Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

April 22, 2016

U.S. Army Corps of Engineers
Asheville Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28805

ATTN: Ms. Lori Beckwith
NCDOT Division 13 Coordinator

SUBJECT: **Application for Section 404 Individual Permit and Section 401 Individual Water Quality Certification** for the proposed NC 63 (Leicester Highway) Widening and Improvements from SR 1615 (Gilbert Road) to SR 1004 (Newfound Road), Buncombe County, Division 13; Federal Aid Project No. STP-63(1); TIP Project No. U-3301.

Debit $570 from WBS Element No.34909.1.1

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to widen NC 63 (Leicester Highway) from SR 1615 (Gilbert Road) to SR 1004 (Newfound Road). The roadway will exist as a three-lane undivided facility from SR 1380 (Jones Road) to just east of Gray Fox Drive, then will transition to a four-lane divided facility with a 23-foot median that runs to Newfound Road. Within the project area, NC 63 will be a three-lane facility which transitions to a four-lane median divided facility, and will have partial control of access. The alterations in the roadway will result in the removal of several driveways and structures along the NC 63 corridor. The length of the project corridor is 4.3 miles. Proposed improvements include flattening several curves along the project roadway by utilizing existing pavement. Several existing culverts will be extended, including the ones located near Gray Fox Drive, SR 1002 (Old Leicester Highway), and SR 1305 (Shirey Drive). The two culverts that currently run adjacent to the Jones Road intersection will also be extended and connected. The same eighteen intersections will occur within the project limits following the proposed improvements. The intersection of NC 63 and SR 1610 (Martin Branch Road) will be signalized to further accommodate traffic needs. The SR 1375 (Dix Creek Chapel Road) and SR 1004 (Newfound Road) intersection will be widened with the addition of turn lanes. Several intersections will be realigned to improve sight distances. The proposed NC 63 improvements do not include provisions for a paved sidewalk since there will be 14-foot wide outside lanes within the three-lane section and 5-foot paved shoulders within the four-lane divided section to accommodate bicycle traffic along the roadway. The design speed of NC 63 would increase to 50 miles per hour with the wider roadway and straighter geometry. The recommended posted speed will be 45 miles per hour, with 35 miles per hour within the Leicester community. The utility estimate for the preferred alternative was completed in May 2014. There will be several relocations of power and telephone poles, as well as reconstruction of water, sewer and cable lines.

In addition to this cover letter, please find the enclosed ENG 4345, the North Carolina Division of Mitigation Services (NCDMS) Acceptance Letter (March 18, 2016), Concurrence Form for Assessment of Effects (September 18, 2007), Archaeological Language and Commitments for Environmental Document of Improvements to NC 63 Additional Alternatives TIP U-3301 Buncombe County, North Carolina (February 7, 2006), Indirect and Cumulative Effects Assessment Memorandum letter (November 6, 2015), Minutes of the Interagency Hydraulic Design Review Meeting [Concurrence Points (CP) 4B meeting minutes], Post Meeting Follow Up to the Interagency Hydraulic Design Review Meeting (July 22, 2015) [CP 4B follow up notes], State Stormwater Management Plan (SMP), permit drawings, and roadway plans as well as property owner addresses.

PROJECT SCHEDULE

The Let date for the U-3301 Design Build Project was February 24, 2015. Construction is anticipated to begin in June 2016 and be completed by July 01, 2020.

PURPOSE AND NEED

The primary purposes of improving NC 63 are to increase the traffic carrying capacity and improve safety along the subject section of NC 63. The proposed improvements to the subject section of NC 63 are needed to improve travel between Asheville and Leicester, as well as to decrease the crash potential along NC 63. As per the CE document the project area was projected to exceed capacity in the design year (2014).

NC 63 is a primary northwest-southeast transportation facility for Buncombe County, connecting Asheville to Leicester and the northwest portion of the county. It is designated as a major collector within the Leicester community, and a principal arterial closer to Asheville, on the North Carolina Statewide Functional Classification System. The corridor of NC 63 along the proposed project site currently consists of a 2-lane, 24-foot roadway section. The roadway has a slightly undulating vertical alignment, along with several large horizontal curves. Existing right-of-way along NC 63 within the project limits varies from approximately 35 to 100 feet. There is no control of access.

NEPA DOCUMENT STATUS

A Categorical Exclusion (CE) was approved for the project in August 2014 and has been provided to all appropriate agencies. The CE is also available on the NCDOT Website at https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx, under *Quick Links > Environmental Documents.* In compliance with the NEPA/404 Merger Process, Concurrent Point 4B was reached on July 22, 2015. The CP 4B Post Meeting Follow Up notes were distributed on October 6, 2015. Please note that the project was removed from the Merger Process after 2A, so there was no 4A meeting, thus no 4A minutes. Additionally, an agreement was made at the 4B meeting to not hold a 4C meeting; therefore, 4C meeting minutes are not contained within this submittal.

INDEPENDENT UTILITY

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

(1) The project connects logical termini and is of sufficient length to address environmental matters on a broad scope.

In 1995, a feasibility study was completed by NCDOT that focused on improvements to NC 63 between Whitt Road and Newfound Road in Buncombe County (U-3301). It was determined that safety and capacity improvements were necessary, and the upgrade of NC 63 to current design standards for a major thoroughfare was included in the 1996 Asheville Thoroughfare Plan Report. The initial scoping meeting for U-3301 was held in October 1999.

The eastern terminus of U-3301 was established at a point just west of the five-lane curb and gutter section of NC 63 that had previously been widened. Initially, the proposed western terminus of U-3301 was Whitt Road (SR 1615), which was renamed Gilbert Road between NC 63 and Turkey Creek Road. However, during the project planning and design, the western terminus was shifted east from Gilbert Road to Jones Road due to the removal of planned roundabouts at both the Gilbert Road and Jones Road intersections, as well as to facilitate improvements needed at the Leicester Elementary School entrance/Jones Road intersection.

The project has independent utility because it addresses the current and expected transportation needs and can serve its intended use without precipitating other improvements in the future. As stated in the Categorical Exclusion for this project section signed by FHWA on August 4, 2014, the U-3301 project limits are of sufficient length to consider a range of alternatives without restricting other reasonably foreseeable transportation improvements.

(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

Wetland and stream determinations within the U-3301 project study area were conducted using the field delineation methodologies 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* (U.S. Army Corps of Engineers [USACE] Peer Review Draft [June 2009], Interim Version [2010], and Version 2.0 [April 2012]). The N.C. Wetland Assessment Method (NC WAM) User Manual, Version 4.1 (October 2010) was also used to classify wetlands within the project study corridor. Stream identification and classification followed the *Identification Methods for the Origins of Intermittent and Perennial Streams* (NC Division of Water Quality [NCDWQ], Version 3.1 [February 2005], and *Methodology for Identification of Intermittent and Perennial Streams and Their Origins, Version 4.11*, [September 2010]).

The jurisdictional wetlands and streams were field verified by Ms. Lori Beckwith (USACE Regulatory Specialist) on August 22, 2014. The Preliminary Jurisdictional Determination (PJD) was dated December 5, 2014 (Action ID 2014-10633).

The project area lies within the Mountain physiographic region of North Carolina. Jurisdictional features within the project footprint are located in the French Broad River Drainage Basin (United States Geological Survey [USGS] Hydrologic Unit Code [HUC] 06010105) in Buncombe County. Jurisdictional streams that will be impacted by this project include Sluder Branch (NCDWR Classification C; NCDWR Index No. 6-84-5), Newfound Creek and one UT of Newfound Creek (NCDWR Classification C; NCDWR Index No. 6-84), Gouches Branch and one UT of Gouches Branch (NCDWR Classification C; NCDWR Index No. 6-84-4), and Dix Creek and one UT of Dix Creek (NCDWR Classification C; NCDWR Index No. 6-84-7).

There are no designated High Quality Waters (HQW), Outstanding Resource Waters (ORW), Water Supply I (WS-I), Water Supply II (WS-II), or Trout Waters (Tr) occurring within 1.0 mile of the project area. No Anadromous Fish Spawning Areas or potential habitat areas are located near or within the project study area.

Within 1.0 mile of the construction footprint no streams are listed as a 303(d) water in the 2014 Final North Carolina 303(d) List of Impaired Waters of North Carolina for turbidity or sedimentation.

IMPACTS TO WATERS OF THE UNITED STATES

Surface Waters

Total jurisdictional stream impacts for U-3301 include 4,033 linear feet of permanent stream impacts (which includes 132 linear feet of permanent bank stabilization); and 353 linear feet of temporary stream impacts. Utility relocation will not result in any temporary or permanent impacts. The jurisdictional stream impacts are summarized below in Table 1.

Table 1. Surface Water Impacts within the Upper French Broad River Basin (HUC 06010105)

Permit Site No.	Stream Name	Stream ID[1]	Intermittent /Perennial	Impact Type	Impacts (lin. Ft.)	Impacts Requiring USACE Mitigation (lin. Ft.)	USACE Mitigation Ratio	Impacts Requiring 1:1 NCDWR Mitigation (lin. Ft.)
1	Sluder Branch	Sluder Branch	Perennial	Permanent Fill	427	427	2:1	427
				Temporary Fill	45	0		0
2	Sluder Branch	Sluder Branch	Perennial	Permanent Bank Stabilization	20	0[2]		20[3]
				Temporary Fill (Bank Stabilization)	10	0		0
3	UT to Newfound Creek	SB	Perennial	Permanent Fill	364	364	2:1	364

Table 1. Surface Water Impacts within the Upper French Broad River Basin (HUC 06010105) (Continued)

Permit Site No.	Stream Name	Stream ID[1]	Intermittent /Perennial	Impact Type	Impacts (lin. Ft.)	Impacts Requiring USACE Mitigation (lin. Ft.)	USACE Mitigation Ratio	Impacts Requiring 1:1 NCDWR Mitigation (lin. Ft.)
4	UT to Newfound Creek	SB	Perennial	Permanent Fill	167	167	2:1	167
				Permanent Bank Stabilization	28	0[2]		28[3]
				Temporary Fill (Bank Stabilization)	20	0		0
5	UT to Newfound Creek	SB	Perennial	Permanent Fill	200	200	2:1	200
				Permanent Bank Stabilization	10	0[2]		10[3]
				Temporary Fill (Bank Stabilization and Fill)	20	0		0
6	UT to Newfound Creek	SB	Perennial	Permanent Fill	372	372	2:1	372
				Temporary Fill	14	0		0
7	UT to Newfound Creek	SB	Perennial	Permanent Fill	84	84	2:1	84[3]
				Permanent Bank Stabilization	44	0[2]		44[3]
				Temporary Fill (Bank Stabilization)	3	0		0
7A	UT to Newfound Creek	SB	Perennial	Permanent Fill	313	313	2:1	313
				Permanent Bank Stabilization	20	0[2]		20[3]
				Temporary Fill (Bank Stabilization)	20	0		0
8	Newfound Creek	Newfound Creek	Perennial	Permanent Bank Stabilization	10	0[2]		0[3]
				Temporary Fill (Bank Stabilization)	10	0		0
9	Gouches Branch	SD	Perennial	Permanent Fill	396	396	2:1	396
				Temporary Fill	24	0		0

Table 1. Surface Water Impacts within the Upper French Broad River Basin (HUC 06010105) (Continued)

Permit Site No.	Stream Name	Stream ID[1]	Intermittent /Perennial	Impact Type	Impacts (lin. Ft.)	Impacts Requiring USACE Mitigation (lin. Ft.)	USACE Mitigation Ratio	Impacts Requiring 1:1 NCDWR Mitigation (lin. Ft.)
10	Gouches Branch	SD	Perennial	Permanent Fill	46	46	2:1	46[3]
				Temporary Fill	9	0		0
11	UT to Gouches Branch	SE	Perennial	Permanent Fill	663	663	2:1	663
13	Dix Creek	Dix Creek	Perennial	Permanent Fill	247	247	2:1	247
				Temporary Fill	158	0		0
13A	UT to Dix Creek	SG	Intermittent	Permanent Fill	115	115	1:1	115[3]
14	UT to Dix Creek	SG	Perennial	Permanent Fill	507	507	1:1	507
			Perennial	Temporary Fill	20	0		0
Temporary Fill Impacts					353	0		0
Permanent Fill Impacts					3,901	3,901[4]		3,901
Permanent Bank Stabilization Impacts					132	0[2]		132
TOTAL TEMPORARY IMPACTS					353	0		0
TOTAL PERMANENT IMPACTS					4,033	3,901[4]		4,033

[1]Stream IDs are from the CE document approved August 04, 2014.
[2]Per USACE, bank stabilization impacts do not require compensatory mitigation as the impacts do not require fill in the stream bed and therefore, under Section 404 of the Clean Water Act, does not constitute Loss of Waters of the U.S.
[3]Per NCDWR, bank stabilization impacts will require compensatory mitigation when total permanent stream impacts equal or exceed 150 linear feet per feature.
[4] See Table 4 for Mitigation breakdown.

Site 1 - Sluder Branch

The existing structure under Jones Road consists of two 73' x 55'' CMP's and will be replaced by two 7' x 6' RCBC's 90 feet in length. The existing structure under NC 63 consists of two 6' x 6' RCBC'S at 90 feet in length. Both structures convey Sluder Branch. At NC 63 the proposed structure includes two 90' (7' x 6') RCBC with sills at the outlet location and will be extended 40 feet. At the inlet the 6' x 6' RCBC culvert will be extended by 30 feet. A channel change is proposed at the outlet extension. Impacts proposed for the above improvements total 427 linear feet of permanent stream fill.

Site 2 - Sluder Branch

Class I riprap bank stabilization will placed at the toe of the proposed base ditch that ties into Sluder Branch. As a result, 20 linear feet of permanent bank stabilization will be incurred.

Site 3 - UT to Newfound Creek

At this location, an existing 18" CMP which conveys stormwater from Old Newfoundland Road will be removed and replaced with a 30" RCP III including a lateral base ditch which will tie into a 36" RCP III. No permanent impacts will occur as a result of the conveyance replacement but roadway embankment fill is proposed to permanently impact 364 linear feet of stream and 0.06 acres of wetlands.

Site 4 - UT to Newfound Creek

On the south side of NC 63 at Alexander Road an existing 36" CMP system will be removed and replaced by a 48" RCP III, which includes an unpiped section of UT to Newfound Creek. This section will be turned into the 48" RCP III and will tie into a 54" RCP IV. Permanent bank stabilization of 28 linear feet will occur as a result of the new piping. In addition, 167 linear feet of permanent stream impact is proposed for the roadway embankment.

Site 5 - UT to Newfound Creek

Roadway embankment fill and a channel change are proposed to permanently impact 200 linear feet of stream. A system of roadway drainage conveyances are proposed at this location. Permanent bank stabilization impacts of 10 linear feet are also proposed at this location.

Site 6 - UT to Newfound Creek

Roadway embankment fill and a channel change are proposed to permanently impact 372 linear feet of stream.

Site 7 - UT to Newfound Creek

The existing dual, 54" CMP's beneath Hampton Road will be replaced with and bore and jacked 72" RCP. The existing 7' x 6' RCBC that conveys UT to Newfound Creek under NC 63 will be extended at the inlet by 8 feet and outlet by 76 feet resulting in permanent stream fill impact of 84 linear feet. A rock cross vane will be installed just outside the outlet. Bank stabilization which will permanently impact 44 linear feet of stream is proposed at this location.

Site 7A - UT to Newfound Creek

Roadway embankment fill, channel change and a culvert extension are proposed to permanently impact 313 linear feet of stream. Class I riprap bank stabilization impacts of 20 linear feet are proposed at the outlet end of the single proposed 81" x 59" Corrugated Metal Pipe Arch (CMPA) beyond the 270 linear feet of proposed channel change.

Site 8 – Newfound Creek

Existing structure includes three 37’ 6” RC deck girders with end bents and RC caps and timber piles and interior bents with RC piles and beams. A dual (100’x 54”) pre-stressed girder with 4’ caps is proposed. Proposed impacts at this location include 10 linear feet of bank stabilization to Newfound Creek due to Class I riprap bank protection on the upstream side of the bridge.

Site 9 - Gouches Branch

The existing structure, two 8’ x 9’ barrels 80 feet in length will be extended with two 9’x 9’ RCBC barrels and one 66” RCP III at 150 feet in total length. Proposed impacts at this location include 193 linear feet of permanent stream impact due to the RCBC placement and 203 linear feet of permanent stream impact for the roadway embankment fill.

Site 10 – UT Gouches Branch

At this location a single 60” RCP conveys UT to Gouches Branch under SR 1377. At the outlet end a riprap energy dissipater will be installed. Permanent stream impacts total 46 linear feet at this location.

Site 11 – UT Gouches Branch

An existing 60” CMP is located east of Gouches Branch Road as well as a 54” CMP which conveys flow from south to north under NC 63 from UT to Gouches Branch. The existing 60” and 54” CMPs will be replaced with the same size RCP. The existing channel of UT Gouches Branch will be moved to accommodate the roadway embankment. The channel change will incur 663 linear feet of permanent stream impacts.

Site 12 - Gouches Branch

Wetland fill (0.001 acres) for Class I riprap dissipater necessary for 30” CSP roadway drainage structure.

Site 13 - Dix Creek

An existing triple barrel 7’ x 8’ RCBC currently conveys Dix Creek and is proposed to be replaced with a double barrel 11’ x 9’ RCBC. Roadway embankment impacts are proposed at this location. Permanent stream impacts due to the culvert extension include 247 linear feet of permanent stream impact. Temporary stream relocation during construction phasing will incur 158 linear feet of temporary stream impact.

Site 13A - Dix Creek

Roadway embankment will permanently impact of 115 linear feet of stream and <0.01 acre of wetland at this location.

Sites 14 - UT Dix Creek

Roadway embankment will permanently impact 0.10 acres of pond and 507 linear feet of stream on the north side of NC 63 east of Hensley Drive.

Wetlands

There will be a total of 0.07 acres of permanent wetland impacts associated with this project due to fill. There will be no impacts to wetlands resulting from utilities nor hand clearing impacts associated with this project. These impacts are summarized in Table 2.

Table 2. Wetland Impacts within the Upper French Broad River Basin (HUC 06010105)

Permit Site No.	Wetland ID[1]	Wetland Type	Impact Type	Permanent Impacts (ac.)	Impacts Requiring USACE Mitigation (ac.)[2]
3	WA	Riparian	Fill	0.05	0.05
	WB	Riparian	Fill	0.01	0.01
12	WC	Riparian	Fill	<0.01	<0.01
13A	WD	Riparian	Fill	<0.01	<0.01
TOTAL IMPACTS				**0.07[3]**	**0.07[3]**

[1]Wetland IDs are from the CE document approved August 4, 2014.
[2]Mitigation ratio for all applicable wetland sites is 2:1.
[3]Rounded total is based on the sum of the actual impacts.

Ponds

There will be a total of 0.10 acres of open water (pond) impacts associated with this project at Permit Site 14 due to fill. This pond corresponds to Site P1 and is identified in the PJD as a jurisdictional cattle pond due to its direct connection with UT to Dix Creek (Feature SG).

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 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:

- NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters will be enforced;
- NCDOT's BMPs for Construction and Maintenance Activities will be utilized;
- NCDOT will implement installation and maintenance of high quality erosion and sediment control measures;
- Rip rap pads at drainage system outlets will dissipate flow and reduce velocities and erosive potential;
- Unstable eroded stream banks will be stabilized with rip rap armoring;
- Low flow conditions at culverts have been accommodated with the appropriate sizing, grade controls, burial, sills and baffles;
- Where possible, streams were daylighted where existing pipe / culvert configuration existed. See Table 3 below for stream length quantities that would be replaced by pipe / culverts compared to ones replaced by open channel, and,
- Existing drainage patterns have been maintained to the maximum extent practicable.

In addition to the above practices, specific measures have been utilized to maintain water quality:

- Throughout the curb & gutter section there is a 9.5' wide grassed berm behind the curb (13.5' wide at guardrail locations) which provides water quality treatment and velocity reduction to offsite runoff draining towards the roadway;
- In some locations a grass lined ditch has been located behind the berm to intercept offsite runoff and keep it separate from the roadway runoff;
- Fill slopes have been flattened (< 2:1) where possible reducing runoff velocity and minimizing the potential for slope erosion;
- From Sta. 62+50 to Sta. 68+00 -L- Rt. compound fill slopes (4:1 for clear recovery width and then 2:1) will minimize the impacts to jurisdictional stream SB, while avoiding 240 linear feet of stream impacts;
- The wooded riparian buffer that is adjacent to stream SB will also be saved, and,
- The 4-lane divided section includes approximately 2,930 linear feet of vegetated roadside ditches that will convey pavement runoff and provide storm water treatment.

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Table 3. Stream Lengths Replaced by Open Channel Versus Closed Conveyance

Permit Site No.	Station	Structure Size / Type	Stream Impact (ft)	Open Channel (ft)
1	25+00 -L- RT	2 - 2 @ 7'x6' RCBC 2 - 2 @ 6' X 6' RCBC	91	41
1	26+00 to 29+00 -L- LT	2 - 2 @ 6'x6' RCBC & 95x67 CMPA	336	292
5	70+75 to 73+00 -L- RT	Roadway Embankment	200	87
6	78+50 to 80+65 -L- RT	Roadway Embankment	364	224
6[1]	82+00 to 83+00 -L- LT	Roadway Embankment	8	97
7[2]	88+25 to 89+10 -L- RT	7'x6' RCBC	84	23
7A	90+65 to 93+50 -L- RT	Roadway Embankment	313	280
9[3]	133+54 -L-	2 @ 9'x9' RCBC w/66" RCP	193	50
9	134+50 to 136+45 -L- RT	Roadway Embankment	203	165
11[4]	147+50 to 152+15 -L- LT	Roadway Embankment	663	459
13A[5]	223+00 to 224+50 -L- LT	Roadway Embankment	115	115[7]
14[6]	226+00 to 231+70 -L- LT	Roadway Embankment	507	507[7]
Totals			**3,077**	**2,340**[8]

NOTES:
[1]Replaced 27' 54" CMP with open channel; Added 70' lateral open channel which is included in total.
[2] Replaced existing outlet end of 54" CMP with 7' of open channel with riprap base; Replaced 16' 48" CMP at driveway (Sheet 22 of 48) with open channel; Site on two separate Plan Sheets.
[3]Outlet section only included as open channel (Inlet excluded).
[4]Channel 230' with rip-rapped base which is included in total.
[5]Channel with rip-rapped base.
[6]Site on two separate Plan Sheets.
[7]The listed open channel length is limited to the length of corresponding stream channel impact (total open channel lengths are 140 feet and 587 feet for Site 13A and Site 14, respectively).
[8]Total amount of impacted stream channel relocated to open channel.

Stormwater Management Plan

- Two (2) vegetated swales will be constructed at the following locations: 109+00 Rt. to 111+50 Rt. and 112+75 Rt. to 115+00 Rt. The function of these swales is to reduce water velocity, promote infiltration and provide treatment for discharge before runoff enters streams;
- One (1) riprap energy dissipater basin will be constructed at the following location: Sta. 10+83 -Y12- Lt. The function of the riprap dissipater is to stabilize the stream outlets;
- One (1) pre-formed scour hole (PSH) will be constructed along the project at the Sta. 190+41 -L- Rt. pipe outlet and will function as a stormwater energy dissipater.

The CE document estimated a total of 7,000 linear feet of stream and 0.07 acre of wetlands in the study area. For Concurrence Point 4B, the permanent stream impacts were calculated to be 3,761 linear feet including bank stabilization. After final design, permanent stream impacts increased by 272 linear feet to 4,033 linear feet, including bank stabilization. The increase in permanent stream impact is due in part to an increase in roadway embankment impacts at Sites 6 and 7. Temporary stream impacts have been reduced by 541 linear feet, from 894 (4B Meeting) to 353 (final design). Overall wetland impacts have remained consistent from the CE, through 4B and to final design of 0.07 acre.

Compensatory Mitigation

Compensatory requirements for U-3301 are summarized below in Table 4. This project will permanently impact 4,033 linear feet of cool water streams. Of the 4,033 linear feet, 132 linear feet are associated with stream bank stabilization that does not require mitigation by the USACE. This results in 3,901 linear feet of permanent stream impacts requiring USACE mitigation. Of the 3,901 linear feet of permanent impact requiring mitigation, 3,279 linear feet requires mitigation at a 2:1 ratio, while the 622 linear feet of permanent impact to Stream SG (Sites 13A and 14) requires mitigation at a 1:1 ratio for the USACE. Impact numbers are changed in revised permit drawings from those presented in the 4B meeting.

As the total USACE mitigation requirement exceeds the total NCDWR requirement (Table 4), NCDOT has requested that NCDMS provide compensatory mitigation for 3,901 linear feet of stream impact (3,279 linear feet at a 2:1 ratio and 622 linear feet at a 1:1 ratio). NCDMS will also provide mitigation for 0.07 acre (2:1 ratio) of permanent riparian, non-isolated wetland impacts resulting from roadway fill and excavation.

Table 4. U-3301 Compensatory Mitigation Summary

	USACE Stream Impacts in Length (LF)	**Riparian Wetland Impacts (ac.)**
Impacts Requiring Mitigation	**3,901**	**0.07**
Required NCDMS Mitigation	**3,279 @ 2:1**	**2:1**
	622@ 1:1	
Total NCDMS Mitigation Required	**7,180**	**0.14**

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered (E) or Threatened (T) are afforded protection under provisions of Section 7 and Section 9 of the Endangered Species Act (ESA) of 1973, as amended. As of July 24, 2015, the U.S. Fish and Wildlife Service (USFWS) lists eleven (11) species as threatened and / or endangered, of which one (1) species is listed as threatened by similarity of appearance in Buncombe County, NC.

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Table 5. U-3301 Federally Protected Species for Buncombe County, NC

Scientific name	Common Name	Federal Status[1]	Habitat Present	Biological Conclusion
Alasmidonta raveneliana	Appalachian elktoe	E	No	No Effect
Glyptemys muhlenbergii	Bog turtle	T (S/A) [2]	No	Not Required
Glaucomys sabrinus coloratus	Carolina northern flying squirrel	E	No	No Effect
Myotis grisescens	Gray bat	E	No	No Effect
Myotis septentrionalis	Northern long-eared bat	T	Yes	MANLTAA[3]
Gymnoderma lineare	Rock gnome lichen	E	No	No Effect
Erimonax monachus	Spotfin chub (=turquoise shiner)	T	No	No Effect
Geum radiatum	Spreading avens	E	No	No Effect
Microhexura montivaga	Spruce-fir moss spider	E	No	No Effect
Epioblasma florentina walkeri (=E. walkeri)	Tan riffleshell	E	No	No Effect
Spiraea virginiana	Virginia spiraea	T	Yes[4]	No Effect

[1] E- Endangered - "taxon in danger of extinction throughout all or a significant portion of its range," T- Threatened - "taxon likely to become endangered within the foreseeable future throughout all or a significant portion of its range."
[2] T(S/A) - Threatened due to similarity of appearance.
[3] MANLTAA – May Affect, Not Likely To Adversely Affect.
[4] Habitat information taken from approved May 2014 CE (surveys last conducted on June 4, 2016).

A biological conclusion of "no effect' was rendered for all of the above listed species with the exception of the Northern Long Eared Bat (NLEB) (*Myotis septentrionalis*). Documentation to address the Northern long-eared bat (NLEB) was submitted to the USFWS on February 26, 2016. According to the North Carolina Natural Heritage Program (NHP) Biotics Database, most recently updated October 2015, the nearest NLEB hibernacula record is 22 miles away and no known NLEB roost trees occur within ¼ mile of the project. NCDOT has determined that the proposed action does not require separate consultation on the grounds that the proposed action is consistent with the final Section 4(d) rule, codified at 50 C.F.R. § 17.40(o) and effective February 16, 2016. Section 7 responsibilities are therefore considered fulfilled.

CULTURAL RESOURCES

In order to comply with Section 106 of the National Historic Preservation Act (1966, as amended), FHWA and NCDOT must evaluate the project's impact upon any extant architectural and archaeological resources, and determine if additional measures will be necessary to mitigate any adverse effects of the project upon any significant properties and sites.

In 2000, NCDOT investigated historic architectural resources in the U-3301 project area and established the Leicester Historic District and the Harold Clark House as properties eligible for listing in the National Register of Historic Places (NR). All three design alternatives developed for the project by 2002 imposed an adverse effect on both resources, but further design refinements in 2004 placed the Harold Clark House outside the Area of Potential Effects (APE) thereby eliminating it from concern. Re-evaluation of the project area in 2006 in response to additional design changes concluded that the Leicester Historic District no longer meets the criteria for NR eligibility due to significant loss of historical integrity. Two properties, the Dr. C.K. Hughes House and the Frisbee Store located within the former district, are individually NR-

eligible. In 2007 NCDOT, the North Carolina State Historic Preservation Office (HPO), and the Federal Highway Administration (FHWA) agreed that the U-3301 project will not adversely affect the two individual resources; FHWA determined that 4(f) "de minimis" also applies (see attached concurrence form). The "no adverse effect" finding for the Dr. C.K. Hughes House is contingent upon the development and execution of a landscape plan for replacement of trees along the right-of-way. Design changes in 2009 did not alter the validity of the effects findings, and the 2014 Categorical Exclusion documents the need for the Dr. C.K. Hughes House landscape plan. At the time of this application NCDOT Roadside Environmental is in process of creating the plan in consultation with NCDOT Historic Architecture, and HPO. The property owner and NCDOT are responsible for its implementation on site. Attempts to contact the property owners to review the plan have been unsuccessful. The plan will be submitted upon completion.

An archaeological survey was performed for the original widening alternative in 2001. That survey relocated or identified three archaeological sites within the proposed Area of Potential Effects (APE) for the alternative. All three of these sites were recommended as not eligible for listing in the National Register of Historic Places, and no further archaeological work was recommended for this original alternative. No further archaeological investigations are recommended for the original 2001 widening alternative.

Currently, two additional alternatives have been proposed for the project – a Northern Avoidance Alternative and a Southern Avoidance Alternative. A review of the archaeological site files at the Office of State Archaeology in Raleigh on February 7, 2006 found that three archaeological sites were within or adjacent to the proposed Northern Avoidance Alternative. All three of these sites remain unassessed for their NRHP eligibility. No recorded archaeological sites were found in the vicinity of the Southern Avoidance Alternative. Should either Avoidance Alternative be selected, NCDOT will consult with the HPO and complete an intensive survey and site evaluation of the Avoidance Alternative. Should NRHP sites be identified within the APE, then further consultation with the HPO regarding effects will be required.

Table 6. Archeological Sites Located within Northern and Southern Avoidance

Archaeological Site	Northern Avoidance Alternative	Southern Avoidance Alternative	NRHP Eligibility
31BN338	Adjacent	Outside	Unassessed
31BN455	Inside	Outside	Unassessed
31BN456	Adjacent	Outside	Unassessed

FEMA COMPLIANCE

Two streams within the project limits require FEMA coordination. These include Gouches Branch and Newfound Creek. As of February 4, 2016, both have received FEMA approval for the proposed work.

INDIRECT CUMULATIVE IMPACT ANALYSIS

STIP Project U-3301 is the proposed existing location widening of NC 63 from Jones Road (SR1380) to just south of Newfound Road (SR 1004), a distance of approximately 4.3 miles. The planned cross section will transition from a three-lane undivided facility to a four-lane median divided facility.

In terms of demographics, according to the North Carolina Department of Commerce-Labor and Analysis Division, the Mountain Area Workforce Development Board (Buncombe, Henderson, Madison and Transylvania counties), is projected to experience a 1.6% annualized employment growth rate between 2010 and 2020. In addition, according to the North Carolina Office of State Budget and Management, Buncombe County's population is projected to be 269,687 in July 2020 and 300,372 in July of 2030, which represents an annualized growth rate of 1.08% over that time period. The employment projection represents a 'medium' level of job growth (between 1-2%), which coupled with the 'medium' level of projected population growth, albeit on the low end of the range, demonstrates that there is projected growth in the county.

An examination of the Proposed Land Use Map within the *Buncombe County Land Use Plan* (2013) shows that the land adjacent to the project corridor is slated for low-density residential with a mixed-use node located in the established commercial 'center' of Leicester in the vicinity of Alexander Road (SR 1620). Parcels in the project area are zoned as 'Open Use' which is the least restrictive Buncombe County zoning classification. Furthermore, the plan contains additional maps that show pockets of privately-owned available land adjacent to the project corridor and that there has been recent scattered low-density residential development and very limited commercial development in the vicinity of the project corridor. Although some residential development will continue in the project area, the amount and density will be limited by the lack of water and sewer service, some topographical constraints, such as steep slopes and some flood hazard areas, and the presence of conservation properties and Voluntary Agricultural Districts (VAD). While properties enrolled as VAD's aren't afforded any special protections, it does demonstrate a commitment by the landowner/farmer to keep the land in agricultural use. Any development will be consistent with adopted plans and ordinances.

Development regulations are in place to mitigate any potential effects of development which include: the Steep Slope/High Elevation Overlay District and the Protected Ridge Overlay District within the Buncombe County Zoning Ordinance and the Buncombe County Stormwater Management Ordinance which specifies that post-development peak rate runoff for a 24-hour storm event shall not exceed the pre-development rate. This ordinance also includes a requirement that all built-upon area shall have a minimum of 30 feet of setback from all perennial and intermittent streams. The project area is also located in a Phase II MSI (Municipal Sphere of Influence) area which specifies that the county adhere to the National Pollution Discharge Elimination System (NPDES) Phase II stormwater rules for development. Lastly, the Buncombe County Land Development and Subdivision Ordinance is in place to "establish procedures and standards for the subdivision of land within the jurisdiction of the County to provide for orderly growth in a manner and under conditions that facilitate the adequate provision of [services to ensure] public health, safety and the general welfare."

Based upon examination of the proposed scope, an existing location widening, this project will not notably alter travel patterns, increase exposure of adjacent parcels or create new transportation or land use nodes. Furthermore, changes in traffic capacity, travel time and access to adjacent parcels do not meet or exceed minimum thresholds required in order to be considered Transportation Impact Causing Activities. Due to its minimal impact causing activities and other constraints, namely the lack of water and sewer service, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect and cumulative effects study is not necessary.

Direct natural environmental impacts by NCDOT projects will be addressed by programmatic agreements with resource agencies, and will be further evaluated by the NCDOT Natural Environment Unit during project permitting. Natural environmental impacts that may result from

any induced development may be avoided or minimized through the implementation of local, state and federal regulations. Because few indirect impacts are anticipated, the cumulative effect of this project when considered in the context of other past present and future actions, and the resulting impact on the notable human and natural features, should be minimal. Therefore, potential indirect and cumulative effects to downstream water quality should be minimal.

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) or North Carolina Natural and Scenic Rivers.

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 Project U-3301.

We are also hereby requesting a Section 401 Water Quality Certification from the NCDWR. In compliance with Section 143-215.3D(e) of the NCAC, we will provide $570.00 to act as payment for processing the Section 401 permit.

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*. Thank you for your time and assistance with this project. Please contact William Barrett either at wabarrett@ncdot.gov or at (919) 707-6103 if you have any questions or need additional information.

Sincerely,

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 - Middle - Last -	First - Middle - Last -
Company - North Carolina Department of Transportation - PDEA	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address- 1548 Mail Service Center	Address-
City - Raleigh State - NC Zip - 27699 Country - USA	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business 919-707-6100 c. Fax 919-212-5785	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

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

_____ _____
SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
U-3301

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
See Resource Status section in attached cover letter.	Address
15. LOCATION OF PROJECT Latitude: °N 35.6207 Longitude: °W 82.6540	City - State- Zip-

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

17. DIRECTIONS TO THE SITE

Please see attached vicinity map and cover letter.

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

The U-3301 project involves widening of NC 63 (Leicester Highway) from SR 1615 (Gilbert Road) to SR 1004 (Newfound Road). The roadway will exist as a three-lane undivided facility from SR 1380 (Jones Road) to just east of Gray Fox Drive, then will transition to a four-lane divided facility with a 23-foot median that runs to Newfound Road. Within the project area, NC 63 will be a three-lane facility which transitions to a four-lane median divided facility, and will have partial control of access.

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

The primary purposes of improving NC 63 are to increase the traffic carrying capacity and improve safety along the subject section of NC 63. The proposed improvements to the subject section of NC 63 are needed to improve travel between Asheville and Leicester, as well as to decrease the crash potential along NC 63. As per the CE document the project area was projected to exceed capacity in the design year (2014).

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

20. Reason(s) for Discharge

Proposed impacts are required as a result of widening the highway and its shoulders and lengthening/replacing existing hydraulic structures within the project corridor.

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

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

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

Acres See attached cover letter

or

Linear Feet See attached cover letter

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

See attached cover letter

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

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

a. Address- see attached Property Owners Table

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.

SIGNATURE OF APPLICANT — DATE: 4/12/2016

SIGNATURE OF AGENT — DATE

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

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

Environmental Quality

PAT MCCRORY
Governor

DONALD R. VAN DER VAART
Secretary

March 18, 2016

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

Dear Mr. Hancock:

Subject: Mitigation Acceptance Letter:

U-3301, NC 63 (Leicester Highway) Improvements from SR 1615 (Gilbert Road) to West of SR 1004 (Newfound Road) Northwest of Asheville, Buncombe 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 March 9, 2016, the impacts are located in CU 06010105 of the French Broad River basin in the Southern Mountains (SM) Eco-Region, and are as follows:

French Broad 06010105 SM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	3,901.0	0	0.07	0	0	0	0

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

This mitigation acceptance letter replaces the mitigation acceptance letter issued on October 27, 2015 and January 4, 2016. DMS commits to implementing sufficient compensatory stream and riparian wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from 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: Ms. Lori Beckwith, USACE – Asheville Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: U-3301 Revised 2

Federal Aid # WTP-63(1) *TIP #* **U-3301** *County*: **Buncombe**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Widen NC Highway 63, (Leicester Highway)

On September 18, 2007, representatives of the

☒ North Carolina Department of Transportation (NCDOT)
☒ Federal Highway Administration (FHWA)
☒ North Carolina State Historic Preservation Office (SHPO)

reviewed the subject project and agreed

☐ there are no effects on the National Register-listed property/properties located within the project's area of potential effect and listed on the reverse.

☐ there are no effects on the National Register-eligible property/properties located within the project's area of potential effect and listed on the reverse.

☐ there is an effect on the National Register-listed property/properties located within the project's area of potential effect. The property/properties and the effect(s) are listed on the reverse.

☒ there is an effect on the National Register-eligible property/properties located within the project's area of potential effect. The property/properties and effect(s) are listed on the reverse.

Signed:

Sarah Woodard David — Sept, 18, 2007
Representative, NCDOT — Date

9.18.07
FHWA, for the Division Administrator, or other Federal Agency — Date

Representative, SHPO — Date

9.18.07
State Historic Preservation Officer — Date

FHWA intends to make a "de minimis" finding on these two Section 4(f) resources based on SHPO's concurrence on "no adverse effect" determinations.

Federal Aid # WTP-63(1) *TIP #* **U-3301** *County*: **Buncombe**

Properties within the area of potential effect for which there is no effect. Indicate if property is National Register-listed (NR) or determined eligible (DE).

Properties within the area of potential effect for which there is an effect. Indicate property status (NR or DE) and describe the effect.

Frisbee Store (DE): no adverse effect

Dr. Hughes (DE): no ~~de~~ adverse effect

Reason(s) why the effect is not adverse (if applicable).

Frisbee Store:
effect is not adverse because no new right of way will be acquired and road will move away from the property; owner will have access through curb cut.

Dr. Hughs House: ~~e~~effect is not adverse because SHPO & property owners will review a landscape plan to replace trees along right-of-way; NCDOT will implement the landscape plan;

Initialed: NCDOT SWD FHWA RHH SHPO _____

Archaeological Language and Commitments for
Environmental Document of

Improvements to NC 63
Additional Alternatives
TIP U-3301
Buncombe County, North Carolina

ARCHAEOLOGICAL RESOURCES

In order to comply with Section 106 of the National Historic Preservation Act (1966, as amended), FHWA and NCDOT must evaluate the project's impact upon any extant archaeological resources, and determine if additional measures will be necessary to mitigate any adverse effects of the project upon any significant archaeological sites.

An archaeological survey was performed for the original widening alternative in 2001. That survey relocated or identified three archaeological sites within the proposed Area of Potential Effects (APE) for the alternative. All three of these sites were recommended as not eligible for listing in the National Register of Historic Places, and no further archaeological work was recommended for this original alternative. No further archaeological investigations are recommended for the original 2001 widening alternative.

Currently, two additional alternatives have been proposed for the project – a Northern Avoidance Alternative and a Southern Avoidance Alternative. A review of the archaeological site files at the Office of State Archaeology in Raleigh on February 7, 2006 found that three archaeological sites were within or adjacent to the proposed Northern Avoidance Alternative. All three of these sites remain unassessed for their NRHP eligibility. No recorded archaeological sites were found in the vicinity of the Southern Avoidance Alternative. Should either Avoidance Alternative be selected, NCDOT will consult with the HPO and complete an intensive survey and site evaluation of the Avoidance Alternative. Should NRHP sites be identified within the APE, then further consultation with the HPO regarding effects will be required.

Archaeological Site	Northern Avoidance Alternative	Southern Avoidance Alternative	NRHP Eligibility
31BN338	Adjacent	Outside	Unassessed
31BN455	Inside	Outside	Unassessed
31BN456	Adjacent	Outside	Unassessed

Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

November 6, 2015

Mr. William Barrett
Environmental Specialist
Project Development Environmental Analysis-NES
1020 Birch Ridge Drive
Raleigh, NC 27610

Dear Mr. Barrett,

Please see below the ICE language for use in the STIP U-3301 permit application. If you, or the design-build team, have any questions don't hesitate to contact me.

STIP Project U-3301 is the proposed existing location widening of NC 63 from Jones Road (SR 1380) to just south of Newfound Road (SR 1004), a distance of approximately 4.3 miles. The planned cross section will transition from a three-lane undivided facility to a four-lane median divided facility.

In terms of demographics, according to the North Carolina Department of Commerce-Labor and Analysis Division, the Mountain Area Workforce Development Board (Buncombe, Henderson, Madison and Transylvania counties), is projected to experience a 1.6% annualized employment growth rate between 2010 and 2020. In addition, according to the North Carolina Office of State Budget and Management, Buncombe County's population is projected to be 269,687 in July 2020 and 300,372 in July of 2030, which represents an annualized growth rate of 1.08% over that time period. The employment projection represents a 'medium' level of job growth (between 1-2%), which coupled with the 'medium' level of projected population growth, albeit on the low end of the range, demonstrates that there is projected growth in the county.

An examination of the Proposed Land Use Map within the *Buncombe County Land Use Plan* (2013) shows that the land adjacent to the project corridor is slated for low-density residential with a mixed-use node located in the established commercial 'center' of Leicester in the vicinity of Alexander Road (SR 1620). Parcels in the project area are zoned as 'Open Use' which is the least restrictive Buncombe County zoning classification. Furthermore, the plan contains additional maps that show pockets of privately-owned available land adjacent to the project corridor and that there has been recent scattered low-density residential development and very limited commercial development in the vicinity of the project corridor. Although some residential development will continue in the project area, the amount and density will be limited by the lack of water and sewer service, some topographical constraints, such as steep slopes and some flood hazard areas, and the presence of conservation properties and Voluntary Agricultural Districts (VAD). While properties enrolled as VAD's aren't afforded any special protections, it does demonstrate a commitment by the landowner/farmer to keep the land in agricultural use. Any development will be consistent with adopted plans and ordinances.

Development regulations are in place to mitigate any potential effects of development which include: the Steep Slope/High Elevation Overlay District and the Protected Ridge Overlay District within the

Transportation

PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

Buncombe County Zoning Ordinance and the *Buncombe County Stormwater Management Ordinance* which specifies that post-development peak rate runoff for a 24-hour storm event shall not exceed the pre-development rate. This ordinance also includes a requirement that all built-upon area shall have a minimum of 30 feet of setback from all perennial and intermittent streams. The project area is also located in a Phase II MSI (Municipal Sphere of Influence) area which specifies that the county adhere to the National Pollution Discharge Elimination System (NPDES) Phase II stormwater rules for development. Lastly, the *Buncombe County Land Development and Subdivision Ordinance* is in place to "establish procedures and standards for the subdivision of land within the jurisdiction of the County to provide for orderly growth in a manner and under conditions that facilitate the adequate provision of [services to ensure] public health, safety and the general welfare."

Based upon examination of the proposed scope, an existing location widening, this project will not notably alter travel patterns, increase exposure of adjacent parcels or create new transportation or land use nodes. Furthermore, changes in traffic capacity, travel time and access to adjacent parcels do not meet or exceed minimum thresholds required in order to be considered Transportation Impact Causing Activities. Due to its minimal impact causing activities and other constraints, namely the lack of water and sewer service, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect and cumulative effects study is not necessary.

Direct natural environmental impacts by NCDOT projects will be addressed by programmatic agreements with resource agencies, and will be further evaluated by the NCDOT Natural Environment Unit during project permitting. Natural environmental impacts that may result from any induced development may be avoided or minimized through the implementation of local, state and federal regulations. Because few indirect impacts are anticipated, the cumulative effect of this project when considered in the context of other past present and future actions, and the resulting impact on the notable human and natural features, should be minimal. Therefore, potential indirect and cumulative effects to downstream water quality should be minimal.

Sincerely,

Tristram Ford
Community Planner III

Minutes of the
Interagency Hydraulic Design Review Meeting
July 22, 2015

U-3301
State Project 34909.1.1
NC 63 (Leicester Hwy) from SR 1615 (Gilbert Rd.) to SR-1004 (Newfound Rd.)
Northwest of Asheville

Attendees (present):
Lori Beckwith (USACE)
Cynthia Van Der Wiele (USEPA)
Marella Buncick (USFWS)
Marla Chambers (NCWRC)
Carla Dagnino (NCDOT NES)
Bill Barrett (NCDOT NES)
Chris Manley (NCDOT NES)
Stephen Morgan, PE (NCDOT Hydraulics Unit)
Ray Lovinggood, PE (NCDOT Hydraulics Unit)
Malcom Watson, PE (NCDOT Design Build Unit)
Greg Brew (NCDOT Roadway)
Mark Staley (NCDOT REU)
Donna Jackson (NCDOT Utilities)
Tim Goodson (Tennoca)
Kevin Burns (R.C. Burns & Sons)
Reece Schuler, PE (Vaughn & Melton, Inc.)
John Lansford, PE (Vaughn & Melton, Inc.)
Max Price, PE (Wetherill Engineering, Inc.)
James Davis, PE (Wetherill Engineering, Inc.)
Dustin Creech, PE (Wetherill Engineering, Inc.)
Sean Clark (SEPI Engineering)
Phil Beach (SEPI Engineering)

Attendees (present via telephone):
Kevin Barnett (DWR)
Ricky Tipton (NCDOT Division 13)

An interagency preliminary hydraulic drainage design meeting for U-3301 was held on Wednesday, July 22, 2015 in the NCDOT Structure Design Conference Room at the Century Center starting at 10:45 A.M.

Project Overview

Stephen Morgan (NDOT) opened the meeting, followed by introductions. The meeting was then conducted by the hydraulic consultant team lead, Max Price (WEI). Max distributed copies of a summary table that shows preliminary estimates of impacts to streams and wetlands along the project corridor. Another table was also distributed that compared the preliminary impacts to the

estimated impacts shown in the August 2014 Categorical Exclusion. Both tables are included as attachments to these minutes. No significant changes to the permanent impacts shown on the summary table are anticipated. Also, the temporary impacts may be slightly overestimated in a couple of locations and can be reduced. An additional column has been added to the summary table that shows the amount of stream that will be replaced by open channel instead of pipe.

Max then proceeded to go through the project plans sheet by sheet discussing both the hydraulic design features and related impacts.

Plansheet 4

Beginning on this plan sheet NC 63 (-L- alignment) will be resurfaced and that no impacts to jurisdictional features will occur.

Plansheet 5

The jurisdictional stream, Sluder Branch which is currently conveyed under -Y1- with dual 103x71 Corrugated Metal Pipe Arches (CMPAs) is to be conveyed by a proposed double barrel 8x6 Reinforced Concrete Box Culvert (RCBC). A combination of sills and culvert burial will be used to maintain low flow in one barrel and promote natural stream bed deposition in the culvert. An L-shaped headwall will be utilized at the inlet of the proposed –Y1- RCBC.

Sluder Branch then flows into an existing double barrel 6x6 RCBC beneath NC 63. The existing double barrel culvert will be extended upstream and downstream. The left barrel will have 1 Ft. tall sills while the right barrel will be extended on the same grade and will not be buried (which emulates existing conditions).

The difference between stream lengths shown in the CE document and the current design were discussed. It appears the discrepancy has to do with the initial measurement for the document. NCDOT noted that the project is still within the same corridor shown in the planning documents and basically follows the same design as the preliminary design shown. USACOE stated the differences were not unusual or excessive. NCDOT stated the differences will be noted in the permit application.

The difference in impacts on the comparison table appeared to be impacts up and down stream of the –DR1- alignment. In this reach of the stream the existing channel base width is 3 Feet.

USFWS asked if there was any place on the application that would indicate the stream length that would be replaced by pipe/culverts compared to the amount replaced by open channel.
These numbers were discussed during the meeting and have been included in the attached summary sheet and will be finalized and included in the permit application.

NCWRC asked if there would be an open area between the –Y1- and –L- culverts.

A continuous wing wall will be utilized on the left bank side of the stream, while the right bank side of the stream will utilize unconnected wing walls and allow off site surface drainage to openly flow into the –L- culvert. A low flow channel and a high flow bench of varying width will be utilized between the two culverts in addition to downstream of the –L- culvert.
NCWRC stated that without knowing the appropriate width through that reach, it is hard to say if baffles are needed or not.

The existing –Y1- CMPAs have been recently cleaned out and that the existing channel base width is approximately 6 to 7 Ft. wide upstream of –Y1- and 15 Ft. wide at the entrance to the CMPA's. A brief discussion was had about the surrounding agriculture land usage and clearing along streams having an impact to channel dimension along Sluder Branch.

The current design has dual 54" Reinforced Concrete Pipes (RCPs) beneath -DR1-. Both barrels will be buried and channel work would be utilized such that the rightmost barrel would serve as a low flow barrel.

The discussion then addressed the existing crosspipe outfalls at approximate station –L- Sta. 33+00 LT. In the existing condition, crosspipes beneath existing –Y3- and existing –L- alignments outlet to a grassed area in the vicinity of several mobile homes and sheet flow to Sluder Branch (downstream of –DR1-). Both existing pipes have silted up over time and the outlet condition seems to be stable. The proposed design is to outlet the –L- system from line ahead of –Y3- into a rip rap lined lateral base ditch that will run along the toe of fill of –Y3-. This base ditch will then diverge from the –Y3- alignment into a rip rap base ditch toward Sluder Branch. At the banks of Sluder Branch, rip rap on the embankment will be utilized to convey water into Sluder Branch. The bank stabilization rip rap at Sluder Branch will be considered a permanent impact. Because there was not an existing ditch at this location the ditch will be needed to convey drainage along the –Y3- alignment.
USFWS and WRC asked about potentially using a series of step downs in the ditch grade.
Areas were identified to possibly consider steps in the final design

NCDOT-NES asked that bank stabilization be tabulated separately on the impact summary sheet .

Plansheet 6

On the far right side of the page is the beginning of jurisdictional stream SB, and it runs parallel alongside NC 63 to plan sheet 10. In the existing and proposed condition this stream is conveyed by a large series of drive pipes located on different properties. To the maximum extent practical stream SB will be relocated as an open channel.

The JS began at the outlet of an existing pipe at approximate station –L- Sta. 46+50 RT. The Sheehan property (parcel 27) is a historic property and to reduce impacts to the historic property the stream will need to be piped in this location. NCDOT Hydraulics asked about the possibility of any credit for the current designs open channel above the end of the existing pipe where the JS stream begins. USACOE stated that it would probably not have much of an impact since it is not natural stream design.

Plansheet 7

Much of the jurisdictional stream SB will not be placed back as open channel in this area due to the proximity of businesses and homes to the stream. USACOE indicated that this stream barely meets the threshold to be classified as a good quality stream. NCDOT explained that the pipe system would now be located inside of a Permanent Drainage Easement (PDE), fixing the randomness and substandard pipe systems in front the businesses in this portion of the project and better controlling potential illicit discharges.

Plansheet 8

Stream impacts were minimized from –L- Sta. 62+50 to 68+00 RT with the Design Build team's compound fill slope innovation. In this station range, a compound fill slope (4:1 to the clear

recovery and then steepened to a 2:1) was utilized to minimize the footprint of the roadway and avoid impacts to jurisdictional stream SB. The use of this fill slope avoided 240 feet of stream impact in the area. In addition the compound fill slope will also save the existing stand of woods located along the stream overbanks between the JS and the proposed roadway.

Max pointed out that the existing topography was out of date in the station range of –L- Sta. 68+00 to 70+00 RT. In this station range the property owner has utilized a 48" CMP to convey the JS. The JS line style will be removed in this station range prior to submitting the permit application. At –L- Station 71+00 to 73+00 RT the proposed JS stream realignment would most likely be grass lined in the final design in lieu of being lined with rip rap.

Plansheet 9

Jurisdictional stream SB converges back with NC 63 at approximately –L- Sta. 78+50 RT. Jurisdictional stream SB is currently conveyed by dual 54" CMPs beneath –L- near Sta. 82+00 RT. In the proposed design, it is not possible to relocated JS in open channel all the way to near its current inlet location because the back slope of the channel relocation would impact the mobile homes located along –Y8-. In the proposed design a 72" diameter pipe (with a portion bore and jacked) will be utilized to convey jurisdictional stream SB beneath the –L- alignment. The rip rap near the 72" RCP cross pipe is slope protection running along the base of the slope to convey surface drainage to the open ended pipe. This rip rap may be eliminated in the final design due to the small amount of drainage area, but the area will drain to the inlet of the proposed 72" RCP crosspipe.

USACOE asked why rip rap would be required in the proposed channel realignment. The USACE does not want to permit rip rap where it is not required.
As the design is finalized in this area, rip rap will be evaluated if needed on the slopes of the proposed channel realignment. Currently, the right bank of the existing channel is nearly vertical and the left bank is slightly eroded.
NCDOT Hydraulics asked if reforestation were required for mitigation. USACOE stated that it was not required for the Corp, but DWR may have separate requirements.

The 72" pipe will probably be bored and jacked from the upper side where there is slightly more room.

Max stated the single 6x6 box culvert is being extended on the upstream side by about 8 feet and about 62' on the downstream side. There are several drive pipes downstream of the culvert which will be removed. The culvert will be evaluated to see if sills and baffles will be needed. There are no sills and approximately 1' of silt in the existing culvert.

Plansheet 10

A revised sketch presented at the meeting showed the area right of –L- Station 90+00 to 95+00 may an open channel rather than piped. The drive right of –L- Station 93+00 will be revised slightly. This revision will result in about 290' of open channel. The relocation of the drive will result in approximately 32 Ft. of permanent stream impact over what is shown on the preliminary stream impact sheet. NCDOT noted that the location of the bulb-out did not increase stream impacts.

The proposed bridge at Newfound Creek will be a 100 foot single span structure and is replacing a 3 span existing bridge. The existing interior bents are not located in the stream but are located

close to the top of bank and will need to be removed to below natural ground. The existing bridge has concrete slope protection and will be replaced with riprap slope protection. There should be no permanent impacts to Newfound Creek other than the bank stabilization located on the upstream side of the bridge.
NCWRC asked if anything could be done to minimize the riprap in the channel going to Newfound Creek at the bank in order to facilitate wildlife passage. The riprap is needed for stability and will be minimize as is practicable.

Plansheet 11, 12

No Impacts

Plansheet 13

JS stream SD (Gouches Branch) has 1050 feet of impact in the CE while the permanent and temporary impacts currently are 431 feet. The difference occurs in the area between –L- stations 144+00 to 136+00 where the proposed designs fill slope ties to the existing embankment while the CE document shows fill in the stream.

The Gouches Branch culvert is a double-barrel 9x8 being extended upstream and downstream. The Snelson house has flooded twice in 1977 and sometime in the 1980s. Max stated that the crossing is a FEMA Flood Insurance Study. At this location and most all culvert crossings on the project property owners have placed some type of device to prevent cattle from going through the culvert and the flooding appears to be related to debris blockage on the cattle gate.

USFWS asked whether archaeology studies have been done in this area. NCDOT NES staff stated they will check on the archaeology study and that a study should have been done for the CE.

The supplement pipe is a trenchless construction and the pipe sits above the bed in the high flow bench. A sill will be used to promote low flow only through one barrel.

Plansheet 14

JS stream SE is being relocated from Sta. 147+00 to 152+50 –L- Left. The pipe at –L- station 151+00 has been eliminated from the current design. JS stream SE will be conveyed under NC 63 with proposed 60" pipe system. There is erosion at the outlet of the 60" pipe prior to discharge into Gouches Branch located at about Sta.144+50 right. A riprap energy dissipater is proposed at this location to minimize further erosion problems.

Plansheet 15

There is an existing pipe system from –L- station 153+00 to 156+00 that is being replaced with a new pipe system with about 20' of stream impact. A JS line is missing at the beginning of the sheet. This JS line work will be added prior to preparation of permit impact drawings.

Plansheet 16

No Impacts

Plansheet 17

Wetland C is located just outside of the toe of fill. There is an existing 18" CMP cross pipe under the road and the current design will discharge a 30" pipe at this location. Current computations indicate that this discharge will be at a non-erosive velocity. The question was asked if we were showing hand or mechanized clearing. The impacts shown in the summary table at this time are preliminary and have been calculated to the right of way as currently shown. The clearing used for the project will be mechanized clearing.

Plansheet 18 - 19

No impacts

Plansheet 20

The existing culvert will be removed and replaced due to the fill height of the grade change through this area. The grade change was required in order to meet the design speed of the vertical curve. A combination of burial and sills will be used. The existing barrels are currently silted ranging from 1 to 3 feet. The slope is at 0.68% for the culvert which matches the stream gradient in the vicinity. WD is under fill and will be a total take.
NCDOT-NES clarified that the intermittent section of JS stream SG is the section downstream of the pond as a result of the pond altering the hydrology in that section. The impacts for this stream section will be separated in the summary sheet. The need for riprap will be further evaluated.

Plansheet 21

Stream SG will be relocated in an open channel due to roadway fill.

Need for an interagency permit impact review meeting

NCDOT asked if a permit drawing review meeting could be foregone since most of the impacts are known, and no substantial changes will occur with the final design. USACOE asked if it would be possible to just send out the drawings for comments prior to the permit application. NCDOT noted in the past the 4B plans have been republished with notes on what has changed. NCDOT noted the typical time between a 4B meeting and 4C is two to three years, but for a design build project it is typically only a few months. USACOE stated not having a meeting is fine as long as plans and permit impacts are sent with any changes. The team questioned if there would be any other unknowns such as utility impacts. The contractor (V&M) mentioned there should not be any additional impacts due to utilities as a result of the utility relocations being aerial. USFWS expressed concerns that utility relocations may cause non- jurisdictional impacts which could affect JS streams (silt in stream).

After some additional discussion, the team decided an official 4C meeting will not be needed. NCDOT will post plans, tables, reports and any other relevant data for the team to be able to conduct a thorough review of the final impacts. Notification will be sent to the team once these items are available for review.

The meeting was then adjourned at 12:38 p.m.

Post Meeting Follow Up to the Interagency Hydraulic Design Review Meeting July 22, 2015

The Design Build Team has revised the design to address the comments of the 4B meeting and incorporate the revisions requested by the NCDOT Hydraulic reviewers. Below is a summary of the revisions that affected the jurisdictional areas.

Design Revisions bases on Comments from Meeting

Lori Beckwith (USACE) asked if there was any place on the application that would indicate the stream length that would be replaced by pipe/culverts compared to the amount replaced by open channel. - The Design Build Team will incorporate a table in the application.
See summary below of total impacts to streams and lengths of open channel:

	Permanent Stream Impacts (feet)	Temporary Stream Impacts (feet)	Open Channel (feet)
4B	3761	894	2560
Revised	3738	366	2437

Plansheet 5

Marla Chambers (NCWRC) asked if baffles were to be utilized in the culverts to maintain a low flow channel for Sluder Branch. - The Design Build Team included the sills to maintain low flow in the design of the 2 culverts.

Marella Buncick (USFWS) asked about potentially using a series of step downs in the ditch grade. Marla Chambers followed up that the velocities entering Sluder Branch be evaluated to ensure that we do not have a blow out of the opposite bank of Sluder Branch. Further discussion was held about this location and the decision was reached that the best design was to leave the rip rapped ditch along the toe of –Y3- and investigate the possibility of stepping down the grade to minimize the steep grade. – The Design Team incorporated grade control features in the tail ditch.

A question was asked regarding the proposed pipe culvert configuration beneath –DR1- at Sluder Branch. Max stated that the proposed design called for dual 54" Reinforced Concrete Pipes (RCPs) beneath -DR1-. – The Design Build Team revised the culvert to a 95"x67" CMPA buried 1 foot.

Plansheet 9

Marella Buncick (USFWS) asked if the rip rap shown line ahead of the 72" RCP cross pipe was another ditch line to Stream SB (UT to Newfound Creek). Max Price (WEI) stated that that rip rap was toe protection running along the base of the slope to convey surface drainage to the open ended pipe. – The Design Build Team eliminated the toe protection due to the small amount of drainage area.

Marla Chambers (NCWRC) asked if the Stream SB (UT to New Found Creek) width is being accounted for and if baffles will be required for the extension of the 7' x 6' RCBC near Station 88. The need for baffles and sills in this culvert will be further discussed as the NCDOT approval

process for the design continues. – The Design Build Team found the stream width to be comparable to the culvert. A rock cross vane was included at the outlet of the culvert extension to facilitate the narrowing that occurs downstream.

Plansheet 10

The area right of –L- Station 90+00 to 95+00 is still in the final design process. It is most likely that the 54" pipe system will be replaced with an open channel to convey Stream SB (UT to Newfound Creek). – The Design Build Team revised the area to provide more open channel flow.

Design Revisions

Plansheet 5

The Design Build Team increased the bank stabilization along Sluder Branch at the outlet of the 2 @ 6'x6' RCBC.

The Design Build Team eliminated the rip rap in the ditch right of station 28+50 to 29+50.

Plansheet 8

The Design Build Team reduced the rip rap in the channel bank along Stream SB station 70+50 to 73+00 right.

Plansheet 10

The Design Build Team increased the bank stabilization along Stream SB (UT to Newfound Creek) at the outlet of the 7'x6' RCBC.

Plansheet 14

The Design Build Team increased the bank stabilization along Stream SE at bends of channel station 148+50 to 150+50 left.

Plansheet 20

The Design Build Team reduced the bank stabilization along Stream SG (perennial section) station 226 to 229 left.

Plansheet 21

The Design Build Team revised the drainage station 230 to 237 left resulting in an increase in the number of outlets.

