STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

May 7, 2019

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

Subject: **Application for Section 404 Individual Permit, Section 401 Water Quality Certification, and Neuse Riparian Buffer Authorization** for Interstate 40 Widening and Improvements from I-440/US 64 (Exit 301) to just north of SR 1525 (Cornwallis Road), including improvements to NC 42 and SR 1010 (Cleveland Road) in Wake and Johnston Counties, Federal Aid Project No. IMNHF-040-4(139)301; TIP Numbers I-5111 and I-4739, Division 5; Debit $570 from WBS Element 42346.3.1.

Dear Mr. Alsmeyer:

The North Carolina Department of Transportation (NCDOT), in accordance with the Federal Highway Administration (FHWA), proposes to widen I-40 from I-440/US 64 (Exit 301) to just north of SR 1525 (Cornwallis Road) in Wake and Johnston Counties.

This correspondence is to request a Section 404 Individual Permit, Section 401 Water Quality Certification, and Neuse Riparian Buffer Authorization. Enclosed are ENG Form 4345, stormwater management plan, permit drawings, roadway plans, utility plans, North Carolina Division of Mitigation Services (NCDMS) acceptance letter, and permit drawing review meeting minutes (4B and 4C). Also enclosed are various correspondences intrinsic to the permit application that are detailed in the appropriate sections of this letter.

PURPOSE AND NEED

The project's primary purpose is to provide relief from present and future congestion and provide a higher level of service on I-40.

MAILING ADDRESS:
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PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
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LOCATION:
CENTURY CENTER, BUILDING A
1000 BIRCH RIDGE DRIVE
RALEIGH NC, 27610-4328

PROJECT DESCRIPTION

The project will widen and improve approximately 12.8 miles of I-40 from the I-40/I-440/US64 interchange in Wake County to just north of SR 1525 (Cornwallis Road) in Johnston County. The improvements include modifying the interchanges and replacing the bridges along I-40.

PROJECT SCHEDULE

This project was let in June 2018. Construction commenced in areas that would not result in jurisdictional impacts in October 2018. The expected completion date is June 2022.

NEPA DOCUMENT STATUS

Project I-5111 (Interstate 40 Widening and Improvements from I-440/US 64 [Exit 301] to just north of SR 1525 [Cornwallis Road]) was approved via a Type III Categorical Exclusion signed in June 2018. Project I-4739 (improvements to the existing interchange at I-40 and NC 42) was approved via a Type III Categorical Exclusion signed in June 2018. These documents are available at the NCDOT website:
https://xfer.services.ncdot.gov/pdea/EnvironmentalDocs/Documents/.

INDEPENDENT UTILITY

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

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

SUMMARY OF IMPACTS

The project will result in impacts to waters of the United States as follows:

- 0.72 acre permanent fill in wetlands
- 0.14 acre temporary fill in wetlands
- 0.11 acre excavation in wetlands
- 0.21 acre mechanized clearing in wetlands (combined with permanent fill and excavation, there will be 1.04 acre of permanent wetland impact)
- 1.55 acres permanent surface water impacts
- 0.24 acre temporary surface water impacts
- 7,939 LF permanent surface water impacts
- 1,691 LF temporary surface water impacts
- 685,347 ft^2 riparian buffer impacts (total impacts to Zone 1 and Zone 2)

These impacts are detailed in Tables 2 through 4.

SUMMARY OF MITIGATION

North Carolina Division of Water Resources (NCDWR) mitigation requirements for permanent stream and wetland impacts will be met under the United States Army Corps of Engineers (USACE) mitigation requirements. Neuse Riparian buffer impacts in Zones 1 and 2 will be mitigated at a 3:1 ratio and 1.5:1 ratio, respectively.

RESOURCE STATUS

Water Resource Classifications

Project I-5111/I-4739 is within the Piedmont Physiographic Province in the Neuse River basin [U.S. Geological Survey (USGS) Hydrologic Unit (HUC) 03020201].

Table 1. I-5111/I-4739 Impacted Jurisdictional Streams

Stream Name	Number of Impacted Unnamed Tributaries (UT)	NCDWR Index Number	NCDWR Classification
UT to Walnut Creek	3	27-34-(4)	C; NSW
UT to Little Arm Branch	4	27-34-11-2	C; NSW
Little Arm Branch	N/A	27-34-11-2	C; NSW
UT to Poplar Branch	3	27-34-11-1	C; NSW
Poplar Branch	N/A	27-34-11-1	C; NSW
UT to Big Branch	3	27-34-11	C; NSW
UT to White Oak Creek	10	27-43-11	C; NSW
UT to Swift Creek	31	27-43-(8)	C; NSW
Swift Creek	N/A	27-43-(8)	C; NSW
UT to Mill Branch	6	27-43-15-(4)	C; NSW
Mill Branch	N/A	27-43-15-(4)	C; NSW

There are no designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) waters within 1.0 mile of the project area. There are no streams within the project area listed on the North Carolina 2016 Final 303(d) list of impaired waters for sedimentation and turbidity. Detailed information about the type and quality of the streams can be found in the Natural Resource Technical Reports (NRTR); I-5111 (NRTR 2010, NRTR Addendum 2015), I-4739 (NRTR 2017), and the Complete 540 (August 2014).

Jurisdictional Determinations

Wetland and stream delineations were completed at various times for the two TIPs, ranging from 2010-2019. Specific details are provided in the NRTRs.

IMPACTS TO JURISDICTIONAL RESOURCES

Utility Impacts

Proposed utility impacts at Site 59 are due to construction of an underground power cable. This is a road crossing riparian buffer impact of 5,373 ft^2 (3,416 ft^2 Zone 1; 1,957 ft^2 Zone 2).

Jurisdictional Determinations

Tables 2 through 4 provide individual site impact amounts to wetlands, surface waters, and Neuse River riparian buffers. The detailed permit drawings provide the station number, structure size/type, and type of impact associated with each site.

The initial design stipulated by NCDOT had retaining walls on either side of the roadway south of the bridge over Swift Creek (Site 40), for the purpose of avoiding/minimizing impacts to the Swift Creek floodplain. Construction of the wall in the southwest quadrant of the bridge crossing had both constructability and maintenance issues. These issues, and a request to construct a 2:1 armored slope in the southwest quadrant of the crossing instead of the wall, were discussed in a January 28, 2019 correspondence (see attached). Representatives from the USFWS, NCWRC, USACE, and NCDWR approved of this request via email responses.

In the 4C Meeting on February 21, 2019, the Design-Build Team requested that the 2:1 armored slope also be allowed on southeast quadrant only in areas that did not have wetlands. This was based on the concern of a possible future maintenance issue due to potential erosion of the wall due to possible channel meandering from Swift Creek and cost savings. Based on concurrence from the agencies that were present at the meeting, USACE and NCDWR, the decision was made to move forward with this design in the permit application.

In Table 2, the NRTR Label column is based upon the associated NRTR, I-5111 or I-4739. However, the Complete 540 project intersects the I-5111 project. As it was determined that the Complete 540 project was more recent, the wetland NRTR Labels in this area were named according to the Complete 540 NRTR. This document is available upon request.

Table 2. Wetland Impacts

Permit Drawing Site Number	NRTR Label*	Impact Type	Wetland Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)
7	WC[a]	Channel work at 10'x9' RCBC inlet	Riparian	<0.01	0.04
7	WD[a]	Channel work at 10'x9' RCBC outlet	Riparian		0.01
16C	WQF[c]	60" RCP	Riparian	<0.01	<0.01
17	WQV[a,c]	60" RCP	Riparian		<0.01
18	WSD[a,c]	Ditch, 66" WSP	Riparian	<0.01	
18	WSD[a,c]	Bank stabilization	Riparian	0.02	0.02
20	WQE[a,c]	Channel change	Riparian	<0.01	0.01
20	WRX[a,c]	Fill slope	Riparian	<0.01	

* a = I-5111 NRTR, b = I -4739 NRTR, c = C540 NRTR, d = not in NRTR

Table 2. Wetland Impacts (continued)

Permit Drawing Site Number	NRTR Label*	Impact Type	Wetland Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)
24	WNQ[a,c]	Bank stabilization	Riparian	0.02	
30	WEC[c]	Roadway fill	Riparian	<0.01	<0.01
33	WFA[c], WFC[c]	54" RCP & 54" WSP	Riparian	0.02	
34	WFB[a,c]	Roadway fill	Riparian	0.05	
37	WEZ[a,c]	36" RCP	Non-Riparian	0.02	
60	WEX[a,c]	Channel work	Riparian	0.08	
60	WEX[a,c]	Bank stabilization	Riparian		<0.01
39A	WEM[a,c]	Roadway fill	Riparian	0.09	
39B	WEM[a,c]	Roadway fill	Riparian	0.02	
41	WEP(1)[a,c]	Roadway fill	Riparian	0.02	
42	WEN[a,c]	Roadway fill	Riparian	0.33	0.01
44	WEO(1)[c]	60" RCP, Roadway fill, Ditch	Riparian	0.04	
46	WOE[a,c]	30" CSP / 36" RCP	Riparian	0.02	
49	WC[a], WOB[c]	66" WSP / 66" RCP	Riparian	0.06	
50	WOA[c]	60" CSP, Channel change	Riparian	0.05	0.02
51	WNZ[c]	Roadway fill	Riparian	0.02	
51	WH[a]	Roadway fill, 66" RCP	Riparian	0.03	
52	WGG[a]	Ditch, Roadway fill	Riparian	0.02	0.01
54	WI[a]	54" WSP	Riparian	0.06	
55	WJ[a]	48" RCP	Riparian	<0.01	
57	WFF[b]	60" WSP	Riparian	0.01	
		Total Riparian Impacts:		1.04 acres	0.14 acres

* a = I-5111 NRTR, b = I -4739 NRTR, c = C540 NRTR, d = not in NRTR

Table 3. Surface Water Impacts

Permit Drawing Site	NRTR Label*	Impact Type	Permanent Surface Water Impacts (Ponds) (ac)	Permanent Surface Water Impacts (Stream) (lf)	Temporary Surface Water Impacts (Stream) (lf)	Stream Flow (Intermittent/ Perennial)
1	SZ[d]	HW Replacement		13	14	Perennial
1	SZ[d]	Rip Rap Outlet Pad		20	20	Perennial
2	SAA[d]	Concr. Ditch Replacement			29	Perennial
2	SAA[d]	Prop Rdwy Fill		45		Perennial
2	SAA[d]	Riprap Outlet Pads		12	10	Perennial

* a = I-5111 NRTR, b = I -4739 NRTR, c = C540 NRTR, d = not in NRTR

** Bank stabilization does not require mitigation

Table 3. Surface Water Impacts (continued)

Permit Drawing Site	NRTR Label*	Impact Type	Permanent Surface Water Impacts (Ponds) (ac)	Permanent Surface Water Impacts (Stream) (lf)	Temporary Surface Water Impacts (Stream) (lf)	Stream Flow (Intermittent/ Perennial)
3	SBB[a]	Prop Pipes & Bridge Construction		24	240	Perennial/ Perennial
4	SB[a]	Rip Rap Outlet Pad		13	10	Perennial
4	SB[a]	Ditch Outfall		18	27	Perennial
5	SC[a]	Channel Change		352	12	Perennial
6	SD[a]	Channel work at 8'x8' RCBC inlet		78	11	Perennial
6	SD[a]	Channel work at 8'x8' RCBC outlet		51	30	Perennial
7	SF[a]	Channel work at 10'x9' RCBC inlet		85	90	Perennial
7	SF[a]	Channel work at 10'x9' RCBC outlet		80	10	Perennial
8	SNN[a]	Prop Rdwy Fill & Rip Rap Pad		59		Intermittent
8	SNN[a]	Channel Change		12	4	Intermittent
9	SOO[a]	Rip Rap at Pipe Outfalls		23	8	Perennial
10	SG[a]/SI[a]	Perm & Temp Channel Work		30	113	Perennial
10	SG[a]/SH[a]	Channel Change & Stabilization		496	18	Perennial
13	SG[a]	Plug & Fill of Existing Outlet			21	Perennial
13	SG[a]	Roadway Fill Slope		20	108	Perennial
14A	SRM[c]	Bank Stabilization		5**	20	Intermittent
14B	SRM[c]	Bank Stabilization		8**	43	Intermittent
14C	SRM[c]	Bank Stabilization		34**	10	Intermittent
16A	SCF[c]	Exist. 24" CMP Plug			10	Intermittent, Perennial
16B	SCF[c]	Exist. 15" CMP Plug			15	Intermittent, Perennial

* a = I-5111 NRTR, b = I -4739 NRTR, c = C540 NRTR, d = not in NRTR
** Bank stabilization does not require mitigation

Table 3. Surface Water Impacts (continued)

Permit Drawing Site	NRTR Label*	Impact Type	Permanent Surface Water Impacts (Ponds) (ac)	Permanent Surface Water Impacts (Stream) (lf)	Temporary Surface Water Impacts (Stream) (lf)	Stream Flow (Intermittent/ Perennial)
16C	SCF[c]	60" RCP		46	10	Intermittent, Perennial
17	SOE[c]	60" RCP		12	21	Perennial
17	SOE[c]	Bank Stabilization		84**		Perennial
17	SOE[c]	60" WSP		87		Perennial
17	SOE[c]	Bank stabilization		40**		Perennial
17	SOE[c]	60" WSP		49	5	Perennial
18	SOI[a,c]	Ditch, 66" WSP		62	6	Perennial
18	SOI[a,c]	Bank Stabilization		34**	11	Perennial
19	SNF[c]	Ditch, 66" WSP		134	14	Perennial
20	SNH[a,c]	Channel Change		99	46	Intermittent
20	SNH[a,c]	Bank Stabilization		5**	10	Intermittent
21	SNY[c]	Channel change, 72" RCP		138	19	Intermittent, Perennial
22	SOC[c]	Channel change		108	22	Perennial
23A	SLF[c], SEM[c]	Channel change		204	23	Intermittent, Perennial
23B	SEM[c]	Bank stabilization		5**	20	Intermittent, Perennial
23C	SEM[c]	Channel change		455	10	Intermittent, Perennial
23C	SEM[c]	Bank stabilization		12**	10	Intermittent, Perennial
24	SLI[c]	Bank stabilization		56**	15	Intermittent
26A	SNK[c]	Bank stabilization		5**	10	Perennial
26B	SNK[c]	Bank stabilization		42**	10	Perennial
27	SNO[c]	Bank stabilization		26**	15	Perennial
28	SEM[c]	60" WSP		41	20	Intermittent, Perennial
29	SEK[a,c]	Channel change		48	10	Intermittent

* a = I-5111 NRTR, b = I -4739 NRTR, c = C540 NRTR, d = not in NRTR
** Bank stabilization does not require mitigation

Table 3. Surface Water Impacts (continued)

Permit Drawing Site	NRTR Label*	Impact Type	Permanent Surface Water Impacts (Ponds) (ac)	Permanent Surface Water Impacts (Stream) (lf)	Temporary Surface Water Impacts (Stream) (lf)	Stream Flow (Intermittent/ Perennial)
29	SEK[a,c]	Bank stabilization		37**	10	Intermittent
31	SEL[a,c]	66" RCP		90	25	Perennial
32	SEV[a,c]	Bank stabilization		10**	10	Intermittent, Perennial
33	SDT[a,c]	54" RCP & 54" WSP		127	10	Intermittent, Perennial
34	SDU[a,c]	Roadway fill		88		Perennial
36	SDO[a,c]	36" WSP		23		Intermittent
36	SDO[a,c]	Bank stabilization		31**	10	Intermittent
59	SRN[c]	2 @ 48" RCP, Channel change		159	10	Intermittent
60	SET[a,c]	Channel work		51	10	Perennial
60	SET[a,c]	Bank stabilization		23**	10	Perennial
40	SDG[a,c]	Bank stabilization		254**	90	Perennial
42	SDN[a,c]	Roadway fill		200		Intermittent
43	SEO[a,c]	Roadway fill			40	Intermittent
44	SEQ[a,c]	60" RCP, Roadway fill, Ditch		269		Intermittent
44	SEQ[a,c]	Bank stabilization		16**	11	Intermittent
45	SEU[a,c]	48" CSP		154		Perennial
45	SEU[a,c]	Bank stabilization		40**	11	Perennial
46	SEA[c]	30" CSP, 36" RCP		168		Perennial
47	SLV[c]	54" CSP		62		Perennial
47	SLV[c]	Bank stabilization		45**	11	Perennial
48	SLW[c]	Roadway fill, Rip Rap		14	51	Perennial
49	SLU[c]	66" WSP, 66" RCP		284		Perennial
49	SLU[c]	Bank stabilization		64**	30	Perennial
50	SLS[c]	60" CSP, Channel change		588	57	Perennial

* a = I-5111 NRTR, b = I -4739 NRTR, c = C540 NRTR, d = not in NRTR
** Bank stabilization does not require mitigation

Table 3. Surface Water Impacts (continued)

Permit Drawing Site	NRTR Label*	Impact Type	Permanent Surface Water Impacts (Ponds) (ac)	Permanent Surface Water Impacts (Stream) (lf)	Temporary Surface Water Impacts (Stream) (lf)	Stream Flow (Intermittent/ Perennial)
51	PBL/Pond 2	Roadway fill	0.58			N/A
51	SLR[c]	Roadway fill, 66" RCP		612		Perennial
51	SLR[c]	Bank stabilization		55**	15	Perennial
53	Mill Branch[b]	54" RCP, 66" RCP		401	7	Perennial
53	Mill Branch[b]	Bank stabilization		29**	17	Perennial
54	SJ[a]	54" WSP		82		Perennial
54	SJ[a]	Bank stabilization		45**	10	Perennial
55	SK[a]	48" RCP		78		Perennial
55	SK[a]	Bank stabilization		40**	10	Perennial
56	SEE[d]	Channel change		102	10	Perennial
57	SDD[b]	60" WSP		238	10	Perennial
57	SDD[b]	Bank stabilization		55**	9	Perennial
58	SQ[b]	36" WSP		100		Perennial
58	SQ[b]	Bank stabilization		33**	27	Perennial
Total Impacts[1]			**0.58**	**7,939 ft**	**1,691 ft**	
Total Requiring Mitigation			**N/A**	**6,806 ft**		

1 –Values are based on rounding, due to some of the individual impacts being <0.01 acre
* a = I-5111 NRTR, b = I -4739 NRTR, c = C540 NRTR, d = not in NRTR
** Bank stabilization does not require mitigation

Table 4. Riparian Buffer Impacts

Mitigation Requirement (sq. ft.)	Allowable with mitigation	Allowable^	Total Impacts^	Wetlands in Buffer^^	Impacts Requiring Mitigation
Zone 1 Impact	323,506	120,232	443,547	11,309	312,197
Zone 2 Impact	183,833	57,776	241,609	5,729	178,104

^ Includes utility impacts, ^^ Allowable non-mitigable buffer impacts have been deducted from wetlands in buffers

FEDERALLY PROTECTED SPECIES

Plants and animals with a Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act (ESA) of 1973, as amended. The USFWS lists five species for Johnston County (updated June 27, 2018) and six species for Wake County (updated June 27, 2018) (Table 5).

As assessment of the impacts to these species is provided in the NRTRs prepared for these projects. A summary of the findings of these reports is provided in Table 5.

Table 5. Federally protected species listed for Johnston (J) and Wake (W) Counties

Scientific Name	Common Name	County	Federal Status[1]	Habitat Present	Biological Conclusion
Picoides borealis	Red-cockaded woodpecker	J, W	E	No	No Effect
Alasmidonta heterodon	Dwarf wedgemussel	J, W	E	Yes	MA-LAA
Parvaspina steinstansana	Tar River spinymussel	J, W	E	Yes	No Effect
Elliptio lanceolate	Yellow lance	J, W	T	Yes	MA-LAA
Rhus michauxii	Michaux's sumac	J, W	E	Yes	No Effect
Notropis mekistocholas	Cape Fear shiner	W	E	No	No Effect
Fusconaia masoni	Atlantic pigtoe	J,W	P	Yes	Undetermined*

E – Endangered, T – Threatened, P- Proposed, MA-LAA – May Affect, Likely to Adversely Affect
* If and when the Atlantic Pigtoe becomes listed, NCDOT will coordinate with USFWS

The projects were found to have No Effect on all species except for Dwarf wedgemussel and Yellow lance, where the finding is May Affect – Not Likely to Adversely Affect. In a letter dated December 6, 2018 (attached), the FHWA determined the project meets the criteria pursuant to the programmatic biological opinion (PBO) issued on June 13, 2018 for Bridge and Culvert Replacements/Repairs/Rehabilitations in Eastern North Carolina, Divisions 1-8. NCDOT will adhere to the requirements of the PBO and as such NCDOT/FHWA have fulfilled the requirements of the ESA for all currently listed species for this project.

The USFWS has developed a PBO in conjunction with the FWHA, USACE, and NCDOT for the northern long-eared bat (NLEB) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is May Affect, Likely to Adversely Affect. The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Wake and Johnston County, where the project is located.

MITIGATION OPTIONS

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts. Avoidance measures were taken during the National Environmental Policy Act planning process. Minimization measures were incorporated as part of the project design.

Avoidance and Minimization

The following are commitments that are incorporated into the project:

- An in-lieu fee will be paid into the NC Nongame Aquatic Species Fund in accordance with the stipulations in the Programmatic Biological Opinion (PBO).
- Design Standards in Sensitive Watersheds [15A15A NCAC 04B .0124(b) – (e)] will be incorporated throughout the entire project.
- Prior to commencing construction on the Swift Creek bridge, NCDOT, in collaboration with USFWS and NCWRC, will develop and implement a Mussel Relocation Plan to remove mussels from a salvage area (to be determined in the Mussel Relocation Plan).
- Bridge bents will not be located in the channel of Swift Creek or within 10 feet (horizontally) of either top of bank to the extent practical.
- No permanent fill required to build the bridge will be placed within Swift Creek. All permanent and temporary structures will be positioned such that they will not result in any bank instability or cause significant sediment to runoff into Swift Creek.
- Bioretention basins with media filter and hazardous spill basins within the immediate vicinity/floodplain of the crossing of Swift Creek will be constructed (see plan sheet 40).

In accordance with the PBO, the following measures will be included in the project:

- Environmentally Sensitive Areas are to be designated as a 50-foot buffer zone on both sides of the streams within 0.25-mile of Swift Creek as well as Swift Creek proper. Within these Environmentally Sensitive Areas the following shall apply:
    - The contractor may perform clearing operations but not grubbing operations until immediately prior to beginning grading operations.
    - Once grading operations begin in identified Environmentally Sensitive Areas, work shall progress in a continuous manner until complete.
    - Erosion control devices shall be installed immediately following the clearing operation.
    - Seeding and mulching shall be performed on the areas disturbed by construction immediately following final grade establishment.
    - Seeding and mulching shall be done in stages on cut and fill slopes that are greater than 20 feet in height measured along the slope or greater than two acres in area, whichever is less.
- Offsite detours will be utilized to the maximum extent practicable.
- No heavy equipment will be placed in the streams.
- BMPs for bridge demolition and removal will be implemented (NCDOT 2003, NCDOT 2014a, or newer).
- Bridges will be removed from the top down, first removing the asphalt with containment measures in place to prevent asphalt from dropping into the stream. The method of containment will be proposed by the contractor and approved by the project engineer. This will be followed by removal of the decking, girders, and finally the piles/shafts/columns.
- No new bents will be placed in the channel (unless justification is provided and then accepted by the USFWS).
- Existing abutments will be completely removed unless removal would result in destabilization of banks or increase adverse effects to listed mussels.
- Deck drains will not be allowed to discharge directly into the stream.

- Special sediment control fence (NCDOT Standard No. 1606.01) or a combination of special sediment control fence and standard silt fence will be installed between the top of the stream bank and bridge embankment. Once the disturbed areas of the project draining to these areas have been stabilized, the special sediment control fence and/or silt fence and all built up sediment adjacent to these devices will be removed to natural ground and stabilized with a native grass mix.
- All appropriate sedimentation and erosion control measures, throughout the project limits, will be cleaned out when half full to ensure proper function of the measures.
- Coir fiber matting or clean riprap (underlain with geotextile) will be installed on the footprint of unclassified structure excavation near the streambanks.
- Embankment construction and grading shall be managed in such a manner as to prevent surface runoff/drainage from discharging untreated into the riparian buffer. All interim surfaces will be graded to drain to temporary erosion control devices. Temporary berms, ditches, etc. will be incorporated, as necessary, to treat runoff before discharging into the riparian buffer (as specified in NCDOT BMP manuals).
- USFWS, FHWA, USACE, NCDWR, and NCWRC will be invited to any preconstruction meetings associated with the installation of structures within 0.25 mile of Swift Creek
- No borrow/waste site locations, staging areas, equipment storage areas, and refueling areas shall be within 0.25 mile of Swift Creek without further coordination with USFWS during the approval process.

Compensatory Mitigation

The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent practicable, as described above. The unavoidable impacts will be offset by compensatory mitigation. Tables 2 through 4 summarize the proposed wetland, stream, and riparian buffer impacts for the projects. Project impacts requiring mitigation are as follows:

- 1.04 acre of wetlands (requiring 2.08 acres of wetland mitigation)
- 6,806 lf of streams (requiring 13,612 lf of stream mitigation)
- 312,197 ft^2 of Zone 1 stream buffer (936,591 ft^2 of Zone 1 mitigation)
- 178,104 ft^2 of Zone 2 stream buffer (267,156 ft^2 of Zone 2 mitigation).

Mitigation will be provided by DMS as noted on the attached acceptance letter.

CULTURAL RESOURCES

Historic Architectural Resources

Neither project required a determination under Section 106 of the National Historic Preservation Act for historic architectural resources.

Archaeological Resources

Neither project required a determination under Section 106 of the National Historic Preservation Act for archaeologic resources.

Section 4(f) Resources

Neither project required a determination under Section 4(f).

INDIRECT AND CUMULATIVE EFFECTS

An Indirect and Cumulative Screening Report was completed for I-5111 on November 2, 2010 with the conclusion that given the minimal direct effects, and likely minimal indirect effects, anticipated as a result of the existing alignment project, no further study was recommended. The June 24, 2015 Indirect and Cumulative Effects Screening Report for I-4739 recommended a Land Use Scenario Assessment (LUSA) be performed. The LUSA was completed on July 20, 2017 and states it is unlikely that the I-4739 project would have large-scale influence over the type or rate of development within the future land use study area.

FEMA COMPLIANCE

The I-5111 / I-4739 project will require a total of four Memorandums of Agreement (MOAs) between NCDOT and North Carolina Floodplain Mapping Program (NCFMP): Type 2b for Big Branch Tributary 1, Big Branch Tributary 3, and Swift Creek, and Type 2g for Poplar Branch. No Conditional Letters of Map Revision (CLOMR) packages are required. At the time of this permit application submittal Federal Emergency Management Agency (FEMA) and NCFMP compliance has not been finalized. The MOA's have been submitted to NCFMP in accordance with FEMA. The MOAs will be signed and authorized prior to construction mobilization.

REGULATORY APPROVALS

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

Section 401: We are requesting a Section 401 Individual Water Quality Certification and Neuse Riparian Buffer Authorization from NCDWR. We are providing this application to NCDWR, for their approval. Authorization to debit the $570.00 Permit Application Fee from TIP No. I-5111/I-4739/WBS 42346.3.1 is hereby given.

A copy of the permit application and its distribution list will be posted at https://xfer.services.ncdot.gov/pdea/PermApps/.

If you have any questions or need additional information, please contact Gordon Cashin at gcashin@ncdot.gov or 919-707-6107.

Sincerely,

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

cc: NCDOT Permit Application Standard Distribution List

U.S. Army Corps of Engineers (USACE)

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

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

Form Approved - OMB No. 0710-0003 Expires: 01-08-2018

The public reporting burden for this collection of information, OMB Control Number 0710-0003, 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 the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. 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 APPLICATION TO THE ABOVE EMAIL.

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. System of Record Notice (SORN). The information received is entered into our permit tracking database and a SORN has been completed (SORN #A1145b) and may be accessed at the following website: http://dpcld.defense.gov/Privacy/SORNsIndex/DOD-wide-SORN-Article-View/Article/570115/a1145b-ce.aspx

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

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

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Philip Middle - S Last - Harris Company - NC Dept. of Transportation - Env. Analysis Unit E-mail Address - pharris@ncdot.gov	First - Middle - Last - Company - E-mail Address -
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- 1548 Mail Service Center City - Raleigh State - NC Zip - 27699 Country - US	Address- City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	**10. AGENTS PHONE NOs. w/AREA CODE**
a. Residence b. Business 919-707-6123 c. Fax	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)
TIPs I-5111 and I-4739, I-40 Widening and Improvements (WBS 42346.3.1)

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Multiple in Neuse River Basin (see cover letter)	Address City - State- Zip-
15. LOCATION OF PROJECT	
Latitude: ◦N 35.622036 Longitude: ◦W 78.566938	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Municipality

Section - Township - Range -

17. DIRECTIONS TO THE SITE

See attached vicinity maps by TIP number.

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

The project will widen and improve approximately 12.8 miles of I-40 from the I-40/I-440/US64 interchange in Wake County to just north of the SR 1525 (Cornwallis Road) in Johnston County. Details of the amount of widening are included in the attached roadway plans. The improvements include modifying the interchanges and replacing the bridges along I-40.

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

The project's primary purpose is to provide relief from present and future congestion and provide a higher level of service on I-40.

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

20. Reason(s) for Discharge

Wetlands, stream, and riparian buffers will be impacted by construction of the widening of the existing roadway, improvements to interchanges, and installation of drainage features.

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 permit drawings		

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

Acres

or

Linear Feet

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

Construction improvements have begun on existing roadway facility in areas and that do not impact jurisdictional features.

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- A list of property owners will be provided.

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.

Carla Brown for Philip S. Harris, III, P.E. CPM. — SIGNATURE OF APPLICANT

5/7/19 — DATE

SIGNATURE OF AGENT — DATE

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

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

I-5111_I-4739 Swift Creek Retaining Wall Removal And Bent Scour

January 28, 2019

The S.T. Wooten/ RK&K Design-Build Team (TEAM) is requesting that the required retaining wall adjacent to streams SDN, SEO, SEQ and SEP and Wetlands WEN and WEO(1) on the southwest quadrant of the crossing of Swift Creek be allowed to be changed to a 2:1 slope. The Team recognizes the critical nature of the natural resources, including the wetlands, streams, and riparian buffers particularly within a quarter mile of Swift Creek which resulted in the requirement of a retaining wall to avoid and minimize impacts these natural resources. However, after investigating the requirements needed to construct the retaining wall coupled with the long-term maintenance, the Team believes that constructing the 2:1 slope will ultimately result in a more environmentally stable and protected situation.

As noted on the plan sheets, portions of streams SDN, SEO and SEQ and wetlands WEN and WEO abut the toe of the roadway slope. The site was investigated on January 9 and 24, 2019 to review the site conditions where it was noted beavers have constructed a dam approximately 55' upstream of the confluence of stream SDN and Swift Creek which has resulted in a significant amount of standing water not only within wetland WEN, but also in some of the adjacent uplands (Figure 1). This additional standing water would only further exacerbate the issues with constructing a wall that are listed below. The difference in impacts to streams and wetlands are also noted in the table and pictures of the project site follow.

Two types of wall, MSE and soldier, were considered. The concerns and issues with constructing either/both are as follows:

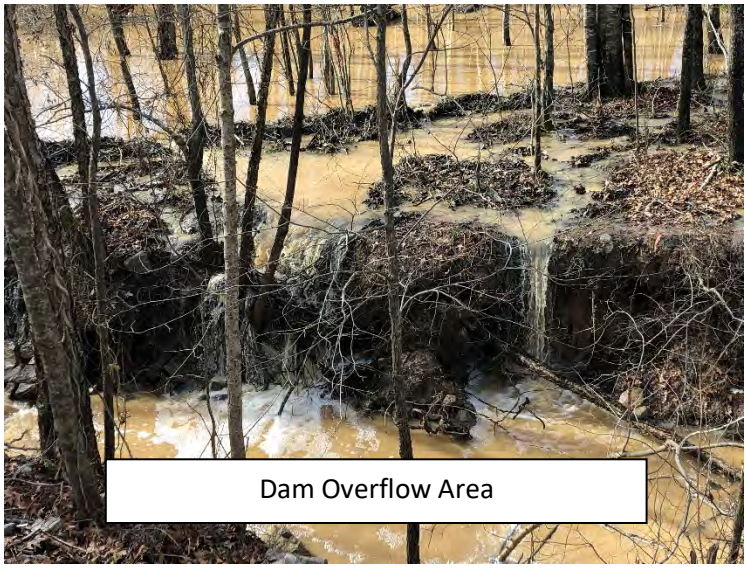
- Construction of the wall would require considerable impacts to the streams and wetlands that are immediately adjacent to the existing slope. The streams will have to be moved to allow construction equipment access. Further, as there are several sections where the streams banks are actually a continuation of the riprapped 2:1 road shoulder slopes, they will need to be permanently relocated an appropriate distance from the base of the wall.
- The soils are soft and will require extensive undercutting to mitigate.
- The wall will require toe protection from scour as it is located in a highly erosive area.
- Constructing the wall will require tie backs. This will result in the following:
    - The tie backs would extend under the existing roadway, necessitating additional impacts to the existing roadway which also impacts traveling public.
    - Effect existing and/or future utilities.
- The streams will have to be relocated away from the base of the wall. They will have to be moved to construct the wall anyways, but they will have to ultimately be relocated away from the wall as the potential scour and inaccessibility of putting them back such that they abut the wall is not a viable option.

	With Wall	With 2:1 Slope	Difference
Permanent Fill in Wetlands	0 ac	0.24 ac	+0.24 ac
Permanent Fill in Surface Waters	355 lf	355 lf	0 lf
Temporary Fill in Wetlands	0.01 ac	0 ac	-0.01 ac
Temporary Fill in Surface Waters	197 lf	26 lf	-171 lf
Mechanized Clearing	0.02	0.13 ac	+0.09 ac

Side of beaver dam from stream SDN

Beaver impoundment from dam

Stream SDN from dam to Swift Ck

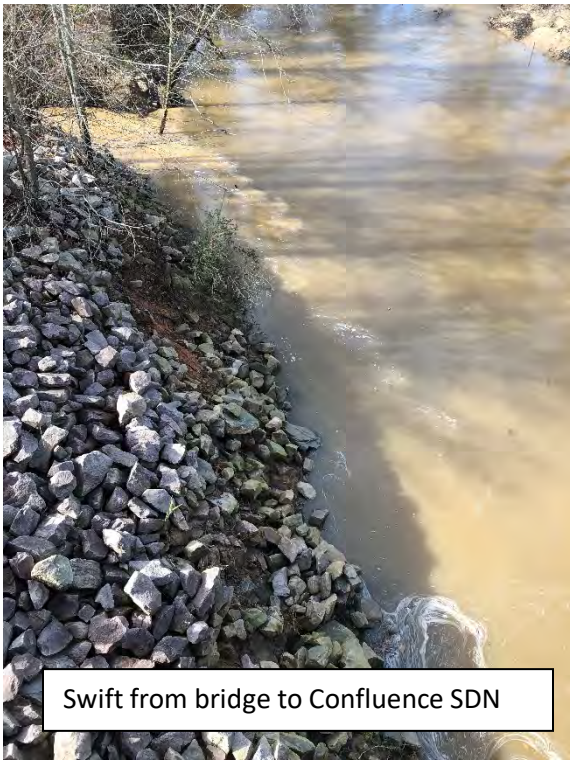


Dam Overflow Area

It was also noted that Swift Creek mainstem has scoured a significant portion of the right descending bank particularly beyond the confluence with stream SDN including behind a portion of the bridge bent that used to constitute the bank of Swift Creek, such that now that portion of the bent is in Swift Creek proper. An estimation of the scour in provided in Figure 1. (**NOTE:** the scouring of Swift Creek in this area does not affect the issue with constructing the retaining walls but is being noted as it is a significant change from what the plans reflected when the Biological Assessment was prepared, submitted, and subsequently retracted in favor of the Programmatic Biological Opinion). As a result, surface water impacts in Swift Creek will be unavoidable.

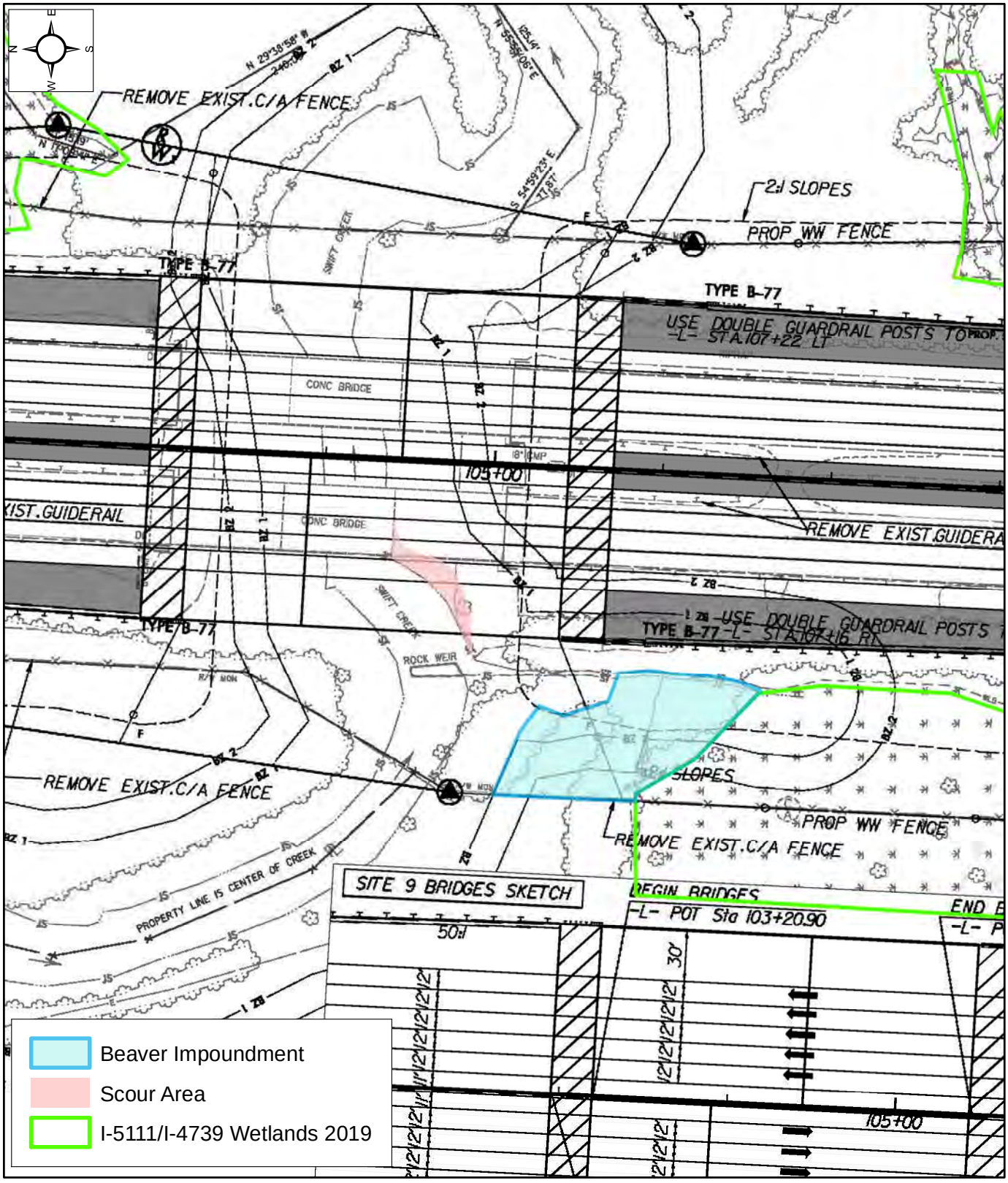
Piles in Swift Creek

Scour behind bent



Swift from bridge to Confluence SDN

Upstream from edge of scour



Prepared For: S.T. WOOTEN

THREE OAKS ENGINEERING

I-5111/I-4739
Wetland And Stream
Swift Creek Crossing
And Wetlands

Wake County, North Carolina

Date:	January 2019
Scale:	0 25 50 Feet
Job No.:	18-101
Drawn By:	NMS
Checked By:	MGW

Figure
1

U.S. Department of Transportation
Federal Highway Administration

North Carolina Division

310 New Bern Avenue, Suite 410
Raleigh, NC 27601
(919) 856-4346
(919) 747-7030
http://www.fhwa.dot.gov/ncdiv/

December 6, 2018

In Reply Refer To:
HDA-NC

Mr. Pete Benjamin
Field Supervisor
U.S. Fish and Wildlife Service
Raleigh Field Office
551F Pylon Drive
Raleigh, NC 27606

Dear Mr. Benjamin:

In a letter to you dated June 6, 2018, the Federal Highway Administration (FHWA) requested initiation of formal consultation for the proposed I-40 widening of Interstate 40 from Interstate 440 (I-440) in Wake County to a point approximately 250 feet south of the center of the I-40 crossing of Swift Creek in Johnston County, North Carolina, Federal Aid Project No. IMNHF-040-4(139)301, TIP No. I-5111 with the U.S. Fish and Wildlife Service (USFWS) in accordance with the Endangered Species Act of 1973 (ESA), as amended, for potential effects to:

- the Dwarf wedgemussel (*Alasmidonta heterodon*) (DWM) (federal status – endangered), and
- the Yellow lance mussel (*Elliptio lanceolate*) (YL) (federal status – threatened).

FHWA is now rescinding the prior initiation request for these mussel species, as it has been determined that this project meets the criteria pursuant to the Programmatic Biological Opinion (PBO) issued on June 13, 2018 for Bridge and Culvert Replacements/Repairs/Rehabilitations in Eastern North Carolina, NCDOT Divisions 1-8. FHWA has coordinated with NCDOT and USFWS to verify the PBO is applicable to this project. NCDOT has agreed to make financial payments in accordance with the PBO, and implement all mitigative measures listed in the PBO.

We have concluded the proposed action will incur a biological conclusion of "May Affect-Likely to Adversely Affect" call for DWM and YL. With the use of the PBO, FHWA has fulfilled the requirements of the ESA for all currently listed species for this project.

FHWA appreciates your cooperation on this matter. If you have any questions, please contact Felix Davila at (919) 747-7021 or felix.davila@dot.gov

Sincerely,

For John F. Sullivan, III, PE
Assistant Division Administrator

ec: Gary Jordan, USFWS, Raleigh Office, Fish and Wildlife Biologist (w attachment)
ec: Marissa Cox, NCDOT, Biological Surveys Group (w attachment)
ec: Jared Gray, NCDOT, Biological Surveys Group (w attachment)

I-5111_I-4739 4B Interagency Concurrence Point Meeting Minutes

Date: December 20, 2018
Date of Minutes: January 7, 2019
Location: NCDOT Structures Conference Room
Time: 10:00 PM
Minutes Authored By: Matthew Cook

Attendees:

- Eric Alsmeyer – USACE
- Nikki Thomson – NCDOT Div 5 Env
- Paul Atkinson – NCDOT Hydraulics
- Gordon Cashin – NCDOT NES
- Jonathan Bivens – ST Wooten
- Andy Barry – ST Wooten
- Michael Wood – Three Oaks
- Hayley Wood – Three Oaks
- Richard Bollinger – RS&H
- Alex Vinson – RS&H
- Matthew Cook – RK&K
- Rob Ridings – NCDWR
- Heather Montague – NCDOT Div 5 Env
- Herb Turner – Mott MacDonald
- Tim McFadden – NCDOT Design Build
- Matthew Davis – ST Wooten
- Kala Carter – ST Wooten
- Nancy Scott – Three Oaks
- Tom Hildebrand – RS&H
- Cole Benjamin – RS&H
- Mary Mays Yahl – RK&K
- Alexis Burke – RK&K

Via Telephone:

- Robert Patterson – NCDWR

The 30% Hydraulic Review was held in order to reach agreement on concurrence point 4B for the I-5111_I-4739 I-40 widening project in Wake and Johnston Counties. The following items were discussed and conclusions reached:

Matthew Cook introduced the DB Team for the project. The project is broken up in to three design segments. RK&K is the prime engineer for the project and is the designer for Sections 2 and 3. RS&H is a major sub-consultant and is the designer for Section 1. The project is being constructed by S.T. Wooten. The DB Team was awarded the job in July 2018. The project is approximately 13 miles from the I-440 interchange to Cornwallis Rd.

This project overlaps with the Complete 540 (C540) that is scheduled to begin construction in 2019. The NRTRs also overlap. For consistency moving forward, the C540 naming conventions and determinations of jurisdictional features was utilized where there was overlap. If there is no overlap, then the appropriate environmental document was reviewed (I-5111 NRTR / Addendum or I-4739 NRTR).

General notes:

- Due to matchlines on some of the plansheets / permit sites, it was discussed that plansheets will be grouped based on showing an entire permit site even if the plansheets are not sequential.
- Site numbers in the stream / wetlands set will match the buffer set.
- Erosion control basins will not be constructed in either buffer zone 1 or buffer zone 2.
- Construction work has already begun on the projects in non-jurisdictional areas. No jurisdictional impacts will occur until the proper environmental permits are issued. Eric Alsmeyer noted that this work performed should be considered at NCDOT's risk. He also asked that early work for future projects be coordinated with the agencies.
- Mike Wood noted that the Biological Opinion has been withdrawn. A Programmatic Biological Opinion has been agreed to as of December 17, 2018. Nikki Thomson asked that all stipulations be met. She also asked for safety fence to be installed as early as possible and to coordinate with the resident's office.
- Roadway drawings and permit drawings will match once approved. The design is still in flux, and therefore the drawings could show minor discrepancies at this time.

- Riprap in the channels will be shown based on the shear stress and velocity of the flow as designed. If riprap is not needed, a note for "on banks only" will be shown on the plans at pipe outlets. The ditches will show riprap in the channel as needed on the details with the riprap installed flush with the stream bed. Additional riprap transitions will be shown where ditches tie to jurisdictional streams as needed.
- Due to the nature of the project, the existing grassed lined median ditch is being removed and will be impervious. Therefore, buffer filtration that is provided in the median is also being removed. It is the intention of the Team to design the project providing buffer filtration as much as possible. However, there will be areas where the Team will not be able to achieve the 100' / 1 ac of filtration. A maximum extent practicable approach will be taken.
- Rob Ridings/DWR requires sheet flow out of rip rap pads in buffer areas.
- Heather Montague requested the following:
    - Linear footage of rip rap bank stabilization added to the call outs.
    - The station numbers to all details be confirmed and match their reference.
    - To use the term "geotextile" instead of "geo fab".
    - Where ditches outlet at stream banks, Class I or II rip rap be utilized instead of Class B.
    - Where "trenchless" pipe installations will be done, impacts to the streams and buffers also need to be enumerated (i.e. bore pits, tie-ins, etc.).
    - The need to include "dewatering" in the temporary stream impact category for any stream work (including culvert extensions, bank stabilization, rip rap pad installation, etc).
- Ms. Thomson reminded everyone that pipes larger than 48-inches in diameter are buried 1-foot; pipes 48-inches in diameter or less are only buried 20% of their diameter (unless otherwise specifically directed).

Mr. Cook then handed the meeting over to Richard Bollinger to review the Section 1 4B planset.

SECTION 1 4B Planset

Plan sheet 4

- Stream 'SY': Contractor to replace the existing concrete paved ditch as necessary after the headwall is replaced. This work will be considered a temporary impact in the jurisdictional stream.
- Stream 'SZ' (U/S): Buffered stream with impacts due to the replacement of the headwall and dual 42" CSP and the proposed noise wall and base ditch.
- Stream 'SZ' (D/S): Buffered stream with impacts due to proposed pipe outfall. The Division requested consideration be made for armoring the ditch tie-ins.
- Wetland 'WI': No impacts.
- Wetland 'WH': No Impacts. Need to check Rip Rap Outlet (str. 0425) to see if rip rap pad is acceptable or if rip rap on banks is necessary.

Plan sheet 5

- Stream SBB (U/S): Stream is buffered and has stream impacts due to proposed pipe outfall and proposed HW at inlet of 42" RCP. The buffer impacts are due to the bridge bent. Need to verify where this buffer starts/stops (check USGS & Soils Survey).
- Stream SBB (D/S): No impacts, but RS&H will check WSS and see what is buffered at this location. The Division requested consideration be made for installing riprap around the pipe inlet.
- Wetland WGH: No Impacts
- Stream SAA (U/S): Recommended that buffers be shown on SAA. Stream is jurisdictional but will not require mitigation. Show in WISS as normal.
- Stream SAA (Mid): Not buffered and has permanent stream impacts due to proposed roadway alignment slope limits.
- Stream SAA (D/S): Recommended that buffers be shown on SAA. Stream is jurisdictional but will not require mitigation.
- Review old asphalt site for a place to add BMPs.
- The removal of fencing discussed for potential wetland impacts. The Agencies said this would not be considered an impact.

Plan sheet 6

- No features. No Impacts.

Plan sheet 7

- Stream SB: Stream is buffered with stream impacts due to proposed pipe outfall. Buffer impacts due to proposed storm system and widened roadway facility.
- Minor drainage comment: Label pipe sizes on storm drain system that outlets into stream 'SB'.
- Ms. Montague requested a label of the ditch type and detail for the ditch on the west side of the highway.

Plan sheet 8

- Stream SB: Stream is buffered with buffer impacts due to proposed pipe outfall and permanent stream impacts due to rip rapped ditch. Will evaluate if pipe can be pulled back to minimize impacts.

Plan sheet 9

- Stream SC: Not buffered. The location of the JS needs to be revised to follow the existing stream location. Stream impacts will be evaluated due to the two proposed pipe outfalls.
- Stream SD (U/S): Stream and buffer impacts due to proposed 72" W.S. supplemental pipe, headwall, and rip rap. Verify the use of coir fiber on floodplain bench where stable to do so. Make v-ditch tie to Rip Rap embankment.
- Stream SD (D/S): Stream and buffer impacts are the same as U/S. Tie lateral v-ditch into channel rip rap.
- Wetland WA and WB: No impacts.
- Ms. Thomson asked to examine the possibility of needing rip rap protection around/along wing walls both upstream and downstream. She also asked to examine the possibility of needing toe protection along the slope at the upstream end of Stream SD.

Plan sheet 10

- Stream SD (D/S): No stream impacts due to drainage features on this plan sheet. Buffer impacts due to widened roadway facility.

Plan sheet 11

- Sediment will be removed from existing culvert for complete inspection of inside of culvert. Culvert will not be backfilled once inspection is complete and any repairs are made.
- Stream SF (U/S): Stream and buffer impacts due to dual 96" supplemental pipes, as well as headwall and channel improvements, including installation of rip rap.
- Stream SF (D/S): Stream and buffer impacts are the same as U/S. Discussed if rip rap is needed on south bank and it was determined that it not currently required.
- Stream SE: No impacts and not buffered.
- Wetland WC: Has impacts due to channel improvements and rip rap.
- Wetland WD: No Impacts.
- Ms. Montague noted the WW fence cutting across rip rap armoring of the streambank and commented if it should instead tie to the wing wall.

Plan sheet 12

- The gaps in the proposed WW Fence were discussed. It was recommended that the fence gaps be filled.
- Wetland WC and WD: No impacts.

Plan sheet 13

- No features. No Impacts.

Plan sheet 14

- Stream SNN (U/S): Buffers to be added. Permanent stream impacts and buffer impacts due to proposed pipe and widened roadway facility, respectively.
- Stream SNN (D/S): Buffers to be added. Permanent stream impacts and buffer impacts due to proposed pipe and widened roadway facility, respectively.
- Wetland WJJ: Impacts due to installation of 36" W.S. pipe.

- Stream SOO: Buffers to be added. Permanent stream impacts and buffer impacts due to proposed pipe and widened roadway facility, respectively.
- The interchange design could still be revised due to ongoing discussions with an outside party. Revisions will be made and coordination held with NCDOT and the agencies as needed.
- Ms. Thomson commented that the outlet of SOO shows three rip rap pads of varying stone size; this should be one consistent size of stone..

Plan sheet 15

- Stream SI: Stream and buffer impacts due to proposed 30" W.S. pipe, HW and excavation. Buffer impacts due to widened roadway facility.
- Stream SG (U/S): Stream impacts due to HW and buffer impacts due to widened roadway facility.
- Stream SG (D/S): Stream and buffer impacts due to proposed 30" W.S. pipe, HW, channel realignment, and rip rap and widened roadway facility.
- Stream SH: Stream and buffer impacts due to stream re-alignment, proposed 72" RCP, HW improvements, and energy dissipater basin. Buffer impacts due to widened roadway facility.

Plan sheet 16

- Stream SG (U/S): No stream impacts. Buffer impacts due to widened roadway facility.
- Stream SG (D/S): Same as U/S.
- Stream SJ: Buffers to be added. No stream or buffer impacts.
- Wetland WE: No Impacts.

Plan sheet 54

- No features, no impacts.

Plan sheets 55-58

- For information only.

Following Section 1, Mr. Cook began the review of the Sections 2 and 3 4B plansets.

SECTION 2 4B Planset

Plan sheet 17

- Stream SRM; buffered. Impacts: There are three locations where systems discharge in to the stream. Two of the locations closely match existing outfall locations. Buffers will be impacted due to the new pipe outfalls and the widened roadway facility.
- Ms. Thomson asked that call outs and details be added for the outfalls. Mr. Cook stated that these are standard outfalls as detailed in the NCDOT Roadway Standard Drawings. She asked if the outfalls truly require impact/stabilization on far bank? Mr. Cook said that the need could arise during the riprap pad construction.

Plan sheets 18 and 19

- Streams SRJ, SRL, SRK; buffered. Impacts: No stream impacts, however the buffers will be impacted due to the widened roadway facility. Stream SRL is NOT buffered per an email from Rob Ridings dated 11/14/18.
- Wetlands WOC and WOD. Impacts: None
-
- Ms. Thomson asked that all erosion control be installed and functioning prior to work at the outlet at -L- 192+50 LT since it is next to a jurisdictional feature.

Plan sheet 20

- No features, no impacts.

Plan sheet 21

- Stream SOF; buffered. Impacts: No stream impacts, however the buffers will be impacted due to the standard V ditch

- Wetland WPP. Impacts: None
- SOF should be named SCF per Complete 540 NRTR.

Plan sheet 22

- Streams SOF, SOE; buffered. Impacts: All impacted due to 60" pipes, buffers impacted. 60" RCP conveying SOF will be buried 1.0'. The 60" W.S. pipes along SOE are being installed as additional conveyance measures. They will not be buried. The channel will continue to use the existing pipes for low flow.
- SOF should be named SCF per Complete 540 NRTR.
- Channel shown as JS along -Y5RPC- 52+00-53+00 LT should not be JS. JS and buffers will be removed.
- Stream SOI; buffered. Impacts: None.
- Wetlands WQF, WQV. Impacts: All impacted due to 60" pipes.
- Wetlands WFF, WSD. Impacts: None
- The stream and buffers shown along WQF should be removed. There is no stream at this location.
- Ms. Thomson added that downstream of SOE, PDE needs to be shown/included for stream/pipe work.

Plan sheet 23

- Stream SOI; buffered. Impacts: 60" RCPs upstream and downstream, buffers impacted. The channel upstream needs to be regraded in order to enter the 60" RCP. There is an energy dissipator online downstream due to stability and velocity concerns. EAU will coordinate removal of the wetland symbology that currently overlaps within the JS.
- The 60" RCPs / W.S. pipe needs to be upsized and buried since it is in a jurisdictional stream (not an equalizer pipe). Per discussions, the wetlands up and downstream should not be affected due to the pipe burial.
- Wetlands WPT, WSD. Impacts: WSD impacted due to 60" RCP and outlet riprap energy dissipator. WPT not impacted.

Plan sheet 24

- Streams SNF, SNH; buffered. Impacts: SNF impacted due to a 66" W.S. pipe, buried 1.0'; buffers impacted. SNH impacted due to a 60" W.S. pipe (shown on plan sheet 25); buffers impacted.
- The transition area between the stream and the entrance to the pipe will be checked for the need for riprap.
- Wetlands WQE, WPV. Impacts: None for WPV; none for WQE on this plan sheet.
- Ms. Thomson stated that the details for the outlets show rip rap in the channel, however, the plan shows banks only. She asked which detail is appropriate for this (and other sites) in the plans. Mr. Cook said that the plans are still being finalized and will be checked for consistency.

Plan sheet 25

- Stream SNH; buffered. Impacts: 60" W.S. pipe (shown on plan sheet 25); buffers impacted.
- The 60" W.S. pipe needs to be upsized and buried since it is in a jurisdictional stream (not an equalizer pipe). Per discussions, the wetlands up and downstream should not be affected due to the pipe burial.
- Wetlands WQE, WRX. Impacts: 66" W.S. pipe and lateral base ditch. WRX not impacted.
- Ms. Thomson stated that upstream of SNH, a headwall is labeled but not shown. Also, downstream of SNH, she asked that the impact needed for outlet structure #2516 be detailed. She asked if work/riprap was truly required across the channel. Mr. Cook said that the need could arise during the riprap pad construction.

Plan sheets 26-27

- No features, no impacts.

Plan sheet 28

- Streams SNY, SOC; buffered. Impacts: SNY and SOC impacted due to an 84" W.S. pipe which will act as a high flow conveyance measure; buffers impacted. The existing 72" CMP will be lined, extended, and continue to convey average daily flow. Additionally, lateral base ditches impact the buffers. A portion of SOC will be conveyed in a channel change due to the proposed fill extending in to the channel.
- Ms. Thomson asked top check if the riprap/embankment upstream of SNY needed a detail/call out. She also stated that the channel change detail of SOC showed riprap in flowline yet the plan view showed riprap on banks only; please confirm and correct which is appropriate notation.

Plan sheets 29-30

- No features, no impacts.

Plan sheet 31

- Streams SLF, SEM; buffered. Stream SLH; not buffered. Impacts: SLF and SLH are not impacted. SEM is impacted due to the proposed fill slope extending in to the stream. A channel change will be used as the new conveyance. It is also impacted by a system outlet. The buffers are impacted by the proposed roadway fill slope in areas where the stream is not impacted.
- Ms. Thomson asked that the riprap pad at the outlet at -L- 361+25 LT fan out to allow for better dispersed flow as the drainage leaves the pipe.

Plan sheet 32

- Streams SEM, SLI, SNK; buffered. SNM; not buffered. SEM is impacted due to the proposed fill slope extending in to the stream. A channel change will be used as the new conveyance. It is also impacted by two system outlets. The buffers are impacted by the proposed roadway fill slope in areas where the stream is not impacted. SNK is impacted a system outlet. The buffers are impacted by the proposed roadway fill slope in areas where the stream is not impacted. SLI and SNM not impacted.
- Mr. Cook suggested lining the peninsula between SEM and SLI (-L- 379+00 LT) with riprap due to the anticipation of potential scour with the new channel. Everyone agreed.
- A note will be added showing where SNM becomes jurisdictional. The buffer lines will be shown for this stream.
- Wetlands WNQ, WPX, WQC. Impacts: WNQ impacted by construction of a channel change nearby and is expected to be a total take. WPX and WQC not impacted.
- The outlet at -L- 381+40 RT will be angled to appr. -L- 382+00 RT to avoid an impact with WQC.

Plan sheet 33

- Streams SEM, SNK, SNO, SEK; buffered. Impacts: SEM, SNK, and SNO impacted due to a 60" W.S. pipe which will act as a high flow conveyance measure; buffers impacted. Additionally, SNO is impacted by a lateral V ditch, and SEM is impacted by another system outlet. SEK impacted due to a 54" W.S.; buffers impacted.
- The 54" W.S. pipe for SEK needs to be upsized and buried since it is in a jurisdictional stream (not an equalizer pipe).
- A note for SNK will be added to the plans.
- Wetlands WQA, WEF, WFF. Impacts: None.

Plan sheet 34

- Streams SEK and SEL; buffered. Impacts: SEK impacted due to a 54" W.S. pipe and a lateral V ditch; buffers impacted. SEL impacted due to a 78" W.S. and lateral ditches; buffers impacted. The existing 66" CMP will be lined and continue to convey average daily flow.
- The 54" W.S. pipe for SEK needs to be upsized and buried since it is in a jurisdictional stream (not an equalizer pipe).
- Wetlands WEF, WFF, WEC. Impacts: WEF and WFF not impacted. WEC impacted by the proposed fill slope.
- Ms. Thomson asked to explore if toe protection and/or rock around the pipe outlet is required at WEC. She said that details were needed for the pipe outlets and to explore rip rap sizes (i.e. Class I at tail end of V ditch and base ditch).

Plan sheet 35

- Stream SEV; buffered downstream but not at project. Impacts: 30" RCP. Crossing is not jurisdictional upstream of the project. The pipe is not buried since the channel upstream is not jurisdictional.
- Wetlands WFE. Impacts: None.
- The interchange design could still be revised due to design of the I-540 crossing / interchange. Revisions will be made and coordination held with NCDOT and the agencies as needed.

Plan sheets 36

- No features, no impacts.

Plan sheet 37

- Streams SDR, SDQ, SDS, SDT, SDU; buffered. Impacts: SDS impacted due to a standard base ditch. SDU impacted due to a proposed fill slope, lateral V ditch, and 60" W.S. pipe. SDT impacted due to a 54" RCP, 60" W.S. pipe and ditches. SDQ and SDR: none.
- Mr. Ridings agreed that the 60" W.S. PIPE under the -L- does not need to be buried since there is no jurisdictional stream feeding it. The pipe will be downsized to a 54" W.S. PIPE.
- Class I riprap should be used at the outlet at -L- 448+00 RT.
- Wetlands WEJ, WEK, WEL, WFA, WFB, WFC, WFD. Impacts: WEJ, WEK, WEL, WFC none. WFD impacted due to a lateral base swale and 54" RCP. WFB impacted due to a proposed fill slope and lateral V ditch. WFA impacted due to a 54" RCP, 60" W.S. pipe and ditches. WFC, WEJ, WEK, WEL, none.
- Ms. Thomson stated that PSRM is not recommended. She also commented that Detail AJ has no liner.

Plan sheet 38

- Stream SDO; buffered. Impacts: 36" W.S. pipe and 15" CSP. Crossing is not jurisdictional upstream of the project.
- Wetlands WEZ. Impacts: 36" RCP and standard V ditch.
- Mr. Cook pointed out that the existing hazardous spill basin at -L- 468+00 LT will be retained. Due to a small amount of proposed fill in to it, the bottom of the basin will be regraded to provide the same amount of storage.
- Ms. Thomson asked for an impact detail at outlet on SDO. She stated that wetland WEZ will be a total take. She also asked to consider rock embankment on near the bank since riprap installation on the far bank could be a challenge.
-

Plan sheet 39

- Stream SES; buffered. Impacts: No stream impacts, however the buffers will be impacted due to the widened roadway facility.

Plan sheets 59-60

- No features, no impacts.

Plan sheet 61

- Stream SOE, SRN, SRO; buffered. Impacts: SOE no stream impacts, however the buffers will be impacted due to the widened roadway facility. SRN due to 2 @ 48" RCPs and a standard base ditch. SRO none.
- Ms. Thomson asked that the details be labeled correctly in the detail sheets.

Plan sheet 62

- No features, no impacts.

Plan sheet 63

- Stream SET; buffered. Impacts: 66" RCP.
- Wetlands WFI, WEX, WEY. Impacts: WEX impacted due to a 66" RCP and lateral V swales. WFI and WEY none.
- Mr. Cook noted that a new hazardous spill basin will be installed at -Y8RPA- 23+00 RT to replace the existing basin impacted by the new ramp alignment.

<u>SECTION 3 4B Planset</u>

Plan sheet 39

- Stream SES; buffered. Impacts: No stream impacts, however the buffers will be impacted due to the widened roadway facility.

Plan sheet 40

- Stream SES; buffered. Impacts: None.
- Wetlands WEM, WEQ. Impacts: None.
- Bioretention basins are designed and shown on this sheet to protect Swift Creek. This sheet will be shown on the permit package even though there are no impacts.

Plan sheet 41

- Streams SET, SDG (Swift Creek), SDN, SEO; buffered (except SET). Impacts: None.
- Wetlands WEM, WEQ. WEN, WEP(1). Impacts: WEM and WEQ none. WEN and WEP(1) temporary impacts due to construction.
- The group held a discussion concerning the retaining walls along -L- 105+50-111+00 LT and -L- 105+50-116+00 RT (primarily the right wall). The original environmental documentation requested no jurisdictional impacts south of Swift Creek. With the Biological Opinion being withdrawn, Mr. Cook asked the group to consider removing the walls from the design. There are constructability issues with the walls, and there is a major concern hydraulically with having a wall in such close proximity to Swift Creek during its higher flow events. It was agreed that consideration could be made for removing the walls, however additional information was needed. Mr. Wood agreed to produce a document detailing the reasons the Team preferred fill slopes instead of retaining walls and to show the potential impacts associated with them.

Plan sheet 42

- Streams SEQ, SEO, SEP; buffered (except SEP). Impacts: SEQ downstream impacted due to a 60" RCP. SEQ upstream impacted to new 54" W.S. pipe installed to convey the stream. SEO and SEP none.
- SEP should not have buffers. SEO will still show full buffers with SEP located within them.
- Wetlands WEN, WEP(1), WEO(1). Impacts: None.
- Mr. Cook asked if the swale along -L- 114+50-118+00 LT could be removed. It was initially designed to provide buffer filtration and to receive overland flow as it approached the fill slope, however the ditch is extremely deep and appr. 150' wide is sections. The group agreed that the swale was beyond maximum extent practicable and could be removed.
- Mr. Wood suggested tying the outlet at-L- 115+00 RT to JS SEQ. Mr. Cook said they would check to see if that would work.
- Ms. Thomson asked for details at the outlets and ditchlines.

Plan sheet 43

- No features, no impacts.

Plan sheet 44

- Stream SEU; buffered. Impacts: 48" CSP.
- Ms. Thomson asked for details at the outlet and bank stabilization.

Plan sheet 45

- Streams SEA, SLW, SLV, SLU; buffered (except SLW). Impacts: SEA impacted due to a 30" CSP and a 36" RCP. It was noted during the meeting that riprap should be in the channel between the 30" and 36" pipes. SLW is impacted by the fill slope. SLV in impacted due to a 54" CSP. SLU is impacted due to a 66" W.S. pipe, buried 1.0'. The lateral swale along -L- 175+00 RT will be removed. The group agreed that the swale was beyond maximum extent practicable.
- Wetlands WOE, WC. WOB, WD. Impacts: WD none. WOE impacted due to a channel and a 36" RCP. WC impacted due to a swale. WOB impacted due to a 66" W.S. pipe.
- Ms. Thomson asked for details and call outs for the bank stabilization.

Plan sheet 46

- Streams SLS, SLR; buffered. Impacts: A 54" W.S. pipe which will act as a high flow conveyance measure; buffers impacted. The existing 66" CMP will be lined, extended, and continue to convey average daily flow. Additionally, lateral base swales impact the buffers.
- Wetlands WOA, WNZ, WH. Impacts: WOA impacted due to a 60" W.S. pipe and lateral V swale. WNZ and WH impacted due to roadway fill.
- Ms. Thomson asked to consider bank stabilization at outlets of pipes to channels and that callouts and details were needed.

Plan sheet 47

- Stream Mill Branch; buffered. Impacts: 60" W.S. pipe, buried 1.0'. The jurisdictional call in the digital file stops before the channel change ties in. The group agreed that the jurisdictional call and buffers could continue beyond the

channel change. The lateral base ditch along -L- 182+00-184+00 LT will be removed due to the extent of grading. The 24" CSP outlet will tie to the 60" CSP outlet. SLR is impacted due to 42", 60" and 66" pipes.

- The project at -L- 212+00-217+00 LT is outside the project corridor. Additional field work will be conducted to check for jurisdictional features.
- Ms. Thomson asked to consider inlet protection and outlet bank stabilization and that callouts and details were needed. She also asked to consider temporary stream impacts associated with dewatering.

Plan sheet 48

- No features, no impacts.

Plan sheet 49

- Streams SJ, buffered; SK, not buffered. Impacts: SJ impacted due to a 54" W.S. pipe, buffers impacted. SK impacted due to a 48" W.S. pipe.
- Wetlands WI, WJ. Impacts: WI impacted due to roadway fill slope. It was noted that this would not be a total take. WJ impacted due to 48" W.S. pipe and is expected to be a total take.
- Ms. Thomson said that the pipe outlet on SK should not be buried; it is not jurisdictional upstream. She also asked to consider Class I outlet protection/bank stabilization.

Plan sheet 50

- Streams SDD, buffered; SEE, not buffered. Impacts: SDD impacted due to a 60" W.S. pipe, buried 1.0', buffers impacted. SEE impacted due to the roadway fill slope. The channel change connecting SEE to the proposed 60" W.S. pipe will be checked for riprap lining.
- Wetland WFF. Impacts: Due to the roadway fill slope.
- The project at -L- 245+50-247+00 LT and -L- 245+50+00-247+50 RT is outside the project corridor. Additional field work will be conducted to check for jurisdictional features.
- Ms. Thomson asked to consider inlet protection and outlet bank stabilization and that callouts and details were needed.

Plan sheet 51

- Stream SQ; buffered. Impacts: 36" W.S. pipe, buffers impacted.
- The project at -L- 266+00-270+00 LT is outside the project corridor. Additional field work will be conducted to check for jurisdictional features.

Plan sheet 52

- Stream SQ; buffered. Impacts: No stream impacts, however the buffers will be impacted due to the widened roadway facility.

Plan sheet 53, 64-72

- No features, no impacts.

After completing the review of the plans, Mr. Cook asked if anyone was interested in a field visit to see the sites and project. No one felt it necessary to review the project in person.

The meeting adjourned.

I-5111_I-4739 4C Interagency Concurrence Point Meeting Minutes

Date: February 21, 2019
Date of Minutes: February 27, 2019
Location: NCDOT Structures Conference Room
Time: 10:00 PM
Minutes Authored By: Matthew Cook
Attendees:

- Eric Alsmeyer – USACE
- Robert Patterson – NCDWR
- Heather Montague – NCDOT Div 5 Env
- Frank Fleming – VHB
- Gordon Cashin – NCDOT NES
- Andy Barry – ST Wooten
- Michael Wood – Three Oaks
- Hayley Wood – Three Oaks
- Richard Bollinger – RS&H
- Mays Yahl – RK&K
- Alexis Burke – RK&K
- Rob Ridings – NCDWR
- Nikki Thomson – NCDOT Div 5 Env
- Paul Atkinson – NCDOT Hydraulics
- Mike Sanderson – NCDOT EPU
- Tim McFadden – NCDOT Design Build
- Matthew Davis – ST Wooten
- Nancy Scott – Three Oaks
- Tom Hildebrand – RS&H
- Alex Vinson – RS&H
- Matthew Cook – RK&K

An interagency concurrence point meeting was held in order to reach agreement on concurrence point 4C for the I-5111_I-4739 I-40 widening project in Wake and Johnston Counties. The following items were discussed and conclusions reached:

Matthew Cook began the meeting and introductions were made. The project is broken up into three design segments. RK&K is the prime engineer for the project and is the designer for Sections 2 and 3. RS&H is a major sub-consultant and is the designer for Section 1. The project is being constructed by S.T. Wooten. The project is approximately 13 miles from the I-440 interchange to Cornwallis Rd.

The Roadway right of way plans are currently under review by NCDOT. The hydraulics design has been accepted by NCDOT. There are 9 culvert survey reports on the project, and seven have been approved. The remaining two are in the review process. The one hydraulic bridge crossing is under review as well.

This project overlaps with the Complete 540 (C540) that is scheduled to begin construction in 2019. The R-2828 portion of the project crosses I-5111_I-4739. The NRTRs also overlap. For consistency moving forward, the C540 naming conventions and determinations of jurisdictional features were utilized where there was overlap. If there is no overlap, then the appropriate environmental document was reviewed (I-5111 NRTR / Addendum or I-4739 NRTR). Per the RFP for I-5111_I-4739, the Design Build Team is required to construct but not design the tapers, acceleration / deceleration lanes, and ramps to the back of the gores for the R-2828 project in portions that it overlaps. There are approximately four I-5111_I-4739 permit sites that overlap the R-2828 project. The R-2828 project is slated to receive its preliminary permit very soon. The I-5111_I-4739 Team anticipates submitting the permit application for review to the agencies within a month. The potential to "double permit" jurisdictional sites is a concern. Per coordination with the R-2828 Team, they will not have hydraulic designs complete to determine final jurisdictional impact numbers until Spring of 2019. This is too late to incorporate their impacts in to the I-5111_I-4739 impacts to make sure a site is not permitted in both projects. Per discussion at this meeting, the following course of action will take place:

- The I-5111_I-4739 permit application will be submitted as is currently designed and required to build the project excluding R-2828 components.
- The R-2828 Team will prepare a permit mod to address the sites where the projects overlap as soon as possible.
- The I-5111_I-4739 Team will issue a permit revision / mod based on the impacts required for the R-2828 project. This could occur during the I-5111_I-4739 permit application review or even after the project receives the 401 and 404.

With this course of action, the I-5111_I-4739 project will not be delayed while the R-2828 Team is designing their project and securing their permit.

Mike Wood stated that there are areas outside the original study corridor where construction needs to occur. These have been reviewed in the field. There are no additional jurisdictional features in these areas, only continuation of already know features. This information will be submitted to NCDOT under separate cover.

Nikki Thomson asked that impacts in jurisdictional features be extended to the right of way line. Her concern was that there could be overclearing that would not be accounted for in the permit. Mr. Cook said that that was not generally how impacts were calculated since it would require additional impacts in areas where no construction would occur. He said that this was done if the proposed impact was very close to the right of way, but not as a general rule. Paul Atkinson stated that extending the impacts was sometimes done, but with design build there is greater communication between the engineer and the contractor which reduced this risk. Eric Alsmeyer did not see a need for this at every site either. Rob Ridings agreed. Mr. Cook and Andy Barry discussed how they have already coordinated to make sure construction areas required to build the project are adequately accounted for.

Mr. Cook handed the meeting over to Richard Bollinger to review the Section 1 4C permit drawings.

SECTION 1 4C Permit Drawings

Permit drawing 9 of 125, buffer drawing 5 of 32

- **Site 1A, 1B:** Stream SZ, buffered. Impacts: There are two locations where the stream will be impacted. Impacts due to the replacement of the headwall / dual 42" CSP, rip rap bank stabilization, the proposed noise wall, and base ditch upstream (1A) and due to the proposed pipe outfall downstream (1B).
- Site 1A and 1B will be called Site 1 since it is a single continuous crossing under the alignments.
- All sites in section 1 will be verified to ensure that allowable and mitigable buffer impacts are being accounted for accurately.

Permit drawing 11 of 125, buffer drawing 6 of 32

- **Site 2A, 2B, 2C:** Stream SAA, buffered. Impacts at 2A (Inset A) are due to construction at the inlet and installation of the sound walls. Impacts at 2B (Inset B) are due to the roadway fill. Impacts at 2C (Inset C) are due to the pipe outfalls and rip rap.
- Sites 2A, 2B and 2C will be called Site 2 since it is a single continuous crossing under the alignments.
- **Site 3:** Stream SBB, buffered. Stream impacts are due to proposed pipe outfall and proposed HW at inlet of 42" RCP and the bank stabilization there. The buffer impacts are due to the bridge bent and bridge construction.

Permit drawing 13 of 125, buffer drawing 7 of 32

- **Site 4A:** Stream SB, buffered. The stream impacts are due to the proposed pipe outfall. Buffer impacts are due to the proposed storm system and widened roadway facility.
- A comment was made on the absence of labels on the ditches behind the sound wall. Ditches and callouts will be verified and labeled as completely as possible for Permit Drawing and Buffer Drawing submittal, and the greatest focus will be on those around impact sites and buffer zones, as well as those providing any treatment.

Permit drawing 15 of 125, buffer drawing 8 of 32

- **Site 4B:** Stream SB, buffered. Buffer impacts here are due to the proposed pipe outfall and permanent stream impacts are due to the rip rap at embankment.
- Site 4A and 4B will be called Site 4 since it is a single continuous crossing under the alignments.
- Rip Rap at embankment is to be taken all the way down to the JS.
- The TS impacts are to be taken all the way to the PDE line.

Permit drawing 17 of 125, buffer drawing 9 of 32

- **Site 5:** Stream SC, not buffered. The impacts are due to the proposed roadway embankment which causes a need for the channel to be relocated.

- The location of the "SC" JS needed to be revised to follow the existing stream location. This had been done on the drawings shown in the presentation, though this had not yet been done for the 4C drawings sent out prior to the meeting. The impact length was roughly the same in both plan sets.
- "TS" to be made legible. Verify impacts can be read at all sites.
- **Site 6A, 6B:** Stream SD, buffered. Upstream and downstream impacts are due to the 72" steel supplemental pipe, headwall, and rip rap.
- Inset B will be adjusted such that it encompasses the whole impact area.
- The Plug/Fill note will be turned on for the 15" CMP.
- The Collar and Extend note will be turned on for the 48" overflow pipe.
- The TS Impacts will be extended to the ROW line.
- The upstream buffer impacts will be extended to the ROW line.
- Sites 6A and 6B will be called Site 6 since it is a single continuous crossing under the alignments.

Buffer drawing 10 of 32

- **Site 6:** Stream SD, buffered. There are no stream impacts on this plan sheet, therefore no permit drawing sheet. Buffer impacts are due to the widened roadway facility.

Permit drawing 20 of 125, buffer drawing 11 of 32

- **Site 7A, 7B:** Stream SF, buffered. Impacts at 7A (upstream) are due to dual 96" supplemental pipes, as well as headwall and channel improvements, including installation of rip rap. Impacts in wetland 'WC' are due to channel improvements and rip rap, with extra area accounted for due to construction. Impacts at 7B (downstream) are the same as U/S.
- The contractor requested access to the southern downstream bank. Impacts will be accounted for there.
- There was discussion as to whether rip rap was need at the outlet of the dual 9x10 RCBC. It was decided that rip rap is not to be added to the downstream end of the crossing, since this area is much more susceptible to aggradation than degradation.
- Sediment will be removed from existing culvert for complete inspection of inside of culvert. Culvert will not be backfilled once inspection is complete and any repairs are made.
- Upstream buffer impacts to be taken to the ROW line.
- Sites 7A and 7B will be called Site 7 since it is a single continuous crossing under the alignments.

Permit drawing 24 of 125, buffer drawing 12 of 32

- **Site 8A, 8B:** Stream SNN, buffered. Wetland WJJ. The 8A (Inset A) permanent stream impacts and buffer impacts are due to proposed pipe and widened roadway facility. The 8B (inset B) permanent stream impacts and buffer impacts are due to the proposed pipe outfall and short channel relocation.
- After further investigation, the wetland impacts due to installation of 36" W.S. pipe are to be removed from the plan sheets and the wetland impact summary sheet, due to how quickly the channel tie in can occur. The easement will also be pulled in tighter here.
- Sites 8A and 8B will be called Site 8 since it is a single continuous crossing under the alignments.
- **Site 9:** Stream SOO, buffered. The permanent stream impacts and buffer impacts are due to the proposed pipe outfalls and the rip rap.
- It was to be verified that the new, proposed outlet pipe inverts were higher than the existing pipe outlet.
    - After the meeting this was investigated and found to all be at the same invert. This will be updated.
- All the rip rap at this outfall will be revised such that it is all the same class.
- The buffer impacts will be updated at Site 8B (downstream SNN) such that they match the impacts shown on the permit drawings.

Permit drawing 26 of 125, buffer drawing 13 of 32

- **Site 10A, 10B:** Stream SG, buffered. 10A (upstream) impacts are due to the proposed channel work and the buffer impacts due to the widened roadway facility. The 10B (downstream) stream and buffer impacts are due to the proposed 30" steel overflow pipe and the existing pipe extension, the channel realignment and associated rip rap, and the rip rap energy dissipator.
- Sites 10A and 10B will be called Site 10 since it is a single continuous crossing under the alignments.

- **Site 11:** Stream SI, buffered. The stream and buffer impacts are due to the proposed 30" W.S. pipe, HW and excavation. The buffer impacts are due to rip rap, excavation and construction methods.
- **Site 12:** Stream SH, buffered. The stream and buffer impacts are due to the stream re-alignment, proposed 72" RCP, HW improvements, and energy dissipater basin. The buffer impacts are due to construction methods and the widened roadway facility.
- RS&H is to re-investigate the tie of stream SH to the side of the energy dissipater basin.
- As questions were asked about whether rip rap would be placed in the stream relocation, NCDOT Hydraulics requested that Rip Rap be turned on for clarification. Rip rap is on the banks and in the bed for the entire stream relocation to ensure stability in an area that has severely scoured out in its present condition.
- The channel change label at SH will be adjusted such that it is easier to read.

Permit drawing 29 of 125, buffer drawing 14 of 32

- **Site 13:** Stream SG, buffered. Impacts are due to the proposed rip rap access to plug and full the existing 15" CMP.
- An enlargement will be added to this sheet, and the rip rap hatching will be turned on in the main, non-enlargement plan sheet.
- The TS length will be reduced, since the fill slope does not extend as far out any more. The buffer impacts will be reduced similarly.
- The extents of the existing transportation facility are to be verified.

Following Section 1, Mr. Cook began the review of the Sections 2 and 3 4C permit drawings.

SECTION 2 4C Permit Drawings

Permit drawing 31 of 125, buffer drawing 15 of 52

- **Sites 14A, 14B, 14C:** Stream SRM, buffered. Impacts: There are three locations where systems discharge in to the stream. Two of the locations closely match existing outfall locations. Buffers will be impacted due to the new pipe outfalls and the widened roadway facility.

Buffer drawing 16 of 52

- **Site 15:** Stream SRJ, buffered. Impacts: No stream impacts, however the buffer will be impacted due to the widened roadway facility.

Permit drawing 33 of 125, buffer drawing 17 of 52

- **Sites 16A, 16B:** Stream SCF, buffered. Impacts: There are two locations where the stream will be impacted due to installing pipe plugs on existing pipes. Buffers will be impacted due to the standard V ditch and pipe plugs for existing pipes.

Permit drawing 35 of 125, buffer drawing 18 of 52

- **Site 16C:** Stream SCF, buffered; wetland WQF. Impacts: Due to 60" WSP buried 1.0', buffers impacted.
- **Sites 17A, 17B, 17C:** Stream SOE, buffered; wetland WQV. Impacts: 17A due to 60" WSP buried 1.0' under -Y5RPC- and 60" WSP not buried installed as additional conveyance measure under -L-. The channel will continue to use the existing pipe, which will be lined, for low flow. 17B due to 60" WSP not buried installed as additional conveyance measure under -L- and 60" WSP not buried installed as additional conveyance measure under -Y5RPA-. The channel will continue to use the existing pipe for low flow. 17C due to 60" WSP not buried installed as additional conveyance measure under -Y5RPA-. Buffers impacted at each location and additionally by a lateral V ditch and a standard V ditch.
- Sites 17A, Site 17B, and Site 17C will all be called Site 17 since it is a single continuous crossing under the alignments.
- Mr. Ridings requested that the buffer impacts for the newly combined Site 17 be checked to be under 1/3 acre of impacts; if impacts are over this threshold they will need to be updated to be shown as mitigable.
- The channel at Site 17B will be checked to determine if riprap is necessary in the bed.
- The buffer impact along -Y5RPC- 52+50-54+00 RT will be checked to determine if it is necessary.
- The following sheets detailing the pipe crossings will be updated to show Site 17 on each as required.

Permit drawing 42 of 125, buffer drawing 19 of 52

- **Site 18:** Stream SOI, buffered; wetland WSD. Impacts: Due to 66" WSP buried 1.0', buffers impacted. The channel upstream needs to be regraded in order to enter the 66" WSP and will utilize riprap in the base of the channel for stability. There is an energy dissipator online downstream due to stability and velocity concerns. Additionally, buffers will be impacted by a lateral base swale.
- The PDE along -Y5RPA- 16+00 RT will be straightened to allow easier construction access; additional buffer will be impacted.

Permit drawing 46 of 125, buffer drawing 20 of 52

- **Site 19:** Stream SNF, buffered. Impacts: Due to 66" WSP buried 1.0', buffers impacted. The transition channel between the existing stream and the entrance to the pipe will utilize riprap in the base of the channel for stability. Additionally, buffers will be impacted by three lateral base ditches and a lateral V swale.
- **Site 20:** Stream SNH, buffered; wetland WQE (primarily shown on and discussed with permit drawing 49).

Permit drawing 49 of 125, buffer drawing 21 of 52

- **Site 20:** Stream SNH, buffered; wetland WQE. Impacts: Due to 66" WSP buried 1.0', buffers impacted. The transition channels between the existing stream and the entrance to the pipe as well as the outlet of the pipe and the existing stream will utilize riprap in the bases of the channels for stability. Additionally, buffers will be impacted by a lateral base swale.

Permit drawing 52 of 125, buffer drawing 22 of 52

- **Site 21:** Stream SNY, buffered. Impacts: Due to 84" WSP not buried installed as additional conveyance measure. The channel will continue to use the existing pipe, which will be lined, for low flow. The transition channel between the existing stream and the entrance to the pipe will utilize riprap in the base of the channel for stability. Buffers will be impacted the pipe and also by a lateral base ditch and two lateral base swales.
- **Site 22:** Stream SOC, buffered. Impacts: Due to 84" WSP not buried installed as additional conveyance measure and the proposed fill slope; buffers impacted. Additionally, buffers will be impacted by a lateral base ditch and a channel change due to the proposed fill extending in to the channel. The transition channel between the existing stream and the tie to stream SNY will utilize riprap in the base of the channel for stability.
- Mr. Ridings requested that the buffer impacts for Site 22 be mitigable instead of allowable since the impacts are parallel to the roadway facility.

Permit drawing 55 of 125, buffer drawing 23 of 52

- **Site 23A:** Stream SEM, buffered. Impacts: Due to the proposed fill slope extending in to the stream and utilization of a special lateral base ditch. A channel change will be used as the new conveyance. Buffers will be impacted.
- **Site 23B:** Stream SEM, buffered. Impacts: Due to a 15" CSP discharging in to the stream, buffers impacted.
- Mr. Ridings requested that the buffer impacts for Sites 23A and 23B be mitigable instead of allowable since the impacts are parallel to the roadway facility.

Permit drawing 57 of 125, buffer drawing 24 of 52

- **Site 23C:** Stream SEM, buffered. Impacts: Due to the proposed fill slope extending in to the stream and utilization of a special lateral base ditch; buffers impacted.
- **Site 24:** Stream SLI, buffered; wetland WNQ. Impacts: Due to the realignment of SEM in a special lateral base ditch. The peninsula between SEM and SLI (-L- 379+00 LT) is lined with riprap due to the anticipation of potential scour with the new channel. Wetland WNQ will be a total take. Buffers will be impacted.
- **Site 25:** Stream SNM, buffered. Impacts: No stream impacts, however the buffer will be impacted due to a special lateral base ditch.
- **Site 26A:** Stream SNK, buffered. Impacts: Due to a 15" RCP discharging in to the stream, buffers impacted.
- Mr. Ridings requested that the buffer impacts for Sites 23C and 24 be mitigable instead of allowable since the impacts are parallel to the roadway facility.
- The buffer impacts at Site 23C will be extended to the existing right of way along -L- 374+50-375+50 LT.
- The buffer impacts at Site 26A will be adjusted due to new surveys which modified the top of bank widths.

Permit drawing 59 of 125, buffer drawing 25 of 52

- **Site 26B:** Stream SNK, buffered. Impacts: Due to 60" WSP not buried installed as additional conveyance measure. The channel will continue to use the existing pipe for low flow. Buffers will be impacted.
- **Site 27:** Stream SNO, buffered. Impacts: Due to 60" WSP not buried installed as additional conveyance measure. The channel will continue to use the existing pipe for low flow. Buffers will be impacted by the 60" WSP and additionally by a lateral V ditch.
- **Site 28:** Stream SEM, buffered. Impacts: Due to 60" WSP not buried installed as additional conveyance measure. The channel will continue to use the existing pipe for low flow. Buffers will be impacted.
- **Site 29:** Stream SEK, buffered. Impacts: Due to 54" WSP buried 1.0', buffers impacted. The transition channel between the existing stream and the entrance to the pipe will utilize riprap in the base of the channel for stability. Buffers will be impacted by the 54" WSP and additionally by a lateral V swale.
- A "TS" will be added to the temporary stream impact at Site 26B for clarity.
- The buffer impacts at Site 28 will be adjusted due to new surveys which modified the top of bank widths.

Permit drawing 62 of 125, buffer drawing 26 of 52

- **Site 29:** See information on permit drawing 59. Additionally, this permit site along -L- LT is impacted by the R-2828 project potentially outside of the impacts shown on this project (potential stream, wetland, and buffer impacts).
- **Site 31:** Stream SEL buffered. Impacts: Due to 72" WSP not buried installed as additional conveyance measure. The channel will continue to use the existing pipe (extended) for low flow. Buffers will be impacted by the 72" WSP and existing pipe extension. Buffers will be impacted by these pipes and additionally by a lateral V swale and a special lateral base ditch. Additionally, this permit site along -L- LT is impacted by the R-2828 project potentially outside of the impacts shown on this project (potential stream and buffer impacts).
- Additional PDE will be added along -L- 405+50 LT to connect to the approximate 90 degree angle in the right of way. Additional buffer will be impacted.

Permit drawing 66 of 125

- **Site 32:** Stream SEV, buffered downstream but not at the project. Impacts: Due to 30" RCP not buried. The pipe is not buried since the channel upstream is not jurisdictional. Additionally, this permit site along -L- LT is impacted by the R-2828 project potentially outside of the impacts shown on this project (potential stream impacts).
- Mike Wood said he would check on the appropriateness of the intermittent designation downstream of perennial.

Permit drawing 68 of 125, buffer drawing 27 of 52

- **Site 33:** Stream SDT, buffered; wetlands WFC and WFA. Impacts: Due to 54" RCP under -Y8RPB- and under -L-. Neither pipe is buried since the stream goes underground just upstream of the project. WFC and WFA are total takes. Buffers between -Y8RPB- and -L- are a total take. The outlet channel between the pipe and the existing stream will utilize riprap in the base of the channel for stability. Buffers along -L- RT are impacted by the 54" RCP and 15" CSP.
- **Site 34:** Stream SDU, buffered; wetland WFB. Impacts: Due to the project gore area and special lateral V ditch in between -L- and -Y8RPB-. WFB, SDU, and its buffers are all total takes.
- **Site 35:** Stream SDS, buffered. Impacts: No stream impacts, however the buffer will be impacted due to the lateral base swale.
- Mr. Atkinson suggested continuing the lateral base swale along -Y8RPB- 20+75 LT to the inlet of the 54" RCP since wetland WFC is a total take.
- Mr. Ridings requested that the buffer impacts for Site 34 be mitigable instead of allowable since the impacts are parallel to the roadway facility.

Permit drawing 71 of 125, buffer drawing 28 of 52

- **Site 36:** Stream SDO, buffered. Impacts: Due to 36" WSP not buried and 15" CSP not buried. The pipes are not buried since the channel upstream is not jurisdictional. Buffers will be impacted. Additionally, this permit site along -L- RT is impacted by the R-2828 project potentially outside of the impacts shown on this project (potential stream and buffer impacts).
- **Site 37:** Wetland WEZ. Impacts: Due to 36" RCP not buried and standard V ditch. WEZ is a total take.
- **Site 38:** Stream SES, buffered. Impacts: No stream impacts, however the buffer will be impacted due to a standard base ditch and the roadway fill.

- Mr. Ridings requested that the buffer impacts for Site 38 be mitigable instead of allowable since the impacts are parallel to the roadway facility.

Buffer drawing 31 of 52

- **Site 38:** See information on buffer drawing 28.

Permit drawing 74 of 125, buffer drawing 29 of 52

- **Site 59:** Stream SRN, buffered. Impacts: Due to 2 @ 48" RCPs not buried. The pipes are not buried since the channel upstream is not jurisdictional. Buffers will be impacted by the pipes and a standard base ditch.

Utility permit impact package, utility permit drawing 2 of 3

- **Site 59:** Stream SRN, buffered. Impacts: Temporary due to boring by Duke Energy.

Permit drawing 77 of 125, buffer drawing 30 of 52

- **Site 60:** Stream SET, buffered; wetland WEX. Impacts: Upstream due to removal of a sill on the existing pipe. Downstream due to extension of the existing 60" RCP and 15" RCP to a 2GI and a new 66" RCP outlet. Buffers will be impacted by the pipes and two lateral V swales.
- Sites 60A and 60B will be combined on the impacts summary table.

SECTION 3 4C Permit Drawings

Permit drawing 81 of 125

- No impacts. Bioretention basins are designed and shown on this sheet to protect Swift Creek. This sheet will be shown on the permit package.

Permit drawing 84 of 125, buffer drawing 33 of 52

- **Site 39:** Wetland WEM. Impacts: Due to widening of roadway facility and extension of existing 60" RCP. Additionally, this permit site along -L- LT is impacted by the R-2828 project potentially outside of the impacts shown on this project (potential wetland impacts).
- **Site 40:** Stream SDG (Swift Creek), buffered. Impacts: Due to widened roadway facility and extension of existing 60" RCP. Buffers will be impacted. In the vicinity of the proposed bridges, impacts are due to the potential need to line the stream banks in the vicinity of the proposed bridges with riprap if during construction they become unstable. This may not occur and the riprap might not be needed. This will be evaluated in the field during construction. Additional stream buffers will be impacted.
- **Site 41:** Wetland WEP(1). Impacts: Due to the widened roadway facility.
- **Site 42:** Stream SDN, buffered; wetland WEN. Impacts: Due to the widened roadway facility. Buffers will be impacted.
- Stream SEO, buffered. **This site will be renamed Site 43**, and a callout will be added to the drawing. Impacts: Due to the widened roadway facility.
- The fill slopes along Site 39 will remain 3:1. The RFP for the project dictates 3:1 slopes be used in Johnston County. The wetland impact due to the toe protection will extend outside the fill slope per the detail.
- The fill slopes along Site 40, -L- 99+00-101+50 RT will be 2:1 and armored per Geotechnical recommendation. This will be done to minimize impacts to the Swift Creek buffer and to pull the roadway facility farther away from the bend in the channel at this location.
- Mr. Ridings requested that the buffer impacts for Site 40 along -L- 99+00-101+50 RT be mitigable instead of allowable since the impacts are parallel to the roadway facility.
- The impacts along Swift Creek at the proposed bridges (Site 40) will only extend in to the creek approximately 10' from the stream edges. A note will be added to the plans discussing the riprap along the banks and that its installation might not be necessary. The impacts will be extended further upstream to allow for the tie-in of the proposed ditch along -L- 105+00 RT (permanent and temporary).
- The buffer impacts along Swift Creek at the proposed bridges (Site 40) will extend 20' additional outside the bridge to the right of -L- on the upstream left side (-L- 103+50 RT) due to construction. They will also extend 20' additional outside the bridge to the left of -L- on the downstream right side (-L- 104+50 LT) due to construction.

- Mr. Ridings requested that the buffer impacts for Site 40 in the vicinity of the proposed bridges be allowable instead of mitigable since the impacts are due to the bridges.
- Andy Barry noted that it is not their intention during construction to enter Swift Creek unless absolutely necessary. Removal of the existing piers will not require entrance to Swift Creek.
- Mr. Cook stated that a best faith effort was put forth to keep bridge interior bents more than 10' outside the top of bank for Swift Creek. However, due to the sinuosity of the creek some bents are within 10' of the top of banks.
- Mr. Ridings requested that the buffer impacts for stream SEO (now Site 43) be mitigable instead of allowable since the impacts are parallel to the roadway facility.
- The notes around Insets A and B will be moved to provide clarity.
- For Site 41, originally a retaining wall had been proposed in this area along -L- 105+50-111+0 LT. During the discussion of this site, Mr. Cook stated that at a minimum the sloped abutment under the bridge would need to wrap around the bridge to the left of -L- (-L- 105+50 LT). This was agreed upon. He then proceeded to ask if the wall could be removed up to approximately -L- 107+50 LT. There are no jurisdictional features along this portion of -L-. The wall would be picked back up at -L- 107+50 LT and run to -L- 111+00 LT. Mr. Wood pointed out that while there are no jurisdictional features, the area served as a floodplain for Swift Creek. Mr. Alsmeyer was OK with the removal of the wall as was Mr. Ridings.
- For Site 42, correspondence between NCDOT and the agencies occurred at the request of the Design Build Team concerning the retaining wall. This was initiated at the 4B meeting. Mr. Wood provided the information to NCDOT. It was decided in that correspondence that the wall would not be advisable due to hydraulic, geotechnical, and construction concerns. The wall has been removed. 2:1 slope will be used and armored per Geotechnical recommendation. SDN will be realigned to continue allow wetland WEN to reach Swift Creek. Mr. Alsmeyer asked if this was necessary. Mr. Wood said it would be recommended.

Permit drawing 92 of 125, buffer drawing 34 of 52

- **Site 43: This will now be named Site 44.** Stream SEQ, buffered; wetland WEO(1). Impacts: Due to extension of an existing 60" RCP not buried (since it acts as an equalizer pipe), the widened roadway facility and a lateral base ditch. Buffers will be affected by the pipe and ditch as well as an additional lateral base swale.
- The drawings show Site 43 on -L- LT and Site 44 on -L- RT. This will be Site 444 for both sides of -L-.
- The following sheets detailing the pipe crossings will be updated to show Site 44 as required.

Permit drawing 94 of 125, buffer drawing 35 of 52

- **Site 45:** Stream SEU, buffered. Impacts: Due to 48" RCP not buried. The pipe is not buried since the channel upstream is not jurisdictional.

Permit drawing 96 of 125, buffer drawing 36 of 52

- **Site 46:** Stream SEA, buffered; wetland WOE. Impacts: Due to 30" RCP and 30" CSP not buried. The pipe is not buried since the channel upstream is not jurisdictional. Buffers will be impacted. SEA and WOE are total takes.
- **Site 47:** Stream SLV, buffered. Impacts: Due to a 54" CSP not buried. The pipe is not buried since the channel upstream is not jurisdictional. Buffers will be impacted.
- **Site 48:** Stream SLW, not buffered. Impacts: Due to a 54" CSP not buried. The pipe is not buried since the channel upstream is not jurisdictional. Buffers will be impacted.
- **Site 49:** Stream SLU, buffered; wetland WC and WOB. Impacts: Due to 66" WSP buried 1.0'. WC impacted by a lateral base swale and is a total take. WOB is a total take due to the 66" WSP. Buffers impacted by the 66" WSP and also due to a 36" CSP, a lateral base swale and a 15" CSP.
- Ms. Thomson asked for the Inset A box to be drawn around the outlet of the pipe.
- The stream SEA in Inset C will be checked to show the appropriate impact hatching.
- PDE will be modified at Sites 47 and 48 and permit impacts modified accordingly.

Permit drawing 100 of 125, buffer drawing 37 of 52

- **Site 50:** Stream SLS, buffered; wetland WOA. Impacts: Due to 60" WSP and 60" CSP, buried 1.0', buffers impacted. Additionally, buffers will be impacted by a lateral V swale and a channel change. The transition channel between the exit of the proposed pipe and the existing stream will utilize riprap in the base of the channel for stability.

- **Site 51:** Stream SLR, buffered; wetlands WNZ and WH; pond P2. Impacts: Due to -Y2RPA3-, 60" WSP, and 66" RCP not buried. Since all the jurisdictional features upstream of the cross pipe are being impacted the proposed pipes will ne be buried. WNZ, WH, and Pond 2 will be total takes. Buffers will be impacted.
- **Site 52:** Wetland WGG. Impacts: Due to -Y2RPD3- construction.
- Additional toe protection will be added to the right of the 60" WSP entrance.

Permit drawing 108 of 125, buffer drawing 40 of 52

- **Site 51:** See information on permit drawing 96.
- **Site 53:** Stream Mill Branch, buffered. Impacts: Due to 54" WSP not buried installed as additional conveyance measure. The channel will continue to use the existing pipe, which will be lined and extended, for low flow. Buffers will be impacted by the pipes and also by two lateral base swales and a lateral base ditch.

Permit drawing 111 of 125, buffer drawing 41 of 52

- **Site 54:** Stream SJ, buffered; wetland WI. Impacts: Due to 54" WSP not buried. The pipe is not buried since the channel upstream is not jurisdictional. WI will be a total take. Buffers will be impacted by the pipe and by a lateral base swale.
- **Site 55:** Stream SK, not buffered; wetland WJ. Impacts: Due to 48" WSP not buried. The pipe is not buried since the channel upstream is not jurisdictional. WJ will be a total take.

Permit drawing 114 of 125, buffer drawing 42 of 52

- **Site 56:** Stream SEE, not buffered. Impacts: Due to widened roadway facility. The transition channel between existing channel and the entrance of the proposed pipe will utilize riprap in the base of the channel for stability.
- **Site 57:** Stream SDD, buffered; wetland WFF. Impacts: Due to 60" WSP buried 1.0'. WFF is a total take. Buffers will be impacted by the pipe and also by a channel change and a lateral base swale.

Permit drawing 118 of 125, buffer drawing 43 of 52

- **Site 58:** Stream SQ; buffered. Impacts: Due to 36" WSP not buried. The pipe is not buried since the channel upstream is not jurisdictional. Buffers will be impacted by the pipe and also by a lateral base swale.
- The project at -L- 266+00-270+00 LT is outside the project corridor. Additional field work will be conducted to check for jurisdictional features.

Buffer drawing 44 of 52

- **Site 58:** Stream SQ, buffered. Impacts: No stream impacts, however the buffer will be impacted due to the widened roadway facility.

The meeting adjourned.

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
TIM BAUMGARTNER
Director

NORTH CAROLINA
Environmental Quality

April 26, 2019

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

Dear Mr. Harris:

Subject: DMS Mitigation Acceptance Letter:

I-5111 / I-4739, I-40 Widening, Wake and Johnston Counties

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the stream, wetland and buffer mitigation for the subject project. Based on the information supplied by you on April 26, 2019, the impacts are located in CU 03020201 of the Neuse River basin in the Central Piedmont and Northern Inner Coastal Plain (CP and NICP) Eco-Regions, and are as follows:

Stream and Wetlands	River Basin	CU Location	Eco-Region	Stream			Wetlands		
				Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Neuse	03020201	CP / NICP	0	0	6,899.0	1.04	0	0

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

All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible to ensure that appropriate compensation for the buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWR's Buffer Authorization Certification, DMS will transfer funds from the NCDOT 2984 Fund into the Riparian Restoration Buffer Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for TIP Number I-5111 / I-4739. Subsequently, DMS will conduct a review of current NCDOT ILF Program mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Restoration Buffer Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Program.

Buffer	River Basin	CU	Eco-Region	Buffer Impacts		
				Zone 1	Zone 2	TOTAL
Impacts	Neuse	03020201	CP / NICP	312,197.0	178,104.0	490,301.0

The impacts and associated mitigation needs were under projected by the NCDOT in the 2019 impact data. DMS will commit to implement sufficient compensatory stream, wetland and buffer mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS

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

Sincerely,

James B. Stanfill
DMS Asset Management Supervisor

Cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NC Division of Water Resources
File: I-5111 / I-4739

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111 / I-4739 (SEC1) **County(ies):** Wake

General Project Information

WBS Element:	42346.3.1	**TIP Number:**	I-5111 / I-4739 (SEC1)	**Project Type:**	Roadway Widening	**Date:**	4/15/2019
NCDOT Contact:	Paul Atkinson, P.E.			**Contractor / Designer:**	Richard Bollinger, P.E. (RS&H)		
Address:	1000 Birch Ridge Drive Raleigh, NC 27610			**Address:**	8521 Six Forks Road Suite 400 Raleigh, NC 27615		
Phone:	(919) 707-6707			**Phone:**	(919) 926-4105		
Email:	patkinson@ncdot.gov			**Email:**	Richard.bollinger@rsandh.com		
City/Town:	Raleigh			**County(ies):**	Wake		
River Basin(s):	Neuse			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	2.823 MI.	**Surrounding Land Use:**	Woods, Residential		
	Proposed Project			**Existing Site**	
Project Built-Upon Area (ac.)	77.8 ac.			49.9 ac.	
Typical Cross Section Description:	A 170-foot wide typical section will be used, providing ten 12-foot travel lanes, two 14-foot exterior shoulder sections, 12-feet of the shoulder is paved, as well as two 11' interior paved shoulder sections. Accomodations for a future managed lane and six foot buffer will be provided at all bridge locations.			The existing 165-foot wide typical section features six 12-foot travel lanes, two 10-foot exterioir shoulder sections, as well as two 4-foot interior paved shoulder sections and a grass median.	
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 166,400	Year: 2040		Existing: 103,200	Year: 2015
General Project Narrative: (Description of Minimization of Water Quality Impacts)	I-5111 / I-4739 (Section 1) involves widening Interstate 40, including the construction of multiple new alignments and bridges in Wake County. The majority of the widening will occur in the existing median. Aquatic habitats within the study area consist of wetlands, as well as perennial and intermittent streams. Water quality treament will be provided via treatment swales that will be utlized throughout the project to the greatest extent practicable upstream of all riparian buffer zones. There will be a rip rap energy dissipator basin at the downstream end of the culvert at -L- Sta. 149+00. This culvert outlets into Poplar Creek and the dissipator basin is needed due to extreme scour in the present conditions due to high velocities coming out of the existing culvert. The dissipator basin, and the rip rap channel realignment should stabilize the stream in the project vicinity. There will be no direct discharge to the buffer zones via deck drains from the proposed bridges.				

Waterbody Information

Surface Water Body (1):	UT to Swift Creek		**NCDWR Stream Index No.:**	27-43-(8)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SY			**Buffer Rules in Effect:**	Neuse	
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?	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)						

WBS Element: 42346.3.1 **TIP No.:** I-5111 / I-4739 (SEC1) **County(ies):** Wake

Additional Waterbody Information

Surface Water Body (2):	UT to Swift Creek		**NCDWR Stream Index No.:**	27-43-(8)	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SZ			**Buffer Rules in Effect:**	Neuse
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (3):	UT to Swift Creek		**NCDWR Stream Index No.:**	27-43-(8)	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SBB			**Buffer Rules in Effect:**	Neuse
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (4):	UT to Swift Creek		**NCDWR Stream Index No.:**	27-43-(8)	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SAA			**Buffer Rules in Effect:**	Neuse
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (5):	UT to Little Arm Branch		**NCDWR Stream Index No.:**	27-34-11-2	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SB			**Buffer Rules in Effect:**	Neuse
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)					

WBS Element: 42346.3.1 **TIP No.:** I-5111 / I-4739 (SEC1) **County(ies):** Wake

Additional Waterbody Information

Surface Water Body (6):	UT to Little Arm Branch		**NCDWR Stream Index No.:**	27-34-11-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SC			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (7):	UT to Little Arm Branch		**NCDWR Stream Index No.:**	27-34-11-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SD			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (8):	UT to Little Arm Branch		**NCDWR Stream Index No.:**	27-34-11-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SF			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (9):	Little Arm Branch		**NCDWR Stream Index No.:**	27-34-11-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SE			**Buffer Rules in Effect:**	Neuse	
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)						

WBS Element: 42346.3.1 **TIP No.:** I-5111 / I-4739 (SEC1) **County(ies):** Wake

Additional Waterbody Information

Surface Water Body (10):	UT to White Oak Creek		**NCDWR Stream Index No.:**	27-43-11		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SNN			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (11):	UT to White Oak Creek		**NCDWR Stream Index No.:**	27-43-11		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SOO			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (12):	UT to Poplar Branch		**NCDWR Stream Index No.:**	27-34-11-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SI			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (13):	UT to Poplar Branch		**NCDWR Stream Index No.:**	27-34-11-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SH			**Buffer Rules in Effect:**	Neuse	
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)						

WBS Element: 42346.3.1 **TIP No.:** I-5111 / I-4739 (SEC1) **County(ies):** Wake

Additional Waterbody Information

Surface Water Body (14):	UT to Poplar Branch		**NCDWR Stream Index No.:**	27-34-11-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SJ			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (15):	Poplar Branch		**NCDWR Stream Index No.:**	27-34-11-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SG			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (16):			**NCDWR Stream Index No.:**			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**				
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**		**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?		(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 (17):			**NCDWR Stream Index No.:**			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**				
		Supplemental Classification:				
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:				**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**		**Dissipator Pads Provided in Buffer?**		
Deck Drains Discharge Over Water Body?		(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)						

WBS Element: 42346.3.1 **TIP No.:** I-5111 / I-4739 (SEC1) **County(ies):** Wake

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
4	-Y1RPWB- 14+50 - 15+00 RT	(2)UT to Swift Creek	4.0	6.0	6.0	0.2	24	50	0.30%	1.0	0.8	1.3	0.8	No	Yes
4	-Y1RPWB- 15+00 - 18+00 RT	(2)UT to Swift Creek	0.0	6.0	6.0	0.2	24	300	1.72%	1.0	1.6	1.3	1.7	No	Yes
4	-Y1RPWB- 19+00 - 20+50 RT	(2)UT to Swift Creek	0.0	4.0	3.0	0.2	24	150	3.02%	1.0	1.8	1.3	1.9	No	Yes
5	-Y1RPEB- 19+00 - 19+50 RT	(2)UT to Swift Creek	0.0	8.0	6.0	0.4	38	50	0.52%	1.9	1.2	2.4	1.3	No	Yes
5	-Y1RPA- 19+80 - 21+94 RT	(3)UT to Swift Creek	0.0	6.0	6.0	0.2	15	214	3.68%	0.6	1.9	0.8	2.1	No	Yes
5	-Y1RPA- 21+94 - 24+30 RT	(3)UT to Swift Creek	0.0	6.0	6.0	0.2	17	236	3.24%	0.7	1.9	0.9	2.0	No	Yes
5	-Y1RPA- 25+00 - 28+50 RT	(3)UT to Swift Creek	0.0	6.0	6.0	0.3	32	350	2.28%	1.3	1.9	1.7	2.0	No	Yes
5	-Y1RPA- 29+00 - 32+50 RT	(3)UT to Swift Creek	0.0	6.0	6.0	0.3	26	350	2.14%	1.1	1.8	1.4	1.9	No	Yes
5	-Y1RPWB- 34+80 - 37+00 RT	(2)UT to Swift Creek	4.0	6.0	4.0	0.4	37	220	1.66%	1.9	1.7	2.4	1.9	No	Yes
5	-L2RT- 472+65 - 474+75 LT	(3)UT to Swift Creek	6.0	3.0	3.0	1.0	97	210	1.00%	5.1	2.0	5.1	2.0	No	Yes
5	-Y1RPBD- 40+00 - 41+00 LT	(3)UT to Swift Creek	6.0	4.0	4.0	0.2	24	100	4.00%	1.3	1.9	1.3	1.9	No	Yes
6	-L- 16+50 - 18+00 RT	(3)UT to Swift Creek	0.0	6.0	6.0	0.3	25	150	1.84%	1.1	1.7	1.4	1.6	No	Yes
6	-L- 20+00 - 22+00 RT	(3)UT to Swift Creek	0.0	12.0	5.0	0.6	58	200	1.20%	5.1	2.0	5.8	2.0	No	Yes
6	-L- 22+50 - 23+00 RT	(3)UT to Swift Creek	0.0	8.0	16.0	0.6	58	50	0.62%	5.1	1.4	5.8	1.5	No	Yes
6	-L- 23+00 - 25+00 RT	(3)UT to Swift Creek	0.0	8.0	8.0	0.7	65	200	1.52%	2.7	1.9	3.5	2.0	No	Yes
6	-L- 24+50 - 28+00 LT	(3)UT to Swift Creek	0.0	6.0	3.0	0.8	76	350	0.64%	3.1	1.6	4.0	1.7	No	Yes
6	-L- 21+50 - 22+00 LT	(3)UT to Swift Creek	0.0	6.0	6.0	0.4	41	50	1.94%	1.7	1.9	2.2	2.1	No	Yes
7	-L- 31+00 - 33+00 LT	(5)UT to Swift Creek	0.0	6.0	4.0	2.0	202	200	0.50%	8.3	1.8	10.7	1.9	No	Yes
7	-L- 33+50 - 34+50 LT	(5)UT to Swift Creek	0.0	6.0	4.0	2.0	202	100	0.58%	8.3	1.9	10.7	2.1	No	Yes

Additional Comments

Surface Water Bodies (2), (3), and (5) are buffered.

WBS Element: 42346.3.1 **TIP No.:** I-5111 / I-4739 (SEC1) **County(ies):** Wake

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?
7	-L- 37+00 - 37+50 LT	(5)UT to Swift Creek	0.0	6.0	6.0	2.0	202	50	0.70%	8.3	2.0	10.7	2.1	No	Yes
7	-L- 30+00 - 35+00 RT	(5)UT to Swift Creek	0.0	3.0	3.0	2.5	245	500	0.50%	10.1	2.0	13.0	2.1	No	Yes
8	-L- 38+00 - 39+00 RT	(6)UT to Little Arm Branch	0.0	8.0	4.0	1.3	132	100	0.71%	5.4	1.8	7.0	1.9	No	Yes
8	-L- 41+00 - 43+00 RT	(6)UT to Little Arm Branch	0.0	12.0	3.0	1.3	132	200	0.93%	5.4	1.9	7.0	2.0	No	Yes
8	-L- 48+00 - 49+00 RT	(6)UT to Little Arm Branch	4.0	6.0	4.0	0.9	85	100	1.36%	3.5	2.0	4.5	2.1	No	Yes
8	-L- 48+00 - 49+00 LT	(6)UT to Little Arm Branch	0.0	6.0	6.0	0.9	88	100	1.01%	3.6	1.8	4.7	2.0	No	Yes
8	-L- 50+00 - 51+00 LT	(6)UT to Little Arm Branch	6.0	6.0	4.0	0.9	88	100	1.68%	3.6	2.0	4.7	2.2	No	Yes
8	-L- 51+00 - 53+00 LT	(6)UT to Little Arm Branch	0.0	8.0	4.0	0.7	74	200	1.51%	3.0	2.0	3.9	2.1	No	Yes
9	-L- 55+00 - 56+00 LT	(6)UT to Little Arm Branch	0.0	6.0	6.0	0.2	18	100	1.56%	0.7	1.5	1.0	1.6	No	Yes
9	-L- 56+00 - 57+00 LT	(6)UT to Little Arm Branch	0.0	6.0	6.0	0.4	41	100	1.14%	1.7	1.6	2.2	1.7	No	Yes
10	-L- 67+00 - 70+00 RT	(7)UT to Little Arm Branch	4.0	5.0	4.0	2.1	208	300	0.60%	8.6	1.9	11.0	2.1	No	Yes
10	-L- 74+00 - 75+00 RT	(7)UT to Little Arm Branch	0.0	6.0	6.0	2.1	208	100	0.49%	8.6	1.7	11.0	1.9	No	Yes
10	-L- 70+00 - 71+00 LT	(7)UT to Little Arm Branch	0.0	4.0	4.0	1.0	101	100	0.60%	4.2	1.7	5.4	1.8	No	Yes
10	-L- 72+50 - 73+50 LT	(7)UT to Little Arm Branch	0.0	4.0	3.0	1.1	107	100	0.50%	4.4	1.7	5.7	1.8	No	Yes
10	-L- 78+00 - 80+50 RT	(7)UT to Little Arm Branch	0.0	6.0	4.0	0.4	44	250	1.32%	1.8	1.8	2.3	1.9	No	Yes
11	-L- 82+00 - 83+00 RT	(8)UT to Little Arm Branch	0.0	8.0	12.0	0.9	85	100	1.52%	3.5	1.9	4.5	2.0	No	Yes
13	-L- 107+60 - 110+85 RT	(8)UT to Little Arm Branch	0.0	6.0	4.0	0.2	17	325	0.74%	0.7	1.1	0.9	1.2	No	Yes
13	-L- 111+00 - 112+50 RT	(8)UT to Little Arm Branch	0.0	6.0	6.0	0.1	8	150	1.78%	1.0	1.7	1.3	1.8	No	Yes
13	-L- 113+50 - 122+00 RT	(8)UT to Little Arm Branch	0.0	4.0	4.0	1.7	174	850	0.40%	7.2	1.7	9.2	1.8	No	Yes

Additional Comments

Surface Water Bodies (5), (6), (7), and (8) are buffered.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111 / I-4739 (SEC1) **County(ies):** Wake

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?
13	-L- 113+50 - 122+00 LT	(8)UT to Little Arm Branch	0.0	6.0	4.0	0.3	25	850	1.70%	1.0	1.5	1.3	1.6	No	Yes
13	-Y3RPC- 17+50 - 18+50 RT	(8)UT to Little Arm Branch	0.0	6.0	6.0	0.3	26	100	2.74%	1.1	2.0	1.4	2.1	No	Yes
13	-Y3RPB- 13+29 - 15+84 LT	(8)UT to Little Arm Branch	0.0	6.0	6.0	0.6	60	255	1.35%	2.5	1.9	3.2	2.0	No	Yes
14	-L- 125+50 - 127+00 RT	(10)UT to White Oak	0.0	6.0	4.0	0.3	32	150	0.88%	1.3	1.4	1.7	1.5	No	Yes
14	-L- 127+00 - 135+00 RT	(11)UT to White Oak	0.0	6.0	4.0	1.5	151	800	0.58%	6.2	1.8	8.0	1.9	No	Yes
14	-Y3RPC- 23+00 - 26+00 LT	(8)UT to Little Arm Branch	0.0	6.0	6.0	0.3	25	300	1.44%	1.0	1.6	1.3	1.7	No	Yes
14	-Y3RPA- 16+03 - 21+00 RT	(11)UT to White Oak	0.0	6.0	5.0	0.2	18	497	1.74%	0.7	1.5	1.0	1.6	No	Yes
14	-Y3RPA- 16+03 - 22+00 LT	(11)UT to White Oak	0.0	6.0	4.0	0.5	49	597	1.85%	1.0	1.7	1.3	1.8	No	Yes
14	-Y3RPD- 14+73 - 16+25 LT	(11)UT to White Oak	0.0	6.0	4.0	0.3	29	152	2.10%	1.2	1.9	1.5	2.0	No	Yes
14	-Y3RPD- 17+79 - 18+00 LT	(11)UT to White Oak	0.0	6.0	4.0	0.3	29	21	1.95%	1.2	1.9	1.5	2.0	No	Yes
15	-L- 137+50 - 144+50 RT	(15)Poplar Branch	0.0	6.0	3.0	1.7	174	700	0.52%	7.2	1.8	9.2	1.9	No	Yes
15	-L- 148+00 - 148+50 RT	(15)Poplar Branch	0.0	6.0	5.0	0.5	51	50	1.32%	2.1	1.8	2.7	1.9	No	Yes
15	-L- 148+50 - 150+50 RT	(12)UT to Poplar	4.0	3.0	3.0	1.7	174	200	3.46%	6.3	1.9	8.3	2.0	No	Yes
15	--L- 152+00 - 152+50 LT	(15)Poplar Branch	0.0	6.0	8.0	0.5	45	50	1.70%	1.9	1.8	2.4	1.9	No	Yes

Additional Comments

Surface Water Bodies (8), (10), (11), (12), and (15) are buffered.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: **TIP No.:** I-5111 / I-4739 (SEC **County(ies):** Wake

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?
15	-L- 149+00 LT	(15)Poplar Branch	Riprap Energy Dissipator Basin	Class I	134.4	Pipe	72	270.0	3.8	Yes

Additional Comments

Surface Water Body (15) is buffered.

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

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

General Project Information

WBS Element:	42346.3.1	**TIP Number:**	I-5111/I-4739 (SEC 2)	**Project Type:**	Roadway Widening	**Date:**	3/12/2019
NCDOT Contact:	Paul Atkinson, PE			**Contractor / Designer:**	RK&K: Matthew Cook, PE		
Address:	NC Department of Transportation 1020 Birch Ridge Dr Raleigh, NC 27610			**Address:**	900 Ridgefield Drive Suite 350 Raleigh, NC 27609		
Phone:	919-707-6707			**Phone:**	919-878-9560		
Email:	patkinson@ncdot.gov			**Email:**	mcook@rkk.com		
City/Town:	Raleigh			**County(ies):**	Wake	Johnston	
River Basin(s):	Neuse			**CAMA County?**	No	No	
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	13.04	**Surrounding Land Use:**	Commercial / Industrial / Residential		
	Proposed Project			**Existing Site**	
Project Built-Upon Area (ac.)	372.3 ac.			353.3 ac.	
Typical Cross Section Description:	The proposed typical cross section for I-40 will be will have four to five 12' lanes in each direction, 12' outside shoulders and 11' inside shoulders. For most of the project there will be median barrier running the length of the roadway facility.			The existing typical cross section for I-40 is two to three lanes in each direction with 12' lanes, 10' outside shoulders and 4' inside shoulders.	
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 137,200	Year: 2040		Existing: 106,200	Year: 2018
General Project Narrative: (Description of Minimization of Water Quality Impacts)	The widening of I-40 from I-440 to Cornwallis Road (SR 1525) will involve grading, drainage improvements, paving, widening, resurfacing and structures work. There are 10 major crossings on the entire project providing adequate cross sectional openings to allow water to travel under I-40 or other alignments on the project without impacting any structures adjacent to the project. The 10 major crossings consist of a bridge over Swift creek two RCBCs with supplemented pipes and crossings with maintained pipes with supplemented pipes. Drainage outfalls along the project have been analyzed to verify stability and outlet protection has been incorporated into the design for all proposed drainage improvements. Areas of the project around jurisdictional features have incorporated steeper side slopes to minimize impacts. The project is located in the Neuse river basin so this area adheres to buffer rules. Buffer swales have been designed through out the entire project providing filtration before water inters jurisdictional streams. Due to the proximity to Swift Creek, two permanent filtration basins have been designed to treat water entering the stream. These two permanent filtration basins will also serve as hazardous spill basins. There has also been two basins designed that solely serve as hazardous spill basins with one of them already being in the roadway facility that will handle any kind of chemical spills that happen in the area of I-40 westbound to US 70 Bypass. Two energy dissipators will be installed as well to attenuate flow and velocity.				

Waterbody Information

Surface Water Body (1):	Poplar Branch		**NCDWR Stream Index No.:**	27-34-11-1	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)		
Other Stream Classification:					
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SRM			**Buffer Rules in Effect:**	Neuse
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)					

WBS Element:	42346.3.1	TIP No.:	I-5111/I-4739 (SEC 2)	County(ies):	Wake Johnston	Page	2	of	8

Additional Waterbody Information

Surface Water Body (2):	White Oak Creek		**NCDWR Stream Index No.:**	24-43-11			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C				
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)				
Other Stream Classification:							
Impairments:	None						
Aquatic T&E Species?	No	Comments:					
NRTR Stream ID:	SOE			**Buffer Rules in Effect:**	Neuse		
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)							

Surface Water Body (3):	Swift Creek		**NCDWR Stream Index No.:**	27-43-(8)			
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C				
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)				
Other Stream Classification:							
Impairments:	None						
Aquatic T&E Species?	Yes	Comments:	Dwarf Wedgemussel				
NRTR Stream ID:	SDG			**Buffer Rules in Effect:**	Neuse		
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)							

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (SEC 2) **County(ies):** Wake Johnston

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?
17	-L- 170+00 TO -L- 172+00 LT	(1)Poplar Branch	0.0	4.0	3.0	0.4	44	200	1.68%	1.6	2.0	2.1	2.1	No	Yes
17-18	-L- 177+50 TO -L- 179+50 LT	(1)Poplar Branch	0.0	4.0	4.0	1.7	168	200	0.94%	4.6	2.0	5.9	2.1	No	Yes
18	-L- 181+50 TO -L- 184+50 LT	(1)Poplar Branch	0.0	4.0	4.0	1.5	147	300	0.53%	4.0	1.6	5.2	1.7	No	Yes
19	-L- 200+00 TO -L- 203+50 LT	(1)Poplar Branch	0.0	4.0	4.0	1.8	175	102	0.42%	5.7	1.6	7.3	1.7	No	Yes
19-20	-L- 203+50 TO -L- 207+00 LT	(1)Poplar Branch	0.0	4.0	4.0	1.2	121	350	0.42%	3.9	1.5	5.0	1.6	No	Yes
20	-L- 216+00 TO -L- 218+00 LT	(1)Poplar Branch	0.0	4.0	4.0	1.2	124	200	0.90%	4.0	2.0	5.1	2.1	No	Yes
19	-L- 193+00 TO -L- 193+50 LT	(1)Poplar Branch	0.0	6.0	6.0	0.1	14	50	0.48%	0.5	0.8	0.6	0.9	No	Yes
19	-L- 193+50 TO -L- 195+50 LT	(1)Poplar Branch	0.0	6.0	6.0	0.6	64	200	0.45%	1.9	1.3	2.6	1.4	No	Yes
19	-L- 195+50 TO -L- 197+50 LT	(1)Poplar Branch	0.0	6.0	3.0	0.9	87	200	0.93%	2.6	1.8	3.3	1.9	No	Yes
61	-Y5RPB- 45+00 TO -Y5RPB- 46+50 LT	(2)White Oak Creek	0.0	4.0	2.0	0.5	51	150	0.71%	1.4	1.4	1.8	1.5	No	Yes
23	-L- 256+00 TO -L- 257+28 RT	(2)White Oak Creek	4.0	3.0	3.0	1.5	153	128	0.30%	2.5	1.3	3.2	1.4	No	Yes
23	-L- 262+00 TO -L- 264+85 LT	(2)White Oak Creek	0.0	6.0	6.0	0.7	72	285	0.45%	2.3	1.2	3.0	1.3	No	Yes
23-24	-L- 264+85 TO -L- 273+00 LT	(2)White Oak Creek	0.0	6.0	6.0	2.0	198	815	0.45%	6.3	1.6	8.1	1.7	No	Yes
23-24	-L- 262+50 TO -L- 271+50 RT	(2)White Oak Creek	0.0	6.0	6.0	1.6	157	900	0.45%	5.0	1.5	6.4	1.6	No	Yes
27	-L- 312+50 TO -L- 314+50 LT	(2)White Oak Creek	0.0	6.0	6.0	0.2	16	200	1.40%	0.5	1.3	0.6	1.3	No	Yes
27	-L- 310+00 TO -L- 311+50 RT	(2)White Oak Creek	0.0	6.0	6.0	1.2	116	150	1.30%	3.5	2.0	4.4	2.1	No	Yes
28	-L- 322+00 TO -L- 323+32 RT	(2)White Oak Creek	4.0	4.0	4.0	5.6	557	132	0.60%	17.0	2.0	21.0	2.1	No	Yes
28	-L- 322+68 TO -L- 323+75 LT	(2)White Oak Creek	4.0	3.0	3.0	10.1	1008	107	0.40%	27.1	2.0	34.9	2.1	No	Yes
29	-L- 338+00 TO -L- 341+50 RT	(2)White Oak Creek	0.0	6.0	6.0	0.8	81	350	1.40%	2.6	1.9	3.3	2.0	No	Yes

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (SEC 2) **County(ies):** Wake Johnston

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?
29	-L- 341+50 TO -L- 346+46 RT	(2)White Oak Creek	0.0	6.0	6.0	1.4	136	496	0.90%	4.4	1.9	5.6	2.0	No	Yes
29	-L- 338+50 TO -L- 341+50 LT	(2)White Oak Creek	0.0	6.0	6.0	0.8	75	350	1.40%	2.4	1.9	3.1	2.0	No	Yes
29	-L- 341+50 TO -L- 346+46 LT	(2)White Oak Creek	0.0	6.0	6.0	1.1	112	496	0.90%	3.6	1.8	4.6	1.9	No	Yes
31	-L- 360+37 TO -L- 363+00 RT	(2)White Oak Creek	0.0	6.0	6.0	0.6	55	263	2.00%	1.8	2.0	2.2	2.1	No	Yes
33	-L- 387+50 TO -L- 389+50 RT	(2)White Oak Creek	0.0	5.0	3.0	0.8	77	300	1.20%	2.5	2.0	3.2	2.1	No	Yes
33	-L- 390+93 TO -L- 395+00 RT	(2)White Oak Creek	0.0	6.0	6.0	0.8	81	407	0.70%	2.6	1.4	3.3	1.5	No	Yes
34	-L- 396+50 TO -L- 399+00 RT	(2)White Oak Creek	0.0	3.0	3.0	0.8	81	250	0.40%	2.2	1.1	2.9	1.2	No	Yes
34	-L- 403+00 TO -L- 405+93 RT	(2)White Oak Creek	0.0	3.0	3.0	2.5	250	293	0.80%	8.0	2.0	10.0	2.1	No	Yes
35	-L- 411+00 TO -L- 415+50 LT	(2)White Oak Creek	0.0	4.0	3.0	1.1	108	450	0.30%	3.7	1.3	4.8	1.4	No	Yes
35	-L- 417+50 TO -L- 420+50 LT	(2)White Oak Creek	0.0	6.0	4.0	2.5	252	300	0.50%	8.1	1.8	10.0	1.9	No	Yes
35	-L- 418+00 TO -L- 419+35 RT	(2)White Oak Creek	0.0	4.0	3.0	0.7	66	135	0.40%	2.1	1.2	2.7	1.3	No	Yes
35-36	-L- 419+35 TO -L- 422+50 RT	(2)White Oak Creek	0.0	4.0	3.0	1.1	112	315	0.30%	3.6	1.3	4.6	1.4	No	Yes
35	-L- 410+00 TO -L- 414+16 RT	(2)White Oak Creek	0.0	4.0	3.0	1.4	144	414	0.70%	4.6	1.6	5.9	1.7	No	Yes
35	-L- 414+16 TO -L- 417+50 RT	(2)White Oak Creek	0.0	4.0	3.0	1.5	151	336	0.70%	4.9	1.7	6.2	1.8	No	Yes
37	-L- 424+50 TO -L- 429+00 LT	(3)Swift Creek	0.0	4.0	3.0	1.3	134	450	0.30%	4.3	1.3	5.5	1.4	No	Yes
37	-L- 446+00 TO -L- 447+40 RT	(3)Swift Creek	4.0	3.0	3.0	0.4	40	140	2.00%	1.3	1.4	1.7	1.6	No	Yes
38	-L- 462+50 TO -L- 464+00 RT	(3)Swift Creek	0.0	3.0	3.0	0.7	70	150	30.00%	2.6	1.0	3.4	1.1	No	Yes
38	-L- 467+50 TO -L- 473+50 RT	(3)Swift Creek	0.0	4.0	3.0	2.6	260	600	1.10%	6.0	2.0	7.6	2.1	No	Yes

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (SEC 2) **County(ies):** Wake Johnston

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?
21	-Y5LPB- 17+50 TO -Y5LPB- 20+98 RT	(2)White Oak Creek	0.0	3.0	3.0	1.1	113	348	0.30%	3.6	1.1	4.6	1.2	No	Yes
21	-Y5LPB- 12+25 TO -Y5LPB- 13+82 RT	(2)White Oak Creek	0.0	4.0	3.0	0.4	39	157	2.50%	1.1	2.0	1.4	2.1	No	Yes
21	-Y5LPB- 25+00 TO -Y5LPB- 26+85 RT	(2)White Oak Creek	0.0	3.0	3.0	0.8	75	185	1.40%	3.4	2.0	4.3	2.2	No	Yes
21	-Y5LPB- 26+85 TO -Y5LPB- 29+45 RT	(2)White Oak Creek	0.0	3.0	3.0	3.8	379	260	0.60%	12.0	2.0	16.0	2.1	No	Yes
21	-Y5RPB- 30+50 TO -Y5RPB- 34+00 RT	(2)White Oak Creek	0.0	4.0	3.0	2.7	273	350	0.70%	7.5	2.0	9.6	2.1	No	Yes
21	-Y5RPBSPUR- 13+73 TO -Y5RPBSPUR- 17+20 RT	(2)White Oak Creek	4.0	4.0	3.0	4.2	418	347	0.90%	11.5	2.0	14.7	2.1	No	Yes
21-61	-Y5RPB- 40+50 TO -Y5RPB- 43+50 LT	(2)White Oak Creek	0.0	4.0	4.0	1.8	181	300	0.80%	5.0	2.0	6.4	2.1	No	Yes
22	-Y5RPA- 17+50 TO -Y5RPA- 20+50 RT	(2)White Oak Creek	0.0	4.0	4.0	0.5	53	300	2.00%	1.5	2.0	1.9	2.1	No	Yes
61	-Y5RPA- 27+00 TO -Y5RPA- 29+00 RT	(2)White Oak Creek	0.0	4.0	3.0	0.4	38	200	0.90%	1.1	1.2	1.4	1.3	No	Yes
22	-L- 249+50 TO -L- 250+53 LT	(2)White Oak Creek	0.0	3.0	3.0	1.6	156	103	1.20%	4.6	2.0	5.9	2.1	No	Yes
22	-Y5RPC- 52+00 TO -Y5RPC- 53+28 LT	(2)White Oak Creek	0.0	4.0	3.0	0.2	24	128	2.30%	0.9	1.9	1.1	2.1	No	Yes
22	-Y5RPC- 53+28 TO -Y5RPC- 54+50 LT	(2)White Oak Creek	0.0	4.0	3.0	0.2	23	122	0.30%	0.8	0.9	1.1	1.0	No	Yes
22	-L- 249+00 TO -L- 251+00 RT	(2)White Oak Creek	4.0	3.0	3.0	2.8	278	200	0.90%	8.3	2.0	11.0	2.2	No	Yes
22	-L- 251+50 TO -L- 253+00 RT	(2)White Oak Creek	0.0	4.0	4.0	1.0	100	150	1.20%	2.5	1.6	3.2	1.7	No	Yes
22	-L- 253+00 TO -L- 256+00 RT	(2)White Oak Creek	0.0	4.0	4.0	1.3	133	300	1.30%	3.7	1.8	4.7	2.0	No	Yes
22	-L- 252+00 TO -L- 254+50 LT	(2)White Oak Creek	0.0	4.0	3.0	1.0	98	250	0.50%	3.1	1.3	4.0	1.4	No	Yes
63	-Y8RPA- 24+50 TO -Y8RPA- 26+00 LT	(3)Swift Creek	0.0	4.0	3.0	0.2	18	150	0.30%	0.4	0.6	0.5	0.7	No	Yes
63	-Y8RPA- 26+00 TO -Y8RPA- 28+50 LT	(3)Swift Creek	0.0	4.0	3.0	0.4	36	250	3.50%	0.7	1.9	1.0	2.0	No	Yes
38	-L- 474+00 TO -L- 476+00 RT	(3)Swift Creek	0.0	4.0	3.0	0.7	68	200	1.10%	2.2	1.6	2.8	1.7	No	Yes

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (SEC 2) **County(ies):** Wake Johnston

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?
37	-L- 437+00 TO -L- 444+00 LT	(3)Swift Creek	4.0	3.0	3.0	9.3	926	700	0.40%	25.0	1.9	33.0	2.1	No	Yes
37	-L- 444+00 TO -L- 446+90 LT	(3)Swift Creek	4.0	3.0	3.0	10.0	1000	290	0.30%	28.0	1.9	35.0	2.0	No	Yes
63	-Y8RPA- 26+00 TO -Y8RPA- 27+01 RT	(3)Swift Creek	0.0	3.0	3.0	1.0	103	101	1.40%	3.5	2.0	4.5	2.1	No	Yes
63	-Y8RPA- 27+48 TO -Y8RPA- 29+60 RT	(3)Swift Creek	0.0	3.0	3.0	3.3	331	212	0.60%	11.0	2.0	15.0	2.2	No	Yes
25	-L- 282+11 TO -L- 282+50 RT	(2)White Oak Creek	4.0	3.0	3.0	4.0	396	39	0.50%	10.0	1.7	13.0	1.8	No	Yes
25	-L- 284+00 TO -L- 290+00 RT	(2)White Oak Creek	0.0	6.0	6.0	1.9	189	600	0.80%	5.6	1.9	7.2	2.0	No	Yes
21	-Y5RPD- 20+17 TO -Y5RPD- 21+66 RT	(2)White Oak Creek	4.0	3.0	3.0	6.6	663	149	0.40%	21.0	1.9	27.0	2.1	No	Yes
22	-L- 258+50 TO -L- 260+50 LT	(2)White Oak Creek	0.0	4.0	3.0	0.5	51	200	0.30%	1.6	0.9	2.1	1.0	No	Yes
22	-L- 258+50 TO -L- 262+50 RT	(2)White Oak Creek	0.0	4.0	3.0	1.1	110	400	0.30%	3.5	1.3	4.5	1.4	No	Yes
24	-L- 275+65 TO -L- 276+50 LT	(2)White Oak Creek	0.0	3.0	3.0	0.5	53	85	1.80%	1.8	1.8	2.3	2.0	No	Yes
33	-L- 386+27 TO -L- 387+50 RT	(3)Swift Creek	4.0	3.0	3.0	1.8	181	123	1.30%	5.4	2.0	6.9	2.1	No	Yes

Additional Comments

WBS Element: **TIP No.:** I-5111/I-4739 (SEC **County(ies):** Wake Johnston

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?
19	-L- 192+73 LT	(1)Poplar Branch	Riprap Energy Dissipator Basin	Class I	67.7	Pipe	72" RCP & 42" RCP	230.0	0.9	Yes
23	-L- 256+65 LT	(2)White Oak Creek	Riprap Energy Dissipator Basin	Class I	44.2	Pipe	66" RCP	160.0	1.6	Yes

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.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (S **County(ies):** Wake Johnston

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?
38	-L- 468+25 LT Improving Existing Basin	(3)Swift Creek	Hazardous Spill Basin	6.71	0.00	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	N/A	cf	N/A	cf	Yes
63	-Y8RPA- 23+00 RT	(3)Swift Creek	Hazardous Spill Basin	14.55	0.50	2yr, tc=10 min, td= 5 min storm runoff + 1,550 cf (cf)	17779.1	cf	18036.0	cf	Yes

*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

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (SEC 3) **County(ies):** Johnston

General Project Information

WBS Element:	42346.3.1	**TIP Number:**	I-5111/I-4739 (SEC 3)	**Project Type:**	Roadway Widening	**Date:**	3/12/2019
NCDOT Contact:	Paul Atkinson, PE			**Contractor / Designer:**	RK&K: Matthew Cook, PE		
Address:	NC Department of Transportation 1020 Birch Ridge Dr Raleigh, NC 27610			**Address:**	900 Ridgefield Drive Suite 350 Raleigh, NC 27609		
Phone:	919-707-6707			**Phone:**	919-878-9560		
Email:	patkinson@ncdot.gov			**Email:**	mcook@rkk.com		
City/Town:	Raleigh			**County(ies):**	Johnston		
River Basin(s):	Neuse			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	13.04	**Surrounding Land Use:**	Commercial / Industrial / Residential

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	362.5 ac.	270.5 ac.
Typical Cross Section Description:	The proposed typical cross section for I-40 will be will have four to five 12' lanes in each direction, 12' outside shoulders and 11' inside shoulders. For most of the project there will be median barrier running the length of the roadway facility.	The existing typical cross section for I-40 is two to three lanes in each direction with 12' lanes, 10' outside shoulders and 4' inside shoulders.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 137,200 Year: 2040	Existing: 106,200 Year: 2018

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

The widening of I-40 from I-440 to Cornwallis Road (SR 1525) will involve grading, drainage improvements, paving, widening, resurfacing and structures work. There are 10 major crossings on the entire project providing adequate cross sectional openings to allow water to travel under I-40 or other alignments on the project without impacting any structures adjacent to the project. The 10 major crossings consist of a bridge over Swift creek two RCBCs with supplemented pipes and crossings with maintained pipes with supplemented pipes. Drainage outfalls along the project have been analyzed to verify stability and outlet protection has been incorporated into the design for all proposed drainage improvements. Areas of the project around jurisdictional features have incorporated steeper side slopes to minimize impacts. The project is located in the Neuse river basin so this area adheres to buffer rules. Buffer swales have been designed through out the entire project providing filtration before water inters jurisdictional streams. Due to the proximity to Swift Creek, two permanent filtration basins have been designed to treat water entering the stream. These two permanent filtration basins will also serve as hazardous spill basins. There has also been two basins designed that solely serve as hazardous spill basins with one of them already being in the roadway facility that will handle any kind of chemical spills that happen in the area of I-40 westbound to US 70 Bypass. Two energy dissipators will be installed as well to attenuate flow and velocity.

