STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

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SECRETARY

July 21, 2014

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

ATTN: Mr. Andrew Williams
NCDOT Coordinator

Dear Sir:

Subject: **Application for an Individual Section 404 and Section 401 Water Quality Certification** for the US 221 Widening from US 421 to US 221 Business/NC 88 in Jefferson in Watauga and Ashe Counties. Federal Aid Project No. STP-0221(13), Division 11, TIP No. R-2915. Debit $570 from WBS 34518.1.1.

The North Carolina Department of Transportation (NCDOT) proposes to widen US 221 to a four-lane, median-divided facility from US 421 in the Deep Gap Community of Watauga County to the US 221 Business/NC 88 intersection in the town of Jefferson in Ashe County. The project is approximately 16.1 miles in length.

Please see the enclosed ENG 4345, Ecosystem Enhancement Program (EEP) mitigation acceptance letters, permit drawing review minutes (4B and 4C), letter and Effects Form for 4(f) properties, State Historic Preservation Office (HPO) letter for archaeological sites, State Stormwater Management Plan (SMP), permit drawings, and design plans for the above referenced project.

MAILING ADDRESS:
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LOCATION:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC, 27610-4328

Purpose and Need:
The purpose of this project is to upgrade the existing roadway to a multi-lane facility to increase capacity, alleviate congestion, improve traffic operations and reduce the rate of traffic crashes.

Existing US 221 currently experiences capacity deficiency and operates at levels of service D, E and F. Crash rates and accident severity are relatively high along portions of the project and will likely worsen if no improvements are made.

Summary of Jurisdictional Impacts:
The preliminary projected impacts for the overall (Sections A-E) project will be approximately 3.04 acres of permanent wetland impacts, 7,886 linear feet of permanent stream impacts (6,947 linear feet of fill and 939 linear feet of bank stabilization), and 0.31 acre of temporary stream impacts (see Tables 2 and 3 for a breakdown of impacts by Section). A total of the individual water resources impacted by each section can be found in Table 1.

Table 1 – Summary of Water Resources Impacted

Section	Design Stage	Total # Wetlands Impacted	Total # Streams Impacted
R-2915A	Final	6	12
R-2915B	Final	6	6
R-2915C	Preliminary	5	16
R-2915D	Final	20	24
R-2915E	Preliminary	9	6
Total		**46**	**62***

* S1 included in both Section A and B totals, S56 included in both Section C and D totals

Table 2 – Summary of Wetland Impacts for R-2915

Section	Design Stage	Wetland Impact Type	Wetland Impact Area (ac)	Wetland Impacts Requiring Mitigation (ac)
R-2915A	Final	Perm. Wetland Fill	0.48	0.57*
		Excavation in Wetlands	0.01	
		Mechanized Clearing in Wetlands	0.08	
		Hand Clearing in Wetlands	0.05†	
R-2915B	Final	Perm. Wetland Fill	0.32	0.43*
		Excavation in Wetlands	0.04	
		Mechanized Clearing in Wetlands	0.06	
R-2915C	Preliminary	Perm. Wetland Fill	0.16	0.20
		Excavation in Wetlands	--	
		Mechanized Clearing in Wetlands	0.04	
R-2915D	Final	Perm. Wetland Fill	1.01	1.32
		Excavation in Wetlands	0.01	
		Mechanized Clearing in Wetlands	0.30	
R-2915E	Preliminary	Perm. Wetland Fill	0.43	0.52
		Excavation in Wetlands	--	
		Mechanized Clearing in Wetlands	0.09	
			Total	**3.04**

†Additionally, 0.01 acre of temporary fill in wetlands will occur in the hand clearing areas for erosion control measures
* Values are based on rounding, due to calculating totals with actual numbers to the thousandths

Table 3 – Summary of Stream Impacts for R-2915

Section	Design Stage	Stream Impact Type	Impact Length (lf)	Temporary Impacts (ac)	Stream Impacts Requiring Mitigation (lf)
R-2915A	Final	Permanent Fill	1,119	--	1,119*
		Bank Stabilization	402	--	
		Temporary	--	0.05	
R-2915B	Final	Permanent Fill	533	--	533**
		Bank Stabilization	411	--	
		Temporary	--	0.15	
R-2915C	Preliminary	Permanent Fill	2,263	--	2,263
		Temporary	--	0.06	
R-2915D	Final	Permanent Fill	2,627	--	2,627***
		Bank Stabilization	126	--	
		Temporary	--	0.05	
R-2915E	Preliminary	Permanent Fill	405	--	405
		Temporary	--	<0.01	
		Total	**7,886**	**0.31**	**6,947**

* See Table 7
** See Table 9
*** See Table 11

Summary of Utility Impacts:
There will be no impacts associated with utility relocations in the A, B or D Sections of this project. For Sections C and E, the utility relocations will be determined at final design.

Summary of Mitigation:
The project has been designed to avoid and minimize impacts to jurisdictional areas throughout the National Environmental Policy Act (NEPA) and design processes. However, project impacts will necessitate compensatory mitigation for the unavoidable impacts. Mitigation for impacts resulting from Section C (preliminary design) and Sections A, B and D (final design impacts) are provided. EEP will provide all required mitigation for these sections. See Tables 2 and 3 for a summary of impacts and Table 13 for a summary of proposed mitigation. These mitigable impacts include 6,542 linear feet of permanent stream impact and 2.52 acres of permanent wetland impact. It has been determined that onsite mitigation is not an option for this project. Section E is due to let post year, therefore no mitigation is proposed for this section at this time.

NEPA DOCUMENT STATUS

An Environmental Assessment (EA) was completed for this project in October 2012. A Finding of No Significant Impact (FONSI) was completed in May 2013. In addition, a FONSI Addendum was completed in December 2013. Additional copies will be provided upon request.

In compliance with the NEPA/404 Merger Process, Concurrence Points 4B and 4C were reached for R-2915D on April 18, 2013 and September 11, 2013, respectively. Concurrence Points 4B and 4C were reached for R-2915A and R-2915B on June 20, 2013 and January 23, 2014, respectively. Concurrence Point 4B was reached for R-2915C on September 11, 2013.

PROJECT SCHEDULE

The project will be permitted in phases due to project size, funding and TIP schedule. Table 4 describes the proposed project sections and phasing. The impacts reported in this Individual Permit Application for Sections A, B and D are based on final design. The proposed impacts for the remaining Sections C and E are based on preliminary design. Preliminary design impacts for Section C have been calculated using the Concurrence Point 4B drawings, and Section E impacts have been roughly calculated using preliminary slope stakes plus 10' for wetlands and to the existing ROW for most streams. Permit modification requests will be submitted as the final design is completed for each of the remaining sections (C and E) according to the phasing dates provided in Table 4.

Table 4 – Project phasing for US 221 Widening (R-2915)

Section	Approximate Section Limits	Approximate Length	Construction Letting
R-2915A	US 421 in Watauga County to SR 1003 (Idlewild Road)	2.8 miles	Jun 2015
R-2915B	SR 1003 (Idlewild Road) to north of the South Fork New River	1.77 miles	Jun 2015
R-2915C	North of the South Fork New River to south of NC 194	3.98 miles	Feb 2017
R-2915D	South of NC 194 to US 211 Bypass	4.3 miles	Feb 2015
R-2915E	US 221 Bypass to US 221 Business/NC 88 in Jefferson	3.3 miles	Post-Year
	TOTAL	**16.1 miles**	

INDEPENDENT UTILITY

The subject project is in compliance with 23 CFR Part 771.111(f) which lists the Federal Highway Administration (FHWA) characteristics of independent utility of a project:

(1) The project connects logical termini and is of sufficient length to address environmental matters on a broad scope,
(2) The project is usable and a reasonable expenditure, even if no additional transportation improvements are made in the area;
(3) The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

RESOURCE STATUS

Waters within the project area are located in the New River Basin (HUC 05050001, within subbasins 05-07-01 and 05-07-02). There are Outstanding Resource Waters (ORW) (a portion of Old Field Creek) as well as High Quality Waters (HQW) (South Fork New River) within the project area. No Water Supply Waters (WS-I or WS-II) waters occur within 1.0

mile of the project area. Six named streams as well as unnamed tributaries to two other named streams are located within the project area (Table 5).

Wetland and stream determinations within R-2915 were conducted using the field delineation method outlined in the 1987 Corps of Engineers Wetland Delineation Manual and the 2012 Eastern Mountains and Piedmont Supplement. Mr. Monte Matthews of the U.S. Army Corps of Engineers (USACE) and Sue Homewood of the North Carolina Division of Water Quality (DWR) field verified the wetlands and surface waters on June 12, 2007. Mr. Matthews and Amy Euliss of DWR field reverified the wetlands and surface waters on July 29, 2013. This Section 404 Individual Permit application includes a request for a final approved Jurisdictional Determination of the resources included in the R-2915 project area.

Table 5 – Project area streams

Stream Name	Stream Index Number	Best Usage Classification	Description
Subbasin 05-07-01			
Gap Creek	10-1-23	C;Tr+	From source to South Fork New River
South Fork New River	10-1-(20.5)	WS-V, HQW	From a point 0.4m upstream of Couches Creek to a point 2.8m upstream of Obids Creek
Old Field Creek	10-1-22-(0.3)	C;Tr+	From source to Call Creek
Old Field Creek	10-1-22-(0.7)	C;Tr, ORW	From Call Creek to South Fork New River
Beaver Creek	10-1-25	C;Tr+	From source to South Fork New River
Cole Branch*	10-1-21-1	C;Tr+	From source to Beaver Creek
South Beaver Creek*	10-1-25-2	C;Tr+	From source to Beaver Creek
Naked Creek	10-1-32	C+	From source to South Fork New River
Subbasin 05-07-02			
Little Buffalo Creek	10-2-20-1	C;Tr+	From source to Buffalo Creek

* Stream does not occur within the project area, only unnamed tributaries to stream occur within the project area

303(d) Impaired Waters:
Little Buffalo Creek is currently listed on the North Carolina 2012 Final 303(d) list of impaired waters for having impaired ecological/biological integrity for benthos.

IMPACTS TO WATERS OF THE U.S.

Tables 6 and 7 summarize the impacts to jurisdictional water resources for the final design of R-2915A. Tables 8 and 9 summarize the impacts to jurisdictional water resources for the final design of R-2915B. Tables 10 and 11 summarize the impacts to jurisdictional water resources for the final design of R-2915D. Site numbers correspond with the permit (hydraulic) drawings included in this application. The stream and wetland numbers correspond to the NRTR. A brief description of each impact site will follow the tables.

Table 6 – R-2915A Wetland Impacts*

Site	Wetland Number	Wetland Size (ac)	Permanent Fill in Wetlands (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Impacts Requiring Mitigation (ac)
1	W2b	0.21	0.25	--	--	0.03	0.25
1A	W2a	0.56	0.03	--	--	<0.01	0.03
1B	W2a	0.56	0.07	--	0.02	<0.01	0.10
5	W3	0.05	<0.01	--	--	<0.01	<0.01
18	W6**	0.15	0.09	<0.01	0.05	--	0.15
21	W8	0.08	0.01	<0.01	--	<0.01	0.02
22	W9	0.14	0.03	--	--	<0.01	0.03
Total Impacts			**0.48**	**0.01**	**0.08**	**0.05†**	**0.57*** **

* All wetlands impacted are riparian
** Total take of wetland
*** Values are based on rounding, due to calculating totals with actual numbers to the thousandths
†Additionally, 0.01 acre of temporary fill in wetlands will occur in the hand clearing areas for erosion control measures

Table 7 – R-2915A Stream Impacts

Site	Stream Name & Intermittent (I) or Perennial (P) [1]	Stream Number	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement[2] (linear feet)
1	N/A (wetland only)	--	--	--	--	--
1A	N/A (wetland only)	--	--	--	--	--
1B	N/A (wetland only)	--	--	--	--	--
2	Gap Creek (P)	S1	Perm. Fill	98	--	USACE & DWR
			Bank Stabilization	60	--	DWR
			Temp Fill	--	0.02	--
3	UT to Gap Creek (P)	S2	Perm. Fill	198	--	USACE & DWR
			Bank Stabilization	47	--	DWR
			Temp Fill	--	<0.01	--
3A	UT to Gap Creek (P)	S2	Perm. Fill	57	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp Fill	--	<0.01	--
4	Gap Creek (P)	S1	Perm. Fill	--	--	--
			Bank Stabilization	19	--	DWR
			Temp Fill	--	--	--
5	UT to Gap Creek (P)	S6	Perm. Fill	--	--	--
			Bank Stabilization	9	--	DWR
			Temp Fill	--	<0.01	--
6	Gap Creek (P)	S1	Perm. Fill	--	--	--
			Bank Stabilization	15	--	DWR
			Temp. Fill	--	--	-
7	UT to Gap Creek (I)	S6	Perm. Fill	250	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
8	Gap Creek (P)	S1	Perm. Fill	--	--	--
			Bank Stabilization	12	--	DWR
			Temp. Fill	--	--	--
9	Gap Creek (P)	S1	Perm. Fill	--	--	--
			Bank Stabilization	10	--	DWR
			Temp. Fill	--	--	--

Table 7 Continued – R-2915A Stream Impacts

Site	Stream Name & Intermittent (I) or Perennial (P) [1]	Stream Number	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement[2] (linear feet)
10	UT to Gap Creek (P)	S10	Perm. Fill	74	--	USACE
			Bank Stabilization	16	--	--
			Temp. Fill	--	<0.01	--
11	UT to Gap Creek (P)	S12	Perm. Fill	80	--	USACE
			Bank Stabilization	60	--	--
			Temp. Fill	--	<0.01	--
12	UT to Gap Creek (P)	S13	Perm. Fill	55	--	USACE
			Bank Stabilization	10	--	--
			Temp. Fill	--	<0.01	--
12A	UT to Gap Creek (P)	S13	Perm. Fill	--	--	--
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
12B	UT to Gap Creek (P)	S13	Perm. Fill	--	--	--
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
13	UT to Gap Creek (P)	S14	Perm. Fill	66	--	USACE
			Bank Stabilization	13	--	--
			Temp. Fill	--	<0.01	--
13A	UT to Gap Creek (P)	S14	Perm. Fill	--	--	--
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
13B	UT to Gap Creek (P)	S14	Perm. Fill	--	--	--
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
14	Gap Creek (P)	S1	Perm. Fill	--	--	--
			Bank Stabilization	13	--	DWR
			Temp. Fill	--	--	--
15	UT to Gap Creek (I)	S18	Perm. Fill	84	--	USACE
			Bank Stabilization	26	--	--
			Temp. Fill	--	<0.01	--
16	Gap Creek (P)	S1	Perm. Fill	--	--	--
			Bank Stabilization	9	--	DWR
			Temp. Fill	--	--	--
17	UT to Gap Creek (P)	S19	Perm. Fill	26	--	USACE
			Bank Stabilization	21	--	--
			Temp. Fill	--	<0.01	--
18	N/A (wetland only)	--	--	--	--	--
19	UT to Gap Creek (P)	S21	Perm. Fill	113	--	USACE
			Bank Stabilization	23	--	--
			Temp. Fill	--	<0.01	--
20	UT to Gap Creek (P)	S23	Perm. Fill	--	--	--
			Bank Stabilization	9	--	--
			Temp. Fill	--	--	--
21	N/A (wetland only)	--	--	--	--	--

Table 7 Continued – R-2915A Stream Impacts

Site	Stream Name & Intermittent (I) or Perennial (P) [1]	Stream Number	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement[2] (linear feet)
22	N/A (wetland only)	--	--	--	--	--
23	UT to Gap Creek (P)	S26	Perm. Fill	18	--	USACE
			Bank Stabilization	9	--	--
			Temp. Fill	--	<0.01	--
23A	UT to Gap Creek (P)	S26	Perm. Fill	--	--	--
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
24	Gap Creek (P)	S1	Perm. Fill	--	--	--
			Bank Stabilization	21	--	DWR
			Temp. Fill	--	--	--
Total Temporary Impacts:				**--**	**0.05**[3]	**--**
Total Perm. Impacts (Perm. Fill + Bank Stabilization):				**1,521**	**--**	**--**
Permanent Impacts Requiring DWR Mitigation:				**818**	**--**	**--**
Permanent Impacts Requiring USACE Mitigation:				**1,119**	**--**	**--**
Total Impacts Requiring Mitigation:				**1,119**	**--**	**†**

1 – All streams are Class C; Tr+ waters
2 – Mitigation for bank stabilization impacts required by DWR – not required by USACE
3 – Values are based on rounding, due to some of the individual impacts being <0.01 acre
† – Final mitigation requirement will be up to the USACE and DWR

Permit Site 1: The construction of a ramp for the new interchange with US 421 will result in 0.25 acre of permanent wetland fill and 0.03 acre of hand clearing in W2b.

Permit Site 1A: The construction of a ramp for the new interchange with US 421 will result in 0.03 acre of permanent wetland fill and <0.01 acre of hand clearing in W2a. An 18" RCP (reinforced concrete pipe) will be installed under the ramp at this location, which will continue to provide the hydrology of the un-impacted portion of W2b within the gore area.

Permit Site 1B: The construction of a ramp for the new interchange with US 421 will result in 0.07 acre of permanent wetland fill, 0.02 acre of mechanized clearing, and <0.01 acre of hand clearing in W2a.

Permit Site 2: The construction of a ramp for the new interchange with US 421will result in a new 11'x8' triple-barrel RCBC (reinforced concrete box culvert) being constructed to carry Gap Creek (S1) under the ramp. The installation of this new culvert will result in 98 lf (linear feet) of permanent stream impacts to Gap Creek, 60 lf of bank stabilization from floodplain bench construction, and 0.02 acre (78 lf) of temporary stream impacts.

Permit Site 3: The construction of a ramp for the new interchange with US 421 will result in a new 9'x7' single-barrel RCBC being constructed to carry S2 under the ramp. The installation of this new culvert will result in 198 lf of permanent stream impacts, 47 lf of bank stabilization and <0.01 (67 lf) acre of temporary impacts to S2.

Permit Site 3A: The construction of a driveway to maintain landowner access to property will result in a new 7.25'x5.25' metal arch culvert to carry S2 under the new driveway. The installation of this new culvert will result in 57 lf of permanent impacts and <0.01 (10 lf) acre of temporary impacts to S2.

Permit Site 4: There will be 19 lf of bank stabilization to Gap Creek (S1) to protect the outlet of an energy dissipator basin.

Permit Site 5: Two existing 30" RCPs carrying the flow to W3 and S6 will be removed and replaced as a single 30" RCP perpendicular with US 221. The installation of the new RCP and stabilization of the outlet will result in <0.01 acre of permanent wetland fill and <0.01 acre of hand clearing in wetlands to W3. It will also result in 9 lf of permanent impacts and <0.01 acre (10 lf) of temporary impacts to S6.

Permit Site 6: There will be 15 lf of bank stabilization to Gap Creek (S1) to protect the outlet of a new standard base ditch.

Permit Site 7: The widening of US 221 and construction of a ramp for the new interchange with US 421 will result in the installation of a 30" RCP to carry S6 under the new roadway slopes. The installation of this RCP will result in 250 lf of permanent impacts to and <0.01 acre (10 lf) of temporary impacts to S6.

Permit Site 8: There will be 12 lf of bank stabilization to Gap Creek (S1) to protect the outlet of a new standard base ditch.

Permit Site 9: There will be 10 lf of bank stabilization to Gap Creek (S1) to protect the outlet of a new standard base ditch.

Permit Site 10: The existing 5'x6' RCBC carrying S10 will be replaced and extended to the west with a 54" RCP. This pipe replacement will result in 74 lf of permanent impacts, 16 lf of bank stabilization and <0.01 acre (10 lf) of temporary stream impacts to S10.

Permit Site 11: The existing 6'x9' double-barrel RCBC carrying S12 will be replaced and extended to both the east and west with a 9'x6' double-barrel RCBC. This replacement and extension will result in 80 lf of permanent impacts, 60 lf of bank stabilization and <0.01 acre (20 lf) of temporary impacts to S12.

Permit Site 12: The existing 42" RCP and 15" RCP carrying S13 will be replaced and extended with a new 42" RCP. This action will result in 55 lf of permanent stream impacts, 10 lf of bank stabilization and <0.01 acre (20 lf) of temporary impacts to S13.

Permit Site 12A: The existing 30" CMP (corrugated metal pipe) carrying S13 will be removed and replaced in the same location with a new 42" RCP. This will result in <0.01 acre (10 lf) of temporary impacts to S13.

Permit Site 12B: The existing 24" CMP carrying S13 will be removed and replaced in the same location with a new 42" RCP. This will result in <0.01 acre (10 lf) of temporary impacts to S13.

Permit Site 13: The existing dual 42" RCPs carrying S14 will be replaced and extended to the east with a new 48" RCP. This replacement and extension will result in 66 lf of permanent stream impact, 13 lf of bank stabilization and <0.01 acre (25 lf) of temporary stream impacts to S14.

Permit Site 13A: The existing 48" CMP carrying S14 will be removed. This pipe removal will result in <0.01 acre (10 lf) of temporary impacts to S14.

Permit Site 13B: The existing 36" CMP carrying S14 will be removed and replaced in the same location with a new 48" RCP. This will result in <0.01 acre (10 lf) of temporary impacts to S14.

Permit Site 14: There will be 13 lf of bank stabilization to Gap Creek (S1) to protect the ditch outfall of a 36" RCP.

Permit Site 15: The existing 36" RCP carrying S18 will be replaced and extended with a new 36" RCP. Additionally a new standard base ditch will tie into S18 close to its confluence with Gap Creek (S1). These actions will result in 84 lf pf permanent impacts, 26 lf of bank stabilization and <0.01 acre (20 lf) of temporary impacts to S18.

Permit Site 16: There will be 9 lf of bank stabilization to Gap Creek (S1) to protect the outlet of a new standard base ditch.

Permit Site 17: The existing dual 42" RCPs and single 36" CMP carrying S19 will be replaced and extended with a new 60" RCP. This activity will result in 26 lf of permanent stream impacts, 21 lf of bank stabilization and <0.01 acre (20 lf) of temporary impacts to S19.

Permit Site 18: As a result of the new roadway slopes, there will be 0.09 acre of permanent wetland fill, <0.01 acre of excavation and 0.05 acre of mechanized clearing in W6. This will result in a total take of all 0.15 acre of W6.

Permit Site 19: The existing 66" RCP carrying S21 will be replaced and extended to both the east and west with a new 66" RCP. This action will result in 113 lf of permanent stream impacts, 23 lf of bank stabilization and <0.01a acre (20 lf) or temporary stream impacts to S21.

Permit Site 20: There will be 9 lf of bank stabilization to S23 to protect the outlet of a new standard base ditch.

Permit Site 21: Wetland W8 originates at the outlet of an existing 48" RCP. As a result of the new roadway slopes, the 48" RCP will be replaced and extended, resulting in 0.01 acre of permanent wetland fill, <0.01 of excavation in wetlands and <0.01 acre of hand clearing in wetlands within W8.

Permit Site 22: Wetland W9 originates at the outlet of an existing 18" RCP. As a result of the new roadway slopes, the 18" RCP will be replaced and extended, resulting in 0.03 acre of permanent wetland fill and <0.01 acre of hand clearing in wetlands within W9.

Permit Site 23: The existing 24" RCP carrying S26 will be replaced and extended resulting in 18 lf of permanent stream impacts, 9 lf of bank stabilization and <0.01 acre (10 lf) of temporary stream impacts to S26.

Permit Site 23A: The existing 15" TC (terra cotta pipe) carrying S26 will be removed and replaced in the same location with a new 24" RCP. This will result in <0.01 acre (10 lf) of temporary impacts to S26.

Permit Site 24: There will be 21 lf of bank stabilization to Gap Creek (S1) to protect the outlet of a new standard base ditch.

Table 8 – R-2915B Wetland Impacts*

Site	Wetland Number	Wetland Size (ac)	Permanent Fill in Wetlands (ac)	Excavation (ac)	Mechanized Clearing (ac)	Impacts Requiring Mitigation (ac)
4	W11	0.26	<0.01	--	<0.01	<0.01
5	W11	0.26	<0.01	--	--	<0.01
6	W11	0.26	<0.01	--	--	<0.01
7	W11	0.26	0.05	0.03	--	0.08
8	W12	0.05	<0.01	--	<0.01	<0.01
11	W14	0.02	<0.01	--	<0.01	<0.01
12	W15**	0.12	0.12	--	<0.01	0.12
14	W16	0.04	--	0.01	<0.01	0.02
15	W126**	0.19	0.14	--	0.05	0.19
Total Impacts			**0.32**	**0.04**	**0.06**	**0.43*** **

* All wetlands impacted are riparian
** Total take of wetland
*** Values are based on rounding, due to calculating totals with actual numbers to the thousandths

Table 9 – R-2915B Stream Impacts

Site	Stream Name & Intermittent (I) or Perennial (P) [1]	Stream Number	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement[2] (linear feet)
1A	UT to Gap Creek (P)	S32	Perm. Fill	170	--	USACE & DWR
			Bank Stabilization	44	--	DWR
			Temp Fill	--	<0.01	--
1B	Gap Creek (P)	S1	Perm. Fill	15	--	USACE & DWR
			Bank Stabilization	35	--	DWR
			Temp Fill	--	<0.01	--
2	UT to Gap Creek (P)	S35	Perm. Fill	34	--	USACE
			Bank Stabilization	--	--	--
			Temp Fill	--	--	--
3	UT to Gap Creek (P)	S35	Perm. Fill	111	--	USACE
			Bank Stabilization	--	--	--
			Temp Fill	--	--	--

Table 9 continued – R-2915B Stream Impacts

Site	Stream Name & Intermittent (I) or Perennial (P) [1]	Stream Number	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement[2] (linear feet)
4	N/A (wetland only)	--	--	--	--	--
5	N/A (wetland only)	--	--	--	--	--
6	N/A (wetland only)	--	--	--	--	--
7	N/A (wetland only)	--	--	--	--	--
8	N/A (wetland only)	--	--	--	--	--
9	UT to Gap Creek (P)	S36	Perm. Fill	124	--	USACE
			Bank Stabilization	23	--	--
			Temp. Fill	--	--	--
10	Gap Creek (P)	S1	Perm. Fill	--	--	--
			Bank Stabilization	154	--	DWR
			Temp. Fill	--	0.02	--
11	N/A (wetland only)	--	--	--	--	--
12	N/A (wetland only)	--	--	--	--	--
13	UT to Gap Creek (P)	S40	Perm. Fill	52	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
14	N/A (wetland only)	--	--	--	--	--
15	N/A (wetland only)	--	--	--	--	--
16	UT to Gap Creek (P)	S42	Perm. Fill	27	--	USACE
			Bank Stabilization	9	--	--
			Temp. Fill	--	--	--
17	Gap Creek (P)	S1	Perm. Fill	--	--	--
			Bank Stabilization	54	--	DWR
			Temp. Fill	--	--	--
18	Gap Creek (P)	S1	Perm. Fill	--	--	--
			Bank Stabilization	53	--	DWR
			Temp. Fill	--	--	--
19	South Fork New River (P)	S43	Perm. Fill	--	--	--
			Bank Stabilization	---	--	--
			Temp. Fill	--	0.12	--
20	South Fork New River (P)	S43	Perm. Fill	--	--	--
			Bank Stabilization	19	--	--
			Temp. Fill	--	--	--
21	South Fork New River (P)	S43	Perm. Fill	--	--	--
			Bank Stabilization	20	--	--
			Temp. Fill	--	--	--
Total Temporary Impacts:				**--**	**0.15**[3]	**--**
Total Permanent Impacts (Perm. Fill + Bank Stabilization):				**944**	**--**	**--**
Permanent Impacts Requiring DWR Mitigation:				**525**	**--**	**--**
Permanent Impacts Requiring USACE Mitigation:				**533**	**--**	**--**
Total Impacts Requiring Mitigation:				**533**	**--**	†

1 – All streams are Class C; Tr+ waters except S43 (South Fork New River), which is WS-V; HQW
2 – Mitigation for bank stabilization impacts required by DWR – not required by USACE
3 – Values are based on rounding, due to some of the individual impacts being <0.01 acre
† – Final mitigation requirement will be up to the USACE and DWR

Permit Site 1A: The existing 8'x8' RCBC is being replaced and extended to the east, resulting in 170 (lf) of permanent impacts to S32. There will be 44 lf of stream bank stabilization at the inlet of the culvert extension and <0.01 acre (21 lf) of temporary impacts associated with the extension.

Permit Site 1B: As a result of the culvert replacement and extension, there will be 15 lf of permanent impact to Gap Creek (S1). Additionally there will 35 lf of bank stabilization and <0.01 acre (6 lf) of temporary impacts to Gap Creek at the outlet of the culvert carrying S32.

Permit Site 2: The existing 24" RCP carrying S35 is being replaced with a 30" RCP, resulting in 5 lf of permanent impacts to S35 from the pipe installation and 29 lf of permanent impacts to S35 due to shaping the downstream portion into a tail ditch for a total of 34 lf of permanent impacts.

Permit Site 3: The existing 12" CMP carrying S35 upstream of Permit Site 2 is being replaced with an 18" CMP. The new pipe will be slightly to the east of the existing one, and S35 will be directed in and out of the new pipe via a 2' base ditch on each side. These activities will result in 111 lf of permanent impact to S35.

Permit Site 4: The existing 30" RCP which drains to W11 is being replaced with a new 12" RCP. There will be <0.01 acre of permanent wetland fill and <0.01 acre of mechanized clearing in W11 at the outlet of the new pipe.

Permit Site 5: The existing 24" RCP draining into W11 directly across from Titus Ridge Drive (Y9) is being replaced with a 30" CSP (corrugated steel pipe). This will result in <0.01 acre of permanent wetland fill to W11 at the outlet of the new pipe.

Permit Site 6: A new 24" CSP is being installed under US 221 to carry flow from the east side of the road. There will be <0.01 acre of permanent wetland fill to W11 at the outlet of this new pipe.

Permit Site 7: Due to the new roadway slopes, a portion of W11 will be relocated to the west into a lateral 6' grassed swale. The swale has been designed to match the grade and shape of the existing portion of wetland and will be stabilized using coir fiber matting. This action will result in 0.05 acre of permanent wetland fill and 0.03 acre of wetland excavation in W11.

Permit Site 8: Due to the new roadway slopes there will be <0.01 acre of permanent wetland fill and <0.01 acre of mechanized clearing in W12. The nearby existing 18" RCP draining into W12 will be replaced and extended with 15" CSP.

Permit Site 9: The existing 42" RCP carrying S36 will be replaced and extended to the east with a 36" RCP. This will result in 124 lf of permanent impacts to S36. Additionally, there will be 23 lf of bank stabilization at the outlet of the pipe associated with the replacement and extension. The pipe inlet will not be buried, but the outlet has a less than 1% slope.

Permit Site 10: The existing 10'x12' triple-barrel RCBC carrying Gap Creek (S1) under US 221 is being pulled out and replaced with a 130-foot long, three-span, pre-stressed girder bridge. There will be 154 lf of stream bank stabilization to Gap Creek to reinforce the

channel after culvert removal. Additionally, there will be 0.02 acre (57 lf) of temporary impacts due to the placement of a temporary workpad needed to install the drilled piers for the northern interior bent.

Permit Site 11: As a result of the new roadway slopes, there will be <0.01 acre of permanent wetland fill and <0.01 acre of mechanized clearing in W14.

Permit Site 12: As a result of the new roadway slopes, there will be 0.12 acre of permanent wetland fill and <0.01 acre of mechanized clearing in W15, resulting in a total take of the wetland.

Permit Site 13: The existing 24" CMP that carries flow from W15 to the west side of US 221 where it becomes S40 is being replaced and extended with a 24" RCP. This pipe replacement and extension will result in 52 lf of permanent stream impacts to S40. In addition, the pipe installation will result in <0.01 acre (8 lf) of temporary stream impacts to S40.

Permit Site 14: As a result of the new roadway slopes, there will be 0.01 acre of wetland excavation and <0.01 acre of mechanized clearing in W16.

Permit Site 15: As a result of the new roadway slopes, there will be 0.14 acre of permanent wetland fill and 0.05 acre of mechanized clearing in W126, resulting in a functional total take of the wetland.

Permit Site 16: Currently, S42 is carried under US 221 all the way to Gap Creek via a 60" RCP and a 54" CMP. These pipes will be replaced with a 60" RCP that will not carry S42 all the way to the confluence with Gap Creek. At the outlet of the 60" RCP, the channel will be open, flowing into a new 5' base ditch until it reaches Gap Creek. These actions will result in 27 lf of permanent stream impacts to S42. Additionally there will be 9 lf of bank stabilization in S42 on the inlet side of the new pipe at the tie-in with a new 2' lateral base ditch from the south.

Permit Site 17: There will be 54 lf of bank stabilization to Gap Creek in order to protect the outlet of the new 5' base ditch created to carry S42 (permit site 16 above).

Permit Site 18: There will be 53 lf of bank stabilization to Gap Creek in order to protect the outlet of a new 3' base ditch. This ditch will serve to diffuse and slow drainage from a new 36" RCP that will replace an existing 36" CMP which currently drains directly into Gap Creek.

Permit Site 19: The existing bridge over the South Fork New River (S43) will be removed and replaced with dual 260-foot, three-span pre-stressed concrete girder bridges. Temporary work pads on the north and south banks of the river will be required in order to remove existing bents and install the drilled shafts for the new bridges. These work pads will result in 0.12 acre (115 lf) of temporary impacts to the South Fork New River (S43). Work pad construction and removal shall be staged so that no more than half the channel is blocked at any time.

Permit Site 20: There will be 19 lf of bank stabilization to the South Fork New River (S43) to protect the outlet of a new 4' base ditch on the east side of the road.

Permit Site 21: There will be 20 lf of bank stabilization to the South Fork New River (S43) to protect the outlet of a new 3' base ditch on the west side of the road.

Table 10 – R-2915D Wetland Impacts*

Site	Wetland Number	Wetland Size (ac)	Permanent Fill in Wetlands (ac)	Excavation (ac)	Mechanized Clearing (ac)	Impacts Requiring Mitigation (ac)
2	W53	0.02	<0.01	--	--	<0.01
3B	W58	0.05	<0.01	<0.01	0.02	0.03
4	W59**	0.14	0.10	--	0.04	0.14
7	W63	0.39	0.25	--	0.05	0.30
13	W72	0.02	<0.01	<0.01	--	0.01
14	W78	0.74	0.03	<0.01	0.01	0.05
15	W76	0.30	<0.01	--	0.02	0.02
16	W77	1.86	--	--	<0.01	<0.01
17A	W79	0.25	0.06	--	0.01	0.07
19	W81**/W82**	0.01/0.06	0.07	--	<0.01	0.07
20B	W85	0.03	<0.01	--	<0.01	0.01
21	W86**	0.18	0.17	<0.01	--	0.18
22	W88	0.06	<0.01	--	<0.01	<0.01
24	W89	0.09	<0.01	--	0.01	0.02
25	W93	0.54	0.11	--	0.05	0.15
27	W94	0.04	0.04	--	<0.01	0.04
28	W95	0.52	<0.01	--	0.02	0.02
30	W95	0.52	0.04	--	0.06	0.10
31	W96	0.3	0.06	--	<0.01	0.07
32	W98	0.07	0.02	--	<0.01	0.02
Total Impacts			**1.01**	**0.01**	**0.3**	**1.32*** **

* All wetlands impacted are riparian
** Total take of wetland
*** Values are based on rounding, due to calculating totals with actual numbers to the thousandths

Table 11 – R-2915D Stream Impacts

Site	Stream Name & Intermittent (I) or Perennial (P) [1]	Stream Number	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement[2] (linear feet)
1	UT to Old Field Creek (I)	S87	Perm. fill	312	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp. fill	--	<0.01	--
2	N/A (wetland only)	--	--	--	--	--
3A	UT to Old Field Creek (P)	S90	Perm. Fill	60	--	USACE
			Bank Stabilization	--	--	--
			Temp Fill	--	--	--

Table 11 continued – R-2915D Stream Impacts

Site	Stream Name & Intermittent (I) or Perennial (P) [1]	Stream Number	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement[2] (linear feet)
3B	UT to Old Field Creek (P)	S92a	Perm. Fill	56	--	USACE
			Bank Stabilization	--	--	--
			Temp Fill	--	<0.01	--
4	UT to Old Field Creek (P)	S92a	Perm. Fill	--	--	--
			Bank Stabilization	--	--	--
			Temp Fill	--	<0.01	--
5	UT to Old Field Creek (P)	S92b	Perm. Fill	57	--	USACE
			Bank Stabilization	19	--	--
			Temp Fill	--	--	--
6	Old Field Creek (P)	S56	Perm. Fill	120	--	USACE & DWR
			Bank Stabilization	48	--	DWR
			Temp. Fill	--	<0.01	
7	N/A (wetland only)	--	--	--	--	--
8	UT to Old Field Creek (P)	S95	Perm. Fill	--	--	--
			Bank Stabilization	15	--	--
			Temp. Fill	--	--	--
9	UT to Old Field Creek (P)	S102	Perm. Fill	126	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
10	UT to Old Field Creek (P)	S104	Perm. Fill	396	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp. Fill	--	--	--
11	UT to Old Field Creek (P)	S95	Perm. Fill	--	--	--
			Bank Stabilization	11	--	--
			Temp. Fill	--	--	--
12	UT to Beaver Creek (P)	S106	Perm. Fill	51	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
13	N/A (wetland only)	--	--	--	--	--
14	UT to South Beaver Creek (P)	S111	Perm. Fill	162	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
15	UT to South Beaver Creek (P)	S111	Perm. Fill	12	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp. Fill	--	--	--
16	N/A (wetland only)	--	--	--	--	--
17A	UT to South Beaver Creek (P)	S112	Perm. Fill	28	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
17B	UT to South Beaver Creek (P)	S112	Perm. Fill	12	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	--	--

Table 11 continued – R-2915D Stream Impacts

Site	Stream Name & Intermittent (I) or Perennial (P) [1]	Stream Number	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement[2] (linear feet)
18	UT to Beaver Creek (P)	S115	Perm. Fill	491	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp. Fill	--	--	--
19	UT to Beaver Creek (P)	S116	Perm. Fill	100	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
20A	UT to Beaver Creek (P)	S117	Perm. Fill	55	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
20B	UT to Beaver Creek (P)	S118	Perm. Fill	57	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
21	UT to Beaver Creek (P)	S119	Perm. Fill	49	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
22	UT to Beaver Creek (P)	S120	Perm. Fill	61	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	--	--
23A	UT to Beaver Creek (P)	S122	Perm. Fill	19	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	--	--
23B	UT to Beaver Creek (P)	S123	Perm. Fill	66	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
24	UT to Beaver Creek (I)	S125	Perm. Fill	22	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
25	UT to Beaver Creek (P)	S127	Perm. Fill	12	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	--	--
26	Beaver Creek	S124	Perm. Fill	75	--	USACE
			Bank Stabilization	33	--	--
			Temp. Fill	--	0.01	--
27	UT to Beaver Creek (P)	S126	Perm. Fill	134	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp. Fill	--	--	--
28	N/A (wetland only)	--	--	--	--	--
29	UT to Beaver Creek (P)	S126	Perm. Fill	69	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp. Fill	--	--	--
30	N/A (wetland only)	--	--	--	--	--
31	N/A (wetland only)	--	--	--	--	--

Table 11 continued – R-2915D Stream Impacts

Site	Stream Name & Intermittent (I) or Perennial (P) [1]	Stream Number	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement[2] (linear feet)
32	UT to Beaver Creek (P)	S128	Perm. Fill	25	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01	--
Total Temporary Impacts:				**--**	**0.05**[3]	**--**
Total Perm. Impacts (Perm. Fill + Bank Stabilization):				**2,753**	**--**	**--**
Permanent Impacts Requiring DWR Mitigation:				**1,744**	**--**	**--**
Permanent Impacts Requiring USACE Mitigation:				**2,627**	**--**	**--**
Total Impacts Requiring Mitigation:				**2,627**	**--**	**†**

1 – All streams are Class C; Tr+ waters
2 – Mitigation for bank stabilization impacts required by DWR – not required by USACE
3 – Values are based on rounding, due to some of the individual impacts being <0.01 acre
† – Final mitigation requirement will be up to the USACE and DWR

Permit Site 1: The existing 18" RCP carrying S87 is being replaced and extended with a new 36" RCP. A portion of the stream at the outlet of the new pipe will be relocated to the east to accommodate new roadway slopes. The relocated channel will be constructed with coir fiber matting. These actions will result in 312 lf of permanent impacts to S87. There will be <0.01 acre (46 lf) of temporary impacts to S87 at the inlet and outlet associated with the pipe extension and channel relocation.

Permit Site 2: The existing 66" RCP is being extended to the east, resulting in <0.01 acre of permanent fill in W53.

Permit Site 3A: The existing 84" CMP carrying S90 will be extended to the west, resulting in 60 lf of permanent impacts to S90.

Permit Site 3B: The new fill slopes in this location will result in <0.01 acre of wetland fill, <0.01 acre of wetland excavation and 0.02 acre of mechanized clearing to W58. In addition, the 24" CMP carrying S92a under Y27 will be extended to the north, resulting in 56 linear lf of permanent stream impacts. There will be <0.01 ac (73 lf) of temporary stream impacts to S92a associated with the pipe extension and the mechanized clearing in W58.

Permit Site 4: The new roadway slopes will impact most of W59 due to wetland fill and mechanized clearing. This will disrupt the hydrology of the wetland such that it will be a total take of all 0.14 acre of W5 due to 0.1 acre of permanent fill and 0.04 acre of mechanized clearing. Additionally, there will be <0.01 acre (19 lf) of temporary stream impacts to the headwaters of S92a due to the mechanized clearing in W59.

Permit Site 5: The existing 60" CMP will be extended to the west with a 60" RCP, resulting in 57 lf of permanent impacts to S92. Additionally, a lateral v-ditch will tie into S92 at the outlet of the pipe extension, resulting in 19 lf of bank stabilization to S92.

Permit Site 6: The existing pair of 84" CMPs carrying Old Field Creek (S56) will be extended to the west with 84" CSPs (corrugated steel pipes). Additionally, due to extensive scour on the downstream end of the existing pipes, the entire channel will be stabilized with

rip rap and a rock cross vane structure will be constructed to direct flow and control stream grade. These activities will result in 120 lf of permanent impacts to Old Field Creek. There will also be 48 lf of bank stabilization on the upstream side of the extension and <0.01 acre (25 lf) of temporary impacts to Old Field Creek associated with the pipe extension.

Permit Site 7: The new roadway slopes will result in 0.25 acre of wetland fill and 0.05 acre of wetland mechanized clearing in W63.

Permit Site 8: There will be 15 lf of bank stabilization in S95 due to the outlet of a tail ditch.

Permit Site 9: The existing 30" CMP carrying S102 will be extended to the west. Due to the alignment of the existing pipe, the stream will be relocated slightly to the south in order to align with the inlet of the pipe extension. These activities will result in 126 lf of permanent impacts and <0.01 acre (22 lf) of temporary impacts to S102.

Permit Site 10: Stream S104 will be filled and relocated to the north due to the new roadway slopes. This will result in 396 lf of permanent impacts to S104.

Permit Site 11: There will be 11 lf of bank stabilization to S95 at the outlet of the existing 30" CMP to preserve the channel profile after pipes upstream of the outlet are replaced.

Permit Site 12: The existing 24" CMP is being extended to the east with a 24" CSP and 24" RCP. This will result in 51 lf of permanent impacts to S106 and <0.01 acre (11 lf) of temporary impacts.

Permit Site 13: The existing 24" CMP is being extended to the north with a 24" CSP and 24" RCP. This will result in in <0.01 acre of wetland fill and <0.01 acre of wetland excavation within W72.

Permit Site 14: Due to the new roadway slopes, the existing 36" CMP carrying S111 will be extended to the north with a 36" CSP and 36" RCP. A portion of S111 at the inlet will be relocated to align with the new pipe extension. This will result in 162 lf of permanent stream impacts and <0.01 acre (14 lf) of temporary stream impacts to S111. In addition, the new roadway slopes will result in 0.03 acre of wetland fill, <0.01 acre of wetland excavation and 0.01 acre of mechanized clearing within W78.

Permit Site 15: There will be 12 lf of permanent stream impacts to S111 at the outlet of the existing 36" CMP due to placement of riprap for outlet protection. Additionally, new roadway slopes in this area will result in <0.01 acre of permanent wetland fill and 0.02 acre of mechanized clearing in W76.

Permit Site 16: As a result of the new roadway slopes, there will be <0.01 acre of mechanized clearing in W77.

Permit Site 17A: The existing 36" CMP is being extended to the north with a 36" CSP and 36" RCP, resulting in 28 lf of permanent stream impacts and <0.01 acre (23 lf) of temporary

stream impacts to S112. The new roadway slopes in this vicinity will result in 0.06 acre of wetland fill and 0.01 acre of mechanized clearing in W79.

Permit Site 17B: The outlet of the existing 36" CMP carrying S112 will be stabilized with riprap, resulting in 12 lf of permanent impacts to S112.

Permit Site 18: New roadway slopes will fill the length of S115, resulting in 491 lf of permanent impacts to S115.

Permit Site 19: The existing 24" CMP carrying S116 will be extended with a 24" CSP and 24" RCP. This will result in 100 lf of permanent stream impacts and <0.01 (12 lf) of temporary impacts to S116. The new roadway slopes and subsequent pipe extension in this vicinity will entirely fill W82 (total take), and partially fill W81, with the rest of W81 cleared mechanically (functionally a total take). This will result in a total of 0.07 acre of wetland fill and <0.01 acre of mechanized clearing in W81 and W82.

Permit Site 20A: The existing 42" CMP is being extended to the south. The portion of the pipe extension carrying S117 will be extended using a 42" CSP and a 42" RCP. This will result in 55 lf of permanent impacts and <0.01 acre (18 lf) of temporary impacts to S117.

Permit Site 20B: The existing 42" CMP is being extended to the south. The portion of the pipe carrying S118 will be extended using a 42" RCP and a 24" RCP. This will result in 57 lf of permanent stream impacts and <0.01 acre (11 lf) of temporary stream impacts to S118. The new roadway slopes in the vicinity will result in <0.01 acre of wetland fill and <0.01 acre of mechanized clearing in W85.

Permit Site 21: The new roadway slopes will result in 0.17 acre of wetland fill and <0.01 acre of wetland excavation in W86 (functionally a total take). The new fill slope will also result in 49 lf of permanent stream impacts and <0.01 acre (17 lf) of temporary stream impacts to S119.

Permit Site 22: The existing 30" CMP is being extended with a 30" CSP and 30" RCP, which will result in 61 lf of permanent impacts to S120. The new roadway slopes will result in <0.01 acre of wetland fill and <0.01 acre of mechanized clearing in W88.

Permit Site 23A: The new roadway slopes and nearby pipe extension will fill the short section of S122, resulting in 19 lf of permanent stream impacts.

Permit Site 23B: The existing 24" CMP will be extended to the east with a 24" CSP and 24" RCP, resulting in 66 lf of permanent impacts and <0.01 acre (15 lf) of temporary impacts to S123.

Permit Site 24: The existing 30" CMP carrying S125 will be extended to the east with a 30" CSP and 30" RCP. This will result in 22 lf of permanent stream impacts and <0.01 acre (10 lf) of temporary stream impacts to S125. The new roadway slopes will result in <0.01 acre of wetland fill and 0.01 acre of mechanized clearing in W89.

Permit Site 25: There will be 12 lf of permanent stream impacts to S127 due to placement of riprap in the channel to alleviate the existing 3' drop-off at the outlet of the 36" CMP. The existing 36" CMP will be extended on the inlet side with a 36" CSP due to the new roadway slopes. The new slopes will result in 0.11 acre of wetland fill and 0.05 acre of mechanized clearing in W93.

Permit Site 26: The existing 8'x10' triple barrel box culvert carrying Beaver Creek (S124) will be extended to the east. This will result in 75 lf of permanent impacts to Beaver Creek as well as 33 lf of bank stabilization impacts to Beaver Creek at the outlet. In addition, there will be 0.01 acre (48 lf) of temporary impacts to Beaver Creek associated with construction of the extension and bank stabilization installation.

Permit Site 27: The existing pair of 60" CMPs that carry S126 and its overflow are being extended to the east with 60" CSPs. The outlet flow will be directed into a new lateral base ditch stabilized with coir fiber matting, before ultimately rejoining with the natural channel of S126 prior to the confluence with Beaver Creek. This will result in 134 lf of permanent stream impacts to S126. Additionally, the new fill slopes in this vicinity will result in 0.04 acre of wetland fill and <0.01 acre of mechanized clearing in W94 (a total take).

Permit Site 28: New roadway slopes in this location will necessitate <0.01 acre of wetland fill and 0.02 acre of mechanized clearing in W95.

Permit Site 29: The inlet side of the existing 60" CMPs carrying S126 is highly destabilized. There will be 69 lf of permanent impacts to S126 from the reshaping of the channel into a head ditch to better conform to the pipe baseflow and overflow inlets.

Permit Site 30: The new roadway slopes and accompanying rock plating will result in 0.04 acre of wetland fill and 0.06 acre of mechanized clearing in W95.

Permit Site 31: The new roadway slopes will result in 0.06 acre of wetland fill and <0.01 acre of mechanized clearing in W96.

Permit Site 32: The new roadway slopes will result in 0.02 acre of wetland fill and <0.01 acre of mechanized clearing in W98. The existing 24" CMP carrying S128 will be extended to the east with a 24" RCP. In addition, riprap will be used at the outlet of the existing pipe to the west to alleviate an existing drop-off. These actions will result in 25 lf of permanent stream impacts to S128. Additionally, the pipe extension and nearby mechanized clearing in wetlands will result in <0.01 acre (19 lf) of temporary impacts to S128.

MORATORIUM

The North Carolina Wildlife Resources Commission (NCWRC) has requested a trout moratorium prohibiting in-stream work and land disturbance within the 25-foot trout buffer from October 15 to April 15 for all streams supporting wild trout within the project area. This includes Cole Branch, Gap Creek, Old Field Creek and Beaver Creek and their unnamed tributaries. Little Buffalo Creek, South Beaver Creek and Naked Creek along with their unnamed tributaries, are not subject to any construction moratoria.

FEDERALLY PROTECTED SPECIES

Plants and animals with Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 14, 2014, the USFWS lists eight federally protected species for Watauga County and nine federally protected species for Ashe County (Table 12).

A US Fish and Wildlife Service proposal for listing the Northern Long-eared Bat (*Myotis septentrionalis*) as an Endangered species was published in the Federal Register in October 2013. The listing will become effective on or before April, 2015. Furthermore, this species is included in USFWS's current list of protected species for Ashe and Watauga County. NCDOT is working closely with the USFWS to understand how this proposed listing may impact NCDOT projects. NCDOT will continue to coordinate appropriately with USFWS to determine if this project will incur potential effects to the Northern long-eared bat, and how to address these potential effects, if necessary.

Summary of Species with Habitat:

Bog turtle: Assessments of the wetlands within the project vicinity and bog turtle surveys were conducted by NCDOT biologists in April, May and June 2008. Several of the wetlands provide potential habitat for bog turtles, and a bog turtle was found in one of the wetlands (that is not within the proposed construction limits of this project). However, this species is listed due to similarity of appearance, and is not subject to Section 7 consultation with the USFWS. Impacts to wetlands, including those that provide habitat for the bog turtle within the project have been avoided and minimized to the greatest extent practicable.

Swamp pink: Walking visual surveys of all areas of potential habitat were conducted in June 2008 and May 2013. No individuals of this species have been identified within the project and there are no known occurrences within 1.0 mile of the project.

Virginia spiraea: Surveys of all areas of suitable habitat were conducted in June 2008, July 2010 and June 2012. No individuals of this species have been identified within the project area during any of the surveys. After discussions with USFWS in April 2013, it was determined that the only area within the project providing reasonable habitat for Virginia spiraea was the crossing of the South Fork New River, which was surveyed again in July 2014. Though there is a known population of Virginia spiraea located less than 1.0m from this project along the South Fork New River, the biological conclusion for this species is 'No Effect' (verified by USFWS via e-mail on April 23, 2013). There is a tributary flowing into the South Fork New River between the proposed new bridge location and the known Element Occurrence of spiraea (which marks the westernmost known extent along the South Fork New River). In addition, the spiraea is located around a bend of the South Fork New River (and not directly straight downstream) so this project will likely not generate sedimentation that would affect the known population.

Table 12 – Federally protected species listed for Watauga and Ashe Counties

Scientific Name	Common Name	County*	Federal Status**	Habitat Present	Biological Conclusion
Clemmys muhlenbergii	Bog turtle	W, A	T (S/A)	Yes	Not Required
Glaucomys sabrinus coloratus	Carolina northern flying squirrel	W, A	E	No	No Effect
Corynorhinus townsendii virginianus	Virginia big-eared bat	W	E	No	No Effect
Microhexura montivaga	Spruce-fir moss spider	W	E	No	No Effect
Solidago spithamaea	Blue ridge goldenrod	W, A	T	No	No Effect
Liatris helleri	Heller's blazing star	W, A	T	No	No Effect
Hedyotis purpurea var. *montana*	Roan mountain bluet	W, A	E	No	No Effect
Geum radiatum	Spreading avens	W, A	E	No	No Effect
Helonias bullata	Swamp pink	A	T	Yes	No Effect
Spiraea virginiana	Virginia spiraea	A	T	Yes	No Effect
Gymnoderma lineare	Rock gnome lichen	A	E	No	No Effect

*W – Watauga County, A – Ashe County
**T(S/A) - Threatened due to similarity of appearance, T – Threatened, E – Endangered

INDIRECT CUMULATIVE IMPACT ANALYSIS

Existing rules for the 401 Water Quality Certification Program (15A NCAC 2H .0506(b)(4) require that the DWR determine that a project "does not result in cumulative impacts, based on past or reasonably anticipated future impacts, that cause or will cause a violation of downstream water quality standards."

An Indirect and Cumulative Effects Assessment (ICE) was completed for this project in 2009. Copies of this report are available upon request. This report concluded the following:

Indirect and Cumulative Effects to the Human Environment

Indirect Assessment:
The widening of US 221 from its existing two-lane configuration to a four-lane, median-divided facility will decrease travel times between US 421 (and Boone to the west) and Jefferson and West Jefferson. The travel time savings will come as a result of an increase in the capacity and decrease in traffic congestion on US 221. Residential development is expected to continue, particularly along the southern portion of the project, where it has already been occurring. The area has been, and will likely remain, a popular retirement and second home destination because of its scenic charm and rural appeal. The project is expected to result in a slight increase in this type of development, and the location will be

driven by the proximity to Boone and secondarily to the Towns of West Jefferson and Jefferson in the north. The intensity of the development along the southern portion of the project will be limited by the lack of water and sewer infrastructure. Future development will likely come in the form of single-family, larger-lot development. The increased number of residences will slightly strengthen the demand for commercial services. More intense development is possible in the Beaver Creek area and the Towns of Jefferson and West Jefferson. These areas are experiencing growth and have water and sewer facilities and the capacity to handle larger, more intense development. There is also ample available land in these areas to handle larger-scale development. Very few development regulations exist aside from the Trout Stream buffer requirements, which require a 50-foot buffer along waters designated as Trout Streams, and the Mountain Ridge Protection Act development regulations, which prevent construction higher than 500 feet from the adjacent valley floor. No notable indirect effects are anticipated to result from this project.

Cumulative Assessment:
Cumulative effects considers past, present, and reasonably foreseeable future actions within the Future Land Use Study Area. Past manmade actions include previous development along the alignment and the widening of US 421 to the south of the study area. Current or present actions include the project itself and construction of the Cedar Crossing and Titus Ridge neighborhoods along US 221. Future actions include the construction of the proposed water intake valve for the Town of Boone and the subsequent reclassification of its watershed to a WSW-IV, as well as TIP Project U-3812, which will upgrade NC 88. The proposed project crosses the South Fork New River, which is classified as High-Quality Water (HQW), and Old Field Creek, which is classified as Outstanding Resource Water (ORW). It also crosses Little Buffalo Creek, which is listed by the state as having impaired water quality. Indirect effects in the form of land use changes as a result of this existing location widening project may occur in the form of increased residential development and redevelopment. Increased commercial and industrial development is possible at the northern end of the project. Impacts to storm water runoff and downstream water quality are not expected from this change in development patterns due to a lack of water and sewer utilities and existing storm water runoff controls. The project is expected to result in a slight increase in residential development, which will likely take the form of larger-lot, single family residences. However, the cumulative effect of this project, when considered in the context of other past, present, and future actions, and the resulting impact to notable human and natural features is considered
minimal. No notable cumulative impacts are anticipated to result from this project.

Indirect and Cumulative Effects to the Natural Environment

Detailed analysis of the probable development patterns in the area suggest that this project will have little or no effect on future storm water run-off or water quality in this watershed. Regional population and job growth projections suggest that suburban development in the area will continue to occur with and without the project. The highest development potential is on the northern end of the project, particularly in the Beaver Creek area and the Towns of Jefferson and West Jefferson. Travel time savings will be the highest in these areas and will make commuting to and from Boone more appealing, and the availability of water and sewer in these areas make more intense development possible. Ashe County, The Town of West Jefferson, and the NC DWR have storm water runoff regulations in these areas that will serve

to protect the stream quality of the surrounding areas. The areas along the southern end of the project are also developing and will continue to develop, however the lack of water and sewer utilities will prevent any large-scale development. Ashe County and the NC DWR storm water regulations will address runoff and downstream water quality. For these reasons, indirect and cumulative effects on the existing resources, including downstream water quality should be minimal. No additional ICE study is recommended.

CULTURAL RESOURCES

Section 4(f) and Section 6(f) Resources:
The project study area includes four Section 4(f) resources: Baldwin Bethany Cemetery (National Register eligible), Barnett Idol House (National Register eligible), Fleetwood Community Center, and Foster Tyson Park. The only impact anticipated by this project is to the Fleetwood Community Center, where the driveway will need to be re-tied to US 221 (temporary impact). A letter of de minimis impact from the Ashe County School board regarding the Fleetwood Community Center is attached.

There are no 6(f) resources within the project study area.

Archaeological and Historic Architectural Resources:
The proposed improvements to U.S. 221 from US 421 in Deep Gap, Watauga County, to US 221 Business/NC 88 in Jefferson, Ashe County is a Federally-funded project. Therefore the project must comply with Section 106 of the National Historic Preservation Act that requires the lead Federal agency (the NCDOT on behalf of the Federal Highways Administration [FHWA]) to consult with the North Carolina State Historic Preservation Office (HPO [on behalf of the Advisory Council on Historic Preservation]) regarding the project's potential to impact archaeological resources eligible for or listed on the National Register of Historic Places (NRHP).

Consultation with HPO began in 1977 when personnel with the Archaeology Section of the N.C. Department of Cultural Resources, Division of Archives and History, conducted an archaeological survey of the section of proposed US 221 between Baldwin and Jefferson (Scheitlin et al. 1979). The survey identified 26 archaeological sites, all of which were recommended ineligible for the NRHP. HPO concurred with these recommendations, and the section was later constructed as a two-lane road. Updated scoping information was submitted to HPO on April 7, 2006. On May 24, 2006, HPO recommended that a comprehensive archaeological survey be conducted by an experienced archaeologist to identify and evaluate the significance of archaeological remains that may be damaged or destroyed by the proposed project.

In May 2012, the NCDOT sponsored an archaeological survey of the Area of Potential Effects (A.P.E.) of the section between Deep Gap in Watauga County and Baldwin in Ashe County. The survey identified five archaeological sites, all of which were recommended ineligible for the NRHP. The NCDOT submitted the archaeological survey report (O'Neal 2013) to HPO on January 24, 2013. On March 5, 2013 HPO concurred with the report's findings and recomm ended no further archaeological work for the project. Please see attached consultation letter from HPO.

FEMA COMPLIANCE

The project has been coordinated with appropriate state and local officials and the Federal Emergency Management Agency (FEMA) to assure compliance with FEMA, state, and local floodway regulations.

WILD AND SCENIC RIVER SYSTEM

The project will not impact any designated Wild and Scenic Rivers or any rivers included in the list of study rivers (Public Law 90-542, as amended). The South Fork New River is not designated as a Wild and Scenic River until the confluence with Dog Creek northeast of the project. The northern portion of the project closest to this confluence is over 3.5 straight miles and 6.4 river miles (via Naked Creek) away from the point at which the Wild and Scenic River designation begins.

MITIGATION OPTIONS

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

<u>Avoidance and Minimization:</u>
NCDOT has avoided impacting many wetlands and streams and reduced impacts to wetlands and streams to the greatest extent practicable. Wetland impacts have been kept to a minimum by avoiding ditching and channelization through wetlands. Existing drainage patterns to the wetlands have been kept to maintain the hydrology feeding the wetlands. Other specific examples of avoidance and minimization measures include:

- Design Standards in Sensitive Watersheds will be implemented throughout the entire project during construction (15A NCAC 4B .0124).
- Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to receiving streams and wetlands due to erosion and runoff.
- A trout moratorium from October 15 – April 15 will be adhered to in order to protect reproducing trout.
- Grassed swales will be utilized throughout the project (see SMPs) to reduce water velocity, promote infiltration and provide treatment for discharge before runoff enters streams. These grassed swales have side slopes that are 3:1 or flatter, with many side slopes being 6:1 and 4:1, have a velocity during the 2-Year Storm of less than 2 feet per second and have a minimum ditch length equivalent to 100 feet per acre of impervious area.

- Preformed scour holes (PSH) will be utilized in several locations (see SMPs) to diffuse the concentrated flow from storm drain outlet pipes into non-erosive sheet flow to surrounding water resources.
- Riprap aprons/pads will be utilized in several locations (see SMPs) to reduce velocity and erosion at pipe outlets.
- Multiple culvert extensions utilize junction boxes to dissipate energy, reduce the slope of the channel and provide a non-erosive outlet velocity to the stream bed and bank.
- Culverts will be buried 20% of the pipe diameter below the natural streambed up to 1 foot.
- Where possible, hand clearing in wetlands will be used in R-2915A rather than mechanized clearing.
- The relocated portion of a wetland at R-2915B permit site 7 will be a grassed swale that has been designed to match the grade and shape of the existing wetland as much as possible.
- The culvert carrying Gap Creek at R-2915B permit site 10 is being pulled out and replaced with a bridge.
- To alleviate scour and erosion at the downstream end of Old Field Creek at R-2915D permit site 6, a cross vane structure will be created to improve channel structure.
- Rock plating has been utilized near R-2915D permit sites 6 and 30 to tighten and reinforce slopes to reduce impacts to jurisdictional resources to the greatest extent practicable in these locations.

Compensation:

The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent practicable as described above. Tables 2 and 3 summarize the wetland and stream impacts for each section of this project. This project will permanently impact 3.04 acres of wetlands, 7,886 linear feet of streams (6,947 linear feet of permanent fill and 939 linear feet of bank stabilization), and temporarily impact 0.31 acre of streams.

At this time, EEP will provide compensatory mitigation for Sections A, B, C and D impacts only as Section E is not due to let within the next five years. Table 13 summarizes the total mitigation needs as 2.52 acre of wetlands impacts and 6,542 linear feet of stream impacts. Compensatory mitigation for Section E will be provided accordingly during the subsequent permit modification. This modification will occur when final design on the remaining Section has been completed.

Table 13 – Summary of Mitigation Requested from EEP

Section	Design Stage	Wetland Impacts Requiring Mitigation (ac)	Stream Impacts Requiring Mitigation (ac)
R-2915A	Final	0.57	1,119
R-2915B	Final	0.43	533
R-2915C	Preliminary	0.20	2,263
R-2915D	Final	1.32	2,627
Total		**2.52**	**6,542**

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 will provide $570.00 to act as payment for processing the Section 401 permit application previously noted in this application (see Subject line). We are providing five (5) copies of this application to the NCDWR for their review and approval.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Erin Cheely at ekcheely@ncdot.gov or (919) 707-6108. A copy of this application and distribution list will also be posted on the NCDOT website at: http://connect.ncdot.gov/resources/Environmental/Pages.

Sincerely,

for Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit

cc:

NCDOT Permit Application Standard Distribution List.

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

OMB APPROVAL NO. 0710-0003
EXPIRES: 28 FEBRUARY 2013

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Richard Middle - W. Last - Hancock	First - Middle - Last -
Company - NCDOT-PDEA	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address- 1548 Mail Service Center	Address-
City - Raleigh State - NC Zip - 27699 Country - USA	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business 919-707-6100 c. Fax 919-212-5785	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____
SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
R-2915

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Gap,SF New,Old Fld,Bver,Naked,Ltl Buffalo,Cole Br,S Bver +UTs	Address
15. LOCATION OF PROJECT Latitude: ◦N 36.23647 (southern end) Longitude: ◦W -81.50907	City - State- Zip-

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID Municipality
Section - Township - Range -

17. DIRECTIONS TO THE SITE

Please see attached vicinity map and cover letter.

18. Nature of Activity (Description of project, include all features)

The project will widen US 221 to a four-lane, median-divided facility from US 421 in the Deep Gap Community of Watauga County to the US 221 Business/NC 88 intersection in the town of Jefferson in Ashe County. The project is approximately 16.1 miles in length, and construction will be phased over five sections (see attached cover letter for more detail regarding phasing).

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of this project is to upgrade the existing roadway to a multi-lane facility to increase capacity, alleviate congestion, improve traffic operations and reduce the rate of traffic crashes.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Impacts will result from widening the roadway and shoulders, lengthening/replacing hydraulic structures as well as bridge construction.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
See attached cover letter.		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres See attached cover letter.

or

Linear Feet See attached cover letter.

23. Description of Avoidance, Minimization, and Compensation (see instructions)

See attached cover letter.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See attached permit drawings.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.



7-21-14

SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

NCDENR
North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Michael Ellison, Director
Ecosystem Enhancement Program

John E. Skvarla, III
Secretary

July 17, 2014

Mr. Richard W. Hancock, P.E.
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

Subject: EEP Mitigation Acceptance Letter:

R-2915A, Widening of US 221 from US 421 in Watauga County to SR 1003 (Idlewild Road) in Ashe County, Watauga and Ashe Counties

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and riparian wetland mitigation for the subject project. Based on the information supplied by you on July 16, 2014, the impacts are located in CU 05050001 of the New River basin in the Northern Mountains (NM) Eco-Region, and are as follows:

New 05050001 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	1,119.0	0	0	0.57	0	0	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.

EEP commits to implementing sufficient compensatory stream mitigation and riparian wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

James B. Stanfill
EEP Asset Management Supervisor

cc: Mr. Andy Williams, USACE – Raleigh Regulatory Field Office
Mr. Dave Wanucha, NCDWQ – Winston-Salem Regional Office
Ms. Linda Fitzpatrick, NCDOT – PDEA
File: R-2915A

NCDENR
North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Michael Ellison, Director
Ecosystem Enhancement Program

John E. Skvarla, III
Secretary

June 18, 2014

Mr. Richard W. Hancock, P.E.
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Hancock:

Subject: EEP Mitigation Acceptance Letter:

R-2915B, Widening of US 221 from SR 1003 (Idlewild Road) to North of the South Fork New River, Ashe County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and riparian wetland mitigation for the subject project. Based on the information supplied by you on June 17, 2014, the impacts are located in CU 05050001 of the New River basin in the Northern Mountains (NM) Eco-Region, and are as follows:

New 05050001 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	533.0	0	0	0.43	0	0	0	0

EEP commits to implementing sufficient compensatory stream mitigation and riparian wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

James B. Stanfill

James B. Stanfill
EEP Asset Management Supervisor

cc: Mr. Andy Williams, USACE – Raleigh Regulatory Field Office
Mr. Dave Wanucha, NCDWQ – Winston-Salem Regional Office
Ms. Linda Fitzpatrick, NCDOT – PDEA
File: R-2915B

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Michael Ellison, Director
Ecosystem Enhancement Program

John E. Skvarla, III
Secretary

June 18, 2014

Mr. Richard W. Hancock, P.E.
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Hancock:

Subject: EEP Mitigation Acceptance Letter:

R-2915C, US 221 Widening from North of the South Fork New River to South of NC 194, Ashe County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and riparian wetland mitigation for the subject project. Based on the information supplied by you on June 17, 2014, the impacts are located in CU 05050001 of the New River basin in the Northern Mountains (NM) Eco-Region, and are as follows:

New 05050001 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	2,263.0	0	0	0.20	0	0	0	0

This impact and associated mitigation need were under projected by the NCDOT in the 2014 impact data. EEP 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 N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

James B. Stanfill
EEP Asset Management Supervisor

cc: Mr. Andy Williams, USACE – Raleigh Regulatory Field Office
Mr. Dave Wanucha, NCDWQ – Winston-Salem Regional Office
Ms. Linda Fitzpatrick, NCDOT – PDEA
File: R-2915C

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Michael Ellison, Director
Ecosystem Enhancement Program

John E. Skvarla, III
Secretary

June 3, 2014

Mr. Richard W. Hancock, P.E.
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Hancock:

Subject: EEP Mitigation Acceptance Letter:

R-2915D, Widening of US 221 from South of NC 194 to US 211 Bypass, Ashe County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and riparian wetland mitigation for the subject project. Based on the information supplied by you on June 2, 2014, the impacts are located in CU 05050001 of the New River basin in the Northern Mountains (NM) Eco-Region, and are as follows:

New 05050001 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	2,627.0	0	0	1.32	0	0	0	0

EEP commits to implementing sufficient compensatory stream mitigation and riparian wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

James B. Stanfill
EEP Asset Management Supervisor

cc: Mr. Andy Williams, USACE – Raleigh Regulatory Field Office
Mr. Dave Wanucha, NCDWQ – Winston-Salem Regional Office
Ms. Linda Fitzpatrick, NCDOT – PDEA
File: R-2915D

Minutes from the Interagency 4B Hydraulic Design Review Meeting
R-2915A in Ashe County
June 20, 2013

Team Members:

Monte Matthews, USACE	(present)
Marella Buncick, USFWS	(present)
Amy Euliss , NCDWQ	(present)
Marla Chambers, NCWRC	(present)
Chris Mittscher, EPA	(present)
Michael Batuzich, FHWA	(present)
Mark Staley, REU	(present)
Erin Cheely, NES	(present)

Participants:

Marshall Clawson, Hydraulics
Charles Smith, Hydraulics
Richard Bollinger, RS&H
Will Weathersbee, RS&H
Katrina Washington, Roadway Design
Tatia White, Roadway Design
Quang Nguyen, Structures

Minutes:

The subject meeting was held to review the development of the drainage design. Introductions were made by all in attendance. Richard Bollinger proceeded through the plan sheets and drainage design. Below is a brief summary of the items discussed during the meeting.

Sheet 4:

USFWS requested we consider making the center barrel of the proposed Gap Creek 3 @ 11'x8' RCBC wider than 11' to provide for improved fish passage. Details of a wider barrel may be provided for consideration. It was discussed that it may be difficult to make the middle barrel of the culvert wide enough to satisfy the requirements of the details and satisfy the structural design requirements of the culvert. The proposed culverts middle barrel has been sized to match the width of the existing stream channel. The flanking barrels will have one foot high channel benches which will mimic the existing channels floodplain flow. Once the daily flow rises approximately 3" it will flow into the two adjoining culvert barrels, reducing the velocity due to the discharge flowing through 3 cells vs. 1 cell, and helping prevent erosion of the bed material inside the culvert cells. The proposed culvert is larger than the 3-cell culvert just downstream under US 421, and that culvert shows signs of silt accumulation, not erosion, and therefore we do not consider erosion of the material inside the proposed culvert to be a concern. As requested by USFWS, we are going to examine making the middle cell of the culvert wider.

All of the area inside loop is to be considered as impacts.

Check for impact to pocket wetland around structure 450 before 4C meeting.

Realign outfall 0450 to reduce the impacts to the Jurisdictional Stream. Also, realign the end of the ditch at outfall 0454 to slightly bend to Gap Creek to prevent possible bank erosion.

Another model showing the fill placed at the Kubota tractor dealer needs to be completed. Using this model for comparison should eliminate the rise shown in the current model comparison.

Sheet 5:

Realign the end of the ditch at outfalls 0508 and 0519 to slightly bend to Gap Creek to prevent possible bank erosion.

Sheet 9:
Confirm bank slope steepness justifies outfall pipe at church.

Realign the end of the ditch at outfalls 0901 and 0914 to slightly bend to Gap Creek to prevent possible bank erosion.

Sheet 10:
There is a small wetland on west side of road that will be a complete take due to fill slope.

Sheet 11:
Realign the end of the ditch at outfall 1112 to slightly bend to Gap Creek to prevent possible bank erosion.

Sheet 12:
Discharge at 1206 will need more dissipation of discharge into wetlands.

Sheet 13:
Realign the end of the ditch at outfall 1303 to slightly bend to Gap Creek to prevent possible bank erosion.

General Comments:

Check pre vs. post velocities at the outfalls entering a Jurisdictional Streams or Gap Creek.

Provide bank stabilization along Gap Creek at ditch outfall locations.

Date when FONSI issued? Last month, not sure of exact date

Show PDE on all ditches and outfalls where required for Final ROW.

Check wetland file for possible missing WLB locations on plans.

Stormwater Management Plan - Identify any extra measures taken for stream stabilization and grass swales used for treatment.

The rationale for combining outfalls was explained to those present, and the agencies were in general agreement with the approach.

Per Amy Euliss, no SSP is required on this project.

Meeting adjourned.

Minutes from the Interagency 4C Hydraulic Design Review Meeting
R-2915A in Ashe County
January 23, 2014

Team Members:

Andrew Williams, USACE	(present)
Marella Buncick, USFWS	(via phone)
Marla Chambers, NCWRC	(present)
Michael Batuzich, FHWA	(present)
Chris Mittscher, EPA	(not present)
Amy Chapman, NCDWR	(not present)

Participants:

Erin Cheely, NES	(present)
Carla Dagnino, NES	(present)
Bill Zerman, Hydraulics	(present)
Charles Smith, Hydraulics	(present)
Richard Bollinger, RS&H	(present)
Joel Madden, RS&H	(present)
Trent Beaver, Div. 11 Construction	(present)
Katrina Washington, Roadway Design	(present)
Wael Arafat, Structures	(present)
David Harris, Roadside	(not present)
Brenda Moore, Roadway Design	(not present)
John Conforti, PDEA	(not present)
Quang Nguyen, Structures	(not present)

Minutes:

The purpose of this meeting was to review the drainage design, and resulting environmental impacts for the R-2915A project. The plans were reviewed, addressing each impact site sequentially. Introductions were made by all in attendance. Joel Madden proceeded through the plan sheets and drainage design. Below is a brief summary of the items discussed during the meeting.

Site 1/1A/1B

- The wetland area connected to site 1B within the proposed loop will be considered as a take because all natural drainage will be cut off by the loop; permit drawings to be revised accordingly.
- The wetland area connected to site 1A within the proposed loop will not be considered as a take because off site drainage will pass under the loop and continue to feed this area; no revisions.
- The streams inside the loop will remain as shown and will not be considered a take; no revisions

Site 2

- Label the size and quantity of the rip rap for the proposed culvert.
- Add the details of the "floodplain bench" for the culvert, and the culvert section with sills into the permit drawings.
- **Typical comment for all pipes/outlet stabilization:** Show permanent impacts for the entire footprint of the new proposed pipes and to the end of the bank stabilization. Show

temporary impacts beyond the end of the bank stabilization. Show the pipe impacts separately from the bank stabilization impacts in the Wetland Permit Impact Summary. Stream impacts will be permitted based upon linear feet, but area of impacts will also be included in the Wetland Permit Impact Summary table. All instances of bank stabilization and floodplain benches should reference a detail (like ZZ for all stabilization)

Site 3

- See typical comment under Site 2.

Site 4

- Impact is bank stabilization at outlet of dissipator basin.

Site 5

- Preliminary discussions were had pertaining to the particular configuration of the drainage system from 0456 to 0450. There were concerns about the indirect path from the JS on the upstream side of the road, to the stream/wetland on the downstream side of the road. (note: permit drawing to be revised to show 0456)
- This area was tabled and then revisited near the end of the meeting.
- Charles Smith showed the plans from the 4B meeting as well as his notes from that meeting. He explained that the configuration in this area was much different at the 4B meeting, and that it was agreed at that time that the configuration would be revised to how it is currently shown in order to eliminate multiple outfall locations.
- His notes from the 4B meeting read "We will continue with plan to combine outfalls, and the *environmentalists* are OK with that."
- It was also pointed out that the configuration was needed to go around the end of the proposed median retaining wall in the vicinity of 0414 for long term maintenance of the system & in order to avoid the wall footing.
- All parties were in agreement to retain the configuration as currently shown.
- Wetland/Stream symbology was clarified as wetlands with small stream running through.
- The USACE representative directed NCDOT to justify this configuration on the permit application using 4B and 4C minutes, and brief explanation of prior meeting (4C) decision and retaining wall.

Site 6

- Bank stabilization to be shown as permanent impacts instead of temporary. **(Typical Comment)**

Site 7

- No comments

Site 8-11

- See typical comment under Site 2.

Site 12

- Show 5' of temporary impacts at upstream and downstream ends of pipes that are being replaced in yards; i.e. two 42" RCP's downstream of the 42" road crossing result in 20'

total of temporary impacts. These impacts will be included as a part of Site 12, and will be labeled 12A, & 12B.
- See typical comment under Site 2.

Site 13
- Show 5' of temporary impacts at locations of pipes that are being replaced in yards. These impacts will be included as a part of Site 13, and will be labeled 13A.
- See typical comment under Site 2.

Site 14
- Discussions were had about the possibility of shortening this pipe. It was explained that due to the depth of the pipe, the creation of a channel in lieu of the pipe would be quite large (+/- 75' top width). It was agreed to leave this area as currently shown.
- Fish passage was discussed. The outlet of the existing pipe at Gap Creek will be matched with the proposed pipe which is a few feet above normal water surface of Gap Creek. It was agreed that fish passage was not reasonable to achieve in this location.
- Within Gap Creek, rock is to be bank stabilization only, and there will be no rock added to the stream bed.
- See typical comment under Site 2.

Site 15
- Fish passage was discussed. We are sinking all cross pipes in jurisdictional bodies 20% of pipe diameter up to 1'.
- See typical comment under Site 2.

Site 16
- Within Gap Creek, rock is to be bank stabilization only, and there will be no rock added to the stream bed.
- See typical comment under Site 2.

Site 17
- Alternate drainage configurations were briefly discussed; it was agreed to leave the configuration as shown.
- We are sinking all cross pipes in jurisdictional bodies 20% of pipe diameter up to 1'.
- For purposes of examining fish passage, the request was made during the meeting to provide pipe diameter, pipe slope, pipe length, and flow velocities for cross-pipes such as this one in the meeting minutes:
    - Existing Pipe Diameter/Material = 36" CMP & Double 42" RCP
    - Proposed Pipe Diameter/Material = 60" RCP
    - Proposed Pipe Slope = 3.3%
    - Proposed Pipe Length = 139'
    - Velocity of 10-yr event = 4.1 ft/sec
- Marla Chambers to investigate usage of baffles within round concrete pipes.
- Marla Chambers indicated that culverts over 3% were desirable candidates for baffles.

- Proposed pipe mimics the slope of the existing pipe system, and improves the possibility of fish passage by increasing the pipe diameter.
- It was noted that there would be no onsite mitigation for this project.

Site 18

- Revised the drawings to show the area of Site 18 on Sheet 11 as being taken, which will make this wetland area a total take.

Site 19

- The request was made during the meeting to provide pipe diameter, pipe slope, pipe length, and flow velocities for cross-pipes such as this one in the meeting minutes:
    - Existing Pipe Diameter/Material = 66" RCP
    - Proposed Pipe Diameter/Material = 66" RCP
    - Proposed Pipe Slope = 1.0%
    - Proposed Pipe Length =144'
    - Velocity of 10-yr event = 4.0 ft/sec
- The proposed pipe mimics the conditions of the existing pipe that is being replaced, and will be installed with the inverts 1' below stream bed elevation.
- See typical comment under Site 2.

Site 20

- See typical comment under Site 2.

Site 21

- No comments

Site 22

- No comments

Site 23

- Show 5' of temporary impacts at locations of pipes that are being replaced in yards. These impacts will be included as a part of Site 23, and will be labeled 23A.

Site 24

- See typical comment under Site 2.

HYDRAULIC DESIGN (4c) / PERMIT DRAWINGS REVIEW

Location: Structure Design Conference Room, DOT Century Center

TIP NO: R-2915A **DATE: 1.23.2014**

NAME	AGENCY/ UNIT	PHONE	Email
Bill Zerman	Hydraulics	919-707-6755	bzerman@ncdot.gov
Charles Smith	H&D	919-707 6716	crsmith5@ncdot.gov
Joel Madden	RS+H	704-940-4721	joel.madden@rsandh.com
Richard Bollinger	BS&H	919-480-4066	richard.bollinger@rsandh.com
Andrew Williams	USACE	919-554-4884	andrew.c.williams2@usace.army.mil
Trent Beaver	NCDOT - Div. 11 Const.	336-903-9117	tbeaver@ncdot.gov
Wael Arafat	Structures	919 707 6483	warafat@ncdot.gov
Alan Johnson	DWR	704 235 2201	alan.johnson@ncdenr.gov
ERIN CHEELY	NCDOT-PDEA-NES	919-707-6108	ekcheely@ncdot.gov
Carla Dagnino	NCDOT-NES	919 707 6110	cdagnino@ncdot.gov
Marla Chambers	NCWRC	704-982-9181	marla.chambers@ncwildlife.org

Minutes from the Interagency 4B Hydraulic Design Review Meeting
R-2915B in Ashe County
June 20, 2013

Team Members:

Monte Matthews, USACE	(present)
Marella Buncick, USFWS	(present)
Amy Euliss, NCDWQ	(present)
Marla Chambers, NCWRC	(present)
Chris Militscher, EPA	(via phone)
Mitch Batuzich, FHWA	(present)
Mark Staley, REU	(present)
Erin Cheely, NES	(present)

Participants:
Marshall Clawson, Hydraulics
Vincent Rivers, Hydraulics
Josh Dalton, Sungate Design Group
Brad Smith, Sungate Design Group
Tatia White, Roadway Design
Piotr Stojda, Roadway Design
David Stutts, Structures

Minutes:

Introductions were made by all in attendance.

Josh Dalton proceeded through the plan sheets and drainage design:

General:
Several plan sheets (8, 10, 11, and 14) show rip rap devices extending beyond the right-of-way lines. *The right-of-way shown on the plans is preliminary and will be finalized once the drainage design is complete. All rip rap devices will be contained within either right-of-way or Permanent Drainage Easements.*

Sheet 4:
Discussed grass swale treatment of impervious surfaces. No comments.

Sheet 5:
Discussed grass swale treatment of impervious surfaces and separation of cross drainage from roadway drainage to the maximum extent practicable. No comments.

Sheet 6:
Discussed grass swale treatment of impervious surfaces and separation of cross drainage from roadway drainage to the maximum extent practicable. There will be impacts to the wetland located left of station 180+00 to 182+10. The proposed fill slope covers the existing wetland. A 6' base grassed swale will replace the wetland area which matches the existing swale dimensions.

PDEA noted that there was no jurisdictional stream left of stations 177+00 to 182+50, only wetlands. The FS file will be corrected by NCDOT.

The plans depict an existing "spring house" located on top of the stream right of station 189+00. However, this is actually located on the top of bank. Pictures of the site were

reviewed. A question was asked regarding the slope of pipe 0615. Mr. Dalton could not recall the slope of the pipe but would review the design calculations and revise as necessary. A comment was also noted that pipe inlet 0613 should not be buried. *(Slope in original design was 4.1%. This has been revised to 1.0% by making structure 0614 deeper. Pipe inlet 0613 will not be buried.)*

Sheet 7:

Discussed grass swale treatment of impervious surfaces and separation of cross drainage from roadway drainage to the maximum extent practicable.

The existing triple barrel box culvert will be replaced with a three-span bridge. New channel banks will be constructed and lined with class II rip rap upon removal of the existing culvert.

The survey file from NCDOT denotes the stream as "Deep Gap Creek". It was noted that the stream name is "Gap Creek". The FS file will be corrected by NCDOT.

Reconfiguring the span arrangement was discussed with Structures to possibly remove the bents from the channel. A single span 72" MBT was suggested but would require raising the roadway grade several feet. This span arrangement was investigated during design but was eliminated as an option due to site constraints.

All runoff from the proposed roadway and off-site is discharged right of station 198+00 to the remnants of an existing pond. The plans do not depict this area as a jurisdictional feature. PDEA commented that they would verify this was correct. It was noted that if this area is determined to be jurisdictional, then it should be considered a total take. A comment requesting the designers investigate changing the "filter berm" to a hazardous spill basin. Mr. Dalton stated that there was not adequate volume at this location for a hazardous spill basin. *(Hazardous spill basins are discussed below.)*

Sheet 8:

Discussed grass swale treatment of impervious surfaces and separation of cross drainage from roadway drainage to the maximum extent practicable. It was noted that the grass swale calculation data was missing left of station 215+00.

Marshall Clawson stated that an elevation should be provided for the class II rip rap located along the right fill slope. He recommended using an elevation one foot above the 100-year event.

Sheet 9:

Discussed grass swale treatment of impervious surfaces and separation of cross drainage from roadway drainage to the maximum extent practicable. A retaining wall has been added to reduce impacts to the floodplain of Gap Creek. No comments.

There was a lengthy discussion regarding replacement of the existing 36" CMP. The current design uses a grassed swale to convey stormwater along the north side of the road all the way to the South Fork New River overflow bridge. *The existing pipe will be replaced to maintain the offsite existing drainage patterns.*

Sheets 10:
PDEA noted that there was no jurisdictional stream at the overflow bridge, only wetlands. The FS file will be corrected by NCDOT.

A comment was made that hazardous spill basins are needed at structures 1019 and 1021. Basins would not be needed at structures 1015 and 1017 due to the overland distance from the main stream. *Hazardous spill basins will not be required after discussion with DWQ. The storm water outlets near the river will be removed and the water piped further away to proposed PSH's.*

Span arrangements for the bridge over the South Fork New River were discussed. Due to the amount of freeboard, a two span structure was feasible. However, that would place the bent in the middle of the stream. The Agency members did not prefer this option. Also, debris problems are recurrent at the existing bent in the channel. It was suggested to investigate shifting the spans to possibly get one bent out of the stream (1@80', 1@100', 1@80'). With this span arrangement, bent #1 would be further into the channel and possibly cause debris problems. Also, bent #2 would be right at the top of bank which is a bad location due to potential bank scour problems. It was determined that the proposed span arrangement was the best option.

Structures stated that a causeway will be required to remove the existing bridge and construct the proposed bridge on the South Fork New River. They will provide the General Drawings before the permit drawings are completed.

Sheets 11:
It was noted that the "Committee for the New River" requested a river access point at this location. Trent Beaver noted that property owners usually would not agree to this. Tatia White stated that she would check on this item and address the comment.

A comment was made that hazardous spill basins are needed at structures 1103, 1106, 1108, and 1111. The inlets should be tied together and outletted to a common hazardous spill basin. Several options for basins were discussed including putting the basin up at the shoulder point in fill or using a prefabricated tank system. *(Hazardous spill basins are discussed below.)*

Reviewed photos of jurisdictional sites.

Meeting adjourned.

Minutes from the Interagency 4C Hydraulic Design Review Meeting
R-2915B in Ashe County
January 23, 2014

Team Members:

Andrew Williams, USACE	(present)
Marella Buncick, USFWS	(via phone)
Alan Johnson, NCDWR	(present)
Marla Chambers, NCWRC	(present)
Chris Militscher, EPA	(not present)
Mitch Batuzich, FHWA	(not present)
Amy Chapman, NCDWR	(not present)

Participants:
Trent Beaver, Division
Bill Zerman, Hydraulics
Vincent Rivers, Hydraulics
Josh Dalton, Sungate Design Group
Brad Smith, Sungate Design Group
Piotr Stojda, Roadway Design
Tatia White, Roadway Design
David Sutts, Structures
Erin Cheely, PDEA/NES
Carla Dagnino, NES

Minutes:

Introductions were made by all in attendance.

Josh Dalton proceeded through the permit drawing plan sheets:

General

All instances of bank stabilization should reference a detail.

Construction Plan Sheet 10 was reviewed. There are wetlands located on the sheet, however, pending information from structures and utilities, no impacts are proposed. The sheet will be added to the permit package.

Permit Sheet 4:

Site 1: Split Gap Creek and Tributary to Site 1A and Site 1B

Why have the boulders been removed from the floodplain bench detail?
At the time of the meeting there was a misunderstanding regarding the boulders. Rather than removing them entirely, only the "keyed in" note and section of boulders should be removed from the detail. The detail has been revised to show the boulders sitting on the bed rather than keyed into the bed.

Permit Sheet 7:

Site 2: Is stream JS intermittent?
No, stream is perennial.

Separate bank stabilization impact

Site 3: No comment

Site 4: No comment

Site 5: No comment

Permit Sheet 9:

Site 6: No comment

Site 7: Wetland boundary should extend all the way to Gap Creek. PDEA will provide updated wetland file.
NEU Wetland file on server has been updated to display the correct line style.

Site 8: Discussed relocating preformed scour hole away from fill slope and wetland. Since the existing roadway pipe is source of wetland hydrology it was decided to leave outlet in current location and use rip rap pad rather than preformed scour hole.

Site 9: Pipe is not buried at inlet but outlet pipe has a less than 1% slope. Discussed using baffles in the pipe, but with approximately 22ft of drop from inlet to outlet, some sections of the system are too steep for fish passage to be successful. It was agreed to leave system as currently designed.

Permit Sheet 11:

Site 10: Don't account for temporary stream impacts in summary but leave hatching on plans.

Discussed if bent #2 could be moved out of water on downstream bridge. It was decided that it was not possible without major impacts elsewhere due to grade change, and Gap Creek, in this area, would likely narrow after removal of existing culvert.

Discussed temporary impacts associated with bents and bridge construction. David Stutts (structures) will provide what is needed.

Permit Sheet 13:

Site 11: No comment

Site 12: No comment

Site 13: No comment

Site 14: No comment

Permit Sheet 15:

Site 15: Leave hatching as shown but add note for a total take in permit plan sheet. Include total take area in impact summary and provide note on summary sheet showing amount of impact due to fill and mechanized clearing.

Site 16: Separate bank stabilization impacts

What is the slope of 60" RCP?
Slope is 0.7% and pipe is buried on both ends.

Site 17: Show impact as bank stabilization.

Site 18: Show impact as bank stabilization.

Permit Sheet 17:

Site 19 & 20: Reviewed hazardous spill basin discussion from 4B meeting.

Drawings will be updated for bent impacts and temporary impacts associated with bridge construction needs. David Stutts (structures) will provide causeway limits.

Meeting adjourned.

Subject: Minutes from CP-4B Hydraulic Design Review Meeting on September 11, 2013 for R-2915C in Ashe County

Team Members:

Andrew Williams - USACE	(present)
Mitch Batuzich - FHWA	(absent)
Amy Euliss - NCDWQ	(present)
Marla Chambers - NCWRC	(present)
Chris Militscher - EPA	(phone)
Marella Buncick - USFWS	(present)

Participants:
Marshall Clawson, NCDOT Hydraulics
Bill Zerman, NCDOT Hydraulics
Tatia White, NCDOT Roadway Design
Katrina Washington, NCDOT Roadway Design
Bruce Klappenbach, NCDOT SMU
Trent Beaver, NCDOT Division 11 (phone)
Jeremy Goodwin, NCDOT REU
Erin Cheely, NCDOT NES
Carla Dagnino, NCDOT NES
John Conforti, NCDOT PDEA
Jamie Byrd, HNTB
Ben Henegar, HNTB

The Project is a portion of US 221 from north of South Fork New River to south of NC 194.

The meeting began at 1:00pm.

GENERAL NOTES / COMMENTS

- HNTB advised that one (1) RCBC crossing was waiting for input from Division 11 as to whether it would be retained or replaced. The RCBC is located on Sheet 12 and will be discussed in more detail with the sheet.
- HNTB advised that a new "Wet" file was received several days before 4B Plans were due to be submitted and that the provided 4B Plans showed both jurisdictional streams from the new Wet File as well as the current FS file.
    - HNTB added that to date, an updated "FS" file incorporating recent stream surveys had not been received from NCDOT.
    - HNTB also noted that several JS stream in the new Wet file had not yet been field surveyed by Location & Surveys.
- HNTB advised that all riprap outlet protection for pipes and riprap toe protection for the project will be Class I.
- HNTB advised that actual designs may vary slightly from those on the 4B Plans. Specifically, junction boxes have been added to some cross pipe extensions to reduce the slope of the pipe and minimize velocities into the streams.

Sheet 4

- HNTB advised that the Riprap Energy Dissipator Basin call right of -L- Sta. 249+50 was no longer valid since the adjoining project (R-2915B) had designed a ditch that receives drainage from the 30" pipe and discharges it directly into South Fork New River.
- USFWS questioned the typical section for the outfall since it was not shown on the plans.
    - HNTB advised that the outfall was a 4' base ditch with 2:1 side slopes.
    - HNTB added that a portion of the ditch at the pipe outlet was lined with riprap while the remained was grass lined.
    - USFWS expressed some concerns over the type of lining proposed for the outfall and suggested that it be "vegetated" instead of just being grassed.
- There was also a good bit of discussion about where NCDOT fencing would be placed with respect to the ditch and how livestock will be allowed to pass from one side of the road to the other.
- Roadway stated that the R/W and CA fencing would be outside the ditch limits with the possible exception of at the bridge where it typically ties to the bridge wing walls.

Sheet 5

- HNTB advised that to minimize impacts to the JS and property left of -L- Sta. 262+00, the majority of project water was captured in a closed drainage system and discharged in the lateral base ditch on Sheet 4.
- NES noted that a portion of stream left of -L- Sta. 264+00 that is currently shown as JS is not jurisdictional.

Sheet 6

- NES noted that a portion of stream left of -L- Sta. 266+00 that is currently shown as JS is not jurisdictional.

Sheet 7

- No comments.

Sheet 8

- HNTB advised that the stream located at -L- Sta. 299+00+ is classified as an Outstanding Resource Water (ORW).
    - HNTB added that this crossing meets the criteria for a Hazardous Spill Basin but that site constraints don't allow for its construction.
    - HNTB added that the current 48" CMP will be retained, lined and extended if the pipe is found to be structurally sound by NCDOT.
- The Agencies had concerns about slope of the proposed pipe extensions and the perched condition of the existing 48" CMP.

Sheet 8 (Cont.)

- NCWRC questioned whether baffles could be added to the pipe.
    - HNTB responded that baffles can't be added to a concrete pipe.
- Division was questioned about the use of metal pipe and advised that it had no issues with using metal pipes.
- After some more discussion, it was decided that 1.5'± drops would be added in the proposed junction boxes and that metal pipe could be used for the extensions in lieu of concrete pipe. Also, the last pipe sections out of the JB will be at 0.0%.
- It was noted that comments from this discussion shall apply to the entire project.

- While not jurisdictional, DWQ expressed concerns with pipes outletting onto steep slopes such as left of 294+00±.
    - HNTB advised that while this is not a preferred condition, it is not unlike the current conditions on site.
    - HNTB added that the outlet pads could be upsized for added protection if acceptable to Hydraulics.
        - Based on follow-up discussions w/ Hydraulics, riprap outlet pads will be sized in accordance with Std. 876.02.

Sheet 9

- HNTB advised that the stream located at -L- Sta. 302+50± is classified as ORW in the EIS but that since it's not a "blue line" on the USGS Quad Map, it doesn't meet NCDOT guidelines.
    - Some of the Agencies were concerned with this but DWQ acknowledged this as an agreed upon policy.
- HNTB advised that current designs show the existing 1 @ 4' x 5' RCBC being extended with 60" RCP both upstream and downstream.
    - NCWRC questioned whether the existing RCBC could be extended as an RCBC with baffles added.
    - HNTB advised that it would review and discuss this item with Hydraulics.
- USFWS will investigate the stream for trout habitat and advise.
    - This will determine whether the existing RCBC is extended as a RCBC w/baffles or with pipes.

Sheet 10

- HNTB advised that the existing inlet right of -L- Sta. 317+50± is approximately 50' deep and has flowing water into it from an undetermined offsite location.
    - HNTB added that the inlet will be retained and adjusted for proposed conditions.
    - HNTB advise that the existing pipe with be "TV'ed" in the coming weeks to determine if it can be retained.
- The Agencies expressed concerns over how erosion control (i.e. dewatering) will be handled in a situation like this.
    - REU responded that it will likely be handled with impervious dikes and pumps.

Sheet 11

- No comments.

Sheet 12

- HNTB advised that the JS left of -L- Sta. 349+00± was not field surveyed but field surveys have been requested.
- HNTB advised that the existing RCBC located at -L- Sta. 351+50± is bottomless and will be inspected by Bridge Maintenance to determine whether it can be retained.
    - HNTB added that their field investigations revealed several wall cracks and undermined footings at several locations.
    - Should replacement required, it will create a significant traffic control issue since the RCBC is in a 45' deep cut.

Sheet 13

- No comments.

Sheet 14

- HNTB advised that the existing bottomless 3 @ 9'x 9' RCBC is proposed to be replaced with a "standard" RCBC of similar size due to Geotech notification that suitable rock for a bottomless culvert was not present.
    - HNTB added that the likely design would have 2 barrels conveying normal flows with the remaining barrel blocked by sills and floodplain benches.
- HNTB advised that Old Field Creek is FEMA Limited Detailed Study stream so an MOA is required for replacement of the crossing.
- The Agencies expressed concerns over the proposed structure given that 2A committed to a bottomless structure.
- NCWRC questioned whether a bridge could be constructed at this location.
    - Hydraulics advised that a SMU had looked at a bridge that too many physical site constraints exist at this location.
    - Roadway Design added that the current -Y8- & -Y9- designs take into account accessibility and constructability issues on the -L- Line.
- NCWRC also questioned what was being proposed at this location to reduce past flooding instances as evidenced from Public Hearing Comments.
    - HNTB advised that resident interviews did not indicate any significant flooding problems in the area.
- USFWS questioned whether the RCBC could be shortened by utilizing a retaining wall on the downstream end.
    - Hydraulics advised that a Roadway and Structure dictate where walls can be placed.
    - HNTB added that stream alignment on the downstream side would be a concern if a retaining wall were constructed.

Sheet 14 (Cont.)

- HNTB will clearly document any deviation from CP2A.
    - HNTB added that a majority of the existing roadway embankment would be removed to natural ground or sloped back at 3:1.
- HNTB advised that a JS which currently runs parallel to -L- in the roadside ditch will be taken across -L- on Sheet 15 and ditched down to Old Field Creek.
- HNTB advised that the proposed PSH right of -L- Sta. 379+15± does not impact the existing wetland.

Sheet 15

- The NC DWQ questioned whether "bank stabilization" would be placed at the new ditch intersection with Old Field Creek.
    - HNTB advised that designs have not been completed for this sheet but that bank stabilization would likely be required.

Sheet 16

- HNTB will investigate/revisit slope/stake limits right of -L- Sta. 395+00±.
- HNTB advised that S77 & S78 were recently added jurisdictional streams.

Sheet 17

- HNTB will revisit the outlet right of -L- Sta. 413+50± to insure the existing wetland is not impacted and that the pipe outlet velocity is less than 2.0fps if possible.

Sheet 17A

- No comments.

Sheet 18

- No comments.

Sheet 19

- HNTB advised that several "linear wetland" impacts are present on this sheet.
- NES noted that an existing stream left of -L- Sta. 445+00± that does not show on the plans.
    - NES added that the extensive "cut" in this area may impact the stream.
    - NES to investigate and advise.

Sheet 20

- HNTB advised that the existing indeterminate drainage system at the -L- Line / -Y15- intersection will be replaced in its entirety.
    - The Agencies noted that system should be treated as a live stream during construction.

Sheet 21

- The Agencies requested that the pipe outlet right of -L- Sta. 462+20 be angled so that it does no intersect the receiving lateral ditch at 90^0.

Sheet 22

- HNTB advised that a pipe from offsite enters the R/W conveying flowing water left of -Y4- Sta. 16+50+.
    - HNTB added that the source of the water could not be determined from their field investigations.
    - NES advised that it will revisit this area.

Sheet 23

- No comments.

Sheet 24

- HNTB advised that it will work with Roadway Design to eliminate impacts to the existing pond left of –Y11- Sta. 11+50+.

Closing Statements

- NCWRC questioned the "purpose and need" for this project adding the new typical section is not needed in this area given current traffic needs.
- NCWRC questioned the validity of the traffic numbers for the project.
- Division 11 commented that this route is heavily traveled by commuters.
- Division 11 added that the public supports this project.
- After additional discussion on this matter, all agreed that the appropriate people needed for a discussion on purpose and need were not present.

The meeting adjourned at 3:00pm.

Minutes from the Interagency 4B Hydraulic Design Review Meeting
R-2915D in Ashe County
April 18, 2013
1:00 PM – 2:30 PM

Team Members:		**Participants:**
Monte Matthews, USACE	(present)	Marshall Clawson, Hydraulics
Marella Buncick, USFWS	(present)	Will Hines, Sungate Design Group
Marla Chambers, NCWRC	(present)	Brad Smith, Sungate Design Group
Amy Chapman, NCDWQ	(present)	Quang Nguyen, Structure Design
Chris Militscher, EPA	(absent)	Tatia White, Roadway Design
Michael Batuzich, NCDOT	(absent)	Mark Staley, REU
David Harris, NCDOT	(absent)	Erin Cheely, PDEA
Brenda Moore, NCDOT	(absent)	John Conforti, PDEA
Trent Beaver, NCDOT	(absent)	Carla Dagnino, NES
		Elizabeth Lusk, NES

Minutes:

General Introduction was initiated by Marshall Clawson. Introductions were made by all in attendance.

Sheet 4:

No comments.

Sheet 5:

No comments.

Sheet 6:

No comments.

Sheet 7:

No impacts.

Sheet 8:

NES will let Hydraulics know if the wetland will be a total take.

Sheet 9:

No impacts.

Sheet 10:

No comments.

Sheet 11:

Station 537+00 -L- Left (Structure 1103): Investigate realigning 30” CSP with JS.

Sheet 12:

No impacts.

Sheet 13:

No comments.

Sheet 14:

No comments.

Sheet 15:

Station 587+50 -L- Right (Structure 1502): Investigate extending the proposed 24” pipe and using a Preformed Scour Hole if the design criteria allows.

Station 588+00 -L- Right: Remove debris (existing detached FES) from stream.

Sheet 16:

Station 607+50 -L- Left (Structure 1610): Add drop box in proposed 24” pipe in order to reduce velocity in the wetland.

Sheet 17:

No Comments.

Sheet 18:

Station 628+50 -L- Right (Structure 1808): Investigate realigning the proposed 24” pipe with JS.

Sheet 19:

Station 642+00 -L- Right: Hydraulics explained that the wetland to the left will head up and flow to the 30" pipe inlet.

Station 642+00 -L- Left: The Hydraulics Engineer explained that the gap between the two 30" pipes will be maintained and that the proposed riprap will be placed between the 30" outlet and the wetland boundary.

Sheet 20:

No comments.

Sheet 21

Station 663+50 -L- Right: Place a note on Plans stating to tamp down riprap at outlet of 60" pipes or call for riprap on banks only.

Station 17+00 – 21+00 -Y32- Right: Hand clear wetland 5 feet from slope stake line.

Station 668+00 -L- Right: The Hydraulics Engineer pointed out that a portion of the wetland shown on the Plans was actually a mowed lawn. NES stated that the wetlands on this project will be confirmed.

Station 670+00 -L- Right (Structure 2129): Place inlet of proposed 30" pipe on grade in order to avoid draining wetland.

Sheet 22

Station 677+00 -L- Right: Redesign Lateral "V" Ditch in order to reduce the velocity going into the wetland.

Sheet 23

No impacts.

Meeting adjourned.

Minutes from the Interagency 4C Hydraulic Design Review Meeting
R-2915D in Ashe County
September 11, 2013
2:45 PM – 4:15 PM

Team Members:	
Monte Matthews, USACE	(absent)
Marella Buncicke, USFWS	(present)
Marla Chambers, NCWRC	(present)
Amy Euliss, NCDWQ	(present)
Mitch Batuzich, FHWA	(absent)
Chris Militscher, EPA	(phone)

Participants:
Marshall Clawson, Hydraulics
Will Hines, Sungate Design Group
Brad Smith, Sungate Design Group
Bruce Klappenbach, Structure Design
Tatia White, Roadway Design
Piotr Stojda, Roadway Design
Erin Cheely, PDEA
Carla Dagnino, NES
Vincent Rivers, Hydraulics
Andrew Williams, USACE
Jeremy Goodwin, Roadside Environmental
Trent Beaveer, Division 11 (phone)

Minutes:

General Comment: It was asked that the drawing of small impacts be blown up in size to make seeing the impact easier.

General Comment: In the Summary Sheet, break out streambank stabilization.

General Comment: In the Stormwater Management Plan, be more specific on the location of the grass swales.

Sheet 4:

No comments.

Sheet 5:

No comments.

Sheet 6:

Site 3: Label as Site 3A and 3B.

Site 3B: Label temporary impacts. The JS should be a Temporary Impact.

Site 4: Where does the JS start? In the Summary Table, show wetlands as a total take. USACE asked if a blow up of the drawing could be provided.

Site 5: If the Lateral V-ditch ties into the JS below OHW, then need to show as an impact.

Sheet 8:

Site 6: Investigate using a sill in one of the 84-inch cross-pipes. Investigate using a cross-vane downstream of the outlet.

Sheet 10:

Site 8: Do we need a Streambank Stabilization Detail? Why is the existing 18-inch pipe shown in red?

Sheet 11:

Site 11: Show Streambank Stabilization as a permanent impact.

Sheet 14:

Site 13: The Summary Sheet shows mechanized clearing, but the Permit Drawing does not. USACE asked if a blow up of the drawing could be provided.

Sheet 15:

Site 14: How will the inlet channel be constructed? Is additional easement needed? There is also a JS shown on the west side that should have impacts shown. The riprap at the outlet should be a permanent impact.

Site 15: The riprap at the outlet should be a permanent impact.

Sheet 16:

Station 607+50 -L- Left: Use a riprap pad instead of on banks only.

Sheet 17:

Site 17: Label as Site 17A and 17B. Streambank stabilization should be a permanent impact.

Sheet 18:

Site 23: It appears that the FS file has not been updated to show a JS on the downstream end of the 24-inch cross-pipe. Need to show a temporary impact for the pipe cleanout.

Sheet 19:

Station 645+00 -L- Right: The question was asked if the blue line was a JS. Based on the WET file, it is not.

Sheet 20:

Site 25: The riprap at the outlet should be a permanent impact.

Sheet 21

Site 26: How will the bevel at the inlet end of the box culvert be constructed? Are any temporary impacts needed to be shown? Investigate using a sill in one of the barrels.

Site 29: Revise Detail to show a floodplain bench.

Site 30: Leave as mechanized clearing.

Station 670+00 -L- Right (Structure 2129): Place inlet of proposed 30" pipe on grade in order to avoid draining wetland.

Sheet 22

No Comments.

Meeting adjourned.

ASHE COUNTY
schools

Challenging young minds to soar.

Donnie R. Johnson, Superintendent • Charles L. King, Chairman • Charles B. Jones, Jr., Vice-Chairman
Dr. Lee Beckworth • Polly Jones • Terry Williams

May 1, 2013

Tim D. Goins, PE
Parsons Engineering
5540 Centerview Drive, Suite 217
Raleigh, North Carolina 27606

Dear Mr. Goins:

The Ashe County School Board concurs that the NCDOT widening of US 221 (Project R-2915) will not adversely affect the activities, features, or attributes that qualify the Fleetwood Community Center for protection under Section 4(f) of the Safe, Accountable, Flexible, Efficient Transportation Equity Act.

Should you need any additional information in order to complete the preliminary phase of this project, please contact my office.

Thank you,

Donnie R. Johnson

Donnie R. Johnson
Superintendent

Federal Aid #: **STP-0221(13)** *TIP#: R-2915* *County*: **Ashe & Watauga**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Widen US 221 to four-lanes divided from US 421 in Watauga County to US 221 Business/NC 88 in Jefferson

On 11/23/2010, representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [x] Federal Highway Administration (FHWA)
- [x] North Carolina State Historic Preservation Office (HPO)
- [ ] Other

Reviewed the subject project and agreed on the effects findings listed within the table on the reverse of this signature page.

Signed:

Mary Pope Furr — Nov. 23, 2010

Representative, NCDOT — Date

Donald W Brew — 11-23-10

FHWA, for the Division Administrator, or other Federal Agency — Date

Representative, HPO — Date

Renee Gledhill-Earley — 11.23.10

State Historic Preservation Officer — Date

Federal Aid #: **STP-0221(13)** *TIP#: R-2915* *County*: **Ashe & Watauga**

Property and Status	Effect Finding	Alternative	Reasons
Baldwin Bethany Cemetery (DE), Criterion C	No effect	Best fit alt.	no construction w/in historic boundary & no changes to ~~it~~ elements that make it eligible
Barnett Idol House (DE), Criterion C	No effect	Best fit alt.	no construction w/in historic boundary and no changes to elements that make it eligible

Initialed: NCDOT MPT FHWA DB HPO RGG

☐ FHWA intends to use HPO's call of "No Adverse Effect" as the basis of a "de minimis" finding for the following properties, pursuant to Section 4(f): FHWA initials _____

North Carolina Department of Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Pat McCrory, Governor
Susan W. Kluttz, Secretary
Kevin Cherry, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

March 5, 2013

MEMORANDUM

TO: Matt Wilkerson
Office of Human Environment
NCDOT Division of Highways

FROM: Ramona M. Bartos RMB for Ramona M. Bartos

SUBJECT: Draft Report of the Archaeological Survey of US 221 Improvements, R-2915, Federal Aid # STP-125(1); Ashe and Watauga Counties, ER 06-1023

Thank you for your letter of January 24, 2013, transmitting the draft archaeological survey report by Michael O'Neal of Archaeological Consultants of the Carolinas for the above project. We have reviewed the report and offer the following comments.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following properties are not eligible for the National Register of Historic Places:

31WT300 (revisit), 31WT365&365**, 31WT366, 31WT367**, 31WT368, 31WT369, 31AH276, 31AH277&277**, 31AH278** and 31AH279

None of these archaeological sites retain sufficient integrity to provide important information regarding the prehistoric or historic past of North Carolina.

We concur with the author's recommendation that no additional archaeological investigation is warranted in connection with this project as currently proposed. The report meets our office's guidelines and those of the Secretary of the Interior. Specific concerns and/or corrections which need to be addressed in the preparation of a final report are attached for the author's use.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Michael O'Neal, Archaeological Consultants of the Carolinas, Inc.

Specific Comments, US 221 Improvements, R-2915, Ashe and Watauga Counties

1. The report needs extensive editing. There are many missing words, typographical errors and sentence fragments scattered throughout the document.
2. The Tuscarora War did not end in 1712, as the last big battle of the war at Neoheroka did not occur until March of 1713.
3. In several places in the report during the discussion of corridor width, the document states that the corridor was primarily 61 meters (200 feet) wide, but in some places it was 91 meters (200 feet) wide.

WETLAND PERMIT IMPACT SUMMARY*

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
	SECTION A		0.48		0.01	0.08	0.05	0.17	0.05	1521	370	
	SECTION B		0.32		0.04	0.06		0.14	0.15	944	207	
	SECTION C		0.16			0.04		0.29	0.06	2263	434	
	SECTION D		1.01		0.01	0.30		0.43	0.05	2753	383	
	SECTION E		0.43			0.09		0.03	< 0.01	405	79	
TOTALS*:			2.41	0.01**	0.06	0.57	0.05	1.34	0.22	7886	1473	0

* Rounded totals are sum of actual impacts

** 0.01 acre of temporary fill in wetlands will occur in the hand clearing areas of R-2915A for erosion control measures

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
01-16-14
R-2915 ASHE COUNTY
US 221 FROM US 421 IN WATAUGA COUNTY TO
US 221 BUSINESS IN ASHE COUNTY
SHEET 1 OF 1

ATN Revised 3/12/13

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: 34518.1.2 (R-2915A) **County(ies):** Watauga Ashe

General Project Information

Project No.:	34518.1.2 (R-2915A)	**Project Type:**	Roadway Widening	**Date:**	7/14/2014
NCDOT Contact:	Bill Zerman, PE	**Contractor / Designer:**	Richard Bollinger, PE		
Address:	NCDOT Hydraulics Unit 1020 Birch Ridge Road Raleigh, NC 27610	**Address:**	RS&H 8601 Six Forks Road, Suite 260 Raleigh, NC 27615		
Phone:	919-707-6755	**Phone:**	919-926-4105		
Email:	bzerman@ncdot.gov	**Email:**	richard.bollinger@rsandh.com		
City/Town:		**County(ies):**	Watauga	Ashe	
River Basin(s):	New	**CAMA County?**	No	No	
Primary Receiving Water:	Gap Creek	**NCDWQ Stream Index No.:**	10-1-23		
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**	Class C			
	Supplemental:	Trout Waters (Tr)			
Other Stream Classification:	None				
303(d) Impairments:	None				
Buffer Rules in Effect	N/A				

Project Description

Project Length (lin. Miles or feet):	2.841 Miles	**Surrounding Land Use:**	Rural mainly residential with some business

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	28.94 ac.	7.80 ac.
Typical Cross Section Description:	Four-lane divded with raised grass median. Two 12' lanes on each side with 8' shoulders (4' paved).	Two-lane, two-way with 11' lanes with 4' - 6' grass shoulders.
Average Daily Traffic (veh/hr/day):	Design/Future: 2035 ADT = 20,400	Existing: 2010 ADT = 9,864

General Project Narrative:

This project is located approximately 10 miles east of the Town of Boone, and approximately 13 miles south of the Town of West Jefferson. The first portion of the project is located in Watauga County with the remainder in Ashe County. The entire project falls within the New River Basin.

The project begins with a new interchange at the intersection of US Highways 421 & 221. It continues along Highway 221, widening the existing two lane ditch section road to a four lane divided section. The project length is 2.8 miles along US 221, and 0.8 miles along US 421.

The project drainage system will consist mainly of ditches, cross pipes, storm drainage systems, and culverts, including two new box culverts within the proposed 221/421 interchange.

Gap Creek and its tributaries are the only streams that are affected by the project; NCDWQ Stream Index # 10-1-23 – Stream Classification C, Trout Waters (Tr).

Wherever possible, grassed swales have been used to treat surface water before it enters jurisdictional streams and wetlands. Cross pipes and culverts in jurisdictional streams will have the inverts buried a minimum of 20% of the diameter of the pipe size up to and including 60" diameter. For pipes 60" or greater and box culverts, the inverts will be buried 1.0'. Sills have been utilized in the two new box culverts within the 221/421 interchange to allow for maintenance of the existing stream low flow width, depth and velocity.

References

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: 34518.1.2 (R-2915A) **County(ies):** Watauga Ashe

Swales

Sheet No.	Station (From / To)	Stream Crossing Station	Base Width (ft)	Front Slope (H:V)	Back Slope (H:V)	Drainage Area (ac)	Recommended Treatment Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used
4	-LPC- 13+50 LT -LPC- 15+83 LT	NA	0.0	4	4	4.20	420	352	1.00%	7.7	1.7	10.1	1.9	No
6	-L- 41+43 LT -L- 43+50 LT	NA	2.0	2	2	5.67	567	207	0.60%	17.5	2.1	22.8	2.2	No
6	-L- 44+45 RT -L- 45+26 RT	NA	0.0	6	2	1.40	140	81	2.50%	2.3	1.9	2.9	2.1	No
6	-L- 45+26 RT -L- 47+00 RT	NA	0.0	6	2	3.03	303	174	0.40%	7.4	1.0	9.7	1.1	No
6	-L- 49+71 RT -L- 47+00 RT	NA	0.0	6	2	3.30	330	271	2.00%	3.2	1.4	4.1	1.4	No
6	-L- 46+17 RT -L- 46+50 RT	NA	2.0	3	3	0.23	23	33	0.30%	1.0	0.4	1.3	0.5	No
7	-L- 54+50 LT -L- 52+04 LT	NA	3.0	3	3	13.00	1300	246	1.50%	20.9	2.5	27.3	2.7	No
7	-L- 60+83 RT -L- 57+00 RT	NA	0.0	6	2	1.22	122	383	0.30%	1.7	0.4	2.2	0.4	No
7	-L- 64+37 RT -L- 66+25 RT	NA	0.0	6	2	6.80	680	188	3.80%	8.0	2.7	10.2	2.9	No
7	-L- 62+23 LT -L- 59+62 LT	NA	0.0	6	4	0.45	45	261	1.40%	1.2	0.8	1.6	0.9	No
8	-L- 78+00 RT -L- 78+48 RT	NA	0.0	6	2	1.55	155	48	1.00%	2.9	1.2	3.7	1.3	No
8	-L- 80+07 RT -L- 79+08 RT	NA	0.0	6	4	0.52	52	99	3.00%	1.0	2.1	1.2	2.2	No
8	-L- 79+15 LT -L- 79+91 LT	NA	2.0	2	2	0.46	46	76	10.00%	1.7	2.9	2.2	3.1	No
9	-L- 83+00 LT -L- 81+32 LT	NA	0.0	6	4	0.57	57	168	0.30%	2.0	0.4	2.6	0.4	No
9	-L- 81+50 RT -L- 82+00 RT	NA	0.0	6	4	3.36	336	50	0.30%	4.6	0.7	6.0	0.7	No
9	-L- 88+00 RT -L- 89+00 RT	NA	0.0	6	2	0.69	69	100	2.10%	1.0	0.9	1.2	0.9	No
9	-L- 88+86 LT -L- 89+07 LT	NA	2.0	2	2	1.07	107	80	1.00%	3.0	1.5	3.9	1.6	No
9	-L- 90+00 RT -L- 89+50 RT	NA	0.0	6	2	0.17	17	50	2.80%	0.2	0.9	0.3	1.0	No
9	-L- 94+50 LT -L- 89+50 LT	NA	0.0	2	2	1.01	101	500	1.20%	1.4	1.1	1.8	1.2	No
9	-L- 91+89 RT -L- 93+58 RT	NA	2.0	3	3	3.00	300	169	5.00%	4.1	1.3	5.4	1.4	No

☐ YES ☑ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanantion of why design criteria was not met.

Additional Comments

The design criteria from the NCDOT BMP Toolbox has been followed to the extent possible. Due to the challenging terrain and other existing conditions, the criteria could not be followed in all areas.

North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: 34518.1.2 (R-2915A) **County(ies):** Watauga Ashe

Swale

Sheet No.	Station (From / To)	Stream Crossing Station	Base Width (ft)	Front Slope (H:V)	Back Slope (H:V)	Drainage Area (ac)	Recommended Treatment Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used
9	-L- 92+13 LT -L- 92+17 LT	NA	2.0	2	2	11.80	1180	160	1.50%	13.8	2.5	17.7	2.6	No
10	-L- 98+68 LT -L- 99+66 LT	NA	0.0	2	2	0.24	24	98	3.60%	0.9	1.6	1.2	1.7	No
11	-L- 106+05 LT -L- 106+50 LT	NA	0.0	2	2	0.84	84	45	1.80%	1.7	1.2	2.3	1.3	No
11	-L- 117+62 RT -L- 115+77 RT	NA	0.0	6	2	5.22	522	211	0.70%	7.2	1.0	9.4	1.0	No
12	-L- 126+43 LT -L- 126+73 LT	NA	0.0	2	2	0.20	20	105	2.30%	0.8	1.6	1.1	1.8	No
12	-L- 130+00 RT -L- 131+00 RT	NA	0.0	6	4	0.90	90	100	0.30%	1.7	0.4	2.2	0.4	No
13	-L- 134+19 LT -L- 134+31 LT	NA	2.5	4	4	19.90	1990	88	0.50%	23.3	1.7	29.9	1.8	No
14, 15	-L- 154+45 RT -L- 157+50 RT	NA	2.0	3	3	8.70	870	305	0.30%	11.9	1.1	15.2	1.2	No
15	-Y9- 10+72 RT -Y9- 13+15 RT	NA	2.0	3	3	10.30	1030	243	0.50%	14.1	1.4	18.0	1.5	No
16	-SR1- 13+96 LT -SR1- 15+16 LT	NA	0.0	4	2	2.50	250	120	2.00%	3.5	1.6	4.5	1.7	No
16	-SR1- 20+00 LT -SR1- 20+48 LT	NA	0.0	4	4	1.00	100	48	0.90%	2.1	0.8	2.7	0.8	No
16	-SR1- 25+00 RT -SR1- 26+70 RT	NA	0.0	4	4	0.19	19	170	3.20%	0.3	0.8	0.5	1.0	No
							0							
							0							
							0							
							0							
							0							
							0							
							0							
							0							

☐ YES ☑ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanantion of why design criteria was not met.

Additional Comments

The design criteria from the NCDOT BMP Toolbox has been followed to the extent possible. Due to the challenging terrain and other existing conditions, the criteria could not be followed in all areas.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: 34518.1.2 (R-2915A) **County(ies):** Watauga Ashe

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)
4	-L- 13+20 LT	Riprap Energy Dissipator Basin	Class I	2.05	Pipe	54" RCP	63.0	12.0
11	-L- 109+65 LT	PFSH	Class 'B'	1.51	Pipe	18" RCP	9.3	7.2
13	-L- 132+06 LT	PFSH	Class 'B'	0.36	Pipe	15" RCP	1.9	4.9
13	-L- 136+40 LT	PFSH	Class 'B'	0.35	Pipe	15" RCP	1.6	4.6

☑ YES ☐ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox (2008), NCDOT Standard Details, or FHWA HEC-14 (July 2006), been met and verified, as applicable? If No, provide further explanantion of why design criteria was not met.

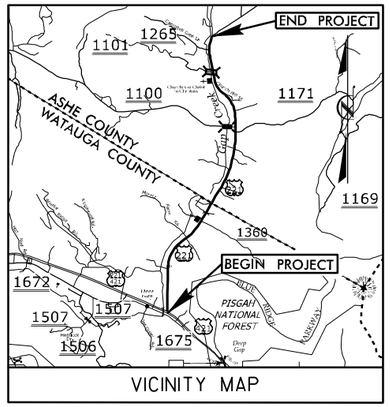
Additional Comments

* Refer to the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), NCDOT Standard Details, 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.

09/08/99

TIP PROJECT: R-2915A

CONTRACT:



75% SUBMITTAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WATAUGA & ASHE COUNTIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34518.1.2	STP-0221 (13)	P.E.
34518.2.2	STP-0221 (13)	R/W & UTILITY

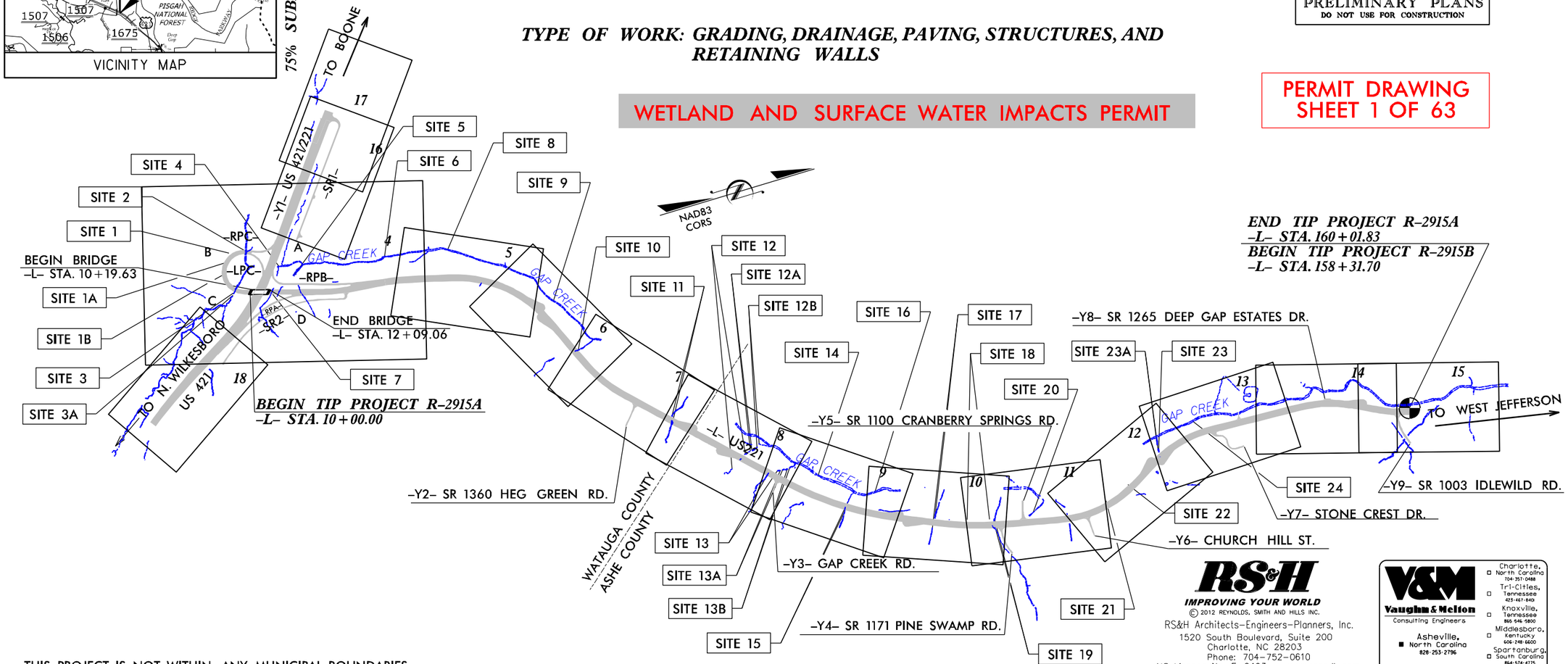
LOCATION: US 221 FROM US 421 IN WATAUGA COUNTY TO SR 1003 (IDLEWILD RD) IN ASHE COUNTY

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, AND RETAINING WALLS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 1 OF 63

WETLAND AND SURFACE WATER IMPACTS PERMIT



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

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Knoxville, Tennessee 865-546-5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775

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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 2015 = 11970
ADT 2035 = 20400
K = 10 %
D = 65 %
T = 9 %
V = 60 MPH
*(TTST 2%+DUALS 7%)
FUNC CLASS =
RURAL ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2915A = 2.805 MI.
LENGTH STRUCTURES TIP PROJECT R-2915A = 0.036 MI.
TOTAL LENGTH OF TIP PROJECT R-2915A = 2.841 MI.

Prepared in the Office of:
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE NC, 28806
FOR NCDOT DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 30, 2013

LETTING DATE:
JUNE 16, 2015

REECE SCHULER, PE
PROJECT ENGINEER

AARON CARVER, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
BRENDA MOORE, PE

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

PREPARED IN THE OFFICE OF: DEPARTMENT OF TRANSPORTATION · STATE OF NORTH CAROLINA

7/14/2014
X:\P\03285000 R-2915A\Project Production\Hydraulics\PERMITS_Environmental\Drawings\R-2915A_rdy_tsh.dgn
5:56:36 PM

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	2-F
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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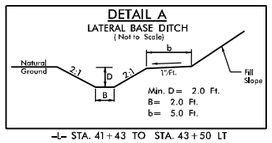
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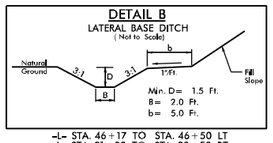
PERMIT DRAWING
SHEET 2 OF 63

DETAIL A
LATERAL BASE DITCH
(Not to Scale)



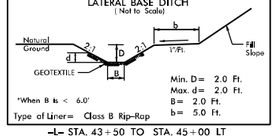
–L– STA. 41+43 TO STA. 43+50 LT

DETAIL B
LATERAL BASE DITCH
(Not to Scale)



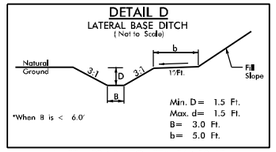
–L– STA. 46+17 TO STA. 46+50 LT
–L– STA. 91+89 TO STA. 93+58 RT
–L– STA. 154+45 TO STA. 157+50 RT
–Y9– STA. 11+35 TO STA. 13+15 RT

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



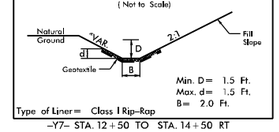
–L– STA. 43+50 TO STA. 45+00 LT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



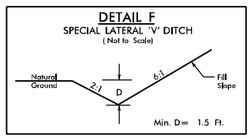
–L– STA. 52+04 TO STA. 54+50 LT

DETAIL E
SPECIAL LATERAL BASE DITCH
(Not to Scale)



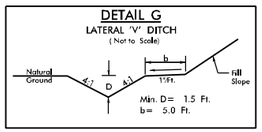
–Y7– STA. 12+50 TO STA. 14+50 RT

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



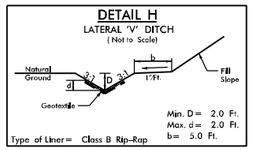
–L– STA. 44+45 TO STA. 45+26 RT
–L– STA. 47+00 TO STA. 49+71 RT

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



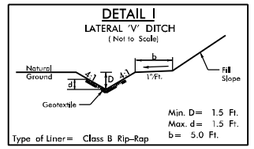
–LPC– STA. 13+50 TO STA. 15+83 RT

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



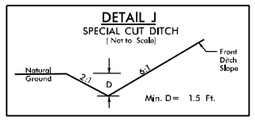
–L– STA. 105+89 TO STA. 107+09 RT

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



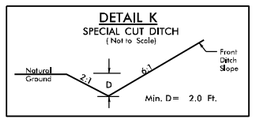
–LPC– STA. 15+83 TO STA. 16+00 RT

DETAIL J
SPECIAL CUT DITCH
(Not to Scale)



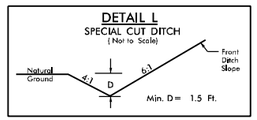
–L– STA. 45+26 TO STA. 47+00 RT
–L– STA. 57+00 TO STA. 60+83 RT
–L– STA. 64+37 TO STA. 66+25 RT
–L– STA. 78+00 TO STA. 78+48 RT

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



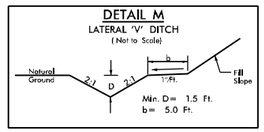
–L– STA. 88+00 TO STA. 89+00 RT
–L– STA. 89+50 TO STA. 90+00 RT
–L– STA. 115+77 TO STA. 117+62 RT

DETAIL L
SPECIAL CUT DITCH
(Not to Scale)



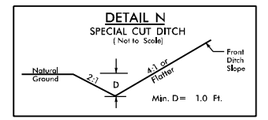
–L– STA. 59+62 TO STA. 62+23 LT
–L– STA. 79+08 TO STA. 80+07 RT
–L– STA. 81+32 TO STA. 83+00 LT
–L– STA. 81+50 TO STA. 82+00 RT
–L– STA. 130+00 TO STA. 131+00 RT

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



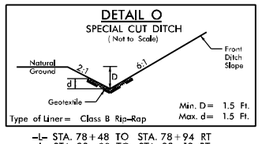
–L– STA. 89+50 TO STA. 94+00 LT
–L– STA. 106+05 TO STA. 106+50 LT

DETAIL N
SPECIAL CUT DITCH
(Not to Scale)



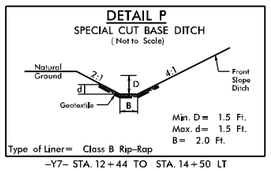
–SR1– STA. 13+96 TO STA. 15+16 LT

DETAIL O
SPECIAL CUT DITCH
(Not to Scale)



–L– STA. 78+48 TO STA. 78+94 RT
–L– STA. 89+00 TO STA. 89+12 RT
–L– STA. 89+18 TO STA. 89+50 RT

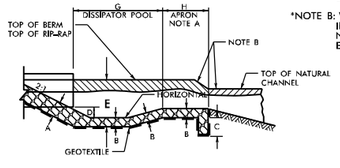
DETAIL P
SPECIAL CUT BASE DITCH
(Not to Scale)



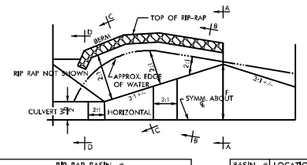
–Y7– STA. 12+44 TO STA. 14+50 LT

DETAIL Q
RIP-RAPPED ENERGY DISSIPATOR BASIN

℄ SECTION

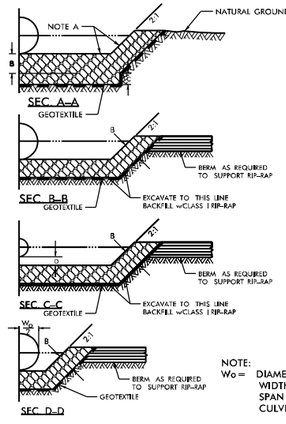


HALF PLAN



*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.



DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	3.0'							
B	2.5'							
C	2.0'							
D	2.5'							
E	8.0'							
F	12.0'							
G	18.0'							
H	9.0'							

*ALL DIMENSIONS APPROXIMATE IN FEET

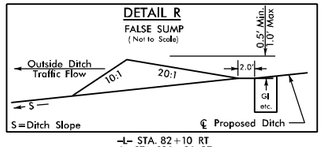
BASIN #	LOCATION (AT OUTLET)
1	449
2	
3	
4	
5	
6	
7	
8	

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

5/05

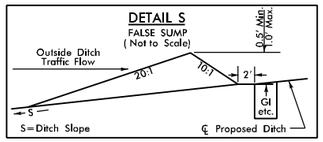
–L– STA. 13+20 TO STA. 13+54 LT

DETAIL R
FALSE SUMP
(Not to Scale)



–L– STA. 82+10 RT
–L– STA. 120+80 RT
–L– STA. 130+60 RT
–L– STA. 152+80 RT

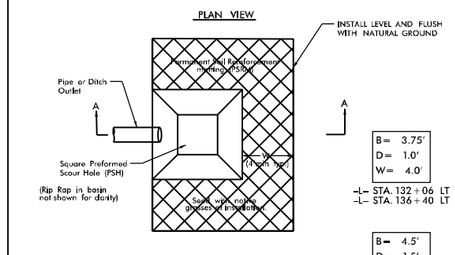
DETAIL S
FALSE SUMP
(Not to Scale)



–L– STA. 54+38 RT
–L– STA. 84+60 LT
–L– STA. 84+85 RT
–L– STA. 99+30 RT
–Y2– STA. 10+70 RT

DETAIL T
PREFORMED SCOUR HOLE
*NOT TO SCALE

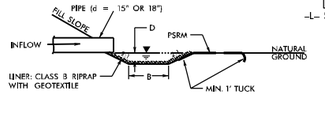
PLAN VIEW



B= 3.75'
D= 1.0'
W= 4.0'

–L– STA. 132+06 LT
–L– STA. 136+40 LT

SECTION A–A



B= 4.5'
D= 1.5'
W= 4.0'

–L– STA. 109+65 LT

3/08

–L– STA. 109+65 LT
–L– STA. 132+06 LT
–L– STA. 136+40 LT

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	2-G
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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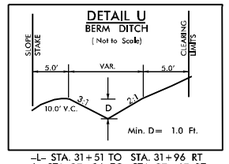
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Middlesboro, Kentucky 606-248-5600
Spartanburg, South Carolina 864-574-4175

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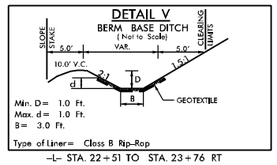
PERMIT DRAWING SHEET 3 OF 63

DETAIL U
BERM DITCH
(Not to Scale)



–L– STA. 31+51 TO STA. 31+96 RT
–L– STA. 37+26 TO STA. 37+67 RT

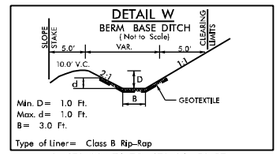
DETAIL V
BERM BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 3.0 Ft.
Type of Liner= Class B Rip-Rap

–L– STA. 22+51 TO STA. 23+76 RT
–L– STA. 32+00 TO STA. 33+98 RT
–L– STA. 54+51 TO STA. 58+97 RT
–L– STA. 141+48 TO STA. 142+49 RT

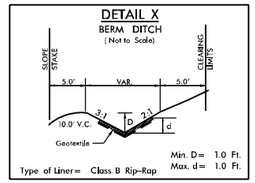
DETAIL W
BERM BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 3.0 Ft.
Type of Liner= Class B Rip-Rap

–L– STA. 23+76 TO STA. 26+50 RT

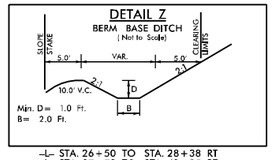
DETAIL X
BERM DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
Type of Liner= Class B Rip-Rap

–L– STA. 84+97 TO STA. 87+85 RT

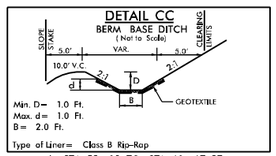
DETAIL Z
BERM BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 2.0 Ft.

–L– STA. 26+50 TO STA. 28+38 RT
–L– STA. 37+73 TO STA. 42+95 RT
–L– STA. 54+04 TO STA. 54+48 RT
–L– STA. 71+61 TO STA. 71+98 RT
–L– STA. 129+72 TO STA. 130+17 RT
–L– STA. 132+98 TO STA. 133+50 RT
–L– STA. 137+97 TO STA. 138+88 RT

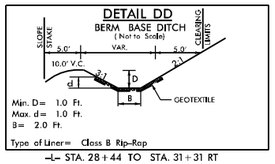
DETAIL CC
BERM BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
Type of Liner= Class B Rip-Rap

–L– STA. 59+02 TO STA. 60+67 RT
–L– STA. 71+98 TO STA. 72+50 RT
–L– STA. 103+51 TO STA. 105+89 RT
–L– STA. 108+23 TO STA. 113+33 RT
–L– STA. 130+17 TO STA. 132+98 RT
–L– STA. 133+50 TO STA. 136+28 RT
–L– STA. 138+93 TO STA. 141+48 RT
–L– STA. 142+51 TO STA. 145+00 RT
–Y4– STA. 11+00 TO STA. 13+50 LT

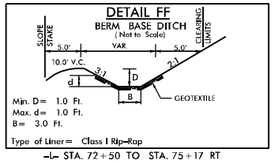
DETAIL DD
BERM BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
Type of Liner= Class B Rip-Rap

–L– STA. 28+44 TO STA. 31+31 RT

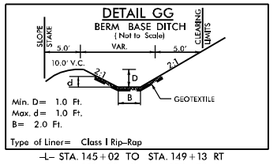
DETAIL FF
BERM BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 3.0 Ft.
Type of Liner= Class I Rip-Rap

–L– STA. 72+50 TO STA. 75+17 RT

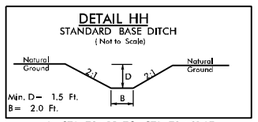
DETAIL GG
BERM BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= 2.0 Ft.
Type of Liner= Class I Rip-Rap

–L– STA. 145+02 TO STA. 149+13 RT
–L– STA. 151+08 TO STA. 153+73 RT

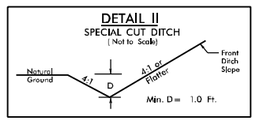
DETAIL HH
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
B= 2.0 Ft.

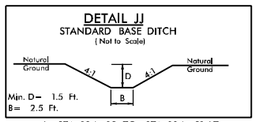
–L– STA. 79+15 TO STA. 79+91 LT
–L– STA. 88+86 TO STA. 89+07 LT
–L– STA. 92+13 TO STA. 92+17 LT

DETAIL II
SPECIAL CUT DITCH
(Not to Scale)



–SR1– STA. 20+00 TO STA. 20+48 LT
–SR1– STA. 25+00 TO STA. 26+70 RT

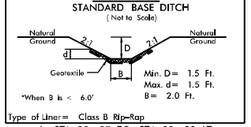
DETAIL JJ
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
B= 2.5 Ft.

–L– STA. 134+19 TO STA. 134+31 LT

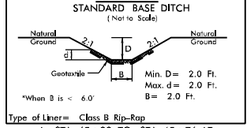
DETAIL KK
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2.0 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap

–L– STA. 89+07 TO STA. 89+32 LT

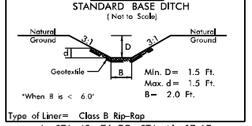
DETAIL LL
STANDARD BASE DITCH
(Not to Scale)



Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 2.0 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap

–L– STA. 45+00 TO STA. 45+76 LT

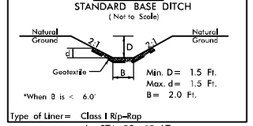
DETAIL MM
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2.0 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap

–L– STA. 45+76 TO STA. 46+17 LT

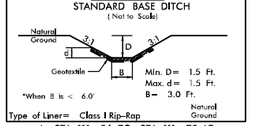
DETAIL NN
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

–L– STA. 92+13 LT
PLACE CLASS I RIP RAP
IN LAST 20' OF DITCH

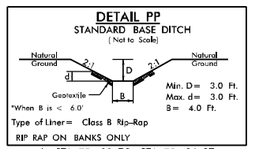
DETAIL OO
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

–L– STA. 111+56 TO STA. 111+75 LT

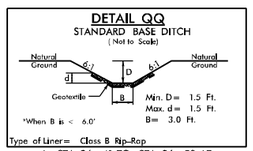
DETAIL PP
STANDARD BASE DITCH
(Not to Scale)



Min. D= 3.0 Ft.
Max. d= 3.0 Ft.
B= 4.0 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap
RIP RAP ON BANKS ONLY

–L– STA. 75+09 TO STA. 75+26 RT

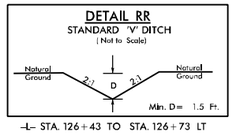
DETAIL QQ
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3.0 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap

–L– STA. 26+41 TO STA. 26+50 LT
–L– STA. 33+00 TO STA. 33+48 LT

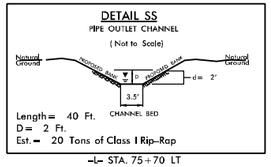
DETAIL RR
STANDARD 'V' DITCH
(Not to Scale)



Min. D= 1.5 Ft.

–L– STA. 126+43 TO STA. 126+73 LT

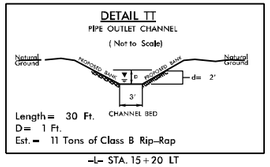
DETAIL SS
PIPE OUTLET CHANNEL
(Not to Scale)



Length= 40 Ft.
D= 2 Ft.
Est.= 20 Tons of Class I Rip-Rap

–L– STA. 75+70 LT

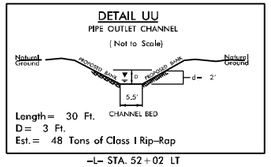
DETAIL TT
PIPE OUTLET CHANNEL
(Not to Scale)



Length= 30 Ft.
D= 1 Ft.
Est.= 11 Tons of Class B Rip-Rap

–L– STA. 15+20 LT
–L– STA. 89+18 LT
–L– STA. 115+50 LT
–L– STA. 129+45 LT

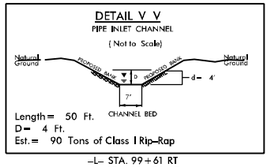
DETAIL UU
PIPE OUTLET CHANNEL
(Not to Scale)



Length= 30 Ft.
D= 3 Ft.
Est.= 48 Tons of Class I Rip-Rap

–L– STA. 52+02 LT
–L– STA. 107+00 LT

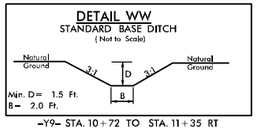
DETAIL V V
PIPE INLET CHANNEL
(Not to Scale)



Length= 50 Ft.
D= 4 Ft.
Est.= 90 Tons of Class I Rip-Rap

–L– STA. 99+61 RT
–L– STA. 99+76 LT

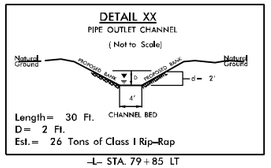
DETAIL WW
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
B= 2.0 Ft.