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

Overview

Introduction

The Stormwater Management Plan (SMP), is used to evaluate and present mitigation efforts for potential stormwater runoff impacts to surface waters. The SMP summarizes project stormwater management information including post-construction stormwater best management practices (BMPs) selected to mitigate stormwater impacts. This information is used to support compliance with the department's NPDES permit as well as other federal and state environmental permit applications during the design stage of a project.

This SMP form was developed for use on NCDOT roadway projects and is being made available for non-road projects; however, some fields and sheets may not apply.

Instructions

Some general guidelines for filling out the SMP follow:

The workbook has been distributed with some cells protected in order to preserve formatting and formulas. Cell protection may be removed from each tab by selecting "Unprotect Sheet" under the Excel "Review" ribbon or by clicking "File" on the Excel ribbon and deactivating the "Protect Current Sheet" button under the "Protect Workbook" dropdown.

Fill out the applicable worksheets (not all sheets are required for all projects) with yellow tabs as completely as possible. The yellow cells within each worksheet should be filled in by the user. Some fields contain a pull-down list of options, but allow unique values to be entered. Further explanation of terms is provided in one of two ways: (1) click on the yellow cell of interest to display a message that describes what should be entered, or (2) click on the Guidance tab and scroll to the term and corresponding definition of interest for a more complete explanation.

Space is provided at the bottom of each worksheet or at the end of each row to include any additional comments that apply to a given section of the SMP. If needed, additional space can be created by unprotecting the sheet as described above, or by simply attaching additional documentation to the SMP.

The SMP should be saved using the following convention: [Project/TIP No.]_HYD_SMP_[YYYYMMDD].

Please refer to the PCSP for guidance on submittal requirements.

Version Number	Revision Date	Revision Summary
2.0	September 29, 2014	Released for use.
2.01	December 1, 2014	Minor typographic corrections.
2.02	April 1, 2015	Clarified Swale and Filter Strip measurement instructions

(Version 2.02; Released April 2015)

Note: For more information or guidance on the definitions provided below, reference the NCDOT Hydraulics Unit website,
http://www.ncdot.org/doh/preconstruct/highway/hydro/

General Guidance	
Referenced Documents	
North Carolina Department of Transportation (NCDOT) Stormwater Best Management Practices (BMP) Toolbox (2014) https://connect.ncdot.gov/resources/hydro/Pages/Stormwater-Program.aspx	
Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, July 2006 http://www.fhwa.dot.gov/engineering/hydraulics/pubs/06086/hec14.pdf	
General Project Information	
WBS Element:	The Work Breakdown Structure (WBS) Element is a unique project identifying number used by NCDOT's SAP management system. All projects have a WBS element.
TIP No.:	If the project is a Transportation Improvement Program (TIP) project, provide the TIP Project Number. If the project is not part of a TIP project, leave the cell blank.
Project Type:	Provide type of project activity.
NCDOT Contact:	Provide contact information for the project NCDOT representative.
Contractor/Designer:	Provide contact information for the project contractor or designer.
City/Town:	Provide either the municipality where the project takes place, or the nearest municipality to the project.
County(ies):	Provide the county where the project takes place. Include more than one county if necessary.
River Basin(s):	Provide the river basin in which the project takes place, from the 17 major river basins identified in North Carolina. Provide more than one river basin if necessary. More information on river basins, including interactive mapping tools, can be found on the North Carolina Department of Environment and Natural Resources (NCDENR) website, http://portal.ncdenr.org/web/wq/ps/bpu/basin
CAMA County:	Indicates whether the project occurs in a county subject to the Coastal Area Management Act (CAMA), administered by the Coastal Resources Commission. Cell populates based on selection in "County(ies)" cell. The "CAMA Map" tab illustrates these counties. A list of CAMA counties is provided on the North Carolina Division of Coastal Management website, http://dcm2.enr.state.nc.us/index.htm
Wetlands within Project Limits?	Using the dropdown menu, indicate whether wetlands are present within the project limits.
Project Length:	Provide linear length of entire project. Enter "N/A" for non-road projects.
Surrounding Land Use:	Provide general information on the project area surrounding land uses.
Project Built-Upon Area (BUA):	The portion of a project that is covered by impervious or partially impervious surface including, but not limited to buildings; pavement and gravel areas such as roads, parking lots and paths; and recreation facilities such as tennis courts. Refer to NC Session Law 2006-246 for full definition.
Typical Cross Section:	Provide a brief description of the design or existing typical cross section, including median types and dimensions, if applicable. Enter "N/A" for non-road projects.
Annual Average Daily Traffic (design/future):	Provide the estimated design Annual Average Daily Traffic (AADT) within the project area (20-yr projection, typ.). Provide the year for which this estimation was made. The proposed AADT may be found as part of preliminary roadway design documents. Enter "N/A" for non-road projects.

Note: For more information or guidance on the definitions provided below, reference the NCDOT Hydraulics Unit website,
http://www.ncdot.org/doh/preconstruct/highway/hydro/

General Guidance	
General Project Information (Continued)	
Annual Average Daily Traffic (existing):	Provide the existing Annual Average Daily Traffic (AADT) for the project area and the year in which the estimate was performed. Enter "N/A" for non-road projects. AADT for a roadway may be obtained from NCDOT's Traffic Survey Unit website, http://www.ncdot.org/doh/preconstruct/tpb/traffic_survey/
General Project Narrative: (Description of Minimization of Water Quality Impacts)	Provide a summary of the current project area, including reference to NCDOT and non-NCDOT roadways in the project area, and facility type. Describe proposed improvements. Provide a brief description of any stormwater and water quality impacts as well as minimization efforts or mitigation measures utilized as part of the project design. Such efforts may include maximizing vegetative conveyance, minimizing directly connected impervious area (DCIA), minimizing diversion of stormwater, etc. Pressing 'alt + enter' will create a carriage return within the cell and advance the cursor to the next line.
Surface Water Body:	Provide the first named surface water to which runoff from the project area drains. If runoff from the project area drains to an unnamed tributary, provide the first named stream downstream of the unnamed tributary. Surface waters within the project area can be found from 7.5-minute USGS Topographic Maps, among other resources. If there are multiple water bodies, they should each be documented in the additional spaces provided in order according to station.
NCDWR Stream Index:	Provide the North Carolina Division of Water Resources' (NCDWR) stream index number for the water body (previously identified). The stream index can be found in the NCDWR Waterbody Reports. To download Waterbody Reports, refer to the NCDWR Classifications and Standards Unit (CSU) website, http://portal.ncdenr.org/web/wq/ps/csu/classifications
NCDWR Surface Water Classification:	Designations applied to surface water bodies by NCDWR which define the best uses to be protected within these waters and carry with them an associated set of water quality standards to protect those uses. Surface water classifications can be found through the environmental documents for the project, as well as from NCDWR's Classifications and Standards Unit (CSU) website, http://portal.ncdenr.org/web/wq/ps/csu/classifications
Primary (Surface Water Body Classification):	Provide primary classifications for the water body (previously defined). For example, water bodies classified as WS-I are also protected as Class C. All classifications should be listed in the spaces provided. For more information on primary surface water classifications, refer to, http://portal.ncdenr.org/web/wq/ps/csu/classifications
Supplemental (Surface Water Body Classification):	Provide any supplemental classifications for the water body (previously identified) per NCDWR's Classifications and Standards Unit (CSU). For more information on supplemental surface water classifications, refer to, http://portal.ncdenr.org/web/wq/ps/csu/classifications
Other Stream Classification:	Provide any surface water classifications as determined by agencies other than NCDWR, including The NC Division of Parks and Recreation, NC Wildlife Resources Commission, the NC Division of Coastal Management, the NC Division of Environmental Health, and the Marine Fisheries Commission. Other surface water classifications are generally listed in the project's environmental documents.
Impairment:	If the water body is impaired, provide the type of water quality impairment. Provide all impairments if more than one exists. Impaired waters and associated type of water quality impairment(s) are listed in the North Carolina Integrated Report. For more information, refer to the following section of NCDWR's website, http://portal.ncdenr.org/web/wq/ps/mtu/assessment

Note: For more information or guidance on the definitions provided below, reference the NCDOT Hydraulics Unit website,
http://www.ncdot.org/doh/preconstruct/highway/hydro/

General Guidance	
General Project Information (Continued)	
Aquatic Threatened/Endangered Species:	If threatened or endangered aquatic species (not terrestrial species) are present (indicate "Yes" or "No"), provide a brief description of the species and any related stormwater management measures used to protect the species of concern. Consult the project's Environmental Impact Statement (EIS) or Environmental Assessment (EA).
NRTR Stream ID:	If available, provide the ID assigned to the water body in the Natural Resource Technical Report (NRTR). If the ID includes a superscript, denote it by selecting the character and checking the "Superscript" box in the "Font" dialogue box. Or, use the carat symbol (^). Note that NRTRs are not completed for all projects. "N/A" may be entered for such cases.
Buffer Rules in Effect:	Select the Riparian Area Buffer Rule that applies to your project, if applicable. Otherwise, select "N/A." For more information, refer to the following section of NCDWR's website, http://portal.ncdenr.org/web/wq/swp/ws/401/riparianbuffers
Project Includes Bridge Spanning Water Body?	Using the dropdown menu, indicate whether a bridge spanning the listed water body is included as part of the project. If "Yes," be sure to describe all bridge BMPs that were used in the General Project Narrative. Refer to Chapter 9 of the Toolbox for additional information.
Deck Drains Discharge Over Water Body?	Using the dropdown menu, indicate whether deck drains discharge over the listed water body. Note that this cell will automatically be populated with "N/A" if "No" was selected in the previous cell. If "Yes" is selected, provide justification in the General Project Narrative section. Specifically, indicate why direct discharge could not be avoided.
Deck Drains Discharge Over Buffer?	Using the dropdown menu, indicate whether deck drains discharge over the riparian buffer. Note that this cell will automatically be populated with "N/A" if "N/A" is selected for "Buffer Rules in Effect" or if "No" was selected under "Project Includes Bridge Spanning Water Body." If "Yes" is selected, provide justification in the General Project Narrative section and then indicate whether dissipator pads were used.
Dissipator Pads Provided in Buffer?	Using the dropdown menu, indicate whether dissipator pads were provided in the buffer underneath deck drains. Note that this cell will automatically be populated with "N/A" if "No" or "N/A" is contained in the previous cell. If "Yes" is selected, describe the dimensions and materials used for the pads. If "No" was selected, provide justification for why dissipator pads were not provided.
Swales	
If a swale is designed for water quality treatment per the BMP Toolbox, it should be identified as a BMP on the Swales tab. Any swale that should be included in the I&M program should be identified on the Swales tab. Use of vegetated conveyance is also beneficial for water quality. Roadside channels that do not meet the aforementioned swale criteria should be described in the General Project Narrative area.	
Sheet No.:	Provide the plan sheet number on which the applicable swale section begins.
Station & Coordinates (Road and Non Road Projects):	Road and Non Road Projects: provide the project station (i.e., alignment, station, and right or left; e.g., -L- 12+73 Rt.) and coordinates (latitude/longitude, decimal degrees) for the downslope end of the swale (e.g., 35.764498 / -78.578803).
Surface Water Body:	Select the water body that the swale eventually drains to. Refer to the water bodies listed on the General Project Information sheet (drop down values are based on these). If only one water body was listed, that water body will be entered automatically after a Sheet No. is entered (via the "IF" formula that resides in the cell unless it is replaced by the user with a value from the drop down list). Note that water body names do not automatically synchronize with those on the General Project Information sheet and that they will need to be updated if any revisions are made to the water body names on the General Project Information sheet.
Base Width:	Provide base width of swale. Base width is equal to zero for V-ditch geometry.

Note: For more information or guidance on the definitions provided below, reference the NCDOT Hydraulics Unit website,
http://www.ncdot.org/doh/preconstruct/highway/hydro/

General Guidance	
Swales (Continued)	
Front Slope:	Provide the front slope (nearest the road) of swale. Enter only the horizontal change as it relates to 1 unit of vertical change. For example, for a 3:1 slope, enter "3" into the cell.
Back Slope:	Provide the back slope (furthest from road) of swale. Enter only the horizontal change as it relates to 1 unit of vertical change. For example, for a 3:1 slope, enter "3" into the cell.
Drainage Area:	Provide the total drainage area flowing to the listed swale section in acres.
Length Recommended for Treatment:	A treatment length of 100 feet for every one acre of drainage area, as is recommended by the NCDOT Stormwater Best Management Practices Toolbox (2014), is automatically calculated.
Actual Length:	Input actual linear length of swale.
Longitudinal Slope:	Input longitudinal slope of swale.
Q2:	Provide the 2-year storm event peak flow rate (in cubic feet per second) through the swale section listed.
V2:	Provide the 2-year storm event velocity (in feet per second) through the swale section listed.
Q10:	Provide the 10-year storm event peak flow rate (in cubic feet per second) through the swale section listed.
V10:	Provide the 10-year storm event velocity (in feet per second) through the swale section listed.
Rock Check Dams Used:	Indicate if rock check dams are installed within swale channel.
Swale Installed for Buffer Compliance?	Use the dropdown menu to indicate whether the swale was used for buffer compliance. If "Yes," use the Additional Comments box to describe how the swale was used to meet buffer protection requirements.
Filter Strip	
If a filter strip is designed for water quality treatment per the BMP Toolbox, it should be identified as a BMP on the Filter Strip tab. Any filter strip that should be included in the I&M program should be identified on the Filter Strip tab. Any filter strips not documented on the Filter Strip tab, should be described in the General Project Narrative area.	
Sheet No.:	Provide the plan sheet number on which the applicable filter strip begins.
Station & Coordinates (Road and Non Road Projects):	Road and Non Road Projects: provide the project station (i.e., alignment, station, and right or left; e.g., -L-12+73 Rt.) and coordinates (latitude/longitude, decimal degrees) for the downslope end mid-point of the filter strip (e.g., 35.764498 / -78.578803).
Surface Water Body:	Select the water body that the filter strip eventually drains to. Refer to the water bodies listed on the General Project Information sheet (drop down values are based on these). If only one water body was listed, that water body will be entered automatically after a Sheet No. is entered (via the "IF" formula that resides in the cell unless it is replaced by the user with a value from the drop down list). Note that water body names do not automatically synchronize with those on the General Project Information sheet and that they will need to be updated if any revisions are made to the water body names on the General Project Information sheet.
Drainage Area:	Provide the total drainage area flowing to the listed filter strip section in acres.
Surface Area:	Provide the estimated surface area of the filter strip section in acres.

Note: For more information or guidance on the definitions provided below, reference the NCDOT Hydraulics Unit website,
http://www.ncdot.org/doh/preconstruct/highway/hydro/

General Guidance	
Filter Strip (Continued)	
Drainage Area: Surface Area Ratio	The ratio of drainage area to surface area is automatically calculated and should be less than 10:1 as is recommended by the NCDOT Stormwater Best Management Practices Toolbox (2014).
Actual Length:	Input length of filter strip in feet.
Longitudinal Slope:	Input longitudinal slope of filter strip in percent.
Filter Strip Installed for Buffer Compliance?	Use the dropdown menu to indicate whether the filter strip was used for buffer compliance. If "Yes," use the Additional Comments box to describe how the filter strip was used to meet buffer protection requirements.
Preformed Scour Holes and Energy Dissipators	
PSHs not used solely for energy dissipation (e.g., PSHs used in associated with buffer compliance) should be listed on this tab. PSHs used solely for energy dissipation may be described in the general project narrative. Any PSH that should be included in the I&M program should be identified on this tab. Any PSHs not documented on this tab, should be described in the General Project Narrative area. Preferably, energy dissipators should be entered on this tab; however, describing them in the general project narrative is also acceptable.	
Sheet No.:	Provide the plan sheet number on which the applicable energy dissipator is shown.
Station & Coordinates (Road and Non Road Projects):	Road and Non Road Projects: provide the project station (i.e., alignment, station, and right or left; e.g., -L-12+73 Rt.) and coordinates (latitude/longitude, decimal degrees) for the downslope end of the energy dissipator (e.g., 35.764498 / -78.578803).
Surface Water Body:	Select the water body that the energy dissipator eventually drains to. Refer to the water bodies listed on the General Project Information sheet (drop down values are based on these). If only one water body was listed, that water body will be entered automatically after a Sheet No. is entered (via the "IF" formula that resides in the cell unless it is replaced by the user with a value from the drop down list). Note that water body names do not automatically synchronize with those on the General Project Information sheet and that they will need to be updated if any revisions are made to the water body names on the General Project Information sheet.
Energy Dissipator Type:	Provide the energy dissipator type located at the listed station. Refer to FHWA HEC-14 for descriptions of types.
Riprap Type:	Provide riprap size used in energy dissipator. Refer to NCDOT Standard Specification 1042 for riprap sizes.
Drainage Area:	Provide the total drainage area flowing to the listed energy dissipator in acres.
Conveyance Structure:	List the hydraulic structure directly flowing to energy dissipator, including equalizer pipes.
Pipe/Structure Dimensions:	If conveyance structure is pipe, select the pipe diameter from the pull down list. If not listed, manually input the pipe diameter. For structures other than pipes, dimensions and standard acronyms are to be included, i.e., 2-8x8 RCBC
Q10:	Provide the 10-year storm event peak flow rate (in cubic feet per second) flowing to energy dissipator listed.
V10:	Provide the 10-year storm event velocity (in feet per second) exiting energy dissipator listed.
PSH Installed for Buffer Compliance?	Use the dropdown menu to indicate whether the PSH was used for buffer compliance. If "Yes," use the Additional Comments box to describe how the PSH was used to meet buffer protection requirements.

Note: For more information or guidance on the definitions provided below, reference the NCDOT Hydraulics Unit website,
http://www.ncdot.org/doh/preconstruct/highway/hydro/

General Guidance	
Level Spreaders, Hazardous Spill Basins, and Forebays	
All level spreaders, hazardous spill basins, and forebays included in the project should be listed on this tab.	
Dual-purpose BMPs (such as hazardous spill basins that also function as dry detention basins) should be listed on both applicable worksheets. Fields documenting BMP type that utilize dropdown menus can be overwritten with manual entries. Users may enter "HSB/DDB," for example. Include any necessary notes in the comment boxes to cross-reference entries and define the BMP's configuration. Record only the portion of the BMP's volume that pertains to its function on the worksheet. Note that a HSB/DDB must be designed to capture the WQv plus the spill volume in the event that a spill occurs during or following a rain event. *For example, consider a HSB/DDB with a drainage area of 0.75 ac that is entirely NBUA. The total volume of the HSB/DDB is 5,200 ft ^{3}, the required HSB volume is 2,360 ft ^{3}, the HSB volume provided is 2,500 ft ^{3}, and the dry detention portion (WQv) is 2,700 ft ^{3}. On the Level Spreaders, Hazardous Spill Basin, and Forebays tab, enter 2,360 for the Required/Minimum Treatment and 2,500 for the Treatment Achieved. Add notes in the Additional Comments field discussing the BMP's configuration, documenting the total BMP volume of 5,200 ft ^{3}, and referring to other applicable sheets (i.e., the Other BMPs sheet).*	
Sheet No.:	Provide the plan sheet number on which the applicable stormwater best management practice (BMP) is shown.
Station & Coordinates (Road and Non Road Projects):	Road and Non Road Projects: provide the project station (i.e., alignment, station, and right or left; e.g., -L-12+73 Rt.) and coordinates (latitude/longitude, decimal degrees) for the downslope end* (e.g., 35.764498 / -78.578803). * LS = Center of Level Spreader Weir * HSB = On the Outlet Structure * Forebay = Center of the Forebay
Surface Water Body:	Select the water body that the BMP eventually drains to. Refer to the water bodies listed on the General Project Information sheet (drop down values are based on these). If only one water body was listed, that water body will be entered automatically after a Sheet No. is entered (via the "IF" formula that resides in the cell unless it is replaced by the user with a value from the drop down list). Note that water body names do not automatically synchronize with those on the General Project Information sheet and that they will need to be updated if any revisions are made to the water body names on the General Project Information sheet.
Level Spreader, Hazardous Spill Basin, or Forebay:	Indicate whether the BMP located at the listed station is a level spreader, hazardous spill basin, or forebay.
Drainage Area:	Provide the total drainage area flowing to the listed BMP in acres.
New Built-Upon Area (NBUA):	The amount of added impervious or partially impervious surface draining to the BMP including, but not limited to buildings; pavement and gravel areas such as roads, parking lots and paths; and recreation facilities such as tennis courts. Refer to NC Session Law 2006-246 for full definition.
Required / Minimum Treatment:	Provide the required/minimum design treatment (including units) for the listed BMP type. For more information on the stormwater treatment calculation refer to the document, NCDOT Stormwater Best Management Practices Toolbox (2014). Minimum treatment criteria will automatically populate based on BMP type selection.
Treatment Achieved:	Provide the actual treatment achieved (including units). For more information on the stormwater treatment calculation refer to the document, NCDOT Stormwater Best Management Practices Toolbox (2014).
BMP Installed for Buffer Compliance?	Use the dropdown menu to indicate whether the BMP was used for buffer compliance. If "Yes," use the Additional Comments box to describe how the BMP was used to meet buffer protection requirements.
Other BMPs	

Note: For more information or guidance on the definitions provided below, reference the NCDOT Hydraulics Unit website,
http://www.ncdot.org/doh/preconstruct/highway/hydro/

General Guidance
All bioretention basins, dry detention basins, filtration basins, infiltration basins, stormwater wetlands, wet detention basins, and BMP variations similar to these that are not listed on other sheets should be listed on this tab.
Dual-purpose BMPs (such as hazardous spill basins that also function as dry detention basins) should be listed on both applicable worksheets. Fields documenting BMP type that utilize dropdown menus can be overwritten with manual entries. Users may enter "HSB/DDB," for example. Include any necessary notes in the comment boxes to cross-reference entries and define the BMP's configuration. Record only the portion of the BMP's volume that pertains to its function on the worksheet. Note that a HSB/DDB must be designed to capture the WQv plus the spill volume in the event that the spill occurs during or following a rain event. *For example, consider a HSB/DDB with a drainage area of 0.75 ac that is entirely NBUA. The total volume of the HSB/DDB is 5,200 ft ^{3} , the required HSB volume is 2,360 ft ^{3} , the HSB volume provided is 2,500 ft ^{3} , and the dry detention portion (WQv) is 2,700 ft ^{3} . On the Other BMPs sheet, enter 0.062 ac-ft (2,700 ft ^{3}) under Volume Treated which results in 1.04" of precipitation treated. Add notes in the Additional Comments field discussing the BMP's configuration, documenting the total BMP volume of 5,200 ft ^{3} , and referring to other applicable sheets (i.e., the Level Spreader, HSB, & Forebay sheet).*
Sheet No.: Provide the plan sheet number on which the applicable BMP is shown.

Note: For more information or guidance on the definitions provided below, reference the NCDOT Hydraulics Unit website,
http://www.ncdot.org/doh/preconstruct/highway/hydro/

General Guidance	
Other BMPs (Continued)	
Station & Coordinates (Road and Non Road Projects):	Road and Non Road Projects: provide the project station (i.e., alignment, station, and right or left; e.g., -L- 12+73 Rt.) and coordinates (latitude/longitude, decimal degrees) for the downslope end* (e.g., 35.764498 / -78.578803). *On the Outlet Structure *If no Outlet Structure, use Center of Basin
BMP Type:	Provide the BMP type located at the listed station. Refer to the document, NCDOT Stormwater Best Management Practices Toolbox (2014), for approved NCDOT post-construction BMPs.
Drainage Area:	Provide the total drainage area flowing to the listed BMP in acres.
New Built-Upon Area (NBUA):	The amount of added impervious or partially impervious surface draining to the BMP including, but not limited to buildings; pavement and gravel areas such as roads, parking lots and paths; and recreation facilities such as tennis courts. Refer to NC Session Law 2006-246 for full definition.
Volume Treated:	Provide the treatment volume achieved and the associated units of measure.
Precipitation Depth Treated over NBUA:	Provide the precipitation depth treated (in inches) as calculated relative to the new built-upon area (i.e., [P = WQv/(3,450 A_{NBU})] with unit conversions as appropriate).
BMP Installed for Buffer Compliance?	Use the dropdown menu to indicate whether the BMP was used for buffer compliance. If "Yes," use the Additional Comments box to describe how the BMP was used to meet buffer protection requirements.
Bridge to Culvert Avoidance and Minimization	
The "Bridge to Culvert Avoidance and Minimization" sheet should be filled out for any project in the state involving a bridge converted to culvert(s).	
Sheet No.:	Provide the plan sheet number on which the culvert is shown.
Station:	Provide the project station of the culvert.
Drainage Area:	Provide the total area (in acres or square miles) draining to the culvert and indicate units of measure using the dropdown options.
Surface Water Body:	Select the water body associated with the culvert. Refer to the water bodies listed on the General Project Information sheet (drop down values are based on these). If only one water body was listed, that water body will be entered automatically (via the "IF" formula that resides in the cell unless it is replaced by the user with a value from the drop down list). Note that water body names do not automatically synchronize with those on the General Project Information sheet and that they will need to be updated if any revisions are made to the water body names on the General Project Information sheet.
Culvert Type:	Indicate the type and material of construction for the culvert (e.g., "Reinforced concrete box culvert).
Number of Culverts:	Indicate the number of culverts to be installed.
Culvert Width/Diameter (ft):	Provide the culvert width if rectangular or the diameter if circular.
Culvert Height (ft):	Provide the culvert height if rectangular or type "N/A" if circular.
Culvert Length (ft):	Provide the culvert length.

Note: For more information or guidance on the definitions provided below, reference the NCDOT Hydraulics Unit website,
http://www.ncdot.org/doh/preconstruct/highway/hydro/

General Guidance	
Bridge to Culvert Avoidance and Minimization (Continued)	
Avoidance and Minimization Efforts: (Bridge to Culvert)	Provide a brief overview of bridge to culvert avoidance and/or minimization efforts and describe, in detail, any efforts that will not be captured in the remainder of the form. Some examples of minimization efforts include: culvert burial, low flow sill/baffles, slope considerations, velocity considerations, and culvert angle and stream bend considerations.
Existing Average Stream Slope (%):	Provide the existing average slope (%) of the stream along the distance of the proposed culvert.
Proposed Culvert Slope (%):	Provide the proposed culvert slope, in %.
Existing Low Flow Channel Dimensions in the Stream:	Provide a description of the approximate average existing low flow channel dimensions for the stream. Indicate units of measure (typically feet).
Proposed Low Flow Dimensions Through the Culvert:	Provide a description of the proposed low flow dimensions for the culvert. Indicate units of measure (typically feet).
Existing Low Flow Velocities in the Stream (ft/s):	Provide the existing low flow velocities in the section of stream to be impacted by the culvert. Use the average spring flow if available. If unavailable, use bankfull flow.
Proposed Low Flow Velocities Through the Culvert (ft/s):	Provide the proposed low flow velocities through the culvert. Use the average spring flow if available. If unavailable, use bankfull flow.
Alternating Low Flow Sills/Baffles:	Indicate whether the culvert will have low flow sills and/or baffles and provide justification.
Proposed Culvert Burial Depth (ft):	Provide the depth of burial of the culvert (i.e., the distance from the invert of the culvert to the elevation of the natural streambed).
Existing Streambed Material:	Describe the existing streambed material (e.g., boulders, cobbles, gravel, sand).
Proposed Sills/Baffles:	Describe the proposed sills and/or baffles in detail, including spacing, dimensions, and justification.
Stream Patterns Up and Downstream of Culvert that Could Affect Fish Passage and Bank Stability:	Describe any characteristics of the stream and culvert that may prevent fish passage or bank stability (e.g., bends in the stream or changes in slope).
Bed Forms Impacted by Culvert (riffles, pools, glides, etc.):	Describe the bed forms that will be affected by the culvert.
Low Flow Floodplain Bench Required?	Indicate whether a low flow floodplain bench is required (yes/no) and provide justification.
Sharp Bends at Inlet/Outlet?	Indicate whether there are any sharp bends at the inlet or outlet of the culvert (yes/no) and describe the general alignment of the culvert with the stream.
Stream Realignment Necessary?	Indicate whether stream realignment is necessary (yes/no) and provide justification.
Bank Stabilization:	Describe bank stabilization measures, including distances up and downstream where appropriate.
Natural Stream Channel 2-yr Velocity (ft/s):	Provide the 2-year natural stream channel velocity.
Proposed Culvert 2-yr Outlet Velocity (ft/s):	Provide the 2-year culvert outlet velocity.
Natural Stream Channel 10-yr Velocity (ft/s):	Provide the 10-year natural stream channel velocity.
Proposed Culvert 10-yr Outlet Velocity (ft/s):	Provide the 10-year culvert outlet velocity.
Evaluate/Describe Roadway Geometric Constraints:	Describe any roadway constraints that prevent ideal culvert design and installation.

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General Project Information

WBS Element:	34909.1.1	**TIP Number:**	U-3301	**Project Type:**	Roadway Widening	**Date:**	3/2/2016
NCDOT Contact:	Roger Bryan			**Contractor / Designer:**	Wetherill Engineering, Inc./ Max S. Price, PE		
	Address: Highway Division 13 55 Orange Street Asheville, NC 28801			**Address:**	1223 Jones Franklin Rd. Raleigh, NC 27606		
	Phone: (828)251-6171			**Phone:**	919-851-8077		
	Email: rdbryan@ncdot.gov			**Email:**	mprice@wetherilleng.com		
City/Town:				**County(ies):**	Buncombe		
River Basin(s):	French Broad			**CAMA County?**	No		
Wetlands within Project Limits?	Yes	Project is located within TVA watershed.					

Project Description

Project Length (lin. miles or feet):	4.455 miles	**Surrounding Land Use:**	Rural; Mixed residential and commercial; Mountainous terrain
	Proposed Project		**Existing Site**
Project Built-Upon Area (ac.)	44.7 ac.		20.4 ac.
Typical Cross Section Description:	Re-surfacing: Begin Project (Sta. 17+80) to Sta. 23+50. Widening: 3-lane curb & gutter (44' face to face) from Sta. 23+50 to begin Newfound Creek bridge. Widening: 4-lane shoulder section with raised median (24' width) from end bridge to end of project.		2-lane shoulder section (width approximately 24') with approximate 2' paved shoulders.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 29,200 VPD Year: 2040		Existing: 20,200 VPD Year: 2014
General Project Narrative: (Description of Minimization of Water Quality Impacts)	Throughout the curb & gutter section there is a 9.5' wide grassed berm behind the curb (13.5' wide at guardrail locations). This berm provides water quality treatment and velocity reduction to offsite runoff draining towards the roadway. In some locations a grass lined ditch has been located behind the berm to intercept offsite runoff and keep it separate from the roadway runoff. Fill slopes have been flattened (< 2:1) where possible. This reduces runoff velocity and minimizes the potential for slope erosion. From Sta. 62+50 to Sta. 68+00 -L- Rt. compound fill slopes (4:1 for clear recovery width and then 2:1) will minimize the impacts to jurisdictional stream SB. 240 linear feet of stream impacts will be avoided. The wooded riparian buffer that is adjacent to stream SB will also be saved. The 4-lane divided section includes approximately 2,930 linear feet of vegetated roadside ditches that will convey pavement runoff and provide storm water treatment. Rip rap pads at drainage system outlets will dissipate flow and reduce velocities and erosive potential. Existing drainage patterns have been maintained to the maximum extent practicable.		

Waterbody Information

Surface Water Body (1):	Sluder Branch		**NCDWR Stream Index No.:**	6-84-5	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:			
Other Stream Classification:					
Impairments:	None				
Aquatic T&E Species?		Comments:			
NRTR Stream ID:	Sluder Branch			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

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Additional Waterbody Information

Surface Water Body (2):	Sluder Branch		**NCDWR Stream Index No.:**	6-84-5		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	Sluder Branch			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):	Unnamed Tributary to Newfound Creek		**NCDWR Stream Index No.:**	6-84		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SB			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No	
Deck Drains Discharge Over Water Body?	Yes	(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 (4):	Newfound Creek		**NCDWR Stream Index No.:**	6-84		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SC			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (5):	Gouches Branch		**NCDWR Stream Index No.:**	6-84-4		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SD			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

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Additional Waterbody Information

Surface Water Body (6):	Unnamed Tributary 1 to Gouches Branch		**NCDWR Stream Index No.:**	6-84		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SE			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (7):	Dix Creek		**NCDWR Stream Index No.:**	6-84-7		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	Dix Creek			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (8):	Unnamed Tributary 1 to Dix Creek		**NCDWR Stream Index No.:**	6-84		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	Yes	Comments:				
NRTR Stream ID:	SG			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	No	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (9):	Unnamed Tributary 2 to Dix Creek		**NCDWR Stream Index No.:**	6-84		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SH			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

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Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
11	109+00 Rt. to 111+50 Rt.		0.0	6.0	6.0	1.0	100	250	0.30%	2.7	1.0	3.6	1.1	No	
11&12	112+75 Rt. to 115+00 Rt.		0.0	3.0	3.0	0.7	73	225	1.77%	2.0	2.0	2.3	2.2	No	

Additional Comments

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Filter Strips

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Drainage Area (ac)	Surface Area (ac)	Drainage Area: Surface Area Ratio	Actual Length (ft)	Longitudinal Slope (%)	BMP Associated with Buffer Rules?

Additional Comments

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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?
	Sta. 10+83 -Y12- Lt.	(5)Upper Tributary 1 to	Riprap Energy Dissipator Basin	Class 'B'	140.0	Pipe	60	103.0	2.7	N/A
	Sta. 190+41 -L- Rt.	N/A	PSH	Class 'B'	1.7	Pipe	15	4.3	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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WBS Element: 34909.1.1 **TIP No.:** U-3301 **County(ies):** Buncombe

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?

*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

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WBS Element: 34909.1.1 **TIP No.:** U-3301 **County(ies):** Buncombe

Other Best Management Practices

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	BMP Type	Drainage Area (ac)	New Built-Upon Area (ac)	Volume Treated (ac-ft)	Precipitation Depth Treated over NBUA (in)	BMP Associated w/ Buffer Rules?

Additional Comments

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STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.02; Released April 2015)

WBS Element:	34909.1.1	TIP No.:	U-3301	County(ies):	Buncombe	Page	of	4

Bridge to Culvert Avoidance and Minimization

Proposed Structure Summary

Sheet No. & Station	Sheet No.:		Station:		Number of Culverts:		
Drainage Area (ac or sq mi):					Culvert Width/Diameter (ft):		
Surface Water Body:					Culvert Height (ft):		
Culvert Type:					Culvert Length (ft)		
Avoidance and Minimization Efforts: (Bridge to Culvert)							

Stream Slope			Fish and/or Aquatic Life Passage	
Existing Average Stream Slope (%):		%	Existing Low Flow Channel Dimensions in the Stream:	
Proposed Culvert Slope (%):		%		
Culvert Burial				
Proposed Culvert Burial Depth (ft):				
Existing Streambed Material:			Proposed Low Flow Dimensions Through the Culvert:	
Proposed Sills/Baffles:			Existing Low Flow Velocities in the Stream (ft/s):	
			Proposed Low Flow Velocities Through the Culvert (ft/s):	
			Alternating Low Flow Sills/Baffles:	

Culvert/Stream Alignment

Stream Patterns Upstream and Downstream of the Culvert that Could Affect Fish Passage and Bank Stability:		
Bed Forms Impacted by Culvert (riffles, pools, glides, etc.):		
Low Flow Floodplain Bench Required? (provide justification)		
Sharp Bends at Inlet/Outlet? (describe culvert alignment with stream)		
Stream Realignment Necessary? (provide justification)		
Bank Stabilization:		

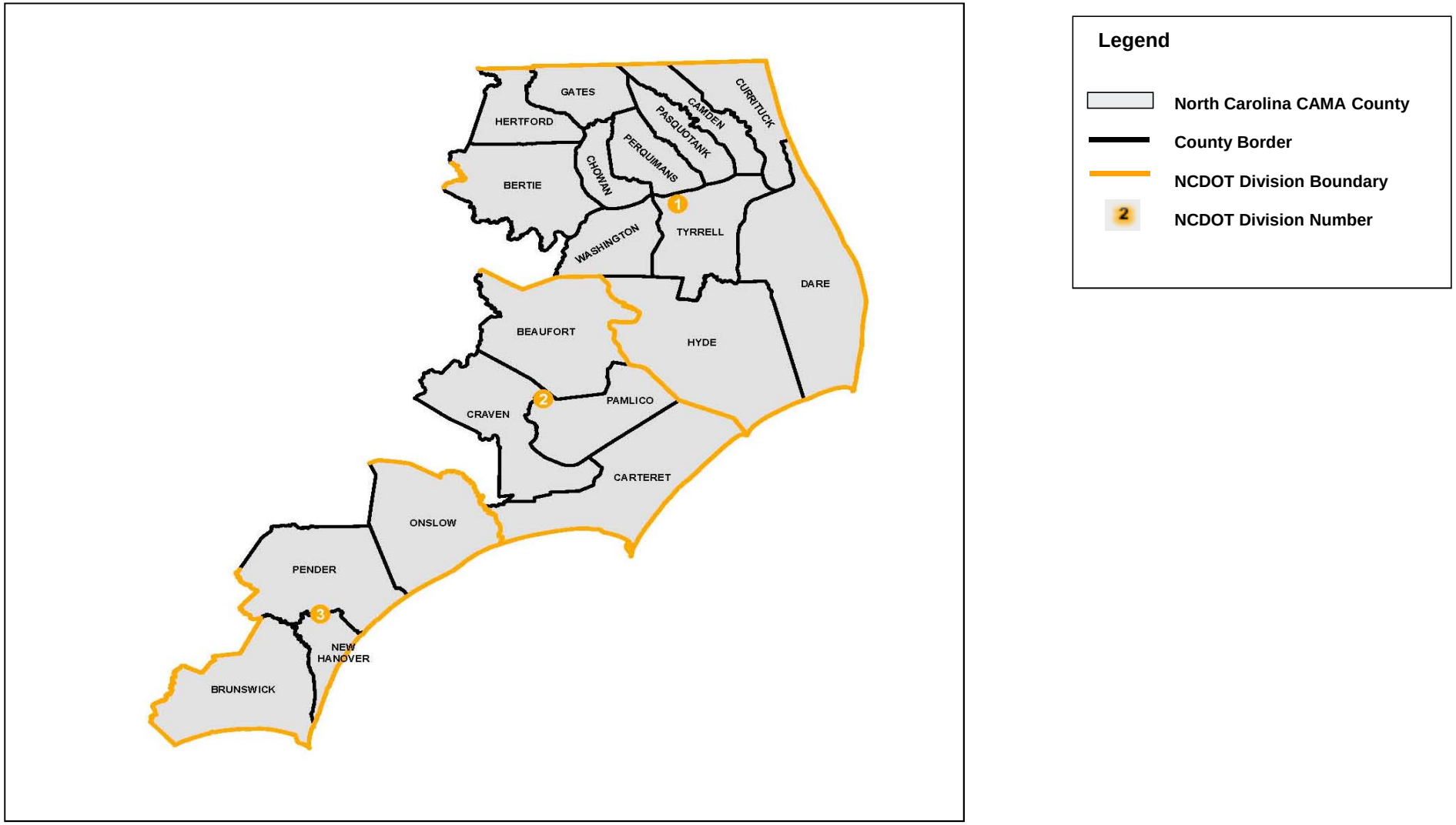
Outlet Velocities

Natural Stream Channel 2-yr Velocity (ft/s):		Natural Stream Channel 10-yr Velocity (ft/s):	
Proposed Culvert 2-yr Outlet Velocity (ft/s):		Proposed Culvert 10-yr Outlet Velocity (ft/s):	

Roadway Geometric Considerations

Evaluate/Describe Roadway Geometric Constraints:

Map A. North Carolina Coastal Counties subject to the Coastal Area Management Act (CAMA)



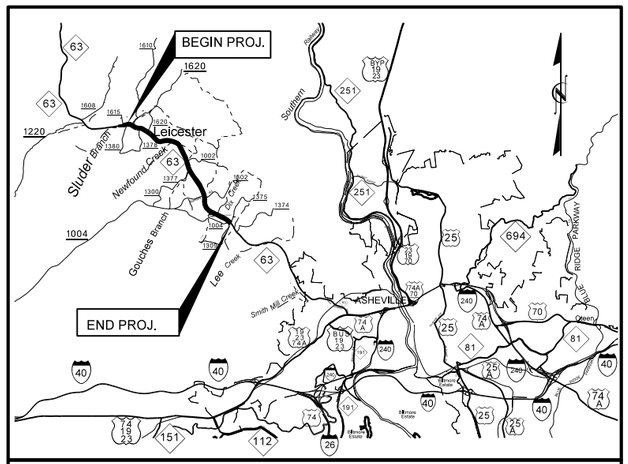
Note: Map prepared using NCDOT's Environmental Sensitivity Maps (ESM).

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TIP PROJECT: U-3301

CONTRACT: C203575

See Sheet 1-A For Index of Sheets


BEGIN PROJ.
END PROJ.
Leicester
Sluder Branch
Newfound Creek
Gouches Branch
Lee Creek
Smith Mill Creek
Southern
ASHEVILLE
RIDGE PARKWAY
Glenn
Bloomington
Bruce Estate
1610
1620
1608
1615
1380
1374
1377
1350
1515
1374
1378
1004
1220
1620
1802
1377
1468
1378
1380
1615
1610
1620
1627
1002

PROJECT REFERENCE NO.	SHEET NO.
U-3301	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 2 OF 48

SCALE 1" = 100'

NAD 83

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

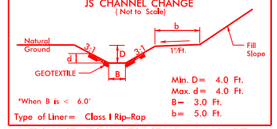
SITE 1

SITE 2

BANK STABILIZATION
SEE DETAIL 9

FOR PROFILE OF LINE –L– SEE SHEET 24
FOR PROFILE OF LINE –Y1– SEE SHEET 34
FOR PROFILE OF LINE –Y2– SEE SHEET 42
FOR PROFILE OF LINE –Y3– SEE SHEET 34
FOR PROFILE OF LINE –DR1– SEE SHEET 40
FOR CULVERT PLANS SEE SHEET C-__ THRU C-__

DETAIL 4
JS CHANNEL CHANGE
(Not to Scale)



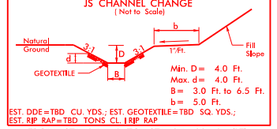
*When B is < 6.0'

Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B = 3.0 Ft.
b = 5.0 Ft.

Type of Liner = Class I Rip-Rap

FROM STA. 26+50 TO STA. 27+50 –L– (LT)
FROM STA. 28+50 TO STA. 29+13 –L– (LT)

DETAIL 5
JS CHANNEL CHANGE
(Not to Scale)

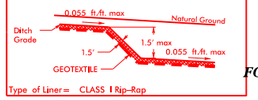


Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B = 3.0 Ft. to 6.5 Ft.
b = 5.0 Ft.

EST. DDE=TBD CU. YDS.; EST. GEOTEXTILE=TBD SQ. YDS.;
EST. RIP RAP=TBD TONS CL. I RIP RAP

FROM STA. 27+50 TO STA. 27+89 –L– (LT)
FROM STA. 28+26 TO STA. 28+50 –L– (LT)

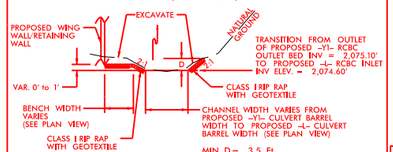
DETAIL 15
GRADE CONTROL FEATURE
(Not to Scale)



Type of Liner = CLASS I Rip-Rap

FROM STA. 14+05 TO STA. 14+50 –Y3– (RT)

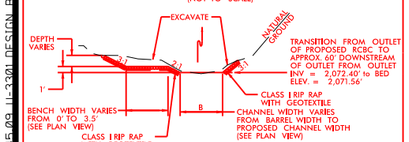
DETAIL 1
SLUDER BRANCH –L– INLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
(NOT TO SCALE)



SEE PLAN VIEW FOR EXTENTS
EST. DDE=62 CU. YDS.; EST. GEOTEXTILE=84 SQ. YDS.; EST. RIP RAP=38 TONS CL. I RIP RAP

FROM –Y1– CULVERT OUTLET TO –L– CULVERT INLET

DETAIL 2
SLUDER BRANCH –L– OUTLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
(NOT TO SCALE)



B=6.0 Ft. AT CULVERT
SEE PLAN VIEW FOR EXTENTS
EST. DDE=93 CU. YDS.; EST. GEOTEXTILE=222 SQ. YDS.; EST. RIP RAP=128 TONS CL. I RIP RAP

FROM CULVERT OUTLET TO APPROXIMATELY 60' DOWNSTREAM
–L– STA. 25+95 (LT)

DETAIL 9
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 42 TONS CL I Rip-Rap
Geotextile = 65 sy

–Y3– STA. 13+90(RT)

JS CHANNEL CHANGE SEE DETAIL 5
JS CHANNEL CHANGE SEE DETAIL 4
95x60" CMPA (12 Ga. 3"x1" Corr.) BURIED 1'
EXTEND EXISTING RCBC AT OUTLET END W/(2)6'X6' RCBC SILLS LT BRL 1FT
EXTEND EXISTING RCBC AT INLET END WITH (2) 7'X6' SKEWED 45 DEGREES TO EXISTING
CLASS 'B' RR GEOTEXT EST. 7 SY RR EST. 2 TN
CONTINUOUS WINGWALL
(2)7'x6' SILLS LT BRL 1FT
18" RCP-III
15" CSP 2 ELBOWS
15" RCP-IV
30" RCP-III
30" RCP-IV
36" RCP-III
36" RCP-IV
TIE PROPOSED 18" CSP TO EXISTING 18" CSP WITH 18" PIPE ELBOW
GRADE CONTROL FEATURE SEE DETAIL 15
15" CSP 2 ELBOWS
15" CSP 1 ELBOW
15" CSP ELBOW BED
DUKE POWER 250 GAL TANK
250 GAL TANK
1,000 GAL PROPANE TANKS
FLAG POLE
LANDSCAPE TIMBERS
SEPTIC
GENERATOR W/ CONC PAD
MTL POST GV
SIGN PLATFORM
FIRE DEPARTMENT
SCHOOL PLAYGROUND
BUNCOMBE COUNTY BOARD OF EDUCATION
JAMES WEST
CHAD A. SILVER
JUDY JINKS
DAPHNA B. STILES
VID R. HOLDER
DEBRA B PATTON
ANNE B. PUCKRIDGE
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BETTY LOU DAVES
MARY LOU LONGLEY
CARL FRANCIS & TRACEY EDWARDS BROWN
MELISSA W. HERRON
FRANK LOWERY JR. HEIRS
BLK PUMP HOUSE
MARTIN BRANCH
SR 1650
GRAVEL LN
MATCH LINE –L– STA. 22+50.00 SEE SHEET 4
MATCH LINE –L– STA. 36+00.00 SEE SHEET 6
25+00
30+00
35+00

100' 0' 100'
GRAPHIC SCALE

REVISIONS
8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-3301	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 3 OF 48

SCALE 1" = 100'

NAD 83

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

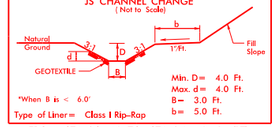
SITE 1

SITE 2

BANK STABILIZATION
SEE DETAIL 9

FOR PROFILE OF LINE –L– SEE SHEET 24
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FOR PROFILE OF LINE –Y2– SEE SHEET 42
FOR PROFILE OF LINE –Y3– SEE SHEET 34
FOR PROFILE OF LINE –DR1– SEE SHEET 40
FOR CULVERT PLANS SEE SHEET C–__ THRU C–__

DETAIL 4
JS CHANNEL CHANGE
(Not to Scale)



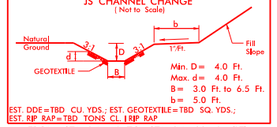
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Type of Liner = Class I Rip-Rap

FROM STA. 26+50 TO STA. 27+50 –L– (LT)
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DETAIL 5
JS CHANNEL CHANGE
(Not to Scale)

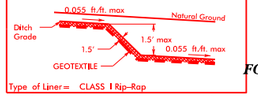


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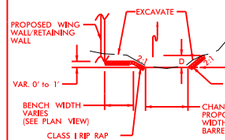
DETAIL 15
GRADE CONTROL FEATURE
(Not to Scale)



Type of Liner = CLASS I Rip-Rap

FROM STA. 14+05 TO STA. 14+50 –Y3– (RT)

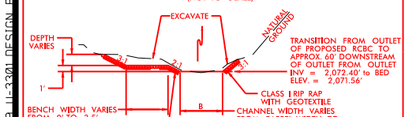
DETAIL 1
SLUDER BRANCH –L– INLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
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SEE PLAN VIEW FOR EXTENTS
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DETAIL 9
RIP RAP AT EMBANKMENT
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Type of Liner = 42 TONS, CL I Rip-Rap
Geotextile = 65 sy

–Y3– STA. 13+90(RT)

JS CHANNEL CHANGE SEE DETAIL 5

JS CHANNEL CHANGE SEE DETAIL 4

95x60" CMPA (12" Ga. 3"x1" Corr.) BURIED 3'-3"

EXTEND EXISTING RCBC AT OUTLET END W/(2)6'x6' RCBC ENDS LT BRL 1Ft.

EXTEND EXISTING RCBC AT INLET END WITH (2) 7'x6' SKEWED 5 DEGREES TO EXISTING

CONTINUOUS WINGWALL

(2)7'x6' SILLS LT BRL 1Ft.

CLASS I RR GEOTEXT. EST. 7 SY RR EST. 2 TN

GRADE CONTROL FEATURE SEE DETAIL 15

TIE PROPOSED 18" CSP TO EXISTING 18" CSP WITH 18" PIPE ELBOW

15" CSP ELBOWS

BLK PUMP HOUSE

DEBRA B PATTON
7

BUNCOMBE COUNTY BOARD OF EDUCATION
21

JAMES WEST
4

CHAD A. SILVER
5

JUDY JINKS
91

DAPHNA B. STILES
6

VID R. HOLDER

ANNE B. PUCKRIDGE
43

ANNE B. PUCKRIDGE
10

MARY LOU LONGLEY
12

CARL FRANCIS & TRACEY EDWARDS BROWN
14

MELISSA W. HERRON
13

FRANK LOWERY JR. HEIRS
9

DAVIS
8

MATCH LINE –L– STA. 22+50.00 SEE SHEET 4

MATCH LINE –L– STA. 36+00.00 SEE SHEET 6

25+00

30+00

35+00

100' 0' 100'
GRAPHIC SCALE

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-3301	5 DETAIL
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 4 OF 48

NAD 83

SCALE 1" = 60'

SITE 1

RIP RAP NOT SHOWN FOR CLARITY

JS CHANNEL CHANGE SEE DETAIL 5

JS CHANNEL CHANGE SEE DETAIL 4

95x67 CMPA (12 Ga. 3"x1" Corr.) BURIED 1FT.

EXTEND EXISTING RCBC AT OUTLET END W/(2)6'X6' RCBC SILLS LT BRL 1Ft.

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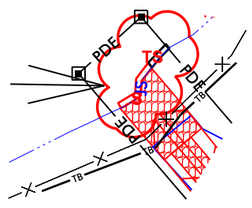
CONTINUOUS WINGWALL

(2)7'x6' SILLS LT BRL 1Ft.

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 2



BANK STABILIZATION SEE DETAIL 9

100' 0' 100'

GRAPHIC SCALE

REVISIONS

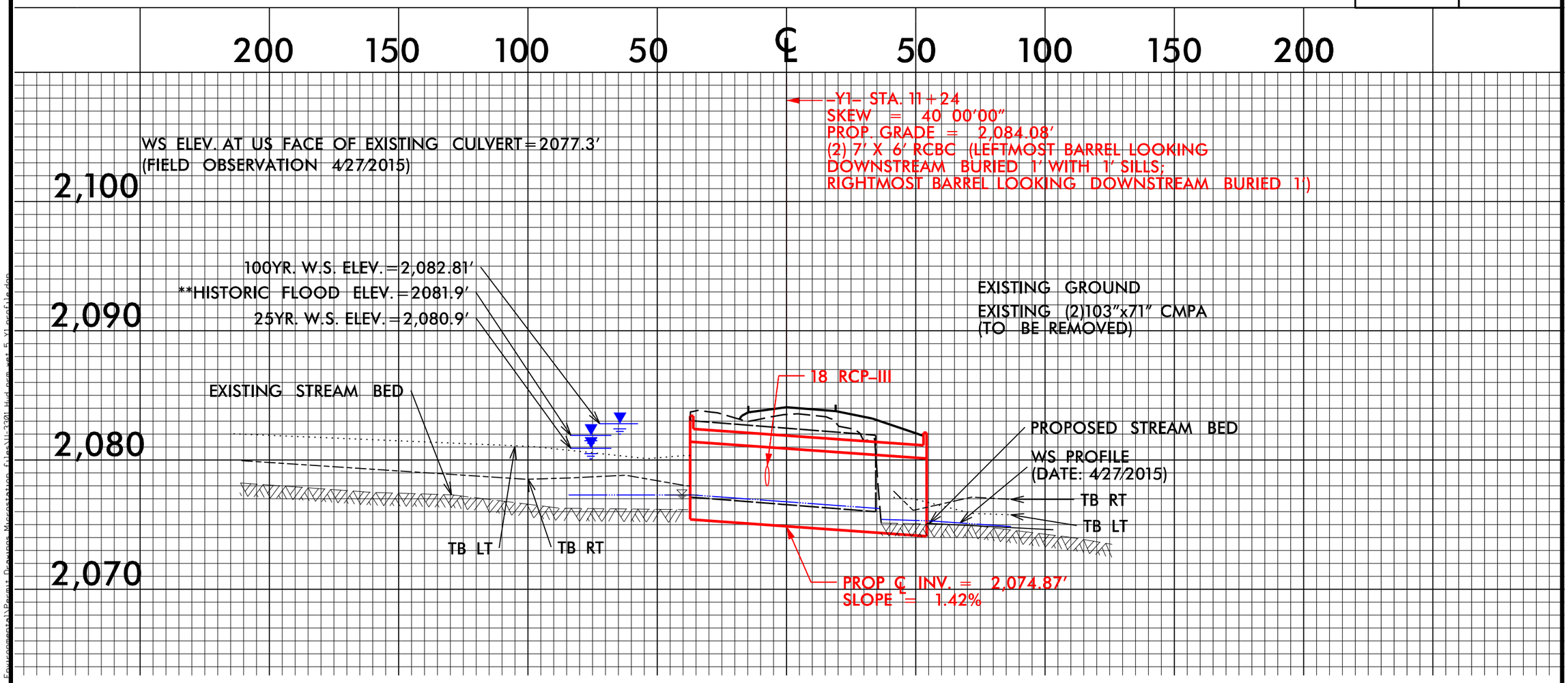
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PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 5 OF 48

SITE 1



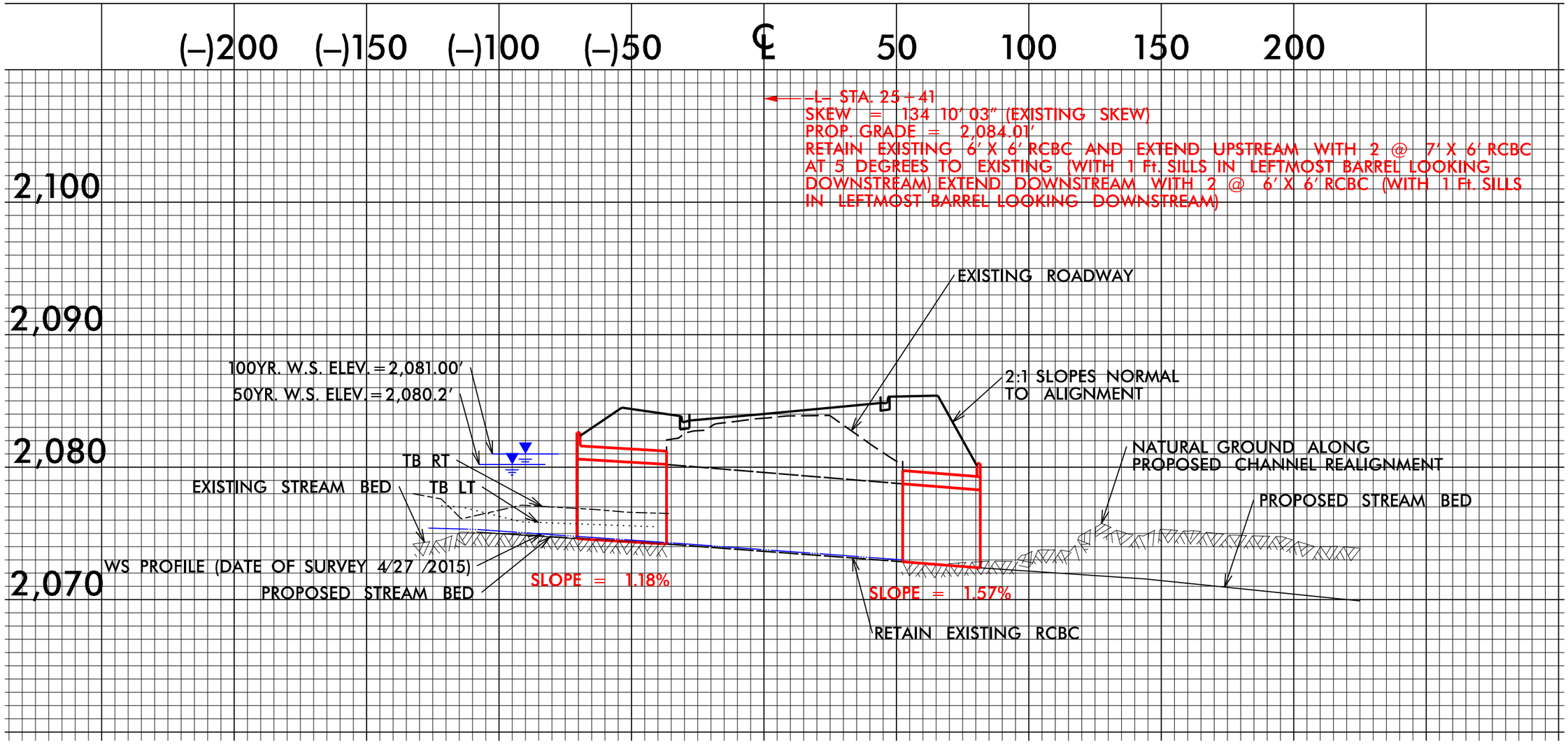
HORIZ. SCALE 1" = 40'
VERT. SCALE 1" = 8'

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

PERMIT DRAWING
SHEET 6 OF 48

SITE 1



HORIZ. SCALE 1" = 40'
VERT. SCALE 1" = 8'

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478 / 700		1456 / 1900

SR 1378 — 15

2015 / 2035 ESTIMATED ADT

1933 / 2600

SR-1378
OLD NEWFOUNDLAND RD

DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

PERMIT DRAWING
SHEET 7 OF 48

SCALE 1" = 100'

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
U-3301	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 24 & 25
FOR PROFILE OF LINE -Y4- SEE SHEET 34
FOR PROFILE OF LINE -Y5- SEE SHEET 35

MATCH LINE -L- STA. 36+00.00 SEE SHEET 5

MATCH LINE -L- STA. 49+00.00 SEE SHEET 7

HARRY C. SHARPE

LARRY W. FERGUSON 19

M. HEATHER McMULLEN 18

R. G. REEMS 15

CARL FRANCIS & TRACEY EDWARDS BROWN 14

GEORGE R. LANE 16

MELISSA W. HERRON 13

RONALD SILVER 17

AVIS MAYRAND

PETER MAYRAND 155

NORMAN & JOYCE BEDNAR TRUSTEES 22

JANE W. McMAHAN 23

BELL UNITED METHODIST CHURCH 20

2SBK BELL UNITED METHODIST CHURCH

BELL UNITED METHODIST CHURCH 20

TINA HILL 26

CONNIE R. NEWCOME 28

JAMES H. COMAN 24

JOSEPH W. SHEEHAN 27

HISTORICAL PROPERTY LINE

CLASS B RR
GEOTEXT EST. 5 SY
RR EST. 1 TN

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 2

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 11

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 4

SPECIAL LATERAL "V" DITCH SEE DETAIL 5

LATERAL BASE DITCH SEE DETAIL 6

CONNECT 12" HDPE TO SYSTEM

SR 1378 OLD NEWFOUNDLAND RD

SR 1403 MAYRAND RD

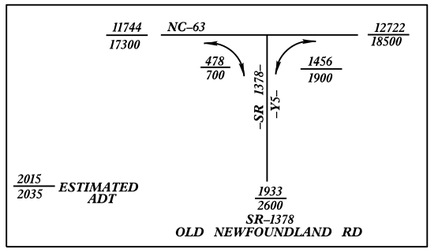
SITE 3

100' 0' 100'
GRAPHIC SCALE

REVISIONS

8/17/99

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DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

PERMIT DRAWING
SHEET 8 OF 48

SCALE 1" = 100'

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
U-3301	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
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FOR PROFILE OF LINE -L- SEE SHEETS 24 & 25
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FOR PROFILE OF LINE -Y5- SEE SHEET 35

SEE SHEET 5

MATCH LINE -L- STA. 36+00.00 SEE SHEET 6

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HARRY C. SHARPE

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AVIS MAYRAND

RONALD SILVER

BELL UNITED METHODIST CHURCH

JAMES H. COMAN

JOSEPH W. SHEEHAN

PETER MAYRAND

HISTORICAL PROPERTY LINE

SITE 3

100' 0' 100'
GRAPHIC SCALE

REVISIONS

8/17/99

3/14/2016
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PROJECT REFERENCE NO.	SHEET NO.
	6 DETAIL
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

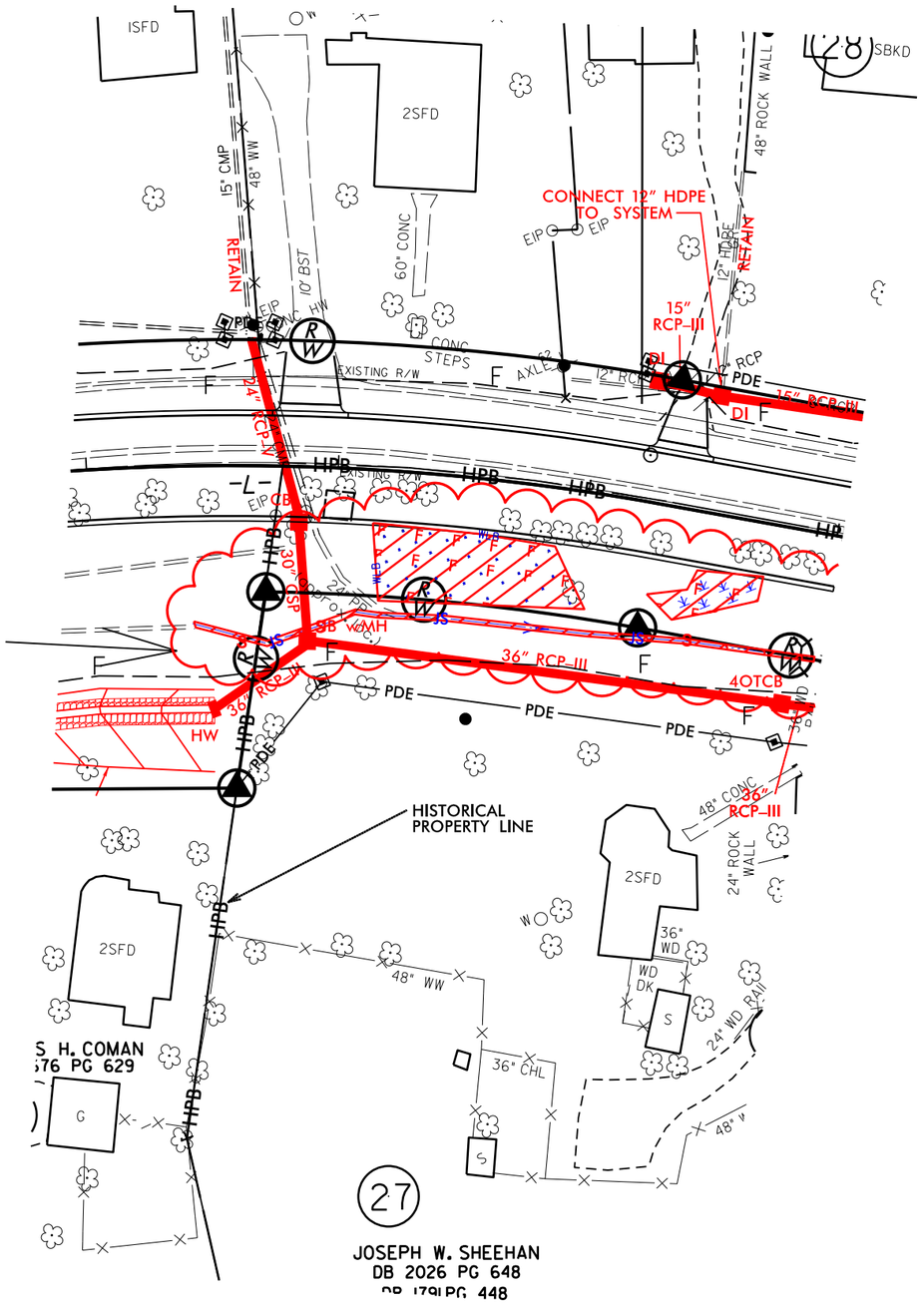
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 9 OF 48

SCALE 1" = 60'

38 NAD

SITE 3



F/F DENOTES FILL IN WETLAND

S/S DENOTES IMPACTS IN SURFACE WATER

100' 0' 100'

GRAPHIC SCALE

REVISIONS

8/17/99

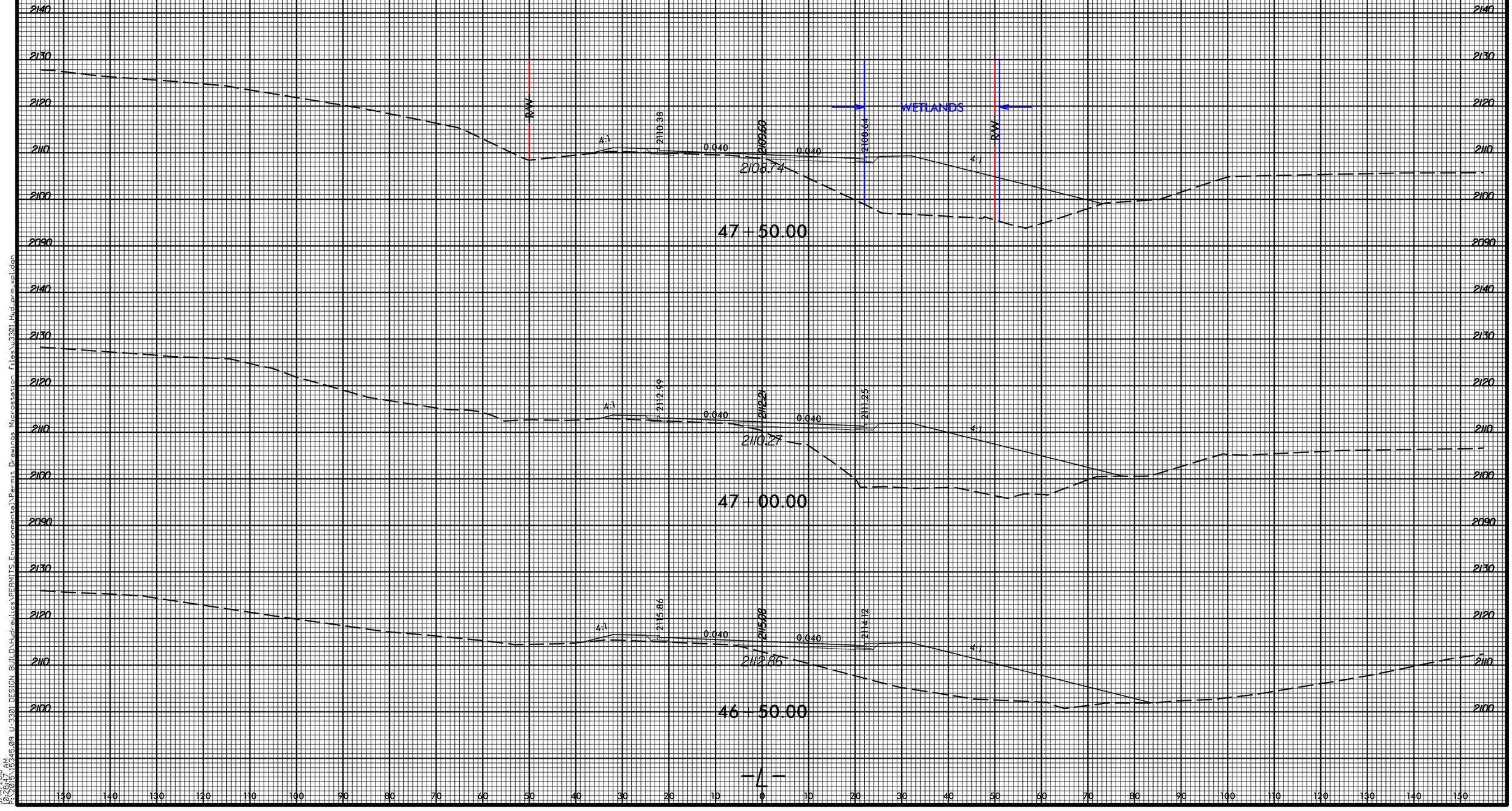
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-3301	X-20

PERMIT DRAWING
SHEET 10 OF 48

SCALE 1" = 20'

SITE 3



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-3301	X-21

PERMIT DRAWING
SHEET 11 OF XX

SCALE 1" = 20'

SITE 3

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

2130 2120 2110 2100 2090

4:1 0.005 0.020 4:1

2103.9 2103.24 2102.44 2102.15

49 + 00.00

RXW PIDE

4:1 0.020 0.020 4:1

2105.59 2105.24 2104.62 2104.39

WETLANDS

48 + 50.00

RXW PIDE

4:1 0.035 0.035 4:1

2107.93 2107.24 2106.38 2106.36

WETLANDS

48 + 00.00

8/23/99

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PROJECT REFERENCE NO.	SHEET NO.
U-3301	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL 4
JS STREAM OUTLET PIPE PROTECTION
(Not to Scale)

Min. D = Existing Ch Depth
Min. d = Outlet Pipe Dia.
B= Existing Channel Base

See Plan View for Length of Bank Protection
Type of Liner= 26 TONS, CL I Rip-Rap
Geotextile= 45 sy
STA. 61+98 -L- (RT)

DETAIL 5
LATERAL 'V' DITCH
(Not to Scale)

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

Type of Liner= Class I Rip-Rap
FROM STA. 57+55 TO STA. 58+38 -L- (RT)

DETAIL 6
STANDARD BASE DITCH
(Not to Scale)

Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= Var. to 4.0 Ft.