Waterbody Information

Surface Water Body (1):	Swift Creek		**NCDWR Stream Index No.:**	27-43-(8)	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)		
Other Stream Classification:					
Impairments:	None				
Aquatic T&E Species?	Yes	Comments: Dwarf Wedgemussel			
NRTR Stream ID:	SDG			**Buffer Rules in Effect:**	
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)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (SEC 3) **County(ies):** Johnston

Additional Waterbody Information

Surface Water Body (2):	Mill Branch		**NCDWR Stream Index No.:**	27-43-15-12		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:						
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	Mill Branch			**Buffer Rules in Effect:**		
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (SEC 3) **County(ies):** Johnston

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?
42	-L- 111+09 LT	(1)Swift Creek	4.0	3.0	3.0	1.9	189	70	0.90%	6.9	1.8	8.9	2.0	No	Yes
45	-L- 163+70 TO -L- 166+64 LT	(1)Swift Creek	0.0	3.0	3.0	1.2	120	294	0.40%	3.8	1.2	4.9	1.3	No	Yes
45	-L- 146+15 TO -L- 147+00 RT	(1)Swift Creek	4.0	3.0	3.0	8.5	850	85	0.30%	27.0	1.9	35.0	2.0	No	Yes
45	-Y1RPA- 18+05 TO -Y1RPA- 22+50 LT	(1)Swift Creek	0.0	3.0	3.0	3.1	309	445	0.70%	9.9	2.0	13.0	2.1	No	Yes
45	-Y1RPD- 14+21 TO -Y1RPD- 15+75 LT	(1)Swift Creek	4.0	3.0	3.0	4.0	400	154	0.50%	13.0	1.8	16.0	1.9	No	Yes
45	-Y1RPD- 15+75 TO -Y1RPD- 16+53 LT	(1)Swift Creek	4.0	3.0	3.0	4.0	400	75	0.60%	13.0	2.0	16.0	2.1	No	Yes
45	-L- 173+25 TO -L- 175+50 LT	(1)Swift Creek	4.0	3.0	3.0	2.5	247	225	0.70%	8.5	1.8	11.0	1.9	No	Yes
45	-Y1RPD- 20+28 TO -Y1RPD- 21+50 LT	(1)Swift Creek	0.0	4.0	4.0	0.8	78	122	1.30%	2.5	2.0	3.2	2.1	No	Yes
45	-Y1RPA- 19+50 TO -Y1RPA- 22+00 RT	(1)Swift Creek	0.0	6.0	6.0	1.0	95	250	2.20%	3.1	2.0	3.9	2.1	No	Yes
45-46	-LCDEB- 54+64.54 TO -LCDEB- 59+01.14 RT	(1)Swift Creek	0.0	6.0	6.0	1.7	165	436	0.50%	4.6	1.2	5.9	1.3	No	Yes
45	-Y1RPA- 15+74.66 TO -Y1RPA- 16+33.93 RT	(1)Swift Creek	0.0	3.0	3.0	0.8	80	59	3.20%	1.0	2.0	1.3	2.1	No	Yes
46	-L- 186+00 TO -L- 189+50 RT	(1)Swift Creek	0.0	4.0	3.0	0.9	87	350	0.30%	2.8	1.3	3.6	1.3	No	Yes
46	-L- 184+00 TO -L- 185+50 RT	(1)Swift Creek	0.0	3.0	3.0	2.4	241	150	0.70%	8.3	1.9	9.9	2.0	No	Yes
46	-L- 191+00 TO -L- 193+50 LT	(2)Mill Branch	0.0	4.0	3.0	0.9	89	250	0.30%	2.0	1.1	2.6	1.2	No	Yes
46	-L- 209+00 TO -L- 207+78 RT	(2)Mill Branch	4.0	3.0	3.0	14.1	1410	78	0.30%	45.0	1.9	58.0	2.0	No	Yes
46	-Y2- 59+26 TO -Y2- 61+00 LT	(2)Mill Branch	0.0	3.0	3.0	3.1	309	174	0.30%	8.5	1.4	11.0	1.5	No	Yes
46	-Y2RPB- 24+00 TO -Y2RPB- 26+60 LT	(2)Mill Branch	4.0	3.0	3.0	4.4	435	260	0.80%	12.0	2.0	15.0	2.1	No	Yes
46	-Y2- 57+50 TO -Y2- 58+00 LT	(2)Mill Branch	4.0	3.0	3.0	8.5	848	50	0.30%	27.0	1.8	35.0	2.0	No	Yes

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (SEC 3) **County(ies):** Johnston

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?
46	-Y2RPA- 18+30 TO -Y2RPA- 22+75 LT	(2)Mill Branch	4.0	3.0	3.0	13.2	1320	445	0.30%	42.0	2.0	54.0	2.1	No	Yes
46	-Y2RPA- 19+50 TO -Y2RPA- 20+50 RT	(2)Mill Branch	4.0	3.0	3.0	2.9	285	100	0.70%	9.1	2.0	12.0	2.1	No	Yes
46	-Y2RPA- 20+50 TO -Y2RPA- 23+50 RT	(2)Mill Branch	4.0	3.0	3.0	3.3	328	300	0.60%	11.0	2.0	13.0	2.1	No	Yes
46	-Y2RPA- 13+62 TO -Y2RPA- 17+40 RT	(2)Mill Branch	0.0	4.0	3.0	2.0	199	378	0.30%	5.9	1.4	7.6	1.5	No	Yes
46	-Y2RPB- 15+64.89 TO -Y2RPB- 18+50 LT	(1)Swift Creek	0.0	6.0	6.0	1.2	117	285	0.90%	3.5	1.4	4.5	1.5	No	Yes
46	-LCDEB- 68+22.85 TO -LCDEB- 70+94.51 LT	(2)Mill Branch	0.0	6.0	6.0	1.0	101	272	0.50%	3.0	1.1	3.8	1.2	No	Yes
46	-L- 200+00 TO -L- 203+50 RT	(2)Mill Branch	0.0	6.0	6.0	0.8	82	350	0.50%	2.4	1.1	3.1	1.2	No	Yes
46	-L- 198+50 TO -L- 202+75 LT	(2)Mill Branch	0.0	6.0	6.0	1.1	112	425	1.20%	3.3	1.7	4.3	1.8	No	Yes
46	-L- 202+75 TO -L- 204+50 LT	(2)Mill Branch	0.0	6.0	6.0	0.6	55	175	1.40%	1.6	1.4	2.1	1.5	No	Yes
46	-L- 204+00 TO -L- 205+00 RT	(2)Mill Branch	0.0	6.0	6.0	0.8	83	100	2.50%	2.5	2.0	3.2	2.1	No	Yes
46	-Y2RPD3- 17+50 TO -Y2RPD3- 24+00 RT	(2)Mill Branch	0.0	6.0	6.0	1.7	169	650	1.70%	4.3	2.0	5.4	2.1	No	Yes
46	-Y2RPD3- 16+70 TO -Y2RPD3- 23+00 LT	(2)Mill Branch	0.0	6.0	6.0	1.1	114	630	1.90%	3.4	1.9	4.3	2.0	No	Yes
47	-Y2RPD3- 12+21.20 TO -Y2RPD3- 15+51.99 LT	(2)Mill Branch	0.0	6.0	6.0	0.6	58	331	0.40%	1.9	0.9	2.4	1.0	No	Yes
47	-LCDWB- 102+08 TO -LCDWB- 103+27 LT	(2)Mill Branch	4.0	3.0	3.0	1.6	161	119	1.30%	5.5	2.0	7.1	2.1	No	Yes
47	-LCDEB- 88+99 TO -LCDEB- 91+52 RT	(2)Mill Branch	4.0	3.0	3.0	3.9	391	253	0.70%	11.0	2.0	14.0	2.1	No	Yes
48	-L- 227+50 TO -L- 229+50 LT	(2)Mill Branch	0.0	4.0	3.0	0.5	53	200	2.40%	1.0	2.0	1.2	2.1	No	Yes
48-49	-L- 231+50 TO -L- 232+65 LT	(2)Mill Branch	4.0	3.0	3.0	3.6	358	115	0.50%	11.0	1.7	15.0	1.9	No	Yes
49	-L- 243+00 TO -L- 243+50 RT	(2)Mill Branch	4.0	3.0	3.0	0.7	71	50	3.20%	2.0	2.0	2.5	2.1	No	Yes
49	-L- 237+00 TO -L- 241+50 LT	(2)Mill Branch	4.0	4.0	3.0	1.2	119	450	1.10%	4.0	2.0	5.2	2.1	No	Yes

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (SEC 3) **County(ies):** Johnston

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?
49	-L- 234+28 TO -L- 235+50 LT	(2)Mill Branch	4.0	3.0	3.0	3.8	379	122	0.70%	12.0	2.0	16.0	2.1	No	Yes
50	-L- 245+50 TO -L- 247+66 LT	(2)Mill Branch	4.0	3.0	3.0	4.3	431	216	0.70%	12.0	2.0	15.0	2.1	No	Yes
50	-L- 250+18 TO -L- 253+50 LT	(2)Mill Branch	0.0	6.0	6.0	0.8	83	332	0.40%	2.7	1.0	3.4	1.1	No	Yes
50	-L- 249+00 TO -L- 250+00 LT	(2)Mill Branch	4.0	3.0	3.0	4.4	437	100	0.50%	15.0	1.9	19.0	2.0	No	Yes
50-51	-L- 258+50 TO -L- 261+50 RT	(2)Mill Branch	0.0	4.0	3.0	0.5	53	300	0.30%	1.5	1.1	1.9	1.1	No	Yes
50-51	-L- 253+50 TO -L- 260+13 LT	(2)Mill Branch	0.0	6.0	6.0	1.7	170	663	0.30%	5.5	1.1	7.0	1.2	No	Yes
51	-L- 269+00 TO -L- 270+71 LT	(2)Mill Branch	4.0	3.0	3.0	3.5	345	171	0.70%	11.0	2.0	14.0	2.1	No	Yes
71	-Y2- 61+50 TO -Y2- 63+50 LT	(2)Mill Branch	0.0	4.0	3.0	0.9	94	200	0.30%	2.4	1.2	3.0	1.3	No	Yes

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 42346.3.1 **TIP No.:** I-5111/I-4739 (SEC 3) **County(ies):** Johnston

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?
40	-L- 95+00 LT	(1)Swift Creek	HSB/Bioretention Basin	11.7	2.3	11481	63301.36	Yes
40	-L- 95+00 RT	(1)Swift Creek	HSB/Bioretention Basin	15.6	3.3	19966	76623.85	Yes

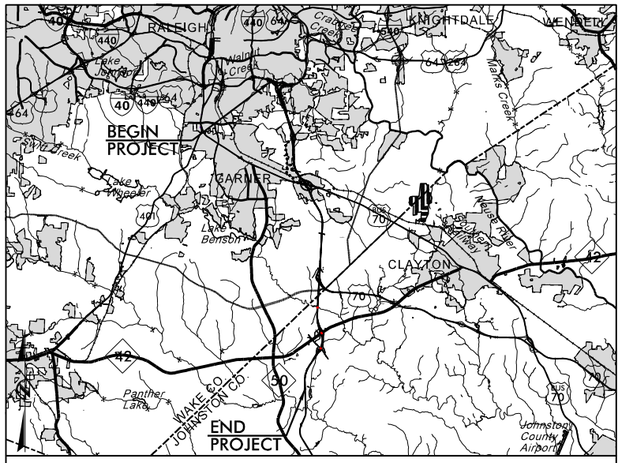
Additional Comments

09/08/16

TIP PROJECT: I-5111 /I-4739

CONTRACT: C204134

See Sheet 1-B For Plan Sheet Symbols



VICINITY MAP (NTS)

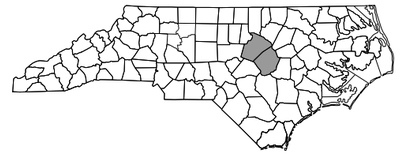
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE & JOHNSTON COUNTIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5111 /I-4739	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
42346.3.1	IMNHF-040-4(139)301	PE	

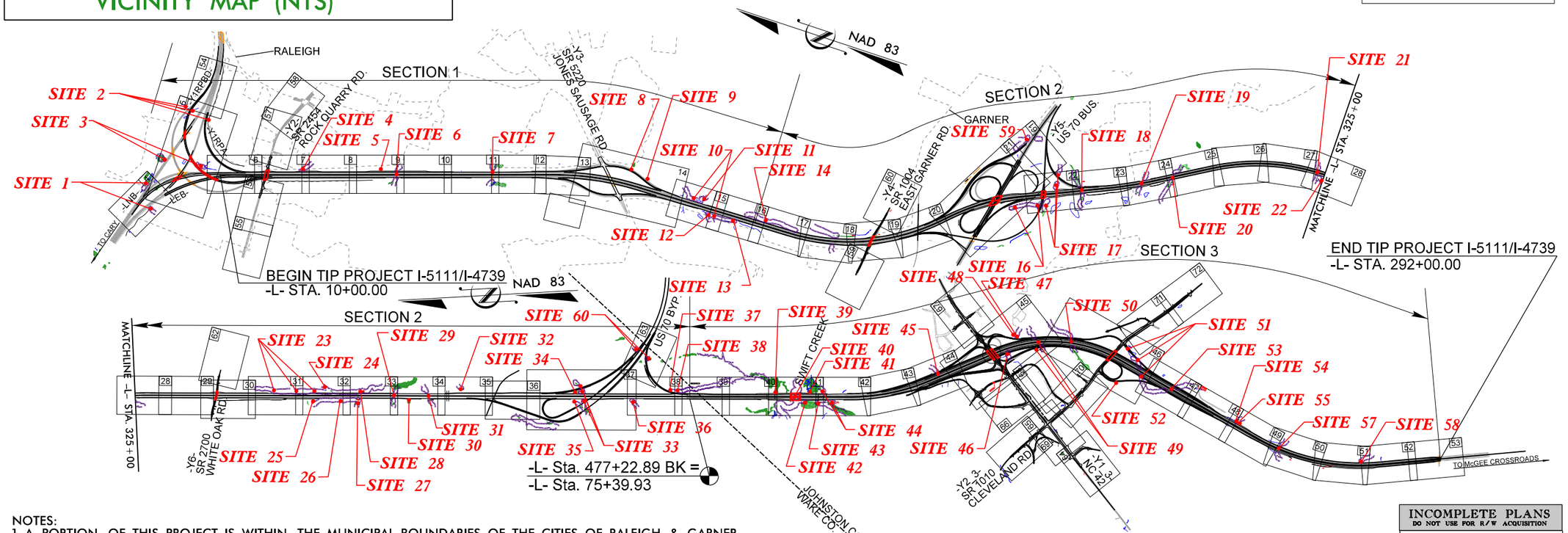
LOCATION: *I–40 FROM I–440 /US 64 (EXIT 301) TO JUST NORTH OF SR 1525 (CORNWALLIS ROAD), INCLUDING IMPROVEMENTS TO NC 42 AND SR 1010 (CLEVELAND ROAD).*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, WIDENING, RESURFACING & STRUCTURES*



WETLAND AND STREAM IMPACTS

PERMIT DRAWING
SHEET 1 OF 125



NOTES:
1. A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITIES OF RALEIGH & GARNER.
2. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III MODIFIED.
3. THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS 50 25 0 50 100
PROFILE (HORIZONTAL) 50 25 0 50 100
PROFILE (VERTICAL) 10 5 0 10 20

DESIGN DATA

ADT 2018 = 106,200
ADT 2040 = 137,200
DHV = 65%
D = 9%
T = 9% *
V = 70 MPH & 75 MPH **
FUNC CLASS: URBAN INTERSTATE
* (TTST 5% + DUAL 4%)
** DESIGN SPEED CHANGES AT US 70 BUS

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I–5111 /I–4739..... 12.950 miles
LENGTH STRUCTURE TIP PROJECT I–5111 /I–4739..... 0.094 miles
TOTAL LENGTH OF PROJECT I–5111 /I–4739..... 13.044 miles

NCDOT CONTACT

K. Zak Hamidi, P.E.
PROJECT ENGINEER – DESIGN-BUILD UNIT

PLANS PREPARED BY:

RK&K — RUMMEL, KLEPPER & KAHL, LLP, 900 RIDGEFIELD DRIVE, SUITE 350, RALEIGH, NORTH CAROLINA 27609, NC LICENSE NO. F–0112

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

S.T. WOOTEN

2018 STANDARD SPECIFICATIONS

LETTING DATE: JUNE 19, 2018

Brandon J. McInnis, P.E.
PROJECT ENGINEER

Mary E. Yahl, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

4/15/2019
R:\Hydraulics\PERMITS_Environmental\Drawings\4C\I5111_I4739_Hyd_wet_tsh.dgn
Fkeys

15-APR-2019 08:04
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CD Post-award NCDOT I-40/Hydraulics/PERMITS_Environmental/Drawings/I-5111_I-4739_Hyd_Ditch Detail.dgn
RS&H\rshmd01.rsandh.com:PW_RSH/Documents/Transportation/Projects/10300741101 13½

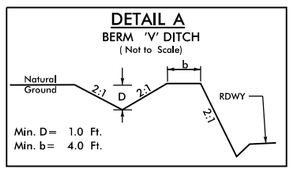
DITCH DETAILS: SECTION 1

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PERMIT DRAWING
SHEET 2 OF 125

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

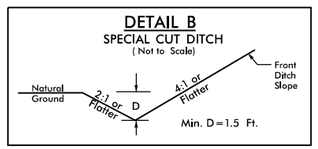
DETAIL A
BERM 'V' DITCH
(Not to Scale)



Min. D= 1.0 Ft.
Min. b= 4.0 Ft.

–L– STA. 55+00 TO STA. 56+50 LT

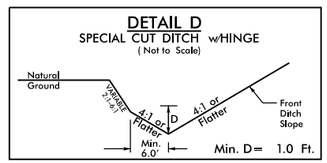
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D=1.5 Ft.

–L1– STA. 37+50 TO STA. 38+00 RT
–L1– STA. 33+50 TO STA. 34+00 LT
–L1– STA. 37+00 TO STA. 37+50 LT
–L1– STA. 152+00 to STA. 152+50 LT
–Y3RPA– STA. 15+02 TO STA. 15+52 RT
–Y1RPC– STA. 24+00 TO STA. 25+39 RT
–Y1RPA– STA. 22+00 TO STA. 24+50 RT
–Y1RPA– STA. 27+50 TO STA. 32+25 LT

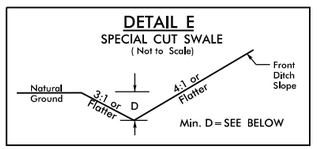
DETAIL D
SPECIAL CUT DITCH wHINGE
(Not to Scale)



Min. D= 1.0 Ft.

–L1– STA. 120+00 TO STA. 123+00 RT
–L1– STA. 121+50 TO STA. 122+50 LT
–L1– STA. 130+00 TO STA. 132+50 LT
–L1– STA. 124+00 TO STA. 128+00 LT
–L1– STA. 125+50 TO STA. 127+00 RT
–L1– STA. 130+00 TO STA. 131+50 RT
–L1– STA. 138+50 TO STA. 142+00 LT
–L1– STA. 146+00 TO STA. 148+00 RT
–Y1RPEB– STA. 17+50 TO STA. 19+00 RT
–Y3RPA– STA. 17+59 TO STA. 22+00 LT

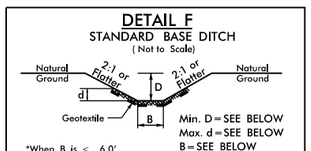
DETAIL E
SPECIAL CUT SWALE
(Not to Scale)



Min. D=SEE BELOW

–Y1RPBD– STA. 21+00 TO STA. 23+00 LT, D=1.0'

DETAIL F
STANDARD BASE DITCH
(Not to Scale)

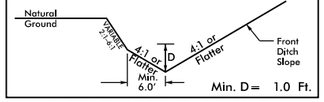


Min. D=SEE BELOW
Max. d=SEE BELOW
B=SEE BELOW
*When B is < 6.0'

Type of Liner= SEE BELOW

–L1– STA. 103+00 RT, B=6', CL B RIPRAP, MIN D=2.0'
L=100', BEG. EL=253.00', END EL=261.50', S=3.0%
–L1– STA. 104+00 RT, B=6', CL B RIPRAP, MIN D=6.0'
L=300', BEG. EL=256.00', END EL=261.50', S=1.5%
–L– STA. 64+80 TO STA. 66+00 RT

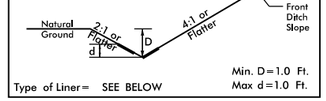
DETAIL G
SPECIAL CUT SWALE wHINGE
(Not to Scale)



Min. D= 1.0 Ft.

–L1– STA. 25+00 TO STA. 28+50 LT
–L1– STA. 31+00 TO STA. 32+00 RT
–L1– STA. 30+50 TO STA. 33+50 LT
–L1– STA. 72+50 TO STA. 73+50 LT
–Y1RPBD– STA. 28+50 TO STA. 29+50 LT
–Y1RPWB– STA. 14+60 TO STA. 16+50 RT

DETAIL I
SPECIAL CUT DITCH
(Not to Scale)

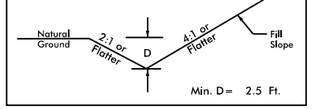


Type of Liner= SEE BELOW

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

–Y1RPA– STA. 24+00 TO STA. 25+00 LT, CL B RIPRAP

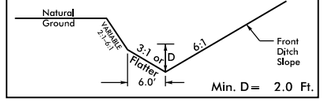
DETAIL K
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 2.5 Ft.

–L1– STA. 37+00 TO STA. 37+63 LT
–L1– STA. 41+00 TO STA. 42+50 LT
–L1– STA. 41+50 TO STA. 42+00 RT
–L1– STA. 58+00 TO STA. 58+50 LT
–L1– STA. 67+00 TO STA. 72+50 LT
–L1– STA. 70+00 TO STA. 70+50 RT
–L1– STA. 73+50 TO STA. 74+50 LT
–L1– STA. 107+60 TO STA. 109+00 RT
–L1– STA. 113+00 TO STA. 121+50 LT
–L1– STA. 113+50 TO STA. 120+00 RT
–L1– STA. 116+00 TO STA. 121+50 LT
–L1– STA. 128+50 TO STA. 130+00 LT
–L1– STA. 132+50 TO STA. 133+00 LT
–L1– STA. 136+50 TO STA. 140+00 RT
–L1– STA. 137+00 TO STA. 138+00 LT
–L1– STA. 137+50 TO STA. 139+00 RT
–L1– STA. 138+50 TO STA. 139+00 LT
–L1– STA. 140+50 TO STA. 142+50 RT
–L1– STA. 142+00 TO STA. 143+00 RT
–L1– STA. 145+50 TO STA. 146+00 RT
–Y1RPEB– STA. 31+00 TO STA. 32+64 RT
–Y1RPWB– STA. 18+00 TO STA. 19+00 LT
–Y1RPBD– STA. 30+00 TO STA. 30+50 LT

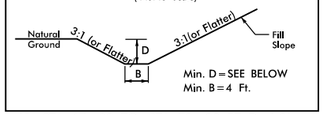
DETAIL L
SPECIAL CUT DITCH wHINGE
(Not to Scale)



Min. D= 2.0 Ft.

–L1– STA. 42+50 TO STA. 45+50 LT
–L1– STA. 109+00 TO STA. 110+85 RT
–L1– STA. 124+00 TO STA. 128+00 LT
–L1– STA. 125+50 TO STA. 127+00 RT
–L1– STA. 130+00 TO STA. 131+50 RT
–L1– STA. 139+00 TO STA. 142+00 RT
–L1– STA. 143+00 TO STA. 144+50 RT
–L1– STA. 121+50 TO STA. 122+50 LT
–L1– STA. 137+00 TO STA. 137+50 LT
–L1– STA. 139+00 TO STA. 142+00 LT
–L1– STA. 140+00 TO STA. 140+50 RT
–L1– STA. 142+50 TO STA. 144+50 RT
–L1– STA. 158+50 TO STA. 160+00 LT
–Y1RPBD– STA. 21+50 TO STA. 22+00 RT
–Y1RPBD– STA. 25+00 TO STA. 27+00 RT
–Y1RPBD– STA. 23+00 TO STA. 28+50 LT

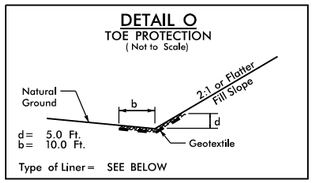
DETAIL M
SPECIAL LATERAL BASE SWALE
(Not to Scale)



Min. D=SEE BELOW
Min. B=4 Ft.

–L1– STA. 67+00 TO STA. 70+00 RT, D=1.0'
–L1– STA. 149+00 TO STA. 150+50 RT, D=1.0'
–Y1RPWB– STA. 33+50 TO STA. 37+00 RT, D=1.0'

DETAIL O
TOE PROTECTION
(Not to Scale)

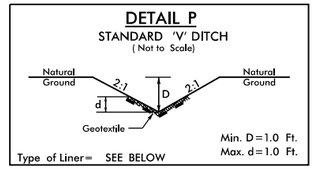


d= 5.0 Ft.
b= 10.0 Ft.

Type of Liner= SEE BELOW

–L1– STA. 143+11 TO STA. 144+21 LT, CL I RIPRAP

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

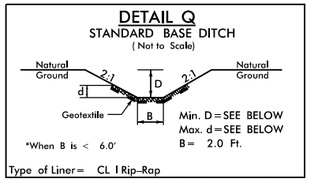


Min. D=1.0 Ft.
Max. d=1.0 Ft.

Type of Liner= SEE BELOW

–L1– STA. 118+88 TO STA. 118+94 RT, CL B RIPRAP

DETAIL Q
STANDARD BASE DITCH
(Not to Scale)

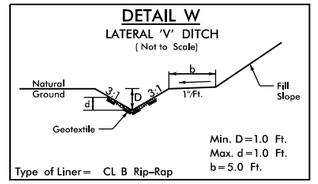


Min. D=SEE BELOW
Max. d=SEE BELOW
B= 2.0 Ft.
*When B is < 6.0'

Type of Liner= CL I Rip-Rap

–L1– STA. 144+80 TO STA. 144+98 RT,
MIN D=1.0', MAX d=1.0'

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



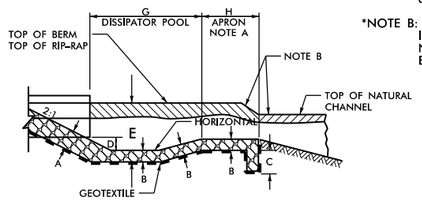
Min. D=1.0 Ft.
Max. d=1.0 Ft.
b=5.0 Ft.

Type of Liner= CL B Rip-Rap

–Y1RPA– STA. 22+50 TO STA. 24+00 LT

DETAIL X
RIP–RAP ENERGY DISSIPATOR BASIN

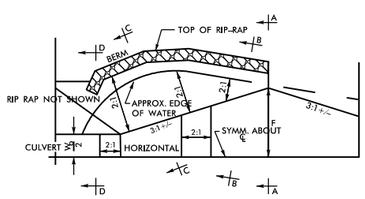
℄ SECTION

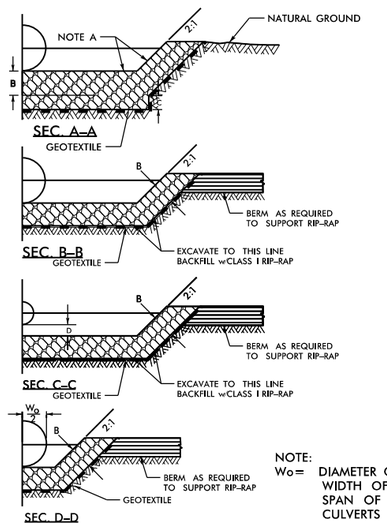


*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A)= SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

HALF PLAN





DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	2.5							
B	1.67							
C	2.0							
D	2.3							
E	10.0							
F	10.0							
G	22.4							
H	11.2							

*ALL DIMENSIONS APPROXIMATE IN FT

BASIN #	LOCATION (AT OUTLET)
1	–L1– 149+03 LT
2	
3	
4	
5	
6	
7	
8	

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

5/05

PLANS PREPARED BY:

RS&H Architects–Engineers–Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F–0493 (919) 926–4100

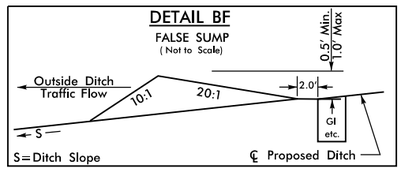
DITCH DETAILS: SECTION 1

PERMIT DRAWING
SHEET 3 OF 125

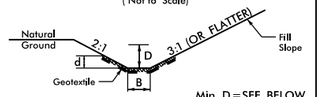
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL BF
FALSE SUMP
(Not to Scale)



DETAIL AD
SPECIAL LATERAL BASE DITCH
(Not to Scale)

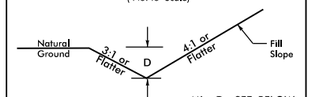


Min. D=SEE BELOW
Max. d=SEE BELOW
B=4.0 Ft.

Type of Liner= CL B Rip-Rap

–L1– STA. 144+50 TO STA. 144+79 RT,
MIN D=1.25', MAX d=1.25'
–L1– STA. 145+00 TO STA. 146+00 RT,
MIN D=1.25', MAX d=1.25'

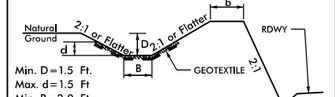
DETAIL AE
SPECIAL LATERAL 'V' SWALE
(Not to Scale)



Min. D=SEE BELOW

–L1– STA. 56+50 TO STA. 57+30 LT, D=1.0'

DETAIL CA
BERM BASE DITCH
(Not to Scale)

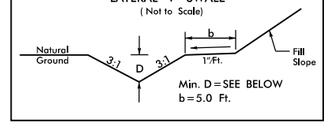


Min. D=1.5 Ft.
Max. d=1.5 Ft
Min. B=2.0 Ft.
Min. b=4.0 Ft.

Type of Liner= CL B Rip-Rap

–Y1RPEB– STA. 21+50 TO 24+50 RT

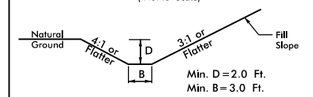
DETAIL AN
LATERAL 'V' SWALE
(Not to Scale)



Min. D=SEE BELOW
b=5.0 Ft.

–Y1RPA– STA. 18+05 TO STA. 22+50 LT, D=1.5'

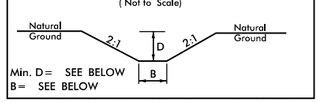
DETAIL AP
SPECIAL LATERAL BASE DITCH
(Not to Scale)



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

–L1– STA. 113+34 TO STA. 113+50 RT
–L1– STA. 59+50 TO STA. 63+00 LT
–Y1RPWB– STA. 33+50 TO STA. 34+80 RT
–Y1RPBD– STA. 54+00 TO STA. 54+50 LT

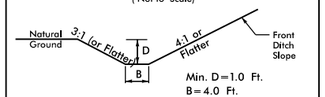
DETAIL AT
STANDARD BASE DITCH
(Not to Scale)



Min. D= SEE BELOW
B= SEE BELOW

–Y1RPBD– STA. 32+50 RT, B=4', MIN D=2.0'
L=175', BEG. EL=231.15', END EL=224.00', S=4.1%

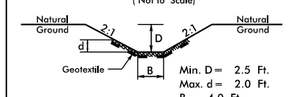
DETAIL AU
SPECIAL CUT BASE SWALE
(Not to Scale)



Min. D=1.0 Ft.
B=4.0 Ft.

–L1– STA. 32+00 TO STA. 37+50 RT
–Y1RPEB– STA. 17+50 TO STA. 19+95 LT
–Y1RPWB– STA. 33+50 TO STA. 37+00 RT

DETAIL AY
STANDARD BASE DITCH
(Not to Scale)

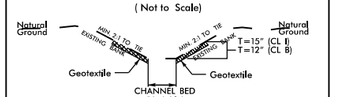


Min. D= 2.5 Ft.
Max. d= 2.0 Ft.
B= 4.0 Ft.

Type of Liner= CL I Rip-Rap

–L– STA. 59+12 TO STA. 61+50 LT

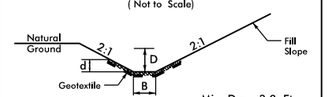
DETAIL BB
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length= SEE BELOW
Type of Liner= CL I or B Rip-Rap – Keyed-In (SEE BELOW)

–LEB– STA. 12+14 RT, L=10', CL B RIP RAP
–Y1RPBD– STA. 46+80 LT, L=10', CL B RIP RAP

DETAIL CB
SPECIAL LATERAL BASE DITCH
(Not to Scale)

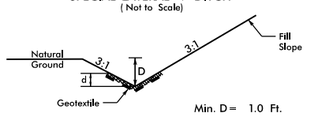


Min. D= 3.0 Ft.
Max. d= 2.5 Ft.
B= 6.0 Ft.

Type of Liner= SEE BELOW

–L– STA. 61+50 TO STA. 61+85 LT, CL 1 RIPRAP
–L– STA. 61+85 TO STA. 63+00 LT, CL B RIPRAP

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

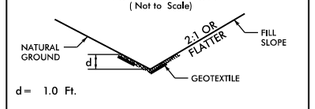


Min. D= 1.0 Ft.
Max. d= 1.0 Ft.

Type of Liner= CL I Rip-Rap

–L– STA. 65+76 TO STA. 66+50 LT

DETAIL CD
TOE PROTECTION
(Not to Scale)

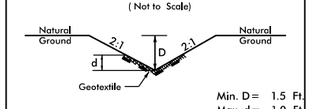


d= 1.0 Ft.

Type of Liner= CL B Rip-Rap

–L– 30+00 TO 30+50 RT

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

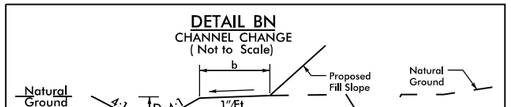


Min. D= 1.5 Ft.
Max. d= 1.0 Ft.

Type of Liner= CL I Rip-Rap

–L– STA. 40+25 TO STA. 40+40 LT

DETAIL BN
CHANNEL CHANGE
(Not to Scale)

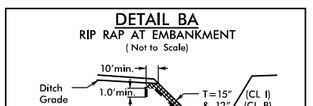


Min. D=1.0 Ft.
Max. d=1.0 Ft.
B=2.0 Ft.

Type of Liner= Class "I" Rip Rap

–L1– STA. 149+00 LT

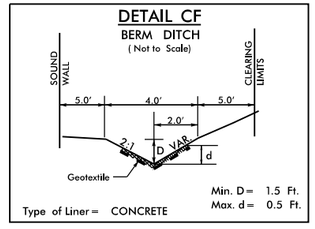
DETAIL BA
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= SEE BELOW

–L1– STA. 40+20 LT, CL I RIPRAP

DETAIL CF
BERM DITCH
(Not to Scale)

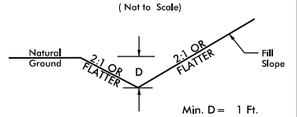


Min. D= 1.5 Ft.
Max. d= 0.5 Ft.

Type of Liner= CONCRETE

–L– STA. 37+75 TO STA. 40+00 RT
–L– STA. 30+50 TO STA. 37+65 RT
–L– STA. 55 TO STA. 56+50 LT
–Y1RPA– STA. 14+00 TO STA. 21+00 RT
–Y1RPA– STA. 21+00 TO STA. 25+50 RT
–Y1RPA– STA. 25+50 TO STA. 35+25 RT
–Y1RPA– STA. 35+25 TO –L2RT– STA. 490+50 RT
–L2RT– STA. 492+25 TO STA. 494+00 RT
–L2RT– STA. 494+80 TO STA. 499+25 RT
–L2RT– STA. 499+25 TO STA. 501+00 RT
–L2RT– STA. 447+50 TO STA. 448+25 RT
–L2RT– STA. 449+50 TO STA. 453+00 RT
–L2RT– STA. 454+00 TO STA. 454+75 RT
–L2RT– STA. 454+75 –Y1RPEB– STA. 12+25 RT
–L2RT– STA. 450+50 STA. STA. 459+00 LT

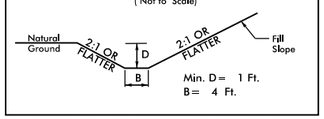
DETAIL CG
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.

–Y1RPBD– STA. 29+50 TO STA. 32+50 RT
–Y1RPBD– STA. 60+75 TO STA. 63+85 RT

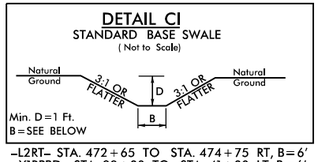
DETAIL CH
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
B= 4 Ft.

–Y1RPBD– STA. 30+50 TO STA. 33+00 LT
–Y1RPBD– STA. 32+50 TO STA. 36+00 RT
–Y1RPWB– STA. 19+00 TO STA. 24+50 LT
–Y1RPWB– STA. 19+50 TO STA. 22+00 RT

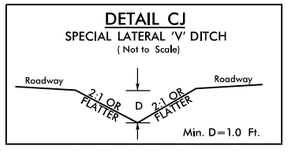
DETAIL CI
STANDARD BASE SWALE
(Not to Scale)



Min. D=1 Ft.
B=SEE BELOW

–L2RT– STA. 472+65 TO STA. 474+75 RT, B=6'
–Y1RPBD– STA. 38+00 TO STA. 41+00 LT, B=6'

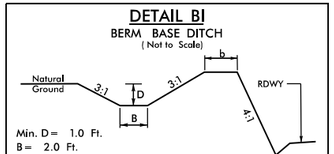
DETAIL CJ
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.

–L1– STA. 112+50 TO 116+00 LT
–L1– STA. 132+50 TO 135+00 RT
–Y3RPA– STA. 15+02 TO 17+59 LT

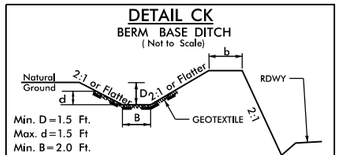
DETAIL BI
BERM BASE DITCH
(Not to Scale)



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

–L– STA. 114+00 TO STA. 119+80 RT

DETAIL CK
BERM BASE DITCH
(Not to Scale)

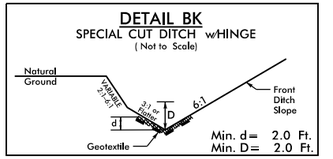


Min. D=1.5 Ft.
Max. d=1.5 Ft
Min. B=2.0 Ft.
Min. b=4.0 Ft.

Type of Liner= CL I Rip-Rap

–Y1RPEB– STA. 24+50 TO 25+25 RT

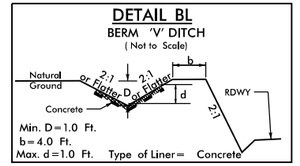
DETAIL BK
SPECIAL CUT DITCH w/HINGE
(Not to Scale)



Min. d= 2.0 Ft.
Min. D= 2.0 Ft.

–L1– STA. 144+00 TO STA. 144+50 RT

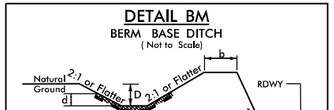
DETAIL BL
BERM 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.
b=4.0 Ft.
Max. d=1.0 Ft. Type of Liner= Concrete

–L– STA. 30+50 TO STA. 33+50 RT
–L– STA. 34+00 TO STA. 46+00 RT

DETAIL BM
BERM BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 2.0 Ft.
Min. B= 2.0 Ft.
Min. b= 4.0 Ft.

Type of Liner= Concrete

–L– STA. 54+00 TO STA. 55+00 LT

PLANS PREPARED BY:
RS&H
RS&H Architects-Engineers-Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

15-APR-2019 08:05
p:\r-sphw01.rsandh.com:PW_RSH/Documents/Transportation/Projects/103007401 1½2 CD Post-award NCDOT I-40/Hydraulics/PERMITS_Environmental/Drawings/I-5111_I-4739_Hyd_Ditch Detail.dgn
$$$$USERNAME$$$$

CULVERT DETAILS: SECTION 1

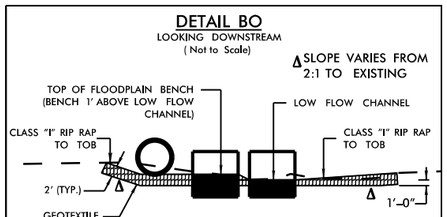
PERMIT DRAWING
SHEET 4 OF 125

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

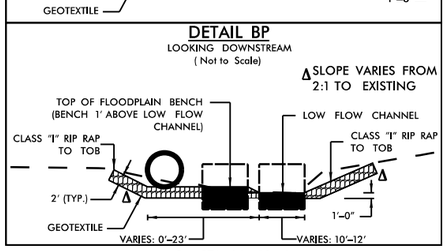
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 1

DETAIL BO
LOOKING DOWNSTREAM
(Not to Scale)



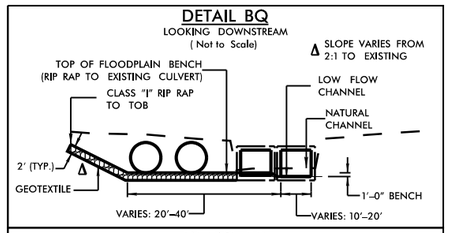
DETAIL BP
LOOKING DOWNSTREAM
(Not to Scale)



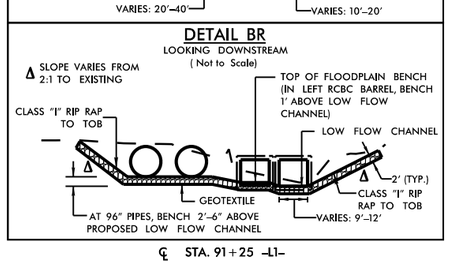
℄ STA. 64+93 -L1-

SITE 2

DETAIL BQ
LOOKING DOWNSTREAM
(Not to Scale)



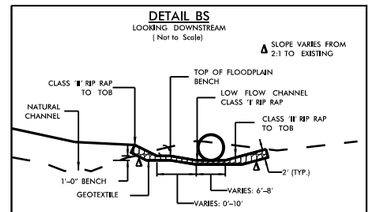
DETAIL BR
LOOKING DOWNSTREAM
(Not to Scale)



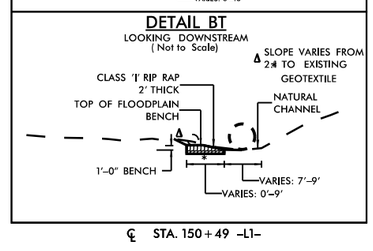
℄ STA. 91+25 -L1-

SITE 3

DETAIL BS
LOOKING DOWNSTREAM
(Not to Scale)



DETAIL BT
LOOKING DOWNSTREAM
(Not to Scale)



℄ STA. 150+49 -L1-

PLANS PREPARED BY:

RS&H Architects-Engineers-Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

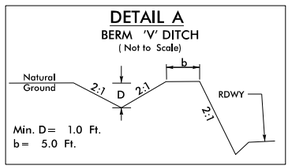
15-APR-2019 08:05
$$$$USERNAME$$$$
CD Post-award NCDOT I-40/Hydraulics/PERMITS_Environmental/Drawings/I-5111_I-4739_Hyd_Ditch Detail.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

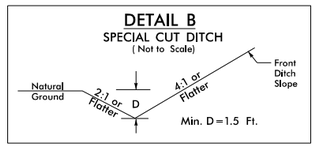
PERMIT DRAWING SHEET 5 OF 125

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



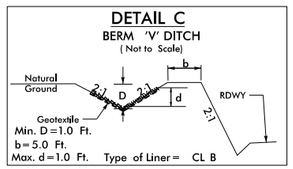
–L2– STA. 170+50 TO STA. 175+50 RT
–L2– STA. 198+50 TO STA. 204+00 RT
–L2– STA. 295+16 TO STA. 310+00 RT
–L2– STA. 388+75 TO STA. 394+00 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



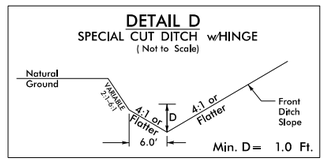
–L2– STA. 198+50 TO STA. 199+30 RT
–L2– STA. 204+95 TO STA. 209+00 RT
–L2– STA. 209+00 TO STA. 209+50 LT
–L2– STA. 212+00 TO STA. 214+50 LT
–L2– STA. 212+50 TO STA. 214+00 RT
–L2– STA. 303+50 TO STA. 304+35 RT
–L2– STA. 309+00 TO STA. 310+00 RT
–L2– STA. 420+50 TO STA. 423+50 LT
–L3– STA. 155+00 TO STA. 157+50 RT
–L3– STA. 155+00 TO STA. 157+50 LT
–L3– STA. 261+50 TO STA. 262+00 RT
–L3– STA. 276+50 TO STA. 278+50 RT
–LCDEB– STA. 91+51.57 TO STA. 99+29.50 RT
–Y1RPA_3– STA. 22+00 TO STA. 24+00 RT
–Y1RPB_3– STA. 20+50 TO STA. 22+00 LT
–Y1RPC_3– STA. 12+97 TO STA. 15+49 RT
–Y1RPC_3– STA. 24+00 TO STA. 25+39 RT
–Y2_3– STA. 13+00 TO STA. 14+50 RT
–Y2_3– STA. 13+50 TO STA. 14+50 LT
–Y2_3– STA. 17+50 TO STA. 19+15 RT
–Y2_3– STA. 71+50 TO STA. 74+50 RT
–Y2RPA– STA. 17+40 TO STA. 19+00 RT
–Y3RPC– STA. 24+00 TO STA. 26+00 LT
–Y3RPC– STA. 27+00 TO STA. 30+00 LT
–Y3RPC– STA. 31+00 TO STA. 32+00 LT
–Y8RPA– STA. 16+25 TO STA. 15+25 LT
–Y4– STA. 10+80 TO STA. 14+50 LT
–Y5– STA. 43+50 TO STA. 44+00 RT
–Y5RPA– STA. 18+00 TO STA. 23+50 LT
–Y5LPC– STA. 17+00 TO STA. 19+50 RT
–Y5RPB– STA. 37+00 TO STA. 38+50 LT
–Y5RPB_TEMP– STA. 37+00 TO STA. 38+50 LT
–Y5RPB_TEMP– STA. 39+90 TO STA. 42+50 LT
–Y5RPB– STA. 42+00 TO STA. 43+50 RT
–Y5RPC– STA. 17+03.22 TO STA. 20+00 RT
–Y5RPC– STA. 58+50 TO STA. 59+60 LT
BEG. EL=312.27', END EL=311.94', S=0.30%
–Y5RPBSPUR– STA. 14+50 TO STA. 16+50 LT
–Y5RPBSPUR– STA. 17+20 TO STA. 17+50 RT
–Y5RPD– STA. 18+00 TO STA. 18+59 RT
–Y6– STA. 10+50 TO STA. 15+58 LT
–Y6– STA. 11+16 TO STA. 14+00 RT
–Y6– STA. 18+50 TO STA. 23+00 LT
–Y6– STA. 20+79 TO STA. 23+00 RT
–Y8RPC– STA. 18+61 TO STA. 21+13 RT

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



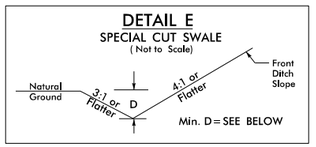
–L2– STA. 167+50 TO STA. 170+50 RT
–L2– STA. 204+00 TO STA. 204+95 RT

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



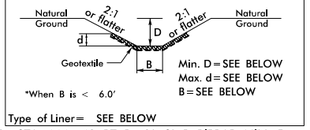
–L2– STA. 172+50 TO STA. 176+50 RT
–L2– STA. 177+00 TO STA. 181+00 RT
–L2– STA. 179+50 TO STA. 181+50 LT
–L2– STA. 190+50 TO STA. 195+50 RT
–L2– STA. 199+30 TO STA. 204+95 RT
–L2– STA. 207+00 TO STA. 209+00 LT
–L2– STA. 214+50 TO STA. 216+00 LT
–L2– STA. 218+00 TO STA. 219+50 LT
–L2– STA. 417+50 TO STA. 420+50 LT
–L3– STA. 21+50 TO STA. 23+50 LT
–Y5RPB– STA. 38+50 TO STA. 39+00 LT

DETAIL E
SPECIAL CUT SWALE
(Not to Scale)



–L2– STA. 170+00 TO STA. 172+00 LT, D=1.0'
–L2– STA. 195+50 TO STA. 197+00 LT, D=1.0'
–L2– STA. 252+00 TO STA. 254+50 LT, D=1.25'
–L2– STA. 258+50 TO STA. 260+50 LT, D=1.0'
–L2– STA. 258+50 TO STA. 262+50 RT, D=1.0'
–L2– STA. 387+50 TO STA. 390+50 RT, D=1.0'
–L2– STA. 411+00 TO STA. 415+50 LT, D=1.25'
–L2– STA. 418+00 TO STA. 422+50 RT, D=1.25'
–L2– STA. 424+50 TO STA. 429+00 LT, D=1.0'
–L3– STA. 186+00 TO STA. 189+50 RT, D=1.0'
–L3– STA. 191+00 TO STA. 193+50 LT, D=1.0'
–L3– STA. 258+50 TO STA. 261+50 RT, D=1.0'
–Y2RPA_3– STA. 13+62 TO STA. 17+40 RT, D=1.25'
–Y5LPB– STA. 12+25 TO STA. 13+82 RT, D=1.0'
–Y5RPB– STA. 30+50 TO STA. 34+00 RT, D=1.0'
–Y5RPB– STA. 45+00 TO STA. 46+50 LT, D=1.0'
–Y5RPC– STA. 52+00 TO STA. 53+28 LT, D=1.0'
BEG. EL=314.91', END EL=311.93', S=2.33%
–Y5RPC– STA. 53+28 TO STA. 54+50 LT, D=1.0'
BEG. EL=311.93', END EL=312.30', S=0.30%
–Y8RPA– STA. 24+50 TO STA. 28+50 LT, D=1.0'
–Y2_3– STA. 61+50 TO STA. 63+50 LT, D=1.0'

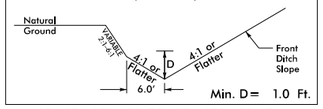
DETAIL F
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= SEE BELOW

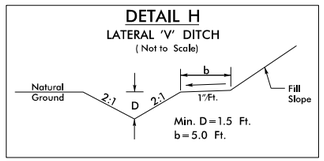
–L2– STA. 444+43 RT, B=2', CL B RIPRAP, MIN D=1.0'
L=98', BEG. EL=271.77', END EL=266.15', S=5.76%
–L2– STA. 473+44 LT, B=2', CL B RIPRAP, MIN D=1.0'
L=39', BEG. EL=237.23, END EL=235.29, S=5.0%
–Y5LPB– STA. 26+85 RT, B=4', CL I RIPRAP, MIN. D=2.25'
L=485', BEG. EL=338.00', END EL=325.00', S=2.68%
–Y5LPB– STA. 27+33 LT, B=4', CL I RIPRAP, MIN D=3.5'
L=445', BEG. EL=323.00', END EL=315.25', S=1.74%
–Y5RPBSPUR– STA. 17+30 LT, B=4',CL I RIPRAP, MIN D=3.5'
L=286', BEG. EL=311.25', END EL=306.50', S=1.66%
–Y5RPB– STA. 43+35 LT, B=4', CL II RIPRAP, MIN D=3.5'
L=133', BEG. EL=305.80', END EL=302.95', S=2.14%
–L3– STA. 446+90 TO STA. 447+24 LT,
B=4', CL I RIPRAP, MIN D=2.0'
L=100', BEG. EL=272.43', END EL=269.19', S=3.2%

DETAIL G
SPECIAL CUT SWALE w/HINGE
(Not to Scale)



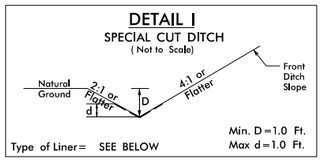
–L2– STA. 177+50 TO STA. 179+50 LT
–L2– STA. 181+50 TO STA. 184+50 LT
–L2– STA. 200+00 TO STA. 207+00 LT
–L2– STA. 216+00 TO STA. 218+00 LT
–L2– STA. 251+50 TO STA. 256+00 RT
–L3– STA. 20+28 TO STA. 21+50 LT
–Y5RPA– STA. 17+50 TO STA. 20+50 RT
–Y5RPB– STA. 40+50 TO STA. 43+50 LT

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



–L2– STA. 257+28 TO STA. 258+50 RT
–L2– STA. 395+74 TO STA. 396+50 RT
–Y5LPC– STA. 14+50 TO STA. 17+00 RT
–Y5LPB– STA. 15+40 TO STA. 17+50 LT
–Y5RPB– STA. 35+00 TO STA. 37+00 LT
–Y5RPB_TEMP– STA. 35+00 TO STA. 37+00 LT
–Y5RPBSPUR– STA. 16+50 TO STA. 17+29 LT

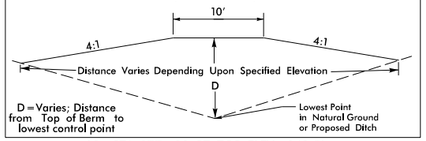
DETAIL I
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= SEE BELOW

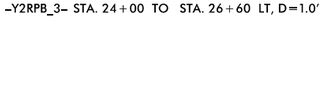
–L3– STA. 122+50 TO STA. 123+50 LT, CL B RIPRAP
–Y1RPA_3– STA. 24+00 TO STA. 25+00 LT, CL B RIPRAP
–Y5RPB– STA. 34+00 TO STA. 37+50 RT, PSRM
–Y5RPB– STA. 38+50 TO STA. 40+50 LT, CL I RIPRAP
–Y5RPB_TEMP– STA. 38+50 TO STA. 39+90 LT, CL I RIPRAP
–Y5RPBSPUR– STA. 10+20 TO STA. 13+73 RT, CL II RIPRAP

DETAIL J
10' WIDE BERM
(Not to Scale)



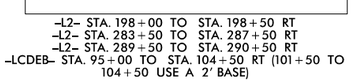
–L2– STA. 177+00 RT, TOP ELEV=349.5'
–L2– STA. 305+00 RT, TOP ELEV=314.5'
–L2– STA. 324+25 LT, TOP ELV=277.5'
–L2– STA. 436+50 LT, TOP ELEV=280.0'
–L3– STA. 114+00 LT, TOP ELEV=228.0'
–L3– STA. 278+50 RT, TOP ELEV=260.0'
–Y5RPB– STA. 43+74 LT, TOP ELEV=314.0'
–Y2RPA_3– STA. 19+26 LT, TOP ELEV=298.0'
–Y2– STA. 70+00 LT, TOP ELEV=304.8'

DETAIL M
SPECIAL LATERAL BASE SWALE
(Not to Scale)



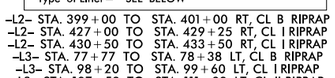
–Y2RPB_3– STA. 24+00 TO STA. 26+60 LT, D=1.0'

DETAIL N
BERM BASE DITCH
(Not to Scale)



–L2– STA. 198+00 TO STA. 198+50 RT
–L2– STA. 283+50 TO STA. 287+50 RT
–L2– STA. 289+50 TO STA. 290+50 RT
–LCDEB– STA. 95+00 TO STA. 104+50 RT (101+50 TO 104+50 USE A 2' BASE)

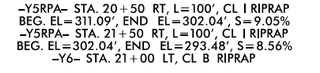
DETAIL O
TOE PROTECTION
(Not to Scale)



Type of Liner= SEE BELOW

–L2– STA. 399+00 TO STA. 401+00 RT, CL B RIPRAP
–L2– STA. 427+00 TO STA. 429+25 RT, CL I RIPRAP
–L2– STA. 430+50 TO STA. 433+50 RT, CL I RIPRAP
–L3– STA. 77+77 TO STA. 78+38 LT, CL B RIPRAP
–L3– STA. 98+20 TO STA. 99+60 LT, CL I RIPRAP
–L3– STA. 107+50 TO STA. 111+00 LT, CL II RIPRAP
–L3– STA. 111+87 TO STA. 118+19 LT, CL I RIPRAP
–L3– STA. 144+14 TO STA. 145+50 LT, CL I RIPRAP
–L3– STA. 171+60 TO STA. 173+25 LT, CL I RIPRAP
–L3– STA. 181+65 TO STA. 183+00 LT, CL I RIPRAP
–L3– STA. 181+80 TO STA. 183+90 RT, CL I RIPRAP
–L3– STA. 211+00 TO STA. 212+50 LT, CL I RIPRAP
–L3– STA. 243+50 TO STA. 246+60 RT, CL I RIPRAP
–L3– STA. 247+42 TO STA. 250+00 RT, CL I RIPRAP
–Y8LPC– STA. 10+62 TO STA. 12+40 LT, CL I RIPRAP
–LCDWB– STA. 97+73.62 TO STA. 99+23.62 LT, CL B RIPRAP
–Y2RPA_3– STA. 18+31 TO STA. 19+12 LT, CL B RIPRAP
–Y1_3– STA. 32+90 TO STA. 33+40 RT, CL B RIPRAP
–Y1_3– STA. 68+00 TO STA. 68+60 RT, CL B RIPRAP

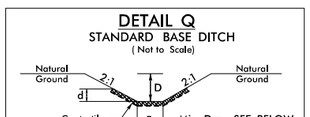
DETAIL P
STANDARD 'V' DITCH
(Not to Scale)



Type of Liner= SEE BELOW

–Y5RPA– STA. 20+50 RT, L=100', CL I RIPRAP
BEG. EL=311.09', END EL=302.04', S=9.05%
–Y5RPA– STA. 21+50 RT, L=100', CL I RIPRAP
BEG. EL=302.04', END EL=293.48', S=8.56%
–Y6– STA. 21+00 LT, CL B RIPRAP

DETAIL Q
STANDARD BASE DITCH
(Not to Scale)



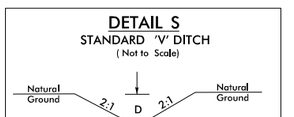
Type of Liner= CL I Rip-Rap

–Y5– STA. 25+00 LT, L=103', CL B RIPRAP,
BEG. EL=355.50' END EL=352.00', S=3.4%
MIN D=1.25', MIN d=1.25'

DETAIL R
LATERAL BASE DITCH
(Not to Scale)

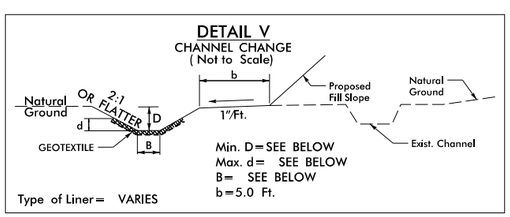
–L3– STA. 92+50 TO STA. 94+50 LT
–L3– STA. 265+00 TO STA. 276+50 RT

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



–Y8RPA– STA. 16+00 RT, MIN. D=3.25'
L=99', S=0.3%
BEG. EL=237.80', END EL=237.54'

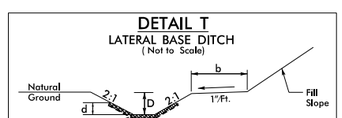
DETAIL V
CHANNEL CHANGE
(Not to Scale)



Type of Liner= VARIES

–Y5RPC– STA. 53+28 LT, B=3', CL I RIPRAP, MIN D=2.25'
BEG. EL=308.85', END EL=307.37', L=48', S=3.1%
–L2– STA. 281+89 RT, B=1.5', CL I RIPRAP, MIN D=3.25'
BEG. EL=306.78', END EL=306.28', L=25', S=2.0%
–L2– STA. 257+28 RT, B=8', CL I RIPRAP, MIN D=4.0'
L=31', BEG. EL=314.75', END EL=314.84', S=0.3%
–L2– STA. 273+00 TO STA. 273+30 RT, B=4', D=4', d=4',
CL I RIPRAP, BEG. EL=297.70, END EL.=297.50
–L2– STA. 275+00 LT, B=4', CL I RIPRAP, MIN D=3.5'
L=42', BEG. EL=290.72', END EL=290.12', S=1.42%
–L2– STA. 283+47 LT, B=4', CL I RIPRAP, MIN D=4.75'
L=66', BEG. EL=302.98', END EL=302.67', S=0.5%
–L2– STA. 323+32 TO STA. 324+50 RT,
B=4', D=4.75', d=4.75', CL I RIPRAP
–L2– STA. 395+91 RT, B=3', D=1.5', d=1.5', CL I RIPRAP, S=4.4%
BEG. EL=259.53', END EL=257.50'
–L3– STA. 178+50 TO STA. 181+75 LT, B=4', D=2.5', CL I RIPRAP
–L3– STA. 246+42 TO STA. 247+34 RT, B=4', D=3.25', d=3.25', CL I RIPRAP
–L3– STA. 104+89 TO STA. 106+28 RT, B=4', D=1.0',
CL I RIPRAP, S=6.2%, BEG. EL.=184.77. END EL.=193.32

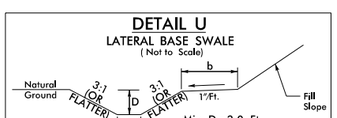
DETAIL T
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= SEE BELOW

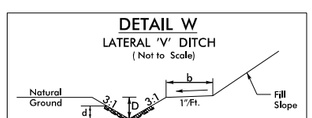
–L2– STA. 251+00 TO STA. 251+50 RT, CL B
–L2– STA. 272+00 TO STA. 273+00 RT, CL B
–L2– STA. 273+30 TO STA. 275+50 RT, CL B
–L2– STA. 274+00 TO STA. 275+05 LT, CL B
–L2– STA. 320+00 TO STA. 322+68 LT, CL B
–L2– STA. 320+50 TO STA. 322+00 RT, CL I
–L2– STA. 324+50 TO STA. 325+50 RT, CL B
–L2– STA. 405+93 TO STA. 406+50 RT, CL B

DETAIL U
LATERAL BASE SWALE
(Not to Scale)



–L2– STA. 249+00 TO STA. 251+00 RT
–L2– STA. 256+00 TO STA. 257+28 RT
–L2– STA. 282+11 TO STA. 282+50 RT
–L2– STA. 322+00 TO STA. 323+32 RT
–L2– STA. 322+68 TO STA. 323+75 LT
–L2– STA. 386+27 TO STA. 387+50 RT
–L2– STA. 437+00 TO STA. 446+90 LT
–L3– STA. 86+50 TO STA. 92+80 RT
–L3– STA. 146+15 TO STA. 147+00 RT
–L3– STA. 173+25 TO STA. 175+50 LT
–L3– STA. 249+00 TO STA. 250+00 LT
–Y5RPD– STA. 20+17 TO STA. 21+66 RT
–Y2_3– STA. 57+50 TO STA. 58+00 LT
–Y2RPA_3– STA. 19+63 TO STA. 22+75 LT
–Y2RPA_3– STA. 19+50 TO STA. 23+50 RT

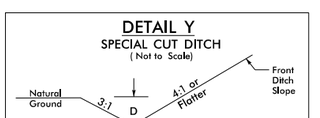
DETAIL W
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL B Rip-Rap

–Y1RPA_3– STA. 22+50 TO STA. 24+00 LT

DETAIL Y
SPECIAL CUT DITCH
(Not to Scale)



–Y2_3– STA. 77+50 TO STA. 85+50 LT, MIN D=3.25'

PLANS PREPARED BY :

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 6 OF 125

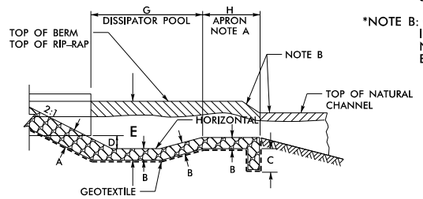
DETAIL X

RIP–RAPPED ENERGY DISSIPATOR BASIN

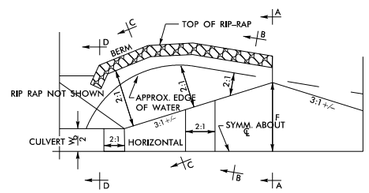
*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A)= SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

℄ SECTION



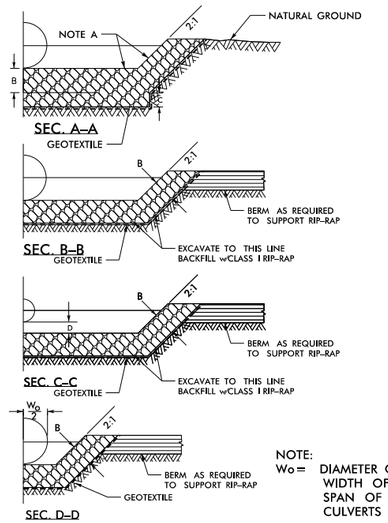
HALF PLAN



DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	4.0	4.0						
B	3.0	3.0						
C	2.0	2.0						
D	1.9	1.3						
E	10.5	8.5						
F	12.6	12.6						
G	28.7	21.3						
H	9.6	6.3						

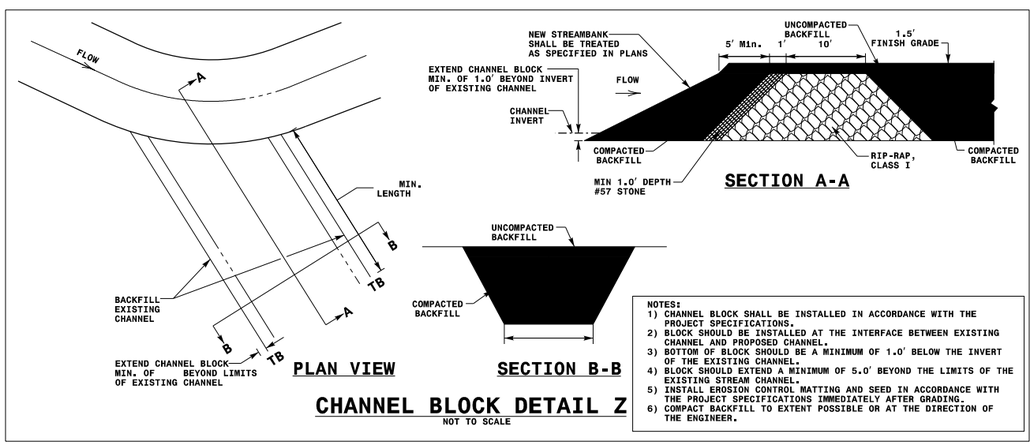
*ALL DIMENSIONS APPROXIMATE IN FT

BASIN #	LOCATION (AT OUTLET)
1	–L2– 192+73 LT
2	–L2– 256+65 LT
3	
4	
5	
6	
7	
8	



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

5/05



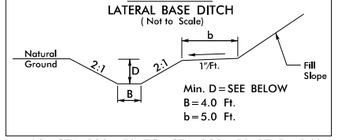
CHANNEL BLOCK DETAIL Z

NOT TO SCALE

NOTES:
1) CHANNEL BLOCK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2) BLOCK SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
3) BOTTOM OF BLOCK SHOULD BE A MINIMUM OF 1.0' BELOW THE INVERT OF THE EXISTING CHANNEL.
4) BLOCK SHOULD EXTEND A MINIMUM OF 5.0' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
5) INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
6) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.

DETAIL AA

LATERAL BASE DITCH
(Not to Scale)

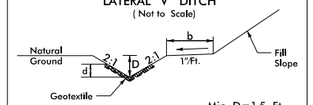


Min. D=SEE BELOW
B=4.0 Ft.
b=5.0 Ft.

–L2– STA. 282+50 TO STA. 283+50 RT, D=1.0'
–L2– STA. 290+50 TO STA. 292+50 RT, D=1.0'
–Y4– STA. 22+76 TO STA. 23+75 LT, D=1.75'

DETAIL AB

LATERAL 'V' DITCH
(Not to Scale)



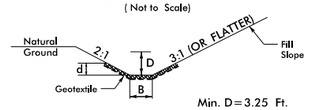
Min. D=1.5 Ft.
Max. d=1.5 Ft.
b=5.0 Ft.

Type of Liner= SEE BELOW

–L2– STA. 248+00 TO STA. 249+50 LT, CL B RIPRAP
–L2– STA. 316+50 TO STA. 317+50 RT, CL I RIPRAP
–L2– STA. 401+00 TO STA. 403+00 RT, CL I RIPRAP

DETAIL AC

SPECIAL LATERAL BASE DITCH
(Not to Scale)



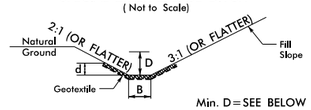
Min. D=3.25 Ft.
Max. d=3.25 Ft.
B=4.0 Ft.

Type of Liner= CL I Rip–Rap

–L2– STA 362+63 TO STA. 364+50 LT
–L2– STA. 374+50 TO STA. 379+00 LT

DETAIL AD

SPECIAL LATERAL BASE DITCH
(Not to Scale)



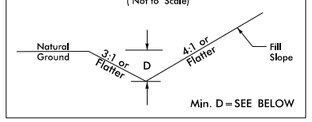
Min. D=SEE BELOW
Max. d=SEE BELOW
B=4.0 Ft.

Type of Liner= CL B Rip–Rap

–L2– STA. 369+50 TO STA. 373+92 RT, D=1.5', d=1.5'
–L2– STA. 405+93 TO STA. 410+00 RT, D=1.5', d=1.5'
–L2– STA. 434+50 TO STA. 436+27 LT, D=1.5', d=1.5'

DETAIL AE

SPECIAL LATERAL 'V' SWALE
(Not to Scale)

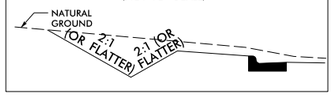


Min. D=SEE BELOW

–L2– STA. 410+00 TO STA. 417+50 RT, D=1.25'
–L2– STA. 467+50 TO STA. 473+50 RT, D=1.25'
–L2– STA. 474+00 TO STA. 476+00 RT, D=1.0'
–Y5RPA– STA. 27+00 TO STA. 29+00 RT, D=1.0'

DETAIL AG

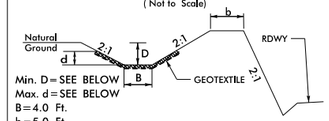
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



–Y2 3– STA. 30+00 TO STA. 42+49 RT
–Y5LPC– STA. 18+50 TO STA. 21+20 LT
–Y1 3– STA. 25+50 TO STA. 30+10 RT
–Y1E– STA. 12+25 TO STA. 16+00 LT

DETAIL AH

BERM BASE DITCH
(Not to Scale)



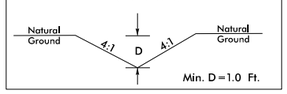
Min. D=SEE BELOW
Max. d=SEE BELOW
B=4.0 Ft.
b=5.0 Ft.

Type of Liner= CL B Rip–Rap

–L2– STA. 198+00 TO STA. 198+50 RT, D=2.0'
–L2– STA. 418+50 TO STA. 420+50 RT, D=1.5'
–L2– STA. 424+80 TO STA. 435+00 LT, D=1.5'

DETAIL AI

STANDARD 'V' DITCH
(Not to Scale)

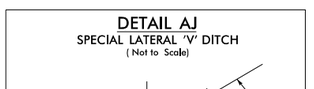


Min. D=1.0 Ft.

–L2– STA. 223+19 LT, L=75', S=1.08%
BEG. EL=364.81', END EL=364.00'

DETAIL AJ

SPECIAL LATERAL 'V' DITCH
(Not to Scale)

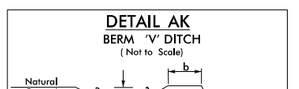


Min. D=SEE BELOW Ft.

–L2– STA. 444+50 TO STA. 448+00 LT, D=1.25'
–L2– STA. 473+50 TO STA. 474+00 RT, D=1.0'
–LCDEB– STA. 22+55.28 TO STA. 25+05.29 RT, D=1.0'
–Y1RPB_3– STA. 22+00 TO STA. 25+00 RT, D=1.5'
–Y1RPB_3– STA. 22+00 TO STA. 23+50 LT, D=2.00'
–Y2_3– STA. 69+00 TO STA. 70+52 RT, D=1.0'
–Y5RPD– STA. 17+50 TO STA. 19+75 LT, D=2.00'
–SR1– STA. 11+85 TO STA. 14+50 RT, D=1.25'
–SR1– STA. 12+34 TO STA. 14+75 LT, D=1.0'
–PIERCE– STA. 14+54 TO STA. 15+41 RT, D=1.0'

DETAIL AK

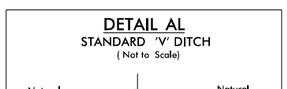
BERM 'V' DITCH
(Not to Scale)



–L3– STA. 121+00 TO STA. 122+50 LT
–L3– STA. 126+50 TO STA. 138+00 LT
–L3– STA. 156+00 TO STA. 157+75 RT
–L3– STA. 238+00 TO STA. 243+00 RT
–L3– STA. 276+50 TO STA. 290+00 RT
–LCDEB– STA. 90+01.57 TO STA. 95+00 RT
–Y2RPA_3– STA. 18+00 TO STA. 19+50 RT

DETAIL AL

STANDARD 'V' DITCH
(Not to Scale)

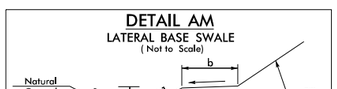


Min. D=1.5 Ft.

–L3– STA. 157+75 TO STA. 159+58 RT
–SR1– STA. 18+50 RT, BEG. ELEV=316.80, END ELEV=315.00, S=1.24%, L=145'
–SR1– STA. 18+50 LT, BEG. ELEV=317.56, END ELEV=317.02, S=0.48%, L=112'
–Y1 3– STA. 19+77 TO STA. 20+50 LT, BEG. ELEV=312.00, END ELEV=313.00, S=1.4%
–Y1 3– STA. 21+71 TO STA. 22+50 RT, BEG. ELEV=316.00, END ELEV=317.50, S=1.7%
–Y1E– STA. 16+00 TO STA. 17+00 LT, S=1.3%
BEG. ELEV=314.00, END ELEV=312.72'
–PIERCE– STA. 14+54 RT, L=118', S=1.8%
BEG. ELEV=320.48, END ELEV=318.40

DETAIL AM

LATERAL BASE SWALE
(Not to Scale)

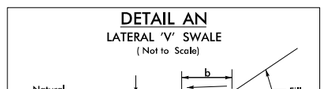


Min. D=1.0 Ft.
B=4.0 Ft.
b=5.0 Ft.

–L2– STA. 446+00 TO STA. 447+40 RT
–L3– STA. 111+09 LT; L=70'; S=0.9%
–L3– STA. 231+50 TO STA. 232+79 LT
–L3– STA. 234+28 TO STA. 235+50 LT
–L3– STA. 243+00 TO STA. 243+50 RT
–L3– STA. 245+50 TO STA. 247+66 LT
–L3– STA. 269+00 TO STA. 270+71 LT
–LCDEB– STA. 88+98.93 TO STA. 91+51.57 RT
–LCDWB– STA. 102+08.23 TO STA. 103+26.82 LT
–Y1RPD_3– STA. 14+21 TO STA. 16+53 LT

DETAIL AN

LATERAL 'V' SWALE
(Not to Scale)



Min. D=SEE BELOW
b=5.0 Ft.

–L2– STA. 249+50 TO STA. 250+53 LT, D=1.0'
–L2– STA. 275+65 TO STA. 276+50 LT, D=1.0'
–L2– STA. 462+50 TO STA. 464+00 RT, D=1.25'
–L2– STA. 396+50 TO STA. 399+00 RT, D=1.0'
–L2– STA. 403+00 TO STA. 405+93 RT, D=1.5'
–L3– STA. 163+70 TO STA. 166+64 LT, D=1.25'
–L3– STA. 184+00 TO STA. 185+50 RT, D=1.5'
–Y1RPA_3– STA. 15+74.66 TO STA. 16+33.93 RT, D=1.0'
–Y1RPA_3– STA. 18+05 TO STA. 22+50 LT, D=1.5'
–Y2_3– STA. 59+26 TO STA. 61+00 LT, D=1.75'
–Y5LPB– STA. 17+50 TO STA. 20+98 RT, D=1.25'
–Y5LPB– STA. 25+00 TO STA. 26+85 RT, D=1.0'
–Y5LPB– STA. 26+85 TO STA. 29+45 RT, D=1.75'
–Y8RPA– STA. 26+00 TO STA. 27+01 RT, D=1.0'
–Y8RPA– STA. 27+48 TO STA. 29+60 RT, D=1.75'

PLANS PREPARED BY :

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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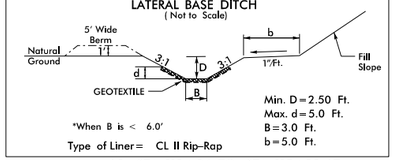
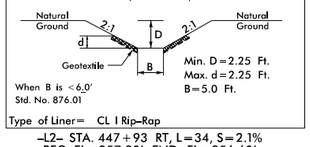
PERMIT DRAWING
SHEET 7 OF 125

DETAIL AQ
LATERAL BASE DITCH
(Not to Scale)



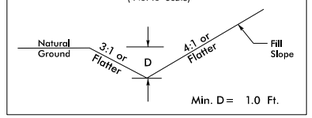
–L3– STA. 112+94 TO STA. 115+23 LT

DETAIL AR
STANDARD BASE DITCH
(Not to Scale)



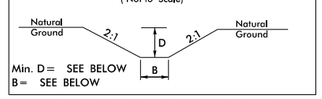
–L2– STA. 447+93 RT, L=34, S=2.1%
BEG. EL=257.30'; END EL=256.60'

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



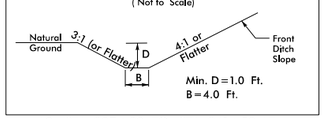
–L2– STA. 454+50 TO STA. 455+77 RT
–Y5LPB– STA. 13+82.47 TO STA. 17+50 RT

DETAIL AT
STANDARD BASE DITCH
(Not to Scale)



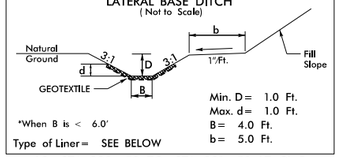
–L2– STA. 429+48 RT, L=79', S=0.8%
BEG. EL=278.30', END EL=277.70'
D=2.0', B=3.0'

DETAIL AU
SPECIAL CUT BASE SWALE
(Not to Scale)



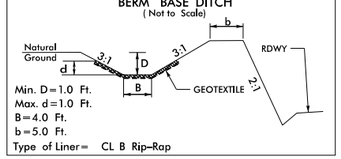
–L3– STA. 237+00 TO STA. 241+50 LT
–Y5RPBSPUR– STA. 13+73 TO STA. 17+20 RT

DETAIL AV
LATERAL BASE DITCH
(Not to Scale)



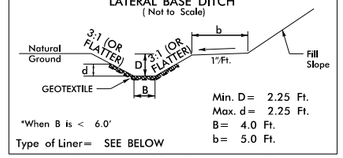
–L3– STA. 229+50 TO STA. 231+50 LT, CL B
–L3– STA. 231+75 TO STA. 233+00 RT, CL I
–L3– STA. 234+00 TO STA. 235+00 RT, CL B
–L3– STA. 235+50 TO STA. 237+00 LT, CL B
–L3– STA. 243+00 TO STA. 245+50 LT, CL B
–L3– STA. 263+00 TO STA. 269+00 LT, CL B
–L3– STA. 263+50 TO STA. 265+00 RT, CL B

DETAIL AW
BERM BASE DITCH
(Not to Scale)



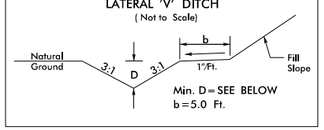
–L3– STA. 122+50 TO STA. 126+50 LT
–L3– STA. 234+50 TO STA. 238+00 RT
–LCDEB– STA. 104+50 TO STA. 109+50 RT (104+50 TO 107+50 USE A 2' BASE WITH 2:1 SIDE SLOPES)

DETAIL AX
LATERAL BASE DITCH
(Not to Scale)



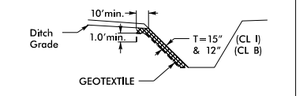
–L3– STA. 231+00 TO STA. 231+75 RT, CL I
–L3– STA. 233+00 TO STA. 234+00 RT, CL B
–LCDWB– STA. 99+23.62 TO STA. 103+26.82 LT, CL I
–Y2RPA_3– STA. 22+75 TO STA. 23+40 LT, CL I

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



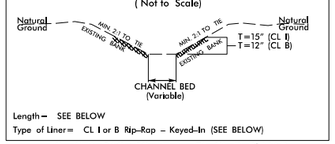
–Y2_3– STA. 55+75 TO STA. 57+50 LT, D=1.0'
–Y2LPD_3– STA. 16+20 TO STA. 18+81 RT, D=1.0'
–Y2RPD_3– STA. 24+43 TO STA. 25+27 LT, D=2.25'
–Y1_3– STA. 30+88 TO STA. 32+00 RT, D=1.0'

DETAIL BA
RIP RAP AT EMBANKMENT
(Not to Scale)



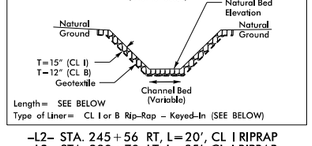
–L2– STA. 257+25 RT, CL I RIPRAP
–L2– STA. 272+87 RT, CL B RIPRAP
–L2– STA. 273+27 RT, CL B RIPRAP
–L2– STA. 275+06 LT, CL B RIPRAP
–L2– STA. 322+48 LT, CL B RIPRAP
–L2– STA. 322+88 LT, CL B RIPRAP
–L2– STA. 323+13 RT, CL I RIPRAP
–L2– STA. 386+30 RT, CL I RIPRAP
–L2– STA. 395+82 RT, CL I RIPRAP
–L2– STA. 405+84 RT, CL I RIPRAP
–L2– STA. 406+05 RT, CL B RIPRAP
–L2– STA. 447+72 LT, CL I RIPRAP
–L2– STA. 447+93 LT, CL I RIPRAP
–L3– STA. 174+80 RT, CL B RIPRAP
–L3– STA. 210+62 RT, CL I RIPRAP
–L3– STA. 215+34 LT, CL I RIPRAP
–L3– STA. 215+52 LT, CL I RIPRAP
–L3– STA. 247+67 LT, CL I RIPRAP
–L3– STA. 270+63 LT, CL I RIPRAP

DETAIL BB
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



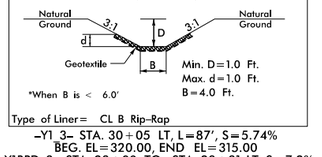
–L2– STA. 169+12 LT, L=5', CL B RIPRAP
–L2– STA. 172+65 LT, L=8', CL B RIPRAP
–L2– STA. 176+20 LT, L=36', CL I RIPRAP
–L2– STA. 284+50 LT, L=5', CL I RIPRAP
–L2– STA. 396+41 LT, L=45', CL I RIPRAP
–L2– STA. 369+00 LT, L=5', CL B RIPRAP
–L2– STA. 381+90 RT, L=5', CL B RIPRAP
–L2– STA. 416+93 LT, L=10', CL B RIPRAP
–L2– STA. 447+84 LT, L=64', CL I RIPRAP
–L2– STA. 461+38 RT, L=30', CL I RIPRAP
–Y8RPA– STA. 27+36 RT, L=22', CL I RIPRAP
–L3– STA. 111+82 LT, L=16', CL I RIPRAP (INLET)
–L3– STA. 144+04 LT, L=40', CL I RIPRAP
–L3– STA. 168+43 LT, L=45', CL I RIPRAP
–L3– STA. 171+49 LT, L=55', CL I RIPRAP
–L3– STA. 205+30 RT, L=55', CL I RIPRAP
–L3– STA. 233+34 LT, L=45', CL I RIPRAP
–L3– STA. 234+09 LT, L=40', CL I RIPRAP
–L3– STA. 247+67 LT, L=50', CL I RIPRAP
–L3– STA. 270+61 LT, L=33', CL I RIPRAP

DETAIL BC
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



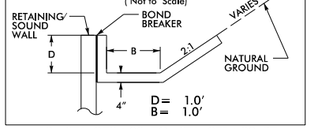
–L2– STA. 245+56 RT, L=20', CL I RIPRAP
–L2– STA. 290+70 LT, L=35', CL I RIPRAP
–L3– STA. 121+50 RT, L=20', CL B RIPRAP
–L3– STA. 124+36 RT, L=30', CL I RIPRAP
–L3– STA. 126+90 RT, L=30', CL I RIPRAP
–L3– STA. 275+43 LT, L=25', CL I RIPRAP

DETAIL BD
STANDARD BASE DITCH
(Not to Scale)



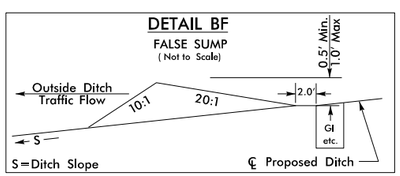
–Y1_3– STA. 30+05 LT, L=87', S=5.74%
BEG. EL=320.00, END EL=315.00
–Y1RPD_3– STA. 23+00 TO STA. 23+31 LT, S=7.2%
BEG. EL= 302.27, END ELEV=300.0
–Y1RPD_3– STA. 23+31 TO STA. 23+96 LT, S=9.2%
BEG. ELEV=300.00, END ELEV=305.96

DETAIL BE
CONCRETE DITCH BEHIND WALL
(Not to Scale)

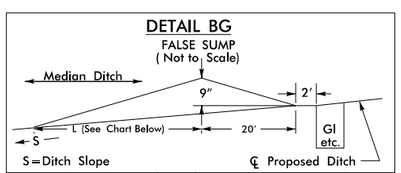


–L2– STA. 258+00 TO STA. 271+00 RT
–L2– STA. 276+00 TO STA. 280+00 RT
–L2– STA. 347+50 TO STA. 366+50 RT
–L3– STA. 250+00 TO STA. 251+00 RT
–L3– STA. 256+50 TO STA. 262+00 RT

DETAIL BF
FALSE SUMP
(Not to Scale)

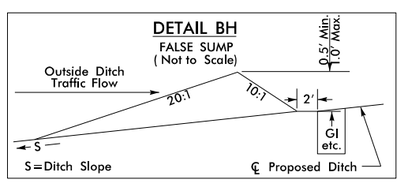


DETAIL BG
FALSE SUMP
(Not to Scale)

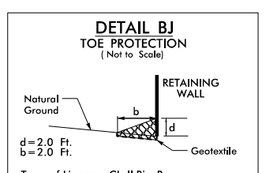


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

DETAIL BH
FALSE SUMP
(Not to Scale)

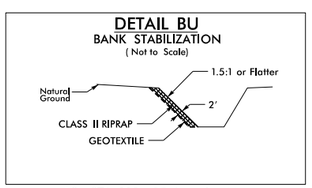


DETAIL BJ
TOE PROTECTION
(Not to Scale)



–L3– STA. 105+80 TO STA. 111+00 LT

DETAIL BU
BANK STABILIZATION
(Not to Scale)



–L3– STA. 103+95, Length=225'
–L3– STA. 104+40, Length=250'

PLANS PREPARED BY :
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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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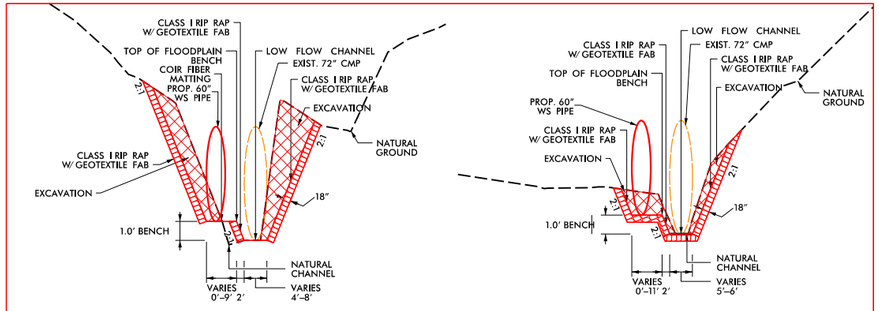
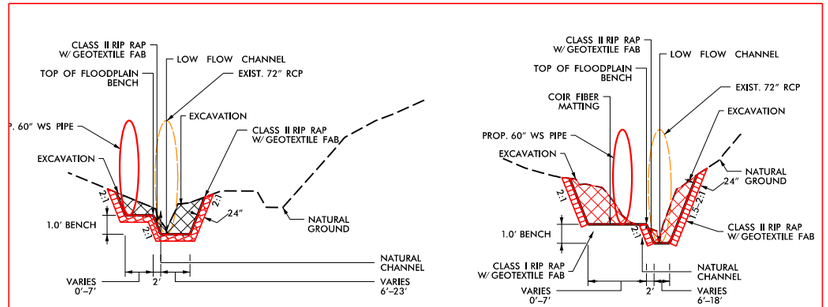
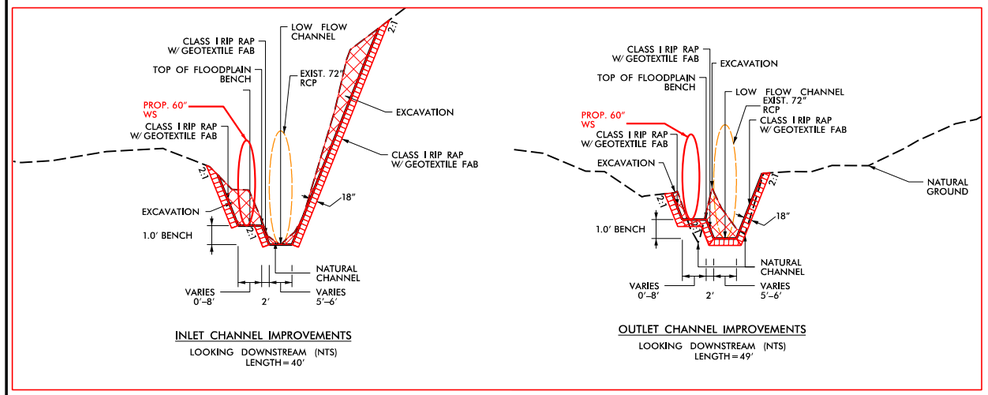
SHEET 8 OF 125



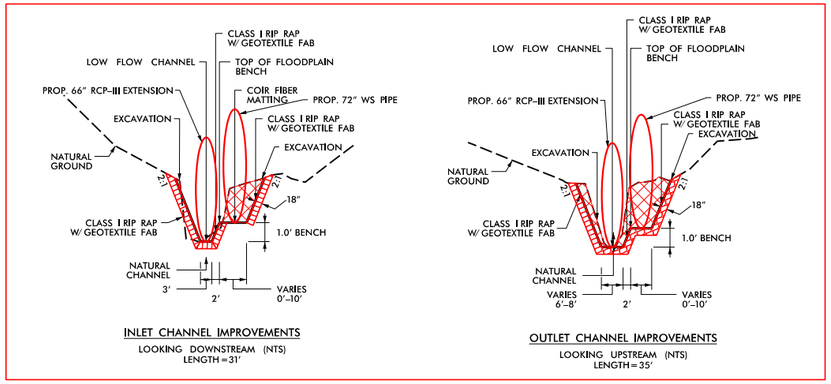
CULVERT INLET/OUTLET DETAILS
C400
–L2– 249+09



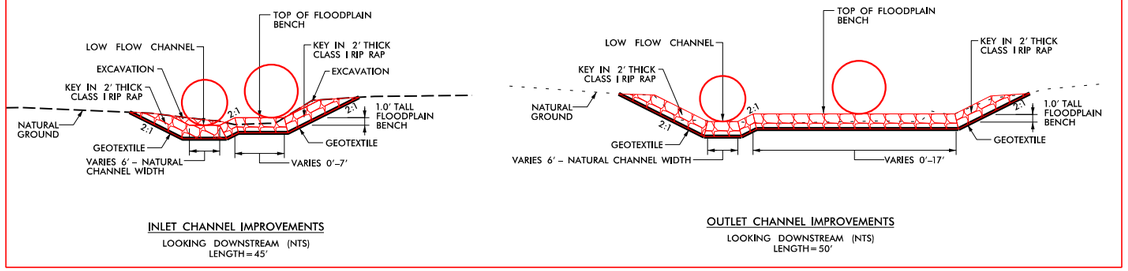
CULVERT INLET/OUTLET DETAILS
C700
–L2– 386+82



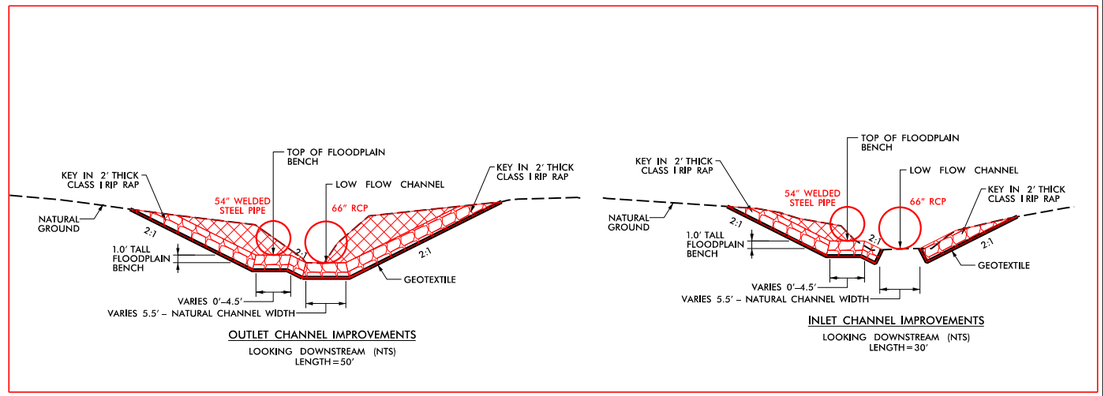
CULVERT INLET/OUTLET DETAILS
C500
–Y5RPA– 21+98



CULVERT INLET/OUTLET DETAILS
C800
–L2– 405+38



CULVERT INLET/OUTLET DETAILS
C600
–L2– 322+93



CULVERT INLET/OUTLET DETAILS
C900
–L3– 212+70

PLANS PREPARED BY :

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 9 OF 125

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DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

ENGLISH

NAD 83

INSET B

SITE 1

SEE INSET B

SEE INSET A

MATCHLINE SEE INSERT ABOVE

MATCHLINE SEE INSERT BELOW

MATCHLINE -LWB- STA. 20+50 SEE SHEET 5

MATCHLINE -LEB- STA. 16+50 SEE SHEET 5

BEG.WW FENCE

PROP.SOUND BARRIER

BEG. -NW1- Sta.10+00.00 =
-LWB- Sta.2+53.22 (173.90' LT)

BEG. -NW3- Sta.10+00.00 =
-LWB- Sta.4+32.49 (217.47' RT)

-LWB- 15+00

-LWB- 20+00

-LEB- 15+00

SZ

WI

WH

SY

SZ

RETAIN

REMOVE

BERM DITCH SEE DETAIL CF

PAVED DITCH

SP. LAT. BASE DITCH SEE DETAIL M

SP. LAT. V DITCH SEE DETAIL K

SP. LAT. BASE DITCH SEE DETAIL CH

PLUG AND FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 36" WELDED STEEL

JB w/MH SP. DET.

Conv. DI TO JB w/MH

SP. CUT SWALE W/HINGE SEE DETAIL G

REPLACED W/42" RCP IV AS PART OF TIP #I-5338

8 TONS CL B RIP RAP W/ 2 SY GEOTEXTILE ON BANKS ONLY LENGTH = 10' (SEE DETAIL RB)

15 TONS CL B RIP RAP 35 SY GEOTEXTILE IN/OUT = 190 S

POSSIBLE JUNCTION

SWAMP AREA

TRIANGLE GREENWAYS COUNCIL

EDDIE BERNARD CLINTON

DEBRA JOHNSON

GLORIA MEJIA

OLIVE HOUSE INVESTMENTS, LLC

KENNETH G NDUNG'U

GRANITE RIDGE HOMEOWNERS ASSOCIATION INC

DELORIESE WALKER

JOHN L. REITZEL, JR. AND WIFE, BEVERLY ROSSER REITZEL

THOMAS WALTER BRAND, III

T. W. BRAND

SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

PLANS PREPARED BY:

RS&H Architects–Engineers–Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
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4/12/2019
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 10 OF 125

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

ENGLISH

NAD 83

INSET B

SITE 1

SEE INSET B

SEE INSET A

MATCHLINE SEE INSERT ABOVE

MATCHLINE SEE INSERT BELOW

MATCHLINE -LWB- STA. 20+50 SEE SHEET 5

MATCHLINE -LEB- STA. 16+50 SEE SHEET 5

BEG.WW FENCE

PROP.SOUND BARRIER

BEG. -NW1- Sta.10+00.00 = -LWB- Sta.2+53.22 (173.90' LT)

BEG. -NW3- Sta.10+00.00 = -LWB- Sta.4+32.49 (217.47' RT)

-LWB- 15+00

-LWB- 20+00

-LEB- 15+00

SZ

WI

WH

SY

TRIANGLE GREENWAYS COUNCIL

EDDIE BERNARD CLINTON

DEBRA JOHNSON

GLORIA MEJIA

OLIVE HOUSE INVESTMENTS, LLC

KENNETH G NDUNG'U

GRANITE RIDGE HOMEOWNERS ASSOCIATION INC

JOHN L. REITZEL, JR. AND WIFE, BEVERLY ROGER REITZEL

DELORIESE WALKER

THOMAS WALTER BRAND, III

L.W. BRAND

SHARON DOCKERY

TAMMY SIMMONS

ZAINAB DARAMY

ROGER MISSIE GANDZALI

ANGELA D. BROC

L M LEWIS

RETAIN

REMOVE

BERM DITCH SEE DETAIL CF

SP. LAT. V DITCH SEE DETAIL K

SP. LAT. BASE DITCH SEE DETAIL M

SP. LAT. BASE DITCH SEE DETAIL CH

SP. CUT SWALE W/HINGE SEE DETAIL G

PLUG AND FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 36" WELDED STEEL

JB w/MH SP. DET.

Conv. DI TO JB w/MH

REPLACED W/42" RCP IV AS PART OF TIP #I-5938

8 TONS CL B RIP RAP W/ 2 SY GEOTEXTILE ON BANKS ONLY LENGTH = 10' (SEE DETAIL BB)

15 TONS CL A RIP RAP W/ 35 SY GEOTEXTILE IN OUT = 100 S

POSSIBLE JUNCTION BOX

SWAMP AREA

24" RCP

36" RCP

42" RCP

48" RCP

SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

PLANS PREPARED BY:

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8521 SIX FORKS ROAD, SUITE 400
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PERMIT DRAWING
SHEET 11 OF 125

PROJECT REFERENCE NO. I-5811/I-329 — SHEET NO. 5
RW SHEET NO.
ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

100 50 0 100 200
SCALE

25 0 25 50
SCALE FOR INSET

NAD 83

MATCHLINE –LWB– STA. 20+50
SEE SHEET 4

MATCHLINE –LEB– STA. 16+50
SEE SHEET 4

INSET B

INSET C

INSET E

INSET D

SURFACE WATER IMPACTS

INSET A

SITE 2

SEE INSET C

SEE INSET B

SITE 2

MATCHLINE –YYRPBD– STA. 29+00
SEE SHEET 54

SEE INSET E

SITE 3

SEE INSET D

SEE INSET A

SITE 2

MATCHLINE –LEB– STA. 31+50
SEE SHEET 6

MATCHLINE –LWB– STA. 36+50
SEE SHEET 6

MATCHLINE –YYRPBD– STA. 20+00
SEE SHEET 6

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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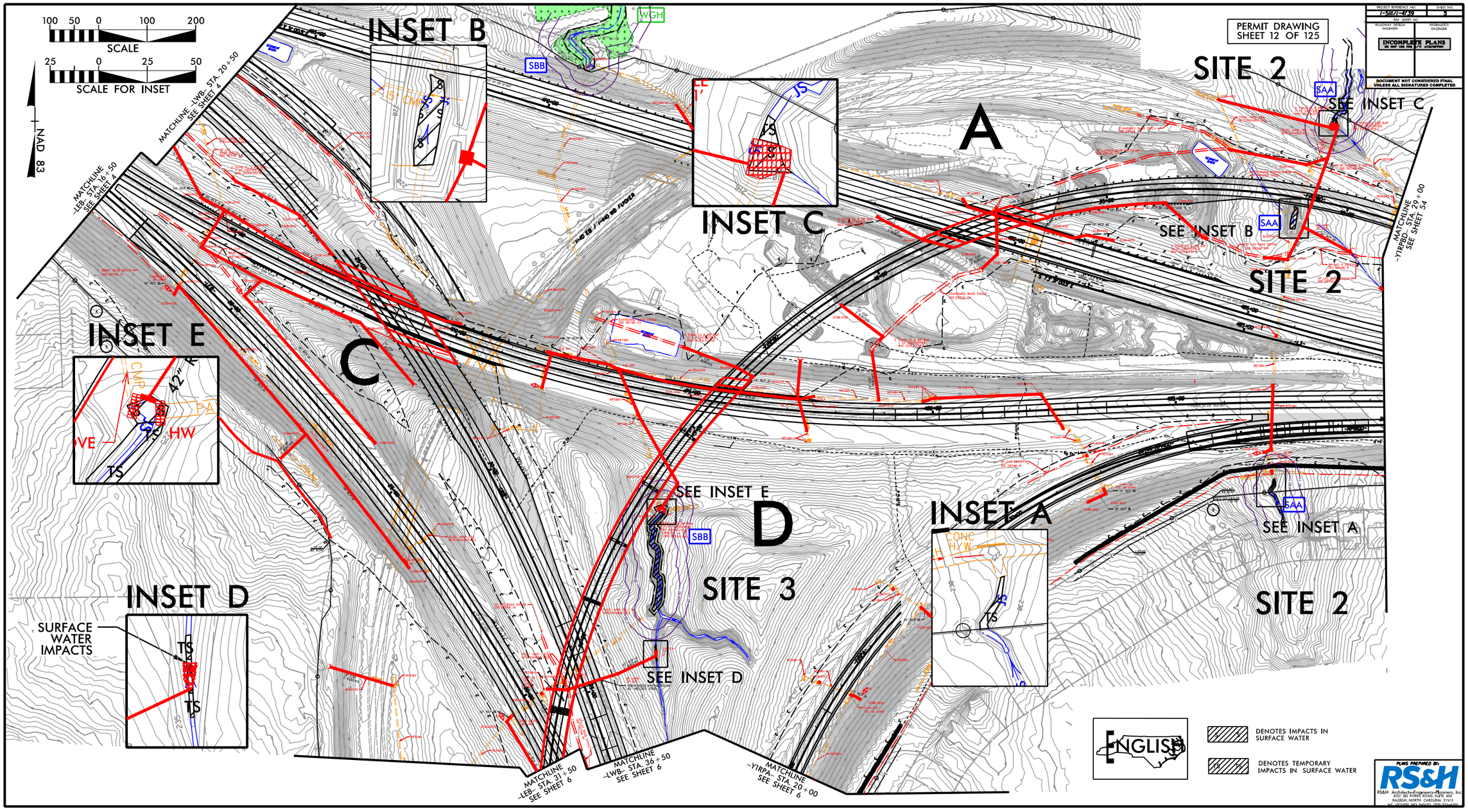
100 50 0 100 200
SCALE
25 0 25 50
SCALE FOR INSET
NAD 83
INSET B
INSET C
INSET E
INSET D
INSET A
A
C
D
SITE 2
SITE 3
SITE 2
SEE INSET C
SEE INSET B
SEE INSET E
SEE INSET D
SEE INSET A
MATCHLINE -LWB- STA. 20+50 SEE SHEET 5
MATCHLINE -LEB- STA. 16+50 SEE SHEET 4
MATCHLINE -YYRBD- STA. 29+00 SEE SHEET 54
MATCHLINE -LEB- STA. 31+50 SEE SHEET 6
MATCHLINE -LWB- STA. 36+50 SEE SHEET 6
MATCHLINE -Y1RFA- STA. 20+00 SEE SHEET 6
SURFACE WATER IMPACTS
PERMIT DRAWING SHEET 12 OF 125
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
ENGLISH
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
PLANS PREPARED BY:
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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 13 OF 125

NAD 83

INSET A

26 TONS CL I RIP RAP
50 SY GEOTEXTILE
INV. OUT=248.0'

SB

SEE INSET A

SITE 4

MATCHLINE -Y2- STA. 37+50 SEE SHEET 57

MATCHLINE -L- STA. 40+00 SEE SHEET 8

MATCHLINE -L- STA. 26+50 SEE SHEET 6

MATCHLINE -YIRPBD- STA. 65+00 SEE SHEET 6

MATCHLINE -Y2- STA. 30+50 SEE SHEET 56

ROCK QUARRY HOLDINGS LLC

PC Sta. 35+56.20

SC Sta. 65+60.45

CS Sta. 67+02.72

-Y2- Sta. 29+20.00 = -L- Sta. 33+64.53

-YIRPBD- ST Sta. 69+02.72 = -L- POT Sta. 30+54.91 (59' RT)

PROPOSED ENCLOSED DRAINAGE SYSTEM UNDERNEATH BRIDGE (50) 4" DECK DRAINS EVERY 6' CONNECTED W/18" UVL-ROOF PVC

PROPOSED ENCLOSED DRAINAGE SYSTEM UNDERNEATH BRIDGE (60) 4" DECK DRAINS EVERY 5' CONNECTED W/16" UVL-ROOF PVC

SP. CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL LATERAL "V" DITCH SEE DETAIL K

SP. CUT BASE SWALE SEE DETAIL AU

CONC. BERM DITCH SEE DETAIL BL

PROVIDENCE OF RALEIGH HOMEOWNERS ASSOC.INC.

PLUG AND FILL W/FLOWABLE BFILL

PLUG AND FILL W/FLOWABLE FILL

REMOVE

RETAIN

CONVERT TO JB w/MH

TRENCHLESS INSTALLATION OF 42" WELDED STEEL

TB 2GIB-ST

TB 2GIA-ST

2GI-WSS

2GI-B

42" CSP 2 ELBOWS

24" CSP 2 ELBOWS

18" CSP w/ELBOWS

24" RCP III

18" RCP III

15" RCP III

35" RCP III

30" RCP III

REDUS RALEIGH HOUSING LLC

2SFD

ANITA M. HARKUM

ERNESTINA FLORES

MRS. VIROY R. BROWN

MR. & MRS. ERIC AKYEA

MR. & MRS. MICHAEL BARNETT JR.

RIP RAP

CONC WALL

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PLANS PREPARED BY:

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 14 OF 125

NAD 83

INSET A

SEE INSET A

SITE 4

MATCHLINE -Y2- STA. 37+50 SEE SHEET 57

MATCHLINE -L- STA. 26+50 SEE SHEET 6

MATCHLINE -L- STA. 40+00 SEE SHEET 8

MATCHLINE -YIRPBD- STA. 65+00 SEE SHEET 6

MATCHLINE -Y2- STA. 30+50 SEE SHEET 56

ROCK QUARRY HOLDINGS LLC

PROVIDENCE OF RALEIGH HOMEOWNERS ASSOC.INC.

REDUS RALEIGH HOUSING LLC

PC Sta. 35+56.20

SC Sta. 65+60.45

CS Sta. 67+02.72

-L- Sta. 29+20.00 = -Y2- Sta. 33+64.53

-YIRPBD- ST Sta. 69+02.72 = -L- POT Sta. 30+54.91 (59' RT)

PROPOSED ENCLOSED DRAINAGE SYSTEM UNDERNEATH BRIDGE (50) 4" DECK DRAINS EVERY 6' CONNECTED W/16" UVL ROOF PVC

PROPOSED ENCLOSED DRAINAGE SYSTEM UNDERNEATH BRIDGE (60) 4" DECK DRAINS EVERY 5' CONNECTED W/16" UVL ROOF PVC

SP CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL LATERAL V-DITCH SEE DETAIL K

SP CUT BASE SWALE SEE DETAIL AU

CONC. BERM DITCH SEE DETAIL BL

PLUG AND FILL W/FLOWABLE FILL

26 TONS CL I RIP RAP
50 SY GEOTEXTILE
INV. OUT=248.0'

TRENCHLESS INSTALLATION OF 42" WELDED STEEL

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

PLANS PREPARED BY:

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 15 OF 125

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET A

SITE 4

SEE INSET A

SB

J12A

DUTCHMAN HOMEOWNERS ASSOC.

BRANDON JOHNSON SR.

KALUBI M. TSHIYONGA

ENETA E. MCALISTER

MELVIN TATE, JR.

MELVIN D. BROWN

TAFFE H. DAVIS

DANNY G. JOHNSON

TANZA T. CHRISTE

PATRICIA M. JOHNSTON

ELIZABETH CABRIE

WELDON & ANGELA SELPH

KIM S. ROBINSON

SLOPE EASEMENT

EXISTING R/W

MATCHLINE –L– STA. 40+00 SEE SHEET 7

MATCHLINE –L– STA. 53+00 SEE SHEET 9

SPECIAL LATERAL 'V' DITCH SEE DETAIL K

RIP RAP AT EMBANKMENT SEE DETAIL BA

TAIL DITCH SEE DETAIL CE

SPECIAL CUT DITCH w/HINGE SEE DETAIL L

RETAIN

2GIA-WSS

2GIB-WSF

18" RCP III

24" RCP III

30" RCP III

15" RCP III

TB 2GIB-ST

TB 2GIA-ST

TRENCHLESS INSTALLATION 24" WELDED STEEL

BL-105

14' FDPS

12' FDPS

I-40 WB

I-40 EB

I-40 WBL 35" CONC

I-40 EBL 35" CONC

45+00

50+00

18" CSP
2 ELBOWS

SPECIAL LAT. V DITCH SEE DETAIL K

CONC. BERM DITCH SEE DETAIL BL

PROVIDENCE OF RALEIGH TOWNHOUSE OWNERS ASSOC.INC

PROVIDENCE PF RALEIGH HOMEOWNERS ASSOC.

PROVIDENCE DEVELOPMENT OF RALEIGH LLC

10' CONC WALL

2SFD

CONC

ENGLISH

SCALE FOR INSET

25 0 25 50

SCALE

50 25 0 50 100

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

PLANS PREPARED BY:

RS&H

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 16 OF 125

NAD 83

INSET A

PDE

SITE 4

SB

J12A

SEE INSET A

BZ 1

BZ 2

BUTCHMAN HOMEOWNERS ASSOC.

BRIGGON JOHNSON SR.

KALUBI M. TSHIYONGA

ENETA E. MCALISTER

MELVIN TATE JR.

MELVIN D. BROWN

TAFFE H. DAVIS

DANNY G. JOHNSON

TANZA T. CHRISTIE

PATRICIA M. JOHNSTON

HABIB ZIYAD

WELDON & ANGELA SELPH

KIM S. ROBINSON

SPECIAL LATERAL 'V' DITCH
SEE DETAIL K

RIP RAP AT EMBANKMENT
SEE DETAIL BA

TAIL DITCH
SEE DETAIL CE

18" RCP III

2GIB-WSF

SPECIAL GUT DITCH
w/HINGE
SEE DETAIL L

2GIA-WSS

RETAIN

24" RCP

30" RCP III

14' FDPS

I-40 WB

I-40 EB

15" RCP III

24" RCP III

TB 2GIB-ST

TB 2GIA-ST

TRENCHLESS INSTALLATION 24" WELDED STEEL

18" CSP
2 ELBOWS

CONC BERM DITCH
SEE DETAIL BL

PROVIDENCE OF RALEIGH TOWNHOUSE OWNERS ASSOC.INC

PROVIDENCE PF RALEIGH HOMEOWNERS ASSOC.

PROVIDENCE DEVELOPMENT OF RALEIGH LLC

MATCHLINE –L– STA. 40+00 SEE SHEET 7

MATCHLINE –L– STA. 53+00 SEE SHEET 9

45+00

50+00

SCALE FOR INSET 25 0 25 50

SCALE 50 25 0 50 100

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

ENGLISH

PLANS PREPARED BY:
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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 17 OF 125

NAD 83

INSET A

INSET B

SITE 5

SITE 6

SEE INSET B

SEE INSET A

MATCHLINE –L– STA. 53+00 SEE SHEET 8

MATCHLINE –L– STA. 66+00 SEE SHEET 10

DONNA L. GRUNDY

JEFFREY G. MITCHELL

TONJAY DAVENPORT

PORTIA G. JUDD

GERALD RICHARDSON JR.

AMARFI VALDEZ

HOMEOWNERS ASSOCIATION

WORD OF GOD FELLOWSHIP

BERM DITCH SEE DETAIL CF

SPECIAL LATERAL 'V' SWALE SEE DETAIL AE

SPECIAL LATERAL 'V' DITCH SEE DETAIL K

STANDARD BASE DITCH SEE DETAIL AY
20 TONS CL I RIP RAP
39 SY GEOTEXTILE
INV. OUT = 220.1'

SPECIAL LATERAL BASE DITCH SEE DETAIL CB

SPECIAL LATERAL BASE DITCH SEE DETAIL AD

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT = 204.6'

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT = 201.5'

STANDARD BASE DITCH SEE DETAIL E

72 TONS CL B RIP RAP
125 SY GEOTEXTILE

OUTLET CHANNEL SEE DETAIL BQ

INLET CHANNEL SEE DETAIL BP

18" CSP
2 ELBOWS

REMOVE 30" RCP III

2GIA–WSS 36" RCP III

2GIA–WSF 42" RCP III

2GIB–WSF SP. DET.

TRENCHLESS INSTALLATION 30" WELDED STEEL

TRENCHLESS INSTALLATION 72" WELDED STEEL

COLLAR AND EXTEND 48" RCP

PLUG AND FILL W/ FLOWABLE FILL

RETAIN

55+00

60+00

65+00

S 18° 21' 43.7" E

SC

WA

WB

SD

12B

12D

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

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ENGLISH

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 18 OF 125

NAD 83

SITE 5

SITE 6

SITE 6

INSET A

INSET B

SEE INSET A

SEE INSET B

MATCHLINE –L– STA. 53+00 SEE SHEET 8

MATCHLINE –L– STA. 66+00 SEE SHEET 10

BERM DITCH SEE DETAIL CF

SPECIAL LATERAL 'V' SWALE SEE DETAIL AE

STANDARD BASE DITCH SEE DETAIL AY
20 TONS CL I RIP RAP
39 SY GEOTEXTILE
INV. OUT = 220.1

SPECIAL LATERAL BASE DITCH SEE DETAIL CB

SPECIAL LATERAL BASE DITCH SEE DETAIL AD
3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT = 204.6

18" CSP
2 ELBOWS

REMOVE 30" RCP III

2GIA–WSS 36" RCP III

2GIA–WSS

REMOVE

36" RCP III

42" RCP III

REMOVE

SPECIAL LATERAL 'V' DITCH SEE DETAIL K

30" RCP III

2GIB–WSF SP. DET.

COLLAR AND EXTEND 48" RCP

PLUG AND FILL W/ FLOWABLE FILL

TRENCHLESS INSTALLATION 72" WELDED STEEL

OUTLET CHANNEL SEE DETAIL BCX

2GIB–WSF
15" RCP III

TRENCHLESS INSTALLATION 30" WELDED STEEL

RETAIN

55+00

60+00

65+00

S 18° 21' 43.7" E

TB 2GIB–ST

15" RCP III

18" RCP III

30" RCP III

REMOVE

TB 2GIA–ST SP. DET.

GREU 350 TL–3

CAT–1

DI

48" WW & ISBW

EIP

EXISTING R/W

95' SLOPE EASEMENT

WORD OF GOD FELLOWSHIP

STANDARD BASE DITCH SEE DETAIL E

72 TONS CL B RIP RAP
125 SY GEOTEXTILE

INLET CHANNEL SEE DETAIL BP

TYPE SE

WA

WB

SD

12B

12D

SC

BZ 1

BZ 2

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

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ElkRuns

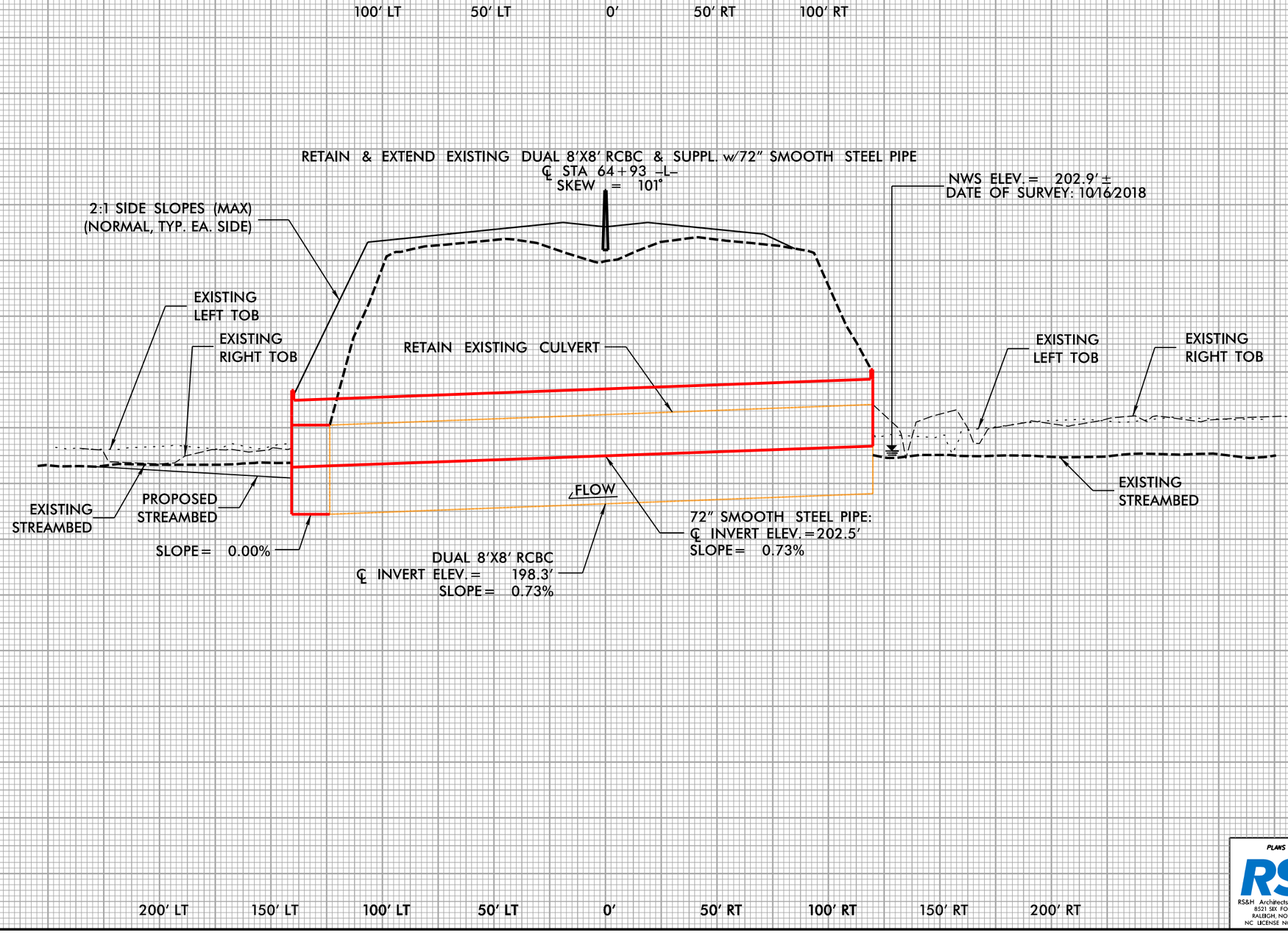
5/14/99

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 19 OF 125

SITE 6



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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 20 OF 125

NAD 83

12F

SF

SE

WD

SITE 7

CITY OF RALEIGH
DB 12224 - PG 149

MATCHLINE –L– STA. 79+00 SEE SHEET 10

MATCHLINE –L– STA. 92+00 SEE SHEET 12

2 TONS CL B RIP RAP
7 SY GEOTEXTILE
INV. OUT=220.4'

15" CSP
2 ELBOWS

5 TONS CL B RIP RAP
14 SY GEOTEXTILE
INV. OUT=221.80'

24" CSP
2 ELBOWS

OUTLET CHANNEL
SEE DETAIL BQ

TRENCHLESS INSTALLATION
24" WELDED STEEL

TRENCHLESS INSTALLATION
DUAL 96" WELDED STEEL

REMOVE

PLUG AND FILL
W/FLOWABLE FILL

18" CSP
2 ELBOWS

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=223.5'

INLET CHANNEL
SEE DETAIL BR

SEE INSET A

S 18° 21' 43.7" E

EAO LLC
DB 12757 - PG 658
PB 1985 - PG 2046

GLENDA B. JETTER
DB 2844 - PG 541

INSET A

FILL IN WETLANDS SHOWN RED FOR CLARITY

ENGLISH

SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

DENOTES TEMPORARY FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

PLANS PREPARED BY:
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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 21 OF 125

NAD 83

12F

SF

SE

WD

SITE 7

MATCHLINE –L– STA. 79+00 SEE SHEET 10

MATCHLINE –L– STA. 92+00 SEE SHEET 12

CITY OF RALEIGH
DB 12224 - PG 149

48" WW A ISBW

2 TONS CL B RIP RAP
7 SY GEOTEXTILE
INV. OUT = 220.4'

15" CSP
2 ELBOWS

5 TONS CL B RIP RAP
14 SY GEOTEXTILE
INV. OUT= 221.80'

24" CSP
2 ELBOWS

15" RCP III

2GIB-WSF

OUTLET CHANNEL
SEE DETAIL BQ

TRENCHLESS INSTALLATION
DUAL 96" WELDED STEEL

RETAIN

TRENCHLESS INSTALLATION
24" WELDED STEEL

REMOVE

80+00

85+00

90+00

S 18° 21' 43.7" E

TB 2GIB-ST

18" RCP III

PLUG AND FILL W/FLOWABLE FILL

GREU 350 TL-3

18" CSP
2 ELBOWS

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=223.5'

INLET CHANNEL
SEE DETAIL BR

SEE INSET A

12E

WC

2D

PDE

BZ 1

EAO LLC
DB 12757 - PG 658
PB 1985 - PG 2046

GLENDA B. JETTER
DB 2844 - PG 541

ENGLISH

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

DENOTES TEMPORARY FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

INSET A

FILL IN WETLANDS SHOWN RED FOR CLARITY

PLANS PREPARED BY:

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4/12/2019
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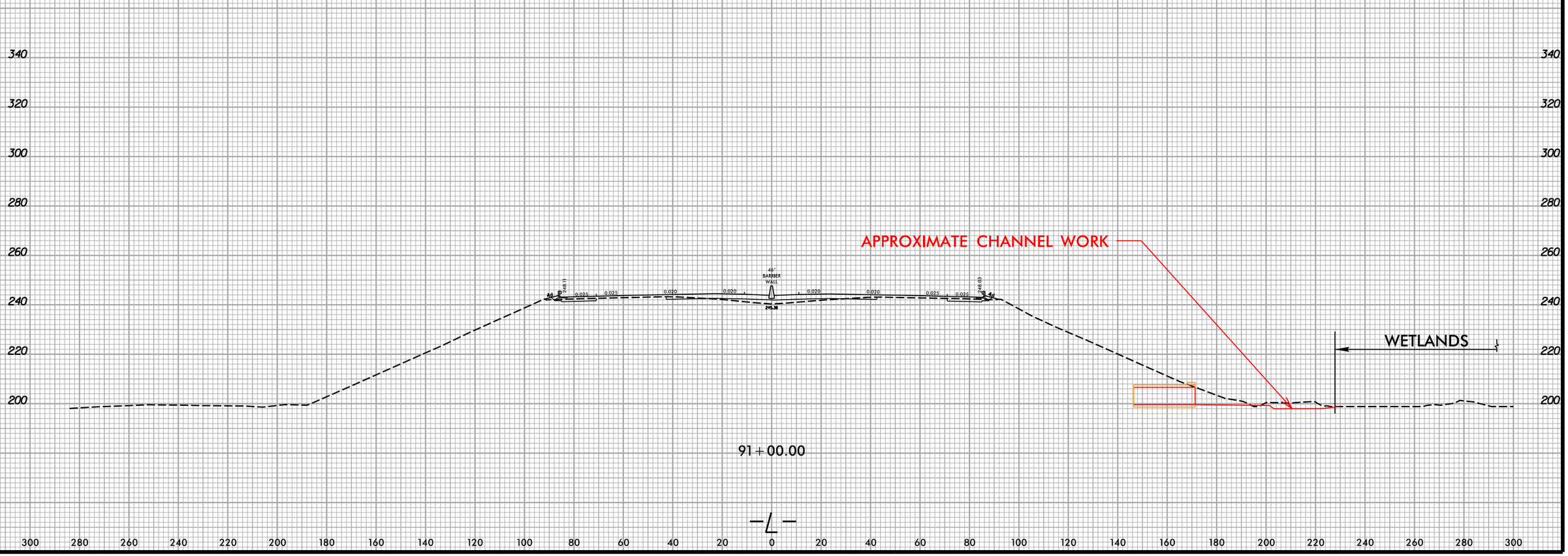
6/23/16

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
I-5111/I-4739	S1

PERMIT DRAWING
SHEET 22 OF 125

SITE 7



2/5/2019
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Fullen8

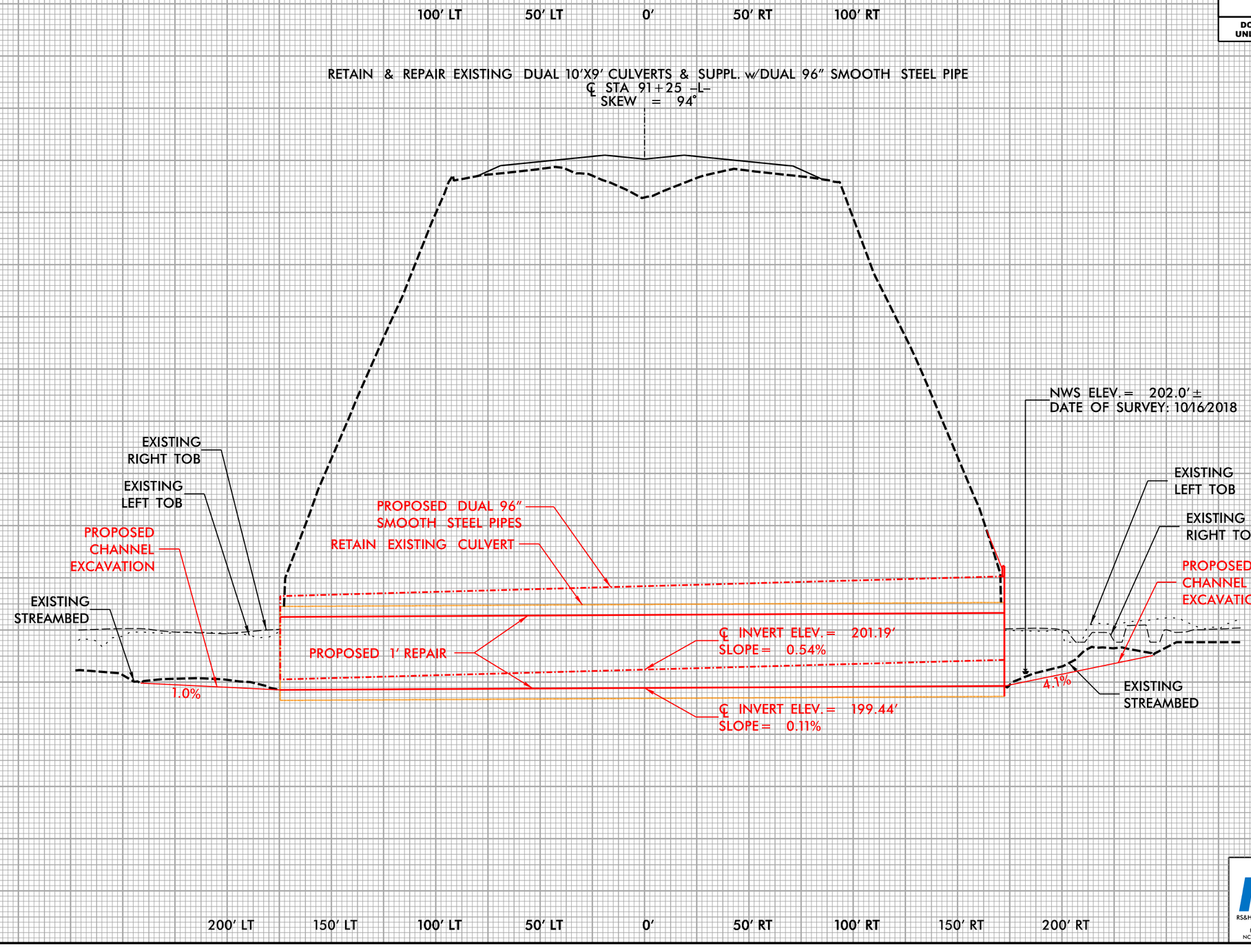
5/14/99

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 23 OF 125

SITE 7



PLANS PREPARED BY:

RS&H

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2/5/2019
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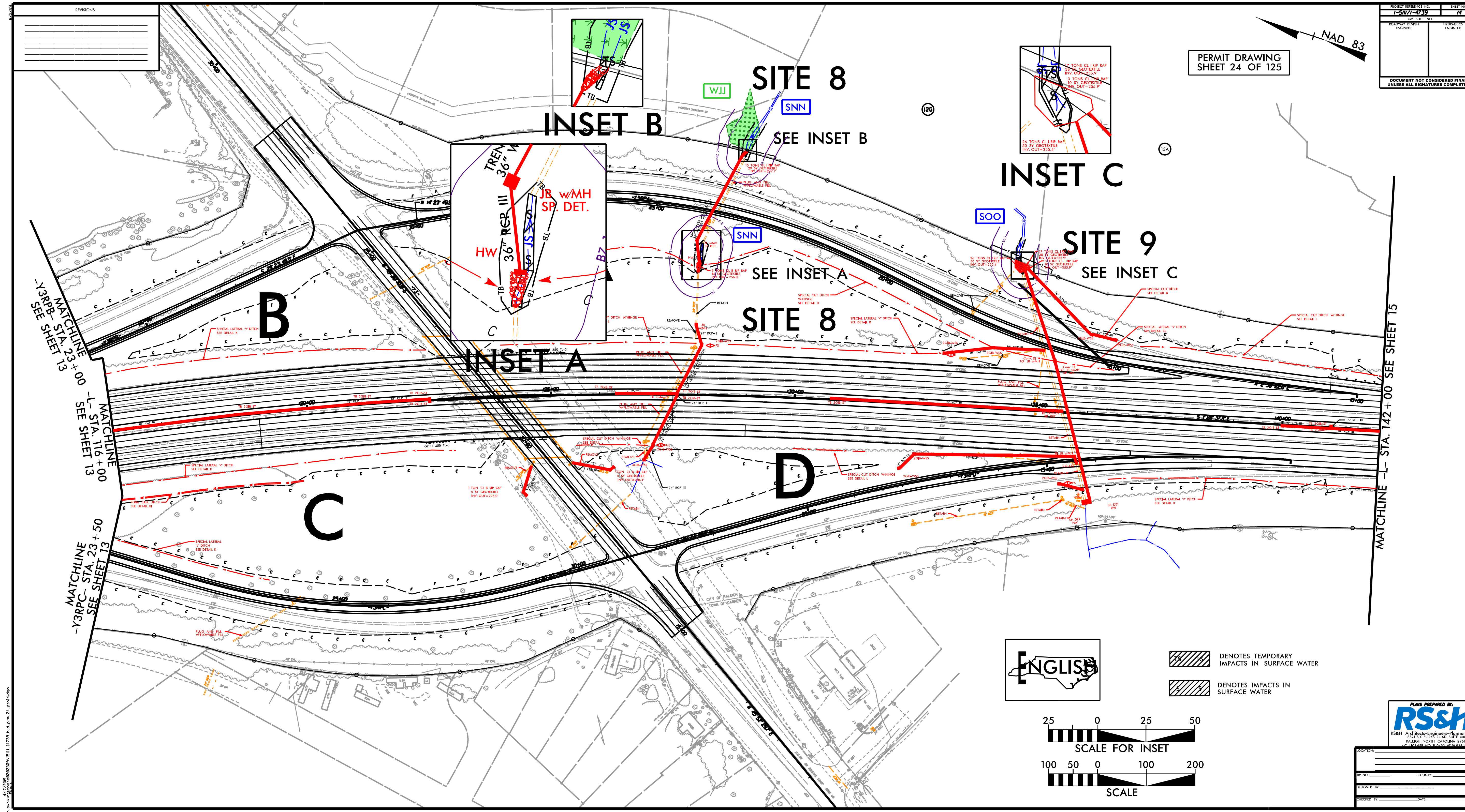
Plotted by: ***



REVISIONS
PROJECT REFERENCE NO.
I-5111/I-4739
SHEET NO.
14
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83
PERMIT DRAWING
SHEET 24 OF 125
SITE 8
WJJ
SNN
SEE INSET B
INSET B
INSET A
SEE INSET A
JB w/MH
SP. DET.
HW
36" RCP III
15 TONS CL I RIP RAP
29 SY GEOTEXTILE
INV. OUT=247.1'
5 TONS CL B RIP RAP
14 SY GEOTEXTILE
INV. OUT=256.0'
PLUG AND FILL W/FLOWABLE FILL
TRENCHLESS INSTALLATION 24" WELDED STEEL
INSET C
17 TONS CL I RIP RAP
38 SY GEOTEXTILE
INV. OUT=255.9'
3 TONS CL I RIP RAP
10 SY GEOTEXTILE
INV. OUT=255.9'
26 TONS CL I RIP RAP
50 SY GEOTEXTILE
INV. OUT=255.4'
SOO
SITE 9
SEE INSET C
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT DITCH W/HINGE SEE DETAIL L
SPECIAL LATERAL 'V' DITCH SEE DETAIL K
SPECIAL CUT DITCH W/HINGE SEE DETAIL D
BERM BASE DITCH SEE DETAIL BI
1 TON CL B RIP RAP
5 SY GEOTEXTILE
INV. OUT=295.0'
1 TON CL B RIP RAP
5 SY GEOTEXTILE
INV. OUT=296.1'
B
C
D
MATCHLINE -Y3RPB- STA. 23+00 SEE SHEET 13
MATCHLINE -L- STA. 116+00 SEE SHEET 13
MATCHLINE -Y3RPC- STA. 23+50 SEE SHEET 13
MATCHLINE -L- STA. 142+00 SEE SHEET 15
CITY OF RALEIGH
TOWN OF GARNER
ENGLISH
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
SCALE FOR INSET
SCALE
PLANS PREPARED BY:
RS&H
RS&H Architects–Engineers–Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
LOCATION:
TIP NO.:
COUNTY:
DESIGNED BY:
CHECKED BY:
DATE:

REVISIONS

PROJECT REFERENCE NO. I-5811/I-309 | SHEET NO. 14
RW SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 25 OF 125

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET B

INSET A

INSET C

SITE 8

SEE INSET B

SITE 8

SEE INSET A

SITE 9

SEE INSET C

WJJ

SNN

SNN

SOO

B

C

D

MATCHLINE -Y3RPB- STA. 23+00 SEE SHEET 13

MATCHLINE -Y3RPC- STA. 23+50 SEE SHEET 13

MATCHLINE -L- STA. 116+00 SEE SHEET 13

MATCHLINE -L- STA. 142+00 SEE SHEET 15

JB w/MH SP. DET.

36" RCP III

TRENCH

ENGLISH

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

25 0 25 50
SCALE FOR INSET

100 50 0 100 200
SCALE

PLANS PREPARED BY:
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RS&H Architects-Engineers-Planners, Inc.
2000 Regency Parkway, Suite 410
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. C-0293 SC LICENSE NO. 2727

LOCATION:

TIP NO. _____ COUNTY: _____

DESIGNED BY: _____

CHECKED BY: _____ DATE: _____

4/17/2020
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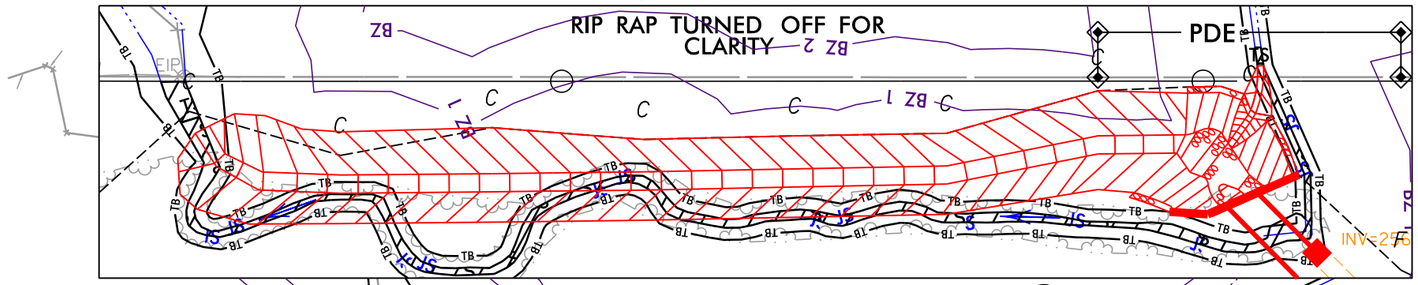
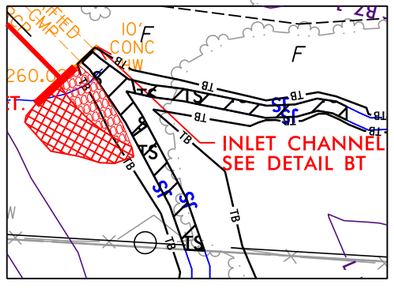
8/17/99

INSET A



INSET B



NAD 83

PERMIT DRAWING
SHEET 26 OF 125

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PLANS PREPARED BY:

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8/17/99

INSET A

RIP RAP TURNED OFF FOR CLARITY

PERMIT DRAWING
SHEET 27 OF 125

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SG

SITE 10

SEE INSET A

SH

SITE 12

SI

SITE 11

SG

SITE 10

SEE INSET B

MATCHLINE –L– STA. 142+00 SEE SHEET 14

MATCHLINE –L– STA. 155+00 SEE SHEET 16

26 TONS CL I RIP RAP
50 SY GEOTEXTILE
INV. OUT=250.4'

CHANNEL CHANGE
SEE DETAIL BN
TIE TO DISSIPATER BASIN
WITH MAX. SLOPE OF 5.0%

FILL EXISTING STREAM

OUTLET CHANNEL
SEE DETAIL BS

72" RCP FES
SLAB END

RETAIN

24" RCP

2GIA-WSF
SP. DET.

2GIB-WSF

18" RCP III

15" RCP III

REMOVE EXIST. 15" RCP

PLUG AND FILL W/FLOWABLE FILL

TB 2GIB-ST

TB 2GIA-ST

TB 2GIA-ST SP. DET.