–Y9– STA. 10+72 TO STA. 11+35 RT

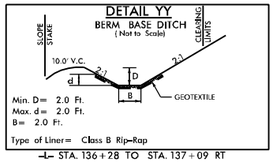
DETAIL XX
PIPE OUTLET CHANNEL
(Not to Scale)



Length= 30 Ft.
D= 2 Ft.
Est.= 26 Tons of Class I Rip-Rap

–L– STA. 79+85 LT

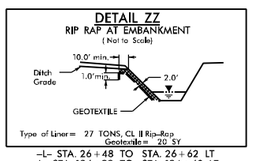
DETAIL YY
BERM BASE DITCH
(Not to Scale)



Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 2.0 Ft.
Type of Liner= Class B Rip-Rap

–L– STA. 136+28 TO STA. 137+09 RT

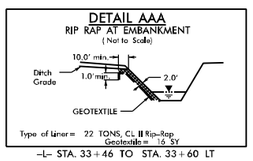
DETAIL ZZ
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 27 TONS, CL II Rip-Rap
Geotextile= 20 SY

–L– STA. 26+48 TO STA. 26+62 LT
–L– STA. 134+22 TO STA. 134+40 LT

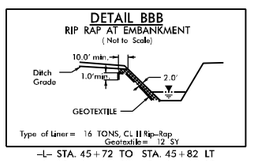
DETAIL AAA
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 22 TONS, CL II Rip-Rap
Geotextile= 16 SY

–L– STA. 33+46 TO STA. 33+60 LT

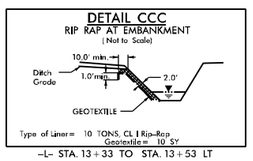
DETAIL BBB
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 16 TONS, CL II Rip-Rap
Geotextile= 12 SY

–L– STA. 45+72 TO STA. 45+82 LT
–L– STA. 84+80 TO STA. 84+90 LT
–L– STA. 89+31 TO STA. 89+37 LT
–L– STA. 92+05 TO STA. 92+08 LT

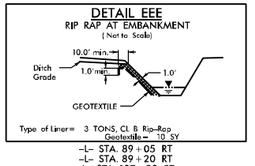
DETAIL CCC
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 10 TONS, CL I Rip-Rap
Geotextile= 10 SY

–L– STA. 13+33 TO STA. 13+53 LT

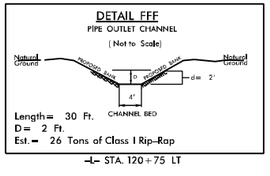
DETAIL EEE
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 3 TONS, CL B Rip-Rap
Geotextile= 10 SY

–L– STA. 89+05 RT
–L– STA. 89+20 RT
–L– STA. 107+20 RT
–L– STA. 111+57 LT

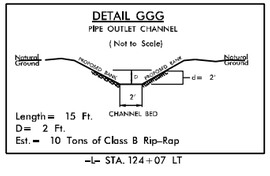
DETAIL FFF
PIPE OUTLET CHANNEL
(Not to Scale)



Length= 30 Ft.
D= 2 Ft.
Est.= 26 Tons of Class I Rip-Rap

–L– STA. 120+75 LT

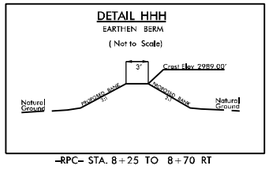
DETAIL GGG
PIPE OUTLET CHANNEL
(Not to Scale)



Length= 15 Ft.
D= 2 Ft.
Est.= 10 Tons of Class B Rip-Rap

–L– STA. 124+07 LT

DETAIL HHH
EARTHEN BERM
(Not to Scale)



–RPC– STA. 8+25 TO 8+70 RT

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 4 OF 63

200′ 0′ 200′ 400′ 600′
GRAPHIC SCALE

HC HC DENOTES HAND CLEARING

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

SITE 1
SITE 1A
SITE 1B
SITE 2
SITE 3
SITE 3A
SITE 4
SITE 5
SITE 6
SITE 7

MATCHLINE -Y1- STA. 26+00 - SEE SHEET 16

MATCHLINE -Y1- STA. 42+00 - SEE SHEET 17

MATCHLINE -L- STA. 30+00 - SEE SHEET 5

SEE SHEETS 18 & 19 FOR -L- PROFILE

$FILE$

$DATE$

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PROJECT REFERENCE NO.	SHEET NO.
R-2915A	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 5 OF 63

200′ 0′ 200′ 400′ 600′
GRAPHIC SCALE

HC HC DENOTES HAND CLEARING

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

SITE 1
SITE 1A
SITE 1B
SITE 2
SITE 3
SITE 3A
SITE 4
SITE 5
SITE 6
SITE 7

MATCHLINE -Y1- STA. 26+00 - SEE SHEET 16

MATCHLINE -Y1- STA. 42+00 - SEE SHEET 17

MATCHLINE -L- STA. 30+00 - SEE SHEET 5

SEE SHEETS 18 & 19 FOR -L- PROFILE

$FILE$

$DATE$

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ENLARGEMENT SHEET

TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S	DENOTES IMPACTS IN SURFACE WATER
	DENOTES MECHANIZED CLEARING
HC HC	DENOTES HAND CLEARING
F F	DENOTES FILL IN WETLAND

50′ 0′ 50′ 100′ 150′
GRAPHIC SCALE

NAD 83/NSRS 2007 NC GRID

PERMIT DRAWING SHEET 6 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SITE 1
SITE 1A
SITE 1B
SITE 2

BANK STABILIZATION SEE SECTION A–A ON PERMIT DRAWING SHEET 12

BANK STABILIZATION SEE SECTION B–B ON PERMIT DRAWING SHEET 12

EARTHEN BERM SEE DETAIL HHH

SEE PERMIT DRAWING SHEET 12 FOR SITE 2 CULVERT NOTES AND DETAILS

TOE PROTECTION

TOE PROTECTION

3–11′X8′ RCBC

GRAU 350 TL-3

15″ RCP-III

18″ RCP-III

EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB

Q10=1.7 cfs
V10=0.96 fps

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

CAT-1

REM. GR

RETAIN

13 -LPC

15 -RPC

10 -LCC

WASTE WATER TREATMENT

MARY SUE PAYNE
DB 187 PG 317
PB 8 PG 164
TAX MAP

COLYARD OIL COMPANY
BR 403 PG 344
PB 8 PG 164
TAX MAP

SEE SHEETS 18 & 19 FOR –L– PROFILE

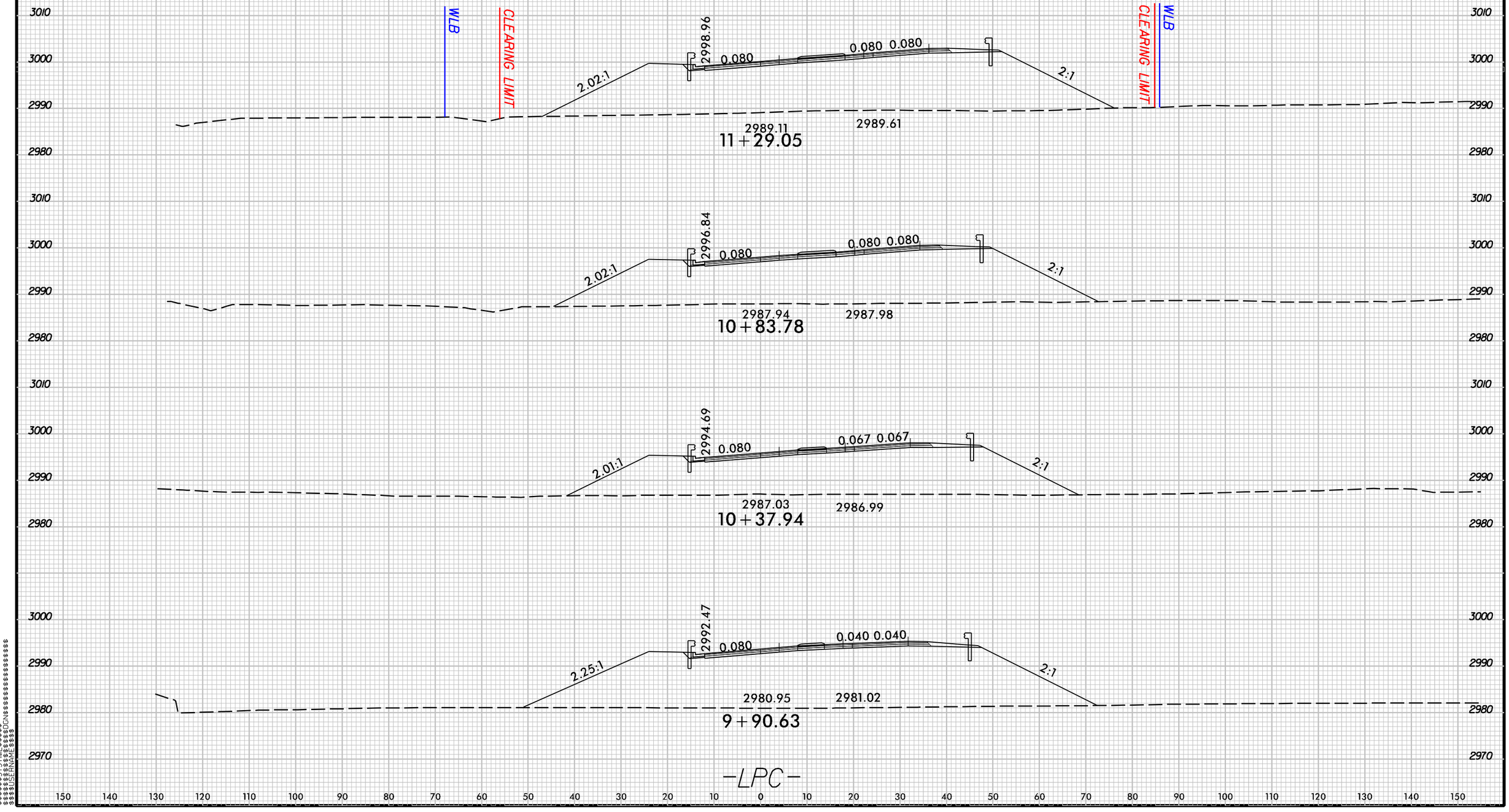
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$DATE$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-193

WETLAND CROSS SECTION SITE 1

PERMIT DRAWING
SHEET 7 OF 63



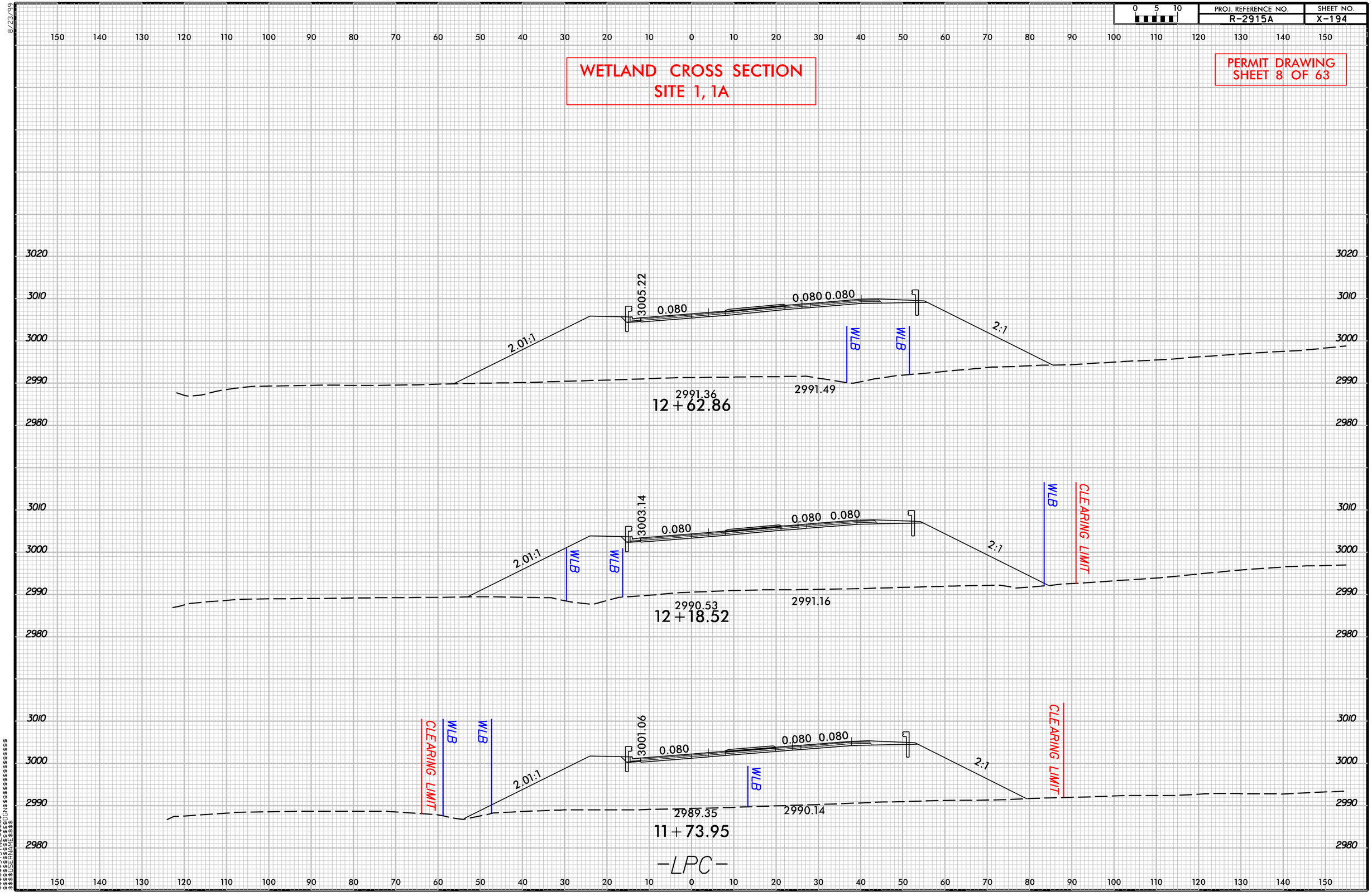
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$$$$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-194

WETLAND CROSS SECTION
SITE 1, 1A

PERMIT DRAWING
SHEET 8 OF 63



$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$
$$$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-195

WETLAND CROSS SECTION
SITE 1B

PERMIT DRAWING
SHEET 9 OF 63

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

3020
3010
3000
2990
2980

CLEARING LIMIT
WLB
WLB
2:1
3011.40
0.080
0.080 0.080
WLB
WLB
2:1
50:1
4:1
4:1
2992.31
13+95.29
2992.12

3009.34
0.080
0.080 0.080
WLB
WLB
2:1
2:1
2991.85
13+51.15
2993.08

3007.28
0.080
0.080 0.080
2:1
2:1
2991.18
13+07.04
2992.49

-LPC-

$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$USERNAME$$$$

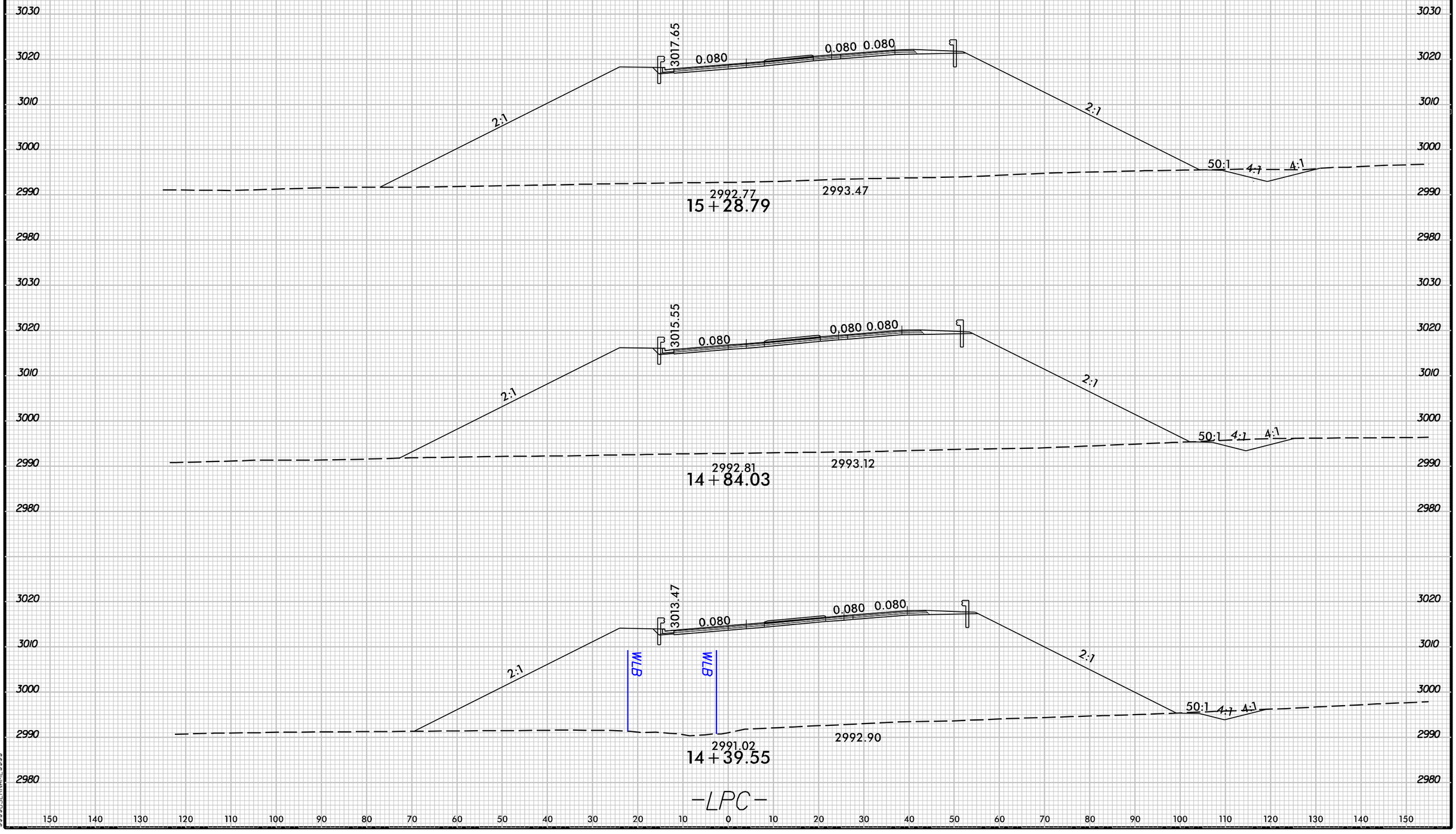
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-196

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

WETLAND CROSS SECTION
SITE 1B

PERMIT DRAWING
SHEET 10 OF 63



$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$$$$USERNAME$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 11 OF 63

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-RPC-

BEGIN CULVERT -RPC- STA.16+92.29
END CULVERT -RPC- STA.16+81.72

PIPE HYDRAULIC DATA
462 -RPC- Sta.9+98.61

DRAINAGE AREA	= 1504	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 900	CFS
DESIGN HW ELEVATION	= 2987.10	FT
100 YEAR DISCHARGE	= 1100	CFS
100 YEAR HW ELEVATION	= 2987.57	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 1250	CFS
OVERTOPPING ELEVATION	= 2990.00	FT

PIPE HYDRAULIC DATA
451 -RPC- Sta.16+87.00

DRAINAGE AREA	= 2816	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 320	CFS
DESIGN HW ELEVATION	= 2995.10	FT
100 YEAR DISCHARGE	= 390	CFS
100 YEAR HW ELEVATION	= 2995.84	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 625	CFS
OVERTOPPING ELEVATION	= 3000.60	FT

BEGIN GRADE
-RPC- STA 5+00.00
EL = 2989.80'

PI = 6+00.00
EL = 2989.64'
VC = 100'
K = 96
DS = 50 MPH

PI = 8+30.00
EL = 2986.88'
VC = 290'
K = 49
DS = 35 MPH

PI = 13+00.00
EL = 3009.00'
VC = 120'
K = 180
DS = 60 MPH

PI = 17+70.00
EL = 3027.98'
VC = 140'
K = 41
DS = 35 MPH

(-)0.1600%
(-)1.2000%
(-)1.2000%
(+)4.7064%
(+)4.7064%
(+)4.0383%
(+)4.0383%
(+)0.6093%

END GRADE
-RPC- STA 18+66.84
EL = 3028.57'

BEGIN DITCH RIGHT STA. 113+94.00
EL. 2996.0'

END DITCH RIGHT STA. 16+80.00
EL. 2990.0'

(-) 2.1212%
(-) 0.8284%
(-) 16.6667%
(-) 11.1111%

18" RCP
18" RCP IV

SITE 2
SITE 3

FOR PLAN SEE SHEET 4

-LPC-

PIPE HYDRAULIC DATA
0458 -LPC- Sta.12+38.88

DRAINAGE AREA	= 0.64	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 3.20	CFS
DESIGN HW ELEVATION	= 2993.34	FT
100 YEAR DISCHARGE	= 3.80	CFS
100 YEAR HW ELEVATION	= 2993.44	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 14.00	CFS
OVERTOPPING ELEVATION	= 3011.50	FT

PIPE HYDRAULIC DATA
0457 -LPC- Sta.17+39.98

DRAINAGE AREA	= 1.58	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 3.20	CFS
DESIGN HW ELEVATION	= 2999.99	FT
100 YEAR DISCHARGE	= 3.80	CFS
100 YEAR HW ELEVATION	= 3000.06	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 39.00	CFS
OVERTOPPING ELEVATION	= 3028.61	FT

BEGIN GRADE
-LPC- STA 5+00.00
EL = 2999.50'

PI = 5+65.00
EL = 2997.45'
VC = 90'
K = 182
DS = 60 MPH

PI = 8+50.00
EL = 2987.05'
VC = 320'
K = 38
DS = 30 MPH

PI = 17+25.00
EL = 3028.07'
VC = 100'
K = 25
DS = 30 MPH

END GRADE
-LPC- STA 17+78.98
EL = 3028.40'

(-)13.1538%
(-)13.6491%
(-)13.6491%
(+)14.6880%
(+)14.6880%
(+)10.6114%

18" RCP
18" RCP IV

SITE 2
SITE 3

FOR PLAN SEE SHEET 4

$$$$$$$SYSTIME$$$$$$
$$$$$$$FILENAME$$$$$$

PERMIT DRAWING
SHEET 12 OF 63

SITE 2

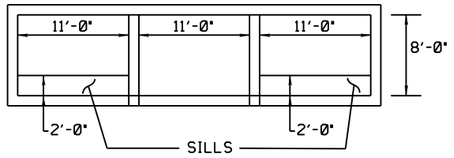
ADDITIONAL INFORMATION AND COMPUTATIONS

* * NATIVE MATERIAL AND BACKFILL SPECIFICATION

NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL IN THE HIGH FLOW CULVERT BARREL(S). IF RIP RAP IS USED TO LINE THE HIGH FLOW CULVERT BARREL(S), NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. BACKFILL RIP RAP IN FLOODING BENCHES OF CHANNEL IMPROVEMENTS WITH NATIVE MATERIAL TO FILL VOIDS. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

NOTES: MAJORITY OF THE BANKS U/S AND D/S ARE WELL VEGETATED AND STABLE.

THIS PROJECT COMPLIES WITH LOCAL FLOODPLAIN REGULATIONS.



LOOKING DOWNSTREAM

BOX CULVERT SILL DETAIL AT INLET AND OUTLET

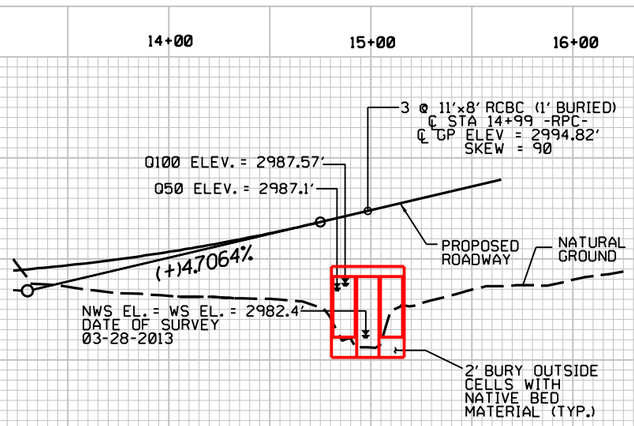
NOTES: SILLS TO BE CONSTRUCTED AT INLET AND OUTLET OF LEFT CELL AND RIGHT CELL.

SILLS TO BE 1' WIDE. CAST SEPARATELY AND ATTACHED BY DOWELS.

BED MATERIAL IS COMPOSED OF SAND, GRAVEL AND BOULDERS. RETAIN NATIVE MATERIAL AND PLACE BACK IN RCBC TO BURY 1'.

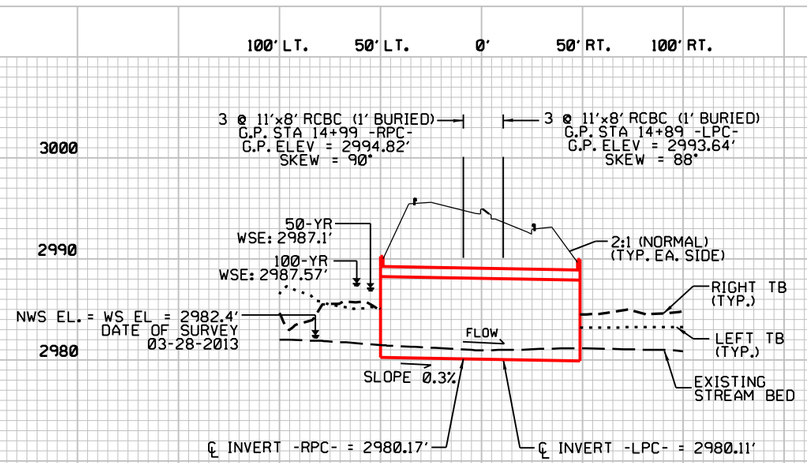
BACK FILL LEFT AND RIGHT BARRELS UP TO THE FLOODPLAIN BENCH ELEVATION THAT EXISTS BOTH UPSTREAM AND DOWNSTREAM.

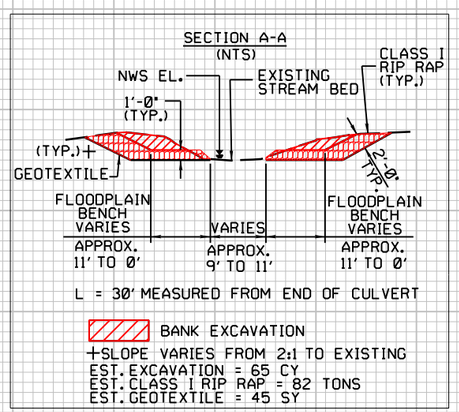
SEE NATIVE MATERIAL AND BACKFILL SPECIFICATION UNDER 'ADDITIONAL INFORMATION AND COMPUTATIONS * *

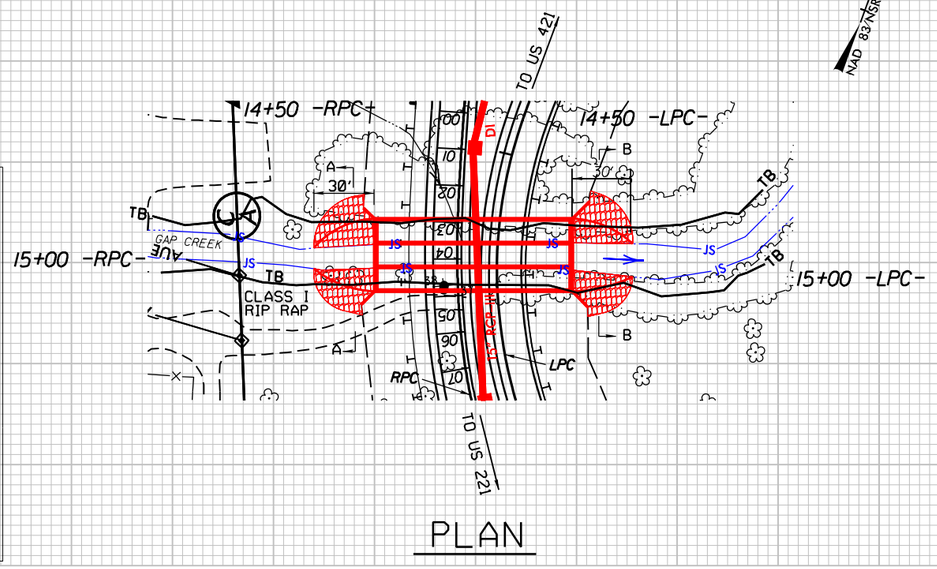


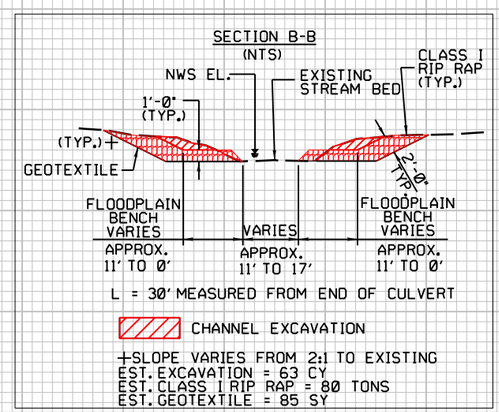
PROFILE

LOOKING DOWNSTREAM









ENLARGEMENT SHEET

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50′ 0′ 50′ 100′ 150′
GRAPHIC SCALE

PERMIT DRAWING SHEET 13 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/NSRS 2007 NC GRID

SEE PERMIT DRAWING SHEET 14 FOR SITE 3 CULVERT NOTES AND DETAILS

SITE 3

BANK STABILIZATION SEE SECTION B–B ON PERMIT DRAWING SHEET 14

MARY SUE PAYNE
DB 187 PG 317
PB 8 PG 164
TAX MAP

COLYARD OIL COMPANY
BR 403 PG 344
PB 8 PG 164
TAX MAP

EST 3 TONS CL B RIP RAP
EST 11 SY FILT FAB

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

LATERAL V DITCH SEE DETAIL G

9′X 7′ RCBC

REMOVE DI
PLUG & FILL W/FLOWABLE MATERIAL

15" RCP

TYPE B–77

24" RCP–IV

15" RCP–III

2GI

BST

WD RAIL

ISBKBUS

ISBW

TIOS 9

RIPRAP

36" CMP

LATERAL V DITCH SEE DETAIL I

BANK STABILIZATION SEE SECTION A–A ON PERMIT DRAWING SHEET 14

SITE 3A

SEE PERMIT DRAWING SHEET 14 FOR SITE 3A PROFILE ALONG STRUCTURE

–DR5–
N 38° 27′ 01.9″ E

7.25′ X 5.25′ METAL ARCH

EXISTING R/W

POSTS ONLY

US 421 SBL

23′ BST

–DR5– SITE 3A

3,020
3,010
3,000
2,990

BEGIN GRADE –DR5– STA 10+05 EL=2,997.45′

PI = 10+75.00 EL = 2,996.20′ VC = 90′ K = 7

PI = 11+60.00 EL = 3,006.40′ VC = 30′ K = 5

END GRADE –DR5– STA 11+79.20 EL=3,007.45′

(+)12.0000%

(+)5.5000%

(–)11.7874%

7.25′ X 5.25′ PIPE ARCH

10 11

$FILE$

$DATE$

PERMIT DRAWING
SHEET 14 OF 63

SITE 3

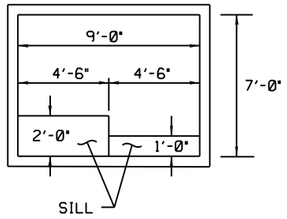
ADDITIONAL INFORMATION AND COMPUTATIONS

* * NATIVE MATERIAL AND BACKFILL SPECIFICATION

NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. BACKFILL CULVERT TO LOW FLOW SILL AND BAFFLE ELEVATION WITH NATIVE MATERIAL. BACKFILL RIP RAP IN FLOODPLAIN BENCHES OF CHANNEL IMPROVEMENTS WITH NATIVE MATERIAL TO FILL VOIDS. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

NOTES: BED MATERIAL IS COMPOSED OF SAND, GRAVEL AND BOULDERS. RETAIN AND PLACE BACK IN RCBC TO CONSTRUCT LOW FLOW CHANNEL.

MAJORITY OF THE BANKS U/S AND D/S ARE WELL VEGETATED AND STABLE.



BOX CULVERT SILL DETAIL AT INLET AND OUTLET
LOOKING DOWNSTREAM

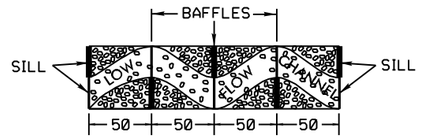
NOTES: 2' SILLS/BAFFLES TO BE CONSTRUCTED IN CELL AS SHOWN IN PLAN, BELOW.
1' SILLS/BAFFLES TO BE CONSTRUCTED IN CELL AS SHOWN IN PLAN, BELOW.

SILLS/BAFFLES TO BE 1' WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

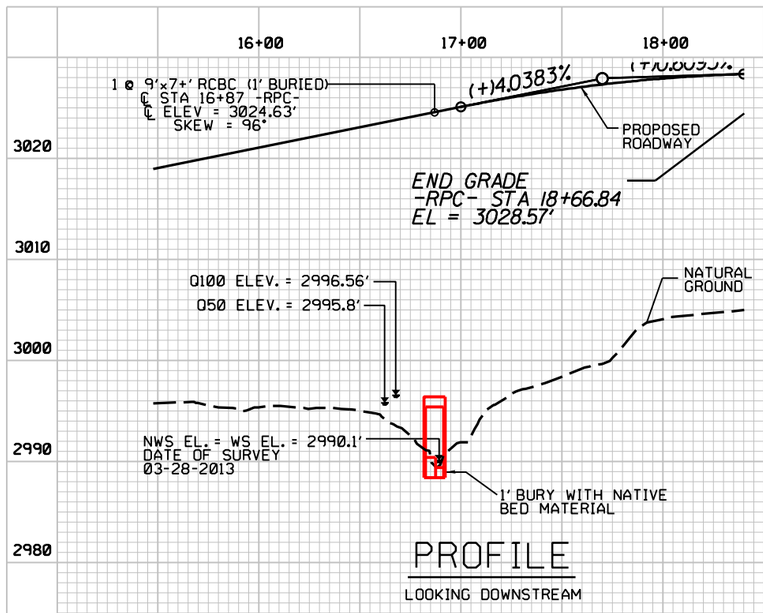
SEE NATIVE MATERIAL AND BACK FILL SPECIFICATION UNDER "ADDITIONAL INFORMATION AND COMPUTATIONS". * *

- 2' SILL/BAFFLE

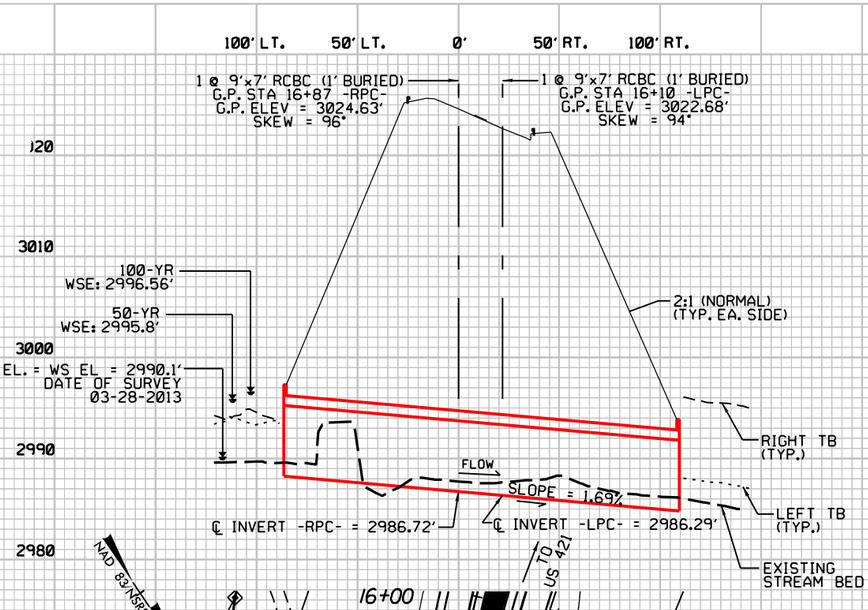
- 1' SILL/BAFFLE

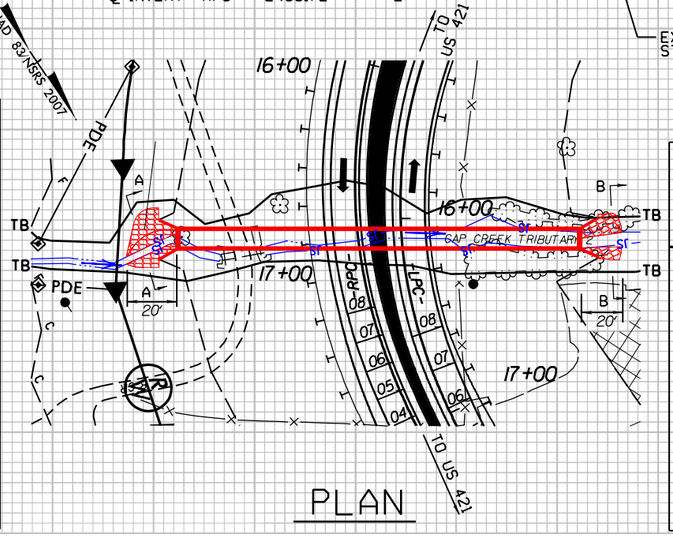


PLAN VIEW

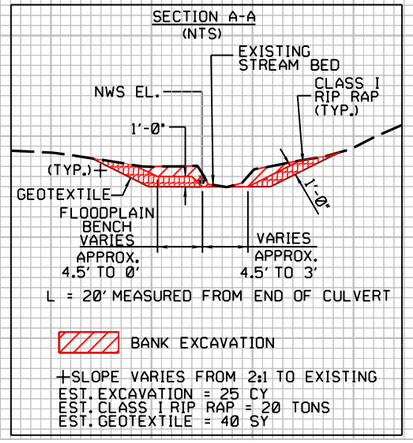


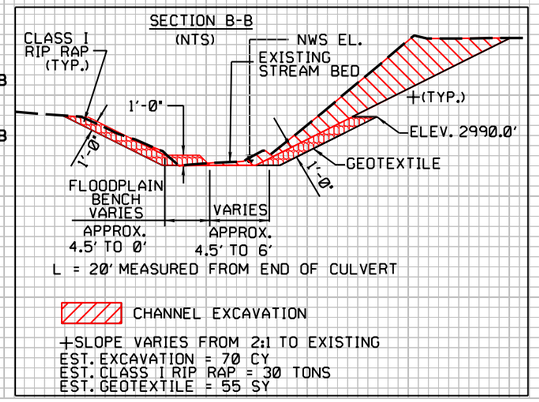
PROFILE
LOOKING DOWNSTREAM



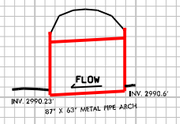


PLAN





SITE 3A



ENLARGEMENT SHEET

F F	DENOTES FILL IN WETLAND
HC HC	DENOTES HAND CLEARING
S S	DENOTES IMPACTS IN SURFACE WATER
TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 15 OF 63

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BANK STABILIZATION AT DITCH OUTLET SEE DETAIL CCC

EST 265 TONS CL I RIP RAP
EST 190 SY FILT FAB

SITE 5 IS CHARACTERIZED AS WETLANDS WITH A SMALL STREAM RUNNING THROUGH

SITE 5

ENERGY DISSIPATOR SEE DETAIL Q

BANK STABILIZATION
EST 11 TONS CL B RIP RAP
EST 22 SY FILT FAB
SEE DETAIL TT
RIP RAP ON BANKS ONLY

INDIRECT STORM SEWER ROUTING IS TO AVOID RETAINING WALL FOOTER THAT RUNS PARALLEL TO PIPES BETWEEN 0412 AND 0414. SEE 4B /4C MEETING MINUTES.

SITE 4

SITE 7

NAD 83/NSRS 2007 NC GRID

0409 2GI-A
0410 2GI-A
0411
0412 2GI
0413 2GI-A
0414 JB W/MH
0415 2GI
0439 JB W/MH
0449
0450
0456

TYPE B-77
TYPE B-77
CAT-1

REMOVE
18" RCP-III
24" RCP-III
30" RCP-III
36" RCP-III
48" RCP-III
54" RCP-III
15" RCP-III
18" RCP
24" RCP
30" RCP
15" RCP
6'STL-HP
RIPRAP
RIPRAP LINED CHANNEL
CONC CATTLE GUARD
ISBKD
ARBOR
DI
MH
PDE
HC
TS
EP
MLB
12' BST
9' BST

-RPB-
-RPA-
-L-
US 221 BST
AATUR
N 3° 22' 22.8" E
N 2° 30' 00.0" E

SEE X-SECTIONS FOR GRADING PLAN

SEE SHEETS 18 & 19 FOR -L- PROFILE

50' 0' 50' 100' 150'
GRAPHIC SCALE

$FILE$
$DATE$

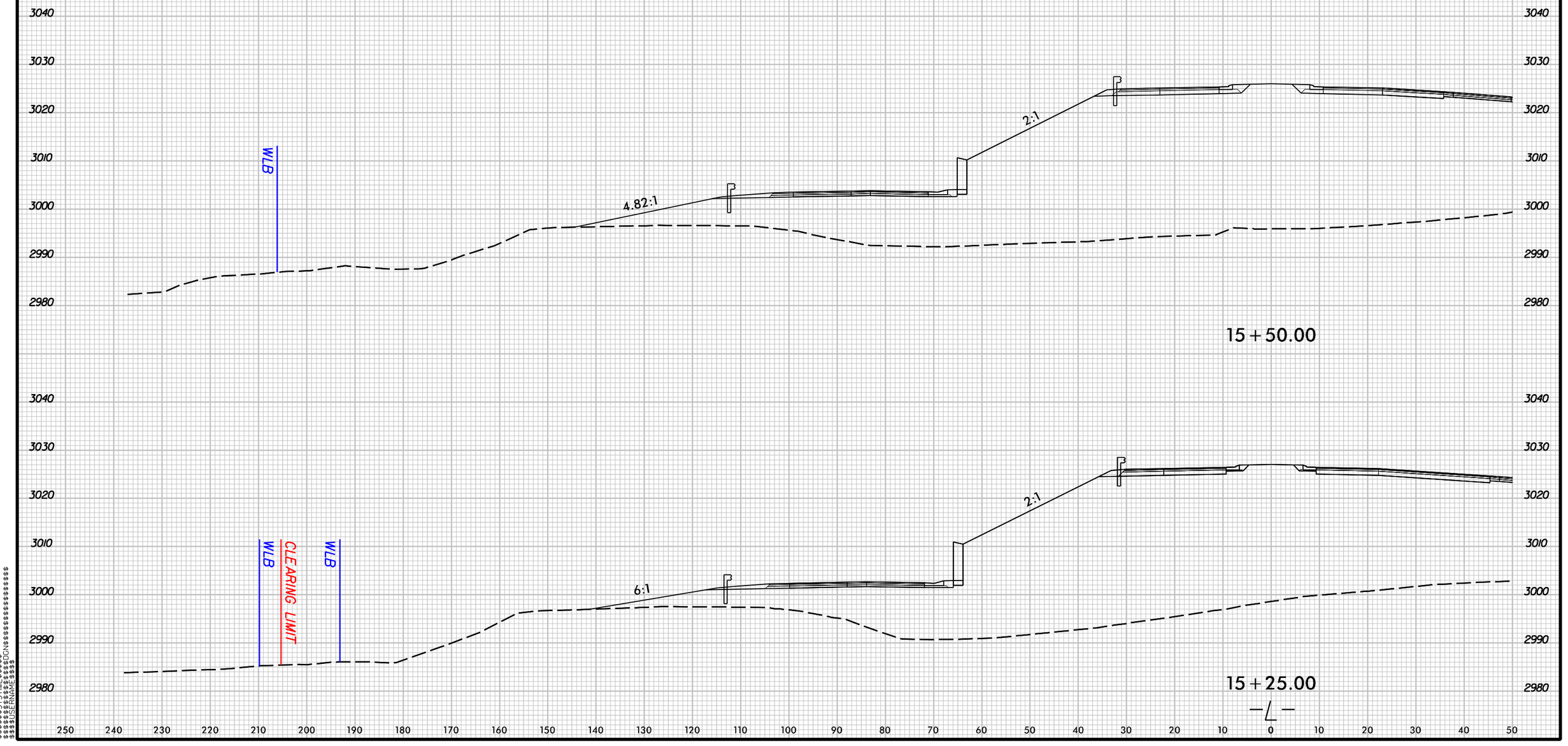
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-6

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

WETLAND CROSS SECTION
SITE 5

PERMIT DRAWING
SHEET 16 OF 63



$$$$$$$$USERNAME$$$$ $$$$$$$$$

ENLARGEMENT SHEET

DENOTES IMPACTS IN SURFACE WATER

50′ 0′ 50′ 100′ 150′
GRAPHIC SCALE

PERMIT DRAWING
SHEET 17 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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NAD 83/NSRS 2007 NC GRID

SITE 6

BANK STABILIZATION AT DITCH OUTLET SEE DETAIL ZZ

STANDARD BASE DITCH SEE DETAIL QQ

MARTIN L. BLEVINS
DB 196 PG 176
TAX MAP

DOROTHY BLEVINS
DB 111 PG 117

E. STEELMAN JR.
490 PG 861
409 PG 398

GAP CREEK

4SBW 6SBW 2S ELEC

JS PDE S E

ISFD DK GRAPE ARBOR CHORD

AUE

EXISTING R/W

RETAIN

EST 15 TONS CL I RIP RAP
EST 30 SY FILT FAB

AATUR

GR SOIL

REMOVE

36" RCP-III

4.5′ CONC HW

STACK IN POST

60" GR

6"STL-HP

US 221 22′ BST 33′ BST 38′ BST

GRAU 350 TL-3
N 4° 17′ 07.5" W

15" RCP-III 24" RCP-III 18"

SEE SHEETS 18 & 19 FOR –L– PROFILE

$FILE$
$DATE$

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 18 OF 63

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 8

NC GRID NAD 83/NSRS 2007

DENOTES IMPACTS IN SURFACE WATER

100' 0' 100' 200' 300'
GRAPHIC SCALE

BANK STABILIZATION AT DITCH OUTLET SEE DETAIL AAA

STANDARD BASE DITCH SEE DETAIL QQ

MORETZ IV, LLC
DB 1351 PG 187

EST 11 TONS CL I RIP RAP
EST 22 SY FILT FAB

DOROTHY BLEVINS
DB 111 PG 117

CONC CATTLE GUARD

RIP RAP

CHORD

FILL & PAVE/FLOWABLE MATERIAL

US 221 24' ASPH

4' CONC MW

EXISTING R/W

AREA UNDER CONSTRUCTION

2.5' CONC HW (BROKEN)

POSSIBLE SPRING LOCATION INSIDE OF SHED

BERM DITCH SEE DETAIL U

BERM DITCH SEE DETAIL Z

BERM DITCH SEE DETAIL Y

BERM DITCH SEE DETAIL DD

BERM DITCH SEE DETAIL V

JACK WELBORN
DB 169 PG 857
DB 274 PG 408

WILLIAM C. MORETZ
DB 295 PG 780

LATERAL BASE DITCH SEE DETAIL A

EST 11 TONS CL I RIP RAP
EST 22 SY FILT FAB

RAYMOND R. SHOOK JR., ET. AL.
DB 629 PG 366

TERRY VANDYKE
DB 240 PG 284

WILLIAM C. MORETZ
DB 100 PG 196
TAX MAP

MATCHLINE -L- STA. 30+00 - SEE SHEET 4

MATCHLINE -L- STA. 42+00 - SEE SHEET 6

SEE SHEET 20 FOR -L- PROFILE

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$FILE$
$DATE$

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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PERMIT DRAWING SHEET 19 OF 63

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SITE 8

NC GRID NAD 83/NSRS 2007

DENOTES IMPACTS IN SURFACE WATER

GRAPHIC SCALE 100′ 0′ 100′ 200′ 300′

BANK STABILIZATION AT DITCH OUTLET SEE DETAIL AAA

STANDARD BASE DITCH SEE DETAIL QQ

EST 11 TONS CL I RIP RAP
EST 22 SY FILT FAB

MORETZ IV, LLC
DB 1351 PG 187

DOROTHY BLEVINS
DB III PG 117

WILLIAM C. MORETZ
DB 295 PG 780

LATERAL BASE DITCH SEE DETAIL A

EST 11 TONS CL I RIP RAP
EST 22 SY FILT FAB

RIPRAP

CONDUIT

GAP CREEK

CONC CATTLE GUARD

MATCHLINE -L- STA. 30+00 – SEE SHEET 4

MATCHLINE -L- STA. 42+00 – SEE SHEET 6

N 05° 04' E

US 221 24' PCC

48" RW & 5SBW AATUR

24" RCP-III

18" RCP-III

15" RCP-III

4' CONC HW

EXISTING R/W

6"STL-HP

CAT-1

GRAU 350 TL-3

2.5'-CONC HW (BROKEN)

POSSIBLE SPRING LOCATION INSIDE OF SHED

AREA UNDER CONSTRUCTION

REMOVE

BERM DITCH SEE DETAIL U

BERM DITCH SEE DETAIL Z

BERM DITCH SEE DETAIL DD

BERM DITCH SEE DETAIL V

JACK WELBORN
DB 1691 PG 857
DB 274 PG 408

RAYMOND R. SHOOK JR., ET. AL.
DB 629 PG 366

TERRY VANDYKE
DB 240 PG 284

WILLIAM G. MORETZ
DB 100 PG 196
TAX MAP

SEE SHEET 20 FOR -L- PROFILE

$FILE$

$DATE$

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 20 OF 63

100' 0' 100' 200' 300'
GRAPHIC SCALE

NAD 83/NSRS 2007 NC GRID

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 9

SITE 10

WILLIAM C.MORETZ
DB 100 PG 196
TAX MAP
32

WILLIAM C. MORETZ
DB 295 PG 780
31

MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404
35

TERRY VANDYKE
DB 240 PG 284
30

33
WILLIAM C.MORETZ
DB 100 PG 196
TAX MAP

34
MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404

BANK STABILIZATION AT DITCH OUTLET SEE DETAIL BBB

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

STANDARD BASE DITCH SEE DETAIL LL

LATERAL BASE DITCH SEE DETAIL C

EST 5 TONS CL B RIP RAP
EST 14 SY FILT FAB

LATERAL BASE DITCH SEE DETAIL A

STANDARD BASE DITCH SEE DETAIL MM

EST 5 TONS CL B RIP RAP
EST 14 SY FILT FAB

LATERAL BASE DITCH SEE DETAIL B

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

RIP RAP ON BANKS ONLY
EST 48 TONS CL I RIP RAP
EST 62 SY FILT FAB
SEE DETAIL UU
BANK STABILIZATION

LATERAL BASE DITCH SEE DETAIL D

SPECIAL LATERAL V DITCH SEE DETAIL F

SPECIAL CUT DITCH SEE DETAIL J

BERM DITCH SEE DETAIL Z

PLUG AND FILL WITH SUITABLE MATERIAL

SPECIAL LATERAL V DITCH SEE DETAIL F

GAP CREEK

SHOP CURVED R 60'

SHOP CURVED R 20'

GRAU 350 TL-3

N 43° 19' 49.0" E

N 52° 35' 59.7" E

MATCHLINE -L- STA. 42+00 – SEE SHEET 5

MATCHLINE -L- STA. 54+00 – SEE SHEET 7

SEE SHEET 21 FOR -L- PROFILE

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$FILE$
$DATE$

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 21 OF 63

100' 0' 100' 200' 300'
GRAPHIC SCALE

NAD 83/NSRS 2007 NC GRID

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 9

SITE 10

WILLIAM G.MORETZ
DB 100 PG 196
TAX MAP
32

WILLIAM G. MORETZ
DB 295 PG 780
31

MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404
35

TERRY VANDYKE
DB 240 PG 264
30

WILLIAM G.MORETZ
DB 100 PG 196
TAX MAP
33

MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404
34

BANK STABILIZATION AT DITCH OUTLET SEE DETAIL BBB

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

STANDARD BASE DITCH SEE DETAIL LL

LATERAL BASE DITCH SEE DETAIL C

EST 5 TONS CL B RIP RAP
EST 14 SY FILT FAB

LATERAL BASE DITCH SEE DETAIL A

STANDARD BASE DITCH SEE DETAIL MM

EST 5 TONS CL B RIP RAP
EST 14 SY FILT FAB

LATERAL BASE DITCH SEE DETAIL B

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

SHOP CURVED R 60'

SHOP CURVED R 20'

GAP CREEK

CHORD

RIP RAP ON BANKS ONLY
EST 48 TONS CL I RIP RAP
EST 62 SY FILT FAB
SEE DETAIL UU
BANK STABILIZATION

LATERAL BASE DITCH SEE DETAIL D

GRAU 350 TL-3

CAT #0

PLUG AND FILL WITH SUITABLE MATERIAL

SPECIAL LATERAL V-DITCH SEE DETAIL F

SPECIAL CUT DITCH SEE DETAIL J

BERM DITCH SEE DETAIL Z

18" SIDE DRAIN

18" CMP

15" CMP W/FES

12' X 6' GRATED CONCRETE STRUCTURE SITTING ON TOP OF CONC HEAD AND WING WALLS UNABLE TO OBTAIN CULVERT DATA LOOKS LIKE A CATTLE GUARD CROSSING

RETAIN

REMOVE

N 43° 19' 49.0" E

N 52° 35' 59.7" E

MATCHLINE -L- STA. 42+00 - SEE SHEET 5

MATCHLINE -L- STA. 54+00 - SEE SHEET 7

SEE SHEET 21 FOR -L- PROFILE

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$DATE$

ENLARGEMENT SHEET

PERMIT DRAWING
SHEET 22 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

50′ 0′ 50′ 100′ 150′
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NC GRID
NAD 83/NSRS 2007

MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404

RIP RAP ON BANKS ONLY
EST 48 TONS CL I RIP RAP
EST 62 SY FILT FAB
SEE DETAIL UU
BANK STABILIZATION

35

SITE 10

LATERAL BASE DITCH
SEE DETAIL D

LATERAL BASE DITCH
SEE DETAIL D

EST 3 TONS CL B RIP
EST 10 SY FILT FAB

SPECIAL LATERAL V DITCH
SEE DETAIL F

REMOVE

18" SIDE DRAIN

18" SIDE DRAIN

REMOVE

15" CMP W/FES 12' X 6' GRATED CONCRETE STRUCTURE SITTING ON TOP OF CONC. HEAD AND WING WALLS UNABLE TO OBTAIN CULVERT DATA (LOOKS LIKE A CATTLE GUARD CROSSING)

RETAIN

FALSE SUMP
SEE DETAIL S

BERM BASE DITCH
SEE DETAIL Z

SEE SHEET 21 FOR -L- PROFILE

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$FILE$
$DATE$

5/14/99

-L-

PERMIT DRAWING
SHEET 23 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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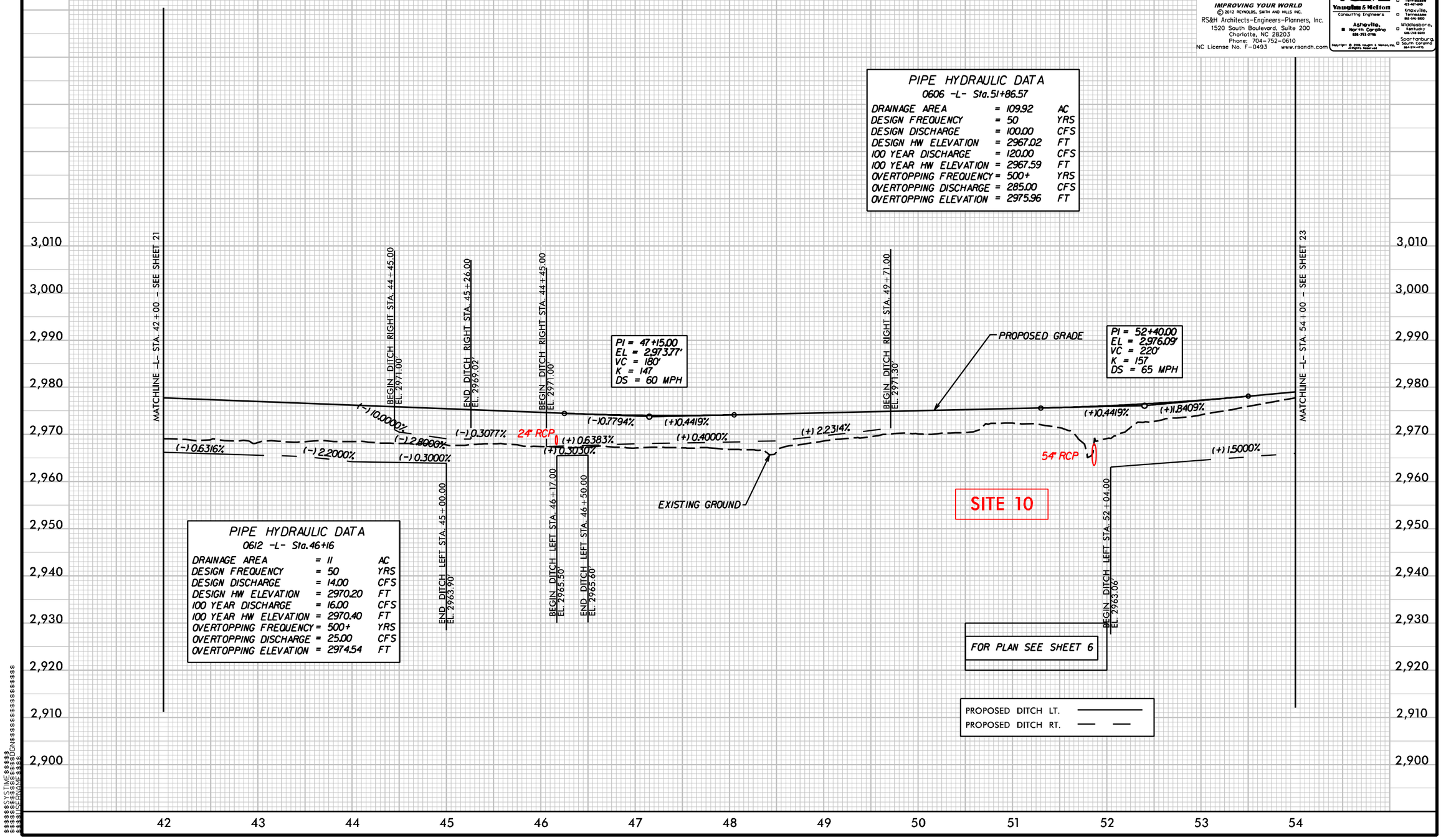
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PIPE HYDRAULIC DATA
0606 -L- Sta. 51+86.57

DRAINAGE AREA	= 109.92	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 100.00	CFS
DESIGN HW ELEVATION	= 2967.02	FT
100 YEAR DISCHARGE	= 120.00	CFS
100 YEAR HW ELEVATION	= 2967.59	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 285.00	CFS
OVERTOPPING ELEVATION	= 2975.96	FT

PIPE HYDRAULIC DATA
0612 -L- Sta. 46+16

DRAINAGE AREA	= 11	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14.00	CFS
DESIGN HW ELEVATION	= 2970.20	FT
100 YEAR DISCHARGE	= 16.00	CFS
100 YEAR HW ELEVATION	= 2970.40	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 25.00	CFS
OVERTOPPING ELEVATION	= 2974.54	FT



$$$$$$$$SYSTIME$$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$CELNAME$$$$$$

PERMIT DRAWING
SHEET 24 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007 NC GRID

100' 0' 100' 200' 300'
GRAPHIC SCALE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 11

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MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404
35

MATCHLINE -L- STA. 54+00 SEE SHEET 6

LATERAL BASE DITCH
SEE DETAIL D

CHORD

EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB

GRAU 350 TL-3

US 221 22' BST

AATUR

4SBW

EXISTING R/W

GIST-HP

2GI-A

FS

2GI

15"

BDO

3'x2' CONC HW

2GI-C

REMOVE EX. 3'x2' CONC HW

24"

FALSE SUMP
SEE DETAIL S

BERM BASE DITCH
SEE DETAIL Z

BERM BASE DITCH
SEE DETAIL V

BERM BASE DITCH
SEE DETAIL DD

34
MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404

BERM BASE DITCH
SEE DETAIL CC

BERM BASE DITCH
SEE DETAIL CC

BERM BASE DITCH
SEE DETAIL CC

SPECIAL CUT DITCH
SEE DETAIL J

FALSE SUMP
SEE DETAIL X

2GI-D

BDO

MTL

VINYL RAIL & 3S ELEC

JACK WELLBORN, CARL CHEEK, COY HOLLAR
TRUSTEES OF GAP CREEK BAPTIST CHURCH
DB 31 PG 563
36

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB
CUT /FILL TRANSITION

35 ELEC

DOUBLE F RD 12' BST

AURELIA S. LEONARD
DB 235 PG 302

37

SPECIAL CUT DITCH
SEE DETAIL L

15" SIDE DRAIN

-BL- 36

KOKOMO DR 13' BST

MAURICE J. YATES
(DB 401 PG 552
WATAUGA R.O.D.)
DB 218 PG 196
(ASHE R.O.D.)

72" WD

RALPH WILLIAM DAVIS
DB 574 PG 28
39

40

EST 35 TONS
CL I RIP RAP
EST 180 SY FILT FAB

RDEF

EIP TO R/W

REMOVE EX. 2-9'X6' RCBC BOX CULVERT

WD RAIL

CAT-1

GRAU 350 TL-3

EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB

SPECIAL CUT DITCH
SEE DETAIL J

EST 90 TONS
CL I RIP RAP
EST 115 SY FILT FAB

MATCHLINE -L- STA. 67+00 SEE SHEET 8

SHEET 8

BONITA C. STEWART
DB 686 PG 502
PB 16 PG 81
38

SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 31 FOR -Y2- PROFILE

$FILE$

$DATE$

PERMIT DRAWING
SHEET 25 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007 NC GRID

100′ 0′ 100′ 200′ 300′
GRAPHIC SCALE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 11

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MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404
35

MAURICE J. YATES
(DB 401PG 552
WATAUGA R.O.D.)
DB 218 PG 196
(ASHE R.O.D.)

AURELIA S. LEONARD
DB 235 PG 302

JACK WELLBORN, CARL CHEEK, COY HOLLAR
TRUSTEES OF GAP CREEK BAPTIST CHURCH
DB 31 PG 563
36

RALPH WILLIAM DAVIS
DB 574 PG 28
39

37

40

MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404
34

BONITA C. STEWART
DB 686 PG 502
PB 16 PG 81
38

MATCHLINE –L– STA. 54+00 – SEE SHEET 6

MATCHLINE –L– STA. 67+00 – SEE SHEET 8

CHORD

LATERAL BASE DITCH
SEE DETAIL D

EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB
CUT/FILL TRANSITION

SPECIAL CUT DITCH
SEE DETAIL L

15" SIDE DRAIN

REMOVE EX. BOX CULVERT

2-9'X6' RCBC

EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB

SPECIAL CUT DITCH
SEE DETAIL J

EST 90 TONS
CL I RIP RAP
EST 115 SY FILT FAB

FALSE SUMP
SEE DETAIL S

BERM BASE DITCH
SEE DETAIL Z

BERM BASE DITCH
SEE DETAIL V

BERM BASE DITCH
SEE DETAIL OD

BERM BASE DITCH
SEE DETAIL CC

FALSE SUMP
SEE DETAIL X

SEE SHEET 22 FOR –L– PROFILE
SEE SHEET 31 FOR –Y2– PROFILE

$FILE$
$DATE$

ENLARGEMENT SHEET

50′ 0′ 50′ 100′ 150′

GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

PERMIT DRAWING SHEET 26 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SITE 11

SEE PERMIT DRAWING SHEET 28 FOR SITE 11 CULVERT NOTES AND DETAILS

AURELIA S. LEONARD
DB 235 PG 302

RALPH WILLIAM DAVIS
DB 574 PG 28

DOUBLE F RD
10′ BST
10′ GR
13′ BST
KOKOMO DR
9′ BST
US 221 22′ BST
WD RAIL
2SFD
CAN
48″ GR
DK
EIP
HTR
PDE
TS
S
CAT-1
GRAU 350 TL-3
GPS R2915-3
6″STL-HP
EXISTING R/W
EIP TO R/W
N 31° 08′ 44.5″ E
45BW
REMOVE EX. BOX CULVERT
2-9′X6′ RCBC
GRADE TO DRAIN
SPECIAL CUT DITCH SEE DETAIL J
BANK STABILIZATION SEE SECTION B-B ON PERMIT DRAWING SHEET 28
BANK STABILIZATION SEE SECTION A-A ON PERMIT DRAWING SHEET 28
3S WIRE
36″ CONC
ISFD
2GI
40
39
37
C A
R W

SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 31 FOR -Y2- PROFILE

$FILE$
$DATE$

5/14/99

-L-

PERMIT DRAWING
SHEET 27 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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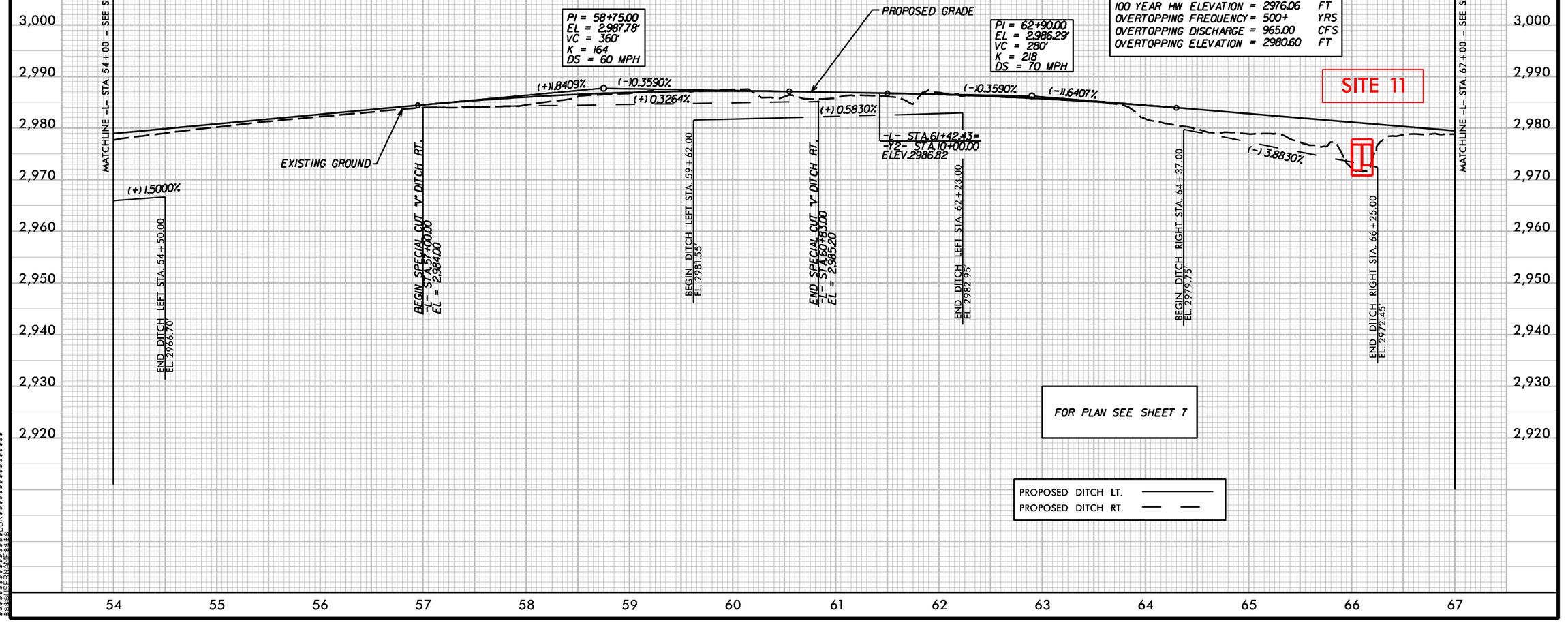
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BEGIN CULVERT -L- STA.66+00.02
END CULVERT -L- STA.66+21.86

CULVERT HYDRAULIC DATA
-L- Sta.66+11.00

DRAINAGE AREA	= 518.40	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 340.00	CFS
DESIGN HW ELEVATION	= 2975.7	FT
100 YEAR DISCHARGE	= 410.00	CFS
100 YEAR HW ELEVATION	= 2976.06	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 965.00	CFS
OVERTOPPING ELEVATION	= 2980.60	FT

SITE 11



FOR PLAN SEE SHEET 7

PROPOSED DITCH LT. ———
PROPOSED DITCH RT. — —

$$$$$$$SYSTIME$$$$$$
$$$$$$$

PERMIT DRAWING
SHEET 28 OF 63

SITE 11

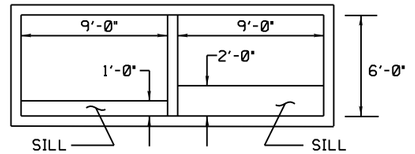
ADDITIONAL INFORMATION AND COMPUTATIONS

* * NATIVE MATERIAL AND BACKFILL SPECIFICATION

NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL IN THE HIGH FLOW CULVERT BARREL(S). IF RIP RAP IS USED TO LINE THE HIGH FLOW CULVERT BARREL(S), NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. BACKFILL RIP RAP IN FLOODPLAIN BENCHES OF CHANNEL IMPROVEMENTS WITH NATIVE MATERIAL TO FILL VOIDS. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

NOTES: BED MATERIAL IS COMPOSED OF SAND, GRAVEL AND BOULDERS. RETAIN AND PLACE BACK IN RCBC TO BURY 1'.

MAJORITY OF THE BANKS U/S AND D/S ARE WELL VEGETATED AND STABLE.



BOX CULVERT SILL DETAIL AT INLET AND OUTLET
LOOKING DOWNSTREAM

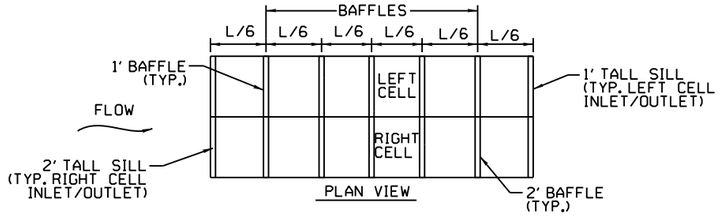
NOTES: 2' SILLS/BAFFLES TO BE CONSTRUCTED IN RIGHT CELL AS SHOWN IN PLAN.

1' SILLS/BAFFLES TO BE CONSTRUCTED IN LEFT CELL AS SHOWN IN PLAN.

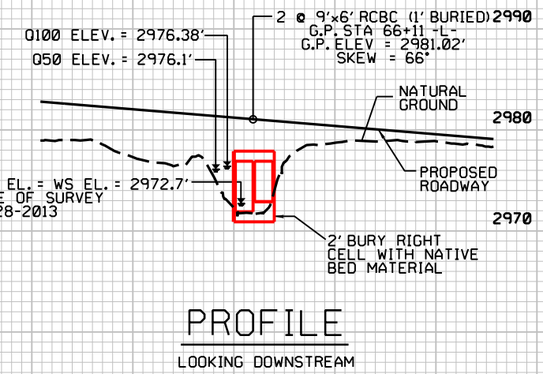
SILLS/BAFFLES TO BE 1' WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

SEE NATIVE MATERIAL AND BACK FILL SPECIFICATION UNDER "ADDITIONAL INFORMATION AND COMPUTATIONS". * *

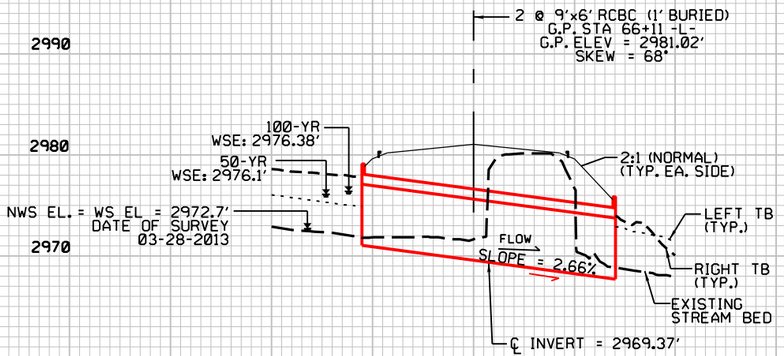
L/6 SPACING OF SILLS/BAFFLES BASED ON 0.5'/CULVERT SLOPE.

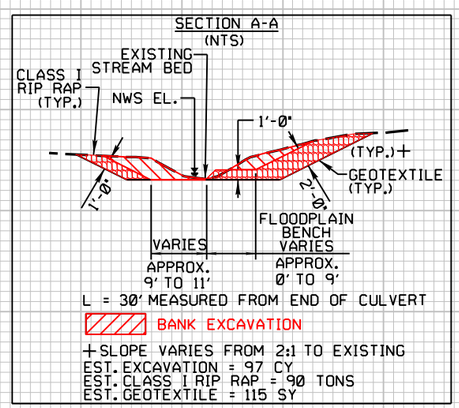


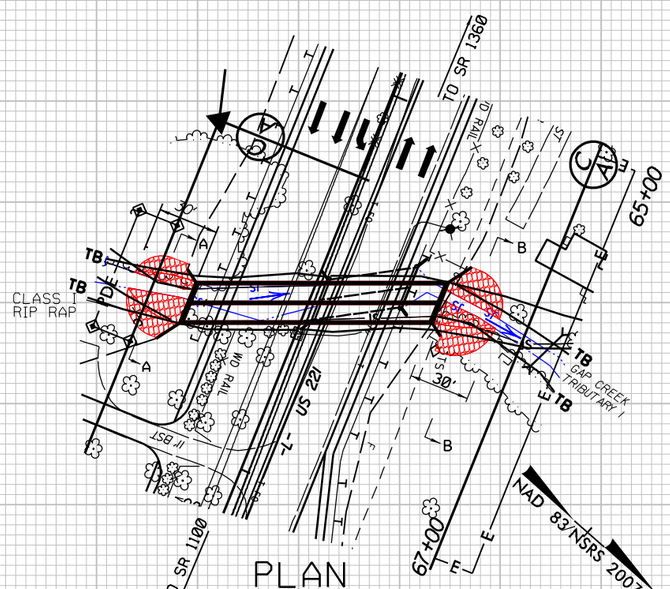
PLAN VIEW

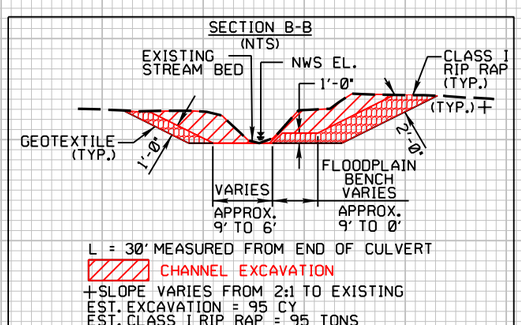


PROFILE
LOOKING DOWNSTREAM









PERMIT DRAWING
SHEET 29 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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100' 0' 100' 200' 300'
GRAPHIC SCALE

JS JS DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

SITE 12 SITE 12A SITE 12B SITE 13 SITE 13A SITE 13B

MATCHLINE –L– STA. 67+00 – SEE SHEET 7

MATCHLINE –L– STA. 81+00 – SEE SHEET 9

SEE SHEET 23 FOR –L– PROFILE
SEE SHEET 31 FOR –L– PROFILE

$FILE$
$DATE$

PERMIT DRAWING
SHEET 30 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

100' 0' 100' 200' 300'
GRAPHIC SCALE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

SITE 12 SITE 12A SITE 12B SITE 13 SITE 13A SITE 13B

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MATCHLINE –L– STA. 67+00 – SEE SHEET 7

MATCHLINE –L– STA. 81+00 – SEE SHEET 9

CASEY JAMES CARROLL
DB 148 PG 506

GAP CREEK CEMETARY
TAX MAP 44

CASEY JAMES CARROLL
DB Z-5 PG 445

CASEY JAMES CARROLL
DB 148 PG 506

MAURICE J. YATES
DB 401 PG 552
(WATAUGA R.O.D.)
DB 218 PG 196
(ASHE R.O.D.)

DARRYL L. VAUGHN
DB 132 PG 1067

CASEY J. CARROLL
DB 198 PG 230

DONALD LEE MILLER
DB 339 PG 336

ROBERT PAUL SHEETS
DB 218 PG 1776

CHERIE HAMPTON SMITH
JOHNNY C. HAMPTON
DB 1630 PG 506
(WATAUGA R.O.D.)
DB 429 PG 897
(ASHE R.O.D.)

BENJAMIN A. SMITH
DB 299 PG 112

CHERIE HAMPTON SMITH
JOHNNY C. HAMPTON
DB 429 PG 897
(ASHE R.O.D.)

JAMES LEONARD GREER
DB 564 PG 346
PB 15 PG 81

BONITA G. STEWART
DB 686 PG 502
PB 15 PG 81

TIMOTHY A. MILLER
DB 327 PG 455

CAROL G. FAIRCHILD
DB 312 PG 196

SOM & DEVIR DUTT
DB 366 PG 1315
PB 3 PG 44

SAFE HAVEN SELF STORAGE
DB 442 PG 584

GAS PRESSURE REGULATING STATION

PARTIALLY REMOVE TBE CMP TO TIE BACK

REMOVE & REPLACE CMP W/42" RCP

REMOVE & REPLACE CMP W/48" RCP

RETAIN 18" CMP

RIP RAP ON BANKS ONLY
EST 26 TONS CL I RIP RAP
EST 37 SY FILT FAB
SEE DETAIL SS
BANK STABILIZATION

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB
CUT / FILL TRANSITION

PLUG & ABANDON

STANDARD BASE DITCH W/ CLASS B RIP RAP ON SIDES ONLY SEE DETAIL PP

BERM BASE DITCH SEE DETAIL Z

BERM BASE DITCH SEE DETAIL CC

BERM BASE DITCH SEE DETAIL FF

SPECIAL CUT DITCH SEE DETAIL J

SPECIAL CUT DITCH SEE DETAIL O

15" SIDE DRAIN

STANDARD BASE DITCH SEE DETAIL HH

END OF PIPE NOT VISIBLE CAN POSSIBLY BE ABANDONED

N 36°08'44.5" E

S 52°52'27.3" E

S 72° 22' 24.4" E

SEE SHEET 23 FOR –L– PROFILE
SEE SHEET 31 FOR –L– PROFILE

$FILE$
$DATE$

ENLARGEMENT SHEET

50′ 0′ 50′ 100′ 150′
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

PERMIT DRAWING SHEET 31 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SITE 12B
SITE 12A
SITE 12
SITE 13A
SITE 13
SITE 13B

PARTIALLY REMOVE 18" CMP TO TIE W/42" RCP
REMOVE & REPLACE CMP W/42" RCP
RETAIN 18" CMP
REMOVE & REPLACE CMP W/42" RCP
RIP RAP ON BANKS ONLY EST 20 TONS CL I RIP RAP EST 37 SY FILT FAB SEE DETAIL SS BANK STABILIZATION
REMOVE & REPLACE CMP W/48" RCP
RIP RAP ON BANKS ONLY EST 26 TONS CL I RIP RAP EST 50 SY FILT FAB SEE DETAIL XX BANK STABILIZATION
STANDARD BASE DITCH SEE DETAIL HH
REMOVE
RETAIN
REMOVE RCP
2GI-A
SPECIAL CUT DITCH SEE DETAIL J
SPECIAL CUT DITCH SEE DETAIL J
SPECIAL CUT DITCH SEE DETAIL O
15" SIDE DRAIN
48" RCP-III
42" RCP-III

51 DARRYL L. VAUGHN DB 132 PG 1067
52 CASEY J. CARROLL DB 198 PG 2303
54 DONALD LEE MILLER DB 339 PG 336
56

SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 31 FOR -L- PROFILE

$FILE$
$DATE$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 32 OF 63

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-L-

PIPE HYDRAULIC DATA
0812 -L- Sta.79+44.50

DRAINAGE AREA	= 115	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80.00	CFS
DESIGN HW ELEVATION	= 2954.79	FT
100 YEAR DISCHARGE	= 100.00	CFS
100 YEAR HW ELEVATION	= 2955.42	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 148.00	CFS
OVERTOPPING ELEVATION	= 2960.20	FT

SITE 13

PI = 80+60.00
EL = 2957.25'
VC = 180'
K = 230
DS = 75 MPH

SITE 12

(-)11.6407%
EXISTING GROUND
PROPOSED GRADE
(-)1.0417%
(-)12.17.39%
(+)2.0476%
(+)3.0769%
(-)11.6407%
(-)10.8588%
48" RCP
-L- STA.80+48.05=
-Y3- STA.10+00.00
ELEV.2957.58

BEGIN DITCH RIGHT STA. 78+00.00
EL. 2957.00'
END DITCH RIGHT STA. 78+94.00
EL. 2931.40'
BEGIN DITCH RIGHT STA. 79+08.00
EL. 2952.10'
END DITCH RIGHT STA. 80+07.00
EL. 2956.40'

FOR PLAN SEE SHEET 8

MATCHLINE -L- STA. 67+00 - SEE SHEET 23
MATCHLINE -L- STA. 81+00 - SEE SHEET 25

3,010
3,000
2,990
2,980
2,970
2,960
2,950
2,940
2,930
2,920
2,910
2,900
2,890
2,880

67 68 69 70 71 72 73 74 75 76 77 78 79 80 81

$$$$$$$SYSTIME$$$$$$$
$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$

PERMIT DRAWING
SHEET 33 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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100' 0' 100' 200' 300'
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

SITE 14

SITE 15

SITE 16

MATCHLINE –L– STA. 81+00 – SEE SHEET 8

MATCHLINE –L– STA. 94+00 – SEE SHEET 10

EMMANUEL BAPTIST CHURCH DB 144 PG 1065

SAMUEL B. CHURCH DB 124 PG 877

NELL HUBBARD DOMECK DB 191 PG 219 DB 368 PG 378

JAMES DALE MILLER HEIRS DB 386 PG 225 PB 6 PG 54

KERMIT LEE MILLER DB 145 PG 1958 DB 386 PG 2122

APRIL M. HOLDAWAY DB 352 PG 1598

DAVID MATTHEW HAMILTON ET AL DB 430 PG 835

EDWIN G. GREER DB 237 PG 997 PB 3 PG 44

KAREN PHILLIPS CHURCH DB 216 PG 426 PB 3 PG 44

SPECIAL CUT DITCH SEE DETAIL L

RIP RAP ON BANKS ONLY BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL BBB

STANDARD BASE DITCH SEE DETAIL KK

STANDARD BASE DITCH SEE DETAIL HH

FALSE SUMP SEE DETAIL S

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL O

BEAM DITCH SEE DETAIL X

BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL BBB

BANK STABILIZATION RIP RAP ON BANKS ONLY EST 11 TONS CL B RIP RAP EST 28 SY FILT FAB SEE DETAIL TT

STANDARD BASE DITCH SEE DETAIL NN

LATERAL V DITCH SEE DETAIL M

EST 5 TONS CL B RIP RAP EST 14 SY FILT FAB

LATERAL BASE DITCH SEE DETAIL B

BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL EEE RIP RAP ON BANKS ONLY

EST 2 TONS CL B RIP RAP EST 7 SY FILT FAB

SEE SHEET 24 FOR –L– PROFILE

$FILE$

$DATE$

PERMIT DRAWING
SHEET 34 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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100′ 0′ 100′ 200′ 300′
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

SITE 14 SITE 15 SITE 16

MATCHLINE –L– STA. 81+00 – SEE SHEET 8

MATCHLINE –L– STA. 94+00 – SEE SHEET 10

EMMANUEL BAPTIST CHURCH DB 144 PG 1065

SAMUEL B. CHURCH DB 124 PG 877

NELL HUBBARD DOMECK DB 191 PG 219 DB 368 PG 378

JAMES DALE MILLER HEIRS DB 386 PG 225 PB 6 PG 54

KERMIT LEE MILLER DB 145 PG 1958 DB 386 PG 222

APRIL M. HOLDAWAY DB 352 PG 1598

DAVID MATTHEW HAMILTON ET AL DB 430 PG 835

EDWIN G. GREER DB 237 PG 997 PB 3 PG 44

KAREN PHILLIPS CHURCH DB 216 PG 426 PB 3 PG 44

RIP RAP ON BANKS ONLY BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL BBB

STANDARD BASE DITCH SEE DETAIL KK

STANDARD BASE DITCH SEE DETAIL HH

STANDARD BASE DITCH SEE DETAIL NN

LATERAL V DITCH SEE DETAIL M

LATERAL BASE DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL L

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL O

FALSE SUMP SEE DETAIL S

BERM DITCH SEE DETAIL X

BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL EEE RIP RAP ON BANKS ONLY

BANK STABILIZATION RIP RAP ON BANKS ONLY EST 11 TONS CL B RIP RAP EST 28 SY FILT FAB SEE DETAIL TT

EST 2 TONS CL B RIP RAP EST 7 SY FILT FAB

EST 5 TONS CL B RIP RAP EST 14 SY FILT FAB

DO NOT DISTURB WELL

SPRING INSIDE OF CONCRETE HOLDING TANK

UNABLE TO LOCATE END

SEPTIC FIELD

PLAY HOUSE

12" ROCK WALL

SEE SHEET 24 FOR –L– PROFILE

$FILE$

$DATE$

ENLARGEMENT SHEET

PERMIT DRAWING
SHEET 35 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

50′ 0′ 50′ 100′ 150′
GRAPHIC SCALE

JS DENOTES IMPACTS IN SURFACE WATER

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

SITE 15

STANDARD BASE DITCH
SEE DETAIL KK

STANDARD BASE DITCH
SEE DETAIL HH

SAMUEL B. CHURCH
DB 124 PG 877

60

62

NELL HUBBARD DOMECK
DB 191 PG 219
DB 368 PG 378

64

KERMIT LEE MILLER
DB 145 PG 1958
DB 386 PG 2122

BANK STABILIZATION
AT DITCH OUTFALL
SEE DETAIL BBB
RIP RAP ON BANKS ONLY

BANK STABILIZATION
RIP RAP ON BANKS ONLY
EST 11 TONS CL B RIP RAP
EST 28 SY FILT FAB
SEE DETAIL TT

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

72" CHL & 3SBW

15" SIDE DRAIN

15" RCP-III

24" RCP-III

REMOVE

2GI

9.5' CONC HW

-BL- 37

BM #4

4SBW & IS ELEC

6"STL-HP

REPEATER ON WOOD POST

CAT-1

US 221 22' BST

NAIL

SPECIAL CUT DITCH
SEE DETAIL K

SPECIAL CUT DITCH
SEE DETAIL O

RETAIN

UNABLE TO LOCATE END

BERM DITCH
SEE DETAIL X

BANK STABILIZATION
AT DITCH OUTFALL
SEE DETAIL EEE
RIP RAP ON BANKS ONLY

SEE SHEET 24 FOR -L- PROFILE

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$FILE$

$DATE$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 36 OF 63

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-L-

PIPE HYDRAULIC DATA
0915 -L- Sta.92+39.14

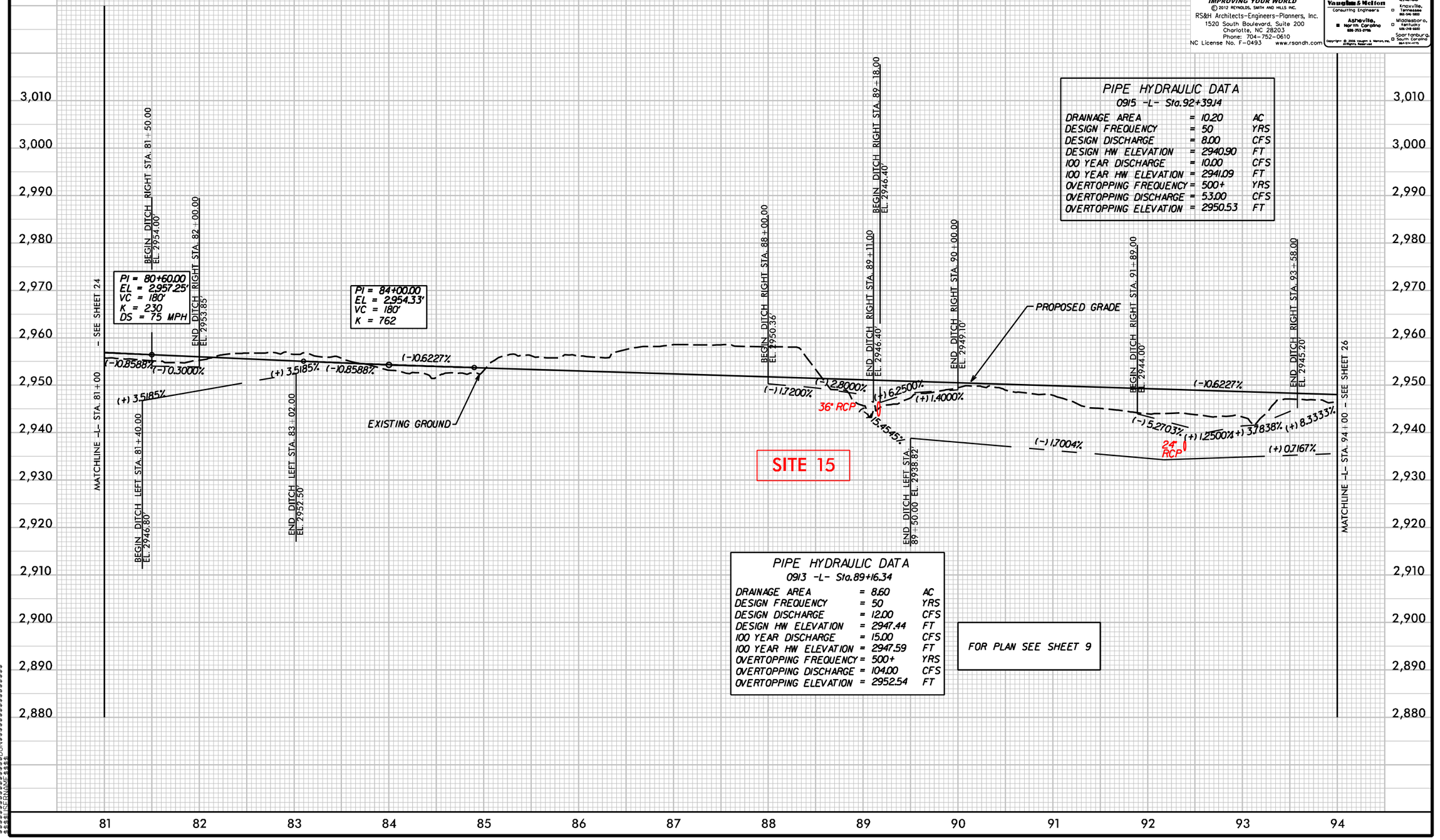
DRAINAGE AREA	= 10.20	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 8.00	CFS
DESIGN HW ELEVATION	= 2940.90	FT
100 YEAR DISCHARGE	= 10.00	CFS
100 YEAR HW ELEVATION	= 2941.09	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 53.00	CFS
OVERTOPPING ELEVATION	= 2950.53	FT

PIPE HYDRAULIC DATA
0913 -L- Sta.89+16.34

DRAINAGE AREA	= 8.60	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 12.00	CFS
DESIGN HW ELEVATION	= 2947.44	FT
100 YEAR DISCHARGE	= 15.00	CFS
100 YEAR HW ELEVATION	= 2947.59	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 104.00	CFS
OVERTOPPING ELEVATION	= 2952.54	FT

FOR PLAN SEE SHEET 9

SITE 15



PERMIT DRAWING
SHEET 37 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	10
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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100' 0' 100' 200' 300'
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83/NSRS 2007 NC GRID

SITE 17

SITE 18

MATCHLINE -L- STA. 94+00 - SEE SHEET 9

MATCHLINE -L- STA. 106+00 - SEE SHEET 11

65 JAMES DALE MILLER DB 386 PG 2125 PB 6 PG 54

67 JAMES CLINE CHURCH DB 148 PG 438 DB 166 PG 2257 DB 252 PG 431

68 WILLIAMS J. EVANS DB 431PG 1786 PB 7 PG 191

68A HEATHER N. GIBSON, ET AL DB 438 PG 818 PB 7 PG 191

68B ROBERT W. WAGONER DB 431PG 465

68C PREMIER LAND LIQUIDATORS BR 438 PG 820

68D MIDLAND IRS,INC DB 431PG 2063

68E KERMIT L. MILLER DB 431PG 753

68F

66 JAMES DALE MILLER DB 386 PG 2125 PB 6 PG 54

YVONNE BROWN DB 1297 PG 1299

TREE FARM

POSSIBLE JUNCTION BOX APPROXIMATE LOCATION INVERTS INACCESSIBLE

ISFBUS

EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB

RIP RAP ON BANKS ONLY
EST 60 TONS CL I RIP RAP
EST 75 SY FILT FAB
SEE DETAIL V V
BANK STABILIZATION

REMOVE

CHANNEL LINER SEE DETAIL V W BANK STABILIZATION

FALSE SUMP SEE DETAIL S

BERM DITCH SEE DETAIL CC

48" BLK WALL

52" BLK WALL

SOIL & GR

16' GR

US 221 22' BST

17' BST

18' SOIL

N 16°13'49.3" E

SEE SHEET 25 FOR -L- PROFILE

$FILE$

$DATE$

PERMIT DRAWING
SHEET 38 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	10
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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100' 0' 100' 200' 300'
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83/NSRS 2007 NC GRID

SITE 17

SITE 18

MATCHLINE -L- STA. 94+00 - SEE SHEET 9

SEE SHEET 11 - MATCHLINE -L- STA. 106+00

65 JAMES DALE MILLER DB 386 PG 2125 PB 6 PG 54

67 JAMES CLINE CHURCH DB 148 PG 438 DB 166 PG 2257 DB 252 PG 431

68 WILLIAMS J. EVANS DB 431PG 1786 PB 7 PG 191

68A HEATHER N. GIBSON, ET AL DB 438 PG 818 PB 7 PG 191

68B ROBERT W. WAGONER DB 431PG 465

68C PREMIER LAND LIQUIDATORS BR 438 PG 820

68D MIDLAND IRS,INC DB 431PG 2063

68E KERMIT L. MILLER DB 431PG 753

68F

66 JAMES DALE MILLER DB 386 PG 2125 PB 6 PG 54

YVONNE BROWN DB 1297 PG 1299

POSSIBLE JUNCTION BOX APPROXIMATE LOCATION INVERTS INACCESSIBLE

12" CMP RETAIN

36" CMP REMAIN

18" METAL RETAIN

SHOP CURVE R60'

SHOP CURVE R20' 356BW

ISFBUS

EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB

RIP RAP ON BANKS ONLY
EST 60 TONS CL I RIP RAP
EST 75 SY FILT FAB
SEE DETAIL V-V
BANK STABILIZATION

REMOVE

N 10°13'49"E

CHANNEL LINER SEE DETAIL V-V BANK STABILIZATION

FALSE SUMP SEE DETAIL S

BERM DITCH SEE DETAIL CC

48" BLK WALL

52" BLK WALL

SOIL & GR

TREE FARM

SEE SHEET 25 FOR -L- PROFILE

$FILE$

$DATE$

ENLARGEMENT SHEET

50′ 0′ 50′ 100′ 150′

GRAPHIC SCALE

NC GRID NAD 83/NSRS 2007

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

PERMIT DRAWING SHEET 39 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	10
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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SITE 17

SITE 18

RIP RAP ON BANKS ONLY
EST 60 TONS CL I RIP RAP
EST 75 SY FILT FAB
SEE DETAIL V V
BANK STABILIZATION

EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB

RETAIN

REMOVE

CHANNEL INLET
SEE DETAIL V V
BANK STABILIZATION

FALSE SUMP
SEE DETAIL S

WILLIAMS J. EVANS
DB 431 PG 1786
PB 7 PG 191

PREMIER LAND LIQUIDATORS, LLC
BR 438 PG 820

SEE SHEET 25 FOR -L- PROFILE

$FILE$

$DATE$

5/14/99

-L-

PERMIT DRAWING
SHEET 40 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PIPE HYDRAULIC DATA
1010 -L- Sta.99+67.76

DRAINAGE AREA	= 100.50	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 150.00	CFS
DESIGN HW ELEVATION	= 2943.29	FT
100 YEAR DISCHARGE	= 180.00	CFS
100 YEAR HW ELEVATION	= 2943.86	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 250.00	CFS
OVERTOPPING ELEVATION	= 2945.40	FT

PI = 99+00.00
EL = 2,944.99'
VC = 180'
K = 893

PROPOSED GRADE

(-)10.6227%
(-)10.4211%
(-)10.6227%
(-)10.3944%
(-)15.1667%
(+)0.7167%
(-)3.6000%

EXISTING GROUND

60" RCP

SITE 17

MATCHLINE -L- STA. 94+00 - SEE SHEET 25

END DITCH LEFT STA. 94+50.00
EL. 2935.95'

BEGIN DITCH LEFT STA. 98+68.00
EL. 2941.52'

END DITCH LEFT STA. 99+66.00
EL. 2937.99'

BEGIN DITCH RIGHT STA. 105+89.00
EL. 2940.30'

MATCHLINE -L- STA. 106+00 - SEE SHEET 27

FOR PLAN SEE SHEET 10

PROPOSED DITCH LT. ——————
PROPOSED DITCH RT. — — —

3,010
3,000
2,990
2,980
2,970
2,960
2,950
2,940
2,930
2,920
2,910
2,900
2,890
2,880

94 95 96 97 98 99 100 101 102 103 104 105 106

$$$$$$$SYSTIME$$$$$
$$$$$$$

SITE 17

PERMIT DRAWING
SHEET 41 OF 63

100′ LT. 50′ LT. 0′ 50′ RT. 100′ RT.

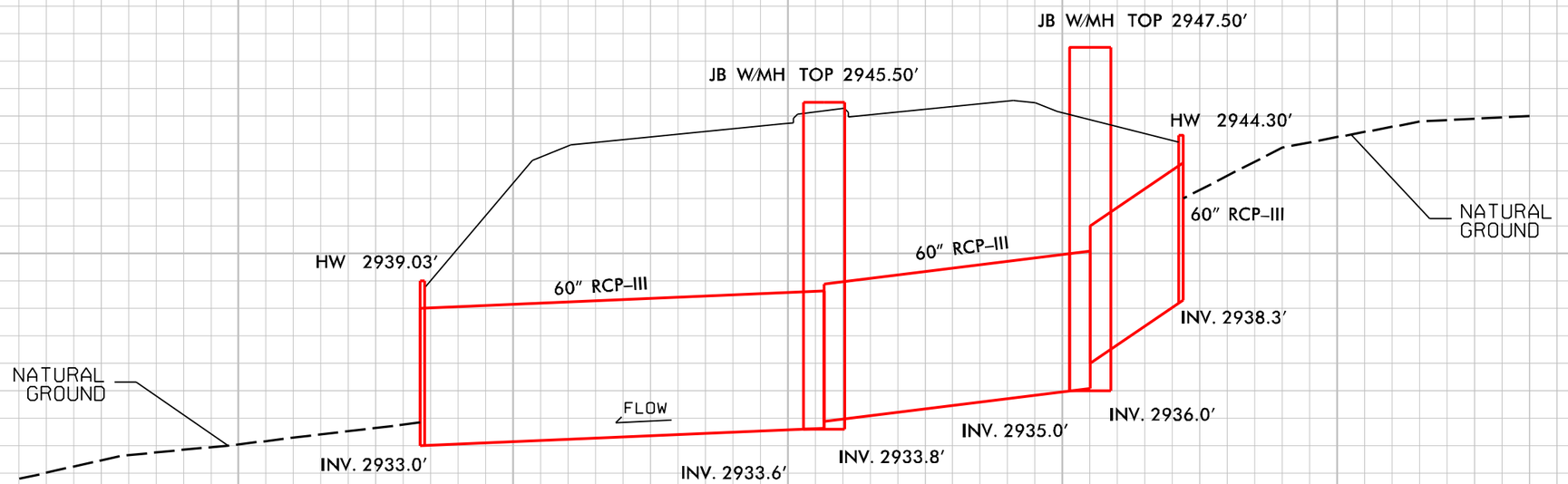
℄ STA. 99 + 61.00

2,950

2,940

2,930

2,920



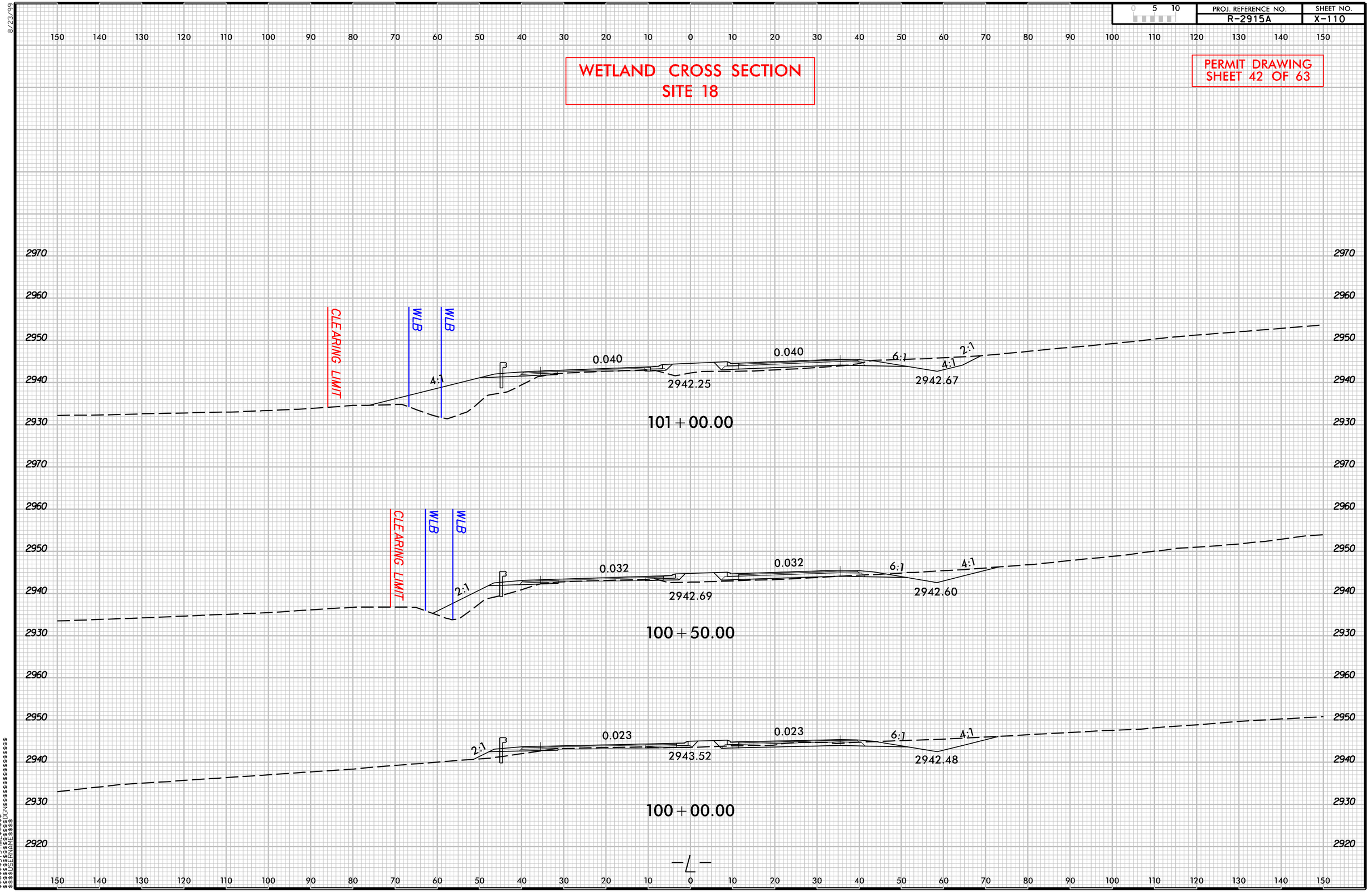
PROFILE ALONG 60" RCP

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-110

WETLAND CROSS SECTION
SITE 18

PERMIT DRAWING
SHEET 42 OF 63



$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

8/23/99

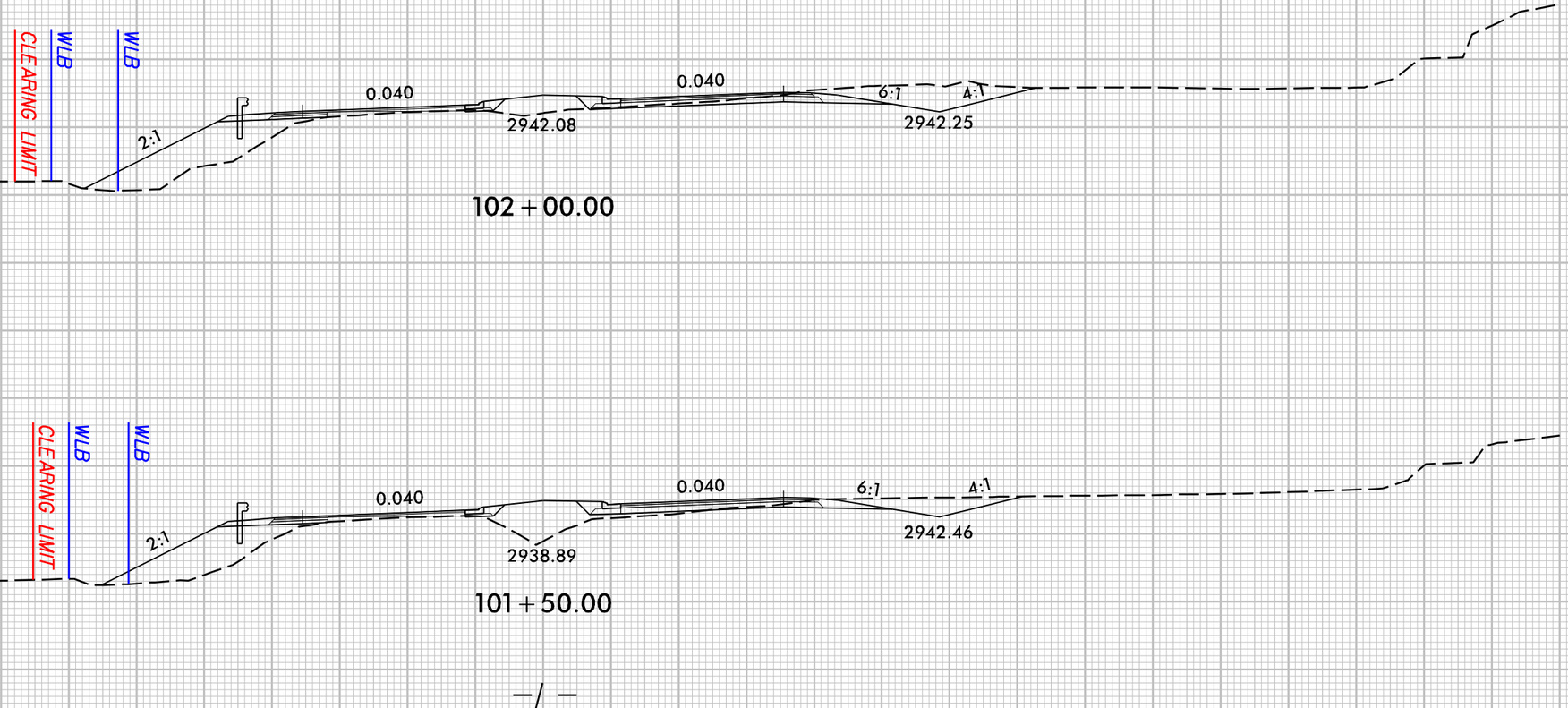
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	R-2915A	X-111

WETLAND CROSS SECTION
SITE 18

PERMIT DRAWING
SHEET 43 OF 63

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

2990
2980
2970
2960
2950
2940
2930
2920



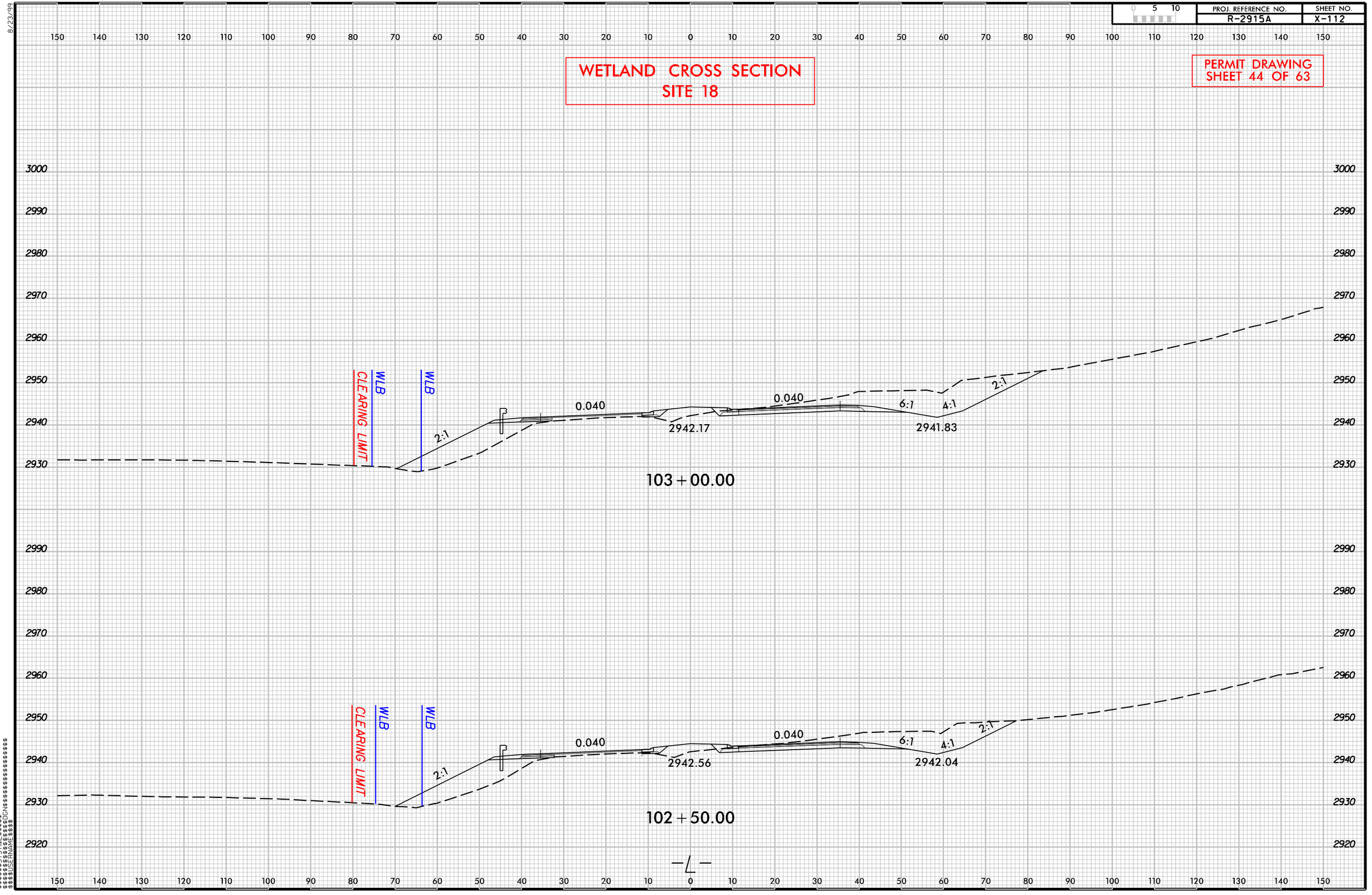
$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-112

WETLAND CROSS SECTION
SITE 18

PERMIT DRAWING
SHEET 44 OF 63



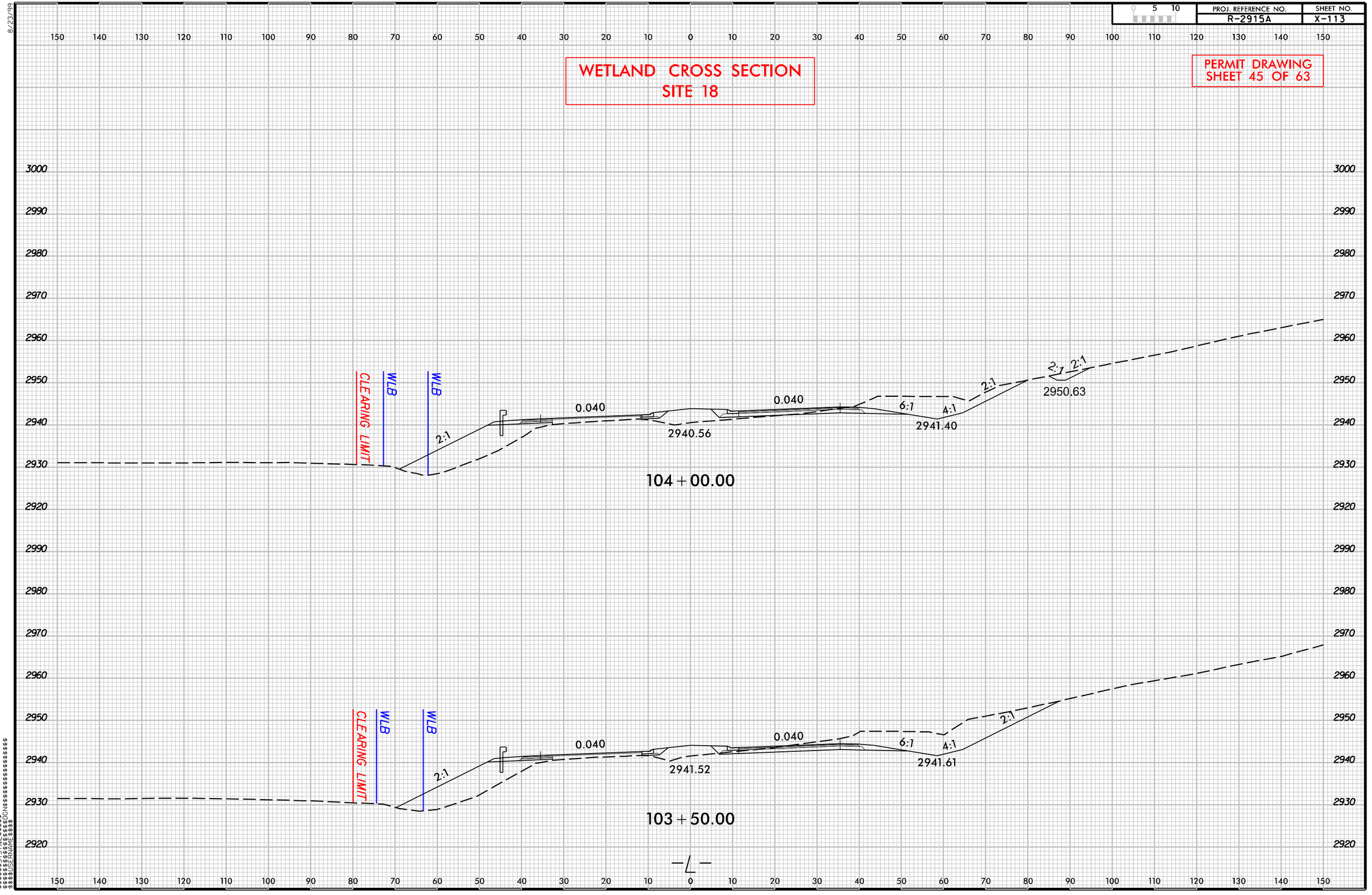
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$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-113

WETLAND CROSS SECTION
SITE 18

PERMIT DRAWING
SHEET 45 OF 63



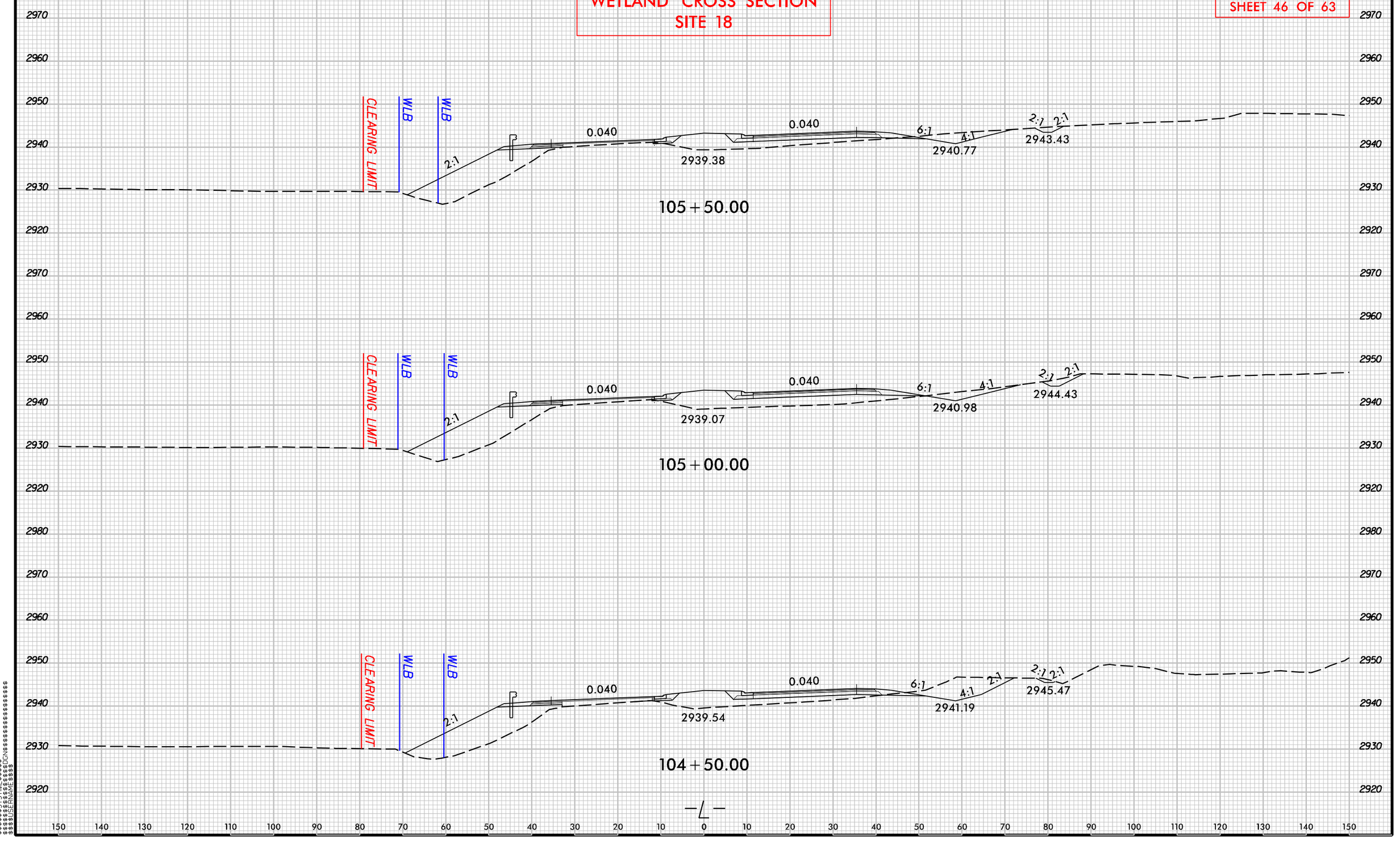
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-114

WETLAND CROSS SECTION
SITE 18

PERMIT DRAWING
SHEET 46 OF 63



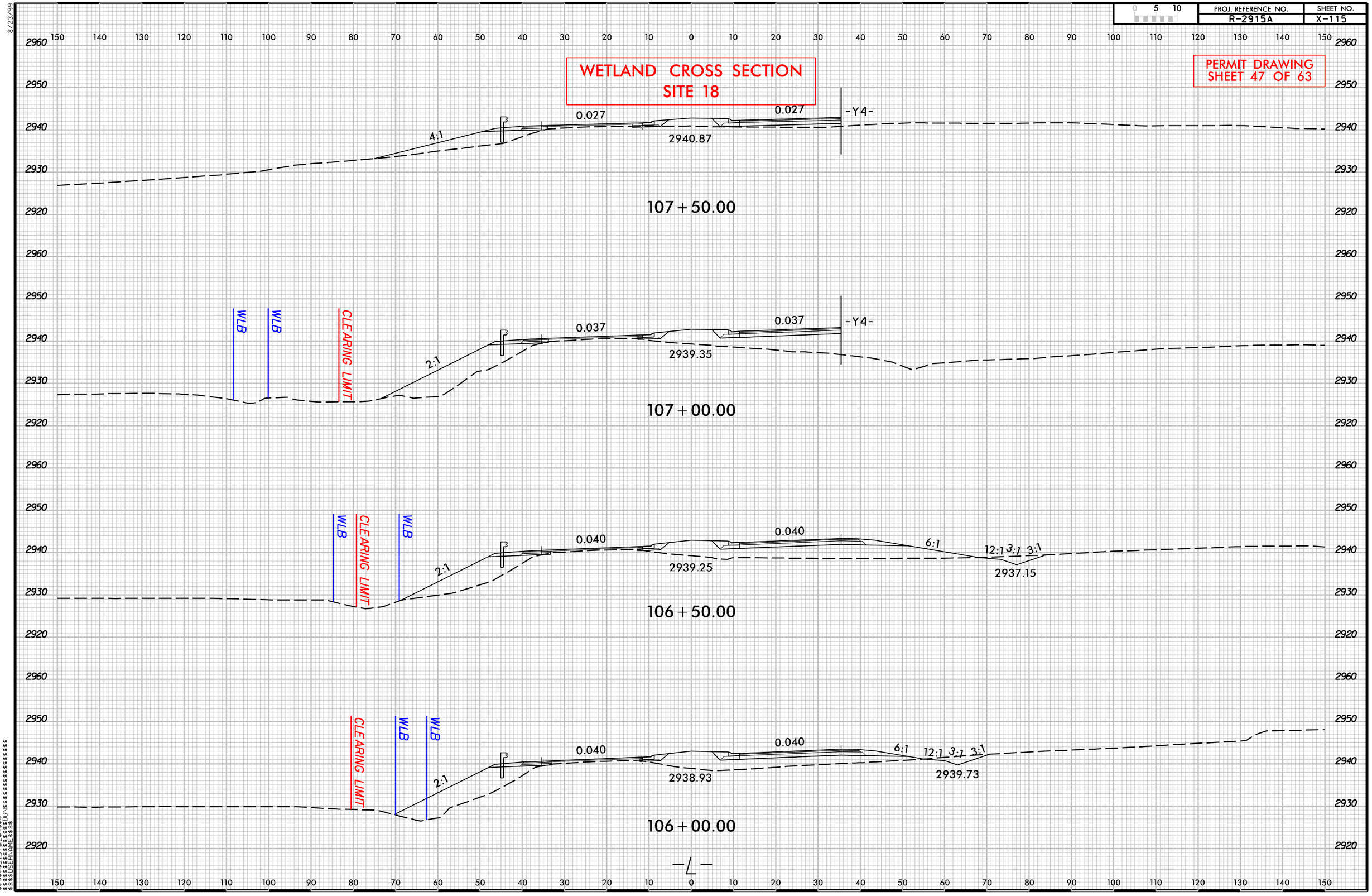
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$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-115

WETLAND CROSS SECTION
SITE 18

PERMIT DRAWING
SHEET 47 OF 63



$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$USERNAME$$$$

PERMIT DRAWING
SHEET 48 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

100' 0' 100' 200' 300'
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83/NSRS 2007 NC GRID

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SITE 18
SITE 19
SITE 20

JAMES CLINE CHURCH
DB 148 PG 438
DB 166 PG 2257
DB 252 PG 431

72 BERNARD A. MILLER
DB A-6 PG 407

74 IAN NATHANIEL CHEEK
DB 420 PG 1850

76 J. CURTIS CHEEK
DB 267 PG 756

73 DAVID K. KING
DB 306 PG 1350

71 TALMADGE N. RITCHIE
DB 356 PG 147

70 NORMAN CHEEK (HEIRS)
DB 271 PG 149
DB 241 PG 1377

68E PREMIER LAND LIQUIDATORS LLC
DB 429 PG 2005

68F RONALD PAUL PEDEMONTE
DB 431 PG 215

75 WAYNE A. PATRICK
DB 170 PG 427
DB 170 PG 429
DB 326 PG 1930

MATCHLINE -L- STA. 106+00 - SEE SHEET 10

MATCHLINE -L- STA. 119+00 - SEE SHEET 12

EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB
LATERAL V DITCH SEE DETAIL M

EST 48 TONS CL I RIP RAP
EST 89 SY F.F.
SEE DETAIL UU
BANK STABILIZATION

RIP RAP ON BANKS ONLY

SEE DETAIL T FOR PSH

BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL EEE

RIP RAP ON BANKS ONLY

LATERAL V DITCH SEE DETAIL H

BERM BASE DITCH SEE DETAIL CC

BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL EE
RIP RAP ON BANKS ONLY

STANDARD BASE DITCH SEE DETAIL OO

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

SPECIAL CUT DITCH SEE DETAIL J

RIP RAP ON BANKS ONLY
EST 11 TONS CL B RIP RAP
EST 28 SY FILT FAB
SEE DETAIL TT

SPECIAL CUT DITCH SEE DETAIL K

N 74° 52' 33.4" E

N 68° 33' 10" E

S 87° 34' 10.2" E

N 1° 41' 24.4" W

SEE SHEET 26 FOR -L- PROFILE
SEE SHEET 31 FOR -Y4- AND -Y5- PROFILE
SEE SHEET 32 FOR -Y6- PROFILE

$FILE$
$DATE$

PERMIT DRAWING
SHEET 49 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

100′ 0′ 100′ 200′ 300′
GRAPHIC SCALE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83/NSRS 2007 NC GRID

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SITE 18
SITE 19
SITE 20

JAMES CLINE CHURCH
DB 148 PG 438
DB 166 PG 2257
DB 252 PG 431

72 BERNARD A. MILLER
DB A-6 PG 407

74 IAN NATHANIEL CHEEK
DB 420 PG 1850

76 J. CURTIS CHEEK
DB 267 PG 756

73 DAVID K. KING
DB 306 PG 1350

71 NORMAN CHEEK (HEIRS)
DB 271 PG 149
DB 241 PG 1377

70 NORMAN CHEEK (HEIRS)
DB 271 PG 149
DB 241 PG 1377

68E PREMIER LAND LIQUIDATORS LLC
DB 429 PG 2005

68F RONALD PAUL PEDEMONTE
DB 431 PG 215

68G

75 WAYNE A. PATRICK
DB 170 PG 427
DB 170 PG 429
DB 326 PG 1930

TALMADGE N. RITCHIE
DB 356 PG 147

MATCHLINE –L– STA. 106+00 – SEE SHEET 10

MATCHLINE –L– STA. 119+00 – SEE SHEET 12

N 74° 52' 33.4" E

N 68° 31' 05" E

S 87° 34' 10.2" E

N 1° 41' 24.4" W

US 221 22 BUS

BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL EE

RIP RAP ON BANKS ONLY

LATERAL V DITCH SEE DETAIL H

EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB
LATERAL V DITCH SEE DETAIL M

EST 48 TONS CL I RIP RAP
EST 89 SY F.F.
SEE DETAIL UU
BANK STABILIZATION

RIP RAP ON BANKS ONLY

SEE DETAIL T FOR PSH

BERM BASE DITCH SEE DETAIL CC

STANDARD BASE DITCH SEE DETAIL OO

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

RIP RAP ON BANKS ONLY
EST 11 TONS CL B RIP RAP
EST 28 SY FILT FAB
SEE DETAIL TT

SPECIAL CUT DITCH SEE DETAIL J

SPECIAL CUT DITCH SEE DETAIL K

POSSIBLE FENCING LOCATION

SEE SHEET 26 FOR –L– PROFILE
SEE SHEET 31 FOR –Y4– AND –Y5– PROFILE
SEE SHEET 32 FOR –Y6– PROFILE

$FILE$
$DATE$

ENLARGEMENT SHEET

PERMIT DRAWING
SHEET 50 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

50′ 0′ 50′ 100′ 150′
GRAPHIC SCALE

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

NAD 83/NSRS 2007 NC GRID

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SITE 18
SITE 19
SITE 20
EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB
LATERAL V DITCH SEE DETAIL M
EST 48 TONS CL I RIP RAP
EST 89 SY F.F.
SEE DETAIL UU
BANK STABILIZATION
RIP RAP ON BANKS ONLY
SEE DETAIL T FOR PSH
BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL EEE
RIP RAP ON BANKS ONLY
PDE STANDARD BASE SEE DETAIL OO
BERM BASE DITCH SEE DETAIL CC
TREE FARM
AUE
S 87° 34′ 10.2″ E
-Y5-
N 88° 53′ 11.0″ E
-L-
CHORD
GRAU 350 TL-3
6"STL-HP
EXISTING R/W
SHOP CURVED R70′
SHOP CURVED R97′
SHOP CURVED R83′ AT-1
150′ SIGHT DISTANCE
POSSIBLE SPRING LOCATION
18" RCP-III
24"x38" RCP
15" RCP
15" SIDE DRAIN
REMOVE
2GI
BDO
PSH
HW
TS
EIP
EIP TO EXISTING R/W 34.07′
EXISTING R/W TO CORNER 34.10′
BK COLUMN
CONC
1½SFD
36" BK
30" ROCK WALL
LANDSCAPE TIMBERS
TSF
102
71

SEE SHEET 26 FOR -L- PROFILE
SEE SHEET 31 FOR -Y4- AND -Y5- PROFILE
SEE SHEET 32 FOR -Y6- PROFILE

$FILE$
$DATE$

5/14/99

-L-

PERMIT DRAWING
SHEET 51 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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PIPE HYDRAULIC DATA
1105 -L- Sta.107+05.24

DRAINAGE AREA	= 238.50	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 180.00	CFS
DESIGN HW ELEVATION	= 2932.74	FT
100 YEAR DISCHARGE	= 210.00	CFS
100 YEAR HW ELEVATION	= 2933.30	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 357.00	CFS
OVERTOPPING ELEVATION	= 2943.20	FT

PIPE HYDRAULIC DATA
1119 -L- Sta.115+65.37

DRAINAGE AREA	= 21.10	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 20.00	CFS
DESIGN HW ELEVATION	= 2941.53	FT
100 YEAR DISCHARGE	= 25.00	CFS
100 YEAR HW ELEVATION	= 2941.74	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 108.00	CFS
OVERTOPPING ELEVATION	= 2947.37	FT

PI = 107+05.00
EL = 2941.60'
VC = 260'
K = 282

PI = 118+10.00
EL = 2947.15'
VC = 600'
K = 172
DS = 60 MPH

-L- STA.112+00.00 =
-DR2- STA.10+00.00
ELEV.2944.09

EXISTING GROUND

(+)9.6429%
(+)10.5023%
(-)12.9797%
(+)0.4348%
(+)1.0000%
(+)0.4762%

MATCHLINE -L- STA.106+00 - SEE SHEET 26

BEGIN DITCH LEFT STA. 106+05.00
EL. 2927.45'

END DITCH LEFT STA. 106+50.00
EL. 2926.64'

END DITCH RIGHT STA. 107+09.00
EL. 2934.10'

(-)1.8000%
(-)10.4211%
(-)5.1667%
(+)10.5023%

66" RCP

-L- STA.107+68.58 =
-Y4- STA.10+00
ELEV.2942.00

SITE 19

-L- STA.110+25.34 =
-Y5- STA.20+00
ELEV.2943.21

PROPOSED GRADE

36" RCP

BEGIN DITCH RIGHT STA. 115+77.00
EL. 2944.10'

END DITCH RIGHT STA. 117+62.00
EL. 2947.8'

-L- STA.117+97.20 =
-Y6- STA.10+00
ELEV.2944.69

MATCHLINE -L- STA.119+00 - SEE SHEET 28

FOR PLAN SEE SHEET 11

PROPOSED DITCH LT. ——————
PROPOSED DITCH RT. — — —

3,010
3,000
2,990
2,980
2,970
2,960
2,950
2,940
2,930
2,920
2,910
2,900
2,890
2,880

106 107 108 109 110 111 112 113 114 115 116 117 118 119

$$$$$$$SYSTIME$$$$$$
$$$$$$$

SITE 19

PERMIT DRAWING
SHEET 52 OF 63

100′ LT. 50′ LT. 0′ 50′ RT. 100′ RT.

