STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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December 17, 2008

U.S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1000
Washington, NC 27889-1000

Attn: Mr. William Wescott
NCDOT Coordinator

Subject: **Application for an Individual Section 404 and 401 permit and Tar-Pamlico Buffer Authorization for Construction of Rocky Mount Northern Connector.**
Construction of Northern Connector from SR 1604 (Hunter Hill Road) to US 301. Nash County. WBS 34509.1.1. TIP No. R-2823.

Dear Sir:

The North Carolina Department of Transportation (NCDOT), Division of Highways, in consultation with the Federal Highway Administration (FHWA), proposes to construct the Rocky Mount Northern Connector in Nash County. The Northern Connector will be an approximately 4.9 mile, four-lane median divided facility from SR 1604 (Hunter Hill Road) to US 301. This is a design build project and the project letting date was May 20, 2008. Construction will begin upon receipt of necessary permits.

The purpose of this letter is to request approval for a Section 404 Individual Permit, a Section 401 Water Quality Certification and Tar-Pamlico Buffer Authorization. In addition to the cover letter and ENG Form 4345, this application package includes the following as appendices: half-size permit drawings, Merger 01 Revised 4A, 4B, and 4C meeting minutes, the Stormwater Management Plan, a set of half-size roadway plans, and the North Carolina Ecosystem Enhancement Program (EEP) acceptance letter.

1.0 Purpose and Need

The purpose and need for this project, as identified in the Environmental Assessment (EA), is to improve system linkage and reduce travel time between existing residential areas in western Rocky Mount and existing industrial areas in northern Rocky Mount. Most of the major routes in the study area (US 301, NC 43, NC 48, and I-95) are north/south routes and most of the

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residential and industrial development is in the northern and western sections of Rocky Mount. Access between these two sections requires circuitous travel which contributes to congestion on US 301/US 301 Bypass. Additionally, virtually all traffic (local and regional) between the residential areas west of Rocky Mount and the industrial areas north of Rocky Mount must travel US 301, which suffers from high traffic volumes. Due in part to high traffic volumes, high accident rates occur on US 301 between Old Mill Road and Benvenue Road (higher than the statewide average for similar facilities). Sixty nine percent of the accidents which occurred along this section of US 301/US 301 Bypass were the type of accidents which may be related more to traffic volume than to roadway characteristics.

2.0 Project Description

The Rocky Mount Northern Connector will be constructed from SR 1604 (Hunter Hill Rd.) to US 301 (N. Wesleyan Blvd.). The proposed 4.9-mile extension will be on new location except for utilizing portions of existing SR 1613 (Woodruff Rd.) and SR 1538 (Fenner Rd.) at each end of the project. Approximately 170 to 220 feet of right-of-way will be required to accommodate this facility. Partial Control of access (one access per parcel for properties with no access on other roads) will be maintained along the project. Dual bridges will be provided over Hornbeam Branch and Compass Creek.

2.1 Typical Section

From SR 1604 (Hunter Hill Rd.) to U.S. 301 [length = 4.6 miles] – Construct a four-lane, 30-foot raised median divided urban arterial with partial control of access. At-grade intersections are provided for SR 1604 (Hunter Hill Rd.), SR 1613 (Woodruff Rd.), NC 43 (Benvenue Rd.), SR 1535 (Peele Rd.), NC 48 (Goldrock Rd.), Relocated SR 1538 (Fenner Rd.), SR 1545 (Bishop Rd.), and US 301 (N. Wesleyan Blvd.).

Along existing SR 1613 (Winstead Ave.) [Length = 0.40 miles] – Widen SR 1613 to tie into the Rocky Mount Northern Connector four-lane, 30-foot raised median section.

Along existing SR 1604 (Hunter Hill Rd.) [Length = 0.31 miles] – Widen SR 1604 to include exclusive left and right turn lanes onto the Rocky Mount Northern Connector. Proposed concrete islands will be used north and south of the intersection. Proposed concrete curb and gutter will be used south of the intersection.

From the proposed Rocky Mount Northern Connector east to existing SR 1613 (Woodruff Rd.) [Length = 0.09 miles] - Construct a two-lane local connector.

Along existing NC 43 (Benvenue Rd.) [Length = 0.12 miles] – Resurface NC 43 and tie into Rocky Mount Northern Connector. Proposed concrete curb and gutter will be used north and south of the intersection to tie into the existing curb and gutter.

Along existing SR 1535 (Peele Rd.) [Length = 0.23 miles] – Lower SR 1535 profile to tie into Rocky Mount Northern Connector. Proposed concrete islands will be used north and south of the intersection.

Along existing NC 48 (Goldrock Rd.) [Length = 0.24 miles] – Widen and resurface NC 48 to provide required turning lanes for the Rocky Mount Northern Connector. Some proposed concrete curb and gutter will be used south of the intersection to tie to the existing curb and gutter.

From the proposed Rocky Mount Northern Connector south to the existing intersection at SR 1539 (Instrument Dr.) [Length = 0.34 miles] - Construct a two-lane relocated Fenner Road connector on new alignment. Remove the pavement on existing Fenner Rd. from SR 1539 to Bishop Rd.

Along existing SR 1545 (Bishop Rd.) [Length = 0.06 miles] – Widen and resurface SR 1545 to accommodate concrete islands needed for channelization at the intersection with the Rocky Mount Northern Connector.

Along existing US 301 (N. Wesleyan Blvd.) [Length = 0.29 miles] – Widen and resurface US 301 to accommodate required turning lanes for the proposed Rocky Mount Northern Connector. Proposed concrete curb and gutter will be used in the median south of the intersection.

3.0 Summary of Impacts to Waters of the U.S. and Riparian Buffers

Proposed permanent impacts to jurisdictional areas of R-2823 total 6.33 acres of wetlands (bottomland hardwood forest, swamp forests, etc.) and 1,939 linear feet (LF) of streams (intermittent and perennial). In addition, 193,740 square feet of riparian buffers will be impacted by the project. Table 1 summarizes the permanent impacts by permit site and jurisdictional feature.

Table 1. Summary of Proposed Permanent Jurisdictional Impacts*

Permit Site	Station	Riparian Wetlands (ac)	Non-Riparian Wetlands (ac)	Perennial Streams (LF)	Intermittent Streams (LF)	Riparian Buffer Zone 1 (sq ft)	Riparian Buffer Zone 2 (sq ft)
1	-L- 30+28	0	0.11	95	0	7,865	3,903
2	-L- 32+50 RT	0	0	0	0	87	1,830
3	-L- 36+50 LT	0.09	0	0	0	0	0
4	-L- 49+02	0	0	158	0	10,527	6,437
5	-L- 50+65	0.11	0	0	210	0	0
6	-L- 68+00	0	1.11	0	0	0	0
7	-L- 111+50	1.02	0	0	0	8,967	7,421
8	-L- 113+26	0.03	0	0	24	0	0
9	-L- 135+34	0	0.21	210	0	14,535	9,434
10	-L- 169+16	0	0.21	407	0	24,431	15,186
11	-L- 175+00	0.73	0	0	0	0	0
12	-L- 182+00	1.15	0	197	0	11,213	7,394
13	-L- 189+80	0.29	0	205	0	15,653	10,114
14	-Y5- 11+50	0	0.12	0	0	0	0
15	-L- 231+00	0	0.02	0	0	180	1530
16	-L- 231+57	0	0.15	0	74	6,616	5,773
17	-L- 239+81	0.98	0	211	0	14,429	8,028
18	-L- 260+50	0	0	0	130	0	0
19	-Y8- 23+50	0	0	18	0	1,776	411
TOTAL IMPACTS:		**4.40**	**1.93**	**1,501**	**438**	**116,279**	**77,461**

* Includes fill, excavation, and mechanized clearing impacts in wetlands; and all impacts (allowable and allowable with mitigation) in riparian buffers

There are no temporary wetland impacts. Temporary stream impacts include 396 LF. No impacts will occur to open water ponds.

3.1 Summary of Mitigation

This project has been designed to avoid and minimize impacts to jurisdictional areas while meeting the purpose and need of the project in accordance with the National Environmental Policy Act (NEPA) and throughout the design and merger process. Construction in jurisdictional areas will be in strict compliance with all permits and Best Management Practices (BMPs) to minimize impacts. Specific strategies are detailed in Section 15.2.

The EEP will provide off-site compensatory mitigation. No on-site mitigation is proposed. Required compensatory mitigation provided by EEP for the Rocky Mount Northern Connector is summarized in Table 2.

Table 2. Summary of Compensatory Mitigation requested from EEP

Mitigation	Linear Feet Requested	Area Requested
Perennial Stream	1,501 ft	--
Intermittent Stream	438 ft	--
Riparian Buffer Zone 1	--	57,137 sq ft
Riparian Buffer Zone 2	--	42,595 sq ft
Riparian Wetland	--	4.40 ac
Non-Riparian Wetland	--	1.93 ac

4.0 Project Schedule

Construction of this project is projected to commence on April 1, 2009, contingent on permit approval. The attached permit drawings are complete in detailing all proposed impacts occurring within R-2823, which is at final design completion. The R-2823 design build letting date was May 20, 2008 and completion of the roadway is projected on August 1, 2011.

5.0 Resource Status

5.1 Delineations

Wetland and stream delineations for R-2823 were conducted between January and March 2004, by Arcadis. Jurisdictional wetland determinations were conducted using the criteria specified in the 1987 *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987). Wetland functions were evaluated according to the NCDWQ Wetland Rating Worksheet, 4th Version (NCDWQ 1995). Surface waters were evaluated and classified based on stream characteristics as defined in the 1999 NCDWQ Stream Classification Form *Internal Guidance Manual*, Version 2.0 and the 2003 NCDWQ *Determination of the Origin of Perennial Stream Draft Internal Policy*. Copies of the data forms and characterization of the stream and wetland sites are included in the August 2004 NRTR. Mr. Michael Bell of the USACE Wilmington Regulatory Field Office verified the delineations in the field on June 15, 2004.

During the initial investigation phases of the R-2823 Design Build project, the project team noted that there appeared to be areas that contained jurisdictional features that were not accounted for in the 2004 Natural Resource Technical Report (NRTR). This omission was discussed in the first R-2823 monthly progress meeting on July 10, 2008. As a result of these discussions, NCDOT-NEU requested that The Catena Group conduct jurisdictional delineations and T&E surveys of project areas outside of the study corridors noted in the NRTR. To this end, seven areas were identified that fell beyond NRTR study corridors. Two wetlands/stream associations were identified within one of the additional areas on various dates during July and August 2008. These features comprise Sites 15, 16, and 17 (Plan Sheets 20-21) on the permit drawings. All of the features are continuations of previously delineated streams and wetlands within Alternative B, which are detailed in the NRTR.

These additional jurisdictional features were provided in a memo to NCDOT on August 13, 2008, discussed with the regulatory agencies during the 4B meeting on August 20, 2008.

Based on this information, NCDOT believes that all stream and wetland delineations are accurate and current and properly detailed in the attached permit drawings.

5.2 R-2823: Characterization of Jurisdictional Sites

5.2.1 Streams

Streams within R-2823 study area include portions of and UTs to Compass Creek, Beech Branch, Hornbeam Branch, and Goose Branch. Compass Creek, Hornbeam Branch, and Goose Branch are classified as "C NSW" waters, as defined by the NCDWQ Best Use Classification system. Class C denotes waters that are used for secondary recreation, propagation and survival of fish and other aquatic life, and agriculture. NSW indicates Nutrient Sensitive Waters, which require additional nutrient management due to their propensity toward excessive growth of microscopic or macroscopic vegetation. Beech Branch is classified as "B NSW" waters, where Class B denotes waters that are used for primary recreation and all uses specified for Class C waters.

All surface waters proposed to be impacted by the Rocky Mount Northern Connector are located in Tar-Pamlico River Subbasin 03-03-02 and USGS 8-digit hydrologic unit 03020101. Proposed permanent impacts to jurisdictional streams total 1,939 LF. These unavoidable impacts are the result of minimization and avoidance measures. Temporary impacts to streams (396 LF) will occur from rip-rap placement due to construction, erosion control, and staging for stream channel stabilization.