*When B is < 6.0'
EST. DD=31 CU. YDS.; EST. GEOTEXTILE=48 SQ. YDS.;
EST. RIP. RAP=31 TONS CL. II RIP RAP
-L- STA. 58+50 RT

FOR PROFILE OF LINE -L- SEE SHEET 25
FOR PROFILE OF LINE -Y6- SEE SHEET 35

PERMIT DRAWING
SHEET 12 OF 48

SCALE 1"=100'

GARLEEN BROWN 38
LARRY W. FERGUSON 39
DWAYNE GOSSETT
IGLESIA CRISTIANA EBENEZER 40
K&D INVESTMENT PROPERTIES, LLC 45
LEICESTER VOLUNTEER FIRE DEPT INC
GARY DONALD MEADOWS 31
STEPHEN K. SLUDER 36
HENRY FRISBEE 34
BECKY L. BRIDGES 28
B. M. PONDER 33
BELLSOUTH TELLCO., INC. 27 30
SEA-NIC ENTERPRISES, INC. 35
STEPHEN G. MORGAN 37
OWEN C. MEADOWS 41
RICHARD HARDIN 42
L. MICHAEL LUSK 44
JANICE K. PAYNE 46
RUSSELL LEE GOFF 47
GORDON E. PINCZKOWSKI

SPECIAL LATERAL 'V' DITCH SEE DETAIL 2
SPECIAL LATERAL 'V' DITCH SEE DETAIL 3
LATERAL 'V' DITCH SEE DETAIL 5
STANDARD BASE DITCH SEE DETAIL 6

FLOWABLE FILL

BANK STABILIZATION

Sta.= 61+27 -L- RT
Q2= 23 cfs
V= 2.4 fps
d= 1.2 ft
s= 0.011 ft/ft
n= 0.06
Liner= CL II Bank Stabilization

Sta.= 61+27 -L- RT
Q2= 77 cfs
V= 3.7 fps
d= 2.1 ft
s= 0.011 ft/ft
n= 0.06
Liner= CL II Bank Stabilization

MATCH LINE -L- STA. 49+00.00 SEE SHEET 6
MATCH LINE -L- STA. 62+00.00 SEE SHEET 8

SITE 3
SITE 4

ALEXANDER RD
SR-1620
2015 ESTIMATED ADT
2035 ESTIMATED ADT
4630 / 7000
SR 1620 -Y6-
1933 / 2600
2696 / 4400
12,722 / 18500
13,485 / 20300
NC-63

100' 0' 100'
GRAPHIC SCALE

REVISIONS
8/17/99

3/14/2016
10:32:38 AM
C:\WORK\5345.02_U-3301_DESIGN_BUILD\Hydraulics\PERMITS Engineering\R/W Permit Drawings Mapping Files\U-3301 Hyd permit rev 12 and 13 ash 7.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3301	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

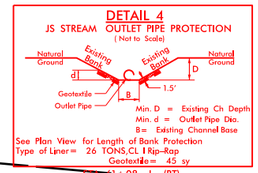
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

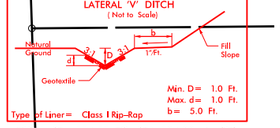
DETAIL 4
JS STREAM OUTLET PIPE PROTECTION
(Not to Scale)



Min. D = Existing Ch Depth
Min. d = Outlet Pipe Dia.
B = Existing Channel Base

See Plan View for Length of Bank Protection
Type of Liner = 26 TONS, CL I Rip-Rap
Geotextile = 45 sy
STA. 61+27 -L- (RT)

DETAIL 5
LATERAL 'V' DITCH
(Not to Scale)



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

Type of Liner = Class I Rip-Rap
FROM STA. 57+55 TO STA. 58+38 -L- (RT)

DETAIL 6
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= Var. to 4.0 Ft.
*When B is < 6.0'
EST. DDP=31 CU. YDS.; EST. GEOTEXTILE=48 SQ. YDS.;
EST. RIP. RAP=31 TONS, CL. I RIP RAP
-L- STA. 58+50 RT

FOR PROFILE OF LINE -L- SEE SHEET 25
FOR PROFILE OF LINE -Y6- SEE SHEET 35

PERMIT DRAWING
SHEET 13 OF 48

SCALE 1" = 100'

GARLEEN BROWN (38)
LEICESTER VOLUNTEER FIRE DEPT INC
GARY DONALD MEADOWS (31)
STEPHEN K. SLUDER (36)
HENRY FRISBEE (34)
BECKY L. BRIDGES (28)
B. M. PONDER (33)
BELLSOUTH TELLCO., INC. (30)
SEA-NIC ENTERPRISES, INC. (35)
STEPHEN G. MORGAN (37)
LARRY W. FERGUSON (39)
DWAYNE GOSSETT
IGLESIA CRISTIANA EBENEZER (40)
OWEN C. MEADOWS (41)
RICHARD HARDIN (42)
L. MICHAEL LUSK (44)
K&D INVESTMENT PROPERTIES, LLC (45)
JANICE K. PAYNE (46)
RUSSELL LEE GOFF (47)
GORDON E. PINCZKOWSKI (47)

SITE 3
SITE 4

MATCH LINE -L- STA. 49+00.00 SEE SHEET 6
MATCH LINE -L- STA. 62+00.00 SEE SHEET 8

BANK STABILIZATION

Sta. = 61+27 -L- RT
Q2 = 73 cfs
V = 2.4 fps
d = 1.2 ft
s = 0.011 ft/ft
n = 0.06
Liner = CL II Bank Stabilization

Sta. = 61+27 -L- RT
Q2 = 77 cfs
V = 3.2 fps
d = 2.1 ft
s = 0.011 ft/ft
n = 0.06
Liner = CL II Bank Stabilization

ALEXANDER RD SR-1620 -Y6-

	2015 ESTIMATED ADT / 2035 ESTIMATED ADT
NW	4630 / 7000
SW	1933 / 2600
NE	2696 / 4400
SE	12,722 / 18500
NC-63	13,485 / 20300

100' 0' 100'
GRAPHIC SCALE

REVISIONS
8/17/99

3/14/2016
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PROJECT REFERENCE NO.	SHEET NO.
	7 DETAIL
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

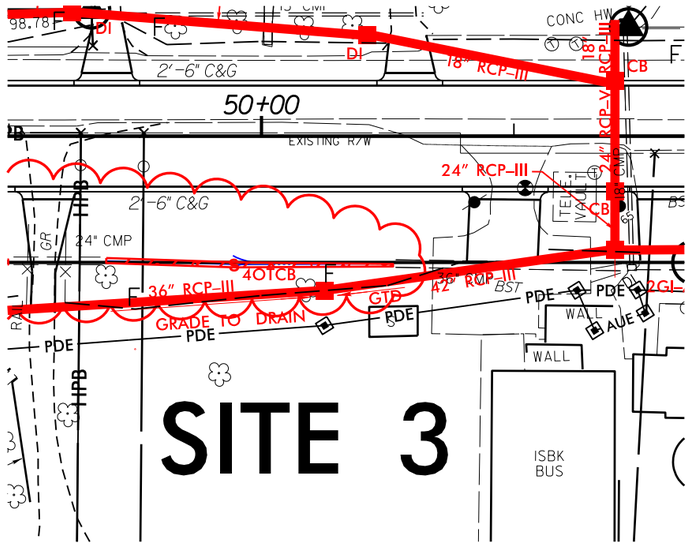
PERMIT DRAWING
SHEET 14 OF 48

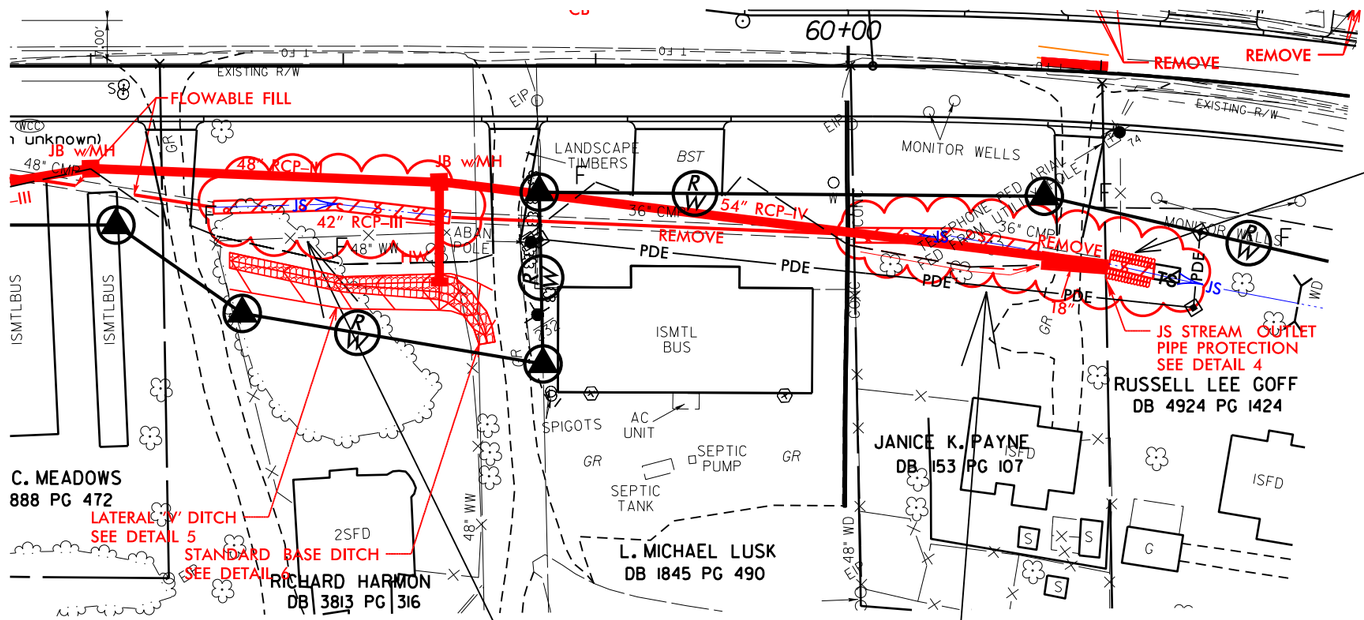
SCALE 1" = 60'

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83





100' 0' 100'
GRAPHIC SCALE

REVISIONS

8/17/99

3/14/2016
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PROJECT REFERENCE NO.	SHEET NO.
U-3301	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 15 OF 48

SCALE 1"=100'

NAD 83

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

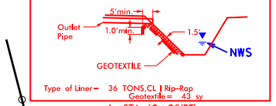
FOR PROFILE OF LINE -L- SEE SHEETS 25 & 26
FOR CULVERT PLANS SEE SHEETS C-__ THRU C-__

REVISIONS

8/17/99

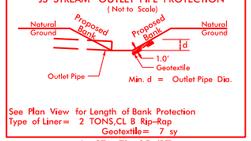
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DETAIL 1
RIP RAP AT EMBANKMENT
(Not to Scale)



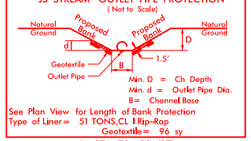
Type of Liner= 36 TONS,CL I Rip-Rap
Geotextile = 43 sy
-L- STA. 62+25(RT)
-L- STA. 67+91(RT)

DETAIL 6
JS STREAM OUTLET PIPE PROTECTION
(Not to Scale)



See Plan View for Length of Bank Protection
Type of Liner= 2 TONS,CL B Rip-Rap
Geotextile= 7 sy
-L- STA. 71+35 (RT)

DETAIL 5
JS STREAM OUTLET PIPE PROTECTION
(Not to Scale)



See Plan View for Length of Bank Protection
Type of Liner= 51 TONS,CL I Rip-Rap
Geotextile= 96 sy
-L- STA. 70+80 (RT)
-L- STA. 72+75 (RT)

SITE 4

SITE 5

MATCH LINE -L- STA. 62+00.00 SEE SHEET 7

MATCH LINE -L- STA. 75+00.00 SEE SHEET 9

PC Sta. 71+66.33

PT Sta. 63+88.55

BANK STABILIZATION

BANK STABILIZATION

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 2

CLASS I RIP RAP AT EMBANKMENT SEE DETAIL 1

CLASS I RIP RAP AT EMBANKMENT SEE DETAIL 1

JS STREAM OUTLET PIPE PROTECTION SEE DETAIL 5

JS CHANNEL CHANGE SEE DETAIL 4

JS STREAM OUTLET PIPE PROTECTION SEE DETAIL 4

JS STREAM OUTLET PIPE PROTECTION SEE DETAIL 5

BERM DITCH SEE DETAIL 3

GRADE TO DRAIN

Retain

100' 0' 100'
GRAPHIC SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-3301	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 16 OF 48

SCALE 1"=100'

NAD 83

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR PROFILE OF LINE -L- SEE SHEETS 25 & 26
FOR CULVERT PLANS SEE SHEETS C-__ THRU C-__

REVISIONS

8/17/99

DETAIL 1
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 36 TONS,CL I Rip-Rap
Geotextile = 43 sy
-L- STA. 62+25(RT)
-L- STA. 67+91(RT)

MATCH LINE -L- STA. 62+00.00 SEE SHEET 7

MATCH LINE -L- STA. 75+00.00 SEE SHEET 9

PC Sta. 71+66.33

PT Sta. 63+88.55

SITE 4

SITE 5

BANK STABILIZATION

BANK STABILIZATION

CLASS I RIP RAP AT EMBANKMENT SEE DETAIL 1

CLASS I RIP RAP AT EMBANKMENT SEE DETAIL 1

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 2

BERM DITCH SEE DETAIL 3

JS CHANNEL CHANGE SEE DETAIL 4

JS STREAM OUTLET PIPE PROTECTION SEE DETAIL 5

JS STREAM OUTLET PIPE PROTECTION SEE DETAIL 5

JS STREAM OUTLET PIPE PROTECTION SEE DETAIL 5

CB (TO TIE IN BUSINESS ROOF DRAINS)

CONTOUR AND EXTEND

GRADE TO DRAIN

Retain

RETAINING WALL

100 GAL LP TANK

SEPTIC

CONC WALL

ISMTL BUS

WELL INSIDE BASEMENT

ISBKD

60" CONC

ISFD

2SFD

HTR

ISFBKD

G APT

ISF BUS

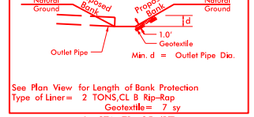
SSBW

POSTS

CONC BLK WALL

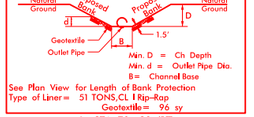
10' BST WALL

DETAIL 6
JS STREAM OUTLET PIPE PROTECTION
(Not to Scale)



See Plan View for Length of Bank Protection
Type of Liner= 2 TONS,CL B Rip-Rap
Geotextile= 7 sy
-L- STA. 71+35 (RT)

DETAIL 5
JS STREAM OUTLET PIPE PROTECTION
(Not to Scale)



Min. D = Ch Depth
Min. d = Outlet Pipe Dia.
B= Channel Base
See Plan View for Length of Bank Protection
Type of Liner= 51 TONS,CL I Rip-Rap
Geotextile= 96 sy
-L- STA. 70+80 (RT)
-L- STA. 72+75 (RT)

100' 0' 100'
GRAPHIC SCALE

4/13/2016
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PERMIT DRAWING
SHEET 17 OF 48

SCALE 1" = 60'

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

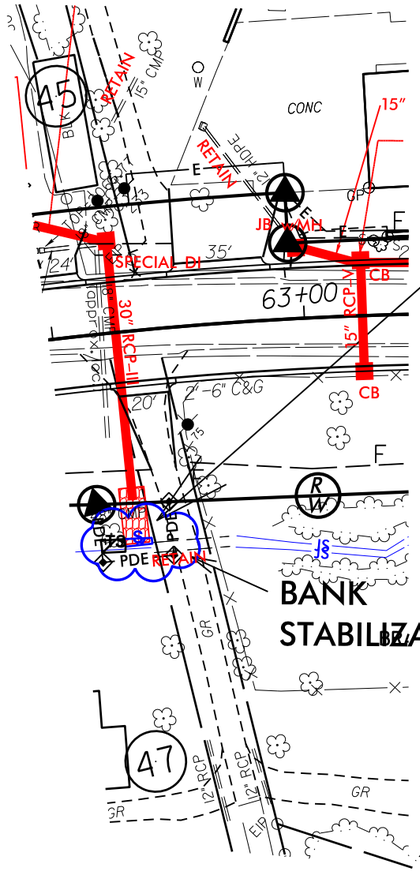
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

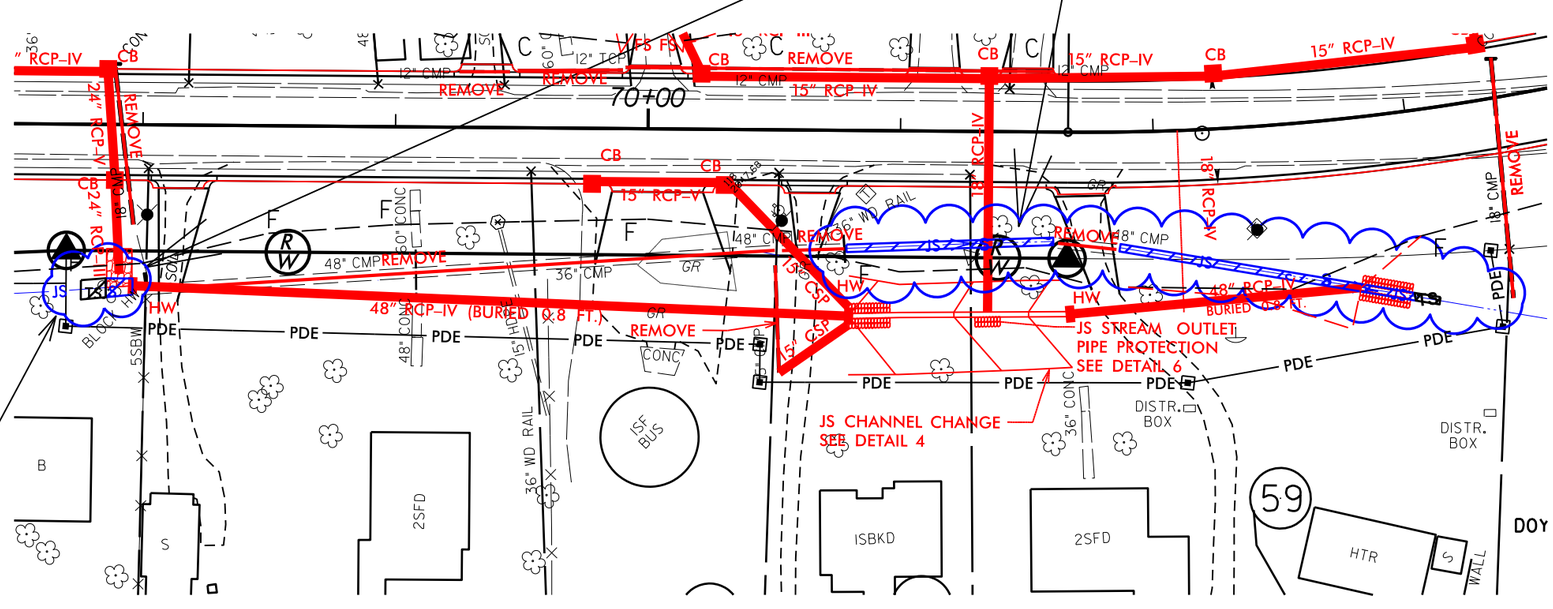
SITE 4



BANK STABILIZATION

BANK STABILIZATION

SITE 5



100' 0' 100'

GRAPHIC SCALE

REVISIONS

8/17/99

4/13/2016
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REVISIONS

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-3301	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 18 OF 48

SCALE 1"=100'

100' 0' 100'
GRAPHIC SCALE

NAD 83

DENOTES PIPES REPLACED BY OPEN CHANNEL

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR PROFILE OF –L– SEE SHEETS 26
FOR PROFILE OF –Y7– SEE SHEET 35
FOR PROFILE OF –Y8– SEE SHEET 36
FOR PROFILE OF –Y9– SEE SHEET 36
FOR PROFILE OF –DR9REV– SEE SHEET 40

SITE 7

BANK STABILIZATION

LINDA W. CULBERTSON

ELAINE C. PRICE

DAVID JACKSON

ELEONORE M. SHELTON

GARY E. MONEYHAM, ET AL

GAIL K. MOORE

DOUGLAS A ROBERSON (LE)

MARK HOLT

DEMETRE C. THEODOSSIS

DAROLD L. ROSE

PAVEL KUSHNIR

KENNETH S. McMULLEN

ALBERT FREEMAN

JAMES K. LANDOLF

DAVID GOLDSMITH

HATTIE PONDER

SITE 6

MATCH LINE –L– STA. 89+00.00 SEE SHEET 10

MATCH LINE –L– STA. 75+00.00 SEE SHEET 8

STANDARD BASE DITCH SEE DETAIL 4 (Length = 37')

JS CHANNEL CHANGE SEE DETAIL 3

BERM DITCH SEE DETAIL 1

FLOWABLE FILL

GRADE TO DRAIN

RETAIN EXISTING CAST IRON CONST. PIPE

Retain Existing R/W

INLET CHANNEL TYPICAL SEE DETAIL 6

EXTEND 7'X6' RCBC

7'X6' BARREL

REMOVE

ROCK CROSS VANE SEE DETAIL 8

OUTLET CHANNEL TYPICAL SEE DETAIL 7

STD BOARD BASE DITCH SEE DETAIL 4

JS CHANNEL CHANGE SEE DETAIL 2

15" CSP w/ELBOW

72" RCP-III (BURIED 1 FT.)

24" RCP-IV

15" RCP-IV

18" CMP

15" CMP

36" CMP

2-54" CMP

60" WW & ISBW

45BW

ISFD

ISBLK BUS

HTR

BLK FOUND

MTL GATE

ALUE

CONC

RCK WALL

DETAIL 3
JS CHANNEL CHANGE
(Not to Scale)

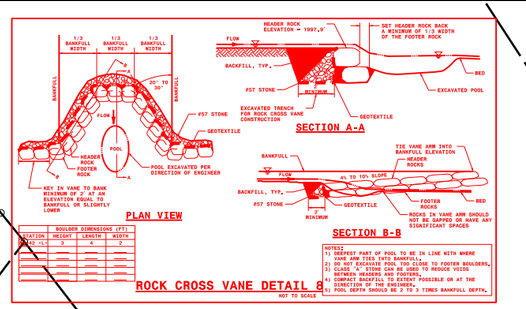


Min. D = 2.5 Ft.
Max. d = 2.5 Ft.
B = 4.0 Ft.
b = 5.0 Ft.

Type of Liner = CLASS I Rip-Rap

FROM STA. 82+22 TO STA. 82+75 –L– (LT)

ROCK CROSS VANE DETAIL 8

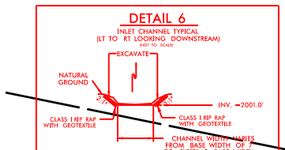


BOULDER DIMENSIONS (FT)			
LOCATION (LOOKING –L–)	HEIGHT	LENGTH	WIDTH
1	3	4	2

NOTES:
1) DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2) DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3) CLASS I STONE CAN BE USED TO PRODUCE VOIDS BETWEEN HEADER AND FOOTER ROCKS.
4) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5) POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

NOT TO SCALE

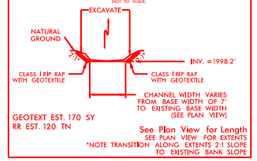
DETAIL 6
INLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
(NOT TO SCALE)



GEOTEXT EST. 25 SY
RR EST. 17 TN

See Plan View for Length
SEE PLAN VIEW FOR EXTENTS
*NOTE TRANSITION ALONG EXTENTS 2:1 SLOPE TO EXISTING BANK SLOPE

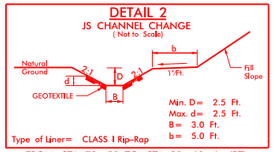
DETAIL 7
OUTLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
(NOT TO SCALE)



GEOTEXT EST. 170 SY
RR EST. 120 TN

See Plan View for Length
SEE PLAN VIEW FOR EXTENTS
*NOTE TRANSITION ALONG EXTENTS 2:1 SLOPE TO EXISTING BANK SLOPE

DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)

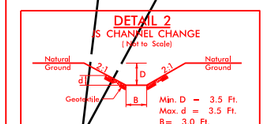


Min. D = 2.5 Ft.
Max. d = 2.5 Ft.
B = 3.0 Ft.
b = 5.0 Ft.

Type of Liner = CLASS I Rip-Rap

FROM STA. 78+50 TO STA. 80+60 –L– (RT)

DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 3.5 Ft.
Max. d = 3.5 Ft.
B = 3.0 Ft.

Type of Liner = Class I Rip-Rap

FROM STA. 88+91 TO STA. 89+23 –L– (RT)

3/14/2016
10:39:53 AM
C:\Projects\45.00_U-3301_DESIGN_BUILD\Hydraulics\PERMITS\Temporary\NWP\Permit Drawings_Mountains_Final\U-3301_Final_Permit_Drawings_Mountains.dgn

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3301	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 19 OF 48

SCALE 1"=100'

100' 0' 100'
GRAPHIC SCALE

NAD 83

FOR PROFILE OF –L– SEE SHEETS 26
FOR PROFILE OF –Y7– SEE SHEET 35
FOR PROFILE OF –Y8– SEE SHEET 36
FOR PROFILE OF –Y9– SEE SHEET 36
FOR PROFILE OF –DR9REV– SEE SHEET 40

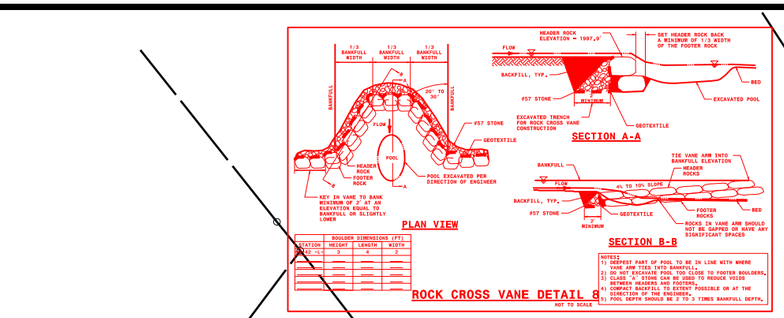
DENOTES PIPES REPLACED BY OPEN CHANNEL

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

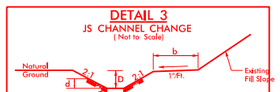
SITE 7
BANK STABILIZATION

SITE 6



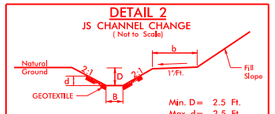
ROCK CROSS VANE DETAIL 8
NOT TO SCALE

DETAIL 3
JS CHANNEL CHANGE
(Not to Scale)



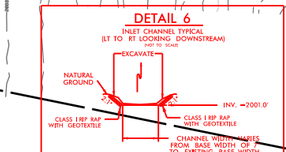
Min. D = 2.5 Ft.
Max. d = 2.5 Ft.
B = 4.0 Ft.
b = 5.0 Ft.
Type of Liner = CLASS I Rip-Rap
FROM STA. 82+22 TO STA. 82+75 –L– (LT)

DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)



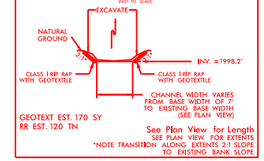
Min. D = 2.5 Ft.
Max. d = 2.5 Ft.
B = 3.0 Ft.
b = 5.0 Ft.
Type of Liner = CLASS I Rip-Rap
FROM STA. 78+50 TO STA. 80+60 –L– (RT)

DETAIL 6
INLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
(NOT TO SCALE)



GEOTEXT EST. 25 SY
RR EST. 17 TN
See Plan View for Length
SEE PLAN VIEW FOR EXTENTS
*NOTE TRANSITION ALONG EXTENTS 2:1 SLOPE TO EXISTING BANK SLOPE

DETAIL 7
OUTLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
(NOT TO SCALE)



GEOTEXT EST. 170 SY
RR EST. 120 TN
See Plan View for Length
SEE PLAN VIEW FOR EXTENTS
*NOTE TRANSITION ALONG EXTENTS 2:1 SLOPE TO EXISTING BANK SLOPE

DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 3.5 Ft.
Max. d = 3.5 Ft.
B = 3.0 Ft.
Type of Liner = Class I Rip-Rap
FROM STA. 88+91 TO STA. 89+23 –L– (RT)

3/14/2016
10:39:14 AM
PERMITS Transportation\NCDOT Projects Maps\U-3301 Hyde County\Design\U-3301_DESIGN_BUILD\Roadway\U-3301_PERMIT_DRAWING_SHEET_19_and_19_add_1.dgn

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 20 OF 48

SCALE 1" = 60'

OC OC DENOTES PIPES REPLACED BY OPEN CHANNEL

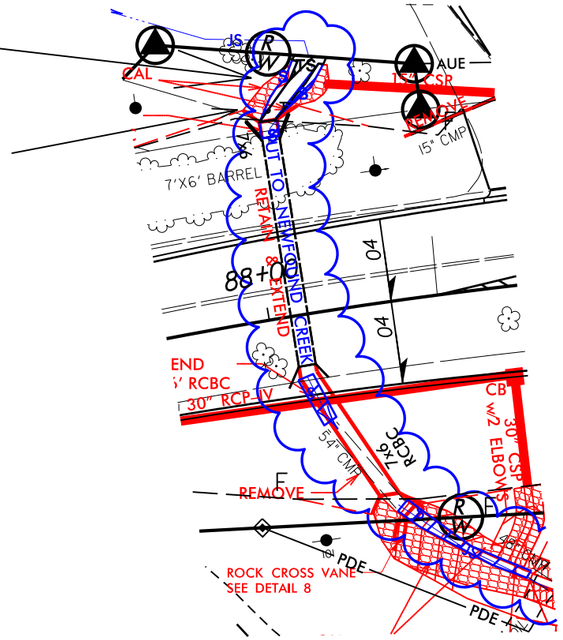
S S DENOTES IMPACTS IN SURFACE WATER

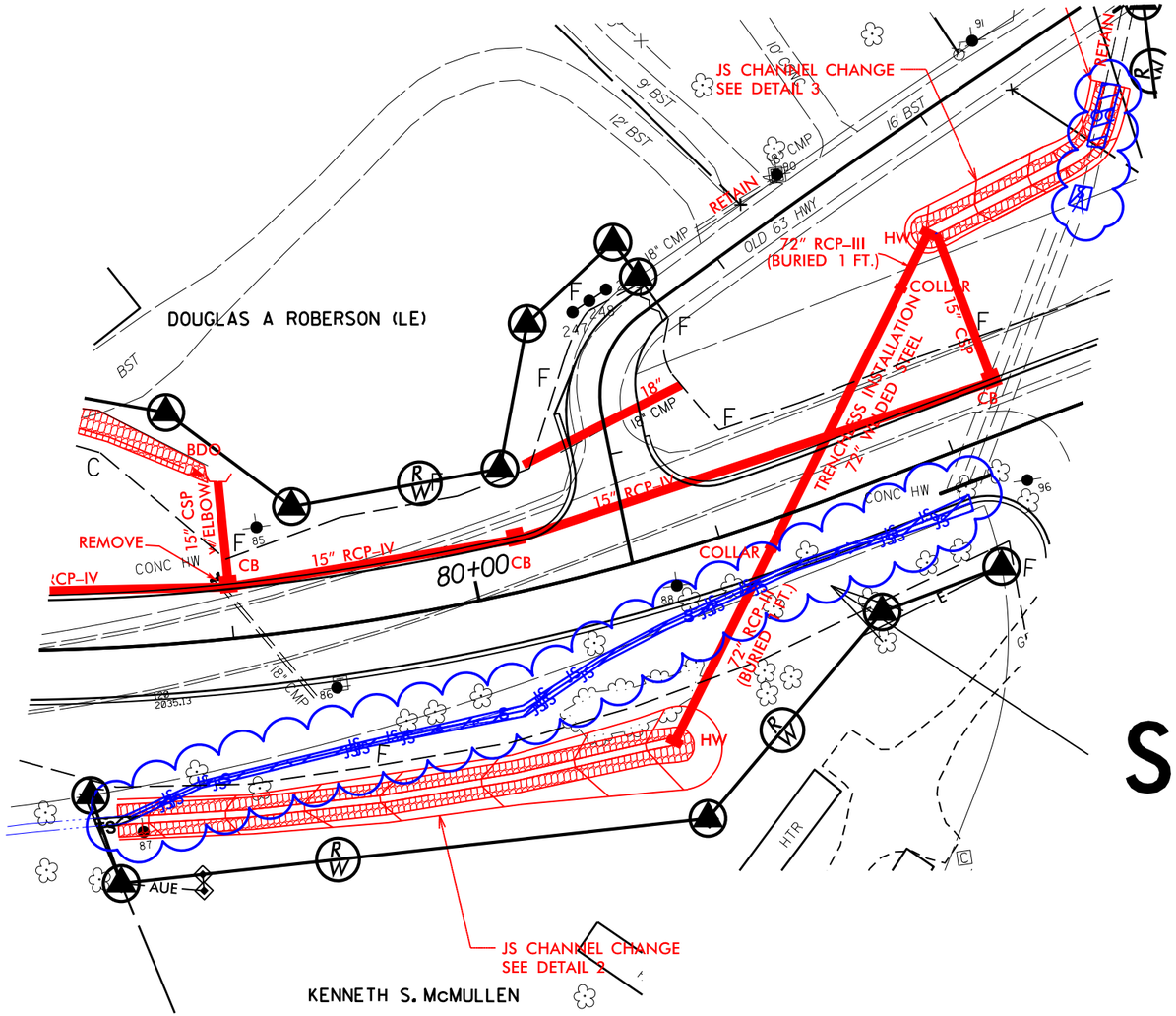
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

SITE 7

BANK STABILIZATION





SITE 6

100' 0' 100'

GRAPHIC SCALE

REVISIONS

8/17/99

3/14/2016
10:40:34 AM

PERMIT DRAWING
SHEET 21 OF 48

PROJECT REFERENCE NO.	SHEET NO.

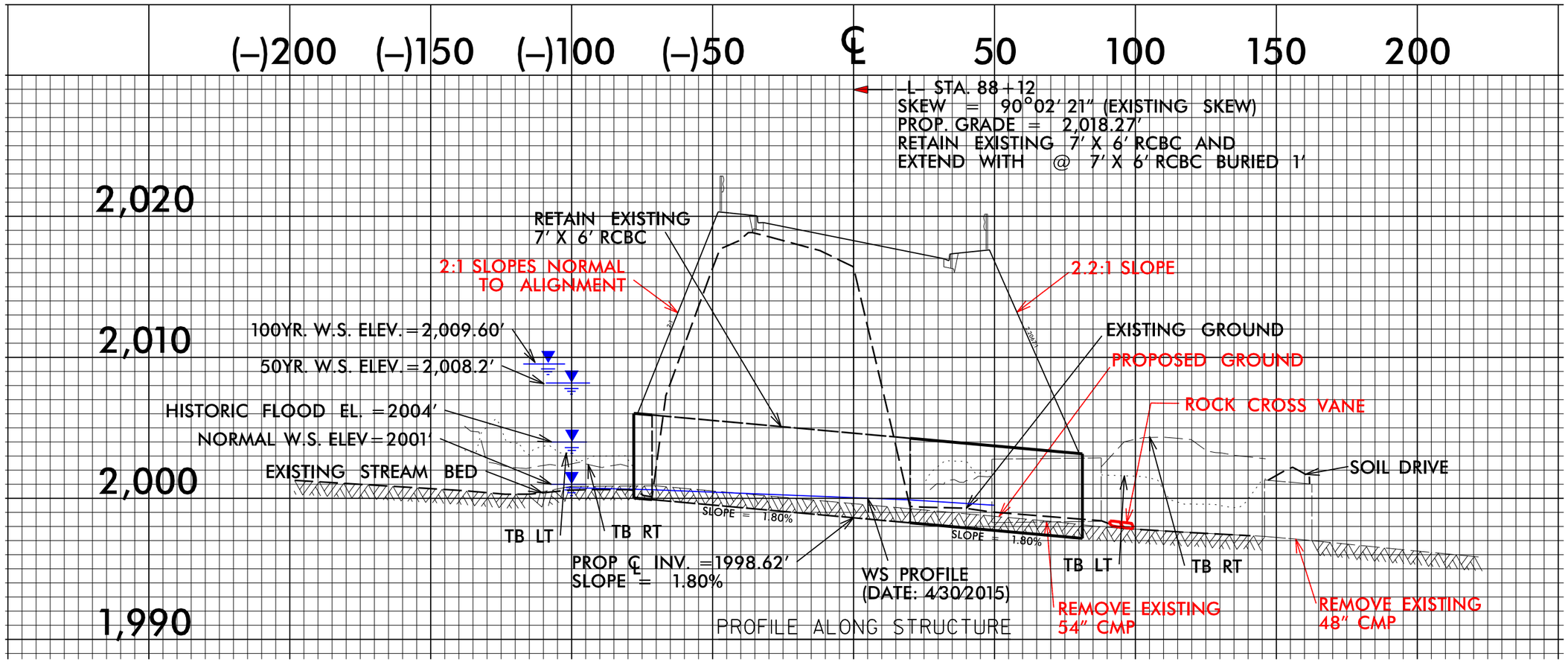
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 7



HORIZ. SCALE 1" = 40'
VERT. SCALE 1" = 8'

5/14/99
3/14/2016
10:41:36 AM
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PERMIT DRAWING
SHEET 22 OF 48

SCALE 1" = 100'

100' 0' 100'

GRAPHIC SCALE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
U-3301	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF –L– SEE SHEET 26 & 27
FOR PROFILE OF –DRRTS– SEE SHEET 40
FOR STRUCTURE PLANS SEE S–1 THRU S–

REVISIONS

8/17/99

MATCH LINE –L– STA. 89+00.00 SEE SHEET 9

MATCH LINE –L– STA. 103+00.00 SEE SHEET 11

NAD 83

NEWFOUND BAPTIST CHURCH, INC. (73)

NEW FOUND BAPTIST CHURCH BK

CEMETERY

MARIE H. RICKARD

KYLE M. CARVER, SR. (77)

SYCAMORE VALLEY FARM, LLC (79)

PAVEL KUSHNIR (72)

KATHLEEN DARNELL (74)

JP MORGAN CHASE BANK NATIONAL ASSOC.

MICHAEL HAYNES (61)

JAMES K. LANDOLF

LARRY W. FERGUSON & JOE FERGUSON (76)

VANCE E. RANDALL (78)

NEWFOUND ESTATES HOA, INC. (110)

REMOVE EXISTING SYSTEM

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 1

REMOVE 4 L.F. +/- CONC CURB

15" CSP W/1 ELB.

COLLAR AND EXTEND

SPECIAL LATERAL V DITCH SEE DETAIL 9

CLASS 'B' RR GEOTEXT EST. 10 SY RR EST. 3 TN

CLASS 'B' RR GEOTEXT EST. 7 SY RR EST. 2 TN

CB AS JB

REMOVE FLOWABLE FILL

JB? (location unknown)

REMOVE JS CHANNEL CHANGE SEE DETAIL 2

BANK STABILIZATION

JS CHANNEL CHANGE SEE DETAIL 4

JS CHANNEL CHANGE SEE DETAIL 5

JS STREAM OUTLET PIPE PROTECTION SEE DETAIL 10

LATERAL BASE DITCH SEE DETAIL 6

STANDARD BASE DITCH SEE DETAIL 7

CLASS II RIP RAP AT EMBANKMENT SEE DETAIL 8

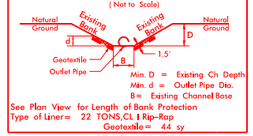
SITE 7

SITE 7A

SITE 8

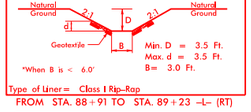
BANK STABILIZATION

DETAIL 10
JS STREAM OUTLET PIPE PROTECTION
(Not to Scale)



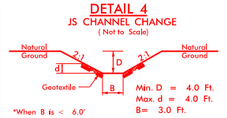
Min. D = Existing Ch Depth
Min. d = Outlet Pipe Dia.
B = Existing Channel Base
See Plan View for Length of Bank Protection
Type of Liner = 22 TONS,CL I Rip-Rap
Geotextile = 44 sy
–L– STA. 94+50 (RT)

DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)



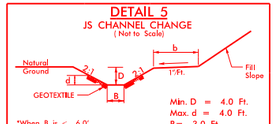
Min. D = 3.5 Ft.
Max. d = 3.5 Ft.
B = 3.0 Ft.
*When B is < 6.0'
Type of Liner = Class I Rip-Rap
FROM STA. 88+91 TO STA. 89+23 –L– (RT)

DETAIL 4
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B = 3.0 Ft.
*When B is < 6.0'
Type of Liner = Class I Rip-Rap
FROM STA. 90+65 TO STA. 91+50 –L– (RT)

DETAIL 5
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B = 3.0 Ft.
b = 5.0 Ft.
*When B is < 6.0'
Type of Liner = Class I Rip-Rap
FROM STA. 91+50 TO STA. 93+55 –L– (RT)

DETAIL 8
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 26 TONS,CL II Rip-Rap
Geotextile = 39 sy
–L– STA. 100+90(RT)

CONC.ISLAND

3/17/2016
8:23:07 PM
C:\Projects\U-3301\Design\PERMITS\Permit Drawings\Permit Drawings U-3301.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3301	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 23 OF 48

SCALE 1" = 100'

GRAPHIC SCALE 100' 0' 100'

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR PROFILE OF –L– SEE SHEET 26 & 27
FOR PROFILE OF –DRRTS– SEE SHEET 40
FOR STRUCTURE PLANS SEE S–1 THRU S–

REVISIONS

8/17/99

NAD 83

MATCH LINE –L– STA. 89+00.00 SEE SHEET 9

MATCH LINE –L– STA. 103+00.00 SEE SHEET 11

NEWFOUND BAPTIST CHURCH, INC.

NEW FOUND BAPTIST CHURCH BK

CEMETERY

MARIE H. RICKARD

KYLE M. CARVER, SR.

SYCAMORE VALLEY FARM, LLC

PAVEL KUSHNIR

KATHLEEN DARNELL

JP MORGAN CHASE BANK NATIONAL ASSOC.

JAMES K. LANDOLF

MICHAEL HAYNES

LARRY W. FERGUSON & JOE FERGUSON

VANCE E. RANDALL

REMOVE EXISTING SYSTEM

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 1

REMOVE 4 L.F. +/- CONC CURB

15" CSP W/1 ELB.

CB AS JB

REMOVE FLOWABLE FILL

JB? (location unknown)

REMOVE JS CHANNEL CHANGE SEE DETAIL 2

BANK STABILIZATION

JS CHANNEL CHANGE SEE DETAIL 4

JS CHANNEL CHANGE SEE DETAIL 5

JS STREAM OUTLET PIPE PROTECTION SEE DETAIL 10

COLLAR AND EXTEND

SPECIAL LATERAL V DITCH SEE DETAIL 9

CLASS 'B' RR GEOTEXT EST. 10 SY RR EST. 3 TN

CLASS 'B' RR GEOTEXT EST. 7 SY RR EST. 2 TN

LATERAL BASE DITCH SEE DETAIL 6

STANDARD BASE DITCH SEE DETAIL 7

CLASS II RIP RAP AT EMBANKMENT SEE DETAIL 8

NEWFOUND ESTATES HOA, INC.

CONC. ISLAND

SITE 7

SITE 7A

SITE 8

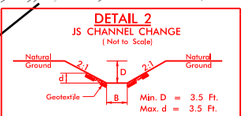
BANK STABILIZATION

DETAIL 10
JS STREAM OUTLET PROTECTION
(Not to Scale)



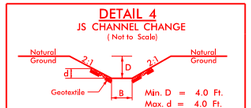
Min. D = Existing Ch Depth
Min. d = Outlet Pipe Dia.
B = Existing Channel Base
See Plan View for Length of Bank Protection
Type of Liner= 22 TONS,CL I Rip-Rap
Geotextile = 44 sy
–L– STA. 94+50 (RT)

DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)



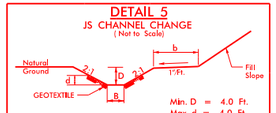
Min. D = 3.5 Ft.
Max. d = 3.5 Ft.
B= 3.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 88+91 TO STA. 89+23 –L– (RT)

DETAIL 4
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B= 3.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 90+65 TO STA. 91+50 –L– (RT)

DETAIL 5
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B= 3.0 Ft.
b= 5.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 91+50 TO STA. 93+55 –L– (RT)

DETAIL 8
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 26 TONS,CL II Rip-Rap
Geotextile = 39 sy
–L– STA. 100+90(RT)

3/17/2016
2:30:05 PM

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

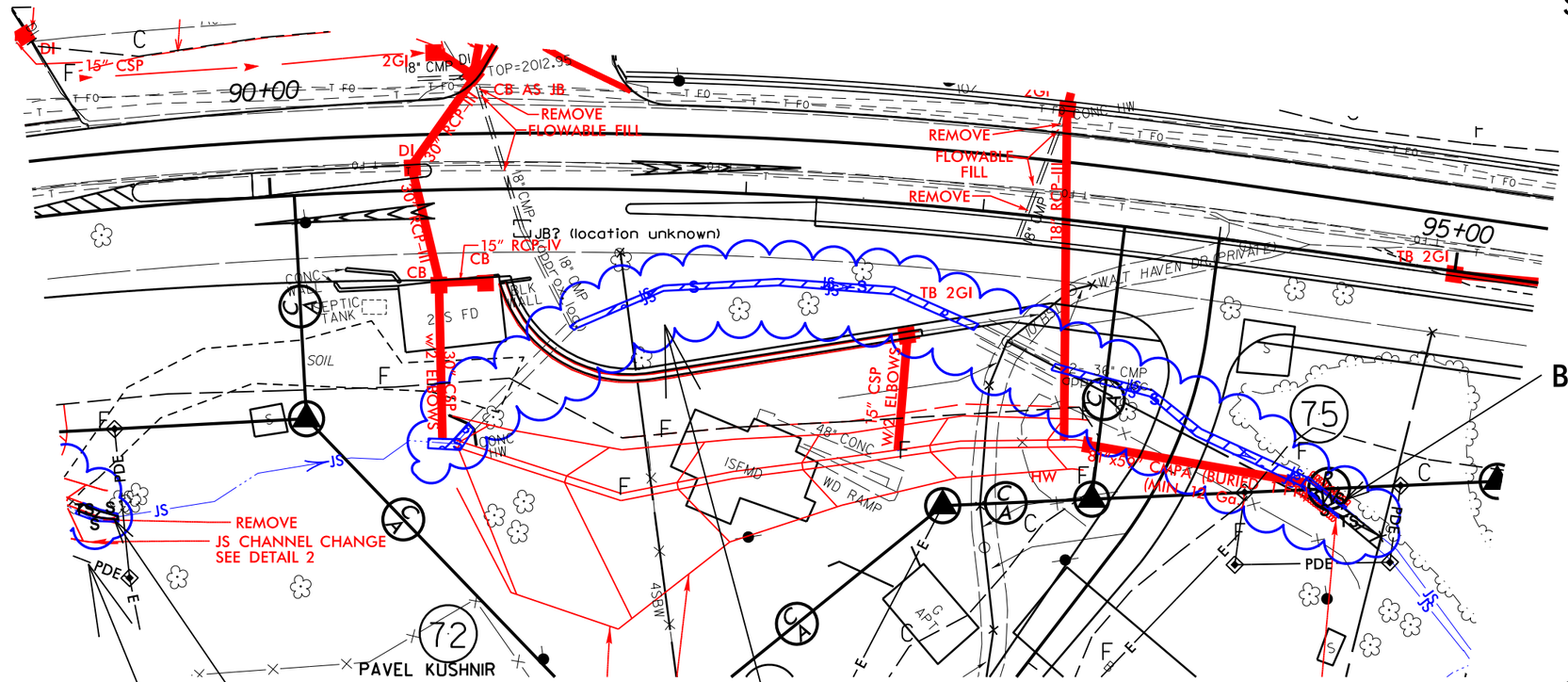
PERMIT DRAWING
SHEET 24 OF 48

SCALE 1" = 60'

NAD 83

REVISIONS

8/17/99



BANK STABILIZATION
RIGHT OF WAY
NOT SHOWN
FOR CLARITY

BANK
STABILIZATION
RIP RAP AND EXISTING PIPE TEXT
NOT SHOWN FOR CLARITY

SITE 7

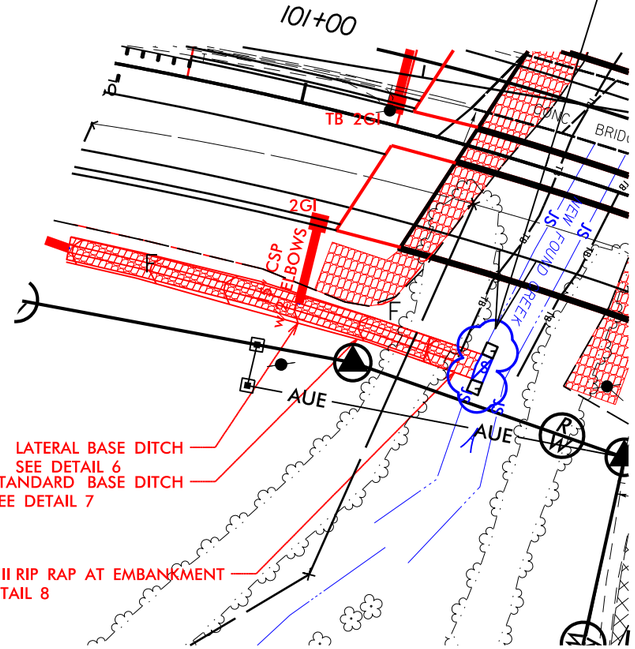
SITE 7A

S/S DENOTES IMPACTS IN SURFACE WATER

TS/TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'
GRAPHIC SCALE

SITE 8
BANK STABILIZATION



3/14/2016
10:44:27 AM

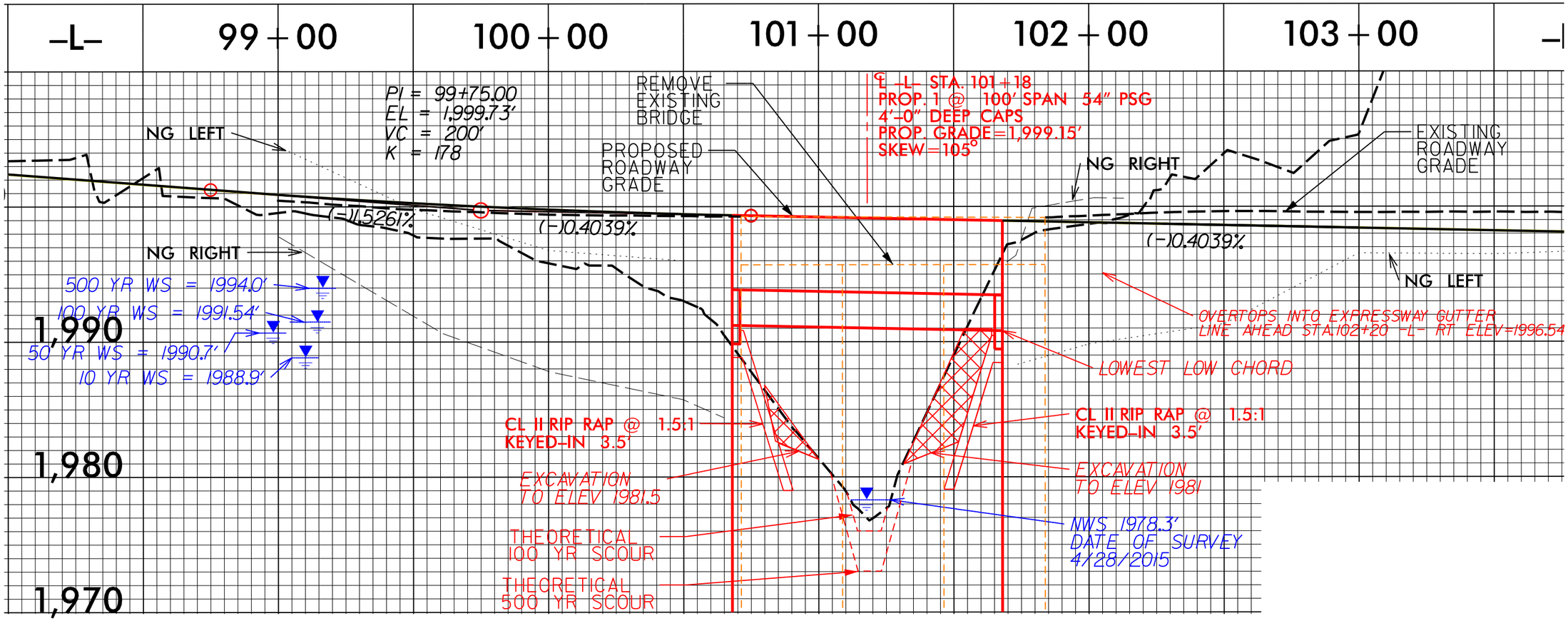
PROJECT REFERENCE NO.	SHEET NO.
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 25 OF 48

SITE 8



HORIZ. SCALE 1" = 40'
VERT. SCALE 1" = 8'

REVISIONS

8/17/99

3/14/2016 10:45:29 AM
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VE-2301 DESIGN BUILD Hydraulics\PERMITS Environmental\PERMIT Drawings Modernization Files

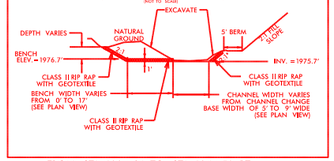
8/17/99

REVISIONS

3/17/2016
8:38:46 PM
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DETAIL 1

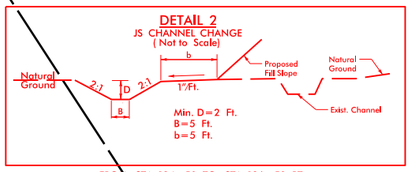
INLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE



FROM STA. 133+64 TO STA. 134+50 RT.

DETAIL 2

JS CHANNEL CHANGE
(Not to Scale)



FROM STA. 134+50 TO STA. 136+50 RT.