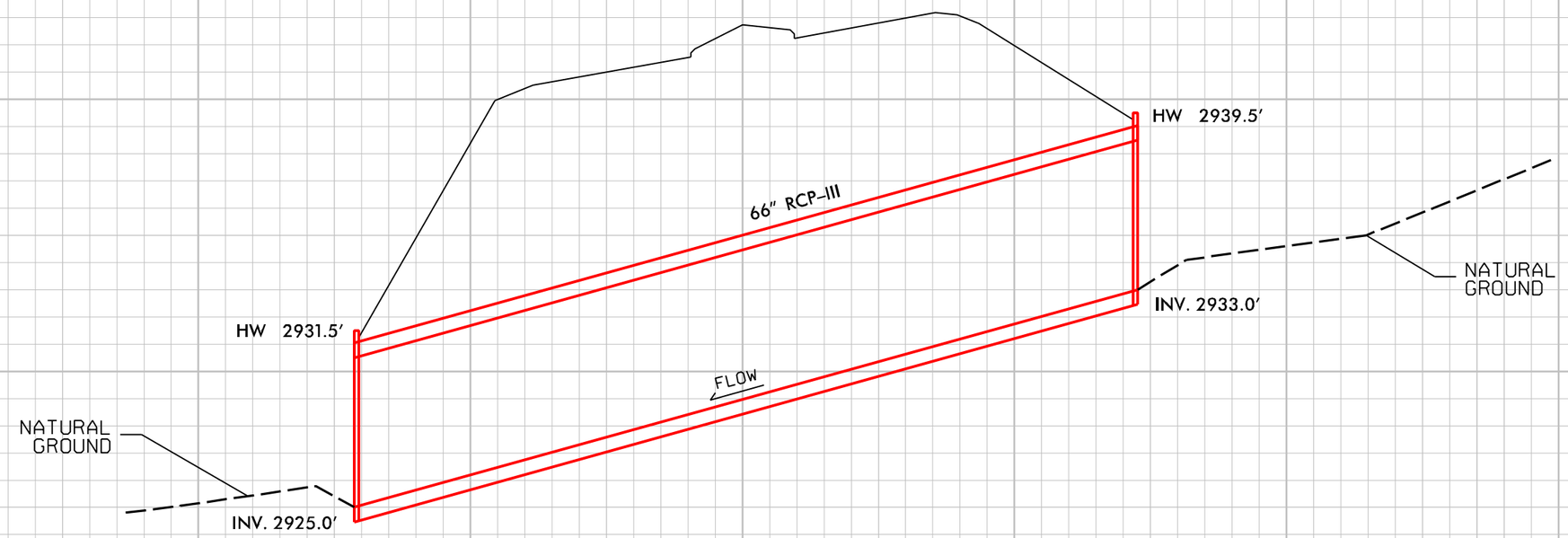
℄ STA. 107+05.24

2,950

2,940

2,930

2,920



PROFILE ALONG 66" RCP

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 53 OF 63

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

100′ 0′ 100′ 200′ 300′
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

HC HC DENOTES HAND CLEARING

NAD 83/NSRS 2007 NC GRID

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SITE 21
SITE 22
SITE 23
SITE 23A

76
80
ROCK GAP LIMITED PARTNERSHIP
DB 249 PG 2135

J. CURTIS CHEEK
DB 267 PG 756

MATCHLINE –L– STA. 119+00 – SEE SHEET 11
MATCHLINE –L– STA. 131+00 – SEE SHEET 12

Q10=32.9 cfs
V10=1.9 fps
Q10=9.6 cfs
V10=1.5 fps

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB
EST 10 TONS CL B RIP RAP
EST 20 SY FILT FAB
SEE DETAIL GGG
EST 26 TONS CL I RIP RAP
EST 35 SY FILT FAB
SEE DETAIL FFF
EST 11 TONS CL B RIP RAP
EST 14 SY FILT FAB
SEE DETAIL TT
BANK STABILIZATION
RIP RAP ON
BANKS ONLY

STANDARD V DITCH
SEE DETAIL RR
SPECIAL CUT DITCH
SEE DETAIL I
REMOVE & REPLACE TC W/24" RCP
REMOVE & REPLACE 24" RCP W/ 15" RCP-III
15" SIDE DRAIN
REMOVE
FALSE SUMP
SEE DETAIL R
BERM BASE DITCH
SEE DETAIL CC
BERM BASE DITCH
SEE DETAIL Z
RETAIN
TREE FARM
SOIL
WD RAIL
ISBKD
ISBLKBUS
ISFD
FUEL
POND
CHORD
S 62 24' 43.4" E
GRAU 350 TL-3
DONALD E. BLACKBURN
DB J4 PG 329
79
WAYNE A. PATRICK
DB 170 PG 427
DB 170 PG 429
DB 326 PG 1930
75
77
RONALD D. CHEEK
DB 247 PG 1297
DB 186 PG 640
DB 136 PG 1562
DB 326 PG 1933
78A
SETH RYAN OSBORNE
DB 412 PG 998
78
MARTHA B. BLACKBURN
DB 262 PG 156
BREMCO 100' EASEMENT
DB 78 PG 48
5' DIAMETER SPRING BOX TOP CONC.=2974.9'

SEE SHEET 27 FOR –L– PROFILE

$FILE$
$DATE$

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 54 OF 63

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

100′ 0′ 100′ 200′ 300′
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

HC HC DENOTES HAND CLEARING

NAD 83/NSRS 2007 NC GRID

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SITE 21
SITE 22
SITE 23
SITE 23A

MATCHLINE –L– STA. 119+00 – SEE SHEET 11
MATCHLINE –L– STA. 131+00 – SEE SHEET 12

76 J. CURTIS CHEEK DB 267 PG 766
80 ROCK GAP LIMITED PARTNERSHIP DB 249 PG 235
79 DONALD E. BLACKBURN DB 34 PG 329
78 MARTHA B. BLACKBURN DB 262 PG 156
78A SETH RYAN OSBORNE DB 412 PG 998
77 RONALD D. CHEEK DB 247 PG 1297 DB 186 PG 640 DB 136 PG 1562 DB 326 PG 1933
75 WAYNE A. PATRICK DB 170 PG 427 DB 170 PG 429 DB 326 PG 1930

BREMCO 100' EASEMENT
S 62 24' 43.4" E 1126.27'
GRAU 350 TL-3
50' EXISTING R/W
TREE FARM
POND
DONALD E. BLACKBURN DB 34 PG 329

EST 10 TONS CL B RIP RAP
EST 20 SY FILT FAB
SEE DETAIL GGG
Q10=32.9 cfs
V10=1.9 fps
EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB
15" SIDE DRAIN
EST 26 TONS CL I RIP RAP
EST 35 SY FILT FAB
SEE DETAIL FFF
Q10=9.6 cfs
V10=1.5 fps
STANDARD V DITCH
SEE DETAIL RR
EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB
REMOVE & REPLACE 72" RCP W/24" RCP
BANK STABILIZATION
RIP RAP ON BANKS ONLY
EST 11 TONS CL B RIP RAP
EST 14 SY FILT FAB
SEE DETAIL TT
SPECIAL CUT DITCH
SEE DETAIL I
FALSE SUMP
SEE DETAIL R
BERM BASE DITCH
SEE DETAIL Z
BERM BASE PIPE
SEE DETAIL EE
REMOVE 15" RCP
REMOVE 18" RCP
REMOVE 24" RCP
REMOVE 30" RCP
REMOVE US 221 22" BST
REMOVE 6" TL HP
REMOVE 15" CMP
REMOVE 24" CMP
REMOVE 36" CMP
REMOVE 48" RCP
REMOVE 48" CMP
REMOVE 48" RCP
REMOVE 48" WMP
REMOVE 48" WMP
REMOVE 48" WM

ENLARGEMENT SHEET

PERMIT DRAWING
SHEET 55 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

50′ 0′ 50′ 100′ 150′

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

HC HC DENOTES HAND CLEARING

NAD 83/NSRS 2007
NO GRID

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SITE 21

SITE 22

J. CURTIS CHEEK
DB 267 PG 756

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

15" SIDE DRAIN

EST 26 TONS CL I RIP RAP
EST 35 SY FILT FAB
SEE DETAIL FFF

EST 10 TONS CL B RIP RAP
EST 20 SY FILT FAB
SEE DETAIL GGG

CHORD

S 62° 24′ 43.4″ E

DR3

GRAU 350 TL-3

16′ EXISTING R/W

50′ EXISTING R/W

4SBW & IS ELEC

BREMCO 100′ EASEMENT

DB 69 PG 330

REMOVE 15" CMP

18" SIDE DRAIN

JB w/MH

48" RCP III

48" RCP

REMOVE US 221 22′ BST

2GI-A

FS

2 ISLS FUEL PUMP

FALSE SUMP
SEE DETAIL R

BST

CORNER TO EXISTING R/W 38.45′

6"STL-HR

REMOVE 15" CMP

15" RCP-III

2GI

18" RCP III

REMOVE

15"

-BL- 41

-BL- 42

FUEL

72" CHL

36" CMP

RETAIN

ISBKD

24" CONC

ISBLKBUS

TREE FARM

24" ROCK WALL

8' GR

WD RAIL

PDE

2" FO

6"STL-HP

6"STL-HP

SEE SHEET 27 FOR -L- PROFILE

$FILE$

$DATE$

ENLARGEMENT SHEET

50′ 0′ 50′ 100′ 150′

GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 56 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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80

ROCK GAP LIMITED PARTNERSHIP
DB 249 PG 2135

RETAIN — BTM — WLB

SITE 23

SITE 23A

REMOVE & REPLACE TC W/24" RCP

STANDARD V DITCH SEE DETAIL RR

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB

BANK STABILIZATION
RIP RAP ON BANKS ONLY
EST 11 TONS CL B RIP RAP
EST 14 SY FILT FAB
SEE DETAIL TT

SEE DETAIL T FOR PSH

PSH

50′ EXISTING R/W

4SBW & 48" WW

24" RCP-III

REMOVE 15"

15" RCP-III

REMOVE 2GI

BL 43

DI

JB w/MH

REMOVE

24" RCP

SPECIAL CUT DITCH
SEE DETAIL L

2GI

FS

18" RCP-III

FALSE SUMP
SEE DETAIL R

WD RAIL

24" BK WALL

CHORD

APPROXIMATE PIPE DIRECTION

SEE SHEET 27 FOR -L- PROFILE

$FILE$

$DATE$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 57 OF 63

PRELIMINARY PLANS
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-L-

SITE 21

SITE 22

SITE 23

PI = 118+10.00
EL = 2,947.15'
VC = 600'
K = 172
DS = 60 MPH

PI = 124+00.00
EL = 2,929.57'
VC = 280'
K = 146
DS = 60 MPH

PI = 128+25.00
EL = 2,925.05'
VC = 180'
K = 346
DS = 75 MPH

(-)12.9797%
(-)12.9797%
(-)11.0635%
(-)11.0635%
(-)11.5843%
(-) 0.3000%
(+) 0.5600%

-L- STA 125+10.00 =
-DR3- STA 16+61.71
ELEV. 2928.43

PROPOSED GRADE

EXISTING GROUND

MATCHLINE -L- STA. 119+00 - SEE SHEET 27

MATCHLINE -L- STA. 131+00 - SEE SHEET 29

BEGIN DITCH RIGHT STA. 130+00.00
EL. 2915.32

END DITCH RIGHT STA. 131+00.00
EL. 2915.45

FOR PLAN SEE SHEET 12

2,990
2,980
2,970
2,960
2,950
2,940
2,930
2,920
2,910
2,900
2,890
2,880
2,870
2,860
2,850

119 120 121 122 123 124 125 126 127 128 129 130 131

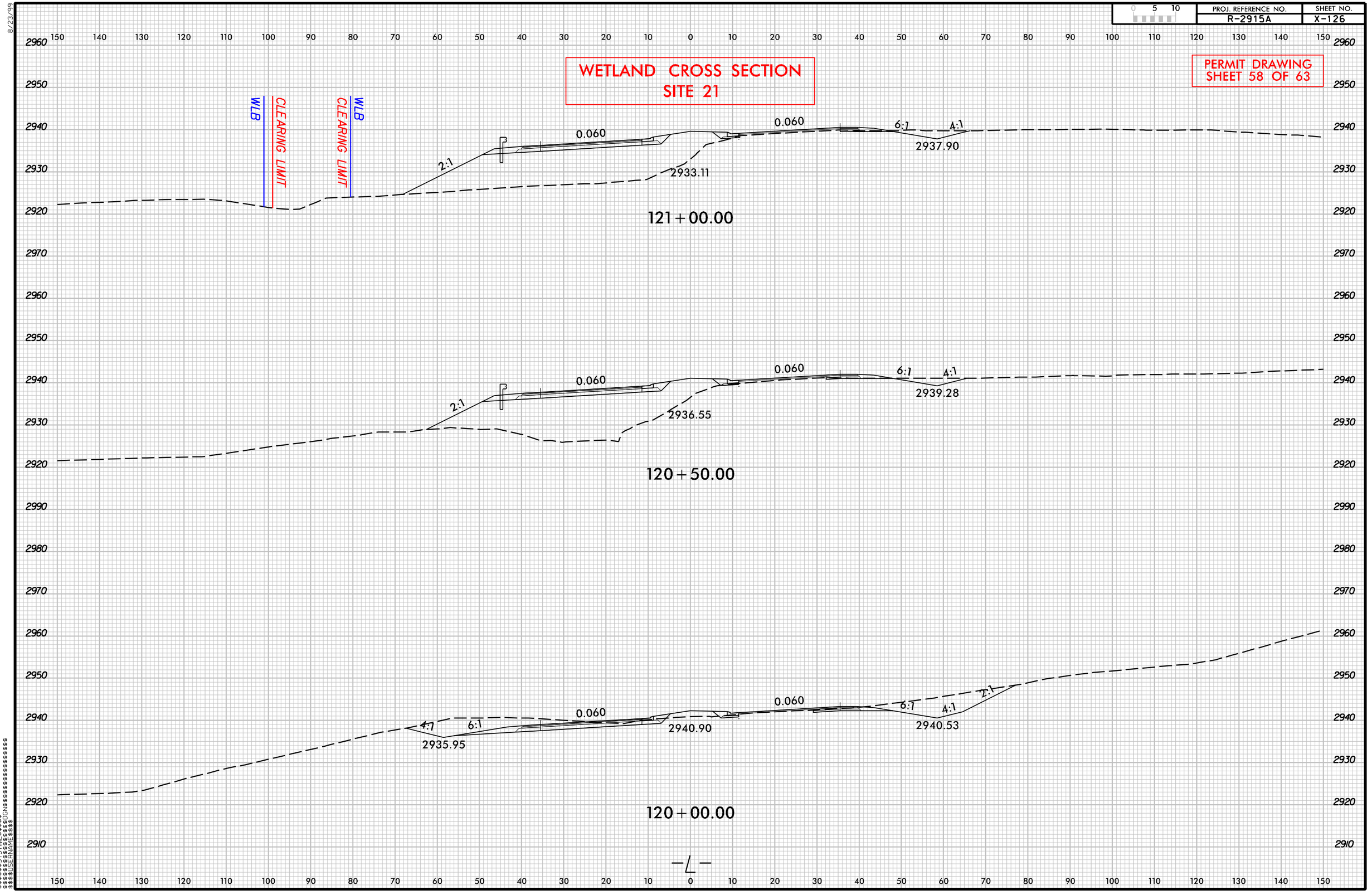
$$$$$$$SYSTIME$$$$$$
$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$ENGINE$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-126

WETLAND CROSS SECTION
SITE 21

PERMIT DRAWING
SHEET 58 OF 63



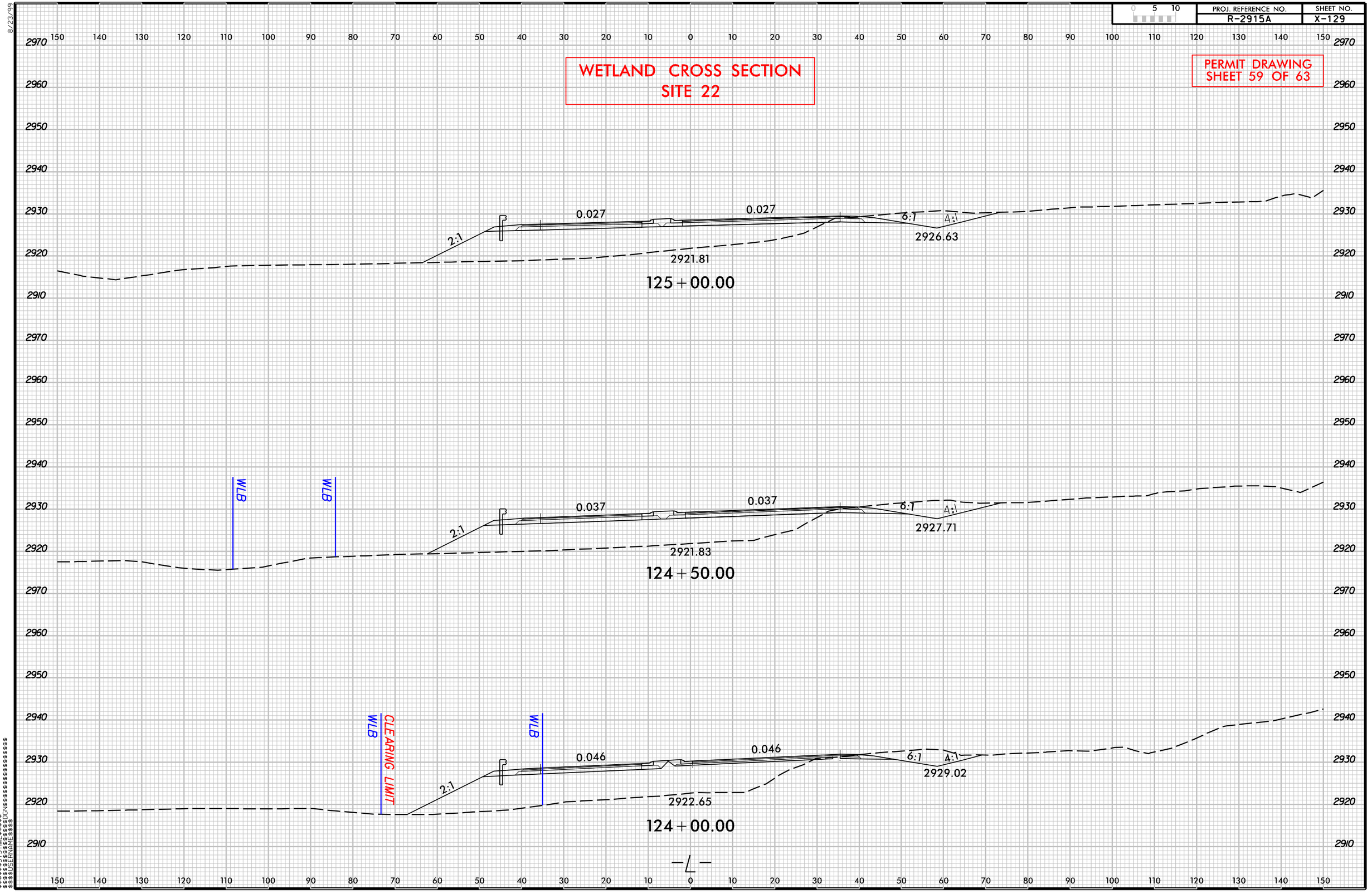
$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915A	X-129

WETLAND CROSS SECTION
SITE 22

PERMIT DRAWING
SHEET 59 OF 63



$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$

PERMIT DRAWING
SHEET 60 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

100′ 0′ 100′ 200′ 300′
GRAPHIC SCALE

DENOTES IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

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(80) ROCK GAP LIMITED PARTNERSHIP
DB 249 PG 2135

SITE 24

CHURCHES OF CHRIST IN CHRISTIAN
DB V5 PG 80
(82)

ARLETTE E. HEMPEN
JOYCE A. CHASTANG
DB 221PG 1532

(89) LARRY KEITH BLACKBURN
DB 138 PG 1218
DB 209PG 2420
DB 124 PG 356
DB 124 PG 357
PB. 75, PG. 24

BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL ZZ
STANDARD BASE DITCH SEE DETAIL JJ
EST 8 TONS CL B RIP RAP
EST 21 SY FILT FAB

GAP CREEK

POSSIBLE JUNCTION BOX APPROXIMATE LOCATION INVERTS INACCESSIBLE

POND WE=2905.3'

6" PVC RISER

TELE. CONDUIT UNDER BRIDGE

EST 8 TONS CL B RIP RAP
EST 21 SY FILT FAB

AT-1 SHOP CURVED R 25'

SHOP CURVED R 30'

SHOP CURVED R 94'

US 221 23' BST

US 221 22'

N 11°16'22.3"W

N 11°06'08.5"E

N 75°38'50.6"W

MATCHLINE -L- STA. 131+00 – SEE SHEET 12

MATCHLINE -L- STA. 144+00 – SEE SHEET 14

DONALD E. BLACKBURN
DB J4 PG 329
(79)

CLAUDE W. SLUDER
MARY NELL WATSON
DB 156 PG 127
(81)

(84) ALEXIS ALBA
DB 331PG 593
DB 330 PG 1503
PB 6 PG 64

(85) MATHEW D. STEVENS
DB 325 PG 1355
PB 6 PG 64

ALEX T. JERNIGAN
ANN S. LETHCOE
DB 354 PG 926
PB 6 PG 64

(86) FS HOLDING, LTD. & BAXTER NORRIS CONSTRUCTION
DB 242 PG 2234
PB 6 PG 64

(87) GENE E. PHILLIPS
DB 164 PG 876
PB 6 PG 64

(88) STEVEN MARK COX
DB 345 PG 1033
DB 412 PG 2240
PB 6 PG 64

SEE SHEET 28 FOR -L- PROFILE
SEE SHEET 32 FOR -Y7- PROFILE

$FILE$
$DATE$

PERMIT DRAWING
SHEET 61 OF 63

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	13
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

100′ 0′ 100′ 200′ 300′
GRAPHIC SCALE

DENOTES IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007 NC GRID

SITE 24

(80) ROCK GAP LIMITED PARTNERSHIP
DB 249 PG 2135

CHURCHES OF CHRIST IN CHRISTIAN
DB V5 PG 80
(82)

ARLETTE E. HEMPEN
JOYCE A. CHASTANG
DB 221PG 1532

(89) LARRY KEITH BLACKBURN
DB 138 PG 1218
DB 209PG 2420
DB 124 PG 356
DB 124 PG 357
PB 75 PG 24

BM6
N 926296 ELEVATION
E 126206
BL STATION 139+22 93'
CHISELED SQUARED IN CO
WALL AT CREEK

MATCHLINE –L– STA. 131+00 – SEE SHEET 12

MATCHLINE –L– STA. 144+00 – SEE SHEET 14

BANK STABILIZATION AT DITCH OUTFALL SEE DETAIL ZZ
STANDARD BASE DITCH SEE DETAIL JJ
EST 8 TONS CL B RIP RAP
EST 21 SY FILT FAB

GAP CREEK

POSSIBLE JUNCTION BOX APPROXIMATE LOCATION INVERTS INACCESSIBLE

POND WE=2905.3'

6" PVC RISER

TELE. CONDUIT UNDER BRIDGE

EST 8 TONS CL B RIP RAP
EST 21 SY FILT FAB

SHOP CURVED R 30'

AT-1 SHOP CURVED R 25'

SHOP CURVED R 94'

N 11°16'22.3"W

N 1°06'08.5"E

S 15°38'50.6"W

SEE DETAIL T FOR PSH

US 221 23' BST

US 221 22'

REMOVE 18" CMP

REMOVE 15" RCP

REMOVE 18" HDPE

REMOVE 24" RCP

REMOVE 48" WD RAIL & 48" WW

REMOVE 36" WD RAIL & 48" WW

REMOVE 48" WD WALL

REMOVE 36" WD WALL

BERM DITCH SEE DETAIL Z

BERM BASE DITCH SEE DETAIL CC

BERM BASE DITCH SEE DETAIL YY

SPECIAL LATERAL BASE DITCH SEE DETAIL E

SPECIAL CUT BASE DITCH SEE DETAIL AA

BERM BASE DITCH SEE DETAIL V

SPECIAL CUT BASE DITCH SEE DETAIL AA

15" SIDE DRAIN

DONALD E. BLACKBURN
DB J4 PG 329
(79)

CLAUDE W. SLUDER
MARY NELL WATSON
DB 156 PG 127
(81)

(84) ALEXIS ALBA
DB 331PG 593
DB 330 PG 1503
PB 6 PG 64

(85) MATHEW D. STEVENS
DB 325 PG 1355
PB 6 PG 64

ALEX T. JERNIGAN
ANN S. LETHCOE
DB 354 PG 926
PB 6 PG 64

(86) FS HOLDING, LTD. & BAXTER NORRIS CONSTRUCTION
DB 242 PG 2234
PB 6 PG 64

(87) GENE E. PHILLIPS
DB 164 PG 876
PB 6 PG 64

(88) STEVEN MARK COX
DB 345 PG 1033
DB 412 PG 2240
PB 6 PG 64

SEE SHEET 28 FOR –L– PROFILE
SEE SHEET 32 FOR –Y7– PROFILE

$FILE$
$DATE$

RS&H
IMPROVING YOUR WORLD
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Middlesboro, Kentucky 606-248-6688
Spartanburg, South Carolina 864 574 4775
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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER 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)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	LPC 15+91 to 16+65	Roadway Fill	0.25	-	-	-	0.03	-	-	-	-	-
1A	LPC 17+34 to 17+43	18" RCP III	0.03	-	-	-	<0.01	-	-	-	-	-
1B	LPC 19+10 to 19+37	Roadway Fill	0.07	-	-	0.02	<0.01	-	-	-	-	-
2	LPC 14+83 to 14+95	3 @ 11'x8' RCBC	-	-	-	-	-	0.03	-	98	-	-
		Bank Stabilization	-	-	-	-	-	0.02	-	60	-	-
		Temporary Diversion	-	-	-	-	-	-	0.02	-	78	-
3	LPC 21+06 to 16+10	1 @ 9'x7' RCBC	-	-	-	-	-	0.03	-	198	-	-
		Bank Stabilization	-	-	-	-	-	<0.01	-	47	-	-
		Temporary Diversion	-	-	-	-	-	-	<0.01	-	67	-
3A	DR5 10+90	7.25' x 5.25' Metal Arch	-	-	-	-	-	<0.01	<0.01	57	10	-
4	L 13+25 to 13+63	Bank Stabilization at outlet of Dissipator Basin	-	-	-	-	-	<0.01	-	19	-	-
5	L 15+13 to 15+36	Bank Stabilization	<0.01	-	-	-	<0.01	<0.01	<0.01	9	10	-
6	L 26+41 to 26+74	Bank Stabilization	-	-	-	-	-	<0.01	-	15	-	-
7	L 15+74 to 16+96	Roadway Fill	-	-	-	-	-	0.01	<0.01	250	10	-
8	L 33+45 to 33+72	Bank Stabilization	-	-	-	-	-	<0.01	-	12	-	-
9	L 45+63 to 45+91	Bank Stabilization	-	-	-	-	-	<0.01	-	10	-	-
10	L 51+79 to 52+12	54" RCP III	-	-	-	-	-	<0.01	-	74	-	-
		Bank Stabilization	-	-	-	-	-	<0.01	<0.01	16	10	-
11	L 65+75 to 66+44	2 @ 9'x6' RCBC	-	-	-	-	-	0.02	-	80	-	-
		Bank Stabilization	-	-	-	-	-	<0.01	<0.01	60	20	-
12	L 75+25 to 75+70	42" RCP III	-	-	-	-	-	<0.01	-	55	-	-
		Bank Stabilization	-	-	-	-	-	<0.01	<0.01	10	20	-
12A	L 75+93 to 76+10	42" RCP III	-	-	-	-	-	-	<0.01	-	10	-
12B	L 76+44 to 76+48	42" RCP III	-	-	-	-	-	-	<0.01	-	10	-
TOTALS:			0.35	-	-	0.02	0.04	0.13	0.04	1070	245	-

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WATAUGA & ASHE COUNTIES
WBS - 34518.1.2 (R-2915A)

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
13	L 79+03 to 79+85	Roadway Fill	-	-	-	-	-	<0.01	<0.01	66	10	-
		Bank Stabilization	-	-	-	-	-	<0.01	<0.01	13	15	-
13A	L 80+15 to 80+42	48" RCP III	-	-	-	-	-	-	<0.01	-	10	-
13B	L 80+79 to 90+03	48" RCP III	-	-	-	-	-	-	<0.01	-	10	-
14	L 84+80 to 84+90	Bank Stabilization	-	-	-	-	-	<0.01	-	13	-	-
15	L 89+14 to 89+19	36" RCP III	-	-	-	-	-	<0.01	-	84	-	-
		Bank Stabilization	-	-	-	-	-	<0.01	<0.01	26	20	-
16	L 91+98 to 92+24	Bank Stabilization	-	-	-	-	-	<0.01	-	9	-	-
17	L 99+59 to 99+76	60" RCP III	-	-	-	-	-	<0.01	-	26	-	-
		Bank Stabilization	-	-	-	-	-	<0.01	<0.01	21	20	-
18	L 100+31 to 106+67	Roadway Fill	0.09	-	<0.01	0.05	-	-	-	-	-	-
19	L 106+99 to 107+12	66" RCP III	-	-	-	-	-	<0.01	-	113	-	-
		Bank Stabilization	-	-	-	-	-	<0.01	<0.01	23	20	-
20	L 111+52 to 111+59	Bank Stabilization	-	-	-	-	-	<0.01	-	9	-	-
21	L 120+56 to 121+06	48" RCP III	0.01	-	<0.01	-	<0.01	-	-	-	-	-
22	L 123+67 to 124+35	18" RCP III	0.03	-	-	-	<0.01	-	-	-	-	-
23	L 129+34 to 129+58	24" RCP III	-	-	-	-	-	<0.01	-	18	-	-
		Bank Stabilization	-	-	-	-	-	<0.01	<0.01	9	10	-
23A	L 129+60 to 129+80	24" RCP III	-	-	-	-	-	-	<0.01	-	10	-
24	L 134+14 to 134+51	Bank Stabilization	-	-	-	-	-	<0.01	-	21	-	-
SHEET TOTALS (SITES 13 - 24)			0.13	-	0.01	0.05	0.01	0.03	0.01	451	125	-
SHEET TOTALS (SITES 1 - 12)			0.35	-	-	0.02	0.04	0.13	0.04	1070	245	-
TOTALS:			0.48	*0.01	0.01	0.08	0.05	0.17	0.05	1521	370	-

*0.01 acre of Temporary Fill in Wetlands in the Hand Clearing areas for erosion control measures.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WATAUGA & ASHE COUNTIES
WBS - 34518.1.2 (R-2915A)

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: R-2915B **County(ies):** Ashe

General Project Information

Project No.:	R-2915B	**Project Type:**	Roadway Widening	**Date:**	1/8/2014
NCDOT Contact:	Jay W. Twisdale, Jr. PE	**Contractor / Designer:**	Brian Elam, PE		
Address:	NCDOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699	**Address:**	Sungate Design Group 915 Jones Franklin Road Raleigh, NC 27606		
Phone:	919-707-6700	**Phone:**	919-859-2243 x207		
Email:	jtwisdale@ncdot.gov	**Email:**	belam@sungatedesign.com		
City/Town:	West Jefferson	**County(ies):**	Ashe		
River Basin(s):	New	**CAMA County?**	No		
Primary Receiving Water:	See Environmental Summary Sheet	**NCDWQ Stream Index No.:**			
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**				
	Supplemental:				
Other Stream Classification:					
303(d) Impairments:					
Buffer Rules in Effect	N/A				

Project Description

Project Length (lin. Miles or feet):	1.77	**Surrounding Land Use:**	Mountainous, Rural, Farmland

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	21.30 ac.	6.40 ac.
Typical Cross Section Description:	Two 12-foot lanes and a 4-foot paved shoulder in each direction with a 23-foot raised median (2-foot 9-inch mountable C&G and 17.5 feet of grass).	Two 12-foot lanes with roadway ditches.
Average Daily Traffic (veh/hr/day):	Design/Future: ADT for 2035 is 20,204	Existing: ADT for 2015 is 12,089

General Project Narrative:

US-221 from North of Idlewild Rd to North of Lemly Rd: Grassed Swales were used throughout the Project to treat the stormwater. These Grassed Swales have side slopes that are 3:1 or flatter, with many typical ditch side slopes being 6:1 and 4:1, have a velocity during the 2-Year Storm of less than 2 feet per second and have a minimum ditch length equivalent to 100 feet per contributing acre. In addition to the Grassed Swales, Preformed Scour Holes are used at many locations. Also, bridge deck drains are not used over open water, reducing impacts caused by direct roadway runoff.

References

Please fill out all yellow cells as completely as possible. Use pick lists where provided. For more information on the NCDOT Stormwater Management Plan form, please refer to the document, NCDOT Stormwater Best Management Practices Toolbox (2008).
Print area may be adjusted to include sheets as needed.

North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: R-2915B **County(ies):** Ashe

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
4	159+80 -L- Rt 161+80 -L- Lt	Stream		Gap Creek		10-1-23	C; Tr+	None	Culvert		
4	162+00 -L- Lt 162+60 -L- Lt	Stream		Gap Creek		10-1-23	C; Tr+	None	Culvert		
5	165+40 -L- Rt 165+45 -L- RT	Stream		Gap Creek		10-1-23	C; Tr+	None	Culvert		
5	165+95 -L- Lt 166+00 -L- Lt	Stream		Gap Creek		10-1-23	C; Tr+	None	Culvert		
5	15+00 -DR2- Lt 13+85-DR2- Rt	Stream		Gap Creek		10-1-23	C; Tr+	None	Culvert		
5	172+60 -L- Lt 172+80 -L- Lt	Wetland		Gap Creek		10-1-23	C; Tr+	None	Fill		
5	173+90 -L- Lt 174+00 -L- Lt	Wetland		Gap Creek		10-1-23	C; Tr+	None	Fill		
6	178+40 -L- Lt 178+50 -L- Lt	Wetland		Gap Creek		10-1-23	C; Tr+	None	Fill		
6	180+00 -L- Lt 182+00 -L- Lt	Wetland		Gap Creek		10-1-23	C; Tr+	None	Fill		
6	186+20 -L- Lt 186+40 -L- Lt	Wetland		Gap Creek		10-1-23	C; Tr+	None	Fill		
6	187+60 -L- Rt 189+40 -L- Lt	Stream		Gap Creek		10-1-23	C; Tr+	None	Culvert		
7	197+20 -L- Lt 198+90 -L- Lt	Stream		Gap Creek		10-1-23	C; Tr+	None	Stabilization		
8	207+00 -L- Rt 207+10 -L- Rt	Wetland		Gap Creek		10-1-23	C; Tr+	None	Fill		
8	209+20 -L- Lt 209+25 -L- Lt	Stream		Gap Creek		10-1-23	C; Tr+	None	Culvert		
8	208+70 -L- Rt 209+60 -L- Rt	Wetland		Gap Creek		10-1-23	C; Tr+	None	Fill		
8	210+00 -L- Lt 210+40 -L- Lt	Wetland		Gap Creek		10-1-23	C; Tr+	None	Excavation		
9	215+50 -L- Rt 217+40 -L- Rt	Wetland		Gap Creek		10-1-23	C; Tr+	None	Fill		

* List all stream and surface water impact locations regardless of jurisdiction or size.
Equalizer Pipes to be noted as a minimization of impacts.
All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

Project/TIP No.: R-2915B **County(ies):** Ashe

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
9	217+40 -L- Lt 217+50 -L- Lt	Stream		Gap Creek		10-1-23	C, Tr+	None	Culvert		
9	217+20 -L- Rt 217+70 -L- Rt	Stream		Gap Creek		10-1-23	C, Tr+	None	Stabilization		
9	222+50 -L- Rt 222+80 -L- Rt	Stream		Gap Creek		10-1-23	C, Tr+	None	Stabilization		
11	242+40 -L- Rt 242+50 -L- Rt	Stream		South Fork New River		10-1-(20.5)	WS-V; HQW	None	Stabilization		
11	243+30 -L- Lt 243+50 -L- Lt	Stream		South Fork New River		10-1-(20.5)	WS-V; HQW	None	Stabilization		

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: R-2915B **County(ies):** Ashe

Swales

Sheet No.	Station (From / To)	Stream Crossing Station	Base Width (ft)	Front Slope (H:V)	Back Slope (H:V)	Drainage Area (ac)	Recommended Treatment Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used
4	160+20 -L- Rt 161+00 -L- Rt	NA	2.0	3	3	0.78	78	80	0.50%	1.5	2.0	2.0	2.6	No
8	211+80 -L- Rt 215+55 -L- Rt	NA	2.0	6	3	0.98	98	375	1.60%	2.4	2.0	3.3	2.2	No
9	224+50 -L- Lt 229+50 -L- Lt	NA	5.0	4	3	4.70	470	500	0.70%	7.1	2.0	9.4	2.1	No
10	233+80 -L- Rt 238+00 -L- Rt	NA	2.0	3	3	2.10	210	420	0.31%	5.6	1.5	7.4	1.6	No
11	244+00 -L- Lt 247+00 -L- Lt	NA	3.0	3	3	1.70	170	300	1.50%	4.2	2.2	5.5	2.4	No
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☐ YES ☑ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanantion of why design criteria was not met.

Additional Comments

2yr velocity requirement not met for swale at 244+00 -L- LT due to ditch slope.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: R-2915B **County(ies):** Ashe

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)
5	165+00 -L- Lt	PFSH	Class 'B'	0.64	Pipe	15	2.4	0.8
5	171+50 -L- Lt	PFSH	Class 'B'	1.18	Pipe	15	4.4	1.0
5	174+00 -L- Lt	Riprap Apron / Pad	Class I	18.19	Pipe	30	28.6	1.9
6	178+50 -L- Lt	Riprap Apron / Pad	Class I	4.57	Pipe	24	7.8	1.3
6	182+75 -L- Lt	PFSH	Class 'B'	3.86	Pipe	18	8.9	1.4
6	186+43 -L- Lt	PFSH	Class 'B'	0.19	Pipe	15	0.9	0.6
7	200+00 -L- Rt	PFSH	Class 'B'	0.20	Pipe	15	0.8	0.5
8	204+00 -L- Rt	PFSH	Class 'B'	2.18	Pipe	15	4.7	1.1
8	206+50 -L- Rt	PFSH	Class 'B'	2.33	Pipe	15	4.0	1.0
8	211+27 -L- Rt	PFSH	Class 'B'	2.14	Pipe	15	4.7	1.1
9	216+75 -L- Rt	PFSH	Class 'B'	1.06	Pipe	15	4.8	1.1
9	221+95 -L- Rt	PFSH	Class 'B'	0.16	Pipe	15	0.6	0.5
10	231+50 -L- Rt	PFSH	Class 'B'	0.33	Pipe	15	1.2	0.6
10	232+80 -L- Rt	PFSH	Class 'B'	0.13	Pipe	15	0.5	0.4
10	238+00 -L- Lt	PFSH	Class 'B'	0.61	Pipe	15	2.5	0.8

☑ YES ☐ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox (2008), NCDOT Standard Details, or FHWA HEC-14 (July 2006), been met and verified, as applicable? If No, provide further explanantion of why design criteria was not met.

Additional Comments

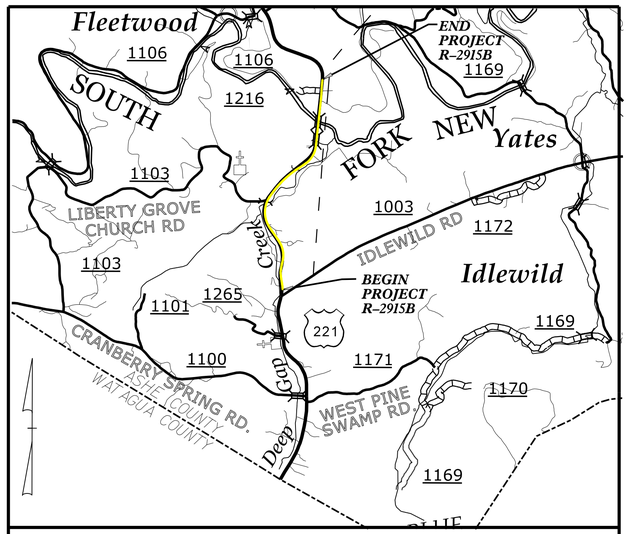
* Refer to the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), NCDOT Standard Details, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

09/08/99

TIP PROJECT: R-2915B

CONTRACT:

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



VICINITY MAP

RW PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ASHE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34518.1.3	STP-0221(40)	P.E.
34518.2.FR2	STP-0221(40)	R /W
34518.2.UFR2	STP-0221(40)	UTILITIES

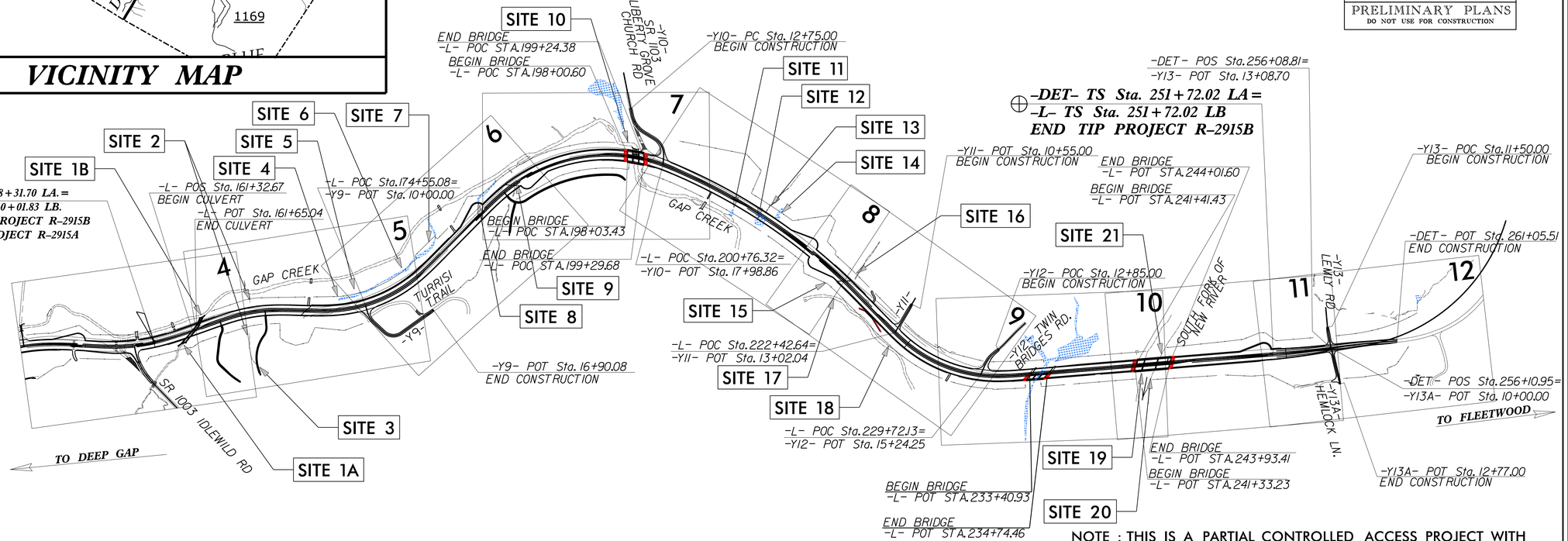
PERMIT DRAWING
SHEET 1 OF 31

LOCATION: US 221 FROM SR 1003 (IDLEWILD ROAD) TO NORTH OF SOUTH FORK NEW RIVER

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

NAD 83/CORS

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTE : THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO ONE DRIVEWAY PER PARCEL.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

WETLAND AND SURFACE WATER IMPACTS PERMIT

NCDOT CONTACT: BRENDA L. MOORE, P.E.

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 2015 = 12,089
ADT 2035 = 20,204
DHV = 10 %
D = 65 %
T = 9 % *
V = 50 MPH
* TTST 2% DUAL 7%
FUNC CLASS = ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2915B = 1.675 MILES
LENGTH STRUCTURE TIP PROJECT R-2915B = 0.094 MILES
TOTAL LENGTH TIP PROJECT R-2915B = 1.769 MILES

Prepared in the Office of:
CDM Smith
5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 30, 2013

LETTING DATE:
JUNE 16, 2015

DOUGLAS B. SAUNDERS, P.E.
PROJECT ENGINEER

RICKY E. STATON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

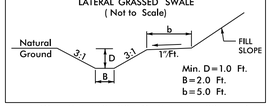
6/6/2014
R2915B_Hyd_prm_wet_psh_01.dgn
bclem

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	2-B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 2 OF 31

DETAIL #1
LATERAL GRASSED SWALE
(Not to Scale)



Min. D=1.0 Ft.
B=2.0 Ft.
b=5.0 Ft.

FROM STA. 160+20 TO STA. 161+00 –L– RT
FROM STA. 215+00 TO STA. 217+40 –L– LT
FROM STA. 234+35 TO STA. 238+00 –L– RT

DETAIL #2
TOE PROTECTION
(Not to Scale)

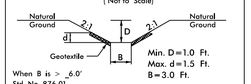


d=2.0 Ft.
b=2.0 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA. 161+00 TO STA. 161+70 –L– RT
FROM STA. 197+50 TO STA. 197+80 –L– RT
FROM STA. 250+00 TO STA. 251+50 –L– RT
FROM STA. 251+00 TO STA. 252+50 –L– LT

DETAIL #3
STANDARD BASE DITCH
(Not to Scale)



When B is > 6.0'
Std. No. 876.01

Min. D=1.0 Ft.
Max. d=1.5 Ft.
B=3.0 Ft.

Type of Liner= Class 'I' Rip-Rap

STA. 166+00 –L– LT

DETAIL #4
SPECIAL CUT DITCH
(Not to Scale)

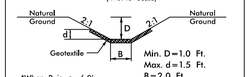


Type of Liner= PSRM

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

FROM STA. 10+50 TO STA. 16+00 –Y9– LT & RT
FROM STA. 16+20 TO STA. 16+90 –Y9– RT
FROM STA. 10+50 TO STA. 12+10 –Y7A– RT
FROM STA. 10+50 TO STA. 12+50 –Y7A– LT
FROM STA. 11+50 TO STA. 12+50 –Y7– LT
FROM STA. 10+50 TO STA. 15+43 –DR1– RT & LT
FROM STA. 10+50 TO STA. 14+90 –DR2– RT & LT
FROM STA. 11+30 TO STA. 15+00 –DR3– RT & LT
FROM STA. 17+00 TO STA. 19+72 –DR3– RT & LT

DETAIL #5
STANDARD BASE DITCH
(Not to Scale)



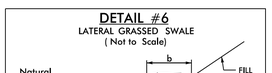
*When B is < 6.0'

Min. D=1.0 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.

Type of Liner= Class 'I' Rip-Rap

STA. 16+50 –Y9– LT

DETAIL #6
LATERAL GRASSED SWALE
(Not to Scale)



Min. D=1.0 Ft.
B=6.0 Ft.
b=5.0 Ft.

FROM STA. 180+00 TO STA. 182+00 –L– LT

DETAIL #7
SPECIAL CUT DITCH wHINGE
(Not to Scale)



Min. D=1.0 Ft.

FROM STA. 196+50 TO STA. 197+00 –L– RT

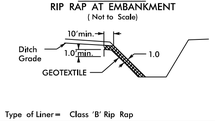
DETAIL #8
STANDARD BASE DITCH
(Not to Scale)



Min. D=1.0 Ft.
B=2.0 Ft.

FROM STA. 198+80 TO STA. 199+55 –L– LT

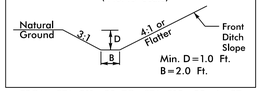
DETAIL #9
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= Class 'B' Rip Rap

FROM STA. 198+70 TO STA. 198+90 –L– LT
FROM STA. 217+27 TO STA. 217+40 –L– LT
FROM STA. 242+50 TO STA. 242+70 –L– RT
FROM STA. 243+40 TO STA. 243+60 –L– LT

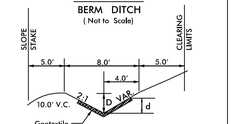
DETAIL #10
SPECIAL CUT GRASSED SWALE
(Not to Scale)



Min. D=1.0 Ft.
B=2.0 Ft.

FROM STA. 211+80 TO STA. 215+55 –L– RT

DETAIL #11
BERM DITCH
(Not to Scale)

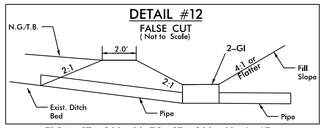


Min. D=1.0 Ft.
Max. d=1.5 Ft.

Type of Liner= Class 'I' Rip Rap

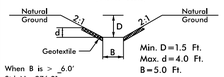
FROM STA. 171+50 TO STA. 172+75 –L– RT

DETAIL #12
FALSE CUT
(Not to Scale)



FROM STA. 208+80 TO STA. 209+60 –L– LT

DETAIL #13
STANDARD BASE DITCH
(Not to Scale)



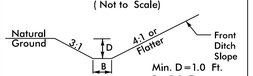
When B is > 6.0'
Std. No. 876.01

Min. D=1.5 Ft.
Max. d=4.0 Ft.
B=5.0 Ft.

Type of Liner= Class 'I' Rip-Rap (Bank Stabilization)

STA. 217+50 –L– RT

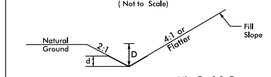
DETAIL #14
SPECIAL CUT GRASSED SWALE
(Not to Scale)



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

FROM STA. 222+50 TO STA. 229+50 –L– LT

DETAIL #15
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

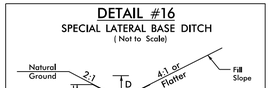


Min. D=1.0 Ft.
Max. d=1.0 Ft.

Type of Liner= PSRM

FROM STA. 10+55 TO STA. 12+18 –Y11– RT
FROM STA. 13+95 TO STA. 14+55 –Y12– RT

DETAIL #16
SPECIAL LATERAL BASE DITCH
(Not to Scale)

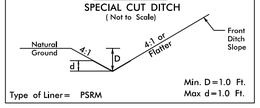


Min. D=1.0 Ft.
Max. d=1.0 Ft.
B=3.0 Ft.

Type of Liner= PSRM

FROM STA. 11+50 TO STA. 12+35 –Y11– LT

DETAIL #17
SPECIAL CUT DITCH
(Not to Scale)

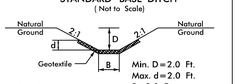


Type of Liner= PSRM

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

FROM STA. 252+00 TO STA. 255+50 –DET– RT
FROM STA. 253+00 TO STA. 255+50 –DET– LT
FROM STA. 256+42 TO STA. 261+05 –DET– RT
FROM STA. 256+50 TO STA. 260+50 –DET– LT

DETAIL #18
STANDARD BASE DITCH
(Not to Scale)



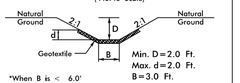
*When B is < 6.0'

Min. D=2.0 Ft.
Max. d=2.0 Ft.
B=2.0 Ft.

Type of Liner= Class 'B' Rip-Rap

STA. 13+35 –Y10– RT

DETAIL #19
STANDARD BASE DITCH
(Not to Scale)



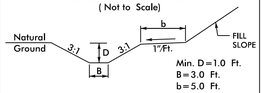
*When B is < 6.0'

Min. D=2.0 Ft.
Max. d=2.0 Ft.
B=3.0 Ft.

Type of Liner= Class 'I' Rip-Rap (Bank Stabilization)

STA. 222+69 –L– RT

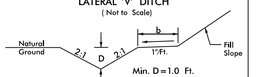
DETAIL #20
LATERAL GRASSED SWALE
(Not to Scale)



Min. D=1.0 Ft.
B=3.0 Ft.
b=5.0 Ft.

FROM STA. 244+00 TO STA. 247+00 –L– LT

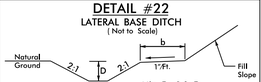
DETAIL #21
LATERAL 'V' DITCH
(Not to Scale)



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

FROM STA. 247+00 TO STA. 249+00 –L– LT

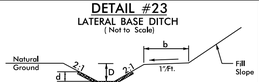
DETAIL #22
LATERAL BASE DITCH
(Not to Scale)



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

FROM STA. 242+60 TO STA. 248+50 –L– RT

DETAIL #23
LATERAL BASE DITCH
(Not to Scale)



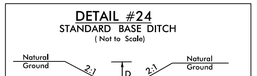
*When B is < 6.0'

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

Type of Liner= CL 'I' Rip-Rap

FROM STA. 248+50 TO STA. 250+00 –L– RT

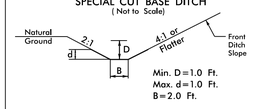
DETAIL #24
STANDARD BASE DITCH
(Not to Scale)



Min. D=1.0 Ft.
B=3.0 Ft.

FROM STA. 243+50 TO STA. 244+00 –L– LT

DETAIL #25
SPECIAL CUT BASE DITCH
(Not to Scale)

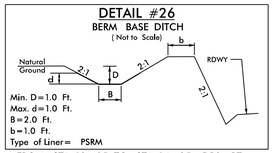


Min. D=1.0 Ft.
Max. d=1.0 Ft.
B=2.0 Ft.

Type of Liner= PSRM

FROM STA. 14+50 TO STA. 14+90 –DR2– LT
FROM STA. 14+25 TO STA. 14+35 –DR2– RT

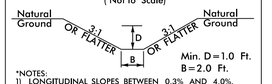
DETAIL #26
BERM BASE DITCH
(Not to Scale)



Min. D=1.0 Ft.
Max. d=1.0 Ft.
B=2.0 Ft.
b=1.0 Ft.
Type of Liner= PSRM

FROM STA. 13+85 TO STA. 14+25 –DR2– RT

DETAIL #27
STANDARD BASE GRASSED SWALE
(Not to Scale)



Min. D=1.0 Ft.
B=2.0 Ft.

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

FROM STA. 233+80 TO STA. 234+35 –L– RT

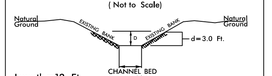
DETAIL #28
LATERAL BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
B=2.0 Ft.
b=5.0 Ft.

FROM STA. 215+00 TO STA. 217+40 –L– LT

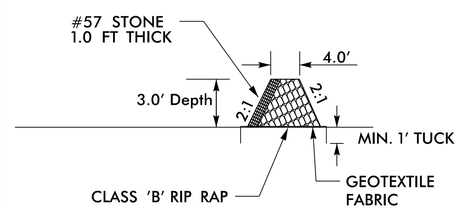
DETAIL #29
PIPE OUTLET CHANNEL
(Not to Scale)



Length=12 Ft.
D=3.0 Ft.
Est.= 15 Tons of Class 'I' Rip-Rap

STA. 189+40 –L– LT

DETAIL #30
FILTER BERM SECTION VIEW
(Not to Scale)



EST 10 TONS #57 STONE
EST 40 TONS CL B RIP RAP
EST 70 SY GEOTEXTILE

STA. 198+00 –L– RT

6/13/2014
R2915B_hyd_DETAILS.dgn
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	2-C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 3 OF 31

DETAIL #31

(NOT TO SCALE)

SKEWED MULTI–BARREL CULVERT LOW FLOW CHANNEL,SILLS AND FLOOD PLAIN

*NOTES:

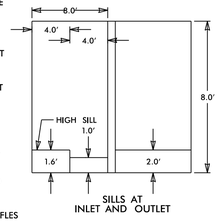
1) NATIVE MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE THE STREAM OR FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP–RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL IN THE HIGH FLOW CULVERT BARREL(S). IF RIP–RAP IS USED TO LINE THE HIGH FLOW CULVERT BARREL(S), NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS/BAFFLES ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

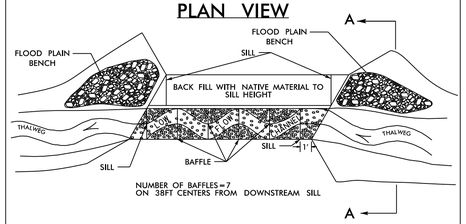
3) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

4) DO NOT SET ELEVATION OF HIGH SILL/BAFFLES ABOVE BANK FULL.

5) NUMBER OF SILL/BAFFLES DETERMINED BY THE ENGINEER.

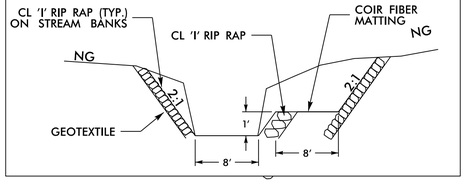


PLAN VIEW



SECTION A–A

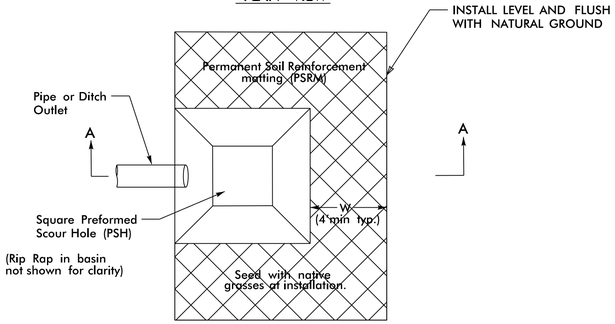
INLET AND OUTLET CHANNEL



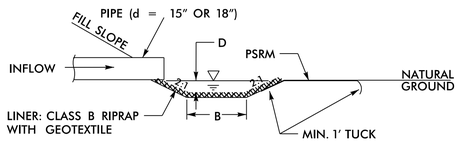
PREFORMED SCOUR HOLE

*NOT TO SCALE

PLAN VIEW



SECTION A–A



STATION	B FT.	D FT.	CLASS B RIP RAP TONS	DDE (CU YD)	GEOTEXTILE FABRIC (SQ YD)	PSRM (SQ YD)
FOR 15" PIPE	4.0	1.0	7	19.6	20	30
165+00 -L- LT	4.0	1.0	7	19.6	20	30
171+50 -L- LT	4.0	1.0	7	19.6	20	30
186+43 -L- LT	4.0	1.0	7	19.6	20	30
200+00 -L- RT	4.0	1.0	7	19.6	20	30
204+00 -L- RT	4.0	1.0	7	19.6	20	30
206+50 -L- RT	4.0	1.0	7	19.6	20	30
211+27 -L- RT	4.0	1.0	7	19.6	20	30
216+75 -L- RT	4.0	1.0	7	19.6	20	30
221+95 -L- RT	4.0	1.0	7	19.6	20	30
231+50 -L- RT	4.0	1.0	7	19.6	20	30
232+80 -L- RT	4.0	1.0	7	19.6	20	30
238+00 -L- LT	4.0	1.0	7	19.6	20	30
TOTAL			84	236	240	360
FOR 18" PIPE	6.0	1.0	10	28.0	27	35
182+75 -L- LT	6.0	1.0	10	28.0	27	35
TOTAL			10	28	27	35
GRAND TOTAL			157	440	447	665

6/6/2014
R-2915B_hyd_DETAILS.dgn
tmilam

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC CDA No. F-0412
SUNGATE DESIGN GROUP, P.A., 915 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

PERMIT DRAWING SHEET 4 OF 31

REVISIONS

5/14/99

NAD 83 /CORS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-L- CS Sta. 158+31.70 LA.=
-L- CS Sta. 160+01.83 LB.
BEGIN TIP PROJECT R-2915B
END TIP PROJECT R-2915A

HERBERT D. WATSON, L/E
CATHERINE R. CLARK
SHANE VANNOY, LLC
HUBERT E. HAMILTON
RAY T. SMITH, ET.AL
FS HOLDING, LTD. & BAXTER NORRIS CONSTRUCTION
KAREN FLOWE PRESLAR
AMY F. ROSE
AREA UNDER CONSTRUCTION
SHANE VANNOY, LLC
RICHARD FAYKO, JR. AND WIFE DONNA FAYKO
BRUCE R. GREENE AND WIFE RETA H. GREENE
KEITH BLACKBURN
LAVERNE E. WATSON
MARTHA D. WATSON
BAXTER DERRICK HARDIN
LONNIE MILLER
KENNETH DAY
WENDELL WILCOX
TRUSTEES OF MORNING STAR BAPTIST CHURCH
THOMAS R. GRIGGS
PATRICIA D. GRIGGS
CHARLES G. DEAL
VIOLA A. DEAL
THOMAS R. GRIGGS
DEAN POTTER

-L- TS Sta. 162+63.70
-L- POT Sta. 161+65.04
END CULVERT
-L- ST Sta. 161+55.70
-L- POS Sta. 161+32.67
BEGIN CULVERT
-L- POS Sta. 163+50.44=
-DRI- POT Sta. 10+00.00

SITE 1B
SITE 1A

CL 'I' RIP RAP
STREAM BANK STABILIZATION AND FLOODPLAIN BENCH
EST. 15 TONS
SEE DETAIL #31

SHOULDER BERM GUTTER FROM STA 140+25 TO STA 162+63 -L- LT

-DRI- PC Sta. 10+53.29
-DRI- PRC Sta. 10+88.19
TOE PROTECTION
CL 'B' RIP RAP
SEE DETAIL#2

-DRI- PT Sta. 11+61.45

CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GF

LAT 2' GRASSED SWALE
SEE DETAIL #1

-DRI- PC Sta. 12+79.58

-DRI- PT Sta. 13+49.50

LINE PROP DITCH W/PSRM
EST. 660 SY
SEE DETAIL #4

-DRI- PC Sta. 14+35.40

-DRI- PT Sta. 14+98.10

-DRI- POT Sta. 15+43.00

-L- POC Sta. 164+00.00

MATCH TO SHEET 5 -L- POC Sta. 164+00.00

BM#7

SEE SHEET 13 FOR -L- PROFILE
SEE SHEET 20 FOR -DRI- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

6/6/2014
R2915B_Hyd_prm_wet_psh_04.dgn

PERMIT DRAWING
SHEET 5 OF 31

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC COA No. F-0412
SUNGATE DESIGN GROUP, P.A., 915 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

NAD 83 / CORS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-L- CS Sta. 158+31.70 LA. =
-L- CS Sta. 160+01.83 LB.
BEGIN TIP PROJECT R-2915B
END TIP PROJECT R-2915A

SITE 1B

SITE 1A

MATCH TO SHEET 5 – -L- POC Sta. 164+00.00

-L- TS Sta. 162+63.70
-L- POT Sta. 161+65.04
END CULVERT
-L- ST Sta. 161+55.70
-L- POS Sta. 161+32.67
BEGIN CULVERT
-L- POS Sta. 163+50.44=
-DRI- POT Sta. 10+00.00
-DRI- PC Sta. 10+53.29
-DRI- PRC Sta. 10+88.19
-DRI- PT Sta. 11+61.45
-DRI- PC Sta. 12+79.58
-DRI- PT Sta. 13+49.50
-DRI- PC Sta. 14+35.40
-DRI- PT Sta. 14+98.10
-DRI- POT Sta. 15+43.00

HERBERT D. WATSON, L/E
CATHERINE R. CLARK
HUBERT E. HAMILTON
SHANE VANNOY, LLC
SHANE VANNOY, LLC
RICHARD FAYKO, JR. AND WIFE DONNA FAYKO
BRUCE R. GREENE AND WIFE RETA H. GREENE
KEITH BLACKBURN
LAVERNE E. WATSON MARTHA D. WATSON
BAXTER DERRICK HARDIN LONNIE MILLER KENNETH DAY WENDELL WILCOX TRUSTEES OF MORNING STAR BAPTIST CHURCH
THOMAS R. GRIGGS PATRICIA D. GRIGGS CHARLES G. DEAL VIOLA A. DEAL
THOMAS R. GRIGGS PATRICIA D. GRIGGS CHARLES G. DEAL VIOLA A. DEAL
THOMAS R. GRIGGS
DEAN POTTER
RAY T. SMITH, ET.AL
F.S HOLDING, LTD. & BAXTER NORRIS CONSTRUCTION
KAREN FLOWE PRESLAR AMY F. ROSE

AREA UNDER CONSTRUCTION
TELE. CONDUIT UNDER BRIDGE
CL 'I' RIP RAP STREAM BANK STABILIZATION AND FLOODPLAIN BENCH EST. 15 TONS SEE DETAIL #31
SHOULDER BERM GUTTER FROM STA 160+25 TO STA 162+63 -L- LT
GRADE TO DRAIN
15" RCP IV
TB 2GI
2GI
CL 'I' RIP RAP STREAM BANK STABILIZATION AND FLOODPLAIN BENCH EST 45 TONS SEE DETAIL #31
TOE PROTECTION CL 'B' RIP RAP SEE DETAIL#2
CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF
LAT 2' GRASSED SWALE SEE DETAIL #1
REMOVE
LINE PROP DITCH W/PSRM EST. 660 SY SEE DETAIL #4
GRAU 350
BM#7
N 8°58'22.7" W
N 44°51'00.2" E

SEE SHEET 13 FOR -L- PROFILE
SEE SHEET 20 FOR -DRI- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

REVISIONS

5/14/99

6/6/2014
R2915B_hyd_prm_wet_psh_04_con.dgn

8/17/99

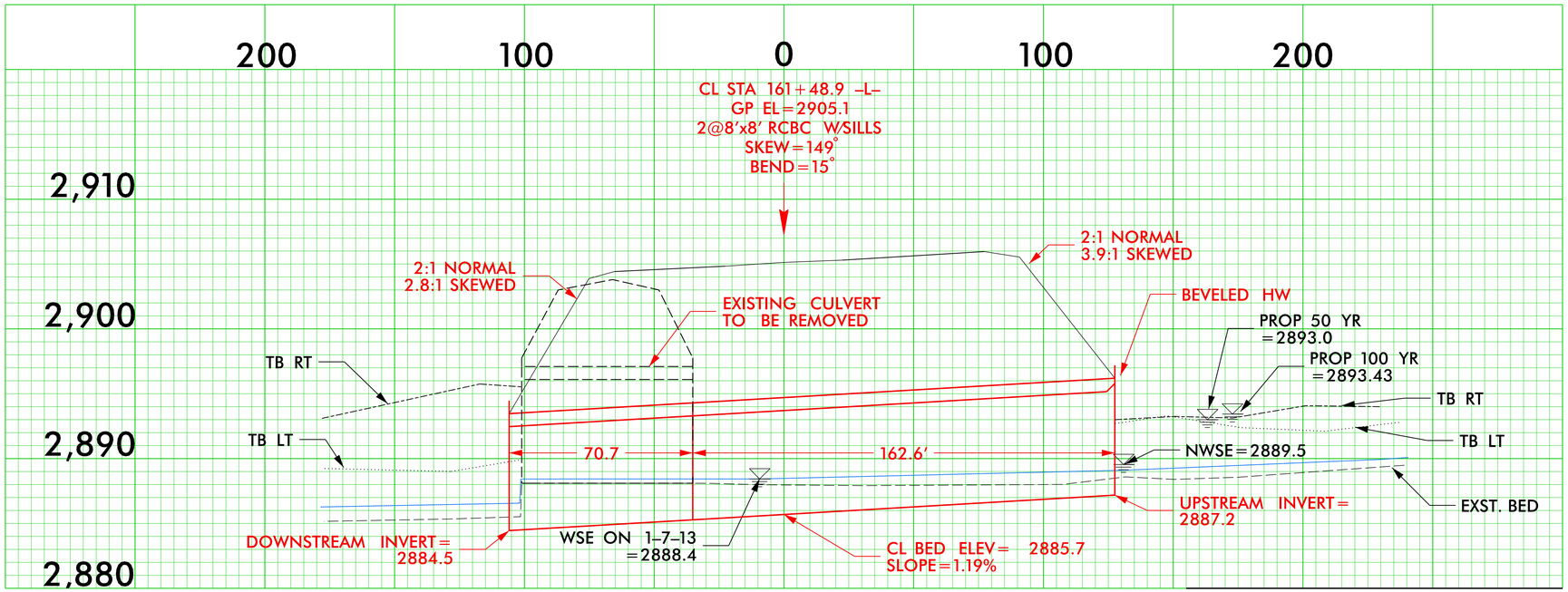
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	CULV
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 6 OF 31



6/6/2014
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kalam

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC CDA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 915 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

PERMIT DRAWING SHEET 7 OF 31

NAD 83 /CORS

F F — DENOTES FILL IN WETLAND

S S — DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

-L- SC Sta. 165+69.70

-L- CS Sta. 166+59.74

-L- POS Sta.167+00.00

-DR2- POT Sta. 10+00.00

-L- SRS Sta. 169+65.74

-L- SC Sta. 172+71.74

-L- POC Sta.174+55.08=
-Y9- POT Sta. 10+00.00

-L- POC Sta. 164+00.00

-L- POC Sta. 177+00.00

MATCH TO SHEET 4

MATCH TO SHEET 6

MATCH TO SHEET 9

-Y9- POT Sta. 15+00.00

RICHARD FAYKO, JR. AND WIFE DONNA FAYKO (2)

BRUCE R. GREENE AND WIFE RETA H. GREENE (8)

CATHERINE GREEN (17)

KETINA CORPORATION (16, 16A, 16B, 16C)

CHARLES COOK AND WIFE ANITA COOK

THOMAS R. GRIGGS, PATRICIA D. GRIGGS, CHARLES G. DEAL, VIOLA A. DEAL (7)

BAXTER DERRICK HARDIN (13)

MICHAEL W. MAYNARD, DEBORAH BROWN (14)

SITE 2

SITE 3

SITE 4

SITE 5

3' TAIL DITCH W/CL 'I' RIP RAP
EST. 11 TONS
EST. 22 SY GF
SEE DETAIL #3

SHOULDER BERM GUTTER
STA. 170+50 TO STA 182+75 -L- LT

CL 'I' RIP RAP
EST 7 TONS
EST. 15 SY GF

GRADE TO DRAIN

REMOVE

SPECIAL DITCH GRADE
STA. 164+50 TO 166+00 -L- RT
SEE PROFILE

BERM DITCH
STA 164+45 – 169+05 -L- RT

LINE PROP DITCH W/PSRM
EST. 660 SY
SEE DETAIL #4

BERM DITCH
STA 170+65 – 171+50 -L- RT

BERM DITCH W/CL 'I' RIP RAP
SEE DETAIL #11

LINE PROP DITCH W/PSRM
EST. 720 SY
SEE DETAIL #4

BERM 2' BASE DITCH W/PSRM
SEE DETAIL #26

2' BASE DITCH W/PSRM
SEE DETAIL #25

SPECIAL DITCH GRADE
WITH END CONSTRUCTION
SEE DETAIL #19

-DR2- PC Sta. 11+21.48

-DR2- PRC Sta. 11+93.20

-DR2- PT Sta. 14+59.21

-DR2- POT Sta.14+90.00

-DR2- POT Sta. 15+06.93

-Y9- PC Sta. 10+55.24

-Y9- PT Sta. 11+49.53

-Y9- PC Sta. 12+55.49

-Y9- PT Sta. 13+92.44

N 87° 52' 01.2" E

N 53° 23' 06.7" E

N 25° 04' 38.6" W

SEE SHEET 13 FOR -L- PROFILE
SEE SHEET 18 FOR -Y9- PROFILE
SEE SHEET 20 FOR -DR2- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

REVISIONS 5/14/99

6/6/2014
R2915B_sht_prm_wet_tsh_05.dgn
dsmith

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Camp Dresser & McKee
5400 Glenwood Avenue
Suite 300
Raleigh, NC 27612-3228
NC COA No. P-0412

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

PERMIT DRAWING
SHEET 8 OF 31

NAD 83 /CORS

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

REVISIONS

5/14/99

-L- SC Sta. 165+69.70

-L- CS Sta. 166+59.74

-L- POS Sta. 167+00.00
-DR2- POT Sta. 10+00.00

-L- SRS Sta. 169+65.74

-L- POC Sta. 164+00.00

-L- POC Sta. 177+00.00

MATCH TO SHEET 4 -L- POC Sta. 164+00.00

MATCH TO SHEET 6 -L- POC Sta. 177+00.00

MATCH TO SHEET 6 -Y9- POC Sta. 15+00.00

RICHARD FAYKO, JR.
AND WIFE
DONNA FAYKO

BRUCE R. GREENE
AND WIFE
RETA H. GREENE

CATHERINE GREEN

CHARLES COOK
AND WIFE
ANITA COOK

THOMAS R. GRIGGS
PATRICIA D. GRIGGS
CHARLES G. DEAL
VIOLA A. DEAL

BAXTER DERRICK HARDIN

MICHAEL W. MAYNARD
DEBORAH BROWN

KETINA CORPORATION

KETINA CORPORATION

SITE 2

SITE 3

SITE 4

SITE 5

3' TAIL DITCH W/CL 'I' RIP RAP
EST. 11 TONS
EST. 22 SY GF
SEE DETAIL #3

GRADE TO DRAIN

REMOVE

SPECIAL DITCH GRADE
STA 164+50 TO 166+00 -L- RT
SEE PROFILE

BERM DITCH
STA 164+45 - 166+05 -L- RT

LINE PROP DITCH W/PSRM
EST. 660 SY
SEE DETAIL #4

BERM 2' BASE DITCH W/PSRM
SEE DETAIL #26

2' BASE DITCH W/PSRM
SEE DETAIL #25

-DR2- PC Sta. 11+21.48

-DR2- PRC Sta. 11+93.20

-DR2- PT Sta. 14+59.21

-DR2- POT Sta. 14+90.00

-DR2- PT Sta. 15+06.93

BERM DITCH
STA 170+65 - 171+50 -L- RT

BERM DITCH
W/CL 'K' RIP RAP
SEE DETAIL #11

-Y9- PC Sta. 10+55.24

-Y9- PT Sta. 11+49.53

-Y9- PC Sta. 12+55.49

-Y9- PT Sta. 13+92.44

SHOULDER BERM GUTTER
STA. 170+50 TO STA
182+75 -L- LT

CL 'I' RIP RAP
EST. 7 TONS
EST. 15 SY GF

-L- SC Sta. 172+71.74

-L- POC Sta. 174+55.08=
-Y9- POT Sta. 10+00.00

SPRING BOX

ACCESS PT.

ACCESS EASEMENT OVER LAND DESCRIBED IN DEED BOOK 1965, PG. 273 WITH LOCATION NOT DISCLOSED PER DB. 1965, PG. 273

N 81°52'07.2" E

N 55°23'06.7" E

N 25°04'38.6" W

SEE SHEET 13 FOR -L- PROFILE
SEE SHEET 18 FOR -Y9- PROFILE
SEE SHEET 20 FOR -DR2- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

6/6/2014
R2915B_Hyd-prm_wet_psh_05_con.dgn
kellam

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A., 915 JONES FRANKLIN ROAD, RALEIGH NORTH CAROLINA 27606, NC COA No. C-0890

PERMIT DRAWING SHEET 9 OF 31

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83 / CORS

REVISIONS

5/14/99

SITE 6

SITE 7

SITE 8

SITE 9

-L- CS Sta. 178+39.62

-L- ST Sta. 181+45.62

-L- TS Sta. 185+41.14

-L- SC Sta. 188+47.14

-L- POS Sta. 188+09.10=
-DR3- POT Sta. 10+00.00

-DR3- PC Sta. 10+54.16

-DR3- PRC Sta. 12+02.77

-DR3- POT Sta. 11+16.30=
-DR3B- POT Sta. 10+00.00

-DR3B- PC Sta. 10+81.99

-DR3B- PT Sta. 11+31.74

-DR3B- POT Sta. 12+35.00
END CONSTRUCTION

-DR3B- POT Sta. 12+57.84

-Y9- POT Sta. 16+90.08
END CONSTRUCTION

MATCH TO SHEET 5 -L- POC Sta. 177+00.00

MATCH TO SHEET 7 -L- POC Sta. 190+00.00

MATCH TO SHEET 5 -Y9- POT Sta. 15+00.00

CATHERINE GREEN (17)

KETINA CORPORATION (16, 16B, 16C)

JONATHAN ROY COLLINS
TERRY LYNN IRISH (19)

JAMES D. ALEXANDER
DONNA T. ALEXANDER (22)

R.C. MILLER
ZELMA MILLER
DOUGLAS M. RUDERSDORF (21)

GARY E. TAYLOR
VICKIE TAYLOR (24)

RICHARD E. WATSON
LISA H. WATSON (23)

OAK RIDGE CONSTRUCTION, INC. (20)

RODNEY C. OLIVER
MILLICENT J. OLIVER (18)

LAT 6' GRASSED SWALE W/COIR FIBER MATTING EST. 340 SY SEE DETAIL #6

SHOULDER BERM GUTTER FROM STA 170+50 TO STA 182+75 -L- LT

CL 'I' RIP RAP EST. 7 TONS EST. 15 SY GF

CL 'B' RIP RAP EST. 1 TON EST. 5 SY GF

CL 'I' RIP RAP (BANKS ONLY) SEE DETAIL #29

PDE

ACCESS PT

GRAU 350

CAT 1

15" CSP W/ELBOW

18" RCP-III W/2 ELBOWS

15" RCP-III

15" RCP-IV

24" W/ELBOW

REMOVE

TB 2GI

2GI

DI

FS

2GI-A

BDO

LINE PROP DITCH W/PSRM EST. 730 SY SEE DETAIL #4

2' BASE DITCH W/CL 'I' RIP RAP EST. 70 TONS EST. 120 SY GF SEE DETAIL #5

LINE EXTG DITCH W/PSRM EST. 120 SY

SPECIAL CUT DITCH W/PSRM SEE DETAIL #4

72" ROCK WALL

TURRISI TRAIL 18' BST

US 221 22' BST

N 34° 48' 05.0" W

N 25° 04' 38.6" W

N 64° 47' 42.5" E

S 64° 49' 06.1" E

S 71° 58' 40.5" E

SEE SHEET 14 FOR -L- PROFILE
SEE SHEET 18 FOR -Y9- PROFILE
SEE SHEET 19 FOR -DR3- PROFILE
SEE SHEET 19 FOR -DR3B- PROFILE
SEE SHEET 2-E FOR U-TURN BULB DETAILS
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

6/6/2014
R-2915B_sht_prld_prm_wet_psh_06.dgn
kbrown

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83 / CORS

PERMIT DRAWING SHEET 10 OF 31

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A., 915 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

REVISIONS

5/14/99

MATCH TO SHEET 5 –L– POC Sta. 177+00.00

MATCH TO SHEET 7 –L– POC Sta. 190+00.00

MATCH TO SHEET 5 –Y9– POT Sta. 15+00.00

–L– CS Sta. 178+39.62

–L– ST Sta. 181+45.62

–L– TS Sta. 185+41.14

–L– SC Sta. 188+47.14

–L– POS Sta. 188+09.10=
–DR3– POT Sta. 10+00.00

–DR3– PC Sta. 10+54.16

–DR3– PRC Sta. 12+02.77

–DR3– POC Sta. 11+16.30=
–DR3B– POT Sta. 10+00.00

–DR3B– PC Sta. 10+81.99

–DR3B– PT Sta. 11+31.74

–DR3B– POT Sta. 12+35.00
END CONSTRUCTION

–DR3B– POT Sta. 12+57.84

–Y9– POT Sta. 16+90.08
END CONSTRUCTION

SITE 6

SITE 7

SITE 8

SITE 9

CATHERINE GREEN (17)

KETINA CORPORATION (16)

KETINA CORPORATION (16B)

KETINA CORPORATION (16C)

KETINA CORPORATION

JONATHAN ROY COLLINS
TERRY LYNN IRISH (19)

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GARY E. TAYLOR
VICKIE TAYLOR (24)

RICHARD E. WATSON
LISA H. WATSON (23)

CL 'I' RIP RAP
EST. 7 TONS
EST. 15 SY GF

LAT 6' GRASSED SWALE
W/COIR FIBER MATTING
EST. 340 SY
SEE DETAIL #6

SHOULDER BERM GUTTER
FROM STA 170+50 TO
STA 182+75 –L– LT

CL 'B' RIP RAP
EST. 1 TON
EST. 5 SY GF

CL 'I' RIP RAP
(BANKS ONLY)
SEE DETAIL #29

LINE PROP DITCH W/PSRM
EST. 730 SY
SEE DETAIL #4

2' BASE DITCH
W/CL 'I' RIP RAP
EST. 70 TONS
EST. 120 SY GF
SEE DETAIL #5

LINE EXTG DITCH W/PSRM
EST. 120 SY

SPECIAL CUT DITCH
W/PSRM
SEE DETAIL #4

LINE PROP DITCH W/PSRM
SEE DETAIL #4

PDE

ACCESS PT

PSH

REMOVE

15" CSP W/ELBOW

18" RCP W/ELBOW

15" RCP IV

24" W/ELBOW

TB. 2GI

DI

2GI

FS

2SFD

W/SFD

GRAU. 350

CAT 1

US 221 22 BST

N 34° 48' 05.0" W

N 25° 04' 38.6" W

S 64° 49' 06" E

S 73° 36' 40.9" E

TURRI TRAIL 18' BST

72" ROCK RIP RAP

45' PRIVATE R/W PER PB 1, PG 87

SEE SHEET 14 FOR –L– PROFILE
SEE SHEET 18 FOR –Y9– PROFILE
SEE SHEET 19 FOR –DR3– PROFILE
SEE SHEET 19 FOR –DR3B– PROFILE
SEE SHEET 2–E FOR U–TURN BULB DETAILS
SEE SHEETS 2–C THRU 2–D FOR DRAINAGE DETAILS

6/6/2014
R2915B_roll_prm_wet_psh_06_con.dgn
rplotz

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A., 915 JONES FRANKLIN ROAD, RALEIGH NORTH CAROLINA 27606, NC COA No. C-0890

PERMIT DRAWING SHEET 11 OF 31

REVISIONS 5/14/99

NAD 83 / CORS

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S — DENOTES IMPACTS IN SURFACE WATER

SITE 10

-Y10- PC Sta. 12+75.00
BEGIN CONSTRUCTION

-Y10- PC Sta. 13+25.00

-Y10- PT Sta. 14+91.13

-Y10- PC Sta. 15+75.47

-L- CS Sta. 200+60.03

-Y10- PT Sta. 17+43.86

-L- SC Sta. 201+66.03

-L- POC Sta. 203+00.00

-DR3- PCC Sta. 19+08.88

-DR3- POT Sta. 19+95.47

-DR3- PT Sta. 19+85.75

-L- POC Sta. 200+76.32 =
-Y10- POT Sta. 17+98.86

MATCH TO SHEET 6 – -L- POC Sta. 190+00.00

MATCH TO SHEET 8 – -L- POC Sta. 203+00.00

21 R.C. MILLER, ZELMA MILLER, DOUGLAS M. RUDERSDORF

25 PER A. KJONSO, MICHELLE KJONSO

24 GARY E. TAYLOR, VICKIE TAYLOR, DB 343, PG 1963

23 RICHARD E. WATSON, LISA H. WATSON, DB 313, PG 2429

26 LUIS M. FALERO, ROSARY P. FALERO

27 ROBERT L. KILBY, JOYCE T. KILBY

28 ROBERT L. KILBY, JOYCE T. KILBY

29 UNKNOWN

30 NITA FERRELL LANGER, TRUSTEE

31 JERRY GRAY STYERS, GERALDINE MYERS STYERS, DB 217, PG 171, LOTS 22-25 OF PB 5, PG 70

STD 2' BASE DITCH W/CL 'B' RIP RAP
EST. DDE = 35 CY
EST. 10 TONS
EST. 20 SY GF
SEE DETAIL #18

REMOVE 175' EXTG 15" CMP

24" RCP, IV

RETAIN

GRADE TO DRAIN

STD 2' BASE DITCH
EST. DDE = 60 CY
SEE DETAIL #8

CL 'B' RIP RAP
EST. 5 TONS
EST. 14 SY GF

RIP RAP AT EMBANKMENT
SEE DETAIL #9

REMOVE

SPEC DITCH GRADE
STA 12+75 TO 13+50 -Y11- LT
SEE PROFILE

24" W/ ELBOW

15" RCP, IV

2.4' RCP, III

BDO

2GI

FS

TYPE B-77

TYPE M350

GRAU 350

PSH

TB 2GI

SHOULDER BERM GUTTER
FROM STA 199+62 TO
STA 200+05 -L- RT

CL 'II' RIP RAP TO EL 2874.0
STA 199+70 TO 205+00 -L- RT
EST. 540 TONS

TEMPORARY WORK PADS
SEE GENERAL DRAWINGS
ON SHEETS 26 & 27

SHOULDER BERM GUTTER
FROM STA 199+00 TO
APPROACH SLAB

15" W/ ELBOWS

18" W/ ELBOWS

SPEC CUT DITCH W/HINGE
SEE DETAIL #7

CL 'B' RIP RAP
EST. 3 TONS
EST. 11 SY GF

CL 'B' RIP RAP
EST. 1 TON
EST. 3 SY GF

LINE PROP DITCH W/PSRM
EST. 120 SY
SEE DETAIL #4

LINE PROP DITCH W/PSRM
EST. 330 SY
SEE DETAIL #4

FILTER BERM
SEE DETAIL #30

SPEC DITCH GRADE
STA. 164+50 TO 166+00 -L- RT
SEE PROFILE

PLUG

FILL W/FLOWABLE MATERIAL

GRADE TO DRAIN

ISFD

AUE

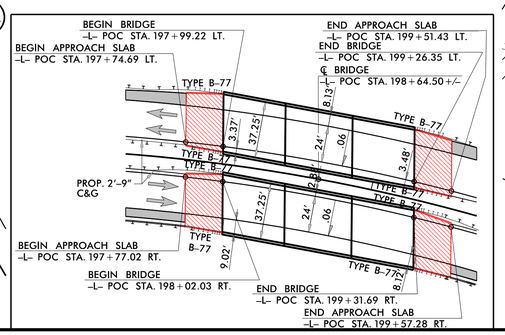
GAP CREEK

EIP

AVERAGE DAILY TRAFFIC
2015 / 2035
-11-
LIBERTY GROVE CH RD

100 / 180	415 / 700
10258 / 17400	10572 / 18000

-L-
US 221



SEE SHEET 14 FOR -L- PROFILE
SEE SHEET 19 FOR -Y10- PROFILE
SEE SHEET 19 FOR -DR3- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

6/6/2014
R2915B_Hyd_prm_wet_psh_07.dgn
kelam

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A., 915 JONES FRANKLIN ROAD, RALEIGH NORTH CAROLINA 27606, NC COA No. C-0890

PERMIT DRAWING
SHEET 12 OF 31

REVISIONS 5/14/99

NAD 83 / CORS

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S — DENOTES IMPACTS IN SURFACE WATER

SITE 10

-Y10- PC Sta. 12+75.00
BEGIN CONSTRUCTION

-Y10- PC Sta. 13+25.00

-Y10- PT Sta. 14+91.13

-Y10- PC Sta. 15+75.47

-L- CS Sta. 200+60.03
-Y10- PT Sta. 17+43.86

-L- SC Sta. 201+66.03

-L- POC Sta. 203+00.00

-DR3- PCC Sta. 19+08.88

-DR3- POT Sta. 19+95.47

-DR3- PT Sta. 19+85.75

-L- POC Sta. 200+76.32=
-Y10- POT Sta. 17+98.86

N 89°16'21.2" E

N 41°40'43.8" E

MATCH TO SHEET 6 – -L- POC Sta. 190+00.00

MATCH TO SHEET 8 – -L- POC Sta. 203+00.00

21 R.C. MILLER, ZELMA MILLER, DOUGLAS M. RUDERSDORF

25 PER A. KJONSO, MICHELLE KJONSO

24 GARY E. TAYLOR, VICKIE TAYLOR, DB 343, PG 1963

23 RICHARD E. WATSON, LISA H. WATSON, DB 313, PG 2429

26 LUIS M. FALERO, ROSARY P. FALERO

27 ROBERT L. KILBY, JOYCE T. KILBY

28 ROBERT L. KILBY, JOYCE T. KILBY

29 UNKNOWN

30 NITA FERRELL LANGER, TRUSTEE

31 JERRY GRAY STYERS, GERALDINE MYERS STYERS, DB 217, PG 171, LOTS 22-25 OF PB 5, PG 70

RETAIN — REMOVE — REMOVE 1-75' EXIST. 15" CMP

24" RCP FES — 24" RCP I.V. — 24" W/ ELBOW — 15" — FS — 2GI — BDO

STD 2' BASE DITCH W/CL 'B' RIP RAP
EST. DDE = 35 CY
EST. 10 TONS
EST. 20 SY GF
SEE DETAIL #18

STD 2' BASE DITCH
EST. DDE = 60 CY
SEE DETAIL #8

CL 'B' RIP RAP
EST. 5 TONS
EST. 14 SY GF

RIP RAP AT EMBANKMENT
SEE DETAIL #9

GRADE TO DRAIN

SHOULDER BERM GUTTER FROM STA 199+00 TO APPROACH SLAB

SPEC DITCH GRADE
STA 12+75 TO 13+50 -Y11- LT
SEE PROFILE

SPEC DITCH GRADE
STA 164+50 TO 166+00 -L- RT
SEE PROFILE

SPEC CUT DITCH W/HINGE
SEE DETAIL #7

CL 'B' RIP RAP
EST. 3 TONS
EST. 11 SY GF

CL 'II' RIP RAP
EST. 1 TON
EST. 3 SY GF

CL 'II' RIP RAP TO EL 2874.0
STA. 199+70 TO 205+00 -L- RT
EST. 540 TONS

LINE PROP DITCH W/PSRM
EST. 120 SY
SEE DETAIL #4

LINE PROP DITCH W/PSRM
EST. 330 SY
SEE DETAIL #4

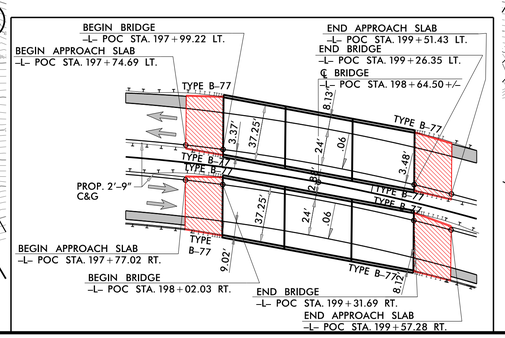
FILTER BERM
SEE DETAIL #30

SHOULDER BERM GUTTER
FROM STA 199+62 TO
STA 200+05 -L- RT

TEMPORARY WORK PADS
SEE GENERAL DRAWINGS
ON SHEETS 26 & 27

TYPE B-77 — TYPE M350 — GRAU 350 — TB 2GI — PSH — DT — 1ST RDCR — 2GI-A — 15" W/ ELBOW — 18" W/ ELBOW — PLUG — FILL W/FLOWABLE MATERIAL — GRADE TO DRAIN — PROPERTY LINE/EXISTING RW — EXISTING RW — ISFB — CAN — GAP CREEK — AUE — JS — EIP

AVERAGE DAILY TRAFFIC
2015 / 2035
-11-
LIBERTY GROVE CH RD
100 / 180 — 415 / 700
10258 / 17400 — -L- — 10572 / 18000
US 221



SEE SHEET 14 FOR -L- PROFILE
SEE SHEET 19 FOR -Y10- PROFILE
SEE SHEET 19 FOR -DR3- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

6/6/2014
R2915B_Hyd_prm_wet_psh_07_con.dgn
bellah

PERMIT DRAWING
SHEET 13 OF 31

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	8
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 201, Raleigh, NC 27612-3228, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A., 816 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

5/14/99

REVISIONS

NAD 83 /CORS

SITE 13

SITE 14

SITE 11

SITE 12

SITE 15
WETLAND IMPACT IS A TOTAL TAKE

MATCH TO SHEET 7 –L– POC Sta. 203+00.00

MATCH TO SHEET 9 –L– POC Sta. 216+00.00

NITA FERRELL LANGER, TRUSTEE

JERRY GRAY STYERS
GERALDINE MYERS STYERS

PHIL A. TEMPLETON
PHYLLIS TEMPLETON

MICHAEL K. GOODMAN
FREDA R. GOODMAN

JAMES CLINE CHURCH
ELLEN LEMLY CHURCH

24" W/ELBOWS

FALSE CUT SEE DETAIL #12

REMOVE

FILL W/FLOWABLE MATERIAL

PLUG

POSSIBLE SPRING LOCATION

SPEC DITCH GRADE STA 214+00 TO 215+00 –L– LT SEE PROFILE

LAT 2' BASE DITCH SEE DETAIL #28

BM#9

CL 'I' RIP RAP EST. 4 TONS EST. 12 SY GF

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

CL 'II' RIP RAP TO EL 2573.0 STA. 205+00 TO 207+00 –L– RT EST. 370 TONS

CL 'II' RIP RAP TO EL 2572.0 STA. 207+00 TO 211+65 –L– RT EST. 900 TONS

SPEC CUT 2' GRASSED SWALE SEE DETAIL#10

AREA UNDER CONSTRUCTION

ACCESS PT.

PROPERTY LINE-EXISTING RW

US 221 22' BST

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SEE SHEET 15 FOR –L– PROFILE
SEE SHEET __ FOR U-TURN BULB DETAILS
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

6/6/2014
R2915B_Hyd_prm_wet_psh_08.dgn

PERMIT DRAWING
SHEET 14 OF 31

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	8
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 201, Raleigh, NC 27612-3228, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A., 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

REVISIONS 5/14/99

NAD 83 /CORS

MATCH TO SHEET 7 –L– POC Sta. 203+00.00

MATCH TO SHEET 9 –L– POC Sta. 216+00.00

SITE 11

SITE 12

SITE 13

SITE 14

SITE 15
WETLAND IMPACT IS A TOTAL TAKE

NITA FERRELL LANGER, TRUSTEE

JERRY GRAY STYERS
GERALDINE MYERS STYERS

PHIL A. TEMPLETON
PHYLLIS TEMPLETON

MICHAEL K. GOODMAN
FREDA R. GOODMAN

JAMES CLINE CHURCH
ELLEN LEMLY CHURCH

ACCESS PT.

PROPERTY LINE-EXISTING RW

POSSIBLE SPRING LOCATION

AREA UNDER CONSTRUCTION

BM#9

+45.70 –L– 100.00' RT

24" W/ELBOWS

FALSE CUT SEE DETAIL #12

FILL W/FLOWABLE MATERIAL

REMOVE

PLUG

SPEC DITCH GRADE STA 214+00 TO 215+00 –L– LT SEE PROFILE

LAT 2' BASE DITCH SEE DETAIL #28

CL 'I' RIP RAP EST. 4 TONS EST. 12 SY GF

CL 'II' RIP RAP TO EL 2873.0 STA. 205+00 TO 207+00 –L– RT EST. 370 TONS

CL 'II' RIP RAP TO EL 2872.0 STA. 207+00 TO 211+65 –L– RT EST. 900 TONS

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

SPEC CUT 2' GRASSED SWALE SEE DETAIL#10

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

SEE SHEET 15 FOR –L– PROFILE
SEE SHEET __ FOR U-TURN BULB DETAILS
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

R2915B_Hyd_prm_wet_psh_08_con.dgn
5/6/2014

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5420 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A., 915 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

PERMIT DRAWING SHEET 15 OF 31

REVISIONS 5/14/99

NAD 83 /CORS

DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SITE 16

SITE 15

WETLAND IMPACT IS A TOTAL TAKE

SITE 17

SITE 18

-L- CS Sta. 217+38.86

-L- ST Sta. 219+50.86

-L- TS Sta. 221+34.86

-L- SC Sta. 223+68.86

-Y11- POT Sta. 10+00.00

-Y11- POT Sta. 10+55.00
BEGIN CONSTRUCTION

-L- POC Sta. 222+42.64=
-Y11- POT Sta. 13+02.04

MATCH TO SHEET 8 – -L- POC Sta. 216+00.00

MATCH TO SHEET 10 – -L- POC Sta. 229+00.00

NITA FERRELL LANGER, TRUSTEE

ARCHIE L. PIERCE
NANCY C. PIERCE
RETAIN

JAMES CLINE CHURCH
ELLEN LEMLY CHURCH

RICHARD W. LEMLY
MINNIE C. LEMLY
TRUSTEES OF THE
RICHARD W. LEMLY LIVING TRUST

LAT 2' BASE DITCH SEE DETAIL #28

RIP RAP AT EMBANKMENT SEE DETAIL #9

HW BURY PIPE 1.0 FT

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

SPEC LAT 'V' DITCH W/PSRM SEE DETAIL #15

SPEC DITCH GRADE STA 218+75 TO 221+90 SEE PROFILE

SPEC LAT 3' BASE DITCH W/ PSRM SEE DETAIL #16

SPEC CUT 5' GRASSED SWALE SEE DETAIL #14

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

SHOULDER BERM GUTTER FROM STA 216+75 TO STA 221+35 -L- RT

CL 'II' RIP RAP TO EL 2868.0 STA. 215+80 TO STA. 219+20 -L- RT EST. 500 TONS

STD 5' BASE DITCH W/CL 'I' RIP RAP EST. DDE=120 CY EST. 75 TONS EST. 135 SY GF SEE DETAIL #13

STD 3' BASE DITCH W/CL 'I' RIP RAP EST. DDE=50 CY EST. 40 TONS EST. 65 SY GF SEE DETAIL #19

CL 'II' RIP RAP TO EL 2867.0 STA. 221+70 TO STA. 223+80 -L- RT EST. 215 TONS

SEE SHEET 15 FOR -L- PROFILE
SEE SHEET 18 FOR -Y11- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

6/10/2014
R2915B_Hyd_prm_wet_psh_09.dgn
tsaylor

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 915 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

PERMIT DRAWING SHEET 16 OF 31

REVISIONS 5/14/99

DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83 /CORS

SITE 16

SITE 15
WETLAND IMPACT IS A TOTAL TAKE

SITE 17

SITE 18

-L- CS Sta. 217+38.86

-L- ST Sta. 219+50.86

-L- TS Sta. 221+34.86

-L- SC Sta. 223+68.86

-Y11- POT Sta. 10+00.00

-Y11- POT Sta. 10+55.00
BEGIN CONSTRUCTION

-L- POC Sta. 222+42.64=
-Y11- POT Sta. 13+02.04

MATCH TO SHEET 8 - -L- POC Sta. 216+00.00

MATCH TO SHEET 10 - -L- POC Sta. 229+00.00

LAT 2' BASE DITCH SEE DETAIL #28

RIP RAP AT EMBANKMENT SEE DETAIL #9

HW BURY PIPE 1.0 FT

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

SPEC LAT 'V' DITCH W/PSRM SEE DETAIL #15

SPEC DITCH GRADE STA 218+75 TO 221+90 -L- SEE PROFILE

SPEC LAT 3' BASE DITCH W/ PSRM SEE DETAIL #16

SPEC CUT 5' GRASSED SWALE SEE DETAIL #14

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

SHOULDER BERM GUTTER FROM STA 216+75 TO STA 221+35 -L- RT

CL 'II' RIP RAP TO EL 2868.0 STA. 219+80 TO STA. 219+20 -L- RT EST. 500 TONS

STD 5' BASE DITCH W/CL 'I' RIP RAP EST. DDE=120 CY EST. 75 TONS EST. 135 SY GF SEE DETAIL #13

STD 3' BASE DITCH W/CL 'I' RIP RAP EST. DDE=50 CY EST. 40 TONS EST. 65 SY GF SEE DETAIL #19

CL 'II' RIP RAP TO EL 2867.0 STA. 221+70 TO STA. 223+80 -L- RT EST. 215 TONS

NITA FERRELL LANGER, TRUSTEE

JAMES CLINE CHURCH
ELLEN LEMLY CHURCH

ARCHIE L. PIERCE
NANCY C. PIERCE
RETAIN

ARCHIE L. PIERCE
NANCY C. PIERCE

RICHARD W. LEMLY
MINNIE C. LEMLY
TRUSTEES OF THE
RICHARD W. LEMLY LIVING TRUST

20' DRIVE EASTER PER PB. 1, PG. 3

60' PRIVATE R/W PER PB 5, PG 70

GAP CREEK

ACCESS PT.

N 56° 22' 25.2" E

S 46° 41' 12" E

SEE SHEET 15 FOR -L- PROFILE
SEE SHEET 18 FOR -Y11- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

6/10/2014
R2915B_Hyd_prm_wet_psh_09_con.dgn
ed.pdc

PERMIT DRAWING
SHEET 17 OF 31

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC CDA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 915 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

NAD 83 /CORS

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 19

TEMPORARY WORK PADS SEE GENERAL DRAWINGS ON SHEETS 28 & 29

MATCH TO SHEET 9 –L– POC Sta. 229+00.00

MATCH TO SHEET 11 –L– POT Sta. 242+20.00

SPEC CUT 5' GRASSED SWALE SEE DETAIL #14

SPEC LAT 'V' DITCH W/PSRM SEE DETAIL #15

ARCHIE L. PIERCE
NANCY C. PIERCE
DB 340, PG 764
DB 343, PG 177
LOT 6 OF
PB 7, PG 372
35

CLAYTON LEMLY
RUTH H. LEMLY
DB 235, PG 391
39

RETAIN

CL 'B' RIP RAP
EST. 2 TONE
EST. 7 SY GF

SHOULDER BERM GUTTER FROM STA 235+42 TO STA 241+29 –L– LT

REMOVE

24" RCP-III

CL 'A' RIP RAP
EST. 11 TONS
EST. 22 SY GF

15" RCP-IV

15" W/ 2 ELBOWS

TB 2GI

2GI

TYPE B-77

TYPE M350

GRAU 350

PSH

PDE

AUE

ACCESS PT.

DUE

RICHARD W. LEMLY
MINNIE C. LEMLY
TRUSTEES OF THE
RICHARD W. LEMLY LIVING TRUST
DB 233, PG 857
LOT 2 OF
PB 5, PG 70
38

SHOULDER BERM GUTTER FROM STA 232+05 TO STA 232+85 –L– RT

STD. 2' GRASSED SWALE DAYLIGHT DITCH SEE DETAIL #27

LAT. 2' GRASSED SWALE SEE DETAIL #1

CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GF

40
RICHARD LEMLY
DB WILL, PG 96-E
LOT 1 OF
PB 5, PG 70

SHOULDER BERM GUTTER FROM STA 234+66 TO STA 237+80 –L– RT

SHOULDER BERM GUTTER FROM STA 239+20 TO STA 240+98 –L– RT

41
RICHARD W. LEMLY
MINNIE C. LEMLY

SEE SHEET 16 FOR –L– PROFILE
SEE SHEET 17 FOR –Y12– PROFILE
SEE SHEET 18FOR –DR4– PROFILE
SEE SHEETS 2–C THRU 2–D FOR DRAINAGE DETAILS

REVISIONS 5/14/99

8/6/2014
R:\2915B_hyd_prm_wet_psh_10.DGN
Falcon

PERMIT DRAWING
SHEET 18 OF 31

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC CDA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 915 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

REVISIONS 5/14/99

NAD 83 /CORS

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 19
TEMPORARY WORK PADS SEE GENERAL DRAWINGS ON SHEETS 28 & 29

MATCH TO SHEET 9 – –L– POC Sta. 229+00.00

MATCH TO SHEET 11 – –L– POT Sta. 242+20.00

ARCHIE L. PIERCE
NANCY C. PIERCE
DB 340, PG 764
DB 343, PG 177
LOT 6 OF
PB 7, PG 372
35

CLAYTON LEMLY
RUTH H. LEMLY
DB 235, PG 391
39

RICHARD W. LEMLY
MINNIE C. LEMLY
TRUSTEES OF THE
RICHARD W. LEMLY LIVING TRUST
DB 233, PG 857
LOT 2 OF
PB 5, PG 70
38

RICHARD LEMLY
DB WILL, PG 96-E
LOT 1 OF
PB 5, PG 70
40

RICHARD W. LEMLY
MINNIE C. LEMLY
41

SPEC CUT 5' GRASSED SWALE SEE DETAIL #14

SPEC LAT 'V' DITCH W PSRM SEE DETAIL #15

+85.00 –Y12– 22.50' RT

+25.22 –Y12– EX. ROW

+85.00 –Y12– 22.50' LT

RETAIN

+80.00 –L– 115.00' LT

+90.00 –L– 115.00' LT

CL 'B' RIP RAP EST. 2 TON EST. 7 SY GF

CL 4' RIP RAP EST. 11 TONS EST. 22 SY GF

24" RCP-III

REMOVE

SHOULDER BERM GUTTER FROM STA 235+42 TO STA 241+29 –L– LT

PDE

PSH

15" W/ 2 ELBOWS

15" RCP-IV

TB 2GI

2GI

TYPE B-77

TYPE B-83

TYPE M350

GRAU 350

48" WW & ISBW

15" W2

+66.00 –L–

AUE

ACCESS PT.

+75.00 –L– 100.00' RT

+75.00 –L– 103.00' RT

+00.00 –L– 103.00' RT

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

SHOULDER BERM GUTTER FROM STA 239+20 TO STA 240+98 –L– RT

SHOULDER BERM GUTTER FROM STA 232+05 TO STA 232+85 –L– RT

STD. 2' GRASSED SWALE DAYLIGHT DITCH SEE DETAIL #27

LAT. 2' GRASSED SWALE SEE DETAIL #1

SHOULDER BERM GUTTER FROM STA 234+66 TO STA 237+80 –L– RT

-BL- 56

-BL- 57

-L-

-Y12-

-DR4-

-DR5-

-DR6-

-DR7-

-DR8-

-DR9-

-DR10-

-DR11-

-DR12-

-DR13-

-DR14-

-DR15-

-DR16-

-DR17-

-DR18-

-DR19-

-DR20-

-DR21-

-DR22-

-DR23-

-DR24-

-DR25-

-DR26-

-DR27-

-DR28-

-DR29-

-DR30-

-DR31-

-DR32-

-DR33-

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SEE SHEET 16 FOR –L– PROFILE
SEE SHEET 17 FOR –Y12– PROFILE
SEE SHEET 18FOR –DR4– PROFILE
SEE SHEETS 2–C THRU 2–D FOR DRAINAGE DETAILS

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PERMIT DRAWING
SHEET 19 OF 31

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	11
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3208, NC CDA No. F-0412

SUNGATE DESIGN GROUP, P.A., 915 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

NAD 83 /CORS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS 5/14/99

MATCH TO SHEET 10 – –L– POT Sta. 242+20.00

MATCH TO SHEET 12 – –L– POS Sta. 255+00.00

CLAYTON LEMLY
RUTH H. LEMLY
39

TRACY C. LEMLY
ELIZABETH C. LEMLY
42

TRACY C. LEMLY
ELIZABETH C. LEMLY
DB M-5, PG 121
47

RICK D. WEAVER
ALLISON L. WEAVER
44

RICHARD W. LEMLY
MINNIE C. LEMLY
41

RICHARD C. CORNEJO
LORETTA A. CORNEJO
46

BARNEY F. WATSON
RAMONA N. WATSON
TRUSTEES OF THE
WATSON FAMILY TRUST
DB 217, PG 1209
LOT 12 OF
PB 5, PG 265

JAMES CLINE CHURCH
ELLEN L. CHURCH
EVELYN LEMLY
43

JAMES CLINE CHURCH
ELLEN L. CHURCH
EVELYN LEMLY
43

45

55

53

SITE 19

REMOVE SECTION OF TEMPORARY WORK PAD IMMEDIATELY FOLLOWING REMOVAL OF EXISTING BENT. WORK PAD CONSTRUCTION AND REMOVAL SHOULD BE STAGED SO THAT NO MORE THAN HALF THE CHANNEL IS BLOCKED AT ONE TIME.

SITE 21

SITE 20

–DET– TS Sta. 251+72.02 LA =
–L– TS Sta. 251+72.02 LB
–L– TS Sta 254+36.94 AH
END TIP PROJECT R-2915B

–DET– CS Sta. 254+66.15

–DET– SC Sta. 253+31.02

STA 254+36.94 AH

STD 3' BASE DITCH EST. DDE+30 CY SEE DETAIL #24

LAT 3' GRASSED SWALE SEE DETAIL #20

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

LAT 'V' DITCH SEE DETAIL #21

SHOULDER BERM GUTTER FROM STA 244+37 TO STA 252+30 –L– LT

RAP AT EMBANKMENT SEE DETAIL #9

PROPERTY LINE / EXISTING RW

TOE PROTECTION CL 'B' RIP RAP SEE DETAIL #2

SPEC DITCH GRADE STA 252+86 TO 253+50 –DET– LT SEE PROFILE

LINE PROP DITCH W/SRM EST. 170 SY SEE DETAIL #17

REMOVE

TYPE B-77

GRAU 350

15" W/ 2 ELBOWS

15" RCP-IV

2GI

ATTENUATOR

N 5°56'20.6" E

TB JB w/Slab Lid

24" RCP-IV

2GI-A

30" W/2 ELBOWS

SPEC DITCH GRADE STA 252+00 TO 253+00 –DET– RT SEE PROFILE

SHOULDER BERM GUTTER FROM STA 244+05 TO STA 251+00 –L– RT

LAT 4' BASE DITCH SEE DETAIL #22

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

LAT 4' BASE DITCH W/CL 'I' RIP RAP SEE DETAIL #23

TOE PROTECTION CL 'B' RIP RAP SEE DETAIL #2

RIP RAP AT EMBANKMENT SEE DETAIL #9

TEMPORARY WORK PADS SEE GENERAL DRAWINGS ON SHEETS 28 & 29

ACCESS PT.

LINE PROP DITCH W/SRM EST. 390 SY SEE DETAIL #17

ISFD

ELEC. PED

TIMBER

UNABLE TO LOCATE END

RIPRAP

CONCRETE MONUMENT

EXISTING 24" RCP-III

66" RCP

36" CMP

36" WW & ISBW

US 221 20' BST

7' BST

6' BST

45' PRIVATE RW PER PB 5, PG 265

BRIDGE SKETCH – –L– OVER SOUTH FORK OF NEW RIVER

BEGIN BRIDGE –L– POT STA. 241+41.43 +/– LT.
BEGIN APPROACH SLAB –L– POT STA. 241+17.49 +/– LT.
℄ BRIDGE –L– POT STA. 242+67.42 +/–
END APPROACH SLAB –L– POT STA. 244+25.54 +/– LT.
END BRIDGE –L– POT STA. 244+01.60 +/– LT.
TYPE B-77
8' 34' 24' 11.5' 2' 02
PROP 2'-9" C&G
2.4 +20.00
BEGIN BRIDGE –L– POT STA. 241+33.23 +/– RT.
BEGIN APPROACH SLAB –L– POT STA. 241+09.29 +/– RT.
END BRIDGE –L– POT STA. 243+93.41 +/– RT.
END APPROACH SLAB –L– POT STA. 244+17.34 +/– RT.

SEE SHEET 16 FOR –L– PROFILE
SEE SHEET 16 FOR –DET– PROFILE
SEE SHEET __ FOR U-TURN BULB DETAILS
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

6/6/2014
R2915B_Hyd_prm_wet_psh_11.dgn
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PERMIT DRAWING
SHEET 20 OF 31

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	11
R/W SHEET NO.	

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HYDRAULICS ENGINEER

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5/14/99

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DB 217, PG 1209
LOT 12 OF
PB 5, PG 265

53

55

-DET- TS Sta. 251+72.02 LA =
-L- TS Sta. 251+72.02 LB
-L- TS Sta 254+36.94 AH
END TIP PROJECT R-2915B

-DET- CS Sta. 254+66.15

-DET- SC Sta. 253+31.02

-L- Sta. 254+36.94 AH

SITE 19

REMOVE SECTION OF TEMPORARY WORK PAD IMMEDIATELY FOLLOWING REMOVAL OF EXISTING BENT. WORK PAD CONSTRUCTION AND REMOVAL SHOULD BE STAGED SO THAT NO MORE THAN HALF THE CHANNEL IS BLOCKED AT ONE TIME.

SITE 21

SITE 20

TEMPORARY WORK PADS SEE GENERAL DRAWINGS ON SHEETS 28 & 29

STD 3' BASE DITCH EST. DDE=30 CY SEE DETAIL #24

LAT 3' GRASSED SWALE SEE DETAIL #20

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

LAT 'V' DITCH SEE DETAIL #21

SHOULDER BERM GUTTER FROM STA 244+37 TO STA 252+30 -L- LT

RAP AT EMBANKMENT SEE DETAIL #9

TOE PROTECTION CL 'B' RIP RAP SEE DETAIL #2

SPEC DITCH GRADE STA 252+86 TO 253+50 DET- LT SEE PROFILE

LINE PROP DITCH W/ERM EST. 175 SY SEE DETAIL #17

SHOULDER BERM GUTTER FROM STA 244+05 TO STA 251+ -L- RT

LAT 4' BASE DITCH SEE DETAIL #22

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

LAT 4' BASE DITCH W/CL 'I' RIP RAP SEE DETAIL #23

RIP RAP AT EMBANKMENT SEE DETAIL #9

TOE PROTECTION CL 'B' RIP RAP SEE DETAIL #2

SPEC DITCH GRADE STA 252+00 TO 253+00 -DET- RT SEE PROFILE

LINE PROP DITCH W/ERM EST. 390 SY SEE DETAIL #17

15" W/ 2 ELBOWS

30" W/ 2 ELBOWS

TYPE B-77

GRAU 350

ATTENUATOR

TB JB. w/Slab Lid

24" RCP-IV

24" RCP-III

15" RCP-IV

18" RCP-IV

REMOVE

ACCESS PT.

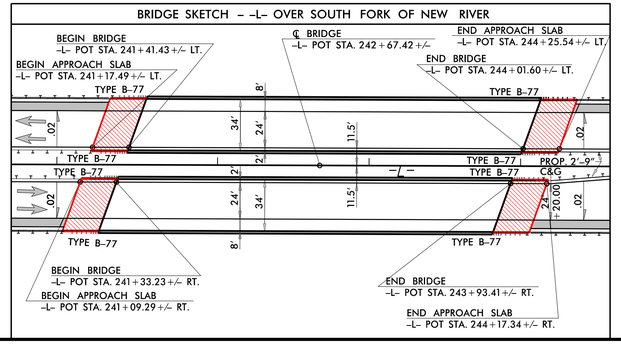
ACCESS PT.

N 5°56'20.6" E

MATCH TO SHEET 10 -L- POT Sta. 242+20.00

MATCH TO SHEET 12 -L- POS Sta. 255+00.00

BRIDGE SKETCH -L- OVER SOUTH FORK OF NEW RIVER



SEE SHEET 16 FOR -L- PROFILE
SEE SHEET 16 FOR -DET- PROFILE
SEE SHEET __ FOR U-TURN BULB DETAILS
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

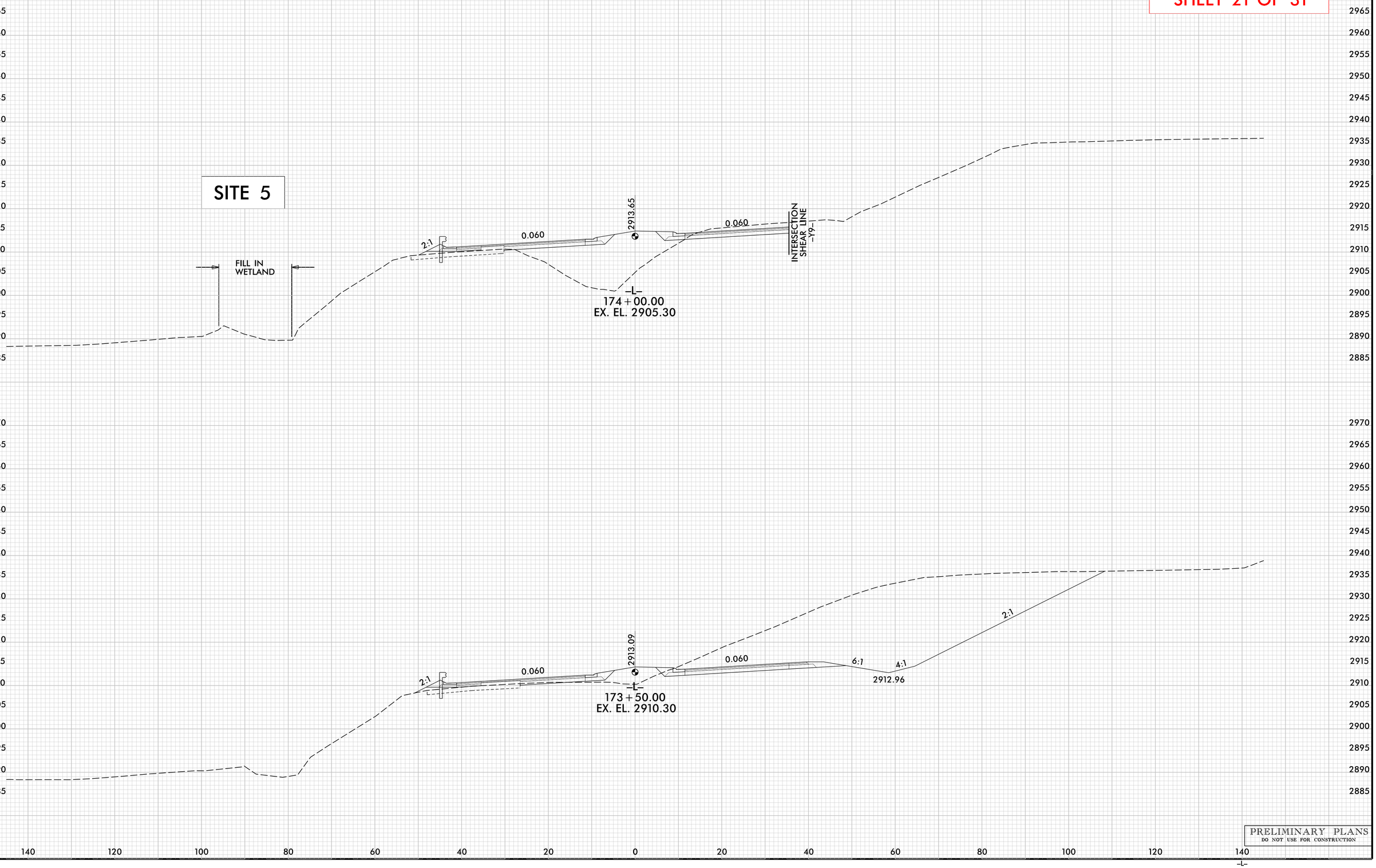
6/6/2014
R2915B_sht_prm_wet_psh_11_con.dgn
tsmith

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915B	X-23

PERMIT DRAWING
SHEET 21 OF 31

SITE 5



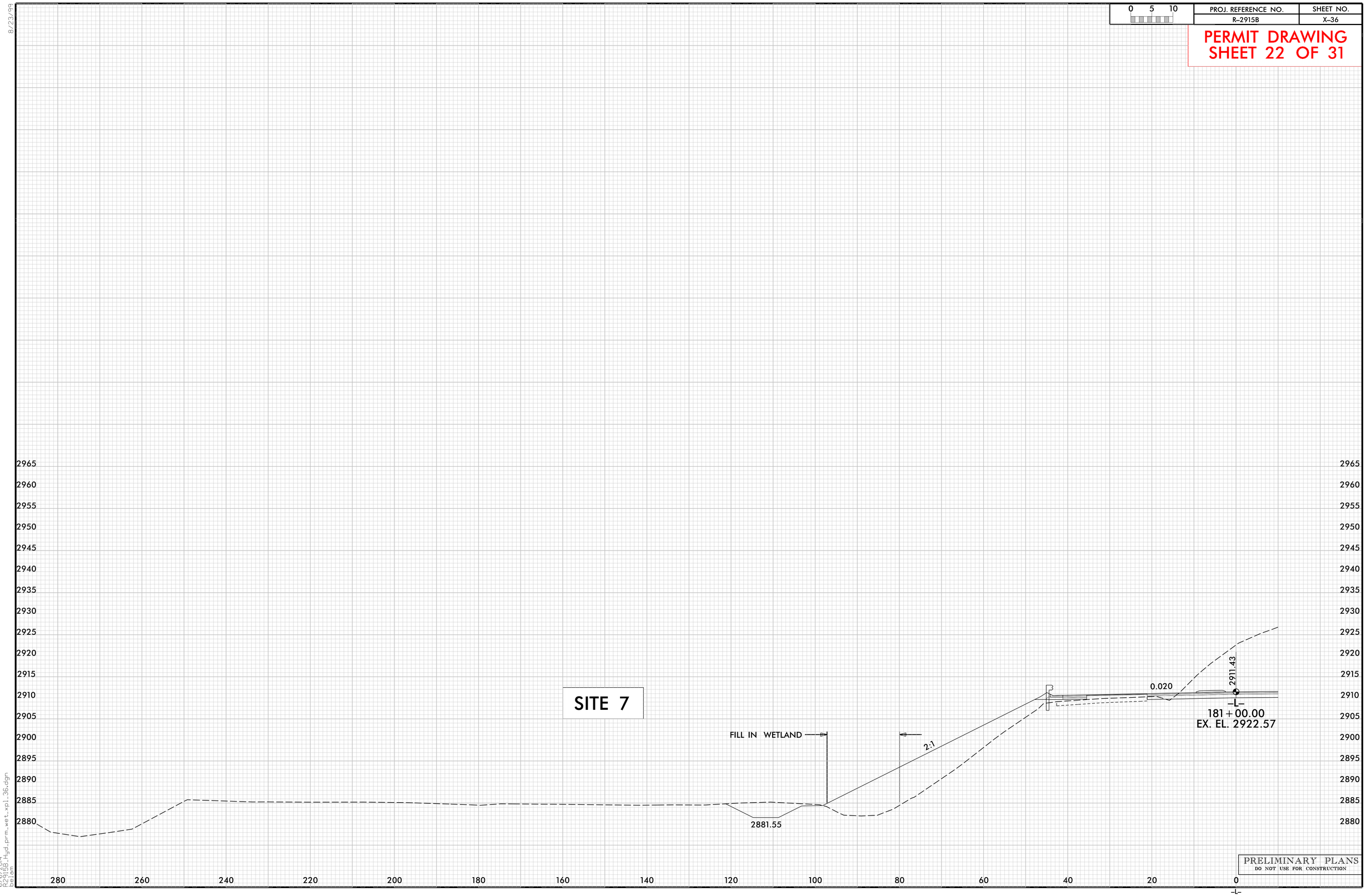
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

6/6/2014
R2915B_Hyd_prm_wet_xpl_23.dgn
belam

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915B	X-36

PERMIT DRAWING
SHEET 22 OF 31



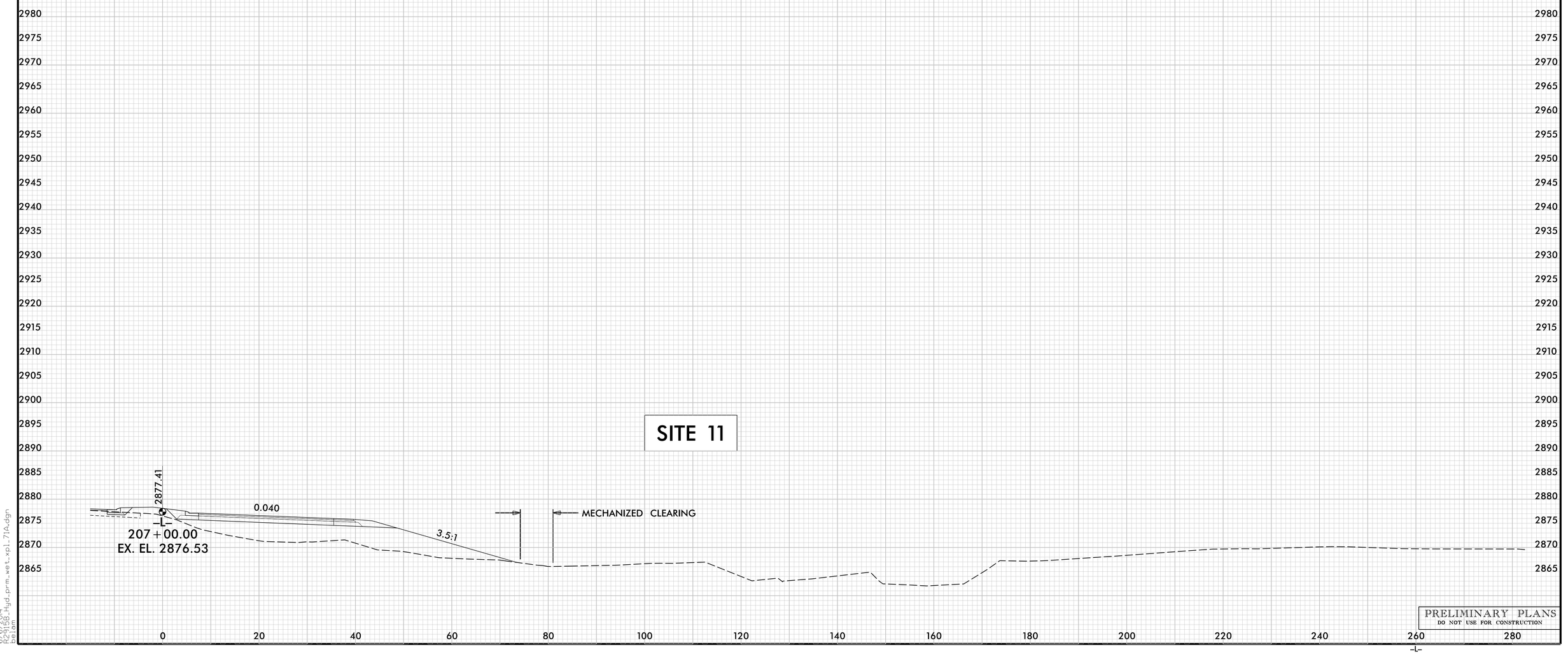
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

6/6/2014
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belam

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915B	X-71A

PERMIT DRAWING
SHEET 23 OF 31



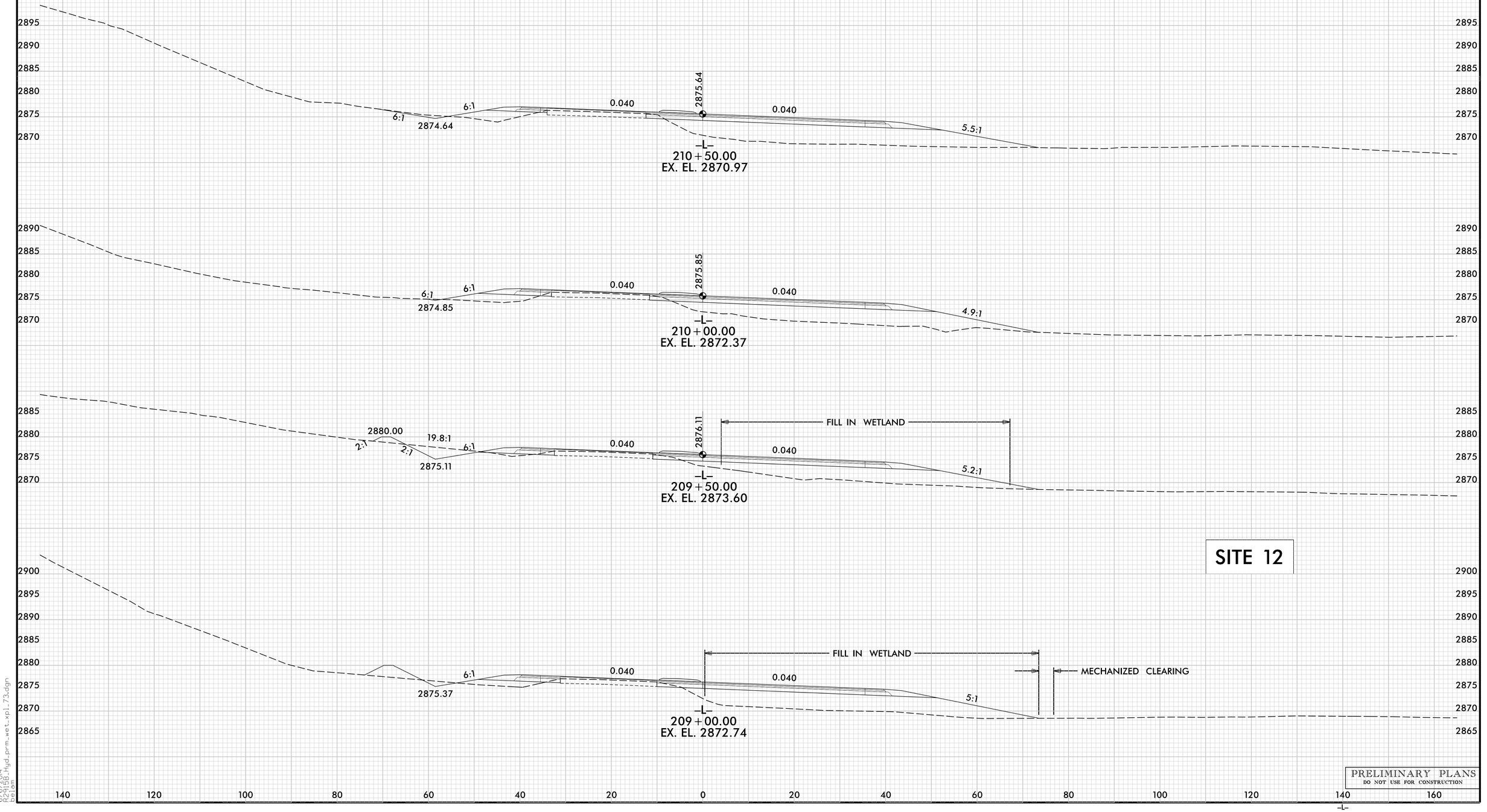
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

6/6/2014
R2915B_Hyd_prm_wet_xpl_71A.dgn
belam

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915B	X-73

PERMIT DRAWING
SHEET 24 OF 31



SITE 12

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

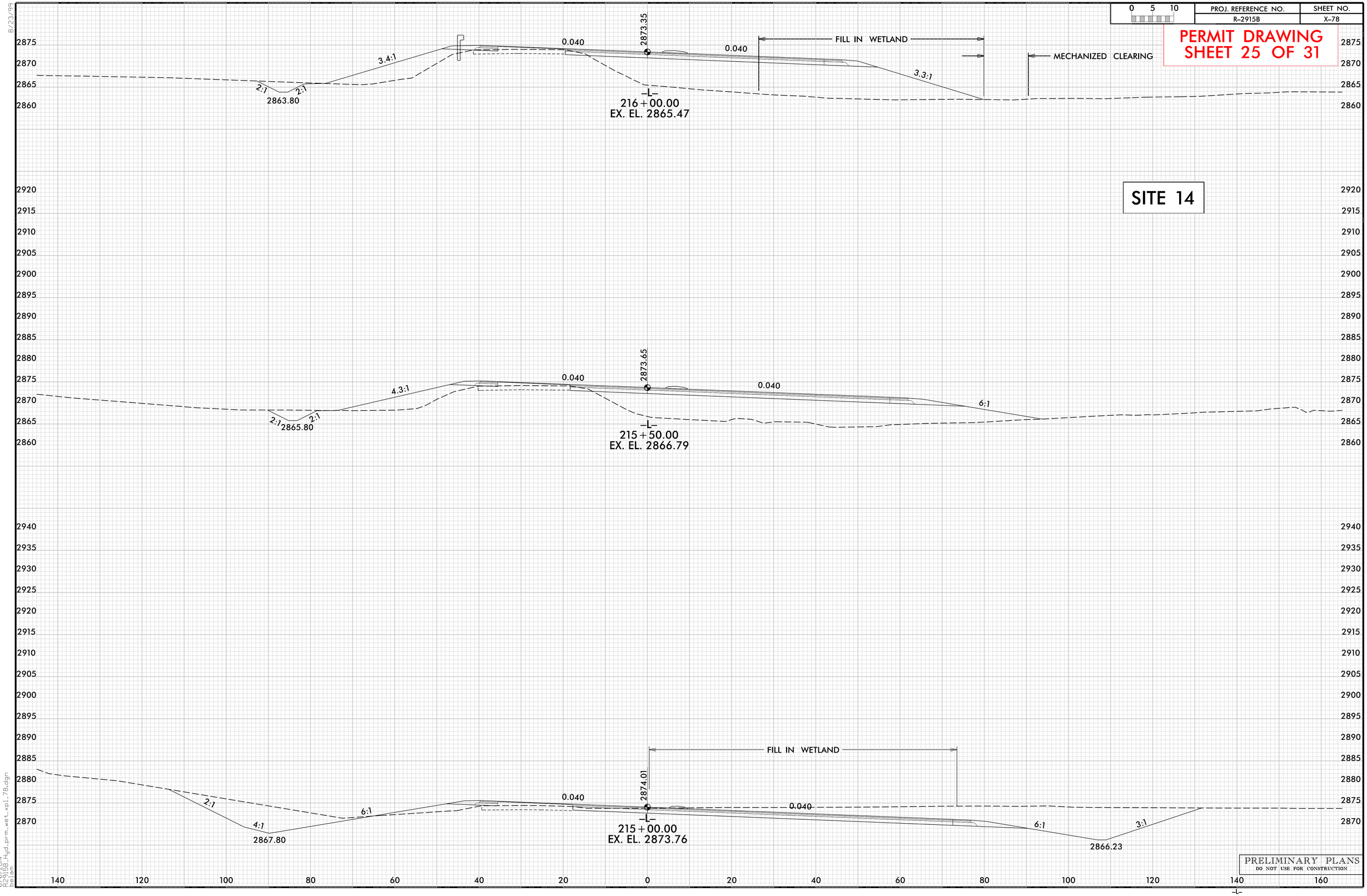
6/6/2014
R2915B_Hyd_prm_wet_xpl_73.dgn
belam

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915B	X-78

PERMIT DRAWING
SHEET 25 OF 31

SITE 14

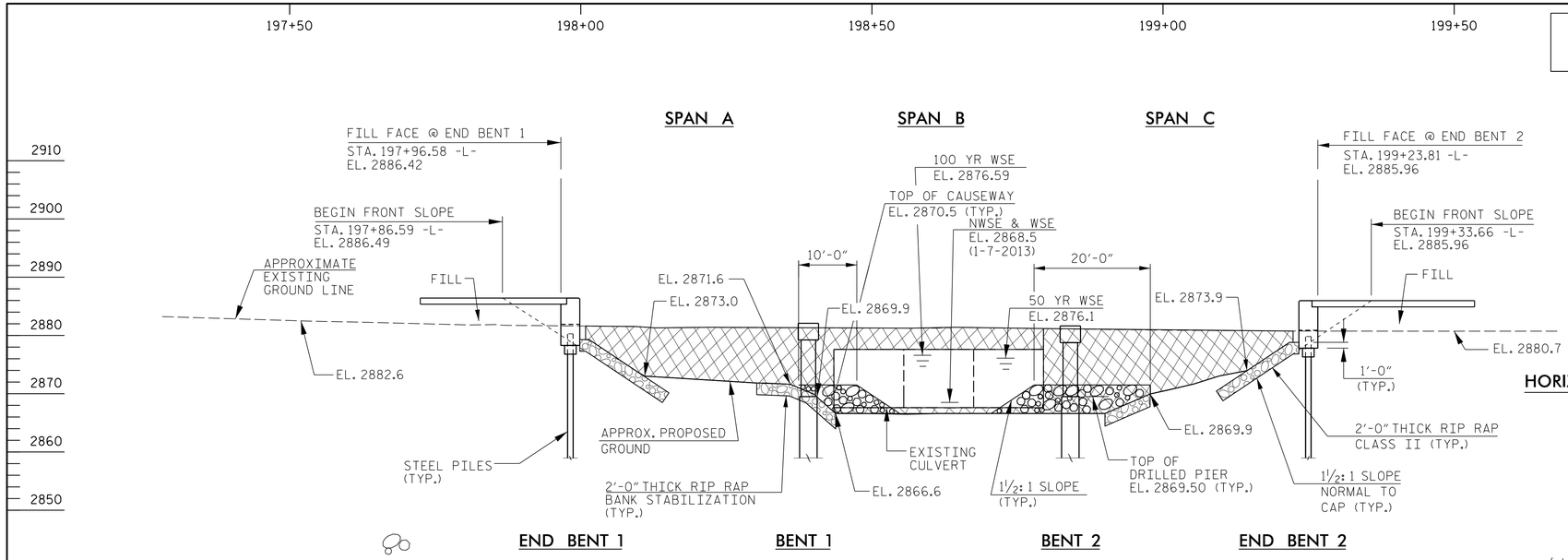


PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

6/6/2014
R2915B_Hyd_prm_wet_xpl_78.dgn
belam

PERMIT DRAWING
SHEET 26 OF 31

F.A. PROJECT NO. STP–0221(40)



SECTION ALONG –SBL– BRIDGE CONTROL LINE & ℄ BRIDGE

(SECTION AT END BENTS AND BENTS ARE AT RIGHT ANGLES)

UNCLASSIFIED STRUCTURE EXCAVATION

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

HORIZONTAL CURVE DATA –L–

PI STA. 195+10.72
△ = 57° 44' 33.0" (RT)
D = 4° 45' 38.7"
L = 1,212.88'
T = 663.58'
R = 1,203.50'

GRADE DATA –L–

(-) 1.4200% ▽ (-) 0.3400%

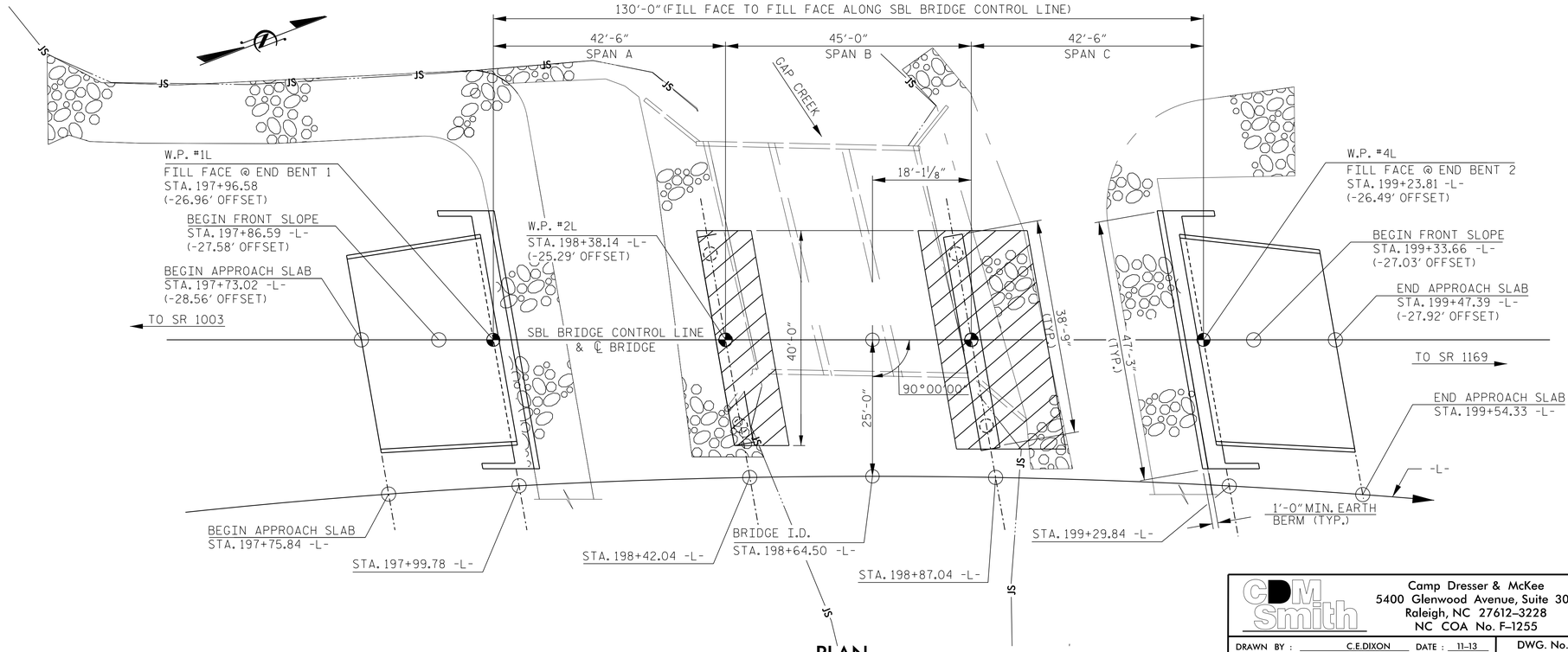
PI = 195+00.00
EL = 2,885.81'
VC = 200.00'

HYDRAULIC DATA

DESIGN DISCHARGE	= 2400 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YEARS
DESIGN HIGH WATER ELEVATION	= 2,876.1 FT.
DRAINAGE AREA	= 9.5 SQ. MI.
BASE DISCHARGE (Q100)	= 2,900 CFS
BASE HIGH WATER ELEVATION	= 2,876.59 FT.

OVERTOPPING FLOOD DATA

	= >3,900 CFS
	= >500 YEARS
	= 2,884.0 FT.
	= 200+00 -L-



PLAN

PROJECT NO. R–2915B

ASHE COUNTY

STATION: 198+64.50 –L–

SHEET 1 OF 2 BRIDGE NO. 538

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY
GENERAL DRAWING

BRIDGE OVER GAP CREEK ON US 221 BETWEEN SR 1003 AND SR 1169
(SBL)

Camp Dresser & McKee
5400 Glenwood Avenue, Suite 300
Raleigh, NC 27612–3228
NC COA No. F–1255

DRAWN BY :	C.E.DIXON	DATE :	11–13
CHECKED BY :	J.TAYLOR	DATE :	11–13
DESIGN ENGINEER :	J.TAYLOR	DATE :	11–13

DWG. No.

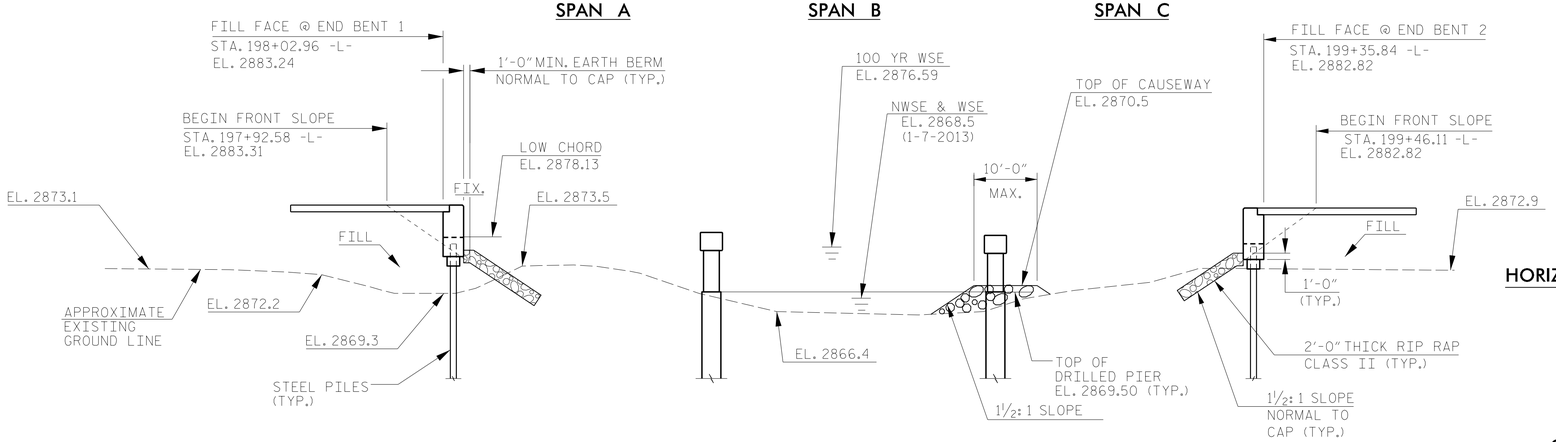
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S1–01
1			3			TOTAL SHEETS
2			4			

STR. NO. 1

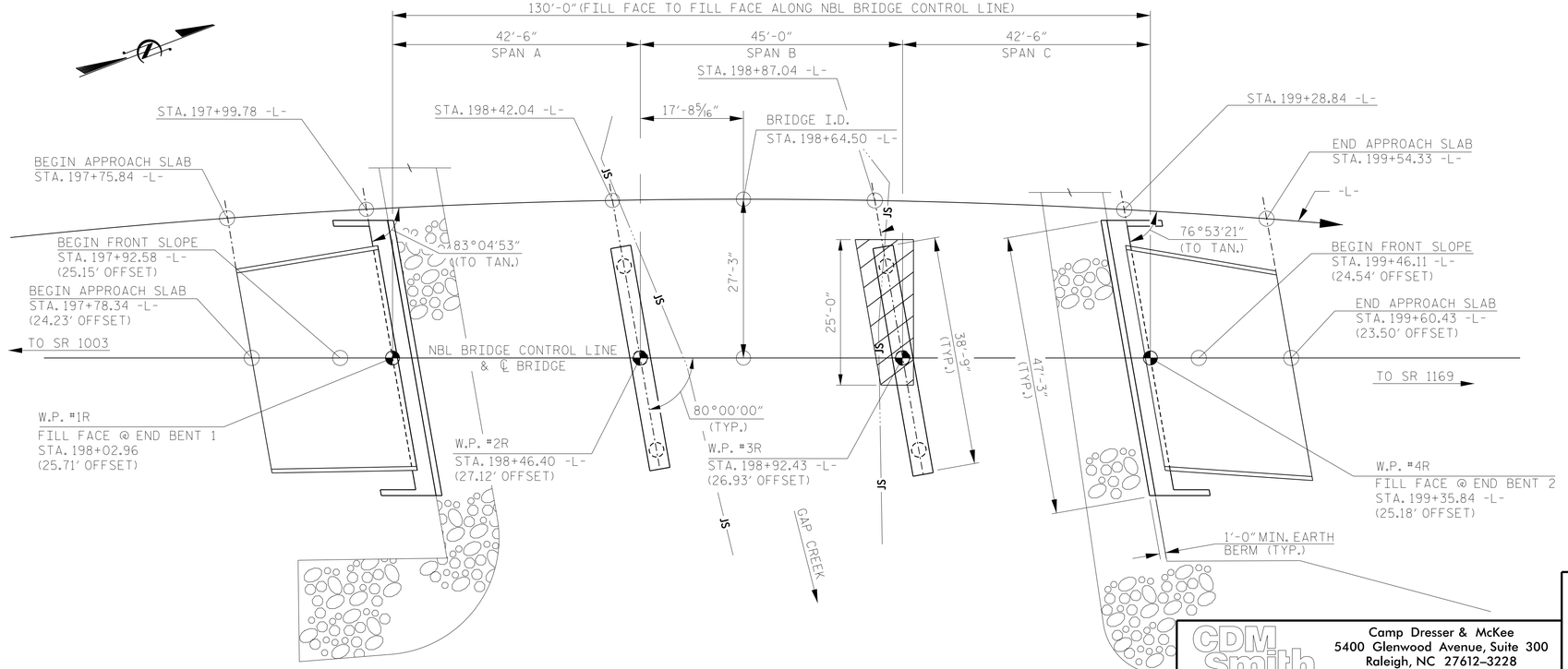
PERMIT DRAWING
SHEET 27 OF 27

F.A. PROJECT NO. STP–0221(40)



SECTION ALONG –NBL– BRIDGE CONTROL LINE & ℄ BRIDGE

(SECTION AT END BENTS AND BENTS ARE AT RIGHT ANGLES)



PLAN

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

HORIZONTAL CURVE DATA –L–

PI STA. 195+10.72
△ = 57° 44' 33.0" (RT)
D = 4° 45' 38.7"
L = 1,212.88'
T = 663.58'
R = 1,203.50'

GRADE DATA –L–

(-) 1.4200% (-) 0.3400%

PI = 195+00.00
EL = 2,885.81'
VC = 200.00'

HYDRAULIC DATA

DESIGN DISCHARGE	= 2400 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YEARS
DESIGN HIGH WATER ELEVATION	= 2,876.1 FT.
DRAINAGE AREA	= 9.5 SQ. MI.
BASE DISCHARGE (Q100)	= 2,900 CFS
BASE HIGH WATER ELEVATION	= 2,876.59 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= >3,900 CFS
FREQUENCY OF OVERTOPPING FLOOD	= >500 YEARS
OVERTOPPING FLOOD ELEVATION	= 2,884.0 FT.
OVERTOPPING ROAD	= 200+00 -L-

CDM Smith
Camp Dresser & McKee
5400 Glenwood Avenue, Suite 300
Raleigh, NC 27612–3228
NC COA No. F–1255

DRAWN BY : C.E.DIXON DATE : 11–13
CHECKED BY : J.TAYLOR DATE : 11–13
DESIGN ENGINEER : J.TAYLOR DATE : 11–13

DWG. No.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. R–2915B

ASHE COUNTY

STATION: 198+64.50 –L–

SHEET 1 OF 2 BRIDGE NO. 539

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY
GENERAL DRAWING

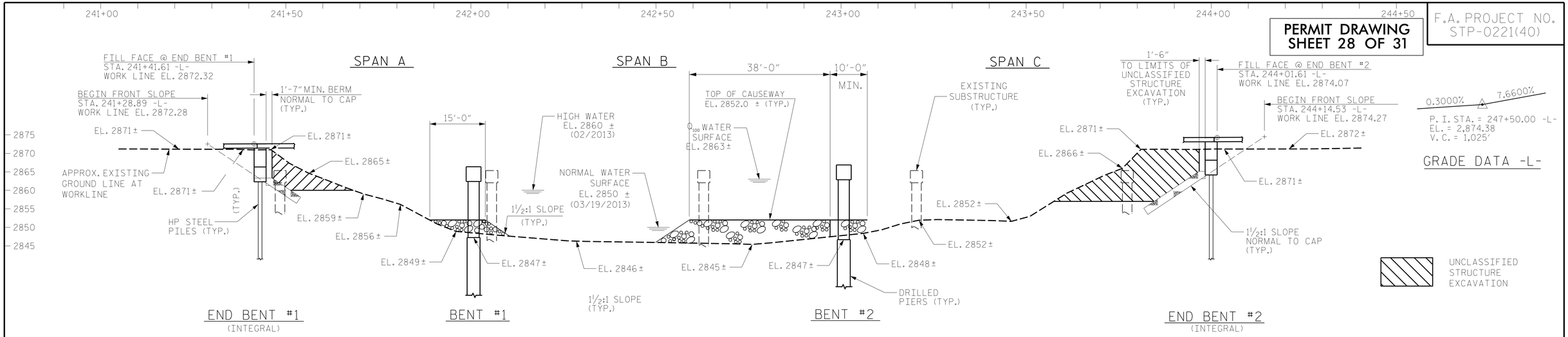
BRIDGE OVER GAP CREEK ON
US 221 BETWEEN
SR 1003 AND SR 1169
(NBL)

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S2–01
1			3			TOTAL SHEETS
2			4			

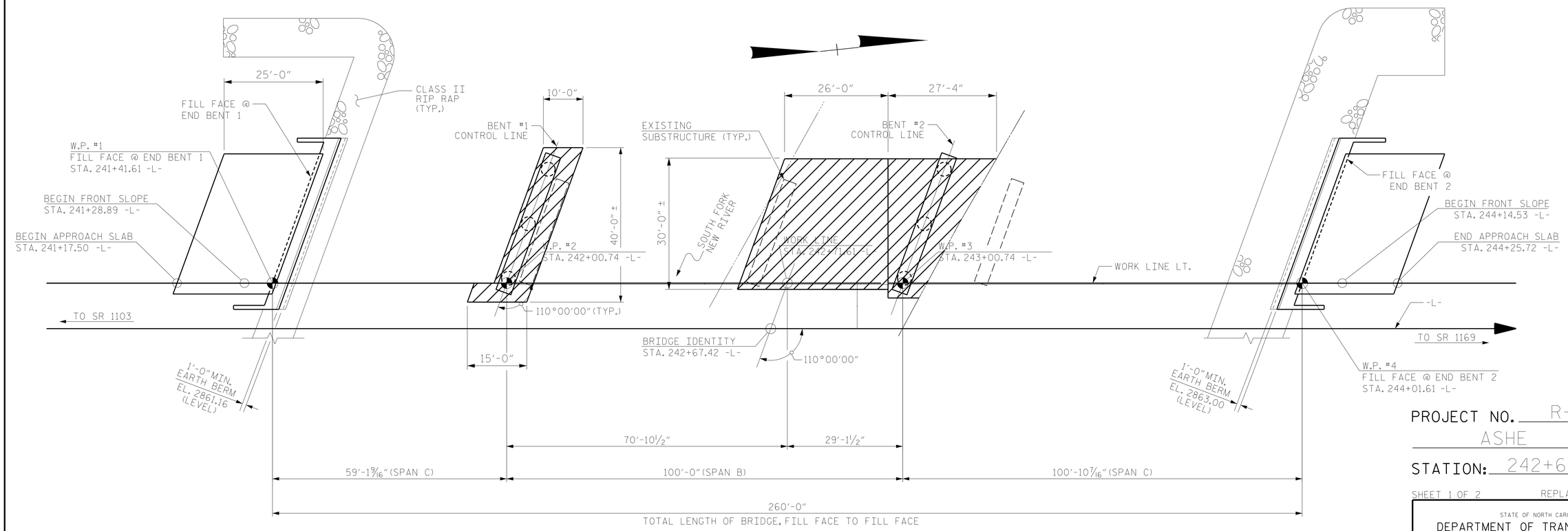
STR. NO. 2

PERMIT DRAWING SHEET 28 OF 31

F.A. PROJECT NO. STP-0221(40)



SECTION ALONG WORK LINE



PLAN

(PILES NOT SHOWN IN PLAN VIEW)

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY

GENERAL DRAWING

BRIDGE OVER
SOUTH FORK NEW RIVER
ON US 221
BETWEEN SR 1103
& SR 1169

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			2

STR. NO. 4

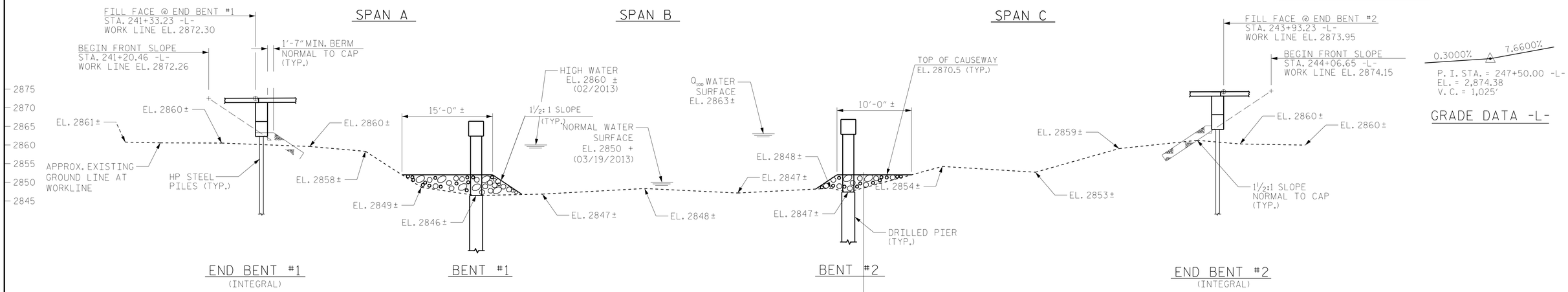
DRAWN BY : J. S. HOBSON DATE : 10/16/13
CHECKED BY : R. F. WERTMAN DATE : 11/15/13
DESIGN ENGINEER OF RECORD : R. F. WERTMAN DATE : 11/15/13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

241+00 241+50 242+00 242+50 243+00 243+50 244+00

PERMIT DRAWING SHEET 29 OF 31

F.A. PROJECT NO. STP-0221(40)



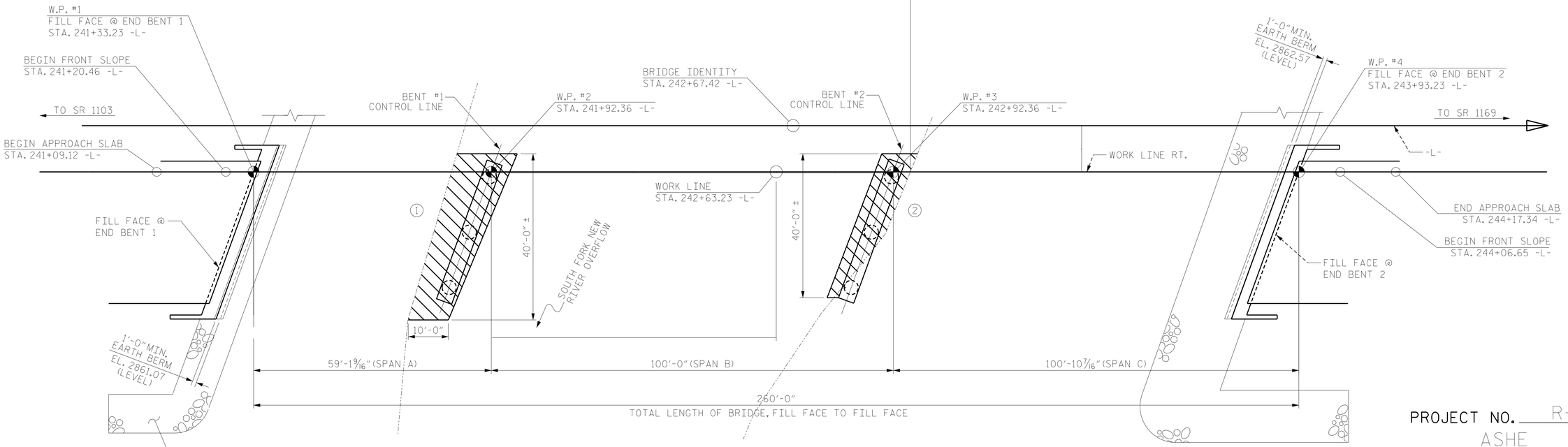
0.3000% 7.6600%

P. I. STA. = 247+50.00 -L-
EL. = 2,874.38
V. C. = 1,025'

GRADE DATA -L-

SECTION ALONG WORK LINE

(SECTION AT BENTS & END BENTS ARE AT RIGHT ANGLES)



PLAN

(PILES NOT SHOWN IN PLAN VIEW)

PROJECT NO. R-2915B

ASHE COUNTY

STATION: 242+67.42 -L-

SHEET 1 OF 2 BRIDGE NO. 541

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY
GENERAL DRAWING
BRIDGE OVER
SOUTH FORK NEW RIVER
ON US 221
BETWEEN SR 1103
& SR 1169

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			2

STR. NO. 5

DRAWN BY : J. S. HOBSON DATE : 10/16/13
CHECKED BY : R. F. WERTMAN DATE : 11/19/13
DESIGN ENGINEER OF RECORD : R. F. WERTMAN DATE : 11/19/13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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)
1A	159+80 / 160+40 -L- RT	BANK STABILIZATION (TRIB.)						0.01	< 0.01	44	21	
	160+40 / 161+80 -L-	CULVERT (TRIB.)						0.05		170		
1B	162+15 / 162+30 -L- LT	CULVERT (GAP CREEK)						< 0.01	< 0.01	15	6	
	162+15 / 162+65 -L- LT	BANK STABILIZATION (GAP CREEK)						< 0.01		35		
2	165+73 -L-	BDO / 30" RCP						< 0.01		5		
	166+00 -L- LT	TAIL DITCH						< 0.01		29		
3	13+85 / 15+03 -DR2-	18" PIPE						< 0.01		111		
4	172+58 / 172+85 -L- LT	12" RCP	< 0.01			< 0.01						
5	174+00 -L- LT	30" CSP	< 0.01									
6	178+50 -L- LT	24" CSP	< 0.01									
7	180+00 / 182+00 -L- LT	ROAD FILL	0.05		0.03							
8	186+21 / 186+43 -L- LT	ROAD FILL	< 0.01			< 0.01						
9	187+63 / 189+15 -L-	36" RCP						0.01		124		
	189+35 / 189+45 -L- LT	BANK STABILIZATION						< 0.01		23		
10	197+20 / 198+90 -L-	BANK STABILIZATION						0.02		154		
	198+80 / 198+90 -L-	WORKPAD / CULVERT REMOVAL							0.02		57	
11	207+00 / 207+05 -L- RT	ROAD FILL	< 0.01			< 0.01						
12	208+72 / 209+51 -L- RT	ROAD FILL	0.12			< 0.01						
13	209+23 -L- LT	24" Pipe						< 0.01	< 0.01	52	8	
14	210+01 / 210+36 -L- LT	ROAD FILL			0.01	< 0.01						
15	215+54 / 217+43 -L- RT	ROAD FILL	0.14			0.05						
16	217+48 -L- LT	60" RCP						< 0.01		27		
	217+45 -L- LT	BANK STABILIZATION						< 0.01		9		
SUBTOTALS*:			0.32		0.04	0.06		0.12	0.03	798	92	

*Rounded totals are sum of actual impacts

NOTES:
Site 10: Total Permanent Pier Impacts = 25.1 SF = 0.0006 AC
Site 15: Fill Imapcts = 0.14 ac, Mechanized Clearing Impacts=0.013, Total Take Impacts=0.036

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6-6-2014
R-2915B ASHE COUNTY
ON US 221 FROM SR 1003 (IDLEWILD RD)
TO NORTH OF SOUTH FORK NEW RIVER

ATN Revised 3/12/13

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)
17	217+22 / 217+75 -L- RT	BANK STABILIZATION						< 0.01		54		
18	222+55 / 222+83 -L- RT	BANK STABILIZATION						< 0.01		53		
19	241+75 / 243+25 -L-	WORK PAD							0.12		115	
20	242+41 / 242+54 -L- RT	BANK STABILIZATION						< 0.01		19		
21	243+31 / 243+46 -L- LT	BANK STABILIZATION						< 0.01		20		
SUBTOTALS*:								0.02	0.12	146	115	
SUBTOTALS FROM PAGE 1*:			0.32		0.04	0.06		0.12	0.03	798	92	
TOTALS*:			0.32		0.04	0.06		0.14	0.15	944	207	

*Rounded totals are sum of actual impacts

NOTES:
Site 19: Total Permanent Pier Impacts = 150.8 SF = 0.003 AC

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6-6-2014
R-2915B ASHE COUNTY
ON US 221 FROM SR 1003 (IDLEWILD RD)
TO NORTH OF SOUTH FORK NEW RIVER

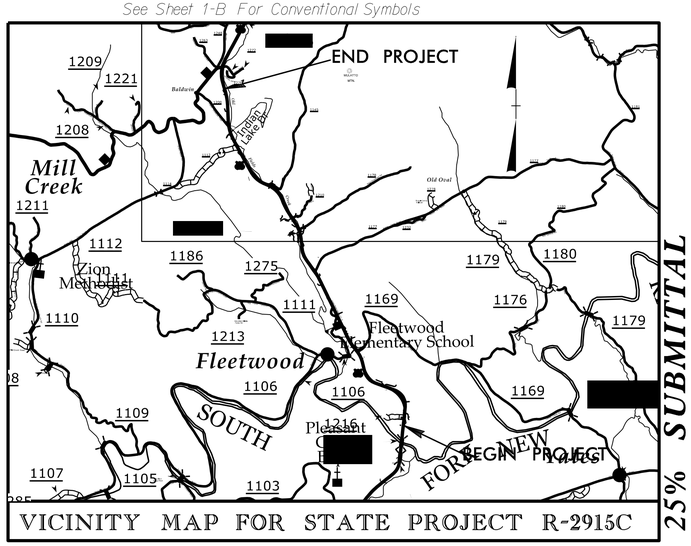
ATN Revised 3/12/13

09/08/99

TIP PROJECT: R-2915C

CONTRACT:

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



VICINITY MAP FOR STATE PROJECT R-2915C

25% SUBMITTAL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915C	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
34518.1.4	STP-0221(41)	P.E.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

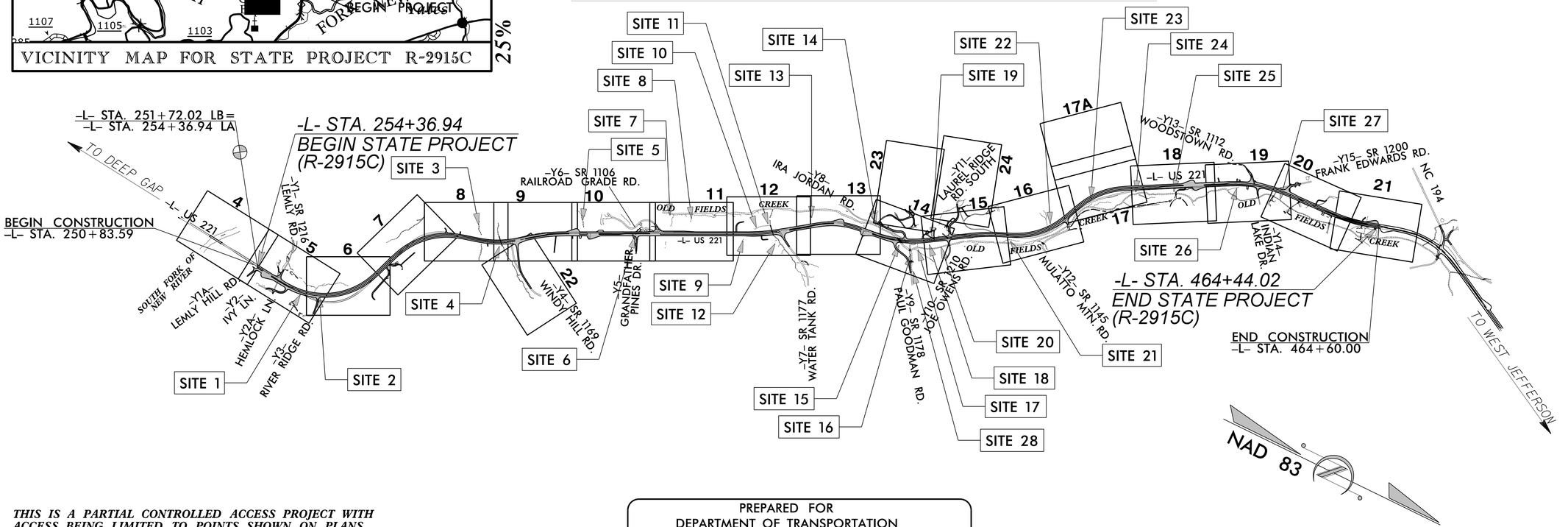
ASHE COUNTY

LOCATION: US 221 FROM NORTH OF SOUTH FORK NEW RIVER TO SOUTH OF NC 194.