145+00

150+00

S 1°28'37.4" E

RETAIN AND LINE WITH STRUCTURAL LINER

1-40 WBL 35' CONC

1-40 EBL 35' CONC

GREU 350 TL-3

Conv. DI TO JB w/MH

2GIB-WSS

REMOVE 2GIB-WSS FES

18" CSSP 2 @ 45° ELBOWS

HW

REMOVE

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

STANDARD BASE DITCH SEE DETAIL AD

SPECIAL LATERAL V DITCH SEE DETAIL L

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=278.8'

SPECIAL LATERAL BASE SWALE SEE DETAIL M

5 TONS CL B RIP RAP
14 SY GEOTEXTILE
INV. OUT=269.00

INLET CHANNEL SEE DETAIL BT

WASTE TREATMENT RESERVOIR

HAB PROPERTIES LLC

INSET B

INLET CHANNEL SEE DETAIL BT

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PLANS PREPARED BY:

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4/15/2019
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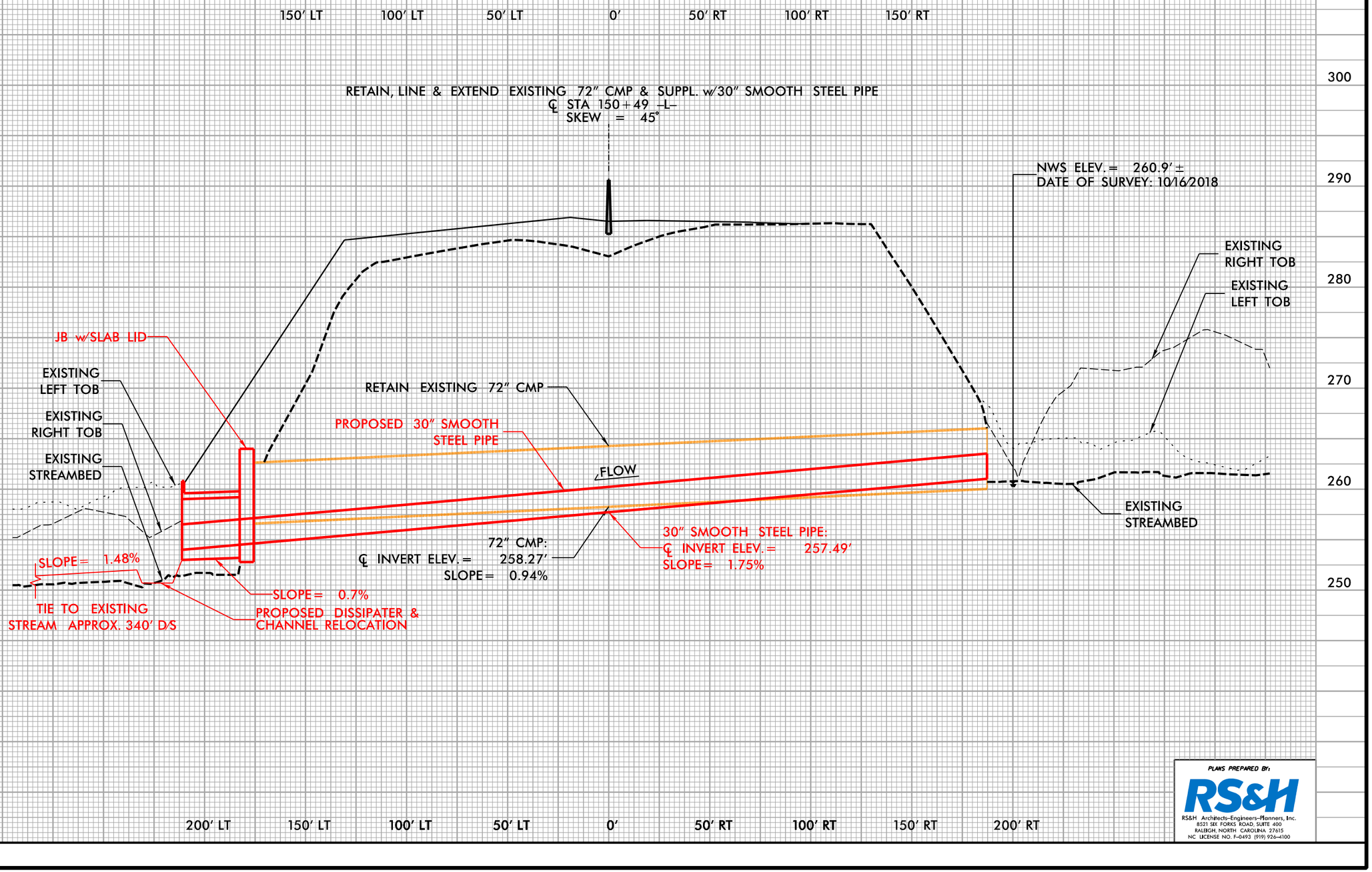
5/14/99

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 28 OF 125

SITE 10



PLANS PREPARED BY:

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8/17/99

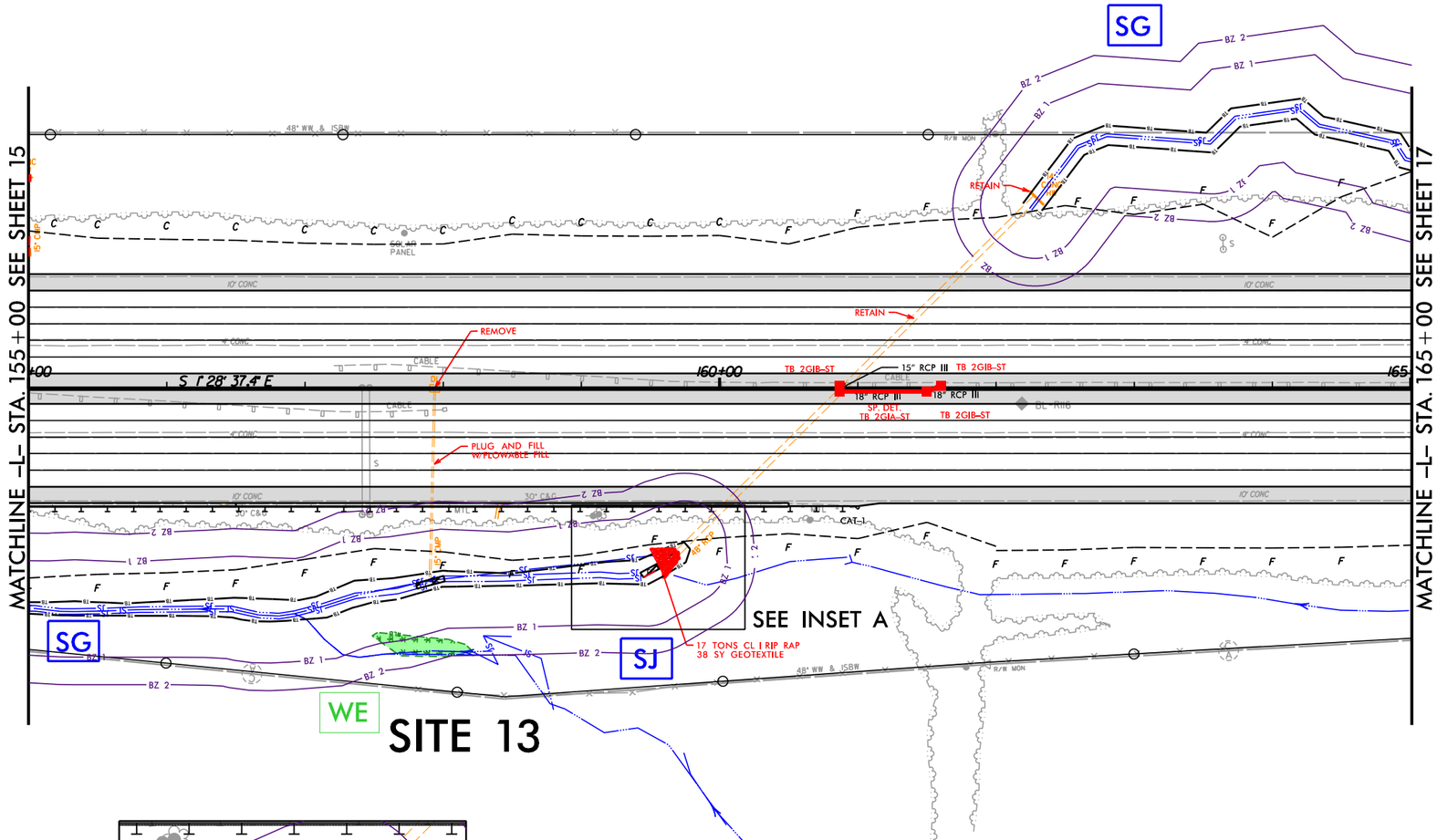
NAD 83

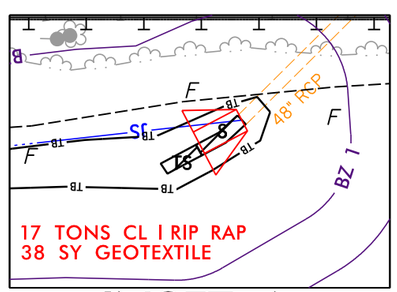
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 29 OF 125

MARTIN MARIETTA MATERIAL INC.
DB 5960 - PG 864
MAPPED PER WAKE CO. G.I.S.





INSET A

GARNER ECONOMIC DEVELOPMENT CORP.
DB 14572 - PG 2740

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 50 100
SCALE

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RALEIGH, NORTH CAROLINA 27615
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4/12/2019
Eric Work
I:\projects\work\rsh_pw\vinstone\d0202389\I5111_I4739_hyd_prm_29_psh16.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

PERMIT DRAWING
SHEET 30 OF 125

MARTIN MARIETTA MATERIAL INC.
DB 5960 - PG 864
MAPPED PER WAKE CO. G.I.S.

MATCHLINE -L- STA. 155+00 SEE SHEET 15

MATCHLINE -L- STA. 165+00 SEE SHEET 17

SG

SJ

WE

SITE 13

SEE INSET A

RETAIN

REMOVE

PLUG AND FILL W/ FLOWABLE FILL

S 1° 28' 37.4" E

160+00

TB 2GIB-ST

15" RCP III

18" RCP III

SF DET.

TB 2GIA-ST

CAT-1

17 TONS CL I RIP RAP
38 SY GEOTEXTILE

48" WW & JSBW

R/R MON

GARNER ECONOMIC DEVELOPMENT CORP.
DB 14512 PG 2740

INSET A

48" RCP

17 TONS CL I RIP RAP
38 SY GEOTEXTILE

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50 25 0 50 100
SCALE

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 31 OF 125

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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NAD 83

MARTIN MARIETTA MATERIAL INC.
MAPPED PER WAKE CO. G.I.S.
14

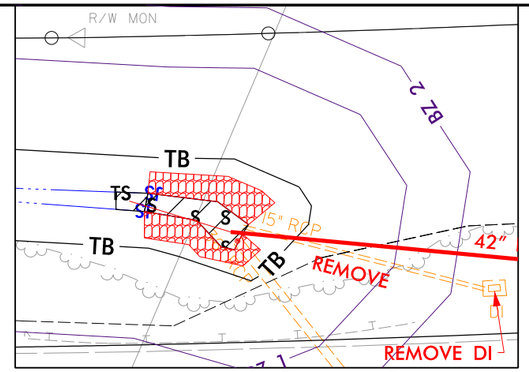
SITE 14A

SITE 14B

SITE 14C

SRM

INSET C



5 TONS CL B RIP RAP W/14 SY GEOTEXTILE ON BANKS ONLY LENGTH=8' (SEE DETAIL BB)

2 TONS CL B RIP RAP 7 SY GEOTEXTILE ON BANKS ONLY LENGTH=5' (SEE DETAIL BB)

50 TONS CL I RIP RAP W/98 SY GEOTEXTILE ON BANKS ONLY LENGTH=35' (SEE DETAIL BB)

SEE INSET A

SEE INSET B

SEE INSET C

MATCHLINE –L– STA. 165+00 SEE SHEET 16

MATCHLINE –L– STA. 179+00 SEE SHEET 18

165+00 170+00 175+00

S 1° 28' 37.4" E

–L–

–L– TS Sta. 173+23.00

–L– SC Sta. 176+23.00

BZ 1 BZ 2 TB SF SFS TS

CABLE EOP EOT 4" CONC 10' CONC I-40 WBL 35' CONC I-40 EBL 35' CONC

REMOVE DI

15" CSP 2 ELBOWS

FS 2GIB-WSS

SPECIAL CUT SWALE SEE DETAIL E

24" RCP-III

TRENCHLESS INSTALLATION 24" WELDED STEEL

PLUG & FILL W/ FLOWABLE FILL

COLLAR

18" RCP-III

TB 2GIA-ST

TB 2GIB-ST

REMOVE 15" RCP

42" RCP-III

15" RCP-III

SPECIAL CUT SWALE W/HINGE SEE DETAIL G

TRENCHLESS INSTALLATION 42" WELDED STEEL

PLUG & FILL W/FLOWABLE FILL

2GIA-WSS

2GIB WSS

15" CSP 2 ELBOWS

15" RCP-III

18" RCP-III

BDO

BERM V DITCH W/CL B RIP RAP SEE DETAIL C

BERM V DITCH SEE DETAIL A

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

10' WIDE BERM TOP ELEV.= 349.5' SEE DETAIL J

COLLAR AND EXTEND 18" RCP

REMOVE

2 TONS CL B RIP RAP 7 SY GEOTEXTILE

GARNER ECONOMIC DEVELOPMENT CORP.

INSET A

INSET B

MARTIN MARIETTA MATERIAL INC.
MAPPED PER WAKE CO. G.I.S.
14

FOR –L– PROFILE SEE SHT. 85

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Kevin

8/17/99

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 32 OF 125

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SITE 14A

SITE 14B

SITE 14C

SRM

INSET C

SEE INSET A

SEE INSET B

SEE INSET C

MATCHLINE –L– STA. 165+00 SEE SHEET 16

MATCHLINE –L– STA. 179+00 SEE SHEET 18

165+00

170+00

175+00

S 1° 28' 37.4" E

–L–

–L– SC Sta. 176+23.00

–L– TS Sta. 173+23.00

MARTIN MARIETTA MATERIAL INC.
MAPPED PER WAKE CO. G.I.S.
14

GARNER ECONOMIC DEVELOPMENT CORP.

2 TONS CL B RIP RAP
7 SY GEOTEXTILE
ON BANKS ONLY
LENGTH = 5'
(SEE DETAIL BB)

5 TONS CL B RIP RAP
W/14 SY GEOTEXTILE
ON BANKS ONLY
LENGTH = 8'
(SEE DETAIL BB)

50 TONS CL I RIP RAP
W/98 SY GEOTEXTILE
ON BANKS ONLY
LENGTH = 35'
(SEE DETAIL BB)

2 TONS CL B RIP RAP
7 SY GEOTEXTILE

15" CSP
2 ELBOWS

18" CSP
3 ELBOWS

SPECIAL CUT SWALE
SEE DETAIL E

SPECIAL CUT SWALE
W/HINGE
SEE DETAIL G

SPECIAL CUT DITCH
W/HINGE
SEE DETAIL D

BERM V DITCH
W/CL B RIP RAP
SEE DETAIL C

BERM V DITCH
SEE DETAIL A

10' WIDE BERM
TOP ELEV. = 249.5'
SEE DETAIL J

TRENCHLESS INSTALLATION
24" WELDED STEEL

TRENCHLESS INSTALLATION
42" WELDED STEEL

PLUG & FILL W/ FLOWABLE FILL

COLLAR

COLLAR AND EXTEND
18" RCP

REMOVE

REMOVE DI

REMOVE 15" RCP

2GIB
WSS

2GIA–WSS

TB 2GIA–ST

TB 2GIB–ST

24" RCP–III

18" RCP–III

15" RCP–III

42" RCP–III

BDO

HW

INSET A

INSET B

FOR –L– PROFILE SEE SHT. 85

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Ekaus

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-Y4-	21+98.84	22+28.80	RT

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 32A OF 125

ENGLISH

50 25 0 50 100 SCALE — NAD 83

REVISIONS

8/17/99 ROW REVISION - 01-09-2019 - ADDED PUES TO PARCEL NO.15 & 14 FOR UTILITY RELOCATIONS.

DRAINAGE REVISION - 03-14-2019 - REVISED ALL DRAINAGE SYSTEMS AND LAYOUTS.

4/15/2019 8:47:06 am C:\Projects\PERMITS_Environmental\Drawings\4C\Section 2\Wetland\15111_14739_hyd_4C_wet_psh19.dgn

-Y4- STA. 192+00 SEE SHEET 18

MATCHLINE -L- STA. 205+00 SEE SHEET 20

MATCHLINE -Y4- STA. 26+00 SEE SHEET 60

MATCHLINE -Y4- STA. 16+00 SEE SHEET 59

MATCHLINE -L- STA. 205+00 SEE SHEET 20

14 MARTIN MARIETTA MATERIAL INC. DB 5960 - PG 864 MAPPED PER WAKE CO. G.I.S.

14A MARTIN MARIETTA MATERIALS INC. DB 13897 - PG 1354

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DB 3078 - PG 378

15 S.T. WOOTEN CORP. DB 12346 - PG 1359 PB 1990 - PG 836

16 SHERMAN A. YEARGAN JR. TRUSTEE DB 14611 - PG 2642-2672 PB 2005 - PG 1397

8421 TIME WARNER ENTERTAINMENT PB 1986 - PG 528

-Y4- PRC Sta. 23+90.19

-Y4- PRC Sta. 17+12.83

-Y4- POT Sta. 20+29.24 = -L- POC Sta. 197+50.29

SITE 5 BRIDGE SKETCH

BEGIN BRIDGE -Y4- POC Sta 18+84.72

END BRIDGE -Y4- POC Sta 21+65.21

-L- Sta. 197+50.29

-Y4- Sta. 20+29.83

D = 57°36'17"

BEGIN APPROACH SLAB -Y4- POC Sta 18+67.67

END APPROACH SLAB -Y4- POC Sta 21+83.91

SHEET FOR INFORMATION ONLY- NO IMPACTS

FOR -L- PROFILE SEE SHTS. 86-87
FOR -Y4- PROFILE SEE SHT. 139

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SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-Y4-	21+98.84	22+28.80	RT

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

50 25 0 50 100 SCALE

NAD 83

PERMIT DRAWING SHEET 32B OF 125

ENGLISH

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REVISIONS

8/17/99 ROW REVISION - 01-09-2019 - ADDED PUES TO PARCEL NO.15 & 14 FOR UTILITY RELOCATIONS.

DRAINAGE REVISION - 03-14-2019 - REVISED ALL DRAINAGE SYSTEMS AND LAYOUTS.

2\Wetland\I5111.I4739_hyd_4C_wet_psh19_con.dgn

4/15/2019 4:56:16 PM EDT

SHEET FOR INFORMATION ONLY- NO IMPACTS

FOR -L- PROFILE SEE SHTS. 86-87
FOR -Y4- PROFILE SEE SHT. 139

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PROJECT REFERENCE NO. I-5111/I-4739 | SHEET NO. 21
R/W SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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SITE 59
SRN

DUKE REALTY LAND, LLC
GSNCOOI LLC

-Y5RPB- CS Sta. 23+26.95
-Y5RPB- SRS Sta. 25+16.95
-Y5RPB- SC Sta. 27+06.95 REVISED LINESTYLE TO STORM SEWER BASED ON SITE VISIT
-Y5RPB- TS Sta. 39+75.47
-Y5RPB- SC Sta. 41+95.47
-Y5RPB- CS Sta. 36+03.86
-Y5RPB- ST Sta. 37+93.86
-Y5RPBSPUR- PC Sta. 10+00.00= -Y5RPB- Sta. 351+93.42 (112 RT)
-Y5RPBSPUR- PT Sta. 17+99.84
-Y5RPBSPUR- POT Sta. 17+66.69
-Y5- POT Sta. 43+50.00
-Y5- PT Sta. 41+34.38= -Y5RPBSPUR- POT Sta. 18+41.86
-Y5- POT Sta. 44+00.00
END PAVING
END CONSTRUCTION

-Y5LPB- SC Sta. 18+65.10
-Y5LPB- CS Sta. 17+90.00
-Y5LPB- CS Sta. 26+30.83
-Y5LPB- SC Sta. 27+05.83
-Y5LPB- ST Sta. 31+89.80
-Y5LPB- CS Sta. 29+89.80
-Y5LPB- TS Sta. 11+50.00
-Y5LPB- POT Sta. 10+00.00= -L- Sta. 242+72.52 (61 RT)
-Y5LPB- SC Sta. 14+50.00

-L- SRS Sta. 218+90.04
-L- SC Sta. 221+40.04
-L- POC Sta. 233+62.28= -Y5- POT Sta. 30+17.50
-L- CS Sta. 238+54.95
-L- ST Sta. 241+04.95
-L- STA. 218+00 SEE SHEET 20
-L- STA. 243+00 SEE SHEET 22
-Y5RPB- STA. 43+00 SEE SHEET 61
-Y5- STA. 44+50 SEE SHEET 61

-Y5LPC- SC Sta. 13+00.00
-Y5LPC- PCC Sta. 15+70.75
-Y5LPC- ST Sta. 10+00.00 = -L- POT Sta. 227+27.11 59 RT
-Y5LPC- ST Sta. 23+62.77 = -Y5- POT Sta. 22+67.39 139 LT
-Y5LPC- CS Sta. 21+62.77
-Y5RPC- TS Sta. 32+43.33
-Y5RPC- SC Sta. 34+23.33
-Y5RPCSPUR- PT Sta. 16+92.91
-Y5RPCSPUR- POT Sta. 20+48.41= -Y5- PT Sta. 15+15.59
-Y5RPD- ST Sta. 10+00.00 -Y5- POT Sta. 20+22.22 139 RT
-Y5RPD- CS Sta. 27+73.39
BEGIN CONSTRUCTION -Y5- POT Sta. 8+28.32

HP -Y5RPB- STA. 18+36.64 2.04% 1.19%
HP -L- STA. 226+22.90 LT 1.97% 1.03%
HP -Y5LPB- STA. 13+44.74 4.99% 0.61%
LP -Y5LPB- STA. 27+88.65 6.15% 3.54%
HP -Y5LPC- STA. 11+05.12 1.37% 0.30%
HP -L- STA. 225+81.29 RT

A
B
C
D

INSET A
TEMPORARY IMPACTS DUE TO PLUG & FILL OF EXISTING PIPE
INSET B
SEE INSET A
SITE 16A WPP
SEE INSET B
SITE 16B SCF

INVESTORS PROPERTY TAX SERVICES, INC.

GRAPHIC SCALE 50 25 0 50 100 PLANS
SCALE FOR INSET 25 0 25 50
PERMIT DRAWING SHEET 33 OF 125
ENGLISH
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
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LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

MATCHLINE -L- STA. 243+00 SEE SHEET 22

5/6/2019
R:\Projects\I-5111\PERMITS_Environmental\Sheets\I-5111_I-4739_Sht_AC-ext.dgn

PROJECT REFERENCE NO. I-5111/I-4739 | SHEET NO. 21
R/W SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 59
SRN

MATCHLINE -L- STA. 218+00 SEE SHEET 20

MATCHLINE -Y5RPB- STA. 43+00 SEE SHEET 61

MATCHLINE -Y5- STA. 44+50 SEE SHEET 61

MATCHLINE -L- STA. 243+00 SEE SHEET 22

-Y5RPB- CS Sta. 23+26.95
-Y5RPB- SRS Sta. 25+16.95
-Y5RPB- SC Sta. 27+06.95 REVISED LINESTYLE TO STORM SEWER BASED ON SITE VISIT
-Y5RPB- TS Sta. 39+75.47
-Y5RPB- SC Sta. 41+95.47
-Y5RPB- CS Sta. 36+03.86
-Y5RPB- ST Sta. 37+93.86
-Y5RPBSPUR- PC Sta. 10+00.00= -Y5RPB- Sta. 357+93.42 (12 RT)
-Y5RPBSPUR- PT Sta. 17+99.84
-Y5RPBSPUR- STA. 17+66.69
-Y5RPBSPUR- POT Sta. 18+41.86
-Y5RPB- SC Sta. 18+65.10
-Y5LPB- CS Sta. 17+90.00
-Y5LPB- CS Sta. 26+30.83
-Y5LPB- SC Sta. 27+05.83
-Y5LPB- ST Sta. 31+89.80
-Y5LPB- CS Sta. 29+89.80
-Y5LPB- TS Sta. 11+50.00
-Y5LPB- POT Sta. 10+00.00= -L- Sta. 232+72.52 (6 LT)
-L- PCC Sta. 233+62.28= -Y5- POT Sta. 30+17.50
-Y5LPB- SC Sta. 14+50.00
-L- SRS Sta. 218+90.04
-L- SC Sta. 221+40.04
-Y5LPC- SC Sta. 13+00.00
-Y5LPC- PCC Sta. 15+17.75
-Y5LPC- ST Sta. 10+00.00 = -L- POT Sta. 227+27.71 (59 RT)
-Y5LPC- ST Sta. 23+62.77 = -Y5- POT Sta. 22+67.39 (39 LT)
-Y5LPC- CS Sta. 21+62.77
-Y5RPC- TS Sta. 32+43.33
-Y5RPC- SC Sta. 34+23.33
-Y5RPCSPUR- PT Sta. 15+92.91
-Y5RPCSPUR- POT Sta. 20+48.41= -Y5- PT Sta. 15+15.59
-Y5RPD- ST Sta. 10+00.00 = -Y5- POT Sta. 20+22.22 (39 RT)
-Y5RPD- CS Sta. 27+13.39
-L- ST Sta. 241+04.95
-L- CS Sta. 238+54.95
-Y5- PT Sta. 41+34.38= -Y5RPBSPUR- POT Sta. 18+41.86
END PAVING -Y5- POT Sta. 43+50.00
END CONSTRUCTION -Y5- POT Sta. 44+00.00
BEGIN CONSTRUCTION -Y5- POT Sta. 9+25.32

HP -Y5RPB- STA. 18+36.64 2.04% 1.19%
HP -L- STA. 226+22.90 LT 1.97% 1.03%
HP -Y5LPB- STA. 13+84.74 4.98% 0.61%
HP -Y5LPC- STA. 11+05.12 1.37% 0.30%
HP -L- STA. 225+81.29 RT 0.30% 0.30%
LP -Y5LPB- STA. 27+88.65 5.15% 3.34%
LP -Y5RPBSPUR- STA. 17+66.69 4.00%

A
B
C
D

INSET A
TEMPORARY IMPACTS DUE TO PLUG & FILL OF EXISTING PIPE
INSET B
SEE INSET A
SITE 16A WPP
SEE INSET B
SITE 16B SCF

GRAPHIC SCALE 50 25 0 50 100 PLANS
SCALE FOR INSET 25 0 25 50
PERMIT DRAWING SHEET 34 OF 125
ENGLISH
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

4/15/2019
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

INSET C

SP. DET. HW

BZ 1

BZ 2

WS

INSET D

SEE INSET D

SOE

SITE 17

SOI

WSD

PERGO INC.

STANDARD V DITCH W/CL I RIP RAP SEE DETAIL P

SEE C500 OUTLET DETAIL –Y5RPA– STA. 21+98

SPECIAL CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT SWALE SEE DETAIL E

SPECIAL CUT DITCH SEE DETAIL B

SEE C400 OUTLET DETAIL –L2– STA. 249+09

SEE C500 INLET DETAIL –Y5RPA– STA. 21+98

SEE INSET C

LATERAL V SWALE SEE DETAIL AN

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL AB

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

SP. DET. C 2GIA–WSS

SP. DET. HW

80' WARRANTY EASEMENT (NOT BURIED)

TRENCHLESS INSTALLATION 60" WELDED STEEL (NOT BURIED)

RETAIN 72" RCP

60" RCP–III (NOT BURIED)

15" CSP 2 ELBOWS

2GIB–WSF

15" RCP–III

MATCHLINE –Y5RPC– STA. 62+00 SEE SHEET 61

MATCHLINE –Y5RPA– STA. 23+00 SEE SHEET 61

MATCHLINE –Y5RPA– STA. 16+50 SEE SHEET 23

MATCHLINE –L– STA. 243+00 SEE SHEET 21

MATCHLINE –L– STA. 256+00 SEE SHEET 23

245+00

250+00

255+00

60+00

55+00

20+00

GREU 350 TL-3

GREU TL-3

GREU TL-2

TYPE B-77

PROP. SBG

CAT-1

REMOVE DI

TB 2GIB–ST

24" RCP–III

18" RCP–III

24" CSP 2 ELBOWS

PLUG & FILL W/FLOWABLE FILL

ADJUST DI

RETAIN

CONVERT to JBw/MH

RETAIN & LINE W/ STRUCTURAL LINER

PROP. SOUND BARRIER

INVESTOR PROPERTIES TAX SERVICE INC.

SEE INSET A

SEE INSET B

INSET A

INSET B

SCF

WQF

SITE 16C

WQV

SOE

WFF

SITE 17

18 TONS CL I RIPRAP W/38 SY GEOTEXTILE LENGTH = 20' (SEE DETAIL BC)

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

2GIA WSS

60" RCP–III BURIED 10'

HW

TS

PERMIT DRAWING SHEET 35 OF 125

ENGLISH

1 1 DENOTES TEMPORARY FILL IN WETLAND

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SCALE FOR INSET

25 0 25 50

50 25 0 50 100

SCALE

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –Y5RPC– STA. 62+00 SEE SHEET 61

MATCHLINE –Y5RPA– STA. 23+00 SEE SHEET 61

SEE INSET D

SOE

SITE 17

SOI

WSD

SITE 16C

SCF

WQF

WQV

SOE

WFF

SITE 17

MATCHLINE –L– STA. 243+00 SEE SHEET 21

MATCHLINE –L– STA. 256+00 SEE SHEET 23

SEE INSET A

SEE INSET B

SEE INSET C

INSET A

INSET B

INSET C

INSET D

SP. DET. HW

SP. DET. 2GIA–WSS

SP. DET. HW

SP. DET. HW

SPECIAL CUT DITCH SEE DETAIL B

SEE C500 OUTLET DETAIL –Y5RPA– STA. 21+98

STANDARD V DITCH W/CL I RIP RAP SEE DETAIL P

SPECIAL CUT SWALE W/HINGE SEE DETAIL G

SEE C500 INLET DETAIL –Y5RPA– STA. 21+98

LATERAL V SWALE SEE DETAIL AN

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL AB

SEE C400 OUTLET DETAIL –L2– STA. 249+09

SPECIAL CUT SWALE SEE DETAIL E

SEE C400 INLET DETAIL –L2– STA. 249+09

LATERAL 4' BASE SWALE SEE DETAIL U

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL T

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

18 TONS CL I RIPRAP W/38 SY GEOTEXTILE LENGTH = 20' (SEE DETAIL BC)

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

GRADE TO DRAIN

REMOVE DI

ADJUST DI

RETAIN

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION (60" WELDED STEEL PIPE) (NOT BURIED)

RETAIN & LINE W/ STRUCTURAL LINER

CONVERT to JB w/MH

PROP. SOUND BARRIER

PERGO INC.

INVESTOR PROPERTIES TAX SERVICE INC.

PERMIT DRAWING SHEET 36 OF 125

ENGLISH

DENOTES TEMPORARY FILL IN WETLAND

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SCALE FOR INSET

SCALE

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

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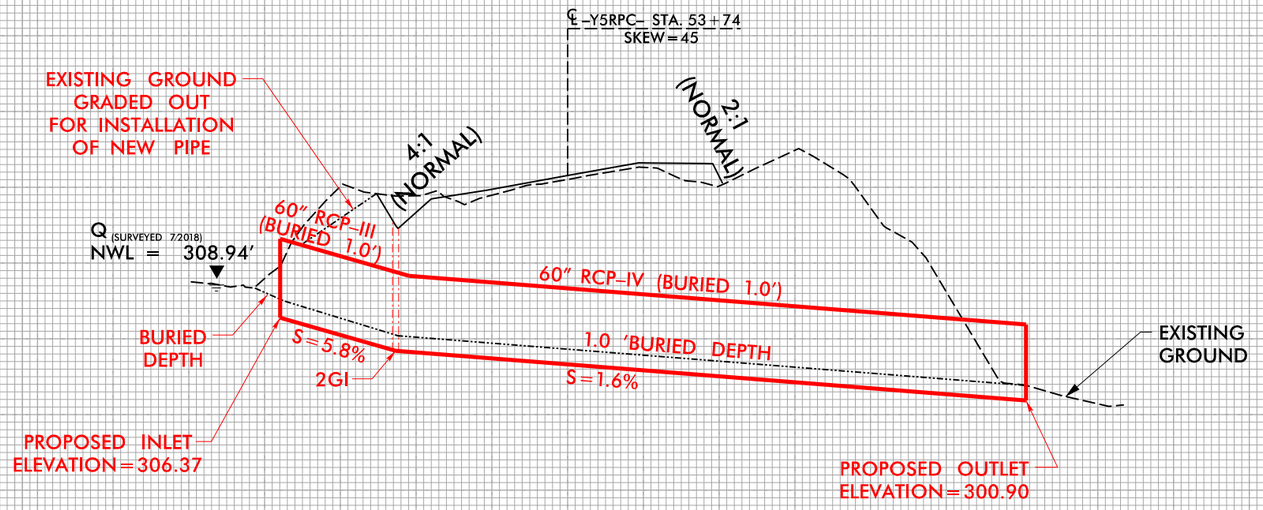
PERMIT DRAWING
SHEET 37 OF 125

SITE 16C & 17
–Y5RPC– 53+74



PROPOSED 60" RCP–IV (BURIED 1.0')
(length=245')

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
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Ekang

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

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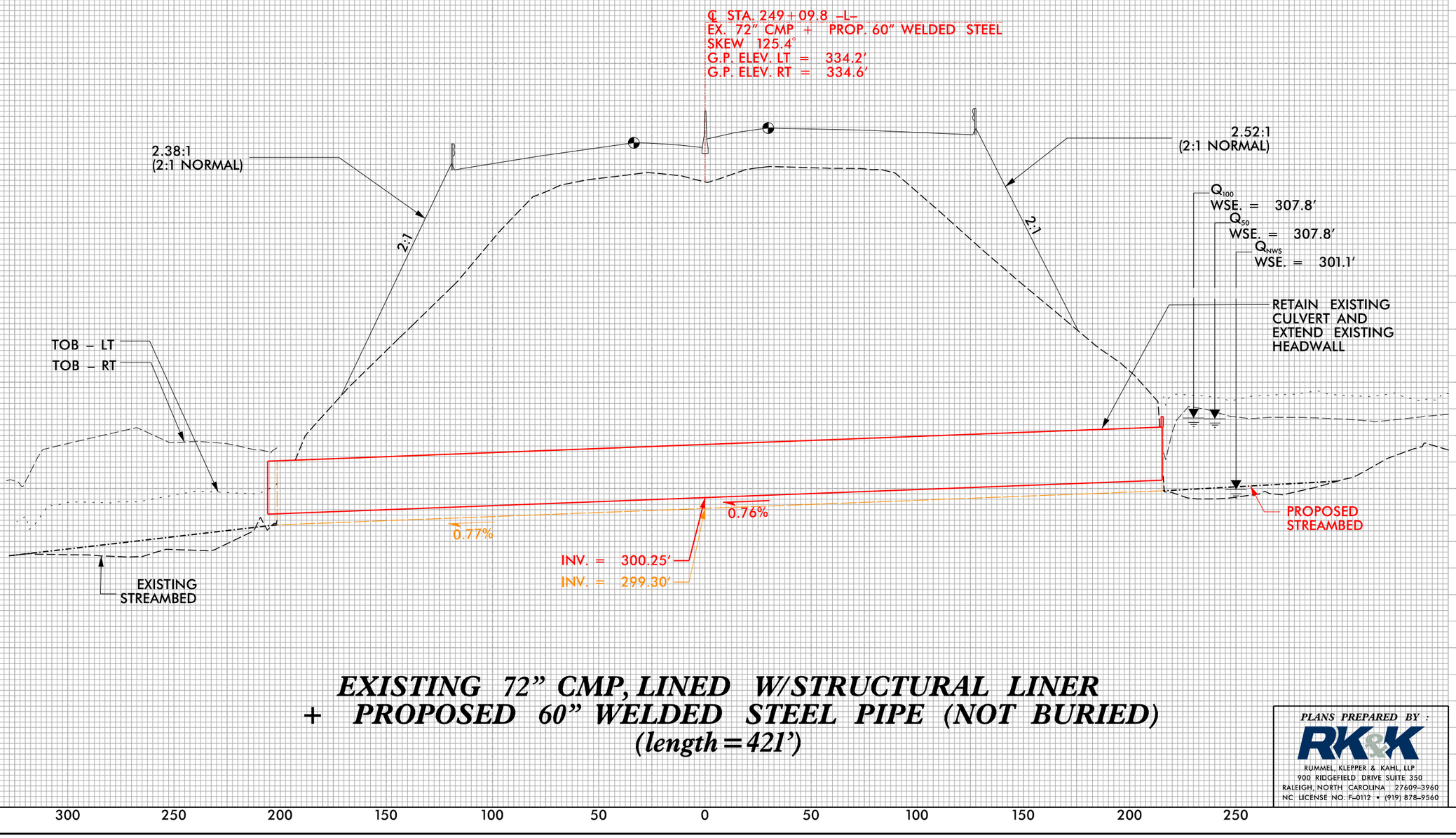
PERMIT DRAWING
SHEET 38 OF 125

SITE 17
–L– 249+09.8



EXISTING 72" CMP, LINED W/STRUCTURAL LINER + PROPOSED 60" WELDED STEEL PIPE (NOT BURIED) (length = 421')

PLANS PREPARED BY :
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RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
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5/14/99

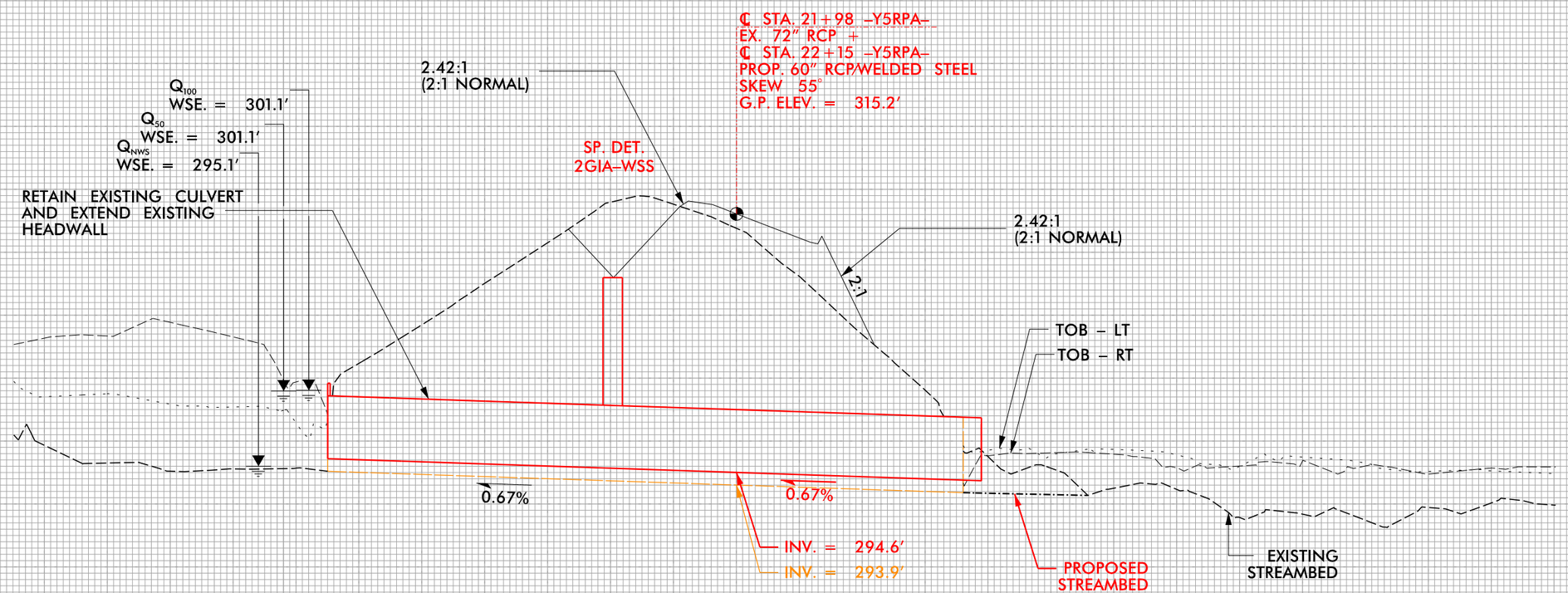
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 39 OF 125

SITE 17
–Y5RPA– 21+98



EXISTING 72" RCP (NOT BURIED)
+ PROPOSED 60" WELDED STEEL PIPE (NOT BURIED)
(length = 258')

PLANS PREPARED BY :
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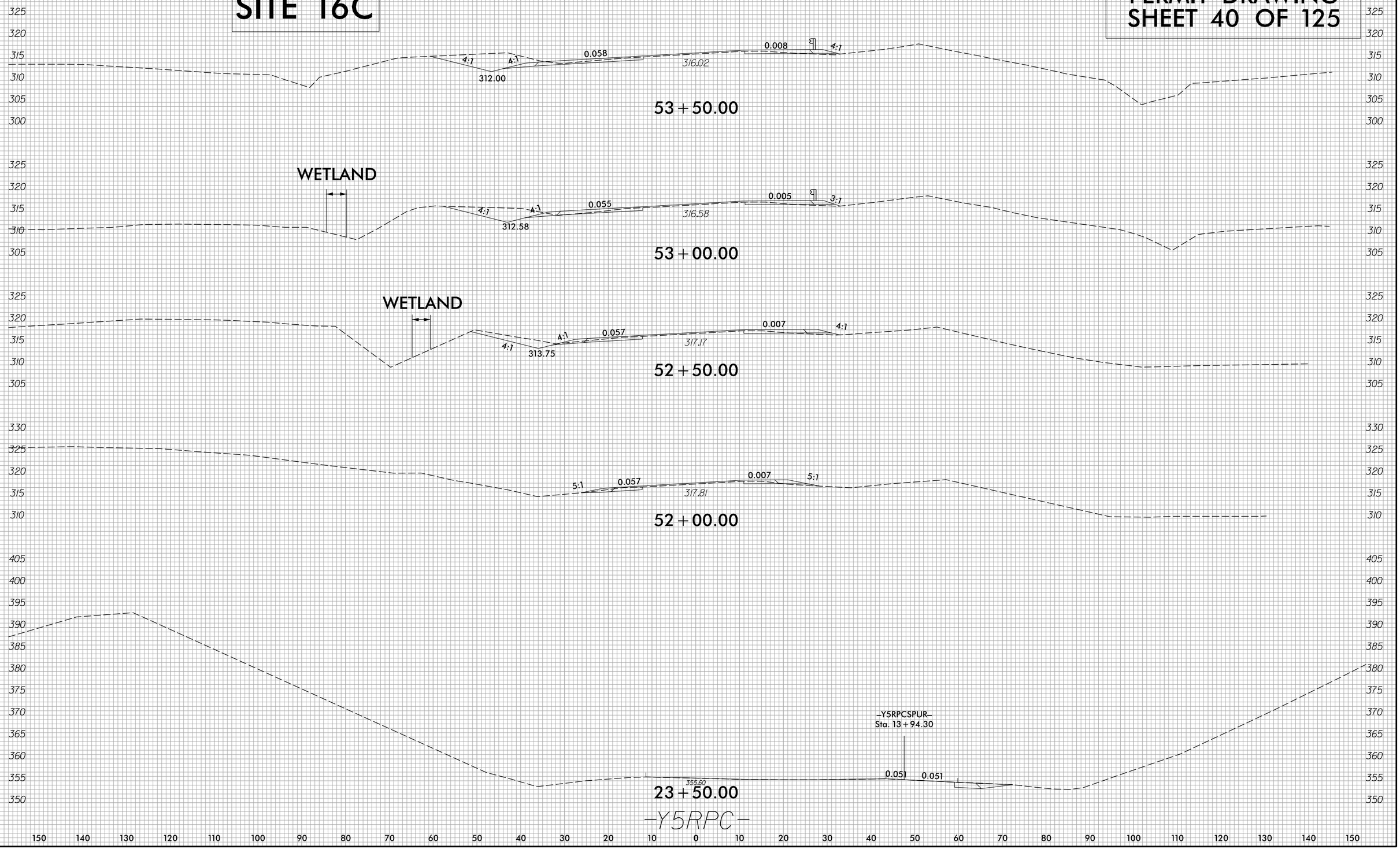
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-206

SITE 16C

PERMIT DRAWING SHEET 40 OF 125



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Plotted By: Paul Ulses
File Name: P:\Environmental\Drawings\4C\Section 2\5111.14739_hyd.xpl.Y5RPC_site16B.17A.dgn

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-207

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PERMIT DRAWING
SHEET 41 OF 125

345 340 335 330 325 320 315 310 305

0.059 0.005 314.51

55+50.00

335 330 325 320 315 310 305 300

0.058 0.008 314.78

55+00.00

335 330 325 320 315 310 305 300

4:1 4:1 β 0.056 0.002 315.16 312.30

54+50.00

325 320 315 310 305 300

4:1 4:1 β 0.059 0.009 4:1 315.57 312.15

54+00.00

SITE 17

WETLAND

WETLAND

-Y5RPC-

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

4/15/2019
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Plotted

8/17/99

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 42 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
E E DENOTES EXCAVATION IN WETLAND
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
T T DENOTES TEMPORARY FILL IN WETLAND

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

INSET A

INSET B

-Y5RPA- SC Sta. 14+72.96

-Y5RPA- TS Sta. 11+82.96

SOI

WSD

ENERGY DISSIPATOR BASIN SEE DETAIL X

HP
-Y5RPA- STA. 13+77.27
2.05% 0.30%

Q10=160.0 cfs
V10=1.6 fps

SITE 18

SEE INSET B

MATCHLINE -Y5RPA- STA. 16+50 SEE SHEET 22

CUT-FILL TRANSITION 2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

SPECIAL CUT SWALE SEE DETAIL E

-Y5RPA- POT Sta. 10+00.00= -L- POT Sta.262+16.57 (59' LT)

-Y5RPA- N 21° 04' 30.4" W

S 24° 04' 24.4" E

-L- TS Sta. 263+81.72

-L- SC Sta. 265+31.72

MATCHLINE -L- STA. 256+00 SEE SHEET 22

MATCHLINE -L- STA. 269+00 SEE SHEET 24

2GIA-WSF
66" RCP-III (BURIED 1.0')
HW
15" RCP-III
2GIB-WSS
2GID-WSS
15" CSP 2 ELBOWS
18" RCP-III
24" RCP-III
Conv. DI TO JB w/MH
REMOVE
RETAIN
TB 2GIB-ST
TB 2GIA-ST
PDE
PDR
BZ 1
BZ 2
2GIB WSF
INV=
MECHANICAL INSTALLATION 66" WELDED STEEL (BURIED 1.0')
PLUG & FILL W/FLOWABLE FILL
LATERAL BASE SWALE SEE DETAIL U
RIP RAP AT EMBANKMENT SEE DETAIL BA
CONCRETE DITCH BEHIND WALL SEE DETAIL BE
CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V
SEE INSET A
WPT
SITE 18
SOI
PERGO INC.
INVESTOR PROPERTY TAX SERVICE INC.
JAMES M. NICHOLSON
70' POWER EASEMENT
9' BLK & 48" CHL
48" CHL
48" WW & ISBW
8" PVC
3SFAPT
SEDIMENT BA
EXISTING R/W
R/W MON
CABLE
-L-
-Y4RPC-
10' CONC
4" CONC
EOP
EOT

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Fleis

8/17/99

SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

PERMIT DRAWING
SHEET 43 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
E E DENOTES EXCAVATION IN WETLAND
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
T T DENOTES TEMPORARY FILL IN WETLAND

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET A

INSET B

SOI

WSD

SITE 18

HP
-Y5RPA- STA. 13+77.27
2.05% 0.30%

-Y5RPA- SC Sta. 14+72.96

-Y5RPA- TS Sta. 11+82.96

ENERGY DISSIPATOR BASIN SEE DETAIL X

Q10=160.0 cfs
V10=1.6 fps

SEE INSET B

MATCHLINE -Y5RPA- STA. 16+50 SEE SHEET 22

CUT/FILL TRANSITION 2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

SPECIAL CUT SWALE SEE DETAIL E

-Y5RPA- POT Sta. 10+00.00= -L- POT Sta. 262+16.57 (59' LT)

-Y5RPA- N 21° 04' 30.4" W

-L- S 24° 04' 24.4" E

-L- TS Sta. 263+81.72

-L- SC Sta. 265+31.72

MATCHLINE -L- STA. 256+00 SEE SHEET 22

MATCHLINE -L- STA. 269+00 SEE SHEET 24

2GIA-WSF
66" RCP-III (BURIED 1.0')
HW

2GIB WSF
15" RCP-III
66" RCP-III (BURIED 1.0')
2GIA-WSF

2GID-WSS
15" RCP-III
Conv. DI TO JB w/MH

REMOVE
24" RCP-III
TB 2GIA-ST

18" RCP-III
TB 2GIB-ST

2GIB-WSS
15" CSP
2 ELBOWS

RETAIN

RELAY 15" CSP 2 ELBOWS

RIP RAP AT EMBANKMENT SEE DETAIL BA

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

LATERAL BASE SWALE SEE DETAIL U

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

SEE INSET A WPT

SITE 18

SOI

PERGO INC.

JAMES M. NICHOLSON

INVERTOR PROPERTIES TAX SERVICE INC

70' POWER EASEMENT

3SFAPT

SEDIMENT BA

PLUG & FILL W/FLOWABLE FILL

BACKFLOW/INSTALLATION 66" WELDED STEEL (BURIED 1.0)

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

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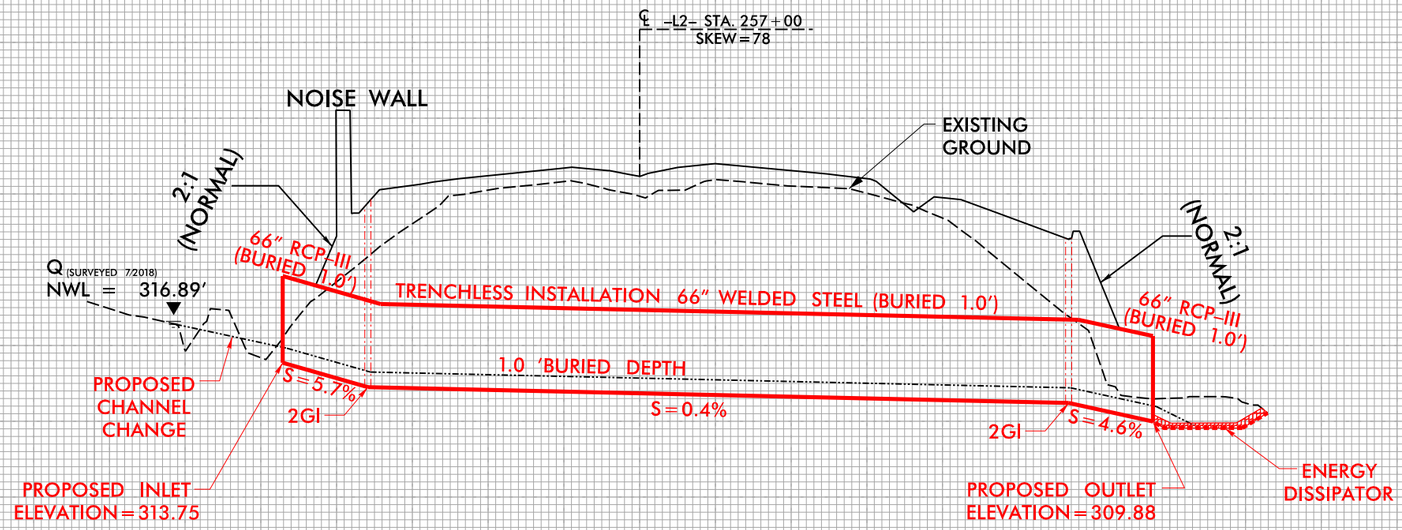
PERMIT DRAWING
SHEET 44 OF 125

SITE 18
–L2– 257+00



PROPOSED TRENCHLESS INSTALLATION 66" WELDED STEEL (BURIED 1.0')
(length=287')

PLANS PREPARED BY :

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RUMMEL, KLEPPER & KAHL, LLP
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Ekaterina Gulis

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-50

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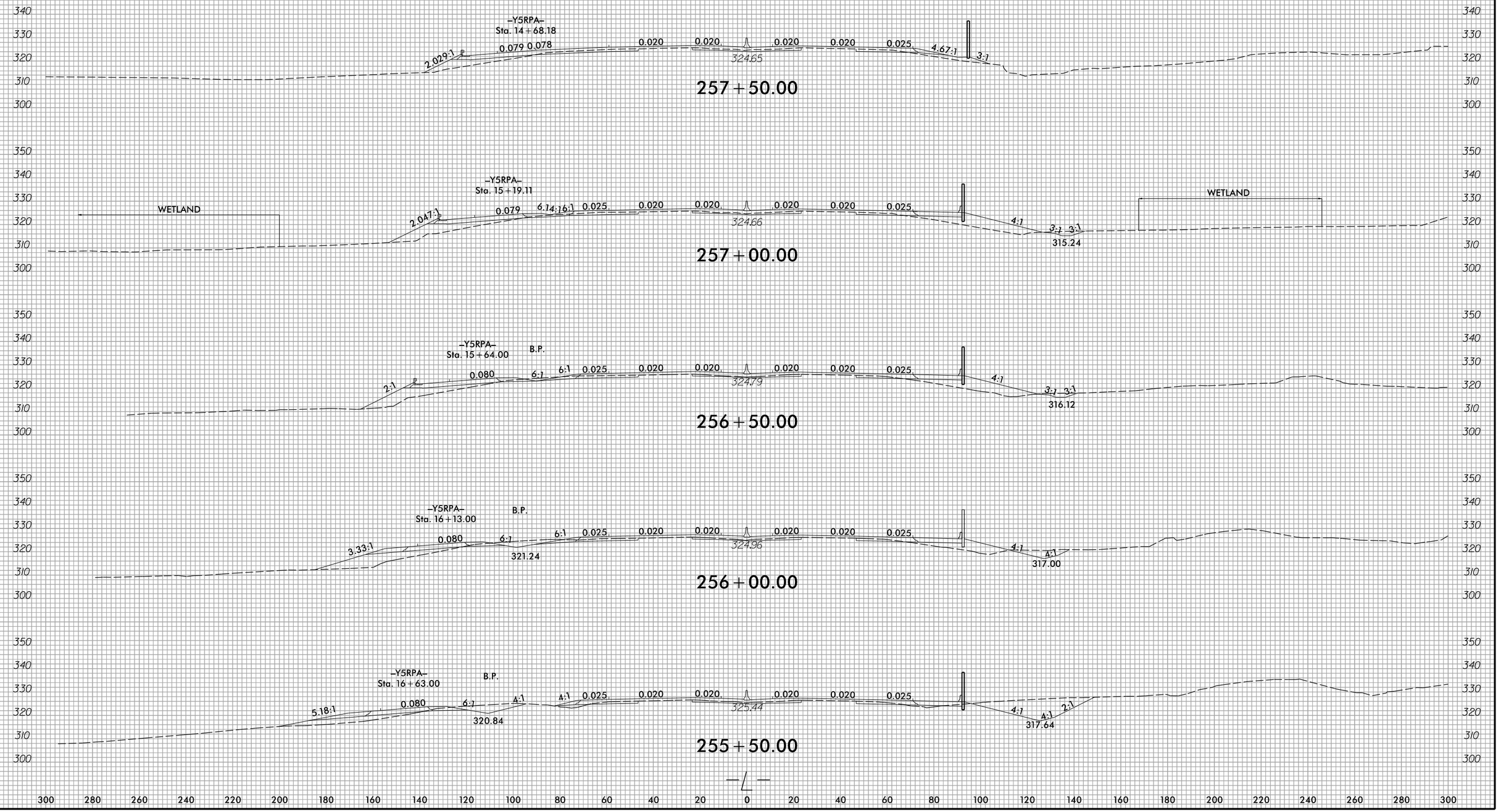
SITE 18

PERMIT DRAWING
SHEET 45 OF 125



300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 46 OF 125

ENGLISH

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

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET A

INSET B

SITE 19

SITE 20

SNF

SNH

WPV

WQE

SEE INSET A

SEE INSET B

SEE INSET ON SHEET 25

MATCHLINE -L- STA. 269+00 SEE SHEET 23

MATCHLINE -L- STA. 282+00 SEE SHEET 25

-L- STA. 280+90.37 LT

0.46% 1.08%

-L- STA. 281+15.56 RT

0.37% 1.02%

-L- ST Sta. 278+23.01

-L- CS Sta. 276+73.01

PERGO INC.

GREENFIELD 40 ASSOC.W/CL I RIPRAP SEE DETAIL V

GREENFIELD 40 ASSOC.

JAMES M. NICHOLSON

ASHTON VILLAGE LIMITED PARTNERSHIP

CARNER LAND COMPANY LLC

SOLAR PANEL

PROP. SOUND BARRIER

PROP. SBG

SEDIMENT BASIN

CONC RISER

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL T

LATERAL V SWALE SEE DETAIL AN

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

RIP RAP AT EMBANKMENT SEE DETAIL BA

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

MAINTAIN ACCESS TO EXISTING SEWER JB FOR MAINTENANCE, AVOID ARMORING WITH CL I RIPRAP

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 48" WELDED STEEL BURIED

REMOVE DI

CONV. DI to JB wMH

Conv. DI TO JB wMH

30" CSP 2 ELBOWS

15" CSP 2 ELBOWS

18" CSP 2 ELBOWS

15" RCP-III

18" RCP-III

24" RCP-III

TB 2GIA-ST

TB 2GIB-ST

2GIA-WSS

2GIB-WSS

2GID-WSS

2GIB-WSF

(2)2GIB-WSF

RETAIN

I-40 WBL 23' CONC

I-40 EBL 23' CONC

4" CONC

10' CONC

48" WW & ISBW

R/W MON

EIP

EXISTING R/W

70' POWER EASEMENT

20' SANITARY SEWER EASEMENT

8" PVC

15" SANITARY SEWER EASEMENT

15" PVC

48" CMP

48" CHL

CABLE

BDO

INV=309.63'

INV=306.83'

8" OUT=305.53'

24" OUT=307.50'

24" IN=310.67'

30" OUT=310.50'

S 30° 31' 05.4" E

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 47 OF 125

ENGLISH

DENOTES TEMPORARY FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET A

INSET B

SITE 19

SITE 20

SNF

SNH

WPV

WQE

SEE INSET B

SEE INSET A

SEE INSET ON SHEET 25

MATCHLINE -L- STA. 269+00 SEE SHEET 23

MATCHLINE -L- STA. 282+00 SEE SHEET 25

-L- STA. 280+90.37 LT

0.46% 1.08%

LP

-L- STA. 281+15.56 RT

0.37% 1.02%

-L- ST Sta. 278+23.01

-L- CS Sta. 276+73.01

S 30° 31' 05.4" E

PERGO INC.

GREENFIELD 40 ASSOC.

JAMES M. NICHOLSON

ASHTON VILLAGE LIMITED PARTNERSHIP

GARNER LAND COMPANY LLC

PROP. SOUND BARRIER

PROP. SBG

SEDIMENT BASIN

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

RIP RAP AT EMBANKMENT SEE DETAIL BA

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL T

LATERAL V SWALE SEE DETAIL AN

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

MAINTAIN ACCESS TO EXISTING SEWER JB FOR MAINTENANCE, AVOID ARMORING WITH CL I RIPRAP

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 48" WELDED STEEL BURIED

REMOVE DI

CONV. DI to JB w/MH

Conv. DI TO JB w/MH

2GIA-WSS

2GIB-WSS

2GID-WSS

2GIB-WSF

(2)2GIB-WSF

TB 2GIA-ST

TB 2GIB-ST

15" RCP-III

18" RCP-III

24" RCP-III

30" CSP 2 ELBOWS

15" CSP 2 ELBOWS

SP. DET. HW

PDE

TS

15" CSP 2 ELBOWS

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

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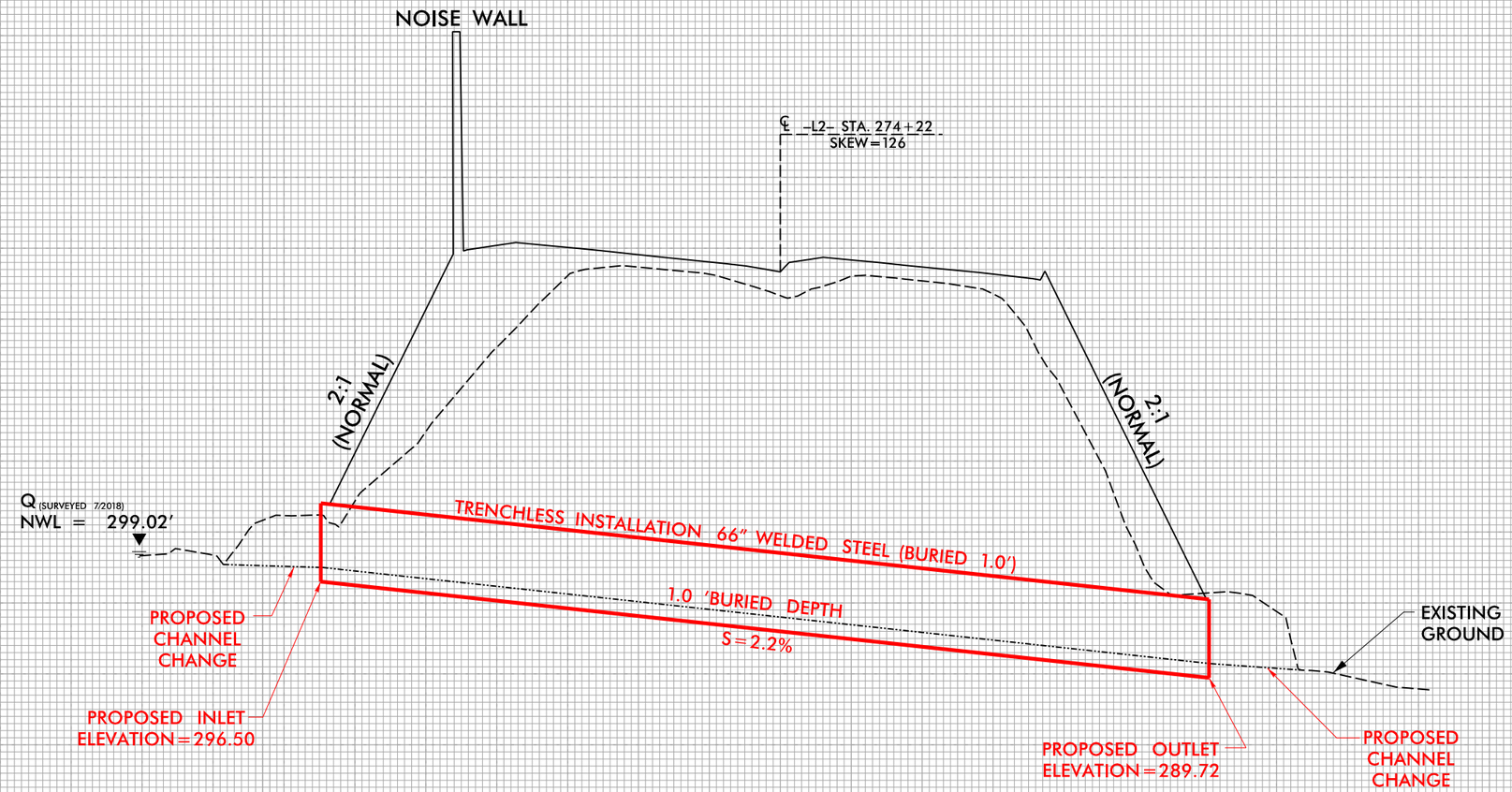
PERMIT DRAWING
SHEET 48 OF 125

SITE 19
–L2– 274+22



PROPOSED TRENCHLESS INSTALLATION 66" WELDED STEEL (BURIED 1.0')
(length=314')

PLANS PREPARED BY :

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 49 OF 125

ENGLISH

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

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

SMM

WRX

SITE 20

SNH

SEE INSET B

GREENFIELD 40 ASSOC.

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

INSET B

BZ 2
BZ 1
EXISTING R/W
JS
15" CSP
2 ELBOWS
TRENCHLESS INSTALLATION STEEL WELDED (BURIED 1.0')
2GIB–WSF
15"
SKE TRUCK LEASING CO. L.P.
BST PA
CONC
72" CHL

-L- TS Sta. 292+63.21

MATCHLINE -L- STA. 282+00 SEE SHEET 24

MATCHLINE -L- STA. 295+00 SEE SHEET 26

48" WW & ISBW
EIP
2 TONS CL B RIP RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH=5' (SEE DETAIL BB)
15" RCP-III
2GIB–WSF
PLUG & FILL W/FLOWABLE FILL
REMOVE DI
40 TONS CL I RIP RAP W/78 SY GEOTEXTILE LENGTH=35' (SEE DETAIL BC)
CUT/FILL TRANSITION 2 TONS CL B RIP RAP W/7 SY GEOTEXTILE
GREU TL-3
285+00
290+00
T.I. 66" W.S.
SP. DET. TB 2GIA–ST
T.I. 42" W.S.
TB 2GIB–ST
-FI-
S 30° 31' 05.4" E
BL-I29
I-40 WBL 23' CONC
I-40 EBL 23' CONC
10' CONC
4' CONC
CABLE
TRENCHLESS INSTALLATION 42" WELDED STEEL (NOT BURIED)
FS
2GID–WSS
2 TONS CL B RIP RAP W/7 SY GEOTEXTILE
BERM 4' BASE DITCH SEE DETAIL N
LATERAL BASE SWALE SEE DETAIL U
LATERAL BASE DITCH SEE DETAIL AA
WQE
SITE 20
Q10=13.0 cfs
V10=1.84 fps
CHANNEL CHANGE W/CL I RIPRAP ON BANKS ONLY SEE DETAIL V
70' POWER EASEMENT
HW
R/W MON
SEE INSET A

INSET A

15" RCP-III
TRENCHLESS 66" WELDED (BURIED
2GID–WSS
GARNER LAND COMPANY LLC

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Features

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 50 OF 125

ENGLISH

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

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

SMM

WRX

SITE 20

SNH

WQE

SITE 20

SEE INSET B

SEE INSET A

INSET B

INSET A

MATCHLINE –L– STA. 282+00 SEE SHEET 24

MATCHLINE –L– STA. 295+00 SEE SHEET 26

–L– TS Sta. 292+63.21

GREENFIELD 40 ASSOC.

GARNER LAND COMPANY LLC

SKE TRUCK LEASING CO. L.P.

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

2 TONS CL B RIP-RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH = 5' (SEE DETAIL BB)

40 TONS CL I RIP RAP W/78 SY GEOTEXTILE LENGTH = 35' (SEE DETAIL BC)

CUTFILL TRANSITION 2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

TRENCHLESS INSTALLATION 66" WELDED STEEL (BURIED 1.0')

TRENCHLESS INSTALLATION 42" WELDED STEEL (NOT BURIED)

15" RCP-III

2GIB-WSF

2GID-WSS

LATERAL BASE SWALE SEE DETAIL U

LATERAL BASE DITCH SEE DETAIL AA

BERM 4' BASE DITCH SEE DETAIL N

Q10=13.0 cfs
V10=1.84 fps

285+00

290+00

S 30° 31' 05.4" E

BL-129

T.I. 66" W.S.

T.I. 42" W.S.

SP. DET. TB 2GIA-ST

TB 2GIB-ST

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Ekang

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-65

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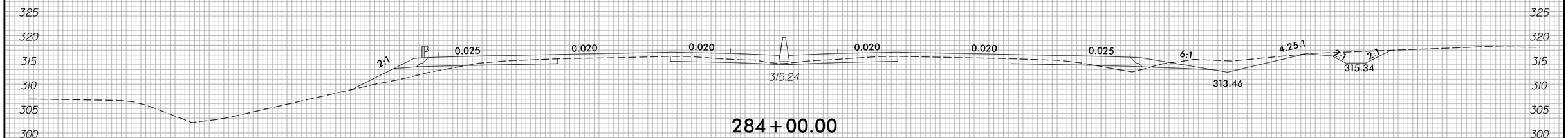
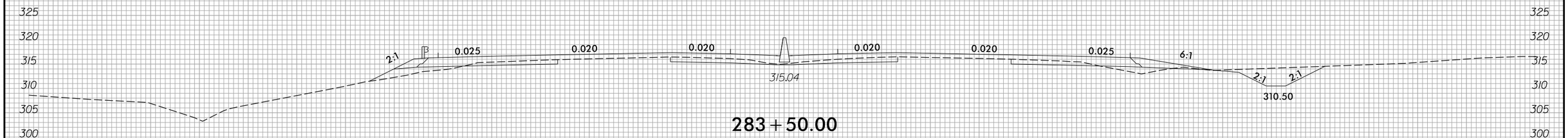
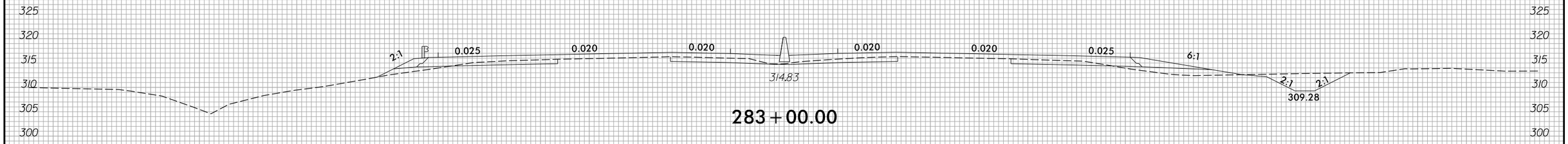
PERMIT DRAWING
SHEET 51 OF 125



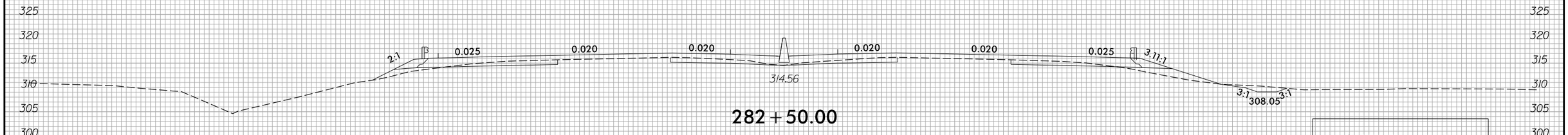
284+00.00



283+50.00

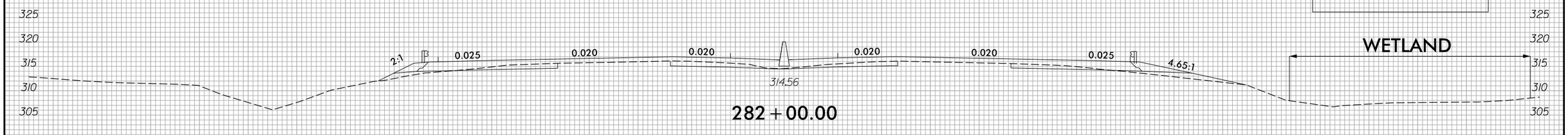


283+00.00



282+50.00

SITE 20



282+00.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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Plotted By: Fleig

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 52 OF 125

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET A

SNY

SITE 21

LP
–L– STA. 321+11.62 LT
1.41% 2.06%

–L– CS Sta. 326+41.06

–L– ST Sta. 329+01.06

MATCHLINE –L– STA. 321+00 SEE SHEET 27

MATCHLINE –L– STA. 334+00 SEE SHEET 29

SEE INSET A

SEE INSET B

SNY SITE 21

SITE 22
SOC

INSET B

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SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

PERMIT DRAWING SHEET 53 OF 125

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET A

SNY

SITE 21

LP
-L- STA. 321+11.62 LT
1.41% 2.06%

-L- CS Sta. 326+41.06

-L- ST Sta. 329+01.06

SEE C600 OUTLET DETAIL -L2- STA. 322+93

RIP RAP AT EMBANKMENT SEE DETAIL BA

11 TONS CL B RIP RAP W/28 SY GEOTEXTILE

10' WIDE BERM TOP ELEV.=277.5' SEE DETAIL J

RIP RAP AT EMBANKMENT SEE DETAIL BA

LATERAL BASE DITCH W/CL B RIPRAP SEE DETAIL T

JEFFERY K WILSON

SEE INSET A

LATERAL 4' BASE SWALE SEE DETAIL U

SP. DET. JB w/MH

COLLAR

18" RCP-III

35" RCP-III

4QTCB

MATCHLINE -L- STA. 321+00 SEE SHEET 27

MATCHLINE -L- STA. 334+00 SEE SHEET 29

325+00

330+00

-L-

15" RCP-III

REMOVE DI

TB 2GIB-ST

TB 2GIA-ST

2GIA-WSS

36" RCP-III

GREU TL-3

REMOVE

Conv. DI TO JB w/MH

30" RCP-III

24" RCP REMOVE

S 3°19'01.0" W

BL 133

24" IN=304.0'
30" OUT=303.96'

RETAIN

2GID-WSS

PIPE CLEANOUT

CHANNEL BLOCK SEE DETAIL Z

LATERAL BASE DITCH W/CL B RIPRAP SEE DETAIL T

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

RIP RAP AT EMBANKMENT SEE DETAIL BA

SEE INSET B

SEE C600 INLET DETAIL -L2- STA. 322+93

LATERAL BASE DITCH W/CL I RIPRAP SEE DETAIL T

LATERAL BASE SWALE SEE DETAIL U

RIP RAP AT EMBANKMENT SEE DETAIL BA

1.41% 2.05%

LP
-L- STA. 321+10.78 RT

SNY SITE 21

SITE 22
SOC

INSET B

N. D. SAULS JR.

KLC-4W PARTNERSHIP

4/15/2019
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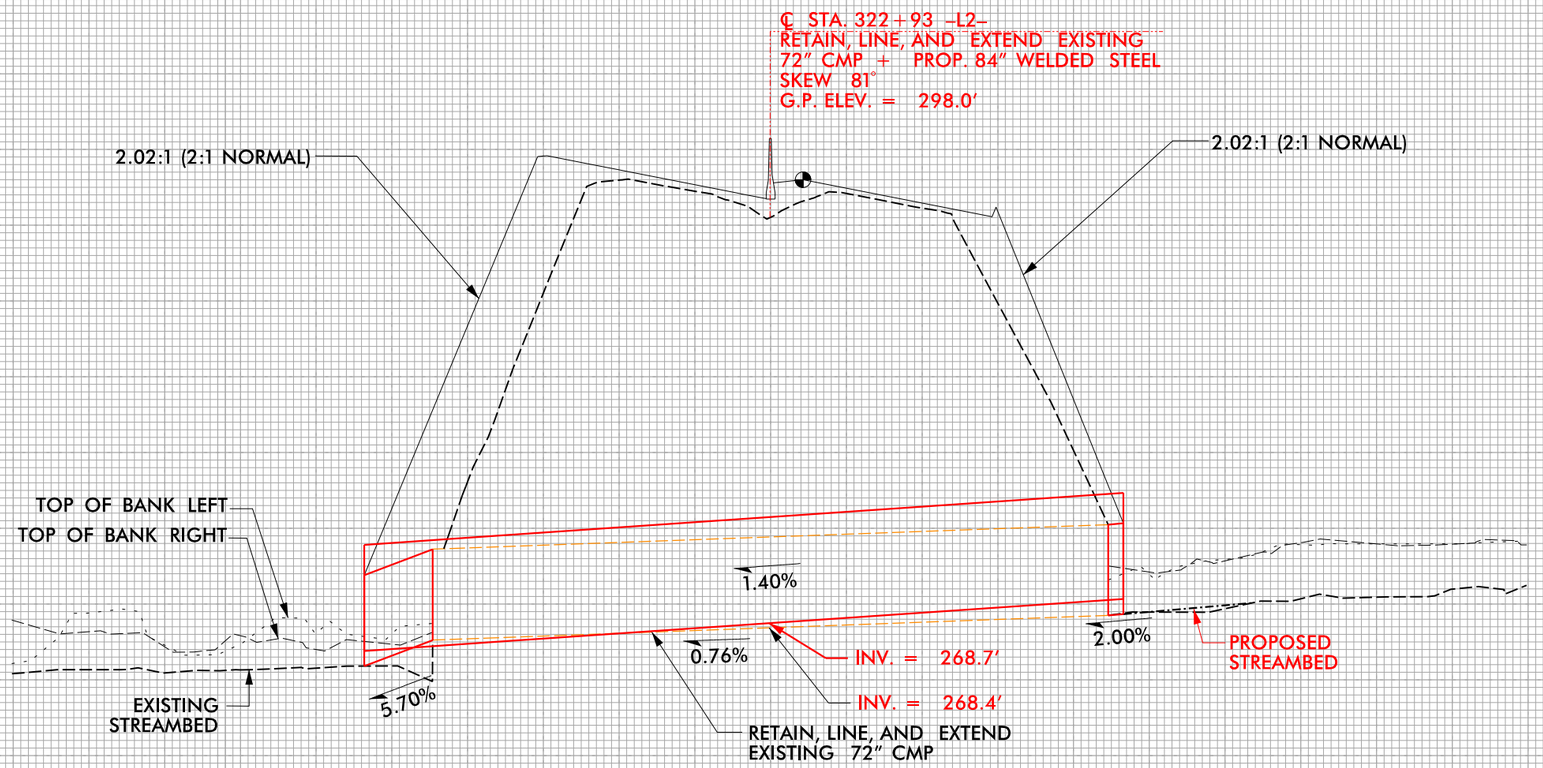
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 54 OF 125

SITE 21
–L– 322+93



EXISTING 72" CMP, LINED WITH STRUCTURAL LINER + PROPOSED 84" WELDED STEEL (NOT BURIED) (length = 268')

PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 150
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112

TANNED DETAIL

4/15/2019
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SCALE FOR INSET

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SCALE

PERMIT DRAWING
SHEET 55 OF 125

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

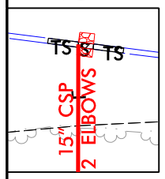
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

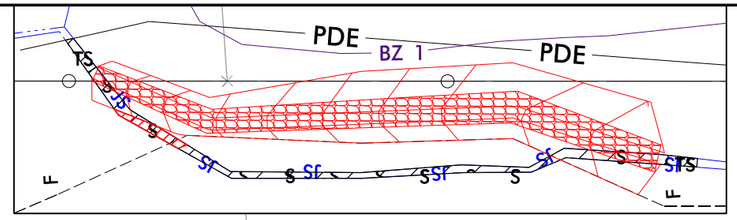
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET B





INSET A

BOBBY BANKS

N. D. SAULS JR.

SLF

SLH

SITE 23A

SITE 23B

SEE INSET A

SEE INSET B

SEM

SP. LAT. 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

11 TONS CL B RIP RAP W/28 SY GEOTEXTILE "FLARE RIP RAP OUT FOR MORE DISPERSION IN BUFFER ZONE

CHANNEL BLOCK SEE DETAIL Z

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH=5' (SEE DETAIL BB)

MATCHLINE -L- STA. 357+00 SEE SHEET 30

MATCHLINE -L- STA. 370+00 SEE SHEET 32

360+00

365+00

370+00

S 3°19'01.0" W

REMOVE DI

Conv. DI TO JB w/MH

TB 2GIA-ST

TB 2GIB-ST

2GIB-WSS

2GIB-WSF

24" RCP-III

18" RCP-III

15" RCP-III

30" RCP-III

REMOVE

REMOVE 15'

18" CSP 2 ELBOWS

RETAIN

PROP. SBG

PROP. SOUND BARRIER WALL

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

DENNIS L. POWELL

WAUDDELL J. ROBINSON JR.

MR. & MRS. HARRIS D. FAULK

MARVA LEWIS

VICTORIA LYNN SCALLY

WAUDDELL J. ROBINSON JR.

WILLIAM C. MCLAMB

CHARLIE L. FOBBS

SNK

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SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 56 OF 125

ENGLISH

S/S DENOTES IMPACTS IN SURFACE WATER

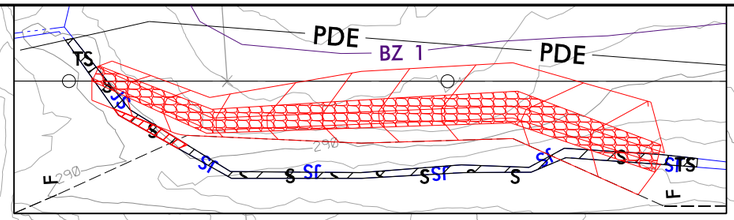
TS/TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

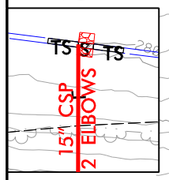
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET A



INSET B



MATCHLINE –L– STA. 357+00 SEE SHEET 30

MATCHLINE –L– STA. 370+00 SEE SHEET 32

SLF

SLH

SITE 23A

SITE 23B

SEE INSET A

SEE INSET B

SEM

SP. LAT. 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

11 TONS CL B RIP RAP W/28 SY GEOTEXTILE *FLARE RIP RAP OUT FOR MORE DISPERSION IN BUFFER ZONE

CHANNEL BLOCK SEE DETAIL Z

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH=5' (SEE DETAIL BB)

REMOVE DI

REMOVE 24" RCP

30" RCP-III

Conv. DI TO JB w/MH

2GIB-WSS

2GIB-WSF

360+00

365+00

370+00

24" RCP-III

24" RCP

18" RCP-III

TB 2GIA-ST

TB 2GIB-ST

15" RCP-III

18" RCP-III

JB w/MH

REMOVE 15'

18" CSP 2 ELBOWS

S 3°19'01.0" W

PROP. SBG

PROP SOUND BARRIER

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

BENNIS L. POWELL

WAUDDELL J. ROBINSON JR.

MARVA LEWIS

MR. & MRS. HARRIS D. FAULK

VICTORIA LYNN SCALLY

WAUDDELL J. ROBINSON JR.

WILLIAM C. MCLAMB

CHARLIE L. FOBBS

N. D. SAULS JR.

BOBBY BANKS

SNK

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25 0 25 50
SCALE FOR INSET

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SCALE

PERMIT DRAWING
SHEET 57 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –L– STA. 370+00 SEE SHEET 31

MATCHLINE –L– STA. 383+00 SEE SHEET 33

BOBBY BANKS

ROY R. SMITH

WILLIAM C. MCLAMB

RIDGEVIEW SUBDIVISION HOMEOWNERS ASSOC.

SITE 23C

SITE 24

SITE 25

SITE 26A

SLI

SEM

WNQ

WPX

SNK

SNM

WQC

SEE INSET A

SEE INSET B

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

SP. LAT. 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

RIP RAP LINE ENTIRE PENINSULA BETWEEN STREAMS FOR STABILIZATION 10 TONS CL B RIP RAP W/28 SY GEOTEXTILE

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

*SITE IMPACTS ONLY IN BUFFER DRAWINGS

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

JS BEGINS

JS BEGINS

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH = 5' (SEE DETAIL BB)

PROP. SBG

PROP. SOUND BARRIER

PROP. SBG

TYPE B-77

15" RCP-III

15" CSP 2 ELBOWS

2GIB-WSF

TB 2GIB-ST

REMOVE DI

RETAIN

I-40 WBL 23' BST

I-40 EBL 23' BST

370+00

375+00

380+00

BL-137

BL-138

–L–

S 3°19'01.0" W

INSET A

INSET B

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SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 58 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –L– STA. 370+00 SEE SHEET 31

MATCHLINE –L– STA. 383+00 SEE SHEET 33

SITE 23C

SITE 24

SITE 25

SITE 26A

SEE INSET A

SEE INSET B

SLI

WNQ

SEM

SEM

WPX

SNK

SNM

WQC

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

SP. LAT. 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

RIP RAP LINE ENTIRE PENINSULA BETWEEN STREAMS FOR STABILIZATION 10 TONS CL B RIP RAP W/28 SY GEOTEXTILE

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

*SITE IMPACTS ONLY IN BUFFER DRAWINGS

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

JS BEGINS

JS BEGINS

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH=15' (SEE DETAIL BB)

INSET A

INSET B

PROP. SBG

PROP. SOUND BARRIER

TYPE B-77

15" RCP-III

15" CSP 2 ELBOWS

2GIB-WSF

TB 2GIB-ST

REMOVE DI

RETAIN

370+00

375+00

380+00

BL-137

BL-138

–L– S 3°19' 01.0" W

BOBBY BANKS

ROY R. SMITH

WILLIAM C. MCLAMB

RIDGEVIEW SUBDIVISION HOMEOWNERS ASSOC.

I-40 WBL 23' BST

I-40 EBL 23' BST

10' CONC

4' CONC

CABLE

EIP

EOP

EOT

R/W MON

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SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

PERMIT DRAWING
SHEET 59 OF 125

ENGLISH

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET A

INSET B

INSET C

SEM

SITE 28

SEE INSET A

SEE INSET B

SEE INSET C

SNK SITE 26B

SNO SITE 27

WFF SITE 29

SEK

WEF

WQA

MATCHLINE –L– STA. 383+00 SEE SHEET 32

MATCHLINE –L– STA. 396+00 SEE SHEET 34

385+00 390+00 395+00

–L– S 3°19'01.0" W

BL-139

2.05% 0.73%

LP

–L– STA. 388+83.47 RT

ROY R. SMITH

BEATRICE M. MARLOW

KENNETH REID WALTERS

34A

SEE C700 OUTLET DETAIL –L2– STA. 386+82

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

8 TONS CL B RIP RAP W/21 SY GEOTEXTILE

*BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

15" RCP–III

(2)2GIB–WSF

REMOVE CB

REMOVE DI

TB 2GIB–ST

15" RCP–III

24" RCP–III

Conv. DI TO JB w/MH

24" IN–258.41' DI
24" OUT–258.03'
24" RCP–III

24" CSP
2 ELBOWS

2GID–WSS

SPECIAL CUT SWALE SEE DETAIL E

BERM V DITCH SEE DETAIL A

LATERAL BASE SWALE SEE DETAIL U

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

RIP RAP AT EMBANKMENT SEE DETAIL BA

SEE C700 INLET DETAIL –L2– STA. 386+82

SP. DET. HW

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

LATERAL V DITCH SEE DETAIL H

RIP RAP AT EMBANKMENT SEE DETAIL BA

TRENCHLESS INSTALLATION OF WELDED STEEL

RETAIN

I-40 WBL 23' BST

I-40 EBL 23' BST

EXISTING R/W

R/W MON

CABLE

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Plotted:

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SCALE FOR INSET

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SCALE

PERMIT DRAWING
SHEET 60 OF 125

ENGLISH

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET A

INSET B

INSET C

SITE 28

SITE 26B

SITE 27

SITE 29

SNK

SNO

SEK

WFF

WEF

WQA

SEM

BEATRICE M. MARLOW

ROY R. SMITH

KENNETH REID WALTERS

34A

SEE INSET A

SEE INSET B

SEE INSET C

SEE C700 OUTLET DETAIL –L2– STA. 386+82
3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

8 TONS CL B RIP RAP W/21 SY GEOTEXTILE
*BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

SEE C700 INLET DETAIL –L2– STA. 386+82

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

RIP RAP AT EMBANKMENT SEE DETAIL BA

LATERAL BASE SWALE SEE DETAIL U

SPECIAL CUT SWALE SEE DETAIL E

BERM V DITCH SEE DETAIL A

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

LATERAL V DITCH SEE DETAIL H

2.05% 0.73%
LP
–L– STA. 388+83.47 RT

S 3°19'01.0" W

385+00

390+00

395+00

MATCHLINE –L– STA. 383+00 SEE SHEET 32

MATCHLINE –L– STA. 396+00 SEE SHEET 34

15" RCP-III

24" RCP-III

(2)2GIB-WSF

REMOVE DI

REMOVE CB

Conv. DI TO JB w/MH

24" CSP 2 ELBOWS

SP DET HW

SP DET

I-40 WBL 23' BST

I-40 EBL 23' BST

BL-139

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Flair

5/14/99

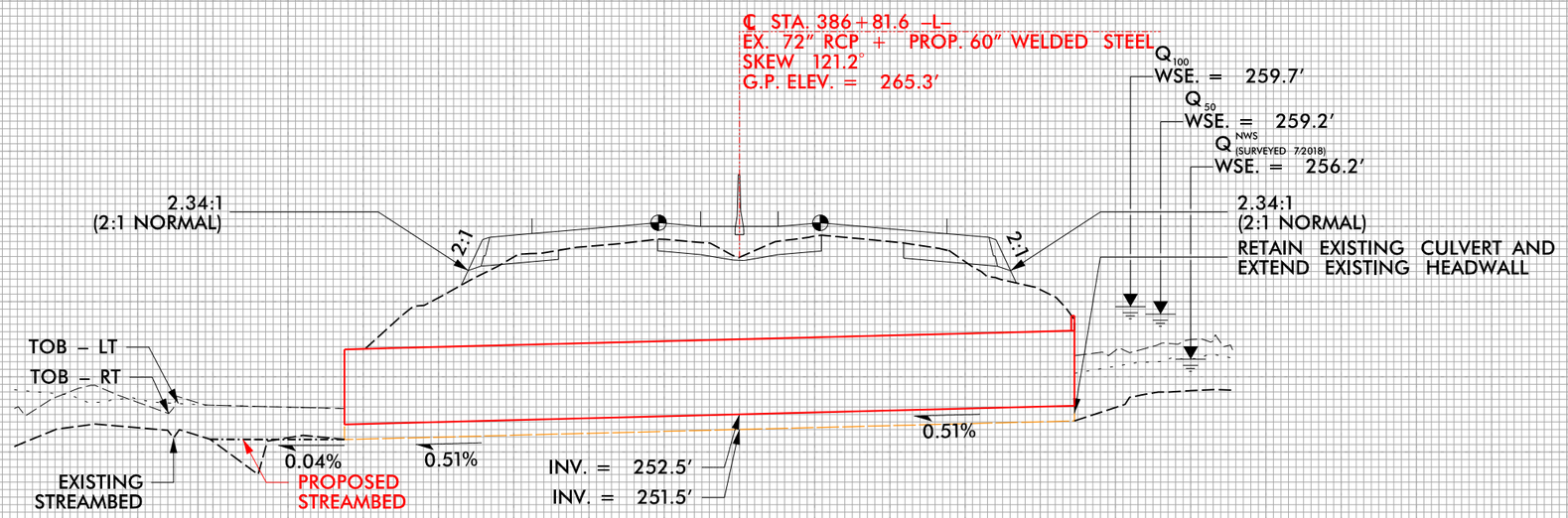
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 61 OF 125

SITE 26B, 27, & 28
–L– 386+81.6



EXISTING 72" RCP +
PROPOSED 60" WELDED STEEL (NOT BURIED)
(length = 243')

PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
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SCALE

PERMIT DRAWING
SHEET 62 OF 125

ENGLISH

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

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L- STA. 396+00 SEE SHEET 33

MATCHLINE -L- STA. 409+00 SEE SHEET 35

KENNETH REID WALTERS

DAVID PENNY EXEC.

SEK

SITE 29

WFF

WEF

SEK

SITE 29

SITE 30

WEC

SEL

SITE 31

SEE INSET A

SEE INSET B

SEE INSET C

INSET A

INSET B

INSET C

33 TONS CL I RIP RAP W/62 SY GEOTEXTILE ON BANKS ONLY LENGTH = 45' (SEE DETAIL BB)

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

JB w/MH

15" CSP 2 ELBOWS

34" RCP-III (BURIED 1.0')

COLLAR AND EXTEND 66" RCP-III

15" RCP-III

24" RCP-III

2GIB-WSF

2GIA-WSS

TB 2GIA-ST

TB 2GIB-ST

REMOVE DI

REMOVE CB

REMOVE 15" RCP

PLUG & FILL W/FLOWABLE FILL

RETAIN

PROP. SBG

400+00

405+00

S 3°19'01.0" W

-L-

BL-I40

I-40 WBL 35' CONC

I-40 EBL 47' CONC

10' CONC

10' BST

LATERAL V DITCH SEE DETAIL H

LATERAL V SWALE SEE DETAIL AN

TOE PROTECTION W/CL B RIPRAP SEE DETAIL O

LATERAL V DITCH W/CL I RIPRAP SEE DETAIL AB

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

RIP RAP AT EMBANKMENT SEE DETAIL BA

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

SEE C800 OUTLET DETAIL -L2- STA. 405+38

SEE C800 INLET DETAIL -L2- STA. 405+38

SR. DET. HW

PDE

BZ 1

BZ 2

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 63 OF 125

ENGLISH

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

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –L– STA. 396+00 SEE SHEET 33

MATCHLINE –L– STA. 409+00 SEE SHEET 35

INSET A

INSET B

INSET C

SEE INSET A

SEE INSET B

SEE INSET C

SITE 29

SITE 30

SITE 31

SEK

WFF

WEF

WEC

SEL

KENNETH REID WALTERS

DAVID PENNY EXEC.

33 TONS CL I RIP RAP W/62 SY GEOTEXTILE ON BANKS ONLY LENGTH = 45' (SEE DETAIL BB)

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

SEE C800 OUTLET DETAIL –L2– STA. 405+38

SEE C800 INLET DETAIL –L2– STA. 405+38

TRENCHLESS INSTALLATION OF STRUCTURAL LINER

LATERAL V DITCH SEE DETAIL H

LATERAL V SWALE SEE DETAIL AN

TOE PROTECTION W/CL B RIPRAP SEE DETAIL O

LATERAL V DITCH W/CL I RIPRAP SEE DETAIL AB

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

RIP RAP AT EMBANKMENT SEE DETAIL BA

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5/14/99

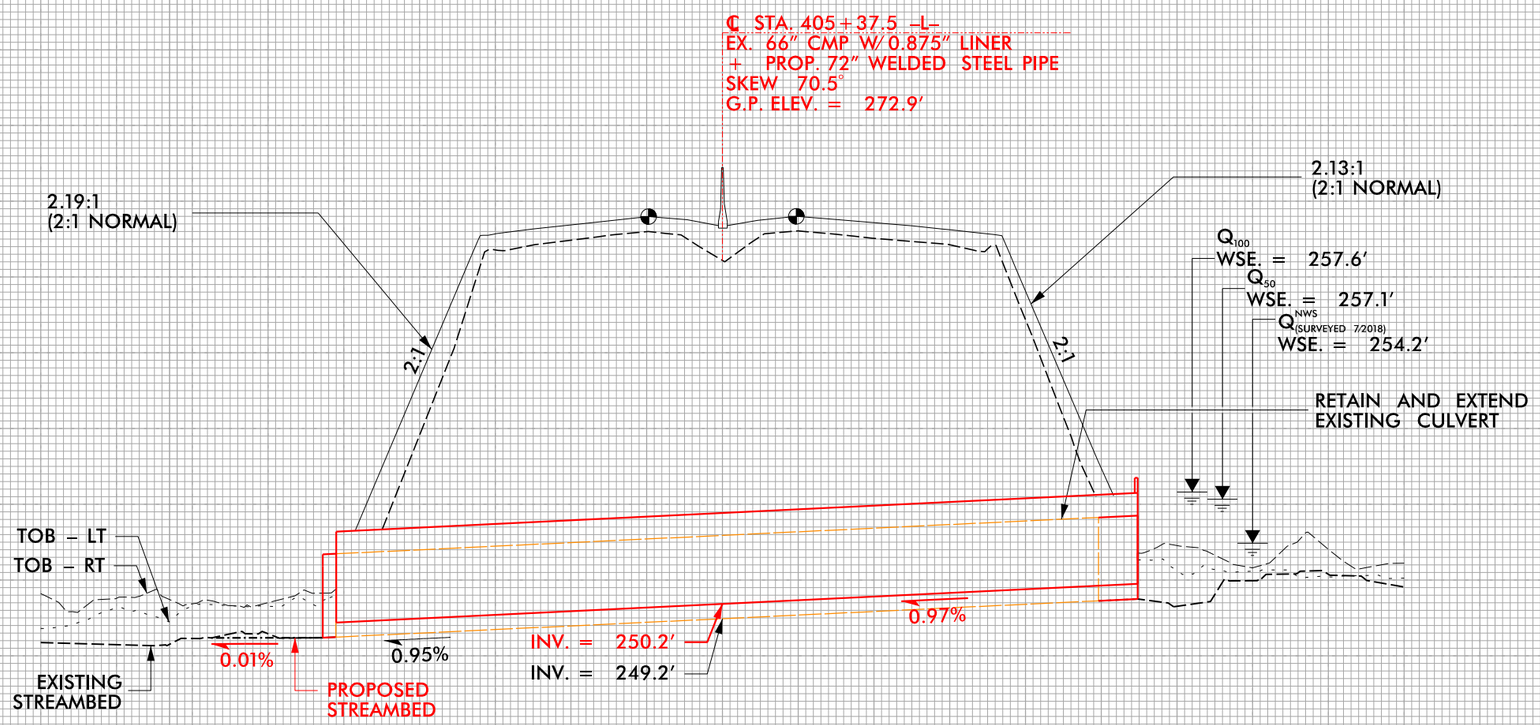
PROJECT REFERENCE NO.	SHEET NO.
1-5111/1-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 64 OF 125

SITE 31
–L– 405+37.5



EXISTING 66" CMP, LINED WITH STRUCTURAL LINER + PROPOSED TRENCHLESS 72" WELDED STEEL (NOT BURIED) (length = 265')

PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

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6/23/16

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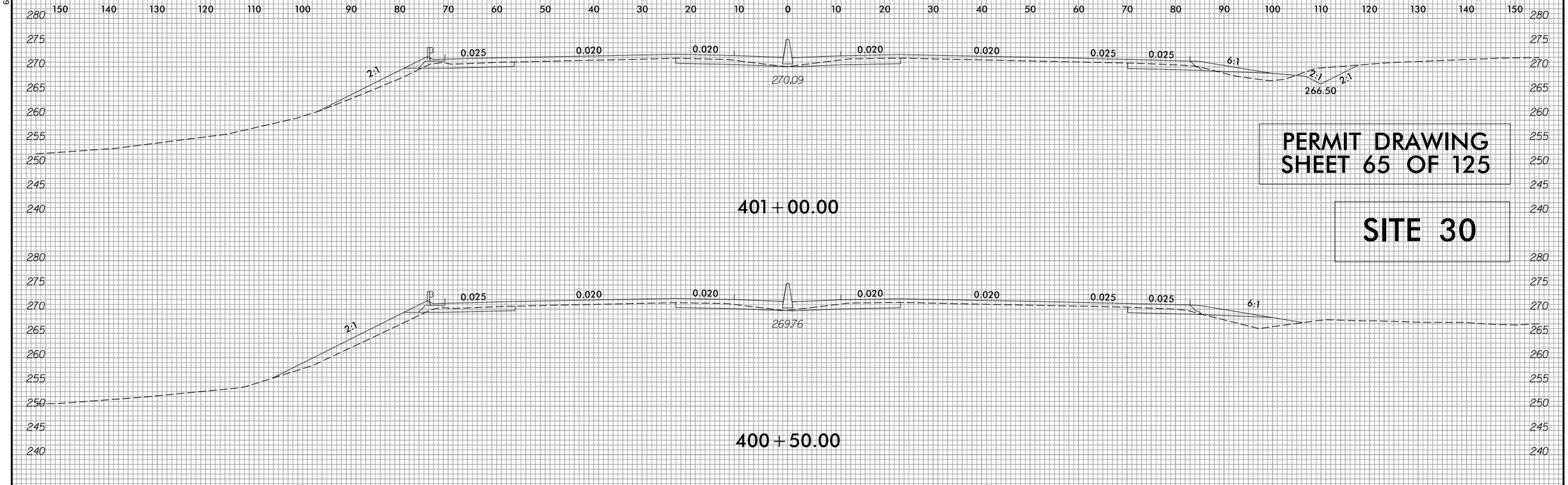
	I-5111/I-4739	X-124



PERMIT DRAWING
SHEET 65 OF 125

SITE 30

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SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 66 OF 125

ENGLISH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

INSET A

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L- STA. 409+00
SEE SHEET 34

MATCHLINE -L- STA. 422+00
SEE SHEET 36

MATCHLINE -Y8RPC- STA. 16+80
SEE SHEET 36

MOLLIE F. PENNY

DAVID PENNY EXEC.

JIMMY LEE PENNY

REBECCA A. NORRIS

INTERMITTENT BEGINS

PERENNIAL BEGINS

WFE

SEV

SITE 32

SEE INSET A

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

8 TONS CL B RIP RAP W/21 SY GEOTEXTILE OPT RANGE ONLY LENGTH =10 (SEE DETAIL BB)

Conv DI TO DB w/MH

2GIB-WSS

18" RCP-III

24" RCP-III

24" CSP 2 ELBOWS

PLUG & FILL W/FLOWABLE FILL

REMOVE

RETAIN

TB 2GIB-ST

TB 2GIA-ST

18" RCP END UNKNOWN

Adj. 2GI

SOLAR PANEL

PDE

BDO

-Y8RPC- ST Sta. 10+04.38 =
-L- POT Sta. 415+89.83 (59' LT)

-Y8RPC- SC Sta. 11+84.38

S 3°19'01.0" W

S 64°49'38.9" E

410+00 415+00 420+00 10+00 15+00

48" WW & ISBW

EXISTING R/W

R/W MON

10' CONC

10' BST

I-40 WBL 47' CONC

I-40 EBL 35' CONC

22' CONC

24' BST

CABLE

GREU TL-3

PROP. SBG

-L-

-FL-

-Y8RPC-

-FY7RPC-

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8/17/99

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 67 OF 125

ENGLISH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

INSET A

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L- STA. 409+00 SEE SHEET 34

MATCHLINE -L- STA. 422+00 SEE SHEET 36

MATCHLINE -Y8RPC- STA. 16+80 SEE SHEET 36

INTERMITTENT BEGINS

PERENNIAL BEGINS

WFE

SEV

SITE 32

SEE INSET A

MOLLIE F. PENNY

DAVID PENNY EXEC.

JIMMY LEE PENNY

REBECCA A. NORRIS

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

8 TONS CL B RIP RAP W/21 SY GEOTEXTILE ORT BANKS ONLY LENGTH = 10' (SEE DETAIL BB)

Conv DI TO JB w/MH

2GIB-WSS

18" RCP-III

24" RCP-III

24" CSP 2 ELBOWS

TB 2GIB-ST

TB 2GIA-ST

RETAIN

REMOVE

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 24" WELDED STEEL

PDE

BDO

-Y8RPC- ST Sta. 10+04.38 = -L- POT Sta. 415+89.83 (59' LT)

-Y8RPC- SC Sta. 11+84.38

S 3°19'01.0" W

S 64°49'38.9" E

410+00 415+00 420+00

10+00 15+00

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Features

REVISIONS

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

SCALE FOR INSET 25 0 25 50

SCALE 50 25 0 50 100

PERMIT DRAWING SHEET 68 OF 125

ENGLISH

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	37
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET C

INSET B

INSET A

MATCHLINE –L– STA. 435+00 SEE SHEET 36

MATCHLINE –L– STA. 461+00 SEE SHEET 38

MATCHLINE –Y8RPC– STA. 29+00 SEE SHEET 36

MATCHLINE –Y8RPB– STA. 32+50 SEE SHEET 63

MATCHLINE –Y8LPC– STA. 43+00 SEE SHEET 63

MATCHLINE –Y8RPC– STA. 40+00 SEE SHEET 63

A

B

C

SITE 33 SDT

SITE 34 WFB

SITE 35 SDS

WFA WFC WFD WEK WEL WEJ SDQ SDR SDU

SEE INSET A

SEE INSET B

SEE INSET C

SPECIAL LATERAL V DITCH SEE DETAIL AJ

REMOVE 47' EX. 24"

15" CSP 2 ELBOWS BDO

END GRADE –Y8RPB– POC Sta.11+90.00 BEGIN OVERLAY

END GRADE –Y8LPC– POC Sta.14+55.00 BEGIN OVERLAY

–Y8RPB– ST Sta.10+00.00 = –L– POT Sta.436+43.38 (TF RT)

–Y8RPB– SC Sta.12+40.00

–Y8LPC– ST Sta.10+00.00 = –L– POT Sta.440+61.4 (159' LT)

–Y8LPC– SC Sta.12+40.00

–Y8LPC– SC Sta.22+16.43

–Y8LPC– CS Sta.19+21.16

–Y8RPC– TS Sta.32+16.52

–Y8RPC– SC Sta.35+41.80

–Y8RPC– CS Sta.39+10.92

MARY POWELL WARD WHITE

NC DEPARTMENT OF TRANSPORTATION

CH YOUNG PROPERTIES, LLC.

RKK CONSULTANTS 301 Yamacraw Office Park 300 Phillips, North Carolina 27834-9466 Fax: (252) 752-4429 Engineering | Construction Managers | Planners | Surveyors WWW.RKK.COM

LOCATION:	
TIP NO.:	COUNTY:
DESIGNED BY:	
CHECKED BY:	DATE:

GRAPHIC SCALE 50 25 0 50 100 PLANS

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REVISIONS

SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

PERMIT DRAWING SHEET 69 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-6139	37
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -Y8RPB- STA. 32+50 SEE SHEET 63

MATCHLINE -Y8LPC- STA. 43+00 SEE SHEET 63

MATCHLINE -Y8RPC- STA. 40+00 SEE SHEET 63

MATCHLINE -L- STA. 435+00 SEE SHEET 36

MATCHLINE -L- STA. 461+00 SEE SHEET 38

MATCHLINE -Y8RPC- STA. 29+00 SEE SHEET 36

INSET C

INSET B

INSET A

A

B

C

SITE 33 SDT

SITE 34 WFB

SITE 35 SDS

SITE 33 SDT

SDQ

SDR

WFA

WFC

WFD

WEK

WEL

WEJ

SEE INSET A

SEE INSET B

SEE INSET C

SDU

SDT

-Y8RPB- ST Sta.10+00.00 = -L- POT Sta.436+43.38 (LT RT)

-Y8RPB- SC Sta.12+40.00

-Y8RPB- TS Sta.32+16.52

-Y8RPB- CS Sta.39+10.92

-Y8RPC- ST Sta.10+00.00 = -L- POT Sta.440+61.74 (LT RT)

-Y8RPC- SC Sta.12+40.00

-Y8RPC- TS Sta.32+16.43

-Y8RPC- CS Sta.39+10.80

-Y8LPC- ST Sta.11+09.72

-Y8LPC- SC Sta.12+40.00

-Y8LPC- SC Sta.22+16.43

-Y8LPC- CS Sta.19+21.06

END GRADE -Y8RPB- POC Sta.11+50.00 BEGIN OVERLAY

END GRADE -Y8LPC- POC Sta.14+55.00 BEGIN OVERLAY

HP

2.22% 0.65%

BZ 2

INV=269.19'

54" RCP-IV

REMOBZ 1

15" CSP 2 ELBOWS BDO

SPECIAL LATERAL V DITCH SEE DETAIL AJ

REMOVE 47' EX. 24"

BZ 1

BZ 2

RKK

LOCATION:	
TIP NO.:	COUNTY:
DESIGNED BY:	
CHECKED BY:	DATE:

GRAPHIC SCALE 50 25 0 50 100 PLANS

4/10/2019
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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-146

PERMIT DRAWING
SHEET 70 OF 125

4/15/2019
Alignments
Fkeys

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 71 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET A

INSET B

INSET C

COLLAR AND EXTEND 18" RCP-III

MATCHLINE -Y8RPA- STA. 22+00 SEE SHEET 63

JOHNSTON COUNTY
WAKE COUNTY

-Y8RPA-

20+00

-Y8RPA- PCC Sta. 14+01.80

SITE 37

SITE 38

Q10=30.0 cfs
V10=1.22 f/s

WEZ

JS BEGINS

STANDARD 2' BASE DITCH W/CL B RIPRAP SEE DETAIL F

STANDARD 'V' DITCH SEE DETAIL S

3 TONS CL B RIPRAP W/10 SY GEOTEXTILE

11 TONS CL B RIPRAP W/28 SY GEOTEXTILE

SEE INSET B

SEE INSET C

REMOVE DI AND EX. 15" RCP

2GIB-WSS

18" RCP-III

15" RCP-III

ADJUST DI

RETAIN & ADJUST EXISTING HAZARDOUS SPILL BASIN AS NEEDED TO SAME APPROX. DIMENSIONS.

36" RCP-IV (NOT BURIED)

PLUG & FILL W/FLOWABLE FILL

HW W/SLUICE GATE

INV=241.46'

INV=241.48'

SPECIAL CUT DITCH SEE DETAIL B

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

ADJUST JB W/MH

TOP=255.36'

18" CSP REMOVE

15" RCP REMOVE

15+00

-Y7RPD-

CONC PAVED DITCH

CAT-1

MATCHLINE -L- STA. 461+00 SEE SHEET 37

MATCHLINE -L- STA. 474+00 SEE SHEET 39

465+00

470+00

10' BST

I-40 WBL 35' BST

I-40 EBL 35' BST

-L-

-Fl-

BL -145

S 3°19'01.0" W

TB 2GIB-ST

15" RCP-III

RETAIN

REMOVE SYSTEM

15" PROP. SBG

(2)-2GIB-WSF

10' CONC

CAT-1

LATERAL V SWALE SEE DETAIL AN

2GIB-WSS

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

RETAIN DI

FS

SPECIAL LATERAL V SWALE SEE DETAIL AE

SPECIAL LATERAL V DITCH SEE DETAIL AJ

TRENCHLESS INSTALLATION 36" WELDED STEEL

45° ELBOWS

15 TONS CL I RIPRAP W/30 SY GEOTEXTILE ON BANKS ONLY LENGTH=30' (SEE DETAIL BB)

SEE INSET A

SDO

SITE 36

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4/15/2019 jbaulos
Ekes

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SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 72 OF 125

ENGLISH

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

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET A

INSET B

INSET C
COLLAR AND EXTEND 18" RCP-III

MATCHLINE -Y8RPA- STA. 22+00 SEE SHEET 63

JOHNSTON COUNTY
WAKE COUNTY

-Y8RPA-

20+00

-Y8RPA- PCC Sta. 14+01.80

SITE 37

SITE 38

Q10=30.0 cfs
V10=1.22 fps

WEZ

JS BEGINS

STANDARD 'V' DITCH SEE DETAIL 5

3 TONS CL B RIPRAP W/10 SY GEOTEXTILE

STANDARD 2' BASE DITCH W/CL B RIPRAP SEE DETAIL F

11 TONS CL B RIPRAP W/28 SY GEOTEXTILE

SEE INSET B

SEE INSET C

REMOVE DI AND EX. 15" RCP

2GIB-WSS

18" RCP-III

15" RCP-III

FS

RETAIN & ADJUST EXISTING HAZARDOUS SPILL BASIN AS NEEDED TO SAME APPROX. DIMENSIONS.

ADJUST DI

REMOVE EX. 18" RCP

36" RCP-IV (NOT BURIED)

PLUG & FILL W/FLOWABLE FILL

HW W/SLUICE GATE

INV=24.46'

SPECIAL CUT DITCH SEE DETAIL C

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

ADJUST JB WMH

TOP=255.36'

18" CSP W/ 2 ELBOWS

15+00

-Y7RPD-

CONC. PAVED DITCH

CAT-1

MATCHLINE -L- STA. 461+00 SEE SHEET 37

MATCHLINE -L- STA. 474+00 SEE SHEET 39

465+00

470+00

-L-

BL-I45

S 3°19'01.0" W

TB 2GIB-ST

15" RCP-III

RETAIN

I-40 WBL 35' BST

I-40 EBL 35' BST

10' BST

REMOVE SYSTEM

15" DPROP. SBG

(2)-2GIB-WSF

15" RCP-III

CAT-1

15" RCP-III

2GIB-WSS

LATERAL V SWALE SEE DETAIL AN

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

TRENCHLESS INSTALLATION 36" HDPE ALTERNATE

SPECIAL LATERAL V SWALE SEE DETAIL AE

SPECIAL LATERAL V DITCH SEE DETAIL AJ

13 TONS CL II RIPRAP W/30 SY GEOTEXTILE ON BANKS ONLY LENGTH=20' (SEE DETAIL BB)

SEE INSET A

SDO

SITE 36

4/15/2019
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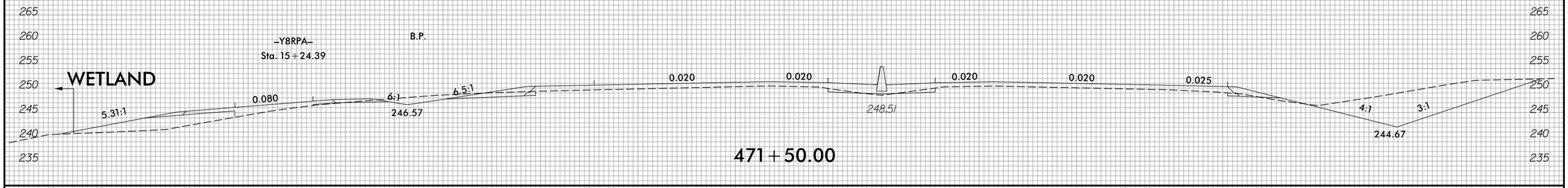
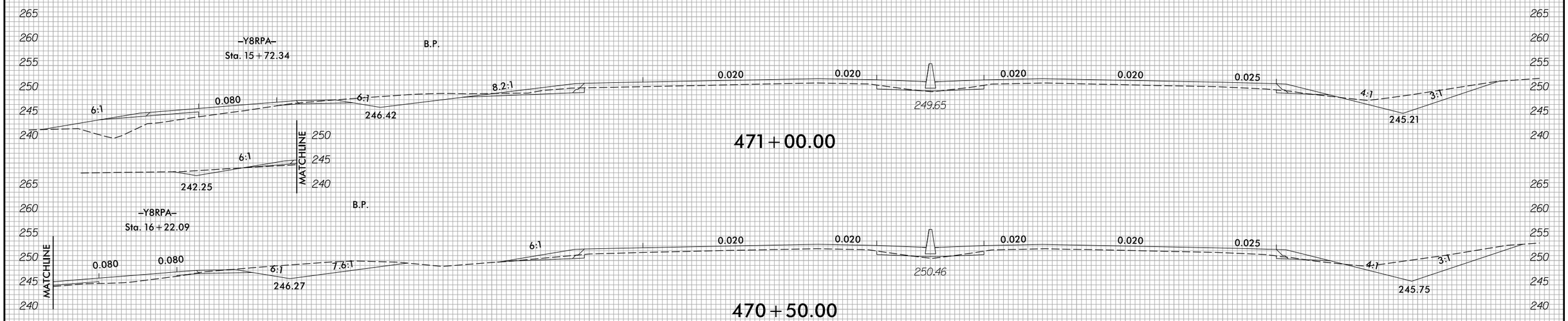
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-157

PERMIT DRAWING
SHEET 73 OF 125

SITE 37

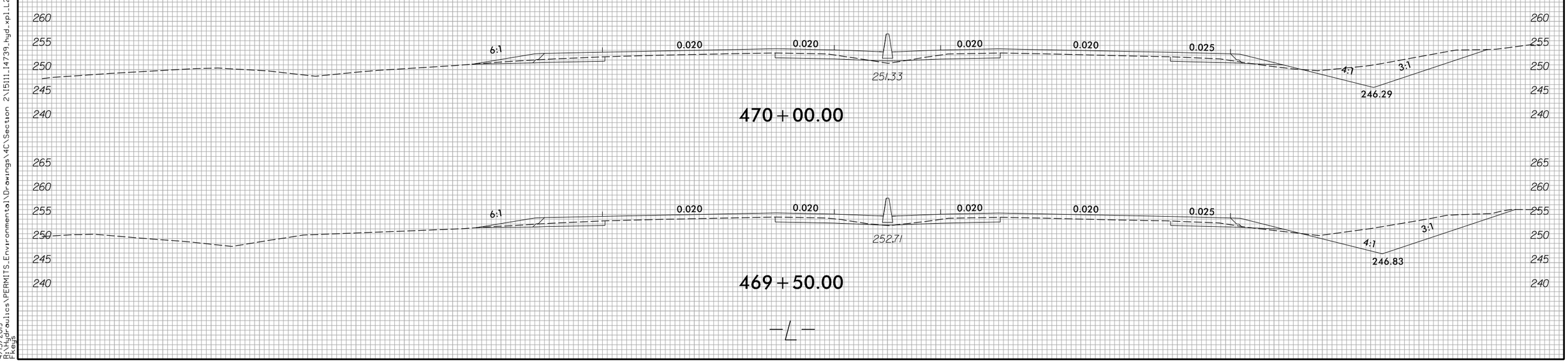


471+50.00



471+00.00

470+50.00



470+00.00

469+50.00

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	61
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

25 0 25 50
SCALE FOR INSET
50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 74 OF 125

ENGLISH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

INSET A

48" RCP-III
TB
JS
TS
BZ 1
BZ 2

MATCHLINE -Y5RPC- STA. 62+00 SEE SHEET 22

MATCHLINE -Y5RPA- STA. 23+00 SEE SHEET 22

-Y5RPC- N 74° 26' 43.9" E

65+00

25+00

-Y5RPA-

30+00

70+00

SPECIAL CUT DITCH SEE DETAIL B

REPAIR EXISTING CONCRETE DITCH & EXTEND AN ADDITIONAL 10'

INV=307.92'

RETAIN SYSTEM

TB 2GIB-ST

15" CSP 2 ELBOWS

1 TON CL B RIPRAP W/ 5" SY GEOTEXTILE

SITE 17C

SOE

PERDO INC.

-Y5RPA- PCC Sta. 27+88.58

SP. LAT. V SWALE SEE DETAIL AE

END CONSTRUCTION
-Y5RPA- POC Sta. 29+36.35

MATCHLINE -Y5- STA. 44+50 SEE SHEET 21

MATCHLINE -Y5RPB- STA. 43+00 SEE SHEET 21

-Y5- PC Sta. 45+18.59

45+00

45+00

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL F

SPECIAL CUT DITCH SEE DETAIL B

RETAIN DI

RETAIN 15" RCP

RETAIN 18" END UNKNOWN

RETAIN 15" RCP

HW

2GIA NSS

BY4-157

10' WIDE BERM TOP ELEV=314.0' SEE DETAIL J

REMOVE SYSTEM

SEE INSET A

SPECIAL CUT SWALE SEE DETAIL E

DUKE REALTY LAND, LLC

STANDARD 4' BASE DITCH W/CL II RIP RAP SEE DETAIL F

SITE 59

SRN

SPECIAL CUT DITCH SEE DETAIL E

SRO

END CONSTRUCTION
-Y5RPB- POC Sta. 46+45.00

-Y5RPB- PT Sta. 46+90.14

RETAIN SYSTEM

RETAIN DI

-Y5RPB- TS Sta. 69+61.17

-Y5RPC- SC Sta. 71+41.17

REPAIR 20 +/- OF 18" RCP WHERE OUTLET HAS SEPERATED FROM HW (RECONNECT)

RETAIN DI

RETAIN

50+00

-Y5RPA-

DUKE CONSTRUCTION LTD PTNRP

-Y5RPC-

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Eksun

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	61
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

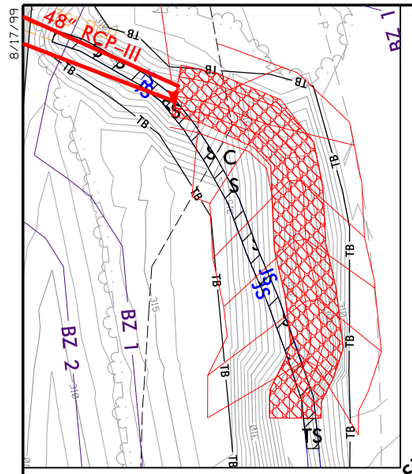
PERMIT DRAWING
SHEET 75 OF 125

ENGLISH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83



INSET A

MATCHLINE -Y5RPC- STA. 62+00 SEE SHEET 22

MATCHLINE -Y5RPA- STA. 23+00 SEE SHEET 22

-Y5RPC- N 74° 26' 43.9" E

65+00

25+00

-Y5RPA-

SPECIAL CUT DITCH SEE DETAIL B

REPAIR EXISTING CONCRETE DITCH & EXTEND AN ADDITIONAL 10'

RETAIN SYSTEM

TB 2GIB-ST

15" CSP 2 ELBOWS

1 TON CL B RIPRAP W/ S.Y. GEOTEXTILE

SITE 17C

SOE

PERSO INC.

