STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

February 27, 2017

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

ATTN: Mr. David Bailey
NCDOT Division 7 Project Coordinator

SUBJECT: **Phased Permit Application for Section 404 Individual Permit and Section 401 Water Quality Certification** for the proposed relocation of NC 119 from Interstate 40/85 to north of SR 1918 (Mrs. White Lane) in Mebane (Mebane Bypass), Alamance County, North Carolina, Division 7. Federal Aid Project No. STP-119 (1), TIP No. U-3109.

Debit $570.00 from WBS 34900.1.2

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to improve NC 119 from the Interstate 40/85 (I-40/I-85) interchange southwest of downtown Mebane to the existing SR 1962 (3rd Street) Extension. The project then proceeds onto new location, relocating NC 119 to the west and north of downtown Mebane before tying into existing NC 119 just south of SR 1918 (Mrs. White Lane). The project terminates just north of Mrs. White Lane. The new location portion of NC 119 will be constructed as a four-lane, median-divided facility. Existing NC 119 in the vicinity of I-40/I-85 is proposed to be widened to six-lanes. Improvements to a portion of SR 1997 (Corrigidor Road), including realignment to the east of its existing location and connecting it to SR 1973 (Tate Avenue) near the Mebane Wastewater Treatment Plant (WWTP), are also included in the project. In addition, SR 1970 (Roosevelt Street) would tie into the proposed Corrigidor Road realignment just north of the City of Mebane Maintenance Yard.

The project, also known as the Mebane Bypass, is comprised of two sections. Section A, which is approximately 3.3 miles in length, will begin near the I-85/I-40 interchange and end north of SR 1921/SR 1996 (Mebane Rogers Road/East Stagecoach Road). Section B, which is approximately 1.5 miles in length, will begin north of Mebane Rogers Road/ East Stagecoach Road and end north of Mrs. White Lane.

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Please see the enclosed ENG 4345, North Carolina Division of Mitigation Services (DMS) mitigation acceptance letters, South Buffalo Creek Mitigation Site debit ledger insert for wetland impacts to Section A; meeting minutes for Concurrence Points 4B and 4C, Memorandum Of Agreement between the Federal Highway Administration (FHWA) and the North Carolina State Historic Preservation Officer (dated October 12, 2009), State Historic Preservation Office (SHPO) Consultation on Archaeological Issues (dated January 27, 2003), SHPO Addendum to the Archaeological Study for U-3109 (dated January 4, 2005), State Stormwater Management Plan (SMP), final permit drawings for Section A, preliminary permit drawings for Section B, and roadway design plans for Section A.

PROJECT SCHEDULE

This project will be permitted in two phases, Sections A and B. Impacts reported in this application for Section A are based on final design. Section A currently has a let date of May 16, 2017 and a let review date of March 28, 2017.

Impacts reported in this application for Section B are based on preliminary design. A request for modification of the initial permit will be submitted for Section B once final design is available and prior to its proposed let date. Section B currently has a let date of October 19, 2021 and a let review date of August 31, 2021. The let date for Section B may advance as additional funds become available.

PURPOSE AND NEED

The primary needs of the proposed action include the following:

- Capacity deficiencies;
- Lack of connectivity within the local community;
- Lack of efficient north-south routes through Mebane due to development patterns.

The primary purposes of the proposed action include the following:

- Reduce traffic congestion in downtown Mebane;
- Improve access to the local area;
- Provide Alamance County a primary north-south route.

A more thorough description of the purpose and need for this project can be found in the Final Environmental Impact Statement (FEIS, June 2009), pages 1-2 to 1-4.

NEPA DOCUMENT STATUS

A Draft Environmental Impact Statement (DEIS) and Draft Section 4(F) Evaluation were completed for this project in August 2007. Subsequently, a FEIS and Final Section 4(F) Evaluation were completed in June 2009. The Record of Decision (ROD) was completed

in December 2009. A FEIS re-evaluation was completed in July 2013. Most recently, a Right-of-Way (ROW) Consultation was completed in October 2014. Additional copies are available upon request.

In compliance with the NEPA/404 Merger Process, Concurrence Points (CP) 3 and 4A were reached on June 19, 2008. Alternative 9 (the Preferred Alternative) was selected as the Least Environmentally Damaging Practicable Alternative (LEDPA) at CP 3. CP 4B was reached for Section A on July 25, 2013 and CP 4C was reached on May 14, 2015. CPs 4B and 4C will be held for Section B at future dates.

Re-evaluation of LEDPA

As shown below, there is a significant increase in the amount of Section A permanent impacts between those reported in the FEIS and the final design. Therefore, in a letter to the U.S. Army Corps of Engineers (USACE) dated February 9, 2017, NCDOT provided an explanation of the impact difference, as well as a re-evaluation of the three alternatives presented in the FEIS with the current impacts considered. After re-evaluating all three alternatives, NCDOT concluded that Alternative 9 is still the LEDPA for this project. In an email dated February 13, 2017, USACE agreed with this assessment and determined that a CP 3 revisit meeting is unnecessary and that the project can go forward with permit evaluation through the Individual Permit process. In that same email, USACE also asked the Merger Team whether they agreed with this conclusion; all team members responded in agreement that Alternative 9 is still the LEDPA.

INDEPENDENT UTILITY

The subject project is in compliance with 23 CFR Part 771.111(f), which lists the FHWA characteristics of independent utility for 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

Water Resource Classifications

The study area lies within the Piedmont physiographic province of North Carolina. Jurisdictional features with the project footprint are located within the Cape Fear River Basin (Hydrologic Unit [HUC] 03030002) in Alamance County.

Jurisdictional streams that will be impacted by Section A of this project include MoAdams Creek (Latham Lake) (N.C. Division of Water Resources [NCDWR] Classification WS-V, NSW; NCDWR Index No. 16-18-7) and 12 Unnamed Tributaries (UT) of MoAdams Creek (Latham Lake); five UTs of Back Creek (Graham-Mebane Reservoir) (NCDWR Classification WS-II, HQW, NSW, CA; NCDWR Index No. 16-18-[1.5]); and UT of Mill Creek (Forest Lake) (NCDWR Classification WS-II, HQW, NSW; NCDWR Index No. 16-18-3-2-[1]).

Jurisdictional streams that will be potentially impacted by Section B of this project, based on preliminary design, include UT of Mill Creek (Forest Lake) (NCDWR Classifications WS-II, HQW, NSW and WS-II, HQW, NSW, CA; NCDWR Index Nos. 16-18-3-2-[1] and 16-18-3-2-[2]); Mill Creek (NCDWR Classification WS-II, HQW, NSW, CA; NCDWR Index No. 16-18-3-[1.5]) and one UT of Mill Creek; and three additional UTs of Mill Creek (NCDWR Classification WS-II, HQW, NSW; NCDWR Index No. 16-18-3-[0.5]).

There are no designated Outstanding Resource Waters (ORW) or Water Supply I (WS-I) waters within 1.0 mile of the project. Additionally, there are no designated anadromous fish or trout waters within the project footprint. Several features within 1.0 mile of the project are identified as both High Quality Waters (HQW) and Water Supply II (WS-II) waters. These include Back Creek (Graham-Mebane Reservoir), Back Creek (NCDWR Classification WS-II, HQW, NSW; NCDWR Index No. 16-18-[1]), UT of Mill Creek (Forest Lake), Mill Creek, and Lake Michael (NCDWR Classification WS-II, HQW, NSW; NCDWR Index No. 16-18-3-1).

Within 1.0 mile of the construction footprint, Back Creek (Graham-Mebane Reservoir) (Assessment Unit No. 16-18-[1.5]a1) is listed on the 2014 Final 303(d) List of Impaired Waters for North Carolina. This portion of the Back Creek is listed for turbidity.

Jurisdictional Determinations

Wetland delineations for U-3109 followed the field delineation method outlined in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and the subsequent *Regional Supplement to the Corps of Engineers Delineation Manual: Eastern Mountains and Piedmont Region* (USACE; Interim Version [2010], Version 2.0 [2012]). The regional supplement was only used for the Jurisdictional Determination (JD) re-verifications (Section A, December 2012; Section B, October 2016). Stream identification and classification followed the *Identification Methods for the Origins of*

Intermittent and Perennial Streams (North Carolina Division of Water Quality [NCDWQ], Versions 3.0 – 4.1.1).

Jurisdictional features associated with the original project study area (U-3109 in its entirety) and the proposed alternatives within it were verified by USACE Regulatory Specialist John Thomas under a Notification of Jurisdictional Determination (JD), dated July 8, 2003 (Action ID No. 200220667). Revisions/modifications to the JD were also issued by Mr. Thomas on February 16, 2005, June 16, 2005, and July 14, 2005, all under the same Action ID number. Regulatory Specialist Andy Williams (USACE), on January 26, 2010, made additional changes to the project verification, eliminating wetland WL6 and Stream UT18 from the delineation (Action ID No. SAW-2010-00165).

On December 5, 2012 Mr. Williams, along with Amy Euliss from NCDWQ (now NCDWR), performed a site visit to re-verify resources associated with the A Section of the project. Ms. Euliss provided an On-Site Determination for Applicability to the Mitigation Rules (dated May 6, 2013); no written verification was received from USACE.

On October 4, 2016, Mr. David Bailey (USACE) and Mr. Brian Wrenn (NCDWR) performed a site visit to re-verify resources associated with the B Section of the project. Additional information was submitted to Mr. Bailey and Mr. David Wanucha (NCDWR) related to additional features associated with the B Section that were not visited during the October 2016 site visit. Those features were verified without an additional site visit. No written verification has been received from either agency for the B Section at the time of this application submittal.

IMPACTS TO WATERS OF THE U.S.

Summary of Impacts

Surface Water and Wetland Impacts

The projected impacts for the overall project (Sections A and B) within the LEDPA (Alternative 9) are based on final design for Section A and preliminary design for Section B. Stream impacts will be approximately 6,232 linear feet of permanent (6,065 linear feet of permanent fill and 167 linear feet of bank stabilization) and 461 linear feet of temporary impacts. There will be 0.32 acre of open water impacts. Wetland impacts will be approximately 0.89 acre, which consists of 0.78 acre of permanent fill, 0.02 acre of excavation, and 0.09 acre of mechanized clearing. Please see Table 1 for a breakdown of the number of jurisdictional resources impacted by each section. Please also see Tables 2 and 3 for a breakdown of surface water and wetland impacts, by type, in each section. Please see *Jurisdictional Impacts by Section* below for a site-by-site breakdown of impacts for each section of the project.

Table 1. Summary of Water Resources Impacted by U-3109

Section	Design Stage	No. Streams Impacted[1]	No. Wetlands Impacted	No. Ponds Impacted
U-3109A	Final	19	6	3
U-3109B	Preliminary	6	7	0
TOTAL		25	13	3

[1] UT14 (now Stream SU in Section A and Stream SA in Section B) is impacted in both sections.

Table 2. Summary of Surface Water Impacts for U-3109

Section	Design Stage	Stream Impact Type	Impact Length (lin. ft.)
U-3109A	Final	Permanent Fill	4,759
		Bank Stabilization	167
		Temporary Fill	461
U-3109B	Preliminary	Permanent Fill	1,306
		Temporary Fill	0
TOTAL[1]			**6,232 Permanent 461 Temporary**

[1] In addition to the impacts listed in the table, 0.32 acre of permanent open water impacts will also occur.

Table 3. Summary of Wetland Impacts for U-3109

Section	Design Stage	Wetland Impact Type	Acreage (ac.)
U-3109A	Final	Permanent Fill	0.27
		Excavation	0.02
		Mechanized Clearing	0.09
U-3109B	Preliminary	Permanent Fill	0.51
TOTAL			**0.89**

Utility Impacts

No utility impacts to jurisdictional features will occur in Section A of the project. Impacts associated with utility relocations for Section B will be determined at final design.

Buffer Impacts

U-3109 (Sections A and B) reached Concurrence Points 3 (LEDPA) and 4A (Avoidance and Minimization) on June 19, 2008, which is prior to the effective date of the Jordan

Lake Riparian Buffer Rules, which were initially enacted on August 11, 2009. Therefore, this project is considered exempt from the Jordan Lake Riparian Buffer Rules.

Jurisdictional Impacts by Section

U-3109A

Tables 4 and 5 provide site-by-site impacts to streams and wetlands within Section A of the project. A brief description of each impact site follows the tables. The proposed impacts for this section, which are based on final design, are 4,926 linear feet of permanent stream impacts (4,759 linear feet of permanent fill and 167 linear feet of bank stabilization), 461 linear feet of temporary stream impacts, 0.27 acre of permanent fill in wetlands, 0.02 acre of excavation in wetlands, and 0.09 acre of mechanized clearing in wetlands.

Permanent open water impacts totaling 0.32 acre are also proposed for this Section. A total of 0.10 acre of permanent impacts are proposed at Site 4 to Pond OWA; 0.13 acre of permanent impacts are proposed at Site 12 to jurisdictional Pond OWB; and 0.09 acre of permanent impacts are proposed at Site 13 to jurisdictional pond OWC.

Table 4. U-3109A Stream Impacts

Permit Site No.	Stream Name	Stream ID (FEIS ID)[1]	Int./Per.	Impact Type	Impacts (lin. ft.)	Impacts Requiring USACE mitigation (lin. ft.)	USACE Mitigation Ratio	Impacts Requiring 1:1 DWR mitigation (lin. ft.)
1	UT of MoAdams Creek (Latham Lake)	SB (UT2)	Int.	Perm. Fill	235	0	None Required	0
1	UT of MoAdams Creek (Latham Lake)	SB (UT2)	Per.	Perm. Fill	117	117	2:1	0
				Temp. Fill	16	0		0
2	UT of MoAdams Creek (Latham Lake)	SC (UT3)	Int.	Perm. Fill	348	348	1:1	0
				Temp. Fill	17	0		0
3	UT of MoAdams Creek (Latham Lake)	SD (UT1)	Per.	Perm. Fill	320	320	2:1	320
				Temp. Fill	10	0		0
5	UT of MoAdams Creek (Latham Lake)	SF (UT4)	Int.	Temp. Fill	16	0		0
6	UT of MoAdams Creek (Latham Lake)	SG	Int.	Perm. Fill	257	257	2:1	0
				Temp. Fill	35	0		0
7	MoAdams Creek (Latham Lake)	MoAdams Creek (Latham Lake)	Per.	Perm. Fill	501	501	2:1	501
				Bank Stabil.	63	0[2]		63
				Temp. Fill	52	0		0

Table 4. U-3109A Stream Impacts (Continued)

Permit Site No.	Stream Name	Stream ID (FEIS ID)[1]	Int./Per.	Impact Type	Impacts (lin. ft.)	Impacts Requiring USACE mitigation (lin. ft.)	USACE Mitigation Ratio	Impacts Requiring 1:1 DWR mitigation (lin. ft.)
7A	UT of MoAdams Creek (Latham Lake)	SH (UT5)	Int.	Perm. Fill	18	0	None Required	0
				Temp. Fill	20	0		0
8A	UT of MoAdams Creek (Latham Lake)	SJ (UT6)	Per.	Perm. Fill	463	463	2:1	463
				Temp. Fill	19	0		0
8B	UT of MoAdams Creek (Latham Lake)	SK	Per.	Perm. Fill	82	82	2:1	0
				Temp. Fill	21	0		0
10	UT of MoAdams Creek (Latham Lake)	SM (UT7)	Per.	Perm. Fill	396	396	2:1	396
				Temp. Fill	25	0		0
10A	UT of MoAdams Creek (Latham Lake)	SN (UT7A)	Per.	Perm. Fill	74	74	2:1	0
11	UT of MoAdams Creek (Latham Lake)	SO (UT8)	Per.	Perm. Fill	270	270	1:1	270
				Temp. Fill	25	0		0
12B	UT of Back Creek (Graham-Mebane Reservoir)	S1	Per.	Perm. Fill	105	105	2:1	0
				Temp. Fill	7	0		0

Table 4. U-3109A Stream Impacts (Continued)

Permit Site No.	Stream Name	Stream ID (FEIS ID)[1]	Int./Per.	Impact Type	Impacts (lin. ft.)	Impacts Requiring USACE mitigation (lin. ft.)	USACE Mitigation Ratio	Impacts Requiring 1:1 DWR mitigation (lin. ft.)
12C	UT of Back Creek (Graham-Mebane Reservoir)	S2	Per.	Temp. Fill	13	0		0
13	UT of Back Creek (Graham-Mebane Reservoir)	SR (UT10)	Per.	Perm. Fill	183	183	2:1	183
				Temp. Fill	21	0		0
14	UT of Back Creek (Graham-Mebane Reservoir)	SS	Per.	Temp. Fill	19	0		0
15	UT of Back Creek (Graham-Mebane Reservoir)	ST (UT11)	Per.	Perm. Fill	447	447	2:1	447
				Temp. Fill	44	0		0
16	UT of Back Creek (Graham-Mebane Reservoir)	SR (UT10)	Per.	Perm. Fill	494	494	2:1	494
				Temp. Fill	32	0		0
17	UT of Mill Creek (Forest Lake)	SU (UT14)[3]	Per.	Bank Stabil.	35	0[2]		35[4]

Table 4. U-3109A Stream Impacts (Continued)

Permit Site No.	Stream Name	Stream ID (FEIS ID)[1]	Int./Per.	Impact Type	Impacts (lin. ft.)	Impacts Requiring USACE mitigation (lin. ft.)	USACE Mitigation Ratio	Impacts Requiring 1:1 DWR mitigation (lin. ft.)
18	MoAdams Creek (Latham Lake)	SI	Per.	Perm. Fill	122	122	2:1	122
				Bank Stabil.	69	0[2]		69
				Temp. Fill	45	0		0
20	UT of MoAdams Creek (Latham Lake)	SL (UT25)	Per.	Perm. Fill	327	327	2:1	327
				Temp. Fill	24	0		0
TOTAL TEMPORARY FILL IMPACTS					**461**	**0**		**0**
TOTAL PERMANENT FILL IMPACTS					**4,759**	**4,506**		**3,523**
TOTAL BANK STABILIZATION IMPACTS					**167**	**0**		**167**

[1] Stream IDs are from the December 2012 JD re-verification, except for Streams S1 and S2, which were added to the project in 2016 after Concurrence Point 4C. Corresponding Stream IDs that were used in the FEIS are in parentheses, where applicable.

[2] Per USACE, bank stabilization impacts do not require compensatory mitigation.

[3] Stream SU in Section A is also Stream SA in Section B.

[4] Although this impact does not exceed the 150 linear-foot threshold requiring mitigation, this stream is also impacted in the B Section of the project and the total impact does exceed that threshold. Therefore, NCDWR-required mitigation is being applied to this Site.

Table 5. U-3109A Wetland Impacts

Permit Site No.	Wetland ID (FEIS ID)[1]	Wetland Type[2]	Impact Type	Permanent Impacts (ac.)[3]	Impacts Requiring USACE mitigation (ac.)
9	WB (WL2)	HF	Perm. Fill	<0.01	<0.01
			Mech. Clearing	0.01	0.01
12	WD	HF	Perm. Fill	0.08	0.08
12A	WE	NTFM	Perm. Fill	0.03	0.03

Table 5. U-3109A Wetland Impacts (Continued)

Permit Site No.	Wetland ID (FEIS ID)[1]	Wetland Type[2]	Impact Type	Permanent Impacts (ac.)[3]	Impacts Requiring USACE mitigation (ac.)
13	WF (WL4)	HF	Perm. Fill	0.07	0.07
			Mech. Clearing	0.01	0.01
19	WA (WL11)	NTFM	Perm. Fill	0.04	0.04[4]
			Mech. Clearing	0.01	0.01[4]
20	WC (WL13)	NTFM	Perm. Fill	0.05	0.05
			Excavation	0.02	0.02
			Mech. Clearing	0.06	0.06
Total Permanent Fill				**0.27**	**0.27**
Total Excavation				**0.02**	**0.02**
Total Mechanized Clearing				**0.09**	**0.09**
TOTAL IMPACTS				**0.38**	**0.38**

[1] Wetland IDs are from the December 2012 JD re-verification. Corresponding Wetland IDs that were used in the FEIS are in parentheses, where applicable.

[2] HF – Headwater Forest; NTFM – Non-Tidal Freshwater Marsh. All wetlands are Riparian.

[3] Rounded totals are sum of actual impacts.

[4] Wetland WA has a 1:1 mitigation ratio. All other wetlands have a 2:1 mitigation ratio.

Permit Site 1: The installation of a 48-inch reinforced concrete pipe (RCP) under the L-line will result in 235 linear feet of permanent impacts to the intermittent portion of Stream SB. It will also result in the permanent impact of 117 linear feet and the temporary impact of 16 linear feet to the perennial portion of Stream SB.

Permit Site 2: The installation of a 54-inch RCP under the L-line and associated stormwater management tie-ins will result in the permanent impact of 348 linear feet and temporary impact of 17 linear feet to Stream SC.

Permit Site 3: The installation of a 66-inch RCP under a new portion of Y-line connecting to Third Street and associated stormwater management tie-ins will result in 320 linear feet of permanent impact and 10 linear feet of temporary impact to Stream SD.

Permit Site 4: The placement of rock fill associated with the L-line will result in 0.10 acre of permanent open water impacts to Pond OWA.

Permit Site 5: The installation of three 30-inch RCPs under the L-line, connecting Pond OWA and Stream SF, will result in 16 linear feet of temporary impacts to Stream SF.

Permit Site 6: The installation of a 54-inch RCP under the L-line and associated stormwater management tie-ins will result in 257 linear feet of permanent impact and 35 linear feet of temporary impact to Stream SG.

Permit Site 7: The installation of a triple-barrel (3 at 11-foot by 9-foot) Reinforced Concrete Box Culvert (RCBC) under the L-line and corresponding channel change east of the L-line will result in 501 linear feet of permanent impact, 63 linear feet of bank stabilization impact, and 52 linear feet of temporary impact to MoAdams Creek (Latham Lake).

Permit Site 7A: A channel realignment is required to tie existing Stream SH to the proposed channel change alignment of MoAdams Creek at Permit Site 7. This will result in 18 linear feet of permanent impact and 20 linear feet of temporary impact to Stream SH.

Permit Site 8A: The installation of a 48-inch RCP under the L-line and an associated stormwater management tie-in will result in 463 linear feet of permanent impact and 19 linear feet of temporary impact to Stream SJ.

Permit Site 8B: The pipe installation described at Permit Site 8A will also result in 82 linear feet of permanent impact and 21 linear feet of temporary impact to Stream SK.

Permit Site 9: The placement of roadway fill associated with the L-line will result in <0.01 acre of permanent fill and 0.01 acre of mechanized clearing impacts to Wetland WB.

Permit Site 10: The installation of a 72-inch RCP under the L-line and associated stormwater management tie-ins will result in 396 linear feet of permanent impact and 25 linear feet of temporary impact to Stream SM.

Permit Site 10A: The placement of roadway fill, plus the actions described at Permit Site 10, will result in 74 linear feet or permanent impact to Stream SN. This is a total take of the stream.

Permit Site 11: The installation of a 48-inch RCP under the L-line and an associated stormwater management tie-in will result in 270 linear feet of permanent impact and 25 linear feet of temporary impact to Stream SO.

Permit Site 12: Due to the placement of roadway fill associated with the L-line, a total of 0.08 acre of permanent fill will occur in Wetland WD. This is a total take. Additionally, jurisdictional Pond OWB will be breached and drained, resulting in 0.13 acre of permanent open water impacts. This is also a total take.

Permit Site 12A: Due to the location of the L-line, a total of 0.03 acre of permanent fill will occur in Wetland WE. This is a total take.

Permit Site 12B: The creation of a tail ditch in a portion of Stream S1 will result in 105 linear feet of permanent impact and 7 linear feet of temporary impact to the stream. This ditch will be placed directly downstream of drained Pond OWB.

Permit Site 12C: A total of 13 linear feet of temporary impact will occur to Stream S2 due to the tail ditch work along Stream S1 associated with Permit Site 12B.

Permit Site 13: The installation of a 66-inch RCP under the L-line, plus a Hazardous Spill Basin (HSB) tie-in east of the roadway, will result in 183 linear feet of permanent impact and 21 linear feet of temporary impact to Stream SR. Due to the placement of roadway fill and rock fill along the L-line, 0.07 acre of permanent fill and 0.01 acre of mechanized clearing will occur in Wetland WF and 0.09 acre of permanent open water impacts will occur to Pond OWC.

Permit Site 14: The placement of a 36-inch RCP under a new Y-line section connecting to US 70, just upstream of Stream SS, will result in 19 linear feet of temporary impact to the feature.

Permit Site 15: The installation of a single-barrel (1 at 10-foot by 7-foot) RCBC under the L-line will result in 447 linear feet of permanent impact and 44 linear feet of temporary impact to Stream ST.

Permit Site 16: The installation of a 42-inch RCP under the same Y-line extension that is impacted by Permit Site 14, plus a HSB tie-in west of the roadway, will result in 494 linear feet of permanent impact and 32 linear feet of temporary impact to Stream SR.

Permit Site 17: The installation of bank stabilization along Stream SU, as part of the stormwater management design, will result in 35 linear feet of bank stabilization impacts.

Permit Site 18: The installation of a double-barrel (2 at 10-foot by 8-foot) RCBC under the realignment/extension of Corrigidor Road will result in 122 linear feet of permanent impact, 69 linear feet of bank stabilization impacts, and 45 linear feet of temporary impact to Stream SI.

Permit Site 19: Due to the placement of roadway fill along the realignment/extension of Corrigidor Road, a total of 0.04 acre of permanent fill and 0.01 acre of mechanized clearing will occur in Wetland WA. This is the only wetland that requires a 1:1 mitigation ratio (the rest will require a 2:1 ratio).

Permit Site 20: The placement of a 60-inch RCP under the intersection of the Corrigidor Road realignment/extension and Roosevelt Street tie-in will result in 327 linear feet of permanent impact and 24 linear feet of temporary impact to Stream SL. Additionally, roadway fill and the RCP installation will result in 0.05 acre of permanent impact due to

fill, 0.02 acre of permanent impact due to excavation, and 0.06 acre of mechanized clearing in Wetland WC.

U-3109B

Tables 6 and 7 provide site-by-site impacts to streams and wetlands within Section B of the project. These impacts are based on preliminary design; stream and wetland impacts were calculated based on slope stakes plus 25-foot estimates. Hydraulic design has not yet occurred on this Section; therefore, site-specific impact descriptions are not possible at this time. The proposed impacts for this section are 1,306 linear feet of permanent stream impacts and 0.51 acre of permanent wetland fill impacts.

Table 6. U-3109B Preliminary Stream Impacts

Permit Site No.	Stream Name	Stream ID (FEIS ID)[1]	Int./Per.	Impact Type[2]	Impacts (lin. ft.)	Impacts Requiring USACE mitigation (lin. ft.)	USACE Mitigation Ratio[3]	Impacts Requiring 1:1 DWR mitigation (lin. ft.)
1	UT of Mill Creek (Forest Lake)	SA (UT14)[4]	Per.	Perm. Fill	280	280	2:1	280
2	Mill Creek	Mill Creek	Per.	N/A	0[5]	0		0
3	UT of Mill Creek	SB (UT16)	Int.	Perm. Fill	400	400	2:1	0
4	UT of Mill Creek	SC (UT17)	Int.	Perm. Fill	146	146	2:1	0
10	UT of Mill Creek	SI (UT 29 – lower portion only)	Int.	Perm Fill	299	299	2:1	0
11	UT of Mill Creek	SJ (UT28)	Int.	Perm. Fill	181	181	2:1	0
TOTAL PERMANENT FILL IMPACTS					**1,306**	**1,306**		**280**

[1] Stream IDs are from the October 2016 JD re-verification. Corresponding Stream IDs that were used in the FEIS are in parentheses, where applicable.

[2] Impacts are based on preliminary design. Stream impacts were calculated based on slope stakes plus 25 feet. All impacts were assumed to be permanent fill at this stage in design. These designations may change once design is more refined.

[3] All impacts were assumed to have a 2:1 mitigation ratio at this stage in design.

[4] Stream SA is also Stream SU in Section A.

[5] It is assumed at this point in design that the bridge across Mill Creek will span the creek and no impacts will occur. However, this feature has been assigned a site number in case that changes in final design.

Table 7. U-3109B Preliminary Wetland Impacts

Permit Site No.	Wetland ID[1]	Wetland Type[2]	Impact Type	Permanent Impacts (ac.)[3]	Impacts Requiring USACE mitigation (ac.)[4]
4	WA	FP	Perm. Fill	0.01	0.01
5	WB	NTFM	Perm. Fill	0.12	0.12
6	WC	NTFM	Perm. Fill	0.11	0.11
7	WD-1	NTFM	Perm. Fill	0.18	0.18
8	WE-1	HF	Perm. Fill	0.06	0.06
9	WE-2	HF	Perm. Fill	0.01	0.01
10	WG	HF	Perm. Fill	<0.01	<0.01
TOTAL IMPACTS				**0.51**	**0.51**

[1] Wetland IDs are from the October 2016 JD re-verification. No wetlands were identified in the FEIS in the B Section of the project.

[2] FP – Floodplain Pool; HF – Headwater Forest; NTFM – Non-Tidal Freshwater Marsh. All wetlands are Riparian.

[3] Rounded totals are sum of actual impacts. Wetland impacts in the B Section of the project are based on preliminary design. Impacts were calculated using slopes stakes plus 25 feet. All impacts were assumed to be permanent fill at this stage in design. These designations may change once design is more refined.

[4] All impacts were assumed to have a 2:1 mitigation ratio at this stage in design.

MITIGATION OPTIONS

The USACE has adopted, through the Council on Environmental Quality (CEQ), a wetland mitigation policy that embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of the waters of the United States. CEQ has defined mitigation of wetland and surface water impacts to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20).

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 phase and minimization measures were incorporated as part of the project design. Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts.

Avoidance and Minimization

Avoidance and minimization has been employed in the project area to the maximum extent practicable. Listed below are some of the measures implemented on the project as a whole (both Sections A and B):

- NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters will be enforced.
- NCDOT's Best Management Practices for Construction and Maintenance Activities will also be employed.
- Due to a portion of the project being within the Graham-Mebane Reservoir watershed crticial area, Design Standards in Sensitive Watersheds will be employed.

Avoidance and Minimization included in FEIS/CP 4A (both Sections A and B)

Below is an overview of the avoidance and minimization that NCDOT has agreed to for this project, listed based on the document or meeting that it is attributed to. Any additional information for an item is listed below the item in italics.

FEIS

- During the development of the preliminary engineering designs for each Detailed Study Alternative, including the Preferred Alternative (Alternative 9), efforts were made to avoid and minimize impacts to wetlands and streams wherever practicable. Where stream crossings were unavoidable, they were located, within design constraints, as perpendicular as practicable, in order to minimize the length of stream impacted.
- The alignment for all three Detailed Study Alternatives, including the Preferred Alternative (Alternative 9), proposed under the preliminary engineering designs crosses Wetland 1 (WL1) where the direct impacts would be the least; staying as much on the eastern edge of the wetland as possible while not encroaching upon a parallel section of MoAdams Creek to the west.
    - *Wetland WL1 is not impacted by the project and appears to have been eliminated in the 2012 re-delineation.*
- The alignment skirts between Wetland 3 (WL3), which is near the eastern boundary of the alignment, and Wetland 4 (WL4), which is on the western boundary of the alignment, while avoiding impacts to Craftique Furniture Company.
    - *Wetland WL3 is not impacted by the project, but Wetland WL4 (now WF) is impacted at Permit Site 13.*
- Wetlands 11 (WL11) and 13 (WL13) are associated with the extension of Corrigidor Road. The alignment impacts the western edge of WL11 and WL13 to avoid impacting the City of Mebane WWTP operations.

    - *Wetland WL11 (now WA) is impacted at Permit Site 19 and Wetland WL13 (now WC) is impacted at Permit Site 20.*
- Jurisdictional impacts would be further minimized by a reduction in side slopes to 2:1 in the areas of wetland impacts. Sensitive placement of drainage structures, during final design of Preferred Alternative 9, would minimize degradation of water quality and reduce adverse impacts on aquatic habitat viability in streams and tributaries. Based on preliminary designs, there are no substantial fill slopes associated with this project. A determination would be made during final design if retaining walls should be included in the design. Once surveys of the project area are available, the preliminary design can be revised to further minimize impacts to the human and natural environments.
- The Mebane Rogers Road tie-in near proposed NC 119 was designed to end before the creek crossing (Site 5; Figure S.4 of the FEIS) for Alternative 8 and Preferred Alternative 9.
    - *This feature, Stream UT14 (renamed SU in Section A and SA in Section B), was going to be impacted at this location in the Alternative 9 A Section final design due to the installation of a single-barrel box culvert. However, a design revision was made and the culvert will no longer be installed. However, the stream will still incur minor bank stabilization impacts (35 linear feet) at this location due to the stormwater management design, which was not considered in the FEIS impacts.*
- The tie-in from proposed NC 119 to existing NC 119 south of the Mill Creek community was designed to end before the Mill Creek crossing for the Detailed Study Alternatives, including Preferred Alternative 9, in this area.
- In the vicinity of the Fieldstone community, the mainline alignment was shifted slightly outside the corridor limits to reduce impacts to MoAdams Creek, necessitating a slight expansion of the corridor limits in this area.
- A bridge over Mill Creek is an additional minimization component. Bridging floodplain wetlands along the larger stream systems, such as Mill Creek, would decrease the degree of potential habitat fragmentation and reduce potential wildlife mortality due to traffic operations by providing riparian corridors for wildlife use.
    - *Preliminary design for the B Section shows that bridges will be employed over Mill Creek.*

CP 4A (items that were not listed in the FEIS)

- The realignment of Third Street in the vicinity of the U.S. Post Office was designed to reduce impacts to the Fieldstone apartments, as well as other residences in that area.
- An access road was incorporated into the design near the beginning of the project to reduce impacts to the Fox Run apartments.
- The Cates Farm on-site stream restoration project will be discussed and evaluated at CP 4B.

- *Cates Farm is associated with the B Section of the project; a more detailed restoration discussion will occur when Section B is at or near CP 4B.*

Avoidance and Minimization, Section A Stormwater Management Plan

After CP 4A, the project was split into its 2 Sections. The information that follows in this section is for the A Section of the project only. Detailed information regarding the post-4A avoidance and minimization for Section A will be provided at a later date.

- A combination of grassed swales, roadway ditches, and structural BMPs were employed to minimize water quality impacts. In most locations, the outlets for the storm drainage systems were placed at least 50 feet from the Jurisdictional Stream. However, due to topography, none of the lateral grass swales located along the embankment fill slope met the recommended minimum length of swale.
- Class B rip rap aprons/pads will be installed at pipe outlets at Stations 80+50 -L- LT and 97+98 -L- LT.
- A Class I rip rap energy dissipator basin will be installed at a pipe outlet at Station 100+70 -L- LT.
- Pre-formed Scour Holes (PSH) comprised of Class B rip rap will be installed at Stations 130+50 -L- LT and 140+50 -L- LT.
- Hazardous Spill Basins will be installed at the following locations:
  - 161+92 -L- RT
  - 179+68 -L- RT
  - 20+90 -Y16RPA- LT
  - 32+55 -Y20- LT

Compensatory Mitigation

U-3109A

Compensatory mitigation requirements for permanent stream and wetland impacts associated with U-3109A are summarized below in Table 12. These impacts are based on final design and occur in HUC 03030002.

A total of 4,926 linear feet of permanent warm water stream impacts will occur in the A Section. Of that total, 167 linear feet are bank stabilization impacts, which do not require mitigation per USACE. Of the remaining 4,759 linear feet of permanent stream impacts, 3,888 linear feet will require compensatory mitigation at a 2:1 ratio per USACE, 618 linear feet will require mitigation at a 1:1 ratio, and 253 linear feet will not require any mitigation (Sites 1 and 7A). These mitigation decisions were made at the December 5, 2012 site visit with USACE and NCDWR.

NCDWR-mandated compensatory mitigation is not required for any permanent impacts along intermittent streams (including bank stabilization). However, NCDWR does require

mitigation along perennial streams if the total permanent impacts along a given stream, including bank stabilization, exceed 150 linear feet. Therefore, NCDWR will require compensatory mitigation for 3,690 linear feet of permanent warm water stream impacts (167 linear feet of which is bank stabilization) at a 1:1 ratio.

The total USACE stream mitigation requirement exceeds the NCDWR stream mitigation requirement; therefore NCDOT will request that DMS provide compensatory mitigation for 3,888 linear feet of permanent stream impacts at a 2:1 ratio and 618 linear feet of permanent stream impacts at a 1:1 ratio.

Compensatory mitigation at a 2:1 ratio for 0.33 acre of permanent riparian wetland impacts resulting from roadway fill (0.23 acre), mechanized clearing (0.08 acre), and excavation (0.02 acre); and 0.05 acre at a 1:1 ratio resulting from roadway fill (0.04 acre) and mechanized clearing (0.01 acre) will be offset by NCDOT by debiting the South Buffalo Creek Mitigation Site. Please see the attached insert regarding the debit ledger transaction.

Table 12. U-3109A Compensatory Mitigation Summary

	Stream Impacts (lin. ft.)	**Riparian Wetland Impacts (ac.)**
Impacts Requiring Mitigation	4,506	0.38
Mitigation Ratio	3,888 at 2:1	0.33 at 2:1
	618 at 1:1	0.05 at 1:1
Total DMS Mitigation	**8,394**	---
Total Debit Ledger Mitigation	---	**0.71**

U-3109B

Compensatory mitigation requirements for permanent stream and wetland impacts associated with U-3109B are summarized below in Table 13. These impacts are based on preliminary design and occur in HUC 03030002. The current proposed Let Date for U-3109B is October 19, 2021. Since this is less than five years from the proposed Let Date of the A Section (May 16, 2017), NCDOT will acquire mitigation now to offset proposed impacts on the B Section. These impacts and mitigation requirements are subject to change once final design is available.

A total of 1,306 linear feet of stream impacts are proposed in the B Section. Since these impacts are based on preliminary design, all impacts are currently considered permanent

stream impact. It is also assumed that all impacts will require mitigation at a 2:1 ratio per USACE. Of the 1,306 linear feet of proposed permanent stream impacts, 280 linear feet are proposed on perennial streams. Since NCDWR-mandated compensatory mitigation is not required for any permanent impacts along intermittent streams, mitigation for NCDWR is only required for this 280 linear feet. This mitigation will be required at a 1:1 ratio.

The total USACE stream mitigation requirement exceeds the NCDWR stream mitigation requirement; therefore NCDOT will request compensatory mitigation for 1,306 linear feet of permanent stream impacts at a 2:1 ratio. NCDOT will also request mitigation to offset 0.51 acre (2:1 ratio) of permanent riparian wetland impacts currently proposed in the preliminary design.

NCDOT will request that DMS provide compensatory mitigation for impacts associated with the B Section at this time. However, other mitigation options such as debit ledger and/or on-site mitigation may be pursued once final design is available. The Cates Farm property is currently being reviewed as a potential on-site mitigation site that could offset impacts in this section. If either/both of these options are pursued in the future, they will replace all/ a portion of the mitigation that is currently being provided by DMS.

Table 13. U-3109B Compensatory Mitigation Summary

	Stream Impacts (lin. ft.)	**Riparian Wetland Impacts (ac.)**
Impacts Requiring Mitigation	1,306	0.51
Mitigation Ratio	2:1	2:1
Total DMS Mitigation	**2,612**	**1.02**

MORATORIUM

No moratoria are proposed for section of this project.

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 September 22, 2010, the U.S. Fish and Wildlife Service (USFWS) lists zero federally protected species for Alamance County.

Northern long-eared bat

The USFWS has developed a programmatic biological opinion (PBO) in conjunction with FHWA, USACE, and NCDOT for the northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is **May Affect, Likely to Adversely Affect**. The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Alamance County, where U-3109 is located. This level of incidental take is authorized from the effective date of a final listing determination through April 30, 2020.

Bald eagle

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water.

A desktop-GIS assessment of the entire project (Sections A and B), as well as the area within a 1.13-mile radius (1.0 mile plus 660 feet) of the project limits, was performed on January 3, 2017 using the newest-available color aerials of the review area. Water bodies large enough and/or sufficiently open to be considered potential feeding sources were identified, including the Graham-Mebane Reservoir and Forest Lake. Since there was foraging habitat within the review area, a survey of the project study area and the area within 660 feet of the project limits was conducted on January 24, 2017. No individuals or nests were identified within the nesting survey area. Additionally, a review of the NCNHP database on January 4, 2017 revealed no known occurrences of this species within 1.0 mile of the project study area. Due to the lack of habitat, known occurrences, and minimal impact anticipated for this project, it has been determined that this project will not affect this species.

CULTURAL RESOURCES

Section 4(f) Resources

There is one resource within the boundaries of the preferred alternative (Alternative 9), the Cates Farm, which is protected under Section 4(f) of the Department of Transportation Act. This property is located in the B Section of the project. The Cates Farm is a historic property listed on the NRHP under Criterion A (Agriculture) for the importance of its dairy operation within the agricultural context of Alamance County, as developed for the property's period of significance (1905-1947), and under Criterion B for its association with Charles F. Cates, founder of the Cates Pickle Manufacturing Company and a leader in business, civic, and agricultural affairs.

For Alternative 9, the proposed roadway is anticipated to be visible and audible from the farmhouse. However, it will not require the removal of any structures associated with the Cates Farm. The Historic Preservation Office (HPO) initially determined that Alternative 9 will have an "adverse effect" on the property in their concurrence form dated June 6, 2002, which is included in the FEIS. A subsequent concurrence form, dated August 21, 2007, confirms the HPO's previous finding and is also included in the FEIS.

Several alignments that avoid the Cates Farm were studied during the project planning process. These alternatives required the acquisition of right-of-way from one or more historic properties in the area, had significant relocations of residences or businesses, impacted the West End community, or had additional impacts to the water supply watershed critical area of the Graham-Mebane Reservoir. For these reasons, earlier alignments were eliminated from further study.

In accordance with 23 CFR 771.135(i), the FHWA provided the FEIS and Section 4(f) Evaluation to the Department of the Interior, Office of Environmental Project Review, for coordination and comment on July 9, 2009. A copy of this letter is included in the FEIS. A minimum of 45 days was established by the Administration for receipt of comments. No comments were received from the Department of Interior within the comment period.

A Memorandum of Agreement (MOA) for mitigative measures concerning impacts to the Cates Farm was signed in October 2009 and is included with this permit application. The MOA stipulates that the NCDOT will complete a photo-documentation record of the Cates Farm and its surroundings and prepare a landscape plan that incorporates native plants along the top of the roadway slope in a natural appearance and composition to help to screen the farm from the roadway. The photo-documentation of the Cates Farm will be completed prior to construction. The landscape plan will be prepared in coordination with the property owners when the Section B final design is prepared.

Since the FEIS was approved, the farm owners, along with the City of Mebane, have worked to preserve the farm as an active farming operation, using a conservation easement mechanism. The NCDOT acquired the necessary right-of-way from the farm through the protective purchase process prior to establishment of the conservation easements.

Section 6(f) Resources

The project will not impact any 6(f) resources.

Historical Architecture Resources

As stated above, the Cates Farm is located within the B Section of the project. No historical architecture is located in the A Section of the project.

Archaeological Resources

The common corridor of the Preferred Alternative and Alternatives 8 and 10 crosses archaeological Site 31AM392, located on an upland flat on the Davis property, which is north of and adjacent to the Craftique Furniture Company property on the east side of SR 1949 (Edgewood Church Road). This is located in the A Section of the project. Preliminary archaeological test excavations of this site revealed the eroded nature of the ridge toe. The site has little potential to yield any information important to history or prehistory and does not meet the criterion for listing on the NRHP. Therefore, no additional archaeological work is recommended at this site (see the attached letter from HPO dated January 4, 2005).

The common corridor of the Preferred Alternative and Alternatives 8 and 10 also crosses archaeological Site 31AM395, located on a ridgetop just west of SR 1951 (Woodlawn Road; also in Section A). Due to the heavily deflated nature of the site, it is recommended as being not eligible for the NRHP (Legacy Research Associates, 2009). Therefore, no additional archaeological work is recommended at this site.

The Office of State Archaeology (OSA) commented that Cook's Mill (31AM369**), deemed eligible for listing on the NRHP under Criterion B, C, and D, should be avoided (see attached memo from HPO dated January 27, 2003). The Preferred Alternative (and Alternatives 8 and 10 from the FEIS) avoid this property. The Preferred Alternative (and Alternatives 8 and 10) also avoid Site 31AM394 near Woodlawn Road, which is recommended as being eligible for the NRHP (also in the A Section). Therefore, no further archaeological work is expected for this project.

INDIRECT CUMULATIVE IMPACT ANALYSIS

The following information is taken from the "Indirect and Cumulative Effects Screening and Land Use Scenario Assessment Report" for U-3109, dated February 2015. Copies of this document are available upon request.

Scenario Assessment Conclusions

The proposed relocation of the NC 119 alignment would likely encourage more development along the new alignment. Residential development would likely occur in all four probable development areas (PDA) due to new access, although zoning regulations would limit the density of new residential development. Similarly, industrial and commercial development would likely occur in three of the PDAs – I-40/I-85 to MoAdams Creek; MoAdams Creek to US 70; and US 70 to Mebane Rogers Road. However, development in the US 70 to Mebane Rogers Road PDA may be limited due to zoning restrictions and would not likely be more than that of the "No Build" scenario.

The new alignment would have a slight influence on regional population growth, albeit limited. The proposed alignment would create greater access to an area with limited roads and development. However, as previously stated, zoning regulations would limit the size and amount of residential development, therefore minimizing the growth.

All four PDAs fall within areas strictly regulated by water quality and zoning policies. It is unlikely that either the "Build" or "No Build" scenarios would have a notable impact on water quality. Furthermore, all probable development areas occur within planned areas; therefore minimal water quality impacts are anticipated.

The proposed realignment of NC 119 would slightly influence the development patterns of the area, as the new location would create additional access points. Additionally, the rural nature of the probable development areas would likely allow for sprawling development. However, the impact from the "Build" scenario is just slightly more likely as compared to the "No Build", due to current development patterns and zoning restrictions.

All four PDAs fall within areas where land development is strictly regulated and would comply with storm water management goals. Riparian buffers associated with the watershed and streams will limit the potential impact of the project.

Water Quality

Analysis of the probable development areas suggests that this project will have little or no impact on future water run-off or water quality in the watershed. The relocation of NC 119 would increase access to minimally-developed land. However, the majority of the land available is zoned for low-density development. Additionally, new developments would have minimal impacts on water quality as a result of riparian buffers established to protect and maintain the streams and reservoir present within the study area.

For these reasons, indirect and cumulative effects on the existing resources, including downstream water quality, should be minimal. No additional ICI study is recommended.

FEMA COMPLIANCE

There are streams within the project limits that are within Federal Emergency Management Agency (FEMA)-designated flood zones. Coordination between the NCDOT Hydraulics Unit and FEMA will occur prior to Let to ensure that NCDOT is in full compliance with applicable floodplain/floodway ordinances.

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).

ESSENTIAL FISH HABITAT

The project will not impact any essential fish habitat afforded protection under the Magnuson – Stevens Act of 1996 (16 U.S.C 1801 *et seq.*).

REGULATORY APPROVALS

Application is hereby made for a Department of the Army Section 404 Individual Permit as required for the above-described activities for the proposed T.I.P. Project No. U-3109.

We are also hereby requesting a Section 401 Water Quality Certification. In compliance with Section 143-215.3D(e) of the North Carolina Administrative Code (NCAC), we will provide $570.00 to act as payment for processing the Section 401 permit. We are providing two copies of this application to the North Carolina Department of Environmental Quality (NCDEQ), NCDWR, for their review and approval.

A copy of this permit application and its distribution list will be posted on the NCDOT website at https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx, under *Quick Links > Permit Applications*. Copies of the NEPA documents are also available at the above website address under *Quick Links > Environmental Documents*. Thank you for your time and assistance with this project. Please contact James Mason at either jsmason@ncdot.gov or (919) 707-6136 if you have any questions or need additional information.

Sincerely,

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

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 - Philip Middle - S. Last - Harris III	First - Middle - Last -
Company - NCDOT-Natural Environment Section	Company -
E-mail Address - jsmason@ncdot.gov	E-mail Address -
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- 1598 Mail Service Center	Address-
City - Raleigh State - NC Zip - 27699 Country - 1598	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	**10. AGENTS PHONE NOs. w/AREA CODE**
a. Residence b. Business 919-707-6136 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)
U-3109 (Mebane Bypass)

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
MoAdams Creek, Back Creek, Mill Creek	Address
15. LOCATION OF PROJECT Latitude: °N 36.108733 Longitude: °W -79.286213	City - State- Zip-

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID Municipality Mebane
Section - Alamance County 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)

NCDOT proposes to improve NC 119 from near the Interstate 40/85 (I-40/I-85) interchange southwest of downtown Mebane to the existing SR 1962 (3rd Street) Extension. The project then proceeds onto new location, relocating NC 119 to the west and north of downtown Mebane before tying into existing NC 119 just south of SR 1918 (Mrs. White Lane). The project terminates just north of Mrs. White Lane. The new location portion of NC 119 will be constructed as a four-lane, median-divided facility. Existing NC 119 in the vicinity of I-40/I-85 is proposed to be widened to six-lanes. Y-line improvements are also proposed. The project, also known as the Mebane Bypass, is comprised of two sections. Section A, which is approximately 3.3 miles in length, will begin near the I-85/I-40 interchange and end north of SR 1921/SR 1996 (Mebane Rogers Road/East Stagecoach Road). Section B, which is approximately 1.5 miles in length, will begin north of Mebane Rogers Road/ East Stagecoach Road and end north of Mrs. White Lane.

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

Please see attached cover letter

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

20. Reason(s) for Discharge

Impacts will result from improving the existing roadway and shoulders, construction of new roadway on new location, and work associated with secondary roads along the project.

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 & permit drawings		

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

Acres See attached cover letter & permit drawings.

or

Linear Feet See attached cover letter & permit drawings.

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 permit drawing packet.

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.

02-27-2017

SIGNATURE OF APPLICANT | DATE | SIGNATURE OF AGENT | DATE

for PHILIP S. HARRIS

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.

Environmental Quality

ROY COOPER
Governor

February 16, 2017

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

Dear Mr. Harris:

Subject: Mitigation Acceptance Letter:

U-3109A, Mebane Bypass – NC 119 Relocation from I-85 / I-50 Interchange to North of SR 1921 / SR 1996 (Mebane Rogers Road / East Stagecoach Road), Alamance County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on February 13, 2017, the impacts are located in CU 03030002 of the Cape Fear River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Cape Fear 03030002 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	4,506.0	0	0	0	0	0

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

The impacts and associated mitigation needs were under projected by the NCDOT in the 2017 impact data. DMS will commit to implement sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS.

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

Sincerely,

James B. Stanfill
Credit Management Supervisor

cc: Mr. David Bailey, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: U-3109A

Environmental Quality

ROY COOPER
Governor

February 16, 2017

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

Dear Mr. Harris:

Subject: Mitigation Acceptance Letter:

U-3109B, Mebane Bypass – NC 119 Relocation from North of SR 1921 / SR 1996 (Mebane Rogers Road / East Stagecoach Road) to North of SR 1918 (Mrs. White Lane), Alamance County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream and wetland mitigation for the subject project. Based on the information supplied by you on February 13, 2017, the impacts are located in CU 03030002 of the Cape Fear River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Cape Fear 03030002 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	1,306.0	0.51	0	0	0	0

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

The impacts and associated mitigation needs were under projected by the NCDOT in the 2017 impact data. DMS will commit to implement sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS.

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

Sincerely,

James B. Stanfill
Credit Management Supervisor

cc: Mr. David Bailey, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: U-3109B

South Buffalo Creek Mitigation Site
ONEID 041-009

The South Buffalo Creek mitigation site is located in Guilford County within the USGS hydrologic unit 03030002 of the Cape Fear River. NCDOT acquired a 31.73 acres parcel to mitigate for unavoidable, jurisdictional impacts associated with TIP I-2402, U-2525 and I-2201F/E. This parcel produced 16.2 acres of Riparian Wetland Preservation and 15.53 acres of Riparian Wetland Restoration. Monitoring requirements were performed from 1999 to 2003 and the site was closed out in 2004. Table 1 shows the final mitigation quantities approved for the site. The site has been placed on the NCDOT On-site Debit Ledger for use within HUC 03030002. Table 2 indicates all mitigation debits that have occurred per regulatory agency approval.

In order to offset 0.38 acres of unavoidable impacts to U-3109A, NCDOT will be debiting the South Buffalo Creek Mitigation Site, with 0.33 acres at a 2:1 ratio and 0.05 ac. at a 1:1 ratio, totaling 0.71 acres of mitigation.

Table 1. Mitigation Quantities Approved

HUC	Mitigation Type	Starting Amount (AC)	Additional Notes
3030002	Riparian Wetland Restoration	16.2	
3030002	Riparian Wetland Restoration	15.53	

Table 2. Mitigation Debits –

Mitigation Type	Debit Amount (Ac)	Status	SITE TIP	Action ID#	Notes
Riparian Wetland Preservation	3.36	Close Out	I-2201F		
Riparian Wetland Preservation	1.23	Close Out	I-2402D mod	199502886	
Riparian Wetland Preservation	9.4	Close Out	U-2525A & I-2402D	199300243	

TYPE	Debit Amount (Ac)	Status	SITE TIP	Action ID#	Notes
Riparian Wetland Restoration	0.96	Close Out	I-2201F		
Riparian Wetland Restoration	0.35	Close Out	I-2402D mod	199502886	
Riparian Wetland Restoration	0.14	Close Out	Mit Work		
Riparian Wetland Restoration	0.95	Close Out	R-2000AA/AB		
Riparian Wetland Restoration	9.1	Close Out	U-2525A & I-2402D	199300243	
Riparian Wetland Restoration	0.71	Close Out	U-3109A		impacts were 0.38 acres, with 0.33 at 2:1 ratio, 0.05 at 1:1 ratio

Minutes from the Interagency 4B Hydraulic Design Review Meeting
U-3109A in Alamance County
July 25, 2013
10:00 AM – 11:00 AM

Team Members:		**Participants:**
Andrew Williams, USACE	(absent)	Marshall Clawson, Hydraulics
Gary Jordan, USFWS	(present)	Henry Wells, Sungate Design Group
Travis Wilson, NCWRC	(present)	Brad Smith, Sungate Design Group
Amy Euliss, NCDWQ	(present)	Bill Zerman, Hydraulics
Chris Militscher, EPA	(absent)	Kanchana Noland, Roadway Design
Felix Davila, FHWA	(present)	Andy Young, Roadway Design
David Harris, REU	(absent)	Jillian Hinson, Roadway Design
Brenda Moore, NCDOT	(absent)	Mark Staley, REU
Kevin Fischer, NCDOT	(present)	Kyle Pleasant, Utilities
Derrick Weaver, NCDOT	(absent)	Steve McKee, Utilities
Rachelle Beauregard, NES	(absent)	Jamshid Hafshejani, Utilities
Patty Eason, NCDOT	(present)	Greg Price, NES
		Elizabeth Lusk, NES
		Chris Underwood, NES
		Monte Matthews, USACE
		Tyler Crumbley, USACE

Minutes:

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

Sheet 7:

Station 64+00 -L-: Beginning of JS is located at inlet of proposed 48-inch cross-pipe. Increase pipe on size and bury 20%. Place note on Permit Drawings "JS begins here".

Sheet 8:

Pond: Discuss with Division how to handle or design for overflow. Place note on Permit Drawings "JS begins here".

Sheet 9:

Station 94+00 -L- Right: Tie in short segment of JS into realigned channel.

Sheet 10:

Drainage Structure No. 1007: Show non-erosive velocities exiting the energy dissipater. Also include the 10 Year Velocity.

Backfill floodplain bench in culvert.

Sheet 12:

Station 127+50 -L- Left: Revise tail ditch to provide a better transition to natural channel.

Station 128+00 -L- Left: Place note on Permit Drawings "JS begins here".

Sheet 14:

Station 26+00 -Y16- Left: Utilities asked if the impact to the water tower could be eliminated.

Sheet 15:

Station 162+50 -L- Left: Use rock fill. Show non-erosive velocities entering wetland. Place note on Permit Drawings "JS begins here".

Sheet 17:

Hazardous Spill Basins may be required on project east of US 70. Note: In a critical area, if we are draining water to a location below an intake, then HSB's may not be necessary.

Sheet 27

Station 24+00 -Y16RPA- Right: The question was asked if this were a JS. According to the most recent WET file, this is not a JS.

Meeting adjourned.

Minutes from the Interagency 4C Hydraulic Design Review Meeting
U-3109A in Alamance County
May 14, 2015
10:00 AM – 12:00 AM

Team Members:

David Bailey, USACE	(present)
Gary Jordan, USFWS	(absent)
Travis Wilson, NCWRC	(present)
Dave Wanucha, NCDWR	(present)
Dr. Cynthia Van Der Wiele, USEPA	(present)
Felix Davila, FHWA	(present)
David Harris, REU	(absent)
Ron McCollum, Roadway	(absent)
Kevin Fischer, Structures	(absent)
Derrick Weaver, PDEA	(absent)
Rachelle Beauregard, NES	(present)
Patty Eason, Division	(absent)
James Steven McKee, Utilities	(absent)

Participants:
Bill Zerman, Hydraulics
Will Hines, Sungate Design Group
Brad Smith, Sungate Design Group
Piotr Stojda, Roadway Design
Jillian Hinson, Roadway Design
Mark Staley, REU
Terry Clelland, SMU
Jamshid Hafshejani, Utilities
Greg Price, NES
Ed Lewis, Division 7

Minutes:

The following plan sheet numbers refer to the Plan Sheets, not the Permit Drawings Sheet numbers.

General Comments:

Use a label with a leader to call out Temporary Impacts in Surface Waters.

Greg Price, NCDOT NES, will provide a list of streams that have different mitigation requirements which will be used to breakout the different streams in the Summary.

Will Hines, Sungate Design Group (SDG), will provide a list of streams where the location of the stream shown in the FS file does not match the SDG survey. This list will be used in requesting that NCDOT L&S revise the FS file to match the SDG survey or resurvey.

When resubmitting the SMP, provide decimal coordinates for the HSB's.

Plan Sheet 7:

Other than the General Comments, there were no other specific comments for Site 1 discussed.

Plan Sheet 8:

The question was asked whether the impact between Site 2 and Site 3 is shown as Permanent or Temporary. After looking at the Micro Station file, it has been verified that it is shown as a Permanent Impact.

Site 4: Will Hines, SDG, announced that a Right-of-way revision will be submitted moving the proposed Right-of-way out of the pond and onto the proposed Rock Fill.

Plan Sheet 9:

Site 7 (Station 94+00 -L- Right): Show impact to small JS; Label as Site 7A.

Plan Sheet 10:

Site 7: Breakout stream bank stabilization in the Summary.

Energy Dissipater (Station 100+70 -L- Lt): Provide the 10 Year Velocity on the Permit Drawing.

Plan Sheet 11:

Site 8: Breakout the smaller stream and label the two streams Site 8A and Site 8B.

Plan Sheet 12:

Site 10 (Station 128+00 -L- Lt): Show impact to small JS; Label as Site 10A. Label Begin JS.

Plan Sheet 13:

Site 11: Show Temporary Impacts to small JS located upstream of the cross-pipe. Label Site 11A.

Plan Sheet 14:

Station 26+00 -Y16- Left: Utilities asked if the potential impact to the existing waterlines can be eliminated. NCDOT Hydraulics has requested elevations on the existing waterlines.

Plan Sheet 15:

Site 12 (Station 157+50 -L- Lt): NCDOT NES to investigate whether the stream downstream of the pond is a JS.

Site 12 (Station 157+50 -L- Lt): NCDOT NES to investigate the wetland to determine if it will be a Permanent or Temporary Impact. Label as Site 12A.

Site 13: Revise Fill in Wetland to include the portion of the wetland located within the pond.

Site 13: Show Temporary JS impacts upstream of the cross-pipe.

Site 13: Will Hines, SDG, announced that a Right-of-way revision will be submitted moving the proposed Right-of-way out of the pond and onto the proposed Rock Fill.

Plan Sheet 16:

Site 15: Show the Baffle Detail from the Culvert Survey Report on the Permit Drawing. Add TS upstream of the box culvert. Check the Box Culvert Construction Sequence for any additional impacts.

Plan Sheet 27

Station 24+00 -Y16RPA- Right: The question was asked if this was a JS. According to the most recent WET file and to NCDOT NES, this is not a JS.

Plan Sheet 29

Site 17: Breakout bank stabilization in the Summary.

Site 17: The JS stream location does not match the SDG survey. NCDOT L&S to be asked to resurvey this site.

Site 17: Show Temporary Impact to Surface Waters in the Construction Easement located downstream of the box culvert.

Plan Sheet 30

Site 18: Breakout bank stabilization (upstream only) in the Summary.

Plan Sheet 31

Site 20: Check pipe size shown in the Summary

Site 20: NCDOT NES to verify JS location. Specifically where the JS ends.

Site 20: SDG to investigate whether the impacts downstream of the cross-pipe can be reduced.

Meeting adjourned.

MEMORANDUM OF AGREEMENT
BETWEEN THE
FEDERAL HIGHWAY ADMINISTRATION
AND THE
NORTH CAROLINA
STATE HISTORIC PRESERVATION OFFICER
FOR
NC 119 RELOCATION
I-85/40 TO SOUTH OF SR 1918 (MRS. WHITE LANE)
MEBANE, ALAMANCE COUNTY, NORTH CAROLINA
TIP PROJECT NO. U-3109
FEDERAL AID PROJECT NO. STP-119(1)

WHEREAS, the Federal Highway Administration (FHWA) has determined that the relocation of NC 119 from the I-85/40 interchange southwest of Mebane to existing NC 119 near SR 1918 (Mrs. White Lane) north of Mebane in Alamance County, including improvements to a portion of SR 1997 (Corrigidor Road) and SR 1970 (Roosevelt Street) (the Undertaking) will have an adverse effect upon the Charles F. and Howard Cates Farm, a property listed on the National Register of Historic Places (NRHP); and

WHEREAS, the Undertaking will alter the historic setting of the Charles F. and Howard Cates Farm by 1) requiring the acquisition of 12.6 acres of right-of-way; 2) isolating an additional 4.6 acres from the rest of the farm; and 3) creating a roadway visible from, at least, the western half of the property and the cluster of buildings comprising the farmstead, including the occupied main house; and

WHEREAS, the FHWA has consulted with the North Carolina State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f); and

WHEREAS, the North Carolina Department of Transportation (NCDOT), the Eloise W. Cates Estate, and the Marsha A. Ritchie Trust (the latter two sharing the ownership of the parcels contained within the National Register boundary of the Charles F. and Howard Cates Farm) have participated in the consultation and been invited by FHWA and the North Carolina SHPO to concur in this Memorandum of Agreement (MOA); and

WHEREAS, the FHWA has notified the Advisory Council on Historic Preservation (Council) of the adverse effect and the Council has declined to comment or participate in the consultation;

NOW, THEREFORE, FHWA and the North Carolina SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the Undertaking on the historic property.

STIPULATIONS

The FHWA shall ensure that the following measures are carried out:

I. **Photodocumentation of the Charles F. and Howard Cates Farm**

Prior to the initiation of construction, NCDOT shall record the Charles F. and Howard Cates Farm and its surroundings in accordance with the attached "Historic Structures and Landscape Recordation Plan" (Appendix A). NCDOT shall deposit copies of the documentation with the SHPO, NCDOT Historic Architecture Group, the Eloise W. Cates Estate and the Marsha A. Ritchie Trust within three (3) years of the execution of this MOA.

II. **Preservation and Restoration of Landscape Features**

NCDOT, in consultation with the North Carolina SHPO, the Eloise W. Cates Estate, and the Marsha A. Ritchie Trust, shall develop and implement a landscape plan for that part of the Charles F. and Howard Cates Farm directly impacted by the undertaking (specifically, the top of the roadway slope). The plan will utilize materials from native plant communities and replace existing fencing as necessary to reestablish a natural appearance and composition, as well as help screen the farm from the proposed roadway. NCDOT Roadside Environmental Unit shall inventory the existing features and coordinate with the property owners. NCDOT Historic Architecture Group and the North Carolina SHPO shall review and comment on the resultant plan.

III. **Refinement of Design**

NCDOT Roadway Design Unit shall lower the proposed roadbed approximately two to three feet below the roadway design grade in the vicinity of Unnamed Tributary (UT) to Mill Creek to reduce the visibility of vehicles on the proposed roadway from the farm.

IV. Treatment of Isolated Acreage

Future use of the 4.6 acres isolated from the rest of the Charles F. and Howard Cates Farm by the undertaking is unknown at this time. NCDOT may purchase the acreage as an uneconomical remnant or provide it with a service road. If purchased, NCDOT shall insure that incompatible activities, such as billboard placement, do not occur on the land.

V. Unanticipated Discovery

In accordance with 36 CFR 800.11(a), if NCDOT identifies any additional cultural resource(s) during construction and determines it (them) to be eligible for the NRHP, all work will be halted within the limits of the NRHP-eligible resource(s) and the FHWA and SHPO contacted. If after consultation with the Signatory and Concurring Party(ies) additional mitigation is determined necessary, the NCDOT, in consultation with the Signatory and Concurring Party(ies), will develop and implement appropriate protection/mitigation measures for the resource(s). Inadvertent or accidental discovery of human remains will be handled in accordance with North Carolina General Statutes 65 and 70.

VI. Dispute Resolution

Should any of the Signatory or Concurring Party(ies) object within thirty (30) days to any plans or documentation provided for review pursuant to this MOA, the FHWA shall consult with the objecting party(ies) to resolve the objection. If the FHWA or objecting party(ies) determines that the objection cannot be resolved, the FHWA will forward all documentation relevant to the dispute to the Council. Within thirty (30) days after receipt of all pertinent documentation, the Council will either:

1) Provide the FHWA with recommendations which the FHWA will take into account in reaching a final decision regarding the dispute, or

2) Notify the FHWA that it will comment pursuant to 36 CFR Section 800.7(c) and proceed to comment. Any Council comment provided in response to such a request will be taken into account by the FHWA, in accordance with 36 CFR Section 800.7(c)(4) with reference to the subject of the dispute.

Any recommendations or comment provided by the Council will be understood to pertain only to the subject of the dispute; FHWA's responsibility to carry out all of the actions under this agreement that are not the subject of the dispute will remain unchanged

VII. **Amendments**

If any Signatory to this MOA believes that its terms cannot be carried out or that an amendment to the terms must be made, that (those) party(ies) shall immediately consult with the other party(ies) to develop amendments in accordance with 36 CFR 800.6(c)(7). If an amendment cannot be agreed upon, the dispute resolution process set forth in Stipulation VI will be followed.

VIII. **Termination**

Any Signatory to this MOA may terminate the agreement by providing notice to the other parties, provided that the Signatories and Concurring party(ies) will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. Termination of this MOA will require compliance with 36 CFR 800. This MOA may be terminated by the execution of a subsequent MOA that explicitly terminates or supersedes its terms.

IX. **Duration**

Unless terminated pursuant to Stipulation VIII above, this MOA will be in effect until FHWA, in consultation with the other Signatory and Concurring Party(ies), determines that all of its terms have satisfactorily been fulfilled or if NCDOT is unable or decides not to construct the Undertaking.

Execution of this Memorandum of Agreement by FHWA and the North Carolina SHPO, its subsequent filing with the Council, and implementation of its terms evidence that FHWA has afforded the Council an opportunity to comment on the Undertaking and that FHWA has taken into account the effects of the Undertaking on the historic property.

AGREE:

Federal Highway Administration

for _____ 10/28/09

John F. Sullivan III, P.E.
Division Administrator — Date

State Historic Preservation Officer

_____ 10/20/09

Jeffrey J. Crow
North Carolina State Historic Preservation Officer — Date

FILED:

By: _____
Advisory Council on Historic Preservation — Date

MEMORANDUM OF AGREEMENT
BETWEEN THE
FEDERAL HIGHWAY ADMINISTRATION
AND THE
NORTH CAROLINA
STATE HISTORIC PRESERVATION OFFICER
FOR
NC 119 RELOCATION
I-85/40 TO SOUTH OF SR 1918 (MRS. WHITE LANE)
MEBANE, ALAMANCE COUNTY, NORTH CAROLINA
TIP PROJECT NO. U-3109
FEDERAL AID PROJECT NO. STP-119(1)

Execution of this Memorandum of Agreement by FHWA and the North Carolina SHPO, its subsequent filing with the Council, and implementation of its terms evidence that FHWA has afforded the Council an opportunity to comment on the Undertaking and that FHWA has taken into account the effects of the Undertaking on the historic property.

CONCUR:

North Carolina Department of Transportation

Robert Andrew Joyner 10/12/09

Robert Andrew Joyner, P.E.
Human Environment Unit Head — Date

MEMORANDUM OF AGREEMENT
BETWEEN THE
FEDERAL HIGHWAY ADMINISTRATION
AND THE
NORTH CAROLINA
STATE HISTORIC PRESERVATION OFFICER
FOR
NC 119 RELOCATION
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TIP PROJECT NO. U-3109
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CONCUR:

Eloise W. Cates Estate

Cherry Causey 11/02/09

Cherry Causey
Executrix

Date

MEMORANDUM OF AGREEMENT
BETWEEN THE
FEDERAL HIGHWAY ADMINISTRATION
AND THE
NORTH CAROLINA
STATE HISTORIC PRESERVATION OFFICER
FOR
NC 119 RELOCATION
I-85/40 TO SOUTH OF SR 1918 (MRS. WHITE LANE)
MEBANE, ALAMANCE COUNTY, NORTH CAROLINA
TIP PROJECT NO. U-3109
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Execution of this Memorandum of Agreement by FHWA and the North Carolina SHPO, its subsequent filing with the Council, and implementation of its terms evidence that FHWA has afforded the Council an opportunity to comment on the Undertaking and that FHWA has taken into account the effects of the Undertaking on the historic property.

CONCUR:

Marsha A. Ritchie Trust

_____

Marsha Ritchie Altmeyer Date

APPENDIX A

Historic Structures and Landscape Recordation Plan
NC 119 Relocation
I-85/40 to South of SR 1918 (Mrs. White Lane)
Mebane, Alamance County, North Carolina
TIP Project No. U-3109
Federal Aid Project No. STP-119(1)

Photographic Requirements

- Overall views of the Charles F. and Howard Cates Farm and its immediate surroundings;
- Overall views of the farmstead and related fields and woodland;
- Elevations and oblique views of all component buildings, structures, and landscape elements and details of representative structural and ornamental features.

Photographic Format

- All images will be captured, labeled, and stored according to the North Carolina State Historic Preservation Office's "Policy and Guidelines for Digital Photography for Historic Property Surveys, National Register Nominations and NRAC PowerPoint Presentations, Revised November 2008."

Copies and Curation

- One (1) set of all photographic documentation will be deposited with the North Carolina Division of Archives and History/State Historic Preservation Office, to be made a permanent part of the statewide survey and iconographic collection;
- One (1) set of all photographic documentation will be deposited in the files of the Historic Architecture Group of NCDOT;
- One (1) set of all photographic documentation will be provided for representatives of the Eloise W. Cates Estate and the Marsha A. Ritchie Trust.

SHPO CONSULTATION ON ARCHAEOLOGICAL ISSUES

JANUARY 27, 2003

PROJECT: **TIP # U-3109 NC 119 Relocation - Archaeological input on new Alternatives**

NCDOT ARCHAEOLOGIST(S): **Brian Overton, Paul Mohler**

CONSULTATION WITH: **Dolores Hall** DATE: **January 24, 2003**

CONSULTATION TYPE: ☐ TELEPHONE ☒ MEETING

Paul Mohler and I met with Dolores Hall of OSA on January 24, 2003 to discuss archaeological issues for new and/or selected alternatives for the NC 119 Relocation Project in Alamance County (TIP # U-3109). Three alternatives (8, 9 and 10) were selected for detailed study as a result of the NEPA merger team meeting on June 13, 2002. We reviewed the previous archaeological work completed by NCDOT archaeologists over the past several years (Glover 1996, 1997, 2000). In addition to aerial mapping of the proposed corridors, topographic mapping showing previously surveyed areas and identified sites were also studied and discussed.

We concluded that the previous archaeological surveys have covered the APE (Area of Potential Effects) for the three alternatives being considered. It is unlikely that the project will impact any undiscovered archaeological sites eligible for the National Register of Historic Places. Dolores Hall further commented that the eligble Cook's Mill (31Am369**) should be avoided, if possible, as noted in previous documents. No further archaeological work is expected for this project.

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

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

January 4, 2005

MEMORANDUM

TO: Matt Wilkerson, Archaeology Supervisor
Office of Human Environment
NCDOT Division of Highways

FROM: Peter Sandbeck PBS for Peter Sandbeck

SUBJECT: Phase I Investigation of 31AM392, Addendum to the Archaeological Study, U-3109
NC 119 Relocation, State Project 8.1470901, WBS# 34900.1.1, Division 7,
Alamance County, ER 94-8152

Thank you for your letter of November 12, 2004, transmitting the addendum archaeological report by Gerold Glover, Ph.D. for the above project. We apologize for the delay in our response.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following property is not eligible for listing in the National Register of Historic Places under criterion D:

31AM392

This Middle and Late Archaic and Late Woodland site has been disturbed by landscaping and erosion and does not retain sufficient integrity to yield information important to prehistory. We concur with Dr. Glover's recommendation for no additional archaeological investigation at this site.

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 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Gary Glover, NCDOT

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.04; Released November 2015)

WBS Element:	34900.1.1	TIP No.:	U-3109A	County(ies):	Alamance	Page	1	of	4

General Project Information

WBS Element:	34900.1.1	**TIP Number:**	U-3109A	**Project Type:**	New Location	**Date:**	2/25/2016
NCDOT Contact:	William (Bill) S. Zerman, Jr. PE			**Contractor / Designer:**	W. Henry Wells, Jr. PE		
	Address: NCDOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699-1590			**Address:**	Sungate Design Group, PA 915 Jones Franklin Road Raleigh, NC 27609		
	Phone: 919-707-6755			**Phone:**	919-859-2243 ext. 202		
	Email: bzerman@ncdot.gov			**Email:**	hwells@sungatedesign.com		
City/Town:	Mebane			**County(ies):**	Alamance		
River Basin(s):	Cape Fear			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	3.44 miles	**Surrounding Land Use:**	Urban, Residential

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	70.8 ac.	16.8 ac.
Typical Cross Section Description:	The pavement consists of 2-12' lanes and a 4' paved shoulder in each direction with a raised 30' median. In cut sections, the roadway ditch will have a 6:1 front slope and a 4:1-6:1 back slope. For Site 1 and 2, the 4' paved shoulder is replaced with a 14' lane and C&G.	N/A
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 28,400 Year: 2036	Existing: 21,100 Year: 2016
General Project Narrative: (Description of Minimization of Water Quality Impacts)	A combination of grassed swales, roadway ditches and structural BMPs (Preformed Scour Holes, Energy Dissipators and Hazardous Spill Basins) were used to minimize the Water Quality Impacts. In most locations, the outlets for the storm drainage systems were placed at least 50 feet from the Jurisdictional Stream. However, due to topography none of the lateral grass swales located along the embankment fill slope met the recommended minimum length of swale.	

Waterbody Information

Surface Water Body (1):	McAdams Creek		**NCDWR Stream Index No.:**	16-18-7	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply V (WS-V)		
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SI			**Buffer Rules in Effect:**	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

(Version 2.04; Released November 2015)

WBS Element: 34900.1.1 **TIP No.:** U-3109A **County(ies):** Alamance

Additional Waterbody Information

Surface Water Body (2):	Back Creek (Graham-Mebane Reservoir)		**NCDWR Stream Index No.:**	16-18-(1.5)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply II (WS-II)			
		Supplemental Classification:	High Quality Waters (HQW)	(NSW)		
Other Stream Classification:						
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):	UT to Mill Creek		**NCDWR Stream Index No.:**	16-18-3-2-(1)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply II (WS-II)			
		Supplemental Classification:	High Quality Waters (HQW)	(NSW)		
Other Stream Classification:						
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SU			**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.04; Released November 2015)

WBS Element: **TIP No.:** U-3109A **County(ies):** Alamance

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)	BMP Associated w/ Buffer Rules?
8	80+50 -L- LT 36.0814538 / -79.2943632	(1)McAdams Creek	Riprap Apron / Pad	Class 'B'	0.3	Pipe	15	1.3	0.6	N/A
10	97+98 -L- LT 36.0861900 / -79.2932986	(1)McAdams Creek	Riprap Apron / Pad	Class 'B'	0.1	Pipe	15	0.2	0.3	N/A
10	100+70 -L- LT 36.0869283 / -79.2932099	(1)McAdams Creek	Riprap Energy Dissipator Basin	Class I	7.5	Pipe	30	18.3	1.3	N/A
12	130+50 -L- LT 36.0948746 / -79.2943008	(1)McAdams Creek	PSH	Class 'B'	0.5	Pipe	15	2.0	0.6	N/A
13	140+50 -L- LT 36.0973282 / -79.2957894	(1)McAdams Creek	PSH	Class 'B'	0.7	Pipe	15	3.4	0.7	N/A

Additional Comments

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

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(Version 2.04; Released November 2015)

WBS Element: 34900.1.1 **TIP No.:** U-3109A **County(ies):** Alamance

Level Spreaders, Hazardous Spill Basins, and Forebays

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Level Spreader, Hazardous Spill Basin, or Forebay?	Drainage Area (ac)	New Built-Upon Area (ac)	Required / Minimum Treatment			Treatment Achieved		BMP Associated w/ Buffer Rules?
15	161+92 -L- RT 36.1028543 / -79.2946013	(2)Back Creek	Hazardous Spill Basin	1.00	0.90	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	2480.0	cf	2630.0	cf	N/A
16	179+68 -L- RT 36.1058795 / -79.2901163	(2)Back Creek	Hazardous Spill Basin	9.70	1.45	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	6560.0	cf	7526.0	cf	N/A
27	20+90 -Y16RPA- LT 36.1088473 / -79.2838139	(2)Back Creek	Hazardous Spill Basin	3.30	1.10	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	3740.0	cf	4760.0	cf	N/A
39	32+55 -Y20- LT 36.1018606 / -79.2932411	(3)UT to Mill Creek	Hazardous Spill Basin	1.00	0.70	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	2300.0	cf	2590.0	cf	N/A

*Hazardous spill basins are pollution prevention measures designed for spill containment rather than stormwater treatment. Under Required / Minimum Treatment and Treatment Achieved, provide the minimum required volume and the actual HSB volume, respectively. Refer to the NCDOT Stormwater Best Management Practices Toolbox (2014) for design guidance.