PERMIT DRAWING
SHEET 1 OF 33

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

WETLAND AND SURFACE WATER IMPACTS PERMIT



THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS SHOWN ON PLANS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD _____ .
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
DESIGN EXCEPTION IS REQUIRED FOR 8% GRADE ALONG -L- STATION 254+36.94 TO -L- STATION 276+95.00.

PREPARED FOR
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, NC
PLANS COORDINATED BY:
Brenda L. Moore, PE – Project Engineer (NCDOT)

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2017 = 12,743
ADT 2037 = 21,029
DHV = 9 %
D = 60 %
T = 9 % *
V = 60 MPH
* TTST = 2% DUAL 7%
FUNC CLASS =
RURAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2915C = 3.979 Miles
TOTAL LENGTH TIP PROJECT R-2915C = 3.979 Miles

Prepared In the Office of:
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
April 18, 2014

LETTING DATE:
February 21, 2017

Stephen C. Browde, PE
PROJECT ENGINEER

Bill Bollman
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

6/10/2014
R2915C_Hyd_prm_wet_psh_01.dgn
jdalton

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 2 OF 33

8/17/99

REVISIONS

-Y1- (SR 1216) LEMLY RD.
100/100
100/100 0/0
8714/18000 US 221 -L- 8514/17800
100/100 0/0
100/100
HEMLOCK DR./ IVY LN. 2017 ADT 2037 ADT

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83

SITE 1

END STATE PROJECT R-2915B LB = -L- POT Sta. 251+72.02
BEGIN STATE PROJECT R-2915C LA -L- POT Sta. 254+36.94

BEGIN CONSTRUCTION R-2915C -L- POT Sta. 250+83.59

TRACY C. LEMLY
ELIZABETH C. LEMLY

RICK D. WEAVER
ALLISON L. WEAVER

JANET LOU YOUNG

-Y1- POT Sta. 10+00.00

BEGIN CONSTRUCTION -Y1- POT Sta. 11+25.00

-L- SC Sta. 262+25.75

-Y1- POT Sta. 12+00.00= -DRW1- POT Sta. 10+00.00

-DRW1- POT Sta. 11+77.45

END CONSTRUCTION -DRW1- POT Sta. 11+55.00

-DRW1- PT Sta. 11+14.60

-DRW1- PRC Sta. 10+79.16

-DRW1- PC Sta. 10+44.22

S 5° 04' 15.9" W

-L- TS Sta. 258+05.75

-L- POT Sta. 254+50.09= -Y1A- POT Sta. 10+00.00

S 84° 55' 44" E

RIVER RIDGE UNLIMITED, INC.

-L- POS Sta. 260+85.75= -Y2- POT Sta. 10+00.00

S 88° 04' 56.6" E

-L- POS Sta. 258+74.62= -Y1- POT Sta. 13+33.76

-L- PC Sta. 10+57.77

RONALD S. GREENE
CARLENE G. GREENE

JAMES CLINE CHURCH
ELLEN L. CHURCH
EVELYN LEMLY

RICHARD C. CORNEJO
LORETTA A. CORNEJO

BARNEY F. WATSON
RAMONA N. WATSON
TRUSTEES OF THE
WATSON FAMILY TRUST

BARBARA CARTER LIVING TRUST

BARBARA CARTER LIVING TRUST

KEITH & JOYCE K. BLACKBURN

S 2° 47' 35.9" E

-Y2- PT Sta. 14+65.43

-Y2- POT Sta. 15+00.09

-Y2- PT Sta. 12+36.39

RICHARD W. LEMLY
MINNIE C. LEMLY

END CONSTRUCTION -Y1A- POT Sta. 12+50.00

-Y1A- POT Sta. 12+65.12

S 63° 21' 35.7" E

-Y2- PC Sta. 13+75.91

-Y2A- POT Sta. 13+21.57= -Y2A- POT Sta. 10+00.00

-Y2A- POT Sta. 11+20.00

S 45° 32' 17.8" E

END CONSTRUCTION -Y2A- POT Sta. 10+65.00

END CONSTRUCTION -Y2- POT Sta. 14+72.93

N 84° 39' 08.4" E

JAMES CLINE CHURCH
ELLEN L. CHURCH
EVELYN LEMLY

CHARLES J. & WANDA W. ARNETTE

EXISTING R/W TO BE ABANDONED

MATCH TO SHEET 4 -L- STA. 250+00.00

MATCH TO SHEET 10 -L- STA. 265+00.00

DRIVEWAY TURNOUTS ARE 10' RADII UNLESS SHOWN OTHERWISE.

SEE SHEET 41 FOR -DRW1- PROFILE	SEE SHEET 36 FOR -Y1- PROFILE	SEE SHEET 36 FOR -Y1A- PROFILE
SEE SHEET 36 FOR -Y2A- PROFILE	SEE SHEET 36 FOR -Y2- PROFILE	SEE SHEET 26 FOR -L- PROFILE

1/3/2014
k2915c_Hyd_prm_wet_psh_05
jbarnes

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 3 OF 33

REVISIONS 8/17/99

-Y1- (SR 1216) LEMLY RD.
100/100 | 100/100 | 0/0 | 8714/18000 | US 221 | -L- | 8514/17800 | 100/100 | 0/0 | 100/100
HEMLOCK DR./ IVY LN. 2017 ADT 2037 ADT

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83

SITE 1

END STATE PROJECT R-2915B LB = -L- POT Sta. 251+72.02
BEGIN STATE PROJECT R-2915C LA -L- POT Sta. 254+36.94

BEGIN CONSTRUCTION R-2915C -L- POT Sta. 250+83.59

-Y1- POT Sta. 10+00.00

BEGIN CONSTRUCTION -Y1- POT Sta. 11+25.00

-L- SC Sta. 262+25.75

-Y1- POT Sta. 12+00.00= -DRW1- POT Sta. 10+00.00

-L- POT Sta. 254+50.09= -Y1A- POT Sta. 10+00.00

-DRW1- POT Sta. 11+77.45

END CONSTRUCTION -DRW1- POT Sta. 11+55.00

-DRW1- PT Sta. 11+14.60

-DRW1- PRC Sta. 10+79.16

-DRW1- PC Sta. 10+44.22

S 5° 04' 15.9" W

-L- TS Sta. 258+05.75

N 5° 56' 20.6" E

-L- POS Sta. 258+74.62= -Y1- POT Sta. 13+33.76

S 88° 04' 56.6" E

PC Sta. 10+57.77

-L- POS Sta. 260+85.75= -Y2- POT Sta. 10+00.00

-Y2- PT Sta. 14+65.43

-Y2- POT Sta. 15+00.09

-Y2- PT Sta. 12+36.39

S 2° 47' 35.9" E

END CONSTRUCTION -Y1A- POT Sta. 12+50.00 -Y1A- POT Sta. 12+65.12

S 63° 27' 35.7" E

-Y2- PC Sta. 13+75.91

-Y2- POT Sta. 13+21.57= -Y2A- POT Sta. 10+00.00

S 45° 32' 17.8" E

END CONSTRUCTION -Y2A- POT Sta. 10+65.00

END CONSTRUCTION -Y2- POT Sta. 14+72.93

-Y2A- POT Sta. 11+20.00

N 84° 39' 08.4" E

DRIVEWAY TURNOUTS ARE 10' RADII UNLESS SHOWN OTHERWISE.

MATCH TO SHEET 4 -L- STA. 250+00.00

MATCH TO SHEET 6 -L- STA. 265+00.00

SEE SHEET 41 FOR -DRW1- PROFILE	SEE SHEET 36 FOR -Y1- PROFILE	SEE SHEET 36 FOR -Y1A- PROFILE
SEE SHEET 36 FOR -Y2A- PROFILE	SEE SHEET 36 FOR -Y2- PROFILE	SEE SHEET 26 FOR -L- PROFILE

TRACY C. LEMLY
ELIZABETH C. LEMLY

RICK D. WEAVER
ALLISON L. WEAVER

JANET LOU YOUNG

RIVER RIDGE UNLIMITED, INC.

RONALD S. GREENE
CARLENE G. GREENE

BARBARA CARTER LIVING TRUST

KEITH & JOYCE K. BLACKBURN

JAMES CLINE CHURCH
ELLEN L. CHURCH
EVELYN LEMLY

RICHARD C. CORNEJO
LORETTA A. CORNEJO

BARNEY F. WATSON
RAMONA N. WATSON
TRUSTEES OF THE WATSON FAMILY TRUST

RICHARD W. LEMLY
MINNIE C. LEMLY

CHARLES J. & WANDA W. ARNETTE

GRAU 350

GRAU 320

-PINE RUN DR

-HEMLOCK DR

-IVY LN

-LEMLY RD

EXISTING RW TO BE ABANDONED

POSSIBLE SPRING BOX

12" METAL PIPE

15" RCP

24" CMP

36" CMP

WD RAIL & 48" WW

ROCK WALL

CONC MONUMENT

45' PRIVATE RW PER PB 5, PG 265

60' PRIVATE RW PER PB 25, PG 66

SECONDARY TRANS

(US 221 - 23 BS)

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(for YOU)

REVISIONS 8/17/99

LOCHNER	PROJECT REFERENCE NO.	SHEET NO.
H. W. LOCHNER, INC. 2840 PLAZA PLACE, SUITE 202 RALEIGH, NC 27612 — NC License Number F-0159	R-2915C	6
HNTB — NC License Number C-1554	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 4 OF 33

NAD 83

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SITE 1

SITE 2

MATCH TO SHEET 5 -L- STA. 265+00.00

MATCH TO SHEET 7 -L- STA. 279+00.00

-L- POC Sta. 266+50.00=
-Y3- POT Sta. 10+00.00

-L- CS Sta. 276+16.91

-Y3- PC Sta. 10+60.49

-Y3- PT Sta. 11+73.17

-Y3- PC Sta. 12+66.80

-Y3- PT Sta. 13+13.53

END CONSTRUCTION
-Y3- POT Sta. 13+45.00

-Y3- POT Sta. 13+45.72

-DRW2- PC Sta. 15+90.80

-DRW2- PT Sta. 17+75.80

END CONSTRUCTION
-DRW2- POT Sta. 17+55.00

GROVER & SUE GOODMAN

KEITH & JOYCE K. BLACKBURN

RIVER RIDGE UNLIMITED

CHARLES J. & WANDA W. ARNETTE

DONALD EDWARD BLACKBURN et al.

TERRI ANNE WELLS

LESLIE DELEON & BETTY ROSE SASSER

MICHAEL DEAN & MARLENE E. BLEDSOE

WAYLON B & RACHEL THOMAS

EASEMENT REQUIRED HERE FOR TEMPORARY DETOUR/WIDENING (REF. SHT 12-C)

EXISTING R/W TO BE ABANDONED

PAVED DITCH

GRAU 350

HWY 221 BST

RIVER RIDGE ROAD

-L-		
PIs Sta 260+86.12	PI Sta 269+92.55	PIs Sta 277+27.08
Θs = 9° 02' 48J"	Δ = 59° 55' 50.5" (LT)	Θs = 7° 06' 29.2"
Ls = 420.00'	D = 4° 18' 28.6"	Ls = 330.00'
LT = 280.37'	L = 1,391.16'	LT = 220.18'
ST = 140.33'	T = 766.80'	ST = 110.16'
	R = 1,330.00'	
	SE = .06	
	Ro = As Shown	

-Y3-	-Y3-	-DRW2-
PI Sta 11+17.12	PI Sta 12+90.20	PI Sta 17+39.93
Δ = 14° 09' 30.3" (RT)	Δ = 7° 38' 58.6" (RT)	Δ = 117° 46' 45.2" (LT)
D = 12° 33' 53.5"	D = 16° 22' 12.8"	D = 63° 39' 43.1"
L = 112.68'	L = 46.73'	L = 185.01'
T = 56.63'	T = 23.40'	T = 149.13'
R = 456.00'	R = 350.00'	R = 90.00'
SE = .05	SE = As Shown	
Ro = As Shown	Ro = As Shown	

DRIVEWAY TURNOUTS ARE 10' RADII UNLESS SHOWN OTHERWISE.

SEE SHEET 41 FOR -DRW2- PROFILE
SEE SHEET 37 FOR -Y3- PROFILE
SEE SHEET 28 FOR -L- PROFILE

U3-2014
R2915C Hyd_prm_wet_psh_06
Drawn

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 5 OF 33

REVISIONS 8/17/99

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83

MATCH TO SHEET 5 -L- STA. 265+00.00

MATCH TO SHEET 7 -L- STA. 279+00.00

SITE 1

SITE 2

-L- POC Sta. 266+50.00=
-Y3- POT Sta. 10+00.00

-L- CS Sta. 276+16.91

-Y3- PC Sta. 10+60.49

-Y3- PT Sta. 11+73.17

-Y3- PC Sta. 12+66.80

-Y3- PT Sta. 13+13.53

END CONSTRUCTION
-Y3- POT Sta. 13+45.00
-Y3- POT Sta. 13+45.72

-DRW2- PC Sta. 15+90.80

-DRW2- PT Sta. 17+75.80

END CONSTRUCTION
-DRW2- POT Sta. 17+55.00

GROVER & SUE GOODMAN

KEITH & JOYCE K. BLACKBURN

RIVER RIDGE UNLIMITED

CHARLES J. & WANDA W. ARNETTE

DONALD EDWARD BLACKBURN et ux.

TERRI ANNE WELLS

EASEMENT REQUIRED HERE FOR TEMPORARY DETOUR/WIDENING (REF. SHT 12-C)

EXISTING R/W TO BE ABANDONED

LESLIE DELEON & BETTY ROSE SASSER

MICHAEL DEAN & MARLENE E. BLEDSOE

WAYLON B. & RACHEL THOMAS

-L-			-Y3-	-Y3-	-DRW2-
PIs Sta 260+86.12	PI Sta 269+92.55	PIs Sta 277+27.08	PI Sta 11+17.12	PI Sta 12+90.20	PI Sta 17+39.93
Θs = 9° 02' 48.1"	Δ = 59° 55' 50.5" (LT)	Θs = 7° 06' 29.2"	Δ = 14° 09' 30.3" (RT)	Δ = 7° 38' 58.6" (RT)	Δ = 117° 46' 45.2" (LT)
Ls = 420.00'	D = 4° 18' 28.6"	Ls = 330.00'	D = 12° 33' 53.5"	D = 16° 22' 12.8"	D = 63° 39' 43.1"
LT = 280.37'	L = 1,391.16'	LT = 220.18'	L = 112.68'	L = 46.73'	L = 185.01'
ST = 140.33'	T = 766.80'	ST = 110.16'	T = 56.63'	T = 23.40'	T = 149.13'
	R = 1,330.00'		R = 456.00'	R = 350.00'	R = 90.00'
	SE = .06		SE = .05	SE = As Shown	
	Ro = As Shown		Ro = As Shown	Ro = As Shown	

DRIVEWAY TURNOUTS ARE 10' RADII UNLESS SHOWN OTHERWISE.

SEE SHEET 41 FOR -DRW2- PROFILE
SEE SHEET 37 FOR -Y3- PROFILE
SEE SHEET 28 FOR -L- PROFILE

1/3/2014
R2915C_hyd_prm_wet_psh_06.con
hor_wet

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159

HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 6 OF 33

NAD 83

REVISIONS 8/17/99

-DRW5-
PI Sta 10+45.15
△ = 35° 18' 18.2" (RT)
D = 163° 42' 08.0"
L = 21.57'
T = 11.14'
R = 35.00'

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 3

JOHN MICHAEL GRAY

LILLIAN B EDWARDS WORLEY

GERALD K. & MAUREEN E. DENNY

DAVID LEE HOLMAN

NO HEAD, LLC

EASEMENT REQUIRED HERE FOR TEMPORARY DETOUR WIDENING (REF. SHT. B-2, DI, DRW5, & ANTICIPATED DRAINAGE NEEDS.

REBAR

-DRW5- POT Sta. 10+00.00

-DRW5- PC Sta. 10+34.02

BEGIN CONSTRUCTION
-DRW5- POT Sta. 10+05.00

-DRW5-
PT Sta. 10+55.58

-L- SC Sta. 300+47.91

-L- POC Sta. 292+72.53=
-DRW5- POT Sta. 11+41.08

-L- CS Sta. 293+87.91

-L- SRS Sta. 297+17.91

MATCH TO SHEET 7 -L- STA. 291+00.00

MATCH TO SHEET 9 -L- STA. 302+00.00

US 221 BST

GRAU 350

CAT-1

EXISTING R/W

R/W MON

18" RCP

12.8"HW

GUY

-L-		
PIs Sta 283+12.59	PI Sta 289+27.54	PIs Sta 294+98.07
Θs = 7° 06' 29.2"	△ = 41° 35' 36.0" (RT)	Θs = 7° 06' 29.2"
Ls = 330.00'	D = 4° 18' 28.6"	Ls = 330.00'
LT = 220.18'	L = 965.50'	LT = 220.18'
ST = 110.16'	T = 505.13'	ST = 110.16'
	R = 1,330.00'	
	SE = .06	
	Ro = As Shown	

-L-		
PIs Sta 299+38.03	PI Sta 302+14.38	PIs Sta 304+89.79
Θs = 5° 50' 08.5"	△ = 11° 44' 01.8" (LT)	Θs = 5° 50' 08.5"
Ls = 330.00'	D = 3° 32' 12.4"	Ls = 330.00'
LT = 220.12'	L = 331.77'	LT = 220.12'
ST = 110.11'	T = 166.47'	ST = 110.11'
	R = 1,620.00'	
	SE = .06	
	Ro = As Shown	

DRIVEWAY TURNOUTS ARE 10' RADII UNLESS SHOWN OTHERWISE.

SEE SHEET 41 FOR -DRW5- PROFILE

SEE SHEET 29 FOR -L- PROFILE

K:\3_2014\R-2915C\Hyd_prm_wet_psh_08.dgn

8/17/99

REVISIONS

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159

HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 7 OF 33

NAD 83

-DRW5-
PI Sta. 10+45.15
△ = 35° 18' 18.2" (RT)
D = 163° 42' 08.0"
L = 21.57'
T = 11.14'
R = 35.00'

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCH TO SHEET 7 -L- STA. 291+00.00

MATCH TO SHEET 9 -L- STA. 302+00.00

JOHN MICHAEL GRAY

EASEMENT REQUIRED FOR TEMPORARY DETOUR, WIDENING, TREE REMOVAL, DRIVEWAYS, & ANTICIPATED BORROW NEEDS

REBAR

LILLIAN B EDWARDS WORLEY

SITE 3

GERALD K. & MAUREEN E. DENNY

DAVID LEE HOLMAN

NO HEAD, LLC

-DRW5- POT Sta. 10+00.00

-DRW5- PC Sta. 10+34.02

BEGIN CONSTRUCTION
-DRW5- POT Sta. 10+05.00

-DRW5- PT Sta. 10+55.58

-L- SC Sta. 300+47.91

-L- POC Sta. 292+72.53=
-DRW5- POT Sta. 11+41.08

-L- CS Sta. 293+87.91

-L- SRS Sta. 297+17.91

GRAU 350

CAT-1

US 221 BST

-L-						
PIs Sta 283+12.59	PI Sta 289+27.54	PIs Sta 294+98.07	PIs Sta 299+38.03	PI Sta 302+14.38	PIs Sta 304+89.79
Θs = 7° 06' 29.2"	△ = 41° 35' 36.0" (RT)	Θs = 7° 06' 29.2"	Θs = 5° 50' 08.5"	△ = 11° 44' 01.8" (LT)	Θs = 5° 50' 08.5"
Ls = 330.00'	D = 4° 18' 28.6"	Ls = 330.00'	Ls = 330.00'	D = 3° 32' 12.4"	Ls = 330.00'
LT = 220.18'	L = 965.50'	LT = 220.18'	LT = 220.12'	L = 331.77'	LT = 220.12'
ST = 110.16'	T = 505.13'	ST = 110.16'	ST = 110.11'	T = 166.47'	ST = 110.11'
	R = 1,330.00'			R = 1,620.00'	
	SE = .06			SE = .06	
	Ro = As Shown			Ro = As Shown	

DRIVEWAY TURNOUTS ARE 10' RADII UNLESS SHOWN OTHERWISE.

SEE SHEET 41 FOR -DRW5- PROFILE

SEE SHEET 29 FOR -L- PROFILE

U:\2014\R-2915C\Hyd\prm_wet_psh_08.con
Drawing

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 8 OF 33

REVISIONS 8/17/99

8515 / 17800 US 221 -L- 9093 / 18200
54 / 500 632 / 900
686 / 1400
-Y4- (SR 1169) WINDY HILL RD.
2017 ADT / 2037 ADT

NAD 83

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 4

DAVID LEE HOLMAN

JERRY G. & GERALDINE M. STYERS

SECONDARY TRANS

B&B LAND DEVELOPERS

DONALD E. BLACKBURN
JIMMY BLEDSOE

BARRY & CAROLYN GOODMAN

LAINE N. KELLER

JOSEPH L. & CANDICE L. KELLER et al

MAUDE K. WILLIAMS (L/E)

JORGE HERNANDEZ et al

T. MAURICE JORDAN

NO HEAD, LLC

SR 1106 RAILROAD GRADE RD BST

HWY 221 BST

WINDY HILL RD SR 1162

-L- CS Sta. 303+79.68

-L- SRS Sta. 307+09.68

-L- CS Sta. 312+52.30

-L- SC Sta. 309+79.68

-L- POS Sta. 305+50.00=
-Y4- POT Sta. 10+00.00

-L- POS Sta. 312+67.18=
-DRW6- POT Sta. 10+00.00

-DRW6- POT Sta. 13+50.00

-L- ST Sta. 315+22.30

N 58° 37' 21" E

N 69° 58' 14.9" E

N 26° 00' 35.7" W

MATCH TO SHEET 8 -L- STA. 302+00.00

MATCH TO SHEET 10 -L- STA. 316+00.00

MATCH TO SHEET 22 -Y4- STA. 13+00

DRIVEWAY TURNOUTS ARE 10' RADII UNLESS SHOWN OTHERWISE.

SEE SHEET 41 FOR -DRW6- PROFILE
SEE SHEET 37 FOR -Y4- PROFILE
SEE SHEET 30 FOR -L- PROFILE

1/3/2014
R-2915C_Hyd_prm_wet_psh_09
harvey

LOCHNER
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NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 9 OF 33

REVISIONS 8/17/99

8515 / 17800 US 221 -L- 9093 / 18200
54 / 500
632 / 900
686 / 1400
-Y4- (SR 1169) WINDY HILL RD.
2017 ADT / 2037 ADT

NAD 83

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DAVID LEE HOLMAN

JERRY G. & GERALDINE M. STYERS

SECONDARY TRANS

SITE 4

-L- SRS Sta. 307+09.68

-L- CS Sta. 303+79.68

-L- CS Sta. 312+52.30

B&B LAND DEVELOPERS

DONALD E. BLACKBURN
JIMMY BLEDSOE

BARRY & CAROLYN GOODMAN

SR 1106 RAILROAD GRADE RD

MATCH TO SHEET 8 -L- STA. 302+00.00

MATCH TO SHEET 10 -L- STA. 316+00.00

-L- POS Sta. 312+67.18=
-DRW6- POT Sta. 10+00.00

N 26° 00' 35.7" W

N 69° 58' 14.9" E

JOSEPH L. & CANDICE L. KELLER et al

LAINE N. KELLER

-L- SC Sta. 309+79.68

-L- POS Sta. 305+50.00=
-Y4- POT Sta. 10+00.00

N 58° 37' 27.2" E

JORGE HERNANDEZ et al

MAUDE K. WILLIAMS (L/E)

-L- ST Sta. 315+22.30

-DRW6- POT Sta. 13+50.00

T. MAURICE JORDAN

NO HEAD, LLC

EXISTING R/W TO BE ABANDONED

MATCH TO SHEET 22 -Y4- STA. 13+00

DRIVEWAY TURNOUTS ARE 10' RADII UNLESS SHOWN OTHERWISE.

SEE SHEET 41 FOR -DRW6- PROFILE
SEE SHEET 37 FOR -Y4- PROFILE
SEE SHEET 30 FOR -L- PROFILE

1/3/2014
R-2915C_Hyd_prm_wet_psh_09.con
harvey

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 10 OF 33

REVISIONS

8/17/99

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

MATCH TO SHEET 9 -L- STA. 316+00.00

MATCH TO SHEET 11 -L- STA. 330+00.00

-Y6- PCC Sta. 11+60.21

-Y6- PC Sta. 10+97.91

-Y6- POT Sta. 10+00.00

-L- POT Sta. 327+04.23=
-Y5- POT Sta. 10+00.00

SITE 5

SITE 6

TIMOTHY RAY HAMBY

TRAVIS MARIE WOODIE HAMBY

ASHE COUNTY BOARD OF EDUCATION

CHRISTOPHER EVAN MOORE
KAYLA PHIPPS MOORE

BARRY & CAROLYN GOODMAN

MAUDE K. WILLIAMS (L/E)

T. MAURICE JORDAN

JOHN RAY PHILLIPS, SR;
JOHN RAY PHILLIPS, JR; &
HEATHER R. PHILLIPS

RICKEY WAYNE SURBER

FLEETWOOD VOL. FIRE DEPARTMENT

CHRISTOPHER C. & VICTORIA HAMBY MOORE

SR 1106 RAILROAD GRADE RD

N 75° 06' 24.0" W

N 26° 00' 35.7" W

N 0° 01' 12.3" E

END CONSTRUCTION
-Y5- POT Sta. 13+15.00

-Y5- POT Sta. 13+60.00

-Y6-	-Y6-
PI Sta 11+29.67	PI Sta 13+89.57
Δ = 27° 27' 20.2" (RT)	Δ = 95° 02' 44.9" (RT)
D = 44° 04' 25.2"	D = 27° 17' 01.3"
L = 62.29'	L = 348.36'
T = 31.76'	T = 229.36'
R = 130.00'	R = 210.00'
SE = EXIST.	SE = .06

SEE SHEET 37 FOR -Y5- PROFILE

SEE SHEET 30 FOR -L- PROFILE

L37_2014
R2915C_Hyd_prm_wet_psh_10
Drawing

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 11 OF 33

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

REVISIONS 8/17/99

MATCH TO SHEET 9 -L- STA. 316+00.00

MATCH TO SHEET 11 -L- STA. 330+00.00

-Y6- PCC Sta. 11+60.21

-Y6- PC Sta. 10+97.91

-Y6- POT Sta. 10+00.00

SITE 5

SITE 6

TIMOTHY RAY HAMBY

TRAVIS MARIE WOODIE HAMBY

ASHE COUNTY BOARD OF EDUCATION

CHRISTOPHER EVAN MOORE
KAYLA PHIPPS MOORE

BARRY & CAROLYN GOODMAN

MAUDE K. WILLIAMS (L/E)

T. MAURICE JORDAN

JOHN RAY PHILLIPS, SR;
JOHN RAY PHILLIPS, JR; &
HEATHER R. PHILLIPS

RICKEY WAYNE SURBER

FLEETWOOD VOL FIRE DEPARTMENT

CHRISTOPHER C. & VICTORIA HAMBY MOORE

N 26°00'35.7" W

N 73°06'24.0" W

N 60°07'12.7" E

-L- POT Sta. 327+04.23=
-Y5- POT Sta. 10+00.00

END CONSTRUCTION
-Y5- POT Sta. 13+15.00

-Y5- POT Sta. 13+60.00

-Y6-
PI Sta 11+29.67
Δ = 27° 27' 20.2" (RT)
D = 44° 04' 25.2"
L = 62.29'
T = 31.76'
R = 130.00'
SE = EXIST.

-Y6-
PI Sta 13+89.57
Δ = 95° 02' 44.9" (RT)
D = 27° 17' 01.3"
L = 348.36'
T = 229.36'
R = 210.00'
SE = .06

SEE SHEET 37 FOR -Y5- PROFILE
SEE SHEET 30 FOR -L- PROFILE

K:\3_2014\R-2915C\Hyd_prm_wet_psh_10.con
bar vers 8.11

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 12 OF 33

REVISIONS 8/17/99

-Y6- (SR 1106) RAILROAD GRADE RD.
1593
3200

511 / 600 — 1082 / 2600

9093 / 18200 — US 221 — -L- — 9664 / 20200

2017 ADT
2037 ADT

NAD 83

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

SITE 7

SITE 8

OLD FIELD CREEK

335

340

REBAR

BEGIN CONSTRUCTION
-Y6- POC Sta. 13+95.00

TIMOTHY RAY HAMBY

FLEETWOOD FALLS, INC.

CHARLES JONES
TERESA D. JONES

TRAVIS MARIE
WOODIE HAMBY

-Y6-
PT Sta. 15+08.57

N 49° 23' 41" E

CAT 1

RAILROAD GRADE RD

HWY 221 BST

EXISTING R/W

ISBKBUS

ISFBUS

GRAU 350

N 26° 00' 35.7" W

-L-

-L- POT Sta. 331+10.00=
-Y6- POT Sta. 15+99.61

CHRISTOPHER C. &
VICTORIA HAMBY MOORE

TRAVIS MARIE
WOODIE HAMBY

MATCH TO SHEET 10 -L- STA. 330+00.00

MATCH TO SHEET 12 -L- STA. 344+00.00

-Y6-
PI Sta 13+89.57
△ = 95° 02' 44.9" (RT)
D = 27° 17' 01.3"
L = 348.36'
T = 229.36'
R = 210.00'
SE = .06
Ro = AS SHOWN

SEE SHEET 37 FOR -Y6- PROFILE

SEE SHEET 31 FOR -L- PROFILE

1/3/2014
R2915C_Hyd_prm_wet_psh_11
hpowell

8/17/99

REVISIONS

-Y6- (SR 1106) RAILROAD GRADE RD.
1593
3200

511 600 | 1082 2600
9093 18200 ◄ US 221 -L- ► 9664 20200
2017 ADT
2037 ADT

NAD 83

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 13 OF 33

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

MATCH TO SHEET 10 -L- STA. 330+00.00

MATCH TO SHEET 12 -L- STA. 344+00.00

SITE 7

SITE 8

BEGIN CONSTRUCTION
-Y6- POC Sta. 13+95.00

PT Sta. 15+08.57

-L- POT Sta. 331+10.00=
-Y6- POT Sta. 15+99.61

N 49° 23' 41" E

N 26° 00' 35.7" W

OLD FIELD CREEK

TIMOTHY RAY HAMBY

CHARLES JONES
TERESA D. JONES

FLEETWOOD FALLS, INC.

TRAVIS MARIE
WOODIE HAMBY

CHRISTOPHER C. &
VICTORIA HAMBY MOORE

HWY 221 BST

EXISTING R/W

-Y6-
PI Sta 13+89.57
△ = 95° 02' 44.9" (RT)
D = 27° 17' 01.3"
L = 348.36'
T = 229.36'
R = 210.00'
SE = .06
Ro = AS SHOWN

SEE SHEET 37 FOR -Y6- PROFILE
SEE SHEET 31 FOR -L- PROFILE

1/3/2014
R2915C_Hyd_prm_wet_psh_11.con
Default

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 14 OF 33

REVISIONS 8/17/99

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

MATCH TO SHEET 11 -L- STA. 344+00.00

MATCH TO SHEET 13 -L- STA. 357+00.00

TIMOTHY RAY HAMBY

OLD FIELD CREEK

REBAR

-DRW6A- POT Sta. 13+18.10

-DRW6A- PT Sta. 12+41.33

FLEETWOOD FALLS, INC.

N 36° 45' 44.8" W

JASON & EMILY STOPPER

WILLIAM W. STURDIVANT
LINDA H. STURDIVANT

SITE 10

SITE 11

SITE 9

SITE 12

RV HOLDINGS FOUR, LLC

SHERRIE TESTERMAN

JAMES P. &
LINDA J. HUTCHINS

RUTH BAKER
LINDA BAKER TAYLOR
WAYNE BAKER

WILLIAM S. MILLER TRUST

NELL BALDWIN

CHRISTOPHER C. &
VICTORIA HAMBY MOORE

-DRW6A- PC Sta. 11+16.79

S 63° 59' 24.3" W

-L- POT Sta. 343+80.00=
-DRW6A- POT Sta. 10+00.00

-L- TS Sta. 345+99.15

-L- SC Sta. 348+19.15

-L- POC Sta. 349+50.00=
-DRW7- POT Sta. 10+00.00

-L- CS Sta. 351+81.37

-L- POS Sta. 352+70.64=
-Y7- POT Sta. 10+00.00

-L- ST Sta. 354+01.37

N 26° 00' 35.7" W

N 60° 02' 50.5" E

N 35° 32' 27.4" W

N 30° 41' 11.5" E

N 24° 25' 13.4" E

-DRW7- PC Sta. 10+87.06

N 30° 46' 59.5" W

-DRW7-
PT Sta. 11+34.62

-DRW7-
PC Sta. 12+07.53

END CONSTRUCTION
-DRW7- POT Sta. 12+15.00

-DRW7- POT Sta. 12+48.86

-DRW7-
PT Sta. 12+34.16

-Y7- PC Sta. 13+35.55

END CONSTRUCTION
-Y7- POC Sta. 14+00.00

-Y7- PT Sta. 14+45.49

9665 / 20200 ◄ US 221 -L- ► 9800 / 19800

286 / 1000 ◄ ► 421 / 600

707 / 1600
-Y7- (SR 1177) WATER TANK RD.
2017 ADT
2037 ADT

-L-
PIs Sta 347+45.83
Θs = 1° 48' 02.6"
Ls = 220.00'
LT = 146.67'
ST = 73.34'

-L-
PI Sta 350+00.42
△ = 5° 55' 46.5" (LT)
D = 1° 38' 13.3"
L = 362.22'
T = 181.27'
R = 3,500.00'
SE = .04
Ro = As Shown

-L-
PIs Sta 352+54.71
Θs = 1° 48' 02.6"
Ls = 220.00'
LT = 146.67'
ST = 73.34'

-DRW6A-
PI Sta 11+91.35
△ = 79° 16' 50.9" (RT)
D = 63° 39' 43.1"
L = 124.53'
T = 74.56'
R = 90.00'

-Y7-
PI Sta 13+90.58
△ = 6° 17' 58.1" (LT)
D = 5° 43' 46.5"
L = 109.95'
T = 55.03'
R = 1,000.00'
SE = EXIST.
Ro = As Shown

-DRW7-
PI Sta 12+21.79
△ = 50° 51' 33.0" (RT)
D = 190° 59' 09.4"
L = 26.63'
T = 14.26'
R = 30.00'

-DRW7-
PI Sta 11+17.50
△ = 90° 49' 49.9" (LT)
D = 190° 59' 09.4"
L = 47.56'
T = 30.44'
R = 30.00'

SEE SHEET 41 FOR -DRW7- PROFILE
SEE SHEET 37 FOR -Y7- PROFILE
SEE SHEET 31 FOR -L- PROFILE

U3-2004
R-2915C
Hyd_prm_wet_psh_12
Drawn

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 15 OF 33

REVISIONS 8/17/99

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

MATCH TO SHEET 11 -L- STA. 344+00.00

MATCH TO SHEET 13 -L- STA. 357+00.00

TIMOTHY RAY HAMBY

JASON & EMILY STOPPER

FLEETWOOD FALLS, INC.

WILLIAM W. STURDIVANT
LINDA H. STURDIVANT

RV HOLDINGS FOUR, LLC

SHERRIE TESTERMAN

JAMES P. & LINDA J. HUTCHINS

RUTH BAKER
LINDA BAKER TAYLOR
WAYNE BAKER

WILLIAM S. MILLER TRUST

NELL BALDWIN

CHRISTOPHER C. & VICTORIA HAMBY MOORE

SITE 9

SITE 10

SITE 11

SITE 12

-DRW6A- POT Sta. 13+18.10

-DRW6A- PT Sta. 12+41.33

N 36° 45' 44.5" W

-L- POT Sta. 343+80.00=
-DRW6A- POT Sta. 10+00.00

-DRW6A-
PC Sta. 11+16.79

S 63° 59' 24.3" W

-L- TS Sta. 345+99.15

-△- SC Sta. 348+19.15

-L- POC Sta. 349+50.00=
-DRW7- POT Sta. 10+00.00

N 26° 00' 35.7" W

N 60° 02' 50.5" E

-DRW7- PC Sta. 10+87.06

N 30° 46' 59.5" W

-DRW7-
PT Sta. 11+34.62

-DRW7-
PC Sta. 12+07.53

END CONSTRUCTION
-DRW7- POT Sta. 12+15.00

-DRW7- POT Sta. 12+48.86

-DRW7-
PT Sta. 12+34.16

-L- CS Sta. 351+81.37

-L- POS Sta. 352+70.64=
-Y7-1 POT Sta. 10+00.00

-L- ST Sta. 354+01.37

N 35° 32' 27.4" W

N 30° 41' 11.5" E

N 24° 23' 13.4" E

-Y7- PC Sta. 13+35.55

END CONSTRUCTION
-Y7- POC Sta. 14+00.00

-Y7- PT Sta. 14+45.49

9665 / 20200 — US 221 — -L- — 9800 / 19800

286 / 1000 — 421 / 600

707 / 1600 -Y7- (SR 1177) WATER TANK RD.

2017 ADT
2037 ADT

-L-			
PIs Sta 347+45.83	PI Sta 350+00.42	PIs Sta 352+54.71	PI Sta 13+90.58
Θs = 1° 48' 02.6"	△ = 5° 55' 46.5" (LT)	Θs = 1° 48' 02.6"	△ = 6° 17' 58.1" (LT)
Ls = 220.00'	D = 1° 38' 13.3"	Ls = 220.00'	D = 5° 43' 46.5"
LT = 146.67'	L = 362.22'	LT = 146.67'	L = 109.95'
ST = 73.34'	T = 181.27'	ST = 73.34'	T = 55.03'
	R = 3,500.00'		R = 1,000.00'
	SE = .04		SE = EXIST.
	Ro = As Shown		Ro = As Shown

-DRW6A-	-DRW7-	-DRW7-
PI Sta 11+91.35	PI Sta 12+21.79	PI Sta 11+17.50
△ = 79° 16' 50.9" (RT)	△ = 50° 51' 33.0" (RT)	△ = 90° 49' 49.9" (LT)
D = 6° 39' 43.1"	D = 190° 59' 09.4"	D = 190° 59' 09.4"
L = 124.53'	L = 26.63'	L = 47.56'
T = 74.56'	T = 14.26'	T = 30.44'
R = 90.00'	R = 30.00'	R = 30.00'

SEE SHEET 41 FOR -DRW7- PROFILE
SEE SHEET 37 FOR -Y7- PROFILE
SEE SHEET 31 FOR -L- PROFILE

K:\24150C_Hyd_prm_wet_psh_12.con

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 16 OF 33

REVISIONS

8/17/99

NAD 83

SHERRIE TESTERMAN

S S DENOTES IMPACTS IN SURFACE WATER

SITE 13

JAMES P. & LINDA J. HUTCHINS

WILLIAM S. MILLER TRUST

ANDREW K. JORDAN

EDGAR D. WADE, JR.

JOSEPH D. STARNES
VANESSA G. STARNES

JOSEPH D. & VANESSA G. STARNES

IRA JORDAN RD BST

ANDREW LN

OLD FIELD CREEK

HWY 221 BST

US 221 BST

EXISTING R/W

4" BARS WIRE

WALL

STONE WALL

WELL

WELL COVER

GUY

PIPEPOST

ISFD

DI

8" RCPE

MATCH TO SHEET 12 -L- STA. 357+00.00

MATCH TO SHEET 14 -L- STA. 369+00.00

N 35° 32' 27.4" W

-L- TS Sta. 358+44.08

-L- SC Sta. 361+74.08

-L- CS Sta. 365+33.57

-L- SRS Sta. 368+63.57

-L-		
PIs Sta 360+64.25	PI Sta 363+54.93	PIs Sta 366+43.74
Θs = 7° 06' 29.2"	Δ = 15° 29' 13.4" (RT)	Θs = 7° 06' 29.2"
Ls = 330.00'	D = 4° 18' 28.6"	Ls = 330.00'
LT = 220.18'	L = 359.50'	LT = 220.18'
ST = 110.16'	T = 180.85'	ST = 110.16'
	R = 1,330.00'	
	SE = .06	
	Ro = As Shown	

-L-		
PIs Sta 370+83.65	PI Sta 374+98.67	PIs Sta 379+09.17
Θs = 4° 43' 36.8"	Δ = 17° 20' 48.7" (LT)	Θs = 4° 43' 36.8"
Ls = 330.00'	D = 2° 51' 53.2"	Ls = 330.00'
LT = 220.08'	L = 605.52'	LT = 220.08'
ST = 110.07'	T = 305.09'	ST = 110.07'
	R = 2,000.00'	
	SE = .06	
	Ro = As Shown	

SEE SHEET 32 FOR -L- PROFILE

1/3/2014
R2915C_Hyd_prm_wet_psh_13
Revised

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 17 OF 33

REVISIONS 8/17/99

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83

SHERRIE TESTERMAN

ANDREW K. JORDAN

EDGAR D. WADE, JR.

WILLIAM S. MILLER TRUST

JAMES P. & LINDA J. HUTCHINS

SITE 13

JOSEPH D. STARNES
VANESSA G. STARNES

JOSEPH D. & VANESSA G. STARNES

WILLIAM S. MILLER TRUST

MATCH TO SHEET 12 -L- STA. 357+00.00

MATCH TO SHEET 14 -L- STA. 369+00.00

N 35° 32' 27.4" W

-L- TS Sta. 358+44.08

-L- SC Sta. 361+74.08

-L- CS Sta. 365+33.57

-L- SRS Sta. 368+63.57

HWY 221 BST

US 221 BST

OLD FIELD CREEK

WALL

STONE WALL

4 BARS WIRE

EXISTING R/W

ISFD

BST

-L-

PIs Sta 360+64.25	PI Sta 363+54.93	PIs Sta 366+43.74
Θs = 7° 06' 29.2"	Δ = 15° 29' 13.4" (RT)	Θs = 7° 06' 29.2"
Ls = 330.00'	D = 4° 18' 28.6"	Ls = 330.00'
LT = 220.18'	L = 359.50'	LT = 220.18'
ST = 110.16'	T = 180.85'	ST = 110.16'
	R = 1,330.00'	
	SE = .06	
	Ro = As Shown	

-L-

PIs Sta 370+83.65	PI Sta 374+98.67	PIs Sta 379+09.17
Θs = 4° 43' 36.8"	Δ = 17° 20' 48.7" (LT)	Θs = 4° 43' 36.8"
Ls = 330.00'	D = 2° 51' 53.2"	Ls = 330.00'
LT = 220.08'	L = 605.52'	LT = 220.08'
ST = 110.07'	T = 305.09'	ST = 110.07'
	R = 2,000.00'	
	SE = .06	
	Ro = As Shown	

SEE SHEET 32 FOR -L- PROFILE

1/3/2014
R2915C_Hyd_prm_wet_psh_13.con
hpreed

8/17/99

REVISIONS

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159

HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 18 OF 33

MATCH TO SHEET 13 -L- STA. 369+00.00

MATCH TO SHEET 23 -DRW8- STA. 14+50.00

MATCH TO SHEET 15 -L- STA. 381+00.00

EDGAR D. WADE, JR.

COLE WILLIAM & ZEE PREVETTE YOUNGER

ELBERT F. & LANDA CAIN BROWN

CHARLIE E. & MARY C. ADAMS

MARK H. & ROSANN POPLIN HOLLARS

HENRY A. THOMPSON
LOIS W. THOMPSON

ROBERT E. & CHRISTINA L. LITTLE

HAROLD G HAMILTON et al

LAURA K. ELDRETH

ILLA K. BRYAN

GEORGETTE L. M. SCOTT

DENNIS L. GROGAN

JOSEPH D. STARNES
VANESSA C. STARNES

JOSEPH D. & VANESSA G. STARNES

JOYCE MAHAFFEY
WINFORD & MARY JUNE KIMBERLIN

FELIX OTERO
BRENDA OTERO

DAVID R. & JULIE S. TESTERMAN

MARY JANE LEWIS

CLEO G. & MARTHA BILLINGS

JAMES ALFRED & JESSIE K. CHURCH

SITE 14 | SITE 15 | SITE 16 | SITE 17 | SITE 18 | SITE 19 | SITE 28

BEGIN CONSTRUCTION -Y8- POT Sta. 10+20.00

END CONSTRUCTION -Y8B- POT Sta. 15+06.90

END CONSTRUCTION -Y9- POT Sta. 17+19.83

-Y8- PC Sta. 13+21.00 | -Y8- PRC Sta. 14+44.69 | -Y8- PT Sta. 15+70.80 | -L- CS Sta. 377+99.09 | -L- POC Sta. 376+00.00= -Y8- POT Sta. 16+71.72

-L- SC Sta. 371+93.57 | -L- POS Sta. 379+09.09= -DRW9- POT Sta. 10+00.00

-L- POC Sta. 374+00.00= -Y9- POT Sta. 10+00.00 | -Y9- PC Sta. 10+81.70 | -Y9- PT Sta. 12+11.66 | -Y9- PC Sta. 13+52.99 | -Y9- PT Sta. 15+18.31

-Y8A- PT Sta. 14+87.90 | -Y8A- PC Sta. 15+48.68 | -Y8A- PT Sta. 17+03.67 | -Y8A- PC Sta. 13+75.86 | -Y8A- PT Sta. 11+63.84 | -Y8A- PC Sta. 12+78.44 | -Y8A- PT Sta. 14+93.60 | -Y8A- POT Sta. 15+37.33 | -Y8A- PC Sta. 14+60.08 | -DRW9- PT Sta. 11+18.59

-Y8- POT Sta. 10+00.00 | -Y8- POT Sta. 10+30.90= -Y8A- POT Sta. 17+23.43

-DRW9- PC Sta. 10+59.02

-Y8A-
PI Sta 16+30.09
Δ = 43° 19' 03.9" (LT)
D = 27° 56' 57.0"
L = 154.99'
T = 81.41'
R = 205.00'
SE = .04
Ro = As Shown

-Y8A-
PI Sta 14+37.72
Δ = 61° 24' 38.4" (LT)
D = 54° 34' 02.7"
L = 112.54'
T = 62.36'
R = 105.00'
SE = .04
Ro = As Shown

-Y8A-
PI Sta 12+48.79
Δ = 57° 45' 41.1" (RT)
D = 37° 12' 18.2"
L = 155.25'
T = 84.94'
R = 154.00'
SE = .04
Ro = As Shown

-Y8B-
PI Sta 13+23.63
Δ = 51° 20' 32.7" (RT)
D = 37° 12' 18.2"
L = 138.00'
T = 74.02'
R = 154.00'
SE = .04
Ro = As Shown

-Y8B-
PI Sta 14+77.50
Δ = 38° 24' 13.0" (LT)
D = 114° 35' 29.6"
L = 33.51'
T = 17.41'
R = 50.00'
SE = .04
Ro = As Shown

-Y8-
PI Sta 13+84.14
Δ = 28° 20' 52.7" (LT)
D = 22° 55' 05.9"
L = 123.69'
T = 63.14'
R = 250.00'
SE = .04
Ro = As Shown

-Y8-
PI Sta 15+22.15
Δ = 84° 00' 51.7" (RT)
D = 66° 37' 22.8"
L = 126.10'
T = 77.45'
R = 86.00'
SE = .04
Ro = As Shown

-L-
PIs Sta 370+83.65
Θs = 4° 43' 36.8"
Ls = 330.00'
LT = 220.08'
ST = 110.07'

-L-
PI Sta 374+98.67
Δ = 17° 20' 48.7" (LT)
D = 2° 51' 53.2"
L = 605.52'
T = 305.09'
R = 2,000.00'
SE = .06
Ro = As Shown

-L-
PIs Sta 379+09.17
Θs = 4° 43' 36.8"
Ls = 330.00'
LT = 220.08'
ST = 110.07'

-DRW9-
PI Sta 10+92.91
Δ = 68° 15' 41.0" (RT)
D = 114° 35' 29.6"
L = 59.57'
T = 33.89'
R = 50.00'

-Y9-
PI Sta 11+51.48
Δ = 51° 42' 30.9" (LT)
D = 39° 47' 19.4"
L = 129.96'
T = 69.78'
R = 144.00'
SE = .06
Ro = 103.02'

-Y9-
PI Sta 14+39.37
Δ = 41° 00' 20.4" (RT)
D = 24° 48' 12.1"
L = 165.32'
T = 86.38'
R = 231.00'
SE = .06
Ro = 109.02'

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

NAD 83

9800 / 19800 — US 221 -L- — 9579 / 19400
221 / 400 — 0 / 0
221 / 400
-Y9- (SR 1178) PAUL GOODMAN RD.
2017 ADT
2037 ADT

SEE SHEET 42 FOR -DRW9- PROFILE
SEE SHEET 38 FOR -Y8- PROFILE
SEE SHEET 40 FOR -Y8A- PROFILE
SEE SHEET 38 FOR -Y8B- PROFILE
SEE SHEET 38 FOR -Y9- PROFILE
SEE SHEET 32 FOR -L- PROFILE

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8/17/99

REVISIONS

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159

HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 19 OF 33

MATCH TO SHEET 13 -L- STA. 369+00.00

MATCH TO SHEET 23 -DRW8- STA. 14+50.00

MATCH TO SHEET 15 -L- STA. 381+00.00

EDGAR D. WADE, JR.

COLE WILLIAM & ZEE PREVETTE YOUNGER

ELBERT F. & LANDA CAIN BROWN

CHARLIE E. & MARY C. ADAMS

MARK H. & ROSANN POPLIN HOLLARS

HENRY A. THOMPSON
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ROBERT E. & CHRISTINA L. LITTLE

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LAURA K. ELDRETH

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FELIX OTERO
BRENDA OTERO

MARY JANE LEWIS

JOYCE MAHAFFEY WINFORD & MARY JUNE KIMBERLIN

CLEO G. & MARTHA BILLINGS

JAMES ALFRED & JESSIE K. CHURCH

SITE 14 — SITE 15 — SITE 16 — SITE 17 — SITE 18 — SITE 19 — SITE 28

BEGIN CONSTRUCTION
-Y8- POT Sta. 10+20.00

-Y8- POT Sta. 10+00.00

-Y8A- PT Sta. 14+87.90
-Y8A- PC Sta. 15+48.68
-Y8A- PT Sta. 17+03.67
-Y8A- PC Sta. 13+75.86
-Y8A- PT Sta. 13+19.10
-Y8A- PC Sta. 11+63.84
-Y8- PC Sta. 13+21.00
-Y8- PRC Sta. 14+44.69
-Y8- PT Sta. 15+70.80
-L- CS Sta. 377+99.09
-L- POC Sta. 376+00.00=
-Y8- POT Sta. 16+71.72
-Y8- POT Sta. 10+30.90=
-Y8A- POT Sta. 17+23.43
-L- SC Sta. 371+93.57
-L- POC Sta. 374+00.00=
-Y9- POT Sta. 10+00.00
-Y9- PC Sta. 10+81.70
-Y9- PT Sta. 12+11.66
-Y9- PC Sta. 13+52.99
-Y9- PT Sta. 15+18.31
-L- POS Sta. 379+09.09=
-DRW9- POT Sta. 10+00.00
-DRW9- PC Sta. 10+59.02
-DRW9- PC Sta. 12+78.44
-DRW9- PT Sta. 11+18.59
-Y8B- PC Sta. 14+60.08
-Y8B- PT Sta. 14+93.60
-Y8B- POT Sta. 15+37.33
-Y8B- POT Sta. 15+06.90
END CONSTRUCTION
-Y8B- POT Sta. 15+06.90
END CONSTRUCTION
-Y9- POT Sta. 17+00.00
-Y9- POT Sta. 17+19.83

N 86° 20' 06.1" E
N 2° 52' 26.8" W
S 50° 20' 50.0" E
S 11° 03' 48.4" W
N 58° 20' 22.7" E
N 19° 57' 09.8" E
S 46° 41' 52.7" E
N 52° 47' 32.2" E
S 59° 27' 45.4" W
N 52° 16' 33.6" W
N 63° 31' 18.4" E
N 11° 48' 47.5" E
N 52° 49' 08.0" E

-Y8A-
PI Sta 16+30.09
Δ = 43° 19' 03.9" (LT)
D = 27° 56' 57.0"
L = 154.99'
T = 81.41'
R = 205.00'
SE = .04
Ro = As Shown

-Y8A-
PI Sta 14+37.72
Δ = 61° 24' 38.4" (LT)
D = 54° 34' 02.7"
L = 112.54'
T = 62.36'
R = 105.00'
SE = .04
Ro = As Shown

-Y8A-
PI Sta 12+48.79
Δ = 57° 45' 41.1" (RT)
D = 37° 12' 18.2"
L = 155.25'
T = 84.94'
R = 154.00'
SE = .04
Ro = As Shown

-Y8B-
PI Sta 13+23.63
Δ = 51° 20' 32.7" (RT)
D = 37° 12' 18.2"
L = 138.00'
T = 74.02'
R = 154.00'
SE = .04
Ro = As Shown

-Y8B-
PI Sta 14+77.50
Δ = 38° 24' 13.0" (LT)
D = 114° 35' 29.6"
L = 33.51'
T = 17.41'
R = 50.00'
SE = .04
Ro = As Shown

-Y9-
PI Sta 11+51.48
Δ = 51° 42' 30.9" (LT)
D = 39° 47' 19.4"
L = 129.96'
T = 69.78'
R = 144.00'
SE = .06
Ro = 103.02'

-Y9-
PI Sta 14+39.37
Δ = 41° 00' 20.4" (RT)
D = 24° 48' 12.1"
L = 165.32'
T = 86.38'
R = 231.00'
SE = .06
Ro = 109.02'

-Y8-
PI Sta 13+84.14
Δ = 28° 20' 52.7" (LT)
D = 22° 55' 05.9"
L = 123.69'
T = 63.14'
R = 250.00'
SE = .04
Ro = As Shown

-Y8-
PI Sta 15+22.15
Δ = 84° 00' 51.7" (RT)
D = 66° 37' 22.8"
L = 126.10'
T = 77.45'
R = 86.00'
SE = .04
Ro = As Shown

-L-
PIs Sta 370+83.65
Θs = 4° 43' 36.8"
Ls = 330.00'
LT = 220.08'
ST = 110.07'

-L-
PI Sta 374+98.67
Δ = 17° 20' 48.7" (LT)
D = 2° 51' 53.2"
L = 605.52'
T = 305.09'
R = 2,000.00'
SE = .06
Ro = As Shown

-L-
PIs Sta 379+09.17
Θs = 4° 43' 36.8"
Ls = 330.00'
LT = 220.08'
ST = 110.07'

-DRW9-
PI Sta 10+92.91
Δ = 68° 15' 41.0" (RT)
D = 114° 35' 29.6"
L = 59.57'
T = 33.89'
R = 50.00'

DENOTES MECHANIZED CLEARING

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

9800 / 19800 — US 221 — -L- — 9579 / 19400
221 / 400 — 0 / 0 — 221 / 400
-Y9- (SR 1178) PAUL GOODMAN RD.
2017 ADT
2037 ADT

SEE SHEET 42 FOR -DRW9- PROFILE
SEE SHEET 38 FOR -Y8- PROFILE
SEE SHEET 40 FOR -Y8A- PROFILE
SEE SHEET 38 FOR -Y8B- PROFILE
SEE SHEET 38 FOR -Y9- PROFILE
SEE SHEET 32 FOR -L- PROFILE

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LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 20 OF 33

REVISIONS
8/17/99

MATCH TO SHEET 24 -Y11- STA. 12+00.00

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

-Y11- PC Sta. 12+51.14
-DRW10- PC Sta. 10+36.70
-DRW10- PT Sta. 10+76.87
-DRW10- PC Sta. 11+67.09
-DRW9- PT Sta. 13+00.85
END CONSTRUCTION -DRW9- POT Sta. 13+05.00
-DRW9- POT Sta. 13+18.09
END CONSTRUCTION -DRW10- POC Sta. 12+70.00
-DRW10- PT Sta. 12+99.79
-L- ST Sta. 381+29.09
-L- POT Sta. 383+54.49= -Y10- POT Sta. 10+00.00
END CONSTRUCTION -Y10- POT Sta. 11+05.00
-Y10- PC Sta. 11+82.89
-Y10- PT Sta. 13+11.72
-Y10- POT Sta. 13+56.82
POC Sta. 14+00.00= -DRW10- POT Sta. 10+00.00
-Y11- PT Sta. 14+13.14
-Y11- PC Sta. 15+02.47
-Y11- PT Sta. 16+03.08
-L- POT Sta. 384+00.00= -Y11- POT Sta. 17+63.83
-L- TS Sta. 386+31.61
-L- SC Sta. 388+51.61
-L- CS Sta. 391+51.34
-DRW11- PC Sta. 12+25.28
-DRW11- PT Sta. 12+97.85
-DRW11- POT Sta. 13+13.57
END CONSTRUCTION -DRW11- POC Sta. 13+00.00

N 30° 34' 06.7" E
N 54° 43' 56.2" E
S 20° 07' 00.4" W
S 71° 56' 51.4" E
S 64° 59' 44.1" E
N 57° 21' 42.2" E
N 52° 35' 05.3" W
N 32° 38' 17.9" W
W 52° 43' 53.2" E
S 86° 15' 38.5" E

TIM & APRIL RUSSELL
ILLA K. BRYAN
LECIA DARE K. LAMBERT
NELDA H JORDAN
ROBERT W. & EVA T. MCELROY
MARY JANE LEWIS
DAVID & BARBARA M. THOMAS
GRAU 350
SITE 19
SITE 20
GAZEBO
WD RAIL
LAUREL RIDGE RD SOUTH BST
LAUGHING WATERS LN BST
OLD FIELD CREEK
US 221 20' BST
EXISTING R/W
NAD 83

MATCH TO SHEET 14 -L- STA. 381+00.00
MATCH TO SHEET 16 -L- STA. 393+00.00

-DRW9-
PI Sta 12+90.20
Δ = 42° 47' 49.3" (RT)
D = 190° 59' 09.4"
L = 22.41'
T = 11.76'
R = 30.00'

-DRW10-
PI Sta 10+62.62
Δ = 92° 03' 51.5" (LT)
D = 229° 10' 59.2"
L = 40.17'
T = 25.92'
R = 25.00'

-DRW10-
PI Sta 12+38.14
Δ = 50° 41' 26.5" (LT)
D = 38° 11' 49.9"
L = 132.71'
T = 71.05'
R = 150.00'

-DRW11-
PI Sta 12+69.64
Δ = 83° 09' 11.9" (LT)
D = 114° 35' 29.6"
L = 72.56'
T = 44.36'
R = 50.00'

-Y10-
PI Sta 12+50.20
Δ = 41° 00' 28.4" (RT)
D = 31° 49' 51.6"
L = 128.83'
T = 67.31'
R = 180.00'
SE = EXIST.

-Y11-
PI Sta 13+40.54
Δ = 60° 16' 19.7" (RT)
D = 37° 12' 18.2"
L = 162.00'
T = 89.40'
R = 154.00'
SE = .04
Ro = 69.00'

-Y11-
PI Sta 15+57.49
Δ = 57° 38' 33.8" (LT)
D = 57° 17' 44.8"
L = 100.61'
T = 55.02'
R = 100.00'
SE = .04
Ro = 65.00'

-L-
PIs Sta 370+83.65
Θs = 4° 43' 36.8"
Ls = 330.00'
LT = 220.08'
ST = 110.07'

-L-
PI Sta 374+98.67
Δ = 17° 20' 48.7" (LT)
D = 2° 51' 53.2"
L = 605.52'
T = 305.09'
R = 2,000.00'
SE = .06
Ro = As Shown

-L-
PIs Sta 379+09.17
Θs = 4° 43' 36.8"
Ls = 330.00'
LT = 220.08'
ST = 110.07'

-L-
PIs Sta 387+78.28
Θs = 2° 01' 59.1"
Ls = 220.00'
LT = 146.68'
ST = 73.34'

-L-
PI Sta 390+01.59
Δ = 5° 32' 23.2" (RT)
D = 1° 50' 53.7"
L = 299.73'
T = 149.98'
R = 3,100.00'
SE = .04
Ro = As Shown

-L-
PIs Sta 392+24.68
Θs = 2° 01' 59.1"
Ls = 220.00'
LT = 146.68'
ST = 73.34'

SEE SHEET 42 FOR -DRW10- PROFILE
SEE SHEET 42 FOR -DRW11- PROFILE
SEE SHEET 38 FOR -Y10- PROFILE
SEE SHEET 39 FOR -Y11- PROFILE
SEE SHEET 33 FOR -L- PROFILE

1/3/2014
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Default

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 21 OF 33

REVISIONS
8/17/99

MATCH TO SHEET 24 -Y11- STA. 12+00.00

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

-Y11- PC Sta. 12+51.14
-DRW10- PC Sta. 10+36.70
-DRW10- PT Sta. 10+76.87
-DRW10- PC Sta. 11+67.09
-DRW9- PT Sta. 13+00.85
END CONSTRUCTION -DRW9- POT Sta. 13+05.00
-DRW9- POT Sta. 13+18.09
END CONSTRUCTION -DRW10- POC Sta. 12+70.00
-DRW10- PT Sta. 12+99.79
-L- ST Sta. 381+29.09
-Y11- POC Sta. 14+00.00= -DRW10- POT Sta. 10+00.00
-Y11- PT Sta. 14+13.14
-Y11- PC Sta. 15+02.47
-Y11- PT Sta. 16+03.08
-L- POT Sta. 384+00.00= -Y11- POT Sta. 17+63.83
-DRW11- PC Sta. 12+25.28
-DRW11- PT Sta. 12+97.85
-DRW11- POT Sta. 13+13.57
END CONSTRUCTION -DRW11- POC Sta. 13+00.00
-L- POT Sta. 383+54.49= -Y10- POT Sta. 10+00.00
-Y10- PC Sta. 11+82.89
END CONSTRUCTION -Y10- POT Sta. 11+05.00
-Y10- PT Sta. 13+11.72
-Y10- POT Sta. 13+56.82
-L- TS Sta. 386+31.61
-L- SC Sta. 388+51.61
-L- CS Sta. 391+51.34

N 30° 34' 06.7" E
S 20° 07' 00.8" W
N 54° 43' 56.2" E
S 71° 56' 51.4" E
S 64° 59' 44.1" E
N 57° 21' 42.5" E
N 52° 35' 05.3" W
N 32° 38' 17.9" W
N 52° 43' 53.2" E
S 86° 15' 38.5" E

MATCH TO SHEET 14 -L- STA. 381+00.00

MATCH TO SHEET 16 -L- STA. 393+00.00

SITE 19
SITE 20

TIM & APRIL RUSSELL
ILLA K. BRYAN
LECIA DARE K. LAMBERT
MARY JANE LEWIS
ROBERT W. & EVA T. MCELROY
NELDA H. JORDAN
DAVID & BARBARA M. THOMAS
GRAU 350
GAZEBO

US 221 20' BST
LAUREL RIDGE RD SOUTH BST
LAUGHING WATERS LN BST
OLD FIELD RDG EX
WD RAIL
8" MTL
48" WW
8" HDPE
ISFD
CONC
390
385

NAD 83

-DRW9-
PI Sta 12+90.20
△ = 42° 47' 49.3" (RT)
D = 190° 59' 09.4"
L = 22.41'
T = 11.76'
R = 30.00'

-DRW10-
PI Sta 10+62.62
△ = 92° 03' 51.5" (LT)
D = 229° 10' 59.2"
L = 40.17'
T = 25.92'
R = 25.00'

-DRW10-
PI Sta 12+38.14
△ = 50° 41' 26.5" (LT)
D = 38° 11' 49.9"
L = 132.71'
T = 71.05'
R = 150.00'

-DRW11-
PI Sta 12+69.64
△ = 83° 09' 11.9" (LT)
D = 114° 35' 29.6"
L = 72.56'
T = 44.36'
R = 50.00'

-Y10-
PI Sta 12+50.20
△ = 41° 00' 28.4" (RT)
D = 31° 49' 51.6"
L = 128.83'
T = 67.31'
R = 180.00'
SE = EXIST.

-Y11-
PI Sta 13+40.54
△ = 60° 16' 19.7" (RT)
D = 37° 12' 18.2"
L = 162.00'
T = 89.40'
R = 154.00'
SE = .04
Ro = 69.00'

-Y11-
PI Sta 15+57.49
△ = 57° 38' 33.8" (LT)
D = 57° 17' 44.8"
L = 100.61'
T = 55.02'
R = 100.00'
SE = .04
Ro = 65.00'

-L-
PIs Sta 370+83.65
Θs = 4° 43' 36.8"
Ls = 330.00'
LT = 220.08'
ST = 110.07'

-L-
PI Sta 374+98.67
△ = 17° 20' 48.7" (LT)
D = 2° 51' 53.2"
L = 605.52'
T = 305.09'
R = 2,000.00'
SE = .06
Ro = As Shown

-L-
PIs Sta 379+09.17
Θs = 4° 43' 36.8"
Ls = 330.00'
LT = 220.08'
ST = 110.07'

-L-
PIs Sta 387+78.28
Θs = 2° 01' 59.1"
Ls = 220.00'
LT = 146.68'
ST = 73.34'

-L-
PI Sta 390+01.59
△ = 5° 32' 23.2" (RT)
D = 1° 50' 53.7"
L = 299.73'
T = 149.98'
R = 3,100.00'
SE = .04
Ro = As Shown

-L-
PIs Sta 392+24.68
Θs = 2° 01' 59.1"
Ls = 220.00'
LT = 146.68'
ST = 73.34'

SEE SHEET 42 FOR -DRW10- PROFILE
SEE SHEET 42 FOR -DRW11- PROFILE
SEE SHEET 38 FOR -Y10- PROFILE
SEE SHEET 39 FOR -Y11- PROFILE
SEE SHEET 33 FOR -L- PROFILE

LJ3 2014
R2915C_Hyd_prm_wet_psh_15.con
Drawn

LOCHNER	
H. W. LOCHNER, INC. 2840 PLAZA PLACE, SUITE 202 RALEIGH, NC 27612	NC License Number F-0159
HNTB	NC License Number F-????

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 22 OF 33

REVISIONS 8/17/99

NAD 83

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

MATCH TO SHEET 15 -L- STA. 393+00.00

MATCH TO SHEET 17 -L- STA. 407+00.00

-L- SRS Sta. 393+71.34

-L- SC Sta. 397+01.34

-L- CS Sta. 403+76.07

-L- POS Sta. 405+63.94=
-Y12- POT Sta. 10+00.00

END CONSTRUCTION
-Y12- POT Sta. 11+35.00

-Y12- POT Sta. 11+50.98

N 50° 17' 13" E

SITE 21

SITE 22

71 ROBERT W. & EVA T. MCELROY

70 DAVID & BARBARA M. THOMAS

72 DONALD A. & THERESA CHURCH

142 HAROLD L. & MABEL F. POLING

73 WILLIAM S. MILLER TRUST & CLYDE B. MILLER

74 RENNA MILLER

75 AGNES BALDWIN TRUSTEE

76 NELL BALDWIN

US 221 20' BST

SR 1145 MULATTO MTN RD BST

EXISTING R/W

EXISTING R/W TO BE ABANDONED

OLD FIELD CREEK

CAT-1

24" RCP

15" CMP

R/W MON

ISBKD

DK

GR

TREE FARM

-L- PIs Sta 387+78.28
Θs = 2° 01' 59.1"
Ls = 220.00'
LT = 146.68'
ST = 73.34'

-L- PI Sta 390+01.59
Δ = 5° 32' 23.2" (RT)
D = 1° 50' 53.7"
L = 299.73'
T = 149.98'
R = 3,100.00'
SE = .04
Rc = See Plans

-L- PIs Sta 392+24.68
Θs = 2° 01' 59.1"
Ls = 220.00'
LT = 146.68'
ST = 73.34'

-L- PIs Sta 395+91.52
Θs = 7° 06' 29.2"
Ls = 330.00'
LT = 220.18'
ST = 110.16'

-L- PI Sta 400+46.13
Δ = 29° 04' 01.1" (LT)
D = 4° 18' 28.6"
L = 674.73'
T = 344.79'
R = 1,330.00'
SE = .06
Rc = As Shown

-L- PIs Sta 404+86.23
Θs = 7° 06' 29.2"
Ls = 330.00'
LT = 220.18'
ST = 110.16'

-Y12- PI Sta 10+58.24
Δ = 24° 44' 21.7" (RT)
D = 38° 11' 49.9"
L = 64.77'
T = 32.90'
R = 150.00'
SE = EXIST.

9579 / 19400 — US 221 -L- — 9379 / 19200

211 / 300 — 11 / 100

221 / 400

-Y12- (SR 1145) MULATTO MOUNTAIN RD.

2017 ADT
2037 ADT

SEE SHEET 39 FOR -Y12- PROFILE

SEE SHEET 33 FOR -L- PROFILE

LJ 2014
R2915C_Hyd_prm_wet_psh_16
Drawn

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number ?-????

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 23 OF 33

REVISIONS 8/17/99

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83

MATCH TO SHEET 15 -L- STA. 393+00.00

-L- SRS Sta. 393+71.34

-L- SC Sta. 397+01.34

-L- CS Sta. 403+76.07

-L- POS Sta. 405+63.94=
-Y12- POT Sta. 10+00.00

END CONSTRUCTION
-Y12- POT Sta. 11+35.00

-Y12- POT Sta. 11+50.98

MATCH TO SHEET 17 -L- STA. 407+00.00

N 50° 17' 13" E

SITE 21

SITE 22
RENNA MILLER

70 DAVID & BARBARA M. THOMAS

71 ROBERT W. & EVA T. MCELROY

72 DONALD A. & THERESA CHURCH

73 WILLIAM S. MILLER TRUST & CLYDE B. MILLER

74

75 AGNES BALDWIN TRUSTEE

76 NELL BALDWIN

142 HAROLD L. & MABEL F. POLING

CAT-1

OLD FIELD CREEK

MULATTO MTN RD

SR 1145

15" CMP

R/W MON

ISBKD

-L-

Pls Sta 387+78.28	Pl Sta 390+01.59	Pls Sta 392+24.68
Θs = 2° 01' 59.1"	△ = 5° 32' 23.2" (RT)	Θs = 2° 01' 59.1"
Ls = 220.00'	D = 1° 50' 53.7"	Ls = 220.00'
LT = 146.68'	L = 299.73'	LT = 146.68'
ST = 73.34'	T = 149.98'	ST = 73.34'
	R = 3,100.00'	
	SE = .04	
	Rc = See Plans	

Pls Sta 395+91.52	Pl Sta 400+46.13	Pls Sta 404+86.23
Θs = 7° 06' 29.2"	△ = 29° 04' 01.1" (LT)	Θs = 7° 06' 29.2"
Ls = 330.00'	D = 4° 18' 28.6"	Ls = 330.00'
LT = 220.18'	L = 674.73'	LT = 220.18'
ST = 110.16'	T = 344.79'	ST = 110.16'
	R = 1,330.00'	
	SE = .06	
	Rc = As Shown	

-L-

-Y12-

Pl Sta 10+58.24
△ = 24° 44' 21.7" (RT)
D = 38° 11' 49.9"
L = 64.77'
T = 32.90'
R = 150.00'
SE = EXIST.

⊙ REBAR

9579 / 19400 US 221 -L- 9379 / 19200

211 / 300 — 11 / 100

221 / 400

-Y12- (SR 1145) MULATTO MOUNTAIN RD.

2017 ADT
2037 ADT

SEE SHEET 39 FOR -Y12- PROFILE

SEE SHEET 33 FOR -L- PROFILE

LJ3 2014
K2915C_Hyd_prm_wet_psh_16.con
Dan Veri

MATCH TO SHEET 17A -L- STA. 413+50 @ 625.00' LT.)

-L-
PIs Sta 395+91.52
θs = 7° 06' 29.2"
Ls = 330.00'
LT = 220.18'
ST = 110.16'

PI Sta 400+46.13
Δ = 29° 04' 01.1" (LT)
D = 4° 18' 28.6"
L = 674.73'
T = 344.79'
R = 1,330.00'
SE = .06
Ro = As Shown

PIs Sta 404+86.23
θs = 7° 06' 29.2"
Ls = 330.00'
LT = 220.18'
ST = 110.16'

-L-
PIs Sta 409+26.24
θs = 7° 06' 29.2"
Ls = 330.00'
LT = 220.18'
ST = 110.16'

PI Sta 413+12.92
Δ = 23° 31' 04.1" (RT)
D = 4° 18' 28.6"
L = 545.92'
T = 276.86'
R = 1,330.00'
SE = .06
Ro = As Shown

PIs Sta 416+92.14
θs = 7° 06' 29.2"
Ls = 330.00'
LT = 220.18'
ST = 110.16'

F F DENOTES FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HAROLD L. & MABEL F. POLING

HOMER R. & GERTRUDE LUCAS

NELL B. BALDWIN

BOBBY R. HAM

JOHN D. & SHIRLEY H. BALDWIN et ol

NELL BALDWIN

WILLIAM S. MILLER TRUST & CLYDE B. MILLER

SITE 23

SITE 24

-L- SRS Sta. 407+06.07

-L- SC Sta. 410+36.07

-L- CS Sta. 415+81.98

-L- ST Sta. 419+11.98

MATCH TO SHEET 16 -L- STA. 407+00.00

MATCH TO SHEET 18 -L- STA. 420+00.00

N 28° 34' 53.5" W

SEE SHEET 34 FOR -L- PROFILE

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	17
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 24 OF 33

NAD 83

REVISIONS

8/17/99

1/7/2014
R2915C_Hyd_prm_wet_psh_17
(Revised)

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 25 OF 33

8/17/99

REVISIONS

MATCH TO SHEET 17A -L- STA. 413+50 @ 625.00' LT.)

-L-
Pls Sta 395+91.52
Θs = 7° 06' 29.2"
Ls = 330.00'
LT = 220.18'
ST = 110.16'

-L-
Pl Sta 400+46.13
Δ = 29° 04' 01.1" (LT)
D = 4° 18' 28.6"
L = 674.73'
T = 344.79'
R = 1,330.00'
SE = .06
Ro = As Shown

-L-
Pls Sta 404+86.23
Θs = 7° 06' 29.2"
Ls = 330.00'
LT = 220.18'
ST = 110.16'

-L-
Pls Sta 409+26.24
Θs = 7° 06' 29.2"
Ls = 330.00'
LT = 220.18'
ST = 110.16'

-L-
Pl Sta 413+12.92
Δ = 23° 31' 04.1" (RT)
D = 4° 18' 28.6"
L = 545.92'
T = 276.86'
R = 1,330.00'
SE = .06
Ro = As Shown

-L-
Pls Sta 416+92.14
Θs = 7° 06' 29.2"
Ls = 330.00'
LT = 220.18'
ST = 110.16'

F F DENOTES FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

HAROLD L. & MABEL F. POLING

HOMER R. & GERTRUDE LUCAS

NELL B. BALDWIN

BOBBY R. HAM

JOHN D. & SHIRLEY H. BALDWIN et ol

SITE 23

SITE 24

-L- SRS Sta. 407+06.07

-L- SC Sta. 410+36.07

-L- CS Sta. 415+81.98

-L- ST Sta. 419+11.98

WILLIAM S. MILLER TRUST & CLYDE B. MILLER

NELL BALDWIN

NELL BALDWIN

MATCH TO SHEET 16 -L- STA. 407+00.00

MATCH TO SHEET 18 -L- STA. 420+00.00

SEE SHEET 34 FOR -L- PROFILE

1/3/2014
R2915C_Hyd_prm_wet_psh_17.con
bar,vai

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 26 OF 33

REVISIONS
8/17/99

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83

MATCH TO SHEET 17 -L- STA. 420+00.00

MATCH TO SHEET 19 -L- STA. 433+00.00

NELL B. BALDWIN

JOHN D. & SHIRLEY H. BALDWIN et al

ISFD

S26°10'31"E 502.26'

S45°57'01"W 200.21'

EXISTING R/W

N 28° 34' 53.5" W

-L-

US 221 2r BST

S 50° 40' 42" E

REBAR

S 28° 34' 53.5" E

N 61° 25' 06.5" E

CAT-I

GRAU 350

-L- POT Sta. 428+43.36=
-DRW13- POT Sta. 10+00.00

POT Sta. 10+00.00

N 28° 34' 53.5" W

NEAL WAGNER

S32°16'15"E 70.67'

-DRW13-
PC Sta. 10+47.50
-DRW13-
PT Sta. 10+86.71

-DRW13-
PC Sta. 11+61.06

JESSIE G. BALDWIN

S52°41'08"E 264.08'

S38°50'52"W 100.04'

S55°51'08"E 141.26'

OLD FIELD CREEK

S85°27'08"E 216.36'

SITE 25

-DRW13- POT Sta. 12+02.17
END CONSTRUCTION
-DRW13- POT Sta. 12+00.00
-DRW13- PT Sta. 11+86.13

JERROLD W. & SARA W. AHSLEY

NELL BALDWIN

SOIL

N48°27'40"E 123.36'

S47°40'52"W 153.34'

WILLIAM S. MILLER TRUST & CLYDE B. MILLER

-DRW13-	-DRW13-
PI Sta 10+72.50	PI Sta 11+73.75
Δ = 90° 00' 00.0" (RT)	Δ = 22° 05' 48.6" (LT)
D = 229° 10' 59.2"	D = 88° 08' 50.5"
L = 39.27'	L = 25.07'
T = 25.00'	T = 12.69'
R = 25.00'	R = 65.00'

SEE SHEET 34 FOR -L- PROFILE

L3/2014
K29150_Hyd_prm_wet_psh_18
bar_ver

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 27 OF 33

REVISIONS 8/17/99

MATCH TO SHEET 17 -L- STA. 420+00.00

MATCH TO SHEET 19 -L- STA. 433+00.00

DENOTES IMPACTS IN SURFACE WATER

NAD 83

NELL B. BALDWIN

JOHN D. & SHIRLEY H. BALDWIN et al

NELL B. BALDWIN

NEAL WAGNER

JERROLD W. & SARA W. AHSLEY

NELL BALDWIN

JESSIE G. BALDWIN

WILLIAM S. MILLER TRUST & CLYDE B. MILLER

SITE 25

-L- POT Sta. 428+43.36=
-DRW13- POT Sta. 10+00.00

POT Sta. 10+00.00

N 28° 34' 53.5" W

N 61° 25' 06.5" E

S 28° 34' 53.5" E

S 50° 40' 42" E

-DRW13-
PC Sta. 10+47.50
-DRW13-
PT Sta. 10+86.74

-DRW13- POT Sta. 12+02.17
END CONSTRUCTION
-DRW13- POT Sta. 12+00.00
-DRW13- PT Sta. 11+86.13

-DRW13-
PC Sta. 11+61.06

-DRW13-	-DRW13-
PI Sta 10+72.50	PI Sta 11+73.75
Δ = 90° 00' 00.0" (RT)	Δ = 22° 05' 48.6" (LT)
D = 229° 10' 59.2"	D = 88° 08' 50.5"
L = 39.27'	L = 25.07'
T = 25.00'	T = 12.69'
R = 25.00'	R = 65.00'

SEE SHEET 34 FOR -L- PROFILE

LJ 2014
R2915C Hyd_prm_wet_psh_18.con
Drawn

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 28 OF 33

REVISIONS 8/17/99

-Y13- (SR 1112) WOODSTOWN RD.
222
400
11 100
211 300
9379 19200 — US 221 -L- — 9579 19400
2017 ADT
2037 ADT

NAD 83

MATCH TO SHEET 18 -L- STA. 433+00.00

MATCH TO SHEET 20 -L- STA. 446+00.00

BEGIN CONSTRUCTION
-Y13- POT Sta. 10+25.00

-Y13- POT Sta. 10+00.00

-Y13- PC Sta. 11+40.98

-Y13- PT Sta. 13+16.44

-L- POC Sta. 440+50.00=
-Y13- POT Sta. 13+54.65

-L- POC Sta. 441+55.00=
-Y14- POT Sta. 10+00.00

-Y14- PC Sta. 10+95.09

-Y14- PT Sta. 11+62.88

END CONSTRUCTION
-Y14- POT Sta. 11+95.00

-Y14- POT Sta. 12+29.38

-L- TS Sta. 435+12.21

-L- SC Sta. 437+82.21

SITE 26

N 28° 34' 53.5" W

N 71° 02' 03.3" E

N 68° 32' 27.4" E

N 51° 43' 35.3" E

N 27° 30' 47.5" E

NELL B. BALDWIN

NEAL WAGNER

BOBBY N. & BARBARA P. GENTRY

LAWRENCE & VIVIAN P. GOODMAN

EDWARD EUGENE PARLIER

HADLEY JORDAN

RITA TRIVETTE HOUCK

JAMES A. & LINDA TRIVETTE

JAMES A. TRIVETTE LINDA TRIVETTE

JESSIE G. BALDWIN

W.G. BLACK

LINDA BLACK CROUSE

WILLIAM S. MILLER TRUST & CLYDE B. MILLER

JO ANN GOODMAN WOODIE

JOANN GREER

FLORENCE MILLER & GABRIEL MILLER

WILLIAM T MONTGOMERY SUZANNE MONTGOMERY

OLD FIELD CREEK

INDIAN LAKE DR

US 221 BST

SR 1200 (O BST)
FRANK EDWARDS RD

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

-L-		-Y13-	-Y14-
PIs Sta 436+92.24	PI Sta 442+09.80	PIs Sta 447+18.53	PI Sta 12+33.19	PI Sta 11+29.23
Θs = 3° 13' 22.4"	Δ = 20° 12' 13.3" (RT)	Θs = 3° 13' 22.4"	Δ = 43° 31' 15.8" (RT)	Δ = 16° 48' 52.1" (LT)
Ls = 270.00'	D = 2° 23' 14.4"	Ls = 270.00'	D = 24° 48' 12.1"	D = 24° 48' 12.1"
LT = 180.03'	L = 846.29'	LT = 180.03'	L = 175.46'	L = 67.79'
ST = 90.03'	T = 427.59'	ST = 90.03'	T = 92.21'	T = 34.14'
	R = 2,400.00'		R = 231.00'	R = 231.00'
	SE = .05		SE = .06	SE = .04
	Ro = As Shown		Ro = As Shown	Ro = As Shown

SEE SHEET 39 FOR -Y13- PROFILE
SEE SHEET 39 FOR -Y14- PROFILE
SEE SHEET 35 FOR -L- PROFILE

LJ 2014
R2915C_Hyd_prm_wet_psh_19
Drawn By:

8/17/99

REVISIONS

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159

HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 29 OF 33

NAD 83

-Y13- (SR 1112) WOODSTOWN RD.
222
400
11 100
211 300
9379 19200 — US 221 — -L- — 9579 19400
2017 ADT
2037 ADT

MATCH TO SHEET 18 -L- STA. 433+00.00

MATCH TO SHEET 20 -L- STA. 446+00.00

BEGIN CONSTRUCTION
-Y13- POT Sta. 10+25.00

-Y13- POT Sta. 10+00.00

-Y13- PC Sta. 11+40.98

-Y13- PT Sta. 13+16.44

N 71° 02' 03.3" E

-L- POC Sta. 440+50.00=
-Y13- POT Sta. 13+54.65

-L- POC Sta. 444+55.00=
-Y14- POT Sta. 10+00.00

N 28° 34' 53.5" W

N 27° 30' 47.5" E

N 68° 32' 27.4" E

N 57° 43' 55.8" E

-L- TS Sta. 435+12.21

-L- SC Sta. 437+82.21

-Y14- PC Sta. 10+95.09

-Y14- PT Sta. 11+62.88

END CONSTRUCTION
-Y14- POT Sta. 11+95.00

-Y14- POT Sta. 12+29.38

SITE 26

NELL B. BALDWIN
NEAL WAGNER
BOBBY N. & BARBARA P. GENTRY
HADLEY JORDAN
RITA TRIVETTE HOUCK
JAMES A. & LINDA TRIVETTE
LAWRENCE & VIVIAN P. GOODMAN
EDWARD EUGENE PARLIER
JESSIE G. BALDWIN
W.G. BLACK
LINDA BLACK CROUSE
WILLIAM S. MILLER TRUST & CLYDE B. MILLER
JO ANN GOODMAN WOODIE
JOANN GREER
FLORENCE MILLER & GABRIEL MILLER
WILLIAM T MONTGOMERY SUZANNE MONTGOMERY

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

-L-			-Y13-	-Y14-
PIs Sta 436+92.24	PI Sta 442+09.80	PIs Sta 447+18.53	PI Sta 12+33.19	PI Sta 11+29.23
θs = 3° 13' 22.4"	Δ = 20° 12' 13.3" (RT)	θs = 3° 13' 22.4"	Δ = 43° 31' 15.8" (RT)	Δ = 16° 48' 52.1" (LT)
Ls = 270.00'	D = 2° 23' 14.4"	Ls = 270.00'	D = 24° 48' 12.1"	D = 24° 48' 12.1"
LT = 180.03'	L = 846.29'	LT = 180.03'	L = 175.46'	L = 67.79'
ST = 90.03'	T = 427.59'	ST = 90.03'	T = 92.21'	T = 34.14'
	R = 2,400.00'		R = 231.00'	R = 231.00'
	SE = .05		SE = .06	SE = .04
	Ro = As Shown		Ro = As Shown	Ro = As Shown

SEE SHEET 39 FOR -Y13- PROFILE
SEE SHEET 39 FOR -Y14- PROFILE
SEE SHEET 35 FOR -L- PROFILE

LJ 2014
R-2915C Hyd_prm_wet_psh_19.con
Drawn By:

NAD 83

S S DENOTES IMPACTS IN SURFACE WATER

-Y15- (SR 1200) FRANK EDWARDS RD.
464 / 1000
21 / 200 — 443 / 800
9578 / 19400 — US 221 — -L- — 10000 / 20000
2017 ADT / 2037 ADT

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612
NC License Number F-0159
HNTB
NC License Number C-1554

PROJECT REFERENCE NO.	SHEET NO.
R-2915C	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 30 OF 33

REVISIONS
8/17/99

MATCH TO SHEET 19 -L- STA. 446+00.00

MATCH TO SHEET 21 -L- STA. 458+00.00

JOHN C. & NANCY P. EDWARDS (104)
BEGIN CONSTRUCTION -Y15- POT Sta. 12+00.00
JAMES A. & LINDA TRIVETTE (96)
-Y15- PC Sta. 13+50.81
JEFF & MARGIE SMITH (108)
JAMES A. TRIVETTE, LINDA TRIVETTE (144)
MARY LAVON CAUDILL (107)
JAMES A. TRIVETTE, LINDA TRIVETTE (103)
-Y15- PT Sta. 14+55.89
JOANN GREER (109)
RODERICK E. & KENA EDWARDS SLOOP
HISTORIC PROPERTY
BALDWIN-BETHANY CEMETERY
BETHANY CEMETERY
BETHANY UNITED METHODIST CHURCH
-Y15- POT Sta. 10+00.00
-DRW12- POT Sta. 12+95.38
-DRW12- PT Sta. 12+66.45
-DRW12- PC Sta. 12+32.17
-DRW12- PT Sta. 11+44.72
END CONSTRUCTION -DRW12- POT Sta. 12+80.00
-L- SC Sta. 456+70.83
-L- TS Sta. 453+95.83
-DRW12- PC Sta. 10+90.82
-L- POT Sta. 452+49.30= -DRW12- POT Sta. 10+00.00
-L- POS Sta. 446+50.00= -Y15- POT Sta. 15+48.61
-L- CS Sta. 446+28.50
-L- ST Sta. 448+98.50
-L- SCS Sta. 450+48.50
-L- CT Sta. 451+98.50
-L- ST Sta. 455+79.18
-L- TS Sta. 459+20.50
-L- SC Sta. 462+60.70
-L- CS Sta. 464+10.70
-Y15- PT Sta. 14+05.81
-Y15- POT Sta. 15+55.81
-L- POT Sta. 466+60.70= -Y15- POT Sta. 16+55.81
-L- POT Sta. 468+60.70= -Y15- POT Sta. 17+55.81
-L- POT Sta. 470+60.70= -Y15- POT Sta. 18+55.81
-L- POT Sta. 472+60.70= -Y15- POT Sta. 19+55.81
-L- POT Sta. 474+60.70= -Y15- POT Sta.

REVISIONS 8/17/99

NAD 83

S S DENOTES IMPACTS IN SURFACE WATER

-Y15- (SR 1200) FRANK EDWARDS RD.
464 / 1000
21 / 200 — 443 / 800
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PROJECT REFERENCE NO.	SHEET NO.
R-2915C	20
R/W SHEET NO.	___
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 31 OF 33

JOHN C. & NANCY P. EDWARDS (104)
BEGIN CONSTRUCTION -Y15- POT Sta. 12+00.00
JAMES A. & LINDA TRIVETTE (96)
-Y15- PC Sta. 13+50.81
JEFF & MARGIE SMITH (108)
JAMES A. TRIVETTE LINDA TRIVETTE (144)
MARY LAVON CAUDILL (107)
JAMES A. TRIVETTE LINDA TRIVETTE (103)
-Y15- PT Sta. 14+55.89
RODERICK E. & KENA EDWARDS SLOOP
JOANN GREER (109)
-Y15- POT Sta. 10+00.00
-DRW12- POT Sta. 12+95.38
-DRW12- PT Sta. 12+66.45
-DRW12- PC Sta. 12+32.17
-DRW12- PT Sta. 11+44.72
-L- TS Sta. 453+95.83
-DRW12- PC Sta. 10+90.82
-L- POT Sta. 452+49.30=
-DRW12- POT Sta. 10+00.00
END CONSTRUCTION -DRW12- POT Sta. 12+80.00
-L- SC Sta. 456+70.83
HISTORIC PROPERTY BALDWIN-BETHANY CEMETERY
BETHANY CEMETERY
BETHANY UNITED METHODIST CHURCH
-L- POS Sta. 446+50.00=
-Y15- POT Sta. 15+48.61
-L- CS Sta. 446+28.50
-L- ST Sta. 448+98.50
JOANN GREER (100)
BARRY K. & SANDRA T. LIDDLE
FLORENCE MILLER & GABRIEL MILLER (99)
WILLIAM LEE GREER HEIRS
SITE 27
JO ANN GOODMAN WOODIE (95)
TONY A ELDRETH SHARON W ELDRETH (137)
ARVELL & BERTHA GROGAN (135)
JOANN GREER
DANNY & DONNA COLDIRON
MARTIN MARTINEZ SALDANA
BETTY SUE HOUCK
MATCH TO SHEET 19 -L- STA. 446+00.00
MATCH TO SHEET 21 -L- STA. 458+00.00

-DRW12-
PI Sta 11+22.76
Δ = 77° 12' 36.5" (RT)
D = 143° 14' 22.0"
L = 53.90'
T = 31.94'
R = 40.00'

-DRW12-
PI Sta 12+51.46
Δ = 65° 29' 09.4" (LT)
D = 190° 59' 09.4"
L = 34.29'
T = 19.29'
R = 30.00'

-L-
PIs Sta 436+92.24
Θs = 3° 13' 22.4"
Ls = 270.00'
LT = 180.03'
ST = 90.03'

-L-
PI Sta 442+09.80
Δ = 20° 12' 13.3" (RT)
D = 2° 23' 14.4"
L = 846.29'
T = 427.59'
R = 2,400.00'
SE = .05
Ro = As Shown

-L-
PIs Sta 447+18.53
Θs = 3° 13' 22.4"
Ls = 270.00'
LT = 180.03'
ST = 90.03'

-L-
PIs Sta 455+79.18
Θs = 2° 37' 33.8"
Ls = 275.00'
LT = 183.35'
ST = 91.69'

-L-
PI Sta 459+20.50
Δ = 9° 30' 53.1" (LT)
D = 1° 54' 35.5"
L = 498.19'
T = 249.67'
R = 3,000.00'
SE = .05
Ro = As Shown

-L-
PIs Sta 462+60.70
Θs = 2° 37' 33.8"
Ls = 275.00'
LT = 183.35'
ST = 91.69'

-Y15-
PI Sta 14+05.81
Δ = 41° 48' 34.7" (LT)
D = 39° 47' 19.4"
L = 105.08'
T = 55.00'
R = 144.00'
SE = .05
Ro = As Shown

SEE SHEET 42 FOR -DRW12- PROFILE
SEE SHEET 39 FOR -Y15- PROFILE
SEE SHEET 35 FOR -L- PROFILE

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Darcy

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1	263+91-265+17-L-LT	ROAD FILL	0.13			0.02						
2	265+75-266+07-L-LT	ROAD FILL	0.02			< 0.01						
3	299+12-L-	48" CSP						0.02	< 0.01	219.6	41.3	
4	302+65-L-	60" CSP						0.03	< 0.01	245.5	36.1	
5	317+57-L-LT	30" RCP						< 0.01	< 0.01	63.3	16.5	
6	326+84-327+09-L-RT	ROAD FILL						< 0.01		23		
7	333+18-333+51-L-LT	ROAD FILL						< 0.01	< 0.01	143.8	13.3	
8	336+88-L-LT	6" PVC						< 0.01	< 0.01	30.5	27.9	
9	346+16-346+42-L-RT	36"						< 0.01	< 0.01	13.7	23.7	
10	348+31-34*+08-L-LT	36" RCP						< 0.01	< 0.01	55	25	
11	350+57-351+27-L-LT	ROAD FILL						< 0.01	< 0.01	43.3	25.3	
12	351+52-L-	CULVERT						0.02	< 0.01	136.1	73	
13	358+69-L-LT	18" CSP						< 0.01		13.8		
14	369+90-370+07-L-LT	24" RCP						< 0.01		16.3		
15	374+85-L-	CULVERT						0.11	0.02	286.3	53.2	
16	376+62-376+92-L-RT								< 0.01		30.1	
17	377+87-378+05-L-RT							< 0.01		17.3		
18	379+71-380+60-L-RT	ROAD FILL				0.01						
19	379+36-382+15-L-	ROAD FILL						0.01		297.8		
20	382+03-382+24-L-RT	36" RCP						< 0.01		20.8		
21	393+86-395+81-L-RT							< 0.01	< 0.01	162.7	48.6	
22	402+00-L-	24"						0.02		333.6		
23	410+74-411+37-L- RT	ROAD FILL	0.01									
TOTALS*:			0.16			0.04		0.27	0.06	2122	414	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
01-08-14
ASHE COUNTY
US 221 FROM NORTH OF SOUTH FORK
NEW RIVER TO SOUTH OF US 194
SHEET 32 OF 33

ATN Revised 3/12/13

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
24	419+51-419+68-L-RT	18" RCP						< 0.01		17		
25	426+42-426+59-L-RT	30" WSP						< 0.01		16.9		
26	437-41-438+11-L-RT	30" RCP	< 0.01			< 0.01						
27	446+24-446+44-L-RT							< 0.01		20		
28	15+72-16+87-Y9-LT							< 0.01	< 0.01	87.4	19.5	
	SHEET 1		0.16			0.04		0.27	0.06	2122	414	
TOTALS*:			0.16			0.04		0.29	0.06	2263	434	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
01-08-14
ASHE COUNTY
US 221 FROM NORTH OF SOUTH FORK
NEW RIVER TO SOUTH OF US 194
SHEET 33 OF 33

ATN Revised 3/12/13

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: R-2915D **County(ies):** Ashe

General Project Information

Project No.:	R-2915D	**Project Type:**	Roadway Widening	**Date:**	1/3/2014
NCDOT Contact:	Jay W. Twisdale, Jr. PE	**Contractor / Designer:**	W. Henry Wells, Jr., PE		
Address:	NCDOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699	**Address:**	Sungate Design Group 915 Jones Franklin Road Raleigh, NC 27606		
Phone:	919-707-6700	**Phone:**	919-859-2243 x202		
Email:	jtwisdale@ncdot.gov	**Email:**	hwells@sungatedesign.com		
City/Town:	West Jefferson	**County(ies):**	Ashe		
River Basin(s):	New	**CAMA County?**	No		
Primary Receiving Water:	See Environmental Summary Sheet	**NCDWQ Stream Index No.:**			
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**				
	Supplemental:				
Other Stream Classification:					
303(d) Impairments:					
Buffer Rules in Effect					

Project Description

Project Length (lin. Miles or feet):	4.30 miles	**Surrounding Land Use:**	Mountainous, Rural, Farmland

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	ac.	ac.
Typical Cross Section Description:	Two 12-foot lanes and a 4-foot paved shoulder in each direction with a 23-foot raised median (2-foot 9-inch mountable C&G and 17.5 feet of grass).	Two 12-foot lanes with roadway ditches.
Average Daily Traffic (veh/hr/day):	Design/Future: ADT for 2035 is 25000	Existing: ADT for 2015 is 14715

General Project Narrative:

US-221 from South of NC-194 to US-221 Bypass: Grassed Swales were used throughout the Project to treat the stormwater. These Grassed Swales have side slopes that are 3:1 or flatter, with many side slopes being 6:1 and 4:1, have a velocity during the 2-Year Storm of less than 2 feet per second and have a minimum ditch length equivalent to 100 feet per acre of impervious area. In addition to the Grassed Swales, Preformed Scour Holes are used at several locations.

References

Project/TIP No.: R-2915D **County(ies):** Ashe

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
4	460+40 -L- 462+30 -L-	Stream		Old Field Creek			C; Tr+		Fill		
5	464+50 -L- Rt 464+60 -L- Rt	Wetland		Old Field Creek			C; Tr+		Culvert		
6	474+40 -L- Lt 474+60 -L- Lt	Stream		Old Field Creek			C; Tr+		Culvert		
6	474+60 -L- Lt 475+40 -L- Lt	Wetland		Old Field Creek			C; Tr+		Fill		
6	476+50 -L- Lt 476+90 -L- Lt	Stream		Old Field Creek			C; Tr+		Culvert		
6	477+60 -L- Lt 481+00 -L- Lt	Wetland		Old Field Creek			C; Tr+		Fill		
6	482+60 -L- Lt 483+40 -L- Lt	Stream		Old Field Creek			C; Tr+		Culvert		
8	503+10 -L- Rt 503+60 -L- Rt	Stream		Old Field Creek			C; Tr+		Stabilization		
8	504+70 -L- Lt 506+10 -L- Lt	Stream		Old Field Creek			C; Tr+		Culvert		
8	505+60 -L- Lt 508+70 -L- Lt	Wetland		Old Field Creek			C; Tr+		Fill		
10	522+70 -L- Rt 522+90 -L-Rt	Stream		Old Field Creek			C; Tr+		Excavation		
11	536+70 -L- Lt 538+10 -L- Lt	Stream		Old Field Creek			C; Tr+		Culvert		
11	540+50 -L- Lt 544+50 -L- Lt	Stream		Old Field Creek			C; Tr+		Fill		
11	544+30 -L- Rt 544+40 -L- Rt	Stream		Old Field Creek			C; Tr+		Stabilization		
13	564+70 -L- Rt 565+00 -L- Rt	Stream		Beaver Creek			C; Tr+		Culvert		
14	577+70 -L- Lt 577+90 -L- Lt	Wetland		South Beaver Creek			C; Tr+		Culvert		
15	586+60 -L- Lt 587+30 -L- Lt	Wetland		South Beaver Creek			C; Tr+		Fill		

* List all stream and surface water impact locations regardless of jurisdiction or size.
Equalizer Pipes to be noted as a minimization of impacts.
All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
15	588+00 -L- Rt 588+10 -L- Rt	Stream		South Beaver Creek			C, Tr+		Stabilization		
15	588+30 -L- Rt 589+10 -L- Rt	Wetland		South Beaver Creek			C, Tr+		Fill		
15	591+40 -L- Lt 594+40 -L- Lt	Wetland		South Beaver Creek			C, Tr+		Fill		
15	594+00 -L- Rt 594+10 -L- Rt	Stream		South Beaver Creek			C, Tr+		Stabilization		
17	608+50 -L- Rt 611+00 -L- Rt	Stream		Beaver Creek			C, Tr+		Fill		
17	610+10 -L- Rt 611+10 -L- Rt	Stream		Beaver Creek			C, Tr+		Culvert		
17	610+90 -L- Rt 613+00 -L- Rt	Wetland		Beaver Creek			C, Tr+		Fill		
17	618+60 -L- Rt 619+60 -L- Rt	Stream		Beaver Creek			C, Tr+		Culvert		
17	619+80 -L- Rt 622+90 -L- Rt	Wetland		Beaver Creek			C, Tr+		Fill		
18	624+10 -L- Rt 624+40 -L- Rt	Stream		Beaver Creek			C, Tr+		Culvert		
18	628+40 -L- Rt 628+70 -L- Rt	Stream		Beaver Creek			C, Tr+		Culvert		
19	641+40 -L- Rt 642+20 -L- Rt	Wetland		Beaver Creek			C, Tr+		Fill		
20	650+50 -L- Rt 652+40 -L- Rt	Wetland		Beaver Creek			C, Tr+		Fill		
20	652+00 -L- Lt 652+20 -L- Lt	Stream		Beaver Creek			C, Tr+		Culvert		
21	660+70 -L- Rt 661+40 -L- Rt	Stream		Beaver Creek			C, Tr+		Culvert		
21	661+60 -L- Rt 662+70 -L- Rt	Stream		Beaver Creek			C, Tr+		Fill		
21	662+70 -L- Rt 664+00 -L- Rt	Wetland		Beaver Creek			C, Tr+		Fill		

* List all stream and surface water impact locations regardless of jurisdiction or size.
Equalizer Pipes to be noted as a minimization of impacts.
All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

Project/TIP No.: R-2915D **County(ies):** Ashe

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
21	662+00 -L- Lt 663+20 -L- Lt	Wetland		Beaver Creek			C, Tr+		Clearing		
21	663+60 -L- Lt 664+40 -L- Lt	Stream		Beaver Creek			C, Tr+		Excavation		
21	667+50 -L- Rt 669+90 -L- Rt	Wetland		Beaver Creek			C, Tr+		Fill		
21	17+80 -Y32- Rt 20+80 -Y32- Rt	Wetland		Beaver Creek			C, Tr+		Fill		
22	675+40 -L- Lt 675+70 -L- Lt	Stream		Beaver Creek			C, Tr+		Stabilization		
22	676+40 -L- Rt 677+00 -L- Rt	Wetland		Beaver Creek			C, Tr+		Fill		

* List all stream and surface water impact locations regardless of jurisdiction or size.
Equalizer Pipes to be noted as a minimization of impacts.
All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

Project/TIP No.: R-2915D **County(ies):** Ashe

Swales

Sheet No.	Station (From / To)	Stream Crossing Station	Base Width (ft)	Front Slope (H:V)	Back Slope (H:V)	Drainage Area (ac)	Recommended Treatment Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used
4,5	455+80 -L- 462+25 -L- Lt	455+70 -L- Rt	0.0	4	6	1.88	188	625	0.68%	1.6	1.1	2.1	1.2	No
4,5	462+25 -L- 472+50 -L- Lt	462+25 -L-	0.0	4	6	5.30	530	1060	2.06%	2.2	1.8	2.9	1.9	No
5	462+80 -L- 463+70 -L- Rt	462+25 -L-	0.0	4	6	0.19	19	115	1.64%	0.4	1.2	0.5	1.2	No
5,6	468+60 -L- 475+80 -L- Rt	468+50 -L- Rt	0.0	4	6	1.22	122	690	1.51%	1.3	1.6	1.7	1.7	No
6	477+50 -L- 481+30 -L- Rt	477+50 -L- Rt	0.0	4	6	0.59	59	370	2.00%	1.1	1.6	1.5	1.7	No
6,7	484+50 -L- 496+20 -L- Lt	482+30 -L-	0.0	4	6	4.23	423	1350	1.37%	2.4	1.5	3.2	1.7	No
7,8	496+20 -L- 502+00 -L- Lt	495+90 -L- Rt	0.0	4	6	1.85	185	575	1.48%	1.5	1.4	2.0	1.5	No
6,7	482+50 -L- 494+70 -L- Rt	482+30 -L-	0.0	4	6	2.22	222	1220	0.57%	2.0	1.2	2.6	1.3	No
7,8	495+90 -L- 498+00 -L- Rt	495+90 -L- Rt	0.0	4	6	1.02	102	450	1.40%	2.0	1.6	2.6	1.7	No
9	514+90 -L- 517+60 -L- Rt	514+90 -L- Rt	0.0	4	6	0.44	44	265	1.00%	0.8	1.1	1.1	1.2	No
9	513+50 -L- 517+70 -L- Lt	514+90 -L- Rt	0.0	4	6	0.68	68	395	3.15%	0.3	1.2	0.4	1.5	No
9,10	517+70 -L- 522+25 -L- Lt	517+70 -L- Rt	0.0	4	6	2.72	272	415	3.47%	2.0	1.9	2.7	2.1	No
10	522+25 -L- 529+15 -L- Lt	522+25 -L- Rt	0.0	4	6	4.01	401	645	3.92%	1.8	1.9	2.3	2.1	No
10,11	529+15 -L- 534+50 -L- Lt	523+00 -L- Rt	0.0	4	6	3.90	390	555	3.10%	2.6	1.9	2.0	2.1	No
12	552+70 -L- 558+00 -L- Lt	544+70 -L- Rt	0.0	4	6	1.97	197	520	2.48%	3.3	1.9	4.3	2.0	No
12	552+70 -L- 556+50 -L- Rt	544+70 -L- Rt	0.0	4	6	1.76	176	390	2.64%	2.4	1.9	3.2	2.1	No
12,13	558+00 -L- 561+70 -L- Lt	564+90 -L Rt	0.0	4	6	0.26	26	275	1.28%	0.5	1.1	0.6	1.1	No
12,13	556+50 -L- 561+70 -L- Rt	564+90 -L- Rt	0.0	4	6	1.36	136	525	2.86%	2.6	2.0	3.4	2.2	No
13,14	566+60 -L- 576+40 -L- Lt	581+00 -L- Rt	0.0	4	6	4.30	430	905	2.69%	2.5	1.9	3.2	2.1	No
14	570+50 -L- 575+00 -L- Lt	581+00 -L- Rt	0.0	4	6	0.77	77	495	2.58%	0.7	1.7	0.9	1.9	No

Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanantion of why design criteria was not met.

Additional Comments

Yes, these swales meet the minimum design criteria. In the table above where the swale listed is made of more than one segment, the total "Drainage Area" and total "Actual Length" are shown. The Q2, V2, Q10 and V10 are averages.

Swale

Sheet No.	Station (From / To)	Stream Crossing Station	Base Width (ft)	Front Slope (H:V)	Back Slope (H:V)	Drainage Area (ac)	Recommended Treatment Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used
14	578+20 -L- 583+50 -L- Lt	588+00 -L- Rt	0.0	4	6	2.60	260	510	2.88%	2.0	1.8	2.7	2.0	No
14,15	578+50 -L- 586+00 -L- Rt	588+00 -L- Rt	0.0	4	6	1.56	156	720	2.49%	1.5	1.8	2.0	1.9	No
18	625+95 -L- 628+00 -L- Rt	628+50 -L-	0.0	4	6	1.06	106	205	3.22%	1.7	1.8	2.2	2.0	No
18	629+50 -L- 633+30 -L- Rt	634+00 -L- Lt	0.0	4	6	1.77	177	380	1.07%	1.4	1.2	1.8	1.3	No
18	630+00 -L- 633+30 -L- Lt	634+00 -L- Lt	0.0	4	6	0.66	66	355	0.92%	1.2	1.2	1.6	1.3	No
19	633+00 -L- 640+50 -L- Rt	NA	0.0	4	6	5.83	583	680	1.32%	4.3	1.7	5.7	1.9	No
19	644+00 -L- 647+40 -L- Rt	NA	0.0	4	6	1.82	182	360	2.00%	2.8	2.0	3.7	2.1	No
20	654+00 -L- 660+00 -L- Rt	659+20 -L- Lt	0.0	4	6	2.73	273	605	0.72%	2.2	1.2	2.9	1.3	No
20	655+50 -L- 658+50 -L- Lt	659+20 -L- Lt	0.0	4	6	1.73	173	510	1.58%	2.8	1.8	3.7	1.9	No
21,22	672+00 -L- 675+50 -L- Rt	661+50 -L- Rt	0.0	4	6	0.83	83	375	3.70%	1.0	1.9	1.3	2.0	No
21	666+60 -L- 668+00 -L- Rt	661+50 -L- Rt	0.0	4	6	0.57	57	165	0.78%	0.8	1.0	1.0	1.1	No
21	669+50 -L- 674+50 -L- Lt	664+80 -L- Lt	0.0	4	6	1.30	130	510	3.32%	2.6	1.9	3.4	2.1	No
21	19+00 -Y32- 20+50 -Y32- Lt	664+80 -L- Lt	0.0	3	3	0.79	79	150	0.30%	2.4	1.0	3.1	1.1	No
							0							
							0							
							0							
							0							
							0							
							0							
							0							

Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanantion of why design criteria was not met.

Additional Comments

Yes, these swales meet the minimum design criteria. In the table above where the swale listed is made of more than one segment, the total "Drainage Area" and total "Actual Length" are shown. The Q2, V2, Q10 and V10 are averages.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)
4	459+00 -L- Rt	PFSH	Class 'B'	0.50	Pipe	15	2.2	0.6
5	464+55 -L- Rt	Riprap Apron / Pad	Class 'B'	3.02	Pipe	66	7.5	0.7
8	504+50 -L- Rt	PFSH	Class 'B'	0.41	Pipe	15	1.8	0.6
8	506+50 -L- Lt	PFSH	Class 'B'	0.42	Pipe	15	1.9	0.6
15	588+65 -L- Lt	Riprap Apron / Pad	Class 'B'	0.72	Pipe	15	3.2	0.8
15	591+50 -L- Lt	Riprap Apron / Pad	Class 'B'	0.27	Pipe	15	1.2	0.6
17	613+50 -L- Rt	PFSH	Class 'B'	0.71	Pipe	15	3.2	0.7
21	661+00 -L- Lt	PFSH	Class 'B'	1.18	Pipe	18	5.3	0.9
21	19+75 -Y32- Rt	Riprap Apron / Pad	Class 'B'	0.89	Pipe	15	3.5	0.8

Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox (2008), NCDOT Standard Details, or FHWA HEC-14 (July 2006), been met and verified, as applicable? If No, provide further explanantion of why design criteria was not met.

Additional Comments

Yes, these devices meet the minimum design criteria.

* Refer to the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), NCDOT Standard Details, 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.

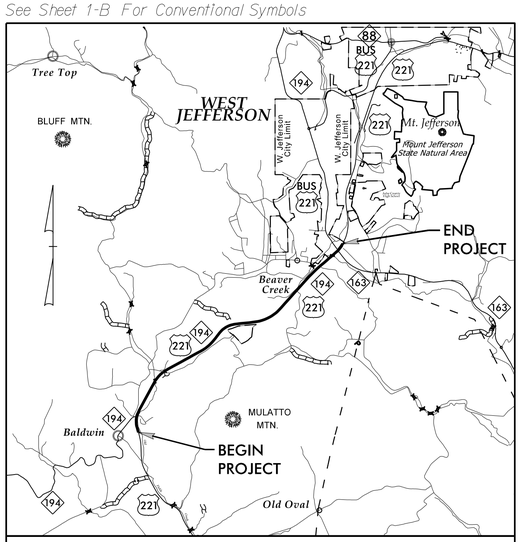
09/08/99

TIP PROJECT: R–2915D

CONTRACT:

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

ROW PLANS



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ASHE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2915D	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34518.1.1	STP–0221(42)	P.E.
34518.2.4	STP–0221(42)	R/W,UTIL.

LOCATION: US 221 FROM SOUTH OF NC 194 TO US 221 BYPASS

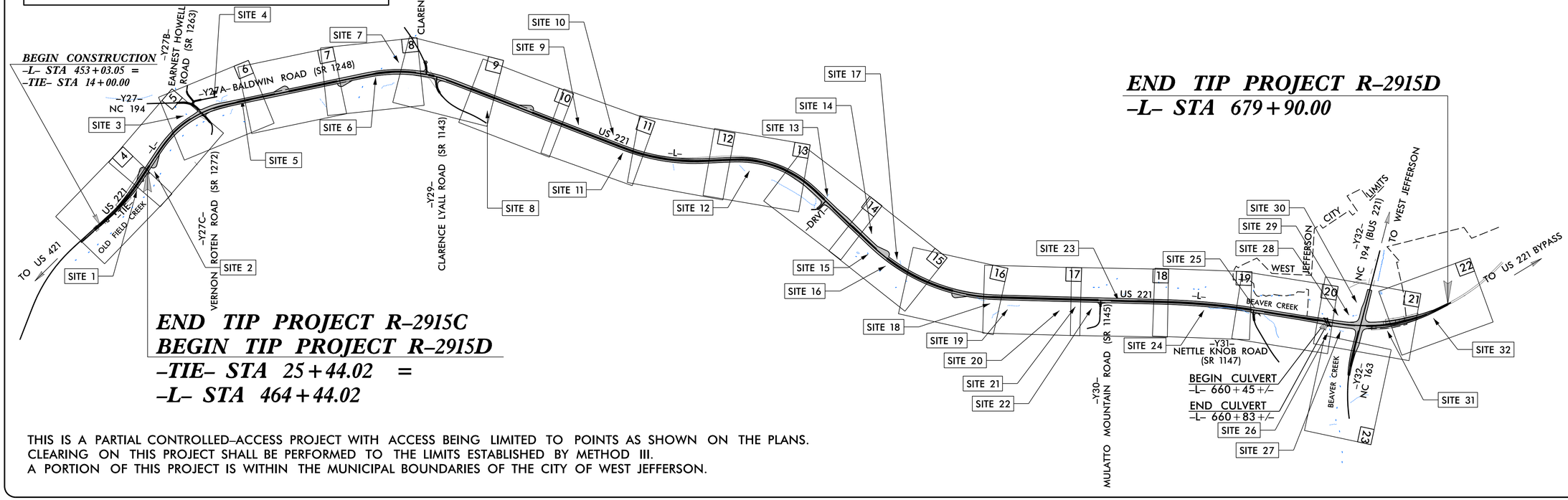
TYPE OF WORK: GRADING, PAVING, DRAINAGE, CURB AND GUTTER, SIGNALS, AND CULVERT

PRELIMINARY PLANS
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PERMIT DRAWING
SHEET 1 OF 52

NAD 83/CORS

WETLAND AND SURFACE WATER IMPACTS PERMIT



END TIP PROJECT R–2915C
BEGIN TIP PROJECT R–2915D
–TIE– STA 25+44.02 =
–L– STA 464+44.02

END TIP PROJECT R–2915D
–L– STA 679+90.00

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

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 2015 = 14715
ADT 2035 = 25000
DHV = 9 %
D = 55 %
T = 9 % *
V = 60 MPH
* TTST =2 DUAL 7
FUNC CLASS =
Major Collector
Statewide Tier

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT R–2915D	=	4.290 MI
LENGTH OF STRUCTURE PROJECT R–2915D	=	0.007 MI
TOTAL LENGTH OF PROJECT R–2915D	=	4.297 MI

Prepared in the Office of:
KCI Associates of N.C., P.A.
4601 Six Forks Road
Landmark Center II, Suite 220
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 30, 2013

LETTING DATE:
FEBRUARY 17, 2015

NCDOT CONTACT: ***BRENDA MOORE, PE***
PROJECT ENGINEER – ROADWAY DESIGN

Plans Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh NC, 27610

CHARLES L. FLOWE, P.E.
PROJECT ENGINEER

BARRY C. SMITH, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

1/15/2014
R2915D_Hyd_prm_wet_psh_01(tsh)
jharvey

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

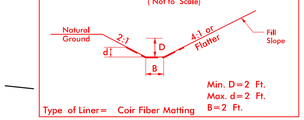
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PERMIT DRAWING
SHEET 2 OF 52

DETAIL 4
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D = 2 Ft.
Max. d = 2 Ft.
B = 2 Ft.
Type of Liner = Coir Fiber Matting

FROM STA. 21+44 TO STA. 23+00 –TIE– RT

NAD 83/CORS

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

3/28/2014
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bpowell

JEFF & MARGIE SMITH
JAMES A. TRIVETTE
LINDA TRIVETTE
JOANN GREER
BALDWIN-BETHANY CEMETERY
THOMAS M. HOWELL AND W KATHY H. HOWELL
BETHANY UNITED METHODIST CHURCH
RODERICK E. & KENA EDWARDS SLOOP
BARRY K. & SANDRA T. LIDDLE
MARTIN MARTINEZ SALDANA
BETTY SUE HOUCK
DANNY & DONNA COLDIRON
ARVELL & BERTHA GROGAN
TONY A ELDRETH
SHARON W ELDRETH
MARY EDWARDS HOLCOMB AND HUSBAND, C. J. HOLCOMB, JR.

FRANK EDWARDS RD SR 1200

BEGIN CONSTRUCTION R–2915D
–L– POT Sta. 453+03.05, OS: 23.5' RT =
–TIE– POT Sta. 14+00.00, OS: 0'

SITE 1

BERM DITCH
STA 20+00 – 24+90 –TIE– LT

Convert to JB w/MH
RETAIN AND EXTEND
RETAIN
REMOVE
SPEC LAT 2' BASE DITCH w/ COIR FIBER MATTING SEE DETAIL 4
CL I RIPRAP ON BANKS ONLY EST 15 TONS EST FF 30 SY

MATCH LINE –L– STA. 462+50
SEE SHEET NO. 5

FOR –TIE– PROFILE, SEE SHEET 24

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 3 OF 52

REVISIONS

8/17/99

3/28/2014
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DENOTES IMPACTS IN SURFACE WATER

NAD 83/CORS

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL 4
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, T, B, 4:1 or Flatter, Fill Slope

Mini. D = 2 Ft.
Max. d = 2 Ft.
B = 2 Ft.

Type of Liner = Coir Fiber Matting

FROM STA. 21+44 TO STA. 23+00 –TIE– RT

BEGIN CONSTRUCTION R–2915D
–L– POT Sta. 453+03.05, OS: 23.5' RT =
–TIE– POT Sta. 14+00.00, OS: 0'

JEFF & MARGIE SMITH
JAMES A. TRIVETTE
LINDA TRIVETTE
1 JOANN GREER
2 BALDWIN-BETHANY CEMETERY
3 BETHANY UNITED METHODIST CHURCH
RODERICK E. & KENA EDWARDS SLOOP
THOMAS M. HOWELL AND W KATHY H. HOWELL
5
JOANN GREER
4 BARRY K. & SANDRA T. LIDDLE
MARTIN MARTINEZ SALDANA
BETTY SUE HOUCK
JOANN GREER
TONY A ELDRETH
SHARON W ELDRETH
ARVELL & BERTHA GROGAN
DANNY & DONNA COLDIRON
TONY A ELDRETH
SHARON W ELDRETH
6 MARY EDWARDS HOLCOMB AND HUSBAND, C. J. HOLCOMB, JR.

FRANK EDWARDS RD
PROPERTY LINE / R/W
24" CMP
JS
POND
RISER
450
455
460
20
15
N 1° 55' 55.4" W
-L-
-TIE-
US 221 BST
WD RAIL
EXISTING R/W
REBAR
FENCE
GATE
FLAG
CURB
GAS VENTS
CONC
ISFBUS
ISMTLBUS
ISRBO
HTR
TREE FARM
ERWIN HOUCK DR
SR 1200
SR 1201
BETHANY CEMETERY
FIELD CREEK

SITE 1

BERM DITCH
STA. 20+00 – 24+90 –TIE– LT

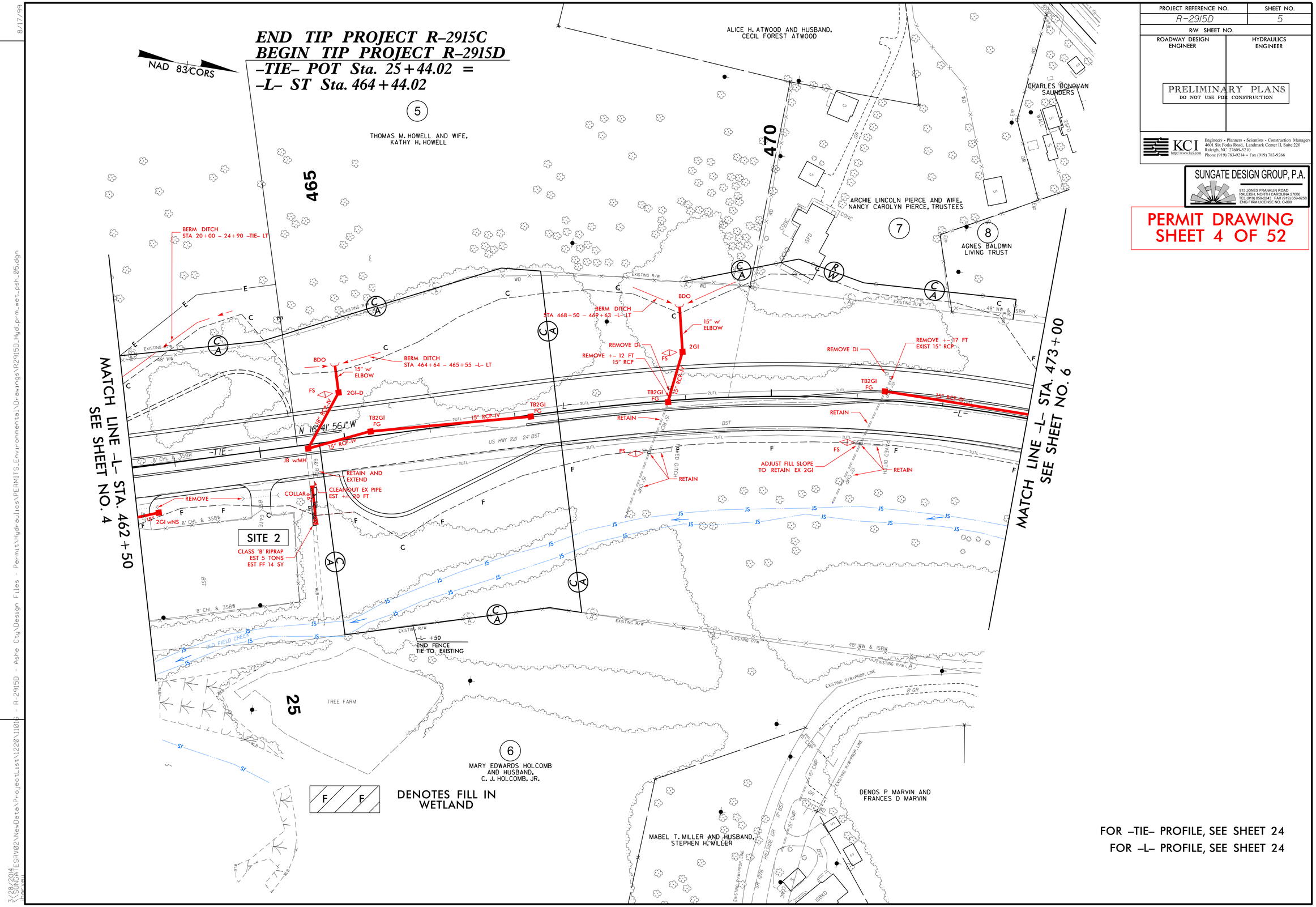
(0410) BDO, 36" ELBOW, 2GI, FS, 36" RCP-III

MATCH LINE –L– STA. 462+50
SEE SHEET NO. 5

(0402) 2GI NS, FS, 15", 18" RCP-III COLLAR
(0403) Convert to JB w/MH
(0404) RETAIN AND EXTEND
(0405) RETAIN
(0406) TB2GI FG, 15" RCP-IV, REMOVE
(0407) TB2GI FG, 15" RCP-IV, REMOVE
(0408) TB2GI FG, 15" RCP-IV, REMOVE
(0409) PSH
(0412) JB w/MH, 15"
(0413) CL I RIPRAP ON BANKS ONLY EST 15 TONS EST FF 30 SY
(0414) 15"

SPEC LAT 2' BASE DITCH w/COIR FIBER MATTING SEE DETAIL 4

FOR –TIE– PROFILE, SEE SHEET 24



PROJECT REFERENCE NO.	SHEET NO.
R-2915D	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 4 OF 52

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	5
R/W SHEET NO.	
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PERMIT DRAWING
SHEET 5 OF 52

END TIP PROJECT R-2915C
BEGIN TIP PROJECT R-2915D
-TIE- POT Sta. 25+44.02 =
-L- ST Sta. 464+44.02

NAD 83/CORS

MATCH LINE -L- STA. 462+50
SEE SHEET NO. 4

MATCH LINE -L- STA. 473+00
SEE SHEET NO. 6

5
THOMAS M. HOWELL AND WIFE,
KATHY H. HOWELL

ALICE H. ATWOOD AND HUSBAND,
CECIL FOREST ATWOOD

CHARLES DONOVAN
SAUNDERS

ARCHIE LINCOLN PIERCE AND WIFE,
NANCY CAROLYN PIERCE, TRUSTEES

7

8
AGNES BALDWIN
LIVING TRUST

6
MARY EDWARDS HOLCOMB
AND HUSBAND,
C. J. HOLCOMB, JR.

DENOS P MARVIN AND
FRANCES D MARVIN

MABEL T. MILLER AND HUSBAND,
STEPHEN H. MILLER

495

470

25

TREE FARM

BERM DITCH
STA 20+00 - 24+90 -TIE- LT

BERM DITCH
STA 464+64 - 465+55 -L- LT

BERM DITCH
STA 468+50 - 469+63 -L- LT

BDO
15" w/ ELBOW
FS
2GI-D
TB2GI
FG
15" RCP IV
JB w/MH
N 16°41'56.1" W
REMOVE DI
REMOVE +- 42 FT
15" RCP
2GI
REMOVE +- 17 FT
EXIST 15" RCP
RETAIN
ADJUST FILL SLOPE
TO RETAIN EX 2GI
RETAIN AND
EXTEND
CLEAN OUT EX PIPE
EST 20 FT
COLLAR
REMOVE
2GI wNS
SITE 2
CLASS 'B' RIPRAP
EST 5 TONS
EST FF 14 SY
-L- +50
END FENCE
TIE TO EXISTING
-TIE-
-L-
US HWY 221
24' BST
EXISTING R/W
EXISTING R/W/PROP. LINE
8' CHL & 35BW
48' WW
48' WW & 35BW
48' WW & 75BW
F
C
E
JS
SF
WD
DITCH
CONC
GRVL DRIVE
DWL
SHED
GAZEBO

F F DENOTES FILL IN WETLAND

FOR -TIE- PROFILE, SEE SHEET 24
FOR -L- PROFILE, SEE SHEET 24

REVISIONS
8/17/99

3/28/2014
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hpreel

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/CORS

PERMIT DRAWING SHEET 6 OF 52

REVISIONS 8/17/99

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GEORGIA P. TEDDER
THE VERONICA GAIL WORTH REVOCABLE LIVING TRUST
VERNON ROTEN
CHARLES DONOVAN SAUNDERS
AGNES BALDWIN LIVING TRUST
GREATHEL T. COLDIRON
JERROLD ASHLEY
BARBARA LEE EDWARDS AND CHARLES CLAYBORN EDWARDS, JR.
NCDOT
PATRICIA P. ANDREWS
LINDA D. BURGESS
VERNON ROTEN AND LENNA RUTH ROTEN
FRANCES R. ELLER
FRANCES MARION MILLER

BEGIN CONSTRUCTION -Y27B- POC Sta.10+90.00
END CONSTRUCTION -Y27A- POT Sta.11+70.00
BEGIN CONSTRUCTION -Y27- POT Sta.14+65.00
END CONSTRUCTION -Y27C- POT Sta.12+00.00

-Y27- N 38°45'18.1" E
-Y27A- N 29°00'31.3" E
-Y27B- S 89°09'43.1" E
-Y27B- S 42°12'57.1" E
-Y27C- N 28°26'23.0" E

BEARING BK = N 24°15'41.2" W
BEARING BK = N 89°14'20.8" E
BEARING AH = S 54°17'55.9" E
BEARING AH = S 36°07'42.1" E

SITE 3A
SITE 3B
SITE 4
SITE 5
TOTAL TAKE

MATCH LINE -L- STA. 473+00 SEE SHEET NO. 5
MATCH LINE -L- STA. 484+50 SEE SHEET NO. 7

LAT 2' BASE DITCH w/ CLASS 'B' RIPRAP SEE DETAIL 7
LAT 2' BASE DITCH SEE DETAIL 6
LAT V-DITCH w/CLASS I RIPRAP SEE DETAIL 9
SPEC LAT V-DITCH SEE DETAIL 8
HEAD DITCH SEE DETAIL 21
TOE PROTECTION SEE DETAIL 18
TOE PROTECTION SEE DETAIL 1
STREAM BANK STABILIZATION SEE DETAIL 26
RETAIN AND EXTEND
REMOVE
REMOVE HW
REMOVE DI
REMOVE +- 12 FT 15" CMP
COLLAR
BEGIN JS
CLASS I RIPRAP EST 7 TONS EST FF 15 SY

24" RCP-IV
15" RCP-IV
60" RCP-III
84" CSP
60" CSP
48" WW & ISBW
36" WD
18" CMP
15" CMP
24" CSP
TB2GI FG
2GI-A
2GI
JB w/MH
HW
CAT-1
12.7' CONC. HW
13' CONC. HW
GRAU 350 TL-3

DETAIL 21
STANDARD BASE DITCH
(Not to Scale)
Min. D=2 Ft.
B=VARIES 8-16 Ft.
FROM STA. 474+43 TO STA. 474+69 -L- LT
DDE = 16 CY

DETAIL 1
TOE PROTECTION
(Not to Scale)
d=2 Ft.
b=3 Ft.
Type of Liner= CLASS I Rip-Rap
FROM STA. 480+20 TO STA. 481+40 -L- LT

DETAIL 6
LATERAL BASE DITCH
(Not to Scale)
Min. D=2 Ft.
B=2 Ft.
b=5 Ft.
FROM STA. 15+00 TO STA. 16+75 -Y27- LT
DDE = 174 CY

DETAIL 7
LATERAL BASE DITCH
(Not to Scale)
*When B is < 6.0'
Type of Liner= Class 'B' Rip-Rap
Min. D= 2 Ft.
Max. d= 2 Ft.
B= 2 Ft.
b= 5 Ft.
FROM STA. 14+65 TO STA. 15+00 -Y27- LT
DDE = 19 CY

DETAIL 8
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D= 2 Ft.
FROM STA. 477+50 TO STA. 478+50 -L- RT

DETAIL 18
TOE PROTECTION
(Not to Scale)
d=2 Ft.
Type of Liner= CLASS I Rip-Rap
FROM STA. 478+80 TO STA. 480+20 -L- LT

DETAIL 9
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 2 Ft.
Max. d= 2 Ft.
b= 5 Ft.
Type of Liner= CLASS I Rip-Rap
FROM STA. 483+34 TO STA. 483+76 -L- LT
DDE = 17 CY

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

FOR -L- PROFILE, SEE SHEET 25
FOR -Y27- PROFILE, SEE SHEET 33
FOR -Y27A- PROFILE, SEE SHEET 34
FOR -Y27B- PROFILE, SEE SHEET 34
FOR -Y27C- PROFILE, SEE SHEET 33

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/CORS

PERMIT DRAWING SHEET 7 OF 52

REVISIONS 8/17/99

3/28/2014
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bpeoples

GEORGIA P. TEDDER

THE VERONICA GAIL WORTH REVOCABLE LIVING TRUST

BEGIN CONSTRUCTION -Y27B- POC Sta.10+90.00

VERNON ROTEN

LAT 2' BASE DITCH w/ CLASS 'B' RIPRAP SEE DETAIL 7

LAT 2' BASE DITCH SEE DETAIL 6

REMOVE

-Y27- N 38°45'18.1" E

-Y27B- S 42°12'57.1" E

-Y27B- S 83°09'41.1" E

CHARLES DONOVAN SAUNDERS

GREATHEL T. COLDIRON

END CONSTRUCTION -Y27A- POT Sta.11+70.00

BEGIN CONSTRUCTION -Y27- POT Sta.14+65.00

AGNES BALDWIN LIVING TRUST

CHARLES DONOVAN SAUNDERS

JERROLD ASHLEY

BARBARA LEE EDWARDS AND CHARLES CLAYBORN EDWARDS, JR.

LAT V-DITCH w/CLASS I RIPRAP SEE DETAIL 9

-Y27A- N 29°00'31.3" E

SR 1248 BALDWIN RD

SITE 3A

SITE 3B

SITE 4

SITE 5

TOTAL TAKE

RETAIN AND EXTEND

BEARING BK = N 24°15'41.2" W

REMOVE HW

COLLAR

HEAD DITCH SEE DETAIL 21

HW

84" CSP

TOE PROTECTION SEE DETAIL 18

TOE PROTECTION SEE DETAIL 1

STREAM BANK STABILIZATION SEE DETAIL 26

NCDOT

60" RCP-III

JB w/MH

60" CSP

CLASS I RIPRAP EST 7 TONS EST FF 15 SY

2GI-A

24" FS GRAU 350 TL-3

TB2GI FG

15" RCP-IV

REMOVE +/- 12 FT 15" CMP U S HWY 221

REMOVE DI

2GI

RETAIN

SPEC LAT V-DITCH SEE DETAIL 8

N 28°26'23.0" E

MATCH LINE -L- STA. 473+00 SEE SHEET NO. 5

MATCH LINE -L- STA. 484+50 SEE SHEET NO. 7

BEARING BK = N 89°14'20.8" E

END CONSTRUCTION -Y27C- POT Sta.12+00.00

BEARING AH= S 54°17'55.9" E

BEARING AH= S 36°07'42.1" E

PATRICIA P. ANDREWS

LINDA D. BURGESS

FRANCES MARION MILLER

VERNON ROTEN AND LENNA RUTH ROTEN

FRANCES R. ELLER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

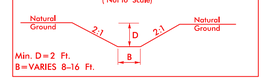
F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FOR –L– PROFILE, SEE SHEET 25
FOR –Y27– PROFILE, SEE SHEET 33
FOR –Y27A– PROFILE, SEE SHEET 34
FOR –Y27B– PROFILE, SEE SHEET 34
FOR –Y27C– PROFILE, SEE SHEET 33

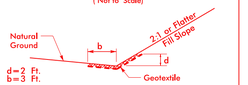
DETAIL 21
STANDARD BASE DITCH
(Not to Scale)



Min. D=2 Ft.
B=VARIES 8-16 Ft.

FROM STA. 474+43 TO STA. 474+69 –L– LT
DDE = 16 CY

DETAIL 1
TOE PROTECTION
(Not to Scale)



d=2 Ft.
b=3 Ft.

Type of Liner= CLASS I Rip-Rap

FROM STA. 480+20 TO STA. 481+40 –L– LT

DETAIL 6
LATERAL BASE DITCH
(Not to Scale)



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

FROM STA. 15+00 TO STA. 16+75 –Y27– LT
DDE = 174 CY

DETAIL 7
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'
Min. D= 2 Ft.
Max. d= 2 Ft.
B= 2 Ft.
b= 5 Ft.

Type of Liner= Class 'B' Rip-Rap

FROM STA. 14+65 TO STA. 15+00 –Y27– LT
DDE = 19 CY

DETAIL 8
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 2 Ft.

FROM STA. 477+50 TO STA. 478+50 –L– RT

DETAIL 18
TOE PROTECTION
(Not to Scale)

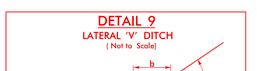


d=2 Ft.

Type of Liner= CLASS I Rip-Rap

FROM STA. 478+80 TO STA. 480+20 –L– LT

DETAIL 9
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 2 Ft.
Max. d= 2 Ft.
b= 5 Ft.