-Y5RPA- PCC Sta. 27+88.58

END CONSTRUCTION
-Y5RPA- POC Sta. 29+36.35

SP LAT V SWALE SEE DETAIL AE

30+00

70+00

-Y5RPC- TS Sta. 69+61.17

-Y5RPC- SC Sta. 71+41.17

-Y5RPC- CS Sta. 73+41.17

-Y5RPC- ST Sta. 75+21.17

-Y5RPC- PCC Sta. 75+41.17

-Y5RPC- POC Sta. 75+61.17

-Y5RPC- EC Sta. 77+41.17

MATCHLINE -Y5- STA. 44+50 SEE SHEET 21

-Y5- PC Sta. 45+18.59

45+00

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL F

RETAIN DI

RETAIN

SPECIAL CUT DITCH SEE DETAIL B

10' WIDE BERM TOP ELEV=314.0' SEE DETAIL J

END CONSTRUCTION
-Y5RPB- POC Sta. 46+45.00

-Y5RPB- PT Sta. 46+90.14

RETAIN SYSTEM

MATCHLINE -Y5RPB- STA. 43+00 SEE SHEET 21

REMOVE SYSTEM

SEE INSET A

SPECIAL CUT SWALE SEE DETAIL E

DUKE REALTY LAND, LLC

STANDARD 4' BASE DITCH W/CL II RIP RAP SEE DETAIL F

SITE 59

SRN

SPECIAL CUT DITCH SEE DETAIL E

SRO

50+00

REPAIR 20+/- OF 18" RCP WHERE OUTLET HAS SEPERATED FROM HW (RECONNECT)

DUKE CONSTRUCTION LTD PTNRP

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

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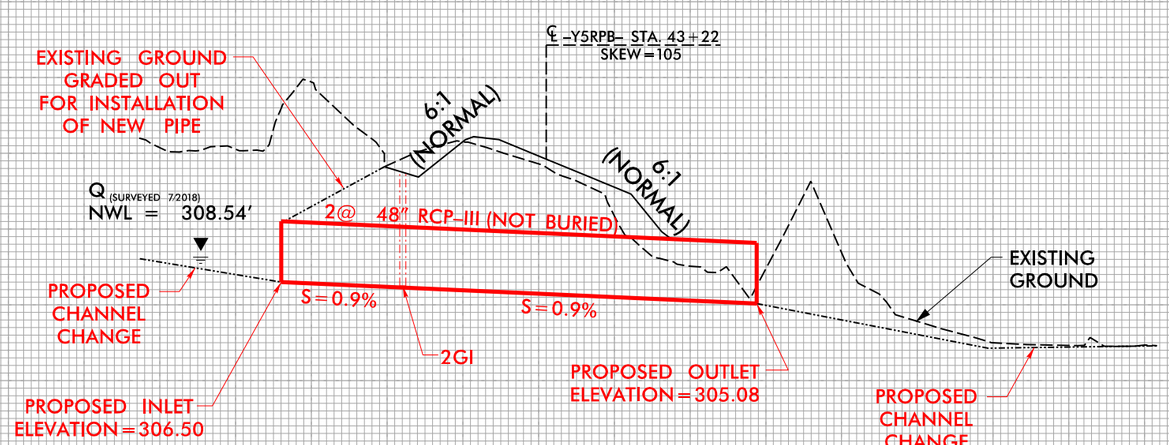
PERMIT DRAWING
SHEET 76 OF 125

SITE 59
–Y5RPB– 43+22



PROPOSED 2@48" RCP–III (NOT BURIED)
(length=157')

PLANS PREPARED BY :

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4/15/2019
Ekaterina Ivanova
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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	63
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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DO NOT USE FOR R/W ACQUISITION

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NAD 83

MATCHLINE –Y8RPB– STA. 32+50 SEE SHEET 37

MATCHLINE –Y8LPC– STA. 43+00 SEE SHEET 37

MATCHLINE –Y8RPC– STA. 60+00 SEE SHEET 37

MATCHLINE –Y8RPA– STA. 22+00 SEE SHEET 38

SET

SITE 60

WFI

WEY

WEX

SET

SITE 60

INSET B

SEE INSET B

SEE INSET A

INSET A

HP

–Y8RPA– STA. 28+45.64

REMOVE 15"METAL SILL (NO SILL DOWNSTREAM AND NOT SERVING ITS INTENDED PURPOSE)

RETAIN SYSTEM

RETAIN CB

RETAIN DI

CONC PAVED DITCH

SPECIAL CUT SWALE SEE DETAIL E

GRADE TO DRAIN

REMOVE CB

REMOVE

PLUG & FILL W/FLOWABLE FILL

GRADE PAVEMENT REMOVAL AREA TO DRAIN TO HW 6300

LINE CUT DITCH TRANSITION 2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

5 TONS CL B RIPRAP W/14 SY GEOTEXTILE

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

20 TONS CL I RIPRAP W/39 SY GEOTEXTILE

48 TONS CL I RIPRAP W/89 SY GEOTEXTILE ON BANKS ONLY LENGTH=22' (SEE DETAIL BB)

LATERAL V SWALE SEE DETAIL AN

Q10=14.0 cfs
V10=1.86 fps

Q10=4.2 cfs
V10=1.86 fps

0.35%

1.77%

HAZARDOUS SPILL BASIN SEE 2D-7

SLUICE GATE

WAKE COUNTY
JOHNSTON COUNTY

SCALE FOR INSET
25 0 25 50

SCALE
50 25 0 50 100

PERMIT DRAWING SHEET 77 OF 125

ENGLISH

DENOTES TEMPORARY FILL IN WETLAND

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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Flair

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	63
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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NAD 83

SET
SITE 60

WFI

WEY

WEX

SET

HP
-Y8RPA- STA. 28+45.64

INSET B

SEE INSET B

SEE INSET A
SITE 60

INSET A

MATCHLINE -Y8RPB- STA. 32+50
SEE SHEET 37

MATCHLINE -Y8LPC- STA. 43+00
SEE SHEET 37

MATCHLINE -Y8RPC- STA. 60+00
SEE SHEET 37

MATCHLINE -Y8RPA- STA. 22+00
SEE SHEET 38

-Y8RPB-
-Y8LPC-
-Y8RPC-
-Y8RPA-
-FY7RPB-
-FY7RPC-

RETAIN SYSTEM
REMOVE 15"METAL SILL (NO SILL DOWNSTREAM AND NOT SERVING ITS INTENDED PURPOSE)
RETAIN CB
RETAIN DI
SPECIAL CUT SWALE SEE DETAIL E
GRADE TO DRAIN
REMOVE CB
REMOVE
PLUG & FILL W/FLOWABLE FILL
GRADE PAVEMENT REMOVAL AREA TO DRAIN TO HW 6300
2GIB-WSS
2GIB-WSF
FS
COLLAR AND EXTEND 60" RCP-III
COLLAR AND EXTEND 15" RCP-III
JB w/MH
GIB-WSF
15" CSP ELBOWS
60" RCP
66" RCP-III
15" RCP-III
24" RCP
30" RCP
42" RCP
48" RCP
5 TONS CL B RIPRAP W/14 SY GEOTEXTILE
2 TONS CL B RIPRAP W/7 SY GEOTEXTILE
20 TONS CL I RIPRAP W/39 SY GEOTEXTILE
48 TONS CL I RIPRAP W/89 SY GEOTEXTILE ON BANKS ONLY LENGTH=22' (SEE DETAIL BB)
LATERAL V SWALE SEE DETAIL AN
UNE CUT DITCH TRANSITION 2 TONS CL B RIPRAP W/7 SY GEOTEXTILE
HAZARDOUS SPILL BASIN SEE 2D-7
SLUICE GATE
Q10=14.0 cfs
V10=1.86 fps
Q10=4.2 cfs
V10=1.86 fps
0.35%
1.77%
S 58° 46' 31.41" E

SCALE FOR INSET
25 0 25 50

SCALE
50 25 0 50 100

PERMIT DRAWING SHEET 78 OF 125

ENGLISH

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

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

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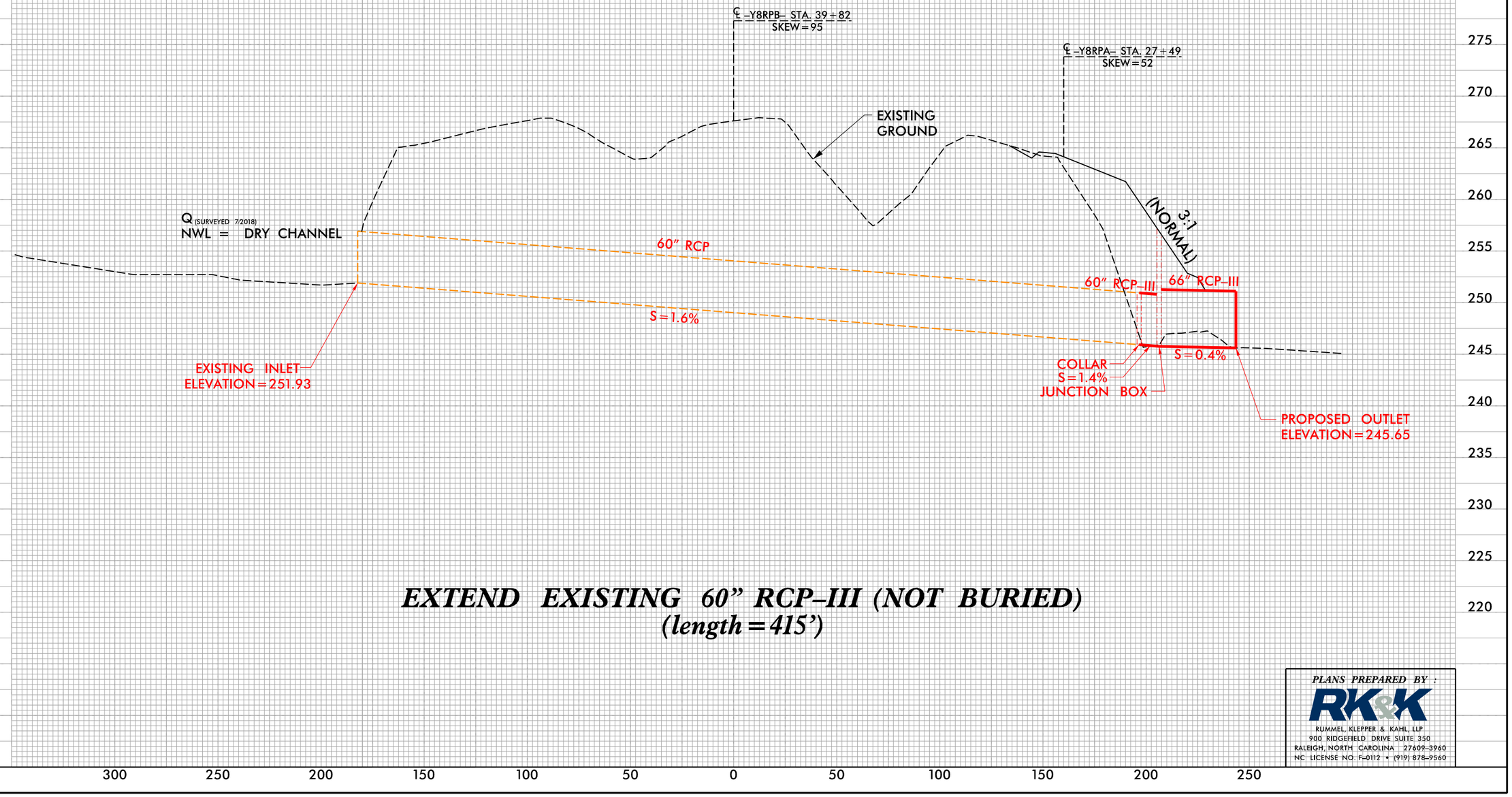
PERMIT DRAWING
SHEET 79 OF 125

SITE 60
–Y8RPB 39+82



EXTEND EXISTING 60" RCP–III (NOT BURIED)
(length=415')

PLANS PREPARED BY :
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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-224

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PERMIT DRAWING
SHEET 80 OF 125

SITE 60

-Y8RPA-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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PERMIT DRAWING
SHEET 81 OF 125

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SES

NAD 83

WEM

THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)

39

SHEET FOR INFORMATION ONLY– NO IMPACTS

LP
–L3– STA. 96+25.50 LT
1.98% 2.40%

MATCHLINE –L– STA. 85+00 SEE SHEET 39

MATCHLINE –L– STA. 98+00 SEE SHEET 41

RW MON

EXISTING R/W

LATERAL 4' BASE DITCH SEE DETAIL R

BIORETENTION BASIN

15 TONS CL I RIPRAP W/20 SY GEOTEXTILE

36" RCP–III

RISER STRUCTURE

2GID–WSS

FS

REMOVE DI & 20' EX. 15"

15" RCP–III

JB w/MH

24" RCP–III

18" RCP–III

2GIB–WSF

SP. DET. JB w/MH

HW

60" RCP–III

PROP. SBG

RETAIN

18" RCP–III REMOVE DI

TB 2GIB–ST

REMOVE 7' & EX. DI

PLUG & FILL W/FLOWABLE FILL

90+00

95+00

S 3°19'01" W

RETAIN AND CLEAN OUT 90° EQUALIZER PIPE

Conv. DI TO JB w/MH

30" RCP–III

2GIA–WSS

45° CSP ELBOWS

REMOVE

LATERAL 4' BASE SWALE SEE DETAIL U

8 TONS CL B RIP RAP W/21 SY GEOTEXTILE

2GIA–WSF

24" RCP–III

PROP. SBG

COLLAR AND EXTEND 60" RCP–III

ARMOR SLOPE W/ CL II RIPRAP UP TO 100–YR ELEV=201.7'

42" RCP–III

20 TONS CL I RIPRAP W/39 SY GEOTEXTILE

THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)

39

WEQ

1.96% 2.40%

LP
–L3– STA. 96+22.00 RT

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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SHEET 82 OF 125

ENGLISH

SES

NAD 83 WEM

THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)

39

SHEET FOR INFORMATION ONLY– NO IMPACTS

MATCHLINE –L– STA. 85+00 SEE SHEET 39

MATCHLINE –L– STA. 98+00 SEE SHEET 41

–L3– STA. 96+25.50 LT
1.98% 2.40%
LP

–L3– STA. 96+22.00 RT
1.96% 2.40%
LP

BIORETENTION BASIN
RISER STRUCTURE
15 TONS CL I RIPRAP W/20 SY GEOTEXTILE
36" RCP-III
HW
SP. DET. JB w/MH
60" RCP-III
2GIB-WSF
PROP. SBG
RETAIN AND CLEAN OUT 60" EXCELTUBE PIPE
LATERAL 4' BASE DITCH SEE DETAIL R
24" RCP-III
18" RCP-III
JB w/MH
REMOVE 7' & EX. DI
PLUG & FILL W/FLOWABLE FILL
TB 2GIB-ST
15" RCP-III
S 3°19'01" W
REMOVE DI
2GID-WSS
FS
REMOVE DI & 20' EX. 15"
15" RCP-III
RETAIN
18" RCP-III REMOVE DI
Conv. DI TO JB w/MH
30" RCP-III
2GIA-WSS
REMOVE
30" CSP 3 ELBOWS
8 TONS CL B RIP RAP W/21 SY GEOTEXTILE
LATERAL 4' BASE SWALE SEE DETAIL U
2GIA-WSF
COLLAR AND EXTEND 60" RCP-III
ARMOR SLOPE W/ CL II RIPRAP UP TO 100-YR ELEV=201.7'
42" RCP-III
20 TONS CL I RIPRAP W/39 SY GEOTEXTILE
BIORETENTION BASIN
RISER STRUCTURE
THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)
39
WEQ

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	41
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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25 0 25 50
SCALE FOR INSET
50 25 0 50 100
SCALE

PERMIT DRAWING SHEET 83 OF 125

ENGLISH

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

NAD 83

MATCHLINE –L– STA. 98+00 SEE SHEET 40

MATCHLINE –L– STA. 111+00 SEE SHEET 42

SET

SITE 40
SDG

SON-LA L CLASSIC DEVELOPMENT COMPANY, LLC
DB 1832 PG 333

WEM SITE 39

SITE 41
WEP(1)

Q10=4.1 cfs
V10=0.68 ft/s

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

ARMOR SLOPE W/ CL II RIPRAP UP TO 100-YR ELEV=201.7'

SEE INSET A

SEE INSET B

BANK STABILIZATION W/CL II RIPRAP SEE DETAIL BO
*ONLY INSTALL IF LOCATION DESTABILIZES DURING CONSTRUCTION

ARMOR WALL W/ CL II RIPRAP UP TO 100-YR ELEV=201.7'

1 TONS CL B RIPRAP W/5 SY GEOTEXTILE

TOE PROTECTION W/CL II RIPRAP SEE DETAIL BJ

15" CSP 2 ELBOWS

COLLAR

2GIB-WSF

REMOVE DI & PIPE

RETAIN AND CLEAN OUT 60' EQUALIZER PIPE

-EL-WBL-
INTERSTATE 40 WBL 24' CONC

-EL-EBL-
INTERSTATE 40 EBL 24' CONC

100+00

105+00

110+00

24" RCP-III

2GIA-WSF

RIPRAP

15" RCP-III

TB 2GIB-ST

SWIFT CREEK

ROCK WEIR

WEQ

ARMOR SLOPES W/ CL II RIPRAP UP TO 100-YR ELEV=201.7'

ARMOR 2:1 SIDE SLOPES W/CL II RIPRAP UP TO SHOULDER POINT

PROPERTY LINE IS CENTER OF CREEK

SITE 40
SDG

GLENN MILLER
DB 4092 PG 377
PB 66 PG 176

THE BROWN-COWER COMPANY, LLC
DB 5037 PG 695 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)

ARMOR 2:1 SIDE SLOPES W/CL II RIPRAP UP TO SHOULDER POINT

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

SDN WEN SITE 42

SITE 43 SEO

WETLANDS BOUNDARY-PER JEN PIERCE

GLENN MILLER

INSET A

INSET B

15" CSP 2 ELBOWS

39

40

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 84 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

T DENOTES TEMPORARY FILL IN WETLAND

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	41
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 98+00 SEE SHEET 40

MATCHLINE –L– STA. 111+00 SEE SHEET 42

SET

SITE 40

SDG

WEM SITE 39

SITE 41

WEP(1)

WEQ

SITE 40 SDG

SDN WEN SITE 42

SITE 43 SEO

SON-LA CLASSIC DEVELOPMENT COMPANY, LLC
DB 1832 PG 333

GLENN MILLER
DB 4092 PG 377
BM 66 PG 176

THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)

Q10 = 4.1 cfs
V10 = 0.68 fps

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

1 TONS CL B RIPRAP W/5 SY GEOTEXTILE

SEE INSET A

SEE INSET B

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

ARMOR SLOPE W/ CL II RIPRAP UP TO 100-YR ELEV=201.7'

BANK STABILIZATION W/CL II RIPRAP SEE DETAIL BO *ONLY INSTALL IF LOCATION DESTABILIZES DURING CONSTRUCTION

ARMOR WALL W/ CL II RIPRAP UP TO 100-YR ELEV=201.7'

TOE PROTECTION W/CL II RIPRAP SEE DETAIL BJ

15" CSP 2 ELBOWS

COLLAR

2GIB-WSF

REMOVE DI & PIPE

RETAIN AND CLEAN OUT 60' EQUALIZER PIPE

-EL-WBL-

INTERSTATE 40 WBL 24" CONC

-EL-EBL-

INTERSTATE 40 EBL 24" CONC

100+00

105+00

110+00

24" RCP-III

2GIA-WSF

RIPRAP

ROCK WEIR

HW

ARMOR SLOPES W/ CL II RIPRAP UP TO 100-YR ELEV=201.7'

ARMOR 2:1 SIDE SLOPES W/CL II RIPRAP UP TO SHOULDER POINT

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

SHIFT CREEK

PROPERTY LINE IS CENTER OF CREEK

15" RCP-III

TB 2GIB-ST

INSET A

INSET B

15" CSP
2 ELBOWS

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SHEET 85 OF 125

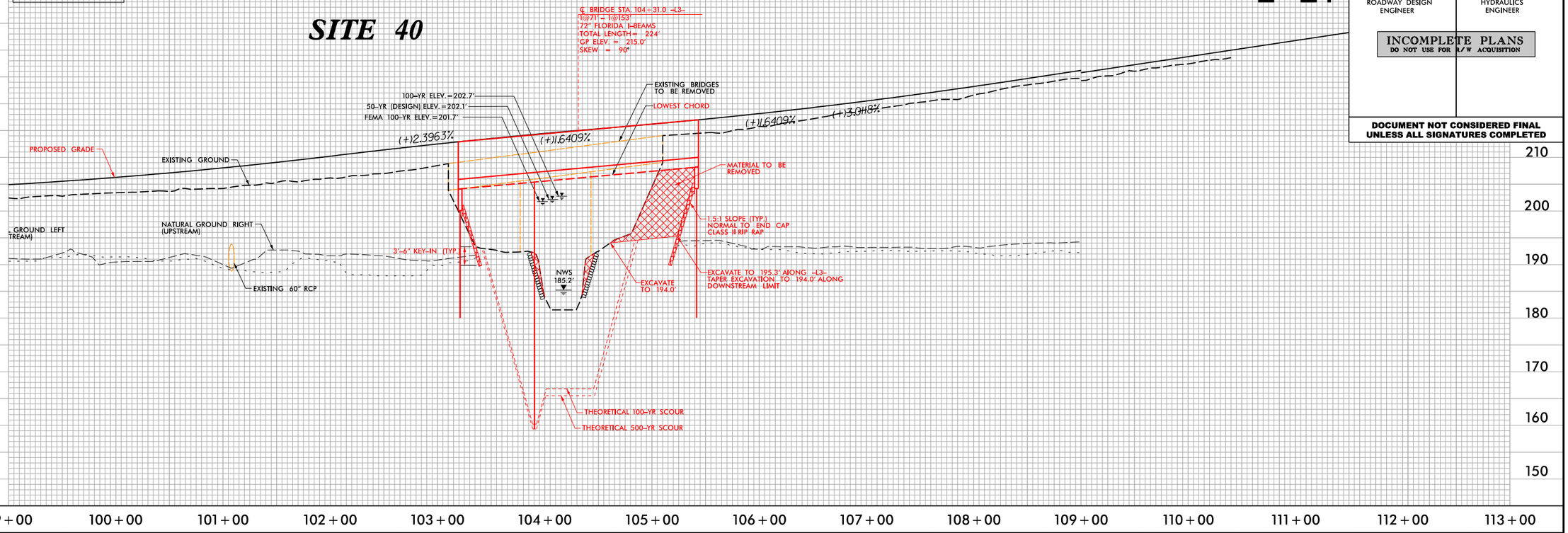
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	109
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

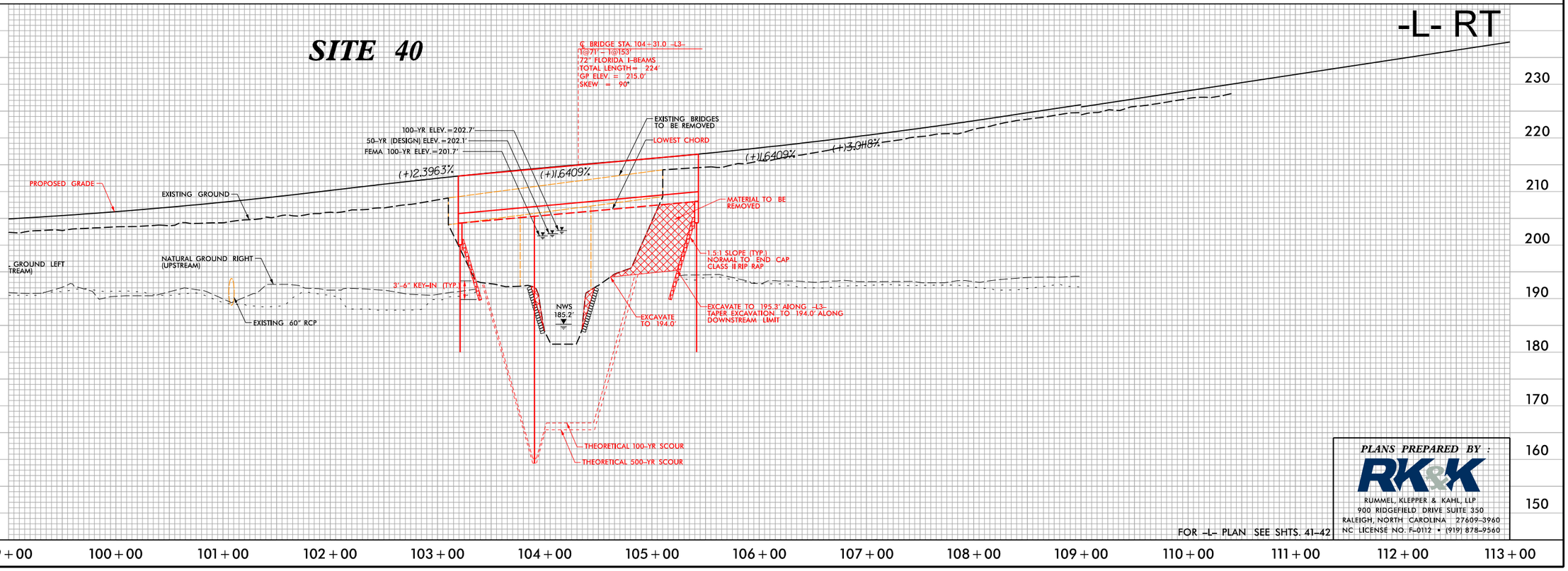
-L- LT

SITE 40



-L- RT

SITE 40



FOR –L– PLAN SEE SHTS. 41–42

PLANS PREPARED BY :
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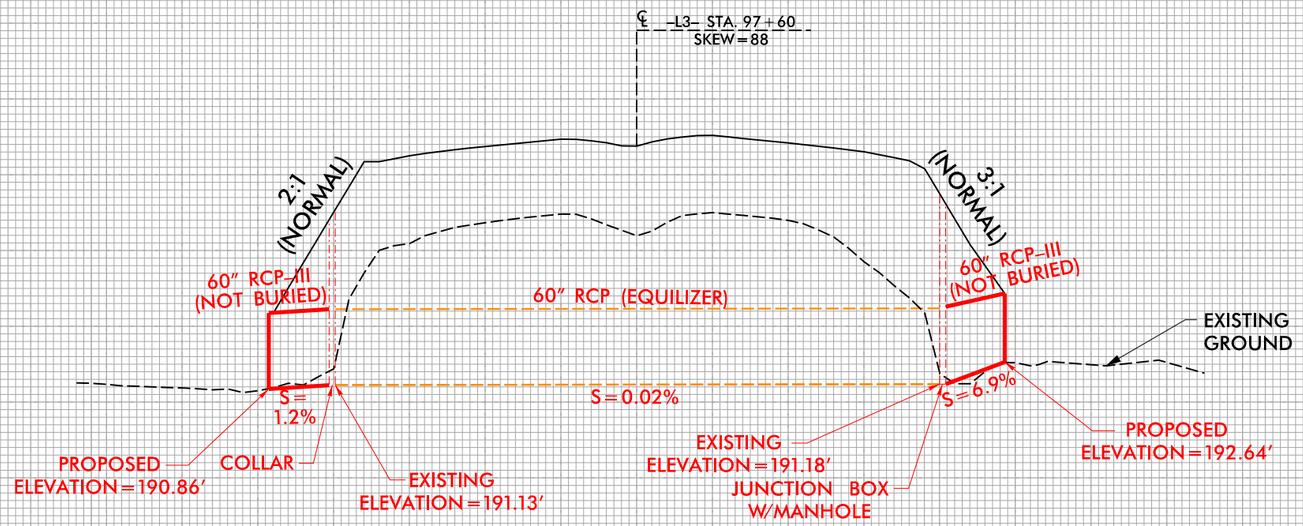
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 86 OF 125

SITE 39
-L3- 97+60



RETAIN & EXTEND EXISTING 60" RCP EQUILIZER PIPE
(length=266')

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO: F-0112 • (919) 878-9560

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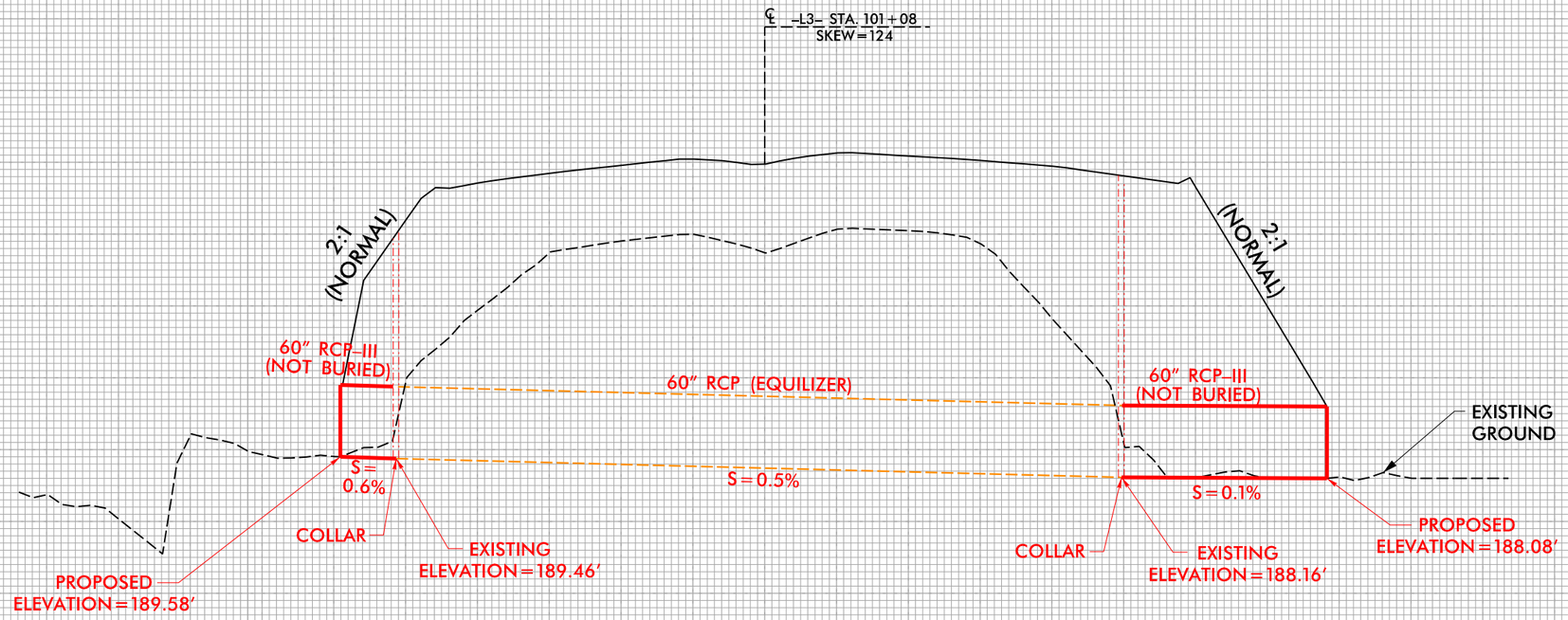
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 87 OF 125

SITE 40
–L3– 101+08



RETAIN & EXTEND EXISTING 60" RCP EQUILIZER PIPE
(length=385')

215 210 205 200 195 190 185 180 175

300 250 200 150 100 50 0 50 100 150 200 250

PLANS PREPARED BY :
RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO: F–0112 • (919) 878–9560

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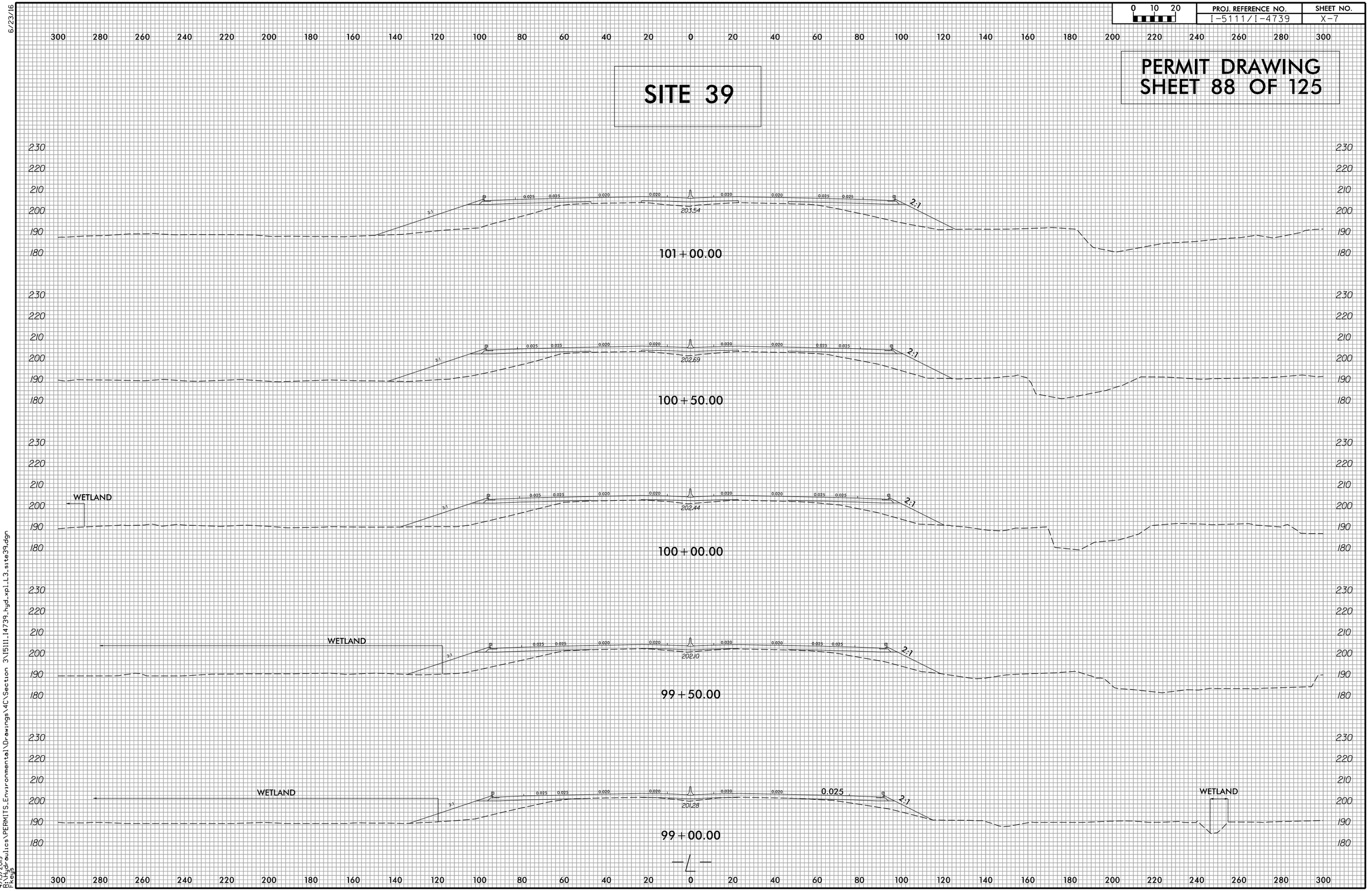
	I-5111/I-4739	X-7

SITE 39

PERMIT DRAWING
SHEET 88 OF 125



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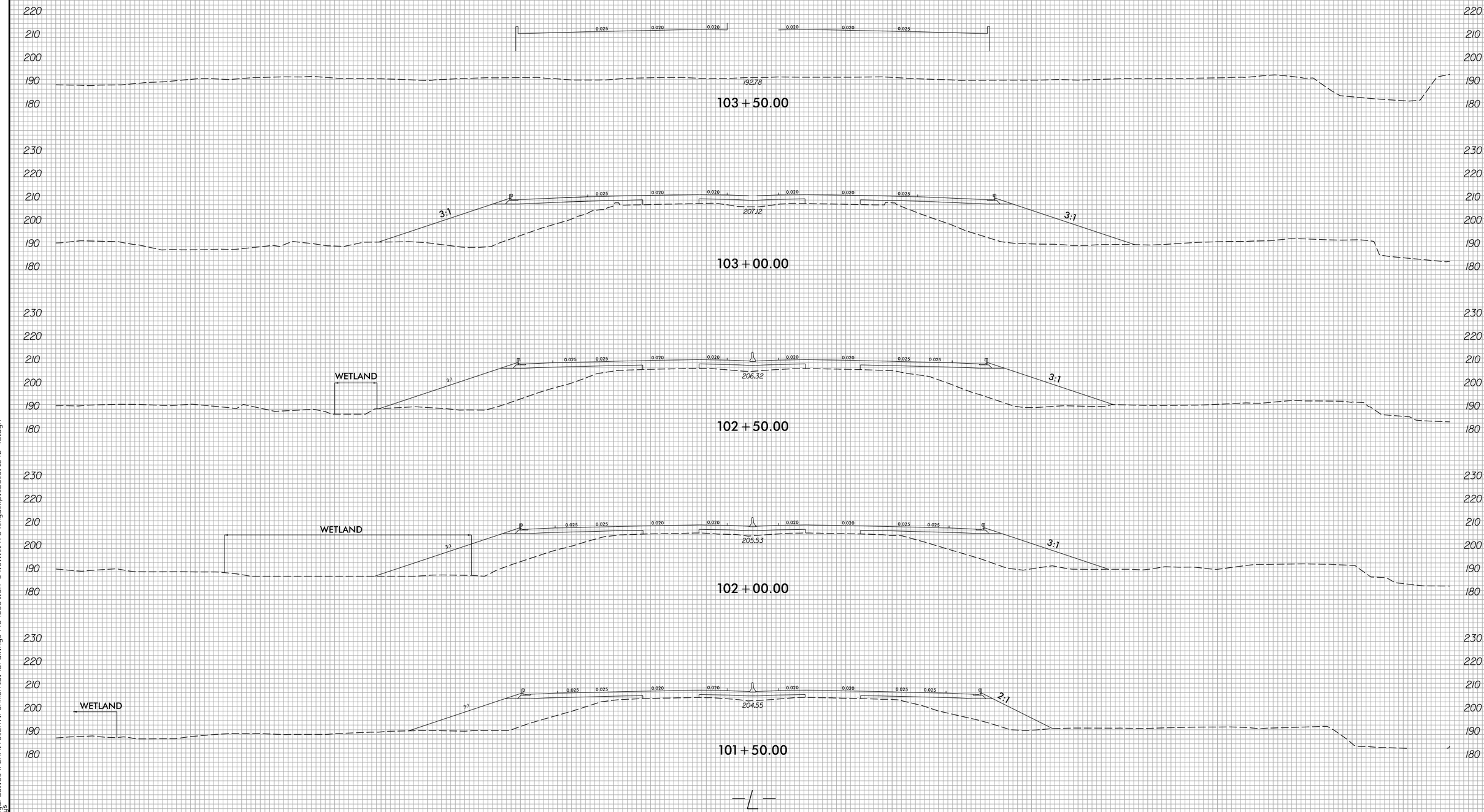
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-8

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

SITE 40

PERMIT DRAWING
SHEET 89 OF 125



300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

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6/23/16

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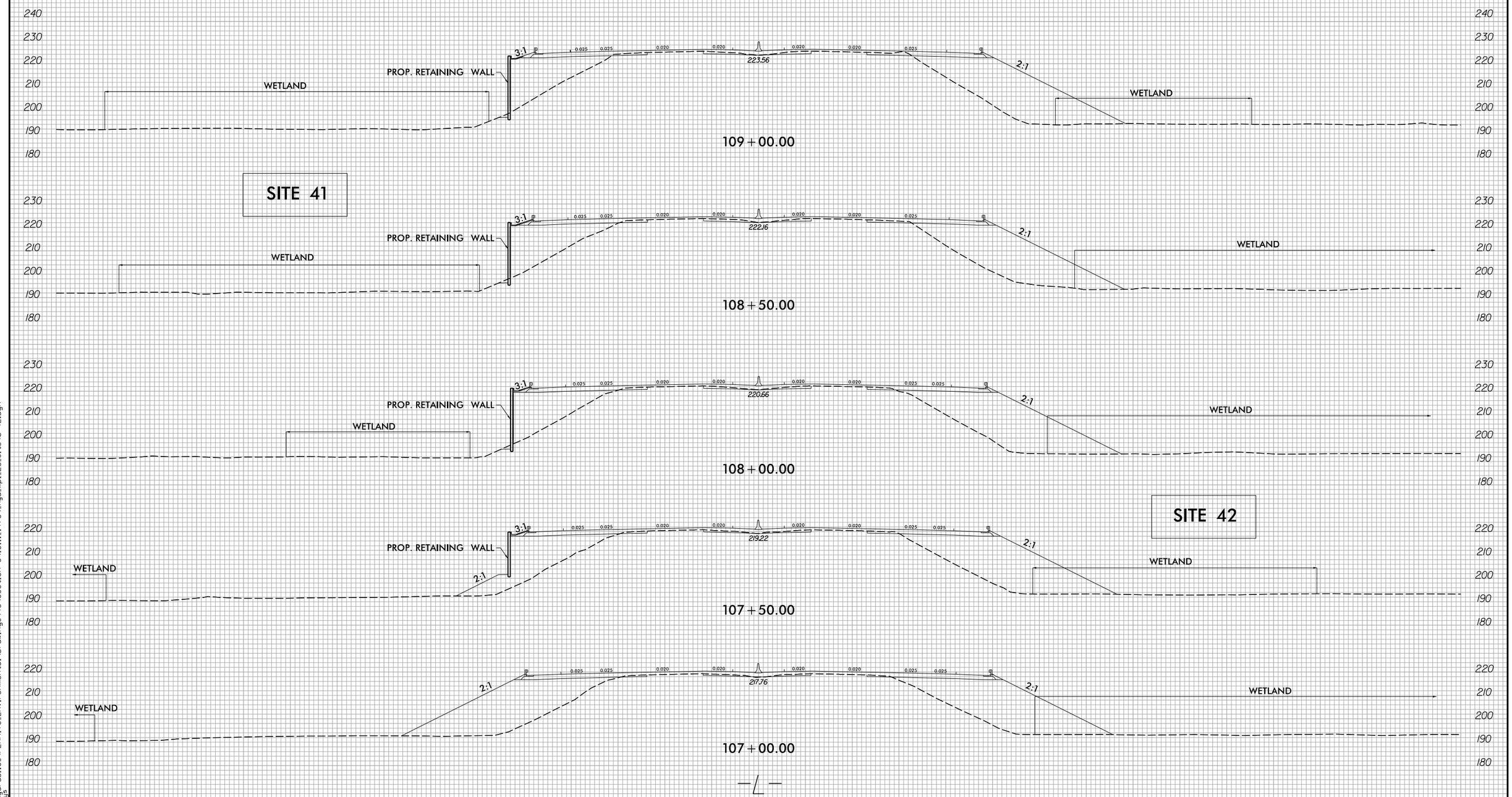
	I-5111/I-4739	X-10

PERMIT DRAWING
SHEET 90 OF 125



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Fkeys

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 91 OF 125

ENGLISH

T T DENOTES TEMPORARY FILL IN WETLAND
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
E E DENOTES EXCAVATION IN WETLAND

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	42
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WEP(1)

SITE 44

SEQ

INSET A

SON-LAN

40

Q10=10.0 cfs
V10=1.99 ft/s

3 TONS CL B RIPRAP W/10 SY GEOTEXTILE

40 TONS CL I RIP RAP W/75 SY GEOTEXTILE ON BANKS ONLY LENGTH=16' (SEE DETAIL BB)

SEE INSET A

10' WIDE BERM TOP ELEV.=228.0' SEE DETAIL J

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL AM

18" CSP 2 ELBOWS

2GIB-WSF

PLUG & FILL W/FLOWABLE FILL

15" RCP-III

15" RCP-III

REMOVE DI

TB 2GIB-ST

TB 2GIB-ST

REMOVE & REPLACE EXIST. RCP W/ NEW 15" RCP-III

REMOVE & REPLACE EXIST. RCP W/ NEW 15" RCP-III

REMOVE & REPLACE EXIST. RCP W/ NEW 15" RCP-III

REMOVE & REPLACE EXIST. RCP W/ NEW 15" RCP-III

RETAIN AND CLEAN OUT EQUALIZER PIPE

INTERSTATE 40 WBL 24" CONC

S 3°19'01.0" W

115+00

INTERSTATE 40 EBL 24" CONC

SEQ

TRENCHLESS INSTALLATION 54" WELDED STEEL (NOT BURIED)

5' WIDE BERM TO PROTECT WETLAND BOUNDARY

SITE 44

LATERAL 3' BASE DITCH W/CL I RIPRAP SEE DETAIL AQ

Q10=130.0 cfs
V10=1.98 ft/s

END FENCE

BEGIN FENCE

ARMOR 2:1 SIDE SLOPES W/CL II RIPRAP UP TO SHOULDER POINT

SEE INSET B

WETLANDS BOUNDARY PB 66 PG 176

GLENN MILLER
DB 4092 PG 377
PB 66 PG 176

WEN

SEO

WEO(1)

SEP

WEO(2)

41

SITE 43

INSET B

*RIPRAP ON SLOPES TURNED OFF FOR CLARITY

JB w/Slab Lid

BEGIN FENCE

PDE

10'X10' CONC HW

SP. EXCT. JB w/MH

18" RCP-III

18" CSP 2 ELBOWS

15" CSP 2 ELBOWS

FS

2GIB-WSS

GREU TL-3

BERM V DITCH SEE DETAIL AK

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AW

SP. CUT DITCH W/CL B RIPRAP SEE DETAIL I

10'

6.0' CUT

PLUG & FILL W/FLOWABLE FILL

54" WELDED STEEL (NOT BURIED)

TRENCHLESS INSTALLATION 24" WELDED STEEL (NOT BURIED)

+60.00 EX. ROW

18 TONS CL I RIPRAP W/38 SY GEOTEXTILE LENGTH=20' (SEE DETAIL BC)

MATCHLINE -L- STA. 111+00 SEE SHEET 41

MATCHLINE -L- STA. 124+00 SEE SHEET 43

4/15/2019
4/15/2019 C:\Projects\PERMITS_Environmental\Drawings\4C\Section 3\Wetland\I5111_I4739_hyd_4C_wet_psh42.dgn
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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 92 OF 125

ENGLISH

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

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	42
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WEP(1)

SITE 44

SEQ

SEE INSET A

Q10=10.0 cfs
V10=1.99 ft/s

40 TONS CL I RIP RAP W/75 SY GEOTEXTILE ON BANKS ONLY LENGTH=16' (SEE DETAIL BB)

3 TONS CL B RIPRAP W/10 SY GEOTEXTILE

10' WIDE BERM TOP ELEV.=228.0' SEE DETAIL J

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL AM

18" CSP 2 ELBOWS

2GIB-WSF

PLUG & FILL W/ FLOWABLE FILL

15" RCP-III

15" RCP-III

TB 2GIB-ST

REMOVE DI

REMOVE AND CLEAN OUT EQUALIZER PIPE

INTERSTATE 40 EBL 24" CONC

S 3°19'01.0" W

115+00

120+00

TRENCHLESS INSTALLATION 54" WELDED STEEL (NOT BURIED)

18" RCP-III

18" CSP 2 ELBOWS

SP. EXCT. JB w/MH

JB w/MH

10'x10' CONC. HW

15" CSP 3 ELBOWS

2GIB-WSS

GREU TL-3

BERM 'V' DITCH SEE DETAIL AK

BERM '4' BASE DITCH W/CL B RIPRAP SEE DETAIL AW

SP. CUT DITCH W/CL B RIPRAP SEE DETAIL I

MATCHLINE -L- STA. 111+00 SEE SHEET 41

MATCHLINE -L- STA. 124+00 SEE SHEET 43

INSET A

JB w/Slab Lid

60" RCP-IV

SON-LAN

40

SEE INSET B

ARMOR 2:1 SIDE SLOPES W/CL II RIPRAP UP TO SHOULDER POINT

END FENCE

PDE

SEQ

SITE 44

5' WIDE BERM TO PROTECT WETLAND BOUNDARY

LATERAL 3' BASE DITCH W/CL I RIPRAP SEE DETAIL AQ

Q10=130.0 cfs
V10=1.98 ft/s

WEO(1)

SEP

WEO(2)

WEN

SEO

41

SITE 43

WETLANDS BOUNDARY PB 66 PG 176

GLENN MILLER DB 4092 PG 377 PB 66 PG 176

GLENN MILLER DB 4092-PG 374 PB 66 PG 176

EXISTING R/W

+60.00' EX. ROW

18 TONS CL I RIPRAP W/38 SY GEOTEXTILE LENGTH=20' (SEE DETAIL BC)

INSET B

*RIPRAP ON SLOPES TURNED OFF FOR CLARITY

JB w/Slab Lid

BEGIN FENCE

PDE

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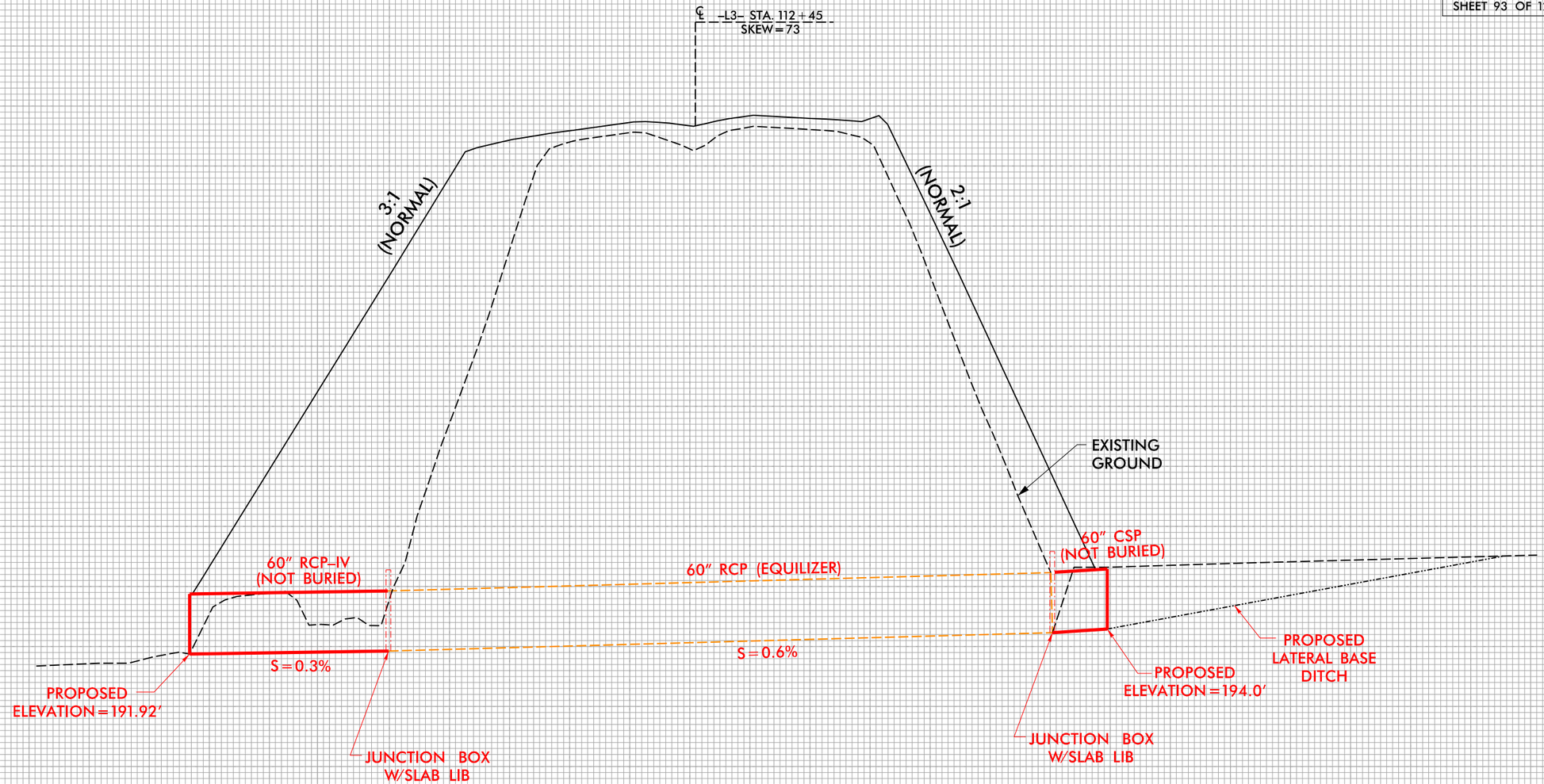
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 93 OF 125

SITE 44
–L3– 112+45



RETAIN & EXTEND EXISTING 60" RCP EQUILIZER PIPE (length=360')

PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

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SCALE

PERMIT DRAWING
SHEET 94 OF 125

ENGLISH

5 5 DENOTES IMPACTS IN SURFACE WATER

15 15 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	44
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SON-LAN CLASSIC DEVELPMENT CO, LLC

SEE INSET A

SEU

SITE 45

52 TONS CL B RIP RAP W/100 SY GEOTEXTILE ON BANKS ONLY LENGTH=40' (SEE DETAIL BB)

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

HP -LCDWB- STA. 32+17.47 1.57% 2.06%

HP -L3- STA. 145+95.26 LT 2.99% 2.06%

HP -Y1RPB3 STA. 11+10.89 0.56% 0.45%

MATCHLINE -Y1RPB3- STA. 16+00 SEE SHEET 45

MATCHLINE -L- STA. 137+00 SEE SHEET 43

MATCHLINE -L- STA. 150+00 SEE SHEET 45

MATCHLINE -Y1A- STA. 25+50 -Y1RPC3- STA. 15+50 SEE SHEET 45

BERM V DITCH SEE DETAIL AK

48" RCP-III

JB w/MH

2GIB-WSF

15" RCP-III

48" RCP-V

15" CSP 2 ELBOWS

-LCDWB-

-Y1RPB3-

-Y1A-

-LCDEB-

-Y1RPC3-

S 19° 41' 30.0" E

S 19° 50' 33.6" E

S 10° 29' 05.6" E

INTERSTATE 40 WBL 36' CONC

INTERSTATE 40 EBL 24' CONC

REMOVE DI & 7' PIPE

REMOVE DI

18" CMP REMOVE

PLUG & FILL W/ FLOWABLE FILL

ATTENUATOR

TB 2GIB-ST

SPECIAL LATERAL V DITCH SEE DETAIL AJ

8" PVC, JOHNSTON COUNTY

12" DIP, JOHNSTON COUNTY

PIPES DO NOT INTERSECT (>28' SEPERATION BTW COLLAR & 2GI)

COLLAR

FRENCH DRAIN

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

SPECIAL CUT DITCH SEE DETAIL B

LATERAL 4' BASE SWALE SEE DETAIL U

CLEAN OUT RIPRAP & DIRT, REPAIR ADJ DITC IF NEEDED

RETAIN DI

HP -LCDEB- STA. 21+46.61 2.32% 0.95%

LP -LCDEB- STA. 24+96.27 0.95% 0.99%

LP -Y1RPC- STA. 10+97.01 0.55% 0.36%

HP L3- STA. 145+86.02 RT 2.98% 2.30%

HP -Y1RPC3- STA. 13+47.61 0.36% 0.66%

HP -LCDEB- STA. 28+58.50 0.99% 2.41%

LP -Y1RPC3- STA. 15+27.06 0.66% 1.48%

ZIGGY VENTURES LLC

J & M SMITH ENTERPRISES LLC

JACK L. CHANDLER JR.

KELLEY C. GURLEY

SHIV ENTERPRISES INC

Piedmont Natural Gas Company Inc, 2" PLASTIC, 2002

INSET A

4/15/2019
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Ekaur

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25 0 25 50
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50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 95 OF 125

ENGLISH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	44
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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NAD 83

SEE INSET A

SEU

SITE 45

52 TONS CL I RIP RAP W/100 SY GEOTEXTILE ON BANKS ONLY LENGTH=40' (SEE DETAIL BB)

48" RCP-III

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

HP -L3- STA. 145+95.26 LT
2.99% 2.06%

HP -LCDWB- STA. 32+17.47
1.57% 2.06%

HP -Y1RPB3 STA. 11+10.89
0.56% 0.45%

SON-LAN CLASSIC DEVELPMENT CO. LLC

40

BERM V DITCH SEE DETAIL AK

MATCHLINE -L- STA. 137+00 SEE SHEET 43

MATCHLINE -L- STA. 150+00 -Y1RPB3- STA. 16+00 SEE SHEET 45

MATCHLINE -L- STA. 15+50 SEE SHEET 45

MATCHLINE -Y1A- STA. 25+50 -Y1RPC3- STA. 15+50 SEE SHEET 45

-LCDWB-

-Y1RPB3-

-Y1RPC3-

-Y1A-

-LCDEB-

S 19° 41' 30.0" E

S 19° 50' 33.6" E

S 10° 29' 05.6" E

2GIB-WSF

15" RCP-III

18" RCP-III

TB 2GIB-ST

REMOVE DI & 7' PIPE

REMOVE DI

18" CMP REMOVE

PLUG & FILL W/ FLOWABLE FILL

ATTENUATOR

INTERSTATE 40 WBL 36' CONC

INTERSTATE 40 EBL 24' CONC

8" PVC, JOHNSTON COUNTY

12" DIP, JOHNSTON COUNTY

SPECIAL LATERAL V DITCH SEE DETAIL AJ

JB w/MH

48" RCP-V

15" CSP 2 ELBOWS

BZ 1

BZ 2

RETAIN DI

24" RCP-III

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

SPECIAL CUT DITCH SEE DETAIL B

LATERAL 4' BASE SWALE SEE DETAIL U

CLEAN OUT RIPRAP & DIRT, REPAIR/ADJ. DI IF NEEDED

2.32% 0.95%
HP -LCDEB- STA. 21+46.61

0.95% 0.99%
LP -LCDEB- STA. 24+96.27

0.55% 0.36%
LP -Y1RPC- STA. 10+97.01

2.98% 2.10%
HP -L3- STA. 145+86.02 RT

0.99% 2.41%
HP -LCDEB- STA. 28+58.50

0.36% 0.66%
HP -Y1RPC3- STA. 13+47.61

0.66% 1.48%
LP -Y1RPC3- STA. 15+27.06

ZIGGY VENTURES LLC

J & M SMITH ENTERPRISES LLC

JACK L. CHANDLER JR.

KELLEY C. GURLEY

SHIV ENTERPRISES INC

Piedmont Natural Gas Company, Inc. 2" PLASTIC, 2002

INSET A

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REVISIONS

SCALE FOR INSET 25 0 25 50

SCALE 50 25 0 50 100

PERMIT DRAWING SHEET 96 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO. I-5111/I-4739 | SHEET NO. 45

RW SHEET NO. | ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –Y1_3– STA. 67+00 SEE SHEET 67

MATCHLINE –Y1RPB3– STA. 16+00 SEE SHEET 44

MATCHLINE –L– STA. 150+00 SEE SHEET 44

MATCHLINE –Y1A– STA. 25+50–Y1RPC2– STA. 15+50 SEE SHEET 44

MATCHLINE –Y1A– STA. 34+50 SEE SHEET 66

MATCHLINE –Y1_3– STA. 51+50 SEE SHEET 66

MATCHLINE –Y1C– STA. 16+50 SEE SHEET 68

MATCHLINE –L– STA. 177+00 SEE SHEET 46

INSET A

INSET B

INSET C

INSET D

INSET E

SITE 46 WOE

SITE 47 SLV

SITE 48 SLW

SITE 49 SLU

SITE 49 WOB

WC

SEA

WD

SEE INSET A

SEE INSET B

SEE INSET C

SEE INSET D

SEE INSET E

RKK CLEVELAND 810 Vaughn Office Park, Suite 310 | Raleigh, North Carolina 27615 | 919.872.5115

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www.rkk.com | Corporate Headquarters: Columbus, Ohio

GRAPHIC SCALE 50 25 0 50 100

PLANS

LOCATION:

TIP NO. COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

RK&K 2020

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REVISIONS

SCALE FOR INSET

SCALE

PERMIT DRAWING SHEET 97 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	45
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –Y1_3– STA. 67+00 SEE SHEET 67

MATCHLINE –Y1RPB3– STA. 16+00 SEE SHEET 44

MATCHLINE –L– STA. 150+00 SEE SHEET 44

MATCHLINE –Y1A– STA. 25+50–Y1RPC2– STA. 15+50 SEE SHEET 44

MATCHLINE –Y1A– STA. 34+50 SEE SHEET 66

MATCHLINE –Y1_3– STA. 51+50 SEE SHEET 66

MATCHLINE –Y1C– STA. 16+50 SEE SHEET 68

MATCHLINE –L– STA. 177+00 SEE SHEET 46

INSET A

INSET B

INSET C

INSET D

INSET E

SITE 46

SITE 47

SITE 48

SITE 49

SEE INSET A

SEE INSET B

SEE INSET C

SEE INSET D

SEE INSET E

SEA

SLV

SLU

WOE

WOB

WC

WD

RKK

GRAPHIC SCALE

PLANS

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

1/6/2009
Plotted By: Jeffrey Hall
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

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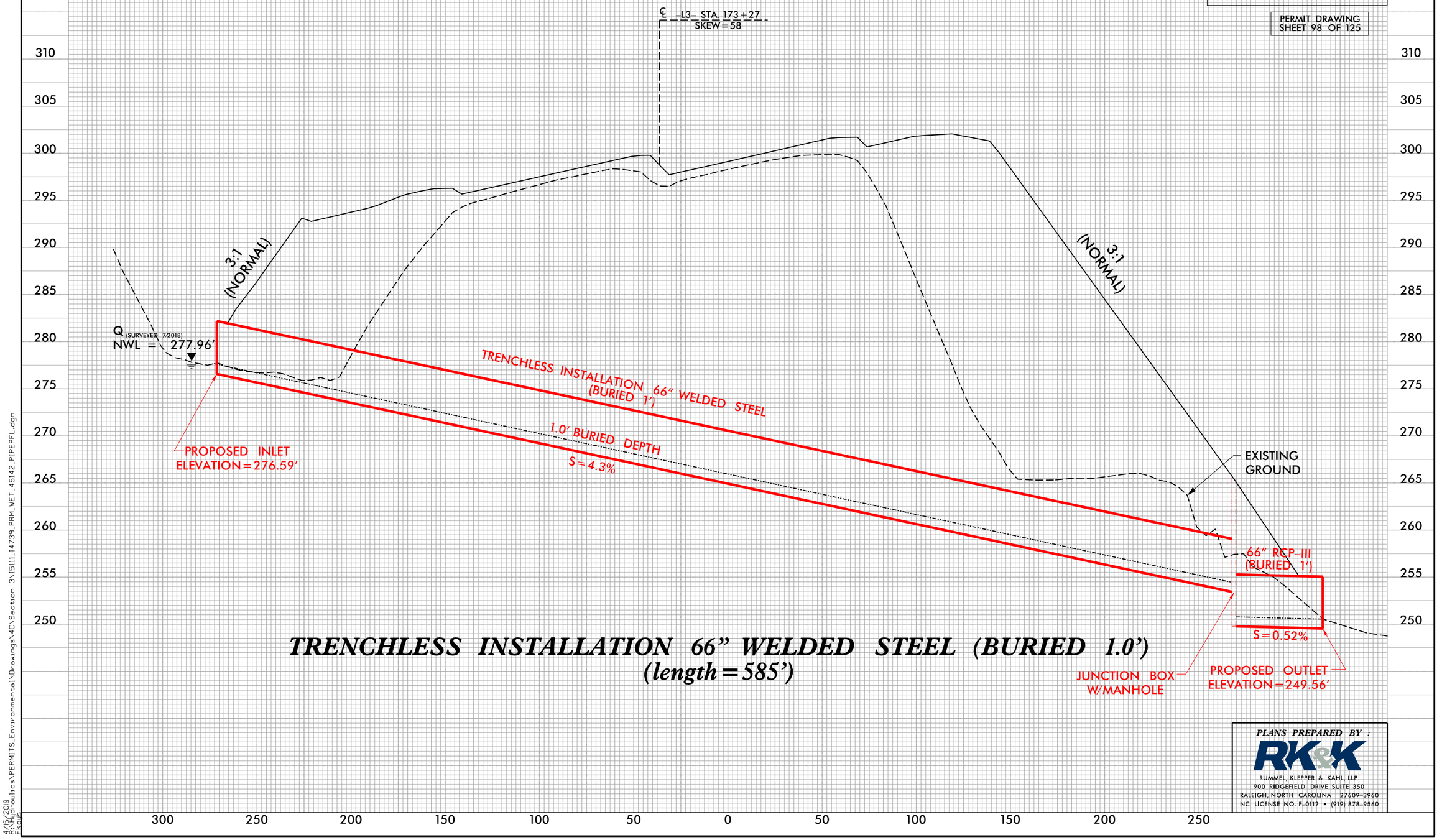
SHEET 98 OF 125

SITE 49
–L3– 173+27



TRENCHLESS INSTALLATION 66" WELDED STEEL (BURIED 1.0')
(length=585')

PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
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6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-33

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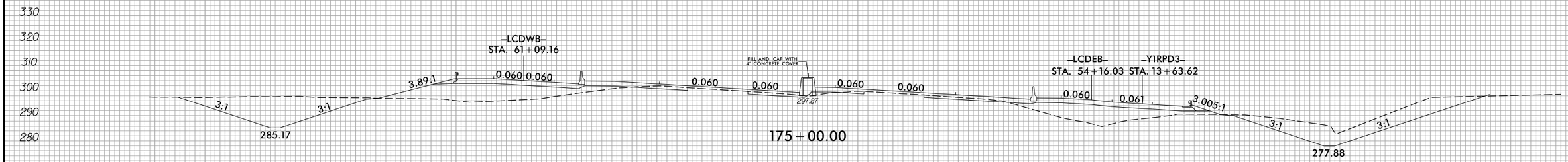
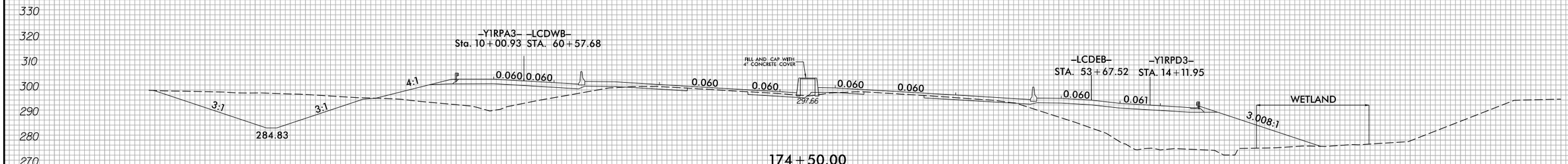
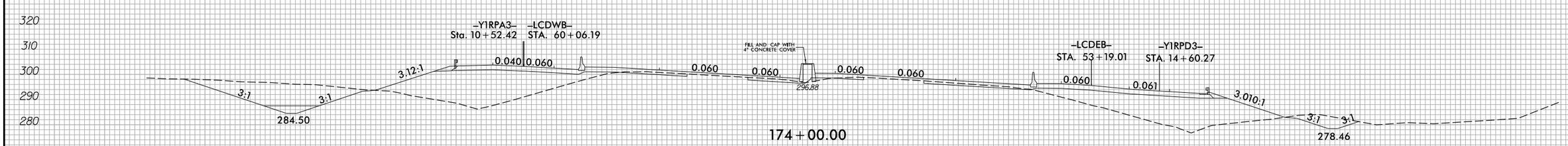
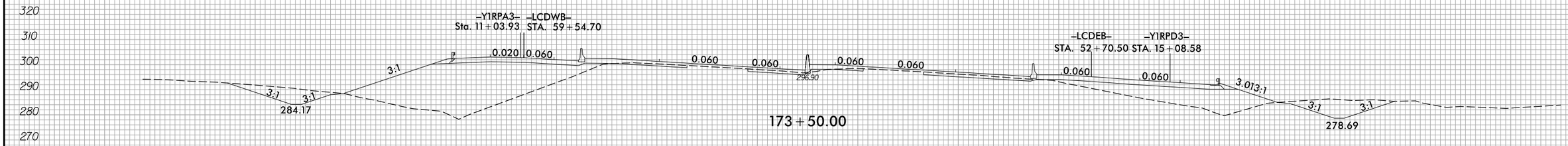
SITE 49

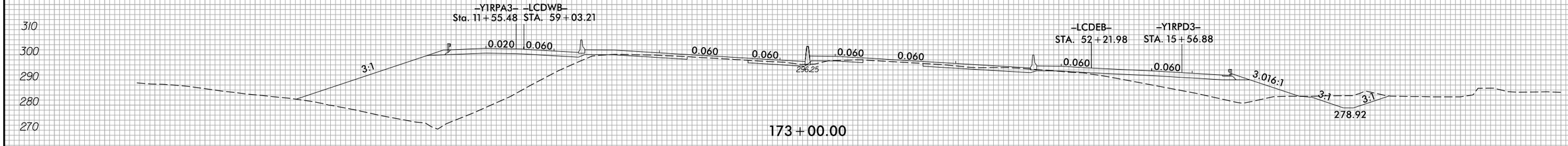
PERMIT DRAWING
SHEET 99 OF 125











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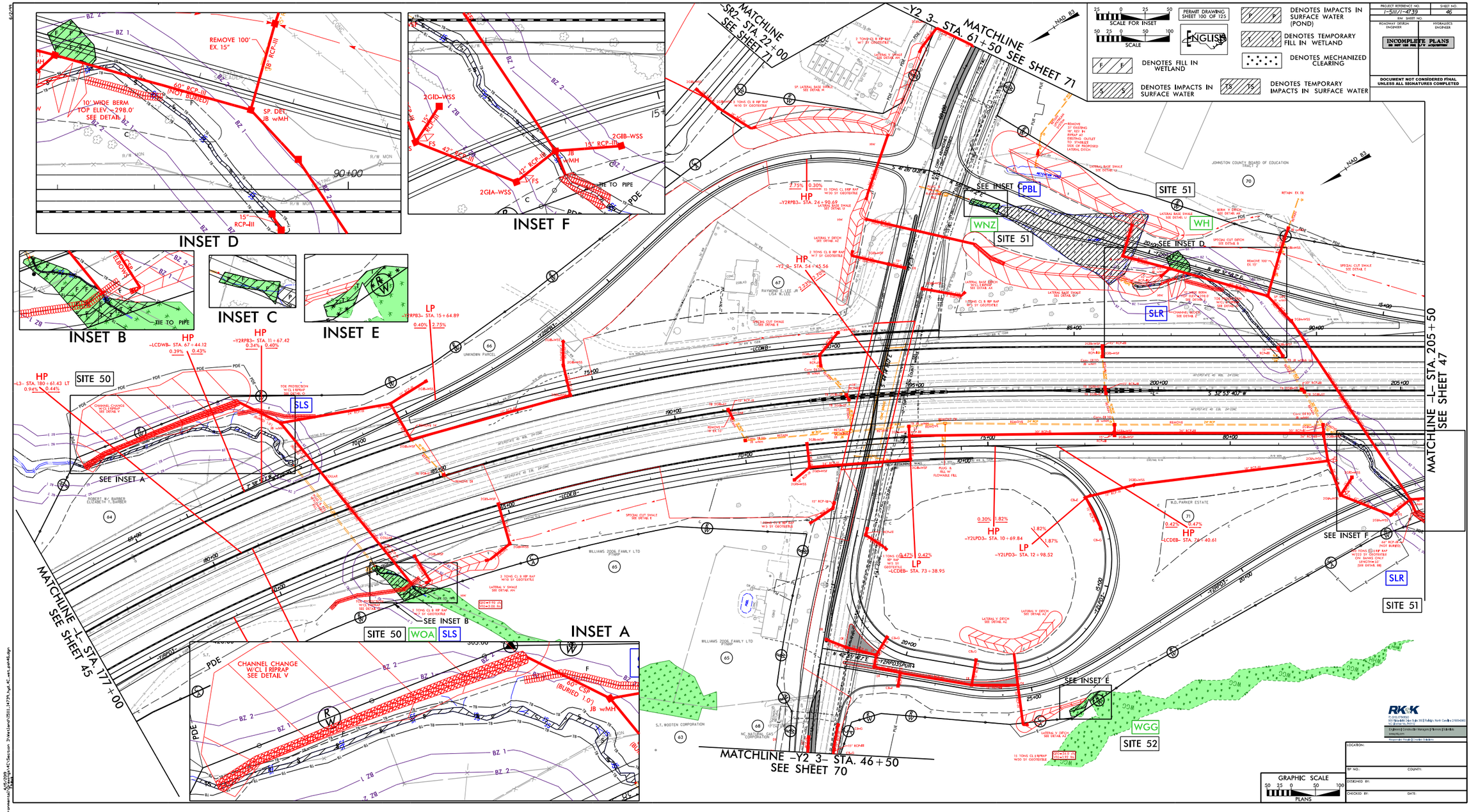
Fkeys


MATCHLINE SR2- STA. 22+00 SEE SHEET 71
MATCHLINE -Y2 3- STA. 61+50 SEE SHEET 71
MATCHLINE -L- STA. 205+50 SEE SHEET 47
MATCHLINE -L- STA. 177+00 SEE SHEET 45
MATCHLINE -Y2 3- STA. 46+50 SEE SHEET 70
INSET A
INSET B
INSET C
INSET D
INSET E
INSET F
SEE INSET A
SEE INSET B
SEE INSET C
SEE INSET D
SEE INSET E
SEE INSET F
SITE 50
SITE 51
SITE 52
SLS
WOA
WNZ
WH
PBL
SLR
WGG
REMOVE 100' EX. 15"
60" RCP-III (NOT BURIED)
10' WIDE BERM TOP ELEV. 298.0' SEE DETAIL J
SP. DET. JB w/MH
CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V
60" CSP (BURIED 1.0') JB w/MH
2GID-WSS
2GIB-WSS
2GIA-WSS
15" RCP-III
18" RCP-III
42" RCP-III
TIE TO PIPE
HP -L3- STA. 180+61.43 LT 0.94% 0.44%
HP -LCDWB- STA. 67+44.12 0.39% 0.43%
HP -Y2RPB3- STA. 11+67.42 0.34% 0.40%
LP -Y2RPB3- STA. 15+64.89 0.40% 2.75%
HP -Y2RPB3- STA. 24+00.69 2.75% 0.30%
HP -Y2-L- STA. 54+45.56 2.75% 2.25%
HP -Y2LPD3- STA. 10+69.84 0.30% 1.82%
LP -Y2LPD3- STA. 12+98.52 1.82% 1.87%
LP -LCDEB- STA. 73+38.95 0.47% 0.42%
HP -LCDEB- STA. 76+40.61 0.42% 1.47%
-Y2RPD3-
-Y2RPD4SUR-
-LCDWB-
-LCDEB-
-Y2-
N 42° 25' 47" E
S 32° 55' 40" W
PDE
BZ 1
BZ 2
L Z8
LOD
JOHNSTON COUNTY BOARD OF EDUCATION TRACT 2
R.D. PARKER ESTATE
WILLIAMS 2006 FAMILY LTD PTNRSP
S.T. WOOTEN CORPORATION
NC NATURAL GAS CORPORATION
RAYMOND T. LEE JR. ETUX W. KAY
ROBERT W. BARBER ELIZABETH T. BARBER
PERMIT DRAWING SHEET 100 OF 125
SCALE FOR INSET
SCALE
ENGLISH
DENOTES IMPACTS IN SURFACE WATER (POND)
DENOTES TEMPORARY FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
PROJECT REFERENCE NO. I-5111/I-4739
SHEET NO. 46
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
RKK
GRAPHIC SCALE
PLANS
LOCATION:
TIP NO.:
COUNTY:
DESIGNED BY:
CHECKED BY:
DATE:

INSET D

INSET F

INSET B

INSET C

INSET E

INSET A

MATCHLINE SR2- STA. 22+00 SEE SHEET 71

MATCHLINE -Y2 3- STA. 61+50 SEE SHEET 71

MATCHLINE -L- STA. 177+00 SEE SHEET 45

MATCHLINE -Y2 3- STA. 46+50 SEE SHEET 70

MATCHLINE -L- STA. 205+50 SEE SHEET 47

SITE 50 SLS

SITE 50 WOA SLS

SITE 51 PBL WNZ

SITE 51 WH

SITE 51 SLR

SITE 52 WGG

SEE INSET A

SEE INSET B

SEE INSET C

SEE INSET D

SEE INSET E

SEE INSET F

SCALE FOR INSET 25 0 25 50

SCALE 50 25 0 50 100

ENGLISH

PERMIT DRAWING SHEET 101 OF 125

DENOTES IMPACTS IN SURFACE WATER (POND)

DENOTES TEMPORARY FILL IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO. I-5111/I-4739 SHEET NO. 46

RW SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALE 50 25 0 50 100 PLANS

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

RK&K

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4/6/2018
Plotted:

5/14/99

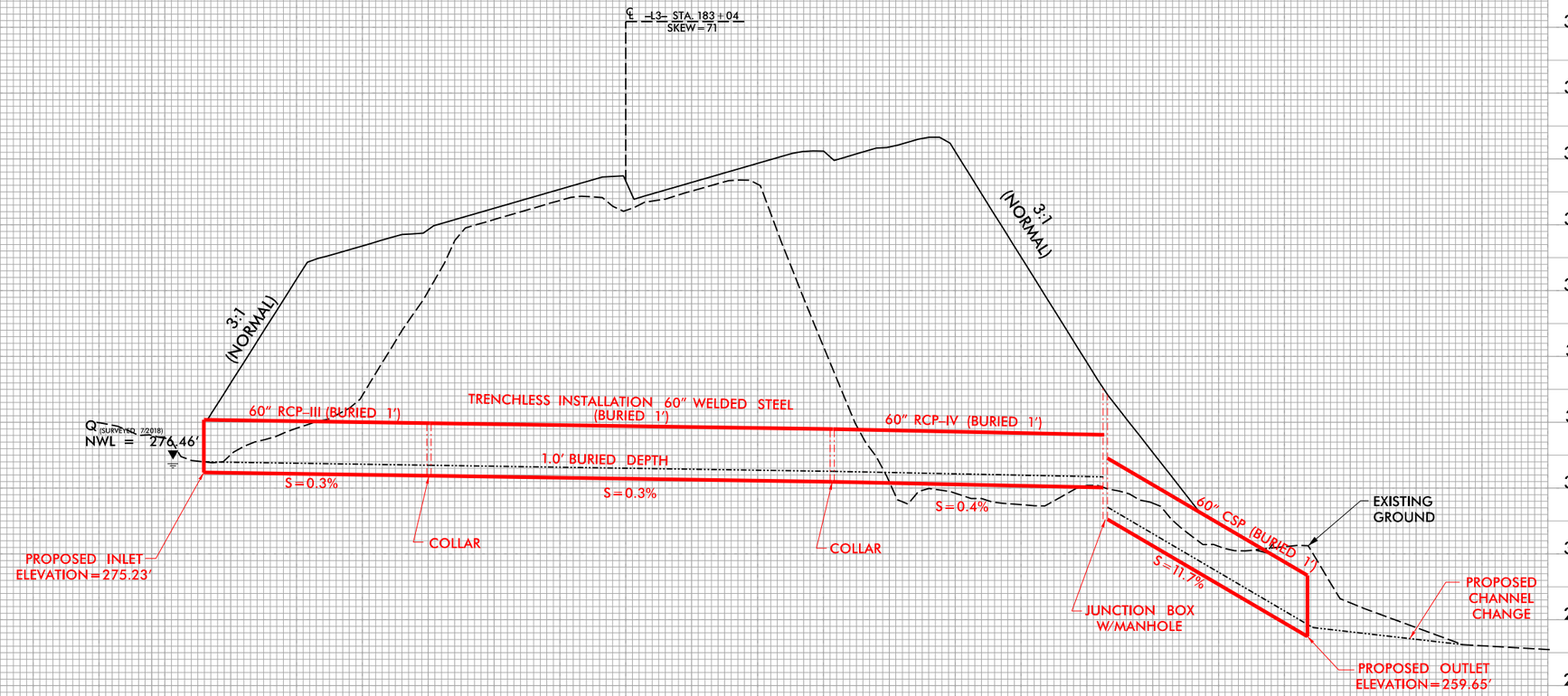
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 102 OF 125

SITE 50
–L3– 183+04



TRENCHLESS INSTALLATION 60" WELDED STEEL (BURIED 1.0)
(length = 524')

PLANS PREPARED BY :

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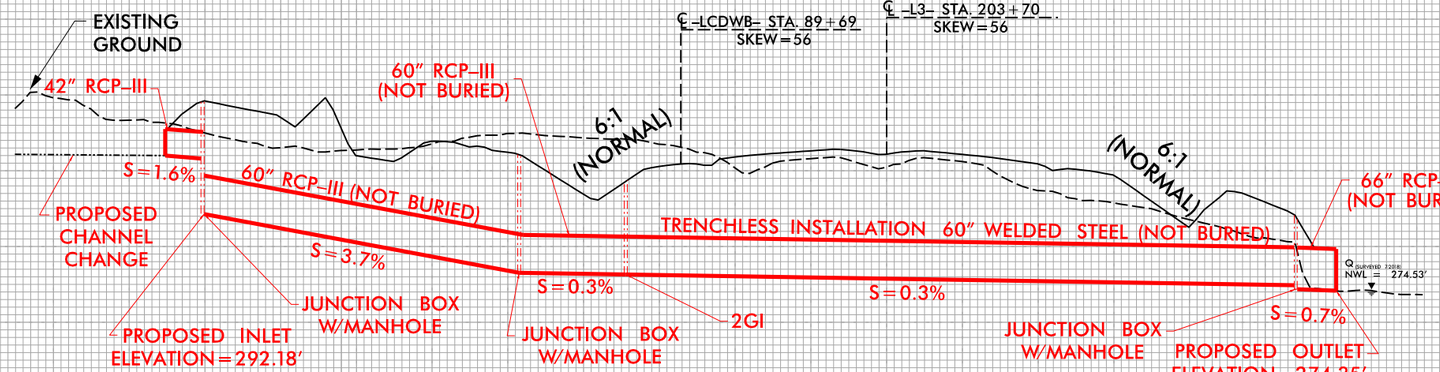
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 103 OF 125

SITE 51
–L3– 203+70



TRENCHLESS INSTALLATION 60" WELDED STEEL (NOT BURIED)
(length=772')

PLANS PREPARED BY :

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Hydraulics
Ekaus

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6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-37

340 320 300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260

SITE 50

PERMIT DRAWING
SHEET 104 OF 125

330 320 310 300 290 280 270

–Y2RPB3–
Sta. 14+21.23

–LCDWB–
STA. 70+35.96

–LCDEB–
STA. 62+89.23

3.09:1 | 0.009 | 0.010 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 3:1

299.38

WETLAND

278.29

184+00.00

320 310 300 290 280 270

–Y2RPB3–
Sta. 13+69.22

–LCDWB–
STA. 69+84.48

–LCDEB–
STA. 62+40.72

3.01:1 | 0.028 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 3:1

299.59

WETLAND

183+50.00

320 310 300 290 280 270

–Y2RPB3–
Sta. 13+17.33

–LCDWB–
STA. 69+32.99

–LCDEB–
STA. 61+92.21

3.01:1 | 0.048 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 3:1

300.07

183+00.00

320 310 300 290 280 270 260

–Y2RPB3–
Sta. 12+65.55

–LCDWB–
STA. 68+81.50

–LCDEB–
STA. 61+43.70

3.01:1 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 3:1

299.94

182+50.00

320 310 300 290 280 270 260

–Y2RPB3–
Sta. 12+13.87

–LCDWB–
STA. 68+30.01

–LCDEB–
STA. 60+95.18

3:1 | 3:1 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 0.060 | 6:1

299.99

182+00.00

340 320 300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260

4/15/2019
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8/23/99

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	I-5111/I-4739	X-161

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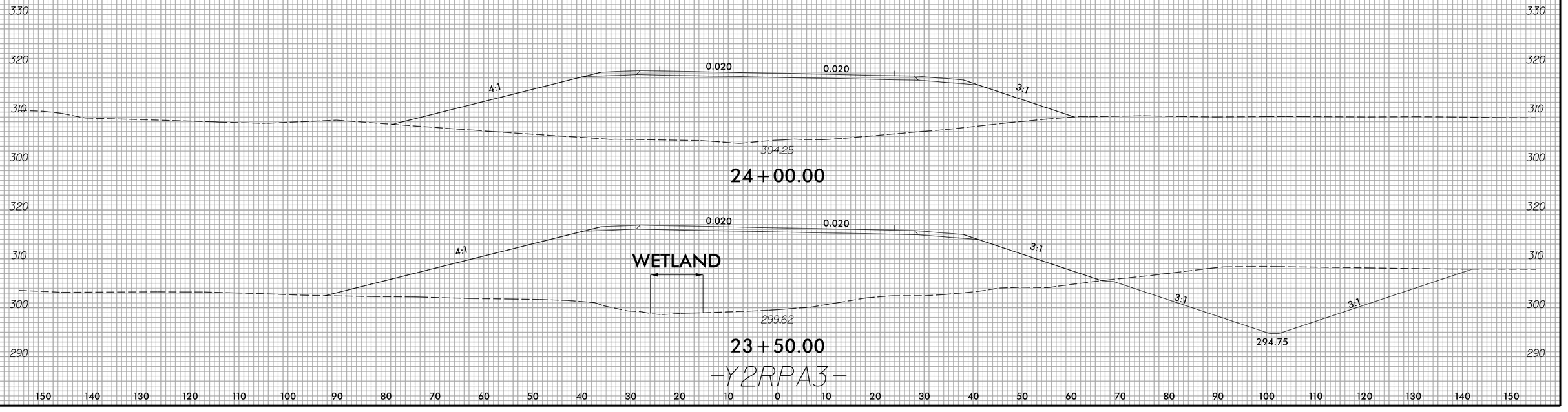
PERMIT DRAWING
SHEET 105 OF 125

SITE 51



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8/23/99

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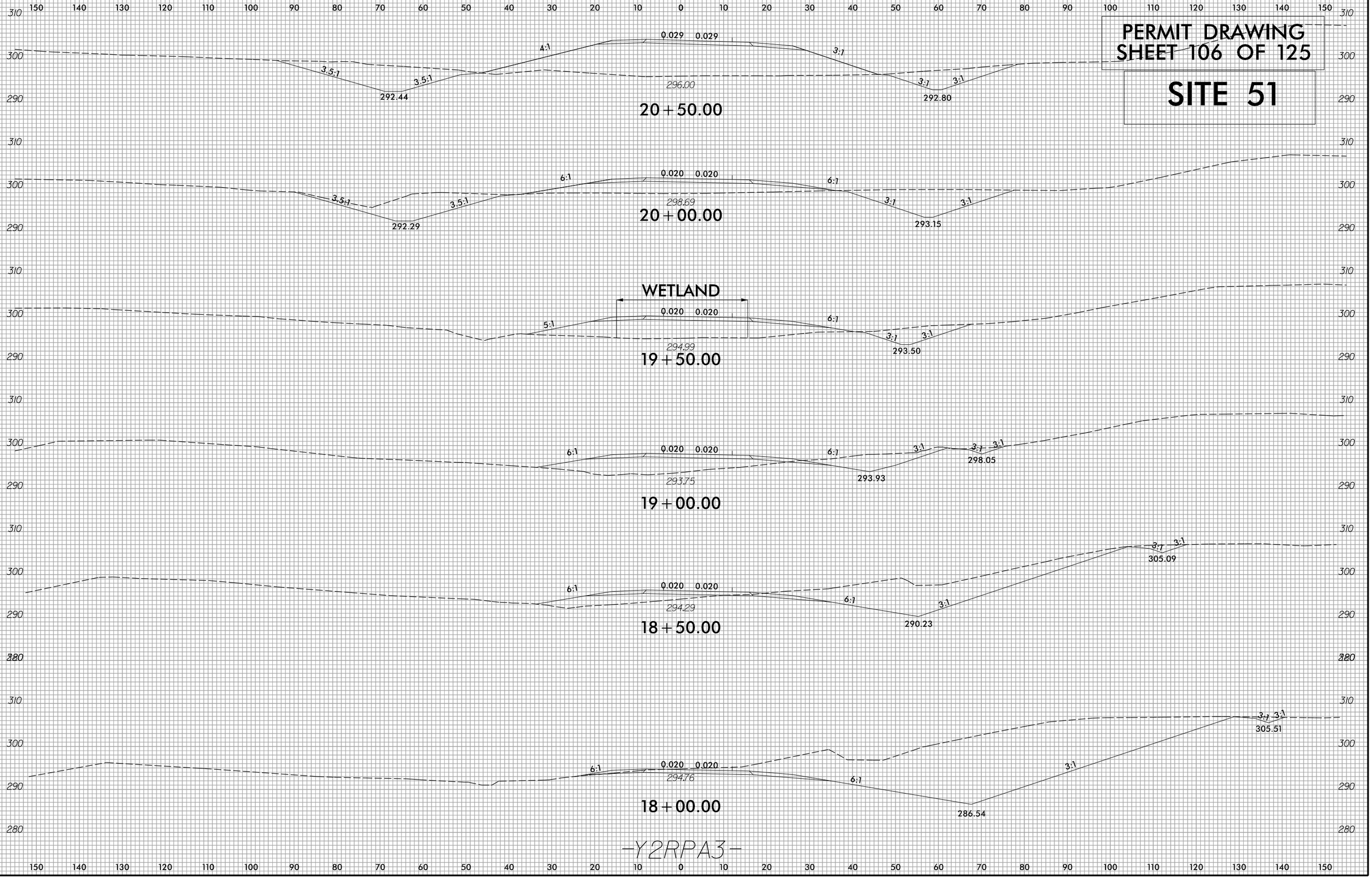
	I-5111/I-4739	X-159

PERMIT DRAWING
SHEET 106 OF 125

SITE 51



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Fkeys

8/23/99

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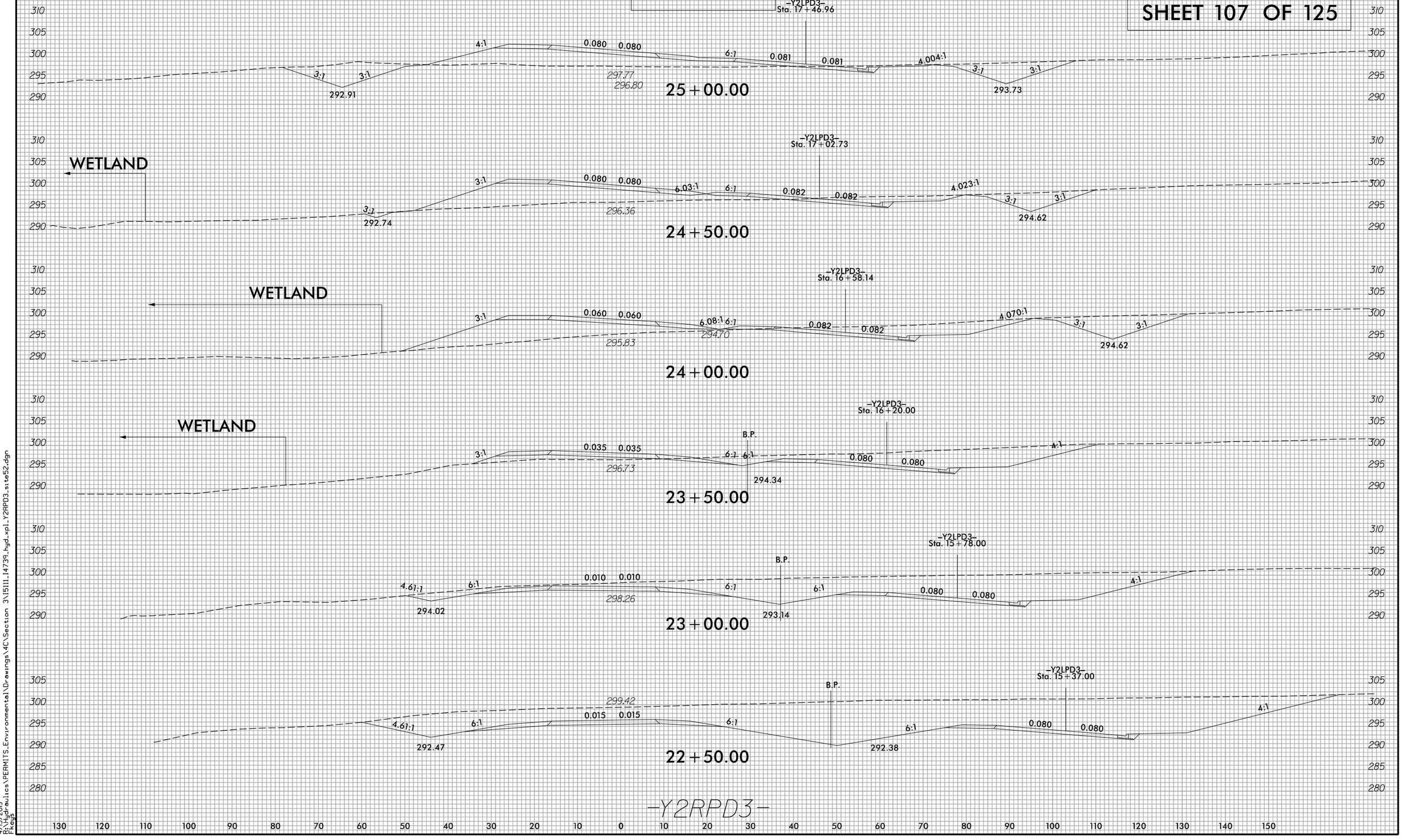
	I-5111/I-4739	X-167

SITE 52

PERMIT DRAWING
SHEET 107 OF 125



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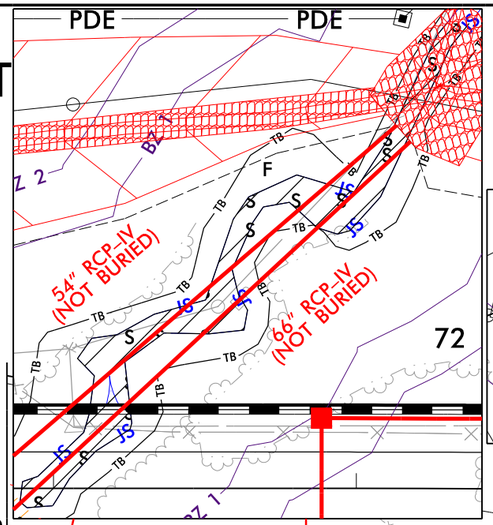
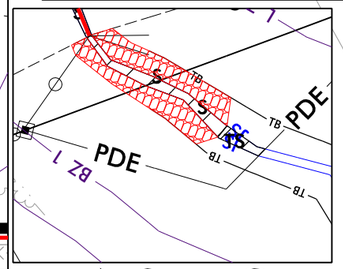
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	47
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET A





25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING SHEET 108 OF 125

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

SITE 53
MILL BRANCH

SEE INSET A

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AX

SEE C900 OUTLET DETAIL -L3- STA. 212+70

IVAN OTERO
GLORIA OTERO

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

RIP RAP AT EMBANKMENT SEE DETAIL BA

LATERAL 4' BASE SWALE SEE DETAIL AM

JONATHAN RIBA
TRACY RIBA

FORREST GLENN JOHNSON
DONALD LEE JOHNSON

15" CSP 2 ELBOWS

54" RCP-IV (NOT BURIED)

66" RCP-IV (NOT BURIED)

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

48" RCP-III

JB w/MH

REMOVE 30" PIPE

2GIB-WSF

24" RCP-III

15" RCP-III

REMOVE DI

Conv. DI TO JB w/MH

18" RCP-III

TB 2GIB-ST

SP. DET. JB w/MH

COLLAR

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 54" WELDED STEEL (NOT BURIED)

RETAIN & LINE W/STRUCTURAL LINER

2GID-WSS

SPECIAL CUT DITCH 291.73'
SEE DETAIL B

BERM V DITCH SEE DETAIL AK

BERM 4' BASE DITCH SEE DETAIL N

APOTHECARY HOLDINGS LLC

-Y2RPA3- 95+00 N 35° 35' 49.2" E 10.00

-LCDWB-

S 32° 53' 40.7" W

10+00 100+00 105+00 210+00 215+00 85+00 90+00 95+00

-L-

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

MATCHLINE -L- STA. 205+50 SEE SHEET 46

MATCHLINE -L- STA. 219+00 SEE SHEET 48

-Y2RPD3-

15+00

SEE INSET C

SEE INSET B

LP
-Y2RPD3- STA. 15+51.99

HP
-Y2RPD3- STA. 12+20.14

0.57%
1.80%
0.47%

120 TONS CL I RIP RAP W/223 SY GEOTEXTILE ON BANKS ONLY LENGTH=55' (SEE DETAIL BB)

W.D. PARKER ESTATE

SLR
SITE 51

SITE 53
MILL BRANCH

INSET B

54" RCP-III (NOT BURIED)

66" RCP-IV (NOT BURIED)

71 72 73 75 76

RK&K
P: (919) 878-9560
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	47
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING SHEET 109 OF 125

ENGLISH

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

SITE 53
MILL BRANCH

INSET A

INSET C

INSET B

SEE INSET A

SEE INSET B

SEE INSET C

MATCHLINE –L– STA. 205+50 SEE SHEET 46

MATCHLINE –L– STA. 219+00 SEE SHEET 48

–Y2RPA3– 95+00 N 35° 35' 49.2" E 10.00

–LCDWB–

S 32° 53' 40.7" W

–Y2RPD3–

–LCDEB–

–L–

100+00 105+00 210+00 215+00 85+00 90+00 95+00 15+00

54" RCP-IV (NOT BURIED)

66" RCP-IV (NOT BURIED)

54" RCP-III (NOT BURIED)

LP
–Y2RPD3– STA. 15+51.99

HP
–Y2RPD3– STA. 12+20.14

0.57% 1.80% 0.47%

SITE 51
SLR

SITE 53
MILL BRANCH

120 TONS CL I RIP RAP W/223 SY GEOTEXTILE ON BANKS ONLY LENGTH=55' (SEE DETAIL BB)

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AX

LATERAL 4' BASE SWALE SEE DETAIL AM

RIP RAP AT EMBANKMENT SEE DETAIL BA

SEE C900 OUTLET DETAIL –L3– STA. 212+70

SEE C900 INLET DETAIL –L3– STA. 212+70

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

BERM V DITCH SEE DETAIL AK

BERM 4' BASE DITCH SEE DETAIL N

SPECIAL CUT DITCH 291.73' SEE DETAIL B

IVAN OTERO
GLORIA OTERO
JONATHAN RIBA
TRACY RIBA
FORREST GLENN JOHNSON
DONALD LEE JOHNSON
W.D. PARKER ESTATE
APOTHECARY HOLDINGS, LLC

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

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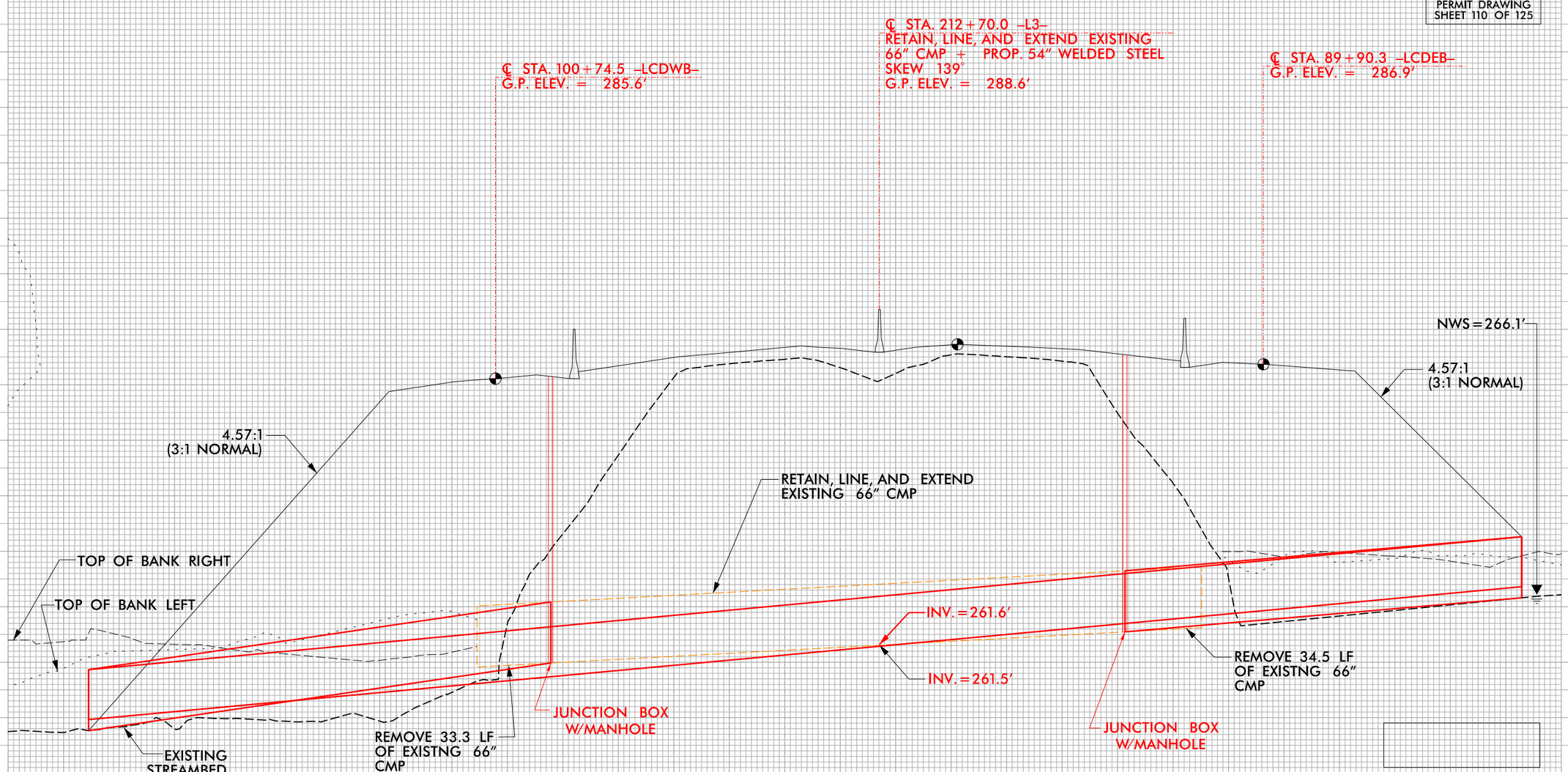
PERMIT DRAWING
SHEET 110 OF 125

SITE 53
–L– 212+70



EXISTING 66" CMP, EXTEND W/66' RCP–IV + PROPOSED 54" CSP
(length=274')

PLANS PREPARED BY :

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Ekaterina Kuznetsova

8/17/99

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 111 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	49
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET A

INSET B

NAD 83

SEE INSET A

SEE INSET B

SJ Q10=15.0 cfs V10=1.90 ft/s

SITE 54

WJ Q10=16.0 cfs V10=1.97 ft/s

SITE 55

SK

WI

83 TONS CL I RIP RAP W/155 SY GEOTEXTILE ON BANKS ONLY LENGTH=45' (SEE DETAIL BB)

65 TONS CL I RIP RAP W/125 SY GEOTEXTILE ON BANKS ONLY LENGTH=40' (SEE DETAIL BB)

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

LATERAL 4' BASE SWALE SEE DETAIL AM

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

SPECIAL CUT 4' BASE SWALE SEE DETAIL AU

LP
A-239+99.56 L
30% 0.40%

MATCHLINE -L- STA. 232+00 SEE SHEET 48

MATCHLINE -L- STA. 245+00 SEE SHEET 50

BARBARA PENNY

JERALD L. PETERSON
LUZMILA PETERSON

SAMUEL P. LAPSLEY
TAMMY J. LAPSLEY

82

85

85A

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

235+00

240+00

245+00

S 32°53'40" W

48" RCP-III

24" RCP

15" CSP 2 ELBOWS

2 2GIB-WSF

JB w/MH

JB w/Slab Lid

15" RCP-III

18" RCP-IV

15" RCP-IV

TB 2GI-ST

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

RETAIN

TRENCHLESS INSTALLATION OF 48" WELDED STEEL NOT BURIED

8.0' CONC HW

HW

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

BDO

40'CSP

30" RCP-III

SPECIAL CUT DITCH SEE DETAIL B

BERM V DITCH SEE DETAIL AK

-L- SC Sta. 241+24.63

0.30% 0.39%

LP
-L3- STA. 240+01.36 RT

-L- TS Sta. 238+64.63

LEAMON KING HOLLAND

84

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AW

THOMAS C. III BUCKLEY
JESSICA BUCKLEY

83

CONTRACTOR TO FIELD ADJUST (WITH RIPRAP) ALL LOCATIONS OF CONCENTRATED FLOW TRAVELING ONSITE INTO PROPOSED DITCHES

4/15/2019
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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 112 OF 125

ENGLISH

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

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	49

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET A

INSET B

NAD 83

SJ
Q10=15.0 cfs
V10=1.90 fps
SITE 54

WJ
Q10=16.0 cfs
V10=1.97 fps
SITE 55

SK

WI

SEE INSET A

SEE INSET B

83 TONS CL I RIP RAP W/155 SY GEOTEXTILE ON BANKS ONLY LENGTH=45' (SEE DETAIL BB)

65 TONS CL I RIP RAP W/125 SY GEOTEXTILE ON BANKS ONLY LENGTH=40' (SEE DETAIL BB)

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

LATERAL 4' BASE SWALE SEE DETAIL AM

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

SPECIAL CUT 4' BASE SWALE SEE DETAIL AU

LP
-L- 239+99.56 L
30% 0.40%

JB w/MH

48" RCP-III

15" CSP 2 ELBOWS

2 2GIB=WSF

JB w/Slab Lid

15" RCP-III

24" CSP 2 ELBOWS

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION OF 48" WELDED STEEL NOT BURIED

24" RCP RETAIN

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

235+00

240+00

245+00

S 32°53'40" W

TB 2GI-ST

15" RCP-III

18" RCP-IV

15" RCP-IV

REMOVE DI

REMOVE

8.0' CONC HW

HW

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AV

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AX

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

CONTRACTOR TO FIELD ADJUST (WITH RIPRAP) ALL LOCATIONS OF CONCENTRATED FLOW TRAVELING ONSITE INTO PROPOSED DITCHES

SPECIAL CUT DITCH SEE DETAIL B

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AW

BERM V DITCH SEE DETAIL AK

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

LATERAL 4' BASE SWALE SEE DETAIL AM

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

BDO

15" CSP 2 ELBOWS

ROCK

30" RCP-III

-L- SC Sta. 241+24.63

-L- TS Sta. 238+64.63

LP
-L3- STA. 240+01.36 RT

0.30% 0.39%

MATCHLINE -L- STA. 232+00 SEE SHEET 48

MATCHLINE -L- STA. 245+00 SEE SHEET 50

BARBARA PENNY

THOMAS C. III BUCKLEY
JESSICA BUCKLEY

LEAMON KING HOLLAND

SAMUEL P. LAPSLEY
TAMMY J. LAPSLEY

JERALD L. PETERSON
LUZMILA PETERSON

82 83 84 85 85A

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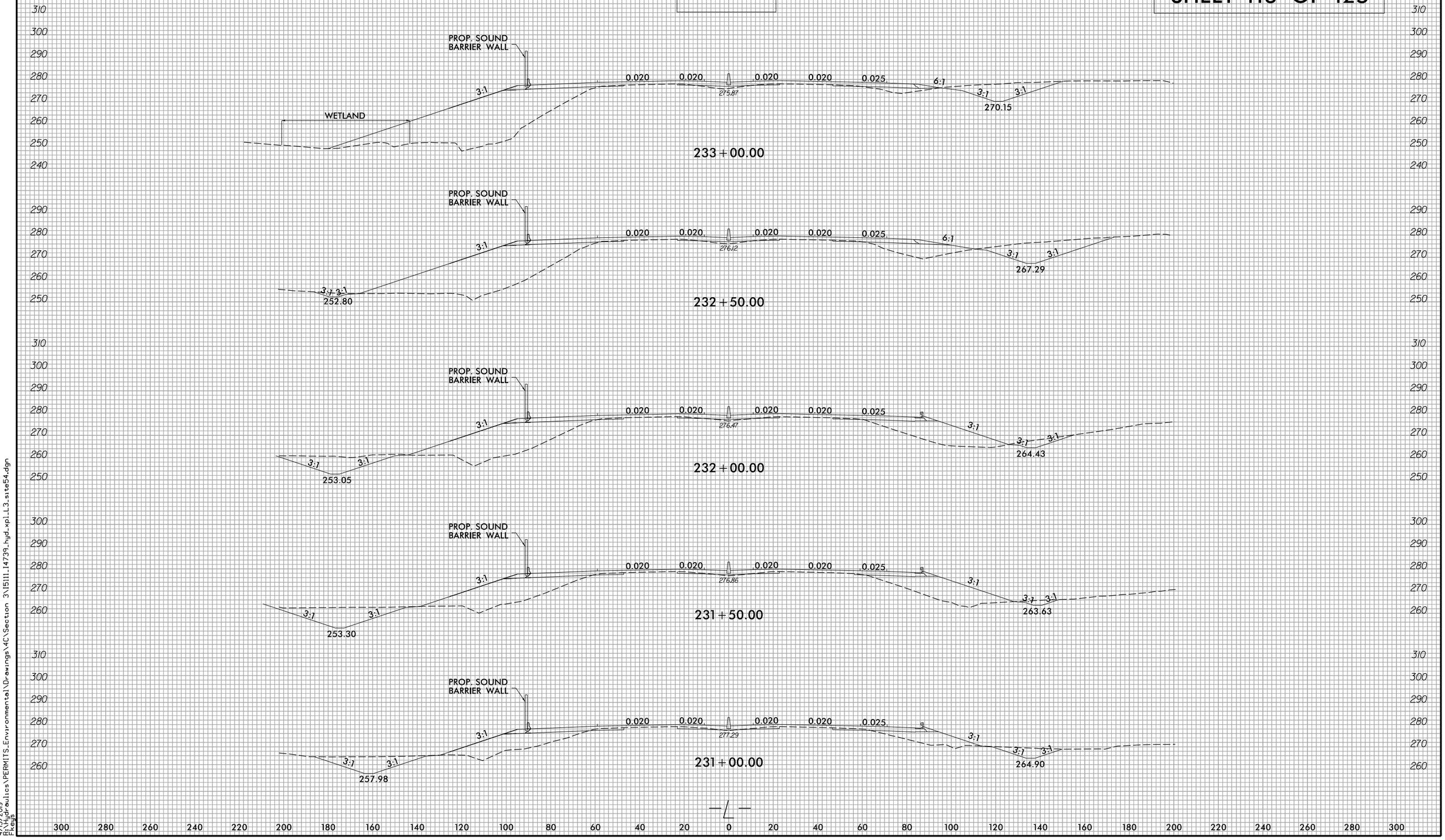
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-54

PERMIT DRAWING
SHEET 113 OF 125

SITE 54



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Fkeys

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 114 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	50
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET A

INSET B

SDD

SITE 57

WFF

SEE INSET A

SEE INSET B

SITE 56 SEE SHEET 49

SITE 57 SEE SHEET 51

MATCHLINE –L– STA. 245+00

MATCHLINE –L– STA. 258+00

SANDRA QUEEN FOWLER

JOEY V YOUNG

MIDLAND, INC.

MARIA RAMOS LOPEZ AND GREGORIO ISLAS ORTIZ

CHRISTINA N. OUTLAW

KRISTEN L. LOWE

JAMES B. DILLARD AND WIFE, DEBORAH S. DILLARD

PAUL TOLLEFSRUD AND WIFE, DARA B. TOLLEFSRUD

ELLIS FAMILY TRUST

LEAMON KING HOLLAND

JENNIFER

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

LATERAL 4' BASE SWALE SEE DETAIL AM

RIP RAP AT EMBANKMENT SEE DETAIL BA

40 TONS CL I RIP RAP W/75 SY GEOTEXTILE ON BANKS ONLY LENGTH=50' (SEE DETAIL BB)

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

LATERAL 4' BASE SWALE SEE DETAIL U

60" RCP-III (BURIED 1.0')

JB w/MH

30" CSP 2 ELBOWS

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

PROP. SBG

8" EXPRESSWAY CURB

2GIA-WSS

18" RCP-III

2GIB-WSS

GREU TL-3

Conv. DI TO JB w/MH

24" RCP-III

TB 2GI-ST

18" RCP-IV

15" RCP-IV

4' CONC PS

10' CONC PS

35' CONC PS

INTERSTATE 40 WBL 24' CONC

INTERSTATE 40 EBL 24' CONC

TRENCHLESS INSTALLATION 60" WELDED STEEL (BURIED 1.0')

GRADE TO DRAIN

15" RCP-III

15" CSP 2 ELBOWS

PROP. EXP. GUTTER

PROP. SOUND BARRIER

2GIB-WSF

WOODS

TYPE B-77

30" RCP-III

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

CHANNEL BLOCK SEE DETAIL Z

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

END FENCE

BEGIN FENCE

ISFD

EXISTING R/W

245+00

250+00

255+00

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 115 OF 125

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	50
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET A

INSET B

SEE INSET A

SEE INSET B

SDD

SITE 57

SITE 56

SEE

SDD

SITE 57

WFF

MATCHLINE –L– STA. 245+00 SEE SHEET 49

MATCHLINE –L– STA. 258+00 SEE SHEET 51

245+00

250+00

255+00

88 SANDRA QUEEN FOWLER

86

89

84

87

90

JOEY V YOUNG

MIDLAND, INC.

LEAMON KING HOLLAND

JENNIFER

MARIA RAMOS LOPEZ AND GREGORIO ISLAS ORTIZ

CHRISTINA N. OUTLAW

KRISTEN L. LOWE

JAMES B. DILLARD AND WIFE, DEBORAH S. DILLARD

PAUL TOLLEFSRUD AND WIFE, DARA B. TOLLEFSRUD

ELLIS FAMILY TRUST

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

LATERAL 4' BASE SWALE SEE DETAIL AM

RIP RAP AT EMBANKMENT SEE DETAIL BA

40 TONS CL I RIP RAP W/75 SY GEOTEXTILE ON BANKS ONLY LENGTH=50' (SEE DETAIL BB)

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

LATERAL 4' BASE SWALE SEE DETAIL U

60" RCP-III (BURIED)

30" CSP 2 ELBOWS

JB w/MH

18" RCP-III

18" RCP-IV

24" RCP-III

15" RCP-III

15" RCP-IV

15" CSP 2 ELBOWS

2GIA-WSS

2GIB-WSS

2GIB-WSF

TB 2GI-ST

GREU TL-3 Conv. DITO JB w/MH

REMOVE DI

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 60" WELDED STEEL (BURIED)

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

CHANNEL BLOCK SEE DETAIL Z

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

GRADE TO DRAIN

PROP. SOUND BARRIER

PROP. EXP. GUTTER

PROP. SBG

8" EXPRESSWAY CURB

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

10" CONC PS

35" CONC PS

4" CONC PS

TYPE B-77

END FENCE

BEGIN FENCE

HW

JB

BZ 1

BZ 2

PDE

TS

JS

F

C

E

S

TB

WD

ISFD

WOODS

EXISTING R/W

48" CHL

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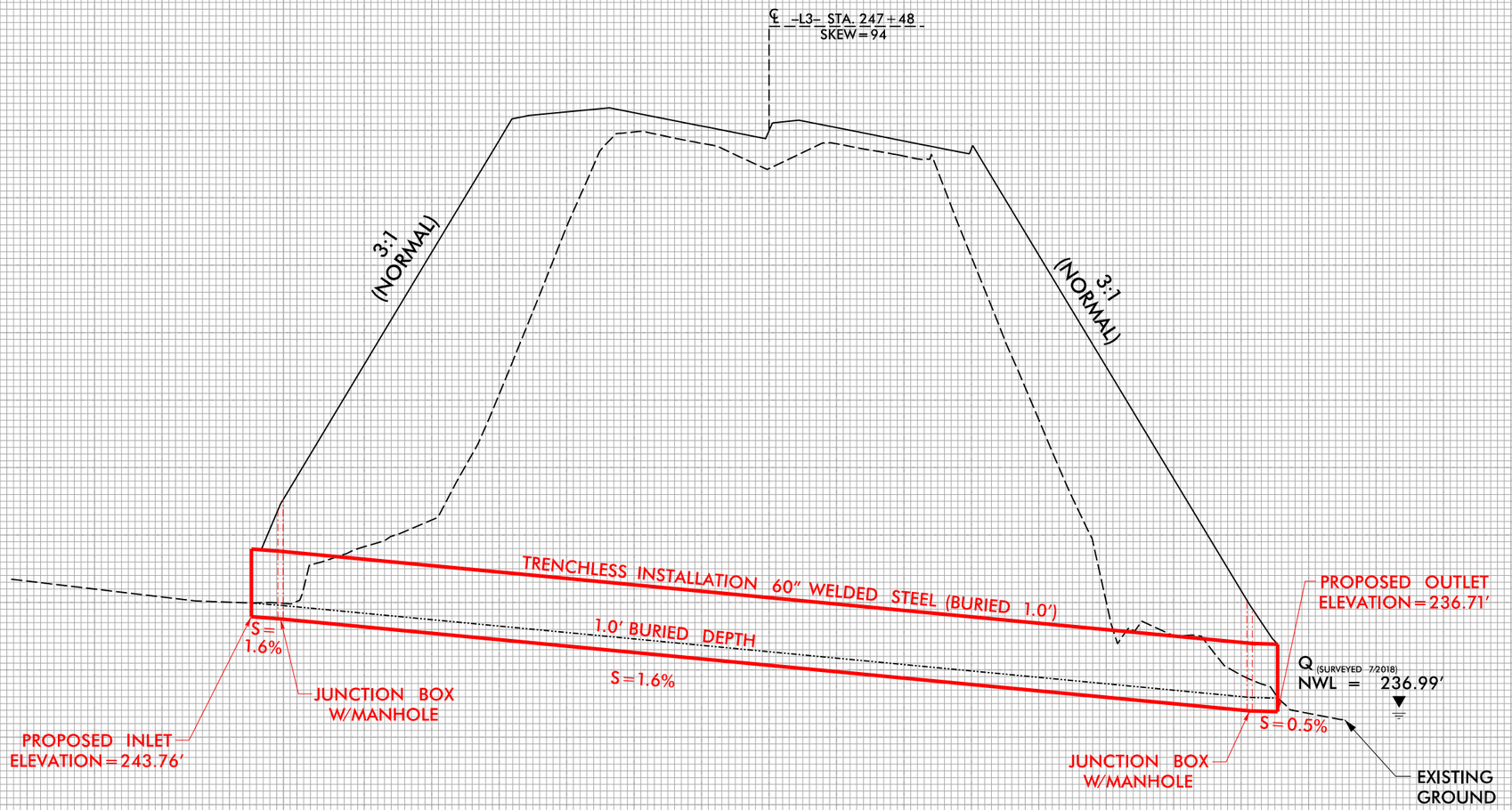
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 116 OF 125

SITE 57
–L3– 247+48



TRENCHLESS INSTALLATION 60" WELDED STEEL (BURIED 1.0')
(length=377')

PLANS PREPARED BY :

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609-3960
NC LICENSE NO. F-0112 • (919) 878-9560

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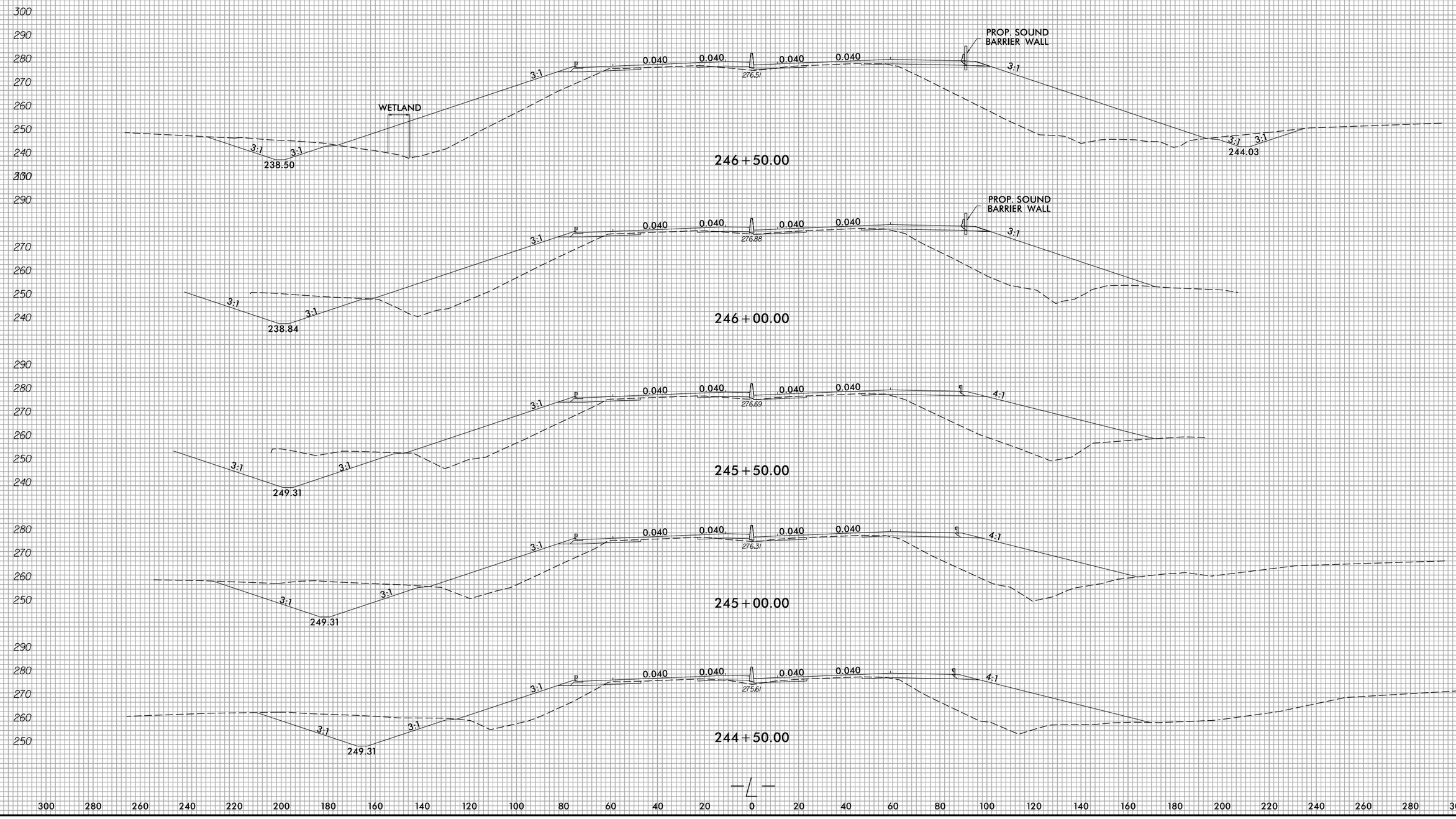
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	I-5111/I-4739	X-58

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

SITE 57

PERMIT DRAWING
SHEET 117 OF 125



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Plotted by: Fkeys

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 118 OF 125

ENGLISH

JS JS DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	51
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SQ

SITE 58

INSET A

SEE INSET A

HP
–L3– STA. 260+13.48 LT
0.40% | 1.86%

HP
–L3– STA. 260+18.65 RT
0.39% | 1.86%

MATCHLINE –L– STA. 258+00 SEE SHEET 50

MATCHLINE –L– STA. 271+00 SEE SHEET 52

260+00 265+00 270+00

MIDLAND, INC.

89

RIP RAP AT EMBANKMENT SEE DETAIL BA

38 TONS CL I RIP RAP W/75 SY GEOTEXTILE ON BANKS ONLY LENGTH=33' (SEE DETAIL BB)

LATERAL 4' BASE SWALE SEE DETAIL AM

LATERAL 4' BASE SWALE SEE DETAIL AV

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

15" CSP 2 ELBOWS

JB w/MH

15" RCP-III

TB 2GI-ST

TB 2GI-ST REMOVE DI

15" RCP

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION OF REINFORCED STEEL JACKED PIPE

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT SWALE SEE DETAIL A

2GIB-WSS

2GIB-WSF

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

LATERAL 4' BASE DITCH SEE DETAIL R

LATERAL 4' BASE DITCH SEE DETAIL R

INTERSTATE 40 WBL 24' CONC

INTERSTATE 40 EBL 24' CONC

10' CONC PS

4' CONC PS

LONNIE G. BOWLES AND WIFE, DONNA L. BOWLES

SANDRA M. WHITE AND HUSBAND, GREGORY D. GOODE, SR.

MICHELE LEE BURGOS AND HUSBAND, PHILIP DAVID BURGOS

MELISSA M. HAMILTON AND THOMAS N. TAYLOR

RYAN G. RHODES AND WIFE, CANDACE J. RHODES

RALPH C. GILLIKIN AND WIFE, CATERINA A. GILLIKIN

JOYCE GODWIN

MEHRAN CHARKHESHT

JOHN C. JOHNSON, III

JOHN C. JOHNSON, III

ELLIS FAMILY TRUST

98 98B 98C 99 100 100

WOODS

EXISTING R/W

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 119 OF 125

ENGLISH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	51
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SQ

SITE 58

INSET A

SEE INSET A

MATCHLINE –L– STA. 258+00 SEE SHEET 50

MATCHLINE –L– STA. 271+00 SEE SHEET 52

HP
–L3– STA. 260+13.48 LT
0.40% 1.86%

HP
–L3– STA. 260+18.65 RT
0.39% 1.86%

RIP RAP AT EMBANKMENT — 38 TONS CL I RIP RAP W/75 SY GEOTEXTILE ON BANKS ONLY LENGTH=33' (SEE DETAIL BB)

LATERAL 4' BASE SWALE SEE DETAIL AM

LATERAL 4' BASE SWALE SEE DETAIL AV

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

15" CSP 2 ELBOWS

JB w/MH

15" RCP-III

TB 2GI-ST

TB 2GI-ST REMOVE DI

PLUG & FILL W/FLOWABLE FILL

STRUCTURE INSTALLATION 36" FERNED STEEL NOT BURIED

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT SWALE SEE DETAIL A

2GIB-WSS

2GIB-WSF

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

LATERAL 4' BASE DITCH SEE DETAIL R

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JOHN C. JOHNSON, III

LONNIE G. BOWLES AND WIFE, DONNA L. BOWLES

SANDRA M. WHITE, S AND HUSBAND, GREGORY D. GOODE, SR.

MICHELE LEE BURGOS AND HUSBAND, PHILIP DAVID BURGOS

MELISSA M. HAMILTON AND THOMAS N. TAYLOR

RALPH C. GILLIKIN AND WIFE, CATERINA A. GILLIKIN

JOYCE GODWIN

MEHRAN CHARKHESHT

ELLIS FAMILY TRUST

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

10" CONC PS

4/5/2019
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WETLAND AND SURFACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-LEB- 12+14 RT	HW Replacement - SZ						< 0.01	< 0.01	13	14	
1	-LWB- 18+77 LT	Rip Rap Outlet Pad - SZ						< 0.01	< 0.01	20	20	
2	-Y1RPA- 32+52 RT	Concr. Ditch Replacement - SAA							< 0.01		29	
2	-Y1RPBD- 31+06 RT	Prop Rdwy Fill - SAA						0.01		45		
2	-Y1RPBD- 30+62 LT	Rip Rap Outlet Pads - SAA						< 0.01	< 0.01	12	10	
3	-Y1RPBD- 46+74 to 48+93 LT	Prop Pipes & Bridge Construction - SBB						< 0.01	0.05	24	240	
4	-L- 39+21 LT	Rip Rap Outlet Pad - SB						< 0.01	< 0.01	13	10	
4	-L- 40+19 LT	Ditch Outfall - SB						< 0.01	< 0.01	18	27	
5	-L- 59+13 to 62+63 LT	Channel Change - SC						0.03	< 0.01	352	12	
6	-L- 64+53 RT	Channel work at 8'x8' RCBC inlet - SD						0.02	< 0.01	78	11	
6	-L- 65+38 LT	Channel work at 8'x8' RCBC outlet - SD						0.01	< 0.01	51	30	
7	-L- 90+96 RT	Channel work at 10'x9' RCBC inlet - WC, SF	< 0.01	0.04				0.06	0.02	85	90	
7	-L- 91+39 LT	Channel work at 10'x9' RCBC outlet - WD, SF		0.01				0.08	< 0.01	80	10	
8	-Y3RPA- 23+91 LT	Prop Rdwy Fill and Rip Rap Pad - SNN						< 0.01		59		
8	-Y3RPA- 23+45 RT	Channel Change - SNN						< 0.01	< 0.01	12	4	
9	-Y3RPA- 17+58 RT	Rip Rap at pipe outfalls - SOO						< 0.01	< 0.01	23	8	
TOTALS*:			< 0.01	0.05				0.24	0.11	885	515	0

*Rounded totals are sum of actual impacts

WETLAND AND SURFACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
10	-L- 151+95 RT	Perm & Temp Channel Work - SG, SI						< 0.01	0.01	30	113	
10	-L- 145+45 to 149+23 LT	Channel Change and stabilization - SG, SH						0.03	< 0.01	496	18	
13	-L- 157+90 RT	Plug and Fill of Existing Outlet - SG							< 0.01		21	
13	-L- 158+46 to 159+72 RT	Roadway Fill Slope - SG						< 0.01	0.01	20	108	
TOTALS*:								0.04	0.03	546	260	0

*Rounded totals are sum of actual impacts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
April 2019
Wake County
I-5111 / I-4739
42346.3.1

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
14A	-L- 168+98-169+22 LT	BANK STABILIZATION - SRM						< 0.01	< 0.01	5	20	
14B	-L- 172+50-172+75 LT	BANK STABILIZATION - SRM						< 0.01	< 0.01	8	43	
14C	-L- 175+91-176+26 LT	BANK STABILIZATION - SRM						< 0.01	< 0.01	34	10	
15	ONLY IN BUFFER SET											
16A	-Y5RPD- 22+19-22+29 RT	EXIST. 24" CMP PLUG - SCF							< 0.01		10	
16B	-Y5RPD- 24+79 RT	EXIST. 15" CMP PLUG - SCF							< 0.01		15	
16C	-Y5RPC- 53+31 LT	60" RCP - SCF, WQF		< 0.01	< 0.01			< 0.01	< 0.01	46	10	
17	-Y5RCP- 54+38-54+68 RT	60" RCP - SOE, WQV		< 0.01				< 0.01	< 0.01	12	21	
	-Y5RCP- 54+68-55+37 RT	BANK STABILIZATION - SOE						< 0.01		84		
	-L- 250+27 LT	60" WSP - SOE						0.01		87		
	-L- 250+27 LT	BANK STABILIZATION - SOE						< 0.01		40		
	-Y5RPA- 22+51-22+93 RT	60" WSP - SOE						< 0.01	< 0.01	49	5	
18	-L- 256+39-257+51 LT & RT	DITCH, 66" WSP- SOI	< 0.01					< 0.01	< 0.01	62	6	
	-L- 256+70 LT	BANK STABILIZATION - SOI, WSD		0.02	0.02			< 0.01	< 0.01	34	11	
19	-L- 272+67-275+51 LT & RT	DITCH, 66" WSP - SNF						0.02	< 0.01	134	14	
20	-L- 281+93-284+50 LT & RT	CHANNEL CHANGE - SNH, WQE		0.01	< 0.01			< 0.01	< 0.01	99	46	
	-L- 284+50 LT	BANK STABILIZATION - SNH						< 0.01	< 0.01	5	10	
	-L- 287+00 LT	FILL SLOPE - WRX				< 0.01						
21	-L- 322+40-323+33 LT & RT	CHANNEL CHANGE, 72" RCP, SNY						0.02	< 0.01	138	19	
22	-L- 323+33-324+31 RT	CHANNEL CHANGE - SOC						0.01	< 0.01	108	22	
23A	-L- 362+54-364+61 LT	CHANNEL CHANGE - SLF / SEM						0.01	< 0.01	204	23	
23B	-L- 368+90-369+15 LT	BANK STABILIZATION - SEM						< 0.01	< 0.01	5	20	
23C	-L- 374+40-379+01 LT	CHANNEL CHANGE - SEM						0.02	< 0.01	455	10	
	-L- 379+01-379+22 LT	BANK STABILIZATION - SEM						< 0.01	< 0.01	12	10	
24	-L- 378+63-379+12 LT	BANK STABILIZATION - SLI, WNQ	0.02					< 0.01	< 0.01	56	15	
TOTALS*:			0.02	0.03	0.02	< 0.01		0.15	0.03	1678	339	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE AND JOHNSTON
I-5111_I-4739

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
25	ONLY IN BUFFER SET											
26A	-L- 381+90 RT	BANK STABILIZATION - SNK						< 0.01	< 0.01	5	10	
26B	-L- 385+85-386+27 RT	BANK STABILIZATION - SNK						< 0.01	< 0.01	42	10	
27	-L- 386+25 RT	BANK STABILIZATION - SNO						< 0.01	< 0.01	26	15	
28	-L- 387+46-387+93	60" WSP - SEM						0.01	< 0.01	41	20	
29	-L- 395+85 RT	CHANNEL CHANGE - SEK						< 0.01	< 0.01	48	10	
	-L- 396+45 LT	BANK STABILIZATION - SEK						< 0.01	< 0.01	37	10	
30	-L- 400+05 RT	ROADWAY FILL - WEC	< 0.01	< 0.01								
31	-L- 405+95 LT & RT	66" RCP - SEL						< 0.01	< 0.01	90	25	
32	-L- 416+74-416+93 LT	BANK STABILIZATION - SEV						< 0.01	< 0.01	10	10	
33	-L- 447+90 LT & RT	54" RCP & 54" WSP - SDT, WFA, WFC	0.01		0.01			0.01	< 0.01	127	10	
34	-L- 445+24-447+90 LT	ROADWAY FILL - SDU, WFB	0.01		0.04			< 0.01		88		
35	ONLY IN BUFFER SET											
36	-L- 461+16-461+39 RT	36" WSP - SDO						< 0.01		23		
	-L- 461+37-431+65 RT	BANK STABILIZATION - SDO						< 0.01	< 0.01	31	10	
37	-Y8RPA- 14+95-15+75 RT	36" RCP - WEZ	0.02									
38	ONLY IN BUFFER SET											
59	-Y5RPB- 43+22-44+62 LT	2 @ 48" RCP, CHANNEL CHANGE - SRN						0.01	< 0.01	159	10	
60	-Y8RPB- 39+80 LT	CHANNEL WORK - SET, WEX	0.06			0.02		< 0.01	< 0.01	51	10	
	-Y8RPA- 27+35 RT	BANK STABILIZATION - SET, WEX		< 0.01				< 0.01	< 0.01	23	10	
TOTALS*:			0.11	0.01	0.05	0.02		0.08	0.01	801	161	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE AND JOHNSTON
I-5111_I-4739

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
39A	-L- 98+30-99+62 LT	ROADWAY FILL - WEM	0.07			0.02						
39B	-L- 101+93-102+66 LT	ROADWAY FILL - WEM	0.01			0.01						
40	-L- 103+59-104+95 LT & RT	BANK STABILIZATION - SDG						0.12	0.03	254	90	
41	-L- 107+69-109+35 LT	ROADWAY FILL - WEP(1)				0.02						
42	-L- 104+95-108+09 RT	ROADWAY FILL - SDN, WEN	0.23	0.01		0.10		0.02		200		
43	-L- 110+24-110+66 RT	ROADWAY FILL - SEO							< 0.01		40	
44	-L- 111+78-114+64 LT & RT	60" RCP, ROADWAY FILL, DITCH - SEQ, WEO(1)			0.04			0.02		269		
	-L- 111+58-111+85 LT	BANK STABILIZATION - SEQ						< 0.01	< 0.01	16	11	
45	-L- 144+01-144+56 LT	48" CSP - SEU						0.01		154		
	-L- 143+75-144+08 LT	BANK STABILIZATION - SEU						< 0.01	< 0.01	40	11	
46	-L- 164+25-164+78 RT	30" CSP / 36" RCP - SEA, WOE	0.02					0.01		168		
47	-Y1RPA- 16+63-17+14 RT	54" CSP - SLV						< 0.01		62		
	-Y1RPA- 16+58-16+65 RT	BANK STABILIZATION - SLV						< 0.01	< 0.01	45	11	
48	-Y1RPA- 16+66-17+11 RT	ROADWAY FILL, RIPRAP - SLW						< 0.01	< 0.01	14	51	
49	-L- 171+49-174+67 LT & RT	66" WSP / 66" RCP - SLU, WC, WOB	0.06					0.03		284		
	-L- 171+40-174+63 LT & RT	BANK STABILIZATION - SLU						< 0.01	< 0.01	64	30	
50	-LCDWB- 64+67-68+61 LT & RT	60" CSP, CHANNEL CHANGE - SLS,WOA	0.05	0.02				0.06	< 0.01	588	57	
51	-Y2RPA3- 23+20-23+82 LT	ROADWAY FILL - WNZ	0.02									
	-Y2RPA3- 20+23-23+20	ROADWAY FILL - PBL						0.58				
	-L- 199+51-205+31	ROADWAY FILL, 66" RCP - SLR, WH	0.03					0.04		612		
	-Y2RPD3- 15+76-16+19 LT	BANK STABILIZATION- SLR						< 0.01	< 0.01	55	15	
52	-Y2RPD3- 23+65-24+43 LT	DITCH, ROADWAY FILL - WGG		0.01		0.02						
53	-L- 210+53-215+65 LT	54" RCP / 66" RCP - MILL BRANCH						0.06	< 0.01	401	7	
	-L- 210+21-210+61 RT	BANK STABILIZATION - MILL BRANCH						< 0.01	< 0.01	29	17	
TOTALS*:			0.49	0.05	0.04	0.18		0.98	0.05	3256	340	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE AND JOHNSTON
I-5111_I-4739

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
54	-L- 232+69-233+35 LT	54" WSP - SJ, WI	0.06					< 0.01		82		
	-L- 233+33-233+44 LT	BANK STABILIZATION - SJ						< 0.01	< 0.01	45	10	
55	-L- 233+94-234+19 LT	48" RCP - SK, WJ	< 0.01					< 0.01		78		
	-L- 234+02-234+11 LT	BANK STABILIZATION - SK						< 0.01	< 0.01	40	10	
56	-L- 246+22-246+77 RT	CHANNEL CHANGE - SEE						< 0.01	< 0.01	102	10	
57	-L- 246+73-247+65	60" WSP - SDD, WFF	0.01					0.02	< 0.01	238	10	
	-L- 247+59-247+78 LT	BANK STABILIZATION - SDD						< 0.01	< 0.01	55	9	
58	-L- 269+75-270+63 LT	36" WSP - SQ						< 0.01		100		
	-L- 270+58-270+85 LT	BANK STABILIZATION - SQ						< 0.01	< 0.01	33	27	
TOTALS*:			0.09					0.06	< 0.01	773	76	0
PROJECT TOTALS*:			**0.72**	**0.14**	**0.11**	**0.21**		**1.55**	**0.24**	**7939**	**1691**	

NOTES:
*Rounded totals are sum of actual impacts

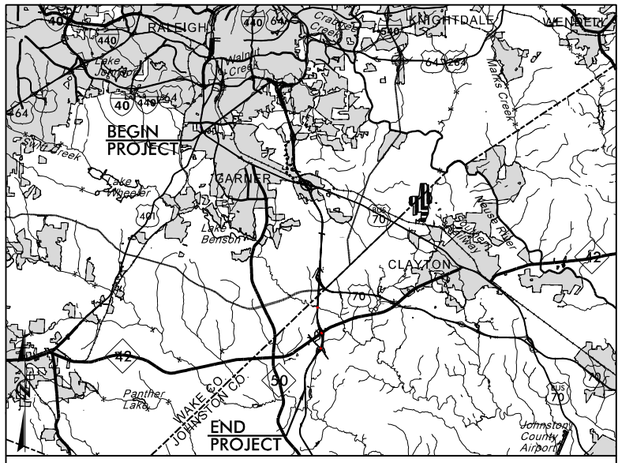
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE AND JOHNSTON
I-5111_I-4739

09/08/16

TIP PROJECT: I-5111 /I-4739

CONTRACT: C204134

See Sheet 1-B For Plan Sheet Symbols



VICINITY MAP (NTS)

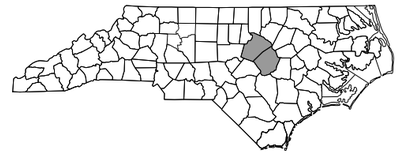
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE & JOHNSTON COUNTIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5111 /I-4739	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
42346.3.1	IMNHF-040-4(139)301	PE	

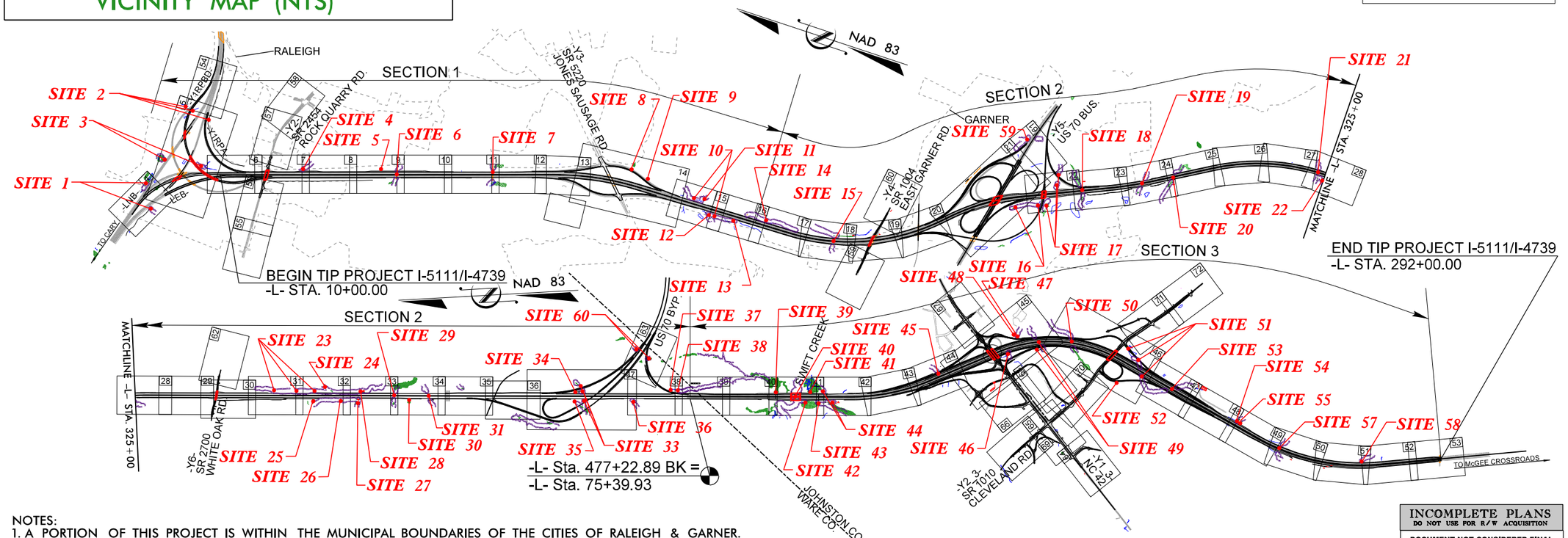
LOCATION: *I–40 FROM I–440 /US 64 (EXIT 301) TO JUST NORTH OF SR 1525 (CORNWALLIS ROAD), INCLUDING IMPROVEMENTS TO NC 42 AND SR 1010 (CLEVELAND ROAD).*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, WIDENING, RESURFACING & STRUCTURES*



BUFFER IMPACTS

BUFFER DRAWING SHEET 1 OF 52



NOTES:
1. A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITIES OF RALEIGH & GARNER.
2. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III MODIFIED.
3. THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2018 = 106,200
ADT 2040 = 137,200
DHV = 65%
D = 9%
T = 9% *
V = 70 MPH & 75 MPH **
FUNC CLASS: URBAN INTERSTATE
* (TTST 5% + DUAL 4%)
** DESIGN SPEED CHANGES AT US 70 BUS

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I–5111 /I–4739..... 12.950 miles
LENGTH STRUCTURE TIP PROJECT I–5111 /I–4739..... 0.094 miles
TOTAL LENGTH OF PROJECT I–5111 /I–4739..... 13.044 miles

NCDOT CONTACT

K. Zak Hamidi, P.E.
PROJECT ENGINEER – DESIGN-BUILD UNIT

PLANS PREPARED BY:

RK&K — RUMMEL, KLEPPER & KAHL, LLP, 900 RIDGEFIELD DRIVE, SUITE 350, RALEIGH, NORTH CAROLINA 27609, NC LICENSE NO. F–0112

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

S.T. WOOTEN

2018 STANDARD SPECIFICATIONS

LETTING DATE: JUNE 19, 2018

Brandon J. McInnis, P.E.
PROJECT ENGINEER

Mary E. Yahl, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER
SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

4/17/2019
R:\Hydraulics\PERMITS_Environmental\Drawings\4C\I5III_I4739_Hyd_buf_tsh.dgn
Fkeys

BUFFER INFILTRATION TABLE - OUTFALL Y1RPWB 1700		
IMPERV. AREA INCREASE = 0.28 AC		
-Y1RPWB- STA.14+50 TO STA. 18+00 RT (HYD/RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	28 FT.	350 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.30%
MAX. LONGITUDINAL SLOPE	4.00%	1.72%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	4 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.6 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.7 FPS

BUFFER INFILTRATION TABLE - OUTFALL Y1RPWB 1900		
IMPERV. AREA INCREASE = 1.34 AC		
-Y1RPEB- STA. 19+00 TO STA. 19+50 RT (RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	134 FT.	50 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.52%
MAX. LONGITUDINAL SLOPE	4.00%	0.52%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.2 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.3 FPS

BUFFER INFILTRATION TABLE - (JS SBB) OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.79 AC		
-L- STA. 16+50 TO STA. 18+00 RT (HYD/RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	179 FT.	150 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.40%
MAX. LONGITUDINAL SLOPE	4.00%	1.84%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.7 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.6 FPS

BUFFER INFILTRATION TABLE - (JS SBB) OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.79 AC		
-L- STA. 20+00 TO STA. 22+00 RT (EX)		
-L- STA. 22+50 TO STA. 25+00 RT (EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	179 FT.	450 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.58%
MAX. LONGITUDINAL SLOPE	4.00%	1.52%
MAX. SIDE SLOPE	3:1	5:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	2.0 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.0 FPS

BUFFER INFILTRATION TABLE - (JS SBB) OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.79 AC		
-L- STA. 24+50 TO STA. 28+00 LT (EX/HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	179 FT.	350 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.38%
MAX. LONGITUDINAL SLOPE	4.00%	0.64%
MAX. SIDE SLOPE	3:1	3:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.6 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.7 FPS

BUFFER INFILTRATION TABLE - (JS SBB) OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.79 AC		
-L- STA. 21+50 TO STA. 22+00 LT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	179 FT.	50 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.94%
MAX. LONGITUDINAL SLOPE	4.00%	1.94%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.9 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.1 FPS

BUFFER INFILTRATION TABLE - OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.79 AC		
-Y1RPA- STA. 19+79 TO STA. 24+31 RT (RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	179 FT.	452 FT.
MIN. LONGITUDINAL SLOPE	0.30%	2.87%
MAX. LONGITUDINAL SLOPE	4.00%	3.68%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.9 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.1 FPS

BUFFER INFILTRATION TABLE - OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.79 AC		
-Y1RPA- STA. 25+00 TO STA. 28+50 RT (RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	179 FT.	350 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.34%
MAX. LONGITUDINAL SLOPE	4.00%	2.28%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.9 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.1 FPS

BUFFER INFILTRATION TABLE - OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.79 AC		
-Y1RPBD- STA.40+00 TO STA. 41+00 LT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	179 FT.	100 FT.
MIN. LONGITUDINAL SLOPE	0.30%	4.00%
MAX. LONGITUDINAL SLOPE	4.00%	4.00%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	6 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.9 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.9 FPS

BUFFER INFILTRATION TABLE - OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.34 AC		
-Y1RPWB- STA.19+00 TO STA. 20+50 RT (RDWY/HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	134 FT.	150 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.78%
MAX. LONGITUDINAL SLOPE	4.00%	3.02%
MAX. SIDE SLOPE	3:1	3:1
MAX. BASE WIDTH	6 FT.	4 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.8 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.9 FPS

BUFFER INFILTRATION TABLE - OUTFALL Y1RPWB 1900		
IMPERV. AREA INCREASE = 1.34 AC		
-Y1RPWB- STA.34+50 TO STA. 37+00 RT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	134 FT.	250 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.66%
MAX. LONGITUDINAL SLOPE	4.00%	1.66%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	4
MAX. Q2 VELOCITY	2.0 FPS	1.7 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.9 FPS

BUFFER INFILTRATION TABLE - OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.79 AC		
-L2LT- STA. 472+65 TO STA. 474+75 LT (EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	179 FT.	210 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.00%
MAX. LONGITUDINAL SLOPE	4.00%	1.00%
MAX. SIDE SLOPE	3:1	3:1
MAX. BASE WIDTH	6 FT.	6 FT.
MAX. Q2 VELOCITY	2.0 FPS	2.0 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.0 FPS

BUFFER INFILTRATION TABLE - OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.79 AC		
-Y1RPA- STA. 29+00 TO STA. 32+50 RT (RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	179 FT.	350 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.32%
MAX. LONGITUDINAL SLOPE	4.00%	2.14%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.8 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.9 FPS

BUFFER INFILTRATION TABLE - OUTFALL MP2 #1		
IMPERV. AREA INCREASE = 1.79 AC		
-Y1RPEB- STA. 30+50 TO STA. 32+50 RT (RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	179 FT.	200 FT.
MIN. LONGITUDINAL SLOPE	0.30%	3.56%
MAX. LONGITUDINAL SLOPE	4.00%	3.56%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.3 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.3 FPS

BUFFER INFILTRATION TABLE - OUTFALL 91+00		
IMPERV. AREA INCREASE = 7.57 AC		
-L- STA. 107+60 TO STA. 110+85 RT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	757 FT.	325 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.60%
MAX. LONGITUDINAL SLOPE	4.00%	0.74%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.1 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.2 FPS

BUFFER INFILTRATION TABLE - OUTFALL 91+00		
IMPERV. AREA INCREASE = 7.57 AC		
-Y3RPC- STA. 23+00 TO STA. 26+00 LT (HYD/RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	757 FT.	300 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.44%
MAX. LONGITUDINAL SLOPE	4.00%	1.44%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.6 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.7 FPS

BUFFER INFILTRATION TABLE - OUTFALL 91+00		
IMPERV. AREA INCREASE = 7.57 AC		
-Y3RPC- STA. 17+50 TO STA. 18+50 RT (RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	757 FT.	100 FT.
MIN. LONGITUDINAL SLOPE	0.30%	2.02%
MAX. LONGITUDINAL SLOPE	4.00%	2.74%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	2.0 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.1 FPS

BUFFER INFILTRATION TABLE - OUTFALL 1442		
IMPERV. AREA INCREASE = 0.88 AC		
-Y3RPD- STA. 14+73 TO STA. 16+25 LT (RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	88 FT.	152 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.82%
MAX. LONGITUDINAL SLOPE	4.00%	2.10%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.9 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.0 FPS

BUFFER INFILTRATION TABLE - OUTFALL 91+00		
IMPERV. AREA INCREASE = 7.57 AC		
-Y3RPB- STA. 13+29 TO STA. 15+84 LT (RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	757 FT.	255 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.76%
MAX. LONGITUDINAL SLOPE	4.00%	1.35%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.9 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.0 FPS

BUFFER INFILTRATION TABLE - OUTFALL 1442		
IMPERV. AREA INCREASE = 0.88 AC		
-Y3RPA- STA. 16+03 TO STA. 21+00 RT (RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	88 FT.	497 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.31%
MAX. LONGITUDINAL SLOPE	4.00%	1.74%
MAX. SIDE SLOPE	3:1	5:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.5 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.6 FPS

BUFFER INFILTRATION TABLE - OUTFALL 1442		
IMPERV. AREA INCREASE = 0.88 AC		
-Y3RPA- STA. 16+03 TO STA. 22+00 LT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	88 FT.	597 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.62%
MAX. LONGITUDINAL SLOPE	4.00%	1.85%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.7 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.8 FPS

BUFFER INFILTRATION TABLE - (JS SI) OUTFALL 142+50		
IMPERV. AREA INCREASE = 7.95 AC		
-L- STA.148+50 TO STA. 150+50 RT (HYD/EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	795 FT.	200 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.40%
MAX. LONGITUDINAL SLOPE	4.00%	3.46%
MAX. SIDE SLOPE	3:1	3:1
MAX. BASE WIDTH	6 FT.	4 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.9 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.0 FPS

BUFFER INFILTRATION TABLE - OUTFALL 91+00		
IMPERV. AREA INCREASE = 7.57 AC		
-L- STA. 111+00 TO STA. 112+50 RT (EX)		
-L- STA. 113+50 TO STA. 122+00 RT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	757 FT.	1000 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.40%
MAX. LONGITUDINAL SLOPE	4.00%	1.78%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.7 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.8 FPS

BUFFER INFILTRATION TABLE - OUTFALL 91+00		
IMPERV. AREA INCREASE = 7.57 AC		
-L- STA. 113+50 TO STA. 122+50 LT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	757 FT.	900 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.30%
MAX. LONGITUDINAL SLOPE	4.00%	1.70%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.5 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.6 FPS

BUFFER INFILTRATION TABLE - OUTFALL 1442		
IMPERV. AREA INCREASE = 0.88 AC		
-L- STA. 125+50 TO STA. 127+00 RT (HYD)		
-L- STA. 127+50 TO STA. 135+00 RT (HYD/RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	88 FT.	900 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.30%
MAX. LONGITUDINAL SLOPE	4.00%	0.88%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.8 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.0 FPS

BUFFER INFILTRATION TABLE - OUTFALL 142+50		
IMPERV. AREA INCREASE = 7.95 AC		
-L- STA. 137+50 TO STA. 144+50 RT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	795 FT.	700 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.48%
MAX. LONGITUDINAL SLOPE	4.00%	0.52%
MAX. SIDE SLOPE	3:1	3:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.8 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.9 FPS

BUFFER INFILTRATION TABLE - OUTFALL 142+50		
IMPERV. AREA INCREASE = 7.95 AC		
-L- STA. 148+00 TO STA. 148+50 RT (EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	795 FT.	50 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.32%
MAX. LONGITUDINAL SLOPE	4.00%	1.32%
MAX. SIDE SLOPE	3:1	5:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.8 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.9 FPS

BUFFER INFILTRATION TABLE - OUTFALL 142+50		
IMPERV. AREA INCREASE = 7.95 AC		
-L- STA. 152+00 TO STA. 152+50 LT (RDWY)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	795 FT.	50 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.70%
MAX. LONGITUDINAL SLOPE	4.00%	1.70%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.8 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.9 FPS

BUFFER INFILTRATION TABLE - OUTFALL 4000		
IMPERV. AREA INCREASE = 3.20 AC		
-L- STA.31+00 TO STA. 33+00 LT (HYD)		
-L- STA.33+50 TO STA. 34+50 LT (HYD/EX)		
-L- STA.37+00 TO STA. 37+50 LT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	320 FT.	350 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.40%
MAX. LONGITUDINAL SLOPE	4.00%	0.70%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	2.0 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.1 FPS

BUFFER INFILTRATION TABLE - OUTFALL 4000		
IMPERV. AREA INCREASE = 3.20 AC		
-L- STA. 30+00 TO STA.35+00 RT (EX/HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	320 FT.	500 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.40%
MAX. LONGITUDINAL SLOPE	4.00%	0.50%
MAX. SIDE SLOPE	3:1	3:1
MAX. BASE WIDTH	6 FT.	4 FT.
MAX. Q2 VELOCITY	2.0 FPS	2.0 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.1 FPS

BUFFER INFILTRATION TABLE - OUTFALL 6500 (OUTLET 0910)		
IMPERV. AREA INCREASE = 7.15 AC		
-L- STA. 38+00 TO STA. 39+00 RT (HYD/EX)		
-L- STA. 41+00 TO STA. 43+00 RT (HYD/EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	715 FT.	300 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.71%
MAX. LONGITUDINAL SLOPE	4.00%	0.93%
MAX. SIDE SLOPE	3:1	3:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.9 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.0 FPS

BUFFER INFILTRATION TABLE - OUTFALL 6500 (OUTLET 0910)		
IMPERV. AREA INCREASE = 7.15 AC		
-L- STA. 48+00 TO STA. 49+00 RT (EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	715 FT.	100 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.36%
MAX. LONGITUDINAL SLOPE	4.00%	1.36%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	4 FT.
MAX. Q2 VELOCITY	2.0 FPS	2.0 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.1 FPS

BUFFER INFILTRATION TABLE - OUTFALL 6500 (OUTLET 0910)		
IMPERV. AREA INCREASE = 7.15 AC		
-L- STA. 48+00 TO STA. 49+00 RT (EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	715 FT.	100 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.01%
MAX. LONGITUDINAL SLOPE	4.00%	1.01%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.8 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.0 FPS

BUFFER INFILTRATION TABLE - OUTFALL 6500 (OUTLET 0910)		
IMPERV. AREA INCREASE = 7.15 AC		
-L- STA. 50+00 TO STA. 53+00 LT (EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	715 FT.	300 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.42%
MAX. LONGITUDINAL SLOPE	4.00%	1.68%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	6 FT.
MAX. Q2 VELOCITY	2.0 FPS	2.0 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.2 FPS

BUFFER INFILTRATION TABLE - OUTFALL 6500 (OUTLET 0910)		
IMPERV. AREA INCREASE = 7.15 AC		
-L- STA. 55+00 TO STA. 57+00 LT (HYD/EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	715 FT.	200 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.14%
MAX. LONGITUDINAL SLOPE	4.00%	1.56%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.6 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.7 FPS

BUFFER INFILTRATION TABLE - OUTFALL 6500		
IMPERV. AREA INCREASE = 8.45 AC		
-L- STA. 67+00 TO STA. 70+00 RT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	845 FT.	300 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.53%
MAX. LONGITUDINAL SLOPE	4.00%	0.60%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	4 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.9 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.1 FPS

BUFFER INFILTRATION TABLE - OUTFALL 6500		
IMPERV. AREA INCREASE = 8.45 AC		
-L- STA. 74+00 TO STA. 75+00 RT (EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	845 FT.	100 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.49%
MAX. LONGITUDINAL SLOPE	4.00%	0.49%
MAX. SIDE SLOPE	3:1	6:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.7 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.9 FPS

BUFFER INFILTRATION TABLE-OUTFALL 91+00(DUAL 10x9 RCBC)		
IMPERV. AREA INCREASE = 7.57 AC		
-L- STA. 82+00 TO STA. 83+00 RT (EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	757 FT.	100 FT.
MIN. LONGITUDINAL SLOPE	0.30%	1.52%
MAX. LONGITUDINAL SLOPE	4.00%	1.52%
MAX. SIDE SLOPE	3:1	8:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.9 FPS
MAX. Q10 VELOCITY	4.0 FPS	2.0 FPS

BUFFER INFILTRATION TABLE - OUTFALL 6500		
IMPERV. AREA INCREASE = 8.45 AC		
-L- STA. 78+00 TO STA. 80+50 RT (EX)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	845 FT.	250 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.56%
MAX. LONGITUDINAL SLOPE	4.00%	1.32%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.8 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.9 FPS

BUFFER INFILTRATION TABLE - OUTFALL 6500		
IMPERV. AREA INCREASE = 8.45 AC		
-L- STA. 70+00 TO STA. 71+00 LT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	845 FT.	100 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.60%
MAX. LONGITUDINAL SLOPE	4.00%	0.60%
MAX. SIDE SLOPE	3:1	4:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.7 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.8 FPS

BUFFER INFILTRATION TABLE - OUTFALL 6500		
IMPERV. AREA INCREASE = 8.45 AC		
-L- STA. 72+50 TO STA. 73+50 LT (HYD)		
PARAMETER	TOTAL REQUIRED	SEGMENT PROVIDES
TREATMENT LENGTH	845 FT.	100 FT.
MIN. LONGITUDINAL SLOPE	0.30%	0.50%
MAX. LONGITUDINAL SLOPE	4.00%	0.50%
MAX. SIDE SLOPE	3:1	3:1
MAX. BASE WIDTH	6 FT.	0 FT.
MAX. Q2 VELOCITY	2.0 FPS	1.7 FPS
MAX. Q10 VELOCITY	4.0 FPS	1.8 FPS

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING
SHEET 2 OF 52

NOTE:

"HYD" INDICATES HYDRAULIC DITCH

"EX" INDICATES EXISTING DITCH

"RDWY" INDICATES ROADWAY DITCH

PLANS PREPARED BY :
RS&H
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3/6/2019
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Jeff Keys

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739/U-6093	2D-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 3 OF 52

BUFFER FILTRATION–SECTION 2

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
DA= 0.44ac SLOPE= 1.68% Q2= 1.61cfs V2= 2.00ft/s D2= 0.45' Q10= 2.06cfs V10= 2.12ft/s D10= 0.49'	DA= 1.68ac SLOPE= 0.94% Q2= 4.62cfs V2= 1.99ft/s D2= 0.68' Q10= 5.91cfs V10= 2.11ft/s D10= 0.75'	DA= 1.47ac SLOPE= 0.53% Q2= 4.04cfs V2= 1.63ft/s D2= 0.79' Q10= 5.17cfs V10= 1.73ft/s D10= 0.86'	DA= 1.75ac SLOPE= 0.42% Q2= 5.69cfs V2= 1.63ft/s D2= 0.93' Q10= 7.28cfs V10= 1.74ft/s D10= 1.02'	DA= 1.21ac SLOPE= 0.42% Q2= 3.88cfs V2= 1.48ft/s D2= 0.81' Q10= 4.96cfs V10= 1.58ft/s D10= 0.89'	DA= 1.24ac SLOPE= 0.90% Q2= 3.98cfs V2= 1.98ft/s D2= 0.71' Q10= 5.09cfs V10= 2.10ft/s D10= 0.78'	DA= 0.14ac SLOPE= 0.48% Q2= 0.48cfs V2= 0.84ft/s D2= 0.31' Q10= 0.62cfs V10= 0.90ft/s D10= 0.34'	DA= 0.64ac SLOPE= 0.45% Q2= 1.91cfs V2= 1.27ft/s D2= 0.61' Q10= 2.59cfs V10= 1.37ft/s D10= 0.67'	DA= 0.87ac SLOPE= 0.93% Q2= 2.59cfs V2= 1.8ft/s D2= 0.60' Q10= 3.31cfs V10= 1.91ft/s D10= 0.66'	DA= 0.51ac SLOPE= 0.71% Q2= 1.40cfs V2= 1.40ft/s D2= 0.50' Q10= 1.79cfs V10= 1.49ft/s D10= 0.55'
PROVIDING FILTRATION –L– STA. 170+00 TO 172+00 LT PSH 17 DETAIL E	PROVIDING FILTRATION –L– STA. 177+50 TO 179+50 LT PSH 17–18 DETAIL G	PROVIDING FILTRATION –L– STA. 181+50 TO 184+50 LT PSH 18 DETAIL G	PROVIDING FILTRATION –L– STA. 200+00 TO 203+50 LT PSH 19 DETAIL G	PROVIDING FILTRATION –L– STA. 203+50 TO 207+00 LT PSH 19–20 DETAIL G	PROVIDING FILTRATION –L– STA. 216+00 TO 218+00 LT PSH 20 DETAIL G	PROVIDING FILTRATION –L– 193+00 TO 193+50 LT PSH 19 RDY CUT DITCH	PROVIDING FILTRATION –L– STA. 193+50 TO 195+50 LT PSH 19 RDY CUT DITCH	PROVIDING FILTRATION –L– STA. 195+50 TO 197+50 LT PSH 19 DETAIL L	PROVIDING FILTRATION –Y5RPB– STA. 45+00 TO 46+50 LT PSH 61 DETAIL B

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
DA= 1.53ac SLOPE= 1.8% Q2= 3.90cfs V2= 1.99ft/s D2= 0.38' Q10= 4.90cfs V10= 2.14ft/s D10= 0.43'	DA= 0.72ac SLOPE= 0.45% Q2= 2.32cfs V2= 1.22ft/s D2= 0.56' Q10= 2.97cfs V10= 1.29ft/s D10= 0.62'	DA= 1.98ac SLOPE= 0.45% Q2= 6.33cfs V2= 1.57ft/s D2= 0.82' Q10= 8.10cfs V10= 1.67ft/s D10= 0.90'	DA= 1.57ac SLOPE= 0.45% Q2= 5.03cfs V2= 1.48ft/s D2= 0.75' Q10= 6.43cfs V10= 1.57ft/s D10= 0.83'	DA= 0.16ac SLOPE= 1.4% Q2= 0.47cfs V2= 1.25ft/s D2= 0.25' Q10= 0.60cfs V10= 1.33ft/s D10= 0.27'	DA= 1.16ac SLOPE= 1.3% Q2= 3.45cfs V2= 2.0ft/s D2= 0.54' Q10= 4.42cfs V10= 2.13ft/s D10= 0.59'	DA= 5.57ac SLOPE= 0.6% Q2= 17.0cfs V2= 1.99ft/s D2= 1.05' Q10= 21.0cfs V10= 2.10ft/s D10= 1.16'	DA= 10.08ac SLOPE= 0.4% Q2= 27.1cfs V2= 1.96ft/s D2= 1.58' Q10= 34.87cfs V10= 2.09ft/s D10= 1.78'	DA= 0.81ac SLOPE= 1.4% Q2= 2.60cfs V2= 1.90ft/s D2= 0.48' Q10= 3.32cfs V10= 2.02ft/s D10= 0.52'	DA= 1.36ac SLOPE= 0.9% Q2= 4.37cfs V2= 1.88ft/s D2= 0.62' Q10= 5.59cfs V10= 2.00ft/s D10= 0.68'	DA= 0.75ac SLOPE= 1.4% Q2= 2.39cfs V2= 1.86ft/s D2= 0.46' Q10= 3.06cfs V10= 1.98ft/s D10= 0.51'	DA= 1.12ac SLOPE= 0.9% Q2= 3.59cfs V2= 1.77ft/s D2= 0.58' Q10= 4.59cfs V10= 1.88ft/s D10= 0.64'	DA= 0.55ac SLOPE= 2.0% Q2= 1.75cfs V2= 2.00ft/s D2= 0.38' Q10= 2.24cfs V10= 2.12ft/s D10= 0.42'
PROVIDING FILTRATION –L– 256+00 TO 257+28 RT PSH 23 DETAIL U	PROVIDING FILTRATION –L– 262+00 TO 264+85 LT PSH 23 RDY CUT DITCH	PROVIDING FILTRATION –L– 264+85 TO 273+00 LT PSH 23–24 RDY CUT DITCH	PROVIDING FILTRATION –L– 262+50 TO 271+50 RT PSH 23–24 RDY CUT DITCH	PROVIDING FILTRATION –L– 312+50 TO 314+50 LT PSH 27 RDY CUT DITCH	PROVIDING FILTRATION –L– 310+00 TO 311+50 RT PSH 27 RDY CUT DITCH	PROVIDING FILTRATION –L– 322+00 TO 323+32 RT PSH 28 DETAIL U	PROVIDING FILTRATION –L– 322+68 TO 323+75 LT PSH 28 DETAIL U	PROVIDING FILTRATION –L– 338+00 TO 341+50 RT PSH 29 RDY CUT DITCH	PROVIDING FILTRATION –L– 341+50 TO 346+46 RT PSH 29 RDY CUT DITCH	PROVIDING FILTRATION –L– 338+00 TO 341+50 LT PSH 29 RDY CUT DITCH	PROVIDING FILTRATION –L– 341+50 TO 346+46 LT PSH 29 RDY CUT DITCH	PROVIDING FILTRATION –L– 360+37 TO 363+00 RT PSH 31 RDY CUT DITCH

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
DA= 0.77ac SLOPE= 1.2% Q2= 2.50cfs V2= 1.98ft/s D2= 0.56' Q10= 3.20cfs V10= 2.11ft/s D10= 0.62'	DA= 0.81ac SLOPE= 0.7% Q2= 2.59cfs V2= 1.44ft/s D2= 0.55' Q10= 3.31cfs V10= 1.53ft/s D10= 0.60'	DA= 0.81ac SLOPE= 0.4% Q2= 2.20cfs V2= 1.11ft/s D2= 0.81' Q10= 2.90cfs V10= 1.19ft/s D10= 0.90'	DA= 2.5ac SLOPE= 0.8% Q2= 8.00cfs V2= 1.99ft/s D2= 1.16' Q10= 10.00cfs V10= 2.10ft/s D10= 1.26'	DA= 1.08ac SLOPE= 0.3% Q2= 3.71cfs V2= 1.30ft/s D2= 0.85' Q10= 4.75cfs V10= 1.38ft/s D10= 0.93'	DA= 2.52ac SLOPE= 0.5% Q2= 8.10cfs V2= 1.83ft/s D2= 0.94' Q10= 10.0cfs V10= 1.93ft/s D10= 1.02'	DA= 0.66ac SLOPE= 0.4% Q2= 2.11cfs V2= 1.21ft/s D2= 0.66' Q10= 2.70cfs V10= 1.29ft/s D10= 0.72'	DA= 1.12ac SLOPE= 0.3% Q2= 3.60cfs V2= 1.28ft/s D2= 0.84' Q10= 4.60cfs V10= 1.36ft/s D10= 0.92'	DA= 1.44ac SLOPE= 0.7% Q2= 4.60cfs V2= 1.62ft/s D2= 0.97' Q10= 5.90cfs V10= 1.73ft/s D10= 1.07'	DA= 1.51ac SLOPE= 0.7% Q2= 4.90cfs V2= 1.65ft/s D2= 1.00' Q10= 6.20cfs V10= 1.75ft/s D10= 1.09'	DA= 1.34ac SLOPE= 0.3% Q2= 4.30cfs V2= 1.34ft/s D2= 0.80' Q10= 5.5cfs V10= 1.43ft/s D10= 0.88'	DA= 0.37ac SLOPE= 2.0% Q2= 1.30cfs V2= 1.44ft/s D2= 0.20' Q10= 1.70cfs V10= 1.57ft/s D10= 0.23'	DA= 3.96ac SLOPE= 0.5% Q2= 10.0cfs V2= 1.71ft/s D2= 0.88' Q10= 13.0cfs V10= 1.84ft/s D10= 1.01'
PROVIDING FILTRATION –L– 387+50 TO 389+50 RT PSH 33 DETAIL E	PROVIDING FILTRATION –L– 390+93 TO 395+00 RT PSH 33 RDY CUT DITCH	PROVIDING FILTRATION –L– 396+50 TO 399+00 RT PSH 34 DETAIL AN	PROVIDING FILTRATION –L– 403+00 TO 405+93 RT PSH 34 DETAIL AN	PROVIDING FILTRATION –L– 411+00 TO 415+50 LT PSH 35 DETAIL E	PROVIDING FILTRATION –L– 417+50 TO 419+35 RT PSH 35 DETAIL G	PROVIDING FILTRATION –L– 418+00 TO 419+35 RT PSH 35 DETAIL E	PROVIDING FILTRATION –L– 419+35 TO 422+50 RT PSH 35–36 DETAIL E	PROVIDING FILTRATION –L– 410+00 TO 414+16 RT PSH 35 DETAIL AE	PROVIDING FILTRATION –L– 414+16 TO 417+50 RT PSH 35 DETAIL AE	PROVIDING FILTRATION –L– 424+50 TO 429+00 LT PSH 36 DETAIL E	PROVIDING FILTRATION –L– 446+00 TO 447+40 RT PSH 37 DETAIL AM	PROVIDING FILTRATION –L2– 282+11 TO 282+50 RT PSH 25 DETAIL U

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
DA= 0.72ac SLOPE= 0.3% Q2= 2.60cfs V2= 1.04ft/s D2= 0.91' Q10= 3.40cfs V10= 1.11ft/s D10= 1.01'	DA= 2.60ac SLOPE= 1.1% Q2= 6.00cfs V2= 2.00ft/s D2= 0.92' Q10= 7.60cfs V10= 2.13ft/s D10= 1.01'	DA= 1.13ac SLOPE= 0.3% Q2= 3.60cfs V2= 1.09ft/s D2= 1.05' Q10= 4.60cfs V10= 1.16ft/s D10= 1.15'	DA= 0.39ac SLOPE= 2.5% Q2= 1.10cfs V2= 2.00ft/s D2= 0.33' Q10= 1.40cfs V10= 2.13ft/s D10= 0.36'	DA= 0.75ac SLOPE= 1.4% Q2= 3.40cfs V2= 2.00ft/s D2= 0.75' Q10= 4.30cfs V10= 2.16ft/s D10= 0.84'	DA= 3.79ac SLOPE= 0.6% Q2= 12.0cfs V2= 1.99ft/s D2= 1.42' Q10= 16.0cfs V10= 2.14ft/s D10= 1.58'	DA= 2.73ac SLOPE= 0.7% Q2= 7.50cfs V2= 1.99ft/s D2= 0.87' Q10= 9.60cfs V10= 2.12ft/s D10= 0.95'	DA= 4.18ac SLOPE= 0.9% Q2= 11.48cfs V2= 2.00ft/s D2= 0.74' Q10= 14.69cfs V10= 2.14ft/s D10= 0.84'	DA= 1.81ac SLOPE= 0.8% Q2= 4.97cfs V2= 1.96ft/s D2= 0.80' Q10= 6.36cfs V10= 2.09ft/s D10= 0.87'	DA= 0.53ac SLOPE= 2.0% Q2= 1.50cfs V2= 1.99ft/s D2= 0.39' Q10= 1.90cfs V10= 2.12ft/s D10= 0.42'	DA= 0.38ac SLOPE= 0.9% Q2= 1.10cfs V2= 1.18ft/s D2= 0.48' Q10= 1.40cfs V10= 1.26ft/s D10= 0.53'	DA= 1.56ac SLOPE= 1.2% Q2= 4.60cfs V2= 1.99ft/s D2= 0.88' Q10= 5.90cfs V10= 2.12ft/s D10= 0.96'	DA= 0.24ac SLOPE= 2.3% Q2= 0.88cfs V2= 1.94ft/s D2= 0.34' Q10= 1.10cfs V10= 2.05ft/s D10= 0.37'
PROVIDING FILTRATION –L– 462+50 TO 464+00 RT PSH 38 DETAIL AN	PROVIDING FILTRATION –L– 467+50 TO 473+50 RT PSH 38 DETAIL AE	PROVIDING FILTRATION –Y5LPB– 17+50 TO 20+98 RT PSH 21 DETAIL AN	PROVIDING FILTRATION –Y5LPB– 12+25 TO 13+82 RT PSH 21 DETAIL E	PROVIDING FILTRATION –Y5LPB– 25+00 TO 26+85 RT PSH 21 DETAIL AN	PROVIDING FILTRATION –Y5LPB– 26+85 TO 29+45 RT PSH 21 DETAIL AN	PROVIDING FILTRATION –Y5RPB– 30+50 TO 34+00 RT PSH 21 DETAIL E	PROVIDING FILTRATION –Y5RPBSPUR– 13+73 TO 17+20 RT PSH 21 DETAIL AU	PROVIDING FILTRATION –Y5RPB– 40+50 TO 43+50 LT PSH 21\61 DETAIL G	PROVIDING FILTRATION –Y5RPA– 17+50 TO 20+50 RT PSH 22 DETAIL G	PROVIDING FILTRATION –Y5RPA– 27+00 TO 29+00 RT PSH 61 DETAIL AE	PROVIDING FILTRATION –L– 249+50 TO 250+53 LT PSH 22 DETAIL AN	PROVIDING FILTRATION –Y5RPC– 52+00 TO 53+28 LT PSH 22 DETAIL E

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
DA= 0.23ac SLOPE= 0.3% Q2= 0.84cfs V2= 0.89ft/s D2= 0.48' Q10= 1.10cfs V10= 0.96ft/s D10= 0.54'	DA= 2.78ac SLOPE= 0.9% Q2= 8.30cfs V2= 2.00ft/s D2= 0.68' Q10= 11.00cfs V10= 2.17ft/s D10= 0.79'	DA= 1.00ac SLOPE= 1.2% Q2= 2.50cfs V2= 1.61ft/s D2= 0.62' Q10= 3.20cfs V10= 1.71ft/s D10= 0.68'	DA= 1.33ac SLOPE= 1.3% Q2= 3.70cfs V2= 1.84ft/s D2= 0.71' Q10= 4.70cfs V10= 1.95ft/s D10= 0.78'	DA= 0.98ac SLOPE= 0.5% Q2= 3.10cfs V2= 1.27ft/s D2= 0.90' Q10= 4.00cfs V10= 1.35ft/s D10= 0.99'	DA= 0.18ac SLOPE= 0.3% Q2= 0.36cfs V2= 0.64ft/s D2= 0.43' Q10= 0.46cfs V10= 0.68ft/s D10= 0.48'	DA= 0.36ac SLOPE= 3.5% Q2= 0.74cfs V2= 1.90ft/s D2= 0.36' Q10= 0.95cfs V10= 2.02ft/s D10= 0.40'	DA= 0.68ac SLOPE= 1.1% Q2= 2.20cfs V2= 1.56ft/s D2= 0.63' Q10= 2.80cfs V10= 1.66ft/s D10= 0.69'	DA= 9.26ac SLOPE= 0.4% Q2= 25.0cfs V2= 1.93ft/s D2= 1.51' Q10= 33.0cfs V10= 2.08ft/s D10= 1.73'	DA= 10.0ac SLOPE= 0.3% Q2= 28.0cfs V2= 1.89ft/s D2= 1.65' Q10= 35.0cfs V10= 2.00ft/s D10= 1.83'	DA= 1.03ac SLOPE= 1.4% Q2= 3.50cfs V2= 1.97ft/s D2= 0.77' Q10= 4.50cfs V10= 2.10ft/s D10= 0.85'	DA= 3.31ac SLOPE= 0.6% Q2= 11.0cfs V2= 1.99ft/s D2= 1.36' Q10= 15.0cfs V10= 2.15ft/s D10= 1.53'
PROVIDING FILTRATION –Y5RPC– 53+28 TO 54+50 LT PSH 22 DETAIL E	PROVIDING FILTRATION –L– 249+00 TO 251+00 RT PSH 22 DETAIL U	PROVIDING FILTRATION –L– 251+50 TO 253+00 RT PSH 22 DETAIL G	PROVIDING FILTRATION –L– 253+00 TO 256+00 RT PSH 22 DETAIL G	PROVIDING FILTRATION –L– 252+00 TO 254+50 LT PSH 22 DETAIL E	PROVIDING FILTRATION –Y8RPA– 24+50 TO 26+00 LT PSH 63 DETAIL E	PROVIDING FILTRATION –Y8RPA– 26+00 TO 28+50 LT PSH 63 DETAIL E	PROVIDING FILTRATION –L– 474+00 TO 476+00 RT PSH 38 DETAIL AE	PROVIDING FILTRATION –L– 437+00 TO 444+00 LT PSH 37 DETAIL U	PROVIDING FILTRATION –L– 444+00 TO 446+90 LT PSH 37 DETAIL U	PROVIDING FILTRATION –Y8RPA– 26+00 TO 27+01 RT PSH 63 DETAIL AN	PROVIDING FILTRATION –Y8RPA– 27+48 TO 29+60 RT PSH 63 DETAIL AN

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
DA= 1.89ac SLOPE= 0.8% Q2= 5.60cfs V2= 1.91ft/s D2= 0.70' Q10= 7.20cfs V10= 2.03ft/s D10= 0.77'	DA= 6.64ac SLOPE= 0.4% Q2= 21.0cfs V2= 1.92ft/s D2= 1.36' Q10= 27.0cfs V10= 2.05ft/s D10= 1.53'	DA= 0.51ac SLOPE= 0.3% Q2= 1.60cfs V2= 0.99ft/s D2= 0.67' Q10= 2.10cfs V10= 0.97ft/s D10= 0.74'	DA= 1.10ac SLOPE= 0.3% Q2= 3.50cfs V2= 1.27ft/s D2= 0.83' Q10= 4.50cfs V10= 1.36ft/s D10= 0.91'	DA= 0.53ac SLOPE= 1.8% Q2= 1.80cfs V2= 1.84ft/s D2= 0.57' Q10= 2.30cfs V10= 1.96ft/s D10= 0.63'	DA= 1.81ac SLOPE= 1.3% Q2= 5.40cfs V2= 1.97ft/s D2= 0.50' Q10= 6.90cfs V10= 2.12ft/s D10= 0.57'
PROVIDING FILTRATION –L– 284+00 TO 290+00 RT PSH 25 RDY CUT DITCH	PROVIDING FILTRATION –Y5RPD– 20+17 TO 21+66 RT PSH 21 DETAIL U	PROVIDING FILTRATION –L– 258+50 TO 260+50 LT PSH 22 DETAIL E	PROVIDING FILTRATION –L– 258+50 TO 262+50 RT PSH 22 DETAIL E	PROVIDING FILTRATION –L– 275+65 TO 276+50 LT PSH 24 DETAIL AN	PROVIDING FILTRATION –L– 386+27 TO 387+50 LT PSH 33 DETAIL U

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739/U-6093	2D-6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 4 OF 52

BUFFER FILTRATION–SECTION 3

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
DA= 1.89ac SLOPE= 0.9% Q2= 6.90cfs V2= 1.84ft/s D2= 0.63' Q10= 8.90cfs V10= 1.99ft/s D10= 0.73'	DA= 1.20ac SLOPE= 0.4% Q2= 3.80cfs V2= 1.23ft/s D2= 1.00' Q10= 4.90cfs V10= 1.34ft/s D10= 1.10'	DA= 8.50ac SLOPE= 0.3% Q2= 27.0cfs V2= 1.85ft/s D2= 1.64' Q10= 35.0cfs V10= 1.98ft/s D10= 1.85'	DA= 3.09ac SLOPE= 0.7% Q2= 9.9cfs V2= 1.99ft/s D2= 1.29' Q10= 13.0cfs V10= 2.13ft/s D10= 1.43'	DA= 4.00ac SLOPE= 0.5% Q2= 13.0cfs V2= 1.78ft/s D2= 1.03' Q10= 16.0cfs V10= 1.88ft/s D10= 1.15'	DA= 4.00ac SLOPE= 0.6% Q2= 13.0cfs V2= 1.99ft/s D2= 0.95' Q10= 16.0cfs V10= 2.10ft/s D10= 1.06'	DA= 2.47ac SLOPE= 0.7% Q2= 8.50cfs V2= 1.79ft/s D2= 0.76' Q10= 11.0cfs V10= 1.93ft/s D10= 0.87'	DA= 0.78ac SLOPE= 1.3% Q2= 2.50cfs V2= 1.96ft/s D2= 0.53' Q10= 3.20cfs V10= 2.09ft/s D10= 0.58'	DA= 0.95ac SLOPE= 2.2% Q2= 3.10cfs V2= 1.96ft/s D2= 0.51' Q10= 3.90cfs V10= 2.07ft/s D10= 0.56'
PROVIDING FILTRATION –L– STA. 111+09 LT L=70' PSH 42 DETAIL AM	PROVIDING FILTRATION –L– STA. 163+70 TO 166+64 LT PSH 45 DETAIL AN	PROVIDING FILTRATION –L– STA. 146+15 TO 147+00 RT PSH 45 DETAIL U	PROVIDING FILTRATION –Y1RPA– STA. 18+05 TO 22+50 LT PSH 45 DETAIL AN	PROVIDING FILTRATION –Y1RPD– STA. 14+21 TO 15+75 LT PSH 45 DETAIL AM	PROVIDING FILTRATION –Y1RPD– STA. 15+75 TO 16+53 LT PSH 45 DETAIL AM	PROVIDING FILTRATION –L3– STA. 173+25 TO 175+50 LT PSH 45 DETAIL U	PROVIDING FILTRATION –Y1RPD– STA. 20+28 TO 21+50 LT PSH 45 DETAIL G	PROVIDING FILTRATION –Y1RPA– STA. 19+50 TO 22+00 RT PSH 45 ROADWAY CUT DITCH

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
DA= 1.65ac SLOPE= 0.5% Q2= 4.60cfs V2= 1.22ft/s D2= 0.79' Q10= 5.90cfs V10= 1.30ft/s D10= 0.87'	DA= 0.80ac SLOPE= 3.2% Q2= 1.00cfs V2= 1.99ft/s D2= 0.41' Q10= 1.30cfs V10= 2.12ft/s D10= 0.45'	DA= 0.87ac SLOPE= 0.3% Q2= 2.80cfs V2= 1.25ft/s D2= 0.80' Q10= 3.60cfs V10= 1.33ft/s D10= 0.88'	DA= 2.41ac SLOPE= 0.7% Q2= 8.30cfs V2= 1.91ft/s D2= 1.20' Q10= 9.90cfs V10= 2.00ft/s D10= 1.28'	DA= 0.89ac SLOPE= 0.3% Q2= 2.00cfs V2= 1.10ft/s D2= 0.67' Q10= 2.60cfs V10= 1.18ft/s D10= 0.74'	DA= 14.1ac SLOPE= 0.3% Q2= 45.0cfs V2= 1.90ft/s D2= 1.98' Q10= 58.0cfs V10= 2.03ft/s D10= 2.22'	DA= 3.09ac SLOPE= 0.3% Q2= 8.50cfs V2= 1.42ft/s D2= 1.41' Q10= 11.0cfs V10= 1.52ft/s D10= 1.55'	DA= 4.35ac SLOPE= 0.8% Q2= 12.0cfs V2= 2.00ft/s D2= 0.79' Q10= 15.0cfs V10= 2.12ft/s D10= 0.89'	DA= 8.48ac SLOPE= 0.3% Q2= 27.0cfs V2= 1.84ft/s D2= 1.64' Q10= 35.0cfs V10= 1.97ft/s D10= 1.86'	DA= 13.0ac SLOPE= 0.3% Q2= 42.0cfs V2= 2.00ft/s D2= 1.94' Q10= 53.0cfs V10= 2.13ft/s D10= 2.16'	DA= 2.85ac SLOPE= 0.7% Q2= 9.10cfs V2= 1.95ft/s D2= 1.25' Q10= 12.0cfs V10= 2.09ft/s D10= 1.38'	DA= 3.28ac SLOPE= 0.6% Q2= 11.0cfs V2= 1.99ft/s D2= 1.36' Q10= 13.0cfs V10= 2.08ft/s D10= 1.45'	DA= 1.99ac SLOPE= 0.3% Q2= 5.90cfs V2= 1.42ft/s D2= 0.96' Q10= 7.60cfs V10= 1.51ft/s D10= 1.06'
PROVIDING FILTRATION –LCDEB– STA. 54+64.54 TO 59+01.14 RT PSH 45–46 ROADWAY CUT DITCH	PROVIDING FILTRATION –Y1RPA– STA. 15+74.66 TO 16+33.93 RT PSH 45 DETAIL AN	PROVIDING FILTRATION –L– STA. 186+00 TO 189+50 RT PSH 46 DETAIL E	PROVIDING FILTRATION –L– STA. 184+00 TO 185+50 RT PSH 46 DETAIL AN	PROVIDING FILTRATION –L– STA. 191+00 TO 193+50 LT PSH 46 DETAIL E	PROVIDING FILTRATION –L– STA. 209+00 TO 209+78 RT PSH 46 DETAIL M	PROVIDING FILTRATION –Y2– STA. 59+26 TO 61+00 LT PSH 46 DETAIL AN	PROVIDING FILTRATION –Y2RPB– STA. 24+00 TO 26+60 LT PSH 46 DETAIL M	PROVIDING FILTRATION –Y2– STA. 57+50 TO 58+00 LT PSH 46 DETAIL U	PROVIDING FILTRATION –Y2RPA– STA. 19+63 TO 22+75 LT PSH 46 DETAIL U	PROVIDING FILTRATION –Y2RPA– STA. 19+50 TO 20+50 RT PSH 46 DETAIL U	PROVIDING FILTRATION –Y2RPA– STA. 20+50 TO 23+50 RT PSH 46 DETAIL U	PROVIDING FILTRATION –Y2RPA– STA. 13+62 TO 17+40 RT PSH 46 DETAIL E

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
DA= 1.17ac SLOPE= 0.9% Q2= 3.50cfs V2= 1.42ft/s D2= 0.64' Q10= 4.50cfs V10= 1.52ft/s D10= 0.70'	DA= 1.01ac SLOPE= 0.5% Q2= 3.00cfs V2= 1.13ft/s D2= 0.67' Q10= 3.80cfs V10= 1.20ft/s D10= 0.73'	DA= 0.82ac SLOPE= 0.5% Q2= 2.40cfs V2= 1.08ft/s D2= 0.67' Q10= 3.10cfs V10= 1.15ft/s D10= 0.73'	DA= 1.12ac SLOPE= 1.2% Q2= 3.30cfs V2= 1.68ft/s D2= 0.63' Q10= 4.30cfs V10= 1.79ft/s D10= 0.69'	DA= 0.55ac SLOPE= 1.4% Q2= 1.60cfs V2= 1.42ft/s D2= 0.43' Q10= 2.10cfs V10= 1.52ft/s D10= 0.48'	DA= 0.83ac SLOPE= 2.5% Q2= 2.50cfs V2= 1.95ft/s D2= 0.46' Q10= 3.20cfs V10= 2.07ft/s D10= 0.51'	DA= 1.69ac SLOPE= 1.7% Q2= 4.30cfs V2= 1.96ft/s D2= 0.61' Q10= 5.40cfs V10= 2.07ft/s D10= 0.66'	DA= 1.14ac SLOPE= 1.9% Q2= 3.40cfs V2= 1.91ft/s D2= 0.54' Q10= 4.30cfs V10= 2.03ft/s D10= 0.59'	DA= 0.58ac SLOPE= 0.4% Q2= 1.90cfs V2= 0.93ft/s D2= 0.64' Q10= 2.40cfs V10= 0.99ft/s D10= 0.70'	DA= 1.61ac SLOPE= 1.3% Q2= 5.50cfs V2= 1.98ft/s D2= 0.50' Q10= 7.10cfs V10= 2.14ft/s D10= 0.58'	DA= 3.91ac SLOPE= 0.7% Q2= 11.0cfs V2= 1.99ft/s D2= 0.85' Q10= 14.0cfs V10= 2.12ft/s D10= 0.96'	DA= 1.44ac SLOPE= 0.9% Q2= 4.90cfs V2= 1.71ft/s D2= 0.80' Q10= 6.30cfs V10= 1.82ft/s D10= 0.88'	DA= 3.58ac SLOPE= 0.5% Q2= 11.0cfs V2= 1.74ft/s D2= 0.93' Q10= 15.0cfs V10= 1.90ft/s D10= 1.09'
PROVIDING FILTRATION –Y2RPB– STA. 15+64.89 TO 18+50 LT PSH 46 ROADWAY CUT DITCH	PROVIDING FILTRATION –LCDEB– STA. 68+22.85 TO 70+94.51 LT PSH 46 ROADWAY CUT DITCH	PROVIDING FILTRATION –L– STA. 200+00 TO 203+50 RT PSH 46 ROADWAY CUT DITCH	PROVIDING FILTRATION –L– STA. 198+50 TO 202+75 LT PSH 46 ROADWAY CUT DITCH	PROVIDING FILTRATION –L– STA. 202+75 TO 204+50 LT PSH 46 ROADWAY CUT DITCH	PROVIDING FILTRATION –L– STA. 204+00 TO 205+00 RT PSH 46 ROADWAY CUT DITCH	PROVIDING FILTRATION –Y2RPD3– STA. 17+50 TO 24+00 RT PSH 46 ROADWAY CUT DITCH	PROVIDING FILTRATION –Y2RPD3– STA. 16+70 TO 23+00 LT PSH 46 ROADWAY CUT DITCH	PROVIDING FILTRATION –Y2RPD3– STA. 12+21.20–LCDWB– STA. 102+08 TO 15+51.99 LT PSH 47 ROADWAY CUT DITCH	PROVIDING FILTRATION –LCDEB– STA. 88+99 TO 103+27 LT PSH 47 DETAIL AM	PROVIDING FILTRATION –L– STA. 224+75 TO 91+52 RT PSH 47 DETAIL AM	PROVIDING FILTRATION –L– STA. 224+75 TO 228+75 LT PSH 48 ROADWAY CUT DITCH	PROVIDING FILTRATION –L– STA. 231+50 TO 232+65 LT PSH 48–49 DETAIL AM

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
DA= 0.71ac SLOPE= 3.2% Q2= 2.00cfs V2= 1.96ft/s D2= 0.22' Q10= 2.50cfs V10= 2.11ft/s D10= 0.25'	DA= 1.19ac SLOPE= 1.1% Q2= 4.10cfs V2= 1.99ft/s D2= 0.37' Q10= 5.20cfs V10= 2.14ft/s D10= 0.43'	DA= 3.79ac SLOPE= 0.7% Q2= 12.0cfs V2= 1.97ft/s D2= 0.91' Q10= 16.0cfs V10= 2.14ft/s D10= 1.05'	DA= 4.31ac SLOPE= 0.7% Q2= 12.0cfs V2= 1.99ft/s D2= 0.90' Q10= 15.0cfs V10= 2.12ft/s D10= 1.01'	DA= 0.83ac SLOPE= 0.4% Q2= 2.70cfs V2= 1.04ft/s D2= 0.66' Q10= 3.40cfs V10= 1.10ft/s D10= 0.72'	DA= 4.37ac SLOPE= 0.5% Q2= 15.0cfs V2= 1.89ft/s D2= 1.09' Q10= 19.0cfs V10= 2.02ft/s D10= 1.23'	DA= 0.53ac SLOPE= 0.3% Q2= 1.50cfs V2= 1.06ft/s D2= 0.64' Q10= 1.90cfs V10= 1.12ft/s D10= 0.70'	DA= 1.70ac SLOPE= 0.3% Q2= 5.50cfs V2= 1.09ft/s D2= 0.92' Q10= 7.00cfs V10= 1.16ft/s D10= 1.00'	DA= 3.45ac SLOPE= 0.7% Q2= 11.0cfs V2= 1.99ft/s D2= 0.84' Q10= 14.0cfs V10= 2.13ft/s D10= 0.96'	DA= 0.94ac SLOPE= 0.3% Q2= 2.40cfs V2= 1.24ft/s D2= 0.74' Q10= 3.00cfs V10= 1.31ft/s D10= 0.81'
PROVIDING FILTRATION –L– STA. 243+00 TO 243+50 RT PSH 49 DETAIL AM	PROVIDING FILTRATION –L– STA. 237+00 TO 241+50 LT PSH 49 DETAIL AU	PROVIDING FILTRATION –L– STA. 234+28 TO 235+50 LT PSH 49 DETAIL AM	PROVIDING FILTRATION –L– STA. 245+50 TO 247+66 LT PSH 50 DETAIL AM	PROVIDING FILTRATION –L– STA. 250+18 TO 253+50 LT PSH 50 ROADWAY CUT DITCH	PROVIDING FILTRATION –L– STA. 249+00 TO 250+00 LT PSH 50 DETAIL U	PROVIDING FILTRATION –L– STA. 258+50 TO 261+50 RT PSH 51 DETAIL E	PROVIDING FILTRATION –L– STA. 253+50 TO 260+13 LT PSH 50–51 ROADWAY CUT DITCH	PROVIDING FILTRATION –L– STA. 269+00 TO 270+71 LT PSH 51 DETAIL AM	PROVIDING FILTRATION –Y2– STA. 61+50 TO 63+50 LT PSH 71 DETAIL E

PLANS PREPARED BY :

RK&K

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900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO. F–0112 • (919) 878–9560

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ENGLISH

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

BUFFER DRAWING
SHEET 5 OF 52

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SITE 1

NAD 83

L M LEWIS · SHARON DOCKERY · TAMMY SIMMONS · ZAINAB DARAMY · JUDGE DAVIS · ROGER MISSIE GANDZALI · ANGELA L. BROC

BEG.WW FENCE

PROP.SOUND BARRIER

MATCHLINE

BEG. -NW1- Sta.10+00.00 =
-LWB- Sta.2+53.22 (173.90' LT)

RETAIN · DI · 150+00

SWAMP AREA

SZ · WI · WH · SY

15 TONS CL I RIP RAP
30 SY GEOTEXTILE
INV. OUT=199.5

TRENCHLESS INSTALLATION 36" WELDED STEEL

PLUG AND FILL W/FLOWABLE FILL

SP. LAT. BASE DITCH SEE DETAIL M

SP. LAT. V DITCH SEE DETAIL K

JB w/MH SP. DET.

REMOVE

BERM DITCH SEE DETAIL CF

PAVED DITCH

-LWB- 15+00 · 20+00

Conv. DI TO JB w/MH

SP. CUT SWALE W/HINGE SEE DETAIL G

24" RCP · 30" RCP · 42" RCP

REPLACED W/42" RCP IV AS PART OF TIP #I-5938

-LEB- 15+00

POSSIBLE JUNCTION

8 TONS CL I RIP RAP W/ 20 SY GEOTEXTILE ON BANKS ONLY LENGTH = 10' (SEE DETAIL RB)

REMOVE BURIED

MATCHLINE SEE INSERT ABOVE

MATCHLINE -LWB- STA. 20+50 SEE SHEET 5

MATCHLINE -LEB- STA. 16+50 SEE SHEET 5

SITE 1

1 · 2 · 3

50 25 0 50 100
SCALE

PROP.SOUND BARRIER

BEG.WW FENCE

24" CMP · 24" CSP 2 ELBOWS · CONC. HW · HW

BEG. -NW3- Sta.10+00.00 =
-LWB- Sta.4+32.49 (21.47' RT)

4/16/2019
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PLANS PREPARED BY:

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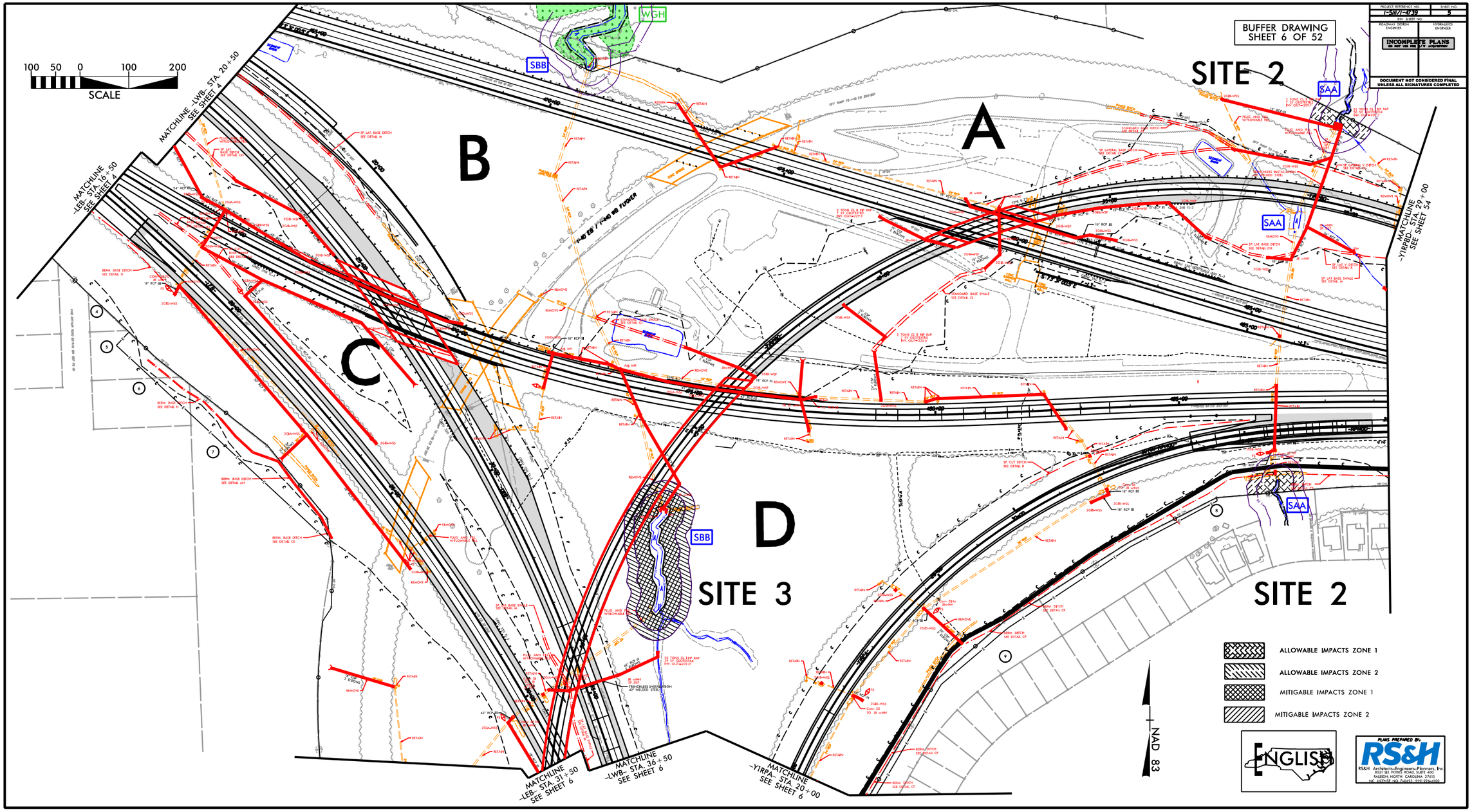
BUFFER DRAWING
SHEET 6 OF 52
SITE 2
A
B
C
D
SITE 3
SITE 2
100 50 0 100 200
SCALE
MATCHLINE –LWB– STA. 20+50
SEE SHEET 7
MATCHLINE –LEB– STA. 16+50
SEE SHEET 4
MATCHLINE –YYRPBD– STA. 29+00
SEE SHEET 54
MATCHLINE –LEB– STA. 31+50
SEE SHEET 6
MATCHLINE –LWB– STA. 36+50
SEE SHEET 6
MATCHLINE –YYRPA– STA. 20+00
SEE SHEET 6
I-40 EB / I-40 BB FLYOVER
SBB
SAA
WGH
INCOMPLETE PLANS
DO NOT USE FOR C.F.P. AGREEMENT
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
NAD 83
PLANS PREPARED BY:
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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENGLISH

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

NAD 83

BUFFER DRAWING SHEET 7 OF 52

50 25 0 50 100
SCALE

SITE 4

SB

MATCHLINE -Y2- STA. 37+50 SEE SHEET 57

MATCHLINE -L- STA. 26+50 SEE SHEET 6

MATCHLINE -YIRPBD- STA. 65+00 SEE SHEET 6

MATCHLINE -L- STA. 40+00 SEE SHEET 8

MATCHLINE -Y2- STA. 30+50 SEE SHEET 56

CULTURAL COMMERCE PARTNERS, LLC

EARNEST PAUL ADAMS

PROVIDENCE OF RALEIGH HOMEOWNERS ASSOC.INC.

SP. CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL LATERAL 'V' DITCH SEE DETAIL K

SP. CUT BASE SWALE SEE DETAIL AU

26 TONS CL I RIP RAP
50 SY GEOTEXTILE
INV. OUT=248.0'

PROPOSED ENCLOSED DRAINAGE SYSTEM UNDERNEATH BRIDGE (50) 4" DECK DRAINS EVERY 6' CONNECTED W/16' UVL-PROOF PVC

PROPOSED ENCLOSED DRAINAGE SYSTEM UNDERNEATH BRIDGE (60) 4" DECK DRAINS EVERY 5' CONNECTED W/16' UVL-PROOF PVC

18" CSP W/ELBOWS CONVERT TO FES JBw/MH

CONVERT DI TO JBw/MH

15" RCP III

18" RCP III

24" RCP III

42" CSP 2 ELBOWS

24" CSP 2 ELBOWS

TRENCHLESS INSTALLATION 42" WELDED STEEL

TB 2GIB-ST

TB 2GIA-ST

2GI-B

2GIA-WSS

RETAIN CB

JB w/MH

FES

RIP RAP

10' CONC WALL

60" WD

48" CHL

ISFD

2SFD

REDUS RALEIGH HOUSING LLC

US RALEIGH HOUSING LLC

RALEIGH ING LLC

EJCH LLC

ERNESTINA FLORES

MRS. VIROY R. BROWN

MR. & MRS. ERIC AKYEA

MR. & MRS. MICHAEL BARNETT JR.

ANITA M. HARRUM

PLANS PREPARED BY:

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENGLISH

SITE 4

SB

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 83

BUFFER DRAWING
SHEET 8 OF 52

BZ 1 BZ 2 BZ

J12A

DUTCHMAN HOMEOWNERS ASSOC.

KALUBI M. TSHIYONGA

BRANDON JOHNSON SR.

ENETA E. MCALISTER

MELVIN TATE JR.

MELVIN D. BROWN

TAFFE H. DAVIS

DANNY G. JOHNSON

TANZA T. CHRISTIE

PATRICIA M. JOHNSTON

ELIZABETH CARRIE

WELDON & ANGELA SELPH

KIM S. ROBINSON

2SFD

CONC

EIP

SLOPE EASEMENT

EXISTING R/W

MATCHLINE –L– STA. 40+00 SEE SHEET 7

MATCHLINE –L– STA. 53+00 SEE SHEET 9

PDE

4 TONS CL I RIP RAP
9 SY GEOTEXTILE
INFLOW = 250.0'
OUT = 250.0'

RIP RAP AT EMBANKMENT
SEE DETAIL BA

TAIL DITCH
SEE DETAIL CE

SPECIAL LATERAL 'V' DITCH
SEE DETAIL K

SPECIAL CUT DITCH
w/HINGE
SEE DETAIL L

18" RCP III

2GIB-WSF

48" WW & ISBW

EOP

EOT

10' CONC

4' CONC

I-40 WB

I-40 EB

I-40 WBL 35' CONC

I-40 EBL 35' CONC

15" RCP III

24" RCP III

30" RCP III

24" RCP

18" RCP

TB 2GIB-ST

TB 2GIA-ST

45+00

50+00

CABLE

REMOVE

RETAIN

2GIA-WSS

PLUG AND FILL
W/FLOWABLE FILL

TRENCHLESS INSTALLATION
24" WELDED STEEL

14' FDPS

12' FDPS

22'

18" CSP
2 ELBOWS

SPECIAL LAT. V DITCH
SEE DETAIL K

CONC. BERM DITCH
SEE DETAIL BL

OF RALEIGH TOWNHOUSE OWNERS ASSOC.INC

PROVIDENCE PF RALEIGH HOMEOWNERS ASSOC.

PROVIDENCE DEVELOPMENT OF RALEIGH LLC

10' CONC WALL

2SFD

CONC

R/W MON

EXISTING R/W

DE RALEIGH CARRIER

50 25 0 50 100
SCALE

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

BUFFER DRAWING
SHEET 9 OF 52

SITE 6

SC

WA

WB

SD

12B

12D

MATCHLINE –L– STA. 53+00 SEE SHEET 8

MATCHLINE –L– STA. 66+00 SEE SHEET 10

DONNA L. GRUNDY

JEFFREY G. MITCHELL

TONJAY DAVENPORT

THEODORE POWELL III

EARLINE L. MOTLEY

PHILLIP LENOIR DAVIS

PORTIA G. JUDD

GERALD RICHARDSON JR.

JASON A. TUCKER

LENA M. BRISCOE

REGINA NCOZI-JOHNSON

IB&T RAHAMAN LONG

AMARFI VALDEZ

DUTCHMAN HOMEOWNERS ASSOC.

2SFD

CONC

20' DRAINAGE EASEMENT

60' RW

50' SLOPE EASEMENT

40' SANITARY SEWER EASEMENT

BERM DITCH
SEE DETAIL CF

SPECIAL LATERAL 'V' SWALE
SEE DETAIL AE

STANDARD BASE DITCH
SEE DETAIL AY
20 TONS CL I RIP RAP
39 SY GEOTEXTILE
INV. OUT = 220.1'

SPECIAL LATERAL BASE DITCH
SEE DETAIL CB

SPECIAL LATERAL BASE DITCH
SEE DETAIL AD

18" CSP
2 ELBOWS

REMOVE
30" RCP III

2GIA–WSS 36" RCP III

2GIA–WSS

REMOVE

36" RCP III

42" RCP III

REMOVE

SPECIAL LATERAL 'V' DITCH
SEE DETAIL K

30" RCP–III

2GIB–WSF
SP. DET.

COLLAR AND EXTEND
48" RCP

OUTLET CHANNEL
SEE DETAIL BQ

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT = 201.5'

GREU 350 TL-3

TRENCHLESS INSTALLATION
30" WELDED STEEL

TRENCHLESS INSTALLATION
72" WELDED STEEL

PLUG AND
FILL W/
FLOWABLE FILL

RETAIN

55+00

60+00

65+00

S 18° 21' 43.7" E

–L–

TB 2GIB–ST

TB 2GIA–ST

15" RCP III

18" RCP III

30" RCP III

REMOVE

DL 106

CABLE

CAT–1

GREU 350 TL-3

STANDARD BASE DITCH
SEE DETAIL E

12 TONS CL B RIP RAP
26 SY GEOTEXTILE

INLET PROTECTION
SEE DETAIL BR

FDE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

50 25 0 50 100
SCALE

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ER_Plans

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

BUFFER DRAWING
SHEET 10 OF 52

SD

MITIGABLE IMPACTS ZONE 1

SITE 6

MATCHLINE –L– STA. 66+00 SEE SHEET 9

MATCHLINE –L– STA. 79+00 SEE SHEET 11

TOE PROTECTION
SEE DETAIL CD
13 TONS CL B RIP RAP
23 SY GEOTEXTILE
3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=204.6'

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=204.5'

SPECIAL LATERAL 'V' DITCH
SEE DETAIL K

SP. CUT SWALE W/HINGE
SEE DETAIL G

SPECIAL LATERAL 'V' DITCH
SEE DETAIL K

ABANDONED PER RALEIGH PUBLIC UTILITIES SUPERVISOR

48" WW & ISBW

EXISTING R/W

R/W MON

12' SOIL

18" RCP III

2GIB-WSS

2GIB-WSF

FS

REMOVE

GREU 350 TL-3

15" RCP III

PLUG AND FILL W/ FLOWABLE FILL

JB w/MH

RETAIN

30" RCP III

TB 2GIA-ST

TB 2GIB-ST

24" RCP III

24" RCP

18" RCP

70+00

75+00

–/ –

S 18° 21' 43.7" E

PLUG AND FILL W/FLOWABLE FILL

CAT-1

SPECIAL LATERAL BASE SWALE
SEE DETAIL M

SPECIAL LATERAL V DITCH
SEE DETAIL K

EOP

EOT

4' CONC.

6' CONC.

CITY OF RALEIGH
TOWN OF GARNER

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

50 25 0 50 100
SCALE

PLANS PREPARED BY:

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

BUFFER DRAWING
SHEET 11 OF 52

12F

SF

SE

WD

SITE 7

REMOVE & REPLACE EXIST.C/A FENCE

MATCHLINE -L- STA. 79+00 SEE SHEET 10

MATCHLINE -L- STA. 92+00 SEE SHEET 12

2 TONS CL B RIP RAP
7 SY GEOTEXTILE
INV. OUT=220.4'

15" CSP
2 ELBOWS

PROP. SIGN

SINGLE SLOPE BARRIER

5 TONS CL B RIP RAP
14 SY GEOTEXTILE
INV. OUT=221.80'

24" CSP
2 ELBOWS

END WW FENCE

BEGIN WW FENCE

OUTLET CHANNEL
SEE DETAIL BQ

PROP. SBG

PROP. GUARDRAIL

2GIB-WSF

15" RCP III

TRENCHLESS INSTALLATION
24" WELDED STEEL

TRENCHLESS INSTALLATION
DUAL 96" WELDED STEEL

I-40 WB

I-40 EB

80+00

85+00

90+00

-L-

S 18° 21' 43.7" E

TB 2GIB-ST

REMOVE

18" RCP III

18" CSP
2 ELBOWS

PLUG AND FILL
W/FLOWABLE FILL

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=223.5'

INLET CHANNEL
SEE DETAIL BR

REMOVE & REPLACE EXIST.C/A FENCE

12D

12E

WC

SITE 7

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	80+50.00	102+00.00	LT
SBG	-L-	85+50.00	102+00.00	RT

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

50 25 0 50 100
SCALE

PLANS PREPARED BY:

RS&H Architects-Engineers-Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

4/15/2019
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-5811A,B,D	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

BUFFER DRAWING
SHEET 12 OF 52

SITE 8

SITE 9

SITE 8

WJJ

SNN

SNN

SOO

A

B

C

D

MATCHLINE –Y3RPB– STA. 23+00
SEE SHEET 13

MATCHLINE –L– STA. 116+00
SEE SHEET 13

MATCHLINE –Y3RPC– STA. 23+50
SEE SHEET 13

MATCHLINE –L– STA. 142+00
SEE SHEET 15

ENGLISH

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

100 50 0 100 200
SCALE

PLANS PREPARED BY:
RS&H
RS&H Architects-Engineers-Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC FIRMS NO. P0293 SC FIRMS NO. 2576

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

4/7/2015
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

BUFFER DRAWING
SHEET 13 OF 52

SITE 10

SG

SITE 12

SH

RIP RAP AND CHEVRONS TURNED OFF FOR CLARITY

13

HAB PROPERTIES LLC
DB 4960 - PG 332
PB 2005 - PG 952

MATCHLINE -L- STA. 142+00 SEE SHEET 14

MATCHLINE -L- STA. 155+00 SEE SHEET 16

26 TONS CL I RIP RAP
50 SY GEOTEXTILE
INV. OUT=250.4'

CHANNEL CHANGE
SEE DETAIL BN
TIE TO DISSIPATER BASIN
WITH MAX. SLOPE OF 5.0%

FILL EXISTING STREAM

OUTLET CHANNEL
SEE DETAIL BS

RETAIN

24" RCP

INV=260.

INV=252.6'

RETAIN

DI TOP=257.

18" IN=261.95'

24" OUT=261.55'

2GIA-WSF
SP. DET.

2GIB-WSF

18" RCP III

15" RCP III

REMOVE EXIST. 15" RCP

PLUG AND FILL
W/FLOWABLE FILL

18" RCP III

24" RCP III

TOP=258.58'
IN=258.18'
OUT=258.08'

TB 2GIB-ST

TB 2GIA-ST

TOP=269.48'
OUT=268.73'

15" RCP III

145+00

TB 2GIA-ST
SP. DET.

PLUG AND FILL
W/FLOWABLE FILL

PLUG AND FILL
W/FLOWABLE FILL

REMOVE

TOP=264.87'
OUT=261.72'

HW
II" CSP
INV=260.30'

SPECIAL CUT DITCH
W/HINGE
SEE DETAIL D

STANDARD BASE DITCH
SEE DETAIL AD

STANDARD BASE DITCH
SEE DETAIL Q

SPECIAL LATERAL
'V' DITCH
SEE DETAIL L

48"WW & ISBW

EXISTING R/W

R/W MON

RIP RAP

SLAB LID
INV=275.59'

RCP III

30" CMP

EOP

EOT

RETAIN AND LINE
WITH STRUCTURAL LINER

I-40 WBL 35' CONC

150+00

TB 2GIB-ST

TB 2GIB-ST

TOP=286.66'
IS IN=281.52'

15" RCP III

BL-115

TIGHTHEAD
SPECULATION
STEEL

RETAIN AND LINE
WITH STRUCTURAL LINER

I-40 EBL 35' CONC

INV=281.39'

15" RCP III

2GID-WSS

Conv. DI TO JB w/MH

GREU 350 TL-3

18" RCP

18" RCP III

Conv. DI TO JB w/MH

INV=302.

REMOVE

2GID-WSS

FS

18" CSP
2 @ 45° ELBOWS

18" RCP-III

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=275.0'

SPECIAL LATERAL
BASE SWALE
SEE DETAIL M

5 TONS CL B RIP RAP
14 SY GEOTEXTILE
INV. OUT=269.00'

2GIA-WSS

24" RCP III

SI

SPECIAL CHANNEL
SEE DETAIL ST

CITY OF RALEIGH
TOWN OF GARNER

SG

48"WD/WW/ISBW

WASTE TREATMENT RESERVOIR

72" CMP

MW

BZ 1

BZ 2

ZB

SITE 11

SITE 10

ENGLISH

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

50 25 0 50 100
SCALE

PLANS PREPARED BY:

RS&H

RS&H Architects-Engineers-Planners, Inc.
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RALEIGH, NORTH CAROLINA 27615
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NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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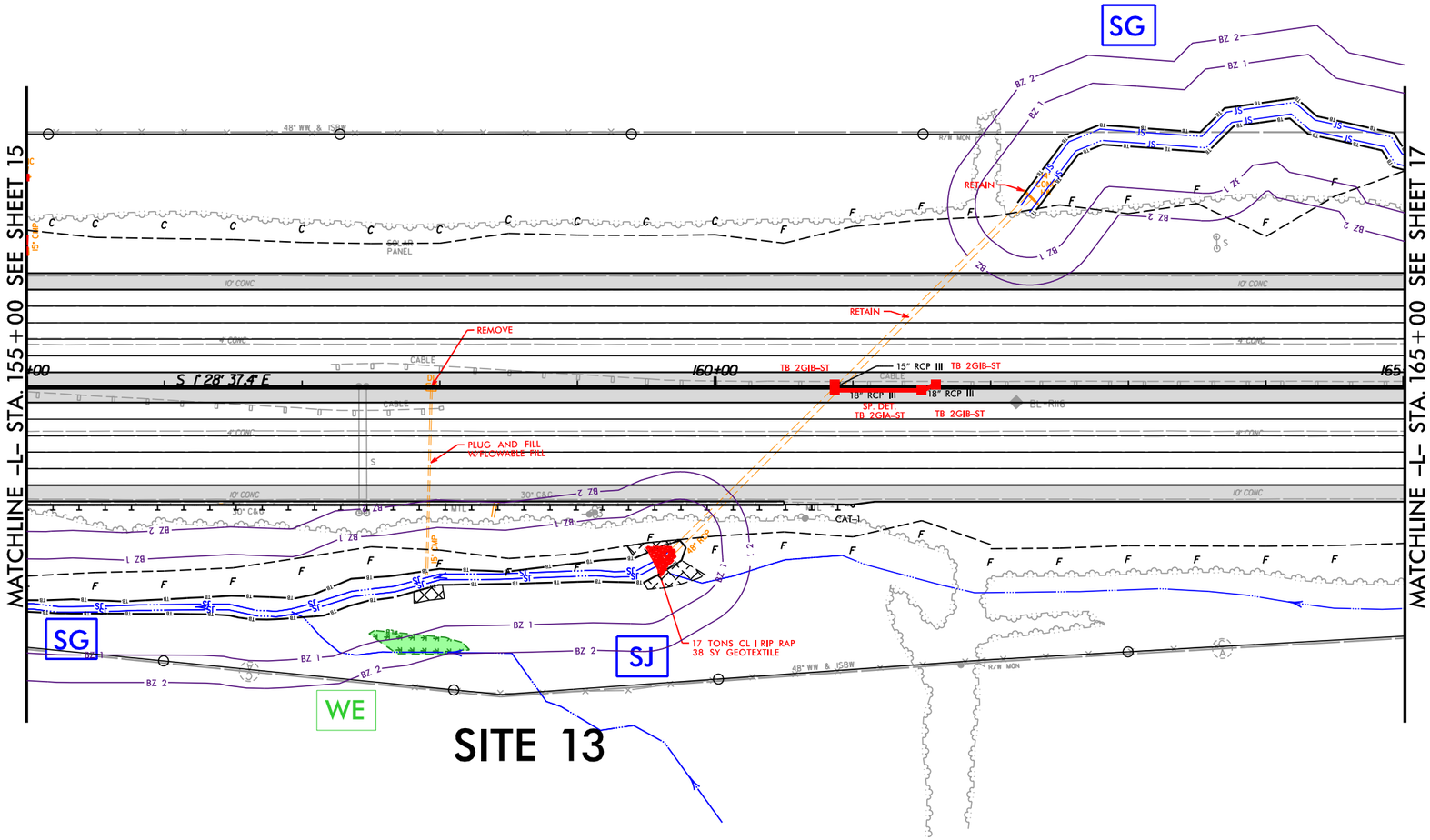
SHEET 14 OF 52



ENGLISH

ALLOWABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 1

50 25 0 50 100
SCALE

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SHEET 15 OF 52

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NAD 83

MARTIN MARIETTA MATERIAL INC.
MAPPED PER WAKE CO. G.I.S.
14

SITE 14A

SITE 14B

SRM

SITE 14C

2 TONS CL B RIP RAP
7 SY GEOTEXTILE
ON BANKS ONLY
LENGTH=5'
(SEE DETAIL BB)

5 TONS CL B RIP RAP
W/14 SY GEOTEXTILE
ON BANKS ONLY
LENGTH=8'
(SEE DETAIL BB)

50 TONS CL I RIP RAP
W/98 SY GEOTEXTILE
ON BANKS ONLY
LENGTH=35'
(SEE DETAIL BB)

MATCHLINE -L- STA. 165+00 SEE SHEET 16

MATCHLINE -L- STA. 179+00 SEE SHEET 18

165+00 170+00 175+00

S 1° 28' 37.4" E

-L-

-L- TS Sta. 173+23.00

-L- SC Sta. 176+23.00

BZ 1 BZ 2 TB SF DI C F E

REMOVE DI

15" CSP
2 ELBOWS

FS 2GIB-WSS

2GIB WSS

15" RCP-III

BDO

BERM V DITCH
W/CL B RIP RAP
SEE DETAIL C

BERM V DITCH
SEE DETAIL A

SPECIAL CUT SWALE
SEE DETAIL E

COLLAR

TRENCHLESS INSTALLATION 24" WELDED STEEL

PLUG & FILL W/ FLOWABLE FILL

I-40 WBL 35' CONC

I-40 EBL 35' CONC

10' CONC

4' CONC

EOT EOP

TB 2GIA-ST

TB 2GIB-ST

24" RCP-III

18" RCP-III

15" RCP-III

42" RCP-III

2GIA-WSS

REMOVE 15" RCP

REMOVE 36" RCP

COLLAR AND EXTEND 18" RCP

REMOVE

18" CSP 3 ELBOWS

SPECIAL CUT DITCH W/HINGE
SEE DETAIL D

10' WIDE BERM
TOP ELEV.=349.5'
SEE DETAIL J

SPECIAL CUT SWALE W/HINGE
SEE DETAIL G

SPECIAL CUT DITCH
W/HINGE
SEE DETAIL D

15" CMP

EXISTING RCP

2 TONS CL B RIP RAP
7 SY GEOTEXTILE

R/W MON

CABLE

MTL

HW

GARNER ECONOMIC DEVELOPMENT CORP.

MARTIN MARIETTA MATERIAL INC.
MAPPED PER WAKE CO. G.I.S.
14

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SHEET 16 OF 52

ENGLISH

MITIGABLE IMPACTS ZONE 2

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MARTIN MARIETTA MATERIAL INC.
DB 5960 - PG 864
MAPPED PER WAKE CO. G.I.S.

14

SITE 15

SRK

SRJ

SRL

WOC

WOD

HP
-L- STA. 186+69.40 LT
2.44% 0.64%

MATCHLINE -L- STA. 179+00 SEE SHEET 17

MATCHLINE -L- STA. 192+00 SEE SHEET 19

SPECIAL CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

SPECIAL CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

15" RCP-III

FS

2GIB-WSS

REMOVE DI

TB 2GIB-ST

CABLE

180+00

185+00

190+00

-L-

RETAIN

48" WW & ISRW

EXISTING R/W

R/W MON

EOP

EOT

4' CONC

10' CONC

I-40 WBL 35' CONC

I-40 EBL 35' CONC

72" CHL

GR

BST

SOIL

15" CONC

CONC

ISMTL BUS

12" HDPE

END UNKNOWN

N 73°44'59" E
284.03'

N 01°17'49" E
34.28'

S 71°05'26" W
38.29'

S 01°32'54" W
36.30'

S 35°57'39" W
24.66'

S 50°02'18" W
14.76'

S 55°59'12" W
121.72'

S 18°36'06" E
510.24'

S 18°31'20" E
499.27'

S 35°29'17" W
167.18'

50' ACCESS EASEMENT

50' DRAINAGE EASEMENT

2.15% 0.45%

HP
-L- STA. 186+36.43 RT

S.T. WOOTEN CORP.
DB 7556 - PG 165

S.T. WOOTEN CORP.
DB 12346 - PG 1359
PB 1990 - PG 836

15

PATRICIA LOFLIN
DB 11177 - PG 849
PB 2006 - PG 1879

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 16A OF 52

NAD 83

ENGLISH

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-Y4-	21+98.84	22+28.80	RT

REVISIONS

8/17/99

ROW REVISION - 01-09-2019 - ADDED PUES TO PARCEL NO.15 & 14 FOR UTILITY RELOCATIONS.
DRAINAGE REVISION - 03-14-2019 - REVISED ALL DRAINAGE SYSTEMS AND LAYOUTS.

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MATCHLINE -Y4- STA. 26+00 SEE SHEET 60

MATCHLINE -L- STA. 205+00 SEE SHEET 20

MATCHLINE -L- STA. 192+00 SEE SHEET 18

MATCHLINE -Y4- STA. 16+00 SEE SHEET 59

14 MARTIN MARIETTA MATERIAL INC. DB 5960 - PG 864 MAPPED PER WAKE CO. G.I.S.

MARTIN MARIETTA MATERIALS INC. DB 13897 - PG 1354 — 14A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DB 3078 - PG 378

S.T. WOOTEN CORP. DB 12346 - PG 1359 PB 1990 - PG 836 — 15

8421 TIME WARNER ENTERTAINMENT PB 1986 - PG 528

SHERMAN A. YEARGAN JR. TRUSTEE DB 14611 - PG 2642-2672 PB 2005 - PG 1397 — 16

-Y4- PRC Sta. 23+90.19

-Y4- POT Sta. 20+29.24 = -L- POC Sta. 197+50.29

-Y4- PRC Sta. 17+12.83

SITE 5 BRIDGE SKETCH

BEGIN BRIDGE -Y4- POC Sta 18+84.72

END BRIDGE -Y4- POC Sta 21+65.21

-L- Sta. 197+50.29

-Y4- Sta. 20+29.83

D = 57°36'17"

BEGIN APPROACH SLAB -Y4- POC Sta 18+67.67

END APPROACH SLAB -Y4- POC Sta 21+83.91

SHEET FOR INFORMATION ONLY- NO IMPACTS

FOR -L- PROFILE SEE SHTS. 86-87
FOR -Y4- PROFILE SEE SHT. 139

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REVISIONS

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ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

SCALE FOR INSET 25 0 25 50

INSET A

SITE 16A WPP

SITE 16B SCF

SITE 59 SRN

SEE INSET A

SEE INSET B

MATCHLINE -Y5RPB- STA. 43+00 SEE SHEET 61

MATCHLINE -Y5- STA. 44+50 SEE SHEET 61

PROJECT REFERENCE NO. | SHEET NO.

RW SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALE 50 25 0 50 100 PLANS

RK&K

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

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SHEET 18 OF 52

ENGLISH

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

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

MATCHLINE –Y5RPC– STA. 62+00 SEE SHEET 61

MATCHLINE –Y5RPA– STA. 23+00 SEE SHEET 61

MATCHLINE –L– STA. 243+00 SEE SHEET 21

MATCHLINE –L– STA. 256+00 SEE SHEET 23

MATCHLINE –Y5RPA– STA. 16+50 SEE SHEET 23

SITE 17

SITE 16C

SOE

SOI

WSD

SCF

WQF

WQV

WFF

PERGO INC.
DB 9039 - PG 2178
19

INVESTOR PROPERTIES TAX SERVICE INC.
DB 14427 - PG 2535
PB 2011 - PG 765
20

PROP. SOUND BARRIER

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SHEET 19 OF 52

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -Y5RPA- STA. 16+50 SEE SHEET 22

MATCHLINE -L- STA. 256+00 SEE SHEET 22

MATCHLINE -L- STA. 269+00 SEE SHEET 24

-Y5RPA- SC Sta. 14+72.96

-Y5RPA- TS Sta. 11+82.96

SOI

HP
-Y5RPA- STA. 13+77.27
2.05% 0.30%

WSD

ENERGY DISSIPATOR BASIN SEE DETAIL X

Q10=160.0 cfs
V10=1.6 fps

SITE 18

CUT-FILL TRANSITION
2 TONS CL B RIP RAP
W/7 SY GEOTEXTILE

-Y5RPA- POT Sta. 10+00.00=
-L- POT Sta. 262+16.57 (59' LT)

SPECIAL CUT SWALE
SEE DETAIL E

-Y5RPA- N 21° 04' 30.4" W

10+00

260+00

S 24° 04' 24.4" E

265+00

-L- TS Sta. 263+81.72

-L- SC Sta. 265+31.72

PROP. SBG 15+00

PDE

2GIB WSF

15" RCP-III

66" RCP-III (BURIED 1.0')

2GIA-WSF

TRENCHLESS INSTALLATION 66" WELDED STEEL (BURIED 1.0')

18" RCP-III

TB 2GIB ST

PLUG & FILL W/FLOWABLE FILL

2GIA-WSF 18" RCP-III

2GIB-WSS

15" CSP 2 ELBOWS

LATERAL BASE SWALE SEE DETAIL U

PROP. SOUND BARRIER

RIP RAP AT EMBANKMENT SEE DETAIL BA

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

70' POWER EASEMENT

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

WPT

SITE 18

SOI

JAMES M. NICHOLSON

19

PERGO INC.

20

INVESTOR PROPERTIES TAX SERVICE INC

21

2GID-WSS

15" RCP-III

Conv. DI TO JB w/MH

RETAIN

REMOVE

24" RCP-III

TB 2GIA-ST

15" CSP 2 ELBOWS

2GIB-WSS

8" PVC

8" IN=334.88'
8" OUT=334.48'

8" IN=332.81'
8" OUT=332.71'

8" IN=332.35'
8" OUT=332.25'

8" IN=338.38'
8" OUT=338.28'

8" IN=331.35'

8" OUT=341.15'

3SFAPT

SEDIMENT BA

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SHEET 20 OF 52

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

LP
-L- STA. 280+90.37 LT
0.46% 1.08%

SITE 19

SNF

PERGO INC.

GREENFIELD 40 ASSOC.W/CL I RIPRAP
SEE DETAIL V

CHANNEL CHANGE

RIP RAP AT EMBANKMENT
SEE DETAIL BA

GREENFIELD 40 ASSOC.

LATERAL 4' BASE DITCH
W/CL B RIPRAP
SEE DETAIL T

LATERAL V SWALE
SEE DETAIL AN

2 TONS CL B RIP RAP
W/7 SY GEOTEXTILE

5 TONS CL B RIP RAP
W/14 SY GEOTEXTILE

30" CSP
2 ELBOWS

15" CSP
2 ELBOWS

2GIA-WSS

2GIB-WSS

CONV. DI to
JB w/MH

REMOVE DI

24" RCP-III

15" RCP-III

18" RCP-III

TB 2GIA-ST

TB 2GIB-ST

REMOVE

RETAIN

PLUG & FILL
W/FLOWABLE FILL

TRENCHLESS INSTALLATION 48" WELDED STEEL (BURIED)

PROP. SBG

PROP. SOUND BARRIER

2GID-WSS

2GIB-WSF

Conv. DI
TO JB w/MH

-L- ST Sta. 278+23.01

-L- CS Sta. 276+73.01

MATCHLINE -L- STA. 269+00 SEE SHEET 23

MATCHLINE -L- STA. 282+00 SEE SHEET 25

270+00

275+00

280+00

I-40 WBL 23' CONC

I-40 EBL 23' CONC

10' CONC

4' CONC

CABLE

48" WW & ISBW

R/W MON

EIP

EXISTING R/W

20' SANITARY SEWER EASEMENT

70' POWER EASEMENT

CONCRETE DITCH
BEHIND WALL
SEE DETAIL BE

RIP-RAP AT EMBANKMENT
SEE DETAIL BA

LATERAL 4' BASE DITCH
W/CL B RIPRAP
SEE DETAIL T

CHANNEL CHANGE
W/CL I RIPRAP
SEE DETAIL V

MAINTAIN ACCESS TO
EXISTING SEWER JB
FOR MAINTENANCE.
AVOID ARMORING WITH
CL I RIPRAP

48" CMP

SEDIMENT BASIN

CONC RISER

WPV

WQE

SNH

SOLAR PANEL

JAMES M. NICHOLSON

ASHTON VILLAGE LIMITED PARTNERSHIP

CARNER LAND COMPANY LLC

21

21A

BZ 1

BZ 2

+30.00
133.00

0.37% 1.02%

LP
-L- STA. 281+15.56 RT

SITE 20

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BUFFER DRAWING
SHEET 21 OF 52

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SMM

WRX

SITE 20

SNH

WQE

SITE 20

GREENFIELD 40 ASSOC.

PENSKE TRUCK LEASING CO. L.P.

GARNER LAND COMPANY LLC

22A

-L- TS Sta. 292+63.21

MATCHLINE -L- STA. 282+00 SEE SHEET 24

MATCHLINE -L- STA. 295+00 SEE SHEET 26

285+00

290+00

S 30° 31' 05.4" E

BZ 1

BZ 2

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH=5' (SEE DETAIL BB)

40 TONS CL I RIP RAP W/78 SY GEOTEXTILE LENGTH=35' (SEE DETAIL BC)

LINE CUT/FILL TRANSITION 2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

15" RCP-III

2GIB-WSF

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

T.I. 66" W.S.

SP. DET. TB 2GIA-ST

T.I. 42" W.S.

TB 2GIB-ST

TRENCHLESS INSTALLATION 42" WELDED STEEL (NOT BURIED)

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

BERM 4' BASE DITCH SEE DETAIL N

LATERAL BASE SWALE SEE DETAIL U

LATERAL BASE DITCH SEE DETAIL AA

LATERAL 4' BASE DITCH SEE DETAIL AA

HW

Q10=13.0 cfs
V10=1.84 ft/s

SEE INSET A

INSET A

70' POWER EASEMENT

48" WW & ISBW

I-40 WBL 23' CONC

I-40 EBL 23' CONC

10' CONC

4' CONC

CABLE

EIP

R/W MON

EXISTING R/W

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SHEET 22 OF 52

ENGLISH

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

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SNY

SITE 21

LP
–L– STA. 321+11.62 LT
1.41% 2.06%

–L– CS Sta. 326+41.06

–L– ST Sta. 329+01.06

N. D. SAULS JR.
23

JEFFERY K WILSON
22

MATCHLINE –L– STA. 321+00 SEE SHEET 27

MATCHLINE –L– STA. 334+00 SEE SHEET 29

RIP RAP AT EMBANKMENT SEE DETAIL BA

LATERAL BASE DITCH W/CL B RIPRAP SEE DETAIL T

SEE C600 OUTLET DETAIL –L2– STA. 322+93

11 TONS CL B RIP RAP W/28 SY GEOTEXTILE

10' WIDE BERM TOP ELEV.=277.5' SEE DETAIL J

36" RCP-III

4OTCB

LATERAL 4' BASE SWALE SEE DETAIL U

COLLAR 18" RCP-III

SP. DET. JB w/MH

TRENCHLESS INSTALLATION OF BELLED STEEL INSERT LINER

RETAIN & LINE W/ FRICTIONAL LINER

2GIA-WSS

Conv. DI TO JB w/MH

REMOVE

325+00

330+00

15" RCP-III

REMOVE DI

TB 2GIB-ST

TB 2GIA-ST

30" RCP-III

24" RCP REMOVE

S 3°19'01.0" W

2GID-WSS

PIPE CLEANOUT

PROP. SBG

2GIB-WSF

72" RCP-III JB w/MH

CHANNEL BLOCK SEE DETAIL Z

LATERAL BASE DITCH W/CL B RIPRAP SEE DETAIL T

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

LATERAL BASE DITCH W/CL I RIPRAP SEE DETAIL T

LATERAL BASE SWALE SEE DETAIL U

1.41% 2.05%
LP
–L– STA. 321+10.78 RT

SEE C600 INLET DETAIL –L2– STA. 322+93

S 10°17'41" E 268.55

S 14°27'19" W 170.00'

S 09°12'19" W 600.00'

S 04°23' 185.4

S 78°02'42" E 140.35'

S 13°43'11" W 163.42'

SNY

SITE 21

SITE 22

SOC

LLC-4W PARTNERSHIP

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SHEET 23 OF 52

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

N. D. SAULS JR.

BOBBY BANKS

23

23B

SLF

SLH

SEM

SITE 23A

SITE 23B

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH=5' (SEE DETAIL BB)

SP. LAT. 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

11 TONS CL B RIP RAP W/28 SY GEOTEXTILE *FLARE RIP RAP OUT FOR MORE DISPERSION IN BUFFER ZONE

CHANNEL BLOCK SEE DETAIL X

MATCHLINE –L– STA. 357+00 SEE SHEET 30

MATCHLINE –L– STA. 370+00 SEE SHEET 32

PROP. SBG

PROP SOUND BARRIER

2GIB-WSS

2GIB-WSF

Conv. DI TO JB w/MH

REMOVE DI

REMOVE

RETAIN

TB 2GIA-ST

TB 2GIB-ST

24" RCP-III

18" RCP-III

15" RCP-III

30" RCP-III

24" RCP

18" CSP 2 ELBOWS

REMOVE 15'

JB w/MH

360+00

365+00

370+00

S 3°19'01.0" W

–L–

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

DENNIS L. POWELL

WAUDDELL J. ROBINSON JR.

MR. & MRS. HARRIS D. FAULK

MARVA LEWIS

VICTORIA LYNN SCALLY

WAUDDELL J. ROBINSON JR.

WILLIAM C. MCLAMB

CHARLIE L. FOBBS

29

30

32

29

2SFD

ISFD

SNK

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SHEET 24 OF 52

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –L– STA. 370+00 SEE SHEET 31

MATCHLINE –L– STA. 383+00 SEE SHEET 33

SITE 23C

SITE 24

SITE 25

SITE 26A

SEM

SLI

WNQ

WPX

SNK

SNM

WQC

JS BEGINS

JS BEGINS

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

SP. LAT. 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

RIP RAP LINE ENTIRE PENINSULA BETWEEN STREAMS FOR STABILIZATION 10 TONS CL B RIP RAP W/28 SY GEOTEXTILE

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH = 5' (SEE DETAIL BB)

15" CSP 2 ELBOWS

15" RCP-III

2GIB-WSF

TB 2GIB-ST

REMOVE DI

REMAIN

PROP. SBG

PROP. SOUND BARRIER

PROP. SRG

I-40 WBL 23' BST

I-40 EBL 23' BST

370+00

375+00

380+00

–L– S 3°19'01.0" W

BOBBY BANKS

ROY R. SMITH

WILLIAM C. MCLAMB

RIDGEVIEW SUBDIVISION HOMEOWNERS ASSOC.

CABLE

EOP

EOT

10' CONC

4' CONC

R/W MON

EXISTING R/W

EIP

HTR

MTL CAN

S 01°43'27" W 420.05'

S 88°04'39" E 228.49'

S 86°52'21" E 249.49'

S 88°16'33" E 145.67'

S 03°19'55" W 162.00'

S 86°40'05" E 100.00'

S 68°16'09" E 107.80'

S 89°57'16" E 104.58'

N 04°17'50" E 1277.74'

N 04°15'36" E 44.54'

N 29°00'55" W 88.08'

N 44°38'28" W 81.93'

N 73°28'12" W 84.03'

N 61°55'55" W 109.04'

S 3°19'01.0" W 1315.55'

S 86°40'05" E 100.00'

N 3°19'55" E 1315.55'

S 86°40'05" E 100.00'

N 3°19'55" E 1315.55'

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SHEET 25 OF 52

ENGLISH

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

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –L– STA. 383+00 SEE SHEET 32

MATCHLINE –L– STA. 396+00 SEE SHEET 34

LP
–L– STA. 388+85.82 LT
2.01% 0.73%

LP
–L– STA. 388+83.47 RT
2.05% 0.73%

SEM
SITE 28
SNK
SITE 26B
SNO
SITE 27
WQA
WFF
SITE 29
SEK
SITE 29
SEK
WEF
SITE 29

ROY R. SMITH
BEATRICE M. MARLOW
KENNETH REID WALTERS
34A

SEE C700 OUTLET DETAIL –L2– STA. 386+82
3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

8 TONS CL B RIP RAP W/21 SY GEOTEXTILE
*BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

SEE INSET A
SEE INSET B

SPECIAL CUT SWALE SEE DETAIL E
BERM V DITCH SEE DETAIL A
LATERAL DITCH SWALE SEE DETAIL U
CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V
LATERAL V DITCH SEE DETAIL H
RIP RAP AT EMBANKMENT SEE DETAIL BA
SEE C700 INLET DETAIL –L2– STA. 386+82
2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

INSET A

INSET B

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SHEET 26 OF 52

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET A

SEE INSET A

SEE SHEET 33

MATCHLINE –L– STA. 396+00

MATCHLINE –L– STA. 409+00

SEE SHEET 35

SEK

SITE 29

WFF

WEF

SEK

SITE 29

SITE 30

WEC

SEL

SITE 31

SEL

SITE 31

33 TONS CL I RIP RAP W/62 SY GEOTEXTILE ON BANKS ONLY LENGTH = 45' (SEE DETAIL BB)

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

JB wMH

15" CSP 2 ELBOWS

54" RCP-III (BURIED 1.0')

15" CSP 2 ELBOWS

15" RCP-III

COLLAR AND EXTEND 66" RCP-III

TRENCHLESS INSTALLATION OF 72" WELDED STEEL STRUCTURAL LINER

REMOVE 15" RCP

REMOVE DI

REMOVE CB

RETAIN

PLUG & FILL W/FLOWABLE FILL

PROP. SBG

2GIB-WSF

2GIA-WSS

TB 2GIA-ST

TB 2GIB-ST

SP DET

LATERAL V DITCH SEE DETAIL H

LATERAL V SWALE SEE DETAIL AN

TOE PROTECTION W/CL B RIPRAP SEE DETAIL O

LATERAL V DITCH W/CL I RIPRAP SEE DETAIL AB

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

RIP RAP AT EMBANKMENT SEE DETAIL BA

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

SEE C800 OUTLET DETAIL –L2– STA. 405+38

SEE C800 INLET DETAIL –L2– STA. 405+38

KENNETH REID WALTERS

DAVID PENNY EXEC.

34A

34

400+00

405+00

S 3°19'01.0" W

–L–

4/17/2019
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REVISIONS

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SHEET 27 OF 52

ENGLISH

SCALE FOR INSET: 25 0 25 50

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

INSET A

INSET B

NAD 83

PROJECT REFERENCE NO. 1-5111/1-4739
SHEET NO. 37
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –L– STA. 435+00 SEE SHEET 36

MATCHLINE –Y8RPC– STA. 29+00 SEE SHEET 36

MATCHLINE –Y8RPC– STA. 40+00 SEE SHEET 53

MATCHLINE –L– STA. 461+00 SEE SHEET 38

SEE INSET A

SEE INSET B

SITE 33 SDT

SITE 34 WFB

SITE 35 SDS

SITE 33 SDT

SITE 33 WFC

SITE 33 WFD

SITE 33 WFA

SITE 33 SDT

SITE 33 SDU

SITE 35 WEK

SITE 35 WEL

SITE 35 WEJ

SITE 35 SDQ

SITE 35 SDR

STANDARD BASE DITCH W/CL I RIPRAP SEE DETAIL F

Q10=35.0 cfs
V10=2.00 fps

REMOVE DI

SPECIAL LATERAL V DITCH SEE DETAIL AJ

REMOVE 47' EX. 24"

REMOVE 7 LF EXIST. 24" RCP

15" RCP-III

PLUG & FILL W/FLOWABLE FILL

TRENCH SHEETS

2GIB-WSF

15" CSP 2 ELBOWS

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

STEEL (NOT INJURED)

MARBLE FILL

15" CMP

RETAIN

GRAPHIC SCALE 50 25 0 50 100 PLANS

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801 Corporate Center Drive, Suite 300 Raleigh, North Carolina 27607-5065
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WWW.RKK.COM

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

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SHEET 28 OF 52

ENGLISH

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

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -Y8RPA- STA. 22+00 SEE SHEET 63

JOHNSTON COUNTY
WAKE COUNTY

-Y8RPA-

20+00

SITE 37

SITE 38

-Y8RPA- PCC Sta. 14+01.80

Q10=30.0 cfs
V10=1.22 f/s

WEZ

JS BEGINS

STANDARD 'V' DITCH SEE DETAIL S

STANDARD 2' BASE DITCH W/CL B RIPRAP SEE DETAIL F

3 TONS CL B RIPRAP W/10 SY GEOTEXTILE

11 TONS CL B RIPRAP W/28 SY GEOTEXTILE

2GIB-WSS

18" RCP-III

15" RCP-III

REMOVE DI AND EX. 15" RCP

ADJUST DI

RETAIN & ADJUST EXISTING HAZARDOUS SPILL BASIN AS NEEDED TO SAME APPROX. DIMENSIONS.

36" RCP-IV (NOT BURIED)

HW W/SLUICE GATE

PLUG & FILL W/FLOWABLE FILL

SPECIAL CUT DITCH SEE DETAIL B

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

ADJUST JB W/MH

CONC PAVED DITCH

COLLAR AND EXTEND 18" RCP-III

MATCHLINE -L- STA. 461+00 SEE SHEET 37

MATCHLINE -L- STA. 474+00 SEE SHEET 39

465+00

470+00

15+00

-L-

S 3°19'01.0" W

TB 2GIB-ST

I-40 WBL 35' BST

I-40 EBL 35' BST

10' BST

10' CONC

REMOVE SYSTEM

PROP. SBG

(2)-2GIB-WSF

LATERAL V SWALE SEE DETAIL AN

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

SPECIAL LATERAL V SWALE SEE DETAIL AE

SPECIAL LATERAL V DITCH SEE DETAIL AJ

RETAIN DI FS

TRENCHLESS INSTALLATION 36" WELDED STEEL

15 TONS CL I RIPRAP W/30 SY GEOTEXTILE ON BANKS ONLY LENGTH=30' (SEE DETAIL BB)

SDO

SITE 36

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SHEET 29 OF 52

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	61
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -Y5RPC- STA. 62+00 SEE SHEET 22

MATCHLINE -Y5RPA- STA. 23+00 SEE SHEET 22

-Y5RPC- N 74° 26' 43.9" E

SPECIAL CUT DITCH SEE DETAIL B

REPAIR EXISTING CONCRETE DITCH & EXTEND AN ADDITIONAL 10'

RETAIN SYSTEM

TB 2GIB-ST

15" CSP 2 ELBOWS

1 TON CL B RIPRAP W/S SY GEOTEXTILE

SITE 17C

SOE

19

PERDO INC.

-Y5RPA- PCC Sta. 27+88.58

SP. LAT. V SWALE SEE DETAIL AE

END CONSTRUCTION
-Y5RPA- POC Sta. 29+36.35

MATCHLINE -Y5- STA. 44+50 SEE SHEET 21

MATCHLINE -Y5RPB- STA. 43+00 SEE SHEET 21

-Y5- PC Sta. 45+18.59

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL F

SPECIAL CUT DITCH SEE DETAIL B

10' WIDE BERM TOP ELEV=314.0' SEE DETAIL J

REMOVE SYSTEM

SPECIAL CUT SWALE SEE DETAIL E

DUKE REALTY LAND, LLC

STANDARD 4' BASE DITCH W/CL II RIP RAP SEE DETAIL F

18

SITE 59

SRN

SPECIAL CUT DITCH SEE DETAIL E

SRO

END CONSTRUCTION
-Y5RPB- POC Sta. 46+45.00

-Y5RPB- PT Sta. 46+90.14

RETAIN SYSTEM

-Y5RPC- TS Sta. 69+61.17

-Y5RPC- SC Sta. 71+41.17

REPAIR 20+/- OF 18" RCP WHERE OUTLET HAS SEPERATED FROM HW (RECONNECT)

DUKE CONSTRUCTION LTD PTNRP

-Y5RPC- ST Sta. 73+61.17

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SHEET 30 OF 52

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	63
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SET

SITE 60

WFI

WEY

WEX

SET

SITE 60

MATCHLINE -Y8RPB- STA. 32+50 SEE SHEET 37

MATCHLINE -Y8LPC- STA. 43+00 SEE SHEET 37

MATCHLINE -Y8RPC- STA. 60+00 SEE SHEET 37

MATCHLINE -Y8RPA- STA. 22+00 SEE SHEET 38

END CONSTRUCTION
-Y8RPB- POC Sta. 42+63.72

-Y8LPC- PT Sta. 55+76.08

-Y8RPC- SC Sta. 72+95.36

-Y8RPC- CS Sta. 70+00.09

Y8RPA- PC Sta. 34+78.95

END CONSTRUCTION
-Y8RPA- POC Sta. 34+88.95

-Y8RPA- ST Sta. 32+96.33

-Y8RPA- CS Sta. 30+86.33

HP
-Y8RPA- STA. 28+45.64

REMOVE 15" METAL SILL (NO SILL DOWNSTREAM AND NOT SERVING ITS INTENDED PURPOSE)

RETAIN CB

RETAIN SYSTEM

RETAIN DI

CONC PAVED DITCH

SPECIAL CUT SWALE SEE DETAIL E

GRADE TO DRAIN

REMOVE CB

REMOVE 15" RCP

REMOVE 18" RCP

REMOVE 60" RCP

REMOVE 42" RCP

2GID-WSS

2GIB-WSF

PLUG & FILL W/FLOWABLE FILL

COLLAR AND EXTEND 15" RCP-III

COLLAR AND EXTEND 60" RCP-III

LINE CUT DITCH TRANSITION
2 TONS CL B RIPRAP
W/7 SY GEOTEXTILE

5 TONS CL B RIPRAP W/14 SY GEOTEXTILE

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

LATERAL V SWALE SEE DETAIL AN

Q10=14.0 cfs
V10=1.86 ft/s

Q10=4.2 cfs
V10=1.86 ft/s

48 TONS CL I RIPRAP W/89 SY GEOTEXTILE ON BANKS ONLY LENGTH=22' (SEE DETAIL BB)

20 TONS CL I RIPRAP W/39 SY GEOTEXTILE

HAZARDOUS SPILL BASIN SEE 2D-7

SLUICE GATE

GRADE PAVEMENT REMOVAL AREA TO DRAIN TO HW 6300

S 58° 46' 31.41" E

WAKE COUNTY
JOHNSTON COUNTY

4/7/2019
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Plan

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BUFFER DRAWING
SHEET 31 OF 52

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

ENGLISH

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	39
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SES

-L- POT Sta. 477+22.89 BK=
-L- POT Sta.75+39.93 AH
COORDINATE EQUALITY

-Y8RPA- SC Sta. 12+30.00

-Y8RPA- ST Sta. 10+00.00 =
-L- POT Sta.476+76.55 (59' LT)

JS BEGINS

SITE 38

SEE INSET A

MATCHLINE -L- STA. 474+00 SEE SHEET 38

MATCHLINE -L- STA. 85+00 SEE SHEET 40

BZ 1
BZ 2
JS
TB
F
EOF
EOP
WOODS
10+00
475+00
80+00
-Y8RPA-

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL O

RETAIN DI
REMOVE DI
TB 2GIB-ST
18" RCP-III
15" RCP-III
RETAIN 18" RCP
RETAIN 15" RCP
Conv. DI TO JB wMH
2GID-WSS
FS
RETAIN 18" RCP
RETAIN 24" RCP
INTERSTATE 40 WBL 36" CONC
INTERSTATE 40 EBL 24" CONC

SPECIAL LATERAL V SWALE
SEE DETAIL AE

INSET A

COLLAR AND
EXTEND
18" RCP-III

RW MON

4/17/2019
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SHEET 32 OF 52

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	40

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SES

NAD 83 WEM

THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)

39

SHEET FOR INFORMATION ONLY– NO IMPACTS

LP
–L3– STA. 96+25.50 LT
1.98% 2.40%

MATCHLINE –L– STA. 85+00 SEE SHEET 39

MATCHLINE –L– STA. 98+00 SEE SHEET 41

RW MON
EXISTING R/W
BIORETENTION BASIN
15 TONS CL I RIPRAP W/20 SY GEOTEXTILE
36" RCP–III
LATERAL 4' BASE DITCH SEE DETAIL R
RISER STRUCTURE
2GIB–WSF
SP. DET. JB w/MH
HW
60" RCP–III
PROP. SBG
2GID–WSS
FS
REMOVE DI & 20' EX. 15"
15" RCP–III
JB w/MH
24" RCP–III
18" RCP–III
REMOVE 7' & EX. DI
5' SECT. OF PIPE PLUG & FILL W/FLOWABLE FILL
TB 2GIB–ST
15" RCP–III
90+00
95+00
S 3°19'01" W
PLUG & FILL W/FLOWABLE FILL
18" CMP
RETAIN AND CLEAN OUT 60" EQUALIZER PIPE
REMOVE DI
Conv. DI TO JB w/MH
30" RCP–III
2GIA–WSF
45° CSP ELBOWS
REMOVE
10" RCP
RETAIN
8 TONS CL B RIP RAP W/21 SY GEOTEXTILE
LATERAL 4' BASE SWALE SEE DETAIL U
24" RCP–III
2GIA–WSF
COLLAR AND EXTEND 60" RCP–III
ARMOR SLOPE W/ CL II RIPRAP UP TO 100–YR ELEV=201.7'
42" RCP–III
20 TONS CL I RIPRAP W/39 SY GEOTEXTILE
THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)
39
WEQ
1.96% 2.40%
LP
–L3– STA. 96+22.00 RT

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SHEET 33 OF 52

ENGLISH

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

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	41
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L- STA. 98+00 SEE SHEET 40

MATCHLINE -L- STA. 111+00 SEE SHEET 42

THE BROWN-GOWER COMPANY, LLC

SON-LAY CLASSIC DEVELOPMENT COMPANY, LLC

GLENN MILLER

SET

SITE 40
SDG

WEM
SITE 39

SITE 41
WEP(1)

WEQ
SITE 40
SDG

SDN
WEN
SITE 42

SITE 43
SEO

Q10 = 4.1 cfs
V10 = 0.68 fps

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

ARMOR SLOPE W/ CL II RIPRAP UP TO 100-YR ELEV = 201.7'

BANK STABILIZATION W/CL II RIPRAP SEE DETAIL BO
*ONLY INSTALL IF LOCATION DESTABILIZES DURING CONSTRUCTION

ARMOR WALL W/ CL II RIPRAP UP TO 100-YR ELEV = 201.7'

1 TONS CL B RIPRAP W/5 SY GEOTEXTILE

TOE PROTECTION W/CL II RIPRAP SEE DETAIL BJ

15" CSP 2 ELBOWS

COLLAR

2GIB-WSF

REMOVE DI & PIPE

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

S 3°19'01.0" W

100+00

105+00

110+00

24" RCP-III

15" RCP-III

TB 2GIB-ST

RETAIN AND GLEAN OUT 60' EQUALIZER PIPE

CONC BRIDGE

SWIFT CREEK

ROCK WEIR

PROPERTY LINE IS CENTER OF CREEK

ARMOR SLOPES W/ CL II RIPRAP UP TO 100-YR ELEV = 201.7'

ARMOR 2:1 SIDE SLOPES W/CL II RIPRAP UP TO SHOULDER POINT

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

RIPRAP

HW

BZ 1

BZ 2

BEGIN BRIDGES
-L- POT Sta 103+20.90

END BRIDGES
-L- POT Sta 105+46.00

105+00

BEGIN APPROACH SLABS
-L- POT Sta 102+96.00

END APPROACH SLABS
-L- POT Sta 105+71.00

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SHEET 34 OF 52

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	42
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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UNLESS ALL SIGNATURES COMPLETED

WEP(1)

SITE 44

SEQ

SON-LAN CLASSIC DEVELOPMENT COMPANY, LLC

40

Q10=10.0 cfs
V10=1.99 ft/s

3 TONS CL B RIPRAP W/10 SY GEOTEXTILE

40 TONS CL I RIP RAP W/75 SY GEOTEXTILE ON BANKS ONLY LENGTH=16' (SEE DETAIL BB)

10' WIDE BERM TOP ELEV.=228.0' SEE DETAIL J

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

BERM V DITCH SEE DETAIL AK

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AW

SP. CUT DITCH W/CL B RIPRAP SEE DETAIL I

LATERAL 4' BASE DITCH SEE DETAIL AM

18" CSP 2 ELBOWS

2GIB-WSF

15" RCP-III

PLUG & FILL W/ FLOW. FILL

TB 2GIB-ST

REMOVE DI

SP. EXCAV. JB w/MH

18" RCP-III JB w/MH

10'X10' CONC HW

16" CSP 2 ELBOWS

FS

2GIB-WSS

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

TB 2GIB-ST

15" RCP-III

6.0' CONC HW

PLUG & FILL W/FLOWABLE FILL

45° BEND

TRENCHLESS INSTALLATION 24" WELDED STEEL (NOT BURIED)

MATCHLINE -L- STA. 111+00 SEE SHEET 41

MATCHLINE -L- STA. 124+00 SEE SHEET 43

-EL-WBL-
INTERSTATE 40 WBL 24' CONC

-EL-EBL-
INTERSTATE 40 EBL 24' CONC

S 3°19'01.0" W

115+00

120+00

REMOVE DI

REAR ANGLE CLEAN OUT EQUALIZER PIPE

SEQ

SITE 44

5' WIDE BERM TO PROTECT WETLAND BOUNDARY

LATERAL 3' BASE DITCH W/CL I RIPRAP SEE DETAIL AQ
Q10=130.0 cfs
V10=1.98 ft/s

18 TONS CL I RIPRAP W/38 SY GEOTEXTILE LENGTH=20' (SEE DETAIL BC)

+60.00 EX. ROW

WEO(1)

SEP

WEO(2)

WEN

SEO

SITE 43

GLENN MILLER

41

WETLANDS BOUNDARY PB 66 PG 176

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SHEET 35 OF 52

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	44
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SEU

SITE 45

SON-LAN CLASSIC DEVELPMENT CO, LLC

40

52 TONS CL I RIP RAP W/100 SY GEOTEXTILE ON BANKS ONLY LENGTH=40' (SEE DETAIL BB)

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

HP –LCDWB– STA. 32+17.47 1.57% 2.06%

HP –L3– STA. 145+95.26 LT 2.99% 2.06%

HP –Y1RPB3 STA. 11+10.89 0.56% 0.45%

BERM V DITCH SEE DETAIL AK

MATCHLINE –Y1RPB3– STA. 16+00 SEE SHEET 45

MATCHLINE –L– STA. 137+00 SEE SHEET 43

MATCHLINE –L– STA. 150+00 SEE SHEET 45

MATCHLINE –Y1A– STA. 25+50–Y1RPC3– STA. 15+50 SEE SHEET 45

–LCDWB–

–EL–WBL–

INTERSTATE 40 WBL 36' CONC

–EYRPB–

–Y1RPB3–

–Y1RPC3–

–LCDEB–

–Y1A–

S 19° 41' 30.0" E

S 19° 50' 33.6" E

S 10° 29' 05.6" E

10+00 15+00 20+00 25+00 30+00 35+00 140+00 145+00

2GIB–WSF

TB 2GIB–ST

18" RCP–III

15" RCP–III

REMOVE DI & 7' PIPE

18" CMP REMOVE

REMOVE DI

PLUG & FILL W/ FLOWABLE FILL

SPECIAL LATERAL V DITCH SEE DETAIL AJ

8" PVC, JOHNSTON COUNTY

12" DIP, JOHNSTON COUNTY

2" PVC, JOHNSTON COUNTY

SR 1600 TECHNOLOGY DRIVE 20' BST

COUNTY

JOHNSTON COUNTY

AMERICAN CONEC CORPORATION

ZIGGY VENTURES LLC

J & M SMITH ENTERPRISES LLC

JACK L. CHANDLER JR.

KELLEY C. GURLEY

SHIV ENTERPRISES INC

Piedmont Natural Gas Company Inc, 2" PLASTIC, 2002

2.32% 0.95% HP –LCDEB– STA. 21+46.61

0.95% 0.99% LP –LCDEB– STA. 24+96.27

0.55% 0.36% LP –Y1RPC– STA. 10+97.01

2.98% 2.30% HP –L3– STA. 145+86.02 RT

0.99% 2.41% HP –LCDEB– STA. 28+58.50

0.36% 0.66% HP –Y1RPC3– STA. 13+47.61

0.66% 1.48% LP –Y1RPC3– STA. 15+27.06

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

SPECIAL CUT DITCH SEE DETAIL B

LATERAL 4' BASE SWALE SEE DETAIL U

CLEAN OUT RIPRAP & DIRT, REPAIR ADJ DI IF NEEDED

PIPES DO NOT INTERSECT (>28' SEPERATION BTW COLLAR & 2GI)

FRENCH STRESS INSTALLATION AS NEEDED STEEL COLLAR

RETAIN DI

RETAIN

REMOVE

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REVISIONS

MATCHLINE –Y1_3– STA. 67+00 SEE SHEET 67

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

BUFFER DRAWING SHEET 36 OF 52

ENGLISH

PROJECT REFERENCE NO. I-5111/I-4739
SHEET NO. 45
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

INCOMPLETE PLANS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET A

SEE INSET A

SEE INSET B

SEE INSET C

SEE INSET D

INSET B

INSET C

INSET D

SITE 46 WOE SEA

SITE 47 SLV

SITE 48 SLW

SITE 49 SLU WOB WD WC

MATCHLINE –Y1_3– STA. 51+50 SEE SHEET 66

MATCHLINE –Y1C– STA. 16+50 SEE SHEET 68

MATCHLINE –L– STA. 177+00 SEE SHEET 46

GRAPHIC SCALE
50 25 0 50 100
PLANS

RK&K

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

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10/7/2020

REVISIONS

BUFFER DRAWING SHEET 37 OF 52

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PROJECT REFERENCE NO. R-5111/I-4739 | SHEET NO. 46

RW SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS

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NAD 83

MATCHLINE SR2- STA. 22+00 SEE SHEET 71

MATCHLINE -Y2 3- STA. 61+50 SEE SHEET 71

SEE INSET A

SEE INSET B

MATCHLINE -L- STA. 177+00 SEE SHEET 45

MATCHLINE -L- STA. 205+50 SEE SHEET 47

MATCHLINE -Y2 3- STA. 46+50 SEE SHEET 70

SITE 50 | WOA | SLS

SITE 51 | PBL | WNZ | WH | SLR

SITE 52 | WGG

MARVIN WILLIAMS

ROBERT W. BARKER ELIZABETH T. BARKER

WILLIAMS 2006 FAMILY LTD PTNRSP

RAYMOND T. LEE JR LIFE INT EST

S.T. WOOTEN CORPORATION

NC NATURAL GAS CORPORATION

JOHNSTON COUNTY BOARD OF EDUCATION TRACT 2

W.D. PARKER ESTATE

-L- | -LCDWB- | -Y2 3- | -RAPIDSAUR-

GRAPHIC SCALE 50 25 0 50 100 PLANS

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LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

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BUFFER DRAWING SHEET 38 OF 52

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

INSET A

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	46A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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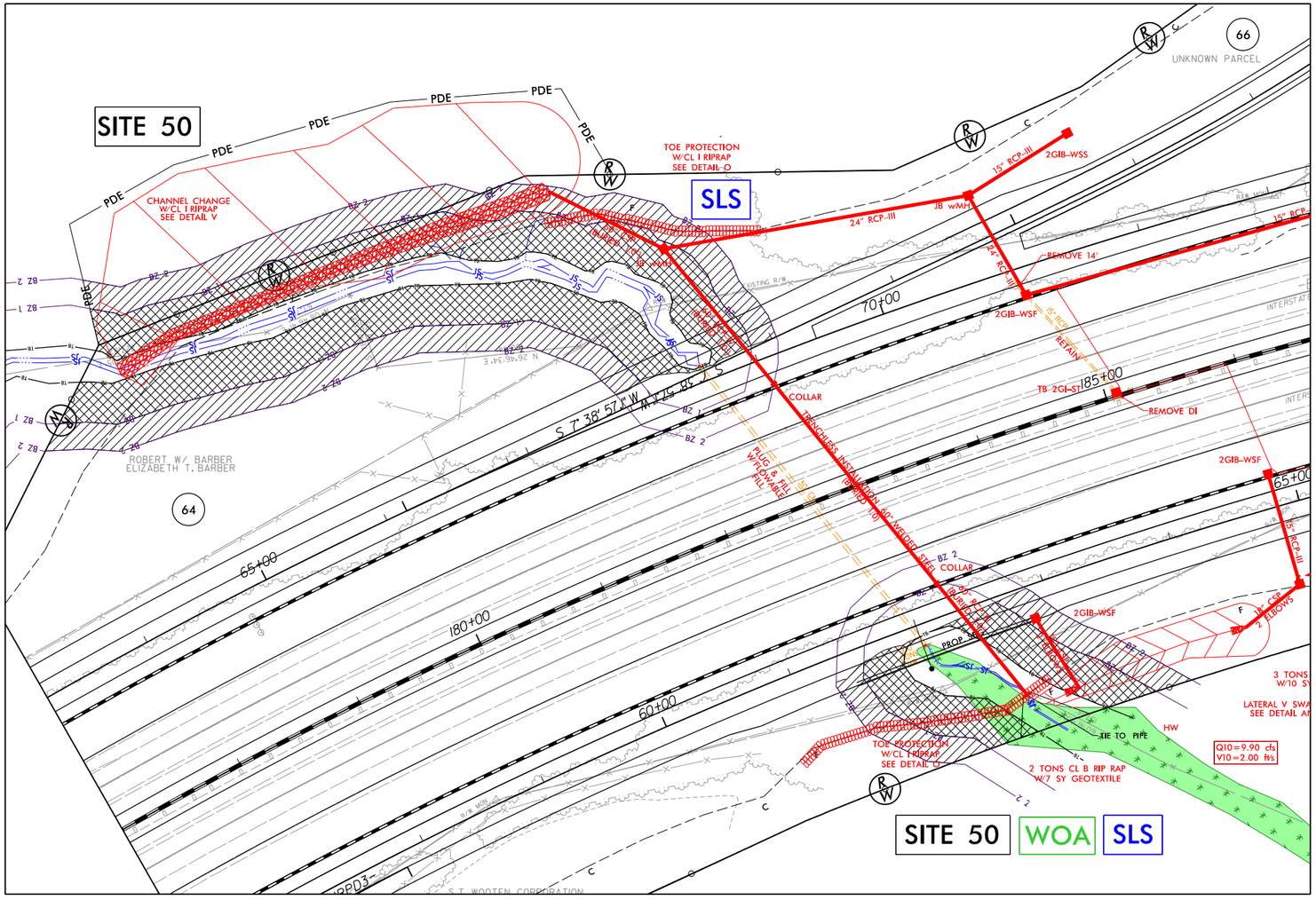

PLANS PREPARED BY:

RK&K

RUMMEL, KLEPPER & KAHL, LLP
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RALEIGH, NORTH CAROLINA 27609-2960
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LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS

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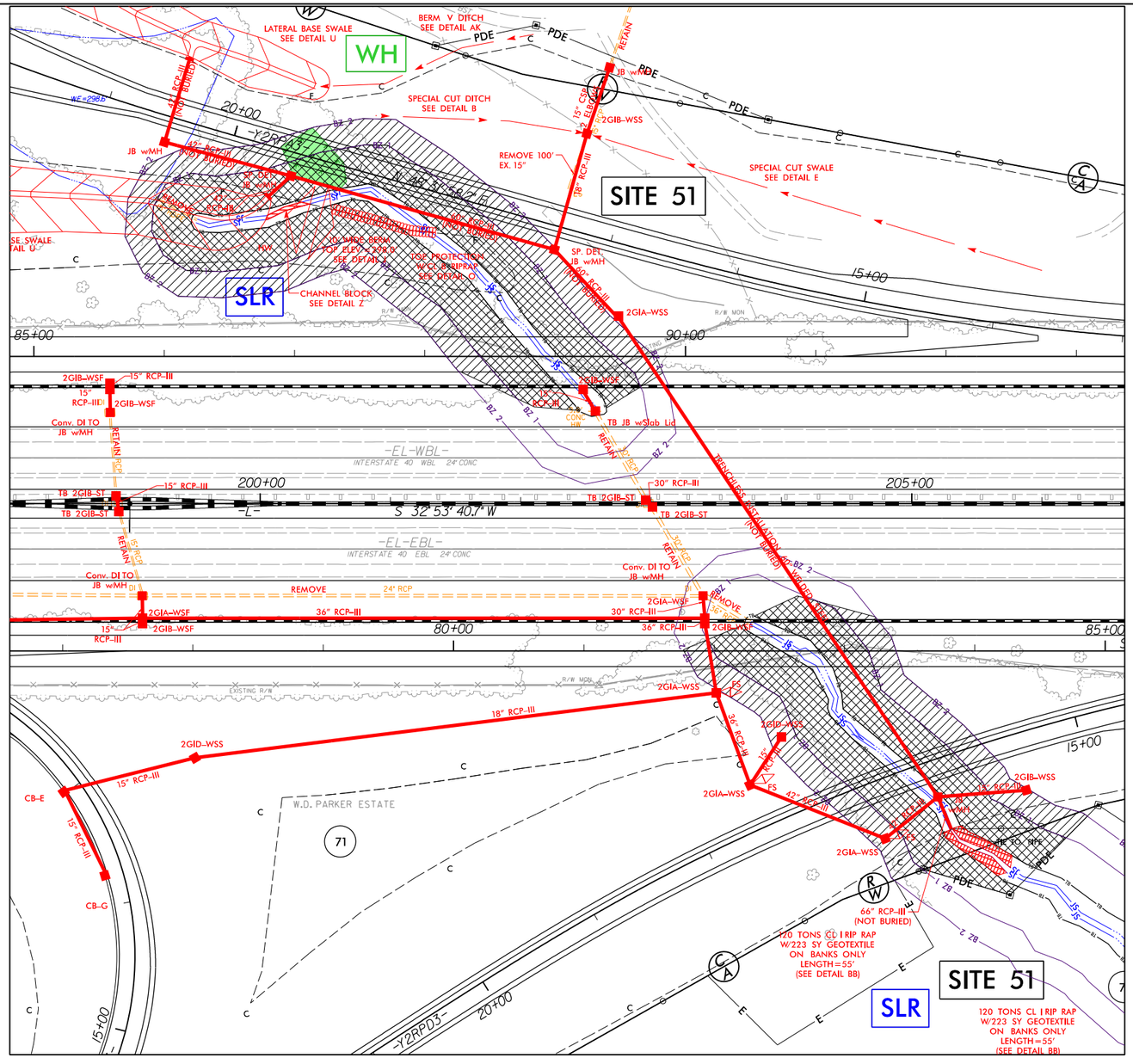
SHEET 39 OF 52

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

INSET B



PROJECT REFERENCE NO. 1-5111/1-4739
SHEET NO. 46B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

INCOMPLETE PLANS
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CHECKED BY: DATE:

GRAPHIC SCALE
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PLANS

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SHEET 40 OF 52

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	47
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SITE 53
MILL BRANCH

LP
-Y2RPA3- STA. 13+76.21
4.29% 0.30%

HP
-Y2RPA3- STA. 12+14.29
0.30% 0.40%

JOHNSTON COUNTY BOARD OF EDUCATION TRACT 2

IVAN OTERO
GLORIA OTERO

JONATHAN RIBA
TRACY RIBA

JOHNSON

FORREST GLENN JOHNSON
DONALD LEE JOHNSON

APOTHECARY HOLDINGS LLC

W.D. PARKER ESTATE

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AX

SEE C900 OUTLET DETAIL -L3- STA. 212+70

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

RIP RAP AT EMBANKMENT SEE DETAIL BA

LATERAL 4' BASE SWALE SEE DETAIL AM

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

SPECIAL CUT DITCH SEE DETAIL B

BERM V DITCH SEE DETAIL AK

BERM 4' BASE DITCH SEE DETAIL N

120 TONS CL I RIP RAP W/223 SY GEOTEXTILE ON BANKS ONLY LENGTH=55' (SEE DETAIL BB)

TRENCHLESS INSTALLATION 54" WELDED STEEL LINER BURIED

RETAIN & LINE W/STRUCTURAL LINER

PLUG & FILL W/FLOWABLE FILL

SP. DET. JB w/MH

COLLAR DI

REMOVE DI

REMOVE 30" PIPE

Conv. DI TO JB w/MH

JB w/MH

15" CSP 2 ELBOWS

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

-Y2RPA3- 95+00 N 35° 35' 49.2" E 10.00

-LCDWB- S 32° 53' 40.7" W

-Y2RPD3-

-LCDEB-

-L-

-EL-WBL- INTERSTATE 40 WBL 24" CONC

-EL-EBL- INTERSTATE 40 EBL 24" CONC

-Y2RPD3- STA. 15+51.99

-Y2RPD3- STA. 12+20.14

MATCHLINE -L- STA. 205+50 SEE SHEET 46

MATCHLINE -L- STA. 219+00 SEE SHEET 48

SITE 53
MILL BRANCH

SLR
SITE 51

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SHEET 41 OF 52

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	49

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 232+00 SEE SHEET 48

MATCHLINE –L– STA. 245+00 SEE SHEET 50

SJ Q10=15.0 cfs V10=1.90 ft/s

SITE 54

LATERAL 4' BASE SWALE SEE DETAIL AM

83 TONS CL I RIP RAP W/155 SY GEOTEXTILE ON BANKS ONLY LENGTH=45' (SEE DETAIL BB)

WJ Q10=16.0 cfs V10=1.97 ft/s

SITE 55

65 TONS CL I RIP RAP W/125 SY GEOTEXTILE ON BANKS ONLY LENGTH=40' (SEE DETAIL BB)

SK

LATERAL 4' BASE SWALE SEE DETAIL AM

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

WI

LP
–L3– STA. 239+99.56 LT
0.30% 0.40%

SPECIAL CUT 4' BASE SWALE SEE DETAIL AU

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

SAMUEL P. LAPSLEY
TAMMY J. LAPSLEY

DIRK MATTIN
STEPHANIE K. MATTIN

JERALD L. PETERSON
LUZMILA PETERSON

BARBARA PENNY

82

85

85A

84

83

JB wMH 2 2GIB–WSF

JB wSlab Lid

15" RCP–III

24" CSP 2 ELBOWS

15" CSP 2 ELBOWS

REMOVE DI

PLUG & FILL W/FLOWABLE FILL

–EL–WBL–
INTERSTATE 40 WBL 24' CONC

–EL–EBL–
INTERSTATE 40 EBL 24' CONC

235+00

240+00

245+00

S 32°53'40.7" W

TB 2GI–ST

15" RCP–III

18" RCP–IV

15" RCP–IV

56 2GI–ST

24" RCP RETAIN

15" RCP RETAIN

TRENCHLESS INSTALLATION 48" WELDED STEEL NOT BURIED

8.0' CONC HW

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AV

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AX

CONTRACTOR TO FIELD ADJUST (WITH RIPRAP) ALL LOCATIONS OF CONCENTRATED FLOW TRAVELING ONSITE INTO PROPOSED DITCHES

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AW

SPECIAL CUT DITCH SEE DETAIL B

BERM V DITCH SEE DETAIL AK

LATERAL 4' BASE SWALE SEE DETAIL AM

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

30" RCP–III

0.30% 0.39%

LP
–L3– STA. 240+01.36 RT

THOMAS C. III BUCKLEY
JESSICA BUCKLEY

LEAMON KING HOLLAND

N 48°08'33" E 232.23'

S 11°56'21" E 239.00'

N 51°00'06" W 380.00'

S 10°50'40" E 134.26'

N 37°04'27" E 28.10'

N 84°26'39" E 45.33'

S 88°59'46" E 45.33'

S 42°18'18" W 34.71'

S 12°57'50" W 32.57'

S 80°59'40" E 78.69'

N 82°49'22" W 45.17'

S 16°50'07" W 21.22'

S 16°50'07" W 13.64'

S 05°03'16" E 49.77'

N 88°46'10" W 33.98'

N 05°03'16" E 153.11'

N 63°01'57" W 127.22'

S 28°27'50" W 85.00'

S 80°59'40" E 154.20'

N 72°41'35" W 133.71'

S 11°53'57" W 137.83'

N 11°53'57" E 232.00'

N 49°33'24" W 205.79'

S 81°09'36" E 199.36'

265.19' S 26°32'18" W

N 47°10'05" W 245.48'

8/17/2019
R:\Projects\PERMITS_Environmental\Drawings\4C\Section 3\Buffer\I5111_I4739_hyd_4C_buf_psh49.dgn
Kevin

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8/17/99

BUFFER DRAWING
SHEET 42 OF 52

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	50
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -L- STA. 245+00 SEE SHEET 49

MATCHLINE -L- STA. 258+00 SEE SHEET 51

SDD

SITE 57

WFF

SDD

SITE 56

SEE

SITE 57

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

LATERAL 4' BASE SWALE SEE DETAIL AM

RIP RAP AT EMBANKMENT SEE DETAIL BA

40 TONS CL I RIP RAP W/75 SY GEOTEXTILE ON BANKS ONLY LENGTH=50' (SEE DETAIL BB)

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

LATERAL 4' BASE SWALE SEE DETAIL U

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

Conv. DI TO JB w/MH

TRENCHLESS INSTALLATION 60" WELDED STEEL (BORED)

GRADE TO DRAIN

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

CHANNEL BLOCK SEE DETAIL Z

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

18" RCP-III

24" RCP-III

30" RCP-III

36" RCP-III

42" RCP-III

15" RCP-III

15" RCP-IV

15" CSP 2 ELBOWS

2GIA-WSS

2GIB-WSS

2GIB-WSF

TB 2GI-ST

JB w/MH

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

10' CONC PS

35' CONC PS

4' CONC PS

-EL-WBL-

-EL-EBL-

-L-

EXISTING R/W

88 SANDRA QUEEN FOWLER

86 JOEY V YOUNG

89 MIDLAND, INC.

90 MARIA RAMOS LOPEZ AND GREGORIO ISLAS ORTIZ

84 LEAMON KING HOLLAND

87 JENNIFER

CHRISTINA N. OUTLAW

ISFD

KRISTEN L. LOWE

JAMES B. DILLARD AND WIFE, DEBORAH S. DILLARD

PAUL TOLLEFSRUD AND WIFE, DARA B. TOLLEFSRUD

ELLIS FAMILY TRUST

WOODS

20' DRAINAGE EASEMENT PB 24, PG 284

135.90' S 20°20'45" W

64.22' S 20°20'45" W

S 33°25'16" E 87.80'

S 45°55'24" E 120.00'

N 73°45'08" W 588.70'

S 71°53'57" E 134.46'

S 35°38'16" E 301.78'

S 55°35'57" E 281.25'

S 69°27'40" E 274.85'

S 69°27'40" E 274.83'

S 69°27'47" E 274.74'

S 69°27'37" E 275.01'

S 58°52'37" E 86.29'

N 20°21'15" E 26.31'

N 20°24'10" E 145.00'

N 20°22'01" E 110.01'

N 20°20'26" E 189.60'

N 20°20'37" E 138.65'

S 86°47'28" E 212.12'

S 66°40'25" W 238.64'

N 68°01'31" W 180.19'

N 68°01'31" W 187.03'

N 65°08'14" W 196.02'

N 68°01'43" W 226.09'

S 86°47'28" E 12.88'

193.79' N 19°30'29" E

253.80' S 12°12'02" W

S 16°40'05" E 214.03'

245+00

250+00

255+00

4/17/2019
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Kevin

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BUFFER DRAWING
SHEET 43 OF 52

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	51
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SQ

SITE 58

MATCHLINE -L- STA. 258+00 SEE SHEET 50

MATCHLINE -L- STA. 271+00 SEE SHEET 52

HP
-L3- STA. 260+13.48 LT
0.40% 1.86%

HP
-L3- STA. 260+18.65 RT
0.39% 1.86%

RIP RAP AT EMBANKMENT SEE DETAIL BA

38 TONS CL I RIP RAP W/75 SY GEOTEXTILE ON BANKS ONLY LENGTH=33' (SEE DETAIL BB)

LATERAL 4' BASE SWALE SEE DETAIL AM

LATERAL 4' BASE SWALE SEE DETAIL AV

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

15" CSP 2 ELBOWS

JB w/MH

RETAIN 6" RIP RAP

-EL-WBL-
INTERSTATE 40 WBL 24' CONC

-EL-EBL-
INTERSTATE 40 EBL 24' CONC

10' CONC PS

4' CONC PS

15" RCP-III

TB 2GI-ST

TB 2GI-ST REMOVE DI

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION RE-INSULATED STEEL (NOT BURIED)

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT SWALE SEE DETAIL A

2GIB-WSS

2GIB-WSF

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

LATERAL 4' BASE DITCH SEE DETAIL R

LATERAL 4' BASE DITCH SEE DETAIL R

MIDLAND, INC.

MIDLAND, INC.

89

WOODS

WOODS

RYAN G. RHODES AND WIFE, CANDACE J. RHODES

JOHN C. JOHNSON, III

JOHN C. JOHNSON, III

LONNIE G. BOWLES AND WIFE, DONNA L. BOWLES

SANDRA M. WHITE AND HUSBAND, GREGORY D. GOODE, SR.

MICHELE LEE BURGOS AND HUSBAND, PHILIP DAVID BURGOS

MELISSA M. HAMILTON AND THOMAS N. TAYLOR

RALPH C. GILLIKIN AND WIFE, CATERINA A. GILLIKIN

JOYCE GODWIN

MEHRAN CHARKHESHT

ELLIS FAMILY TRUST

98

98B

98C

99

100

100

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BUFFER DRAWING
SHEET 44 OF 52

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	52
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SITE 58
SQ

MATCHLINE -L- STA. 271+00 SEE SHEET 51

MATCHLINE -L- STA. 284+00 SEE SHEET 53

MIDLAND, INC.

89

JS BEGINS

COMMUNITY BAPTIST CHURCH OF CLAYTON

102

28 TONS CL I RIP RAP W/55 SY GEOTEXTILE LENGTH=25' (SEE DETAIL BC)

PDE

30" CSP 2 ELBOWS

2GIB-WSF

SP. DET. 2GIB-WSF

15" RCP-III

2GIB-WSF

15" RCP-III

PLUG & FILL W/FLOWABLE FILL

2GID-WSS

FS

15" RCP-III

Conv. DI TO JB w/MH

REMOVE DI

15" RCP-III

TB 2GIB-ST

TB 2GIB-ST

RETAIN

TRENCHLESS INSTALLATION 30" WELDED STEEL NOT BURIED

275+00

SP. DET. TB 2GIB-ST

SP. DET. TB 2GIB-ST

REMOVE DI

S 2°00'45.3" E

280+00

-EL-WBL-

INTERSTATE 40 WBL 24" CONC

-L-

-EL-EBL-

INTERSTATE 40 EBL 24" CONC

10' CONC PS

4' CONC PS

CABLE

15" RCP-III 2 2GIBs-WSF 15" CSP 2 ELBOWS

COLLAR 15" RCP-III

Conv. DI TO JB w/MH 15" RCP-III

2GID-WSS FS

2 ELBOWS

SPECIAL CUT DITCH SEE DETAIL B

10' WIDE BERM TOP ELEV.=260.0' SEE DETAIL J

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

LATERAL 4' BASE DITCH SEE DETAIL R

LATERAL 4' BASE DITCH SEE DETAIL R

BERM V DITCH SEE DETAIL AK

BERM V DITCH SEE DETAIL AK

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

JOHN C. JOHNSON, III

100

99A

KERRY ALLEN REDLINE

JOHN C. JOHNSON, III

100

PROFILE CONSTRUCTION, INC.

101

DONNA RICHARDSON

103

BDO

PROFILE CONSTRUCTION, INC.

101

WOODS

EXISTING R/W

30' ACCESS EASEMENT MB 53, PG 145

222.36'
N 01°44'22" E

287.85'
N 01°56'54" E

108.07'
N 01°57'15" E

209.76'
N 01°45'46" E

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FLewis

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	-LEB- 12+10 RT	HW Replacement & Dual 42" CSP	X			2721	1807	4528					
1	-LWB- 18+74 LT	Prop 36" Welded Steel Pipe Outfall			X				335		335		
2	-Y1RPA- 32+57 RT	HW Replacement & Prop Berm Ditch	X			2710	1734	4444					
2	-Y1RPBD- 30+60 RT	Prop 48" & 15" RCP Pipe Outfall	X			2307	1296	3603					
3	-LWB- 31+71 to 34+63 LT	Proposed 42" CSP Pipe Outfall & Prop HW			X				23470	15180	38650		
4	-L- 39+10 LT	Prop Pipe Outfall & Widened Roadway Facility	X			1544	320	1864					
4	-L- 40+19 LT	Pipe Outfall			X				1984	519	2503		
6	-L- 64+70 RT	Prop 72" W.S. Suppl. Pipe, HW & Rip Rap	X						6006	3970	9976		
6	-L- 65+16 LT	Prop 72" W.S. Suppl. Pipe, HW & Rip Rap	X						6315	3866	10181		
7	-L- 91+13 RT	Prop Dual 96" Suppl. Pipes Plus HW & Channel Impovements	X			4730	1390	6120					
7	-L- 91+37 LT	Prop Dual 96" Suppl. Pipes Plus HW & Channel Impovements	X			3337	795	4132					
8	-Y3RPA- 23+91 LT	Prop Pipe & Widened Roadway Facility	X						7488	8136	15624		
8	-Y3RPA- 23+46 RT	Prop Pipe & Widened Roadway Facility	X						1066	1030	2096		
9	-Y3RPA- 17+52 RT	Prop Pipe & Widened Roadway Facility	X			1906	1389	3295					
10	-L- 144+75 to 152+66 LT/RT	Prop 30" W.S. Pipe, HW & Channel Relocation			X				15337	3414	18751		
11	-L- 151+69 RT	Prop 30" W.S. Pipe & HW	X			2045	1410	3455					
12	-L- 149+34 LT	HW & Widened Roadway Facility	X			2873	1514	4387					
13	-L- 157+91 RT	Plug and Fill Ex. Pipe			X				199		199		
13	-L- 159+69 RT	Widened Roadway Facility	X			652		652					
TOTALS*:						**24825**	**11655**	**36480**	**62200**	**36115**	**98315**	**0**	**0**

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
April 2019
Wake County
I-5111
42346.3.1
SHEET 45 OF 52

Revised 2018 Feb

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
7	-L- 91+13 RT		2284	1189
7	-L- 91+78 LT		424	
TOTAL:			**2708**	**1189**

Revised 2018 Feb

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
April 2019
Wake County
I-5111
42346.3.1

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
14A	-L- 168+89-169+89 LT	BANK STABILIZATION - SRM			X				1658	946	2604		
14B	-L- 172+50-172+88 LT	BANK STABILIZATION - SRM			X				1824	1680	3504		
14C	-L- 175+81-176+98 LT	BANK STABILIZATION - SRM			X				2795	277	3071		
15	-L- 186+18-188+55 LT	ROADWAY FILL - SRJ			X				0	90	90		
16A	-Y5RPD- 22+19-22+50 RT	EXIST. 24" CMP PLUG			X				2032	2231	4263		
16B	-Y5RPD- 24+79 RT	EXIST. 15" CMP PLUG			X				613	306	918		
16C	-Y5RPC- 53+20 LT	60" RCP - SCF, WQF	X			1489	0	1489					
17	-Y5RPC- 54+38-55+47 RT, -L- 250+27 LT, -Y5RPA- 21+91-23+05 RT	BANK STABILIZATION - SOE, WQV	X						12126	3903	16028		
18	-L- 256+39-257+51 LT & RT	DITCH, 66" WSP- SOI, WSD	X			6922	3626	10548					
19	-L- 272+67-275+51 LT & RT	DITCH, 66" WSP - SNF	X			8722	5049	13771					
20	-L- 281+93-284+50 LT & RT	CHANNEL CHANGE - SNH, WQE,WRX	X			3953	956	4909					
21	-L- 322+40-323+33 LT & RT	CHANNEL CHANGE, 72" RCP, SNY	X			8579	4452	13031					
22	-L- 323+52-325+32 RT	CHANNEL CHANGE - SOC			X				3438	1054	4493		
23A	-L- 361+15-364+65 LT	CHANNEL CHANGE - SLF / SEM			X				8260	2082	10342		
23B	-L- 368+90-369+15 LT	BANK STABILIZATION - SEM			X				635	0	635		
23C	-L- 374+40-378+99 LT	CHANNEL CHANGE - SEM			X				11509	228	11738		
24	-L- 378+63-379+21 LT	BANK STABILIZATION - SLI			X				1108	0	1108		
25	-L- 373+59-374+08 RT	ROADWAY FILL/ DITCH - SNM			X				61	775	836		
26A	-L- 381+90 RT	BANK STABILIZATION - SNK			X				233	0	233		
26B	-L- 385+01-385+81 RT	ROADWAY FILL - SNK			X				1025	0	1025		
	-L- 385+80-386+06 RT	BANK STABILIZATION - SNK			X				712	0	712		
27	-L- 386+06-386+88 RT	BANK STABILIZATION - SNO	X			1765	1079	2844					
28	-L- 387+14-387+47 LT	60" WSP - SEM			X				1116	0	1116		
TOTALS*:						**31431**	**15161**	**46592**	**49142**	**13572**	**62715**	**0**	**0**

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE / JOHNSTON
I-5111 / I-4739
42346.3.1
SHEET 47 OF 52

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
16C	-Y5RPC- 53+20 LT		89	
17	-Y5RPC- 54+38 RT		37	
18	-L- 256+39-257+51 LT & RT		1061	10
20	-L- 281+93-284+50 LT & RT		621	
24	-L- 378+63-379+21 LT		384	
TOTAL:			**2191**	**10**

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE / JOHNSTON
I-5111 / I-4739
42346.3.1
SHEET 48 OF 52

Revised 2018 Feb

Rev. Jan 2009

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
29	-L- 395+85 RT	CHANNEL CHANGE, 54" WSP - SEK	X			5647	3238	8885					
30	ONLY IN PERMIT SET												
31	-L- 403+60-406+60 LT & RT	66" RCP - SEL	X			6573	4835	11408					
32	ONLY IN PERMIT SET												
33	-L- 447+90 LT & RT	54" RCP & 54" WSP - SDT, WFA, WFC	X			6439	3075	9514					
34	-L- 446+49-447+66 LT	ROADWAY FILL - SDU, WFB			X				3140	1550	4690		
35	-L- 444+65-446+47 RT	DITCH - SDS			X				0	212	212		
36	-L- 460+63-462+20 RT	36" WSP - SDO	X			2876	1229	4105					
37	ONLY IN PERMIT SET												
38	-L- 473+51-476+16 LT	EXTEND 18" RCP			X				3264	2467	5731		
59	-Y5RPB- 43+00-44+66 LT	2 @ 48" RCP, CHANNEL CHANGE - SRN	X			6380	87	6467					
60	-Y8RPB- 39+80 LT, -Y8RPA- 26+57-28+05 RT	CHANNEL CHANGE, 66" RCP - SET, WEX	X			4153	2283	6437					
TOTALS*:						**32068**	**14748**	**46816**	**6404**	**4229**	**10633**	**0**	**0**

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE / JOHNSTON
I-5111 / I-4739
42346.3.1
SHEET 49 OF 52

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
33	-L- 447+90 LT & RT		492	
34	-L- 446+49-447+66 LT		500	382
60	-Y8RPA- 26+57-28+05 RT		2231	156
TOTAL:			**3223**	**538**

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE / JOHNSTON
I-5111 / I-4739
42346.3.1
SHEET 50 OF 52

Revised 2018 Feb

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
39	ONLY IN PERMIT SET												
40	-L- 99+00-107+44 LT & RT	BRIDGE		X		14449	7030	21479	1104	2993	4097		
41	ONLY IN PERMIT SET												
42	-L- 106+42-107+44 RT	ROADWAY FILL - SDN, WEN			X				7169	5126	12295		
43	-L- 109+63-114+04 RT	ROADWAY FILL - SEO			X				7471	4557	12028		
44	-L- 110+99-115+29 LT & RT	60" RCP, DITCH - SEQ, WEO(1)	X						12849	6061	18910		
45	-L- 143+25-145+12 LT	48" CSP - SEU	X						11384	6539	17923		
46	-L- 164+25-164+78 RT	30" CSP / 36" RCP - SEA, WOE	X						10987	7345	18332		
47	-Y1RPA- 16+15-17+72 RT	54" CSP - SLV	X			5350	2012	7362					
48	ONLY IN PERMIT SET												
49	-L- 170+95-175+40 LT & RT	66" WSP / 66" RCP - SLU, WC, WOB	X						20163	9924	30087		
50	-L- 178+00-184+97 LT&RT	60" CSP, CHANNEL CHANGE - SLS,WOA	X						38684	25634	64318		
51	-L- 199+51-205+31	ROADWAY FILL, 66" RCP - SLR, WH,WNZ	X						41494	26817	68311		
52	ONLY IN PERMIT SET												
53	-L- 209+51-217+29 LT & RT	54" RCP / 66" RCP - MILL BRANCH	X						27804	17778	45582		
54	-L- 232+37-234+37 LT	54" WSP - SJ, WI, WJ	X			8694	5213	13907					
55	ONLY IN PERMIT SET												
56	ONLY IN PERMIT SET												
57	-L- 246+11-248+25 LT & RT	60" WSP - SDD, WFF	X						15680	9394	25074		
58	-L- 269+75-270+63 LT	36" WSP - SQ	X						10972	7749	18721		
TOTALS*:						**28492**	**14255**	**42747**	**205760**	**129917**	**335677**	**0**	**0**
PROJECT TOTALS*:						**116816**	**55819**	**172635**	**323506**	**183833**	**507339**	**0**	**0**

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE / JOHNSTON
I-5111 / I-4739
42346.3.1
SHEET 51 OF 52

Revised 2018 Feb

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
42	-L- 106+08-107+45 RT		2367	3001
43	-L- 109+63-111+26 RT		1618	736
44	-L- 113+34-114+92 RT		3043	871
49	-L- 174+33 RT		1439	
50	-L- 183+49 RT		680	
51	-Y2RPA3- 19+34		862	535
54	-L- 232+68-234+16 LT		1926	902
57	-L- 246+36-246+93 LT		379	204
TOTAL:			**12314**	**6249**

PROJECT TOTALS:	**20436**	**7986**

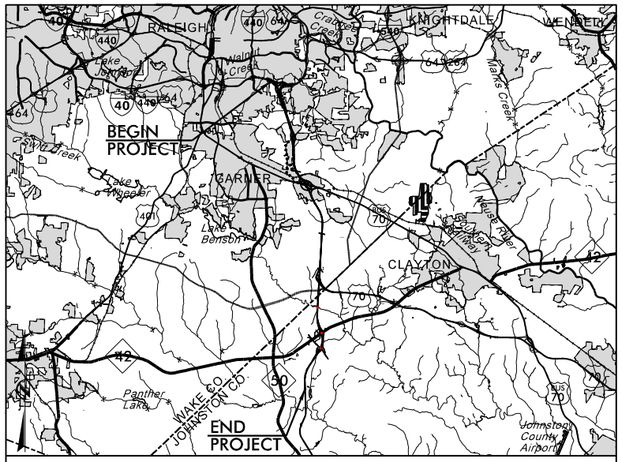
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE / JOHNSTON
I-5111 / I-4739
42346.3.1
SHEET 52 OF 52

Revised 2018 Feb

Rev. Jan 2009

09/28/16

See Sheet 1-B For Plan Sheet Symbols



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

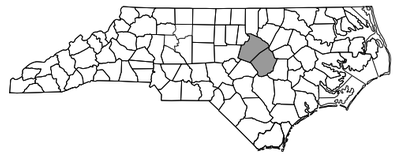
WAKE & JOHNSTON COUNTIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5111 /I-4739	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
42346.3.1	IMNHF-040-4(139)301	PE	

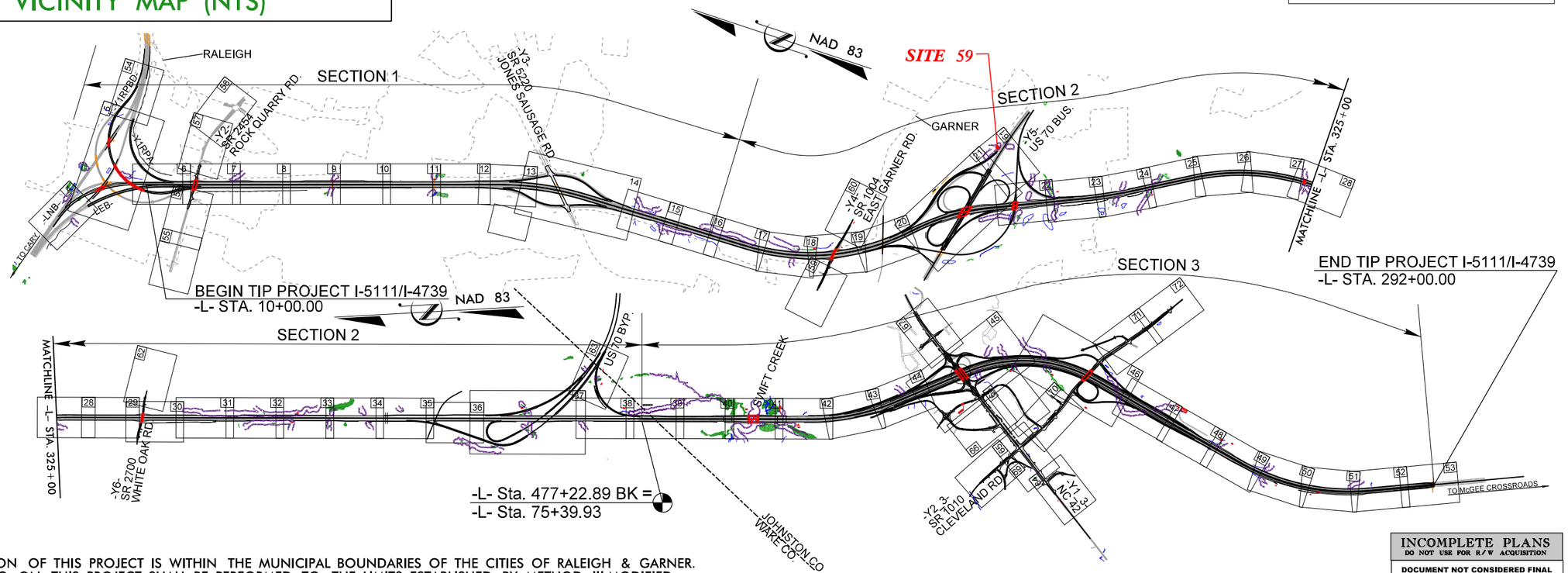
LOCATION: *I-40 FROM I-440 /US 64 (EXIT 301) TO JUST NORTH OF SR 1525 (CORNWALLIS ROAD), INCLUDING IMPROVEMENTS TO NC 42 AND SR 1010 (CLEVELAND ROAD).*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, WIDENING, RESURFACING & STRUCTURES*

BUFFER IMPACTS FOR UTILITIES



UTLITIES BUFFER DRAWING
SHEET 1 OF 3



NOTES:
1. A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITIES OF RALEIGH & GARNER.
2. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III MODIFIED.
3. THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2018 = 106,200
ADT 2040 = 137,200
DHV = 65%
D = 9%
T = 9% *
V = 70 MPH & 75 MPH **
FUNC CLASS: URBAN INTERSTATE
* (TTST 5% + DUAL 4%)
** DESIGN SPEED CHANGES AT US 70 BUS

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5111 /I-4739..... 12.950 miles
LENGTH STRUCTURE TIP PROJECT I-5111 /I-4739..... 0.094 miles
TOTAL LENGTH OF PROJECT I-5111 /I-4739..... 13.044 miles

NCDOT CONTACT

K. Zak Hamidi, P.E.
PROJECT ENGINEER - DESIGN-BUILD UNIT

PLANS PREPARED BY:

RK&K — RUMMEL, KLEPPER & KAHL, LLP, 900 RIDGEFIELD DRIVE, SUITE 350, RALEIGH, NORTH CAROLINA 27609, NC LICENSE NO. F-0112

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

S.T. WOOTEN

LETTING DATE:
JUNE 19, 2018

Brandon J. McInnis, P.E.
PROJECT ENGINEER

Mary E. Yahl, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

CONTRACT: C204134

TIP PROJECT: I-5111 /I-4739

4/15/2019
R:\Hydraulics\PERMITS_Environmental\Drawings\4C\I5III_I4739_Hyd_buf_utilities_tsh.dgn
Fkeys

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	61
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

UTILITIES BUFFER DRAWING
SHEET 2 OF 3

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

NAD 83

INSET A

MATCHLINE –Y5– STA. 44+50 SEE SHEET 21

MATCHLINE –Y5RPB– STA. 43+00 SEE SHEET 21

MATCHLINE –Y5RPC– STA. 62+00 SEE SHEET 22

MATCHLINE –Y5RPA– STA. 23+00 SEE SHEET 22

–Y5– PC Sta. 45+18.59

TEMPORARY IMPACTS DUE TO BORING BY DUKE ENERGY

END CONSTRUCTION
–Y5RPB– POC Sta. 46+45.00

–Y5RPB– PT Sta. 46+90.14

–Y5RPC– N 74° 26' 43.9" E

–Y5RPC– TS Sta. 69+61.17

–Y5RPC– SC Sta. 71+41.17

–Y5RPA– PCC Sta. 27+88.58

END CONSTRUCTION
–Y5RPA– POC Sta. 29+36.35

SITE 59
SRN
SEE INSET A

SITE 17C
SOE

SRO

DUKE REALTY LAND, LLC

DUKE CONSTRUCTION LTD PTNRP

PERGO INC.