S/S DENOTES IMPACTS IN SURFACE WATER

TS/TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 26 OF 48

SCALE 1"=100'

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
U-3301	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 28
FOR PROFILE OF -Y1l- SEE SHEET 37
FOR PROFILE OF -Y1l4- SEE SHEET 42
FOR CULVERT PLANS SEE C-__ THRU C-__

SYCAMORE VALLEY FARM, LLC

SNELSON FARM LLC 90

SNELSON FARM LLC 90

SNELSON FARM LLC 90

SNELSON FARM LLC 90

SR 1002 OLD LEGISTER HWY 20' BST

NC 63 LEICESTER HWY 26' BST

MATCH LINE -L- STA. 126+00.00 SEE SHEET 12

MATCH LINE -L- STA. 139+50.00 SEE SHEET 14

CLASS B RR GEOTEXT EST. 3 SY RR EST. 1 TN

LATERAL BASE DITCH (SEE DETAIL 3)

LATERAL BASE DITCH (SEE DETAIL 4)

BERM BASE DITCH (SEE DETAIL 5)

BERM DITCH (SEE DETAIL 5)

CLASS B RR GEOTEXT EST. 3 SY RR EST. 1 TN (SEE DETAILS 1 & 2)

DO NOT DISTURB TREE

130+00

135+00

SITE 9

100' 0' 100'
GRAPHIC SCALE

CONC. ISLAND

PROJECT REFERENCE NO.	SHEET NO.
U-3301	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

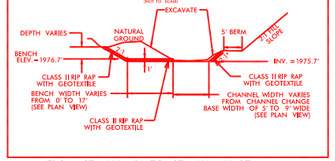
PERMIT DRAWING
SHEET 27 OF 48

SCALE 1" = 100'

S DENOTES IMPACTS IN SURFACE WATER

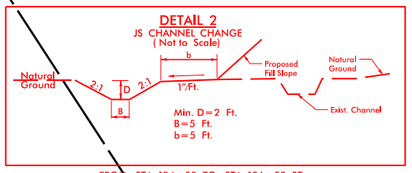
TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL 1
INLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE



FROM STA. 133+64 TO STA. 134+50 RT.

DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)



FROM STA. 134+50 TO STA. 136+50 RT.

FOR PROFILE OF -L- SEE SHEET 28
FOR PROFILE OF -Y1L- SEE SHEET 37
FOR PROFILE OF -Y1L4- SEE SHEET 42
FOR CULVERT PLANS SEE C-__ THRU C-__

SYCAMORE VALLEY FARM, LLC

SNELSON FARM LLC

SNELSON FARM LLC

SNELSON FARM LLC

SNELSON FARM LLC

SR 2026 OLD LEICESTER HWY

NC 63 LEICESTER HWY 26' BST

LATERAL BASE DITCH (SEE DETAIL 3)

LATERAL BASE DITCH (SEE DETAIL 4)

BERM BASE DITCH (SEE DETAIL 5)

BERM DITCH (SEE DETAIL 5)

CLASS B RR GEOTEXT EST. 3 SY RR EST. 1 TN

CLASS B RR GEOTEXT EST. 4 SY RR EST. 1 TN

STANDARD CURB & GUTTER (SEE DETAILS 1 & 2)

DO NOT DISTURB TREE

130+00

135+00

MATCH LINE -L- STA. 126+00.00 SEE SHEET 12

MATCH LINE -L- STA. 139+50.00 SEE SHEET 14

SITE 9

ISBKD

2SFB

GRAPHIC SCALE 100' 0' 100'

CONC. ISLAND

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

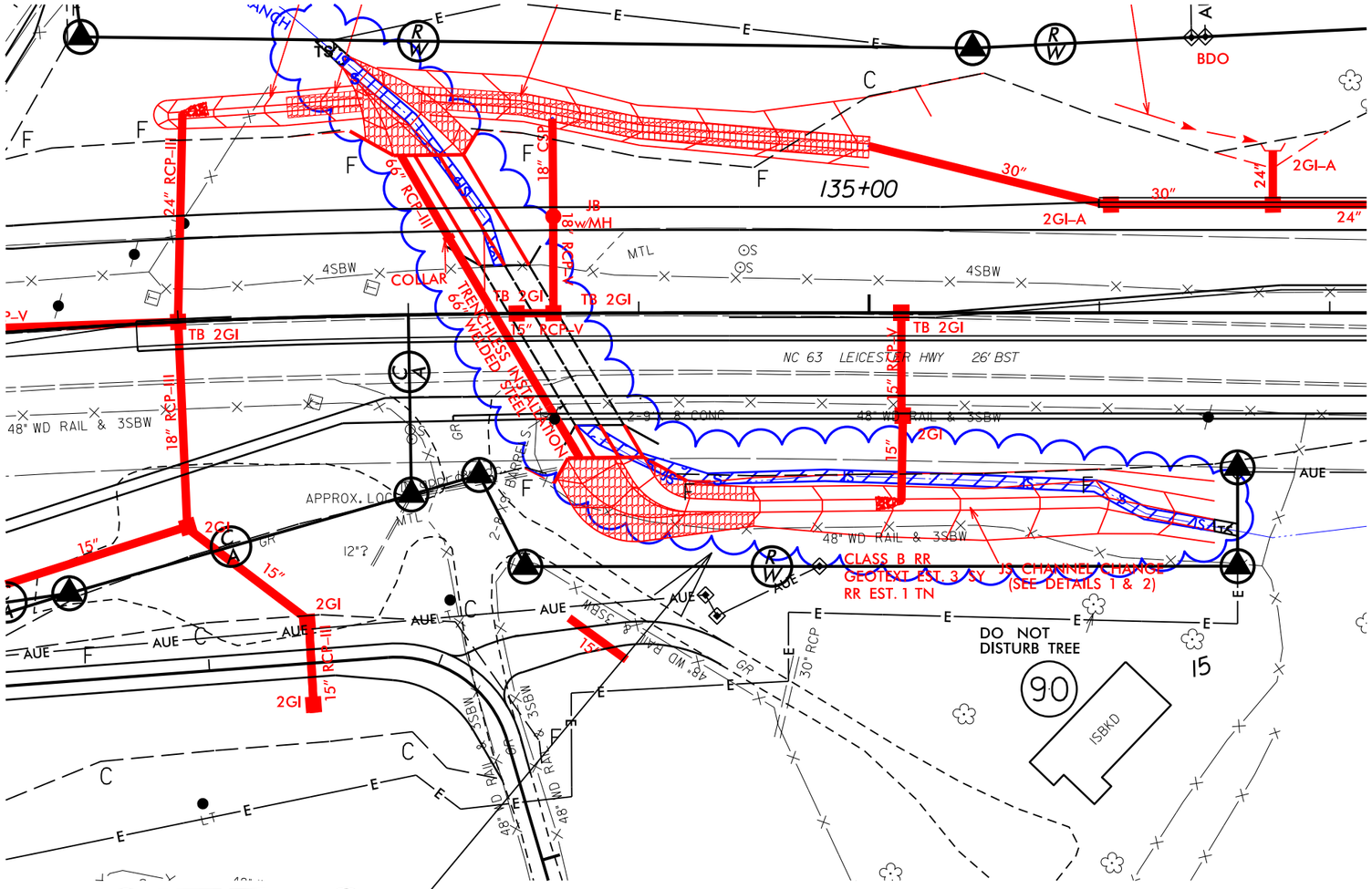
PERMIT DRAWING
SHEET 28 OF 48

SCALE 1" = 60'

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83



100' 0' 100'

GRAPHIC SCALE

REVISIONS

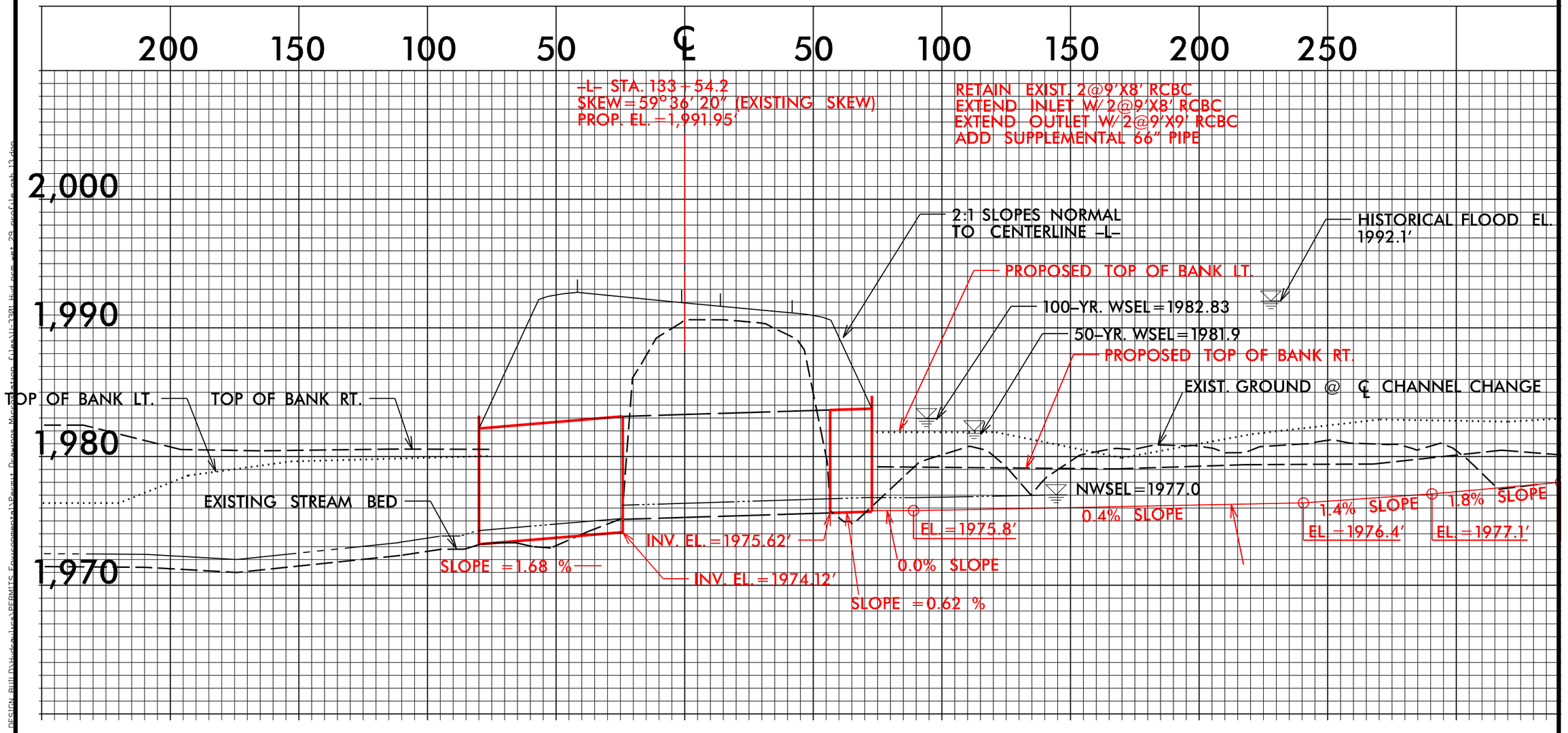
8/17/99

3/14/2016
10:47:51 AM
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PROJECT REFERENCE NO.	SHEET NO.

PERMIT DRAWING
SHEET 29 OF 48

SITE 9



HORIZ. SCALE 1" = 40'
VERT. SCALE 1" = 8'

5/14/99
3/14/2016 10:48:31 AM
Z:\Projects\345.09 LL-330\DESIGN_BUILD\Hydraulics\PERMITS_Encroachment\NPermit Drawings_Mitigation_files\LL-330U Hydraulics_sht29.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3301	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 30 OF 48

NAD 83

SCALE 1" = 100'

100' 0' 100'
GRAPHIC SCALE

11700 / 18000 — NC-63 — 12200 / 18900

300 / 400 — 800 / 1300

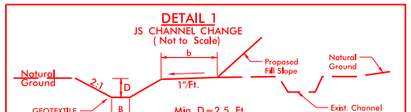
–SR 1377– –Y12–

1100 / 1700

2014 / 2040 ESTIMATED ADT

SR-1377
GOUGES BRANCH RD

DETAIL 1
JS CHANNEL CHANGE
(Not to Scale)

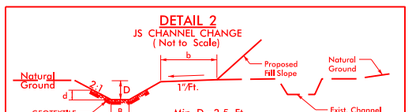


Min. D = 2.5 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = Vegetation

FROM STA.147+00 TO STA. 148+50 –L– LT.
STA.150+50 TO STA. 151+90 –L– LT.

DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)

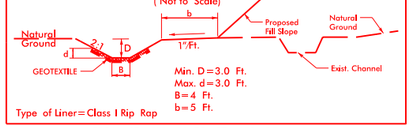


Min. D = 2.5 Ft.
Max. d = 2.5 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = Class B Rip Rap

FROM STA. 148+50 TO STA. 150+50 –L– Lt.

DETAIL 3
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 3.0 Ft.
Max. d = 3.0 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = Class I Rip Rap

FROM STA. 151+90 TO STA. 152+25 –L– Lt.

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR PROFILE OF LINE –L– SEE SHEETS 28 AND 29
FOR PROFILE OF LINE –Y12– SEE SHEET 37

SITE 11

SITE 10

(90) SNELSON FARM LLC

(92) DEWAYNE TURNER
MICHAEL TURNER

(90) SNELSON FARM LLC

(93) ROGER F. SLAGLE

(94) MICHAEL E. ANDERS

(96) BRYAN S. CLAY

RAMSEY REAL ESTATE, LLC

ROBERT HARRINGTON

MATCH LINE –L– STA. 139+50.00 SEE SHEET 13

MATCH LINE –L– STA. 153+00.00 SEE SHEET 15

BERM DITCH

REMOVE

JS CHANNEL CHANGE
(SEE DETAILS 1, 2 & 3)

CLASS I RR
GEOTEXTILE EST. 76 SY
RR EST. 36 TN

TRENCHLESS INSTALLATION
60" WELDED STEEL

RIP RAP
ENERGY DISSIPATOR
(SEE DETAIL 4)

DO NOT DISTURB SHED

BEGIN EXPWY.GUTTER
–L– STA.147+00.00

END EXPWY.GUTTER
–L– STA.145+66.00

EXPWY.GUTTER

DOWNSTREAM MATERIAL

PK NAIL

LANDSCAPE TIMBERS

WOOD STEPS

SEWER PUMPS

REPAIR SEPTIC FIELD
2-30' RUNS
3-20' RUNS

PRIMARY SEPTIC FIELD
4-30' RUNS

SEWER DISTRIBUTION BOX

ADDITIONAL REPAIR AREA AVAILABLE DOWN SLOPE IF NEEDED

FIBER OPTIC SPLICE BOX

ISBUS

ISBKD

60' BK WALL

SHED

CONC

GOUGES BRANCH RD SR 1377

21' BST

9' BST

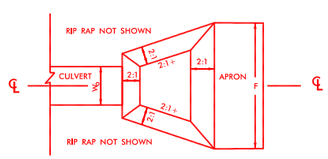
48" WD RAIL

DETAIL 4

CLASS I RIP-RAPPED ENERGY DISSIPATOR BASIN

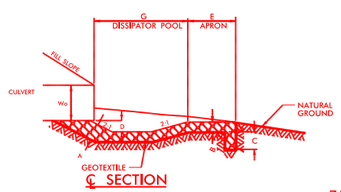
DIM. (ft)	RIP RAP BASIN # 1	?	?
A	2	?	?
B	1.5	?	?
C	2	?	?
D	2.25	?	?
E	11	?	?
F	32	?	?
G	22	?	?

ALL DIMENSIONS APPROXIMATE



PLAN

BASIN #	LOCATION (AT OUTLET)
1	10+83 Y12 RT.
?	?
?	?



℄ SECTION

7/08

STA. 10+83 Y12 LT.

CONC. ISLAND

REVISIONS

8/17/99

3/14/2016
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C:\DOT\Projects\45.00 U-3301 DESIGN BUILD\Hydraulics\PERMITS Environmental\NPDES Permit Drawings Mitigation Plan\U-3301 Hyd permit sht 30 and 31 sht 14.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-3301	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 31 OF 48

SCALE 1" = 100'

100' 0' 100'
GRAPHIC SCALE

NAD 83

11700 / 18000 — NC-63 — 12200 / 18900

300 / 400 — 800 / 1300

-SR 1377- -Y12-

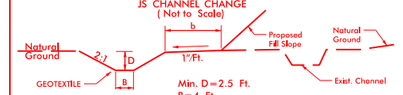
1100 / 1700

SR-1377

GOUGES BRANCH RD

2014 / 2040 ESTIMATED ADT

DETAIL 1
JS CHANNEL CHANGE
(Not to Scale)

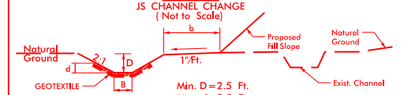


Min. D = 2.5 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = Vegetation

FROM STA.147+00 TO STA. 148+50 -L- LT.
STA.150+50 TO STA. 151+90 -L- LT.

DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)

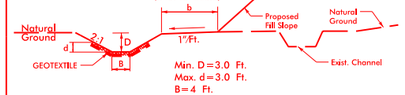


Min. D = 2.5 Ft.
Max. d = 2.5 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = Class B Rip Rap

FROM STA. 148+50 TO STA. 150+50 -L- Lt.

DETAIL 3
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 3.0 Ft.
Max. d = 3.0 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = Class I Rip Rap

FROM STA. 151+90 TO STA. 152+25 -L- Lt.

FOR PROFILE OF LINE -L- SEE SHEETS 28 AND 29
FOR PROFILE OF LINE -Y12- SEE SHEET 37

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 11

SITE 10

MATCH LINE -L- STA. 139+50.00 SEE SHEET 13

MATCH LINE -L- STA. 153+00.00 SEE SHEET 15

-L-

-Y12-

-SR 1377-

GOUGES BRANCH RD

90 SNELSON FARM LLC

92 DEWAYNE TURNER
MICHAEL TURNER

93 ROGER F. SLAGLE

94 MICHAEL E. ANDERS

96 BRYAN S. CLAY

RAMSEY REAL ESTATE, LLC

ROBERT HARRINGTON

JIMMY

BERM DITCH

REMOVE

RIP RAP ENERGY DISSIPATOR (SEE DETAIL 4)

JS CHANNEL CHANGE (SEE DETAILS 1, 2 & 3)

CLASS I RR GEOTEXTILE EST. 76 SY
RR EST. 36 TN

TRENCHLESS INSTALLATION 60" WELDED STEEL

BEGIN EXPWY GUTTER -L- STA. 147+00.00

DO NOT DISTURB SPED

END EXPWY GUTTER -L- STA. 152+00.00

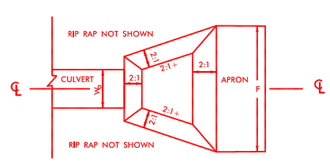
CONC. ISLAND

DETAIL 4

CLASS I RIP-RAPPED ENERGY DISSIPATOR BASIN

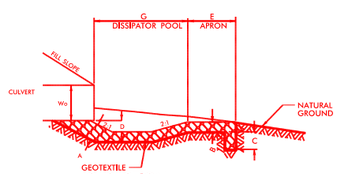
DIM. (ft)	RIP RAP BASIN # 1	?	?
A	2	?	?
B	1.5	?	?
C	2	?	?
D	2.25	?	?
E	11	?	?
F	32	?	?
G	22	?	?

ALL DIMENSIONS APPROXIMATE



PLAN

BASIN #	LOCATION (AT OUTLET)
1	10+83 Y12 RT.
?	?
?	?



℄ SECTION

STA. 10+83 Y12 LT.

7/08

REVISIONS

8/17/99

3/14/2016
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PROJECT REFERENCE NO.	SHEET NO.SHEET NO
	14 DETAIL
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 32 OF 48

SCALE 1" = 60'

SITE 11

ROW MARKERS
REMOVED FOR CLARITY

S DENOTES IMPACTS IN SURFACE WATER

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'
GRAPHIC SCALE

NAD 83

JS CHANNEL CHANGE
(SEE DETAILS 1, 2 & 3)

90
SNELSON FARM LLC

94
MICHAEL E. ANDERS

93
ROGER F. SLAGLE

REMOVE
2GI
2GI-D
DI
15" RCP-IV
15" CMP
60" CMP
60" RCP-IV
18" RCP
36"
HW
CONC HW
REMOVE HW
60" CMP
FLOWABLE FILL
SOIL
15" RCP
2GI
JB w/MH
15"
60"
24" RCP-V
TB 2GI-A
15" RCP-V
2SFD
48" CONC
5SBW
4SBW
SOIL
END EXPWY.GUTTER
-L- STA.145+66.00
145+00
COLLAR
TRENCHLESS INSTALLATION
30" WELDED STEEL
FLOWABLE MATERIAL
150+00
EXPWY.GUTTER
NC 63 LEICESTER HWY 26' BST
LANDSCAPE TIMBERS
WOOD STEPS
WOOD DK
SS CLEAN OUT
ISFBUS
4" HDPE DI
SEWER PUMPS
REPAIR
SEPTIC
FIELD
2-30' RUNS
2-20' RUNS
4SBW
9' BST
GRAU 350
RIP RAP
ENERGY DISSIPATOR
(SEE DETAIL 4)
DO NOT DISTURB SHED
SHED
CONC
BEGIN EXPWY.GUTTER
-L- STA.147+00.00
2SFD
ISBKD
WALL
GR
10' BST
EIP
AUE
24" RCP-III
TREX
F
E
W

SITE 10

REVISIONS
REVISIONS

8/17/99

3/14/2016
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PROJECT REFERENCE NO.	SHEET NO.
U-3301	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 33 OF 48

SCALE 1" = 100'

NAD 1983

100' 0' 100'
GRAPHIC SCALE

DENOTES IMPACTS IN SURFACE WATER

FOR PROFILE OF LINE -L- SEE SHEET 29

REVISIONS

8/17/99

SNELSON FARM LLC
90

SHARON E. WAUGH &
W. D. McDOWALL, JR.
98

BERM DITCH
BDO
15" CSP W/ ELBS
15" RCP-V
2GI
2GI-D
2GI-A
TB 2GI
TB 2GI-A
155+00
160+00
165+00
REMOVE HW
REMOVE
CONC HW
5SBW
5RBW
NC 63 LEICESTER HWY 26' BST
18" CMP
24" CMP
48" CHL
48" CMP
36" CMP
CLASS I RR GEOTEXT EST. 15 SY RR EST. 7 TN
CLASS I RR GEOTEXT EST. 12 SY RR EST. 4 TN
RETAIN
CONC BLK HW
EIP
JS
PDE
MH
SSMH
HTR
ISM'L BUS
MTL CARPORTS
SITE 11

JOHN TAMAS
97

JIMMY L. HEDDEN
95

L. HEDDEN
95

BRYAN S. CLAY
96

JEAN K. BALL, ET AL

MAXINE BROOKSHIRE
99

MATCH LINE -L- STA. 153+00.00 SEE SHEET 14

MATCH LINE -L- STA. 166+00.00 SEE SHEET 16

CONC. ISLAND

3/14/2016
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PROJECT REFERENCE NO.	SHEET NO.
U-3301	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

100' 0' 100'
GRAPHIC SCALE

PERMIT DRAWING
SHEET 34 OF 48

SCALE 1" = 100'

NAD 83

DENOTES IMPACTS IN SURFACE WATER

FOR PROFILE OF LINE -L- SEE SHEET 29

MATCH LINE -L- STA. 153+00.00 SEE SHEET 14

MATCH LINE -L- STA. 166+00.00 SEE SHEET 16

SNELSON FARM LLC
90

SHARON E. WAUGH &
W. D. McDOWALL, JR.
98

JIMMY L. HEDDEN
95

L. HEDDEN
5

JOHN TAMAS
97

BRYAN S. CLAY
96

JEAN K. BALL, ET AL

MAXINE BROOKSHIRE
99

SITE 11

NC 63 LEICESTER HWY 26' BST

155+00 160+00 165+00

BERM DITCH
BDO
15" CSP
W ELBS
2GI
2GI-D
2GI-A
TB 2GI
TB 2GI-A
REMOVE
REMOVE HW
CONC HW
CONC BLK HW
24" CMP
18" CMP
48" CHL
36" CMP
RETAIN
CLASS I RR GEOTEXT EST. 15 SY RR EST. 7 TN
CLASS I RR GEOTEXT EST. 12 SY RR EST. 4 TN
ISM'L BUS
MTL CARPORTS
HTR
FLOWABLE FILL
RR CROSS TIES
EIP
PDE
JS
5SBW
5SBE
AUE
BST
DUE
SOIL
GR

CONC. ISLAND

REVISIONS

8/17/99

3/14/2016
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PROJECT REFERENCE NO.	SHEET NO.
	15 DETAIL
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

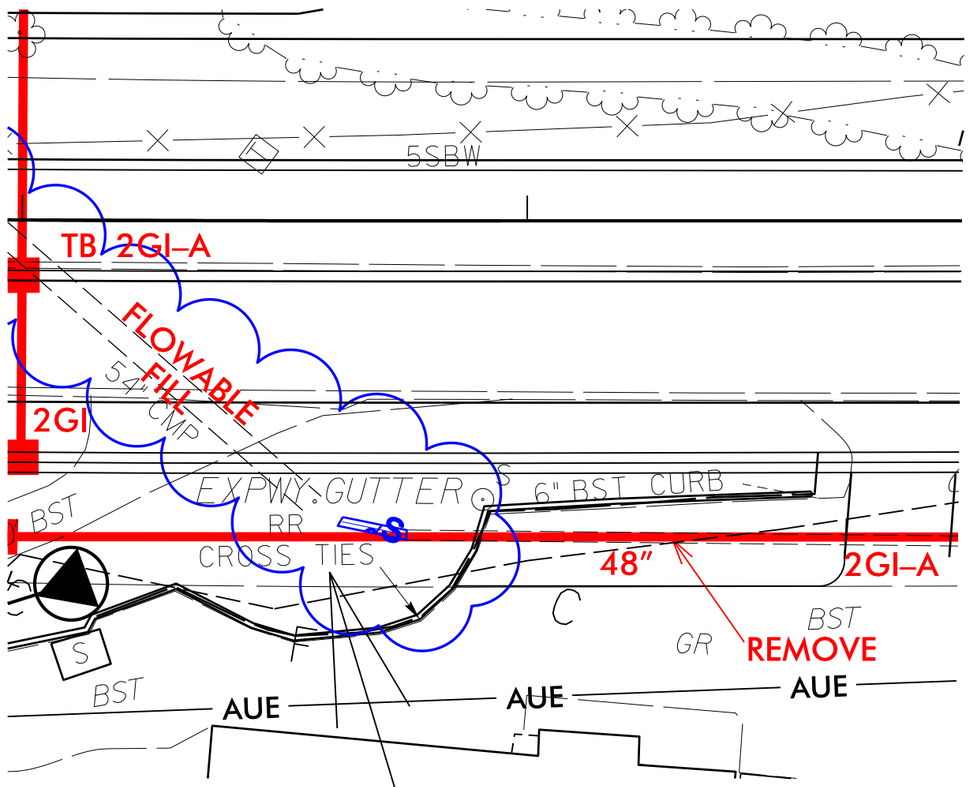
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 35 OF 48

SCALE 1" = 30'

NAD 83

S S DENOTES IMPACTS IN SURFACE WATER



SITE 11

100' 0' 100'

GRAPHIC SCALE

REVISIONS

8/17/99

3/14/2006
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PROJECT REFERENCE NO.	SHEET NO.
U-3301	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 36 OF 48

SCALE 1" = 100'

NAD 83

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

FOR PROFILE OF LINE –L– SEE SHEETS 30 & 31
FOR PROFILE OF LINE –Y12A– SEE SHEET 37
FOR PROFILE OF LINE –Y13– SEE SHEET 37
FOR PROFILE OF LINE –Y14– SEE SHEET 37

SITE 12

JUNE BROOKSHIRE
DB 1376 PG 224

SNELSON FARM, LLC
DB 4752 PG 467
DB 4820 PG 1070

J. B. ARRINGTON
DB 899 PG 429

JUNIOR MOORE
DB 860 PG 227

FORE HIM PROPERTIES, LLC
DB 4753 PG 664

CHRISTINE BROOKSHIRE,
AGATHA JUNE BROOKSHIRE,
MAXINE BROOKSHIRE
DB 866 PG 729

KEVIN G. KING &
BRANDON J. KING
DB 4595 PG 7

NORMAN G. HOFFMAN
DB 3719 PG 895

TOE PROTECTION
SEE DETAIL 2
(CLASS B RIP RAP)

CLASS I RR
GEOTEXT EST. 17 SY
RR EST. 7 TN

CLASS B RR
GEOTEXT EST. 14 SY
RR EST. 5 TN

PROPOSED RELOCATED
SEPTIC FIELD AND REPAIR AREA

REMOVE
HW

MATCH LINE -L- STA. 178+50.00 SEE SHEET 16

MATCH LINE -L- STA. 191+50.00 SEE SHEET 18

2014 / 2040 ESTIMATED ADT

RAMSEY RD
900 / 1500

SR 1302 -Y14-

100 / 300		700 / 1100
12200 / 18900	NC-63	13100 / 20200
100 / 100		400 / 600

SR-1292 -Y13-

600 / 800
BROOKSHIRE RD

100' 0' 100'
GRAPHIC SCALE

PAINT STRIPING
CONC. ISLAND

REVISIONS
8/17/99

3/14/2016
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PROJECT REFERENCE NO.	SHEET NO.
U-3301	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 37 OF 48

SCALE 1" = 100'

NAD 83

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

FOR PROFILE OF LINE –L– SEE SHEETS 30 & 31
FOR PROFILE OF LINE –Y12A– SEE SHEET 37
FOR PROFILE OF LINE –Y13– SEE SHEET 37
FOR PROFILE OF LINE –Y14– SEE SHEET 37

MATCH LINE –L– STA. 178+50.00 SEE SHEET 16

MATCH LINE –L– STA. 191+50.00 SEE SHEET 18

SITE 12

90 SNELSON FARM, LLC
DB 4752 PG 467
DB 4820 PG 1070

102 JUNE BROOKSHIRE
DB 1376 PG 224

104 JUNIOR MOORE
DB 860 PG 227

J. B. ARRINGTON
DB 899 PG 429

105 FORE HIM PROPERTIES, LLC
DB 4753 PG 664

107

106 KEVIN G. KING & BRANDON J. KING
DB 4595 PG 7

103 CHRISTINE BROOKSHIRE, AGATHA JUNE BROOKSHIRE, MAXINE BROOKSHIRE
DB 866 PG 729

NORMAN G. HOFFMAN
DB 3719 PG 895

TOE PROTECTION SEE DETAIL 2 (CLASS B RIP RAP)

REMOVE HW

PROPOSED RELOCATED SEPTIC FIELD AND REPAIR AREA

CLASS I RR GEOTEX EST. 17 SY RR EST. 7 TN

CLASS B RR GEOTEX EST. 14 SY RR EST. 5 TN

2014 / 2040 ESTIMATED ADT		
	RAMSEY RD 900 / 1500	
	SR 1302 –Y14–	
100 / 300		700 / 1100
12200 / 18900 NC-63		13100 / 20200
100 / 100		400 / 600
	SR-1292 –Y13–	
	600 / 800 BROOKSHIRE RD	

100' 0' 100'
GRAPHIC SCALE

PAINT STRIPING
CONC. ISLAND

REVISIONS

8/17/99

3/14/2016
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PROJECT REFERENCE NO.	SHEET NO.
	17 DETAIL
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

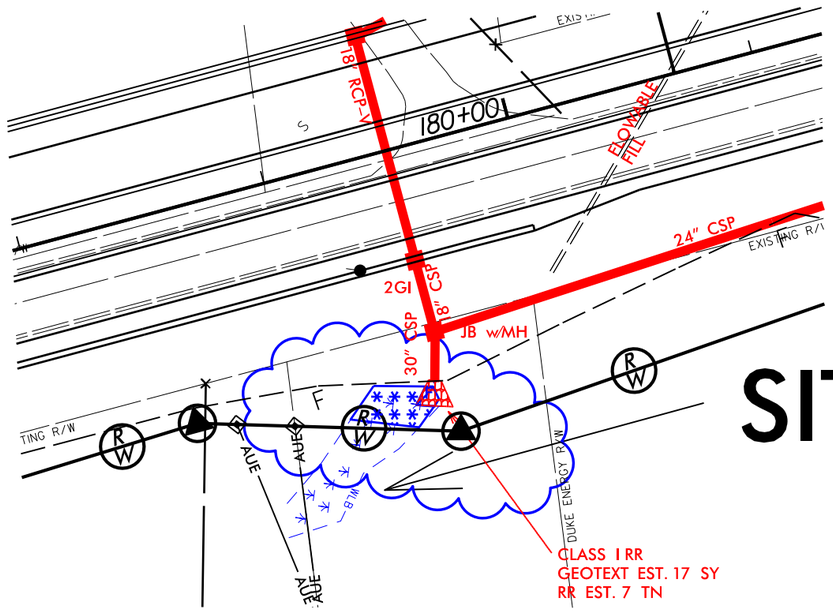
PERMIT DRAWING
SHEET 38 OF 48

SCALE 1" = 60'

NAD 83

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING



SITE 12

100' 0' 100'

GRAPHIC SCALE

REVISIONS

8/17/99

3/14/2016
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PERMIT DRAWING SHEET 39 OF 48

SCALE 1" = 20'

SITE 12

RW

2:1

4:1

0.020

2:1

2:1

2149.11

2150.06

2151.26

2150.06

0.020

RW

WETLANDS

179+00.00

2:1

4:1

2148.25

2146.72

2148.25

2148.25

0.020

VAR.

178+50.00

8/23/99

3/14/2006
10:29:33 AM
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PROJECT REFERENCE NO.	SHEET NO.
U-3301	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 40 OF 48

38 DAN

SCALE 1" = 100'

FOR PROFILE OF LINE -L- SEE SHEET 32
FOR PROFILE OF -DRRT3- SEE SHEET 40
FOR CULVERT PLANS SEE C-__ THRU C-__

SITE 13

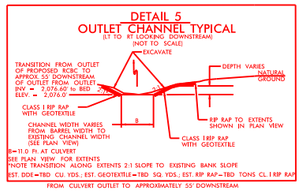
SITE 13A

SITE 14

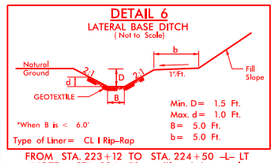
MATCH LINE -L- STA. 216+00.00 SEE SHEET 19

MATCH LINE -L- STA. 229+50.00 SEE SHEET 21

DETAIL 5
OUTLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
(NOT TO SCALE)

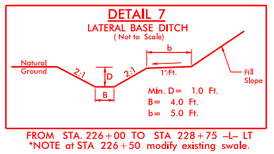


DETAIL 6
LATERAL BASE DITCH
(Not to Scale)



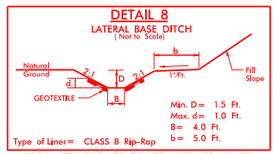
Type of Liner= CL I Rip-Rap
FROM STA. 223+12 TO STA. 224+50 -L- LT
*NOTE at STA 224+50 modify existing swale

DETAIL 7
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 226+00 TO STA. 228+75 -L- LT
*NOTE at STA 226+50 modify existing swale.

DETAIL 8
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CLASS B Rip-Rap
FROM STA. 228+75 TO STA. 231+50 -L- LT

OUTLET CHANNEL SEE DETAIL 5
RIP RAP AT EMBANKMENT SEE DETAIL 3
LATERAL BASE DITCH SEE DETAIL 6
JS STREAM OUTLET PIPE PROTECTION (SEE DETAIL 8)
CL I RR Geotext est. 22 sy RR est. 11 tn
CL I RR Geotext est. 22 sy RR est. 11 tn
LATERAL 'V' DITCH SEE DETAIL 1
CL B RR Geotext est. 7 sy RR est. 2 tn
30" CSP W/ELBOWS
15" CSP W/ELBOWS
LATERAL BASE DITCH SEE DETAIL 7
LATERAL BASE DITCH SEE DETAIL 8
REMOVE
DRAIN POND #2
RIP RAP AT EMBANKMENT SEE DETAIL 3
INLET CHANNEL SEE DETAIL 4
LATERAL BASE DITCH SEE DETAIL 2
CLASS B RIP RAP
LATERAL BASE DITCH SEE DETAIL 10
LATERAL BASE SWALE SEE DETAIL 9
SPECIAL LATERAL V DITCH SEE DETAIL 11
RIP RAP AT EMBANKMENT SEE DETAIL 3

130 DAVID L. PHILLIPS
127
124 MAX E. MORGAN
129 HORACE CONSTANCE
131 LINDA R. TARPLEY, ET AL
48
132 JOANNE CARTER GUNTER
136 DONNIE REEMS

220+00
225+00
SR 1206
SR 1205
SR 1207
SR 1208
SR 1209
SR 1210
SR 1211
SR 1212
SR 1213
SR 1214
SR 1215
SR 1216
SR 1217
SR 1218
SR 1219
SR 1220
SR 1221
SR 1222
SR 1223
SR 1224
SR 1225
SR 1226
SR

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3301	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

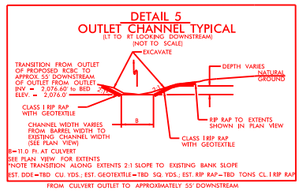
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

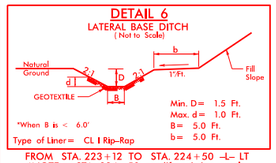
PERMIT DRAWING
SHEET 41 OF 48

38 DAN

DETAIL 5
OUTLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
(NOT TO SCALE)

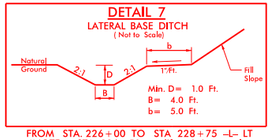


DETAIL 6
LATERAL BASE DITCH
(Not to Scale)



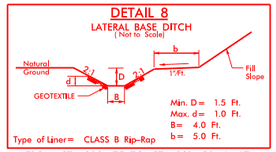
FROM STA. 223+12 TO STA. 224+50 -L- LT
*NOTE at STA 224+50 modify existing swale

DETAIL 7
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 226+00 TO STA. 228+75 -L- LT
*NOTE at STA 226+50 modify existing swale.

DETAIL 8
LATERAL BASE DITCH
(Not to Scale)



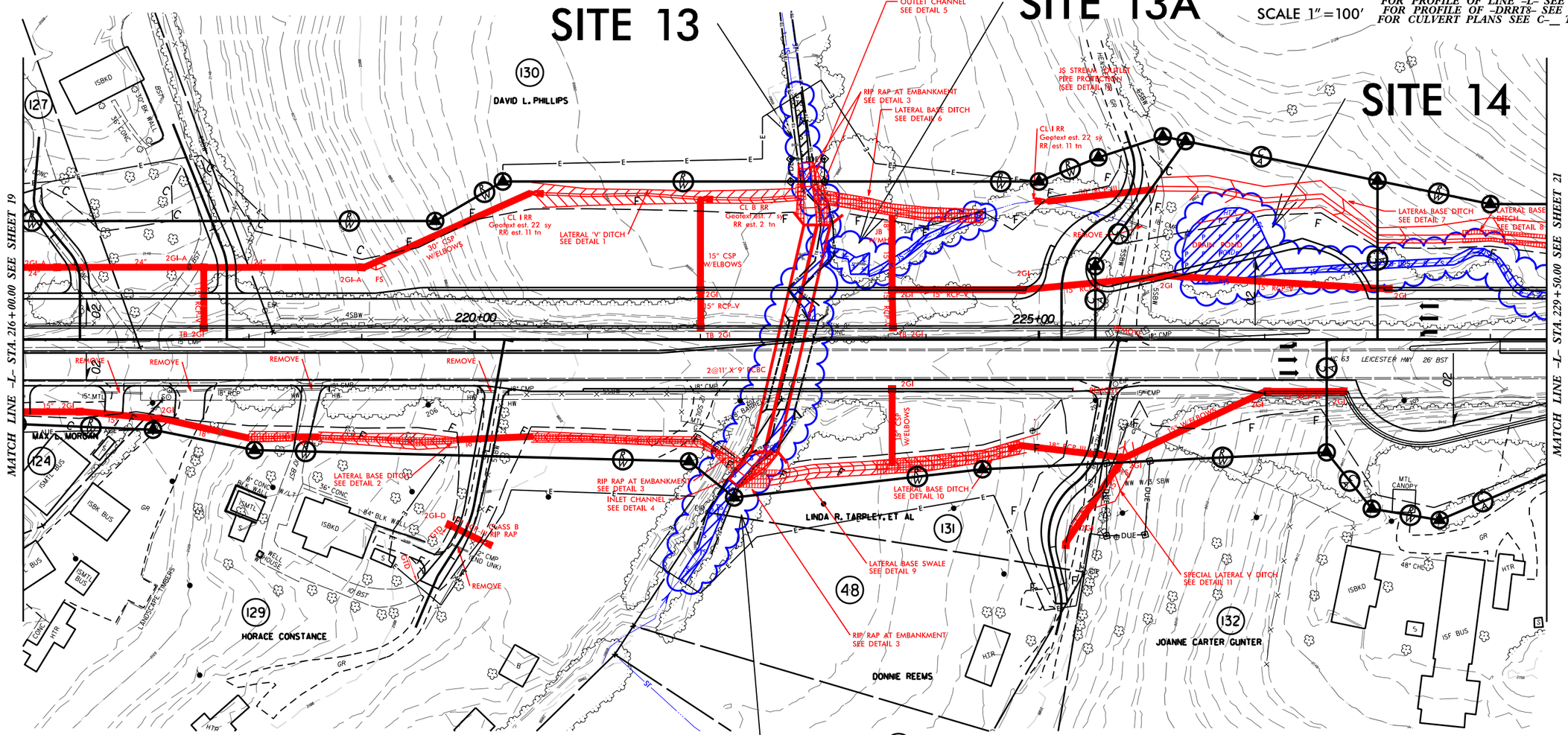
FROM STA. 228+75 TO STA. 231+50 -L- LT

SITE 13

SITE 13A

SCALE 1" = 100'

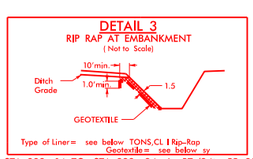
FOR PROFILE OF LINE -L- SEE SHEET 32
FOR PROFILE OF -DRRT3- SEE SHEET 40
FOR CULVERT PLANS SEE C-__ THRU C-__



SITE 13

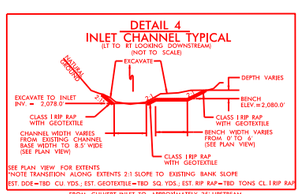
SITE 14

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



FROM STA. 222+14 TO STA. 222+34 -L- RT (24tn RR; 33sy GF)
FROM STA. 222+85 TO STA. 222+93 -L- LT (9tn RR; 13sy GF)
FROM STA. 222+40 TO STA. 222+60 -L- RT (21tn RR; 30sy GF)
FROM STA. 223+00 TO STA. 223+12 -L- LT (13tn RR; 19sy GF)

DETAIL 4
INLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
(NOT TO SCALE)



DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER (POND)

100' 0' 100'
GRAPHIC SCALE

CONC. ISLAND

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SITE 13

SITE 13A

SITE 14

SITE 13

PERMIT DRAWING
SHEET 42 OF 48

PROJECT REFERENCE NO.	SHEET NO.
	20 DETAIL
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

SCALE 1" = 60'

NAD 83

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

P P — DENOTES IMPACTS IN SURFACE WATER (POND)

F F — DENOTES FILL IN WETLAND

OUTLET CHANNEL
SEE DETAIL 5

RIP RAP AT EMBANKMENT
SEE DETAIL 3

LATERAL BASE DITCH
SEE DETAIL 6

JS STREAM OUTLET
PIPE PROTECTION
(SEE DETAIL 11)

CL 1 RR
Geotext est. 22 sy
RR est. 11 tn

CL B RR
Geotext est. 7 sy
RR est. 2 tn

15" CSP
W/ELBOWS

2GI
15" RCP-V

TB 2GI

18" RCP-III

30" RCP-III

18" W/MH

15" RCP-V

2GI

225+00

DRAIN POND
POND P

15" RCP-V

LATERAL BASE DITCH
SEE DETAIL 7

LATERAL BASE
DITCH
SEE DETAIL 8

EXISTING R/W

NC 63 LEICESTER HWY 26' BST

2@11' X 9' RCBC

18" CMP

15" CMP

15" RCP-IV

15" W/ELBOWS

2GI

MTL CANOPY

LATERAL BASE DITCH
SEE DETAIL 10

LATERAL BASE SWALE
SEE DETAIL 9

SPECIAL LATERAL V DITCH
SEE DETAIL 11

RIP RAP AT EMBANKMENT
SEE DETAIL 3

ISBKD

HTR

GR

48" CHL

100' 0' 100'

GRAPHIC SCALE

REVISIONS

8/17/99

3/14/2016
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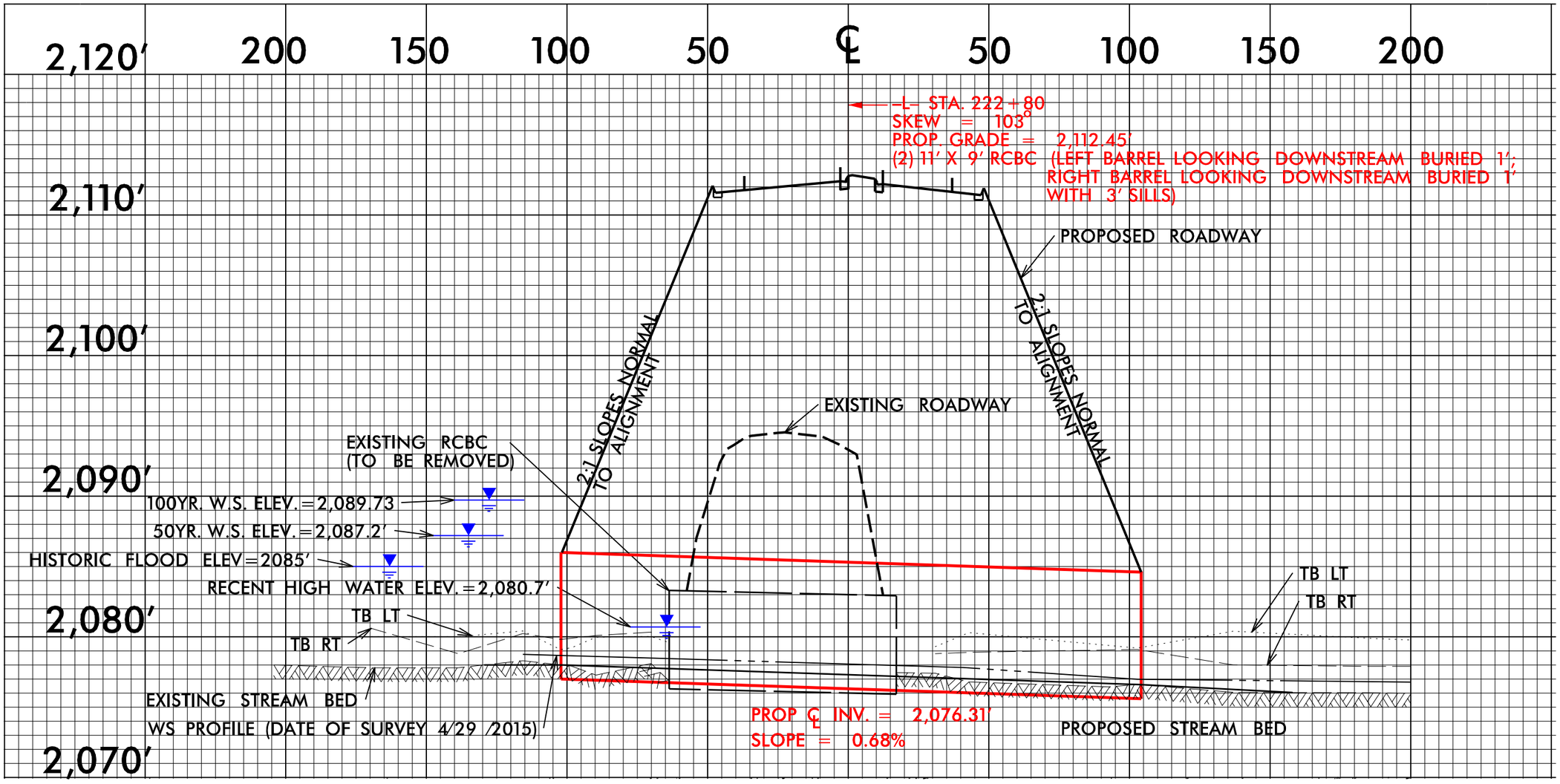
PERMIT DRAWING
SHEET 43 OF 48

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

SITE 13



HORIZ. SCALE 1" = 40'
VERT. SCALE 1" = 8'

REVISIONS

8/17/99

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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-3301	X-152

PERMIT DRAWING
SHEET 44 OF 48

SCALE 1" = 20'

SITE 13A

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

2120 2110 2100 2090 2080 2070

0.020 0.020 2:1 2:1

2112.16 2112.3 2112.36

2094.12

224+50.00

0.020 0.020 2:1 2:1

2111.86 2112.10 2112.11

2093.38

224+00.00

0.020 0.020 2:1 2:1

2111.84 2112.08 2112.22

RAW RAW WETLANDS

2092.69

223+50.00

—L—

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REVISIONS
3/14/2016
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DETAIL 1
LATERAL BASE DITCH
(Not to Scale)



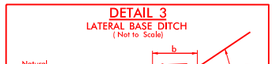
Min. D= 1.5 Ft.
Max. d= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
Type of Liner= CLASS B Rip-Rap
FROM STA. 228+75 TO STA. 231+75 –L– LT

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



Min. D= 1.0 Ft.
b= 5.0 Ft.
FROM STA. 235+75 TO STA. 236+73=L– LT

DETAIL 3
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.2 Ft.
Max. d= 1.0 Ft.
B= 5.0 Ft.
*When B is < 6.0'
b= 2.0 Ft.
Type of Liner= CLASS B Rip-Rap
FROM STA. 236+73 TO STA. 240+50 –L– LT

PERMIT DRAWING
SHEET 45 OF 48

SCALE 1" = 100'

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
U-3301	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

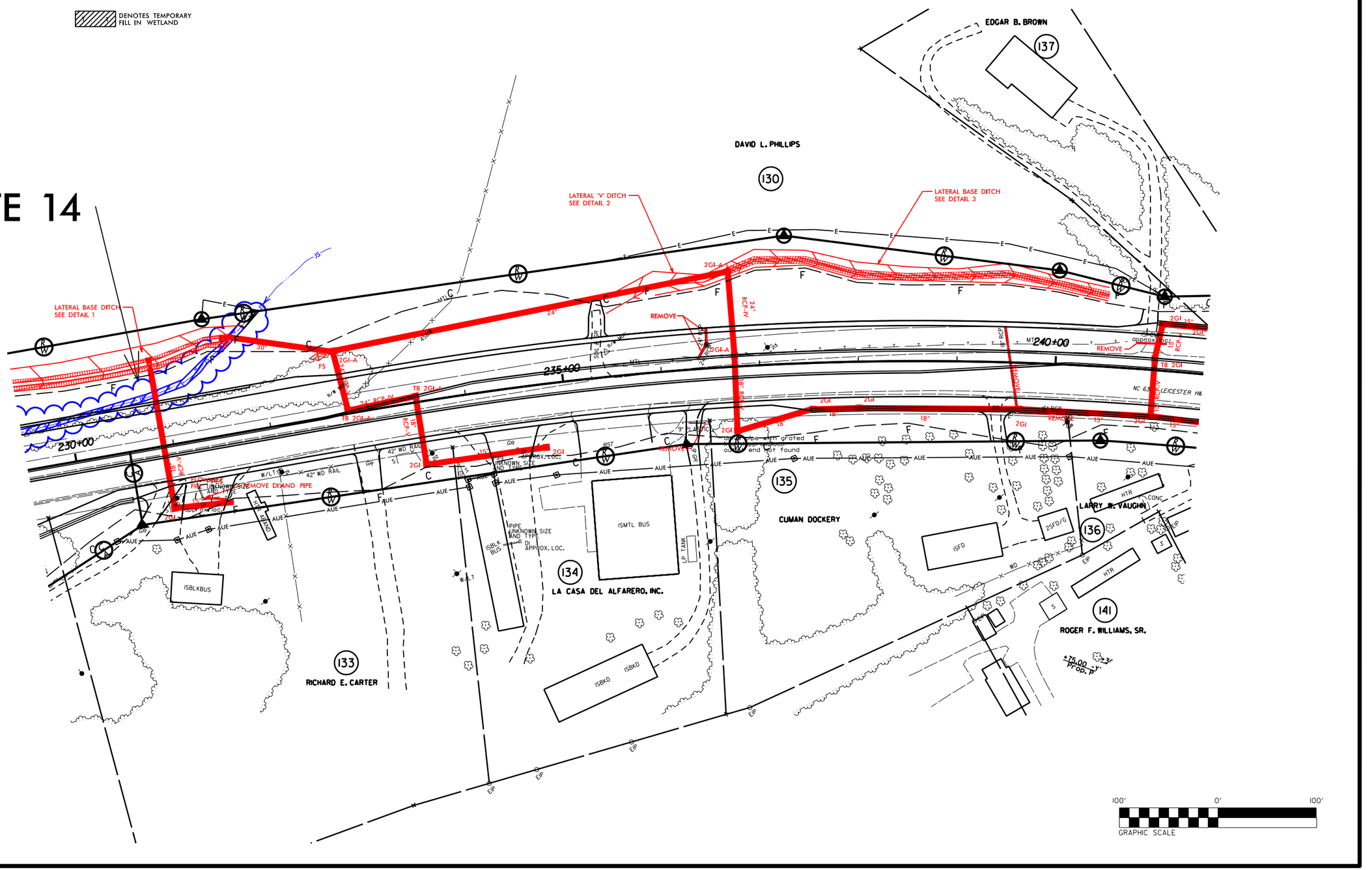
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE –L– SEE SHEETS 32 & 33

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY FILL IN WETLAND

SITE 14



8/17/99
REVISIONS
3/14/2016
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PROJECT REFERENCE NO.	SHEET NO.
U-3301	21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

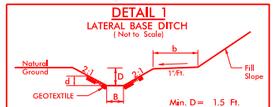
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 46 OF 48

SCALE 1" = 100'

NAD 83

DETAIL 1
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.5 Ft.
Max. d = 1.0 Ft.
B = 4.0 Ft.
b = 5.0 Ft.

Type of Liner = CLASS B Rip-Rap

FROM STA. 228+75 TO STA. 231+75 –L– LT

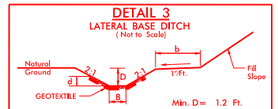
DETAIL 2
LATERAL 'V' DITCH
(Not to Scale)



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

FROM STA. 235+75 TO STA. 236+73 = L– LT

DETAIL 3
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.2 Ft.
Max. d = 1.0 Ft.
B = 5.0 Ft.
b = 2.0 Ft.

*When B is < 6.0'

Type of Liner = CLASS B Rip-Rap

FROM STA. 236+73 TO STA. 240+50 –L– LT

FOR PROFILE OF LINE –L– SEE SHEETS 32 & 33

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY FILL IN WETLAND

SITE 14

EDGAR B. BROWN
137
DAVID L. PHILLIPS
130
LATERAL 'V' DITCH SEE DETAIL 2
LATERAL BASE DITCH SEE DETAIL 3
LATERAL BASE DITCH SEE DETAIL 1
2GI-A
24" RCP-IV
REMOVE
235+00
230+00
240+00
TB 2GI
REMOVE 24" RCP AND PIPE
ISBLKBUS
ISBLK BUS
PIPE UNKNOWN SIZE AND TYPE DI APPROX. LOC.
ISMTL BUS
LP TANK
ISBKO
ISFD
2SFD/G
HTR
CONC
EIP
133
RICHARD E. CARTER
134
LA CASA DEL ALFARERO, INC.
135
CUMAN DOCKERY
136
LARRY W. VAUGHN
141
ROGER F. WILLIAMS, SR.
+15.00 -Y- PROP.

100' 0' 100'
GRAPHIC SCALE

PERMIT DRAWING
SHEET 47 OF 48

PROJECT REFERENCE NO.	SHEET NO.
	21 DETAIL
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

SCALE 1" = 60'

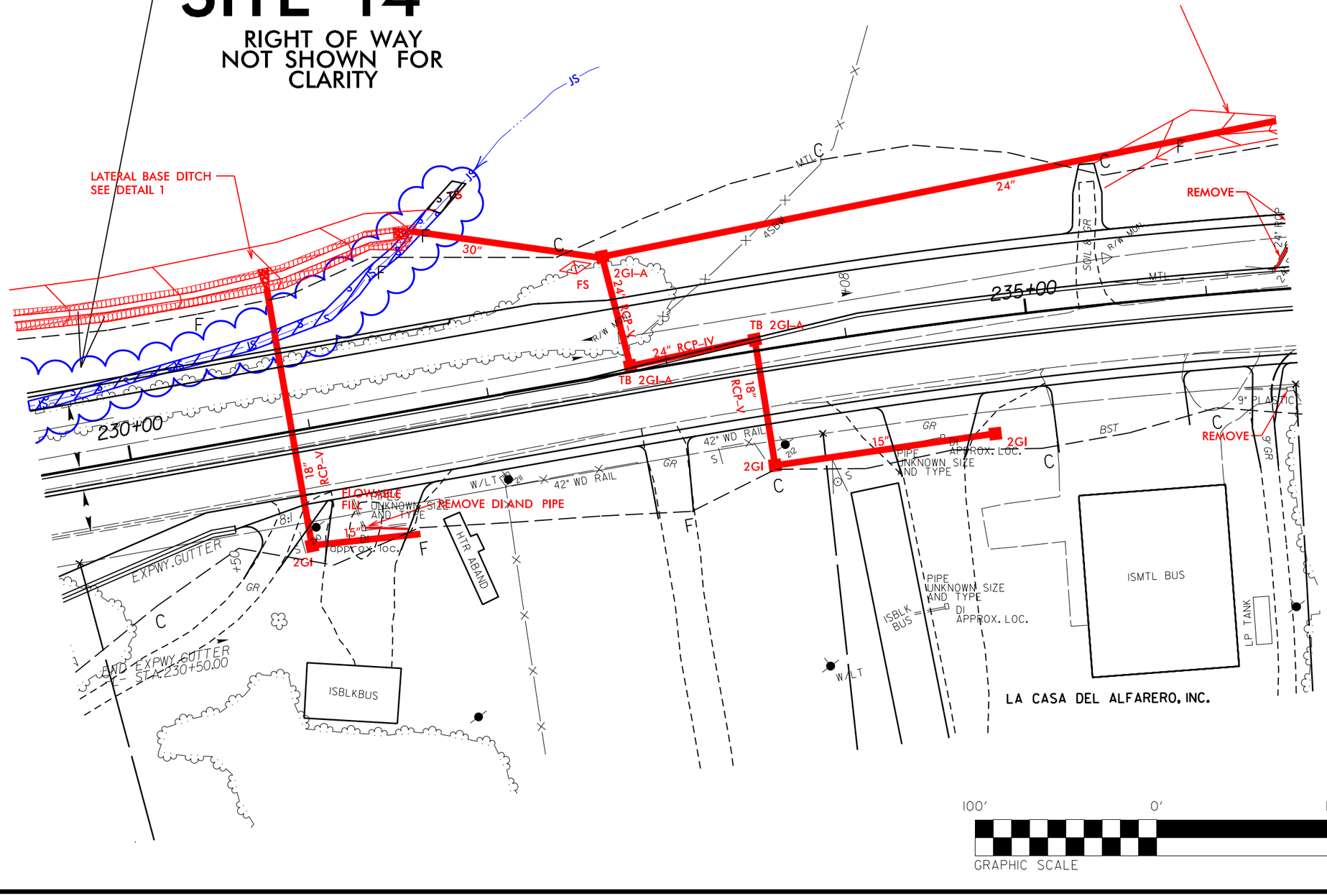
S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

SITE 14

RIGHT OF WAY NOT SHOWN FOR CLARITY



100' 0' 100'
GRAPHIC SCALE

REVISIONS
8/17/99

3/14/2016
12:56:40 PM

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)	Perm. SW Pond impacts (ac)
1	23+70 (rt) to 29+20 (lt) L	2 - 2 @ 6'x6' RCBC						0.05	0.02	427	45	
2	14+00 (rt) Y3	Bank Stabilization						< 0.01	< 0.01	20	10	
**3	46+40 to 50+55 (rt) L	Roadway Embankment	0.06					0.02		364		
4	57+50 to 58+45 (rt) L	Roadway Embankment						0.01		94		
4	60+00 to 60+80 (rt) L	Roadway Embankment						< 0.01		73		
4	61+10 to 61+45 (rt) L	Bank Stabilization						< 0.01	< 0.01	18	10	
**4	62+10 to 62+30 (rt) L	Bank Stabilization						< 0.01	< 0.01	10	10	
5	67+70 to 67+95 (rt) L	Bank Stabilization						< 0.01	< 0.01	10	10	
5	70+75 to 73+25 (rt) L	Roadway Embankment						0.01	< 0.01	200	10	
6	78+40 (rt) to 83+20 (lt) L	Roadway Embankment						0.03	< 0.01	372	14	
7	88+25 (lt) L	Bank Stabilization						< 0.01	< 0.01	27	3	
7	88+12 L	6'x 7' RCBC						0.01		84		
**7	89+10 (rt) L	Bank Stabilization						< 0.01	< 0.01	17		
7A	90+60 to 94+50 (rt) L	Roadway Embankment						0.02		313		
7A	94+50 to 94+85 (rt) L	Bank Stabilization						< 0.01	< 0.01	20	20	
8	101+00 (rt) L	Bank Stabilization						< 0.01	< 0.01	10	10	
9	133+54 L	2 @ 8'x8' RCBC w/66" RCP						0.03	< 0.01	193	14	
9	134+50 to 136+50 (rt) L	Roadway Embankment						0.02	< 0.01	203	10	
10	144+50 (rt) L	Energy Dissipator						< 0.01	< 0.01	46	9	
**11	45+90 to 153+75 (lt & rt)	Roadway Embankment						0.05		663		
12	179+30 (rt) L	Roadway Embankment	< 0.01			< 0.01						
13	222+80 L	2 @ 11' x 9' RCBC						0.04	0.03	247	158	
***13A	223+10 to 224+55 (lt) L	Roadway Embankment	< 0.01					0.02		115		
**14	226+25 to 232+05 (lt) L	Roadway Embankment						0.07	< 0.01	507	20	0.10
TOTALS*:			0.07			< 0.01		0.39	0.07	4033	353	0.10

*Rounded totals are sum of actual impacts

NOTES:
** Site on two separate Plan Sheets
*** Intermittent Stream

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
1/26/2016
Buncombe County
U-3301
34909.1.1
SHEET 48 OF 48

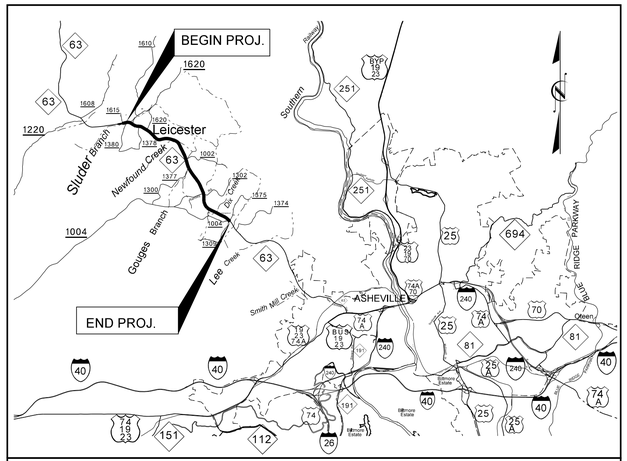
Revised 2013 10 24

09/08/99

TIP PROJECT: U–3301

CONTRACT: C203575

See Sheet 1-A For Index of Sheets



VICINITY MAP (N.T.S)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U–3301	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
34909.1.1	STP–63(1)	PE,RW,CONSTR.	