Type of Liner= CLASS I Rip-Rap

FROM STA. 483+34 TO STA. 483+76 –L– LT
DDE = 17 CY

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	6-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 8 OF 52

END CONSTRUCTION
-Y27A- POT Sta.11+70.00

24" RCP-IV

-Y27A-
N 29° 00' 31.3" E
SR 1248 BALDWIN RD

JERROLD ASHLEY

EXISTING R/W 20'

RETAIN AND EXTEND

SITE 3B

GRAU 350 TL-3

24" CSP

REMOVE HW
COLLAR

SITE 4

BEARING BK = N 24° 15' 41.2" W

TOTAL TAKE

BEGIN JS

TOE PROTECTION
SEE DETAIL 18

TOE PROTECTION
SEE DETAIL 1

TB2GI
FG

15" RCP-IV

REMOVE DI

REMOVE +- 12 FT
15" CMP

U S HWY 221

FS

2GI

RETAIN

SPEC LAT V-DITCH
SEE DETAIL 8

-Y27C-

GRAU 350 TL-3

7'H x 7'W DOUBLE BARREL BOX CULVERT

END CONSTRUCTION
-Y27C- POT Sta.12+00.00

13' CONC. HW

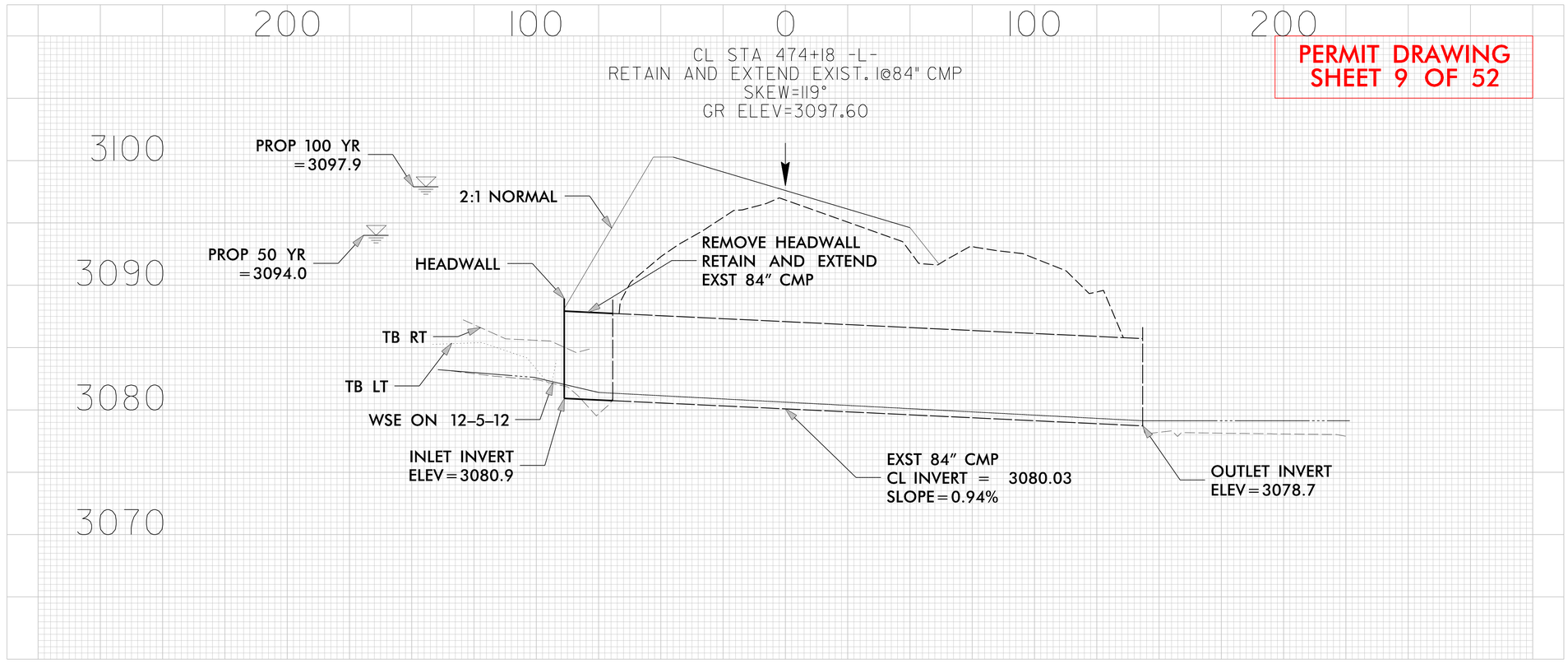
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PLANS

REVISIONS

8/17/99

3/28/2014
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PERMIT DRAWING
SHEET 9 OF 52



PROJECT REFERENCE NO.	SHEET NO.
R-2915D	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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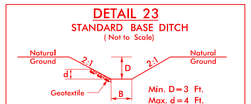
PERMIT DRAWING SHEET 10 OF 52

REVISIONS 8/17/99

3/28/2014
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bbryan

NAD 83/CORS

DETAIL 23
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = Stream Bank Stabilization
FROM STA. 505+29 TO STA. 505+82 -L- LT
DDE = 65 CY

DETAIL 9
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = CLASS I Rip-Rap
FROM STA. 502+50 TO STA. 505+35 -L- LT
DDE = 397 CY

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = CLASS I Rip-Rap
FROM STA. 508+65 TO STA. 509+50 -L- LT

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

17 BOWER CAMPBELL AND WIFE, LILLIAN B. CAMPBELL

15 D. J. HART & BETTY HART

18 MORRIS H. WALKER AND KATHY G. WALKER

ANN M. VANNOY AND RUSSELL F. VANNOY

16 RUSSELL F. VANNOY

500

505

BERM DITCH
STA 496+17 – 498+00 -L- LT

LAT V-DITCH w/CLASS 1 RIPRAP
SEE DETAIL 9

HEAD DITCH
SEE DETAIL 23

STREAM BANK STABILIZATION
CLASS I RIPRAP
EST 12 TONS
EST FF 17 SY
SEE DETAIL 23

ROCK PLATING ON FILL SLOPE STEEPER THAN 2:1
STA 505+28 – 506+50 -L- LT

TOE PROTECTION
SEE DETAIL 1

PROVIDE 2' OPENING IN CONC ISLAND
STA. 498+55 – 498+57

COLLAR
REMOVE HW

84" CSP

COLLAR
RETAIN AND EXTEND

TB2GI FG

15" RCP-IV

15" RCP-III

18" RCP-IV

SITE 6

SITE 7

PSH

PDE

HW

CLASS II RIPRAP
EST +/- 125 TONS
EST FF +/- 130 SY

ROCK CROSS VANE
SEE DETAIL SHEET 2-F

W 28° 26' 23.0" E

GRAU 350 TL-3

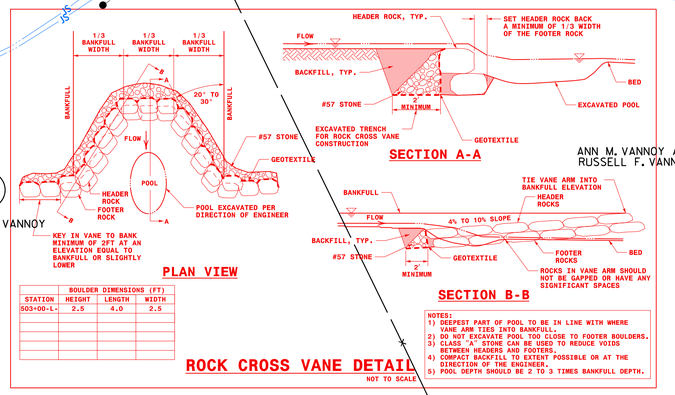
US HWY 221 24' BST

MATCH LINE -L- STA. 497+50
SEE SHEET NO. 7

MATCH LINE -L- STA. 509+50
SEE SHEET NO. 9

48" WW & ISBW

EXISTING R/W



BOULDER DIMENSIONS (FT)			
STATION	HEIGHT	LENGTH	WIDTH
503+00-L-	2.5	4.0	2.5

NOTES:
1) DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2) DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3) CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5) POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

ROCK CROSS VANE DETAIL
NOT TO SCALE

FOR -L- PROFILE, SEE SHEET 26

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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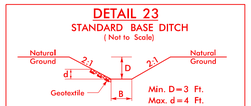
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PERMIT DRAWING SHEET 11 OF 52

REVISIONS 8/17/99

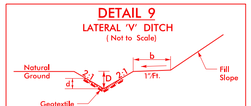
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DETAIL 23
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = Stream Bank Stabilization
FROM STA. 505+29 TO STA. 505+82 –L– LT
DDE = 65 CY

DETAIL 9
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = CLASS I Rip-Rap
FROM STA. 502+50 TO STA. 505+35 –L– LT
DDE = 397 CY

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = CLASS I Rip-Rap
FROM STA. 508+65 TO STA. 509+50 –L– LT

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83 CORS

17 BOWER CAMPBELL AND WIFE, LILLIAN B. CAMPBELL

15 D. J. HART & BETTY HART

18 MORRIS H. WALKER AND KATHY G. WALKER

16 RUSSELL F. VANNOY

ANN M. VANNOY AND RUSSELL F. VANNOY

500

505

BERM DITCH STA 496+17 – 498+00 –L– LT

PROVIDE 2' OPENING IN CONC ISLAND STA. 498+55 – 498+57

LAT V-DITCH w/CLASS 1 RIPRAP SEE DETAIL 9

HEAD DITCH SEE DETAIL 23

STREAM BANK STABILIZATION CLASS I RIPRAP EST 12 TONS EST FF 17 SY SEE DETAIL 23

ROCK PLATING ON FILL SLOPE STEEPER THAN 2:1 STA 505+28 – 506+50 –L– LT

TOE PROTECTION SEE DETAIL 1

COLLAR REMOVE HW

84" CSP

CAT-1

COLLAR RETAIN AND EXTEND

TB2GI FG

15" RCP-IV

15" RCP-III

18" RCP IV

W 28° 26' 23.0" E

GRAU 350 TL-3

US HWY 221 24' BST

SITE 6

SITE 7

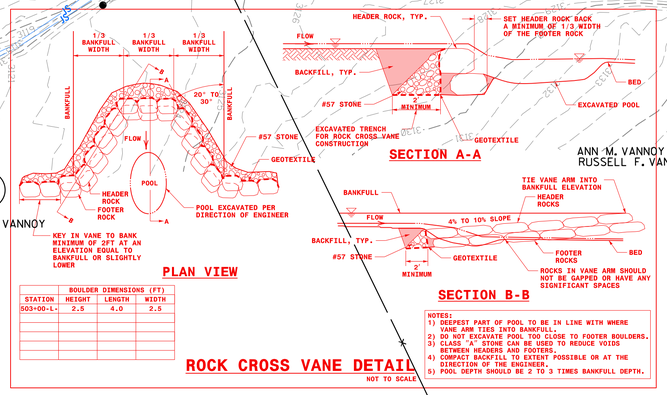
CLASS II RIPRAP EST = 125 TONS EST FF +/- 130 SY

ROCK CROSS VANE SEE DETAIL SHEET 2-F

MATCH LINE –L– STA. 497+50 SEE SHEET NO. 7

MATCH LINE –L– STA. 509+50 SEE SHEET NO. 9

FOR –L– PROFILE, SEE SHEET 26

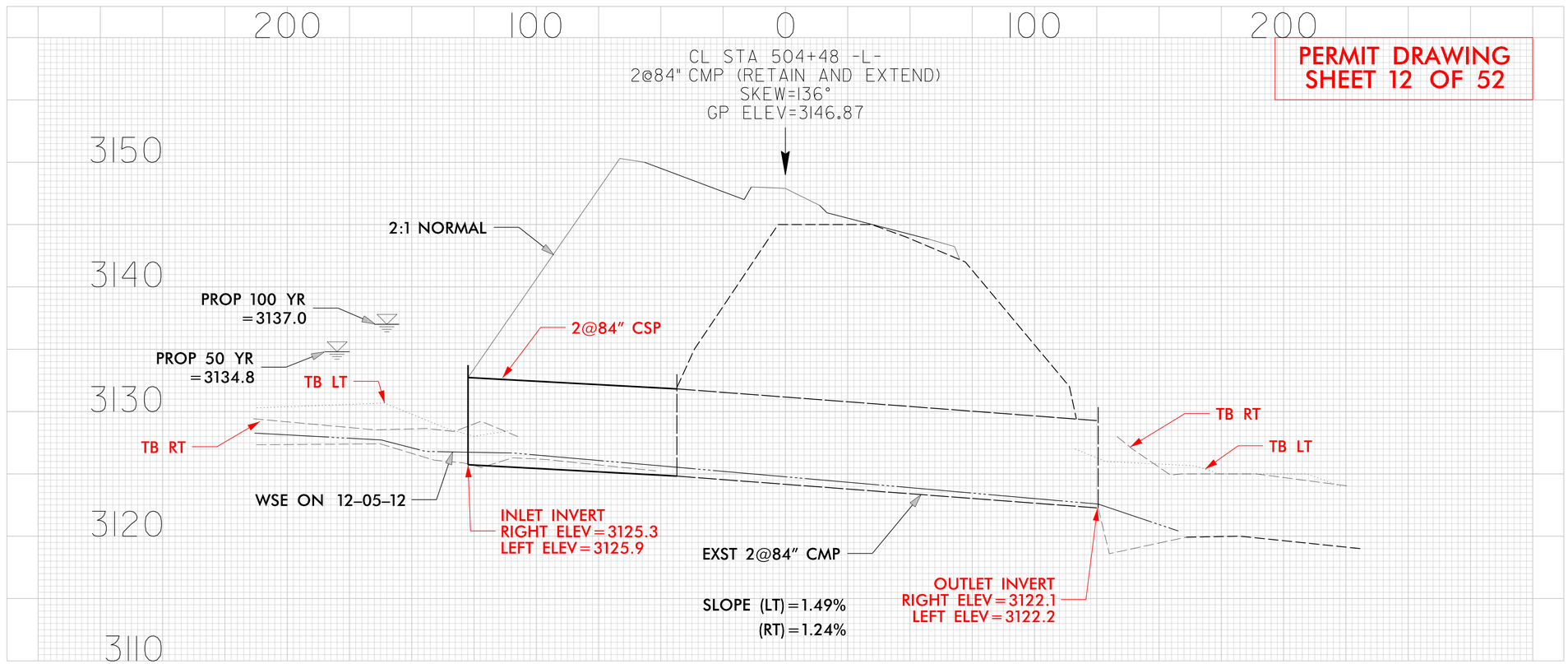


STATION	BOULDER DIMENSIONS (FT) HEIGHT	LENGTH	WIDTH
503+00-L-	2.5	4.0	2.5

NOTES:
1) DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2) DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3) CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5) POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

ROCK CROSS VANE DETAIL
NOT TO SCALE

PERMIT DRAWING
SHEET 12 OF 52



PERMIT DRAWING
SHEET 13 OF 52

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS 8/17/99

MATCH LINE –L– STA. 520+00
SEE SHEET NO. 9

MATCH LINE –L– STA. 533+50
SEE SHEET NO. 11

NAD 83/CORS

520 | 525 | 530

EDWIN DALE KRIDER & WIFE
SHERRY W. KRIDER

JOYCE G. BLEVINS

20 EDWIN DALE KRIDER & WIFE SHERRY W. KRIDER

DETAIL 16
STANDARD BASE DITCH
(Not to Scale)

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

Min. D=3 Ft.
Max. d=2 Ft.
B=2 Ft.

*When B is < 6.0'

Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 523+82 TO STA. 527+91 –L– RT
DDE = 120 CY

DETAIL 17
STANDARD BASE DITCH
(Not to Scale)

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

Min. D=3 Ft.
Max. d= 2Ft.
B=3 Ft.

*When B is < 6.0'

Type of Liner= CLASS I Rip-Rap
STA. 522+93 –L– RT
DDE = 20 CY

BERM DITCH
STA 523+73 – 524+82 –L– LT

BERM DITCH
STA 528+87 – 530+00 –L–

BDO
18" w/ ELBOW
30" w/ ELBOW
FS
2GI
18"
15"
REMOVE
REMOVE +/- 10 FT 18" CMP
18" RCP-III
JB w/MH
RETAIN
REMOVE HW
30" RCP-III
CONC. HW
18" RCP-IV
TB JB w/MH
REMOVE +/- 138 FT EXIST 24" CMP
24" CMP
HEAD DITCH SEE DETAIL 5
TAIL DITCH SEE DETAIL 16
CLASS 'B' RIPRAP EST 8 TONS EST FF 21 SY
PLUG
REMOVE EXIST FES
36" w/ ELBOW
JB w/MH
42"
CLASS I RIPRAP EST 20 TONS EST FF 39 SY
TAIL DITCH SEE DETAIL 17
STREAM BANK STABILIZATION SEE DETAIL 26

SITE 8

–L– N 61° 21' 21.6" E
–Y29– N 71° 53' 26.1" E
US HWY 221 BST

STEVEN M. HALSEY
GEORGE MICHAEL SHATLEY
SARA ELIZABETH POOLE
21 JOHNNY P. PHILLIPS & WIFE DORIS G. PHILLIPS
22 JERRY L. ROTEN & WIFE MARGARET G. ROTEN
KATRINA CASEY
GARLAND C. LYALLS & WIFE JOAN B. LYALLS

EXISTING R/W, 48" WW & ISBW, 48" WW & WD, 55BW, 36" CHL, 64" CHL & 35BW, 18" CMP, 24" CMP, WBSS, WD RAIL, BK WALK, CONC, 1 1/2 SBKD, ISMTLBUS, ISFD, DK, BST, BST/L, MTL, GRAU 350 TL-3, CAT-1, 2UTL, JS, SOIL, GATE, CONC DRIVE, GRV, B, W, POLE

S S DENOTES IMPACTS IN SURFACE WATER

DETAIL 5
STANDARD 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground

Min. D=2 Ft.

FROM STA. 522+81 TO STA. 523+82 –L–RT
DDE = 15 CY

DETAIL 26
RIP RAP AT EMBANKMENT
(Not to Scale)

10' min., Ditch Grade, 1.0' min., 1.5 FT, GEOTEXTILE

Type of Liner= 6 TONS Class I Riprap
FF 8 SY
STA. 522+93 –L– RT

FOR –L– PROFILE, SHEET 27

K:\7204\2915D_Hyd_prm_wet_psh_10 harvey 1/7/2004

PERMIT DRAWING
SHEET 14 OF 52

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-860

REVISIONS 8/17/99

MATCH LINE –L– STA. 520+00
SEE SHEET NO. 9

MATCH LINE –L– STA. 533+50
SEE SHEET NO. 11

NAD 83/CORS

DETAIL 16
STANDARD BASE DITCH
(Not to Scale)

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

Min. D=3 Ft.
Max. d=2 Ft.
B=2 Ft.

*When B is < 6.0'

Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 523+82 TO STA. 527+91 –L– RT
DDE = 120 CY

DETAIL 17
STANDARD BASE DITCH
(Not to Scale)

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

Min. D=3 Ft.
Max. d= 2Ft.
B=3 Ft.

*When B is < 6.0'

Type of Liner= CLASS I Rip-Rap
STA. 522+93 –L– RT
DDE = 20 CY

520
JOYCE G. BLEVINS

EDWIN DALE KRIDER & WIFE
SHERRY W. KRIDER

525

530

20
EDWIN DALE KRIDER & WIFE
SHERRY W. KRIDER

BERM DITCH
STA. 523+73 – 524+82 –L– LT

BERM DITCH
STA. 528+87 – 530+00 –L–

BDO
18" w/ ELBOW
2GI
FS
18"
15"
REMOVE
REMOVE +/- 10' RT 18" CMP
JB w/MH
RETAIN
–L– N 61° 21' 21.6" E
PAVED PATH
US HWY 221 BST
GRAU 350 TL-3
CAT-1
HEAD DITCH SEE DETAIL 5
TAIL DITCH SEE DETAIL 16
36" w/ ELBOW
42"
CLASS I RIPRAP EST 20 TONS EST FF 39 SY
TAIL DITCH SEE DETAIL 17
SITE 8
STREAM BANK STABILIZATION SEE DETAIL 26
30" w/ ELBOW
30" RCP-IV
18" RCP-IV
REMOVE HW
TB JB w/MH
CLASS 'B' RIPRAP EST 8 TONS EST FF 21 SY
REMOVE +/- 138 FT EXIST 24" CMP
PLUG
REMOVE EXIST FES
CONC
BK WALK
1 1/2 SBKD
WD RAIL
EXISTING R/W
48" WW & ISBW
36" CHL
24" CHL & 35BW
18" CMP
–Y29– N 7°53' 26" E
–L– N 61° 21' 21.6" E

STEVEN M. HALSEY
ISMTLBUS
GEORGE MICHAEL SHATLEY
SARA ELIZABETH POOLE
ISFD
21
JOHNNY P. PHILLIPS & WIFE
DORIS G. PHILLIPS
22
JERRY L. ROTEN & WIFE
MARGARET G. ROTEN
KATRINA CASEY
CARLAND C. LYALLS & WIFE
JOAN B. LYALLS
METSBKD

S S DENOTES IMPACTS IN SURFACE WATER

DETAIL 5
STANDARD 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground

Min. D=2 Ft.

FROM STA. 522+81 TO STA. 523+82 –L–RT
DDE = 15 CY

DETAIL 26
RIP RAP AT EMBANKMENT
(Not to Scale)

10' min., 1.0' min., Ditch Grade, 1.5 FT, GEOTEXTILE

Type of Liner= 6 TONS Class I Riprap
FF 8 SY
STA. 522+93 –L– RT

FOR –L– PROFILE, SHEET 27

K:\3\2014\R2915D\Hyd\prm_wet_psh_10_con
harvey

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 15 OF 52

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

DETAIL 22
LATERAL BASE DITCH
(Not to Scale)



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

Type of Liner= Coir Fiber Matting
FROM STA. 537+33 TO STA. 537+61 –L– LT
DDE = 116 CY

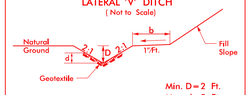
DETAIL 7
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'
Min. D= 2 Ft.
Max. d= 2 Ft.
B= 2 Ft.
b= 5 Ft.

Type of Liner= Class 'B' Rip-Rap
FROM STA. 541+10 TO STA. 545+50 –L– LT
DDE = 1,237 CY

DETAIL 10
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 2 Ft.
Max. d= 2 Ft.
b= 5 Ft.

Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 536+00 TO STA. 537+32 –L– LT
DDE = 415 CY

DETAIL 11
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.4 Ft.
b=5 Ft.

FROM STA. 539+50 TO STA. 541+10 –L– LT
DDE = 995 CY

NAD 83/CORS

535

540

545

20
EDWIN DALE KRIDER & WIFE
SHERRY W. KRIDER

23
RITZ C. RAY, JR.

24
RAY FARMS, LLC

LAT 2' BASE DITCH w/COIR FIBER MATTING SEE DETAIL 22

STREAM BANK STABILIZATION CLASS I RIPRAP EST. 10 TONS EST FF 23 SY SEE DETAIL 27

LAT 'V' DITCH w/CLASS 'B' RIPRAP SEE DETAIL 10

CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY

LAT V-DITCH SEE DETAIL 11

LAT 2' BASE DITCH w/CLASS 'B' RIP RAP SEE DETAIL 7

TIE TO EXIST BERM DITCH

BERM DITCH STA 545+50 – 546+07 –L– LT

CLASS 'B' RIPRAP EST. 2 TONS EST FF 7 SY

SITE 9

SITE 10

SITE 11

CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY

15" w/ ELBOW

REMOVE HW 15"

30" CSP

COLLAR

2GI w/ FLAT GRADE

RETAIN AND EXTEND

REMOVE 15"

CLASS I RIPRAP ON BANKS ONLY EST 11 TONS EST FF 22 SY SEE DETAIL 29

RETAIN

Convert to JBwMH

GRAU 350 TL-3

2GI

2GI-A

TB2GI FG

15" RCP-IV

TB2GI-A FG

30" RCP-IV

30" CMP

15" RCP

18" CMP

24" CMP

12" HDPE LENGTH UNKNOWN

12" CMP

MATCH LINE –L– STA. 533+50 SEE SHEET NO. 10

MATCH LINE –L– STA. 547+00 SEE SHEET NO. 12

N 61° 21' 21.6" E

US HWY 221 BST

PAVED DITCH

EXISTING R/W

EXISTING R/W-PROP. LINE

48" WW & ISBW

55BW

CYNTHIA K. HOUCK

KATRINA CASEY

LESIA HAM MILLER

GARLAND LYALLS & WIFE
JOAN LYALLS

TERESA L. HAWKINS
GARLAND C. LYALLS & WIFE
JOAN B. LYALLS

CLARENCE LYALL RD

1SFD

1SBKO

1½SFD

HTR

DOG PEN

CONC

DK

DETAIL 27
LATERAL BASE DITCH
(Not to Scale)



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

Type of Liner= 16 TONS,CL 'I' Rip-Rap
Geotextile= 23 sy
FROM STA. 537+61 TO STA. 537+94 –L– LT

DETAIL 29
RIP RAP STREAM BANK ONLY
(Not to Scale)



Type of Liner= Class "I" Rip-Rap
STA. 544+87 –L– RT

FOR –L– PROFILE, SEE SHEET 27

REVISIONS

8/17/99

5/8/2014
J:\DOT\DATESRV02\NewData\ProjectList\12200\110\R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_11.dgn
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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	11
RW SHEET NO.	
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PERMIT DRAWING SHEET 16 OF 52

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/CORS

DETAIL 22
LATERAL BASE DITCH
(Not to Scale)



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

Type of Liner= Coir Fiber Matting
FROM STA. 537+33 TO STA. 537+61 –L– LT
DDE = 116 CY

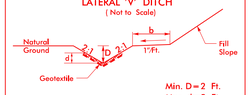
DETAIL 7
LATERAL BASE DITCH
(Not to Scale)



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

*When B is < 6.0'
Type of Liner= Class 'B' Rip-Rap
FROM STA. 541+10 TO STA. 545+50 –L– LT
DDE = 1,237 CY

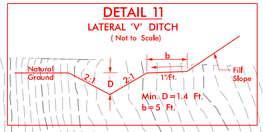
DETAIL 10
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 2 Ft.
Max. d= 2 Ft.
b= 5 Ft.

Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 536+00 TO STA. 537+32 –L– LT
DDE = 415 CY

DETAIL 11
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.4 Ft.
b=5 Ft.

FROM STA. 539+50 TO STA. 541+10 –L– LT
DDE = 995 CY

535

540

545

20 EDWIN DALE KRIDER & WIFE SHERRY W. KRIDER

23 RITZ C. RAY, JR.

24 RAY FARMS, LLC

SITE 9

SITE 10

SITE 11

LAT 2' BASE DITCH w/COIR FIBER MATTING SEE DETAIL 22

STREAM BANK STABILIZATION CLASS I RIPRAP EST. 18 TONS EST. FF 23 SY SEE DETAIL 23

LAT 'V' DITCH w/CLASS 'B' RIPRAP SEE DETAIL 10

CLASS 'B' RIPRAP EST. 2 TONS EST. FF 7 SY

LAT V-DITCH SEE DETAIL 11

LAT 2' BASE DITCH w/CLASS 'B' RIP RAP SEE DETAIL 7

TIE TO EXIST BERM DITCH

BERM DITCH STA 545+50 – 546+07 –L– LT

CLASS 'B' RIPRAP EST. 2 TONS EST. FF 7 SY

CLASS 'B' RIPRAP EST. 2 TONS EST. FF 7 SY

15" w/ ELBOW

REMOVE HW 15"

30" CSP

COLLAR

RETAIN AND EXTEND

2GI w/ FLAT GRATE

CAT-1

REMOVE 15"

2GI w/ FLAT GRATE

COLLAR

RETAIN AND EXTEND

15" w/ ELBOW

2GI w/ FLAT GRATE

2GI

GRAU 350 TL-3

N 61° 21' 216" E

US HWY 221 BST

PAVED DITCH

15" RCP-IV

TB2GI FG

15" RCP-IV

TB2GI FG

30" RCP-IV

TB2GI-A FG

30"

2GI-A

REMOVE

CLASS I RIPRAP ON BANKS ONLY EST 111 TONS EST FF 22 SY SEE DETAIL 29

RETAIN

Convert to JBwMH

MATCH LINE –L– STA. 533+50 SEE SHEET NO. 10

MATCH LINE –L– STA. 547+00 SEE SHEET NO. 12

CYNTHIA K. HOUCK

LESIA HAM MILLER

KATRINA CASEY

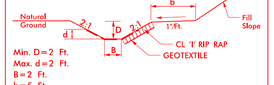
CLARENCE LYALL RD

12" HDPE LENGTH UNKNOWN

GARLAND LYALLS & WIFE JOAN LYALLS

TERESA L. HAWKINS
GARLAND C. LYALLS & WIFE
JOAN B. LYALLS

DETAIL 27
LATERAL BASE DITCH
(Not to Scale)



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

Type of Liner= 16 TONS,CL 'I' Rip-Rap
Geotextile= 23 sy
FROM STA. 537+61 TO STA. 537+94 –L– LT

DETAIL 29
RIP RAP STREAM BANK ONLY
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap
STA. 544+87 –L– RT

FOR –L– PROFILE, SEE SHEET 27

REVISIONS

8/17/99

5/8/2014
J:\DOT\STESRV02\NewData\ProjectList\12200\1100 - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_11.con.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 17 OF 52

REVISIONS 8/17/99

NAD 83/CORS

24
RAY FARMS, LLC

BURT S. WASHBURN & JO ANN L WASHBURN

EARL B. SHEETS

CYNTHIA JANE SHEETS

JANIE SHEETS HURLEY

ISFD

590

565

570

MATCH LINE –L– STA. 560+00 SEE SHEET NO. 12

MATCH LINE –L– STA. 572+00 SEE SHEET NO. 14

US HWY 221

EXISTING R/W

48" WW & ISBW

JS

2GI
CAT-1
FS
15" RCP-IV
TB2GI
FG
RETAIN AND EXTEND
2GI w/ COLLAR FLAT GRATE
REMOVE HW
CAP
JB w/MH
24" RCP-III
CLASS B RIPRAP
EST 2 TONS
EST FF 7 SY
GRAU 350 TL-3
2GI-A
24"
BDO
24" w2 ELBOWS
CLASS I RIPRAP
ON BANKS ONLY
EST 4 TONS
EST FF 8 SY
BERM DITCH
STA 559+21 – 561+75 –L– RT
SITE 12

ROSEBUD FARMS, LLC

TOWN OF WEST JEFFERSON

COUNTY OF ASHE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR –L– PROFILE, SEE SHEET 28

1/7/2014
R2915D_Hyd_prm_wet_psh_13
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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 18 OF 52

8/17/99

REVISIONS

NAD 83/CORS

24 RAY FARMS, LLC

BURT S. WASHBURN & JO ANN L. WASHBURN

CYNTHIA JANE SHEETS

EARL B. SHEETS

JANIE SHEETS HURLEY

565

570

560

MATCH LINE -L- STA. 560+00 SEE SHEET NO. 12

MATCH LINE -L- STA. 572+00 SEE SHEET NO. 14

US HWY 221

SITE 12

2GI
CAT-1
FS
TB2GI
FG
GRAU 350 TL-3
2GI-A
BDO
24" w/2 ELBOWS
CLASS I RIPRAP ON BANKS ONLY EST 4 TONS EST FF 8 SY
BERM DITCH STA 559+21 - 561+75 -L- RT
RETAIN AND EXTEND
2GI w/ COLLAR FLAT GRATE
REMOVE HW
JB w/MH
24" RCP-III
CLASS B RIPRAP EST 2 TONS EST FF 7 SY
15" RCP-IV
18" RCP-IV
24" RCP
TOWN OF WEST JEFFERSON

ROSEBUD FARMS, LLC

COUNTY OF ASHE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR -L- PROFILE, SEE SHEET 28

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R2915D_Hyd_prm_wet_psh_13.con
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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	14
R/W SHEET NO.	
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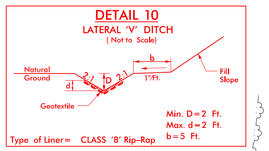
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PERMIT DRAWING SHEET 19 OF 52

REVISIONS 8/17/99

3/28/2014
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DETAIL 10
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CLASS 'B' Rip-Rap

FROM STA. 575+50 TO STA. 577+72 -L- LT
DDE = 461 CY

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

NAD 83 CORS

575

580

JERRY W. RAY

BEARING AH = S 5° 45' 09.1" E

LAT V-DITCH w/CLASS 'B' RIP RAP SEE DETAIL 10

REVISED FILL SLOPE TO 2:1 TO MINIMIZE WETLAND IMPACT

SITE 13

MATCH LINE -L- STA. 572+00 SEE SHEET NO. 13

MATCH LINE -L- STA. 584+50 SEE SHEET NO. 15

EXISTING R/W
48" WW & ISBW
EIP
TB JB w/MH
24" RCP-III
CAT-1
24" CSP
REMOVE HW COLLAR
GRAU 350 TL-3
PAVED DITCH
US HWY 221 BST
15" RCP-IV
TB2GI
FG
2GI
FS
18"
2GI-A
24"
RETAIN AND EXTEND
8" PLASTIC
N 84° 14' 50.9" E
24" CMP
42" CMP
36" CMP
CLASS 'B' RIPRAP
EST 5 TONS
EST FF 14 SY
-DRV1-
S 38° 43' 27.3" W
END CONSTRUCTION
-DRV1- POC Sta.11+80.00
FROM SCHOOL
72" CMP
BST PA
24" C&G
CONC
SOIL GATE
ISBK SCHOOL
WESTWOOD ELEMENTARY SCHOOL
COUNTY OF ASHE
ST

FOR -L- PROFILE, SEE SHEET 29
FOR -DRV1- PROFILE, SEE SHEET 34

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 20 OF 52

NAD 83 CORS

DETAIL 10
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground, dt, 2:1 TO 3:1, b, 1' Ft., Fill Slope, Geotextile
Min. D = 2 Ft.
Max. d = 2 Ft.
b = 5 Ft.
Type of Liner = CLASS 'B' Rip-Rap

FROM STA. 575+50 TO STA. 577+72 -L- LT
DDE = 461 CY

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

575

580

JERRY W. RAY

LAT V-DITCH w/CLASS 'B' RIP RAP SEE DETAIL 10

REVISED FILL SLOPE TO 2:1 TO MINIMIZE WETLAND IMPACT

BEARING AH = S 5° 45' 09.1" E

SITE 13

EXISTING R/W

48" WW & ISBW

TB2GI FG

15" RCP-IV

2GI

FS

18"

2GI-A

24" RCP-III

CAT-1

TB JB w/MH

24" CSP

REMOVE HW COLLAR

RETAIN AND EXTEND

GRAU 350 TL-3

8" PLASTIC

N 84° 14' 50.9" E

US HWY 221

PAVED DITCH

CLASS 'B' RIPRAP
EST 5 TONS
EST FF 14 SY

-DRV1-
S 38° 43' 27.3" W

END CONSTRUCTION
-DRV1- POC Sta.11+80.00

42" CMP

36" CMP

24" C&G

CONC

ISBK SCHOOL

WESTWOOD ELEMENTARY SCHOOL

COUNTY OF ASHE

MATCH LINE -L- STA. 572+00
SEE SHEET NO. 13

MATCH LINE -L- STA. 584+50
SEE SHEET NO. 15

FOR -L- PROFILE, SEE SHEET 29
FOR -DRV1- PROFILE, SEE SHEET 34

REVISIONS

8/17/99

3/28/2014
K:\NCDOT\ESRV02\NewData\ProjectList\12200\11016 - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_14_con.dgn
jhardy

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	14A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 21 OF 52

REVISED FILL SLOPE TO 2:1 TO MINIMIZE WETLAND IMPACT

SITE 13

EXISTING R/W

TB JB w/MH

24" RCP–III

CAT–1

24" CSP

REMOVE HW COLLAR

TB2GI FG

15" RCP–IV

RETAIN AND EXTEND

GRAU

12.5 6.25 0 12.5 25
PLANS

REVISIONS

8/17/99

3/28/2014 K:\ESRV02\NewData\ProjectList\1220\1101\6 - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_14_con_a.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

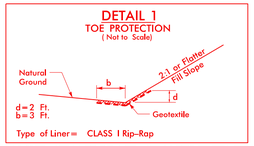
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PERMIT DRAWING SHEET 22 OF 52

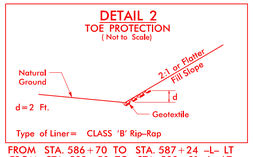
NAD 83 CORS

DETAIL 1
TOE PROTECTION
(Not to Scale)



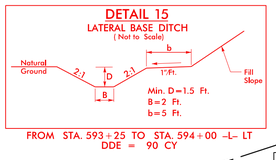
Type of Liner= CLASS I Rip-Rap
FROM STA. 587+24 TO STA. 588+65 –L– LT
FROM STA. 591+50 TO STA. 592+50 –L– LT

DETAIL 2
TOE PROTECTION
(Not to Scale)



Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 586+70 TO STA. 587+24 –L– LT
FROM STA. 592+50 TO STA. 593+21 –L– LT

DETAIL 15
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 593+25 TO STA. 594+00 –L– LT
DDE = 90 CY

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

ZEB V. GAMBILL & WIFE
ANGIE TRIBBLE GAMBLE

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

E E DENOTES EXCAVATION IN WETLAND

585 590 595

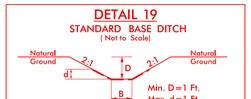
MATCH LINE –L– STA. 584+50 SEE SHEET NO. 14

MATCH LINE –L– STA. 597+00 SEE SHEET NO. 16

SITE 14 SITE 15 SITE 16 SITE 17A SITE 17B

TOE PROTECTION SEE DETAIL 1
TOE PROTECTION SEE DETAIL 2
HEAD DITCH SEE DETAIL 19
CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY
15" w2 ELBOWS
36" RCP-III
REMOVE HW
RETAIN AND EXTEND
2GI w/ FLAT GRATE
15" RCP-IV
TB2GI FG
24" GRAU 350 TL-3 FS 2GI-A
24" w2 ELBOWS
CLASS I RIPRAP EST 7 TONS EST FF 15 SY
CLASS I RIPRAP EST 15 TONS EST FF 30 SY
REMOVE DEBRIS
25 GAMBILL PROPERTIES, LLC
BERM DITCH STA 594+00 – 598+56 –L– LT
LAT 2' BASE DITCH SEE DETAIL 15
DITCH BLOCK TO ELEV 3230.2
JB w/MF 36" CSP
15" CSP w2 ELBOWS
REMOVE HW COLLAR
CAT-1
CLASS I RIPRAP EST 15 TONS EST FF 30 SY
N184°14'50.9"E
48" WW & ISBW
EXISTING R/W
8" PLASTIC
CONC. HW
US HWY 221 3F BST
COUNTY OF ASHE
26 RALPH GOODMAN & TED GOODMAN
27 IVY S. GOODMAN

DETAIL 19
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Coir Fiber Matting
FROM STA. 587+03 TO STA. 587+14 –L– LT
DDE = 3 CY

FOR –L– PROFILE, SEE SHEET 29

REVISIONS

8/17/99

3/28/2014
I:\SDGI\ESRV02\NewData\ProjectList\12201101F - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_15.dgn
DRAWN

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

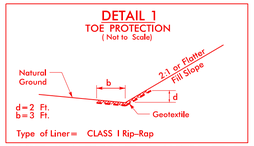
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PERMIT DRAWING SHEET 23 OF 52

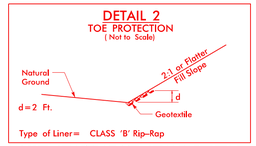
NAD 83 CORS

DETAIL 1
TOE PROTECTION
(Not to Scale)



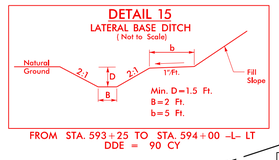
Type of Liner= CLASS I Rip-Rap
FROM STA. 587+24 TO STA. 588+65 –L– LT
FROM STA. 591+50 TO STA. 592+50 –L– LT

DETAIL 2
TOE PROTECTION
(Not to Scale)



Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 586+70 TO STA. 587+24 –L– LT
FROM STA. 592+50 TO STA. 593+21 –L– LT

DETAIL 15
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 593+25 TO STA. 594+00 –L– LT
DDE = 90 CY

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
ZEB V. GAMBILL & WIFE
ANGIE TRIBBLE GAMBLE

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

E E DENOTES EXCAVATION IN WETLAND

585 590 595

MATCH LINE –L– STA. 584+50 SEE SHEET NO. 14

MATCH LINE –L– STA. 597+00 SEE SHEET NO. 16

N184°14'50.9"E

SITE 14 SITE 15 SITE 16 SITE 17A SITE 17B

25 GAMBILL PROPERTIES, LLC

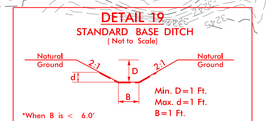
26 RALPH GOODMAN & TED GOODMAN

27 IVY S. GOODMAN

COUNTY OF ASHE

TOE PROTECTION SEE DETAIL 1
TOE PROTECTION SEE DETAIL 2
HEAD DITCH SEE DETAIL 19
BERM DITCH STA 594+00 – 598+56 –L– LT
LAT 2' BASE DITCH SEE DETAIL 15
CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY
15" w2 ELBOWS
36" RCP-III
JB w/MH
REMOVE HW
COLLAR
RETAIN AND EXTEND
2GI w/ FLAT GRATE
15" RCP-IV
TB2GI FG
15" CSP w2 ELBOWS
36" CSP
DITCH BLOCK TO ELEV 3230.2
GRAU 350 TL-3
24" w2 ELBOWS
2GI-A
CLASS I RIPRAP EST 7 TONS EST FF 15 SY
CLASS I RIPRAP EST 15 TONS EST FF 30 SY
REMOVE DEBRIS
CAT-1

DETAIL 19
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Coir Fiber Matting
FROM STA. 587+03 TO STA. 587+14 –L– LT
DDE = 3 CY

FOR –L– PROFILE, SEE SHEET 29

REVISIONS

8/17/99

3/28/2014
C:\DOCUMENTS AND SETTINGS\JESRV02\MY DOCUMENTS\NEWDATA\PROJECTLIST\U2201\U101F - R-2915D - ASHE CTY\DESIGN FILES - PERMIT\HYDRAULICS\PERMITS_ENVIRONMENTAL\DRAWINGS\R2915D_HYD_PRM_WET_PSH_15_CON.DGN
DGN: USER:

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 24 OF 52

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REVISIONS 8/17/99

NAD 83/CORS

-L-
PI Sta 598+87.47
Δ = 36° 59' 04.8" (LT)
D = 1° 58' 32.6"
L = 1,871.96'
T = 969.90'
R = 2,900.00'
SE = .05
RUNOFF = 275'

PIs Sta 608+81.22
Θs = 2° 42' 59.8"
Ls = 275.00'
LT = 183.35'
ST = 91.69'

ZEB V. GAMBILL & WIFE
ANGIE TRIBBLE GAMBLE

600

605

29
MARLETTE B. CULLEN (TRUSTEE)

MATCH LINE -L- STA. 597+00
SEE SHEET NO. 15

MATCH LINE -L- STA. 608+50
SEE SHEET NO. 17

BERM DITCH
STA 594+00 – 598+56 -L- LT

-L- CS Sta. 607+89.54

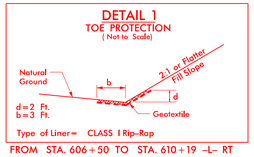
48" WW & ISBW
EXISTING R/W
PAVED DITCH
US HWY 221
GRAU 350 TL-3
8" PLASTIC
15" RCP-IV
18" RCP-IV
24" RCP-IV
30" RCP-IV
2GI
2GI-A
TB2GI
FS
FG
JB wMH
30" w2 ELBOWS
CLASS I RIPRAP
EST 11 TONS
EST FF 22 SY
TOE PROTECTION
SITE 18
TOE PROTECTION
SEE DETAIL 1
ISFD
BST
ASC CHL
SSBW & TS ELEC
2UTL
SS
C
F
S
B

27
IVY S. GOODMAN

28
JERRY WAYNE JONES & WIFE
DONNA H. JONES

ROBERT GLENN POE
AND
DEBRA E. POE

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner= CLASS I Rip-Rap
FROM STA. 606+50 TO STA. 610+19 -L- RT

S S DENOTES IMPACTS IN SURFACE WATER

FOR -L- PROFILE, SEE SHEET 30

1/3/2014
K:\Projects\R2915D_Hyd_prm_wet_psh_16.dgn
hdarden

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 25 OF 52

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REVISIONS 8/17/99

NAD 83/CORS

MATCH LINE –L– STA. 597+00
SEE SHEET NO. 15

MATCH LINE –L– STA. 608+50
SEE SHEET NO. 17

29
MARLETTE B. CULLEN (TRUSTEE)

ZEB V. GAMBILL & WIFE
ANGIE TRIBBLE GAMBLE

600

605

BERM DITCH
STA 594+00 – 598+36 +L– LT

48" WW & ISBW
EXISTING R/W

CLASS I RIPRAP
EST. 11 TONS
EST FF. 22 SY

30" w/2 ELBOWS

JB w/MH

2GI
2GI-A
TB2GI
FG
FS
15"
24"
8" PLASTIC
18" RCP-IV
18" RCP-III
15" RCP-IV
PAVED DITCH
US HWY 221
GRAU 350 TL-3
CAT-1

SITE 18

TOE PROTECTION

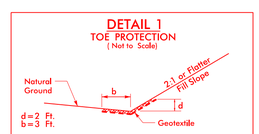
TOE PROTECTION
SEE DETAIL 1

27
IVY S. GOODMAN

28
JERRY WAYNE JONES & WIFE
DONNA H. JONES

ROBERT GLENN POE
AND
DEBRA E. POE

DETAIL 1
TOE PROTECTION
(Not to Scale)



d = 2 Ft.
b = 3 Ft.

Type of Liner = CLASS I Rip-Rap

FROM STA. 606+50 TO STA. 610+19 –L– RT

S S DENOTES IMPACTS IN SURFACE WATER

FOR –L– PROFILE, SEE SHEET 30

1/31/2014
R2915D_Hyd_prm_wet_psh_16.con
barrel

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 26 OF 52

REVISIONS 8/17/99

3/28/2014
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bpayseur

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

NAD 83/CORS

610 615 620

29 MARLETTE B. CULLEN (TRUSTEE)

MARLETTE B. CULLEN (TRUSTEE)

GWYN CAMBELL & WIFE
WILLA MAE CAMPBELL

MATCH LINE –L– STA. 608+50
SEE SHEET NO. 16

MATCH LINE –L– STA. 621+50
SEE SHEET NO. 18

US HWY 221 (BST)

SR 1195 HELEN BLEVINS RD (17' BST)

N 41° 49' 46.5" E

15" RCP-IV | TB2GI FG | 2GI w/ FLAT GRATE | JB w/MH | 24" CMP | 42" CMP | 42" RCP-III | 24" RCP-III

SITE 18 | SITE 19 | SITE 20A | SITE 20B | SITE 21

COLLAR | REMOVE HW | RETAIN AND EXTEND | 15" w/2 ELBOWS | PSH | PLACE FILL MATERIAL TO ELEV 3084 | EARTH BERM TO ELEV 3085.2 SEE DETAIL 20 | TOE PROTECTION SEE DETAIL 1 | TOE PROTECTION SEE DETAIL 2 | LAT-V-DITCH w/CLASS I RIP RAP SEE DETAIL 9 | CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY

ROBERT GLENN POE AND DEBRA E. POE

ALVIN P. ALEXANDER JR. & WIFE
ALMA W. ALEXANDER
GARY E. KEY & WIFE
JEANNETTE A. KEY

FOR –L– PROFILE, SEE SHEET 30

DETAIL 20
EARTH BERM
(Not to Scale)

Top Elevation 3085.2 | Natural Ground | 3:1 | 3:1 | B | Natural Ground

B= 4 Ft.

STA. 612+65 –L–

DETAIL 1
TOE PROTECTION
(Not to Scale)

Natural Ground | b | 2:1 or Flatter Fill Slope | d | Geotextile

d=2 Ft.
b=3 Ft.

Type of Liner= CLASS I Rip-Rap

FROM STA. 606+50 TO STA. 610+19 –L– RT
FROM STA. 610+51 TO STA. 611+11 –L– RT
FROM STA. 614+00 TO STA. 616+00 –L– RT
FROM STA. 619+50 TO STA. 620+00 –L– RT

DETAIL 2
TOE PROTECTION
(Not to Scale)

Natural Ground | 2:1 or Flatter Fill Slope | d | Geotextile

d=2 Ft.

Type of Liner= CLASS 'B' Rip-Rap

FROM STA. 610+26 TO STA. 610+51 –L– RT
FROM STA. 619+27 TO STA. 619+50 –L– RT

DETAIL 9
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground | 2:1 | d' | 2:1 | b | 1'-Ft. | Fill Slope | Geotextile

Min. D=2 Ft.
Max. d=2 Ft.
b=5 Ft.

Type of Liner= CLASS 1 Rip-Rap

FROM STA. 616+00 TO STA. 618+71 –L– RT
DDE = 185 CY

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 27 OF 52

REVISIONS 8/17/99

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

NAD 83/CORS

MARLETTE B. CULLEN (TRUSTEE)

GWYN CAMBELL & WIFE
WILLA MAE CAMPBELL

MATCH LINE –L– STA. 608+50
SEE SHEET NO. 16

MATCH LINE –L– STA. 621+50
SEE SHEET NO. 18

SITE 18 — SITE 19 — SITE 20A — SITE 20B — SITE 21

ROBERT GLENN POE
AND
DEBRA E. POE

ALVIN P. ALEXANDER JR. & WIFE
ALMA W. ALEXANDER
GARY E. KEY & WIFE
JEANNETTE A. KEY

FOR –L– PROFILE, SEE SHEET 30

DETAIL 20
EARTH BERM
(Not to Scale)

Top Elevation 3085.2; Natural Ground; 3:1; B; 2:1; Natural Ground

B= 4 Ft.

STA. 612+65 –L–

DETAIL 1
TOE PROTECTION
(Not to Scale)

Natural Ground; b; 2:1 or Flatter Fill Slope; d; Geotextile

d=2 Ft.
b=3 Ft.

Type of Liner= CLASS I Rip-Rap

FROM STA. 606+50 TO STA. 610+19 –L– RT
FROM STA. 610+51 TO STA. 611+11 –L– RT
FROM STA. 614+00 TO STA. 616+00 –L– RT
FROM STA. 619+50 TO STA. 620+00 –L– RT

DETAIL 2
TOE PROTECTION
(Not to Scale)

Natural Ground; 2:1 or Flatter Fill Slope; d; Geotextile

d=2 Ft.

Type of Liner= CLASS 'B' Rip-Rap

FROM STA. 610+26 TO STA. 610+51 –L– RT
FROM STA. 619+27 TO STA. 619+50 –L– RT

DETAIL 9
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground; d1; 2; D; 2:1; b; 1'-6"±; Fill Slope; Geotextile

Min. D=2 Ft.
Max. d=2 Ft.
b=5 Ft.

Type of Liner= CLASS 1 Rip-Rap

FROM STA. 616+00 TO STA. 618+71 –L– RT
DDE = 185 CY

3/26/2014
DWG: (ESRV02\NewData\ProjectList\1220\1106 - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_17_con.dgn
DATE:

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PERMIT DRAWING SHEET 28 OF 52

REVISIONS

8/17/99

3/28/2014
I:\DOT\ESRV02\NewData\ProjectList\1220\1101 - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_18.dgn
DarylVH

NAD 83/CORS

MATCH LINE –L– STA. 621+50
SEE SHEET NO. 17

MATCH LINE –L– STA. 634+50
SEE SHEET NO. 19

CAROL E. DANIEL
EDDIE LEE ELDRETH
ELIZABETH HOLMAN

HOWARD L. COMBS & WIFE
BETTY S. COMBS

625

630

JAMES C. GAMBILL JR. (HEIRS)

SHARON B. GAMBILL

CAROL E. DANIEL
EDDIE LEE ELDRETH
ELSIE G. ELDRETH
ELIZABETH HOLMAN

LARRY R. GOODMAN

WILLIAM DAVID PATRICK
LOIS P. GRUBB
LARRY LEE PATRICK
WAYNE ALLEN PATRICK
GEORGE GARY PATRICK
LINDA P. MILLER

ROY G. POE & WIFE
JUDY P. POE

US HWY 221

N 41° 49' 46.5" E

S 46° 57' 33.4" E

S 26° 49' 12.7" W

-L-

-Y30-

SITE 21

SITE 22

SITE 23A

SITE 23B

RETAIN AND EXTEND

REMOVE

2GI w/ FLAT GRATE

JB w/MH

30" CSP

REMOVE HW

15" RCP-III

REMOVE DI

REMOVE +- 30 FT EXIST PAVED DITCH

RETAIN PAVED DITCH

LAT 2' BASE DITCH w/COIR FIBER MATTING SEE DETAIL 24

CLEANOUT EX PIPE EST +/- 20 FT

7.1' CONC. HW

CLASS 'B' RIPRAP EST 5 TONS EST FF 14 SY

2GI-A

24" RCP-III

24" CSP

2GI

15" CSP

24" RCP-III

COLLAR

CAT-1

24" w/ ELBOW

BDO

HEAD DITCH SEE DETAIL 5

BERM DITCH STA 632+50 – 633+00 –L– RT

END PAVEMENT -Y30- POT Sta.11+00.00

END CONSTRUCTION -Y30- POT Sta.11+41.00

GRAU 350 TL-3

GRAU 350 TL-3

10.80' CONC. HW

48" WW & ISBW

48" WW & ISELEC

36" CMP

24" CMP

60" CMP

8" PLASTIC

15" RCP & PLASTIC

EXISTING R/W

EXISTING R/W-PROP. LINE

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL 5
STANDARD 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground
Min. D=2 Ft.

FROM STA. 628+44 TO STA. 628+66 –L– RT
DDE = 9 CY

DETAIL 24
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, D, 2:1, b, 1' Ft., Fill Slope, B
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2 Ft.
b=5 Ft.

Type of Liner= Coir Fiber Matting
FROM STA. 622+25 TO STA. 624+15 –L– RT
DDE = 376 CY

FOR –L– PROFILE, SEE SHEET 31
FOR –Y30– PROFILE, SEE SHEET 35

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 29 OF 52

REVISIONS 8/17/99

3/26/2014
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DRAYER

NAD 83/CORS

CAROL E. DANIEL
EDDIE LEE ELDRETH
ELIZABETH HOLMAN

HOWARD L. COMBS & WIFE
BETTY S. COMBS

625

CAROL E. DANIEL
EDDIE LEE ELDRETH
ELSIE G. ELDRETH
ELIZABETH HOLMAN

JAMES C. GAMBILL JR. (HEIRS)

630

SHARON B. GAMBILL

MATCH LINE –L– STA. 621+50
SEE SHEET NO. 17

MATCH LINE –L– STA. 634+50
SEE SHEET NO. 19

US HWY 221

N 41° 49' 46.5" E

S 46° 57' 33.4" E

S 26° 49' 27" W

RETAIN AND EXTEND
REMOVE
2GI w/ FLAT GRATE
COLLAR
JB w/MH
30" RCP-III
REMOVE HW
30" CSP
15" RCP-III
LAT 2' BASE DITCH w/COIR FIBER MATTING SEE DETAIL 24
REMOVE DI
REMOVE 30 FT EXIST PAVED DITCH
FS
2GI
RETAIN PAVED DITCH
END PAVEMENT -Y30- POT Sta.11+00.00
END CONSTRUCTION -Y30- POT Sta.11+41.00
HEAD DITCH SEE DETAIL 5
GRAU 350 TL-3
24" CSP
24" RCP-III
CAT-1
REMOVE HW
CLEANOUT EX. PIPE EST +/- 20 FT
CLASS 'B' RIPRAP EST 5 TONS EST FF 14 SY
REMOVE 2GI-A
ES
24" w/ ELBOW
BDO
BERM DITCH STA. 632+50 – 633+00 –L– RT

SITE 21
SITE 22
SITE 23A
SITE 23B

WILLIAM DAVID PATRICK
LOIS P. GRUBB
LARRY LEE PATRICK
WAYNE ALLEN PATRICK
GEORGE GARY PATRICK
LINDA P. MILLER

ROY G. POE & WIFE
JUDY P. POE

LARRY R. GOODMAN

F F DENOTES FILL IN WETLAND

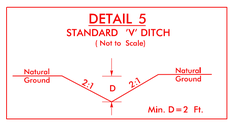
S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

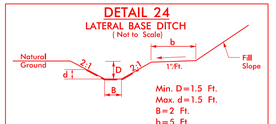
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL 5
STANDARD "V" DITCH
(Not to Scale)



FROM STA. 628+44 TO STA. 628+66 –L– RT
DDE = 9 CY

DETAIL 24
LATERAL BASE DITCH
(Not to Scale)



Type of Liner = Coir Fiber Matting
FROM STA. 622+25 TO STA. 624+15 –L– RT
DDE = 376 CY

FOR –L– PROFILE, SEE SHEET 31
FOR –Y30– PROFILE, SEE SHEET 35

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 30 OF 52

REVISIONS 8/17/99

NAD 83/CORS

GAMBILL PROPERTIES, LLC

635 640 645

MATCH LINE –L– STA. 634+50 SEE SHEET NO. 18

MATCH LINE –L– STA. 647+50 SEE SHEET NO. 20

SR 1195 HELEN BLEVINS RD

US HWY 221

CONLEY SHEPARD & MICHAEL SHEPARD

MICHAEL SHEPARD & CONLEY SHEPARD

ISMTLBUS

LIFT STATION NO ACCESS

PUMP STATION

BEAVER DAM

EXISTING R/W=PROP. LINE

EXISTING R/W

CLASS I RIPRAP PLACE BETWEEN END OF PIPE AND WLB EST 11 TONS EST FF 22 SY

REMOVE FES

RETAIN AND EXTEND COLLAR

REMOVE HW 30" CSP

JB w/MH

30" RCP-III

18" CMP UNKNOWN LENGTH

8.5' CONC. HW

72" CMP & 3SBW

72" CHL & 3SBW GATE

8" PLASTIC

8"PVC DATUM

15" 2GI FS

GRAU 350 TL-3

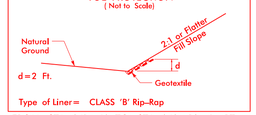
SITE 24

TOE PROTECTION SEE DETAIL 2

HERBERT N. FRANCIS

LARRY R. GOODMAN

DETAIL 2
TOE PROTECTION
(Not to Scale)



Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 641+40 TO STA. 642+18 –L– RT

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FOR –L– PROFILE, SEE SHEET 31

1/3/2014
R2915D_Hyd_prm_wet_psh_19
(hardcopy)

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-690

PERMIT DRAWING SHEET 31 OF 52

REVISIONS 8/17/99

NAD 83/CORS

GAMBILL PROPERTIES, LLC

635 640 645

MATCH LINE –L– STA. 634+50 SEE SHEET NO. 18

MATCH LINE –L– STA. 647+50 SEE SHEET NO. 20

SR 1195 HELEN BLEVINS RD

US HWY 22I

CONLEY SHEPARD & MICHAEL SHEPARD

MICHAEL SHEPARD & CONLEY SHEPARD

HERBERT N. FRANCIS

LARRY R. GOODMAN

ISMTLBUS

LIFT STATION NO ACCESS

PUMP STATION

GATE

REMOVE FES

CLASS I RIPRAP PLACE BETWEEN END OF PIPE AND WLB EST 11 TONS EST FF 22 SY

REMOVE HW 30" CSP

RETAIN AND EXTEND COLLAR

JB w/MH

30" RCP-III

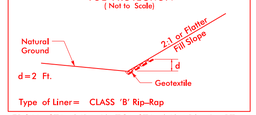
GRAU 350 TL-3

2GI 15" FS

TOE PROTECTION SEE DETAIL 2

SITE 24

DETAIL 2
TOE PROTECTION
(Not to Scale)



Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 641+40 TO STA. 642+18 –L– RT

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

FOR –L– PROFILE, SEE SHEET 31

1/3/2014
R2915D_Hyd_prm_wet_psh_19.con
(konveg)

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

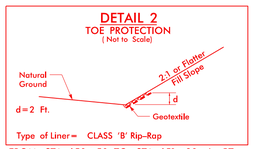
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ENG FIRM LICENSE NO. C-690

PERMIT DRAWING SHEET 32 OF 52

DETAIL 2
TOE PROTECTION
(Not to Scale)



Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 650+50 TO STA. 651+80 -L- RT

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/CORS

MATCH LINE -L- STA. 647+50
SEE SHEET NO. 19

MATCH LINE -L- STA. 660+00
SEE SHEET NO. 21

650

655

CANOPY
CAR WASH
ISBLKBUS
CONC
BST
HTR
TBK
CONC CURB
CONC RAIL
ISMTLBUS
ISBKBUS
WALL
OK
JS
S
GR
MTLS
EXISTING R/W
PRIVATE R/W
48" WW & ISBW
60" CMP
24" CMP
18" CMP
15" CMP
18" C&G
WALL FT
CB
WALL LP
TV FO
BM
CM
CLASS I RIPRAP
EST 15 TONS
EST FF 30 SY
CLASS 'B' RIPRAP
EST 5 TONS
EST FF 14 SY
SITE 26
SITE 25
BEARING AH = S 50° 25' 53.1" E
N 49° 22' 07.9" E
-L-
-Y31-
US HWY 221
GRAU 350 TL-3
2GI-A NS
2GI NS
24" RCP-III
FS
CAT-1
JB w/MH
REMOVE HW
COLLAR RETAIN AND EXTEND
RETAIN
18" RCP-III
15" RCP
18" CMP
TOE PROTECTION SEE DETAIL 2
END CONSTRUCTION -Y31- POC Sta: H+65.00
S 80° 19' 26" W
EIP
EIPF
ISFD
ISBKBO
1/2SBKBO
2SFD
GAZEBO
FENCE
WELL
OHW
OHP
JEB HOTEL CORPORATION
MICHAEL SHEPARD & CONLEY SHEPARD
JAMES RICHARD BEAMON, JR. & WIFE CAROLINE KNOX BEAMON
BOB MCCOY
LARRY E. GREER & WIFE GINGER B. GREER
RAY C. TAYLOR & WIFE LOUISE P. TAYLOR
ARTHUR JOE BALL & WIFE BETTY BALL
KENNETH G. HERTEL (HEIRS)
GARY DEAN HALL & WIFE BRENDA K. HALL
AVERY ERNEST ROARK & WIFE JANET SUE ROARK
LANNY M. LEWIS & WIFE MARIE T. LEWIS
TONY A. WALLACE & WIFE JUDY W. WALLACE
JOHN A. WEAVER JR. & WIFE IMAGENE H. WEAVER

FOR -L- PROFILE, SEE SHEET 32
FOR -Y31- PROFILE, SEE SHEET 35

REVISIONS

8/17/99

3/28/2014
X:\SINGLETESRV02\NewData\ProjectLists\1220\1101\6 - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_20.dgn
jbarker

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

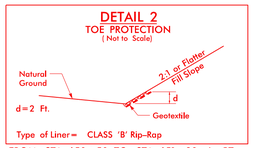
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ENG FIRM LICENSE NO. C-690

PERMIT DRAWING SHEET 33 OF 52

DETAIL 2
TOE PROTECTION
(Not to Scale)



Type of Liner = CLASS 'B' Rip-Rap
FROM STA. 650+50 TO STA. 651+80 -L- RT

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/CORS

650

655

CANOPY
CAR WASH
ISBLKBUS
CONC
BST
HTR
CONC TOK
CONC CURB & GUTTER
CONC CURB & GUTTER TRANS
CONC
ISMTLBUS
ISBKBUS
WALL
DK
JS
S
GR
MTLS
PRIVATE R/W
EXISTING R/W
48" WW & ISBW
EXISTING R/W
JEB HOTEL CORPORATION
EXISTING R/W
24" CMP
15" CMP
18" CSAP
8" CMP
15" CMP C&G
WALL
MICHAEL SHEPARD & CONLEY SHEPARD
JAMES RICHARD BEAMON, JR. & WIFE CAROLINE KNOX BEAMON
BOB MCCOY
LARRY E. GREER & WIFE GINGER B. GREER
LARRY E. GREER & WIFE GINGER B. GREER
SITE 26
CLASS I RIPRAP
EST 15 TONS
EST FF 30 SY
CLASS "B" RIPRAP
EST 5 TONS
EST FF 14 SY
BEARING AH = S 50° 25' 53.1" E
GRAU 350 TL-3
US HWY 221
N 49° 22' 07.9" E
N 49° 22' 07.9" E
-L-
2GI-A NS
FS
CAT-1
24" RCP
24" RCP
2GI NS
15"
JB wMH
18"
REMOVE HW
COLLAR
RETAIN AND EXTEND
RETAIN
CMP
HW
SITE 25
TOE PROTECTION
SEE DETAIL 2
-Y31- POC Sta. H+65.00
END CONSTRUCTION
-Y31-
RAY C. TAYLOR & WIFE LOUISE P. TAYLOR
LANNY M. LEWIS & WIFE MARIE T. LEWIS
TONY A. WALLACE & WIFE JUDY W. WALLACE
JOHN A. WEAVER JR. & WIFE IMAGENE H. WEAVER
ARTHUR JOE BALL & WIFE BETTY BALL
AVERY ERNEST ROARK & WIFE JANET SUE ROARK
KENNETH G. HERTEL (HEIRS)
GARY DEAN HALL & WIFE BRENDA K. HALL
S 80° 18' 26" E
GRAU 350 TL-3
GRAU 350 TL-3
ISFD
ISRD
ISWD
ISWMD
ISWSD
TV FO
OHP
UTILITY POLE
MATCH LINE -L- STA. 647+50 SEE SHEET NO. 19
MATCH LINE -L- STA. 660+00 SEE SHEET NO. 21

FOR -L- PROFILE, SEE SHEET 32
FOR -Y31- PROFILE, SEE SHEET 35

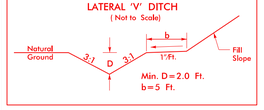
REVISIONS 8/17/99

3/28/2014
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DGN: USER:

REVISIONS

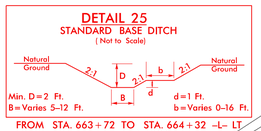
3/28/2014
DAN GRIESER
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...ESRV02\NewData\ProjectList\1220\1100 - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_

DETAIL 13
LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 19+00 TO STA. 20+50 –Y32– LT
DDE = 404 CY

DETAIL 25
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 663+72 TO STA. 664+32 –L– LT
DDE = 35 CY

F F — DENOTES FILL IN WETLAND

S S — DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

BEGIN CONSTRUCTION
–Y32– POT Sta.15+45.00

BEGIN PAVEMENT
–Y32– POT Sta.16+30.00

REVISED SIGNAL

FOR –L– PROFILE, SEE SHEET 32

FOR –Y32– PROFILE, SEE SHEET 35

NAD 83/CORS

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 34 OF 52

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A. SMOKIE GREENE

BRADLEY W. JORDAN

WEB HOTEL CORPORATION

WEST JEFFERSON, LLC

ANTHONY K. DICKSON

LARRY D. BOOTH

JOHN A. WEAVER JR. & WIFE
IMAGENE H. WEAVER

CONLEY W. SHEPHERD & WIFE
WILMA T. SHEPHERD

SITE 25
SITE 26
SITE 27
SITE 28
SITE 29
SITE 30
SITE 31

660
665
670
675
680

RETAIN –Y32–
OTCB
REMOVE ± 6 FT OF EXIST 15" CMP
REMOVE DI
ROCK PLUNGE
STA 15+84 – 21+00 –Y32– RT
CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY
CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY
LAT V-DITCH
SEE DETAIL 13
15" RCP-IV
15" w2 ELBOWS
REMOVE
18" RCP-III
CLASS I RIPRAP
EST 4 TONS
EST FF 10 SY
HEAD DITCH
SEE DETAIL 25
JB wMH
REMOVE ± 15 FT OF EXIST CONC DITCH AND RE-GRADE INLET DITCH
RETAIN AND EXTEND
COLLAR
18" CSP
REMOVE FES
GRAU 350 TL-3
2GI wNSG
FS
PSH
18" w2 ELBOWS
2GI wNSFG
18" RCP-IV
15" RCP-IV
30" RCP-IV
DI
REMOVE HW
CLEANOUT EX PIPE
EST +/- 214 FT
CLEANOUT
EX PIPE
EST +/- 40 FT
2GI-A wNSG
30" CSP
CLASS I RIPRAP
EST 11 TONS
EST FF 22 SY
LAT 21 BASE DITCH
SEE DETAIL 6
CLASS I RIP RAP
ON BANKS ONLY
EST 20 TONS
EST FF 38 SY
CLASS I RIPRAP
ON BANKS ONLY
EST 20 TONS
EST FF 38 SY
CL 'I' RIP RAP
+/-175 TONS
W/GF
13'-31' BASE CHANNEL
DDE= +/-235 CY
SEE DETAIL 28
LAT 5' BASE DITCH
W/COIR FIBER MATTING
SEE DETAIL 12
CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY
LAT V-DITCH
SEE DETAIL 13
REMOVE ± 15 FT OF EXIST CONC DITCH AND RE-GRADE INLET DITCH
CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

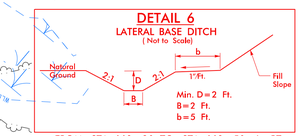
S 35°14'57.4" E

MATCH LINE –L– STA. 660+00
SEE SHEET NO. 20

MATCH LINE –L– STA. 672+00
SEE SHEET NO. 22

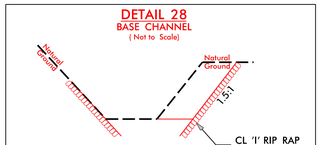
MATCH LINE –Y32– STA. 25+25
SEE SHEET NO. 23

DETAIL 6
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 663+20 TO STA. 663+50 –L– RT
DDE = 131 CY

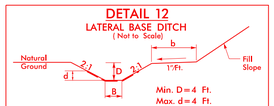
DETAIL 28
BASE CHANNEL
(Not to Scale)



Type of Liner= 175 TONS CL 'I' Rip-Rap
Geotextile= 100 sy

FROM STA. 601+33 –L– RT

DETAIL 12
LATERAL BASE DITCH
(Not to Scale)

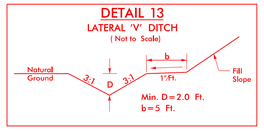


Type of Liner= Coir Fiber Matting

FROM STA. 661+66 TO STA. 663+20 –L– RT
DDE = 766 CY

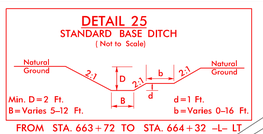
3/28/2014
\\CORCAD1ESRV02\NewData\ProjectList\1220\110\Environmental\Drawings\R2915D_Hyd_prm_wet_psh_21_con.dgn - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_21_con.dgn
Default

DETAIL 13
LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 19+00 TO STA. 20+50 –Y32– LT
DDE = 404 CY

DETAIL 25
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 663+72 TO STA. 664+32 –L– LT
DDE = 35 CY

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

BEGIN CONSTRUCTION –Y32– POT Sta.15+45.00

BEGIN PAVEMENT –Y32– POT Sta.16+30.00

REVISED SIGNAL

FOR –L– PROFILE, SEE SHEET 32

FOR –Y32– PROFILE, SEE SHEET 35

NAD 83/CORS

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-890

PERMIT DRAWING SHEET 35 OF 52

660 WEB HOTEL CORPORATION

665 BRADLEY W. JORDAN

670 WEST JEFFERSON, LLC

ROGER D. SMITHEY
A. SMOKIE GREENE

KENNETH T. PARSONS & WIFE
BETTY W. PARSONS

ANTHONY K. DICKSON

LARRY D. BOOTH

JOHN A. WEAVER JR. & WIFE
IMAGENE H. WEAVER

CONLEY W. SHEPHERD & WIFE
WILMA T. SHEPHERD

SITE 26 | SITE 27 | SITE 28 | SITE 29 | SITE 30 | SITE 31

ROCK PLUNGE
STA 15+84 – 21+00 –Y32– RT

RETAIN

REMOVE ± 6 FT OF EXIST 15" CMP

REMOVE DI

OTCB

CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

LAT V-DITCH
SEE DETAIL 13

REMOVE ± 15 FT OF EXIST CONC. DITCH AND RE-GRADE INLET DITCH

15" RCP-IV

18" RCP-III

15" w2 ELBOWS

CLASS I RIPRAP
EST 4 TONS
EST FF 10 SY

HEAD DITCH
SEE DETAIL 25

JB wMH

18" CSP

REMOVE FES

GRAU 350 TL-3

2GI wNSG

2GI wNSFG

PSH

18" w2 ELBOWS

RETAIN AND EXTEND

COLLAR

REMOVE HW

CLEANOUT EX PIPE
EST +/- 214 FT

2GI-A wNSG

CLEANOUT EX PIPE
EST +/- 40 FT

CL 'I' RIP RAP
+/-175 TONS
W/GF

13'-31' BASE CHANNEL
DDE= +/-235 CY
SEE DETAIL 28

LAT 5' BASE DITCH
W/COIR FIBER MATTING
SEE DETAIL 12

CLASS I RIP RAP
ON BANKS ONLY
EST 20 TONS
EST FF 38 SY

CLASS I RIPRAP
EST 11 TONS
EST FF 22 SY

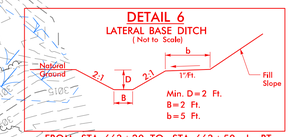
LAT 2' BASE DITCH
SEE DETAIL 6

MATCH LINE –L– STA. 672+00
SEE SHEET NO. 22

MATCH LINE –L– STA. 660+00
SEE SHEET NO. 20

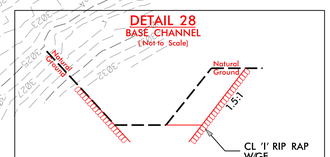
MATCH LINE –Y32– STA. 25+25
SEE SHEET NO. 23

DETAIL 6
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 663+20 TO STA. 663+50 –L– RT
DDE = 131 CY

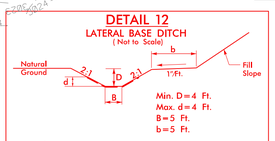
DETAIL 28
BASE CHANNEL
(Not to Scale)



Type of Liner= 175 TONS CL 'I' Rip-Rap
Geotextile = 100 sy

FROM STA. 601+33 –L– RT

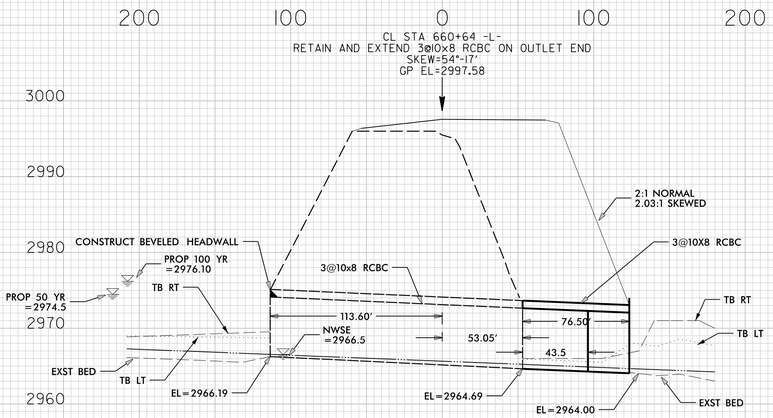
DETAIL 12
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Coir Fiber Matting

FROM STA. 661+66 TO STA. 663+20 –L– RT
DDE = 766 CY

PERMIT DRAWING
SHEET 36 OF 52



PROJECT REFERENCE NO.	SHEET NO.
R-2915D	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 37 OF 52

NAD 83/CORS

AMELIA PROPERTIES, LLC

ILIT REAL ESTATE HOLDINGS, LLC

WILEY AUSTIN BAKER

DONNA M. RAY

ARCHIE H. SHAW

WADE SHEPERD, ET AL

BRADLEY W. JORDAN

675

KENNETH TIMOTHY PARSONS

680

WILEY AUSTIN BAKER

SR 1150 CRESCENT DR.

BEARING AH = N 13° 14' 57.0" E

EXISTING R/W

BST

CL RIP RAP

C/A FENCE

15" RCP

24" CMP

48" CMP

CONC DITCH

WOODS

CLASS I RIPRAP
EST 11 TONS
EST FF 22 SY

REMOVE DEBRIS
FROM EX 24" CMP

CLASS I RIPRAP
EST 7 TONS
EST FF 15 SY

REMOVE FES

RETAIN

30" RCP

ZUTIL

US 221 30' BST

-L-

MATCH LINE -L- STA. 672+00
SEE SHEET NO. 21

24" RCP-III

2GI w/NSG

RETAIN

JB w/MH

24" RCP-III

CLASS 'B' RIPRAP
EST 3 TONS
EST FF 6 SY

SPEC LAT 'V' DITCH
SEE DETAIL 8

DAYLIGHT DITCH AT
EDGE OF WETLANDS

END TIP PROJECT R-2915D
-L- POT Sta. 679+90.00

SITE 32

48" WW & ISBW

72" CMP

MBSS

LARRY D. BOOTH

LOWES HOME CENTERS, INC

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

DETAIL 8
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 4:1 or Flatter, Fill Slope
Min. D = 2 Ft.

FROM STA. 676+75 TO STA. 679+90 – L– RT

FOR -L- PROFILE, SEE SHEET 33

REVISIONS

8/17/99

5/8/2014
S:\GUNGATESRV02\NewData\ProjectLists\12201101\6 - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_22.dgn
bdavis

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-890

PERMIT DRAWING SHEET 38 OF 52

REVISIONS 8/17/99

5/8/2014
S:\DATESRV02\NewData\ProjectList\I2201101B - R-2915D - Ashe Cty\Design Files - Permit\Hydraulics\PERMITS_Environmental\Drawings\R2915D_Hyd_prm_wet_psh_22_con.dgn
bpriver

NAD 83/CORS

AMELIA PROPERTIES, LLC
DB 394 PG 14

ILIT REAL ESTATE HOLDINGS, LLC
DB 292 PG 109

DONNA M. RAY
DB P-4 PG 487
PB 2 PG 41
DB B-4 PG 191

ARCHIE H. SHAW
DB Y-4 PG 492
PB 2 PG 41

WILEY AUSTIN BAKER
DB 174 PG 2360

WADE SHEPERD, ET AL
DB 362 PG 1096
PB 2 PG 41

BRADLEY W. JORDAN
DB 403 PG 2289

KENNETH TIMOTHY PARSONS
DB 232 PG 1915

WILEY AUSTIN BAKER
DB 215 PG 1510

675

680

-L- ST Sta. 679+85.77
BEARING AH = N 13° 14' 57.0" E

-L- POT Sta. 680+45.00

-L- CS Sta. 677+05.77

MATCH LINE -L- STA. 672+00
SEE SHEET NO. 21

CLASS I RIPRAP
EST 11 TONS
EST FF 22 SY

CLASS I RIPRAP
EST 7 TONS
EST FF 15 SY

REMOVE DEBRIS FROM EX. CG

RETAIN

REMOVE FES

6" MONOLITHIC ISLAND

400' TAPER LT

720' TAPER RT

925' TAPER LT & RT

2'-9" C&G

60' R

RETAIN

24" RCP-III

JB w/HH

CLASS 'B' RIPRAP
EST 3 TONS
EST FF 6 SY

SPEC LAT 'V' DITCH
SEE DETAIL 8

DAYLIGHT DITCH AT EDGE OF WETLANDS

-BL- D267

SITE 32

LARRY D. BOOTH
DB 354 PG 733

LOWES HOME CENTERS, INC
DB 358 PG 403
PB 6 PG 44I

END TIP PROJECT R-2915D
-L- POT Sta. 679+90.00

PI Sta 672+70.19
Δ = 20° 35' 52.2" (LT)
D = 2° 20' 19.0"
L = 880.77'
T = 445.19'
R = 2,450.00'
SE = .05
RUNOFF = SEE PLANS

PIs Sta 677+99.14
Θs = 3° 16' 26.6"
Ls = 280.00'
LT = 186.70'
ST = 93.36'

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

DETAIL 8
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Natural Ground
2:1 typ.
4:1 to Flatter
Fill Slope
D
Min. D = 2 Ft.

FROM STA. 676+75 TO STA. 679+90 - L- RT

FOR -L- PROFILE, SEE SHEET 33

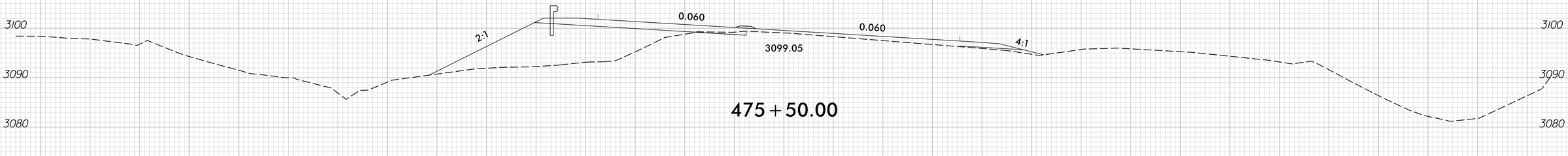
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915D	X-21

PERMIT DRAWING
SHEET 39 OF 52

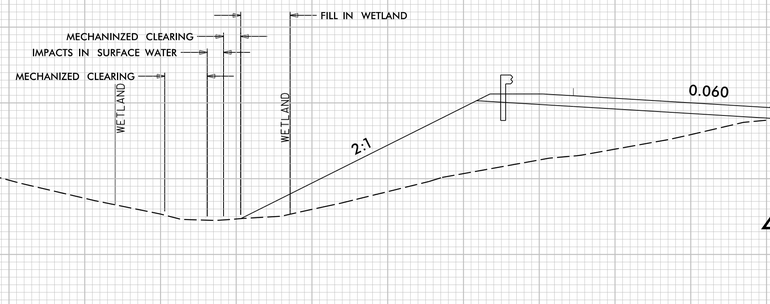
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

3160 3150 3140 3130 3120 3110 3100 3090 3080 3170



475+50.00

SITE 3



475+00.00

1/3/2014
R2915D_Hyd_prm_wet_psh_xpl_site03
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915D	X-24

PERMIT DRAWING
SHEET 40 OF 52

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

3120 / 3110 / 3100 / 3090 / 3080

2:1 | 0.022 | 3107.64 | 3107.48 | 0.022 | 6:1 | 3105.39

481+00.00

2:1 | 0.031 | 3106.88 | 3106.66 | 0.031 | 6:1 | 3105.10

480+50.00

SITE 4

MECHANIZED CLEARING | WETLAND | FILL IN WETLAND | WETLAND | 2:1 | 0.040 | 3106.11 | 3105.83 | 0.040 | 6:1 | 3104.75

480+00.00

2:1 | 0.049 | 3105.35 | 3105.00 | 0.049 | 6:1 | 3104.41

479+50.00

—℄—

1/3/2014
R2915D_Hyd_prm_wet_psh_xpl_site04
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915D	X-43

PERMIT DRAWING
SHEET 41 OF 52

507+50.00

0.050 | 3157.33 | 3156.68 | 0.050 | 4:1 | 2:1 | 3154.23

SITE 7

MECHANIZED CLEARING | WETLAND | FILL IN WETLAND | WETLAND

507+00.00

0.050 | 3155.29 | 3154.79 | 0.050 | 2:1 | 2:1 | 3152.73

506+50.00

0.050 | 3153.60 | 3152.81 | 0.050 | 2:1 | 2:1 | 3151.39

506+00.00

0.050 | 3151.97 | 3151.02 | 0.050 | 3.6:1 | 1.50:1 | 3149.90

505+50.00

0.050 | 3150.39 | 3149.44 | 0.050 | 2:1 | 1.50:1 | 3148.41

—℄—

1/3/2014
R2915D_Hyd_prm_wet_psh_xpl_site07
jharvey

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915D	X-114

PERMIT DRAWING
SHEET 42 OF 52

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

3270 3260 3250 3240 3230

3264.95 0.020 3265.87 3266.01 0.020

3264.59

2:1 2:1

587+50.00

SITE 14

3266.85 0.020 3267.77 3267.94 0.010

3266.68

WETLAND IMPACTS IN SURFACE WATER FILL IN WETLAND MECHANIZED CLEARING FILL IN WETLAND WETLAND

2:1 2:1

587+00.00

3268.71 0.020 3269.63 3269.81 0.001 4:1

3268.19

2:1

586+50.00

3270.51 0.020 3271.43 3271.64 0.008 6:1

3270.17

2:1

586+00.00

—℄—

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

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3/28/2014
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915D	X-117

PERMIT DRAWING
SHEET 43 OF 52

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

3240 3230 3220 3210

4:1 2:1 4:1 6:1 0.050 3233.77 3234.72 0.050 2:1
3232.36 3229.6770 3233.74
594+50.00

3240 3230 3220

4:1 2:1 2:1 0.050 3236.36 3237.31 0.050 2:1
3227.83 3236.00
594+00.00

3240 3230 3220

2:1 2:1 2:1 0.050 3238.90 3239.85 0.050 2:1
3227.68 3238.50
593+50.00

3240 3230 3220

2:1 0.050 3241.40 3242.35 0.050 2:1
3241.20
593+00.00

SITE 17

3240 3230 3220

FILL IN WETLAND
WETLAND WETLAND
2:1 0.050 3243.84 3244.79 0.050 2:1
3243.67
592+50.00

3250 3240 3230 3220

2:1 0.050 3246.24 3247.19 0.050 2:1
3246.06
592+00.00

—℄—

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

1/15/2014
R2915D_Hyd_prm_wet_psh_xpl_site17
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915D	X-132

PERMIT DRAWING
SHEET 44 OF 52

SITE 19

612+00.00

4:1
0.020
3130.87
3130.87
0.020
3130.19
3128.12
2:1
FILL IN WETLAND
WETLAND
WETLAND
3084.00

611+50.00

2:1
0.020
3133.85
3133.90
0.016
3133.37
3131.11
2:1
3084.00

3140 3130 3120 3110 3100 3090 3080 3070 3060

110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

1/3/2014
R2915D_Hyd_prm_wet_psh_xpl_site19
harvey

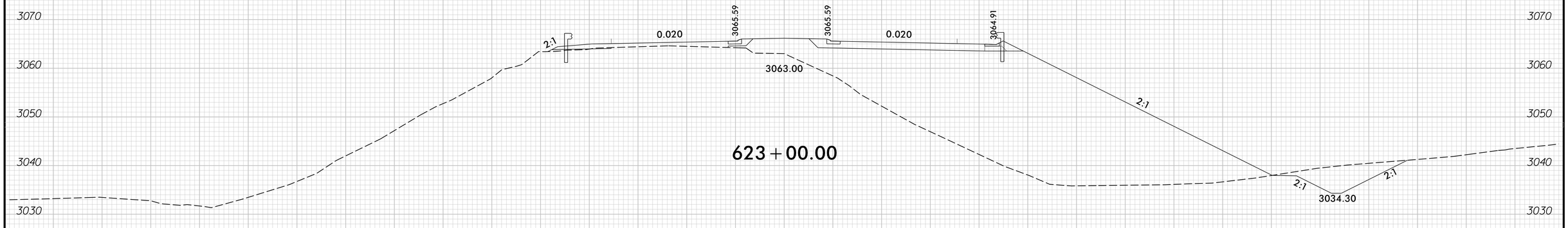
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915D	X-141

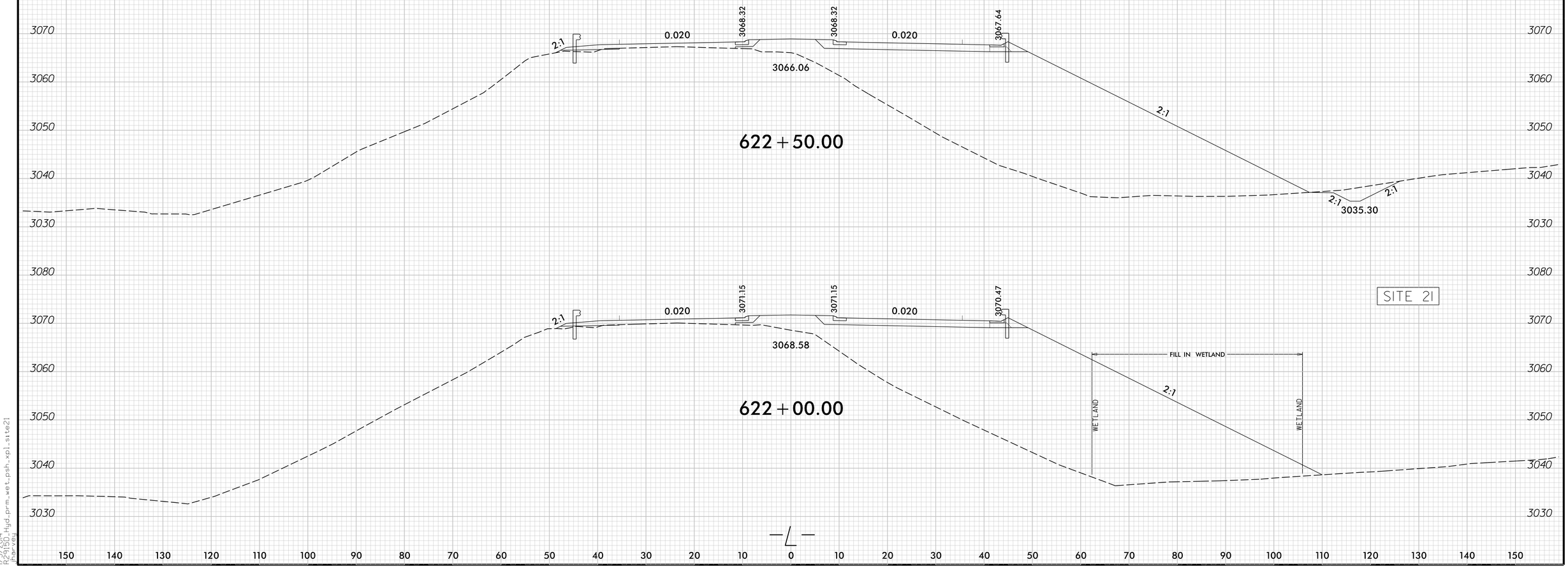
PERMIT DRAWING
SHEET 45 OF 52

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

3080 3070 3060 3050 3040 3030 3090



623+00.00



622+50.00

SITE 21

622+00.00

—℄—

1/3/2014
R-2915D_Hyd_prm_wet_psh_xpl_site21
jharvey

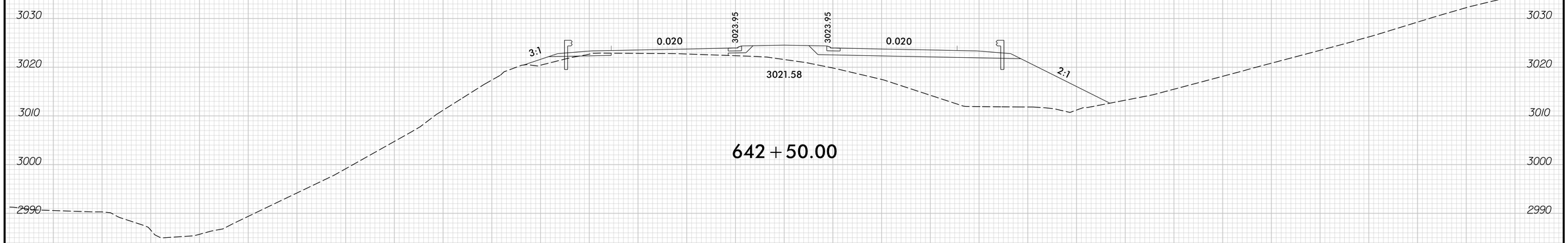
8/23/99

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	R-2915D	X-162

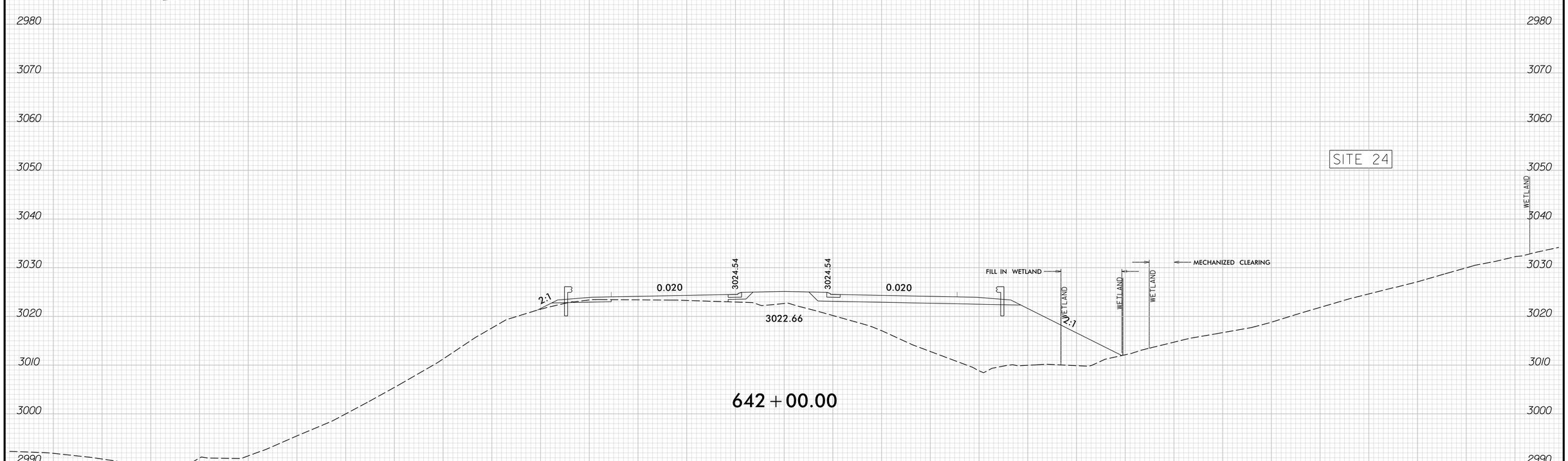
PERMIT DRAWING
SHEET 46 OF 52

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

3070 3060 3050 3040 3030 3020 3010 3000 2990 2980



642+50.00



SITE 24

642+00.00

1/3/2014
R2915D_Hyd_prm_wet_psh_xpl_site24
harvey

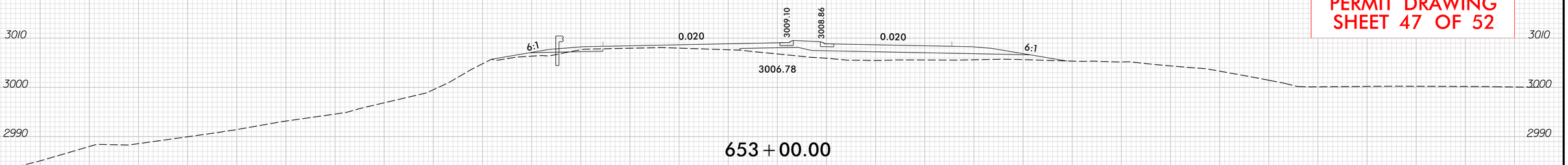
8/23/99

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	R-2915D	X-170

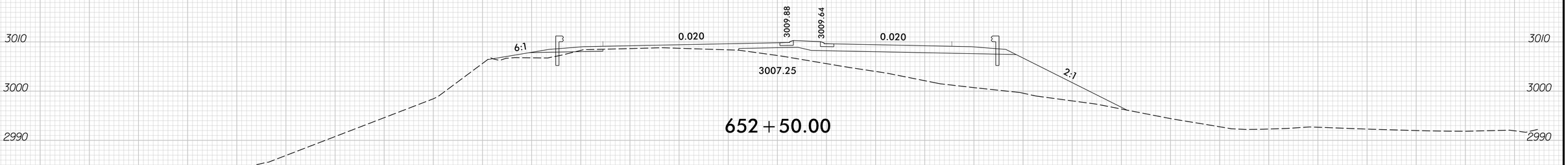
PERMIT DRAWING
SHEET 47 OF 52

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

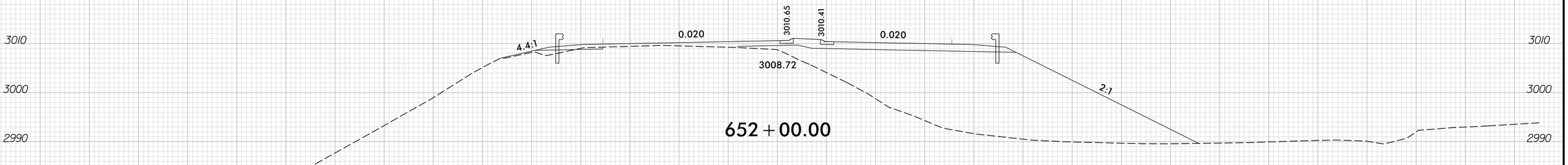
3020 3010 3000 2990 2980 2970



653+00.00

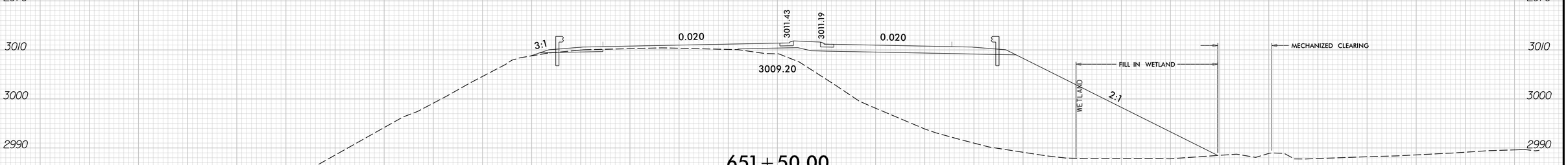


652+50.00



652+00.00

SITE 25



651+50.00

—L—

1/3/2014
R2915D_Hyd_prm_wet_psh_xpl_site25
harvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915D	X-207

PERMIT DRAWING
SHEET 48 OF 52

3010 3000 2990 2980 2970 2960

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

2996.13

21+50.00

4:1 2994.17 0.020 0.020 2994.39 1.5:1

2994.25

21+00.00

3000 2990 2980 2970 2960

2993.92 0.020 0.020 2993.72

2:1 3:1 3:1 2979.00

2993.45

20+50.00

1.5:1

SITE 30

2993.60 0.020 0.020 2993.36

3:1 3:1 3:1 2982.10

2993.54

FILL IN WETLAND

MECHANIZED CLEARING

1.5:1 WETLAND WETLAND

20+00.00

-Y32-

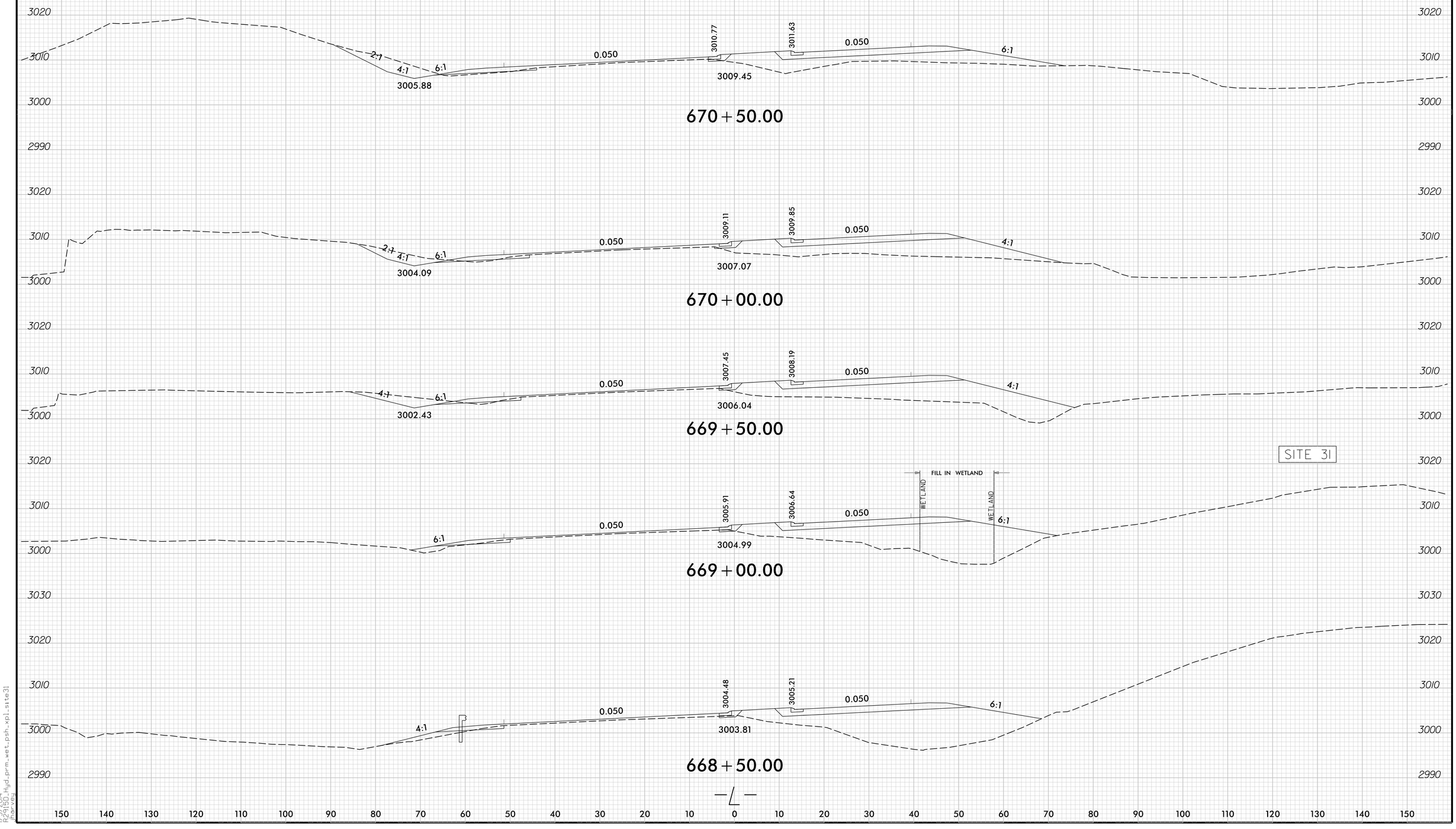
1/3/2014
R2915D_Hyd_prm_wet_psh_xpl_site30
harvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915D	X-181

PERMIT DRAWING
SHEET 49 OF 52

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



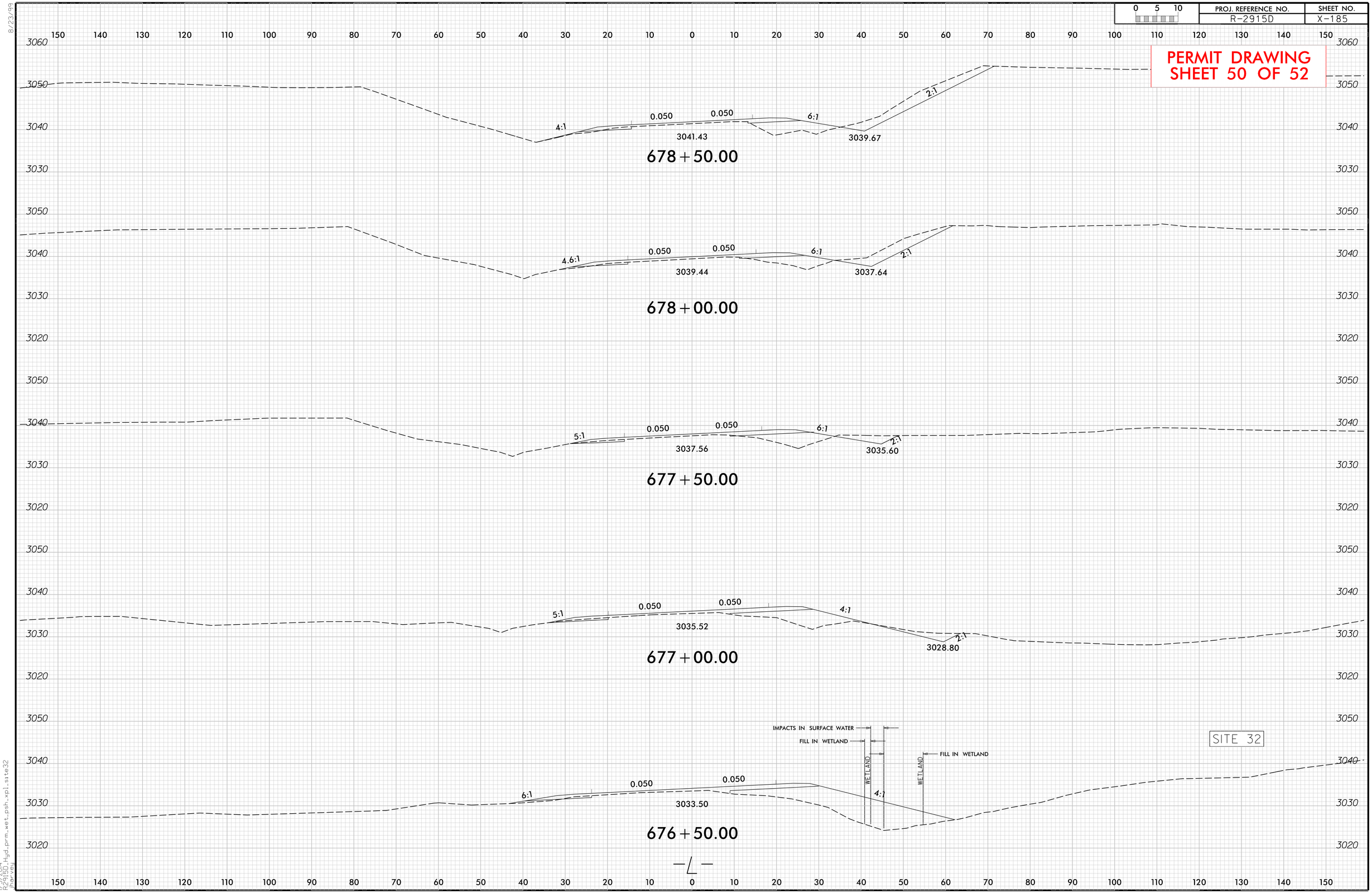
—℄—

1/3/2014
R-2915D_Hyd_prm_wet_psh_xpl_site31
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2915D	X-185

PERMIT DRAWING
SHEET 50 OF 52



1/3/2014
R2915D_Hyd_prm_wet_psh_xpl_site32
jharvey

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	21+40-23+21-TIE-L-R	ROAD FILL						0.02	< 0.01	312	46	
2	25+56 -TIE- R	ROAD FILL	< 0.01									
3A	474+48-474+65 -L- L	ROAD FILL						< 0.01		60		
3B	474+65-475+42 -L- L	ROAD FILL	< 0.01		< 0.01	0.02		< 0.01	< 0.01	56	73	
4	477+62-480+95 -L- L	ROAD FILL	0.10			0.04			< 0.01		19	
5	482+68-483+36 -L- L	ROAD FILL						0.01		57		
		STREAMBANK STABILIZATION						< 0.01		19		
6	504+48 -L-	ROAD FILL						0.05		120		
		STREAMBANK STABILIZATION						< 0.01	< 0.01	48	25	
7	505+57-508+66 -L- L	ROAD FILL	0.25			0.05						
8	522+90-L- R	STREAMBANK STABILIZATION						< 0.01		15		
9	536+74-538+06 -L- L	ROAD FILL						0.03	< 0.01	126	22	
10	540+58-544+48 -L- L	ROAD FILL						0.18		396		
11	544+82 -L- R	STREAMBANK STABILIZATION						< 0.01		11		
12	564+82 -L- R	ROAD FILL						< 0.01	< 0.01	51	11	
13	577+76 -L- L	ROAD FILL	< 0.01		< 0.01							
14	587+50 -L-	ROAD FILL	0.03		< 0.01	0.01		< 0.01	< 0.01	162	14	
15	588+39-589+14 -L- R	ROAD FILL	< 0.01			0.02		< 0.01		12		
16	591+57 -L- R	ROAD FILL				< 0.01						
17A	591+38-594+35 -L- L	ROAD FILL	0.06			0.01		< 0.01	< 0.01	28	23	
17B	594+07 -L- R	RIP RAP						< 0.01		12		
18	606+30-610+13 -L- R	ROAD FILL						0.01		491		
19	610+14-613+04 -L- R	ROAD FILL	0.07			< 0.01		< 0.01	< 0.01	100	12	
SUBTOTALS*:			0.55		< 0.01	0.15		0.35	0.02	2076	245	

*Rounded totals are sum of actual impacts

NOTES:
* SITE 4 - ADDITIONAL 0.04 ACRE ACCOUNTED FOR AS FILL IS ADDED DUE TO TOTAL TAKE OF WETLAND

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
5-6-2014
R-2915D ASHE COUNTY
ON US 221 FROM SOUTH OF NC 194
TO US 221 BYPASS

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)
20A	618+68-619+57 -L- R	ROAD FILL						< 0.01	< 0.01	55	18	
20B	618+68-619+57 -L- R	ROAD FILL	< 0.01			< 0.01		< 0.01	< 0.01	57	11	
21	619+82-622+86 -L- R	ROAD FILL	0.17		< 0.01			< 0.01	< 0.01	49	17	
22	624+24 -L- R	ROAD FILL	< 0.01			< 0.01		< 0.01		61		
23A	628+44-628+98 -L-	ROAD FILL						< 0.01		19		
23B	628+44-628+98 -L-	ROAD FILL						< 0.01	< 0.01	66	15	
24	641+42-642+18-L- R	ROAD FILL	< 0.01			0.01		< 0.01	< 0.01	22	10	
25	650+46-652+40-L- R	ROAD FILL	0.11			0.05		< 0.01		12		
26	659+63-661+42 -L-	CULVERT						0.03	0.01	75	22	
		STREAMBANK STABILIZATION						< 0.01	< 0.01	33	26	
27	651+61-653+98 -L- R	ROAD FILL	0.04			< 0.01		0.01		134		
28	652+08-653+11-L- L	ROAD FILL	< 0.01			0.02						
29	653+75-654+35-L- L	CHANNEL						0.01		69		
30	17+86-2085-Y32- R	ROAD FILL	0.04			0.06						
31	667+52-670+07-L- R	ROAD FILL	0.06			< 0.01						
32	676+39-676+92-L- R	ROAD FILL	0.02			< 0.01		< 0.01	< 0.01	25	19	
SUBTOTALS*:			0.46		< 0.01	0.15		0.08	0.03	677	138	
SUBTOTALS FROM PAGE 1*:			0.55		< 0.01	0.15		0.35	0.02	2076	245	
TOTALS*:			1.01		0.01	0.30		0.43	0.05	2753	383	

*Rounded totals are sum of actual impacts

NOTES:
* SITE 21 TOTAL TAKE OF WETLAND = 0.18 Acre

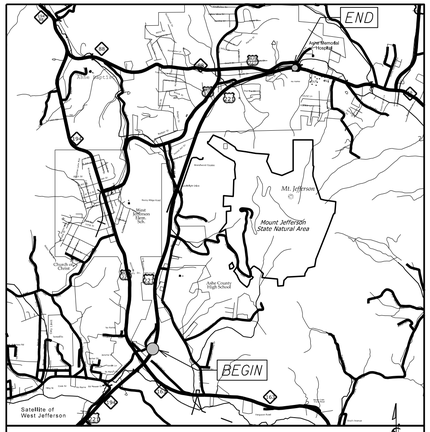
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
5-6-2014
R-2915D ASHE COUNTY
ON US 221 FROM SOUTH OF NC 194
TO US 221 BYPASS

ATN Revised 3/12/13

09/08/49

TIP PROJECT: R-2915E

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ASHE COUNTY

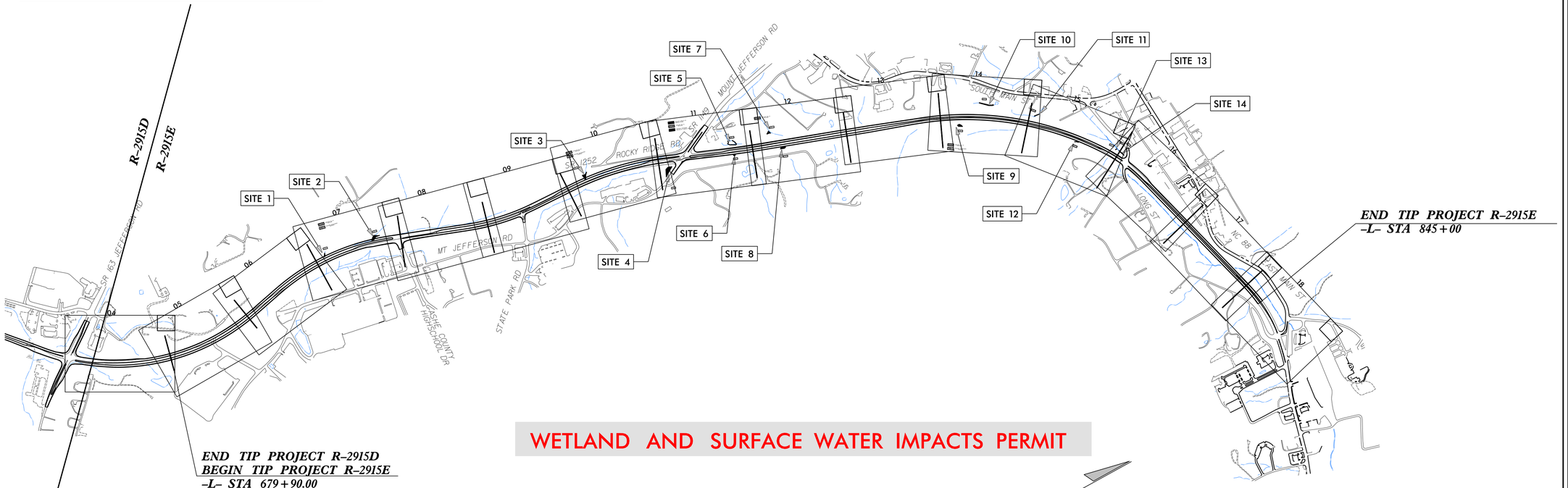
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915E	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

LOCATION: US 221 FROM NC 163 TO US 221 BUS

TYPE OF WORK: GRADING, PAVING, DRAINAGE, CURB AND GUTTER, SIGNALS, BRIDGE AND CULVERT

PERMIT DRAWING
SHEET 1 OF 16



WETLAND AND SURFACE WATER IMPACTS PERMIT

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

0
PROFILE (HORIZONTAL)

0
PROFILE (VERTICAL)

DESIGN DATA

ADT =
ADT =
DHV = %
D = %
T = % *
V = MPH
* TTST = DUAL
FUNC CLASS =

TIER

PROJECT LENGTH

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

PROJECT ENGINEER

PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

1/3/2014
R2915E_Hyd_prm_wet_psh_01
jharvey

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 2 OF 16

REVISIONS

8/17/99

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

705

BROWN, VIRGINIA

17

POT Sta. 715+50.83 -L- =
POT Sta. 10+00.00 -Y33-

BARE, GARY & JUDY W.

SITE 1

SITE 2

R/W

GRAU 350

-L-

CAT-1

F C

ISBKD

ISBKD

WALL

2SF BUS

ISBLK BUS

PA BST

PA BST

ISBLK BUS

CONC

PA BST

Sta. 713+47.83

Sta. 715+47.83

1/3/2014
R-2915E_Hyd_prm_wet_psh_07
hbryan

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 3 OF 16

REVISIONS

8/17/99

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

705

BROWN, VIRGINIA

3150

POT Sta.715+50.83 -L-
POT Sta.10+00.00 -Y33-

BARE, GARY & JUDY W.

SITE 1

SITE 2

R/W

GRAU 350

-L-

CAT-1

3100

3050

3000

2950

2900

2850

2800

2750

2700

2650

2600

2550

2500

2450

2400

2350

2300

2250

2200

2150

2100

2050

2000

1950

1900

1850

1800

1750

1700

1650

1600

1550

1500

1450

1400

1350

1300

1250

1200

1150

1100

1050

1000

950

900

850

800

750

700

650

600

550

500

450

400

350

300

250

200

150

100

50

0

ISBKD

ISBKD

2SF BUS

ISBLK BUS

PA BST

PA BST

ISBLK BUS

CONC

PA BST

WALL

Sta. 713+47.83

Sta. 715+47.83

1/3/2014
K:\Projects\R-2915E\Hyd_prm_wet_psh_07.con
jharvell

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 4 OF 16

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SITE 3

SULLIVAN, JOHNNY L

JONES, CLAYTON

SR 1252 ROCKY RIDGE RD

R/W

CAT-1

2SBK BUS

2SFD

S 0° 13' 33.4" W

-Y35-

REVISIONS

8/17/99

1/3/2014
R2915E_Hyd_prm_wet_psh_10
bstanley

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 5 OF 16

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SITE 3

SULLIVAN, JOHNNY C

CLAXTON JONES

SR 1252 ROCKY RIDGE LRD

2SBK BUS

2SFD

SC Sta. 7

S 0° 13' 33.4" W

-Y35-

REVISIONS

8/17/99

1/3/2014
R2915E_Hyd_prm_wet_psh_10_con
(brevel)

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 6 OF 16

8/17/99

REVISIONS

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

14' SOIL

SULLIVAN, JOHNNY C & PHYLLIS

POT Sta.756+65.75 -L- =
POT Sta.17+13.90 -Y35-

GRAU 350

S 25° 59' 22.5" E

-Y35- POT Sta.10+00.00

PC Sta.761+20.26

ISF BUS

ISMT BUS

ABSHER, RUBY R (TR

SITE 5

CAT-1

N 22° 11' 21.2" E

US 221 48' BST

SITE 6

CANDLE LIGHT RD BST

ALOIA, MICHAEL & CINDEE L

2SFD

2SBKD

G

14' GR

CANDLE ST 7' BST

PC Sta.19+98.69

SITE 4

CS Sta.7

ST Sta.755+2

K:\3\2014
R2915E_Hyd_prm_wet_psh_11
bar vers

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 7 OF 16

DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

POT Sta.756+65.75 -L- =
POT Sta.17+13.90 -Y35-

PC Sta.761+20.26 -Y35- (to ROM)

POT Sta.10+00.00

S 25° 59' 22.5" E

GRAU 350

SITE 5

SITE 6

SITE 4

ABSHER, RUBY R (TR

ALOIA, MICHAEL & CINDEE L

2SFD

2BKD

CAT-1

US 221 (48' BST)

CANDLE LIGHT RD BST

CANDLE ST Z BST

PC Sta.19+98.69

CS Sta.7

ST Sta.755+2

N 22° 11' 21.2" E

REVISIONS

8/17/99

1/3/2014
R2915E_hyd_prm_wet_psh_11.con
bar_wu

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 8 OF 16

8/17/99

REVISIONS

PT Sta. 766+82

2SBKD

F F

DENOTES FILL IN WETLAND

SITE 7

UST)

RD

BST

HTR

DE

ISBKD

CAN

2SFD

G

GRAU 350

-L-

N 19° 30' 14.7" E

CAT-1

SITE 8

12' GR

11' GR

ISFD

PLO

TTI EFIELD, JAMES L

1/3/2014
R2915E_Hyd_prm_wet_psh_12
hparvell

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 9 OF 16

8/17/99

REVISIONS

PT Sta. 766+82

DENOTES FILL IN WETLAND

SITE 7

SITE 8

-L-
N 19° 30' 14.7" E

GRAU 350

CAT-1

2SBKD
2SFD
1SFD
HTR
CAN
POL
12 GR
14 GR

JAMES L

4/3/2014
R2915E_Hyd_prm_wet_psh_12.con
lharvell

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 10 OF 10

REVISIONS

8/17/99

SITE 10

CHURCH, SAMMY & SHIRLEY

SITE 9

CLARK, SHEILA & WEIDENBEN. (TRUSTEES)

F F — DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

1/3/2014
R-2915E_Hyd_prm_wet_psh_14
hparker

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 11 OF 16

REVISIONS

8/17/99

SITE 10

SITE 9

CHURCH, SAMMY & SHIRLEY

CLARK, SHEILA & WEIDENBEN... (TRUSTEES)

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

ISBKD

ISFD

BST PA

ISM BUS

ISF BUS

GR

3025

3000

1/3/2014
R-2915E_Hyd_prm_wet_psh_14.con
bar_wal

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 12 OF 16

REVISIONS

8/17/99

1/3/2014
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MAIN ST
43' BST
ISBKD
SBK BUS
HAWTHORNE LN
LONG ST
SULLIVAN, DORIS
ISBKD
2SFD
SFD
SITE 11
SITE 12
SITE 13
SITE 14
F
C
CAT-1
N 70° 49' 09.5" E
-Y36-
POC Sta. 818+53.77
POT Sta. 14+14.37
-L-
RAU 350
WILLOW
10' BST
STANLEY, DOROTHY O
(TRUSTEE)
2SBKD
PCC Sta. 815+46.81

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 13 OF 16

REVISIONS

8/17/99

MAIN ST
43' BST
LONG ST
HAMTHORNE LN
WILLOW
10' BST
SULLIVAN, DORIS
STANLEY, (TRUSTEE) DOROTHY Q.
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2SBKD
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-Y36-
POT Sta. 14+14.37
-Y36-
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PCC Sta. 815+46.81
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1/7/2014
R2915E_Hyd_prm_wet_psh_15.con
harvell

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 14 OF 16

REVISIONS

8/17/99

SITE 14

Sta. 11+04.71

ACADEMY

26.8' BST

IVY ST

20.5' BST

CHERRY ST

19.

PT Sta. 13+47.47

PC Sta. 14+26.78

CAT-1

GRAU 350

39° 38' 06.8" E

N 89° 36' 53.2" E

R
WC

PT Sta. 16+57.07

Sta. 17+07.43

CS Sta. 820+

ST Sta. 822+

LAUREL
HOMES, IN

ISF BUS
ISBKD
2SBKD
ISBKBUS
ISBK BUS
2SF BUS
ISMTL BUS
2SFD
ISFD
GR

1/3/2014
R2915E_Hyd_prm_wet_psh_16
bar:Yes

PROJECT REFERENCE NO.	SHEET NO.
R-2915E	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 15 OF 16

REVISIONS

8/17/99

SITE 14

Sta. 11+04.71

PT Sta. 13+47.47

PC Sta. 14+26.78

CAT-1

GRAU 350

39° 38' 08" E

CAT-1

N 89° 36' 53" E

GRAU 350

Y36

R/W

PT Sta. 16+25.07

PT Sta. 17+07.43

CS Sta. 820+

ST Sta. 822+

LAUREL
HOMES, IN

ACADEM

20.5' BST

BST

ISF
BUS

2SBKD

ISBKBUS

2SF
BUS

ISBK
BUS

ISMTL
BUS

GR

ISFD

2SFD

2SBKD

S

F

C

T

X

V

1/3/2014
R2915E_Hyd_prm_wet_psh_16.con
[illegible]

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	705+20-405+45-L-LT	ROAD FILL	0.01									
2	712+02-713+22-L-LT	ROAD FILL	0.04			0.02						
3	742+55-743+25-L-LT	ROAD FILL	0.03			0.02						
4	19+24-20+67-Y35-RT	ROAD FILL	0.08			0.03						
5	762+69-763+93-L-LT	ROAD FILL						< 0.01	< 0.01	165.8	78.8	
6	762+26-762+60-L-RT	ROAD FILL	0.01									
7	768+23-768+77-L-LT	ROAD FILL	0.18									
8	769+75-770+50-L-RT	ROAD FILL	0.03									
9	794+30-795+02-L-RT	ROAD FILL	0.02			0.01						
10	797+22-799+13-L-LT	ROAD FILL	0.02			0.01						
11	804+64-805+21-L-LT	ROAD FILL						< 0.01		68.7		
12	810+89-811+42-L-RT	ROAD FILL						< 0.01		54.4		
13	816+38-816+52-L-LT	ROAD FILL						< 0.01		23.9		
14	816+85-817+72-L-LT	ROAD FILL						0.01		91.8		
TOTALS*:			0.43			0.09		0.03	< 0.01	405	79	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
01-08-14
ASHE COUNTY
US 221 FROM NC 163
TO US 221 BUSINESS

ATN Revised 3/12/13

09/08/06

TIP PROJECT: R-2915A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WATAUGA & ASHE COUNTIES

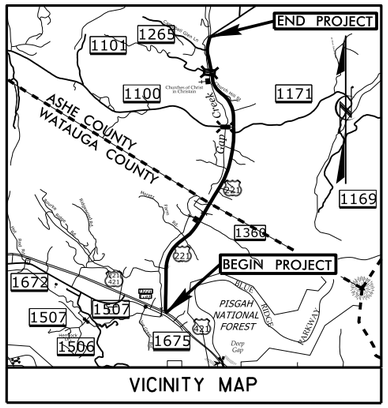
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915A	1	

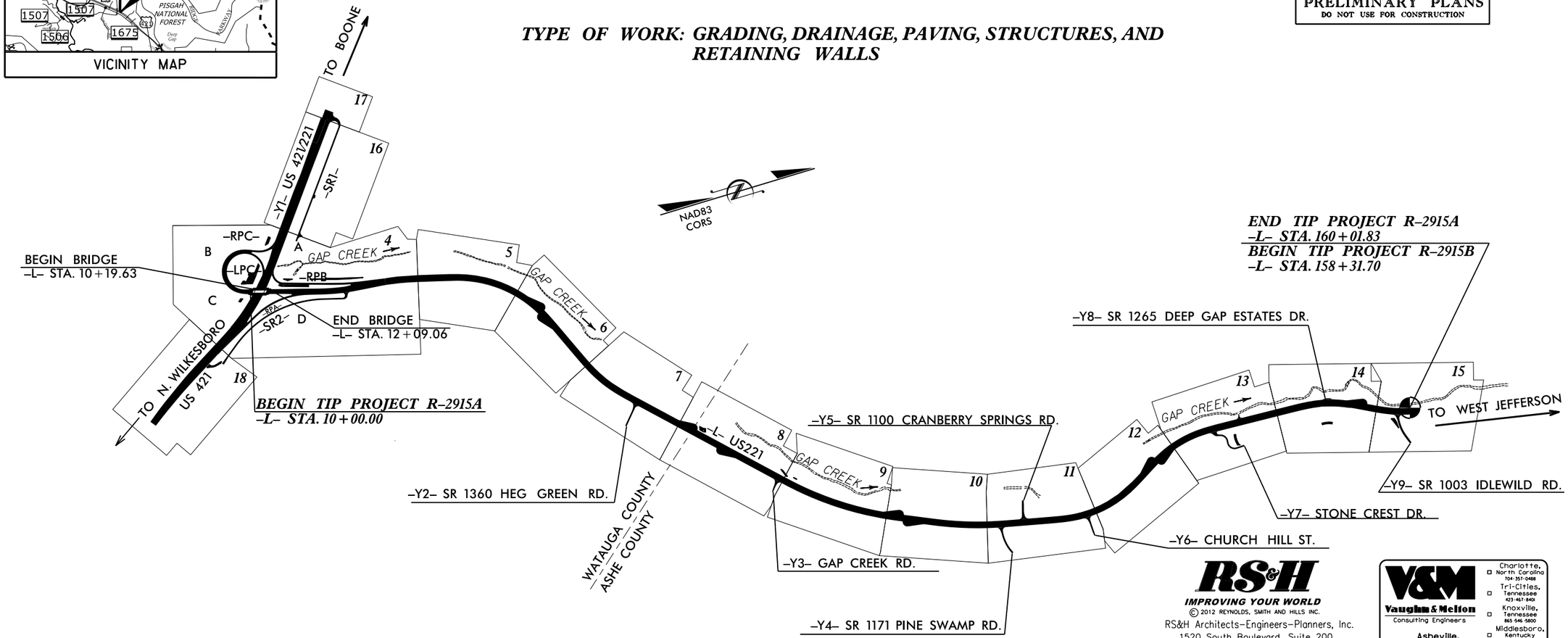
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34518.1.2	STP-0221 (39)	P.E.
34518.2.FR1	STP-0221 (39)	R/W
34518.2.UFR1	STP-0221 (39)	UTILITIES

LOCATION: US 221 FROM US 421 IN WATAUGA COUNTY TO SR 1003 (IDLEWILD RD) IN ASHE COUNTY

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, AND RETAINING WALLS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

RS&H
IMPROVING YOUR WORLD
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Charlotte, North Carolina 704-357-0488
Tri-Cities, Tennessee 423-467-840
Knoxville, Tennessee 865-546-5800
Middlesboro, Kentucky 606-248-6600
Spartanburg, South Carolina 864-574-4775

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CONTRACT:

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 2015 = 11970
ADT 2035 = 20400
K = 10 %
D = 65 %
T = 9 %
V = 60 MPH
*(TTST 2% + DUALS 7%)
FUNC CLASS =
RURAL ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2915A = 2.805 MI.
LENGTH STRUCTURES TIP PROJECT R-2915A = 0.036 MI.
TOTAL LENGTH OF TIP PROJECT R-2915A = 2.841 MI.

Prepared In the Office of:
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE NC, 28806
FOR NCDOT DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 30, 2013

LETTING DATE:
JUNE 16, 2015

REECE SCHULER, PE
PROJECT ENGINEER

AARON CARVER, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
BRENDA MOORE, PE

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

08-JUL-2014 10:25
R:\Roadway\Proj\R-2915A_rdy_tsh.dgn
$$$$USERNAME$$$$

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line
- Designated U/G Water Line (S.U.E.*)
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

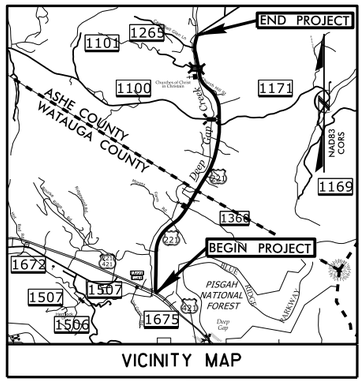
MISCELLANEOUS:

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
34518.1.1	1–C
Location and Surveys	

SURVEY CONTROL SHEET R–2915A



BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL31	BL-31	914231.3163	1260881.4743	2496.36	10+88.74	112.22 LT
BL32	BL-32	915856.9898	1260189.7839	2492.35	14+28.12	116.45 LT
BL33	BL-33	916426.7594	1260896.2899	2484.52	32+94.88	48.21 LT
BL34	BL-34	917885.9249	1260255.2487	2476.26	39+78.38	0.26 RT
BL35	BL-35	917985.8057	1261827.9966	2472.55	51+12.98	1.78 RT
BL36	NCDS MON CAP	918664.8295	1261677.3259	2485.67	61+33.88	42.82 LT
R29153	GPS R2915-3	919149.7848	1261969.4688	2477.41	66+95.74	48.18 LT
R29154	GPS R2915-4	920506.4880	1262832.0570	2457.81	83+82.48	0.82 RT
BL37	BL-37	921144.8567	1263188.4761	2449.15	89+96.40	6.86 LT
BL38	BL-38	922126.6192	1263321.6829	2443.48	100+85.24	1.19 LT
BL39	BL-39	922865.1325	1263389.3999	2448.63	107+47.13	9.35 RT
BL40	BL-40	923780.4131	1263314.5824	2443.82	115+95.20	33.61 LT
BL41	BL-41	924139.8336	1263288.2637	2444.24	120+15.19	57.84 RT
BL42	BL-42	924580.7753	1262942.2353	2429.67	125+28.47	69.59 RT
BL43	BL-43	925844.3824	1262485.3746	2419.16	132+18.91	28.98 LT
BL44	BL-44	925745.5320	1262264.3667	2413.17	134+38.81	51.23 LT
BL45	BL-45	926790.8827	1262069.3736	2404.83	144+97.33	68.46 LT
R29155	GPS R2915-5	927532.5780	1262287.7910	2402.28	157+48.32	18.37 RT
BL46	BL-46	928482.6858	1262144.5944	2486.48	OUTSIDE PROJECT LIMITS	
BL47	BL-47	929326.9848	1262283.2698	2418.77	OUTSIDE PROJECT LIMITS	
BL48	BL-48	929833.8883	1262134.8936	2412.87	OUTSIDE PROJECT LIMITS	
BL49	BL-49	930252.5771	1261888.4631	2484.69	OUTSIDE PROJECT LIMITS	
BL50	BL-50	930705.8836	1261535.6732	2897.84	OUTSIDE PROJECT LIMITS	
BL51	BL-51	931116.8346	1261433.8956	2898.72	OUTSIDE PROJECT LIMITS	
BL52	BL-52	931641.1471	1261537.6793	2881.92	OUTSIDE PROJECT LIMITS	
BL53	BL-53	932216.8529	1261999.6986	2876.74	OUTSIDE PROJECT LIMITS	
BL54	BL-54	932765.6858	1262461.6863	2874.49	OUTSIDE PROJECT LIMITS	
BL55	BL-55	933354.5662	1263268.6938	2871.17	OUTSIDE PROJECT LIMITS	
BL56	BL-56	933847.1988	1263665.8128	2878.83	OUTSIDE PROJECT LIMITS	
BL57	BL-57	934899.1246	1263792.5528	2878.92	OUTSIDE PROJECT LIMITS	
BL58	BL-58	935748.1689	1263808.7456	2884.86	OUTSIDE PROJECT LIMITS	
BL59	BL-59	936429.4463	1263916.1781	2937.49	OUTSIDE PROJECT LIMITS	
BL60	BL-60	937238.1186	1264803.2714	3884.18	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
BY166	BY1-66	918664.8295	1261677.3259	2485.67	OUTSIDE PROJECT LIMITS	
BY167	BY1-67	918487.4172	1262218.1671	3820.37	15+58.86	7.62 LT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
BY268	BY2-68	922865.1325	1263389.3999	2448.63	18+89.31	21.49 RT
BY269	BY2-69	922916.5888	1263629.3149	2448.73	12+47.91	20.69 RT
BY270	BY2-70	923132.2288	1263891.8377	2458.15	15+82.72	11.27 LT
BY271	BY2-71	923286.9353	1264241.1875	2479.74	19+62.86	12.73 LT
BY272	BY2-72	923319.8897	1264699.2984	3887.14	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y5 STATION	OFFSET
BY373	BY3-73	923173.7894	1262319.6864	2466.46	OUTSIDE PROJECT LIMITS	
BY374	BY3-74	923173.4784	1262985.9563	2438.95	16+12.43	13.83 LT
BY375	BY3-75	923065.1325	1263389.3999	2448.63	OUTSIDE PROJECT LIMITS	

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y8 STATION	OFFSET
BY476	BY4-76	926958.2639	1261951.4117	2412.85	OUTSIDE PROJECT LIMITS	
BY477	BY4-77	926798.8827	1262869.3736	2489.83	14+82.89	27.96 RT

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y9 STATION	OFFSET
BY578	BY5-78	927532.5788	1262287.7910	2482.28	18+89.69	186.83 RT
BY579	BY5-79	928848.8446	1263848.8471	2428.92	OUTSIDE PROJECT LIMITS	

BM1 ELEVATION - 2496.63
N 914478 E 1259917
L STATION 13+20.88 207 LEFT
CHISLED SQUARE ON TOP OF HEADWALL

BM2 ELEVATION - 2488.61
N 916757 E 1259989
L STATION 35+93.88 248 LEFT
RR SPIKE IN ROOT OF 18" RED BUD TREE

BM3 ELEVATION - 2962.89
N 919454 E 1261861
L STATION 69+88.88 291 LEFT
RR SPIKE IN BASE OF POWER POLE

BM4 ELEVATION - 2944.88
N 921191 E 1262934
L STATION 89+88.88 181 LEFT
CHISLED X ON TOP OF STEEL RAIL ON
PRIVATE BRIDGE ON SE CORNER

BM5 ELEVATION - 2988.84
N 923826 E 1263485
L STATION 116+98.88 74 RIGHT
CHISLED SQUARE ON CONCRETE CATTLE
DRINKER

BM6 ELEVATION - 2988.94
N 926296 E 1263867
L STATION 145+17.88 137 LEFT
CHISLED SQUARED IN CONCRETE RETAINING
WALL AT CREEK

NC DOT STATION R2915–1
LOCALIZED PROJECT COORDINATES
N= 916355.6590
E= 1255522.7760

NC GRID
NAD 83/CORS

TO BOONE

NC DOT STATION R2915–2
LOCALIZED PROJECT COORDINATES
N= 915243.5260
E= 1258316.3100

–Y– US 421/221 –SR1–

–RPC–
–LPC–
–RPA–
–RPB–
A
B
C
D
GAP CREEK

BEGIN BRIDGE
–L– STA. 10+19.63

END BRIDGE
–L– STA. 12+09.06

–SR2–

TO N. WILKESBORO
US 421

BEGIN TIP PROJECT R–2915A
–L– STA. 10+00.00
N= 914137.7697
E= 1260189.7217

–Y1– US421
–Y1– STA. 54+00.00

–Y2– SR 1360 HEG GREEN RD.

WATAUGA COUNTY
ASHE COUNTY

NC DOT STATION R2915–3
LOCALIZED PROJECT COORDINATES
N= 919149.7040
E= 1261969.9680

NC DOT STATION R2915–4
LOCALIZED PROJECT COORDINATES
N= 920506.4880
E= 1262832.0570

–L– US221

–Y5– SR 1100 CRANBERRY SPRINGS RD.

–Y3– GAP CREEK RD.

–Y4– SR 1171 PINE SWAMP RD.

END TIP PROJECT R–2915A
BEGIN TIP PROJECT R–2915B
–L– STA. 160+01.83
N= 927788.0547
E= 1262284.8931

NC DOT STATION R2915–5
LOCALIZED PROJECT COORDINATES
N= 927532.5780
E= 1262287.7910

–Y8– SR 1265 DEEP GAP ESTATES DR.

DEEP GAP CREEK

TO WEST JEFFERSON

–Y9– SR 1003 IDLEWILD RD.

–Y7– STONE CREST DR.

–Y6– CHURCH HILL ST.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2915-15"
WITH NAD 83/CORS STATE PLANE GRID COORDINATES OF
NORTHING: 954880.7810(ft) EASTING: 1254012.2870(ft)
ELEVATION: 3097.5210(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991292
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"R2915-15" TO –L– STATION 10+00.00 IS
S 08°37'17" E 41208.6602
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*
2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2915A_LS_GPSCALIB.HTML
   R2915A_LS_WGS84.TXT
   R2915A_LS_LOCAL.TXT
   R2915A_LS_CONTROL.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

✪ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

08-JUL-2014 10:25
R:\Roadway\Proj\r_2915a_ls_1-C.dgn
$$$$USERNAME$$$$

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
34518.1.1	1-D
Location and Surveys	

SURVEY CONTROL SHEET R-2915A

GPS Calibration Report

Project: r2915abcde

TIN Number	LSFCdata		
User name	rbrayaux	Date & time	8/23/2013 8:41:30 AM
Coordinate System	US State Plane 1983	Zone	North Carolina 3200
Horizontal Datum	NAD83 (CORS)		
Vertical Datum		Geoid Model	GEOID12A
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

LOCAL SITE INFORMATION
Localized about
Latitude: N/A
Longitude: N/A
Site Scale Factor: N/A
Height: N/A

The North Carolina Department of Transportation uses a Localized Coordinate System which is very similar to North Carolina Zone 3200 from which it is derived.
Please take care in utilizing these coordinates to eliminate confusion of the two systems.
This file is derived from use of Real Time Kinematic (RTK) GPS data and localization layout.