Additional Comments

8/17/99

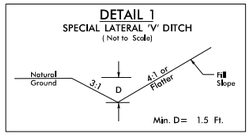
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2-N
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

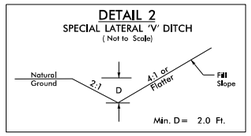
DETAILS

DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



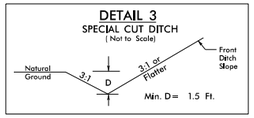
FROM STA. 10+00 TO STA. 14+33 –L– RT
FROM STA. 10+83 TO STA. 13+00 –RPA– RT
FROM STA. 13+50 TO STA. 17+00 –RPB– RT
FROM STA. 19+50 TO STA. 20+68 –RPB– LT
FROM STA. 13+00 TO STA. 16+50 –RPC– LT
FROM STA. 59+60 TO STA. 61+36.6 –L– LT
FROM STA. 62+85 TO STA. 64+50 –L– LT
FROM STA. 11+00 TO STA. 12+90 –Y19– LT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 11+50 TO STA. 12+38 –Y5B– LT
FROM STA. 15+00 –RPD– RT TO STA. 19+09 –RPD SPUR– RT
FROM STA. 31+00 TO STA. 33+50 –Y7A– LT

DETAIL 3
SPECIAL CUT DITCH
(Not to Scale)

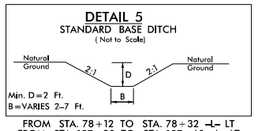


FROM STA. 11+00 TO STA. 13+00 –L– LT
FROM STA. 13+90 TO STA. 14+50 –Y2– RT
FROM STA. 11+68 TO STA. 12+25 –RPC– RT
FROM STA. 14+10 TO STA. 15+00 –Y8– RT
FROM STA. 17+00 TO STA. 17+50 –Y26– RT

DETAIL 4
STANDARD BASE DITCH
(Not to Scale)

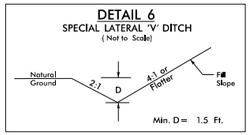
FROM STA. 11+45 TO STA. 11+67 –Y7A– LT
FROM STA. 126+21 TO STA. 126+40 –L– RT
FROM STA. 127+17 TO STA. 127+45 –L– LT

DETAIL 5
STANDARD BASE DITCH
(Not to Scale)



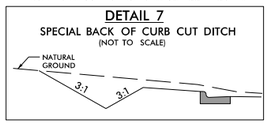
FROM STA. 78+12 TO STA. 78+32 –L– LT
FROM STA. 157+20 TO STA. 157+60 –L– LT

DETAIL 6
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



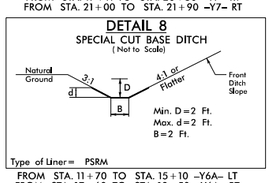
FROM STA. 15+00 TO STA. 18+50 –Y13– RT
FROM STA. 17+15 TO STA. 18+00 –Y13– LT
FROM STA. 10+75 TO STA. 12+40 –Y19– RT
FROM STA. 31+50 TO STA. 32+27 –Y16– RT
FROM STA. 32+27 TO STA. 33+50 –Y16– RT
FROM STA. 33+10 TO STA. 34+50 –Y16– LT
FROM STA. 19+88 TO STA. 20+25 –Y20– LT
FROM STA. 10+15 TO STA. 12+50 –Y26– LT
FROM STA. 29+00 TO STA. 32+00 –Y10– LT
FROM STA. 33+75 TO STA. 35+50 –Y10– LT
FROM STA. 36+00 TO STA. 36+80 –Y10– RT
FROM STA. 13+50 TO STA. 14+50 –Y11– LT
FROM STA. 18+00 TO STA. 19+50 –Y16RPA– RT
FROM STA. 32+60 TO STA. 33+58 –Y20– LT
FROM STA. 33+10 TO STA. 34+22 –Y20– RT

DETAIL 7
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



FROM STA. 42+10 TO STA. 44+00 –L– LT
FROM STA. 46+62 TO STA. 49+50 –L– LT
FROM STA. 49+75 TO STA. 52+20 –L– LT
FROM STA. 60+00 TO STA. 62+37 –L– RT
FROM STA. 65+10 TO STA. 67+00 –L– LT
FROM STA. 17+11 TO STA. 20+50 –Y7– RT
FROM STA. 21+00 TO STA. 21+90 –Y7– RT

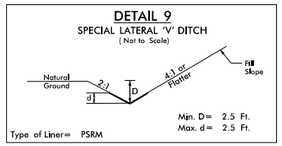
DETAIL 8
SPECIAL CUT BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 11+70 TO STA. 15+10 –Y6A– LT
FROM STA. 17+60 TO STA. 18+50 –Y6A– RT

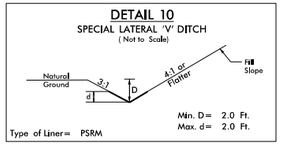
DETAIL 9
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 16+00 TO STA. 17+13 –Y6A– LT
FROM STA. 29+15 TO STA. 31+00 –Y7A– RT

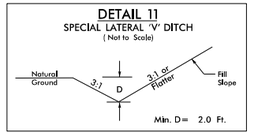
DETAIL 10
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

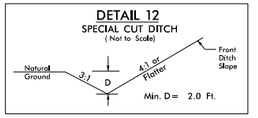
FROM STA. 54+75 TO STA. 61+25 –L– LT
FROM STA. 17+25 TO STA. 18+50 –Y6A– LT
FROM STA. 12+50 TO STA. 14+00 –Y13– LT
FROM STA. 26+00 TO STA. 26+70 –Y16RPA– RT

DETAIL 11
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



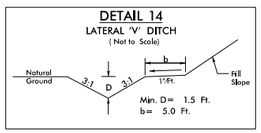
FROM STA. 62+80 TO STA. 64+50 –L– LT

DETAIL 12
SPECIAL CUT DITCH
(Not to Scale)



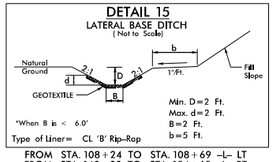
FROM STA. 65+10 TO STA. 67+00 –L– LT
FROM STA. 17+00 TO STA. 18+70 –RPD– LT

DETAIL 14
LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 69+95 TO STA. 70+75 –L– RT
FROM STA. 69+95 TO STA. 70+10 –L– LT
FROM STA. 70+10 TO STA. 70+68 –L– LT
FROM STA. 96+50 TO STA. 96+80 –L– RT
FROM STA. 10+95 TO STA. 11+56 –Y7A– LT
FROM STA. 125+36 TO STA. 126+20 –L– RT
FROM STA. 126+95 TO STA. 127+30 –L– LT
FROM STA. 132+22 TO STA. 133+32 –L– LT
FROM STA. 157+77 TO STA. 158+75 –L– RT
FROM STA. 182+25 TO STA. 188+00 –L– RT

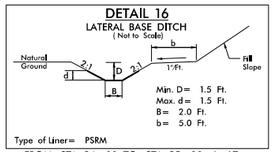
DETAIL 15
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CL 'B' Rip–Rap

FROM STA. 108+24 TO STA. 108+69 –L– LT
FROM STA. 148+00 TO STA. 154+65 –L– RT
FROM STA. 180+00 TO STA. 182+25 –L– RT
FROM STA. 26+00 TO STA. 26+50 –Y16RPA– RT
FROM STA. 18+50 TO STA. 19+98 –Y10– RT
FROM STA. 20+40 TO STA. 22+50 –Y10– LT

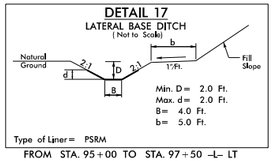
DETAIL 16
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 94+00 TO STA. 95+00 –L– LT

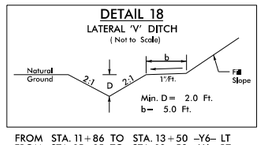
DETAIL 17
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

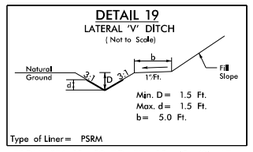
FROM STA. 95+00 TO STA. 97+50 –L– LT

DETAIL 18
LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 11+86 TO STA. 13+50 –Y6– LT
FROM STA. 15+15 TO STA. 18+50 –Y6– RT
FROM STA. 132+10 TO STA. 132+22 –L– LT
FROM STA. 154+70 TO STA. 156+25 –L– RT

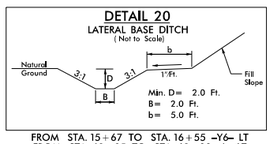
DETAIL 19
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

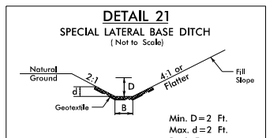
FROM STA. 13+50 TO STA. 15+60 –Y6– LT
FROM STA. 16+79 TO STA. 18+50 –Y6– LT

DETAIL 20
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 15+67 TO STA. 16+55 –Y6– LT
FROM STA. 62+85 TO STA. 63+00 –L– LT
FROM STA. 179+03 TO STA. 180+00 –L– RT
FROM STA. 19+45 TO STA. 20+40 –Y10– LT

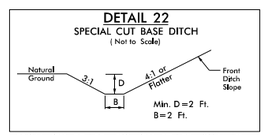
DETAIL 21
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CL 'B' Rip–Rap

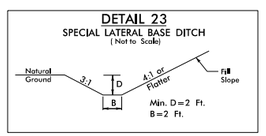
FROM STA. 58+25 TO STA. 59+60 –L– LT
FROM STA. 20+00 TO STA. 21+05 –Y16RPA– LT

DETAIL 22
SPECIAL CUT BASE DITCH
(Not to Scale)



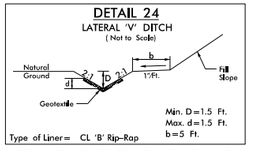
FROM STA. 15+10 TO STA. 17+13 –Y6A– LT

DETAIL 23
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 59+60 TO STA. 61+36.6 –L– LT
FROM STA. 63+00 TO STA. 64+50 –L– LT
FROM STA. 108+20 TO STA. 109+75 –L– RT

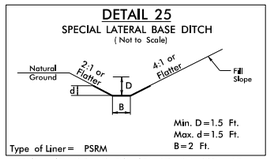
DETAIL 24
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL 'B' Rip–Rap

FROM STA. 68+50 TO STA. 69+65 –L– LT
FROM STA. 70+68 TO STA. 72+00 –L– LT
FROM STA. 84+50 TO STA. 84+93 –L– LT
FROM STA. 85+50 TO STA. 86+60 –L– RT
FROM STA. 126+00 TO STA. 126+95 –L– LT

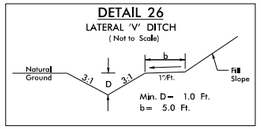
DETAIL 25
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

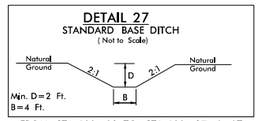
FROM STA. 17+06 TO STA. 17+60 –Y6A– RT
FROM STA. 10+65 TO STA. 13+50 –Y11– LT

DETAIL 26
LATERAL 'V' DITCH
(Not to Scale)



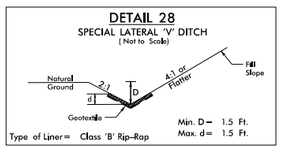
FROM STA. 11+65 TO STA. 12+31 –Y7A– LT
FROM STA. 84+93 TO STA. 85+14 –L– LT

DETAIL 27
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 108+03 TO STA. 108+37 –L– LT
FROM STA. 162+25 TO STA. 162+50 –L– RT

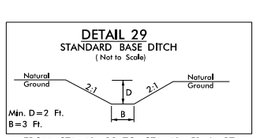
DETAIL 28
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class 'B' Rip–Rap

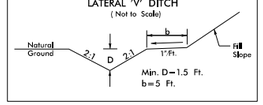
FROM STA. 29+70 TO STA. 31+00 –Y7A– LT
FROM STA. 22+50 TO STA. 24+00 –Y10– LT
FROM STA. 11+00 TO STA. 14+00 –Y13– RT
FROM STA. 32+33 TO STA. 32+60 –Y20– LT

DETAIL 29
STANDARD BASE DITCH
(Not to Scale)



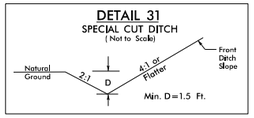
FROM STA. 40+38 TO STA. 40+51 –L– RT
FROM STA. 16+84 TO STA. 17+10 –Y6A– RT
FROM STA. 17+14 TO STA. 17+30 –Y6A– LT
FROM STA. 15+05 TO STA. 15+24 –Y6– RT
FROM STA. 15+54 TO STA. 15+84 –Y6– LT
FROM STA. 65+40 TO STA. 65+67 –L– RT
FROM STA. 70+00 TO STA. 70+20 –L– LT
FROM STA. 70+66 TO STA. 70+89 –L– LT
FROM STA. 85+05 TO STA. 85+33 –L– LT
FROM STA. 86+55 TO STA. 86+72 –L– RT
FROM STA. 28+48 TO STA. 29+34 –Y10– RT
FROM STA. 30+45 TO STA. 31+58 –Y10– RT
FROM STA. 17+81 TO STA. 18+06 –Y16RPA– RT
FROM STA. 20+93 TO STA. 21+38 –Y16RPA– LT

DETAIL 30
LATERAL 'V' DITCH
(Not to Scale)



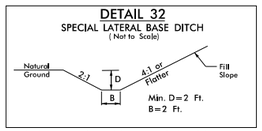
FROM STA. 23+50 TO STA. 28+00 –Y6– RT
FROM STA. 96+80 TO STA. 97+25 –L– RT

DETAIL 31
SPECIAL CUT DITCH
(Not to Scale)



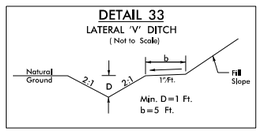
FROM STA. 26+00 TO STA. 28+25 –Y6– LT
FROM STA. 11+62 TO STA. 14+25 –Y16– LT
FROM STA. 14+25 TO STA. 20+15 –Y16– LT
FROM STA. 19+00 TO STA. 20+15 –Y16– RT
FROM STA. 20+15 TO STA. 21+00 –Y16– RT
FROM STA. 40+50 TO STA. 42+50 –Y16– LT
FROM STA. 45+00 TO STA. 46+02 –Y16– LT
FROM STA. 45+00 TO STA. 46+06 –Y16– RT
FROM STA. 20+00 TO STA. 21+00 –Y20– RT
FROM STA. 18+50 TO STA. 19+20 –Y20– LT
FROM STA. 16+50 TO STA. 17+50 –Y20– LT
FROM STA. 09+70 TO STA. 12+00 –Y20– RT
FROM STA. 09+70 TO STA. 12+00 –Y20– LT
FROM STA. 26+50 TO STA. 30+00 –Y20– LT
FROM STA. 23+50 TO STA. 24+09 –Y16RPA– RT

DETAIL 32
SPECIAL LATERAL BASE DITCH
(Not to Scale)



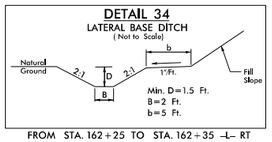
FROM STA. 11+10 TO STA. 11+50 –Y13– LT
FROM STA. 111+10 TO STA. 111+50 –L– RT

DETAIL 33
LATERAL 'V' DITCH
(Not to Scale)



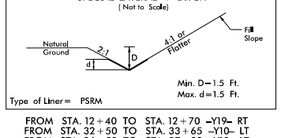
FROM STA. 76+50 TO STA. 78+00 –L– LT

DETAIL 34
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 162+25 TO STA. 162+35 –L– RT

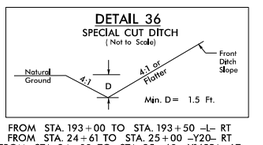
DETAIL 35
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

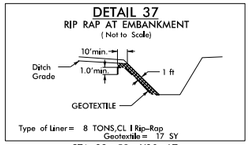
FROM STA. 12+40 TO STA. 12+70 –Y19– RT
FROM STA. 32+50 TO STA. 33+65 –Y10– LT
FROM STA. 36+50 TO STA. 37+00 –Y10– LT

DETAIL 36
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 193+00 TO STA. 193+50 –L– RT
FROM STA. 24+61 TO STA. 25+00 –Y20– RT
FROM STA. 24+00 TO STA. 25+60 –Y16RPA– LT
FROM STA. 21+50 TO STA. 22+50 –Y20– LT

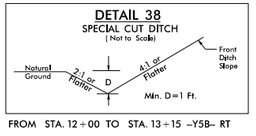
DETAIL 37
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 8 TONS,CL I Rip–Rap
Geotextile= 17 SY

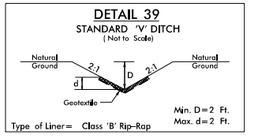
STA. 33+59 –Y20– LT
STA. 34+36 –Y20– RT
STA. 19+98 –Y10– RT
STA. 10+65 –Y11– LT

DETAIL 38
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 12+00 TO STA. 13+15 –Y5B– RT

DETAIL 39
STANDARD 'V' DITCH
(Not to Scale)



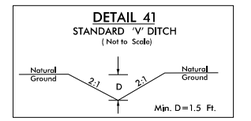
Type of Liner= Class 'B' Rip–Rap

FROM STA. 154+50 TO STA. 154+92 –L– RT
FROM STA. 157+66 TO STA. 157+89 –L– RT

DETAIL 40
STANDARD BASE DITCH
(Not to Scale)

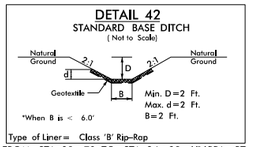
FROM STA. 20+20 TO STA. 20+36 –Y20– LT
FROM STA. 12+18 TO STA. 14+07 –Y16RPA– LT
FROM STA. 25+90 TO STA. 26+04 –Y16RPA– RT
FROM STA. 25+57 TO STA. 26+06 –Y16RPA– LT
FROM STA. 25+99 TO STA. 26+12 –Y16RPA– LT
FROM STA. 32+97 TO STA. 33+38 –Y10– RT
FROM STA. 33+56 TO STA. 33+89 –Y10– LT
FROM STA. 29+06 TO STA. 29+25 –Y7A– RT
FROM STA. 17+30 TO STA. 17+50 –Y11– LT

DETAIL 41
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 147+87 TO STA. 148+66 –L– LT

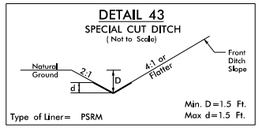
DETAIL 42
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class 'B' Rip–Rap

FROM STA. 23+70 TO STA. 24+28 –Y16RPA– RT

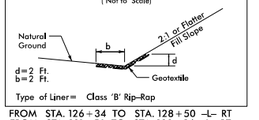
DETAIL 43
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 19+50 TO STA. 20+00 –Y20– RT
FROM STA. 32+00 TO STA. 33+10 –Y20– RT

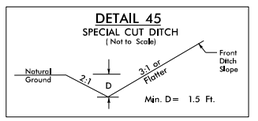
DETAIL 44
TOE PROTECTION
(Not to Scale)



Type of Liner= Class 'B' Rip–Rap

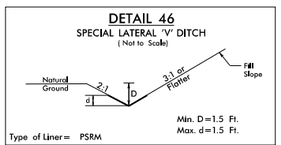
FROM STA. 126+34 TO STA. 128+50 –L– RT
FROM STA. 131+50 TO STA. 133+96 –L– RT

DETAIL 45
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 16+00 TO STA. 17+32 –L– LT

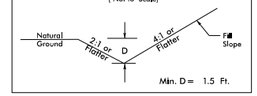
DETAIL 46
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

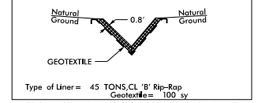
FROM STA. 17+11 TO STA. 18+00 –Y11– RT
FROM STA. 17+32 TO STA. 18+00 –Y11– LT

DETAIL 48
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM STA. 10+15 TO STA. 11+50 –Y26– RT

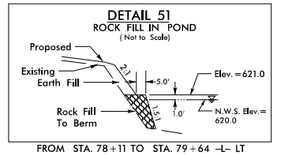
DETAIL 49
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 45 TONS,CL 'B' Rip–Rap
Geotextile= 100 sy

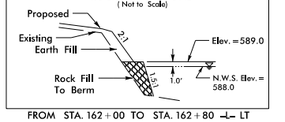
FROM STA. 61+37 TO STA. 62+53 –L– LT

DETAIL 51
ROCK FILL IN POND
(Not to Scale)



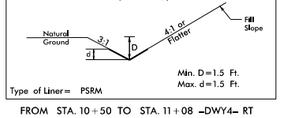
FROM STA. 78+11 TO STA. 79+64 –L– LT

DETAIL 52
ROCK FILL IN POND
(Not to Scale)



FROM STA. 162+00 TO STA. 162+80 –L– LT

DETAIL 58
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 10+50 TO STA. 11+08 –DWY4– RT

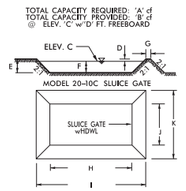
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2K
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DETAIL 47
HAZARDOUS SPILLBASIN

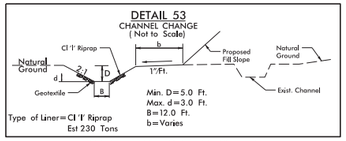
	DIM.	BASIN # 1	2	3	4
A	cf	2480	6560	3740	2300
B	cf	2630	7526	4760	2590
C	ft	597.0	604.0	608.0	597.5
D	ft	1.0	1.0	1.0	1.0
E	ft	4.0	4.0	VARIES	4.0
F	ft	3.0	3.0	VARIES	3.0
G	ft	2.0	2.0	2.0	2.0
H	ft	23	VARIES	29	VARIES
I	ft	39	75	41	59
J	ft	23	54	40	21
K	ft	39	68	57	47

TOTAL CAPACITY REQUIRED: 'A' cf
TOTAL CAPACITY PROVIDED: 'B' cf
@ ELEV. 'C' w/ 'D' FT. FREEBOARD



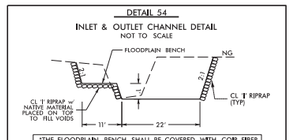
BASIN #	LOCATION (AT OUTLET)
1	STA 161+85 –L– RT
2	STA 179+50 –L– RT
3	STA 20+50 –Y16RPA– LT
4	STA 32+50 –Y20– LT

DETAIL 53
CHANNEL CHANGE
(Not to Scale)



FROM STA. 93+93 TO STA. 96+36 –L– RT

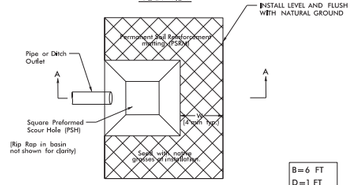
DETAIL 54
INLET & OUTLET CHANNEL DETAIL
NOT TO SCALE



*THE FLOODPLAIN BENCH SHALL BE COVERED WITH COIR FIBER MATTING AND THE PERIMETER SHALL BE LINED WITH CLASS 'I' RIP RAP IF FILL IS NEEDED FOR THE BENCH USE CLASS 'I' RIP RAP AND PLACE NATIVE MATERIAL ON TOP TO FILL VOIDS.

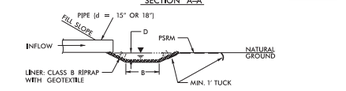
PREFORMED SCOUR HOLE DETAIL 55
*NOT TO SCALE

PLAN VIEW



B=6 FT
D=1 FT
W=6 FT

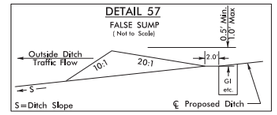
SECTION A–A



308

FROM STA. 130+39 TO STA. 130+60 –L– LT
FROM STA. 140+39 TO STA. 140+60 –L– LT

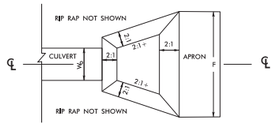
DETAIL 57
FALSE SUMP
(Not to Scale)



ENERGY DISSIPATOR DETAIL 56
RIP-RAPPED ENERGY DISSIPATOR BASIN

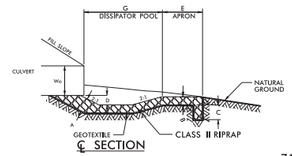
DIM. (ft)	RIP RAP BASIN # 1		
A	2.5		
B	2.0		
C	2.0		
D	0.9		
E	11.8		
F	10.1		
G	10.1		

ALL DIMENSIONS APPROXIMATE



PLAN

BASIN #	LOCATION (AT OUTLET)
1	STA 100+70 –L– LT



℄ SECTION

7/08

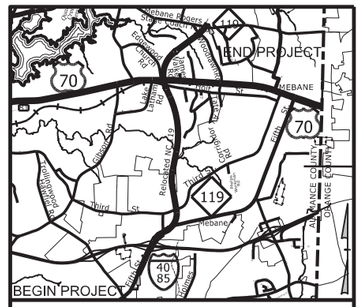
12/6/2016
03109A_Hyd_prm.wet.dgn
whines

09/08/16

TIP PROJECT: U-3109A

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ALAMANCE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3109A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34900.1.1	STP-0119(10)	PE
34900.2.FRU4	STP-0119(10)	UTILITY
34900.2.FR4	STP-0119(10)	ROW

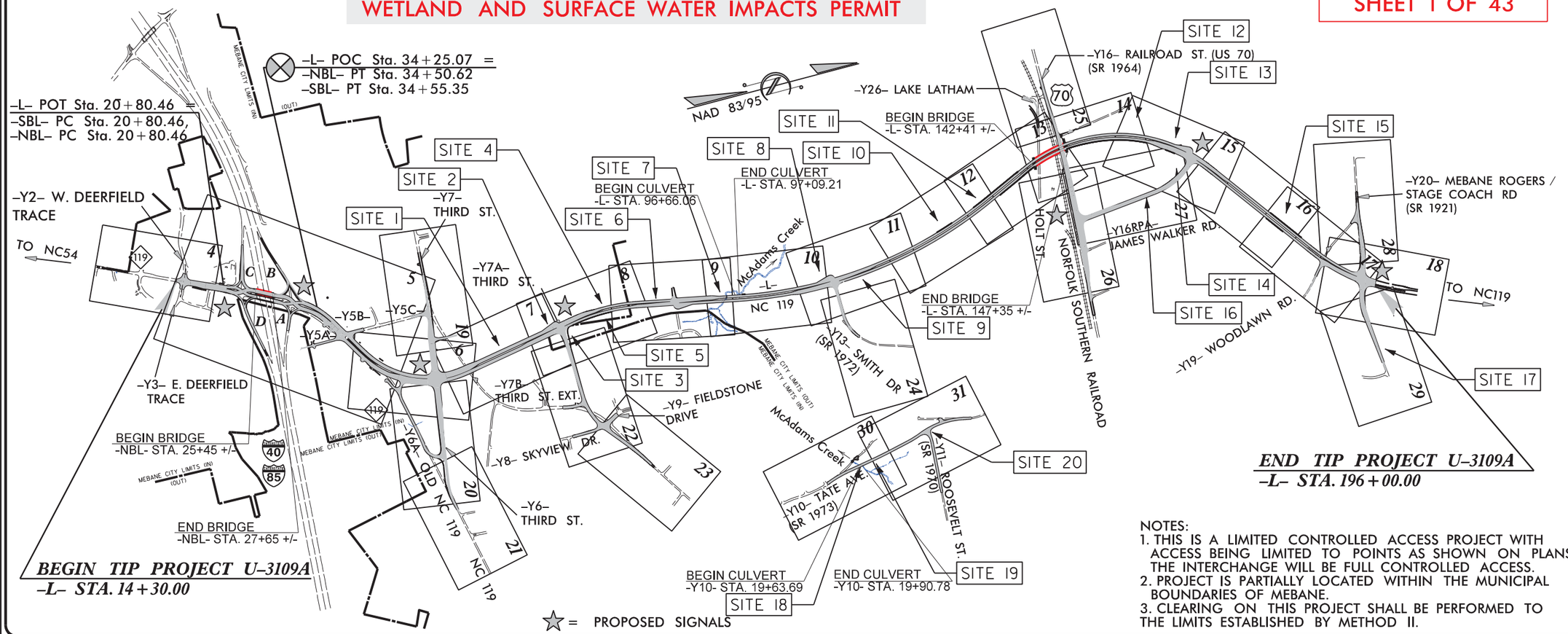
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: NC 119 RELOCATION FROM I-40 /85 TO NORTH OF SR 1921 (MEBANE ROGERS ROAD /STAGE COACH ROAD)

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

PERMIT DRAWING
SHEET 1 OF 43

WETLAND AND SURFACE WATER IMPACTS PERMIT



NOTES:
1. THIS IS A LIMITED CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON PLANS. THE INTERCHANGE WILL BE FULL CONTROLLED ACCESS.
2. PROJECT IS PARTIALLY LOCATED WITHIN THE MUNICIPAL BOUNDARIES OF MEBANE.
3. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

GRAPHIC SCALES

PLANS 50 0 50 100
PROFILE (HORIZONTAL) 50 0 50 100
PROFILE (VERTICAL) 10 0 10 20

DESIGN DATA

ADT 2016 = 21,100
ADT 2036 = 28,400
DHV = 9 %
D = 55 %
T = 3 % *
V = 50 MPH
* TTST 1% DUAL 2%
FUNC CLASS = URBAN COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-3109A ..... 3.280 mi
LENGTH STRUCTURE TIP PROJECT U-3109A ..... 0.161 mi
TOTAL LENGTH OF TIP PROJECT U-3109A ..... 3.441 mi

PLANS PREPARED BY:

Baker

Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
Professional Corporation License Number: F-1084

FOR DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 19, 2014

LETTING DATE: DECEMBER 20, 2016

TODD H. BUCKNER, PE
PROJECT ENGINEER

WARREN E. JOHNSON
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
RON E. McCOLLUM, P.E.
PROJECT ENGINEER – ROADWAY DESIGN

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/29/2016
U3109A_Hyd_prm_wet_psh_01.dgn
jharvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 2 OF 43

REVISIONS 8/17/99

MATCH LINE – SHEET 6 –L– STATION 57+00

MATCH LINE – SHEET 8 –L– STATION 70+00

N 15° 57' 11.0" W

N 10° 03' 08.6" W

NAD 83/95

HKID 42 INC.

FIRST MEBANE PROPERTIES

MCCLURE FUNERAL SERVICE, INC.

3S INVESTMENTS, LLC

SARAH & WILLIAM FOUST

RAY FAMILY SHARE TRUST

SITE 1

SITE 2

REMOVE

SPEC LAT 2' BASE DITCH W/CL 'B' RIP RAP
STA 58+25 – STA 59+60 -L- LT
EST 64 TONES
EST FF 164 SY
SEE DETAIL 21

CLASS 'B' RIPRAP
EST 8 TONS
EST FF 21 SY

CLASS 'B' RIPRAP
EST 5 TONS
EST FF 16 SY

SPEC LAT 2' BASE DITCH
STA 59+60 – STA 61+37 -L- LT
SEE DETAIL 23

LAT 2' BASE DITCH
STA 62+85 – STA 63+00 -L- LT
SEE DETAIL 20

STABILIZE
EXIST CHANNEL
W/CLASS 'B' RIPRAP
EST 45 TONS
EST FF 100 SY
SEE DETAIL 49

SPEC LAT 2' BASE DITCH
STA 63+00 – STA 64+50 -L- LT
SEE DETAIL 23

CLASS 'B' RIPRAP
EST 5 TONS
EST FF 14 SY

SPEC CUT DITCH
STA 65+10 – STA 67+00 -L- LT
SEE DETAIL 7

LATERAL V-DITCH W/CL 'B' RIP RAP
STA 68+50 – 69+65 -L- LT
EST 46 TONS
EST FF 86 SY
SEE DETAIL 24

CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

LATERAL V-DITCH
STA 69+65 – 70+10 -L- LT
SEE DETAIL 14

SPEC CUT DITCH
STA 60+00 – STA 62+37 -L- RT
SEE DETAIL 7

CLASS I RIPRAP
ON BANKS ONLY
EST 11 TONS
EST FF 18 SY

TAIL DITCH
EST DDE +/- 13 CY
SEE DETAIL 29

CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR -L- PROFILE SEE SHEETS 33 & 34
FOR -DWY2- PROFILE SEE SHEET 54

3/10/2016
U3109A_gd_prm_wet_psh_07.dgn
mcrvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 3 OF 43

8/17/99

REVISIONS

MATCH LINE – SHEET 6 –L– STATION 57+00

MATCH LINE – SHEET 8 –L– STATION 70+00

N 15°57'10" W

N 16°03'08.6" W

NAD 83/95

SITE 1

SITE 2

HKID 42 INC.

FIRST MEBANE PROPERTIES

MCCLURE FUNERAL SERVICE, INC.

3S INVESTMENTS, LLC

SARAH & WILLIAM FOUST

RAY FAMILY SHARE TRUST

WET POND A

WET POND B

BEGIN -L-

REMOVE

SPEC LAT 2' BASE DITCH W/CL 'B' RIP RAP
STA 58+23 – STA 59+60 –L– LT
EST 64 TONS
EST FF 164 SY
SEE DETAIL 21

CLASS 'B' RIPRAP
EST 18 TONS
EST FF 21 SY

CLASS 'B' RIPRAP
EST 5 TONS
EST FF 10 SY

SPEC LAT 2' BASE DITCH
STA 59+60 – STA 61+37 –L– LT
SEE DETAIL 23

LAT 2' BASE DITCH
STA 62+85 – STA 63+06 –L– LT
SEE DETAIL 23

STABILIZE
ESST CHANNEL
W/CLASS 'B' RIPRAP
EST 45 TONS
EST FF 100 SY
SEE DETAIL 16

SPEC LAT 2' BASE DITCH
STA 63+80 – STA 64+50 –L– LT
SEE DETAIL 23

CLASS 'B' RIPRAP
EST 5 TONS
EST FF 14 SY

SPEC CUT DITCH
STA 65+10 – STA 67+00 –L– LT
SEE DETAIL 7

LATERAL V-DITCH
STA 69+65 – 70+10 –L– LT
SEE DETAIL 14

LATERAL V-DITCH W/CL 'B' RIP RAP
STA 68+50 – 69+65 –L– LT
EST 46 TONS
EST FF 86 SY
SEE DETAIL 24

CLASS 'B' RIPRAP
EST 26 TONS
EST FF 75 SY

SPEC CUT DITCH
STA 60+00 – STA 62+37 –L– RT
SEE DETAIL 7

TAIL DITCH
EST DBE +/– 13 CY
SEE DETAIL 29

CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

CLASS 'I' RIPRAP
ON BENDS ONLY
EST 11 TONS
EST FF 18 SY

RETAIN

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR -L- PROFILE SEE SHEETS 33 & 34
FOR -DWY2- PROFILE SEE SHEET 54

3/10/2016
U3109A_sht_prm_wet_psh_07_con.dgn
barveu

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 4 OF 43

NAD 83/95

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

P P — DENOTES IMPACTS IN SURFACE WATER (POND)

MATCH LINE – SHEET 7 –L– STATION 70+00

MATCH LINE – SHEET 9 –L– STATION 82+00

MATCH LINE – SHEET 22 –Y7A– STATION 15+00

–L– 70+00

–L– 75+00

–L– 80+00

–Y7A– 15

SITE 2

SITE 3

SITE 4

SITE 5

HEAD DITCH
EST DDE +/– 19 CY
SEE DETAIL 29

LATERAL V–DITCH
STA 70+10 – 70+68 –L– LT
SEE DETAIL 14

TOTAL DDE=390 CY

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

LAT V–DITCH
W/CL 'B' RIP RAP
STA 70+68 –
72+00 –L– LT
EST 61 TONS
EST GF 164 SY
SEE DETAIL 24

LAT V DITCH
STA 76+50 – STA 78+10 –L– LT
SEE DETAIL 33
TOTAL DDE=99 CY

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

SET INLET INV ELEV
TO NORMAL POND
WS ELEV 619.6

ROCK FILL IN POND
TO ELEV 621.0
EST 575 TONS
EST GF 462 SY
SEE DETAIL 51

CLASS 'B' RIPRAP
EST 1 TONS
EST GF 5 SY

TAIL DITCH
EST DDE
+/– 29 CY
SEE DETAIL 29

CLASS I RIPRAP
ON BANKS ONLY
EST 18 TONS
EST GF 29 SY

HEAD DITCH
EST DDE
+/– 32 CY
SEE DETAIL 27

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

LATERAL V–DITCH
STA 10+95 – STA 11+56 –Y7A– LT
SEE DETAIL 14
TOTAL DDE=61 CY

TAIL DITCH
EST DDE +/– 49 CY
SEE DETAIL 4

CLASS I RIPRAP
ON BANKS ONLY
EST 27 TONS
EST GF 44 SY

LATERAL V–DITCH
STA 11+65 – STA 12+31 –Y7A– LT
SEE DETAIL 26
TOTAL DDE=61 CY

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

CLASS I RIPRAP
EST 33 TONS
EST GF 66 SY

TAIL DITCH
EST DDE +/– 9 CY
SEE DETAIL 5

LATERAL V–DITCH
STA 69+95 – STA 70+75 –L– RT
SEE DETAIL 14

HKID 42 INC.

RAY FAMILY SHARE TRUST

FIELDSTONE FARMS HOMEOWNERS ASSOCIATION, INC.

FIRST MEBANE PROPERTIES
DB 3362 PG 64

MEBANE CITY LIMITS

N 10° 03' 08.6" W (GRID)

N 89° 22' 26.3" E

N89°28'51"E 377.18'

48" WW FENCE

15" CSP w/2 ELBOWS

15" RCP–IV

66" RCP–III

3@30" RCP–III

2GI GF

2GI NSGF

GRAU–350

CAT–1

CAT–1c

MONITORING WELL

CB

FS

FES

BEGIN JS

TS

PDE

TDE

HW

L376 SF OPEN SPACE

FOR –L– PROFILE SEE SHEET 34
FOR –Y7A– PROFILE SEE SHEET 47

REVISIONS

8/17/99

2/1/2017
03109A_Hyd_prm_wet_psh_08.dgn
rhines

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 5 OF 43

NAD 83/95

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

P P — DENOTES IMPACTS IN SURFACE WATER (POND)

MATCH LINE – SHEET 7 –L– STATION 70+00

MATCH LINE – SHEET 9 –L– STATION 82+00

MATCH LINE – SHEET 22 –Y7A– STATION 15+00

SITE 2

SITE 3

SITE 4

SITE 5

HEAD DITCH EST DDE +/- 19 CY SEE DETAIL 29

LATERAL V-DITCH STA 70+10 – 70+68 -L- LT SEE DETAIL 14

TOTAL DDE=390 CY

CLASS 'B' RIPRAP EST 2 TONS EST GF 7 SY

LAT V-DITCH W/CL 'B' RIP RAP STA 70+68 – 72+00 -L- LT EST 61 TONS EST GF 164 SY SEE DETAIL 24

LAT V DITCH STA 76+50 – STA 78+10 -L- LT SEE DETAIL 23 TOTAL DDE=99 CY

CLASS 'B' RIPRAP EST 2 TONS EST GF 7 SY

SET INLET INV ELEV TO NORMAL POND WS ELEV 619.6

ROCK FILL IN POND TO ELEV 621.0 EST 575 TONS EST GF 462 SY SEE DETAIL 51

CLASS 'B' RIPRAP EST 1 TONS EST GF 5 SY

TAIL DITCH EST DDE +/- 29 CY SEE DETAIL 29

CLASS 'B' RIPRAP ON BANKS ONLY EST 18 TONS EST GF 29 SY

HEAD DITCH EST DDE +/- 32 CY SEE DETAIL 27

LATERAL V-DITCH STA 89+95 – STA 70+75 -L- RT SEE DETAIL 14

CLASS 'B' RIPRAP EST 2 TONS EST GF 7 SY

LATERAL V-DITCH STA 10+95 – STA 11+56 -Y7A- LT SEE DETAIL 14 TOTAL DDE=61 CY

TAIL DITCH EST DDE +/- 49 CY SEE DETAIL 4

CLASS 'B' RIPRAP ON BANKS ONLY EST 22 TONS EST GF 44 SY

LATERAL V-DITCH STA 11+63 – STA 12+31 -Y7A- LT SEE DETAIL 26 TOTAL DDE=61 CY

CLASS 'B' RIPRAP EST 2 TONS EST GF 7 SY

CLASS 'B' RIPRAP EST 2 TONS EST GF 60 SY

TAIL DITCH EST DDE +/- 9 CY SEE DETAIL 5

RAY FAMILY SHARE TRUST

FIELDSTONE FARMS HOMEOWNERS ASSOCIATION, INC.

FIRST MEBANE PROPERTIES DB 0356Z PG 604

MEBANE CITY LIMITS

MONITORING WELL

HKID / 42 INCH

48" WW FENCE

66" RCP-III

15" RCP-IV

15" CSP w/2 ELBOWS

2GI NSGF

3@30" RCP-III

GRAU-350

N 10°03' 08.60"W (T1)

N 89°22' 26.31"E

FOR -L- PROFILE SEE SHEET 34
FOR -Y7A- PROFILE SEE SHEET 47

REVISIONS

8/17/99

2/1/2017
U3109A_Hyd_prm_wet_psh_08_con.dgn
dhines

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

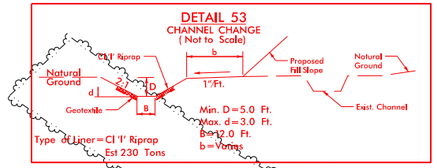
PERMIT DRAWING SHEET 6 OF 43

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95

DETAIL 53
CHANNEL CHANGE
(Not to Scale)



Type 'I' Liner=Cl 'I' Riprap
Est 230 Tons
FROM STA. 93+93 TO STA. 96+36 -L- RT

MATCH LINE – SHEET 8 -L- STATION 82+00

MATCH LINE – SHEET 10 -L- STATION 95+00

-L- 85+00

-L- 96+00

-L- 95+00

MARINO REALTY III LLC

RAY FAMILY SHARE TRUST

FIELDSTONE FARMS HOMEOWNERS ASSOCIATION, INC.

MEBANE CITY LIMITS (IN)

SITE 6

SITE 7

SITE 7A

RETENTION POND

PAVED PARKING

8' CONC

FLOWER BED

6' METAL

PARK CENTER DRIVE

S 84°20'00" E

N 1°10'13.8" E

WOODS

LAT V DITCH
STA 84+93 – 85+14 -L- LT
SEE DETAIL 24
TOTAL DDE=81 CY

LAT V DITCH WITH CL 'B' RIP RAP
STA 84+50 – 84+93 -L- LT
EST 20 TONS
EST GF 53 SY
SEE DETAIL 24
CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

FILL TO APPROX. ELEV = 603

HEAD DITCH
EST DDE +/- 13 CY
SEE DETAIL 29

GRADE TO DRAIN

REMOVE

TOP=600.93 – REMOVE
18" RCP DIRECTION ONLY

LAT 2' BASE DITCH W/PSRM
STA 94+00 – STA 95+00 -L- LT
EST. +/- 84 SY
SEE DETAIL 16
TOTAL DDE=384 CY

CLASS 'B' RIPRAP
EST 5 TONS
EST GF 14 SY

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

REMOVE
CLASS I RIPRAP
ON BANKS ONLY
EST 9 TONS
EST GF 14 SY

LAT V DITCH WITH CL 'B' RIP RAP
STA 85+50 – 86+60 -L- RT
EST 50 TONS
EST GF 137 SY
SEE DETAIL 24

TAIL DITCH
EST DDE +/- 10 CY
SEE DETAIL 29

PLACE FILL MATERIAL TO MATCH NG

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 20 TONS
EST GF 30 SY

CHANNEL CHANGE
SEE DETAIL 53
CLASS 'I' RIP RAP
EST 130 TONS
EST GF 192 SY

CLASS 'B' RIPRAP
EST 3 TONS
EST GF 6 SY

TIE EXIST JS TO PROPOSED CHANNEL

ANDA CORN

ANTHONY & KAREN LAWSON

MARK & MARISA LAW

JOHN BILAR, JR. & SASHA BILAR

JOSEPH RUDD JR. & WENDIE RUDD

LEIGH ANN HINSHAW

PETE D'ANNA, III

TRACY & JOHN HOLMES

BRIAN & KARYN BURKE

HUNTER POWERS & KATHERINE SHELTON

BRIARWOOD DR 30' BST

FOR -L- PROFILE SEE SHEETS 34 & 35

8/17/99

REVISIONS

2/1/2017
U3109A_Hyd_prm_wet_psh_09.dgn
dlines

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 7 OF 43

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95

DETAIL 53
CHANNEL CHANGE
(Not to Scale)

Type 'C' Liner = Cl 'B' Riprap
Est 280 Tons

FROM STA 93+93 TO STA 97+36 -L- RT

MATCH LINE – SHEET 8 –L– STATION 82+00

MATCH LINE – SHEET 10 –L– STATION 95+00

RAY FAMILY SHARE TRUST

MARINO REALTY III LLC

FIELDSTONE FARMS HOMEOWNERS ASSOCIATION, INC.

MEBANE CITY LIMITS (INS)

SITE 6

SITE 7

SITE 7A

RETENTION POND

FILL TO APPROX. ELEV = 603

LAT Y DITCH STA 84+93 – 85+14 -RT SEE DETAIL 24 TOTAL DDE = 81 CY

LAT Y DITCH WITH GL 'B' RIP RAP STA 84+50 – 84+93 -L- LT EST 20 TONS EST GF 53 SY SEE DETAIL 24 CLASS 'B' RIPRAP EST 2 TONS EST GF 7 SY

HEAD DITCH EST DDE = 13 CY SEE DETAIL 29

GRADE TO DRAIN

REMOVE

TAIL DITCH EST DDE = 10 CY SEE DETAIL 29

CLASS 'B' RIPRAP EST 12 TONS EST GF 7 SY

REMOVE CLASS 'I' RIPRAP ON BANKS ONLY EST 9 TONS EST GF 14 SY

LAT Y DITCH WITH GL 'B' RIP RAP STA 85+50 – 86+60 -Y- RT EST 50 TONS EST GF 137 SY SEE DETAIL 24

LAT Z BASE DITCH W/PSRM STA 94+00 – STA 95+00 -L- LT EST +/- 84 SY SEE DETAIL 16 TOTAL DDE = 384 CY

CLASS 'B' RIPRAP EST 5 TONS EST GF 14 SY

STREAMBANK STABILIZATION CLASS 'I' RIPRAP EST 20 TONS EST GF 30 SY

CLASS 'B' RIPRAP EST 3 TONS EST GF 6 SY

CHANNEL CHANGE SEE DETAIL 53 CLASS 'I' RIP RAP EST 130 TONS EST GF 190 SY

PLACE FILL MATERIAL TO MATCH NG

TIE EXIST. DITCH TO PROPOSED CHANNEL

N 11°10' 13.8" E

S 84°20'09" E

FOR -L- PROFILE SEE SHEETS 34 & 35

REVISIONS 8/17/99

2/1/2017
U3109A_Hyd_prm_wet_psh_09_con.dgn
dlines

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 8 OF 43

REVISIONS 8/17/99

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/95

WOODS

RAY FAMILY SHARE TRUST

-L- 95+00

-L- 100+00

-L- 105+00

SITE 7

PATTERSON PROPERTIES

S ABAND

EIP

48" WW FENCE

MATCH LINE – SHEET 9 –L– STATION 95+00

MATCH LINE – SHEET 11 –L– STATION 108+00

TOTAL DDE=384 CY

LAT 4' BASE DITCH W/PSRM
STA 95+00 – STA 97+50 –L– LT
EST +/- 272 SY
SEE DETAIL 17
PLACE FILL MATERIAL TO MATCH NG

STREAMBANK STABILIZATION
CLASS I RIPRAP
SEE DETAIL 54
EST 74 TONS
EST GF 105 SY

ENERGY DISSIPATOR
SEE DETAIL 56
CLASS II RIPRAP
EST 25 TONS
EST GF 20 SY

V10=1.3 FT/S

CLASS 'B' RIPRAP
EST 1 TON
EST GF 5 SY

15" CSP w/2 ELBOWS

BEGIN CULVERT
STA. 96+66.06
FLOODPLAIN BENCH
SEE DETAIL 53

END CULVERT
STA. 97+09.21

2' SILL

1' SILL

2GI GF

2GI NS

15" RCP-IV

30" RCP-III

24" RCP-III

2GI-A GF

FS

BDO

15" CSP w/ ELBOW

24" CSP w/ ELBOW

DITCH BLOCK
TOP ELEV = 596.5

CLOSED 3@11' X 9' RCBC

50.00 –L– 110.00 RT

CHANNEL CHANGE
SEE DETAIL 53
CLASS 'I' RIP RAP
EST 130 TONS
EST GF 192 SY

LAT V-DITCH
STA 96+50 – 96+80 –L– RT
DDE=6 CY
SEE DETAIL 14

STREAMBANK STABILIZATION
CLASS I RIPRAP
SEE DETAIL 54
EST 204 TONS
EST GF 255 SY

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

LAT V-DITCH
STA 96+80 – 97+25 –L– RT
DDE=6 CY
SEE DETAIL 30

BERM DITCH
STA 101+10 – 102+50 –L– RT
TOTAL DDE= 12 CY

BERM DITCH
STA 103+50 – 105+00 –L– RT
TOTAL DDE=15 CY

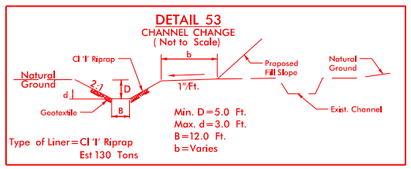
PATTERSON PROPERTIES

RAY FAMILY SHARE TRUST

DELORES JONES

CURTIS PENDERGRASS

DETAIL 53
CHANNEL CHANGE
(Not to Scale)

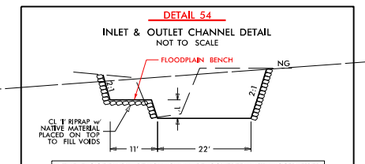


Min. D=5.0 Ft.
Max. d=3.0 Ft.
B=12.0 Ft.
b=Varies

Type of Liner=Cl 'I' Riprap
Est 130 Tons

FROM STA. 93+93 TO STA. 96+36 –L– RT

DETAIL 54
INLET & OUTLET CHANNEL DETAIL
NOT TO SCALE



*THE FLOODPLAIN BENCH SHALL BE COVERED WITH COIR FIBER MATTING AND THE PERIMETER SHALL BE LINED WITH CLASS 'I' RIP RAP. IF FILL IS NEEDED FOR THE BENCH, USE CLASS 'I' RIP RAP AND PLACE NATIVE MATERIAL ON TOP TO FILL VOIDS.

FOR -L- PROFILE SEE SHEET 35

2/6/2017
U3109A_Hyd_prm_wet_psh_10.dgn
mhines

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 9 OF 43

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/95

MATCH LINE – SHEET 9 –L– STATION 95+00

MATCH LINE – SHEET 11 –L– STATION 108+00

SITE 7

RAY FAMILY SHARE TRUST

PATTERSON PROPERTIES

RAY FAMILY SHARE TRUST

DELORES JONES

CURTIS PENDERGRASS

WOODS

48" WW FENCE

TOTAL DDE=384 CY

LAT 4' BASE DITCH W/ RSRM
STA 95+00 – STA 97+50 –L– LT
EST +/- 222 SY
SEE DETAIL 17
PLACE FILL MATERIAL TO MATCH NG

TDE

TS 15"

BEGIN CULVERT STA. 96+64.06 FLOODPLAIN BENCH SEE DETAIL 55

2' SILL

1' SILL

END CULVERT STA. 97+09.21

PROPOSED 3@11' X 9' RCBC

50.00 –L– PBL 80' RT

PDE

CHANNEL CHANGE
SEE DETAIL 53
CLASS 'I' RIP RAP
EST 130 TONS
EST GF 192 SY

LAT V-DITCH
STA 96+30 – 96+80 –L– RT
DDE=6 CY
SEE DETAIL 19

STREAMBANK STABILIZATION
CLASS I RIPRAP
SEE DETAIL 54
EST 204 TONS
EST GF 255 SY

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

LAT V-DITCH
STA 96+80 – 97+25 –L– RT
DDE=6 CY
SEE DETAIL 30

STREAMBANK STABILIZATION
CLASS I RIPRAP
SEE DETAIL 54
EST 74 TONS
EST GF 105 SY

ENERGY DISSIPATOR
SEE DETAIL 56
CLASS II RIPRAP
EST 25 TONS
EST GF 20 SY

V10=1.3 FPS

15" CSP w/ ELBOW

30" RCP-III

24" RCP-III

15" RCP-IV

2GI NS

2GI GF

2GI-A GF

BDO

FS

BERM DITCH
STA 101+10 – 102+50 –L– RT
TOTAL DDE= 12 CY

BERM DITCH
STA 103+50 – 105+00 –L– RT
TOTAL DDE=15 CY

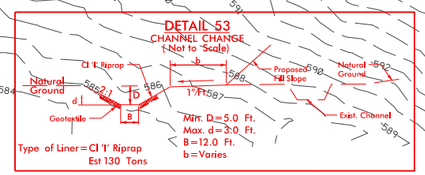
DITCH BLOCK TOP ELEV = 596.5

EIP

48" WW FENCE

FOR –L– PROFILE SEE SHEET 35

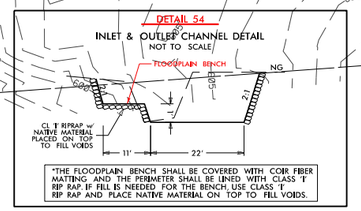
DETAIL 53
CHANNEL CHANGE
(Not to Scale)



Type of Liner=Cl 'I' Riprap
Est 130 Tons
Min. D=5.0 Ft.
Max. d=3.0 Ft.
B=12.0 Ft.
b=Varies

FROM STA. 93+93 TO STA. 96+36 –L– RT

DETAIL 54
INLET & OUTLET CHANNEL DETAIL
NOT TO SCALE



*THE FLOODPLAIN BENCH SHALL BE COVERED WITH COIR FIBER MATTING AND THE PERIMETER SHALL BE LINED WITH CLASS 'I' RIP RAP. IF FILL IS NEEDED FOR THE BENCH, USE CLASS 'I' RIP RAP AND PLACE NATIVE MATERIAL ON TOP TO FILL VOIDS.

8/17/99

REVISIONS

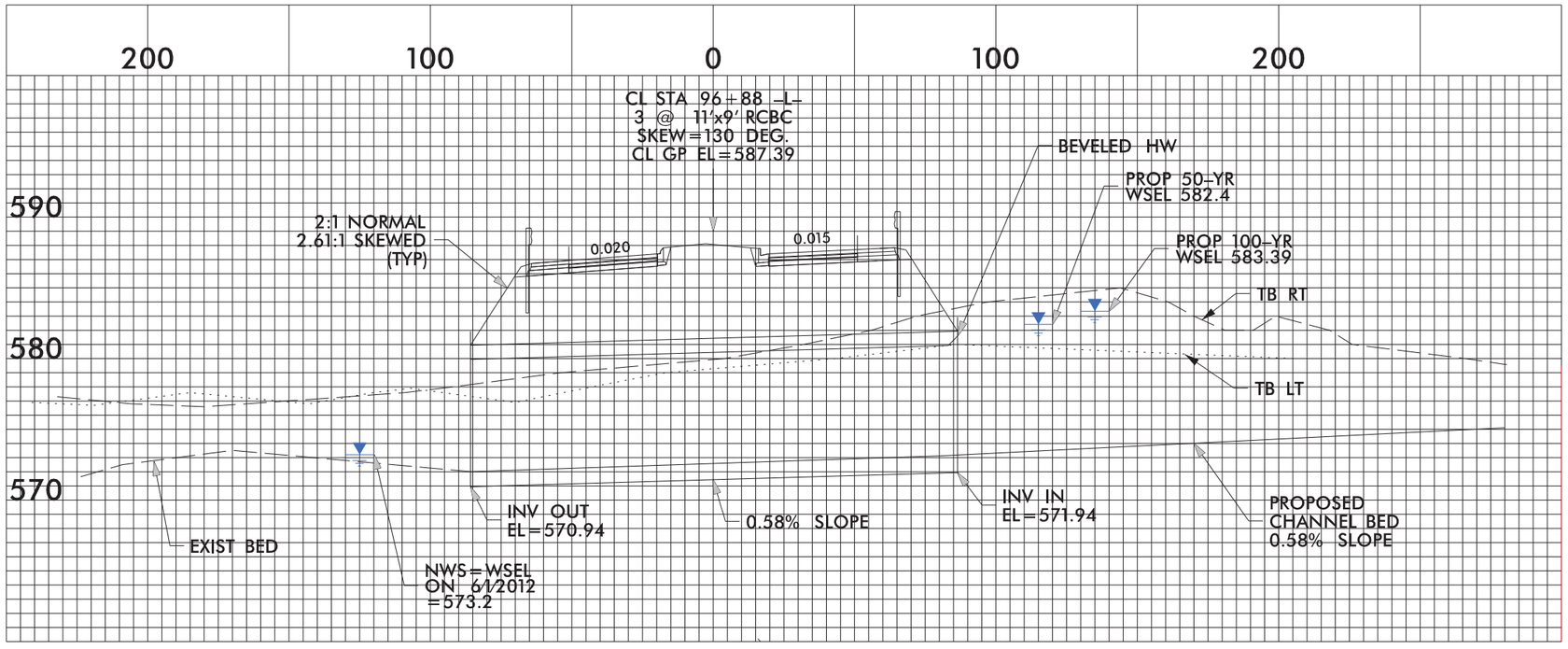
PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 10 OF 43

SITE 7



2/29/2016
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jharvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 11 OF 43

8/17/99

REVISIONS

NAD 83/95

MATCH LINE – SHEET 10 –L– STATION 108+00

MATCH LINE – SHEET 12 –L– STATION 121+00

MATCH LINE – SHEET 24 –Y13– STATION 14+00

-L- 110+00

-L- 115+00

-L- 120+00

100' DUKE POWER EASEMENT

DUKE POWER EASEMENT

RAY FAMILY SHARE TRUST

FUTURE IMPROVEMENTS OR ADJUSTMENTS TO NC 119 THAT ARE ASSOCIATED WITH THIS ACCESS BREAK WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER

CLASS I RIPRAP ON BANKS ONLY EST 15 TONS EST FF 24 SY

TAIL DITCH EST DDE +/- 17 CY SEE DETAIL 27

LAT 2' BASE DITCH W/CL 'B' RIP RAP STA 108+24 – 108+69 –L– LT EST 18 TONS EST FF 55 SY SEE DETAIL 15

CLASS 'B' RIPRAP EST 8 TONS EST FF 21 SY

BERM DITCH STA 111+11 – 113+50 –L– LT

SPEC LAT 2' BASE DITCH STA 108+20 – STA 109+75 –L– RT SEE DETAIL 23

SPEC LAT 2' BASE DITCH STA 111+10 – 111+55 –L– RT SEE DETAIL 32

SPEC LAT 2' BASE DITCH STA 11+10 – 11+50 –Y13– LT SEE DETAIL 32

CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY

SPEC LAT V-DITCH W/CL B RIP RAP STA 11+00 – 14+00 –Y13– RT SEE DETAIL 28

SPEC LAT V-DITCH W/PSRM STA 12+50 – 14+00 –Y13– LT SEE DETAIL 10

REMOVE

SITE 8A

SITE 8B

SITE 9

RAY FAMILY SHARE TRUST

MARY RUTH WOOD HEIRS

DELORES JONES

DUKE POWER

+74.53
28.22°

N 88-56-46 E

48" RCP-III
24" RCP-III
15" RCP-IV
18"
24"

2GI NS
2GI FG
2GI-A NS
FS
BDO
18" w/ ELBOW
TS
EIP
HW

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

FOR –L– PROFILE SEE SHEETS 35 & 36
FOR –Y13– PROFILE SEE SHEET 50

2/29/2016
03046.16.tg.d_prm_wet_psh_11.dgn
har-veu

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 12 OF 43

8/17/99

REVISIONS

NAD 83/95

MATCH LINE – SHEET 10 –L– STATION 108+00

MATCH LINE – SHEET 12 –L– STATION 121+00

MATCH LINE – SHEET 24 –Y13– STATION 14+00

SITE 8A

SITE 8B

SITE 9

RAY FAMILY SHARE TRUST

DELORES JONES

DUKE POWER

MARY RUTH WOOD HEIRS

FUTURE IMPROVEMENTS OR ADJUSTMENTS TO NC 119 THAT ARE ASSOCIATED WITH THIS ACCESS BREAK WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER

CLASS I RIPRAP ON BANKS ONLY EST 15 TONS EST FF 24 SY

TAIL DITCH EST QDE = 17 CY SEE DETAIL 22B

LAT 2' BASE DITCH W/CL 'B' RIP RAP STA 108+24 108+69 -L- RT EST 18 TONS EST FF 38.5 SY SEE DETAIL 15

CLASS 'B' RIPRAP EST 8 TONS EST FF 21 SY

BERM DITCH STA 111+11 – 113+50 -L- LT

SPEC LAT 2' BASE DITCH STA 108+20 STA 109+75 -L- RT SEE DETAIL 23

SPEC LAT 2' BASE DITCH STA 111+10 – 111+55 -L- RT SEE DETAIL 32

REMOVE

SPEC LAT 2' BASE DITCH STA 11+10 – 11+50 -Y13- LT SEE DETAIL 32

CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY

SPEC LAT V-DITCH W/CL 'B' RIP RAP STA 11+00 -Y13- RT SEE DETAIL 28

SPEC LAT V-DITCH W/PSRM STA 12+50 –14+00 -Y13- LT SEE DETAIL 10

24" RCP-III

15" RCP-IV

48" RCP-III

18" RCP-III

18" w/ ELBOW

RPO

2GI FS

2GI NS

2GI FG

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S DENOTES IMPACTS IN SURFACE WATER

F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

FOR -L- PROFILE SEE SHEETS 35 & 36
FOR -Y13- PROFILE SEE SHEET 50

2/29/2016
03109A_hyd_prm_wet_psh_11.dgn
jhar-vey

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 13 OF 43

REVISIONS 8/17/99

NAD 83/95

N 695,905.3623

-L- 125+00

-L- 130+00

RAY FAMILY SHARE TRUST

A CAMPBELL HOLDINGS, LLC

MATCH LINE – SHEET 11 -L- STATION 121+00

MATCH LINE – SHEET 13 -L- STATION 134+00

SITE 10

SITE 10A

SITE 11

LAT V-DITCH
STA 126+95 – 127+30 -L- LT
EST 32 TONS, EST FF 69 SY
SEE DETAIL 14

LAT V-DITCH W/CL 'B' RIP RAP
STA 126+00 – 126+95 -L- LT
EST 38 TONS
EST FF 71 SY
SEE DETAIL 24

TAIL DITCH
EST DDE +/- 54 CY
SEE DETAIL 4

CLASS I RIPRAP
ON BANK ONLY
EST 11 TONS
EST FF 18 SY

CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

15" w/2 ELBOWS

CLASS I RIPRAP
ON BANKS ONLY
EST 22 TONS
EST FF 36 SY

BEGIN JS

PREFORMED SCOUR HOLE DATA
Q10= 2.0 CFS

PSH
SEE DETAIL

LAT V-DITCH
STA 132+10 – STA 132+22 -L- LT
SEE DETAIL 18

CLASS I RIPRAP
ON BANKS ONLY
EST 15 TONS
EST FF 24 SY

TAIL DITCH
EST DDE +/- 8 CY
SEE DETAIL 29

LAT V-DITCH
STA 132+22 – STA 133+32 -L- LT
SEE DETAIL 14

CLASS 'B' RIPRAP
EST 2 TONS
EST FF 7 SY

15" w/2 ELBOWS

TOE PROTECTION
STA 126+34 – 128+50 -L- RT
SEE DETAIL 44

TOE PROTECTION
STA 131+50 – 133+96 -L- RT
SEE DETAIL 44

HEAD DITCH
EST DDE +/- 28 CY
SEE DETAIL 4

HEAD DITCH
EST DDE +/- 5 CY
SEE DETAIL 29

LAT V-DITCH
STA 125+36 – 126+20 -L- RT
SEE DETAIL 14

CLASS I RIPRAP
ON BANK ONLY
EST 10 TONS
EST FF 16 SY

15" RCP-III
18" RCP-III
15" RCP-IV
48" RCP-IV

2GI NS
2GI FG
2GI NSFG

FS
TS
HW
TDE
PDE
JS
ST
E
C
F
R/W
CA

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR -L- PROFILE SEE SHEET 36

3/10/2016
U3109A_hyd_prm_wet_psh_12.dgn
jbarbu

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 14 OF 43

REVISIONS 8/17/99

NAD 83/95

MATCH LINE – SHEET 11 –L– STATION 121+00

MATCH LINE – SHEET 13 –L– STATION 134+00

–L– 125+00

–L– 130+00

SITE 10

SITE 10A

SITE 11

RAY FAMILY SHARE TRUST

A CAMPBELL HOLDINGS, LLC

LAT V-DITCH STA 126+95 – L– 127+38 –L– LT EST 32 TONS, EST FF 69 SY SEE DETAIL 14

LAT V-DITCH W/CL B RIP RAP STA 126+00 – 126+93 –L– LT EST 38 TONS EST FF 21 SY SEE DETAIL 24

TAIL DITCH EST DDE +/– 8 CY SEE DETAIL 29

CLASS I RIPRAP ON BANK ONLY EST 11 TONS EST FF 18 SY

PREFORMED SCOUR HOLE DATA Q10 = 2.0 CFS

LAT V-DITCH STA 132+10 – STA 132+22 –L– LT SEE DETAIL 18

CLASS I RIPRAP ON BANKS ONLY EST 15 TONS EST FF 24 SY

TAIL DITCH EST DDE +/– 8 CY SEE DETAIL 29

LAT V-DITCH STA 132+22 –L– LT STA 133+32 –L– LT SEE DETAIL 14

CLASS B RIPRAP EST 2 TONS EST FF 7 SY

CLASS I RIPRAP ON BANKS ONLY EST 22 TONS EST FF 36 SY BEGIN JS

15" w/2 ELBOWS

PSH SEE DETAIL

CLASS B RIPRAP EST 2 TONS EST FF 7 SY

15" w/2 ELBOWS

2GI NS

2GI FG

2GI NSFG

15" RCP-III

15" RCP-IV

HEAD DITCH EST DDE +/– 28 CY SEE DETAIL 4

HEAD DITCH EST DDE +/– 5 CY SEE DETAIL 29

CLASS B RIPRAP EST 2 TONS EST FF 7 SY

LAT V-DITCH STA 125+39 – 126+20 –L– RT SEE DETAIL 14

CLASS I RIPRAP ON BANK ONLY EST 10 TONS EST FF 16 SY

TOE PROTECTION STA 126+34 – 128+50 –L– RT SEE DETAIL 44

TOE PROTECTION STA 131+50 – 133+96 –L– RT SEE DETAIL 44

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR –L– PROFILE SEE SHEET 36

3/10/2016
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barvan

8/17/99

REVISIONS

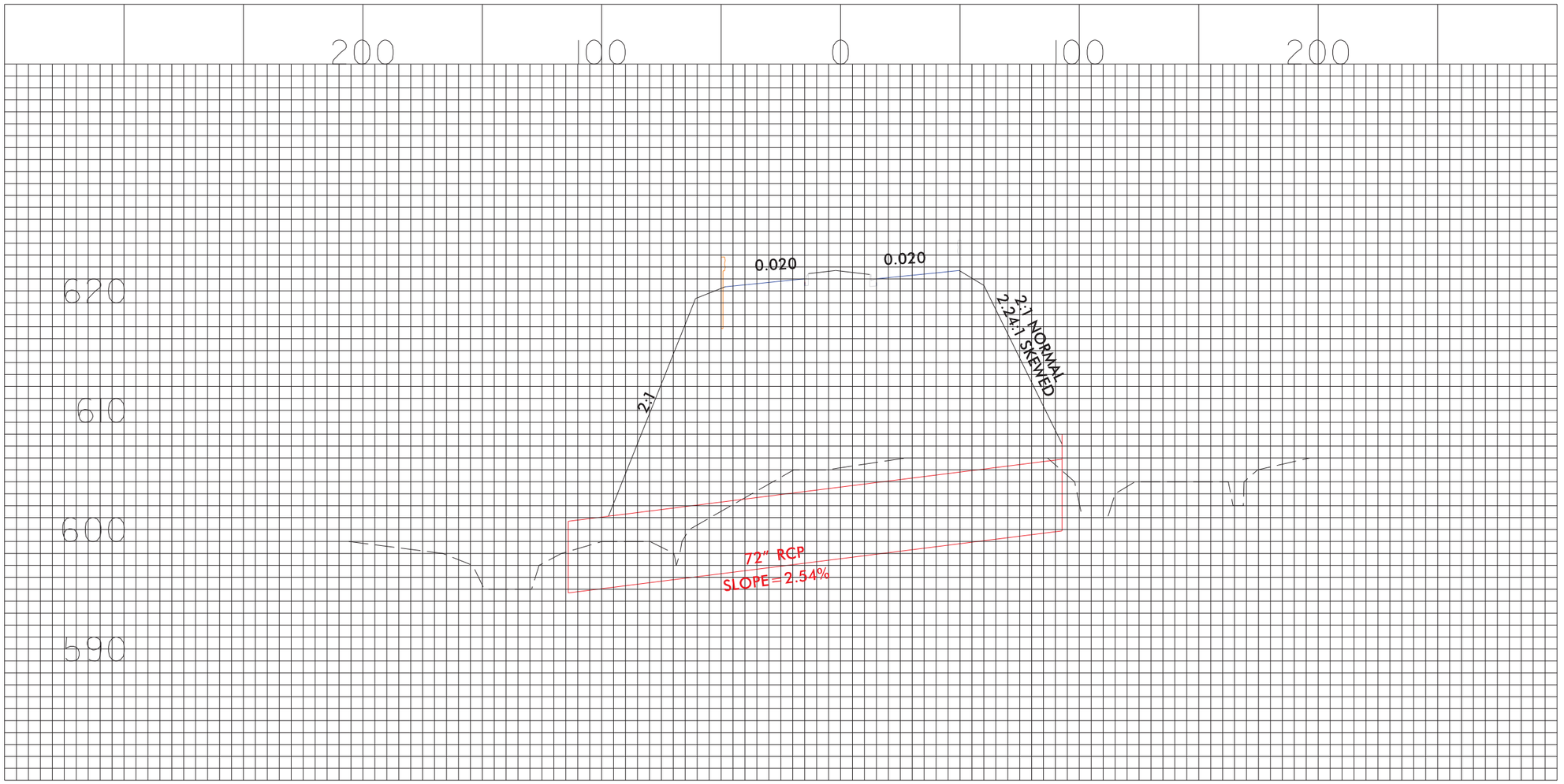
PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 15 OF 43

SITE 10



2/29/2016
03064
harvey
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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 16 OF 43

REVISIONS
8/17/99

NAD 83/95

MATCH LINE – SHEET 12 –L– STATION 134+00

MATCH LINE – SHEET 14 –L– STATION 145+00

–L– 135+00

–L– 140+00

–L– 145+00

–Y26– 20

–Y26– 25

A CAMPBELL HOLDINGS, LLC

A CAMPBELL HOLDINGS, LLC

NORTH CAROLINA RAILROAD COMPANY

RAY FAMILY SHARE TRUST

RAY FAMILY SHARE TRUST

SOUTHERN STATES COOPERATIVE, INC.

AMERIGAS PROPANE, LP

PREFORMED SCOUR HOLE DATA
Q10= 3.4 CFS

PSH SEE DETAIL

PDE

RETAIN

15" CSP w/ 2 ELBOWS

END WW FENCE

TYPE B-77

2GI NSFG

2GI FG

15" RCP-IV

12GI FG

N 24° 30' 15.0" W

S 76° 42' 11.2" E

48" WW

TOE

TS

JS

SITE 11

S S DENOTES IMPACTS IN SURFACE WATER

FOR –L– PROFILE SEE SHEET 36
FOR BR. SKETCH SEE SHEET 14

2/29/2016
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jharvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 17 OF 43

REVISIONS

8/17/99

NAD 83-95

MATCH LINE – SHEET 12 –L– STATION 134+00

MATCH LINE – SHEET 14 –L– STATION 145+00

–L– 135+00

–L– 140+00

–L– 145+00

A CAMPBELL HOLDINGS, LLC

NORTH CAROLINA RAILROAD COMPANY

RAY FAMILY SHARE TRUST

AMERIGAS PROPANE, LP

SOUTHERN STATES COOPERATIVE, INC.

PREFORMED SCOUR HOLE DATA
Q10= 3.4 CFS

PSH SEE DETAIL

15" CSP w/ 2 ELBOWS

RETAIN

PDE

END WW FENCE

TYPE B-77

15" RCP-IV

2GI NSFG

2GI FG

N 24° 30' 15.0" W

S 76° 42' 12" E

Y26-20

Y26-25

SITE 11

S S DENOTES IMPACTS IN SURFACE WATER

FOR –L– PROFILE SEE SHEET 36
FOR BR. SKETCH SEE SHEET 14

2/29/2016
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jharvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 18 OF 43

REVISIONS 8/17/99

MATCH LINE – SHEET 25 –Y16– STATION 19+00

NAD 83/95

MATCH LINE – SHEET 13 –L– STATION 145+00

MATCH LINE – SHEET 15 –L– STATION 157+00

MATCH LINE – SHEET 26 –Y16– STATION 28+00.00

NORTH CAROLINA RAILROAD COMPANY

PAMELA WILLIAMSON CLARK

RONALD E. MASSEY & LAWRENCE L. MASSEY

BRENDA COLEMAN

DONALD A SMITH FAMILY TRUST

WM 43 SUBSIDIARY LLC.

DAVID & GLENDA SOLOMON

ROLAND & JERI CHURCH

LESLIE PLUMB & WILLIAM & JENNIFER PETTY

ALLIE MARTIN, JR. & KENNETH MARTIN

SITE 12

SITE 12A

SPEC CUT DITCH STA 19+00 -L- STA 20+15 –Y16– RT SEE DETAIL 31

SPEC CUT DITCH STA 14+25 -L- STA 20+15 –Y16– LT SEE DETAIL 31

SPEC CUT DITCH STA 20+15 – STA 21+00 –Y16– RT SEE DETAIL 31

TAIL DITCH EST DDE +/- 24 CY SEE DETAIL 41

CLASS 'B' RIPRAP EST 5 TONS EST FF 14 SY

CLASS 'B' RIPRAP EST 3 TONS EST FF 10 SY

HEAD DITCH EST DDE +/- 13 CY SEE DETAIL 41

DISCHARGE AT THIS LOCATION= EXISTING: Q5=4.1 CFS, Q10=4.5 CFS PROPOSED: Q5=5.9 CFS, Q10=6.6 CFS

DISCHARGE AT THIS LOCATION= EXISTING: Q5=21.9 CFS, Q10=23.9 CFS PROPOSED: Q5=10.7 CFS, Q10=11.8 CFS

REMOVE EXIST 12" RCP TO R/W EST 60 LF

LAT 2' BASE DITCH W/CL 'B' RIPRAP STA 148+00 – STA 154+65 -L- RT EST 266 TONS EST FF 812 SY SEE DETAIL 15

HEAD DITCH EST DDE +/- 35 CY EST 17 TONS RIPRAP EST FF 34 SY SEE DETAIL 39

CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY

CLASS 'B' RIPRAP EST 8 TONS EST FF 21 SY

LAT V-DITCH STA 154+65 156+25 -L- RT SEE DETAIL 18

DO NOT DISTURB WATER VALVES, WATER METERS, AND VAULT. ORANGE ALAMANCE

DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES IMPACTS IN SURFACE WATER (POND)

BRIDGE PAVEMENT RELATIONSHIP SKETCH

BEGIN BRIDGE -L- Sta.142+24+/-

APPROACH SLAB -L- Sta.141+99+/-

APPROACH SLAB -L- Sta.148+14+/-

END BRIDGE -L- Sta.147+89+/-

FOR -L- PROFILE SEE SHEETS 36 & 37
FOR -Y16- PROFILE SEE SHEETS 50 & 51

3/10/2016
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barvan

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 19 OF 43

NAD 83/95

MATCH LINE – SHEET 25 –Y16– STATION 19+00

MATCH LINE – SHEET 13 –L– STATION 145+00

MATCH LINE – SHEET 15 –L– STATION 157+00

MATCH LINE – SHEET 26 –Y16– STATION 28+00.00

NORTH CAROLINA RAILROAD COMPANY

PAMELA WILLIAMSON CLARK

RONALD E. MASSEY & LAWRENCE L. MASSEY

BRENDA COLEMAN

WM 43 SUBSIDIARY LLC.

DONALD A SMITH FAMILY TRUST

DAVID & GLENDA SOLOMON

ROLAND & JERRY CHURCH

LESLIE PLUMB & WILLIAM & JENNIFER PETTY

ALLIE MARTIN JR & KENNETH MARTIN

SITE 12

SITE 12A

EDGEWOOD CH RD

SPEC CUT DITCH STA 19+00 L – STA 20+15 –Y16– RT SEE DETAIL 31

SPEC CUT DITCH STA 20+15 – STA 21+00 –Y16– RT SEE DETAIL 31

SPEC CUT DITCH STA 14+25 – STA 20+15 –Y16– LT SEE DETAIL 31

TAIL DITCH EST DDE +/- 24 CY SEE DETAIL 41

CLASS 'B' RIPRAP EST 5 TONS EST FF 14 SY

CLASS 'B' RIPRAP EST 3 TONS EST FF 10 SY

TAIL DITCH EST DDE +/- 13 CY SEE DETAIL 41

DISCHARGE AT THIS LOCATION: EXISTING: QS=4.1 CFS, Q10=4.5 CFS PROPOSED: QS=5.9 CFS, Q10=6.6 CFS

DISCHARGE AT THIS LOCATION: EXISTING: QS=21.9 CFS, Q10=23.9 CFS PROPOSED: QS=10.7 CFS, Q10=11.8 CFS

REMOVE EXIST 12" RCP TO R/W EST +/- 91 FT

LAT 2' BASE DITCH W/CL 'B' RIPRAP STA 148+00 – STA 154+65 – L – RT EST 266 TONS EST FF 812 SY SEE DETAIL 15

CLASS 'B' RIPRAP EST 2 TONS EST FF 7 SY

HEAD DITCH EST DDE +/- 35 CY EST 17 TONS RIPRAP EST FF 34 SY SEE DETAIL 39

LAT V-DITCH STA 154+65 156+25 – L – RT SEE DETAIL 18

CLASS 'B' RIPRAP EST 8 TONS EST FF 21 SY

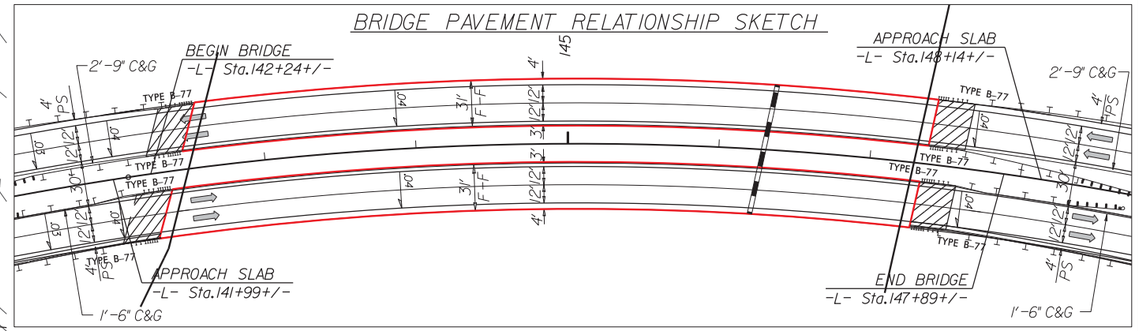
DO NOT DISTURB WATER VALVES, WATER METERS, AND VAULT. ORANGE ALAMANCE

DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES IMPACTS IN SURFACE WATER (POND)

BRIDGE PAVEMENT RELATIONSHIP SKETCH



FOR -L- PROFILE SEE SHEETS 36 & 37
FOR -Y16- PROFILE SEE SHEETS 50 & 51

3/10/2016
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barvan

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 20 OF 43

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

P P DENOTES IMPACTS IN SURFACE WATER (POND)

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS 8/17/99

SITE 12C

SITE 12B

SITE 12

SITE 12A

SITE 13

SITE 14

TAIL DITCH
EST DDE = 36 CY
SEE DETAIL 5

BREACH EXIST DAM AND DRAIN POND

CLASS 'B' RIPRAP
EST 5 TONS
EST GF 14 SY

ALLIE MARTIN, JR. & KENNETH MARTIN

WILLIE DAVIS, JR. & JOAN DAVIS

CLASS I RIPRAP
EST 32 TONS
EST GF 67 SY

ROCK FILL IN POND TO ELEV 588.6
EST 480 TONS
EST GF 600 SY
SEE DETAIL 52

BRETT M. MICHEAL & LISA W. NESBITT

MELVIN KING

ALBERT SHAW HEIRS

ALBERT SHAW HEIRS

VERONICA SMITH

WM 43 SUBSIDIARY LLC.

24" RCP-IV

15" RCP-IV

18" CSP w2 ELBOWS

15" CSP w2 ELBOWS

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

HAZARDOUS SPILL BASIN #1
SEE DETAIL 47

SLUICE GATE

LAT BASE DITCH
STA 162+25 – STA 162+35 -L- RT
SEE DETAIL 34

HEAD DITCH
EST DDE +/- 16 CY
SEE DETAIL 27

CLASS 'B' RIPRAP
EST 3 TONS
EST GF 10 SY

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

CLASS 'B' RIPRAP
EST +/- 3 TONS

TAIL DITCH
EST DDE +/- 7 CY
SEE DETAIL 40

CLASS 'B' RIPRAP
EST 11 TONS
EST GF 28 SY

BEGIN JS

36" RCP-III

LAT 2' BASE DITCH W/CL 'B' RIP RAP
STA 26+00 – STA 26+50 -Y16RPA- RT
EST 34 TONS
EST GF 86 SY
SEE DETAIL 15

CLASS 'B' RIPRAP
EST 3 TONS
EST GF 10 SY

HEAD DITCH
CLASS B RIPRAP
EST 13 TONS
EST GF 34 SY
EST DDE 18 CY
SEE DETAIL 39

LAT V-DITCH
STA 157+77 – STA 158+75 -L- RT
EST DDE=74 CY
SEE DETAIL 14

2GI GF

2GI NSGF

2GI NS

2GI FS

18" CSP w2 ELBOWS

66" RCP-IV

44° 22' 18" RT

NAD 83/95

-L- 160+00

-L- 165+00

-L- 170+00

MATCH LINE – SHEET 14 -L- STATION 157+00

MATCH LINE – SHEET 16 -L- STATION 170+00

MATCH LINE – SHEET 27 -Y16RPA- STATION 26+00

FOR -L- PROFILE SEE SHEET 37
FOR -Y16RPA- PROFILE SEE SHEET 52

2/1/2017
03109A_Hyd_prm_wet_psh_15.dgn
rhines

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 21 OF 43

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

P P DENOTES IMPACTS IN SURFACE WATER (POND)

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS 8/17/99

MATCH LINE – SHEET 14 –L– STATION 157+00

MATCH LINE – SHEET 16 –L– STATION 170+00

MATCH LINE – SHEET 27 –Y16RPA– STATION 26+00

SITE 12C

SITE 12B

SITE 12

SITE 12A

SITE 13

SITE 14

TAIL DITCH EST DDE = 36 CY SEE DETAIL 5

BREACH EXIST DAM AND DRAIN POND

CLASS 'B' RIPRAP EST 5 TONS EST GF 14 SY

24" HDPE

ALLIE MARTIN, JR. & KENNETH MARTIN

WILLIE DAVIS, JR. & JOAN DAVIS

CLASS I RIPRAP EST 82 TONS EST GF 55 SY

ROCK FILL IN POND TOP ELEV 588.6 EST 480 TONS EST GF 600 SY SEE DETAIL 52

BRETT M. MICHEAL & LISA W. NESBITT

MELVIN KING

ALBERT SHAW HEIRS

WM 43 SUBSIDIARY LLC

VERONICA SMITH

15" RCP-IV

18" RCP-IV

24" RCP-IV

36" RCP-IV

42" RCP-IV

15" CSP W/ 2 ELBOWS

18" CSP W/ 2 ELBOWS

2GI NSGF

2GI GF

2GI NS

2GI NSGF 18"

CLASS 'B' RIPRAP EST 2 TONS EST GF 7 SY

CLASS 'B' RIPRAP EST +/- 3 TONS

CLASS 'B' RIPRAP EST 2 TONS EST GF 7 SY

CLASS 'B' RIPRAP EST 13 TONS EST GF 10 SY

CLASS 'B' RIPRAP EST 11 TONS EST GF 28 SY

CLASS 'B' RIPRAP EST 3 TONS/ EST GF 10 SY

HAZARDOUS SPILL BASIN #1 SEE DETAIL 47

SLUICE GATE

LAT BASE DITCH STA 162+29 – STA 162+35 –L– RT SEE DETAIL 34

HEAD DITCH EST DDE +/- 16 CY SEE DETAIL 27

TAIL DITCH EST DDE = 7 SY SEE DETAIL 40

LAT 2' BASE DITCH W/CL 'B' RIP RAP STA 26+00 – STA 26+50 –Y16RPA– RT EST 34 TONS EST GF 66 SY SEE DETAIL 15

HEAD DITCH CLASS B RIPRAP EST 13 TONS EST GF 34 SY EST DDE 18 CY SEE DETAIL 39

LAT V-DITCH STA 157+77 – STA 158+75 –L– RT EST DDE=74 CY SEE DETAIL 14

BEGIN JS

PDE

NAD 83/95

165400

170400

FOR –L– PROFILE SEE SHEET 37

FOR –Y16RPA– PROFILE SEE SHEET 52

2/1/2017
U3109A_Hyd_prm_wet_psh_15_con.dgn
mbines

8/17/99

REVISIONS

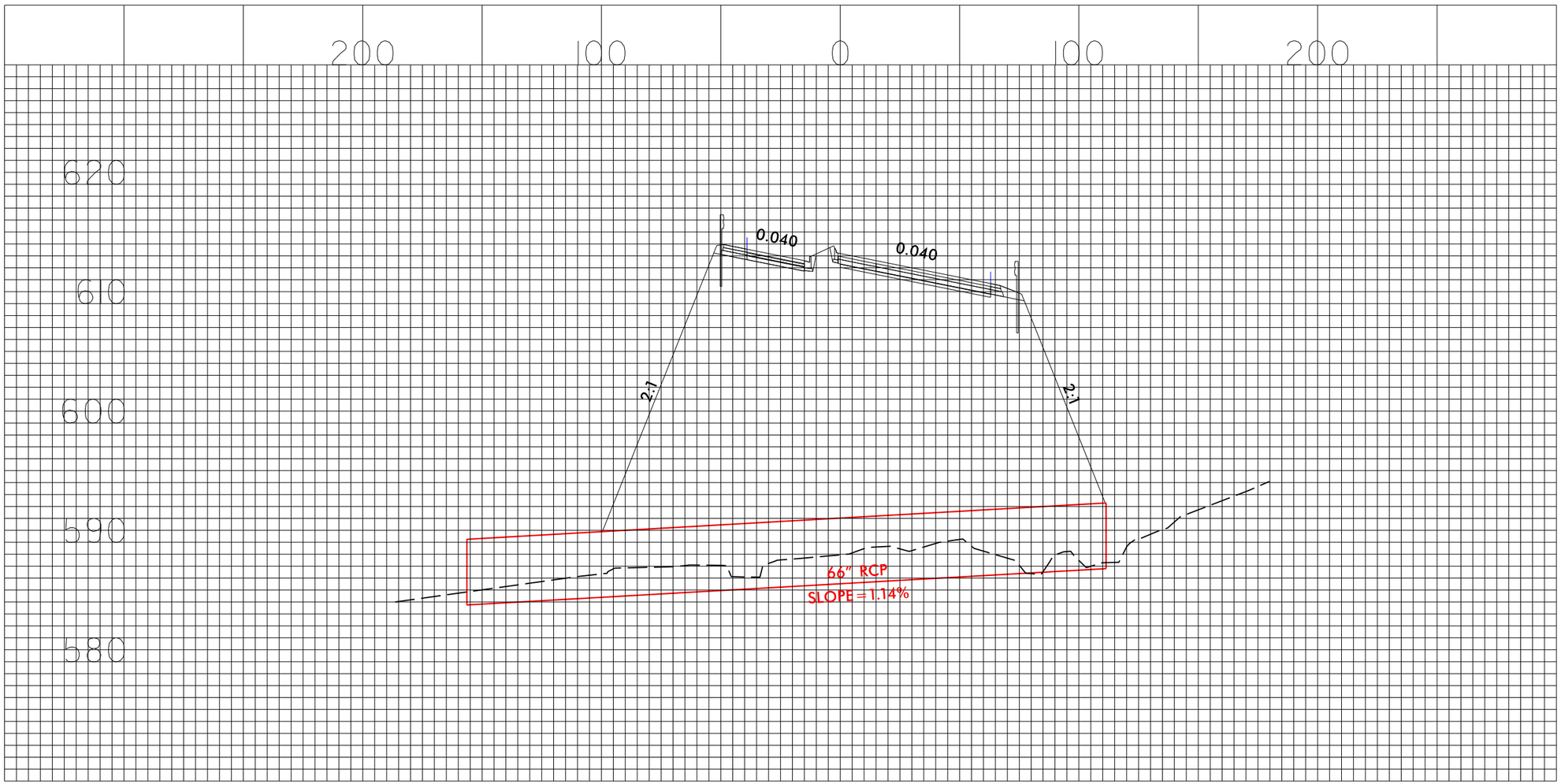
PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 22 OF 43

SITE 13



2/1/2017
03109A_Hyd_prm_wet_psh_15_xsc.dgn
shines

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 23 OF 43

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/95

MATCH LINE – SHEET 15 –L– STATION 170+00

MATCH LINE – SHEET 17 –L– STATION 181+00

-L- 170+00

-L- 180+00

BRETT M. MICHEAL & LISA W. NESBITT

MELVIN KING

MELVIN KING

VERONICA SMITH

EIPO

MELVIN KING

HEIRS OF VIOLA BAYNES

HAROLD & ELIZABETH HALACHEFF

ISFD

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 31 TONS
EST FF 47 SY

SITE 15

PDE

PROP. 1@10' X 7' RCBC

CLASS 'B' RIPRAP
EST 5 TONS
EST FF 14 SY

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 34 TONS
EST FF 50 SY

SLUICE GATE

CLASS 'B' RIPRAP
EST 8 TONS
EST FF 21 SY

LAT BASE DITCH
STA 179+03 – 180+00 –L– RT
SEE DETAIL 20

HAZARDOUS SPILL BASIN #2
SEE DETAIL 47

LAT BASE DITCH W/CL 'B' RIPRAP
STA 180+00 – 188+00 –L– RT
EST 456 TONS
EST FF 977 SY
SEE DETAIL 15

FS 2GI NS

15" RCP-III

18" RCP-III

JB w/MH

-L-

N 53° 25' 30.3" E

2GI NSFG

15" RCP-IV

24" RCP-III

AXLE

TS

+20.00 -L- 105.00 RT

1 @ 10' X 7' W/ SILLS, BAFFLES, AND BEVELED HEADWALL (NTS)

*NOTES:
1) BED MATERIAL BETWEEN BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL THE BED MATERIAL SHALL BE NATIVE MATERIAL WHICH CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEERING AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) BAFFLES ARE TO BE 5.5 FT. WIDE X 1.7 FT. HIGH, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) TOP OF SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

4) CLASS 'B' RIP RAP MAY BE USED TO SUPPLEMENT NATIVE MATERIAL. NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE.

10' 7.0' 5.5' 1.0' 4.5' 1.7'

1.0' 1.7' TYP. 3'

FLOOD PLAIN BENCH
COIR MATTING
4.5' CHANNEL
SILL
SILL
BAFFLE
COIR MATTING
FLOOD PLAIN BENCH

FOR -L- PROFILE SEE SHEETS 37 & 38

REVISIONS

8/17/99

2/29/2016
03109A_hyd_prm_wet_psh_16.dgn
harvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 24 OF 43

DENOTES IMPACTS IN SURFACE WATER

MATCH LINE – SHEET 15 –L– STATION 170+00

MATCH LINE – SHEET 17 –L– STATION 181+00

BRETT M. MICHEAL & LISA W. NESBITT

MELVIN KING

VERONICA SMITH

HEIRS OF VIOLA BAYNES

HAROLD & ELIZABETH HALCHEFF

SITE 15

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 31 TONS
EST FF 42 SY

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 34 TONS
EST FF 50 SY

CLASS B RIPRAP
EST 5 TONS
EST FF 14 SY

CLASS A RIPRAP
EST 9 TONS
EST FF 21 SY

LAT BASE DITCH
STA 179+03 – 181+00 – RT
SEE DETAIL 20

HAZARDOUS SPILL BASIN #2
SEE DETAIL 47

LAT BASE DITCH W/CL B RIPRAP
STA 180+00 – 188+00 –L– RT
EST 456 TONS
EST FF 877 SY
SEE DETAIL 15

SLUICE GATE

N 53° 25' 30.5"E

1 @ 10'X 7' W/ SILLS, BAFFLES, AND BEVELED HEADWALL (INTS)

1) BED MATERIAL BETWEEN BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. THE BED MATERIAL SHALL BE NATIVE MATERIAL WHICH CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEERING AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) BAFFLES ARE TO BE 2.5 FT. WIDE X 1.7 FT. HIGH, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) TOPS OF SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM (TYPICAL).

4) CLASS B RIP RAP MAY BE USED TO SUPPLEMENT NATIVE MATERIAL. (NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE.