According to the NRTR, the jurisdictional streams impacted by the proposed project include both perennial and intermittent streams. However, as previously stated (Section 5.1) two additional stream impact sites (Sites 16 and 17) were delineated beyond the original project area boundaries. Although these streams were not included in the NRTR, they are continuations of previously delineated streams. Streams had been characterized and approved downstream of the impact sites in the NRTR.

Table 3 provides the stream classification, rating, and buffer requirement as well as temporary and permanent impacts for each stream impacted by construction of the Rocky Mount Northern Connector. Eight perennial and four intermittent stream impact sites are located within the project corridor.

Table 3. Stream characterization, impact site locations, and summary of temporary and permanent impacts

Permit Site	Station	NRTR Reference ID	DWQ Stream Rating	Classification Type	Temporary Impacts (LF)	Permanent Impacts (LF)	Impacts Requiring Mitigation (LF)
1	-L- 30+28	S-55	37.5	Perennial	10	95	95
4	-L- 49+02	S-58	31.5	Perennial	54	158	158
5	-L- 50+65	S-59	N/A	Intermittent	0	210	210
8	-L- 113+26	S-38	27.75	Intermittent	24	24	24
9	-L- 135+34	S-34	32.5	Perennial	48	210	210
10	-L- 169+16	S-28	43.5	Perennial	53	407	407
12	-L- 182+00	N/A	N/A	Perennial	19	197	197
13	-L- 189+80	S-19	35.5	Perennial	43	205	205
16	-L- 231+57	S-15	19.25	Intermittent	10	74	74
17	-L- 239+81	S-14	31.75	Perennial	85	211	211
18	-L- 260+50	S-12	N/A	Intermittent	39	130	130
19	-Y8- 23+50	S-13	38	Perennial	11	18	18
Total Stream Impacts:					**396**	**1,939**	**1,939**

N/A = not provided

5.2.2 Wetlands

Proposed impacts to jurisdictional wetlands total 6.33 acres of permanent impacts. These unavoidable impacts have been minimized as a result of minimization and avoidance measures. There will be 0.06 ac of Hand Clearing. There will be no temporary impacts to wetlands.

According to the NRTR, the wetlands impacted by the proposed project are both riparian and non-riparian. As previously stated (Section 5.1) three additional wetland impact sites (Sites 15, 16, and 17) were delineated beyond the original project area boundaries. Although these wetlands were not included in the NRTR, they are continuations of previously delineated wetlands. Wetland characterization had been determined and approved in the NRTR downstream of the impact sites.

Table 4 describes the rating and common name of the 15 wetland sites impacted by the project. The primary wetland community type can be characterized as Bottomland Hardwood Forest; however, several other wetland types are prevalent throughout the project area. Bottomland hardwood forest communities were found within the floodplains of the larger stream systems throughout the project corridor. Dominant vegetation includes sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), white oak (*Quercus alba*), willow oak (*Quercus phellos*), American elm (*Ulmus americana*), tulip poplar (*Liriodendron tulipfera*), American holly (*Ilex opaca*), sweet bay (*Magnolia virginiana*), blackberry (*Rubus* sp.), rush (*Juncus* sp.), Japanese honeysuckle (*Lonicera japonica*), greenbriar (*Smilax laurifolia* and *rotundifolia*), muscadine (*Vitus rotundifolia*), and microstegium (*Microstegium vimineum*). These wetlands are defined by Cowardin et al. (1979) as a palustrine forested area with broad-leaved deciduous vegetation (PFO1) characterized by both temporary and seasonal flooding.

Hydrology for riparian wetlands is provided by associated streams and flooding. Hydrology for non-riparian wetlands is provided by rainfall, surface water runoff, and groundwater discharge.

Table 4. Impact site locations and wetland characterization at each impacted site

Permit Site	Station	NRTR Reference ID	DWQ Wetland Rating	Common Name
1	-L- 30+28	43/44	50/51	Bottomland hardwood forest
3	-L- 36+50 LT	42	64	Bottomland hardwood forest
5	-L- 50+65	40	74	Bottomland hardwood forest
6	-L- 68+00	38	20	Wet pine flat
7	-L- 111+50	32	80	Bottomland hardwood forest
8	-L- 113+26	32	80	Bottomland hardwood forest
9	-L- 135+34	31	55	Mixed pine/hardwood (pine dominated)
10	-L- 169+16	27	42	Headwater forest
11	-L- 175+00	26	83	Bottomland hardwood forest
12	-L- 182+00	26	88	Swamp forest
13	-L- 189+80	24	69	Bottomland hardwood forest
14	-Y5- 11+50	18	42	Swamp forest
15	-L- 231+00	18	42	Swamp forest
16	-L- 231+57	18	42	Swamp forest
17	-L- 239+81	16	80	Bottomland hardwood forest

Table 5 is a summary of each wetland site impacted by construction of the Rocky Mount Northern Connector. There will be no temporary fill in wetlands

Table 5. Summary of jurisdictional wetland impacts

Permit Site	Station	Wetland Type	Permanent Fill (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Impacts Requiring Mitigation (ac)
1	-L- 30+28	Non-Riparian	0.06	0	0.05	0	0.11
3	-L- 36+50 LT	Riparian	0.07	0	0.02	0	0.09
5	-L- 50+65	Riparian	0.08	0	0.03	0	0.11
6	-L- 68+00	Non-Riparian	0.97	0	0.14	0	1.11
7	-L- 111+50	Riparian	0.85	0	0.17	0.06	1.02
8	-L- 113+26	Riparian	0	0.01	0.02	0	0.03
9	-L- 135+34	Non-Riparian	0.17	0	0.04	0	0.21
10	-L- 169+16	Non-Riparian	0.19	0	0.02	0	0.21
11	-L- 175+00	Riparian	0.64	0	0.09	0	0.73
12	-L- 182+00	Riparian	1.00	0	0.15	0	1.15
13	-L- 189+80	Riparian	0.21	0.02	0.06	0	0.29
14	-Y5- 11+50	Non-Riparian	0.11	0	0.01	0	0.12
15	-L- 231+00	Non-Riparian	0.01	0	0.01	0	0.02
16	-L- 231+57	Non-Riparian	0.13	0.01	0.01	0	0.15
17	-L- 239+81	Riparian	0.86	0.01	0.11	0	0.98
Total Wetland Impacts:			**5.35**	**0.05**	**0.93**	**0.06**	**6.33**

5.2.3 Riparian Buffers

The proposed project is located within the Tar-Pamlico River basin, which currently supports riparian buffer rules (15A NCAC 2B .0259-.0261). Total proposed impacts (both allowable and allowable with mitigation) to protected riparian buffers include 193,740 square feet. Table 6 describes the impacted buffer locations and a summary of Zone 1 and Zone 2 impacts. Required riparian buffer mitigation is a factor of the sum of mitigable impacts minus wetland impacts within the buffer for each site.

Table 6. Riparian buffer impact site locations and summary of impacts and mitigation required

Permit Site	Station	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wtlds) (sq ft)	Zone 1 Buffer 3:1 Mitigation Required* (sq ft)	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 2 Buffers (not wtlds) (sq ft)	Zone 2 Buffer 1.5:1 Mitigation Required (sq ft)
1	-L- 30+28	7,865	3,268	4,597	N/A	3,903	687	3,216	N/A
2	-L- 32+50 RT	87	0	87	261	1,830	0	1,830	2,745
4	-L- 49+02	10,527	41	10,486	31,458	6,437	574	5,863	8,794.5
7 road	-L- 111+50	8,967	8,967	0	0	5,186	4,982	204	306
7 bridge	-L- 111+50	0	0	0	N/A	2,235	2,235	0	N/A
9	-L- 135+34	14,535	0	14,535	43,605	9,434	96	9,338	14,007
10	-L- 169+16	24,431	1,174	23,257	69,771	15,186	1,626	13,560	20,340
12 road	-L- 182+00	8,584	5,987	2,597	7,791	7,394	4,324	3,070	4,605
12 bridge	-L- 182+00	2,629	1,641	988	N/A	0	0	0	N/A
13	-L- 189+80	15,653	9,708	5,945	17,835	10,114	2,521	7,593	11,389.5
15	-L- 231+00	180	25	155	N/A	1,530	507	1,023	N/A
16	-L- 231+57	6,616	2,114	4,502	N/A	5,773	1,300	4,473	N/A
17	-L- 239+81	14,429	14,199	230	690	8,028	6,891	1,137	1,705.5
19	-Y8- 23+50	1,776	0	1,776	N/A	411	0	411	N/A
Total Buffer Impacts:		**116,279**	**47,124**	**69,155**	**171,411**	**77,461**	**25,743**	**51,718**	**63,892.5**

N/A = No mitigation is required. Impacts may be either "allowable" or total impact for site is less than 1/3 acre and 150 linear feet

5.2.4 Impacts to Jurisdictional Sites

Total permanent wetland impacts for the entire project are projected to be 6.33 acres, resulting from fill, excavation, and mechanized clearing to 15 wetland sites. There will be 1,939 linear feet of permanent impacts to eight perennial and four intermittent stream sites. Additionally, there will be 193,740 square feet of impacts to riparian buffers, 99,732 square feet of which require mitigation under the Tar-Pamlico Buffer Rules (57,137 square feet impacts in Zone 1 and 42,595 square feet impacts in Zone 2).

Temporary impacts will occur during construction of the proposed project, including diversion channels, temporary pipes, and causeway construction. Temporary impacts are projected to be 269 linear feet of perennial stream and 127 linear feet of intermittent stream.

Impacts to jurisdictional streams, wetlands, and buffers were summarized in Tables 3, 5, and 6, respectively, and are shown on sheets 5-8, 12, 13, 16-18, 20, 21, 23, and 30 of the permit drawings. All construction material staging areas will be located in upland areas throughout construction.

6.0 NEPA Document Status

The FHWA and NCDOT submitted the EA in September 2006, in compliance with the NEPA guidelines. The EA explains the purpose and need for the project, provides a description of the alternatives considered, and characterizes the social, economic, and environmental effects. The EA was approved and circulated to federal, state, and local agencies. It was approved by PDEA and FHWA on September 29, 2006 and October 4, 2006, respectively. A Finding of No Significant Impact (FONSI) was approved by PDEA and FHWA on October 5, 2007. Copies of the project documents have been provided to regulatory review agencies involved in the approval process. Additional copies will be provided upon request.

This project was developed through the NEPA / 404 Merger process. All concurrence points have been reached for this project.

7.0 Independent Utility

R-2823 is in compliance with 23 CFR Part 771.111(f) which lists the FHWA characteristics of the independent utility of a project. The project will serve as a connector to two existing roadways north of Rocky Mount. Currently, no particular route serves to connect these roadways, making travel between them indirect and increasing traffic flow along these indirect routes to unsafe levels. Therefore, this project meets the criteria for independent utility as detailed below:

- The project has logical termini and independent utility and is of sufficient length to address environmental matters on a broad scope;
- The project is usable and a reasonable expenditure of funds, even if no additional transportation improvements are made in the area; and
- The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

8.0 Special Commitments

The following special commitments have been agreed to by the NCDOT, as noted in the EA and / or the FONSI:

- NCDOT will coordinate with the Federal Emergency Management Agency (FEMA) and local authorities during the design phase of the project for approval of a flood insurance rate map revision and to ensure compliance with applicable floodplain ordinances.

- Thick evergreen plantings will be provided on the north side of the proposed Rocky Mount Northern Connector at the NC 48 (Gold Rock Road) intersection. These plantings are proposed as mitigation for the project's effects on the Ricks-Boseman Farm, which is eligible for listing on the National Register of Historic Places.
- Control of access will be obtained and noise barriers provided on the southern side of the project between SR 1535 (Peele Road) and NC 48 and between SR 1545 (Bishop Road) and US 301.
- NCDOT will continue to consult with the United States Fish and Wildlife Service (USFWS) and the NCWRC regarding minimizing impacts to the blue heron. Representatives of these agencies are invited to the preconstruction conference for the project. NCDOT biologists will visit the blue heron rookery near the project prior to right of way acquisition and construction to determine its status.

9.0 Protected Species

9.1 Threatened and Endangered Species

Plants and animals with federal classification of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. The USFWS (2008) lists three federally protected species for Nash County as of the January 31, 2008 listing (Table 7).