Datum Transformation Parameters

Datum Transformation computation not requested

Lambert Default Projection (Transverse Mercator) Definition

Undesired default projection not requested

Horizontal Adjustment Parameters

Northing coordinate of rotation center	954,593.112 ft
Easting coordinate of rotation center	1,254,718.979 ft
Rotation about the center point	0°00'00"
Translation north	-2.038 ft
Translation east	-7.836 ft
Scale factor	1.00000000

Vertical Adjustment Parameters

Northing coordinate of origin point	954,593.649 ft
Easting coordinate of origin point	1,254,711.700 ft
Vertical separation at origin	-2.177 ft
Slope north	0.00 ppm
Slope east	0.00 ppm

Geoid Model Definition

GEOID12A

Residual Differences Between GPS (WGS84) And Local Coordinates

Summary

	Minimum error	Root Mean Square error	Peak
Horizontal	0.01 ft	0.02 ft	R2915-7 WGS84
Vertical	0.03 ft	0.05 ft	R2915-7 WGS84
Three dimensional	0.03 ft	0.06 ft	R2915-7 WGS84

Point Residuals

WGS84 Coordinates		Calculated point NAD83(NSRS2011) (2010)		Local Coordinates	
Point	R2915-1 WGS84	Northing	955,017.6736ft	Point	R2915-1 Local
Latitude	34°53'30.16412"N	Easting	1,254,622.7408ft	Northing	955,017.6736ft
Longitude	80°51'19.58017"W	Elevation	3,097.5210ft	Easting	1,254,622.7408ft
Height	3,097.5210ft	Horizontal error	0.01ft	Elevation	3,097.5210ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-2 WGS84	Northing	955,017.5306ft	Point	R2915-2 Local
Latitude	34°53'18.67418"N	Easting	1,254,622.7408ft	Northing	955,017.5306ft
Longitude	80°51'19.58017"W	Elevation	3,097.6778ft	Easting	1,254,622.7408ft
Height	3,097.3968ft	Horizontal error	0.01ft	Elevation	3,097.6778ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-3 WGS84	Northing	955,017.5306ft	Point	R2915-3 Local
Latitude	34°53'18.67418"N	Easting	1,254,622.7408ft	Northing	955,017.5306ft
Longitude	80°51'19.58017"W	Elevation	3,097.6778ft	Easting	1,254,622.7408ft
Height	3,097.3968ft	Horizontal error	0.01ft	Elevation	3,097.6778ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-4 WGS84	Northing	955,017.5306ft	Point	R2915-4 Local
Latitude	34°53'18.67418"N	Easting	1,254,622.7408ft	Northing	955,017.5306ft
Longitude	80°51'19.58017"W	Elevation	3,097.6778ft	Easting	1,254,622.7408ft
Height	3,097.3968ft	Horizontal error	0.01ft	Elevation	3,097.6778ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-5 WGS84	Northing	955,017.5306ft	Point	R2915-5 Local
Latitude	34°53'18.67418"N	Easting	1,254,622.7408ft	Northing	955,017.5306ft
Longitude	80°51'19.58017"W	Elevation	3,097.6778ft	Easting	1,254,622.7408ft
Height	3,097.3968ft	Horizontal error	0.01ft	Elevation	3,097.6778ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-6 WGS84	Northing	955,017.5306ft	Point	R2915-6 Local
Latitude	34°53'18.67418"N	Easting	1,254,622.7408ft	Northing	955,017.5306ft
Longitude	80°51'19.58017"W	Elevation	3,097.6778ft	Easting	1,254,622.7408ft
Height	3,097.3968ft	Horizontal error	0.01ft	Elevation	3,097.6778ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-7 WGS84	Northing	954,880.7810ft	Point	R2915-7 Local
Latitude	34°53'17.89257"N	Easting	1,254,012.7338ft	Northing	954,880.7810ft
Longitude	80°51'40.66775"W	Elevation	3,097.5210ft	Easting	1,254,012.7338ft
Height	3,067.4388ft	Horizontal error	0.01ft	Elevation	3,097.5210ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-8 WGS84	Northing	955,017.5416ft	Point	R2915-8 Local
Latitude	34°53'18.67418"N	Easting	1,254,622.7408ft	Northing	955,017.5416ft
Longitude	80°51'19.58017"W	Elevation	3,097.5210ft	Easting	1,254,622.7408ft
Height	3,067.4388ft	Horizontal error	0.01ft	Elevation	3,097.5210ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-9 WGS84	Northing	955,017.5306ft	Point	R2915-9 Local
Latitude	34°53'18.67418"N	Easting	1,254,622.7408ft	Northing	955,017.5306ft
Longitude	80°51'19.58017"W	Elevation	3,097.6778ft	Easting	1,254,622.7408ft
Height	3,097.3968ft	Horizontal error	0.01ft	Elevation	3,097.6778ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-10 WGS84	Northing	954,880.7810ft	Point	R2915-10 Local
Latitude	34°53'17.89257"N	Easting	1,254,012.7338ft	Northing	954,880.7810ft
Longitude	80°51'40.66775"W	Elevation	3,097.5210ft	Easting	1,254,012.7338ft
Height	3,067.4388ft	Horizontal error	0.01ft	Elevation	3,097.5210ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-11 WGS84	Northing	954,880.7810ft	Point	R2915-11 Local
Latitude	34°53'17.89257"N	Easting	1,254,012.7338ft	Northing	954,880.7810ft
Longitude	80°51'40.66775"W	Elevation	3,097.5210ft	Easting	1,254,012.7338ft
Height	3,067.4388ft	Horizontal error	0.01ft	Elevation	3,097.5210ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-12 WGS84	Northing	955,017.5416ft	Point	R2915-12 Local
Latitude	34°53'18.67418"N	Easting	1,254,622.7408ft	Northing	955,017.5416ft
Longitude	80°51'19.58017"W	Elevation	3,097.5210ft	Easting	1,254,622.7408ft
Height	3,067.4388ft	Horizontal error	0.01ft	Elevation	3,097.5210ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-13 WGS84	Northing	954,880.7810ft	Point	R2915-13 Local
Latitude	34°53'17.89257"N	Easting	1,254,012.7338ft	Northing	954,880.7810ft
Longitude	80°51'40.66775"W	Elevation	3,097.5210ft	Easting	1,254,012.7338ft
Height	3,067.4388ft	Horizontal error	0.01ft	Elevation	3,097.5210ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality
Point	R2915-14 WGS84	Northing	955,017.5416ft	Point	R2915-14 Local
Latitude	34°53'18.67418"N	Easting	1,254,622.7408ft	Northing	955,017.5416ft
Longitude	80°51'19.58017"W	Elevation	3,097.5210ft	Easting	1,254,622.7408ft
Height	3,067.4388ft	Horizontal error	0.01ft	Elevation	3,097.5210ft
		Vertical error	0.03ft	Difficult	Horizontal Vert
		3D error	0.03ft	Quality	Survey quality

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2915-15" WITH NAD 83/CORS STATE PLANE GRID COORDINATES OF NORTHING: 954880.7810(ft) EASTING: 1254012.2870(ft) ELEVATION: 3097.5210(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991292 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2915-15" TO -L- STATION 10+00.00 IS S 08°37'17" E 41208.6602 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*
2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/*

THE FILES TO BE FOUND ARE AS FOLLOWS:
R2915A_LS_GPSCALIB.HTML
R2915A_LS_WGS84.TXT
R2915A_LS_LOCAL.TXT
R2915A_LS_CONTROL.TXT

THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

○ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

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PROJECT REFERENCE NO.	SHEET NO.
34518.1.1	1-E
Location and Surveys	

SURVEY CONTROL SHEET R–2915A

Latitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Forward Vert
		3D error	[illegible]	Quality	Survey quality

Latitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Forward Vert
		3D error	[illegible]	Quality	Survey quality

Point	R2915-12 WGS84	Northing	[illegible]	False R2915-12 Local	
Latitude	[illegible]	Easting	[illegible]	Northing	[illegible]
Longitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Forward Vert
		3D error	[illegible]	Quality	Survey quality

Point	R2915-22 WGS84	Northing	[illegible]	False R2915-22 Local	
Latitude	[illegible]	Easting	[illegible]	Northing	[illegible]
Longitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Reverse Vert
		3D error	[illegible]	Quality	Survey quality

Point	R2915-16 WGS84	Northing	[illegible]	False R2915-16 Local	
Latitude	[illegible]	Easting	[illegible]	Northing	[illegible]
Longitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Reverse Vert
		3D error	[illegible]	Quality	Survey quality

Point	R2915-24 WGS84	Northing	[illegible]	False R2915-24 Local	
Latitude	[illegible]	Easting	[illegible]	Northing	[illegible]
Longitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Reverse Vert
		3D error	[illegible]	Quality	Survey quality

Point	R2915-17 WGS84	Northing	[illegible]	False R2915-17 Local	
Latitude	[illegible]	Easting	[illegible]	Northing	[illegible]
Longitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Reverse Vert
		3D error	[illegible]	Quality	Survey quality

Point	R2915-18 WGS84	Northing	[illegible]	False R2915-18 Local	
Latitude	[illegible]	Easting	[illegible]	Northing	[illegible]
Longitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Reverse Vert
		3D error	[illegible]	Quality	Survey quality

Point	R2915-19 WGS84	Northing	[illegible]	False R2915-19 Local	
Latitude	[illegible]	Easting	[illegible]	Northing	[illegible]
Longitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Reverse Vert
		3D error	[illegible]	Quality	Survey quality

Point	R2915-20 WGS84	Northing	[illegible]	False R2915-20 Local	
Latitude	[illegible]	Easting	[illegible]	Northing	[illegible]
Longitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Reverse Vert
		3D error	[illegible]	Quality	Survey quality

Point	R2915-21 WGS84	Northing	[illegible]	False R2915-21 Local	
Latitude	[illegible]	Easting	[illegible]	Northing	[illegible]
Longitude	[illegible]	Elevation	[illegible]	Easting	[illegible]
Height	[illegible]	Horz error	[illegible]	Elevation	[illegible]
		Vert error	[illegible]	Fixed	Reverse Vert
		3D error	[illegible]	Quality	Survey quality

Point	R2915-23 WGS84	Northing	[illegible]
Latitude	[illegible]	Easting	[illegible]

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2915-15"
WITH NAD 83/CORS STATE PLANE GRID COORDINATES OF
NORTHING: 954880.7810(ft) EASTING: 1254012.2870(ft)
ELEVATION: 3097.5210(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991292
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2915-15" TO -L- STATION 10+00.00 IS
S 08°37'17" E 41208.6602
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

THE FILES TO BE FOUND ARE AS FOLLOWS:
R2915A_LS_GPSCALIB.HTML
R2915A_LS_WGS84.TXT
R2915A_LS_LOCAL.TXT
R2915A_LS_CONTROL.TXT

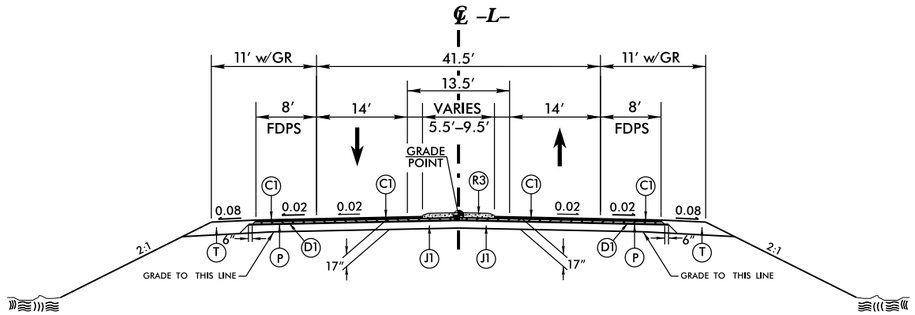
THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

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PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

08-JUL-2014 10:25
R:\Roadway\Proj\r2915a_ls_1-E.dgn
$$$$USERNAME$$$$

	PRELIMINARY PAVEMENT DESIGN
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0X, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E4	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E5	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J1	10" AGGREGATE BASE COURSE
P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
R1	2'-9" MOUNTABLE CURB & GUTTER
R2	2'-6" CURB & GUTTER
R3	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)
R4	CONCRETE EXPRESSWAY GUTTER
R5	DOUBLE FACED CONCRETE BARRIER, TYPE T
R6	DOUBLE FACED CONCRETE BARRIER, TYPE T1
R7	DOUBLE FACED CONCRETE BARRIER, TYPE T2
R8	SINGLE FACED CONCRETE BARRIER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

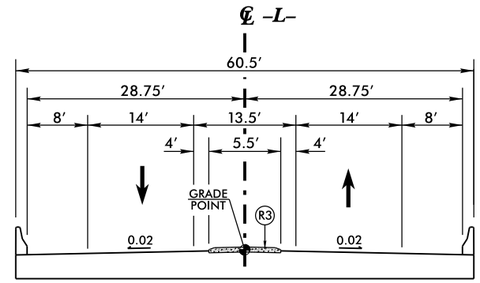
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 1

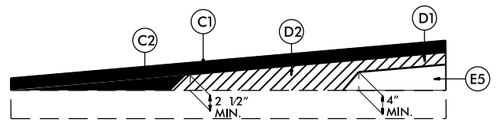
–L– STA. 10+00 TO STA. 10+19.63

–L– STA. 12+09.06 TO STA. 14+10

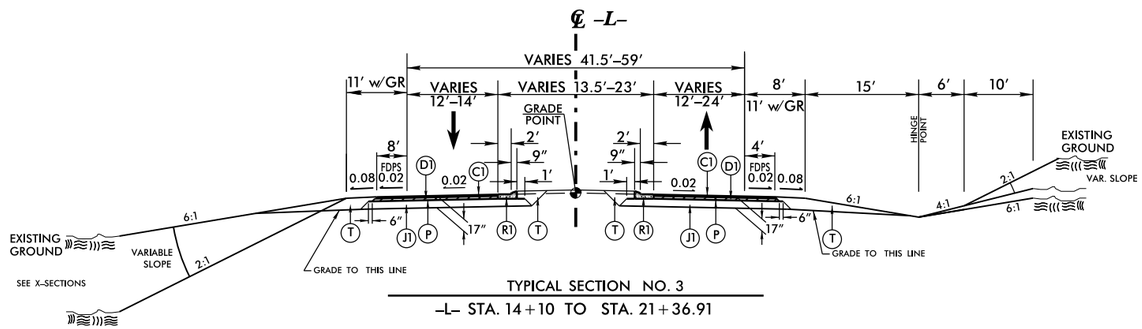


TYPICAL SECTION NO. 2

–L– STA. 10+19.63 TO STA. 12+09.06



Wedging Detail For –L–



TYPICAL SECTION NO. 3

–L– STA. 14+10 TO STA. 21+36.91

PROJECT REFERENCE NO.	SHEET NO.
R–2915A	2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Vaughn & Melton
Consulting Engineers
Asheville, North Carolina 828 253-3796
Charlotte, North Carolina 704 357-0400
Tri-Cities, Tennessee 423-467-8400
Knoxville, Tennessee 865-546-3600
Middlesboro, Kentucky 606-248-5600
Spartanburg, South Carolina 864-574-4775

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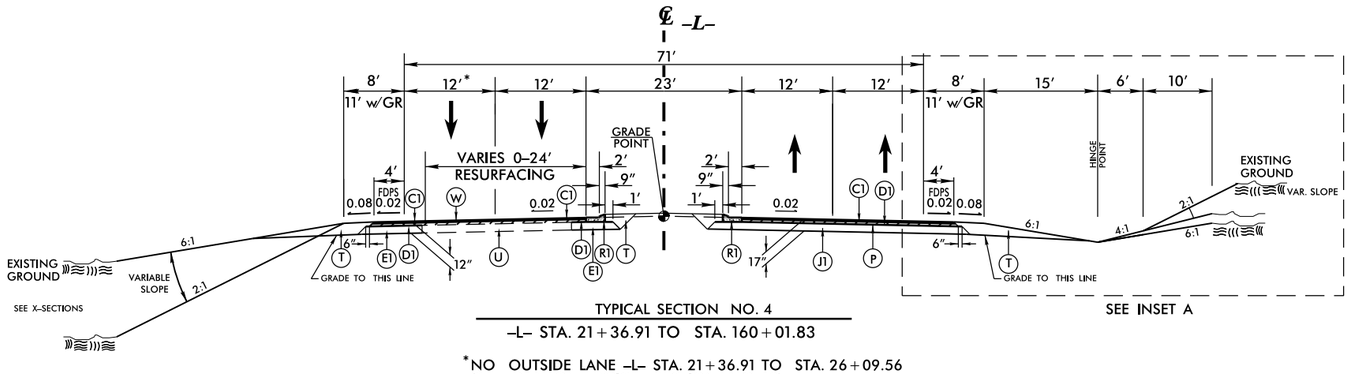
	PRELIMINARY PAVEMENT DESIGN
C1	3" S9.5B
C2	VAR. S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	5" B25.0B
E2	4" B25.0B
E3	4½" B25.0B
E4	5½" B25.0B
E5	VAR. B25.0B
J1	10" ABC
P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
R1	2'-9" MOUNTABLE CURB & GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER.
R3	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)
R4	CONCRETE EXPRESSWAY GUTTER
R5	DOUBLE FACED CONCRETE BARRIER, TYPE T
R6	DOUBLE FACED CONCRETE BARRIER, TYPE T1
R7	DOUBLE FACED CONCRETE BARRIER, TYPE T2
R8	SINGLE FACED CONCRETE BARRIER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

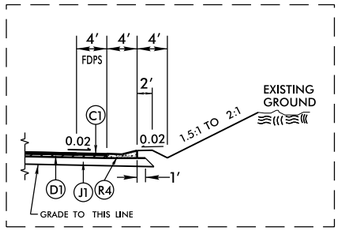
V&M Vaughn & Melton Consulting Engineers
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Charlotte, North Carolina 704-357-0468
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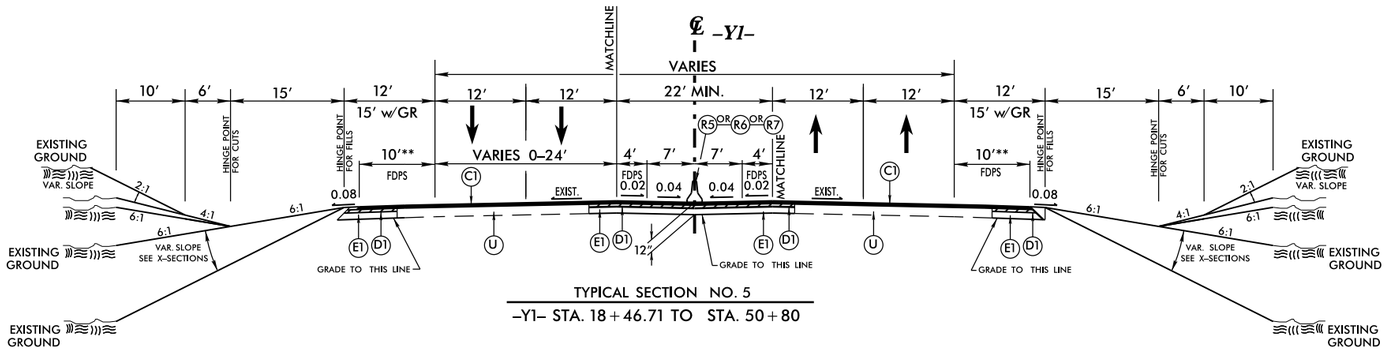
TYPICAL SECTION NO. 4
–L– STA. 21+36.91 TO STA. 160+01.83

SEE INSET A

*NO OUTSIDE LANE –L– STA. 21+36.91 TO STA. 26+09.56
(SEE –RPB– ON TYPICAL SECTION NO. 10)



INSET A
–L– STA. 26+80 TO STA. 34+50
–L– STA. 136+93.01 TO STA. 152+75.00



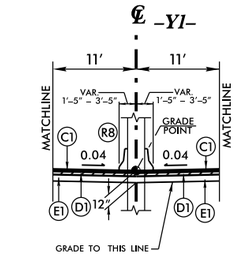
TYPICAL SECTION NO. 5
–Y1– STA. 18+46.71 TO STA. 50+80

** EXISTING PAVED SHOULDER TO BE REMOVED

NOTE: RESURFACE AND WIDEN AS NEEDED
FROM –Y1– STA. 10+90 TO STA. 18+46.71
AND –Y1– STA. 50+80 TO STA. 54+00

(R6) USE DOUBLE FACED CONCRETE BARRIER TYPE T1 FOR:
–Y1– STA. 23+50 TO –Y1– STA. 33+00
–Y1– STA. 40+25 TO –Y1– STA. 48+50

(R7) USE DOUBLE FACED CONCRETE BARRIER TYPE T2 FOR:
–Y1– STA.33+00 TO –Y1– STA. 40+25

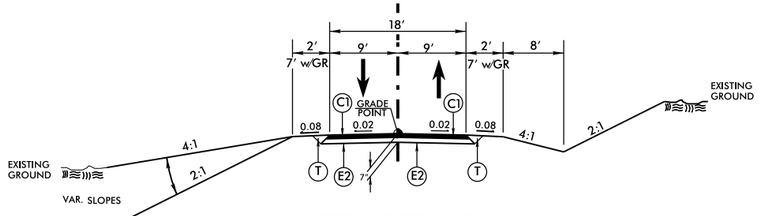


PARTIAL TYPICAL SECTION NO. 5A
CONC. BARRIER WALL DETAIL AT BRIDGE PIER

USE PARTIAL TYPICAL SECTION NO. 5A IN CONJUNCTION WITH T.S. NO.5 FOR:

–Y1– STA. 33+00 TO STA. 34+70

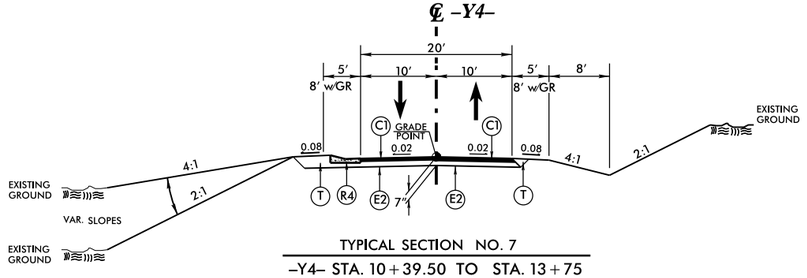
℄ *–Y2–, –Y3–, –Y6–, –Y7–, –Y8–, –SR1–, –SR2–*



TYPICAL SECTION NO. 6

–SR1–	STA. 10+52.00	TO	STA. 22+80
–SR2–	STA. 10+39.50	TO	STA. 28+57.05
–Y2–	STA. 10+39.50	TO	STA. 13+20
–Y3–	STA. 10+39.50	TO	STA. 11+85
–Y6–	STA. 10+39.50	TO	STA. 12+70
–Y7–	STA. 10+39.50	TO	STA. 15+20
–Y8–	STA. 14+96.57	TO	STA. 15+14.50

℄ *–Y4–*



TYPICAL SECTION NO. 7
–Y4– STA. 10+39.50 TO STA. 13+75

	PRELIMINARY PAVEMENT DESIGN
C1	3" S9.5B
C2	VAR. S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	5" B25.0B,
E2	4" B25.0B,
E3	4½" B25.0B,
E4	5½" B25.0B,
E5	VAR. B25.0B,
J1	10" ABC
R1	2'-9" MOUNTABLE CURB & GUTTER
R2	2'-6" CONCRETE CURB AND GUTTER.
R3	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN)
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R8	SINGLE FACED CONCRETE BARRIER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	2B
R/W SHEET NO.	

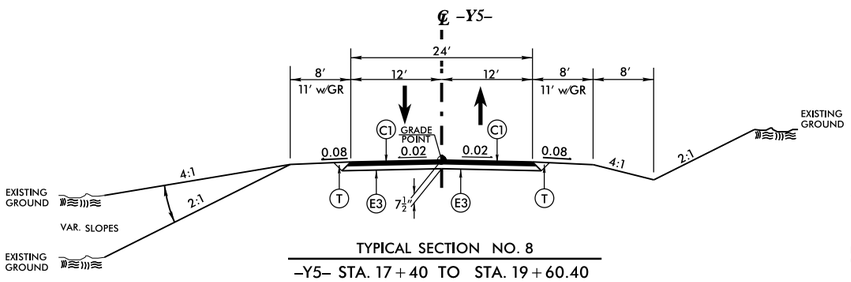
ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

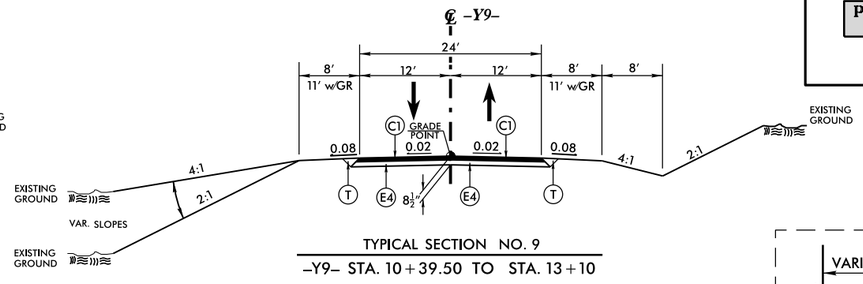
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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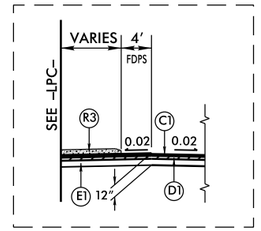
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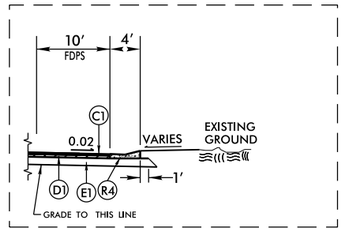
TYPICAL SECTION NO. 8
–Y5– STA. 17+40 TO STA. 19+60.40



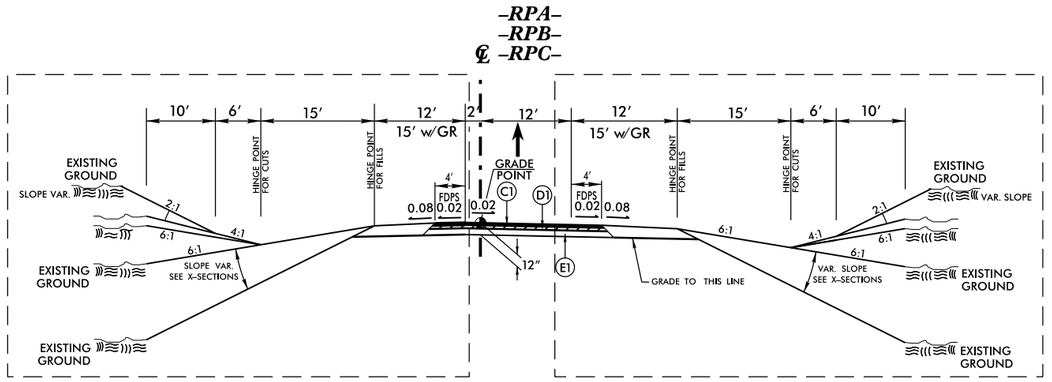
TYPICAL SECTION NO. 9
–Y9– STA. 10+39.50 TO STA. 13+10



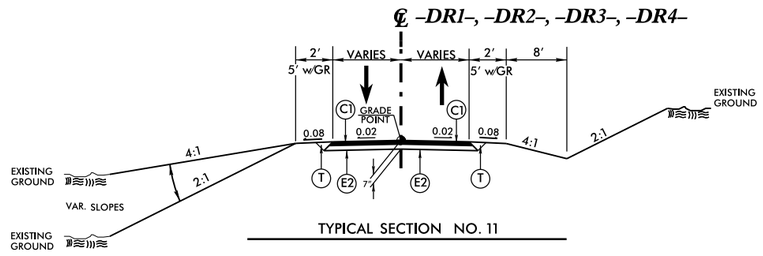
INSET B
–RPC– STA. 14+28.00 TO STA. 23+66.84



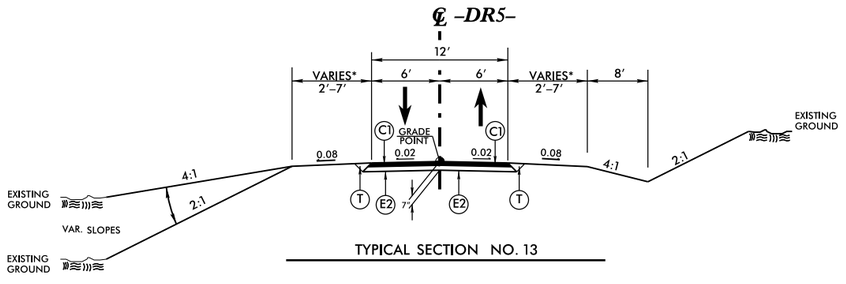
INSET C
–RPC– STA. 6+75 TO STA. 8+50



TYPICAL SECTION NO. 10
–RPA– STA. 5+00.00 TO STA. 18+00.65
–RPB– STA. 5+00.00 TO STA. 19+60.25
–RPC– STA. 5+00.00 TO STA. 18+66.84



TYPICAL SECTION NO. 11

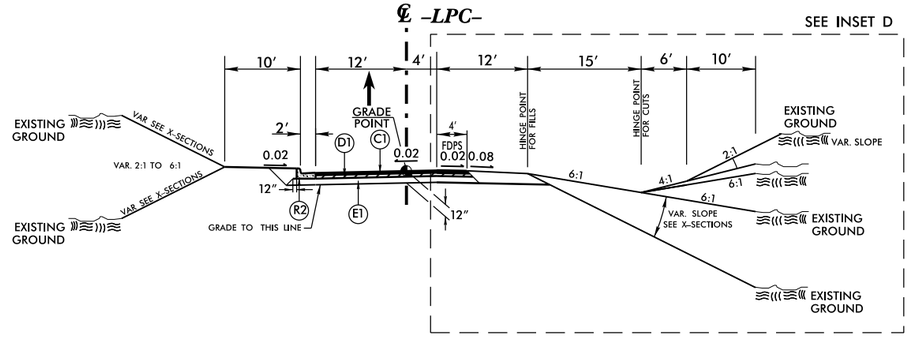


TYPICAL SECTION NO. 13

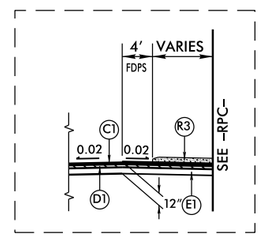
*NOTE: 2′ SHOULDER WIDTH FROM –DR5– STA. 10+05 TO STA. 10+25
AND FROM –DR5– STA. 11+50 TO 11+79.20

7′ SHOULDER WIDTH AT CREEK CROSSING FROM –DR5– STA. 10+75 TO STA. 11+00

TAPER SHOULDER WIDTH FROM –DR5– STA. 10+25 TO STA. 10+75
AND FROM –DR5– STA. 11+00 TO 11+50



TYPICAL SECTION NO. 12
–LPC– STA. 5+00 TO STA. 17+78.98



INSET D
–LPC– STA. 14+25.00 TO STA. 22+78.98

DRAINAGE DETAILS

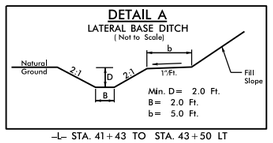
PROJECT REFERENCE NO.	SHEET NO.
R-2915A	2-C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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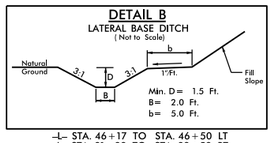
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DETAIL A
LATERAL BASE DITCH
(Not to Scale)



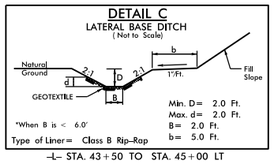
–L– STA. 41+43 TO STA. 43+50 LT

DETAIL B
LATERAL BASE DITCH
(Not to Scale)



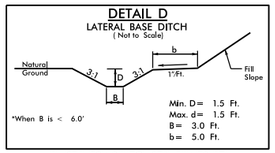
–L– STA. 46+17 TO STA. 46+50 LT
–L– STA. 91+89 TO STA. 93+58 RT
–L– STA. 154+45 TO STA. 157+50 RT
–Y9– STA. 11+35 TO STA. 13+15 RT

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



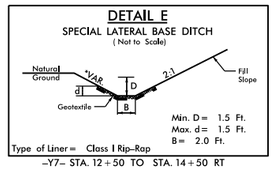
–L– STA. 43+50 TO STA. 45+00 LT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



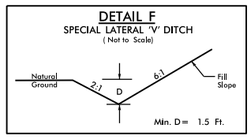
–L– STA. 52+04 TO STA. 54+50 LT

DETAIL E
SPECIAL LATERAL BASE DITCH
(Not to Scale)



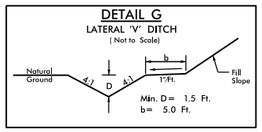
–Y7– STA. 12+50 TO STA. 14+50 RT

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



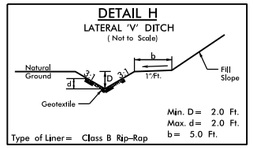
–L– STA. 44+45 TO STA. 45+26 RT
–L– STA. 47+00 TO STA. 49+71 RT

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



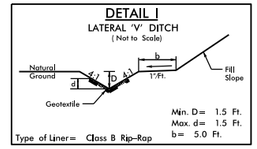
–LPC– STA. 13+50 TO STA. 15+83 RT

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



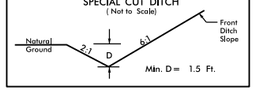
–L– STA. 105+89 TO STA. 107+09 RT

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



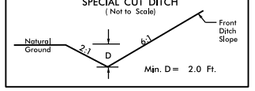
–LPC– STA. 15+83 TO STA. 16+00 RT

DETAIL J
SPECIAL CUT DITCH
(Not to Scale)



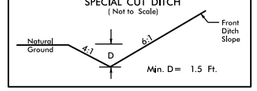
–L– STA. 45+26 TO STA. 47+00 RT
–L– STA. 57+00 TO STA. 60+83 RT
–L– STA. 64+37 TO STA. 66+25 RT
–L– STA. 78+00 TO STA. 78+48 RT
–DR4– STA. 10+60 TO STA. 12+00 LT

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



–L– STA. 88+00 TO STA. 89+00 RT
–L– STA. 89+50 TO STA. 90+00 RT
–L– STA. 115+77 TO STA. 117+62 RT

DETAIL L
SPECIAL CUT DITCH
(Not to Scale)



–L– STA. 59+62 TO STA. 62+23 LT
–L– STA. 79+08 TO STA. 80+07 RT
–L– STA. 81+32 TO STA. 83+00 LT
–L– STA. 81+50 TO STA. 82+00 RT
–L– STA. 130+00 TO STA. 131+00 RT

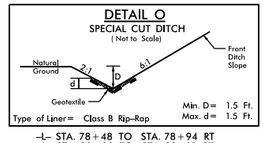
DETAIL M
LATERAL 'V' DITCH
(Not to Scale)



–L– STA. 89+50 TO STA. 94+50 LT
–L– STA. 106+05 TO STA. 106+50 LT

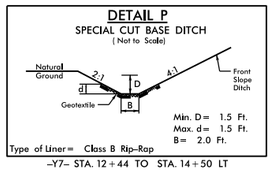
NOTE:
DITCH DETAIL N
IS NOT BEING USED

DETAIL O
SPECIAL CUT DITCH
(Not to Scale)



–L– STA. 78+48 TO STA. 78+94 RT
–L– STA. 89+00 TO STA. 89+12 RT
–L– STA. 89+18 TO STA. 89+50 RT

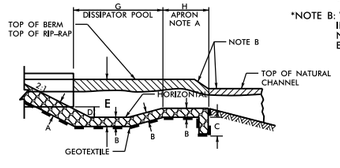
DETAIL P
SPECIAL CUT BASE DITCH
(Not to Scale)



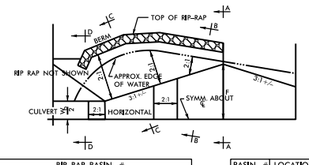
–Y7– STA. 12+44 TO STA. 14+50 LT

DETAIL Q
RIP-RAPPED ENERGY DISSIPATOR BASIN

℄ SECTION

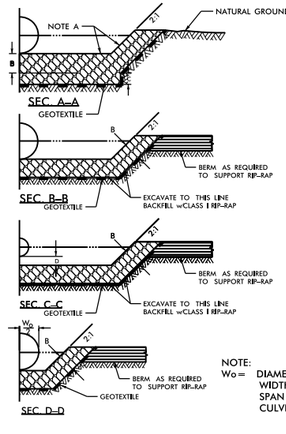


HALF PLAN



*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.



DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	3.0'							
B	2.5'							
C	2.0'							
D	2.5'							
E	8.0'							
F	12.0'							
G	18.0'							
H	9.0'							

*ALL DIMENSIONS APPROXIMATE IN FEET

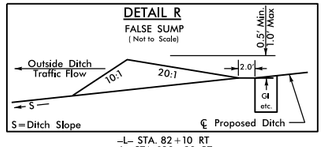
BASIN #	LOCATION (AT OUTLET)
1	449
2	
3	
4	
5	
6	
7	
8	

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

5/05

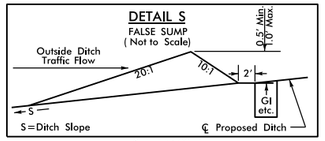
–L– STA. 13+20 TO STA. 13+54 LT

DETAIL R
FALSE SUMP
(Not to Scale)



–L– STA. 82+10 RT
–L– STA. 120+80 RT
–L– STA. 130+60 RT
–L– STA. 152+80 RT

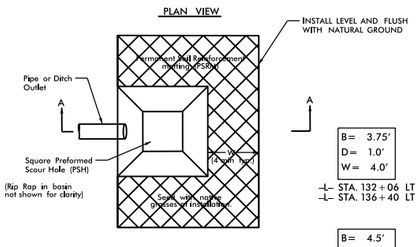
DETAIL S
FALSE SUMP
(Not to Scale)



–L– STA. 54+38 RT
–L– STA. 84+60 LT
–L– STA. 84+85 RT
–L– STA. 99+30 RT
–Y2– STA. 10+70 RT

DETAIL T
PREFORMED SCOUR HOLE
*NOT TO SCALE

PLAN VIEW



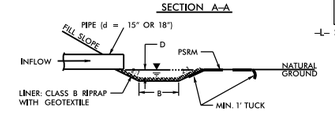
B= 3.75'
D= 1.0'
W= 4.0'

–L– STA. 132+06 LT
–L– STA. 136+40 LT

B= 4.5'
D= 1.5'
W= 4.0'

–L– STA. 109+65 LT

SECTION A–A



3/08

–L– STA. 109+65 LT
–L– STA. 132+06 LT
–L– STA. 136+40 LT

$FILE$

$DATE$

DRAINAGE DETAILS

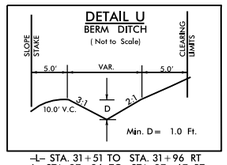
PROJECT REFERENCE NO.	SHEET NO.
R-2915A	2-D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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Spartanburg, South Carolina 864-574-4715

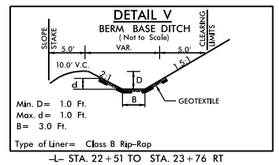
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DETAIL U
BERM DITCH
(Not to Scale)



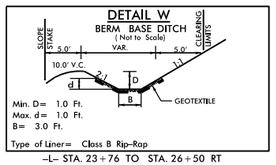
–L– STA. 31+51 TO STA. 31+96 RT
–L– STA. 37+26 TO STA. 37+67 RT

DETAIL V
BERM BASE DITCH
(Not to Scale)



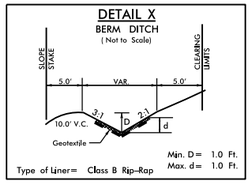
–L– STA. 22+51 TO STA. 23+76 RT
–L– STA. 32+00 TO STA. 33+98 RT
–L– STA. 54+51 TO STA. 58+97 RT
–L– STA. 141+48 TO STA. 142+49 RT

DETAIL W
BERM BASE DITCH
(Not to Scale)



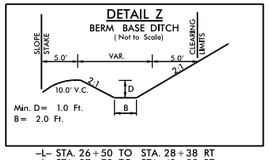
–L– STA. 23+76 TO STA. 26+50 RT

DETAIL X
BERM DITCH
(Not to Scale)



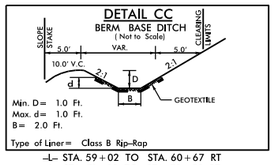
–L– STA. 84+97 TO STA. 87+85 RT

DETAIL Z
BERM BASE DITCH
(Not to Scale)



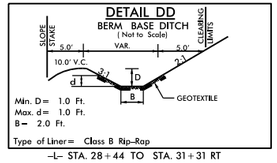
–L– STA. 26+50 TO STA. 28+38 RT
–L– STA. 37+73 TO STA. 42+95 RT
–L– STA. 54+04 TO STA. 54+48 RT
–L– STA. 71+61 TO STA. 71+98 RT
–L– STA. 129+72 TO STA. 130+17 RT
–L– STA. 132+98 TO STA. 133+50 RT
–L– STA. 137+97 TO STA. 138+88 RT

DETAIL CC
BERM BASE DITCH
(Not to Scale)



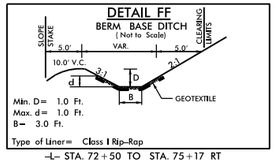
–L– STA. 59+02 TO STA. 60+67 RT
–L– STA. 71+98 TO STA. 72+50 RT
–L– STA. 103+51 TO STA. 105+89 RT
–L– STA. 108+23 TO STA. 113+33 RT
–L– STA. 130+17 TO STA. 132+98 RT
–L– STA. 133+50 TO STA. 136+28 RT
–L– STA. 138+93 TO STA. 141+48 RT
–L– STA. 142+51 TO STA. 145+00 RT
–Y4– STA. 11+00 TO STA. 13+50 LT

DETAIL DD
BERM BASE DITCH
(Not to Scale)



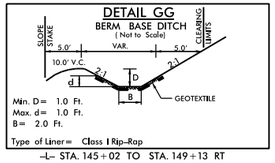
–L– STA. 28+44 TO STA. 31+31 RT

DETAIL FF
BERM BASE DITCH
(Not to Scale)



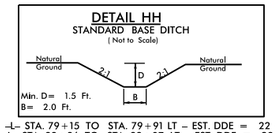
–L– STA. 72+50 TO STA. 75+17 RT

DETAIL GG
BERM BASE DITCH
(Not to Scale)



–L– STA. 145+02 TO STA. 149+13 RT
–L– STA. 151+08 TO STA. 153+73 RT

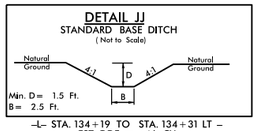
DETAIL HH
STANDARD BASE DITCH
(Not to Scale)



–L– STA. 79+15 TO STA. 79+91 LT – EST. DDE = 22 CY
–L– STA. 88+86 TO STA. 89+07 LT – EST. DDE = 29 CY
–L– STA. 92+13 TO STA. 92+17 LT – EST. DDE = 44 CY

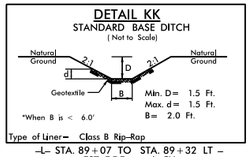
NOTE:
DITCH DETAIL II
IS NOT BEING USED

DETAIL JJ
STANDARD BASE DITCH
(Not to Scale)



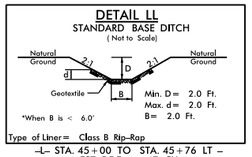
–L– STA. 134+19 TO STA. 134+31 LT –
EST. DDE = 46 CY

DETAIL KK
STANDARD BASE DITCH
(Not to Scale)



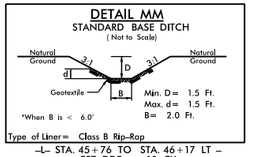
–L– STA. 89+07 TO STA. 89+32 LT –
EST. DDE = 6 CY

DETAIL LL
STANDARD BASE DITCH
(Not to Scale)



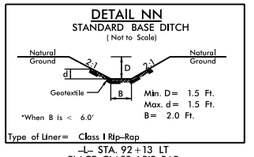
–L– STA. 45+00 TO STA. 45+76 LT –
EST. DDE = 47 CY

DETAIL MM
STANDARD BASE DITCH
(Not to Scale)



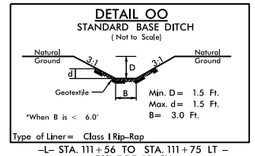
–L– STA. 45+76 TO STA. 46+17 LT –
EST. DDE = 10 CY

DETAIL NN
STANDARD BASE DITCH
(Not to Scale)



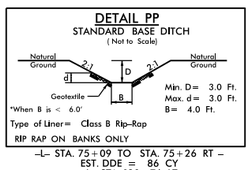
–L– STA. 92+13 LT
PLACE CLASS I RIP RAP
IN LAST 20' OF DITCH –
EST. DDE = 6 CY

DETAIL OO
STANDARD BASE DITCH
(Not to Scale)



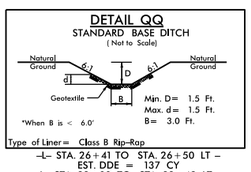
–L– STA. 111+56 TO STA. 111+75 LT –
EST. DDE 15 CY

DETAIL PP
STANDARD BASE DITCH
(Not to Scale)



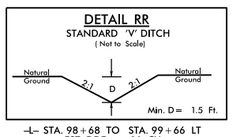
–L– STA. 75+09 TO STA. 75+26 RT –
EST. DDE = 86 CY
–L– STA. 120+76 LT
EST. DDE = 38 CY

DETAIL QQ
STANDARD BASE DITCH
(Not to Scale)



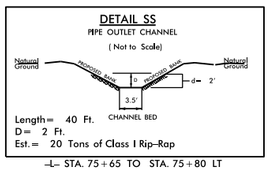
–L– STA. 26+41 TO STA. 26+50 LT –
EST. DDE = 137 CY
–L– STA. 33+00 TO STA. 33+48 LT –
EST. DDE = 176 CY

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



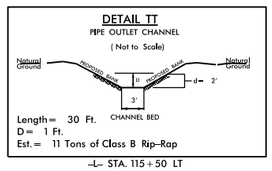
–L– STA. 98+68 TO STA. 99+66 LT
EST. DDE = 16 CY
–L– STA. 126+43 TO STA. 126+73 LT –
EST. DDE = 18 CY

DETAIL SS
PIPE OUTLET CHANNEL
(Not to Scale)



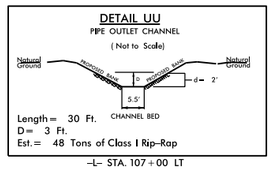
–L– STA. 75+65 TO STA. 75+80 LT

DETAIL TT
PIPE OUTLET CHANNEL
(Not to Scale)



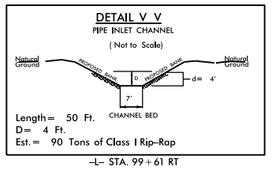
–L– STA. 115+50 LT

DETAIL UU
PIPE OUTLET CHANNEL
(Not to Scale)



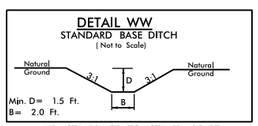
–L– STA. 107+00 LT

DETAIL V V
PIPE INLET CHANNEL
(Not to Scale)



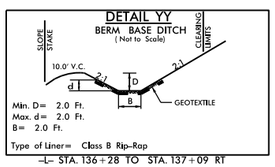
–L– STA. 99+61 RT

DETAIL WW
STANDARD BASE DITCH
(Not to Scale)



–Y9– STA. 10+72 TO STA. 11+35 RT –
EST. DDE = 42 CY

DETAIL YY
BERM BASE DITCH
(Not to Scale)



–L– STA. 136+28 TO STA. 137+09 RT

$FILE$

$DATE$

REVISIONS

12/12/13 – ROW REV: REVISED ROW BETWEEN –RPA– 9+15.69 & –RPA– 11+07.69 ON PARCEL 10; REMOVED ROW MARKER AT –L– 17+86.23, 73.50' RT ON PARCEL 21; REVISED ROW BETWEEN –RPA– 16+08.65 & –L– 19+50.97 ON PARCELS 18, 21, & 22; CORRECTED OFFSET ON TCE LABEL AT –SR2– 26+81 FROM 50' TO 38' LT ON PARCEL 13 – KNW

01/31/14 – ROW REV: UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 5, 7, & 13; ADDED DEED REFERENCES ON PARCELS 19 & 24; UPDATED PROPERTY OWNER NAME ON PARCEL 26 – KNW

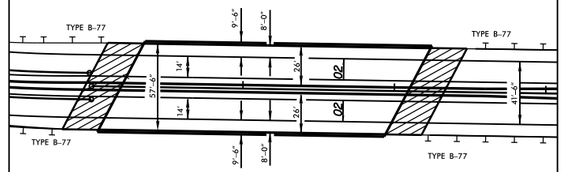
6/27/14 – ROW REV: COMBINED PARCELS 4 & 19 AND OMITTED PARCEL 19; ADDED –DR–5– AND REVISED EASEMENT ON PARCEL 7; AMENDED PROPERTY LINES ON PARCELS 10, 18, 21, & 21A; REVISED EASEMENT ON PARCEL 18 AND ADDED PARCEL 21A; UPDATED PROPERTY OWNER NAME ON PARCEL 25 – JDS

$FILE$

$DATE$

	20,110 / 33,400	
US 421 -Y1-	9750 / 16600	12,110 / 20,400 -L- US 221
	2230 / 3800	
YR 2015 / YR 2035	12,600 / 20,600	

SKETCH SHOWING RELATIONSHIP OF PAVEMENT WIDTH TO BRIDGE WIDTH



NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

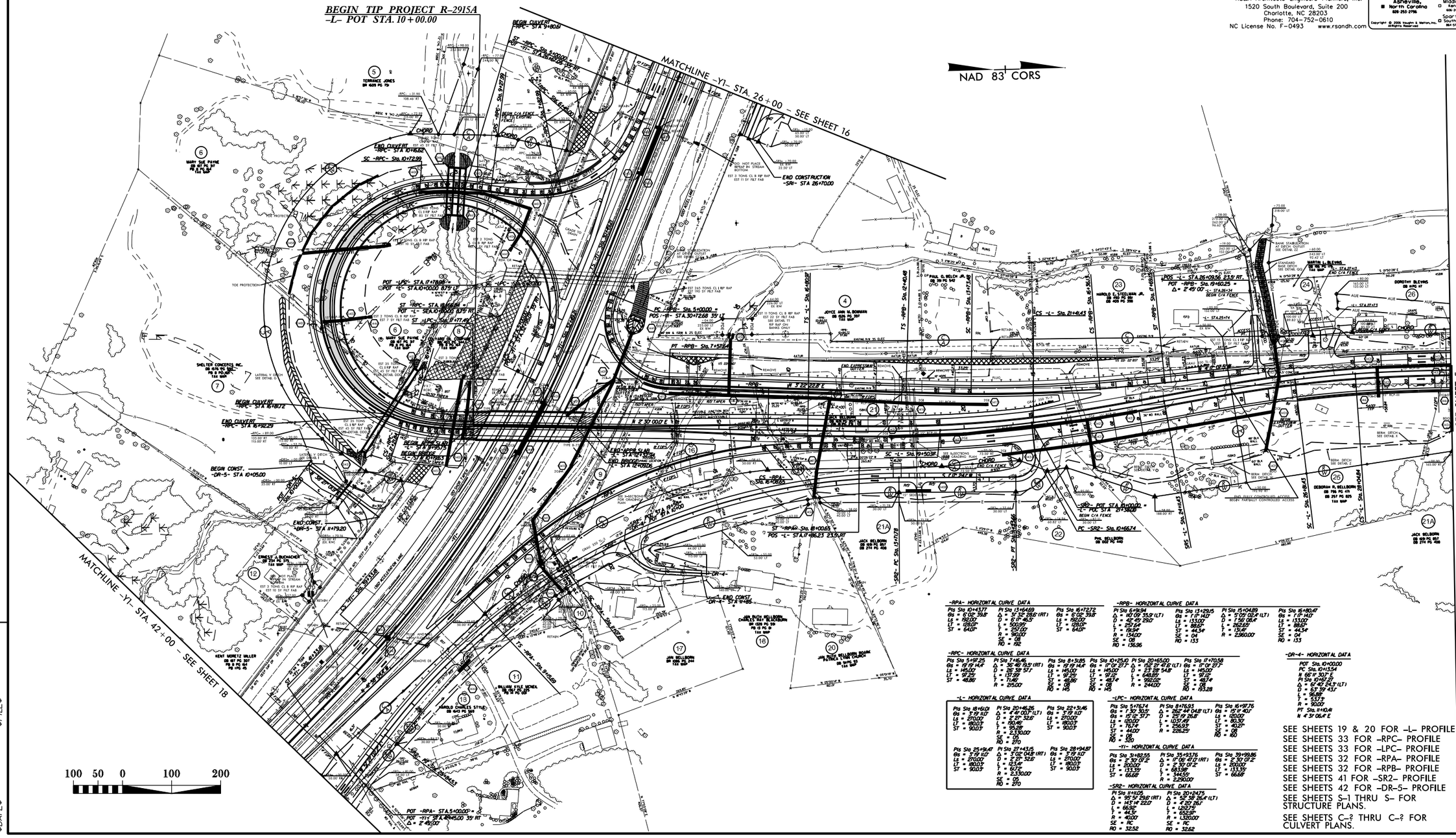
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Spartanburg, South Carolina 864-574-4775

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BEGIN TIP PROJECT R-2915A
-L- POT STA. 10+00.00
MATCHLINE -Y1- STA. 26+00 – SEE SHEET 16
NAD 83 CORS
MATCHLINE -Y1- STA. 42+00 – SEE SHEET 18
MATCHLINE -L- STA. 30+00 – SEE SHEET 5
100 50 0 100 200
BEGIN CULVERT -RPC- STA 9+80.81
END CULVERT -RPC- STA 10+16.52
SC -RPC- Sta. 10+72.95
POT -LPC- STA 17+78.88
POT -L- STA 10+00.00 875' LT
POT -L- STA 10+00.00 875' RT
ST -LPC- Sta. 11+77.40
SC -LPC- Sta. 12+00.00
PC -RPB- Sta. 5+00.00 =
POS -Y1- STA 30+72.68 35' LT
PT -RPB- Sta. 7+57.84
SC -RPB- Sta. 9+72.84
CS -RPB- Sta. 11+87.84
ST -RPB- Sta. 13+40.68
POS -L- STA 26+09.62 29' RT
Δ = 2° 45' 00"
BEGIN C/A FENCE
POS -RPC- Sta. 9+72.84
POS -RPA- Sta. 9+15.69
BEGIN C/A FENCE
POS -RPA- Sta. 11+07.69
BEGIN CONST. -DR-5- STA 10+05.00
END CONST. -DR-5- STA 11+79.20
END CONST. -DR-4- STA 12+98.85
BEGIN CULVERT -RPC- STA 15+98.75
END CULVERT -RPC- STA 15+92.29
BEGIN APRON SLAB STA 17+99.75
END APRON SLAB STA 18+08.25
BEGIN BRIDGE -L- STA 12+93.06
END BRIDGE -L- STA 12+93.06
POS -RPC- Sta. 9+72.84
SC -RPC- Sta. 6+72.84
BEGIN C/A FENCE
CHORD
END CULVERT -RPC- STA 10+16.52
SC -RPC- Sta. 10+72.95
END CONSTRUCTION -SR1- STA 26+70.00
ST -RPA- Sta. 11+40.65
POS -L- STA 17+86.23 29.9' RT
SC -RPA- Sta. 15+40.65
POS -RPA- Sta. 16+08.65
POT -RPA- STA 5+00.00 =
POT -Y1- STA 40+45.00 35' RT
Δ = 2° 45' 00"
POT -SR2- STA 10+00.00 =
POT -L- STA 27+38.00
BEGIN C/A FENCE
PC -SR2- Sta. 10+66.74
SRS -L- Sta. 24+14.43
-SR2- PT Sta. 24+34.96
-SR2- PC Sta. 31+71.78
SC -L- Sta. 19+50.97
CS -L- Sta. 21+46.43
SRS -L- Sta. 25+18.43
-L- STA.25+74
-L- STA.27+12.3
-L- STA.25+74
-L- STA.27+12.3
-L- Sta. 28+40.69
-L- Sta. 29+80.47
-L- Sta. 31+80.47
-L- Sta. 33+80.47
-L- Sta. 35+80.47
-L- Sta. 37+80.47
-L- Sta. 39+80.47
-L- Sta. 41+80.47
-L- Sta. 43+80.47
-L- Sta. 45+80.47
-L- Sta. 47+80.47
-L- Sta. 49+80.47
-L- Sta. 51+80.47
-L- Sta. 53+80.47
-L- Sta.

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

12/12/13 ROW REV: CORRECTED STATION ON ROW MONUMENT FROM -L- 31+30 TO -L- 31+00 ON PARCEL 21; REVISED ROW AND ADJUSTED DUE BETWEEN -L- 32+61.10 & -L- 35+85.10 ON PARCEL 27; ADDED TCE STATION & OFFSET AT -L- 39+57, 164' LT ON PARCEL 27. - KNW
01/31/14 ROW REV: UPDATED PROPERTY OWNER NAMES ON PARCELS 28 & 31. - KNW
06/27/14 ROW REV: CHANGED PARCEL 21 TO 21A; COMBINED PARCELS 28 & 33 TO BECOME PARCEL 33, REVISED PROPERTY LINES, AND OMITTED PARCEL 28; UPDATED DEED REFERENCE ON PARCEL 31. - JDS

$DATE$ $FILE$

NAD 83 CORS

DOROTHY BLEVINS
DB IIPG II7

WILLIAM G. MORETZ
DB 98 PG 766

MORETZ IV, LLC
DB 1351 PG 187

JACK WELBORN
DB 1691 PG 857
DB 274 PG 408

RAYMOND R. SHOOK JR., ET. AL.
DB 629 PG 366

WILLIAM G. MORETZ
DB 100 PG 196
TAX MAP

BANK STABILIZATION AT DITCH OUTLET SEE DETAIL AAA

STANDARD BASE DITCH SEE DETAIL QQ

EST 11 TONS CL I RIP RAP
EST 22 SY FILT FAB

LATERAL BASE DITCH SEE DETAIL A

BERM DITCH SEE DETAIL DD

BERM DITCH SEE DETAIL U

BERM DITCH SEE DETAIL V

BERM DITCH SEE DETAIL Z

BERM DITCH SEE DETAIL ZA

-L- STA. 32+28 END C/A FENCE

BEGIN C/A FENCE -L- STA. 39+99

END C/A FENCE -L- STA. 39+42

PLUG & FILL W/FLOWABLE MATERIAL

END EXPRESSWAY GUTTER

AREA UNDER CONSTRUCTION

POSSIBLE SPRING LOCATION INSIDE OF SHED

200' BAY TAPER

MATCHLINE -L- STA. 30+00 - SEE SHEET 4

MATCHLINE -L- STA. 42+00 - SEE SHEET 6

ST -L- Sta. 30+74.84

TS -L- Sta. 32+61.10

SC -L- Sta. 35+85.10

-L- HORIZONTAL CURVE DATA

PI Sta 27+43.15	PIs Sta 28+94.87	PIs Sta 34+77.26	PI Sta 40+73.85	PIs Sta 46+33.70
Δ = 3°02' 04.8" (RT)	θs = 3°19' 11.0"	θs = 6° 37' 47.8"	Δ = 38° 29' 20.0" (RT)	θs = 6° 37' 47.8"
D = 2° 27' 32.6"	Ls = 270.00'	Ls = 324.00'	D = 4° 05' 33.2"	Ls = 324.00'
L = 123.41'	LT = 180.03'	LT = 216.15'	L = 940.46'	LT = 216.15'
T = 61.72'	ST = 90.03'	ST = 108.14'	T = 488.75'	ST = 108.14'
R = 2,330.00'			R = 1,400.00'	
SE = 06			S = 0.06	
RO = 216				

SEE SHEET 21 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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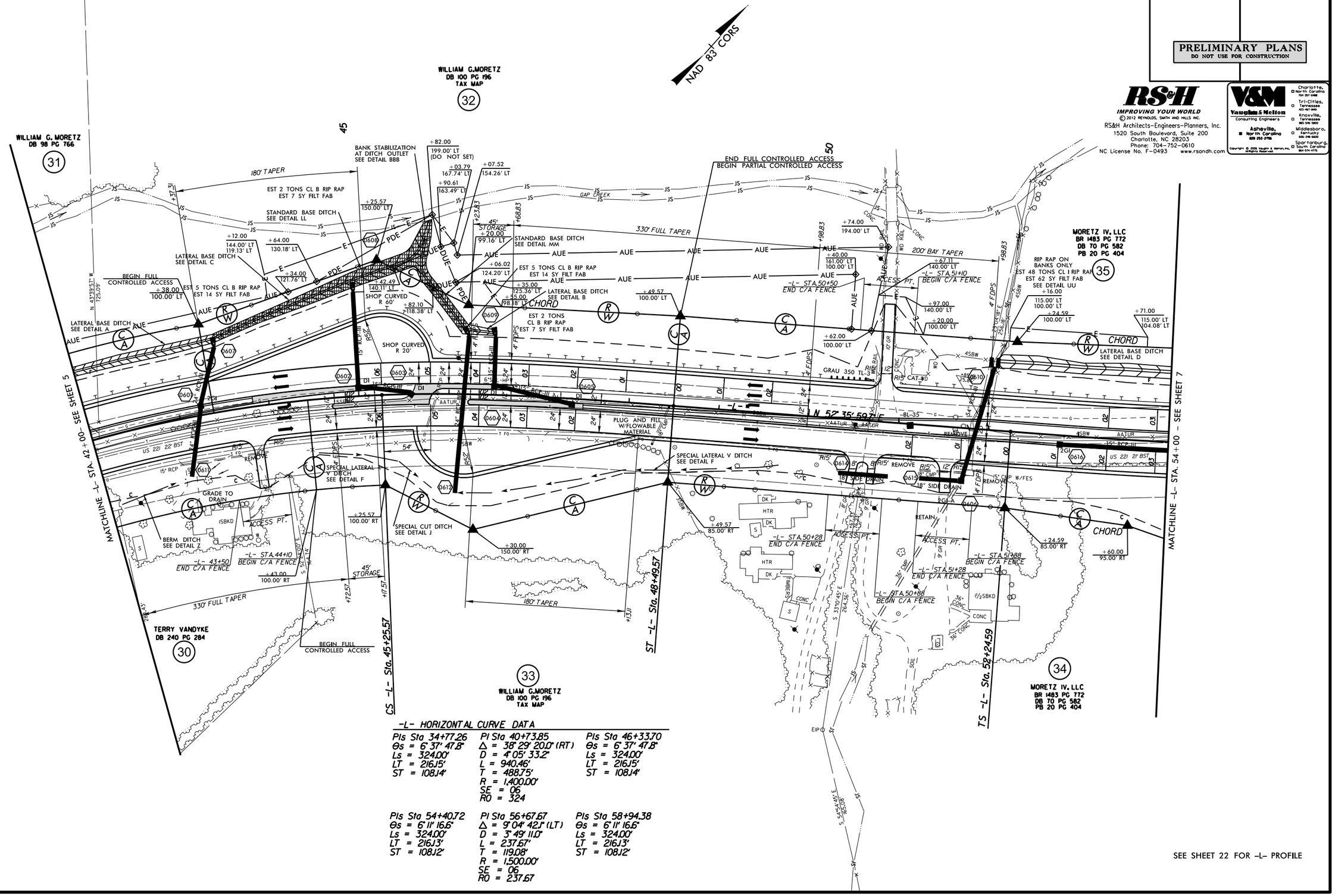
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REVISIONS

12/12/13 ROW REV: CORRECTED OFFSET ON AUE LABEL AT –L– 50+40 FROM 160' TO 161' LT ON PARCEL 32 – KNW
01/31/14 ROW REV: UPDATED PROPERTY OWNER NAME ON PARCEL 31; ADDED DEED REFERENCE ON PARCEL 30 – KNW
06/27/14 ROW REV: REVISED PROPERTY LINE BETWEEN PARCELS 30 & 33; UPDATED DEED REFERENCE ON PARCEL 31. CORRECTED C/A STATION LABELS BETWEEN –L– 51+28 AND 51+88 ON PARCEL 34. – JDS

$DATE$ $FILE$



–L– HORIZONTAL CURVE DATA

PIs Sta 34+77.26	PI Sta 40+73.85	PIs Sta 46+33.70
θs = 6° 37' 47.8"	Δ = 38° 29' 20.0" (RT)	θs = 6° 37' 47.8"
Ls = 324.00'	D = 4° 05' 33.2"	Ls = 324.00'
LT = 216.15'	L = 940.46'	LT = 216.15'
ST = 108.14'	T = 488.75'	ST = 108.14'
	R = 1,400.00'	
	SE = 06	
	RO = 324	
PIs Sta 54+40.72	PI Sta 56+67.67	PIs Sta 58+94.38
θs = 6° 11' 16.6"	Δ = 9° 04' 42.1" (LT)	θs = 6° 11' 16.6"
Ls = 324.00'	D = 3° 49' 11.0"	Ls = 324.00'
LT = 216.13'	L = 237.67'	LT = 216.13'
ST = 108.12'	T = 119.08'	ST = 108.12'
	R = 1,500.00'	
	SE = 06	
	RO = 237.67	

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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11957 / 20266	US 421 -L-	11957 / 20266
66 / 99		66 / 99
	SR 1360 -Y2-	
YR 2015 / YR 2035	130 / 200	

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REVISIONS

12/12/13 ROW REV: REMOVED ROW STATION & OFFSET NEAR -L- 55+04 RT ON PARCEL 34; ADDED ROW BETWEEN MONUMENTS AT -L- 61+10.26 LT ON PARCEL 36; CORRECTED TCE AT -L- 61+10.26, 80' LT ON PARCEL 36. - KNW

$FILE$

$DATE$

MATCHLINE -L- STA. 54+00 - SEE SHEET 6

MATCHLINE -L- STA. 67+00 - SEE SHEET 8

NAD 83 CORS

S 20°46'12" W 657.78'

N 54°40'04" W 289.86'

MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404
35

JACK WELLBORN, CARL CREEK, COY HOLLAR TRUSTEES OF GAP CREEK BAPTIST CHURCH
DB 31 PG 563
36

AURELIA S. LEONARD
DB 235 PG 302
37

RALPH WILLIAM DAVIS
DB 574 PG 28
39

MAURICE J. YATES
DB 401 PG 552 (WATAUGA R.O.D.)
DB 218 PG 196 (ASHE R.O.D.)
40

BEGIN FULL CONTROLLED ACCESS
END PARTIAL CONTROLLED ACCESS

SC -L- Sta. 55+48.59
CS -L- Sta. 57+86.26
ST -L- Sta. 61+10.26

CHORD

LATERAL BASE DITCH SEE DETAIL D

EST 3 TONS CL B RIP RAP EST 10 SY FILT FAB

EST 2 TONS CL B RIP RAP EST 7 SY FILT FAB CUT /FILL TRANSITION

EST 45 TONS CL I RIP RAP EST 80 SY FILT FAB

EST 90 TONS CL I RIP RAP EST 115 SY FILT FAB

-L- STA.60+45 END C/A FENCE

-L- STA.61+95 BEGIN C/A FENCE

-L- STA.62+10 END C/A FENCE

-L- STA.62+70 BEGIN C/A FENCE

-L- STA.63+80 END C/A FENCE

-L- STA.64+40 BEGIN C/A FENCE

-Y2- STA.10+39.50 BEGIN C/A FENCE

-Y2- STA.13+20.00 END C/A FENCE

SPECIAL CUT DITCH SEE DETAIL L

SPECIAL CUT DITCH SEE DETAIL J

SPECIAL CUT DITCH SEE DETAIL

FALSE SUMP SEE DETAIL S

FALSE SUMP SEE DETAIL X

BERM BASE DITCH SEE DETAIL Z

BERM BASE DITCH SEE DETAIL V

BERM BASE DITCH SEE DETAIL DD

BERM BASE DITCH SEE DETAIL CC

BEGIN CULVERT -L- STA 66+00.02

END CULVERT -L- STA 66+21.86

REMOVE EX. BOX CULVERT

2-9'X6' RCBC

GRADE TO DRAIN

-L- STA 61+42.43= -Y2- STA 10+00 S 58°51'15.5" E

PC -Y2- Sta. 10+39.50

PT -Y2- Sta. 10+94.26

PC -Y2- Sta. 12+75.12

PT -Y2- Sta. 13+47.13

END CONSTRUCTION -Y2- STA 13+20.00

200' BAY TAPER

330' FULL TAPER

34
MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404

38
BONITA G. STEWART
DB 686 PG 502
PB 16 PG 81

-L- HORIZONTAL CURVE DATA

PIs Sta 54+40.72	PI Sta 56+67.67	PIs Sta 58+94.38
θs = 6°11'16.6"	Δ = 9°04'42.1" (LT)	θs = 6°11'16.6"
Ls = 324.00'	D = 3°49'11.0"	Ls = 324.00'
LT = 216.13'	L = 237.67'	LT = 216.13'
ST = 108.12'	T = 119.08'	ST = 108.12'
	R = 1,500.00'	
	S = 0.06	
	SE = 06	
	RO = 324	

SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 38 FOR -Y2- PROFILE
SEE SHEETS C- THRU C- FOR STURCTURE PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

12/12/13 ROW REV: REVISED ROW AT –L– 78+67.25 BETWEEN EX. ROW & 85' LT ON PARCELS 52 & 54; CORRECTED STATION ON ROW LABEL FROM –L– 80+17 TO –L– 80+00 ON PARCEL 54; REMOVED ROW MONUMENT AT –L– 80+95, 100' RT ON PARCEL 56. – KNW

01/31/14 ROW REV: ADDED DEED REFERENCE ON PARCEL 40; UPDATED PROPERTY OWNER NAME ON PARCEL 53. – KNW

06/27/14 ROW REV: COMBINED PARCELS 42 & 46 AND OMITTED PARCEL 46; ADDED "DO NOT DISTURB" NOTE TO WELL ON PARCEL 51; REVISED C/A BREAK LIIMITS BETWEEN –L– 80+71.21 AND –L– 80+78.07 ON PARCEL 53 & 56. – JDS

$FILE$

$DATE$

MATCHLINE –L– STA. 67+00 – SEE SHEET 7

MATCHLINE –L– STA. 81+00 – SEE SHEET 9

NAD 83 CORS

CASEY JAMES CARROLL
DB 148 PG 506

WATAUGA COUNTY
ASHE COUNTY

N 23°47'50" E 122.36'

2"ϕ HDPE

CEMETERY

N 13°32'31" E 129.02'

VINYL RAIL

BM #3

N 39°51'02" E 22.78'

END FULLY CONTROLLED ACCESS
BEGIN PARTIALLY CONTROLLED ACCESS

GAP CREEK CEMETERY
TAX MAP 44

CEMETERY

-L- STA.70+60
BEGIN C/A FENCE

-L- STA.70+00
END C/A FENCE

-L- STA.72+85
END C/A FENCE

-L- STA.73+57
BEGIN C/A FENCE

GAS PRESSURE REGULATING STATION

RETAIN

ACCESS PT.

180' TAPER

45' STORAGE

330' FULL TAPER

200' BAY TAPER

GAP CREEK

PARTIALLY REMOVE 18" CMP TO TIE W/42" RCP

REMOVE & REPLACE CMP W/42" RCP

REMOVE & REPLACE CMP W/42" RCP

TS -L- Sta. 80+29.03

-L- Sta. 80+48.05 =
-Y3- Sta 10+00.00

TS -L- Sta. 80+29.03

PC -Y3- Sta. 11+01.20

PT -Y3- Sta. 11+71.92

-Y3- Sta. 11+85.00
END CONSTRUCTION

PC -Y3- Sta. 12+33.72

PT -Y3- Sta. 12+66.12

BEGIN C/A FENCE
-L- STA 80+78.07

EST 2 TONS CL B RIP RAP
EST 7 SY FILT FAB
CUT / FILL TRANSITION

RIP RAP ON BANKS ONLY
EST 20 TONS CL I RIP RAP
EST 37 SY FILT FAB
SEE DETAIL SS

RIP RAP ON BANKS ONLY
EST 26 TONS CL I RIPRAP
EST 50 SY FILT FAB
SEE DETAIL XX

STANDARD BASE DITCH
SEE DETAIL HH

SPECIAL CUT DITCH
SEE DETAIL J

SPECIAL CUT DITCH
SEE DETAIL O

STANDARD BASE DITCH
W/CLASS B RIP RAP
ON SIDES ONLY
SEE DETAIL PP

BERM BASE DITCH
SEE DETAIL Z

BERM BASE DITCH
SEE DETAIL CC

BERM BASE DITCH
SEE DETAIL FF

PLUG & ABANDON

REMOVE 18" CMP

REMOVE 12" RCP

REMOVE 18" RCP

REMOVE 42" RCP

REMOVE 48" RCP

REMOVE 24" CMP

REMOVE 30" CMP

REMOVE 36" CMP

REMOVE 42" RCP-III

REMOVE 48" RCP-III

REMOVE CONC HW

REMOVE 18" CMPR

REMOVE 24" RCP-III

REMOVE 42" RCP-III

REMOVE 48" RCP-III

REMOVE 24" CMP

REMOVE 30" CMP

REMOVE 36" CMP

REMOVE 42" RCP-III

REMOVE 48" RCP-III

N 31°08'44.5" E

US 221 22' BST

-L-

END OF PIPE NOT VISIBLE POSSIBLY ABANDONED

SEE SHEET 24 FOR –L– PROFILE
SEE SHEET 38 FOR –Y3– PROFILE

-Y3- HORIZONTAL CURVE DATA

PI Sta 11+36.73	PI Sta 12+49.93
Δ = 13° 30' 23.2" (LT)	Δ = 6° 11' 16.5" (LT)
D = 19° 05' 54.9"	D = 19° 05' 54.9"
L = 70.72'	L = 32.40'
T = 35.52'	T = 16.22'
R = 300.00'	R = 300.00'
SE = 04	
RO = 64.8	

-L- HORIZONTAL CURVE DATA

PIs Sta 81+73.03	PI Sta 88+37.13	PIs Sta 94+91.84
Θs = 1° 37' 26.9"	Δ = 11° 40' 01.4" (LT)	Θs = 1° 37' 26.9"
Ls = 216.00'	D = 1° 30' 13.8"	Ls = 216.00'
LT = 144.01'	L = 1,174.81'	LT = 144.01'
ST = 72.01'	T = 592.10'	ST = 72.01'
	R = 3,810.00'	
	SE = 04	
	RO = 216	

(40)	MAURICE J. YATES DB 401 PG 552 (WATAUGA R.O.D.) DB 218 PG 196 (ASHE R.O.D.)
(41)	JAMES LEONARD GREER DB 564 PG 346 PB 15 PG 81
(42)	CHERIE HAMPTON SMITH JOHNNY C. HAMPTON DB 1630 PG 506 (WATAUGA R.O.D.) DB 429 PG 897 (ASHE R.O.D.)
(43)	BENJAMIN A.SMITH DB 299 PG 112
(44)	
(45)	CASEY JAMES CARROLL DB Z-5 PG 445
(46)	
(47)	ROBERT PAUL SHEETS DB 211 PG 1776
(48)	TIMOTHY A. MILLER DB 327 PG 455
(49)	CAROL G. FAIRCHILD DB 312 PG 196
(50)	SAFE HAVEN SELF STORAGE DB 442 PG 584
(51)	DARRYL L. VAUGHN DB 132 PG 1067
(52)	CASEY J. CARROLL DB 198 PG 230
(53)	SOM & DEVIR DUTT DB 366 PG 135 PB 3 PG 44
(54)	DONALD LEE MILLER DB 339 PG 336
(55)	CASEY JAMES CARROLL DB 148 PG 506
(56)	
(57)	
(38)	BONITA G. STEWART DB 686 PG 502 PB 16 PG 81

WATAUGA COUNTY
ASHE COUNTY

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS
01/31/14 ROW REV: UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 57. - KNW
05/09/14 ROW REV: REVISED ROW & C/A BETWEEN -L- 92+53.80 & -L- 96+35.83 ON PARCEL 65. - ACC
06/27/14 ROW REV: ADDED DRIVEWAY, PROPOSED PDE, AND REVISED TCE ON PARCEL 55; CHANGED PROPERTY OWNER NAMES ON PARCELS 56, 65, AND 66; REVISED PDE AND ADDED 'DO NOT DISTURB' NOTE TO WELL ON PARCEL 60. - JDS

$FILE$

$DATE$

NAD 83 CORS

MATCHLINE -L- STA. 81+00 - SEE SHEET 8

MATCHLINE -L- STA. 94+00 - SEE SHEET 10

-L- HORIZONTAL CURVE DATA

PIs Sta 81+73.03	PI Sta 88+37.13	PIs Sta 94+91.84
Es = 1' 37' 26.9"	Δ = 17° 40' 01.4" (LT)	Es = 1' 37' 26.9"
Ls = 216.00'	D = 1° 30' 13.8"	Ls = 216.00'
LT = 144.01'	L = 1,174.81'	LT = 144.01'
ST = 72.01'	T = 592.10'	ST = 72.01'
	R = 3,810.00'	
	SE = 04	
	RO = 216	

SEE SHEET 25 FOR -L- PROFILE

REVISIONS

12/12/13 ROW REV: REVISED ROW AT –L– 94+19.83, 100' RT ON PARCEL 66; CORRECTED ROW AT –L– 99+25, 100' RT ON PARCEL 69; REMOVED TCE OFFSETS OF 85.73' AT –L– 99+80 LT AND 85.68' AT –L– 100+32 LT ON PARCEL 67; REVISED ROW AT –L– 100+92.15, 100' RT ON PARCEL 69 – KNW

01/31/14 ROW REV: SUBDIVIDED PARCEL 68 INTO PARCELS 68, & 68A WITH PROPERTY OWNERS AND DEED REFERENCES; SUBDIVIDED PARCEL 69 INTO PARCELS 68B, 68C, 68D, 68E, & 68F WITH PROPERTY OWNERS AND DEED REFERENCES; REMOVED TCE'S 80 & 83 ON PARCEL 69 – KNW

05/09/14 ROW REV: REVISED ROW & C/A BETWEEN –L– 94+85 & –L– 99+25 ON PARCELS 66, 68, 68A, & 68B – ACC

06/27/14 ROW REV: CHANGED PROPERTY OWNER NAMES ON PARCELS 65, 66, AND 68C – JDS

$DATE$ $FILE$

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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-L- HORIZONTAL CURVE DATA

PIs Sta 81+73.03
Θs = 1° 37' 26.9"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

PI Sta 88+37.13
Δ = 17° 40' 01.4" (LT)
D = 1° 30' 13.8"
L = 1,174.81'
T = 592.10'
R = 3,810.00'
SE = 04
RO = 1174.8

PIs Sta 94+91.84
Θs = 1° 37' 26.9"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

PIs Sta 100+20.16
Θs = 1° 35' 48.8"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

PI Sta 103+87.82
Δ = 8° 43' 36.2" (LT)
D = 1° 28' 43.0"
L = 590.20'
T = 295.67'
R = 3,875.00'
SE = 04
RO = 590.2

PIs Sta 107+54.36
Θs = 1° 35' 48.8"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

NAD 83 CORS

BREMCO 100' EA!

N 83°56'00" W 55.61'
S 02°45'17" W 51.84'
S 03°30'08" 314.64'

CS -L- Sta. 94+19.83
ST -L- Sta. 96+35.83
TS -L- Sta. 98+76.15
SC -L- Sta. 100+92.15

MATCHLINE -L- STA. 94+00 – SEE SHEET 9
MATCHLINE -L- STA. 106+00 – SEE SHEET 11

65 JAMES DALE MILLER HEIRS DB 386 PG 2125 PB 6 PG 54
66 JAMES DALE MILLER HEIRS DB 386 PG 2125 PB 6 PG 54
67 JAMES CLINE CHURCH DB 148 PG 438 DB 166 PG 2257 DB 252 PG 431
68 WILLIAMS J. EVANS DB 431PG 1786 PB 7 PG 191
68A HEATHER N. GIBSON, ET AL DB 438 PG 868 PB 7 PG 191
68B ROBERT W. WAGONER DB 431PG 465
68C PREMIER LAND LIQUIDATORS, LLC BR 438 PG 820
68D MIDLAND IRS,INC DB 431PG 2063
68E KERMIT L. MILLER DB 431PG 753
68F
YVONNE BROWN DB 1297 PG 1299 PB 7 PG 191

TREE FARM
BANKS ONLY
EST 60 TONS CL I RIP RAP
EST 75 SY FILT FAB
SEE DETAIL V V
BERM DITCH SEE DETAIL CC
CHANNEL INLET SEE DETAIL VX
FALSE SUMP SEE DETAIL S
48" BLK WALL
52" BLK WALL
16' GR
US 221 22' BST
PDE
ACCESS PT
BEGIN C/A FENCE
END C/A FENCE
END FULLY CONTROLLED ACCESS
BEGIN PARTIALLY CONTROLLED ACCESS
EST 3 TONS CL B RIP RAP
EST 10 SY FILT FAB
180' TAPER
330' FULL TAPER
200' BAY TAPER
SHOP CURVE R60'
SHOP CURVE R20'
POSSIBLE JUNCTION BOX APPROXIMATE LOCATION INVERTS INACCESSIBLE

SEE SHEET 26 FOR –L– PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

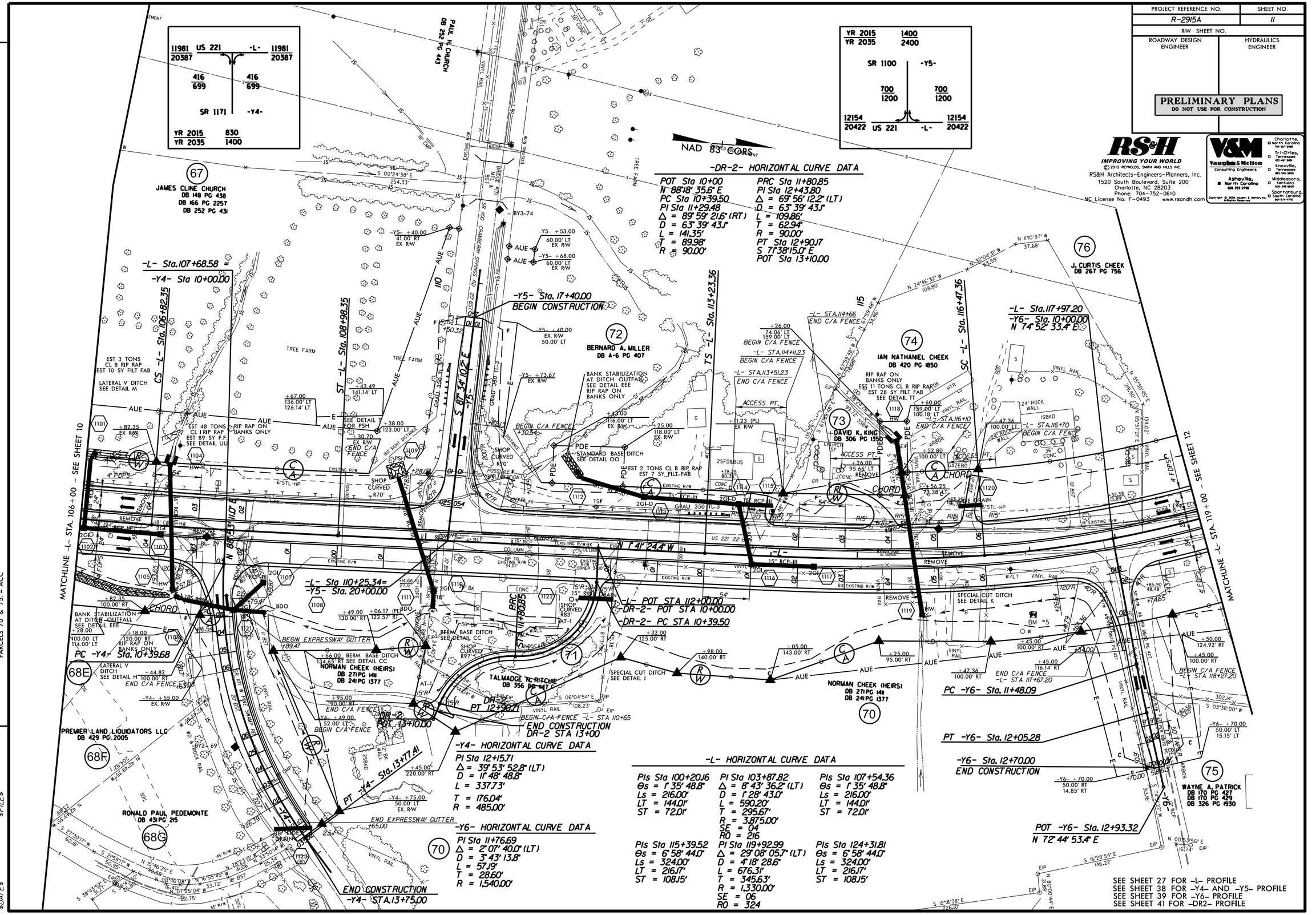
12/12/13 ROW REV: REVISED ROW AT –L– 106+82.35, 100' RT ON PARCEL 69; REVISED ROW MONUMENT AT –Y4– 13+75, EX. ROW RT ON PARCEL 69; REVISED ROW AT –Y4– 13+75 BETWEEN –L– 109+38, 123' LT ON PARCEL 67; REVISED TCE TO TIE TO ADJUSTED PDE BETWEEN –L– 109+43.19, 141.14' LT ON PARCEL 67, CORRECTED ROW STATION & OFFSET LABEL FROM –L– 109+83, 182' RT TO –L– 109+95, 190' RT ON PARCEL 70; REMOVED TCE STATION & OFFSET LABEL NEAR –L– 114+11.23 LT ON PARCEL 73; REVISED ROW AND ADJUSTED PDE BETWEEN –L– 114+11.23 & 115+56.25 LT ON PARCEL 73; REVISED ROW AND ADJUSTED PDE BETWEEN –L– 115+52.80 & –L– 116+47.36 LT ON PARCEL 74; REVISED TCE AT –Y6– 12+70 TO TIE TO EXIST EASEMENT LTRT ON PARCELS 70 & 75. – KNW

01/31/14 ROW REV: SUBDIVIDED PARCEL 69 INTO PARCELS 68E, 68F, & 68G WITH PROPERTY OWNERS AND DEED REFERENCE ON PARCEL 74. – KNW

06/27/14 ROW REV: DELETED PROPOSED ROW AND REVISED TCE ALONG –Y4– RT; REMOVED ACCESS POINT ON PARCEL 71; REVISED C/A LIMITS BETWEEN –L– 117+67.20 AND –L– 118+27.20 ON PARCELS 70 & 75. – ACC

$FILE$

$DATE$



PROJECT REFERENCE NO.	SHEET NO.
R-2915A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

12/12/13 ROW REV: ADDED ROW MONUMENT AT –L– 126+47.66, 100' RT ON PARCEL 79; CORRECTED ROW AND ADJUSTED PDE BETWEEN –L– 123+23.66, 100' RT & –L– 126+47.66, 100' RT ON PARCELS 78 & 79; CORRECTED OFFSET ON TCE LABEL AT –L– 125+95 FROM 145.08' TO 145.21' LT ON PARCEL 80. – KNW

01/31/14 ROW REV: SUBDIVIDED PARCEL 78 INTO PARCELS 78 & 78A WITH PROPERTY OWNERS AND DEED REFERENCES. – KNW

$FILE$

$DATE$

-DR3- HORIZONTAL CURVE DATA

PI Sta 11+80.57
Δ = 71° 06' 39.1" (LT)
D = 81° 51' 04.0"
L = 86.88'
T = 50.03'
R = 70.00'

PI Sta 10+40.17
Δ = 67° 36' 23.1" (RT)
D = 95° 29' 34.7"
L = 70.80'
T = 40.17'
R = 60.00'

-L- HORIZONTAL CURVE DATA

PIs Sta 115+39.52
Θs = 6° 58' 44.0"
Ls = 324.00'
LT = 216.17'
ST = 108.15'

PI Sta 119+92.99
Δ = 29° 08' 05.7" (LT)
D = 4° 18' 28.6"
L = 676.31'
T = 345.63'
R = 1,330.00'
SE = 06
RO = 324

PIs Sta 124+3
Θs = 6° 58' 4
Ls = 324.00'
LT = 216.17'
ST = 108.15'

PIs Sta 128+63.83
Θs = 6° 58' 44.0"
Ls = 324.00'
LT = 216.17'
ST = 108.15'

PI Sta 132+00.82
Δ = 19° 33' 07.8" (RT)
D = 4° 18' 28.6"
L = 453.86'
T = 229.16'
R = 1,330.00'
SE = 06
RO = 324

PIs Sta 135+3
Θs = 6° 58' 4
Ls = 324.00'
LT = 216.17'
ST = 108.15'

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130

NAD 83 CORS

MATCHLINE –L– STA. 119+00 – SEE SHEET 11

MATCHLINE –L– STA. 131+00 – SEE SHEET 13

BEGIN CONSTRUCTION
PC -DR3- Sta. 10+00.00

PT -DR3- Sta. 10+70.80

PC -DR3- Sta. 11+30.53

PT -DR3- Sta. 12+17.41

CS -L- Sta. 123+23.66

SRS -L- Sta. 126+47.66

-L- Sta.125+10.00
-DR3- Sta. 16+61.71

-L- Sta.129+71.66

J. CURTIS CHEEK
DB 267 PG 188

ROCK GAP LIMITED PARTNERSHIP
DB 249 PG 2135

SETH RYAN OSBORNE
DB 412 PG 998

WAYNE A. PATRICK
DB 170 PG 427
DB 170 PG 429
DB 326 PG 1930

RONALD D. CHEEK
DB 247 PG 1297
DB 186 PG 640
DB 136 PG 1562
DB 326 PG 1933

MARTHA B. BLACKBURN
DB 262 PG 156

DONALD E. BLACKBURN
DB J4 PG 329

76 77 78 78A 79 80

SEE SHEET 28 FOR –L– PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS
12/12/13 ROW REV: CORRECTED STATION ON TCE LABEL FROM –L– 143+96 TO –L– 143+06 ON PARCEL 88. – KNW
01/31/14 ROW REV: ADDED DEED BOOK REFERENCE ON PARCEL 88. – KNW

$FILE$
$DATE$

NAD 83 CORS

-L- HORIZONTAL CURVE DATA

PIs Sta 128+63.83
Δs = 6° 58' 44.0"
Ls = 324.00'
LT = 216.17'
ST = 108.15'

PI Sta 132+00.82
Δ = 19° 33' 07.8" (RT)
D = 4° 18' 28.6"
L = 453.86'
T = 229.16'
R = 1,330.00'
SE = 06
RO = 324

PIs Sta 135+33.68
Δs = 6° 58' 44.0"
Ls = 324.00'
LT = 216.17'
ST = 108.15'

-Y7- HORIZONTAL CURVE DATA

PI Sta 10+79.52
Δ = 76° 24' 23.8" (LT)
D = 114° 35' 29.6"
L = 66.68'
T = 39.35'
R = 50.00'
SE = 06
RO = 64.2

PI Sta 12+15.23
Δ = 79° 45' 39.9" (RT)
D = 70° 44' 07.9"
L = 112.76'
T = 67.68'
R = 81.00'
SE = 06
RO = 64.2

PI Sta 13+78.99
Δ = 96° 16' 39.0" (LT)
D = 70° 44' 07.9"
L = 136.11'
T = 90.40'
R = 81.00'
SE = 06
RO = 64.2

-DRI- HORIZONTAL CURVE DATA

PI Sta 10+80.99
Δ = 7° 21' 18.9" (LT)
D = 4° 32' 50.2"
L = 161.75'
T = 80.99'
R = 1,260.00'

PROPOSED EXPRESSWAY GUTTER
-L- STA.136+93.00 RT.TO -L- STA.152+75.00

80 ROCK GAP LIMITED PARTNERSHIP DB 249 PG 2135

82 CHURCHES OF CHRIST IN CHRISTIAN DB V5 PG 80

83 ARLETTE E. JOYCE A. C… DB 221PG…

89 LARRY KEITH BLACKBURN
DB 138 PG 1218
DB 201PG 2420
DB 124 PG 356
DB 124 PG 357
DB Y5 PG 24

79 DONALD E. BLACKBURN DB J4 PG 329

81 CLAUDE W. SLUDER MARY NELL WATSON DB 156 PG 127

84 ALEXIS ALBA DB 331PG 593 DB 330 PG 1503 PB 6 PG 64

85 MATHEW D. STEVENS DB 325 PG 1355 PB 6 PG 64

86 FS HOLDING, LTD. & BAXTER NORRIS CONSTRUCTION DB 242 PG 2234 PB 6 PG 64

87 GENE E. PHILLIPS DB 164 PG 876 PB 6 PG 64

88 STEVEN MARK COX DB 345 PG 1033 DB 412 PG 2240 PB 6 PG 64

ALEX T. JERNIGAN ANN S. LETHCOE DB 364 PG 926 PB 6 PG 64

PC -DRI- Sta. 10+00.00
PT -DRI- Sta. 11+61.75
BEGIN CONSTRUCTION -DRI- STA 11+83.62
PC -Y7- Sta. 10+40.71
PT -Y7- Sta. 11+06.85
PC -Y7- Sta. 11+47.55
RT -Y7- Sta. 12+60.31
PC -Y7- Sta. 12+88.59
PT -Y7- Sta. 14+24.70
END CONSTRUCTION POT -Y7- STA 15+20.00
POT -DRI- Sta. 12+78.78 -L- STA 139+36.74
CS -L- Sta. 134+25.52
-Y7- STA 10+00.00 -L- STA 136+08.70 N 77° 24' 32.3" E
ST -L- Sta. 137+49.52
BEGIN C/A FENCE
END C/A FENCE
BEGIN C/A FENCE

SEE SHEET 29 FOR –L– PROFILE
SEE SHEET 39 FOR –Y7– PROFILE
SEE SHEET 41 FOR –DRI– PROFILE

MATCHLINE –L– STA. 131+00 – SEE SHEET 12
MATCHLINE –L– STA. 144+00 – SEE SHEET 14

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

12/12/13 ROW REV: REVISED ROW BETWEEN –L– 151+48.88 & –L– 152+35 LT ON PARCEL 93; REMOVED ROW MONUMENT AT –L– 155+30, 97.82' RT ON PARCEL 95; ADDED A PERMANENT EASEMENT MONUMENT AND ADJUSTED PDE & TCE AT –L– 155+30, 95.77' RT ON PARCEL 95.– KNW
01/31/14 ROW REV: ADDED DEED REFERENCE ON PARCEL 88; UPDATED PDE & TCE & –L– 152+35 LT ON PARCEL 93; REMOVED ROW MONUMENT AT –L– 155+30, 97.82' RT ON PARCEL 95; ADDED A PERMANENT
06/27/14 ROW REV: CHANGED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 94.– KNW
$DATE$ $FILE$ PARCEL 92.– JDS

NAD 83 CORS

PROPOSED EXPRESSWAY GUTTER
–L– STA.136+93.00 RT.TO –L– STA.152+75.00

–L– HORIZONTAL CURVE DATA

PIs Sta 147+82.70	PI Sta 150+20.11	PIs Sta 152+57.03
θs = 6°58'44.0"	Δ = 11°07'45.9" (RT)	θs = 6°58'44.0"
Ls = 324.00'	D = 4°18'28.6"	Ls = 324.00'
LT = 216.17'	L = 258.35'	LT = 216.17'
ST = 108.15'	T = 129.58'	ST = 108.15'
	R = 1,330.00'	
	SE = 06	
	RO = 324	

POC –L– Sta. 150+23.24= POT –Y8– Sta. 15+50.00
POT –Y8– Sta. 13+92.00
BEGIN CONSTRUCTION –Y8– STA.14+96.64
END FULLY CONTROLLED ACCESS
BEGIN PARTIALLY CONTROLLED ACCESS
BEGIN FULLY CONTROLLED ACCESS
END PARTIALLY CONTROLLED ACCESS
MATCHLINE –L– STA. 144+00 – SEE SHEET 13
MATCHLINE –L– STA. 156+00 – SEE SHEET 15
SC –L– Sta. 148+90.53
CS –L– Sta. 151+48.88
TS –L– Sta. 145+66.53
SRS –L– Sta. 154+72.88
EXPRESSWAY GUTTER
200' BAY TAPER
330' FULL TAPER
45' FULL
220' LANE SHIFT TAPER
BERM BASE DITCH SEE DETAIL GG
BERM BASE DITCH SEE DETAIL CC
LATERAL BASE DITCH SEE DETAIL B
FALSE SUMP SEE DETAIL R
BEGIN C/A FENCE
END C/A FENCE
UNKNOWN OWNER TAX MAP
EST 5 TONS CL B RIP RAP EST 14 SY FILT FAB
GRAU 350 TL-3
GRAU 350 TL-2 WALL
UNABLE TO LOCATE END OF WLBV
APPROXIMATE PIPE DIRECTION

89 LARRY KEITH BLACKBURN
DB 138 PG 1218
DB 201PG 2420
DB 124 PG 356
DB 124 PG 357
DB Y5 PG 24

90 JAMES T. CADE
DB 232 PG 2095

91 FS HOLDING, LTD. & BAXTER NORRIS CONSTRUCTION
DB 242 PG 2234
PB 7 PG 53
PB 6 PG 64

92 MICHAEL DAVID CAMERON
DB 446 PG 1992

RYAN ASHLEY
DB 364 PG 1024
PB 6 PG 64
PB 6 PG 232

DAVID P. ASHLEY
DB 386 PG 893
DB 364 PG 1022
PB 7 PG 53
PB 6 PG 64
PB 6 PG 232

88 STEVEN MARK COX
DB 345 PG 1033
DB 412 PG 2240
PB 6 PG 64

87 GENE E. PHILLIPS
DB 164 PG 876
PB 6 PG 64

93 UNKNOWN OWNER TAX MAP

94 JOHN YATES
DB 402 PG 1707

95 RAY T. SMITH, ET.AL
DB 0-4 PG 518

IVAN S. ELLIOT, ET.AL
DB 182 PG 1467

CATHERINE R. CLARK
DB 275 PG 170

ARLENE J. LUNDQUIST
DB 280 PG 1948

HUBERT E. HAMILTON
DB 282 PG 1176

SEE SHEET 30 FOR –L– PROFILE
SEE SHEET 39 FOR –Y8– PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS
01/31/14 ROW REV: UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 94. - KNW
06/27/14 ROW REV: OMITTED PARCEL 96 (TO BE COMBINED WITH R-2915B PARCEL 3); ADDED 24' DRIVE AT -Y9- STA. 12+62 LT. - JDS

$FILE$
$DATE$

10206 / 17376 US 221 -L- 12024 / 20188
175 / 395 1994 / 3206
SR 1003 -Y9-
YR 2015 / YR 2035 130 / 200

NAD 83 CORS

-Y8- HORIZONTAL CURVE DATA
PI Sta 11+73.32
Δ = 37° 21' 26.0" (LT)
D = 28° 38' 52.4"
L = 130.40'
T = 67.61'
R = 200.00'

-Y9- HORIZONTAL CURVE DATA
PI Sta 11+60.32
Δ = 36° 35' 02.5" (LT)
D = 11° 48' 48.8"
L = 309.68'
T = 160.32'
R = 485.00'
SE = 06
RO = 124.08

-L- HORIZONTAL CURVE DATA

Pls Sta 156+89.04	PI Sta 158+99.56	Pls Sta 161+09.99
θs = 6° 58' 44.0"	Δ = 8° 49' 46.3" (LT)	θs = 6° 58' 44.0"
Ls = 324.00'	D = 4° 18' 28.6"	Ls = 324.00'
LT = 216.17'	L = 204.96'	LT = 216.17'
ST = 108.15'	T = 102.68'	ST = 108.15'
	R = 1,330.00'	
	SE = 06	
	RO = 204.95	

END PROJECT R-2915A -L- STA. 160+01.83
BEGIN PROJECT R-2915B -L- STA. 158+31.70

SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 39 FOR -Y9- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

01/31/14 ROW REV: UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 94. – KNW
06/27/14 ROW REV: REVISED PROPERTY LINES AND ADDED PARCEL 1A WITH PROPERTY OWNER AND DEED REFERENCE; ADDED PARCEL 19. – JDS

$FILE$

$DATE$

MATCHLINE –Y1– STA. 12+00 – SEE INSET, SHEET 17

MATCHLINE –Y1– STA. 26+00 – SEE SHEET 4

-SRI- HORIZONTAL CURVE DATA
PI Sta 11+77.41
Δ = 90° 00' 00.0" (RT)
D = 71° 37' 11.0"
L = 125.66'
T = 80.00'
R = 80.00'

NAD 83+CORS

BRADLEY HARRIS
DB 1689 PG 34
PB 23 PG 433

1
BR 1004 PG 848
DB 632 PG 861
DB 592 PG 200
PB 18 PG 41
PB 23 PG 433
HIGH COUNTRY COMMERCIAL PROPERTY ,LLC

ISBLKBUS
VENTURE PROPERTIES VII, LLC
DB 1737 PG 688
PB 23 PG 433

1A

2
MAURICE J. YATES
DB 260 PG 106
TAX MAP

3
DEEP GAP ASSOC LLC
BR 928 PG 844
DB 406 PG 418
DB 559 PG 675
TAX MAP

4
JOYCE ANN M. BOWMAN
DB 1526 PG 397

MASONIC LODGE
PB 8 PG 164
TAX MAP

19
JOHNNY H. ANDERSON
DB 540 PG 178
PB 8 PG 164
TAX MAP

SEE SHEET 40 FOR -SR1- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

06/27/14 – ROW REV: REVISED PROPERTY LINES AND ADDED PARCEL 1A WITH PROPERTY OWNER AND DEED REFERENCE. – KNW

$FILE$

$DATE$

NAD 83 CORS

VENTURE PROPERTIES VII, LLC
DB 1737 PG 688
PB 23 PG 433

1

1A

N 88°25'49" W 200.65'
N 88°25'49" W 116.96'
S 05°53'05" W 80.33'
N 05°53'05" E 80.69'
N 88°18'52" W 116.80'
S 88°18'52" E 71.31'
N 54°07'35" W 202.21'
N 84°37'04" W 19.41'
N 01°56'13" W 56.09'
N 27°51'54" W 70.80'
N 54°07'35" W 211.97'

-SR1- HORIZONTAL CURVE DATA
PI Sta 11+77.41
Δ = 90°00'00.0" (RT)
D = 71°37'11.0"
L = 125.66'
T = 80.00'
R = 80.00'

N 66°37'30" W 60.00' EIP

BR 1004 PG 848
DB 632 PG 861
DB 592 PG 200
PB 18 PG 41
PB 23 PG 433
HIGH COUNTRY COMMERCIAL PROPERTY ,LLC

10

1

-Y1- Sta.10+00.00

DWIGHT E. CRITCHER et,al
DB 49 PG 523

N 23°38'06" E 176.25'
N 23°38'06" E 184.53'
GRASS
BST
-SR1- +49.44 EX+R/W
-SR1- +37.22 EX R/W
EIP
EXISTING R/W
PC -SR1- Sta. 10+97.41
RIPRAP LINED CHANNEL
GRADE TO DRAIN
GRASS
RETAIN
RETAIN
N 23°29'46" E
BEGIN CONSTRUCTION -Y1- Sta.10+90.00
RETAIN
CONC
POT -SRI- Sta.10+00.00 =
POT -Y1- STA.11+45.10
MATCHLINE -Y1- STA. 12+00 SHEET 16
RETAIN
48" RCP
JS
30" CMP
HICKORY FIBRE, LLC
DB 645 PG 45
DWIGHT E. CRITCHER et,al
DB 49 PG 523
15" RCP

SEE SHEET 41 FOR -Y1- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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MATCHLINE -Y1- STA. 42+00 – SEE SHEET 4

S 46°20'35" E
150.83'
JAMES BARRY GREEN
DB 925 PG 521

14

15

JAMES E. GREEN
DB 314 PG 386

POT -SR2- Sta. 28+57.05

BEGIN C/A FENCE
TIE TO EXISTING FENCE

-SR2- +17.00
50.00' LT

-SR2- +85.81
30.00' LT

-Y1- ± 42.37
EX R/W

-Y1- +99.36
109.03' LT

S 54°02'32" E
-SR2-

S 54°01'18" W
258.83'

12' ROCK WALL

ISFD

DK

GRAU 350 FL-3

RIPRAP

6' CONC WW
9' CONC HW

48" WW & ISBW

RETAIN

CONC

15" RCP

4" FDPS

15" RCP-III

2GI

(802)

(801)

APPROX. LOCATION 54" RCP

JUNCTION BOX
APPROXIMATE LOCATION
(PER PLANS)

SR 1675 DEEP GAP DR

23' BST

AATUR

-Y1- +83.00
EX R/W
139.00' RT

-Y1- STA. 44+10
END C/A FENCE

ACCESS TO R/W CORNER 73.8'

-Y1- +82.00
EX R/W
130.00' RT

-Y1- STA. 44+70
BEGIN C/A FENCE

VAR. WIDTH EXISTING R/W

N 52°04'38" E
570.44'

-Y1- 44+65.22
160.11'

RUINS

THE ROCK GAP LIMITED PARTNERSHIP
DB 569 PG 56
TAX MAP

PC -Y1- Sta. 47+19.28

12" CMP

RETAIN

STERLING C. CARROLL ET.AL.
DB 416 PG 18
TAX MAP

S 03°47'29" E
126.65'

S 02°35'39" E
142.06'

S 11°47'34" E
130.89'

S 49°00'47" W
404.25'

-Y1- Sta. 54+00.00
END CONSTRUCTION

PT -Y1- Sta. 53+88.93

EXISTING R/W

TOE PROTECTION

TIE TO EXISTING

S 51°03'29" E

ATTENUATOR

-BY- 65

320' LANE SHIFT TAPER

END DOUBLE FACED CONC. BARRIER
-Y1- STA. 50+80

360' ACCELERATION LANE

300' ACCEL. LANE

US 421 NBL 24' BST

3' BST

US 421 GBL 26' BST

12' BST

15' BST

18' BST

10'STL-HP

MTL

T FO

R30'

R15'

CAT-I

S 45°23'04" E
-Y1-

PAUL E. MILLER JR. /TRUSTEE
BR 1108 PG 438
PB 8 PG 164
PB 1PG 45

D. GRADY MORETZ JR
DB 445 PG 287
TAX MAP

ISF BUS (ABAND)

CONC

36" CONC

JOHN O. MILLER JR.
BR 443 PG 481
PB 1PG 45
TAX MAP

ANNETTE M. POSTERNAK
DB 187 PG 313
DB 577 PG 887
PB 1PG 45
TAX MAP

36" CMP

INV=3048.46'

INV=3044.70'

LINDA FAIRCHILD DAY
BR 573 PG 582
BR 1327 PG 203
PB 1PG 45
TAX MAP

-Y1- HORIZONTAL CURVE DATA
PI Sta 50+54.48
Δ = 6° 40' 25.4" (LT)
D = 0° 59' 47.8"
L = 669.65'
T = 335.20'
R = 5,749.10'

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R-2915A	19

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-L-

BEGIN GRADE
-L- STA 10+00.00
EL = 3028.57

BEGIN PROJECT R-2915A
-L- STA 10+00.00

PI = 13+80.00
EL = 3,030.85'
VC = 540'
K = 154
DS = 60 MPH

(+)0.6000%

(-)2.9000%

PROPOSED GRADE

BEGIN BRIDGE
-L- STA 10+19.63
ELEV. = 3028.69'

END BRIDGE
-L- STA 12+09.06
ELEV. = 3029.5'

EXISTING GROUND

MATCHLINE -L- STA 20+00 - SEE SHEET 20

BENCHMARK BM #1
N 914470 E 1259917
ELEVATION = 2986.63
-Y1- STATION 30+41.25 72.43' LT

FOR PLAN SEE SHEET 4

3,040
3,030
3,020
3,010
3,000
2,990
2,980
2,970
2,960
2,950
2,940
2,930

10 11 12 13 14 15 16 17 18 19 20

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-L-

-L- STA 21+38.00=
-SR2- STA 10+00.00
ELEV. 3008.87

PROPOSED GRADE

PI = 28+50.00
EL = 2,988.22'
VC = 340'
K = 146
DS = 60 MPH

(-)2.9000%

EXISTING GROUND

(-)2.9000%

(-)0.5643%

MATCHLINE -L- STA. 20+00 - SEE SHEET 19

MATCHLINE -L- STA. 30+00 - SEE SHEET 21

3,010
3,000
2,990
2,980
2,970
2,960
2,950
2,940
2,930

20 21 22 23 24 25 26 27 28 29 30

BENCHMARK BM #1
N 914470 E 1259917
ELEVATION = 2986.63
-Y1- STATION 30+41.25 72.43' LT

FOR PLAN SEE SHEET 4

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R-2915A	21

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-L-

PI = 31+30.00
EL = 2,986.64'
VC = 180'
K = 508
DS = 65 MPH

PI = 35+00.00
EL = 2,983.24'
VC = 180'
K = 1290

(-)0.5643%
(-)0.9189%
(-)0.9189%
(-)0.7794%
(-)0.7794%

PROPOSED GRADE

EXISTING GROUND

MATCHLINE -L- STA. 30+00 - SEE SHEET 20

MATCHLINE -L- STA. 42+00 - SEE SHEET 22

BEGIN DITCH LEFT STA. 41+60.00
EL. 2966.30'

BENCHMARK BM #2
N 916757 E 1259909
ELEVATION = 2968.61
-L- STATION 35+92.61 248' LT

FOR PLAN SEE SHEET 5

3,010
3,000
2,990
2,980
2,970
2,960
2,950
2,940
2,930
2,920
2,910
2,900

30 31 32 33 34 35 36 37 38 39 40 41 42

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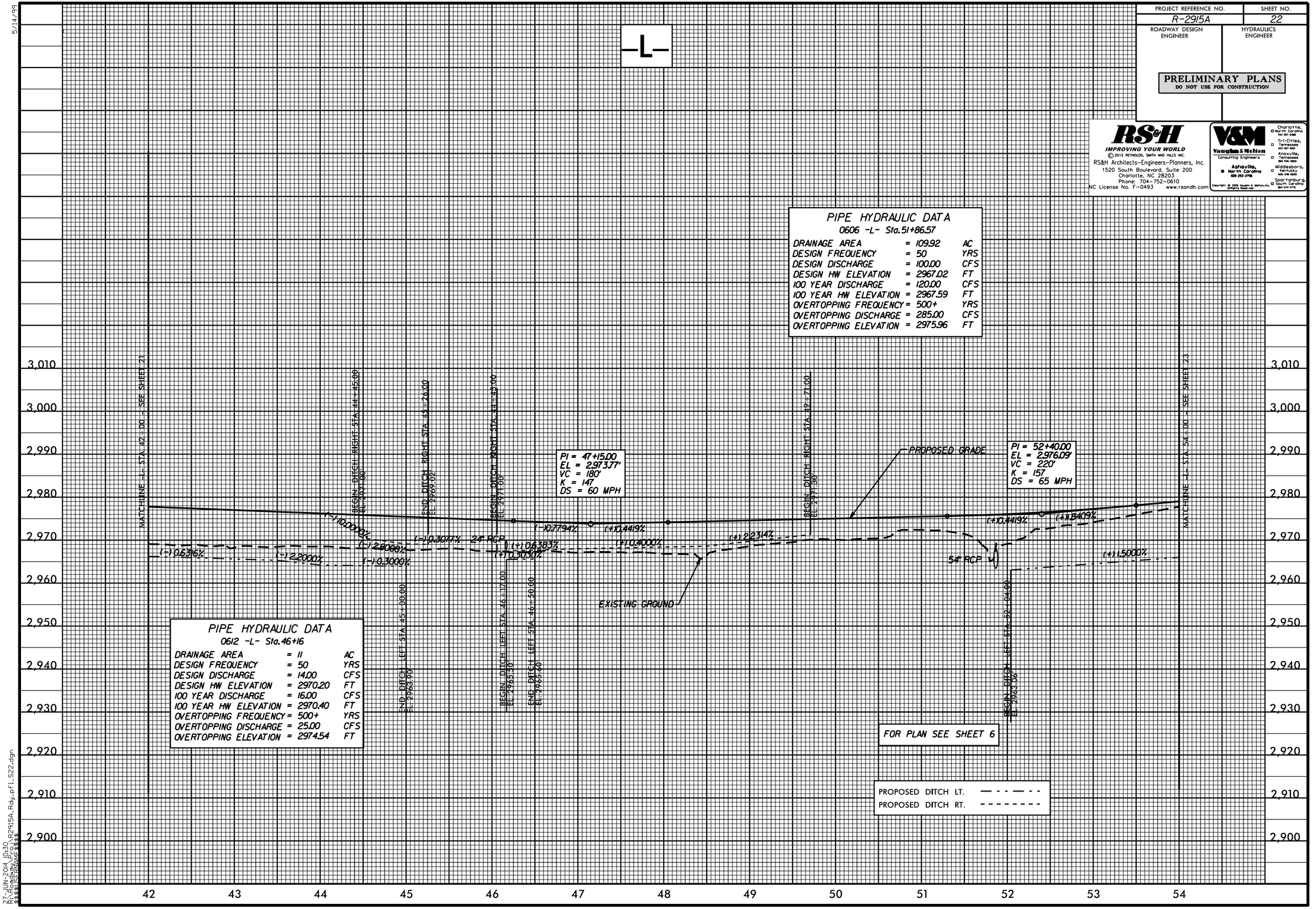
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PIPE HYDRAULIC DATA
0606 -L- Sta. 51+86.57

DRAINAGE AREA	= 109.92	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 100.00	CFS
DESIGN HW ELEVATION	= 2967.02	FT
100 YEAR DISCHARGE	= 120.00	CFS
100 YEAR HW ELEVATION	= 2967.59	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 285.00	CFS
OVERTOPPING ELEVATION	= 2975.96	FT

PIPE HYDRAULIC DATA
0612 -L- Sta. 46+16

DRAINAGE AREA	= 11	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14.00	CFS
DESIGN HW ELEVATION	= 2970.20	FT
100 YEAR DISCHARGE	= 16.00	CFS
100 YEAR HW ELEVATION	= 2970.40	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 25.00	CFS
OVERTOPPING ELEVATION	= 2974.54	FT



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-L-

BEGIN CULVERT -L- STA.66+00.02
END CULVERT -L- STA.66+21.86

CULVERT HYDRAULIC DATA
-L- Sta.66+11.00

DRAINAGE AREA	= 518.40	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 340.00	CFS
DESIGN HW ELEVATION	= 2975.7	FT
100 YEAR DISCHARGE	= 410.00	CFS
100 YEAR HW ELEVATION	= 2976.06	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 965.00	CFS
OVERTOPPING ELEVATION	= 2980.60	FT

PI = 58+75.00
EL = 2,987.78'
VC = 360'
K = 164
DS = 60 MPH

PI = 62+90.00
EL = 2,986.29'
VC = 280'
K = 218
DS = 70 MPH

PROPOSED GRADE

EXISTING GROUND

(+)1.8409%
(-)0.3590%
(+)0.5264%
(+)0.5830%
(-)0.3590%
(-)1.5407%
(-)3.8830%
(+)1.5000%

MATCHLINE -L- STA.54+00 - SEE SHEET 22

MATCHLINE -L- STA.67+00 - SEE SHEET 24

END DITCH LEFT STA. 54+50.00
EL. 2968.70

BEGIN SPECIAL CUT 'V' DITCH RT.
-L- STA.57+00.00
EL. = 2,984.00

BEGIN DITCH LEFT STA. 59+67.00
EL. 2981.55

END SPECIAL CUT 'V' DITCH RT.
-L- STA.60+83.00
EL. = 2,985.20

-L- STA.61+42.43 =
Y2= STA.10+00.00
ELEV.2986.82

END DITCH LEFT STA. 62+23.00
EL. 2987.55

BEGIN DITCH RIGHT STA. 64+37.00
EL. 2979.75

END DITCH RIGHT STA. 66+25.00
EL. 2972.45

FOR PLAN SEE SHEET 7

PROPOSED DITCH LT. — - - — - -
PROPOSED DITCH RT. - - - - - - - -

3,010
3,000
2,990
2,980
2,970
2,960
2,950
2,940
2,930
2,920

54 55 56 57 58 59 60 61 62 63 64 65 66 67

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PIPE HYDRAULIC DATA
0812 -L- Sta.79+44.50

DRAINAGE AREA	= 115	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80.00	CFS
DESIGN HW ELEVATION	= 2954.79	FT
100 YEAR DISCHARGE	= 100.00	CFS
100 YEAR HW ELEVATION	= 2955.42	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 148.00	CFS
OVERTOPPING ELEVATION	= 2960.20	FT

PI = 80+60.00
EL = 2,957.25'
VC = 180'
K = 230
DS = 75 MPH

(-)1.64072%
PROPOSED GRADE
EXISTING GROUND
(-)1.04172%
(-)2.00172%
(+)2.00476%
(+)3.00769%
(-)10.85686%
48" RCP
-L- STA.80+48.05
-Y3- STA.10+00.00
ELEV.2957.58

MATCHLINE -L- STA. 67+00 - SEE SHEET 23
BEGIN DITCH RIGHT STA. 78+00.00
EL. 2957.00
END DITCH RIGHT STA. 78+94.00
EL. 2951.40
BEGIN DITCH RIGHT STA. 79+08.00
EL. 2952.10
END DITCH RIGHT STA. 80+07.00
EL. 2956.40
MATCHLINE -L- STA. 81+00 - SEE SHEET 25

FOR PLAN SEE SHEET 8

3,010 3,000 2,990 2,980 2,970 2,960 2,950 2,940 2,930 2,920 2,910 2,900 2,890 2,880

67 68 69 70 71 72 73 74 75 76 77 78 79 80 81

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- SEE SHEET 24

PI = 80+60.00
EL = 2957.25'
VC = 180'
K = 230
DS = 75 MPH

PI = 84+00.00
EL = 2954.33'
VC = 180'
K = 762

MATCHLINE -L- STA. 81+00.00

BEGIN DITCH LEFT STA. 81+46.00
EL. 2946.80'

BEGIN DITCH RIGHT STA. 81+50.00
EL. 2954.00'

END DITCH RIGHT STA. 82+00.00
EL. 2953.85'

END DITCH LEFT STA. 83+02.00
EL. 2952.50'

(-)0.8588%
(-)0.3000%
(+)3.5185%
(+)3.5185%
(-)0.8588%
(-)0.6227%

EXISTING GROUND

BEGIN DITCH LEFT STA. 88+00.00
EL. 2950.38'

(-)1.7200%
(-)2.8800%

BEGIN DITCH RIGHT STA. 89+11.00
EL. 2946.40'

END DITCH LEFT STA. 89+50.00
EL. 2938.82'

(+)6.2500%
(+)1.4000%

36" RCP

PROPOSED GRADE

END DITCH RIGHT STA. 90+00.00
EL. 2947.10'

BEGIN DITCH RIGHT STA. 91+89.00
EL. 2944.00'

(-)1.7000%
(-)5.2703%
(+)1.2500%
(+)3.9838%
(+)8.3333%

24" RCP

END DITCH RIGHT STA. 93+58.00
EL. 2945.20'

(-)0.6227%
(+)0.7167%

MATCHLINE -L- STA. 94+00.00

- SEE SHEET 26

PIPE HYDRAULIC DATA
0913 -L- Sta.89+16.34

DRAINAGE AREA	= 8.60	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 12.00	CFS
DESIGN HW ELEVATION	= 2947.44	FT
100 YEAR DISCHARGE	= 15.00	CFS
100 YEAR HW ELEVATION	= 2947.59	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 104.00	CFS
OVERTOPPING ELEVATION	= 2952.54	FT

FOR PLAN SEE SHEET 9

3,010 3,000 2,990 2,980 2,970 2,960 2,950 2,940 2,930 2,920 2,910 2,900 2,890 2,880

81 82 83 84 85 86 87 88 89 90 91 92 93 94

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PIPE HYDRAULIC DATA
1010 -L- Sta.99+67.76

DRAINAGE AREA	= 100.50	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 150.00	CFS
DESIGN HW ELEVATION	= 2943.29	FT
100 YEAR DISCHARGE	= 180.00	CFS
100 YEAR HW ELEVATION	= 2943.86	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 250.00	CFS
OVERTOPPING ELEVATION	= 2945.40	FT

PI = 99+00.00
EL = 2,944.99'
VC = 180'
K = 893

(-)10.6227%
(+)0.7167%
(-)10.4211%
(-)10.6227%
(-)3.6000%
(-)10.3944%
(-)5.1667%

EXISTING GROUND
PROPOSED GRADE
54" RCP

MATCHLINE -L- STA. 94+00.00 - SEE SHEET 25

END DITCH LEFT STA. 94+50.00
EL. 2938.99'

BEGIN DITCH LEFT STA. 98+68.00
EL. 2941.52'

END DITCH LEFT STA. 99+66.00
EL. 2937.99'

BEGIN DITCH RIGHT STA. 105+89.00
EL. 2940.30'

MATCHLINE -L- STA. 105+00.00 - SEE SHEET 27

FOR PLAN SEE SHEET 10

PROPOSED DITCH LT. — - - — - -
PROPOSED DITCH RT. - - - - - - - -

3,010	3,000	2,990	2,980	2,970	2,960	2,950	2,940	2,930	2,920	2,910	2,900	2,890	2,880
94	95	96	97	98	99	100	101	102	103	104	105	106	

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PIPE HYDRAULIC DATA
1105 -L- Sta.107+05.24

DRAINAGE AREA	= 238.50	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 180.00	CFS
DESIGN HW ELEVATION	= 2932.74	FT
100 YEAR DISCHARGE	= 210.00	CFS
100 YEAR HW ELEVATION	= 2933.30	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 357.00	CFS
OVERTOPPING ELEVATION	= 2943.20	FT

PIPE HYDRAULIC DATA
1119 -L- Sta.115+65.37

DRAINAGE AREA	= 21.10	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 20.00	CFS
DESIGN HW ELEVATION	= 2941.53	FT
100 YEAR DISCHARGE	= 25.00	CFS
100 YEAR HW ELEVATION	= 2941.74	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 108.00	CFS
OVERTOPPING ELEVATION	= 2947.37	FT

PI = 107+05.00
EL = 2,941.60'
VC = 260'
K = 282

-L- STA.112+00.00 = -DR2- STA.10+00.00
ELEV.2944.09

EXISTING GROUND

PI = 118+10.00
EL = 2,947.15'
VC = 600'
K = 172
DS = 60 MPH

(+)0.50253%
(-)0.42117%
(-)5.16672%
(-)1.18000%
(+)0.50253%
(+)0.43482%
(+)10.00002%
(+)0.47622%
(-)2.97197%

-L- STA.107+68.58 = -Y4- STA.10+00
ELEV.2942.00

-L- STA.110+26.34 = -Y5- STA.20+00
ELEV.2943.21

-L- STA.117+97.20 = -Y6- STA.10+00
ELEV.2944.69

66" RCP
36" RCP

PROPOSED GRADE

MATCHLINE -L- STA.106+00.00 - SEE SHEET 26

BEGIN DITCH LEFT STA. 106+05.00
EL. 2927.45'

END DITCH LEFT STA. 106+50.00
EL. 2925.64'

END DITCH RIGHT STA. 107+09.00
EL. 2934.10'

BEGIN DITCH RIGHT STA. 115+77.00
EL. 2944.10'

END DITCH RIGHT STA. 117+62.00
EL. 2947.8'

MATCHLINE -L- STA.119+00.00 - SEE SHEET 28

FOR PLAN SEE SHEET 11

PROPOSED DITCH LT. — - - — - -
PROPOSED DITCH RT. - - - - - - - -

3,010
3,000
2,990
2,980
2,970
2,960
2,950
2,940
2,930
2,920
2,910
2,900
2,890
2,880

106 107 108 109 110 111 112 113 114 115 116 117 118 119

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-L-

PI = 118+10.00
EL = 2,947.15'
VC = 600'
K = 172
DS = 60 MPH

PI = 124+00.00
EL = 2,929.57'
VC = 280'
K = 146
DS = 60 MPH

PI = 128+25.00
EL = 2,925.05'
VC = 180'
K = 346
DS = 75 MPH

-L- STA 125+10.00 = -DR3- STA 16+61.71
ELEV. 2928.43

PROPOSED GRADE

EXISTING GROUND

(-)2.9797%
(-)1.0635%
(-)1.5843%
(-)10.3000%
(+)0.5600%

MATCHLINE -L- STA. 119+00 - SEE SHEET 27

MATCHLINE -L- STA. 131+00.00 - SEE SHEET 29

BEGIN DITCH RIGHT STA. 130+00.00
EL. 2916.92

END DITCH RIGHT STA. 131+00.00
EL. 2915.45

FOR PLAN SEE SHEET 12

2,990
2,980
2,970
2,960
2,950
2,940
2,930
2,920
2,910
2,900
2,890
2,880
2,870
2,860
2,850

119 120 121 122 123 124 125 126 127 128 129 130 131

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-L-

PI = 132+70.00
EL = 2,918.00'
VC = 180'
K = 140
DS = 60 MPH

-L- STA 136+08.70 =
-Y1- STA 1+00.00
ELEV. = 2916.98'

-L- STA 139+36.74 =
-DR1- STA 12+78.78
ELEV. = 2916.00'

PROPOSED GRADE

EXISTING GROUND

(-)1.58433%

r=10.3000%

r=10.3000%

MATCHLINE -L- STA 131+00.00 - SEE SHEET 28

MATCHLINE -L- STA 144+00.00 - SEE SHEET 30

FOR PLAN SEE SHEET 13

2,980 2,970 2,960 2,950 2,940 2,930 2,920 2,910 2,900 2,890 2,880 2,870 2,860 2,850

131 132 133 134 135 136 137 138 139 140 141 142 143 144

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-L-

2,980
2,970
2,960
2,950
2,940
2,930
2,920
2,910
2,900
2,890
2,880
2,870
2,860
2,850

MATCHLINE -L- STA 144+00 - SEE SHEET 29

PI = 145+60.00
EL = 2,914.13'
VC = 450'
K = 339
DS = 75 MPH

(-)1.6265%

(-)0.3000%

EXISTING GROUND

PROPOSED GRADE

PI = 149+75.00
EL = 2,907.38'
VC = 180'
K = 211
DS = 75 MPH

(-)1.6265%

(-)0.7728%

-L- STA 150+23.24 =
-Y8- STA 15+50.00
ELEV = 2907.05'

PI = 156+00.00
EL = 2,902.55'
VC = 200'
K = 149
DS = 60 MPH

(-)0.7728%

(-)0.3082%

FOR PLAN SEE SHEET 14

BEGIN DITCH - RIGHT STA. 154+45.00
EL. 2895.40'

MATCHLINE -L- STA 156+00 - SEE SHEET 31

144 145 146 147 148 149 150 151 152 153 154 155 156

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-L-

2,980
2,970
2,960
2,950
2,940
2,930
2,920
2,910
2,900
2,890
2,880
2,870
2,860
2,850

MATCHLINE -L- STA. 1+56.00 - SEE SHEET 30

PROPOSED GRADE

END PROJECT R-2915A -L- STA. 160+01.83
BEGIN PROJECT R-2915B -L- STA. 158+31.70
EL.= 2,904.85

(-)0.57242

(-)0.30822

-L- STA. 158+52.64 =
-Y9- STA. 10+00
ELEV. 2904.00

BEGIN DITCH RIGHT STA. 157+50.00
EL. 2894.46

EXISTING GROUND

FOR PLAN SEE SHEET 15

156 157 158 159 160 161 162 163 164 165

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R-2915A	32
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-RPA-

BEGIN GRADE -RPA- STA 5+00.00 EL = 3032.29

PI = 5+80.00
EL = 3,029.41'
VC = 140'
K = 456

PI = 10+00.00
EL = 3,015.58'
VC = 360'
K = 65
DS = 40 MPH

PI = 15+00.00
EL = 3,026.88'
VC = 400'
K = 85
DS = 50 MPH

(-)3.6000%
(-)3.2929%
(-)3.2929%
(+)2.2610%
(+)2.2610%
(-)2.4496%

END GRADE -RPA- STA 18+00.65 EL = 3019.52

FOR PLAN SEE SHEET 4

-RPB-

BEGIN GRADE -RPB- STA 5+00.00 EL = 2993.66

PI = 5+50.00
EL = 2,994.72'
VC = 100'
K = 240

PI = 9+50.00
EL = 3,004.88'
VC = 180'
K = 92
DS = 50 MPH

PI = 15+00.00
EL = 3,008.06'
VC = 650'
K = 204
DS = 65 MPH

(+)1.1245%
(+)2.5403%
(+)2.5403%
(+)0.5719%
(+)0.5719%
(-)2.6088%

INSET "A"
MATCHLINE -RPB- STA. 19+00
END GRADE -RPB- STA 19+60.25 EL = 2996.05'
(-)2.6088%

MATCHLINE -RPB- STA. 19+00 SEE INSET "A"

FOR PLAN SEE SHEET 4

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R-2915A	33

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-RPC-

PIPE HYDRAULIC DATA
462 -RPC- Sta.9+98.61

DRAINAGE AREA	= 1504	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 900	CFS
DESIGN HW ELEVATION	= 2987.10	FT
100 YEAR DISCHARGE	= 1100	CFS
100 YEAR HW ELEVATION	= 2987.57	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 1250	CFS
OVERTOPPING ELEVATION	= 2990.00	FT

BEGIN CULVERT -RPC- STA.16+92.29
END CULVERT -RPC- STA.16+81.72

PIPE HYDRAULIC DATA
451 -RPC- Sta.16+87.00

DRAINAGE AREA	= 2816	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 320	CFS
DESIGN HW ELEVATION	= 2995.10	FT
100 YEAR DISCHARGE	= 390	CFS
100 YEAR HW ELEVATION	= 2995.84	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 625	CFS
OVERTOPPING ELEVATION	= 3000.60	FT

PI = 17+70.00
EL = 3,027.98'
VC = 140'
K = 41
DS = 35 MPH

PI = 13+00.00
EL = 3,009.00'
VC = 120'
K = 180
DS = 60 MPH

PI = 8+30.00
EL = 2,986.88'
VC = 290'
K = 49
DS = 35 MPH

PI = 6+00.00
EL = 2,989.64'
VC = 100'
K = 96
DS = 50 MPH

BEGIN GRADE -RPC- STA 5+60.00
EL = 2989.80'

(-)0.600%
(-)1.200%
(-)1.200%
(+)4.706%
(+)4.706%
(+)14.038%
(+)14.038%
(+)10.609%
(-)2.212%
(-)0.826%
(-)16.666%
(-)11.111%

BEGIN DITCH RIGHT STA. 113+94.00
EL. 2996.0'

END DITCH RIGHT STA. 16+80.00
EL. 2990.0'

END GRADE -RPC- STA 18+66.84
EL = 3028.57'

18" RCP
18" RCP IV

FOR PLAN SEE SHEET 4

-LPC-

PIPE HYDRAULIC DATA
0458 -LPC- Sta.12+38.88

DRAINAGE AREA	= 0.64	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 3.20	CFS
DESIGN HW ELEVATION	= 2993.34	FT
100 YEAR DISCHARGE	= 3.80	CFS
100 YEAR HW ELEVATION	= 2993.44	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 14.00	CFS
OVERTOPPING ELEVATION	= 3011.50	FT

PIPE HYDRAULIC DATA
0457 -LPC- Sta.17+39.98

DRAINAGE AREA	= 1.58	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 3.20	CFS
DESIGN HW ELEVATION	= 2999.99	FT
100 YEAR DISCHARGE	= 3.80	CFS
100 YEAR HW ELEVATION	= 3000.06	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 39.00	CFS
OVERTOPPING ELEVATION	= 3028.61	FT

PI = 5+65.00
EL = 2,997.45'
VC = 90'
K = 182
DS = 60 MPH

PI = 8+50.00
EL = 2,987.05'
VC = 320'
K = 38
DS = 30 MPH

PI = 17+25.00
EL = 3,028.07'
VC = 100'
K = 25
DS = 30 MPH

BEGIN GRADE -LPC- STA 5+00.00
EL = 2999.50'

END GRADE -LPC- STA 17+78.98
EL = 3028.40'

(-)3.538%
(-)3.649%
(-)3.649%
(+)4.688%
(+)4.688%
(+)10.511%

18" RCP
18" RCP IV

FOR PLAN SEE SHEET 4

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-Y1-

3,140
3,130
3,120
3,110
3,100
3,090
3,080
3,070
3,060
3,050
3,040
3,030
3,020
3,010
3,000
2,990
2,980
2,970
2,960
2,950

EXISTING GROUND

MATCHLINE -Y1- STA 23+00 - SEE SHEET 35

10 11 12 13 14 15 16 17 18 19 20 21 22 23

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-Y1-

MATCHLINE -Y1- STA 23+00 - SEE SHEET 34

MATCHLINE -Y1- STA 35+00 - SEE SHEET 36

EXISTING GROUND

3,140 3,130 3,120 3,110 3,100 3,090 3,080 3,070 3,060 3,050 3,040 3,030 3,020 3,010 3,000 2,990 2,980 2,970 2,960 2,950

23 24 25 26 27 28 29 30 31 32 33 34 35

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-Y1-

MATCHLINE -Y1- STA 35+00 - SEE SHEET 35

MATCHLINE -Y1- STA 47+00 - SEE SHEET 37

EXISTING GROUND

3,140
3,130
3,120
3,110
3,100
3,090
3,080
3,070
3,060
3,050
3,040
3,030
3,020
3,010
3,000
2,990
2,980
2,970
2,960
2,950

35 36 37 38 39 40 41 42 43 44 45 46 47

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-Y1-

3,140
3,130
3,120
3,110
3,100
3,090
3,080
3,070
3,060
3,050
3,040
3,030
3,020
3,010
3,000
2,990
2,980
2,970
2,960
2,950

EXISTING GROUND

MATCHLINE -Y1- STA. 35+00 - SEE SHEET 36

47 48 49 50 51 52 53 54 55 56 57 58

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-Y2-

PROPOSED GRADE

PI = 12+90.00
EL = 3,011.92'
VC = 60'
K = 8.6

PI = 11+50.00
EL = 2,991.00'
VC = 190'
K = 17
DS = 20 MPH

(+)18.0000%

(+)14.9576%

(+)14.9576%

(+)14.0000%

EXISTING GROUND

END CONSTRUCTION
-Y2- STA.13+20
EL= 3,014.32

BEGIN GRADE
-Y2- STA.10+36.50
EL= 2,986.61

FOR PLAN SEE SHEET 7

-Y3-

PI = 11+70.00
EL = 2,967.05'
VC = 30'
K = 12.5

PROPOSED GRADE

PI = 11+00.00
EL = 2,960.14'
VC = 100'
K = 17
DS = 20 MPH

PI = 10+39.50
EL = 2,957.72'

EXISTING GROUND

(+)7.4832%

(+)9.8800%

(+)4.0000%

(+)0.3522%

END GRADE
-Y3- STA.11+85
EL= 2,968.18

BEGIN GRADE
-Y3- STA.10+35.50
EL= 2,957.30

FOR PLAN SEE SHEET 8

-Y4-

BEGIN GRADE
-Y4- STA.10+35.50
EL= 2,942.60

END GRADE
-Y4- STA.13+75
EL= 2,952.31

PI = 10+39.50
EL = 2,942.69'

PROPOSED GRADE

EXISTING GROUND

(+)2.8668%

(+)2.4030%

FOR PLAN SEE SHEET 11

-Y5-

PI = 19+60.40
EL = 2,941.94'

PI = 18+30.00
EL = 2,934.83'
VC = 180'
K = 69
DS = 40 MPH

PROPOSED GRADE

(+)1.9444%

(+)5.4521%

(+)5.4521%

(+)2.8249%

END GRADE
-Y5- STA.19+64.41
EL= 2,942.02

EXISTING GROUND

BEGIN GRADE
-Y5- STA.17+40
EL= 2,932.29

FOR PLAN SEE SHEET 11

27-JUN-2014 10:30
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PROJECT REFERENCE NO.	SHEET NO.
R-2915A	39

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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Spartanburg, South Carolina 864-574-4775

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-Y6-

PI = 12+40.00
EL = 2,968.79'
VC = 60'
K = 13.6
DS = 25 MPH

PI = 11+00.00
EL = 2,950.64'
VC = 120'
K = 17
DS = 20 MPH

EXISTING GROUND

PI = 10+39.50
EL = 2,947.01'

(+)6.0000%

(+)12.9648%

(+)18.5551%

END GRADE
-Y6- STA.12+70
EL= 2,971.36

PROPOSED GRADE

BEGIN GRADE
-Y6- STA.10+35.50
EL= 2,946.77

FOR PLAN SEE SHEET 11

-Y8-

PI = 15+00.00
EL = 2,909.46'
VC = 20'
K = 5

BEGIN GRADE
-Y8- STA.14+90.00
EL= 2,909.25

(+)2.0498%

(-)11.9620%

END GRADE
-Y8- STA.15+14.50
EL= 2,909.18

PROPOSED GRADE

EXISTING GROUND

FOR PLAN SEE SHEET 14

-Y7-

END GRADE
-Y7- STA.15+20
EL= 2,987.82

END SPECIAL LAT. BASE DITCH RT.
-Y7- STA.14+50.00
EL = 2,973.30

PI = 13+50.00
EL = 2,957.22'
VC = 60'
K = 30
DS = 25 MPH

(+)8.0000%

(+)12.2400%

(+)17.7400%

(+)23.2400%

PROPOSED GRADE

EXISTING GROUND

PI = 11+00.00
EL = 2,917.22'
VC = 100'
K = 7
DS = 15 MPH

(+)3.3333%

(+)22.2500%

BEGIN GRADE
-Y7- STA.10+35.50
EL= 2,916.05

(+)6.0000%

BEGIN SPECIAL LATERAL BASE DITCH RT.
-Y7- STA.12+50.00
EL = 2,928.61

(-)12.5076%

(+)2.0965%

PI = 10+39.50
EL = 2,915.95'

FOR PLAN SEE SHEET 13

-Y9-

BEGIN GRADE
-Y9- STA.10+35.57
EL= 2,906.14

PROPOSED GRADE

END GRADE
-Y9- STA.14+15
EL= 2,907.83

EXISTING GROUND

PI = 11+20.00
EL = 2,907.99
VC = 130'
K = 47

PI = 13+30.00
EL = 2,909.36'
VC = 110'
K = 68

(+)2.0000%

(-)10.7774%

(-)10.7774%

(+)11.7356%

END LAT. BASE DITCH RT.
-Y9- STA.11+15.00
EL = 2,892.10

(-)1.0600%

BEGIN LATERAL BASE DITCH RT.
-Y9- STA.11+35.00
EL = 2,894.20

FOR PLAN SEE SHEET 15

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-SR1-

PROJECT REFERENCE NO.	SHEET NO.
R-2915A	40

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BEGIN GRADE
-SR1- STA.10+00.00
EL.= 3,033.61

PI = 10+80.00
EL = 3,031.92'
VC = 55'
K = 11

PI = 12+40.00
EL = 3,036.72'
VC = 80'
K = 22

PI = 13+50.00
EL = 3,035.99'
VC = 140'
K = 19

PI = 15+80.00
EL = 3,017.59'
VC = 300'
K = 57

PI = 19+70.00
EL = 3,006.86'
VC = 250'
K = 65

PI = 22+00.00
EL = 3,009.42'
VC = 150'
K = 29

3,033.61

(-)2.11541%

(+)3.00000%

(-)10.65811%

(-)15.00000%

(-)16.00000%

(-)12.75111%

PROPOSED GRADE

EXISTING GROUND

(-)12.75111%

(+)1.11011%

(-)4.00000%

FOR PLAN SEE SHEET 16

3,010 3,040 3,030 3,020 3,040 3,030 3,020 3,010 3,000 2,990 2,980 2,970 2,960 2,950

10 11 12 13 14 15 16 17 18 19 20 21 22 23

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PROJECT REFERENCE NO.	SHEET NO.
R-2915A	41

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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PIPE HYDRAULIC DATA
0459 -SR2- Sta. 21+17.21

DRAINAGE AREA	= 39.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 52.00	CFS
DESIGN HW ELEVATION	= 3013.29	FT
100 YEAR DISCHARGE	= 60.00	CFS
100 YEAR HW ELEVATION	= 3013.54	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 120.00	CFS
OVERTOPPING ELEVATION	= 3017.80	FT

-SR2-

BEGIN GRADE
-SR2- STA. 10+39.50
EL = 3,010.86'

PI = 11+80.00
EL = 3,017.89'
VC = 200'
K = 23
DS = 30 MPH

PI = 14+50.00
EL = 3,008.34'
VC = 260'
K = 38
DS = 30 MPH

PI = 17+60.00
EL = 3,018.70'
VC = 180'
K = 27
DS = 30 MPH

PI = 20+80.00
EL = 3,007.72'
VC = 460'
K = 47
DS = 30 MPH

(+)5.0000%
(+)5.0000%
(-)13.5344%
(-)13.5344%
(+)13.5411%
(+)13.5411%
(-)13.4325%
(-)13.4325%
(+)16.3176%
42" RCP

MATCHLINE -SR2- STA. 23+00

FOR PLAN SEE SHEET 4 & 17

-SR2-

END GRADE
-SR2- STA. 28+57.05
EL = 3,061.44'

PI = 27+80.00
EL = 3,060.15'
VC = 60'
K = 7
DS = 20

PI = 25+50.00
EL = 3,037.41'
VC = 400'
K = 112
DS = 50

(+)19.8885%
(+)19.8885%
(+)16.3178%
(+)1.6704%

MATCHLINE -SR2- STA. 23+00

FOR PLAN SEE SHEET 4 & 17

-DR2-

PI = 10+80.00
EL = 2,944.51'
VC = 80'
K = 6

PI = 10+39.50
EL = 2,943.30'

PI = 12+85.00
EL = 2,976.78'

2943.38
2977.72
(-)12.0000%
(+)3.0000%
(+)13.7386%
(+)13.7386%
(+)16.2911%

-DR1-

PI = 12+00.00
EL = 2,910.81'

PI = 12+30.00
EL = 2,914.56'

PI = 12+37.93
EL = 2,915.19'

2909.83
2915.27
(+)6.0000%
(+)12.4741%
(+)8.0000%

BEGIN GRADE
-DR1- STA. 11+83.62
EL= 2,909.83

END GRADE
-DR1- STA. 12+41.89
EL= 2,915.27

FOR PLAN SEE SHEET 13

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PROJECT REFERENCE NO.	SHEET NO.
R-2915A	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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-DR4-

BEGIN GRADE
-DR4- STA 10+09
EL=3013.06'

(+)12.8571%

PI = 10+40.00
EL = 3,013.68'
VC = 60'
K = 6

(+)12.0000%

PI = 11+60.00
EL = 3,029.05'
VC = 30'
K = 7

(+)8.1768%

END GRADE
-DR4- STA 11+85
EL=3031.23'

FOR PLAN SEE SHEET 4

-DR5-

BEGIN GRADE
-DR5- STA 10+05
EL=2,997.45'

PI = 10+75.00
EL = 2,996.20'
VC = 90'
K = 7

(-)11.7874%

(+)12.0000%

PI = 11+60.00
EL = 3,006.40'
VC = 30'
K = 5

(+)5.6000%

END GRADE
-DR5- STA 11+79.20
EL=3,007.45'

48" RCP

FOR PLAN SEE SHEET 4

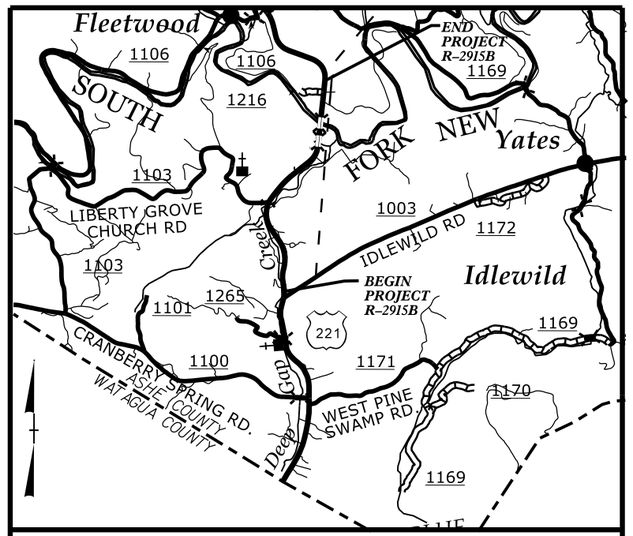
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09/26/99

TIP PROJECT: R-2915B

CONTRACT:

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



VICINITY MAP

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ASHE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34518.1.3	STP-0221(40)	P.E.
34518.2.FR2	STP-0221(40)	R /W
34518.2.UFR2	STP-0221(40)	UTILITIES

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612, NC COA No. F-0412

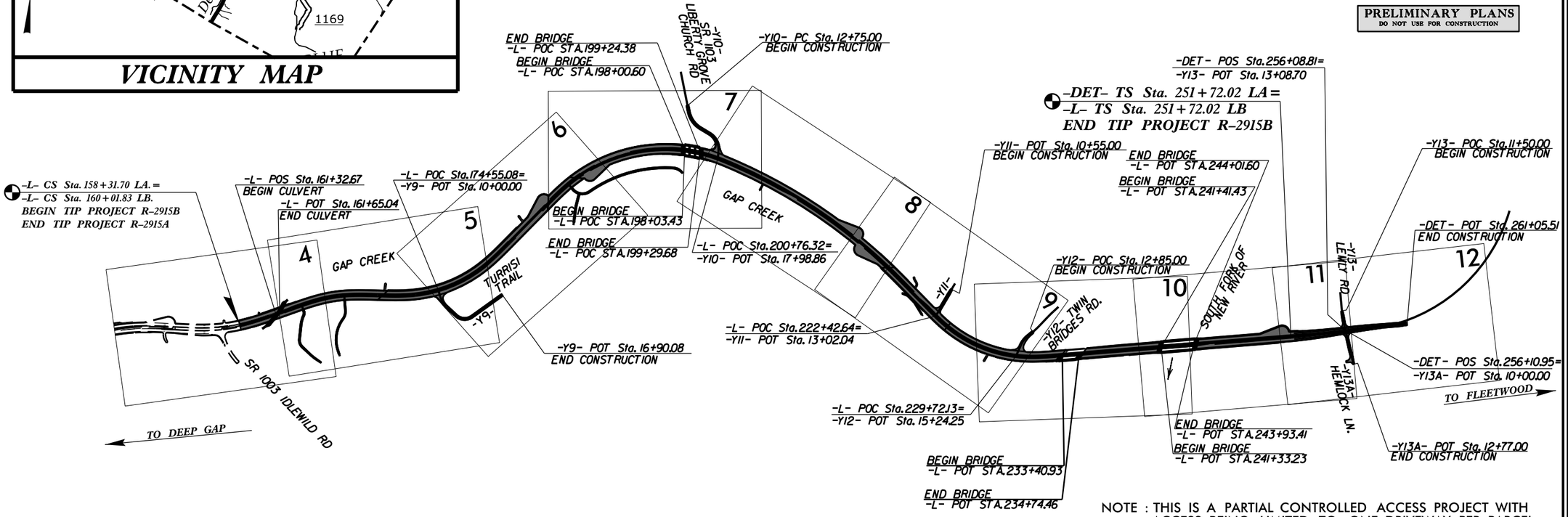
SUNGATE DESIGN GROUP P.A., 115 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

LOCATION: US 221 FROM SR 1003 (IDLEWILD ROAD) TO NORTH OF SOUTH FORK NEW RIVER

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

NAD 83/CORS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTE : THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO ONE DRIVEWAY PER PARCEL.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

NCDOT CONTACT: BRENDA L. MOORE, P.E.

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 2015 = 12,089
ADT 2035 = 20,204
DHV = 10 %
D = 65 %
T = 9 % *
V = 50 MPH
* TTST 2% DUAL 7%
FUNC CLASS = ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2915B = 1.675 MILES

LENGTH STRUCTURE TIP PROJECT R-2915B = 0.094 MILES

TOTAL LENGTH TIP PROJECT R-2915B = 1.769 MILES

Prepared In the Office of:
CDM Smith
5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 30, 2013

LETTING DATE:
JUNE 16, 2015

DOUGLAS B. SAUNDERS, P.E.
PROJECT ENGINEER

RICKY E. STATON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

03-OCT-2013 07:06
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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	1B

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

REVISIONS

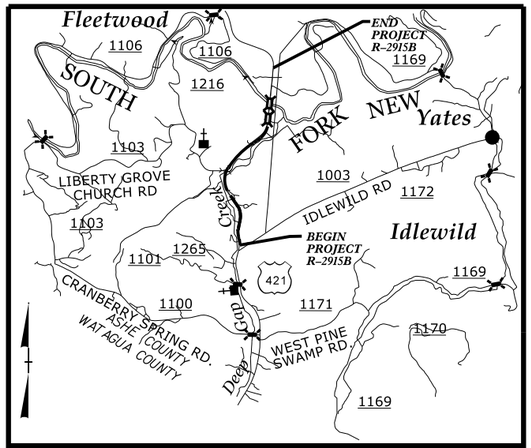
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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
34518.1.3	1-C
Location and Surveys	

SURVEY CONTROL SHEET R-2915B



VICINITY MAP

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL46	BL-46	928402.6058	1262144.5944	2906.40	164+57.70	59.72 LT
BL47	BL-47	929326.9840	1262283.2690	2910.77	173+86.62	21.84 LT
BL48	BL-48	929833.8683	1262134.0936	2912.87	179+30.93	18.77 LT
BL49	BL-49	930252.5771	1261808.4631	2904.69	184+62.04	52.22 LT
BL50	BL-50	930705.0036	1261535.6732	2897.84	189+78.77	56.31 LT
BL51	BL-51	931116.0346	1261433.0556	2890.72	193+82.19	74.07 LT
BL52	BL-52	931641.1471	1261537.6793	2881.92	198+92.50	62.93 LT
BL53	BL-53	932216.8529	1261999.6996	2876.74	206+18.26	5.40 RT
BL54	BL-54	932765.6058	1262461.6063	2874.49	213+30.49	49.96 LT
BL55	BL-55	933354.5662	1263260.6930	2871.17	223+21.60	61.35 LT
BL56	BL-56	933897.1980	1263665.8120	2870.83	230+36.98	17.88 LT
BL57	BL-57	934899.1246	1263792.5538	2870.93	240+49.66	7.77 LT
BL58	BL-58	935740.1689	1263880.7456	2884.86	248+95.32	7.08 LT

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	Y10 STATION	OFFSET
BY680	BY6-80	931624.6900	1260669.6512	2913.15	OUTSIDE PROJECT LIMITS	
BY681	BY6-81	931641.1471	1261537.6793	2881.92	15+36.22	122.93 RT

BY7

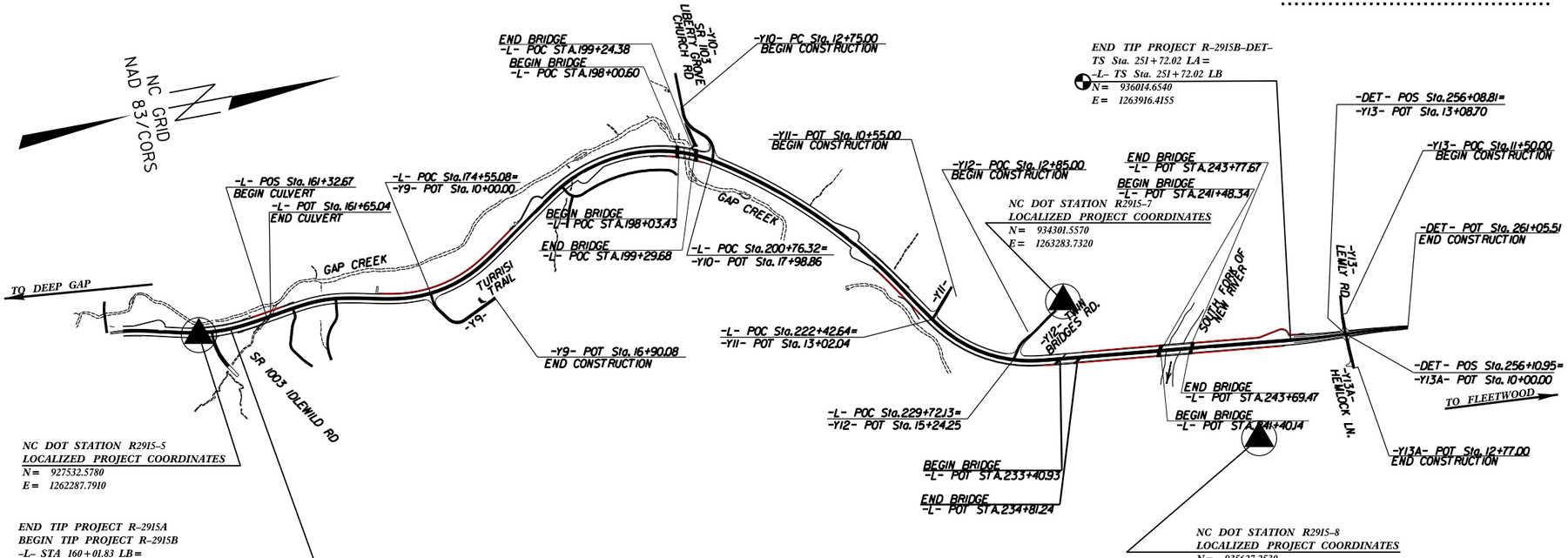
POINT	DESC.	NORTH	EAST	ELEVATION	Y13 STATION	OFFSET
BY782	BY7-82	936407.6723	1263268.6732	2888.19	OUTSIDE PROJECT LIMITS	
BY783	BY7-83	936468.4871	1263464.0511	2903.80	OUTSIDE PROJECT LIMITS	
BY784	BY7-84	936429.4463	1263916.1701	2937.49	12+75.74	20.96 RT

BM7 ELEVATION = 2900.68
N 927977 E 1262292
L STATION 160+18.00 24 RIGHT
CHISELED SQUARE IN CONCRETE FLOOR OF TELEPHONE EXCHANGE

BM8 ELEVATION = 2881.14
N 930658 E 1261410
L STATION 189+80.00 191 LEFT
RR SPIKE IN 30" WHITE PINE

BM9 ELEVATION = 2871.28
N 932968 E 1262584
L STATION 215+49.00 130 LEFT
RR SPIKE IN ROOT OF 24" FORKED CHERRY TREE

BM10 ELEVATION = 2974.62
N 936805 E 1263884
L STATION 161+56.00
N 10°39'23.54" E DIST 8848.34
RR SPIKE IN ROOT OF 8" WHITE PINE



NC DOT STATION R2915-5
LOCALIZED PROJECT COORDINATES
N= 927532.5780
E= 1262287.7910

END TIP PROJECT R-2915A
BEGIN TIP PROJECT R-2915B
-L- STA 160+01.83 LB=
-L- STA 158+31.70 LA
N= 927788.0547
E= 1262284.8931

NC DOT STATION R2915-6
LOCALIZED PROJECT COORDINATES
N= 926551.4520
E= 1265372.0870

NC DOT STATION R2915-8
LOCALIZED PROJECT COORDINATES
N= 935627.2530
E= 1264633.5310

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2915-15" WITH NAD 83/CORS STATE PLANE GRID COORDINATES OF NORTHING: 954880.7810(ft) EASTING: 1254012.2870(ft) ELEVATION: 3097.5210(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991292
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2915-15" TO -L- STATION 158+31.70 IS S 16°58'47" E 28327.5827
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 8395 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORK WITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT: HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   R2915B_LS_GPSCALIB.HTML
   R2915B_LS_WGS84.TXT
   R2915B_LS_LOCAL.TXT
   R2915B_LS_CONTROL.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

© INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

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PROJECT REFERENCE NO.	SHEET NO.
34518.1.3	1-D
Location and Surveys	

SURVEY CONTROL SHEET R–2915B

GPS Calibration Report

Project : r2915abcde

TIP Number	r2915abcde		
User name	rhwagoner	Date & Time	8:15:20 AM 3/29/2010
Coordinate System	US State Plane 1983	Zone	North Carolina 3200
Horizontal Datum	NAD 1983 (Conus)		
Vertical Datum		Geoid Model	G03NC
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

LOCAL SITE INFORMATION

Localized around	
Latitude	N/A
Longitude	N/A
Site Scale Factor	N/A
Height	N/A

The North Carolina Department of Transportation uses a Localized Coordinate System which is very similar to North Carolina Zone 3200 from which it is derived. Please take care in utilizing these coordinates to eliminate confusion of the two systems. This file is to aid in the use of Real Time Kinematic (RTK) GPS during construction layout.