FLOOD PLAIN BENCH
COIR MATTING
4.5' CHANNEL
SILL
BAFFLE
COIR MATTING
FLOOD PLAIN BENCH

FOR –L– PROFILE SEE SHEETS 37 & 38

REVISIONS

8/17/99

2/29/2016
U3109A_hyd_prm_wet_psh_16_con.dgn
harvey

8/17/99

REVISIONS

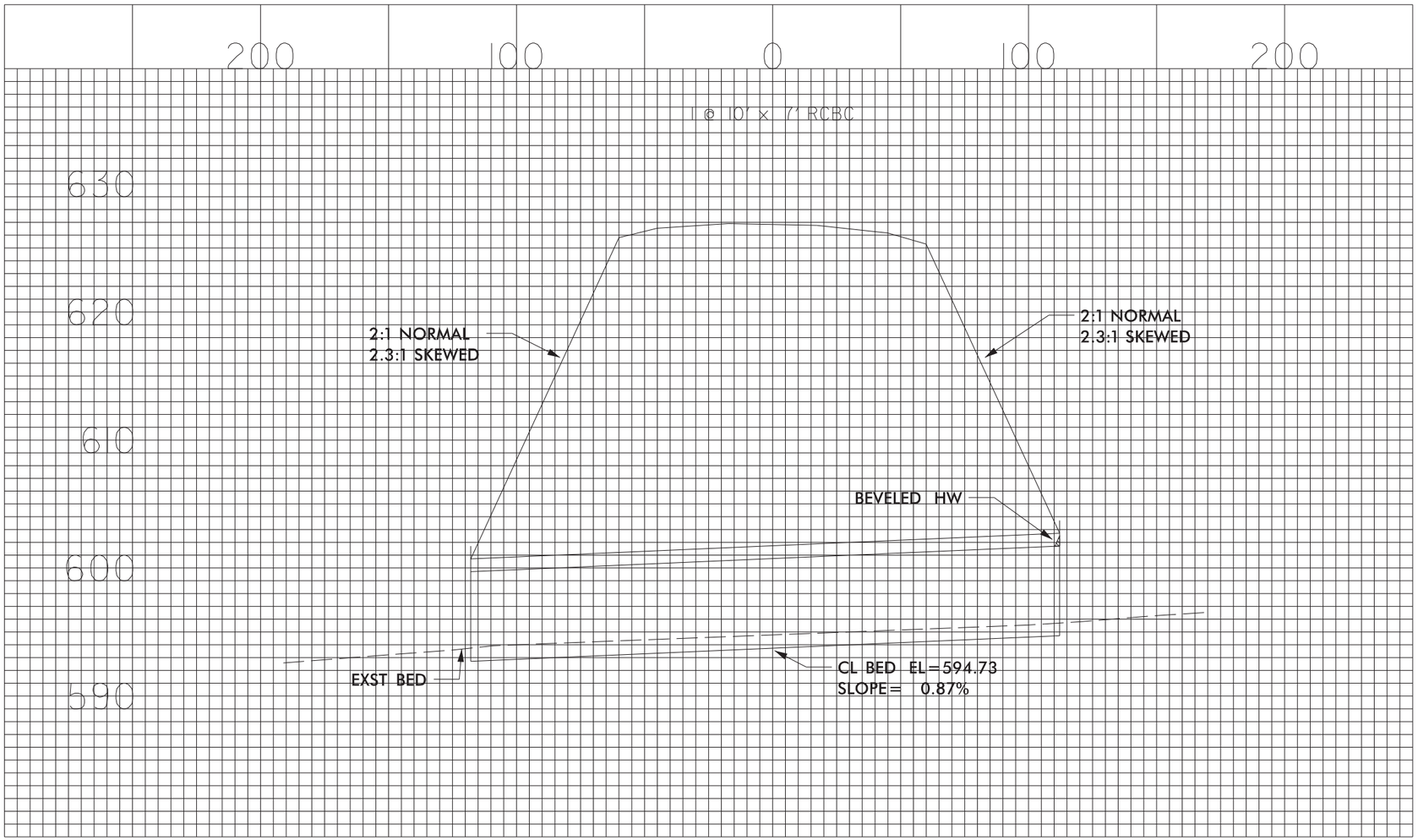
PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 25 OF 43

SITE 15



3/29/2016
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harvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 26 OF 43

8/17/99

REVISIONS

NAD 83/95

MATCH LINE – SHEET 26 –Y16RPA– STATION 13+00

MATCH LINE – SHEET 15 –Y16RPA– STATION 26+00

–Y16RPA– 20

–Y16RPA– 15

–Y16RPA– 25

WE 622'

EIP

GR

RW

BOS

TAIL DITCH
EST DDE +/– 43 CY
SEE DETAIL 40

PDE

WM 43 SUBSIDIARY LLC.

SPEC LAT 2' BASE DITCH W/CL 'B' RIPRAP
STA 20+00 – STA 21+05 –Y16RPA– LT
EST 42 TONS
EST FF 128 SY
CLASS 'B' RIPRAP SEE DETAIL 21
EST 3 TONS
EST FF 10 SY

SLUICE GATE

HAZARDOUS SPILL BASIN #3
SEE DETAIL 47

ALBERT SHAW HEIRS

TAIL DITCH
EST DDE +/– 23 CY
SEE DETAIL 29

CLASS 'B' RIPRAP
EST 3 TONS
EST FF 10 SY

CLASS I RIPRAP
ON BANKS ONLY
EST 9 TONS
EST FF 14 SY

TAIL DITCH
EST DDE +/– 13 CY
SEE DETAIL 40

CLASS 'B' RIPRAP
EST 11 TONS
EST FF 28 SY

36" RCP-III

HEAD DITCH
EST DDE +/– 15 CY
SEE DETAIL 40

ALBERT SHAW HEIRS
DB 116 PG 226

HEAD DITCH
EST DDE +/– 43 CY
EST 33 TONS RIPRAP
EST FF 68 SY
SEE DETAIL 42

VERONICA SMITH

15" RCP-III

2GI NS FS

N 6° 11' 32.6" W

HEAD DITCH
EST DDE +/– 15 CY
SEE DETAIL 29

42" RCP-III

SITE 16

SPEC CUT DITCH
STA 23+50 –
STA 24+09 –Y16RPA– RT
SEE DETAIL 31

BERM DITCH
STA 21+00 – 23+90 –Y16RPA– RT

HEAD DITCH
EST DDE +/– 43 CY
EST 33 TONS RIPRAP
EST FF 68 SY
SEE DETAIL 42

RICHARD HOLT

ROLLINS CHAVIS

ROGER FOUST
(ANNIE FOUST HEIR)

ISFD

ISBWD

CANOPY

S DENOTES IMPACTS IN SURFACE WATER

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR –Y16RPA– PROFILE SEE SHEET 52

2/29/2016
U3109A_hyd_prm_wet_psh_27.dgn
hgarvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 27 OF 41

8/17/99

REVISIONS

NAD 83/95

MATCH LINE – SHEET 26 –Y16RPA– STATION 13+00

MATCH LINE – SHEET 15 –Y16RPA– STATION 26+00

-Y16RPA-

-Y16RPA-

WE 622'

WM 43 SUBSIDIARY LLC.

ALBERT SHAW HEIRS

ALBERT SHAW HEIRS
DB 116 PG 226

VERONICA SMITH

RICHARD BOLT

ROLLINS CHAVIS

ROGER FOUST
(ANNIE FOUST HEIR)

SITE 16

SLUDGE GAFE

HAZARDOUS SILL BASIN #3
SEE DETAIL 47

SPEC LAT 2' BASE DITCH W/CL 'B' RIPRAP
STA 20+00 – STA 21+05 -Y16RPA- RT
EST 42 TONS
EST FF 126 SY

CLASS 'B' RIPRAP SEE DETAIL 21
EST 3 TONS
EST FF 10 SY

TAIL DITCH
EST DDE +/- 43 CY
SEE DETAIL 40

TAIL DITCH
EST DDE +/- 23 CY
SEE DETAIL 29

CLASS 'B' RIPRAP
EST 3 TONS
EST FF 10 SY

CLASS 'I' RIPRAP
ON BANKS ONLY
EST 9 TONS
EST FF 14 SY

TAIL DITCH
EST DDE +/- 13 CY
SEE DETAIL 40

CLASS 'B' RIPRAP
EST 11 TONS
EST FF 28 SY

HEAD DITCH
EST DDE +/- 15 CY
SEE DETAIL 40

HEAD DITCH
EST DDE +/- 43 CY
EST 33 TONS RIPRAP
EST FF 68 SY
SEE DETAIL 42

HEAD DITCH
EST DDE +/- 15 CY
SEE DETAIL 29

SPEC CUT DITCH
STA 23+50 –
STA 24+09 -Y16RPA- RT
SEE DETAIL 21

BERM DITCH
STA 21+00 – 23+90 -Y16RPA- RT

HEAD DITCH
EST DDE +/- 43 CY
EST 33 TONS RIPRAP
EST FF 68 SY
SEE DETAIL 42

15" RCP-III

18" RCP-III

2GI NS

FS

HW

PDE

JS

TS

S

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR -Y16RPA- PROFILE SEE SHEET 52

2/29/2016
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harvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 28 OF 43

8/17/99

REVISIONS

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/95

MATCH LINE – SHEET 18 –Y20– STATION 29+00

MATCH LINE

-Y20- 30

-Y20- 35

MARSHA ALTMEYER

MARSHA ALTMEYER

WINDSOR INVESTMENTS, LLC

CONSERVATION EASEMENT

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

HAZARDOUS SPILL BASIN #4
SEE DETAIL 47

SLUICE GATE

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 8 TONS
EST GF 17 SY
SEE DETAIL 37

+20.00 –Y20– 80.00' LT

SPEC CUT DITCH
STA 26+50 – STA 30+00 –Y20– LT
SEE DETAIL 31

NO UTILITY RECORDS MAPPED BY FIELD INSPECTION

REMOVE

N 83°55'18.5" E

8" ASBESTOS CONCRETE

10" ASBESTOS CONCRETE

12" RCP

24" RCP

48" WWF

15" UTILITY EASEMENT PB 60 PG 102

30' UTILITY EASEMENT PB 60 PG 102

ROBERT GERARDI

ROBERT J. GERARDI

SITE 17

SPEC CUT DITCH W/PSRM
STA 32+00 – 33+10 –Y20– RT
EST. +/– 39 SY
SEE DETAIL 43

SPEC LAT V-DITCH
STA 33+10 – 34+25 –Y20– RT
SEE DETAIL 6

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 8 TONS
EST GF 17 SY
SEE DETAIL 37

JOHNSON CHAPEL A.M.E. CHURCH

48" CULVERT

PUE DUE JS FSS EIP EIR

FOR -Y20- PROFILE SEE SHEET 53 & 54
FOR -Y20DET- SEE SHEET 2-N

2/1/2017
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jhines

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 29 OF 43

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/95

MATCH LINE – SHEET 18 –Y20– STATION 29+00

MARSHA ALTMEYER

MARSHA ALTMEYER

WINDSOR INVESTMENTS, LLC

-Y20- 30

-Y20- 35

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

HAZARDOUS SPILL BASIN #4
SEE DETAIL 47

SLUICE GATE

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 8 TONS
EST GF 18 SY
SEE DETAIL 37

SPEC CUT DITCH
STA 28+99 -Y20- RT
STA 30+08 -Y20- RT
SEE DETAIL 31

NO UTILITY RECORDS
MAPPED BY FIELD INSPECTION

10" ASBESTOS CONCRETE

8" ASBESTOS CONCRETE

N 83°55'18.5" E

SITE 17

SPEC CUT DITCH W/PSRM
STA 32+08 - 33+10 -Y20- RT
EST 39 SY
SEE DETAIL 43

SPEC LAT V-DITCH
STA 33+10 - 34+25 -Y20- RT
SEE DETAIL 6

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 8 TONS
EST GF 17 SY
SEE DETAIL 37

JOHNSON CHAPEL A.M.E. CHURCH

ROBERT J. GERARDI

ROBERT GERARDI

WEST LAKE TR 30' EST

FOR -Y20- PROFILE SEE SHEET 53 & 54
FOR -Y20DET- SEE SHEET 2-N

REVISIONS

8/17/99

2/1/2017
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mbrues

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
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 43

SITE 17

CULVERT REMOVED FROM PROJECT SECTION NO LONGER NEEDED

2/6/2017
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bgravu

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 31 OF 43

NAD 83/95

MATCH LINE – SHEET 31 –Y10– STATION 23+50

REVISIONS 8/17/99

2/29/2016
U3109A_hyd_prm_wet_psh_30.dgn
jhar-vey

TOWN OF MEBANE.

8" ASBESTOS CONCRETE

PARKING AREA BST

CORRIDOR RD 17' BST

ISB BUS

TANK

TANK

WATER VAULT

REMOVE EXIST BRIDGE

STREAMBANK STABILIZATION CLASS I RIPRAP EST 45 TONS EST FF 85 SY

RETAIN

TIE FRONT DITCH SLOPE TO BOTTOM OF EXISTING DITCH STA 15+00 – 15+50 –Y10– LT

LAT 2' BASE DITCH STA 19+45– STA 20+40 –Y10– LT EST 38 TONS EST FF 121 SY SEE DETAIL 20

FLOODPLAIN BENCH

2' SILL

BEGIN CULVERT STA. 19+63.69

END CULVERT STA. 19+90.78

LAT 2' BASE DITCH STA 18+50 – STA 19+98 –Y10– RT SEE DETAIL 15

PROP. 2@10' X 8' RCBC

STREAMBANK STABILIZATION SEE DETAIL 37

FLOODPLAIN BENCH

MAY NEED TO ENCASE SANITARY SEWER IN CONCRETE

SITE 18

SITE 19

N 16°05'26"W 204.00'

N 54°58'25"E 423.00'

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

FOR –Y10– PROFILE SEE SHEETS 48 & 49

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 32 OF 43

NAD 83/95

MATCH LINE – SHEET 31 –Y10– STATION 23+50

TOWN OF MEBANE

STREAMBANK STABILIZATION CLASS I RIPRAP EST 45 TONS EST FF 88 SY

REMOVE EXIST BRIDGE

TIE FRONT DITCH SLOPE TO BOTTOM OF EXISTING DITCH STA 15+00 –Y5– LT –Y10– LT

RETAIN

LAT 2' BASE DITCH STA 19+45– STA 20+40 –Y10– LT EST 38 TONS EST FF 121 SY SEE DETAIL 20

FLOODPLAIN BENCH

GRAU 350

N 16°05'26" E

END CULVERT STA 19+90.78 2' SILL

BEGIN CULVERT STA 19+63.59

LAT 2' BASE DITCH STA 18+50 – STA 19+98 –Y10– RT SEE DETAIL 13

PROP 2@10'X6' RCBC

STREAMBANK STABILIZATION SEE DETAIL 17

SITE 18

SITE 19

FLOODPLAIN BENCH

MAY NEED TO ENCASE SANITARY SEWER IN CONCRETE

WATER VAULT

NO WATER LINE ON FRONT PUT IN BY FIELD INSPECTION

PARKING AREA BST

CORRIDOR RD 17' BST

8" ASBESTOS CONCRETE

36" HDPE

30" CMP

C&G

CONC

BST

TDE

TS

JS

RW

N 54°58'25" E 423.40'

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

FOR –Y10– PROFILE SEE SHEETS 48 & 49

REVISIONS

8/17/99

2/29/2016
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jhar-veu

8/17/99

REVISIONS

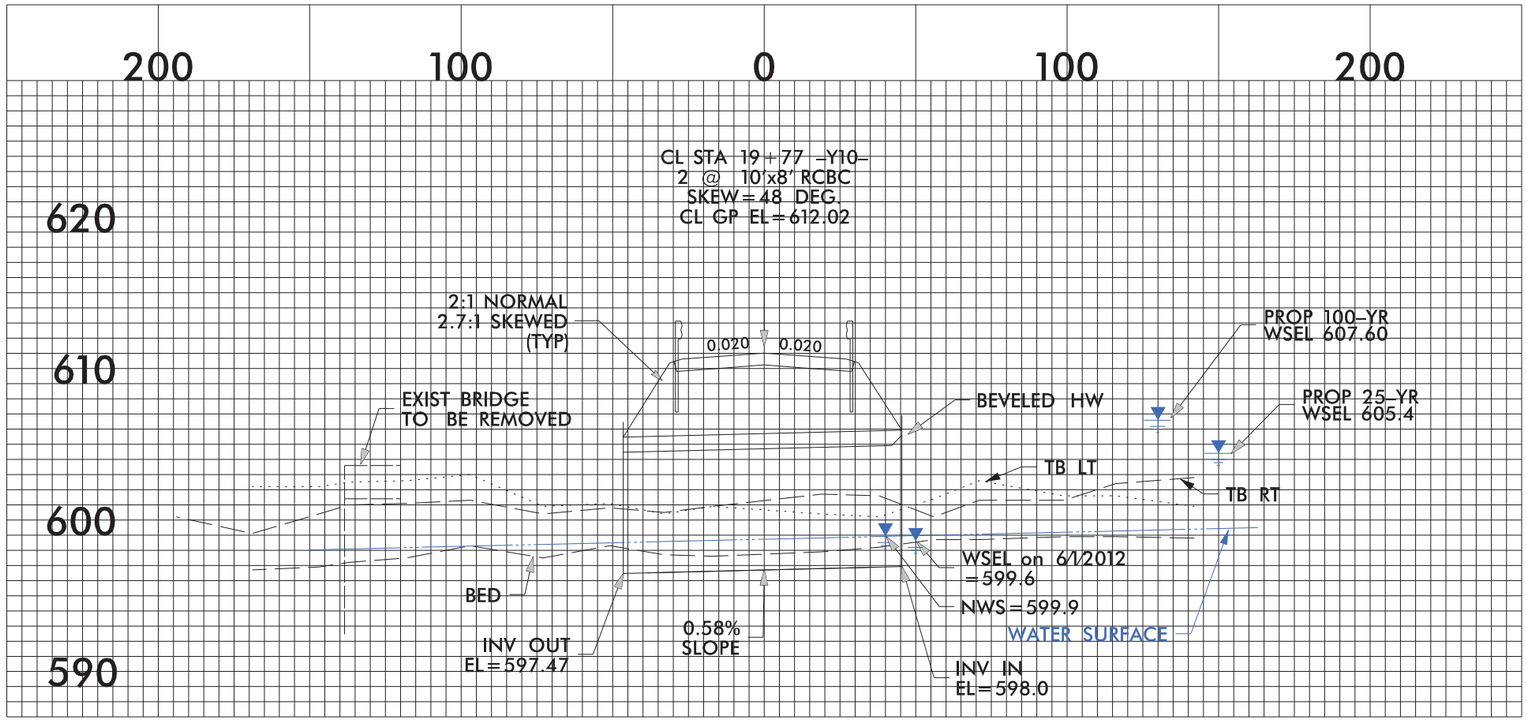
PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 33 OF 43

SITE 18



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harvey
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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 34 OF 43

REVISIONS 8/17/99

NAD 83/95

MATCH LINE – SHEET 31 –Y10– STATION 23+50

-Y10- 25

-Y10- 30

-Y10- 35

CORRIGIDOR RD 17' BST

TOWN OF MEBANE.

WHITFIELD, CLIFFORD T.

SNIPES, MARILYN HOLT

COLEMAN, JAMES

SETTLE, JOHN D.
SETTLE, LEE W.
SETTLE, ROBERT K.

CLEOTHER, LATTA HEIRS.

HOLT, MATTHEW HEIRS

CONGDON, BRIAN E. & SARAH J.

LATTA.

CHRISTOPHER, DAVID E & AMELIA

OBLINGER, BARRIE W.

N 13° 04' 10.9" W

N 84° 47' 12.4" E

S 86° 07' 02.2" E

S 86° 06' 43.0" E

SITE 20

SPEC LAT V-DITCH W/PSRM
STA 32+50 – 33+65 –Y10– LT
EST. +/– 41 SY
SEE DETAIL 35

HEAD DITCH
EST DDE +/– 11 CY
SEE DETAIL 40

SPEC LAT V-DITCH
STA 33+75 – STA 35+50 –Y10– LT
SEE DETAIL 6

SPEC LAT V-DITCH W/PSRM
STA 36+50 – STA 37+00 –Y10– LT
EST. +/– 18 SY
SEE DETAIL 35

REMOVE

HEAD DITCH
EST DDE +/– 42 CY
SEE DETAIL 29

60" RCP III

TAIL DITCH
EST DDE +/– 37 CY
SEE DETAIL 29

END JS

CLASS 'B' RIPRAP
EST +/– 3 TONS

CLASS I RIPRAP
ON BANKS ONLY
EST 12 TONS
EST GF 20 SY

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 8 TONS
EST GF 17 SY
SEE DETAIL 37

SPEC LAT 2' BASE DITCH W/PSRM
STA 10+65 – STA 13+50 –Y11– LT
EST. +/– 165 SY
SEE DETAIL 25

CLASS 'B' RIPRAP
EST 11 TONS
EST GF 28 SY
TAIL DITCH
EST DDE +/– 20 CY
SEE DETAIL 40

SPEC LAT V-DITCH
STA 13+50 – STA 14+50 –Y11– LT
SEE DETAIL 6

SPEC LAT V-DITCH
STA 36+00 – 36+80 –Y10– RT
SEE DETAIL 6

FOR –Y10– PROFILE SEE SHEET 48&49
FOR –Y11– PROFILE SEE SHEET 49

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

MATCH LINE – INSERT –Y11– STATION 16+00

MATCH LINE – INSERT –Y11– STATION 16+00

SPEC CUT DITCH
ACCENT BUILDERS & DESIGN INC
STA 17+32 –Y11– LT
EST. +/– 32 SY
SEE DETAIL 46

DO NOT DISTURB SHED
DO NOT DISTURB CONC. PAD
HEAD DITCH
EST DDE +/– 5 CY
SEE DETAIL 40

WOODS, ROBERT S.

HARMON, JOHN H.

OAKLEY, CHAD

HARMON, JOHN H.

SLOANE, WILL

SR 1970 ROOSEVELT ST 18' BST

CLASS 'B' RIPRAP
EST 9 TONS
EST GF 30 SY

ACCENT BUILDERS & DESIGN INC

SMITH, ANGENETT S.

SPEC LAT V-DITCH W/PSRM
STA 18+00 –Y11– RT
EST. +/– 32 SY

MORRIS, BARBARA R. / JEAN C ROGERS

NAD 83/95

10/5/2016
U3109A_Hyd_prm_wet_psh_31.dgn
kbinns

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 35 OF 43

REVISIONS 8/17/99

NAD 83/95

MATCH LINE – SHEET 31 –Y10– STATION 23+50

-Y10- 25

-Y10- 30

-Y10- 35

CORRIDOR RD 12" BST

TOWN OF MEBANE

CONC

MH

MH

MH

8/17/99

REVISIONS

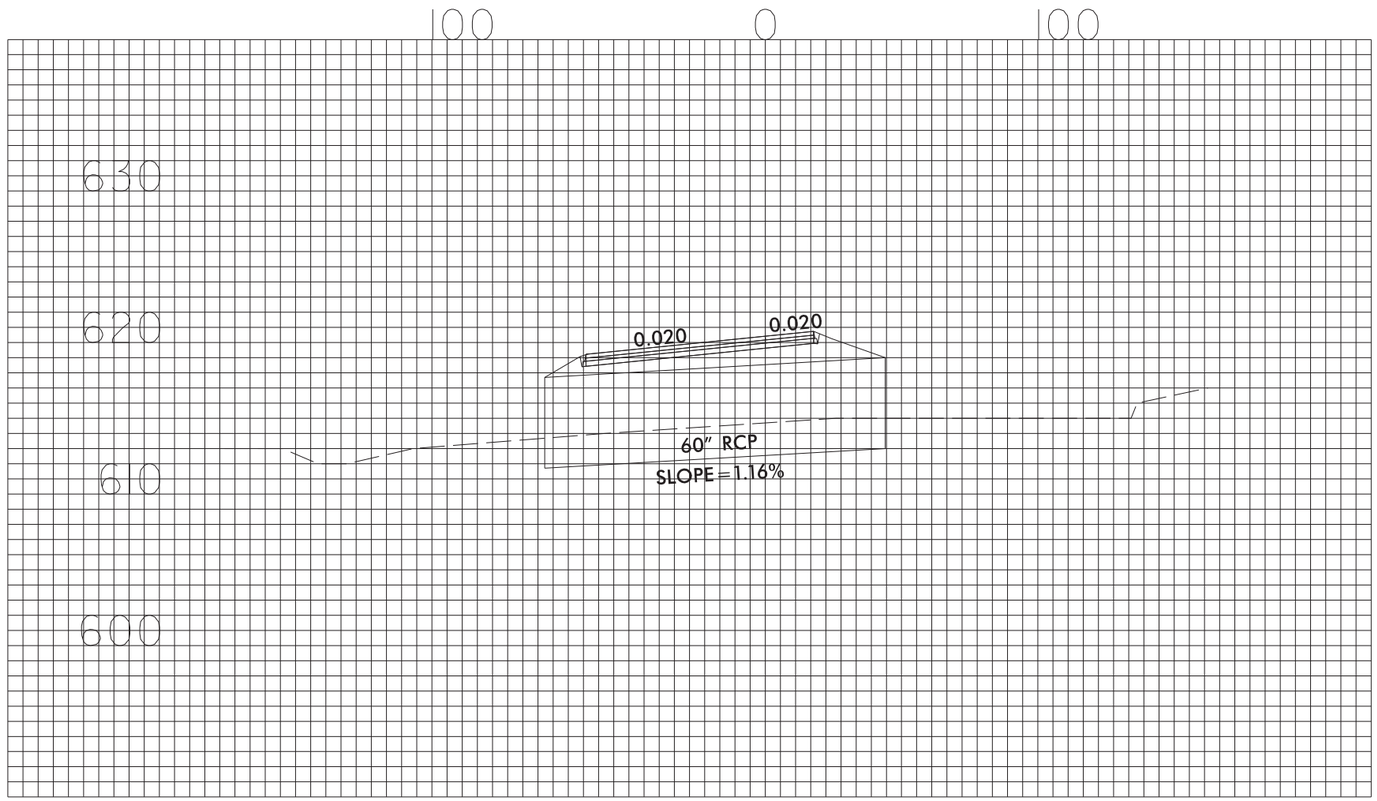
PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 36 OF 43

SITE 20



2/28/2016
03194G1hyd_prm_wet_psh_31_xsc.dgn
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-3109A	X-53

PERMIT DRAWING
SHEET 37 OF 43

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

630 620 610 600 590

2.16:1 6:1 603.09 0.020 615.04 0.020 6:1 4.97:1 604.45

115 + 00.00

2.18:1 6:1 602.47 0.020 610.68 0.020 6:1

114 + 50.00

WETLAND BOUNDARY

SITE 9

FILL IN WETLAND
MECHANIZED CLEARING

2.20:1 6:1 601.85 0.020 608.45 0.020 4:1

114 + 00.00

4.236:1 2:1 612.77 2.23:1 6:1 601.23 0.020 606.75 0.020 4:1

113 + 50.00

2/29/2016
U3109A_hyd_prm_wet_xpl-L-_53.dgn
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-3109A	X-81

PERMIT DRAWING
SHEET 38 OF 43

640 630 620 610 600 590

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

0.040 0.040

2:1 2:1

601.29

156 + 50.00

SITE 12

0.040 0.040

2:1 2:1 2:1 2:1 2:1

WETLAND BOUNDARY

WETLAND BOUNDARY

FILL IN WETLAND

599.52

606.46

156 + 00.00

0.040 0.040

2:1 2:1 2:1 2:1 2:1

602.54

606.13

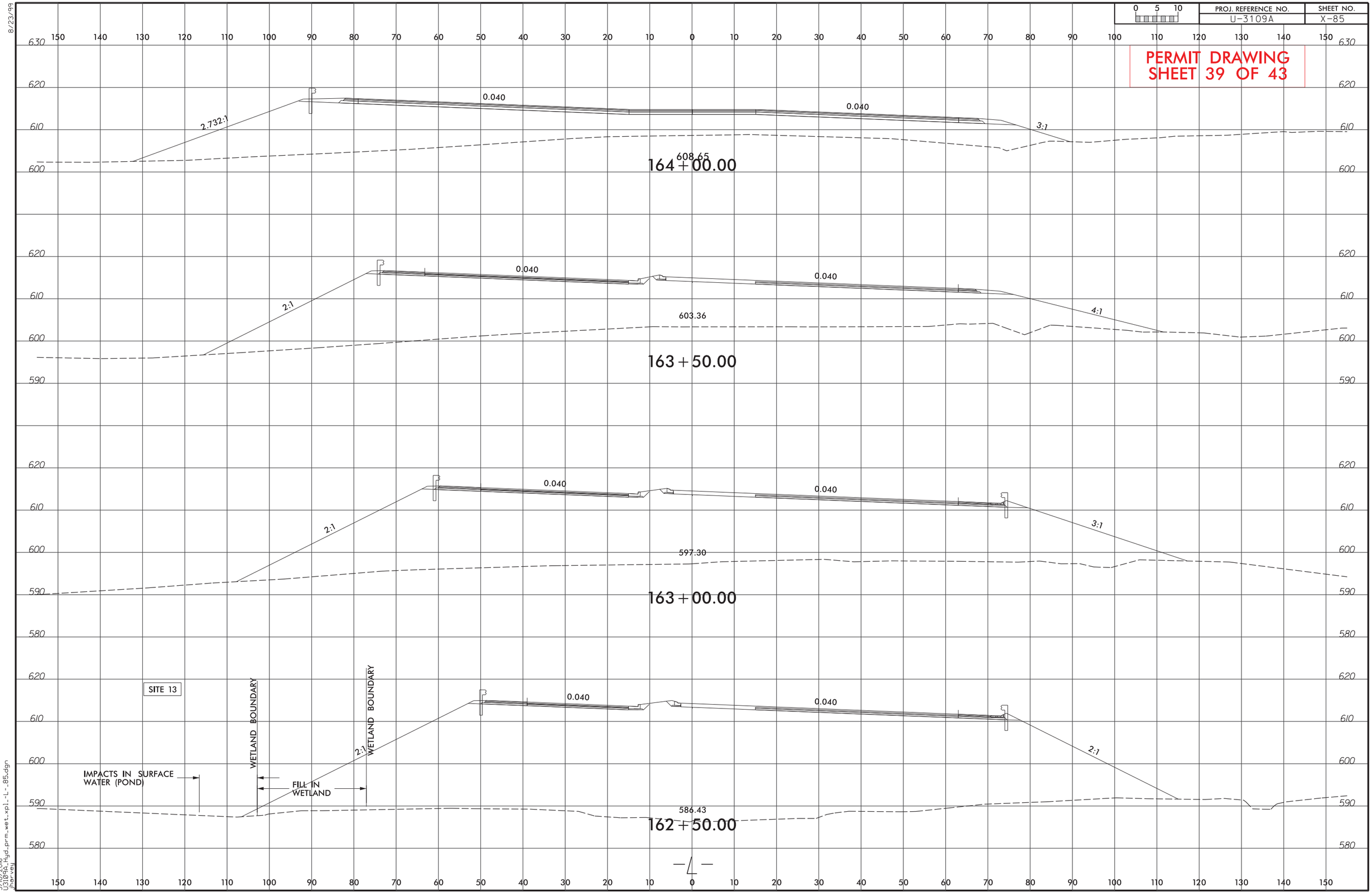
155 + 50.00

2/29/2016
U3109A_hyd_prm_wet_xpl_-L-_81.dgn
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-3109A	X-85

PERMIT DRAWING
SHEET 39 OF 43



3/10/2016
U3109A_grd_prm_wet_xpl_-L-_85.dgn
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-3109A	X-175

PERMIT DRAWING
SHEET 40 OF 43

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

630 620 610 600 590

0.020 0.020
4:1 4:1
2:1
605.80
607.21
22+00.00

0.020 0.020
2:1 2:1 2:1 4:1
604.63
606.97
21+50.00

SITE 19

WETLAND BOUNDARY
WETLAND BOUNDARY

0.020 0.020
2:1 2:1
FILL IN WETLAND
2:1
2:1 2:1
603.47
605.23
21+00.00

0.020 0.020
2:1 2:1
3:1 3:1
602.38
603.62
20+50.00

-Y10-

2/29/2016
U3109A_hyd_prm_wet_xpl_-Y10-_175.dgn
jharvey

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-3109A	X-179

PERMIT DRAWING
SHEET 41 OF 43

640 630 620 610

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

2:1 4:1 0.019 0.019 617.30 615.30

29 + 50.00

SITE 20

WETLAND BOUNDARY
MECHANIZED CLEARING
IMPACTS IN SURFACE WATER
WETLAND BOUNDARY
FILL IN WETLAND
EXCAVATION
MECHANIZED CLEARING

2:1 4:1 0.005 0.005 616.70 617.25

29 + 00.00

2:1 4:1 0.029 0.029 615.73 618.40 4:1

28 + 50.00

2:1 4:1 0.040 0.040 614.72 621.30 4:1 2:1 615.68

28 + 00.00

-Y10-

2/29/2016
U3109A_tgd_prm_wet_xpl_-Y10-_179.dgn
jharvey

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	63+59-65+75 -L-	48" RCP						0.03		235		
		48" RCP						0.01	< 0.01	117	16	
2	69+92-70+95 -L-	54" RCP						0.04	< 0.01	348	17	
3	11+61 -Y7A-	66" RCP						0.04	< 0.01	320	10	
4	78+10-79+64 -L-LT	ROAD FILL						0.10				
5	78+25 -L- RT	3 AT 30" RCP							< 0.01		16	
6	85+02-86+67 -L-	54" RCP						0.02	< 0.01	257	35	
7	93+65-97+92 -L-	3 @ 11'x9' RCBC						0.15	0.02	501	52	
		STREAMBANK STABILIZATION						0.02		63		
7A	94+25 -L- RT	CHANNEL REALIGNMENT						< 0.01	< 0.01	18	20	
8A	108+00-111+82 -L-	48" RCP						0.04	< 0.01	463	19	
8B	110+64-111+10 -L- RT	48" RCP						< 0.01	< 0.01	82	21	
9	113+72-114+35 -L-RT	ROAD FILL	< 0.01			0.01						
10	125+99-127+49 -L-	72" RCP						0.04	< 0.01	396	25	
10A	127+41-127+99 -L- LT	ROAD FILL						< 0.01		74		
11	133+53 -L-	48" RCP						0.02	< 0.01	270	25	
12	155+09-157+67 -L-	30" RCP	0.08					0.13				
12A	156+91-157+54 -L-LT		0.03									
12B	157+25-157+73 -L-LT							< 0.01	< 0.01	105	7	
12C	157+55-L-LT								< 0.01		13	
13	162+01-162+68-L-	66" RCP	0.07			0.01		0.09	< 0.01	183	21	
14	26+00 -Y16RPA- LT	36" RCP							< 0.01		19	
15	178+79-180+22 -L-	1 @ 10'x7' RCBC						0.06	< 0.01	447	44	
SUB TOTALS *:			0.18			0.02		0.82	0.05	3879	360	

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
12/12/16
ALAMANCE COUNTY
U-3109A
34900.1.1

Revised 2013 10 24

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)
16	17+83-21+62 -Y6RPA-	42" RCP						0.03	< 0.01	494	32	
17	33+97 -Y20-	STREAMBANK STABILIZATION						< 0.01		35		
18	19+72 -Y10-	2 @ 10'x8' RCBC						0.02	< 0.01	122	45	
		S STREAMBANK STABILIZATIO						< 0.01		25		
		DS STREAMBANK STABILIZATION						< 0.01		44		
19	20+18-22+74 -Y10-RT	ROAD FILL	0.04			0.01						
20	10+14 -Y11-	60" RCP	0.05		0.02	0.06		0.02	< 0.01	327	24	
TOTALS FROM PREVIOUS SHEET			0.18			0.02		0.82	0.05	3879	360	
TOTALS*:			0.27		0.02	0.09		0.91	0.06	4926	461	

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
12/12/16
ALAMANCE COUNTY
U-3109A
34900.1.1
SHEET 43 OF 43

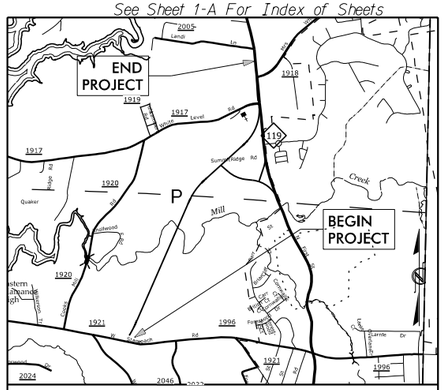
Revised 2013 10 24

09/08/59

TIP PROJECT: U-3109B

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ALAMANCE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-3109B	1	

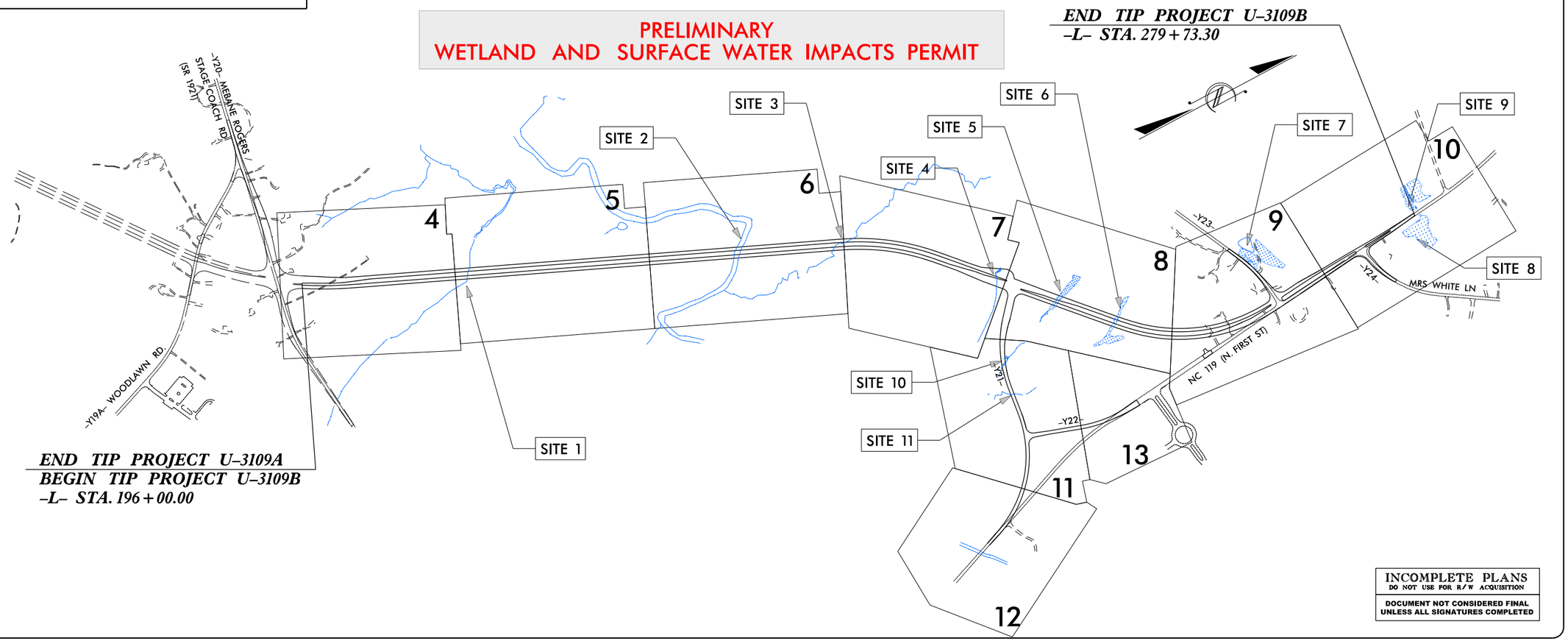
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

PERMIT DRAWING
SHEET 1 OF 18

LOCATION: NC 119 RELOCATION FROM NORTH OF SR 1921 (MEBANE ROGERS ROAD /STAGE COACH ROAD) TO NC 119 (N. FIRST ST)

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

PRELIMINARY
WETLAND AND SURFACE WATER IMPACTS PERMIT



END TIP PROJECT U-3109A
BEGIN TIP PROJECT U-3109B
-L- STA. 196 + 00.00

END TIP PROJECT U-3109B
-L- STA. 279 + 73.30

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

0
PROFILE (HORIZONTAL)

0
PROFILE (VERTICAL)

DESIGN DATA

ADT =
ADT =
K = %
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

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

1/25/2017
U3109B_Hyd_prm_wet_psh_01.dgn
jharvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 2 OF 18

REVISIONS

8/17/99

BEGIN TIP PROJECT U-3109B
-L- POC Sta. 196+00.00

PAYNE JOHN LEE &
LUANNE FOX

PIPER JAMES
LINDA C

ST Sta. 200+40.68

CS Sta. 198+40.68

SITE 1

MATCH LINE – SHEET 5 -L- STATION 207+00

S S DENOTES IMPACTS IN SURFACE WATER

U:\25_207_U3109B_Hyd_prm_wet_psh_04.dgn
bar.vsu

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	04

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 3 OF 18

REVISIONS

8/17/99

BEGIN TIP PROJECT U-3109B
-L- POC Sta. 196+00.00

1ST Sta. 200+40.68

2ND Sta. 198+40.68

PAYNE JOHN LEE & LUANNE FOX

PIPER JAMES L & WANDA C

SITE 1

MEBANE ROGERS RD (SR 1557)

MATCH LINE – SHEET 5 -L- STATION 207+00

S S DENOTES IMPACTS IN SURFACE WATER

U:\25_2017\3109B\Hyd_prm_wet_psh_04a.dgn
harveu

PERMIT DRAWING
SHEET 4 OF 18

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS

210

215

220

SITE 1

MATCH LINE – SHEET 4 –L– STATION 207+00

MATCH LINE – SHEET 6 –L– STATION 221+00

N 23° 41' 12.1" E

–L–

-S- MH

-S- MH

-S- MH

PERMIT DRAWING
SHEET 5 OF 18

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	05
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

MATCH LINE – SHEET 4 –L– STATION 207+00

MATCH LINE – SHEET 6 –L– STATION 221+00

SITE 1

N 23° 41' 12.2" E

DENOTES IMPACTS IN SURFACE WATER

U-3109B_Hyd_prm_wet_psh_05a.dgn
U/25/2017
3:10:48 PM
barreu

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	06
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 6 OF 18

REVISIONS

8/17/99

225

230

CATES ELOISE W
ESTATE TRUSTEES

SITE 2

SITE 3

STATION 221+00

MATCH LINE – SHEET 5 –L– STATION 221+00

STATION 235+00

MATCH LINE – SHEET 7 –L– STATION 235+00

TSSta. 233+91.70

JS MT

LWN SC

C F C F C F F C F F C F C F

S S DENOTES IMPACTS IN SURFACE WATER

1/25/2017
U3109B_Hyd_prm_wet_psh_06.dgn
jharvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	06
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 7 OF 18

REVISIONS

8/17/99

MATCH LINE – SHEET 5 –L– STATION 221+00

MATCH LINE – SHEET 7 –L– STATION 235+00

SITE 2

SITE 3

CATES ELOISE W ESTATE TRUSTEES

TSS1a 233+91.70

S S DENOTES IMPACTS IN SURFACE WATER

225

230

C A

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	07
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 8 OF 18

REVISIONS

8/17/99

SITE 3

SITE 4

CSSta. 240+67.87

STSta. 242+67.87

MATCH LINE – SHEET 6 –L– STATION 235+00

MATCH LINE – SHEET 8 –L– STATION 247+00

SCSta. 235+91.70

C

CA

MW

25' wet

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

1/25/2017
U-3109B_Hyd_prm_wet_psh_07.dgn
harvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	07
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 9 OF 18

REVISIONS

8/17/99

SITE 3

SITE 4

CSSta. 240+67.87

STSta. 242+67.87

MATCH LINE – SHEET 6 –L– STATION 235+00

MATCH LINE – SHEET 8 –L– STATION 247+00

SCSta. 235+19.70

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

U:\25_207_U3109B_Hyd_prm_wet_psh_07a.dgn
hgarrett

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	08
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 10 OF 18

F F DENOTES FILL IN WETLAND

ALBERT ROY & LEONORE

TSSta. 254+73.66

-L- SC Sta. 257+23.66
-L- POC Sta. 257+65.30

WHITE BAPT

SNIPES BARBARA ANN\ SWAN

TORAIN WILLIAM HARVEY

AFFORDA INC\C/O

-L- POT Sta. 247+62.21
-Y21- POT Sta. 10+00.00

SITE 5

SITE 6

MATCH LINE – SHEET 7 –L– STATION 247+00

MATCH LINE – SHEET 9 –L– STATION 260+00

N 41° 54' 00.9" E

S 49° 03' 26.3" E

PCSta. 12+61.56

MATCH LINE – SHEET 11
–Y21– STATION 14+00

REVISIONS

8/17/99

1/25/2017
U3109B_Hyd_prm_wet_psh_08.dgn
bgravely

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	08
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 11 OF 18

REVISIONS

8/17/99

F F DENOTES FILL IN WETLAND

ALBERT ROY & LEONORE

TSSta. 254+73.66

-L- SC Sta. 257+23.66

POC Sta. 257+65.30

WHITE BAPT

SNIPES BARBARA ANN \ SWAN

TORAIN WILLIAM \ HARVEY

AFFORDA INC \ C/O

SITE 5

SITE 6

-L- POT Sta. 247+62.21

-Y21- POT Sta. 10+00.00

MATCH LINE – SHEET 7 –L– STATION 247+00

MATCH LINE – SHEET 9 –L– STATION 260+00

MATCH LINE – SHEET 11 –Y21– STATION 14+00

N 41° 54' 00.9" E

S 49° 03' 26.3" E

PCSta. 12+61.56

WE SO

U-3109B_hyd_prm_wet_psh_08a.dgn
1/25/2017
harvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	09
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 12 OF 18

REVISIONS 8/17/99

SITE 7

F F DENOTES FILL IN WETLAND

POT Sta. 10+00.00

PC Sta. 11+87.17

N 64° 15' 39" E

PT Sta. 15+58.50

N 85° 32' 29" E

-L- POC Sta. 268+10.00

-Y23- POT Sta. 16+24.79

POC Sta. 268+91.17

ST Sta. 268+91.17

-L- SSta. 266+41.17

MATCH LINE - SHEET 8 -L- STATION 260+00

MATCH LINE - SHEET 10 -L- STATION 272+00

MILES JOHN DAVID

LEVEL 1ST CHURCH

DICKEY MOZELLE T

LOVE MARY L

BLE PROPERTIES SHERMAN TATE

RICHMOND MOLLIE HEIRS\ANN MANUEL

AFFORDABLE PROPERTIES INC\C/O SHERMAN TATE

WHITE BOBBY L HEIRS/ JOAN WHITE

ALSTON JESSE & JANICE

SMITA STORES INC

LOVE PEARL W HEIRS\C/O GLORIA LOVE

FOWLER HARRY G JR

ISBK CH

MTL CANOPY

ISBMD

HTR

ISFD

WALL

ISBRD

ISMD

POOL

CONC

ISM BUS

265

270

U:\25\2017 U3109B\Hyd_drn_wet_sht_09.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	09
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 13 OF 18

REVISIONS

8/17/99

SITE 7

F F DENOTES FILL IN WETLAND

POT Sta. 10+00.00

PC Sta. 11+87.17

N 64° 15' 39" E

Sta. 266+41.17

MILES JOHN DAVID

LEVEL 1ST CHURCH

DICKEY MOZELLE T

LOVE MARY L

BLE PROPERTIES SHERMAN TATE

MATCH LINE – SHEET 8 –L– STATION 260+00

MATCH LINE – SHEET 10 –L– STATION 272+00

S 85° 32' 29" E

PT Sta. 15+58.50

FOWLER HARRY G JR

-L- PC Sta. 268+10.00

-L- Δ 23° 17' 39"

-L- PT Sta. 16+24.79

ALSTON JESSE & JANICE

RICHMOND MOLLIE HEIRS \ ANN MANUEL

AFFORDABLE PROPERTIES INC \ C/O SHERMAN TATE

WHITE BOBBY L HEIRS \ JOAN WHITE

SMITA STORES INC

LOVE PEARL W HEIRS \ C/O GLORIA LOVE

PC Sta. 268+91.17

ST Sta. 268+91.17

270

U:\Projects\U-3109B\Hyd_prm_wet_psh_09a.dgn
1/25/2017
jneeves

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 14 OF 18

8/17/99

REVISIONS

F F DENOTES FILL IN WETLAND

MATCH LINE – SHEET 9 –L– STATION 272+00

PRCSta. 275+00.46

PTSta. 279+73.30

SITE 9

SITE 8

-DET PERM-

N 76° 01' 02.4" E

-Y24- POTSta. 275+13.55

PCSta. 11+28.18

-Y24- POTSta. 10+00.00

CONYARD THELMA
PHYLLIS HOLT

POOLE
PEARL HOLT

POOLE
PEARL H

BRADSHER
GLORIA R&
GLORIA LOVE

NEY
GEORGE L

MILES ROTHA J

UNKNOWN

LAND USE

ISBKD

MTL CANOPY

CANOPIES

CONC

WOOD

12SFD

S

C

F

D

Y24

275

14

85'

80'

R/W

U:\25_2017_U-3109B_Hyd_prm_wet_psh_10.dgn
bar_xsu

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 15 OF 18

F F DENOTES FILL IN WETLAND

MATCH LINE – SHEET 9 –L– STATION 272+00

PRCSta. 275+00.46

PTSta. 279+73.30

SITE 9

SITE 8

-DET.PERM- POTSta. 275+13.55

-Y24- POTSta. 280+00.00

PCSta. 11+28.18

N 76°01'02" E

DET.PERM

CONYARD THELMA
PHYLLIS HOLT

POOLE
PEARL HOLT

POOLE
PEARL H

IVEY
GEORGE L

BRADSHER
GLORIA R&
GLORIA LOVE

MILES ROTHA J

UNKNOWN

LAND LN OR

ISBKD

MTL CANOPY

CONC

REVISIONS

8/17/99

U-3109B_Hyd_prm_wet_psh_10a.dgn
1/25/2017
jharvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 16 OF 18

REVISIONS

8/17/99

MATCH LINE – SHEET 13
–Y22– STATION 14+00

MATCH LINE – SHEET 8
–Y21– STATION 14+00

MATCH LINE – SHEET 12
–Y21– STATION 25+00

–Y21A–

S 82° 53' 26.1" E

N 18° 34' 21" E

THE MILL CRK INC HOMEOWNERS ASSOC

SITE 10

SITE 11

–Y21– POCSta. 21+21.62
–Y22– POTSta. 10+00.00

PTSta. 17+54.63

PCSta. 19+54.63

15

20

25 MT

25 MT

25 MT

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

1/25/2017
U3109B_Hyd_prm_wet_psh_11.dgn
jharvey

PROJECT REFERENCE NO.	SHEET NO.
U-3109B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 17 OF 18

REVISIONS

8/17/99

MATCH LINE – SHEET 13
–Y22– STATION 14+00

MATCH LINE – SHEET 8
–Y21– STATION 14+00

MATCH LINE – SHEET 12
–Y21– STATION 25+00

S 82° 53' 26.1" E

N 18° 34' 21" E

Y21A

SITE 10

SITE 11

THE MILL CREEK HOMEOWNERS ASSOC. INC.

–Y21– POCSta. 24+21.62
–Y22– POTSta. 10+00.00

POCSta. 16+54.63

POTSta. 17+54.63

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

1/25/2017
U3109B_Hyd_prm_wet_psh_11a.dgn
jharvey

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	206+33-208+20 -L-	ROADWAY						0.05		280		
2	226+41 -L-	BRIDGE										
3	233+00-236+20 -L-	ROADWAY						0.06		400		
4	246+12-246+79 -L-	ROADWAY	0.01					0.02		146		
5	250+58-251+62 -L-	ROADWAY	0.12									
6	255+19-256+41 -L-	ROADWAY	0.11									
7	11+73-13+52 -Y23	ROADWAY	0.18									
8	278+33-279+73 -L- RT	ROADWAY	0.06									
9	279+63-279+73 -L- LT	ROADWAY	0.01									
10	14+85-16+59 -Y21A-	ROADWAY	< 0.01					0.01		299		
11	17+55-18+37 -Y21A-	ROADWAY						0.02		181		
TOTALS*:			0.51					0.16		1306	0	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
JANUARY 25, 2017
ALAMANCE COUNTY
U-3109B
PRELIMINARY

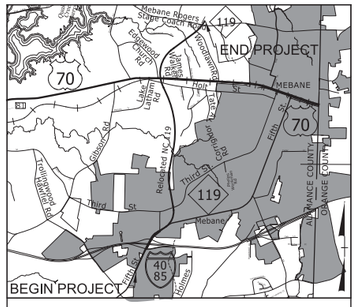
Revised September 2014

09/08/99

TIP PROJECT: U–3109A

CONTRACT: C203844

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



VICINITY MAP

PLFI PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ALAMANCE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U–3109A	1	

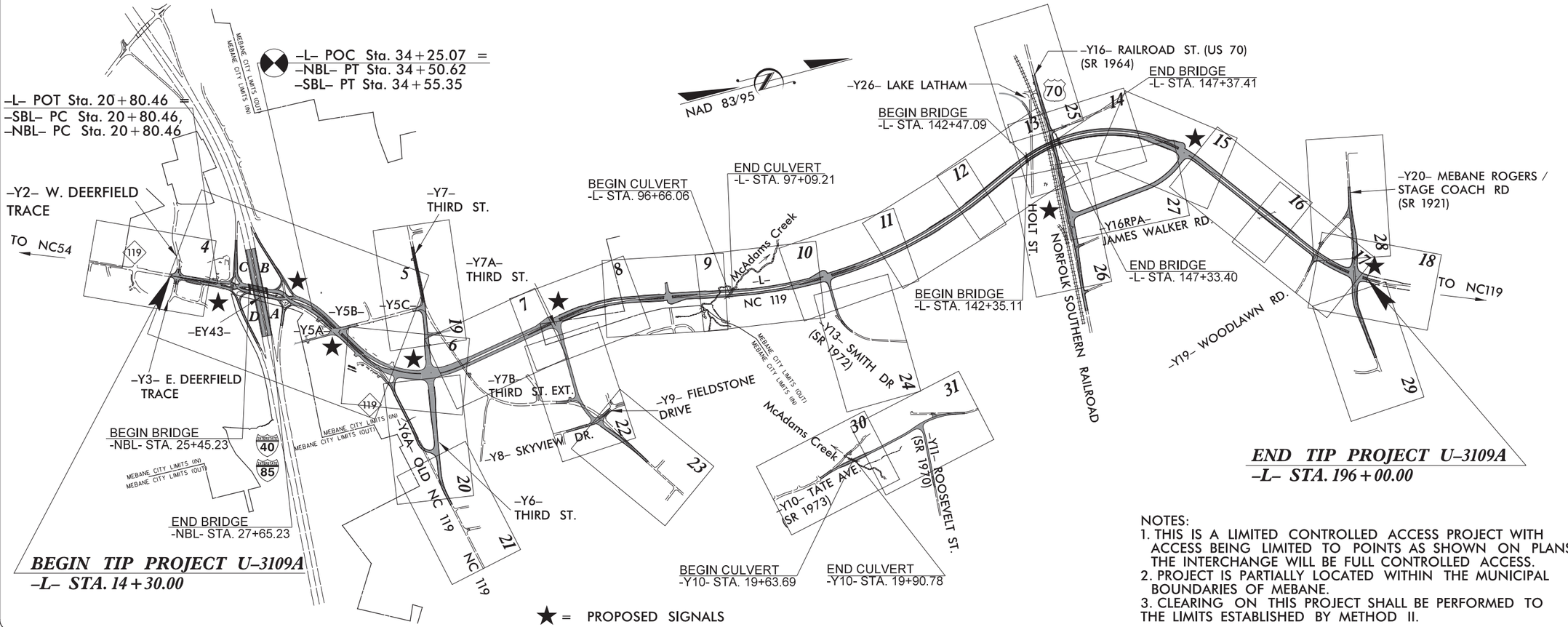
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34900.1.1	STP–0119(10)	PE
34900.2.FRU4	STP–0119(10)	UTILITY
34900.2.FR4	STP–0119(10)	ROW

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: NC 119 RELOCATION FROM I–40 /85 TO NORTH OF SR 1921 (MEBANE ROGERS ROAD /STAGE COACH ROAD)

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



BEGIN TIP PROJECT U–3109A
–L– STA. 14+30.00

END TIP PROJECT U–3109A
–L– STA. 196+00.00

NOTES:
1. THIS IS A LIMITED CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON PLANS. THE INTERCHANGE WILL BE FULL CONTROLLED ACCESS.
2. PROJECT IS PARTIALLY LOCATED WITHIN THE MUNICIPAL BOUNDARIES OF MEBANE.
3. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

GRAPHIC SCALES

PLANS: 50 0 50 100
PROFILE (HORIZONTAL): 50 0 50 100
PROFILE (VERTICAL): 10 0 10 20

DESIGN DATA

ADT 2016 = 21,100
ADT 2036 = 28,400
K = 9 %
D = 55 %
T = 3 % *
V = 50 MPH
* TTST 1% DUAL 2%
FUNC CLASS = URBAN COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U–3109A ..... 3.447 mi
LENGTH STRUCTURE TIP PROJECT U–3109A ..... 0.135 mi
TOTAL LENGTH OF TIP PROJECT U–3109A ..... 3.312 mi

PLANS PREPARED BY:

Baker

Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
Professional Corporation License Number: F-1084

FOR DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 19, 2014

LETTING DATE: MAY 16, 2017

TODD H. BUCKNER, PE
PROJECT ENGINEER

WARREN E. JOHNSON
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
REKHA PATEL, PE
PROJECT ENGINEER – ROADWAY DESIGN

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

7/21/2016 3:53:36 PM
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USER: susan.lancaster

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

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
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

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
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (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
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

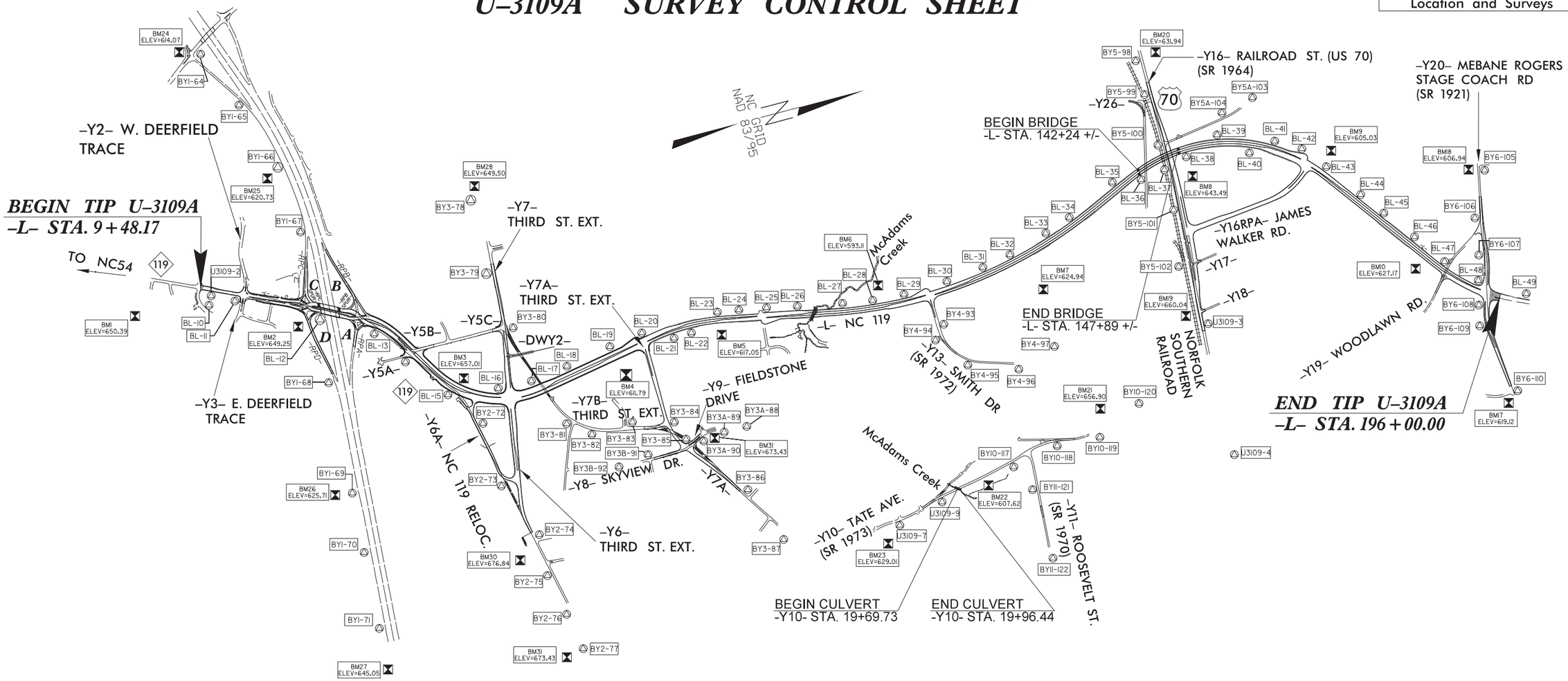
MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?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 LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

12/01/2005

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	1C-1
Location and Surveys	

U-3109A SURVEY CONTROL SHEET



NOTES

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING NCDOT PROJECT CONTROL DATA AT:*
   HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   U3109A_LS_CONTROL.txt
   U3109A_LS_GPSCALIB.HTML
   U3109A_LS_WGS84.txt
   U3109A_LS_LOCAL.txt

△ *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.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U3109-3" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 854967.949(ft) EASTING: 1914759.215(ft) ELEVATION: 659.17'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999552720
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U3109-3" TO -L- STATION 9+48.17 IS S 16°46'43" W 13,048.70'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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USER:wejohnson

12/01/2005

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	1C-2
Location and Surveys	

U-3109A SURVEY CONTROL SHEET

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	U3109-1	841207.2430	1910433.6690	652.45	OUTSIDE PROJECT LIMITS	
2	U3109-2	842594.1850	1911069.6640	662.33	10+88.91	20.57 RT
11	BL-11	842935.1813	1911240.8024	660.29	14+70.19	34.35 RT
12	BL-12	843908.5105	1911723.3920	658.75	25+59.46	64.36 RT
13	BL-13	844501.1301	1912073.6535	648.88	32+62.80	86.65 RT
14	BL-14	844853.6751	1912517.3724	648.03	38+65.21	77.03 RT
15		851617.3521	1913502.3981	UNKNOWN	110+30.64	0.00 RT
16	BL-16	845848.9147	1913349.9812	656.41	51+87.80	18.41 LT
17	BL-17	846419.4604	1913392.7329	654.49	57+70.26	6.34 LT
18	BL-18	846858.3679	1913321.7203	636.01	62+14.99	0.83 LT
19	BL-19	847471.1937	1913221.3832	627.77	68+35.93	7.34 RT
20	BL-20	847868.8513	1913138.4992	620.67	72+41.95	4.86 LT
21	BL-21	848217.6937	1913094.1475	624.29	75+93.70	4.42 RT
22	BL-22	848490.4456	1913098.3930	614.81	78+67.52	20.78 RT
23	BL-23	848869.8439	1913106.5024	626.44	82+47.84	3.99 LT
24	BL-24	849148.4382	1913163.8953	607.22	85+32.01	0.46 LT
25	BL-25	849487.6124	1913233.2195	612.34	88+78.34	2.63 RT
26	BL-26	849899.6914	1913314.9945	593.73	92+98.46	3.02 RT
27	BL-27	850516.3358	1913431.6550	589.88	99+25.99	2.09 RT
28	BL-28	850894.6500	1913476.8357	596.23	103+07.01	0.77 LT
29	BL-29	851288.7502	1913508.4395	602.40	107+02.19	6.49 RT
30	BL-30	851895.4312	1913497.3135	606.27	113+08.46	8.59 RT
31	BL-31	852411.5035	1913436.7536	634.96	118+27.52	7.94 RT
32	BL-32	852791.4258	1913356.9529	638.29	122+15.44	1.77 RT
33	BL-33	853336.4768	1913204.3215	614.32	127+81.57	0.42 RT
34	BL-34	853678.5347	1913081.3979	621.28	131+45.03	1.55 RT
35	BL-35	854368.3176	1912775.1138	636.34	138+99.77	1.67 RT
36	BL-36	854711.0960	1912687.5904	643.16	142+52.53	57.71 RT
37	BL-37	855041.8732	1912713.6757	640.53	145+83.83	171.03 RT
38	BL-38	855328.3479	1912584.9867	632.15	149+02.07	73.12 RT
39	BL-39	855744.5961	1912541.0481	616.86	153+21.65	3.65 LT
40	BL-40	856130.1446	1912720.1433	604.92	157+48.92	58.08 RT
41	BL-41	856416.4627	1912799.7596	611.70	160+44.69	0.99 LT
42	BL-42	856710.0891	1913023.7769	609.49	164+14.82	4.39 RT
43	BL-43	856939.8322	1913267.2767	619.34	167+50.74	4.65 RT
44	BL-44	857292.5041	1913729.0431	635.68	173+31.91	1.39 LT
45	BL-45	857520.1869	1914039.8519	626.29	177+17.19	0.96 RT
46	BL-46	857816.9044	1914446.3536	618.85	182+20.45	4.90 RT
47	BL-47	858174.4072	1914908.0297	632.74	188+04.44	1.44 LT
48	BL-48	858598.4102	1915222.1811	620.75	193+36.36	67.68 LT
49	BL-49	859112.2576	1915540.8273	617.56	199+56.62	54.39 LT
50	BL-50	859568.5487	1915800.3209	609.17	204+79.28	2.57 LT
51	BL-51	860030.5966	1916010.8092	597.20	209+86.99	2.28 RT
52	BL-52	860315.9274	1916123.5728	592.73	212+93.53	10.47 LT
53	BL-53	860659.7071	1916279.1091	580.13	216+70.85	7.85 LT
54	BL-54	861281.7097	1916560.1487	577.42	223+53.38	3.45 LT
55	BL-55	861605.0338	1916694.3011	549.69	227+03.32	12.07 LT
56	BL-56	862047.2565	1916887.3181	594.35	231+85.82	15.15 LT
57	BL-57	862519.3838	1917099.3052	597.79	237+00.05	29.30 LT
58	BL-58	862792.7584	1917329.6809	614.68	240+52.99	16.65 LT
59	BL-59	863048.4901	1917600.0746	619.30	244+24.19	20.27 LT
60	BL-60	863585.5585	1918206.4639	612.75	252+34.16	9.80 LT
61	BL-61	864167.2846	1918805.1434	624.69	OUTSIDE PROJECT LIMITS	
62	BL-62	864855.4072	1918900.0590	634.36	OUTSIDE PROJECT LIMITS	
63	BL-63	865473.1908	1918831.0609	636.57	OUTSIDE PROJECT LIMITS	
5	U3109-5	866558.2770	1918704.1310	631.16	OUTSIDE PROJECT LIMITS	
6	U3109-6	867837.1210	1918347.6260	629.09	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	BY1 STATION	OFFSET
64	BY1-64	843206.0067	1908812.9636	616.09	5+00.00	0.00
65	BY1-65	843671.9908	1908809.4301	604.93	14+22.77	0.00
66	BY1-66	843919.5244	1909790.1555	614.62	24+34.25	0.00
67	BY1-67	843967.1153	1910614.6771	630.97	32+60.14	0.00
A12	BL-12	843908.5105	1911723.3920	658.75	43+70.41	0.00
68	BY1-68	843882.3929	1912558.7366	632.27	52+06.16	0.00
69	BY1-69	843774.4885	1914077.9861	625.19	67+29.24	0.00
70	BY1-70	843730.3495	1914870.3122	628.51	75+22.79	0.00
71	BY1-71	843665.6078	1915883.7557	636.85	85+38.30	0.00

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y6A STATION	OFFSET
A15	BL-15	845315.8353	1913076.7768	652.92	OUTSIDE PROJECT LIMITS	
72	BY2-72	845511.7451	1913602.1982	640.22	13+80.23	28.11 LT
73	BY2-73	845639.0489	1914417.0701	653.25	21+87.82	41.36 RT
74	BY2-74	845868.5075	1915267.7466	670.45	OUTSIDE PROJECT LIMITS	
75	BY2-75	845937.3912	1915764.7708	679.13	OUTSIDE PROJECT LIMITS	
76	BY2-76	846059.7085	1916335.6522	672.38	OUTSIDE PROJECT LIMITS	
77	BY2-77	846155.9873	1916806.6617	670.77	OUTSIDE PROJECT LIMITS	

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y7 STATION	OFFSET
78	BY3-78	846250.0864	1910800.8819	657.76	OUTSIDE PROJECT LIMITS	
79	BY3-79	846191.3134	1911760.8338	662.60	15+02.07	20.43 RT
80	BY3-80	846200.9559	1912517.8042	664.11	22+52.72	49.74 LT
A17	BL-17	846419.4604	1913392.7329	654.49	30+81.51	405.21 LT
81	BY3-81	846684.5242	1913928.6641	644.26	OUTSIDE PROJECT LIMITS	
82	BY3-82	846964.8751	1914102.2876	647.64	OUTSIDE PROJECT LIMITS	
83	BY3-83	847401.3620	1914154.6853	647.61	OUTSIDE PROJECT LIMITS	
84	BY3-84	847835.2496	1914263.4147	639.63	OUTSIDE PROJECT LIMITS	
85	BY3-85	848084.9663	1914559.5143	623.41	OUTSIDE PROJECT LIMITS	
86	BY3-86	848655.9260	1915414.4363	632.57	OUTSIDE PROJECT LIMITS	
87	BY3-87	849039.9329	1916069.8817	625.71	OUTSIDE PROJECT LIMITS	

BY3A

POINT	DESC.	NORTH	EAST	ELEVATION	Y9 STATION	OFFSET
88	BY3A-88	848854.9207	1914498.5727	620.63	18+30.85	30.24 RT
89	BY3A-89	848533.2968	1914506.9280	626.31	15+14.59	27.73 RT
90	BY3A-90	848310.0105	1914526.9504	621.85	12+78.03	28.90 RT
A85	BY3-85	848084.9663	1914559.5143	623.41	10+54.09	35.13 LT

BY3B

POINT	DESC.	NORTH	EAST	ELEVATION	Y8 STATION	OFFSET
B85	BY3-85	848084.9663	1914559.5143	623.41	OUTSIDE PROJECT LIMITS	
91	BY3B-91	847582.5812	1914626.4175	633.20	13+64.42	17.42 LT
92	BY3B-92	847146.3072	1914655.5515	645.06	OUTSIDE PROJECT LIMITS	

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y13 STATION	OFFSET
A30	BL-30	851895.4312	1913497.3135	606.27	10+00.03	278.13 LT
93	BY4-93	851633.7329	1913919.4149	614.79	14+17.25	8.71 LT
94	BY4-94	851598.1341	1914081.6131	617.93	15+72.36	39.41 RT
95	BY4-95	851885.9449	1914455.1304	631.41	20+34.65	12.05 RT
96	BY4-96	852504.9744	1914667.8546	648.16	OUTSIDE PROJECT LIMITS	
97	BY4-97	853066.7693	1914586.5300	649.44	OUTSIDE PROJECT LIMITS	

BY5

POINT	DESC.	NORTH	EAST	ELEVATION	Y16 STATION	OFFSET
98	BY5-98	855043.4518	1911259.1669	628.29	OUTSIDE PROJECT LIMITS	
99	BY5-99	855042.4275	1911717.1640	634.82	13+86.34	20.45 RT
100	BY5-100	855043.1061	1912380.5286	631.49	20+49.34	50.98 RT
A37	BL-37	855041.8732	1912713.6757	640.53	23+84.71	55.05 RT
101	BY5-101	855023.6538	1913255.3291	649.28	29+28.89	51.07 RT
102	BY5-102	854979.2744	1913991.2362	657.20	36+68.20	49.97 RT
3	U3109-3	854967.9490	1914759.2150	659.17	44+34.76	18.40 LT
4	U3109-4	854859.2370	1916526.5410	683.38	OUTSIDE PROJECT LIMITS	

BY5A

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
103	BY5A-103	856329.9159	1912089.5258	599.81	157+03.20	601.43 LT
104	BY5A-104	855930.3453	1912259.3498	602.07	154+35.01	318.20 LT
A100	BY5-100	855043.1061	1912380.5286	631.49	146+42.00	157.07 LT

BY6

POINT	DESC.	NORTH	EAST	ELEVATION	Y20 STATION	OFFSET
105	BY6-105	858981.0369	1913705.1494	609.14	OUTSIDE PROJECT LIMITS	
106	BY6-106	858777.8898	1914367.7055	618.48	14+35.33	32.10 RT
107	BY6-107	858722.8856	1914893.1166	611.91	19+62.51	18.98 RT
A48	BL-48	858598.4102	1915222.1811	620.75	23+15.96	54.98 RT
108	BY6-108	858607.6847	1915484.2109	615.96	25+64.54	28.42 LT
109	BY6-109	858529.8053	1915754.6452	621.17	28+48.03	6.01 RT
110	BY6-110	858657.2304	1916664.6650	617.52	37+66.07	28.04 LT

BENCHMARK DATA

BM1 ELEVATION = 650.39
N 841555 E 1911128
L STATION 6+00.00
S 24°59'17.08" E DIST 664.90
CHISLED SQUARE IN CONCRETE BASE OF LT POLE

BM2 ELEVATION = 649.25
N 843683 E 1911804
L STATION 23+92.00 238 RIGHT
RR SPIKE IN BASE OF 12 " MAPLE

BM3 ELEVATION = 657.01
N 845477 E 1913014
L STATION 46+64.00 140 LEFT
RR SPIKE IN BASE OF 30" PINE

BM4 ELEVATION = 611.79
N 847529 E 1913401
L STATION 68+62.00 194 RIGHT
RR SPIKE IN BASE OF 12" SWEETGUM

BM5 ELEVATION = 617.05
N 848870 E 1913311
L STATION 82+83.00 198 RIGHT
RR SPIKE IN BASE OF 16" POPLAR

BM6 ELEVATION = 593.11
N 850963 E 1913275
L STATION 103+58.00 208 LEFT
RR SPIKE IN BASE OF 18" POPLAR

BM7 ELEVATION = 624.94
N 853053 E 1913081
L STATION 123+43.00 572 RIGHT
RR SPIKE IN BASE OF 24" MAPLE

BM8 ELEVATION = 643.49
N 855292 E 1912798
L STATION 148+53.00 284 RIGHT
CHISLED MARK ON SW CORNER OF CONC. PAD

BM9 ELEVATION = 605.03
N 856978 E 1912953
L STATION 165+52.00 233 LEFT
RR SPIKE IN ROOT OF 10" ASH

BM10 ELEVATION = 627.17
N 857799 E 1914773
L STATION 184+72.00 214 RIGHT
RR SPIKE IN BASE OF 15" MAPLE

BM17 ELEVATION = 619.12
N 858576 E 1916733
Y20 STATION 10+00.00
S 83°29'0.91" E DIST 2804.08
RR SPIKE IN BASE OF 20" POPLAR

BM18 ELEVATION = 606.94
N 858876 E 1913721
Y20 STATION 10+00.00
S 85°31'59.85" W DIST 226.68
RR SPIKE IN BASE OF 16" MAPLE

BM19 ELEVATION = 660.04
N 854840 E 1914641
Y16 STATION 43+25.00 117 RIGHT
RR SPIKE IN BASE OF 16" PINE

BM20 ELEVATION = 631.94
N 855245 E 1911188
Y16 STATION 10+00.00
N 38°01'47.46" W DIST 231.59
RR SPIKE IN BASE OF 15" SWEETGUM

BM21 ELEVATION = 656.90
N 853378 E 1915566
Y10-3 STATION 29+21.00
N 12°42'4.45" W DIST 1161.20
RR SPIKE IN BASE OF 20" RED OAK

BM22 ELEVATION = 607.62
N 851700 E 1916086
Y10 STATION 23+31.00 120 RIGHT
RR SPIKE IN BASE OF 18" SWEETGUM

BM23 ELEVATION = 629.01
N 850337 E 1916496
Y10 STATION 10+00.00
S 81°31'46.42" E DIST 262.76
RR SPIKE IN BASE OF 12" SWEETGUM

BM24 ELEVATION = 614.07
N 843054 E 1907977
BY1 STATION 5+00.00
S 13°18'32.59" W DIST 156.38
RR SPIKE IN BASE OF 15" OAK

BM25 ELEVATION = 620.73
N 843812 E 1909804
BY1 STATION 24+21.00 108 RIGHT
RR SPIKE IN BASE OF 15" SWEETGUM

BM26 ELEVATION = 625.71
N 843698 E 1914071
BY1 STATION 67+27.00 77 RIGHT
RR SPIKE IN BASE OF 18" OAK

BM27 ELEVATION = 645.05
N 843639 E 1916428
L STATION 48+68.00 3718 RIGHT
TOP OF BOLT OVER HEAD SIGN (MEBANE OAKS RD.)

BM28 ELEVATION = 649.50
N 846256 E 1910622
Y7 STATION 10+00.00
N 89°06'28.92" W DIST 639.72
RR SPIKE IN BASE OF 12" SWEETGUM

BM29 ELEVATION = 623.27
N 848372 E 1914530
Y9 STATION 13+44.00 48 RIGHT
RR SPIKE IN BASE OF 15" OAK

BM30 ELEVATION = 676.84
N 845665 E 1915522
Y6 STATION 30+98.00 231 RIGHT
RR SPIKE IN ROOT OF 42" OAK

BM31 ELEVATION = 673.43
N 845933 E 1916893
BY2 STATION 5+00.00
N 80°49'9.39" E DIST 3865.53
RR SPIKE IN BASE OF 12" POPLAR

NOTES

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING NCDOT PROJECT CONTROL DATA AT:*
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX

THE FILES TO BE FOUND ARE AS FOLLOWS:
U3109A_LS_CONTROL.txt
U3109A_LS_GPSCALIB.HTML
U3109A_LS_WGS84.txt
U3109A_LS_LOCAL.txt

△ *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.

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U3109-3" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 854967.949(ft) EASTING: 1914759.215(ft) ELEVATION: 659.17'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999552720
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U3109-3" TO -L- STATION 9+48.17 IS S 16°46'43" W 13,048.70'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

7/19/2016 9:48:30 AM
R:\Roadway\Projects\U3109a_ls_1c-2.dgn
USER:wejohnson

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	1C-3
Location and Surveys	

SURVEY CONTROL SHEET U-3109A

GPS Calibration Report

Project : u3109_Control_Sheet_130528

TIP Number	U-3109		
User name	khndson	**Date & Time**	10:23:03 AM 5/28/2013
Coordinate System	US State Plane 1983(at ground)	**Zone**	North Carolina 3200
Horizontal Datum	NAD 1983 (Conus)		
Vertical Datum	NAVD88	**Geoid Model**	G99NC
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

LOCAL SITE INFORMATION

Localized around	U3109-3
Latitude	36°05'55.47807"N
Longitude	79°17'18.68783"W
Site Scale Factor	1.0000447300
Height	560.035sft

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	853689.783sft
Easting coordinate of rotation center	1915272.016sft
Rotation about the center point	0°00'00"
Translation north	0.000sft
Translation east	0.000sft
Scale factor	0.99999998

Vertical Adjustment Parameters

Northing coordinate of origin point	841207.244sft
Easting coordinate of origin point	1910433.669sft
Vertical separation at origin	0.000sft
Slope north	-0.020ppm
Slope east	0.033ppm

Geoid Model Definition

G99NC

Residual Differences Between GPS (WGS84) And Local Coordinates

Summary

	Maximum error	Root Mean Square error	Point
Horizontal	0.001sft	0.000	U3109-4_GPS
Vertical	0.000sft	0.000	U3109-1_GPS
Three-dimensional	0.001sft	0.000	U3109-4_GPS

Point Residuals

WGS84 Coordinates		Calculated point FOR DISPLAY ONLY		Local Coordinates	
Point	U3109-1_GPS	**Northing**	841207.244sft	**Point** U3109-1	
Latitude	36°03'39.27530"N	**Easting**	1910433.669sft	**Northing**	841207.244sft
Longitude	79°18'10.88159"W	**Elevation**	652.449sft	**Easting**	1910433.669sft
Height	553.361sft	**Horz error**	0.000sft	**Elevation**	652.449sft
		Vert error	0.000sft	**Utilized**	Horz and Vert
		3D error	0.000sft	**Quality**	Control quality
Point	U3109-2_GPS	**Northing**	842594.186sft	**Point** U3109-2	
Latitude	36°03'53.00956"N	**Easting**	1911069.666sft	**Northing**	842594.186sft
Longitude	79°18'03.18698"W	**Elevation**	662.331sft	**Easting**	1911069.665sft
Height	563.242sft	**Horz error**	0.001sft	**Elevation**	662.331sft
		Vert error	0.000sft	**Utilized**	Horz and Vert
		3D error	0.001sft	**Quality**	Control quality
Point	U3109-3_GPS	**Northing**	854967.950sft	**Point** U3109-3	
Latitude	36°05'55.47807"N	**Easting**	1914759.215sft	**Northing**	854967.950sft
Longitude	79°17'18.68783"W	**Elevation**	659.166sft	**Easting**	1914759.215sft
Height	560.031sft	**Horz error**	0.000sft	**Elevation**	659.166sft
		Vert error	0.000sft	**Utilized**	Horz and Vert
		3D error	0.000sft	**Quality**	Control quality
Point	U3109-4_GPS	**Northing**	854859.237sft	**Point** U3109-4	
Latitude	36°05'54.45332"N	**Easting**	1916526.543sft	**Northing**	854859.238sft
Longitude	79°16'57.14966"W	**Elevation**	683.386sft	**Easting**	1916526.543sft
Height	584.244sft	**Horz error**	0.001sft	**Elevation**	683.386sft
		Vert error	0.000sft	**Utilized**	Horz and Vert
		3D error	0.001sft	**Quality**	Control quality
Point	U3109-5_GPS	**Northing**	866558.277sft	**Point** U3109-5	
Latitude	36°07'50.20033"N	**Easting**	1918704.130sft	**Northing**	866558.277sft
Longitude	79°16'31.01174"W	**Elevation**	631.163sft	**Easting**	1918704.130sft
Height	531.896sft	**Horz error**	0.001sft	**Elevation**	631.163sft
		Vert error	0.000sft	**Utilized**	Horz and Vert
		3D error	0.001sft	**Quality**	Control quality
Point	U3109-6_GPS	**Northing**	867837.120sft	**Point** U3109-6	
Latitude	36°08'02.83633"N	**Easting**	1918347.625sft	**Northing**	867837.120sft
Longitude	79°16'35.40079"W	**Elevation**	629.089sft	**Easting**	1918347.625sft
Height	529.806sft	**Horz error**	0.000sft	**Elevation**	629.089sft
		Vert error	0.000sft	**Utilized**	Horz and Vert
		3D error	0.000sft	**Quality**	Control quality
Point	U3109-7_GPS	**Northing**	850417.130sft	**Point** U3109-7	
Latitude	36°05'10.51959"N	**Easting**	1916266.322sft	**Northing**	850417.130sft
Longitude	79°17'00.16586"W	**Elevation**	633.226sft	**Easting**	1916266.322sft
Height	534.103sft	**Horz error**	0.000sft	**Elevation**	633.226sft
		Vert error	0.000sft	**Utilized**	Horz and Vert
		3D error	0.000sft	**Quality**	Control quality
Point	U3109-8_GPS	**Northing**	851077.119sft	**Point** U3109-8	
Latitude	36°05'17.04042"N	**Easting**	1916068.963sft	**Northing**	851077.119sft
Longitude	79°17'02.59326"W	**Elevation**	609.193sft	**Easting**	1916068.963sft
Height	510.070sft	**Horz error**	0.000sft	**Elevation**	609.193sft
		Vert error	0.000sft	**Utilized**	Horz and Vert
		3D error	0.000sft	**Quality**	Control quality

GPS CALIBRATION REPORT

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 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 SYSTEM) 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 NCDOT PROJECT CONTROL DATA AT:
HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/PAGES/DEFAULT.ASPX

THE FILES TO BE FOUND ARE AS FOLLOWS:

TIP U3109A_LS_GPSCALIB.HTML
TIP U3109A_LS_WGS84.TXT
TIP U3109A_LS_LOCAL.TXT
TIP U3109A_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.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM EXISTING MONUMENTATION.