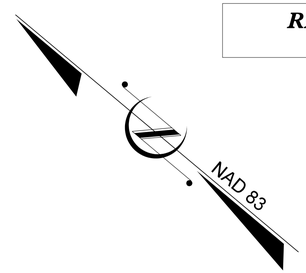


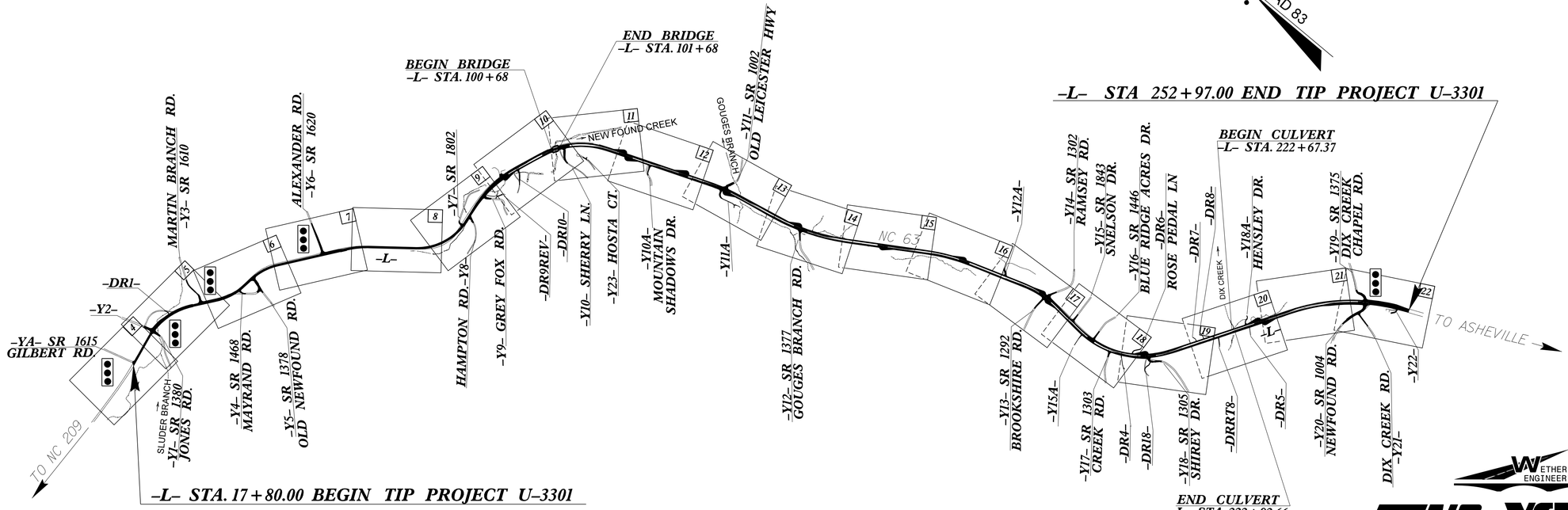
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: NC 63 (LEICESTER HWY) FROM SR 1615 (GILBERT RD.) TO SR 1004 (NEWFOUND ROAD) NORTHWEST OF ASHEVILLE

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

RIGHT OF WAY PLANS
MARCH 16, 2015





SIGNALIZED INTERSECTION

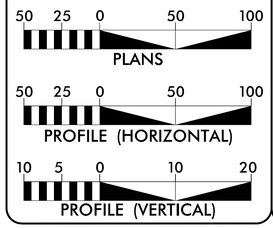
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

WETHERILL ENGINEERING

TNNC

V&M Vaughn & Melton

GRAPHIC SCALES



DESIGN DATA

ADT 2014 = 20,200 VPD
ADT 2040 = 29,200 VPD
K = 9 %
D = 70 %
T = 4 % *
V = 50–60 MPH
*TTST = 1%+DUAL = 3%
FUNCTIONAL CLASSIFICATION
MAJOR COLLECTOR (3 LANE)
PRINCIPLE ARTERIAL (4 LANE)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U–3301 = 4.431 MILES

LENGTH STRUCTURE TIP PROJECT U–3301 = 0.024 MILES

TOTAL LENGTH OF TIP PROJECT U–3301 = 4.455 MILES

NCDOT CONTACT K. ZAK HAMIDI, PE
DESIGN–BUILD PROJECT ENGINEER

Prepared In the Office of:
VAUGHN & MELTON, INC.
1318–F PATTON AVENUE ASHEVILLE, NC 28806 PHONE (828)253–2796

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:
MARCH 16, 2015

REECE SCHULER, PE
PROJECT ENGINEER

JOHN LANSFORD, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

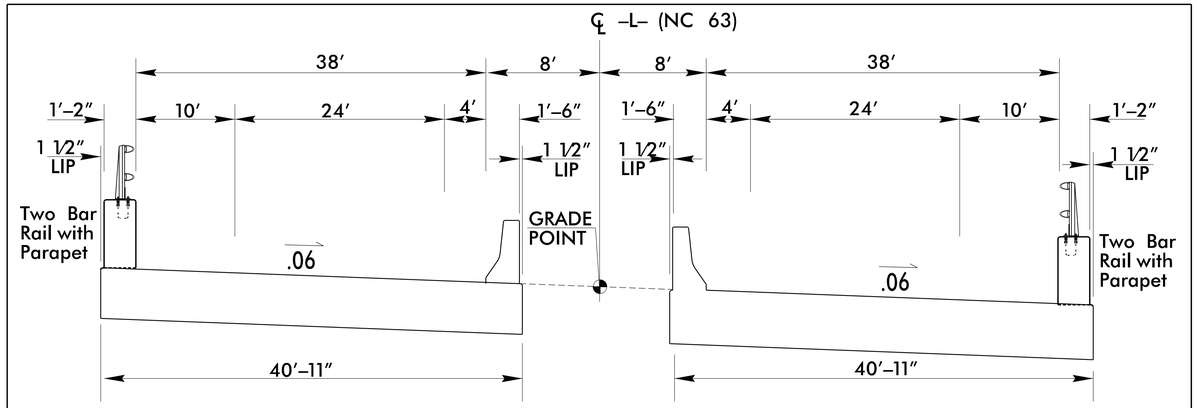
STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

$$$$$$SYSTIME$$$$$$
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$$$$$$USERNAME$$$$$$

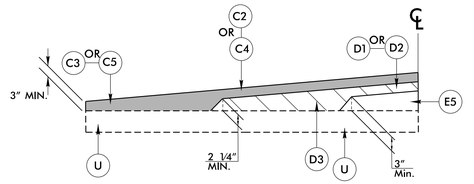
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3301	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

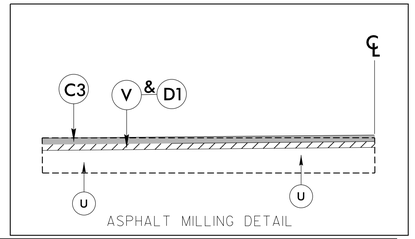


TYPICAL SECTION OF STRUCTURES
–L– STA. 100+68.00 TO 101+68.00



LINE	SURFACE				INTERMEDIATE			BASE
	C2	C3	C4	C5	D1	D2	D3	E5
L	X	X				X	X	X
Y3, Y5, Y11			X	X	X		X	
Y1, Y1A, Y2, Y4Rev, Y7, Y8, Y9, Y10Rev, Y12, Y13, Y14, Y15, Y16, Y17, Y18Rev, Y19, Y21			X	X				X
Y6, Y20	X	X				X	X	X

DETAIL SHOWING METHOD OF WEDGING (W)



ASPHALT MILLING DETAIL

PRELIMINARY PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½″ ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	J1	PROP. 6″ AGGREGATE BASE COURSE.	W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL)
C2	PROP. APPROX. 3″ ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J2	PROP. 8″ AGGREGATE BASE COURSE.		
C3	PROP. VAR. DEPTH ASPHALT CONC. 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 1½″ IN DEPTH.	J3	PROP. 10″ AGGREGATE BASE COURSE.		
C4	PROP. APPROX. 2½″ ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J4	PROP. VARIABLE DEPTH AGGREGATE BASE COURSE.		
C5	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE SF9.5A, AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 1¼″ IN DEPTH.	K	SUBGRADE STABILIZATION, CEMENT OR LIME		
D1	PROP. APPROX. 2½″ ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	P	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.		
D2	PROP. APPROX. 4″ ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R1	2′-9″ CONCRETE CURB AND GUTTER.		
D3	PROP. VAR. DEPTH ASPHALT CONC. 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 2¼″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	R2	2′-6″ CONCRETE CURB AND GUTTER.		
E1	PROP. APPROX. 3″ ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	R3	CONCRETE EXPRESSWAY GUTTER		
E2	PROP. APPROX. 4″ ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R4	CONCRETE SHOULDER BERM GUTTER		
E3	PROP. APPROX. 4½″ ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	T	EARTH MATERIAL.		
E4	PROP. APPROX. 5″ ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.		
E5	PROP. VAR. DEPTH ASPHALT CONC. 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.	V	VARIABLE DEPTH ASPHALT MILLING (SEE MILLING DETAIL)		

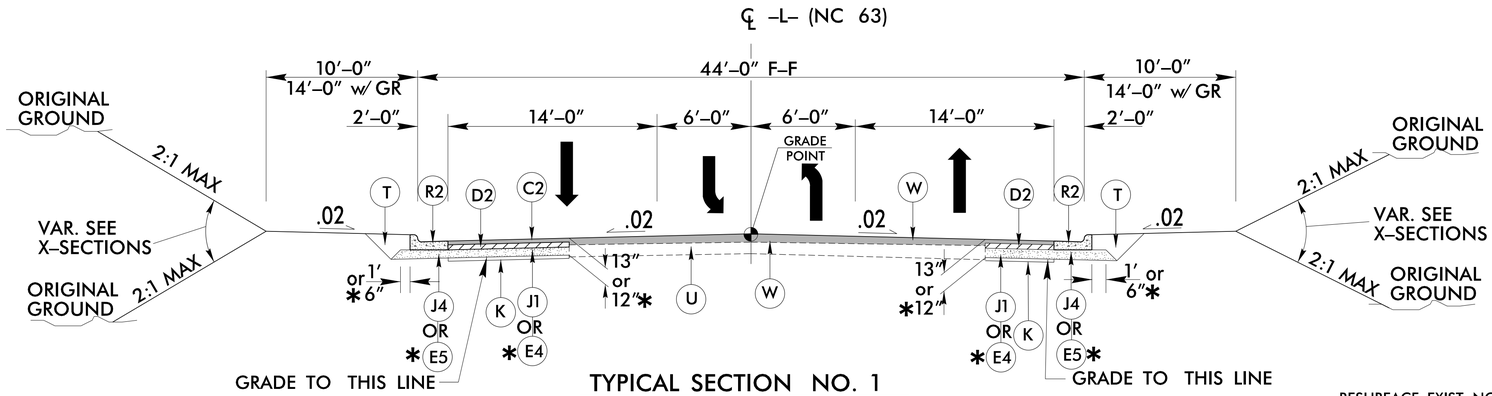
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

CSHEET1 SHEET2 SHEET3 SHEET4 SHEET5 SHEET6 SHEET7 SHEET8 SHEET9 SHEET10 SHEET11 SHEET12 SHEET13 SHEET14 SHEET15 SHEET16 SHEET17 SHEET18 SHEET19 SHEET20 SHEET21 SHEET22 SHEET23 SHEET24 SHEET25 SHEET26 SHEET27 SHEET28 SHEET29 SHEET30 SHEET31 SHEET32 SHEET33 SHEET34 SHEET35 SHEET36 SHEET37 SHEET38 SHEET39 SHEET40 SHEET41 SHEET42 SHEET43 SHEET44 SHEET45 SHEET46 SHEET47 SHEET48 SHEET49 SHEET50 SHEET51 SHEET52 SHEET53 SHEET54 SHEET55 SHEET56 SHEET57 SHEET58 SHEET59 SHEET60 SHEET61 SHEET62 SHEET63 SHEET64 SHEET65 SHEET66 SHEET67 SHEET68 SHEET69 SHEET70 SHEET71 SHEET72 SHEET73 SHEET74 SHEET75 SHEET76 SHEET77 SHEET78 SHEET79 SHEET80 SHEET81 SHEET82 SHEET83 SHEET84 SHEET85 SHEET86 SHEET87 SHEET88 SHEET89 SHEET90 SHEET91 SHEET92 SHEET93 SHEET94 SHEET95 SHEET96 SHEET97 SHEET98 SHEET99 SHEET100 SHEET101 SHEET102 SHEET103 SHEET104 SHEET105 SHEET106 SHEET107 SHEET108 SHEET109 SHEET110 SHEET111 SHEET112 SHEET113 SHEET114 SHEET115 SHEET116 SHEET117 SHEET118 SHEET119 SHEET120 SHEET121 SHEET122 SHEET123 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SHEET568 SHEET569 SHEET570 SHEET571 SHEET572 SHEET573 SHEET574 SHEET575 SHEET576 SHEET577 SHEET578 SHEET579 SHEET580 SHEET581 SHEET582 SHEET583 SHEET584 SHEET585 SHEET586 SHEET587 SHEET588 SHEET589 SHEET590 SHEET591 SHEET592 SHEET593 SHEET594 SHEET595 SHEET596 SHEET597 SHEET598 SHEET599 SHEET600 SHEET601 SHEET602 SHEET603 SHEET604 SHEET605 SHEET606 SHEET607 SHEET608 SHEET609 SHEET610 SHEET611 SHEET612 SHEET613 SHEET614 SHEET615 SHEET616 SHEET617 SHEET618 SHEET619 SHEET620 SHEET621 SHEET622 SHEET623 SHEET624 SHEET625 SHEET626 SHEET627 SHEET628 SHEET629 SHEET630 SHEET631 SHEET632 SHEET633 SHEET634 SHEET635 SHEET636 SHEET637 SHEET638 SHEET639 SHEET640 SHEET641 SHEET642 SHEET643 SHEET644 SHEET645 SHEET646 SHEET647 SHEET648 SHEET649 SHEET650 SHEET651 SHEET652 SHEET653 SHEET654 SHEET655 SHEET656 SHEET657 SHEET658 SHEET659 SHEET660 SHEET661 SHEET662 SHEET663 SHEET664 SHEET665 SHEET666 SHEET667 SHEET668 SHEET669 SHEET670 SHEET671 SHEET672 SHEET673 SHEET674 SHEET675 SHEET676 SHEET677 SHEET678 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SHEET790 SHEET791 SHEET792 SHEET793 SHEET794 SHEET795 SHEET796 SHEET797 SHEET798 SHEET799 SHEET800 SHEET801 SHEET802 SHEET803 SHEET804 SHEET805 SHEET806 SHEET807 SHEET808 SHEET809 SHEET810 SHEET811 SHEET812 SHEET813 SHEET814 SHEET815 SHEET816 SHEET817 SHEET818 SHEET819 SHEET820 SHEET821 SHEET822 SHEET823 SHEET824 SHEET825 SHEET826 SHEET827 SHEET828 SHEET829 SHEET830 SHEET831 SHEET832 SHEET833 SHEET834 SHEET835 SHEET836 SHEET837 SHEET838 SHEET839 SHEET840 SHEET841 SHEET842 SHEET843 SHEET844 SHEET845 SHEET846 SHEET847 SHEET848 SHEET849 SHEET850 SHEET851 SHEET852 SHEET853 SHEET854 SHEET855 SHEET856 SHEET857 SHEET858 SHEET859 SHEET860 SHEET861 SHEET862 SHEET863 SHEET864 SHEET865 SHEET866 SHEET867 SHEET868 SHEET869 SHEET870 SHEET871 SHEET872 SHEET873 SHEET874 SHEET875 SHEET876 SHEET877 SHEET878 SHEET879 SHEET880 SHEET881 SHEET882 SHEET883 SHEET884 SHEET885 SHEET886 SHEET887 SHEET888 SHEET889 SHEET890 SHEET891 SHEET892 SHEET893 SHEET894 SHEET895 SHEET896 SHEET897 SHEET898 SHEET899 SHEET900 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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3301	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 1
3–LANE CURB & GUTTER

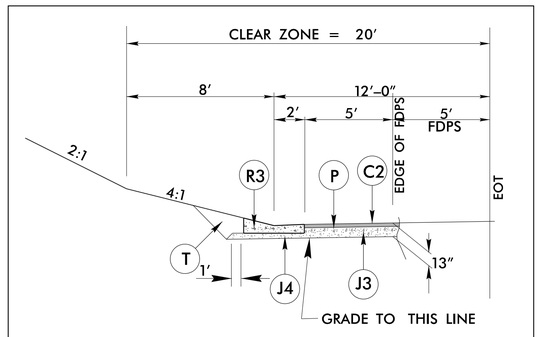
USE TYPICAL SECTION NO. 1
–L– STA. 23+50.00 to 82+93.00

SEE DETAIL A STA. 63+00.00 TO 68+00.00 RT.

–L– STA. 82+93.00 TO 90+70.00, TRANSITION FROM T.S. 1 TO T.S. 2

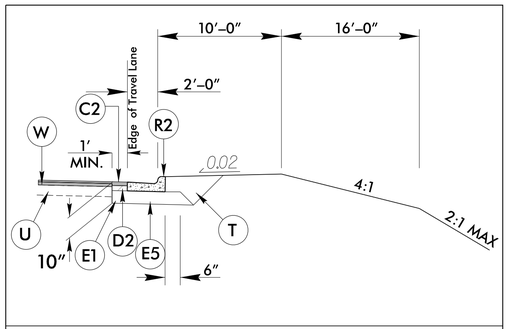
RESURFACE EXIST. NC 63 (–L–) WITH 3″ S9.5B STA. 17+80.00 TO 23+50.00

* USE E4 IN LIEU OF J1 AND K WHEN NEW PAVEMENT WIDTH IS < 6′.



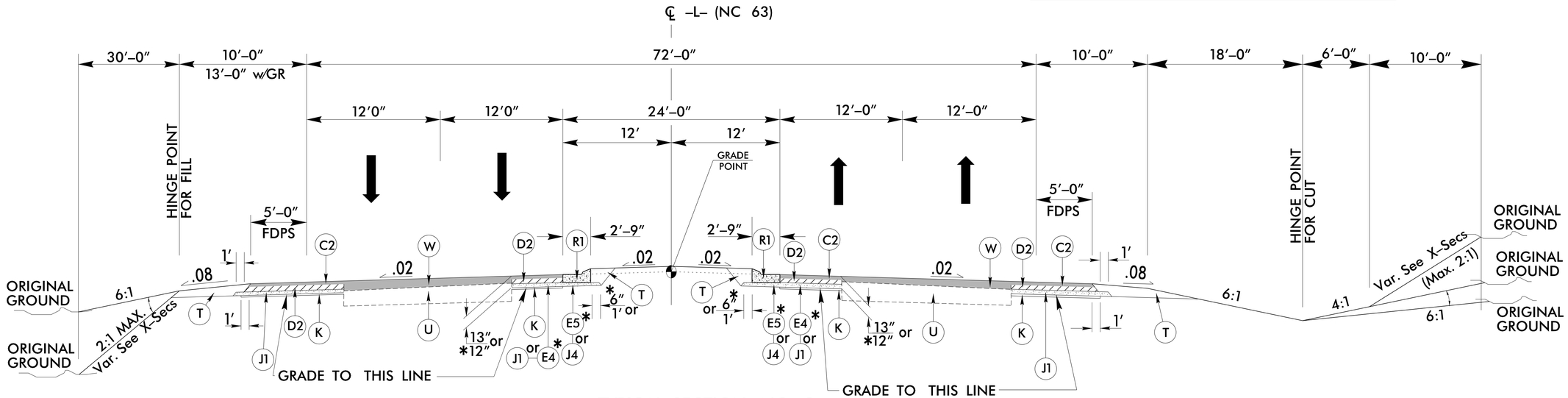
DETAIL SHOWING EXPRESSWAY GUTTER
USE WITH TYPICAL SECTION NO. 2

DETAIL 'A'



DETAIL OF FILL SLOPE FOR USE IN CONJUNCTION WITH TYPICAL NO. 1 AT:
–L– STA. 63+00.00 TO 68+00.00 RT.

PAVEMENT SCHEDULE	
C1	1½″ S9.5B
C2	3″ S9.5B
C3	VAR. S9.5B
C4	2½″ SF9.5A
C5	VAR. SF9.5A
D1	2½″ I19.0B
D2	4″ I19.0B
D3	VAR. I19.0B
E1	3″ B25.0B
E2	4″ B25.0B
E3	4½″ B25.0B
E4	5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	8″ ABC
J3	10″ ABC
J4	VAR. DEPTH ABC
K	SUBGRADE STAB.
P	PRIME COAT
R1	2′-9″ C&G
R2	2′-6″ C&G
R3	5″ MONO. ISLAND
R4	EXPRESS. GUTTER
R5	SHLD. BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING



TYPICAL SECTION NO. 2
4–LANE DIVIDED

* USE E4 IN LIEU OF J1 AND K WHEN NEW PAVEMENT WIDTH IS < 6′.

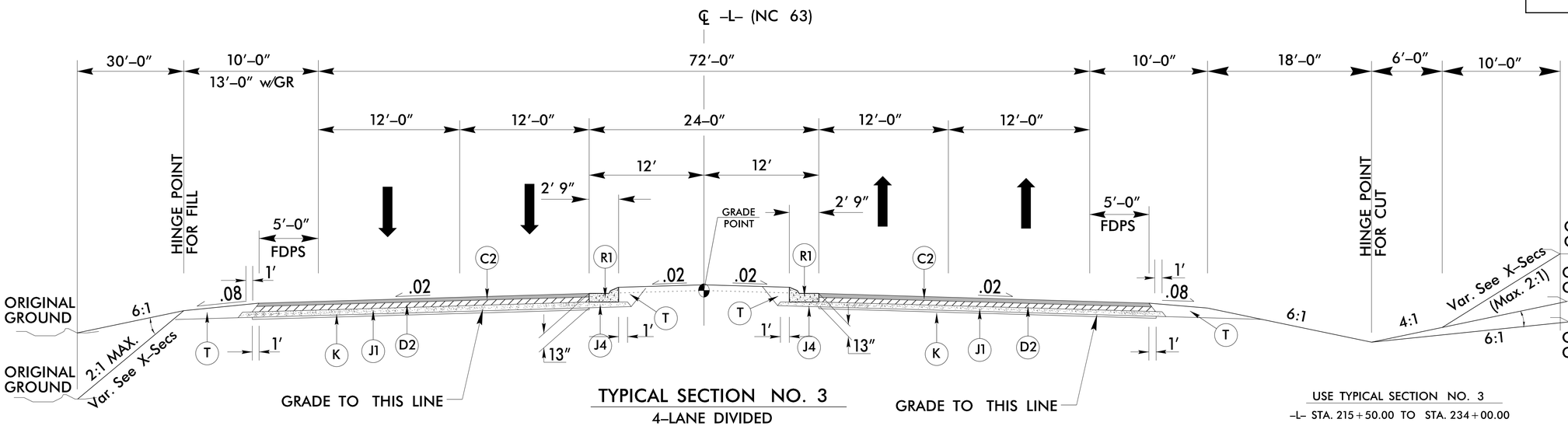
USE TYPICAL SECTION NO. 2
–L– STA. 90+70.00 TO BEGIN BRIDGE
–L– END BRIDGE TO STA. 215+50.00
–L– STA. 234+00.00 TO 245+15.00

DGN: TMES9501
DATE: 6/2/99
TIME: 08:45:00

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3301	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

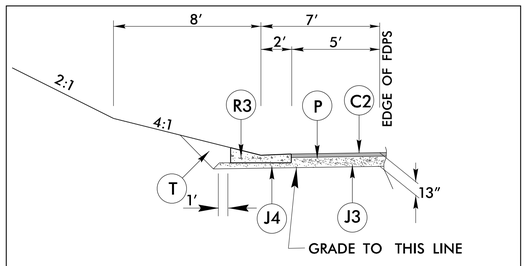
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



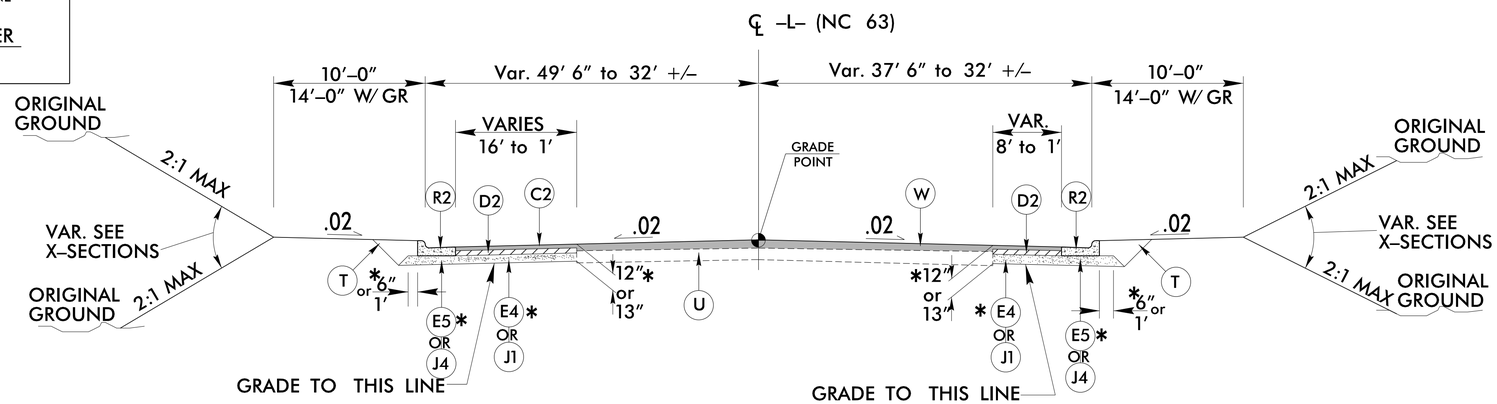
TYPICAL SECTION NO. 3
4–LANE DIVIDED

USE TYPICAL SECTION NO. 3
–L– STA. 215+50.00 TO STA. 234+00.00

PAVEMENT SCHEDULE	
C1	1½″ S9.5B
C2	3″ S9.5B
C3	VAR. S9.5B
C4	2½″ SF9.5A
C5	VAR. SF9.5A
D1	2½″ I19.0B
D2	4″ I19.0B
D3	VAR. I19.0B
E1	3″ B25.0B
E2	4″ B25.0B
E3	4½″ B25.0B
E4	5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	8″ ABC
J3	10″ ABC
J4	VAR. DEPTH ABC
K	SUBGRADE STAB.
P	PRIME COAT
R1	2′-9″ C&G
R2	2′-6″ C&G
R3	5″ MONO. ISLAND
R4	EXPRESS. GUTTER
R5	SHLD. BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING



DETAIL SHOWING EXPRESSWAY GUTTER
USE WITH TYPICAL SECTION NO. 3



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
–L– STA. 245+15.00 TO STA. 252+97.00

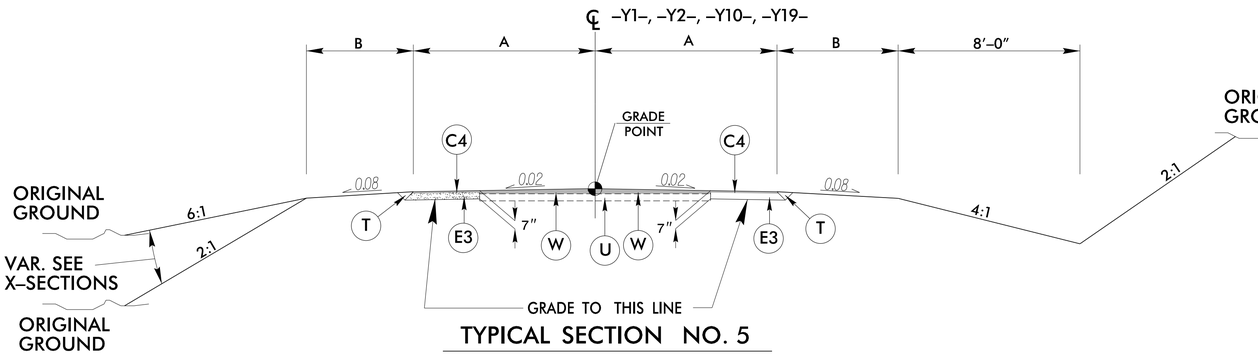
* USE E4 IN LIEU OF J1 AND K WHEN NEW PAVEMENT WIDTH IS < 6′.

THE STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3301	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

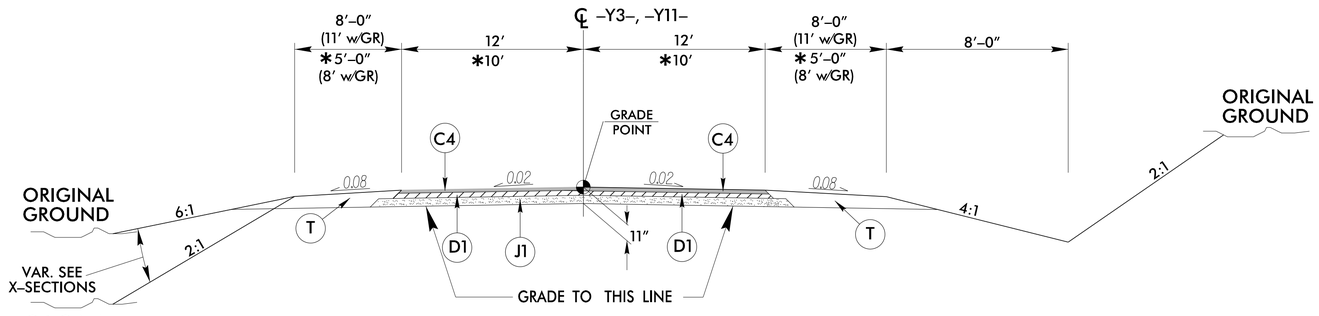


TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
–Y1– STA. 10+20.00 TO STA. 11+45.00
RESURFACE –Y1– STA. 11+45.00 TO STA. 12+13.00 USING 2½″ SF9.5A
–Y2– STA. 14+00.00 TO STA. 15+29.72
–Y10– STA. 10+36.40 TO STA. 12+95.00
–Y19– STA. 10+65.00 TO STA. 15+97.94

TYPICAL SECTION NO. 5 DIMENSIONS

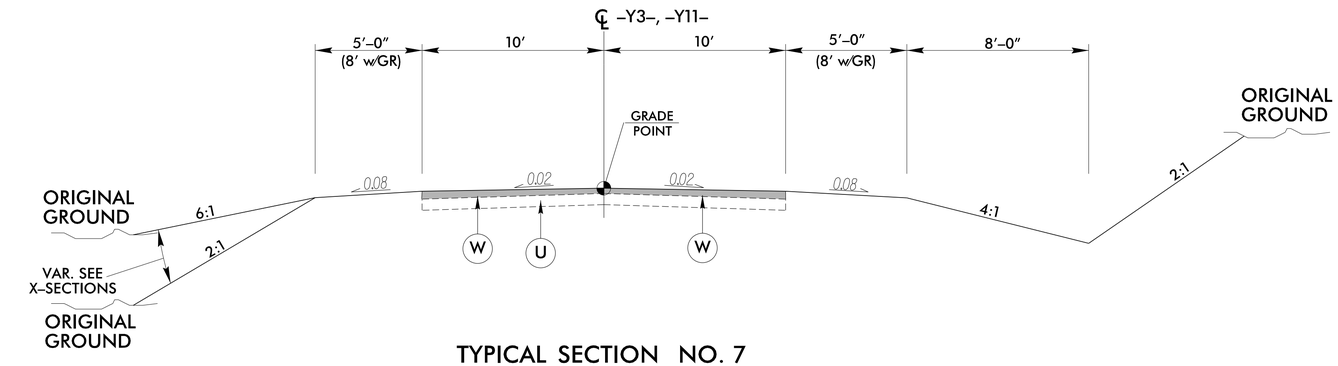
	A	B	B (w/GR)
–Y1–	10′	5′	8′
–Y2–	12′	5′	8′
–Y10–	10′	4′	7′
–Y19–	10′	5′	8′



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6
–Y3– STA. 13+60.00 TO STA. 17+26.39
∗ –Y11– STA. 14+00.00 TO STA. 15+37.50

PAVEMENT SCHEDULE	
C1	1½″ S9.5B
C2	3″ S9.5B
C3	VAR. S9.5B
C4	2½″ SF9.5A
C5	VAR. SF9.5A
D1	2½″ I19.0B
D2	4″ I19.0B
D3	VAR. I19.0B
E1	3″ B25.0B
E2	4″ B25.0B
E3	4½″ B25.0B
E4	5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	8″ ABC
J3	10″ ABC
J4	VAR. DEPTH ABC
K	SUBGRADE STAB.
P	PRIME COAT
R1	2′-9″ C&G
R2	2′-6″ C&G
R3	5″ MONO. ISLAND
R4	EXPRESS. GUTTER
R5	SHLD. BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING



TYPICAL SECTION NO. 7

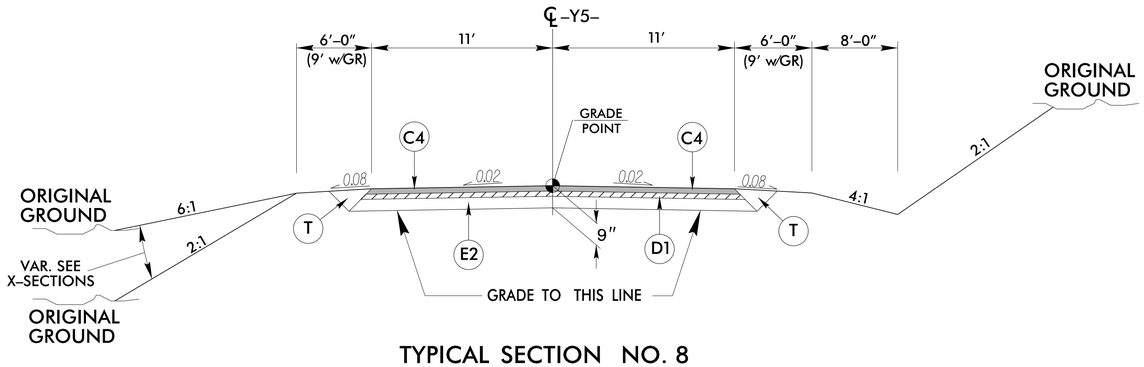
USE TYPICAL SECTION NO. 7
–Y3– STA. 13+60.00 TO STA. 13+85.00
RESURFACE –Y3– STA. 12+90.00 TO STA. 13+60.00 USING 2½″ SF9.5A
–Y11– STA. 13+70.00 TO STA. 14+00.00

TIMESAVER STANDARDS

6/2/99

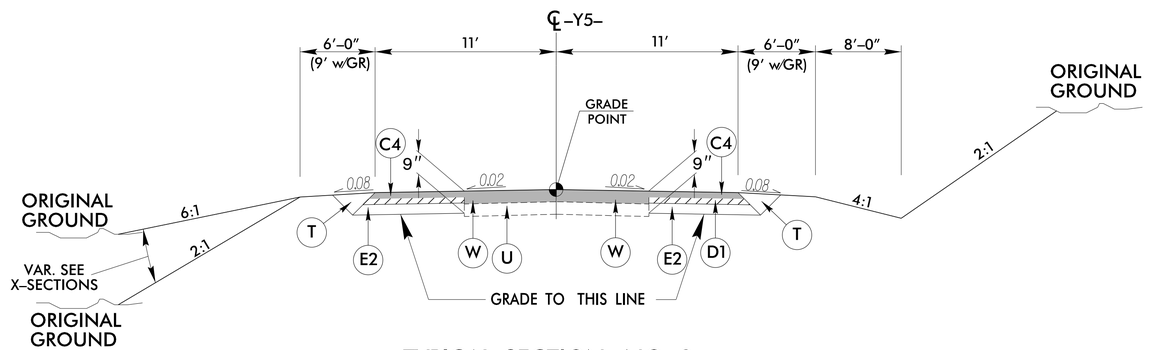
PROJECT REFERENCE NO.	SHEET NO.
U-3301	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



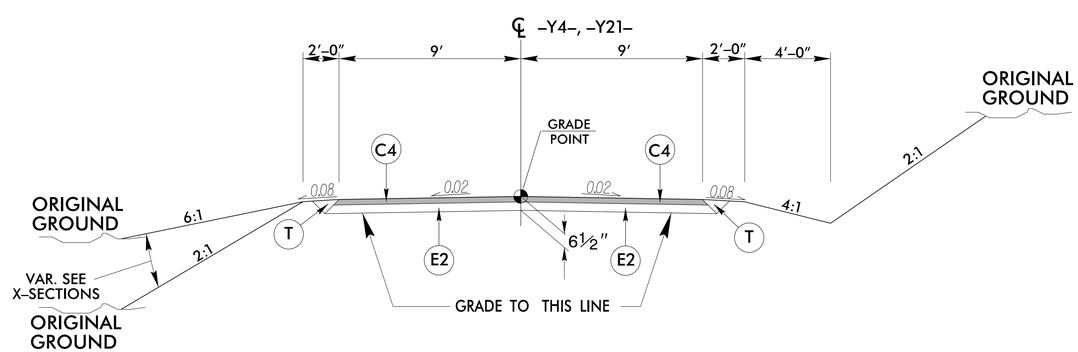
TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8
–Y5– STA. 10+20.11 TO STA. 12+50.00



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
–Y5– STA. 12+50.00 TO STA. 13+00.00



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
–Y4– STA. 10+20.00 TO STA. 11+35.00
–Y21– STA. 10+25.05 TO STA. 12+35.00

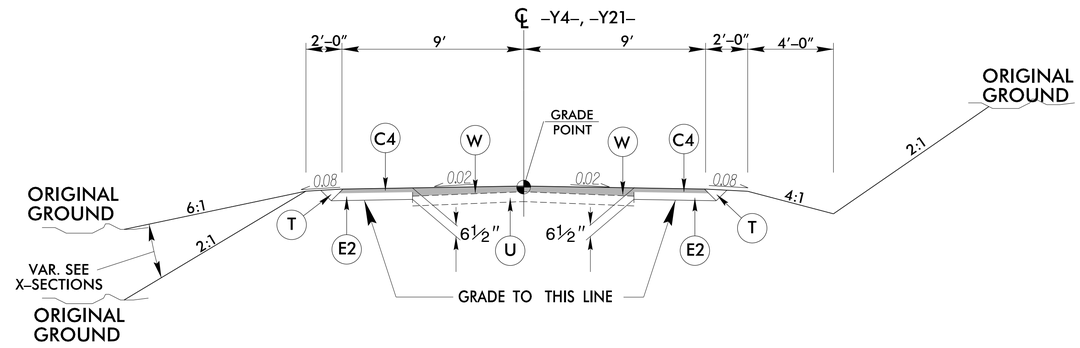
PAVEMENT SCHEDULE	
C1	1½″ S9.5B
C2	3″ S9.5B
C3	VAR. S9.5B
C4	2½″ SF9.5A
C5	VAR. SF9.5A
D1	2½″ I19.0B
D2	4″ I19.0B
D3	VAR. I19.0B
E1	3″ B25.0B
E2	4″ B25.0B
E3	4½″ B25.0B
E4	5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	8″ ABC
J3	10″ ABC
J4	VAR. DEPTH ABC
K	SUBGRADE STAB.
P	PRIME COAT
R1	2′-9″ C&G
R2	2′-6″ C&G
R3	5″ MONO. ISLAND
R4	EXPRESS. GUTTER
R5	SHLD. BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

SYSTIME$$$$
SYSNAME$$$$
FILENAME$$$$
PLOTSCALE$$$$
PLOTDATE$$$$

6/2/99

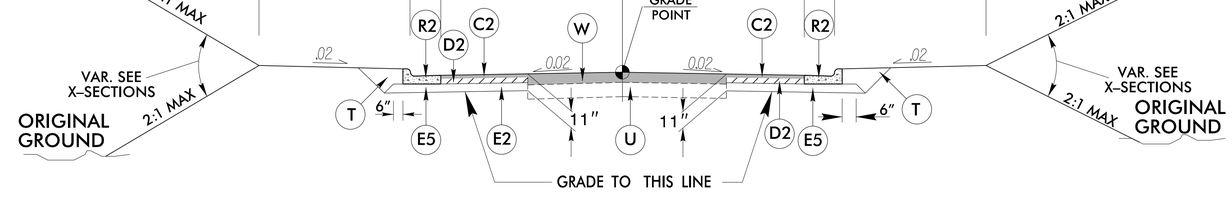
PROJECT REFERENCE NO.	SHEET NO.
U-3301	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



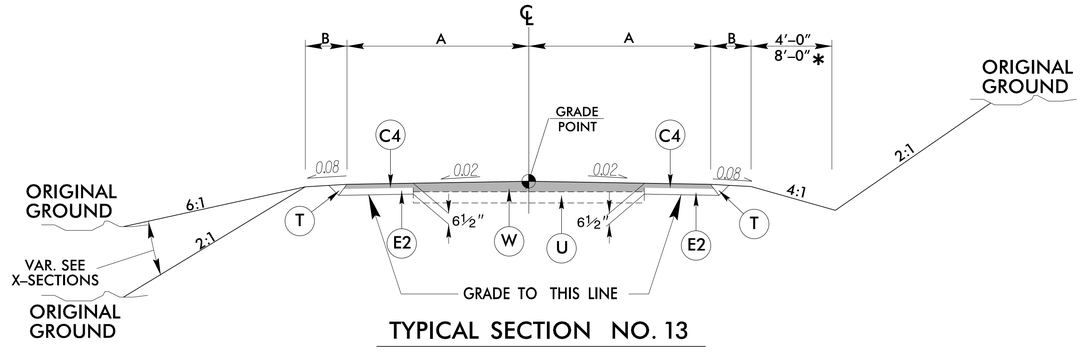
TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
–Y4– STA. 11+35.00 TO STA. 13+95.42
–Y21– STA. 12+35.00 TO STA. 12+50.00



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12
–Y6– STA. 11+70.00 TO STA. 17+34.69
* –Y20– STA. 10+00.00 TO STA. 15+50.00



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13
–Y7– STA. 12+30.00 TO STA. 13+24.75
–Y8– STA. 10+22.52 TO STA. 11+30.00
–Y9– STA. 10+29.64 TO STA. 11+45.00
RESURFACE –Y9– STA. 11+45.00 TO STA. 12+43.00 USING 2½″ SF9.5A
–Y15– STA. 13+70.00 TO STA. 14+98.65
–Y16– STA. 13+75.00 TO STA. 15+29.06
–Y17– STA. 10+36.11 TO STA. 11+20.00
–Y18– STA. 12+80.00 TO STA. 13+00.00
RESURFACE –Y18– STA. 13+00.00 TO STA. 13+95.00 USING 2½″ SF9.5A

TYPICAL SECTION NO. 13 DIMENSIONS

	A	B	B (w/GR)
–Y7–	8′	2′	7′
–Y8–	8′	4′	7′
–Y9–	8′	4′	7′
–Y15–	9′	2′	7′
–Y16–	9′	2′	7′
–Y17–	9′	2′	7′
* –Y18–	10′	5′	8′

PAVEMENT SCHEDULE

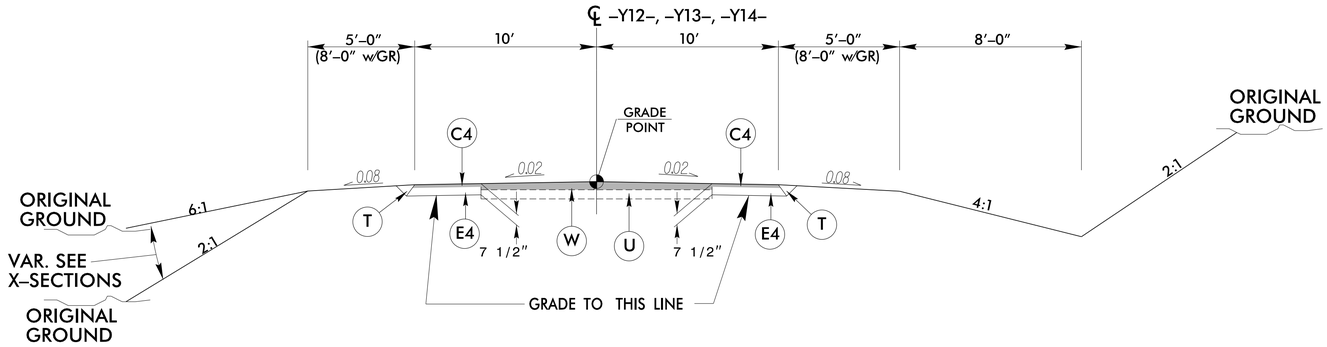
C1	1½″ S9.5B
C2	3″ S9.5B
C3	VAR. S9.5B
C4	2½″ SF9.5A
C5	VAR. SF9.5A
D1	2½″ I19.0B
D2	4″ I19.0B
D3	VAR. I19.0B
E1	3″ B25.0B
E2	4″ B25.0B
E3	4½″ B25.0B
E4	5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	8″ ABC
J3	10″ ABC
J4	VAR. DEPTH ABC
K	SUBGRADE STAB.
P	PRIME COAT
R1	2′-9″ C&G
R2	2′-6″ C&G
R3	5″ MONO. ISLAND
R4	EXPRESS. GUTTER
R5	SHLD. BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING

SSTIMES
SSENGLISH
SSCONSOLE

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-3301	2-F
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 14

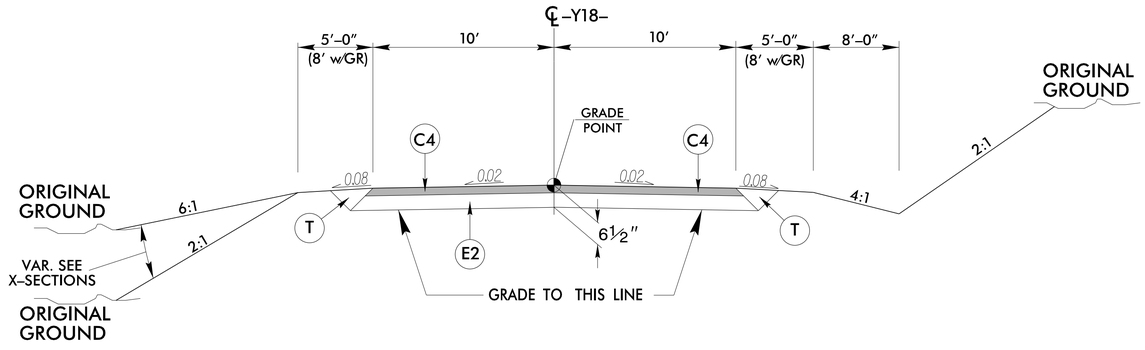
TYPICAL SECTION NO. 14 DIMENSIONS

	A	B	B (w/GR)
–Y12–	11′	6′	9′
–Y13–	10′	5′	8′
–Y14–	11′	6′	9′

USE TYPICAL SECTION NO. 14

–Y12– STA. 10+39.22 TO STA. 12+00.00
–Y13– STA. 10+36.23 TO STA. 12+50.00
–Y14– STA. 15+50.00 TO STA. 16+99.55

PAVEMENT SCHEDULE	
C1	1½″ S9.5B
C2	3″ S9.5B
C3	VAR. S9.5B
C4	2½″ SF9.5A
C5	VAR. SF9.5A
D1	2½″ I19.0B
D2	4″ I19.0B
D3	VAR. I19.0B
E1	3″ B25.0B
E2	4″ B25.0B
E3	4½″ B25.0B
E4	5″ B25.0B
E5	VAR. B25.0B
J1	6″ ABC
J2	8″ ABC
J3	10″ ABC
J4	VAR. DEPTH ABC
K	SUBGRADE STAB.
P	PRIME COAT
R1	2′-9″ C&G
R2	2′-6″ C&G
R3	5″ MONO. ISLAND
R4	EXPRESS. GUTTER
R5	SHLD. BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING
W	WEDGING



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15

–Y18– STA. 10+48.15 TO STA. 12+80.00

I:\SIS\TIMES\$\$\$

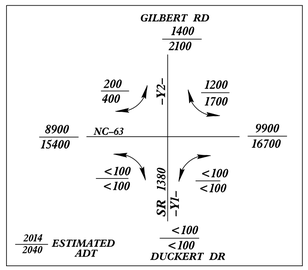
8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3301	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83



-L-
PI Sta 15+58.75
△ = 7° 41' 59.9" (LT)
D = 1° 00' 00.0"
L = 770.00'
T = 385.58'
R = 5,729.56'
SE = RC
V = 50

-YIA-
PI Sta 15+70.92
△ = 2° 36' 00.0" (LT)
D = 3° 29' 52.5"
L = 74.33'
T = 37.17'
R = 1,638.00'

FOR PROFILE OF LINE -L- SEE SHEET 23

-BY- POT 101 5+00.00

PT Sta. 19+43.17

-YIA- Sta. 15+33.75

-YIA- Sta.16+08.08

BEGIN TIP PROJECT U-3301
-L- STA.17+80.00

PC Sta. 11+73.17

MATCH LINE -L- STA. 22+40.00 SEE SHEET 5

-BL- PINC 17+60.94
-BY- POT 9+82.40

POT Sta. 16+70.32 -YIA-=
POT Sta.18+12.22 -L-

PROPOSED SIGNAL

J. T. BROWN FAMILY LIMITED PARTNERSHIP DB 4751 PG 1586

DIANNE B. HUGHES DB 1699 PG 153

DAN SLUDER DB 1432 PG 136

BILLY'S AUTO SALES, INC. DB 2045 PG 657

ROGER J. GARRETT DB 1875 PG 254

BUNCOMBE COUNTY BOARD OF EDUCATION DB 2055 PG 447

WILLIAM JETER BROWN, III DB 1885 PG 70

JAMES WEST DB 1096 PG 423 DB 1368 PG 195

CHAD A. SILVER DB. 1983 PG.24

STEPHEN BOSMA DB 3762 PG 623

MELINDA B. GARRETT DB 2009 PG 673

RICH NALLENWEG DB 5241 PG 427

C. H. BUCKNER DB 1256 PG 467

BEATRICE BUCKNER DB 1552 PG 564

BEATRICE BUCKNER DB 876 PG 169

RALPH E. MILLER DB 2524 PG 575

HAZEL A. WORLEY FREEMAN DB 1781 PG 709 DB 1097 PG 519

LARRY M. LUSK, JR. DB 5084 PG 841

+40.00 -L- 70.00' Lt. 75.80' Lt.

+71.00 -L- Exist. R/W. 82.20' Lt.

+50.00 -L- Exist. R/W. 72.00' Lt.

+05.00 -YIA- Exist. R/W 20.00' Lt.

+95.00 -L- Exist. R/W. 40.00' Rt.

+60.00 -L- Exist. R/W. 40.00' Rt.

20+00

15+00

10+00

N 74° 06' 00.1" E

N 81° 48' 00.0" E

S 23° 07' 00.0" E

S 20° 37' 00.0" E

RETAIN

RETAIN PIPE (NOT SHOWN)

PIPE

SYSTEM
ENGINEER
DESIGN
DRAWN
CHECKED
QUANTITIES

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3301	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

FOR PROFILE OF LINE –L– SEE SHEET 24
FOR PROFILE OF LINE –Y1– SEE SHEET 34
FOR PROFILE OF LINE –Y2– SEE SHEET 42
FOR PROFILE OF LINE –Y3– SEE SHEET 34
FOR PROFILE OF LINE –DRI– SEE SHEET 40
FOR CULVERT PLANS SEE SHEET C-__ THRU C-__

–L–
PI Sta 27+79.39
△ = 48° 32' 49.2" (RT)
D = 5° 12' 31.3"
L = 932.04'
T = 496.06'
R = 1,100.00'
SE = 04
V = 54

–Y1–
PI Sta 11+86.42
△ = 32° 41' 58.3" (RT)
D = 36° 29' 38.9"
L = 89.60'
T = 46.06'
R = 157.00'
V = STOP CONDITION

–DRI–
PI Sta 10+79.64
△ = 53° 06' 47.6" (LT)
D = 76° 23' 39.7"
L = 69.53'
T = 37.49'
R = 75.00'
V = STOP CONDITION

–Y3–
PI Sta 16+17.74
△ = 31° 41' 25.2" (RT)
D = 57° 17' 44.8"
L = 55.31'
T = 28.38'
R = 100.00'
V = STOP CONDITION

PC Sta. 11+08.32 –Y2–

BEGIN CONSTRUCTION –Y2– STA 12+70.00

PT Sta. 13+08.26 –Y2–

+70.00 –Y2– 25.00' Lt.
+70.00 –Y2– 25.00' Rt.
+00.00 –Y2– 50.00' Lt.
+00.00 –Y2– 50.00' Rt.
+50.00 –Y2– 53.00' Rt.
+35.00 –Y2– 43.00' Rt.
+70.00 –Y2– 44.00' Rt.

CUT BASE DITCH SEE DETAIL 14

BUNCOMBE COUNTY BOARD OF EDUCATION DB 2055 PG 447

JAMES WEST DB 1096 PG 423 DB 1368 PG 495

PC Sta. 22+83.34

SPECIAL LATERAL V DITCH SEE DETAIL 13

REMOVE DI (0502)

REMOVE CATCH BASIN (0501)

REMOVE 2GI (0501A)

REMOVE FENCE

REMOVE SYSTEM 3GI-4

REMOVE CONC PAVED DITCH

REMOVE CONC HW

REMOVE CONC CURB & GUTTER

REMOVE CONC SIDEWALK

REMOVE 24" RCP-III

REMOVE 18" RCP-III

REMOVE 15" RCP-IV

REMOVE 30" RCP-IV

REMOVE 36" RCP-III

REMOVE CONC CURB & GUTTER

REMOVE CONC MEDIAN

REMOVE CONC HW & SWALE

REMOVE CONC SWALE

REMOVE CONC PAVED DITCH

REMOVE CONC SIDEWALK & CURB RAMP

REMOVE CONC CURB & GUTTER & SWALE

REMOVE CONC CURB & GUTTER & SIDEWALK

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW & CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW

REMOVE CONC CURB & GUTTER & SIDEWALK & CURB RAMP & SWALE & MEDIAN & HW & CB & DI & 2GI & 3GI-4 & SYSTEM & FENCE & CONC PAVED DITCH & CONC HW &

PROJECT REFERENCE NO.	SHEET NO.
U-3301	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

8/17/99

REVISIONS

RW Revision 2/0/16 JCL Revised Proposed Right of Way Limits on Parcel 20

11744 / 17300 NC-63 12722 / 18500
478 / 700 -SR 1378- -Y5- 1456 / 1900
2015 / 2035 ESTIMATED ADT
1933 / 2600 SR-1378 OLD NEWFOUNDLAND RD

-L-
PI Sta 39+01.88
△ = 30° 25' 36.3" (LT)
D = 5° 59' 58.4"
L = 507.15'
T = 259.71'
R = 955.00'
SE = 04
V = 50

PI Sta 45+85.83
△ = 29° 49' 01.3" (RT)
D = 5° 59' 58.4"
L = 496.99'
T = 254.26'
R = 955.00'
SE = 04
V = 50

-Y4-
PI Sta 10+76.44
△ = 51° 38' 07.7" (LT)
D = 63° 39' 43.1"
L = 81.11'
T = 43.54'
R = 90.00'

-Y4-
PI Sta 13+19.07
△ = 14° 46' 47.7" (LT)
D = 59° 40' 59.2"
L = 24.76'
T = 12.45'
R = 96.00'

-Y5-
PI Sta 13+38.17
△ = 4° 36' 28.8" (LT)
D = 1° 54' 35.5"
L = 241.27'
T = 120.70'
R = 3,000.00'
SE = RC

FOR PROFILE OF LINE -L- SEE SHEETS 24 & 25
FOR PROFILE OF LINE -Y4- SEE SHEET 34
FOR PROFILE OF LINE -Y5- SEE SHEET 35

NOTE: Use 8' Wide Berm From Sta. 35+50 to 36+50 Lt.

MATCH LINE -L- STA. 36+00.00 SEE SHEET 5

MATCH LINE -L- STA. 49+00.00 SEE SHEET 7

HARRY C. SHARPE DB 1312 PG 83 — 18
M. HEATHER McMULLEN DB 3915 PG 683 — 19
LARRY W. FERGUSON DB 1998 PG 772
NORMAN & JOYCE BEDNAR, TRUSTEES DB 4514 PG 677 — 22
JANE W. McMAHAN DB 1905 PG 543 — 23
DEWEY H. PARKER DB 5346 PG 321 — 25
TINA HILL DB 4277 PG 1806 — 26
CONNIE R. NEWCOME DB 4866 PG 179 — 28
R. G. REEMS DB 1100 PG 175 — 15
CARL FRANCIS & TRACEY EDWARDS BROWN DB 5337 PG 753 — 14
GEORGE R. LANE DB 1153 PG 479 — 16
RONALD SILVER DB 5075 PG 1662 — 17
MELISSA W. HERRON DB 970 PG 56 — 13
AVIS MAYRAND DB 4963 PG 185
PETER MAYRAND DB 1677 PG 30 — 155
BELL UNITED METHODIST CHURCH DB 779 PG 341, DB 41 PG 214, DB 127 PG 358 — 20
JAMES H. COMAN DB 1676 PG 629 — 24
JOSEPH W. SHEEHAN DB 2026 PG 648, DB 1791 PG 448 — 27

PC Sta. 43+31.57
PT Sta. 41+49.32
POT Sta. 10+00.00 -Y4-= POC Sta. 40+56.70 -L-
-BL- PINC 43+32.11 -BY5- POT 5+00.00
BM=2 -BL- STA 44+38 184' LEFT ELEV.=2141.38'
POT Sta. 10+00.00 -Y5-= POC Sta. 43+58.09 -L-
-BL- PINC 48+11.45
CLASS B RR GEOTEXT EST. 5 SY RR EST. 1 TN
CONNECT 12" HDPE TO SYSTEM
HISTORIC PROPERTY
PC Sta. 36+42.17
PC Sta. 10+32.90 -Y4-
PT Sta. 11+14.01 -Y4-
BEGIN RESURFACING -Y4- STA 11+35.00
-BY4- POT 7+77.80
TS Sta. 12+16.62 -Y4-
SC Sta. 13+06.62 -Y4-
PT Sta. 13+31.38 -Y4-
PC Sta. 12+17.46 -Y5-
POT Sta. 14+05.71 -Y4-= POC Sta. 12+32.98 -Y5-
END CONSTRUCTION -Y5- STA 13+35.00
PT Sta. 14+58.74 -Y5-
POT Sta. 14+96.42 -Y5-
PT Sta. 48+28.56

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 2
SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 11
SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 4
SPECIAL LATERAL 'V' DITCH SEE DETAIL 5
LATERAL BASE DITCH SEE DETAIL 6

S 87° 46' 47.0" E
S 3° 51' 30.0" E
S 85° 29' 44.3" E
S 10° 22' 5" E

DETAIL 11
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
NATURAL GROUND, 2:1, D, 3:1
Min. D = 1.0 Ft.
FROM STA. 36+00 TO STA. 38+00 -L- (RT)

DETAIL 2
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
NATURAL GROUND, 3:1, D, 3:1
Min. D = 1.5 Ft.
FROM STA. 38+00 TO STA. 40+20 -L- (RT)

DETAIL 4
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
NATURAL GROUND, 3:1, D, 3:1
Min. D = 1.0 Ft.
FROM STA. 41+00 TO STA. 42+90 -L- (RT)
FROM STA. 10+55 TO STA. 10+90 -Y5- (RT)

DETAIL 5
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Fill Slope
Min. D = 2Ft.
FROM STA. 12+80 TO STA. 13+35 -Y5- (RT)

DETAIL 6
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 3:1, d, D, 2:1, b, 1':Ft., GEOTEXTILE, B, Fill Slope
Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 3.0 Ft.
b = 5.0 Ft.
Type of Liner = CLASS I Rip-Rap
FROM STA. 45+00 TO STA. 46+50 -L- (RT)

8/17/99

REVISIONS

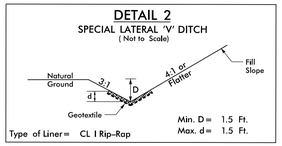
PROJECT REFERENCE NO.	SHEET NO.
U-3301	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE –L– SEE SHEET 25
FOR PROFILE OF LINE –Y6– SEE SHEET 35

NAD 83

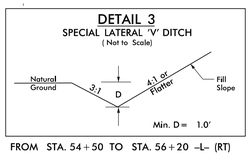
DETAIL 2
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.

FROM STA. 14+50 TO STA. 15+50 –Y6– (RT)

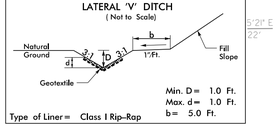
DETAIL 3
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1.0'

FROM STA. 54+50 TO STA. 56+20 –L– (RT)

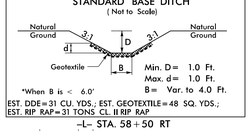
DETAIL 5
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class I Rip-Rap
Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
b= 5.0 Ft.