Datum Transformation Parameters

Datum Transformation computation not requested

Updated Default Projection (Transverse Mercator) Definition

Updated default projection not requested

Horizontal Adjustment Parameters

Northing coordinate of rotation center	947934.1223sft
Easting coordinate of rotation center	1262471.3754sft
Rotation about the center point	0°00'00"
Translation north	-0.6128sft
Translation east	0.7058sft
Scale factor	1.00008668

Vertical Adjustment Parameters

Northing coordinate of origin point	916355.6589sft
Easting coordinate of origin point	1255522.7706sft
Vertical separation at origin	0.0728sft
Slope north	2.018ppm
Slope east	-3.981ppm

Geoid Model Definition

G03NC

Residual Differences Between GPS (WGS84) And Local Coordinates

Summary

	Maximum error	Root Mean Square error	Point
Horizontal	0.037sft	0.006	R2915-23_WGS84
Vertical	0.080sft	0.010	R2915-23_WGS84
Three-dimensional	0.088sft	0.011	R2915-23_WGS84

Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
Point	R2915-1_WGS84	Northing	916355.6589sft	Point	R2915-1_Local
Latitude	36°14'30.16499"N	Easting	1255522.7706sft	Northing	916355.6590sft
Longitude	81°31'28.80325"W	Elevation	3142.3037sft	Easting	1255522.7760sft
Height	3038.5989sft	Horz error	0.005sft	Elevation	3142.2840sft
		Vert error	0.020sft	Utilized	Horz and Vert
		3D error	0.020sft	Quality	Survey quality
Point	R2915-2_WGS84	Northing	915243.5295sft	Point	R2915-2_Local
Latitude	36°14'19.87328"N	Easting	1258316.3057sft	Northing	915243.5260sft
Longitude	81°30'54.37263"W	Elevation	3035.6772sft	Easting	1258316.3100sft
Height	2931.8298sft	Horz error	0.006sft	Elevation	3035.6720sft
		Vert error	0.005sft	Utilized	Horz and Vert
		3D error	0.008sft	Quality	Survey quality
Point	R2915-3_WGS84	Northing	919149.7074sft	Point	R2915-3_Local
Latitude	36°14'59.39661"N	Easting	1261969.9588sft	Northing	919149.7040sft
Longitude	81°30'10.99416"W	Elevation	2977.4067sft	Easting	1261969.9680sft
Height	2873.5914sft	Horz error	0.010sft	Elevation	2977.4070sft
		Vert error	0.000sft	Utilized	Horz and Vert
		3D error	0.010sft	Quality	Survey quality
Point	R2915-4_WGS84	Northing	920506.4892sft	Point	R2915-4_Local
Latitude	36°15'13.02239"N	Easting	1262832.0488sft	Northing	920506.4880sft
Longitude	81°30'00.89092"W	Elevation	2956.9814sft	Easting	1262832.0570sft
Height	2853.1869sft	Horz error	0.008sft	Elevation	2956.9900sft
		Vert error	0.009sft	Utilized	Horz and Vert
		3D error	0.012sft	Quality	Survey quality
Point	R2915-5_WGS84	Northing	927532.5716sft	Point	R2915-5_Local
Latitude	36°16'22.33517"N	Easting	1262287.7805sft	Northing	927532.5780sft
Longitude	81°30'09.69521"W	Elevation	2902.2729sft	Easting	1262287.7910sft
Height	2798.7405sft	Horz error	0.012sft	Elevation	2902.2770sft
		Vert error	0.004sft	Utilized	Horz and Vert
		3D error	0.013sft	Quality	Survey quality
Point	R2915-6_WGS84	Northing	929551.4461sft	Point	R2915-6_Local
Latitude	36°16'43.05751"N	Easting	1265372.0745sft	Northing	929551.4520sft
Longitude	81°29'32.66468"W	Elevation	3037.6229sft	Easting	1265372.0870sft
Height	2934.0460sft	Horz error	0.014sft	Elevation	3037.6360sft
		Vert error	0.013sft	Utilized	Horz and Vert
		3D error	0.019sft	Quality	Survey quality
Point	R2915-7_WGS84	Northing	934301.5436sft	Point	R2915-7_Local
Latitude	36°17'29.48965"N	Easting	1263283.7338sft	Northing	934301.5570sft
Longitude	81°29'59.61899"W	Elevation	2870.4241sft	Easting	1263283.7320sft
Height	2767.0788sft	Horz error	0.014sft	Elevation	2870.4170sft
		Vert error	0.007sft	Utilized	Horz and Vert
		3D error	0.015sft	Quality	Survey quality
Point	R2915-8_WGS84	Northing	935627.2416sft	Point	R2915-8_Local
Latitude	36°17'42.92890"N	Easting	1264633.5337sft	Northing	935627.2530sft
Longitude	81°29'43.54539"W	Elevation	2872.3172sft	Easting	1264633.5310sft
Height	2768.9685sft	Horz error	0.012sft	Elevation	2872.3310sft
		Vert error	0.014sft	Utilized	Horz and Vert
		3D error	0.018sft	Quality	Survey quality
Point	R2915-9_WGS84	Northing	940641.1693sft	Point	R2915-9_Local
Latitude	36°18'31.45715"N	Easting	1260499.6148sft	Northing	940641.1850sft
Longitude	81°30'35.56934"W	Elevation	2893.9308sft	Easting	1260499.6170sft
Height	2790.8934sft	Horz error	0.016sft	Elevation	2893.9060sft
		Vert error	0.025sft	Utilized	Horz and Vert
		3D error	0.029sft	Quality	Survey quality
Point	R2915-10_WGS84	Northing	941223.4149sft	Point	R2915-10_Local
Latitude	36°18'37.24430"N	Easting	1260628.2994sft	Northing	941223.4310sft
Longitude	81°30'34.17760"W	Elevation	2992.8526sft	Easting	1260628.3040sft
Height	2889.8302sft	Horz error	0.017sft	Elevation	2992.8370sft
		Vert error	0.016sft	Utilized	Horz and Vert
		3D error	0.023sft	Quality	Survey quality
Point	R2915-11_WGS84	Northing	946476.2925sft	Point	R2915-11_Local
Latitude	36°19'28.64133"N	Easting	1258539.4421sft	Northing	946476.3110sft
Longitude	81°31'01.31448"W	Elevation	2961.5603sft	Easting	1258539.4520sft
Height	2858.7761sft	Horz error	0.021sft	Elevation	2961.5280sft
		Vert error	0.032sft	Utilized	Horz and Vert
		3D error	0.039sft	Quality	Survey quality
Point	R2915-12_WGS84	Northing	947042.3574sft	Point	R2915-12_Local
Latitude	36°19'34.13447"N	Easting	1258133.1858sft	Northing	947042.3510sft
Longitude	81°31'06.45218"W	Elevation	2976.4319sft	Easting	1258133.1700sft
Height	2873.6799sft	Horz error	0.017sft	Elevation	2976.4580sft
		Vert error	0.026sft	Utilized	Horz and Vert
		3D error	0.031sft	Quality	Survey quality
Point	R2915-13_WGS84	Northing	951569.5121sft	Point	R2915-13_Local
Latitude	36°20'18.04952"N	Easting	1254826.4800sft	Northing	951569.5120sft
Longitude	81°31'48.25253"W	Elevation	3052.2178sft	Easting	1254826.4650sft
Height	2949.7070sft	Horz error	0.015sft	Elevation	3052.2240sft
		Vert error	0.006sft	Utilized	Horz and Vert
		3D error	0.016sft	Quality	Survey quality
Point	R2915-14_WGS84	Northing	952360.7067sft	Point	R2915-14_Local
Latitude	36°20'25.72331"N	Easting	1254245.9924sft	Northing	952360.7080sft

DATUM DESCRIPTION

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PROJECT REFERENCE NO.	SHEET NO.
34518.1.3	1-E
Location and Surveys	

SURVEY CONTROL SHEET R–2915B

Longitude	81°31'55.59073"W	Elevation	3078.5171sft	Easting	1254245.9770sft
Height	2976.0465sft	Horz error	0.015sft	Elevation	3078.5190sft
		Vert error	0.002sft	Utilized	Horz and Vert
		3D error	0.016sft	Quality	Survey quality

Point	R2915-15_WGS84	Northing	954880.7882sft	Point	R2915-15_Local
Latitude	36°20'50.57260"N	Easting	1254012.3126sft	Northing	954880.7810sft
Longitude	81°31'59.23136"W	Elevation	3097.5370sft	Easting	1254012.2870sft
Height	2995.1423sft	Horz error	0.027sft	Elevation	3097.5210sft
		Vert error	0.016sft	Utilized	Horz and Vert
		3D error	0.031sft	Quality	Survey quality

Point	R2915-16_WGS84	Northing	955689.2599sft	Point	R2915-16_Local
Latitude	36°20'58.40190"N	Easting	1253372.2604sft	Northing	955689.2700sft
Longitude	81°32'07.30385"W	Elevation	3139.7336sft	Easting	1253372.2370sft
Height	3037.3781sft	Horz error	0.025sft	Elevation	3139.6930sft
		Vert error	0.041sft	Utilized	Horz and Vert
		3D error	0.048sft	Quality	Survey quality

Point	R2915-17_WGS84	Northing	960732.3214sft	Point	R2915-17_Local
Latitude	36°21'50.14423"N	Easting	1260924.8880sft	Northing	960732.3040sft
Longitude	81°30'36.58112"W	Elevation	3355.9956sft	Easting	1260924.8760sft
Height	3253.5217sft	Horz error	0.021sft	Elevation	3356.0160sft
		Vert error	0.020sft	Utilized	Horz and Vert
		3D error	0.029sft	Quality	Survey quality

Point	R2915-18_WGS84	Northing	959689.5169sft	Point	R2915-18_Local
Latitude	36°21'39.95242"N	Easting	1261385.6028sft	Northing	959689.4970sft
Longitude	81°30'30.62882"W	Elevation	3396.5313sft	Easting	1261385.5910sft
Height	3294.0193sft	Horz error	0.023sft	Elevation	3396.5580sft
		Vert error	0.027sft	Utilized	Horz and Vert
		3D error	0.035sft	Quality	Survey quality

Point	R2915-19_WGS84	Northing	967060.7220sft	Point	R2915-19_Local
Latitude	36°22'54.39872"N	Easting	1267779.1405sft	Northing	967060.7040sft
Longitude	81°29'14.75578"W	Elevation	3005.2191sft	Easting	1267779.1370sft
Height	2902.6651sft	Horz error	0.018sft	Elevation	3005.2590sft
		Vert error	0.040sft	Utilized	Horz and Vert
		3D error	0.044sft	Quality	Survey quality

Point	R2915-20_WGS84	Northing	966821.8373sft	Point	R2915-20_Local
Latitude	36°22'52.19547"N	Easting	1268416.6439sft	Northing	966821.8150sft
Longitude	81°29'06.89021"W	Elevation	3001.8897sft	Easting	1268416.6390sft
Height	2899.3121sft	Horz error	0.023sft	Elevation	3001.9300sft
		Vert error	0.040sft	Utilized	Horz and Vert
		3D error	0.046sft	Quality	Survey quality

Point	R2915-21_WGS84	Northing	972084.6876sft	Point	R2915-21_Local
Latitude	36°23'44.52005"N	Easting	1269660.6108sft	Northing	972084.6700sft
Longitude	81°28'53.29316"W	Elevation	3132.4940sft	Easting	1269660.6140sft
Height	3029.9808sft	Horz error	0.018sft	Elevation	3132.5390sft
		Vert error	0.045sft	Utilized	Horz and Vert
		3D error	0.048sft	Quality	Survey quality

Point	R2915-22_WGS84	Northing	973156.5253sft	Point	R2915-22_Local
Latitude	36°23'55.25041"N	Easting	1270213.4941sft	Northing	973156.5140sft

Longitude	81°28'46.86125"W	Elevation	3163.2767sft	Easting	1270213.5010sft
Height	3060.7659sft	Horz error	0.013sft	Elevation	3163.3260sft
		Vert error	0.049sft	Utilized	Horz and Vert
		3D error	0.051sft	Quality	Survey quality

Point	R2915-23_WGS84	Northing	981712.8608sft	Point	R2915-23_Local
Latitude	36°25'21.32188"N	Easting	1276325.1593sft	Northing	981712.8790sft
Longitude	81°27'34.73217"W	Elevation	2903.7232sft	Easting	1276325.1910sft
Height	2801.1821sft	Horz error	0.037sft	Elevation	2903.6430sft
		Vert error	0.080sft	Utilized	Horz and Vert
		3D error	0.088sft	Quality	Survey quality

Point	R2915-24_WGS84	Northing	980994.0668sft	Point	R2915-24_Local
Latitude	36°25'14.17430"N	Easting	1276148.6155sft	Northing	980994.0780sft
Longitude	81°27'36.67335"W	Elevation	2878.9461sft	Easting	1276148.6390sft
Height	2776.3983sft	Horz error	0.026sft	Elevation	2878.8920sft
		Vert error	0.054sft	Utilized	Horz and Vert
		3D error	0.060sft	Quality	Survey quality

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THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991292
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   R2915B_LS_LOCAL.TXT
   R2915B_LS_CONTROL.TXT

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REVISIONS

PAVEMENT SCHEDULE (PRELIMINARY)

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
C1	PROPOSED APPROXIMATE 3.0 IN. ASPHALT SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS/SY IN EACH OF TWO LAYERS.	E2	PROP. APPROX. 5.0 IN. ASPHALT BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS/SY.	R1	2'-9" CURB & GUTTER
C2	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS/SY/IN. IN LIFTS NOT LESS THAN 1.5 IN. NOR GREATER THAN 2.0 IN.	E3	PROP. VAR. DEPTH ASPHALT BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS/SY/IN IN LIFTS NOT LESS THAN 3 IN. NOR GREATER THAN 5.5 IN.	R2	5" MONOLITHIC CONCRETE ISLAND (KEYED IN)
C3	PROPOSED APPROXIMATE 2.0 IN. ASPHALT SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS/SY	J1	10" AGGREGATE BASE COURSE	T	EARTH MATERIAL
D1	PROP. APPROX. 4.0 IN. ASPHALT INT. COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS/SY	J2	VARIABLE DEPTH AGGREGATE BASE COURSE	U	EXISTING PAVEMENT
D2	PROP. VAR. DEPTH ASPHALT INT. COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS/SY/IN. IN LIFTS NOT LESS THAN 2.5 IN. NOR GREATER THAN 4.0 IN. (MAX TOTAL LAYER=4.0 IN.)	J3	8" AGGREGATE BASE COURSE	W	WEDGING (SEE WEDGE DETAIL ABOVE)
E1	PROP. APPROX. 4.0 IN. ASPHALT BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS/SY.	P	PRIME COAT		

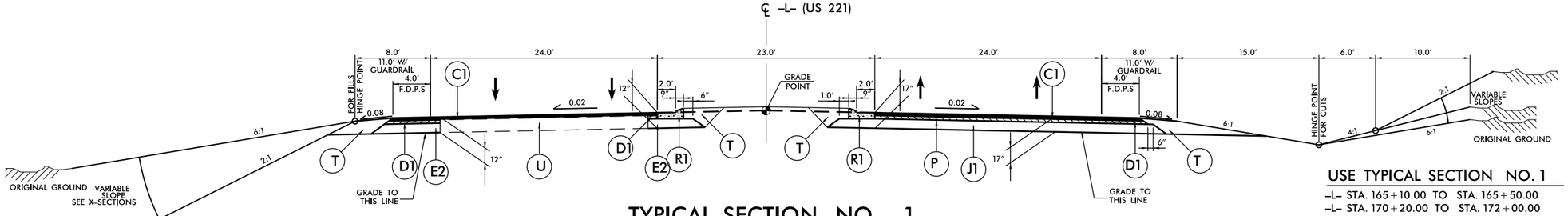
NOTES :
PAVEMENT EDGES ARE 1:1 UNLESS OTHERWISE NOTED.

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	2

ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER

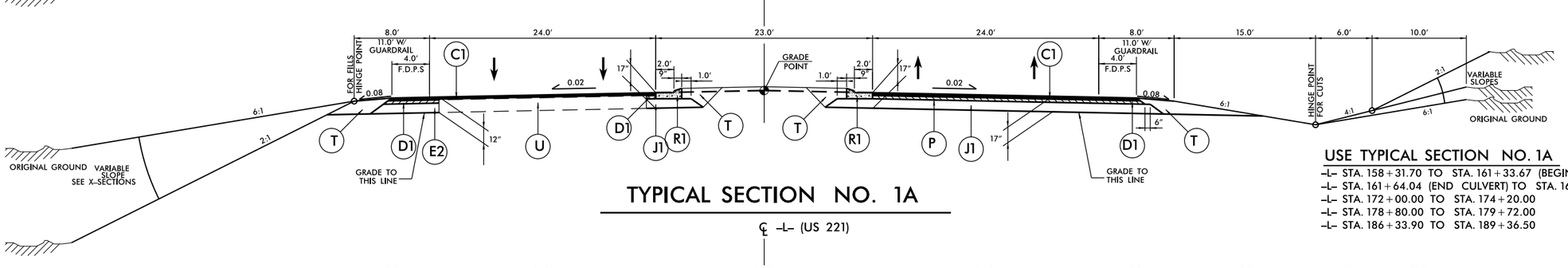
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 350, Raleigh, NC 27612-3228, NC COA No. F-0412
NC DEPARTMENT OF TRANSPORTATION, PAVEMENT MANAGEMENT UNIT, 1593 MAIL SERVICE CENTER, RALEIGH, NC 27699-1593



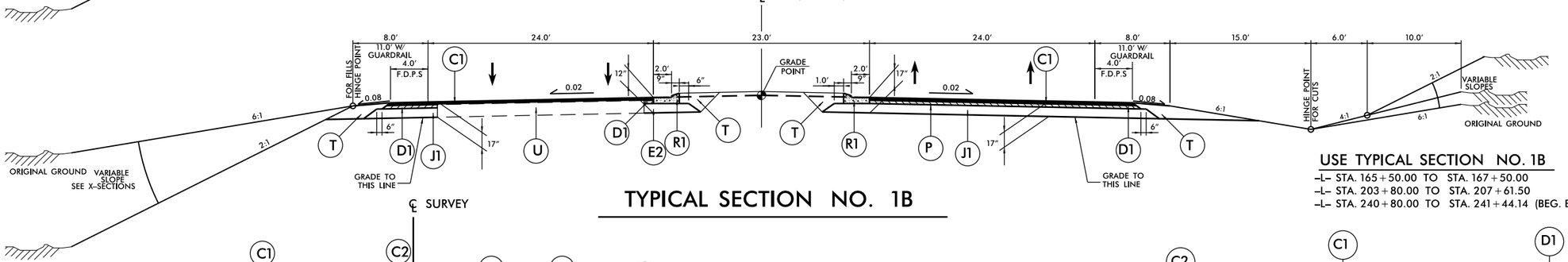
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
–L– STA. 165+10.00 TO STA. 165+50.00
–L– STA. 170+20.00 TO STA. 172+00.00
–L– STA. 237+50.00 TO STA. 240+80.00



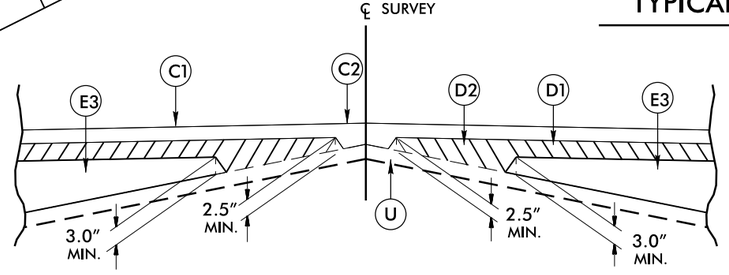
TYPICAL SECTION NO. 1A

USE TYPICAL SECTION NO. 1A
–L– STA. 158+31.70 TO STA. 161+33.67 (BEGIN CULVERT)
–L– STA. 161+64.04 (END CULVERT) TO STA. 165+10.00
–L– STA. 172+00.00 TO STA. 174+20.00
–L– STA. 178+80.00 TO STA. 179+72.00
–L– STA. 186+33.90 TO STA. 189+36.50

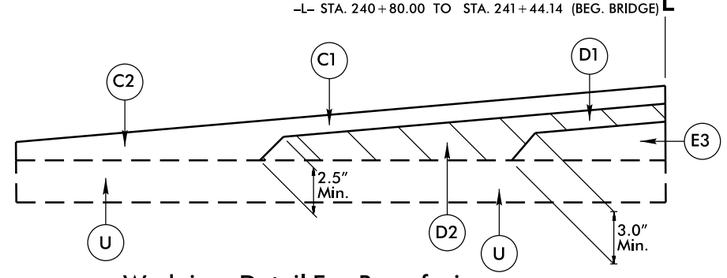


TYPICAL SECTION NO. 1B

USE TYPICAL SECTION NO. 1B
–L– STA. 165+50.00 TO STA. 167+50.00
–L– STA. 203+80.00 TO STA. 207+61.50
–L– STA. 240+80.00 TO STA. 241+44.14 (BEG. BRIDGE)



Detail Showing Method of Wedging



Wedging Detail For Resurfacing

03-OCT-2013 07:07
R:\Roadway\R-2915B_RDY_TYP_2.DGN
$$$$USERNAME$$$$

6/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	2-A

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

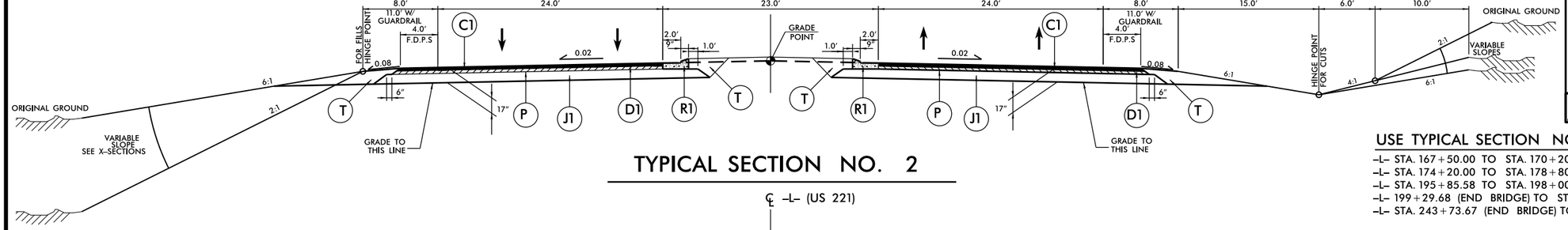
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith
Cairns Dresser & McKee
5400 Glenwood Avenue
Suite 350
Raleigh, NC 27612-3228
NC COA No. F-0412

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

PAVEMENT SCHEDULE	
C1	3" S9.5B
C2	VAR. S9.5B
C3	2" S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
J1	10" ABC
J2	VAR. ABC
J3	8" ABC
P	PRIME COAT
R1	2'-9" C&G
R2	5" MONO. CONC. MEDIAN
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING SEE SHEET 2

℄ –L– (US 221)

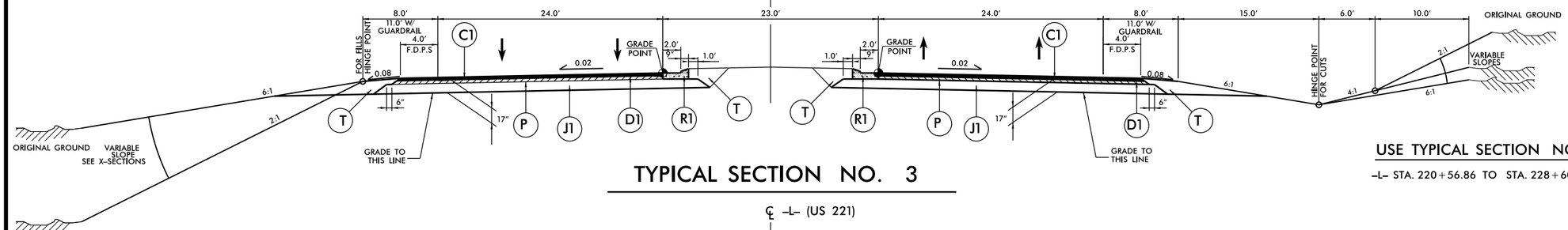


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

–L– STA. 167+50.00 TO STA. 170+20.00
–L– STA. 174+20.00 TO STA. 178+80.00
–L– STA. 195+85.58 TO STA. 198+00.60 (BEG. BRIDGE)
–L– 199+29.68 (END BRIDGE) TO STA. 203+80.00
–L– STA. 243+73.67 (END BRIDGE) TO STA. 245+22.48

℄ –L– (US 221)

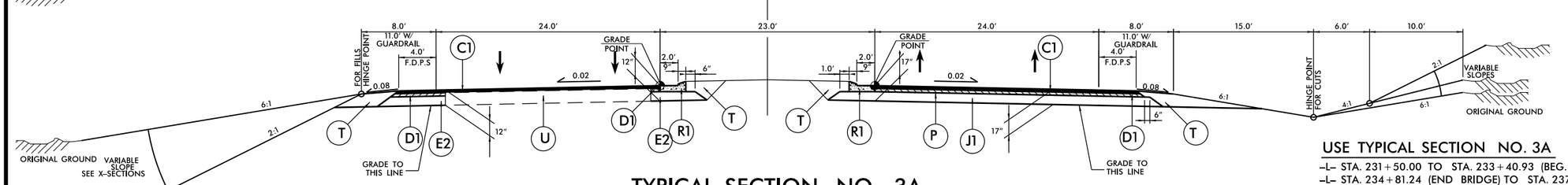


TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

–L– STA. 220+56.86 TO STA. 228+60.00

℄ –L– (US 221)

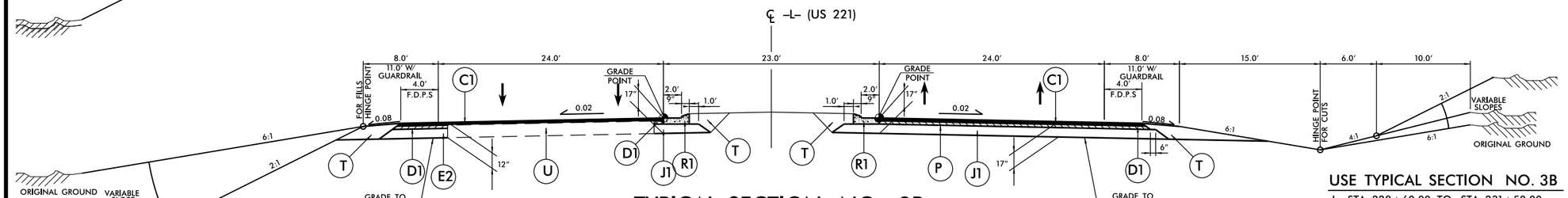


TYPICAL SECTION NO. 3A

USE TYPICAL SECTION NO. 3A

–L– STA. 231+50.00 TO STA. 233+40.93 (BEG. BRIDGE)
–L– STA. 234+81.24 (END BRIDGE) TO STA. 237+50.00

℄ –L– (US 221)

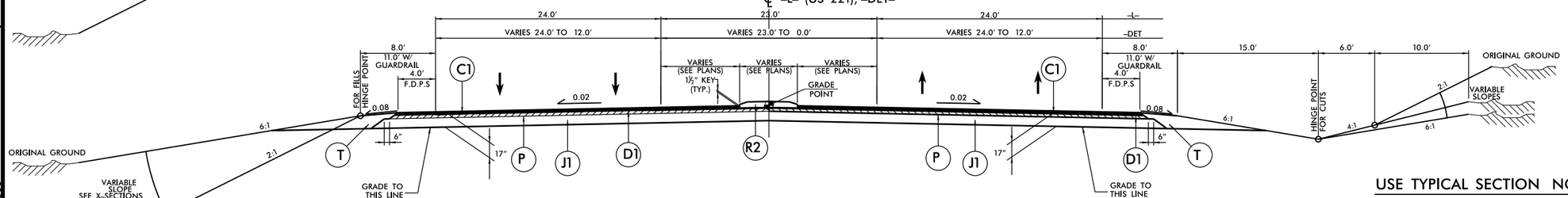


TYPICAL SECTION NO. 3B

USE TYPICAL SECTION NO. 3B

–L– STA. 228+60.00 TO STA. 231+50.00

℄ –L– (US 221), –DET–



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

–L– STA. 190+70.00 TO STA. 195+85.57
–L– STA. 218+30.00 TO STA. 220+56.86
–L– STA. 245+22.48 TO STA. 251+72.02
–DET– STA. 251+72.02 TO STA. 252+00.00

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6/2/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

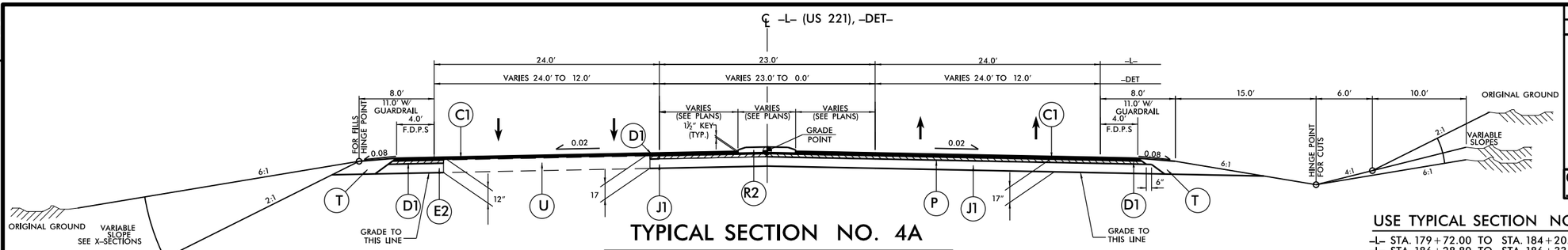
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith
Cairns Dresser & McKee
5400 Glenwood Avenue
Suite 350
Raleigh, NC 27612-3228
NC COA No. F-0412

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

PAVEMENT SCHEDULE

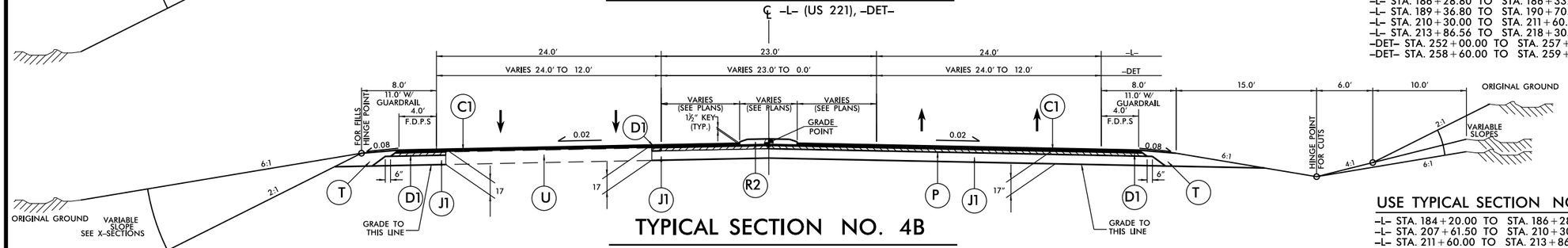
C1	3" S9.5B
C2	VAR. S9.5B
C3	2" S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
J1	10" ABC
J2	VAR. ABC
J3	8" ABC
P	PRIME COAT
R1	2'-9" C&G
R2	5" MONO. CONC. MEDIAN
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING SEE SHEET 2



TYPICAL SECTION NO. 4A

USE TYPICAL SECTION NO. 4A

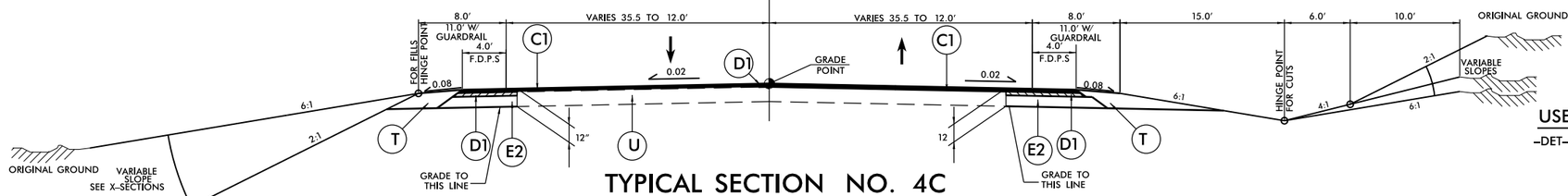
-L- STA. 179+72.00 TO STA. 184+20.00
-L- STA. 186+28.80 TO STA. 186+33.90
-L- STA. 189+36.80 TO STA. 190+70.00
-L- STA. 210+30.00 TO STA. 211+60.00
-L- STA. 213+86.56 TO STA. 218+30.00
-DET- STA. 252+00.00 TO STA. 257+50.00
-DET- STA. 258+60.00 TO STA. 259+00.00



TYPICAL SECTION NO. 4B

USE TYPICAL SECTION NO. 4B

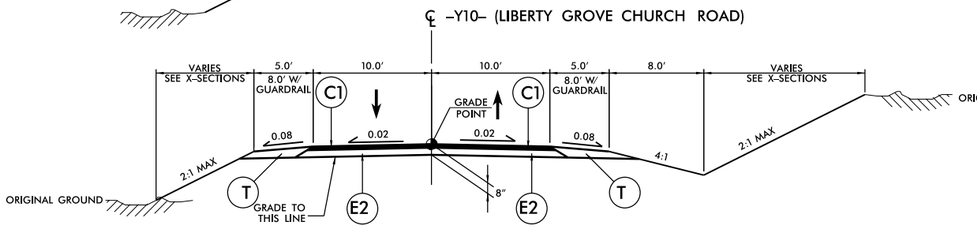
-L- STA. 184+20.00 TO STA. 186+28.80
-L- STA. 207+61.50 TO STA. 210+30.00
-L- STA. 211+60.00 TO STA. 213+86.56
-DET- STA. 257+50.00 TO STA. 258+60.00



TYPICAL SECTION NO. 4C

USE TYPICAL SECTION NO. 4C

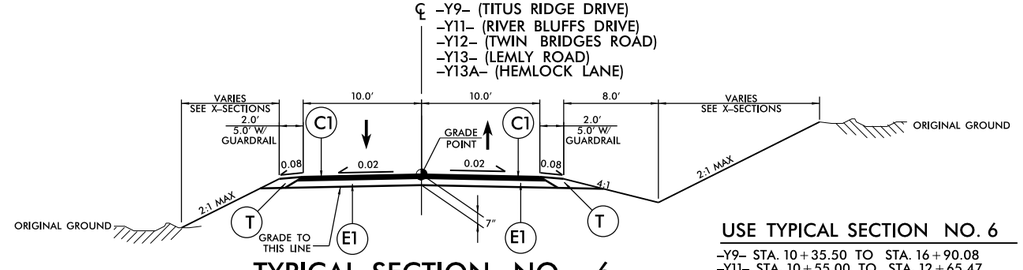
-DET- STA. 259+00.00 TO STA. 261+05.51



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

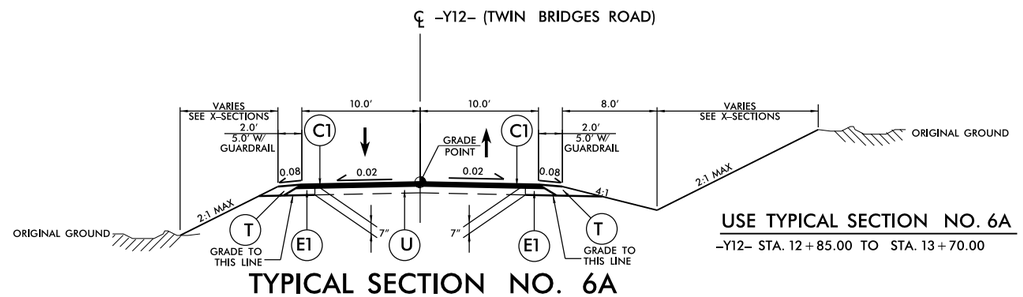
-Y10- STA. 12+75.00 TO STA. 17+62.15



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

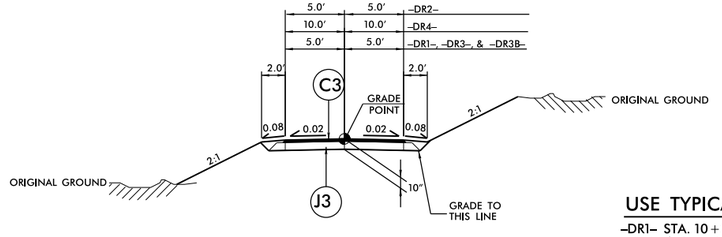
-Y9- STA. 10+35.50 TO STA. 16+90.08
-Y11- STA. 10+55.00 TO STA. 12+65.47
-Y12- STA. 13+70.00 TO STA. 14+87.00
-Y13- STA. 11+50.00 TO STA. 12+86.60
-Y13A- STA. 10+21.98 TO STA. 12+77.00



TYPICAL SECTION NO. 6A

USE TYPICAL SECTION NO. 6A

-Y12- STA. 12+85.00 TO STA. 13+70.00



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

-DR1- STA. 10+35.50 TO STA. 15+43.00
-DR2- STA. 10+35.50 TO STA. 14+90.00
-DR3- STA. 10+35.50 TO STA. 19+95.00
-DR3B- STA. 10+06.00 TO STA. 12+35.00
-DR4- STA 10+35.50 TO STA. 13+24.54

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5/14/99

REVISIONS

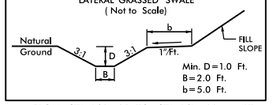
DRAINAGE DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	2-C
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

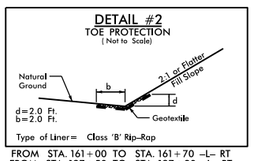
CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC COA No. F-0412
SUNGATE DESIGN GROUP, P.A. — 515 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890

DETAIL #1
LATERAL GRASSED SWALE
(Not to Scale)



FROM STA. 160+20 TO STA. 161+00 –L– RT
FROM STA. 215+00 TO STA. 217+40 –L– LT

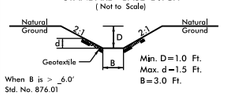
DETAIL #2
TOE PROTECTION
(Not to Scale)



Type of Liner= Class 'B' Rip-Rap

FROM STA. 161+00 TO STA. 161+70 –L– RT
FROM STA. 197+50 TO STA. 197+80 –L– RT
FROM STA. 250+00 TO STA. 251+50 –L– RT
FROM STA. 251+00 TO STA. 253+00 –L– LT

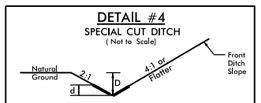
DETAIL #3
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap

STA. 166+00 –L– LT

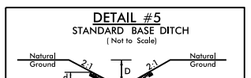
DETAIL #4
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 10+50 TO STA. 16+00 –Y9– LT & RT
FROM STA. 16+20 TO STA. 16+90 –Y9– RT
FROM STA. 10+50 TO STA. 12+10 –Y7A– RT
FROM STA. 10+50 TO STA. 12+50 –Y7A– LT
FROM STA. 11+50 TO STA. 12+50 –Y7– LT
FROM STA. 10+50 TO STA 15+43 –DR1– RT & LT
FROM STA. 10+50 TO STA. 14+90 –DR2– RT & LT

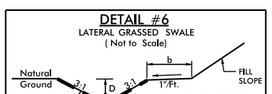
DETAIL #5
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap

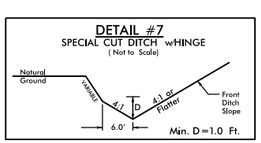
STA. 16+50 –Y9– LT

DETAIL #6
LATERAL GRASSED SWALE
(Not to Scale)



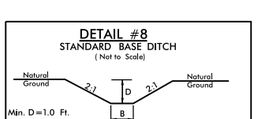
FROM STA. 180+00 TO STA. 182+00 –L– LT

DETAIL #7
SPECIAL CUT DITCH wHINGE
(Not to Scale)



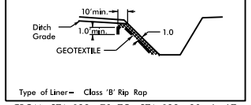
FROM STA. 196+50 TO STA. 197+00 –L– RT

DETAIL #8
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 198+80 TO STA. 199+55 –L– LT

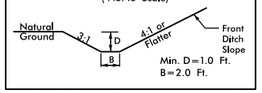
DETAIL #9
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= Class 'B' Rip Rap

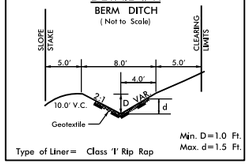
FROM STA. 198+70 TO STA. 198+90 –L– LT
FROM STA. 217+27 TO STA. 217+40 –L– LT
FROM STA. 242+50 TO STA. 242+70 –L– RT
FROM STA. 243+40 TO STA. 243+60 –L– LT

DETAIL #10
SPECIAL CUT GRASSED SWALE
(Not to Scale)



FROM STA. 212+00 TO STA. 215+00 –L– RT

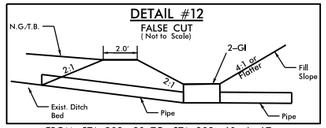
DETAIL #11
BERM DITCH
(Not to Scale)



Type of Liner= Class 'I' Rip Rap

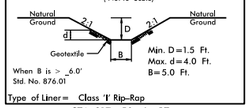
FROM STA. 171+50 TO STA. 172+75 –L– RT

DETAIL #12
FALSE CUT
(Not to Scale)



FROM STA. 208+80 TO STA. 209+60 –L– LT

DETAIL #13
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap

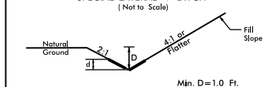
STA. 217+50 –L– RT

DETAIL #14
SPECIAL CUT GRASSED SWALE
(Not to Scale)



FROM STA. 222+50 TO STA. 229+50 –L– LT

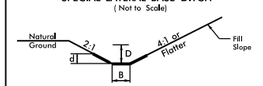
DETAIL #15
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 10+55 TO STA. 12+18 –Y11– RT
FROM STA. 13+95 TO STA. 14+55 –Y12– RT

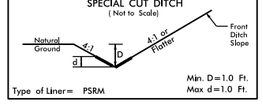
DETAIL #16
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 11+50 TO STA. 12+35 –Y11 LT

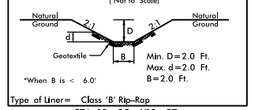
DETAIL #17
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 252+00 TO STA. 255+50 –DET– RT
FROM STA. 253+00 TO STA. 255+50 –DET– LT
FROM STA. 256+42 TO STA. 261+05 –DET– RT
FROM STA. 256+50 TO STA. 260+50 –DET– LT

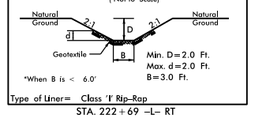
DETAIL #18
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class 'B' Rip-Rap

STA. 13+35 –Y10– RT

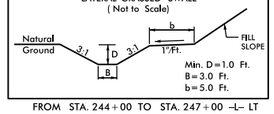
DETAIL #19
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class 'I' Rip-Rap

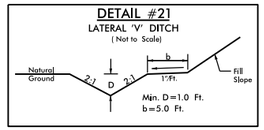
STA. 222+69 –L– RT

DETAIL #20
LATERAL GRASSED SWALE
(Not to Scale)



FROM STA. 244+00 TO STA. 247+00 –L– LT

DETAIL #21
LATERAL 'V' DITCH
(Not to Scale)



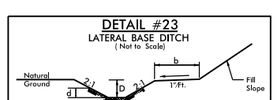
FROM STA. 247+00 TO STA. 249+00 –L– LT

DETAIL #22
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 242+60 TO STA. 248+50 –L– RT

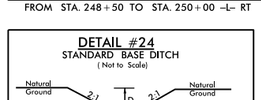
DETAIL #23
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CL 'I' Rip-Rap

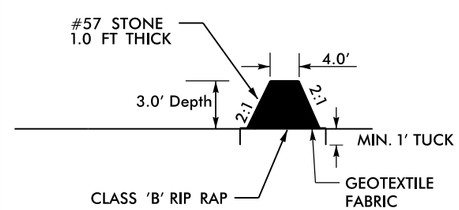
FROM STA. 248+50 TO STA. 250+00 –L– RT

DETAIL #24
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 243+50 TO STA. 244+00 –L– LT

FILTER BERM DETAIL
SECTION VIEW
(Not to Scale)



EST 15 TONS #57 STONE
EST 100 TONS CL B RIP RAP
EST 210 SY GEOTEXTILE

STA. 198+00 –L– RT

03-OCT-2013 07:07
R:\Drainage\R-2915B_hyd_DETAILS.dgn
$$$$ICENHOUR$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	2-E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3226, NC COA No. F-0412
SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

5/14/99

REVISIONS

NAD 83 1/CORS

185

190

195

-L- SC Sta. 188+47.14

-L- TS Sta. 185+41.14

-L- ST Sta. 181+45.62

+60.00 -L-
85.27' LT

+87.00 -L-
33.50' LT

+75.00 -L-
35.50' LT

+26.70 -L-
35.50' LT

R 52.00'

+25.06 -L-
35.50' LT

+59.00 -L-
9.50' LT

+59.00 -L-
5.50' LT

+18.89 -L-
9.50' LT

R 40.00'

300.00' UNIFORM TAPER

+10.40 -L-
5.50' LT

R 2.00'

24'

12'

+10.50 -L-
6.50' RT

+87.00 -L-
6.50' RT

+33.89 -L-
9.50' LT

+33.89 -L-
9.50' RT

R 1.50'

N 34° 48' 05.0" W

+10.50 -L-
9.50' RT

+30.40 -L-
2.50' LT

+10.50 -L-
11.50' RT

+28.96 -L-
2.50' LT

+36.50 -L-
9.50' LT

+85.55 -L-
6.50' LT

+65.00 -L-
9.50' LT

300.00' UNIFORM TAPER

+65.00 -L-
11.50' LT

+36.50 -L-
9.50' RT

+52.96 -L-
9.50' RT

+15.00 -L-
5.50' RT

+15.00 -L-
9.50' RT

+65.00 -L-
6.50' LT

+44.42 -L-
35.50' RT

+85.55 -L-
33.50' RT

+98.00 -L-
35.50' RT

+10.65 -L-
86.10' RT

+78.00 -L-
35.50' RT

-L-

U-TURN BULB DETAIL

(SCALE: 1"=50')

03-OCT-2013 07:07
R:\Roadway\Proj\R2915B_Rdy_psh_02-E.dgn
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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	2-F
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

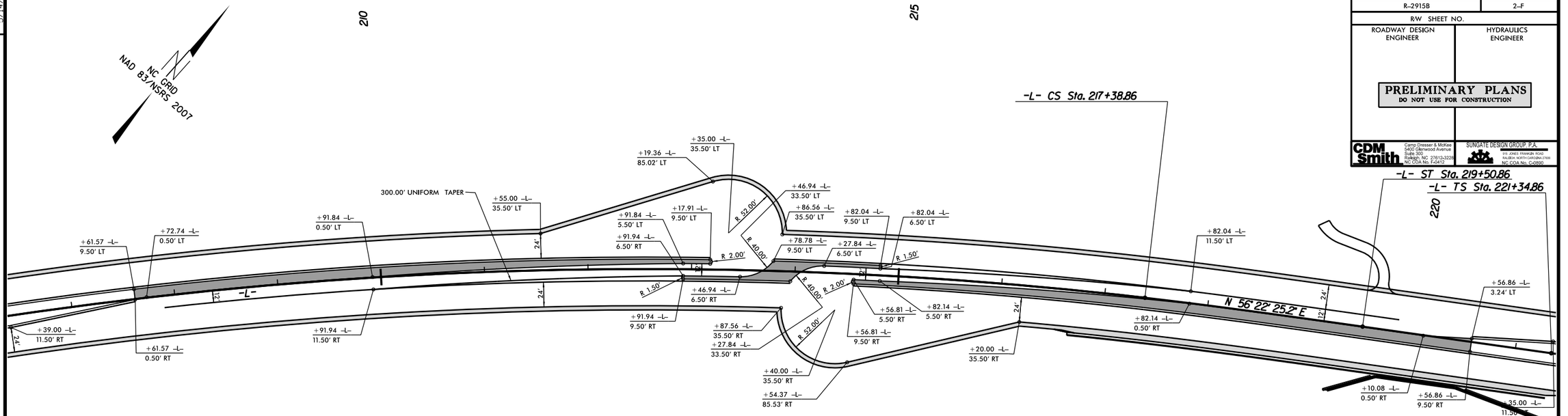
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3226, NC COA No. F-0412

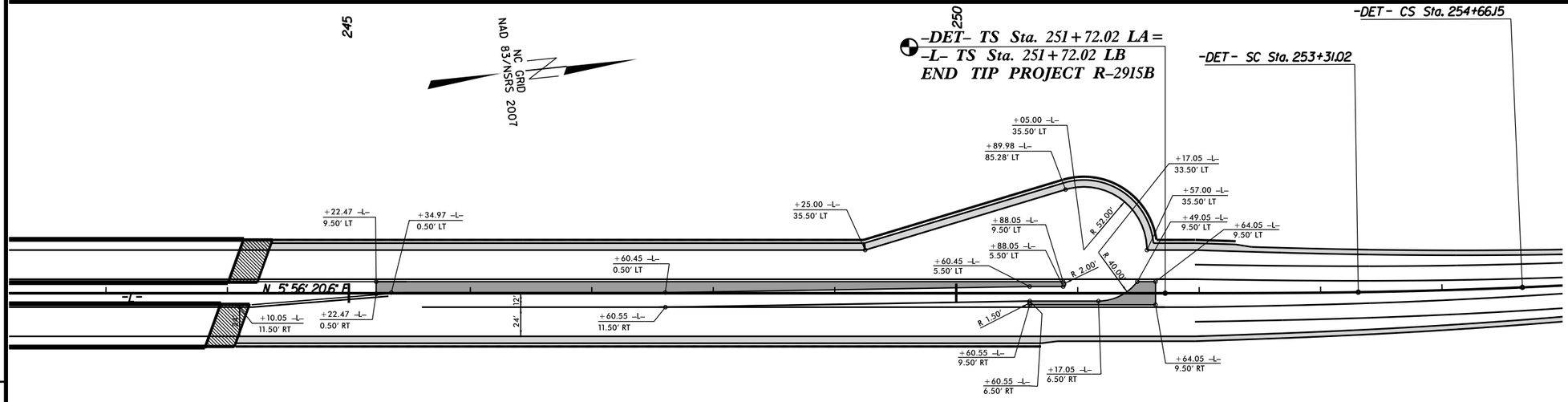
SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

5/14/99

REVISIONS



U-TURN BULB DETAIL
(SCALE: 1" = 50')



U-TURN BULB DETAIL
(SCALE: 1" = 50')

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$$$$USERNAME$$$$

8/17/99

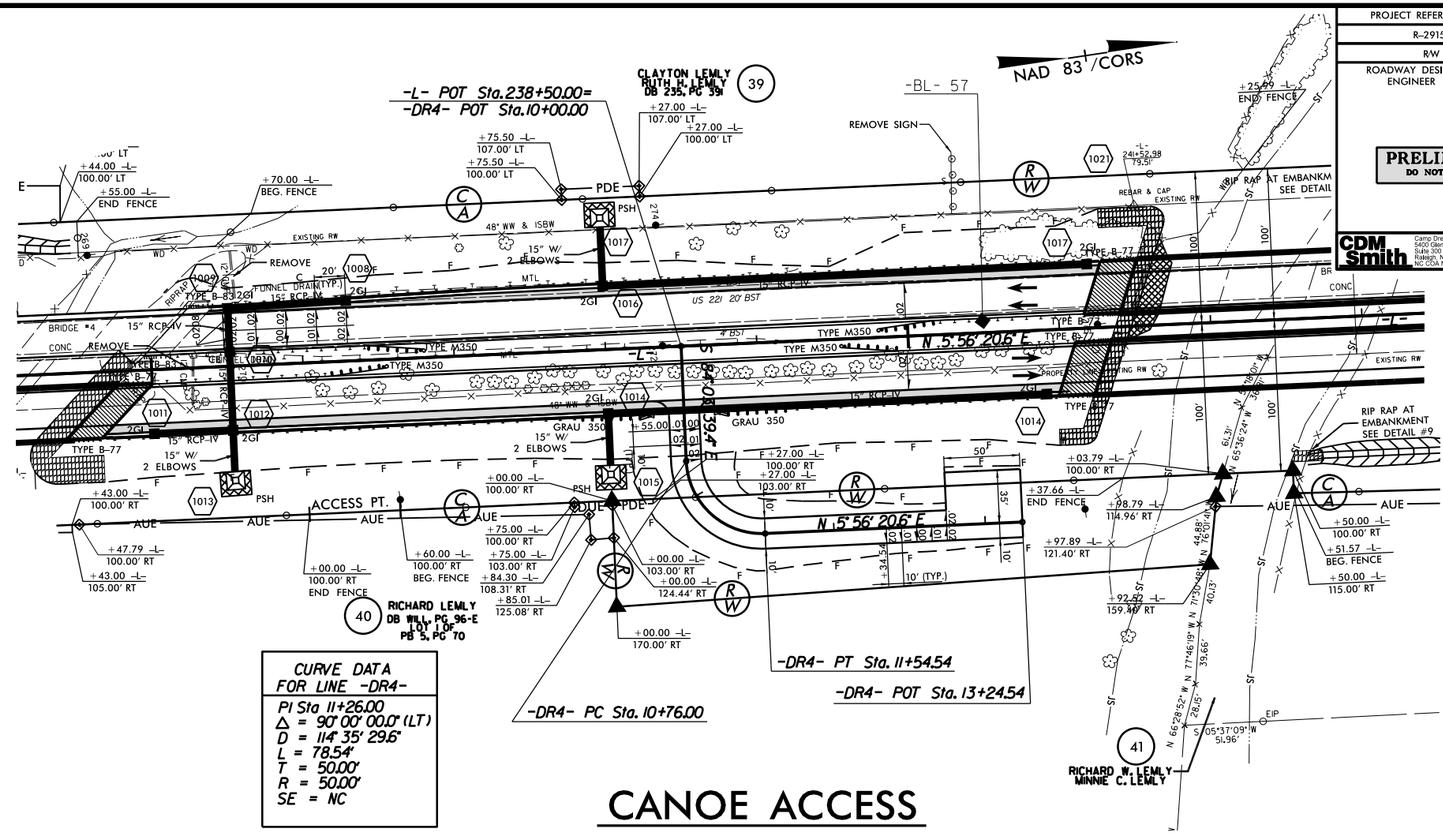
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	2-G
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3228, NC COA No. F-0412

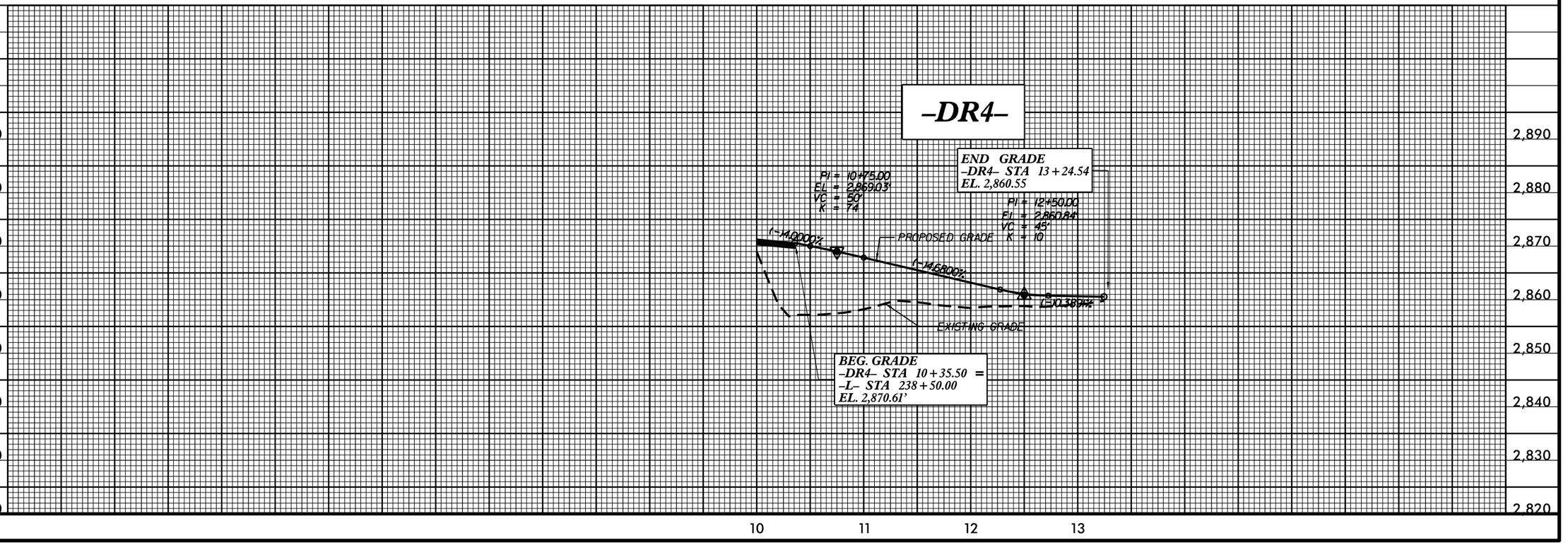
SUNGATE DESIGN GROUP, P.A. — 915 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0890



CURVE DATA FOR LINE -DR4-

PI Sta 11+26.00
Δ = 90° 00' 00.0" (LT)
D = 114° 35' 29.6"
L = 78.54'
T = 50.00'
R = 50.00'
SE = NC

CANOE ACCESS



03-OCT-2013 07:07
R:\Roadway Proj\R2915B_Rdy_psh_02-G.dgn
$$$$CELLRANGE$$$$

5/28/99

COMPUTED BY: RES DATE: 6-26-2013
CHECKED BY: DATE:

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	SHANE VANNOY, LLC
2	4,5	RICHARD FAYKO, JR. AND WIFE DONNA FAYKO
3	4	KEITH BLACKBURN
4	4	BAXTER DERRICK HARDIN, LONNIE MILLER, KENNETH DAY,
		WENDELL WILCOX, TRUSTEES OF MORNING STAR
		BAPTIST CHURCH
5	4	LAVERNE E. WATSON, MARTHA D. WATSON
6	4,5	THOMAS R. GRIGGS, PATRICIA D. GRIGGS,
		CHARLES G. DEAL, VIOLA A. DEAL
7	4,5	THOMAS R. GRIGGS, PATRICIA D. GRIGGS,
		CHARLES G. DEAL, VIOLA A. DEAL
8	4,5	BRUCE R. GREENE AND WIFE RETA H. GREENE
9	4	THOMAS R. GRIGGS
10	4	DEAN POTTER
11	4,5	UNKNOWN
12	5	CHARLES COOK AND WIFE ANITA COOK
13	5	BAXTER DERRICK HARDIN
14	5	MICHAEL W. MAYNARD, DEBORAH BROWN
15	5	UNKNOWN
16	5,6	KETINA CORPORATION
17	5,6	CATHERINE GREEN
18	6	RODNEY C. OLIVER, MILLICENT J. OLIVER
19	6	JONATHAN ROY COLLINS, TERRY LYNN IRISH
20	6	OAK RIDGE CONSTRUCTION, INC.
21	6,7	R.C. MILLER, ZELMA MILLER, DOUGLAS M. RUDERSDORF
22	6	JAMES D. ALEXANDER, DONNA T. ALEXANDER
23	6,7	RICHARD E. WATSON, LISA H. WATSON
24	6,7	GARY E. TAYLOR, VICKIE TAYLOR
25	7	PER A. KJONSO, MICHELLE KJONSO
26	7	LUIS M. FALERO, ROSARY P. FALERO
27	7	ROBERT L. KILBY, JOYCE T. KILBY
28	7	ROBERT L. KILBY, JOYCE T. KILBY
29	7	UNKNOWN
30	7,8,9	NITA FERRELL LANGER, TRUSTEE
31	7,8	JERRY GRAY STYERS, GERALDINE MYERS STYERS
32	8	PHIL A. TEMPLETON, PHYLLIS TEMPLETON
33	8	MICHAEL K. GOODMAN, FREDA R. GOODMAN
34	8,9	JAMES CLINE CHURCH, ELLEN LEMLY CHURCH
35	9,10	ARCHIE L. PIERCE, 6/20/2013 2:30:40 PMNANCY C. PIERCE
36	9	JAMES CLINE CHURCH, ELLEN LEMLY CHURCH
37	9	JAMES CLINE CHURCH, ELLEN LEMLY CHURCH
38	9,10	RICHARD W. LEMLY, MINNIE C. LEMLY, TRUSTEES OF THE
		RICHARD W. LEMLY LIVING TRUST
39	10,11	CLAYTON LEMLY, RUTH H. LEMLY
40	10,11	RICHARD LEMLY
41	11	RICHARD W. LEMLY, MINNIE C. LEMLY
42	11	TRACY C. LEMLY, ELIZABETH C. LEMLY
43	11	JAMES CLINE CHURCH, ELLEN L. CHURCH, EVELYN LEMLY
44	11,12	RICK D. WEAVER, ALLISON L. WEAVER
45	11	RICHARD C. CORNEJO, LORETTA A. CORNEJO
46	11,12	BARNEY F. WATSON, RAMONA N. WATSON, TRUSTEES OF
		THE WATSON FAMILY TRUST
47	11,12	TRACY C. LEMLY, ELIZABETH C. LEMLY
48	12	JANET LOU YOUNG
49	12	RONALD S. GREENE, CARLENE G. GREENE
50	12	RIVER RIDGE UNLIMITED, INC.
51	12	BARBARA CARTER LIVING TRUST
52	12	BARBARA CARTER LIVING TRUST
53	12	UNKNOWN
54	12	UNKNOWN

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	3-C

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION			UNCLASSIFIED EXCAVATION	UNDERCUT	EMBANKMENT +%	BORROW	WASTE
-L- 158+31.70	TO	186+00.00	370,982		23,735		347,247
-Y9- 10+35.50	TO	16+90.08	67,812		8		67,804
-DR1- 10+35.50	TO	15+43.00	27,618				27,618
-DR2- 10+35.50	TO	14+90.00	26,979				26,979
		SUBTOTAL	493,391		23,743		469,648
-L- 186+00.00	TO	198+02.00 (BRIDGE)	116,145		7,171		108,974
-DR3- 10+35.50	TO	19+95.00	78,548		38		78,510
-DR3B- 10+06.00	TO	12+35.00	5,406		1		5,405
		SUBTOTAL	200,099		7,211		192,889
-L- 199+27.00 (BRIDGE)	TO	216+00	108,817		23,419		85,398
-Y10- 12+75.00	TO	17+62.15	11,545		902		10,643
		SUBTOTAL	120,362		24,320		96,042
-L- 216+00	TO	233+52.57 (BRIDGE)	4,337		41,425	37,088	
-Y11- 10+55.00	TO	12+65.47	463		577	114	
-Y12- 12+85.00	TO	14+87.00	2,310		439		1,871
		SUBTOTAL	7,110		42,442	37,203	1,871
-L- 234+92.87 (BRIDGE)	TO	241+44.24 (BRIDGE)	275		15,282	15,007	
		SUBTOTAL	275		15,282	15,007	
-L- 243+73.57 (BRIDGE)	TO	251+72.02					
-DET- 251+72.02	TO	261+05.51					
-Y13- 11+50.00	TO	12+86.60					
-Y13A- 10+21.98	TO	12+77.00	4,461				4,461
		SUBTOTAL	55,356		68,005	65,595	52,945
TOTAL			876,593		181,003	117,805	813,394
LOSS DUE TO CLEARING & GRUBBING							
ADDITIONAL UNDERCUT							
ROCK WASTE TO REPLACE BORROW							
ADJUST FOR ROCK WASTE							
WASTE IN LIEU OF BORROW						-117,805	-117,805
PROJECT TOTAL			876,593		181,003		695,590
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT							
GRAND TOTAL			876,593		181,003		695,590
SAY			876,600		181,100		695,600
EST. DDE = 682 CUBIC YARDS							
SHOULDER BORROW = X,XXX CUBIC YARDS							

03-OCT-2013 07:07
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3226, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

REVISIONS

01/31/14 – R/W REVISIONS: UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 1. – PJS

06/03/14 – R/W REVISIONS: ADDED PROPOSED R/W & C/A FROM -Y9A- 13+09.68 TO -L- 160+01.83 RIGHT ON PARCEL 3; REMOVED GREEN HOUSE AND PROVIDED ACCESS ON PARCEL 3; UPDATED PROPERTY OWNER NAMES ON PARCELS 5, 7 AND 8; SUBDIVIDED PARCEL 11 INTO 11, 11A, AND 11B AND ADDED PROPERTY OWNER NAMES AND DEED REFERENCES. – JBW

CURVE DATA FOR LINE -L-		
PIs Sta 159+39.85	PIs Sta 164+67.93	PI Sta 166+14.75
Θs = 6° 58' 44.0"	Θs = 8° 16' 12.2"	Δ = 4° 52' 01.0" (RT)
Ls = 324.00'	Ls = 306.00'	D = 5° 24' 18.9"
LT = 216.17'	LT = 204.22'	L = 90.04'
ST = 108.15'	ST = 102.20'	T = 45.05'
		R = 1,060.00'
		SE = 0.06
		RUNOFF = 306.00'

CURVE DATA FOR LINE -DRI-			
PI Sta 10+71.67	PI Sta 11+25.16	PI Sta 13+17.28	PI Sta 14+66.81
Δ = 44° 26' 06.8" (RT)	Δ = 19° 04' 45.2" (LT)	Δ = 53° 08' 01.5" (LT)	Δ = 8° 58' 51.4" (LT)
D = 127° 19' 26.2"	D = 26° 02' 36.7"	D = 75° 59' 20.8"	D = 14° 19' 26.2"
L = 34.90'	L = 73.26'	L = 69.92'	L = 62.70'
T = 18.38'	T = 36.97'	T = 37.70'	T = 31.41'
R = 45.00'	R = 220.00'	R = 75.40'	R = 400.00'
SE = NC	SE = NC	SE = NC	SE = NC

NAD 83 /CORS

-L- CS Sta. 158+31.70 LA. =
-L- CS Sta. 160+01.83 LB.
BEGIN TIP PROJECT R-2915B
END TIP PROJECT R-2915A

-L- SC Sta. 157+96.88

-L- SRS Sta. 154+72.88

-L- Sta. 158+52.64 =
-Y9A- PC Sta 10+00.00

-L- TS Sta. 162+63.70

-L- POT Sta. 161+65.04
END CULVERT

-L- ST Sta. 161+55.70

-L- POS Sta. 161+32.67
BEGIN CULVERT

-L- POS Sta. 163+50.44 =
-DRI- POT Sta. 10+00.00

-L- POC Sta. 164+00.00

-Y9A- PT Sta. 13+09.68

-Y9A- POT Sta. 13+10.00
END CONSTRUCTION

-DRI- PC Sta. 10+53.29

-DRI- PRC Sta. 10+88.19

-DRI- PT Sta. 11+61.45

-DRI- PC Sta. 12+79.58

-DRI- PT Sta. 13+49.50

-DRI- PC Sta. 14+35.40

-DRI- PT Sta. 14+98.10

-DRI- POT Sta. 15+43.00

-BL-GPS-2915-5

HERBERT D. WATSON, L/E
DB 0-4 PG 255

CATHERINE R. CLARK
DB 275 PG 170

HUBERT E. HAMILTON?
DB 282 PG 1776

SHANE VANNOY, LLC
DB 390 PG 769

RAY T. SMITH, ET.AL
DB 0-4 PG 518

FS HOLDING, LTD. &
BAXTER NORRIS CONSTRUCTION
DB 242 PG 2234
PB 7 PG 53
PB 6 PG 64

JOHN YATES
DB 402 PG 1707

RICHARD FAYKO, JR.
AND WIFE
DONNA FAYKO
DB 282, PG 1081

KEITH BLACKBURN
DB 126, PG 1493

MARTHA D. WATSON
DB 0-4, PG 111

BAXTER DERRICK HARDIN
LONNIE MILLER
KENNETH DAY
WENDELL WILCOX
TRUSTEES OF MORNING STAR BAPTIST CHURCH
DB 226, PG 626
PORTION OF PB 5, PG 242

KAREN FLOWE PRESLAR
AMY F. ROSE
DB 206 PG 1446
PB 5 PG 242

THOMAS R. GRIGGS
PATRICIA D. GRIGGS
CHARLES G. DEAL
VIOLA A. DEAL
DB 271, PG 143

THOMAS R. GRIGGS
PATRICIA D. GRIGGS
CHARLES G. DEAL
VIOLA A. DEAL
CHARLES L. DEAL
DB 130, PG 148

THOMAS R. GRIGGS
PATRICIA D. GRIGGS
DB 197, PG 1097
DB 254, PG 2157

JOSEPH TURRISI
ANGELA TURRISI
DB 254, PG 380
DB 350, PG 2170
DB 262, PG 471
DB 255, PG 131
DB 254, PG 578

THOMAS R. GRIGGS
DB 254, PG 2159
PORTION OF PB 5, PG 590

DEAN POTTER
DB 254, PG 1563
PORTION OF PB 5, PG 590

BRICE R. GREENE
AND WIFE
RETA H. GREENE
DB 253, PG 1693

TO BE DONE BY OTHERS

TO BE DONE BY OTHERS

24' DRIVE TO BE CONSTRUCTED BY OTHERS

AREA UNDER CONSTRUCTION

ACCESS POINT

TIE IN EXIST. SLOPES WITH FILL, SEE X-SECTS

SHOULDER BERM GUTTER FROM STA 162+25 TO STA 162+61

STREAM BANK STABILIZATION AND FLOODPLAIN BENCH EST. 15 TONS SEE DETAIL #31

CL 'I' RIP RAP AND FLOODPLAIN BENCH EST. 15 TONS SEE DETAIL #31

CL 'I' RIP RAP STREAM BANK STABILIZATION AND FLOODPLAIN BENCH EST 45 TONS SEE DETAIL #31

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

LAT 2' GRASSED SWALE SEE DETAIL #1

LINE PROP DITCH W/PSRM EST. 660 SY SEE DETAIL #4

PROP. CONC MONO. ISLAND

MATCH TO SHEET 5 – -L- POC Sta. 164+00.00

SEE SHEET 13 FOR -L- PROFILE
SEE SHEET 20 FOR -DRI- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

04-JUN-2014 06:54
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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3226, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

REVISIONS

0131/4 – R/W REVISIONS: UPDATED PROPERTY OWNER NAME ON PARCEL 8; UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 11 AND 16; SUBDIVIDED PARCEL 16 CREATING PARCELS 16, 16A, 16B AND 16C. – PJS

060314 – R/W REVISIONS: UPDATED PROPERTY OWNER NAMES ON PARCELS 7 AND 8; SUBDIVIDED PARCEL 11 INTO PARCELS 11, 11A AND 11B AND ADDED PROPERTY OWNER NAMES AND DEED REFERENCES; UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 14 AND 15. – JBW

5/14/99

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NAD 83 /CORS

CURVE DATA FOR LINE -L-				
PIs Sta 164+67.93	PI Sta 166+14.75	PIs Sta 167+61.95	PIs Sta 171+69.97	PI Sta 175+62.67
Θs = 8° 16' 12.2"	Δ = 4° 52' 01.0" (RT)	Θs = 8° 16' 12.2"	Θs = 8° 16' 12.2"	Δ = 30° 41' 43.3" (LT)
Ls = 306.00'	D = 5° 24' 18.9"	Ls = 306.00'	Ls = 306.00'	D = 5° 24' 18.9"
LT = 204.22'	L = 90.04'	LT = 204.22'	LT = 204.22'	L = 567.88'
ST = 102.20'	T = 45.05'	ST = 102.20'	ST = 102.20'	T = 290.93'
	R = 1,060.00'			R = 1,060.00'
	SE = 0.06			SE = 0.06
	RUNOFF = 306.00'			RUNOFF = 306.00'

CURVE DATA FOR LINE -Y9-	
PI Sta 11+03.56	PI Sta 13+37.14
Δ = 30° 52' 08.4" (LT)	Δ = 78° 27' 45.3" (LT)
D = 32° 44' 25.6"	D = 57° 17' 44.8"
L = 94.28'	L = 136.94'
T = 48.32'	T = 81.65'
R = 175.00'	R = 100.00'
SE = 0.04	SE = 0.06
RUNOFF = 52.00'	RUNOFF = 84.00'

CURVE DATA FOR LINE -DR2-	
PI Sta 11+58.96	PI Sta 13+37.65
Δ = 41° 05' 41.5" (RT)	Δ = 55° 25' 23.1" (LT)
D = 57° 17' 44.8"	D = 20° 50' 05.4"
L = 71.72'	L = 266.01'
T = 37.48'	T = 144.45'
R = 100.00'	R = 275.00'
SE = NC	SE = NC

-L- POC Sta. 164+00.00

-L- SC Sta. 165+69.70

-L- CS Sta. 166+59.74

-L- POS Sta. 167+00.00 -L- SRS Sta. 169+65.74
-DR2- POT Sta. 10+00.00

-L- SC Sta. 172+71.74

-L- POC Sta. 174+55.08=
-Y9- POT Sta. 10+00.00

-L- POC Sta. 177+00.00

-DR2- PC Sta. 11+21.48

-DR2- PRC Sta. 11+93.20

-DR2- PT Sta. 14+59.21

-DR2- POT Sta. 14+90.00
END CONSTRUCTION

-DR2- POT Sta. 15+06.93

-Y9- PC Sta. 10+55.24

-Y9- PT Sta. 11+49.53

-Y9- PC Sta. 12+55.49

-Y9- PT Sta. 13+92.44

RICHARD FAYKO, JR. AND WIFE DONNA FAYKO DB 282, PG 1081

THOMAS R. GRIGGS PATRICIA D. GRIGGS CHARLES G. DEAL VIOLA A. DEAL CHARLES L. DEAL DB 130, PG 148

THOMAS R. GRIGGS PATRICIA D. GRIGGS DB 197, PG 1057 DB 254, PG 2057

CHARLES COOK AND WIFE ANITA COOK DB 229, PG 1978

BRICE R. GREENE AND WIFE RETA H. GREENE DB 253, PG 1693

BAXTER DERRICK HARDIN DB 308, PG 1723

RICHARD TERRY GREENE, ET AL DB 443, PG 864

JOSEPH TURRISI ANGELA TURRISI DB 254, PG 380 DB 350, PG 2170 DB 212, PG 471 DB 255, PG 171 DB 254, PG 378

DEBORAH BROWN DB 408, PG 2097

DANNY L. WEST DB 349, PG 15

CATHERINE GREEN DB P-3, PG 333

BLACK DOG ASSOCIATES, LLC DB 439, PG 1090

EDWIN C. INGLE DB 439, PG 837

JOHN STACEY, ET AL DB 439, PG 399

MATCH TO SHEET 4

MATCH TO SHEET 6

MATCH TO SHEET 6

SEE SHEET 13 FOR -L- PROFILE
SEE SHEET 18 FOR -Y9- PROFILE
SEE SHEET 20 FOR -DR2- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3226, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

REVISIONS

01/31/14 - R/W REVISIONS; UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 16, 20 AND 21; SUBDIVIDED PARCEL 16 CREATING PARCELS 16, 16B AND 16C. - PJS

5/14/99

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NAD 83 / CORS

CURVE DATA FOR LINE -L-			
PI Sta 175+62.67	PIs Sta 179+41.83	PIs Sta 187+45.32	PI Sta 195+10.72
Δ = 30° 41' 43.3" (LT)	Θs = 8° 16' 12.2"	Θs = 7° 17' 02.3"	Δ = 57° 44' 33.0" (RT)
D = 5° 24' 18.9"	Ls = 306.00'	Ls = 306.00'	D = 4° 45' 38.7"
L = 567.88'	LT = 204.22'	LT = 204.17'	L = 1,212.88'
T = 290.93'	ST = 102.20'	ST = 102.16'	T = 663.58'
R = 1,060.00'			R = 1,203.50'
SE = 0.06			SE = 0.06
RUNOFF = 306.00'			RUNOFF = 306.00'

CURVE DATA FOR LINE -DR3-	
PI Sta 11+46.03	PI Sta 15+69.67
Δ = 85° 08' 40.3" (LT)	Δ = 38° 24' 10.7" (RT)
D = 57° 17' 44.8"	D = 5° 26' 19.0"
L = 148.61'	L = 706.12'
T = 91.87'	T = 366.90'
R = 100.00'	R = 1,053.50'
SE = NC	SE = NC

CURVE DATA FOR LINE -DR3B-	
PI Sta 11+06.89	
Δ = 7° 07' 34.7" (LT)	
D = 14° 19' 26.2"	
L = 49.75'	
T = 24.91'	
R = 400.00'	
SE = NC	

SEE SHEET 14 FOR -L- PROFILE
SEE SHEET 18 FOR -Y9- PROFILE
SEE SHEET 19 FOR -DR3- PROFILE
SEE SHEET 19 FOR -DR3B- PROFILE
SEE SHEET 2-E FOR U-TURN BULB DETAILS
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

MATCH TO SHEET 5 -L- POC Sta. 177+00.00

MATCH TO SHEET 5 -Y9- POT Sta. 15+00.00

MATCH TO SHEET 7 -L- POC Sta. 190+00.00

-L- CS Sta. 178+39.62

-L- ST Sta. 181+45.62

-L- TS Sta. 185+41.14

-L- SC Sta. 188+47.14

-L- POS Sta. 188+09.10=
-DR3- POT Sta. 10+00.00

-DR3- PC Sta. 10+54.10

-DR3- PRC Sta. 12+02.73

-DR3- POC Sta. 11+16.30=
-DR3B- POT Sta. 10+00.00

-DR3B- PC Sta. 10+81.99

-DR3B- PT Sta. 11+31.74

-DR3B- POT Sta. 12+35.00
END CONSTRUCTION

-DR3B- POT Sta. 12+57.84

-Y9- POT Sta. 16+90.08
END CONSTRUCTION

CATHERINE GREEN
DB P-3, PG 333
17

MILLER PROPERTIES OF ASHE, LLC, ET AL
DB 416, PG 1974
21

JAMES O. ALEXANDER
DONNA T. ALEXANDER
DB 325, PG 1271
22

JONATHAN ROY COLLINS
TERRY LYNN IRISH
DB 360, PG 1244
19

BLACK DOG ASSOCIATES, LLC
DB 439, PG 1090
16

GARY F. TAYLOR
VICKIE TAYLOR
DB 343, PG 1963
24

RICHARD E. WATSON
LISA H. WATSON
DB 313, PG 2429
23

EDWARD PHILLIPS
DB 442, PG 2349
20

RODNEY C. OLIVER
MILLICENT J. OLIVER
DB 384, PG 953
LOT 3 OF
PB 7, PG 197
PB 6, PG 637
18

JOHN STACEY, ET AL
DB 439, PG 399
16B

GLENN MISINCO
DB 394, PG 190
16C

BM#8

-BL- 48

-BL- 49

-BL- 50

-L-

-Y9-

-DR3-

-DR3B-

TURRISI TRAIL 18' BST

GAP CREEK

48" WW FENCE

15" CSP W/ELBOW

PROP. CONC. MONO. ISLAND

GRASS ISLAND

PROP. 2'-9" C&G

LINE PROP DITCH W/PSRM
EST. 730 SY
SEE DETAIL #4

2' BASE DITCH W/CL 'I' RIP RAP
EST. 70 TONS
EST. 120 SY GF
SEE DETAIL #5

SPECIAL CUT DITCH W/PSRM
SEE DETAIL #4

LINE EXTG DITCH W/PSRM
EST. 120 SY

CL 'I' RIP RAP
EST. 15 SY GF

CL 'B' RIP RAP
EST. 1 TON
EST. 5 SY GF

CL 'I' RIP RAP
(BANKS ONLY)
SEE DETAIL #29

LAT 6' GRASSED SWALE
W/COIR FIBER MATTING
EST. 340 SY
SEE DETAIL #6

SHOULDER BERM GUTTER
FROM STA 170+50
STA 182+75

ACCESS PT 1

REMOVE PAVEMENT

REMOVE

72" ROCK WALL

N 34° 48' 05.0" W

N 25° 04' 38.6" W

S 64° 49' 06.5" E

S 26° 51' 58" E 257.29'

S 22° 35' 16" E 329.28'

N 53° 48' 49" E 192.25'

S 22° 35' 16" E 22.43'

S 26° 34' 44" W 281.06'

S 39° 27' 52" W 522.20'

S 51° 59' 18" E 153.57'

S 47° 01' 57" W 177.54'

N 21° 28' 05" W 335.43'

S 25° 57' 25" W 338.84'

S 61° 26' 22" E 280.10'

S 61° 26' 22" E 224.71'

S 52° 08' E 63.55'

S 52° 08' E 22.87'

S 28° 09' 29" E 175.53'

S 29° 31' 31" E 261.47'

S 29° 31' 31" E 261.47'

S 29° 31' 31" E 261.47

CURVE DATA FOR LINE -L-			
PIs Sta 187+45.32	PI Sta 195+10.72	PIs Sta 201+03.24	PI Sta 209+61.76
Θs = 7° 11' 02.3"	Δ = 57° 44' 33.0" (RT)	Θs = 0° 43' 22.4"	Δ = 21° 27' 22.7" (RT)
Ls = 306.00'	D = 4° 45' 38.7"	Ls = 106.00'	D = 1° 21' 51.1"
LT = 204.17'	L = 1,212.88'	LT = 62.81'	L = 1,572.83'
ST = 102.16'	T = 663.58'	ST = 43.22'	T = 795.74'
	R = 1,203.50'	R = 4,200.00'	R = 4,200.00'
	SE = 0.06	SE = 0.04	SE = 0.04
	RUNOFF = 306.00'		RUNOFF = 212.00'

CURVE DATA FOR LINE -Y10-	
PI Sta 14+13.20	PI Sta 16+69.79
Δ = 47° 35' 37.4" (LT)	Δ = 64° 19' 18.9" (RT)
D = 28° 38' 52.4"	D = 38° 11' 49.9"
L = 166.13'	L = 168.39'
T = 88.20'	T = 94.32'
R = 200.00'	R = 150.00'
SE = 0.06	SE = 0.06
RUNOFF = 90.00'	RUNOFF = 90.00'

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3226, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

NAD 83 /CORS

-Y10- PC Sta. 12+75.00
BEGIN CONSTRUCTION

-Y10- PC Sta. 13+25.00

-Y10- PT Sta. 14+91.13

-Y10- PC Sta. 15+75.47

-L- CS Sta. 200+60.03
-Y10- PT Sta. 17+43.86

-L- SC Sta. 201+66.03

-DR3- PCC Sta. 19+08.88

-DR3- POT Sta. 19+95.47

-DR3- PT Sta. 19+85.75

-L- POC Sta. 200+76.32=
-Y10- POT Sta. 17+98.86

MATCH TO SHEET 6 – -L- POC Sta. 190+00.00

MATCH TO SHEET 8 – -L- POC Sta. 203+00.00

LUNDY TRIVETTE HEIRS
DB 303, PG 434

MILLER PROPERTIES OF ASHE, LLC, ET AL
DB 416, PG 1974

PER A. KJONSO
MICHELLE K.JONSO
DB 345, PG 2237

R.C. MILLER
ZELMA MILLER
DOUGLAS M. RUDERSDORF
DB 286, PG 388

LUIS M. FALERO
ROSARY P. FALERO
DB 339, PG 2032

NITA FERRELL LANGER, TRUSTEE
DB 192, PG 105
DB 06, PG 608
PB 5, PG 377

ROBERT L. KILBY
JOYCE T. KILBY
DB 167, PG 649
LOTS 27-29 OF
PB 5, PG 70

ROBERT L. KILBY
JOYCE T. KILBY
DB 160, PG 213
LOT 01 OF
PB 5, PG 70

JERRY GRAY STYERS
GERALDINE MYERS STYERS
DB 217, PG 171
LOTS 24-26 OF
PB 5, PG 70

AVERAGE DAILY TRAFFIC
2015
2035
-11-
LIBERTY GROVE CH RD
100 180 415 700
10258 17400 -L- 10572 18000
US 221

CURVE DATA FOR LINE -DR3-	
PI Sta 15+69.67	PI Sta 19+49.33
Δ = 38° 24' 10.7" (RT)	Δ = 44° 02' 24.4" (RT)
D = 5° 26' 19.0"	D = 57° 17' 44.8"
L = 706.12'	L = 76.86'
T = 366.90'	T = 40.44'
R = 1,053.50'	R = 100.00'
SE = NC	SE = NC

SEE SHEET 14 FOR -L- PROFILE
SEE SHEET 19 FOR -Y10- PROFILE
SEE SHEET 19 FOR -DR3- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

REVISIONS
01/31/14 – R/W REVISIONS: UPDATED PROPOERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 21 AND 29. – PJS

5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3226, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

CURVE DATA FOR LINE -L-		
PIs Sta 201+03.24	PI Sta 209+61.76	PIs Sta 218+09.53
Θs = 0° 43' 22.4"	Δ = 21° 27' 22.7" (RT)	Θs = 1° 26' 45.7"
Θs = 2° 31' 24.0"	D = 1° 21' 51.1"	Ls = 212.00'
Ls = 106.00'	L = 1,572.83'	LT = 141.34'
LT = 62.81'	T = 795.74'	ST = 70.67'
ST = 43.22'	R = 4,200.00'	
	SE = 0.04	
	RUNOFF = 212.00'	

NAD 83 / CORS

REVISIONS 5/14/99

MATCH TO SHEET 7 -L- POC Sta. 203+00.00

MATCH TO SHEET 9 -L- POC Sta. 216+00.00

-BL- 53

-BL- 54

-L-

205

210

215

+90.00 -L- 337.00' LT

+36.00 -L- 285.00' LT

+58.00 -L- 100.00' LT

+70.00 -L- 100.00' LT BEG. FULL C/A

+21.00 -L- 100.00' LT

+13.00 -L- 304.00' LT

+63.00 -L- 295.00' LT

+14.00 -L- 135.00' LT

+05.00 -L- 125.00' LT

+20.00 -L- 100.00' LT

BM #9

30

NITA FERRELL LANGER, TRUSTEE
DB 192, PG 105
DB C6, PG 608
PB 5, PG 377

24" W/ELBOWS

FALSE CUT SEE DETAIL #12

POSSIBLE SPRING LOCATION

48" WW FENCE

LAT 2' GRASSED SWALE SEE DETAIL #1

SPEC DITCH GRADE STA 214+00 TO 215+00 -L- LT SEE PROFILE

0801 0802 0803 0804 0805 0806 0807 0808 0809 0810 0811 0812 0813 0814 0815 0816 0817 0818

2GI FS PROP. 2'-9" C&G

CB GRASS ISLAND

REMOVE

FILL W/FLOWABLE MATERIAL

PROP. CONC. MONO. ISLAND

PROPERTY LINE-EXISTING RW

PROP. RW

11½SFD

+45.70 -L- 100.00' RT

+60.00 -L- 100.00' RT END FENCE

ACCESS PT.

+98.00 -L- 100.00' RT

+76.40 -L- 100.00' RT

+96.40 -L- 115.00' RT

+98.00 -L- 106.37' RT

+98.00 -L- 115.00' RT

+20.00 -L- 100.00' RT BEG. FENCE

+02.08 -L- 123.78' RT

+45.70 -L- 116.00' RT

+56.60 -L- 100.00' RT

+56.60 -L- 115.00' RT

+45.70 -L- 103.05' RT

+76.40 -L- 128.00' RT

+70.00 -L- 100.00' RT END FENCE

+71.20 -L- 128.00' RT

+84.00 -L- 100.00' RT

+71.20 -L- 105.27' RT

+71.20 -L- 109.17' RT

+70.00 -L- 100.00' RT END PARTIAL C/A BEG. FULL C/A BEG. FENCE

+84.00 -L- 120.00' RT

+70.50 -L- 100.00' RT

+70.50 -L- 102.45' RT

+70.50 -L- 120.00' RT

+54.98 -L- 131.36' RT

+87.30 -L- 113.17' RT

+16.31 -L- 143.78' RT

+78.95 -L- 144.42' RT

+52.65 -L- 122.77' RT

+20.26 -L- 144.08' RT

+32.86 -L- 155.08' RT

+43.27 -L- 143.94' RT

+33.48 -L- 135.41' RT

+30.00 -L- 158.00' RT

+75.00 -L- 100.00' RT

CL 'I' RIP RAP EST. 4 TONS EST. 12 SY GF

CL 'II' RIP RAP TO EL 2873.0 STA. 205+00 TO 207+00 -L- RT EST. 370 TONS

CL 'II' RIP RAP TO EL 2872.0 STA. 207+00 TO 211+65 -L- RT EST. 900 TONS

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

CL 'B' RIP RAP EST. 1 TONS EST. 5 SY GF

AREA UNDER CONSTRUCTION

SPEC CUT 2' GRASSED SWALE SEE DETAIL#10

31 JERRY GRAY STYERS
GERALDINE MYERS STYERS
DB 217, PG 171
LOTS 22 & 23 OF
PB 5, PG 70

32 PHIL A. TEMPLETON
PHYLLIS TEMPLETON
DB 777, PG 27
LOTS 18 & 20 OF
PB 5, PG 70

33 MICHAEL K. GOODMAN
FREDA R. GOODMAN
DB 161, PG 99
LOTS 14-17 OF
PB 5, PG 70

34 JAMES CLINE CHURCH
ELLEN LEMLY CHURCH
DB 271, PG 635
LOTS 9-13 OF
PB 5, PG 70

N 59°10'01" E 104.60'

N 76°27'01" E 114.08'

N 24°34'01" W 25.51'

60.00'

60' PRIVATE R/W PER PB 5, PG 70

N 82°37'38" E 155.09'

S 59°59'47" E 618.34'

S 47°54'34" E 613.72'

S 42°57'21" E

SEE SHEET 15 FOR -L- PROFILE
SEE SHEET __ FOR U-TURN BULB DETAILS
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue Suite 300, Raleigh, NC 27612-3226, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

CURVE DATA FOR LINE -L-

PI Sta 209+61.76	PIs Sta 218+09.53	PIs Sta 222+90.96	PI Sta 227+31.63
Δ = 21° 27' 22.7" (RT)	Θs = 1° 26' 45.7"	Θs = 6° 19' 27.0"	Δ = 37° 47' 10.6" (LT)
D = 1° 21' 51.1"	Ls = 212.00'	Ls = 234.00'	D = 5° 24' 18.9"
L = 1,572.83'	LT = 141.34'	LT = 156.10'	L = 699.06'
T = 795.74'	ST = 70.67'	ST = 78.09'	T = 362.78'
R = 4,200.00'			R = 1,060.00'
SE = 0.04			SE = 0.06
RUNOFF = 212.00'			RUNOFF = 234.00'

NAD 83 / CORS

-L- CS Sta. 217+38.86

-L- ST Sta. 219+50.86

-L- TS Sta. 221+34.86

-L- SC Sta. 223+68.86

-L- POC Sta.222+42.64=
-Y11- POT Sta.13+02.04

-Y11- POT Sta. 10+00.00

-Y11- POT Sta. 10+55.00
BEGIN CONSTRUCTION

MATCH TO SHEET 8 - -L- POC Sta. 216+00.00

MATCH TO SHEET 10 - -L- POC Sta. 229+00.00

N 56°22'25.2" E

JAMES CLINE CHURCH
ELLEN LEMLY CHURCH
DB 271, PG 635
LOTS 5-13 OF
PB 5, PG 70

NITA FERRELL LANGER, TRUSTEE
DB 192, PG 1051
PB 5, PG 377

ARCHIE L. PIERCE
NANCY C. PIERCE
DB 340, PG 764
DB 349, PG 177
LOT 6 OF
PB 7, PG 372

JAMES CLINE CHURCH
ELLEN LEMLY CHURCH
DB 190, PG 1003
LOTS 5-8 OF
PB 5, PG 70

JAMES CLINE CHURCH
ELLEN LEMLY CHURCH
DB 179, PG 1447
LOTS 3 & 4 OF
PB 5, PG 70

RICHARD W. LEMLY
MINNIE C. LEMLY
TRUSTEES OF THE
RICHARD W. LEMLY LIVING TRUST
DB 233, PG 857
LOT 2 OF
PB 5, PG 70

SHOULDER BERM GUTTER FROM STA 216+75 TO STA 221+35 -L- RT

CL 'II' RIP RAP TO EL 2868.0
STA. 215+60 TO STA. 219+20 -L- RT
EST. 500 TONS

STD 5' BASE DITCH W/CL 'I' RIP RAP
EST. DDE=120 CY
EST. 75 TONS
EST. 135 SY GF
SEE DETAIL #13

STD 3' BASE DITCH W/CL 'I' RIP RAP
EST. DDE=50 CY
EST. 40 TONS
EST. 65 SY GF
SEE DETAIL #19

CL 'II' RIP RAP TO EL 2867.0
STA. 221+70 TO STA. 223+80 -L- RT
EST. 215 TONS

SPEC DITCH GRADE
STA. 219+75 TO 221+90 -L- RT
SEE PROFILE

SPEC LAT 'V' DITCH W/PSRM
SEE DETAIL #15

SPEC LAT 3' BASE DITCH W/PSRM
SEE DETAIL #16

SPEC CUT 5' GRASSED SWALE
SEE DETAIL #14

LAT 2' BASE DITCH
SEE DETAIL #28

RIP RAP AT EMBANKMENT
SEE DETAIL #9

CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SY GF

SEE SHEET 15 FOR -L- PROFILE
SEE SHEET 18 FOR -Y11- PROFILE
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

REVISIONS

0603/14 - R/W REVISIONS: ADDED PDE FROM -L- STATION 222+38.00 TO 222+88.00 RIGHT ON PARCEL 36. - JBW

5/14/99

04-JUN-2014 07:28
R:\Roadway\Plans\R2915B_RDY_PSH_09.DGN
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3226, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

CURVE DATA FOR LINE -L-		
PIs Sta 222+90.96	PI Sta 227+31.63	PIs Sta 231+46.01
θs = 6° 19' 27.0"	Δ = 37° 47' 10.6" (LT)	θs = 6° 19' 27.0"
Ls = 234.00'	D = 5° 24' 18.9"	Ls = 234.00'
LT = 156.10'	L = 699.06'	LT = 156.10'
ST = 78.09'	T = 362.78'	ST = 78.09'
	R = 1,060.00'	
	SE = 0.06	
	RUNOFF = 234.00'	

CURVE DATA FOR LINE -Y12-		
PI Sta 10+85.51	PI Sta 12+57.23	PI Sta 13+87.10
Δ = 3° 45' 26.2" (LT)	Δ = 6° 27' 50.5" (RT)	Δ = 26° 01' 36.3" (LT)
D = 5° 59' 58.4"	D = 6° 59' 14.2"	D = 30° 09' 20.4"
L = 62.63'	L = 92.51'	L = 86.31'
T = 31.32'	T = 46.30'	T = 43.91'
R = 955.00'	R = 820.00'	R = 190.00'
SE = EX.	SE = EX.	SE = 0.05
		RUNOFF = 70.00'

NAD 83 / CORS

N 23°10'39" E 925.73'

N 34°35'37" W 304.54'

N 56°41'04" E 181.43'

S 31°55'17.5" E

-Y12- POT Sta. 10+00.00

-Y12- PC Sta. 10+54.19

-Y12- PT Sta. 11+16.81

-Y12- PC Sta. 12+10.92

-Y12- POC Sta. 12+85.00
BEGIN CONSTRUCTION

-Y12- PT Sta. 13+03.44

-Y12- PC Sta. 13+43.19

-Y12- PT Sta. 14+29.50

S 55°14'20" E 15.74'

-L- POC Sta. 229+00.00

MATCH TO SHEET 9 -L-

-L- POT Sta. 242+20.00

MATCH TO SHEET 11 -L-

N 5°56'20.6" E

-L- CS Sta. 230+67.92

-L- ST Sta. 233+01.92

-L- POC Sta. 229+72.13=
-Y12- POT Sta. 15+24.25

-L- POT Sta. 241+52.98

-BL- 56

-BL- 57

SPEC CUT 5' GRASSED SWALE SEE DETAIL #14

SPEC LAT 'V' DITCH W/ PSRM SEE DETAIL #15

ARCHIE L. PIERCE
NANCY C. PIERCE
DB 340, PG 164
DB 341, PG 177
LOT 6 OF
PB 7, PG 372
35

RICHARD W. LEMLY
MINNIE C. LEMLY
TRUSTEES OF THE
RICHARD W. LEMLY LIVING TRUST
DB 233, PG 857
LOT 2 OF
PB 5, PG 70
38

CLAYTON LEMLY
RUTH H. LEMLY
DB 235, PG 391
39

RICHARD LEMLY
DB WILL, PG 96-E
LOT 1 OF
PB 5, PG 70
40

RICHARD W. LEMLY
MINNIE C. LEMLY
41

CL 'B' RIP RAP
EST. 2 TON
EST. 7 SY GF

CL 'I' RIP RAP
EST. 31 TONS
EST. 22 SY GF

SHOULDER BERM GUTTER FROM STA 232+05 -L- RT TO BEGIN APPROACH SLAB

SHOULDER BERM GUTTER FROM STA 234+66 TO STA 240+97 -L- RT

SHOULDER BERM GUTTER FROM STA 235+42 TO STA 241+29 -L- LT

REMOVE SIGN

REMOVE

REMOVE FENCE

REMOVE CONC

REMOVE GRAVEL DRIVE

REMOVE 24" RCP

REMOVE 15" RCP

REMOVE 18" RCP

REMOVE 24" RCP

REMOVE 30" RCP

REMOVE 36" RCP

REMOVE 48" WW & ISBW

REMOVE 15" W/ 2 ELBOWS

REMOVE 15" RCP-IV

REMOVE 24" RCP-III

REMOVE 30" RCP-III

REMOVE 36" RCP-III

REMOVE 48" RCP-III

REMOVE 15" RCP-III

REMOVE 18" RCP-III

REMOVE 24" RCP-IV

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REMOVE 24" RCP-LXXXIX

REMOVE 30" RCP-LXXXIX

REMOVE 36" RCP-LXXXIX

REMOVE 48" RCP-LXXXIX

REMOVE 15" RCP-XC

REMOVE 18" RCP-XC

REMOVE 24" RCP-XC

REMOVE 30" RCP-XC

REMOVE 36" RCP-XC

REMOVE 48" RCP-XC

REMOVE 15" RCP-XCI

REMOVE 18" RCP-XCI

REMOVE 24" RCP-XCI

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REMOVE 48" RCP-XCI

REMOVE 15" RCP-XCII

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REMOVE 15" RCP-XCIII

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REMOVE 36" RCP-XCIV

REMOVE 48" RCP-XCIV

REMOVE 15" RCP-XCV

REMOVE 18" RCP-XCV

REMOVE 24" RCP-XCV

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REMOVE 36" RCP-XCV

REMOVE 48" RCP-XCV

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REMOVE 36" RCP-XCVIII

REMOVE 48" RCP-XCVIII

REMOVE 15" RCP-XCIX

REMOVE 18" RCP-XCIX

REMOVE 24" RCP-XCIX

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REMOVE 48" RCP-XCIX

REMOVE 15" RCP-C

REMOVE 18" RCP-C

REMOVE 24" RCP-C

REMOVE 30" RCP-C

REMOVE 36" RCP-C

REMOVE 48" RCP-C

REMOVE 15" RCP-CI

REMOVE 18" RCP-CI

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REMOVE 30" RCP-CI

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REMOVE 48" RCP-CI

REMOVE 15" RCP-CII

REMOVE 18" RCP-CII

REMOVE 24" RCP-CII

REMOVE 30" RCP-CII

REMOVE 36" RCP-CII

REMOVE 48" RCP-CII

REMOVE 15" RCP-CIII

REMOVE 18" RCP-CIII

REMOVE 24" RCP-CIII

REMOVE 30" RCP-CIII

REMOVE 36" RCP-CIII

REMOVE 48" RCP-CIII

REMOVE 15" RCP-CIV

REMOVE 18" RCP-CIV

REMOVE 24" RCP-CIV

REMOVE 30" RCP-CIV

REMOVE 36" RCP-CIV

REMOVE 48" RCP-CIV

REMOVE 15" RCP-CV

REMOVE 18" RCP-CV

REMOVE 24" RCP-CV

REMOVE 30" RCP-CV

REMOVE 36" RCP-CV

REMOVE 48" RCP-CV

REMOVE 15" RCP-CVI

REMOVE 18" RCP-CVI

REMOVE 24" RCP-CVI

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REMOVE 48" RCP-CIX

REMOVE 15" RCP-CX

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REMOVE 18" RCP-CXVII

REMOVE 24" RCP-CXVII

REMOVE 30" RCP-CXVII

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REMOVE 15" RCP-CXVIII

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REMOVE 36" RCP-CXIX

REMOVE 48" RCP-CXIX

REMOVE 15" RCP-CXX

REMOVE 18" RCP-CXX

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REMOVE 15" RCP-CXXXIX

REMOVE 18" RCP-CXXXIX

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REMOVE 30" RCP-CXXXIX

REMOVE 36" RCP-CXXXIX

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REMOVE 15" RCP-CXL

REMOVE 18" RCP-CXL

REMOVE 24" RCP-CXL

REMOVE 30" RCP-CXL

REMOVE 36" RCP-CXL

REMOVE 48" RCP-CXL

REMOVE 15" RCP-CXLI

RE

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3226, NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

CURVE DATA FOR LINE -DET-		
PIs Sta 252+78.02	PI Sta 253+98.59	PIs Sta 255+16.15
Θs = 0° 54' 39.6"	Δ = 1° 32' 54.7" (LT)	Θs = 0° 51' 34.0"
Ls = 159.00'	D = 1° 08' 45.3"	Ls = 150.00'
LT = 106.00'	L = 135.14'	LT = 100.00'
ST = 53.00'	T = 67.57'	ST = 50.00'
	R = 5,000.00'	
	SE = 0.03	
	RUNOFF 1 = 159.00'	
	RUNOFF 2 = 150.00'	

NAD 83 /CORS

-DET- TS Sta. 251+72.02 LA =
-L- TS Sta. 251+72.02 LB
-L- TS Sta 254+36.94 AH
END TIP PROJECT R-2915B

-DET- SC Sta. 253+31.02

-DET- CS Sta. 254+66.15

-BL- 58

MATCH TO SHEET 10 -L- POT Sta. 242+20.00

MATCH TO SHEET 12 -L- POS Sta. 255+00.00

CLAYTON LEMLY
RUTH H. LEMLY
DB 235, PG 391 (39)

TRACY C. LEMLY
ELIZABETH C. LEMLY
DB M-5, PG 121 (42)

TRACY C. LEMLY
ELIZABETH C. LEMLY
DB M-5, PG 121 (47)

RICK D. WEAVER
ALLISON L. WEAVER
DB 230, PG 1480 (44)

MINNIE C. LEMLY (TRUST)
DB 283, PG 217 (41)

JAMES CLINE CHURCH
ELLEN L. CHURCH
EVELYN LEMLY
DB 176, PG 381
LOT 10 OF
PB 5, PG 265 (43)

JAMES CLINE CHURCH
ELLEN L. CHURCH
EVELYN LEMLY
DB 176, PG 381
LOT 9 OF
PB 5, PG 265 (43)

RICHARD C. CORNEJO
LORETTA A. CORNEJO
DB 208, PG 66
LOT 11 OF
PB 5, PG 265 (46)

JACKIE W. NOBLETT
DB 198, PG 1294
LOT 7 OF
PB 5, PG 265 (55)

ROBERT T. PAISLEY
DB 239 PG 507 (53)

BARNEY F. WATSON
RAMONA N. WATSON
TRUSTEES OF THE
WATSON FAMILY TRUST
DB 217, PG 1209
LOT 12 OF
PB 5, PG 265

SOUTH FORK OF NEW RIVER

BRIDGE #10
CONC

ATTENUATOR

TYPE B-77

RAP AT EMBANKMENT SEE DETAIL #9

REMOVE RIP RAP AT EMBANKMENT SEE DETAIL #9

STD 3' BASE DITCH
EST. DOE 430 CY
SEE DETAIL #24

SHOULDER BERM GUTTER FROM END APPROACH SLAB TO STA. 252+30 -L- RT

SHOULDER BERM GUTTER FROM END APPROACH SLAB TO STA. 251+00 -L- RT

LAT 3' GRASSED SWALE SEE DETAIL #20

LAT 'V' DITCH SEE DETAIL #21

LAT 4' BASE DITCH SEE DETAIL #22

LAT 4' BASE DITCH W/CL 'T' RIP RAP SEE DETAIL #23

CL 'B' RIP RAP EST. 7 SY GF

CL 'B' RIP RAP EST. 2 TONS EST. 7 SY GF

TOE PROTECTION CL 'B' RIP RAP SEE DETAIL #2

LINE PROP DITCH W/SRM EST. 275 SY SEE DETAIL #17

LINE PROP DITCH W/SRM EST. 390 SY SEE DETAIL #17

SPED DITCH GRADE STA. 252+00 TO 253+80 -L- RT SEE PROFILE

PROP. CONC. MONO. ISLAND

REMOVE

15" W/ 2 ELBOWS

36" WW & ISBW

24" RCP-IV

GRAU 350

UNABLE TO LOCATE END SECTION

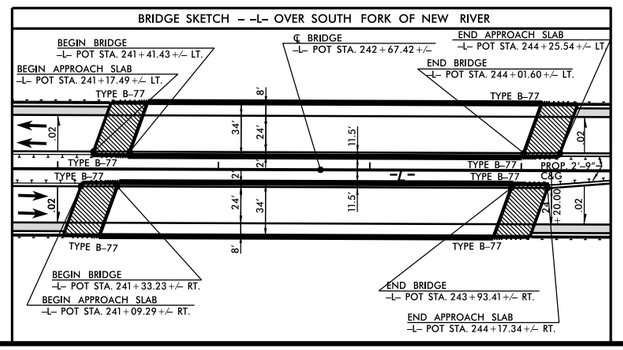
ACCESS PT.

EXISTING RW

PROPERTY LINE

CONCRETE MONUMENT

BRIDGE SKETCH -L- OVER SOUTH FORK OF NEW RIVER



SEE SHEET 16 FOR -L- PROFILE
SEE SHEET 16 FOR -DET- PROFILE
SEE SHEET __ FOR U-TURN BULB DETAILS
SEE SHEETS 2-C THRU 2-D FOR DRAINAGE DETAILS

REVISIONS

013114 - R/W REVISIONS: UPDATED PROPOERTY OWNER NAME ON PARCEL 41. - PJS
032514 - R/W REVISIONS: REVISED PROPOSED R/W ON PARCELS 41, 43, 44, 45, 46, 53 AND 55; ADDED AUE ON PARCELS 42 AND 44; REVISED C/A LIMITS TO PROVIDE DRIVEWAY ACCESS ON PARCEL 43; ADDED PARCEL NUMBER 55. - DJC

5/14/99

25-MAR-2014 15:30
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CDM Smith — Camp Dresser & McKee, 5400 Glenwood Avenue, Suite 300, Raleigh, NC 27612-3226, NC CDA No. F-0412

SUNGATE DESIGN GROUP, P.A. — 919 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606, NC COA No. C-0850

REVISIONS

11/2013 – R/W REVISIONS: CORRECTED THE R/W FROM –L– STA. 259+14.39 TO STA. 262+25.75 LT. ON PARCELS 48 AND 50. – PJS
01/31/14 – R/W REVISIONS; UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 53 AND 54. – PJS
03/25/14 – R/W REVISIONS; REVISED PROPOSED R/W ON PARCELS 46, 48, 53 AND 54; CORRECTED PARCEL NUMBER FROM 53 TO 50 ON PARCEL 50. – DJC
05/12/14 – R/W REVISIONS; REVISED PROPOSED R/W AND ADDED TCE ON PARCEL 53. – JBW

5/14/99

NAD 83 /CORS

MATCH TO SHEET 11 –DET– POS Sta. 255+00.00

-BY7- 83

-Y13- POT Sta. 10+00.00

-DET- CS Sta. 259+16.51

-L- SC Sta. 262+25.75

-DET- ST Sta. 259+97.51

-DET- SC Sta. 257+45.15

-Y13- PC Sta. 11+44.29

-Y13- POC Sta. 11+50.00
BEGIN CONSTRUCTION

-Y13- PT Sta. 11+70.50

-DET- POS Sta. 256+08.81

-Y13- POT Sta. 13+08.70

-DET- POT Sta. 261+05.51
END CONSTRUCTION

-L- POT Sta. 266+00.68
END CONSTRUCTION

-DET- SRS Sta. 256+16.15

-DET- POS Sta. 256+10.95

-Y13A- POT Sta. 10+00.00

-L- TS Sta. 258+05.75

-Y13A- PC Sta. 11+03.28

-Y13A- PT Sta. 11+89.88

-Y13A- POT Sta. 12+77.00
END CONSTRUCTION

-Y13A- POT Sta. 12+79.80

TRACY C. LEMLY
ELIZABETH C. LEMLY
DB M-5, PG 121

RICK D. WEAVER
ALLISON L. WEAVER

JANET LOU YOUNG
ISFD
DB 142, PG 1055

RIVER RIDGE UNLIMITED, INC.
DB 159, PG 1976
A PORTION OF
PB 5, PG 66

BARBARA CARTER LIVING TRUST
DB 271, PG 991
A PORTION OF
PB 5, PG 66

BARBARA CARTER LIVING TRUST
DB 248, PG 348
A PORTION OF
PB 5, PG 66

KEITH & JOYCE K. BLACKBURN
D.B. 165, PG. 459

RIVER RIDGE UNLIMITED
D.B. 159, PG. 1976
P.B. 5, PG. 66

BARNEY F. WATSON
RAMONA N. WATSON
TRUSTEES OF THE WATSON FAMILY TRUST
DB 217, PG 1209
LOT 12 OF
PB 5, PG 265

RONALD S. GREENE
CARLENE G. GREENE
DB 237, PG 2498

RONALD S. GREENE
DB 215, PG 1255
PB 005 PG 265

ROBERT T. PAISLEY
DB 239 PG 507

LINE PROP DITCH W/PSRM
EST. 70 SY
SEE DETAIL #4

LINE PROP DITCH W/PSRM
EST. 450 SY
SEE DETAIL

LINE PROP DITCH W/PSRM
EST. 260 SY
SEE DETAIL #16

LINE PROP DITCH W/PSRM
EST. 520 SY
SEE DETAIL #17

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GR

REMOVE

DO NOT DISTURB WELL

-BL- CI

-BL- 60

-DET-

HWY 221 BST

US 221 23' BST

PAVED DITCH

EXISTING R/W

EXISTING HB

REAR

SOIL

GUY

SECONDARY TRANS

CURVE DATA FOR LINE -L-

PIs Sta 260+86.12	PI Sta 269+92.55	PIs Sta 277+27.08
θs = 9°02'48.1"	Δ = 59°55'50.5" (LT)	θs = 7°06'29.2"
Ls = 420.00'	D = 4°18'28.6"	Ls = 330.00'
LT = 280.37'	L = 1,391.16'	LT = 220.18'
ST = 140.33'	T = 766.80'	ST = 110.16'
	R = 1,330.00'	
	SE = 0.06	

CURVE DATA FOR LINE -DET-

PIs Sta 255+16.15	PIs Sta 257+02.15	PI Sta 258+30.84	PIs Sta 259+43.51
θs = 0°51'34.0"	θs = 0°44'20.8"	Δ = 1°57'49.0" (RT)	θs = 0°27'50.7"
Ls = 150.00'	Ls = 129.00'	D = 1°08'45.3"	Ls = 81.00'
LT = 100.00'	LT = 86.00'	L = 171.36'	LT = 54.00'
ST = 50.00'	ST = 43.00'	T = 85.69'	ST = 27.00'
		R = 5,000.00'	
		SE = 0.03	
		RUNOFF 1 = 129.00'	
		RUNOFF 2 = 81.00'	

CURVE DATA FOR LINE -Y13-

PI Sta 11+57.40
Δ = 5°00'17.5" (LT)
D = 19°05'54.9"
L = 26.21'
T = 13.11'
R = 300.00'
SE = SEE PLANS

CURVE DATA FOR LINE -Y13A-

PI Sta 11+46.59
Δ = 2°09'54.6" (LT)
D = 2°30'00.0"
L = 86.61'
T = 43.31'
R = 2,291.83'
SE = SEE PLANS

SEE SHEET 17 FOR –DET– PROFILE
SEE SHEET 17 FOR –Y13– PROFILE
SEE SHEET 18 FOR –Y13A– PROFILE
SEE SHEETS 2–C THRU 2–D FOR DRAINAGE DETAILS

12-MAY-2014 16:09
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	13

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

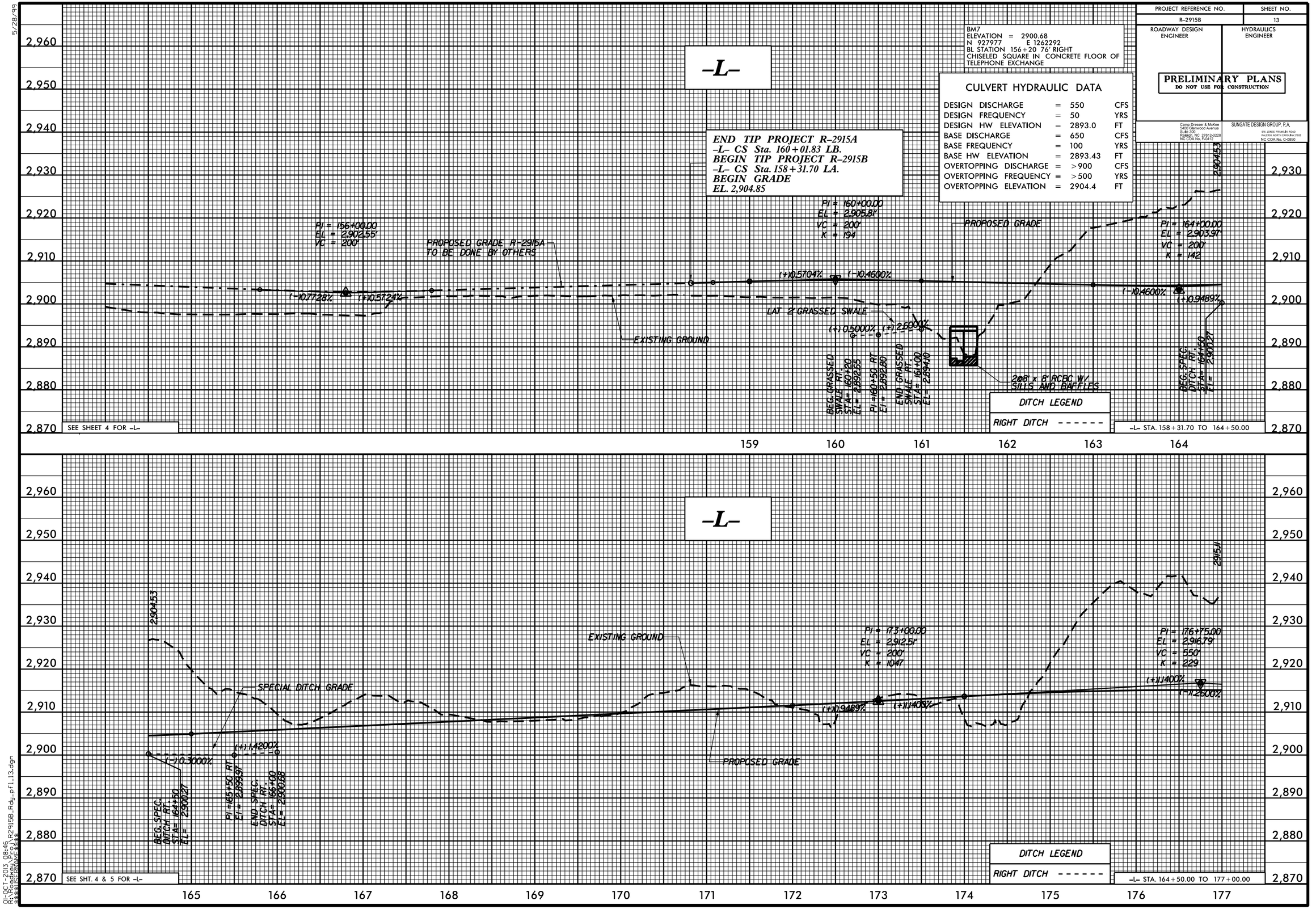
Camp Dresser & McKee
5400 Glenwood Avenue
Suite 300
Raleigh, NC 27612-3228
NC COA No. F-0472

SUNGATE DESIGN GROUP, P.A.
911 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

BM7
ELEVATION = 2900.68
N 927977 E 1262292
BL STATION 156+20 76' RIGHT
CHISELED SQUARE IN CONCRETE FLOOR OF TELEPHONE EXCHANGE

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	550	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	2893.0	FT
BASE DISCHARGE	=	650	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2893.43	FT
OVERTOPPING DISCHARGE	=	>900	CFS
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING ELEVATION	=	2904.4	FT



01-OCT-2013 08:46
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2915B	14

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Camp Dresser & McKee
2420 Glenwood Avenue
Suite 300
Raleigh, NC 27512-3228
NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A.
KY JONES FRANKLIN POND
RALEIGH, NORTH CAROLINA 27605
NC COA No. C-0890

–L–

BM8
ELEVATION = 2881.14
N 930658 E 1261410
BL STATION 185+86 134' LEFT
RR SPIKE IN 30" WHITE PINE

2915JI

EXISTING GROUND

(-)1.2600%

PI = 184+50.00
EL = 2,907.02
VC = 200'
K = 200

(-)1.2600%

(-)1.2600%

2894.59

PROPOSED GRADE

BEG GRASSED SWALE LT. STA= 180+00 EL= 2882.36

END GRASSED SWALE LT. STA= 182+00 EL= 2880.0

(-)1.0000%

LAT 61 GRASSED SWALE

DITCH LEGEND

LEFT DITCH — - - —

SEE SHEET 6 FOR –L–

–L– STA. 177+00.00 TO 190+00.00

177 178 179 180 181 182 183 184 185 186 187 188 189 190

2,960 2,950 2,940 2,930 2,920 2,910 2,900 2,890 2,880 2,870

–L–

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	2400	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	2876.1	FT
BASE DISCHARGE	=	2900	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2876.59	FT
OVERTOPPING DISCHARGE	=	>3900	CFS
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING ELEVATION	=	2884.0	FT
DATE OF SURVEY	=	1-7-13	
W.S. ELEVATION AT DATE OF SURVEY	=	2868.5	FT

2894.59

PI = 192+00.00
EL = 2,890.07'
VC = 200'
K = 238

PI = 195+00.00
EL = 2,885.81'
VC = 200'
K = 185

PROPOSED GRADE

(-)2.2600%

(-)1.4200%

(-)0.4400%

(-)1.4200%

(-)0.3400%

EXISTING GROUND SPEC CUT DITCH W/ HINGE

(-)1.3400%

(-)0.3400%

(-)1.3525%

–L– POC Sta. 200+76.32 = –Y10– POT Sta. 72+98.86

PI = 201+50.00
EL = 2,883.60'
VC = 200'
K = 198

BEG. SPEC. DITCH GRADE RT. STA= 191+00 EL= 2885.37

END SPEC. DITCH GRADE RT. STA= 192+00 EL= 2884.93

SPECIAL DITCH GRADE

BEG. SPEC. CUT DITCH RT. STA= 196+50 EL= 2879.87

END SPEC. CUT DITCH RT. STA= 197+00 EL= 2878.30

DITCH LEGEND

RIGHT DITCH - - - - - -

SEE SHEET 7 FOR –L–

–L– STA. 190+00.00 TO 203+00.00

190 191 192 193 194 195 196 197 198 199 200 201 202 203

2,980 2,970 2,960 2,950 2,940 2,930 2,920 2,910 2,900 2,890

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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	15

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Camp Dresser & McKee
5400 Glenwood Avenue
Suite 300
Raleigh, NC 27612-3228
NC COA No. F-0472

SUNGATE DESIGN GROUP, P.A.
KY. LEWIS FRANKLIN POND
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

BM9
ELEVATION = 2871.28
N 932968 E 1262584
BL STATION 212+19 91' LEFT
RR SPIKE IN ROOT OF 24" FORKED CHERRY TREE

-L-

2,980 2,970 2,960 2,950 2,940 2,930 2,920 2,910 2,900 2,890

PI = 205+50.00
EL = 2,878.19'
VC = 200'
K = 240

(-)1.3525%

(-)0.5200%

PROPOSED GRADE

EXISTING GROUND

PI = 211+00.00
EL = 2,875.53'
VC = 200'
K = 244

(-)0.5200%

(+)0.3000%

PI = 213+00.00
EL = 2,875.93'
VC = 200'
K = 152

(+)0.3000%

(-)1.0200%

(-)1.4667%

(-)1.0200%

(-)1.5586%

BEG. SPEC. DITCH GRADE LT
STA= 215+50
EL= 2,876.33

END DITCH GRADE
BEG. SWALE
STA= 215+00 LT
EL= 2,867.8

SPEC DITCH GRADE

(-)0.5400%

(-)4.0000%

2,873.35

BEG. GRASSED SWALE RT
STA= 212+00
EL= 2,867.23

SPEC CUT 2' GRASSED SWALE

END GRASSED SWALE RT
STA= 215+00
EL= 2,866.23

LAT 2' GRASSED SWALE

2,873.35

DITCH LEGEND	
RIGHT DITCH	- - - - - -
LEFT DITCH	— - - —

SEE SHEET 8 FOR -L-

-L- STA. 203+00.00 TO 216+00.00

203 204 205 206 207 208 209 210 211 212 213 214 215 216

-L-

2,940 2,930 2,920 2,910 2,900 2,890 2,880 2,870 2,860 2,850

END GRADE BK. @ ℄ -L-
Sta. 220+56.86 - EL = 2,873.48'
BEG. GRADE AH. @ MEOP
Sta. 220+56.86 - EL = 2,873.25'

PI = 216+00.00
EL = 2,872.27'
VC = 200'
K = 198

(-)0.5400%

(+)0.4711%

LAT 2' GRASSED SWALE

(-)2.0000%

PI = 216+50 LT
EL = 2,861.80

END GRASSED SWALE LT
STA= 217+40
EL= 2,860.00

2,873.35

BEG. SPEC. DITCH GRADE LT
PI = 220+00
EL = 2,877.00

SPEC DITCH GRADE

(+)0.4711%

(+)0.4708%

(-)1.0526%

-L- P.O.C. SIG 222+42.64
-L- P.O.T. SIG 213+07.04

END SPEC. DITCH GRADE LT
PI = 221+90
EL = 2,866.00

EXISTING GROUND

(+)0.4708%

(-)0.3480%

(+)3.4568%

(-)5.4300%

BEG. GRASSED SWALE LT
PI = 222+99
EL = 2,856.00

PI = 223+50 LT
EL = 2,863.8

PROPOSED GRADE

(-)0.7000%

PI = 224+50 LT
EL = 2,865.5

PI = 225+50.00
EL = 2,874.63'
VC = 200'
K = 244

PI = 228+50.00
EL = 2,872.89'
VC = 200'
K = 943

(-)0.3480%

(-)0.5600%

2,873.60

DITCH LEGEND	
RIGHT DITCH	- - - - - -

SEE SHEET 9 FOR -L-

-L- STA. 216+00.00 TO 229+00.00

216 217 218 219 220 221 222 223 224 225 226 227 228 229

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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Camp Dresser & McKee
2420 Glenwood Avenue
Suite 300
Raleigh, NC 27512-3228
NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A.
311 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	16,000	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	2,862.2	FT
BASE DISCHARGE	=	19,000	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2,863.00	FT
OVERTOPPING DISCHARGE	=	24,000+	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	2,869.2	FT
DATE OF SURVEY	=	3-19-13	
W.S. ELEVATION AT DATE OF SURVEY	=	N/A	FT

-L-

END GRADE BK. @ MEOP
Sta. 237+50.00 – EL = 2,870.17'
BEG. GRADE AH. @ ℄ -L-
Sta. 237+50.00 – EL = 2,870.41'

2,872.60

-L- POC Sta. 229+72.13
-M12- POT Sta. 115+24.25

PI = 231+00.00
EL = 2,871.49'
VC = 200'
K = 635

PI = 233+00.00
EL = 2,869.74
VC = 150'
K = 275

PI = 236+00.00
EL = 2,868.75
VC = 200'
K = 156

PI = 239+00.00
EL = 2,871.83'
VC = 200'
K = 308

2,872.73

(-)0.5600%
(-)0.8750%
(-)0.8750%
(-)0.3300%
(+)0.9500%
(+)0.9500%
(+)0.3000%
(-)0.7000%
(-)1.3500%

PROPOSED GRADE
EXISTING GROUND

END GRASSED SWALE LT.
PI =229+50
EL = 2,862.0

BEG. GRASSED SWALE LT.
PI =230+50
EL = 2,859.9

END GRASSED SWALE LT.
PI =234+50
EL = 2,854.5

DITCH LEGEND
LEFT DITCH — - - —

SEE SHEET 10 FOR -L-

-L- STA. 229+00.00 TO 242+00.00

229 230 231 232 233 234 235 236 237 238 239 240 241 242

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	16,000	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	2,862.2	FT
BASE DISCHARGE	=	19,000	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2,863.00	FT
OVERTOPPING DISCHARGE	=	24,000+	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	2,869.2	FT
DATE OF SURVEY	=	3-19-13	
W.S. ELEVATION AT DATE OF SURVEY	=	2,850.3	FT

-L-

-DET- TS Sta. 251+72.02 LA =
-L- TS Sta. 251+72.02 LB
END TIP PROJECT R-2915B

2,872.73

2,931.91

PROPOSED GRADE
EXISTING GROUND

SPEC DITCH GRADE

(+)11.6600%
(+)7.2400%
(+)11.4000%

PI = 254+00.00
EL = 2,924.17'
VC = 200'
K = 2500

BEG. SPEC. DITCH GRADE RT.
STA= 252+00
EL= 2,905.5

END SPEC. DITCH GRADE RT.
STA= 253+00
EL= 2,914.74

END GRASSED SWALE LT
BEG. LAT. 'V' DITCH LT
STA= 247+00
EL= 2,858.0

PI = 247+50.00
EL = 2,874.38
VC = 1025'
K = 139

(+)0.3000%
(+)7.8600%

LAT 'V' DITCH
END LAT. 'V' DITCH LT
STA= 249+00
EL= 2,859.0

LAT 3' GRASSED SWALE
(+)1.5000%
(+)0.5932%

LAT 3' BASE DITCH
(+)10.5000%
(+)20.0000%

LAT 3' BASE DITCH W/ CL 'I' RIP RAP
END LAT. BASE DITCH RT.
STA= 250+00
EL= 2,860.0

STA= 248+50 RT
EL= 2,857.0

BEG. LAT. DITCH RT.
STA= 242+60
EL= 2,853.5

BEG. GRASSED SWALE LT.
STA= 244+00
EL= 2,853.5

DITCH LEGEND
LEFT DITCH — - - —
RIGHT DITCH - - - - - -

SEE SHEET 11 FOR -L-

-L- STA. 242+00.00 TO 255+00.00

242 243 244 245 246 247 248 249 250 251 252 253 254 255

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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	17

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

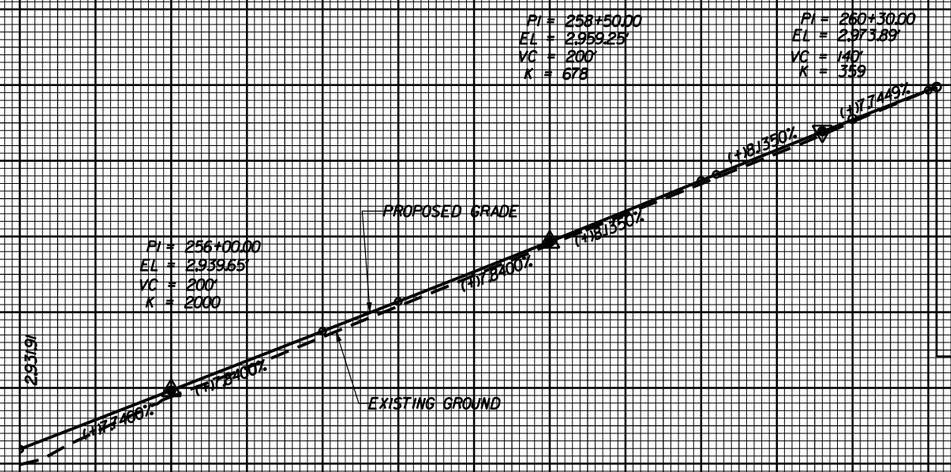
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Camp Dresser & McKee
5400 Glenwood Avenue
Suite 300
Raleigh, NC 27612-3228
NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A.
KY. LEWIS FRANKLIN POND
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

–DET–

BM10
ELEVATION = 2974.62
N 936805 E 1263884
BL STATION 255+86 73' LEFT
RR SPIKE IN ROOT OF 8" WHITE PINE

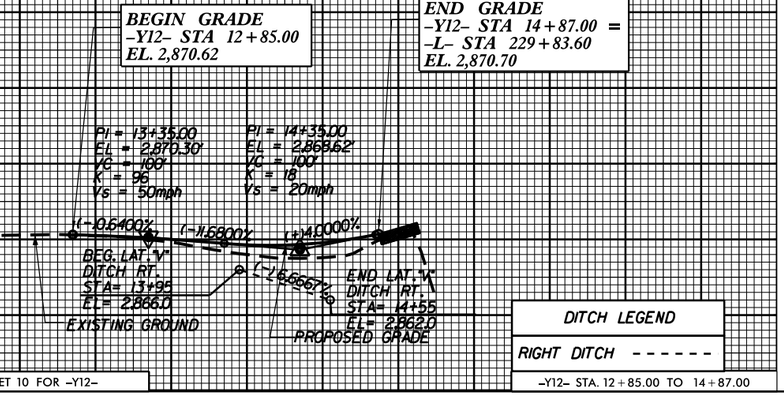


END GRADE
Sta. 261+05.51
EL. 2,979.74

SEE SHEET 12 FOR –DET–

–DET– STA. 255+00.00 TO 261+05.51

–Y12–



BEGIN GRADE
–Y12– STA 12+85.00
EL. 2,870.62

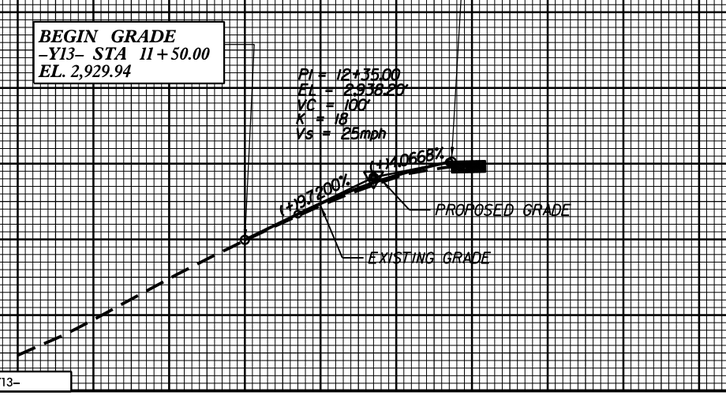
END GRADE
–Y12– STA 14+87.00 =
–L– STA 229+83.60
EL. 2,870.70

DITCH LEGEND
RIGHT DITCH - - - - - -

SEE SHEET 10 FOR –Y12–

–Y12– STA. 12+85.00 TO 14+87.00

–Y13–



BEGIN GRADE
–Y13– STA 11+50.00
EL. 2,929.94

END GRADE
–Y13– STA 12+86.60 =
–DET STA 256+07.99
EL. 2,940.30

SEE SHEET 12 FOR –Y13–

–Y13– STA. 11+50.00 TO 12+86.60

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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	18

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Camp Dresser & McKee
2420 Glenwood Avenue
Suite 300
Raleigh, NC 27512-3228
NC COA No. F-0412

SUNGATE DESIGN GROUP, P.A.
810 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

–Y13A–

BEGIN GRADE
–Y13A– STA 10+21.98 =
–DET– STA 256+12.62
EL. 2,940.67

END GRADE
–Y13A– STA 12+77.00
EL. 2,976.35

PI = 12+52.00
EL = 2,974.27'
VC = 50'
K = 7
Vs = 15mph

PI = 10+50.00
EL = 2,941.99'
VC = 50'
K = 4
Vs = 15mph

EXISTING GRADE
PROPOSED GRADE
(+)16.8000%
(+)8.5000%
(+)3.4000%

SEE SHEET 12 FOR –Y13A–

–Y13A– STA. 10+21.98 TO 12+77.00

–Y11–

BEGIN GRADE
–Y11– STA 10+55.00
EL. 2,891.68

END GRADE
–Y11 STA 12+65.47 =
–L– STA 222+33.80
EL. 2,873.47

PI = 11+80.00
EL = 2,875.65'
VC = 170'
K = 17
Vs = 15mph

PROPOSED GRADE
BEG. LAT. BASE DITCH LT.
STA= 11+50
EL= 2,878.0

BEG. LAT. "V" DITCH RT.
STA= 10+55
EL= 2,890.0

(–)12.9412%
(–)12.5647%

END LAT. "V" DITCH RT.
STA= 12+18 RT.
EL= 2,868.0

END LAT. BASE DITCH LT.
STA= 12+35
EL= 2,867.0

EXISTING GRADE

SEE SHEET 9 FOR –Y11–

–Y11– STA. 10+55.00 TO 12+65.47

DITCH LEGEND	
RIGHT DITCH	- - - - - -
LEFT DITCH	— - - —

–Y9–

BEGIN GRADE
–Y9– STA 10+35.50 =
–L– STA 174+55.08
EL. 2,916.34

PI = 11+50.00
EL = 2,925.50'
VC = 125'
K = 20
Vs = 20mph

EXISTING GRADE
PROPOSED GRADE
(+)8.0000%
(+)3.2000%

SEE SHEET 5 & 6 FOR –Y9–

–Y9–

END GRADE
–Y9– STA 16+90.08
EL. 3,001.00

PI = 15+75.00
EL = 2,986.36'
VC = 100'
K = 62
Vs = 45mph

EXISTING GRADE
PROPOSED GRADE
(+)14.3200%
(+)27.2200%
(–)15.6435°

BEG. SPEC. CUT DITCH RT
STA= 16+20
EL= 2,993.26

END SPEC. CUT DITCH RT
STA= 16+90
EL= 3,000.13

DITCH LEGEND	
RIGHT DITCH	- - - - - -

–DR4–

END GRADE
–DR4– STA 13+24.54
EL. 2,860.55

PI = 10+75.00
EL = 2,869.03'
VC = 50'
K = 7.4

PI = 12+50.00
EL = 2,860.84'
VC = 45'
K = 10

(–)4.0000%
(–)4.6800%
(–)0.3800%
PROPOSED GRADE
EXISTING GRADE

BEG. GRADE
–DR4– STA 10+35.50 =
–L– STA 238+50.00
EL. 2,870.61'

–Y9– STA. 10+35.50 TO 16+90.08

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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	19

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Camp Dresser & McKee
2820 Glenwood Avenue
Suite 300
Raleigh, NC 27612-3228
NC COA No. F-0472

SUNGATE DESIGN GROUP, P.A.
101 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

–Y10–

BEGIN GRADE
–Y10– STA 12+75.00
EL. 2,882.21

END GRADE
–Y10 STA 17+62.15 =
–L– STA 200+67.09
EL. 2,885.96

PI = 16+25.00
EL = 2,891.42'
VC = 180'
K = 20
Vs = 30mph

PI = 14+05.00
EL = 2,879.98'
VC = 260'
K = 38
Vs = 30mph

EXISTING GRADE

PROPOSED GRADE

(+)5.2000%

(–)13.9810%

(–)13.9810%

(+)5.2000%

(+)3.1154%

(+)0.3125%

BEG. SPEC. DITCH
GRADE -1.0%
STA= 13+00
EL= 2,879.29

PI = 13+18 LT
EL = 2,878.60'

END SPEC. DITCH
GRADE -1.5%
STA= 13+50
EL= 2,878.17

SEE SHEET 7 FOR –Y10–

DITCH LEGEND

LEFT DITCH — - - —

–Y10– STA. 12+75.00 TO 17+62.15

–DR3–

BEG. GRADE
–DR3– STA 10+35.50 =
–L– STA 188+09.10
EL. 2,897.04'

PI = 10+80.00
EL = 2,894.89'
VC = 49'
K = 9

PI = 13+00.00
EL = 2,895.35'
VC = 100'
K = 6

PI = 14+50.00
EL = 2,919.74'
VC = 200'
K = 11

PI = 18+00.00
EL = 2,914.14'
VC = 200'
K = 10

END GRADE
–DR3– STA 19+95.00
EL. 2,883.37

PI = 19+50.00
EL = 2,882.84'
VC = 50'
K = 2

(–)5.2809%

(+)0.3000%

(+)0.3000%

(+)16.2600%

(–)11.6000%

(–)11.6000%

(–)20.8667%

(–)20.8667%

(+)1.1178%

–DR3B–

END GRADE
–DR3B– STA 12+35.00
EL. 2,938.66

PI = 10+25.00
EL = 2,894.30'
VC = 38.00'
K = 2

PI = 12+00.00
EL = 2,934.66'
VC = 70.00'
K = 6

(+)111.4286%

(+)23.0625%

(+)23.0625%

(–)2.0000%

BEG. GRADE
–DR3B– STA 10+06.00
EL. 2,894.68

SEE SHEET 6,7 FOR –DR3– & –DR3B–

–DR3– STA. 10+35.00 TO 19+95.00
–DR3B– STA. 10+06.00 TO 12+35.00

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PROJECT REFERENCE NO.	SHEET NO.
R-2915B	20

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Camp Dresser & McKee
2820 Glenwood Avenue
Suite 300
Raleigh, NC 27612-3228
NC COA No. F-0472

SUNGATE DESIGN GROUP, P.A.
911 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

–DR1–

END GRADE
–DR1– STA 15+43.00
EL. 3,022.66

PI = 15+25.00
EL = 3021.48'
VC = 35'
K = 2

(+)6.555%

(+)22.123%

PI = 10+55.00
EL = 2903.40'
VC = 39'
K = 2

(+)25.234%

(-)1.025%

BEG. GRADE
–DR1– STA 10+35.50 =
–L– STA 163+50.49
EL. 2,903.60'

SEE SHEET 4 FOR –DR1–

–DR1– STA. 10+35.50 TO 15+43.00

–DR2–

END GRADE
–DR2– STA 14+90.00
EL. 2,998.80

PI = 14+50.00
EL = 2993.11'
VC = 80'
K = 8

(+)14.225%

(+)23.918%

PI = 10+75.00
EL = 2905.79'
VC = 75'
K = 3

(+)12.987%

BEG. GRADE
–DR2– STA 10+35.50 =
–L– STA 167+00.00
EL. 2,904.82'

SEE SHEET 5 FOR –DR2–

–DR2– STA. 10+35.50 TO 14+90.00

3,020 3,010 3,000 2,990 2,980 2,970 2,960 2,950 2,940 2,930 2,920 2,910 2,900 2,890 2,880 2,870 2,860

3,020 3,010 3,000 2,990 2,980 2,970 2,960 2,950 2,940 2,930 2,920 2,910 2,900 2,890 2,880 2,870 2,860 2,850

10 11 12 13 14 15

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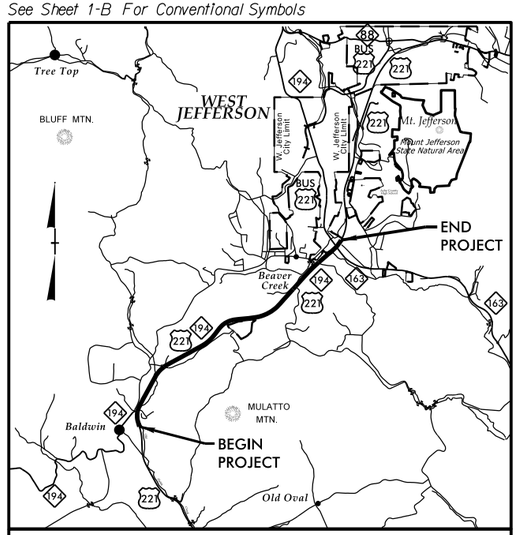
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TIP PROJECT: R-2915D

CONTRACT:

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

ROW PLANS



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ASHE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915D	1	

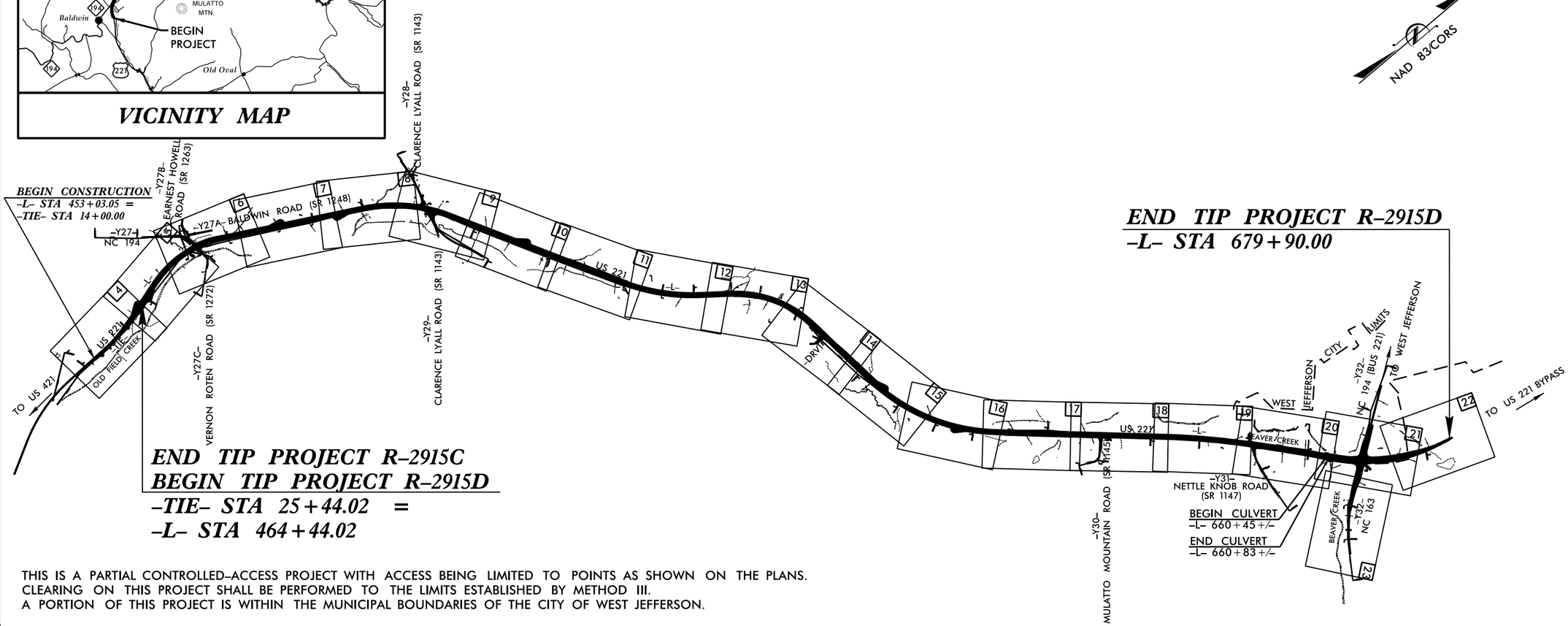
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34518.1.1	STP-0221(42)	P.E.
34518.2.4	STP-0221(42)	R/W,UTIL.