NOTE: DRAWING NOT TO SCALE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U3109-3" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 854967.949(ft) EASTING: 1914759.215(ft) ELEVATION: 659.17'(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999552720 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U3109-3" TO -L- STATION 9+48.17 IS S 16°46'43" W 13,048.70' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

7/19/2016 9:48:31 AM
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USER:wejohnson

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	ID

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	6+00.00	842158.1400	1910847.5800
2	L	7+00.00	842249.0772	1910889.1784
3	L	8+00.00	842340.0144	1910930.7768
4	L	9+00.00	842430.9516	1910972.3752
5	L	10+00.00	842521.8888	1911013.9736
6	L	11+00.00	842612.8259	1911055.5721
7	L	12+00.00	842703.7631	1911097.1705
8	L	13+00.00	842794.7003	1911138.7689
9	L	14+00.00	842885.6375	1911180.3673
10	L	15+00.00	842976.5747	1911221.9657
11	L	16+00.00	843067.5175	1911263.5518
12	L	17+00.00	843158.6888	1911304.6339
13	L	18+00.00	843250.1993	1911344.9548
14	L	19+00.00	843342.0426	1911384.5117
15	L	20+00.00	843433.8807	1911424.0799
16	L	21+00.00	843525.2211	1911464.7837
17	L	22+00.00	843616.0456	1911506.6259
18	L	23+00.00	843706.3400	1911549.6002
19	L	24+00.00	843796.0902	1911593.6998
20	L	25+00.00	843885.2822	1911638.9178
21	L	26+00.00	843974.1021	1911684.8636
22	L	27+00.00	844062.9140	1911730.8251
23	L	28+00.00	844151.7258	1911776.7865
24	L	29+00.00	844240.5376	1911822.7480
25	L	30+00.00	844329.3322	1911868.7428
26	L	31+00.00	844417.3483	1911916.1996
27	L	32+00.00	844502.6572	1911968.3328
28	L	33+00.00	844582.8611	1912027.9841
29	L	34+00.00	844656.3666	1912095.7167
30	L	35+00.00	844722.3538	1912170.7935
31	L	36+00.00	844780.9919	1912251.7649
32	L	37+00.00	844834.6287	1912336.1544
33	L	38+00.00	844886.2036	1912421.8281
34	L	39+00.00	844937.6299	1912507.5913
35	L	40+00.00	844989.0562	1912593.3545
36	L	41+00.00	845040.4826	1912679.1178
37	L	42+00.00	845092.1863	1912764.7134
38	L	43+00.00	845145.9830	1912849.0026
39	L	44+00.00	845204.1170	1912930.3461
40	L	45+00.00	845268.2143	1913007.0677
41	L	46+00.00	845338.2377	1913078.4217
42	L	47+00.00	845413.7394	1913143.9515
43	L	48+00.00	845494.2364	1913203.2381
44	L	49+00.00	845579.2138	1913255.9022
45	L	50+00.00	845668.1281	1913301.6069
46	L	51+00.00	845760.4105	1913340.0598
47	L	52+00.00	845855.4707	1913371.0151
48	L	53+00.00	845952.7006	1913394.2746
49	L	54+00.00	846051.4784	1913409.6897
50	L	55+00.00	846151.1721	1913417.1616
51	L	56+00.00	846251.1441	1913416.6427
52	L	57+00.00	846350.7811	1913408.3825
53	L	58+00.00	846449.7930	1913394.4160
54	L	59+00.00	846548.3536	1913377.5171
55	L	60+00.00	846646.8185	1913360.0624
56	L	61+00.00	846745.2834	1913342.6075
57	L	62+00.00	846843.7482	1913325.1527
58	L	63+00.00	846942.2131	1913307.6978
59	L	64+00.00	847040.6779	1913290.2429
60	L	65+00.00	847139.1428	1913272.7880
61	L	66+00.00	847237.6076	1913255.3332
62	L	67+00.00	847336.0725	1913237.8783
63	L	68+00.00	847434.5373	1913220.4234
64	L	69+00.00	847533.0022	1913202.9686
65	L	70+00.00	847631.4671	1913185.5137
66	L	71+00.00	847729.9319	1913168.0588
67	L	72+00.00	847828.3968	1913150.6039
68	L	73+00.00	847926.8616	1913133.1491
69	L	74+00.00	848025.3790	1913115.9956
70	L	75+00.00	848124.2080	1913100.7606
71	L	76+00.00	848223.5227	1913089.1303
72	L	77+00.00	848323.2230	1913081.4809
73	L	78+00.00	848423.1494	1913077.8246
74	L	79+00.00	848523.1422	1913078.1671
75	L	80+00.00	848623.0413	1913082.5080
76	L	81+00.00	848722.6868	1913090.8404
77	L	82+00.00	848821.9195	1913103.1508
78	L	83+00.00	848920.6014	1913119.3014
79	L	84+00.00	849018.8399	1913137.9821
80	L	85+00.00	849116.9470	1913157.3472
81	L	86+00.00	849215.0525	1913176.7202
82	L	87+00.00	849313.1580	1913196.0931
83	L	88+00.00	849411.2635	1913215.4660
84	L	89+00.00	849509.3690	1913234.8390
85	L	90+00.00	849607.4745	1913254.2119
86	L	91+00.00	849705.5800	1913273.5849
87	L	92+00.00	849803.6855	1913292.9578
88	L	93+00.00	849901.7910	1913312.3307
89	L	94+00.00	849999.8965	1913331.7037
90	L	95+00.00	850098.0020	1913351.0766
91	L	96+00.00	850196.1075	1913370.4496
92	L	97+00.00	850294.2130	1913389.8225
93	L	98+00.00	850392.4608	1913408.4541
94	L	99+00.00	850491.0051	1913425.4477
95	L	100+00.00	850589.8190	1913440.7966
96	L	101+00.00	850688.8750	1913454.4965
97	L	102+00.00	850788.1455	1913466.5436
98	L	103+00.00	850887.6030	1913476.9347
99	L	104+00.00	850987.2198	1913485.6667
100	L	105+00.00	851086.9684	1913492.7374
101	L	106+00.00	851186.8209	1913498.1446
102	L	107+00.00	851286.7497	1913501.8870
103	L	108+00.00	851386.7270	1913503.9635
104	L	109+00.00	851486.7250	1913504.3734
105	L	110+00.00	851586.7160	1913503.1168
106	L	111+00.00	851686.6721	1913500.1939
107	L	112+00.00	851786.5656	1913495.6055
108	L	113+00.00	851886.3688	1913489.3529
109	L	114+00.00	851986.0539	1913481.4379
110	L	115+00.00	852085.5932	1913471.8627
111	L	116+00.00	852184.9592	1913460.6299
112	L	117+00.00	852284.1241	1913447.7426
113	L	118+00.00	852383.0605	1913433.2045
114	L	119+00.00	852481.7409	1913417.0194
115	L	120+00.00	852580.1378	1913399.1921
116	L	121+00.00	852678.2240	1913379.7273
117	L	122+00.00	852775.9721	1913358.6306
118	L	123+00.00	852873.3550	1913335.9077
119	L	124+00.00	852970.3458	1913311.5650
120	L	125+00.00	853066.9173	1913285.6093
121	L	126+00.00	853163.0429	1913258.0477
122	L	127+00.00	853258.6958	1913228.8879
123	L	128+00.00	853353.8494	1913198.1380
124	L	129+00.00	853448.4774	1913165.8066
125	L	130+00.00	853542.5534	1913131.9026
126	L	131+00.00	853636.0512	1913096.4355
127	L	132+00.00	853728.9450	1913059.4150
128	L	133+00.00	853821.2089	1913020.8516
129	L	134+00.00	853912.8173	1912980.7558
130	L	135+00.00	854003.8673	1912939.4054
131	L	136+00.00	854094.8604	1912897.9294
132	L	137+00.00	854185.8535	1912856.4535
133	L	138+00.00	854276.8466	1912814.9775
134	L	139+00.00	854367.8397	1912773.5016
135	L	140+00.00	854458.8328	1912732.0256
136	L	141+00.00	854549.9975	1912690.9298
137	L	142+00.00	854642.1565	1912652.1285
138	L	143+00.00	854735.9923	1912617.5923
139	L	144+00.00	854831.4370	1912587.7891
140	L	145+00.00	854928.2519	1912562.7934
141	L	146+00.00	855026.1951	1912542.6677
142	L	147+00.00	855125.0218	1912527.4622
143	L	148+00.00	855224.4849	1912517.2150
144	L	149+00.00	855324.3359	1912511.9517
145	L	150+00.00	855424.3251	1912511.6855
146	L	151+00.00	855524.2027	1912516.4170
147	L	152+00.00	855623.7190	1912526.1343
148	L	153+00.00	855722.6252	1912540.8132
149	L	154+00.00	855820.6742	1912560.4171
150	L	155+00.00	855917.6209	1912584.8969
151	L	156+00.00	856013.2229	1912614.1913
152	L	157+00.00	856107.2414	1912648.2273
153	L	158+00.00	856199.4412	1912686.9197
154	L	159+00.00	856289.5921	1912730.1719
155	L	160+00.00	856377.4685	1912777.8756
156	L	161+00.00	856462.8509	1912829.9117
157	L	162+00.00	856545.5259	1912886.1501
158	L	163+00.00	856625.2869	1912946.4503
159	L	164+00.00	856701.9344	1913010.6615
160	L	165+00.00	856775.2769	1913078.6232
161	L	166+00.00	856845.1310	1913150.1656
162	L	167+00.00	856911.3223	1913225.1098
163	L	168+00.00	856973.8522	1913303.1387
164	L	169+00.00	857034.0157	1913383.0141
165	L	170+00.00	857093.6058	1913463.3199
166	L	171+00.00	857153.1932	1913543.6278
167	L	172+00.00	857212.7805	1913623.9356
168	L	173+00.00	857272.3678	1913704.2434
169	L	174+00.00	857331.9552	1913784.5513
170	L	175+00.00	857391.5425	1913864.8591
171	L	176+00.00	857451.1299	1913945.1670
172	L	177+00.00	857510.7172	1914025.4748
173	L	178+00.00	857570.3045	1914105.7826
174	L	179+00.00	857629.8919	1914186.0905
175	L	180+00.00	857689.4792	1914266.3983
176	L	181+00.00	857749.0665	1914346.7062
177	L	182+00.00	857808.6539	1914427.0140
178	L	183+00.00	857868.2412	1914507.3218
179	L	184+00.00	857927.8286	1914587.6297
180	L	185+00.00	857987.4159	1914667.9375
181	L	186+00.00	858047.0446	1914748.2146
182	L	187+00.00	858107.5572	1914827.8253
183	L	188+00.00	858170.4450	1914905.5678
184	L	189+00.00	858236.3662	1914980.7546
185	L	190+00.00	858305.2413	1915053.2452
186	L	191+00.00	858376.9601	1915122.9236
187	L	192+00.00	858451.4080	1915189.6782
188	L	193+00.00	858528.4658	1915253.4023
189	L	194+00.00	858608.0103	1915313.9939
190	L	195+00.00	858689.9141	1915371.3562
191	L	196+00.00	858774.0463	1915425.3972
192	L	197+00.00	858860.2723	1915476.0307
193	L	198+00.00	858948.4541	1915523.1755
194	L	199+00.00	859038.4073	1915566.8487
195	L	200+00.00	859129.4861	1915608.1334
196	L	201+00.00	859220.8746	1915648.7307
197	L	202+00.00	859312.2678	1915689.3173
198	L	203+00.00	859403.6611	1915729.9040
199	L	204+00.00	859495.0543	1915770.4907
200	L	205+00.00	859586.4475	1915811.0773
201	L	206+00.00	859677.8407	1915851.6640
202	L	207+00.00	859769.2340	1915892.2506
203	L	208+00.00	859860.6272	1915932.8373
204	L	209+00.00	859952.0204	1915973.4240
205	L	210+00.00	860043.4137	1916014.0106
206	L	211+00.00	860134.8069	1916054.5973
207	L	212+00.00	860226.2001	1916095.1840
208	L	213+00.00	860317.5934	1916135.7706
209	L	214+00.00	860408.9866	1916176.3573
210	L	215+00.00	860500.3798	1916216.9440
211	L	216+00.00	860591.7731	1916257.5306
212	L	217+00.00	860683.1663	1916298.1173
213	L	218+00.00	860774.5595	1916338.7040
214	L	219+00.00	860865.9528	1916379.2906
215	L	220+00.00	860957.3460	1916419.8773
216	L	221+00.00	861048.7392	1916460.4640
217	L	222+00.00	861140.1324	1916501.0506
218	L	223+00.00	861231.5257	1916541.6373
219	L	224+00.00	861322.9189	1916582.2239
220	L	225+00.00	861414.3121	1916622.8106
221	L	226+00.00	861505.7054	1916663.3973
222	L	227+00.00	861597.0986	1916703.9839
223	L	228+00.00	861688.4918	1916744.5706
224	L	229+00.00	861779.8851	1916785.1573
225	L	230+00.00	861871.2783	1916825.7439
226	L	231+00.00	861962.6715	1916866.3306
227	L	232+00.00	862054.0648	1916906.9173
228	L	233+00.00	862145.4580	1916947.5039
229	L	234+00.00	862236.8498	1916988.0938
230	L	235+00.00	862327.8839	1917029.4749
231	L	236+00.00	862417.3109	1917074.2017
232	L	237+00.00	862503.9049	1917124.1839
233	L	238+00.00	862587.2080	1917179.4772
234	L	239+00.00	862666.8948	1917239.8655
235	L	240+00.00	862742.6543	1917305.1131
236	L	241+00.00	862814.2515	1917374.9054
237	L	242+00.00	862882.6507	1917447.8491
238	L	243+00.00	862949.9511	1917521.8130
239	L	244+00.00	863017.2157	1917595.8094
240	L	245+00.00	863084.4804	1917669.8058
241	L	246+00.00	863151.7451	1917743.8022
242	L	247+00.00	863219.0097	1917817.7986
243	L	248+00.00	863286.2744	1917891.7950
244	L	249+00.00	863353.5391	1917965.7913
245	L	250+00.00	863420.8037	1918039.7877
246	L	251+00.00	863488.0684	1918113.7841
247	L	252+00.00	863555.3331	1918187.7805
248	L	253+00.00	863622.5977	1918261.7769
249	L	254+00.00	863689.8624	1918335.7732
250	L	254+50.87	863724.0775	1918373.4125
251	Y6	10+00.00	846007.1879	1913403.7766
252	Y6	11+00.00	845991.2121	1913502.4922
253	Y6	12+00.00	845975.2362	1913601.2078
254	Y6	13+00.00	845959.2604	1913699.9234
255	Y6	14+00.00	845943.2846	1913798.6390
256	Y6	15+00.00	845927.3088	1913897.3546
257	Y6	16+00.00	845911.3329	1913996.0703
258	Y6	17+00.00	845895.3571	1914094.7859
259	Y6	18+00.00	845879.3813	1914193.5015
260	Y6	19+00.00	845863.4055	1914292.2171
261	Y6	20+00.00	845847.4296	1914390.9327
262	Y6	21+00.00	845831.4538	1914489.6483
263	Y6	22+00.00	845815.4780	1914588.3640
264	Y6	23+00.00	845799.5022	1914687.0796
265	Y6	24+00.00	845784.6970	1914785.9634
266	Y6	25+00.00	845779.9885	1914885.7924
267	Y6	26+00.00	845787.2693	1914985.4667
268	Y6	27+00.00	845805.8482	1915083.6877
269	Y6	28+00.00	845827.1796	1915181.3861
270	Y6	29+00.00	845848.5110	1915279.0844
271	Y6	30+00.00	845869.8424	1915376.7828
272	Y6	31+00.00	845891.1738	1915474.4812
273	Y6	32+00.00	845912.5052	1915572.1796
274	Y6	33+00.00	845933.8366	1915669.8779
275	Y6	34+00.00	845955.1680	1915767.5763
276	Y6	34+85.18	845973.3373	1915850.7922
277	Y7	10+00.00	846245.5804	1911261.2756
278	Y7	11+00.00	846240.7222	1911361.1538
279	Y7	12+00.00	846233.5599	1911460.8966
280	Y7	13+00.00	846226.2424	1911560.6285
281	Y7	14+00.00	846218.9248	1911660.3604
282	Y7	15+00.00	846211.8318	1911760.1082
283	Y7	16+00.00	846205.9029	1911859.9316
284	Y7	17+00.00	846201.2428	1911959.8223
285	Y7	18+00.00	846197.3121	1912059.7450
286	Y7	19+00.00	846192.3250	1912159.6174
287	Y7	20+00.00	846184.4758	1912259.3054
288	Y7	21+00.00	846173.7407	1912358.7240
289	Y7	22+00.00	846160.1288	1912457.7897
290	Y7	23+00.00	846144.3037	1912556.5292
291	Y7	24+00.00	846128.3279	1912655.2449
292	Y7	25+00.00	846112.3521	1912753.9605
293	Y7	26+00.00	846096.3762	1912852.6761
294	Y7	27+00.00	846080.4004	1912951.3917
295	Y7	28+00.00	846064.4246	1913050.1073
296	Y7	29+00.00	846048.4488	1913148.8229
297	Y7	30+00.00	846032.4729	1913247.5386
298	Y7	31+00.00	846016.4971	1913346.2542
299	Y7	31+58.27	846007.1876	1913403.7783
300	Y9	10+00.00	848046.0870	1914610.9740
301	Y9	11+00.00	848140.1040	1914576.9033
302	Y9	12+00.00	848229.9142	1914533.4264
303	Y9	13+00.00	848321.0377	1914492.8866
304	Y9	14+00.00	848419.4658	1914476.8750
305	Y9	15+00.00	848519.4363	1914478.8261
306	Y9	16+00.00	848619.4024	1914481.4298
307	Y9	17+00.00	848719.3742	1914483.6303
308	Y9	18+00.00	848818.8593	1914474.6190
309	Y9	18+61.31	848879.0729	1914463.0991
310	Y10	10+00.00	850375.2507	1916236.4445
311	Y10	11+00.00	850475.0964	1916231.2166
312	Y10	12+00.00	850574.3928	1916219.5243
313	Y10	13+00.00	850672.7219	1916201.4170
314	Y10	14+00.00	850769.4520	1916176.1903
315	Y10	15+00.00	850863.7202	1916142.8651
316	Y10	16+00.00	850958.2036	1916110.1666
317	Y10	17+00.00	851054.6550	1916083.8336
318	Y10	18+00.00	851152.6345	1916063.9164
319	Y10	19+00.00	851251.0877	1916046.3959
320	Y10	20+00.00	851349.5409	1916028.8753
321	Y10	21+00.00	851447.9940	1916011.3547
322	Y10	22+00.00	851546.3980	1915993.5625
323	Y10	23+00.00	851644.5201	1915974.2801
324	Y10	24+00.00	851742.3073	1915953.3651
325	Y10	25+00.00	851839.7719	1915930.9919
326	Y10	26+00.00	851937.1815	1915908.3783
327	Y10	27+00.00	852034.5911	1915885.7646
328	Y10	28+00.00	852131.2490	1915860.1995
329	Y10	29+00.00	852225.9911	1915828.2583
330	Y10	30+00.00	852320.1939	1915794.7820
331	Y10	31+00.00	852417.0151	1915769.9146
332	Y10	32+00.00	852515.7344	1915754.1912
333	Y10	33+00.00	852615.4902	1915747.7492
334	Y10	34+00.00	852715.4119	1915750.6446
335	Y10	35+00.00	852814.6273	1915762.8523
336	Y10	36+00.00	852912.5210	1915783.2060
337	Y10	37+00.00	853011.4562	1915796.6243
338	Y10	38+00.00	853111.2394	1915791.3177
339	Y10	38+83.29	853194.2175	1915784.1472
340	Y11	10+00.00	852344.3092	1915787.6805
341	Y11	11+00.00	852352.7151	1915887.3205
342	Y11	12+00.00	852353.1191	1915987.2780
343	Y11	13+00.00	852346.5851	1916087.0629
344	Y11	14+00.00	852339.8136	1916186.8333
345	Y11	15+00.00	852333.0422	1916286.6038
346	Y11	16+00.00	852326.2707	1916386.3743
347	Y11	17+00.00	852319.4993	1916486.1448
348	Y11	18+00.00	852312.7466	1916585.9165
349	Y11	19+00.00	852308.7047	1916685.8267
350	Y11	20+00.00	852301.9393	1916785.5976
351	Y11	20+80.49	852296.4816	1916865.9004
352	Y13	10+00.00	851617.3521	1913502.3981
353	Y13	11+00.00	851619.1911	1913602.3812
354	Y13	12+00.00	851621.0302	1913702.3643
355	Y13	13+00.00	851622.8693	1913802.3474
356	Y13	14+00.00	851624.7083	1913902.3305
357	Y13	15+00.00	851627.3503	1914002.2849
358	Y13	16+00.00	851642.8485	1914100.9459
359	Y13	17+00.00	851676.0650	1914195.1157
360	Y13	18+00.00	851726.0986	1914281.5328
361	Y13	19+00.00	851791.0859	1914357.3677
362	Y13	20+00.00	851865.3051	1914424.3200
363	Y13	21+00.00	851948.7183	1914479.1456
364	Y13	22+00.00	852041.5945	1914515.8031
365	Y13	23+00.00	852136.8889	1914546.1175
366	Y13	23+67.96	852201.6477	1914566.7182
367	Y16RPA	10+00.00	855058.4202	1913563.7159
368	Y16RPA	11+00.00	855157.8367	1913552.9292
369	Y16RPA	12+00.00	855257.2533	1913542.1425
370	Y16RPA	13+00.00	855356.6698	1913531.3557
371	Y16RPA	14+00.00	855456.0863	1913520.5690
372	Y16RPA	15+00.00	855555.5029	1913509.7823
373	Y16RPA	16+00.00	855654.9194	1913498.9956
374	Y16RPA	17+00.00	855754.3359	1913488.2088
375	Y16RPA	18+00.00	855853.7524	1913477.4221
376	Y16RPA	19+00.00	855953.1690	1913466.6354
377	Y16RPA	20+00.00	856052.5855	1913455.8487
378	Y16RPA	21+00.00	856152.0020	1913445.0619
379	Y16RPA	22+00.00	856250.8972	1913430.4987
380	Y16RPA	23+00.00	856347.8607	1913406.2139
381	Y16RPA	24+00.00	856441.9153	1913372.3701
382	Y16RPA	25+00.00	856532.1213	1913329.3057
383	Y16RPA	26+00.00	856617.5774	1913277.4508
384	Y16RPA	27+00.00	856697.4297	1913217.3236
385	Y16RPA	28+00.00	856771.0352	1913149.6810
386	Y16RPA	28+53.30	856809.1355	1913112.4072

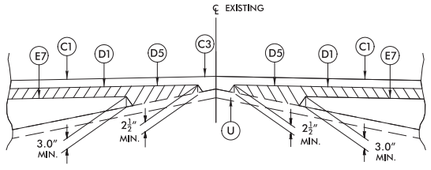
8/17/99

REVISIONS

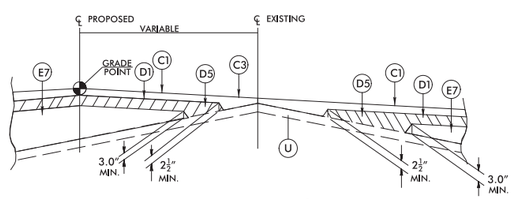
FINAL PAVEMENT SCHEDULE

C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E3	PROP. APPROX. 7″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	R3	2′-9″ CONCRETE CURB AND GUTTER.
C2	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.	E4	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R4	5″ MONOLITHIC CONCRETE ISLAND (KEYED IN)
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH.	E5	PROP. APPROX. 4½″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	R5	GRASS ISLAND
C4	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.	E6	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.	R6	MILLED RUMBLE STRIPS
C5	PROP. APPROX. 1½″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E7	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, 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.	S	4″ CONCRETE SIDEWALK
C6	PROP. APPROX. 1½″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	J1	PROP 8″ AGGREGATE BASE COURSE	T	EARTH MATERIAL
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	K	BASE TO BE TREATED WITH LIME (METHOD-SLURRY) TO A DEPTH OF 8″, AT A RATE OF 20 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER. OR BASE TO BE TREATED WITH CEMENT TO A DEPTH OF 7″, AT A RATE OF 55 LBS. PER SQ. YD. AS DIRECTED BY TH EENGINEER.	U	EXISTING PAVEMENT
D2	PROP. APPROX. 2½″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.			V1	MILLING 3″
D3	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	N	GEOTEXTILE FOR PAVEMENT STABILIZATION	V2	MILLING 1½″
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.	R1	1′-6″ CONCRETE CURB AND GUTTER.	W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS)
D5	PROP.VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, 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.	R2	2′-6″ CONCRETE CURB AND GUTTER.	W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS)
E1	PROP. APPROX. 3″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	J1	PROP 4″ AGGREGATE BASE COURSE	W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS)
E2	PROP. APPROX. 5½″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	J3	PROP VAR. AGGREGATE BASE COURSE		

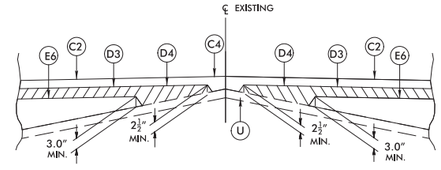
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



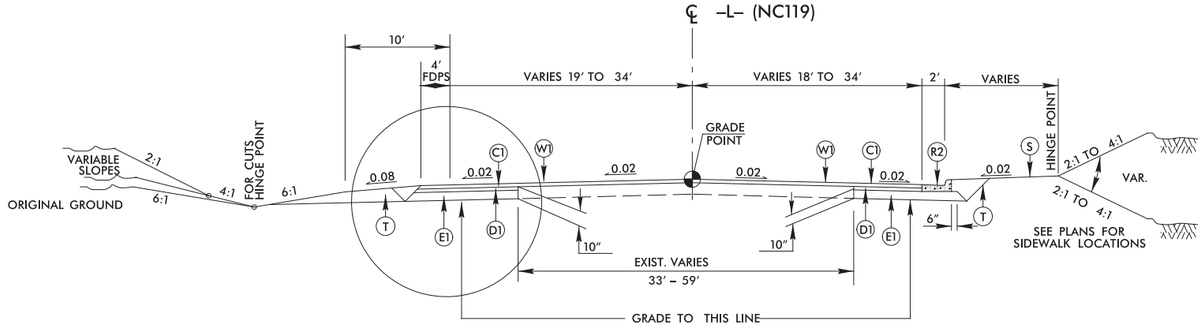
Detail Showing Method of Wedging No. W1



Detail Showing Method Of Wedging No. W2

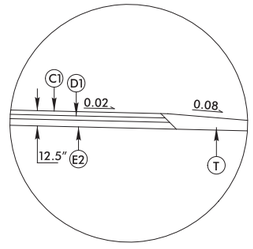


Detail Showing Method of Wedging No. W3

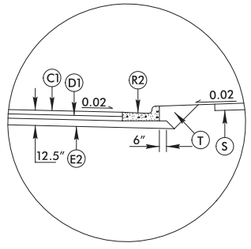


TYPICAL SECTION NO. 1

–L– STA. 14+30.00 TO STA. 15+84.00



INSET 1 – NARROW WIDENING PAVEMENT DESIGN TO BE USED IN NARROW WIDENING AREAS OF LESS THEN 6 FEET



INSET 1A – NARROW WIDENING PAVEMENT DESIGN TO BE USED IN NARROW WIDENING AREAS OF LESS THEN 6 FEET

NOTE: CONSTRUCT MAINLINE PAVEMENT TO THE END OF RADIUS POINT AT ALL Y-LINE INTERSECTIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | PAVEMENT ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

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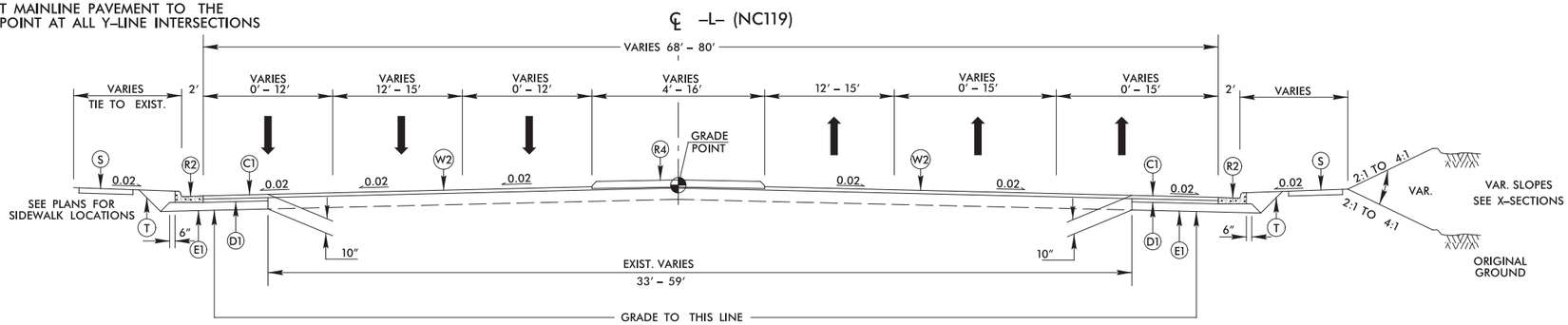
8/17/99

REVISIONS

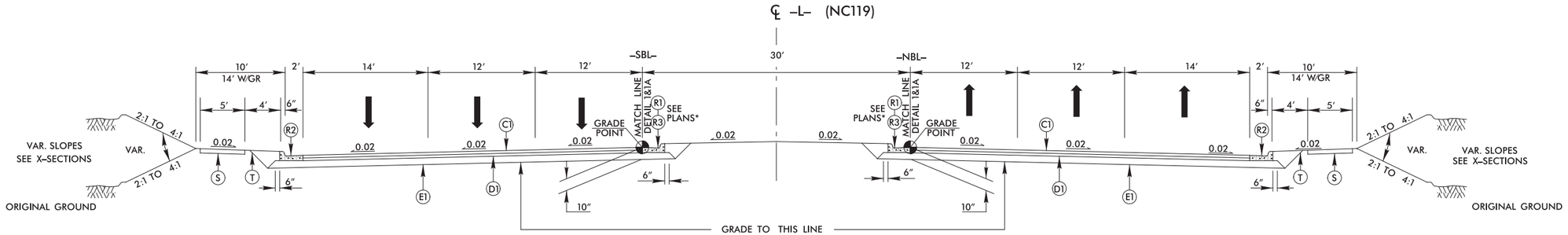
PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	8″ ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	5″ MCI
R5	4″ CONC. ISLAND
R6	RUMBLE STRIPS
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3″
V2	MILLING ½″
W1	WEDGING
W2	WEDGING
W3	WEDGING

NOTE: CONSTRUCT MAINLINE PAVEMENT TO THE END OF RADIUS POINT AT ALL Y-LINE INTERSECTIONS



TYPICAL SECTION NO. 1A

–L– STA. 15+84.00 TO STA. 20+80.46

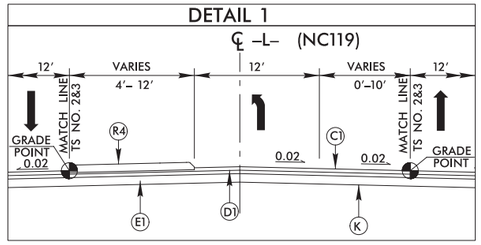


*USE R3 AT LOW SIDE OF SUPERELEVATION, SEE PLANS FOR LOCATIONS

TYPICAL SECTION NO. 2

–L– STA. 34+25.07 TO 73+19.52

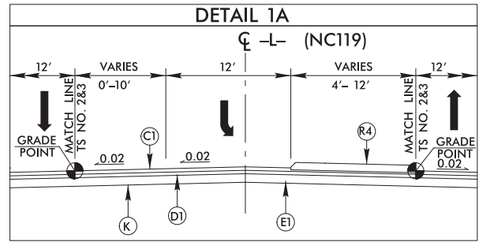
DETAIL 1



–L– STA. 36+83.38 TO 38+45.20
–L– STA. 48+55.00 TO 52+25.47
–L– STA. 70+36.39 TO 71+50.00
–L– STA. 86+47.68 TO 87+61.00

–L– STA. 109+00.48 TO 109+75.00
–L– STA. 163+32.91 TO 164+30.00
–L– STA. 192+30.00 TO 193+30.00

DETAIL 1A

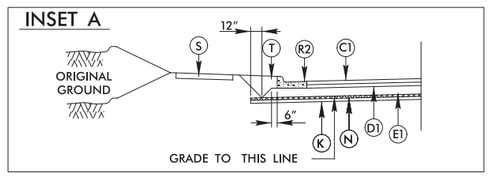


–L– STA. 39+68.46 TO 41+26.89
–L– STA. 55+00.00 TO 58+32.00
–L– STA. 72+90.00 TO 74+03.15
–L– STA. 88+85.00 TO 90+13.68

–L– STA. 110+99.72 TO 112+13.00
–L– STA. 166+10.00 TO 167+23.36
–L– STA. 195+40.00 TO 160+00.00

USE GEOTEXTILE FOR PAVEMENT STABILIZATION DETAIL WITH TRENCH SECTION AS FOLLOWS:
(THESE LOCATIONS TO BE INVESTIGATED DURING CONSTRUCTION)

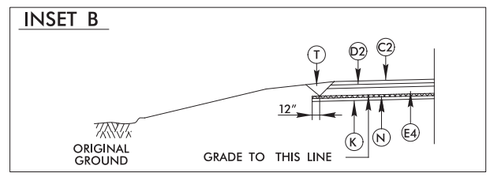
INSET A



–L– STA. 68+00 TO 75+00 LT.&RT.

USE GEOTEXTILE FOR PAVEMENT STABILIZATION DETAIL WITH TRENCH SECTION AS FOLLOWS:
(THESE LOCATIONS TO BE INVESTIGATED DURING CONSTRUCTION)

INSET B



–L– STA. 93+25 TO 98+25 LT.&RT.
–L– STA. 107+75 TO 111+50 LT.&RT.
–L– STA. 125+00 TO 142+24 LT.&RT.
–L– STA. 147+89 TO 165+50 LT.&RT.
–L– STA. 177+50 TO 188+00 LT.&RT.

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084
NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

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8/17/99

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	8″ ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	5″ MCI
R5	4″ CONC. ISLAND
R6	RUMBLE STRIPS
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3″
V2	MILLING ½″
W1	WEDGING
W2	WEDGING
W3	WEDGING

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
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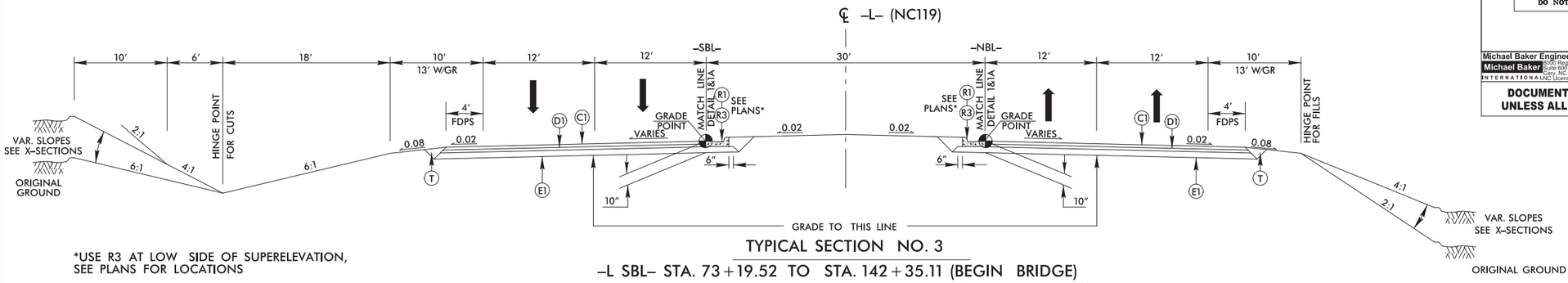
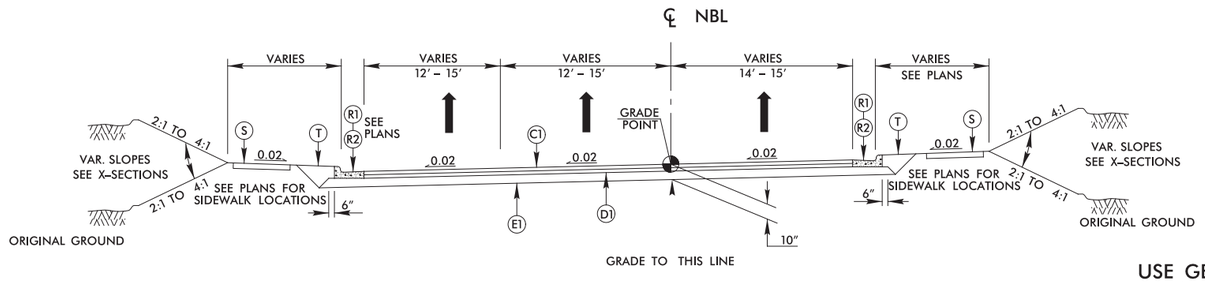


*USE R3 AT LOW SIDE OF SUPERELEVATION, SEE PLANS FOR LOCATIONS

TYPICAL SECTION NO. 3

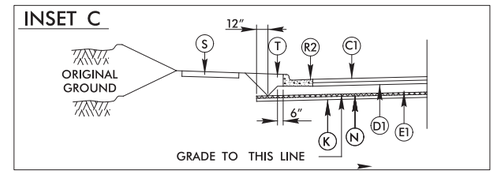
–L SBL– STA. 73+19.52 TO STA. 142+35.11 (BEGIN BRIDGE)
–L NBL– STA. 73+19.52 TO STA. 142+47.09 (BEGIN BRIDGE)
–L SBL– STA. 147+33.40 (END BRIDGE) TO STA. 196+00.00
–L NBL– STA. 147+37.41 (END BRIDGE) TO STA. 196+00.00



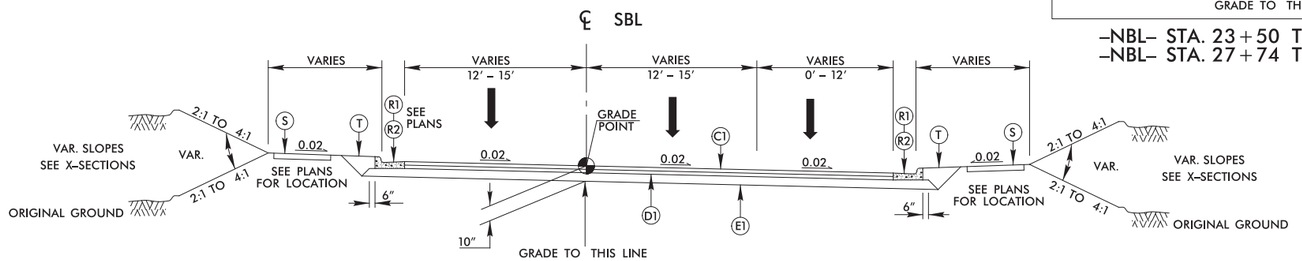
TYPICAL SECTION NO. 4

–NBL– STA. 20+80.46 TO 25+45.23 (BEGIN BRIDGE)
–NBL– STA. 27+65.23 (END BRIDGE) TO 34+50.62

USE GEOTEXTILE FOR PAVEMENT STABILIZATION DETAIL WITH TRENCH SECTION AS FOLLOWS:
(THESE LOCATIONS TO BE INVESTIGATED DURING CONSTRUCTION)



–NBL– STA. 23+50 TO 25+32 LT.&RT.
–NBL– STA. 27+74 TO 30+00 LT.&RT.



TYPICAL SECTION NO. 5

–SBL– STA. 20+80.46 TO 25+54 +/– (BEGIN EXISTING BRIDGE)
–SBL– STA. 28+00 +/– (END EXISTING BRIDGE) TO 34+55.35 = –L– STA. 34+25.07

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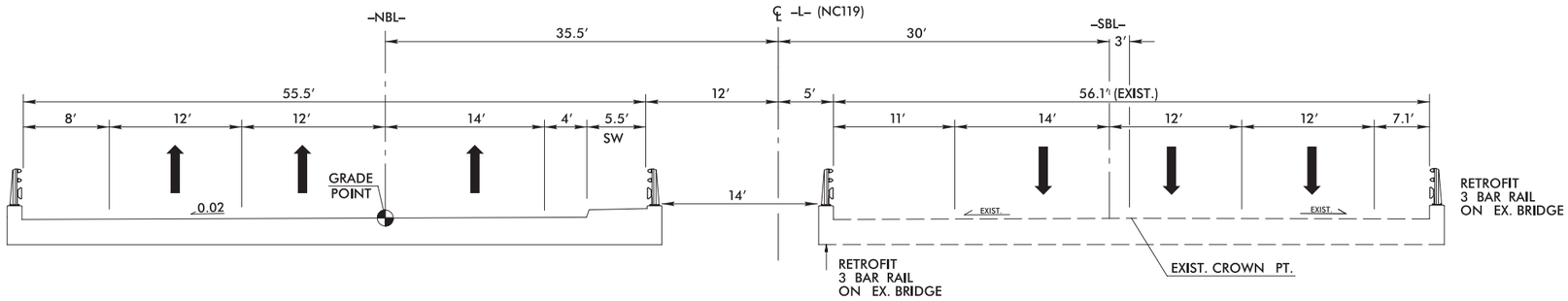
PAVEMENT SCHEDULE	
C1	3" S9.5C
C2	3" S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½" S9.5B
D1	4" I19.0C
D2	2½" I19.0B
D3	4" I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3" B25.0C
E2	5½" B25.0C
E3	7" B25.0C
E4	4" B25.0B
E5	4½" B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	8" ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
R1	1'-6" C & G
R2	2'-6" C & G
R3	2'-9" C & G
R4	5" MCI
R5	4" CONC. ISLAND
R6	RUMBLE STRIPS
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3"
V2	MILLING ½"
W1	WEDGING
W2	WEDGING
W3	WEDGING

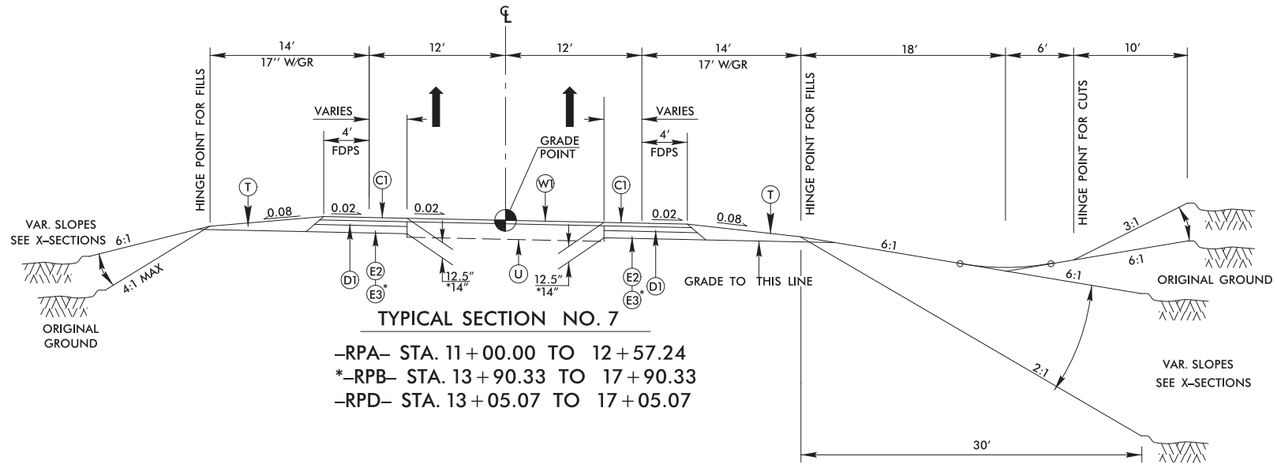
REVISIONS

8/17/99



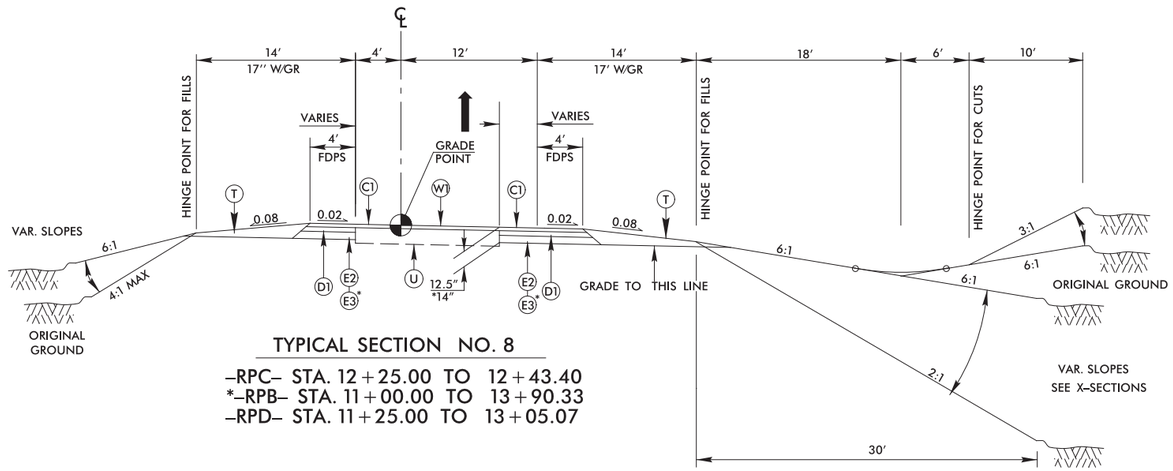
TYPICAL SECTION NO. 6

–NBL– STA. 25+45.23 TO 27+65.23
–SBL– STA. 25+54 +/– TO 28+00 +/– (EXISTING)
C



TYPICAL SECTION NO. 7

–RPA– STA. 11+00.00 TO 12+57.24
*–RPB– STA. 13+90.33 TO 17+90.33
–RPD– STA. 13+05.07 TO 17+05.07



TYPICAL SECTION NO. 8

–RPC– STA. 12+25.00 TO 12+43.40
*–RPB– STA. 11+00.00 TO 13+90.33
–RPD– STA. 11+25.00 TO 13+05.07

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

INCOMPLETE PLANS
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Michael Baker INTERNATIONAL
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NC License: F-1084

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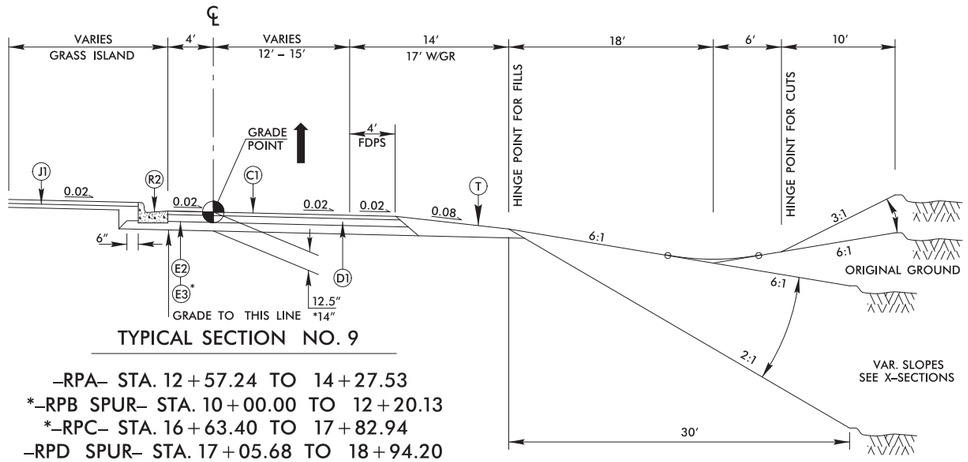
User:rejohnson

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	8″ ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	5″ MCI
R5	4″ CONC. ISLAND
R6	RUMBLE STRIPS
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3″
V2	MILLING ½″
W1	WEDGING
W2	WEDGING
W3	WEDGING

8/17/99

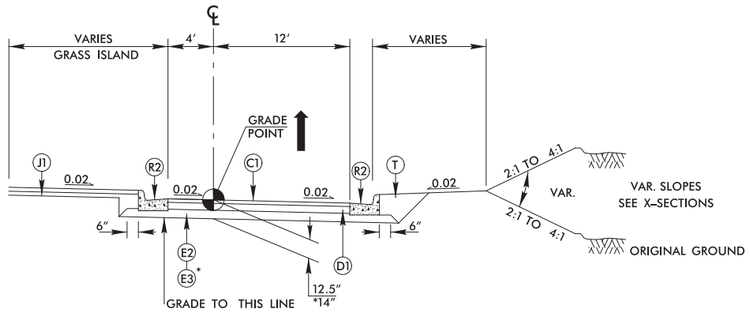
REVISIONS

R/W REVISION 050615 - -Y5A- EXTENDED TO PROVIDE ACCESS TO PARCEL 184.



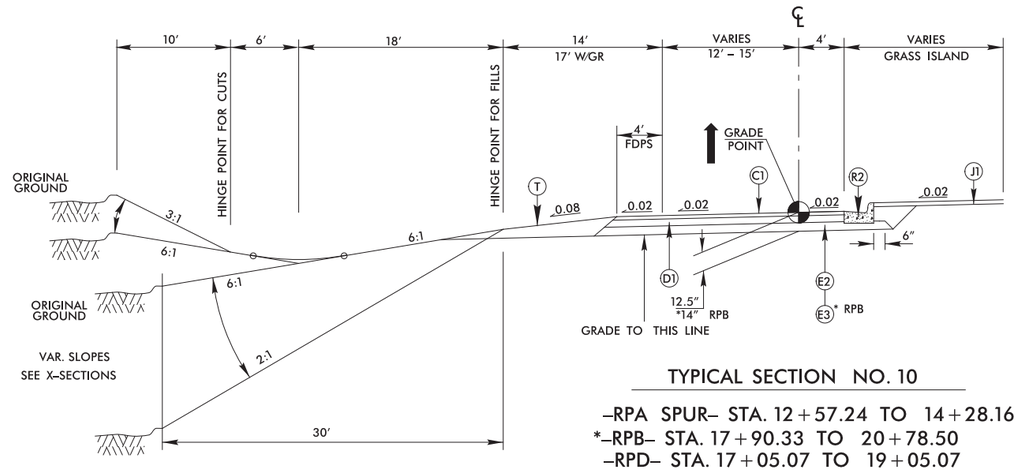
TYPICAL SECTION NO. 9

–RPA– STA. 12+57.24 TO 14+27.53
*–RPB SPUR– STA. 10+00.00 TO 12+20.13
*–RPC– STA. 16+63.40 TO 17+82.94
–RPD SPUR– STA. 17+05.68 TO 18+94.20



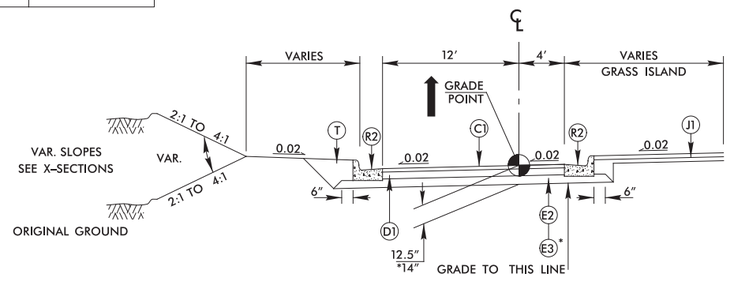
TYPICAL SECTION NO. 9A

–RPA– STA. 14+27.53 TO 14+61.74
*–RPC– STA. 17+82.94 TO 18+26.92
–RPD SPUR– STA. 18+94.20 TO 19+71.35



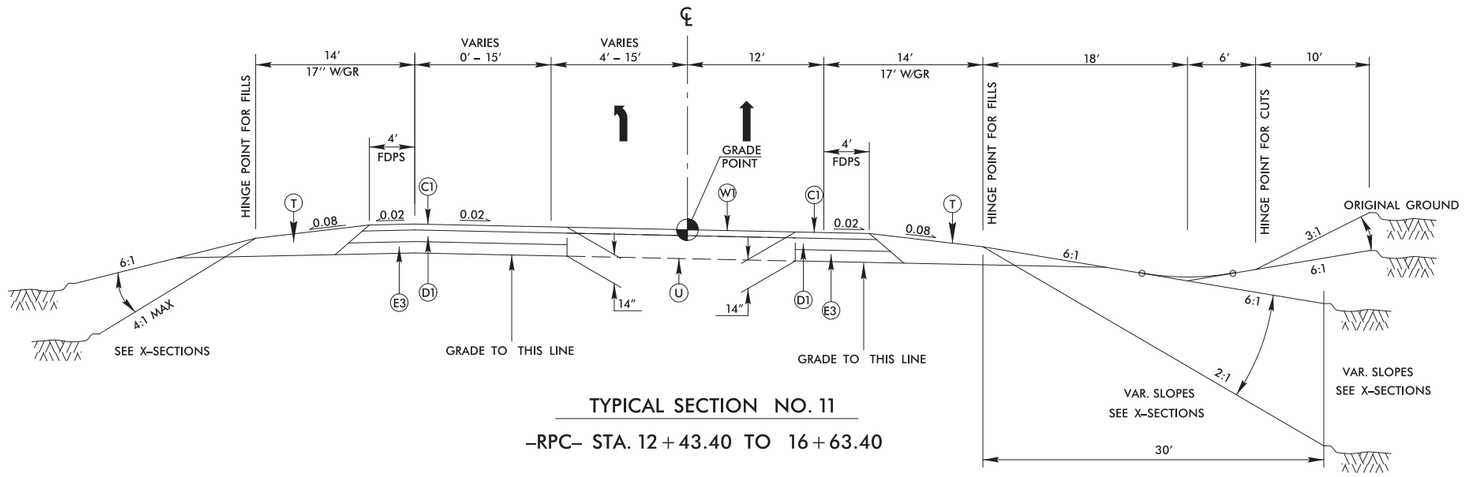
TYPICAL SECTION NO. 10

–RPA SPUR– STA. 12+57.24 TO 14+28.16
*–RPB– STA. 17+90.33 TO 20+78.50
–RPD– STA. 17+05.07 TO 19+05.07



TYPICAL SECTION NO. 10A

–RPA SPUR– STA. 14+28.16 TO 14+70.08
*–RPB– STA. 20+78.50 TO 21+94.35
*–RPC SPUR– STA. 18+32.27 TO 18+40.48
–RPD– STA. 19+05.07 TO 19+59.49



TYPICAL SECTION NO. 11

–RPC– STA. 12+43.40 TO 16+63.40

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | PAVEMENT ENGINEER

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User: wejohnson

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REVISIONS

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	8″ ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
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U	EXIST. PAVEMENT
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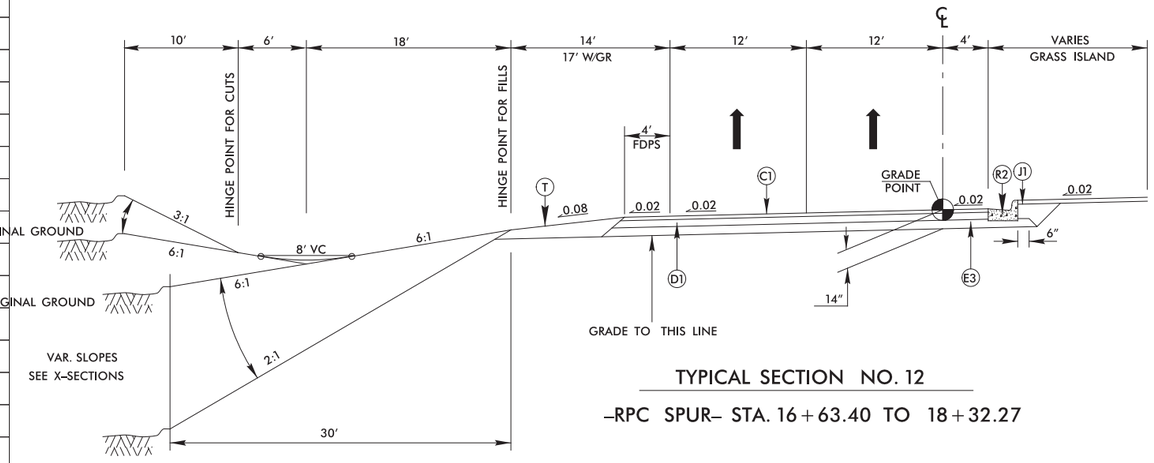
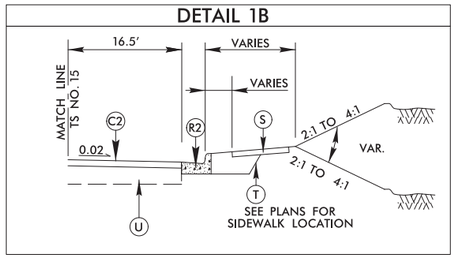
V2	MILLING ½″
W1	WEDGING
W2	WEDGING
W3	WEDGING



TYPICAL SECTION NO. 12

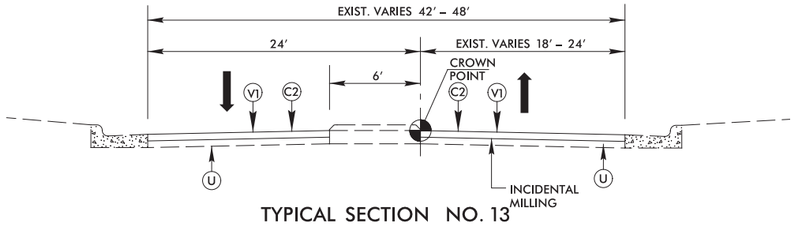
–RPC SPUR– STA. 16+63.40 TO 18+32.27

DETAIL 1B



–Y5C– STA. 10+22.56 TO 11+22.67

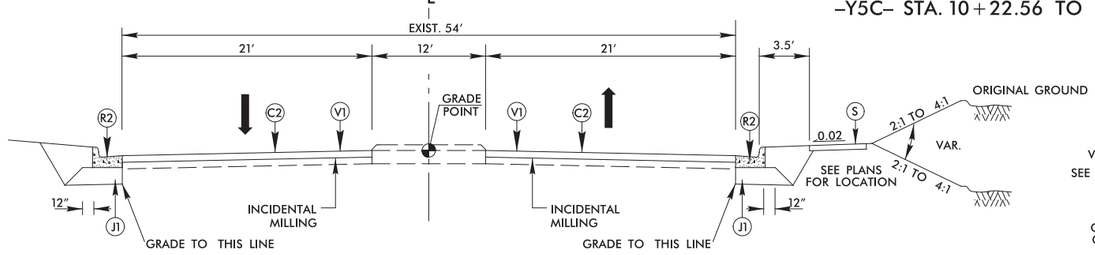
℄ –Y2 – W. DEERFIELD TRACE



TYPICAL SECTION NO. 13

–Y2– STA. 13+87.26 TO 14+58.49

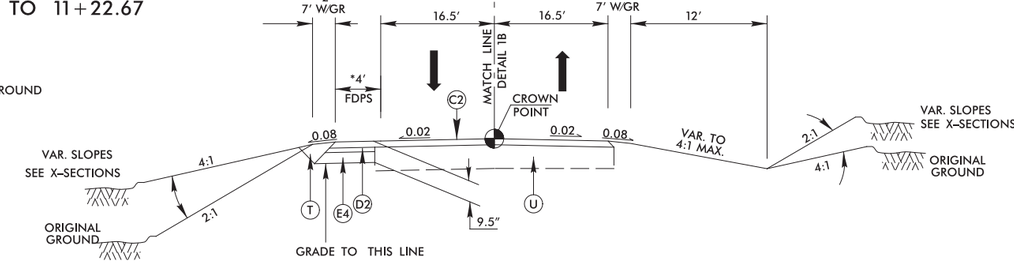
℄ Y3 – E. DEERFIELD TRACE



TYPICAL SECTION NO. 14

–Y3– STA. 10+18.00 TO 11+00.00

℄ –Y5B & C– HOLMES ROAD

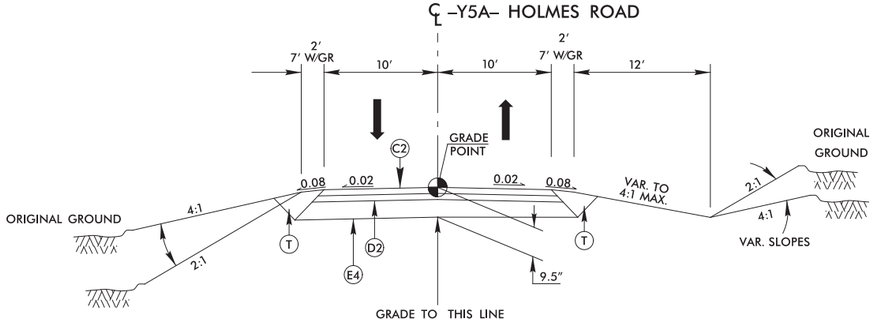


TYPICAL SECTION NO. 15

–Y5B– STA. 11+57.00 TO 13+80.00

*–Y5C– STA. 11+22.67 TO 11+50.00

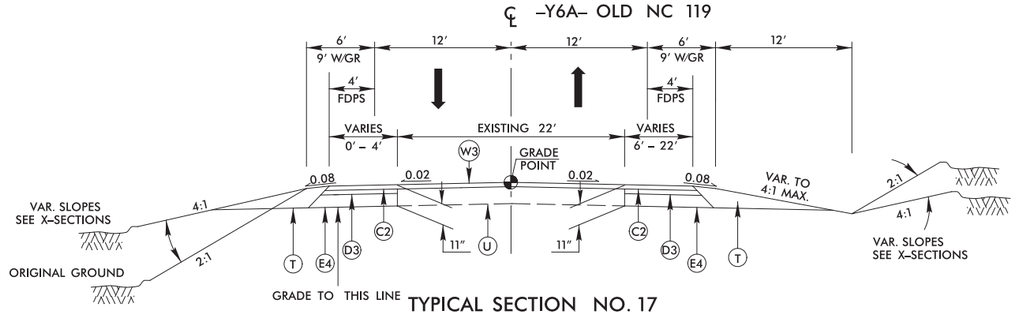
℄ –Y5A– HOLMES ROAD



TYPICAL SECTION NO. 16

–Y5A– STA. 10+61.82 TO 15+26.06

℄ –Y6A– OLD NC 119



TYPICAL SECTION NO. 17

–Y6A– STA. 14+00.00 TO 19+70.58

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

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NC License: F-1084

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PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

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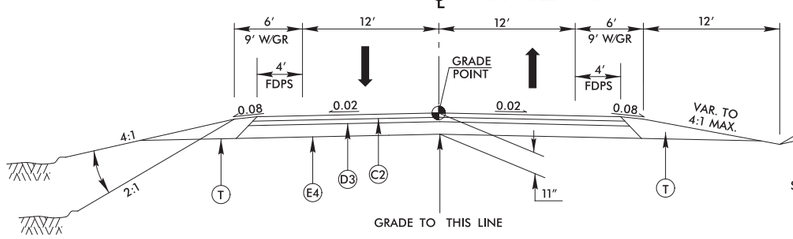
USER:sejohnson

8/17/99

REVISIONS

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	8″ ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	5″ MCI
R5	4″ CONC. ISLAND
R6	RUMBLE STRIPS
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3″
V2	MILLING ½″
W1	WEDGING
W2	WEDGING
W3	WEDGING

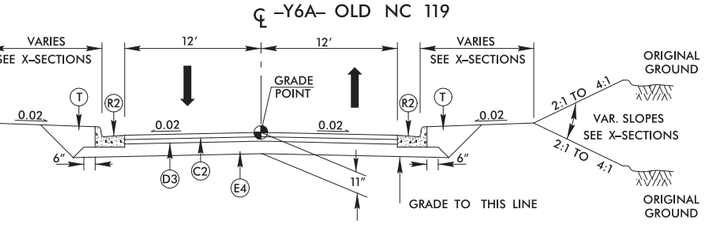
℄ –Y6A– OLD NC 119



TYPICAL SECTION NO. 18

–Y6A– STA. 11+57.80 TO 14+00.00
–Y6A– STA. 19+70.58 TO 23+43.19

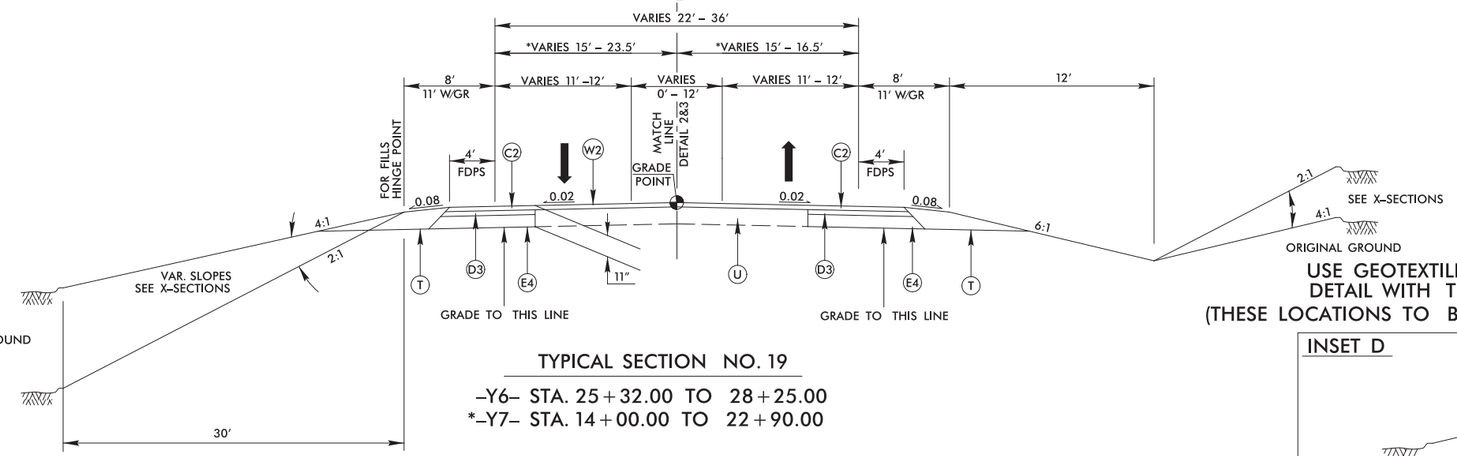
℄ –Y6A– OLD NC 119



TYPICAL SECTION NO. 18A

–Y6A– STA. 10+67.00 TO 11+57.80

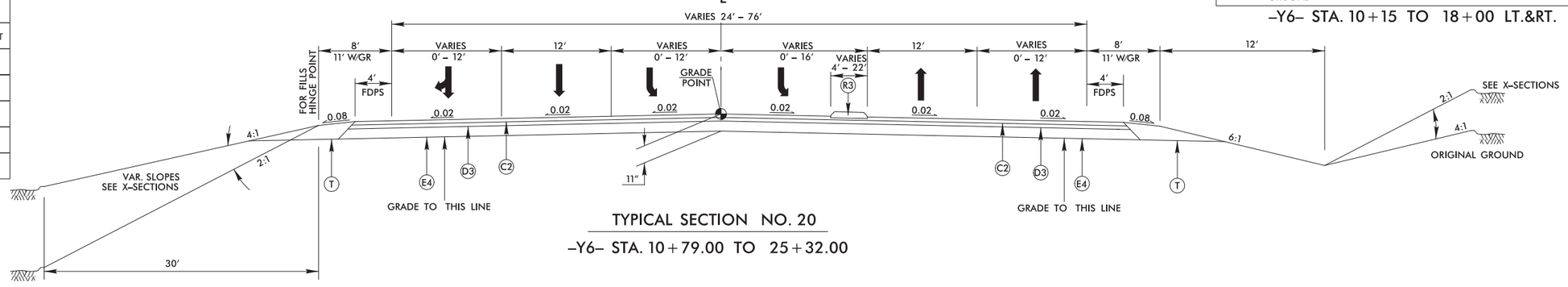
℄ –Y6– THIRD ST.



TYPICAL SECTION NO. 19

–Y6– STA. 25+32.00 TO 28+25.00
*–Y7– STA. 14+00.00 TO 22+90.00

℄ –Y6– THIRD ST.

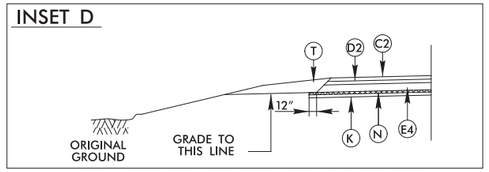


TYPICAL SECTION NO. 20

–Y6– STA. 10+79.00 TO 25+32.00

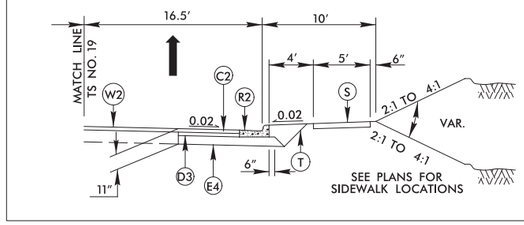
USE GEOTEXTILE FOR PAVEMENT STABILIZATION DETAIL WITH TRENCH SECTION AS FOLLOWS:
(THESE LOCATIONS TO BE INVESTIGATED DURING CONSTRUCTION)

INSET D



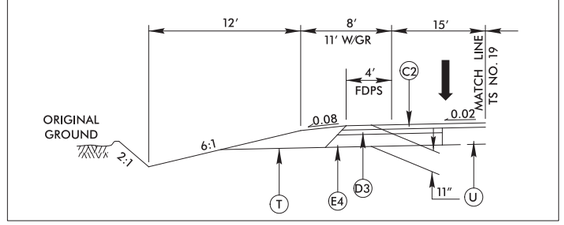
–Y6– STA. 10+15 TO 18+00 LT.&RT.

DETAIL 2



–Y7– STA. 17+00.00 RT TO –Y5C– 11+06.67 RT

DETAIL 3



–Y7– STA. 15+00.00 TO 19+00.00 LT.

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

PAVEMENT ENGINEER

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RALEIGH, NC 27699-1593

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User:wejohnson

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	8″ ABC
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N	GEOTEXTILE PAVE. STABILIZATION
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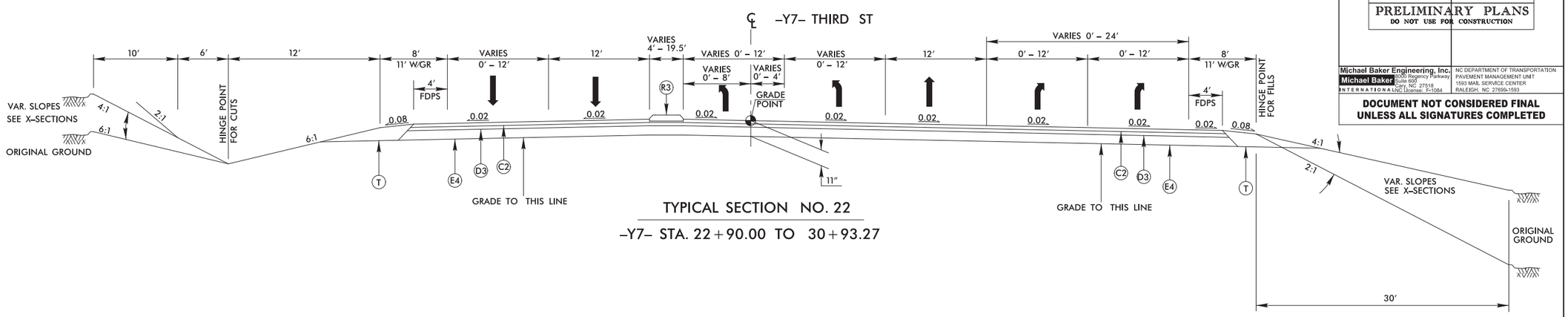
R3	2′-9″ C & G
R4	5″ MCI
R5	4″ CONC. ISLAND
R6	RUMBLE STRIPS
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3″
V2	MILLING ½″
W1	WEDGING
W2	WEDGING
W3	WEDGING

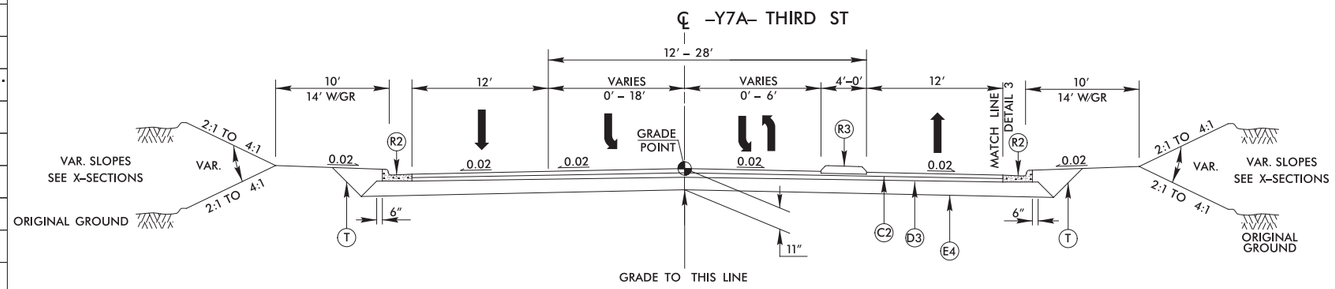
REVISIONS

8/17/99



TYPICAL SECTION NO. 22

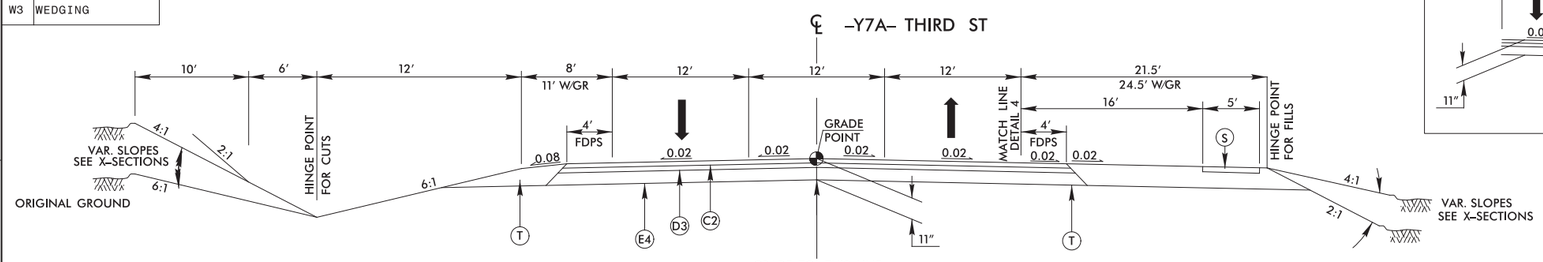
–Y7– STA. 22+90.00 TO 30+93.27



TYPICAL SECTION NO. 23

–Y7A– STA. 10+53.73 TO 25+92.94 LT
–Y7A– STA. 10+53.73 TO 26+89.38 RT

NOTE : CONSTRUCT STANDARD 5′ SIDEWALK FROM –Y7A– STA. 21+46.38 TO 25+92.94 RT. SEE PLANSHEETS 22 AND 23 FOR LOCATIONS.

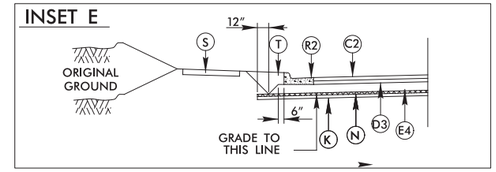


TYPICAL SECTION NO. 24

–Y7A– STA. 25+92.94 TO 29+81.00 LT
–Y7A– STA. 26+89.38 TO 29+81.00 RT

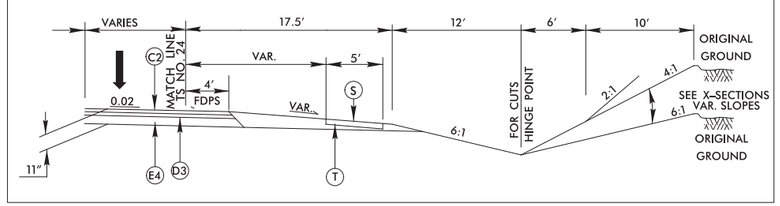
USE GEOTEXTILE FOR PAVEMENT STABILIZATION DETAIL WITH TRENCH SECTION AS FOLLOWS: (THESE LOCATIONS TO BE INVESTIGATED DURING CONSTRUCTION)

INSET E



–Y7A– STA. 10+53 TO 14+00 LT.&RT.

DETAIL 4



–Y7A– STA. 25+92.94 TO 26+89.38 RT

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-8
R/W SHEET NO.	

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NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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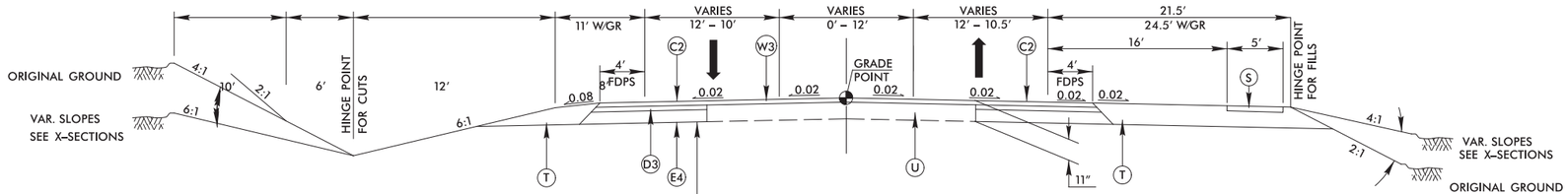
User: wjohnson

8/17/99

PAVEMENT SCHEDULE	
C1	3" S9.5C
C2	3" S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½" S9.5B
D1	4" I19.0C
D2	2½" I19.0B
D3	4" I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3" B25.0C
E2	5½" B25.0C
E3	7" B25.0C
E4	4" B25.0B
E5	4½" B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	8" ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
R1	1'-6" C & G
R2	2'-6" C & G
R3	2'-9" C & G
R4	5" MCI
R5	4" CONC. ISLAND
R6	RUMBLE STRIPS
S	4" SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3"
V2	MILLING ½"
W1	WEDGING
W2	WEDGING
W3	WEDGING

REVISIONS

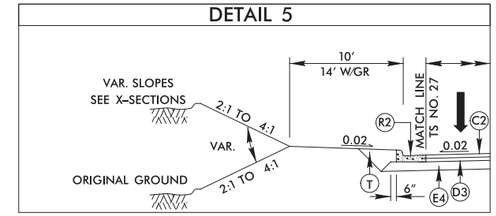
℄ –Y7A– THIRD ST



TYPICAL SECTION NO. 25

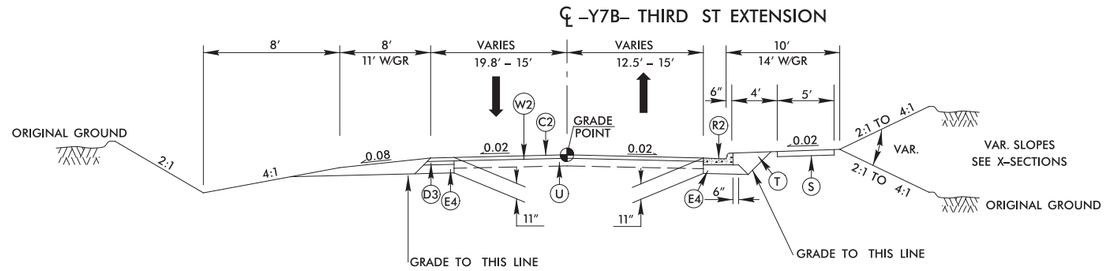
–Y7A– STA. 29+81.00 TO 34+00.00

DETAIL 5



–Y7B– STA. 16+12.19 TO 16+94.90

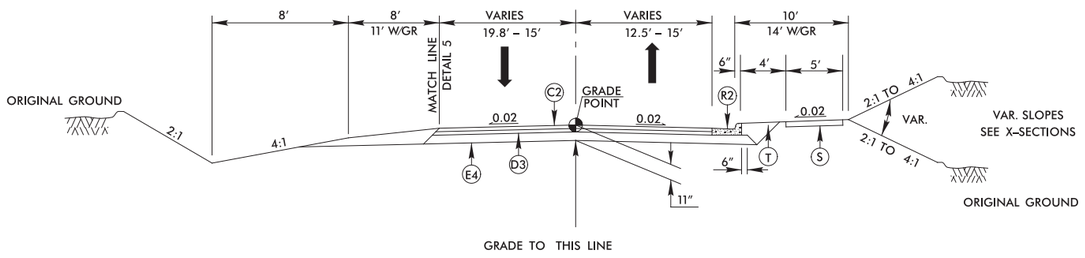
℄ –Y7B– THIRD ST EXTENSION



TYPICAL SECTION NO. 26

–Y7B– STA. 14+00.00 TO 15+26.45

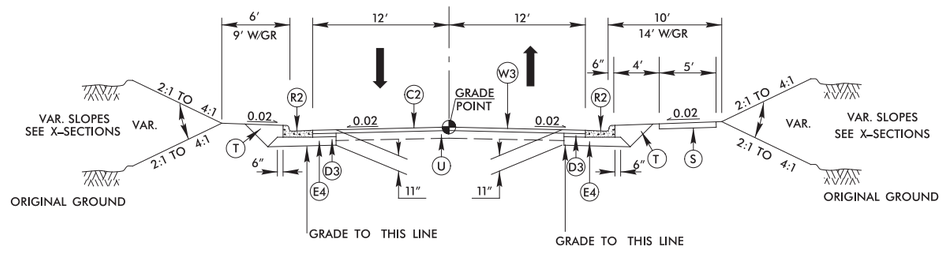
℄ –Y7B– THIRD ST EXTENSION



TYPICAL SECTION NO. 27

–Y7B– STA. 15+26.45 TO 16+94.90

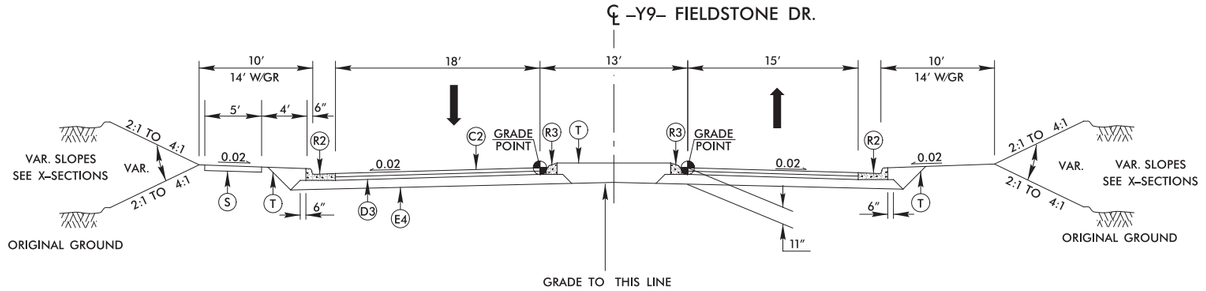
℄ –Y8– SKYVIEW DR.



TYPICAL SECTION NO. 28

–Y8– STA. 13+97.97 TO 16+50.00

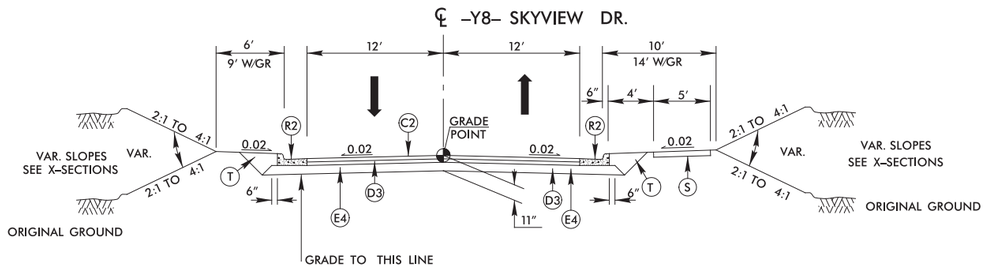
℄ –Y9– FIELDSTONE DR.



TYPICAL SECTION NO. 30

–Y9– STA. 10+18.74 TO 12+55.00

℄ –Y8– SKYVIEW DR.



TYPICAL SECTION NO. 29

–Y8– STA. 16+50.00 TO 18+13.44

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
3930 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084

NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

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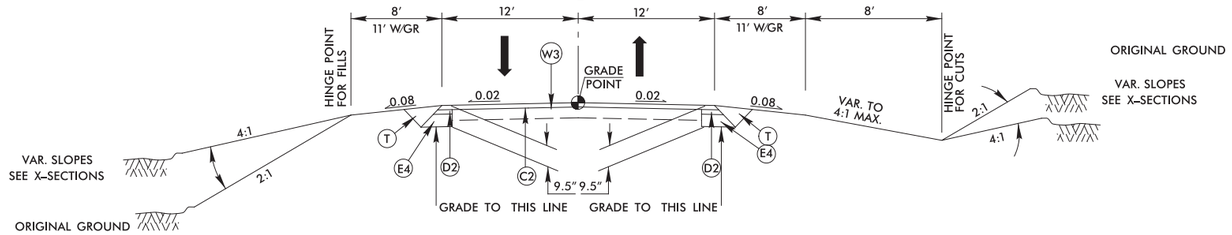
User: wjohnson

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	8″ ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	5″ MCI
R5	4″ CONC. ISLAND
R6	RUMBLE STRIPS
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3″
V2	MILLING ½″
W1	WEDGING
W2	WEDGING
W3	WEDGING

REVISIONS

8/17/99

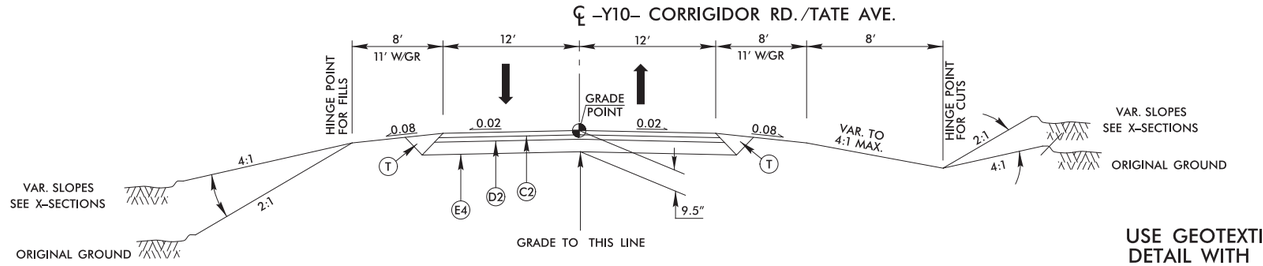
℄ –Y10– CORRIGIDOR RD./TATE AVE.



TYPICAL SECTION NO. 31

–Y10– STA. 14+60.00 TO 16+37.00
–Y10– STA. 34+39.00 TO 36+50.00

℄ –Y10– CORRIGIDOR RD./TATE AVE.

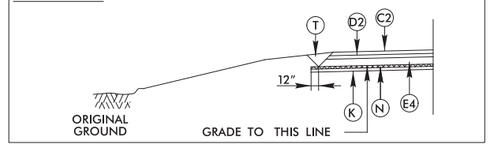


TYPICAL SECTION NO. 32

–Y10– STA. 16+37.00 TO 34+39.00

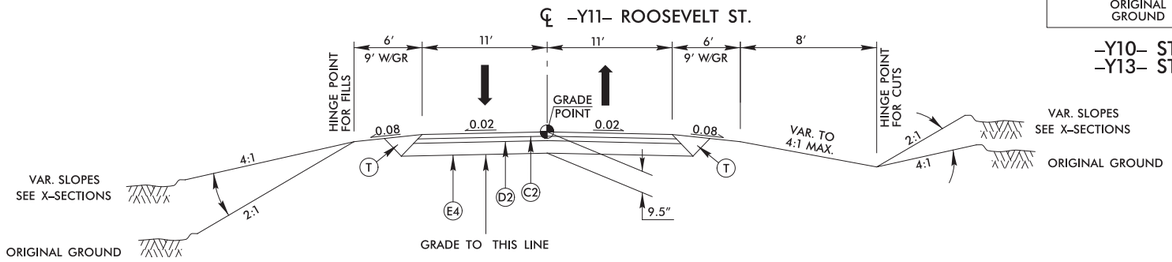
USE GEOTEXTILE FOR PAVEMENT STABILIZATION DETAIL WITH TRENCH SECTION AS FOLLOWS:
(THESE LOCATIONS TO BE INVESTIGATED DURING CONSTRUCTION)

INSET F



–Y10– STA. 18+00 TO 24+00 LT.&RT.
–Y13– STA. 10+00 TO 12+50 LT.&RT.