FROM STA. 57+55 TO STA. 58+38 –L– (RT)

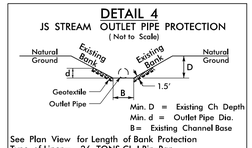
DETAIL 6
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Max. d= 1.0 Ft.
B= Var. to 4.0 Ft.
*When B is < 6.0'
EST. DDE=±31 CU. YDS.; EST. GEOTEXTILE=±48 SQ. YDS.;
EST. RIP RAP=±31 TONS CL. II RIP RAP

–L– STA. 58+50 RT

DETAIL 4
JS STREAM OUTLET PIPE PROTECTION
(Not to Scale)



Min. D = Existing Ch Depth
Min. d = Outlet Pipe Dia.
B= Existing Channel Base
See Plan View for Length of Bank Protection
Type of Liner= 26 TONS,CL I Rip-Rap
Geotextile= 45 sy

STA. 61+08 –L– (RT)

–L–	–Y6–
PI Sta 62+00.18	PI Sta 16+24.88
△ = 14° 28' 06.1" (RT)	△ = 2° 18' 00.0" (RT)
D = 3° 49' 11.0"	D = 1° 33' 03.8"
L = 378.78'	L = 148.29'
T = 190.40'	T = 74.15'
R = 1,500.00'	R = 3,694.00'
SE = 04	V = STOP CONDITION
V = 60	

ALEXANDER RD SR-1620
2015 ESTIMATED ADT
4630 / 7000
–SR 1620– –Y6–
1933 / 2600
2696 / 4400
12,722 / 18500
NC–63
13,485 / 20300

BEGIN CONSTRUCTION
–Y6– STA 11+65.00
BEGIN GRADING
–Y6– STA 11+70.00

PC Sta. 15+50.73 –Y6–
PT Sta. 16+99.02 –Y6–
PC Sta. 60+09.77
POT Sta. 17+66.85 –Y6–
POT Sta. 56+06.40 –L–
BL– PINC 56+08.06
BY6– POT 12+63.45

MATCH LINE –L– STA. 49+00.00 SEE SHEET 6
MATCH LINE –L– STA. 62+00.00 SEE SHEET 8

EXISTING SIGNAL TO BE UPGRADED

$$$$SYSTIME
$$$$ISDATE
$$$$ISTIME
$$$$ISNAME

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3301	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

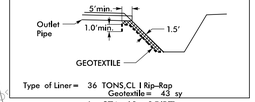
NAD 83

FOR PROFILE OF LINE –L– SEE SHEETS 25 & 26
FOR CULVERT PLANS SEE SHEETS C–__ THRU C–__

–L–

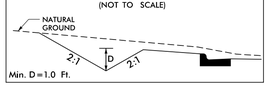
PI Sta 62+00.18	PI Sta 77+07.21
△ = 14° 28' 06.1" (RT)	△ = 59° 03' 06.3" (LT)
D = 3° 49' 11.0"	D = 5° 59' 58.4"
L = 378.78'	L = 984.27'
T = 190.40'	T = 540.88'
R = 1,500.00'	R = 955.00'
SE = 04	SE = 04
V = 60	V = 50

DETAIL 1
RIP RAP AT EMBANKMENT
(Not to Scale)



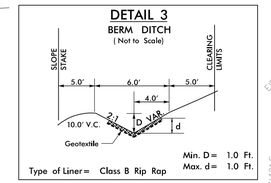
Type of Liner = 36 TONS,CL I Rip-Rap
Geotextile = 43 sy
–L– STA. 62+25(RT)
–L– STA. 67+91(RT)

DETAIL 2
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



FROM STA. 66+00 TO STA. 67+20 –L– (LT)

DETAIL 3
BERM DITCH
(Not to Scale)



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

FROM STA. 73+32 TO STA. 75+00 –L– (LT)

MATCH LINE –L– STA. 62+00.00 SEE SHEET 7

MATCH LINE –L– STA. 75+00.00 SEE SHEET 9

LARRY W. FERGUSON
DB 1600 PG 416
DB 2046 PG 526
DB 1467 PG II
DB 1422 PG 205

STEPHEN M. BURNETTE
DB 2327 PG 783

ROGER A. HAWKINS
DB 1389 PG 126

WELLS FARGO BANK NA
DB 5180 PG 1996

STEPHEN K. SLUDER
DB 0121 PG 521

MICHAEL ALDON INGLE
DB 4159 PG 600

BRAD MIGYANKA
DB 4311 PG 1826

VICTORIA LYALL
DB 4284 PG 813

FLORA S. JUSTICE
DB 1167 PG 531

MARY T. WELLS
DB 4956 PG 863

CHAD NESBITT
DB 1855 PG 430

THOMAS M. PLEMMONS
DB 4311 PG 1858

DAVID K. COOK
DB 1968 PG 349

SOUTHERN CROSS INVESTMENTS, LLC
DB 4202 PG 1315

DOYLE B REEVES TRUST
DB 4689 PG 573

HATTIE PONDER
DB 1005 PG 581

JAMES J. GILLESPIE
DB 2255 PG 305

KENNETH R. PARHAM
DB 1020 PG 495
DB 812 PG 629

NORMAN J. BEDNAR LIVING TRUST
DB 4545 PG 536

-BL- PINC 62+21.26

-BL- PINC 70+38.87

-BL- PINC 75+03.65

PC Sta. 71+66.33

PT Sta. 63+88.55

NOTE: Use 8' Wide Berm From Sta.63+00 to 67+00 Lt.

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 2

BERM DITCH SEE DETAIL 3

CLASS I RIP RAP AT EMBANKMENT SEE DETAIL 1

JS CHANNEL CHANGE SEE DETAIL 4

JS STREAM OUTLET PIPE PROTECTION SEE DETAIL 5

COLLAR AND EXTEND

CB (TO TIE IN BUSINESS ROOF DRAINS)

REMOVE 12LF. +/-

REMOVE 27LF. +/-

24" RCP-V

15" RCP-III

18" RCP-IV

15" RCP-V

48" RCP-IV (BURIED 0.8 FT.)

15" CSP

18" CSP

2-6" C&G

GRADE TO DRAIN

S 43°29'39.6" E

S 44°37'23" E

N 44°37'23" W

N 40°55'53" E

S 35°40'03" E

N 45°08'27" E

N 47°24'02" E

N 41°27'13" E

N 41°46'08" W

N 41°22'22" W

S 40°46'47" E

S 41°40'38" E

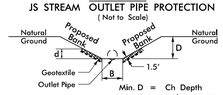
N 56°55'10" W

N 25°57'34" W

N 53°05'32" W

S 45°21'54" E

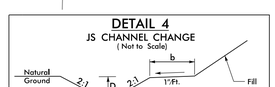
DETAIL 5
JS STREAM OUTLET PIPE PROTECTION
(Not to Scale)



Min. D = Ch Depth
Min. d = Outlet Pipe Dia.
B= Channel Base
See Plan View for Length of Bank Protection
Type of Liner= 51 TONS,CL I Rip-Rap
Geotextile = 96 sy

–L– STA. 70+80 (RT)
–L– STA. 72+10 (RT)

DETAIL 4
JS CHANNEL CHANGE
(Not to Scale)



Min. D= 3.0 Ft.
B= 2.0 Ft.
b= 5.0 Ft.

FROM STA. 70+80 TO STA. 72+95 –L– (RT)

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3301	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

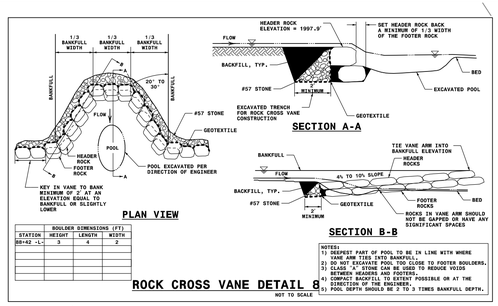
FOR PROFILE OF –L– SEE SHEETS 26
FOR PROFILE OF –Y7– SEE SHEET 35
FOR PROFILE OF –Y8– SEE SHEET 36
FOR PROFILE OF –Y9– SEE SHEET 36
FOR PROFILE OF –DR9REV– SEE SHEET 40

-Y7-
PI Sta 12+63.78
△ = 65° 27' 30.8" (LT)
D = 143° 14' 22.0"
L = 45.70'
T = 25.71'
R = 40.00'
V = STOP CONDITION

-DR9REV-
PI Sta 11+14.08
△ = 63° 13' 52.1" (LT)
D = 127° 19' 26.2"
L = 49.66'
T = 27.70'
R = 45.00'
V = STOP CONDITION

-Y9-
PI Sta 10+67.05
△ = 13° 40' 30.1" (LT)
D = 25° 27' 53.2"
L = 53.70'
T = 26.98'
R = 225.00'
V = STOP CONDITION

-Y8-
PI Sta 11+86.33
△ = 22° 09' 13.3" (RT)
D = 17° 21' 44.5"
L = 127.60'
T = 64.60'
R = 330.00'
V = STOP CONDITION

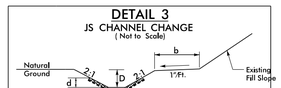


BOULDER DIMENSIONS (FT)			
STATION	HEIGHT	LENGTH	WIDTH
BB+42 -L-	3	4	2

NOTES:
1) DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2) DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3) CLASS "A" STONE CAN BE USED TO REDUCE VOIDS IN ROCK IF APPROVED BY ENGINEER.
4) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5) POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

ROCK CROSS VANE DETAIL 8
NOT TO SCALE

DETAIL 3
JS CHANNEL CHANGE
(Not to Scale)



FROM STA. 82+22 TO STA. 82+75 -L- (LT)

POT Sta. 10+00.00 -Y7-
-BL- PINC 83+40.96
-BY8- POT 5+00.00
STANDARD BASE DITCH
SEE DETAIL 4 (Length=37')
PC Sta. 10+86.67 -Y7-
PT Sta. 11+98.01 -Y7-
BEGIN CONSTRUCTION
-Y7- STA 12+30.00
PC Sta. 12+38.07 -Y7-
PT Sta. 12+83.77 -Y7-
POT Sta. 13+44.80 -Y7-=
POC Sta. 80+63.47 -L-
+30.00 -Y7-
30.00' Rt.
+60.00 -Y7-
35.00' Rt.
JS CHANNEL CHANGE
SEE DETAIL 3
-BY7- POT 5+00.00
DAVID JACKSON
DB 3827 PG 518
ELAINE C. PRICE
DB 1858 PG 625
-BL- PINC 86+44.30
-BY9- POT 5+00.00
LINDA W. CULBERTSON
DB 1418 PG 305
POT Sta. 10+00.50 -Y9-=
POC Sta. 86+54.21 -L-
SC Sta. 85+38.34
TS Sta. 83+22.34
DEMETRE C. THEODOSSIS
DB 2418 PG 463
DAROLD L. ROSE
DB 4600 PG 1392
BM#3
-BY7- STA 6+46
6.75' RIGHT
ELEV.=2018.56'
ELEONORE M. SHELTON
DB 4390 PG 409
GARY E. MONEYHAM, ET AL
DB 1694 PG 88
MARK HOLT
DB 1459 PG 546
GAIL K. MOORE
DB 1979 PG 335
DOUGLAS A ROBERSON (LE)
DB 4907 PG 539
PC Sta. 10+40.07 -Y9-
PT Sta. 10+93.77 -Y9-
POT Sta. 10+00.00 -Y8-=
POT Sta. 82+66.10 -L-
END GRADE
-Y9- STA 11+45.00
PC Sta. 11+53.25 -Y9-
PT Sta. 12+02.41 -Y9-
PT Sta. 11+36.04 -DR9Rev-
POT Sta. 11+45.00 -DR9Rev-
POT Sta. 12+25.49 -Y9-
S 50° 06' 59.6" W
PC Sta. 12+98.44 -Y9-
ALBERT FREEMAN
DB 1892 PG 690
-BY9- PINC 8+93.00
BEGIN CONSTRUCTION
POT Sta. 10+00.00 -DR9Rev-
PCC Sta. 12+49.32 -Y8-
KENNETH S. McMULLEN
DB 1602 PG 242
BEGIN CONSTRUCTION
-Y8- STA 11+30.00
PT Sta. 81+50.60
JS CHANNEL CHANGE
SEE DETAIL 2
KENNETH S. McMULLEN
DB 1552 PG 549
HATTIE PONDER
DB 1005 PG 581
-BL- PINC 78+94.06
-BY7- POT 11+40.06
8+79.34 POT-BY8- 124
DAVID GOLDSMITH
DB 1222 PG 50
DB 1423 PG 622
JAMES K. LANDOLF
DB 4366 PG 1564
-BY9- POT 11+71.44
PAVEL KUSHNIR
DB 1976 PG 675
INLET CHANNEL TYPICAL
SEE DETAIL 6
EXTEND 7'X6' RCBC
OUTLET CHANNEL TYPICAL
SEE DETAIL 7
STANDARD BASE DITCH
SEE DETAIL 5
ROCK CROSS VANE
SEE DETAIL 8
BERM DITCH
SEE DETAIL 1
JS CHANNEL CHANGE
SEE DETAIL 2
GRAU-350
REMOVE
RETAIN
Retain Existing R/W
Prop. Guardrail
CUT TO INFOUND CREEK, RETAIN & EXTEND
MATCH LINE -L- STA. 89+00.00 SEE SHEET 10
MATCH LINE -L- STA. 75+00.00 SEE SHEET 8
GRADE TO DRAIN
Type 350
CAST IRON CONST. PIPE
72" RCP-III (BURIED 1 FT.)
FLOWABLE FILL
50 L.F. +/-
TRENCHES INSTALLED WITH DOBS STEEL
2 GI
COLLAR
CAT-1
+70.00 -L-
EXIST. R/W
92.00' Lt.
+75.00 -L-
115.00' Lt.
+20.00 -L-
EXIST. R/W
+36.00 -L-
EXIST. R/W
+40.00 -L-
75.00' Rt.
+83.00
PT OD. R/W
+72.00 -L-
102.00' Rt.
+55.00 -Y9-
Exist. R/W
+87.00 -L-
77.00' Rt.
+00.00 -Y8-
53.00' Lt.
+95.00 -L-
124.00' Rt.
+80.00 -L-
144.00' Rt.
+20.00 -Y8-
Exist. R/W
+50.60 -L-
50.00' Rt.
+40.00 -L-
Prop. ROW
+40.00 -L-
Exist. R/W.
+50.00 -L-
95.00' Rt.
+80.00
93.46'
100.00' Rt.
+65.00 -L-
107.00' Rt.
+70.00 -Y9-
84.00' Lt.
+80.00 -Y9-
Exist. R/W
S 64° 16' 00.2" W
S 62° 07' 30.8" W
S 14° 49' 59.5" W
S 50° 48' 59.2" W
S 77° 15' 59.8" W
S 38° 06' 59.8" E
N 66° 59' 08.3" W
N 65° 53' 20.5" W
N 34° 12' 00.0" W
N 23° 30' 40.0" W
N 13° 49' 20.0" W
N 04° 08' 00.0" W
N 04° 23' 56.5" E
N 13° 49' 20.0" E
N 23° 30' 40.0" E
N 34° 12' 00.0" E
N 44° 53' 20.0" E
N 55° 34' 40.0" E
N 66° 16' 00.2" E
N 77° 57' 20.3" E
N 89° 38' 40.5" E
S 89° 38' 40.5" W
S 77° 57' 20.3" W
S 66° 16' 00.2" W
S 54° 34' 40.0" W
S 43° 53' 20.0" W
S 33° 12' 00.0" W
S 22° 30' 40.0" W
S 11° 49' 20.0" W
S 01° 08' 00.0" W
S 09° 33' 56.5" E
S 20° 15' 16.5" E
S 30° 56' 36.5" E
S 41° 37' 56.5" E
S 52° 19' 16.5" E
S 63° 00' 36.5" E
S 73° 41' 56.5" E
S 84° 23' 16.5" E
N 84° 23' 16.5" W
N 73° 41' 56.5" W
N 63° 00' 36.5" W
N 52° 19' 16.5" W
N 41° 37' 56.5" W
N 30° 56' 36.5" W
N 20° 15' 16.5" W
N 09° 33' 56.5" W
N 01° 08' 00.0" E
N 11° 49' 20.0" E
N 22° 30' 40.0" E
N 33° 12' 00.0" E
N 43° 53' 20.0" E
N 54° 34' 40.0" E
N 65° 16' 00.2" E
N 75° 57' 20.3" E
N 86° 38' 40.5" E
S 86° 38' 40.5" W
S 75° 57' 20.3" W
S 65

8/17/99

REVISIONS

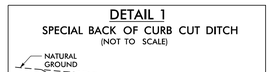
PROJECT REFERENCE NO.	SHEET NO.
U-3301	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF –L– SEE SHEET 26 & 27
FOR PROFILE OF –DRI0– SEE SHEET 35
FOR PROFILE OF –Y10– SEE SHEET 36
FOR STRUCTURE PLANS SEE S–1 THRU S–
FOR DETAIL OF CROSSOVER SEE SHEET 2–?

NAD 83

DETAIL 1
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



FROM STA. 89+25 TO STA. 90+70 –L– (LT)

–L–
PI Sta 89+07.46
△ = 22° 12' 59.7" (RT)
D = 3° 02' 51.5"
L = 728.97'
T = 369.12'
R = 1,880.00'
SE = 04
V = 60

PIs Sta 93+39.34
Θs = 3° 17' 29.3"
Ls = 216.00'
LT = 144.02'
ST = 72.02'

PIs Sta 99+38.44
Θs = 6° 58' 44.0"
Ls = 324.00'
LT = 216.17'
ST = 108.15'

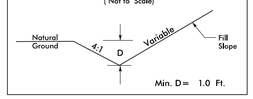
PI Sta 104+48.11
△ = 33° 37' 21.1" (RT)
D = 4° 18' 28.6"
L = 780.48'
T = 401.84'
R = 1,330.00'
SE = 06
V = 60

–DRRT5–
PI Sta 12+00.95
△ = 28° 41' 22.8" (RT)
D = 57° 17' 44.8"
L = 50.07'
T = 25.57'
R = 100.00'
V = STOP CONDITION

–Y10–
PI Sta 13+24.79
△ = 9° 41' 55.6" (LT)
D = 15° 52' 36.9"
L = 61.09'
T = 30.62'
R = 360.87'
V = STOP CONDITION

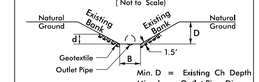
PI Sta 12+33.75
△ = 49° 29' 18.9" (LT)
D = 38° 11' 49.9"
L = 129.56'
T = 69.13'
R = 150.00'
SE = 0.02
V = STOP CONDITION

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



FROM STA. 99+85 TO STA. 100+50 –L– LT

DETAIL 10
JS STREAM OUTLET PIPE PROTECTION
(Not to Scale)



Min. D = Existing Ch Depth
Min. d = Outlet Pipe Dia
B= Existing Channel Base
See Plan View for Length of Bank Protection
Type of Liner= 22 TONS,CL 1 Rip-Rap
Geotextile= 44 sy

–L– STA. 94+50 (RT)

-BL- PINC 92+30.37

Transition From C&G to Exp.Gutter. BEGIN EXPWY.GUTTER –L– STA.91+48.36

CS Sta. 92+67.32

POT Sta. 10+00.00 –DRI0–
POS Sta.94+00.15 –L–

ST Sta. 94+83.32

BEGIN EXPWY.GUTTER –L– STA.98+45.56

BEGIN BRIDGE –L– STA.100+68.00

POT Sta. 10+00.00 –Y10–=
POC Sta. 102+73.53 –L–

-BL- PINC 102+63.32
-BY10- POT 5+00.00

PC Sta. 10+38.16 –DRI0–

TS Sta. 97+22.27

SC Sta. 100+46.27

PT Sta. 11+37.85 –DRI0–

POT Sta. 12+88.17 –DRI0–
END CONSTRUCTION

PC Sta. 11+64.61 –Y10–

END CONSTRUCTION
–Y10– STA 12+95.00

PT Sta. 13+55.26 –Y10–

MATCH LINE –L– STA. 89+00.00 SEE SHEET 9

MATCH LINE –L– STA. 103+00.00 SEE SHEET 11

NEWFOUND BAPTIST CHURCH, INC.
DB 4012 PG 480
DB 1912 PG 771
73

FERGUSON'S WELL DRILLING SERVICE
DB 1480 PG 253
75

KYLE M. CARVER SR.
DB 3698 PG 657
77

MARIE H. RICKARD
DB 3697 PG 115

PAVEL KUSHNIR
DB 1976 PG 675
72

KATHLEEN DARNELL
DB 2175 PG 579
74

LARRY W. FERGUSON & JOE FERGUSON
DB 1370 PG 507
76

VANCE E. RANDALL
MILL 098E PG 323
78

SYCAMORE VALLEY FARM, LLC
DB 3147 PG 457
DB 4838 PG 1576
79

JP MORGAN CHASE BANK NATIONAL ASSOC.
DB 5149 PG 243

MICHAEL HAYNES
DB 1451PG 16
61

JAMES K. LANDOLF
DB 4366 PG 1564

NEWFOUND ESTATES HOA, INC.
DB 3487 PG 436-437
110

REMOVE EXISTING SYSTEM

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 1

REMOVE 27LF. +/-

REMOVE 4 L.F.+/-

REMOVE FLOWABLE FILL

REMOVE DI

REMOVE 59 L.F. +/- BY

TIE EXISTING 8" PIPE (NOT SHOWN) TO 2GI

TIE EXISTING 15" CSP TO PROPOSED CSP WITH 15" PIPE ELBOW

CB AS JB

COLLAR AND EXTEND 18" RCP-III

SPECIAL LATERAL V DITCH SEE DETAIL 9

CLASS 'B' RR GEOTEXT EST. 10 SY
RR EST. 3 TN

CLASS 'B' RR GEOTEXT EST. 7 SY
RR EST. 2 TN

REMOVE EXISTING BRIDGE

END BRIDGE –L– STA.101+68.00

BEGIN SHOULDER BERM GUTTER –L– STA. 90+96.25 (RT)

END SHOULDER BERM GUTTER –L– STA. 92+78 (RT)

BEGIN SHOULDER BERM GUTTER –L– STA. 98+52 RT.

JS CHANNEL CHANGE SEE DETAIL 2

JS CHANNEL CHANGE SEE DETAIL 4

JS CHANNEL CHANGE SEE DETAIL 5

JS STREAM OUTLET PIPE PROTECTION SEE DETAIL 10

LATERAL BASE DITCH SEE DETAIL 6
STANDARD BASE DITCH SEE DETAIL 7

CLASS II RIP RAP AT EMBANKMENT SEE DETAIL 8

End Prop.SBG –L– STA.102+05 RT.
BEGIN EXPWY.GUTTER –L– STA.102+05.00

Beg Prop.SBG –L– STA.102+05 LT.

Prop. Guardrail

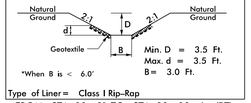
Prop.Guardrail

Retain

Uniform Taper

CONC. ISLAND

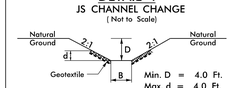
DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 3.5 Ft.
Max. d = 3.5 Ft.
B= 3.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 88+91 TO STA. 89+23 –L– (RT)

DETAIL 4
JS CHANNEL CHANGE
(Not to Scale)

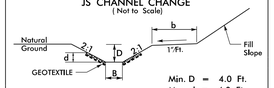


Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B= 3.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 90+65 TO STA. 91+50 –L– (RT)

–DRI0–
PI Sta 10+89.18
△ = 30° 03' 48.5" (RT)
D = 30° 09' 20.4"
L = 99.69'
T = 51.02'
R = 190.00'

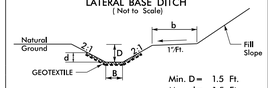
DETAIL 5
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 4.0 Ft.
Max. d = 4.0 Ft.
B= 3.0 Ft.
b= 5.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 91+50 TO STA. 93+55 –L– (RT)

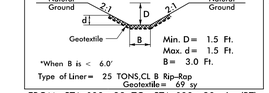
DETAIL 6
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3.0 Ft.
b= 5.0 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap

FROM STA. 99+20 TO STA. 100+23 –L– (RT)

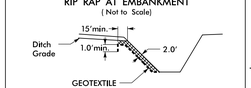
DETAIL 7
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3.0 Ft.
*When B is < 6.0'
Type of Liner= 25 TONS,CL B Rip-Rap
Geotextile= 69 sy

FROM STA. 100+23 TO STA. 100+90 –L– (RT)

DETAIL 8
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 26 TONS,CL II Rip-Rap
Geotextile= 39 sy

–L– STA. 100+90(RT)

SYSTEM: ENGLISH
LENGTH: FEET
DGN: $$$$
DATE: $$$$
TIME: $$$$
FILE NAME: $$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3301	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF -L- SEE SHEET 27
FOR PROFILE OF -Y10- SEE SHEET 36
FOR PROFILE OF -Y23- SEE SHEET 40
FOR DETAIL OF CROSSOVER SEE SHEET 2-?

8/17/99

REVISIONS

R/W REVISION 12/3/15 JCL WIDENED DRIVEWAY WIDTH FROM 16' TO 32' FOR PARCEL 84

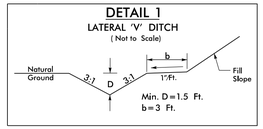
-L-
PI Sta 104+48.11
△ = 33° 37' 21.1" (RT)
D = 4° 18' 28.6"
L = 780.48'
T = 401.84'
R = 1,330.00'
SE = 06
V = 60

PIs Sta 109+34.90
Θs = 6° 58' 44.0"
Ls = 324.00'
LT = 216.17'
ST = 108.15'

-Y23-
PI Sta 10+19.07
△ = 4° 12' 04.4" (RT)
D = 11° 01' 06.3"
L = 38.13'
T = 19.07'
R = 520.00'
V = STOP CONDITION

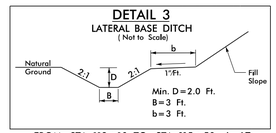
PI Sta 12+18.89
△ = 39° 45' 08.9" (RT)
D = 11° 27' 33.0"
L = 346.91'
180.76'
R = 500.00'
V = STOP CONDITION

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



FROM STA. 110+62 TO STA. 112+10 -L- LT.

DETAIL 3
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 112+10 TO STA. 115+50 -L- LT.

NAD 83

MATCH LINE -L- STA. 103+00.00 SEE SHEET 10

MATCH LINE -L- STA. 113+00.00 SEE SHEET 12

BM#4
-BL- STA 103+94
28' LEFT
ELEV.=2027.95'

SYCAMORE VALLEY FARM, LLC
DB 3147 PG 457
DB 4838 PG 1576
79

-BL- PINC 108+78.70

+35.00 -L-
100.00' Lt.

+95.00 -L-
EXIST. R/W.
102.00' Lt.

+60.00 -L-
EXIST. R/W.
85.00' Lt.

+80.00 -L-
85.00' Lt.

+20.00 -L-
85.00' Lt.
Beg. C/A

-BYIOREV- 163 PINC 9+16.58

End Prop.SBG
+05
Prop.Guardrail

Retain
EXISTING R/W

GRAU-350

GRAU-M350

TB 2GI
GRAU-M350

105+00

2'-9" C&G

TB 2GI

5' Paved Shd.

16'

110+00

24" RCP-IV

TB 2GI-A

24" RCP-III

2GI

EXPWY.GUTTER

15"

18"

LARRY A. JENKINS, SR.
DB 4416 PG 346

EDDIE LANGFORD
DB 4397 PG 326

Prop.Earth Berm Sta.10+50 To 10+75 Lt.Y23 See Detail

+10.00 -L-
200.00' Rt.

+50.00 -L-
110.00' Rt.

+05.00 -L-
180.00' Rt.

CS Sta. 108+26.75

END EXPWY.GUTTER
-L- STA.108+55.00

LEWIS P. McNEIL
DB 2402 PG 102

+00.00 -Y10-
130.00' Lt.

+50.00 -L-
Prop. R/W

BEGIN CONSTRUCTION
-Y23- STA 10+00.00

PCC Sta. 10+38.13 -Y23-

+40.00 -Y23-
10.00' Rt.

+00.00 -Y23-
5.00' Lt.
10.00' Rt.

10+40.91 POT
-BYIO- 132

END CONSTRUCTION
-Y23- STA 10+95.00

JOHN M. PITROLO
DB 3700 PG 540

GARY ODUM
DB 3215 PG 201

MARTHA ANN RICE
DB 3165 PG 88

NEWFOUND ESTATES HOA, INC.
DB 3487 PG 436-437

TIMOTHY W. SISK
DB 3862 PG 296

PT Sta. 13+85.03 -Y23-

PROPOSED EARTH BERM DETAIL

1106
CLASS B RR GEOTEXTILE EST 14 SY
RR EST 5 TN

LATERAL 'V' DITCH
(SEE DETAIL 1)

+33.00 -L-
Prop. R/W

1115

CLASS I RR
GEOTEXT EST. 22 SY
RR EST. 11 TN

+10.00 -L-
145.00' Lt.

LATERAL BASE DITCH
(SEE DETAIL 3)
+10.00 -L-
155.00' Lt.

+68.00 -L-
Prop. R/W.
155.00' Lt.

1199
TB 2GI-A

1105

425' TURN LANE

2'-9" C&G

1108
2GI

18" CSP

BDO

18" RCP-III

BERM DITCH

1107

1109
2GI-A

REMOVE

REMOVE HW

30" RCP-III

60' R

FLOWABLE FILL

1111

HW

24" RCP-III

1110

+00.00 -L-
100.00' Rt.

CLASS 'B' RR
GEOTEXT EST. 14 SY
RR EST. 5 TN

ST Sta. 111+50.75

1114

SPECIAL CUT DITCH
(SEE DETAIL 2)

84
+75.00 -L-
Prop. R/W
Beg. C/A
VANCE E. RANDALL
DB 999 PG 90

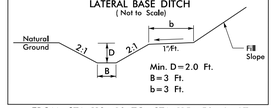
CONC. ISLAND

SYSTEMFS $$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3301	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

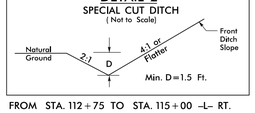
DETAIL 1
LATERAL BASE DITCH
(Not to Scale)



Min. D=2.0 Ft.
B=3 Ft.
b=3 Ft.

FROM STA. 112+10 TO STA. 115+50 –L– LT.

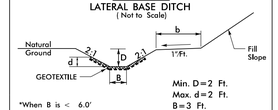
DETAIL 2
SPECIAL CUT DITCH
(Not to Scale)



Min. D=1.5 Ft.

FROM STA. 112+75 TO STA. 115+00 –L– RT.

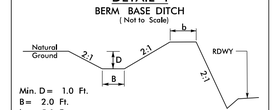
DETAIL 3
LATERAL BASE DITCH
(Not to Scale)



Min. D=2 Ft.
Max. d=2 Ft.
B=3 Ft.
b=3 Ft.
*When B is < 6.0'
Type of Liner = Class I Rip-Rap

FROM STA. 115+50 TO STA. 116+50 –L– LT.

DETAIL 4
BERM BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 2.0 Ft.
b= 5.0 Ft.

FROM STA. 121+50 TO STA. 126+00 –L– RT

FOR PROFILE OF LINE –L– SEE SHEETS 27 & 28
FOR PROFILE OF LINE –Y10A– SEE SHEET 36
FOR DETAIL OF CROSSOVER SEE SHEET 2–?

SYCAMORE VALLEY FARM, LLC
DB 3147 PG 457
DB 4838 PG 1576
79

LAURA GROVER &
RONALD GROVER
WILL 096E PG 129
DB 639 PG 559
88

NAD 83

–Y10A–
PI Sta 11+78.06
△ = 49° 40' 40.9" (LT)
D = 76° 23' 39.7"
L = 65.03'
T = 34.72'
R = 75.00'
V = STOP CONDITION

–BL– PINC 117+10.53
–BYIOREV–POT 5+00.00

–BL– PINC 126+81.56

ALBERT JEREZ
DB 5321PG 1275
87

SNELSON FARM LLC
DB 4752 PG 487
DB 4820 PG 1070
90

VANCE E. RANDALL
DB 999 PG 90
84

LEICESTER POSTAL
INVESTORS GROUP
DB 4485 PG 1065
85

JASON WYATT
DB 4993 PG 354
86

VANCE E. RANDALL
DB 999 PG 90
89

SNELSON FARM LLC
DB 4820 PG 1070
DB 4752 PG 487
90

WILLIAM HERBERT COX
DB 4792 PG 645
DB 4785 PG 1919

POT Sta. 10+00.00 –Y10A–
POT Sta. 117+60.94 –L–

PC Sta. 11+43.35 –Y10A–
PT Sta. 12+08.37 –Y10A–
POT Sta. 12+49.95 –Y10A–

END CONSTRUCTION
–Y10A– STA 12+00.00

MATCH LINE –L– STA. 113+00.00 SEE SHEET 11

MATCH LINE –L– STA. 126+00.00 SEE SHEET 13

CLASS B RR
GEOTEXT EST. 7 SY
RR EST. 2 TN

SPECIAL CUT DITCH
SEE DETAIL 2

BASE BERM DITCH
(SEE DETAIL 4)

BERM DITCH

PAINT STRIPED ISLAND

CONC.ISLAND

REVISIONS

R/W Revision 1/26/16 JCL Added 36' wide driveway to Parcel 88 and revised TCE (Temporary Construction Easement)

8/17/99

TIME = $$SYSTIME$$
DGN = $$DGN$$
FILENAME = $$FILENAME$$

PROJECT REFERENCE NO.	SHEET NO.
U-3301	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

FOR PROFILE OF -L- SEE SHEET 28
FOR PROFILE OF -YII- SEE SHEET 37
FOR PROFILE OF -YIIA- SEE SHEET 42
FOR CULVERT PLANS SEE C-__ THRU C-__

-L-

PIs Sta 128+57.29
Θs = 2° 10' 16.4"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

PI Sta 130+78.65
Δ = 6° 00' 01.5" (RT)
D = 2° 00' 37.4"
L = 298.47'
T = 149.37'
R = 2,850.00'
SE = 04
V = 55

PIs Sta 132+99.76
Θs = 2° 10' 16.4"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

PIs Sta 140+34.14
Θs = 1° 46' 04.7"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

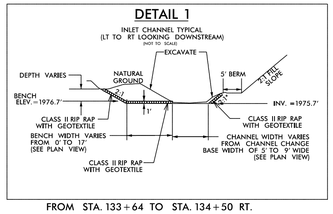
-YII-

PI Sta 11+56.17
Δ = 15° 25' 38.6" (RT)
D = 9° 14' 28.5"
L = 166.94'
T = 83.98'
R = 620.00'

PI Sta 13+06.85
Δ = 41° 31' 21.2" (RT)
D = 45° 31' 11.8"
L = 90.59'
T = 47.39'
R = 125.00'

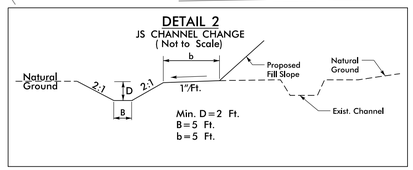
PI Sta 15+04.14
Δ = 3° 31' 29.0" (LT)
D = 4° 50' 06.3"
L = 72.90'
T = 36.46'
R = 1,185.00'
V = STOP CONDITION

DETAIL 1
INLET CHANNEL TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
(NOT TO SCALE)



FROM STA. 133+64 TO STA. 134+50 RT.

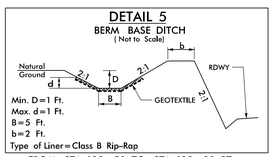
DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)



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

FROM STA. 134+50 TO STA. 136+50 RT.

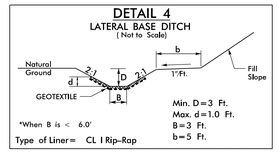
DETAIL 5
BERM BASE DITCH
(Not to Scale)



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

FROM STA. 128+50 TO STA. 129+30 RT.
STA. 136+00 TO STA. 136+70 LT.

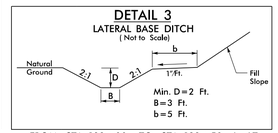
DETAIL 4
LATERAL BASE DITCH
(Not to Scale)



Min. D = 3 Ft.
Max. d = 1.0 Ft.
B = 3 Ft.
b = 5 Ft.
*When B is < 6.0'
Type of Liner = CL I Rip-Rap

FROM STA. 132+50 TO STA. 132+80 -L- LT.
STA. 133+11 TO STA. 135+00 -L- LT.

DETAIL 3
LATERAL BASE DITCH
(Not to Scale)



Min. D = 2 Ft.
B = 3 Ft.
b = 5 Ft.

FROM STA. 132+00 TO STA. 132+50 -L- LT.

SYCAMORE VALLEY FARM, LLC
DB 3147 PG 457

PT Sta. 12+39.14 -YII-
PC Sta. 12+59.46 -YII-
PT Sta. 13+50.05 -YII-
BEGIN CONSTRUCTION -YII- STA 13+70.00
PC Sta. 14+67.67 -YII-
PT Sta. 15+40.57 -YII-
POT Sta. 15+82.45 -YII-
POC Sta. 130+25.99 -L-
POT Sta. 10+00.00 -YIIA-
POC Sta. 130+18.49 -L-
SC Sta. 129+29.28
TS Sta. 127+13.28
PC Sta. 10+79.03 -YIIA-
PT Sta. 11+94.07 -YIIA-
PT Sta. 14+45.66 -YIIA-
END CONSTRUCTION Sta. 14+55.00 -YIIA-
POT Sta. 15+19.97 -YIIA-
CS Sta. 132+27.75
ST Sta. 134+43.75
TS Sta. 138+90.13
BEGIN EXPWY.GUTTER -L- STA.136+00.00
END EXPWY.GUTTER -L- STA.129+45.00
END EXPWY.GUTTER -L- STA.138+90.00
-BL- PINC 131+64.01
-BYII- POT 10+88.63
-BL- PINC 138+40.59
MATCH LINE -L- STA. 126+00.00 SEE SHEET 12
MATCH LINE -L- STA. 139+50.00 SEE SHEET 14
SEE SHEET 14

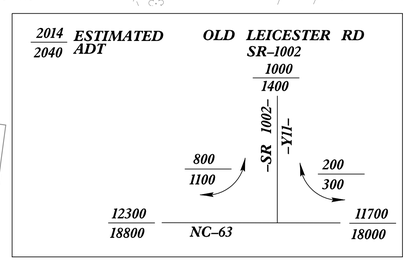
SNELSON FARM LLC
DB 4820 PG 1070
DB 4752 PG 487

DEWAYNE RANDY TURNER ET AL
DB. 5221PG. 991

LATERAL BASE DITCH (SEE DETAIL 3)
LATERAL BASE DITCH (SEE DETAIL 4)
CLASS B RR GEOTEXT EST. 14 SY RR EST. 5 TN
CLASS B RR GEOTEXT EST. 3 SY RR EST. 1 TN
BERM BASE DITCH (SEE DETAIL 5)
BERM DITCH (SEE DETAIL 5)
CLASS B RR GEOTEXT EST. 3 SY RR EST. 1 TN (SEE DETAILS 1 & 2)
DO NOT DISTURB TREE
BDO
JB w/MH
DRAINFIELD
APPROXIMATE LOCATION OF SEPTIC SYSTEM FIELD LINES
PASTURE
GRASS LAWN
ISBKD
2SFB
48" RD RAIL & 35SBW
SR 1002 OLD LEICESTER HWY 90' BST
NC 63 LEICESTER HWY 26' BST
EXISTING R/W
Prop.Guardrail
2-9' C&G
150' TAPER
180' TAPER
425' TURN LANE
45S' TURN LANE
18" RCP-III
18" RCP-V
24" RCP-III
15" RCP-V
18" CSP
15" CSP W/ELBS
2GI-A
2GI
TB 2GI
COLLAR
CAT-1
EXPWY.GUTTER
S 67° 13' 08.5" W
N 71° 15' 30.3" W
S 26° 09' 58.6" E
S 74° 46' 59.3" W
S 20° 05' 08.2" E
S 57° 48' 53.9" W
S 15° 49' 24.4" E

2014/2040 ESTIMATED ADT

OLD LEICESTER RD SR-1002



-YIIA-

PI Sta 11+51.31
Δ = 87° 53' 02.6" (LT)
D = 76° 23' 39.7"
L = 115.04'
T = 72.28'
R = 75.00'

PI Sta 14+18.09
Δ = 77° 54' 02.1" (RT)
D = 114° 35' 29.6"
L = 67.98'
T = 40.42'
R = 50.00'

CONC.ISLAND

REVISIONS
1. Added AUE to Parcel 90, -L- 131+00 to -L- 134+78.50 RT. 11/22/15 RMS

8/17/99

SYSTEMFS DESIGNS
CFENGINEERING

8/17/99

REVISIONS

1. REVISED ROW AND TCE. PARCELS 93 & 94. (1/7/16) - RMS

PROJECT REFERENCE NO.	SHEET NO.
U-3301	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

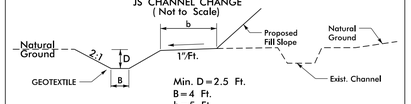
NAD 83

11700 / 18000	NC–63	12200 / 18900
300 / 400	–SR 1377– –Y12–	800 / 1300
	1100 / 1700	

2014 / 2040 ESTIMATED ADT

SR–1377
GOUGES BRANCH RD

DETAIL 1
JS CHANNEL CHANGE
(Not to Scale)

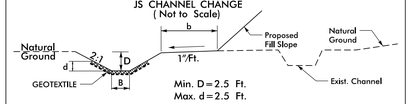


Min. D = 2.5 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = Vegetation

FROM STA. 147+00 TO STA. 148+50 –L– LT.
STA. 150+50 TO STA. 151+90 –L– LT.

DETAIL 2
JS CHANNEL CHANGE
(Not to Scale)

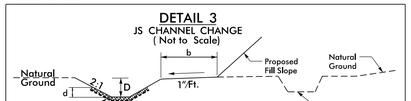


Min. D = 2.5 Ft.
Max. d = 2.5 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = Class B Rip Rap

FROM STA. 148+50 TO STA. 150+50 –L– Lt.

DETAIL 3
JS CHANNEL CHANGE
(Not to Scale)



Min. D = 3.0 Ft.
Max. d = 3.0 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = Class I Rip Rap

FROM STA. 151+90 TO STA. 152+25 –L– Lt.

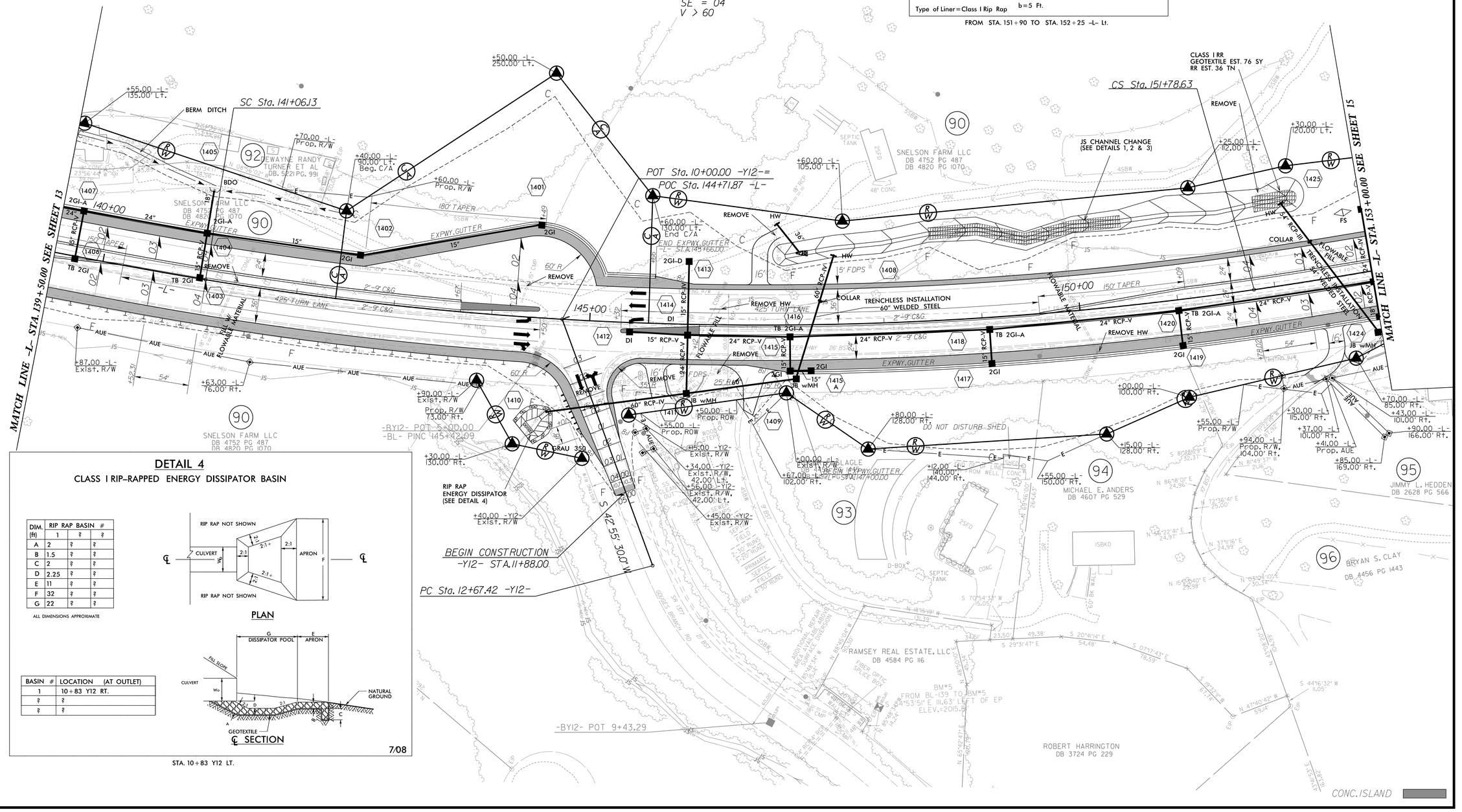
–L–

Pls Sta 140+34.14
Θs = 1° 46' 04.7"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

Pl Sta 146+46.62
△ = 17° 33' 25.5" (LT)
D = 1° 38' 13.3"
L = 1,072.50'
T = 540.49'
R = 3,500.00'
SE = 04
V > 60

Pls Sta 152+50.64
Θs = 1° 46' 04.7"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

FOR PROFILE OF LINE –L– SEE SHEETS 28 AND 29
FOR PROFILE OF LINE –Y12– SEE SHEET 37



DETAIL 4
CLASS I RIP–RAPPED ENERGY DISSIPATOR BASIN

DIM. (ft)	RIP RAP BASIN # 1	?	?
A	2	?	?
B	1.5	?	?
C	2	?	?
D	2.25	?	?
E	11	?	?
F	32	?	?
G	22	?	?

ALL DIMENSIONS APPROXIMATE

PLAN

BASIN #	LOCATION (AT OUTLET)
1	10+83 Y12 RT.
?	?
?	?

℄ SECTION

7/08

STA. 10+83 Y12 LT.

SYSTIME=$$$$ SYSNAME=$$$$ USERNAME=$$$$ DGN=$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3301	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

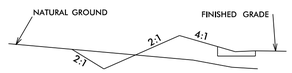
NAD 83

-L-

PIs Sta 152+50.64	PIs Sta 166+74.05
Θs = 1° 46' 04.7"	Θs = 1° 57' 51.9"
Ls = 216.00'	Ls = 216.00'
LT = 144.01'	LT = 144.01'
ST = 72.01'	ST = 72.01'

DETAIL 1

FALSE CUT BEHIND EXPRESSWAY GUTTER
(NOT TO SCALE)



FROM STA. 161+00 TO STA. 161+64 -L- LT.

FOR PROFILE OF LINE -L- SEE SHEET 29
FOR DETAIL OF CROSSOVER SEE SHEET 2-?

REVISIONS

R/W REVISION JCL 2/17/16 ADDED 16' WIDE DRIVEWAY TO PARCEL 95 AT 156+00 RT.

8/17/99

MATCH LINE -L- STA. 153+00.00 SEE SHEET 14

MATCH LINE -L- STA. 166+00.00 SEE SHEET 16

SNELSON FARM LLC
DB 4752 PG 487
DB 4820 PG 1070
90

SHARON E. WAUGH &
W. D. McDOWALL, JR.
DB 2649 PG 552
98

JIMMY L. HEDDEN
DB 2628 PG 566
95

JOHN TAMAS
DB 5143 PG 294
97

JEAN K. BALL, ET AL
DB 2060 PG 187

MAXINE BROOKSHIRE
DB 1376 PG 232
99

BRYAN S. CLAY
DB 4456 PG 1443
96

-BL- PINC 154+67.00

-BL- PINC 162+61.07

ST Sta. 153+94.63

TS Sta. 165+30.04

BEGIN EXPWY GUTTER
-L- STA. 153+95.00

END EXPWY GUTTER
-L- STA. 155+90.00

BEGIN RSS & 1.5:1 SLOPES
-L- STA. 165+00.00 RT.
SEE SHEET 2- FOR DETAIL

FALSE CUT BEHIND EXPRESSWAY GUTTER
(SEE DETAIL 1 & CROSS SECTIONS)

BERM DITCH

BDO

15" CSP W/ELBS.

18" RCP-V

15" RCP-V

120' TAPER

150' TAPER

180' TAPER

REMOVE HW

REMOVE

FLOWABLE MATERIAL

60' R

CLASS I RR GEOTEXT EST. 15 SY
RR EST. 7 TN

CLASS I RR GEOTEXT EST. 12 SY
RR EST. 4 TN

Prop. Guardrail

Prop. SBG

BEG. SBG STA. 164+35

Prop. 8'x12' Curb

EXPWY. GUTTER

2'-9" C&G

2GI-D

2GI

2GI-A

TB 2GI

TB 2GI-A

RETAIN Prop. R/W
84.00' Rt.
Beg. C/A

Prop. R/W End C/A

Exist. R/W

Prop. R/W

S 36° 54' 59.4" E

S 85°22'54" E
73.50'

S 52°13'09" W
275.37'

N 19°04'12" W
564.93'

S 83°54'48" E
406.00'

CONC. ISLAND

8/17/99

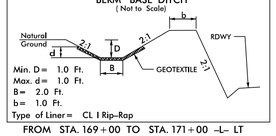
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3301	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

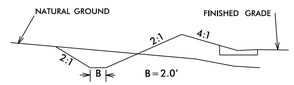
DETAIL 1
BERM BASE DITCH
(Not to Scale)



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

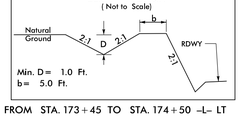
FROM STA. 169+00 TO STA. 171+00 -L- LT

DETAIL 2
FALSE CUT BEHIND EXPRESSWAY GUTTER
(NOT TO SCALE)



FROM STA. 166+50 TO STA. 168+00 -L- LT.

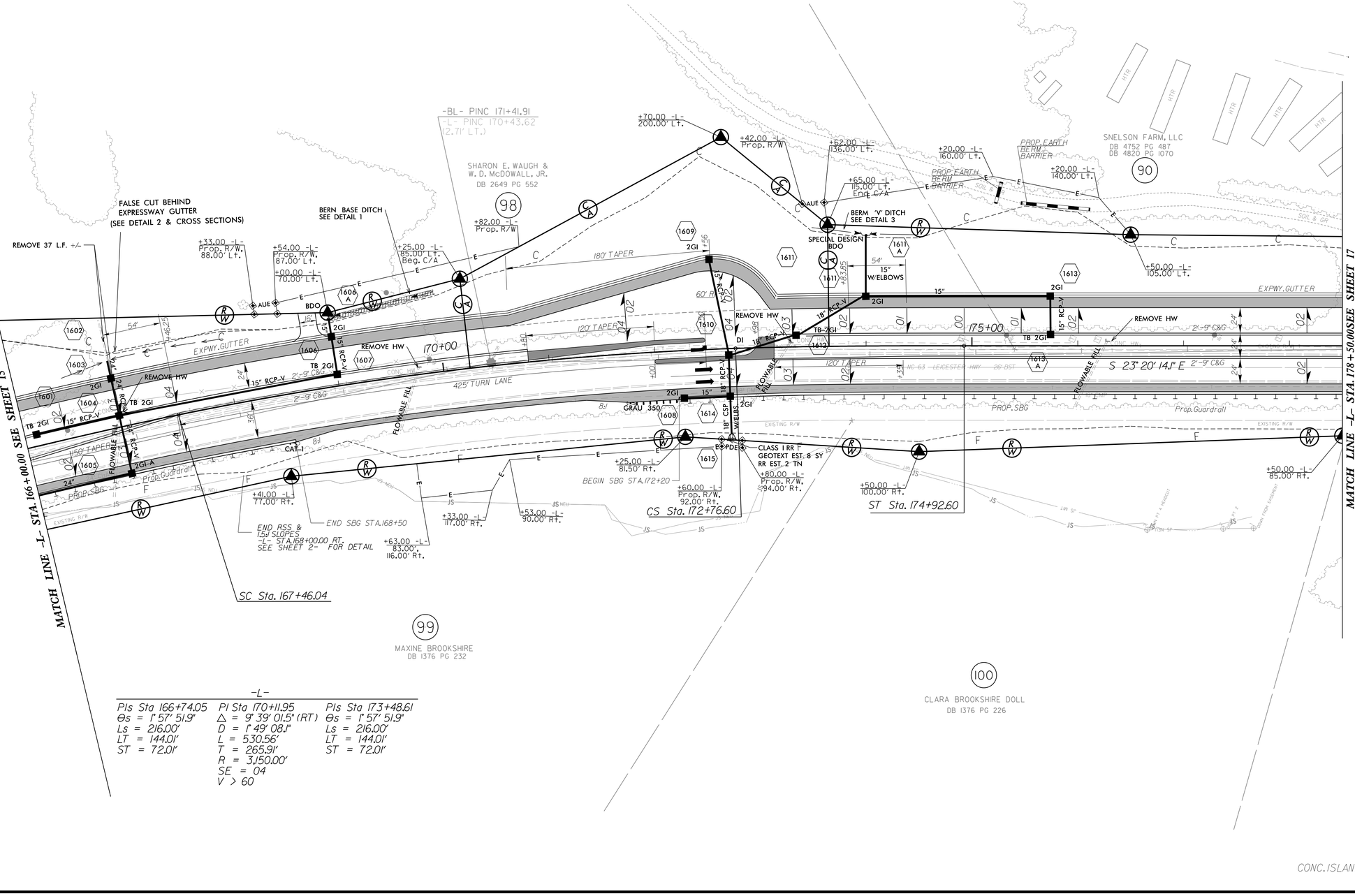
DETAIL 3
BERM 'V' DITCH
(Not to Scale)



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

FROM STA. 173+45 TO STA. 174+50 -L- LT

FOR PROFILE OF LINE -L- SEE SHEET 30
FOR DETAIL OF CROSSOVER SEE SHEET 2-?



-L-

PIs Sta 166+74.05	PI Sta 170+11.95	PIs Sta 173+48.61
Θs = 1° 57' 51.9"	△ = 9° 39' 01.5" (RT)	Θs = 1° 57' 51.9"
Ls = 216.00'	D = 1° 49' 08.1"	Ls = 216.00'
LT = 144.01'	L = 530.56'	LT = 144.01'
ST = 72.01'	T = 265.91'	ST = 72.01'
	R = 3,150.00'	
	SE = 04	
	V > 60	

SYSTEM NAME
ALIGNMENT NAME
PROFILE NAME
CROSS SECTIONS

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-3301	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

-L-

PIs Sta 184+39.82
Θs = 6° 58' 44.0"
Ls = 324.00'
LT = 216.17'
ST = 108.15'

PI Sta 186+62.08
Δ = 9° 50' 05.6" (RT)
D = 4° 18' 28.6"
L = 228.30'
T = 114.43'
R = 1,330.00'
SE = 06
V = 60

PIs Sta 188+84.10
Θs = 6° 58' 44.0"
Ls = 324.00'
LT = 216.17'
ST = 108.15'

-Y13-

PI Sta 12+79.96
Δ = 18° 43' 00.1" (LT)
D = 9° 13' 27.3"
L = 202.91'
T = 102.37'
R = 621.14'
V = STOP CONDITION

-Y12A-

PI Sta 10+66.01
Δ = 59° 02' 13.4" (LT)
D = 81° 51' 04.0"
L = 72.13'
T = 39.63'
R = 70.00'
V = STOP CONDITION

PI Sta 12+23.82
Δ = 52° 32' 12.6" (RT)
D = 81° 51' 04.0"
L = 64.19'
T = 34.55'
R = 70.00'
V = STOP CONDITION

-Y14-

PI Sta 16+94.89
Δ = 6° 11' 50.7" (LT)
D = 16° 08' 22.8"
L = 38.40'
T = 19.22'
R = 355.00'
V = STOP CONDITION

DETAIL 2
TOE PROTECTION
(Not to Scale)

d = 0.5 Ft.

Type of Liner = CL B Rip-Rap

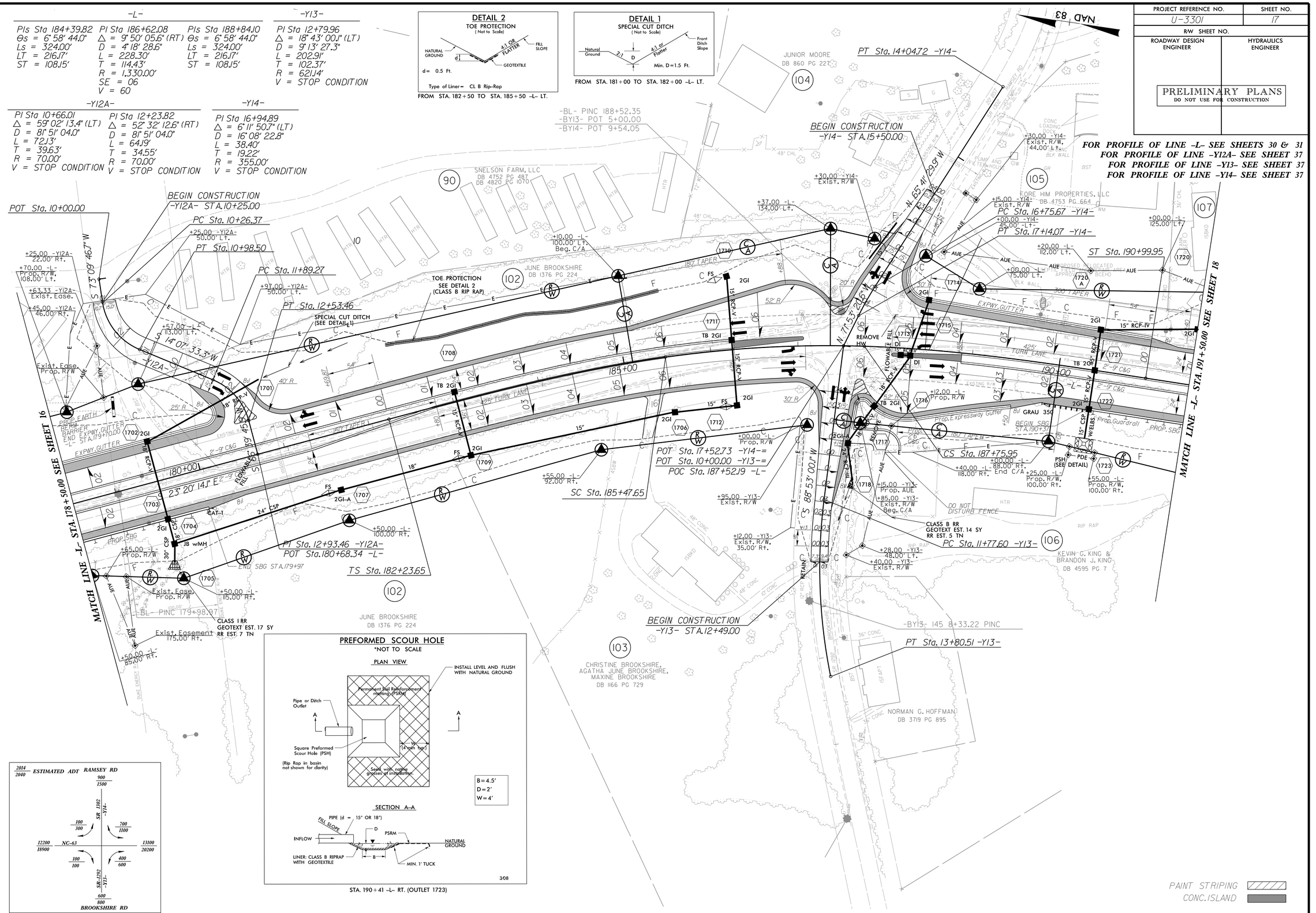
FROM STA. 182+50 TO STA. 185+50 -L- LT.

DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)

Min. D=1.5 Ft.

FROM STA. 181+00 TO STA. 182+00 -L- LT.

FOR PROFILE OF LINE -L- SEE SHEETS 30 & 31
FOR PROFILE OF LINE -Y12A- SEE SHEET 37
FOR PROFILE OF LINE -Y13- SEE SHEET 37
FOR PROFILE OF LINE -Y14- SEE SHEET 37



PREFORMED SCOUR HOLE
*NOT TO SCALE

STA. 190+41 -L- RT. (OUTLET 1723)

SYSTIME=$$$

PROJECT REFERENCE NO.	SHEET NO.
U-3301	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

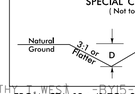
NAD 83

8/17/99

REVISIONS

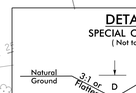
R/W REVISION 3816 JCL REVISED –Y15A–, ADDED –Y15A2– AND DELETED –Y15A1– FROM PLANS.
REVISED TEMPORARY CONSTRUCTION EASEMENT (TCE) ON PARCELS 109, 111 AND 113

DETAIL 3
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 13+41 TO STA. 14+50 –Y15– RT

DETAIL 4
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 10+25 TO STA. 10+50 –Y15B– RT
FROM STA. 10+25 TO STA. 10+50 –Y15B– LT

DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 204+00 TO STA. 205+50 –L– LT

FOR PROFILE OF LINE –L– SEE SHEET 31
FOR PROFILE OF LINE –Y15– SEE SHEET 38
FOR PROFILE OF LINE –Y15A– SEE SHEET 41
FOR PROFILE OF LINE –Y16– SEE SHEET 38
FOR PROFILE OF LINE –Y17– SEE SHEET 38
FOR PROFILE OF LINE –DR4– SEE SHEET 41
FOR PROFILE OF LINE –Y15B– SEE SHEET 41
FOR DETAIL OF CROSSOVER SEE SHEET 2–?

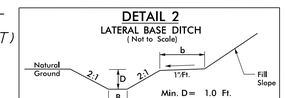
DETAIL 5
TOE PROTECTION
(Not to Scale)



d= 1.0 Ft.
b= 4.0 Ft.
Type of Liner= Class B Rip-Rap

FROM STA. 10+95 TO STA. 12+00 –Y15A–

DETAIL 2
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 2.0 Ft.
b= 5.0 Ft.