Table 7. Federally Protected Species in Nash County

Common Name	Scientific Name	Federal Status	Biological Conclusion
Red-cockaded woodpecker (RCW)	*Picoides borealis*	E	May Affect not Likely to Adversely Affect
Dwarf wedgemussel	*Alasmidonta heterodon*	E	May Affect not Likely to Adversely Affect
Tar River spinymussel	*Elliptio steinstansana*	E	May Effect Affect not Likely to Adversely Affect
E = a species that is in danger of extinction throughout all or a significant portion of its range.			

According to the NRTR, suitable habitat exists for RCW in the project area and surveys were conducted in conjunction with the investigation of biotic communities performed by Arcadis in February 2004. No cavity trees were identified. Additionally, the NC Natural Heritage Program (NCNHP) has no records of known RCW populations within a 1-mile radius of the project study area. According to the FONSI, suitable habitat for the dwarf wedgemussel and the Tar River spinymussel does not exist in the project area. Mussel surveys were conducted in October and November 2004, and no endangered mussels were found. Additionally, the NCNHP has no records of known populations of the dwarf wedgemussel or Tar River spinymussel within a 1-mile radius of the project study area. In a letter dated October 18, 2006, the USFWS concurred with a biological conclusion of "May Affect, Not Likely to Adversely Affect" for all federally protected species listed for Nash County (see attached).

9.2 Migratory Bird Treaty Act

A great blue heron (*Ardea herodias*) rookery was discovered near Compass Creek approximately 400 feet from the proposed roadway alignment during the field investigations. Heron rookeries are protected under the Migratory Bird Treaty Act. NCDOT has consulted with the USFWS and the NCWRC regarding minimizing impacts to the species throughout the design build process. The 4A minutes reported that as long as the proposed alignment / construction was 400 feet away from the rookery, then it should not be a problem.

10.0 Cultural Resources

The potential of the Rocky Mount Northern Connector to impact cultural resources was evaluated in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended. Potential effects were determined using Criteria for Effect and Adverse Effect (36 CFR 800.9) developed by the Advisory Council on Historic Preservation. Concurrence on the eligibility of each property with respect to inclusion on the national Register of Historic Places and the final determination of effects were made by the State Historic Preservation Office (SHPO).

There is one historic property eligible for listing with the National Register within the project corridor. A portion of land from the Ricks-Boseman Farm will be used for this project, but will have "no adverse effect" on the farm. Therefore, this impact is considered a *de minimis* use of the historic property and Section 4(f) does not apply. SHPO concurred with this finding, as detailed in the FONSI.

11.0 Wild and Scenic River System

Construction of the Rocky Mount Northern Connector will not impact any Designated Wild and Scenic Rivers or any rivers included in the list of study rivers (per Public Law 90-542, as amended).

12.0 FEMA Compliance

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

13.0 Utility Impacts

The utility companies are in the process of developing final relocation plans and have been consulted regarding the proposed alignments for their relocations. No impacts to jurisdictional areas due to the utility relocations are anticipated. All crossings of jurisdictional features located outside of the roadway impacts will be either aerial, with all supporting structures placed outside of the delineated features (including buffers), or underground by directional bore method resulting in no impacts.

Any utility installations by open trench method through jurisdictional areas will be located within the roadway impacts identified in this application and will not result in additional impacts.

14.0 Indirect and Cumulative Impacts

From the Community Impact Assessment (CIA) completed in August 2004 by Arcadis and reviewed by personnel from DWQ, it was concluded the proposed project will influence development decisions in the Rocky Mount area; however, it will not notably stimulate new development overall. In reference to secondary/cumulative effects, the 2006 EA stated that development is expected to continue in the west and northwest areas of Rocky Mount even without the proposed roadway, according to local planners and real estate professionals. Construction of the proposed project in conjunction with nearby proposed projects (U-4019) will likely make the area more desirable for residential and commercial development; however, such changes are expected to occur at a moderate pace due to unemployment rates and economic data. The greatest land use change is expected to take place along the proposed Rocky Mount Northern Connector corridor, with a mix of uses and developed at a higher intensity than is typical in suburban areas.

State, local and federal environmental regulations should help minimize any other potential negative indirect impacts this project could have upon other notable features. In addition to zoning and subdivision ordinances, Rocky Mount and Nash County have several other regulations and programs in place that address water quality. Proposed access control along the alignment on new location should alleviate some of the cumulative effects. Impacts to areas of environmental concern (AECs) and other notable features will more likely be the result of direct impacts related to the construction of TIP R-2823 and less the result of indirect impacts such as the potential future development of land. Additional copies of the August 2004 Community Impact Assessment are available upon request.

15.0 Mitigation Options

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

15.1 Avoidance and Minimization

All jurisdictional features were delineated, field verified and surveyed within the corridor for the Rocky Mount Northern Connector. The delineation corridor varies in width and is approximately 4.9 miles in length. Given the number of streams and wetlands in the project area, total avoidance of surface waters and wetlands by this project was not feasible; however, efforts were made to avoid wetlands and streams as preliminary designs for the project were developed. All wetland areas not affected by the project will be protected from unnecessary encroachment.

Minimization includes the examination of appropriate and practicable steps to reduce unavoidable adverse impacts. NCDOT employs many strategies to minimize impacts to jurisdictional areas in all of its designs. Many of these strategies have been incorporated into BMP documents that have been reviewed and approved by the resource agencies and which will be followed throughout construction. Listed below are the general strategies and BMPs that are particularly pertinent to this project as well as individual avoidance items.

- No staging of construction equipment or storage of construction supplies will be allowed in any jurisdictional areas.

- Relocating SR 1538 (Fenner Rd.) approximately 50 feet westward to minimize impacts near –Y5- Station 11+70.

- The vertical alignment was adjusted to avoid ditches in wetland areas.

- The vertical alignment was adjusted along the entire 4.9-mile project to minimize wetland impacts, to shorten cross pipes, and minimize stream impacts.

- Aligning the footprint of the Rocky Mount Northern Connector to avoid historical properties as much as practicable.

- Bridging 333 feet (as opposed to the 295 feet that was the original commitment) of Compass Creek and the associated 100-year floodway and wetlands.

- Bridging 100 feet of Hornbeam Branch and associated riparian buffers and wetland.

- Shifting the alignment closer to Woodruff Road near the Goose Branch crossing to reduce impacts to Goose Branch as well as a neighboring subdivision.

- At locations where wetland impacts are likely, the preliminary design was developed to preserve the largest amount of contiguous wetland area.

- Crossings of jurisdictional areas were angled to cross as perpendicular as possible to minimize impacts.

- All fill slopes in jurisdictional areas will be 3:1.

- The center line of the typical ditch width in cut sections was reduced from 18 feet to 12 feet from the shoulder.

- Sediment and erosion control will follow Design Standards in Sensitive Waters.

- Installation of temporary sediment control fences, earth berms, and temporary ground cover during construction.

- All right-of-way fences placed in wetlands will be hand cleared to the minimum width required for construction.

- Stormwater will be redirected towards the remaining portions of the following sites in an effort to retain as much hydrology as possible: Sites 1, 5, 7, 9, 10, 11, 12, 13, and 17.

15.2 Compensation

The necessary compensatory mitigation to offset unavoidable impacts to waters that are jurisdictional under the federal Clean Water Act and riparian buffers will be provided by the EEP. The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent possible as described above. The remaining, unavoidable impacts to 6.33 acres of jurisdictional wetlands, 1,939 linear feet of jurisdictional surface waters, and 99,732 square feet of riparian buffers (57,137 square feet impacts in Zone 1 and 42,595 square feet impacts in Zone 2) will be offset by compensatory mitigation provided by EEP.

16.0 Regulatory Approvals

Application is hereby made for a Department of the Army Section 404 Individual Permit as required for the above-described activities for the proposed TIP project R-2823. We are also hereby requesting a Section 401 Water Quality Certification from the Division of Water Quality. In compliance with Section 143-215.3D(e) of the NCAC, the NCDOT will provide $570.00 to act as payment for processing the Section 401 permit. Five copies of this application are being provided to the NC DENR DWQ, for their review and approval.

A copy of this application will be posted online at http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html. Thank you for your time and assistance with this project. If you have any questions or need additional information, please contact Mr. Tyler Stanton, Environmental Specialist at tstanton@ncdot.gov or (919) 715-1439.

Sincerely,

E. L. Luck

for Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA Branch

cc:
With Attachment
Mr. Brian Wrenn, NCDWQ **(5 Copies)**
Ms. Kathy Matthews, USEPA

Without Attachment (see website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. Victor Barbour, P.E., Project Services Unit

Mr. Mark Staley, Roadside Environmental
Mr. Richard E. Greene , P.E. Divison Engineer
Mr. Chad Coggins, Division Environmental Officer
Mr. Scott McLendon, USACE, Wilmington
Mr. Gary Jordan, USFWS
Mr. Travis Wilson, NCWRC
Mr. Ron Sechler, NMFS
Ms. Anne Deaton, NCDMF
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Ms. Beth Harmon, EEP
Mr. Todd Jones, NCDOT External Audit Branch
Ms. Jameelah El-Amin, PDEA
Mr. Drew Joyner, PE, Human Environment Unit Head
Mr. Clarence W. Coleman, P.E., FHWA
Ms. LeiLani Paugh, NEU
Mr. Michael Wood, The Catena Group

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)	OMB APPROVAL NO. 0710-003

Public reporting burden for this collection of information is estimated to average 5 hours per response, including the time for reviewing instructions, Searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-003), Washington, DC 20503. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in, or affecting, navigable waters of the United States; the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine uses: Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed 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 instructions) and be submitted to the District Engineer having jurisdiction over the proposed activity. An application that is not completed in full will be returned.

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

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

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME & TITLE (an agent is not required)
NCDOT	
6. APPLICANT'S ADDRESS PDEA-NEU, 1598 Mail Service Center Raleigh, NC 27699-1598	9. AGENT'S ADDRESS
7. APPLICANT'S PHONE NUMBERS WITH AREA CODE a. Residence b. Business (919) 733-3141	10. AGENT'S PHONE NUMBERS WITH AREA CODE a. Residence b. Business

11. STATEMENT OF AUTHORIZATION

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.

_____ _____

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

R-2823 Rocky Mount Northern Connector

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Compass Creek, Hornbeam Branch	N/A
15. LOCATION OF PROJECT Nash (COUNTY) NC (STATE)	

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

From SR 1604 (Hunter Hill Road) to US 301 (N. Wesleyan Blvd)

17. DIRECTIONS TO THE SITE

Beginning (southern portion) of site: From Rocky Mount, travel 64W then N on SR 1613 (Woodruff Road)
End (northern portion) of site: From Rocky Mount, travel 301N then west (left) onto (SR 1538) Fenner Road

18. NATURE OF ACTIVITY (Description of project, include all features)

Construct a 4.9-mile four-lane median divided facility on new location, with the exception of utilizing portions of existing SR 1613 (Woodruff Road) and SR 1538 (Fenner Road) at each terminus of the project, as well as improvements at the new intersections with existing roads. Partial control of access will be maintained along the project.

19. PROJECT PURPOSE (Describe the reason or purpose of the project, see instructions)

Improve system linkage and reduce travel time between existing residential areas in western Rocky Mount and existing industrial areas in northern Rocky Mount.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. REASON(S) FOR DISCHARGE

Construction of roadway.

21. TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS

Typical roadway fill from a local source at amounts detailed in the adjoining cover letter.

22. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED (see instructions)

1,939 linear feet stream
6.33 acre wetland

23. IS ANY PORTION OF THE WORK ALREADY COMPLETE? YES ○ NO ◉ IF YES, DESCRIBE THE WORK

24. ADDRESSES OF ADJOINING PROPERTY OWNERS, LESSEES, ETC. WHOSE PROPERTY ADJOINS THE WATERBODY (If more than can be entered here, please attach a supplemental list)

See supplemental list.

25. LIST OF OTHER CERTIFICATIONS 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
N/A					

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

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

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE
E. L. Lusk	12.18.08		

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 will fully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, facticious, 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.