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL F

STANDARD 4' BASE DITCH W/CL II RIP RAP SEE DETAIL F

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT SWALE SEE DETAIL E

SPECIAL CUT DITCH SEE DETAIL E

SP. LAT. V SWALE SEE DETAIL AE

REMOVE SYSTEM

RETAIN SYSTEM

RETAIN DI

10' WIDE BERM TOP ELEV=314.0' SEE DETAIL J

REPAIR EXISTING CONCRETE DITCH & EXTEND AN ADDITIONAL 10'

REPAIR 20+/- OF 18" RCP WHERE OUTLET HAS SEPERATED FROM HW (RECONNECT)

15" CSP 2 ELBOWS

1 TON CL B RIPRAP W/ 5' SY GEOTEXTILE

6'x6' BORE PIT

45+00 50+00 65+00 70+00 25+00 30+00

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P: (919) 878-9560
900 Ridgefield Drive Suite 350 | Raleigh, North Carolina 27609-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

4/15/2019
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Ekeus

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
59	-Y5RPB- 42+82-45+10 LT	UNDERGROUND POWER CABLE-SRN	X			3416	1957	5373					
TOTALS*:						**3416**	**1957**	**5373**	**0**	**0**	**0**	**0**	**0**

NOTES:

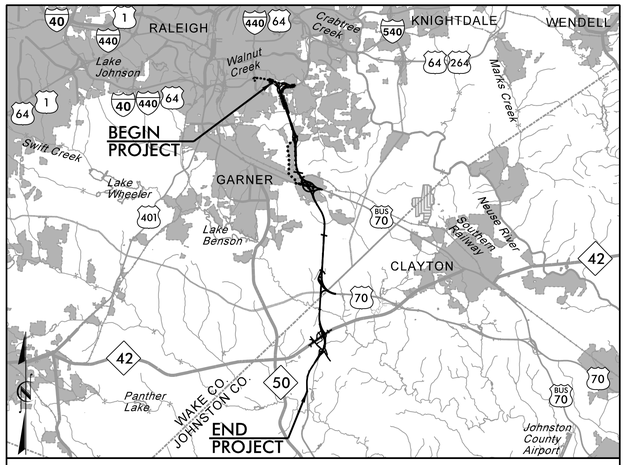
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 2019
WAKE / JOHNSTON
I-5111 / I-4739
42346.3.1
SHEET 3 OF 3

09/08/49

TIP PROJECT: I-5111 /I-4739

CONTRACT: C204134

See Sheet 1-B For Plan Sheet Symbols



VICINITY MAP (NTS)

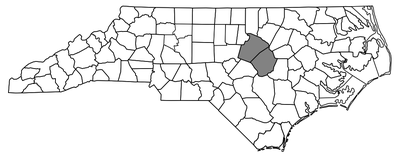
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE & JOHNSTON COUNTIES

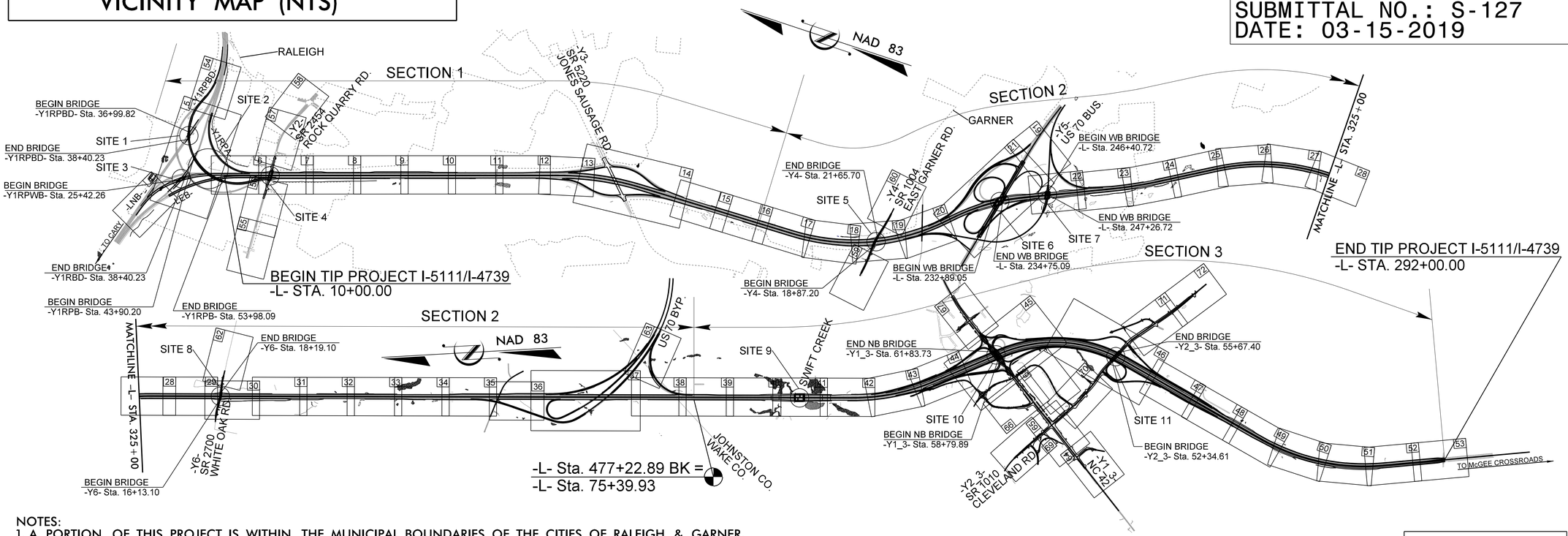
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5111 /I-4739	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
42346.3.1	IMNHF-040-4(139)301	PE	

LOCATION: *I–40 FROM I–440 /US 64 (EXIT 301) TO JUST NORTH OF SR 1525 (CORNWALLIS ROAD), INCLUDING IMPROVEMENTS TO NC 42 AND SR 1010 (CLEVELAND ROAD).*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, WIDENING, RESURFACING & STRUCTURES*



EARLY START CONSTRUCTION
REVISION
SUBMITTAL NO.: S-127
DATE: 03-15-2019



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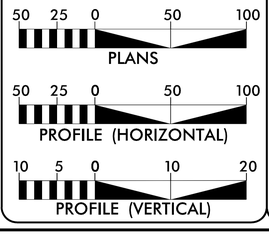
GRAPHIC SCALES



DESIGN DATA

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DHV = 65%
D = 9%
T = 9% *
V = 70 MPH & 75 MPH **
FUNC CLASS: URBAN INTERSTATE
* (TTST 5% + DUAL 4%)
** DESIGN SPEED CHANGES AT US 70 BUS

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I–5111 /I–4739	12.950 miles
LENGTH STRUCTURE TIP PROJECT I–5111 /I–4739	0.094 miles
TOTAL LENGTH OF PROJECT I–5111 /I–4739	13.044 miles

NCDOT CONTACT

Tim McFadden, P.E.
PROJECT ENGINEER – DESIGN–BUILD UNIT

PLANS PREPARED BY:

RK&K
RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
NC LICENSE NO. F–0112

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

S.T. WOOTEN

2018 STANDARD SPECIFICATIONS

LETTING DATE:
JUNE 19, 2018

Brandon J. McInnis, P.E.
PROJECT ENGINEER

Mary E. Yahl, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

4/15/2019
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04/06/15

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

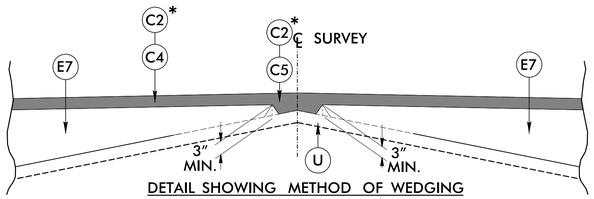
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

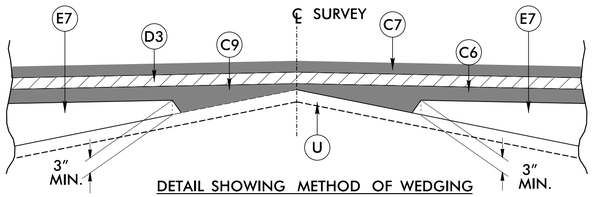
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

$DATE$
$FILE$
myghl

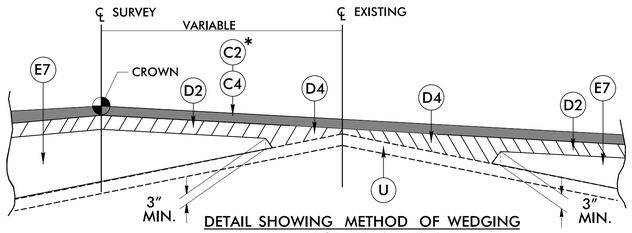
PAVEMENT SCHEDULE	
C2	3″ S9.5B
C3	VAR. S9.5B
C4	3″ S9.5C
C5	VAR. S9.5C
C6	1.5″ S9.5D
C7	3″ S9.5D
C9	VAR. S9.5D
D1	2.5″ I19.0C
D2	4″ I19.0C
D3	5″ I19.0C
D4	VAR. I19.0C
E4	5″ B25.0C
E7	VAR. B25.0C
J1	8″ ABC
J2	10″ ABC
K	CLASS IV STAB.
P	PRIME COAT
R3	SINGLE FACE BARRIER
R4	SINGLE SLOPE BARRIER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



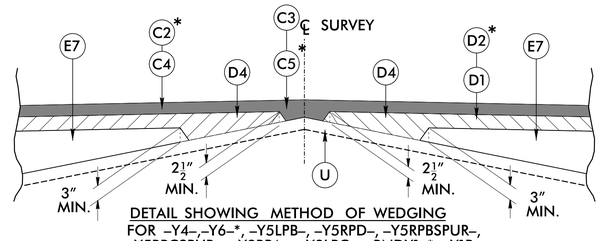
DETAIL SHOWING METHOD OF WEDGING
FOR –Y5LPC–, –Y5RPA–, & –Y1A–



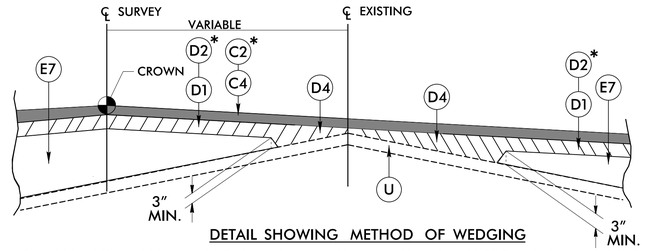
DETAIL SHOWING METHOD OF WEDGING
FOR –L–



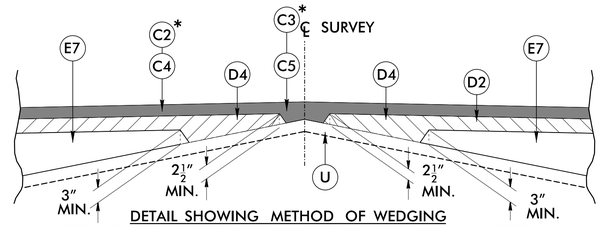
DETAIL SHOWING METHOD OF WEDGING
FOR –Y1_3–,–Y2_3–*



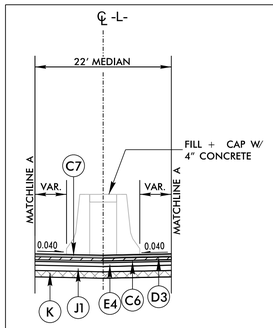
DETAIL SHOWING METHOD OF WEDGING
FOR –Y4–,–Y6–*, –Y5LPB–, –Y5RPD–, –Y5RPBSPUR–, –Y5RPCSPUR–, –Y8RPA–, –Y8LPC–, –RNDY1–*, –Y1B–, –Y1C–, –Y1D–, –Y2B–, & –Y1E–



DETAIL SHOWING METHOD OF WEDGING
FOR –Y4–,–Y6–*, –Y1RPA–, –Y1SPA–, –Y1RPD–, –Y1RPB–, –Y1RPC–, –Y1SPC–, –Y1RPD–, –Y1SPD–



DETAIL SHOWING METHOD OF WEDGING
FOR –Y1_3–,–Y2_3–*, –Y5–, –Y5RPB–, –Y5RPC–, –Y8RPB–, & –Y8RPC–



INSET A

USE INSET WITH TYP. SECTION NOS. 1, 2, &3 FOR THE FOLLOWING STATION RANGES:

–L– STA. 28+18.00 TO STA. 30+28.00
–L– STA. 122+55.00 TO STA. 124+00.00
–L– STA. 195+24.63 TO STA. 198+76.18
–L– STA. 203+95.81 TO STA. 206+27.56
–L– STA. 209+59.60 TO STA. 211+88.05
–L– STA. 229+66.51 TO STA. 250+19.38
–L– STA. 259+35.00 TO STA. 261+65.00
–L– STA. 335+84.95 TO STA. 338+15.00
–L– STA. 345+08.73 TO STA. 348+50.62
–L– STA. 383+12.89 TO STA. 385+42.94
–L– STA. 418+35.05 TO STA. 420+66.50
–L– STA. 449+22.31 TO STA. 454+70.83
–L– STA. 463+35.00 TO STA. 465+65.00
–L– STA. 473+85.00 TO STA. 476+14.95
–L– STA. 158+55.18 TO STA. 162+34.37
–L– STA. 192+78.85 TO STA. 195+64.81
–L– STA. 224+73.58 TO STA. 227+03.68

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. FOR CROSSOVER AREAS, SEE PLANS.

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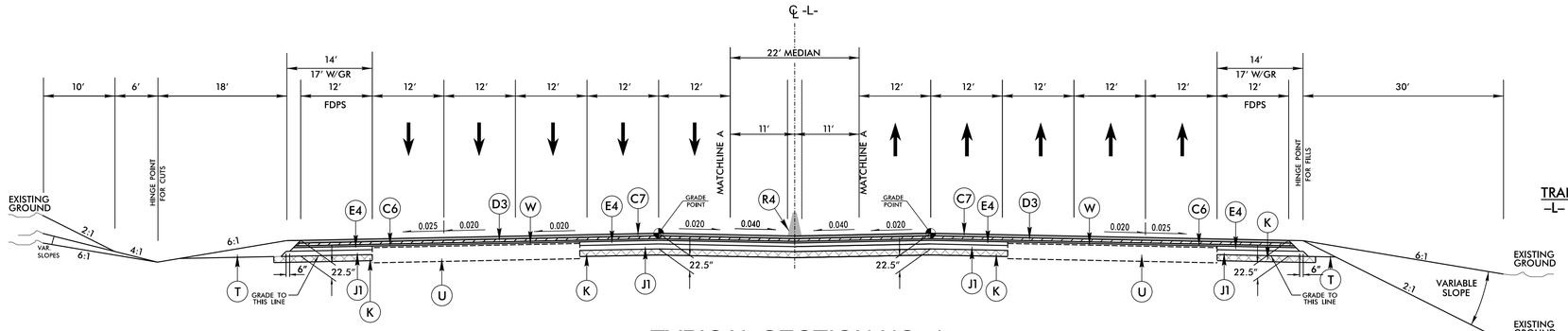
PAVEMENT SCHEDULE	
C4	3″ S9.5C
C6	1.5″ S9.5D
C7	3″ S9.5D
D2	4″ I19.0C
D3	5″ I19.0C
E4	5″ B25.0C
J1	8″ ABC
J2	10″ ABC
K	CLASS IV STAB.
P	PRIME COAT
R3	SINGLE FACE BARRIER
R4	SINGLE SLOPE BARRIER
S	EARTH MATERIAL
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

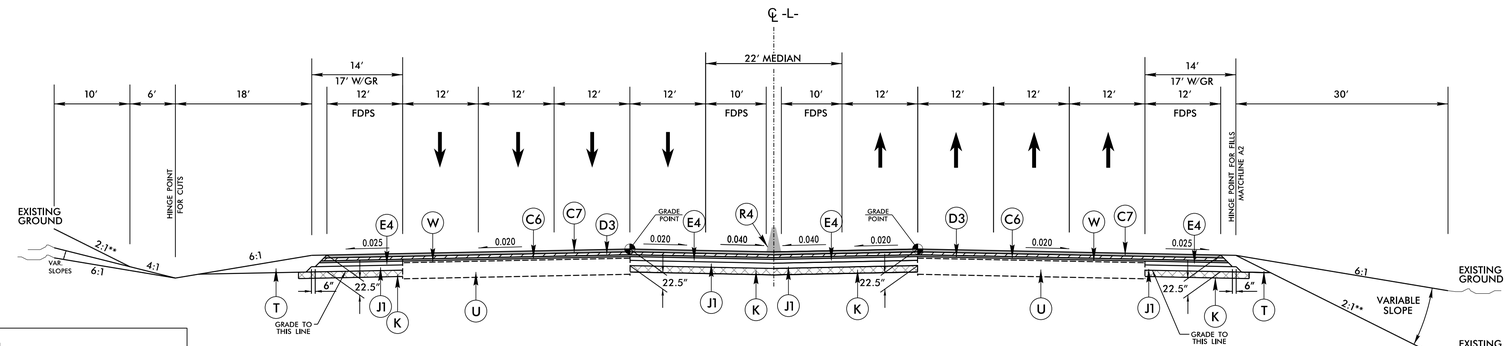
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



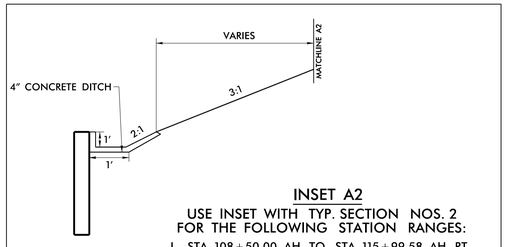
TYPICAL SECTION NO. 1

TRANSITION TO TYPICAL SECTION NO. 1
–L– STA. 15+94.90 TO STA. 30+54.91

USE TYPICAL SECTION NO. 1
–L– STA. 30+54.91 TO STA. 205+00.00



TYPICAL SECTION NO. 2



INSET A2

USE INSET WITH TYP. SECTION NOS. 2 FOR THE FOLLOWING STATION RANGES:
–L– STA. 108+50.00 AH TO STA. 115+99.58 AH RT
–L– STA. 108+50.00 AH TO STA. 111+05.58 AH LT

USE TYPICAL SECTION NO. 2
–L– STA. 205+00.00 TO STA. 232+89.05 (BEGIN BRIDGE)
–L– STA. 234+75.09 (END BRIDGE) TO STA. 246+40.72 (BEGIN BRIDGE)
–L– STA. 247+26.72 (END BRIDGE) TO STA. 477+22.89 BK
–L– STA. 75+39.93 AH TO STA. 103+20.57 (BEGIN BRIDGE)
–L– STA. 105+45.57 (END BRIDGE) TO STA. 143+18.10
–L– STA. 217+00.00 TO STA. 291+00.00

**USE 3:1 MAX SLOPE IN JOHNSTON COUNTY

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. FOR CROSSOVER AREAS, SEE PLANS.

FOR SHOULDER WIDENING DETAILS SEE SHT. 2A–12

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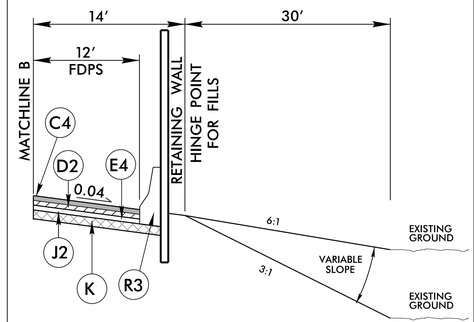
PAVEMENT SCHEDULE	
C4	3″ S9.5C
C6	1.5″ S9.5D
C7	3″ S9.5D
D1	2.5″ I19.0C
D2	4″ I19.0C
D3	5″ I19.0C
E4	5″ B25.0C
J1	8″ ABC
J2	10″ ABC
J3	6″ ABC
K	CLASS IV STAB.
P	PRIME COAT
R3	SINGLE FACE BARRIER
R4	SINGLE SLOPE BARRIER
S	EARTH MATERIAL
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

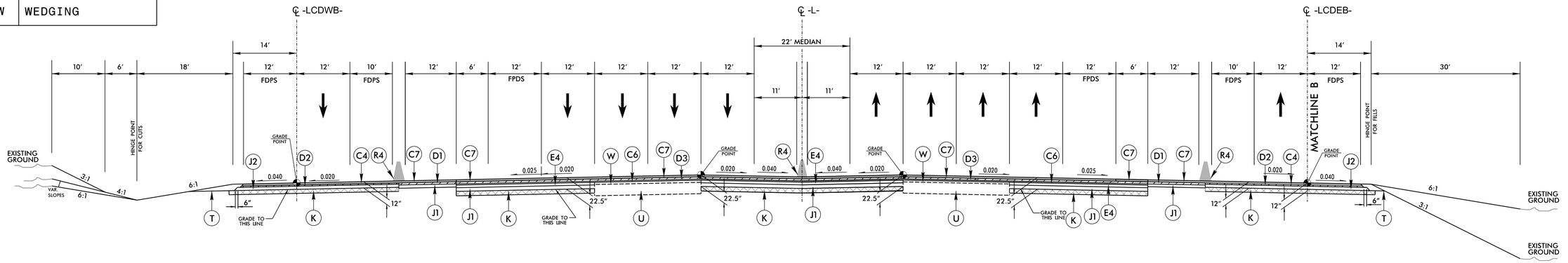
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET B

–LCDEB– STA. 15+96.67 TO STA. 20+03.72 RT





TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

–L– STA. 143+18.10 AH TO STA. 217+00.00 AH

NOTES

SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.

*4:1 INSIDE INTERCHANGE.

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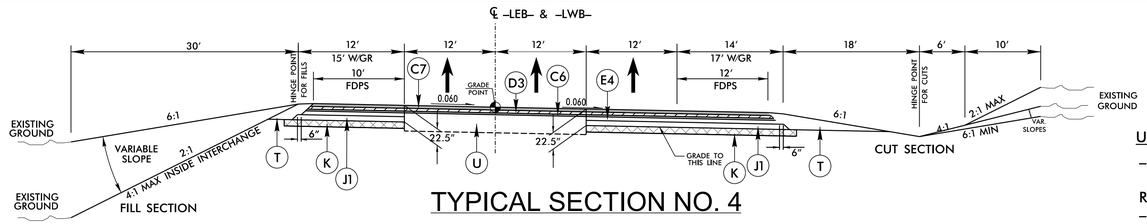
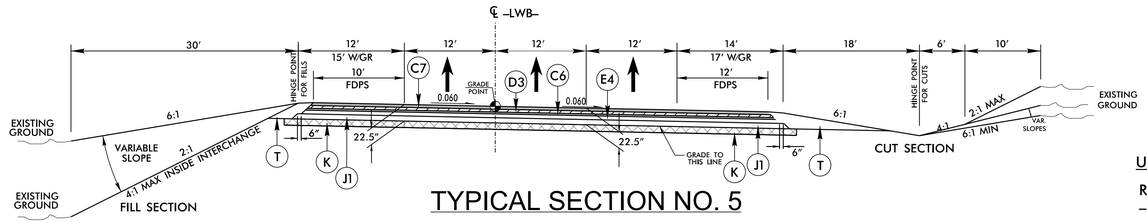
PAVEMENT SCHEDULE	
C2	3″ S9.5B
C4	3″ S9.5C
C6	1.5″ S9.5D
C7	3″ S9.5D
D1	2.5″ I19.0C
D2	4″ I19.0C
D3	5″ I19.0C
E2	4″ B25.0C
E3	4.5″ B25.0C
E4	5″ B25.0C
J1	8″ ABC
K	CLASS IV STAB.
R1	2′-6″ CURB
S	SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
–LEB– STA. 17+48.22 TO STA. 39+48.91

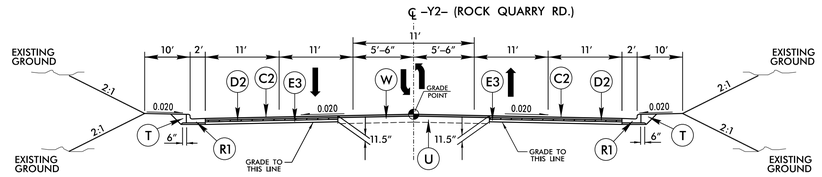
REVERSE TYPICAL
–LWB– STA. 10+00.00 TO STA. 15+00.00



TYPICAL SECTION NO. 5

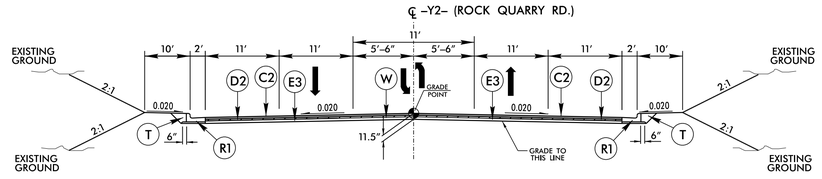
USE TYPICAL SECTION NO. 5

REVERSE TYPICAL
–LWB– STA. 15+00.00 TO STA. 25+42.26 (BEGIN BRIDGE)
–LWB– STA. 26+76.06 (END BRIDGE) TO STA. 37+58.95



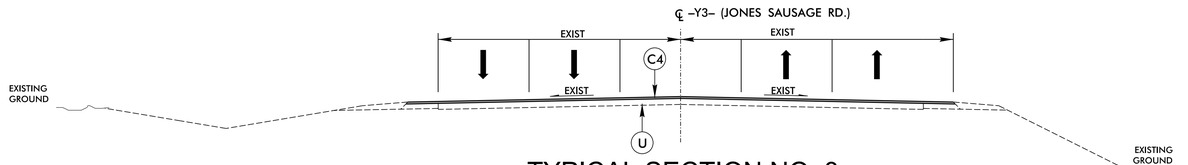
TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6
–Y2– STA. 27+05.40 TO STA. 30+50.00
–Y2– STA. 35+50.00 TO STA. 39+00.00



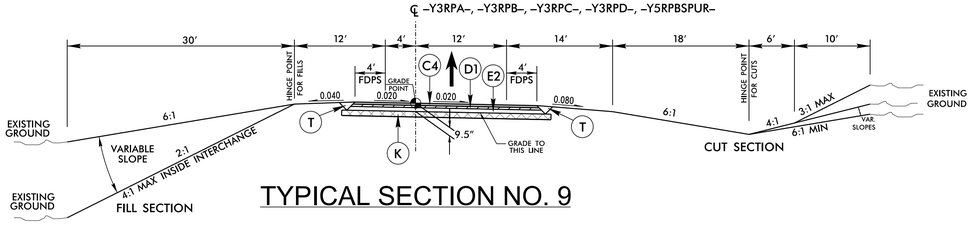
TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7
–Y2– STA. 30+50.00 TO STA. 32+41.01 (BEGIN BRIDGE)
–Y2– STA. 34+80.70 (END BRIDGE) TO STA. 35+50.00



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8
–Y3– STA. 15+00.00 TO STA. 19+47.16 (BEGIN EXISTING BRIDGE)
–Y3– STA. 22+72.02 (END EXISTING BRDIGE) TO STA. 28+20.00



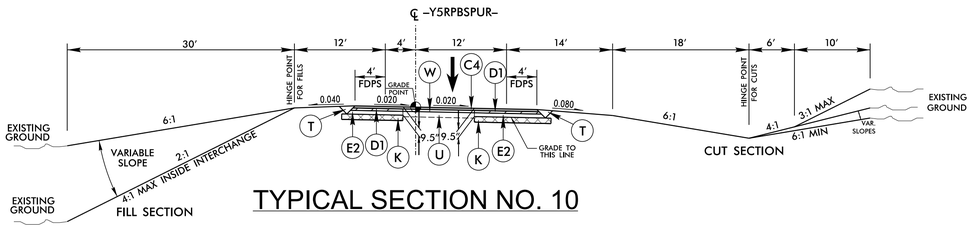
TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
–Y3RPA– STA. 10+00.00 TO STA. 31+18.53
–Y3RPD– STA. 10+00.00 TO STA. 23+78.82

REVERSE TYPICAL
–Y3RPB– STA. 10+00.00 TO STA. 24+73.53
–Y3RPC– STA. 10+00.00 TO STA. 31+04.75

REVERSE LANE ARROW
–Y5RPBSPUR– STA. 10+00.00 TO 12+86.23
–Y5RPBSPUR– STA. 13+95.93 TO 14+50.00

USE –L– PAVEMENT TO BACK OF GORE



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
–Y5RPBSPUR– STA. 12+86.23 TO 13+95.93

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. FOR CROSSOVER AREAS, SEE PLANS.

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-5
ROADWAY DESIGN	PAVEMENT DESIGN ENGINEER

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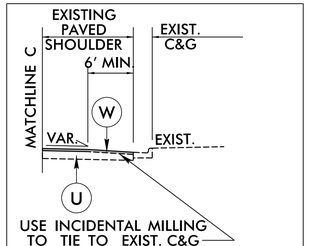
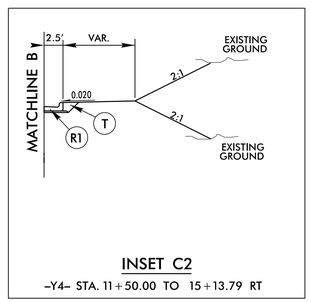
PAVEMENT SCHEDULE	
C4	3″ S9.5C
D1	2.5″ I19.0C
D2	4″ I19.0C
E1	3″ B25.0C
E2	4″ B25.0C
E4	5″ B25.0C
E6	10″ B25.0C
K	CLASS IV STAB.
R1	2′-6″ CURB
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



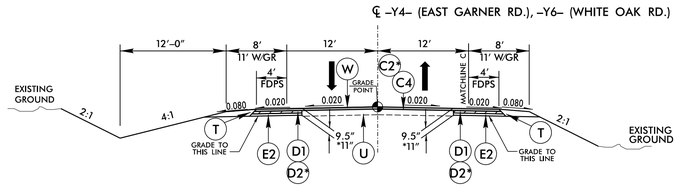
INSET C

–Y4– STA. 10+80.00 TO 11+50.00 RT



INSET C2

–Y4– STA. 11+50.00 TO 15+13.79 RT

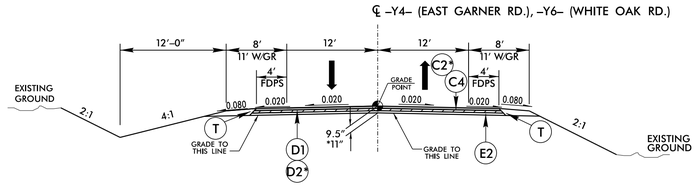


TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

–Y4– STA. 10+80.00 TO STA. 16+54.02
–Y4– STA. 24+40.83 TO STA. 29+15.00

*–Y6– STA. 11+05.00 TO STA. 14+35.13
*–Y6– STA. 19+57.30 TO STA. 22+85.00

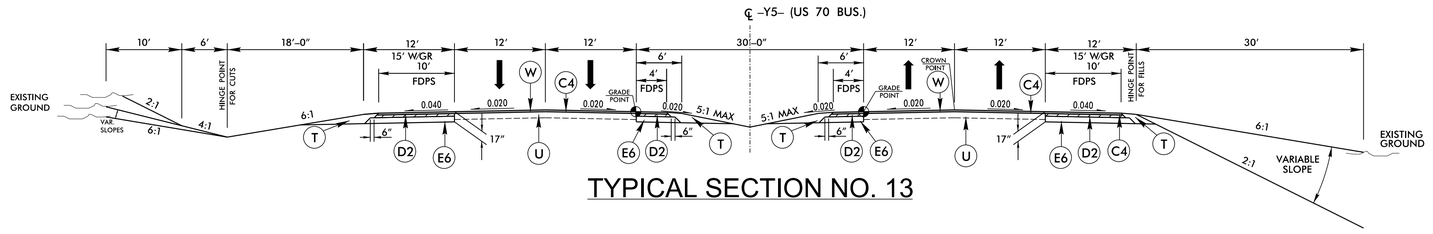


TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12

–Y4– STA. 16+54.02 TO STA. 18+84.72 (BEGIN BRIDGE)
–Y4– STA. 21+65.21 (END BRIDGE) TO STA. 24+40.83

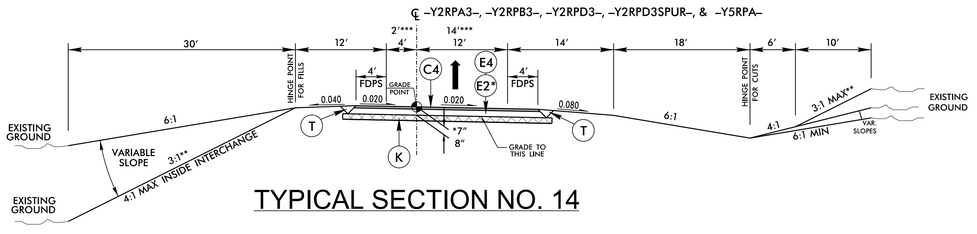
*–Y6– STA. 14+35.13 TO STA. 16+13.45 (BEGIN BRIDGE)
*–Y6– STA. 18+17.92 (END BRIDGE) TO STA. 19+57.30



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13

–Y5– STA. 19+70.00 TO STA. 43+50.00



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14

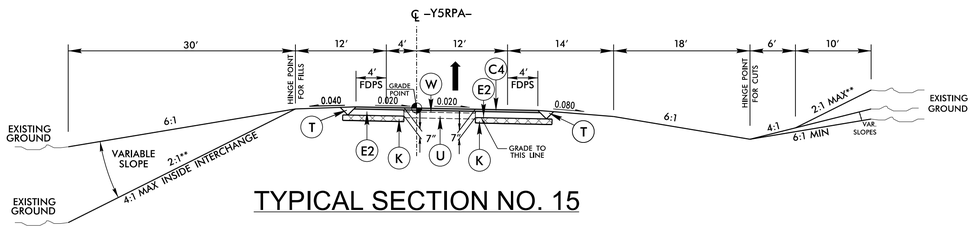
–Y2RPA3– STA. 10+00.00 TO STA. 24+50.97
*–Y5RPA– STA. 10+00.00 TO STA. 23+97.20

REVERSE TYPICAL & LANE ARROWS
–Y2RPB3– STA. 10+00.00 TO STA. 27+13.07
–Y2RPD3SPUR– STA. 10+00.00 TO STA. 11+59.10
–Y2RPD3– STA. 10+00.00 TO STA. 29+08.73

NOTE:
** USE 2:1 MAX FILL SLOPES FOR –Y5RPA–

*** USE FOR –Y2RPD3SPUR–.

*USE –L– PAVEMENT TO BACK OF GORE
USE –LCDEB–/–LCDWB– PAVEMENT TO BACK OF GORE



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15

–Y5RPA– STA. 23+97.20 TO STA. 29+36.35

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-6
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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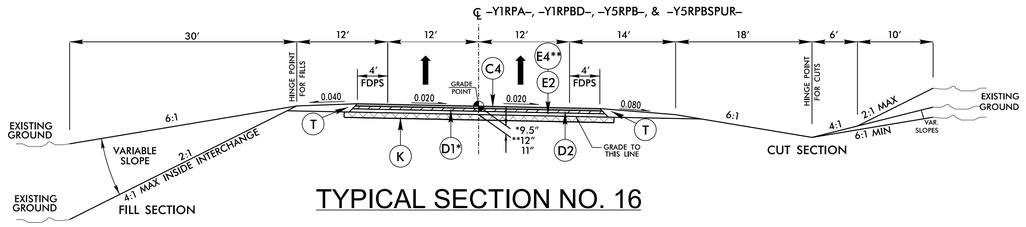
PAVEMENT SCHEDULE	
C2	3″ S9.5B
C4	3″ S9.5C
D1	2.5″ I19.0C
D2	4″ I19.0C
E1	3″ B25.0C
E2	4.0″ B25.0C
E4	5″ B25.0C
K	CLASS IV STAB.
R1	2′-6″ CURB
R2	1′-6″ CURB
S	SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

℄ –Y1RPA–, –Y1RPBD–, –Y5RPB–, & –Y5RPBSPUR–



TYPICAL SECTION NO. 16

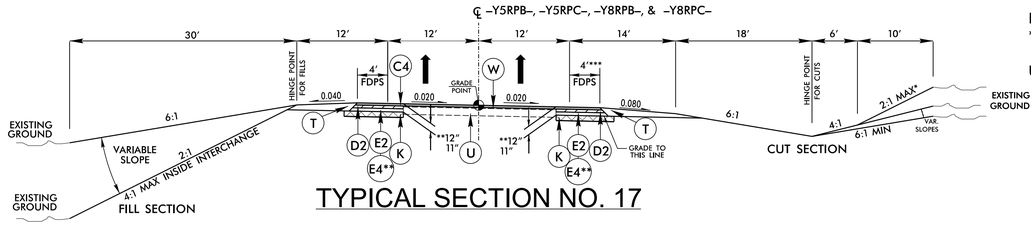
USE TYPICAL SECTION NO. 16
**–Y1RPA– STA. 20+50.00 TO STA. 29+00.00
**–Y1RPBD– STA. 24+50.00 TO STA. 36+99.82 (BEGIN BRIDGE)
**–Y1RPBD– STA. 38+40.23 (END BRIDGE) TO STA. 43+90.20 (BEGIN BRIDGE)
**–Y1RPBD– STA. 53+98.09 (END BRIDGE) TO STA. 69+02.72

REVERSE TYPICAL AND LANE ARROWS:
–Y5RPB– STA. 18+20.72 TO STA. 42+04.08

REVERSE LANE ARROWS:
*–Y5RPBSPUR– STA. 14+50.00 TO STA. 18+02.86

USE –L– PAVEMENT TO BACK OF GORE

℄ –Y5RPB–, –Y5RPC–, –Y8RPB–, & –Y8RPC–



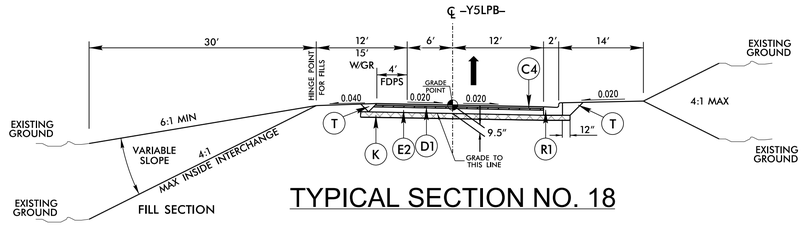
TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17
**–Y1RPA– STA. 10+00.00 TO STA. 20+50.00
**–Y1RPA– STA. 29+00.00 TO STA. 34+61.90
**–Y1RPBD– STA. 20+82.24 TO STA. 24+50.00
**–Y5RPC– STA. 10+00.00 TO STA. 23+53.76
–Y8RPC– STA. 10+00.00 TO STA. 19+35.00

REVERSE TYPICAL AND LANE ARROWS:
–Y5RPB– STA. 10+00.00 TO STA. 18+20.72
–Y5RPB– STA. 42+04.08 TO STA. 46+45.00
–Y8RPB– STA. 10+00.00 TO STA. 17+40.00

NOTES:
USE –L– PAVEMENT TO BACK OF GORE
***USE 10′ FDPS FOR LIMITS OF –Y8RPB– AND –Y8RPC–

℄ –Y5LPB–

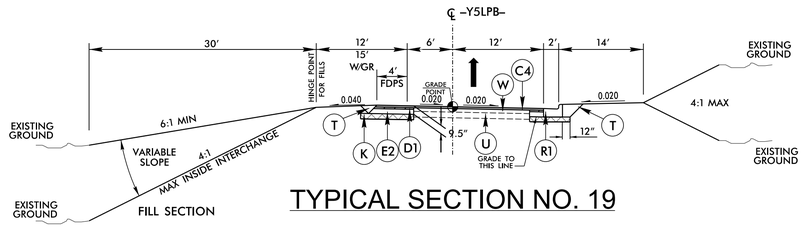


TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18
–Y5LPB– STA. 10+00.00 TO STA. 23+42.08

USE –L– PAVEMENT TO BACK OF GORE

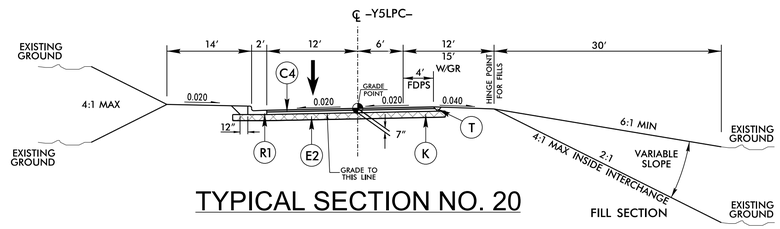
℄ –Y5LPB–



TYPICAL SECTION NO. 19

USE TYPICAL SECTION NO. 19
–Y5LPB– STA. 23+42.08 TO STA. 31+89.80

℄ –Y5LPC–



TYPICAL SECTION NO. 20

USE TYPICAL SECTION NO. 20
–Y5LPC– STA. 16+43.94 TO STA. 21+53.99

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. FOR CROSSOVER AREAS, SEE PLANS.

FOR –Y5RPB_TEMP– TYPICAL SEE SHT. 2A–13

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-7
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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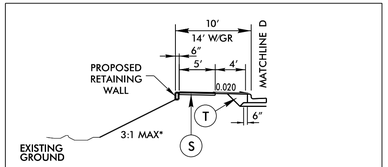
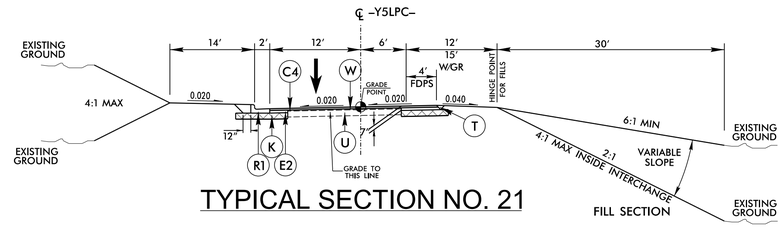
PAVEMENT SCHEDULE	
C2	3″ S9.5B
C4	3″ S9.5C
D1	2.5″ I19.0C
D2	4″ I19.0C
E1	3″ B25.0C
E2	4.0″ B25.0C
E4	5″ B25.0C
K	CLASS IV STAB.
R1	2′-6″ CURB
R2	1′-6″ CURB
S	SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



INSET D

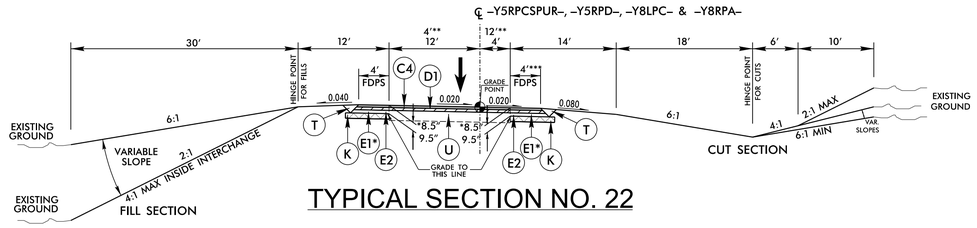
–Y1_3– STA. 32+32.37 TO 37+23.86 LT
–Y1_3– STA. 37+69.63 TO 38+42.61 LT
–Y1_3– STA. 38+84.26 TO 41+17.95 LT
–Y1_3– STA. 44+47.18 TO 45+50.70 LT
–Y1_3– STA. 69+85.22 TO 71+81.73 LT
–Y1_3– STA. 39+88.31 TO 43+54.71 RT
–Y1_3– STA. 44+08.03 TO 46+31.96 RT



TYPICAL SECTION NO. 21

USE TYPICAL SECTION NO. 21
–Y5LPC– STA. 10+00.00 TO STA. 16+43.94
–Y5LPC– STA. 21+53.99 TO STA. 23+62.77

USE –L– PAVEMENT TO BACK OF GORE

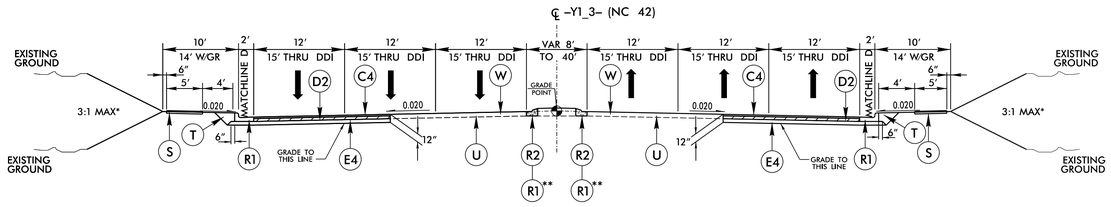


TYPICAL SECTION NO. 22

USE TYPICAL SECTION NO. 22
–Y5RPD– STA. 10+00.00 TO STA. 29+63.39
**–Y5RPCSPUR– STA. 10+00.00 TO STA. 13+97.77

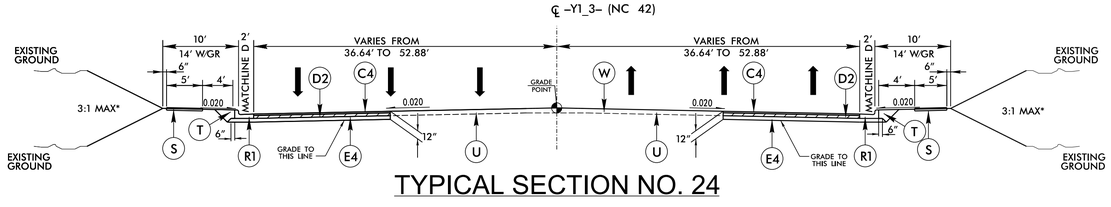
REVERSE TYPICAL
*–Y8RPA– STA. 10+00.00 TO STA. 34+38.95
–Y8LPC– STA. 10+00.00 TO STA. 26+52.92

NOTES:
USE –L– PAVEMENT TO BACK OF GORE
*** USE 10′ FDPS FOR –Y8LPC AND –Y8RPA–
REVERSE LANE ARROW FOR –Y5RPCSPUR–



TYPICAL SECTION NO. 23

USE TYPICAL SECTION NO. 23
–Y1_3– STA. 20+80.00 TO STA. 55+82.36
–Y1_3– STA. 56+99.26 TO STA. 58+79.89 (BEGIN NB BRIDGE)
–Y1_3– STA. 61+83.73 (END NB BRIDGE) TO STA. 63+50.74
–Y1_3– STA. 64+66.89 TO STA. 80+00.00
NOTE:
USE –Y1EB3 AND –Y1WB3– PROFILES IN THE FOLLOWING LOCATIONS:
–Y1_3– STA. 52+69.81 TO STA. 55+82.36
–Y1_3– STA. 56+99.26 TO STA. 58+79.89 (BEGIN NB BRIDGE)
–Y1_3– STA. 61+83.73 (END NB BRIDGE) TO STA. 63+50.74
–Y1_3– STA. 64+66.89 TO STA. 67+87.13
REVERSE LANE ARROWS
–Y1_3– STA. 55+36.04 TO STA. 65+95.70
**
–Y1_3– STA. 55+36.04 TO STA. 58+90.21
–Y1_3– STA. 61+74.23 TO STA. 65+95.70



TYPICAL SECTION NO. 24

USE TYPICAL SECTION NO. 24
–Y1_3– STA. 55+82.36 TO STA. 56+99.26
–Y1_3– STA. 63+50.74 TO STA. 64+66.89

NOTE:
GRADE POINT/CROWN POINT TRANSITIONS FROM 8.10′ LT OF CENTERLINE TO 0′ LT IN THE FOLLOWING LOCATION:
–Y1_3– STA. 55+82.36 TO STA. 56+99.26

GRADE POINT/CROWN POINT TRANSITIONS FROM 0′ RT OF CENTERLINE TO 8.10′ RT IN THE FOLLOWING LOCATION:
–Y1_3– STA. 63+50.74 TO STA. 64+66.89

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. FOR CROSSOVER AREAS, SEE PLANS.

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-8
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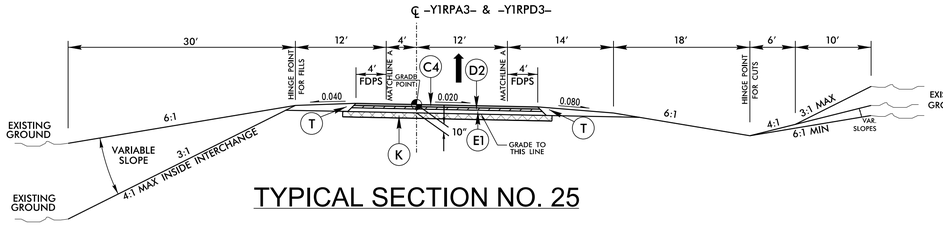
PAVEMENT SCHEDULE	
C2	3″ S9.5B
C4	3″ S9.5C
D2	4″ I19.0C
E1	3″ B25.0C
E2	4″ B25.0C
E4	5″ B25.0C
K	CLASS IV STAB.
R1	2′-6″ CURB
R2	1′-6″ CURB
S	SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

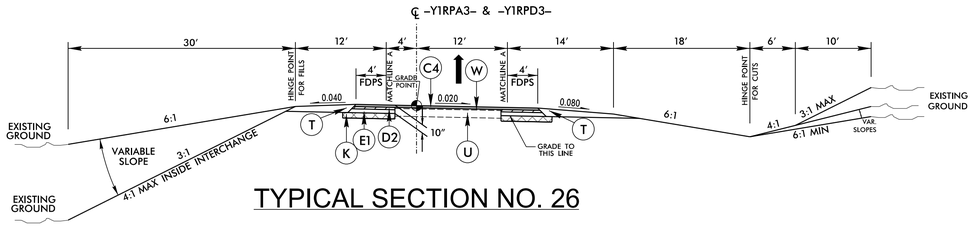


TYPICAL SECTION NO. 25

USE TYPICAL SECTION NO. 25
–Y1RPA3– STA. 10+00.00 TO STA. 16+55.59

REVERSE TYPICAL AND LANE ARROW
–Y1RPD3– STA. 10+00.00 TO STA. 17+96.66
–Y1RPD3– STA. 19+90.37 TO STA. 27+15.09

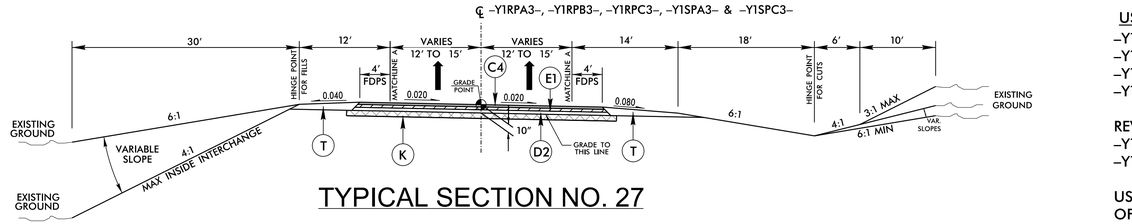
USE –LCDWB– /–LCDEB– PAVEMENT TO BACK OF GORE



TYPICAL SECTION NO. 26

USE TYPICAL SECTION NO. 26
–Y1RPA3– STA. 16+55.59 TO STA. 20+00.00

REVERSE TYPICAL AND LANE ARROW
–Y1RPD3– STA. 17+96.66 TO STA. 19+90.37

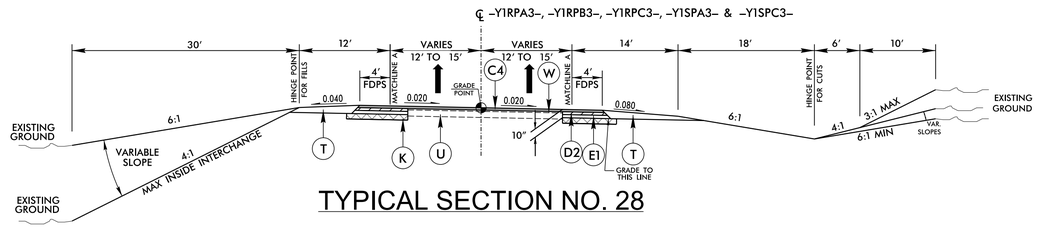


TYPICAL SECTION NO. 27

USE TYPICAL SECTION NO. 27
–Y1RPA3– STA. 23+74.60 TO STA. 26+31.44
–Y1RPC3– STA. 24+83.31 TO STA. 26+67.48
–Y1SPA3– STA. 11+64.45 TO STA. 13+97.17
–Y1SPC3– STA. 12+75.77 TO STA. 14+13.12

REVERSE TYPICAL AND LANE ARROW
–Y1RPB3– STA. 10+00.00 TO 21+75.10
–Y1RPB3– STA. 23+56.44 TO 26+53.61

USE –LCDWB– /LCDEB– PAVEMENT TO BACK OF GORE

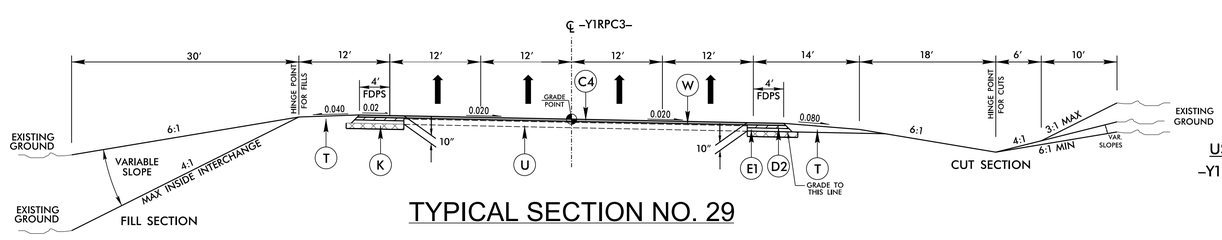


TYPICAL SECTION NO. 28

USE TYPICAL SECTION NO. 28
–Y1RPA3– STA. 20+00.00 TO STA. 23+74.60
–Y1RPC3– STA. 10+00.00 TO STA. 16+30.00
–Y1RPC3– STA. 23+69.72 TO STA. 24+83.31
–Y1SPA3– STA. 10+00.00 TO STA. 11+64.45
–Y1SPC3– STA. 10+00.00 TO STA. 12+75.77

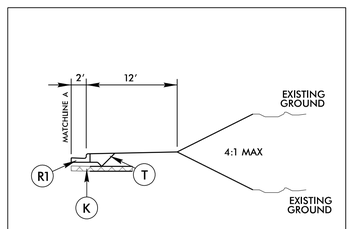
REVERSE TYPICAL AND LANE ARROW
–Y1RPB3– STA. 21+75.10 TO 23+56.44

USE –LCDWB– /LCDEB– PAVEMENT TO BACK OF GORE



TYPICAL SECTION NO. 29

USE TYPICAL SECTION NO. 29
–Y1RPC3– STA. 16+30.00 TO STA. 23+69.72



INSET E

–Y1RPA3– STA. 23+69.72 TO 25+76.10 RT
–Y1RPA3– STA. 25+42.52 TO 26+15.14 LT
–Y1SPA3– STA. 10+62.90 TO 13+41.92 LT
–Y1SPA3– STA. 12+82.79 TO 15+37.91 RT
–Y1RPB3– STA. 23+33.24 TO 25+75.19 LT
–Y1RPB3– STA. 25+29.36 TO 26+00.20 RT
–Y1RPC3– STA. 26+23.31 TO 27+01.42 LT
–Y1RPC3– STA. 24+31.11 TO 26+58.26 RT
–Y1SPC3– STA. 10+62.48 TO 13+41.91 LT
–Y1SPC3– STA. 12+99.20 TO 14+13.12 RT
–Y1RPD3– STA. 24+50.83 TO 26+54.78 LT
–Y1RPD3– STA. 26+14.85 TO 26+69.11 RT

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. FOR CROSSOVER AREAS, SEE PLANS.

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-9
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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-10
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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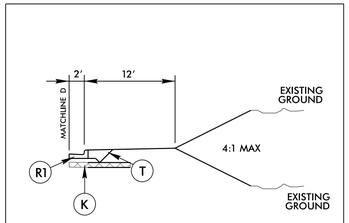
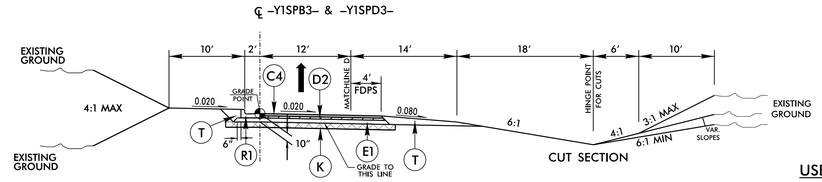
PAVEMENT SCHEDULE	
A1	7″ CONC W/ WIRE
C2	3″ S9.5B
C4	3″ S9.5C
D2	4″ I19.0C
E1	3″ B25.0C
E2	4″ B25.0C
E3	4.5″ B25.0C
E4	5″ B25.0C
K	CLASS IV STAB.
R1	2′-6″ CURB
R2	1′-6″ CURB
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



INSET F

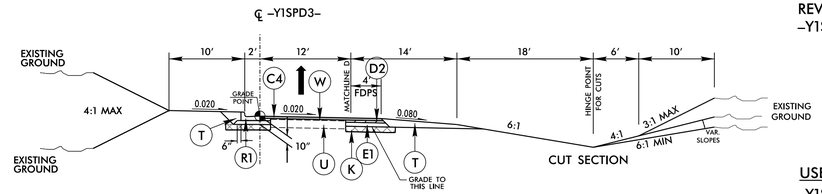
–Y1SPB3– STA. 13+07.27 TO 14+14.14 LT
–Y1SPD3– STA. 12+13.58 TO 13+19.41 LT



TYPICAL SECTION NO. 30

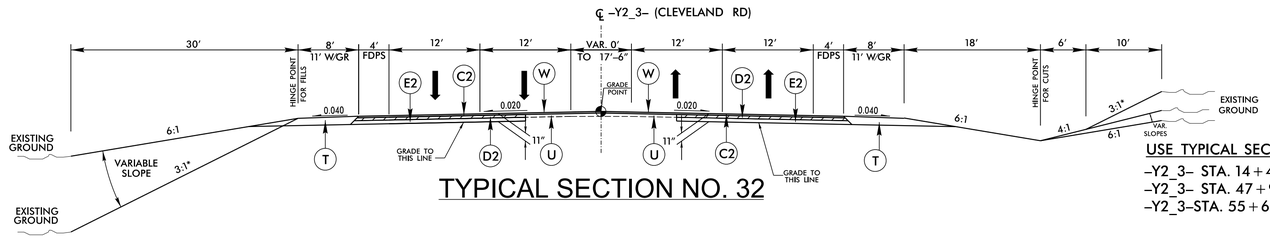
USE TYPICAL SECTION NO. 30
–Y1SPD3– STA. 10+00.00 TO STA. 11+81.25
–Y1SPD3– STA. 12+31.39 TO STA. 12+86.47

REVERSE TYPICAL AND LANE ARROWS
–Y1SPB3– STA. 10+00.00 TO STA. 14+14.14



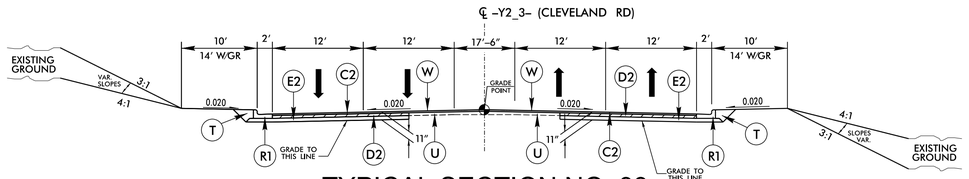
TYPICAL SECTION NO. 31

USE TYPICAL SECTION NO. 31
–Y1SPD3– STA. 11+81.25 TO STA. 12+31.39



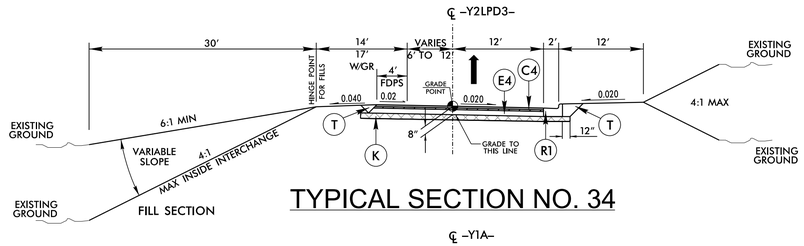
TYPICAL SECTION NO. 32

USE TYPICAL SECTION NO. 32
–Y2_3– STA. 14+40.00 TO STA. 23+00.00
–Y2_3– STA. 47+90.71 TO STA. 52+34.61 (BEGIN BRIDGE)
–Y2_3–STA. 55+67.40 (END BRIDGE) TO 82+50.00



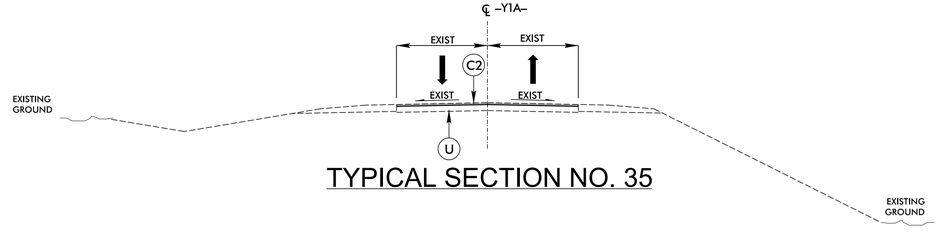
TYPICAL SECTION NO. 33

USE TYPICAL SECTION NO. 33
–Y2_3– STA. 23+00.00 TO STA. 47+90.71



TYPICAL SECTION NO. 34

USE TYPICAL SECTION NO. 34
–Y2LPD3– STA. 10+00.00 TO STA. 21+93.72



TYPICAL SECTION NO. 35

USE TYPICAL SECTION NO. 35
–Y1A– STA. 10+00.00 TO STA. 30+41.79
–Y1A– STA. 34+10.04 TO STA. 42+08.17

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, CONCRETE ISLANDS AND TAPERS.
*4:1 INSIDE INTERCHANGE.
PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
FOR CROSSOVER AREAS, SEE PLANS.

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4/15/2019
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mahon

PAVEMENT SCHEDULE	
A1	7″ CONC W/ WIRE
C2	3″ S9.5B
D2	4″ I19.0C
E2	4″ B25.0C
E5	5.5″ B25.0C
J1	8″ ABC
R1	2′-6″ CURB
R2	1′-6″ CURB
S	SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-11
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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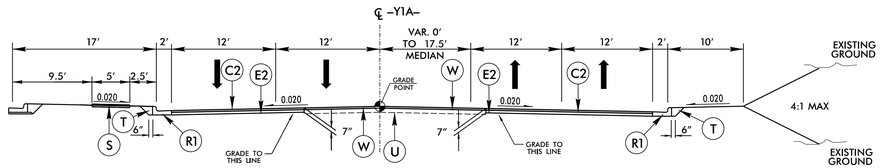
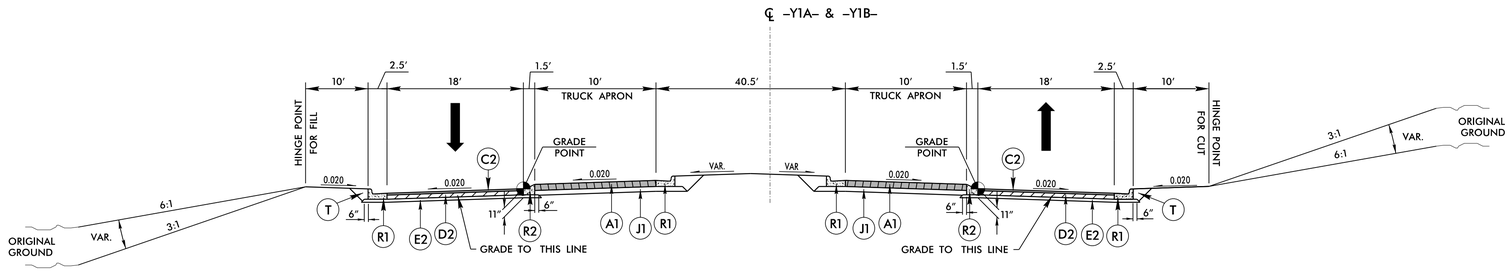


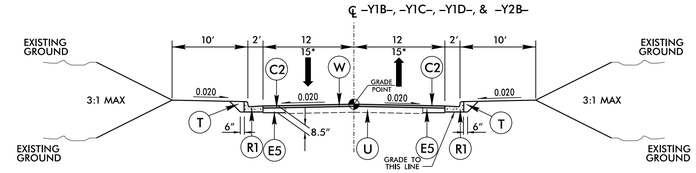
TYPICAL SECTION NO. 36

USE TYPICAL SECTION NO. 36
–Y1A– STA. 42+08.17 TO STA. 47+71.37



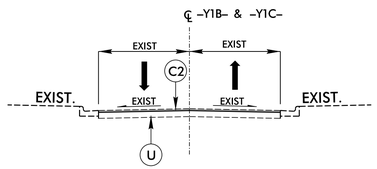
TYPICAL SECTION NO. 37

USE TYPICAL SECTION NO. 37
–Y1A– STA. 30+41.79 TO STA. 34+10.04
–Y1B– STA. 12+75.35 TO STA. 14+38.30



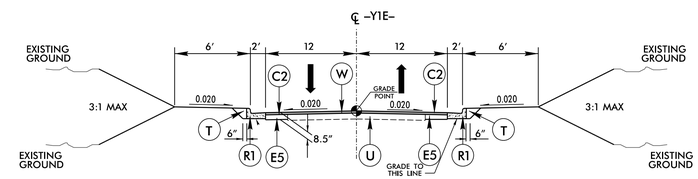
TYPICAL SECTION NO. 38

USE TYPICAL SECTION NO. 38
–Y1B– STA. 11+58.10 TO STA. 12+75.35
–Y1B– STA. 14+38.30 TO STA. 16+65.00
–Y1B– STA. 21+68.19 TO STA. 23+50.00
*–Y1C– STA 10+93.95 TO STA. 12+60
*–Y1C– STA 27+50.00 TO STA. 32+19.70
–Y1D– STA 10+55.00 TO STA. 14+06.93
–Y1D– STA 14+96.43 TO STA. 17+35.00
–Y2B– STA 12+18.78 TO STA. 14+19.58



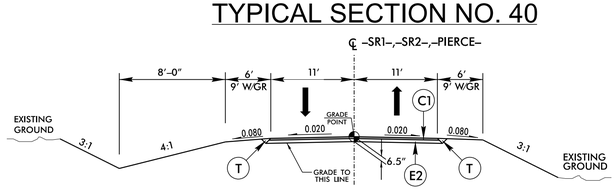
TYPICAL SECTION NO. 39

USE TYPICAL SECTION NO. 39
–Y1B– STA. 16+65.00 TO STA. 21+68.19
–Y1C– STA. 12+60.00 TO STA. 27+50.00



TYPICAL SECTION NO. 40

USE TYPICAL SECTION NO. 40
–Y1E– STA. 10+39.81 TO STA. 15+95.00



TYPICAL SECTION NO. 41

USE TYPICAL SECTION NO. 41
–SR1– STA. 10+11.00 TO STA. 10+55.17
–SR1– STA. 13+30.12 TO STA. 18+68.28
–SR2– STA. 10+33.59 TO STA. 25+05.53
–PIERCE– STA. 12+18.76 TO STA. 15+87.58

NOTE: USE 4′ PS FOR PIERCE RD.

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. FOR CROSSOVER AREAS, SEE PLANS.

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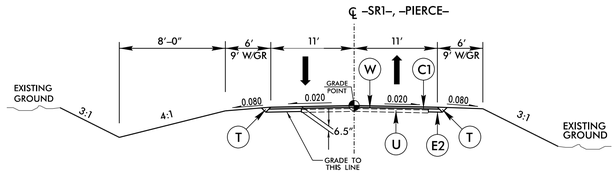
mlatta

PAVEMENT SCHEDULE	
A1	7″ CONC W/ WIRE
C1	2.5″ S9.5B
C2	3″ S9.5B
C4	3″ S9.5C
C6	1.5″ S9.5D
C7	3″ S9.5D
C8	1.5″ S9.5C
D1	2.5″ I19.0C
D2	4″ I19.0C
D3	5″ I19.0C
E1	3″ B25.0C
E2	4″ B25.0C
E3	4.5″ B25.0C
E4	5″ B25.0C
J1	8″ ABC
J3	6″ ABC
K	CLASS IV STAB.
S	SPLIT SEAL
R1	2′-6″ CURB
R2	1′-6″ CURB
R3	SING. FACE BARR.
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 42

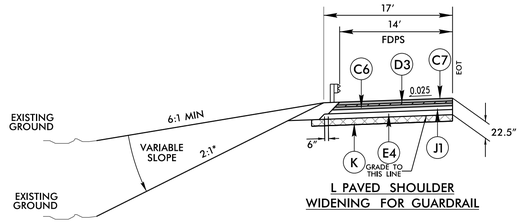
USE TYPICAL SECTION NO. 42
-SR1- STA. 10+55.17 TO STA. 13+30.12
-PIERCE- STA. 10+00.00 TO STA. 12+18.76

NOTE: USE 4′ PS FOR PIERCE RD.

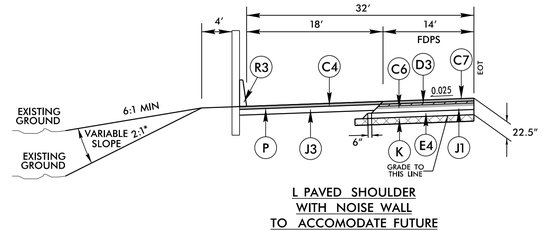
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-12
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SHOULDER WIDENING DETAILS

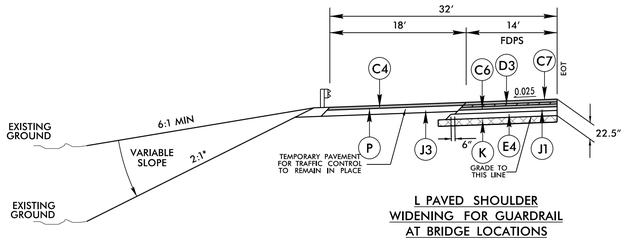


L PAVED SHOULDER
WIDENING FOR GUARDRAIL

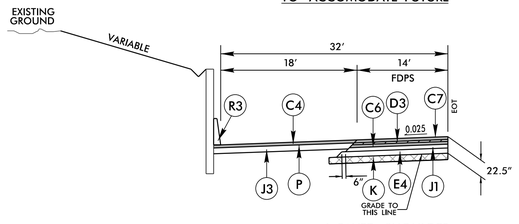


L PAVED SHOULDER
WITH NOISE WALL
TO ACCOMODATE FUTURE

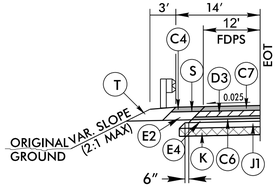
NOTE:
*USE 3:1 MAX SLOPES IN JOHNSTON COUNTY



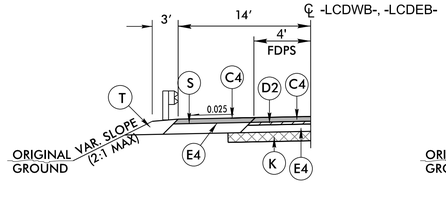
L PAVED SHOULDER
WIDENING FOR GUARDRAIL
AT BRIDGE LOCATIONS
TO ACCOMODATE FUTURE



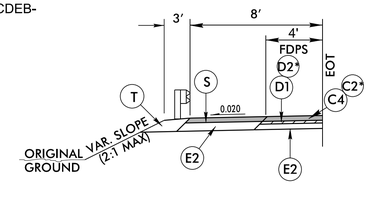
L PAVED SHOULDER
WITH MSE WALL
TO ACCOMODATE FUTURE



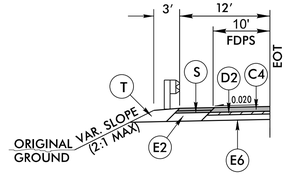
DETAIL #1
-L- OUTSIDE



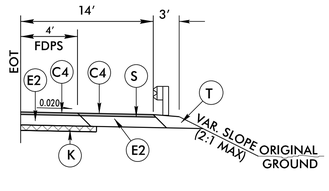
DETAIL #10
-LCDWB-, -LCDEB-



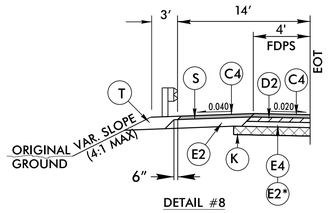
DETAIL #3
-Y4-
*-Y6-



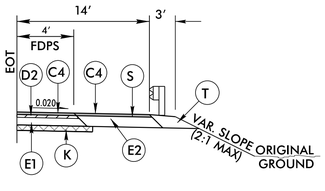
DETAIL #5
-Y5-



DETAIL #7
-Y5RPA-



DETAIL #8
-Y5RPB-*
-Y5RPC-



DETAIL #7
-Y1RPA3-
-Y1RPD3-

NOTES
SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

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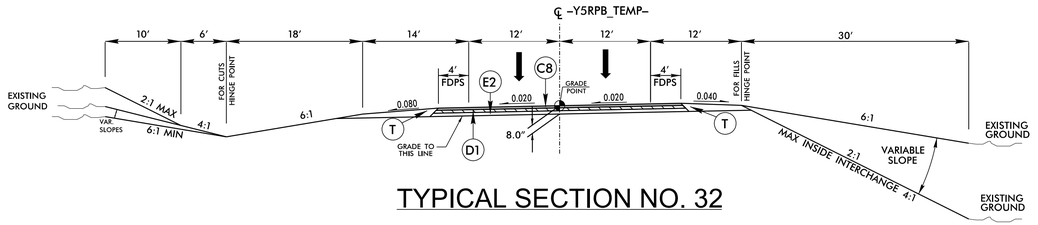
PAVEMENT SCHEDULE	
A1	7″ CONC W/ WIRE
C1	2.5″ S9.5B
C2	3″ S9.5B
C4	3″ S9.5C
C6	1.5″ S9.5D
C7	3″ S9.5D
C8	1.5″ S9.5C
D1	2.5″ I19.0C
D2	4″ I19.0C
D3	5″ I19.0C
E2	4″ B25.0C
E3	4.5″ B25.0C
E4	5″ B25.0C
J1	8″ ABC
J3	6″ ABC
K	CLASS IV STAB.
R1	2′-6″ CURB
R2	1′-6″ CURB
R3	SING. FACE BARR.
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

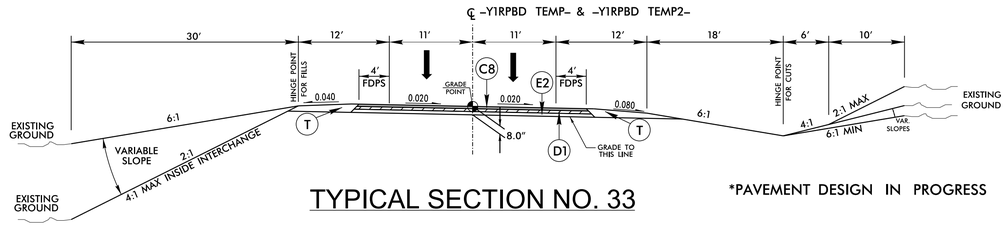
TEMPORARY PAVEMENT



TYPICAL SECTION NO. 32

USE TYPICAL SECTION NO. 32

–Y5RPB_TEMP– STA. 10+00.00 TO STA. 16+10.00

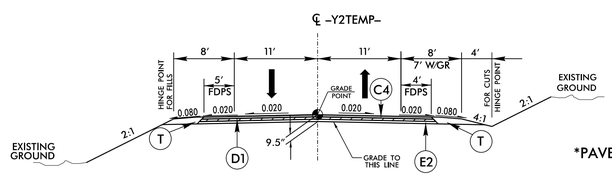


TYPICAL SECTION NO. 33

*PAVEMENT DESIGN IN PROGRESS

USE TYPICAL SECTION NO. 33

–Y1RPBD TEMP– STA. 10+00.00 TO STA. 29+67.83
–Y1RPBD TEMP2– STA. 10+00.00 TO STA. 22+58.59



TYPICAL SECTION NO. 34

*PAVEMENT DESIGN IN PROGRESS

USE TYPICAL SECTION NO. 34

–Y2TEMP– STA. 10+00.00 TO STA. 14+20.43 (BEGIN BRIDGE)
–Y2TEMP– STA. 16+60.12 (END BRIDGE) TO STA. 19+41.78

NOTES

SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. FOR CROSSOVER AREAS, SEE PLANS.

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-13
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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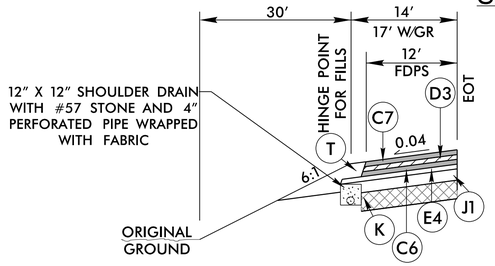
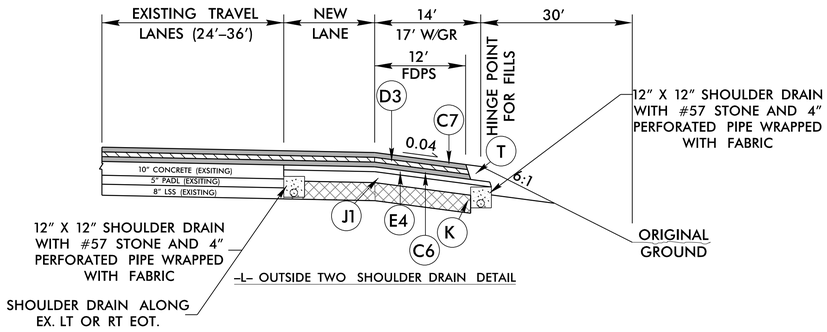
mlhall

PAVEMENT SCHEDULE	
A1	7″ CONC W/ WIRE
C1	2.5″ S9.5B
C2	3″ S9.5B
C4	3″ S9.5C
C6	1.5″ S9.5D
C7	3″ S9.5D
C8	1.5″ S9.5C
D1	2.5″ I19.0C
D2	4″ I19.0C
D3	5″ I19.0C
E2	4″ B25.0C
E3	4.5″ B25.0C
E4	5″ B25.0C
J1	8″ ABC
J3	6″ ABC
K	CLASS IV STAB.
R1	2′-6″ CURB
R2	1′-6″ CURB
R3	SING. FACE BARR.
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W	WEDGING

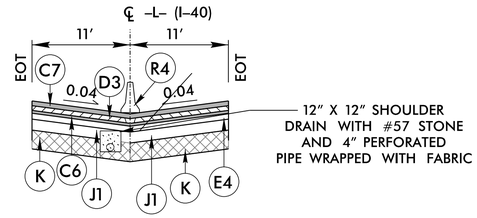
SHOULDER DRAIN DETAILS



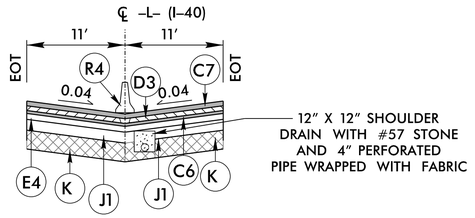
–L– OUTSIDE SHOULDER DRAIN DETAIL



–L– OUTSIDE TWO SHOULDER DRAIN DETAIL



–L– MEDIAN LT SHOULDER DRAIN DETAIL



–L– MEDIAN RT SHOULDER DRAIN DETAIL

NOTES

SEE PLANS FOR LOCATION OF AUXILARY LANES, AND TAPERS.
*4:1 INSIDE INTERCHANGE.

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. FOR CROSSOVER AREAS, SEE PLANS.

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2A-14

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mahon

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2B-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y5RPB_TEMP-		
PI Sta 11+82.90	PI Sta 14+86.17	PI Sta 18+12.41
△ = 11° 15' 43.1" (RT)	△ = 18° 10' 26.7" (LT)	△ = 10° 01' 13.7" (LT)
D = 3° 05' 19.4"	D = 7° 32' 20.1"	D = 2° 25' 47.4"
L = 364.62'	L = 241.07'	L = 412.39'
T = 182.90'	T = 121.56'	T = 206.72'
R = 1,855.00'	R = 760.00'	R = 2,358.00'
SE = 0.07	SE = 0.07	SE = 0.06
V = 60 MPH	V = 50 MPH	V = 60 MPH

NAD 83

TIE -Y5RPB_TEMP- TO -Y5RPB- @ -Y5RPB_TEMP- PC Sta. 10+00.00= -Y5RPB- POC Sta. 36+03.86

DUKE REALTY LAND, LLC DB 15876 - PG 57 PB 2016 - PG 2218 LOT IIC

-Y5RPB_TEMP- PRC Sta. 13+64.62

-Y5RPB- TS Sta. 39+75.47

-Y5RPB- SC Sta. 41+95.47

-Y5RPB_TEMP- PCC Sta. 16+05.69

-Y5RPBSPUR- PC Sta. 10+00.00= -Y5RPB- Sta. 33+79.42 (12' RT)

-Y5RPB- CS Sta. 36+03.86

-Y5RPB- ST Sta. 37+93.86

-Y5LPB- CS Sta. 26+30.83

-Y5LPB- SC Sta. 27+05.83

END CONSTRUCTION -Y5RPB_TEMP- Sta. 16+10.00

PT Sta. 20+18.08

DUKE CONSTRUCTION LTD PTNR DB 14468 - PG 1140 PB 2007 - PG 2587

LATERAL V DITCH SEE DETAIL H

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL I

SPECIAL CUT DITCH SEE DETAIL B

LINE CUT/FILL TRANSITION W/2 TONS CL B RIP RAP W/7 SY GEO FAB

170' TRANSITION

50' BLEND TO EXIST

-Y5RPB_TEMP-

BEGIN GRADE
-Y5RPB_TEMP- Sta. 10+00.00=
-Y5RPB- Sta. 36+03.86
EL = 343.76'

PROPOSED GRADE

EXISTING GROUND

(-) 0.3050%

(-) 2.1667%

(-) 4.9847%

(-) 12.4000%

(-) 11.0786%

(-) 0.5885%

PI = 14+45.00
EL = 321.58'
VC = 250'
K = 97
V = 50 MPH

END GRADE
-Y5RPB_TEMP- Sta. 16+00.00
EL = 317.62'

BEGIN LATERAL V DITCH LT
-Y5RPB_TEMP- STA. 8+95.42
-Y5RPB- STA. 35+00.00
EL = 332.36'

END LATERAL V DITCH LT
BEGIN SP.CUT DITCH LT
-Y5RPB_TEMP- STA. 10+95.55
-Y5RPB- STA. 37+00.00
EL = 331.75'

PI = -Y5RPB_TEMP- STA. 12+41.52
PI = -Y5RPB- STA. 38+50.00
EL = 328.50'

PI = -Y5RPB_TEMP- STA. 13+85.74
PI = -Y5RPB- STA. 39+90.00
EL = 312.99'

END SP.CUT DITCH LT
-Y5RPB_TEMP- STA. 16+55.28
-Y5RPB- STA. 42+50.00
EL = 311.46'

380 370 360 350 340 330 320 310 300

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00

4/5/2019
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myahl

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2B-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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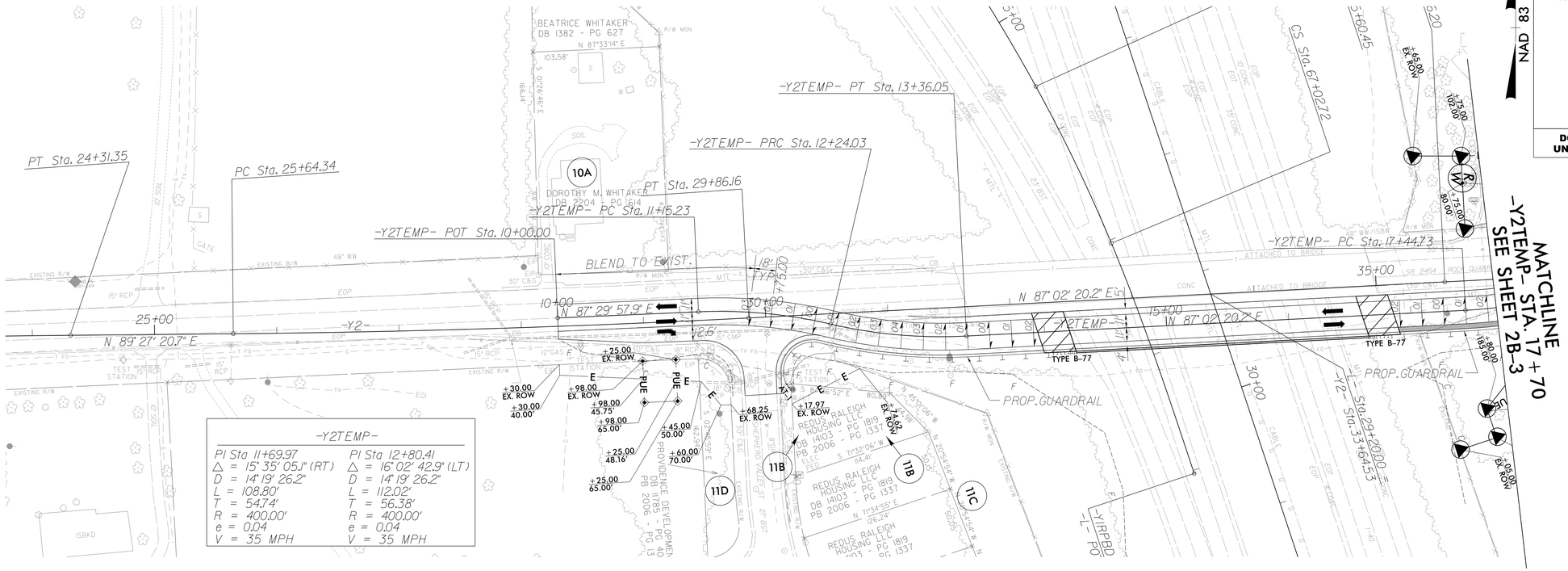
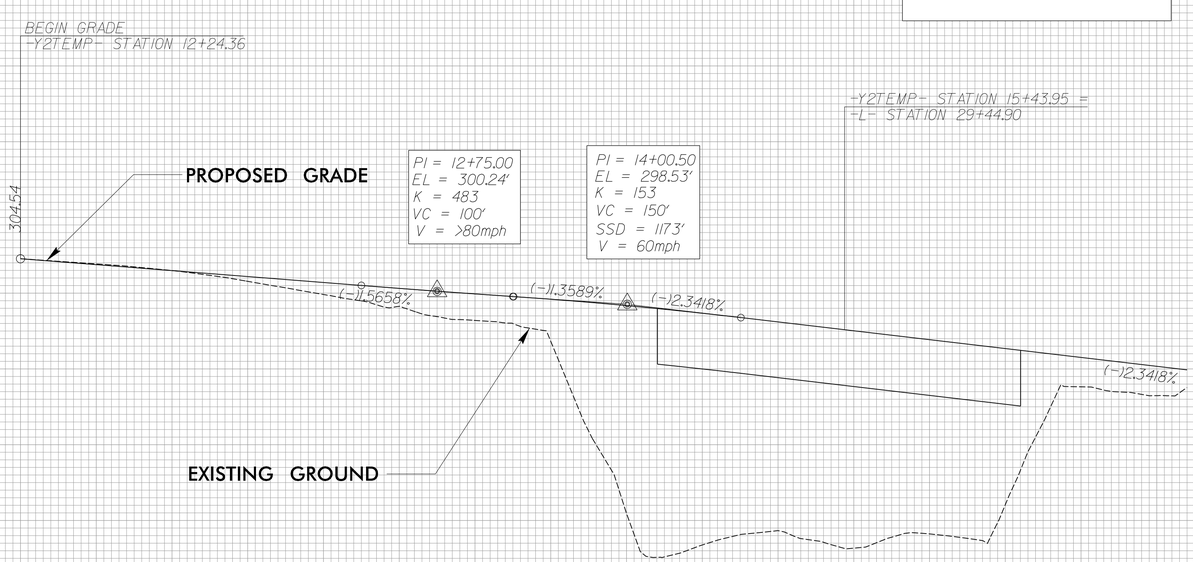
NAD 83

REVISIONS

8/17/99





PLANS PREPARED BY:

RS&H Architects-Engineers-Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

4/15/2008
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Hildebr

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2B-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

REVISIONS

8/17/99

MATCHLINE –Y2TEMP– STA. 17+70
SEE SHEET 2B-2

PT Sta. 40+03.40

–Y2TEMP– PRC Sta. 18+56.86

–Y2TEMP– POT Sta. 21+01.21

TS Sta. 40+38.18

–Y2TEMP– PT Sta. 19+65.27

APPROX. LOCATION OF EXISTING SS BASED ON RK&K SURVEY

EXISTING R/W

PUE

EX. ROW

BLEND TO EXIST.

2'-6" C&G

–Y2TEMP–

20+00 N 86° 30' 21.1" E

40+00 N 84° 28' 36.0" E

45+00

–Y2–

SR 2454 – ROCK QUARRY RD

CHIZOBA NNAMANI
DB 12907 – PG 2757

TRUSTEE HAROLD M. WALL
PB 880 – PG 2000

EARNEST PAUL ADAMS
DB 3765 – PG 801

CAROLYN E. RATCLIFF
DB 5532 PG 802

BOYD WATSON HOLDER
DB 14398 – PG 1370
PB 1952 – PG 62

ROCK QUARRY PROPERTIES, LLC
DB 16920 PG 47
BM 1952 PG 62

WILLIAM E. GOODE
DB 13967 – PG 12
PB 1999 – PG 55

SR 2869 DUTCHMAN RD (R BST)

BM#9
N=720,036
E=1,860

–Y2TEMP–	
PI Sta 18+01.17	PI Sta 19+11.40
△ = 16° 03' 41.7" (LT)	△ = 15° 31' 42.7" (RT)
D = 14° 19' 26.2"	D = 14° 19' 26.2"
L = 112.13'	L = 108.41'
T = 56.44'	T = 54.54'
R = 400.00'	R = 400.00'
e = 0.04	e = 0.04
V = 35 MPH	V = 35 MPH

–Y2TEMP–

PROPOSED GRADE

END GRADE
–Y2TEMP– STATION 19+41.78

PI = 18+90.00
EL = 287.07'
K = 164
VC = 100'
V = 65mph

286.7

(–)2.3418%

(–)1.7320%

EXISTING GROUND

310 300 290 280 270 260

18 19 20 21

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NC LICENSE NO. F-0493 (919) 926-4100

4/15/2008
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tjl.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2B-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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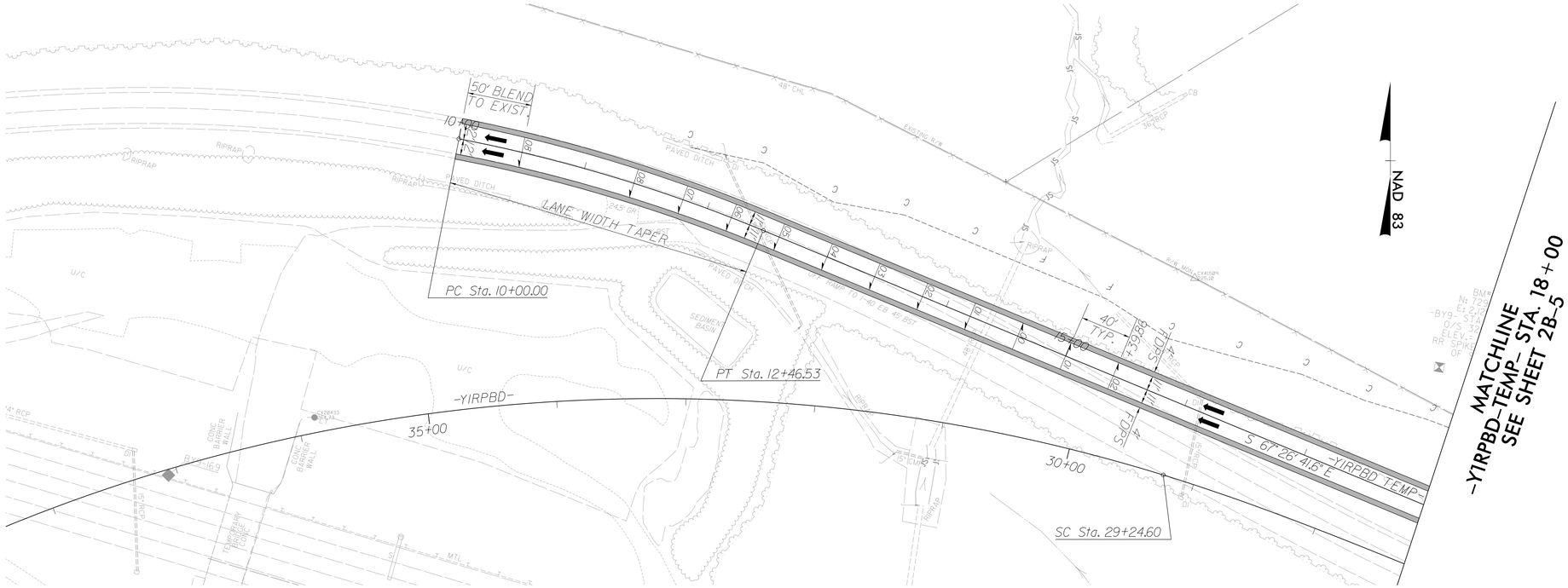
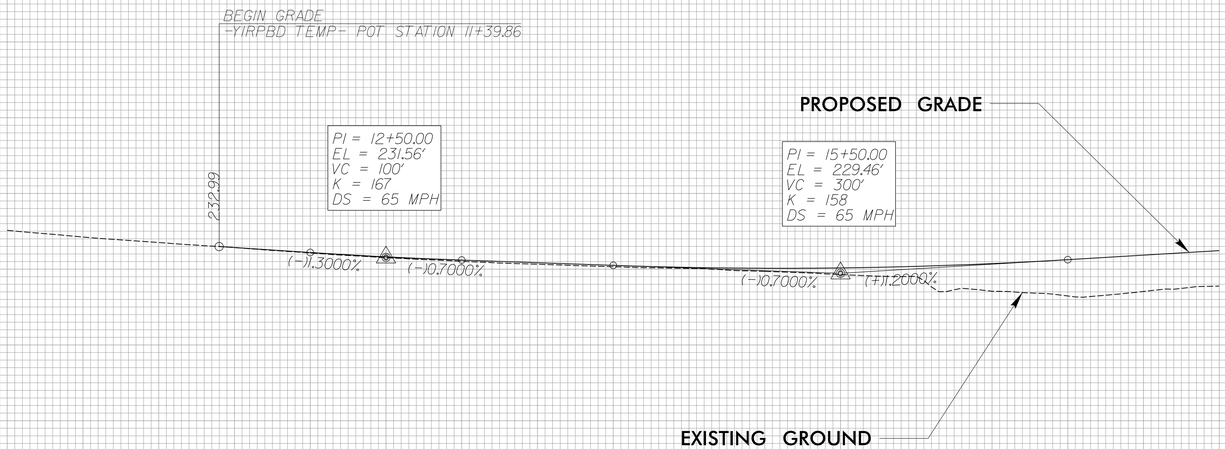
REVISIONS 8/17/99



-Y1RPBD TEMP-



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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2B-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

8/17/99

-YIRPBD TEMP-

PI Sta 11+23.69	PI Sta 25+42.34	PI Sta 32+34.90
△ = 11° 34' 18.8" (RT)	△ = 29° 44' 37.1" (LT)	△ = 10° 39' 03.7" (LT)
D = 4° 41' 38.0"	D = 3° 24' 52.3"	D = 1° 59' 59.5"
L = 246.53'	L = 871.09'	L = 532.59'
T = 123.69'	T = 445.60'	T = 267.07'
R = 1,220.65'	R = 1,678.00'	R = 2,865.00'
e = 0.06	e = 0.06	e = 0.06
V = 50 MPH	V = 60 MPH	V = 60 MPH

MATCHLINE -YIRPBD-TEMP- STA. 18+00 SEE SHEET 2B-4

MATCHLINE -YIRPBD-TEMP- STA. 31+00 SEE SHEET 5

PC Sta. 20+96.74

CS Sta. 24+44.60

SRS Sta. 26+84.60

SC Sta. 17+58.53

CS Sta. 15+58.53

PCC Sta. 29+67.83

-YIRPBD-

-YIRPBD TEMP-

40' TYP.

+76.74

50' BLEND TO EXIST.

WALNUT RIDGE PARTNERS LMTD PTNSHP
DB 8768 PG 2215
BM 2000 PG 1131

THE NEIGHBORI ASS
DB
BM

NAD 83

N05°43'05"W 285.37'

EXISTING R/W

R/W MON

48" CMP

30" CONC SHOULDER

BST

OFF RAMP TO I-40 EB 3" BST

30" RCP

24" RCP

24" RCP

CONC MED BARRIER

I-440/US 64 WB 58' BST

TOP & INV'S UNKN AREA UNDER CONSTRUCTION

LINK SIZE

FDPS

BY9-167

DI

20+00

25+00

30+00

15+00

-Y1RPBD TEMP-

PROPOSED GRADE

EXISTING GROUND

PI = 25+50.00
EL = 241.46'
VC = 150'
K = 179
DS = 65 MPH

(+)11.2000%

(+)2.0400%

END GRADE
-YIRPBD TEMP- POT STATION 29+67.83

PI = 27+93.79
EL = 246.43'
VC = 330'
K = 214
SSD = 866'
DS = 65 MPH

(+)2.0400%

(+)10.5000%

247.30

250
240
230
220
210

18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2B-6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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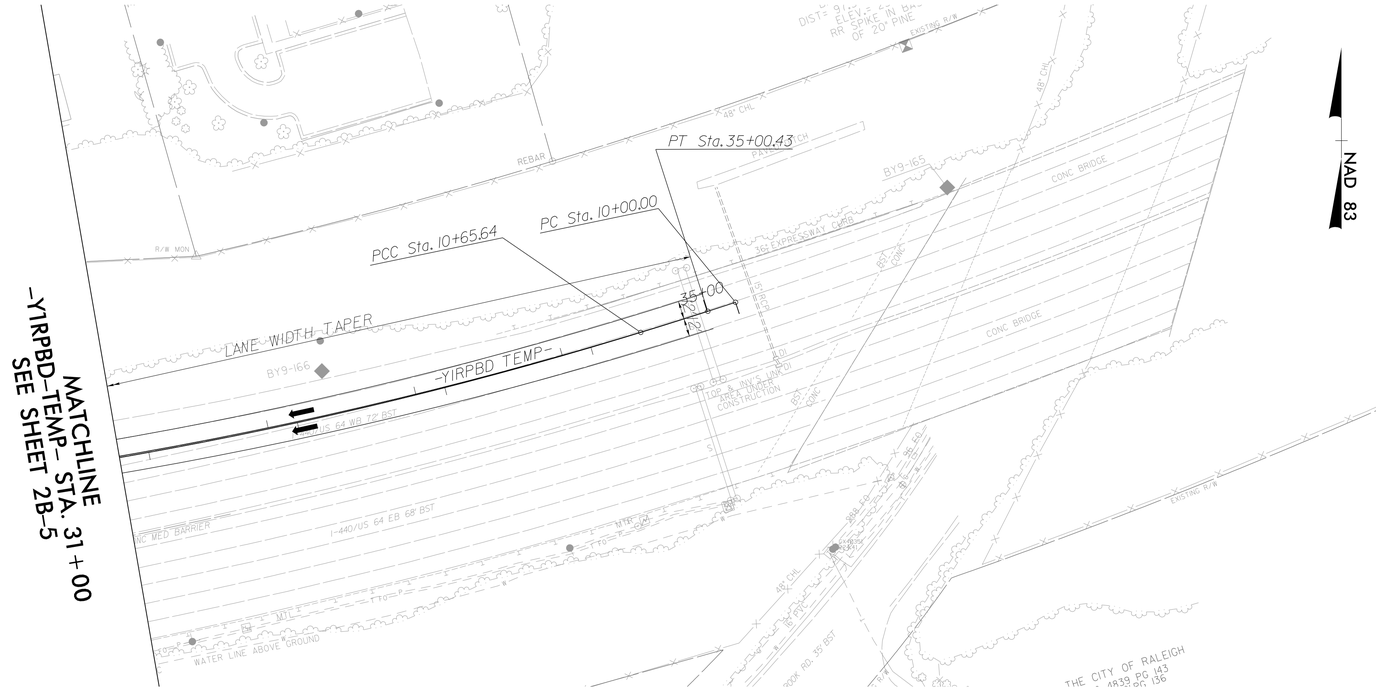
REVISIONS

8/17/99



MATCHLINE
-Y1RPBD-TEMP- STA. 31+00
SEE SHEET 2B-5

NAD 83

-Y1RPBD TEMP-

250
240
230
220
210

EXISTING GROUND

32+00 33+00 34+00 35+00

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2B-7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS 8/17/99

NAD 83

CS Sta. 60+80.45

55+00 -YIRPBD- 60+00

BM#7
N: 728,196
E: 2,120,102
-BL- STA 45+99.81
O/S 156.96' RT
ELEV.= 266.81'
RR SPIKE IN BASE
OF 13" PINE

PT Sta. 14+48.90

SRS Sta. 63+20.45

PC Sta. 16+70.93

S 46° 10' 22.5" E

MATCHLINE -YIRPBD-TEMP2- STA. 18+00
SEE SHEET 2B-8

-YIRPBD TEMP2-

PI Sta 12+26.74	PI Sta 19+43.27
△ = 19° 56' 16.3" (LT)	△ = 27° 48' 38.9" (RT)
D = 4° 26' 29.5"	D = 5° 12' 31.3"
L = 448.90'	L = 533.93'
T = 226.74'	T = 272.33'
R = 1,290.00'	R = 1,100.00'
e = 0.06	e = 0.06
V = 60 MPH	V = 60 MPH

PC Sta. 10+00.00

LANE WIDTH TAPER

50' BLEND TO EXIST

10+00

4 FDPS

40' TYP.

-YIRPBD TEMP2-

28' TYP.

60'

15+00

42" RCP

36" RCP

24" RCP

I-40 EB ON RAMP 3F BST

SANITARY R/W

W/M

BEATRICE WHITAKER
DB 1322 - PG 627
N 87°33'04" E
103.58'

S 01°26'46" E
113.86'

S 01°26'46" E
166.14'

-Y1RPBD TEMP2-

BEGIN GRADE
-YIRPBD TEMP2- POT STATION 12+00.00

259.47

PROPOSED GRADE

PI = 14+50.00
EL = 260.70'
VC = 100'
K = 196
DS = 70 MPH

PI = 16+00.00
EL = 262.20'
VC = 100'
K = 200
DS = 70 MPH

(+)0.4900%
(+)1.0000%
(+)1.0000%
(+)1.5000%

EXISTING GROUND

280 270 260 250 240 230

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2B-8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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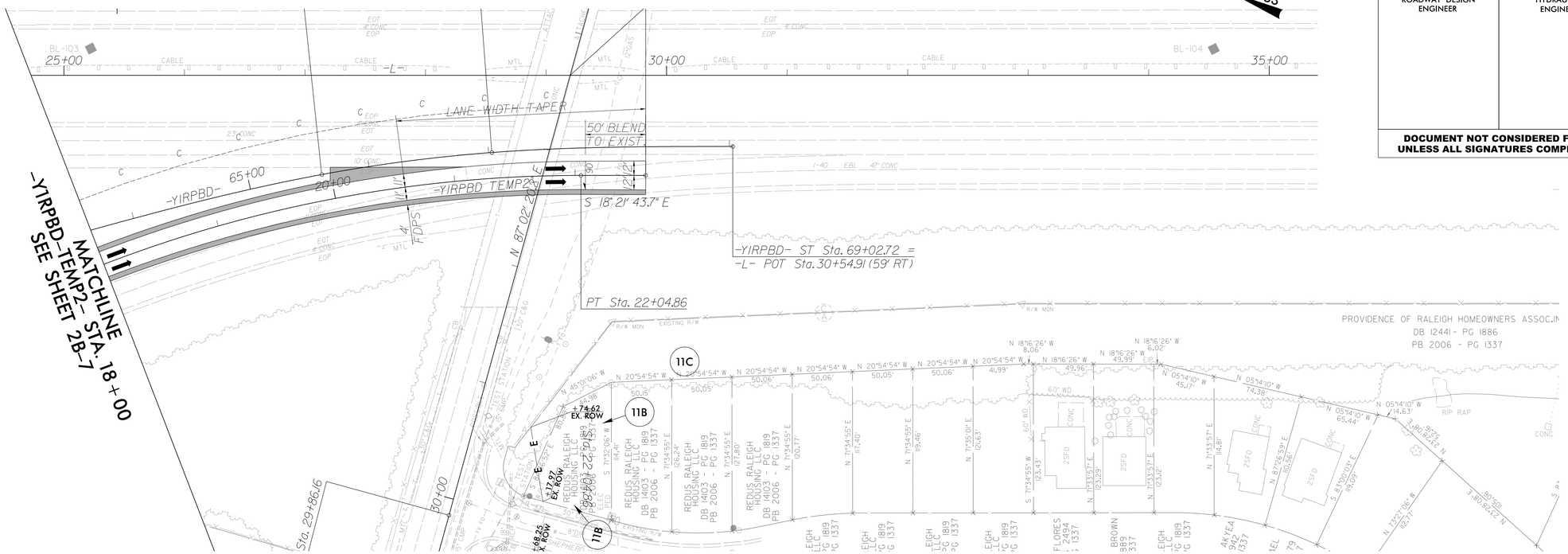
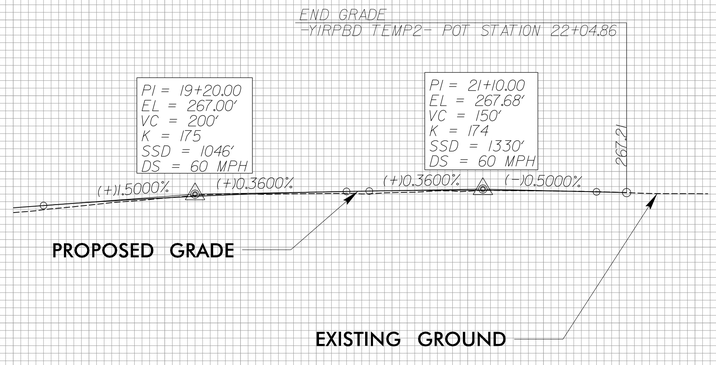
NAD 83

REVISIONS 8/17/99



-Y1RPBD TEMP2-



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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I/4739	2C-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULIC DESIGN ENGINEER

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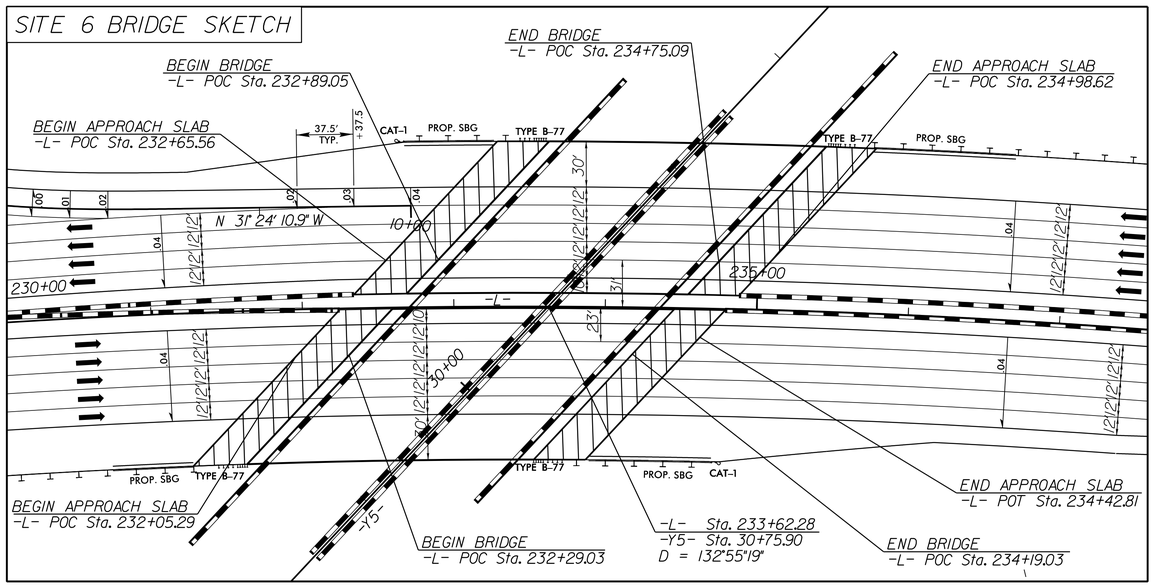
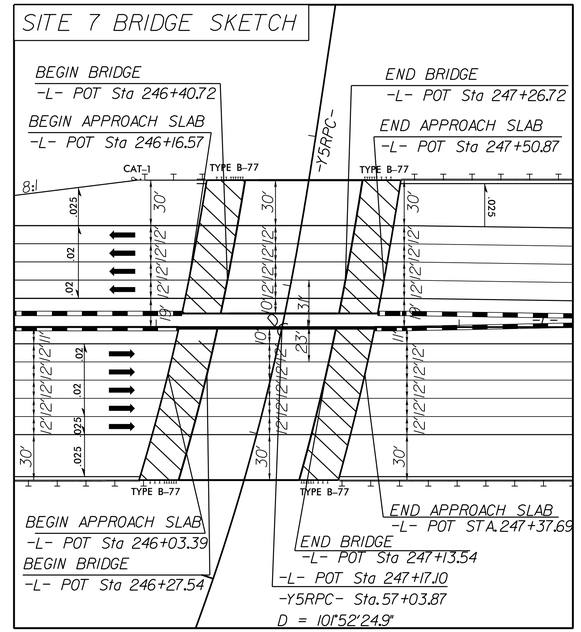
–L2– SITE 6 & 7 BRIDGE SKETCH





FOR PLAN VIEW SEE SHT. 22

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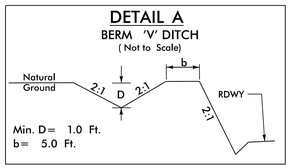
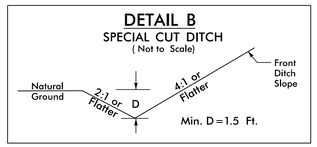
mwahl

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



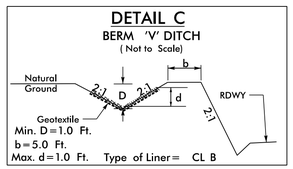
–L2– STA. 170+50 TO STA. 175+50 RT
–L2– STA. 198+50 TO STA. 204+00 RT
–L2– STA. 295+16 TO STA. 310+00 RT
–L2– STA. 388+75 TO STA. 394+00 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



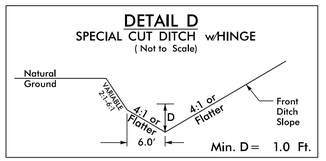
–L2– STA. 198+50 TO STA. 199+30 RT
–L2– STA. 204+95 TO STA. 209+00 RT
–L2– STA. 209+00 TO STA. 209+50 LT
–L2– STA. 212+00 TO STA. 214+50 LT
–L2– STA. 212+50 TO STA. 214+00 RT
–L2– STA. 303+50 TO STA. 304+35 RT
–L2– STA. 309+00 TO STA. 310+00 RT
–L2– STA. 420+50 TO STA. 423+50 LT
–L3– STA. 155+00 TO STA. 157+50 RT
–L3– STA. 155+00 TO STA. 157+50 LT
–L3– STA. 261+50 TO STA. 262+00 RT
–L3– STA. 276+50 TO STA. 278+50 RT
–LCDEB– STA. 91+51.57 TO STA. 99+29.50 RT
–Y1RPA_3– STA. 22+00 TO STA. 24+00 RT
–Y1RPB_3– STA. 20+50 TO STA. 22+00 LT
–Y1RPC_3– STA. 12+97 TO STA. 15+49 RT
–Y1RPC_3– STA. 24+00 TO STA. 25+39 RT
–Y2_3– STA. 13+00 TO STA. 14+50 RT
–Y2_3– STA. 13+50 TO STA. 14+50 LT
–Y2_3– STA. 17+50 TO STA. 19+15 RT
–Y2_3– STA. 71+50 TO STA. 74+50 RT
–Y2RPA– STA. 17+40 TO STA. 19+00 RT
–Y3RPC– STA. 24+00 TO STA. 26+00 LT
–Y3RPC– STA. 27+00 TO STA. 30+00 LT
–Y3RPC– STA. 31+00 TO STA. 32+00 LT
–Y8RPA– STA. 16+25 TO STA. 15+25 LT
–Y4– STA. 10+80 TO STA. 14+50 LT
–Y5– STA. 43+50 TO STA. 44+00 RT
–Y5RPA– STA. 18+00 TO STA. 23+50 LT
–Y5LPC– STA. 17+00 TO STA. 19+50 RT
–Y5RPB– STA. 37+00 TO STA. 38+50 LT
–Y5RPB_TEMP– STA. 37+00 TO STA. 38+50 LT
–Y5RPB_TEMP– STA. 39+90 TO STA. 42+50 LT
–Y5RPB– STA. 42+00 TO STA. 43+50 RT
–Y5RPC– STA. 17+03.22 TO STA. 20+00 RT
–Y5RPC– STA. 58+50 TO STA. 59+60 LT
BEG. EL=312.27', END EL=311.94', S=0.30%
–Y5RPBSPUR– STA. 14+50 TO STA. 16+50 LT
–Y5RPBSPUR– STA. 17+20 TO STA. 17+50 RT
–Y5RPD– STA. 18+00 TO STA. 18+59 RT
–Y6– STA. 10+50 TO STA. 15+58 LT
–Y6– STA. 11+16 TO STA. 14+00 RT
–Y6– STA. 18+50 TO STA. 23+00 LT
–Y6– STA. 20+79 TO STA. 23+00 RT
–Y8RPC– STA. 18+61 TO STA. 21+13 RT

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



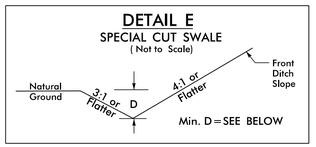
–L2– STA. 167+50 TO STA. 170+50 RT
–L2– STA. 204+00 TO STA. 204+95 RT

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



–L2– STA. 172+50 TO STA. 176+50 RT
–L2– STA. 177+00 TO STA. 181+00 RT
–L2– STA. 179+50 TO STA. 181+50 LT
–L2– STA. 190+50 TO STA. 195+50 RT
–L2– STA. 199+30 TO STA. 204+95 RT
–L2– STA. 207+00 TO STA. 209+00 LT
–L2– STA. 214+50 TO STA. 216+00 LT
–L2– STA. 218+00 TO STA. 219+50 LT
–L3– STA. 21+50 TO STA. 23+50 LT
–Y5RPB– STA. 38+50 TO STA. 39+00 LT

DETAIL E
SPECIAL CUT SWALE
(Not to Scale)



–L2– STA. 170+00 TO STA. 172+00 LT, D=1.0'
–L2– STA. 195+50 TO STA. 197+00 LT, D=1.0'
–L2– STA. 252+00 TO STA. 254+50 LT, D=1.25'
–L2– STA. 258+50 TO STA. 260+50 LT, D=1.0'
–L2– STA. 258+50 TO STA. 262+50 RT, D=1.0'
–L2– STA. 387+50 TO STA. 390+50 RT, D=1.0'
–L2– STA. 411+00 TO STA. 415+50 LT, D=1.25'
–L2– STA. 417+50 TO STA. 420+50 LT, D=1.25'
–L2– STA. 418+00 TO STA. 422+50 RT, D=1.25'
–L2– STA. 424+50 TO STA. 429+00 LT, D=1.0'
–L3– STA. 186+00 TO STA. 189+50 RT, D=1.0'
–L3– STA. 191+00 TO STA. 193+50 LT, D=1.0'
–L3– STA. 258+50 TO STA. 261+50 RT, D=1.0'
–Y2RPA_3– STA. 13+62 TO STA. 17+40 RT, D=1.25'
–Y5LPB– STA. 12+25 TO STA. 13+82 RT, D=1.0'
–Y5RPB– STA. 30+50 TO STA. 34+00 RT, D=1.0'
–Y5RPB– STA. 45+00 TO STA. 46+50 LT, D=1.0'
–Y5RPC– STA. 52+00 TO STA. 53+28 LT, D=1.0'
BEG. EL=314.91', END EL=311.93', S=2.33%
–Y5RPC– STA. 53+28 TO STA. 54+50 LT, D=1.0'
BEG. EL=311.93', END EL=312.30', S=0.30%
–Y8RPA– STA. 24+50 TO STA. 28+50 LT, D=1.0'
–Y2_3– STA. 61+50 TO STA. 63+50 LT, D=1.0'

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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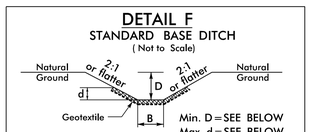
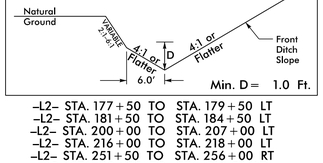
DETAIL F
STANDARD BASE DITCH
(Not to Scale)



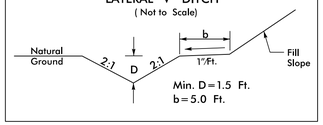
–L2– STA. 444+43 RT, B=2', CL B RIPRAP, MIN D=1.0'
L=98', BEG. EL=271.77', END EL=266.15', S=5.76%
–L2– STA. 473+44 LT, B=2', CL B RIPRAP, MIN D=1.0'
L=39', BEG. EL=237.23, END EL=235.29, S=5.0%
–Y5LPB– STA. 26+85 RT, B=4', CL I RIPRAP, MIN. D=2.25'
L=485', BEG. EL=338.00', END EL=325.00', S=2.68%
–Y5LPB– STA. 27+33 LT, B=4', CL I RIPRAP, MIN D=3.5'
L=445', BEG. EL=323.00', END EL=315.25', S=1.74%
–Y5RPBSPUR– STA. 17+30 LT, B=4',CL I RIPRAP, MIN D=3.5'
L=286', BEG. EL=311.25', END EL=306.50', S=1.66%
–Y5RPB– STA. 43+35 LT, B=4', CL II RIPRAP, MIN D=3.5'
L=133', BEG. EL=305.80', END EL=302.95', S=2.14%
–L3– STA. 446+90 TO STA. 447+24 LT,
B=4', CL I RIPRAP, MIN D=2.0'
L=100', BEG. EL=272.43', END EL=269.19', S=3.2%

DETAIL G
SPECIAL CUT SWALE w/HINGE
(Not to Scale)



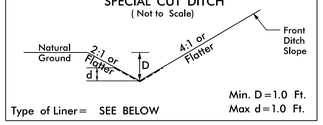
–L2– STA. 177+50 TO STA. 179+50 LT
–L2– STA. 181+50 TO STA. 184+50 LT
–L2– STA. 200+00 TO STA. 207+00 LT
–L2– STA. 216+00 TO STA. 218+00 LT
–L2– STA. 251+50 TO STA. 256+00 RT
–L3– STA. 20+28 TO STA. 21+50 LT
–Y5RPA– STA. 17+50 TO STA. 20+50 RT
–Y5RPB– STA. 40+50 TO STA. 43+50 LT

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



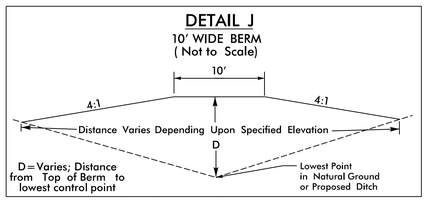
–L2– STA. 257+28 TO STA. 258+50 RT
–L2– STA. 395+74 TO STA. 396+50 RT
–Y5LPC– STA. 14+50 TO STA. 17+00 RT
–Y5LPB– STA. 15+40 TO STA. 17+50 LT
–Y5RPB– STA. 35+00 TO STA. 37+00 LT
–Y5RPB TEMP– STA. 35+00 TO STA. 37+00 LT
–Y5RPBSPUR– STA. 16+50 TO STA. 17+29 LT

DETAIL I
SPECIAL CUT DITCH
(Not to Scale)



–L3– STA. 122+50 TO STA. 123+50 LT, CL B RIPRAP
–Y1RPA_3– STA. 24+00 TO STA. 25+00 LT, CL B RIPRAP
–Y5RPB– STA. 34+00 TO STA. 37+50 RT, PSRM
–Y5RPB– STA. 38+50 TO STA. 40+50 LT, CL I RIPRAP
–Y5RPB TEMP– STA. 38+50 TO STA. 39+90 LT, CL I RIPRAP
–Y5RPBSPUR– STA. 10+20 TO STA. 13+73 RT, CL II RIPRAP

DETAIL J
10' WIDE BERM
(Not to Scale)

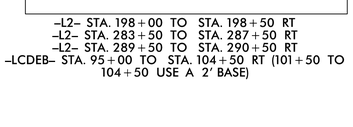


–L2– STA. 177+00 RT, TOP ELEV=349.5'
–L2– STA. 305+00 RT, TOP ELEV=314.5'
–L2– STA. 324+25 LT, TOP ELV=277.5'
–L2– STA. 436+50 LT, TOP ELEV=280.0'
–L3– STA. 114+00 LT, TOP ELEV=228.0'
–L3– STA. 278+50 RT, TOP ELEV=260.0'
–Y5RPB– STA. 43+74 LT, TOP ELEV=314.0'
–Y2RPA_3– STA. 19+26 LT, TOP ELEV=298.0'
–Y2– STA. 70+00 LT, TOP ELEV=304.8'

DETAIL M
SPECIAL LATERAL BASE SWALE
(Not to Scale)

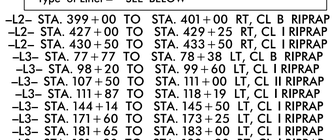
–Y2RPB_3– STA. 24+00 TO STA. 26+60 LT, D=1.0'

DETAIL N
BERM BASE DITCH
(Not to Scale)



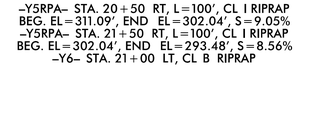
–L2– STA. 198+00 TO STA. 198+50 RT
–L2– STA. 283+50 TO STA. 287+50 RT
–L2– STA. 289+50 TO STA. 290+50 RT
–LCDEB– STA. 95+00 TO STA. 104+50 RT (101+50 TO 104+50 USE A 2' BASE)

DETAIL O
TOE PROTECTION
(Not to Scale)



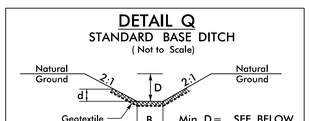
–L2– STA. 399+00 TO STA. 401+00 RT, CL B RIPRAP
–L2– STA. 427+00 TO STA. 429+25 RT, CL I RIPRAP
–L2– STA. 430+50 TO STA. 433+50 RT, CL I RIPRAP
–L3– STA. 77+77 TO STA. 78+38 LT, CL B RIPRAP
–L3– STA. 98+20 TO STA. 99+60 LT, CL I RIPRAP
–L3– STA. 107+50 TO STA. 111+00 LT, CL II RIPRAP
–L3– STA. 111+87 TO STA. 118+19 LT, CL I RIPRAP
–L3– STA. 144+14 TO STA. 145+50 LT, CL I RIPRAP
–L3– STA. 171+60 TO STA. 173+25 LT, CL I RIPRAP
–L3– STA. 181+65 TO STA. 183+00 LT, CL I RIPRAP
–L3– STA. 181+80 TO STA. 183+90 RT, CL I RIPRAP
–L3– STA. 211+00 TO STA. 212+50 LT, CL I RIPRAP
–L3– STA. 243+50 TO STA. 246+60 RT, CL I RIPRAP
–L3– STA. 247+42 TO STA. 250+00 RT, CL I RIPRAP
–Y8LPC– STA. 10+62 TO STA. 12+40 LT, CL I RIPRAP
–LCDWB– STA. 97+73.62 TO STA. 99+23.62 LT, CL B RIPRAP
–Y2RPA_3– STA. 18+31 TO STA. 19+12 LT, CL B RIPRAP
–Y1_3– STA. 32+90 TO STA. 33+40 RT, CL B RIPRAP
–Y1_3– STA. 68+00 TO STA. 68+60 RT, CL B RIPRAP

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



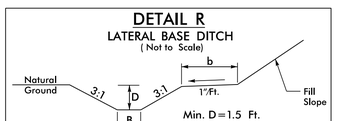
–Y5RPA– STA. 20+50 RT, L=100', CL I RIPRAP
BEG. EL=311.09', END EL=302.04', S=9.05%
–Y5RPA– STA. 21+50 RT, L=100', CL I RIPRAP
BEG. EL=302.04', END EL=293.48', S=8.56%
–Y6– STA. 21+00 LT, CL B RIPRAP

DETAIL Q
STANDARD BASE DITCH
(Not to Scale)



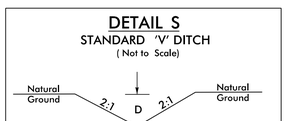
–Y5– STA. 25+00 LT, L=103', CL B RIPRAP,
BEG. EL=355.50' END EL=352.00', S=3.4%
MIN D=1.25', MIN d=1.25'

DETAIL R
LATERAL BASE DITCH
(Not to Scale)



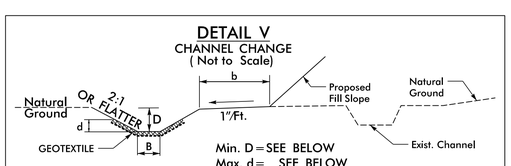
–L3– STA. 92+50 TO STA. 94+50 LT
–L3– STA. 265+00 TO STA. 276+50 RT

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



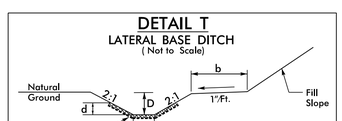
–Y8RPA– STA. 16+00 RT, MIN. D=3.25'
L=99', S=0.3%
BEG. EL=237.80', END EL=237.54'

DETAIL V
CHANNEL CHANGE
(Not to Scale)



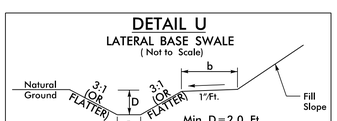
–Y5RPC– STA. 53+28 LT, B=3', CL I RIPRAP, MIN D=2.25'
BEG. EL=308.85', END EL=307.37', L=48', S=3.1%
–L2– STA. 281+89 RT, B=1.5', CL I RIPRAP, MIN D=3.25'
BEG. EL=306.78', END EL=306.28', L=25', S=2.0%
–L2– STA. 257+28 RT, B=8', CL I RIPRAP, MIN D=4.0'
L=31', BEG. EL=314.75', END EL=314.84', S=0.3%
–L2– STA. 273+00 TO STA. 273+30 RT, B=4', D=4', d=4',
CL I RIPRAP, BEG. EL=297.70, END EL.=297.50
–L2– STA. 275+00 LT, B=4', CL I RIPRAP, MIN D=3.5'
L=42', BEG. EL=290.72', END EL=290.12', S=1.42%
–L2– STA. 283+47 LT, B=4', CL I RIPRAP, MIN D=4.75'
L=66', BEG. EL=302.98', END EL=302.67', S=0.5%
–L2– STA. 323+32 TO STA. 324+50 RT,
B=4', D=4.75', d=4.75', CL I RIPRAP
–L2– STA. 395+91 RT, B=3', D=1.5', d=1.5', CL I RIPRAP, S=4.4%
BEG. EL=259.53', END EL=257.50'
–L3– STA. 178+50 TO STA. 181+75 LT, B=4', D=2.5', CL I RIPRAP
–L3– STA. 246+42 TO STA. 247+34 RT, B=4', D=3.25', d=3.25', CL I RIPRAP
–L3– STA. 104+89 TO STA. 106+28 RT, B=4', D=1.0',
CL I RIPRAP, S=6.2%, BEG. EL.=184.77. END EL.=193.32

DETAIL T
LATERAL BASE DITCH
(Not to Scale)



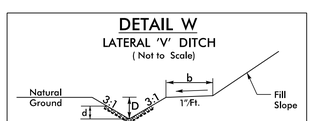
–L2– STA. 251+00 TO STA. 251+50 RT, CL B
–L2– STA. 272+00 TO STA. 273+00 RT, CL B
–L2– STA. 273+30 TO STA. 275+50 RT, CL B
–L2– STA. 274+00 TO STA. 275+05 LT, CL B
–L2– STA. 320+00 TO STA. 322+68 LT, CL B
–L2– STA. 320+50 TO STA. 322+00 RT, CL I
–L2– STA. 324+50 TO STA. 325+50 RT, CL B
–L2– STA. 405+93 TO STA. 406+50 RT, CL B

DETAIL U
LATERAL BASE SWALE
(Not to Scale)



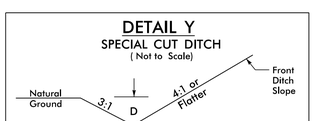
–L2– STA. 249+00 TO STA. 251+00 RT
–L2– STA. 256+00 TO STA. 257+28 RT
–L2– STA. 282+11 TO STA. 282+50 RT
–L2– STA. 322+00 TO STA. 323+32 RT
–L2– STA. 322+68 TO STA. 323+75 LT
–L2– STA. 386+27 TO STA. 387+50 RT
–L2– STA. 437+00 TO STA. 446+90 LT
–L3– STA. 86+50 TO STA. 92+80 RT
–L3– STA. 146+15 TO STA. 147+00 RT
–L3– STA. 173+25 TO STA. 175+50 LT
–L3– STA. 249+00 TO STA. 250+00 LT
–Y5RPD– STA. 20+17 TO STA. 21+66 RT
–Y2_3– STA. 57+50 TO STA. 58+00 LT
–Y2RPA_3– STA. 19+63 TO STA. 22+75 LT
–Y2RPA_3– STA. 19+50 TO STA. 23+50 RT

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



–Y1RPA_3– STA. 22+50 TO STA. 24+00 LT

DETAIL Y
SPECIAL CUT DITCH
(Not to Scale)



–Y2_3– STA. 77+50 TO STA. 85+50 LT, MIN D=3.25'

PLANS PREPARED BY :

RK&K

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4/15/2019
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.mgnt

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

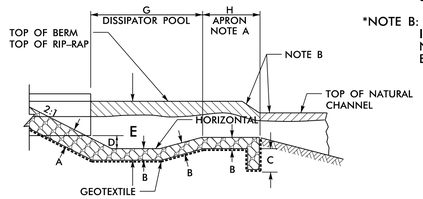
DETAIL X

RIP–RAPPED ENERGY DISSIPATOR BASIN

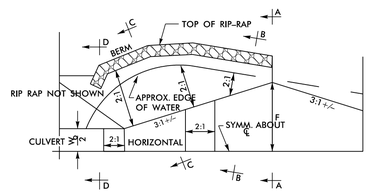
*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A) = SPECIFIED VELOCITY.

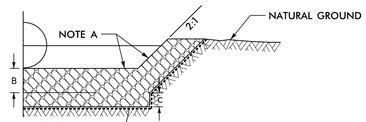
*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

℄ SECTION

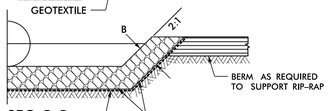


HALF PLAN

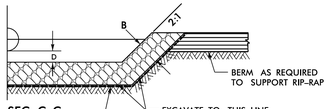




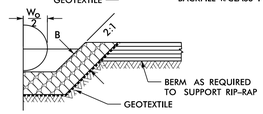
SEC. A–A



SEC. B–B



SEC. C–C



SEC. D–D

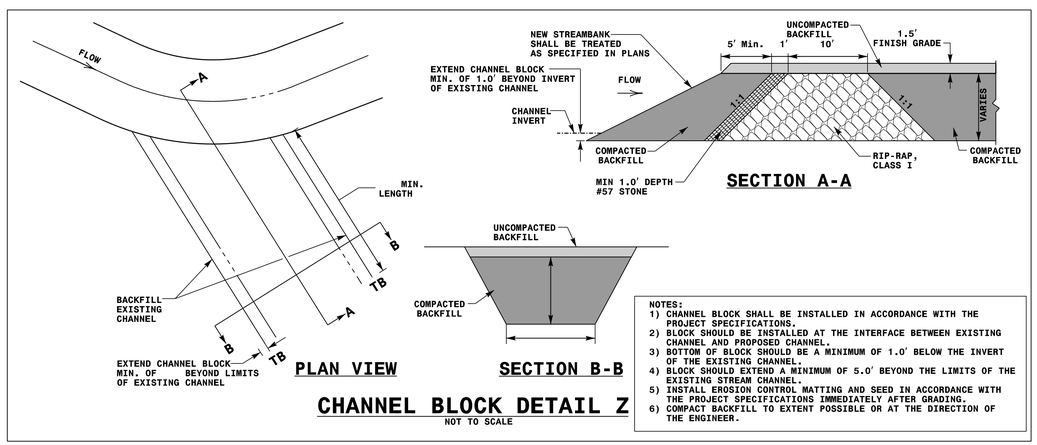
DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	4.0	4.0						
B	3.0	3.0						
C	2.0	2.0						
D	1.9	1.3						
E	10.5	8.5						
F	12.6	12.6						
G	28.7	21.3						
H	9.6	6.3						

*ALL DIMENSIONS APPROXIMATE IN FT

BASIN #	LOCATION (AT OUTLET)
1	–L2– 192+73 LT
2	–L2– 256+65 LT
3	
4	
5	
6	
7	
8	

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

5/05



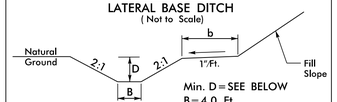
CHANNEL BLOCK DETAIL Z

NOT TO SCALE

NOTES:
1) CHANNEL BLOCK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2) BLOCK SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
3) BOTTOM OF BLOCK SHOULD BE A MINIMUM OF 1.0' BELOW THE INVERT OF THE EXISTING CHANNEL.
4) BLOCK SHOULD EXTEND A MINIMUM OF 5.0' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
5) INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
6) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.

DETAIL AA

LATERAL BASE DITCH
(Not to Scale)

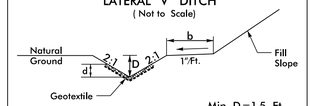


Min. D = SEE BELOW
B = 4.0 Ft.
b = 5.0 Ft.

–L2– STA. 282+50 TO STA. 283+50 RT, D = 1.0′
–L2– STA. 290+50 TO STA. 292+50 RT, D = 1.0′
–Y4– STA. 22+76 TO STA. 23+75 LT, D = 1.75′

DETAIL AB

LATERAL 'V' DITCH
(Not to Scale)



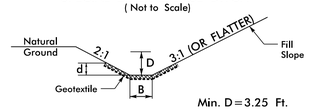
Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
b = 5.0 Ft.

Type of Liner = SEE BELOW

–L2– STA. 248+00 TO STA. 249+50 LT, CL B RIPRAP
–L2– STA. 316+50 TO STA. 317+50 RT, CL I RIPRAP
–L2– STA. 401+00 TO STA. 403+00 RT, CL I RIPRAP

DETAIL AC

SPECIAL LATERAL BASE DITCH
(Not to Scale)



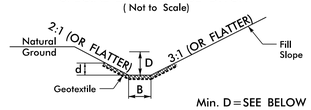
Min. D = 3.25 Ft.
Max. d = 3.25 Ft.
B = 4.0 Ft.

Type of Liner = CL I Rip–Rap

–L2– STA 362+63 TO STA. 364+50 LT
–L2– STA. 374+50 TO STA. 379+00 LT

DETAIL AD

SPECIAL LATERAL BASE DITCH
(Not to Scale)



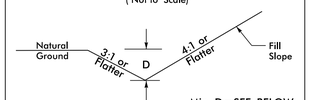
Min. D = SEE BELOW
Max. d = SEE BELOW
B = 4.0 Ft.

Type of Liner = CL B Rip–Rap

–L2– STA. 369+50 TO STA. 373+92 RT, D = 1.5′, d = 1.5′
–L2– STA. 405+93 TO STA. 410+00 RT, D = 1.5′, d = 1.5′
–L2– STA. 434+50 TO STA. 436+27 LT, D = 1.5′, d = 1.5′

DETAIL AE

SPECIAL LATERAL 'V' SWALE
(Not to Scale)

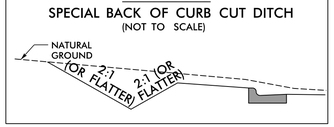


Min. D = SEE BELOW

–L2– STA. 410+00 TO STA. 417+50 RT, D = 1.25′
–L2– STA. 467+50 TO STA. 473+50 RT, D = 1.25′
–L2– STA. 474+00 TO STA. 476+00 RT, D = 1.0′
–Y5RPA– STA. 27+00 TO STA. 29+00 RT, D = 1.0′

DETAIL AG

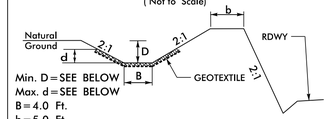
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



–Y2 3– STA. 30+00 TO STA. 42+49 RT
–Y5LPC– STA. 18+50 TO STA. 21+20 LT
–Y1 3– STA. 25+50 TO STA. 30+10 RT
–Y1E– STA. 12+25 TO STA. 16+00 LT

DETAIL AH

BERM BASE DITCH
(Not to Scale)



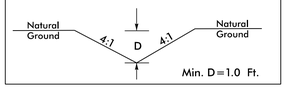
Min. D = SEE BELOW
Max. d = SEE BELOW
B = 4.0 Ft.
b = 5.0 Ft.

Type of Liner = CL B Rip–Rap

–L2– STA. 198+00 TO STA. 198+50 RT, D = 2.0′
–L2– STA. 418+50 TO STA. 420+50 RT, D = 1.5′
–L2– STA. 424+80 TO STA. 435+00 LT, D = 1.5′

DETAIL AI

STANDARD 'V' DITCH
(Not to Scale)

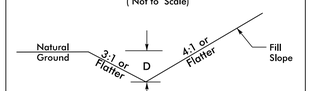


Min. D = 1.0 Ft.

–L2– STA. 223+19 LT, L = 75′, S = 1.08%
BEG. EL = 364.81′, END EL = 364.00′

DETAIL AJ

SPECIAL LATERAL 'V' DITCH
(Not to Scale)

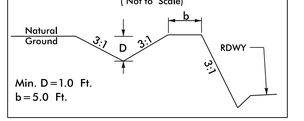


Min. D = SEE BELOW Ft.