FROM STA. 10+75 TO STA. 11+75 –DR4– RT

PAINT STRIPED ISLAND
CONC. ISLAND

8/17/99

REVISIONS

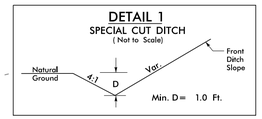
PROJECT REFERENCE NO.	SHEET NO.
U-3301	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE –L– SEE SHEETS 31 & 32
FOR PROFILE OF LINE –Y18– SEE SHEET 38
FOR PROFILE OF LINE –DR18– SEE SHEET 40
FOR PROFILE OF LINE –DR6– SEE SHEET 41

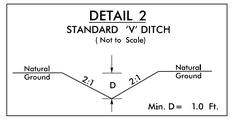
NAD 83

DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)



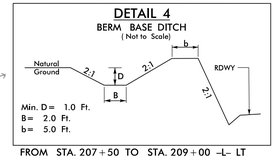
FROM STA. 204+00 TO STA. 205+50 –L– LT

DETAIL 2
STANDARD 'V' DITCH
(Not to Scale)



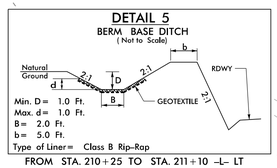
FROM STA. 12+50 –DR6– RT TO STA. 207+50 –L– LT

DETAIL 4
BERM BASE DITCH
(Not to Scale)



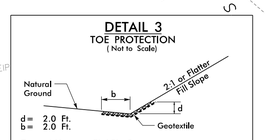
FROM STA. 207+50 TO STA. 209+00 –L– LT

DETAIL 5
BERM BASE DITCH
(Not to Scale)



FROM STA. 210+25 TO STA. 211+10 –L– LT

DETAIL 3
TOE PROTECTION
(Not to Scale)



FROM STA. 10+47 TO STA. 11+50 Y18 RT

MATCH LINE –L– STA. 205+00.00 SEE SHEET 18

MATCH LINE –L– STA.216+00.00 SEE SHEET 20

POT Sta. 13+07.29
END CONST. –DR6– Sta.12+35.00
PC Sta. 10+99.09 –DR6–
PT Sta. 10+36.13 –DR6–
PC Sta. 11+80.85 –DR6–
N 43°07'46.0" E
S 56°25'00.3" E
STANDARD 'V' DITCH SEE DETAIL 2
PT Sta. 12+30.00 –DR6–
CS Sta. 210+21.72
ST Sta. 213+45.72
BASE BERM DITCH SEE DETAIL 5
SPECIAL DESIGN BDD
15" CSP W/ELBOWS
SPECIAL CUT DITCH SEE DETAIL 1
GRADE TO DRAIN
24" CSP
REMOVE HW
REMOVE
425' TURN LANE
EXPWY GUTTER
BEGIN EXPWY GUTTER Sta.211+54.00
END EXPWY GUTTER Sta.215+00.00
POT Sta. 10+00.00 –Y18–= POC Sta. 208+02.15 –L–
-BL- PINC 209+32.51 2GI
-BY18- POT 5+00.00
-BL- PINC 213+75.59
210+00
215+00
S 63°22'43.5" E
FLOWABLE FILL
END GRADING –Y18– STA.13+00.00
GRADE TO DRAIN
S 37°30'30.9" E
PT Sta. 13+96.36 –Y18–
END CONSTRUCTION –Y18– STA.13+95.00
-BY18- POT 9+34.25
JB w/MH
24" RCP-III
PC Sta. 10+30.56 –Y18–
Prop. Guardrail
POT Sta. 10+00.00 –DR18–
POC Sta. 11+12.25 –Y18–
6' TB to TB 0.5' Deep "V" Ditch
CLASS I RR Geotext est. 7 sy RR est. 4 tn
CLASS B RR Geotext est 5 sy RR est 1 tn
PC Sta. 11+03.66 –DR18–
TOE PROTECTION SEE DETAIL 3
CL B RR Geotext est. 11 sy RR est. 3 tn
PT Sta. 12+05.50 –DR18–
POT Sta. 12+15.00 –DR18–
POT Sta. 10+00.00 –DR6–
POC Sta. 205+42.70 –L–
PC Sta. 12+97.23 –Y18–
PT Sta. 12+76.24 –Y18–
PC Sta. 12+05.34 –Y18–
PT Sta. 11+55.46 –Y18–
PC Sta. 10+47.31 –DR18–
PT Sta. 10+75.45 –DR18–
END CONSTRUCTION –DR18– STA.12+05.00
MAURICE C. GORTNEY DB 1773 PG 148
MARSHA R. BALL DB 5026 PG 10
CONLEY SHELTON DB 1165 PG 117
KENNETH Y. COOK DB 4273 PG 1751 DB 1670 PG 48
TERRY L. SIMMONS DB 4069 PG 473
CARROLL B. EDMONDS (OIL PG 602) DB 96 PG 473
BILLIE CLARK DB 2834 PG 386
PHILLIP A. TRULL DB 1383 PG 193
PATRICIA S. HOLLIFIELD DB 4739 PG 1759
KENNETH PARHAM DB 3900 PG 709
MAX L. MORGAN DB 4725 PG 648
HORACE CONSTANCE DB 1007 PG 493
JOSHUA N. GATES DB 4348 PG 536
CONC.ISLAND

-DR18-

PI Sta 10+61.76	PI Sta 11+64.18
△ = 32° 14' 35.7" (RT)	△ = 77° 48' 18.7" (LT)
D = 114° 35' 29.6"	D = 76° 23' 39.7"
L = 28.14'	L = 101.85'
T = 14.45'	T = 60.52'
R = 50.00'	R = 75.00'
V = STOP CONDITION	V = STOP CONDITION

PI Sta 11+13.00	PI Sta 12+41.03	PI Sta 13+47.93
△ = 95° 24' 49.6" (LT)	△ = 16° 14' 53.4" (RT)	△ = 29° 35' 01.1" (RT)
D = 76° 23' 39.7"	D = 22° 55' 05.9"	D = 29° 50' 29.6"
L = 124.90'	L = 70.90'	L = 99.14'
T = 82.44'	T = 35.69'	T = 50.70'
R = 75.00'	R = 250.00'	R = 192.00'
V = STOP CONDITION	V = STOP CONDITION	V = STOP CONDITION

-Y18-

-L-

PI Sta 204+07.38	PIs Sta 211+29.85
△ = 51° 17' 27.6" (LT)	Θs = 6° 16' 17.6"
D = 3° 52' 16.8"	Ls = 324.00'
L = 1,324.89'	LT = 216.14'
T = 710.54'	ST = 108.12'
R = 1,480.00'	
SE = 06	
V = 60	

-DR6-

PI Sta 10+72.55	PI Sta 12+10.46
△ = 72° 08' 44.4" (RT)	△ = 80° 27' 13.7" (LT)
D = 114° 35' 29.6"	D = 163° 42' 08.0"
L = 62.96'	L = 49.15'
T = 36.42'	T = 29.61'
R = 50.00'	R = 35.00'

PROJECT REFERENCE NO.	SHEET NO.
U-3301	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

8/17/99

REVISIONS

R/W Revision 1/12/16 JCL Revised TCE (Temporary Construction Easements) on Parcels 127 and 128

MATCH LINE –L– STA. 216+00.00 SEE SHEET 19

MATCH LINE –L– STA. 229+50.00 SEE SHEET 21

FOR PROFILE OF LINE –L– SEE SHEET 32
FOR PROFILE OF –DR7– SEE SHEET 41
FOR PROFILE OF –DR8– SEE SHEET 41
FOR PROFILE OF –DRRT8– SEE SHEET 40
FOR PROFILE OF –Y18A– SEE SHEET 41
FOR PROFILE OF –DR5– SEE SHEET 42
FOR CULVERT PLANS SEE C-__ THRU C-__

END CONST.11+47.00 –DR7–

PC Sta. 11+92.56 –DR7–

PT Sta. 11+39.68 –DR7–

PC Sta. 11+20.36 –DR7–

PT Sta. 10+79.26 –DR7–

PC Sta. 10+51.79 –DR7–

POT Sta. 12+00.00 –DR8–

END CONST.11+61.00 –DR8–

PT Sta. 10+80.28 –DR8–

Begin Prop.SBG –L– STA.219+60 LT

PC Sta. 10+61.36 –DR8–

POT Sta. 10+00.00 –DRRT8–

POT Sta. 220+26.64 –L–

POT Sta. 10+00.00 –Y18A–

POT Sta. 225+20.06 –L–

PRC Sta. 11+22.65 –Y18A–

PC Sta. 10+42.63 –Y18A–

END CONSTRUCTION –Y18A– STA.11+95.00

PT Sta. 11+91.73 –Y18A–

POT Sta. 12+10.02 –Y18A–

BEGIN PROP.CULVERT –L– STA.222+67.37

END SHOULDER BERM GUTTER –L– STA.224+90LT

BEGIN SHOULDER BERM GUTTER –L– STA.228+06LT

POT Sta. 10+00.00 –DR5–

POT Sta. 225+70.82 –L–

PC Sta. 10+37 –DR5–

PRC Sta. 11+36.65 –DR5–

PT Sta. 12+05.40 –DR5–

POT Sta. 12+51.00 –DR5–

PC Sta. 12+37.11 –DR5–

PT Sta. 12+66.32 –DR5–

POT Sta. 12+79.40 –DR5–

PC Sta. 11+47.23 –DRRT8–

PT Sta. 11+85.92 –DRRT8–

PINC Sta. 12+20.42 –DRRT8–

END CONSTRUCTION –DRRT8– STA.12+30.00

POT Sta. 12+70.13 –DRRT8–

REMOVE EXISTING CULVERT

END PROP.CULVERT –L– STA.222+92.66

PROP.GUARDRAIL

Prop.Guardrail

220+00

225+00

425' TURN LANE

150' TAPER

180' TAPER

2@11' X 9' RCBC

S 63° 22' 43.5" E

S 37° 52' 30" W

S 37° 05' 10" W

S 49° 45' 14" W

N 26° 37' 16" W

N 31° 33' 31.5" E

N 14° 40' 30" W

S 54° 23' 15" E

S 40° 35' 37.5" W

N 58° 57' 25" W 403.15'

N 72° 25' E 650.19'

S 56° 25' 56" E 67.86'

S 56° 56' 56" E 67.86'

S 54° 23' 15" E 338.28'

N 46° 54' 10" W 331.70'

S 37° 52' 30" W 30.00'

S 40° 35' 37.5" W

N 26° 37' 16" W

S 37° 05' 10" W

S 49° 45' 14" W

N 14° 40' 30" W

N 31° 33' 31.5" E

N 73° 21' W 49.04'

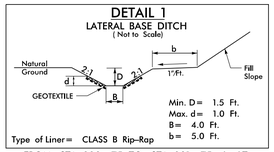
S 54° 23' 15" E

PROJECT REFERENCE NO.	SHEET NO.
U-3301	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE –L– SEE SHEETS 32 & 33

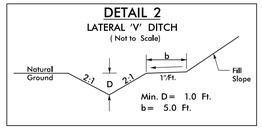
DETAIL 1
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
Type of Liner= CLASS B Rip-Rap

FROM STA. 228+75 TO STA. 231+75 –L– LT

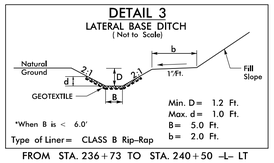
DETAIL 2
LATERAL 'V' DITCH
(Not to Scale)



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

FROM STA. 235+75 TO STA. 236+73=L– LT

DETAIL 3
LATERAL BASE DITCH
(Not to Scale)

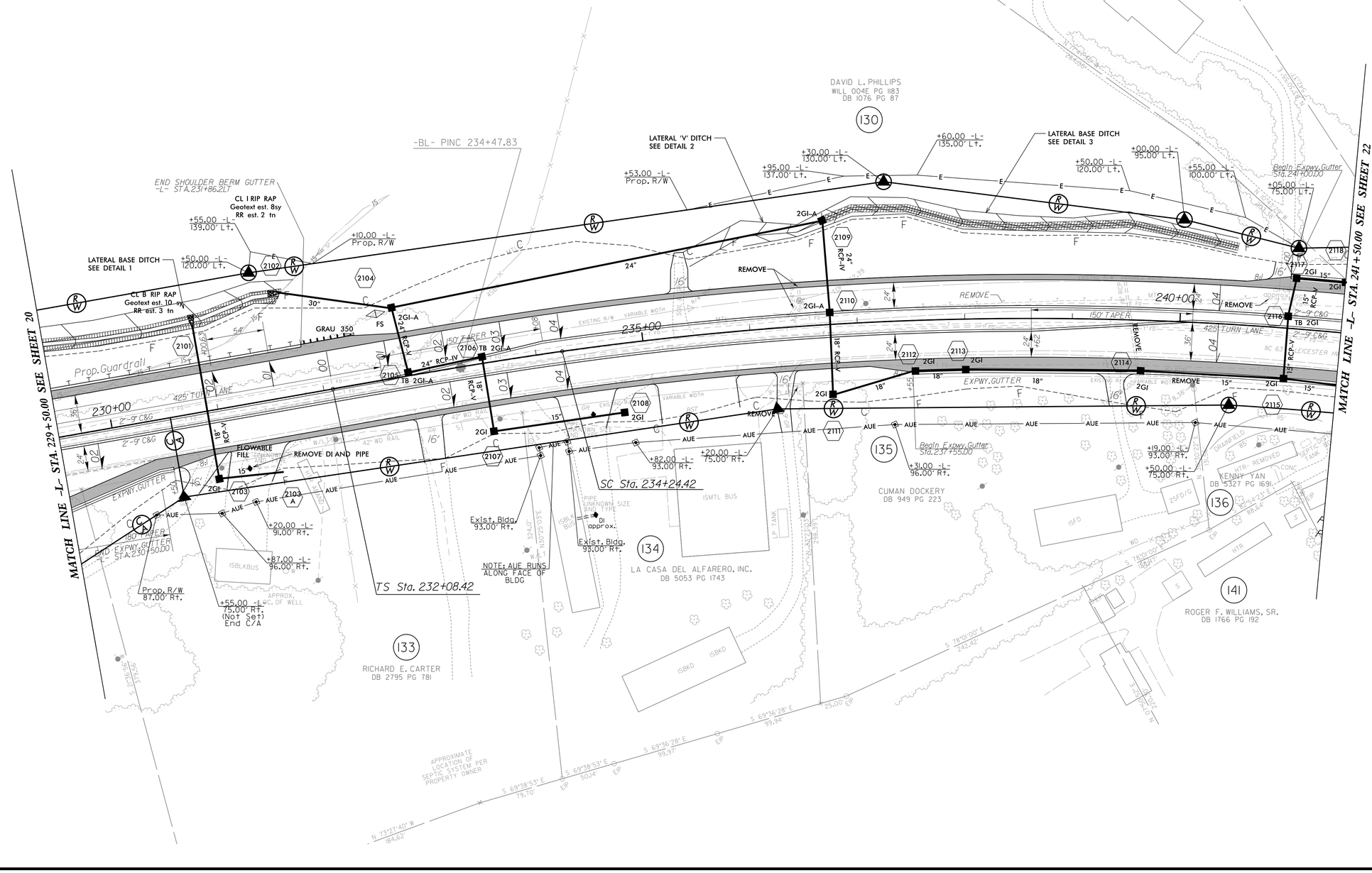


Min. D= 1.2 Ft.
Max. d= 1.0 Ft.
*When B is < 6.0'
B= 5.0 Ft.
Type of Liner= CLASS B Rip-Rap
b= 2.0 Ft.

FROM STA. 236+73 TO STA. 240+50 –L– LT

–L–
Pls Sta 233+52.43
Θs = 1° 58' 48.5"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

Pl Sta 242+70.82
△ = 30° 18' 34.5" (RT)
D = 1° 50' 00.5"
L = 1,653.13'
T = 846.40'
R = 3,125.00'
SE = 04
V > 60



REVISIONS
1. UPDATED OWNER NAME ON PARCEL 136. (2/2/16) RMS

8/17/99

SYSTEMS
CIVIL
GEOTECHNICAL
ENVIRONMENTAL

8/17/99

REVISIONS

1. UPDATED OWNER NAME ON PARCEL 136. (2/2/16) RMS

PROJECT REFERENCE NO.	SHEET NO.
U-3301	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

DIX CREEK CHAPEL RD

600 / 800

SR 1375 -Y19-

10 / 200 — 400 / 600

14500 / 21800 NC-63 — NC-63 20200 / 29200

300 / 500 — 5700 / 7500

SR 1004 -Y20-

6100 / 8000

NEWFOUND RD

2014 / 2040 **ESTIMATED ADT**

-L-

PI Sta 242+70.82
△ = 30° 18' 34.5" (RT)
D = 1° 50' 00.5"
L = 1,653.13'
T = 846.40'
R = 3,125.00'
SE = 04
V > 60

PIs Sta 251+49.56
Θs = 1° 58' 48.5"
Ls = 216.00'
LT = 144.01'
ST = 72.01'

-Y20-

PI Sta 11+14.69
△ = 58° 20' 00.3" (RT)
D = 55° 37' 37.1"
L = 104.87'
T = 57.49'
R = 103.00'
V = STOP CONDITION

PI Sta 15+85.52
△ = 43° 23' 59.3" (LT)
D = 7° 04' 24.8"
L = 613.55'
T = 322.34'
R = 810.00'
SE = RC
V = 20

-Y19-

PI Sta 14+12.02
△ = 59° 31' 59.8" (LT)
D = 71° 37' 11.0"
L = 83.12'
T = 45.75'
R = 80.00'
V = STOP CONDITION

PI Sta 15+55.42
△ = 74° 38' 31.3" (RT)
D = 71° 37' 11.0"
L = 104.22'
T = 60.99'
R = 80.00'
V = STOP CONDITION

-Y22-

PI Sta 10+73.72
△ = 78° 30' 30.1" (RT)
D = 163° 42' 08.0"
L = 47.96'
T = 28.60'
R = 35.00'
V = STOP CONDITION

FOR PROFILE OF LINE -L- SEE SHEET 33
FOR PROFILE OF LINE -Y19- SEE SHEET 39
FOR PROFILE OF LINE -Y20- SEE SHEET 39
FOR PROFILE OF LINE -Y21- SEE SHEET 39
FOR PROFILE OF LINE -Y22- SEE SHEET 39
FOR PROFILE OF LINE -DR20- SEE SHEET 40

PT Sta. 12+88.02 -Y19-
BEGIN CONSTRUCTION -Y19- STA.13+65.00
PC Sta. 13+66.27 -Y19-
PT Sta. 14+49.39 -Y19-
PC Sta. 14+94.43 -Y19-
PT Sta. 15+98.65 -Y19-
-BL- PINC 245+94.09
-BY19- POT 11+95.43
-BY20- POT 5+00.00
CS Sta. 250+77.55
POT Sta. 10+00.00 -Y22-=
POC Sta. 251+00.00 -L-
POT Sta. 252+97.41
END TIP PROJECT U-3301 -L- STA 252+97.00
MATCH LINE -L- STA. 241+50.00 SEE SHEET 21
-BY20- PINC 7+09.59
-BY21- POT 10+28.03
POT Sta. 10+00.00 -Y20-=
POT Sta. 16+45.94 -Y19-=
POC Sta. 245+55.42 -L-
PC Sta. 10+57.21 -Y20-
PT Sta. 11+62.07 -Y20-
POT Sta. 10+00.00 -Y21-=
POT Sta. 12+32.76 -Y20-
PC Sta. 12+63.19 -Y20-
POT Sta. 10+00.00 -DR20-
POC Sta. 14+81.12 -Y20-
PC Sta. 10+20.65
PC Sta. 13+12.57 -Y21-
PT Sta. 10+69.71
PC Sta. 11+09.59
PT Sta. 11+37.34
End Const. -DR20-
POT Sta. 11+40.00
POT Sta. 11+44.02
END CONSTRUCTION -Y20- STA. 16+25.00
END CONSTRUCTION -Y21- STA. 12+00.00
END CONSTRUCTION -Y22- POT Sta. 11+82.44
PC Sta. 10+45.12 -Y22-
PT Sta. 10+93.08 -Y22-
ST Sta. 252+93.55
END GRADING STA. 15+50.00 -Y20-
PT Sta. 11+62.07 -Y20-

FEDERICO MARQUEZ, ET AL
DB 4881 PG 1840 — 138

EVELYN NICOLE WEBB
DB 2811 PG 446

BROOKS A. BURROWS
DB 4567 PG 1087 — 146

R. L. CLARK
DB 1472 PG 331
DB 1580 PG 254 — 149

JEFFREY T. BROWN
DB 4545 PG 539
DB 4266 PG 388 — 151

PAUL WOODY
DB 2729 PG 230

KENNY YAN
DB 5327 PG 691 — 136

STEPHEN & ANGELA OUTLES
DB 5193 — 140

MARY KENNERLY PARHAM
DB 2082 PG 775 — 142

VAN & MAURICE MEHAFFEY
DB 4543 PG 1870 — 143

GEORGETOWN BAPTIST CHURCH
DB 874 PG 163 — 144

MERRIMON AVENUE, INC.
DB 5141 PG 1787 — 145

BARBARA R. GIBSON
DB 1632 PG 544

WILL O. DYE PG 183
WANDA C. PADGETT — 147

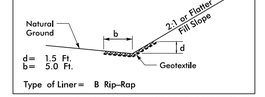
BYRON F. DAVIS
DB 5174 PG 383
DB 2473 PG 73
DB 1697 PG 332
DB 889 PG 429 — 150

MAEDENE NILES
DB 2852 PG 265

MICHAEL D. GATLIN
DB 2051 PG 474 — 152

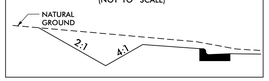
NANCY A. ADAMS
DB 1292 PG 278 — 153

DETAIL 1
TOE PROTECTION
(Not to Scale)



d= 1.5 Ft.
b= 5.0 Ft.
Type of Liner= B Rip-Rap
FROM STA. 257+75 TO STA. 258+90 -L- (LT)

DETAIL 2
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



FROM STA. 13+65 TO STA. 14+50 -Y20-(RT.)

DETAIL 3
DITCH CLEAN OUT
(Not to Scale)



Min. D= 1.0 Ft.
FROM STA. 15+90 TO STA. 16+25 Y20- (LT.)

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL 2

DITCH CLEAN OUT SEE DETAIL 3

CLASS B TOE PROTECTION SEE DETAIL 1

CONVERT DI TO JB

CL B RIP RAP Geotext est. 14sy RR est. 5tn

OBTAIN TEMPORARY CONSTRUCTION EASEMENT WITHIN THE AUE ON PARCELS 142 & 143.

REMOVE EXIST GRAIL

REMOVE DI

RETAIN 15" CMP

GRADE TO DRAIN

DO NOT DISTURB SEPTIC FIELD

EXISTING SIGNAL TO BE UPGRADED

CONC. ISLAND

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

2,150
2,140
2,130
2,120
2,110
2,100
2,090
2,080
2,070
2,060

Begin Resurfacing
Sta. 17+80.00 -L-

MATCH LINE -L- STA. 22+00.00 SEE SHEET 24

FOR -L- PLAN SEE SHEET 4

10 11 12 13 14 15 16 17 18 19 20 21 22

CROSS SLOPE SCALE

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	480	CFS
DESIGN FREQUENCY	50	YRS
DESIGN HW ELEVATION	2080.2	FT
BASE DISCHARGE	600	CFS
BASE FREQUENCY	100	YRS
BASE HW ELEVATION	2081.00	FT
OVERTOPPING DISCHARGE	800+	CFS
OVERTOPPING FREQUENCY	500+	YRS
OVERTOPPING ELEVATION	2083.7	FT

PIPE HYDRAULIC DATA

Sta. 28+50

DRAINAGE AREA	20.5	AC
DESIGN FREQUENCY	50	YRS
DESIGN DISCHARGE	50	CFS
DESIGN HW ELEVATION	2078.3	FT
100 YEAR DISCHARGE	55	CFS
100 YEAR HW ELEVATION	2078.6	FT
OVERTOPPING FREQUENCY	>500	YRS
OVERTOPPING DISCHARGE	95	CFS
OVERTOPPING ELEVATION	2084.16	FT

PI = 26+30.00
EL = 2,082.64'
VC = 150'
K = 143
V = 60

PI = 24+50.00
EL = 2,085.41'
VC = 150'
K = 105
V = 50

PI = 30+20.00
EL = 2,080.72'
VC = 620'
K = 99
V = 60

Begin Grade
Sta. 23+50.00 -L-
El. 2088.37'

End Resurfacing
Sta. 23+50.00 -L-

(-)2.9625%
(-)2.4231%
(-)11.5397%
(+)11.5397%
(-)10.4918%
(+)15.7796%
(+)2.4000%
(-)1.5439%
(+)1.4000%
(-)1.6616%

RETAINING WALL ENVELOPE

RETAINING WALL 25+60 TO 27+40

BEGIN DITCH -L- 23+50.00 (LT) EL = 2085.58
END DITCH -L- 23+80.00 (LT) EL = 2085.37
BEGIN DITCH -L- 24+50.00 (LT) EL = 2079.60
DITCH -L- 25+50.00 (LT) EL = 2074.41
END DITCH -L- 26+30.00 (LT) EL = 2073.32
BEGIN CHANNEL RELOCATION -L- 26+50.00 (LT) EL = 2071.16
BEGIN DITCH -L- 28+50.00 (RT.) EL = 2074.46
36" RCP W/ HW
END CHANNEL RELOCATION -L- 29+13.00 (LT) EL = 2067.72
END DITCH -L- 29+75.00 (RT) EL = 2076.60

100YR. W.S. ELEV. = 2,081.00
50YR. W.S. ELEV. = 2,080.2'
1' HIGH SILL (AT INLET & OUTLET)

-L- STA. 25+41
SKEW = 134 10' 03" (EXISTING SKEW)
PROP. GRADE = 2,084.01'
RETAIN EXISTING 6' X 6' RCBC AND EXTEND UPSTREAM WITH 2 @ 7' X 6' RCBC AT 5 DEGREES TO EXISTING (WITH 1 Ft. SILLS IN LEFTMOST BARREL LOOKING DOWNSTREAM) EXTEND DOWNSTREAM WITH 2 @ 6' X 6' RCBC (WITH 1 Ft. SILLS IN LEFTMOST BARREL LOOKING DOWNSTREAM)

RETAINING WALL ENVELOPE

STATION	OFFSET	TOP ELEV.	BOTTOM ELEV.
25+60.00	33.50'	2084.30'	2083.59'
26+00.00	33.50'	2090.40'	2082.94'
26+50.00	33.50'	2092.52'	2082.41'
27+00.00	33.50'	2091.38'	2082.06'
27+40.00	33.50'	2084.53'	2081.89'

MATCH LINE -L- STA. 22+00.00 SEE SHEET 23

MATCH LINE -L- STA. 34+00.00 SEE BELOW

LEFT DITCH ---------- RIGHT DITCH .....

FOR -L- PLAN SEE SHEET 5

2,130 2,120 2,110 2,100 2,090 2,080 2,070 2,060 2,050 2,040

22 23 24 25 26 27 28 29 30 31 32 33 34

PI = 41+30.00
EL = 2,146.25'
VC = 1,010'
K = 84
V = 50

PI = 35+00.00
EL = 2,108.46'
VC = 150'
K = 686
V = 80

(+)5.9984%
(-)5.9935%
(+)5.7796%
(+)6.6400%
(+)2.6000%
(+)3.0000%
(+)1.2857%
(-)3.2105%
(-)5.8000%

BEGIN DITCH -L- 34+30.00 (RT.) EL = 2059.
DITCH -L- 37+10.00 (RT.) EL = 2120.5
DITCH -L- 38+40.00 (RT.) EL = 2123.1'
DITCH -L- 39+50.00 (RT.) EL = 2127.6
END DITCH -L- 40+32.00 (RT.) EL = 2128.5'
BEGIN DITCH -L- 41+40.00 (RT.) EL = 2131.5'
END DITCH -L- 43+00.00 (RT.) EL = 2125.4'
BEGIN DITCH -L- 45+40.00 (RT.) EL = 2107.1'

BM#2
-BL- STA 44+38
184' LEFT
ELEV.=2141.38'

MATCH LINE -L- STA. 34+00.00 SEE ABOVE

MATCH LINE -L- STA. 46+00.00 SEE SHEET 25

RIGHT DITCH .....

FOR -L- PLAN SEE SHEET 6

2,170 2,160 2,150 2,140 2,130 2,120 2,110 2,100 2,090 2,080

34 35 36 37 38 39 40 41 42 43 44 45 46

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PI = 47+50.00
EL = 2,109.09'
VC = 200'
K = 98
V = 50

PI = 51+50.00
EL = 2,093.28'
VC = 200'
K = 142
V = 60

(-)15.99357%
(-)13.95257%
(-)13.95257%
(-)12.5465%
(-)13.20000%
(-)1.47765%
(-)12.5465%

END DITCH
-L- 46+50.00 (RT)
EL = 2084.4'

BEGIN DITCH
-L- 49+50.00 (RT)
EL = 2081.2'

END DITCH
-L- 50+50.00 (RT)
EL = 2084.0'

BEGIN DITCH
-L- 54+50.00 (RT)
EL = 2081.4'

END DITCH
-L- 56+00.00 (RT)
EL = 2074.2'

MATCH LINE -L- STA. 46+00.00 SEE SHEET 24

MATCH LINE -L- STA. 58+00.00 SEE BELOW

RIGHT DITCH .....

FOR -L- PLAN SEE SHEET 7

2,130 2,120 2,110 2,100 2,090 2,080 2,070 2,060 2,050 2,040

46 47 48 49 50 51 52 53 54 55 56 57 58

PIPE HYDRAULIC DATA
Sta.68+00

DRAINAGE AREA	=	120	AC
DESIGN FREQUENCY	=	5	YRS
DESIGN DISCHARGE	=	60	CFS
DESIGN HW ELEVATION	=	2045.2	FT
100 YEAR DISCHARGE	=		CFS
100 YEAR HW ELEVATION	=		FT
OVERTOPPING FREQUENCY	=	10	YRS
OVERTOPPING DISCHARGE	=	112	CFS
OVERTOPPING ELEVATION	=	2048.1	FT

PI = 58+60.00
EL = 2,075.20'
VC = 150'
K = 337
V = 75

PI = 61+00.00
EL = 2,068.02'
VC = 150'
K = 130
V = 55

PI = 63+00.00
EL = 2,064.35'
VC = 240'
K = 686
V = 80

PI = 69+00.00
EL = 2,051.24'
VC = 150'
K = 243
V = 80

(-)12.5465%
(-)12.9917%
(-)12.9917%
(-)11.8350%
(-)11.8350%
(-)12.1850%
(-)1.2917%
(-)12.1850%
(-)11.5667%

BEGIN DITCH
-L- 66+00.00 (LT)
EL = 2051.0'

END DITCH
-L- 67+20.00 (LT)
EL = 2054.4'

48" RCP BURIED 0.8 FT W/ HW

MATCH LINE -L- STA. 58+00.00 SEE ABOVE

MATCH LINE -L- STA. 70+00.00 SEE SHEET 26

LEFT DITCH -.-.-.-.-.- RIGHT DITCH .....

FOR -L- PLAN SEE SHEET 8

2,110 2,100 2,090 2,080 2,070 2,060 2,050 2,040 2,030 2,020

58 59 60 61 62 63 64 65 66 67 68 69 70

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA
Sta. 81+29

DRAINAGE AREA	=	185	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	240	CFS
DESIGN HW ELEVATION	=	2025.9	FT
100 YEAR DISCHARGE	=	290	CFS
100 YEAR HW ELEVATION	=	2027.3	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	425	CFS
OVERTOPPING ELEVATION	=	2028.96	FT

-L-

PI = 72+00.00
EL = 2,046.54'
VC = 250'
K = 398
V = 80

PI = 74+00.00
EL = 2,042.15'
VC = 150'
K = 221
V = 75

PI = 78+00.00
EL = 2,036.08'
VC = 150'
K = 282
V = 80

PI = 80+00.00
EL = 2,034.11'
VC = 170'
K = 178
V = 60

(-)1.5667%
(-)2.1950%
(-)2.1950%
(-)1.5175%
(-)1.5175%
(-)0.9850%
(-)0.9850%
(-)1.9400%
(-)1.0000%
(-)2.0000%

BEGIN DITCH -L- 70+80.00 (RT) EL.= 2035.2
END DITCH -L- 73+95.00 (RT) EL.= 2033.0
BEGIN DITCH -L- 78+50.00 (RT) EL.= 2023.1'
END DITCH -L- 80+85.00 (RT) EL.= 2018.9
72" CMP BURIED 1'

MATCH LINE -L- STA. 70+00.00 SEE SHEET 25

MATCH LINE -L- STA. 82+00.00 SEE BELOW

RIGHT DITCH .....

FOR -L- PLAN SEE SHEET 8

2,090 2,080 2,070 2,060 2,050 2,040 2,030 2,020 2,010 2,000

70 71 72 73 74 75 76 77 78 79 80 81 82

-L-

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	400	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	2008.2	FT
BASE DISCHARGE	=	480	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2009.60	FT
OVERTOPPING DISCHARGE	=	760	CFS
OVERTOPPING FREQUENCY	=	500 +/-	YRS
OVERTOPPING ELEVATION	=	2016.6	FT

PI = 83+00.00
EL = 2,028.29'
VC = 180'
K = 624
V = 80

PI = 86+50.00
EL = 2,020.49'
VC = 150'
K = 174
V = 65

PI = 90+00.00
EL = 2,015.70'
VC = 150'
K = 360
V = 75

(-)1.9400%
(-)2.2286%
(-)2.2286%
(-)1.3686%
(-)1.3686%
(-)0.5333%
(-)1.7857%
(-)2.0000%
(-)1.7857%
(-)1.5333%
(-)1.6000%

100YR. W.S. ELEV.=2009.60'
25YR. W.S. ELEV.=2006.4'

-L- STA. 88+12
SKEW = 90° 02' 21" (EXISTING SKEW)
PROP. GRADE = 2,018.27'
RETAIN EXISTING 7' X 6' RCBC AND EXTEND WITH @ 7' X 6' RCBC BURIED 1'

BM#3
-BY7- STA 6+46
6.75' RIGHT
ELEV.=2018.56'

(-)2.2222%

BEGIN DITCH -L- 82+00.00 (LT) EL.= 2024.8'
END DITCH -L- 83+12.00 (LT) EL.= 2012.8'
BEGIN DITCH -L- 89+25.00 (LT) EL.= 2016.4'
DITCH -L- 90+00.00 (LT) EL.= 2016.0'
END DITCH -L- 90+70.00 (LT) EL.= 2014.6'
DITCH -L- 91+50.00 (RT) EL.= 1992.0'
BEGIN DITCH -L- 90+75.00 (RT) EL.= 1993.2'
END DITCH -L- 93+55.00 (RT) EL.= 1988.7'

MATCH LINE -L- STA. 82+00.00 SEE ABOVE

MATCH LINE -L- STA. 94+00.00 SEE SHEET 27

LEFT DITCH -·-·-·-·-·- RIGHT DITCH .....

FOR -L- PLAN SEE SHEET 9

2,070 2,060 2,050 2,040 2,030 2,020 2,010 2,000 1,990 1,980

82 83 84 85 86 87 88 89 90 91 92 93 94

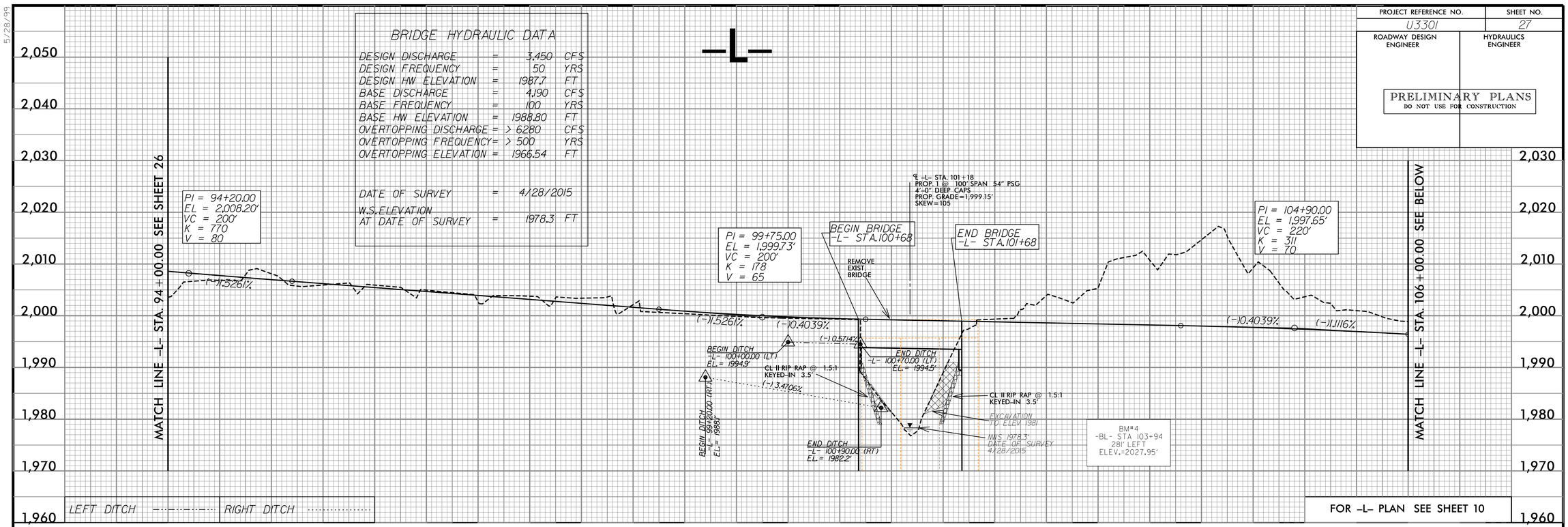
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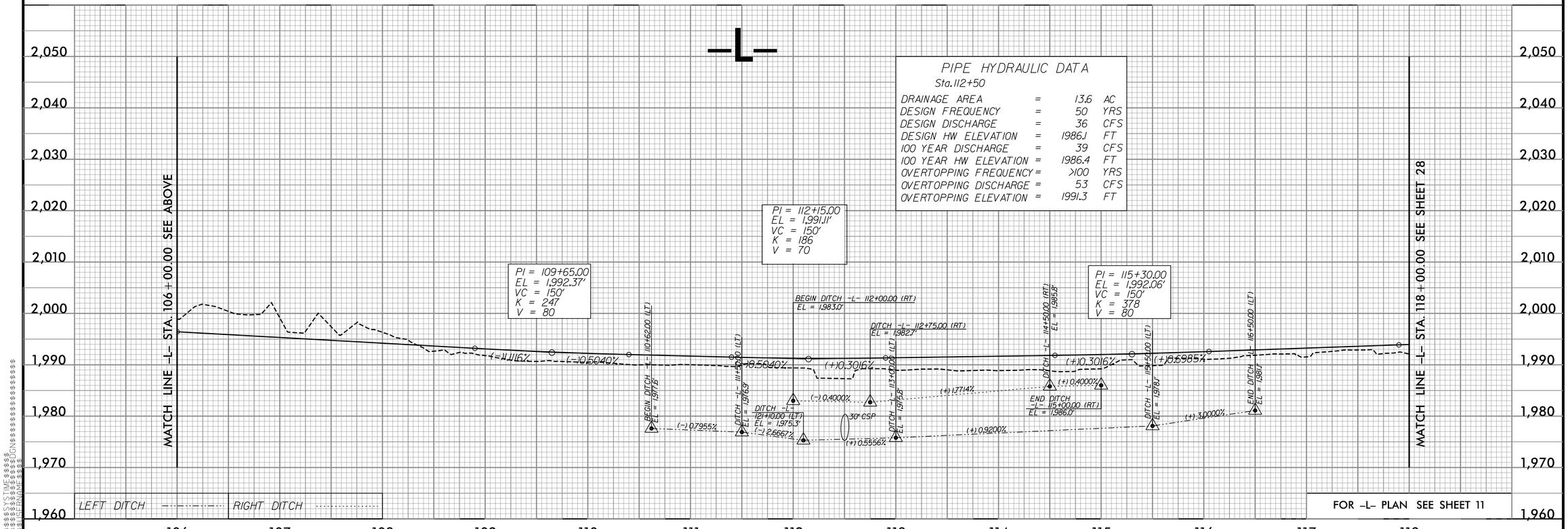
PROJECT REFERENCE NO.	SHEET NO.
U3301	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	3,450	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	1987.7	FT
BASE DISCHARGE	=	4,190	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	1988.80	FT
OVERTOPPING DISCHARGE	=	> 6280	CFS
OVERTOPPING FREQUENCY	=	> 500	YRS
OVERTOPPING ELEVATION	=	1966.54	FT
DATE OF SURVEY	=	4/28/2015	
W.S. ELEVATION AT DATE OF SURVEY	=	1978.3	FT





PIPE HYDRAULIC DATA

Sta.112+50

DRAINAGE AREA	=	13.6	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	36	CFS
DESIGN HW ELEVATION	=	1986.1	FT
100 YEAR DISCHARGE	=	39	CFS
100 YEAR HW ELEVATION	=	1986.4	FT
OVERTOPPING FREQUENCY	=	>100	YRS
OVERTOPPING DISCHARGE	=	53	CFS
OVERTOPPING ELEVATION	=	1991.3	FT

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

2,050
2,040
2,030
2,020
2,010
2,000
1,990
1,980
1,970
1,960

118 119 120 121 122 123 124 125 126 127 128 129 130

MATCH LINE –L– STA. 118+00.00 SEE SHEET 27

PI = 118+65.00
EL = 1,994.40'
VC = 150'
K = 524
V = 80

PI = 121+90.00
EL = 1,997.60'
VC = 320'
K = 211
V = 65

(+)0.9846%
(−)0.5355%
(+)0.6985%
(+)0.9846%

MATCH LINE –L– STA. 130+00.00 SEE BELOW

FOR –L– PLAN SEE SHEET 12

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	1000	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	1981.9	FT
BASE DISCHARGE	=	1200	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	1982.83	FT
OVERTOPPING DISCHARGE	=	> 1600	CFS
OVERTOPPING FREQUENCY	=	> 500	YRS
OVERTOPPING ELEVATION	=	1991.5	FT

MATCH LINE –L– STA. 130+00.00 SEE ABOVE

–L– STA. 133+54.2
SKEW=59° 36' 20" (EXISTING SKEW)
PROP. GRADE = 1,991.95'

PI = 131+05.00
EL = 1,992.70'
VC = 150'
K = 640
V = 80

PI = 135+40.00
EL = 1,991.39'
VC = 150'
K = 165
V = 65

PI = 137+65.00
EL = 1,992.76'
VC = 150'
K = 487
V = 80

(−)0.5355%
(−)0.3011%
(−)0.3011%
(+)0.6089%
(+)0.6089%
(+)0.3008%

100 YR WSEL=1982.83'
50 YR WSEL=1981.9'
EXIST RCBC
PROPOSED 66" SUPPLEMENTAL PIPE (TRENCHLESS INSTALLATION)
1' HIGH CONCRETE SILL (AT INLET & OUTLET)

BEGIN DITCH –L– 132+00.00 (LT) EL = 1,976.5'
DITCH –L– 132+50.00 (LT) EL = 1,976.3'
END DITCH –L– 133+00.00 (LT) EL = 1,973.0'
BEGIN DITCH –L– 133+10.00 (LT) EL = 1,973.0'
DITCH –L– 134+00.00 (LT) EL = 1,980.0'
END DITCH –L– 135+00.00 (LT) EL = 1,983.3'
BEGIN DITCH –L– 134+00.00 (RT) EL = 1,975.8'
DITCH –L– 135+50.00 (RT) EL = 1,976.4'
END DITCH –L– 136+50.00 (RT) EL = 1,978.0'
DITCH –L– 136+00.00 (RT) EL = 1,977.1'

(−) 0.4000%
(−)11.0000%
(+) 7.8652%
(+) 3.3500%
(+) 0.4000%
(+) 1.4000%
(+) 1.8000%

LEFT DITCH ——·——·—— RIGHT DITCH ·····

FOR –L– PLAN SEE SHEET 13

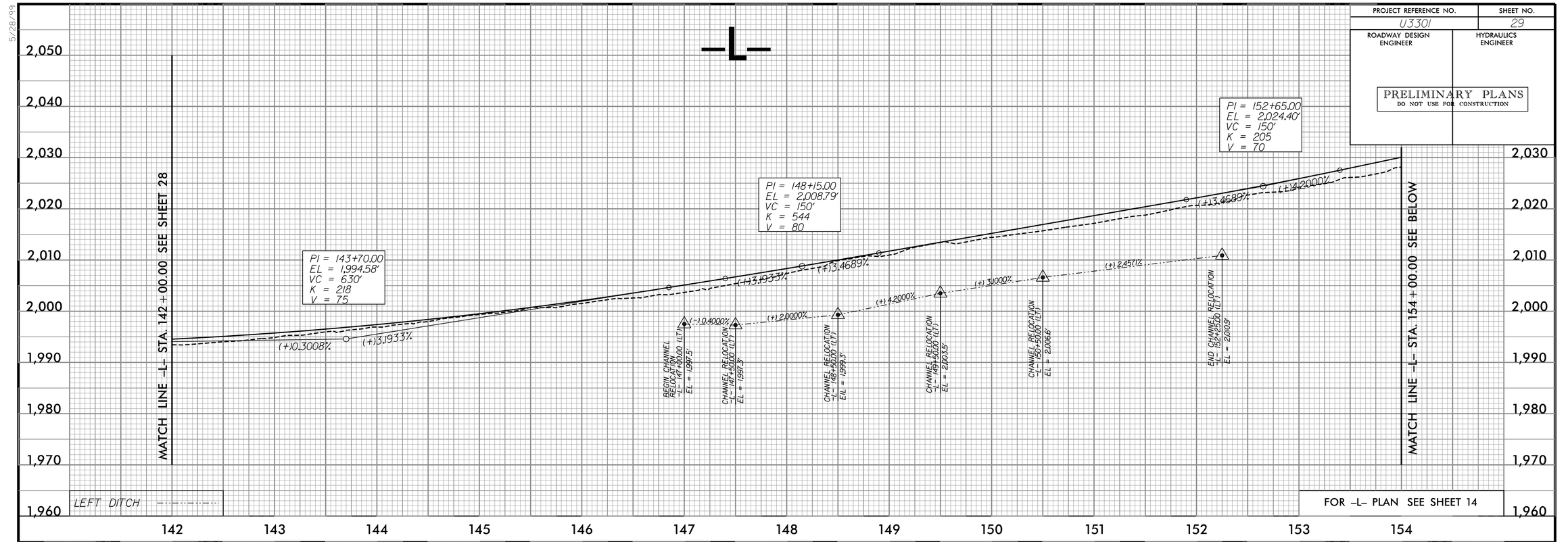
MATCH LINE –L– STA. 142+00.00 SEE SHEET 29

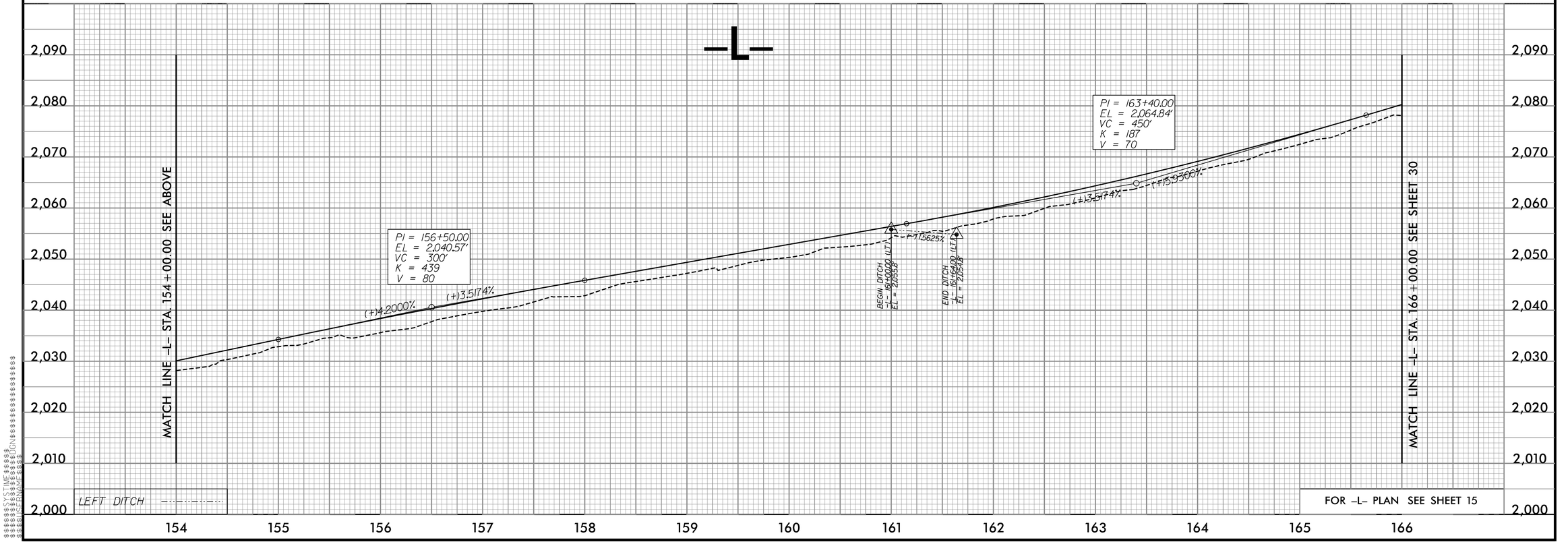
130 131 132 133 134 135 136 137 138 139 140 141 142

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





5/28/99

LEFT DITCH

PROJECT REFERENCE NO.	SHEET NO.
U3301	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L–

PI = 171+40.00
EL = 2,112.28'
VC = 600'
K = 726
V = 80

(+)5.9330%
(+)5.1035%
(+)7.0220%
(–)0.4878%

BEGIN DITCH –L– 166+50.00 (LT)
EL = 2,084.15

DITCH –L– STA.166+91.00 (LT)
EL = 2,084.44'

END DITCH –L– 168+00.00 (LT)
EL = 2,091.4

MATCH LINE –L– STA. 166+00.00 SEE SHEET 29

MATCH LINE –L– STA. 178+00.00 SEE BELOW

FOR –L– PLAN SEE SHEET 16

2,145 2,135 2,125 2,115 2,105 2,095 2,085 2,075

166 167 168 169 170 171 172 173 174 175 176 177 178

–L–

PI = 179+90.00
EL = 2,155.66'
VC = 350'
K = 511
V = 80

PI = 185+40.00
EL = 2,187.50'
VC = 300'
K = 208
V = 65

(+)5.0357%
(+)5.7891%
(+)5.7891%
(+)4.3460%
(+) 0.4000%
(+) 2.5000%

BEGIN DITCH –L– 180+00.00 (LT)
EL = 2,161.00

DITCH –L– 181+00.00 (LT)
EL = 2,165.00

END DITCH –L– 182+00.00 (LT)
EL = 2,154.42

MATCH LINE –L– STA. 178+00.00 SEE ABOVE

MATCH LINE –L– STA. 190+00.00 SEE SHEET 31

FOR –L– PLAN SEE SHEET 17

LEFT DITCH

2,210 2,200 2,190 2,180 2,170 2,160 2,150 2,140 2,130 2,120

178 179 180 181 182 183 184 185 186 187 188 189 190

$$$

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PROJECT REFERENCE NO.	SHEET NO.
U3301	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PI = 195+40.00
EL = 2,230.96'
VC = 1,200'
K = 144
V = 55

(+)4.3460%

(−)4.0144%

BM#6
-BL- STA. 194+83
110' RIGHT
ELEV.=2195.08'

MATCH LINE -L- STA. 190+00.00 SEE SHEET 30

MATCH LINE -L- STA. 202+00.00 SEE BELOW

FOR -L- PLAN SEE SHEET 18

2,230 2,220 2,210 2,200 2,190 2,180 2,170 2,160

190 191 192 193 194 195 196 197 198 199 200 201 202

PI = 204+40.00
EL = 2,194.83'
VC = 200'
K = 595
V = 80

(−)4.0144%

(−)4.3507%

(−)5.3333%

BEGIN DITCH
-L- 204+00.00 (LT)
EL = 2,190.5'

END DITCH
-L- 205+50.00 (LT)
EL = 2,182.5'

PI = 211+90.00
EL = 2,162.20'
VC = 320'
K = 194
V = 65

(−)4.3507%

(−)6.0000%

MATCH LINE -L- STA. 202+00.00 SEE ABOVE

MATCH LINE -L- STA. 214+00.00 SEE SHEET 32

LEFT DITCH -·-·-·-·-·-

FOR -L- PLAN SEE SHEET 19

2,210 2,200 2,190 2,180 2,170 2,160 2,150 2,140 2,130 2,120

202 203 204 205 206 207 208 209 210 211 212 213 214

$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH ---------- RIGHT DITCH .....

-L-

MATCH LINE -L- STA. 214+00.00 SEE SHEET 31

MATCH LINE -L- STA. 226+00.00 SEE BELOW

FOR -L- PLAN SEE SHEET 20

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	1300	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	2087.2	FT
BASE DISCHARGE	=	1600	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2089.73	FT
OVERTOPPING DISCHARGE	=	2100 +	CFS
OVERTOPPING FREQUENCY	=	500 +	YRS
OVERTOPPING ELEVATION	=	2112.5	FT

BEGIN DITCH -L- 218+10.00 (RT) EL = 2113.9

(-)16.4000%

DITCH -L- 219+50.00 (RT) EL = 2104.3'

(-)4.6500%

BEGIN DITCH -L- 220+50.00 (LT) EL = 2107.3'

DITCH -L- 221+50.00 (RT) EL = 2100.50'

(-)2.3438%

END DITCH -L- 221+40 (RT) EL = 2098.35'

PI = 223+70.00
EL = 2,091.40'
VC = 1,380'
K = 115
V = 55

(-)16.0000%

(+)16.0000%

300YR. W.S. ELEV. = 2,089.73'

50YR. W.S. ELEV. = 2,087.2'

DITCH -L- 223+70.00 (LT) EL = 2,081.2'

BEGIN DITCH -L- 222+50.00 (RT) EL = 2,090.50'

PROP. 2x11'x9' RCBC

(-).05000%

END DITCH -L- 222+85.00 (LT) EL = 2,075.5'

3' HIGH SILL

EXISTING RCBC (TO BE REMOVED)

(+)2.4007%

(+)1.0826%

BEGIN DITCH -L- 223+12.00 (LT) EL = 2,075.0'

(+)8.4000%

(+)7.1647%

DITCH -L- 224+00.00 (RT) EL = 2,083.1'

END DITCH -L- 224+50.00 (LT) EL = 2,088.0'

END DITCH -L- 224+85.00 (RT) EL = 2,088.7'

MATCH LINE -L- STA. 226+00.00 SEE ABOVE

MATCH LINE -L- STA. 240+00.00 SEE SHEET 33

FOR -L- PLAN SEE SHEET 21

LEFT DITCH ----------

BEGIN DITCH -L- 226+00.00 (LT) EL = 2,094.2'

(+)6.0000%

(+) 3.4167%

PI = 229+00.00 ET = 2,104.50

(+) 8.7500%

PI = 230+00.00 ET = 2,113.25

(+) 6.3143%

END DITCH -L- 231+90.00 (LT) EL = 2,224.3'

BEGIN DITCH -L- 235+75.00 (LT) EL = 2,159.8'

(-) 4.1459%

DITCH -L- 236+73.00 (LT) EL = 2,155.8'

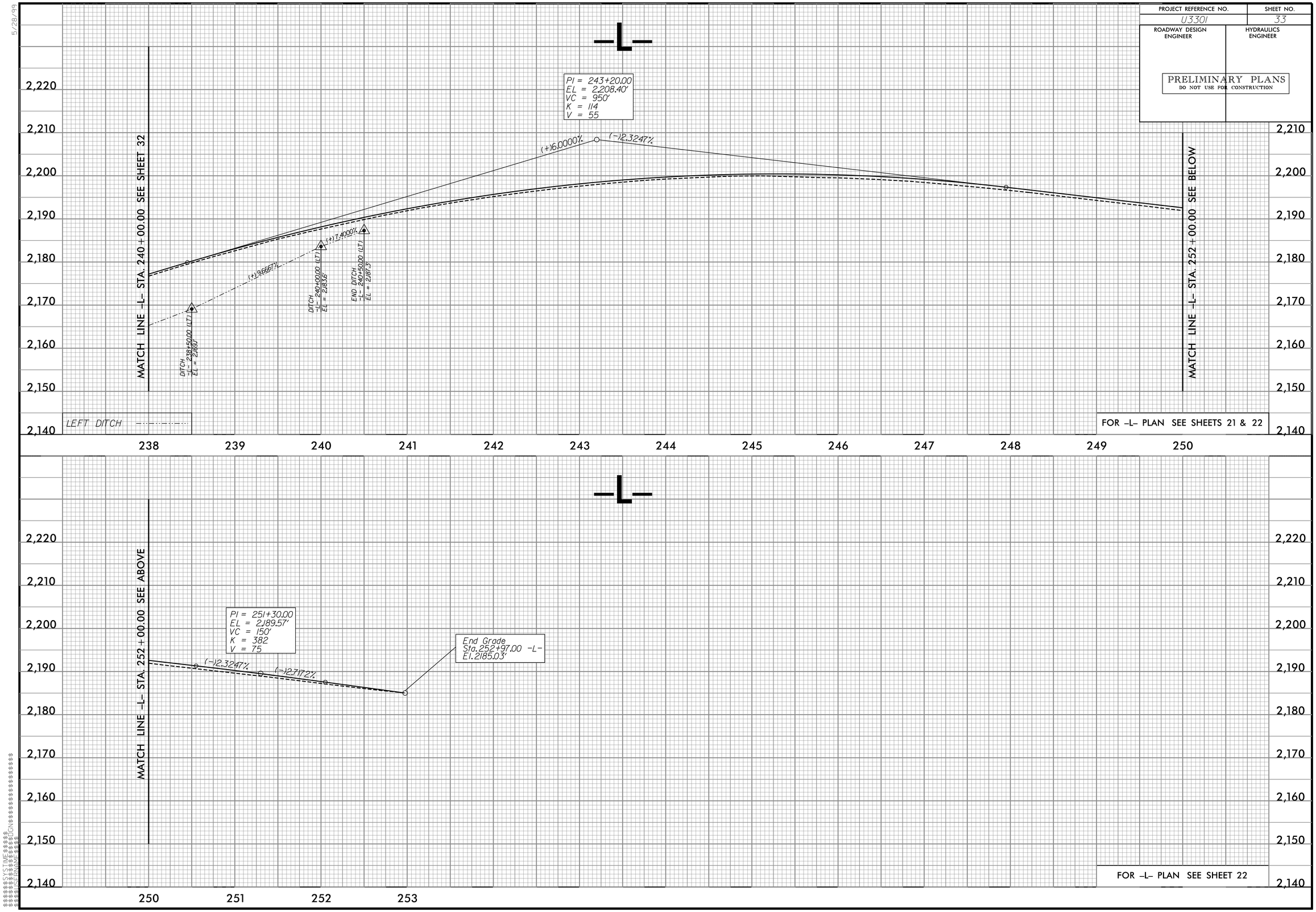
(+)7.6271%

$$$$ LINES $$$$
$$$$ ALIGN $$$$
$$$$ PROFILE $$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y1A

Begin Resurfacing
Sta. 16+30 -Y1A-

End Resurfacing
Sta. 16+53 -Y1A-

FOR -Y1A- PLAN SEE SHEET 4

Y1

-Y1- STA. 11+24
SKEW = 40° 00' 00"
PROP. GRADE = 2.084.08'
(2) 7' X 6' RCBC (LEFTMOST BARREL LOOKING DOWNSTREAM BURIED 1' WITH 1' SILLS; RIGHTMOST BARREL LOOKING DOWNSTREAM BURIED 1')

PI = 10+40.00
EL = 2,084.17'
VC = 40'
K = 15

PI = 10+75.00
EL = 2,083.06'
VC = 30'
K = 8

PI = 11+05.00
EL = 2,083.23'
VC = 30'
K = 8

Begin Grade
Sta. 10+20.00 -Y1-
El. 2085.35'
Sta. 24+30.53 -L-
20' Rt.

End Grade
Sta. 11+45.00 -Y1-
El. 2085.02'

2085.35

2085.02

(-)5.9000%

(-)3.1714%

(+)4.4750%

(+)0.5667%

Sta. 10+00.00 -Y1-
Sta. 24+30.68 -L-
El. 2086.15'

100YR. W.S. ELEV. = 2,082.81'

25YR. W.S. ELEV. = 2,080.9'

EXISTING (2 LINES) 103" x 71" CMPA (TO BE REMOVED)

1' HIGH SILL (AT INLET & OUTLET)

1' BURY DEPTH (AT INLET & OUTLET)

FOR -Y1- PLAN SEE SHEET 5

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	400 CFS
DESIGN FREQUENCY	=	25 YRS
DESIGN HW ELEVATION	=	2080.9 FT
BASE DISCHARGE	=	600 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	2082.81 FT
OVERTOPPING DISCHARGE	=	635 CFS
OVERTOPPING FREQUENCY	=	100+ YRS
OVERTOPPING ELEVATION	=	2083.4 FT

Y3

Begin Grade
Sta. 13+60.00 -Y3-
El. 2087.98'

2087.98

PI = 14+45.00
EL = 2,091.16'
VC = 120'
K = 93

(+)3.7412%

(+)2.4450%

PI = 16+45.00
EL = 2,096.05'
VC = 140'
K = 45

2100.60

End Grade
Sta. 17+26.39 -Y3-
Sta. 33+75.11 -L-
El. 2101.24'
32' Lt.

(+)5.5904%

Sta. 17+58.42 -Y3
Sta. 33+76.63 -L-
El. 2101.33'

(+)5.3000%

(+)3.6000%

BEGIN DITCH
-Y3- 14+80.00 (RT)
EL. = 2078.2

DITCH
-Y3- 15+50.00 (RT)
EL. = 2083.25

END DITCH
-Y3- 17+00.00 (RT)
EL. = 2088.9

RIGHT DITCH .....

FOR -Y3- PLAN SEE SHEET 5

Y4

End Grade
Sta. 11+35.00 -Y4-
El. 2135.22'
BEGIN RESURFACING

Sta. 13+96.67 -Y4-
END RESURFACING

Begin Grade
Sta. 10+20.00 -Y4-
Sta. 40+56.70 -L-
El. 2130.79'
20' Rt.