All Adjacent Property Owners

This list includes those adjacent to buffers and wetlands

PROP. NO.	PROPERTY OWNER NAME	PROP. OWNER ADDRESS
5	Benjamin R. Ricks, et al	16084 NC 43, Whitakers, NC 27891
9	William D. Driver, Jr.	3246 Turkey Foot Rd., Rocky Mount, NC 27804
10	Rebecca D. Paris	3545 Mansfield Dr., Rocky Mount, NC 27803
11	Miriam V. Hayes	1801 Woodruff Rd., Rocky Mount, NC 27804
12	Durwood Lee Shreve	1881 Woodruff Rd., Rocky Mount, NC 27804
13	B.W. Varnell, Heirs	200 College St.Lllington, NC 27850
29	Richard H. Minor	1444 Jeffreys Rd., Rocky Mount, NC 27804
33	Three MR LTD Partnership	2687 Old Bailey Rd., Nashville, NC 27856
34	Aubry D. Woodruff	2233 Boddie Mill Pond Rd., Nashville, NC 27856
42	Alma W. Griffen, Heirs	111 Muscadine Road. Rocky Mount, NC 27804
44	Stanley L. West	1704 Goldrock Rd., Rocky Mount, NC 27804
50	William H. Overman	2709 Coleberry Trail, Rocky Mount, NC 27804
51	Satpal Singh Rathie	115 York Hill Dr., Cary, NC 27513
62	James B. Martin Jr., et al	P.O. Box 280, Brookeville, MD 20833
66	Mack B. Pearsall	1 Page Avenue, Ste. 215, Asheville, NC 28801
67	Walter I. Tharrington	3104 Bishop Road, Rocky Mount, NC 27804
73	NC Wesleyan College	3400 N. Wesleyan Blvd., Rocky Mount, NC 27804
88	Thomas Pearsall, Jr. et al Trust	1 Page Avenue, Ste. 215, Asheville, NC 28801
89	Joco Development Co.	P.O. Box 7533, Rocky Mount, NC 27804
29 and 32	Richard H. Minor	1444 Jeffreys Rd., Rocky Mount, NC 27804
35 & 37	Claudette D. Reges, et al	2012 Northern Nash Rd., Rocky Mount, NC 27804
43 & 52	E. C. Powell	PO Box 2592, Rocky Mount, NC 27804
43 and 52	E. C. Powell	PO Box 2592, Rocky Mount, NC 27804
63 & 65	William Herbert Turner	6316 Settlement Road, Julian, NC 27283
67 & 68	Walter I. Tharrington	3104 Bishop Road, Rocky Mount, NC 27804

March 12, 2007

MEMORANDUM TO: Merger Team Members

FROM: Jameelah El-Amin
Project Planning Engineer
Project Development and Environmental Analysis Branch

SUBJECT: February 22, 2007 Merger Team Meeting for Proposed Rocky Mount Northern Connector, Nash County, TIP Project R-2823

A merger team meeting was held on February 22, 2007 for the proposed project. The following people were in attendance:

Gary Jordan	US Fish and Wildlife Service
William Wescott	US Army Corps of Engineers
Chris Militscher	US Environmental Protection Agency
Ron Lucas	Federal Highway Administration
Clarence Coleman	Federal Highway Administration
Rob Ridings	NC Division of Water Quality
Travis Wilson	NC Wildlife Resources Commission
Brad Kerr	City of Rocky Mount
Steve Yetman	City of Rocky Mount
Bob League	City of Rocky Mount MPO
Renee Gledhill-Earley	DCR/SHPO
Bobby Lewis	NCDOT Division Four
Ricky Greene	NCDOT Division Four
Wendi Johnson	NCDOT Division Four
Mark Staley	NCDOT Roadside Environmental Unit
Thomas Stoddard	NCDOT TIP Unit
Jimmy Goodnight	NCDOT Roadway Design Unit
Chris Rivenbark	NCDOT Natural Environment Unit
Mary Pope Furr	NCDOT Human Environment Unit
Ed Lewis	NCDOT Human Environment Unit
Kimberly Hinton	NCDOT Human Environment Unit
Steve Gurganus	NCDOT Human Environment Unit
Andrew Sawyer	NCDOT Communication Office
Jesse Gilstrap	Work Zone Traffic Control Unit
Don Moore	Geotechnical Engineering Unit
Anna Meares	Transportation Planning Branch
Greg Thorpe	NCDOT Project Development and Environmental Analysis Branch
Missy Dickens	NCDOT Project Development and Environmental Analysis Branch
Rob Hanson	NCDOT Project Development and Environmental Analysis Branch

Jay McInnis	NCDOT Project Development and Environmental Analysis Branch
Olivia Farr	NCDOT Project Development and Environmental Analysis Branch
Kim Gillespie	NCDOT Project Development and Environmental Analysis Branch
Jameelah El-Amin	NCDOT Project Development and Environmental Analysis Branch

The purpose of this meeting was to gain concurrence on the Least Environmentally Damaging Practicable Alternative (LEDPA) (Concurrence Point 3) and avoidance and minimization measures (Concurrence Point 4A) for the project.

PROJECT STATUS

The last merger team meeting was held on March 10, 2005. At that meeting, the team concurred on all bridging decisions (Concurrence Point 2A).

In December 2006, NCDOT held a Corridor Public Hearing to present the current alternatives to the public. Several comments were heard at the hearing expressing opposition to Alternative H (Avoidance Alternative) because it impacted residential communities.

In February 2007, NCDOT held a post-hearing meeting to discuss all three current alternatives. At that meeting, NCDOT staff selected Alternative H (Avoidance Alternative) as NCDOT's preferred corridor. It was discussed at the meeting that Alternative H could be modified to reduce the impacts to residential communities.

LEDPA DISCUSSION

Jameelah El-Amin stated that NCDOT's preferred alternative is Alternative H (Avoidance Alternative). This alternative avoids all the historic properties in the project area and it has low stream and wetland impacts. Alternative H (Avoidance Alternative) has only two more residential relocatees than the alternative with the least amount. The number of relocatees will be reduced with modifications to the design.

It was stated the alignment of Alternative H (Avoidance Alternative) has been modified in order to avoid homes in the Bishop's Row and Oakside subdivisions. This modified alignment would require property from the Ricks-Boseman Farm, a farm that is eligible for listing on the National Register of Historic Places. Jay McInnis mentioned the latest reauthorization of the federal transportation act (SAFETEA-LU), includes a provision that Section 4(f) does not apply if a project has a "de minimis" impact on a Section 4(f) resource. In the case of a historic property, the project must have "no adverse effect" on the property and the property owner must agree.

Renee Gledhill-Earley of the State Historic Preservation Office agreed that this modified alignment would have a no adverse affect on the farm. Only about 3 of the 300 plus acres will be used for the modified alignment and the homeowners are agreeable, therefore it would be a de minimis impact and Section 4(f) would not apply. NCDOT has agreed to replant vegetation in the area. The vegetation will be native species.

William Wescott of the US Army Corp of Engineers asked about the stream and wetland affects of the modified Alternative H (Avoidance Alternative). Jay McInnis stated that the wetlands would be reduced to 5.7 acres and the streams would be reduced to 1,840 linear feet. Jay also stated the number of residential relocatees would be reduced to approximately 25.

Chris Militscher of the US Environmental Protection Agency asked about how the prime/important farmland impacts were calculated. After some discussion, it was determined the farmland impacts listed in the table are for the entire corridor width and not just the right of way width.

Gary Jordan of the US Fish and Wildlife Service asked about the blue heron rookery located near Compass Creek. The rookery is still present and is about 400 feet away from the proposed alignment for Alternative H (Avoidance Alternative). It was stated that a construction moratorium would be put in place if needed. Gary agreed that the project should have minimal impact on the rookery because there is mature forest between the rookery and the road.

Ron Lucas of Federal Highway Administration commented that he supports Alternative H (Avoidance Alternative) as the preferred alternative because he is bound by Federal Law (Section 4(f)). He noted that he is pleased the modified Alternative H (Avoidance Alternative) further reduces the impacts to the community.

The merger team concurred on Alternative H (Avoidance Alternative) as the least environmentally damaging practicable alternative for the project

AVOIDANCE AND MINIMIZATION DISCUSSION

After selection of the LEDPA, the merger team discussed Concurrence Point 4A.

Jay McInnis stated the project will use 3:1 slopes in wetland areas and near streams. The ditch width in cut sections has been reduced from 18 feet to 12 feet and some adjustments to the grade have been made to reduce the amount of cut in some sections. The overall impacts to streams and wetlands are further reduced with the modified Alternative H (Avoidance Alternative). Mr. McInnis reviewed the proposed alignment for Alternative H (Avoidance Alternative) with the merger team.

Gary Jordan of the US Fish and Wildlife Service mentioned keeping an eye on Hornbeam Branch. The size of the wetland in addition to the streams in the area could

cause the channel to shift, which would cause the proposed bridge to be relocated accordingly.

Travis Wilson of the NC Wildlife Resource Commission asked about the cut sections seen in some of the wetlands. Chris Militscher stated that if the road is built in cut sections through wetlands, adjacent wetlands will be drained and that would result in wetland impacts. The cut sections in wetlands will be eliminated, if possible.

It was proposed to shift the cul-de-sac on Fenner Road further southwest to avoid crossing stream 14. This shift could possibly allow the once forested area to revert back to natural vegetation. If access can be maintained with this shift, then it may be possible.

A representative from the City of Rocky Mount asked NCDOT to provide the City with information regarding which homes will be relocated along Fenner Road. The City has a project to extend sewer service to homes along Fenner Road.

Jimmy Goodnight of the Roadway Design Unit asked about the distance the proposed alignment needs to be away from the blue heron rookery. It was stated that as long as construction is about 400 feet away then it should not be a problem.

Gary Jordan of the US Fish and Wildlife Service asked when the rookery was last visited. He asked if the rookery is still in use.

The merger team concurred on avoidance and minimization efforts for the project. Gary Jordan of US Fish and Wildlife Services agreed to sign the concurrence form for concurrence point 4A after he receives additional information on the blue heron rookery.

Additional information regarding the rookery was provided to Gary Jordan by NCDOT Natural Environment Unit staff in an e-mail on March 2, 2007.

Section 404/NEPA Merger Project Team Meeting Agreement
Concurrence Pont No. 4A– Avoidance/ Minimization

Project No./TIP No./Name/Description:
NCDOT Project: 8.2320801, TIP Project: R-2823, Rocky Mount Northern Connector from SR 1604 (Hunter Hill Road) to US 301, Nash County

Avoidance

Efforts were made to avoid wetland sites and streams as preliminary designs for the project were developed. However, due to the number and location of streams in the project area, total avoidance of all wetlands and streams is not possible. The merger team concurs with the alignment presented for the project at the February 22, 2007 merger meeting. Copies of the maps showing this alignment are attached.

Minimization

The following minimization measures are proposed for the project:

The maximum slope (3 to 1) will be used through wetland areas.
The minimum ditch width (12 feet) is proposed for the project.

Mitigation

On-site mitigation will be utilized as much as possible for this project. The On-Site Mitigation Group will investigate areas which could potentially be used for mitigation. The Ecosystem Enhancement Program (EEP) will provide mitigation beyond what can be provided on-site.

In addition to the above, NCDOT will investigate whether or not the existing SR 1538 (Fenner Road) crossing of Stream 16 can be removed.

The Section 404/NEPA Merger Project Team concurred on the 22nd day of February 2007 with the Avoidance/Minimization measures listed above.

N.C. Division of Water Quality
~~**U.S. Army Corps of Engineers**~~ _____ 3/12/07

U.S. Environmental Protection Agency _____ 3/21/07

U.S. Fish and Wildlife Services _____

N.C. Wildlife Resources Commission _____

N.C. Department of Cultural Resources _____ 3.27.07

U.S. Army Corps of Engineers
~~**N.C. Division of Water Quality**~~ _____

Federal Highway Administration _____

N.C. Department of Transportation _____

Rocky Mount MPO

Bob League

Memorandum of Meeting

Date: August 20, 2008

Place\Time: NCDOT, Hydraulics Unit Conference Room, 1:00 P.M.