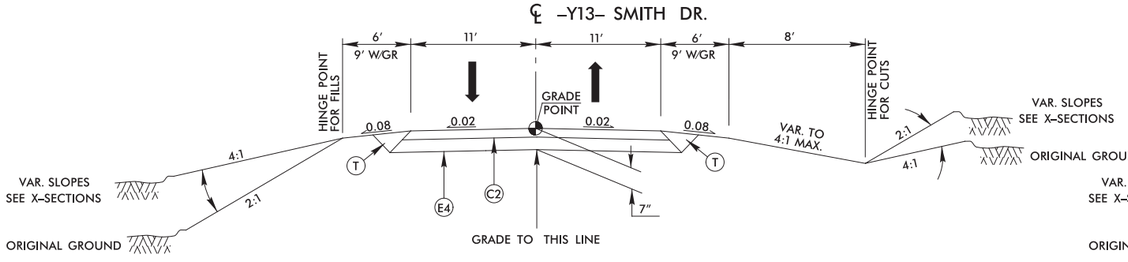
℄ –Y11– ROOSEVELT ST.



TYPICAL SECTION NO. 33

–Y11– STA. 10+12.21 TO 18+85.00

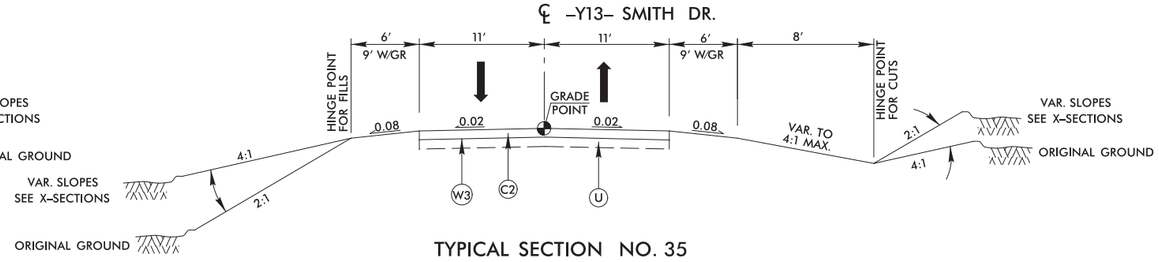
℄ –Y13– SMITH DR.



TYPICAL SECTION NO. 34

–Y13– STA. 10+51.00 TO 16+50.00

℄ –Y13– SMITH DR.



TYPICAL SECTION NO. 35

–Y13– STA. 16+50.00 TO 18+50.00

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
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3930 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084

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User: wejohnson

8/17/99

REVISIONS

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	8″ ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	5″ MCI
R5	4″ CONC. ISLAND
R6	RUMBLE STRIPS
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3″
V2	MILLING ½″
W1	WEDGING
W2	WEDGING
W3	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
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1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

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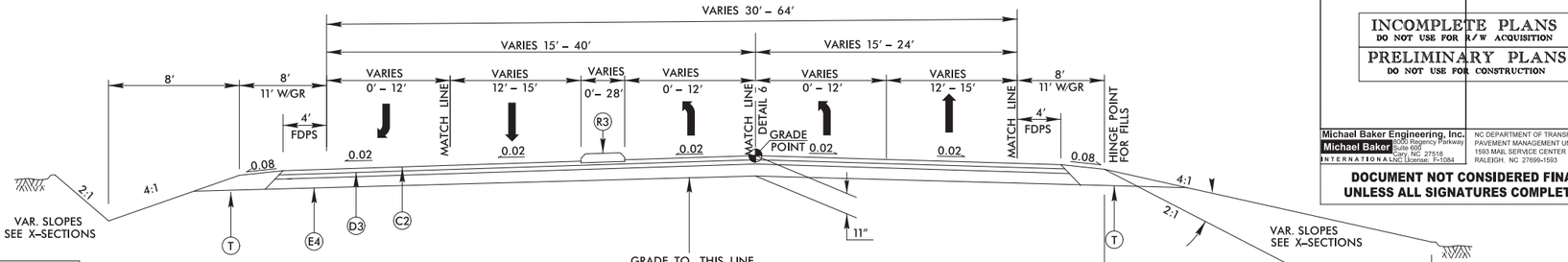
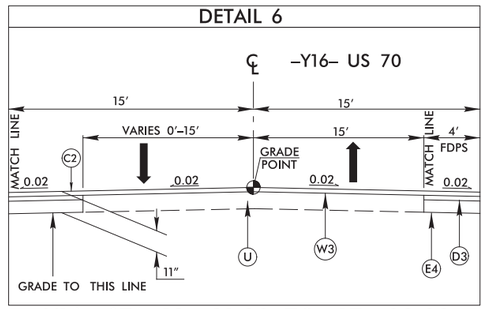
℄ –Y16– US 70



TYPICAL SECTION NO. 36

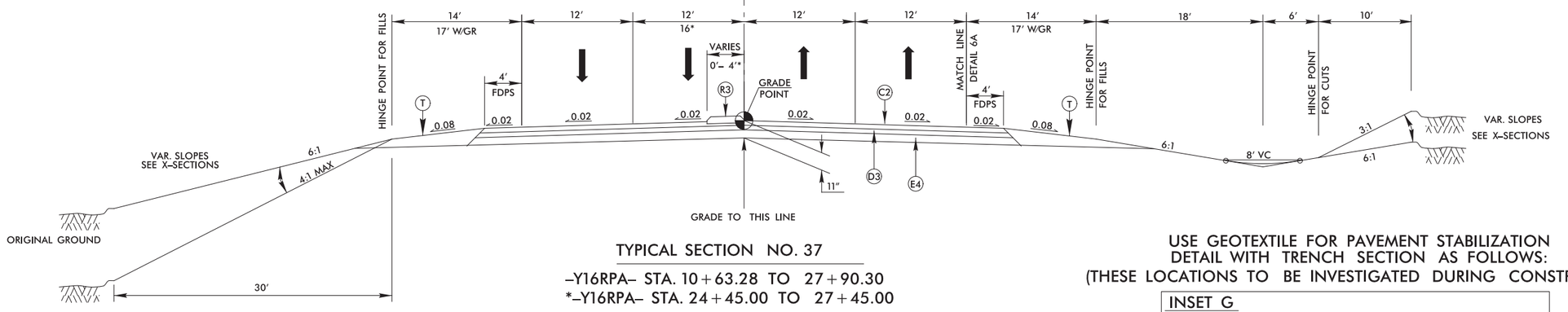
–Y16– STA. 12+21.00 TO 45+37.00

DETAIL 6



–Y16– STA. 12+21.00 TO 17+00.00
–Y16– STA. 40+00.00 TO 45+37.00

℄ –Y16RPA– JAMES WALKER

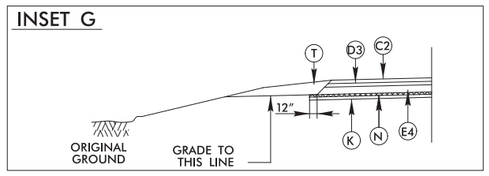


TYPICAL SECTION NO. 37

–Y16RPA– STA. 10+63.28 TO 27+90.30
*–Y16RPA– STA. 24+45.00 TO 27+45.00

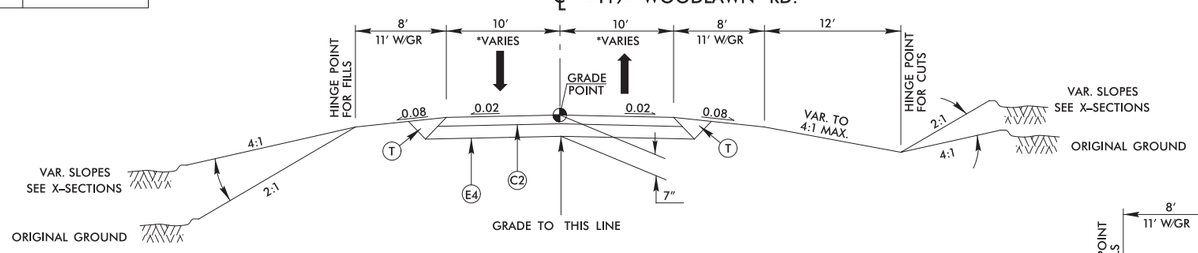
USE GEOTEXTILE FOR PAVEMENT STABILIZATION DETAIL WITH TRENCH SECTION AS FOLLOWS:
(THESE LOCATIONS TO BE INVESTIGATED DURING CONSTRUCTION)

INSET G



–Y16RPA– STA. 17+75 TO 21+25 LT.&RT.

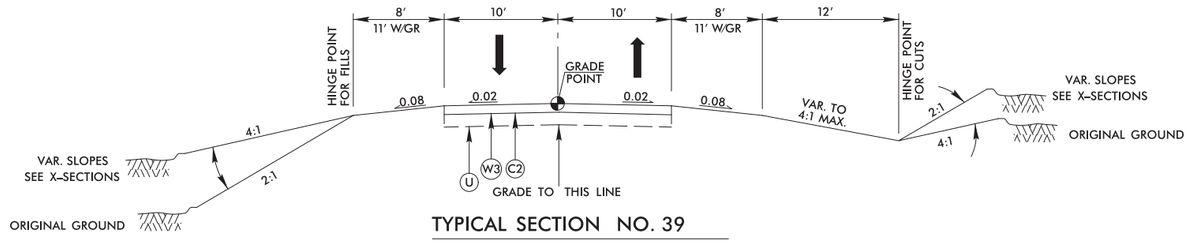
℄ –Y19– WOODLAWN RD.



TYPICAL SECTION NO. 38

–Y19– STA. 10+51.72 TO 12+25.00
* –Y19– STA. 10+51.72 TO 11+45.70

℄ –Y19– WOODLAWN RD.



TYPICAL SECTION NO. 39

–Y19– STA. 12+25.00 TO 12+60.00

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User: wejohnson

8/17/99

REVISIONS

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
C6	1½″ S9.5D
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	4″ ABC
J2	6″ ABC
J3	8″ ABC
J4	10″ ABC
J5	VAR. ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
P	PRIME COAT
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	5″ MCI
R5	RUMBLE STRIPS
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3″
V2	MILLING 1½″
W1	WEDGING
W2	WEDGING
W3	WEDGING

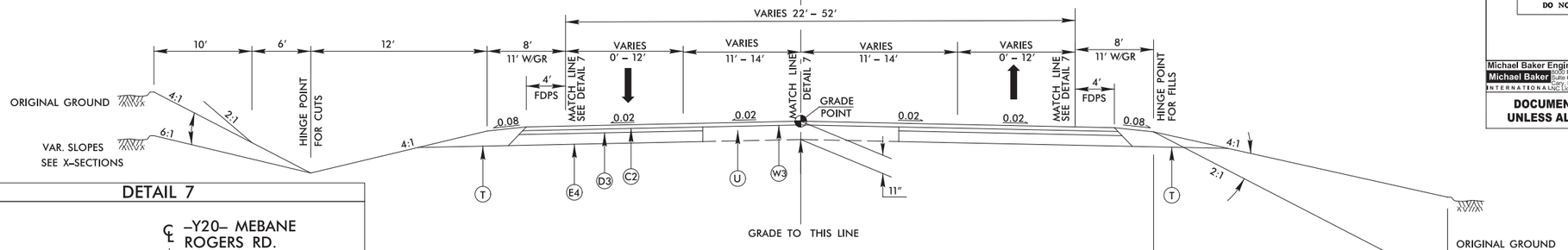
PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518
NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

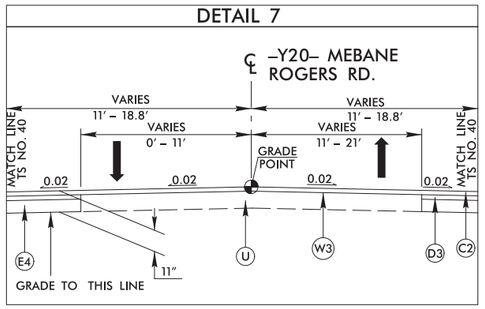
℄ –Y20– MEBANE ROGERS RD.



TYPICAL SECTION NO. 40

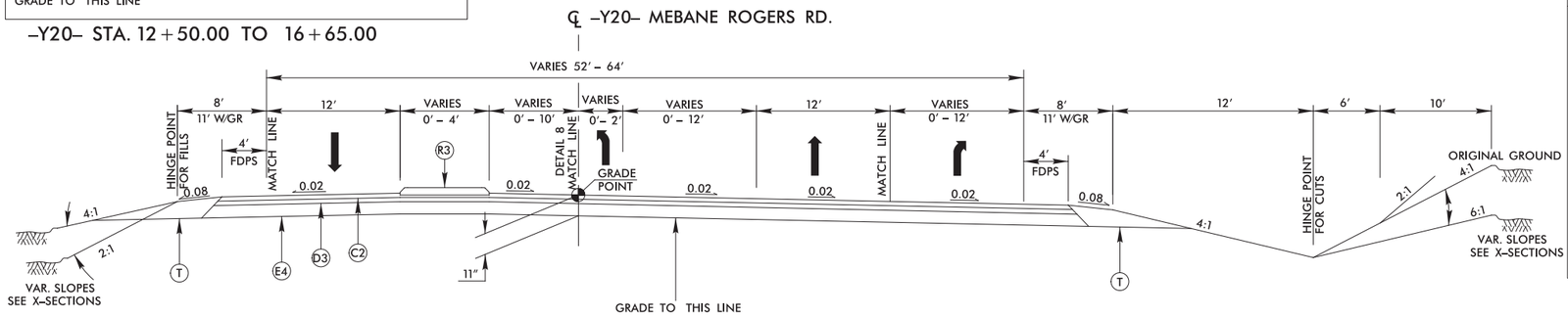
–Y20– STA. 12+50.00 TO 20+25.00

DETAIL 7



–Y20– STA. 12+50.00 TO 16+65.00

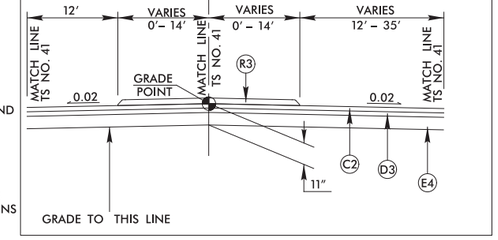
℄ –Y20– MEBANE ROGERS RD.



TYPICAL SECTION NO. 41

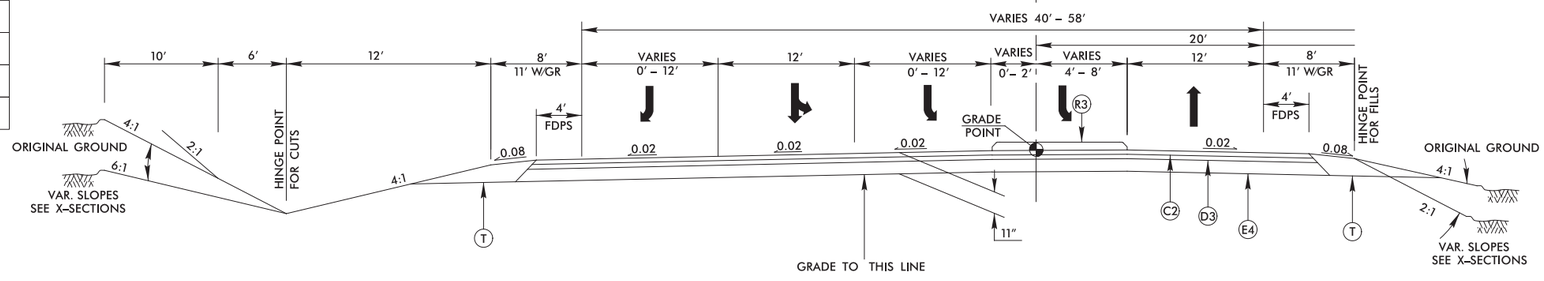
–Y20– STA. 20+25.00 TO 23+56.66

DETAIL 8



–Y20– STA. 20+25.00 TO 21+37.50

℄ –Y20– MEBANE ROGERS RD.



TYPICAL SECTION NO. 42

–Y20– STA. 24+62.10 TO 28+70.00

2/6/2017 12:17:37 PM
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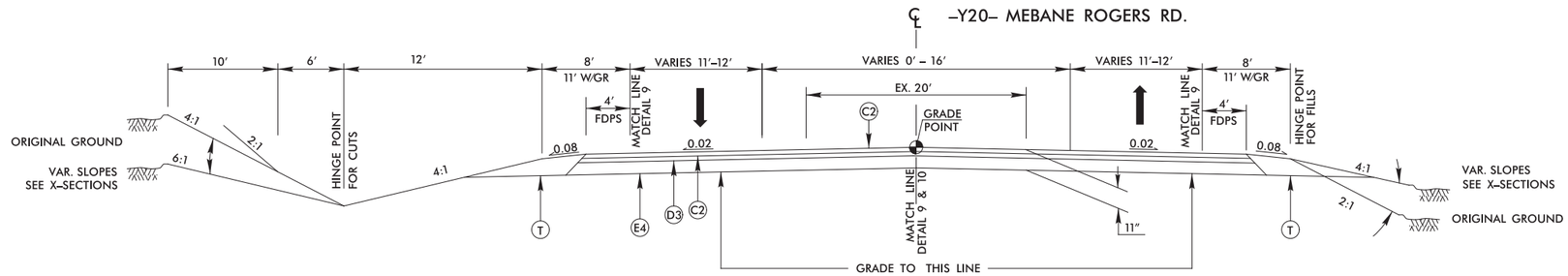
User: toddbuckner

8/17/99

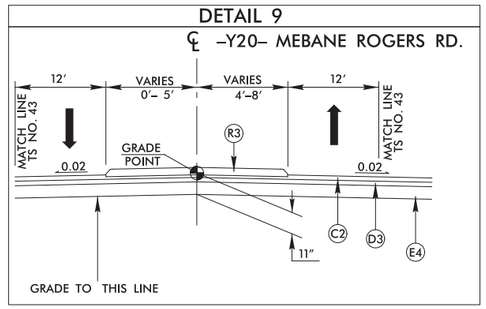
REVISIONS

PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
C6	1½″ S9.5D
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	4″ ABC
J2	6″ ABC
J3	8″ ABC
J4	10″ ABC
J5	VAR. ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
P	PRIME COAT
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	5″ MCI
R5	RUMBLE STRIPS
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3″
V2	MILLING 1½″
W1	WEDGING
W2	WEDGING
W3	WEDGING

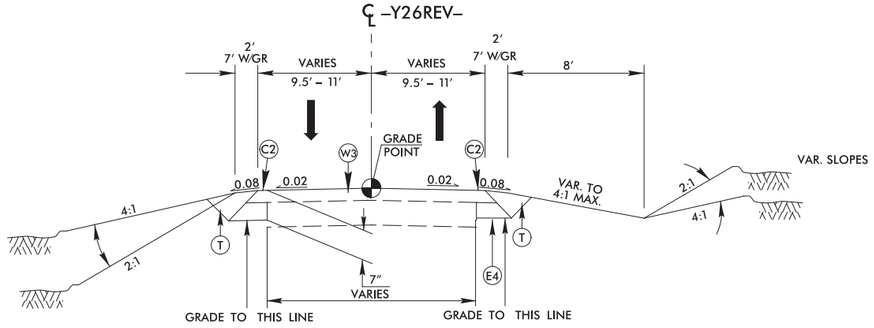


TYPICAL SECTION NO. 43

–Y20– STA. 28+70.00 TO 33+20.00



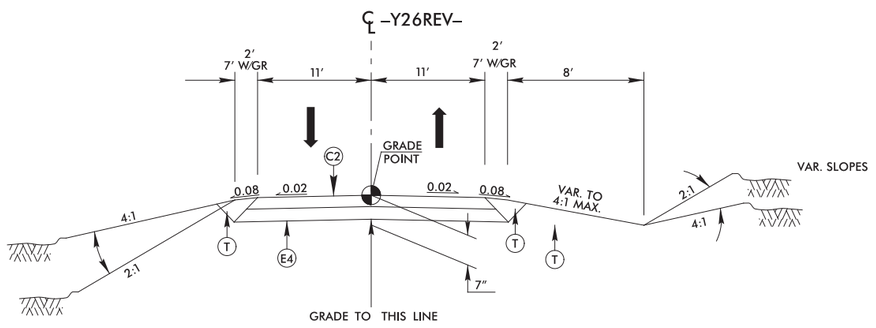
–Y20– STA. 28+70.00 TO 30+73.76



TYPICAL SECTION NO. 44

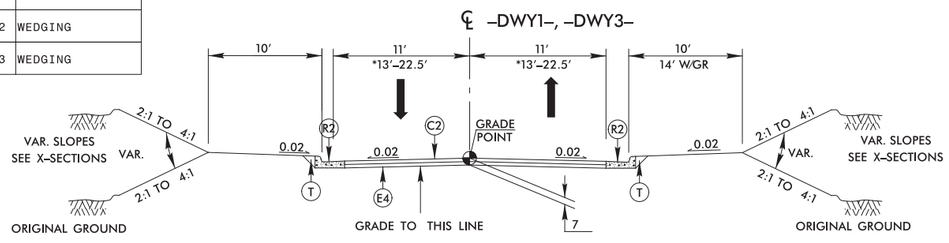
–Y26REV– STA. 10+65.00 TO 11+50.00

–Y26REV– STA. 16+00.00 TO 17+04.37



TYPICAL SECTION NO. 45

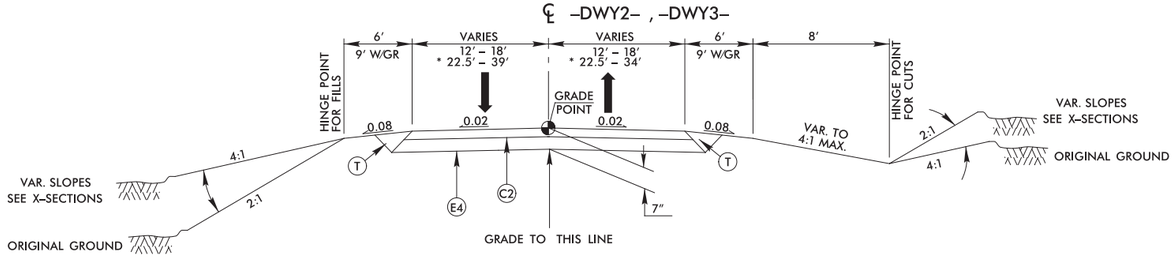
–Y26REV– STA. 11+50.00 TO 16+00.00



TYPICAL SECTION NO. 46

–DWY1– STA. 10+12.00 TO 12+24.20

* –DWY3– STA. 11+00.00 TO 12+26.00



TYPICAL SECTION NO. 47

–DWY2– STA. 10+36.00 TO 11+95.00

* –DWY3– STA. 12+16.00 TO 12+48.00

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600 Cary, NC 27518 NC License: F-1084
NC DEPARTMENT OF TRANSPORTATION PAVEMENT MANAGEMENT UNIT 1593 MAIL SERVICE CENTER RALEIGH, NC 27699-1593

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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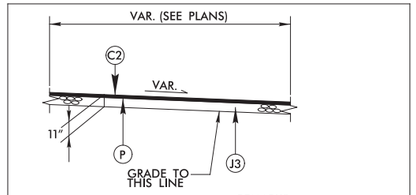
User: toddbuckner

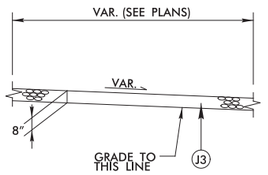
8/17/99

REVISIONS

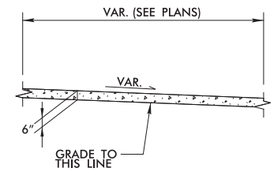
PAVEMENT SCHEDULE	
C1	3″ S9.5C
C2	3″ S9.5B
C3	VAR. S9.5C
C4	VAR. S9.5B
C5	1½″ S9.5B
C6	1½″ S9.5D
D1	4″ I19.0C
D2	2½″ I19.0B
D3	4″ I19.0B
D4	VAR. I19.0B
D5	VAR. I19.0C
E1	3″ B25.0C
E2	5½″ B25.0C
E3	7″ B25.0C
E4	4″ B25.0B
E5	4½″ B25.0B
E6	VAR. B25.0B
E7	VAR. B25.0C
J1	4″ ABC
J2	6″ ABC
J3	8″ ABC
J4	10″ ABC
J5	VAR. ABC
K	SUBGRADE STABILIZATION
N	GEOTEXTILE PAVE. STABILIZATION
P	PRIME COAT
R1	1′-6″ C & G
R2	2′-6″ C & G
R3	2′-9″ C & G
R4	5″ MCI
R5	RUMBLE STRIPS
S	4″ SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	MILLING 3″
V2	MILLING 1½″
W1	WEDGING
W2	WEDGING
W3	WEDGING



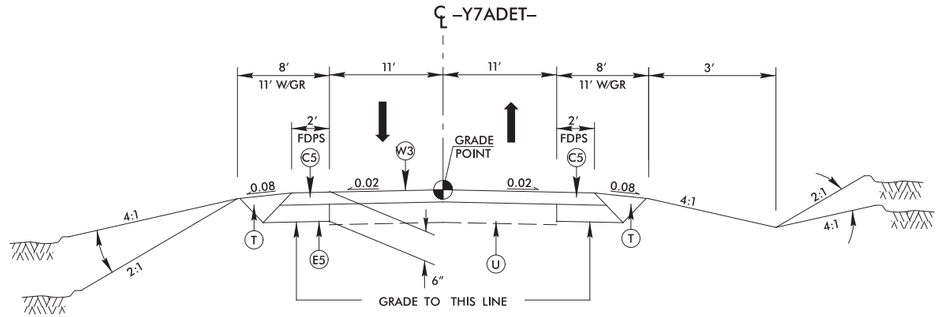
ROADWAY	REMARKS
MISC. PAVED PRIVATE DRIVES	SEE PLANS FOR LOCATIONS
TURNAROUNDS	SEE PLANS FOR LOCATIONS



ROADWAY	REMARKS
MISC. UNPAVED PRIVATE DRIVES	SEE PLANS FOR LOCATIONS

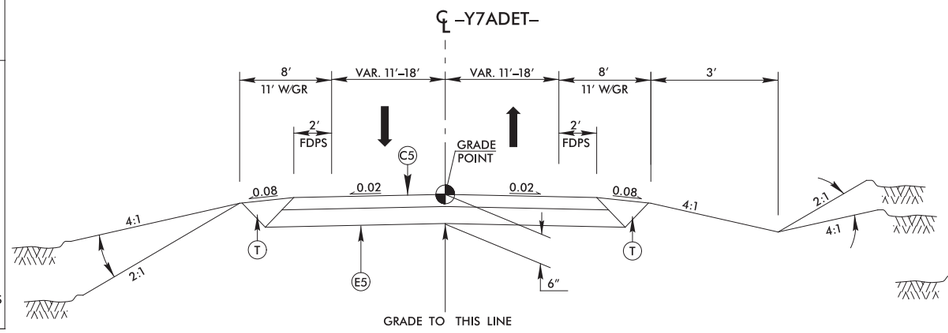


ROADWAY	REMARKS
MISC. CONC PRIVATE DRIVES	SEE PLANS FOR LOCATIONS



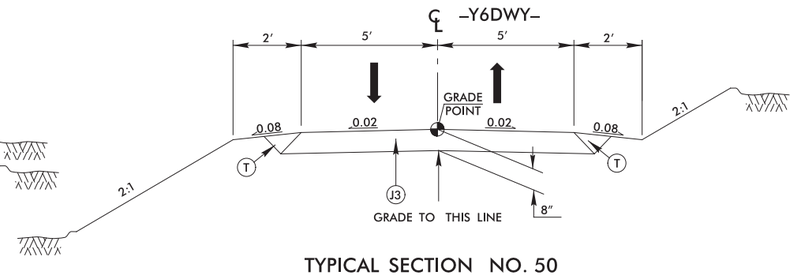
TYPICAL SECTION NO. 48

–Y7ADET– STA. 13+05.00 TO 15+26.83



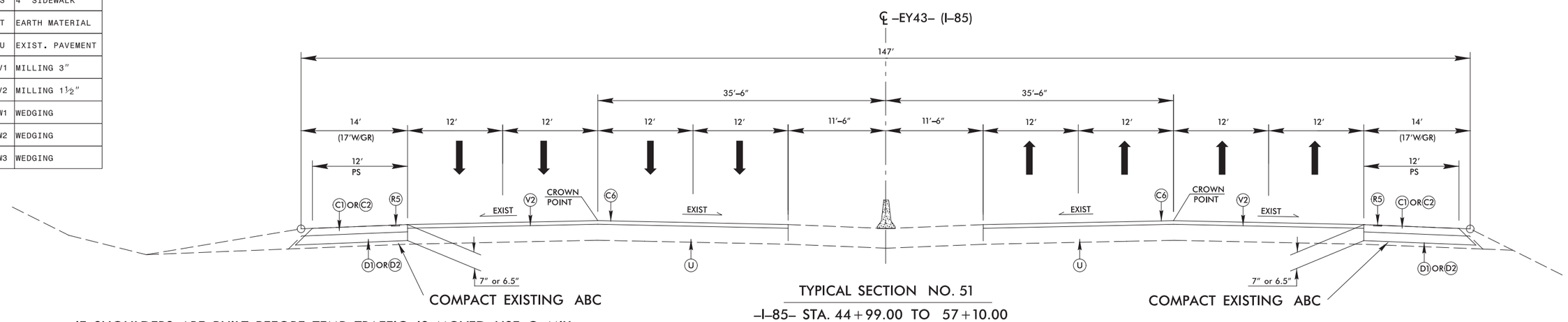
TYPICAL SECTION NO. 49

–Y7ADET– STA. 15+26.83 TO 18+04.71



TYPICAL SECTION NO. 50

–Y6DWY– STA. 10+22.67 TO 11+74.80



TYPICAL SECTION NO. 51

–I–85– STA. 44+99.00 TO 57+10.00

IF SHOULDERS ARE BUILT BEFORE TEMP. TRAFFIC IS MOVED, USE C MIX.
IF SHOULDERS ARE REBUILT AFTER TEMP. TRAFFIC IS REMOVED, USE B MIX.

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2A-14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084
NC DEPARTMENT OF TRANSPORTATION
PAVEMENT MANAGEMENT UNIT
1593 MAIL SERVICE CENTER
RALEIGH, NC 27699-1593

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User: toddbuckner

8/17/99

NC 119 OVER I-40 /85 INTERCHANGE LAYOUT SHEET

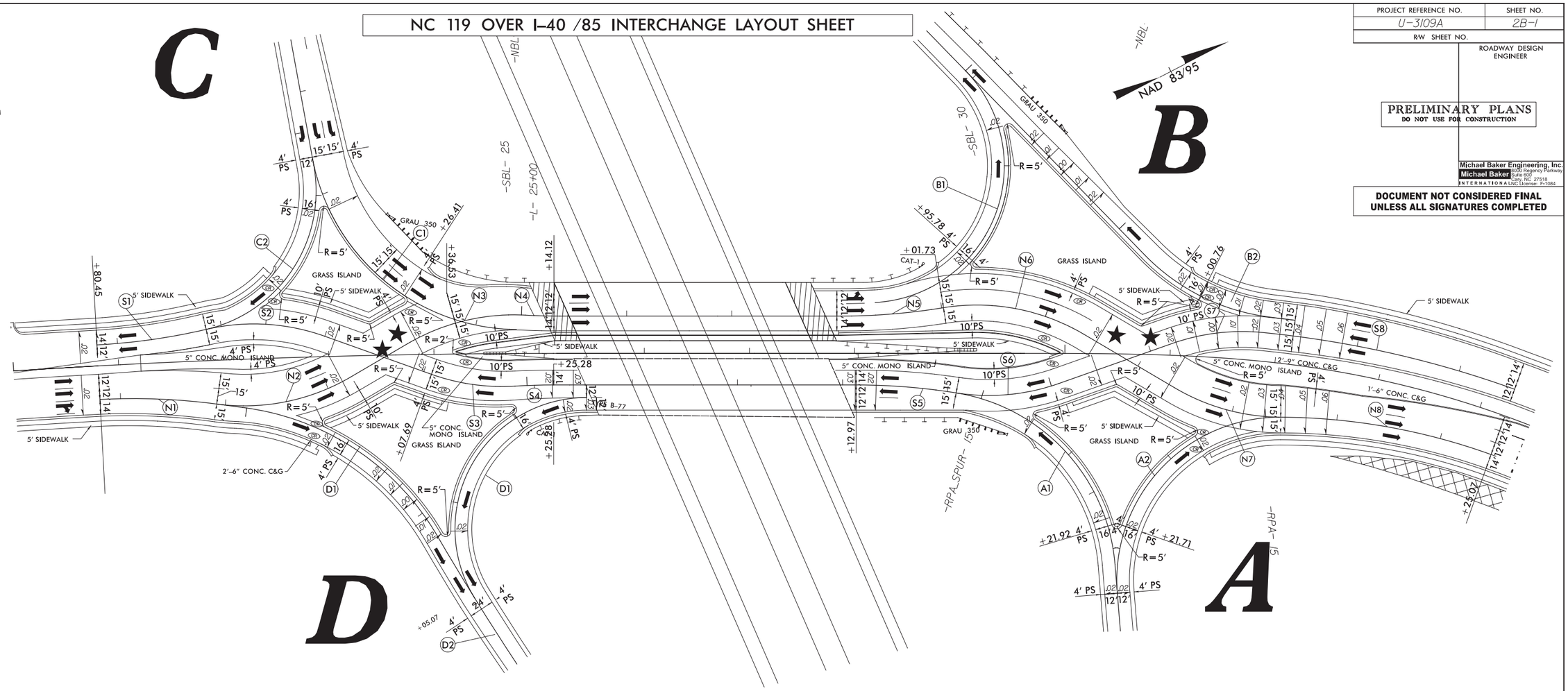
PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600
Cary, NC 27518
NC License: F-1084

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



INTERCHANGE ALIGNMENT DATA

-NBL- CURVE DATA

N1 PI Sta 21+36.26	
Δ = 10° 37' 35.5" (RT)	
D = 9° 32' 57.5"	
L = 111.28'	
T = 55.80'	
R = 600.00'	
N2 PI Sta 22+60.43	
Δ = 37° 54' 40.9" (LT)	
D = 28° 38' 52.4"	
L = 132.34'	
T = 68.59'	
R = 200.00'	
N3 PI Sta 24+47.01	
Δ = 33° 29' 49.6" (RT)	
D = 28° 38' 52.4"	
L = 116.93'	
T = 60.19'	
R = 200.00'	
N4 PI Sta 25+20.15	
Δ = 3° 07' 48.6" (LT)	
D = 9° 32' 57.5"	
L = 32.78'	
T = 16.39'	
R = 600.00'	
N5 PI Sta 28+52.51	
Δ = 9° 18' 29.8" (LT)	
D = 9° 32' 57.5"	
L = 97.48'	
T = 48.85'	
R = 600.00'	
N6 PI Sta 29+73.63	
Δ = 39° 50' 40.6" (RT)	
D = 28° 38' 52.4"	
L = 139.08'	
T = 72.49'	
R = 200.00'	
N7 PI Sta 31+94.91	
Δ = 30° 12' 35.2" (LT)	
D = 28° 38' 52.4"	
L = 105.45'	
T = 53.98'	
R = 200.00'	
N8 PI Sta 33+49.53	
Δ = 19° 29' 53.6" (RT)	
D = 9° 32' 57.5"	
L = 204.18'	
T = 103.09'	
R = 600.00'	

-SBL- CURVE DATA

S1 PI Sta 21+33.07	
Δ = 10° 01' 20.4" (LT)	
D = 9° 32' 57.5"	
L = 104.95'	
T = 52.61'	
R = 600.00'	
S2 PI Sta 22+44.16	
Δ = 32° 44' 14.9" (RT)	
D = 28° 38' 52.4"	
L = 114.28'	
T = 58.74'	
R = 200.00'	
S3 PI Sta 24+48.65	
Δ = 23° 08' 47.2" (LT)	
D = 28° 38' 52.4"	
L = 80.80'	
T = 40.96'	
R = 200.00'	
S4 PI Sta 25+06.89	
Δ = 3° 30' 48.9" (RT)	
D = 9° 32' 57.5"	
L = 36.79'	
T = 18.40'	
R = 600.00'	
S5 PI Sta 28+60.59	
Δ = 9° 04' 34.8" (RT)	
D = 9° 32' 57.5"	
L = 95.05'	
T = 47.62'	
R = 600.00'	
S6 PI Sta 29+58.87	
Δ = 28° 32' 08.0" (LT)	
D = 28° 38' 52.4"	
L = 99.61'	
T = 50.86'	
R = 200.00'	
S7 PI Sta 31+66.00	
Δ = 25° 00' 31.9" (RT)	
D = 28° 38' 52.4"	
L = 87.30'	
T = 44.36'	
R = 200.00'	
S8 PI Sta 33+32.79	
Δ = 14° 16' 30.5" (RT)	
D = 5° 47' 35.9"	
L = 246.41'	
T = 123.85'	
R = 989.00'	

-RPA SPUR- CURVE DATA

A1 PI Sta 14+26.12	
Δ = 76° 17' 49.2" (LT)	
D = 31° 49' 51.6"	
L = 239.69'	
T = 141.38'	
R = 180.00'	

-RPA- CURVE DATA

A2 PI Sta 14+26.32	
Δ = 94° 58' 28.3" (RT)	
D = 36° 55' 54.1"	
L = 256.93'	
T = 169.08'	
R = 155.00'	

-RPB_SPUR- CURVE DATA

B1 PI Sta 12+85.32	
Δ =	
D = 44° 04' 25.24"	
L = 285.32'	
T = 285.34'	
R = 130.00'	

-RPB- CURVE DATA

B2 PI Sta 21+04.64	
Δ = 38° 33' 15.5" (LT)	
D = 28° 38' 52.4"	
L = 134.58'	
T = 69.95'	
R = 200.00'	

-RPC SPUR- CURVE DATA

C1 PI Sta 18+28.00	
Δ = 78° 54' 37.4" (LT)	
D = 28° 38' 52.4"	
L = 275.45'	
T = 164.60'	
R = 200.00'	

-RPC- CURVE DATA

C2 PI Sta 18+00.38	
Δ = 87° 17' 03.7" (RT)	
D = 42° 26' 28.7"	
L = 205.66'	
T = 128.75'	
R = 135.00'	

-RPD SPUR- CURVE DATA

D1 PI Sta 19+30.14	
Δ = 127° 46' 23.5" (RT)	
D = 45° 50' 23.5"	
L = 265.67'	
T = 224.4'	
R = 125.00'	

-RPD- CURVE DATA

D2 PI Sta 16+11.12	
Δ = 7° 11' 41.0" (RT)	
D = 2° 17' 30.6"	
L = 314.00'	
T = 157.21'	
R = 2,500.00'	
D3 PI Sta 18+96.55	
Δ = 52° 18' 36.9" (LT)	
D = 22° 55' 05.9"	
L = 228.0'	
T = 122.64'	
R = 250.00'	

★ = PROPOSED SIGNALS

7/19/2016 9:48:59 AM
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User: wjohnson

FOR –Y7ADET– DETOUR USE ONLY

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2B-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
919 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/95

PRC Sta. 16+33.59 –Y7ADET– = POC Sta. 23+31.81 –Y7A–

POC Sta. 15+39.29 END –Y7ADET– = POC Sta. 22+40.47 –Y7A– (18.0' RT)

PCC Sta. 13+90.68

POC Sta. 13+05.00 BEGIN –Y7ADET–

PCC Sta. 12+57.51

PT Sta. 18+60.65 –Y7ADET– = PT Sta. 25+58.88 –Y7A–

FIELDSTONE PARTNERS, LLC DB 3354 PG 446

UNITED STATES POSTAL SERVICE DB 1322 PG 312

VERNON CLAPP DB 456 PG 758

TRACIE GERRINGER DB 1478 PG 989 PB 44 PG 23

LIBERTAD VILLALBA DB 2769 PG 340 NO CLAIM

SCOTT & LISA WICKER DB 942 PG 757 NO CLAIM

SANDRA & WINFRED JONES DB 873 PG 389

WILLIAM & ALLISON CULLIPHER DB 1097 PG 137

JOE & INISE DEGRAFFENREIDT DB 392 PG 911 DB 481 PG 265

WINFRED & TERRY WHITTED DB 898 PG 119 PB 43 PG 137

MILDRED & WILLARD GODREY DB 446 PG 189

HENRY & JACKIE CRANE DB 751 PG 111 PB 43 PG 137

JESSICA & JOHN ALLISON DB 2144 PG 244 PB 44 PG 127

ANDY WALLS, II & SARA WALLS DB 2251 PG 553 PB 44 PG 127

PAULA ANGEVINE-JEFFERS

–Y7ADET–			
PI Sta 11+28.83	PI Sta 13+24.25	PI Sta 15+17.58	PI Sta 17+47.80
Δ = 4° 43' 02.4" (RT)	Δ = 9° 41' 21.0" (RT)	Δ = 40° 56' 01.3" (RT)	Δ = 15° 18' 20.9" (LT)
D = 1° 49' 54.9"	D = 7° 16' 32.4"	D = 16° 51' 06.1"	D = 6° 44' 26.4"
L = 257.51'	L = 133.17'	L = 242.91'	L = 227.07'
T = 128.83'	T = 66.75'	T = 126.90'	T = 114.21'
R = 3127.64'	R = 787.50'	R = 340.00'	R = 850.00'
Ds = EXIST.	Ds = EXIST.	Ds = 35 mph	Ds = 50 mph
SE = EXIST.	SE = EXIST.	SE = 0.06	SE = 0.06

Y7ADET

BEGIN GRADE –Y7ADET– = STA. 13+05.00
EL. = 641.25'

PI = 14+75.00
EL = 637.51'
VC = 110'
K = 32

END GRADE –Y7ADET– = STA. 15+39.29 = –Y7A– STA. 22+40.47 (18.0' RT)
EL. = 633.91'

PROPOSED GRADE

(–)2.2000%

(–)1.5600%

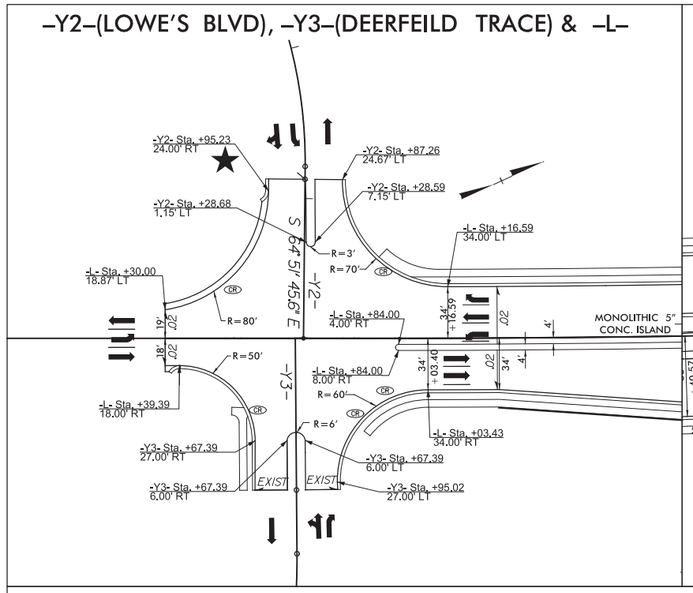
PROPOSED –Y7A– GRADE

650 640 630 620 610 600

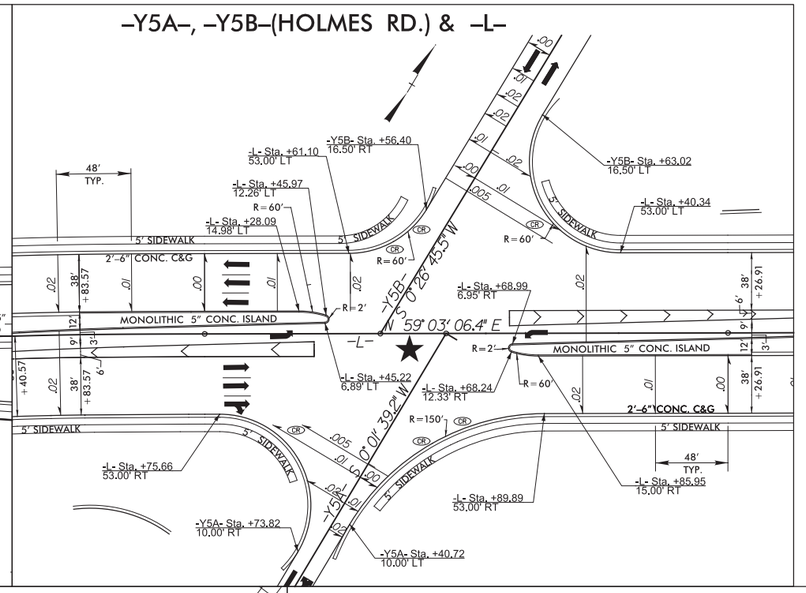
10 11 12 13 14 15 16 17 18

INTERSECTION DETAILS

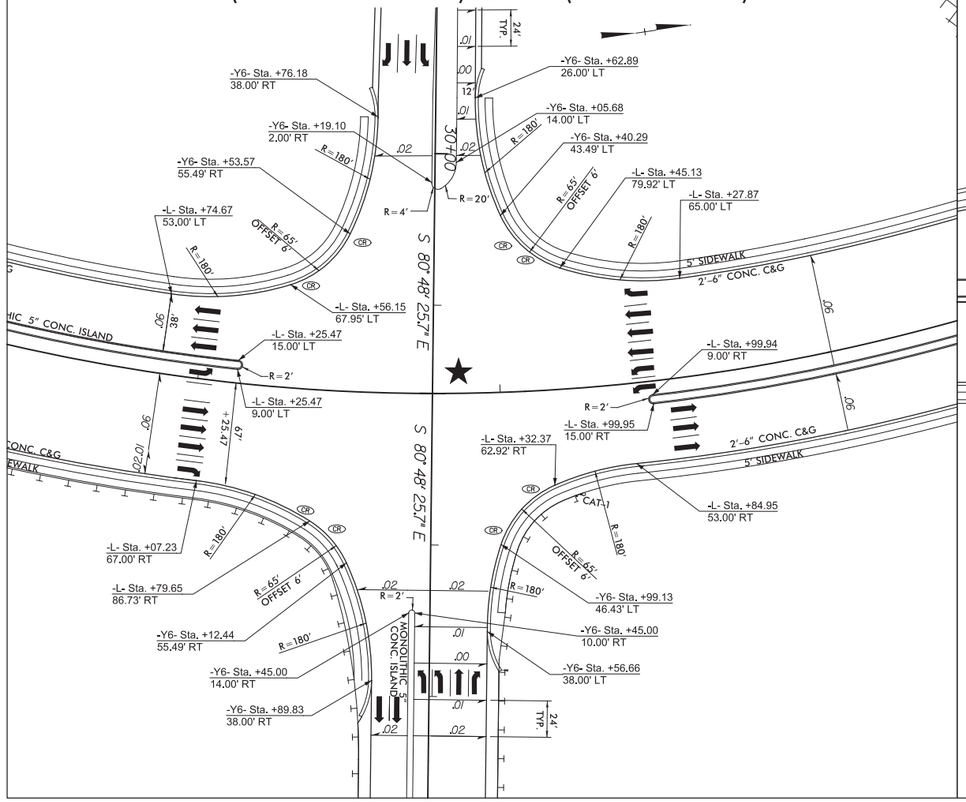
–Y2–(LOWE'S BLVD), –Y3–(DEERFEILD TRACE) & –L–



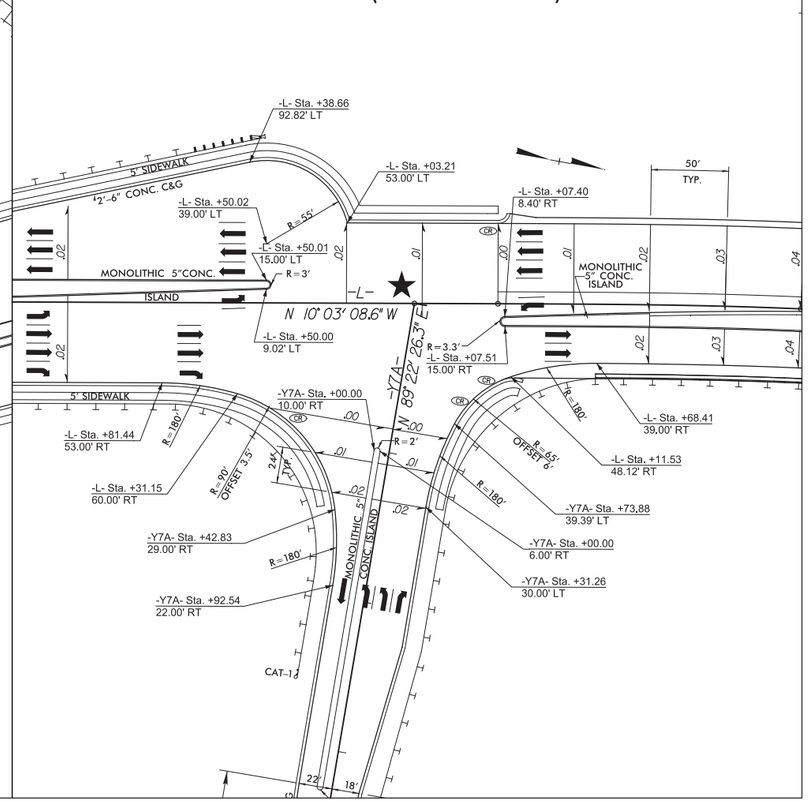
–Y5A–, –Y5B–(HOLMES RD.) & –L–



–Y6–(RELOCATED NC119) & –Y7–(THIRD ST. EXT.)



–L– & –Y7A–(THIRD ST. EXT.)



PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2B-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
8000 Regency Parkway
Suite 600
Cary, NC 27518
INTERNATIONAL LNC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

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REVISIONS

5/14/99

06-FEB-2017 12:05
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$$$$USERNAME$$$$

5/14/99

INTERSECTION DETAILS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2B-4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

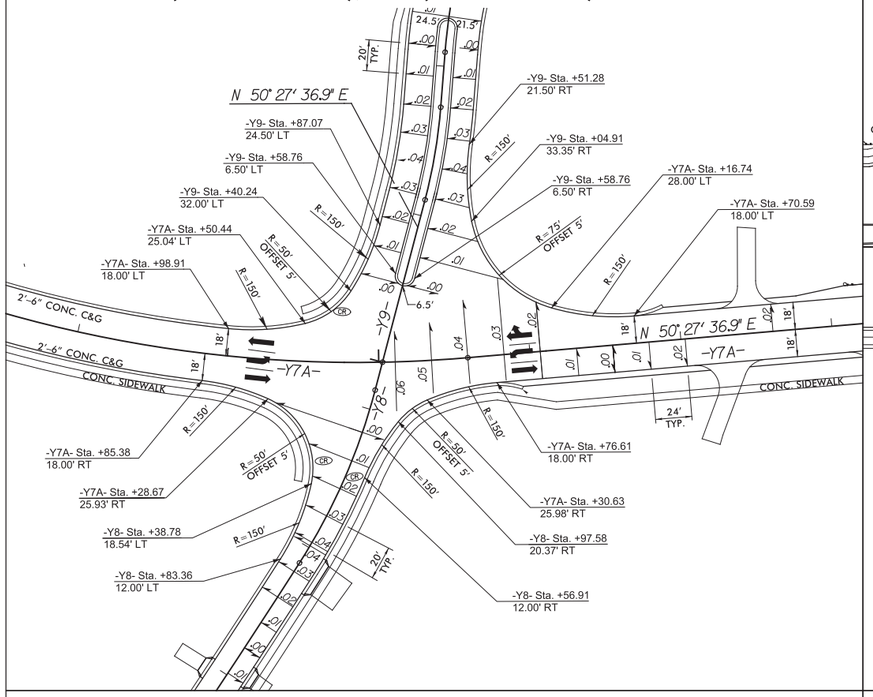
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
8000 Regency Parkway
Suite 600
Cary, NC 27518
INTERNATIONAL LNC License: F-1084

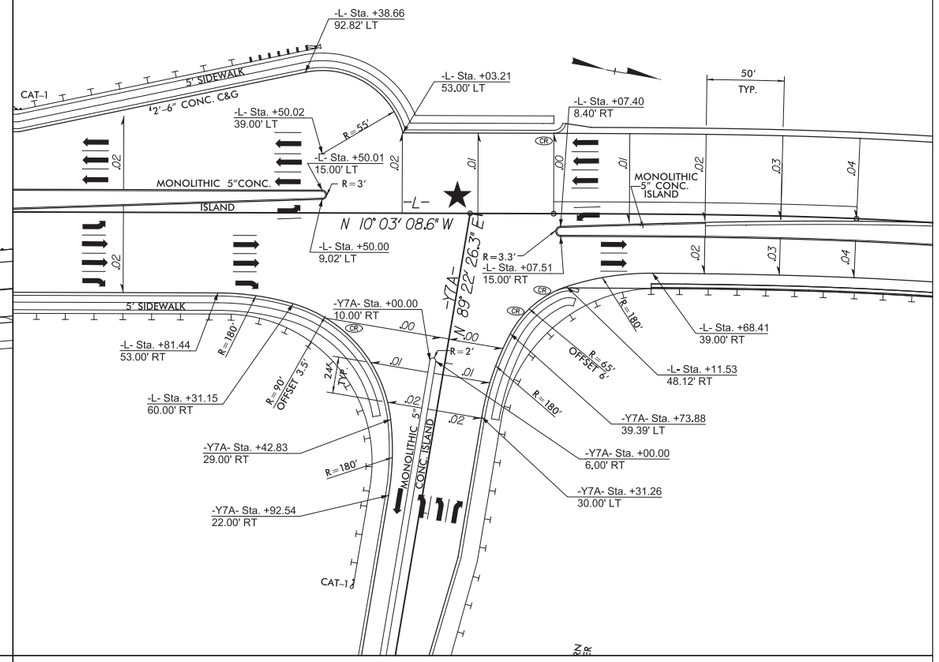
SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

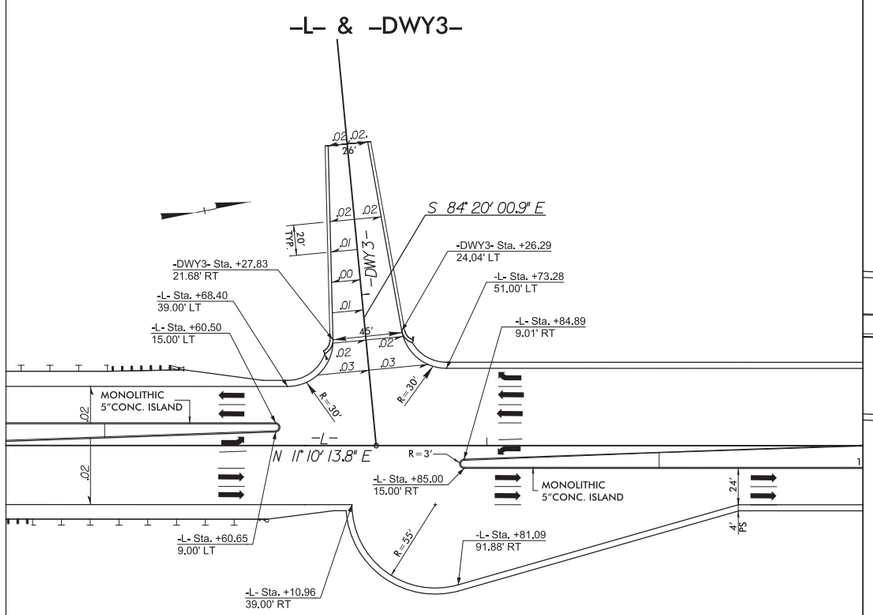
–Y7A–(THIRD ST. EXT.), –Y8–(SKYVIEW DR.) & –Y9–



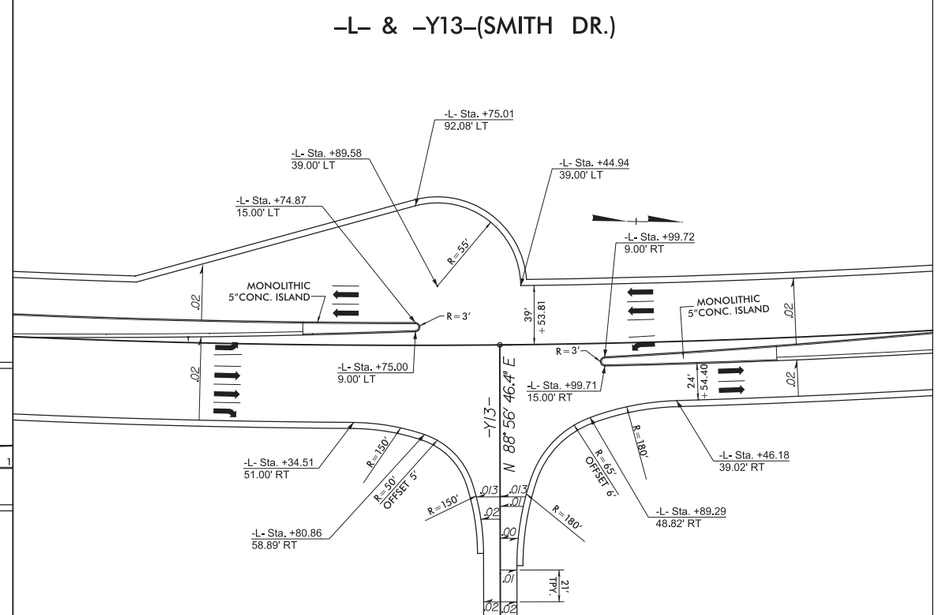
–L– & –Y7A–(THIRD ST. EXT.)



–L– & –DWY3–



–L– & –Y13–(SMITH DR.)



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INTERSECTION DETAILS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2B-5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
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Suite 600
Cary, NC 27518
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SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

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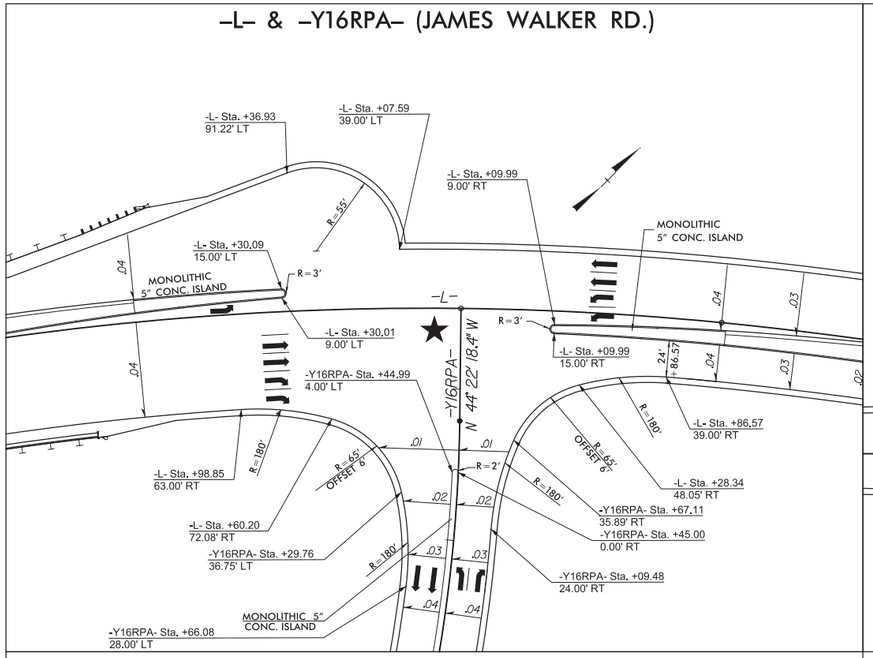
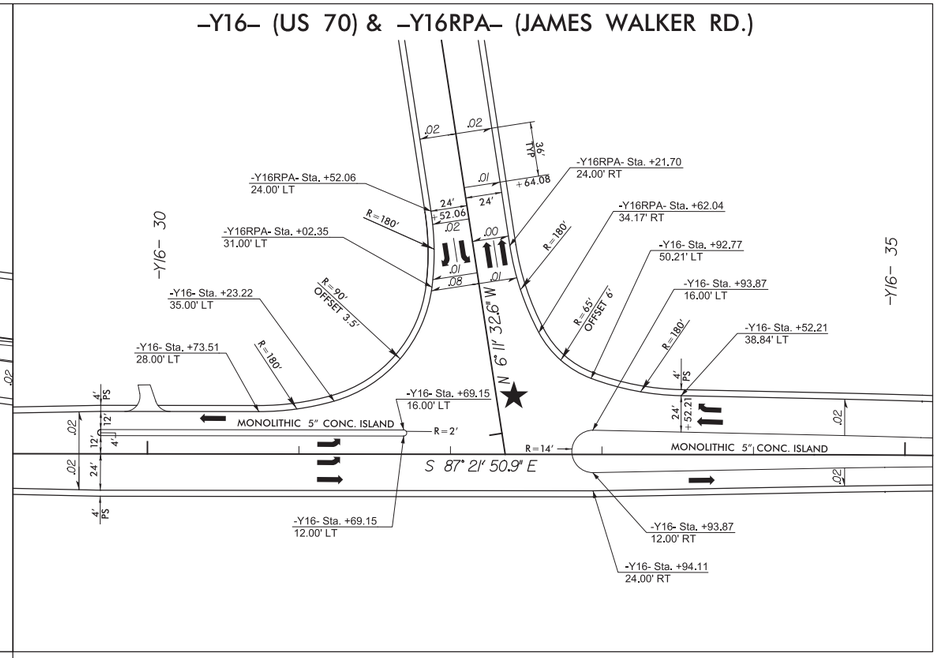
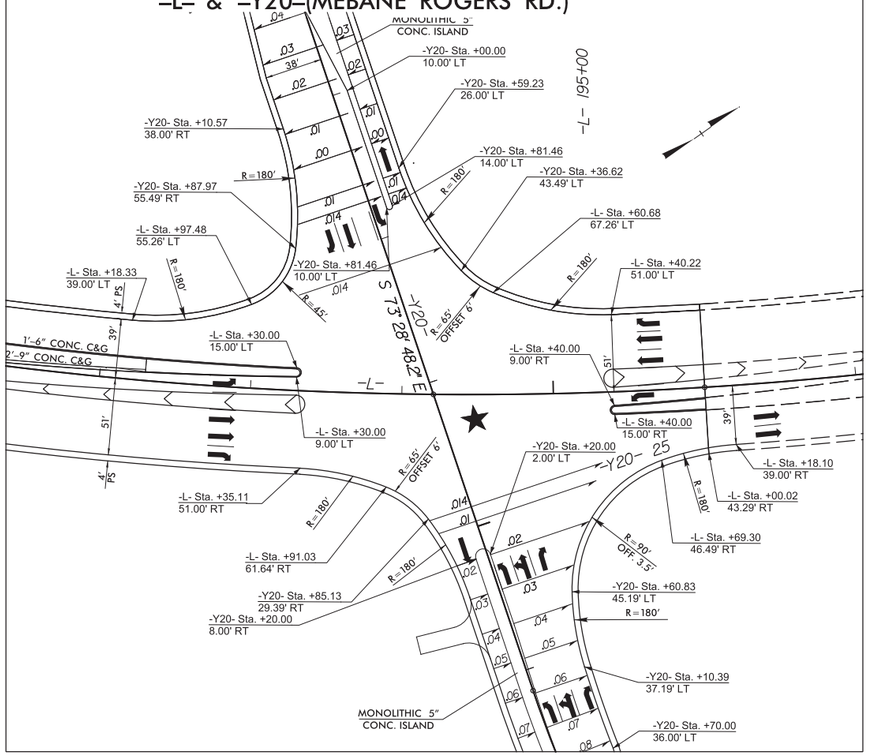
–L– & –Y16RPA– (JAMES WALKER RD.)



–Y16– (US 70) & –Y16RPA– (JAMES WALKER RD.)



–L– & –Y20–(MEBANE ROGERS RD.)

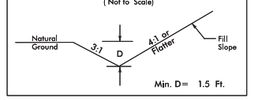


06-FEB-2017 12:05
R:\Scoping\3109A_rdy_psh_2B-5.DGN
USER NAME = $$$$

5/14/99

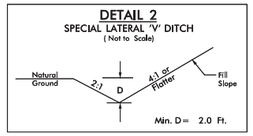
DETAILS

DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



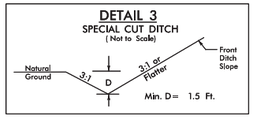
FROM STA. 10+00 TO STA. 14+33 –L– RT
FROM STA. 10+83 TO STA. 13+00 –RPA– RT
FROM STA. 13+50 TO STA. 17+00 –RPB– RT
FROM STA. 19+50 TO STA. 20+68 –RPB– LT
FROM STA. 13+00 TO STA. 16+50 –RPC– LT
FROM STA. 59+60 TO STA. 61+36.6 –L– LT
FROM STA. 62+85 TO STA. 64+50 –L– LT
FROM STA. 11+00 TO STA. 12+90 –Y19– LT

DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



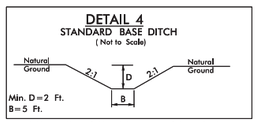
FROM STA. 11+50 TO STA. 12+38 –Y5B– LT
FROM STA. 15+00 –RPD– RT TO STA. 19+09 –RPD SPUR– RT
FROM STA. 31+00 TO STA. 33+50 –Y7A– LT

DETAIL 3
SPECIAL CUT DITCH
(Not to Scale)



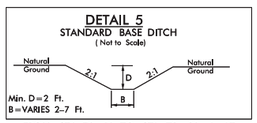
FROM STA. 11+00 TO STA. 13+00 –L– LT
FROM STA. 13+90 TO STA. 14+50 –Y2– RT
FROM STA. 11+68 TO STA. 12+25 –RPC– RT
FROM STA. 14+10 TO STA. 15+00 –Y8– RT
FROM STA. 17+00 TO STA. 17+50 –Y26– RT

DETAIL 4
STANDARD BASE DITCH
(Not to Scale)



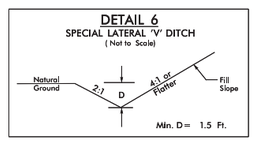
FROM STA. 11+45 TO STA. 11+67 –Y7A– LT
FROM STA. 126+21 TO STA. 126+40 –L– RT
FROM STA. 127+17 TO STA. 127+45 –L– LT

DETAIL 5
STANDARD BASE DITCH
(Not to Scale)



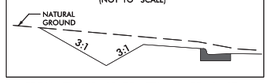
FROM STA. 78+12 TO STA. 78+32 –L– LT
FROM STA. 157+20 TO STA. 157+60 –L– LT

DETAIL 6
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



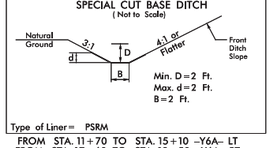
FROM STA. 15+00 TO STA. 18+50 –Y13– RT
FROM STA. 17+15 TO STA. 18+00 –Y13– LT
FROM STA. 10+75 TO STA. 12+40 –Y19– RT
FROM STA. 31+50 TO STA. 32+27 –Y16– RT
FROM STA. 32+27 TO STA. 33+50 –Y16– RT
FROM STA. 33+10 TO STA. 34+50 –Y16– LT
FROM STA. 19+88 TO STA. 20+25 –Y20– LT
FROM STA. 10+15 TO STA. 12+50 –Y26– LT
FROM STA. 29+00 TO STA. 32+00 –Y10– LT
FROM STA. 33+75 TO STA. 35+50 –Y10– LT
FROM STA. 36+00 TO STA. 36+80 –Y10– RT
FROM STA. 13+50 TO STA. 14+50 –Y11– LT
FROM STA. 18+00 TO STA. 19+50 –Y16RPA– RT
FROM STA. 32+60 TO STA. 33+58 –Y20– LT
FROM STA. 33+10 TO STA. 34+22 –Y20– RT

DETAIL 7
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



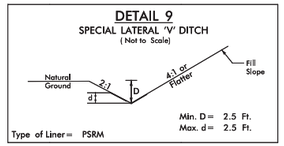
FROM STA. 42+10 TO STA. 44+00 –L– LT
FROM STA. 46+62 TO STA. 49+50 –L– LT
FROM STA. 49+75 TO STA. 52+20 –L– LT
FROM STA. 60+00 TO STA. 62+37 –L– RT
FROM STA. 65+10 TO STA. 67+00 –L– LT
FROM STA. 17+11 TO STA. 20+50 –Y7– RT
FROM STA. 21+00 TO STA. 21+90 –Y7– RT

DETAIL 8
SPECIAL CUT BASE DITCH
(Not to Scale)



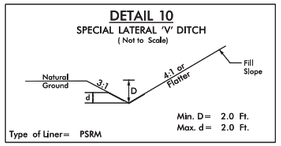
Type of Liner= PSRM
FROM STA. 11+70 TO STA. 15+10 –Y6A– LT
FROM STA. 17+60 TO STA. 18+50 –Y6A– RT

DETAIL 9
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



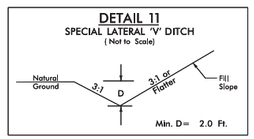
Type of Liner= PSRM
FROM STA. 16+00 TO STA. 17+13 –Y6A– LT
FROM STA. 29+15 TO STA. 31+00 –Y7A– RT

DETAIL 10
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



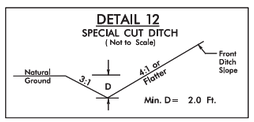
Type of Liner= PSRM
FROM STA. 54+75 TO STA. 61+25 –L– LT
FROM STA. 17+25 TO STA. 18+50 –Y6A– LT
FROM STA. 12+50 TO STA. 14+00 –Y13– LT
FROM STA. 26+00 TO STA. 26+70 –Y16RPA– RT

DETAIL 11
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



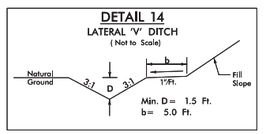
FROM STA. 62+80 TO STA. 64+50 –L– LT

DETAIL 12
SPECIAL CUT DITCH
(Not to Scale)



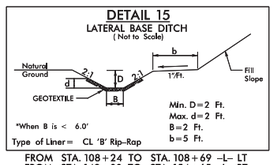
FROM STA. 65+10 TO STA. 67+00 –L– LT
FROM STA. 17+00 TO STA. 18+70 –RPD– LT

DETAIL 14
LATERAL 'V' DITCH
(Not to Scale)



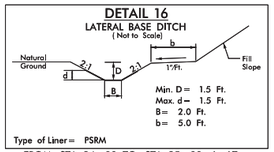
FROM STA. 69+95 TO STA. 70+75 –L– RT
FROM STA. 69+95 TO STA. 70+10 –L– LT
FROM STA. 70+10 TO STA. 70+68 –L– LT
FROM STA. 96+50 TO STA. 96+80 –L– RT
FROM STA. 10+95 TO STA. 11+56 –Y7A– LT
FROM STA. 125+36 TO STA. 126+20 –L– RT
FROM STA. 126+95 TO STA. 127+30 –L– LT
FROM STA. 132+22 TO STA. 133+32 –L– LT
FROM STA. 157+77 TO STA. 158+75 –L– RT
FROM STA. 182+25 TO STA. 188+00 –L– RT

DETAIL 15
LATERAL BASE DITCH
(Not to Scale)



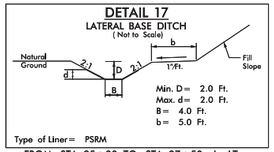
FROM STA. 108+24 TO STA. 108+69 –L– LT
FROM STA. 148+00 TO STA. 154+65 –L– RT
FROM STA. 180+00 TO STA. 182+25 –L– RT
FROM STA. 26+00 TO STA. 26+50 –Y16RPA– RT
FROM STA. 18+50 TO STA. 19+98 –Y10– RT
FROM STA. 20+40 TO STA. 22+50 –Y10– LT

DETAIL 16
LATERAL BASE DITCH
(Not to Scale)



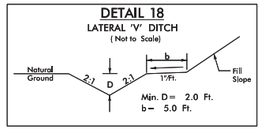
Type of Liner= PSRM
FROM STA. 94+00 TO STA. 95+00 –L– LT

DETAIL 17
LATERAL BASE DITCH
(Not to Scale)



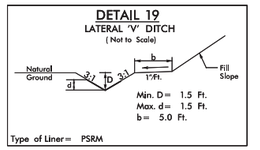
Type of Liner= PSRM
FROM STA. 95+00 TO STA. 97+50 –L– LT

DETAIL 18
LATERAL 'V' DITCH
(Not to Scale)



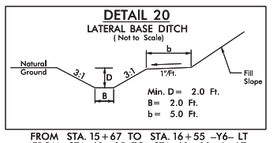
FROM STA. 11+86 TO STA. 13+50 –Y6– LT
FROM STA. 15+15 TO STA. 18+50 –Y6– RT
FROM STA. 132+10 TO STA. 132+22 –L– LT
FROM STA. 154+70 TO STA. 156+25 –L– RT

DETAIL 19
LATERAL 'V' DITCH
(Not to Scale)



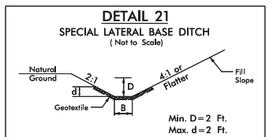
Type of Liner= PSRM
FROM STA. 13+50 TO STA. 15+60 –Y6– LT
FROM STA. 16+79 TO STA. 18+50 –Y6– LT

DETAIL 20
LATERAL BASE DITCH
(Not to Scale)



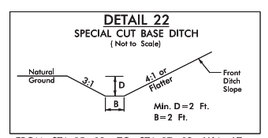
FROM STA. 15+67 TO STA. 16+55 –Y6– LT
FROM STA. 62+85 TO STA. 63+00 –L– LT
FROM STA. 179+03 TO STA. 180+00 –L– RT
FROM STA. 19+45 TO STA. 20+40 –Y10– LT

DETAIL 21
SPECIAL LATERAL BASE DITCH
(Not to Scale)



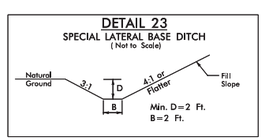
Type of Liner= CL 'B' Rip-Rap
FROM STA. 58+25 TO STA. 59+60 –L– LT
FROM STA. 20+00 TO STA. 21+05 –Y16RPA– LT

DETAIL 22
SPECIAL CUT BASE DITCH
(Not to Scale)



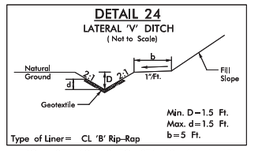
FROM STA. 15+10 TO STA. 17+13 –Y6A– LT

DETAIL 23
SPECIAL LATERAL BASE DITCH
(Not to Scale)



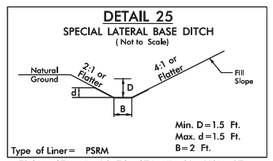
FROM STA. 59+60 TO STA. 61+36.6 –L– LT
FROM STA. 63+00 TO STA. 64+50 –L– LT
FROM STA. 108+20 TO STA. 109+75 –L– RT

DETAIL 24
LATERAL 'V' DITCH
(Not to Scale)



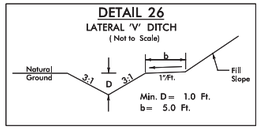
Type of Liner= CL 'B' Rip-Rap
FROM STA. 68+50 TO STA. 69+65 –L– LT
FROM STA. 70+68 TO STA. 72+00 –L– LT
FROM STA. 84+50 TO STA. 84+93 –L– LT
FROM STA. 85+50 TO STA. 86+60 –L– RT
FROM STA. 126+00 TO STA. 126+95 –L– LT

DETAIL 25
SPECIAL LATERAL BASE DITCH
(Not to Scale)



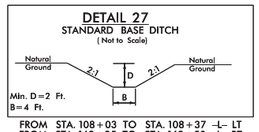
Type of Liner= PSRM
FROM STA. 17+06 TO STA. 17+60 –Y6A– RT
FROM STA. 10+65 TO STA. 13+50 –Y11– LT

DETAIL 26
LATERAL 'V' DITCH
(Not to Scale)



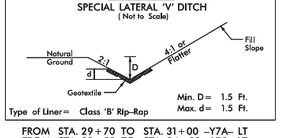
FROM STA. 11+65 TO STA. 12+31 –Y7A– LT
FROM STA. 84+93 TO STA. 85+14 –L– LT

DETAIL 27
STANDARD BASE DITCH
(Not to Scale)



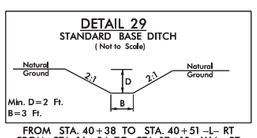
FROM STA. 108+03 TO STA. 108+37 –L– LT
FROM STA. 162+25 TO STA. 162+50 –L– RT

DETAIL 28
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



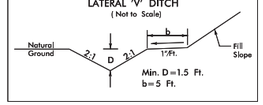
Type of Liner= Class 'B' Rip-Rap
FROM STA. 29+70 TO STA. 31+00 –Y7A– LT
FROM STA. 22+50 TO STA. 24+00 –Y10– LT
FROM STA. 11+00 TO STA. 14+00 –Y13– RT
FROM STA. 32+33 TO STA. 32+60 –Y20– LT

DETAIL 29
STANDARD BASE DITCH
(Not to Scale)



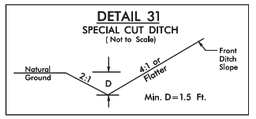
FROM STA. 40+38 TO STA. 40+51 –L– RT
FROM STA. 16+84 TO STA. 17+10 –Y6A– RT
FROM STA. 17+14 TO STA. 17+30 –Y6A– LT
FROM STA. 15+05 TO STA. 15+24 –Y6– RT
FROM STA. 15+54 TO STA. 15+84 –Y6– LT
FROM STA. 65+40 TO STA. 65+67 –L– RT
FROM STA. 70+00 TO STA. 70+20 –L– LT
FROM STA. 70+66 TO STA. 70+89 –L– RT
FROM STA. 85+05 TO STA. 85+33 –L– LT
FROM STA. 86+55 TO STA. 86+72 –L– RT
FROM STA. 28+48 TO STA. 29+34 –Y10– RT
FROM STA. 30+45 TO STA. 31+58 –Y10– RT
FROM STA. 17+81 TO STA. 18+06 –Y16RPA– RT
FROM STA. 20+93 TO STA. 21+38 –Y16RPA– LT

DETAIL 30
LATERAL 'V' DITCH
(Not to Scale)



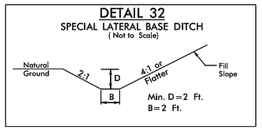
FROM STA. 23+50 TO STA. 28+00 –Y6– RT
FROM STA. 96+80 TO STA. 97+25 –L– RT

DETAIL 31
SPECIAL CUT DITCH
(Not to Scale)



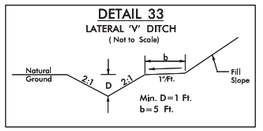
FROM STA. 26+00 TO STA. 28+25 –Y6– LT
FROM STA. 11+62 TO STA. 14+25 –Y16– LT
FROM STA. 14+25 TO STA. 20+15 –Y16– LT
FROM STA. 19+00 TO STA. 20+15 –Y16– RT
FROM STA. 20+15 TO STA. 21+00 –Y16– RT
FROM STA. 40+50 TO STA. 42+50 –Y16– LT
FROM STA. 45+00 TO STA. 46+02 –Y16– LT
FROM STA. 45+00 TO STA. 46+06 –Y16– RT
FROM STA. 20+00 TO STA. 21+00 –Y20– RT
FROM STA. 18+50 TO STA. 19+20 –Y20– LT
FROM STA. 16+50 TO STA. 17+50 –Y20– LT
FROM STA. 09+70 TO STA. 12+00 –Y20– RT
FROM STA. 09+70 TO STA. 12+00 –Y20– LT
FROM STA. 26+50 TO STA. 30+00 –Y20– LT
FROM STA. 23+50 TO STA. 24+09 –Y16RPA– RT

DETAIL 32
SPECIAL LATERAL BASE DITCH
(Not to Scale)



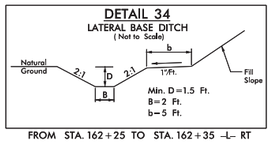
FROM STA. 11+10 TO STA. 11+50 –Y13– LT
FROM STA. 111+10 TO STA. 111+50 –L– RT

DETAIL 33
LATERAL 'V' DITCH
(Not to Scale)



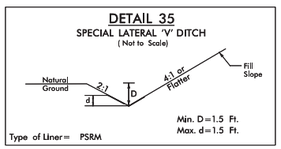
FROM STA. 76+50 TO STA. 78+00 –L– LT

DETAIL 34
LATERAL BASE DITCH
(Not to Scale)



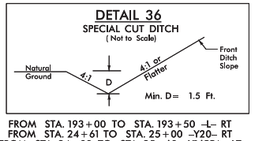
FROM STA. 162+25 TO STA. 162+35 –L– RT

DETAIL 35
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



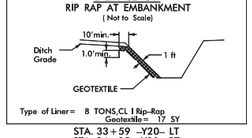
Type of Liner= PSRM
FROM STA. 12+40 TO STA. 12+70 –Y19– RT
FROM STA. 32+50 TO STA. 33+65 –Y10– LT
FROM STA. 36+50 TO STA. 37+00 –Y10– LT

DETAIL 36
SPECIAL CUT DITCH
(Not to Scale)



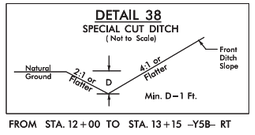
FROM STA. 193+00 TO STA. 193+50 –L– RT
FROM STA. 24+61 TO STA. 25+00 –Y20– RT
FROM STA. 24+00 TO STA. 25+60 –Y16RPA– LT
FROM STA. 21+50 TO STA. 22+50 –Y20– LT

DETAIL 37
RIP RAP AT EMBANKMENT
(Not to Scale)



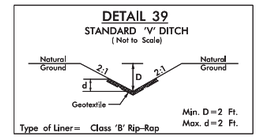
Type of Liner= 8 TONS,CL I Rip-Rap
Geotextile= 17 SY
STA. 33+59 –Y20– LT
STA. 34+25 –Y20– RT
STA. 19+98 –Y10– RT
STA. 10+65 –Y11– LT

DETAIL 38
SPECIAL CUT DITCH
(Not to Scale)



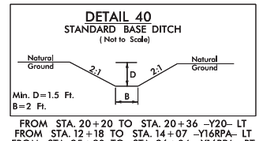
FROM STA. 12+00 TO STA. 13+15 –Y5B– RT

DETAIL 39
STANDARD 'V' DITCH
(Not to Scale)



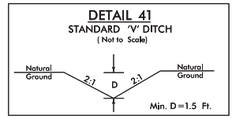
Type of Liner= Class 'B' Rip-Rap
FROM STA. 154+50 TO STA. 154+92 –L– RT
FROM STA. 157+66 TO STA. 157+89 –L– RT

DETAIL 40
STANDARD BASE DITCH
(Not to Scale)



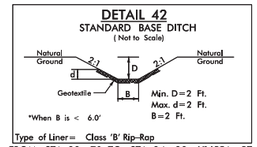
FROM STA. 20+20 TO STA. 20+36 –Y20– LT
FROM STA. 12+18 TO STA. 14+07 –Y16RPA– LT
FROM STA. 25+90 TO STA. 26+04 –Y16RPA– RT
FROM STA. 25+57 TO STA. 26+06 –Y16RPA– LT
FROM STA. 25+99 TO STA. 26+12 –Y16RPA– LT
FROM STA. 32+97 TO STA. 33+38 –Y10– RT
FROM STA. 33+56 TO STA. 33+89 –Y10– LT
FROM STA. 29+06 TO STA. 29+25 –Y7A– RT
FROM STA. 17+30 TO STA. 17+50 –Y11– LT

DETAIL 41
STANDARD 'V' DITCH
(Not to Scale)



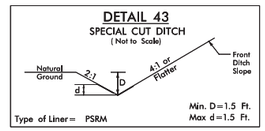
FROM STA. 147+87 TO STA. 148+66 –L– LT

DETAIL 42
STANDARD BASE DITCH
(Not to Scale)



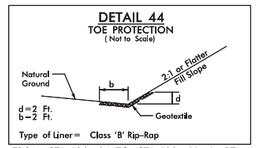
FROM STA. 23+70 TO STA. 24+28 –Y16RPA– RT

DETAIL 43
SPECIAL CUT DITCH
(Not to Scale)



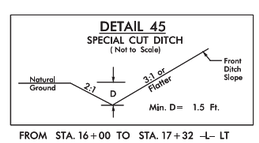
Type of Liner= PSRM
FROM STA. 19+50 TO STA. 20+00 –Y20– RT
FROM STA. 32+00 TO STA. 33+10 –Y20– RT

DETAIL 44
TOE PROTECTION
(Not to Scale)



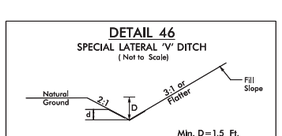
Type of Liner= Class 'B' Rip-Rap
FROM STA. 126+34 TO STA. 128+50 –L– RT
FROM STA. 131+50 TO STA. 133+96 –L– RT

DETAIL 45
SPECIAL CUT DITCH
(Not to Scale)



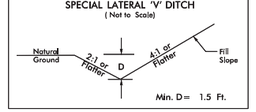
FROM STA. 16+00 TO STA. 17+32 –L– LT

DETAIL 46
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



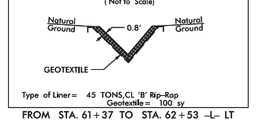
Type of Liner= PSRM
FROM STA. 17+11 TO STA. 18+00 –Y11– RT
FROM STA. 17+32 TO STA. 18+00 –Y11– LT

DETAIL 48
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



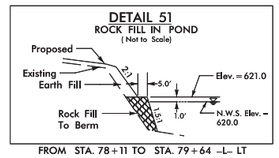
FROM STA. 10+15 TO STA. 11+50 –Y26– RT

DETAIL 49
RIP RAP AT EMBANKMENT
(Not to Scale)



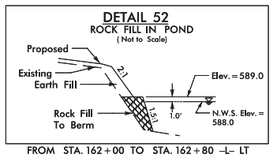
Type of Liner= 45 TONS,CL 'B' Rip-Rap
Geotextile= 100 sy
FROM STA. 61+37 TO STA. 62+53 –L– LT

DETAIL 51
ROCK FILL IN POND
(Not to Scale)



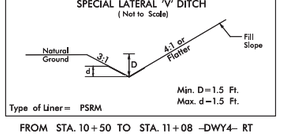
FROM STA. 78+11 TO STA. 79+64 –L– LT

DETAIL 52
ROCK FILL IN POND
(Not to Scale)



FROM STA. 162+00 TO STA. 162+80 –L– LT

DETAIL 58
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM
FROM STA. 10+50 TO STA. 11+08 –DWY4– RT

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2D-1
R/W SHEET NO.	