PI = 10+70.00
EL = 2,132.38'
VC = 100'
K = 37

2131.56

2135.22

(+)1.6466%

(+)4.3726%

Sta. 10+00.00 -Y4-
Sta. 40+56.70 -L-
El. 2130.79'

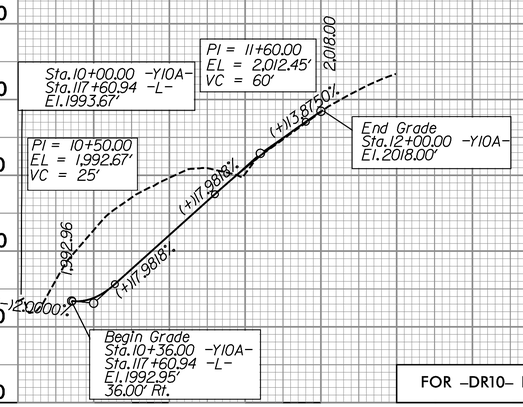
FOR -Y4- PLAN SEE SHEET 6

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

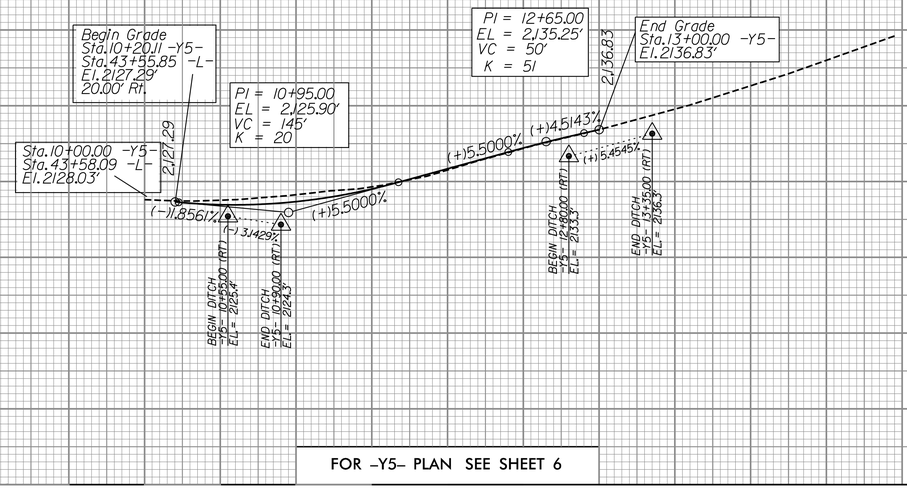
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DR10



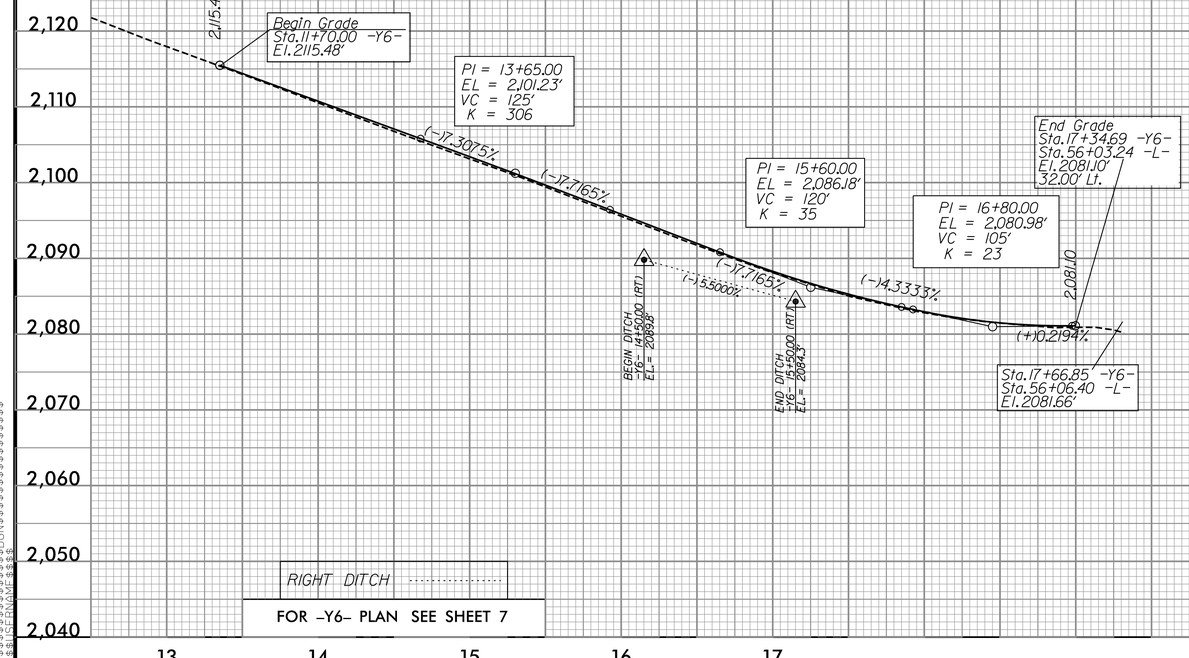
FOR –DR10– PLAN SEE SHEET 10

Y5



FOR –Y5– PLAN SEE SHEET 6

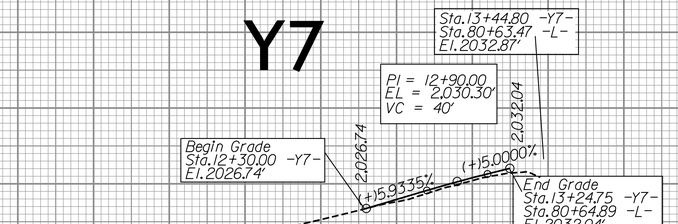
Y6



RIGHT DITCH .....

FOR –Y6– PLAN SEE SHEET 7

Y7



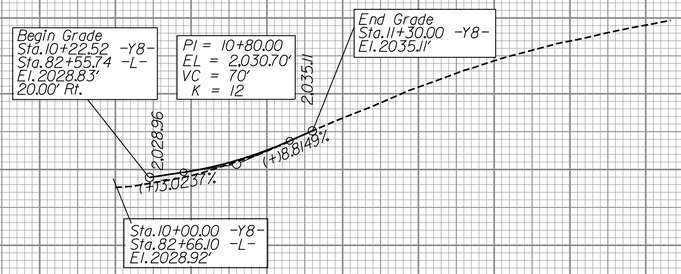
FOR –Y7– PLAN SEE SHEET 9

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

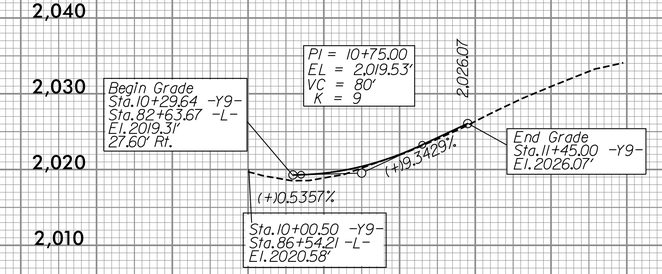
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y8



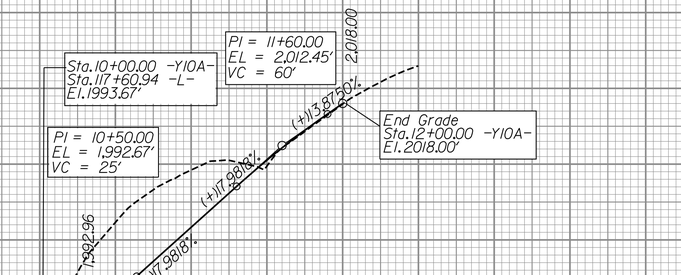
FOR –Y8– PLAN SEE SHEET 9

Y9



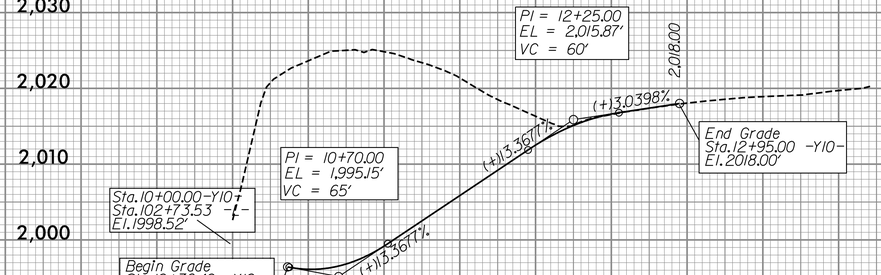
FOR –Y9– PLAN SEE SHEET 9

Y10A



FOR –Y10A– PLAN SEE SHEET 12

Y10



FOR –Y10– PLAN SEE SHEET 10

USERNAME = $USERNAME
DESIGNED = $DESIGNED
DRAWN = $DRAWN
CHECKED = $CHECKED

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y11

Begin Grade
Sta.13+70.00 -Y11-
El.1982.10'

PI = 14+20.00
EL = 1,981.75'
VC = 100'
K = 7

1,982.10

(-)0.7061%

(+)4.3444%

(-)0.8859%

End Grade
Sta.15+37.50 -Y11-
I30+52.95 -L-
El.1994.42'
36.00' Lt.

Sta.15+82.45 -Y11-
I30+25.99 -L-
El.1993.12'

PI = 15+10.00
EL = 1,994.66'
VC = 55'

FOR -Y11- PLAN SEE SHEET 13

Y12A

Begin Grade
Sta.10+30.00 -Y12A-
El.2178.21'

PI = 10+95.00
EL = 2,172.46'
VC = 40'
K = 9.3

(-)8.8415%

PI = 11+90.00
EL = 2,159.99'
VC = 45'
K = 3.8

(-)3.1293%

End Grade
Sta.12+21.46 -Y12A-
Sta.180+68.34 -L-
El.2159.57'
36.00' Lt.

Sta.11+85.57 -Y12A-
Sta.180+68.34 -L-
El.2160.29'

(-)1.3284%

FOR -Y12A- PLAN SEE SHEET 17

Y12

BM#5
FROM BL-139 TO BM#5
S 34°53'51" E 111.63' LEFT OF EP
ELEV.=2015.81'

PI = 10+80.00
EL = 2,000.50'
VC = 50'

PI = 11+50.00
EL = 1,999.14'
VC = 90'
K = 41

1,999.26

(-)0.3266%

(-)1.9413%

(+)0.2308%

End Grade
Sta.12+00.00 -Y12-
El.1999.26'

Begin Grade
Sta.10+39.22 -Y12-
Sta.144+87.34 -L-
El.2000.66'
36.00' Rt.

Sta.10+00.00 -Y12-
Sta.144+71.87 -L-
El.1998.88'

FOR -Y12- PLAN SEE SHEET 14

Y13

Begin Grade
Sta.10+36.23 -Y13-
Sta.187+48.02 -L-
El.2194.38'
36.00' Rt.

PI = 10+70.00
EL = 2,192.37'
VC = 65'

PI = 11+50.00
EL = 2,190.74'
VC = 80'
K = 11

(-)5.9411%

(-)2.0375%

(-)9.0900%

2,181.65

End Grade
Sta.12+50.00 -Y13-
El.2181.65'

Sta.10+00.00 -Y13-
Sta.187+52.19 -L-
El.2196.52'

FOR -Y13- PLAN SEE SHEET 17

Y14

Begin Grade
Sta.15+50.00 -Y14-
El.2209.50'

2,209.50

PI = 15+80.00
EL = 2,207.48'
VC = 50'

(-)6.7533%

(-)5.7116%

2,200.58

End Grade
Sta.16+99.55 -Y14-
Sta.187+74.68 -L-
El.2200.58'
48.00' Lt.

End Grade
Sta.17+52.73 -Y14-
Sta.187+52.19 -L-
El.2196.72'

FOR -Y14- PLAN SEE SHEET 17

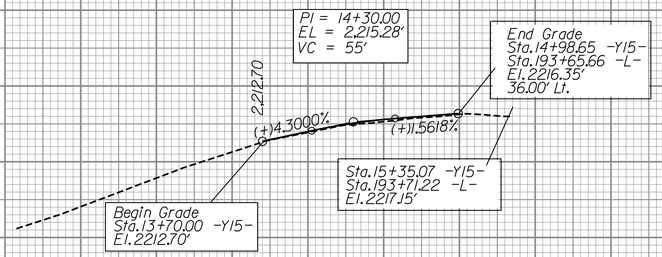
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

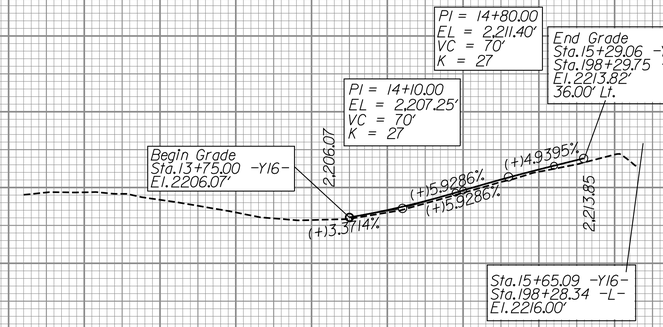
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y15



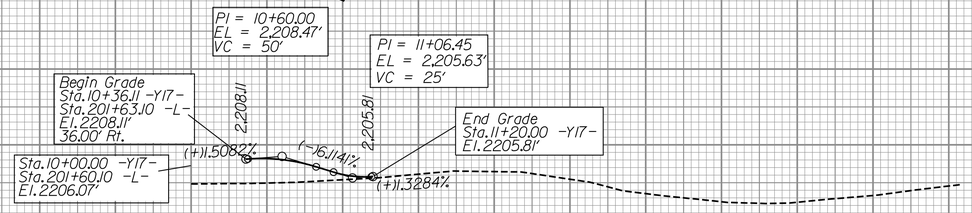
FOR –Y15– PLAN SEE SHEET 18

Y16



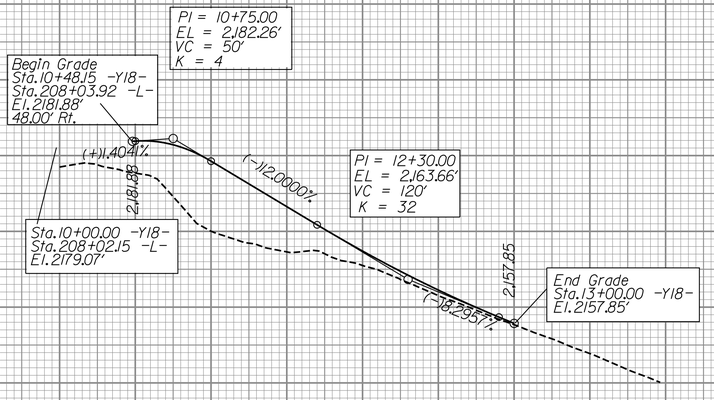
FOR –Y16– PLAN SEE SHEET 18

Y17



FOR –Y17– PLAN SEE SHEET 18

Y18



FOR –Y18– PLAN SEE SHEET 19

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Y19

PI = 14+00.00
EL = 2,213.99'
VC = 60'

PI = 14+80.00
EL = 2,207.15'
VC = 90'
K = 20

2214.05

(-)10.1595%

(-)18.5500%

(-)14.0868%

2202.33

Begin Grade
Sta.10+65.00 -Y19-
El.2214.05'

End Grade
Sta.15+97.94 -Y19-
Sta.245+55.28 -L-
El.2202.33'
48.00' Lt.

Sta.16+45.94 -Y19-
Sta.245+55.42 -L-
El.2200.41'

BM#7
-BY19- STA 10+91
40' LEFT
ELEV.=2218.15'

FOR –Y19– PLAN SEE SHEET 22

Y20

2198.49

Sta.10+00.00 -Y20-
Sta.245+55.42 -L-
El.2200.41'

Begin Grade
Sta.10+48.00 -Y20-
Sta.245+55.56 -L-
El.2198.49'
48.00' Rt.

PI = 12+10.00
EL = 2,194.70'
VC = 275'
K = 73

(-)12.3395%

(-)16.0971%

(-)16.0941%

BEGIN DITCH
-Y20- 13+65.00 (RT)
EL.= 2185.7'

END DITCH
-Y20- 14+50.00 (RT)
ELEV.= 2180.0'

2173.97

End Grade
Sta.15+50.00 -Y20-
El.2173.97'

(-)17.4500%

(-) 3.1333%

BEGIN DITCH CLEAN OUT
-Y20- 15+90.00 (LT)
EL.2170.46'

DITCH
-Y20- 16+10.00 (LT)
EL.2168.97'

END DITCH CLEAN OUT
-Y20- 16+25.00 (LT)
EL.2168.5'
MATCH EXISTING

RIGHT DITCH .....

FOR –Y20– PLAN SEE SHEET 22

Y21

PI = 10+70.00
EL = 2,193.45'
VC = 85'
K = 14

PI = 11+50.00
EL = 2,200.72'
VC = 75'
K = 24

2203.70

Begin Grade
Sta.10+25.05 -Y21-
Sta.12+28.87 -Y20-
El.2192.10'
24.75' Lt.

2192.39

2192.10

(-)11.1701%

(+)13.0033%

(+)19.0875%

(+)15.9600%

End Grade
Sta.12+00.00 -Y21-
El.2203.70'

Sta.10+00.00 -Y21-
Sta.12+32.76 -Y20-
El.2192.41'

FOR –Y21– PLAN SEE SHEET 22

Y22

2207.17

PI = 11+15.00
EL = 2,202.00'
VC = 35'

PI = 10+42.00
EL = 2,188.92'

2189.83

(+)19.4772%

(+)17.6706%

End Grade
Sta.11+82.44 -Y22-
El.2207.17'

(+)15.9920%

Begin Grade
Sta.10+52.50 -Y22-
Sta.250+99.38 -L-
El.2189.83'
52.47' Rt.

PI = 10+47.50
EL = 2,189.03'

Sta.10+00.00 -Y22-
Sta.251+00.00 -L-
El.2190.24'

FOR –Y22– PLAN SEE SHEET 22

SYSTEM USE ONLY

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

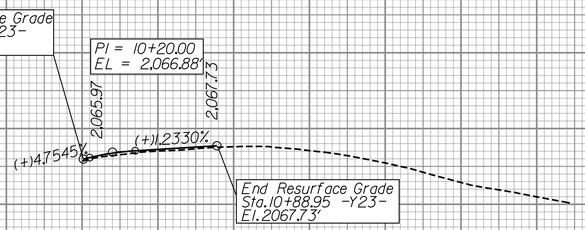
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA

Sta.10+79.5 –DR1–

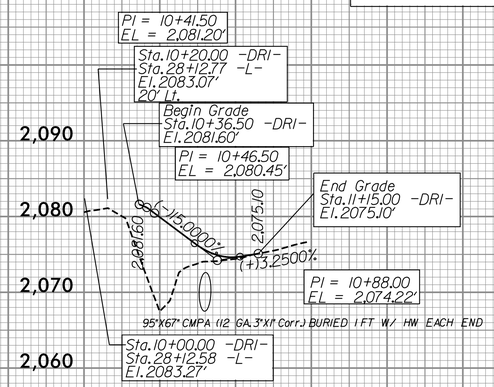
DRAINAGE AREA	=	0.9 SQ MI
DESIGN FREQUENCY	=	5 YRS
DESIGN DISCHARGE	=	210 CFS
DESIGN HW ELEVATION	=	2073.8 FT
100 YEAR DISCHARGE	=	600 CFS
100 YEAR HW ELEVATION	=	2076.5 FT
OVERTOPPING FREQUENCY	=	5 YRS
OVERTOPPING DISCHARGE	=	210 CFS
OVERTOPPING ELEVATION	=	2074.8 FT

Y23



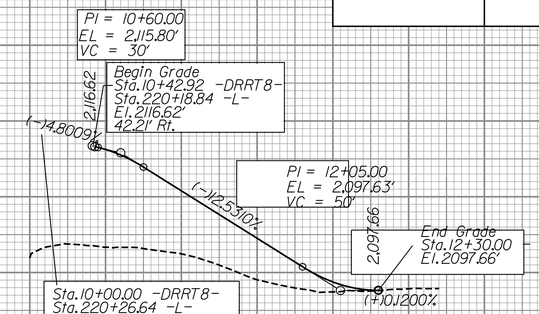
FOR –Y23– PLAN SEE SHEET 11

DR1



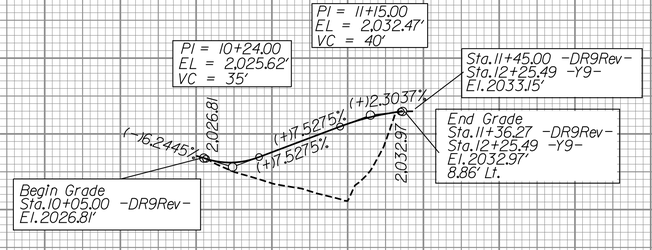
FOR –DR1– PLAN SEE SHEET 5

DRRT8



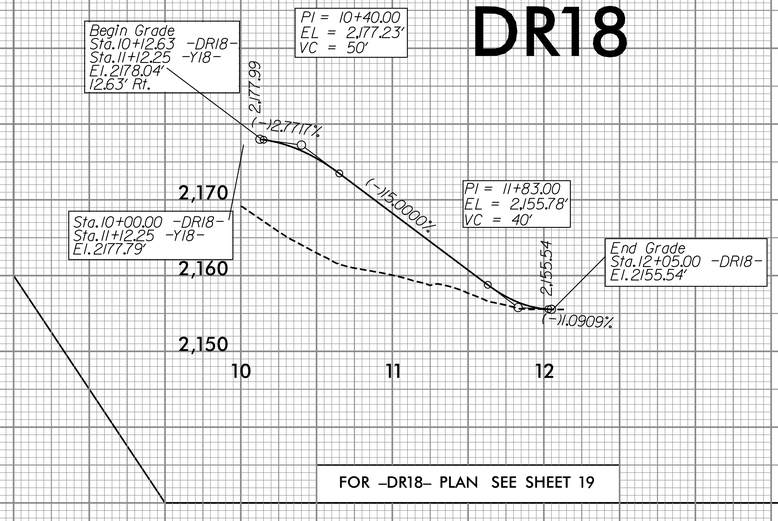
FOR –DRRT8– PLAN SEE SHEET 20

DR9REV



FOR –DR9REV– PLAN SEE SHEET 9

DR18



FOR –DR18– PLAN SEE SHEET 19

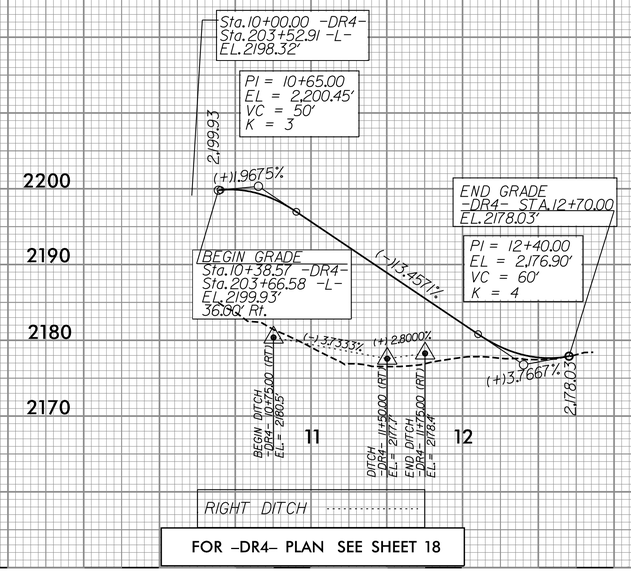
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

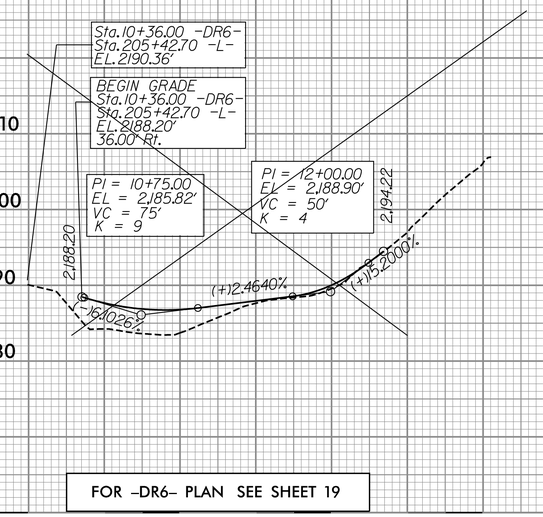
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DR4



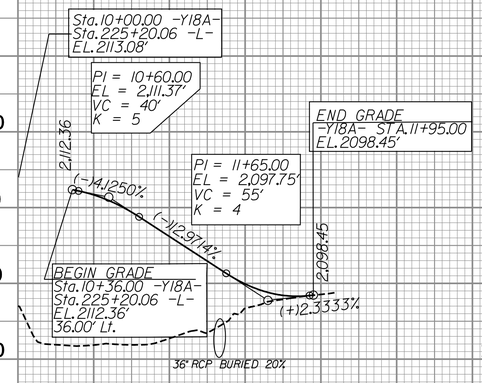
FOR –DR4– PLAN SEE SHEET 18

DR6



FOR –DR6– PLAN SEE SHEET 19

Y18A

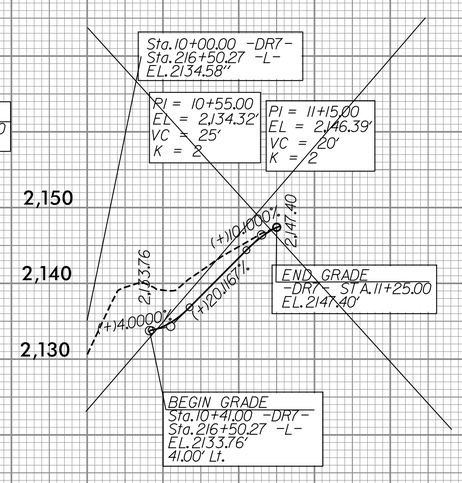


PIPE HYDRAULIC DATA
Sta.11+34.73 -Y18A-

DRAINAGE AREA	=	10.3	AC
DESIGN FREQUENCY	=	25	YRS
DESIGN DISCHARGE	=	31	CFS
DESIGN HW ELEVATION	=	2097.8	FT
100 YEAR DISCHARGE	=	37	CFS
100 YEAR HW ELEVATION	=	2098.3	FT
OVERTOPPING FREQUENCY	=	25	YRS
OVERTOPPING DISCHARGE	=	32	CFS
OVERTOPPING ELEVATION	=	2097.9	FT

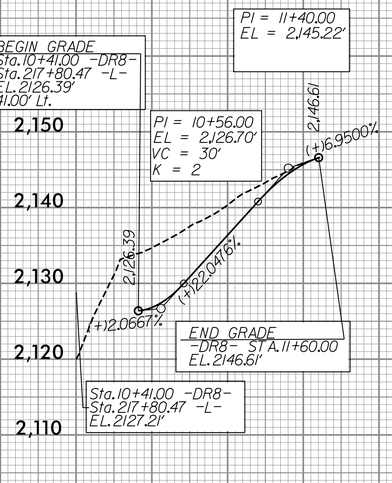
FOR –Y18A– PLAN SEE SHEET 20

DR7



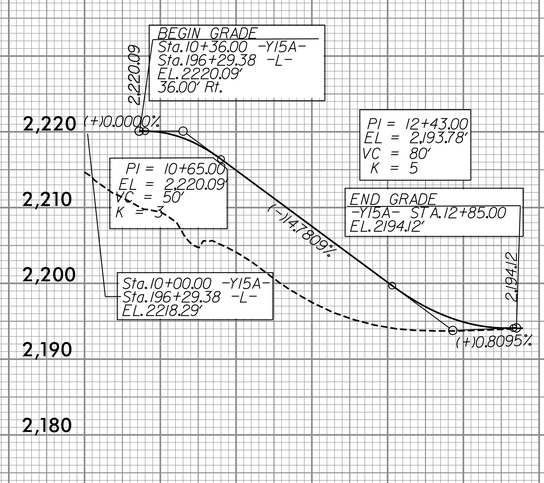
FOR –DR7– PLAN SEE SHEET 20

DR8



FOR –DR8– PLAN SEE SHEET 20

Y15A



FOR –Y15A– PLAN SEE SHEET 18

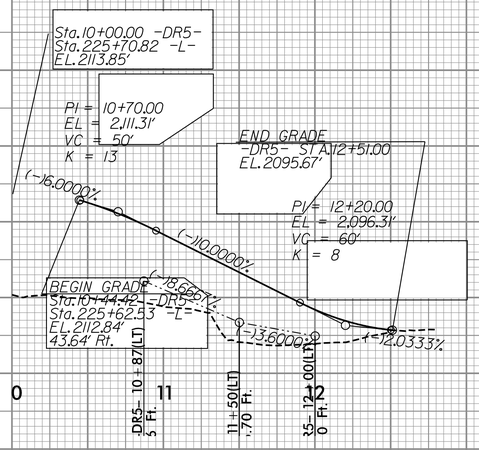
10 11 12

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U3301	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

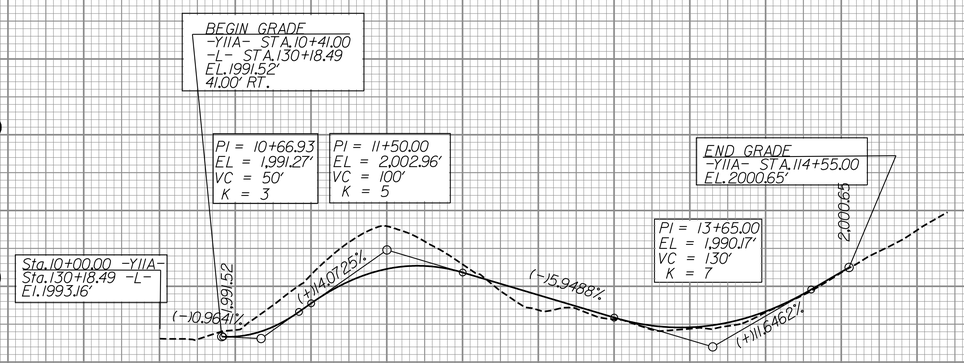
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DR5



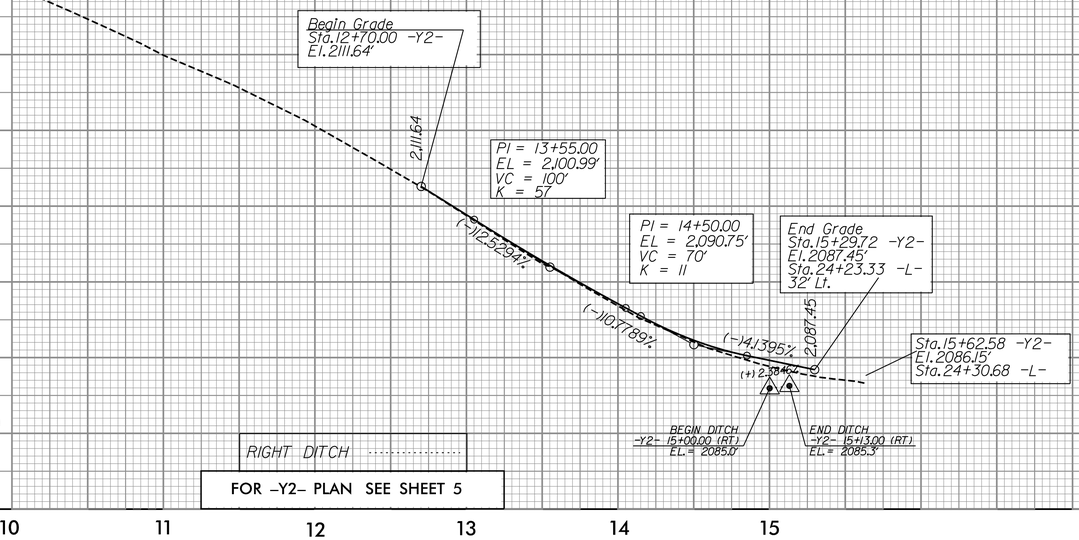
FOR –DR5– PLAN SEE SHEET 20

Y11A



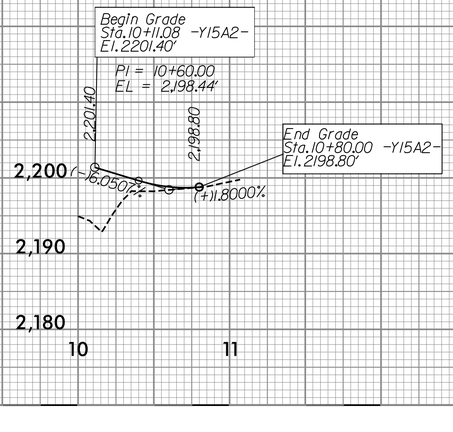
FOR –Y11A– PLAN SEE SHEET 13

Y2



FOR –Y2– PLAN SEE SHEET 5

Y15A2



OWNER	MAILING	CITYNAME	STATE	ZIPCODE	HOUSENUMBE	STREETNAME	STREETTYPE
A T AND T COMMUNICATIONS	79 WOODFIN	ASHEVILLE	NC	28804	2778	NEW LEICESTER	HWY
AMES THOMAS J & LANCASTER-AMES VICTORIA A	2137 NEW LI	ASHEVILLE	NC	28806	2137	NEW LEICESTER	HWY
ANDERS MICHAEL E & ANDERS BELINDA JOYCE	PO BOX 686	ASHEVILLE	NC	28816	2384	NEW LEICESTER	HWY
ARRINGTON J B & ARRINGTON WILDA J	20 RAMSEY F	ASHEVILLE	NC	28806	28	BROOKSHIRE	RD
AUSTIN CECIL W & AUSTIN SHIRLEY E	PO BOX 668	ASHEVILLE	NC	28816	15	WINTER WOODS	DR
BATRANCHUK PAVEL & BATRANCHUK OLGA S	2 SNELSON D	ASHEVILLE	NC	28806	2	SNELSON	DR
BEDNAR NORMAN J (TRUSTEE) & BEDNAR JOYCE (TRU	18 FOSTER E	ASHEVILLE	NC	28806	2811	NEW LEICESTER	HWY
BELL UNITED METHODIST CHURCH	PO BOX 36	LEICESTER	NC	28748	17	MAYRAND	RD
BELLSOUTH TELECOMMUNICATIONS INC	1155 PEACH	ATLANTA	GA	30309	2782	NEW LEICESTER	HWY
BILLY'S AUTO SALES INC	2903 NEW LI	LEICESTER	NC	28748	6	GILBERT	RD
BLANKENSHIP LARRY RANDALL	17 WINTER V	ASHEVILLE	NC	28806	17	WINTER WOODS	DR
BOSMA STEPHEN J	PO BOX 171	ASHEVILLE	NC	28816	2904	NEW LEICESTER	HWY
BOYD BETTY	24 BETTY DR	LEICESTER	NC	28748	24	BETTY	DR
BRANCH BANKING & TRUST CO	PO BOX 167	WINSTON SA	NC	27102	2511	NEW LEICESTER	HWY
BREEDLOVE ERIK & ELLINGTON ELIZABETH CLAIRE	15 BLUE RID	ASHEVILLE	NC	28806	15	BLUE RIDGE ACRES	RD
BROOKSHIRE CRISTINES (ETAL) & BROOKSHIRE AGATH	7 BROOKSHI	LEICESTER	NC	28748	7	BROOKSHIRE	RD
BROWN EDGAR B & BROWN BETTY W	2021 NEW LI	ASHEVILLE	NC	28806	2021	NEW LEICESTER	HWY
BROWN GEARLEEN E	1599 ALEXAN	LEICESTER	NC	28748	1599	ALEXANDER	RD
BROWN JEFFREY T	929 NEW LEI	ASHEVILLE	NC	28806	99999	NEW LEICESTER	HWY
BUCKNER BEATRICE	PO BOX 261	LEICESTER	NC	28748	2916	NEW LEICESTER	HWY
BUCKNER COLEMAN H	2871 NEW LI	LEICESTER	NC	28748	19	DUCKETT	DR
BUNCOMBE COUNTY BOARD OF EDUCATION	175 BINGHA	ASHEVILLE	NC	28806	31	GILBERT	RD
BURNETTE STEPHEN M & BURNETTE CARLA L	12 ESEK DR	LEICESTER	NC	28748	12	ESEK	DR
BURRELL FREIDA B	119 MICHAE	LEICESTER	NC	28748	119	MICHAEL	CT
BURROWS BROOKS A	21 DIX CREE	ASHEVILLE	NC	28806	19	DIX CREEK CHAPEL	RD
CABLE CLYDE J & CABLE MARY FORBES	324 POLE BA	ASHEVILLE	NC	28806	124	SHADOW VIEW	DR
CABLE HAROLD C	67 DOGWOC	WEAVERVILL	NC	28787	31	BLUE RIDGE ACRES	RD
CARTER RICHARD EDWARD & CARTER EVELYN M	17 AMERICA	ASHEVILLE	NC	28806	2050	NEW LEICESTER	HWY
CARVER M KYLE & CARVER JULIAN D	PO BOX 56	LEICESTER	NC	28748	99999	LAWSON RIDGE	DR
CHAPMAN MELVIN L & CHAPMAN MARGARET G	2 EASY LIVIN	ASHEVILLE	NC	28806	105	NEWFOUND	RD
CHERNOUS ANDREY & CHERNOUS LILIYA	508 ASHEVIL	ASHEVILLE	NC	28806	18	BRADHALL	DR
CLARK BILLIE M (LE) & CLARK MARYDELL P	2162 NEW LI	ASHEVILLE	NC	28806	2162	NEW LEICESTER	HWY
CLARK R L	2 QUAIL COV	ASHEVILLE	NC	28804	955	NEW LEICESTER	HWY
CLAY BRYAN S & CLAY DIANE L	2368 NEW LI	ASHEVILLE	NC	28806	2368	NEW LEICESTER	HWY
COMAN JAMES H & COMAN JENNIE S	14 OLD NEW	LEICESTER	NC	28748	14	OLD NEWFOUND	RD
CONSTANCE HORACE & CONSTANCE KATHLEEN	26 WILDWO	ASHEVILLE	NC	28806	2104	NEW LEICESTER	HWY
COOK DAVID K	2704 NEW LI	LEICESTER	NC	28748	2704	NEW LEICESTER	HWY
COOK KENNETH Y & COOK JUDY B	7 ROSE PETA	ASHEVILLE	NC	28806	7	ROSE PETAL	LN
COTHRAN CAROLYN SUE BROWN	24 HAMPTOI	LEICESTER	NC	28748	24	HAMPTON	RD
COX ROY DALE & COX SANDRA KAY	PO BOX 193	LEICESTER	NC	28748	34	GOUGHES BRANCH	RD
COX WILLIAM H & COX JUDITH B	19 MOUNTA	LEICESTER	NC	28748	19	MOUNTAIN SHADOWS	DR
CREAMER SUSAN & PIOTROWSKY SERGIO	53 MIDDLE S	NEWBURYPO	MA	1950	14	WINTER WOODS	DR
CULBERTSON LINDA WRIGHT	2625 NEW LI	LEICESTER	NC	28748	2625	NEW LEICESTER	HWY
DARNELL KATHLEEN M	9 WALT HAV	LEICESTER	NC	28748	9	WALT HAVEN	DR
DAVES BETTY LOU	PO BOX 162	ASHEVILLE	NC	28816	11	MARTIN BRANCH	RD
DAVIS B F & DAVIS PEGGY ANN	952 NEW LEI	ASHEVILLE	NC	28806	952	NEW LEICESTER	HWY
DAVIS BYRON F	952 LEICEST	ASHEVILLE	NC	28806	99999	NEW LEICESTER	HWY
DAWSON MELISSA	2200 NEW LI	ASHEVILLE	NC	28806	2200	NEW LEICESTER	HWY
DIX CREEK UNITED METHODIST	10 BECK DR	ASHEVILLE	NC	28806	31	DIX CREEK CHAPEL	RD
DOCKERY CUMON & DOCKERY INEZ	2026 NEW LI	ASHEVILLE	NC	28806	2026	NEW LEICESTER	HWY
DOLL CLARA BROOKSHIRE	7 ORCHARD	ASHEVILLE	NC	28801	99999	NEW LEICESTER	HWY
DOYLE B REEVES TRUST ET AL & GRACE B REEVES TRUS	308 SKYROCI	LEICESTER	NC	28748	2688	NEW LEICESTER	HWY
EDMONDS CARROLL R & EDMONDS WILMA	1799 BEAR C	LEICESTER	NC	28748	8	ROSE PETAL	LN
FERGUSON LARRY W	12910 NC 20	HOT SPRING	NC	28743	99999	NEW LEICESTER	HWY
FERGUSON LARRY W & FERGUSON JOE M	2731 NEW LI	LEICESTER	NC	28748	99999	NEW LEICESTER	HWY
FERGUSON LARRY W & FERGUSON SHERRY W	1590 ALEXAN	LEICESTER	NC	28748	1598	ALEXANDER	RD
FISHER NATHAN C	44 SHERRY L	LEICESTER	NC	28748	44	SHERRY	LN
FORE HIM PROPERTIES LLC	7 RAMSEY RI	ASHEVILLE	NC	28806	7	RAMSEY	RD
FOX JANE G	28 HAMPTOI	LEICESTER	NC	28748	28	HAMPTON	RD
FOXWORTH JOSHUA B & FOXWORTH SHANNON J	130 SHADOV	LEICESTER	NC	28748	130	SHADOW VIEW	DR
FREEMAN ALBERT A & FREEMAN VELDA	35 RAMSEY F	ASHEVILLE	NC	28806	9	GRAY FOX	DR
FREEMAN DONALD L (LE) & FREEMAN PANSY M (LE)	2182 NEW LI	ASHEVILLE	NC	28806	2182	NEW LEICESTER	HWY
FREEMAN JEFFREY L & FREEMAN JOEY	2196 NEW LI	ASHEVILLE	NC	28806	2196	NEW LEICESTER	HWY
FRISBEE HENRY J & FRISBEE MAUDE	31 KENDALL	ASHEVILLE	NC	28806	2773	NEW LEICESTER	HWY

GARRETT MELINDA B	PO BOX 908	LEICESTER	NC	28748	2910	NEW LEICESTER	HWY
GARRETT MICHAEL D & GARRETT GLENDA M	117 MICHAE	LEICESTER	NC	28748	117	MICHAEL	CT
GARRETT ROGER J & GARRETT MELINDA B	2910 NEW LI	LEICESTER	NC	28748	2911	NEW LEICESTER	HWY
GATES JOSHUA N & GATES TRACEY A	24 SHIREY DI	ASHEVILLE	NC	28806	24	SHIREY	DR
GATLIN MICHAEL D & GATLIN CAROLYN COOPER	932 NEW LEI	ASHEVILLE	NC	28806	932	NEW LEICESTER	HWY
GEORGETOWN BAPTIST CHURCH	PO BOX 448	LEICESTER	NC	28748	464	DIX CREEK NO 1	RD
GERLINDE M LUTZ LIVING TRUST & CARL J LUTZ LIVING	396 NEWFOI	LEICESTER	NC	28748	8	OVERLOOK	DR
GIBSON BARBARA R	PO BOX 1617	ASHEVILLE	NC	28816	960	NEW LEICESTER	HWY
GILL GARRY S	2 FRISBEE RI	LEICESTER	NC	28748	2	FRISBEE	RD
GILLESPIE JAMES J & GILLESPIE BETTY J	PO BOX 43	LEICESTER	NC	28748	26	PUNKIN	ST
GOFF RUSSELL LEE	7 PUNKIN ST	LEICESTER	NC	28748	7	PUNKIN	ST
GOLDSMITH DAVID R & GOLDSMITH JUDY S	16 HAMPTOI	LEICESTER	NC	28748	99999	HAMPTON	RD
GORTNEY MAURICE C & GORTNEY KAREN S	2131 NEW LI	ASHEVILLE	NC	28806	2131	NEW LEICESTER	HWY
GOSSETT DWAYNE & GOSSETT NANCY	2741 NEW LI	LEICESTER	NC	28748	2745	NEW LEICESTER	HWY
GOSSETT WAYNE & GOSSETT SHIRLEY	PO BOX 326	LEICESTER	NC	28748	2741	NEW LEICESTER	HWY
GRACE UNITED METHODIST CHURCH(ETAL)	38 HAYES CC	LEICESTER	NC	28748	2195	NEW LEICESTER	HWY
GREENE HELEN K (LE)	16 WINTER V	ASHEVILLE	NC	28806	16	WINTER WOODS	DR
GUNTER JOANNE CARTER	2062 NEW LI	ASHEVILLE	NC	28806	2062	NEW LEICESTER	HWY
HALL REX E & HALL BETTY D	6 BRADHALL	ASHEVILLE	NC	28806	99999	BLUE RIDGE ACRES	RD
HARMON RICHARD	PO BOX 96	LEICESTER	NC	28748	2754	NEW LEICESTER	HWY
HARRINGTON ROBERT & HARRINGTON PAMELA	28 GOUGHES	LEICESTER	NC	28748	28	GOUGHES BRANCH	RD
HAWKINS ROGER ALLEN	24 ESEK DR	LEICESTER	NC	28748	24	ESEK	DR
HAYNES MICHAEL L & HAYNES MARY E	56 WALT HA'	LEICESTER	NC	28748	56	WALT HAVEN	DR
HEATER MICHAEL & HEATER LESLIE	77 HAMPTOI	LEICESTER	NC	28748	77	HAMPTON	RD
HEDDEN JIMMY L & HEDDEN SUZANNE	PO BOX 160(	LEICESTER	NC	28748	2366	NEW LEICESTER	HWY
HERRON JOHN R & HERRON MELISSA W	PO BOX 6411	ASHEVILLE	NC	28816	99999	NEW LEICESTER	HWY
HILL TINA	2795 NEW LI	LEICESTER	NC	28748	2795	NEW LEICESTER	HWY
HOFFMAN NORMAN G & HOFFMAN LINDA L	29 PEREGRIN	WAYNESVILL	NC	28786	10	BROOKSHIRE	RD
HOLCOMBE LAURA D	PO BOX 285	ENKA	NC	28728	99999	NEW LEICESTER	HWY
HOLDER DAVID R & HOLDER GILLIAN L	26 JONES RD	LEICESTER	NC	28748	26	JONES	RD
HOLLADAY STEVEN B	119 WESTW(	ASHEVILLE	NC	28804	17	PUNKIN	ST
HOLLIFIELD PATRICIA MICHELLE SHIREY	16 ASHMON	ASHEVILLE	NC	28806	16	ASHMONT	DR
HOLT MARK & HOLT ALESIA	108 OLD NC	LEICESTER	NC	28748	108	OLD NC 63	HWY
HOLT RAY & HOLT KATHLEEN	17 RAMSEY F	ASHEVILLE	NC	28806	17	RAMSEY	RD
HUDGINS SCARLETT MICHELLE & PENTE REGINA MARI	2837 NEW LI	LEICESTER	NC	28748	2837	NEW LEICESTER	HWY
HUGHES DIANNE B & HUGHES HAROLD H	35 CLEARVIE	WEAVERVILL	NC	28787	2935	NEW LEICESTER	HWY
IGLESIA CRISTIANA EBENEZER	500 LANDIS (	ASHEVILLE	NC	28806	2755	NEW LEICESTER	HWY
INGLE MICHAEL ALDON & INGLE TERRY STEPHEN	846 S TURKE	LEICESTER	NC	28748	2691	NEW LEICESTER	HWY
JACKSON DAVID & JACKSON PATRICIA	118 OLD NC	LEICESTER	NC	28748	118	OLD NC 63	HWY
JENKINS LARRY A & HOPPER DOLORES	326 HOSTA (	LEICESTER	NC	28748	326	HOSTA	CT
JINKS JUDY & JINKS KING	2900 NEW LI	LEICESTER	NC	28748	2900	NEW LEICESTER	HWY
JPMORGAN CHASE BANK NATIONAL ASSOC	3415 VISION	COLUMBUS	OH	43219	21	WALT HAVEN	DR
JUSTICE FLORA S	3866 NEW LI	LEICESTER	NC	28748	2707	NEW LEICESTER	HWY
KAZANTSEV DMITRIY A & KAZANTSEV LIDIYA V	14 SNELSON	ASHEVILLE	NC	28806	14	SNELSON	DR
KIDWELL AARON & KIDWELL NANCY	32 LONG ME	LEICESTER	NC	28748	32	LONG MEADOWS	DR
KING GORDON J (LE) & KING BELVIE B (LE)	51 SOLID RO	LEICESTER	NC	28748	51	SOLID ROCK	DR
KING KEVIN G & KING BRANDON J	PO BOX 113	LEICESTER	NC	28748	6	BROOKSHIRE	RD
KING WILLIAM G & KING KARON L	PO BOX 192	LEICESTER	NC	28748	99999	NEW LEICESTER	HWY
KUSHNIR PAVEL & KUSHNIR LARISA	2634 NEW LI	LEICESTER	NC	28748	2634	NEW LEICESTER	HWY
LA CASA DEL ALFARERO INC	2040 NEW LI	ASHEVILLE	NC	28806	2040	NEW LEICESTER	HWY
LANDOLF JAMES J & LANDOLF VICKI A	33 WALT HA'	LEICESTER	NC	28748	33	WALT HAVEN	DR
LANE GEORGE R	142 NEW LEI	ASHEVILLE	NC	28806	8	ROWN TREE	LN
LANGFORD EDDIE & LANGFORD JACLYN A	317 HOSTA (	LEICESTER	NC	28748	317	HOSTA	CT
LAWTER ROBERT B & LAWTER RITA R	40 LAWTER (	LEICESTER	NC	28748	16	LAWSON RIDGE	RD
LEICESTER POSTAL INVESTORS GP	PO BOX 813	OOLTEWAH	TN	37363	2520	NEW LEICESTER	HWY
LEICESTER VOLUNTEER FIRE DEPT INC	PO BOX 100	LEICESTER	NC	28748	2852	NEW LEICESTER	HWY
LOIS F DAWSON TRUST	25 HERRINGI	ASHEVILLE	NC	28806	25	HERRINGBONE	DR
LONGLEY MARY LOU	27 AUDUBOI	ASHEVILLE	NC	28804	7	MARTIN BRANCH	RD
LOVE DEBORAH S & LOVE MARY F	22 ARCHERY	ASHEVILLE	NC	28806	14	FORTUNATE	DR
LOWERY FRANK (HEIRS)	11680 GUY R	JAMAICA	NY	11434	2846	NEW LEICESTER	HWY
LUSK L MICHAEL & LUSK KAREN C	PO BOX 433	LEICESTER	NC	28748	99999	HARMONY	LN
LYALL VICTORIA LYNN	671 ENKA LA	CANDLER	NC	28715	2709	NEW LEICESTER	HWY
MARQUEZ FEDERICO (ETAL) & JIMENEZ MARTIN (ETAL	30 DAFFODI	ASHEVILLE	NC	28806	16	DIX CREEK CHAPEL	RD
MARTIN DAVID JOHN	33 SHIREY DI	ASHEVILLE	NC	28806	33	SHIREY	DR
MAYNOR BERGIN L & MAYNOR SUE A	22 MOUNTA	LEICESTER	NC	28748	22	MOUNTAIN SHADOWS	DR

MAYRAND AVIS	2 MAYRAND	LEICESTER	NC	28748	5	MAYRAND	RD
MAYRAND JEFFREY A & MAYRAND KRISTIT B	11 MAYRANI	LEICESTER	NC	28748	11	MAYRAND	RD
MAYRAND PETER J & MAYRAND LINDA L	6 MAYRAND	LEICESTER	NC	28748	9	MAYRAND	RD
MCMAHAN JANE W	99 SLUDER B	LEICESTER	NC	28748	2807	NEW LEICESTER	HWY
MCMULLEN K S & PONDER B M	PO BOX 99	LEICESTER	NC	28748	12	HAMPTON	RD
MCMULLEN KENNETH S	12 HAMPTOI	LEICESTER	NC	28748	5	HAMPTON	RD
MCMULLEN M HEATHER & QUADE DOUGLAS ALAN	13 ROWNTRI	LEICESTER	NC	28748	13	ROWN TREE	LN
MCNEIL LEWIS P	320 HOSTA C	LEICESTER	NC	28748	320	HOSTA	CT
MEADOWS GARY	2783 NEW LI	LEICESTER	NC	28748	2783	NEW LEICESTER	HWY
MEADOWS JOEL K	19 SAM HILL	LEICESTER	NC	28748	2784	NEW LEICESTER	HWY
MEADOWS OWEN C & MEADOWS MARY L	11 SAM HILL	LEICESTER	NC	28748	2768	NEW LEICESTER	HWY
MEHAFFEY VAN & MEHAFFEY MAURICE	16 MILL PON	LEICESTER	NC	28748	480	DIX CREEK NO 1	RD
MERRIMON AVENUE INC	51 MERRIMC	ASHEVILLE	NC	28801	6	NEWFOUND	RD
MIDDLETON GENEVA JEAN	P O BOX 665	SYLVA	NC	28779	15	SNELSON	DR
MIGYANKA BRAD & MIGYANKA MICHELLE	8 PUNKIN ST	LEICESTER	NC	28748	8	PUNKIN	ST
MONEYHAM FAYE (LE)	2116 BAIRD !	VALDESE	NC	28690	15	ESEK	DR
MONTEITH DAVID G	75 HAMPTOI	LEICESTER	NC	28748	75	HAMPTON	RD
MOORE GAIL K & MOORE MAX T	1523 COFFEE	ERWIN	TN	37650	2681	NEW LEICESTER	HWY
MOORE JUNIOR L & MOORE EDITH	8 RAMSEY RI	ASHEVILLE	NC	28806	8	RAMSEY	RD
MORGAN CARRIE (LE)	2127 NEW LI	ASHEVILLE	NC	28806	2127	NEW LEICESTER	HWY
MORGAN MAX L	404 DIX CRE	LEICESTER	NC	28748	2114	NEW LEICESTER	HWY
MORGAN STEPHEN G	2764 NEW LI	LEICESTER	NC	28748	2764	NEW LEICESTER	HWY
MORRISON MICHAEL A & MORRISON CHRISTINE L	2113 NEW LI	ASHEVILLE	NC	28806	2113	NEW LEICESTER	HWY
MYRICK WILLIAM H & WEBER DEBRA J	22 BLUE RID	ASHEVILLE	NC	28806	22	BLUE RIDGE ACRES	RD
NALLENWEG RICH	70 JUNO DRI	ASHEVILLE	NC	28806	27	JONES	RD
NESBITT CHAD N & NESBITT NANCY E	2714 NEW LI	LEICESTER	NC	28748	2714	NEW LEICESTER	HWY
NEWCOME CONNIE ROGERS & NEWCOME THOMAS	3880 SHAFFE	GLEN ROCK	PA	17327	2789	NEW LEICESTER	HWY
NEWFOUND BAPTIST CHURCH INC	PO BOX 6	LEICESTER	NC	28748	2611	NEW LEICESTER	HWY
NEWFOUND ESTATES HOMEOWNERS ASSOC	PO BOX 434	LEICESTER	NC	28748	99999	SHERRY	LN
NILES MAEDENE K	230 PINE ME	BRYSON CIT	NC	28713	471	DIX CREEK NO 1	RD
ODOM GARY & ODOM LINDA	310 HOSTA C	LEICESTER	NC	28748	308	HOSTA	CT
PADGETT WANDA G	130 MONTRI	GRAHAM	NC	27253	958	NEW LEICESTER	HWY
PARHAM KENNETH R & PARHAM IVAGENE	2698 NEW LI	LEICESTER	NC	28748	2698	NEW LEICESTER	HWY
PARHAM KENNETH W & PARHAM DARLENE	107 PARHAN	LEICESTER	NC	28748	13	SHIREY	DR
PARHAM THELMA R	1875 BEAR C	LEICESTER	NC	28748	120	COLE	RD
PARKER DEWEY H	PO BOX 580	LEICESTER	NC	28748	6	FORTUNATE	DR
PARTON GLENN D & PARTON SHIRLEY A	75 NEWFOU	ASHEVILLE	NC	28806	75	NEWFOUND	RD
PAYNE JANICE K	2740 NEW LI	LEICESTER	NC	28748	2740	NEW LEICESTER	HWY
PHILLIPS DAVID L	PO BOX 284	CATHARPIN	VA	20143	99999	NEW LEICESTER	HWY
PINCZKOWSKI GORDON EDWARD	PO BOX 672	ASHEVILLE	NC	28816	11	PUNKIN	ST
PITROLO JOHN M & PITROLO MELANIE C	15 CARL ROI	ALEXANDER	NC	28701	311	HOSTA	CT
PLEMMONS THOMAS M & PLEMMONS JERRY M	1191 NEWFC	LEICESTER	NC	28748	2710	NEW LEICESTER	HWY
PONDER HATTIE	2067 BEAR C	LEICESTER	NC	28748	2682	NEW LEICESTER	HWY
PRICE ANGELA P & PRICE JAMES B	20 FRISBEE R	LEICESTER	NC	28748	20	FRISBEE	RD
PRICE ELAINE C	PO BOX 142	LEICESTER	NC	28748	122	OLD NC 63	HWY
PRUITT PATRICIA L	27 LAWSON	LEICESTER	NC	28748	27	LAWSON RIDGE	RD
PUCKRIDGE ANNE B	2855 NEW LI	LEICESTER	NC	28748	23	MARTIN BRANCH	RD
RAMSEY REAL ESTATE LLC	PO BOX 655	ASHEVILLE	NC	28816	22	GOUGHES BRANCH	RD
RANDALL VANCE E	2536 NEW LI	LEICESTER	NC	28748	99999	MOUNTAIN SHADOWS	DR
REEMES BEAUTY (LE)	13 REEMES F	ASHEVILLE	NC	28806	14	REEMES	RD
REEMS DONNIE & REEMS DIANE	9 REEMES RI	ASHEVILLE	NC	28806	9	REEMES	RD
REEMS R G & REEMS CAROLYN J	4591 RECTOI	MARSHALL	NC	28753	99999	NEW LEICESTER	HWY
REID JAMES M	322 WINDSV	ASHEVILLE	NC	28801	10	FORTUNATE	DR
RICE MARTHA ANN	101 MICHAE	LEICESTER	NC	28748	101	MICHAEL	CT
RICKARD MARIE H & RICKARD FLOYD	114 JONES R	LEICESTER	NC	28748	99999	NEW LEICESTER	HWY
ROBERSON DOUGLAS A (LE)	106 OLD NC	LEICESTER	NC	28748	106	OLD NC 63	HWY
ROBERT F DAWSON REVOCABLE TRUST & DAWSON RC	26 HERRINGI	ASHEVILLE	NC	28806	26	HERRINGBONE	DR
ROBERTS MYRON DEAN & ROBERTS BECKY LEE BRIDGE	275 UPPER C	ASHEVILLE	NC	28805	2777	NEW LEICESTER	HWY
ROSE DAROLD LYNN & ROSE DAWN R	28 S CREEK I	LEICESTER	NC	28748	2641	NEW LEICESTER	HWY
SEA NIC ENTERPRISES INC	PO BOX 537	ASHEVILLE	NC	28813	2772	NEW LEICESTER	HWY
SEALE WILLIAM LARKIN (ETAL)	701 GAYLOR	BALSAM GR(	NC	28708	15	GRAY FOX	DR
SHARPE HARRY C & SHARPE MARTHA D	PO BOX 212	LEICESTER	NC	28748	20	ROWN TREE	LN
SHEEHAN JOSEPH W & SHEEHAN SUZANNE L	2788 NEW LI	LEICESTER	NC	28748	2788	NEW LEICESTER	HWY
SHELTON CONLEY W & SHELTON JANE C	2115 NEW LI	ASHEVILLE	NC	28806	2115	NEW LEICESTER	HWY
SHELTON ELEONORE M & SHELTON MICHAEL E	43 BUDDING	WAYNESVILL	NC	28786	31	LONG MEADOWS	DR

SILVER CHAD A & SILVER KATHERINE A	2892 NEW LI	LEICESTER	NC	28748	2892	NEW LEICESTER	HWY
SILVER RONALD	150 KEYSTOI	ASHEVILLE	NC	28806	1	MAYRAND	RD
SIMMONS TERRY L & SIMMONS ANDREA D	2 EVELAKE D	ASHEVILLE	NC	28806	3	BRADHALL	DR
SISK TIMOTHY W & SISK KATHY LYNN BURGIN	305 HOSTA C	LEICESTER	NC	28748	303	HOSTA	CT
SLAGLE ROGER	2390 NEW LI	ASHEVILLE	NC	28806	2396	NEW LEICESTER	HWY
SLAGLE ROGER F & SLAGLE JAMIE M	2390 NEW LI	ASHEVILLE	NC	28806	2390	NEW LEICESTER	HWY
SLUDER DAN	PO BOX 909	LEICESTER	NC	28748	2929	NEW LEICESTER	HWY
SLUDER STEPHEN K	431 OLD COL	ASHEVILLE	NC	28806	2761	NEW LEICESTER	HWY
SMITH DAVID BRIAN & SMITH DEBORAH KAY	134 SHADOV	LEICESTER	NC	28748	134	SHADOW VIEW	DR
SNELSON BRUCE A & SNELSON BRENDA V	2450 NEW LI	ASHEVILLE	NC	28806	415	HAWKWOOD	LN
SNELSON FARM LLC	2448 NEW LI	ASHEVILLE	NC	28806	99999	NEW LEICESTER	HWY
SOUTHERN CROSS INVESTMENTS LLC	PO BOX 122	SKYLAND	NC	28776	8	BETTY	DR
SPROUSE JUANITA	77 NEWFOU	ASHEVILLE	NC	28806	77	NEWFOUND	RD
STILES DAPHNA B	2858 NEW LI	LEICESTER	NC	28748	2858	NEW LEICESTER	HWY
STRYZHEUS YURIY V	3385 DUBLIN	DUBLIN	CA	94568	79	NEWFOUND	RD
SUTTLES STEPHEN FRANK & PLEMMONS GEORGIA (TR	41 DIX CREE	LEICESTER	NC	28748	3	NEWFOUND	RD
SYCAMORE VALLEY FARM LLC	2555 NEW LI	LEICESTER	NC	28748	99999	SHERRY	LN
TABRI MICHAEL	2856 NEW LI	LEICESTER	NC	28748	2856	NEW LEICESTER	HWY
TAMAS JOHN	2338 NEW LI	ASHEVILLE	NC	28806	99999	NEW LEICESTER	HWY
TARPLEY LINDA REEMES & REEMES DEBORAH	14 REEMES F	ASHEVILLE	NC	28806	5	REEMES	RD
THEODOSSIS DEMETRE C & THEODOSSIS DEBORAH M	1100 MCMIN	HENDERSON	NC	28792	2645	NEW LEICESTER	HWY
THURMAN CELIA TABITHA	20 HERRINGI	ASHEVILLE	NC	28806	20	HERRINGBONE	DR
TOWNSEND LORENE B & TOWNSEND RICKY C	50 DIX CREE	ASHEVILLE	NC	28806	60	DIX CREEK CHAPEL	RD
TRULL PHILLIP A & TRULL BEVERLY P	3 JONES PAT	LEICESTER	NC	28748	2142	NEW LEICESTER	HWY
TURNER DEWAYNE RANDY & TURNER MICHAEL MCKEI	32 POPPYVIN	LEICESTER	NC	28748	2405	NEW LEICESTER	HWY
UNITED STATES DEPT OF AGRICULTURE	1520 MARKE	ST LOUIS	MO	63166	28	LAWSON RIDGE	RD
VAUGHN LARRY W	455 SYLVAN	CHINA GROV	NC	28023	11	NEWFOUND	RD
WALKER RALPH C & WALKER EVELYN W	1503 WORLE	MARSHALL	NC	28753	2797	NEW LEICESTER	HWY
WAUGH SHARON E & MCDOWALL WILLIAM D	44 MOUNTA	ASHEVILLE	NC	28804	99999	NEW LEICESTER	HWY
WELLS FARGO BANK NA	3476 STATEV	FORT MILL	SC	29715	13	ESEK	DR
WELLS MARY T	2705 NEW LI	LEICESTER	NC	28748	2705	NEW LEICESTER	HWY
WEST JAMES	852 NEW LEI	ASHEVILLE	NC	28806	99999	NEW LEICESTER	HWY
WEST TIM	852 NEW LEI	ASHEVILLE	NC	28806	3	SNELSON	DR
WEST TIMOTHY T	15 RAMSEY F	ASHEVILLE	NC	28806	15	RAMSEY	RD
WESTERN ACQUISITION CORP	6 CROWNIN(	ASHEVILLE	NC	28804	10	HARMONY	LN
WILLIAMS DOROTHY G & WILLIAMS RICKY GORDON	PO BOX 98	LEICESTER	NC	28748	21	ROSE PETAL	LN
WILLIAMS ROGER F & WILLIAMS MARLENE	33 NEWFOU	ASHEVILLE	NC	28806	33	NEWFOUND	RD
WYATT JASON & WYATT JESSICA	7 MOUNTAIN	LEICESTER	NC	28748	7	MOUNTAIN SHADOWS	DR