Team Members:
William Wescott – USACE (Absent)
Gary Jordan – USFWS (Present)
Travis Wilson – NCWRC (Absent)
Rob Ridings – NCDWQ (Present)
Kathy Matthews – USEPA (Absent) [1]
Donnie Brew – FHWA (Present)
Derrick G. Weaver – NCDOT PDEA (Absent) [2]
Chris Rivenbark – NCDOT Natural Environment Unit
Wendy Johnson – NCDOT Division 4 (Absent) [3]

[1] Substitute Chris Militscher – USEPA (Present)
[2] Substitute Jay Mcinnis – NCDOT PDEA (Present)
Jameelah Elmin – NCDOT PDEA (Present)
[3] Jon Moore – NCDOT Division 4 (Present)
Steve Joyner – NCDOT Division 4 (Present)

Participants:
Nilesh Surti – NCDOT Alternative Delivery Unit
Khaled Al-Akhdar – NCDOT Design Build
Anne Gamber – NCDOT Hydraulics Unit
Lonnie Brooks – NCDOT Structures Unit
Tyler Stanton – NCDOT Natural Environment Unit
David Harris – NCDOT Roadside Environmental (Absent)
Jimmy Goodnight – NCDOT Roadway Design (Absent)
Rodger Rochelle – NCDOT Design Build
Tina Swiezy – RK&K Engineers
Jenn Callahan – The Catena Group
Mike Wood – The Catena Group
Jon Wallace – PLT Construction

Subject: NEPA\404 Merger Team – Concurrence Point 4B Meeting
R-2823 – Rocky Mount Northern Connector from SR 1604 (Hunter Hill Road) to US 301, Nash County

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The 30% Hydraulic Review was held in order to reach agreement on concurrence point 4B for the Rocky Mount Northern Connector in Nash County. The following items were discussed and conclusions reached:

Tina Swiezy opened the meeting with introductions and a brief description of the project.

Following introductions Jenn Callahan of The Catena Group passed out a memorandum regarding areas of the project outside the original NRTR corridor. She reviewed each of

the Figures in the memorandum. Figure 1 shows the 7 areas of interest. All areas have been verified to not include T&E species or SHPO sites (Figure 3). Only Site 7 (Figure 2) needed additional delineation of jurisdictional features. Jenn explained the additional wetland / stream areas. EPA had a question about their site visit to the wetland near additional area 7 (wetland 16 on the NRTR) and whether or not they would have wanted to see the wetland bridged. They would have seen the majority of the wetland during their initial visit, did not request a bridge at that time and the wetland systems in this area were merely extended and no additional field visit is needed.

Tina Swiezy proceeded by describing RKK's process for reviewing/summarizing the jurisdictional features for a project and explaining the preliminary drainage design at each jurisdictional feature.

Site 1 L 30+28 Lt. & Rt. Wetland Lt. and Rt. Stream begins just upstream of existing road therefore begin of buffer. Roadway drainage will be buffered and pass thru the buffer in a nonerosive manner and offsite drainage will be bypassed in a nonerosive manner. EPA asked about scour hole locations. Tina stated that all PSH's will be located outside wetlands and buffers whenever possible. The cross culvert at this site will not be buried to continue the current hydraulic conditions for the wetland upstream. There was a request that the permit application and/or permit drawings note that "all culverts will be buried except at the following sites..." as applicable.

Site 1A L 32+50 Rt. Buffer adjacent to right of way of proposed roadway. Existing house will be removed from buffer and roadway impacts will be minimal.

Site 2 L 36+50 Rt. Wetland Rt. partial roadway fill impact. Roadway drainage will discharge adjacent to wetland with PSH.

Site 3 L 48+93 Lt. & Rt. Stream crosses existing and proposed roadway. Replacing existing 2-54" CMP with 9'X9' RCBC buried 1'. Roadway drainage will be buffered and pass thru the buffer in a nonerosive manner and offsite drainage will be bypassed in a nonerosive manner.

Site 4 L 50+65 Rt. Wetland Rt. and JS starts and stops within the roadway. Drainage will be discharged adjacent to wetland with a PSH.

Site 5 L 68+00 Lt. & Rt. Isolated wetland system, though not draining anything. EPA said count impact from construction/clearing limits only. Not a total take of wetland. No need for equalizer pipe.

Site 6 Y2 20+00 Lt. Ditch/wetland Lt. Existing curb/gutter installation. New outlet pipe to be installed (larger) with outlet protection. EPA said to call it a ditch, though Corps not present to re-verify. Team decided to angle riprap/pipe/etc. outside of the wetland/ditch and tie back with a roadside ditch so as not to impact the site at all.

Site 7 L 111+50 Lt. & Rt. Hornbeam Wetland/ Stream system crosses roadway. RKK has surveyed JS and will incorporate buffers. The 100' bridge required for 4A has been provided

Site 8 L 113+26 Lt. RKK has located the Stream in the field but no buffers are required not on the soils or quad stream will be tied to wetland to match existing condition

Site 9 L 135+30 Lt. & Rt. Wetland Rt. partial fill by roadway and drainage will be discharged outside wetland in PSH. Stream crosses roadway and cross pipe will be buried 1' and roadway drainage will be buffered and pass thru the buffer in a nonerosive manner and offsite drainage will be bypassed in a nonerosive manner.

Site 10 L 169+20 Lt. & Rt. Isolated wetland Rt will not be a total take because it will still receive hydrology from adjacent property. Stream crosses roadway and cross pipe will be buried 1' and roadway drainage will be buffered and pass thru the buffer in a nonerosive manner and offsite drainage will be bypassed in a nonerosive manner.

Site 11 L 175+00 Lt. & Rt. Wetland will not be a total take because it will still receive hydrology from adjacent property and a cross pipe will be placed to maintain the current drainage pattern in the area.

Tina asked a question to get the agencies' opinion about pipe size per hydrology requirements vs. burying requirements, and whether or not they would concur with or deny the option of using two smaller pipes instead of one larger one (cost savings). USFWS prefers the larger sized pipe instead of two smaller pipes to allow for potential wildlife passage. EPA stated the area was rural and likely had significant animal movement. USFWS also stated that larger pipe provides for a better thalweg meander through the culvert. Conclusion: bigger is better for the agencies.

Site 12 L 182+00 Lt. & Rt. Compass Creek bridge Wetland/Stream system provided 295' for floodway width and agreed upon at 4A. Team design is 330'+/- actual length. EPA verified that side slopes are 3:1 and bridge abutment (floodway) slopes are 2:1. Additionally, no buffer is shown on the plan sheets because surveyor was unable to identify stream channel apart from flooded wetland. DWQ stated that this area may be considered open water with no buffer requirement.

Site 13 L 189+54 Lt. & Rt. Wetland/Stream system crosses roadway. Stream crosses roadway and cross pipe will be buried 1' and drainage will be discharged outside wetland and buffers in PSH.

Site 14 Y5 11+70 Lt. & Rt. Wetland end at roadway. RKK has shifted road alignment to reduce impact in this area and cross drainage will be discharged adjacent to the wetland with a PSH to continue to provide hydrology for the wetland.

Site 15 L 231+70 Lt. & Rt. Wetland/Stream system (Site 7 delineation by TCG) – EPA asked about extent of wetland south of roadway corridor. Asked that plan sheets depict wetland continues south (arrow, etc.) Cross pipe will be adjusted to line up with stream delineation. Roadway drainage will be discharged outside wetland in PSH. Stream crosses roadway and cross pipe will be buried 1' and roadway drainage will be buffered and pass thru the buffer in a nonerosive manner and offsite drainage will be bypassed in a nonerosive manner.

Site 16 L 239+66 Lt. & Rt. Wetland/Stream system (Site 7 delineation by TCG) – EPA asked about extent of wetland south of roadway corridor. Asked that plan sheets depict wetland continues south (arrow, etc.) Cross pipe will be adjusted to line up with stream delineation. Roadway drainage will be discharged outside wetland in PSH. Stream crosses roadway and cross pipe will be buried 1' and roadway drainage will be buffered and pass thru the buffer in a nonerosive manner and offsite drainage will be bypassed in a nonerosive manner. EPA asked about riprap at the south side in the stream bed. Riprap will only be on banks.

Site 17 L 260+58 Lt. and Site 18 Y8 22+46 Lt. Stream crosses under existing and proposed roadway and is piped thru the adjoining property at the intersection of Fenner Rd. and US 301. The existing pipe is undersized and will be increased and buried 1' from upstream of Fenner Rd (Lt.) to downstream of US 301 (Lt.) to the current outlet. The existing drainage system under US 301 has a conflict with the existing sanitary sewer and as part of this project the existing sanitary sewer will be relocated and a new drainage cross pipe under US 301 will be installed.

Tina also stated that in general the roadway design vertical profile is lower and will reduce impacts compare with the previous design.

Jon (PLT) stated that the bridge across Compass Creek will be 3-span: temporary work bridge will be placed in the middle of the twin bridges.

Schedule
Goal for 4C is 8 weeks from today (Nov. , 2008); however, there is potential that this may not occur due to the volume of work required to complete the project.

Rodger
-apologized for confusion/mix up on plan sheets (historical properties)
-asked for permission from agencies to allow contractor flexibility in relocating utilities within upland areas prior to obtaining permit for jurisdictional impacts. EPA stated that it was basically the Corps' decision.
-the design team needs a response from the Corp to move forward with relocation of utilities within upland areas prior to obtaining permit for jurisdictional impacts.

Memorandum of Meeting

Date: December 10, 2008, 1:00 PM

Place\Time: NCDOT Century Center
Location & Surveys Unit Conference Room, 1:00 P.M.

Team Members:
William Wescott – USACE (Teleconference)
Gary Jordan – USFWS (Absent)
Travis Wilson – NCWRC (Present)
Rob Ridings – NCDWQ (Present)
Kathy Matthews – USEPA (Present)
Donnie Brew – FHWA (Absent)
Jay McInnis – NCDOT PDEA (Absent) [1]
Chris Rivenbark – NCDOT Natural Environment Unit (Present)
Wendi Johnson – NCDOT Division 4 (Present)

[1] Substitute Jameelah Elmin – NCDOT PDEA (Present)

Participants:
Nilesh Surti – NCDOT Alternative Delivery Unit (Absent)
Khaled Al-Akhdar – NCDOT Design Build
Anne Gamber – NCDOT Hydraulics Unit
Lonnie Brooks – NCDOT Structures Unit
Tyler Stanton – NCDOT Natural Environment Unit
David Harris – NCDOT Roadside Environmental (Absent) [2]
Jimmy Goodnight – NCDOT Roadway Design (Absent)
Rodger Rochelle – NCDOT Design Build (Absent) [3]
Steve Joyner – NCDOT Division 4 (Present)
John K. Arms, Jr. – NCDOT Division 4 (Present)
Matt Cook – RK&K Engineers
Tommy Peacock – RK&K Engineers
Audrey Burnette – RK&K Engineers
Jenn Callahan – The Catena Group
Mike Wood – The Catena Group
Jon Wallace – PLT Construction
Sim A. Wooten, Jr. – PLT Construction

[2] Substitute Mark Staley NCDOT Roadside Environmental (Present)
[3] Substitute Teresa Bruton – NCDOT Design Build (Present)

Subject: NEPA\404 Merger Team – Concurrence Point 4C Meeting
R-2823 – Rocky Mount Northern Connector from SR 1604 (Hunter Hill Road) to US 301, Nash County

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The following items were discussed and conclusions reached for the concurrence point 4C on the Rocky Mount Northern Connector in Nash County:

William Wescott (USACE) was called in order to teleconference with the group during the meeting. Khaled Al-Akhdar (NCDOT Alternative Delivery Unit) opened the meeting asking for everyone to introduce themselves. Matt Cook (RKK) then gave a brief description of the project. He stated that all the construction features for erosion control, temporary ditches,

and rip rap pads were accounted for in the setting of the final wetland / stream and buffer impacts.

There was only one action statement in the 4B minutes: the design team needs a response from the Corp to move forward with relocation of utilities within upland areas prior to obtaining permit for jurisdictional impacts. Mr. Cook stated that this was achieved via email on September 9, 2008, from Mr. Wescott to Mr. Al-Akhdar.

Mr. Cook then proceeded to go through the permit packages:

Site 1 –L- 30+28 Wetland / Stream & Buffer Impact Site. No comments.

Site 2 L 32+50 Rt. Buffer Impact Site. No comments.

Site 3 –L- 36+50 Wetland Impact Site. No comments.

Site 4 –L- 49+02 Stream & Buffer Impact Site. No comments.

Site 5 –L- 50+65 Wetland / Stream Impact Site. No comments.

Mr. Cook stated that Site 6 in the 4B package (-Y2- 20+00 LT on NC 43, sheet 9) had been removed. The pipe outlet at this location no longer outlets in to the stream. It outlets to the area beside the stream. The note on the plans states: "Excavate exist. ground between exist. and prop. inverts to 135.08 to allow drainage to reach wetland". The sites were renumbered to be sequential in the 4C package.