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DETAILS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	2D-2
R/W SHEET NO.	

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

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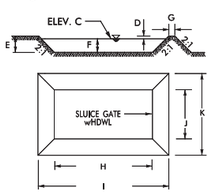
DETAIL 47
HAZARDOUS SPILLBASIN

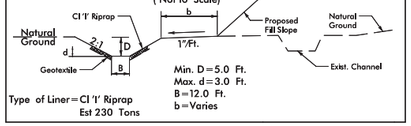
	DIM.	BASIN # 1	2	3	4
A	cf	2480	6560	3740	2300
B	cf	2630	7526	4760	2590
C	ft	597.0	604.0	608.0	597.5
D	ft	1.0	1.0	1.0	1.0
E	ft	4.0	4.0	VARIES	4.0
F	ft	3.0	3.0	VARIES	3.0
G	ft	2.0	2.0	2.0	2.0
H	ft	23	VARIES	29	VARIES
I	ft	39	75	41	59
J	ft	23	54	40	21
K	ft	39	68	57	47

TOTAL CAPACITY REQUIRED: 'A' cf
TOTAL CAPACITY PROVIDED: 'B' cf
@ ELEV. 'C' w/'D' FT. FREEBOARD



BASIN #	LOCATION (AT OUTLET)
1	STA 161+85 –L– RT
2	STA 179+50 –L– RT
3	STA 20+50 –Y16RPA– LT
4	STA 32+50 –Y20– LT

DETAIL 53
CHANNEL CHANGE
(Not to Scale)

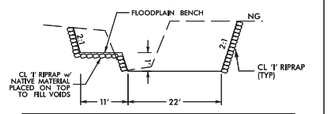


Min. D=5.0 Ft.
Max. d=3.0 Ft.
B=12.0 Ft.
b=Varies

Type of Liner=Cl 'I' Riprap
Est 230 Tons

FROM STA. 93+93 TO STA. 96+36 –L– RT

DETAIL 54
INLET & OUTLET CHANNEL DETAIL
NOT TO SCALE

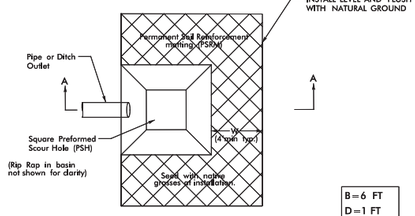


*THE FLOODPLAIN BENCH SHALL BE COVERED WITH COIR FIBER MATTING AND THE PERIMETER SHALL BE LINED WITH CLASS 'I' RIP RAP. IF FILL IS NEEDED FOR THE BENCH, USE CLASS 'I' RIP RAP AND PLACE NATIVE MATERIAL ON TOP TO FILL VOIDS.

FROM STA. 95+54 TO STA. 96+27 –L– RT
FROM STA. 97+18 TO STA. 97+57 –L– RT

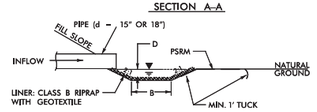
PREFORMED SCOUR HOLE DETAIL 55
*NOT TO SCALE

PLAN VIEW



B=6 FT
D=1 FT
W=6 FT

SECTION A–A



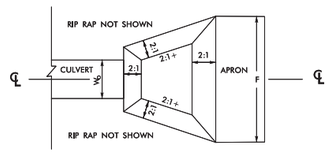
308

FROM STA. 130+39 TO STA. 130+60 –L– LT
FROM STA. 140+39 TO STA. 140+60 –L– LT

ENERGY DISSIPATOR DETAIL 56
RIP–RAPPED ENERGY DISSIPATOR BASIN

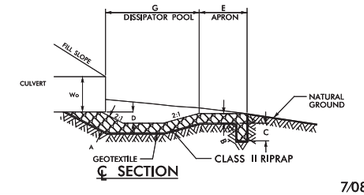
DIM. (ft)	RIP RAP BASIN # 1		
A	2.5		
B	2.0		
C	2.0		
D	0.9		
E	11.8		
F	10.1		
G	10.1		

ALL DIMENSIONS APPROXIMATE



PLAN

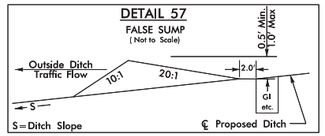
BASIN #	LOCATION (AT OUTLET)
1	STA 100+70 –L– LT



℄ SECTION

7/08

DETAIL 57
FALSE SUMP
(Not to Scale)



STA. 62+53 –L– RT
STA. 73+15 –L– LT
STA. 84+16 –L– LT
STA. 85+16 –L– RT
STA. 92+40 –L– LT
STA. 92+40 –L– RT
STA. 93+51 –L– LT
STA. 100+55 –L– RT
STA. 101+52 –L– RT
STA. 102+19 –L– LT
STA. 103+85 –L– RT
STA. 107+91 –L– RT
STA. 109+36 –L– LT
STA. 110+95 –L– LT
STA. 114+84 –L– LT
STA. 114+85 –L– RT
STA. 117+45 –L– RT
STA. 117+44 –L– LT
STA. 122+65 –L– RT
STA. 122+64 –L– LT
STA. 165+85 –L– LT
STA. 169+35 –L– RT
STA. 169+35 –L– LT
STA. 173+34 –L– RT
STA. 173+35 –L– LT
STA. 189+65 –L– RT
STA. 190+06 –L– LT
STA. 193+01 –L– LT
STA. 13+57 –RPD– RT
STA. 13+58 –RPD– RT
STA. 16+96 –Y7– RT
STA. 12+35 –Y13– LT
STA. 20+75 –Y16– LT
STA. 23+85 –Y16– LT
STA. 32+96 –Y16– LT
STA. 35+84 –Y16– RT
STA. 14+65 –Y16RPA– RT
STA. 14+66 –Y16RPA– LT
STA. 17+16 –Y16RPA– LT
STA. 17+16 –Y16RPA– RT
STA. 19+65 –Y16RPA– LT
STA. 26+85 –Y16RPA– RT
STA. 27+75 –Y16RPA– RT
STA. 11+35 –Y19– RT
STA. 14+35 –Y20–RT
STA. 19+36 –Y20– LT
STA. 21+35 –Y20– LT
STA. 22+35 –Y20– LT
STA. 30+15 –Y20– LT
STA. 31+65 –Y20– LT

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PROJECT REFERENCE NO.	SHEET
U-3109A	2H-1

GEOENVIRONMENTAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 31499 ENGINEER CYRUS F PARKER

DocuSigned by: Cyrus F. Parker 4/19/2016

SIGNATURE DATE

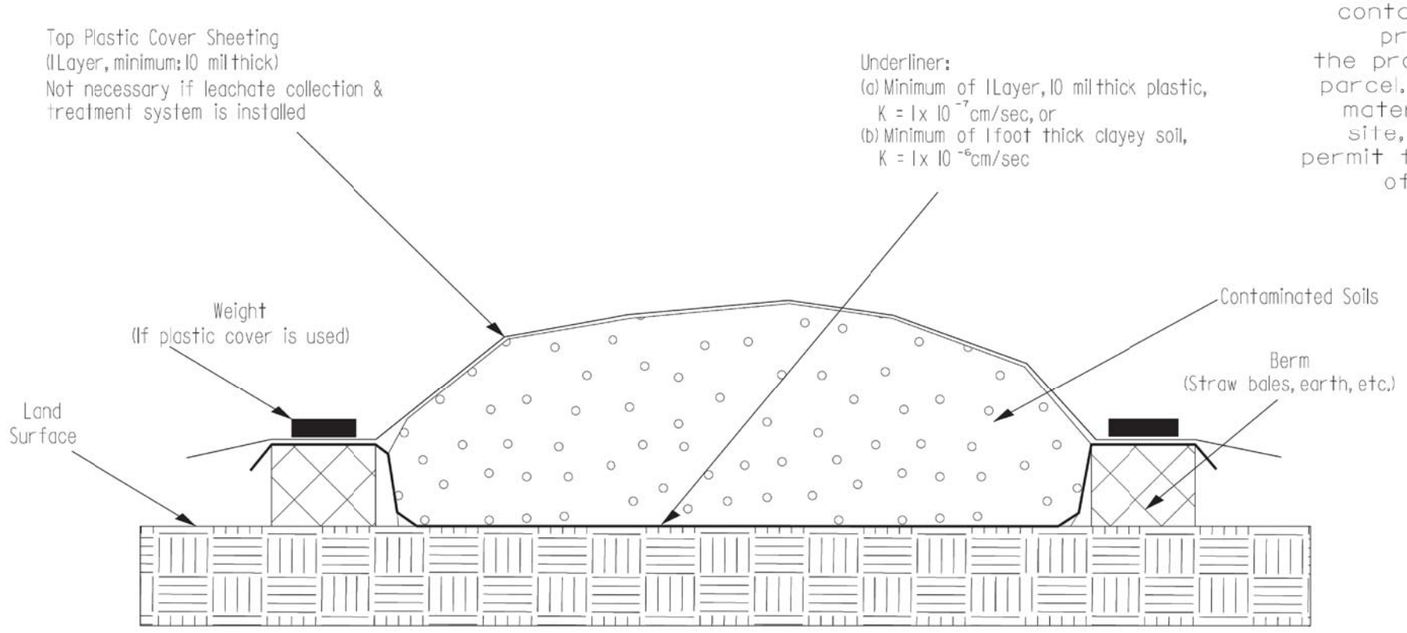
ENGINEER

SIGNATURE DATE

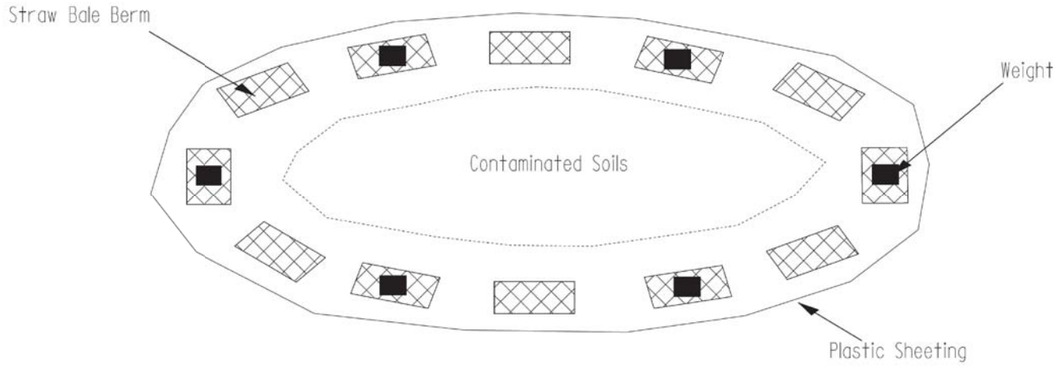
Detail for Temporary Containment of Contaminated Soil

Cross-Section View

NOTE:
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDENR UST Section for off-site temporary storage.



Map View



PREPARED BY:	DATE:
REVIEWED BY:	DATE:

GEOTECHNICAL ENGINEERING UNIT

☐ EASTERN REGIONAL OFFICE
☐ WESTERN REGIONAL OFFICE
☒ CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STOCKPILE CONTAINMENT DETAIL

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

5/9/06

COMPUTED BY: WEJ DATE: 07/13/2016
CHECKED BY: _____ DATE: _____

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	3B-1

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LINE	STATION	STATION	EXCAVATION					EMBANKMENT					WASTE			
			TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK.	BORROW	ROCK	SUITABLE	UNSUIT.	TOTAL
PHASE I																
-L-	14+30.00	15+00.00	34				34	8		8	10			24		24
-L-	15+46.00	25+28.45 (Begin Bridge -NBL)	136				136	3,998		3,998	4,798	4,662				
-L-	28+00.00	57+00.00	9,525		4,385		9,525	35,733		35,733	42,880	33,355			4,385	4,385
-L-	59+00.02	142+41.16(Begin Bridge)	217,298		14,810		217,298	253,288		251,288	303,946	86,648			14,810	14,810
-L-	147+35.37(End Bridge)	187+90.00	62,301		6,111		62,301	313,805		311,805	376,566	314,265			6,111	6,111
-L-	188+42.27	193+50.00	11,511		5,104		11,511	5,104		5,104	6,125			5,386	5,104	10,490
-L-	194+50.00	196+00.00	3		269		3	2,697		2,697	3,236	3,233			269	269
		SUBTOTAL (PHASE I	300,808		30,679		300,808	614,633		614,633	737,560	442,162		5,411	30,679	36,090
PHASE I																
-RPA-	11+00.00	13+99.55	306				306	626		626	751	445				
-RPA SPUR-	13+26.00	14+25.00						986		986	1,183	1,183				
-RPB-	11+00.00	20+90.00	927				927	1,714		1,714	2,057	1,130				
-RPB SPUR-	10+58.00	12+66.28	8				8	1,025		1,025	1,230	1,222				
-RPC-	12+00.00	18+08.00	1,336				1,336	507		507	608			728		728
-RPC SPUR-	17+11.00	18+00.00	55				55	229		229	275	220				
-RPD-	11+25.00	19+21.00	2,676				2,676	380		380	456			2,220		2,220
-RPD SPUR-	17+61.00	19+07.00	196				196	772		772	926	730				
		SUBTOTAL (PHASE I	5,504				5,504	6,239		6,239	7,487	4,930		2,948		2,948
PHASE I																
-Y5A-	11+50.00	15+00.00	273		811		273	1,065		1,065	1,278	1,005			811	811
-Y5C-	11+00.00	11+50.00	151				151	6		6	7			144		144
-Y6-	11+00.00	28+25.00	5,586		3,949		5,586	24,916		24916	29,899	24,313			3,949	3,949
-Y6A-	18+00.00	23+00.00	952		861		952	978		978	1,174	222			861	861
-Y7-	14+00.00	30+50.00	6,408		5,018		6,408	5,675		5,675	6,810	402			5,018	5,018
-Y7A-	11+00.00	21+68.35	4,657				4,657	18,208		18208	21,850	17,193				
-Y7A-	22+35.59	32+50.00	3,229				3,229	5,431		5,431	6,517	3,288				
-Y7B-	16+02.45	16+80.00	134				134	128		128	154	20				
-Y8-	14+00.00	17+50.00	250				250	986		986	1,183	933				
-Y10-	15+00.00	36+00.00	9,335		288		9,335	9,345		9345	11,214	1,879			288	288
-Y11-	10+50.00	18+85.00	919				919	2,208		2,208	2,650	1,731				
-Y13-	10+60.00	18+50.00	1,391				1,391	2,437		2437	2,924	1,533				
-Y16-	12+21.00	45+50.00	6,375				6,375	6,934		6934	8,321	1,946				
-Y16 RPA-	10+70.00	27+80.00	31,265	1,728	3,561		29,537	16,262		16,262	19,514		1,728	10,023	3,561	15,312
-Y20-	12+00.00	23+00.00	2,651				2,651	1,502		1,502	1,802			849		849
-Y26-	10+15.00	17+30.00	1,762				1,762	8		8	10			1,752		1,752
		SUBTOTAL (PHASE I	75,338	1,728	14,488		73,610	96,089		96,089	115,307	54,464	1,728	12,767	14,488	28,983
PHASE I																
-DWY1-	10+50.00	11+50.00	343				343	510		510	612	269				
-DWY2-	10+25.00	12+00.01	76		468		76	529		529	635	559			468	468
-DWY3-	11+00.00	12+60.82	42				42	398		398	478	436				
-DWY4-	10+50.00	11+39.98	148				148	45		45	54			94		94
		SUBTOTAL (PHASE I	609		468		609	1,482		1,482	1,778	1,263		94	468	562
		TOTAL (PHASE I)	382,259		45,635		380,531	718,443		711,443	862,132	502,820	1,728	21,220	45,635	68,583
PHASE II																
-L-	14+30.00	25+00.00	648				648	1,656		1,656	1,987	1,339				
-L-	15+47.60	25+55.77	644				644	1,610		1,610	1,932	1,288				
-L-	27+77.30	47+29.00	1,724		108		1,724	5,850		5,850	7,020	5,296			108	108
-L-	59+50.00	59+50.00	652				652	1,215		1,215	1,458	806				
-L-	193+50.00	194+00.00	517		429		517	430		430	516			1	429	430
		SUBTOTAL (PHASE II	4,185		537		4,185	10,761		10,761	12,913	8,729		1	537	538
PHASE II																
-Y5B-	11+57.00	13+50.00	216				216	73		73	88			128		128
-Y6-	27+50.00	28+25.00	112				112	18		18	22			90		90
-Y6A-	11+58.85	13+31.92	429				429	971		971	1,165	736				
-Y7-	14+00.00	17+00.000	425				425	52		52	62			363		363
-Y7A-	21+68.35	22+35.59	230				230	6		6	7			223		223
-Y7A-	32+50.00	34+00.00	993				993	10		10	12			981		981
-Y7B-	14+00.00	16+02.45	101				101	175		175	210	109				
-Y9-	10+50.00	12+50.00	478				478	218		218	262			216		216
-Y10-	14+60.00	17+03.80	153				153	48		48	58			95		95
-Y10-	33+64.81	36+50.00	306				306	50		50	60			246		246
-Y16-	12+21.00	45+50.00	5,903				5,903	6,567		6,567	7,880	1,977				
-Y19-	10+80.00	12+90.00	223				223	102		102	122			101		101
-Y20-	10+00.00	14+00.00	1,040				1,040	16		16	19			1,021		1,021
-Y20-	15+65.00	23+00.00	4,825				4,825	239		239	287			4,538		4,538
-Y20-	25+00.00	35+95.00	4,579				4,579	1,113		1,113	1,336			3,243		3,243
-Y26-	10+65.00	12+00.00	56				56	8		8	10			46		46
-Y26-	16+00.00	17+30.00	50				50							50		50
		SUBTOTAL (PHASE II	20,119				20,119	9,666		9666	11,599	2,823		11,342		11,342
		TOTAL (PHASE II)	24,304		537		24,304	20,427		20,427	24,512	11,552		11,343	537	11,880
PHASE III																
-L-	56+97.68	59+50.00	652				652	2,695		2,695	3,234	2,582				
		SUBTOTAL (PHASE III	652				652	2,695		2,695	3,234	2,582				
-Y6A-	11+12.35	11+58.84	6				6	851		851	1,021	1,015				
-Y6A-	13+31.92	18+00.00	1,523				1,523	498		498	598			925		925
-Y7B-	14+00.00	16+02.45	267				267	180		180	216			51		51
-Y20-	25+50.00	35+00.00	192				192	195		195	234	42				
		SUBTOTAL (PHASE III	1,988				1,988	1,724		1,724	2,069	1,057		976		976
		TOTAL (PHASE III)	2,640				2,640	4,419		4,419	5,303	3,639		976		976
		PROJECT TOTAL	409,203		46,172		407,475	743,289		743,289	891,947	518,011		33,539	46,172	81,439
	SAY		409,300									518,100				

EST. DDE = 4,050 CUBIC YARDS
SHOULDER BORROW = 3,430 CUBIC YARDS
EST. SHALLOW UNDERCUT = 17,500
EST SHALLOW UNDERCUT CONTINGENCY = 1,000 CY
TOTAL SHALLOW UNDERCUT = 18,500 CY
CLASS IV SUBGRADE STABILIZATION = 33,100 TONS

PER GEOTECH RECOMMENDATION, ESTIMATED 2,500 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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User: wejohnson

6/16/99

COMPUTED BY: W.E.J DATE: 06-12-2013
CHECKED BY: _____ DATE: _____

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	3B-2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS		
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	NG END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	N-350	XIII	CAT-1	AT-1	B-77	TES	G	NG						
-RPC SPUR-	17+51.37	-NBL- 25+30.60	LT	181.25			-NBL- 25+16.28		14								1					1								
-RPD SPUR-	19+00.50	-SBL-25+68.35	RT	75.00					14											1		1								
-NBL-	24+83.50	25+55.74	RT	81.25			25+55.74		9.5													1		1						
-SBL-	24+80.38	25+44.40	LT	68.75			25+44.40		11													1								
				406.25													1			1				1						
-NBL-	27+51.00	-RPB_SPUR-12+36.95	LT	137.50				27+59.86	11.5/14								1					1								
-NBL-	27+75.70	29+07.24	RT	143.75			27+75.66		9.5		117.8							1				1								
-SBL-	27+86.70	29+01.21	LT	131.25				27+86.71	11		101.45							1				1								
-SBL-	28+11.50	-RPA_SPUR- 14+61.50	RT	156.25				28+11.49	11.5/14								1					1								
-RPB-	17+00.00	19+00.00	RT	206.25			18+00.00		14								1			1										
-L-	63+99.70	-Y7A- 12+56.24	RT	931.25			64+99.70		11.5/13								1			1										
-L-	69+45.95	71+49.00	LT	203.05			70+49.00	70+46.00	11.5								1			1										
-Y7A-	13+90.00 LT	-L-79+55.00 RT	LT/RT	981.25			12+90.00	52+60.88	13/11.5								1			1										
-L-	77+44.50	80+99.00	LT	354.50			78+44.50		11.5								1			1										
-L-	85+48.70	87+54.95	RT	206.25			86+49.70		11.5								1			1										
-L-	84+94.75	87+00.00	LT	206.25			86+00.00		10								1			1										
-L-	92+42.87	96+99.12	RT	456.25			93+49.70		10								1			1										
-L-	94+10.75	99+00.00	LT	489.25			98+00.00		10								1			1										
-L-	124+98.50	127+04.75	RT	206.25			125+99.90		10								1			1										
-L-	125+90.00	128+99.50	LT	309.50			127+99.60		10								1			1										
-L-	131+95.05	142+57.55	LT	1062.50			132+94.25	142+57.55	10								1					1								
-L-	132+04.25	142+23.00	RT	1018.75			133+00.00	142+23.00	10								1					1								
-L-	140+85.12	142+36.37	RT	156.25			142+36.37		10		62.25							1				1								
-L-	141+02.15	142+45.90	LT	143.75			142+45.90		10		64.75							1				1								
-L-	58+14.48	58+46.17	LT	30.00																			2							
-Y10-	19+21.83	19+27.44	LT	30.00																			2							
-L- SUBTOTAL #2 BEFORE SITE 2 (BRIDGE) =				**7560.05**													**17**	**4**		**11**		**12**	**4**							
-L-	147+30.36	162+80.36	RT	1550.00			148+30.36	162+05.06	10								1					1								
-L-	147+40.11	163+48.55	LT	1656.25			162+48.55	147+40.11	10								1					1								
-L-	147+33.81	148+69.98	RT	136.17			147+33.81		10		58.6							1				1								
-L-	147+36.89	148+87.43	LT	150.54			147+36.89		10		68.2							1				1								
-L-	177+49.65	182+04.94	RT	455.29			178+49.65	181+04.95	10								1			1										
-L-	178+44.45	184+63.20	LT	606.25			183+49.75	179+44.45	10								1			1										
-L-	187+85.38	188+21.13	LT	30.00																1			2							
-L- SUBTOTAL #3 AFTER SITE 2 (BRIDGE) =				**4584.50**													**4**	**2**		**2**		**4**	**2**							
-L-	49+66.74 RT	-Y6-16+59.03 LT	RT	918.75			-Y6-53+64.09	-Y6-53+64.09	8								1			1										
-Y6-	10+65.00	16+53.67	LT	618.75			15+56.67		8								1			1										
-Y7A-	28+10.99	30+89.68	RT	281.25																										
-Y6- SUBTOTAL # 3 =				**1818.75**													**2**			**2**										
-Y10-	18+33.09	21+70.59	RT	337.50			19+33.09	20+33.08	8								2													
-Y10-	18+33.09	21+33.09	LT	300.00			20+71.10	19+33.09	8								2													
-Y10- SUBTOTAL # 4 =				**637.50**													**4**													
-Y20-	33+08.85	34+40.05	RT	131.2			34+08.85		8								1			1										
-Y20-	33+50.00	34+81.30	LT	131.25				33+81.50	8								1			1										
-Y10- SUBTOTAL # 4 =				**262.45**													**2**			2										
			TOTAL	**15269.50**													**29**	**6**		**17**		**16**	**6**							
ANCHOR UNITS ADJUSTMENT = GRAU-350				**1450.00**																										
			M-350	**225.00**																										
			CAT-1	**106.25**																										
			B-77	**300.00**																										
			TES	**15.00**																										
ADDJUSTED TOTAL =				**13173.25**		**SAY =**	**13,200.00**																							
ADDITIONAL GUARDRAIL POSTS =				**100.00**																										

6/16/99

COMPUTED BY: W.E.J DATE: 06-12-2013
CHECKED BY: SCL DATE: 07-15-16

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	3B-3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT REMOVAL SUMMARY

LINE	STATION	STATION	LOCATION	AREA	WIDTH	SQUARE YARDS
L	22+00.00	25+42.49	LT & RT	23783.53		2643
L	27+88.15	48+31.44	LT & RT	84355.67		9373
L	57+75.00	58+33.41	LT & RT	3653.32		406
L	187+95.71	188+28.27	LT & RT	3243.79		360
L	194+03.52	194+25.76	LT & RT	2031.13		226
RPA	11+00.00	14+40.36	LT & RT	13132.51		1459
RPB	11+00.00	20+18.34	LT & RT	20888.72		2321
RPC	12+25.00	18+22.00	LT & RT	16966.97		1885
RPD	13+50.00	19+23.84	LT & RT	14412.76		1601
Y5C	10+00.00	11+50.00	LT & RT	7190.49		799
Y6	20+66.19	24+68.63	RT	9157.77		1018
Y6A	18+50.00	22+19.89	LT & RT	7863.18		874
Y7	18+50.00	23+79.00	LT	15623.44		1736
EY10	25+55.68	33+92.66	LT & RT	19481.68		2165
EY10	35+69.78	36+18.94	LT & RT	954.49		106
Y7A	21+38.90	24+68.11	LT	10795.49		1199
Y7A	25+87.82	31+54.64	LT	12489.62		1388
Y7B	14+00.09	16+92.98	LT & RT	10358.71		1151
Y8	16+50.00	18+32.11	LT & RT	6864.04		763
Y9	10+66.33	12+50.00	LT	6990.45		777
Y10	14+99.02	19+31.69	LT	9151.64		1017
Y13	15+45.00	18+50.00	LT & RT	5402.04		600
Y16	14+07.00	15+00.00	RT	3081.64		342
Y16	15+00.00	45+35.45	LT & RT	96614.75		10735
Y17	10+20.88	11+10.04	LT & RT	1457.24		162
Y18	10+15.74	10+70.00	LT & RT	1274.33		142
Y19	08+80.70	12+50.00	LT & RT	7355.14		817
Y20	17+00.00	31+00.00	LT & RT	28358.36		3151
Y26	11+17.50	17+28.28	LT	14895.75		1655
DWY2	11+66.00	12+91.54	LT & RT	2156.63		239.63
DWY3	11+00.00	12+75.74	LT & RT	12901.01		1433.45
					TOTAL	52,543
					SAY	**52,550**

MILLING ASPHALT PAVEMENT 1.5'' DEPTH

LINE	STATION	STATION	LOCATION	AREA	WIDTH	SQUARE YARDS
I-40/I85_EB	49+13	52+51	LT & RT	86592.78		9621
I-40/I85_WB	49+23	52+61	LT & RT	84158.56		9351
Y5B	11+57	13+80	LT & RT	7313.20		813
Y5C	10+29	11+57	LT & RT	4739.63		527
					TOTAL	20,312
					SAY	**20,320**

WOVEN WIRE FENCE SUMMARY

STATION TO STATION	LT. OR RT.	A FABRIC L.F.	B END BRACE	C CORNER BRACE	D LINE BRACE	E 4" POSTS	F 5" POSTS
-L- 16+00 - 19+02.55	LT	301.03	2			19	4
-L- 19+65.69 - 21+15.10	RT.	150.00	2			9	4
-L- 21+50- 22+32	LT	82.00	2	1		2	7
-RPB- 18+73 - 21+94	LT	321.00	1	1		20	5
-SBL- 32+38 - 34+55	LT	217.00	1			14	2
-L- 34+25 - 38+85	LT	460.00	2		1	29	7
-Y53- 12+55 - 13+06	RT.	64.00	1	1		2	5
-L- 40+19 - 51+65	LT	1,146.00	1	2	3	73	17
-L- 51+64 - -Y7- 30+00	LT	114.00	1	1		5	5
-Y6- 30+00 - -L- 56+19	LT	152.00	1	1		8	5
-L- 56+19 - 87+60	LT	3,141.00	2		9	207	31
-L- 88+85 - 110+10	LT	2,125.00	2	2	6	137	28
-L- 110+70 - 128+50	LT	1,780.00	2	1	5	115	22
-L- 129+10 - 142+57(BRIDGE)	LT	1,611.00	2		5	105	19
-L- 147+40(BRIDGE) - 187+46	LT	4,006.00	2	4	12	258	52
-L- 188+35 - 192+00	LT	365.00	2		1	22	7
-L- 195+50 - 201+94	LT	644.00	2		1	42	7
-L- 19+66 - 21+15	RT.	149.00	2			9	4
-RPA- 12+44 - 14+47	RT.	203.00	2			12	4
-L- 32+62 - 37+96	RT.	534.00	2		4	29	16
-Y5A- 11+50 - 11+80	LT	30.00	1			1	2
-L- 38+82 - 42+70	RT.	388.00	2	1		24	7
-L- 43+40 - 47+60	RT.	420.00	2		1	26	7
-L- 49+54 - 52+73	RT.	452.00	2	2		27	10
-Y7- 10+89 - -L- 55+00	LT	145.00	1			9	2
-L- 55+00 - -Y7A- 12+80	RT.	1,700.00	2	1	5	109	22
-Y7A- 12+00 - -L- 95+92	RT.	2,406.00	2	3	7	153	34
-L- 96+62 --Y13- 12+00	RT.	1,384.00	1	2	2	91	14
-Y13- 12+15 - -L- 126+28	RT.	1,675.00	2	1	5	108	22
-L- 126+35 - 133+95	RT.	760.00	1	1	2	48	11
-L- 134+01 - 142+23(BRIDGE)	RT.	953.00	2	1	3	59	16
-L- 147+30(BRIDGE) - 162+30	RT.	1,150.00	2	3	3	70	22
-L- 162+37 - 164+24	RT.	287.00	2	2		15	10
-L- 166+50 - 178+81	RT.	1,231.00	2	4	2	76	22
-L- 195+55 - 199+45	RT.	390.00	2		1	24	7
-Y16FPA- 10+64 - 26+25	LT	1,653.00	1	4	4	104	26
-Y16FPA- 10+34 - 26+50	RT.	1,682.00	2	1	5	108	22
TOTAL		**34,271.03**				**2172**	**507**
		ADDITIONAL BARBED WIRE 1500 LF					

CHAIN LINK FENCE SUMMARY

STATION TO STATION	LT. OR RT.	A FABRIC L.F.	B END BRACE	C CORNER BRACE	D LINE BRACE	E LINE POSTS	F TERMINAL POSTS
-L- 15+56 - 18+66	RT.	320.00	2	2		26.67	4
-L- 18+65 - 19+14	RT.	50.00	2			3.83	2
TOTAL		370.00				30.50	6
SAY		**370.00**				**31.00**	**6.00**

6/16/99

COMPUTED BY: W.E.J DATE: 06-12-2013
CHECKED BY: SCL DATE: 07-15-16

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	3B-4

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

1'–6'' CURB & GUTTER

LINE	STATION	STATION	SIDE	GROSS LENGTH	DEDUCTIONS DRIVES	DEDUCTIONS OTHERS	NET LENGTH
SBL	24+36.36	25+43.18	LT	107			107
SBL	27+87.13	30+07.06	LT	220			220
NBL	31+44.50	34+50.62	LT	306			306
L	34+25.07	36+83.53	LT/RT	258			258
L	41+26.89	48+55.00	LT/RT	728			728
L	58+32.09	70+36.39	LT	1,204			1,204
L	74+03.06	86+47.68	LT/RT	1,245			1,245
L	90+13.68	96+23.89	RT	610			610
L	90+13.68	109+00.49	LT	1,887			1,887
L	112+13.00	139+63.48	LT	2,750			2,750
L	135+32.49	141+83.28	RT	651			651
L	147+77.74	153+32.91	LT/RT	1,555			1,555
L	169+60.00	185+35.30	RT	1,575			1,575
L	169+60.00	192+30.02	LT	2,270			2,270
						TOTAL	15,367
						SAY	**15,370**

SHOULDER BERM GUTTER SUMMARY

LOCATION	SIDE	BEG. STA.	END STA.	LENGTH
-L-	RT	73+67.60	79+52.25	584.7
-L-	RT	97+47.74	98+00.87	53.1
-L-	LT	125+95.25	128+50.00	254.8
-L-	LT	132+05.29	139+99.97	794.7
-L-	RT	135+95.25	142+23.04	627.8
-L-	RT	147+30.36	158+79.75	1149.4
-L-	RT	161+50.00	163+00.00	150.0
-L-	RT	178+45.25	181+50.00	304.8
-L-	LT	178+45.25	184+00.00	554.8
			TOTAL	4473.9
			SAY	4480

2'–9'' CURB & GUTTER

LINE	STATION	STATION	SIDE	GROSS LENGTH	DEDUCTIONS DRIVES	DEDUCTIONS OTHERS	NET LENGTH
SBL	31+45.23	34+55.35	RT	310			310
L	34+25.07	36+83.38	LT	258			258
L	41+26.83	48+55.00	LT	730			730
L	58+32.12	59+06.82	RT	75			75
L	74+03.07	83+74.66	RT	972			972
L	96+43.89	109+00.57	LT/RT	1,257			1,257
L	112+13.00	135+12.49	RT	2,299			2,299
L	139+81.28	142+46.20	LT	265			265
L	147+36.98	163+32.66	LT	1,596			1,596
L	167+23.36	169+32.54	LT/RT	209			209
L	185+55.30	192+30.02	LT/RT	675			675
						TOTAL	8,645
						SAY	**8,650**

2'–6'' CURB & GUTTER

LINE	STATION	STATION	SIDE	GROSS LENGTH	DEDUCTIONS DRIVES	DEDUCTIONS OTHERS	NET LENGTH
L	14+32.46	14+74.61	RT	42			42
L	15+60.85	20+80.45	RT	520			520
NBL	20+80.45	20+91.74	RT	11			11
NBL	22+94.14	23+62.18	RT	68			68
NBL	23+39.45	23+73.45	LT	34			34
NBL	24+28.10	25+52.26	RT	124			124
NBL	27+78.48	28+37.03	LT	59			59
NBL	27+97.13	30+28.39	RT	231			231
NBL	29+29.11	30+83.38	LT	154			154
NBL	31+91.75	32+75.67	RT	84			84
NBL	32+46.52	34+50.62	RT	204			204
L	34+25.07	38+27.88	RT	403			403
L	39+16.00	42+87.96	RT	393			393
L	43+22.02	48+75.51	RT	574			574
L	49+28.86	52+93.40	RT	365			365
L	54+10.90	71+74.94	RT	1,764			1,764
L	72+89.97	73+19.69	RT	30			30
L	15+66.96	19+68.10	LT	409			409
L	20+04.04	20+80.46	LT	82			82
SBL	20+80.46	21+85.55	LT	105			105
SBL	22+53.02	23+36.30	LT	83			83
SBL	23+76.83	24+88.59	RT	112			112
SBL	25+56.47	25+67.20	RT	11			11
SBL	28+09.34	29+08.40	RT	99			99
SBL	29+77.66	30+59.04	RT	81			81
SBL	30+99.58	31+55.48	LT	56			56
SBL	32+38.31	34+55.35	LT	217			217
L	34+25.07	38+90.46	LT	465			465
L	39+88.01	52+79.71	LT	1,292			1,292
L	54+20.99	73+10.67	LT	1,717			1,717
Y2	13+87.26	14+02.35	RT	15			15
Y2	13+87.26	14+36.93	LT	50			50
Y3	10+32.12	11+00.00	LT	68			68
Y3	10+52.24	11+00.00	RT	48			48
RPA	13+17.17	14+35.12	LT	118			118
RPA	14+27.25	15+14.09	LT	87			87
RPA_SPUR	13+17.35	14+49.78	RT	132			132
RPA_SPUR	14+28.16	15+24.43	LT	96			96
RPB	18+53.91	21+05.33	RT	251			251
RPB	20+78.50	21+94.35	LT	116			116
RPB_SPUR	10+62.33	12+00.12	LT	138			138
RPB_SPUR	12+21.91	12+97.25	RT	75			75
RPC	17+09.60	18+01.61	LT	92			92
RPC	17+83.51	18+77.29	RT	94			94
RPC_SPUR	17+10.81	18+30.69	RT	120			120
RPC_SPUR	18+31.11	19+38.85	LT	108			108
RPD	18+26.27	19+07.15	RT	81			81
RPD	17+83.01	18+39.63	LT	57			57
RPD_SPUR	17+68.41	19+05.74	LT	137			137
RPD_SPUR	18+94.20	19+71.35	RT	77			77
Y5A	11+21.60	11+89.18	RT	68			68
Y5A	10+66.83	11+65.33	LT	99			99
Y5B	13+41.03	13+85.76	RT	45			45
Y5B	12+48.17	13+15.35	LT	67			67
Y5C	10+35.45	11+22.76	RT	87			87
Y6	10+96.99	12+13.80	RT	117			117
Y6	10+75.65	11+82.91	LT	107			107
Y6A	10+81.01	11+59.40	LT	85			85
Y6A	10+86.58	11+58.48	RT	77			77
Y7	17+00.85	22+03.71	RT	503			503
Y7	29+56.61	30+74.58	RT	118			118
Y7	29+43.26	30+61.57	LT	118			118
Y7A	10+99.03	20+67.51	RT	968			968
Y7A	21+31.21	24+52.98	RT	322			322
Y7A	25+20.30	25+93.80	RT	74			74
Y7A	10+52.41	24+67.97	LT	1,416			1,415
Y7A	25+84.36	26+89.38	LT	105			105
Y7B	15+61.94	15+84.81	LT	44			44
Y7B	16+12.19	16+71.11	LT	80			80
Y7B	14+00.00	16+80.64	LT	281	60.00		221
Y8	13+97.97	17+69.60	LT	372	50.00		322
Y8	13+97.97	18+07.42	RT	409	58.00		351
Y9	10+23.74	12+55.11	LT	231			231
Y9	10+74.79	12+55.13	RT	180			180
DWY1	10+24.16	12+24.20	RT	251			251
DWY1	10+69.74	12+24.20	LT	175	20.00		155
PARKING LOT							
L	20+12.42	20+54.57	LT	42			42
L	35+80.89	36+34.65	RT	58			58
L	36+77.45	37+41.94	RT	66			66
L	41+07.86	41+31.77	LT	24			24
L	44+36.96	44+77.58	RT	47			47
L	44+87.65	46+09.76	RT	137			137
L	44+75.87	45+49.02	RT	68			68
						TOTAL	18,400
						SAY	18,400

CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE SIZE .064 12 | 15 | 18 | 24 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V SIZE 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | A 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15	18	24	30	36	42
NBL 30+69	36	LT	0531		656.5									
			0531	0532		648.8	648.6							
SBL 30+45	21	RT	0532		656.7									
			0532	0535		648.3	648.1							
RPB 20+68	44	LT	0533		651.9									
			0533	0534		649.2	649.0							
SBL 31+50	27	LT	0534		655.7									
			0534	0531		649.0	648.8							
NBL 31+69	27	RT	0535		654.6									
			0535	0537		648.1	644.1							
SBL 33+46	18	RT	0536		652.7									
			0536	0579		648.9	648.5							
NBL 33+52	16	RT	0537		650.1									
			0537	0538		643.6	633.3	1.2						
L 34+78	55	RT	0539		649.5									
			0539	0537		644.0	643.6							
L 35+71	82	LT	0540		650.0									
			0540	0541		646.2	645.9							
L 35+71	14	LT	0541		651.5									
			0541	0542		645.9	645.0	0.5						
L 35+71	55	RT	0542		649.7									
			0542	0539		644.8	644.5							
L 36+94	14	LT	0543		651.0									
			0543	0574		647.1	647.0							
L 37+74	55	RT	0544		649.5									
			0544	0542		645.6	645.0							
L 38+68	7	RT	0545		650.0									
			0545	0558		644.2	642.4	0.3						
L 38+60	55	LT	0546		649.0									
			0546	0545		644.4	644.2							
L 38+81	84	LT	0547		650.0									
			0547	0546		645.9	644.9	1.2		36				
Y5B 13+34	31	RT	0548		648.0									
			0548	0547		648.0	645.9	1.0		40				
Y5A 14+75	65	RT	0549		642.5									
			0549	0571		639.5	638.4							
Y5A 14+20	60	RT	0550		643.8									
			0550	0549		640.8	639.5							
Y5A 14+50	24	LT	0552											
L 40+14	158	LT	0553		648.7									
			0553	0554		648.7	647.1	0.9			24			
L 40+10	139	LT	0554		651.0									
			0554	0555		647.1	643.3	1.1			72			
L 40+02	70	LT	0555		647.9									
			0555	0557		642.3	642.1	0.4						
L 39+77	56	RT	0556		648.3									
			0556	0559		644.5	643.0							
L 40+45	55	LT	0557		648.1									
			0557	0558		641.1	640.9							
L 40+35	11	RT	0558		649.6									
SHEET TOTALS										76	96			

C. S. PIPE SIZE .064 THICKNESS OR GAUGE	12	15	18	24
NBL 30+69				
SBL 30+45				
RPB 20+68				
SBL 31+50				
NBL 31+69				
SBL 33+46				
NBL 33+52				
				96
L 34+78				
L 35+71				
L 35+71				
L 35+71				
L 36+94				
L 37+74				
L 38+68				
L 38+60				
L 38+81				
Y5B 13+34				
Y5A 14+75				
Y5A 14+20				
Y5A 14+50				
L 40+14				
L 40+10				
L 40+02				
L 39+77				
L 40+45				
L 40+35				
				96

R. C. PIPE CLASS III	12	15	18	24	30	36	42	48
NBL 30+69								
SBL 30+45								
RPB 20+68								
		64						
SBL 31+50								
NBL 31+69								
SBL 33+46								
NBL 33+52								
L 34+78								
L 35+71								
L 35+71								
L 35+71								
L 36+94								
L 37+74								
L 38+68								
L 38+60								
L 38+81								
Y5B 13+34								
Y5A 14+75								
Y5A 14+20								
Y5A 14+50								
L 40+14								
L 40+10								
L 40+02								
L 39+77								
L 40+45								
L 40+35								
		64						

R. C. PIPE CLASS IV	12	15	18	24	30	36	42	48
NBL 30+69		72						
SBL 30+45								
		92						
RPB 20+68								
SBL 31+50								
		64						
NBL 31+69								
			188					
SBL 33+46								
		108						
NBL 33+52								
L 34+78								
				144				
L 35+71								
		68						
L 35+71								
		68						
L 35+71								
			88					
L 36+94								
		52						
L 37+74								
		200						
L 38+68								
				168				
L 38+60								
				64				
L 38+81								
Y5B 13+34								
Y5A 14+75								
		16						
Y5A 14+20								
		52						
Y5A 14+50								
L 40+14								
L 40+10								
L 40+02								
				44				
L 39+77								
		60						
L 40+45								
					68			
L 40+35								
		760	368	376	44		68	

R. C. PIPE CLASS V	12	15	18	24	30
NBL 30+69					
SBL 30+45					
RPB 20+68					
SBL 31+50					
NBL 31+69					
SBL 33+46					
NBL 33+52					
L 34+78					
L 35+71					
L 35+71					
L 35+71					
L 36+94					
L 37+74					
L 38+68					
L 38+60					
L 38+81					
Y5B 13+34					
Y5A 14+75					
Y5A 14+20					
Y5A 14+50					52
L 40+14					
L 40+10					
L 40+02					
L 39+77					
L 40+45					
L 40+35					
					52

15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY

CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE THICKNESS OR GAUGE .064 | .064 | .064 | .064 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE SIZE .064 12 | 15 | 18 | 24 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V SIZE 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | B 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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CARY\SBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3109A	3D-5

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE THICKNESS OR GAUGE .064 | 12 | 15 | 18 | 24 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | A 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-6

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE THICKNESS OR GAUGE .064 | .064 | .064 | .064 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V SIZE 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | A 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3109A	3D-7

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE .064 12 | 15 | 18 | 24 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | A 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-8

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE THICKNESS OR GAUGE 12 | 15 | 18 | 24 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-9

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE .064 12 | 15 | 18 | 24 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | A 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-10

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE SIZE .064 12 | 15 | 18 | 24 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V SIZE 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-11

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE .064 12 | 15 | 18 | 24 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH; A: 5' THRU 10' LIN. FT.; A: 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3109A	3D-12

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE: 15	18	24	30	36	42

CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-13

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE: 15	18	24	30	36	42	C. S. PIPE SIZE: 12	15	18	24	R. C. PIPE CLASS III SIZE: 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV SIZE: 12	15	18	24	30	36	42	48	R. C. PIPE CLASS V SIZE: 12	15	18	24	30
															.064	.064	.064	.064																			
THICKNESS OR GAUGE																																					
Y16 11+87	26	LT	2501																																		
Y16 12+73	34	LT	2502																																		
Y16 13+62	37	LT	2503																																		
Y16 14+62	38	LT	2504																																		
Y16 15+74	40	LT	2505																																		
Y16 16+41	43	LT	2506																																		
Y16 16+90	45	LT	2507																																		
Y16 18+23	47	LT	2508																																		
Y26 13+22	19	LT	2509																																		
Y16 37+00	39	LT	2601		655.9																																
			2601	2603		653.1	652.1												104																		
Y16 36+00	34	RT	2602		655.1																																
			2602	2603		652.4	652.1												84																		
Y16 36+00	49	LT	2603		654.8																																
			2603	2604		652.1	644.0	0.5	296																												
Y16 33+10	76	LT	2604		648.0																																
			2604	2608		643.3	642.8																		144												
Y16 32+26	57	RT	2605		645.6																																
			2605	2606		646.0	645.9																		8												
Y16 32+25	50	RT	2606		645.9																																
Y16 32+21	25	LT	2607		654.8																																
			2607	2608		644.9	643.3																		120												
Y16RPA 11+28	34	LT	2608		650.6																																
			2608	2609		642.8	642.6					52																										
Y16 29+72	13	LT	2610		652.4																																
			2610	2611		649.3	646.8																										40					
Y16 29+50	44	LT	2611		649.6																																
			2611	1415		646.8	643.3		248																												
Y16 41+05	45	LT	2612																																		
Y16 43+50	31	LT	2613																																		
Y16RPA 14+50	56	RT	2701		634.8																																
			2701	2702		632.0	631.7	0.3											116																		
Y16RPA 14+50	56	LT	2702		634.8																																
			2702	2704		631.7	620.4	0.6	252																												
Y16RPA 17+00	56	RT	2703		623.5																																
			2703	2704		620.8	620.4												116																		
Y16RPA 17+00	56	LT	2704		623.5																																
			2704	2705		620.4	609.5	1.4	252																												
Y16RPA 19+50	56	LT	2705		612.3																																
			2705	2706		609.3	607.5	0.8			56																										
Y16RPA 19+41	0	CL	2707	2708		607.7	599.6																														
Y16 RPA 21+80	83	LT	2709								40																										
Y20 16+68	44	LT	2801																																		
Y20 19+20	48	LT	2802		610.5																																
			2802	2803		607.8	603.4		76																												
Y20 19+03	44	RT	2804																																		
Y20 13+81	33	LT	2806																																		
Y20 13+27	32	RT	2807																																		
Y20 10+84	24	LT	2808																																		
Y20 10+72	24	RT	2809																																		
SHEET TOTALS									1124	96	52							420	128	144			324			40											

QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) A: 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	A: 10' AND ABOVE LIN. FT.	B	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVER STD. 840.54	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	15" SLUICE GATE (22" SIZE SLUICE GATE)	18" SLUICE GATE (25" SIZE SLUICE GATE)	30"SLIOCE GATE(38.75" SIZE SLUICE GATE)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS

CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-14

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE SIZE 12 | 15 | 18 | 24 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V SIZE 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | A 10' AND ABOVE LIN. FT. | B C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
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CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-15

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15	18	24	30	36	42	C. S. PIPE THICKNESS OR GAUGE .064	.064	.064	.064	R. C. PIPE CLASS III 12	15	18	24	30	36	42	48	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48	R. C. PIPE CLASS V 12	15	18	24	30
L 88+90	95 LT																																			
L 112+00	93 RT																																			
L 147+74	137 LT																																			
L 148+35	145 RT																																			
L 149+10	153 LT																																			
L 149+32	195 LT																																			
L 149+40	149 RT																																			
L 151+55	206 LT																																			
L 151+98	255 LT																																			
L 152+26	226 LT																																			
L 152+53	236 LT																																			
L 152+98	148 LT																																			
L 153+45	320 LT																																			
L 154+75	383 LT																																			
L 156+85	112 LT																																			
L 187+85	85 LT																																			
L 188+30	39 LT																																			
Y6 15+87	106 LT																																			
Y6 16+30	69 LT																																			
Y6 21+59	120 RT																																			
Y6 22+29	127 RT																																			
Y6 22+99	99 RT																																			
Y6 23+69	41 RT																																			
Y6 23+90	64 RT																																			
Y6 24+80	37 RT																																			
Y6 25+42	5 LT																																			
Y6 25+55	23 RT																																			
Y6 26+43	14 RT																																			
Y6 26+85	16 LT																																			
Y6 27+51	20 LT																																			
Y6 28+26	14 RT																																			
Y6A 12+23	6 RT																																			
Y6A 13+40	21 LT																																			
Y6A 14+14	34 LT																																			
Y6A 15+13	20 LT																																			
Y6A 15+54	19 LT																																			
Y6A 17+25	0 CL																																			
Y6A 18+62	22 LT																																			
Y6A 18+82	11 RT																																			
Y6A 18+87	23 LT																																			
Y6A 19+86	4 RT																																			
Y6A 20+33	32 LT																																			
Y6A 20+70	34 LT																																			
Y6A 21+60	18 LT																																			
Y6A 21+85	8 LT																																			
Y6A 21+75	23 RT																																			
Y7 15+61	27 RT																																			
Y7 20+73	19 LT																																			
Y7 23+80	38 LT																																			
Y7A 21+87	73 RT																																			
SHEET TOTALS																																				

15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH	A: 5' THRU 10' LIN. FT.	A: 10' AND ABOVE LIN. FT.	B	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVER STD. 840.54	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	15" SLUICE GATE (22" SIZE SLUICE GATE)	18" SLUICE GATE (25" SIZE SLUICE GATE)	30"SLIOCE GATE(38.75" SIZE SLUICE GATE)	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
																																																			256	
																																																			27	
																																																			28	Remove Exist. 12" RCP
																																																			60	Remove Exist. 12" RCP
																																																			20	Remove Exist. 12" RCP
																																																			34	Remove Exist. 12" RCP
																																																			40	Remove Exist. 12" RCP
																																																			21	Remove Exist. 12" RCP
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																																																			20	Remove Exist. 12" RCP
																																																			8	Remove Exist. 12" RCP
																																																			31	Remove Exist. 12" RCP
																																																			83	Remove Exist. 12" RCP
																																																			17	Remove Exist. 12" RCP
																																																			20	Remove Exist. 24" HDPE
																																																			21	Remove Exist. 12" RCP
																																																			28	Remove Exist. 12" RCP
																																																			14	Remove Exist. 12" RCP
																																																			19	Remove Exist. 12" RCP
																																																			28	Remove Exist. 12" RCP
																																																			22	Remove Exist. 12" RCP
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																																																			18	Remove Exist. 12" RCP
																																																			48	Remove Exist. 12" RCP
																																																			19	Remove Exist. 12" RCP
																																																			19	Remove Exist. 12" RCP
																																																			23	Remove Exist. 12" RCP
																																																			20	Remove Exist. 12" RCP
																																																			18	Remove Exist. 12" RCP
																																																			22	Remove Exist. 12" RCP
																																																			42	4' Culvert and Headwalls
																																																			15	Remove Exist. 12" RCP
																																																			22	Remove Exist. 12" RCP
																																																			22	Remove Exist. 12" RCP
																																																			19	Remove Exist. 12" RCP
																																																			16	Remove Exist. 12" RCP
																																																			21	Remove Exist. 12" RCP
																																																			20	Remove Exist. 12" RCP
																																																			29	Remove Exist. 12" RCP
																																																			30	Remove Exist. 12" RCP
																																																			32	Remove Exist. 18" RCP
																																																			23	Remove Exist. 15" RCP
																																																			23	Remove Exist. 15" RCP
																																																			53	Remove Exist. 15" RCP
																																																			1524	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-16

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE 15 | 18 | 24 | 30 | 36 | 42 | C. S. PIPE SIZE .064 THICKNESS OR GAUGE 12 | 15 | 18 | 24 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | R. C. PIPE CLASS V 12 | 15 | 18 | 24 | 30 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | A 10' AND ABOVE LIN. FT. | B | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | BERM DITCH OUTLET , S.Y. STD 850.10 OR 850.11 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME W/ GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | J.B. STD. 840.31 OR STD. 840.32 | T.B.J.B. STD. 840.34 | M.H. FRAME AND COVER STD. 840.54 | 15" C.S. ELBOW | 18" C.S. ELBOW | 24" C.S. ELBOW | 30" C.S. ELBOW | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | 15" SLUICE GATE (22" SIZE SLUICE GATE) | 18" SLUICE GATE (25" SIZE SLUICE GATE) | 30"SLIOCE GATE(38.75" SIZE SLUICE GATE) | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
U-3109A	3D-17

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

LINE & STATION	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) SIZE: 15	18	24	30	36	42
									THICKNESS OR GAUGE					
Y20 10+80	17	LT												
Y20 14+40	0	CL												
Y20 19+04	48	RT												
Y20 19+50	12	RT												
Y20 20+07	14	RT												
Y20 21+09	50	RT												
Y20 22+43	39	RT												
Y20 22+74	0	CL												
Y20 22+85	34	RT												
Y20 23+81	8	LT												
Y20 25+61	12	RT												
Y20 25+80	26	LT												
Y20 25+80	75	LT												
Y20 26+78	4	RT												
Y20 31+70	20	LT												

CARYLSBROOKHA3

COMPUTED BY: William M. Hines DATE: 2/15/16

CHECKED BY: Waren Johnson DATE: 6/16/16

PROJECT NO.	SHEET NO.
U-3109A	3D-18

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54 INCHES & OVER)

| LINE & STATION | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | R.C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 | 84 | R.C. PIPE CLASS IV 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 | 84 | ENDWALLS STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | B: 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06 | C.B. STD. 852.05 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | DRIVEWAY D.I. STD. 840.30 | FRAME W/ GRATE FOR DRIVEWAY STD. 840.30 | J.B. STD. 840.31 OR STD. 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---

6/16/99

COMPUTED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	3G

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	SY
	CONTINGENCY		
		TOTAL SY:	57,567

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
	CONTINGENCY		AST					500	
				TOTAL CY/TONS/SY:	0	0	0	500	0

*ASU = Aggregate Subgrade
*AST = Aggregate Stabilization

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	3P-1
R/W SHEET NO.	

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL NO.	PROPERTY OWNERS NAMES	SHEET NO.	PARCEL NO.	PROPERTY OWNERS NAMES	SHEET NO.	PARCEL NO.	PROPERTY OWNERS NAMES	SHEET NO.
1	NOT USED		38A	CAMPBELL HOLDINGS, LLC	12, 13 & 21	74	DOGWOOD PROPERTIES & DEV. CORP.	20
2	CHARLES S. HURSEY	4	38B	PATERSON PROPERTIES	10	75	DOGWOOD PROPERTIES & DEV. CORP.	20
3	LOWE'S HOME CENTER, INC.	4	40	PATERSON PROPERTIES	9 & 10	76	EDWARD & JANICE MURPHY	20
4	ERNEST STRAYHORN	4	41	DELORES JONES	10, 11 & 24	77	STEPHEN & NELLIE PETTY	20
5	DIANE MARIE HUNTER	4	41A	DELORES JONES	24	78	1212 SOUTH FIFTH, LLC	20
6	NOT USED		42	MARY RUTH WOOD HEIRS	11 & 24	79	3S INVESTMENTS, LLC	20
7	TRULIANT FEDERAL CREDIT UNION	4	43	RONALD E. MASSEY & LAWRENCE L. MASSEY	14	80	KAREN OLDHAM & BILLIE JEAN HAIR	20
8	GST IRREVOCABLE TRUST U/A CLIFFORD BULLARD & JOHN GRISSOM	4	44	DONALD A. SMITH FAMILY TRUST	14	81	LARRY & BOBBIE RIGGSBEE	20 & 21
			45	BRENDA COLEMAN	14	82	ISABELL BENSON	20 & 21
9	COOK OUT – MEBANE, INC.	4	46	WM 43 SUBSIDIARY LLC.	14	83	JOHN & JEANNE HOVER	20
10	LUIHN FOUR, INC	5	47	RONALD E. MASSEY & LAWRENCE L. MASSEY	14	84	ANDREW LOPEZ	20
11	SANDVIK, INC.	5	48	WM 43 SUBSIDIARY LLC.	14, 15, 26 & 27	85	DEBORAH & RICHARD BAKER	20
12	REX OIL COMPANY	5	48A	RAY FAMILY SHARE TRUST	25	85A	MARIE H. RAY, REVOCABLE TRUST	20
13	CAROLYN LONG	5	49	ALLIE MARTIN, JR. & KENNETH MARTIN	14 & 15	86	JAMES & MARIA OAKELY	20 & 21
14	WCL ONE, LLC	5	50	MICHAEL ROBINSON, JR & ROBYN HARVEY	17	87	LARRY & BOBBIE RIGGSBEE	21
15	UNITED DEVELOPMENT CORP	5	51	ORANGE ALAMANCE	14	88	TROUTMAN PROFESSIONAL PROPERTIES LLC.	21
16	FEDELITY BANK	5	52	WILLIE DAVIS, JR. & JOAN DAVIS	15	89	SAMUEL PARKER, III & DONNA PARKER	21
17	BROOKHOLLOW PLAZA SHOPPING CENTER	5, 6 & 19	53	ALBERT SHAW HEIRS	15 & 27	90	DALE & NELL DAVIS	21
18	RUBY TUESDAY, INC.	5	54	BRETT M. MICHEAL & LISA W. NESBITT	15 & 16	91	TIMOTHY & MICHELE PAGE	21
19	GUNATIT HOSPITALITY INC.	5	55	VERONICA SMITH	15 & 16	92	NOT USED	
20	JAMES & ELLEN PORTER	5	56	MELVIN KING	15 & 16	93	FIELDSTONE PARTNERS, LLC	22
21	SPIRIT MASTER FUNDING III, LLC	5	57	NOT USED		94	NOT USED	
22	WILLIAM & VIRGINIA HAWKS	5	58	HEIRS OF VIOLA BAYNES	16 & 17	95	FIRST MEBANE PROPERTIES	7, 8 & 22
24	JBS PROPERTIES, LLC	5 & 6	59	HAROLD & ELIZABETH HALACHEFF	16 & 17	96	DONALD & JENET WEBER	22
25	BROOKHOLLOW PLAZA SHOPPING CENTER	6 & 19	60	KARILINA LLC.	17	97	DAWN MURPHY	22
26	JUDITH SETTLE	6	61	JANE DEESE	17	98	SANDRA & WINFRED JONES	22
27	3S INVESTMENTS, LLC	6, 7 & 20	62	CLIFFORD & GLENDA HUNTLEY	17 & 18	99	VERNON CLAPP	22
28	WILLIAM & PEGGY BUMCARNER	6 & 19	63	THEODORE & KATE SCHMIDT	17	100	TRACIE GERRINGER	22
29	GARY BUMGARNER	6 & 19	64	JOHN & CAROL PAYNE	18	101	NOT USED	
31	WILTON BENSON	6 & 20	65	JOHN & CATHERINE HEAFNER	18	102	NOT USED	
32	GAKHSKNCP, LLC	6	66	DERIK & ANGELA DAVIS	18	103	NOT USED	
33	DOGWOOD PROPERTIES & DEV. CORP.	6	67	DANIEL & LORRI SHANNON	18	104	JOEL W. WALKER & PHYLLIS WALKER	22
34	EDWARD & JANICE MURPHY	6, 7 & 20	68	JAMES & LINDA PIPER	18	105	PAULA ANGEVINE – JEFFERS	22
35	HKID 42 INC.	7, 8 & 19	69	SPORTS ENDEAVORS, INC.	19	106	ANDY WALLS, II & SARA WALLS	22
36	FIRST MEBANE PROPERTIES	7	71	INDUSTRIAL DEVELMENT ASSOCIATES	19	107	JESSICA & JOHN ALLISON	22
37	MCCLURE FUNERAL SERVICE, INC.	7	72	IDA FLEX OFFICE, LLC	19	108	JOE & INISE DEGRAFFENREIDT	22
38	RAY FAMILY SHARE TRUST	8,9, 10,11,12&13	73	DOGWOOD PROPERTIES & DEV. CORP.	6 & 20	109	WINFRED & TERRY WHITTED	22 & 23

REVISIONS

R/W REVISION: 05/06/15 – UPDATED OWNER INFORMATION ON PARCELS – 36, 42, 43, 44, 46, 47, 48, 54, 55, 57, 58, 60, 76, 84, 88, 93, 94, 104. ADDED PARCELS 41A AND 85A. DELETED PARCELS 92, 94, 101, 102, AND 103.

5/14/99

7/19/2016 9:50:13 AM
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User:egolson

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	3P-2
R/W SHEET NO.	

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL NO.	PROPERTY OWNERS NAMES	SHEET NO.	PARCEL NO.	PROPERTY OWNERS NAMES	SHEET NO.	PARCEL NO.	PROPERTY OWNERS NAMES	SHEET NO.
110	HENRY & JACKIE CRANE	22 & 23	143	DANIEL THACKER, JR & LYNNETTE THACKER	28	179	JOHN & LUANNE PAYNE	18
111	MILDRED & WILLARD GODREY	23	144	CARL BRADLEY	28	180	UNITED STATES POSTAL SERVICE	22
112	FELICIA & TAGBO EKWUEME – OKOLI	23	145	CHRISTOPHER ROBERT TURNER	28	181	ELIZABETH FOUST	24
113	JOHN & MINNIE PACKENHAM	23	146	MELVIN SIDNEY KING	28	182	CONGDON, BRIAN E. & SARAH J.	31
114	JOHN & MINNIE PACKENHAM	23	147	NOT USED		183	NOT USED	
115	C. L. DORIS FRYE	23	148	ROBERT & DIANNE FLYNN	18 & 28	184	VASANT & PRABHA, SEJPAL	5
116	EDWARDS REALTY LLC	24	149	JESSE & BONITA WRIGHT	17 & 28	185	RONNIE C. & KELLY S. WILSON	17
116A	VERNON CLAPP	23	150	WILLIAM & PRISCILLA RICE	18	186	NO CLAIM	9
117	DUKE POWER	11 & 24	151	ELAINE DODSON	18	187	HAROLD THORNTON	18
118	ADDIE HAYES	24	152	CATES ELOISE WOOLSEY ESTATE	18 & 29	188	TERRY & MARGARET GEARHART	23
119	DONALD HEATH	24				189	EFAIN & MAURS SALAS	25
120	DUKE POWER	24	153	JOHNSON CHAPEL A.M.E. CHURCH	29	190	NO CLAIM	
121	WAYNE PATTERSON	25	154	ROBERT J. GERARDI	29	191	BILLY LOYD	22 & 23
122	PAUL & CYNTHIA HAYES	25	155	TOWN OF MEBANE	30 & 31	192	TIMBER CREEK ESTATES, LLC	21
123	WILLIAM & MARY WHEELEY	25	156	SNIPES, MARILYN HOLT	31	193	NORTH CAROLINA RAILROAD COMPANY	13, 14 & 25
124	RAFAEL LOPEZ & DOMINGA MIRANDA	25	157	SETTLE, JOHN D., LEE W. ROBERT K.	31	194	JAMES PIERMARINI	5
125	ROGER SHIELDS	25	158	CLEOTHER, LATTA HEIRS,	31	195	ARNOLD & SARAH BROWN	17
126	BRYAN WHITE	25	159	HOLT, MATTHEW HEIRS	31	196	MEBANE MCGEE ASSOCIATES	21
127	DON & RHONDA SOLOMAN	25	160	SETTLE, JOHN D., LEE W. ROBERT K.	31			
128	WILLIAM GARNER & BETTY HESTER	25	161	NOT USED				
129	DONALD & SHEILA HURT	14 & 25	162	NOT USED				
130	PAMELA WILLAMSON CLARK	14 & 25	163	OBLINGER, BARRIE W.	31			
131	PAMELA BEATRICE SANDERS	27	164	NOT USED				
132	NCDOT	26	165	NOT USED				
133	PENSCO TRUST COMPANY CUSTODIAN FBO JAMES BUTCHER	26	166	JACKSON LEE PROPERTIES INC,	31 (INSERT)			
			167	WOODS, ROBERT S.	31 (INSERT)			
134	NCDOT	26	168	HARMON, JOHN H.	31 (INSERT)			
135	JAMES BUTCHER	26	169	NO CLAIM	31 (INSERT)			
136	PENSCO TRUST COMPANY CUSTODIAN FBO JAMES BUTCHER	26	170	JACKSON LEE PROPERTIES INC.	31 (INSERT)			
			171	JACKSON LEE PROPERTIES INC.	31 (INSERT)			
136A	PHILLIP TYSON HEIRS	26	172	SMITH, ANGENETTE S.	31 (INSERT)			
137	IVSON FOUST, JR. & JOLLY FOUST	26	173	HARMON, JOHN H.	31 (INSERT)			
138	NOT USED		174	NO CLAIM	31 (INSERT)			
139	NO CLAIM	26 & 27	175	ALFRED & ADELL GAINEY	28			
140	NO CLAIM	27	176	NOT USED				
141	RICHARD HOLT	27	177	ROLAND & JERI CHURCH	14			
142	GREGORY RANDALL & CHRISTY RANDALL	28	178	LESLIE PLUMB &WILLIAM & JENNIFER PETTY	14			

REVISIONS

5/14/99

R/W REVISION: 050615 – UPDATED OWNER INFORMATION ON PARCELS – 131, 132, 133, 134, 136, 142, 145, 146, 152, AND 154. ADDED PARCELS 116A, 191, 192, 193, 194, 195 AND 196. DELETED PARCELS 116, 176, 147, AND 190.

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User:eadamson

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0880

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

06/12/15 – R/W REVISIONS SHOWED IMPROVEMENTS OF SITE AND BUILDING ON PARCEL 9; SHOWED EXISTING R/W AND DRIVE ON PARCEL 2; RELOCATED PROPOSED R/W ON PARCELS 8 AND 9; ADDED A "DO NOT DISTURB EXISTING PARKING LOT" NOTE ON PARCEL 9; RELOCATED PROPERTY LINES AND EXISTING R/W ON PARCEL 3. – PJS
10/21/16 – R/W REVISIONS; ADDED RESERVED R/W FOR FUTURE PROJECT ON PARCELS 4 AND 5. – PJS
12/16/16 – R/W REVISIONS; ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 2, 7 & 8. – SCL

-L-

PI Sta 17+45.94	PI Sta 22+13.49
Δ = 1° 33' 56.6" (LT)	Δ = 4° 20' 48.0" (RT)
D = 0° 28' 38.9"	D = 0° 42' 58.3"
L = 327.92'	L = 606.91'
T = 163.97'	T = 303.60'
R = 12,000.00'	R = 8,000.00'
Ds = 50 mph	Ds = 50 mph
SE = NC	SE = NC

-Y2-

PI Sta 13+14.89
Δ = 24° 12' 39.3" (RT)
D = 18° 39' 47.2"
L = 129.73'
T = 65.85'
R = 307.00'

-Y3-

PI Sta 12+53.15
Δ = 28° 56' 43.7" (RT)
D = 13° 19' 28.6"
L = 217.23'
T = 110.99'
R = 430.00'

NAD 83/95

MEBANE CITY LIMITS (OUT)
MEBANE CITY LIMITS (IN)

POT Sta.6+00.00

POT Sta.1+10+00.00

PC Sta. 12+49.05

PT Sta.13+78.77

BEGIN CONSTRUCTION
-Y2- POT Sta.13+87.26

-Y3- POT Sta. 10+00.00 =
-L- POT Sta.15+15.86

-Y2- POT Sta.14+92.23 =
-L- POT Sta.15+21.28

BEGIN TIP PROJECT U-3109A
-L- POT Sta. 14+30.00

PC Sta. 11+42.16

PT Sta. 13+59.39

END CONSTRUCTION
-Y3- POC Sta.11+00.00

PC Sta. 15+81.97

-BL- PINE

-BL-II

"GPS" U3109-2

ISBKD BUS

PA BST

STATE EMPLOYEES' CREDIT UNION
DB 2018 PG 730

COMPASS POINTE LLC
DB 3308 PG 713
PB 76 PG 410

DPC MEBANE, LLC
DB 2750 PG 705

CHARLES S HURSEY ETAL
DB 3372 PG 644
PB 76 PG 410

LOWE'S HOME CENTERS, INC.
DB 2065 PG 997
PB 68 PG 376-377

FOSS LLC
DB 3566 PG 116

DIANE MARIE HUNTER
DB 1175 PG 597

ERNEST STRAYHORN
DB 322 PG 581

PHIPPS-SCOTT, LLC
DB 1258 PG 475
PB 62 PG 30

NORTHEAST PROPERTIES, LLC
DB 2755 PG 184
PB 68 PG 197

TRULIANT FEDERAL CREDIT UNION
DB 2014 PG 729
PB 68 PG 197

VANCE GARRETT, JR. & PAULINE GARRETT
DB 1665 PG 766
PB 61 PG 36
PB 60 PG 83

GST IRREVOCABEL TRUST U/A CLIFFORD BULLARD & JOHN GRISSOM
DB 6298 PG 472
PB 55 PG 169

CLIFFORD E. BULLARD JR. GST IRR
DB 3029 PG 951
PB 71 PG 281

ZEE INVESTMENT CORPORATION
DB 2297 PG 95
PB 70 PG 66

MATCH LINE – SHEET 5 –L– STATION 19+00

REVISED SIGNAL

FOR -L- PROFILE SEE SHEET 32

12/2/2016 5:46:27 PM
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USER: scarroll

REVISIONS

NOTES
1. 6/27/13 - R/W REMOVING CREATED PARCEL 104, REMOVED PLE AND ADJUSTED TCE ON PARCEL 105, REMOVED PLE AND ADJUSTED TCE ON PARCEL 17, REMOVED PLE AND ADJUSTED TCE ON PARCEL 18 AND 19.
2. 8/20/13 - R/W REMOVING REMOVED PLE AND ADJUSTED TCE ON PARCELS 16 AND 17.
3. 9/13/13 - R/W REMOVING REMOVED PLE AND ADJUSTED TCE ON PARCEL 16, ADDED NOTE 16 TO ABANDON PIPE AND A "DO NOT DISTURB WALL" NOTE ON PARCEL 16, + 7HR.
4. 10/23/13 - R/W REMOVING REMOVED PROPOSED R/W LINE, REMOVED TCE ON PARCEL 19 + 7HR.
5. 10/23/13 - R/W REMOVING REVISED PROPOSED R/W LINE, REMOVED PLE AND ADJUSTED TCE ON PARCEL 21, REMOVED TCE ON PARCEL 22 + 7HR.
6. 10/31/13 - R/W REMOVING REVISED PROPOSED R/W LINE, ADJUSTED TCE TO MATCH EXISTING R/W FROM -NBRA1250+14.46 TO -NBRA1250+14.46 ON PARCEL 20, 21 AND 22, TCE CHANGED PLE TO JUG AND REMOVED JUG TO AVOID GAS TANKS ON PARCEL 21, REMOVED TCE ON PARCEL 23 AND 24, REMOVED TCE ON PARCEL 25 + 7HR.
7. 11/7/14 - R/W REMOVING ADDED NOTE FOR THE CONTRACTOR TO NOTIFY THE PROPERTY OWNER PRIOR TO CONSTRUCTION AND A NOTE TO MAINTAIN DRIVEWAY ACCESS DURING CONSTRUCTION ON PARCEL 16 + 7HR - LJ AND ADDED A DRIVEWAY AT -L- STA. 20+80 ON PARCEL 16.
8. 12/2/14 - R/W REMOVING REVISED THE DRIVEWAY WIDTH FROM 20' TO 40' ON PARCEL 16 + 7HR - LJ.
9. 12/22/14 - R/W REMOVING REVISED PLE to 2UE ON PARCEL 106 + 7HR - LJ.
10. 1/16/15 - R/W REMOVING ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING, REVISED TCE ON PARCEL 16 AND ADDED A DRIVEWAY AT -L- STA. 19+90 AND ADDED AN ACCESS POINT FROM -L- STA. 21+70.00 TO STA. 21+80.00 ON PARCEL 17 + 7HR - LJ.

PROJECT REFERENCE NO. U-3109A — SHEET NO. 5

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc. — SIGNATURE/SEAL/DATE — 10 Woodlawn Green Drive, Suite 1 Charlotte, NC 28217

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BRIDGE PAVEMENT RELATIONSHIP SKETCH

BEGIN BRIDGE -NBL- Sta.25+45.23
APPROACH SLAB -NBL- Sta.25+21.32
BEGIN APPROACH SLAB -NBL- Sta.25+55.58
PT Sta. 25+16.80
APPROACH SLAB -NBL- Sta.27+89.14
END BRIDGE 27+97.79 -NBL- Sta.27+65.23
N 27° 21' 44.7" E

-L-

PI Sta 17+45.94	PI Sta 22+13.49	PI Sta 31+41.55	PI Sta 33+59.86	PI Sta 35+74.01	PI Sta 43+03.34	PI Sta 50+62.48	PI Sta 57+44.94
Δ = 1° 33' 56.8" (LT)	Δ = 4° 20' 48.0" (RT)	Bs = 8° 08' 31.5"	Δ = 15° 24' 22.7" (RT)	Bs = 8° 41' 05.4"	Bs = 6° 36' 01.7"	Δ = 55° 54' 11.5" (LT)	Bs = 6° 36' 01.7"
D = 17° 28' 38.9"	D = 17° 42' 58.3"	Ls = 270.00'	D = 6° 01' 52.1"	Ls = 288.00'	Ls = 288.00'	D = 4° 55' 01.2"	Ls = 288.00'
L = 327.92'	L = 606.59'	L = 255.45'	L = 256.45'	LT = 192.13'	LT = 192.13'	L = 1,219.62'	LT = 192.13'
T = 163.98'	T = 303.60'	T = 128.10'	T = 128.50'	ST = 96.12'	ST = 96.12'	T = 661.28'	ST = 96.12'
R = 12,000.00'	R = 8,000.00'	R = 950.00'	R = 950.00'			R = 1,250.00'	
Ds = 50 mph	Ds = 50 mph	Ds = 50 mph	Ds = 50 mph			Ds = 60 mph	
SE = NC	SE = NC	SE = NC	SE = 0.06			SE = 0.06	

NOTE #1: THE CONTRACTOR IS TO GIVE THE PROPERTY OWNER OF PARCEL 16 A 30-DAY NOTICE PRIOR TO CONSTRUCTION IN ORDER TO NECESSITATE THE RELOCATION OF THE SIGN.

NOTE #2: THE DRIVEWAY ACCESS MUST BE MAINTAINED DURING NORMAL BUSINESS HOURS IN THE AREA OF TCE ON PARCEL 16.