–L2– STA. 444+50 TO STA. 448+00 LT, D = 1.25′
–L2– STA. 473+50 TO STA. 474+00 RT, D = 1.0′
–LCDEB– STA. 22+55.28 TO STA. 25+05.29 RT, D = 1.0′
–Y1RPB_3– STA. 22+00 TO STA. 25+00 RT, D = 1.5′
–Y1RPB_3– STA. 22+00 TO STA. 23+50 LT, D = 2.00′
–Y2_3– STA. 69+00 TO STA. 70+52 RT, D = 1.0′
–Y5RPD– STA. 17+50 TO STA. 19+75 LT, D = 2.00′
–SR1– STA. 11+85 TO STA. 14+50 RT, D = 1.25′
–SR1– STA. 12+34 TO STA. 14+75 LT, D = 1.0′
–PIERCE– STA. 14+54 TO STA. 15+41 RT, D = 1.0′

DETAIL AK

BERM 'V' DITCH
(Not to Scale)

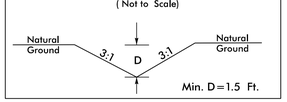


Min. D = 1.0 Ft.
b = 5.0 Ft.

–L3– STA. 121+00 TO STA. 122+50 LT
–L3– STA. 126+50 TO STA. 138+00 LT
–L3– STA. 156+00 TO STA. 157+75 RT
–L3– STA. 238+00 TO STA. 243+00 RT
–L3– STA. 276+50 TO STA. 290+00 RT
–LCDEB– STA. 90+01.57 TO STA. 95+00 RT
–Y2RPA_3– STA. 18+00 TO STA. 19+50 RT

DETAIL AL

STANDARD 'V' DITCH
(Not to Scale)

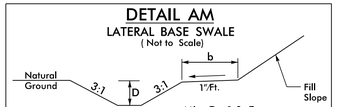


Min. D = 1.5 Ft.

–L3– STA. 157+75 TO STA. 159+58 RT
–SR1– STA. 18+50 RT, BEG. ELEV = 316.80, END ELEV = 315.00, S = 1.24%, L = 145′
–SR1– STA. 18+50 LT, BEG. ELEV = 317.56, END ELEV = 317.02, S = 0.48%, L = 112′
–Y1 3– STA. 19+77 TO STA. 20+50 LT, BEG. ELEV = 312.00, END ELEV = 313.00, S = 1.4%
–Y1 3– STA. 21+71 TO STA. 22+50 RT, BEG. ELEV = 316.00, END ELEV = 317.50, S = 1.7%
–Y1E– STA. 16+00 TO STA. 17+00 LT, S = 1.3%
BEG. ELEV = 314.00, END ELEV = 312.72′
–PIERCE– STA. 14+54 RT, L = 118′, S = 1.8%
BEG. ELEV = 320.48, END ELEV = 318.40

DETAIL AM

LATERAL BASE SWALE
(Not to Scale)

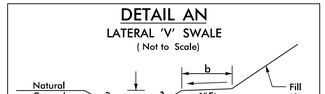


Min. D = 1.0 Ft.
B = 4.0 Ft.
b = 5.0 Ft.

–L2– STA. 446+00 TO STA. 447+40 RT
–L3– STA. 111+09 LT; L = 70′; S = 0.9%
–L3– STA. 231+50 TO STA. 232+79 LT
–L3– STA. 234+28 TO STA. 235+50 LT
–L3– STA. 243+00 TO STA. 243+50 RT
–L3– STA. 245+50 TO STA. 247+66 LT
–L3– STA. 269+00 TO STA. 270+71 LT
–LCDEB– STA. 88+98.93 TO STA. 91+51.57 RT
–LCDWB– STA. 102+08.23 TO STA. 103+26.82 LT
–Y1RPD_3– STA. 14+21 TO STA. 16+53 LT

DETAIL AN

LATERAL 'V' SWALE
(Not to Scale)



Min. D = SEE BELOW
b = 5.0 Ft.

–L2– STA. 249+50 TO STA. 250+53 LT, D = 1.0′
–L2– STA. 275+65 TO STA. 276+50 LT, D = 1.0′
–L2– STA. 462+50 TO STA. 464+00 RT, D = 1.25′
–L2– STA. 396+50 TO STA. 399+00 RT, D = 1.0′
–L2– STA. 403+00 TO STA. 405+93 RT, D = 1.5′
–L3– STA. 163+70 TO STA. 166+64 LT, D = 1.25′
–L3– STA. 184+00 TO STA. 185+50 RT, D = 1.5′
–Y1RPA_3– STA. 15+74.66 TO STA. 16+33.93 RT, D = 1.0′
–Y1RPA_3– STA. 18+05 TO STA. 22+50 LT, D = 1.5′
–Y2_3– STA. 59+26 TO STA. 61+00 LT, D = 1.75′
–Y5LPB– STA. 17+50 TO STA. 20+98 RT, D = 1.25′
–Y5LPB– STA. 25+00 TO STA. 26+85 RT, D = 1.0′
–Y5LPB– STA. 26+85 TO STA. 29+45 RT, D = 1.75′
–Y8RPA– STA. 26+00 TO STA. 27+01 RT, D = 1.0′
–Y8RPA– STA. 27+48 TO STA. 29+60 RT, D = 1.75′

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4/15/2019
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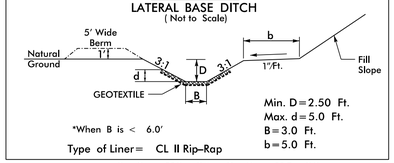
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

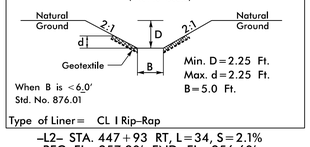
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL AQ
LATERAL BASE DITCH
(Not to Scale)



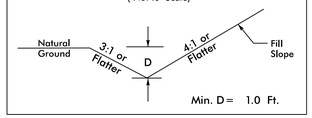
–L3– STA. 112+94 TO STA. 115+23 LT

DETAIL AR
STANDARD BASE DITCH
(Not to Scale)



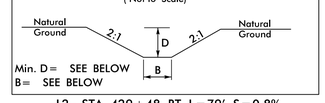
–L2– STA. 447+93 RT, L=34, S=2.1%
BEG. EL=257.30'; END EL=256.60'

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



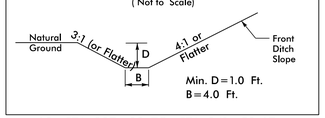
–L2– STA. 454+50 TO STA. 455+77 RT
–Y5LPB– STA. 13+82.47 TO STA. 17+50 RT

DETAIL AT
STANDARD BASE DITCH
(Not to Scale)



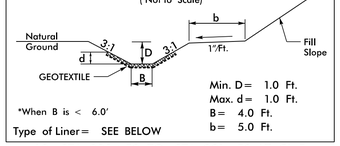
–L2– STA. 429+48 RT, L=79', S=0.8%
BEG. EL=278.30', END EL=277.70'
D=2.0', B=3.0'

DETAIL AU
SPECIAL CUT BASE SWALE
(Not to Scale)



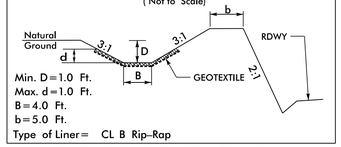
–L3– STA. 237+00 TO STA. 241+50 LT
–Y5RPBSPUR– STA. 13+73 TO STA. 17+20 RT

DETAIL AV
LATERAL BASE DITCH
(Not to Scale)



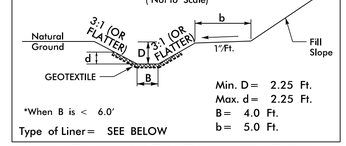
–L3– STA. 229+50 TO STA. 231+50 LT, CL B
–L3– STA. 231+75 TO STA. 233+00 RT, CL I
–L3– STA. 234+00 TO STA. 235+00 RT, CL B
–L3– STA. 235+50 TO STA. 237+00 LT, CL B
–L3– STA. 243+00 TO STA. 245+50 LT, CL B
–L3– STA. 263+00 TO STA. 269+00 LT, CL B
–L3– STA. 263+50 TO STA. 265+00 RT, CL B

DETAIL AW
BERM BASE DITCH
(Not to Scale)



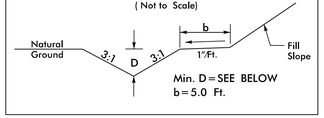
–L3– STA. 122+50 TO STA. 126+50 LT
–L3– STA. 234+50 TO STA. 238+00 RT
–LCDEB– STA. 104+50 TO STA. 109+50 RT (104+50 TO 107+50 USE A 2' BASE WITH 2:1 SIDE SLOPES)

DETAIL AX
LATERAL BASE DITCH
(Not to Scale)



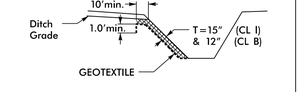
–L3– STA. 231+00 TO STA. 231+75 RT, CL I
–L3– STA. 233+00 TO STA. 234+00 RT, CL B
–LCDWB– STA. 99+23.62 TO STA. 103+26.82 LT, CL I
–Y2RPA_3– STA. 22+75 TO STA. 23+40 LT, CL I

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



–Y2 3– STA. 55+75 TO STA. 57+50 LT, D=1.0'
–Y2LPD_3– STA. 16+20 TO STA. 18+81 RT, D=1.0'
–Y2RPD_3– STA. 24+43 TO STA. 25+27 LT, D=2.25'
–Y1_3– STA. 30+88 TO STA. 32+00 RT, D=1.0'

DETAIL BA
RIP RAP AT EMBANKMENT
(Not to Scale)

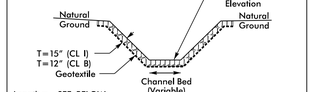


–L2– STA. 257+25 RT, CL I RIPRAP
–L2– STA. 272+87 RT, CL B RIPRAP
–L2– STA. 273+27 RT, CL B RIPRAP
–L2– STA. 275+06 LT, CL B RIPRAP
–L2– STA. 322+48 LT, CL B RIPRAP
–L2– STA. 322+88 LT, CL B RIPRAP
–L2– STA. 323+13 RT, CL I RIPRAP
–L2– STA. 386+30 RT, CL I RIPRAP
–L2– STA. 395+82 RT, CL I RIPRAP
–L2– STA. 405+84 RT, CL I RIPRAP
–L2– STA. 406+05 RT, CL B RIPRAP
–L2– STA. 447+72 LT, CL I RIPRAP
–L2– STA. 447+93 LT, CL I RIPRAP
–L3– STA. 174+80 RT, CL B RIPRAP
–L3– STA. 210+62 RT, CL I RIPRAP
–L3– STA. 215+34 LT, CL I RIPRAP
–L3– STA. 215+52 LT, CL I RIPRAP
–L3– STA. 247+67 LT, CL I RIPRAP
–L3– STA. 270+63 LT, CL I RIPRAP

DETAIL BB
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)

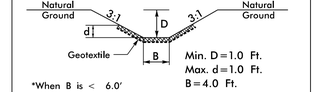
–L2– STA. 169+12 LT, L=5', CL B RIPRAP
–L2– STA. 172+65 LT, L=8', CL B RIPRAP
–L2– STA. 176+20 LT, L=36', CL I RIPRAP
–L2– STA. 284+50 LT, L=5', CL I RIPRAP
–L2– STA. 396+41 LT, L=45', CL I RIPRAP
–L2– STA. 369+00 LT, L=5', CL B RIPRAP
–L2– STA. 381+90 RT, L=5', CL B RIPRAP
–L2– STA. 416+93 LT, L=10', CL B RIPRAP
–L2– STA. 447+84 LT, L=64', CL I RIPRAP
–L2– STA. 461+38 RT, L=30', CL I RIPRAP
–Y8RPA– STA. 27+36 RT, L=22', CL I RIPRAP
–L3– STA. 111+82 LT, L=16', CL I RIPRAP (INLET)
–L3– STA. 144+04 LT, L=40', CL I RIPRAP
–L3– STA. 168+43 LT, L=45', CL I RIPRAP
–L3– STA. 171+49 LT, L=55', CL I RIPRAP
–L3– STA. 205+30 RT, L=55', CL I RIPRAP
–L3– STA. 233+34 LT, L=45', CL I RIPRAP
–L3– STA. 234+09 LT, L=40', CL I RIPRAP
–L3– STA. 247+67 LT, L=50', CL I RIPRAP
–L3– STA. 270+61 LT, L=33', CL I RIPRAP

DETAIL BC
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



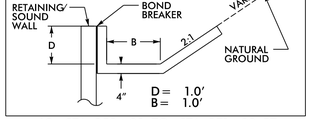
–L2– STA. 245+56 RT, L=20', CL I RIPRAP
–L2– STA. 290+70 LT, L=35', CL I RIPRAP
–L3– STA. 121+50 RT, L=20', CL B RIPRAP
–L3– STA. 124+36 RT, L=30', CL I RIPRAP
–L3– STA. 126+90 RT, L=30', CL I RIPRAP
–L3– STA. 275+43 LT, L=25', CL I RIPRAP

DETAIL BD
STANDARD BASE DITCH
(Not to Scale)



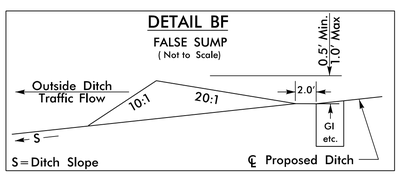
–Y1_3– STA. 30+05 LT, L=87', S=5.74%
BEG. EL=320.00, END EL=315.00
–Y1RPD_3– STA. 23+00 TO STA. 23+31 LT, S=7.2%
BEG. EL= 302.27, END ELEV=300.0
–Y1RPD_3– STA. 23+31 TO STA. 23+96 LT, S=9.2%
BEG. ELEV=300.00, END ELEV=305.96

DETAIL BE
CONCRETE DITCH BEHIND WALL
(Not to Scale)

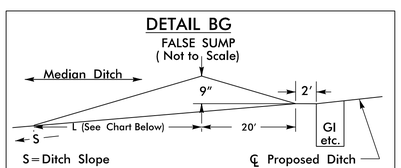


–L2– STA. 258+00 TO STA. 271+00 RT
–L2– STA. 276+00 TO STA. 280+00 RT
–L2– STA. 347+50 TO STA. 366+50 RT
–L3– STA. 250+00 TO STA. 251+00 RT
–L3– STA. 256+50 TO STA. 262+00 RT

DETAIL BF
FALSE SUMP
(Not to Scale)

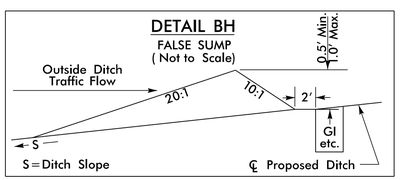


DETAIL BG
FALSE SUMP
(Not to Scale)

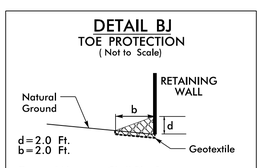


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

DETAIL BH
FALSE SUMP
(Not to Scale)

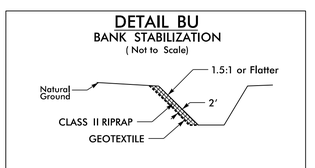


DETAIL BJ
TOE PROTECTION
(Not to Scale)



–L3– STA. 105+80 TO STA. 111+00 LT

DETAIL BU
BANK STABILIZATION
(Not to Scale)



–L3– STA. 103+95, Length=225'
–L3– STA. 104+40, Length=250'

PLANS PREPARED BY :
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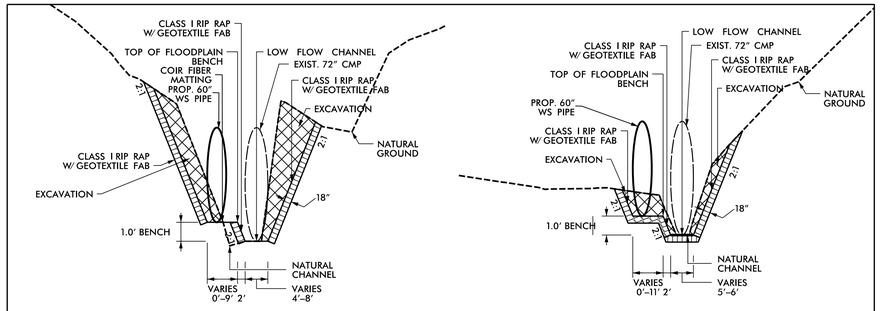
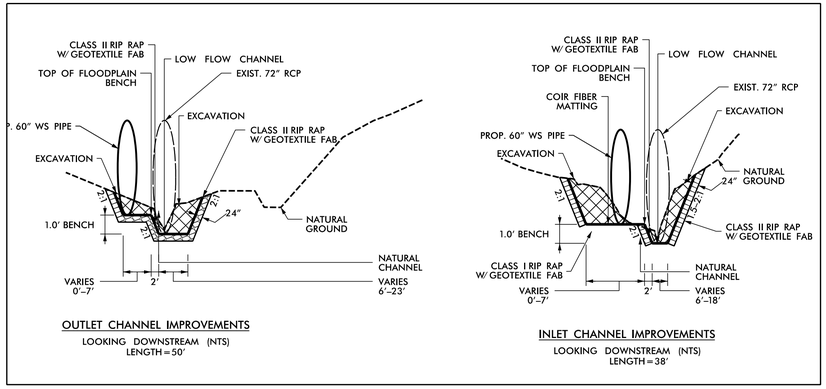
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2D-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

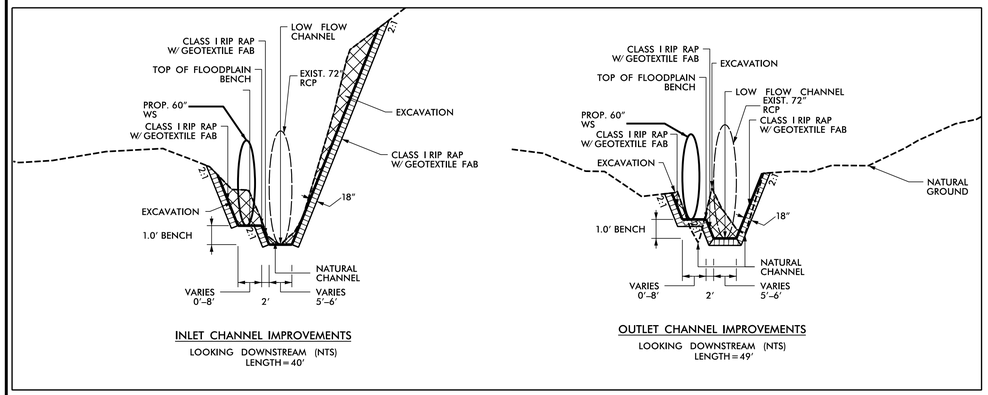
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



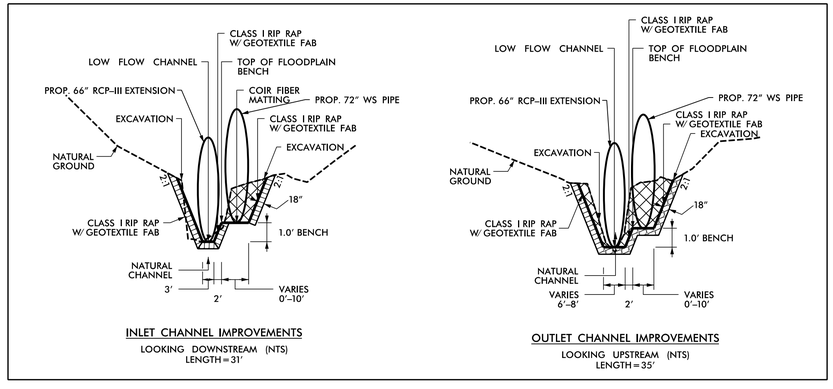
CULVERT INLET/OUTLET DETAILS
C400
–L2– 249+09



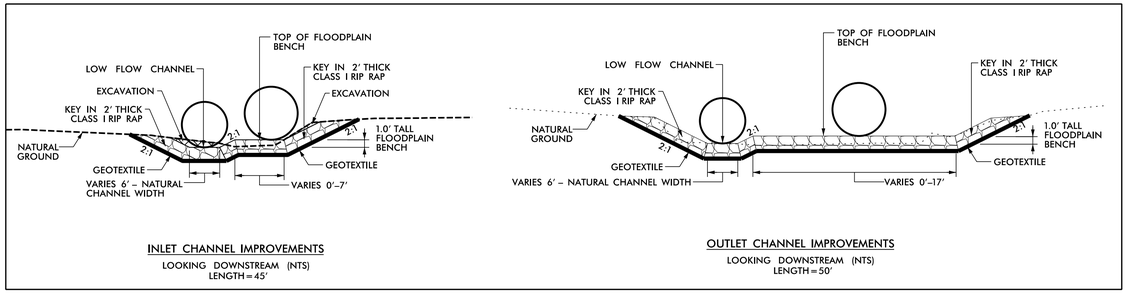
CULVERT INLET/OUTLET DETAILS
C700
–L2– 386+82



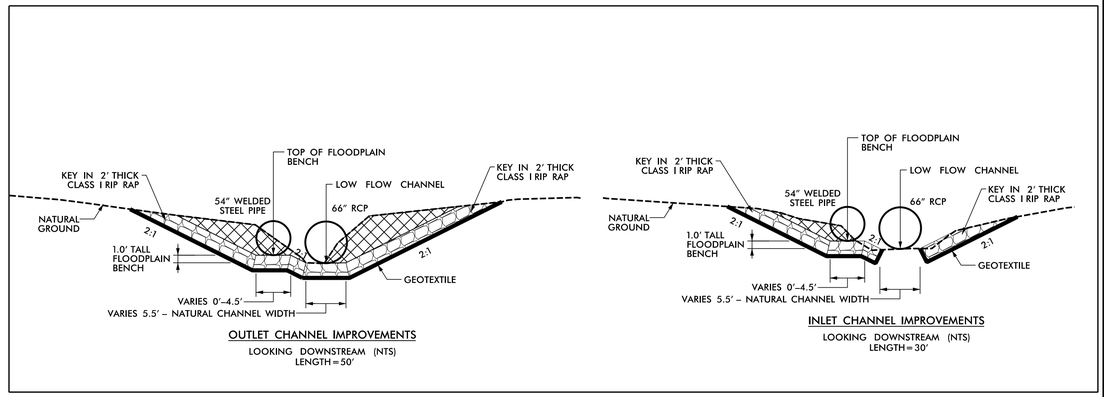
CULVERT INLET/OUTLET DETAILS
C500
–Y5RPA– 21+98



CULVERT INLET/OUTLET DETAILS
C800
–L2– 405+38



CULVERT INLET/OUTLET DETAILS
C600
–L2– 322+93



CULVERT INLET/OUTLET DETAILS
C900
–L3– 212+70

4/15/2019
R:\Hydraulics\CADD\I-5111_I-4739_Hyd_Ditch Detail.dgn
myahl

PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO. F–0112 • (919) 878–9560

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-LWB-

PIs Sta 13+63.10
Δs = 8° 36' 36.7"
Ls = 544.00'
LT = 363.10'
ST = 181.72'

PI Sta 18+84.00
Δ = 21° 16' 39.5" (RT)
D = 3° 09' 55.8"
L = 672.17'
T = 340.00'
R = 1,810.00'
e = 0.08
V = 70 MPH

NAD 83

BM#3
N: 730,366
E: 2,119,273
STA 5I+25.46
-BYS- 215.78' RT
O/S 203.43'
ELEV= IN BASE OF 16" MAPLE
RR SPIKE

KING ARTHUR ROAD 60' R/W BM 1957 PG 101

DEBRA JOHNSON
DB 9507 PG 1192
BM 1957 PG 101

EDDIE BERNARD CLINTON
DB 3149 PG 622
DB 3149 PG 624
BM 1957 PG 101

EDDIE BERNARD CLINTON
DB 10765 PG 883

GLORIA MEJIA
DB 10822 PG 2486
BM 2003 PG 1862

OLIVE HOUSE INVESTMENTS, LLC
DB 16948 PG 2714
BM 1957 PG 101

KENNETH G NDUNG'U
DB 11316 PG 210
BM 2003 PG 1862

REMOVE & REPLACE EXIST.C/A FENCE

RETAIN

BERM DITCH SEE DETAIL CF

END -NW1-

SC Sta. 15+44.00

TS Sta. 10+00.00

PROP. SOUND BARRIER

GRAU 350 TL-3

-LWB-

15+00

20+00

12' FDPS

10' FDPS

68' TYP.

+36.00

15 TONS CL B RIP RAP
30 SY GEOTEXTILE
INV. OUT=199.5

TRENCHLESS INSTALLATION 36" WELDED STEEL

PLUG AND FILL W/FLOWABLE FILL

2GIB-WSS SP. DET.

SP. LAT. BASE DITCH SEE DETAIL M

2GIA-WSS

24" RCP-III

JB w/MH SP. DET.

SP. LAT. V DITCH SEE DETAIL K

PLUG AND FILL W/FLOWABLE FILL REMOVE

36" RCP III

18" RCP-III

2GIB-WSS

SP. LAT. BASE DITCH SEE DETAIL CH

FS

2GIB-WSS

18" RCP-III

Conv. DI TO JB w/MH

SP. CUT-SWALE W/HINGE SEE DETAIL G

2GIA-WSS

Conv. DI TO JB w/MH

PC Sta. 10+00.00

-LEB-

REPLACED W/42" RCP IV AS PART OF TIP #I-5338

42" RCP

42" CSP 2 ELBOWS

8 TONS CL B RIP RAP W/21 SY GEOTEXTILE ON BANKS ONLY LENGTH = 10' (SEE DETAIL BB)

36" CSP 2 ELBOWS

REMOVE

18" RCP-III

2GIB-WSS

PROP. SOUND BARRIER

END -NW3-

REMOVE & REPLACE EXIST.C/A FENCE

GRANITE RIDGE HOMEOWNERS ASSOCIATION INC
DB 8629 PG 2320
BM 2000 PG 855

DELORIESE WALKER
DB 12491 PG 1463
BM 2002 PG 1237

JOHN L. REITZEL, JR. AND WIFE, BEVERLY ROSSER REITZEL
DB 14497 PG 1158
BM 1957 PG 101

THOMAS WALTER BRAND, III
DB 14513 PG 265
BM 1957 PG 101

T. W. BRAND
DB 1758 PG 203
BM 1957 PG 101

MATCHLINE -LWB- STA. 7+50 SEE SHEET 4A

MATCHLINE -LWB- STA. 20+50 SEE SHEET 5

MATCHLINE -LEB- STA. 16+50 SEE SHEET 5

PAVEMENT REMOVAL

FOR -LWB- PROFILE SEE SHT. 127
FOR -LEB- PROFILE SEE SHT. 129

PLANS PREPARED BY:

RS&H Architects-Engineers-Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	4A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -LWB- STA. 7+50
SEE SHEET 4

JUDY T HARRIS
DB 10685 PG 1345
BM 2003 PG 1862

CAROL M. LEWIS
DB 10712 PG 2663
BM 2003 PG 1862

SHARON DOCKERY
DB 10708 PG 383
BM 2003 PG 1862

TAMMY SIMMONS
DB 12906 PG 1414
BM 2003 PG 1862

ZAINAB DARAMY
DB 10822 PG 2502
BM 2003 PG 1862

GIDEON C. TUKORLEM
WIFE JUK TUKORLEM
JUNIOR TUKORLEM
DB 16372 PG 2073
BM 2003 PG 1862

ROGER MISSIE
GANDZALI
DB 11480 PG 566
BM 2003 PG 1862

EMMA N
L PETER
DB 10811 PG 1323
BM 2003 PG 1862

ANGELA L. BRO
DB 15037 PG
BM 2003 PGS 186

N 0°07'10" W
3742.00'

N 89°20'32" E
149.28'

N 52°23'23" E
104.41'

N 44°55'30" E
144.46'

N 26°13'40" E
119.57'

S 80°19'56" W
162.74'

N 16°10'56" E
104.25'

S 16°07'56" W
124.10'

S 16°19'56" W
151.76'

N 39°44'41" E
146.83'

50'-75
3 726.00' N

BEG.WW FENCE

72' WD

120' WD

EXISTING R/W

18' CHL

R/W MON

PROP.SOUND BARRIER

BEG. -NW1- Sta.10+00.00 =
-LWB- Sta.2+53.22 (173.90' LT)

RETAIN

EX 0416

RETAIN

RETAIN

EX 0412

RETAIN

S 73° 31' 00.5" E

5+00

S 73° 31' 00.5" E

RETAIN

CAT-1

BL-98

EX 0417

RETAIN

I-440/US 64 WB 94' BST

CONC MED BARRIER TYPE B-77

RETAIN

EX 0413

24" RCP

18" RCP

-LWB- POT Sta.2+00.00

I-440/US 64 EB 83' BST

RETAIN

EX 0415

REMOVE

24" CSP
2 ELBOWS

PROP.SOUND BARRIER

BEG.WW FENCE

HW

EX 0426

BERM DITCH
SEE DETAIL CF

BEG. -NW3- Sta.10+00.00 =
-LWB- Sta.4+32.49 (217.47' RT)

DRAINAGE EASEMENT
BM 1986 PG 2254

BM#1
N: 730,850
E: 2,117,267
-BL- STA. 5+07.03
-LWB- 39.32' LT
ELEV.= 231.09'
SPIKE IN BASE
OF 15" PINE

BL-97

GRAU 350 TL-3

CAT-1

EXISTING R/W

R/W MON

48' CHL

GRANITE RIDGE
HOMEOWNERS ASSOCIATION INC
DB 9586 PG 2173
BM 2002 PG 1237

S 64°29'59" E

S 82°32'52" E
52.34'

PLANS PREPARED BY:

RS&H

RS&H Architects–Engineers–Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

4/15/2019
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4759	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

A

B

C

D

MATCHLINE -LWB- STA. 20+50 SEE SHEET 4

MATCHLINE -LEB- STA. 16+50 SEE SHEET 4

MATCHLINE -YIRPBD- STA. 29+00 SEE SHEET 54

MATCHLINE -LEB- STA. 31+50 SEE SHEET 6

MATCHLINE -LWB- STA. 36+50 SEE SHEET 6

MATCHLINE -YIRPA- STA. 20+00 SEE SHEET 6

REMOVE & REPLACE EXIST.C/A FENCE

REPAIR GUARDRAIL IF DAMAGED DURING BRIDGE REMOVAL

I-440 WB

I-440 EB

CS Sta. 22+16.17

SC Sta. 23+52.17

-LEB- POC Sta. 17+48.22

PROP.GUARDRAIL

PROP.SIGN

SINGLE FACE BARRIER

SINGLE FACE BARRIER WITH MOMENT SLAB

PROP.SOUND BARRIER

DITCH COMPUTATIONS AND STORM DRAIN DESIGN ALONG -YIRPBD- IS SUBJECT TO CHANGE BASED ON UPDATED SURVEY INFORMATION FROM ASPHALT PLANT SITE.

DITCH COMPUTATIONS AND STORM DRAIN DESIGN ALONG -YIRPBD- IS SUBJECT TO CHANGE BASED ON UPDATED SURVEY INFORMATION FROM ASPHALT PLANT SITE.

DITCH COMPUTATIONS AND STORM DRAIN DESIGN ALONG -YIRPBD- IS SUBJECT TO CHANGE BASED ON UPDATED SURVEY INFORMATION FROM ASPHALT PLANT SITE.

-LWB- Sta. 34+13.38 REMOVE
-YIRPBD- Sta. 50+31.83

-LEB- Sta. 31+19.86 =
-YIRPBD- Sta. 52+29.46

CS Sta. 33+80.95

ST Sta. 32+45.90

ST Sta. 34+61.90

END CONSTRUCTION -YIRPA- ST Sta. 34+61.90

RESURFACE TO ENSURE PROPER GORE ROLL-OVER

SC Sta. 29+24.60

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-LWB-	23+42.15	24+63.50	RT
SBG	-YIRPBD-	33+76.24	36+26.52	LT

-YIRPA-

Pls Sta 11+44.06	Pl Sta 25+70.47	Pls Sta 33+17.96
θs = 5° 09' 23.8"	Δ = 96° 55' 14.9" (RT)	θs = 5° 09' 23.8"
Ls = 216.00'	D = 4° 46' 28.7"	Ls = 216.00'
LT = 144.06'	L = 2,029.90'	LT = 144.06'
ST = 72.06'	T = 1,354.47'	ST = 72.06'
	R = 1200.00'	
	e = 0.08	
	V = 60 MPH	

-LWB-

Pls Sta 22+78.07	Pl Sta 28+55.78	Pls Sta 34+87.00
θs = 1° 41' 12.3"	Δ = 18° 17' 00.0" (RT)	θs = 5° 42' 36.6"
θs = 1° 09' 09.6"	D = 1° 49' 08.1"	Ls = 408.00'
Ls = 136.00'	L = 998.77'	LT = 272.06'
LT = 74.14'	T = 503.61'	ST = 136.05'
ST = 61.90'	R = 3,150.00'	
	e = 0.06	
	V = 70 MPH	

-LEB-

Pl Sta 23+47.04	Pls Sta 37+48.93
Δ = 38° 38' 18.2" (RT)	θs = 2° 17' 16.7"
D = 1° 27' 31.1"	Ls = 300.00'
L = 2,648.91'	LT = 200.02'
T = 1,377.04'	ST = 100.01'
R = 3,938.00'	
e = 0.06	
V = 70 MPH	

-YIRPBD-

Pl Sta 62+12.55
Δ = 135° 51' 09.2" (LT)
D = 4° 18' 28.6"
L = 3,155.85'
T = 3,287.94'
R = 1,330.00'
e = 0.06
V = 60 MPH

BRIDGE APPROACH SLAB

PAVEMENT REMOVAL

FOR -LWB- PROFILE SEE SHTS. 127 & 128
FOR -LEB- PROFILE SEE SHT. 129
FOR -YIRPBD- PROFILE SEE SHTS. 123 & 124
FOR -YIRPA- PROFILE SEE SHT. 126

GRAPHIC SCALE
50 25 0 50 100
PLANS

PLANS PREPARED BY:

RS&H
RS&H Architects-Engineers-Planners, Inc.
2805 Meridian Parkway
RALEIGH, NORTH CAROLINA 27615
NC. LICENSE NO. P-0493 (919) 926-6100

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

XXFS-0000
XXPW-NR3087NBR - CD Post-Construction 11-48\Roadway Plans\I5111.1.4759.Rdy_pw48c.dgn
11/15/2021

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

-YIRPA-

PIs Sta 11+44.06	PI Sta 25+70.47	PIs Sta 33+17.96
Θs = 5° 09' 23.8"	Δ = 96° 55' 14.9" (RT)	Θs = 5° 09' 23.8"
Ls = 216.00'	D = 4° 46' 28.7"	Ls = 216.00'
LT = 144.06'	L = 2,029.90'	LT = 144.06'
ST = 72.06'	T = 1,354.47'	ST = 72.06'
	R = 1,200.00'	
	e = 0.08	
	V = 60 MPH	

MATCHLINE -YIRPA- STA. 20+00 SEE SHEET 5

MATCHLINE -LWB- STA. 36+50 SEE SHEET 5

MATCHLINE -LEB- STA. 31+50 SEE SHEET 5

MATCHLINE -L- STA. 26+50 SEE SHEET 7

MATCHLINE -L- STA. 65+00 SEE SHEET 7 -Y1RPBD- SEE SHEET 7

REMOVE

FS 0608 2GID-WSS

24" RCP III

0609 Conv. DI TO JB w/MH

BERM DITCH SEE DETAIL CF

+50.47 180.00

+50.47 EX. ROW

+43.00 157.00

RETAIN 0650 2GIB-WSS

EX 0426 RETAIN

18" RCP-III

4 FDPS

4 SHLDR

FS 2GIB-WSS 0610

REMOVE & REPLACE EXIST.C/A FENCE

PROP.SOUND BARRIER

MOUNT ZION CHRISTIAN CHURCH INC. DB 11227 - PG 1447

9 LIVE HOMES INC. DB 13763 - PG 2291 PB 2006 - PG 2626

END -NW4-

-LWB- ST Sta. 37+58.95 = -L- POT Sta.15+94.90 (23' LT)

BEGIN TIP PROJECT I-5111 -L- POT Sta.15+94.90

-YIRPA- ST Sta. 10+00.00 = -L- POT Sta.25+44.11 (59' LT)

-LEB- ST Sta. 39+48.91 = -L- POT Sta.22+45.23 (23' RT)

SP. CUT SWALE W/HINGE SEE DETAIL G

SC Sta. 12+16.00

EX 04100 RETAIN

EX 0475 RETAIN

24" RCP

0620 FS Adj. DI

8:1

15:00

CS Sta. 36+48.91

-YIRPA-

12' FDPS

-LWB-

TB 2GIB-ST

0602 15" RCP III

0601 15" RCP-III

0603

TB 2GIB-ST SP. DET.

S 12° 43.7' E

0616 -L-

0614 18" RCP III

0615 15" RCP III TB 2GIB-ST

20+00

RETAIN

8" RCP III

0622 TB 2GIB-ST

0621 TB 2GIB-ST 15" RCP III

0624 25+00

TB 2GIB-ST 0623 15" RCP III

I-40 WB

I-40 EB

REMOVE

RETAIN

10' FDPS

2 TONS CL B RIP RAP 7 SY GEOTEXTILE INV. OUT=254.6

SP. CUT V DITCH W/HINGE SEE DETAIL CI

-LEB-

35+00

0633 JB w/MH 15" RCP III

18" RCP III

2GIB-WSF 0604 2GIB-WSS

TYPE B-77 15" RCP-III

SP. LAT. V DITCH SEE DETAIL K

SHLDR

55+00

TYPE B-77

2 TON CL B RIP RAP 7 SY GEOTEXTILE INV. OUT=256.2

0606 FS 0631 Adj. DI

C 15" CSP 2 ELBOWS

2GIB-WSF SP. DET. 0605

+48.89

50' TYP.

SINGLE SLOPE BARRIER

BM#7 N: 728,196 E: 2,120,102 -BL- STA 45+99.81 O/S 156.96' RT ELEV.= 266.81'

PROP.SINGLE FACE BARRIER

PROP.RETAINING WALL

PROP.GUARDRAIL

PROP. SBG

-YIRPBD-

60+00

2 TON CL B RIP RAP 7 SY GEOTEXTILE INV. OUT=263.8'

0626 FS

CS Sta. 60+80.45

EX 0474 0628 15" RCP-III

0627 CAT-1 2GIB-WSF

0625 2GIB-WSF

12' FDPS

65+00

40' TYP.

EX 0484 +80.45

SRS Sta. 63+20.45

SP. LAT. V DITCH SEE DETAIL CG

2 TON CL B RIP RAP INV.OUT=264.7'

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-YIRPBD-	54+21.66	62+00.00	LT

-YIRPBD-

PIs Sta 61+60.51	PI Sta 62+12.55	PIs Sta 64+80.52
Θs = 5° 10' 10.4"	△ = 135° 57' 09.1" (LT)	Θs = 5° 10' 10.4"
Ls = 240.00'	D = 4° 18' 28.6"	Ls = 240.00'
LT = 160.07'	L = 3,155.85'	LT = 160.07'
ST = 80.06'	T = 3,287.94'	ST = 80.06'
	R = 1,330.00'	
	e = 0.06	
	V = 60 MPH	

RETAIN

EX 0481

EX 0485

EX 0482

EX 0479

EX 0480

EX 0483

36" RCP

30" CSP 2 ELBOWS REMOVE

0612

PAVED DITCH

REMOVE & REPLACE EXIST.C/A FENCE

BEATRICE WHITAKER DB 1382 - PG 627

PAVEMENT REMOVAL

BRIDGE APPROACH SLAB

FOR -L- LEFT PROFILE SEE SHTS. 73 & 74
FOR -L- RIGHT PROFILE SEE SHTS. 73 & 74
FOR -LWB- PROFILE SEE SHTS. 128
FOR -LEB- PROFILE SEE SHTS. 129 & 130
FOR -Y1RPA- PROFILE SEE SHT. 126

PLANS PREPARED BY:

RS&H Architects-Engineers-Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

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4/15/2019
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SITE 4 BRIDGE SKETCH

BEGIN BRIDGE
-Y2- POT Sta 32+41.01

END APPROACH SLAB
-Y2- POT Sta 35+06.63

BEGIN APPROACH SLAB
-Y2- POT Sta 32+15.08
-L- Sta. 29+20.00 =
-Y2- Sta. 33+64.53
D = 74°35'56"

END BRIDGE
-Y2- POT Sta 34+80.70

MATCHLINE -Y2- STA. 37+50 SEE SHEET 57

MATCHLINE -L- STA. 26+50 SEE SHEET 6

MATCHLINE -L- STA. 40+00 SEE SHEET 8

MATCHLINE -L- STA. 65+00 -Y1RPBD- SHEET 6 SEE SHEET

MATCHLINE -Y2- STA. 30+50 SEE SHEET 56

CULTURAL COMMERCE PARTNERS, LLC
DB 13098 - PG 1829
PB 2004 - PG 1591

HAROLD T. WALL
DB 5952 - PG 276
PB 1965 - PG 35

BALL RENTALS LLC
DB 9695 - PG 1868

EARNEST PAUL ADAMS
DB 3765 - PG 801

PROVIDENCE OF RALEIGH HOMEOWNERS ASSOC.INC.
DB 12441 - PG 1886
PB 2006 - PG 1337

PROVIDENCE OF RALEIGH TOWNHOUSE OWNERS ASSOC.INC
DB 12498 - PG 4
PB 2009 - PG 739

PROPOSED 48" RCP-III PIPES FROM STR. 0729 TO OUTFALL 0727 WILL NOT BE CONSTRUCTED AS PART OF MEDIAN PACKAGE 2.

INSTALL PROPOSED SYSTEM FROM STR. 0717 TO STR. 0720 AND TIE TO EXIST. 36" CMP (STR. 0744). THE EXIST. 36" CMP WILL BE USED UNTIL PERMIT APPROVAL IS RECEIVED AND THE PROPOSED SYSTEM CAN BE INSTALLED TO COMPLETION.

EXISTING 36" CMP IS IN GOOD CONDITION. THE DITCH CONTAINS RIP RAP AND STANDING WATER IN SOME AREAS.

0744 AND THE 48" RCP III FROM 0720 TO 0744 WILL BE USED IN THE TEMPORARY CONDITION ONLY. ONCE CONSTRUCTION IS PERMITTED WITHIN THE BUFFER ZONES, 0744 AND THE PIPE WILL BE ABANDONED.

-Y1RPBD-

PI Sta 66+31.65
Δ = 6°07'43.4" (RT)
D = 4°18'28.6"
L = 142.27'
T = 71.20'
R = 1,330.00'
e = 0.06
V = 60 MPH

PIs Sta 67+69.42
Θs = 4°18'28.6"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

PAVEMENT REMOVAL
BRIDGE APPROACH SLAB

FOR -L- LEFT PROFILE SEE SHTS. 74 & 75
FOR -L- RIGHT PROFILE SEE SHTS. 74 & 75
FOR -Y1RPBD- PROFILE SEE SHT. 125
FOR -Y- PROFILE SEE SHTS. 131 & 132

PLANS PREPARED BY:

RS&H Architects-Engineers-Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

4/15/2019
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tlidabr

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 40+00 SEE SHEET 7

MATCHLINE –L– STA. 53+00 SEE SHEET 9

12A

DUTCHMAN HOMEOWNERS ASSOC.
DB 11772 - PG 1129
PB 2005 - PG 1974

KALUBI M. TSHIYONGA
DB 12126 - PG 1901
PB 2005 - PG 1973

BRANDON JOHNSON SR.
DB 12147 - PG 2690
PB 2005 - PG 1973

ENETA E. MCALISTER
DB 11935 - PG 2218
PB 2005 - PG 1974

MELVIN TATE JR.
DB 11933 - PG 2171
PB 2005 - PG 1973

MELVIN D. BROWN
DB 11878 - PG 1905
PB 2005 - PG 1973

TAFFE H. DAVIS
DB 12071 - PG 671
PB 2005 - PG 1973

DANNY G. JOHNSON
DB 14658 - PG 1452
PB 2005 - PG 1973

TANZA T. CHRISTIE
DB 11929 - PG 2648
PB 2005 - PG 1973

PATRICIA M. JOHNSTON
DB 11891 - PG 925
PB 2005 - PG 1973

WESLEY MCCORMICK
DB 12056 - PG 999
PB 2005 - PG 1974

KIM S. ROBINSON
DB 12046 - PG 743
PB 2005 - PG 1974

SINGLE FACE BARRIER

PDE

PDE 4 TONS CL I RIP RAP
9 SY GEOTEXTILE
INV. OUT = 250.0'

RIP RAP AT EMBANKMENT
SEE DETAIL BA

EX. ROW
TAIL DITCH
SEE DETAIL CE

SPECIAL LATERAL 'V' DITCH
SEE DETAIL K

REMOVE & REPLACE EXIST.C/A FENCE

PROP.SOUND BARRIER

SINGLE SLOPE BARRIER

SPECIAL CUT DITCH
w/HINGE
SEE DETAIL L

GREU 350 TL-3

PROP.GUARDRAIL

2GIB-WSF

2GIA-WSS

RETAIN

PROP.SIGN

30" RCP III

CAT-1

14' FDPS

I-40 WB

I-40 EB

15" RCP III

24" RCP III

18" RCP III

TB 2GIB-ST

TB 2GIA-ST

TRENCHLESS INSTALLATION 24" WELDED STEEL

18" CSP
2 ELBOWS

SPECIAL LAT. V DITCH
SEE DETAIL K

PROP.WW FENCE

OF RALEIGH TOWNHOUSE OWNERS ASSOC.INC
DB 13628 - PG 2682
PB 2009 - PG 739

PROVIDENCE PF RALEIGH HOMEOWNERS ASSOC.
DB 12498 - PG 1
PB 2007 - PG 657

PROVIDENCE DEVELOPMENT OF RALEIGH LLC
DB 11785 - PG 400
PB 2007 - PG 658

PROVIDENCE DEVELOPMENT OF RALEIGH LLC
DB 12498 - PG 1
PB 2007 - PG 658

FOR –L– LEFT PROFILE SEE SHTS. 75 & 76
FOR –L– RIGHT PROFILE SEE SHTS. 75 & 76

PLANS PREPARED BY:

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RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

DONNA L. GRUNDY DB 2864 - PG 1727 PB 2004 - PG 1569

JEFFREY G. MITCHELL DB 11290 - PG 1418 PB 2004 - PG 1568

TONJAY DAVENPORT DB 12285 - PG 2150 PB 2004 - PG 1569

THEODORE POWELL III DB 11331 - PG 1299 PB 2004 - PG 1569

EARLINE L. MOTLEY DB 11609 - PG 2317 PB 2004 - PG 1569

PHILLIP LENOIR DAVIS DB 14494 - PG 591 PB 2004 - PG 1569

PORTIA G. JUDD DB 11574 - PG 282 PB 2004 - PG 1569

GERALD RICHARDSON JR. DB 11743 - PG 2242 PB 2005 - PG 518

JASON A. TUCKER DB 11843 - PG 2297 PB 2005 - PG 518

LENA M. BRISCOE DB 13254 - PG 575 PB 2005 - PG 518

REGINA NICOZI-JOHNSON DB 14001 - PG 2010 PB 2005 - PG 518

IB&T RAHAMAN LONG PB 2005 - PG 518

AMARO VALDEZ DB 14069 - PG 1187 PB 2005 - PG 518

DUTCHMAN HOMEOWNERS ASSOC. DB 14705 - PG 2181 PB 2005 - PG 518

DUTCHMAN C
DB
PB

REMOVE & REPLACE EXIST.C/A FENCE

BERM DITCH SEE DETAIL CF

PROP.SOUND BARRIER

SINGLE SLOPE BARRIER

18" CSP 2 ELBOWS

SPECIAL LATERAL 'V' SWALE SEE DETAIL AE

STANDARD BASE DITCH SEE DETAIL AY 20 TONS CL I RIP RAP 39 SY GEOTEXTILE INV. OUT = 220.1'

SPECIAL LATERAL BASE DITCH SEE DETAIL CB

END WW FENCE

SPECIAL LATERAL BASE DITCH SEE DETAIL AD

3 TONS CL B RIP RAP 10 SY GEOTEXTILE INV. OUT = 204.6'

BEGIN WW FENCE

OUTLET CHANNEL SEE DETAIL BO

3 TONS CL B RIP RAP 10 SY GEOTEXTILE INV. OUT = 204.5'

30" RCP III

2GIA-WSS 36" RCP III

2GIA-WSS

36" RCP III

42" RCP III

30" RCP-III

2GIB-WSF SP. DET.

TRENCHLESS INSTALLATION 30" WELDED STEEL

TRENCHLESS INSTALLATION 72" WELDED STEEL

2GIB-WSF 15" RCP III

GREU 350 TL-3

12' FDPS

RETAIN

I-40 WB

I-40 EB

-L- S 18° 21' 43.7" E

55+00

60+00

65+00

TB 2GIB-ST

TB 2GIA-ST

15" RCP III

18" RCP III

30" RCP III

22'

CABLE

PROP.GUARDRAIL

PROP. SBG

GREU 350 TL-3

8:1

PROP.SIGN

CAT-1

EX 0901

STANDARD BASE DITCH SEE DETAIL AY

FENCE

END WW FENCE

EXISTING 48" RCP IS IN GOOD CONDITION.

72 TONS CL B RIP RAP 125 SY GEOTEXTILE

+83.00 EX. ROW

+28.00 EX. ROW

INLET CHANNEL SEE DETAIL BP

+83.00 210.00'

PDE

+28.00 210.00'

EXISTING DOUBLE 8'X8' RCBC HAS SOME SEDIMENT BUILD-UP IN THE OVERFLOW BARREL. HEADWALLS ARE IN GOOD CONDITION.

PROP.SOUND BARRIER

END -NW5-

REMOVE & REPLACE EXIST.C/A FENCE

BM#1
N: 724,663
E: 2,121,300
-BL- STA 83+31.71
O/S 122.17' RT.
ELEV.= 235.69'
RR SPIKE IN BASE OF 16" PINE

50' SLOPE EASEMENT

CITY OF HIGH POINT

12B

WORD OF GOD FELLOWSHIP
DB 8290 - PG 1919
PB 2007 - PG 1385

12D

EAO LLC
DB 12757 - PG 658
PB 1985 - PG 2046

12C

LAWRENCE E. WRAY
DB 1125 - PG 880

MATCHLINE -L- STA. 53+00 SEE SHEET 8

MATCHLINE -L- STA. 66+00 SEE SHEET 10

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	62+00.00	66+00.00	RT

FOR -L- LEFT PROFILE SEE SHTS. 76 & 77
FOR -L- RIGHT PROFILE SEE SHTS. 76 & 77

PLANS PREPARED BY:

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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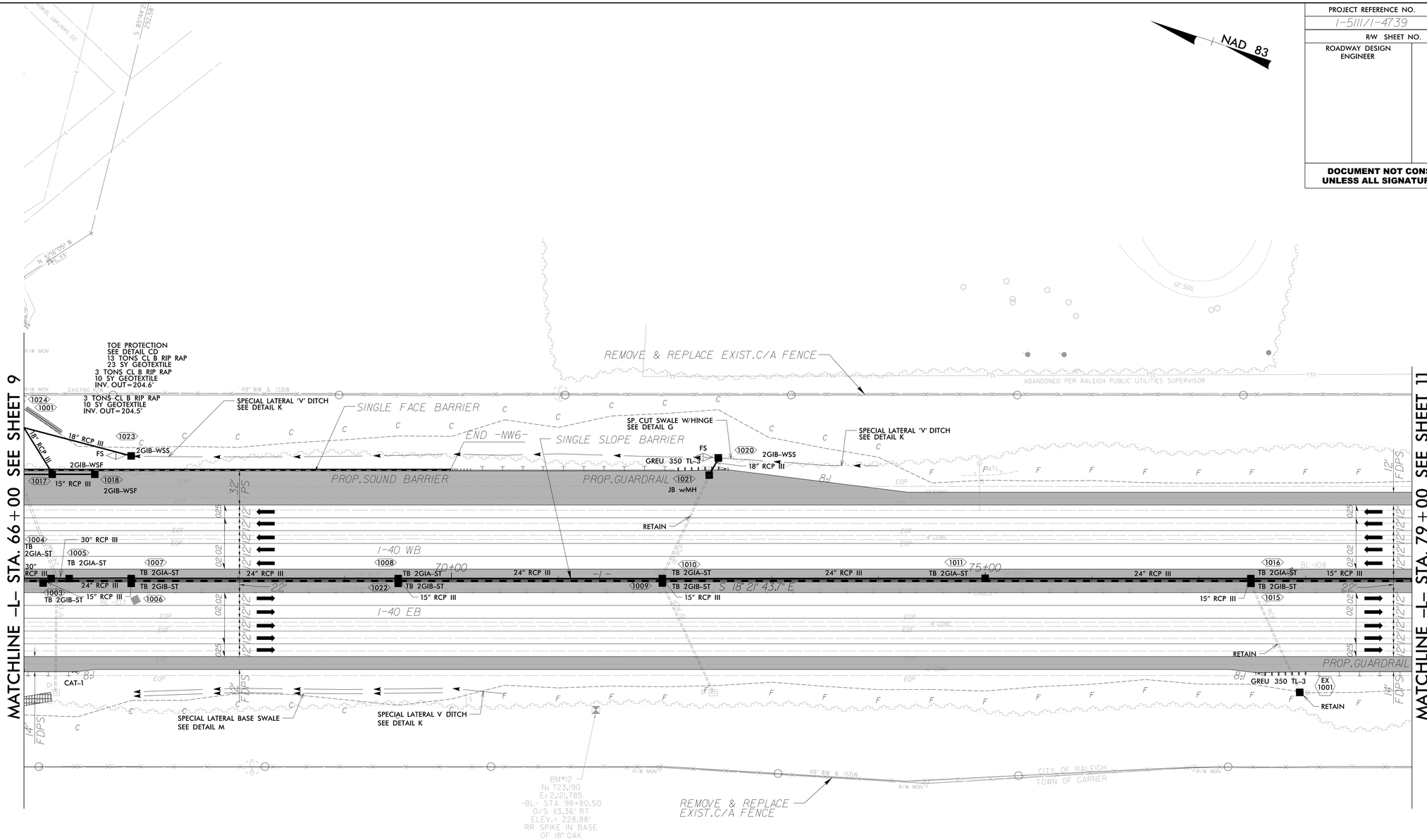
NAD 83



SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	62+00.00	66+00.00	RT

FOR –L– LEFT PROFILE SEE SHTS. 77 & 78
FOR –L– RIGHT PROFILE SEE SHTS. 77 & 78

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RS&H Architects–Engineers–Planners, Inc.
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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

12F

CITY OF RALEIGH
DB 12224 - PG 149

MATCHLINE –L– STA. 79+00 SEE SHEET 10

MATCHLINE –L– STA. 92+00 SEE SHEET 12

REMOVE & REPLACE EXIST.C/A FENCE

PROP. SIGN

CAT-1

2 TONS CL B RIP RAP
7 SY GEOTEXTILE
INV. OUT=220.4'
15" CSP
2 ELBOWS

SINGLE SLOPE BARRIER

5 TONS CL B RIP RAP
14 SY GEOTEXTILE
INV. OUT=221.80'
24" CSP
2 ELBOWS

EXISTING DOUBLE 10'X9' RCBC CONTAINS LARGE AMOUNTS OF SEDIMENT.

+60.00
260.00'

+60.00
EX. ROW

END WW FENCE

BEGIN WW FENCE

OUTLET CHANNEL
SEE DETAIL BQ

PROP. SBG

PROP. GUARDRAIL

2GIB-WSF

15" RCP III

TRENCHLESS INSTALLATION
24" WELDED STEEL

TRENCHLESS INSTALLATION
DUAL 96" WELDED STEEL

RETAIN

I-40 WB

I-40 EB

80+00

85+00

90+00

S 18° 21' 43.7" E

TB 2GIB-ST

18" RCP III

GREU 350 TL-3

18" CSP
2 ELBOWS

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=223.5'

INLET CHANNEL
SEE DETAIL BR

+90.00
EX. ROW
+90.00
250.00'

+65.00
EX. ROW
+65.00
250.00'

PDE

EAO LLC
DB 12757 - PG 658
PB 1985 - PG 2046

GLENDA B. JETTER
DB 2844 - PG 541

12D

12E

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	80+50.00	102+00.00	LT
SBG	-L-	85+50.00	102+00.00	RT

FOR –L– LEFT PROFILE SEE SHTS. 78 & 79
FOR –L– RIGHT PROFILE SEE SHTS. 78 & 79

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 92+00 SEE SHEET 11

MATCHLINE –L– STA. 105+00 SEE SHEET 13

12H

CTR PROPERTIES LLC
DB 8464 - PG 1922
PB 2010 - PG 541

+00.00
260.00'

+00.00
EX. ROW

REMOVE & REPLACE EXIST.C/A FENCE

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=221.7'
1215

18" CSP
2 ELBOWS

SINGLE SLOPE BARRIER

+43.00

300' TAPER

+43.00

580' ACCELERATION LANE

GREU 350 TL-3 8:1

1214

1212

15" RCP III

2GIB-WSF

PROP. SBG 2GIB-WSF

1216
2GIB-WSF

PROP.GUARDRAIL

15" RCP III

I-40 WB

1202 95+00

1204 TB 2GIB-ST

1220

GRADE TO DRAIN

GRADE TO DRAIN 100+00

TB 2GIB-ST

FILL & CAP
W/ 4" CONC.

1219

1218

TB 2GIB-ST

1201

TB 2GIB-ST

1203

TB 2GIB-ST

S 18°21'43.7" E

REMOVE

RETAIN FOR MEDIAN PACKAGE 1
UPON COMPLETION OF MEDIAN
PACKAGE 2 THEN PLUG AND FILL
W/FLOWABLE FILL

I-40 EB

2GIB-WSF

1205

18" RCP III

2GIB-WSF

PROP. SBG

PROP.GUARDRAIL

1217

CAT-1

BM#13
N: 719,984
E: 2,122,808
-BL- STA 132+51.98
O/S 153.93' RT
ELEV.= 262.85'
RR SPIKE IN BASE

PROP. SIGN

18" CSP
2 ELBOWS

1206

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=210.9'

STANDARD BASE DITCH
SEE DETAIL F

REMOVE & REPLACE EXIST.C/A FENCE

CITY OF RALEIGH
TOWN OF GARNER

S 01°38'28" E
1389.27'

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	80+50.00	102+00.00	LT
SBG	-L-	85+50.00	102+00.00	RT

FOR –L– LEFT PROFILE SEE SHTS. 79 & 80
FOR –L– RIGHT PROFILE SEE SHTS. 79 & 80

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

GREGORY POOLE EQUIPMENT CO.
DB 14011 - PG 836
PB 2010 - PG 541

-Y3RPB- ST Sta. 10+00.00 =
-L- POT Sta.107+22.99 (71' LT)

SC Sta. 10+81.00

TS Sta. 106+95.88

580' ACCELERATION LANE

SINGLE SLOPE BARRIER

REMOVE & REPLACE EXIST.C/A FENCE

SC Sta. 110+25.88

MATCHLINE -L- STA. 105+00 SEE SHEET 12

MATCHLINE -L- STA. 116+00 SEE SHEET 14

MATCHLINE -Y3RPB- STA. 23+00 SEE SHEET 14

SPECIAL LATERAL 'V' DITCH SEE DETAIL K

SPECIAL LATERAL 'V' DITCH SEE DETAIL CJ

PLUG AND FILL W/FLOWABLE FILL

REMOVE

RETAIN

TB JB w/SLAB LID 1314

2GIB-WSS 1318

18" RCP III

2GIB-WSS 1322

TB 2GIA-ST 1306

TB 2GIB-ST 1309

15" RCP III

I-40 WB

I-40 EB

24" RCP III

TB 2GIA-ST 1303

TB 2GIB-ST 1302

TB 2GIA-ST 1327

TB 2GIA-ST 1304

15" RCP III

TB 2GIB-ST 1305

TRENCHLESS INSTALLATION 24" WELDED STEEL

S 14°14'43.7"E

TS Sta. 13+50.00

SC Sta. 15+12.00

STANDARD BASE DITCH SEE DETAIL F

5 TONS CL B RIP RAP
14 SY GEOTEXTILE
INV. OUT = 261.5'

EX 1310

EX 1312

EX 1316

SPECIAL CUT DITCH W/HINGE SEE DETAIL L

30" RCP III

2GIA-WSS 1319

2GIA-WSS 1320

2GIA-WSS 1321

2GIA-WSS 1324

2GIB-WSS 1325

2GIB-WSS 1326

BERM BASE DITCH SEE DETAIL BI

-Y3RPC- POT Sta. 10+00.00 =
-L- POT Sta.105+50.00 (71' RT)

CS Sta. 18+84.64

REMOVE & REPLACE EXIST.C/A FENCE

MATCHLINE -Y3RPC- STA. 23+50 SEE SHEET 14

S 83°29'18"E 348.05

-L-

PIs Sta 109+15.88	PI Sta 119+85.80	PIs Sta 130+45.60
Θs = 1° 14' 38.1"	Δ = 14° 23' 50.0" (RT)	Θs = 1° 14' 38.1"
Ls = 330.00'	D = 0° 45' 14.0"	Ls = 330.00'
LT = 220.01'	L = 1,909.72'	LT = 220.01'
ST = 110.00'	T = 959.92'	ST = 110.00'
	R = 7,600.00'	
	e = 0.03	
	V = 70 MPH	

-Y3RPB-

PIs Sta 10+54.00	PI Sta 15+63.71	PIs Sta 20+70.87
Θs = 0° 25' 41.3"	Δ = 10° 10' 43.3" (LT)	Θs = 0° 25' 41.3"
Ls = 81.00'	D = 1° 03' 25.6"	Ls = 81.00'
LT = 54.00'	L = 962.87'	LT = 54.00'
ST = 27.00'	T = 482.71'	ST = 27.00'
	R = 5,420.00'	
	e = 0.03	
	V = 60 MPH	

-Y3RPC-

PIs Sta 14+58.02	PI Sta 16+99.78	PIs Sta 19+56.69	PIs Sta 22+44.70
Θs = 3° 48' 14.6"	Δ = 17° 30' 01.7" (RT)	Θs = 5° 04' 19.5"	Θs = 5° 04' 19.5"
Ls = 162.00'	D = 4° 41' 47.0"	Ls = 216.00'	Ls = 216.00'
LT = 108.02'	L = 372.64'	LT = 144.06'	LT = 144.06'
ST = 54.02'	T = 187.78'	ST = 72.05'	ST = 72.05'
	R = 1,220.00'		
	e = 0.08		
	V = 60 MPH		

FOR -L- LEFT PROFILE SEE SHTS. 80 & 81
FOR -L- RIGHT PROFILE SEE SHTS. 80 & 81
FOR -Y3RPB- PROFILE SEE SHT. 135
FOR -Y3RPC- PROFILE SEE SHT. 136

PLANS PREPARED BY:

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4759	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

2015 AADT
2040 AADT

SR 5220 JONES SAUSAGE RD.

14,400 / 26,200
4,700 / 7,500 — 4,900 / 7,900
103,200 / 166,400 -L- I-40 — 100,000 / 165,400 -L- I-40
5,900 / 6,600 — 2,500 / 5,200
13,200 / 22,600

SR 5220 JONES SAUSAGE RD.

MATCHLINE –Y3RPB– STA. 23+00 SEE SHEET 13

MATCHLINE –L– STA. 116+00 SEE SHEET 13

MATCHLINE –Y3RPC– STA. 23+50 SEE SHEET 13

MATCHLINE –L– STA. 142+00 SEE SHEET 15

A

B

C

D

BEGIN WW FENCE

END RESURFACING –Y3– POT Sta.28+20.00

END WW FENCE

REMOVE & REPLACE EXIST.C/A FENCE

CS Sta. 20+43.87

ST Sta. 21+24.87

–Y3– POT Sta. 25+43.70 = –Y3RPA– POT Sta.21+18.53 = –Y3RPB– POT Sta.24+73.53

PT Sta. 28+35.81

SC Sta. 21+68.02

SRS Sta. 19+45.02

CS Sta. 19+29.50

ST Sta. 17+84.65

SC Sta. 17+36.02

SC Sta. 15+12.00

TS Sta. 13+50.80

–Y3RPA– POT Sta. 10+00.00 = –L– POT Sta.141+50.00 (7° RT)

SINGLE FACE BARRIER

SINGLE SLOPE BARRIER

TYPE 8-77

GRBU 100 TL-3

I-40 WB

I-40 EB

REMOVE & REPLACE EXIST.C/A FENCE

SPECIAL LATERAL 'V' DITCH SEE DETAIL K

SPECIAL CUT DITCH W/HINGE SEE DETAIL L

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

SPECIAL LATERAL 'V' DITCH SEE DETAIL C1

SPECIAL LATERAL 'V' DITCH SEE DETAIL B

RETAIN EXISTING BERM

FIELD VERIFIED BERM AT PROPOSED STRUCTURE 14.05

REMOVE & REPLACE EXIST.C/A FENCE

EXISTING 15" RCP AND 48" RCP ARE IN GOOD CONDITION THE 48" RCP HAS APPROXIMATELY 3' OF SET BUILD-UP, THE 15" RCP IS PERCHED APPROXIMATELY 6'

EXISTING 48" RCP IS IN GOOD CONDITION WITH APPROXIMATELY 3' OF SEDIMENT BUILD-UP AT ENTRANCE.

REMOVE & REPLACE EXIST.C/A FENCE

CAP & FILL W/ 4 CONCRETE

SRS Sta. 21+00.64

SC Sta. 23+16.64

PT Sta. 29+01.26

PC Sta. 15+25.13

PT Sta. 15+52.32

BEGIN WW FENCE

BEGIN RESURFACING –Y3– POT Sta.10+00.00

END WW FENCE

BEGIN "BASE DITCH" SEE DETAIL BB

SPECIAL LATERAL 'V' DITCH SEE DETAIL K

SPECIAL LATERAL 'V' DITCH SEE DETAIL K

PLUG AND FILL W/FLOWABLE FILL

RETAIN

REMOVE

PROP. SIGN

–L– Sta.123+88.19 = –Y3– Sta.21+09.36

–Y3RPA– 25+00

–Y3RPB– 24+00

–Y3RPC– 25+00

–Y3RPD– 24+00

–L– 20+00

–L– 15+00

–L– 10+00

–Y3– POT Sta.16+83.71 = –Y3RPC– POT Sta.3+10.475 = –Y3RPD– POT Sta.23+78.82

–Y3RPD– TS Sta. 10+00.00 = –L– POT Sta.140+21.30 (7° RT)

SC Sta. 10+81.00

580' ACCELERATION LANE

–L–
PIs Sta 109+15.88 — Θs = 1°14' 38.2" — Ls = 3,100.00' — LT = 220.00' — ST = 110.00'
PIs Sta 119+85.80 — Δ = 14° 23' 50.0" (RT) — D = 0° 45' 14.0" — L = 1,909.72' — T = 959.05' — R = 7,600.00' — e = 0.03 — V = 70 MPH
PIs Sta 130+45.60 — Θs = 1°14' 38.2" — Ls = 3,100.00' — LT = 220.00' — ST = 110.00'

–Y3RPA–		
PIs Sta 14+58.02 — Θs = 5° 48' 14.6" — Ls = 162.00' — LT = 108.02' — ST = 54.02'	PI Sta 16+24.33 — Δ = 10° 31' 15.7" (RT) — D = 4° 41' 41.0" — L = 224.15' — T = 112.33' — R = 1,220.00' — e = 0.08 — V = 60 MPH	PIs Sta 18+08.28 — Θs = 5° 04' 19.5" — Ls = 216.00' — LT = 144.26' — ST = 72.05'
PIs Sta 20+96.08 — Θs = 5° 04' 19.5" — Ls = 216.00' — LT = 144.26' — ST = 72.05'	PI Sta 25+10.51 — Δ = 31° 21' 42.4" (LT) — D = 4° 41' 41.0" — L = 667.79' — T = 342.49' — R = 1,220.00' — e = 0.08 — V = 60 MPH	

–Y3RPC–	–Y3RPD–	–Y3–
PI Sta 26+14.67 — Δ = 27° 27' 22.1" (LT) — D = 4° 41' 41.0" — L = 584.62' — T = 298.04' — R = 1,220.00' — e = 0.08 — V = 60 MPH	PIs Sta 10+54.00 — Θs = 1° 46' 24.6" — Ls = 81.00' — LT = 54.00' — ST = 27.00'	PIs Sta 15+25.54 — Δ = 16° 51' 26.5" (LT) — D = 1° 54' 55.5" — L = 882.65' — T = 444.54' — R = 3,000.00' — e = 0.05 — V = 60 MPH
PIs Sta 20+08.65 — Θs = 1° 11' 21.0" — Ls = 135.00' — LT = 90.00' — ST = 45.00'	PI Sta 15+38.73 — Δ = 17° 16' 19.1" (LT) — D = 1° 00' 00.0" — L = 57.25' — T = 13.60' — R = 5,729.58' — e = EXIST. — V = 50 MPH	

FOR –L– LEFT PROFILE SEE SHTS. 81, 82, & 83
FOR –L– RIGHT PROFILE SEE SHTS. 81, 82, & 83
FOR –Y3– PROFILE SEE SHT. 133
FOR –Y3RPA– PROFILE SEE SHT. 134
FOR –Y3RPB– PROFILE SEE SHT. 135
FOR –Y3RPC– PROFILE SEE SHT. 136
FOR –Y3RPD– PROFILE SEE SHT. 137

PLANS PREPARED BY:

RS&H Architects-Engineers-Planners, Inc.
8201 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 928-6100

PROPOSED SIGNAL

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

4/25/2023
X:\PLN\R3082T4681 - CD Plans\Roadway Plans\I5111_I4759_Rdwy_pln014.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 142+00 SEE SHEET 14

MATCHLINE –L– STA. 155+00 SEE SHEET 16

13

HAB PROPERTIES LLC
DB 14160 - PG 332
PB 2005 - PG 952

EXISTING 72" CMP IS IN GOOD CONDITION. THE PIPE IS PERCHED APPROXIMATELY 5' AT THE OUTFALL.

REMOVE & REPLACE EXIST.C/A FENCE

26 TONS CL I RIP RAP
50 SY GEOTEXTILE
INV. OUT=250.4'

STR. 1511 TEMPORARY TOP ELEVATION MEDIAN PACKAGE 1 = 267.00'

PIPE RUNS 1454 TO 1511 & 1518 TO 1511 WILL NOT BE CONSTRUCTED IN MEDIAN PACKAGE 1.

CHANNEL CHANGE SEE DETAIL BN TIE TO DISSIPATER BASIN WITH MAX. SLOPE OF 5.0%

FILL EXISTING STREAM

OUTLET CHANNEL SEE DETAIL BS

EXISTING 24" RCP IS IN GOOD CONDITION. THERE IS RIP RAP PRESENT IN THE EXISTING DITCH LINE.

SINGLE SLOPE BARRIER

RETAIN

REMOVE EXIST. 15" RCP

PLUG AND FILL W/FLOWABLE FILL

18" RCP III

24" RCP III

TRENCHLESS INSTALLATION 48" WELDED STEEL

I-40 WB

I-40 EB

15" RCP III

PROP. GUARDRAIL

PROP. SBG

RETAIN AND LINE WITH STRUCTURAL LINER

REMOVE

580' ACCELERATION LANE

300' TAPER

12' FDPS

8:1 GREU 350 TL-3

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

STANDARD BASE DITCH SEE DETAIL AD

STANDARD BASE DITCH SEE DETAIL Q

SPECIAL LATERAL 'V' DITCH SEE DETAIL L

3 TONS CL B RIP RAP
10 SY GEOTEXTILE
INV. OUT=275.0'

SPECIAL LATERAL BASE SWALE SEE DETAIL M

5 TONS CL B RIP RAP
14 SY GEOTEXTILE
INV. OUT=269.00'

INLET CHANNEL SEE DETAIL BT

EXISTING 72" CMP AND HEADWALL ARE IN GOOD CONDITION.

PROP. SIGN

REMOVE & REPLACE EXIST.C/A FENCE

WASTE TREATMENT RESERVOIR

BM#15
N=216,588
E=2,023,348
-BL- STA 170+32.96
O/S 147.13' RT
ELEV.= 275.45'
RR SPIKE IN BASE OF 14" PINE

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	143+17.66	151+00.00	LT
SBG	-L-	149+01.58	160+50.00	RT

FOR –L– LEFT PROFILE SEE SHTS. 83 & 84
FOR –L– RIGHT PROFILE SEE SHTS. 83 & 84
FOR –Y3RPA– PROFILE SEE SHT. 134
FOR –Y3RPD– PROFILE SEE SHT. 137

PLANS PREPARED BY:
RS&H Architects–Engineers–Planners, Inc.
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RALEIGH, NORTH CAROLINA 27615
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4/15/2019
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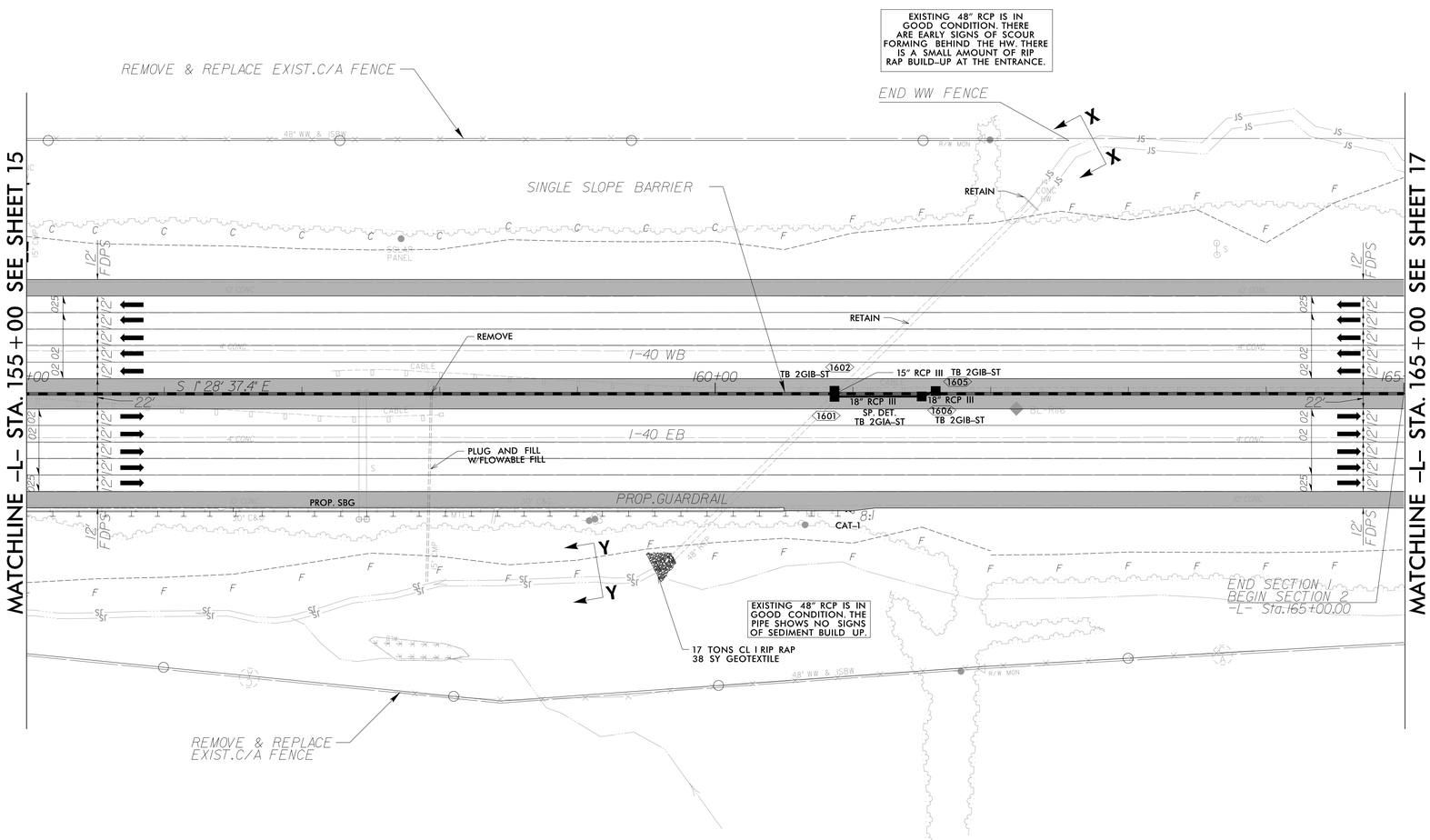
jhildebr

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83



SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	149+01.58	160+50.00	RT

FOR -L- LEFT PROFILE SEE SHT. 84
FOR -L- RIGHT PROFILE SEE SHT. 84

PLANS PREPARED BY:
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8521 SIX FORKS ROAD, SUITE 400
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MARTIN MARIETTA MATERIAL INC.
DB 5960 - PG 864
MAPPED PER WAKE CO. G.I.S.
14

MATCHLINE –L– STA. 165+00 SEE SHEET 16

MATCHLINE –L– STA. 179+00 SEE SHEET 18

2 TONS CL B RIP RAP
7 SY GEOTEXTILE
ON BANKS ONLY
LENGTH = 5'
(SEE DETAIL BB)
1704

5 TONS CL B RIP RAP
W/14 SY GEOTEXTILE
ON BANKS ONLY
LENGTH = 8'
1710
(SEE DETAIL BB)

50 TONS CL I RIP RAP
W/98 SY GEOTEXTILE
ON BANKS ONLY
LENGTH = 35'
(SEE DETAIL BB)

PROP. SIGN

PROP WW FENCE

SPECIAL CUT SWALE
SEE DETAIL E

SPECIAL CUT SWALE
W/HINGE
SEE DETAIL G

15" CSP
2 ELBOWS

1703

GREU TL-3

FS

2GIB-WSS

COLLAR
1720

24" RCP-III

TRENCHLESS INSTALLATION 24" WELDED STEEL

PLUG & FILL W/ FLOWABLE FILL

CAT-1

REMOVE EXIST. CABLE GUIDERAIL

S 1° 28' 37.4" E

165+00

170+00

175+00

–L–

REMOVE DI

REMOVE

42" RCP-III

15" RCP-III

18" RCP-III

TB 2GIB-ST

TB 2GIA-ST

1717

1705

1706

1707

1712

1714

1716

1713

1721

1722

COLLAR

HW

1715

I-40 WBL 35' CONC

I-40 EBL 35' CONC

4" CONC

10" CONC

EOP

EOT

RETAIN

1701

2GIB WSS

15" RCP-III

1719

2GIB-WSS

15" CSP
2 ELBOWS

BM #16

BERM V DITCH
W/CL B RIP RAP
SEE DETAIL C

1718

BDO

1702

2 TONS CL B RIP RAP
7 SY GEOTEXTILE

REMOVE EXIST. C/A FENCE

-L- TS Sta. 173+23.00

COLLAR AND EXTEND 18" RCP
1711

18" CSP
2 ELBOWS

1708

2GIB WSS

REMOVE

BERM V DITCH
SEE DETAIL A

1709

BDO

PROP WW FENCE

SPECIAL CUT DITCH W/HINGE
SEE DETAIL D

75' TYP.

10' WIDE BERM
TOP ELEV. = 349.5'
SEE DETAIL J

GREU TL-3

SPECIAL CUT DITCH
W/HINGE
SEE DETAIL D

-L- SC Sta. 176+23.00

PROP. SIGN

SPECIAL CUT DITCH
W/HINGE
SEE DETAIL D

S 67°51'19" W 9.57'
S 17°14'47" W 16.40'
S 05°20'28" E 10.19'
S 43°59'47" W 9.74'
S 22°00'56" W 18.76'
S 07°07'33" W 14.05'
S 28°47'01" W 26.39'
S 20°43'36" E 13.56'
S 20°20'45" W 9.98'
S 30°35'04" E 26.16'
S 07°08'09" E 38.27'
S 07°13'30" W 26.78'
S 19°22'42" W 6.26'
S 40°56'32" W 34.52'
S 51°01'38" W 42.28'
S 65°17'37" W 46.65'
S 70°00'48" W 62.59'

GARNER ECONOMIC DEVELOPMENT CORP.
DB 14572 - PG 2740

MARTIN MARIETTA MATERIAL INC.
DB 5960 - PG 864
MAPPED PER WAKE CO. G.I.S.
14

N 01°07'33" E
1184.07'

-L-

PIs Sta 175+23.01
Θs = 1° 30' 04.3"
Ls = 300.00'
LT = 200.01'
ST = 100.01'

PI Sta 197+18.19
Δ = 40° 12' 08.8" (LT)
D = 1° 00' 02.9"
L = 4,017.03'
T = 2,095.19'
R = 5,725.00'
SE = 0.04
V = 70 MPH

FOR –L– PROFILE SEE SHT. 85

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MARTIN MARIETTA MATERIAL INC.
DB 5960 - PG 864
MAPPED PER WAKE CO. G.I.S.

14

MATCHLINE -L- STA. 179+00 SEE SHEET 17

MATCHLINE -L- STA. 192+00 SEE SHEET 19

REMOVE EXIST.C/A FENCE

PROP WW FENCE

SPECIAL CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

SPECIAL CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

15" RCP-III

2GIB-WSS

FS

1805

12' PS

EOP

EOT

I-40 WBL 35' CONC

I-40 EBL 35' CONC

4' CONC

180+00

185+00

190+00

-L-

BL-118

REMOVE

REMOVE DI

TB 2GIB-ST

1801

1802

1803

1806

1808

1809

REMOVE EXIST.CABLE GUIDERAIL

RETAIN

60" RCP

48" WW & ISBW

EXISTING R/W

R/W MON

BZ 1

BZ 2

GR

8:1

GREU TL-3

CAT-1

1,500' DECEL LANE

305' TAPER

+24.53

BM#117

10' CONC MW

72" CHL

15' CONC

BST

SOIL

LT

CONC

12" HDPE

END UNKNOWN

ISMTL BUS

S 77°05'26" W
38.29'

S 51°32'54" W
36.30'

S 35°57'39" W
24.66'

S 50°02'18" W
14.76'

S 41°59'02" W
137.72'

N 13°44'59" E
284.03'

N 01°17'49" E
34.28'

S 33°29'17" W
167.08'

S.T. WOOTEN CORP.
DB 7556 - PG 165

S.T. WOOTEN CORP.
DB 12346 - PG 1359
PB 1990 - PG 836

15

50' ACCESS EASEMENT

S 18°36'06" E
510.24'

S 18°31'20" E
499.27'

PATRICIA LOFLIN
DB 11177 - PG 849
PB 2006 - PG 1879

-L-

PI Sta 197+18.19
Δ = 40°12'08.8" (LT)
D = 1°00'02.9"
L = 4,017.03'
T = 2,095.19'
R = 5,725.00'
SE = 0.04
V = 70 MPH

FOR -L- PROFILE SEE SHT. 86

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4/15/2019
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mjah

-L-	-Y4-		
PI Sta 197+18.19	PI Sta 14+75.31	PI Sta 20+53.27	PI Sta 26+28.33
Δ = 40° 12' 08.8" (LT)	Δ = 7° 08' 03.1" (LT)	Δ = 14° 16' 06.2" (RT)	Δ = 7° 08' 03.1" (LT)
D = 1° 00' 02.9"	D = 1° 29' 59.6"	D = 2° 06' 23.3"	D = 1° 29' 59.6"
L = 4,017.03'	L = 475.65'	L = 677.36'	L = 475.65'
T = 2,095.19'	T = 238.13'	T = 340.44'	T = 238.13'
R = 5,725.00'	R = 3,820.00'	R = 2,720.00'	R = 3,820.00'
SE = 0.04	SE = 0.03	SE = 0.03	SE = 0.03
V = 70 MPH	V = 50 MPH	V = 50 MPH	V = 50 MPH

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-Y4-	21+98.84	22+28.80	RT

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 040878 ENGINEER MARY E. YAHL

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 27434 ENGINEER MATTHEW L. COX

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99 ROW REVISION - 01-09-2019 - ADDED PUES TO PARCEL NO.15 & 14 FOR UTILITY RELOCATIONS.

DRAINAGE REVISION - 03-14-2019 - REVISED ALL DRAINAGE SYSTEMS AND LAYOUTS.

4/15/2019 R:\Projects\Proj\Plan_Sheets\Sec2\5111_14739_Rdy_psh19.dgn mwh

NAD 83

MATCHLINE -Y4- STA. 26+00 SEE SHEET 60

MATCHLINE -L- STA. 192+00 SEE SHEET 18

MATCHLINE -L- STA. 205+00 SEE SHEET 20

MATCHLINE -Y4- STA. 16+00 SEE SHEET 59

14 MARTIN MARIETTA MATERIAL INC. DB 5960 - PG 864 MAPPED PER WAKE CO. G.I.S.

MARTIN MARIETTA MATERIALS INC. DB 13897 - PG 1354 — 14A

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DB 3078 - PG 378

SHERMAN A. YEARGAN JR. TRUSTEE DB 14611 - PG 2642-2672 PB 2005 - PG 1397 — 16

15 S.T. WOOTEN CORP. DB 12346 - PG 1359 PB 1990 - PG 836

8421 TIME WARNER ENTERTAINMENT PB 1986 - PG 528

-Y4- PRC Sta. 23+90.19

-Y4- POT Sta. 20+29.24 = -L- POC Sta. 197+50.29

-Y4- PRC Sta. 17+12.83

BEGIN FENCE

ENERGY DISSIPATOR BASIN SEE DETAIL X

REMOVE EXIST. C/A FENCE

PROP WW FENCE

REMOVE EXIST. CABLE GUIDERAIL

FILL & CAP W/ 4" CONCRETE

1500' LANE

300' TAPER

50' TAPER

SPECIAL CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT SWALE SEE DETAIL E

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

SPECIAL CUT DITCH SEE DETAIL B

BERM V DITCH SEE DETAIL A

BERM V DITCH W/CL. B RIPRAP SEE DETAIL C

BERM 4' BASE DITCH W/CL. B RIPRAP SEE DETAIL AH

LATERAL BASE DITCH SEE DETAIL AA

TRENCHLESS INSTALLATION 66" WELDED STEEL

PLUG & FILL W/FLOWABLE FILL

8 TONS CL B RIP RAP 21 SY GEOTEXTILE

1 TON CL B RIP RAP 5 SY GEOTEXTILE

2 TON CL B RIP RAP W/7 SY GEOTEXTILE

TIE FENCE TO BRIDGE

REMOVE JB

REMOVE DI

REMOVE DI & 26" EX. 18"

REMOVE

RETAIN

Conv. JB w/Slab Lid To JB w/MH

Conv. DI TO JB w/MH

JB w/MH

TB JB w/MH

TB JB w/SLAB

SP. DET. TB JB w/MH

SP. DET. 2GIA-WSS

SP. DET. TB 2GIA-ST

SP. DET. TB 2GIB-ST

TB 2GIA-ST

TB 2GIB-ST

2GIA-WSS

2GIB-WSS

2GIA WSS

2GIB WSF

2GIB NSF

2GIB-WSS

15" RCP-III

18" RCP-III

48" RCP-III

54" RCP-III

60" RCP-III

66" RCP-III

42" CSP 2 ELBOWS

15" CSP 2 ELBOWS

54" CAP 2 ELBOWS

54" REMOVE RCP

FS

CAT-1

GREU TL-3

TYPE B-77

JB SLAB LID

EOT

EOP

I-40 WBL 47' CONC

I-40 WBL 35' CONC

I-40 EBL 41' CONC

I-40 EBL 47' CONC

PUE

PDE

DUE

F

PROP. SIGN

-Y4- +40.00 EX. ROW, 110.00'

-L- +40.00 EXIST. ROW

-L- +25.00 EXIST. ROW, 175.00'

-Y4- +70.00 105.00'

-Y4- +87.99 EX. ROW

-Y4- +60.00 135.00'

-L- +50.00 EX. ROW

+75.00 185.00'

+00.00 195.00'

+05.00 EXIST. ROW, 100.00'

END FENCE +60.00 EX. ROW

+30.00 110.00'

+35.00 100.00'

END FENCE +30.00 EXIST. ROW

+20.00 57.71'

+85.00 EX. ROW, 90.00'

+90.00 155.00'

+15.00 110.00'

+60.00 155.00'

+78.00 108.88'

+90.00 81.50'

+80.00 120.00', 135.00'

+50.00 110.00'

N 00°08'14" E 423.36'

N 89°45'11" W 270.18'

N 09°02'30" E 430.02'

N 17°27'41" W 114.40'

N 61°23'42" E 430.09'

SITE 5 BRIDGE SKETCH

BEGIN BRIDGE -Y4- POC Sta 18+84.72

END BRIDGE -Y4- POC Sta 21+65.21

-L- Sta. 197+50.29

-Y4- Sta. 20+29.83

D = 57°36'17"

BEGIN APPROACH SLAB -Y4- POC Sta 18+67.67

END APPROACH SLAB -Y4- POC Sta 21+83.91

CURRENT CONSTRUCTION (MEDIAN PACKAGE #1)

FOR -L- PROFILE SEE SHTS. 86-87

FOR -Y4- PROFILE SEE SHT. 139

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	20
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040878 ENGINEER MARY E. YAHL	NORTH CAROLINA PROFESSIONAL SEAL 27434 ENGINEER MATTHEW L. COX

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FOR –L– PROFILE SEE SHTS. 87–88
FOR –Y5RPB– PROFILE SEE SHT. 143
FOR –Y5RPC– PROFILE SEE SHT. 146
FOR –Y5RPCSPUR– PROFILE SEE SHT. 147

NAD 83

REVISIONS
8/17/99
DRAINAGE REVISION - 03-14-2019 - REVISED DRAINAGE SYSTEM -L- 205+00-215+00 LT.

MARTIN MARIETTA MATERIALS INC.
DB 13897 - PG 1361
PB 1999 - PG 687

MARTIN MARIETTA MATERIALS INC.
DB 13897 - PG 1354
14A

GSNCOOILLC
DB 14226 PG 2615
17

SHERMAN A. YEARGAN JR. TRUSTEE
DB 14611 - PG 2642-2672
PB 2005 - PG 1397
16

JR. TRUSTEE SHERMAN A. YEARGAN
DB 14611 PG 2642
PB 2005 PG 444

JR. TRUSTEE SHERMAN A. YEARGAN
DB 14611 PG 2642
PB 2005 PG 444

MATCHLINE –L– STA. 205+00 SEE SHEET 19

MATCHLINE –L– STA. 218+00 SEE SHEET 21

N 81°22'31" W 125.00'

N 72° 49' 29.4" E

–RR– PI Sta. 15+04.75

–RR– POT Sta. 12+85.74 = –L– POC Sta. 210+73.05

–Y5RPB– ST Sta. 10+00.00= –L– Sta. 212+77.98 (71' LT)

–Y5RPB–SC Sta. 11+90.00

–Y5RPC– CS Sta. 20+97.41

–Y5RPC– ST Sta. 23+77.41

END CONSTRUCTION –Y5RPC– POS Sta. 23+53.76

–Y5RPC– TS Sta. 13+54.44

–Y5RPC– SC Sta. 16+34.44

–Y5RPC– POT Sta. 10+00.00= –L– Sta. 205+10.87 (71' RT)

–RR– POT Sta. 10+00.00

–RR– POT Sta. 11+81.83 = –Y5RPC– POS Sta. 15+34.93

–Y5RPCSPUR– PC Sta. 10+00.00= –Y5RPC– Sta. 19+55.18 (12' RT)

END CONSTRUCTION –Y5RPCSPUR– POC Sta. 13+97.77

S 31°52'48.0" E

N 72° 49' 08.5" E

300' TAPER

584' ACCEL. LANE

1500' LANE

PROP WW FENCE

REMOVE EXIST. C/A FENCE

FILL & CAP W/ 4" CONCRETE

PROP. SIGN

+30.00 EX. ROW

SPECIAL CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT DITCH W/HINGE SEE DETAIL D

SPECIAL CUT DITCH SEE DETAIL B

REMOVE 30" RCP–III

30" RCP–III

TB JB w/SLAB LID

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

REMOVE APPROX. 25' EXIST. 12" RCP

18" RCP–III

15" RCP–III

TB 2GIB–ST

2GIA–WSS

2GIB–WSS

GREU TL–3

TYPE B–77

REMOVE APPROX. 11' EXIST. 15" RCP

REMOVE 12' EX. 15"

RETAIN

RETAIN DI

PLUG & FILL W/FLOWABLE FILL

24" RCP–III

62.5' TYP.

40' TYP.

380.75
380.52
380.72
383.93

CURRENT CONSTRUCTION (MEDIAN PACKAGE #1)

DESIGN INCOMPLETE (SUBJECT TO CHANGE)

–Y5RPB–		–Y5RPC–			–Y5RPCSPUR–	
PIs Sta 11+09.54	PI Sta 17+72.78	PIs Sta 15+41.16	PI Sta 18+67.18	PIs Sta 21+90.80	PI Sta 13+59.34	
Θs = 0° 57' 45.6"	Δ = 31° 01' 12.9" (LT)	Θs = 4° 24' 26.5"	Δ = 14° 34' 29.8" (RT)	Θs = 4° 24' 26.5"	Δ = 37° 27' 12.5" (RT)	
Θs = 2° 35' 31.2"	D = 2° 43' 42.1"	Ls = 280.00'	D = 3° 08' 53.2"	Ls = 280.00'	D = 5° 24' 18.9"	
Ls = 190.00'	L = 1,136.95'	LT = 186.72'	L = 462.97'	LT = 186.72'	L = 692.91'	
LT = 109.54'	T = 582.78'	ST = 93.39'	T = 232.74'	ST = 93.39'	T = 359.34'	
ST = 80.51'	R = 2,100.00'		R = 1,820.00'		R = 1,060.00'	
	SE = 0.07		SE = 0.07		SE = 0.08	
	V = 60 MPH		V = 60 MPH		V = 30 MPH	

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mjohnson

REVISIONS
ROW REVISION – 11-30-2018 – ADDED PARCEL NO. 18A AND REVISED ROW/PUE FOR PARCEL 18 ROW REVISION – 02-15-2019 – REVISED PUE FOR PARCELS 17, 18, AND 18A TO AVOID STORM SEWER ON PARCEL 18A. ROW REVISION – 02-26-2019 – ADDED TCE FOR FILL SLOPE FOR PARCELS 18 AND 18A.

-L- (I-40) US 70 BUS			
ADT 2018 ADT 2038	42,000 68,500		
L-40	22,200 30,900	1,500 2,000	96,400 114,000
US 70 BUS	115,800 137,300	9,600 12,100	9,800 11,000
		37,300 59,000	

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	2F
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L- STA. 218+00 SEE SHEET 20

MATCHLINE -Y5RPB- STA. 43+00 SEE SHEET 61

MATCHLINE -L- STA. 243+00 SEE SHEET 22

MATCHLINE -Y5- STA. 44+50 SEE SHEET 61

-Y5RPB- SC Sta. 27+06.95

-Y5RPB- CS Sta. 23+26.95

-Y5RPB- SRS Sta. 25+16.95

-Y5RPB- TS Sta. 39+75.47

-Y5RPB- SC Sta. 41+95.47

-Y5RPB- CS Sta. 36+03.86

-Y5RPB- ST Sta. 37+93.86

-Y5RPBSPUR- PC Sta. 10+00.00= -Y5RPB- Sta. 35+79.92 (12 RT)

-Y5RPBSPUR- PT Sta. 17+99.84

-Y5LPB- SC Sta. 14+50.00

-Y5LPB- SC Sta. 18+65.10

-Y5LPB- CS Sta. 17+90.10

-Y5LPB- CS Sta. 26+30.83

-Y5LPB- SC Sta. 27+05.83

-Y5LPB- ST Sta. 31+89.80

-Y5LPB- CS Sta. 29+89.80

-Y5LPB- TS Sta. 11+50.00

-Y5LPB- PST Sta. 10+00.00= -L- Sta. 224+72.52 (16' LT)

-L- SRS Sta. 218+90.04

-L- SC Sta. 221+40.04

-Y5LPC- SC Sta. 13+00.00

-Y5LPC- PCC Sta. 15+17.75

-Y5LPC- ST Sta. 10+00.00 = -L- POC Sta. 229+27.71 (59 RT)

-Y5LPC- ST Sta. 23+62.77 = -Y5- POT Sta. 22+67.39 (139 LT)

-Y5LPC- CS Sta. 21+62.77

-Y5RPCSPUR- PT Sta. 16+92.91

-Y5RPCSPUR- POT Sta. 20+48.41= -Y5- PT Sta. 15+15.59

-Y5RPC- TS Sta. 32+43.33

-Y5RPC- SC Sta. 34+23.33

-Y5RPD- ST Sta. 10+00.00 = -Y5- POT Sta. 20+22.22 (139 RT)

BEGIN CONSTRUCTION -Y5- POT Sta. 61+28.32

-Y5RPD- CS Sta. 11+90.00

-Y5RPD- CS Sta. 27+17.39

-L- CS Sta. 238+54.95

-L- ST Sta. 241+04.95

END PAVING -Y5- POT Sta. 43+50.00

END CONSTRUCTION -Y5- POT Sta. 44+00.00

-Y5- PT Sta. 41+34.38= -Y5RPBSPUR- POT Sta. 18+41.86

DUKE REALTY LAND, LLC DB 15876 - PG 57 PB 2016 - PG 2281

DUKE REALTY LAND, LLC DB 15876 - PG 57 PB 2016 - PG 2281

OSMOOS LLC DB 14326 PG 2165

INVESTORS PROPERTY TAX SERVICES, INC. DB 14627 - PG 2529 PB 2002 - PG 1627

-Y5RPB-

PI Sta 17+27.78	PI Sta 23+90.30	PI Sta 26+43.64	PI Sta 31+64.35	PI Sta 36+67.21	PI Sta 41+22.17	PI Sta 141+93.98
Δ = 31° 01' 23.9" (LT)	Δ = 2° 35' 31.0"	Δ = 2° 56' 03.4"	Δ = 3° 42' 33.0"	Δ = 4° 56' 03.4"	Δ = 3° 57' 49.8"	Δ = 65° 28' 04.2" (RT)
D = 2° 43' 42.4"	D = 1° 00.00'	D = 1° 00.00'	D = 3° 05' 19.4"	D = 1° 00.00'	D = 2° 00.00'	D = 8° 11' 06.4"
L = 1,136.95'	Ls = 150.00'	Ls = 150.00'	L = 696.59'	Ls = 150.00'	Ls = 200.00'	L = 799.84'
T = 582.78'	L = 125.68'	L = 125.68'	T = 457.49'	L = 125.68'	T = 146.70'	T = 449.98'
R = 2,100.00'	T = 63.35'	T = 63.35'	R = 1,855.00'	T = 63.35'	T = 73.37'	R = 700.00'
SE = 0.09'			SE = 0.09'			SE = 0.01'
V = 60 MPH			V = 60 MPH			V = 35 MPH

-Y5RPBSPUR-

-Y5LPB-

PI Sta 13+53.91	PI Sta 16+52.25	PI Sta 18+23.58	PI Sta 23+45.81	PI Sta 26+72.66	PI Sta 28+65.35	PI Sta 30+57.50	PI Sta 33+63.36
Δ = 34° 02' 38.9"	Δ = 11° 56' 19.8" (RT)	Δ = 8° 11' 44"	Δ = 87° 44' 48.2" (RT)	Δ = 4° 17' 44"	Δ = 65° 04' 54.8" (RT)	Δ = 22° 55' 05.9"	Δ = 3° 56' 21.7"
D = 3° 00.00'	D = 22° 55' 05.9"	D = 4° 35' 45.5"	D = 1° 27' 33.0"	D = 1° 15' 49.5"	D = 22° 55' 05.9"	D = 2° 00.00'	D = 1° 00.00'
L = 340.10'	L = 240.10'	Ls = 75.00'	L = 765.73'	Ls = 75.00'	L = 283.99'	L = 134.47'	L = 120.02'
T = 203.91'	T = 123.25'	L = 149.31'	T = 382.71'	T = 41.83'	T = 159.55'	T = 67.70'	T = 60.02'
R = 1,910.00'	R = 250.00'	T = 33.49'	R = 3,900.00'	T = 33.49'	R = 250.00'		
SE = 0.08'	SE = 0.08'		SE = 0.06'		SE = 0.08'		
V = 60 MPH	V = 30 MPH		V = 60 MPH		V = 30 MPH		

-Y5RPC-

-L-

PI Sta 220+56.71	PI Sta 230+04.43	PI Sta 239+38.28
Δ = 11° 19' 42.4"	Δ = 11° 46' 04.89" (RT)	Δ = 11° 19' 42.4"
Ls = 250.00'	D = 1° 02' 09.9"	Ls = 250.00'
LT = 166.67'	L = 1,174.39'	LT = 166.67'
ST = 83.34'	T = 864.39'	ST = 83.34'
	R = 5,530.00'	
	SE = 0.04'	
	V = 70 MPH	

-Y5LPC-

PI Sta 11+95.52	PI Sta 14+16.41	PI Sta 21+57.51
Δ = 1° 33' 48.7"	Δ = 40° 49' 21.3" (LT)	Δ = 13° 01' 11.3" (LT)
Ls = 22° 37' 27.6"	D = 15° 04' 40.2"	D = 22° 28' 08.2"
Ls = 300.00'	L = 270.73'	L = 592.05'
LT = 195.52'	T = 141.41'	T = 586.76'
ST = 108.33'	R = 380.00'	R = 255.00'
	SE = 0.08'	SE = 0.08'
	V = 35 MPH	V = 30 MPH

-Y5RPD-

PI Sta 22+30.43	PI Sta 28+26.68	PI Sta 30+30.94	PI Sta 28+36.74
Δ = 22° 28' 08.2"	Δ = 2° 51' 53.2"	Δ = 47° 44' 53.2" (RT)	Δ = 2° 51' 53.2"
Ls = 200.00'	Ls = 150.00'	D = 3° 00' 56.0"	Ls = 150.00'
LT = 134.42'	LT = 126.68'	L = 1,583.15'	LT = 126.68'
ST = 67.66'	ST = 63.35'	T = 840.91'	ST = 63.35'
		R = 1,900.00'	
		SE = 0.07'	
		V = 60 MPH	

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-Y5RPB-	20+00.00	25+25.00	LT
SBG	-L-	232+75.00	233+26.86	LT
SBG	-L-	235+72.50	236+65.00	LT
SBG	-L-	230+70.00	231+24.06	RT
SBG	-L-	233+89.76	234+71.25	RT
SBG	-Y5RPD-	25+41.29	28+16.63	RT
2'-6" C&G	-Y5LPB-	14+00.49	29+82.57	RT
2'-6" C&G	-Y5LPC-	12+77.49	21+45.99	LT

GRAPHIC SCALE
50 25 0 50 100
PLANS

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FOR -L- PROFILE SEE SHTS. 88-90
FOR -Y5RPB- PROFILE SEE SHTS. 143-144
FOR -Y5LPB- PROFILE SEE SHTS. 144-145
FOR -Y5BSPUR- PROFILE SEE SHT. 145
FOR -Y5LPC- PROFILE SEE SHT. 147
FOR -Y5RPD- PROFILE SEE SHT. 147
FOR -Y5- PROFILE SEE SHTS. 140-141
FOR -Y5RPCSPUR- PROFILE SEE SHT. 146
FOR SITE 6 BRIDGE SKETCH SEE SHT. 2C-3

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

Plotted: 3/5/2019 3:44:23 PM
By: Richardson, Jon
File: C:\Users\jrichardson\Desktop\Sheet Files\I-5111_I-4739_Rdy_roll2F.dgn

8/17/99

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-Y5RPA-	21+50.00	24+00.00	RT
SBG	-L-	243+00.00	245+89.40	RT
SBG	-L-	247+21.00	250+45.00	RT
SBG	-L-	246+26.78	25+50.00	LT

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -Y5RPC- STA. 62+00 SEE SHEET 61

MATCHLINE -Y5RPA- STA. 23+00 SEE SHEET 61

MATCHLINE -L- STA. 243+00 SEE SHEET 21

MATCHLINE -Y5RPA- STA. 16+50 SEE SHEET 23

MATCHLINE -L- STA. 256+00 SEE SHEET 23

END OVERLAY -Y5RPC- Sta. 59+62.74

-Y5RPC- ST Sta. 58+46.30

-L- Sta. 246+83.13 = -Y5RPC- ST Sta. 56+72.25 = -Y5RPC- CS Sta. 56+66.30

-Y5RPA- PCC Sta. 17+59.62

BEGIN OVERLAY -Y5RPC- ST Sta. 51+78.24

-Y5RPD- ST Sta. 29+63.39 = -L- POT Sta. 244+46.88 (59' RT)

BEGIN SOUND BARRIER -L- STA. 255+30.63

PROP. SINGLE FACE BARRIER

PROP. SOUND BARRIER

PERGO INC. DB 9039 - PG 2178 (19)

INVESTOR PROPERTIES TAX SERVICE INC. DB 14427 - PG 2535 PB 2011 - PG 765 (20)

SEE C500 OUTLET DETAIL -Y5RPA- STA. 21+98

SEE C500 INLET DETAIL -Y5RPA- STA. 21+98

SEE C400 INLET DETAIL -L2- STA. 249+09

SEE C400 OUTLET DETAIL -L2- STA. 249+09

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT SWALE W/HINGE SEE DETAIL G

SPECIAL CUT SWALE SEE DETAIL E

LATERAL V SWALE SEE DETAIL AN

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL AB

LATERAL 4' BASE SWALE SEE DETAIL U

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL T

STANDARD V DITCH W/CL 1 RIP RAP SEE DETAIL P

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

18 TONS CL 1 RIPRAP W/38 SY GEOTEXTILE LENGTH = 20' (SEE DETAIL BC)

CHANNEL CHANGE W/CL 1 RIPRAP SEE DETAIL V

TRENCHLESS INSTALLATION (84" WELDED STEEL NOT BURIED)

TRENCHLESS INSTALLATION (60" RCP III NOT BURIED)

RETAIN & LINE W/ STRUCTURAL LINER

PLUG & FILL W/FLOWABLE FILL

FILL & CAP W/ 4" CONCRETE

REMOVE DI

ADJUST DI

CONVERT to JBw/MH

PLUG & FILL W/ FLOWABLE FILL

-Y5RPA-		-Y5RPC-	
PI Sta 16+16.97	PI Sta 23+29.76	PI Sta 48+50.06	PIs Sta 57+26.32
Δ = 13° 41' 13.2" (RT)	Δ = 61° 24' 42.6" (RT)	Δ = 89° 52' 07.5" (LT)	θs = 3° 36' 21.7"
D = 4° 46' 28.7"	D = 5° 58' 05.9"	D = 4° 00' 24.1"	Ls = 180.00'
L = 286.66'	L = 1,028.97'	L = 2,242.96'	LT = 120.02'
T = 144.02'	T = 570.14'	T = 1,426.73'	ST = 60.02'
R = 1,200.00'	R = 960.00'	R = 1,430.00'	
SE = 0.08			
V = 60 MPH			

FOR -L- PROFILE SEE SHTS. 90-91
FOR -Y5RPA- PROFILE SEE SHT. 142
FOR SITE 7 BRIDGE SKETCH SEE SHT. 2C-3

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

MATCHLINE -L- STA. 256+00 SEE SHEET 22

MATCHLINE -L- STA. 269+00 SEE SHEET 24

MATCHLINE -Y5RPA- STA. 16+50 SEE SHEET 22

-Y5RPA- SC Sta. 14+72.96

-Y5RPA- TS Sta. 11+82.96

-Y5RPA- POT Sta. 10+00.00= -L- POT Sta. 262+16.57 (59' LT)

-L- SC Sta. 265+31.72

-L- TS Sta. 263+81.72

2312 ENERGY DISSIPATOR BASIN SEE DETAIL X

-Y5RPA- +45.00 EX. ROW

-Y5RPA- +05.00 EX. ROW

-Y5RPA- +45.00 104.46'

+20.00 125.00'

+05.00 72.84'

-Y5RPA- +40.00 75.00'

+65.00 110.00'

+60.00 EX. ROW

-Y5RPA- +30.00 EX. ROW

SPECIAL CUT SWALE SEE DETAIL E

+36.68 70.59'

CUT-FILL TRANISTION 2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

PDE

2311 2GIB WSF CAT-1

2310 2GIA-WSF

66" RCP-III (BURIED 1.0')

PROP. SBG

15+00

33.46' RT

GRAU 350 TL-3

8:1

PROP. SIGN

10+00

-Y5RPA- N 21° 04' 30.4" W

Conv. DI TO JB w/MH

REMOVE EXIST.C/A FENCE

PROP.WW FENCE

2301 2GID-WSS

2302

FS

19

PERGO INC.
DB 9039 - PG 2178

260+00

S 24° 04' 24.4" E

REMOVE EXIST.GUARDRAIL

265+00

TB 2GIB-ST 2303

TB 2GIA-ST 2304

24" RCP-III

TB 2GIA-ST 2306

REMOVE -L-

2305 TB 2GIB ST

18" RCP-III

2307 2GIA-WSF

18" RCP-III

2309

BZ 1

2GIA-WSF

PLUG & FILL W/FLOWABLE FILL

66" WELDED STEEL (BURIED 1.0')

66" RCP-III (BURIED 1.0')

2314 2GIB-WSS

15" CSP 2 ELBOWS

FILL & CAP W/ 4" CONCRETE

SPECIAL CUT SWALE SEE DETAIL E

±3.72

75' TYP.

2316

Conv. DI TO JB w/MH

REMOVE 15" CSP 2 ELBOWS

2315 2GIB-WSS

2308

2317 2GIB-WSS

PROP. SOUND BARRIER

LATERAL BASE SWALE SEE DETAIL U

-L- +00.00 EX. ROW

RIP RAP AT EMBANKMENT SEE DETAIL BA

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

+00.00 165' RT

+25.00 165' RT

20

INVESTOR PROPERTIES TAX SERVICE INC.
DB 14427 - PG 2535
PB 2011 - PG 765

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

70' POWER EASEMENT

JAMES M. NICHOLSON
DB 9968 - PG 1766
PB 2011 - PG 765

21

3SFAPT

SEDIMENT BA

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-Y5RPA-	14+04.94	15+90.46	RT

-L-	-Y5RPA-
PIs Sta 264+81.72	PIs Sta 13+76.44
θs = 0° 22' 27.5"	θs = 6° 55' 23.7"
Ls = 150.00'	Ls = 290.00'
LT = 100.00'	LT = 193.48'
ST = 50.00'	ST = 96.80'

FOR -L- PROFILE SEE SHTS. 91-92
FOR -Y5RPA- PROFILE SEE SHT. 142

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SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	273+50.00	276+49.89	LT

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

MATCHLINE -L- STA. 269+00 SEE SHEET 23

MATCHLINE -L- STA. 282+00 SEE SHEET 25

PERGO INC.
DB 9039 - PG 2178

GREENFIELD 40 ASSOC.
DB 12054 - PG 742
PB 2010 - PG 442

CHANNEL CHANGE
GREENFIELD 40 ASSOC.W/CL I RIPRAP SEE DETAIL V
DB 12054 - PG 742
PB 2009 - PG 132
RIP RAP AT EMBANKMENT SEE DETAIL BA

REMOVE EXIST.C/A FENCE

PROP.WW FENCE

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL T

LATERAL V SWALE SEE DETAIL AN

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

BDO 2410

30" CSP 2 ELBOWS

15" CSP 2 ELBOWS

15" CSP 2 ELBOWS

CONV. DI to JB w/MH 2404

24" RCP-III REMOVE

2GIA-WSS 2405

CAT-1 8:1

PROP. SBG 2427

2|2GIB-WSF 2408

GREU TL-3 8:1

2GIB-WSS 2417

15" RCP-III 2418

RETAIN

Conv. DI TO JB w/MH

I-40 WBL 23' CONC

I-40 EBL 23' CONC

REMOVE EXIST. CABLE GUIDERAIL

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

TB 2GIA-ST 2403

TB 2GIB-ST 2419

18" RCP-III

TB 2GIB-ST 2420

TB 2GIB-ST 2421

TB 2GIB-ST 2422

15" RCP-III

GREU TL-3

TRENCHLESS INSTALLATION 48" WELDED STEEL BURIED 1.00

-L- 275+00

-L- 270+00

-L- 280+00

S 30° 31' 05.4" E

-L- ST Sta. 278+23.01

-L- CS Sta. 276+73.01

75' TYP.

2GID-WSS 2430

PROP. SOUND BARRIER

2GID-WSF 2431

END SOUND BARRIER -L- STA. 280+19.30

2GIB-WSS 2413

15" RCP-III

2GIB-WSS 2428

2414

BM#21

+40.00 EX. ROW

-L- +60.00 165' RT

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

+20.00 EX. ROW, 205.00'

+85.00 205.00'

+05.00 EX. ROW

+48.00 EX. ROW

+30.00 133.00'

+83.66 176.00'

+65.00 162.93'

+05.00 160.00'

+00.00 168.00'

+35.00 EX. ROW

+40.00 EX. ROW

+85.00 220.00'

RIP RAP AT EMBANKMENT SEE DETAIL BA

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL T

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

MAINTAIN ACCESS TO EXISTING SEWER JB FOR MAINTENANCE, AVOID ARMORING WITH CL I RIPRAP

SP DET HW

PDE

2412

2415

2416

2431

2432

2433

REMOVE EXIST.C/A FENCE

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

JAMES M. NICHOLSON
DB 9968 - PG 1766
PB 2011 - PG 765
21

ASHTON VILLAGE LIMITED PARTNERSHIP
DB 12586 - PG 68

ASHTON VILLAGE LIMITED PARTNERSHIP
DB 11720 - PG 47
PB 2003 - PG 333
21A

GARNER LAND COMPANY LLC
DB 8841 - PG 198

SEDIMENT BASIN

CONC RISER

70' POWER EASEMENT

20' SANITARY SEWER EASEMENT

8" SANITARY SEWER EASEMENT

S 84°03'03" E 195.79'

N 84°37'32" E 166.80'

N 63°22'03" E 86.60'

S 59°28'13" W 433.22'

N 59°35'24" E 516.89'

S 81°17'54" W 386.14'

8" OUT=305.53'

-L-	
PI Sta 271+02.84	PIs Sta 277+23.01
△ = 5° 41' 45.8" (LT)	Θs = 0° 22' 27.5"
D = 0° 29' 56.7"	Ls = 150.00'
L = 1,141.29'	LT = 100.00'
T = 571.11'	ST = 50.00'
R = 11,480.00'	
SE = RC	
V = 75 MPH	

FOR -L- PROFILE SEE SHTS. 92-93

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mjabl

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

GREENFIELD 40 ASSOC.
DB 12054 - PG 742
PB 2010 - PG 442

GREENFIELD 40 ASSOC.
DB 12054 - PG 742
PB 2009 - PG 132

PENSKE TRUCK LEASING CO. L.P.
DB 14018 - PG 2071
PB 2011 - PG 154

MATCHLINE -L- STA. 282+00 SEE SHEET 24

MATCHLINE -L- STA. 295+00 SEE SHEET 26

-L- TS Sta. 292+63.21

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

REMOVE EXIST.C/A FENCE

PROP WW FENCE

48" WW & ISBW

40 TONS CL I RIP RAP W/78 SY GEOTEXTILE LENGTH=35' (SEE DETAIL BC)

CUT/FILL TRANSITION 2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH=5' (SEE DETAIL BB)

15" RCP-III

2GIB-WSF

2GID-WSS

2GIB-WSS

42" ELBOWS

15" CSP ELBOWS

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 42" HDPE (BURIED 1.0')

TRENCHLESS INSTALLATION 42" HDPE (NOT BURIED)

REMOVE EXIST.CABLE GUIDERAIL

REMOVE DI

285+00

290+00

S 30° 31' 05.4" E

T.I. 66" W.S.

T.I. 42" W.S.

SP. DET. TB 2GIA-ST

TB 2GIB-ST

2505

2504

2509

2508

2506

2510

2511

2516

2515

2514

2503 HW

2507 HW

2512

2513

2507 2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

BERM 4' BASE DITCH SEE DETAIL N

LATERAL BASE SWALE SEE DETAIL U

LATERAL BASE DITCH SEE DETAIL AA

LATERAL 4' BASE DITCH SEE DETAIL AA

CHANNEL CHANGE W/CL I RIPRAP ON BANKS ONLY SEE DETAIL V

GREU TL-3

CAT-1

BZ 1

BZ 2

65' TYP.

+33.21

+80.00
170.00

+25.00
EX. ROW

+05.00
EX. ROW

EXISTING R/W

R/W MON

EXISTING WW

70' POWER EASEMENT

240' POWER EASEMENT

BM#22

I-40 WBL 23' CONC

I-40 EBL 23' CONC

10' CONC

4' CONC

72" CMP

BST PA

CONC

GARNER LAND COMPANY LLC
DB 8841 - PG 198

GARNER LAND COMPANY LLC
DB 8841 - PG 198

-L-
PIs Sta 294+36.54
Θs = 1° 18' 07.8"
Ls = 260.00'
LT = 173.34'
ST = 86.67'

FOR -L- PROFILE SEE SHTS. 93-94

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mjabl

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

PENSKE TRUCK LEASING CO. L.P.
DB 14018 - PG 2071
PB 2011 - PG 154

GREENFIELD 40 ASSOCIATES LLC
DB 12054 - PG 742
PB 2011 - PG 154

SBH RALEIGH LLC
DB 14392 - PG 2377
PB 2011 - PG 587

JEFFERY K. WILSON
DB 7548 - PG 770

S 89°02'15" W
434.24'

S 01°25'49" E
381.96'

MATCHLINE -L- STA. 295+00 SEE SHEET 25

MATCHLINE -L- STA. 308+00 SEE SHEET 27

-L- SC Sta. 295+23.21

REMOVE EXIST.C/A FENCE

PROP WW FENCE

REMOVE EXIST.CABLE GUIDERAIL

300+00

305+00

-L-

EXISTING R/W

48" WW & ISRW

R/W MON

3 TONS CL B RIP RAP
W/10 SY GEOTEXTILE

5 TONS CL B RIP RAP
W/14 SY GEOTEXTILE

CLEAN OUT
PIPE

Conv. DI
TO JB w/MH

18" CSP
2 ELBOWS

REMOVE

BDO

BERM V DITCH
SEE DETAIL A

SPECIAL CUT DITCH
SEE DETAIL B

24" RCP-III

COLLAR

10' WIDE BERM
TOP ELEV.=314.5'
SEE DETAIL J

-L- +60.00
EX. ROW

+90.00
135.00'

+70.00
EX. ROW

CAT-1

GREU TL-3

8:1

12' PS

10' CONC

4' CONC

EOT

I-40 WBL 23' CONC

I-40 EBL 23' CONC

RETAIN

24" RCP-III
TB 2GIB-ST

TB 2GIB-ST

2601 2603 2604 2606 2607 2608 2610

GARNER LAND COMPANY LLC
DB 8841 - PG 198

JEFFERY K. WILSON
DB 7548 - PG 770

22

-L-
PIs Sta 294+36.54
Θs = 1° 18' 07.8"
Ls = 260.00'
LT = 173.34'
ST = 86.67'

FOR -L- PROFILE SEE SHTS. 94-95

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mwahl

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

N. D. SAULS JR.
DB 06-E PG 241I

N 03°04'28" E
1768.57'

JEFFERY K. WILSON
DB 7548 - PG 770

22

MATCHLINE -L- STA. 308+00 SEE SHEET 26

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

PROP WW FENCE

COLLAR AND EXTEND 18" RCP-III

PROP. SIGN

REMOVE EXIST.C/A FENCE

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

LATERAL BASE DITCH W/CL B RIPRAP SEE DETAIL T
-L- +91.45
EX. ROW

2GIB-WSS C
18" RCP-III
FS 18" RCP-III
REMOVE 18" RCP
Conv. DI TO JB w/MH

REMOVE EXIST.CABLE GUIDERAIL

310+00
315+00
320+00
-L-

18" RCP-III
15" RCP-III
TB 2GIB-ST

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

TRENCHLESS INSTALLATION 8" WATER STEEL

2GIB-WSS
FS
18" CSP
2 ELBOWS
CONC HW

SPECIAL CUT DITCH SEE DETAIL B

PLUG & FILL W/FLOWABLE FILL

BDO

BERM V DITCH SEE DETAIL A

LATERAL V DITCH W/CL I RIPRAP SEE DETAIL AB

PROP WW FENCE

REMOVE EXIST.C/A FENCE

LATERAL BASE DITCH W/CL I RIPRAP SEE DETAIL T

PROP. SBG

GREU TL-3

CAT-1

8:1

I-40 WBL 23' CONC
I-40 EBL 23' CONC
10' CONC
48" WW & JSBW
48" WW & ISBW
EXISTING R/W
R/W MON

JEFFERY K. WILSON
DB 7548 - PG 770

N 75°21'00" W
273.71'

MATCHLINE -L- STA. 321+00 SEE SHEET 28

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	320+00.00	321+00.00	RT

-L-
PI Sta 311+21.91
△ = 31° 13' 50.7" (RT)
D = 1° 00' 06.0"
L = 3,117.85'
T = 1,598.71'
R = 5,720.00'
SE = 0.04
V = 75 MPH

FOR -L- PROFILE SEE SHTS. 95-96

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

N. D. SAULS JR.
DB 06-E PG 241I
23

JEFFERY K. WILSON
DB 7548 - PG 770
22

-L- CS Sta. 326+41.06

-L- ST Sta. 329+01.06

+70.00 250.00'
+10.00 250.00'
E
RIP RAP AT EMBANKMENT SEE DETAIL BA
LATERAL BASE DITCH W/CL B RIPRAP SEE DETAIL T
+85.00 174.97'
2812
COLLAR 281I
18" RCP-III
2825 SP. DET. JB w/MH
LATERAL 4' BASE SWALE SEE DETAIL U
TRENCHLESS INSTALLATION REINFORCED STEEL (NOT FILLED) STRUCTURAL LINER
2826
+10.00 200.00'
+55.00 270.00'
SEE C600 OUTLET DETAIL -L2- STA. 322+93
-L- +55.00 195.00'
RIP RAP AT EMBANKMENT SEE DETAIL BA
+45.00 174.34'
11 TONS CL B RIP RAP W/28 SY GEOTEXTILE
2827
10' WIDE BERM TOP ELEV.=277.5' SEE DETAIL J
+65.00 195.00'
REMOVE EXIST.C/A FENCE
PROP WW FENCE
36" RCP-III
2821 4OTCB
+61.30 EX. ROW
65' TYP.
11 TONS CL B RIP RAP W/28 SY GEOTEXTILE
+00.00 EX. ROW, 110.00'
2820
36" RCP-III
2GIA-WSS
2819
30" RCP-III
2818
GREU TL-3
REMOVE
Conv. DI TO JB w/MH
REMOVE EXIST.CABLE GUIDERAIL
325+00
330+00
15" RCP-III
REMOVE DI
TB 2GIB-ST
2803
2804
2805
2816 TB 2GIB-ST
2817 TB 2GIA-ST
S 3°19'01.0" W
REMOVE
Conv. DI TO JB w/MH
15" RCP-III
2815
2814 2GID-WSS
TB 2GIB-ST
2808
2809
2810
2813
15" RCP-III
PROP. SBG
2828 2GIB-WSF
2801 2GIB-WSF
15" CSP
45° ELBOW
+80.00 EX. ROW
TIE FENCE TO HW
2823
72" RCP-III
CONC TOE WALL
SP. DET. HW
2827
CHANNEL BLOCK SEE DETAIL Z
CAT-1 8:1
2807
3 TONS CL B RIP RAP W/10 SY GEOTEXTILE
LATERAL BASE DITCH W/CL B RIPRAP SEE DETAIL T
+72.00 EX. ROW
PROP WW FENCE
REMOVE EXIST.C/A FENCE
PIPE EX. ROW CLEANOUT
-L- +00.00
+00.00 125.00'
+15.00 EX. ROW
BM#24
2802
LATERAL BASE DITCH W/CL I RIPRAP SEE DETAIL T
+55.96 169.90'
LATERAL BASE SWALE SEE DETAIL U
+80.00 177.83'
RIP RAP AT EMBANKMENT SEE DETAIL BA
+67.00 EX. ROW
TIE FENCE TO HW
+05.00 EX. ROW
+20.00 173.00'
CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V
RIP RAP AT EMBANKMENT SEE DETAIL BA
+60.00 ROW, 230.00'
+20.00 255.00'
SEE C600 INLET DETAIL -L2- STA. 322+93
S 10°17'41" E 268.55'
S 14°27'19" W 170.00'
S 09°12'19" W 600.00'
S 04°23' 185.4'
S 78°02'42" E 141.35'
S 13°47'11" W 163.42'
N. D. SAULS JR.
DB 06-E PG 241I
23
LLC-4W PARTNERSHIP
DB 4550 - PG 928

MATCHLINE -L- STA. 321+00 SEE SHEET 27

MATCHLINE -L- STA. 334+00 SEE SHEET 29

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	321+00.00	325+50.00	RT

-L-
Pls Sta 327+27.73
Θs = 1°18' 07.8"
Ls = 260.00'
LT = 173.34'
ST = 86.67'

FOR -L- PROFILE SEE SHTS. 96-97

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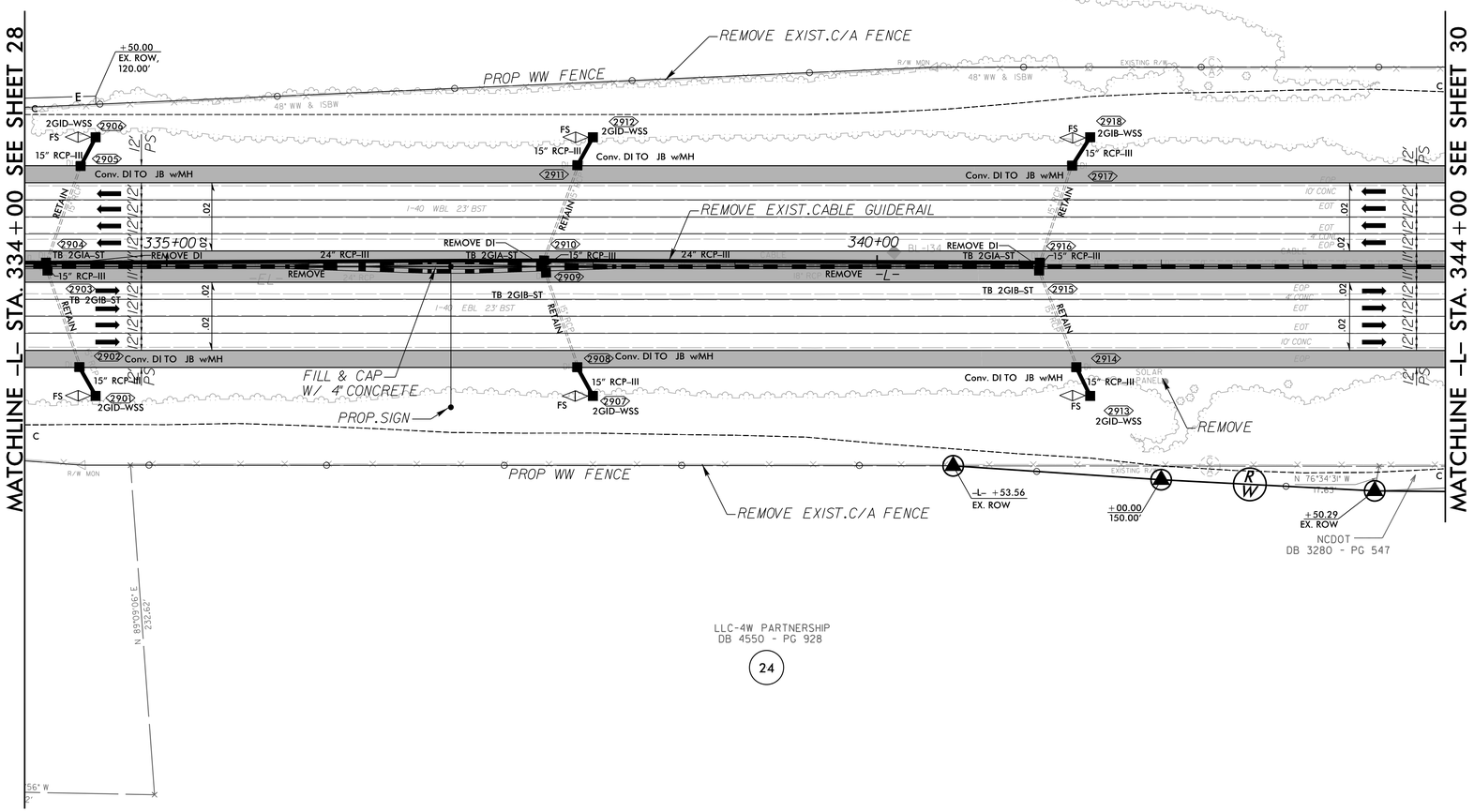
PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

N. D. SAULS JR.
DB 06-E PG 2411
23

LLC-4W PARTNERSHIP
DB 4550 - PG 928
24



FOR –L– PROFILE SEE SHT. 97

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

REVISIONS

ROW REVISION - 04-03-2019 - REVISED PUE FOR PARCEL 26.
ROW REVISION - 04-09-2019 - REVISED PUE TO TIE TO ROW AT STA.18+85 RT FOR PARCEL 23.

8/17/99

MATCHLINE -L- STA. 344+00 SEE SHEET 29

MATCHLINE -L- STA. 357+00 SEE SHEET 31

MATCHLINE -Y6- STA. 20+50 SEE SHEET 62

-Y6- PRC Sta. 20+08.11

-Y6- PRC Sta. 14+05.34

-L- POT Sta. 347+29.68=
-Y6- POC Sta. 17+16.11

-Y6- PC Sta. 12+10.17

BEGIN CONSTRUCTION
-Y6- POT Sta. 11+05.00

BEGIN SOUND BARRIER
-L- STA. 347+47.99
-Y6- +75.00
75.00'

PROP. SOUND BARRIER

N. D. SAULS JR.
DB 06-E PG 241
23

NCDOT
DB 3280 - PG 547

JOHN B. MASSENGILL
DB 10930 - PG 795
PB 1999 - PG 469
26

ELIZABETH Y. BRIGHT
DB 9209 - PG 2443
PB 1999 - PG 469
27

CATHERINE M. WILLIAMS
DB 9935 - PG 288
PB 2002 - PG 917
28

ANGELA M. RICH
DB 9494 - PG 2185
PB 2002 - PG 917

WILLIAM PITTMAN JR.
DB 9612 - PG 2026
PB 2002 - PG 917

LLC-4W PARTNERSHIP
DB 4550 - PG 928
24

MR. & MRS. DAVID B. ROGERS
DB 9458 - PG 2617
PB 2002 - PG 917

UKRAINIAN CATHOLIC DIOCESE OF ST. JA
DB 12246 - PG 1538
PB 1999 - PG 469
25

REMOVE EXIST.C/A FENCE
PROP WW FENCE
REMOVE EXIST.CABLE GUIDERAIL
FILL & CAP I-40 WBL 23' BST W/ 4" CONCRETE
I-40 EBL 23' BST
2 TONS CL B RIPRAP W/7 SY GEOTEXTILE
(2)2GIB-NSF
2GID-WSS
Conv. DI TO JB w/MH
REMOVE DI
TB 2GIB-ST
TB 2GIA-ST
15" RCP-III
18" RCP-III
24" RCP-III
15" CSP 2 ELBOWS
RETAIN
REMOVE
PUE
SPECIAL CUT DITCH SEE DETAIL B
S 3°19'01.0" W
S 00°59'42" W 259.41'
N 09°29'21" E 228.93'
S 09°39'54" W 290.62'
S 80°29'11" E
N 13°03'36" E 215.59'
N 02°21'38" E 207.44'
S 86°50'46" E 29.46'
S 86°36'37" E 184.61'
N 86°36'16" W 211.59'
N 86°43'23" W 183.96'
N 03°16'37" E 163.39'
N 03°16'37" E 91.91'
N 86°43'23" W 15.00'
N 03°16'37" E 30.01'
S 86°43'22" E 30.01'
N 03°17'04" E 295.03'
N 60°45'00" W 71.25'
N 30°40'59" W 108.18'
R=65.00' L=22.56'
R=65.00' L=24.36'
S 86°54'28" E 24.47'
EXIST.
50' TAPER
PROP. SBG -Y6-
TYPE B-77
GREU TL-3
PROP. SBG
EXISTING R/W
R/W MON
CABINET
HTR
ISFD
WD
GR
EOT
10' CONC
4' CONC
48" WW & ISBW
60" SEPTIC EASEMENT
LAUROB LN 12' BST

-Y6-		
PI Sta 13+08.12	PI Sta 17+08.48	PI Sta 20+92.18
Δ = 12° 01' 26.6" (RT)	Δ = 15° 04' 52.2" (LT)	Δ = 10° 19' 53.9" (RT)
D = 6° 09' 39.0"	D = 2° 30' 07.2"	D = 6° 09' 39.0"
L = 195.17'	L = 602.76'	L = 167.70'
T = 97.94'	T = 303.13'	T = 84.08'
R = 930.00'	R = 2,290.00'	R = 930.00'
SE = 0.04	SE = 0.03	0.04
V = 50 mph	V = 50 mph	50 mph

BEGIN BRIDGE
-Y6- POC Sta 16+13.45

END BRIDGE
-Y6- POC Sta 18+17.92

BEGIN APPROACH SLAB
-Y6- POC Sta 15+87.76
-L- POT Sta. 347+29.08 =
-Y6- POC Sta.17+16.11
D = 80° 0' 00"

END APPROACH SLAB
-Y6- POC Sta 18+43.14

SITE 8 BRIDGE SKETCH

FOR -L- PROFILE SEE SHTS. 97-98
FOR -Y6- PROFILE SEE SHT. 148

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 357+00 SEE SHEET 30

MATCHLINE –L– STA. 370+00 SEE SHEET 32

N. D. SAULS JR.
DB 06-E PG 241I
23

BOBBY BANKS
DB 718 - PG 157
DB 2314 - PG 0-E-
DB 3893 - PG 892
PB 1983 - PG 1249
23B

11 TONS CL B RIP RAP W/28 SY GEOTEXTILE 3107
*FLARE RIP RAP OUT FOR MORE DISPERSION IN BUFFER ZONE

SP. LAT. 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

CHANNEL BLOCK SEE DETAIL Z

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE ON BANKS ONLY LENGTH=5' (SEE DETAIL BB)

PROP. SIGN

REMOVE EXIST.CABLE GUIDERAIL

REMOVE EXIST.C/A FENCE

PROP WW FENCE

PROP SOUND BARRIER

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

DENNIS L. POWELL
DB 9126 - PG 1186
PB 2000 - PG 192

WAUDDELL J. ROBINSON JR.
DB 11287 - PG 1803
PB 2000 - PG 192

CHARLIE L. FOBBS
DB 14693 - PG 1196
PB 2000 - PG 192

MR. & MRS. HARRIS D. FAULK
DB 9274 - PG 1979
PB 2000 - PG 193

MARVA LEWIS
DB 9527 - PG 1699
PB 2000 - PG 193

VICTORIA LYNN SCALLY
DB 11052 - PG 1090
PB 2000 - PG 193

WAUDDELL J. ROBINSON JR.
DB 11920 - PG 2176
PB 2000 - PG 193

WILLIAM C. MCLAMB
DB 14523 - PG 2030
PB 2000 - PG 193

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	–L–	361+49.92	370+00.00	LT

FOR –L– PROFILE SEE SHTS. 98–99

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mjohn

8/17/99

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –L– STA. 370+00 SEE SHEET 31

MATCHLINE –L– STA. 383+00 SEE SHEET 33

BOBBY BANKS
DB 718 - PG 157
DB 2314 - PG 0-E-
DB 3893 - PG 892
PB 1983 - PG 1249

S 01°43'27" W
420.05'

S 88°04'39" E
228.49'

ROY R. SMITH
DB 11819 - PG 1329
PB 1991 - PG 1273

29A

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

SP. LAT. 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

+50.00
149.00

+62.00
EX. ROW

PROP WW FENCE

274.18*

3203

3202

3201

2GIB-WSE

PROP. SBG

15" RCP-III

REMOVE EXIST.CABLE GUIDERAIL

REMOVE EXIST.C/A FENCE

ROY R. SMITH
DB 2833 PG 14

29A

BZ249.47
149.37'

S 03°19'55" W
162.00'

S 86°40'09" E
150.00'

RIP RAP LINE ENTIRE PENINSULA BETWEEN STREAMS FOR STABILIZATION
10 TONS CL B RIP RAP
W/28 SY GEOTEXTILE

+81.00
156.00'

+00.00
EXIST. ROW

ROY R. SMITH
DB 2833 - PG 14
PB 1991 - PG 1273

3 TONS CL B RIP RAP
W/10 SY GEOTEXTILE
*BUILD UP RIPRAP TO
PERCHED OUTLET ELEVATION

S 88°16'33" E
145.67'

N 3°52'25" W
3.50'

259.98*

3214

370+00

375+00

380+00

I-40 WBL 23' BST

I-40 EBL 23' BST

TB 2GIB-ST

3208

3207

REMOVE DI

3213

3212

S 3°19'01.0" W

–L–

32'

PROP. SOUND BARRIER

3204

2GIB-WSF

15" CSP
2 ELBOWS

3205

END SOUND BARRIER
–L– STA 374+01.39

8:1
TYPE B-77

269.69
267.50
267.81

WILLIAM C. MCLAMB
DB 14523 - PG 2030
PB 2000 - PG 193

SP. LAT. 4' BASE DITCH
W/CL B RIPRAP
SEE DETAIL AD

+85.00
EX. ROW

268.55

+00.00
160.00'

+30.00
EX. ROW

REMOVE EXIST.C/A FENCE

S 68°16'09" E
107.81'

S 88°57'16" E
124.47'

RIDGEVIEW SUBDIVISION HOMEOWNERS ASSOC.
DB 10432 - PG 1405
PB 2000 - PG 193

N 01°15'36" E
44.54'

N 3°01'28" W
81.83'

N 29°00'56" W
98.04'

N 75°28'12" W
54.21'

N 14°16'40" W
109.04'

'55" W
13'

PROP WW FENCE

260.38
259.61
259.82
259.71

ROY R. SMITH
DB 2833 - PG 14
PB 1991 - PG 1273

2 TONS CL B RIP RAP
W/7 SY GEOTEXTILE
ON BANKS ONLY
LENGTH = 5'
(SEE DETAIL BB)

3211

N 04°17'50" E
1277.74'

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	–L–	370+00.00	373+62.48	LT
SBG	–L–	375+45.89	381+51.39	RT

FOR –L– PROFILE SEE SHTS. 99–100

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mwahl

8/17/99

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –L– STA. 383+00 SEE SHEET 32

MATCHLINE –L– STA. 396+00 SEE SHEET 34

ROY R. SMITH
DB 3530 - PG 131
PB 1977 - PG 541

BEATRICE M. MARLOW
DB 816 - PG 0-E-
PB 1977 - PG 541

ROY R. SMITH
DB 2833 - PG 14
PB 1991 - PG 245

KENNETH REID WALTERS
DB 11655 - PG 1929
34A

ROY R. SMITH
DB 2833 - PG 14
PB 1991 - PG 1273

KENNETH REID WALTERS
DB 11655 - PG 1929
34A

REMOVE EXIST.C/A FENCE

PROP WW FENCE

FILL & CAP W/ 4" CONCRETE

REMOVE EXIST.CABLE GUIDERAIL

SEE C700 OUTLET DETAIL –L2– STA. 386+82
3 TONS CL B RIP RAP W/10 SY GEOTEXTILE
3305

8 TONS CL B RIP RAP W/21 SY GEOTEXTILE
*BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

SPECIAL CUT SWALE SEE DETAIL E

BERM V DITCH SEE DETAIL A

BERM V DITCH SEE DETAIL A

LATERAL BASE SWALE SEE DETAIL U

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE
RIP RAP AT EMBANKMENT SEE DETAIL BA

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

LATERAL V DITCH SEE DETAIL H

RIP RAP AT EMBANKMENT SEE DETAIL BA

SEE C700 INLET DETAIL –L2– STA. 386+82

PROP. SIGN

TRENCHLESS INSTALLATION METHOD (NOT BORING)

SHOWN ACCORDING TO MAKE CO. GIS

SHOWN ACCORDING TO MARKED PUBLIC UTILITIES BY CITY OF RALEIGH
POSSIBLY ABANDONED BY RALEIGH PUBLIC UTILITIES

SHOWN ACCORDING TO MARKED PUBLIC UTILITIES

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	395+74.98	396+00.00	LT

FOR –L– PROFILE SEE SHTS. 100–101

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 396+00 SEE SHEET 33

MATCHLINE –L– STA. 409+00 SEE SHEET 35

S 03°45'23" W
358.02'

S 43°37'
377.00'

S 10°37'15" W
360.79'

KENNETH REID WALTERS
DB 11655 - PG 1929

34A

DAVID PENNY EXEC.
DB 2238 - PG 0-E-

SEE C800 OUTLET DETAIL –L2– STA. 405+38

+25.27 EX. ROW

PDE

+70.00 151.93'

+80.00 EX. ROW

33 TONS CL I RIP RAP W/62 SY GEOTEXTILE ON BANKS ONLY LENGTH=45' (SEE DETAIL BB)

+43.54 106.54'

JB w/MH 3402

15" CSP 2 ELBOWS

54" RCP-III (BURIED 1.0')

3403

PROP WW FENCE

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATIONF

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE *BUILD UP RIPRAP TO PERCHED OUTLET ELEVATION

+43.00 EX. ROW

+75.00 169.00'

+37.57 EX. ROW

REMOVE EXIST.C/A FENCE

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

3415

3422

COLLAR AND EXTEND 66" RCP-III

+05.86 123.97'

15" CSP 2 ELBOWS

3409

3408

RETAIN

3411

RETAIN

REMOVE

2GIB-WSF

REMOVE CB

PROP. SBG

3410 2GIB-WSF

REMOVE DI

REMOVE

REMOVE DI

PLUG & FILL W/ FLOWABLE FILL

BZ 2

TRENCHLESS INSTALLATION OF 72" WELDED STEEL LINER

3414 2GIB-WSF

PLUG & FILL W/FLOWABLE FILL

3401

REMOVE EXIST.CABLE GUIDERAIL

I-40 WBL 35' CONC

10' BST

400+00

405+00

3413

TB 2GIB-ST

15" RCP-III

SP. DET. TB 2GIA-ST

REMOVE DI

S 3°19'01.0" W

–L–

REMOVE DI

3412

PLUG & FILL W/FLOWABLE FILL

I-40 EBL 47' CONC

8:1

AT-1

REMOVE DI & 15" 24" RCP-III

24" RCP-III

3405

JB w/MH

2GIB-WSF 3416

2GIB-WSF 3417

REMOVE DI

PROP. SBG

GREU TL-3

15" RCP-III

15" CSP 2 ELBOWS

REMOVE 15" CMP

COLLAR AND EXTEND 66" RCP-III 3423

CAT-1

3421

SP. DET. HW

+97.03 124.36'

REMOVE 24" RCP

Conv. DI TO JB w/MH 3419

3406

2GIA-WSS

+50.00 EX. ROW

LATERAL V DITCH SEE DETAIL H

3404

PROP WW FENCE

+80.30 130.26'

10.00 EX. ROW 35.34'

LATERAL V SWALE SEE DETAIL AN

+15.00 160.00'

300' TAPER

+30.00

TOE PROTECTION W/CL B RIPRAP SEE DETAIL O

+00.00 EX. ROW

+28.00 EX. ROW

LATERAL V DITCH W/CL I RIPRAP SEE DETAIL AB

3418

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

+05.00 220.00'

REMOVE EXIST.C/A FENCE

RIP RAP AT EMBANKMENT SEE DETAIL BA

LATERAL V SWALE SEE DETAIL AN

3427

SEE C800 INLET DETAIL –L2– STA. 405+38

+75.00 190.00'

+40.75 EX. ROW

SP. LAT. 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AD

RIP RAP AT EMBANKMENT SEE DETAIL BA

+95.00 EX. ROW

+55.00 235.00'

+25.00 155.00', 235.00'

DAVID PENNY EXEC.
DB 2238 - PG 0-E-

KENNETH REID WALTERS
DB 11655 - PG 1929

34A

34

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	–L–	396+00.00	409+00.00	LT

FOR –L– PROFILE SEE SHTS. 101–102

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mjohnson

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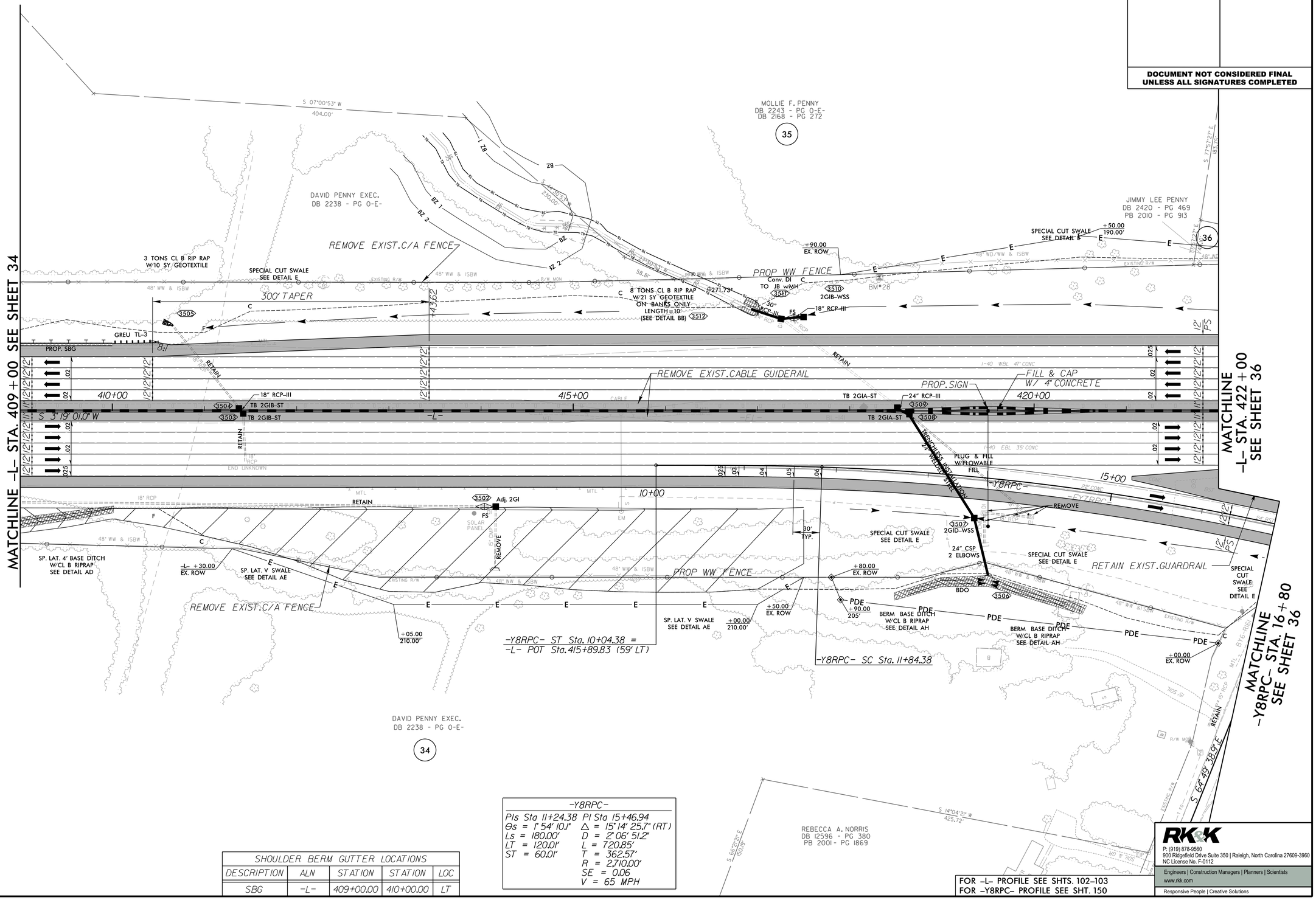
NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	409+00.00	410+00.00	LT

-Y8RPC-	
PIs Sta 11+24.38	PI Sta 15+46.94
Θs = 1° 54' 10.1"	Δ = 15° 14' 25.7" (RT)
Ls = 180.00'	D = 2° 06' 51.2"
LT = 120.01'	L = 720.85'
ST = 60.01'	T = 362.57'
	R = 2,710.00'
	SE = 0.06
	V = 65 MPH

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mlaughlin

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MOLLIE F. PENNY
DB 2243 - PG 0-E-
DB 2168 - PG 272

JIMMY LEE PENNY
DB 2420 - PG 469
PB 2010 - PG 913

MARY POWELL WARD WHITE
DB 3244 - PG 4

ALBERT R. PEARSALL
DB 1924 - PG 51

KEVIN G. BAILEY
DB 13520 - PG 1321

MATCHLINE -L- STA. 422+00
SEE SHEET 35

MATCHLINE -L- STA. 435+00
SEE SHEET 37

MATCHLINE -Y8RPC- STA. 16+80
SEE SHEET 35

MATCHLINE -Y8RPC- STA. 29+00
SEE SHEET 37

-Y7- PCC Sta. 19+71.74

-Y7- PC Sta. 18+24.06

-L- POT Sta. 423+58.45=
-Y7- POT Sta. 15+95.01

-Y7- PT Sta. 14+51.29=
-Y8RPC- POC Sta. 17+20.67

END GRADE
-Y8RPC- POC Sta. 20+00.00
BEGIN OVERLAY

-Y8RPC- CS Sta. 19+05.23

-Y7- PT Sta. 13+77.00

-Y7- PC Sta. 12+71.03

-Y8RPC- ST Sta. 20+85.23

-Y8RPC-
PIs Sta 19+65.23
Δs = 1° 54' 10.1"
Ls = 180.00'
LT = 120.01'
ST = 60.01'

CONTRACTOR TO FIELD ADJUST (WITH MATTING OR RIPRAP) LOCATIONS OF CONCENTRATED FLOW TRAVELING ONSITE INTO PROPOSED DITCHES

BERM BASE DITCH W/CL B RIPRAP SEE DETAIL AH

300' TAPER

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT SWALE SEE DETAIL E

REMOVE EXIST.C/A FENCE

PROP WW FENCE

30" CSP 2 ELBOWS

4OTCB

2GID-WSS

REMOVE JB

REMOVE

REMOVE DI

REMOVE EXIST.CABLE GUIDERAIL

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 30" WELDED STEEL

T.I. 30" W.S.