Site 6 –L- 68+00 Wetland Impact Site. Kathy Matthews (USEPA) asked if there was a need for an equalizer pipe at this location. Mr. Cook stated that the contours did not merit one at this location.

Site 7 –L- 111+50 Wetland & Buffer Impact Site. No comments.

Site 8 –L- 113+26 Stream Impact Site. No comments.

Site 9 –L- 135+34 Wetland / Stream & Buffer Impact Site. No comments.

Site 10 –L- 169+16 Wetland / Stream & Buffer Impact Site. No comments.

Site 11 –L- 175+00 Wetland Impact Site. No comments.

Site 12 –L- 182+00 Wetland / Stream & Buffer Impact Site. No comments.

Upon seeing that there is a temporary work bridge used at Site 12 for construction of the Compass Creek Bridge, Lonnie Brooks (NCDOT Structures) asked Jon Wallace (PLT Construction) if there was a need for a temporary bridge or causeway for the construction of the Hornbeam Branch bridge on sheet 12, Site 7. Mr. Wallace stated that there was not a need for them on that site.

Site 13 –L- 189+80 Wetland / Stream & Buffer Impact Site. Rob Ridings (NCDWQ) asked if the Preformed Scour Holes (PSH) were inside the buffer zones. Mr. Cook answered that the roadside ditch on the left side of –L-as it approaches the stream was approximately 5' deep just outside of the buffers and the ditch along the right of –L- was approximately 3'

deep. The PSHs would lower those elevations another foot. Therefore the PSH could not drain if stopped outside of the buffer zones. The ditch depths were necessary to meet filtration requirements (< 4% ditch slope and velocity < 2.00ft/s) for inlets #173 and #174 as well as the roadway between the bridge and the stream. The ditches will be grass lined.

Buffer Permit Drawing sheet 18 with contours and without contours was handed out at this time during the meeting to show the continuation of the Site 13 buffer impacts. This sheet was inadvertently left out of the package as it was sent to the agencies. No jurisdictional takes changed and the footprint did not change. A copy of these sheets will be forwarded to Mr. Wescott.

Anne Gamber (NCDOT Hydraulics) asked if we should include both pages for each impact site (contours and no contours) or just include the contour pages. Several people said they would prefer to also see the no contour pages for clarity. Both pages will be included in the permit package.

Site 14 -Y5- 11+50 Wetland Impact Site. No comments.

Site 15 –L- 231+00 Wetland & Buffer Impact Site. No comments.

Site 16 –L- 231+57 Wetland / Stream & Buffer Impact Site. No comments.

Site 17 –L- 239+81 Wetland / Stream & Buffer Impact Site. No comments.

Site 18 –L- 260+50 Stream Impact Site. Mr. Cook stated that the buffers were shown originally on this stream in the 4B package, however the blue line on the NRCS soil survey was approx 240' to the west of this stream and is associated with a non-jurisdictional ditch that is not a blue line on the USGS maps. Therefore, this stream is not buffered. Mr. Ridings asked if DWQ called the stream referenced in the soil survey. Jenn Callahan (Catena Group) explained that the streams in this area were delineated by Arcadis in Jan-Mar 2004 and verified by USACE and DWQ. The stream was not called jurisdictional at that time. During the field review / site evaluations, Catena Group also evaluated this area and noted the soil survey stream to be a non-jurisdictional ditch, concurring with the original findings of the delineation. The only jurisdictional stream in the area is the one at –L- 260+50.

Site 19 –Y8- 23+50 Wetland / Stream & Buffer Impact Site. Ms. Matthews asked if the stream was already piped and Mr. Cook verified that the stream is currently piped, however it is a substandard pipe size. The stream impact numbers for Sites 18 and 19 account for the portion of the stream that is not currently piped and is either A) Being replaced by a pipe (permanent impact), or B) Being impacted only during construction (temporary impact).

This concluded the review of the permit packages. Mr. Cook stated that the permit application will be provided to NCDOT by the end of the week and the team plans to provide the permit application to the agencies the following week for their review.

STORMWATER MANAGEMENT PLAN

Project: 34509.2.GV1, TIP No. R-22823 November 4, 2008
Nash County
Hydraulics Project Engineer: Matthew L. Cook P.E. (RKK Engineers)
Anne Gamber, P.E. (NCDOT Hydraulics Unit)

ROADWAY DESCRIPTION

The project consists of construction of the Rocky Mount Northern Connector on new location in Nash County. The project will be a four-lane median divided facility that extends from SR 1604 (Hunter hill road) to US 301. The overall length of the project is approximately 4.92 miles. The first 1,880 linear feet of the project, where the project ties into Winstead Avenue, will be a curb and gutter section. The remainder of the project will be a raised grassed median with grass shoulders and ditches. There is only one waterway crossing that hydraulically requires a bridge: Compass Creek. There are three small creeks running through the project, Goose Branch, Hornbeam Branch and an Unnamed Tributary to Compass Creek that hydraulically require box culverts. As an environmental avoidance and minimization commitment, the culvert crossing at Hornbeam Branch was converted into a single span bridge to minimize the wetland impacts. The project drainage system consists of cross pipes, grated inlets and associated pipe systems, and roadside stormwater ditches and swales.

ENVIRONMENTAL DESCRIPTION

The project is located in the Tar-Pamlico River Basin. Therefore, it is subject to North Carolina Department of Environment and Natural Resources (NCDENR) rules and regulations concerning stream buffers and filtration. All streams crossing the project are classified as C NSW, as described in the NCDENR Division of Water Quality "Redbook". Class C designates freshwater for secondary recreation, fishing, and aquatic life. NSW stands for Nutrient Sensitive Waters. These are waters that are subject to the growth of macroscopic or microscopic vegetation, which requires limits on nutrient inputs. There are fifteen wetland sites impacted by the project. Wetland impacts have been kept to a minimum by limiting the cut sections through wetlands and maintaining 3:1 slopes adjacent to the wetlands. There are twelve sites with impacts to jurisdictional streams and twelve sites with impacts to buffers. Impacts have been kept to a minimum in these areas also by limiting the cut sections through buffers and maintaining 3:1 slopes adjacent to the sensitive areas.

BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES

The primary goal of Best Management Practices (BMPs) is to prevent degradation of the state's surface waters by the location, construction and operation of the highway system. BMPs are activities, practices and procedures taken to prevent or reduce stormwater pollution. The BMPs and measures that have been used on this project to reduce stormwater impacts are grassed swales, preformed scour holes, and riprap energy pads. All waters of the United States that are regulated by the Army Corp of Engineers require that all culverts in jurisdictional streams are buried 1.0' and are upsized by 1.0'.

The following is a list of BMPs to be used on the proposed project:

GRASSED SWALES

Grassed swales are used to remove polluting nutrients from the stormwater before it enters the regulated buffer zones. The grassed swales are proposed at various locations as stated on the attached sheet. Ditch grades never exceed 4%, and the two year velocity was kept below 2.0 ft/s.

PREFORMED SCOUR HOLES

The PSH is used at the outlet of a pipe or end of a ditch to minimize the velocity exiting the system in question before it enters the zone 1 buffer area. The area at the outlet is excavated according to the size of the pipe, and then lined with riprap and filter fabric. The area around the excavation is also slightly excavated to a lesser degree and is lined with Permanent Soil Reinforcement Matting (PSRM). The depression and riprap absorb energy from the outlet and allow the drainage to leave the PSH as sheet flow at a lower velocity. PSH's are only used for flows equal to or less than that of an 18" pipe (Q10 approximately 13 cfs).
The following is a list of PSHs used on the project with the corresponding flow and velocity as it leaves the PSH

-L- 29+55 LT Q10= 8.41cfs V10= 0.98ft/s	-L- 31+10 LT Q10= 2.43cfs V10= 0.43ft/s	-L- 48+20 RT Q10= 8.72cfs V10= 0.99ft/s	-L- 111+05 RT Q10= 11.03cfs V10= 1.15ft/s
-L- 114+10 RT Q10= 3.57cfs V10= 0.76ft/s	-L- 114+45 RT Q10= 13.66cfs V10= 1.22ft/s	-L- 170+75 RT Q10= 1.22cfs V10= 0.34ft/s	-L- 173+10 RT Q10= 0.40cfs V10= 0.18ft/s
-L- 177+30 RT Q10= 2.06cfs V10= 0.41ft/s	-L- 189+15 RT Q10= 5.31cfs V10= 0.85ft/s	-L- 189+70 LT Q10= 6.45cfs V10= 0.90ft/s	-L- 230+80 RT Q10= 4.30cfs V10= 0.80ft/s
-L- 238+25 RT Q10= 1.48cfs V10= 0.37ft/s	-L- 239+20 LT Q10= 6.95cfs V10= 0.92ft/s	-L- 241+05 LT Q10= 13.19cfs V10= 1.21ft/s	

RIPRAP ENERGY PADS

The pads are used at the outlet of a pipe to dissipate the exit velocities before the stormwater enters the wetland. If stormwater leaving the closed pipe system was exiting the pipe at a velocity greater than 10 ft/s or had a Q greater than 13 cfs (Q too large for a PSH to handle), a pad was used to reduce the velocity. The following is a list of energy pads used at wetlands on the project:

-L- 28+80 RT	-L- 50+75 RT	-L- 190+30 RT
Q10= 14.93cfs	Q10= 14.32cfs	Q10= 20.30cfs
V10= 0.93ft/s	V10= 0.92ft/s	V10= 1.10ft/s

MAJOR STRUCTURES

The two RCBC's on the project were designed to minimize impacts to existing stream conditions as well as minimize fill in surface water. The RCBC skew angle follows the stream pattern as closely as possible. They are each buried one foot.

Bridges were designed taking into account the latest Tar-Pamlico Buffer Rules and also to minimize impacts to wetlands in the vicinity. There are no deck drains on either bridge.

PROJECT REFERENCE NO.	SHEET NO.
R-2823	

GRASS SWALE DATA
–L– 33+00 – 44+00 LT
DA= 8.27ac
SLOPE= 0.60%
L REQ.= 827'
L PRO.= 900'
Q2= 13.74cfs
V2= 1.86cfs
D2= 0.72'
Q10= 17.88cfs
V10= 2.01ft/s
D10= 0.83'

GRASS SWALE DATA
–L– 31+20 – 33+00 LT
DA= 0.81ac
SLOPE= 0.89%
L REQ.= 81'
L PRO.= 180'
Q2= 1.88cfs
V2= 1.55ft/s
D2= 0.60'
Q10= 2.43cfs
V10= 1.65ft/s
D10= 0.66'

GRASS SWALE DATA
–L– 41+00 – 48+00 RT
DA= 2.35ac
SLOPE= 0.30%
L REQ.= 235'
L PRO.= 270'
Q2= 6.93cfs
V2= 1.44ft/s
D2= 0.98'
Q10= 8.72fs
V10= 1.68ft/s
D10= 1.02'

GRASS SWALE DATA
–L– 48+95 – 49+50 LT
DA= 6.09ac
SLOPE= 0.82%
L REQ.= NA
L PRO.= NA
Q2= 8.04cfs
V2= 1.70ft/s
D2= 0.51'
Q10= 11.07cfs
V10= 1.95ft/s
D10= 0.59'

GRASS SWALE DATA
–L– 48+25 – 48+85 LT
DA= 15.58ac
SLOPE= 0.25%
L REQ.= NA
L PRO.= NA
Q2= 19.19cfs
V2= 1.64ft/s
D2= 1.00'
Q10= 26.43fs
V10= 2.01ft/s
D10= 1.09'

GRASS SWALE DATA
–Y1– 14+00 – 17+20 LT
DA= 1.44ac
SLOPE= 0.92%
L REQ.= 144'
L PRO.= 320'
Q2= 3.19cfs
V2= 1.79ft/s
D2= 0.73'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
–L– 85+50 – 111+00 RT
DA= 4.54ac
SLOPE= 0.90%
L REQ.= 454'
L PRO.= 1200'
Q2= 7.99cfs
V2= 1.75ft/s
D2= 0.50'
Q10= 11.00fs
V10= 2.01ft/s
D10= 0.57'