L (NC119 RELOCATION) & I-40/I-85

2016 AADT 2036: I-40/I-85 97,700 / 136,000

NAD 83/95

MATCH LINE – SHEET 4 –L– STATION 19+00

MATCH LINE – SHEET 6 –L– STATION 45+00

A
B
C
D

-RPC SPUR- PT Sta.16+63.40 = -SBL- POC Sta.24+95.40,14 RT.
-RPC- PT Sta.16+63.40
-RPC- POT Sta.16+71.67
-RPC SPUR- PT Sta.18+77.29 = -SBL- POC Sta.21+85.55
-RPC- PT Sta.19+09.89
-L- POT Sta.20+80.46 = -SBL- PC Sta.20+80.46, OFFSET 20' LT.,32 RT.
-NBL- PC Sta.20+80.46
-RPD- POT Sta.20+28.79 = -NBL- POC Sta.21+19.74
PT Sta.20+16.94
PRC Sta.17+73.91
-RPB SPUR- PC Sta.10+00.00 = -RPB- PC Sta.11+90.33
-RPB SPUR- PT Sta.19+38.85 = -NBL- POC Sta.24+95.40,14 RT.
-RPB SPUR- PT Sta.12+97.25 = -NBL- POT Sta.28+37.03,42 LT.
PT Sta.15+16.80
-RPA SPUR- PT Sta.19+71.35 = -SBL- POT Sta.25+35.46,12 LT.
-RPA SPUR- PT Sta.12+97.24 = -RPA- PC Sta.12+57.24
-RPD SPUR- PC Sta.17+05.68 = -RPD- POT Sta.17+05.01
SC Sta.14+59.91
TS Sta.13+09.91
END CONSTRUCTION -RPD- PRC Sta.11+25.00
BEGIN CONSTRUCTION -RPB- POC Sta.11+00.00
PC Sta.10+00.00
PT Sta.13+00.70
POT Sta.10+00.00
BEGIN CONSTRUCTION -RPC- POT Sta.11+68.63
BEGIN CONSTRUCTION -EY43- POT Sta.44+99.00
-RPB- POT Sta.21+69.27
-SBL- PT Sta.34+55.35 = -NBL- PT Sta.34+20.62 -L- POC Sta.34+25.01 OFFSET 27' LT.,39 RT.
SC Sta.32+31.96
CS Sta.34+77.79
N 34°56'47.1"E
-SBL- PT Sta.20+34.70 = -SBL- POC Sta.32+34.30, 15' LT.
PC Sta.20+34.70
TS Sta.29+61.36
N 34°56'47.1"E
PT Sta.15+16.80
N 27° 21' 44.7" E
N 27° 21' 44.7" E
-SBL- PC Sta.29+08.40
PC Sta.12+84.73
-RPA- PT Sta.15+14.18 = -NBL- POC Sta.32+46.52
BEGIN CONSTRUCTION -RPA- POT Sta.10+82.52
POT Sta.10+00.00
POT Sta.17+10.61
END CONSTRUCTION -EY43- POT Sta.57+10.00
-Y5A- PT Sta.11+25.00 BEGIN CONSTRUCTION
-Y5A- POT Sta.14+42.09 = -L- POT Sta.376.76
-Y5A- POT Sta.10+00.00 = -L- POT 39+25.64
-Y5A- PC Sta.41+11.20
-Y5A- PT Sta.41+39.20
-DWY- POT Sta.16+01.45 S 7°52' 29.6" W
-DWY- POT Sta.15+73.92
END CONSTRUCTION -DWY- POC Sta.15+45.00
-DWY- PC Sta.14+90.50
-Y5B- POT Sta.11+25.00 END CONSTRUCTION
-Y5B- PT Sta.14+42.09 = -L- POT 376.76
-Y5B- PC Sta.41+11.20
-Y5B- POT Sta.41+39.20
-L- POT Sta.20+80.46 = -SBL- PC Sta.20+80.46, OFFSET 20' LT.,32 RT.
-NBL- PC Sta.20+80.46
-RPD- POT Sta.20+28.79 = -NBL- POC Sta.21+19.74
PT Sta.20+16.94
PRC Sta.17+73.91
SC Sta.14+59.91
TS Sta.13+09.91
END CONSTRUCTION -RPD- PRC Sta.11+25.00

-DWY1-
PI Sta 15+34.81
Δ = 42° 47' 48.4" (LT)
D = 57° 17' 44.8"
L = 87.45'
T = 46.5'
R = 100.00'

FOR INTERCHANGE DETAIL SEE SHEET 2K
FOR -L- PROFILE SEE SHEETS 32 & 33
FOR -NBL- & -SBL- PROFILE SEE SHEET 39
FOR -RPA- & -RPA_SPUR- PROFILE SEE SHEET 40
FOR -RPB- & -RPB_SPUR- PROFILE SEE SHEET 40 & 41
FOR -RPC- & -RPC_SPUR- PROFILE SEE SHEET 41
FOR -RPD- & -RPD_SPUR- PROFILE SEE SHEET 41& 42
FOR Y5A & Y5B PROFILE SEE SHEET 43
FOR STRUCTURE SEE SHEETS S-1 THRU S-7

PROPOSED SIGNAL

LOCATION: NC 119 AND I-40/I-85
TIP NO.: U-3109A — COUNTY: ALAMANCE
DESIGNED BY: WEJ
CHECKED BY: THB

GRAPHIC SCALE
50 25 0 50 100
PLANS

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
8000 Regency Parkway
Suite 600
Cary, NC 27518
INTERNATIONAL NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

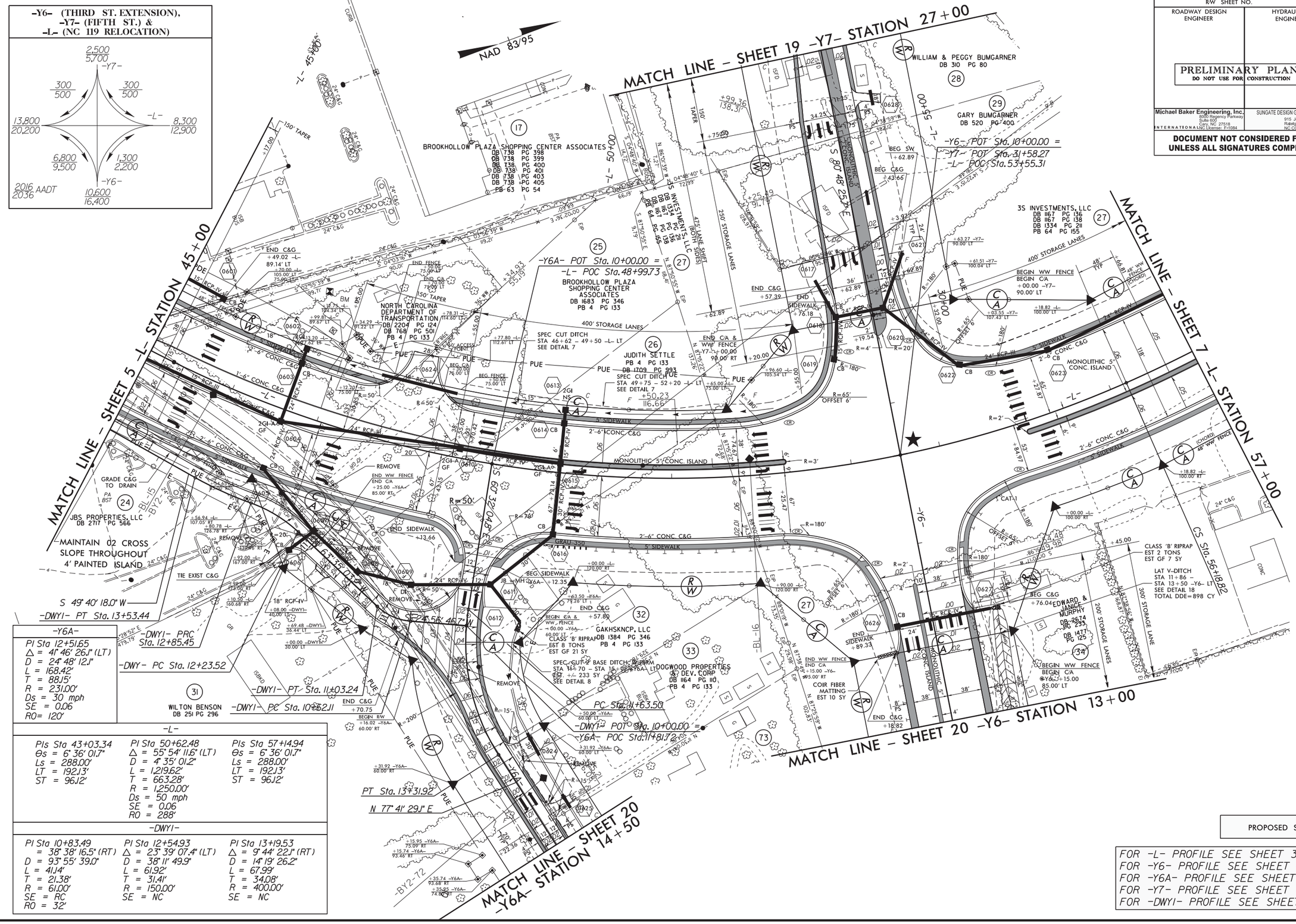
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y6- (THIRD ST. EXTENSION), -Y7- (FIFTH ST.) & -L- (NC 119 RELOCATION)

REVISIONS

5/14/99

06/12/15 - R/W REVISIONS; REMOVED ONE BUILDING STRUCTURE AND LOCATED ANOTHER BUILDING STRUCTURE ON PARCEL 34. - PJS
09/02/15 - R/W REVISIONS; REVISED PUE ON PARCELS 24 THROUGH 27 AND 31; REVISED TCE ON PARCELS 25 THROUGH 27. - THB
06/23/16 - R/W REVISIONS; PROVIDED AN ACCESS POINT FROM -L- STA. 47+70.00 TO STATION 48+30.00 LT; ON PARCEL 25; ADDED A DRIVEWAY AT -L- STA. 48+00.00 LT ON PARCEL 25 FOR INGRESS AND EGRESS TO PARCEL 17.
12/2016 - R/W REVISION; ADDED TCE FROM -L- STA. 46+90.00 TO STA. 47+10.50 ON PARCEL 25; ADJUSTED STATION AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCEL 31. - SCL



PROPOSED SIGNAL

FOR -L- PROFILE SEE SHEET 33
FOR -Y6- PROFILE SEE SHEET 44
FOR -Y6A- PROFILE SEE SHEET 45
FOR -Y7- PROFILE SEE SHEET 46
FOR -DWY1- PROFILE SEE SHEET 54

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MATCH LINE – SHEET 19
–EY10– STATION 33+00

MATCH LINE – SHEET 6
–L– STATION 57+00

MATCH LINE – SHEET 8
–L– STATION 70+00

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0880

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/95

REVISIONS

5/14/99

06/12/15 – R/W REVISIONS. UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCEL 36 AND 95. – PJS
12/16/16 – R/W REVISIONS. ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 27, 35 & 37. – SCL

SPEC LAT 2' BASE DITCH W/CL 'B' RIP RAP
STA 58+25 – STA 59+60 –L– LT
EST 153 TONS
EST GF 316 SY
SEE DETAIL 21

CLASS 'B' RIPRAP
EST 5 TONS
EST GF 14 SY

CLASS 'B' RIPRAP
EST 5 TONS
EST GF 10 SY
150' TAPER

400' STORAGE LANES

SPEC LAT 2' BASE DITCH
STA 59+60 – STA 61+37 –L– LT
SEE DETAIL 23

LAT 2' BASE DITCH
STA 62+85 – STA 63+00 –L– LT
SEE DETAIL 20

STABILIZE
EXIST CHANNEL
W/CLASS 'B' RIPRAP
EST 45 TONS
EST GF 100 SY
SEE DETAIL 49

SPEC LAT 2' BASE DITCH
STA 63+00 – STA 64+50 –L– LT
SEE DETAIL 23

CLASS 'B' RIPRAP
EST 5 TONS
EST GF 14 SY

SPEC CUT DITCH
STA 65+10 – STA 67+00 –L– LT
SEE DETAIL 7

LATERAL V-DITCH
STA 69+65 – 70+10 –L– LT
SEE DETAIL 14
TOTAL DDE=390 CY

LATERAL V-DITCH W/CL "B" RIP RAP
STA 68+50 – 69+65 –L– LT
EST 53 TONS
EST GF 143 SY
SEE DETAIL 24

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

200' TAPER

HKID 42 INC.
DB 713 PG 196

FIRST MEBANE PROPERTIES
DB 3362 PG 614

MCCLURE FUNERAL SERVICE, INC.
DB 2344 PG 358
PB 68 PG 46

3S INVESTMENTS, LLC
DB 1167 PG 136
DB 1167 PG 138
DB 1334 PG 211
PB 64 PG 155

SARAH & WILLIAM FOUST
DB 238 PG 314

RAY FAMILY SHARE TRUST
DB 2679 PG 994

–L–

PIs Sta 43+03.34	PI Sta 50+62.48	PIs Sta 57+14.94
Θs = 6° 36' 01.7"	△ = 55° 54' 11.6" (LT)	Θs = 6° 36' 01.7"
Ls = 288.00'	D = 4° 35' 01.2"	Ls = 288.00'
LT = 192.13'	L = 1,219.62'	LT = 192.13'
ST = 96.12'	T = 663.28'	ST = 96.12'
	R = 1,250.00'	
	Ds = 50 mph	
	SE = 0.06	
	R0 = 288'	

–EY10–

PI Sta 37+63.95
△ = 7° 51' 53.2" (LT)
D = 5° 17' 20.3"
L = 148.70'
T = 74.47'
R = 1,083.31'

–EY10– PC Sta. 36+89.48
–EY10– PCC Sta. 38+38.18
BEGIN CONSTRUCTION –EY10– 36+18.94
END CONSTRUCTION –EY10– 36+89.30
ST Sta. 59+06.82

FOR –L– PROFILE SEE SHEETS 33 & 34
FOR –DWY2– PROFILE SEE SHEET 54

12/12/2016 5:46:18 PM
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USER: rwood

5/14/99

REVISIONS

06/12/15 R/W REVISIONS; UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 95. – PJS
03/07/16 R/W REVISIONS; REVISED PROP R/W AND ADDED PDE ON PARCEL 35. – THB

7/19/2016 9:50:32 AM
A:\Roadway\roadway_U3109A_rdy_psh_8.dgn
User: thbrown

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

N

NAD 83/95

–L–

PIs Sta 74+36.16	PI Sta 78+68.40	PIs Sta 82+95.52
θs = 2° 17' 30.6"	Δ = 16° 38' 21.3" (RT)	θs = 2° 17' 30.6"
Ls = 200.00'	D = 2° 17' 30.6"	Ls = 200.00'
LT = 133.34'	L = 726.02'	LT = 133.34'
ST = 66.68'	T = 365.59'	ST = 66.68'
	R = 2,500.00'	
	Ds = 50 mph	
	SE = 0.04	
	RO = 200'	

MATCH LINE – SHEET 7 –L– STATION 70+00

MATCH LINE – SHEET 9 –L– STATION 82+00

MATCH LINE – SHEET 22 –Y7A– STATION 15+00

HEAD DITCH
EST DDE +/– 19 CY
SEE DETAIL 29

LATERAL V–DITCH
STA 70+10 – 70+68 –L– LT
SEE DETAIL 14

TOTAL DDE=390 CY

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

–Y7A– POT Sta. 10+00.00 =
–L– POT Sta.72+47.69

LAT V–DITCH
W/CL 'B' RIP RAP
STA 70+68 –
72+00 –L– LT
EST 61 TONS
EST GF 164 SY
SEE DETAIL 24

200' TAPER

450' STORAGE LANE
LT. TURN LANE

350' LT. TURN LANE TAPER

TS Sta. 73+02.82

SC Sta. 75+02.82

END SIDEWALK
+02.82

END C&G
+10.67

50' TYP

150' TAPER

100' TAPER
RT. TURN LANE

LAT V DITCH
STA 76+50 – STA 78+10 –L– LT
SEE DETAIL 33
TOTAL DDE=99 CY

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

SET INLET INV ELEV
TO NORMAL POND
WS ELEV 619.6

ROCK FILL IN POND
TO ELEV 621.6
EST 61 TONS
EST GF 462 SY
SEE DETAIL 51

CLASS 'B' RIPRAP
EST 1 TONS
EST GF 5 SY

PROVIDE GATE
FOR POWER
EASEMENT ACCESS

15" w/2 ELBOWS

GRAU-350

5' SIDEWALK

12'-6" CONC. C&G

MONITORING WELL

MONOLITHIC 5" CONC. ISLAND

MEBANE CITY LIMITS (IN)

N 10° 03' 08.60" W

RAY FAMILY SHARE TRUST
DB 2679 PG 994

HKID 42 INC.
DB 713 PG 196

TAIL DITCH
EST DDE
+/– 29 CY
SEE DETAIL 29

CLASS I RIPRAP
ON BANKS ONLY
EST 18 TONS
EST GF 29 SY

HEAD DITCH
EST DDE
+/– 32 CY
SEE DETAIL 27

340' TAPER

450' STORAGE LANE

END WW FENCE
END C/A
+80.00 –Y7A–
65.00 RT

LATERAL V–DITCH
STA 69+95 – STA 70+75 –L– RT
SEE DETAIL 14

FIRST MEBANE PROPERTIES
DB 3362 PG 614

LATERAL V–DITCH
STA 10+95 – STA 11+56 –Y7A– LT
SEE DETAIL 14
TOTAL DDE=61 CY

TAIL DITCH
EST DDE +/– 49 CY
SEE DETAIL 4

CLASS I RIPRAP
ON BANKS ONLY
EST 27 TONS
EST GF 44 SY

LATERAL V–DITCH
STA 11+65 – STA 12+31 –Y7A– LT
SEE DETAIL 26
TOTAL DDE=61 CY

BEGIN WW FENCE
BEGIN C/A
+00.00 –Y7A–
65.00 LT

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

CLASS I RIPRAP
EST 33 TONS
EST GF 66 SY

TAIL DITCH
EST DDE +/– 9 CY
SEE DETAIL 5

RAY FAMILY SHARE TRUST
DB 2679 PG 994

HKID 42 INC.
DB 713 PG 196

FIELDSTONE FARMS HOMEOWNERS ASSOCIATION, INC.
DB 1450 PG 478
PB 65 PG 140

FIELDSTONE FARMS
DB 2592 PG 647
PB 62 PG 64

MEBANE CITY LIMITS

S 03°19'30" E
748.44'

S 03°19'30" E
114.29'

–Y7A– (THIRD ST.)
–L– (NC 119 RELOCATION)

8,300 / 12,900		–L–	5,500 / 8,400
4,200 / 6,600		1,400 / 2,100	
2016 AADT / 2036	–Y7A–		
	3,500 / 8,700		

FOR –L– PROFILE SEE SHEET 34
FOR –Y7A– PROFILE SEE SHEET 47

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
8000 Regency Parkway
Suite 600
Cary, NC 27518
INTERNATIONAL NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

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-L-		
PIs Sta 74+36.16	PI Sta 78+68.40	PIs Sta 82+95.52
Θs = 2° 17' 30.6"	Δ = 16° 38' 21.3" (RT)	Θs = 2° 17' 30.6"
Ls = 200.00'	D = 2° 17' 30.6"	Ls = 200.00'
LT = 133.34'	L = 726.02'	LT = 133.34'
ST = 66.68'	T = 365.59'	ST = 66.68'
	R = 2,500.00'	
	Ds = 50 mph	
	SE = 0.04	
	RO = 200'	

NAD 83/95

MATCH LINE – SHEET 8 –L– STATION 82+00

MATCH LINE – SHEET 10 –L– STATION 95+00

-L- 85+00

-L- 90+00

-L- 95+00

-DWY3- POT Sta. 10+00.00

BEGIN CONSTRCUTION
-DWY3- POT Sta. 11+00.00

-DWY3- POT Sta. 13+00.00 =
-L- POT Sta. 88+26.90

CS Sta. 82+28.84

ST Sta. 84+28.84

-BL-24

-BL-23

-BL-25

-BL-26

(186) MARINO REALTY III LLC
DB 3092 PG 272
PB 75 PG 59
NO CLAIM

(38) RAY FAMILY SHARE TRUST
DB 2679 PG 994

(40) FIELDSTONE FARMS HOMEOWNERS ASSOCIATION, INC.
DB 1450 PG 478
PB 65 PG 140

FIELDSTONE FARMS HOMEOWNERS ASSOCIATION, INC.
DB 2622 PG 574

FIELDSTONE FARMS HOMEOWNERS ASSOCIATION, INC.
DB 2097 PG 349

LAT V DITCH
STA 84+93 – 85+14 –L– LT
SEE DETAIL 26
TOTAL DDE=81 CY

LAT V DITCH WITH CL 'B' RIP RAP
STA 84+50 – 84+93 –L– LT
EST 20 TONS
EST GF 53 SY
SEE DETAIL 24
CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

HEAD DITCH
EST DDE +/- 13 CY
SEE DETAIL 29

TAIL DITCH
EST DDE +/- 10 CY
SEE DETAIL 29

LAT 2' BASE DITCH W/PSRM
STA 94+00 – STA 95+00 –L– LT
EST. +/- 84 SY
SEE DETAIL 16
TOTAL DDE=384 CY

CLASS 'B' RIPRAP
EST 5 TONS
EST GF 14 SY

CLASS 'B' RIPRAP
EST 3 TONS
EST GF 6 SY

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 20 TONS
EST GF 30 SY

CHANNEL CHANGE
SEE DETAIL 53

TIE EXIST JS TO
PROPOSED CHANNEL

PLACE FILL MATERIAL
TO MATCH NG

450' STORAGE LANE

340' LT. TURN LANE TAPER

100' TAPER
(BOTH SIDES)

200' TAPER

100' TAPER

340' TAPER

MEBANE CITY LIMITS (IN)

BEGIN 1'-6" CONC. C&G

2'-9" CONC. C&G

1'-6" CONC. C&G

MONOLITHIC 5"CONC. ISLAND

GRADE TO DRAIN

REMOVE

REMOVE CAT-1
CLASS I RIPRAP
ON BANKS ONLY
EST 9 TONS
EST GF 14 SY

CAT-1

GRAU-350

TDE

PDE

BM 5

R = 3597.99'
CH BRNG
N 00°05'44" W
CH = 518.02'

FOR -DWY3- PROFILE SEE SHEET 55

FOR -L- PROFILE SEE SHEETS 34 & 35

REVISIONS
10/07/15 – RW REVISIONS; ADDED "NO CLAIM" NOTE ON PARCEL 186.– THB
12/16/16 – RW REVISION: ADJUSTED STATION AND/OR OFFSET BASED ON THE FIELD STAKING ON PARCELS 38 AND 186.– SCL

5/14/99

13-DEC-2016 14:55
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

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5/14/99

REVISIONS

—

—

—L—
PI Sta 116+42.09
Δ = 35° 47' 53.2" (LT)
D = 0° 57' 17.7"
L = 3,748.77'
T = 1,937.84'
R = 6,000.00'
Ds = 50 mph
SE = 0.02
R0 = 100'

NAD 83/95

MATCH LINE – SHEET 9 –L– STATION 95+00

MATCH LINE – SHEET 11 –L– STATION 108+00

WOODS

(38) RAY FAMILY SHARE TRUST
DB 2679 PG 994

(40) PATTERSON PROPERTIES
DB 1694 PG 886

(41) DELORES JONES
DB 353 PG 113
PB 31 PG 109

CURTIS PENDERGRASS
DB 1129 PG 781
PB 31PG 109

–L– 95+00

–L– 100+00

–L– 105+00

–BL–27

–BL–28

–BL–29

PC Sta. 97+04.82

TOTAL DDE=384 CY
+16.00 –L– 182.00' LT 110.00' LT

LAT 4' BASE DITCH W/PSRM
STA 95+00 – STA 97+50 –L– LT
EST +/– 272 SY
SEE DETAIL 17
PLACE FILL MATERIAL TO MATCH NG

+04.82 –L– 110.00' LT

TDE

STREAMBANK STABINIZATION
CLASS I RIPRAP
EST 35 TONS
EST GF 100 SY

ENERGY DISSIPATOR
SEE DETAIL 56
CLASS II RIPRAP
EST 25 TONS
EST GF 20 SY

48" WW FENCE

+00.00 –L– 100.00' LT

BEGIN CULVERT
STA. 96+66.06 FLOODPLAIN BENCH
SEE DETAIL 54

CLASS 'B' RIPRAP
EST 1 TON
EST GF 5 SY

15" w/2 ELBOWS GRAU-350

2GI N&GF

BEG SBG (1001) +48.00

END SBG +00.87

END CULVERT STA. 97+09.21

1'–6" CONC. C&G

2'–9" CONC. C&G

2GI GF

15" RCP–IV

30" RCP–III

2GI NS

2GI–A GF

24" RCP–III

2GI GF (1016)

2GI GF (1015)

2GI–A GF (1014)

2GI NS (1013)

2GI NS (1011)

2GI NS (1009)

2GI NS (1007)

2GI GF (1006)

2GI GF (1004)

2GI GF (1002)

2GI NS (1003)

2GI NS (1005)

2GI–A GF (1010)

(1017) (1018) (1012) (1008)

BEGIN 2'–9" CONC. C&G

2' SILL

1' SILL

FLOODPLAIN BENCH
SEE DETAIL 54

CAT–1 8:1

50' TYP

15"

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

LAT V–DITCH
STA 96+80 – 97+25 –L– RT
DDE=6 CY
SEE DETAIL 30

+50.00 –L– 110.00' RT

+04.82 –L– 110.00' RT

PDE

+00.00 –L– 155.00' RT

PROPOSED 3@11' X 9' RCBC

LAT V–DITCH
STA 96+50 – 96+80 –L– RT
DDE=6 CY
SEE DETAIL 14

BERM DITCH
STA 101+10 – 102+50 –L– RT
TOTAL DDE= 12 CY

BERM DITCH
STA 103+50 – 105+00 –L– RT
TOTAL DDE=15 CY

24" w/ ELBOW

15" w/ ELBOW

BDO

DITCH BLOCK
TOP ELEV = 596.5

+00.00 –L– 150.00' LT

+50.00 –L– 110.00' RT

45° WW FENCE

200' TAPER

+00.00 –L– 110.00' RT

+00.00 –L– 125.00' RT

+35.00

+25.00

100' TAPER (BOTH SIDES)

340' LT TURN TAPER

450' STORAGE LANE

+97.18
218.55

EIP

N 25°38'59" E
120.37'

N 03°56'57" E
733.00'

N 03°56'57" E
422.00'

N 86°03'03" W
150.00'

N 87°42'44" E
260.09'

S 27°32'32" W
307.34'

S 06°11'41" E
273.57'

S 87°41'48" W
9.60'

N 03°56'57" E
95.34'

S ABAND

BM 6

FOR –L– PROFILE SEE SHEET 35
FOR CULVERT SEE SHEETS C-1 THRU C-?

7/19/2016 9:50:37 AM
K:\Projects\U3109A\roadway\u3109a_rdy_psh_10.dgn
USER:kgilchrist

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

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5/14/99

REVISIONS

061215 – R/W REVISIONS; ADDED C/A BREAK AT –L– STA. 110+10.00 LT. ON PARCEL 38. – PJS

7/29/2016 9:50:39 AM
K:\TIP\U-3109A\Roadway\U3109A_rdy_psh_11.dgn
USER: egoldstein

NAD 83/95

–L–
PI Sta 116+35.53
△ = 35° 40' 28.8" (LT)
D = 0° 57' 17.7"
L = 3,735.84'
T = 1,930.70'
R = 6,000.00'
Ds = 50 mph
SE = 0.02
RO = 100'

MATCH LINE – SHEET 10 –L– STATION 108+00

MATCH LINE – SHEET 12 –L– STATION 121+00

MATCH LINE – SHEET 24 –Y13– STATION 14+00

DUKE POWER EASEMENT 128.00'

–L– 115+00

–L– 120+00

–BL–30 –BY4–

–BL–31

38 RAY FAMILY SHARE TRUST DB 2679 PG 994

CLASS I RIPRAP ON BANKS ONLY EST 15 TONS EST GF 24 SY

200' TAPER

TAIL DITCH EST DDE +/– 17 CY SEE DETAIL 27

LAT 2' BASE DITCH W/CL 'B' RIP RAP STA 108+24 – 108+69 –L– LT EST 30 TONS EST GF 77 SY SEE DETAIL 15

CLASS 'B' RIPRAP EST 5 TONS EST GF 14 SY

FUTURE IMPROVEMENTS OR ADJUSTMENTS TO NC 119 THAT ARE ASSOCIATED WITH THIS ACCESS BREAK WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER

–Y13– POT Sta. 10+00.00 = –L– POC Sta.110+30.64

450' STORAGE LANE

100' TAPER

BERM DITCH STA 111+11 – 113+50 –L– LT TOTAL DDE=24 CY 340' LT. TURN TAPER

MONOLITHIC 5"CONC. ISLAND

18" w/ ELBOW

24" RCP-III

15" RCP-IV

15" RCP-III

48" RCP-III

1'–6" CONC. C&G

2'–9" CONC. C&G

SPEC LAT 2' BASE DITCH STA 108+20 – STA 109+75 –L– RT SEE DETAIL 23

TOTAL DDE=8 CY

SPEC LAT 2' BASE DITCH STA 111+10 – 111+55 –L– RT SEE DETAIL 32

REMOVE

SPEC LAT 2' BASE DITCH STA 11+10 – 11+50 –Y13– LT SEE DETAIL 32

CLASS 'B' RIPRAP EST 2 TONS EST GF 7 SY

SPEC LAT V-DITCH W/CL B RIP RAP STA 11+00 – 14+00 –Y13– RT EST 249 TONS EST GF 530 SY SEE DETAIL 28

SPEC LAT V-DITCH W/PSRM STA 12+50 – 14+00 –Y13– LT EST +/– 87 SY SEE DETAIL 10

RAY FAMILY SHARE TRUST DB 2679 PG 994

MARY RUTH WOOD HEIRS DB 447 PG 44

DELORES JONES DB 353 PG 113 PB 31 PG 109

DUKE POWER DB 356 PG 309

END C/A ACCESS BREAK +70.00 –L– 120.69' LT

BEGIN C/A ACCESS BREAK +10.00 –L– 141.52' LT

END C/A END WW FENCE +00.00 –Y13– 50.00 RT

BEGIN C/A BEGIN WW FENCE +15.00 –Y13– 50.00 LT

48" WW FENCE

FOR –L– PROFILE SEE SHEETS 35 & 36
FOR –Y13– PROFILE SEE SHEET 50

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
8000 Regency Parkway Suite 600 Cary, NC 27518
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915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0880

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REVISIONS

5/14/99

06/12/15 – R/W REVISIONS; ADDED C/A BREAKS AT –L– STA 128+50.00 LT AND RT, ON PARCEL 38 – PJS
09/02/15 – R/W REVISIONS; SUBDIVIDED PARCEL 38 TO PARCELS 38 AND 38A. – THB

7/18/2016 9:50:41 AM
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USER: mgonzo

NAD 83/95

N 3905069
E 1281229

–L–
PI Sta 116+42.09
△ = 35° 47' 53.2" (LT)
D = 0° 57' 17.7"
L = 3,748.77'
T = 1,937.84'
R = 6,000.00'
Ds = 50 mph
SE = 0.02
RO = 100'

MATCH LINE – SHEET 11 –L– STATION 121+00

MATCH LINE – SHEET 13 –L– STATION 134+00

–L– 125+00

–L– 130+00

–BL–32

–BL–33

–BL–34

38
RAY FAMILY SHARE TRUST
DB 2679 PG 994

38A
A CAMPBELL HOLDINGS, LLC
DB 3331 PG 570
PB 76 PG 221

LAT V–DITCH
STA 126+95 – 127+30 –L– LT
SEE DETAIL 14

TOTAL DDE=207 CY

LAT V-DITCH W/CL 'B' RIP RAP
STA 126+00 – 126+95 –L– LT
EST 44 TONS
EST GF 118 SY
SEE DETAIL 24

TAIL DITCH
EST DDE +/– 54 CY
SEE DETAIL 4

CLASS I RIPRAP
ON BANK ONLY
EST 11 TONS
EST GF 18 SY

FUTURE IMPROVEMENTS OR ADJUSTMENTS TO NC 119 THAT ARE ASSOCIATED WITH THIS ACCESS BREAK WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER

CLASS I RIPRAP
ON BANKS ONLY
EST 15 TONS
EST GF 24 SY

TAIL DITCH
EST DDE +/– 8 CY
SEE DETAIL 29

LAT V–DITCH
STA 132+22 – STA 133+32 –L– LT
SEE DETAIL 14

TOTAL DDE=96 CY

LAT V–DITCH
STA 132+10 – STA 132+22 –L– LT
SEE DETAIL 18

48" WW FENCE

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

CLASS I RIPRAP
ON BANK ONLY
EST 22 TONS
EST GF 36 SY

15" w/2 ELBOWS

72" RCP–III

15" RCP–III

15" RCP–IV

1'–6" CONC. C&G

2'–9" CONC. C&G

PSH
SEE DETAIL 55

TOE PROTECTION
STA 126+34 – 128+50 –L– RT
SEE DETAIL 44

TOE PROTECTION
STA 131+50 – 133+96 –L– RT
SEE DETAIL 44

HEAD DITCH
EST DDE +/– 28 CY
SEE DETAIL 4

HEAD DITCH
EST DDE +/– 5 CY
SEE DETAIL 29

LAT V–DITCH
STA 125+36 – 126+20 –L– RT
DDE=71 CY
SEE DETAIL 14

CLASS I RIPRAP
ON BANK ONLY
EST 10 TONS
EST GF 16 SY

FUTURE IMPROVEMENTS OR ADJUSTMENTS TO NC 119 THAT ARE ASSOCIATED WITH THIS ACCESS BREAK WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER

2GI NS
2GI GF
2GI NSGF
GRAU–350
CAT–1

FOR –L– PROFILE SEE SHEET 36

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
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SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

5/14/99

REVISIONS

06/12/15 – R/W REVISIONS: CREATED PARCEL 193 – PJS
09/02/15 – R/W REVISIONS: SUBDIVIDED PARCEL 38 TO PARCELS 38 AND 38A; ADDED A "NO CLAIM" ON PARCEL 138; UPDATED PROPERTY LINES ON PARCEL 193; ADDED PARCEL 197 – THB
09/08/15 – R/W REVISIONS: ADDED PUE ON PARCEL 38A; ADDED A "NO CLAIM" ON PARCEL 138
12/16/16 – R/W REVISION: ADJUSTED STATION AND/OR OFFSET BASED ON THE FIELD STAKING

-L-			
PI Sta 116+42.09	PIs Sta 141+33.32	PI Sta 156+58.38	PIs Sta 167+86.90
Δ = 35° 47' 53.2" (LT)	Θs = 2° 51' 53.2"	Δ = 72° 11' 58.8" (RT)	Θs = 2° 51' 53.2"
D = 0° 57' 17.7"	Ls = 200.00'	D = 2° 51' 53.2"	Ls = 200.00'
L = 3,748.77'	LT = 133.35'	L = 2,520.24'	LT = 133.35'
T = 1,937.84'	ST = 66.68'	T = 1,458.42'	ST = 66.68'
R = 6,000.00'		R = 2,000.00'	
Ds = 50 mph		Ds = 50 mph	
SE = 0.02		SE = 0.04	
RO = 100'		RO = 200'	

NAD 83/95

MATCH LINE – SHEET 25 –Y26REV– STATION 18+20

MATCH LINE – SHEET 12 –L– STATION 134+00

MATCH LINE – SHEET 14 –L– STATION 145+00

38A
A CAMPBELL HOLDINGS, LLC
DB 3331 PG 570
PB 76 PG 221

NORTH CAROLINA RAILROAD COMPANY
DB 2251 PG 485
193
NO CLAIM

38A
A CAMPBELL HOLDINGS, LLC
DB 3331 PG 570
PB 76 PG 221

–L– 135+00

TS Sta. 139+99.97 –L– 140+00

SC Sta. 141+99.97

–Y26REV– 20

–L– Sta. 143+22.52 =
–Y26REV– Sta. 21+92.77
~~–Y26 Sta. 21+72.45~~

PT Sta. 134+40.67

N 23°58'27" W 252.98'

N 23°58'27" W 300.02'

N 29°36'22" W 303.72'

S 19°06'20" E 195.66' CH 2155.00' RAD.

S 76°38'30" E –Y26REV–

S 76°48'42" E –Y26REV–

RAY FAMILY SHARE TRUST
DB 2679 PG 994

PSH SEE DETAIL 55

15" CSP w/ 2 ELBOWS

50' TYP.

BEGIN MSE WALL –L– +76.72 74.09 LT

END WW FENCE

TYPE B-77

BEGIN WW FENCE BEGIN C/A –L– +42.63 157.92' LT

END C/A +69.44 –L– 140.00' LT

RETAIN

48" WW FENCE

N 24° 30' 15.0" W

1'-6" CONC. C&G

2'-9" CONC. C&G

20' BEGIN 1'-6" CONC. C&G

20' TAPER

15" RCP-IV

2GI NSGF

2GI GF

M-350

CRRU-350

END SBG +99.36

AMERIGAS PROPANE, LP
DB 936 PG 737
197

BEGIN C/A & WW FENCE +88.27 –L– 110.00' RT

END C/A & WW FENCE +39.68 –L– 110.00' RT

END C/A +12.07 –L– 110.00' RT

BEG. SBG +95.25

TOE

JS

–BL–35

–BL–36

S 01°48'33" W 146.74'

0.27' EIP-R/W

SOUTHERN STATES COOPERATIVE, INC.
DB 510 PG 826
138
NO CLAIM

–Y26REV– POT Sta. 25+49.88
~~–Y26– POT Sta. 25+29.59~~

–Y26REV– 25

38
RAY FAMILY SHARE TRUST
DB 2679 PG 994

FOR –L– PROFILE SEE SHEET 36
FOR BRIDGE SKETCH SEE SHEET 14
FOR STRUCTURE SEE SHEETS S-1THUR S-?

13-DEC-2016 14:57
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MATCH LINE – SHEET 25 –Y16– STATION 19+00

NAD 83/95

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc. | 8000 Regency Parkway, Suite 600, Cary, NC 27518 | NC License: F-1084
SUNGATE DESIGN GROUP, P.A. | 915 Jones Franklin Road, Raleigh, NC 27606 | NC COA No. C-0890

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REVISIONS
5/14/99
06/12/15 – R/W REVISIONS: UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 43, 44, 46, 47 AND 48; ADDED A "DO NOT DISTURB WATER VALVES, WATER METERS, AND VAULT" ON PARCEL 51. – PJS
09/09/15 – R/W REVISIONS: UPDATED PROPERTY OWNER NAMES ON PARCEL 193. – THB
09/18/15 – R/W REVISIONS: ADDED "NO CLAIM" NOTE ON PARCEL 193. – PJS
10/07/15 – R/W REVISIONS: REVISED PROPOSED R/W ON PARCELS 129 AND 130. – THB
12/14/15 – R/W REVISIONS: REVISED TDE AND ADDED "SEPTIC AREA BEYOND TDE. USE CARE WHEN REMOVING PIPE" NOTE ON PARCEL 177 – THB
03/07/16 – R/W REVISIONS: REVISED CA TO OPEN INTERSECTION OF EDGEWOOD CH RD AND WOODLAKE DR ON PARCEL 44. – THB
08/10/16 – R/W REVISIONS: ADDED A DRIVEWAY ACCESS ON PARCEL 47 & 130. – SCL
12/16/16 – R/W REVISIONS: ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 43, 44, 46, 47 & 130. – SCL

12/12/2016 5:46:08 PM
K:\Roadway\proj\U3109A_rdy_psh_14.dgn
USER: sscott

MATCH LINE – SHEET 13 –L– STATION 145+00

MATCH LINE – SHEET 15 –L– STATION 157+00

MATCH LINE – SHEET 26 –Y16– STATION 28+00.00

FOR –L– PROFILE SEE SHEETS 36 & 37
FOR –Y16– PROFILE SEE SHEETS 50 & 51
FOR STRUCTURE SEE SHEETS S-1 THRU S-?

–Y16–
PI Sta 20+70.99
Δ = 6° 03′ 45.0″ (RT)
D = 0° 42′ 58.3″
L = 846.48′
T = 423.64′
R = 8,000.00′
Ds = 50 mph
SE = NC

–L–		
PIs Sta 141+33.32	PI Sta 156+58.38	PIs Sta 167+86.90
Δs = 2° 51′ 53.2″	Δ = 72° 11′ 58.8″ (RT)	Δs = 2° 51′ 53.2″
Ls = 200.00′	D = 2° 51′ 53.2″	Ls = 200.00′
LT = 133.35′	L = 2,520.24′	LT = 133.35′
ST = 66.68′	T = 1,458.42′	ST = 66.68′
	R = 2,000.00′	
	Ds = 50 mph	
	SE = 0.04	
	RO = 200′	

–EY28–
PI Sta 17+55.05
Δ = 1° 03′ 51.0″ (LT)
D = 0° 27′ 56.7″
L = 228.49′
T = 114.25′
R = 12,302.11′
PI Sta 18+96.12
Δ = 3° 17′ 13.6″ (LT)
D = 6° 07′ 40.8″
L = 53.64′
T = 26.83′
R = 934.98′
PI Sta 21+26.22
Δ = 24° 04′ 47.2″ (LT)
D = 6° 00′ 40.3″
L = 400.58′
T = 203.29′
R = 953.15′

–EY38– (EXISTING RAILROAD)	
PI Sta 8+57.69	PI Sta 14+18.91
Δ = 6° 23′ 02.3″ (RT)	Δ = 0° 11′ 54.5″ (RT)
D = 0° 59′ 30.9″	D = 0° 02′ 29.0″
L = 643.59′	L = 479.51′
T = 322.13′	T = 239.76′
R = 5,776.20′	R = 138,418.22′

–FUTURE RAILROAD–	
PI Sta 8+59.82	PI Sta 14+21.84
Δ = 6° 23′ 02.3″ (RT)	Δ = 0° 11′ 54.5″ (RT)
D = 0° 59′ 22.3″	D = 0° 02′ 29.0″
L = 645.15′	L = 479.56′
T = 322.91′	T = 239.78′
R = 5,790.20′	R = 138,432.22′

BEGIN APPROACH SLAB
–L– Sta.142+23.34

BEGIN BRIDGE
–L– Sta.142+47.09

MSE WALL

BRIDGE PAVEMENT RELATIONSHIP SKETCH

END BRIDGE
–L– Sta.147+37.41

MSE WALL

END APPROACH SLAB
–L– Sta.147+61.22

2′–9″ C&G

BEGIN BRIDGE
–L– Sta.142+35.11

BEGIN APPROACH SLAB
–L– Sta.142+11.01

1′–6″ C&G

END BRIDGE
–L– Sta.147+33.40

END APPROACH SLAB
–L– Sta.147+57.58

1′–6″ C&G

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606 NC COA No. C-0890

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

06/12/15 – R/W REVISIONS; SHOWED IMPROVEMENTS ON PARCEL 52, UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 48, 54, AND 55. – PJS
09/02/15 – R/W REVISIONS; ADDED GATES AT –L– STA. 158+15+/– RT ON PARCEL 48 AND –L– STA. 158+60+/– LT ON PARCEL 52. – THB
03/07/16 – R/W REVISIONS; REVISED R/W AND ADDED PDE TO AVOID THE POND BEING INSIDE R/W ON PARCEL 52. – THB
09/21/16 – R/W REVISIONS; SHOWED CONSTRUCTION LIMITS AND REVISED R/W ON PARCEL 52. – PJS
12/16/16 – R/W REVISIONS; ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 52 & 54. – SCL

–L–
PIs Sta 141+33.32 Θs = 2° 51′ 53.2″ Ls = 200.00′ LT = 133.35′ ST = 66.68′
PI Sta 156+58.38 Δ = 72° 11′ 58.8″ (RT) D = 2° 51′ 53.2″ L = 2,520.24′ T = 1,458.42′ R = 2,000.00′ Ds = 50 mph SE = 0.04 RO = 200′
PIs Sta 167+86.90 Θs = 2° 51′ 53.2″ Ls = 200.00′ LT = 133.35′ ST = 66.68′

–Y16RPA–
PI Sta 24+58.75 Δ = 38° 10′ 45.8″ (LT) D = 5° 43′ 46.5″ L = 666.36′ T = 346.08′ R = 1,000.00′ Ds = 50 mph SE = 0.08 RO = 288′

–Y16RPA– (JAMES WALKER DR.) & –L– (NC 119 RELOCATION)

5,500 / 8,400 — 3,300 / 5,200 — –L– — 8,500 / 13,000 — 10,600 / 16,100 — –Y16RPA–

2016 / 2036 AADT

NAD 83/95

MATCH LINE – SHEET 14 –L– STATION 157+00

MATCH LINE – SHEET 16 –L– STATION 170+00

MATCH LINE – SHEET 27 –Y16RPA– STATION 26+00

–Y16RPA– POT Sta. 28+53.30 = –L– POC Sta.165+47.83

–L– 160+00 AHEAD

–L– 165+00 AHEAD

–BL–41 PINC

–BL–42 PINC 172+84.69

–BL–40 PINC 166+15.69

CS Sta. 167+20.21

ST Sta. 169+20.21

PT Sta. 27+79.03

PC Sta. 169+34.47

–L– 170+00 AHEAD

49 ALLIE MARTIN, JR. & KENNETH MARTIN DB 1975 PG 292

48 WM 43 SUBSIDIARY LLC. DB 3390 PG 196

52 WILLIE DAVIS, JR. & JOAN DAVIS DB 1009 PG 223 PB 8 PG 17

54 BRETT M. MICHEAL & LISA W. NESBITT DB 2802 PG 452

56 MELVIN KING DB 856 PG 917 PB 27 PG 136

53 ALBERT SHAW HEIRS DB 116 PG 226

55 VERONICA SMITH DB 3266 PG 85

BM 9 Elev. = 1,000.00

TAIL DITCH EST DDE +/– 36 CY SEE DETAIL 5

BREACH EXIST DAM AND DRAIN POND

20' GATE

CLASS 'B' RIPRAP EST 5 TONS EST GF 14 SY

CLASS 'B' RIPRAP EST 2 TONS EST GF 7 SY

HEAD DITCH CLASS B RIPRAP EST 13 TONS EST GF 34 SY EST DDE 18 CY SEE DETAIL 39

LAT V-DITCH STA 157+77 – STA 158+75 –L– RT EST DDE=74 CY SEE DETAIL 14

HAZARDOUS SPILL BASIN #1 SEE DETAIL 47

SLUICE GATE

ROCK FILL IN POND TO ELEV 589.6 EST 19 TONS EST GF 260 SY SEE DETAIL 52

CLASS I RIPRAP EST 32 TONS EST GF 67 SY

CLASS 'B' RIPRAP EST 3 TONS

CLASS 'B' RIPRAP EST 2 TONS EST GF 7 SY

CLASS 'B' RIPRAP EST 11 TONS F EST GF 28 SY

LAT BASE DITCH STA 162+25 – STA 162+35 –L– RT SEE DETAIL 34

HEAD DITCH EST DDE +/– 16 CY SEE DETAIL 27

TAIL DITCH EST DDE +/– 7 CY SEE DETAIL 40

LAT 2' BASE DITCH W/CL 'B' RIP RAP STA 26+00 – STA 25+50 –Y16RPA– RT EST 34 TONS EST GF 86 SY SEE DETAIL 15

CLASS 'B' RIPRAP EST 3 TONS EST GF 10 SY

200' MEDIAN U-TURN TAPER

350' STORAGE LANE

350' TAPER LT. TURN LANE

450' STORAGE LANE EST DDE LT. TURN LANE

100' TAPER

MONOLITHIC 5" CONC. ISLAND

24" RCP-IV

15" RCP-IV

18" RCP-IV

36" RCP-III

2'-9" CONC C&G

1'-6" CONC. C&G

END SBG +79.75

BEG SBG +50.00

END SBG +00.00

2GI NSGF

2GI GF

2GI NS

PROPOSED SIGNAL

FOR –L– PROFILE SEE SHEET 37
FOR –Y16RPA– PROFILE SEE SHEET 52

12/2/2016 5:46:06 PM
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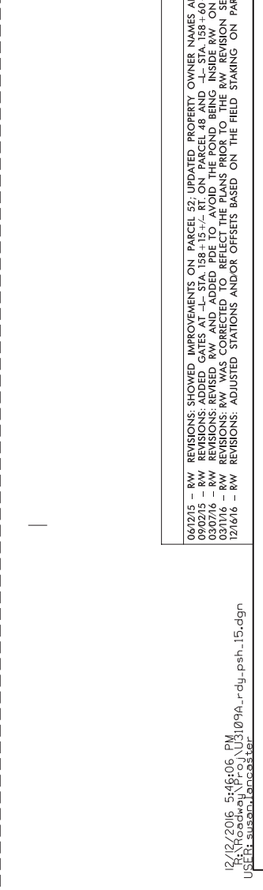
USER: sscott



PROJECT REFERENCE NO.	SHEET NO.
U-3109A	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

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REVISIONS

0612/15 – R/W REVISIONS: UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 55, 57, AND 58. – PJS
1007/15 – R/W REVISIONS: COMBINED PARCELS 56 AND 57 INTO PARCEL 56. – THB

5/14/99

8/8/2016 5:10:25 PM
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USER: thbell
PROJECT: U-3109A

MATCH LINE – SHEET 15 –L– STATION 170+00

MATCH LINE – SHEET 17 –L– STATION 181+00

NAD 83/95

-L- 170+00

-L- 175+00

-L- 180+00

-BL-44

-BL-45

BRETT M. MICHEAL & LISA W. NESBITT
DB 2802 PG 452

MELVIN KING
DB 856 PG 917
PB 27 PG 136

VERONICA SMITH
DB 3266 PG 85

HEIRS OF VIOLA BAYNES
WILL: DB 98E PG 501

HAROLD & ELIZABETH HALASCHEFF
DB 2745 PG 1

200' TAPER

48" WW FENCE

GRAU-350

PROP. 1@10' X 7' RCBC

JB w/MH

18" RCP-III

24" RCP-III

24" RCP-IV

15" RCP-III

15" RCP-IV

1'-6" CONC. C&G

2GI NSNGF

CAT-1

8:1

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 31 TONS
EST GF 47 SY

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 34 TONS
EST GF 50 SY

CLASS 'B' RIPRAP
EST 5 TONS
EST GF 14 SY

CLASS 'B' RIPRAP
EST 8 TONS
EST GF 21 SY

SLUICE GATE

LAT BASE DITCH
STA 179+03 – 180+00 –L– RT
SEE DETAIL 20

LAT BASE DITCH W/CL 'B' RIPRAP
STA 180+00 – 182+25 –L– RT
EST 151 TONS
EST GF 385 SY
SEE DETAIL 15

HAZARDOUS SPILL BASIN #2
SEE DETAIL 47

ISFD

EIP

FDE

S 02°24'28" W 270.03'

S 04°05'25" W 146.92'

S 04°09'09" E 117.20'

S 86°17'40" E 753.15'

S 27°37'06" E 323.00'

N 40°01'04" W 22.87'

S 62°53'07" W 106.03'

N 53° 25' 30.3" E

S 86°45'53" E 426.34'

N 00°27'07" E 546.02'

N 86°49'46" W 360.71'

S 70°50'54" W 55.94'

N 53°17'5.32" W

For -L- profile see sheets 37 & 38
For culvert see sheets C-1 thru C-?

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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Michael Baker INTERNATIONAL
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NC License: F-1084

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915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

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REVISIONS

04/2015 – RW REVISIONS: UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 58, 60, AND 190; REMOVED PUE ON PARCELS 59, 185, AND 190; CORRECTED PROPERTY LINE ON PARCEL 190; CREATED PARCEL 195. – PJS
09/02/15 – RW REVISIONS: REVISED PUE ON PARCELS 50 AND 59; REMOVED PUE AND CLAIM ON PARCEL 195. – THB
12/16/16 – RW REVISIONS: ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 59 THROUGH 61, 63 & 185. – SCL

5/14/99

MATCH LINE – SHEET 16 –L– STATION 181+00

MATCH LINE – SHEET 18 –L– STATION 191+00

NAD 83/95

–L– 185+00

–L– 190+00

TS Sta. 185+46.31

SC Sta. 187+46.31

BEGIN CONSTRUCTION –Y19– POC Sta. 7+30.93

END CONSTRUCTION –Y19– POC Sta. 8+80.70

PC Sta. 9+01.89

PT Sta. 9+97.5

PC Sta. 13+59.78

POT Sta. 6+84.39

Sta. 6+90.79

–L– POC Sta. 188+17.83

–Y19– POT Sta. 10+00.00 =

END CONSTRUCTION –Y19– POC Sta. 14+63.43

BEGIN C/A & WW FENCE –Y19– 30.00' LT

END C/A & WW FENCE –Y19– 30.00' RT

ARNOLD & SARAH BROWN
DB 1063 PG 516
(195)
NO CLAIM

HEIRS OF VIOLA J BAYNES
WILL: DB 98E PG 501
(58)

MICHAEL ROBINSON, JR. & ROBYN HARVEY
DB 2763 PG 298
(50)

KARILNA LLC.
DB 3392 PG 769
PB 75 PG 99
(60)

JANE DEESE
DB 2707 PG 466
(61)

(62)

HAROLD & ELIZABETH HALACHEFF
DB 2745 PG 1
(59)

JOHN & CATHERINE HEAFNER
DB 901 PG 187
PB 46 PG 103
(65)

RONNIE C & KELLY S WILSON
DB 1369 PG 967
PB 46 PG 103
(185)

WILLIAM TODD NEESE
DB 2691 PG 826
PB 46 PG 103
(190)
NO CLAIM

THEODORE & KATE SCHMIDT
DB 817 PG 887
PB 46 PG 103
(63)

RICKY G & RHONDA P CRABTREE
DB 838 PG 867
PB 46 PG 103

ISBKD

ISFD

FS

S

BST

MTL CANOPY

N 48° WW FENCE

4 STRAND WIRE FENCE

S 84°05'06" W 180.75'

S 84°05'06" W 728.30'

S 65°16'43" W 728.30'

S 45°05'03" W 377.16'

N 61°47'28" E 214.18'

S 62°53'07" W 156.77'

N 72°48'41" E 628.00'

N 20°17'17" W 262.00'

N 75°30'03" E 12.64'

N 42°31'27" E 261.15'

N 39°54'15" E 250.65'

N 40°42'47" E 308.39'

S 52°03'24" W 300.66'

GRADE TO DRAIN

CLASS 'B' RIPRAP EST +/- 3 TONS

50' TYP

REMOVE

RETAIN

12'-6" CONC. C&G

1'-6" CONC. C&G

2'-9" CONC. C&G

5' CONCRETE MONOLITHIC ISLAND

BEGIN 2'-9" CONC. C&G

END SBG

GRAU-350

CAT-1

8:1

10' PS

4' FS

2GI GF

2GI NS

2GI

TES

45° TAPER LT TURN LANE

345' TAPER LT. TURN LANE

450' STORAGE LANE LT. TURN LANE

LAT V-DITCH
STA 182+25 – 188+00 –L– RT
SEE DETAIL 14

TOTAL DDE=942 CY

LAT BASE DITCH W/CL 'B' RIPRAP
STA 180+00 – 182+25 –L– RT
SEE DETAIL 15

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

SPEC LAT V-DITCH
STA 10+75 – 12+40 –Y19– RT
SEE DETAIL 6

SPEC LAT V-DITCH W/PERM
STA 12+40 – 12+70 –Y19– RT
EST. +/- 17 SY
SEE DETAIL 35

SPEC LAT V-DITCH
STA 11+00 – STA 11+90 –Y19– LT
SEE DETAIL 1

BM 10

PUE

RCP

GR

–L–		
PIs Sta 186+79.66	PI Sta 192+98.17	PIs Sta 198+99.28
Θs = 2° 17' 30.6"	Δ = 24° 53' 45.5" (LT)	Θs = 2° 17' 30.6"
Ls = 200.00'	D = 2° 17' 30.6"	Ls = 200.00'
LT = 133.34'	L = 1,086.29'	LT = 133.34'
ST = 66.68'	T = 551.86'	ST = 66.68'
	R = 2,500.00'	
	Ds = 50 mph	
	SE = 0.04	
	RO = 200'	

–Y19–		
PI Sta 8+01.32	PI Sta 9+49.74	PI Sta 16+31.21
Δ = 13° 38' 41.7" (LT)	Δ = 4° 24' 50.7" (LT)	Δ = 30° 22' 18.0" (RT)
D = 6° 45' 05.3"	D = 4° 36' 52.6"	D = 5° 43' 46.5"
L = 202.10'	L = 95.65'	L = 530.09'
T = 101.53'	T = 47.85'	T = 271.43'
R = 848.64'	R = 1,241.62'	R = 1,000.00'

FOR –L– PROFILE SEE SHEET 38
FOR –Y19– PROFILE SEE SHEET 53

12/12/2016 6:24:49 PM
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USER: scott.crocker

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606 NC COA No. C-0890

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REVISIONS

06/12/15 – R/W REVISIONS: CORRECTED OFFSET AT –Y20– STA. 21+42.37 RT. ON PARCEL 62, REMOVED PUE ON PARCEL 63, ADVANCED ACQUISITION ON PARCEL 152, REMOVED PROPOSED R/W FROM –Y20– STA. 28+48.67 TO STA. 32+00.00 LT. – PJS
10/02/15 – R/W REVISIONS: CHANGED DUE TO PDE AND REMOVED PUE ON PARCEL 187. – THB
11/19/15 – R/W REVISIONS: REVISED PROPOSED R/W AND REMOVED C/A ON PARCEL 179. – PJS
03/07/16 – R/W REVISIONS: UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 152. – PJS
07/11/16 – R/W REVISIONS: REVISED PROPOSED R/W AND REMOVED C/A ON PARCEL 68. – PJS

5/14/99

2/6/2017 11:53:54 AM
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Roadway Design
User: cdodson

MATCH LINE – SHEET 28 –Y20– STATION 20+00

MATCH LINE – SHEET 17 –L– STATION 191+00

MATCH LINE – SHEET 29 –Y20– STATION 29+00

END TIP PROJECT U-3109A
–L– POC Sta. 196+00.00

–L–

PIs Sta 186+79.66
Θs = 2° 17' 30.6"
Ls = 200.00'
LT = 133.34'
ST = 66.68'

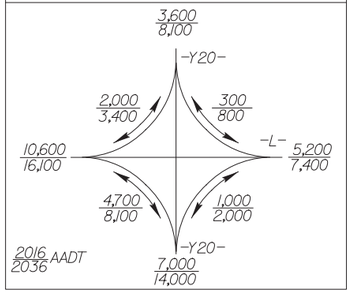
PI Sta 192+98.17
Δ = 24° 53' 45.5" (LT)
D = 2° 17' 30.6"
L = 1,086.29'
T = 551.86'
R = 2,500.00'
Ds = 50 mph
SE = 0.04
RO = 200'

PIs Sta 198+99.28
Θs = 2° 17' 30.6"
Ls = 200.00'
LT = 133.34'
ST = 66.68'

–Y20–

PI Sta 27+66.29
Δ = 22° 35' 53.3" (LT)
D = 7° 32' 20.1"
L = 299.75'
T = 151.85'
R = 760.00'
Ds = 50 mph
SE = 0.08
RO = 192'

–Y20– (SR 1921 MEBANE ROGERS RD.) & –L– (NC 119 RELOCATION)



2016 AADT
2036

★ PROPOSED SIGNAL

FOR –L– PROFILE SEE SHEET 38
FOR –Y20– PROFILE SEE SHEET 53

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL-NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

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REVISIONS

5/14/99 – FIELD STAKING ON PARCELS 28, 35, 69, 71 & 72. – SCL

12/16/16 – R/W REVISIONS: ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING

-Y7-		
PI Sta 10+66.13	PI Sta 15+74.13	PI Sta 20+23.69
△ = 2° 16' 11.9" (RT)	△ = 1° 56' 45.2" (LT)	△ = 6° 56' 32.4" (RT)
D = 1° 42' 59.7"	D = 0° 43' 40.9"	D = 1° 39' 38.7"
L = 132.24'	L = 267.28'	L = 418.02'
T = 66.13'	T = 133.65'	T = 209.27'
R = 3,337.76'	R = 7,870.00'	R = 3,450.00'
	Ds = 50 mph	Ds = 50 mph
	SE = NC	SE = 0.03
	RO = 72'	

-DWY2-
PI Sta 11+42.88
△ = 6° 15' 25.1" (LT)
D = 5° 12' 31.3"
L = 120.13'
T = 60.12'
R = 1,100.00'

NAD 83/95

BEGIN CONSTRUCTION
-Y7- POT Sta.14+00.00

PC Sta. 14+40.48

PT Sta. 17+07.76

PC Sta. 18+14.42

PT Sta. 22+32.45

END CONSTRUCTION
-DWY2- POT STA.11+95.00

PT Sta. 11+93.61

-EY10- PT Sta. 29+04.64

PC Sta. 10+73.48

MATCH LINE – SHEET 6 -EY10- STATION 30+00

MATCH LINE – SHEET 6 -Y7- STATION 27+00

-Y7- 15+00

-Y7- 20+00

-Y7- 25+00

-EY10- 30+00

SPORTS ENDEAVORS, INC.
DB 2373 PG 577
PB 69 PG 188

HKID 42 INC.
DB 713 PG 196

IDA FLEX OFFICE, LLC
DB 2559 PG 223
PB 43 PG 51

INDUSTRIAL DEVELPMENT ASSOCIATES
DB 445 PG 914
PB 43 PG 51

WILLIAM & PEGGY BUMGARNER
DB 310 PG 80

ALPHA INDUSRTRIAL DEVELOPERS
DB 435 PG 743

BROOKHOLLOW PLAZA SHOPPING CENTER ASSOCIATES
DB 738 PG 398
DB 738 PG 399
DB 738 PG 400
DB 738 PG 401
DB 738 PG 403
DB 738 PG 405
PB 63 PG 54

S 87° 44' 58.1" E

S 85° 48' 12.9" E

S 80° 48' 25.1" E

N 8° 12' 36.1" E

N 1° 57' 11.0" E

S 01° 25' 08" E 144.00'

S 01° 19' 22" E

N 89°20'02" W 5.40'

N 89°20'02" W 465.25'

S 89°04'35" W 469.68'

S 00°50'49" W 363.73'

N 86°01'39" W 485.66'

N 86°57'34" W 10.03'

350' LANE SHIFT

135' STORAGE LANE

150' TAPER

475' LANE SHIFT (BOTH SIDES)

GRADE TO DRAIN

BST PARKING

SPEC CUT DITCH
STA 17+11 – 20+50 -Y7- RT
SEE DETAIL 7

SPEC CUT DITCH
STA 21+00 – 21+90 -Y7- RT
SEE DETAIL

CLASS 'B' RIPRAP
EST 3 TONS
EST GF 10 SY

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

BEGIN CONC SIDEWALK
-Y7- +07.76

BEGIN C&G
-Y7- +00.00

END SIDEWALK
-Y5C- +01.83

END C&G
-Y5C- +22.76

END CONSTRUCTION
-Y5C- POT Sta.11+50.00

-Y5C- POT Sta.10+00.00 =
-Y7- POC Sta.22+38.07

POT Sta.13+63.32

-Y7- STA.26+17.31
-DWY2- STA.10+00.00

REMOVE

RETAIN

REVISED SIGNAL

FOR -Y7- PROFILE SEE SHEET 46
FOR -Y5C- PROFILE SEE SHEET 44
FOR -DWY2- PROFILE SEE SHEET 54

12/2/2016 6:24:47 PM
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5/14/99

REVISIONS

06/12/15 – RW REVISIONS; REMOVED PUE AND ADJUSTED TCE ON PARCEL 76; REMOVED PUE AND DEED REFERENCES ON PARCEL 76 AND 84; CREATED PARCEL 85A; REMOVED A CANOPY AND DRIVE ON PARCEL 78; REMOVED A HOUSE ON PARCEL 82; REDUCED R/W ON PARCEL 34 – PJS
10/06/16 – RW REVISIONS; ADDED MISSING R/W MONUMENTS AT –Y6A– STA 19+86.39 LT & RT – SCL
12/16/16 – RW REVISIONS; ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 27, 34, 76 THROUGH 79, 85 & 86 – SCL
01/23/17 – RW REVISION: REVISED PUE ON PARCELS 83 & 84 – SCL

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
8000 Regency Parkway Suite 600 Cary, NC 27518
INTERNATIONAL NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

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-Y6DWY-

PI Sta 11+57.03	PI Sta 10+80.85
Δ = 44° 45' 10.1" (RT)	Δ = 36° 18' 56.5" (LT)
D = 95° 29' 34.7"	D = 47° 44' 47.3"
L = 46.87'	L = 76.06'
T = 24.70'	T = 39.36'
R = 60.00'	R = 120.00'

-Y6A-

PI Sta 18+59.22	PI Sta 22+08.26
Δ = 4° 33' 22.6" (RT)	Δ = 7° 03' 17.3" (LT)
D = 1° 47' 25.8"	D = 28° 38' 52.4"
L = 254.47'	L = 255.01'
T = 127.30'	T = 148.14'
R = 3,200.00'	R = 200.00'
Ds = 30 mph	Ds = 30 mph
SE = NC	SE = 0.06
	RO = 120'

-Y6-

PI Sta 25+13.83
Δ = 21° 30' 34.2" (LT)
D = 6° 52' 41.7"
L = 312.72'
T = 158.22'
R = 833.00'
Ds = 50 mph
SE = 0.06
RO = 144'

FOR -Y6- PROFILE SEE SHEET 44
FOR -Y6A- PROFILE SEE SHEET 45

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

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5/14/99

REVISIONS

06/2015 – R/W REVISIONS: UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 88 AND 192; REDUCED SIDEWALK ON PARCEL 91; CREATED PARCEL 196. – PJS
09/2015 – R/W REVISIONS: REMOVED TCE ON PARCEL 88; REVISED PUE ON PARCELS 89 THROUGH 91. – THB
12/2016 – R/W REVISIONS: ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 81, 87, 88, 91, 192 & 196. – SCL

-Y6-
PI Sta 25+82.91
△ = 20° 30' 56.3" (LT)
D = 6° 52' 41.7"
L = 298.27'
T = 150.75'
R = 833.00'
Ds = 50 mph
SE = 0.06
RO = 144"

NAD 83/95

MATCH LINE – SHEET 20 –Y6– STATION 25+00

PT Sta. 26+68.33

POT Sta. 34+85.18

END CONSTRUCTION
-Y6- POT Sta.29+60.65

81 LARRY & BOBBIE RIGGSBEE DB 1571 PG 669

87 MARK VERNON DB 2006 PG 503

ROSA WHITE & TEDDY COPELAND DB 1801 PG 859 PB 64 PG 94

88 TROUTMAN PROFESSIONAL PROPERTIES LLC DB 2785 PG 431 PB 64 PG 94

DONALD & PHYLLIS TERRELL DB 399 PG 727 DB 366 PG 385

MELVIN & LINDA RUSHIN DB 1555 PG 252 PB 45 PG 17

DANNY & REBECCA WARD DB 903 PG 659 PB 45 PG 17

RICHARD & PATRICIA YELL DB 909 PG 753 PB 45 PG 17

GORDON & NADINE KINSEY DB 969 PG 558

EMILY & CURTIS OUTHRIE DB 3940 PG 38

NORMAN & MILDRED RASKIN DB 524 PG 389 PB 40 PG 36

ERIC & MARIOLA LUCIANO DB 2692 PG 793 PB 71 PG 283

KEN & NACY BERRY DB 1121 PG 263

MAGGIE MCGEE DB 1981 PG 999 PB 68 PG 135

89 SAMUEL PARKER, III & DONNA PARKER DB 2656 PG 895 PB 5 PG 31

90 DALE & NELL DAVIS DB 1677 PG 47 PB 5 PG 31

86 JAMES & MARIA OAKLEY DB 368 PG 618 PB 5 PG 31

91 TIMOTHY & MICHELE PAGE DB 1123 PG 599 PB 56 PG 115

192 TIMBER CREEK ESTATES, LLC DB 2926 PG 736

196 MEBANE MCGEE ASSOCIATES DB 2514 PG 637 DB 2518 PG 123 PB 71 PG 283 PB 71 PG 288

BM 30

425' LANE SHIFT (BOTH SIDES)

150' TAPER

CUT V-DITCH STA 26+00 -Y6- RT STA 28+25 -Y6- LT SEE DETAIL 31

LAT V-DITCH STA 23+50 – 28+00 -Y6- RT SEE DETAIL 30 TOTAL DDE=898 CY

REMOVE

PUE

24' TYP

N 77° 41' 00.1" E

S 77° 41' 00.1" E

FOR -Y6- PROFILE SEE SHEET 44

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USER: scott.clark

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518

SUNGATE DESIGN GROUP P.A.
915 Jones Franklin Road Raleigh, NC 27606 NC COA No. C-0890

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NAD 83/95

REVISIONS

5/14/99

06/12/15 – R/W REVISIONS: UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 93, 95, 97, AND 104, CHANGED PARCEL NUMBER ON PARCEL 94 TO 93; CHANGED PARCEL NUMBER ON PARCEL 95 TO 191; REMOVED TCE AND ELIMINATED THE CLAIM ON PARCELS 101 THROUGH 103, REVISED PROPOSED R/W TO TCE AND ADDED PDE ON PARCELS 104 THROUGH 107, REMOVED PUE ON PARCELS 108 AND 180; REMOVED PUE AND ADDED TCE ON PARCEL 109 – PJS

09/02/15 – R/W REVISIONS: CHANGED TCE TO PDE ON PARCEL 108 – PJS

12/16/16 – R/W REVISIONS: ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 93, 96, 99, 100 & 104. – SCL

MATCH LINE – SHEET 8 –Y7A– STATION 15+00

MATCH LINE – SHEET 23 –Y7A– STATION 28+00

–Y7A–
PI Sta 22+81.86
△ = 38° 54' 49.4" (LT)
D = 6° 44' 26.4"
L = 577.30'
T = 300.28'
R = 850.00'
Ds = 50 mph
SE = 0.06
RO = 144'

–Y7B–
PI Sta 15+27.36
△ = 17° 22' 25.5" (LT)
D = 6° 52' 41.7"
L = 252.59'
T = 127.27'
R = 833.00'
Ds = 50 mph
SE = 0.06

–Y8–	
PI Sta 15+43.03	PI Sta 17+51.08
△ = 2° 46' 11.8" (LT)	△ = 17° 54' 52.2" (RT)
D = 0° 57' 17.7"	D = 14° 19' 26.2"
L = 290.07'	L = 125.07'
T = 145.06'	T = 63.05'
R = 6,000.00'	R = 400.00'
Ds = 35 mph	Ds = 35 mph
SE = NC	SE = 0.04
	RO = 96'

–Y9–	
PI Sta 11+41.89	PI Sta 13+18.66
△ = 10° 09' 27.5" (LT)	△ = 31° 34' 10.3" (RT)
D = 16° 22' 12.8"	D = 14° 48' 27.4"
L = 62.05'	L = 213.20'
T = 31.11'	T = 109.38'
R = 350.00'	R = 386.93'
Ds = 35 mph	Ds = 35 mph
SE = 0.04	SE = 0.04
RO = 80'	RO = 80'

–DWY4–
PI Sta 11+25.72
△ = 90° 00' 00.0" (RT)
D = 229° 10' 59.2"
L = 39.27'
T = 25.00'
R = 25.00'
PI Sta 10+46.53
△ = 62° 46' 47.9" (LT)
D = 114° 35' 29.6"
L = 54.79'
T = 30.51'
R = 50.00'

FOR –Y7A– DETOUR SEE SHEET 2B-2
FOR –Y7A– PROFILE SEE SHEET 47
FOR –Y7B– PROFILE SEE SHEET 48
FOR –Y8– PROFILE SEE SHEET 48
FOR –Y9– PROFILE SEE SHEET 48
FOR –DWY4– PROFILE SEE SHEET 45

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USER: scott.lassiter

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
8000 Regency Parkway
Suite 600
Cary, NC 27518
INTERNATIONAL NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

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REVISIONS

06/12/15 – R/W REVISIONS: REMOVED PUE ON PARCELS 110 AND 111; CORRECTED STATION AND OFFSET AT –Y7A– STA. 31+15.24 LT. ON PARCEL 115; REMOVED PUE AND ADJUSTED TCE ON PARCEL 116; CHANGED PARCEL NUMBER ON PARCEL 95 TO 191; CHANGED PARCEL NUMBER ON PARCEL 116 TO 116A – PJS

12/03/15 – R/W REVISIONS: ADJUSTED TCE ON PARCELS 114, 115, 188 & 191. – SCL

12/06 – R/W REVISIONS: ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 191, 115, 116A, 188, 111, 110, 112, 113, 114 – PJS

5/14/99

MATCH LINE – SHEET 22 –Y7A– STATION 28+00

PC Sta. 28+57.05

–Y7A– 30

–Y7A– 35

191 BILLY LLOYD
DB 668 PG 315
DB 2060 PG 937
DB 2098 PG 595
PB 43 PG 137

DAYLIGHT DITCH
STA. 29+70 –Y7A– LT

SPEC LAT V DITCH
W/CL B RIP RAP
STA. 29+70 – 31+00 –Y7A– LT
EST108 TONS
EST GF 230 SY
SEE DETAIL 28

115 C. L. & DORIS FRYE
DB 1067 PG 728

SPEC LAT V DITCH
STA. 31+00 – 33+50 –Y7A– LT
SEE DETAIL 2

369' TAPER

400' STORAGE LANE

PC Sta. 34+74.66

PT Sta. 34+61.58

PT Sta. 36+51.65

VERNON CLAPP
DB 811 PG 884
DB 851 PG 459
PB 47 PG 60

PAMELLA GRANTHAM
DB 1340 PG 335

16A

SUSAN & ELWOOD COMBS
DB 894 PG 824
PB 49 PG 173

TERRY & MARGARET SEARHART
DB 469 PG 400

188

JOHN & MINNIE PACKENHAM
DB 469 PG 400

KEITH & KIMBERLY WILLIAMS
DB 813 PG 467

111 MILDRED & WILLARD GODREY
DB 446 PG 189

112 FELICIA & TAGBO EKWUEME-OKOLI
DB 446 PG 189

HEAD DITCH
EST DDE 7 CY
SEE DETAIL 40

113 JOHN & MINNIE PACKENHAM
DB 645 PG 56

SPEC CUT DITCH W/PSRM
STA. 29+15 – 31+50 –Y7A– RT
EST. +/– 140 SY
SEE DETAIL 9

PRC Sta. 33+22.67

JOHN & MINNIE PACKENHAM
DB 402 PG 200

114

JOHN & JOAN PACKENHAM
DB 906 PG 770

CLINTON & KAYE MORROW
DB 836 PG 283
PB 35 PG 169

110 HENRY & JACKIE CRANE
DB 751 PG 111
PB 43 PG 137

END CONSTRUCTION
–Y7A– POT Sta. 35+92.52

N 57° 39' 40.4" E

–Y7A–		
PI Sta 30+90.21	PI Sta 33+92.13	PI Sta 35+63.15
Δ = 7° 39' 58.0" (RT)	Δ = 0° 27' 54.9" (LT)	Δ = 0° 41' 57.5" (LT)
D = 1° 38' 47.1"	D = 0° 20' 05.8"	D = 0° 23' 42.4"
L = 465.62'	L = 138.90'	L = 176.99'
T = 233.16'	T = 69.45'	T = 88.49'
R = 3,480.00'	R = 17,105.69'	R = 14,500.83'
Ds = 50 mph	Ds = 50 mph	
SE = 0.04	SE = NC	
RO = 96		

FOR –Y7A– PROFILE SEE SHEET 47

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
8000 Regency Parkway
Suite 600
Cary, NC 27518
INTERNATIONAL NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

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REVISIONS

06/21/5 – RW REVISIONS; REMOVED PUE AND ADJUSTED TCE ON PARCEL 181; CREATED PARCEL 41A; REMOVED TCE ON STEVE MASON PROPERTY; REMOVED R/W AND TCE FROM EXISTING R/W; UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 120 – PJS
09/08/16 – RW REVISIONS; CHANGED PARCEL 120 TO 117 – PJS
12/16/16 – RW REVISIONS; ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 41, 41A, 42, 117, 119 & 181. – SCL

5/14/99

NAD 83/95

MATCH LINE – SHEET 11 –Y13– STATION 14+00

-Y13- 20

-Y13- 15

-BY4-93

-BY4-94

-BY4-95

PC Sta. 14+68.95

PCC Sta. 15+50.45

PCC Sta. 18+77.88

PCC Sta. 20+03.81

PT Sta. 21+80.51

POT Sta. 23+67.96

END CONSTRUCTION
-Y13- POC Sta.18+79.83

END ASPHALT PAVING
-Y13- POC Sta.18+50.00

-Y13-	
PI Sta 15+09.76	PI Sta 17+19.40
△ = 7° 46' 57.6" (LT)	△ = 34° 50' 24.9" (LT)
D = 9° 32' 57.5"	D = 10° 38' 26.3"
L = 81.50'	L = 327.43'
T = 40.81'	T = 168.95'
R = 600.00'	R = 538.46'
Ds = 40 mph	Ds = 40 mph
SE = 0.04	SE = 0.04
RO = 84'	

JERRY AND POLLIE HAITH
DB 477 PG 399
DB 506 PG 776
DB 556 PG 126
PB 31 PG 108

IVSON FOUST
DB 196 PG 533

JOHN JOHNSON
DB 930 PG 92

JAMES LUMPKIN
DB 460 PG 511
DB 673 PG 215
PB 31 PG 108

KATHERINE EVANS
DB 818 PG 587
DB 1111 PG 414
PB 31 PG 108

MARVIN LUMPKIN
DB 1111 PG 421
PB 31 PG 108

GLORIA COBBINS
DB 2360 PG 89
PB 31 PG 108

WALTER HAITH
DB 2501 PG 722
PB 31 PG 108

CMH HOMES INC.
DB 2652 PG 104
PB 31 PG 108

SHIRLEY ANN THOMPSON
DB 1215 PG 534
PB 31 PG 108

JAMES FOUST
DB 408 PG 529
PB 31 PG 108

DUKE POWER
DB 356 PG 309

STEVE MASON
DB 2271 PG 940
PB 31 PG 108

AMERICA'S HOME PLACE, INC.
DB 2482 PG 453
DB 2425 PG 78
PB 31 PG 108

MAMIE J. PARKER
DB 2643 PG 438
PB 31 PG 108

ADDIE HAYES
DB 501 PG 461
PB 31 PG 108

JAMES HOLMES
DB 2316 PG 528
PB 31 PG 108

DELORES JONES
DB 353 PG 113
PB 31 PG 109

EDWARDS REALTY LLC
DB 278 PG 185

DONALD HEATH
DB 400 PG 130
PB 31 PG 108

ELIZABETH FOUST
DB 227 PG 477
DB 392 PG 913
DB 263 PG 149
PB 31 PG 108

123 INVESTMENTS LLC
DB 2526 PG 66
PB 31 PG 108

DUKE POWER EASEMENT

FOR -Y13- PROFILE SEE SHEET 50

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518

SUNGATE DESIGN GROUP P.A.
915 Jones Franklin Road Raleigh, NC 27606 NC COA No. C-0890

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

06/13/15 – R/W REVISIONS REMOVED TDE AND ELIMINATED CLAIM ON PARCEL 176; REDUCED TDE ON PARCEL 121; – PJS
09/02/15 – R/W REVISIONS SUBDIVIDED PARCEL 38 TO PARCELS 38 AND 38A; REMOVED PUE AND CLAIM ON PARCEL 193; ADDED PARCEL 197; – THB
09/08/15 – R/W REVISIONS ADDED DO NOT DISTURB NOTE ON PARCEL 124; – PJS
10/07/15 – R/W REVISIONS REVISED PROPOSED R/W ON PARCELS 121 THROUGH 129; ADDED TCE ON PARCELS 124 THROUGH 126; ADDED PUE ON PARCELS 124 THROUGH 126; REVISED PUE ON PARCEL 127; ADDED "DO NOT DISTURB HOUSES" NOTE ON PARCELS 123, 124, 125, & 126; – THB
11/20/15 – R/W REVISIONS REVISED PROPOSED R/W AND PUE FROM RR ON PARCELS 38A, 38B, & 121; – SCL
12/6/16 – R/W REVISIONS: ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 38A, 38B, & 121; – SCL

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NAD 83/95

BM 20

POT Sta. 10+00.00

PC Sta. 12+81.59

PRC Sta. 16+47.36

PCC Sta. 5+36.91

PCC Sta. 5+35.56

PC Sta. 0+00.00 BEGIN CONSTRUCTION -Y16- POT 11+61.02

PC Sta. 0+00.00

PCC Sta. 2+12.53

END CONSTRUCTION -Y26REV- PT Sta. 17+04.37 = -Y26- POC Sta. 16+84.22 Offset 2.46' Rt.

-Y26- PT Sta. 17+28.28

-Y26REV- PC Sta. 11+16.36 = -Y26- POC Sta. 11+15.49 Offset 2.45' Rt.

BEGIN CONSTRUCTION -Y26REV- POT Sta. 10+65.00 = -Y26- POT Sta. 10+64.31 Offset 0.06' Rt.

-Y26- PC Sta. 10+70.98

MATCH LINE – SHEET 14 -Y16- STATION 19+00

MATCH LINE – SHEET 13 -Y26REV- STATION 18+20

HERSHELL & VIVIAN PENNINGTON DB 694 PG 150

SAMUEL FAUCETTE DB 475 PG 698 (176) NO CLAIM

WAYNE PATTERSON DB 2111 PG 566 (121)

PAUL & CYNTHIA HAYES DB 1880 PG 239 PB 35 PG 76 (122)

WILLIAM & MARY WHEELEY DB 235 PG 227 (123)

RAFAEL LOPEZ & DOMINGA MIRANDA DB 1633 PG 683 (124)

ROGER SHIELDS DB 750 PG 851 (125)

BRYAN WHITE DB 2632 PG 156 (126)

DON & RHONDA SOLOMON DB 420 PG 102 (127)

WILLIAM GARNER & BETTY HESTER DB 1434 PG 90 (128)

DONALD & SHEILA HURT DB 1986 PG 334 (129)

EFAIN & MAURA SALAS DB 1641 PG 751 (189) NO CLAIM

JOHN RAY OF MEBANE, INC. DB 1173 PG 449 PB 1 PG 162

RAY FAMILY SHARE TRUST DB 2679 PG 994 (38B)

AMERIGAS PROPANE, LP DB 936 PG 737 2.5 square feet (197)

NORTH CAROLINA RAILROAD COMPANY DB 2251 PG 485

A CAMPBELL HOLDINGS, LLC DB 3331 PG 570 PB 76 PG 221 (38A)

NO CLAIM (193)

SPEC CUT DITCH STA 11+62 – STA 14+25 –Y16– LT SEE DETAIL 31

SPEC CUT DITCH STA 17+25 – STA 20+15 –Y16– LT SEE DETAIL 31

DO NOT DISTURB HOUSES

ALL WORK IN RELATION TO THE REMOVAL OF THE EXISTING GRADE CROSSING TO BE PERFORMED BY NORFOLK SOUTHERN.

TIE TO EXIST DITCH

Future North Carolina Industrial Center Rail Spur

-Y16-	
PI Sta 14+64.53	PI Sta 20+70.99
△ = 3° 29' 34.1" (LT)	△ = 6° 03' 45.0" (RT)
D = 0° 57' 17.7"	D = 0° 42' 58.3"
L = 365.76'	L = 846.48'
T = 182.94'	T = 423.64'
R = 6,000.00'	R = 8,000.00'
Ds = 50 mph	Ds = 50 mph
SE = RC	SE = NC

-Y26REV-
PI Sta 14+92.64
△ = 90° 48' 34.3" (RT)
D = 15° 26' 37.0"
L = 588.01'
T = 376.28'
R = 371.00'
SE = 0.04
RO = 7.2'

-Y38A- (FUTURE RAILROAD)		
PI Sta 2+68.66	PI Sta 8+59.82	PI Sta 14+21.84
△ = 5° 30' 53.2" (RT)	△ = 6° 23' 02.3" (RT)	△ = 0° 11' 54.5" (RT)
D = 1° 01' 37.7"	D = 0° 59' 22.3"	D = 0° 02' 29.0"
L = 536.91'	L = 645.15'	L = 479.56'
T = 268.66'	T = 322.91'	T = 239.78'
R = 5,578.26'	R = 5,790.20'	R = 138,432.22'

~~-Y26-~~
~~PI Sta 14+91.43~~
~~△ = 90° 44' 54.0" (RT)~~
~~D = 13° 48' 22.4"~~
~~L = 657.30'~~
~~T = 420.46'~~
~~R = 415.00'~~

-EY38- (EXISTING RAILROAD)		
△	PI Sta 3+74.09	PI Sta 8+57.69
D = 1° 01' 47.0"	△ = 3° 19' 34.7" (RT)	△ = 6° 23' 02.3" (RT)
L = 212.53'	D = 1° 01' 47.0"	D = 0° 59' 30.9"
T = 106.28'	L = 323.03'	L = 643.59'
R = 5,564.26'	T = 161.56'	T = 322.13'
	R = 5,564.26'	R = 5,776.20'

FOR -Y16- PROFILE SEE SHEET 50
FOR -Y26REV- PROFILE SEE SHEET 54

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc. (A Unit of Michael Baker International, Inc.) 8000 Regency Parkway, Suite 600, Cary, NC 27518, NC License: F-1084

SUNGATE DESIGN GROUP P.A., 975 Jones Franklin Road, Raleigh, NC 27606, NC COA No. C-0890

REVISIONS

06/12/15 – R/W REVISIONS: UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 132, 133, 134, AND 136 – PJS
09/02/15 – R/W REVISIONS: REVISED PUE ON PARCELS 48 AND 132 – THB
12/16/16 – R/W REVISIONS: ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 132, 133, 136 & 136A – SCL

5/14/99

MATCH LINE – SHEET 27 –Y16RPA– STATION 13+00

MATCH LINE – SHEET 14 –Y16– STATION 28+00

MATCH LINE – INSERT –Y16– STATION 42+00

NAD 83/95

IVSON FOUST, JR. & JOLLY FOUST DB 375 PG 468 DB 3 PG 121 (137)

MAY SQUARED, LLC DB 2681 PG 929 PB 3 PG 121

MATILDA RAY HEIRS NO DEED FOUND PB 3 PG 121

LINCOLN TRUST COMPANY CUSTODIAN FBO JAMES BUTCHER DB 2101 PG 20, DB 1183 PG 125, PB 3 PG 121

ST. LUKES CHRISTIAN CHURCH DB1103 PG 488 DB 2065 818 (134)

PARKER & MYRTIS BRADSHER DB 2741 PG 26 PB 3 PG 121

PENSCO TRUST COMPANY CUSTODIAN FBO JAMES BUTCHER DB 3339 PG 174 PB 3 PG 121 (133)

CRAFTIQUE PROPERTIES, LLC DB 1116 PG 694 PB 8 PG 17 (48)

NCDOT formerly ST. LUKE CHRISTIAN CHURCH PB 3 PG 121 (132)

CONNIE JOHNSON DB 446 PG 819 PB 3 PG 121

JAMES BUTCHER DB 887 PG 625 PB II PG 116 (135)

PENSCO TRUST COMPANY CUSTODIAN FBO JAMES BUTCHER DB 3339 PG 174 PB 3 PG 121 (136)

PHILLIP TYSON HEIRS DB 2373 PG 457, DB 15 PG 396, DB 49 PG 342, DB 49 PG 343, DB 51 PG 556, DB 72 PG 587 (136A)

PAUL FREDRICK DB 2707 PG 752 PB 3 PG 120

TAIL DITCH EST DDE +/- 57 CY SEE DETAIL 40

CLASS 'B' RIPRAP EST 5 TONS EST GF 14 SY

650' LANE SHIFT

300' STORAGE LANE

150' TAPER

200' LANE SHIFT

END CONSTRUCTION –Y17– POT 11+10.00

SPEC CUT DITCH STA 33+10 – STA 34+50 –Y16– LT SEE DETAIL 6

SPEC CUT DITCH STA 40+50 – STA 42+50 –Y16– LT SEE DETAIL 31

CLEANOUT EX 18" RCP EST 75 LF

MONOLITHIC 5" CONC. ISLAND

200' LEFT TURN STORAGE LANE

450' LANE SHIFT

W CENTER ST 22' BST

SPEC LAT V-DITCH STA 31+50 – STA 32+27 –Y16– RT SEE DETAIL 6

SPEC LAT V-DITCH STA 32+27 – STA 33+50 –Y16– RT SEE DETAIL 6

PT Sta. 16+61.62

PT Sta. 16+58.67

PC Sta. 34+40.13

PRC Sta. 40+92.56

–Y16RPA– POT Sta. 9+86.00 = –Y16– POT Sta. 32+35.00

–Y17– POT Sta. 9+92.03 = –Y16– POC Sta. 36+57.17

S 87° 21' 50.9" E

S 86° 30' 03.3" E

S 86° 27' 43.6" E

–BY5-101

–BY5-102

EXISTING R/W NCRR

EXISTING R/W NCDOT

NORFOLK SOUTHERN RR

BR SIGNAL BOX

MTL BUS

ISMTL BUS

ISM BUS

SMALL CHURCH

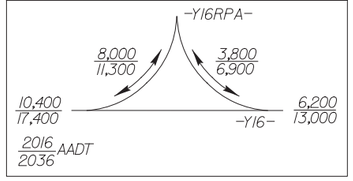
SOIL & GRAVEL STOCKPILE UNDER CONSTRUCTION

–Y16–	
PI Sta 37+66.52	PI Sta 42+14.35
△ = 4° 40' 21.7" (RT)	△ = 3° 46' 14.3" (LT)
D = 0° 42' 58.3"	D = 1° 32' 54.7"
L = 652.43'	L = 243.50'
T = 326.40'	T = 121.79'
R = 8,000.00'	R = 3,700.00'
Ds = 50 mph	Ds = 50 mph
SE = NC	SE = 0.03

–EY38– (EXISTING RAILROAD)
PI Sta 14+18.91
△ = 0° 11' 54.5" (RT)
D = 0° 02' 29.0"
L = 479.51'
T = 239.76'
R = 138,418.22'

–FUTURE RAILROAD–
PI Sta 14+21.84
△ = 0° 11' 54.5" (RT)
D = 0° 02' 29.0"
L = 479.56'
T = 239.78'
R = 138,432.22'

–Y16RPA– (JAMES WALKER RD.) & –Y16– (US 70)



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FOR –Y16– PROFILE SEE SHEET 51
FOR –Y16RPA– PROFILE SEE SHEET 52

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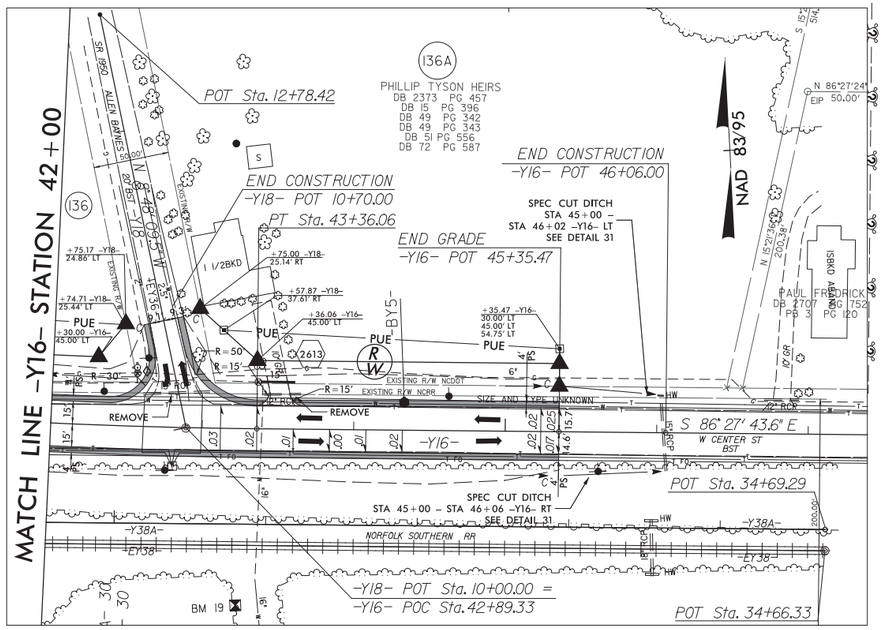
USER: slaird, mcox, thb



PROJECT REFERENCE NO.	SHEET NO.
U-3109A	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL
8000 Regency Parkway Suite 600 Cary, NC 27518
NC License: F-1084

SUNGATE DESIGN GROUP P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

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REVISIONS
5/14/99
06/12/15 – R/W REVISIONS; UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 48, 55, AND 131.