TB 2GIB-ST

425+00

430+00

435+00

S 62° 55' 48.6" E

S 3° 19' 01.0" W

S 22° 21' 47.0" W

8 TONS CL B RIPRAP W/21 SY GEOTEXTILE

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

STANDARD BASE DITCH SEE DETAIL AT

RESURFACING

RETAIN SYSTEM

RETAIN

FOR -L- PROFILE SEE SHTS. 103-104
FOR -Y8RPC- PROFILE SEE SHT. 150

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mjohnson

REVISIONS

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	444+50.12	448+50.00	RT
SBG	-L-	459+00.00	461+00.00	RT

-L- (I-40) US 70 BUS

ADT 2018 — 124,000 — 44,900
2,300 / 3,900 — 5,500 / 5,100 — 72,700 / 94,100
I-40: 98,800 / 152,000 — 5,200 / 8,700 — 3,800 / 8,800
15,000 / 22,700
US 70 BUS

PROJECT REFERENCE NO. I-5111/I-6739 — SHEET NO. 37
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -L- STA. 435+00 SEE SHEET 36

MATCHLINE -Y8RPC- STA. 29+00 SEE SHEET 36

MATCHLINE -Y8RPC- STA. 32+50 SEE SHEET 63

MATCHLINE -Y8LPC- STA. 43+00 SEE SHEET 63

MATCHLINE -Y8RPC- STA. 50+00 SEE SHEET 63

MATCHLINE -L- STA. 461+00 SEE SHEET 38

-Y8RPB- ST Sta. 10+00.00 = -L- POT Sta. 436+43.38 (TFRT)

-Y8RPB- SC Sta. 12+40.00

-Y8RPB- POC Sta. 17+50.00 BEGIN OVERLAY

-Y8LPC- SC Sta. 12+40.00

-Y8LPC- ST Sta. 10+00.00 = -L- POT Sta. 440+51.14 (LT)

END GRADE -Y8LPC- POC Sta. 14+55.00 BEGIN OVERLAY

-Y8LPC- SC Sta. 22+16.43

-Y8LPC- CS Sta. 19+21.06

-Y8RPC- SC Sta. 42+06.20

-Y8RPC- TS Sta. 32+16.56

-Y8RPC- SC Sta. 35+41.80

-L- POT Sta. 450+60.24 = -Y8LPC- POC Sta. 32+37.83

-L- POT Sta. 453+26.94 = -Y8RPC- POC Sta. 50+43.56

RESURFACING

TIE DOWN OVERLAY

REMOVE EXIST. C/A FENCE

REMOVE EXIST. CABLE GUIDERAIL

PROP WM FENCE

RETAIN GUARDRAIL

300' TAPER

100' TAPER

1220' ACCELLANE

A

B

C

D

JOYCE J. NIXON DB 1626 - PG 258

MARY POWELL WARD WHITE DB 3244 - PG 4

WILLIAM T. WARD JR. DB 1343 - PG 0-EQ

NC DEPARTMENT OF TRANSPORTATION DB 1460 - PG 60

CH YOUNG PROPERTIES, LLC. DB 14220 PG 1383 BM 1972 PG 283

-Y8RPB-				-Y8RPC-				-Y8LPC-			
PI Sta 11+60.01	PI Sta 34+13.75	PI Sta 37+15.89		PI Sta 40+09.69	PI Sta 56+28.25		PI Sta 11+61.76	PI Sta 21+52.28	PI Sta 20+22.61	PI Sta 39+46.18	
Θs = 2°05' 46.3"	Θs = 10°54' 53.4"	Δ = 29° 30' 25.4" (LT)		Θs = 10°54' 53.4"	Δ = 26° 19' 43.2" (LT)		Θs = 26° 01' 08.0"	Δ = 141° 41' 30.3" (LT)	Θs = 32° 00' 39.0"	Δ = 33° 31' 24.2" (LT)	
Ls = 240.00'	Ls = 296.27'	D = 7° 03' 14.8"		Ls = 296.27'	D = 01° 56' 12.5"		Ls = 240.00'	D = 21° 40' 56.1"	Ls = 296.27'	D = 1° 00' 02.9"	
LT = 160.01'	LT = 197.23'	L = 399.12'		LT = 197.23'	L = 2,753.89'		LT = 160.76'	L = 661.16'	LT = 200.16'	L = 1,359.65'	
ST = 80.01'	ST = 98.77'	T = 204.09'		ST = 98.77'	T = 1,422.05'		ST = 81.61'	T = 332.28'	ST = 101.45'	T = 679.75'	
		R = 775.00'			R = 6,080.00'			R = 1,750.00'		R = 5,725.00'	
		SE = EXIST.			SE = EXIST.			SE = 0.08		SE = EXIST.	
		V = EXIST.			V = EXIST.			V = 30 MPH		V = EXIST.	

FOR -L- PROFILE SEE SHTS. 104-106
FOR -Y8LPC- PROFILE SEE SHT. 150
FOR -Y8RPB- PROFILE SEE SHT. 150

GRAPHIC SCALE
50 25 0 50 100
PLANS

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LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -Y8RPA- STA. 22+00 SEE SHEET 63

JOHNSTON COUNTY / WAKE COUNTY

-Y8RPA-

20+00

BEGIN FENCE -Y8RPA- STA.18+52.14

REMOVE EXIST.C/A FENCE -Y8RPA- PCC Sta. 14+01.80

RETAIN & ADJUST EXISTING HAZARDOUS SPILL BASIN AS NEEDED TO SAME APPROX. DIMENSIONS.

REMOVE DI AND EX. 15" RCP

ADJUST DI

3 TONS CL B RIPRAP W/10 SY GEOTEXTILE

STANDARD 'V' DITCH SEE DETAIL S

STANDARD 2' BASE DITCH W/CL B RIPRAP SEE DETAIL F

PROP WW FENCE

11 TONS CL B RIPRAP W/28 SY GEOTEXTILE

36" RCP-IV (NOT BURIED)

PLUG & FILL W/FLOWABLE FILL

HW W/SLUICE GATE

SPECIAL CUT DITCH SEE DETAIL B

ADJUST JB W/MH

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

15+00 -EY7RPD-

COLLAR AND EXTEND 18" RCP-III

MATCHLINE -L- STA. 461+00 SEE SHEET 37

MATCHLINE -L- STA. 474+00 SEE SHEET 39

FILL & CAP W/ 4" CONCRETE

465+00

-L-

REMOVE EXIST.CABLE GUIDERAIL

470+00

S 3°19'01.0" W

TB 2GIB-ST

15" RCP-III

REMOVE SYSTEM

PROP. SBG

(2)-2GIB-WSF

TRENCHLESS INSTALLATION 36" WELDED STEEL

15" CSP 2 ELBOWS

2GIB-WSS

LATERAL V SWALE SEE DETAIL AN

PROP. SIGN 2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

PROP WW FENCE

REMOVE EXIST.C/A FENCE

SPECIAL LATERAL V SWALE SEE DETAIL AE

SPECIAL LATERAL V DITCH SEE DETAIL AJ

RETAIN DI

15 TONS CL I RIPRAP W/30 SY GEOTEXTILE ON BANKS ONLY LENGTH=30' (SEE DETAIL BB)

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	461+00.00	464+00.00	RT

-Y8RPA-
PI Sta 13+16.00
△ = 6° 39' 03.2" (RT)
D = 3° 52' 16.8"
L = 171.80'
T = 86.00'
R = 1,480.00'
SE = 0.08
V = 65 MPH

FOR -L- PROFILE SEE SHTS. 106-107
FOR -Y8RPA- PROFILE SEE SHT. 149

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NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	39
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

USE I-5111BA SURVEY FROM BEGIN PROJECT TO -L- STA. 477+22.89 BK

USE I-5111BB SURVEY FROM -L- STA. 75+39.93 AH TO END OF PROJECT

-L- POT Sta. 477+22.89 BK=
-L- POT Sta.75+39.93 AH
COORDINATE EQUALITY

-Y8RPA- SC Sta. 12+30.00

-Y8RPA- ST Sta. 10+00.00 =
-L- POT Sta.476+76.55 (59' LT)

MATCHLINE -L- STA. 474+00 SEE SHEET 38

PROP. SIGN

28.75' TYP.

10+00

GREU TL-3

-Y8RPA-

FILL & CAP
W/ 4" CONCRETE

475+00

SPECIAL LATERAL V SWALE
SEE DETAIL AE

REMOVE EXIST. C/A FENCE

PROP WW FENCE

WOODS

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL O

RETAIN DI 3902

100'

300' TAPER

3908 RETAIN DI

FS

12' PS

REMOVE TB 2GIB-ST 3903 DI

18" RCP-III 3904 TB 2GIB-ST

80+00

REMOVE DI 3909

TB 2GIB-ST 18" RCP-III 3910 TB 2GIB-ST

INTERSTATE 40 WBL 36" CONC

INTERSTSTE 40 EBL 24" CONC

RETAIN 3911

Conv. DI TO JB w/MH 3905 RETAIN 18" RCP

3906 18" RCP-III FS 2GID-WSS

Conv. DI TO JB w/MH 24" RCP RETAIN

15" RCP-III 2GID-WSS 3912 FS

-L- POT Sta. 477+22.89 BK=
-L- POT Sta.75+39.93 AH
COORDINATE EQUALITY

REMOVE EXIST. C/A FENCE

PROP WW FENCE

WOODS

MATCHLINE -L- STA. 85+00 SEE SHEET 40

EXISTING LIMITS OF C/A
FOR FUTURE R-2828

RW MON

FOR -L- PROFILE SEE SHT. 107

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)

39

MATCHLINE –L– STA. 85+00 SEE SHEET 39

MATCHLINE –L– STA. 98+00 SEE SHEET 41

+90.00 240.00'

+60.00 235' LT

–L– +89.58 EX. ROW

+59.58 EXIST. ROW

REMOVE EXIST.C/A FENCE

PROP WW FENCE

LATERAL 4' BASE DITCH SEE DETAIL R

BIORETENTION BASIN

4026 15 TONS CL I RIPRAP W/20 SY GEOTEXTILE

36" RCP–III

4025 HW F 60" RCP–III

SP. DET. JB w/MH 4021

RISER 4022 STRUCTURE 4016

2GIB–WSF 4017

PROP. SBG

4001 2GID–WSS

FS 1

REMOVE DI & 20' EX. 15"

15" RCP–III

4002 JB w/MH

12' PS

RETAIN

CAT–1

JB w/MH

4012

24" RCP–III

4013 F

18" RCP–III

18" RCP–III

8:1

REMOVE EXIST.CABLE GUIDERAIL

REMOVE 7' & EX. DI

4011

TB 2GIB–ST

15" RCP–III

PLUG & FILL W/FLOWABLE FILL

4003 18" RCP–III REMOVE DI

TB 2GIB–ST

4004

15" RCP–III

90+00

95+00

S 3°19'08" W

TB 2GIB–ST 4009

TB 2GIB–ST 4010

15" RCP–III

18" RCP–III

PLUG & FILL W/FLOWABLE FILL

TB 2GIB–ST 4008

REMOVE DI

RETAIN AND CLEAN OUT 60" EQUILIZER PIPE

TB 2GIB–ST

4005

Conv. DI TO JB w/MH

12' PS

30" RCP–III

4006

FS 1

REMOVE 30" RCP 3 SECTIONS

2GIA–WSS

C

F

4007 8 TONS CL B RIP RAP W/21 SY GEOTEXTILE

LATERAL 4' BASE SWALE SEE DETAIL U

REMOVE EXIST.C/A FENCE

LATERAL 4' BASE SWALE SEE DETAIL U

4014 2GIA–WSF

4027 2GIA–WSF

24" RCP–III

PROP. SBG

COLLAR AND EXTEND 60" RCP–III

4019

GREU TL–3

24" RCP–III

4015

ARMOR SLOPE W/ CL II RIPRAP UP TO 100–YR ELEV=201.7'

4018 HW

R/W MON

BIORETENTION BASIN

RISER STRUCTURE 4023

42" RCP–III

4024

+65.00 160.00'

20 TONS CL I RIPRAP W/39 SY GEOTEXTILE

–L– +39.58 EX. ROW

+60.00 200.00'

+40.00 295.00'

+60.00 295.00'

THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)

39

EXISTING R/W

RW MON

WLB

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	–L–	95+53.79	98+00.00	LT
SBG	–L–	95+00.00	98+00.00	RT

FOR –L– PROFILE SEE SHT. 108

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mwhite

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	41
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 98+00 SEE SHEET 40

MATCHLINE –L– STA. 111+00 SEE SHEET 42

THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)
39

SON-LA CLASSIC DEVELOPMENT COMPANY, LLC
DB 1832 PG 333
40

Q10 = 4.1 cfs
V10 = 0.68 ft/s

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

ARMOR SLOPE W/ CL II RIPRAP UP TO 100-YR ELEV = 201.7'

2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

BANK STABILIZATION W/CL II RIPRAP SEE DETAIL BO *ONLY INSTALL IF LOCATION DESTABILIZES DURING CONSTRUCTION

ARMOR WALL W/ CL II RIPRAP UP TO 100-YR ELEV = 201.7'

1 TONS CL B RIPRAP W/5 SY GEOTEXTILE

TOE PROTECTION W/CL II RIPRAP SEE DETAIL BJ

REMOVE EXIST.C/A FENCE

REMOVE EXISTING BRIDGE

PROP WW FENCE

300' TAPER

15" CSP 2 ELBOWS

COLLAR

TYPE B-77

END FENCE

BEGIN FENCE

PROP. SBG

2GIB-WSF

REMOVE DI & PIPE

15" RCP-III

TB 2GIB-ST

FILL AND CAP W/ CONCRETE

REMOVE EXIST.GUIDERAIL

RETAIN AND CLEAN OUT 60' EQUALIZER PIPE

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

24" RCP-III

PROP SIGN

ARMOR 2:1 SIDE SLOPES W/CL II RIPRAP UP TO SHOULDER POINT

ARMOR SLOPES W/ CL II RIPRAP UP TO 100-YR ELEV = 201.7'

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

PROPERTY LINE IS CENTER OF CREEK

GLENN MILLER
DB 4092 PG 377
PB 66 PG 176

THE BROWN-GOWER COMPANY, LLC
DB 5037 PG 696 (JOHNSTON)
DB 16848 PG 552 (WAKE)
BM 1972 PG 283 (WAKE)
39

SITE 9 BRIDGES SKETCH

BEGIN BRIDGES
-L- POT Sta 103+20.90

END BRIDGES
-L- POT Sta 105+46.00

BEGIN APPROACH SLABS
-L- POT Sta 102+96.00

END APPROACH SLABS
-L- POT Sta 105+71.00

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	98+00.00	102+96.00	LT
SBG	-L-	98+00.00	102+96.00	RT
SBG	-L-	105+94.10	111+00.00	RT
SBG	-L-	106+44.20	111+00.00	LT

FOR –L– PROFILE SEE SHT. 108–109

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mjohnson

8/17/99

-L-
PIs Sta 119+59.19
Θs = 1° 37' 00.5"
Ls = 320.00'
LT = 213.34'
ST = 106.67'

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	42
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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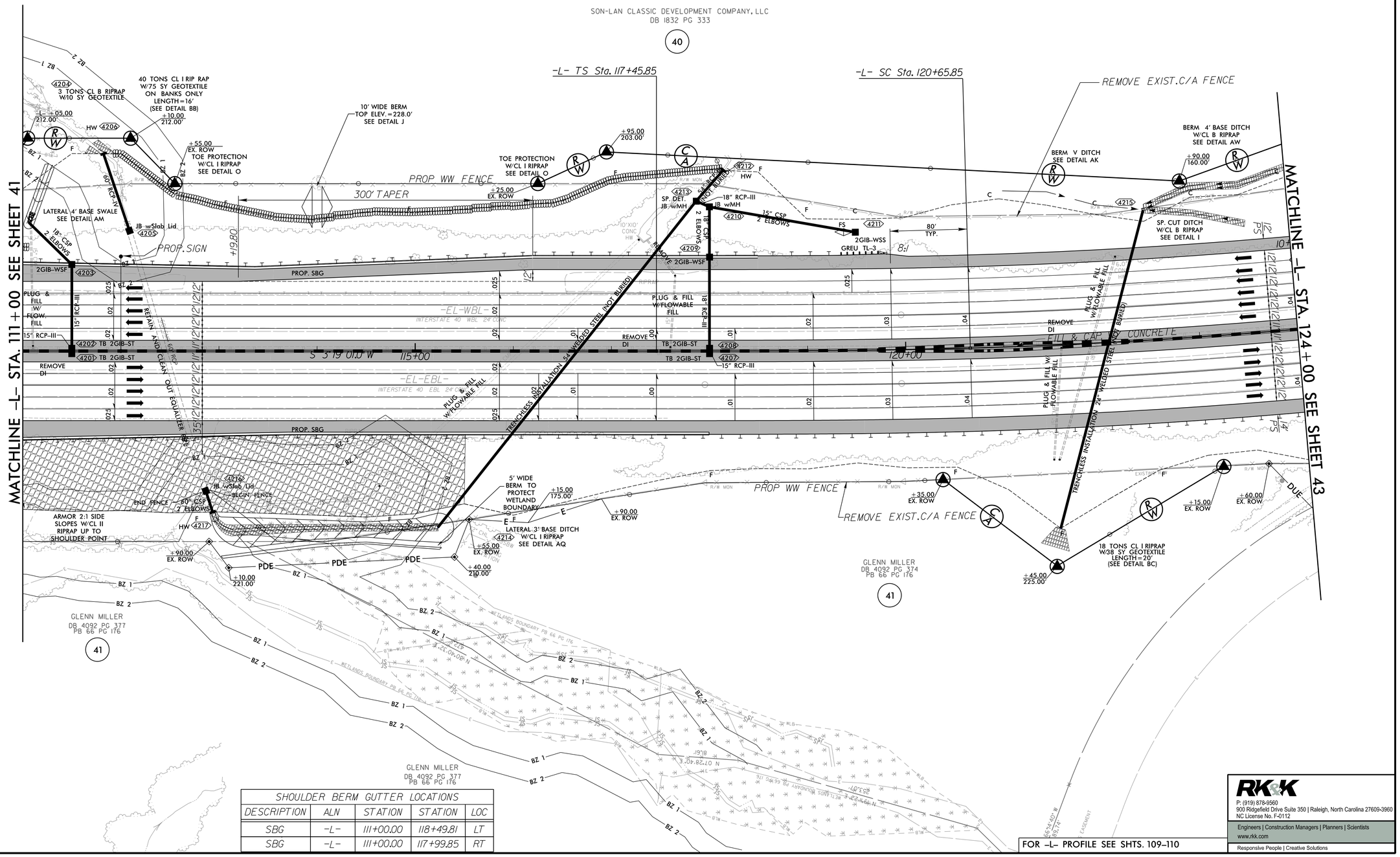

SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	111+00.00	118+49.81	LT
SBG	-L-	111+00.00	117+99.85	RT

FOR -L- PROFILE SEE SHTS. 109-110

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	43
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SON-LAN CLASSIC DEVELPMENT CO. LLC DB 1832 PG 333

40

-LCDWB- SC Sta. 11+69.74

-LCDWB- CS Sta. 13+61.95

-LCDWB- SC Sta. 15+31.95

-LCDWB- CS Sta. 09+99.74=
-L- Sta.123+99.80 (71'RT)

-LCDWB- CS Sta. 22+66.36

MATCHLINE -L- STA. 124+00 SEE SHEET 42

MATCHLINE -L- STA. 137+00 SEE SHEET 44

-L- +15.00 240.00'

-L- +25.00 255.00'

-L- +50.00 220.00'

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AW

BERM V DITCH SEE DETAIL AK

PROP WW FENCE

REMOVE EXIST.C/A FENCE

24" CSP 2 ELBOWS

30" CSP 2 ELBOWS

30" RCP-III

15" RCP-III

18" RCP-III

36" RCP-III

2GIA-WSS

2GIB-WSF

28.33' TYP.

REMOVE DI

REMOVE 54' OF EXIST. 24" CMP

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 36" WELDED STEEL

T.I. 24" W.S.

T.I. 36" W.S.

TB 2GIB-ST

DOUBLE FACED GUARDRAIL

FILL & CAP W/ CONCRETE

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

RETAIN

REMOVE 54' OF EXIST. 24" CMP

PROP RETAINING WALL

BEGIN WALL -LCDEB- Sta. 15+96.67

-Y1A- +90.00 EX. ROW, 40.00'

-Y1A- +55.00 EX. ROW, 50.00'

-Y1A- S 19° 50' 33.6" E

S 11° 31' 30.0" E

-Y1A- PT Sta. 11+16.81

REMOVE 5' OF EX. 24" TO MAINTAIN DRIVEWAY PIPE

30.00 EX. ROW

38 TONS CL I RIPRAP W/75 SY GEOTEXTILE LENGTH=30' (SEE DETAIL BC)

+45.00 170.00' 212.00'

+05.00 190.00'

PROP. SIGN

30' TYP.

GREU TL-3

JB w/MH

Adj. DI

60' NON-EXCLUSIVE ACESS EASEMENT BM 64 PG 222

GLENN MILLER DB 4092 PG 374 PB 66 PG 176

8" PVC, JOHNSTON COUNTY

41

-LCDEB- CS Sta 10+03.81=
-L- Sta.130+66.12 (59'LT).

-LCDEB- SC Sta 11+23.81

AMERICAN CONEC CORPORATION DB 1443 PG 180 PB 45 PG 103

BEGIN OVERLAY
-Y1A- POT Sta. 10+00.00
-Y1A- PC Sta. 10+36.96

N 79°34'43" W 43.47'

-L-	-LCDEB-		-LCDWB-				-Y1A-
PI Sta 130+69.61	PIs Sta 10+51.04	PI Sta 13+96.97	PIs Sta 10+94.60	PI Sta 12+65.89	PIs Sta 14+30.71	PI Sta 18+99.32	PI Sta 10+76.96
△ = 20° 04' 41.3" (LT)	Θs = 0° 07' 56.0"	△ = 1° 12' 14.0" (LT)	Θs = 0° 52' 11.3"	△ = 4° 03' 50.0" (LT)	Θs = 0° 29' 13.2"	△ = 4° 12' 28.1" (LT)	△ = 8° 19' 03.5" (LT)
D = 1° 00' 37.8"	Θs = 0° 36' 00.2"	D = 0° 13' 13.3"	Θs = 1° 47' 49.6"	D = 2° 06' 51.2"	Θs = 1° 47' 49.6"	D = 0° 34' 22.6"	D = 10° 25' 02.7"
L = 1,986.93'	Ls = 120.00'	L = 546.30'	Ls = 170.00'	L = 192.22'	Ls = 170.00'	L = 734.40'	L = 79.84'
T = 1,003.76'	LT = 72.78'	T = 273.16'	LT = 94.87'	T = 96.15'	LT = 101.26'	T = 367.37'	T = 39.99'
R = 5,670.00'	ST = 47.22'	R = 26,000.00'	ST = 75.16'	R = 2,710.00'	ST = 68.76'	R = 10,000.00'	R = 550.00'
SE = 0.04		SE = NC		SE = 0.06		SE = 0.02	
V = 75 mph		V = 65 mph		V = 65 mph		V = 65 mph	

FOR -L- PROFILE SEE SHTS. 110-111
FOR -LCDWB- PROFILE SEE SHT. 155
FOR -LCDEB- PROFILE SEE SHT. 151
FOR -Y1A- PROFILE SEE SHT. 168

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	44
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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FOR –L– PROFILE SEE SHTS. 111–112
FOR –LCDWB– PROFILE SEE SHT. 155
FOR –LCDEB– PROFILE SEE SHT. 151
FOR –Y1A– PROFILE SEE SHT. 168
FOR –Y1RPB3– PROFILE SEE SHTS. 165
FOR –Y1RPC3– PROFILE SEE SHTS. 166

–LCDEB–

PIs Sta 17+78.11
Θs = 0° 11' 14.3"
Θs = 1° 47' 49.6"
Ls = 170.00'
LT = 107.99'
ST = 62.02'

PI Sta 19+71.86
Δ = 5° 33' 58.6" (LT)
D = 2° 06' 51.2"
L = 263.28'
T = 131.74'
R = 2,710.00'
SE = 0.06
V = 65mph

PIs Sta 21+60.06
Θs = 1° 47' 49.6"
Ls = 170.00'
LT = 113.34'
ST = 56.67'

–LCDWB–

PIs Sta 23+32.07
Θs = 0° 20' 37.6"
Θs = 0° 37' 07.1"
Ls = 120.00'
LT = 65.71'
ST = 54.29'

PI Sta 25+07.20
Δ = 2° 29' 29.8" (LT)
D = 1° 01' 51.8"
L = 241.66'
T = 120.85'
R = 5,557.00'
SE = 0.04
V = 70mph

PIs Sta 27+14.68
Θs = 1° 20' 25.3"
Ls = 260.00'
LT = 173.34'
ST = 86.67'

–YIRPB3–

PIs Sta 11+33.35
Θs = 2° 37' 41.7"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

PI Sta 13+52.98
Δ = 8° 01' 41.9" (LT)
D = 2° 37' 41.7"
L = 305.46'
T = 152.98'
R = 2,180.00'
SE = 0.06
V = 55mph

PIs Sta 15+72.14
Θs = 2° 37' 41.7"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

–YIRPC3–

PIs Sta 11+33.35
Θs = 2° 37' 41.7"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

PI Sta 13+97.93
Δ = 10° 22' 33.4" (RT)
D = 2° 37' 41.7"
L = 394.79'
T = 197.93'
R = 2,180.00'
SE = 0.07
V = 65mph

–Y1A–

PI Sta 14+27.99
Δ = 10° 26' 43.1" (RT)
D = 11° 27' 33.0"
L = 91.15'
T = 45.70'
R = 500.00'

PI Sta 15+19.56
Δ = 2° 48' 37.7" (RT)
D = 3° 02' 51.5"
L = 92.22'
T = 46.12'
R = 1,880.00'

PI Sta 16+41.40
Δ = 11° 14' 08.8" (LT)
D = 7° 26' 27.6"
L = 151.00'
T = 75.74'
R = 770.00'

PI Sta 17+62.78
Δ = 2° 48' 38.4" (LT)
D = 3° 02' 51.5"
L = 92.22'
T = 46.12'
R = 1,880.00'

PI Sta 19+68.71
Δ = 10° 08' 54.3" (RT)
D = 3° 10' 59.2"
L = 318.82'
T = 159.83'
R = 1,800.00'

PI Sta 23+78.34
Δ = 4° 57' 53.8" (RT)
D = 4° 02' 05.7"
L = 123.05'
T = 61.56'
R = 1,420.00'

PI Sta 24+71.57
Δ = 5° 07' 11.4" (RT)
D = 8° 04' 11.4"
L = 63.44'
T = 31.74'
R = 710.00'

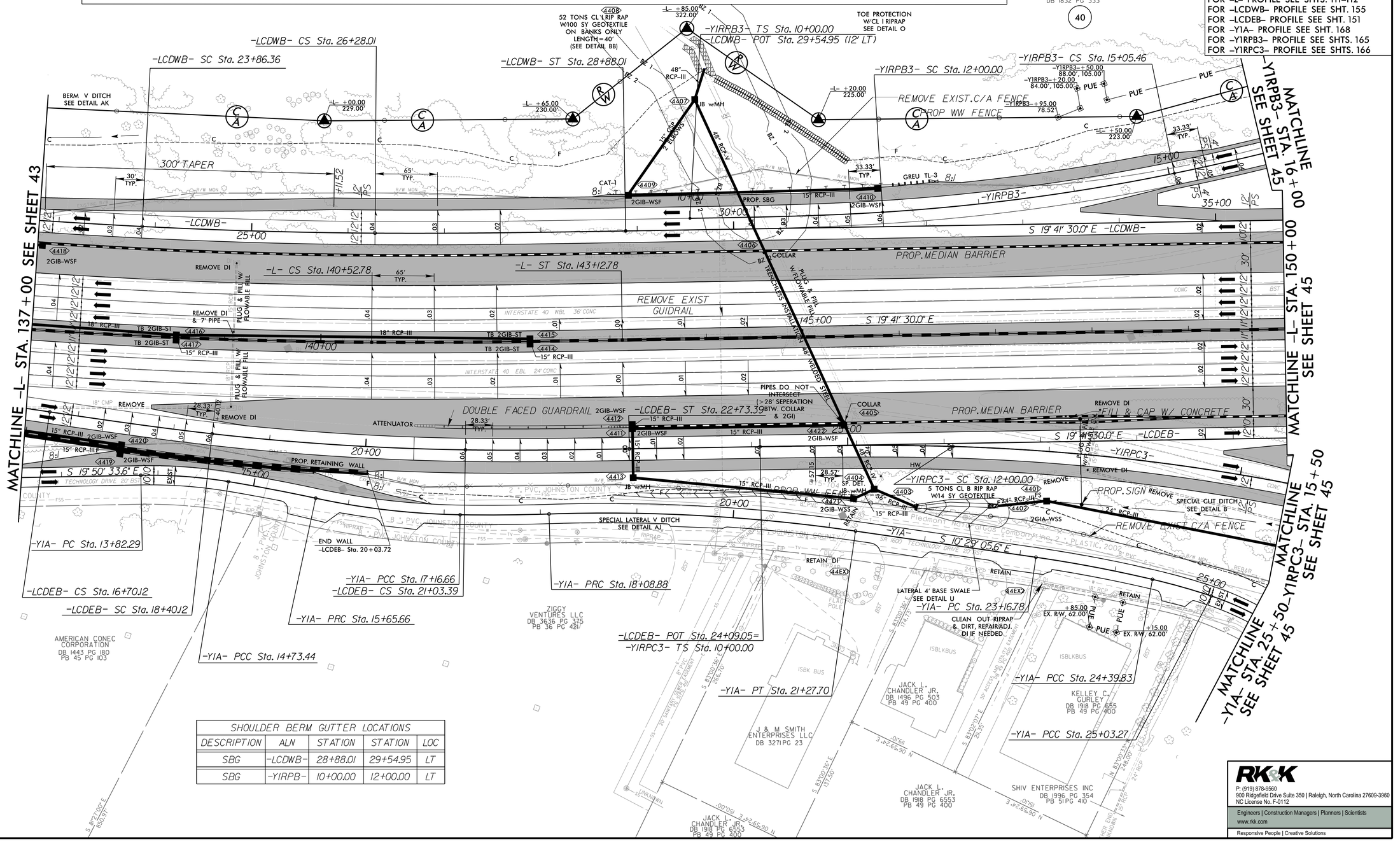
–L–

PIs Sta 141+39.45
Θs = 1° 18' 49.2"
Ls = 260.00'
LT = 173.34'
ST = 86.67'

NAD 83

SON-LAN CLASSIC DEVELPMENT CO, LLC
DB 1832 PG 333

40



SHOULDER BERM GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	–LCDWB–	28+88.01	29+54.95	LT
SBG	–YIRPB–	10+00.00	12+00.00	LT

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REVISIONS

FOR –L– PROFILE SEE SHTS. 112–114
FOR –LCDEB– PROFILE SEE SHTS. 151–152
FOR –LCDWB– PROFILE SEE SHTS. 155–156
FOR –Y1_3– PROFILE SEE SHT. 160
FOR –Y1EB3– PROFILE SEE SHTS. 162–163
FOR –Y1WB3– PROFILE SEE SHTS. 162–163
FOR –Y1A– PROFILE SEE SHT. 168
FOR –Y1B– PROFILE SEE SHT. 169
FOR –Y1C– PROFILE SEE SHT. 170
FOR –Y1RPA3– PROFILE SEE SHT. 164
FOR –Y1SPA3– PROFILE SEE SHT. 164
FOR –Y1RPB3– PROFILE SEE SHT. 165
FOR –Y1SPB3– PROFILE SEE SHT. 165
FOR –Y1RPC3– PROFILE SEE SHT. 166
FOR –Y1SPC3– PROFILE SEE SHT. 166
FOR –Y1RPD3– PROFILE SEE SHT. 167
FOR –Y1SPD3– PROFILE SEE SHT. 167
FOR C-I-G LOCATIONS SEE SHT. 2C-1
FOR CURVE DATA SEE SHT. 2C-2
FOR BRIDGE SKETCH SEE SHT. 2C-2

MATCHLINE –Y1_3– STA. 67+00 SEE SHEET 67

MATCHLINE –Y1RPB3– STA. 16+00 SEE SHEET 44

MATCHLINE –L– STA. 150+00 SEE SHEET 44

MATCHLINE –Y1A– STA. 25+50–Y1RPC3– STA. 15+50 SEE SHEET 44

MATCHLINE –Y1A– STA. 34+50 SEE SHEET 66

MATCHLINE –Y1_3– STA. 51+50 SEE SHEET 66

MATCHLINE –Y1C– STA. 16+50 SEE SHEET 68

MATCHLINE –L– STA. 177+00 SEE SHEET 46

–L– (I–40) NC 42					–Y1_3– (NC 42) GLEN RD.					–Y1A– (TECH. DR.) GLEN RD.				
ADT 2018 ADT 2038	7,300 9,300	27,600 31,800			ADT 2018 ADT 2038	8,200 11,500	27,300 41,700	1,400 1,100		ADT 2018 ADT 2038	600 1,100	1,900 2,900		
I–40	5,400 4,100	53,000 71,500			GLEN RD.				COMMERCE PKWY.	GLEN RD.				
–L–					–Y1B–				–Y1C–	–Y1A–	700 1,200	6,700 12,800		
68,800 97,600	13,700 22,100	1,100 1,200			10,700 16,100	2,600 4,300	3,400 4,800	4,300 6,200	6,700 12,800	800 1,300	700 1,200			
NC 42		27,300 41,700			NC 42		22,200 58,100			–Y1A– TECHNOLOGY DR.		2,200 5,900		

PROJECT REFERENCE NO.	SHEET NO.
I–5111/I–4739	45
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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Responsible Principal | Christopher S. Robinson

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

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REVISIONS

-L-	-LCDWB-	-LCDEB-
PI Sta 180+57.7	PI Sta 96+01.36	PI Sta 66+40.88	PI Sta 82+74.14	PI Sta 59+15.85	PI Sta 74+53.76
Δ = 46° 50' 57.0" (RT)	Ds = 5° 52' 06.8"	Δ = 46° 56' 30.3" (RT)	Ds = 5° 49' 20.2"	Δ = 46° 45' 03.2" (RT)	Ds = 2° 55' 03.7"
D = 1°30' 35.2"	Ls = 380.00'	D = 1° 27' 58.0"	Ls = 385.00'	D = 1° 33' 29.0"	Ls = 375.00'
L = 5,013.01'	LT = 253.37'	L = 3,201.78'	LT = 256.70'	L = 3,004.35'	LT = 250.03'
T = 1,644.18'	ST = 126.70'	T = 1,696.88'	ST = 128.36'	T = 1,591.47'	ST = 125.03'
R = 3,795.00'		R = 3,908.00'		R = 3,682.00'	
SE = 0.06		SE = 0.06		SE = 0.06	
V = 75mph		V = 75mph		V = 75mph	

-Y2RPA3-				-Y1RPD3-
PI Sta 12+74.83	PI Sta 14+59.12	PI Sta 16+29.17	PI Sta 20+40.71	PI Sta 11+09.87
Ds = 2° 56' 10.1"	Δ = 7° 03' 05.2" (RT)	Ds = 2° 56' 32.1"	s = 2° 17' 30.16"	Ds = 1° 33' 40.1"
Ls = 190.00'	D = 3° 05' 49.4"	Ls = 190.00'	Ls = 160.00'	Ds = 2° 51' 53.5"
LT = 126.68'	L = 221.68'	LT = 126.68'	LT = 106.68'	Ls = 200.00'
ST = 63.35'	T = 111.98'	ST = 63.35'	ST = 53.34'	LT = 109.87'
	R = 1,850.00'			ST = 90.23'
	SE = 0.07'			
	V = 60mph			

-Y2RPB3-				-Y2_3-
PI Sta 15+94.25	PI Sta 17+82.70	PI Sta 19+73.68	PI Sta 22+30.52	PI Sta 24+52.39	PI Sta 48+11.96
Ds = 4° 14' 52.1"	Δ = 9° 28' 51.7" (LT)	Ds = 4° 14' 52.1"	Ds = 10° 56' 38.9"	Δ = 40° 47' 01.6" (RT)	Δ = 10° 11' 37.6" (RT)
Ls = 215.00'	D = 3° 57' 05.2"	Ls = 215.00'	Ls = 170.00'	D = 12° 52' 31.6"	D = 2° 51' 53.2"
LT = 143.37'	L = 239.67'	LT = 143.37'	LT = 113.55'	L = 346.76'	L = 559.12'
ST = 71.70'	T = 119.82'	ST = 71.70'	ST = 56.86'	T = 165.44'	T = 280.15'
	R = 1,450.00'			R = 445.00'	R = 2,000.00'
	SE = 0.08			SE = 0.08	SE = 0.04
	V = 60mph			V = 40mph	V = 50mph

CURB + GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-LCDEB-	61+43.70	64+34.76	RT
SBG	-LCDEB-	73+78.29	74+69.38	RT
SBG	-Y2_3-	51+50.04	52+08.72	LT
SBG	-Y2LPD3-	23+00.62	23+11.26	RT
SBG	-Y2_3-	51+20.63	52+32.45	RT
SBG	-Y2_3-	55+45.13	56+40.05	LT
SBG	-Y2_3-	55+67.40	56+39.77	RT
2'-6" C+G	-Y2RPD3-	27+35.76	28+64.82	LT
2'-6" C+G	-Y1PD3-	10+00.00	23+11.26	RT

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	46
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

-L- (I-40) CLEVELAND RD.

ADT 2018
ADT 2035

8,900 / 14,400		3,900 / 6,600	50,700 / 67,100
I-40			
-L-			
53,000 / 77,500	5,400 / 7,600		5,100 / 7,800
	15,800 / 19,200		

-Y2- CLEVELAND RD.

SITE II BRIDGE SKETCH

BEGIN APPROACH SLAB
-Y2_3- POT Sta 52+20.80
TYPE B-77

BEGIN BRIDGE
-Y2_3- POT Sta 52+47.10
-L- POC Sta 194+21.94 =
-Y2_3- POT Sta 54+02.01
D = 13° 28' 2.65"

END APPROACH SLAB
-Y2_3- POT Sta 55+82.10
TYPE B-77

END BRIDGE
-Y2_3- POT Sta 55+55.90
TYPE B-77

P.O.S. 44° 14' 18.0" E

195'00

PROP. REINFORCED CONCRETE APPROACH SLAB

PROP SRG

CAT-1

MATCHLINE -SR2- STA. 22+00 SEE SHEET 71

MATCHLINE -Y2_3- STA. 61+50 SEE SHEET 71

MATCHLINE -L- STA. 205+50 SEE SHEET 47

MATCHLINE -L- STA. 177+00 SEE SHEET 45

MATCHLINE -Y2_3- STA. 46+50 SEE SHEET 70

END CONSTRUCTION
-SR2- POT Sta. 23+17.12

-SR2- POT Sta. 23+51.61

-Y2- POT Sta. 58+17.04=
-Y2RPB3- POT Sta. 27+45.92

-Y2_3- PT Sta. 61+06.73

-Y2RPB3- PT Sta. 26+03.73

-Y2RPA3- PT Sta. 22+59.73

-Y2RPA3- SC Sta. 20+94.04

-Y2RPA3- TS Sta. 19+34.04

-Y2RPA3- ST Sta. 17+55.82

-Y2RPA3- CS Sta. 15+65.82

-Y2RPB3- CS Sta. 19+01.97

-Y2RPB3- SC Sta. 22+86.97

-Y2RPB3- SRS Sta. 21+16.97

-L- POC Sta. 194+21.94=
-Y2_3- POT Sta. 54+02.01

-LCDWB- CS Sta. 81+45.78

-L- CS Sta. 194+47.66

-LCDWB- ST Sta. 85+30.78

-L- ST Sta. 198+54.66

-LCDEB- ST Sta. 77+03.73

-Y2LPD3- CS Sta. 10+00.00

-Y2LPD3- SC Sta. 11+50.00

-LCDEB- CS Sta. 73+28.73

-Y2LPD3- ST Sta. 23+11.26

-Y2LPD3- CS Sta. 21+71.26

-Y2LPD3- PC Sta. 19+81.09

-Y2LPD3- PT Sta. 18+42.08

-Y2RPD3- CS Sta. 18+61.23

-Y2RPD3- ST Sta. 20+91.23

-Y2RPD3- TS Sta. 22+80.23

-Y2RPD3- SC Sta. 24+40.23

-Y2RPD3SPUR- POT Sta. 11+91.85

-Y2_3- POC Sta. 48+34.66=
-Y2RPD3- POT Sta. 29+41.49

-Y2RPD3SPUR- POT Sta. 26+39.03

-Y2RPD3SPUR- POT Sta. 10+00.00

-Y2RPB3- SC Sta. 16+62.88

-Y2RPB3- TS Sta. 14+47.88

-Y2RPB1- POT Sta. 12+00.00 =
-LCDWB- POC Sta. 66+16.35

-Y1RPD3- CS Sta. 10+00.00

-Y2RPD3- CS Sta. 18+61.23

-Y2RPD3- ST Sta. 20+91.23

-Y2RPD3- TS Sta. 22+80.23

-Y2RPD3- SC Sta. 24+40.23

-Y2RPD3SPUR- POT Sta. 26+39.03

-Y2RPD3SPUR- POT Sta. 10+00.00

-Y2RPD3-

Pi Sta 15+50.35	Pis Sta 19+37.94	Pis Sta 23+87.15	Pi Sta 25+42.02
Δ = 24° 06' 39.9" (LT)	Ds = 4° 23' 33.6"	Ds = 12° 13' 23.2"	Δ = 30° 22' 30.4" (RT)
D = 3° 49' 11.2"	Ls = 230.00'	Ls = 160.00'	D = 15° 16' 43.9"
L = 631.23'	LT = 153.38'	LT = 106.92'	L = 198.80'
T = 320.15'	ST = 76.71'	ST = 53.53'	T = 101.80'
R = 1,500.00'			R = 375.00'
SE = 0.08			SE = 0.08
V = 60mph			V = 35mph

-Y2LPD3-

Pi Sta 11+00.56	Pi Sta 46+15.58	Pi Sta 20+89.21
Ds = 18° 49' 00.3"	Δ = 17° 24' 21.8" (RT)	Δ = 68° 05' 54.7" (RT)
Ls = 150.00'	D = 24° 54' 40.4"	D = 35° 48' 35.5"
LT = 100.56'	L = 692.08'	L = 190.11'
ST = 50.5'	T = 3,465.58'	T = 108.12'
	R = 230.00'	R = 160.00'
	SE = 0.08	SE = 0.08
	V = 30mph	V = 20mph (Stop Cond.)

FOR -L- PROFILE SEE SHTS. 114-116
FOR -SR2-PROFILE SEE SHT. 178
FOR -Y2_3- PROFILE SEE SHT. 173
FOR -Y2RPA3- PROFILE SEE SHT. 174-175
FOR -Y2RPB3- PROFILE SEE SHT. 175
FOR -Y2LPD3- PROFILE SEE SHT. 177
FOR -Y2RPD3- PROFILE SEE SHT. 176
FOR -Y2RPD3SPUR- PROFILE SEE SHT. 178
FOR -LCDWB- PROFILE SEE SHTS. 154-157
FOR -LCDEB- PROFILE SEE SHTS. 152-153

GRAPHIC SCALE
50 25 0 50 100
PLANS

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LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

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4/26/2019

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	47
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 205+50 SEE SHEET 46

MATCHLINE –L– STA. 219+00 SEE SHEET 48

JOHNSTON COUNTY BOARD OF EDUCATION
TRACT 2
DB 2893 PG 387
PB 66 PG 206
70

-LCDWB- PC Sta. 101+90.05

-Y2RPA3- POT Sta. 10+00.00=
-LCDWB- POT Sta. 96+35.08

-Y2RPA3- TS Sta. 11+48.14

-Y2RPA3- SC Sta. 13+38.14

-Y2RPA3- 95+00 N 35° 35' 49.2" E 10.00

-LCDWB-

PROP. SIGN

PROP WW FENCE

FILL & CAP W/ CONCRETE

S 32° 53' 40.7" W

PROP. MEDIAN BARRIER

DOUBLE FACED GUARDRAIL

150' TAPER

900' TAPER

300' TAPER

627' ACCEL LANE

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

-LCDEB-

-Y2RPD3-

PROP. SBG

-Y2RPD3- SC Sta. 12+30.00

-Y2RPD3- ST Sta. 10+00.00=
-LCDEB- POT Sta. 89+72.65

-LCDEB- PC Sta. 95+51.57

REMOVE 30' PIPE

REMOVE DI

Conv. DI TO JB w/MH

TE TO PIPE

JB w/MH

SP. DET. JB w/MH

PLUG & FILL W/FLOWABLE FILL

COLLAR

TRENCHLESS INSTALLATION 54" WELDED STEEL (NOT BURIED)

RETAIN & LINE W/STRUCTURAL LINER

REMOVE EXIST. C/A FENCE

RIP RAP AT EMBANKMENT SEE DETAIL BA

SPECIAL CUT DITCH SEE DETAIL B

BERM V DITCH SEE DETAIL AK

BERM 4' BASE DITCH SEE DETAIL N

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AX

LATERAL 4' BASE SWALE SEE DETAIL AM

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

SEE C900 OUTLET DETAIL –L3– STA. 212+70

SEE C900 INLET DETAIL –L3– STA. 212+70

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

120 TONS CL I RIP RAP W/223 SY GEOTEXTILE ON BANKS ONLY LENGTH = 55' (SEE DETAIL BB)

IVAN OTERO
GLORIA OTERO
DB 2875 PG 80
PB 62 PG 483

JONATHAN RIBA
LACEY RIBA
DB 5345 PG 75
PB 62 PG 483

FORREST GLENN JOHNSON
DONALD LEE JOHNSON
DB 1290 PG 385

APOTHECARY HOLDINGS LLC
DB 4084 PG 564
PB 66 PG 168

W.D. PARKER ESTATE
NO REFERENCE

71 72 73 75 76

CURB + GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-LCDEB-	88+20.34	90+51.57	RT

-Y2RPD3-
PIs Sta 11+53.38
Θs = 4° 23' 33.6"
Ls = 230.00'
LT = 153.38'
ST = 76.71'

FOR –L– PROFILE SEE SHTS. 116–117
FOR –LCDWB– PROFILE SEE SHT. 157–158
FOR –LCDEB– PROFILE SEE SHTS. 153–154
FOR –Y2RPA3– PROFILE SEE SHT. 174
FOR –Y2RPD3– PROFILE SEE SHT. 176

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	48
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

EXISTING (2)60" RCP UNDER SOUTHFORT DRIVE ANALYZED IN HY-8 FOR HYDRAULIC CAPACITY. URBAN TOBY EQ. W/47.9% IMPERVIOUS (FOR FUTURE DEVELOPMENT), 0.34 SQ. MI DRAINAGE AREA WITH A Q50 OF 405cfs UTILIZED. EXISTING SYSTEM FOUND TO BE SUFFICIENT WITH NO OVERTOPPING OF THE EXISTING ROAD. EXISTING SHOULDER ELEVATION IS 262.37' (CORNER OF HOUSE=262.83'.) 50 YEAR HW ELEVATION IS 260.71, OVER 1.7' OF FREEBOARD IN POST CONDITION.

MATCHLINE -L- STA. 219+00 SEE SHEET 47

MATCHLINE -L- STA. 232+00 SEE SHEET 49

JONATHAN RIBA
TRACY RIBA
DB 4345 PG 75
PB 62 PG 483
75

WALLACE PRESTON GASTER
HEATHER GURLEY GASTER
DB 2679 PG 69
PB 62 PG 484

MICHAEL S. MCWHORTER
DB 4124 PG 151
PB 62 PG 484

CAROLYN C. WILDER
GREGORY A. WILDER
DB 2881 PG 824
PB 62 PG 484

NEIL G. WOODLIEF
DB 2693 PG 504
PB 62 PG 484

RHONDA S. HANKS
DB 3050 PG 426
PB 62 PG 484

SAMUEL FISHER
DB 4333 PG 427
PB 62 PG 484

KAREN L. HOWARD
DB 4067 PG 143
PB 62 PG 484

BARBARA PENNY
DB 468 PG 3
PB 5 PG 53
82

RHONDA S. HANKS
DB 3050 PG 424 PB 62 PG 484
77

AT&T CORP.

SR 2231 SOUTHFORT DRIVE 195' BST

-LCDWB- POT Sta. 114+54.66

-LCDWB- PT Sta. 110+01.79

REMOVE EXIST. C/A FENCE

PROP WW FENCE

PROP. SOUND BARRIER

PROP. SIGN

8 TONS CL B RIP RAP W/21 SY GEOTEXTILE

-LCDWB- +20.00 78.00'

-LCDWB- +20.00 74.00'

-LCDWB- +35.00 EX-ROW

30" CSP 2 ELBOWS

30" RCP-III

15" RCP-III

42" RCP-III

24" RCP-III

18" RCP-III

2GIB-WSF

2GIB-WSS

2GIA-WSF

2GID-WSS

TYPE B-7

GREU TL-3

TB JB w/MH

ATTENUATOR REMOVE DI

150' TAPER

300' TAPER

-LCDWB- S 36° 30' 00.0" W

-L- S 32° 53' 40.1" W

110+00.22

220+00

225+00

230+00

100+00

105+00

110+00

FILL & CAP W/ CONCRETE

REMOVE EXIST. CABLE GUARDRAIL

REMOVE DI & PIPE

PLUG & FILL W/FLOWABLE FILL

PROP. SBG

PROP. EXPRESSWAY GUTTER

42" CSP 2 ELBOWS

-LCDEB- +45.00 80.00'

-LCDEB- +75.00 80.63', 100.00'

-LCDEB- +90.00 84.10', 110.00'

-LCDEB- +55.00 76.00'

-LCDEB- +00.00 85.00'

-LCDEB- +70.00 108.00', 125.00'

-L- +95.00 148.00'

-LCDEB- PRC Sta. 102+87.74

-LCDEB- PT Sta. 110+23.91

SPECIAL CUT DITCH SEE DETAIL B

BERM 4' BASE DITCH SEE DETAIL N

BERM 2' BASE DITCH SEE DETAIL N

BERM 2' BASE DITCH W/CL B RIPRAP SEE DETAIL AW

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AW

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

LATERAL 4' BASE SWALE SEE DETAIL AM

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AX

CONTRACTOR TO FIELD ADJUST (WITH PSRM OR RIPRAP) ALL LOCATIONS OF CONCENTRATED FLOW TRAVELING ONSITE INTO PROPOSED DITCHES

+45.00 190.00'

+50.00 220.00'

+20.00 178.72'

+05.00 157.00'

+50.00 171.00'

END FENCE

FS

JB w/MH

HW

RIPRAP

2SFD

2SBKBUS

APOTHECARY HOLDINGS LLC
DB 4084 PG 564
PB 66 PG 168
76

D & D LEONARD LLC
DB 3727 PG 101
PB 66 PG 168
78

TWO K'S LLC
DB 2628 PG 843
PB 63 PG 371
79

CHARLES ANTHONY STEPHENSON
DB 2321 PG 26
PB 66 PG 184
80

RICHARD E. ETHERIDGE
WENDY ETHERIDGE
DB 2782 PG 779
PB 65 PG 129
81

BARBARA PENNY
DB 468 PG 3
PB 5 PG 53
82

CURB + GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-LCDEB-	109+52.28	110+23.91	RT
SBG	-L-	230+99.99	232+00.00	RT
EXP	-LCDEB-	100+01.17	106+51.91	RT

-LCDEB-

PI Sta 99+19.76	PI Sta 106+55.93	PI Sta 105+96.06
△ = 3° 16' 11.0" (LT)	△ = 3° 16' 11.0" (RT)	△ = 3° 36' 19.3" (RT)
D = 0° 26' 39.0"	D = 0° 26' 39.0"	D = 0° 26' 39.0"
L = 736.17'	L = 736.17'	L = 811.74'
T = 368.19'	T = 368.19'	T = 406.00'
R = 12,900.00'	R = 12,900.00'	R = 12,900.00'
SE = NC	SE = NC	SE = NC
V = 65mph	V = 65mph	V = 65mph

FOR -L- PROFILE SEE SHTS. 117 & 118
FOR -LCDEB- PROFILE SEE SHT. 154
FOR -LCDWB- PROFILE SEE SHT. 158

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	49
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 232+00 SEE SHEET 48

MATCHLINE –L– STA. 245+00 SEE SHEET 50

83 TONS CL I RIP RAP W/155 SY GEOTEXTILE ON BANKS ONLY LENGTH = 45' (SEE DETAIL BB) 4921

65 TONS CL I RIP RAP W/125 SY GEOTEXTILE ON BANKS ONLY LENGTH = 40' (SEE DETAIL BB) 4920

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE 4916

BARBARA PENNY DB 468 PG 3 PB 5 PG 53 — 82

BARBARA PENNY DB 658 PG 268 — 82

DIRK MATTIN STEPHANIE K. MATTIN DB 3270 PG 318 PB 69 PG 266

JERALD L. PETERSON LUZMILA PETERSON DB 3280 PG 515 PB 69 PG 266 — 85

SAMUEL P. LAPSLEY TAMMY J. LAPSLEY DB 3279 PG 309 PB 68 PG 284 — 85A

LEAMON KING HOLLAND DB 1841 PG 392 PB 44 PG 209 — 84

THOMAS C. III BUCKLEY JESSICA BUCKLEY DB 1841 PG 392 PB 44 PG 209 — 83

BARBARA PENNY DB 468 PG 3 PB 5 PG 53 — 82

LATERAL 4' BASE SWALE SEE DETAIL AM

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AV

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AX

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AW

SPECIAL CUT 4' BASE SWALE SEE DETAIL AU

SPECIAL CUT DITCH SEE DETAIL B

BERM V DITCH SEE DETAIL AK

LATERAL 4' BASE SWALE SEE DETAIL AM 4917

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

CONTRACTOR TO FIELD ADJUST (WITH RIPRAP) ALL LOCATIONS OF CONCENTRATED FLOW TRAVELING ONSITE INTO PROPOSED DITCHES

PROP. SOUND BARRIER 4922 2GIB-WSF

END SOUND BARRIER WALL TYPE B-77 +01.98

JB wMH 4923

JB wSlab Lid 4915

2 2GIBs-WSF GREU TL-3 4919

2 2GIBs-WSF 4907

REMOVE EXIST. C/A FENCE

PROP WW FENCE

REMOVE EXIST. CABLE GUARDRAIL

REMOVE EXIST.C/A FENCE

48" RCP-III

24" CSP 2 ELBOWS

15" CSP 2 ELBOWS

15" RCP-III

18" RCP-IV

30" RCP-III

TB 2GI-ST

PROP. SBG 4901 4902

REMOVE DI

PLUG & FILL W/FLOWABLE FILL

RETAIN

TRENCHLESS INSTALLATION (48" WELDED STEEL NOT BURIED)

TRENCHLESS INSTALLATION (54" WELDED STEEL NOT BURIED)

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

235+00 4914

240+00 4912

245+00

300' TAPER

65' TYP.

+71.54

-L- SC Sta. 241+24.63

-L- TS Sta. 238+64.63

S 32°53'40.7" W 265.19'

N 48°08'33" E 232.23'

S 11°56'21" E 234.00'

N 51°01'05" W 380.00'

S 10°39'40" E 134.26'

N 37°04'27" E 28.10'

S 42°18'18" W 34.71'

S 12°57'50" W 32.51'

S 80°51'05" W 178.69'

N 82°49'02" W 45.71'

S 16°50'01" W 21.22'

S 16°50'05" W 13.64'

N 84°27'33" E 49.33'

S 58°39'46" E 3.94'

S 11°56'21" E 157.83'

S 80°59'47" E 154.20'

N 05°03'05" E 59.27'

N 88°46'10" W 33.98'

N 05°03'16" E 153.41'

N 63°07'57" W 127.26'

S 28°27'50" W 65.00'

N 72°47'55" W 132.71'

+00.00 165.00' 4908

+40.00 EX. ROW

+05.00 160.00'

+25.00 190.00'

+50.66 211.00'

+75.00 230.00'

+05.00 220.00'

+95.00 229.00'

+20.00 225.00'

+80.00 193.89'

+75.00 190.00'

+75.00 212.00'

+70.00 179.00'

+20.00 157.65'

+80.00 166.53', 175.00'

+80.00 170.00'

+90.00 182.00', 190.00'

+00.00 194.00'

+70.00 EX. ROW

+10.00 170.00'

+80.00 EX. ROW

N 48°33'24" W 205.79'

S 81°05'36" E 193.98'

N 47°10'06" W 245.48'

CURB + GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L3-	243+43.93	245+00.00	LT

-L-
PIs Sta 240+37.97
Θs = 1°18' 03.7"
Ls = 260.00'
LT = 173.34'
ST = 86.67'

FOR –L– PROFILE SEE SHTS. 118 & 119

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	50
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 245+00 SEE SHEET 49

MATCHLINE –L– STA. 258+00 SEE SHEET 51

88 SANDRA QUEEN FOWLER DB 4549 PG 211 PB 68 PG 284-285

86 JOEY V YOUNG DB 3294 PG 261 PB 68 PG 284

89 MIDLAND, INC. DB 4900 PG 578 PB 85 PG 212

90 MARIA RAMOS LOPEZ AND GREGORIO ISLAS ORTIZ DB 3684 PG 329 MB 53 PG 144

84 LEAMON KING HOLLAND DB 1841 PG 392 PB 44 PG 209

87 JENNIFER NEWCOMB HOLLAND DB 4679 PG 695 MB 81 PG 485

CHRISTINA N. OUTLAW DB 4445 PG 888 MB 53 PG 144

KRISTEN L. LOWE DB 3018 PG 881 MB 53 PG 144

JAMES B. DILLARD AND WIFE, DEBORAH S. DILLARD DB 1894 PG 248 MB 53 PG 144

PAUL TOLLEFSRUD AND WIFE, DARA B. TOLLEFSRUD DB 1845 PG 779 MB 53 PG 144

ELLIS FAMILY TRUST DB 4417 PG 152 MB 53 PG 144

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AV

LATERAL 4' BASE SWALE SEE DETAIL AM

RIP RAP AT EMBANKMENT SEE DETAIL BA

40 TONS CL I RIP RAP W/75 SY GEOTEXTILE ON BANKS ONLY LENGTH = 50' (SEE DETAIL BB)

REMOVE EXIST. C/A FENCE

PROP WW FENCE

LATERAL 4' BASE SWALE SEE DETAIL U

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

60" RCP-III (BURIED 1.0')

30" CSP 2 ELBOWS

JB w/MH

PLUG & FILL W/FLOWABLE FILL

REMOVE GREU TL-3

Conv. DI TO JB w/MH

18" RCP-III

24" RCP-III

2GIA-WSS

2GIB-WSS

REMOVE DI

PROP. SBG

TRENCHLESS INSTALLATION OF 60" WELDED STEEL (BURIED 0')

TB 2GI-ST

15" RCP-IV

REMOVE EXIST. CABLE GUARDRAIL

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

10' CONC PS

33' CONC PS

PROP. EXP. GUTTER

GRADE TO DRAIN

15" RCP-III

15" CSP 2 ELBOWS

PROP. SOUND BARRIER

TOE PROTECTION W/CL I RIPRAP SEE DETAIL O

CHANNEL BLOCK SEE DETAIL Z

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL V

CONCRETE DITCH BEHIND WALL SEE DETAIL BE

TYPE B-77

BEGIN FENCE

END FENCE

REMOVE EXIST. C/A FENCE

PROP WW FENCE

EXISTING R/W

EX. ROW

EX. RW, 147.00'

20' DRAINAGE EASEMENT DB 4900 PG 578 PB 85 PG 212

WOODS

ISFD

WD

CURB + GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	–L3–	245+00.00	249+31.25	LT

–L–
PI Sta 257+82.76
Δ = 32° 18' 18.5" (LT)
D = 1° 00' 02.9"
L = 3,227.93'
T = 1,658.13'
R = 5,725.00'
SE = 0.04
V = 75mph

FOR –L– PROFILE SEE SHTS. 119 & 120

RK&K
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mwh

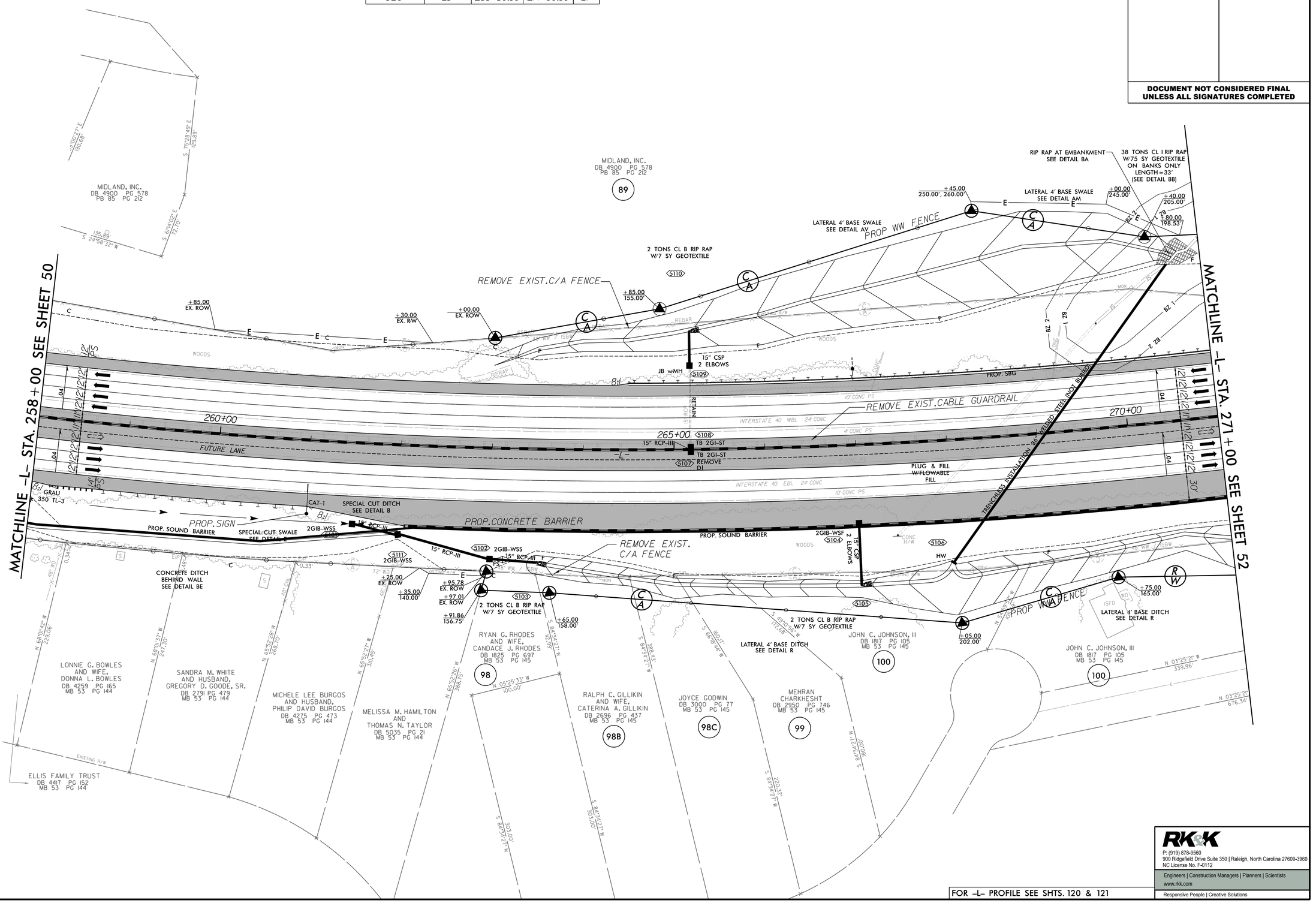
8/17/99

CURB + GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L3-	266+50.00	271+00.00	LT

NAD 83

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	51
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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mwh

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	52
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –L– STA. 271+00 SEE SHEET 51

MATCHLINE –L– STA. 284+00 SEE SHEET 53

MIDLAND, INC.
DB 4900 PG 578
PB 85 PG 212

COMMUNITY BAPTIST CHURCH OF CLAYTON
DB 3229 PG 248

–L– ST Sta. 276+12.57

–L– CS Sta. 273+52.57

S 82°36'24" E 1145.28'

28 TONS CL I RIP RAP W/55 SY GEOTEXTILE LENGTH = 25' (SEE DETAIL BC) <5214>

+25.00 158.96' 168.00'

+65.00 153.69' 168.00'

PDE

+90.00 EX. ROW

+00.00 EX. ROW

REMOVE EXIST.C/A FENCE

+45.00 210.00'

PROP WW FENCE

EXISTING R/W

48" WW / ISBW

WOODS

PROP. SIGN

GREU TL–3 8:1

2GID–WSS <5217>

15" RCP–III <5218>

Conv. DI TO JB w/MH

FES

REMOVE DI <5204> 15" RCP–III TB 2GIB–ST

65' TYP. <5213> 2GIB–WSF

SP. DET. 2GIB–WSF

30" CSP 2 ELBOWS

<5211>

<5212> 2GIB–WSF

15" RCP–III

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION 30" WELDED STEEL NOT BURIED

PROP. SBG

REMOVE EXIST.CABLE GUARDRAIL

INTERSTATE 40 WBL 24" CONC

INTERSTATE 40 EBL 24" CONC

10' CONC PS

4' CONC PS

275+00 <5210>

SP. DET. TB 2GIB–ST

280+00

–L–

REMOVE DI <5209>

<5201> 15" RCP–III

<5202> 2 2GIBs–WSF 15" CSP 2 ELBOWS

END WALL Sta. 272+93.65

COLLAR <5206> 15" RCP–III

PROP. SOUND BARRIER

900' LANE DROP

Conv. DI TO JB w/MH <5219> 15" RCP–III <5216> 2GID–WSS FS

SPECIAL CUT DITCH SEE DETAIL B

10' WIDE BERM TOP ELEV. = 260.0' SEE DETAIL J

+05.00 EX. ROW

+00.00 151.00'

+65.00 144.35'

+85.00 151.11'

+10.00 160.00'

+60.00 EX. ROW

+85.00 182.00'

+00.00 EX. ROW

<5208>

LATERAL 4' BASE DITCH SEE DETAIL R

BERM V DITCH SEE DETAIL AK

<5220> BDO

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE <5207>

<5203> 2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

+85.00 185.00'

JOHN C. JOHNSON, III
DB 1817 PG 105
MB 53 PG 145
100

KERRY ALLEN REDLINE
DB 4271 PG 776
MB 53 PG 145
99A

JOHN C. JOHNSON, III
DB 1925 PG 800
MB 53 PG 145
100

PROFILE CONSTRUCTION, INC.
DB 4851 PG 299
MB 72 PG 448
101

DONNA RICHARDSON
DB 3575 PG 966
MB 72 PG 448
103

PROFILE CONSTRUCTION, INC.
DB 4851 PG 299
MB 72 PG 448
101

30' ACCESS EASEMENT MB 53, PG 145

N 82°50'24" W 111.23'

N 82°54'42" W 50.28'

N 82°50'24" W 16.25'

S 88°00'29" E 144.36'

S 08°04'23" E 148.46'

N 87°59'06" W 16.08'

222.36' N 01°44'22" E

287.85' N 01°56'54" E

108.07' N 01°57'15" E

209.76' N 01°45'46" E

CURB + GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	–L3–	271+00.00	275+50.00	LT

–L–
PIs Sta 274+39.24
Θs = 1° 18' 03.7"
Ls = 260.00'
LT = 173.34'
ST = 86.67'

FOR –L– PROFILE SEE SHTS. 121–122

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mjahn

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	53
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

END TIP PROJECT
I-5111/I-4739
-L- STA. 292+00.00

MATCHLINE -L- STA. 284+00 SEE SHEET 52

COMMUNITY BAPTIST CHURCH OF CLAYTON
DB 3229 PG 248

102

PROP WW FENCE

REMOVE EXIST.C/A FENCE

REMOVE EXIST.CABLE GUARDRAIL

+30.00
EX. ROW

JOHN OWEN LANGDON
AND WIFE,
PEGGY S. LANGDON
DB 1371 PG 869
PB 41 PG 273

WOODS

48" WW / ISBW

EXISTING R/W

BST

CONC

CORNWALLIS ROAD
SR 1525

20' BST

285+00

290+00

300' LANE TAPER

FUTURE LANE

RETAIN

REMOVE DI TB 2GIB-ST

REMOVE
Conv. DI TO
JB w/MH

GRADE TO DRAIN

5305
2GID-WSS

18" RCP-III

5307

8:1

5303 TB 2GIB-ST

5304 TB 2GIB-ST

5310 S 2° 00' 45.3" E

-L- REMOVE 430' PIPE

24" RCP-III

30" RCP-III

TYPE B-77

IMPACT ATTENUATOR

5312 TB JB w/MH

5311 36" RCP-III

36" RCP-III

30" RCP

Conv. DI TO
JB w/MH

5308

24" RCP-III

REMOVE 70'

GRADE TO DRAIN

REMOVE

2GIB-WSS 5306

18" CSP
2 ELBOWS

PLUG & FILL
W/FLOWABLE
FILL

END CONSTRUCTION
-L- POT Sta.293+39.80

900' LANE DROP

FS

12' PS

WILLIAM CHARLES COZART, II
ET ALS
DB 4709 PG 957
MB 31 PG 109

+90.00
EX. ROW

5309 BDO

PROFILE WW FENCE

+10.00
192.09'

+50.00
221.00'

+00.00
235.00'

BERM V DITCH
SEE DETAIL AK

20' ACCESS EASEMENT
MB 72 PG 448

PROFILE CONSTRUCTION, INC.
DB 4851 PG 299
MB 72 PG 448

101

S 88°10'12" E
209.98'

378.53'
N 01°45'46" E

395.60'
N 02°18'19" E

MATCHLINE -L- STA. 295+00 SEE INSET A

MATCHLINE -L- STA. 295+00 INSET A

10' CONC PS

INTERSTATE 40 WBL 24' CONC

4' CONC PS

-L- S 2° 00' 45.3" E

300+00

RETAIN 18" RCP

DI

4' CONC PS

INTERSTATE 40 EBL 24' CONC

10' CONC PS

2GIA-WSS 5313

36" RCP-III

5314 Adj. DI

REMOVE 393'
EXISTING 30" RCP

REMOVE 393'
EXISTING 30" RCP

CONC

RETAIN 36" RCP

FOR -L- PROFILE SEE SHT. 122

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mwh

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	54
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –YIRPBD– STA. 29+00 SEE SHEET 5

DITCH COMPUTATIONS AND STORM DRAIN DESIGN ALONG –YIRPBD– IS SUBJECT TO CHANGE BASED ON UPDATED SURVEY INFORMATION FROM ASPHALT PLANT SITE.

BM#5
N: 729,799
-BY9- E: 2,121,944
ELEV. = 328.30'

MATCHLINE –YIRPBD– STA. 10+00 SEE SHEET 53

END WW FENCE
PCC Sta. 10+65.64
PC Sta. 10+00.00
SINGLE FACE BARRIER
BEG. -NW2-
PROP. SOUND BARRIER
TYPE B-77
CAT-1
50:1 TAPER
PROP. GUARDRAIL
-YIRPBD-
I-440/US 64 WB TIZ BST
I-440/US 64 EB 68' BST
CONC MED BARRIER
WALNUT RIDGE PAR
DB 8766
BM 200
SINGLE FACE BARRIER
TYPE B-77
GRAV. FILL
PROP. SOUND BARRIER
BEG. -NW4-
WATER LINE ABOVE GROUND
TOP & INV'S UNK AREA UNDER CONSTRUCTION
UNK SIZE
36" EXPRESSWAY CMP
PAVED DITCH
REBAR
48" CMP
R/W MON
BY9-165
BY9-166

A

SP. CUT DITCH SEE DETAIL B
REMOVE
PROP. GUARDRAIL
40' TYP.
GREU 350 TL-3
SP. CUT DITCH W/HINGE SEE DETAIL L
SP. CUT SWALE W/HINGE SEE DETAIL G
CS Sta. 24+44.60
SRS Sta. 26+84.60
PROP. WW FENCE
EXISTING R/W
REMOVE EXIST. C/A FENCE
BEGIN CONSTRUCTION –YIRPBD– CS Sta. 15+58.53
SP. CUT DITCH W/HINGE SEE DETAIL L
END -NW2-
2 TONS CL B RIP RAP
7 SY GEOTEXTILE
INV. OUT=233.3'
SINGLE FACE BARRIER
SC Sta. 17+58.53
15" RCP III
2GID-WSF
FS
RETAIN
EX 5411
EX 5404
EX 5403
EX 5405
EX 5406
EX 5407
EX 5408
EX 5409
EX 5410
EX 5411
SP. CUT SWALE SEE DETAIL E
-YIRPBD-
OFF RAMP TO -I-440 EB 58' BST
36" RCP
30" RCP
24" RCP
18" RCP
72" RCP
BY9-168
BY9-167
BY9-172
20+00
S 88° 52' 18.9" W
POT Sta. 35+85.30
24" CSP 2 ELBOWS
15" CSP 2 ELBOWS
GREU 350 TS-3
PROP. GUARDRAIL
PROP. SOUND BARRIER
BERM DITCH SEE DETAIL CF
BERM BASE DITCH SEE DETAIL Q
BERM DITCH SEE DETAIL BD
5403
5404
5420
MATCHLINE –YIRPBD– STA. 15+00 SEE INSERT ABOVE

LIVE OAK HOMES INC
DB 13763 PG 229
BM 2005 PG 689

SUNNYBROOK ESTATES SUBDIVISION HOMEOWNERS ASSOCIATION, INC.
DB 15611 PG 2067
BM 2004 PG 666
BM 2005 PGS 689-690

JAMEL C WATKINS
DB 12271 PG 494
BM 2005 PG 690

CATHERINE RICKY HA
DB 11855 P
BM 2005 P

U.S. BANK NATIONAL ASSOCIATION
DB 16962, PG
BM 2005 PG

JAMES A & DB 12529 BM 2005 PG 689

PROGRESS RESIDENTIAL 2015-2 BORROWER, LLC DB 16046 PG 2446 BM 2005 PG 689

SECURE INC DB 16005 PG 2500 BM 2005 PG 689

ZILLEN LLC DB 13305 PG 1867 BM 2005 PG 689

CATHY JO DB 3818

-YIRPBD-

PI Sta 10+32.82	PI Sta 13+12.72	PIs Sta 16+64.98	PI Sta 21+05.34	PIs Sta 25+24.63	PIs Sta 28+44.67
Δ = 1° 00' 00.0" (RT)	Δ = 10° 05' 09.0" (RT)	θs = 2° 02' 45.7"	Δ = 20° 41' 20.4" (RT)	θs = 3° 37' 07.3"	θs = 5° 10' 10.4"
D = 1° 31' 24.3"	D = 2° 02' 46.6"	θs = 3° 00' 56.9"	D = 3° 00' 56.0"	Ls = 240.00'	Ls = 240.00'
L = 65.64'	L = 492.89'	Ls = 200.00'	L = 686.07'	LT = 160.03'	LT = 160.07'
T = 32.82'	T = 247.08'	LT = 106.45'	T = 346.81'	ST = 80.03'	ST = 80.06'
R = 3,761.00'	R = 2,800.00'	ST = 93.68'	R = 1,900.00'		
e = 0.06	e = 0.06		e = 0.06		
V = 75 MPH	V = 65 MPH		V = 65 MPH		

FOR –Y1RPBD– PROFILE SEE SHT. 123

PLANS PREPARED BY:
RS&H
RS&H Architects-Engineers-Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

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Hildebrand

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	55
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FOR INFORMATION ONLY

NAD 83

BM#8
N: 727,344
E: 2,118,765
-BY- STA 53+23.45
O/S 160.07' RT
ELEV.= 317.20'
RR SPIKE IN BASE
OF 13" PINE

POT Sta. 10+00.00

MATCHLINE
-Y2- STA. 19+50
SEE SHEET 56

-Y2-
PI Sta 21+94.38
△ = 2° 38' 12.9" (RT)
D = 0° 33' 22.6"
L = 474.04'
T = 237.06'
R = 10,300.00'
e = NC
V = 50 MPH

FUTURE -Y2- ALIGNMENT

15+00

-Y2-

N 86° 49' 07.8" E

ROCK QUARRY RD

SR 2542 ROCK QUARRY RD SBST

THE SHAW UNIVERSITY
DB 1830 PG 83
MB 1994 PG 1170

THE GEN

STEPHANIE L. BANKS-MANUEL
DB 9096 PG 2097
BM 2000 PG 854-855

EDITH A. INGRAM
AND KIMBERLY R. INGRAM
DB 11607 PG 2755
BM 2000 PG 854-855

NGA DAO AND HONG DAO
DB 11900
PG 2344
BM 2000
PGS 854-855

PEGGY H. WALKER
DB 9246
PG 2703
BM 2000
PGS 854-855

WILLIAM ERNEST GOODWIN
DB 2460 PG 95
BM 1999 PG 1007

OLDE BIRCH, LLC
DB 14437 PG 2536
MB 2008 PG 1660

OLDE BIRCH, LLC
DB 14437 PG 2536
MB 2008 PG 1660

HADDOCK PROPERTIES,LLC
DB 15962 PG 1346
BM 2008 PG 1660

2900 ROCK QUARRY LLC
DB 14364 - PG 2542
PB 2008 - PG 1660

N 04°27'02" E
236.88'

S 87°12'28" W
328.86'

N 02°49'59" W
280.28'

N 02°36'48" W
320.08'

N 76°47'43" W
184.08'

FOR -Y2- PROFILE SEE SHT. 131

PLANS PREPARED BY:

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	56
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE
-Y2- STA. 19+50
SEE SHEET 55

MATCHLINE
-Y2- STA. 30+50
SEE SHEET 7

ERAL BAPTIST STATE CONVENTION
DB 6381 - PG 738
PB 1994 - PG 1170

PC Sta. 19+57.32

FUTURE -Y2- ALIGNMENT

PT Sta. 24+31.35

PC Sta. 25+64.34

EXISTING 15" RCP IS IN GOOD CONDITION. FES IS CRACKING AND NEEDS TO BE REPAIRED.

10A

DOROTHY M. WHITAKER
DB 2204 - PG 614

PT Sta. 29+86.16

END WW FENCE

RETAIN

ROCK QUARRY RD N 89° 27' 20.7" E

20+00

25+00

30+00

55' R

-Y2-

2'-6" C&G

GREU 350 TL-3

15" RCP III

18" RCP III

5601

5602

5603

5604

5605

CB

ADJ. CB

AT-1

+25.00 EX. ROW

+30.00 EX. ROW

+30.00 40.00'

+98.00 EX. ROW

+98.00 45.75'

+98.00 65.00'

+45.00 50.00'

+68.25 EX. ROW

+17.97 EX. ROW

+60.00 70.00'

+25.00 48.16'

+25.00 65.00'

PUE

BEGIN CONSTRUCTION
-Y2- POC Sta. 27+05.40

EXISTING 15" RCP IS IN GOOD CONDITION. EXISTING 15" RCP DOES NOT CURRENTLY ENTER EXISTING CB. THE D/S END HAS BEEN PLUGGED AND CB WALL HAS BEEN PATCHED.

PROVIDENCE DEVELOPMENT OF RALEIGH LLC
DB 11785 - PG 400
PB 2006 - PG 1337

REDUS HOUSING
DB 14102 - PG 2005
PB 2005 - PG 1857

11B

11D

11A

MS. CHERYL H. FREEMAN
DB 2861 - PG 933
PB 1979 - PG 742

WORD OF GOD FELLOWSHIP
DB 8290
PG 1919

WORD OF GOD FELLOWSHIP
DB 4993 - PG 626

BENJAMINE W. WHITAKER
DB 2777 - PG 593
PB 2007 - PG 1385

ISFD

ISBKD

ISMTLBUS

BST

BST PA

GATE

FLAG POLES

TEST STATION

BACKFLOW PREVENTER

COLUMBARIUM

24" BST

18" RCP

15" RCP

12"GAS

48" CONC

20' SANITARY SEWER EASEMENT

S 02°19'02" E 516.49

N 12°50'30" E 478.85'

N 03°50'40" W 187.48'

N 03°50'40" W 505.00'

S 03°19'19" E 228.59'

S 02°56'58" E 45.02'

N 87°00'20" E 5.00'

S 03°04'25" E 150.51'

S 02°56'58" E 255.28'

N 87°14'01" E 141.02'

S 87°14'01" W 286.71'

-Y2-
PI Sta 27+75.28
△ = 2° 25' 00.5" (LT)
D = 0° 34' 22.6"
L = 421.81'
T = 210.94'
R = 10,000.00'
e = NC
V = 50 MPH

FOR -Y2- PROFILE SEE SHTS. 131

PLANS PREPARED BY:
RS&H
RS&H Architects-Engineers-Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

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Hildebr

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	57
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –Y2– STA. 37+50 SEE SHEET 7

MATCHLINE –Y2– STA. 47+50 SEE SHEET 58

S 15°20'27" W 48.49'
S 72°27'20" W 77.39'
S 69°59'13" W 3.83'
S 15°20'27" W 48.46'
S 01°21'49" E 496.30'
N 04°11'17" W 550.96'
S 88°13'31" W 444.31'
S 10°41'11" W 487.53'
N 08°12'10" W 498.89'

ISFD
12
DONALD W. BUCHOLZ DB 5198 PG 568
YUNLONG LL DB 13627 PG 2624
LOUIS MAYO JR. DB 10915 - PG 1888
REDEEMING LOVE MISSIONARY BAPTIST CHURCH INC. DB 9584 - PG 64 PB 2004 - PG 760
WILLIAM E. GC DB 13967 - PG PB 1999 - P

PT Sta. 40+03.40
–Y2– POC Sta. 39+00.00
TS Sta. 40+38.18
SC Sta. 41+98.18
FUTURE –Y2– ALIGNMENT
APPROX. LOCATION OF EXISTING SS BASED ON R&K SURVEY

+00.00 EX ROW
+00.00 50.00'
+58.00 27.66'
+51.73 EX. ROW
+50.59 EX. ROW

RETAIN
CB 5701
CB 5702
0736 CB
2'-6" C&G
18" RCP III
–Y2–
11.9'
11.8'
12.1'
40+00
N 84° 28' 36.0" E
ROCK QUARRY RD
45+00
12" DIP
12" CMP
18" RCP
12" OUT=278.11'
12" IN=275.41'
TOP=279.50'
TOP=286.18'
INV=284.11'
INV=284.27'
12" GAS
12" BST
12" CONC
30" C&G
60" CONC
EXISTING R/W
EOP
EOF
EIP
ELEC JUNCTION BOX
ELEC PED
CABLE PED
TEST STATION
SR 2454 ROCK QUARRY RD

EARNEST PAUL ADAMS DB 3765 - PG 801
TRUSTEE HAROLD M. WALL PB 880 - PG 2000
CHIZOBA NNAMANI DB 12907 - PG 2757
CAROLYN F. RATCLIFF DB 5532 PG 802
BOYD WATSON HOLDER DB 14398 - PG 1370 PB 1952 - PG 62
11
11/2 SFD
GAZEBO
ISBKD
48" CMP
3' CONC FW
45" RCP
24" DIP
24" RCP
8" DIP
8" BST
ROCK QUARRY RD
OLD NATHAN RD

N 87°03'08" E 194.46'
S 00°56'56" W 260.88'
N 89°44'32" E 157.87'
N 89°27'54" W 209.56'
S 03°50'07" W 60.53'
S 04°47'09" E 84.56'
S 00°59'28" E 148.90'
S 00°59'28" E 119.89'
N 00°42'27" W 420.37'
195.77'
S 78°49'31" E
S 73°53'35" W 245.93'

–Y2–

PI Sta 37+79.84	PIs Sta 41+44.86	PI Sta 45+06.56	PIs Sta 48+59.93
Δ = 2° 33' 44.2" (LT)	Θs = 3° 02' 07.9"	Δ = 23° 05' 06.8" (RT)	Θs = 3° 02' 07.9"
D = 0° 34' 22.6"	Ls = 160.00'	D = 3° 47' 39.9"	Ls = 160.00'
L = 447.20'	LT = 106.68'	L = 608.40'	LT = 106.68'
T = 223.64'	ST = 53.35'	T = 308.38'	ST = 53.35'
R = 10,000.00'		R = 1,510.00'	
e = NC		e = 0.04	
V = 50 MPH		V = 50 MPH	

FOR –Y2– PROFILE SEE SHT. 124

PLANS PREPARED BY:

RS&H

RS&H Architects–Engineers–Planners, Inc.
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

4/15/2019
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jhilden

8/17/99

FOR INFORMATION ONLY

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	58
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -Y2- STA. 47+50 SEE SHEET 57

CS Sta. 48+06.58

ST Sta. 49+66.58

POT Sta. 60+04.04

-Y2- 50+00

-Y2- 55+00

-Y2- 60+00

FUTURE -Y2- ALIGNMENT

ROCK QUARRY RD SR 2542 ROCK QUARRY RD 62' BST

SR 2542 ROCK QUARRY RD 90.5' BST

SR 2544 SUNNYBROOK RD 24' BST

S 66°22'01.3" E

WILLIAM E. GOODWIN
DB 6409 PG 571
BM 1995 PG 76

WILLIAM E. GOODWIN
DB 8353 PG 1732
BM 1995 PG 76

WILLIAM GOODWIN
DB 13099 PG 1351
BM 1994 PG 1362

GOODWIN, GRIER & ASSOCIATES, LLC
DB 8467 PG 2202
BM 1962 PG 193

EARTH PETROLEUM VI, INC.
DB 14829 PG 2329
BM 2010 PG 97

WAL-MART STORES EAST, LP
DB 14451 PG 2466
BM 2010 PGS 97-97
BM 2007 PG 131

THE WAKE COUNTY BOARD OF EDUCATION
DB 13262 PG 2429
BM 2010 PG 826

3708 ROZ, LLC
DB 15013 PG 2695
BM 2003 PG 1712

DONALD WADE WILLIAMS
DB 14591 PG 456
DB 4886 PG 272
BM 1991 PG 101

ARRY PROPERTIES, LLC
I 16920 PG 47
M 1952 PG 62

BM#9
N: 727,036
E: 2,124,860
STA 21+36.20
O/S 214.35' LT
ELEV.= 273.27'
SPIKE IN BASE
OF 43" OAK

FOR -Y2- PROFILE SEE SHT. 124

PLANS PREPARED BY:
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RS&H Architects-Engineers-Planners, Inc.
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RALEIGH, NORTH CAROLINA 27615
NC LICENSE NO. F-0493 (919) 926-4100

4/15/2008
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Hildebr

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-Y4-	11+50.00	15+06.89	RT

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	59
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

ROW REVISION - 01-31-2019 - ADDED PLAN SHEET TO EARLY START PACKAGE FOR UTILITY RELOCATIONS.

ROW REVISION - 04-03-2019 - REMOVED PUE FROM PARCEL 38.

NAD 83

MATCHLINE -Y4- STA. 16+00 SEE SHEET 19

BEGIN CONSTRUCTION -Y4- POT Sta.10+80.00

-Y4- POT Sta. 10+00.00

-Y4- PC Sta. 12+37.18

-Y4- +77.81

-Y4-

PI Sta 14+75.31
△ = 7°08' 03.1" (LT)
D = 1°29' 59.6"
L = 475.65'
T = 238.13'
R = 3,820.00'
SE = 0.03
V = 50 mph

PATRICIA M. CLEMENT TRUSTEE
DB 13746 - PG 1508

MARY WALTON MYATT
DB 13883 - PG 1026
PB 2005 - PG 1759

PATRICIA LOFLIN
DB 11177 - PG 849
PB 2006 - PG 1879

S.T. WOOTEN CORP.
DB 12346 - PG 1359
PB 1990 - PG 836

WAKE COUNTY BOARD OF EDUCATION
DB 2378 - PG 666

25BK
EAST GARNER MAGNET SCHOOL

WAKE COUNTY BOARD OF EDUCATION
DB 2378 - PG 666

EAST GARNER MAGNET SCHOOL

SPECIAL CUT DITCH SEE DETAIL B

PROP. 2'-6" C&G

TIE TO EX. 2'-6" C&G

RETAIN SYSTEM

400' TRANSITION

100' TAPER

50' TAPER

REMOVE

RETAIN

BEGIN FENCE

PIPE CLEANOUT

FOR -Y4- PROFILE SEE SHT. 139

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mwah

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	60
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

REVISIONS

8/17/99 ROW REVISION - 01-31-2019 - ADDED PLAN SHEET TO EARLY START PACKAGE FOR UTILITY RELOCATIONS.

MATCHLINE -Y4- STA. 26+00 SEE SHEET 19

-Y4- PT Sta. 28+65.84

-Y4- POT Sta. 30+78.10

-Y4- 30+00 S 81° 24' 13.7" E

END UNKNOWN

42" HDPE

RIP RAP

RETAIN

MARTIN MARIETTA MATERIAL INC.
DB 5960 - PG 864
MAPPED PER WAKE CO. G.I.S.
14

+05.00 85.00'
+15.00 90.00'
+30.00 85.00'
+00.00 EXIST. ROW, 75.00'
PUE
72" CMP
SOIL
50' TAPER
EXISTING R/W
R/W MON
15" CMP
RETAIN
GREU TL-3
8:1
24"
42"
48"
EOP
36" RCP
RETAIN
EXISTING R/W
RETAIN
RETAIN
18" CONC HW
4.0EX
PIPE CLEANOUT
+54.41 EX. ROW
+59.41 EX. ROW
+89.41 EX. ROW
+00.00 60.00'
+40.00 50.00'
+50.00 50.00'
26.67' TYP.
17.92'

MARTIN MARIETTA MATERIALS INC.
DB 13897 - PG 1354
14A

MARTIN MARIETTA MATERIALS INC.
DB 13897 - PG 1350
14A

MARTIN MARIETTA MATERIALS INC.
DB 13897 - PG 1354
14A

MARTIN MARIETTA MATERIALS INC.
DB 13897 - PG 1361
PB 1999 - PG 687

END CONSTRUCTION
-Y4- POT Sta. 29+15.00

N 08°37'29" E 348.69'

S 08°37'29" W 348.75'

N 81°22'31" W 125.00'

N 00°58'14" E 740.36'

N 00°37'29" E 295.53'

-Y4-
PI Sta 26+28.33
Δ = 1° 08' 03.1" (LT)
D = 1° 29' 59.6"
L = 475.65'
T = 238.13'
R = 3,820.00'
SE = 0.03
V = 50 mph

FOR -Y4- PROFILE SEE SHT. 139

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mabj

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	61
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

ROW REVISION - 11-30-2018 - ADDED PARCEL NO.18A AND REVISED PARCEL 18. REVISED ROW/PUE FOR PARCEL 18.

NAD 83

MATCHLINE -Y5RPC- STA. 62+00 SEE SHEET 22

MATCHLINE -Y5RPA- STA. 23+00 SEE SHEET 22

-Y5RPC- N 74° 26' 43.9" E

65+00

REPAIR EXISTING CONCRETE DITCH & EXTEND AN ADDITIONAL 10'

SPECIAL CUT DITCH SEE DETAIL B

RETAIN SYSTEM

6105 TB 2GIB-ST

15" CSP 2 ELBOWS

6106 1 TON CL B RIPRAP W/ 5 SY GEOTEXTILE

8:1

25+00

-Y5RPA-

+05.00 EX. ROW, 105.00'

19

PERGO INC. DB 9039 - PG 2178

PROP WW FENCE

SP. LAT. V SWALE SEE DETAIL AE

-Y5RPA- PCC Sta. 27+88.58

END CONSTRUCTION -Y5RPA- POC Sta. 29+36.35

30+00

70+00

-Y5RPC- TS Sta. 69+61.17

-Y5RPC- SC Sta. 71+41.17

-Y5RPC-

MATCHLINE -Y5- STA. 44+50 SEE SHEET 21

MATCHLINE -Y5RPB- STA. 43+00 SEE SHEET 21

-Y5- PC Sta. 45+18.59

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL F

RETAIN DI

RETAIN

SPECIAL CUT DITCH SEE DETAIL B

6101 6102 HW

6103 2GIA NSS

48" RCP-III

REMOVE SYSTEM

6104

SPECIAL CUT SWALE SEE DETAIL E

EX. ROW

PUE

DUKE REALTY LAND, LLC DB 15876 - PG 57 PB 2016 - PG 2218 LOT 11C

STANDARD 4' BASE DITCH W/CL II RIP RAP SEE DETAIL F

18

10' WIDE BERM TOP ELEV=314.0' SEE DETAIL J

45+00

+85.00 160'

+20.00 EX. ROW

SPECIAL CUT DITCH SEE DETAIL E

+20.49

27.50' TYP.

50' TAPER

END CONSTRUCTION -Y5RPB- POC Sta. 46+45.00

-Y5RPB- PT Sta. 46+90.14

RETAIN SYSTEM

RETAIN DI

50+00

REMOVE EXIST. CA FENCE

BEGIN FENCE -Y5- STA. 50+21.25

DUKE CONSTRUCTION LTD PTNRP DB 14468 - PG 1140 PB 2007 - PG 2587

REPAIR 20 +/- OF 18" RCP WHERE OUTLET HAS SEPERATED FROM HW (RECONNECT)

18" RCP

-Y5-	-Y5RPA-	-Y5RPB-
PI Sta 53+44.42	PI Sta 30+60.64	PI Sta 44+44.82
Δ = 8° 08' 39.4" (RT)	Δ = 18° 08' 32.6" (RT)	Δ = 17° 49' 31.3" (LT)
D = 0° 29' 38.1"	D = 3° 21' 44.7"	D = 3° 36' 12.6"
L = 1,648.88'	L = 539.56'	L = 494.67'
T = 825.83'	T = 272.06'	T = 249.35'
R = 11,600.00'	R = 1,704.00'	R = 1,590.00'
SE = N.C.	SE = 0.08	SE = 0.08
V = 50 MPH	V = 60 MPH	V = 60 MPH

FOR -Y5RPA- PROFILE SEE SHT. 142
FOR -Y5RPB- PROFILE SEE SHT. 144

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mwahl

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	62
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

REVISIONS

ROW REVISION - 04-03-2019 - ADDED PUE TO PARCEL 23.
ROW REVISION - 04-09-2019 - REMOVED TCE FROM PARCEL 23.

8/17/99

MATCHLINE -Y6- STA. 20+50 SEE SHEET 30

23
N. D. SAULS JR.
DB 06-E PG 241

-Y6- POT Sta. 24+33.21

END CONSTRUCTION
-Y6- POT Sta.22+85.00

50' TAPER TO EXIST.

+30.00
EX. ROW, 50.00'

+00.00
70.00'

+05.00
65.00'

+15.00
EX. ROW

+60.00
40.00'

+85.00
EX. ROW

+80.00
EX. ROW
60.00'

SPECIAL CUT DITCH
SEE DETAIL B

RUINS

GATES

PDE

PUE

TCE

EXISTING R/W

12" RCP

15" REMOVE

25' TYP.

4' PS

8:1

S 73°12'42.8" E
-Y6-

TREE PROTECTION WHITE OAK RD/SR 1151

T FO

R/W MON

BY5-160

+50.00
EX. ROW

+40.00
60.00'

+80.00
80.00'

+30.00
75.00'

+15.00
55.00'
EX. ROW

-Y6- PT Sta. 21+75.81

23
N. D. SAULS JR.
DB 06-E PG 241

TOWN OF GARNER
WAKE COUNTY

BOBBY BANKS
DB 718 - PG 157
DB 234 - PG 0-F-
DB 3893 - PG 892
PB 1983 - PG 1249

-Y6-
PI Sta 20+92.18
△ = 10° 19' 53.9" (RT)
D = 6° 09' 39.0"
L = 167.70'
T = 84.08'
R = 930.00'
SE = 0.04
V = 50 mph

FOR -Y6- PROFILE SEE SHT. 148

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mjohnson

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	63
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -Y8RPB- STA. 32+50 SEE SHEET 37

MATCHLINE -Y8LPC- STA. 43+00 SEE SHEET 37

MATCHLINE -Y8RPC- STA. 60+00 SEE SHEET 37

MATCHLINE -Y8RPA- STA. 22+00 SEE SHEET 38

END CONSTRUCTION -Y8RPB- POC Sta. 42+63.72

-Y8LPC- PT Sta. 55+76.08

TIE DOWN OVERLAY

-Y8RPC- CS Sta. 70+00.09

-Y8RPC- SC Sta. 72+95.36

Y8RPA- PC Sta. 34+78.95

END CONSTRUCTION -Y8RPA- POC Sta. 34+88.95

-Y8RPA- ST Sta. 32+96.33

-Y8RPA- CS Sta. 30+86.33

REMOVE 15"METAL SILL (NO SILL DOWNSTREAM AND NOT SERVING ITS INTENDED PURPOSE)

6308 RETAIN CB

6310 RETAIN CB

6311 RETAIN DI

6312 2GIB-WSS

6313 5 TONS CL B RIPRAP W/14 SY GEOTEXTILE

6314 2 ELBOWS

6315 2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

6316 2 ELBOWS

6317 2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

6318 SLUICE GATE

6319 20 TONS CL I RIPRAP W/39 SY GEOTEXTILE

6300 PLUG & FILL W/FLOWABLE FILL

6301 20 TONS CL I RIPRAP W/39 SY GEOTEXTILE

6303 2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

6304 RETAIN DI

6305 COLLAR AND EXTEND 15" RCP-III

6306 9B DET. JB w/MH

6307 COLLAR AND EXTEND 60" RCP-HH

6307 REMOVE CB

6309 48 TONS CL I RIPRAP W/89 SY GEOTEXTILE ON BANKS ONLY LENGTH=22' (SEE DETAIL BB)

LINE CUT DITCH TRANSITION 2 TONS CL B RIPRAP W/7 SY GEOTEXTILE

LATERAL V SWALE SEE DETAIL AN

SPECIAL CUT SWALE SEE DETAIL E

SPECIAL CUT SWALE SEE DETAIL-E

RETAIN SYSTEM

RETAIN DI

RETAIN

REMOVE

2GID-WSS

2GIB-WSF

15" RCP-III

66" RCP-III

60" RCP-HH

24" RCP-III

30" RCP

24" RCP

15" RCP

60" RCP

18" RCP

WAKE COUNTY

JOHNSTON COUNTY

US 70 BYP EBL 24" BST

US 70 BYP WBL 37" BST

10' BST

16' BST

4' BST

S 58° 46' 31.4" E

26.25' TYP.

-Y8RPA-

PI Sta 25+56.85	PIs Sta 31+56.41	PI Sta 35+33.43
Δ = 100° 32' 16.9" (RT)	Θs = 6° 16' 00.2"	Δ = 1° 48' 20.9" (LT)
D = 5° 58' 05.9"	Ls = 210.00'	D = 1° 39' 26.8"
L = 1,684.53'	LT = 140.09'	L = 108.95'
T = 1,155.05'	ST = 70.08'	T = 54.48'
R = 960.00'		R = 3,456.87'
SE = 0.08		SE = EXIST.
V = 55 MPH		V = EXIST.

-Y8RPB-

PI Sta 43+16.52
Δ = 86° 19' 59.1" (LT)
D = 1° 44' 48.6"
L = 4,942.29'
T = 3,076.52'
R = 3,280.00'
SE = EXIST.
V = EXIST.

-Y8RPC-

PIs Sta 71+96.96	PI Sta 81+03.15
Θs = 2° 27' 19.9"	Δ = 26° 23' 37.3" (LT)
Ls = 295.27'	D = 1° 39' 47.6"
LT = 196.87'	L = 1,586.90'
ST = 98.44'	T = 807.79'
	R = 3,444.87'
	SE = EXIST.
	V = EXIST.

-Y8LPC-

PI Sta 43+16.52
Δ = 86° 19' 59.1" (LT)
D = 1° 44' 48.6"
L = 4,942.29'
T = 3,076.52'
R = 3,280.00'
SE = EXIST.
V = EXIST.

FOR -Y8RPA- PROFILE SEE SHT. 149

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mabj

8/17/99

CURB + GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C+G	-YIE-	10+74.35	14+50.53	RT

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	64
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -Y1_3- STA. 29+00
SEE SHEET 65

NAD 83

BEGIN CONSTRUCTION
-Y1_3- POT Sta.20+80.00

END CONSTRUCTION
-YIE- POT Sta.16+20.00

-YIE- POT Sta. 18+60.83

-YIE- PC Sta. 12+66.37

-YIE- PT Sta. 14+65.56

-Y1_3- STA.24+71.09=
-YIE- STA.10+00.00

-YIE-
PI Sta 13+73.38
△ = 51° 52' 32.0" (RT)
D = 26° 02' 36.7"
L = 199.19'
T = 107.01'
R = 220.00'
SE = 0.04
V = 25mph (Stop Cond.)

FOR -Y1_3- PROFILE SEE SHT. 159
FOR -YIE- PROFILE SEE SHT. 171

GEORGE B. MAST AND WIFE, GAYLE F. MAST DB 4714 PG553

FSC AAP GARNER NC, LLC DB 3994 PG 955 MB72 PG163

GEORGE B. MAST AND WIFE, GAYLE F. MAST DB 2865 P452

HIGHWAY 42 ASSOCIATES, LLC DB 2602 PG 506

HIGHWAY 42 ASSOCIATES, LLC DB 1894 PG 40 DB 3151 PG 196

MATT PROPERTIES, LLC DB 4169 PG 672 MB 67 PG 251

GLOBAL PROPERTIES AND DEVELOPMENT, LLC AND THE BECKETT COMPANY, LLC DB 4385 PG 579 MB 75 PG 35

ROWAN ASSET COMPANY, LLC DB 3836 PG 608 MB 75 PG 35

IRENE S. JOHNSON DB 1373 PG 568

ORVEIN DAVID GONZALEZ DB 4555 PG 283

LUIS VILLALPANDO, JR. AND WIFE, SILVIA VILLALPANDO DB 4398 PG 63 MB 56 PG 306

TUPELO HONEY LAND DEVELOPMENT, LLC DB 4627 PG 719 MB 85 PG 94

STANDARD V DITCH SEE DETAIL AL

2 TONS CL B RIP RAP W/7 SY GEOTEXTILE

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

CLEAN OUT PIPE OUTLET

PROP. 2'-6" C & G

PROP. 2'-6" C&G

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL AG

100' LANE TAPER

200' TAPER

216' TAPER

320' TRANSITION

245' MEDIAN TAPER

90' LANE TAPER

25' 100' LANE TAPER TO EXIST.

PLUG & FILL W/FLOWABLE FILL

REMOVE CB

RP-III

RCP-III

RIP RAP

RETAIN

RETAIN SYSTEM

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mwhitt

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	65
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE –Y1_3– STA. 29+00 SEE SHEET 64

MATCHLINE –SR1– STA. 15+00 SEE SHEET 69

MATCHLINE –Y2_3– STA. 24+50 SEE SHEET 69

MATCHLINE –Y1_3– STA. 42+00 SEE SHEET 66

MATCHLINE –Y2_3– STA. 32+50 SEE SHEET 70

–SRI– PT Sta. 17+05.72

END CONSTRUCTION –SRI– POT Sta. 18+68.74

26 TONS CL I RIP RAP W/50 SY GEOTEXTILE (LINE EXISTING STEEP CHANNEL OUTLET)

STD. BASE DITCH W/CL B RIPRAP SEE DETAIL BD

STD V DITCH SEE DETAIL AI

STANDARD V DITCH SEE DETAIL AI

LATERAL V DITCH SEE DETAIL AZ

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL AG

PROP. 2'-6" C&G

PROP. 2'-8" C&G

PROP. 2'-6" C&G

100' TAPER

200' TAPER

320' MEDIAN WIDTH TAPER

250' LEFT TURN LANE

375' DUAL LEFT TURN LANES

PROP. RETAINING WALL W/HANDRAIL

PROP. RETAINING WALL W/HANDRAIL

PLUG & FILL W/FLOWABLE FILL

PIPE PROTECTION W/CL B RIPRAP SEE DETAIL BB

GRADE TO DRAIN

–Y2_3 GRADE TO DRAIN

–Y1_3– Sta.35+87.12= –Y2_3– Sta.28+12.51

S 38°24'41" E 419.91'

N 55°03' 22.5" E

S 55°24'13" W 159.95'

S 55°23'30" W 141.91'

N 34°59'41" W 165.91'

N 34°45'41" W 165.91'

N 36°43'38" W 101.53'

N 36°56'08" W 257.37'

CURB + GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
1'-6" C+G	–Y1_3–	33+05.31	35+13.29	MED
1'-6" C+G	–Y1_3–	36+51.49	38+48.72	MED
1'-6" C+G	–Y1_3–	39+74.54	42+00.00	MED
2'-6" C+G	–Y1_3–	29+00.00	34+93.20	LT
2'-6" C+G	–Y1_3–	36+58.29	42+00.00	LT
2'-6" C+G	–Y1_3–	29+00.00	30+22.75	RT
2'-6" C+G	–Y1_3–	30+70.37	30+91.97	RT
2'-6" C+G	–Y1_3–	31+83.22	32+55.59	RT
2'-6" C+G	–Y1_3–	32+80.80	35+38.43	RT
2'-6" C+G	–Y1_3–	36+47.51	38+17.76	RT
2'-6" C+G	–Y1_3–	38+65.39	39+42.68	RT
2'-6" C+G	–Y1_3–	39+85.14	42+00.00	RT
2'-6" C+G	–Y2_3–	24+50.00	27+54.20	RT
2'-6" C+G	–Y2_3–	28+96.27	32+50.00	RT
2'-6" C+G	–Y2_3–	25+61.83	27+49.69	LT
2'-6" C+G	–Y2_3–	28+94.87	30+80.74	LT
2'-6" C+G	–Y2_3–	31+14.98	32+50.00	LT

FOR –Y1_3– PROFILE SEE SHTS. 159
FOR –Y2_3– PROFILE SEE SHT. 172
FOR –SR1– PROFILE SEE SHT. 177

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	66
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–Y1_3– (NC 42) TECH. DR.

ADT 2018 / ADT 2038		22,200 / 38,100	
TECH. DR.	1,600 / 2,200	300 / 400	DRVWY
–Y1A–	3,500 / 5,100	1,900 / 2,700	2,400 / 4,800 — 200 / 300
NC		22,400 / 38,500	42

MATCHLINE –Y1A– STA. 34+50 SEE SHEET 45

MATCHLINE –Y1_3– STA. 51+50 SEE SHEET 45

MATCHLINE –Y1_3– STA. 42+00 SEE SHEET 65

NAD 83

–Y1A– PC Sta. 35+01.29

–Y1A– PCC Sta. 36+94.45

–Y1A– PCC Sta. 37+68.28

–Y1A– PCC Sta. 39+73.06

–Y1A– PT Sta. 41+24.32

END 3" OVERLAY
BEGIN CONSTRUCTION
–Y1A– POT Sta. 42+08.17

–Y1A– PC Sta. 44+94.06

–Y1A– PT Sta. 46+78.69

–Y1_3– Sta. 43+95.63=
–Y1A– POT Sta. 47+71.37

FOR –Y1_3– PROFILE SEE SHTS. 159–160
FOR –Y1A– PROFILE SEE SHTS. 168–169

CURB + GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
1–6" C+G	–Y1_3–	42+00.00	43+52.25	MED
1–6" C+G	–Y1_3–	44+68.62	51+50.00	MED
2'–6" C+G	–Y1_3–	42+00.00	43+38.06	LT
2'–6" C+G	–Y1_3–	42+00.00	48+47.00	RT
2'–6" C+G	–Y1_3–	42+00.00	48+47.00	RT
2'–6" C+G	–Y1_3–	44+36.88	47+29.67	LT
2'–6" C+G	–Y1_3–	44+36.88	47+29.67	LT
2'–6" C+G	–Y1_3–	44+03.93	46+40.16	RT
2'–6" C+G	–Y1_3–	44+03.93	46+40.16	RT
2'–6" C+G	–Y1_3–	47+71.47	48+48.25	LT
2'–6" C+G	–Y1_3–	46+95.19	48+30.71	RT
2'–6" C+G	–Y1_3–	48+88.27	49+42.69	LT
2'–6" C+G	–Y1_3–	48+66.45	49+61.45	RT
2'–6" C+G	–Y1_3–	48+66.45	49+61.45	RT
2'–6" C+G	–Y1_3–	49+75.20	50+80.84	LT
2'–6" C+G	–Y1_3–	49+75.20	50+80.84	LT
2'–6" C+G	–Y1_3–	50+00.00	50+41.99	LT
2'–6" C+G	–Y1_3–	51+16.11	51+50.00	RT
2'–6" C+G	–Y1_3–	51+14.11	51+50.00	LT
2'–6" C+G	–Y1_3–	50+00.00	50+43.98	RT
2'–6" C+G	–Y1_3–	50+82.17	51+50.00	RT
2'–6" C+G	–Y1_3–	50+82.17	51+50.00	RT

CURB + GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
2'–6" C+G	–Y1A–	42+08.17	44+19.04	LT
2'–6" C+G	–Y1A–	44+44.30	46+89.73	LT
2'–6" C+G	–Y1A–	44+44.30	46+89.73	RT
2'–6" C+G	–Y1A–	43+19.73	45+11.79	RT
2'–6" C+G	–Y1A–	45+46.42	46+99.19	RT

–Y1A–

PI Sta 36+01.12	PI Sta 37+31.40	PI Sta 38+70.68	PI Sta 40+48.87	PI Sta 45+88.94
Δ = 35° 42' 02.3" (LT)	Δ = 5° 52' 30.1" (LT)	Δ = 1° 10' 24.0" (LT)	Δ = 9° 37' 44.4" (LT)	Δ = 32° 32' 53.4" (LT)
D = 18° 28' 57.0"	D = 7° 57' 27.9"	D = 0° 34' 22.6"	D = 6° 21' 58.3"	D = 17° 37' 46.1"
L = 193.16'	L = 73.83'	L = 204.78'	L = 151.25'	L = 184.62'
T = 99.83'	T = 36.95'	T = 102.40'	T = 75.80'	T = 94.88'
R = 310.00'	R = 720.00'	R = 10,000.00'	R = 900.00'	R = 325.00'
SE = 0.04	SE = 0.03	SE = NC	SE = 0.03	SE = 0.04
V = 30mph	V = 30mph	V = 30mph	V = 30mph	V = 30mph

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	67
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –Y1_3– STA. 67+00 SEE SHEET 45

NAD 83

MEEKER FAMILY PARTNERS LP
DB 4298 PG 484
PB 65 PG 292
47

42 WEST LLC
DB 2660 PG 623
PB 47 PG 218
49

MOORE & MOORE LLC
DB 1388 PG 31
PB 42 PG 225
50

WILCOHESS LLC
DB 2074 PG 326
PB 43 PG 51
133

JR REAL ESTATE LLC
DB 3531 PG 841
PB 56 PG 93

MARKEL PROPERTIES LLC
DB 3196 PG 588
PB 68 PG 461

SOUTH PARK DEVELOPMENT CO, INC
DB 1508 PG 767
PB 47 PG 192
135

HM WADE REAL ESTATE INVESTMENTS
DB 3529 PG 152
PB 54 PG 98
137

EUGENE A. TAYLOR
LILLIE WILLIAMS TAYLOR
DB 4020 PG 398
PB 63 PG 94
138

HM WADE REAL ESTATE INVESTMENTS
DB 3529 PG 152
PB 54 PG 98
137

COUNTRY STORES PROPERTY II LLC
DB 1974 PG 440
PB 50 PG 316
132

WILCOHESS LLC
DB 3390 PG 971
PB 51 PG 200
134

LOWE'S HOME CENTERS INC
DB 1828 PG 895
PB 54 PG 172
136

SHRI BALAJI LLC
DB 3228 PG 642
PB 50 PG 316

–YIWB3– PT Sta. 24+22.34

–YI_3– PC Sta. 73+91.97

–YID– POT Sta. 10+00.00

BEGIN CONSTRUCTION
–YID– POT Sta. 10+55.00

–YISPA3– PT Sta. 15+49.12

–YIEB3– PT Sta. 25+35.84

–YI_3– Sta. 72+33.85=
–YID– Sta. 14+51.68

END CONSTRUCTION
–YI_3– POC Sta. 80+50.00

END CONSTRUCTION
–YID– POT Sta. 17+35.00

–YID– POT Sta. 17+94.74

320' TRANSITION

TOE PROTECTION W/CL B RIPRAP SEE DETAIL O

CONTRACTOR TO FIELD ADJUST TO MAINTAIN EXISTING RETENTION AREA

PROP. RETAINING W/HANDRAIL

PLUG & FILL W/FLOWABLE FILL

REMOVE 30" EX. 24" CMP

REMOVE EX. DI

REMOVE DI

60' LANE WIDTH TAPER

80' LANE WIDTH TAPER

100' TAPER

200' TAPER

PROP. 2'-6" C & G

RETAIN SYSTEM

RETAIN

PUE

CURB + GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
1'-6" C+G	–Y1_3–	67+00.00	68+42.69	LT
1'-6" C+G	–Y1_3–	67+00.00	68+42.69	RT
2'-6" C+G	–Y1_3–	67+00.00	69+25.87	LT
2'-6" C+G	–Y1_3–	67+00.00	69+64.12	RT
2'-6" C+G	–Y1_3–	69+85.18	72+05.81	LT
2'-6" C+G	–Y1_3–	69+98.42	71+84.90	RT
2'-6" C+G	–Y1_3–	72+69.89	80+00.00	LT
2'-6" C+G	–Y1_3–	72+69.89	80+00.00	RT
2'-6" C+G	–YID–	15+19.46	17+34.81	LT
2'-6" C+G	–YID–	11+74.40	13+07.49	RT

–Y1_3– (NC 42) –Y1D–

ADT 2018 / ADT 2038	20,100 / 28,500		
	1,800 / 2,900	1,900 / 2,900	
NC 42			
–Y1–			
6,200 / 9,900	3,200 / 4,800	3,900 / 4,300	7,000 / 9,400
		23,600 / 31,800	
–Y1D–			

FOR –Y1_3– PROFILE SEE SHT. 160–161
FOR –Y1EB3– PROFILE SEE SHT. 163
FOR –Y1WB3– PROFILE SEE SHT. 163
FOR –Y1D– PROFILE SEE SHT. 171

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	68
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

MATCHLINE -Y1C- STA. 27+00 SEE SHEET 70

MATCHLINE -Y1C- STA. 16+50 SEE SHEET 45

STANCIL 1995 FAMILY LTD PTNRP
DB 1495 PG 159
PB 51PG 216

OM PRAKASH JAIN
MALA JAIN
DB 1607 PG 430
PB 47 PG 215

RODESSA, LLC
DB 4375 PG 218
MB 64 PG 269

-Y1C- PC Sta. 26+25.58

-Y1C- PT Sta. 22+86.86

-Y1C- PCC Sta. 18+97.57

3" OVERLAY ONLY

25+00

20+00

S 66°16'53.7" W

S 55°51'37" W
740.64'

S 37°49'46" E
390.39'

S 37°49'46" E
53.42'

N 47°48'56" E
165.93'

N 47°48'5
119.59'

S 50°22'50" W
23.57'

S 23°49'40" E
286.68'

S 23°41'01" E
217.01'

S 27°58'07" E
224.21'

S 78°20'33" W
205.15'

N 78°06'57" E
60.28'

N 57°56'34" W
120.18'

N 40°43'46" E
84.14'

S 48°30'42" W
296.67'

N 63°56'57" W
89.17'

N 83°00'59" W
113.14'

S 54°48'47" W
85.26'

S 35°52'09" W
89.66'

S 25°52'56" W
19.97'

N 85°53'19" W
85.37'

S 51°24'38" E
418.30'

N 73°39'00" W

-Y1C-

PI Sta 20+93.31	PI Sta 27+30.68
△ = 14° 52' 11.4" (RT)	△ = 26° 52' 00.2" (LT)
D = 3° 49' 11.0"	D = 13° 01' 18.4"
L = 389.29'	L = 206.32'
T = 195.75'	T = 105.09'
R = 1,500.00'	R = 440.00'
SE = EXIST.	SE = EXIST.

FOR -Y1C- PROFILE SEE SHT. 170

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	69
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

BEGIN CONSTRUCTION
-Y2_3- PC Sta. 14+40.00

-Y2_3- PT Sta. 20+27.39=
-PIERCE- POT Sta. 16+21.93

-Y2_3- PT Sta. 15+14.92

-PIERCE- PT Sta. 14+97.74

-SRI- POT Sta. 10+00.00=
-PIERCE- POT Sta. 13+28.91

-PIERCE- PC Sta. 10+98.49

BEGIN CONSTRUCTION
-PIERCE- PC Sta. 10+00.00

S 85° 17' 37.5" E

-SRI- PT Sta. 11+03.84

-SRI- PC Sta. 10+42.24

-SRI- PC Sta. 12+28.78

MATCHLINE
-Y2_3- STA. 24+50
SEE SHEET 65

MATCHLINE
-SRI- STA. 15+00
SEE SHEET 65

LARRY W. JOHNSON
DB 4172 PG 608
MB 76 PG 264

TOMMY B. CROCKER AND MARC CROCKER
DB 826 PG 514

GARLAND PAUL SHERRILL, JR. ET ALS
DB 3813 PG 337
140

FULLER-SHERRILL PLACE, LLC
DB 4691 PG 701

AMANDA H. GREENWAY AND HUSBAND, NICOLAS J. GREENWAY
DB 4433 PG 92
MB 27 PG 245
141

ZINDALL R. SEAGROVES AND WIFE, CRYSTAL J. SEAGROVES
DB 1056 PG 459
MB 27 PG 245
142

MICHAEL J. BUDZYNSKI
DB 1082 PG 788
MB 27 PG 245
143

G. PAUL SHERRILL, JR.
DB 1153 PG 768
144

G. PAUL SHERRILL, JR.
DB 1001 PG 284

MATTHEWS TRUST
DB 4563 PG 626
113

RICHARD GREEN TRUST
DB 4201 PG 240
145

MALIBU WILMINGTON INC
DB 3647 PG 620
MB 72 PG 225

SR 1100 CLEVELAND RD 225' BST

SR 1100 CLEVELAND RD 22' BST

PIERCE RD 245' BST

600' PR

200' PR

15+00

20+00

℄ -Y2_3- PKS 40.4

787.5' MEDIAN TAPER RT

650' MEDIAN TAPER LT

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

3 TONS CL B RIP RAP W/7 SY GEOTEXTILE

6 TONS CL B RIP RAP W/20 SY GEOTEXTILE

3 TONS CL B RIP RAP W/10 SY GEOTEXTILE

SPECIAL CUT DITCH SEE DETAIL B

SP. LAT. V DITCH SEE DETAIL AJ

STANDARD V DITCH SEE DETAIL AL

SPECIAL LATERAL V DITCH SEE DETAIL AJ

COLLAR & EXTEND 18" RCP-III

PROP. 2'-6" C&G

GRADE TO DRAIN

RETAIN

REMOVE

EXIST

-PIERCE-	-SRI-
PI Sta 13+08.01	PI Sta 10+76.06
△ = 42° 55' 04.4" (LT)	△ = 58° 49' 13.2" (LT)
D = 10° 44' 58.8"	D = 95° 29' 34.7"
L = 399.25'	L = 61.60'
T = 209.51'	T = 33.82'
R = 533.00'	R = 60.00'
SE = 0.04	SE = 0.04
V = 40mph	V = 15mph (Stop Cond.)
	PI Sta 14+73.47
	△ = 94° 16' 39.0" (RT)
	D = 22° 55' 05.9"
	L = 411.36'
	T = 269.40'
	R = 250.00'
	SE = 0.04
	V = 30mph

FOR -Y2_3- PROFILE SEE SHT. 172
FOR -PIERCE- PROFILE SEE SHT. 178
FOR -SRI- PROFILE SEE SHT. 177

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	70
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -Y1C- STA. 27+00 SEE SHEET 68

MATCHLINE -Y2_3- STA. 32+50 SEE SHEET 65

MATCHLINE -Y2_3- STA. 46+50 SEE SHEET 46

BEGIN CONSTRUCTION
END 3" OVERLAY
-Y1C- POT Sta. 27+25.00

-Y1C- PT Sta. 28+31.91

-Y2B- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y2B- POT Sta. 12+18.78

-Y2_3- PRC Sta. 46+31.84

-Y1C- POT Sta. 32+59.37=
-Y2_3- PC Sta. 35+99.40

-Y2_3- PC Sta. 36+04.49

END C/A
END FENCE
Sta. 36+75.00

-Y2_3- PT Sta. 40+80.74

-Y2_3- PC Sta. 43+79.64

-Y2B- POT Sta. 14+19.58=
-Y2_3- PC Sta. 44+07.16

600' TRANSITION

CLEVELAND VILLAGE, LLC
DB 2772 PG 332
DB 60 PG 91

RODESSA, LLC
DB 4375 PG 218
MB 64 PG 269

PEDDLERS VILLAGE, LLC
DB 3027 PG 88
MB 59 PG 103
MB 60 PG 91

ROBERT W. BARBER REVOCABLE TRUST
AND
ELIZABETH T. BARBER REVOCABLE TRUST
DB 4131 PG 803
MB 31 PG 31

CAROLINA BUILDERS CORPORATION
DB 1671PG 127

S.T. WOOTEN CORPORATION
DB 1134 PG 785
MB 31 PG 31
MB 80 PG 273

W.D. PARKER ESTATE
NO REFERENCE

REGENSBURGER PROPERTIES, LLC
DB 4539 PG 63
MB 49 PG 183
MB 82 PG 6

CLEVELAND MANAGEMENT HOLDINGS, LLC
DB 4539 PG 66
MB 80 PG 273
MB 82 PG 6

-Y2_3-

PI Sta 38+43.12	PI Sta 45+05.91
Δ = 9° 05' 44.6" (LT)	Δ = 7° 13' 29.2" (LT)
D = 1° 54' 35.5"	D = 2° 51' 53.2"
L = 476.25'	L = 252.19'
T = 238.63'	T = 126.26'
R = 3,000.00'	R = 2,000.00'
SE = 0.03	SE = 0.04
V = 50mph	V = 50mph

CURB + GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C+G	-Y2_3-	32+50.00	33+23.59	LT
2'-6" C+G	-Y2_3-	32+50.00	32+93.90	RT
2'-6" C+G	-Y2_3-	33+64.45	35+24.08	LT
2'-6" C+G	-Y2_3-	36+15.27	38+13.24	LT
2'-6" C+G	-Y2_3-	38+63.70	41+46.17	LT
2'-6" C+G	-Y2_3-	41+91.79	43+68.30	LT
2'-6" C+G	-Y2_3-	44+67.33	46+50.00	LT
2'-6" C+G	-Y2_3-	33+27.58	46+50.00	RT
2'-6" C+G	-Y1C-	29+89.50	31+92.38	LT
2'-6" C+G	-Y1C-	28+00.00	31+71.35	RT
2'-6" C+G	-Y2B-	12+18.81	13+71.82	LT
2'-6" C+G	-Y2B-	12+18.78	13+38.41	RT

-Y2_3- (CLEVELAND RD.) -Y1C-

-Y1C-

ADT 2018 / ADT 2038

2,600 / 3,800

800 / 800

1,800 / 3,000

CLEVELAND RD.

-Y2-

14,800 / 17,400

15,800 / 19,600

FOR -Y1C- PROFILE SEE SHT. 170
FOR -Y2B- PROFILE SEE SHT. 177
FOR -Y2_3- PROFILE SEE SHTS. 172-173

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PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	71
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CURB + GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C+G	-Y2_3-	67+37.87	68+08.46	RT
2'-6" C+G	-Y2_3-	68+46.89	68+97.36	RT

-Y2_3-	-SR2-	
PI Sta 59+92.47	PI Sta 12+76.15	PI Sta 15+01.69
Δ = 13° 09' 04.5" (RT)	Δ = 74° 19' 37.0" (LT)	Δ = 11° 30' 53.4" (RT)
D = 5° 43' 46.5"	D = 22° 55' 05.9"	D = 6° 21' 58.3"
L = 229.53'	L = 324.31'	L = 180.87'
T = 115.27'	T = 189.51'	T = 90.74'
R = 1,000.00'	R = 250.00'	R = 900.00'
SE = 0.04	SE = 0.04	SE = 0.04
V = 50mph	V = 30mph (Stop Cond.)	V = 40mph

NAD 83

MATCHLINE -SR2- STA. 22+00 SEE SHEET 46

MATCHLINE -Y2_3- STA. 72+00 SEE SHEET 72

MATCHLINE -Y2 3- STA. 61+50 SEE SHEET 46

-SR2- PRC Sta. 14+10.95

-SR2- PT Sta. 15+91.82

-SR2- PC Sta. 10+86.64

-Y2_3- PC Sta. 70+96.75

-Y2_3- POT Sta. 68+05.93

-SR2- POT Sta. 10+00.00

-SR2- POT Sta. 22+63

-Y2- POT Sta. 23+

-SR2-

-Y2_3-

-SR1-

N 16° 43' 37.8" W

S 35°21'43" E 346.00'

S 87°22'33" W 688.21'

N 65°03'17" E 369.50'

S 33°05'23" E 65.00'

N 33°26'43" W 100.00'

S 58°00'00" W 1365.60'

S 34°54'41" E 124.99'

S 63°12'55" W 203.39'

S 36°29' W 198.95'

S 03°07'17" W 200.00'

MARVIN WILLIAMS DB 4781 PG 337 — 69

JAMES E HALL DB 804 PG 202 — 149

DOROTHY SUE HALL NO DEED FOUND — 150

GLENWOOD PARRISH JOAN PARRISH DB 659 PG 240 — 151

JOAN PARRISH NO REFERENCE — 152

JOAN PARRISH DB 521 PG 154 MB 24 PG 229 — 152

JOAN PARRISH DB 521 PG 154 MB 77 PG 57 — 152

JOHNSTON COUNTY BOARD OF EDUCATION TRACT 2 DB 2893 PG 387 PB 66 PG 206 — 70

JOHNSTON COUNTY BOARD OF EDUCATION TRACT 1 DB 2893 PG 387 PB 66 PG 206 — 70

WESTVIEW ELEMENTARY SCHOOL BK&MTL

SPECIAL CUT SWALE SEE DETAIL E

100' TAPER

END FENCE END C/A

PROP CHAIN LINK FENCE

10' WIDE BERM TOP ELEV. = 304.8' SEE DETAIL J

5 TONS CL B RIP RAP W/14 SY GEOTEXTILE

PLUG & FILL W/FLOWABLE FILL

REMOVE DI & 24" PIPE

Conv. DI TO JB w/MH

SP. LAT. V DITCH SEE DETAIL AJ

SPECIAL CUT DITCH SEE DETAIL B

SCHOOL ENTRANCE

CLEVELAND ROAD

-Y2_3- (CLEVELAND RD.) & SCHOOL DRIVE

ADT 2018
ADT 2038

-Y2- CLEVELAND RD.

21,100 / 28,200

1,400 / 1,600

1,100 / 1,200

20,800 / 27,800

2,500 / 2,800

SCHOOL DRIVE

FOR -Y2_3- PROFILE SEE SHTS. 173-174
FOR -SR1- PROFILE SEE SHT. 178

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4/15/2019
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mjabl

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5111/I-4739	72
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

-Y2_3-
PI Sta 74+63.90
△ = 5° 15' 19.5" (LT)
D = 0° 42' 58.3"
L = 733.79'
T = 367.15'
R = 8,000.00'
SE = 0.04
V = 50mph

CURB + GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
1'-6" C+G	-Y2_3-	73+71.72	80+79.48	LT
1'-6" C+G	-Y2_3-	73+71.72	80+79.48	RT

MATCHLINE -Y2_3- STA. 72+00

SEE SHEET 71

-Y2_3- PT Sta. 78+30.54

-Y2_3- POT Sta. 85+93.22

END CONSTRUCTION -Y2_3- Sta. 85+70.00

JOAN PARRISH
DB 521 PG 154
MB 77 PG 57
152

CLEVELAND ROAD 8969 LIMITED PARTNERSHIP
DB 4504 PG 698
DB 1996 PG 374
153

DAWN M. TAYLOR
DB 2443 PG 404
MB 36 PG 461
156

WILLIE M. HARVELL
DB 4272 PG 230
MB 36 PG 461
157

JAIME MARTINEZ AND WIFE, MARTHA ALICIA MARTINEZ
DB 1293 PG 410
MB 36 PG 461
159

NEAL ISAACS
DB 2770 PG 114
MB 36 PG 461
160

THOMAS D. CARPENTER AND WIFE, JENNIE L. CARPENTER
DB 1740 PG 582
MB 36 PG 461
160A

BARBARA S. JOHNSON AND HUSBAND, RONALD L. JOHNSON
DB 1796 PG 323
MB 53 PG 375
161

ANA MARIA CRUZ FLORES AND SPOUSE, DAVID HERNANDEZ RAMIREZ
DB 4645 PG 102
MB 35 PG 205
155

SUSAN NORDAN GILES AND HUSBAND, DAN DURWOOD GILES, SR.
DB 4956 PG 993
MB 56 PG 432
158

LORI M. CAVINESS
DB 3169 PG 670
MB 50 PG 434

CHARLES DOGGINS STORAGE, LLC
DB 5013 PG 260
MB 71 PG 366
154

JOHNSTON COUNTY BOARD OF EDUCATION TRACT I
DB 2893 PG 387
PB 66 PG 206
70

POSSIBLE BLIND PIPE UNDER ROAD, IF FOUND DURING CONSTRUCTION UTILIZE TO AVOID NEW 24" RCP FROM 7201-7202

SPECIAL CUT DITCH SEE DETAIL Y

SPECIAL CUT DITCH SEE DETAIL B

600' MEDIAN TRANSITION

RETAIN ANY EXISTING BLIND PIPES ENTERING JUNCTION BOX, ADJUST AS NECESSARY TO MAINTAIN FLOW

(2)CONV. SLAB LID JB TO JB W/MH

24" RCP-III

EXIST. SR 1010 CLEVELAND ROAD

PROP. I'-6" C&G

100' TAPER

75+00

-Y2_3- 80+00

S 36° 20' 32.9" E

BM#8

FOR -Y2_3- PROFILE SEE SHT. 174

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mah