LOCATION: US 221 FROM SOUTH OF NC 194 TO US 221 BYPASS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TYPE OF WORK: GRADING, PAVING, DRAINAGE, CURB AND GUTTER, SIGNALS, AND CULVERT

NAD 83/CORS



END TIP PROJECT R-2915C
BEGIN TIP PROJECT R-2915D
-TIE- STA 25+44.02 =
-L- STA 464+44.02

END TIP PROJECT R-2915D
-L- STA 679+90.00

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

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 2015 = 14715
ADT 2035 = 25000
DHV = 9 %
D = 55 %
T = 9 % *
V = 60 MPH
* TTST =2 DUAL 7
FUNC CLASS =
Major Collector
Statewide Tier

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT R-2915D	=	4.290 MI
LENGTH OF STRUCTURE PROJECT R-2915D	=	0.007 MI
TOTAL LENGTH OF PROJECT R-2915D	=	4.297 MI

Prepared In the Office of:
KCI Associates of N.C., P.A.
4601 Six Forks Road
Landmark Center II, Suite 220
Raleigh, NC 27609
Phone (919) 783-9214
Fax (919) 783-9266

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 30, 2013

LETTING DATE: FEBRUARY 17, 2015

Plans Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh NC, 27610

CHARLES L. FLOWE, P.E.
PROJECT ENGINEER

BARRY C. SMITH, P.E.
PROJECT DESIGN ENGINEER

NCDOT CONTACT: ***BRENDA MOORE, PE***
PROJECT ENGINEER – ROADWAY DESIGN

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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04/16/11

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line

- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

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

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

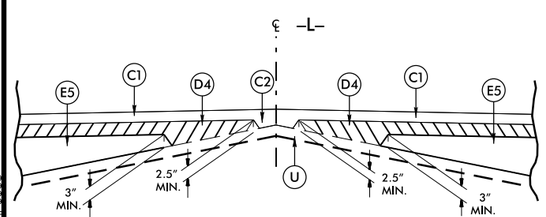
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PAVEMENT SCHEDULE

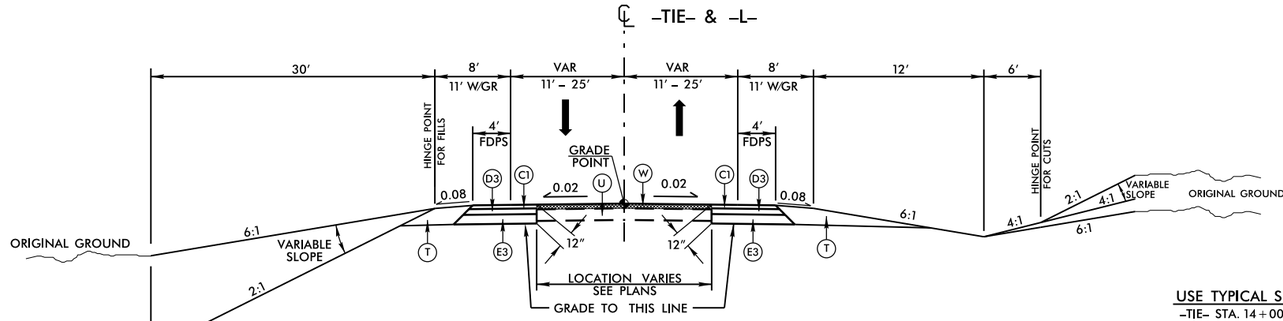
PRELIMINARY PAVEMENT DESIGN

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D3	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D4	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E3	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
E4	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E5	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT GREATER THAN 5½" IN DEPTH OR LESS THAN 3" IN DEPTH.
J1	PROP. 6" AGGREGATE BASE COURSE.
J2	PROP. 10" AGGREGATE BASE COURSE.
J3	PROP. VAR. DEPTH AGGREGATE BASE COURSE.
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	2'-9" CONCRETE CURB AND GUTTER.
R3	5" MONOLITHIC CONCRETE ISLAND (KEYED IN).
R4	CONCRETE EXPRESSWAY GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VAR. DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

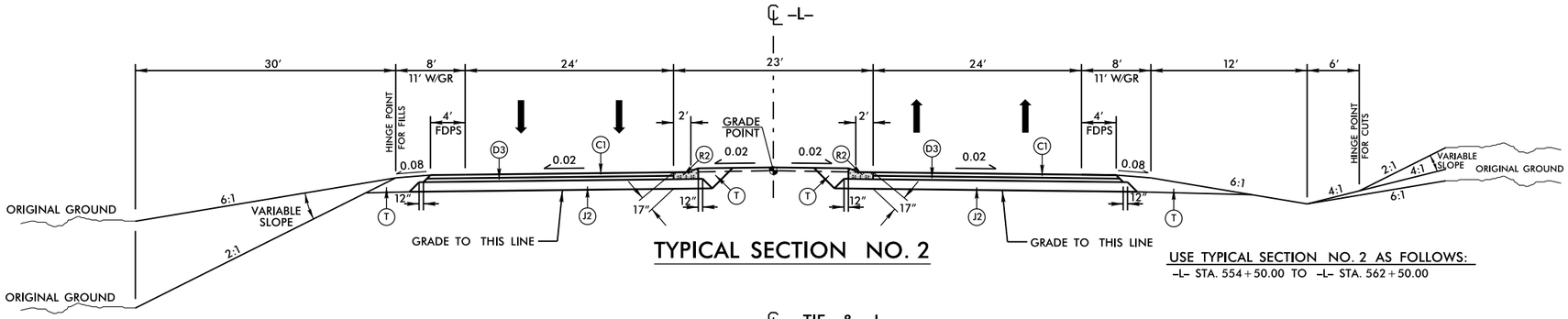


Detail Showing Method of Wedging



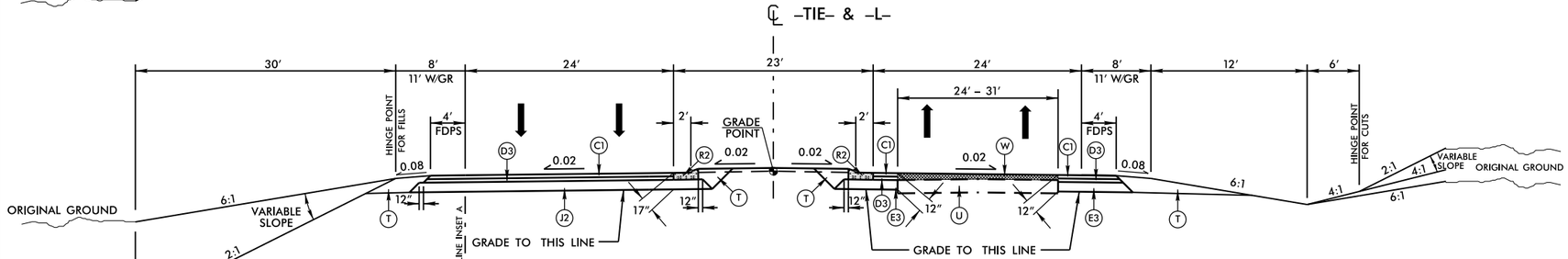
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
–TIE– STA. 14+00.00 TO –TIE– STA. 17+91.00
–L– STA. 676+29.00 TO –L– STA. 679+90.00



TYPICAL SECTION NO. 2

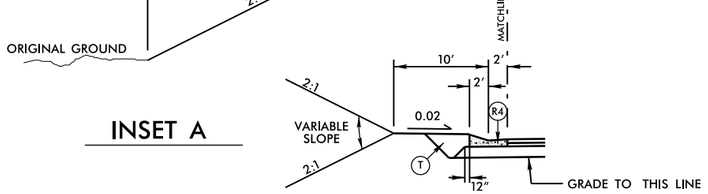
USE TYPICAL SECTION NO. 2 AS FOLLOWS:
–L– STA. 554+50.00 TO –L– STA. 562+50.00



TYPICAL SECTION NO. 3

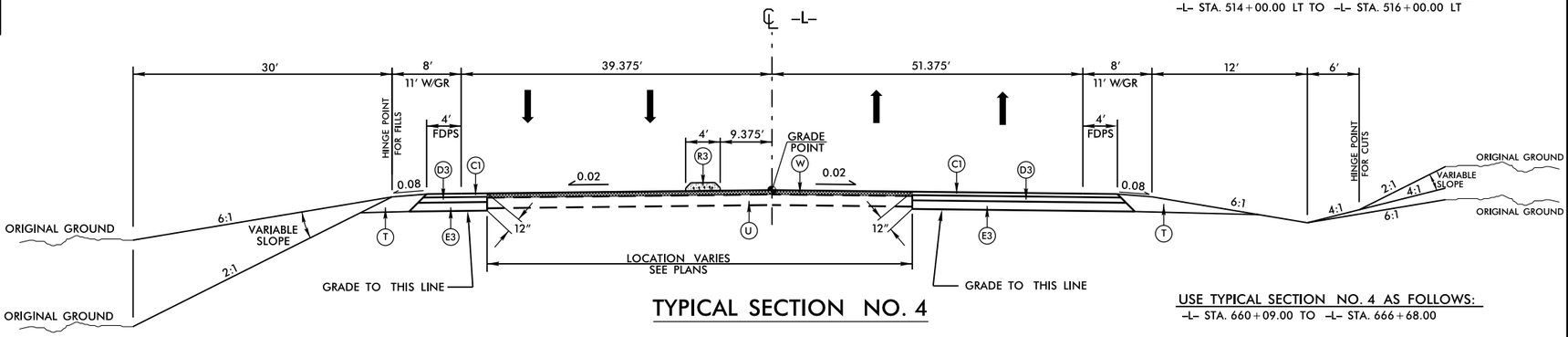
USE TYPICAL SECTION NO. 3 AS FOLLOWS:
–TIE– STA. 17+91.00 TO –TIE– STA. 25+44.02
–L– STA. 464+44.02 TO –L– STA. 548+50.00
–L– STA. 570+50.00 TO –L– STA. 600+00.00

USE REVERSE OF TYPICAL SECTION NO. 3 AS FOLLOWS:
–L– STA. 548+50.00 TO –L– STA. 554+50.00
–L– STA. 562+50.00 TO –L– STA. 570+50.00
–L– STA. 600+00.00 TO –L– STA. 660+09.00
–L– STA. 666+68.00 TO –L– STA. 676+29.00



INSET A

USE INSET A AS FOLLOWS:
–L– STA. 514+00.00 LT TO –L– STA. 516+00.00 LT



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:
–L– STA. 660+09.00 TO –L– STA. 666+68.00

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	2

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
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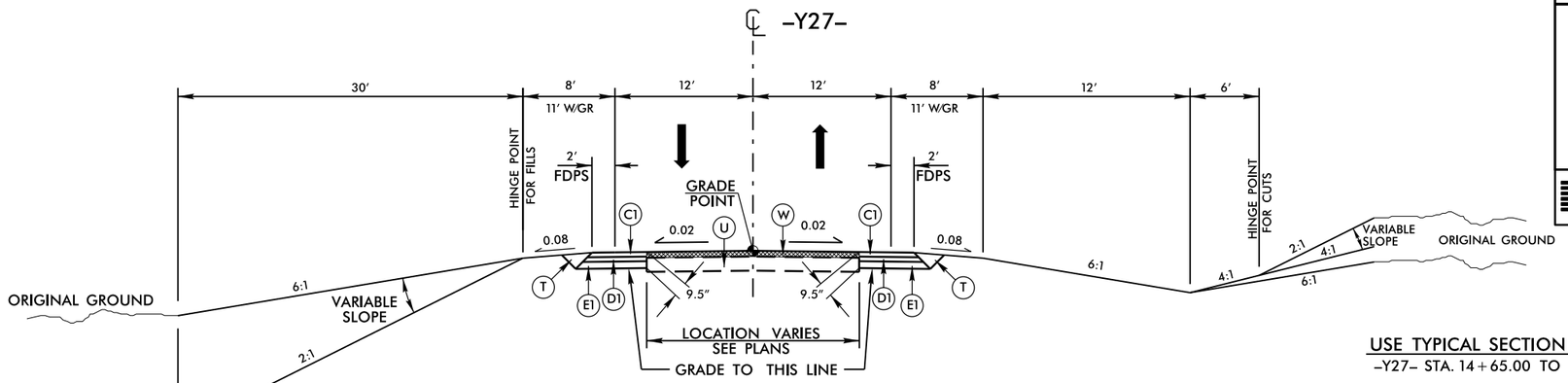
6/2/99

PAVEMENT SCHEDULE *PRELIMINARY PAVEMENT DESIGN*	
C1	3″ S9.5B
C2	VAR. S9.5B
D1	2.5″ I19.0B
D2	3″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
E1	4″ B25.0B
E2	4.5″ B25.0B
E3	5″ B25.0B
E4	5.5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	10″ ABC
J3	VAR. ABC
R1	2′-6″ C & G
R2	2′-9″ C & G
R3	5″ MONO. ISLAND
R4	EXPR. GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

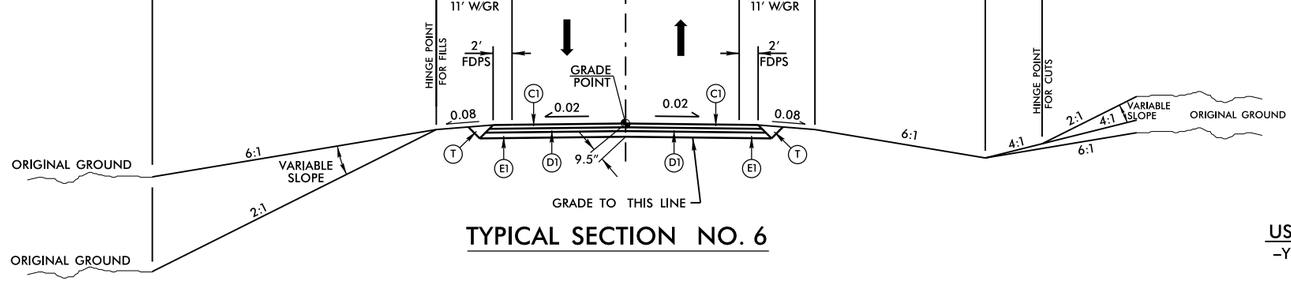
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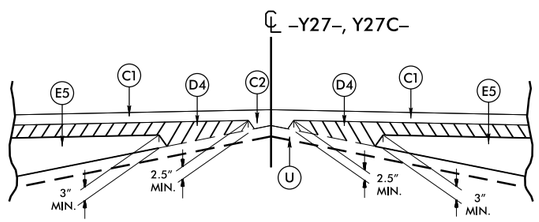
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS:
–Y27– STA. 14+65.00 TO –Y27– STA. 15+60.00

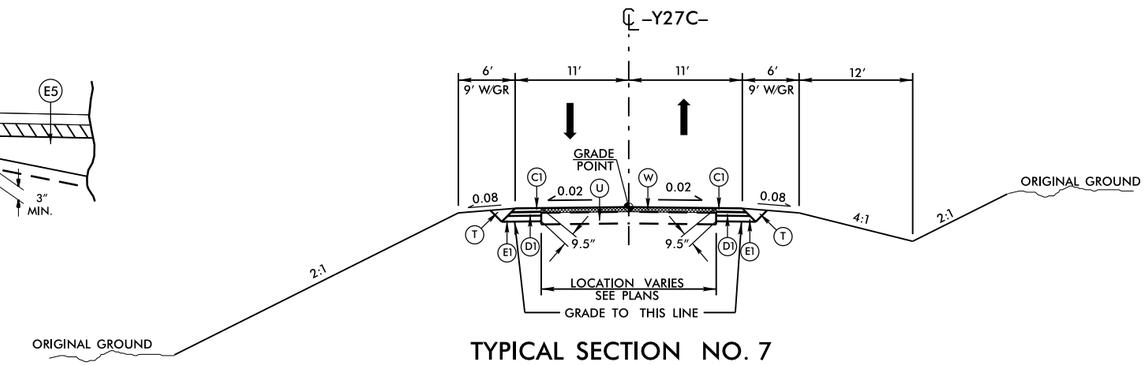


TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS:
–Y27– STA. 15+60.00 TO –Y27– STA. 18+53.39



Detail Showing Method of Wedging



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 AS FOLLOWS:
–Y27C– STA. 10+36.83 TO –Y27C– STA. 12+00.00

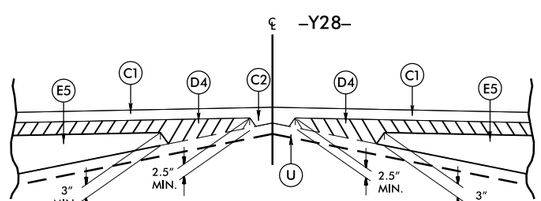
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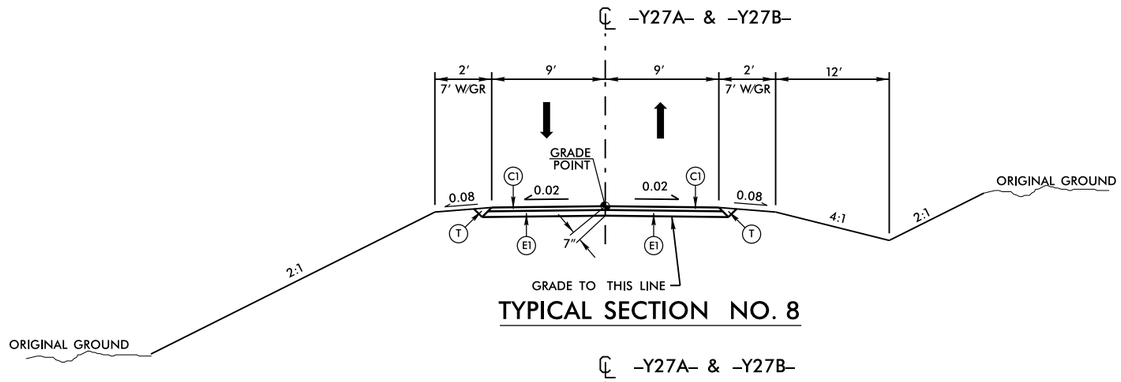
PAVEMENT SCHEDULE *PRELIMINARY PAVEMENT DESIGN*	
C1	3″ S9.5B
C2	VAR. S9.5B
D1	2.5″ I19.0B
D2	3″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
E1	4″ B25.0B
E2	4.5″ B25.0B
E3	5″ B25.0B
E4	5.5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	10″ ABC
J3	VAR. ABC
R1	2′-6″ C & G
R2	2′-9″ C & G
R3	5″ MONO. ISLAND
R4	EXPR. GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



Detail Showing Method of Wedging

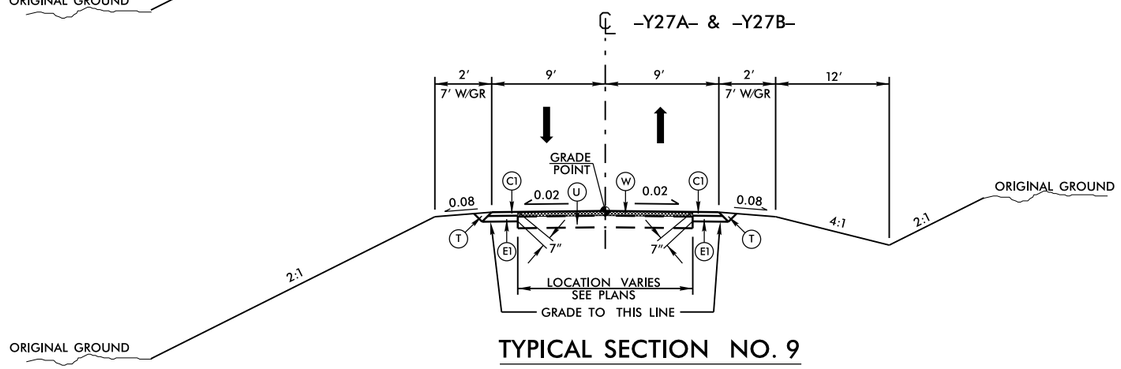


Detail Showing Method of Wedging



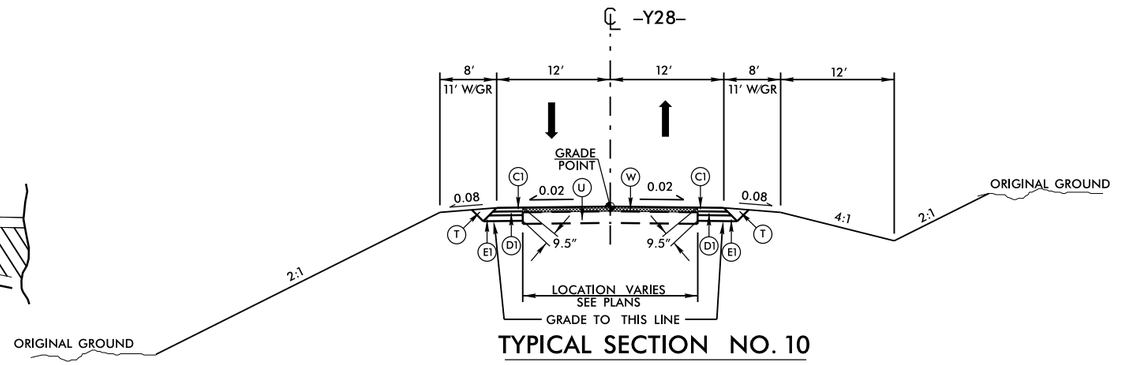
TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 AS FOLLOWS:
–Y27A– STA. 10+12.00 TO –Y27A– STA. 11+25.00
–Y27B– STA. 11+45.00 TO –Y27B– STA. 12+83.78



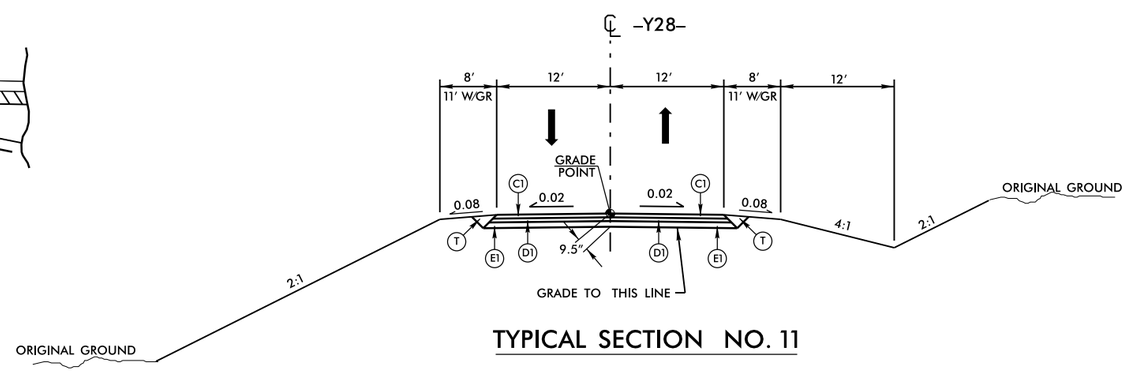
TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9 AS FOLLOWS:
–Y27A– STA. 11+25.00 TO –Y27A– STA. 11+70.00
–Y27B– STA. 10+90.00 TO –Y27B– STA. 11+45.00



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10 AS FOLLOWS:
–Y28– STA. 16+15.00 TO –Y28– STA. 17+08.00



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11 AS FOLLOWS:
–Y28– STA. 17+08.00 TO –Y28– STA. 17+82.70

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

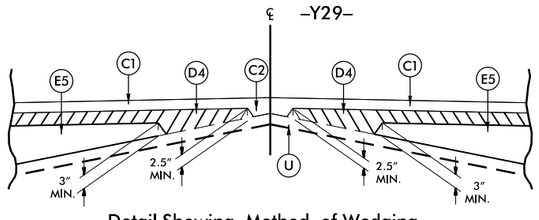
PRELIMINARY PLANS
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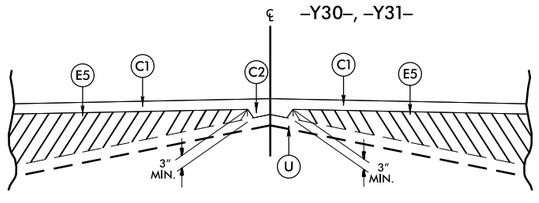
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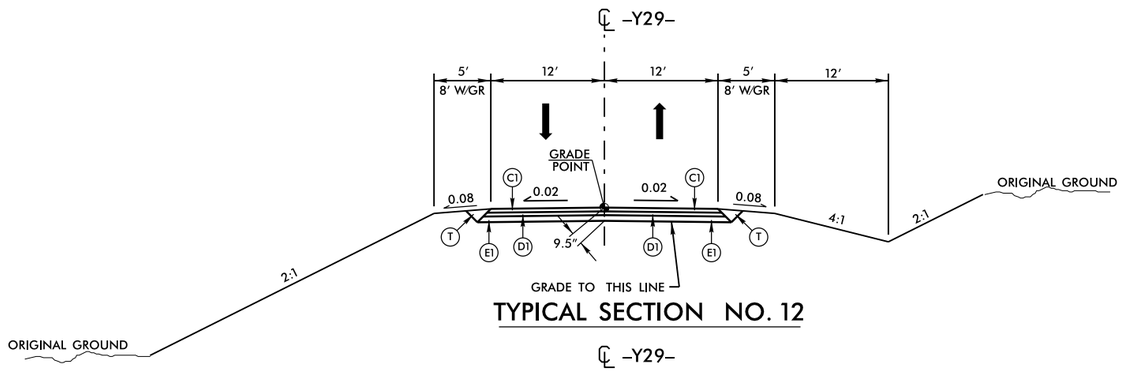
PAVEMENT SCHEDULE *PRELIMINARY PAVEMENT DESIGN*	
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C2	VAR. S9.5B
D1	2.5″ I19.0B
D2	3″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
E1	4″ B25.0B
E2	4.5″ B25.0B
E3	5″ B25.0B
E4	5.5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	10″ ABC
J3	VAR. ABC
R1	2′-6″ C & G
R2	2′-9″ C & G
R3	5″ MONO. ISLAND
R4	EXPR. GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



Detail Showing Method of Wedging

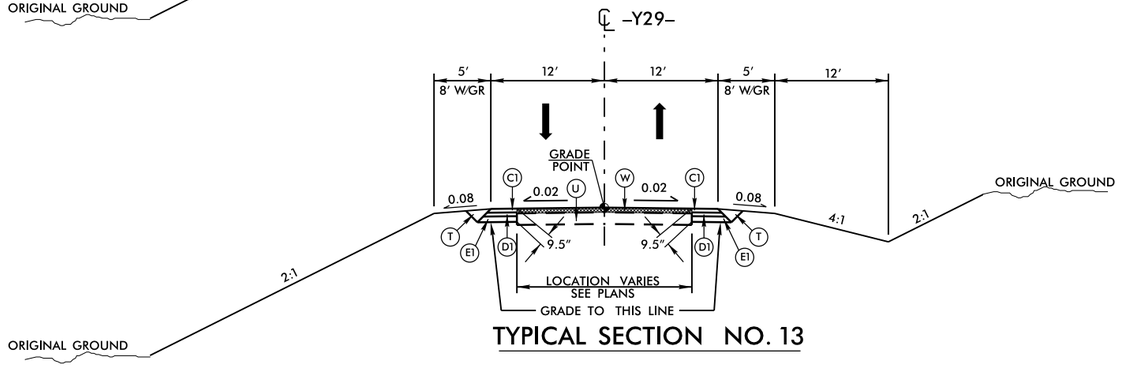


Detail Showing Method of Wedging



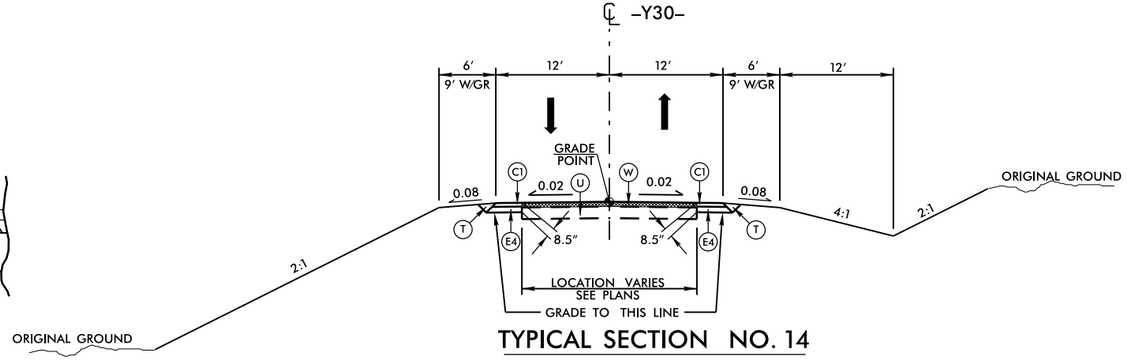
TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12 AS FOLLOWS:
–Y29– STA. 10+36.03 TO –Y29– STA. 11+32.00



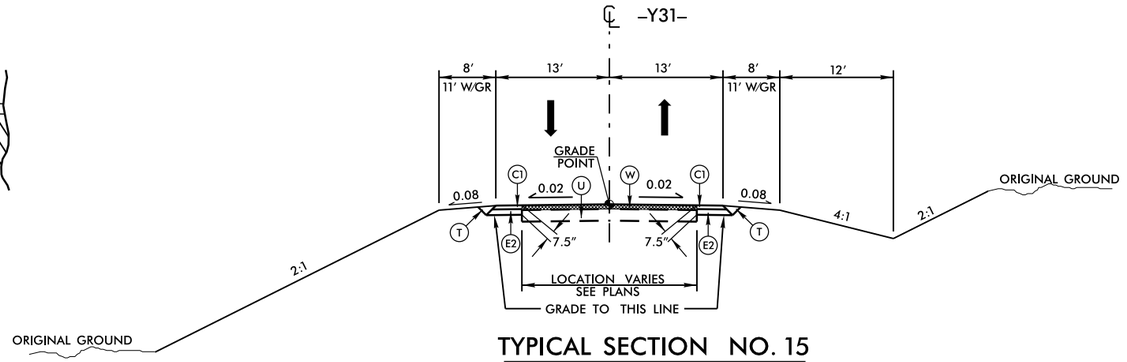
TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13 AS FOLLOWS:
–Y29– STA. 11+32.00 TO –Y29– STA. 12+60.00



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14 AS FOLLOWS:
–Y30– STA. 10+35.51 TO –Y30– STA. 11+00.00



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15 AS FOLLOWS:
–Y31– STA. 10+35.98 TO –Y31– STA. 11+65.00

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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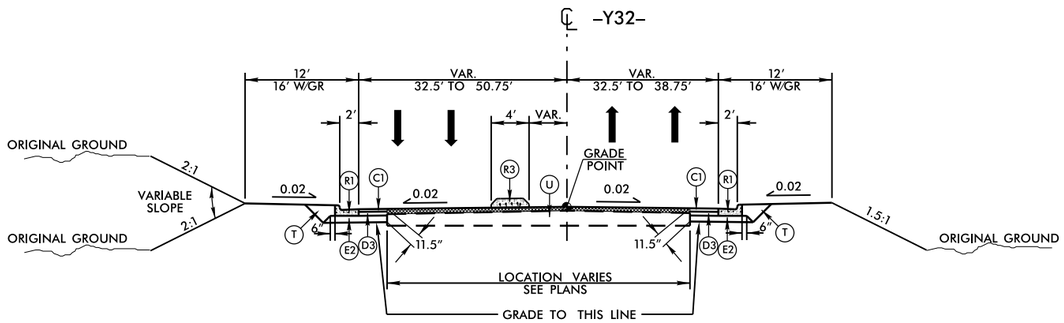
6/2/99

PAVEMENT SCHEDULE *PRELIMINARY PAVEMENT DESIGN*	
C1	3″ S9.5B
C2	VAR. S9.5B
D1	2.5″ I19.0B
D2	3″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
E1	4″ B25.0B
E2	4.5″ B25.0B
E3	5″ B25.0B
E4	5.5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	10″ ABC
J3	VAR. ABC
R1	2′-6″ C & G
R2	2′-9″ C & G
R3	5″ MONO. ISLAND
R4	EXPR. GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

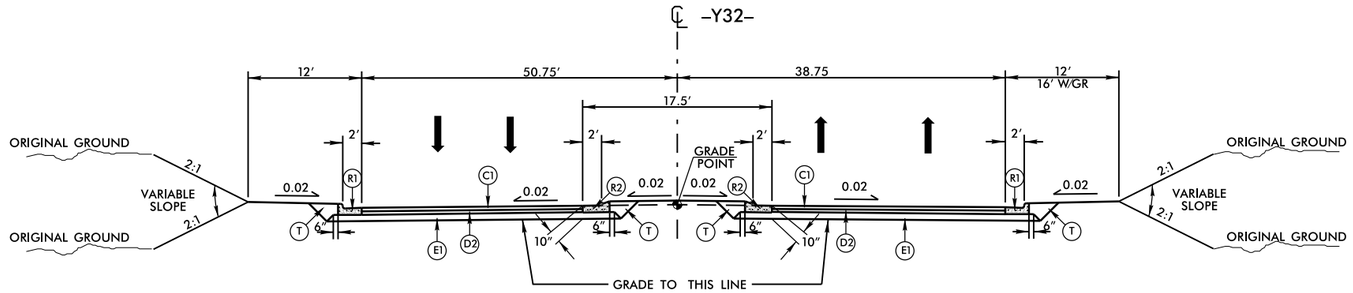
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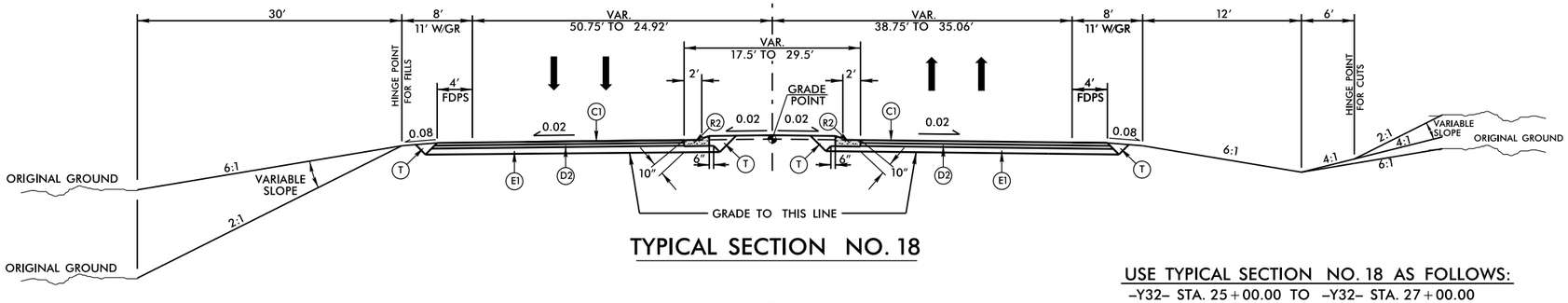
TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16 AS FOLLOWS:
–Y32– STA. 16+30.00 TO –Y32– STA. 21+46.70



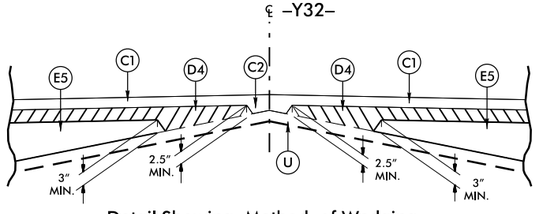
TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17 AS FOLLOWS:
–Y32– STA. 22+52.07 TO –Y32– STA. 25+00.00

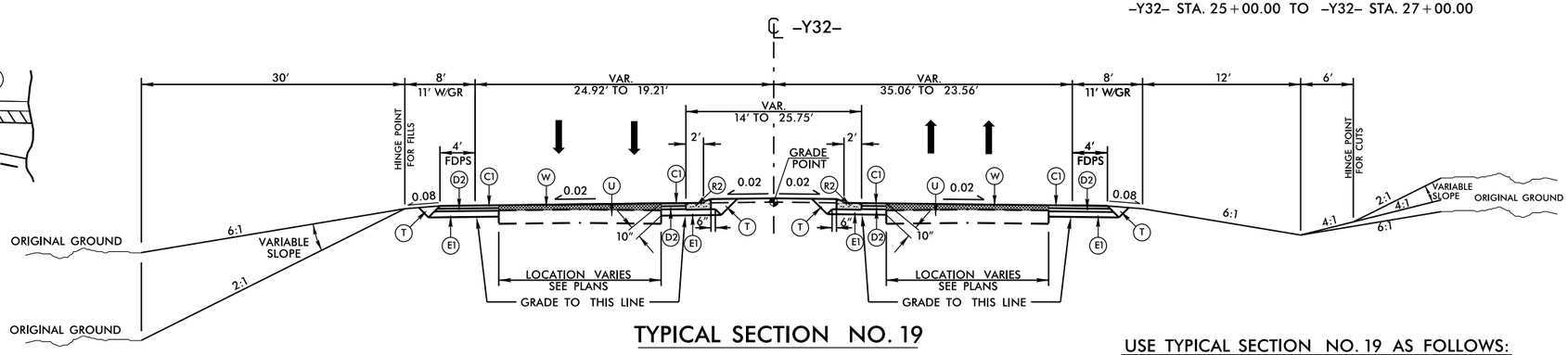


TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18 AS FOLLOWS:
–Y32– STA. 25+00.00 TO –Y32– STA. 27+00.00



Detail Showing Method of Wedging



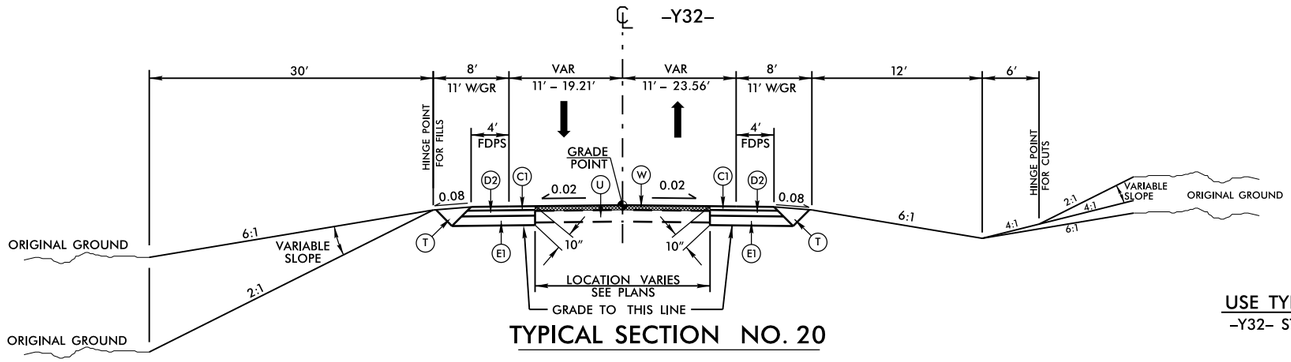
TYPICAL SECTION NO. 19

USE TYPICAL SECTION NO. 19 AS FOLLOWS:
–Y32– STA. 27+00.00 TO –Y32– STA. 28+56.00

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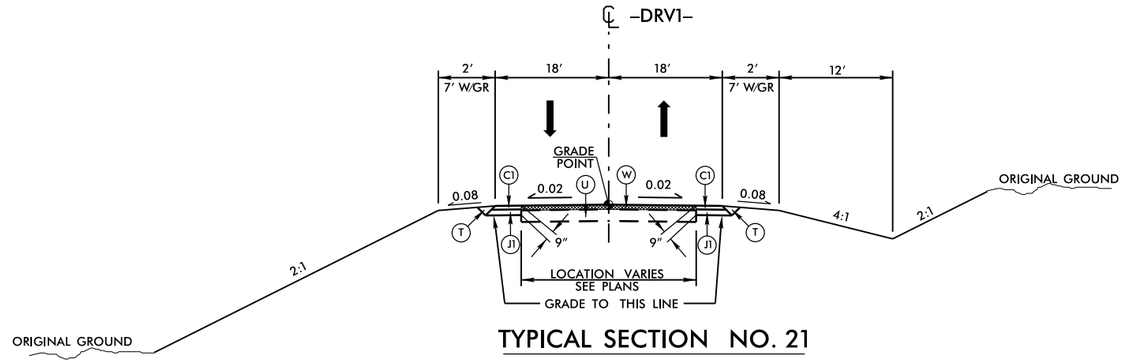
6/2/99

PAVEMENT SCHEDULE *PRELIMINARY PAVEMENT DESIGN*	
C1	3″ S9.5B
C2	VAR. S9.5B
D1	2.5″ I19.0B
D2	3″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
E1	4″ B25.0B
E2	4.5″ B25.0B
E3	5″ B25.0B
E4	5.5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	10″ ABC
J3	VAR. ABC
R1	2′-6″ C & G
R2	2′-9″ C & G
R3	5″ MONO. ISLAND
R4	EXPR. GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



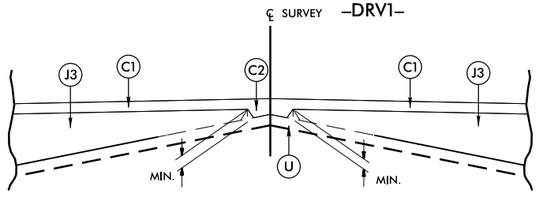
TYPICAL SECTION NO. 20

USE TYPICAL SECTION NO. 20 AS FOLLOWS:
–Y32– STA. 28+56.00 TO –Y32– STA. 29+90.00

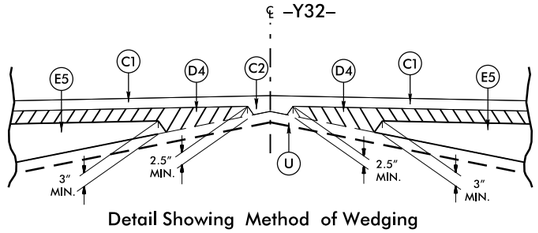


TYPICAL SECTION NO. 21

USE TYPICAL SECTION NO. 21 AS FOLLOWS:
–DRV1– STA. 10+47.50 TO –DRV1– STA. 11+80.00



Detail Showing Method of Wedging



Detail Showing Method of Wedging

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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REVISIONS

8/17/99

022514 – R/W REVISIONS; UPDATED EXISTING R/W AND PROPERTY LINE ON PARCELS 3 AND 5; REVISED TCE FROM –L– STA. 458+50.00 TO STA. 459+27.60 LT. ON PARCEL 3; REMOVED TCE AND ADDED PROPOSED R/W FROM –L– STA. 452+39.52 TO STA. 456+07.64 RT. AND ADDED PDE FROM –L– STA. 452+55.00 TO STA. 452+95.00 RT. ON PARCEL 4. – PJS

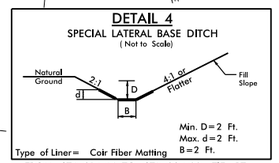
PROJECT REFERENCE NO.	SHEET NO.
R-2915D	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
ENG FIRM LICENSE NO. C-690

DETAIL 4
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Coir Fiber Matting

FROM STA. 21+44 TO STA. 23+00 –TIE– RT

-L-

PIs Sta 447+18.53	PIs Sta 455+79.18	PI Sta 459+20.50	PIs Sta 462+60.70
θs = 3°13' 22.4"	θs = 2° 37' 33.8"	Δ = 9° 30' 53.1" (LT)	θs = 2° 37' 33.8"
Ls = 270.00'	Ls = 275.00'	D = 1° 54' 35.5"	Ls = 275.00'
LT = 180.03'	LT = 183.35'	L = 498.19'	LT = 183.35'
ST = 90.03'	ST = 91.69'	T = 249.67'	ST = 91.69'
		R = 3,000.00'	

NAD 83/CORS

JEFF & MARGIE SMITH
D.B. 386, PG. 598
P.B. 7, PG. 45

JAMES A. TRIVETTE
LINDA TRIVETTE
D.B. 124, PG. 1063

JOANN GREER
D.B. K-4, PG. 233

1 JOANN GREER
D.B. 212, PG. 2033

RODERICK E. & KENA EDWARDS SLOOP
D.B. 384, PG. 117

2 BALDWIN-BETHANY CEMETERY
NO REFERENCE

3 BETHANY UNITED METHODIST CHURCH
D.B. I-5, PG. 432

THOMAS M. HOWELL AND W KATHY H. HOWELL
DB 313 PG 1332

5

4 BARRY K. & SANDRA T. LIDDLE
D.B. 250, PG. 12

MARTIN MARTINEZ-SALDANA
D.B. 247, PG. 1085

BETTY SUE HOUCK
D.B. T-5, PG. 491

6 MARY EDWARDS HOLCOMB AND HUSBAND, C. J. HOLCOMB, JR.
DB 161 PG 351

TONY A ELDRETH
SHARON W ELDRETH
D.B. 374, PG. 1276
PB 7 PG 16

ARVELL & BERTHA GROGAN
D.B. 129, PG. 1558

JOANN GREER
D.B. 316, PG. 2414
P.B. 7, PG. 16

DANNY & DONNA COLDIRON
D.B. 174, PG. 1093

TONY A ELDRETH
SHARON W ELDRETH
D.B. 374, PG. 1276
PB 7 PG 16

BEGIN CONSTRUCTION R-2915D
–L– POT Sta. 453+03.05, OS: 23.5' RT =
–TIE– POT Sta. 14+00.00, OS: 0'

-L- ST Sta. 448+98.50

-L- TS Sta. 453+95.83

-L- SC Sta. 456+70.83

-L- CS Sta. 461+69.02

-L- Sta. 462+50

MATCH LINE -L- STA. 462+50
SEE SHEET NO. 5

-TIE-

PIs Sta 15+86.98	PI Sta 19+28.30	PIs Sta 22+68.50
θs = 2° 37' 33.8"	Δ = 9° 30' 53.1" (LT)	θs = 2° 37' 33.8"
Ls = 275.00'	D = 1° 54' 35.5"	Ls = 275.00'
LT = 183.35'	L = 498.19'	LT = 183.35'
ST = 91.69'	T = 249.67'	ST = 91.69'
	R = 3,000.00'	
	SE = 0.05	
	RUNOFF = 275'	

FOR –TIE– PROFILE, SEE SHEET 24

21-FEB-2014 15:27
R:\Roadway\Proj\R2915D_Rdy_psh_4.dgn
$$$$ICERNA$$$$

8/17/99

REVISIONS

END TIP PROJECT R-2915C
BEGIN TIP PROJECT R-2915D
-TIE- POT Sta. 25+44.02 =
-L- ST Sta. 464+44.02

NAD 83/CORS

-L-
PIs Sta 462+60.70
Δs = 2° 37' 33.8"
Ls = 275.00'
LT = 183.35'
ST = 91.69'

5
THOMAS M. HOWELL AND WIFE,
KATHY H. HOWELL
DB 313 PG 1332

ALICE H. ATWOOD AND HUSBAND,
CECIL FOREST ATWOOD
DB 128 PG 555

CHARLES DONOVAN SAUNDERS
DB 222 PG 2292

ARCHIE LINCOLN PIERCE AND WIFE,
NANCY CAROLYN PIERCE, TRUSTEES
DB 402 PG 1408

7

8
AGNES BALDWIN LIVING TRUST
DB 390 PG 1553

6
MARY EDWARDS HOLCOMB AND HUSBAND,
C. J. HOLCOMB, JR.
DB 161 PG 351

MABEL T. MILLER AND HUSBAND,
STEPHEN H. MILLER
DB 158 PG 161

DENOS P MARVIN AND
FRANCES D MARVIN
DB 122 PG 821

25
TREE FARM

465
470

BERM DITCH
STA 20+00 – 24+90 –TIE– LT

-L- +50
190' LT
EX. R/W
190' LT

-L- +44.02
EX. R/W
190' LT

-L- +50
EX. R/W

-L- +50
EX. R/W
END FULL C/A
BEGIN PARTIAL C/A

-L- +05
EX. R/W
BEGIN FENCE RESET
TIE TO EXIST FENCE

-L- +30
160' LT

-L- +00
135' LT

-L- +65
EX. R/W & 135' LT
END FENCE RESET
TIE TO EXIST FENCE

BERM DITCH
STA 468+50 – 469+63 -L- LT

BERM DITCH
STA 464+64 – 465+55 -L- LT

REMOVE +– 12 FT
15" RCP

REMOVE +– 17 FT
EXIST 15" RCP

REMOVE DI

15" w/
ELBOW

5' MONOLITHIC ISLAND

GRADING ONLY

RETAIN

RETAIN AND
EXTEND

CLEAN OUT EX PIPE
EST +– 20 FT

REMOVE

ADJUST FILL SLOPE
TO RETAIN EX 2GI

CLASS 'B' RIPRAP
EST 5 TONS
EST FF 14 SY

-BL- D53

-L- TS Sta. 466+31.59

-L- SC Sta. 469+01.59

-L- +70
EX. R/W
END PARTIAL C/A
BEGIN FULL C/A
BEGIN FENCE

-L- +50
END FENCE
TIE TO EXISTING

-L- +50
EX. R/W
END FULL C/A
BEGIN PARTIAL C/A

OLD FIELDS CREEK

US HWY 221

MATCH LINE -L- STA. 462+50
SEE SHEET NO. 4

MATCH LINE -L- STA. 473+00
SEE SHEET NO. 6

-TIE-
PIs Sta 22+68.50
Δs = 2° 37' 33.8"
Ls = 275.00'
LT = 183.35'
ST = 91.69'

-L-
PIs Sta 468+51.71
Δs = 5° 54' 31.1"
Ls = 330.00'
LT = 220.12'
ST = 110.11'

PI Sta 474+40.42
Δ = 33° 19' 17.0" (RT)
D = 3° 34' 51.6"
L = 930.51'
T = 478.83'
R = 1,600.00'
SE = .06
RUNOFF = 330'

FOR -TIE- PROFILE, SEE SHEET 24
FOR -L- PROFILE, SEE SHEET 24

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/CORS

REVISIONS
8/17/99
02/2514 – R/W REVISIONS; UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 10. – PJS

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$$$$USERNAME$$$$

-Y27B- PC Sta. 10+67.44
-Y27B- POC Sta.10+90.00
BEGIN CONSTRUCTION
-Y27B- PT Sta. 11+65.77
-Y27B- PC Sta. 12+25.54
-Y27- N 38° 45' 18.1" E
-Y27- PI Sta 17+04.35
Δ = 50° 29' 02.7" (RT)
D = 19° 05' 54.9"
L = 264.33'
T = 141.44'
R = 300.00'
-Y27- PT Sta. 18+27.05
-Y27- POC Sta.17+04.00 = -Y27A- POT Sta. 10+00.00
-Y27- PC Sta. 15+62.71
BEGIN CONSTRUCTION
-Y27- POT Sta.14+65.00
-Y27- N 29° 00' 31.3" E
-Y27A- PC Sta. 10+18.14
BEARING BK = N 24° 15' 41.2" W
-Y27A- POC Sta.10+51.00 = -Y27B- POT Sta. 12+92.78
-Y27A- PT Sta. 10+87.87
END CONSTRUCTION
-Y27A- POT Sta.11+70.00
-L- POC Sta.476+68.00 = -Y27C- POT Sta. 10+00.00
-L- POC Sta.476+61.00 = -Y27- POT Sta.19+02.51
BEARING BK = N 89° 14' 20.8" E
-L- CS Sta. 478+92.10
END CONSTRUCTION
-Y27C- POT Sta.12+00.00
-Y27C- PC Sta. 12+00.69
BEARING BK = N 89° 14' 20.8" E
-Y27C- PC Sta. 12+98.39
-Y27C- PT Sta. 12+77.06
BEARING AH= S 54° 17' 55.9" E
-Y27C- PT Sta. 13+53.89
BEARING AH= S 36° 07' 42.1" E
-Y27C- POT Sta. 13+97.64
MATCH LINE -L- STA. 473+00 SEE SHEET NO. 5
MATCH LINE -L- STA. 484+50 SEE SHEET NO. 7

-Y27A-
PI Sta 10+55.76
Δ = 53° 16' 12.5" (RT)
D = 76° 23' 39.7"
L = 69.73'
T = 37.61'
R = 75.00'

-Y27B-
PI Sta 11+19.55
Δ = 46° 56' 43.9" (LT)
D = 47° 44' 47.3"
L = 98.32'
T = 52.11'
R = 120.00'

-Y27C-
PI Sta 12+40.22
Δ = 36° 27' 43.3" (RT)
D = 47° 44' 47.3"
L = 76.37'
T = 39.53'
R = 120.00'

-Y27C-
PI Sta 13+26.37
Δ = 18° 10' 13.9" (RT)
D = 32° 44' 25.6"
L = 55.50'
T = 27.98'
R = 175.00'

-L-
PI Sta 474+40.42
Δ = 33° 19' 17.0" (RT)
D = 3° 34' 51.6"
L = 930.51'
T = 478.83'
R = 1600.00'
SE = .06
RUNOFF = 330'

-L-
PIs Sta 480+02.21
Θs = 5° 54' 31.1"
Ls = 330.00'
LT = 220.12'
ST = 110.11'

GEORGIA P. TEDDER
DB 253 PG 215

THE VERONICA GAIL WORTH REVOCABLE LIVING TRUST
DB 401PG 001

QUENTINA PRICE
DB E-5 PG 502
DB 144 PG 2194

CHARLES DONOVAN SAUNDERS
DB 222 PG 2292

AGNES BALDWIN LIVING TRUST
DB 590 PG 1553

CHARLES DONOVAN SAUNDERS TAX MAP

GREATHEL T. COLDIRON
DB 320 PG 517

JERROLD ASHLEY
DB K-5 PG 414

BARBARA LEE EDWARDS AND CHARLES CLAYBORN EDWARDS, JR.
DB 316 PG 536

NCDOT
DB 225 PG 2040

PATRICIA P. ANDREWS
DB 263 PG 137

LINDA D. BURGESS
DB 349 PG 422

VERNON ROTEN AND LENNA RUTH ROTEN
DB I-4 PG 446

FRANCES MARION MILLER
DB M-4 PG 553

FRANCES R. ELLER
DB 187 PG 698

SR 1248 BALDWIN RD
SR 1272 VERNON ROTEN RD
U S HWY 221

US 221 & NC 194 /SR 1272		
	2857 / 5000	
NC 194		-Y27-
1129 / 1700		1729 / 3300
12000 / 20000	US 221	-L- 12600 / 21600
129 / 200		129 / 200
SR 1272		-Y27C-
	257 / 400	2015 ADT / 2035 ADT

DETAIL 21
STANDARD BASE DITCH
(Not to Scale)
Min. D=2 Ft.
B=VARIES 8-16 Ft.
FROM STA. 474+43 TO STA. 474+69 -L- LT
DDE = 16 CY

DETAIL 1
TOE PROTECTION
(Not to Scale)
d=2 Ft.
b=3 Ft.
Type of Liner= CLASS I Rip-Rap
FROM STA. 480+20 TO STA. 481+40 -L- LT

DETAIL 6
LATERAL BASE DITCH
(Not to Scale)
Min. D=2 Ft.
B=2 Ft.
b=5 Ft.
FROM STA. 15+80 TO STA. 16+75 -Y27- LT
DDE = 174 CY

DETAIL 7
LATERAL BASE DITCH
(Not to Scale)
*When B is < 6.0'
Min. D= 2 Ft.
Max. d= 2 Ft.
B= 2 Ft.
b= 5 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM STA. 14+65 TO STA. 15+00 -Y27- LT
DDE = 19 CY

DETAIL 8
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D= 2 Ft.
FROM STA. 477+50 TO STA. 478+50 -L- RT

DETAIL 18
TOE PROTECTION
(Not to Scale)
Type of Liner= CLASS I Rip-Rap
FROM STA. 478+80 TO STA. 480+20 -L- LT

DETAIL 9
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 2 Ft.
Max. d= 2 Ft.
b= 5 Ft.
Type of Liner= CLASS I Rip-Rap
FROM STA. 483+34 TO STA. 483+76 -L- LT
DDE = 17 CY

FOR –L– PROFILE, SEE SHEET 25
FOR –Y27– PROFILE, SEE SHEET 33
FOR –Y27A– PROFILE, SEE SHEET 34
FOR –Y27B– PROFILE, SEE SHEET 34
FOR –Y27C– PROFILE, SEE SHEET 33

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-690

REVISIONS

8/17/99

022514 – R/W REVISIONS; UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 14; UPDATED EXISTING R/W ON PARCEL 16. – PJS

MATCH LINE –L– STA. 484+50
SEE SHEET NO. 6

MATCH LINE –L– STA. 497+50
SEE SHEET NO. 8

NAD 83/CORS

13
AURELIA L. LEONARD
DB 306 PG 780

14
ARCHIE L. PIERCE AND NANCY C. PIERCE
REVOCABLE LIVING TRUST DATED JUNE 1, 2009
DB P-5 PG 76
DB 444 PG 831

15
D. J. HART & BETTY HART
DB M-5 PG 645

12
FRANCES R. ELLER
DB 187 PG 698

16
RUSSELL F. VANNOY
DB 192 PG 1047
DB 123 PG 1348
DB 187 PG 2421
DB Z-4 PG 213

ROBERT F. JONES AND WIFE,
SHIRLEY JONES
DB V-3 PG 310

485 490 495

-L- +00 EX. R/W END PARTIAL C/A BEGIN FULL C/A

-L- +80 EX. R/W BEGIN FENCE RESET TIE TO EXIST FENCE

-L- +00 185' LT

-L- +85 EX. R/W END FULL C/A BEGIN PARTIAL C/A END FENCE RESET TIE TO EXIST FENCE

-L- +46.39 EX. R/W BEGIN FENCE RESET TIE TO EXIST FENCE

-L- +40 175' LT

-L- +20 EX. R/W END FENCE RESET TIE TO EXIST FENCE

-L- +95 EX. R/W

BERM DITCH STA 496+17 – 498+00 -L- LT

BM #2

GRAU 350 TL-3

5" MONOLITHIC ISLAND

2'-9" C&G

N 28°26'23.0" E

U S HWY 221 BST

US HWY 221 24' BST

15" RCP-III

18" RCP-III

18" w/ ELBOW

REMOVE

REMOVE DI

REMOVE +/- 10 FT 24" RCP

JB w/MH

RETAIN

REMOVE CONC APRON

-BL- D3

-BL- D4

+ CLEANOUT EX PIPE EST +/- 20 FT

CLASS 'B' RIPRAP EST 5 TONS EST FF 10 SY

TAIL DITCH SEE DETAIL 3

48" WW & ISBW

EXISTING R/W

DETAIL 3
STANDARD BASE DITCH
(Not to Scale)

Natural Ground — 2:1 — D — 2:1 — Natural Ground
B
Min. D=2 Ft.
B=2 Ft.

FROM STA. 495+46 TO STA. 495+60 -L- RT
DDE = 9 CY

S 50°32'19" W 156.13'
S 30°52'19" W 275.14'
S 16°31'19" W 100.67'
S 30°38'19" W 86.81'
S 54°48'19" W 188.30'
S 21°28'19" W 76.56'
S 11°14'19" W 182.15'
S 25°39'19" W 161.87'
S 11°22'41" W 150.00'
N 78°21'55" W 17.84'
N 78°21'55" W 155.41'

FOR –L– PROFILE, SEE SHEET 25

21-FEB-2014 15:27
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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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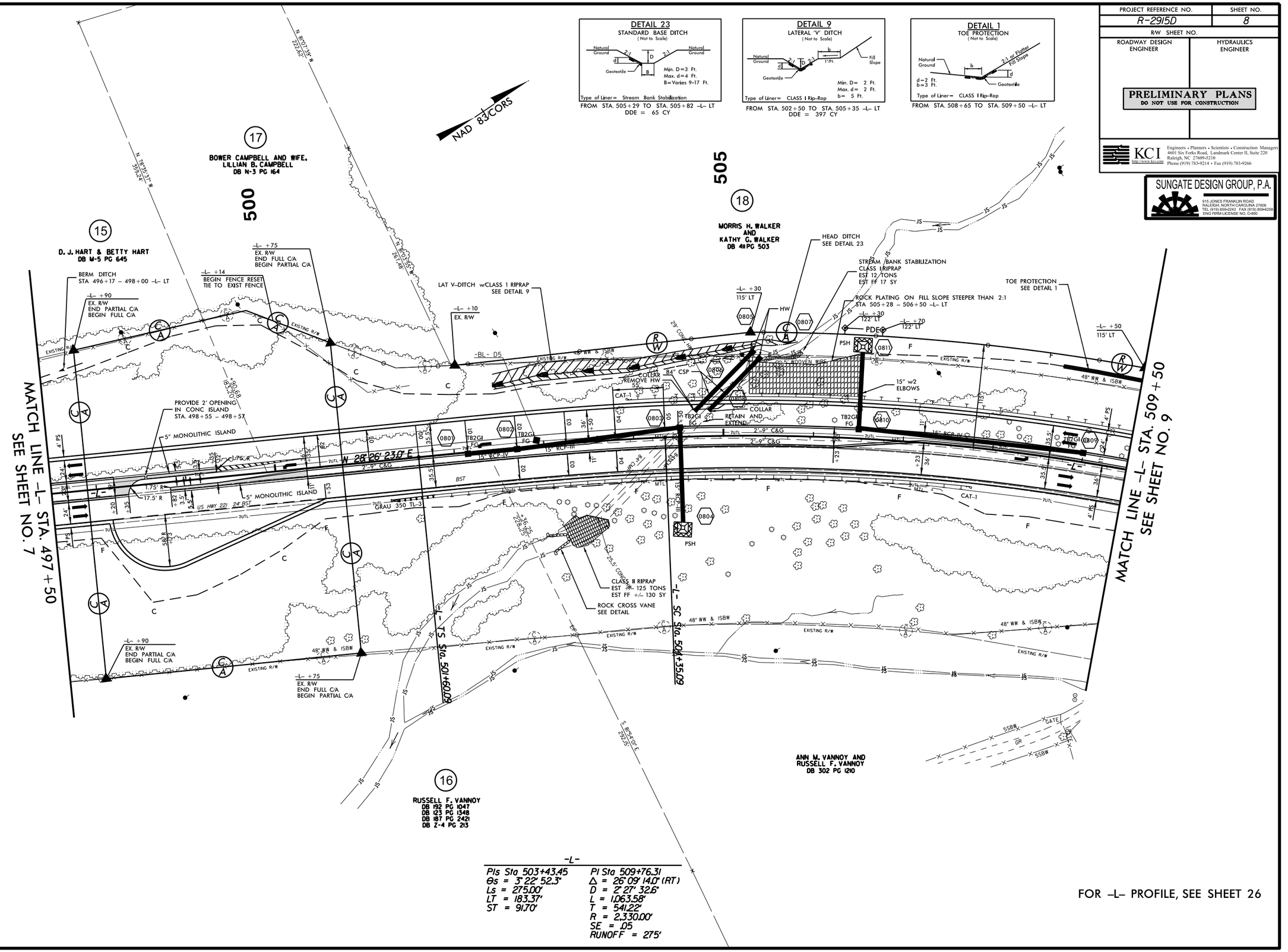
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ENG FIRM LICENSE NO. C-690

8/17/99

REVISIONS

022514 – R/W REVISIONS: UPDATED EXISTING R/W AND PROPOSED C/A ON PARCEL 16. – PJS

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–L–

PIs Sta 503+43.45	PI Sta 509+76.31
Θs = 3°22'52.3"	Δ = 26°09'14.0" (RT)
Ls = 275.00'	D = 2°27'32.6"
LT = 183.37'	L = 1,063.58'
ST = 91.70'	T = 541.22'
	R = 2,330.00'
	SE = .05
	RUNOFF = 275'

FOR –L– PROFILE, SEE SHEET 26

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

022514 – R/W REVISIONS: UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 19; LOCATED AN UNDERGROUND TANK AT –Y29– STA. 14+15+/– LT. AND REMOVED AN EXISTING BUILDING AT –Y29– STA. 14+75+/– LT.; UPDATED EXISTING R/W AND PROPERTY LINES FROM –L– STA. 517+52.31 TO STA. 523+33.45 RT. – PJS

8/17/99

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US 221 & SR 1143

	1800 / 2800	
SR 1143		–Y28–
757 / 1400		986 / 1200
12600 / 21600	US 221 –L–	13086 / 21800
129 / 200		386 / 600
SR 1143		–Y29–
	571 / 1000	2015 ADT / 2035 ADT

–Y28–

PI Sta 11+70.95
Δ = 5° 00' 48.9" (RT)
D = 2° 51' 53.2"
L = 175.01'
T = 87.56'
R = 2,000.00'

PI Sta 14+34.69
Δ = 5° 07' 39.9" (RT)
D = 2° 51' 53.2"
L = 178.99'
T = 89.56'
R = 2,000.00'

PI Sta 16+84.86
Δ = 26° 13' 56.2" (RT)
D = 22° 55' 05.9"
L = 114.46'
T = 58.25'
R = 250.00'

–Y28– PT Sta. 12+58.40

–Y28– PC Sta. 13+45.13

–Y28– PT Sta. 15+24.13

–Y28– PC Sta. 16+26.61

–Y28– PT Sta. 17+41.07

–Y29– PC Sta. 10+71.47

–Y29– PCC Sta. 12+33.83

–Y29– PT Sta. 15+68.13

–Y29– PC Sta. 16+15.62

–Y29– PT Sta. 17+03.49

–L– PT Sta. 509+76.31
Δ = 26° 09' 14.0" (RT)
D = 2° 27' 32.6"
L = 1,063.58'
T = 541.22'
R = 2,330.00'
SE = .05
RUNOFF = 275'

PIs Sta 515+90.36
Θs = 3° 22' 52.3"
Ls = 275.00'
LT = 183.37'
ST = 91.70'

–Y29–

PI Sta 11+55.63
Δ = 37° 12' 39.7" (LT)
D = 22° 55' 05.9"
L = 162.36'
T = 84.16'
R = 250.00'

PI Sta 14+04.23
Δ = 27° 21' 46.7" (LT)
D = 8° 11' 06.4"
L = 334.30'
T = 170.40'
R = 700.00'

PI Sta 16+59.61
Δ = 7° 11' 32.9" (LT)
D = 8° 11' 06.4"
L = 87.87'
T = 43.99'
R = 700.00'

–L– POC Sta. 5+12+10.00 = –Y28– POT Sta. 18+18.71
BEARING BK = S 48° 54' 31.4" E

–L– POC Sta. 5+13+80.00 = –Y29– POT Sta. 10+00.00
BEARING AH = S 44° 43' 39.8" E

BEGIN CONSTRUCTION –Y28– POT Sta. 15+95.00

BEGIN PAVEMENT –Y28– POT Sta. 16+15.00

END CONSTRUCTION –Y29– POC Sta. 12+60.00

–L– S 75° 08' 27.6" E

–L– CS Sta. 5+14+98.67

–L– ST Sta. 5+17+73.67

N 67° 21' 21.6" E

N 70° 41' 53.8" E

N 63° 30' 20.9" E

MATCH LINE –L– STA. 509+50 SEE SHEET NO. 8

MATCH LINE –L– STA. 520+00 SEE SHEET NO. 10

WILLIAM GLEN GOODMAN
DB 129 PG 397
DB P4 PG 447

MORRIS H. WALKER AND KATHY G. WALKER
DB 411 PG 503

DENVER KELLY ELLISON & WIFE LELIA ELLISON
DB 341 PG 2038

JOYCE G. BLEVINS
DB 232 PG 603

ERNEST LEE SINFORD AND WIFE. SIDNEY ELLEN SINFORD
DB 179 PG 1719

STEVEN M. HALSEY
DB 234 PG 1478
PB 4 PG 355-B

ANNE SOUNTY
DB 5 PG 196

NOTE: PLACE GUARDRAIL 5' FROM EXISTING EOT ON CALVIN GOODMAN RD.

TIE TO EXIST. GUARDRAIL

BEGIN GUARDRAIL –L– STA. 513+78.30

END GUARDRAIL –L– STA. 515+78.30

BEGIN EXPR. GUTTER –L– +00 LT

END EXPR. GUTTER –L– +00 LT

BEGIN FENCE RESET TIE TO EXIST FENCE CALVIN GOODMAN RD.

END FENCE RESET TIE TO EXIST FENCE

105' LT END FENCE RESET

TIE EXIST ROADWAY DITCH TO BDO

BERM DITCH STA 515+65 – 516+11 –L– LT

CONVERT TO JB W/MH

BM #3

REMOVE

15" w/ ELBOW

SPEC DAT 'V' DITCH SEE DETAIL 8

TAIL DITCH SEE DETAIL 3

CLASS 'B' RIPRAP EST 4 TONS EST FF 12 SY

CLASS 'B' RIPRAP EST 5 TONS EST FF 14 SY

RETAIN

60" BLK WALL

5" MONOLITHIC ISLAND

US HWY 221 24' BST

SR 1143 CLARENCE LYALL RD BST

GRAU 350 TL

SP 1240

NAD 83/CORS

FOR –L– PROFILE, SEE SHEET 26
FOR –Y28– PROFILE, SEE SHEET 34
FOR –Y29– PROFILE, SEE SHEET 34

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-890

REVISIONS
8/17/99
022514 - R/W REVISIONS; UPDATED EXISTING R/W AND PROPERTY LINES FROM -L- STA. 517+52.31 TO STA. 523+33.45 RT. - PJS

MATCH LINE -L- STA. 520+00
SEE SHEET NO. 9

MATCH LINE -L- STA. 533+50
SEE SHEET NO. 11

DETAIL 16
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, 2:1, d, D, 2:1, Natural Ground, Geotextile, B
Min. D=3 Ft.
Max. d=2 Ft.
B=2 Ft.
*When B is < 6.0'
Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 523+82 TO STA. 527+91 -L- RT
DDE = 120 CY

DETAIL 17
STANDARD BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Natural Ground, Geotextile, d, B
Min. D=3 Ft.
Max. d= 2Ft.
B=3 Ft.
*When B is < 6.0'
Type of Liner= CLASS I Rip-Rap
STA. 522+93 -L- RT
DDE = 20 CY

DETAIL 5
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Natural Ground
Min. D=2 Ft.
FROM STA. 522+81 TO STA. 523+82 -L-RT
DDE = 15 CY

DETAIL 26
RIP RAP AT EMBANKMENT
(Not to Scale)
10' min., 1.0' min., Ditch Grade, 1.5 FT, GEOTEXTILE
Type of Liner= 6 TONS Class I Riprap
FF 8 SY
STA. 522+93 -L- RT

-Y29-
PI Sta 19+30.82
Δ = 8°23'04.2" (RT)
D = 3°49'11.0"
L = 219.51'
T = 109.95'
R = 1,500.00'

FOR -L- PROFILE, SEE SHEET 27

21-FEB-2014 15:27
R:\Roadway\Proj\R2915D_Rdy_psh_10.dgn
$$$$USERNAME$$$$

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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MATCH LINE –L– STA. 533+50
SEE SHEET NO. 10

MATCH LINE –L– STA. 547+00
SEE SHEET NO. 12

DETAIL 22
LATERAL BASE DITCH
(Not to Scale)

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

Type of Liner= Coir Fiber Matting

FROM STA. 537+33 TO STA. 537+80 –L– LT
DDE = 116 CY

DETAIL 7
LATERAL BASE DITCH
(Not to Scale)

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

*When B is < 6.0'

Type of Liner= Class 'B' Rip-Rap

FROM STA. 541+10 TO STA. 545+50 –L– LT
DDE = 1,237 CY

DETAIL 10
LATERAL 'V' DITCH
(Not to Scale)

Min. D=2 Ft.
Max. d=2 Ft.
b=5 Ft.

Type of Liner= CLASS 'B' Rip-Rap

FROM STA. 536+00 TO STA. 537+32 –L– LT
DDE = 415 CY

DETAIL 11
LATERAL 'V' DITCH
(Not to Scale)

Min. D=1.4 Ft.
b=5 Ft.

FROM STA. 539+50 TO STA. 541+10 –L– LT
DDE = 995 CY

20
EDWIN DALE KRIDER & WIFE
SHERRY W. KRIDER
DB 185 PG 837

23
RITZ C. RAY, JR.
DB W-2 PG 212

24
RAY FARMS, LLC
DB 323 PG 1821

KATRINA CASEY
DB 342 PG 1747

CYNTHIA K. HOUCK
DB 199 PG 2163

LESIA HAM MILLER
DB 407 PG 163
PB 4 PB 355-B

GARLAND LYALLS & WIFE
JOAN LYALLS
DB 404 PG 2173
DB V-4 PG 470

TERESA L. HAWKINS
GARLAND C. LYALLS & WIFE
JOAN B. LYALLS
DB 234 PG 708

535
540
545

–L– TS Sta. 543+41.68
–L– SC Sta. 546+16.68

NAD 83/CORS

S 59°16'27" E 65.08'
N 25°00'39" W 879.05'
N 61°21'21.6" E
N 53°46'14" W 146.46'
N 44°35'59" W 144.35'
N 70°17'32" W 130.02'
S 35°08'58" W 110.96'
S 44°17'24" E 200.08'
S 37°19'37" E 146.86'
S 32°32'26" E 230.80'
N 42°50'00" W 180.03'
N 42°50'00" W 157.00'

EXISTING R/W
EXISTING R/W=PROP. LINE
48" WW & ISBW
55BW
–L– +75 EX. R/W & 125' LT BEGIN FENCE RESET TIE TO EXIST FENCE
–L– +75 EX. R/W END FENCE RESET TIE TO EXIST FENCE
LAT 'V' DITCH w/CLASS 'B' RIPRAP SEE DETAIL 10
LAT 2' BASE DITCH w/COIR FIBER MATTING SEE DETAIL 22
–L– +91.81 140' LT
–L– +24.05 EX. R/W & END FENCE RESET TIE TO EXIST FENCE
CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY
–L– +35 EX. R/W & 110' LT BEGIN FENCE RESET TIE TO EXIST FENCE
–L– +45 145' LT
–L– +10 155' LT
LAT V-DITCH SEE DETAIL 11
LAT 2' BASE DITCH w/CLASS 'B' RIP RAP SEE DETAIL 7
–L– +00 120' LT
–L– +50 110' LT
CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY
–L– +25 EX. R/W & 115' LT END FENCE RESET TIE TO EXIST FENCE
TIE TO EXIST BERM DITCH
BERM DITCH STA 545+50 – 546+07 –L– LT
END SBG –L– 546 LT
REMOVE HW
BEGIN SBG –L– +95 LT 8:1
15" COLLAR
CAT-1
15" w/ ELBOW
2GI w/ FLAT GRATE
RETAIN AND EXTEND
REMOVE
2GI
GRAU 350 TL-3
CLASS 'B' RIPRAP ON BANKS ONLY EST 15 TONS EST FF 22 SY
Convert to JBwMH
-BL- D9
CLARENCE LYALL RD
HTR
ISFD
ISBKD
DOG PEN
CONC
DK
S
1 1/2SFD
US HWY 221 BST
30" CMP
30" RCP-IV
15" RCP-IV
18" CMP
12" CMP
12" HDPE LENGTH UNKNOWN
24" CMP
2GI FG
2GI-A FG
TOP=325.62'
TOP=329.04'
TOP=329.55'
TOP=329.55'
TOP=329.68'
TOP=329.55'
TOP=329.55'
TOP=329.55

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS 8/17/99

NAD 83/CORS

(24) RAY FARMS, LLC DB 323 PG 1821

MATCH LINE -L- STA. 547+00 SEE SHEET NO. 11

MATCH LINE -L- STA. 560+00 SEE SHEET NO. 13

550 555 560

-L- PI Sta 555+85.02

-L- ST Sta. 558+60.02

BM #5

48" WW & ISBW

EXISTING R/W

-BL- D11

-BL- D10

US HWY 221

PLUG

REMOVE

2-9" C&G

30" RCP-IV

2GI FG

2GI A FG

30" CMP

24" w/ ELBOW

BDO

FS

1201 1202 1203 1204 1205 1206 1207 1208 1209

-L- 2UTL

55'

4' FS

24'

23'

35.5'

4' FG

24" RCP

-BL- D10

-BL- D11

-BL- D10

CLARENCE LYALL RD BST

GR

EXISTING R/W=PROP. LINE

55BW

6SBW

4SBW

T FO

DAVID V. THOMAS, & WIFE
BARBARA M. THOMAS
DB 346 PG 969

ROSEBUD FARMS, LLC
DB 323 PG 1819

N 68°18'13" E
239.09'

N 70°15'00" E
397.54'

N 65°16'43" W
899.53'

-L-

PI Sta 551+05.10	PIs Sta 556+76.71
Δ = 18° 29' 38.2" (LT)	Θs = 2° 37' 33.8"
D = 1° 54' 35.5"	Ls = 275.00'
L = 968.34'	LT = 183.35'
T = 488.42'	ST = 91.69'
R = 3,000.00'	
SE = .05	
RUNOFF = 275'	

FOR -L- PROFILE, SEE SHEET 28

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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS 8/17/99

NAD 83/CORS

24
RAY FARMS, LLC
DB 323 PG 1821

BURT S. WASHBURN
& JO ANN L WASHBURN
DB U-5 PG 446

CYNTHIA JANE SHEETS
DB 256 PG 744

EARL B. SHEETS
DB H-4 PG 46

JANE SHEETS HURLEY
DB E-6 PG 491

JERRY W. RAY
DB 272 PG 869

ROSEBUD FARMS, LLC
DB 323 PG 1819

TOWN OF WEST JEFFERSON
DB 289 PG 1593

COUNTY OF ASHE
DB 278 PG 663
PB 5 PG 263

560

565

570

MATCH LINE -L- STA. 560+00
SEE SHEET NO. 12

MATCH LINE -L- STA. 572+00
SEE SHEET NO. 14

-L- PI Sta 560+24.61

-L- SC Sta. 563+54.61

-BL- D12

-BL- D13

US HWY 221

EXISTING R/W

48" WW & ISBW

1301 2GI CAT-1 FS

1302 2GI FG

1303 BDO

1304 2GI-A

1305 24" w/2 ELBOWS

1306 END SBG -L- +95 RT

1307 JB w/MH

1308 REMOVE HW

1309 2GI FG

1310 2GI w/ COLLAR FLAT GRATE

1311 CAT-1

1312 2GI FG

1313 2GI

24" RCP-III

RETAIN AND EXTEND

GRAU 350 TL-3

2'-9" C&G

6" BST CURB

BEGIN SBG -L- +25 RT

CLASS I RIPRAP ON BANKS ONLY EST 4 TONS EST FF 8 SY

CLASS B RIPRAP EST 2 TONS EST FF 7 SY

200' TAPER RT

BERM DITCH
STA 559+21 – 561+75 -L- RT

BM #6

FOR -L- PROFILE, SEE SHEET 28

-L-	
PIs Sta 562+44.72	PI Sta 568+99.04
Θs = 5° 33' 39.8"	Δ = 35° 30' 55.4" (RT)
Ls = 330.00'	D = 3° 22' 13.2"
LT = 220.11'	L = 1,053.76'
ST = 110.10'	T = 544.43'
	R = 1,700.00'
	SE = .06
	RUNOFF = 330'

29-JUL-2013 11:29
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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

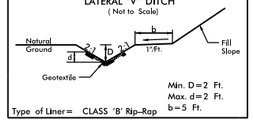
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ENG FIRM LICENSE NO. C-690

REVISIONS 8/17/99

NAD 83 CORS

DETAIL 10
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 575+50 TO STA. 577+72 –L– LT
DDE = 461 CY

JERRY W. RAY
DB 272 PG 869

575

580

S 85°12'29" E
738.25'

LAT V-DITCH w/CLASS 'B' RIP RAP
SEE DETAIL 10

-L- POT Sta. 578+08.00 =
-DRV1- POT Sta. 10+00.00
BEARING AH = S 5°45'09.5" E

MATCH LINE -L- STA. 572+00
SEE SHEET NO. 13

MATCH LINE -L- STA. 584+50
SEE SHEET NO. 15

-L- CS Sta. 574+08.37

-L- ST Sta. 577+38.37

N 84°14'50.9" E

S 35°44'27.3" W

-DRV1- PC Sta. 11+35.59

-DRV1- PT Sta. 12+24.86

-DRV1- POT Sta. 12+17.94

END CONSTRUCTION
-DRV1- POC Sta. 11+80.00

BEGIN SBG
-L- +50. LT

CLASS 'B' RIPRAP
EST 5 TONS
EST FF 14 SY

COUNTY OF ASHE
DB 278 PG 663
PB 5 PG 263

ISBK SCHOOL
WESTWOOD ELEMENTARY SCHOOL

US HWY 221

EXISTING R/W

48" WW & ISBW

24" C&G

2'-9" C&G

5" MONOLITHIC ISLAND

200' TAPER RT

200' TAPER LT

100' TAPER

RETAIN AND EXTEND

REMOVE HW CONTAIN

TB JB WMH

24" CSP

15" RCP-IV

15" RCP-III

18"

36" CMP

42" CMP

8' PLASTIC

BST

BST PA

SOIL GATE

FROM SCHOOL

12" CMP

-L-

PI Sta 568+99.04
Δ = 35° 30' 55.4" (RT)
D = 3° 22' 13.2"
L = 1,053.76'
T = 544.43'
R = 1,700.00'
SE = .06
RUNOFF = 330'

PIs Sta 575+18.47
Θs = 5° 33' 39.8"
Ls = 330.00'
LT = 220.11'
ST = 110.10'

-DRV1-

PI Sta 11+82.61
Δ = 44° 28' 36.3" (RT)
D = 49° 49' 20.7"
L = 89.27'
T = 47.02'
R = 115.00'

FOR –L– PROFILE, SEE SHEET 29
FOR –DRV1– PROFILE, SEE SHEET 34

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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-990

8/17/99

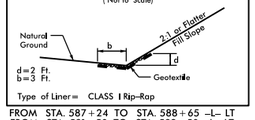
REVISIONS

01/09/14 – R/W REVISION; REVISED TOE AT –L– STA. 587+33 LT ON PARCEL 25 – TLW

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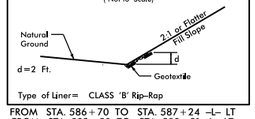
NAD 83/CORS

DETAIL 1
TOE PROTECTION
(Not to Scale)



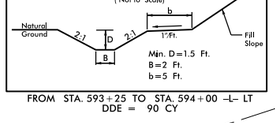
d=2 Ft.
b=3 Ft.
Type of Liner= CLASS I Rip-Rap
FROM STA. 587+24 TO STA. 588+65 –L– LT
FROM STA. 591+50 TO STA. 592+50 –L– LT

DETAIL 2
TOE PROTECTION
(Not to Scale)



d=2 Ft.
Type of Liner= CLASS 'B' Rip-Rap
FROM STA. 586+70 TO STA. 587+24 –L– LT
FROM STA. 592+50 TO STA. 593+21 –L– LT

DETAIL 15
LATERAL BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
B=2 Ft.
b=5 Ft.
FROM STA. 593+25 TO STA. 594+00 –L– LT
DDE = 90 CY

ZEB V. GAMBILL & WIFE ANGIE TRIBBLE GAMBLE
DB 304 PG 1918

N 25°25'33" E
316.48'

N 60°34'11" E
519.68'

N 63°59'09" W
547.83'

S 86°54'36" E
268.45'

N 43°46'21" E
226.46'

N 84°14'50" E

–L–
PIs Sta 588+25.93
θs = 2°42'59.8"
Ls = 275.00'
LT = 183.35'
ST = 91.69'

PI Sta 598+87.47
Δ = 36°59'04.8" (LT)
D = 1°58'32.6"
L = 1,871.96'
T = 969.90'
R = 2,900.00'
SE = .05
RUNOFF = 275'

585 590 595

MATCH LINE –L– STA. 584+50 SEE SHEET NO. 14

MATCH LINE –L– STA. 597+00 SEE SHEET NO. 16

–L– Sta. 586+42.57

–L– SC Sta. 589+17.57

TOE PROTECTION SEE DETAIL 1

TOE PROTECTION SEE DETAIL 2

HEAD DITCH SEE DETAIL 19

–L– +10
EX. R/W
BEGIN FENCE RESET
TIE TO EXIST FENCE

–L– +00
120' LT

–L– +07
139' LT

–L– +25
139' LT

–L– +33
PR. R/W

–L– +50
EX. R/W
END PARTIAL C/A
BEGIN FULL C/A

CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

–L– +50
135' LT

TOE PROTECTION SEE DETAIL 1

CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

–L– +35
EX. R/W
END FULL C/A
BEGIN PARTIAL C/A
END FENCE RESET
TIE TO EXIST FENCE

TOE PROTECTION SEE DETAIL 2

LAT 2' BASE DITCH SEE DETAIL 15

BERM DITCH
STA 594+00 – 598+56 –L– LT

+88.41
185.55

EXISTING R/W

48" WW & ISBW

8" PLASTIC

36" RCP-III

END SBG
71 LT

15" w2 ELBOWS

15" RCP-IV

5" MONOLITHIC ISLAND

15" CSP w2 ELBOWS

2'-9" C&G

2GI w/ FLAT GRATE

TB2GI FG

1.75' R

US HWY 321 BST

GRAU 350 TL-3 FS

2GI-A

24" w2 ELBOWS

-BL- DI6

CLASS I RIPRAP
EST 7 TONS
EST FF 15 SY

CLASS I RIPRAP
EST 15 TONS
EST FF 30 SY

REMOVE HW

RETAIN AND EXTEND

REMOVE HW COLLAR

JB w/MH

36" CSP

DITCH BLOCK TO ELEV 327.02

-BL- DI7

CLASS I RIPRAP
EST 15 TONS
EST FF 30 SY

BM #7

REMOVE DEBRIS

DEBRIS

EIP

–L– +19.59
EX. R/W

–L– +35
EX. R/W
END FULL C/A
BEGIN PARTIAL C/A

–L– +50
EX. R/W
END PARTIAL C/A
BEGIN FULL C/A

–L– +19.99
EX. R/W

S 81°25'05" W
208.37'

S 55°34'45" W
162.36'

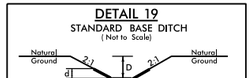
S 05°46'48" W
667.84'

N 48°51'52" W
165.53'

WLB

CAT I

DETAIL 19
STANDARD BASE DITCH
(Not to Scale)



Min. D=1 Ft.
Max. d=1 Ft.
B=1 Ft.
*When B is < 6.0'
Type of Liner= Coir Fiber Matting
FROM STA. 587+03 TO STA. 587+14 –L– LT
DDE = 3 CY

COUNTY OF ASHE
DB 278 PG 663
PB 5 PG 263

(25)
GAMBILL PROPERTIES, LLC
DB 295 PG 1528

(26)
RALPH GOODMAN & TED GOODMAN
DB P-5 PG 173

(27)
IVY S. GOODMAN
DB 184 PG 1361
PB 5 PG 263

FOR –L– PROFILE, SEE SHEET 29

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-690

8/17/99

REVISIONS

NAD 83/CORS

-L-
PI Sta 598+87.47
Δ = 36° 59' 04.8" (LT)
D = 1° 58' 32.6"
L = 1,871.96'
T = 969.90'
R = 2,900.00'
SE = .05
RUNOFF = 275'

PIs Sta 608+81.22
θs = 2° 42' 59.8"
Ls = 275.00'
LT = 183.35'
ST = 91.69'

ZEB V. GAMBILL & WIFE
ANGIE TRIBBLE GAMBLE
DB 304 PG 1918

600

605

29
MARLETTE B. CULLEN (TRUSTEE)
DB 387 PG 379

27
IVY S. GOODMAN
DB 184 PG 1361
PB 5 PG 263

28
JERRY WAYNE JONES & WIFE
DONNA H. JONES
DB 280 PG 1632

ROBERT GLENN POE
AND
DEBRA E. POE
DB 131 PG 1332

MATCH LINE -L- STA. 597+00
SEE SHEET NO. 15

MATCH LINE -L- STA. 608+50
SEE SHEET NO. 17

-L- CS Sta 607+88.54

BERM DITCH
STA 594+00 – 598+56 -L- LT

EX. R/W
END PARTIAL C/A
BEGIN FULL C/A -L- +25

EX. R/W
END FULL C/A
BEGIN PARTIAL C/A -L- +00

EX. R/W -L- +33.99

CLASS I RIPRAP
ON BANKS ONLY
EST 6 TONS
EST FF 10 SY
30" w/
ELBOW

5" MONOLITHIC ISLAND

US HWY 221

-BL- D18

-BL- D19

GRAU 350 TL-3

TOE PROTECTION

TOE PROTECTION
SEE DETAIL 1

DETAIL 1
TOE PROTECTION
(Not to Scale)

Natural Ground
2:1 or Flatter Fill Slope
b
d
d=2 Ft.
b=3 Ft.
Geotextile
Type of Liner – CLASS I Rip-Rap

FROM STA. 606+50 TO STA. 610+19 -L- RT

FOR -L- PROFILE, SEE SHEET 30

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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-990

REVISIONS 8/17/99

-L-
PIs Sta 608+81.22
Θs = 2°42'59.8"
Ls = 275.00'
LT = 183.35'
ST = 91.69'

NAD 83/CORS

N 81°26'30" W 379.00'

610 615 620

MARLETTE B. CULLEN (TRUSTEE)
DB 387 PG 379

(29)

MARLETTE B. CULLEN (TRUSTEE)
DB 387 PG 379

MARLETTE B. CULLEN (TRUSTEE)
DB 387 PG 379

GWYN CAMBELL & WIFE
WILLA MAE CAMPBELL
DB S-4 PG 294

-L- Sta. 608+64.54

MATCH LINE -L- STA. 608+50
SEE SHEET NO. 16

MATCH LINE -L- STA. 621+50
SEE SHEET NO. 18

-BL- D20

US HWY 221

N 41°49'46.5" E

-L-

BST

SR 1195 HELEN BLEVINS RD

17' BST

8" PLASTIC

6" DI

48" WW & ISBW

42" WW & ISBW

4SBW

EXISTING R/W

EXISTING R/W-PROP. LINE

RAIL VINYL

RAIL RAMP

12' CMP

24" CMP

42" CMP

18" CMP

15" RCP-IV

42" RCP-III

2GI FG

2GI w/ FLAT GRATE

JB w/MH

PUMP STATION

17' CONC. HW

229.50
240.12

175.64
219.29

BEGIN SBG COLLAR
-L- +65 RT

REMOVE HW

RETAIN AND EXTEND

15" w2 ELBOWS

PSH

TOE PROTECTION
SEE DETAIL 1

PLACE FILL MATERIAL
TO ELEV 3084

EARTH BERM
TO ELEV 3085.2
SEE DETAIL 20

LAT-V-DITCH w/CLASS I RIP RAP
SEE DETAIL 9

TOE PROTECTION
SEE DETAIL 2

CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

REMOVE HW

RETAIN AND EXTEND CONC. COLLAR

42" RCP-III

JB w/MH

1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715

75' ELEC

POLE

ISBW

POND

APPROXIMATE 60' PRIVATE R/W

N 81°25'59" W 244.12'

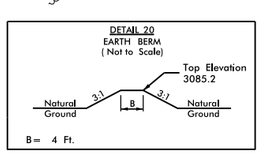
N 55°08'38" W 346.37'

ROBERT GLENN POE
AND
DEBRA E. POE
DB 131 PG 1332

ALVIN P. ALEXANDER JR. & WIFE
ALMA W. ALEXANDER
GARY E. KEY & WIFE
JEANNETTE A. KEY
DB 188 PG 1208
DB 188 PG 1214

FOR -L- PROFILE, SEE SHEET 30

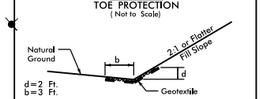
DETAIL 20
EARTH BERM
(Not to Scale)



B= 4 Ft.

STA. 612+65 -L-

DETAIL 1
TOE PROTECTION
(Not to Scale)

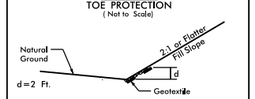


d=2 Ft.
b=3 Ft.

Type of Liner= CLASS I Rip-Rap

FROM STA. 606+50 TO STA. 610+19 -L- RT
FROM STA. 610+51 TO STA. 611+11 -L- RT
FROM STA. 614+00 TO STA. 616+00 -L- RT
FROM STA. 619+50 TO STA. 620+00 -L- RT

DETAIL 2
TOE PROTECTION
(Not to Scale)

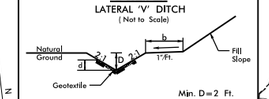


d=2 Ft.

Type of Liner= CLASS 'B' Rip-Rap

FROM STA. 610+26 TO STA. 610+51 -L- RT
FROM STA. 619+27 TO STA. 619+50 -L- RT

DETAIL 9
LATERAL 'V' DITCH
(Not to Scale)



Min. D=2 Ft.
Max. d=2 Ft.
b=5 Ft.

Type of Liner= CLASS 1 Rip-Rap

FROM STA. 616+00 TO STA. 618+71 -L- RT
DDE = 185 CY

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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-890

8/17/99

REVISIONS

NAD 83/CORS

CAROL E. DANIEL
EDDIE LEE ELDRETH
ELIZABETH HOLMAN
DB 316 PG 2099

HOWARD L. COMBS & WIFE
BETTY S. COMBS
DB 168 PG 1096

CAROL E. DANIEL
EDDIE LEE ELDRETH
ELSIE G. ELDRETH
ELIZABETH HOLMAN
DB 266 PG 1981

JAMES C. GAMBILL JR. (HEIRS)
DB 210 PG 1943

SHARON B. GAMBILL
DB 210 PG 1946

625

630

-L- POT Sta.625+42.88
-Y30- POT Sta. 10+00.00

-Y30- PC Sta. 12+98.42

-Y30- PT Sta. 14+59.38

-Y30- POT Sta. 15+64.85

END PAVEMENT
-Y30- POT Sta.11+00.00

END CONSTRUCTION
-Y30- POT Sta.11+41.00

-Y30-
PI Sta 13+92.24
Δ = 73° 46' 46" (RT)
D = 45° 50' 11.8"
L = 160.96'
T = 93.82'
R = 125.00'

MATCH LINE -L- STA. 621+50
SEE SHEET NO. 17

MATCH LINE -L- STA. 634+50
SEE SHEET NO. 19

US 221 & SR 1145

13086 / 21800	US 221 -L-	13914 / 23200
≤10 / ≤10		829 / 1400
	SR 1145 -Y30-	
2015 ADT / 2035 ADT	829 / 1400	

DETAIL 5
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Natural Ground
Min. D=2 Ft.
FROM STA. 628+44 TO STA. 628+66 -L- RT
DDE = 9 CY

DETAIL 24
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2:1, d, D, 2:1, b, 1':Ft., Fill Slope, B
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2 Ft.
b=5 Ft.
Type of Liner= Coir Fiber Matting
FROM STA. 622+25 TO STA. 624+15 -L- RT
DDE = 376 CY

FOR -L- PROFILE, SEE SHEET 31
FOR -Y30- PROFILE, SEE SHEET 35

WILLIAM DAVID PATRICK
LOIS P. GRUBB
LARRY LEE PATRICK
WAYNE ALLEN PATRICK
GEORGE GARY PATRICK
LINDA P. MILLER
DB 273 PG 1547

ROY G. POE & WIFE
JUDY P. POE
DB 185 PG 1674

LARRY R. GOODMAN
DB 184 PG 1365
PB 5 PG 264

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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-850

REVISIONS 8/17/99

NAD 83/CORS

GAMBILL PROPERTIES, LLC
DB 293 PG 1528

(LINES DRAWN BY GIS AND FENCE LINE) N 60°58'34" E 477.52'
(LINES DRAWN BY GIS AND FENCE LINE) N 50°15'54" E 314.53'
(LINES DRAWN BY GIS AND FENCE LINE) N 00°55'25" W 98.32'
(LINES DRAWN BY GIS AND FENCE LINE) N 47°24'42" E 136.33'
S 47°19'08" W 42.01'

635 640 645

4SBW 8" PLASTIC SS BEAVER DAM JS 72" CHL & 3SBW LIFT STATION NO ACCESS PUMP STATION GATE GATE ISMTLBUS CONC EXISTING R/W=PROP. LINE BST PA 8"PVC DATUR FSS SR 1195 HELEN BLEVINS RD 17' BST 6'DI 48" WW & ISBW CLASS I RIPRAP PLACE BETWEEN END OF PIPE AND WLB EST 11 TONS EST FF 22 SY REMOVE FES 8.5' CONC. HW CMP HEADWALL 60' CMP

CONLEY SHEPARD & MICHAEL SHEPARD
DB 305 PG 1947
S 36°41'05" W 174.66'

MICHAEL SHEPARD & CONLEY SHEPARD
DB 350 PG 2034

EXISTING R/W

-L- PC Sta. 635+27.26

CAT-1 40' 41'PS 24' BST 20' 2'-9" C&G 2'-9" C&G 35.5' 2'-9" C&G 2'-9" C&G US HWY 221 -BL- D23 REMOVE HW 30" CSP RETAIN AND EXTEND COLLAR 1906 JB w/MH T904 8.5' CONC. HW 30" RCP-III 15" 18" GRAU 350 TL-3 2GI FS 1901 1902 1903 F C

TOE PROTECTION SEE DETAIL 2

48" WW & ISBW SOIL EXISTING R/W 48" WW & ISBW SOIL 48" WW & ISBW EXISTING R/W

BM #9

GRAU 350 TL-3 2GI 15" 1906

-L- STA. 647+50 SEE SHEET NO. 20

MATCH LINE -L- STA. 634+50 SEE SHEET NO. 18

LARRY R. GOODMAN
DB 184 PG 1365
PB 5 PG 264

+RB-RB 418.19'
324.24' S 34°09'09" E

HERBERT N. FRANCIS
DB 2 PG 481
PB 1 PG 44

DETAIL 2
TOE PROTECTION
(Not to Scale)

Natural Ground — 2:1 or Flatter Fill Slope — d — Geotextile

d=2 Ft.

Type of Liner= CLASS 'B' Rip-Rap

FROM STA. 641+40 TO STA. 642+18 -L- RT

-L-
PI Sta 642+62.40
Δ = 7° 32' 21.3" (RT)
D = 0° 30' 49.9"
L = 1,467.17'
T = 734.65'
R = 11,150.00'
SE = NC

FOR -L- PROFILE, SEE SHEET 31

29-JUL-2013 11:30
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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

DETAIL 2
TOE PROTECTION
(Not to Scale)

Natural Ground
2:1 or Flatter Fill Slope
d=2 Ft.
d
Geotextile

Type of Liner= CLASS 'B' Rip-Rap

FROM STA. 650+50 TO STA. 651+80 -L- RT

NAD 83/CORS

-L-
PI Sta 642+62.40
Δ = 1° 32' 21.3" (RT)
D = 0° 30' 49.9"
L = 1,467.17'
T = 734.65'
R = 11,150.00'
SE = NC

-L- POC Sta.649+12.50 =
-Y31- POT Sta. 10+00.00
BEARING AH = S 50° 25' 53.1" E

-L- PT Sta. 649+94.93

-Y31-
PI Sta 11+89.78
Δ = 29° 53' 33.6" (LT)
D = 14° 19' 26.2"
L = 208.69'
T = 106.78'
R = 400.00'

-Y31- PC Sta.10+83.01

-Y31- POC Sta.11+65.00

-Y31- PT Sta.12+91.70

END CONSTRUCTION

S 87°08'26" E 267.71'

MATCH LINE -L- STA. 647+50
SEE SHEET NO. 19

MATCH LINE -L- STA. 660+00
SEE SHEET NO. 21

US 221 & SR 1147

13914 / 23200	US 221	-L-	14714 / 25000
400 / 400			1200 / 2200
SR 1147			-Y31-
	1600 / 2600		

2015 ADT
2035 ADT

CANOPY
CAR WASH
ISBLKBUS
ISMTLBUS
ISBRBUS
HTR
CONC
BST
DK
WALL
RAIL
650
655
660

JAMES RICHARD BEAMON JR. & WIFE CAROLINE KNOX BEAMON
DB 180 PG 999

BOB MCCOY
DB 3-5 PG 576

LARRY E. GREER & WIFE GINGER B. GREER
DB 147 PG 1590
PB 2 PG 151

LARRY E. GREER & WIFE GINGER B. GREER
DB 147 PG 866
PB 2 PG 151

JEB HOTEL CORPORATION
DB 197 PG 977
PB 5 PG 296
DB 193 PG 1084

NATIONS INN
25RMBUS

MICHAEL SHEPARD & CONLEY SHEPARD
DB 350 PG 2034

RAY C. TAYLOR & WIFE LOUISE P. TAYLOR
DB R-4 PG 180
PB 2 PG 151

LANNY M. LEWIS & WIFE MARIE T. LEWIS
DB 171 PG 2225

ARTHUR JOE BALL & WIFE BETTY BALL
DB R-4 PG 176
PB 2 PG 151

KENNETH G. HERTEL (HEIRS)
DB 302 PG 1630

GARY DEAN HALL & WIFE BRENDA K. HALL
DB 186 PG 263

AVERY ERNEST ROARK & WIFE JANET SUE ROARK
DB 140 PG 1637
PB 2 PG 151

TONY A. WALLACE & WIFE JUDY W. WALLACE
DB 175 PG 435

JOHN A. WEAVER JR. & WIFE IMAGENE H. WEAVER
DB 124 PG 188

US HWY 221
EXISTING R/W
48" WW & ISBW
CLASS I RIPRAP
EST 15 TONS
EST FF 30 SY
CLASS 'B' RIPRAP
EST 5 TONS
EST FF 14 SY
232.5' TAPER LT & RT
200' TAPER RT
5" MONOLITHIC ISLAND
GRAU 350 TL-3
2GI NS
2GI-A NS
REMOVE HW
COLLAR RETAIN AND EXTEND
RETAIN
100' TAPER
TIE GUARDRAIL TO EXISTING
TOE PROTECTION SEE DETAIL 2
-BL- D24
-BY6- D643
-BL- D25
-BY6- D644

FOR -L- PROFILE, SEE SHEET 32
FOR -Y31- PROFILE, SEE SHEET 35

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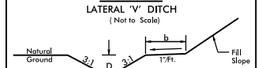
8/17/99

REVISIONS

022514 – R/W REVISIONS; LOCATED AN ADDITION TO THE EXISTING BUILDING ON PARCEL 30 – PJS

21-FEB-2014 15:28
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DETAIL 13
LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 19+00 TO STA. 20+50 –Y32– LT
DDE = 404 CY

DETAIL 25
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 663+72 TO STA. 664+32 –L– LT
DDE = 35 CY

REVISED SIGNAL

FOR –L– PROFILE, SEE SHEET 32

FOR –Y32– PROFILE, SEE SHEET 35

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/CORS

-L-
PIs Sta 662+61.63
Θs = 2°45'51.4"
Ls = 275.00'
LT = 183.36'
ST = 91.69'

PI Sta 665+89.68
Δ = 9°29'00.8" (LT)
D = 2°00'37.4"
L = 471.73'
T = 236.40'
R = 2,850.00'
SE = .05
RUNOFF = 275'

PI Sta 672+70.19
Δ = 20°35'52.2" (LT)
D = 2°20'19.0"
L = 880.77'
T = 445.19'
R = 2,450.00'
SE = .05

BEGIN CONSTRUCTION
-Y32- POT Sta.15+45.00

BEGIN PAVEMENT
-Y32- POT Sta.16+30.00

TIE TO EXIST. GUARDRAIL

KENNETH T. PARSONS & WIFE BETTY W. PARSONS DB 267 PG 1234

ROCK PLATING
STA 15+84 – 21+00 –Y32– RT

ROGER D. SMITHEY
A. SMOKIE GREENE
DB 198 PG 199

BRADLEY W. JORDAN
DB 403 PG 2289

JEB HOTEL CORPORATION
DB 197 PG 827
PB 5 PG 296
DB 198 PG 1084

JOHN A. WEAVER JR. & WIFE
IMAGENE H. WEAVER
DB 124 PG 188

CONLEY W. SHEPHERD & WIFE
WILMA T. SHEPHERD
DB 398 PG 80

ANTHONY K. DICKSON
DB 231 PG 1744

LARRY D. BOOTH
DB 354 PG 733

WEST JEFFERSON, LLC
DB 358 PG 1415
PB 6 PG 510
DB 404 PG 749
PB 6 PG 510

CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

CLASS I RIPRAP
EST 4 TONS
EST FF 10 SY

CLASS I RIPRAP
EST 11 TONS
EST FF 22 SY

CLASS I RIP RAP ON BANKS ONLY
EST 20 TONS
EST FF 38 SY

CL 'I' RIP RAP
+/-175 TONS
W/GF

LAT V-DITCH
SEE DETAIL 13

LAT 5' BASE DITCH
W/GEOTEXTILE FIBER MATTING
SEE DETAIL 12

LAT 2' BASE DITCH
SEE DETAIL 6

HEAD DITCH
SEE DETAIL 25

13'-31' BASE CHANNEL
DDE= +/-235 CY

CLEANOUT EX PIPE
EST +/- 214 FT

CLEANOUT EX PIPE
EST +/- 40 FT

REMOVE +/- 125 LF OF EXIST CONC DITCH AND RE-GRADE INLET DITCH

-L- POC Sta.665+83.69 =
-Y32- POT Sta.21+99.41

-L- POC Sta.668+25.00

-L- TS Sta.660+18.27

-L- TS Sta.663+53.27

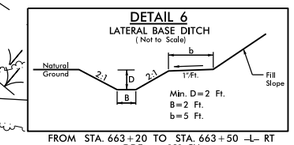
-Y32- TS Sta.663+53.27

MATCH LINE -L- STA. 660+00
SEE SHEET NO. 20

MATCH LINE -L- STA. 672+00
SEE SHEET NO. 22

MATCH LINE -Y32- STA. 25+25
SEE SHEET NO. 23

DETAIL 6
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 663+20 TO STA. 663+50 –L– RT
DDE = 131 CY

US 221 & SR 1143		
	18771 / 29200	
NC 194		–Y32–
5600 / 8600		7914 / 12200
14714 / 25000	US 221	–L– 16714 / 28000
1643 / 3000		1329 / 2400
NC 163		–Y32–
	8229 / 13800	2015 ADT / 2035 ADT

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS 8/17/99

NAD 83/CORS

AMELIA PROPERTIES, LLC
DB 394 PG 14

ILIT REAL ESTATE HOLDINGS, LLC
DB 292 PG 109

WILEY AUSTIN BAKER
DB 174 PG 2360

DONNA M. RAY
DB P-4 PG 487
PB 2 PG 41
DB B-4 PG 191

ARCHIE H. SHAW
DB 7-4 PG 492
PB 2 PG 41

WADE SHEPERD, ET AL
DB 362 PG 1096
PB 2 PG 41

BRADLEY W. JORDAN
DB 403 PG 2289

KENNETH TIMOTHY PARSONS
DB 232 PG 1915

WILEY AUSTIN BAKER
DB 215 PG 1510

LARRY D. BOOTH
DB 354 PG 733

LOWES HOME CENTERS, INC
DB 358 PG 403
PB 6 PG 441

675

680

SR 1150 CRESCENT DR.

EXISTING R/W

BST

CS Sta. 677+05.77

-L- ST Sta. 679+85.77
BEARING AH = N 13° 14' 57.0" E

-L- POT Sta. 680+45.00

MATCH LINE -L- STA. 672+00
SEE SHEET NO. 21

CLASS I RIPRAP
EST 11 TONS
EST FF 22 SY

CLASS I RIPRAP
EST 7 TONS
EST FF 15 SY

REMOVE DERRIS FROM EX 2G1

REMOVE EES

RETAIN

5" MONOLITHIC ISLAND

400' TAPER LT

US 221 30' BST

2'-9" C&G

720' TAPER RT

925' TAPER LT & RT

2G1 wNSG

JB wMH

24" RCP-III

-BL- D267

DAYLIGHT DITCH AT EDGE OF WETLANDS

SPEC LAT 'V' DITCH SEE DETAIL 8

24" CMP

C/A FENCE

48" WW & ISBW

72" CMP

WOODS

END TIP PROJECT R-2915D
-L- POT Sta. 679+90.00

DETAIL 6
LATERAL BASE DITCH
(Not to Scale)

Min. D= 2 Ft.
B=2 Ft.
b=3 Ft.

DETAIL 8
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM STA. 676+75 TO STA. 679+90 – L– RT

-L-
PI Sta 672+70.19
Δ = 20° 35' 52.2" (LT)
D = 2° 20' 19.0"
L = 880.77'
T = 445.19'
R = 2,450.00'
SE = .05
RUNOFF = SEE PLANS

PIs Sta 677+99.14
Θs = 3° 16' 26.6"
Ls = 280.00'
LT = 186.70'
ST = 93.36'

FOR -L- PROFILE, SEE SHEET 33

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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	23
R/W SHEET NO.	
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REVISIONS 8/17/99

NAD 83/CORS

-Y32-

PI Sta 29+60.93	PI Sta 34+16.19
Δ = 12° 50' 01.9" (LT)	Δ = 8° 37' 02.5" (LT)
D = 2° 43' 42.1"	D = 2° 17' 30.6"
L = 470.39'	L = 376.00'
T = 236.18'	T = 188.36'
R = 2,100.00'	R = 2,500.00'

MATCH LINE -Y32- STA. 25+25
SEE SHEET NO. 21

G. MICHAEL BURGESS & WIFE
MARY P. BURGESS
DB 312 PG 675

GEORGE A. BURGESS & WIFE
RUTH A. BURGESS
DB H-4 PG 56

ANN G. HENDRIX
SANDRA G. MCNEILL
KATHY G. MCNEILL
DB T-4 PG 217

KATRINA V. MILLER
DB C-3 PG 323

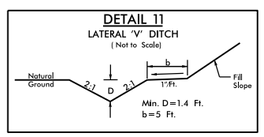
CONLEY W. SHEPHERD & WIFE
WILMA T. SHEPHERD
DB 398 PG 80

RALPH DAVIS
DB 364 PG 526

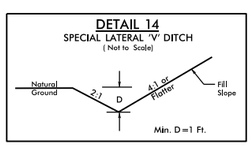
END CONSTRUCTION
-Y32- POC Sta. 29+90.00

-Y32- PC Sta. 27+24.74
-Y32- PT Sta. 31+95.13
-Y32- PC Sta. 32+27.83
-Y32- PT Sta. 36+03.83
-Y32- POT Sta. 36+62.52

REVISE SS TO KEEP EXIST DITCH
CLASS 'B' RIPRAP EST 2 TONS
EST 7 SY
SPEC LAT V-DITCH SEE DETAIL 14
150' TAPER LT
340' TAPER LT & RT
NC HWY 163
24' BST
2'-9" C&G
15" RCP-IV
24" CMP
18" RCP-IV
72" CH
LAT V-DITCH SEE DETAIL 11
MTL STORAGE
CONC
FOUND
GR
WALL
CLASS I RIP RAP EST 49 TONS EST 44 75 SY



FROM STA. 27+50 TO STA. 28+87 -Y32- RT
DDE = 24 CY



FROM STA. 26+00 TO STA. 27+50 -Y32- LT

FOR -Y32- PROFILE, SEE SHEET 35

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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	24

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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ENG FIRM LICENSE NO. C-890

–TIE–

RIGHT DITCH - - - - - - -

BEGIN GRADE –TIE– STA 14+00.00
ELEV. = 3068.23'

(+)11.0402%

(+)1.8409%

PI = 22+40.00
EL = 3,076.99'
VC = 200'
K = 250
V > 80mph

(+)1.4802%

–TIE– STA 25+44.02 =
–L– STA 464+44.02
ELEV. = 3082.58'

BEG SPEC LAT 2' BASE DITCH
STA 21+44 –TIE– RT
EL=3067.7

END SPEC LAT 2' BASE DITCH
STA 23+00 –TIE– RT
EL=3070.4

FOR –TIE– ALIGNMENT, SEE SHEET 4 & 5

–L–

–TIE– STA 25+44.02 =
–L– STA 464+44.02
ELEV. = 3082.58'

PI = 466+10.00
EL = 3,085.64'
VC = 300'
K = 832
V > 80mph

(+)1.8409%

(+)1.4802%

3095.85'

FOR –L– ALIGNMENT, SEE SHEET 5

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5/28/99

BM #1 – TOP CENTER OF CONC. R/W MON. IN NW CORNER OF INTERSECTION OF EARNEST HOWELL RD SR 1263 & BALDWIN RD SR 1248
ELEV. = 3102.49'

–L–

LEFT DITCH — - - — -
RIGHT DITCH - - - - - - -

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	25

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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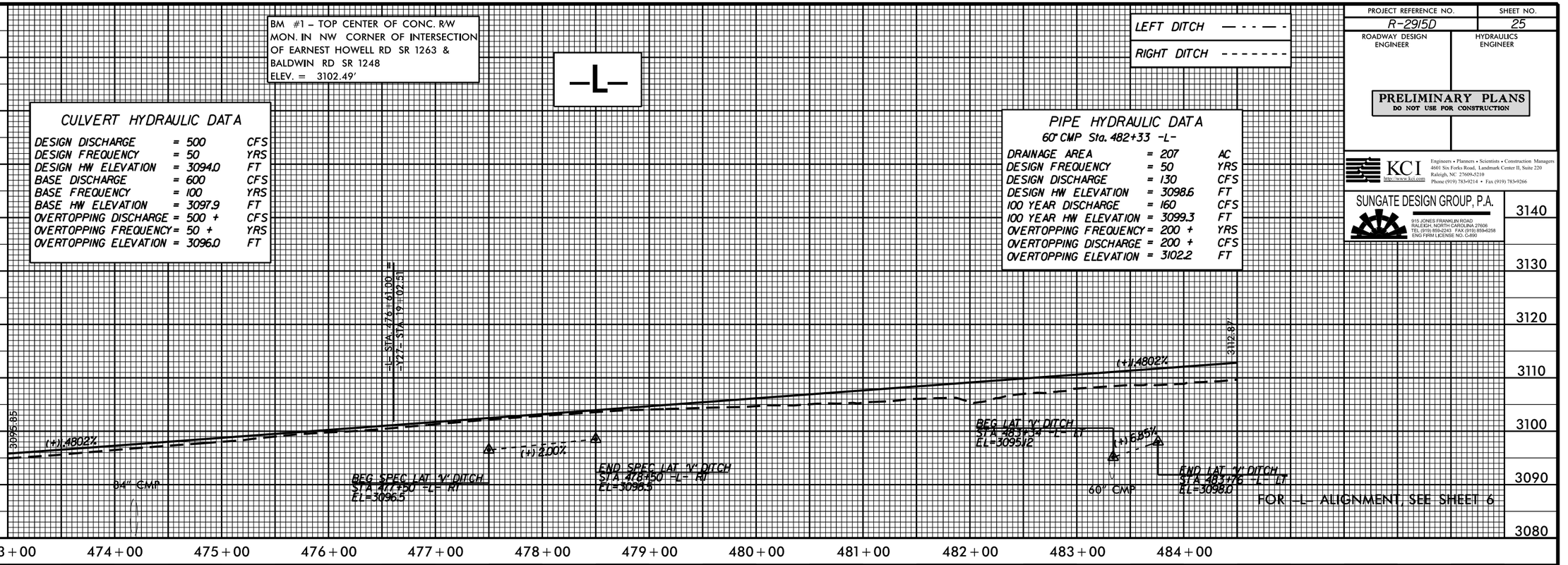
CULVERT HYDRAULIC DATA

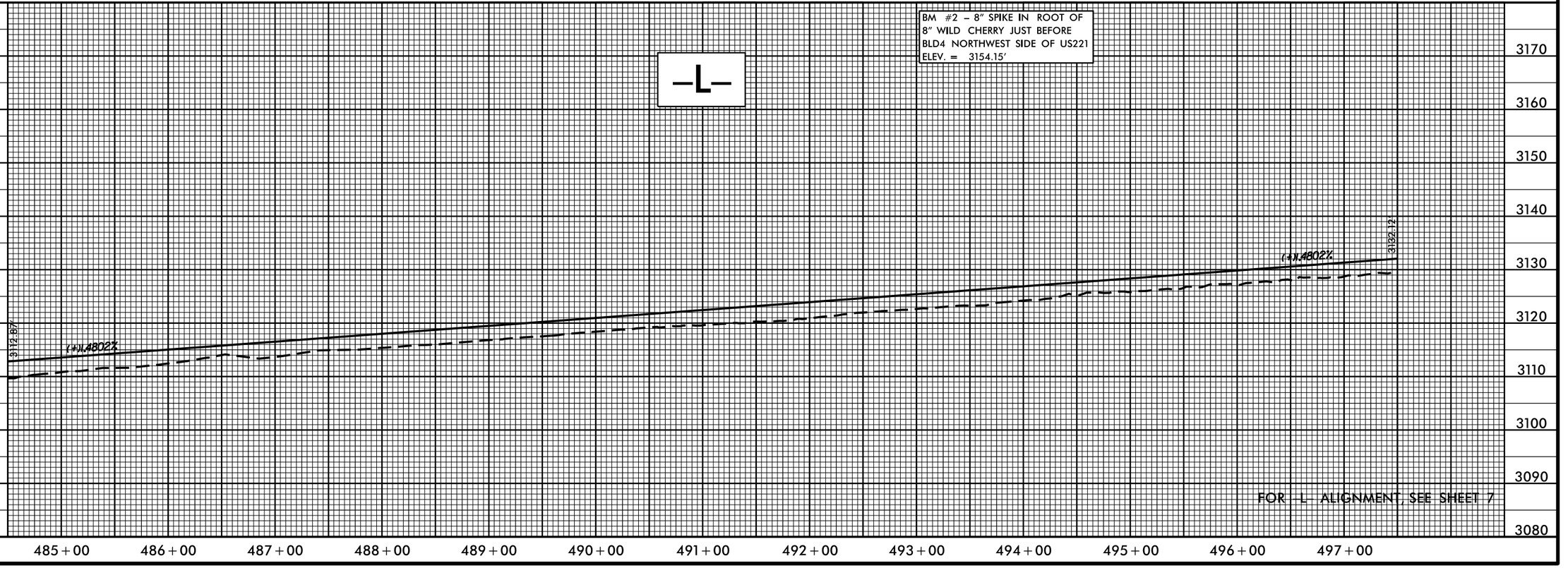
DESIGN DISCHARGE	= 500	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 3094.0	FT
BASE DISCHARGE	= 600	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 3097.9	FT
OVERTOPPING DISCHARGE	= 500 +	CFS
OVERTOPPING FREQUENCY	= 50 +	YRS
OVERTOPPING ELEVATION	= 3096.0	FT

PIPE HYDRAULIC DATA

60" CMP Sta. 482+33 -L-

DRAINAGE AREA	= 207	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 130	CFS
DESIGN HW ELEVATION	= 3098.6	FT
100 YEAR DISCHARGE	= 160	CFS
100 YEAR HW ELEVATION	= 3099.3	FT
OVERTOPPING FREQUENCY	= 200 +	YRS
OVERTOPPING DISCHARGE	= 200 +	CFS
OVERTOPPING ELEVATION	= 3102.2	FT





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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2915D	26

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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TEL (919) 859-2243 FAX (919) 859-6258
ENG FIRM LICENSE NO. C-890

LEFT DITCH — - - — -

RIGHT DITCH - - - - - - -

–L–

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 800	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 3134.8	FT
BASE DISCHARGE	= 950	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 3137.0	FT
OVERTOPPING DISCHARGE	= 950 +	CFS
OVERTOPPING FREQUENCY	= 100 +	YRS
OVERTOPPING ELEVATION	= 3138.5	FT

PI = 503+65.00
EL = 3141.22'
VC = 1,100'
K = 454
V > 80mph

3132.12'

(+)1.4802%

(+)3.9055%

(-)10.65%

(-)5.42%

3164.07'

(+)3.9055%

BEG LAT 'Y' DITCH
STA 502+50 -L- LT
EL=3136.55

LAT 'Y' DITCH
STA 503+50 -L- LT
EL=3135.59

2 @ 84" CMP

END LAT 'Y' DITCH
STA 505+35 -L- LT
EL=3125.87

FOR –L– ALIGNMENT, SEE SHEET 8

BM #3 – 8" PUNCHED HOLE IN BOTTOM MTL STEP
OF A 85' MTL POWER POLE #BT 51
NORTHEAST OF CALVIN GOODMAN ROAD
ELEV. = 3209.47'

–L–

PI = 511+90.00
EL = 3173.44'
VC = 450'
K = 1691
V > 80mph

PI = 517+50.00
EL = 3193.82'
VC = 200'
K = 723
V > 80mph

3164.07'

(+)3.9055%

(+)3.6393%

(+)4.85%

(+)3.9160%

3208.61'

–L– STA 512+10.00 Lt =
–Y2B– STA 18+18.7ft

–L– STA 513+80.00 Rt =
–Y2C– STA 16+66.00

BEG SPEC LAT 'Y' DITCH
STA 514+38.38 -L- Rt
EL=3177.48

END SPEC LAT 'Y' DITCH
STA 516+00 -L- Rt
EL=3182.29

FOR –L– ALIGNMENT, SEE SHEET 9

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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	27

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BM #4 – 8" SPIKE SET IN ROOT OF 15" DOUBLE WHITE PINE ON EAST SIDE OF US 221 JUST BEFORE BL-D8 ELEV. = 3245.44'

-L-

LEFT DITCH — - - — -

3280 3270 3260 3250 3240 3230 3220 3210 3200

3203.61' (+)3.960% 3256.48

520+00 521+00 522+00 523+00 524+00 525+00 526+00 527+00 528+00 529+00 530+00 531+00 532+00 533+00

FOR -L- ALIGNMENT, SEE SHEET 10

3320 3310 3300 3290 3280 3270 3260 3250 3240 3230

PIPE HYDRAULIC DATA
30" CMP Sta. 536+35 -L-

DRAINAGE AREA	= 20	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 33	CFS
DESIGN HW ELEVATION	= 3242.6	FT
100 YEAR DISCHARGE	= 40	CFS
100 YEAR HW ELEVATION	= 3243.7	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 60 +	CFS
OVERTOPPING ELEVATION	= 3257.3	FT

-L-

PI = 541+55.00
EL = 3,288.00'
VC = 200'
K = 755
V > 80mph

PIPE HYDRAULIC DATA
30" CMP Sta. 540+13 -L-

DRAINAGE AREA	= 13	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 13	CFS
DESIGN HW ELEVATION	= 3258.9	FT
100 YEAR DISCHARGE	= 16	CFS
100 YEAR HW ELEVATION	= 3259.1	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 24 +	CFS
OVERTOPPING ELEVATION	= 3265	FT

PI = 546+25.00
EL = 3,305.16'
VC = 200'
K = 253
V > 80mph

3306.50 (+)4.426% (+)3.651% (+)3.960% (+)7.53% (+)7.21% (+)4.20% (-)0.36% (-)3.11% (+)5.32%

BEG LAT 'V' DITCH STA 536+00 -L- LT EL=3244.0

END LAT 'V' DITCH STA 537+32 -L- LT EL=3239.9

BEG LAT 'V' DITCH STA 539+50 -L- LT EL=3258.08

BEG LAT 2' BASE DITCH STA 537+33 -L- LT EL=3239.9

END LAT 2' BASE DITCH STA 537+80 -L- LT EL=3242.4

END LAT 'V' DITCH STA 541+10 -L- LT EL=3257.5

30" CMP

30" CMP

BEG LAT 2' BASE DITCH STA 541+10 -L- LT EL=3257.5

LAT 2' BASE DITCH STA 543+50 -L- LT EL=3274.8

LAT 2' BASE DITCH STA 544+00 -L- LT EL=3280.7

END LAT 2' BASE DITCH STA 545+50 -L- LT EL=3295.2

FOR -L- ALIGNMENT, SEE SHEET 11

534+00 535+00 536+00 537+00 538+00 539+00 540+00 541+00 542+00 543+00 544+00 545+00 546+00 547+00

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BM #5 – 8" SPIKE SET IN ROOT OF 15" MAPLE TREE NORTHWEST SIDE OF US221 JUST BEFORE BL–D10
ELEV. = 3335.66'

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R-2915D	28

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–L–

PI = 556+10.00
EL = 3,348.92'
VC = 1,380'
K = 198
V = 65mph

(+)4.4426%
(–)12.5409%
3336.73
3308.50

FOR –L– ALIGNMENT, SEE SHEET 12

3380 3370 3360 3350 3340 3330 3320 3310 3300 3290

547+00 548+00 549+00 550+00 551+00 552+00 553+00 554+00 555+00 556+00 557+00 558+00 559+00 560+00

BM #6 – BOLT IN NORTHWEST CORNER OF CONC. BOX FOR WATER LINE IN SOUTHWEST SIDE OF PARKING LOT FOR WESTWOOD ELEMENTARY SCHOOL
ELEV. = 3322.77'

–L–

PI = 565+40.00
EL = 3,325.29'
VC = 400'
K = 1206
V > 80mph

3336.73
(–)12.5409%
(–)12.2092%
3310.69

PIPE HYDRAULIC DATA
24" CMP Sta. 564+64 –L–

DRAINAGE AREA	= 15	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 20	CFS
DESIGN HW ELEVATION	= 3283.7	FT
100 YEAR DISCHARGE	= 24	CFS
100 YEAR HW ELEVATION	= 3284.2	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 36 +	CFS
OVERTOPPING ELEVATION	= 3318.2	FT

24" CMP

FOR –L– ALIGNMENT, SEE SHEET 13

3360 3350 3340 3330 3320 3310 3300 3290 3280 3270

560+00 561+00 562+00 563+00 564+00 565+00 566+00 567+00 568+00 569+00 570+00 571+00 572+00

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LEFT DITCH — - - — -

-L-

PI = 573+05.00
EL = 3,308.39'
VC = 300'
K = 521
V > 80mph

3310.69

(-)2.209%

(-)2.784%

PI = 578+90.00
EL = 3,292.10'
VC = 200'
K = 556
V > 80mph

(-)2.784%

(-)1.486%

(-)2.425%

3276.74

(-)2.425%

BEG LAT 2' V DITCH -L- LT
STA 575+90
EL=3291.18

END LAT V DITCH -L- LT
STA 577+42
EL=3287.10

24" CMP

STA 578+08.00 RT = 90.00°

SRVA STA 101+00.00

FOR -L- ALIGNMENT, SEE SHEET 14

PIPE HYDRAULIC DATA		
24" CMP Sta. 578+10 -L-		
DRAINAGE AREA	= 7.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 18	CFS
DESIGN HW ELEVATION	= 3287.8	FT
100 YEAR DISCHARGE	= 20	CFS
100 YEAR HW ELEVATION	= 3288.0	FT
OVERTOPPING FREQUENCY	= 100 +/-	YRS
OVERTOPPING DISCHARGE	= 33 +/-	CFS
OVERTOPPING ELEVATION	= 3288.7	FT

572+00 573+00 574+00 575+00 576+00 577+00 578+00 579+00 580+00 581+00 582+00 583+00 584+00

BM #7 – 8" SPIKE SET IN ROOT OF 10" RED OAK NORTHEAST SIDE OF US221 NEAR BL-D17
ELEV. = 3227.30'

-L-

PI = 589+25.00
EL = 3,267.00'
VC = 1,800'
K = 507
V > 80mph

3276.74

(-)2.425%

(-)2.425%

(-)5.975%

36" CMP

(+)0.3%

36" CMP

(-)5.975%

3220.54

BEG LAT 2' BASE DITCH -L- LT
STA 593+25
EL=3227.57

END LAT 2' BASE DITCH -L- LT
STA 594+00
EL=3227.78

FOR -L- ALIGNMENT, SEE SHEET 15

PIPE HYDRAULIC DATA		
36" CMP Sta. 593+66 -L-		
DRAINAGE AREA	= 21	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 19	CFS
DESIGN HW ELEVATION	= 3229.6	FT
100 YEAR DISCHARGE	= 23	CFS
100 YEAR HW ELEVATION	= 3229.9	FT
OVERTOPPING FREQUENCY	= 100 +	YRS
OVERTOPPING DISCHARGE	= 30	CFS
OVERTOPPING ELEVATION	= 3230.2	FT

PIPE HYDRAULIC DATA		
36" CMP Sta. 587+50 -L-		
DRAINAGE AREA	= 26	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 27	CFS
DESIGN HW ELEVATION	= 3241.8	FT
100 YEAR DISCHARGE	= 33	CFS
100 YEAR HW ELEVATION	= 3242.1	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 49 +	CFS
OVERTOPPING ELEVATION	= 3246.5	FT

585+00 586+00 587+00 588+00 589+00 590+00 591+00 592+00 593+00 594+00 595+00 596+00 597+00

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RIGHT DITCH - - - - - - -

-L-

3220.54

(-)5.97%

(-)5.97%

3151.97

FOR -L- ALIGNMENT, SEE SHEET 16

3230 3220 3210 3200 3190 3180 3170 3160 3150 3140

597+00 598+00 599+00 600+00 601+00 602+00 603+00 604+00 605+00 606+00 607+00 608+00

3151.97

(-)5.97%

FOR -L- ALIGNMENT, SEE SHEET 17

-L-

PIPE HYDRAULIC DATA
24" CMP Sta. 612+44 -L-

DRAINAGE AREA	= 12	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 3084.9	FT
100 YEAR DISCHARGE	= 17	CFS
100 YEAR HW ELEVATION	= 3085.2	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 17	CFS
OVERTOPPING ELEVATION	= 3085.2	FT

NOTE: DITCH PROFILE SHOWN 30' HIGHER THAN PROPOSED ELEVATION IN ORDER TO BE INCLUDED ON SHEET.

PIPE HYDRAULIC DATA
42" CMP Sta. 620+42 -L-

DRAINAGE AREA	= 55	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 60	CFS
DESIGN HW ELEVATION	= 3045.0	FT
100 YEAR DISCHARGE	= 75	CFS
100 YEAR HW ELEVATION	= 3045.7	FT
OVERTOPPING FREQUENCY	= 100 +	YRS
OVERTOPPING DISCHARGE	= 80	CFS
OVERTOPPING ELEVATION	= 3046	FT

NOTE: 42" & 60" PIPES SHOWN 30' HIGHER THAN PROPOSED ELEVATION IN ORDER TO BE INCLUDED ON SHEET.

BEG LAT 'V' DITCH
STA 616+00 -L- RT
EL=3072.4

(-)12.60%

(-)1.45%

LAT 'V' DITCH
STA 618+00 -L- RT
EL=3047.2

END LAT 'V' DITCH
STA 618+71 -L- RT
EL=3044.0

3071.29

(-)5.97%

24" CMP

42" CMP

60" CMP

3150 3140 3130 3120 3110 3100 3090 3080 3070 3060

609+00 610+00 611+00 612+00 613+00 614+00 615+00 616+00 617+00 618+00 619+00 620+00 621+00

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RIGHT DITCH - - - - - - -

PIPE HYDRAULIC DATA
30" CMP Sta. 624+30 -L-

DRAINAGE AREA	= 40	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 35	CFS
DESIGN HW ELEVATION	= 3035.8	FT
100 YEAR DISCHARGE	= 43	CFS
100 YEAR HW ELEVATION	= 3036.7	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 65 +	CFS
OVERTOPPING ELEVATION	= 3046	FT

PIPE HYDRAULIC DATA
24" CMP Sta. 628+57 -L-

DRAINAGE AREA	= 14	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 13	CFS
DESIGN HW ELEVATION	= 3029.9	FT
100 YEAR DISCHARGE	= 16	CFS
100 YEAR HW ELEVATION	= 3030.2	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 24 +	CFS
OVERTOPPING ELEVATION	= 3037.5	FT

-L-

PI = 627+30.00
EL = 3,039.63'
VC = 1,150'
K = 231
V = 80mph

3074.29
(-)5.9756%
BEG LAT 2' BASE DITCH
STA 622+25 -L- RT
EL=3035.8
END LAT 2' BASE DITCH
STA 624+15 -L- RT
EL=3032.0
(-)2.00%
30" CMP
-L- STA. 625+42.38 RT = 120.00
STA. 30+00.00
(-)5.9756%
(-)10.9976%
24" CMP
3032.45
(-)10.9976%

FOR -L- ALIGNMENT, SEE SHEET 18

BM #9 - 8" SPIKE SET IN ROOT 18" WHITE PINE EAST SIDE US221 JUST PAST BL-D23
ELEV. = 3044.00'

PIPE HYDRAULIC DATA
30" CMP Sta. 642+21 -L-

DRAINAGE AREA	= 26	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 29	CFS
DESIGN HW ELEVATION	= 3014.0	FT
100 YEAR DISCHARGE	= 35	CFS
100 YEAR HW ELEVATION	= 3014.5	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 50 +	CFS
OVERTOPPING ELEVATION	= 3019.2	FT

-L-

PI = 644+05.00
EL = 3,022.92'
VC = 1,000'
K = 1813
V > 80mph

3037.45
(-)0.9976%
(-)0.9976%
(-)1.5493%
3017.50
30" CMP

FOR -L- ALIGNMENT, SEE SHEET 19

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RIGHT DITCH - - - - - - -

PIPE HYDRAULIC DATA
36" CMP Sta. 651+18 -L-

DRAINAGE AREA	= 48	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 60	CFS
DESIGN HW ELEVATION	= 2992.4	FT
100 YEAR DISCHARGE	= 75	CFS
100 YEAR HW ELEVATION	= 2998.3	FT
OVERTOPPING FREQUENCY	= 200 +/-	YRS
OVERTOPPING DISCHARGE	= 90 +/-	CFS
OVERTOPPING ELEVATION	= 3005.6	FT

-L-

3017.51

(-)1.549%

-L- STA. 649+12.50 RT =
243'+ STA. 10+00.00

36" CMP

2998.29

(-)1.549%

FOR -L- ALIGNMENT, SEE SHEET 20

3060 3050 3040 3030 3020 3010 3000 2990 2980 2970

648+00 649+00 650+00 651+00 652+00 653+00 654+00 655+00 656+00 657+00 658+00 659+00 660+00

BM #10 - GPS POINT R2915-20
ELEV. = 3001.93'

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 600	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 2986.5	FT
BASE DISCHARGE	= 700	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2993.2	FT
OVERTOPPING DISCHARGE	= < 600	CFS
OVERTOPPING FREQUENCY	= < 50	YRS
OVERTOPPING ELEVATION	= 2975.5	FT

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1748	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 2974.5	FT
BASE DISCHARGE	= 2127	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2976.0	FT
OVERTOPPING DISCHARGE	= < 2127	CFS
OVERTOPPING FREQUENCY	= < 100	YRS
OVERTOPPING ELEVATION	= 2975.5	FT

-L-

PI = 665+15.00
EL = 2,990.23'
VC = 1,150'
K = 212
V = 75mph

-L- STA. 665+83.69 (LT & RT)
Y=32' STA. 21+99.41

2998.29

(-)1.549%

(+)3.8685%

(-)1.549%

(+)3.8685%

3016.73

3 @ 10'X8' RCBC

END LAT 2' BASE DITCH
STA 660+88.16
EL=2963.16

STA 662+42.20 -L- RT
PI 2963.30

STA 663+00.20 -L- RT
EL 2963.50

2 @ 60" CMP

END LAT 2' BASE DITCH
STA 663+50 -L- RT
EL=2963.50

(+)0.052%

(+)0.132%

(+)0.67%

FOR -L- ALIGNMENT, SEE SHEET 21

3050 3040 3030 3020 3010 3000 2990 2980 2970 2960

660+00 661+00 662+00 663+00 664+00 665+00 666+00 667+00 668+00 669+00 670+00 671+00 672+00

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LEFT DITCH — - - — -

RIGHT DITCH - - - - - - -

-L-

PIPE HYDRAULIC DATA
24" CMP Sta. 676+18 -L-

DRAINAGE AREA	= 11.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 33	CFS
DESIGN HW ELEVATION	= 3030.3	FT
100 YEAR DISCHARGE	= 39	CFS
100 YEAR HW ELEVATION	= 3036.6	FT
OVERTOPPING FREQUENCY	= 50 +/-	YRS
OVERTOPPING DISCHARGE	= 32	CFS
OVERTOPPING ELEVATION	= 3029.6	FT

END GRADE -L- STA. 679+90.00
ELEV. = 3047.28'

END SPEC. LAT. 4' DITCH
STA. 679+90 -L- RT
EL= 3045.2

(+)3.8685%

(+)4.08%

(+)0.83%

(+)1.60%

3016.73

SPEC. LAT. 4' DITCH
STA. 677+50 -L- RT
EL= 3035.8

SPEC. LAT. 4' DITCH
STA. 677+00 -L- RT
EL= 3032.80

BEG. SPEC. LAT. 4' DITCH
STA. 676+38 -L- RT
EL= 3028.7

24" CMP

FOR -L- ALIGNMENT, SEE SHEET 22

-Y27-

PIPE HYDRAULIC DATA
24" CMP Sta. 18+02 -Y27-

DRAINAGE AREA	= 10.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 3091.4	FT
100 YEAR DISCHARGE	= 23	CFS
100 YEAR HW ELEVATION	= 3093.0	FT
OVERTOPPING FREQUENCY	= 200 +	YRS
OVERTOPPING DISCHARGE	= 29 +	CFS
OVERTOPPING ELEVATION	= 3102.2	FT

BM #1 – TOP CENTER OF CONC. R/W MONUMENT IN NW CORNER OF INTERSECTION OF EARNEST HOWELL RD (SR 1263) & BALDWIN RD (SR 1248)
ELEV. = 3102.49'

BEGIN GRADE -Y27- STA. 14+65.00
ELEV. = 3096.20'

PI = 15+30.00
EL = 3,096.79'
VC = 120'
K = 52
V = 35mph

(+)0.50%

(+)3.20%

2.35%

PI = 17+90.00
EL = 3,105.13'
VC = 120'
K = 23
V = 30mph

(+)3.2077%

(-)2.0035%

END GRADE -Y27- STA. 18+55.39 =
-L- STA. 476+48.64, OFF 47.3' LT
EOP ELEV. = 3103.86'

BEG LAT. 2' BASE DITCH
STA. 14+65
-Y27- LT
EL=3090.5

LAT. 2' BASE DITCH
STA. 16+00
-Y27- LT
EL= 3093.2

END LAT. 2' BASE DITCH
STA. 16+70
-Y27- LT
EL= 3097.2

24" CMP

FOR -Y27- ALIGNMENT, SEE SHEET 6

-Y27C-

BEG. GRADE -Y27C- STA. 10+36.83 =
-L- STA. 476+77.92, OFF 35.5' RT
EOP ELEV. = 3099.32'

PI = 11+30.00
EL = 3,093.96'
VC = 140'
K = 7
V < 15mph

(+)14.3162%

END GRADE -Y27C- STA. 12+00.00
ELEV. = 3104.06'

FOR -Y27C- ALIGNMENT, SEE SHEET 6

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PROJECT REFERENCE NO.	SHEET NO.
R-2915D	34

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–Y27A–

BEG GRADE –Y27A– STA 10+12.00 = –L– STA 11+04.00 OFF 12.0' LT
EOP ELEV. = 3108.09

PI = 10+50.00
EL = 3,104.23'
VC = 70'
K = 12
V = 25mph

PI = 11+30.00
EL = 3,101.93'
VC = 60'
K = 14
V = 15mph

END GRADE –Y27A– STA 11+79.00
ELEV = 3102.45'

(+)3.1000% (-)2.8750% (+)1.3000%

FOR –Y27A– ALIGNMENT, SEE SHEET 6

–Y27B–

BEGIN GRADE –Y27B– STA 10+90.00
ELEV = 3107.12'

PI = 11+60.00
EL = 3,104.32'
VC = 90'
K = 25
V = 20mph

END GRADE –Y27B– STA 12+83.78 = –Y27A– STA 10+56.06 OFF 9.0' LT
EOP ELEV. = 3103.96'

(-)4.0000% (-)0.3393%

FOR –Y27B– ALIGNMENT, SEE SHEET 6

–Y28–

BEGIN GRADE –Y28– STA 16+15.00
ELEV = 3165.45'

PI = 17+60.00
EL = 3,175.66'
VC = 35'
K = 4
V = 15mph

(-)0.3084% (-)0.3084% (+)8.8182% 4.201%

END GRADE –Y28– STA 17+82.40 = –L– STA 512+03.97 OFF 385.5' LT
EOP ELEV. = 3175.69'

FOR –Y28– ALIGNMENT, SEE SHEET 9

–Y29–

BEG GRADE –Y29– STA 10+36.03 = –L– STA 513+86.22 OFF 35.5' RT
EOP ELEV. = 3177.80'

PI = 11+80.00
EL = 3,171.65'
VC = 150'
K = 32
V = 25mph

END GRADE –Y29– STA 12+69.00
ELEV = 3171.41'

(-)4.9663% (+)4.9683% (-)0.3000%

60" CMP

FOR –Y29– ALIGNMENT, SEE SHEET 9

PIPE HYDRAULIC DATA
60" CMP Sta. 12+35 –Y29–

DRAINAGE AREA	= 211	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 210	CFS
DESIGN HW ELEVATION	= 3168.8	FT
100 YEAR DISCHARGE	= 250	CFS
100 YEAR HW ELEVATION	= 3170.8	FT
OVERTOPPING FREQUENCY	= 100 +	YRS
OVERTOPPING DISCHARGE	= 250 +	CFS
OVERTOPPING ELEVATION	= 3172	FT

–DRV1–

BEG GRADE –DRV1– STA 10+47.50 = –L– STA 508+08.00 OFF 47.5' RT
EOP ELEV. = 3298.44'

PI = 11+30.00
EL = 3,291.91'
VC = 100'
K = 15
V = 15mph

END GRADE –DRV1– STA 11+86.00
ELEV = 3294.41'

(+)2.8575% (+)5.0000%

42" CMP

FOR –DRV1– ALIGNMENT, SEE SHEET 14

PIPE HYDRAULIC DATA
42" CMP Sta. 11+70 –DRV1–

DRAINAGE AREA	= 14	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 27	CFS
DESIGN HW ELEVATION	= 3288.7	FT
100 YEAR DISCHARGE	= 43	CFS
100 YEAR HW ELEVATION	= 3289.6	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 75 +	CFS
OVERTOPPING ELEVATION	= 3292.6	FT

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–Y30–

BM #8 – 8" SPIKE SET
IN ROOT OF 24" MAPLE
EAST OF BY–D541
ELEV. = 3087.71'

BEG GRADE –Y30– STA 10+35.51 =
–L– STA 6925+42.13 OFF 35.5' RT
EOP ELEV. = 3051.39'

END GRADE –Y30– STA 11+00.00
ELEV. = 3055.53'

(+)1.4000%
(+)1.9600%
(+)1.9600%

PI = 10+60.00
EL = 3,053.87'
VC = 40'
K = 16
V = 15mph

FOR –Y30– ALIGNMENT, SEE SHEET 18

–Y31–

BEG GRADE –Y31– STA 10+35.98 =
–L– STA 6945+18.18 OFF 35.5' RT
EOP ELEV. = 3014.26'

END GRADE –Y30– STA 11+65.00
ELEV. = 3010.35'

(–)1.8082%
(–)1.9082%
(–)3.9500%
(–)2.8000%

PI = 10+80.00
EL = 3,013.42'
VC = 60'
K = 29
V = 35mph

PI = 11+40.00
EL = 3,011.05'
VC = 45'
K = 39
V = 30mph

FOR –Y31– ALIGNMENT, SEE SHEET 20

LEFT DITCH — - - — -
RIGHT DITCH - - - - - - -

PROJECT REFERENCE NO.	SHEET NO.
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–Y32–

PIPE HYDRAULIC DATA
18" CMP Sta. 20+57 –Y32–

DRAINAGE AREA	= 3.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 15	CFS
DESIGN HW ELEVATION	= 2985.1	FT
100 YEAR DISCHARGE	= 16	CFS
100 YEAR HW ELEVATION	= 2985.8	FT
OVERTOPPING FREQUENCY	= 100 +	YRS
OVERTOPPING DISCHARGE	= 16 +	CFS
OVERTOPPING ELEVATION	= 2987	FT

BEGIN GRADE –Y32– STA 16+30.00
ELEV. = 2995.32'

(–)0.3027%
(–)1.1024%
(–)1.1024%
(+)2.3994%
(+)0.30%

PI = 18+15.00
EL = 2,995.76'
VC = 140'
K = 175
V = 60mph

PI = 20+20.00
EL = 2,993.50'
VC = 250'
K = 71
V = 40mph

18" CMP

BEG LAT V-DITCH
STA 19+00 –Y32– LT
EL=298.24

END LAT V-DITCH
STA 20+50 –Y32– LT
EL=298.95

END GRADE –Y32– STA 21+46.70 =
–L– STA 6855+95.56 OFF 35.5' LT
EOP ELEV. = 2996.54'

BEG GRADE –Y32– STA 22+52.07 =
–L– STA 6855+72.75 OFF 51.5' RT
EOP ELEV. = 3001.33'

PI = 23+50.00
EL = 3,001.63'
VC = 180'
K = 25
V = 30mph

(+)0.3063%
(–)1.0000%
(–)1.5586%
(–)3.9800%
(–)3.5375%
(–)3.5375%
(–)12.5077%
(–)0.30%

STA 26+50 –Y32– LT
EL=297.30

STA 27+00 –Y32– LT
EL=297.37

BEG LAT V-DITCH
STA 27+50 –Y32– RT
EL=296.77

END LAT V-DITCH
STA 27+50 –Y32– LT
EL= 297.23

END LAT V-DITCH
STA 28+87 –Y32– RT
EL=296.36

END GRADE –Y32– STA 29+90.00
ELEV. = 2967.86'

PI = 26+85.00
EL = 2,978.18'
VC = 300'
K = 89
V = 45mph

PI = 29+25.00
EL = 2,969.45'
VC = 130'
K = 115
V = 50mph

BEG SPEC LAT V-DITCH
STA 26+00 –Y32– LT
EL=298.28

FOR –Y32– ALIGNMENT, SEE SHEETS 21 AND 23

10+00 11+00 12+00

16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00

3100 3090 3080 3070 3060 3050 3040 3030 3020 3010 3000 2990 2980 2970 2960 2950

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