GRASS SWALE DATA
–L– 132+71 – 135+50 RT
DA= 0.41ac
SLOPE= 2.20%/1.16%
L REQ.= 41'
L PRO.= 250'
Q2= 0.77cfs/0.47cfs
V2= 2.00ft/s/1.34ft/s
D2= 0.51'/0.49'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
–L– 134+75 – 135+50 RT
DA= 5.52ac
SLOPE= 0.30%
L REQ.= NA
L PRO.= NA
Q2= 11.98cfs
V2= 1.40ft/s
D2= 0.80'
Q10= 15.36cfs
V10= 1.50ft/s
D10= 0.91'

GRASS SWALE DATA
–L– 135+50 – 147+24 RT
DA= 4.16ac
SLOPE= 0.65%
L REQ.= 321'
L PRO.= 524'
Q2= 9.03cfs
V2= 1.69ft/s
D2= 0.56'
Q10= 11.58cfs
V10= 1.82ft/s
D10= 0.64'

GRASS SWALE DATA
–L– 142+50 – 147+24 RT
DA= 0.95ac
SLOPE= 0.27%
L REQ.= 95'
L PRO.= 474'
Q2= 1.69cfs
V2= 1.16ft/s
D2= 0.98'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
–L– 148+00 – 169+30 LT
DA= 6.34ac
SLOPE= 0.55%
L REQ.= 634'
L PRO.= 680'
Q2= 14.05cfs
V2= 1.82ft/s
D2= 0.75'
Q10= 18.60cfs
V10= 1.97ft/s
D10= 0.86'

GRASS SWALE DATA
–L– 167+75 – 169+50 RT
DA= 0.53ac
SLOPE= 1.35%
L REQ.= NA
L PRO.= NA
Q2= 1.04cfs
V2= 1.89ft/s
D2= 0.61'
Q10= 1.31cfs
V10= 2.00ft/s
D10= 0.66'

GRASS SWALE DATA
–L– 184+48 – 189+15 RT
DA= 1.32ac
SLOPE= 2.10%
L REQ.= 132'
L PRO.= 467'
Q2= 4.22cfs
V2= 1.84ft/s
D2= 0.29'
Q10= 5.31cfs
V10= 1.98ft/s
D10= 0.32'

GRASS SWALE DATA
–L– 184+98 – 189+70 LT
DA= 1.49ac
SLOPE= 0.22%
L REQ.= 149'
L PRO.= 472'
Q2= 5.13cfs
V2= 1.77ft/s
D2= 1.39'
Q10= 6.45cfs
V10= 1.87ft/s
D10= 1.52'

GRASS SWALE DATA
–L– 190+28 – 195+00 LT
DA= 3.52ac
SLOPE= 0.87%
L REQ.= 352'
L PRO.= 422'
Q2= 8.69cfs
V2= 1.85ft/s
D2= 0.51'
Q10= 11.22cfs
V10= 1.99ft/s
D10= 0.59'

GRASS SWALE DATA
–L– 227+00 – 230+75 RT
DA= 2.08ac
SLOPE= 0.30%
L REQ.= 208'
L PRO.= 250'
Q2= 6.65cfs
V2= 1.42ft/s
D2= 0.96'
Q10= 8.36cfs
V10= 1.66ft/s
D10= 1.00'

GRASS SWALE DATA
–L– 232+50 – 239+15 LT
DA= 1.73ac
SLOPE= 1.65%
L REQ.= 173'
L PRO.= 365'
Q2= 5.53cfs
V2= 1.85ft/s
D2= 0.36'
Q10= 6.95cfs
V10= 1.99ft/s
D10= 0.40'

GRASS SWALE DATA
–Y8– 15+00 – 22+26 LT
DA= 4.92ac
SLOPE= 0.80%
L REQ.= 440'
L PRO.= 446'
Q2= 10.15cfs
V2= 1.84ft/s
D2= 0.56'
Q10= 13.68cfs
V10= 2.01ft/s
D10= 0.65'

GRASS SWALE DATA
–Y8– 19+04 – 21+08 RT
DA= 1.94ac
SLOPE= 3.01%
L REQ.= 72'
L PRO.= 108'
Q2= 2.56cfs
V2= 1.69ft/s
D2= 0.20'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
–Y8– 15+00 – 22+26 LT
DA= 4.92ac
SLOPE= 0.80%
L REQ.= 440'
L PRO.= 446'
Q2= 10.15cfs
V2= 1.84ft/s
D2= 0.56'
Q10= 13.68cfs
V10= 2.01ft/s
D10= 0.65'

GRASS SWALE DATA
–Y8– 22+00 – 24+50 RT
DA= 1.76ac
SLOPE= 2.26%
L REQ.= 176'
L PRO.= 250'
Q2= 2.72cfs
V2= 1.61ft/s
D2= 0.22'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
–L– 260+02 – 261+00 LT
DA= 0.47ac
SLOPE= 3.50%
L REQ.= NA
L PRO.= NA
Q2= 1.04cfs
V2= 1.87ft/s
D2= 0.21'
Q10= 1.31cfs
V10= 2.01ft/s
D10= 0.24'

GRASS SWALE DATA
–Y8– 15+00 – 17+39 RT
DA= 1.22ac
SLOPE= 1.29%
L REQ.= 122'
L PRO.= 239'
Q2= 1.61cfs
V2= 1.93ft/s
D2= 0.64'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
–Y8– 15+00 – 17+00 CL
DA= 0.54ac
SLOPE= 1.54%
L REQ.= 54'
L PRO.= 200'
Q2= 1.66cfs
V2= 1.47ft/s
D2= 0.44'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
–Y8– 23+00 – 25+38 LT
DA= 1.45ac
SLOPE= 0.32%
L REQ.= 61'
L PRO.= 238'
Q2= 3.92cfs
V2= 1.77ft/s
D2= 1.04'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
–Y8– 25+30 – 26+50 CL
DA= 0.84ac
SLOPE= 2.24%
L REQ.= 84'
L PRO.= 112'
Q2= 2.48cfs
V2= 1.87ft/s
D2= 0.47'
Q10= NA
V10= NA
D10= NA

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

November 8, 2006

Gregory J. Thorpe, Ph.D.
Project Development and Environmental Analysis
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

This letter is in response to your October 19, 2006 letter which requested comments from the U.S. Fish and Wildlife Service (Service) on the Federal Environmental Assessment (FEA) for the proposed Rocky Mount Northern Connector from SR 1604 (Hunter Hill Road) to US 301, Nash County, North Carolina (TIP No. R-2823). These comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661-667d) and section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

According to the FEA, the North Carolina Department of Transportation (NCDOT) proposes to construct a four-lane median divided facility on new location. The proposed project is approximately 4.9 miles long. Three corridor alternatives remain under consideration (B, C and Avoidance).

The Service has been actively involved in the combined NEPA/Section 404 Merger Process. Our input is reflected in the current designs of each alternative. The Service will defer recommending an alternative until Concurrence Point 3.

The FEA omits discussion of the great blue heron (*Ardea herodias*) rookery that was discovered near Compass Creek. Heron rookeries are protected under the Migratory Bird Treaty Act. According to an NCDOT consultant from Arcadis, approximately 10 great blue heron nests were observed in or before 2004. Subsequently, in March 2005 an NCDOT biologist stated that only one nest remained in the rookery and that a storm event may have destroyed the other nests. The information on the heron rookery should have been updated and discussed in the FEA, as well as a plan to avoid and/or minimize impacts to the rookery. Nests which may have been lost during a storm event may have been rebuilt at a later date. During the Concurrence Point 2A meeting on March 10, 2005, NCDOT stated the rookery was located 370 feet from the Avoidance Alternative, but only 118 feet from Alternatives B and C. NCDOT should continue to consult with the Service to avoid and/or minimize impacts to this resource.

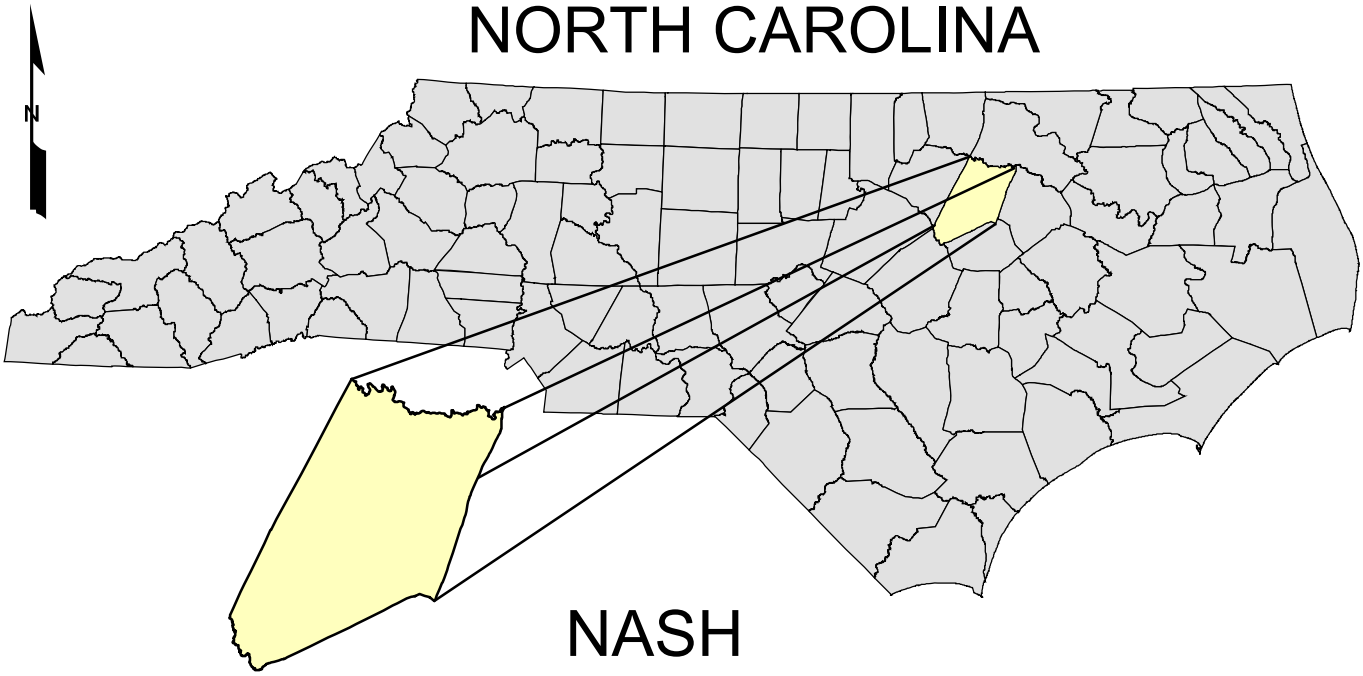
There are four federally protected species listed for Nash County – red-cockaded woodpecker (*Picoides borealis*), dwarf wedgemussel (*Alasmidonta heterodon*), Tar spinymussel (*Elliptio steinstansana*) and bald eagle (*Haliaeetus leucocephalus*). In a letter dated October 18, 2006, the Service concurred with NCDOT's determination that the proposed project may affect, but is not likely to adversely affect the red-cockaded woodpecker, dwarf wedgemussel and Tar spinymussel. In addition, the Service concurred that the project will have no effect on the bald eagle.