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USER: wgoodson

NAD 83/95

MATCH LINE – SHEET 15 –Y16RPA– STATION 26+00

MATCH LINE – SHEET 26 –Y16RPA– STATION 13+00

–Y16RPA–
PI Sta 24+58.75
Δ = 38°10' 45.8" (LT)
D = 5° 43' 46.5"
L = 666.36'
T = 346.08'
R = 1,000.00'
Ds = 50 mph
SE = 0.08
RO = 2.88°

N 07°40'43" W 340.38'
S 86°08'22" W 137.86'
N 86°08'22" E 1004.38'
N 10°55'44" W 841.25' C
N 81°05'12" E 488.61'
S 06°00'19" E 187.99'
S 41°54'41" W 30.41'

PC Sta. 21+12.67

WE 622'

HAZARDOUS SPILL BASIN #3 SEE DETAIL 47

SLUICE GATE

SPEC LAT 2' BASE DITCH W/CL 'B' RIPRAP STA 20+00 – STA 21+05 –Y16RPA– LT
EST 119 TONS
EST GF 246 SY
CLASS 'B' RIPRAP SEE DETAIL 21
EST 3 TONS
EST GF 10 SY

CLASS 'B' RIPRAP EST 3 TONS EST GF 10 SY

CLASS I RIPRAP ON BANKS ONLY EST 9 TONS EST GF 14 SY

TAIL DITCH EST DDE +/– 23 CY SEE DETAIL 29

TAIL DITCH EST DDE +/– 43 CY SEE DETAIL 40

TAIL DITCH EST DDE +/– 13 CY SEE DETAIL 40

CLASS 'B' RIPRAP EST 11 TONS EST GF 28 SY

HEAD DITCH EST DDE +/– 15 CY SEE DETAIL 29

HEAD DITCH EST DDE +/– 15 CY SEE DETAIL 40

HEAD DITCH EST DDE +/– 43 CY CLASS B RIPRAP EST 33 TONS EST GF 68 SY SEE DETAIL 42

SPEC CUT DITCH STA 23+50 – STA 24+09 –Y16RPA– RT SEE DETAIL 31

BERM DITCH STA 21+00 – 23+90 –Y16RPA– RT DDE=76 CY

200' TAPER FOR ISLAND

36" RCP-IV

42" RCP-III

15" RCP-III

+11.00 –Y16RPA– 152.00' LT 100.00' LT
+27.00 –Y16RPA– 156.00' LT 100.00' LT
+15.00 –Y16RPA– 150.00' LT
+62.00 –Y16RPA– 157.00' LT 100.00' LT
+75.00 –Y16RPA– 100.00' LT
+85.00 –Y16RPA– 100.00' RT 120.00' RT
+38.00 –Y16RPA– 100.00' RT
+75.00 –Y16RPA– 125.00' RT
+33.00 –Y16RPA– 100.00' RT
+12.67 –Y16RPA– 100.00' RT
+80.00 –Y16RPA– 100.00' RT
+00.00 –Y16RPA– 110.00' RT
+50.00 –Y16RPA– 100.00' RT

(48) WM 43 SUBSIDIARY LLC. DB 3390 PG 196

(53) ALBERT SHAW HEIRS DB 116 PG 226

(55) VERONICA SMITH DB 3266 PG 85

(131) PAMELA BEATRICE SANDERS DB 465 PG 723

(141) RICHARD HOLT DB 1892 PG 535 PB 3 PG 121

(139) ROLLINS CHAVIS DB 1379 PG 554 PB 3 PG 121

(140) ROGER FOUST (ANNIE FOUST HEIR) DB 1316 PG 531 PB 3 PG 121

FOR –Y13– PROFILE SEE SHEET 50

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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8000 Regency Parkway
Suite 600
Cary, NC 27518
INTERNATIONAL NC License: F-1084

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

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5/14/99

REVISIONS

06/12/15 – R/W REVISIONS; REMOVED PUE ON ON PARCELS 142, 143, 144, AND 145; UPDATED PROPERTY OWNER NAMES AND DEED REFERENCES ON PARCELS 142 AND 145; CORRECTED OFFSET AT –Y20– STA. 11+17.14 LT. ON PARCEL 142; COMBINED PARCELS AND UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 146. – PJS
12/16/16 – R/W REVISIONS: CHANGED PARCEL 146 TO 56; ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 56, 142, & 175. – SCL

MATCH LINE – SHEET 18 –Y20– STATION 20+00

FOR –Y20– PROFILE SEE SHEET 53

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Michael Baker Engineering, Inc.
8000 Regency Parkway
Suite 600
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SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road
Raleigh, NC 27606
NC COA No. C-0890

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REVISIONS

06/12/15 – R/W REVISIONS: UPDATED EXISTING R/W AND PROPERTY LINES TO REFLECT ADVANCED ACQUISITION ON PARCEL 152; REMOVED PROPOSED R/W FROM –Y20– STA. 28+48.67 TO STA. 32+00.00 LT; EXTENDED PROPOSED R/W AND PUE TO EXISTING R/W ON PARCEL 154; UPDATED PROPERTY OWNER NAME AND DEED REFERENCE ON PARCEL 154 – PJS
05/07/16 – R/W REVISIONS: SUBMITTED PARCEL 152 AND PARCEL 154 AS LIMITED PORTIONS; ADJUSTED DEED REFERENCES ON PARCELS 152 AND 152A – PJS
12/16/16 – R/W REVISIONS: ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 152, 152A & 154 – SCL

5/14/99

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$$$$USERNAME$$$$

-Y20-
PI Sta 27+66.29
Δ = 22° 35' 53.3" (LT)
D = 7° 32' 20.1"
L = 299.75'
T = 151.85'
R = 760.00'
Ds = 50 mph
SE = 0.08
R0 = 192'

MATCH LINE – SHEET 18 –Y20– STATION 29+00

PT Sta. 29+14.19

END CONSTRUCTION
-Y20- POT Sta. 38+19.50

POT Sta. 38+50.37

NAD 83/95

-Y20- 30

-Y20- 35

(152) MARSHA ALTMEYER
DB 3389 PG 224
DB 3389 PG 220

(152A) WINDSOR INVESTMENTS, LLC
DB 3503 PG 78
PB 76 PG 453
DB 3293 PG 678

(153) JOHNSON CHAPEL A.M.E. CHURCH
DB 1497 PG 625
PB 65 PG 435

(154) ROBERT J. GERARDI
DB 3254 PG 571-573

ROBERT GERARDI
DB 2539 PG 813
PB 60 PG 102

750' LANE SHIFT

450' LANE SHIFT

150' TAPER
LT. TURN LANE

HAZARDOUS SPILL BASIN #4
SEE DETAIL 47

CLASS 'B' RIPRAP
EST 2 TONS
EST GF 7 SY

SLUICE GATE

12' GATE

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 8 TONS
EST GF 17 SY
SEE DETAIL 37

SPEC CUT DITCH
STA 26+50 –
STA 30+00 –Y20– LT
SEE DETAIL 31

SPEC CUT DITCH W/PSRM
STA 32+00 – 33+10 –Y20– RT
EST. +/– 39 SY
SEE DETAIL 43

SPEC LAT V-DITCH
STA 33+10 – 34+25 –Y20– RT
SEE DETAIL 6

STREAMBANK STABILIZATION
CLASS I RIPRAP
EST 8 TONS
EST GF 17 SY
SEE DETAIL 37

REMOVE

MONOLITHIC 5' CONC. ISLAND

48" WW FENCE

EXISTING R/W

2GI NS FS

MAPPED BY FIELD INSPECTION

10" ASBESTOS CONCRETE

8" ASBESTOS CONCRETE

12" RCP

24" RCP

48" CULVERT

15' UTILITY EASEMENT PB 60 PG 102

30' EASEMENT PB 60 PG 102

WEST LAKE TR 30' ESMT

BM 17

N 83°55'18.5" E

N 20°13'21" E
180.89'

N 19°13'37" W
214.79'

N 06°08'06" W
174.37'

N 86°41'50" E
293.84'

S 32°08'55" E
169.41'

N 35°35'28" E
61.68'

N 00°58'05" W
303.44'

+00.00 –Y20–
115.00' LT
80.00' LT

+20.00 –Y20–
80.00' LT

–Y20– +95.00
80.00' LT
30.00' LT

+19.50 –Y20–
69.92' LT
30.00' LT

+87.60 –Y20–
68.36' LT
30.00' LT

+14.19 –Y20–
70.00' RT

+27.78 –Y20–
86.00' RT
101.93' RT

+02.89 –Y20–
84.01' RT
100.04' RT

+90.00 –Y20–
70.00' RT

+05.00 –Y20–
70.00' RT

+90.00 –Y20–
76.00' RT

+28.46 –Y20–
76.00' RT

+28.48 –Y20–
70.00' RT

+09.11 –Y20–
86.00' RT
101.67' RT

+35.00 –Y20–
86.00' RT

+26.10 –Y20–
84.60' RT
100.27' RT

+13.71

FOR -Y20- PROFILE SEE SHEET 53 & 54
FOR CULVERT SHETS C-1 THRU C-?

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	30
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

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REVISIONS

5/14/99 – PIS ON PARCEL 155

06/2/15 – R/W REVISIONS: CORRECTED OFFSET AT –Y10– STA. 20+00.00 LT. ON

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User: eajohnson

NAD 83/95

MATCH LINE – SHEET 31 –Y10– STATION 23+50

PC Sta. 10+90.00
PCC Sta. 13+29.94
PCC Sta. 14+34.43
PRC Sta. 15+01.68
PT Sta. 17+85.61
PC Sta. 21+42.44
BEGIN CONSTRUCTION –Y10– POC Sta.14+60.00
BEGIN CULVERT STA. 19+63.69
END CULVERT STA. 19+90.78
BM 22

–Y10–

PI Sta 14+68.05	PI Sta 16+44.07	PI Sta 22+98.46
Δ = 1° 40' 03.3" (LT)	Δ = 10° 50' 44.3" (RT)	Δ = 2° 58' 44.7" (LT)
D = 2° 28' 47.5"	D = 3° 49' 11.0"	D = 0° 57' 17.7"
L = 67.25'	L = 283.94'	L = 311.97'
T = 33.63'	T = 142.39'	T = 156.02'
R = 2,310.44'	R = 1,500.00'	R = 6,000.00'
Ds 40 mph	Ds 40 mph	Ds 40 mph
SE = 0.03	SE = 0.04	SE = NC
	R0 = 84'	

FOR –Y10– PROFILE SEE SHEETS 48 & 49
FOR CULVERT SEE SHEETS C-1 THRU C-?

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Michael Baker Engineering, Inc.
Michael Baker INTERNATIONAL NC License: F-1084
8000 Regency Parkway Suite 600 Cary, NC 27518

SUNGATE DESIGN GROUP, P.A.
915 Jones Franklin Road Raleigh, NC 27606
NC COA No. C-0890

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

5/14/99

06/12/15 – R/W REVISIONS: COMBINED PARCELS 160, 161, AND 162 INTO PARCEL 160, REVISED TCE AND PDE ON PARCEL 166; UPDATED EXISTING TOPOGRAPHY ON PARCELS 166, 171, AND 172; REVISED PUE ON PARCEL 169; REVISED PROPOSED R/W ALONG –Y11– P.I.S
09/02/15 – R/W REVISIONS: CHANGED DUE TO PDE ON PARCEL 171; REMOVED PUE ON PARCELS 169 AND 171 THROUGH 173; REVISED TCE ON PARCELS 171 AND 173; ADDED TCE ON PARCEL 172 – THB
10/27/15 – R/W REVISIONS: CORRECTED STATIONS AND OFFSETS ON PARCELS 159 AND 182 – SCL
10/06/16 – R/W REVISIONS: REMOVED AN ERRANT R/W LINE SHOWN ON THE PROPERTY LINE BETWEEN PARCELS 159 AND 182; REVISED TCE ON PARCELS 159 AND 182 – SCL
12/16/16 – R/W REVISIONS: ADJUSTED STATIONS AND/OR OFFSETS BASED ON THE FIELD STAKING ON PARCELS 157, 159, 160 & 182. – SCL

MATCH LINE – SHEET 30 –Y10– STATION 23+50

MATCH LINE – INSERT –Y11– STATION 16+00

NAD 83/95

–Y10–		
PI Sta 22+98.46	PI Sta 28+12.72	PI Sta 32+49.66
△ = 2° 58' 44.7" (LT)	△ = 8° 15' 37.4" (LT)	△ = 34° 10' 58.6" (RT)
D = 0° 57' 17.7"	D = 3° 49' 11.0"	D = 5° 21' 17.1"
L = 311.97'	L = 216.26'	L = 638.37'
T = 156.02'	T = 108.32'	T = 329.00'
R = 6,000.00'	R = 1,500.00'	R = 1,070.00'
Ds = 40 mph	Ds = 40 mph	Ds = 40 mph
SE = NC	SE = 0.04	SE = 0.05
	RO = 84'	RO = 105'

–Y10–	
PI Sta 35+89.42	PI Sta 36+88.31
△ = 1° 15' 51.2" (LT)	△ = 16° 31' 39.2" (LT)
D = 2° 04' 48.1"	D = 12° 08' 53.8"
L = 60.78'	L = 136.05'
T = 30.39'	T = 68.50'
R = 2,754.57'	R = 471.64'
Ds = 40 mph	Ds = 40 mph
SE = 0.03	SE = 0.06
RO = 63'	RO = 126'

–Y11–		
PI Sta 11+42.60	PI Sta 18+18.51	PI Sta 18+74.71
△ = 9° 05' 45.4" (RT)	△ = 2° 49' 26.3" (LT)	△ = 2° 49' 45.5" (RT)
D = 5° 43' 46.5"	D = 5° 43' 46.5"	D = 4° 29' 00.6"
L = 158.75'	L = 49.29'	L = 63.10'
T = 79.54'	T = 24.65'	T = 31.56'
R = 1,000.00'	R = 1,000.00'	R = 1,277.93'
Ds = 30 mph	Ds = 30 mph	Ds = 30 mph
SE = 0.04	SE = 0.04	SE = 0.04
RO = 80'	RO = 80'	RO = 80'

FOR –Y10– PROFILE SEE SHEET 48&49
FOR –Y11– PROFILE SEE SHEET 49

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USER: cwood

5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	32

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

L

BEGIN TIP PROJECT U-3109A
-L- STA.14+30.00
EL.= 661.39'

PI = 15+45.00
EL = 660.56'
VC = 150'
K = 535

PI = 20+00.00
EL = 656.01'
VC = 100'
K = 227

(-)07200%

(-)10005%

(-)10005%

EXISTING GROUND

PROPOSED GRADE

-L- STA.19+15.86
173' DELL FIELD TRACE LT

-L- STA.19+21.28
192' DELL FIELD TRACE RT

FOR -L- PLAN SEE SHEET 4,5

700 690 680 670 660 650 640 630 620 610

6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00

BM 2
-L- STATION 23+92
238 RIGHT
ELEV = 649.25'

L

END GRADE -L- STA.20+80.46
BEGIN GRADE -NBL- STA.20+80.46, 32' RT
BEGIN GRADE -SBL- STA.20+80.46, 20' LT
EL = 655.56'

PI = 20+00.00
EL = 656.01'
VC = 100'
K = 227

(+)09760%

(-)10.5600%

PROPOSED GRADE

FOR -NBL- & -SBL- PROFILES SEE SHEET 39

EXISTING GROUND

FOR -L- PLAN SEE SHEET 5

700 690 680 670 660 650 640 630 620 610

20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00

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User: e_gmoon

5/28/99

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BM 3
-L- STATION 46+64
140 LEFT
ELEV = 657.01'

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

L

END GRADE -NBL- STA 34+50.62, 39' RT
END GRADE -SBL- STA 34+85.38, 27' LT
BEGIN GRADE -L- STA 34+25.07
EL = 652.49'

PI = 40+50.00
EL = 648.99'
VC = 150'
K = 139

PI = 48+50.00
EL = 653.15'
VC = 200'
K = 119

-L- STA 38+81.76
75A STA 16+00.00

-L- STA 39+25.14
75A STA 16+00.00

(-)0.5600%
(+)0.5200%
(-)0.32%
(+)0.5200%
(+)1.15%

PROPOSED GRADE
EXISTING GROUND

BEG SPEC CUT DITCH
STA 42+10
EL=648.10

END SPEC CUT DITCH
STA 44+60
EL=647.50

SPEC CUT DITCH -L- LT
STA 46+62
EL=648.10

LEFT DITCH
RIGHT DITCH

FOR -L- PLAN SEE SHEETS 5 & 6

34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00 47+00 48+00

610 620 630 640 650 660 670 680 690 700

L

PI = 48+50.00
EL = 653.15'
VC = 200'
K = 119

PI = 56+00.00
EL = 669.65'
VC = 625'
K = 87

-L- STA 53+55.31
75A STA 16+00.00 (NO 19)
-M- 37+55.90 (THIRD SLANT)

(+)2.2000%
(-)1.5000%

PI = 63+00.00
EL = 634.65'
VC = 450'
K = 102

(-)0.5200%
(+)1.92%
(+)2.2000%
(+)1.15%

PROPOSED GRADE
EXISTING GROUND

-L- STA 43+99.73
75A STA 16+00.00
NO 19 PROPOSED

END SPEC CUT DITCH
STA 49+50
EL=649.40

BEG SPEC CUT DITCH
STA 49+75
EL=649.60

END SPEC CUT DITCH
STA 52+75
EL=649.60

BEG SPEC CUT DITCH
STA 60+00 -L- RT
EL=647.50

BEG SPEC LAT 2' BASE DITCH
STA 58+25 -L- LT
EL=649.00

(-)1.48%
(-)5.41%
(-)2.62%

SPEC LAT 2' BASE DITCH
STA 59+50 -L- LT
EL=638.40

END SPEC LAT 2' BASE DITCH
STA 61+57 -L- LT
EL=637.50

SPEC CUT DITCH
STA 61+50 -L- RT
EL=639.30

LEFT DITCH
RIGHT DITCH

FOR -L- PLAN SEE SHEETS 6 & 7

48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00 56+00 57+00 58+00 59+00 60+00 61+00 62+00

610 620 630 640 650 660 670 680 690 700

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	34

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

L

BM 4
-L- STATION 68+62
194 RIGHT
ELEV = 611.79'

PI = 63+00.00
EL = 634.65'
VC = 450'
K = 102

PIPE HYDRAULIC DATA
CL III 48" RCP Sta. 64+06.89 -L-

DRAINAGE AREA	= 24.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 90	CFS
DESIGN HW ELEVATION	= 631.8	FT
100 YEAR DISCHARGE	= 100	CFS
100 YEAR HW ELEVATION	= 632.2	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 110	CFS
OVERTOPPING ELEVATION	= 633.0	FT

PIPE HYDRAULIC DATA
CL III 54" RCP Sta. 70+41.2 -L-

DRAINAGE AREA	= 26.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 95	CFS
DESIGN HW ELEVATION	= 618.0	FT
100 YEAR DISCHARGE	= 110	CFS
100 YEAR HW ELEVATION	= 618.6	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 240	CFS
OVERTOPPING ELEVATION	= 627.2	FT

(-) 2.06%
(-) 3.00000%
(-) 1.06000%
(+) 0.30%
(-) 1.83%
(-) 2.40%
(+) 11.91%
(-) 3.00%
(+) 5.74%
(-) 1.06000%
48" RCP
54" RCP
PROPOSED GRADE
EXISTING GROUND
END SPEC CUT DITCH STA 62+42 EL=631.42
BEG LAT V-DITCH STA 62+85 -L- LT EL=627.40
END SPEC CUT DITCH STA 62+50 -L- LT EL=627.50
BEG SPEC CUT DITCH STA 65+40 -L- LT EL=631.20
END SPEC CUT DITCH STA 67+50 -L- LT EL=630.00
BEG LAT V-DITCH STA 68+50 -L- LT EL=626.70
LAT V-DITCH STA 69+00 -L- LT EL=620.70
LAT V-DITCH STA 69+60 -L- LT EL=615.40
BEG LAT V-DITCH STA 69+95 -L- RT EL=609.70
LAT V-DITCH STA 70+10 -L- LT EL=614.20
LAT V-DITCH STA 70+78 -L- LT EL=615.50
END LAT V-DITCH STA 70+93 -L- RT EL=607.30
END LAT V-DITCH STA 72+00 -L- LT EL=622.50
-L- STA 72+26.48 = STA 100+00.00 TEMP STREET EXT.

LEFT DITCH
RIGHT DITCH

FOR -L- PLAN SEE SHEETS 7 & 8

62+00 63+00 64+00 65+00 66+00 67+00 68+00 69+00 70+00 71+00 72+00 73+00 74+00 75+00 76+00

590 600 610 620 630 640 650 660 670 680

L

BM 5
-L- STATION 82+83
198 RIGHT
ELEV = 617.05'

PI = 82+00.00
EL = 623.25'
VC = 250'
K = 104

PIPE HYDRAULIC DATA
CL III 54" RCP Sta. 85+89.4 -L-

DRAINAGE AREA	= 29.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 100	CFS
DESIGN HW ELEVATION	= 602.5	FT
100 YEAR DISCHARGE	= 120	CFS
100 YEAR HW ELEVATION	= 603.3	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 145	CFS
OVERTOPPING ELEVATION	= 604.7	FT

PIPE HYDRAULIC DATA
CL III 3@30" RCP Sta. 78+25.00 -L-

DRAINAGE AREA	= 17.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 65	CFS
DESIGN HW ELEVATION	= 621.9	FT
100 YEAR DISCHARGE	= 75	CFS
100 YEAR HW ELEVATION	= 622.2	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 66	CFS
OVERTOPPING ELEVATION	= 622.0	FT

(-) 1.06000%
(-) 15.20%
(-) 2.40%
(-) 1.06000%
(-) 15.00000%
(-) 6.84%
(-) 3.46%
(-) 6.18%
(-) 13.00000%
PROPOSED GRADE
PROPOSED UNDERCUT
EXISTING GROUND
3@30" RCP
54" RCP
BEG LAT V-DITCH STA 78+50 -L- LT EL=626.70
LAT V-DITCH STA 78+80 -L- LT EL=624.90
END LAT V-DITCH STA 78+98 -L- LT EL=619.26
BEG LAT V-DITCH STA 85+50 -L- LT EL=606.40
LAT V-DITCH STA 85+68 -L- LT EL=599.70
END LAT V-DITCH STA 85+74 -L- LT EL=599.60
BEG LAT V-DITCH STA 86+20 -L- RT EL=604.30
LAT V-DITCH STA 86+40 -L- RT EL=597.10
END LAT V-DITCH STA 87+60 -L- RT EL=590.00

LEFT DITCH
RIGHT DITCH

FOR -L- PLAN SEE SHEETS 8 & 9

76+00 77+00 78+00 79+00 80+00 81+00 82+00 83+00 84+00 85+00 86+00 87+00 88+00 89+00 90+00

560 570 580 590 600 610 620 630 640 650

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	35

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

L

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1420	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 583.0	FT
BASE DISCHARGE	= 1700	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 584.00	FT
OVERTOPPING DISCHARGE	= 2570	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 586.8	FT

BM 6
-L- STATION 103+58
208 LEFT
ELEV = 593.11'

PI = 92+00.00
EL = 593.25'
VC = 200'
K = 111

PI = 98+00.00
EL = 586.05'
VC = 250'
K = 102

(-)3.0000%
(-)3.0000%
(-)1.2000%
(-)3.90%
(-)0.60%
(-) 0.40%
(-)1.2000%
(+)1.2400%
(+)1.2400%

PROPOSED UNDERCUT
PROPOSED GRADE
PROPOSED UNDERCUT
PROPOSED UNDERCUT

BEG LAT V-DITCH
STA 96+00 -L- RT
EL=580.70

END LAT V-DITCH
STA 97+25 -L- RT
EL=581.00

BEG LAT 2' BASE DITCH
STA 94+00 -L- LT
EL=580.40

EXISTING GROUND

LAT 2' BASE DITCH
STA 95+00 -L- LT
EL=576.50

3@1'x1' RCBC

END LAT 4' BASE DITCH
STA 97+50 -L- LT
EL=575.00

LEFT DITCH ——--——-
RIGHT DITCH — — — —

FOR -L- PLAN SEE SHEETS 9 & 10

90+00 91+00 92+00 93+00 94+00 95+00 96+00 97+00 98+00 99+00 100+00 101+00 102+00 103+00 104+00

650 640 630 620 610 600 590 580 570 560

L

PIPE HYDRAULIC DATA

CL III 24" RCP Sta. 108+24.94 -L-

DRAINAGE AREA	= 7.09	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 16	CFS
DESIGN HW ELEVATION	= 595.4	FT
100 YEAR DISCHARGE	= 17	CFS
100 YEAR HW ELEVATION	= 595.5	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 24	CFS
OVERTOPPING ELEVATION	= 596.5	FT

PIPE HYDRAULIC DATA

CL III 48" RCP Sta. 109+42.30 -L-

DRAINAGE AREA	= 26.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 70	CFS
DESIGN HW ELEVATION	= 594.4	FT
100 YEAR DISCHARGE	= 80	CFS
100 YEAR HW ELEVATION	= 594.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 160	CFS
OVERTOPPING ELEVATION	= 601.5	FT

STA 109+30.64
-L- STA 109+60.00
SMITH DR.

(+)1.2400%
(+)1.2400%

24" RCP
(+) 0.65%
(+) 0.44%
PROPOSED GRADE

BEG SPEC LAT V-DITCH
STA 108+20 -L- RT
EL=593.20

EXISTING GROUND

48" RCP

SPEC LAT V-DITCH
STA 109+75 -L- RT
STA 110+50
EL=591.20

BEG LAT 2' BASE DITCH
STA 108+24 -L- LT
EL=585.00

END LAT 2' BASE DITCH
STA 108+58 -L- LT
EL=585.00

END SPEC LAT 2' BASE DITCH
STA 111+65 -L- RT
EL=590.5

BEG SPEC LAT 2' BASE DITCH
STA 111+10 -L- RT
EL=590.3

LEFT DITCH ——--——-
RIGHT DITCH — — — —

FOR -L- PLAN SEE SHEETS 10 & 11

104+00 105+00 106+00 107+00 108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00 117+00 118+00

650 640 630 620 610 600 590 580 570 560

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	36

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

L

BM 7
-L- STATION 123+43
572 RIGHT
ELEV = 624.94'

PIPE HYDRAULIC DATA
CL III 72" RCP Sta. 126+72.7 -L-

DRAINAGE AREA	= 98.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 220	CFS
DESIGN HW ELEVATION	= 607.4	FT
100 YEAR DISCHARGE	= 260	CFS
100 YEAR HW ELEVATION	= 608.5	FT
OVERTOPPING FREQUENCY	= 500+/-	YRS
OVERTOPPING DISCHARGE	= 460	CFS
OVERTOPPING ELEVATION	= 616.6	FT

(+)1.2400%

(+)1.2400%

PROPOSED GRADE

BEG LAT V-DITCH
STA 126+36 -L- LT
EL=603.80

BEG LAT V-DITCH
STA 126+06 -L- LT
EL=605.40

(-)2.1298%

72" RCP

(-)10.0%

(-)1.0671%

EXISTING GROUND

END LAT V-DITCH
STA 126+20 -L- RT
EL=601.30

LAT V-DITCH
STA 126+48 -L- LT
EL=597.30

END LAT V-DITCH
STA 127+36 -L- LT
EL=599.00

FOR -L- PLAN SEE SHEETS 11 & 12

118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00 127+00 128+00 129+00 130+00 131+00 132+00

660 650 640 630 620 610 600 590 580 570

L

PI = 145+00.00
EL = 689.41'
VC = 1035'
K = 100

PIPE HYDRAULIC DATA
CL IV 48" RCP Sta. 133+68.4 -L-

DRAINAGE AREA	= 21.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 65	CFS
DESIGN HW ELEVATION	= 610.7	FT
100 YEAR DISCHARGE	= 75	CFS
100 YEAR HW ELEVATION	= 611.1	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 214	CFS
OVERTOPPING ELEVATION	= 625.5	FT

PI = 133+50.00
EL = 630.07'
VC = 400'
K = 102

(+)1.2400%

(+)5.1600%

(+)5.1600%

(-)15.2000%

BEGIN BRIDGE OVER -Y16- (US 70) RAILROAD STR.
-L NBL- STA 142+35.11
-L SBL- STA 142+47.09

PROPOSED GRADE

EXISTING GROUND

-L- STA 143+22.92
47.28' LT. STA 135+53.51
HOLT ST. SR 1963

-L- STA 145+75.98
MEDIAN

BEG LAT V-DITCH
STA 132+10
EL=606.68

END LAT V-DITCH
STA 133+82
EL=604.00

(-)2.20%

40" RCP

LEFT DITCH ——— - - ———

RIGHT DITCH — — — —

FOR -L- PLAN SEE SHEETS 12,13,14

132+00 133+00 134+00 135+00 136+00 137+00 138+00 139+00 140+00 141+00 142+00 143+00 144+00 145+00 146+00

690 680 670 660 650 640 630 620 610 600

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	37

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

L

BM 8
-L- STATION 148+53
284 RIGHT
ELEV = 643.49'

END BRIDGE OVER RR (US 70X RAILROAD ST.)
-L_NBL- STA.147+33.48
-L_SBL- STA.147+37.41

-L- STA.146+17.93
-Y6- STA.2+23.59
(US 70X RAILROAD ST.)

PI = 145+00.00
EL = 689.41'
VC = 900'
K = 87

(-)5.200%

(-)3.10%

(-)2.73%

REG LAT 2 BASE DITCH
STA.148+00 -L- RT
EL=632.20

LAT 2 BASE DITCH
STA.149+60 -L- RT
EL=622.55

LAT 2 BASE DITCH
STA.153+66 -L- RT
EL=612.00

PROPOSED GRADE

EXISTING GROUND

(-)7.58%

(+)0.72%

END LAT 2 BASE DITCH
STA.154+65 -L- RT
EL=605.50

REG LAT V-DITCH
STA.154+65 -L- RT 30" RCP
EL=605.50

REG LAT V-DITCH
STA.157+77 -L- RT
EL=601.50

END LAT V-DITCH
STA.156+25 -L- RT 24" RCP
EL=606.65

(+)2.76%

END LAT V-DITCH
STA.158+75 -L- RT
EL=604.20

(+)5.200%

LEFT DITCH ——---——

RIGHT DITCH — — — —

FOR -L- PLAN SEE SHEETS 14 & 15

PIPE HYDRAULIC DATA
CL V 30" RCP Sta. 155+86.79 -L-

DRAINAGE AREA	= 9.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 34	CFS
DESIGN HW ELEVATION	= 608.7	FT
100 YEAR DISCHARGE	= 39	CFS
100 YEAR HW ELEVATION	= 609.2	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 43	CFS
OVERTOPPING ELEVATION	= 609.7	FT

PIPE HYDRAULIC DATA
CL IV 24" RCP Sta. 157+69.1 -L-

DRAINAGE AREA	= 4.58	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 15	CFS
DESIGN HW ELEVATION	= 605.3	FT
100 YEAR DISCHARGE	= 16	CFS
100 YEAR HW ELEVATION	= 605.4	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 40	CFS
OVERTOPPING ELEVATION	= 609.7	FT

PI = 160+00.00
EL = 611.41'
VC = 600'
K = 99

680 670 660 650 640 630 620 610 600 590

146+00 147+00 148+00 149+00 150+00 151+00 152+00 153+00 154+00 155+00 156+00 157+00 158+00 159+00 160+00

L

BM 9
-L- STATION 165+52
233LEFT
ELEV = 605.03'

-L- STA.165+47.83
-MGPPA- STA.2+28.33

PI = 160+00.00
EL = 611.41'
VC = 600'
K = 99

PIPE HYDRAULIC DATA
CL IV 66" RCP Sta. 162+29.74 -L-

DRAINAGE AREA	= 73.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 170	CFS
DESIGN HW ELEVATION	= 594.8	FT
100 YEAR DISCHARGE	= 190	CFS
100 YEAR HW ELEVATION	= 595.4	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 370	CFS
OVERTOPPING ELEVATION	= 603.5	FT

(+)10.8400%

PROPOSED UNDERCUT

(-)1.00%

66" RCP

REG LAT BASE DITCH
STA.162+25 -L- RT
EL=590.16

END LAT BASE DITCH
STA.162+35 -L- RT
EL=590.00

PROPOSED GRADE

EXISTING GROUND

(+)10.8400%

PROPOSED UNDERCUT

LEFT DITCH ——---——

RIGHT DITCH — — — —

FOR -L- PLAN SEE SHEET 15

660 650 640 630 620 610 600 590 580 570

160+00 161+00 162+00 163+00 164+00 165+00 166+00 167+00 168+00 169+00 170+00 171+00 172+00 173+00 174+00

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	38

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

L

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 350	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 602.5	FT
BASE DISCHARGE	= 400	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 603.09	FT
OVERTOPPING DISCHARGE	= 1100	CFS
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING ELEVATION	= 621.8	FT

BM 10
-L- STATION 184+72
214 RIGHT
ELEV = 627.17'

PROPOSED GRADE

(+)0.8400%

PROPOSED UNDEROUT

EXISTING GROUND

14@10'x7' RCBC

(+)11.10%

(+)9.66%

(+)2.38%

BEG LAT BASE DITCH
STA 179+50 -L- RT
EL=591.80

LAT BASE DITCH RT
STA 180+00
EL=596.00

LAT BASE DITCH RT
STA 182+50 -L- RT
EL=617.40

PROPOSED GRADE

(+)0.8400%

PROPOSED UNDEROUT

PI = 188+50.00
EL = 635.35'
VC = 400'
K = 85

END LAT BASE DITCH
STA 185+00 -L- RT
EL=631.70

LEFT DITCH ——--——

RIGHT DITCH — — — —

FOR -L- PLAN SEE SHEETS 16 & 17

174+00 175+00 176+00 177+00 178+00 179+00 180+00 181+00 182+00 183+00 184+00 185+00 186+00 187+00 188+00

660 650 640 630 620 610 600 590 580 570

L

-L- STA.185+47.83
170' LT OF -L-
WOOLAWN RD.

(+)0.8400%

(-)3.8400%

PROPOSED UNDEROUT

PI = 188+50.00
EL = 635.35'
VC = 400'
K = 85

PROPOSED GRADE

PI = 193+00.00
EL = 618.07'
VC = 250'
K = 102

(-)3.8400%

(-)1.4000%

(-)5.90%

BEG SPEC CUT DITCH
STA 193+50 -L- RT
EL=617.50

END SPEC CUT DITCH
STA 193+96 -L- RT
EL=616.50

-L- STA.194+24.47
120' NEBANE ROGERS RD

PROPOSED UNDEROUT

EXISTING GROUND

(-)1.4000%

(-)1.4000%

END TIP PROJECT U-3109A
-L- STA.196+00
EL. = 613.87'

LEFT DITCH ——--——

RIGHT DITCH — — — —

FOR -L- PLAN SEE SHEETS 17 & 18

188+00 189+00 190+00 191+00 192+00 193+00 194+00 195+00 196+00 197+00 198+00 199+00 200+00 201+00 202+00

660 650 640 630 620 610 600 590 580 570

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	39

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NBL

BEGIN GRADE
-NBL- STA. 20+80.46, 32' RT =
-L- STA. 20+80.46
EL. = 654.92'

PI = 22+00.00
EL = 654.25'
VC = 239'
K = 96

(-)0.5600%

(+)1.9200%

BEGIN BRIDGE OVER -EY43- (I-40/I-85)
-NBL- STA. 25+45.23

EXISTING GROUND

PROPOSED GRADE

END BRIDGE OVER -EY43- (I-40/I-85)
-NBL- STA. 27+65.23

PI = 27+75.00
EL = 665.29'
VC = 850'
K = 192

(+)1.9200%

(-)2.5090%

END GRADE
-NBL- STA. 34+50.62, 39' RT =
-L- STA. 34+25.07
EL. = 650.30'

PI = 33+50.00
EL = 650.86'
VC = 200'
K = 103

(-)2.5090%

(-)0.5600%

FOR -NBL- PLAN SEE SHEET 5

SBL

BEGIN GRADE
-SBL- STA. 20+80.46, 20' LT =
-L- STA. 20+80.46
EL. = 655.16'

PI = 22+00.00
EL = 654.49'
VC = 225'
K = 97

(-)0.5600%

(+)1.7600%

PROPOSED GRADE

PI = 24+25.00
EL = 658.45'
VC = 150'
K = 93

(+)1.7600%

(+)0.1414%

PI = 25+55.58
EL = 658.63'

(+)0.1414%

END GRADE
BEGIN BRIDGE OVER -EY43- (I-40/I-85)
-SBL- STA. 25+55 +/-
EL = 658.53'

RETAIN EX. BRIDGE

EXISTING GROUND

PI = 27+97.79
EL = 658.97'

PI = 29+00.00
EL = 659.11'
VC = 150'
K = 114

(+)0.1387%

BEGIN GRADE
END BRIDGE OVER -EY43- (I-40/I-85)
-SBL- STA. 27+97 +/-
EL = 658.97'

(-)1.1800%

PROPOSED GRADE

END GRADE
-SBL- STA. 34+55.35 =
-L- STA. 34+25.07, 27' LT
EL. = 655.21'

PI = 33+50.00
EL = 653.80'
VC = 100'
K = 161

(-)1.1800%

(-)0.5600%

FOR -SBL- PLAN SEE SHEET 5

700 690 680 670 660 650 640 630 620 610

21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RPA

BEGIN GRADE
-RPA- STA.11+00.00 =
EL = 642.31'

PI = 11+90.00
EL = 645.48'
VC = 180'
K = 116

PROPOSED GRADE

(+)5.0710%

PI = 13+90.00
EL = 655.62'
VC = 130'
K = 19

(-)1.7400%

END GRADE
-RPA- STA.15+46.74 =
-NBL- STA.31+98.20, 15' LT
EL. = 654.37' (NBL EOT)

-RPA- STA.15+41.18 =
-NBL- STA.32+45.62
EL. = 653.46'

(+)5.2200%

(-)1.4287%

EXISTING GROUND

END SPEC LAT V-DITCH
STA.13+00 -RPA- RT
EL=647.48

SPEC LAT V-DITCH
STA.11+50 -RPA- RT
EL=643.80

LEFT DITCH ——--——-
RIGHT DITCH — — — —

FOR -RPA- PLAN SEE SHEET 5

RPA_SPUR

BEGIN GRADE
-RPA SPUR- STA.12+57.24 =
-RPA- STA.12+57.24
EL. = 649.91'

PI = 14+30.00
EL = 657.58'
VC = 78'
K = 21

(+)5.6200%

(+)1.3070%

-RPA SPUR- STA.15+24.43 =
-SBL- STA.29+08.40
EL = 658.82'

END GRADE
-RPA SPUR- STA.14+72.08 =
-SBL- STA.29+58.71, 15' RT
EL = 658.10' (SBL EOT)

PROPOSED GRADE

EXISTING GROUND

FOR -RPA_SPUR- PLAN SEE SHEET 5

RPB

BEGIN GRADE
-RPB- STA.11+00.00
EL = 639.64'

PI = 14+00.00
EL = 643.54'
VC = 400'
K = 211

(+)5.5000%

(+)3.2000%

(+) 0.30%

(+) 2.44%

PI = 18+69.01
EL = 658.55'
VC = 200'
K = 46

(+)3.2009%

(-)1.1467%

(+)0.53%

END GRADE
-RPB- STA.21+94.35 =
-SBL- STA.32+38.51, 15' LT.
EL = 654.62' (SBL EOT)

PROPOSED GRADE

EXISTING GROUND

SPEC SPEC LAT V-DITCH
STA.10+50 -RPB- RT
EL=638.20

SPEC LAT V-DITCH
STA.11+50 -RPB- RT
EL=639.64

SPEC LAT V-DITCH
STA.13+50 -RPB- RT
EL=641.68

SPEC LAT V-DITCH
STA.14+50 -RPB- RT
EL=643.80

END SPEC LAT V-DITCH
STA.19+90.33 =
-RPB SPUR- STA.10+00.00

SPEC SPEC LAT V-DITCH
STA.18+50 -RPB- LT
EL=652.36

END SPEC LAT V-DITCH
STA.20+68 -RPB- LT
EL=651.94

LEFT DITCH ——--——-
RIGHT DITCH — — — —

FOR -RPB- PLAN SEE SHEET 5

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U-3109A	41

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RPB_SPUR

BEGIN GRADE
-RPB_SPUR- STA 10+00.00 =
-RPB- STA 11+90.33
EL = 655.98'

PI = 10+65.00
EL = 657.57'
VC = 100'
K = 63

PI = 11+65.00
EL = 658.41'
VC = 100'
K = 245

END GRADE
-RPB_SPUR- STA 12+20.13 =
-NBL- STA 29+11.52, 30' LT
EL = 659.10' (NBL EOT)

-RPB_SPUR- STA 12+97.25 =
-NBL- STA 28+37.65
EL = 660.06'

(+)2.440%
(+)0.840%
(+)1.249%
PROPOSED GRADE
EXISTING GROUND

FOR -RPB_SPUR- PLAN SEE SHEET 5

LEFT DITCH
RIGHT DITCH

RPC

BEG SPEC CUT DITCH
STA 11+63 -RPC- RT
EL=634.90

END SPEC CUT DITCH
STA 12+03 -RPC- RT
EL=635.80

BEGIN GRADE
-RPC- STA 12+25.00
EL = 638.60'

-RPC- STA 18+77.29 =
-SBL- STA 21+85.55
EL = 655.07'

END GRADE
-RPC- STA 18+21.62=
-SBL- STA 22+37.94 (5' LT)
EL = 655.14' (SBL EOT)

PI = 13+10.00
EL = 640.68'
VC = 125'
K = 175

PI = 17+70.00
EL = 655.21'
VC = 100'
K = 30

(+)1.458%
(+)2.444%
(+)3.600%
(+)2.271%
(+)3.200%
(-)0.340%
PROPOSED GRADE
EXISTING GROUND

SPEC LAT V-DITCH
STA 14+50 -RPC- LT
EL=642.00

END SPEC LAT V-DITCH
STA 16+50 -RPC- LT
EL=648.40

BEG SPEC LAT V-DITCH
STA 13+00 -RPC- LT
EL=638.60

FOR -RPC- PLAN SEE SHEET 5

RPC_SPUR

BEGIN GRADE
-RPC_SPUR- STA 16+63.40 =
-RPC- STA 18+63.40
EL = 651.85'

END GRADE
-RPC_SPUR- STA 18+40.48 =
-NBL- STA 24+10.76, 30' LT
EL = 657.60' (NBL EOT)

-RPC_SPUR- STA 19+38.85 =
-NBL- STA 24+95.40, 4' RT
EL = 659.55'

PI = 18+50.00
EL = 658.11'
VC = 125'
K = 77

(+)3.351%
(+)1.734%
PROPOSED GRADE
EXISTING GROUND

FOR -RPC_SPUR- PLAN SEE SHEET 5

RPD

BEGIN GRADE
-RPD- STA 11+25.00
EL = 632.20'

PI = 12+50.00
EL = 632.23'
VC = 500'
K = 151

(+)0.440%
(+)3.760%
(+)3.12%
PROPOSED GRADE
EXISTING GROUND

BEG SPEC LAT V-DITCH
STA 15+06 -RPD- RT
EL=638.20

LEFT DITCH
RIGHT DITCH

FOR -RPD- PLAN SEE SHEET 5

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	42

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RPD

-RPD- STA 20+28.79 =
-NBL- STA 21+91.74
EL = 654.34'

END GRADE
-RPD- STA 19+40.95=
-NBL- STA 22+71.37, 25' RT
EL = 655.35' (NBL EOT)

PI = 18+75.00
EL = 655.73'
VC = 165'
K = 39

(+)3.76000%

(-)05.20000%

PROPOSED GRADE

(+)1.46%

EXISTING GROUND

END SPEC CUT DITCH
STA 18+85 -RPD- LT
EL=649.80

END SPEC LAT V-DITCH
STA 17+05.07 -RPD- RT
EL=645.30

BEG SPEC CUT DITCH
STA 17+00 -RPD- LT
EL=647.10

LEFT DITCH

RIGHT DITCH

FOR -RPD- PLAN SEE SHEET 5

RPD_SPUR

BEGIN GRADE
-RPD_SPUR- STA 17+05.68 =
-RPD- STA 17+05.07
EL = 649.34'

END GRADE
-RPD_SPUR- STA 19+71.35 =
-SBL- STA 25+56.45, 12' RT
EL = 658.10' (SBL EOT)

PI = 17+65.00
EL = 651.41'
VC = 105'
K = 54

PI = 18+90.00
EL = 658.22'
VC = 100'
K = 19

(+)3.50054%

(-)5.44117%

(+)10.22000%

PROPOSED GRADE

(+)0.30%

EXISTING GROUND

BEG SPEC LAT V-DITCH
STA 17+05.68 -RPD_SPUR- RT
EL=648.30

END SPEC LAT V-DITCH
STA 19+00 -RPD_SPUR- RT
EL=645.90

LEFT DITCH

RIGHT DITCH

FOR -RPD_SPUR- PLAN SEE SHEET 5

17+00 18+00 19+00 20+00 21+00

16+00 17+00 18+00 19+00 20+00

710 700 690 680 670 660 650 640 630 620

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	43

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

5/28/99 R/W REVISION: 05/6/15 --Y5A- EXTENDED TO PROVIDE ACCESS TO PARCEL 184.

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Y2

-Y2- STA.13+87.26
EL = 659.32'
END 3" OVERLAY

-Y2- STA.14+74.23
EL = 660.36' (MAINLINE EOT)
OFFSET 20' LEFT
BEGIN 3" OVERLAY

-Y2- STA.14+92.23
-L- STA.15+21.28
EL = 660.80'

(+) 3.50%

EXISTING GROUND

REG. SPEC. CUT DITCH
STA. 13+90 -Y2- RT
EL=656.40'

END SPEC. CUT DITCH
STA. 14+50 -Y2- RT
EL=658.50'

LEFT DITCH
RIGHT DITCH

FOR -Y2- PLAN SEE SHEET 4

Y3

-Y3- STA.10+00.00
-L- STA.15+15.86
EL = 660.85'

BEGIN GRADE
-Y3- STA.10+18.00
-L- STA.15+15.00
EL = 660.49' (MAINLINE EOT)
OFFSET 18' RT.

PI = 10+70.00
EL = 659.19'
VC = 60'
K = 47

(-)2.0000%

(-)1.2272%

(-)2.5000%

PROPOSED GRADE

EXISTING GROUND

END GRADE
-Y3- STA.11+00.00
MATCH EXISTING
EL = 658.82'

Y5A

-Y5A- STA.10+17.50
-L- STA.39+16.13
EL = 649.74'

BEGIN GRADE
-Y5A- STA.10+61.82
-L- STA.39+93.32 53' RT.
EL = 649.11' (MAINLINE EOT)

PI = 11+50.00
EL = 647.84'
VC = 175'
K = 57

(-)1.4400%

(-)1.4500%

PROPOSED GRADE

PROPOSED UNDERCUT

EXISTING GROUND

END GRADE
-Y5A- STA.15+26.06
EL = 630.91'

(-)1.4500%

PROPOSED UNDERCUT

FOR -Y5A- PLAN SEE SHEET 5

Y5B

BEGIN 3" OVERLAY
-Y5B- STA.11+57.00
EL = 653.36'

-Y5B- STA.14+42.09
EL = 649.92'

END 3" OVERLAY
-Y5B- STA.13+80.00
-L- STA.39+14+10.53' LT.
EL = 648.99' (MAINLINE EOT)

EXISTING GROUND

(-) 0.34%

(-)1.42%

REG. SPEC. CUT Y DITCH
STA. 12+40.00
EL=649.58'

REG. SPEC. CUT Y DITCH
STA. 12+40.00 -Y5B- RT
EL=649.58'

END SPEC. CUT Y DITCH
STA. 12+58
EL=648.70

END SPEC. CUT Y DITCH
STA. 13+45
EL=647.95

LEFT DITCH
RIGHT DITCH

FOR -Y5B- PLAN SEE SHEET 5

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ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y5C

-Y5C- STA.10+00.00 =
-YT- STA.22+39.22
EL.= 666.77'

BEGIN GRADE
-Y5C- STA.10+22.56 =
-YT- STA.22+42.39, 22.25' RT.
EL.= 666.30'

END GRADE
-Y5C- STA.11+50.00
EL.= 665.50'

PROPOSED GRADE

(-)10.6265%

EXISTING GROUND

FOR -Y5C- PLAN SEE SHEET 19

Y6

-Y6- STA.10+15.00 =
-L- STA.53+55.17
EL.= 664.00'

BEGIN GRADE
-Y6- STA.10+79.00 =
-L- STA.53+55.85.79' RT.
EL.= 665.72' (MAINLINE EOT)

PI = 12+00.00
EL = 663.30'
VC = 175'
K = 88

PIPE HYDRAULIC DATA

CL III 42" RCP Sta. 15+42.3 -Y6-

DRAINAGE AREA	= 28.1	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 50	CFS
DESIGN HW ELEVATION	= 639.4	FT
100 YEAR DISCHARGE	= 80	CFS
100 YEAR HW ELEVATION	= 640.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 180	CFS
OVERTOPPING ELEVATION	= 649.8	FT

(-)12.0000%

(-)14.0000%

(-)7.0179%

(-)6.602%

PROPOSED GRADE

REG LAT V-DITCH
STA.13+86 -Y6- LT
EL=653.70

LAT V-DITCH
STA.13+50 -Y6- LT
EL=652.40

LAT V-DITCH
STA.15+00 -Y6- LT
EL=659.50

EXISTING GROUND

(-)1.45%

(+)1.53%
42" RCP

(+)1.59%

REG LAT V-DITCH
STA.15+75 -Y6- RT
EL=656.80

END LAT V-DITCH
STA.15+68 -Y6- LT
EL=656.70

REG LAT 2' BASE DITCH
STA.15+67 -Y6- LT
EL=656.70

PI = 16+25.00
EL = 646.30'
VC = 600'
K = 100

END LAT 2' BASE DITCH
STA.16+55 -Y6- LT
EL=656.10

REG LAT V-DITCH
STA.16+79 -Y6- LT
EL=659.00

END LAT V-DITCH
STA.18+50 -Y6- RT
EL=648.26

(+)2.0000%

(+)1.40%

(+)1.41%

END LAT V-DITCH
STA.18+50 -Y6- LT
EL=647.06

PROPOSED UNDERCUT

FOR -Y6- PLAN SEE SHEETS 6 & 20

LEFT DITCH ——— - - ———
RIGHT DITCH — — —

Y6

BM 30
-Y6- STATION 30+93
23' RIGHT
ELEV = 676.84'

-Y6- STA.20+65.00
-Y6A- STA.23+17.59

PI = 25+80.00
EL = 665.40'
VC = 120'
K = 651

PROPOSED GRADE

PROPOSED GRADE

(+)1.2600%

(+)2.0000%

(+)1.24%

(+)1.956%

(+)2.00%

(+)2.36%

(+)2.19%

SPEC CUT DITCH
STA.27+00 -Y6- LT
EL=664.10

END GRADE
-Y6- STA.28+25.00
EL = 669.85'

END SPEC CUT DITCH
STA.28+22 -Y6- LT
EL=668.30

EXISTING GROUND

REG LAT V-DITCH
STA.23+68 -Y6- RT
EL=668.50

REG SPEC CUT DITCH
STA.25+50 -Y6- LT
EL=661.10

LAT V-DITCH
STA.26+70 -Y6- RT
EL=661.20

END LAT V-DITCH
STA.28+00 -Y6- RT
EL=666.20

PROPOSED UNDERCUT

FOR -Y6- PLAN SEE SHEETS 20 & 21

LEFT DITCH ——— - - ———
RIGHT DITCH — — —

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U-3109A	45

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y6A

PIPE HYDRAULIC DATA

CL III 48" RCP Sta. 17+16.1 -Y6A-

DRAINAGE AREA	= 37	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 70	CFS
DESIGN HW ELEVATION	= 634.6	FT
100 YEAR DISCHARGE	= 110	CFS
100 YEAR HW ELEVATION	= 637	FT
OVERTOPPING FREQUENCY	= 25+	YRS
OVERTOPPING DISCHARGE	= 100	CFS
OVERTOPPING ELEVATION	= 636.3	FT

-Y6A- STA.10+15.00
EL.= 654.36'

BEGIN GRADE
-Y6A- STA.10+79.00 =
-L- STA.48+99.78 RT.
EL.= 656.37' (MAINLINE EOT)

PI = 15+00.00
EL = 630.81'
VC = 600'
K = 67

(-)5.0000%

(-)2.30%

(+)3.01%

(-)0.76%

(+)6.0000%

48" RCP

(+)5.49%

(+)5.49%

(+)2.0000%

(+)3.01%

(+)2.0000%

PI = 21+75.00
EL = 650.93'
VC = 150'
K = 148

-Y6A- STA.23+73.19 =
-Y6- 20+65.00
EL = 655.10'

END GRADE
-Y6A- STA.23+41.69 =
-Y6- STA.20+67.00,31.5 RT.
EL.= 654.47' (-Y6- EOT)

PROPOSED GRADE

PROPOSED UNDERCUT

PROPOSED UNDERCUT

LEFT DITCH ———— - - - ———

RIGHT DITCH ——— — — ———

FOR -Y6A- PLAN SEE SHEETS 6 & 20

BEG SPEC LAT 2' BASE DITCH
STA.11+70 -Y6A- LT
EL=640.40

SPEC LAT 2' BASE DITCH
STA.15+30 -Y6A- LT
EL=632.80

BEG SPEC LAT V-DITCH
STA.17+25 -Y6A- LT
EL=631.40

END SPEC LAT 2' BASE DITCH
STA.17+13 -Y6A- LT
EL=631.20

SPEC LAT V-DITCH
STA.18+50 -Y6A- LT
EL=633.70

END SPEC 2' BASE CUT DITCH
STA.18+50 -Y6A- RT
EL=633.60

BEG SPEC 2' BASE LAT DITCH
STA.17+06 -Y6A- RT
EL=628.90

Y6DWY

PI = 10+60.00
EL = 649.24'
VC = 60'
K = 7

(-)2.0006%

(-)10.0000%

(+)1.5066%

PI = 11+30.00
EL = 642.17'
VC = 80'
K = 9

FOR -Y6DWY- PLAN SEE SHEET 20

DWY4

BEGIN GRADE
-DWY4- STA.10+00.00 =
-Y7B- STA.16+04.90
EL.= 641.13'

PI = 10+56.50
EL = 641.19'

PI = 11+10.00
EL = 637.05'
VC = 50'
K = 10

PROPOSED GRADE

(-)6.6400%

(-)10.0000%

(-)17.10%

SEE DETAIL
848.03 2 OF 2

END GRADE
-DWY4- STA.11+39.99
EL.= 633.85'

EXISTING GROUND

BEG SPEC LAT 'V' DITCH
STA.10+50 -DWY4- RT
EL=636.00

END SPEC LAT 'V' DITCH
STA.11+08 -DWY4- RT
EL=631.90

LEFT DITCH ———— - - - ———

RIGHT DITCH ——— — — ———

FOR -DWY4- PLAN SEE SHEET 22

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ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y7

BEGIN GRADE
-Y7- STA. 14+00.00
EL = 665.12'

PI = 15+00.00
EL = 663.68'
VC = 150'
K = 282

PI = 16+50.00
EL = 665.30'
VC = 150'
K = 311

PI = 21+00.00
EL = 668.00'
VC = 300'
K = 203

(+)0.5512%
(+)0.0828%
(+)0.0828%
(+)0.6000%
(+)0.49%
(+)0.6000%
(-)0.8800%
(-)1.09%
(-)0.8800%

REC SPEC CUT DITCH
STA. 17+11 -Y7- RT
EL=664.56

END SPEC CUT DITCH
STA. 20+50 -Y7- RT
EL=666.00

REC SPEC CUT DITCH
STA. 21+00 -Y7- RT
EL=666.40

END SPEC CUT DITCH
STA. 21+20 -Y7- RT
EL=666.72

-Y7- STA. 22+33.69 =
-Y6- STA. 10+00.00

PROPOSED GRADE

EXISTING GROUND

PROPOSED UNDERCUT

FOR -Y7- PLAN SEE SHEETS 6 & 19

LEFT DITCH — — —
RIGHT DITCH — — —

14+00 15+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

620 630 640 650 660 670 680 690 700 710

Y7

-Y7- STA. 31+58.27 =
-L- STA. 53+55.31
EL = 664.00'

END GRADE
-Y7- STA. 30+93.27 =
-L- STA. 53+55.99, 65' LT.
EL = 661.01 (MAINLINE EOT)

PI = 30+00.00
EL = 660.08'
VC = 175'
K = 93

PROPOSED GRADE

(-)0.8800%
(-)0.8800%
(+)1.0000%

PROPOSED UNDERCUT

EXISTING GROUND

FOR -Y7- PLAN SEE SHEET 6

28+00 29+00 30+00 31+00

620 630 640 650 660 670 680 690 700 710

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ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y7A

PIPE HYDRAULIC DATA

CL III 66" RCP Sta. 11+54.53 -Y7A-

DRAINAGE AREA	= 86.7	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 150	CFS
DESIGN HW ELEVATION	= 609.4	FT
100 YEAR DISCHARGE	= 240	CFS
100 YEAR HW ELEVATION	= 612.3	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 525	CFS
OVERTOPPING ELEVATION	= 628.9	FT

-Y7A- STA.10+00.00 =
-L- STA.72+47.69
EL = 628.96'

BEGIN GRADE
-Y7A- STA.10+53.73 =
-L- STA.72+38.89, 55' RT
EL = 628.25' (MAINLINE EOT)

PI = 12+00.00
EL = 625.56'
VC = 290'
K = 50

PI = 18+25.00
EL = 650.56'
VC = 700'
K = 84

PI = 24+25.00
EL = 624.64'
VC = 500'
K = 100

(-)11.8400%
(-)1.5400%
(+)4.0000%
(+)42.0000%
(-)14.3200%

END LAT V-DITCH
STA 11+96 -Y7A- LT
EL=604.30

BEG LAT V-DITCH
STA 11+55 -Y7A- LT
EL=604.50

EXISTING GROUND

END LAT V-DITCH
STA 12+31 -Y7A- LT
EL=606.60

BEG LAT V-DITCH
STA 10+95
-Y7A- LT
EL=605.60

(-)1.213%
(+)3.487%

66" RCP

PROPOSED GRADE

-Y7A- STA.27+03.26
-Y7D- STA.27+12.97

FOR -Y7A- PLAN SEE SHEETS 8 & 22 & 23

LEFT DITCH ——— - - —

RIGHT DITCH — — —

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00

600 610 620 630 640 650 660 670 680

Y7A

PIPE HYDRAULIC DATA

CL III 42" RCP Sta. 29+17.07 -Y7A-

DRAINAGE AREA	= 19.4	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 37	CFS
DESIGN HW ELEVATION	= 618.3	FT
100 YEAR DISCHARGE	= 60	CFS
100 YEAR HW ELEVATION	= 619.8	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 115	CFS
OVERTOPPING ELEVATION	= 625.8	FT

PI = 24+25.00
EL = 624.64'
VC = 500'
K = 100

PI = 31+00.00
EL = 629.23'
VC = 150'
K = 104

PI = 32+75.00
EL = 632.94'
VC = 200'
K = 105

END GRADE
-Y7A- STA.34+00.00
EL = 633.22'

(+)0.6800%
(-)4.3200%
(+)2.1200%
(+)0.2200%
(+)0.30%
(+)3.26%
(+)4.21%
(+)10.00%

END SPEC LAT V-DITCH
STA 35+50 -Y7A- LT
EL=630.19

SPEC LAT V-DITCH
STA 32+50 -Y7A- LT
EL=629.89

END SPEC LAT V-DITCH
STA 31+50 -Y7A- RT
EL=625.46

SPEC LAT V-DITCH
STA 31+00 -Y7A- LT
EL=625.06

42" RCP

EXISTING GROUND

PROPOSED GRADE

BEG SPEC LAT V-DITCH
STA 29+19 -Y7A- RT
EL=615.50

BEG SPEC LAT V-DITCH
STA 29+70 -Y7A- LT
EL=612.00

-Y7A- STA.25+02.22
-Y8- STA.18+32.21
-Y9- 10+00.00

FOR -Y7A- PLAN SEE SHEETS 22 & 23

LEFT DITCH ——— - - —

RIGHT DITCH — — —

24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00

600 610 620 630 640 650 660 670 680 690

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y7B

BEGIN GRADE
-Y7B- STA.14+66.00
EL.= 644.23'

PI = 14+50.00
EL = 642.93'
VC = 100'
K = 68

PI = 16+25.00
EL = 640.96'
VC = 100'
K = 87

END GRADE
-Y7B- STA.17+12.97 =
-Y7A- 21+03.26
EL.= 638.23'

(-)1.2682%
(-)11.1268%
(-)12.2596%
(-)12.2800%
PROPOSED GRADE
EXISTING GROUND

FOR -Y7B- PLAN SEE SHEET 22

Y8

BEGIN GRADE
-Y8- STA.13+97.97
EL.= 632.45'

PI = 16+00.00
EL = 627.14'
VC = 200'
K = 50

PI = 17+50.00
EL = 629.18'
VC = 75'
K = 21

END GRADE
-Y8- STA.18+13.44 =
-Y7A- STA.24+97.48 (8' RT.)
EL.= 627.73' (-Y7A- EOT)

-Y8- STA.18+32.11 =
EL.= 626.66'

(-)12.4000%
(-)12.6292%
(+)1.3600%
(-)12.2000%
PROPOSED GRADE
EXISTING GROUND

END SPEC CUT DITCH
STA.18+00 -Y8- RT.
EL=628.26

BEG SPEC CUT DITCH
STA.13+78 -Y8- RT.
EL=630.08

FOR -Y8- PLAN SEE SHEET 22

LEFT DITCH ———
RIGHT DITCH — — —

Y9

BM 29
-Y9- STATION 13+44
48 LEFT
ELEV = 623.27'

-Y9- STA.10+00.00 =
-Y7A- STA.25+02.47
EL.= 626.66'

BEGIN GRADE
-Y9- STA.10+18.74 =
-Y7A- STA.25+07.69 (8' LT.
EL.= 625.52' (-Y7A- EOT)

END GRADE
-Y9- STA.12+55.00
EL.= 622.36'

PI = 10+90.00
EL = 623.95'
VC = 120'
K = 75

PI = 12+10.00
EL = 623.23'
VC = 90'
K = 67

(-)12.2000%
(-)10.5990%
(-)11.9341%
EXISTING GROUND
PROPOSED GRADE

FOR -Y9- PLAN SEE SHEET 22

Y10

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 800	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 605.4	FT
BASE DISCHARGE	= 1220	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 607.60	FT
OVERTOPPING DISCHARGE	= 1720+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 611.0	FT

BEGIN GRADE
-Y10- STA.14+60.00
EL = 618.95'

PI = 15+45.00
EL = 615.86'
VC = 170'
K = 118

PI = 18+00.00
EL = 610.25'
VC = 205'
K = 64

PI = 23+00.00
EL = 615.25'
VC = 120'
K = 171

(-)13.6362%
(-)12.2000%
(-)1.0000%
(-)5.6012%
(-)1.2714%
(+)0.8412%
(+)1.0000%
(+)2.5374%
(+)3.3574%
PROPOSED GRADE
EXISTING GROUND

LAT. 2' BASE DITCH
STA.20+50 -Y10- LT.
EL=602.30

LAT. 2' BASE DITCH
STA.22+00 -Y10- LT.
EL=605.80

LAT. 2' BASE DITCH
STA.19+50 -Y10- RT.
EL=602.50

BEG. LAT. 2' BASE DITCH
STA.18+50 -Y10- RT.
EL=607.90

BEG. LAT. 2' BASE DITCH
STA.19+45 -Y10- LT.
EL=601.50

END LAT. 2' BASE DITCH
STA.19+08 -Y10- RT.
EL=601.00

20(10)x8' RCBC

FOR -Y10- PLAN SEE SHEETS 30

LEFT DITCH ———
RIGHT DITCH — — —

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y10

BM 22
-Y10- STATION 23+31
120 RIGHT
ELEV = 607.62'

LEFT DITCH ——— - - ———
RIGHT DITCH — — —

PIPE HYDRAULIC DATA
CL IV 36" RCP Sta. 33+50.31 -Y10-

DRAINAGE AREA	= 191	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 37	CFS
DESIGN HW ELEVATION	= 623.5	FT
100 YEAR DISCHARGE	= 60	CFS
100 YEAR HW ELEVATION	= 624.9	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 73	CFS
OVERTOPPING ELEVATION	= 626	FT

PI = 23+00.00
EL = 615.25'
VC = 120'
K = 171

PI = 27+25.00
EL = 616.53'
VC = 120'
K = 83

PI = 32+20.00
EL = 625.19'
VC = 260'
K = 200

PI = 35+00.00
EL = 626.45'
VC = 300'
K = 80

-Y10- STA.30+25.44
-Y11- STA.10+12.21
SR 1170 ROSSELVELT ST.

(+)0.3000%
(+)3.35%
(+)0.3000%
(+)1.7500%
(+)1.20%
(+)2.90%
(+)0.4490%
36" RCP
(-)1.55%
(-)7.54%
(+)0.4490%
(+)3.20%
(+)4.2500%
(+)5.00%
(+)6.80%

PROPOSED UNDERCUT
END LAT. & BASE DITCH
STA 22+00 -Y10- LT
EL=612.50
PROPOSED GRADE
BEG SPEC LAT V-DITCH
STA 26+80 -Y10- LT
EL=616.70
EXISTING GROUND
SPEC LAT V-DITCH
STA 31+00 -Y10- LT
EL=619.10
END SPEC LAT V-DITCH
STA 32+50 -Y10- LT
EL=622.00
BEG SPEC LAT V-DITCH
STA 32+50 -Y10- LT
EL=626.20
SPEC LAT V-DITCH
STA 33+00 -Y10- LT
EL=623.45
END SPEC LAT V-DITCH
STA 33+65 -Y10- LT
EL=620.50
END SPEC LAT V-DITCH
STA 35+50 -Y10- LT
EL=626.60
BEG SPEC LAT V-DITCH
STA 35+75 -Y10- LT
EL=627.00
BEG SPEC LAT V-DITCH
STA 36+00 -Y10- RT
EL=627.40
END SPEC LAT V-DITCH
STA 36+80 -Y10- RT
EL=631.40
END SPEC LAT V-DITCH
STA 37+00 -Y10- LT
EL=634.00
END GRADE
-Y10- STA.36+50.00
EL = 632.76'
BEG SPEC LAT V-DITCH
STA 36+50 -Y10- LT
EL=629.60

FOR -Y10- PLAN SEE SHEET 31

Y11

PIPE HYDRAULIC DATA
CL III 60" RCP Sta. 10+70.22 -Y11-

DRAINAGE AREA	= 65.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 110	CFS
DESIGN HW ELEVATION	= 617.7	FT
100 YEAR DISCHARGE	= 170	CFS
100 YEAR HW ELEVATION	= 619.8	FT
OVERTOPPING FREQUENCY	= 100 +/-	YRS
OVERTOPPING DISCHARGE	= 175	CFS
OVERTOPPING ELEVATION	= 620	FT

PIPE HYDRAULIC DATA
CL III 30" RCP Sta. 17+31.4 -Y11-

DRAINAGE AREA	= 12.4	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 20	CFS
DESIGN HW ELEVATION	= 623.6	FT
100 YEAR DISCHARGE	= 32	CFS
100 YEAR HW ELEVATION	= 624.5	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 32	CFS
OVERTOPPING ELEVATION	= 624.5	FT

-Y11- STA.10+00.00 =
-Y10- STA.30+25.44
EL = 621.78'

BEGIN GRADE
-Y11- STA.10+12.21 =
-Y10- STA.30+22.88, 12.21' RT.
EL = 621.71' (-Y10- EOT)

PI = 11+50.00
EL = 618.41'
VC = 160'
K = 37

PI = 15+25.00
EL = 626.96'
VC = 100'
K = 51

PI = 17+25.00
EL = 627.60'
VC = 125'
K = 26

PI = 18+35.00
EL = 633.19'
VC = 95'
K = 28

(-)2.0000%
(-)2.0000%
(+)2.8500%
(+)1.46%
(+)2.8500%
(+)4.75%
(+)0.3200%
(+)0.3200%
(+)2.35%
(+)5.0800%
(+)7.1200%

60" RCP
30" RCP
PROPOSED GRADE
EXISTING GROUND

BEG SPEC LAT 2' BASE DITCH
STA 10+55 -Y11- LT
EL=615.50
SPEC LAT 2' BASE DITCH
STA 12+50 -Y11- LT
EL=616.20
BEGIN SPEC LAT V-DITCH
END SPEC LAT 2' BASE DITCH
STA 13+50 -Y11- LT
EL=617.80
BEG SPEC CUT DITCH
STA 16+50 -Y11- LT
EL=624.50
END SPEC LAT V-DITCH
STA 14+50 -Y11- LT
EL=622.55
BEG SPEC CUT DITCH
STA 17+11 -Y11- RT
EL=619.40
END SPEC CUT DITCH
BEG SPEC LAT V-DITCH
STA 17+32 -Y11- LT
EL=621.40
END SPEC LAT V-DITCH
STA 18+00 -Y11- LT
EL=628.69
END SPEC LAT V-DITCH
STA 18+00 -Y13- RT
EL=628.69
END GRADE
-Y11- STA.18+85.00
EL = 634.05'

FOR -Y11- PLAN SEE SHEET 31

LEFT DITCH ——— - - ———
RIGHT DITCH — — —

23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00
10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00
680 670 660 650 640 630 620 610 600 590

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	50
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y13

PI = 12+00.00
EL = 605.01'
VC = 200'
K = 105

PI = 15+60.00
EL = 619.05'
VC = 200'
K = 125

PI = 17+55.00
EL = 623.54'
VC = 190'
K = 337

-Y13- STA.10+00.00 =
-L- STA.110+30.64, 15' RT.
EL = 601.3'

BEGIN GRADE
-Y13- STA.10+51.00 =
-L- STA.110+30.26, 51' RT.
EL. = 602.03' (MAINLINE EOT)

SPEC MAT V-DITCH
STA 11+00 -Y13- RT
STA 109+75 -L- RT
EL=594.2

REG SPEC MAT V-DITCH
STA 12+50 -Y13- LT
EL=604.26

END SPEC MAT V-DITCH
STA 14+00 -Y13- RT
EL=610.30

(+)2.30110%
(+)2.57%
(+)3.9000%
(+)2.00000%
(+)5.31%
(+)3.89%
(+)2.00%

PROPOSED GRADE

REG SPEC MAT V-DITCH
STA 15+00 -Y13- RT
EL=614.60

REG SPEC MAT V-DITCH
STA 17+15 -Y13- LT
EL=619.80

END SPEC MAT V-DITCH
STA 14+00 -Y13- LT
EL=610.10

END SPEC MAT 2' BASE DITCH
STA 11+60 -Y13- LT
EL=591.10

REG SPEC MAT 2' BASE DITCH
STA 11+90 -Y13- LT
EL=590.30

EXISTING GROUND

END GRADE
-Y13- STA.18+50.00
EL = 626.26'

END SPEC MAT V-DITCH
STA 18+50 -Y13- RT
EL=623.60

END SPEC MAT V-DITCH
STA 18+00 -Y13- LT
EL=622.00

(+)2.86149%
(+)2.59%

LEFT DITCH ——— - - ———
RIGHT DITCH — — —

FOR -Y13- PLAN SEE SHEETS 11 & 24

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00

Y16

LEFT DITCH ——— - - ———
RIGHT DITCH — — —

PIPE HYDRAULIC DATA
CL IV 24" RCP Sta. 20+15 -Y16-

DRAINAGE AREA	= 3.74	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 11	CFS
DESIGN HW ELEVATION	= 628.5	FT
100 YEAR DISCHARGE	= 11	CFS
100 YEAR HW ELEVATION	= 628.5	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 26	CFS
OVERTOPPING ELEVATION	= 630.4	FT

BEGIN GRADE
-Y16- STA.12+21.00
EL. = 633.03'

PI = 13+75.00
EL = 635.62'
VC = 200'
K = 90

PI = 16+20.00
EL = 634.26'
VC = 150'
K = 194

PI = 20+15.00
EL = 629.02'
VC = 420'
K = 97

(+)1.6809%
(-)0.5530%
(-)0.5530%
(-)1.3266%
(+)0.38%
(-)1.00%
(-)2.35%
(-)1.80%
(-)10.33%
(-)1.3%
(-)1.3266%
(+)3.6000%
(+)3.39%
(+)3.79%

SPEC CUT DITCH
STA 18+00 -Y16- LT
EL=625.10

PROPOSED GRADE

END SPEC CUT DITCH
STA 16+00 -Y16- LT
EL=629.25

END SPEC CUT DITCH
STA 17+00 -Y16- LT
EL=626.90

END SPEC CUT DITCH
STA 11+62 -Y16- LT
EL=630.50

BEGIN/END SPEC CUT DITCH
STA 14+25 -Y16- LT
EL=631.00

EXISTING GROUND

BEG SPEC CUT DITCH
STA 19+00 -Y16- RT
EL=628.51

END SPEC CUT DITCH
STA 20+15 -Y16- LT
EL=624.40

(16- STA.22+40.67
EL = 627.19

2.4" RCP

END SPEC CUT DITCH
STA 21+00 -Y16- RT
EL=629.68

BEGIN/END SPEC CUT DITCH
STA 20+15 -Y16- RT
EL=626.80

FOR -Y16- PLAN SEE SHEETS 14 & 25

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00

670 660 650 640 630 620 610 600 590 580

690 680 670 660 650 640 630 620 610

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	51

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y16

PI = 27+40.00
EL = 650.77'
VC = 400'
K = 184

(+)3.6000%
(+)0.8280%
(-)0.9200%
(H) 3.6%
(H) 4.0%
(H) 1.2%

PROPOSED GRADE
EXISTING GROUND

BEG SPEC LAT V-DITCH
STA 33+10 -Y16- LT
EL=648.00

END SPEC LAT V-DITCH
STA 33+500 -Y16- LT
EL=649.50

END SPEC LAT V-DITCH
STA 34+900 -Y16- LT
EL=653.57

BEG SPEC LAT V-DITCH
STA 31+50 -Y16- RT
EL=646.20

END SPEC LAT V-DITCH
STA 31+26 -Y16- RT
EL=646.00

END SPEC LAT V-DITCH
STA 32+76 -Y16- RT
EL=647.56

LEFT DITCH ——— - - ———
RIGHT DITCH — — —

FOR -Y16- PLAN SEE SHEETS 14,25,26

Y16

BM 19
-Y16- STATION 43+25
117 RIGHT
ELEV = 660.04'

PI = 42+20.00
EL = 663.03'
VC = 200'
K = 99

PI = 44+80.00
EL = 659.92'
VC = 110'
K = 212

(+)0.8280%
(-)1.1958%
(-)1.1956%
(H) 0.3%
(-)1.1938%
(-)1.48%

PROPOSED GRADE
EXISTING GROUND

END GRADE
-Y16- STA 45+35.41'
EL = 659.54'

659.54

END SPEC CUT DITCH
STA 46+02 -Y16- LT
EL=656.00

BEG SPEC CUT DITCH
STA 40+60 -Y16- LT
EL=658.62

END SPEC CUT DITCH
STA 41+45 -Y16- LT
EL=659.53

BEGIN SPEC CUT DITCH
STA 45+60 -Y16- LT
EL=657.51

BEG SPEC CUT DITCH
STA 45+00 -Y16- RT
EL=657.46

END SPEC CUT DITCH
STA 46+06 -Y16- RT
EL=656.00

LEFT DITCH ——— - - ———
RIGHT DITCH — — —

FOR -Y16- PLAN SEE SHEET 26

24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00 35+00 36+00 37+00 38+00
38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00
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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	52
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y16RPA

Y16RPA- STA.9+66.00 =
Y16- STA.32+36.14
EL.= 654.88'

PI = 11+75.00
EL = 651.48'
VC = 235'
K = 85

(-)2.0000%
(-)1.7200%
(-)1.7200%
(-)1.4500%

BEGIN GRADE
Y16RPA- STA.10+25.00 =
Y16- STA.32+50.01, 40.00' LT.
EL.= 653.80' (Y16 EOT)

PROPOSED UNDERCUT

PROPOSED GRADE

PROPOSED UNDERCUT

(-)1.40%
(-)1.00%
(-)1.6862%
(-)1.4500%

PI = 23+75.00
EL = 597.48'
VC = 825'
K = 97

REG SPEC LAT V-DITCH
STA 18+00 -Y16RPA- RT
EL=608.40

42" RCP
EXISTING GROUND

SPEC LAT V-DITCH
STA 19+00 -Y16RPA- RT
EL=609.80

END SPEC LAT V-DITCH
STA 19+50 -Y16RPA- RT
EL=610.30

REG SPEC LAT 2' BASE DITCH
STA 20+00 -Y16RPA- LT
EL=607.50

REG SPEC CUT DITCH
STA 23+50 -Y16RPA- RT
EL=605.70

END SPEC LAT 2' BASE DITCH
STA 21+05 -Y16RPA- LT
EL=600.30

LEFT DITCH
RIGHT DITCH

FOR -Y16RPA- PLAN SEE SHEETS 26 & 27

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00

670 660 650 640 630 620 610 600 590 580

Y16RPA

PIPE HYDRAULIC DATA
CL III 42" RCP Sta. 19+41 -Y16RPA-

DRAINAGE AREA	= 19.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 50	CFS
DESIGN HW ELEVATION	= 612.0	FT
100 YEAR DISCHARGE	= 60	CFS
100 YEAR HW ELEVATION	= 612.8	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 68	CFS
OVERTOPPING ELEVATION	= 613.4	FT

PIPE HYDRAULIC DATA
CL III 36" RCP Sta. 24+86 -Y16RPA-

DRAINAGE AREA	= 14.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 41	CFS
DESIGN HW ELEVATION	= 606.2	FT
100 YEAR DISCHARGE	= 47	CFS
100 YEAR HW ELEVATION	= 606.5	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 51	CFS
OVERTOPPING ELEVATION	= 606.8	FT

END SPEC CUT DITCH
STA 24+09 -Y16RPA- RT
EL=603.30

PI = 23+75.00
EL = 597.48'
VC = 825'
K = 97

PROPOSED GRADE

(-)4.07%

(+)4.0000%

48"
36" RCP

(-)4.00%
36" RCP

END SPEC CUT V-DITCH
STA 25+60 -Y16RPA- LT
EL=608.00

REG SPEC CUT V-DITCH
STA 24+00 -Y16RPA- RT
EL=599.90

Y16RPA- STA.28+53.30 =
-L- STA.165+47.83, 15' RT.
EL = 616.01'

END GRADE
Y16RPA- STA.27+90.30 =
-L- STA.165+47.83, 63' RT.
EL = 614.09' (MAINLINE EOT)

PROPOSED UNDERCUT

END LAT 2' BASE DITCH
STA 26+50 -Y16RPA- RT
EL=603.00

EXISTING GROUND

REG LAT 2' BASE DITCH
STA 26+00 -Y16RPA- RT
EL=600.60

LEFT DITCH
RIGHT DITCH

FOR -Y16RPA- PLAN SEE SHEET 15

23+00 24+00 25+00 26+00 27+00 28+00

DWY3

PIPE HYDRAULIC DATA
CL III 36" RCP Sta. 25+99 -Y16RPA-

DRAINAGE AREA	= 17.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 46	CFS
DESIGN HW ELEVATION	= 604.1	FT
100 YEAR DISCHARGE	= 55	CFS
100 YEAR HW ELEVATION	= 604.7	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 82	CFS
OVERTOPPING ELEVATION	= 607	FT

BEGIN GRADE
-DWY- STA.11+00.00
EL.= 603.20'

PI = 11+70.00
EL = 602.55'
VC = 130'
K = 47

PROPOSED GRADE

(-)1.0716%

(+)1.6848%

EXISTING GROUND

BEGIN GRADE
-DWY- STA.12+60.82 =
-L- STA.88+23.14, 39' LT.
EL.= 606.08' (EOT)

-DWY- STA.12+84.93 =
-L- STA.88+26.46, 15' LT.
EL.= 604.49'

FOR -DWY3- PLAN SEE SHEET 9

10+00 11+00 12+00

670 660 650 640 630 620 610 600 590 580

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	53
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y19

-Y19- STA 10+00.00 =
-L- STA 188+11.83
EL. = 633.43'

BEGIN GRADE
-Y19- STA 10+51.72 =
-L- STA 188+26.33 5' RT.
EL. = 634.72' (MAINLINE EOT)

END GRADE
-Y19- STA 12+60.00
EL. = 637.30'

PI = 12+10.00
EL = 636.58'
VC = 100'
K = 337

(+)11.4432%
(+)1.47%
(+)11.4400%
(-)0.55%
(+)1.47%

EXISTING GROUND
PROPOSED GRADE

BEG SPEC LAT V-DITCH
STA 11+00 -Y19- LT
EL=632.40

END SPEC LAT V-DITCH
STA 12+90 -Y19- LT
EL=635.20

END SPEC LAT V-DITCH
STA 12+70 -Y19- LT
EL=636.00

BEG SPEC LAT V-DITCH
STA 10+45 -Y19- RT
EL=634.22

END SPEC LAT V-DITCH
STA 12+50 -Y19- RT
EL=634.29

LEFT DITCH
RIGHT DITCH

FOR -Y19- PLAN SEE SHEET 17

Y20

BEGIN GRADE
-Y20- STA 12+00.00
EL. = 616.17'

PI = 15+25.00
EL = 622.14'
VC = 315'
K = 74

(+)0.63%
(+)0.20%
(+)1.8788%
(-)2.4316%
(-)0.90%

BEG SPEC CUT DITCH
STA 09+70 -Y20- LT
EL=611.25

END SPEC CUT DITCH
STA 14+00 -Y20- LT
EL=613.51

END SPEC CUT DITCH
STA 16+50 -Y20- LT
EL=612.70

BEG SPEC CUT DITCH
STA 09+70 -Y20- RT
EL=611.25

END SPEC CUT DITCH
STA 12+00 -Y20- RT
EL=611.71

END SPEC CUT DITCH
STA 16+50 -Y20- LT
EL=613.50

EXISTING GROUND

LEFT DITCH
RIGHT DITCH

FOR -Y20- PLAN SEE SHEET 28

BEG SPEC CUT DITCH
STA 18+50 -Y20- LT
EL=611.80

PIPE HYDRAULIC DATA

CL IV 30" RCP Sta. 20+13.3 -Y20-

DRAINAGE AREA	= 5.45	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 20	CFS
DESIGN HW ELEVATION	= 607.5	FT
100 YEAR DISCHARGE	= 22	CFS
100 YEAR HW ELEVATION	= 607.6	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 43	CFS
OVERTOPPING ELEVATION	= 609.65	FT

-Y20- STA 23+56.66 =
-L- STA 194+07.02 5' LT.
EL. = 615.15' (MAINLINE EOT)

-Y20- STA 24+09.54
-L- STA 194+21.13
EL. = 616.37'

-Y20- STA 24+62.34 =
-L- STA 194+34.65 5' RT.
EL. = 617.63' (MAINLINE EOT)

PI = 20+50.00
EL = 609.38'
VC = 440'
K = 102

PI = 20+50.00
EL = 609.38'
VC = 440'
K = 102

PI = 23+94.00
EL = 616.43'

PI = 24+25.08
EL = 616.32'

PI = 28+40.00
EL = 623.37'
VC = 500'
K = 86

(-)1.86%
(-)12.4316%
(+)1.8800%
(+)0.30%
(-)4.60%
(+)1.09%
(-)1.08%
(+)3.4633%
(-)10.3834%
(+)3.5163%
(+)0.05%
(-)10.3682%
(+)1.5200%
(-)4.3200%
(-)0.48%

30" RCP

PROPOSED GRADE

END SPEC CUT DITCH
STA 19+20 -Y20- LT
EL=610.50

BEG SPEC CUT DITCH
STA 19+50 -Y20- RT
EL=607.50

BEG SPEC LAT DITCH
STA 19+98 -Y20- LT
EL=603.40

BEG SPEC CUT DITCH
STA 20+00 -Y20- RT
EL=605.25

END SPEC LAT V-DITCH
STA 20+25 -Y20- LT
EL=603.00

END SPEC CUT DITCH
STA 20+00 -Y20- RT
EL=605.25

END SPEC CUT DITCH
STA 21+00 -Y20- RT
EL=606.34

END SPEC CUT DITCH
STA 22+50 -Y20- LT
EL=609.77

BEG SPEC CUT DITCH
STA 23+50 -Y20- LT
EL=609.47

BEG SPEC CUT DITCH
STA 24+65 -Y20- RT
EL=615.30

END SPEC CUT DITCH
STA 24+00 -Y20- RT
EL=615.50

BEG SPEC CUT DITCH
STA 28+50 -Y20- LT
EL=615.80

END SPEC CUT DITCH
STA 30+00 -Y20- LT
EL=612.12

EXISTING GROUND

LEFT DITCH
RIGHT DITCH

FOR -Y20- PLAN SEE SHEETS 18,28,29

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PROJECT REFERENCE NO.	SHEET NO.
U-3109A	54
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

LEFT DITCH ——— - - ———

RIGHT DITCH — — — —

Y20

REG. SPEC. CUT DITCH
STA. 32+00 -Y20- RT
EL=604.15

SPEC. CUT DITCH
STA. 33+00 -Y20- RT
EL=597.20

END GRADE
-Y20- STA. 33+20.00
EL = 603.76'

PI = 32+60.00
EL = 605.22'
VC = 120'
K = 64

EXISTING GROUND

PROPOSED GRADE

(-)43.20%

(-)12.44%

(-)6.95%

(-)3.36%

(-)10.39%

(-)1.16%

SPEC. CUT DITCH
STA. 34+25 -Y20- RT
EL=593.00

LAT. V-DITCH
STA. 32+30 -Y20- LT
EL=593.20

REG. LAT. V-DITCH
STA. 32+33 -Y20- LT
EL=595.00

END LAT. V-DITCH
STA. 33+58 -Y20- LT
EL=591.30

FOR -Y20- PLAN SEE SHEETS 18,28,29

612 611 610 600 690 580

32+00 33+00 34+00 35+00 36+00 37+00

DWY1

690 680 670 660 650 640 630 620

-DWY1- STA. 10+00.00 =
-Y6A- STA. 11+81.72
EL = 649.91'

BEGIN GRADE
-DWY1- STA. 10+12.00 =
-Y6A- STA. 11+81.72 12' RT.
EL. = 650.28'

END GRADE
-DWY1- STA. 12+30.00
EL. = 648.93'

PI = 11+40.00
EL = 646.85'
VC = 152'
K = 31

(+)2.97%

(-)2.66%

(+)2.51%

PROPOSED GRADE

EXISTING GROUND

FOR -DWY1- PLAN SEE SHEET 5 & 6

10+00 11+00 12+00 13+00 14+00 15+00 16+00

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DWY2

DWY2 STA.10+00.00
EL = 663.46'

BEGIN GRADE
-DWY2- STA.10+36.00 +
-LT- STA.26+60.36 LT.
EL = 663.06'

END GRADE
-DWY2- STA.11+95.00
EL = 660.85'

PI = 11+50.00
EL = 662.38'
VC = 90'
K = 30

(-)12.0000%
(-)0.4000%
(-)3.4000%

PI = 10+50.00
EL = 662.78'

PROPOSED GRADE
EXISTING GROUND
PROPOSED UNDERCUT

FOR -DWY2- PLAN SEE SHEET 19

Y26REV

REG SPEC LAT V-DITCH
STA.10+15 -Y26- LT
EL=627.70

REG SPEC LAT V-DITCH
STA.10+15 -Y26- RT
EL=628.70

SPEC LAT V-DITCH
STA.10+65 -Y26- LT
EL=627.80

BEGIN GRADE
-Y26REV- STA.10+65.00
EL = 630.85'

PI = 12+00.00
EL = 633.95'
VC = 250'
K = 227

(+)0.6000%
(+)2.7000%
(+)0.2000%
(+)0.6000%
(+)0.2000%

END SPEC LAT V-DITCH
STA.12+50 -Y26- LT
EL=632.00

END SPEC LAT V-DITCH
STA.11+50 -Y26- RT
EL=629.80

PI = 15+98.00
EL = 638.73'
VC = 150'
K = 273

EXISTING GROUND
PROPOSED GRADE

(+)1.0650%
(+)1.2600%
(+)4.1500%
(+)2.8700%

REG SPEC CUT V-DITCH
STA.11+00 -Y26- RT
EL=637.25

END GRADE
-Y26REV- STA.17+04.39
EL = 639.42'

END SPEC CUT V-DITCH
STA.11+50 -Y26- RT
EL=639.06

SPEC CUT V-DITCH
STA.17+50 -Y26- RT
EL=638.11

FOR -Y26REV- PLAN SEE SHEET 25

LEFT DITCH ——— - - ———
RIGHT DITCH — — —

PROJECT REFERENCE NO.	SHEET NO.
U-3109A	55
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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