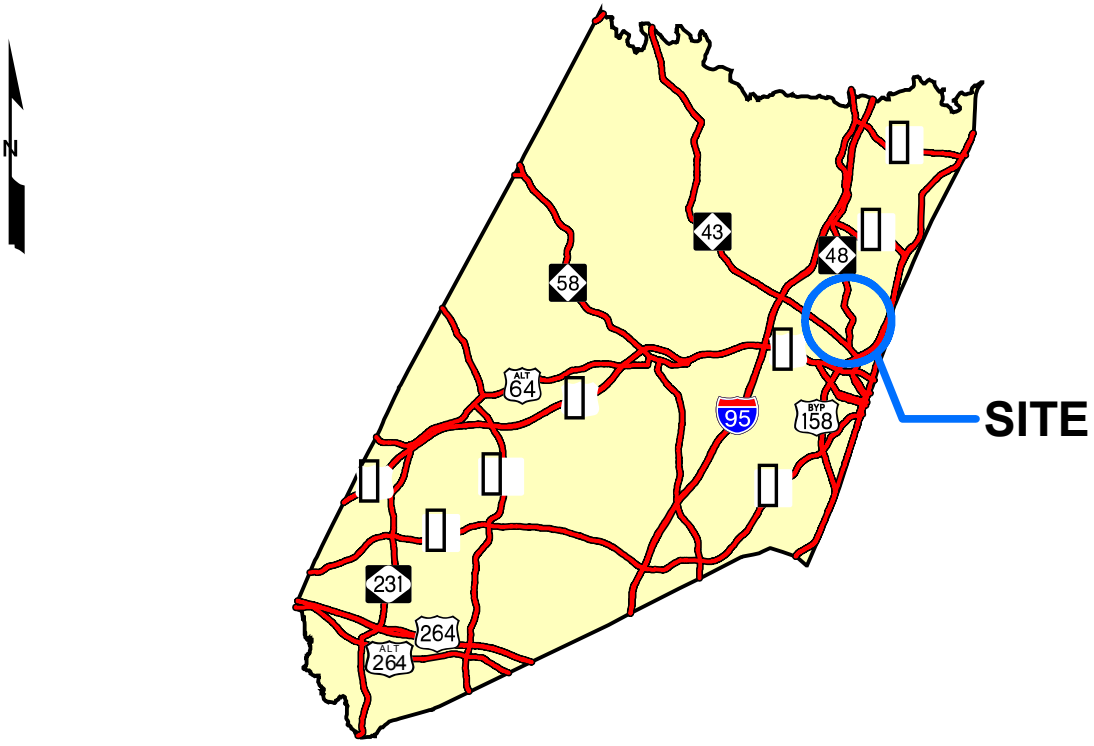
The Service will continue to provide input through the Merger Process. We appreciate the opportunity to review this project. We request that you send us a copy of the "Finding of No Significant Impact". If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520, ext. 32.

Sincerely,

Pete Benjamin
Field Supervisor

cc: Chris Militscher, USEPA, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Rob Ridings, NCDWQ, Raleigh, NC
William Wescott, USACE, Raleigh, NC
John Sullivan, FHwA, Raleigh, NC





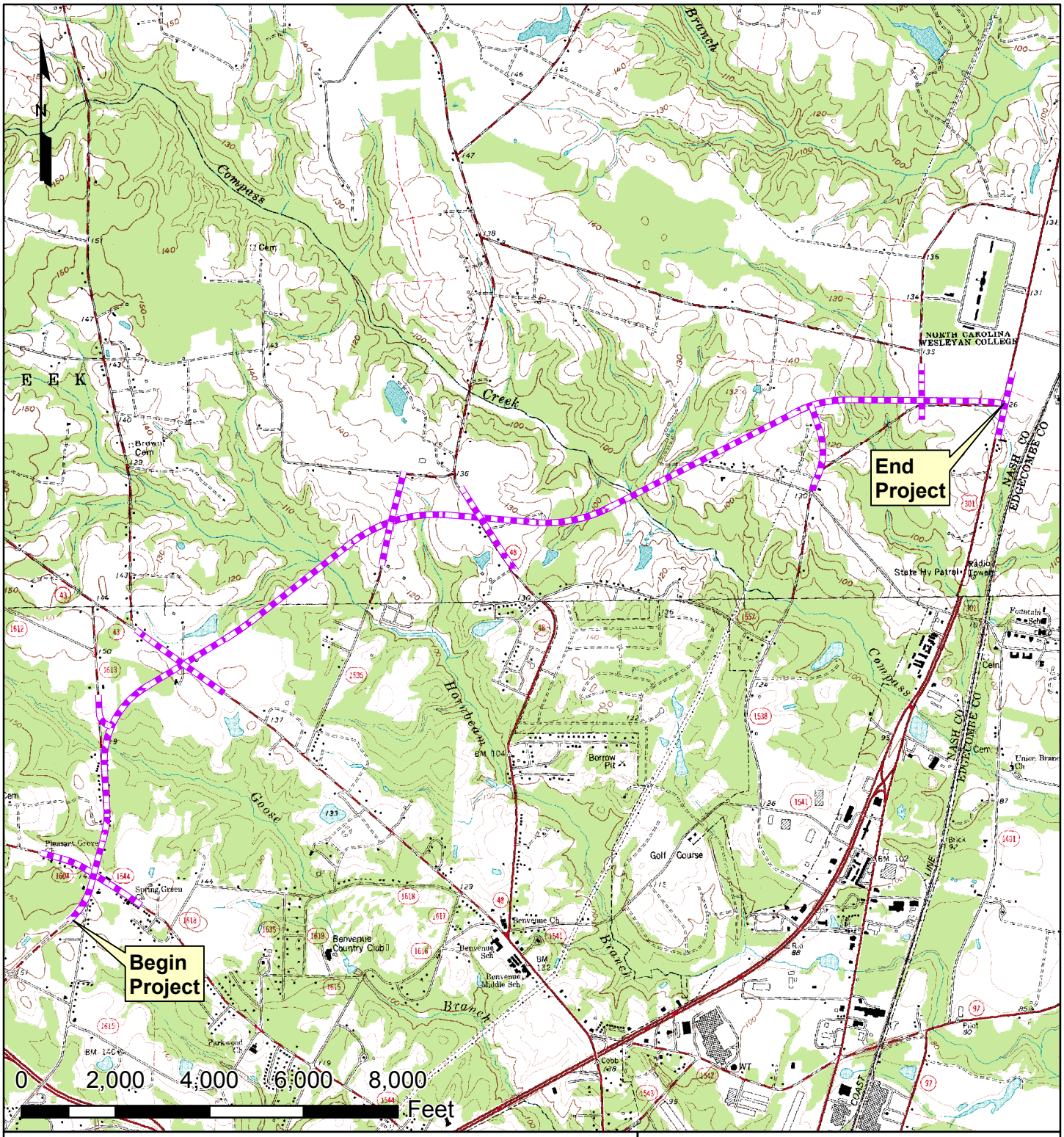
VICINITY MAPS

PERMIT DRAWING SHEET 1 OF 68

NCDOT

DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 34509.2.GV1 (R-2823)
ROCKY MOUNT
NORTHERN CONNECTOR

NOVEMBER 2008



1 inch equals 3,000 feet

LOCATION

PERMIT DRAWING SHEET 2 OF 68

NCDOT

DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 34509.2.GV1 (R-2823)
ROCKY MOUNT
NORTHERN CONNECTOR

NOVEMBER 2008

T:\BRIDGE_Maps\R_2823

Source: USGS 7.5 Minute Quadrangle, Rocky Mount & Drake, NC

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 30+28	2 - 48" RCP	0.06			0.05		0.01	0.00 *	95	10	
3	-L- 36+50 LT	N/A	0.07			0.02						
4	-L- 49+02	9' X 9' RCBC						0.04	0.01	158	54	
5	-L- 50+65	N/A	0.08			0.03		0.02		210		
6	-L- 68+00	N/A	0.97			0.14						
7	-L- 111+50	BRIDGE	0.85			0.17	0.06					
8	-L- 113+26	N/A			0.00 *	0.02		0.00 *	0.00 *	24	24	
9	-L- 135+34	72" RCP	0.17			0.04		0.02	0.00 *	210	48	
10	-L- 169+16	78" RCP	0.19			0.02		0.05	0.01	407	53	
11	-L- 175+00	18" RCP	0.64			0.09						
12	-L- 182+00	BRIDGE	1.00			0.15		0.29	0.10	197	19	
13	-L- 189+80	78" RCP	0.21		0.02	0.06		0.01	0.00 *	205	43	
14	-Y5- 11+50	18" RCP	0.11			0.01						
15	-L- 231+00	N/A	0.01			0.01						
16	-L- 231+57	60" RCP	0.13		0.00 *	0.01		0.00 *	0.00 *	74	10	
17	-L- 239+81	8' X 9' RCBC	0.86		0.01	0.11		0.02	0.01	211	85	
18	-L- 260+50	60" RCP						0.01	0.00 *	130	39	
19	-Y8- 23+50	66" RCP						0.00 *	0.00 *	18	11	
TOTALS:			5.35		0.04	0.93	0.06	0.48	0.14	1939	396	

*: < 0.01ac

Permanent Surface Water Impacts for Piers on Site 12: 7sqft

Temporary Surface Water Impacts for Piers on Site 12 outside of roadway construction: 80sqft

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

NASH COUNTY
PROJECT: C201917 (R-2823)

PERMIT DRAWING SHEET 3 OF 68

ATN Revised 3/31/05

R:/z-misc/Hydro/Permit/New_wetland_Summary.xls

BUFFER IMPACTS SUMMARY

		WETLANDS IN BUFFER	
Site	Station	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	-L- 30+28	3268	687
4 / 5	-L- 49+02	41	574
7	-L- 111+50	8967	7217
9	-L- 135+34	0	96
10	-L- 169+16	1174	1626
12	-L- 182+00	7628	4324
13	-L- 189+80	9708	2521
15	-L- 231+00	25	507
16	-L- 231+57	2114	1300
17	-L- 239+81	14199	6891
		47124	25743

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

NASH COUNTY
PROJECT: C201917 (R-2823)

PERMIT DRAWING SHEET 4 OF 68

PROP. NO.	PROPERTY OWNER NAME	PROP. OWNER ADDRESS
5	Benjamin R. Ricks, et al	16084 NC 43, Whitakers, NC 27891
9	William D. Driver, Jr.	3246 Turkey Foot Rd., Rocky Mount, NC 27804
10	Rebecca D. Paris	3545 Mansfield Dr. , Rocky Mount, NC 27803
13	B.W. Varnell, Heirs	200 College St.Lllington, NC 27850
29	Richard H. Minor	1444 Jeffreys Rd., Rocky Mount, NC 27804
33	Three MR LTD Partnership	2687 Old Bailey Rd., Nashville, NC 27856
34	Aubry D. Woodruff	2233 Boddie Mill Pond Rd., Nashville, NC 27856
35 & 37	Claudette D. Reges, et al	2012 Northern Nash Rd., Rocky Mount, NC 27804
42	Alma W. Griffen, Heirs	111 Muscadine Road. Rocky Mount, NC 27804
43 & 52	E. C. Powell	PO Box 2592, Rocky Mount, NC 27804
44	Stanley L. West	1704 Goldrock Rd., Rocky Mount, NC 27804
50	William H. Overman	2709 Coleberry Trail, Rocky Mount, NC 27804
51	Satpal Singh Rathie	115 York Hill Dr., Cary NC 27513
62	James B. Martin Jr., et al	P.O. Box 280, Brookeville, MD 20833
63 & 65	William Herbert Turner	6316 Settlement Road, Julian, NC 27283
66	Mack B. Pearsall	1 Page Avenue, Ste. 215, Asheville, NC 28801
67 & 68	Walter I. Tharrington	3104 Bishop Road, Rocky Mount, NC 27804
73	NC Wesleyan College	3400 N. Wesleyan Blvd., Rocky Mount, NC 27804
89	Joco Development Co.	P.O. Box 7533, Rocky Mount, NC 27804

WETLAND AND STREAM IMPACTS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

NASH COUNTY
PROJECT: 34509.2.GV1 (R-2823)

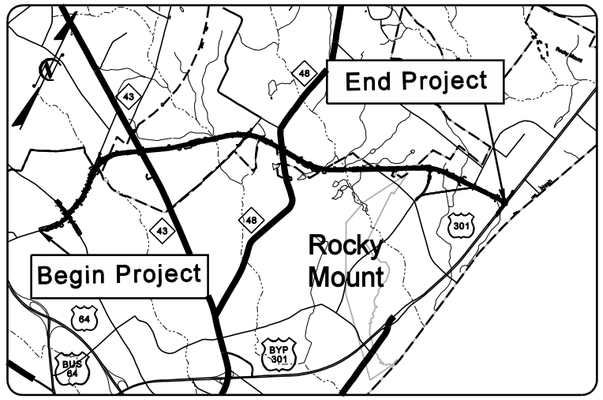
PERMIT DRAWING SHEET 5 OF 68

R:/z-misc/Hydro/Wetprop.xls

T.I.P. PROJECT: R-2823

CONTRACT: C201917

SEE SHEET 1-B FOR CONVENTIONAL PLAN SHEET SYMBOLS



VICINITY MAP

NOTES:
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
2. THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
3. A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ROCKY MOUNT AND DORTCHES.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NASH COUNTY

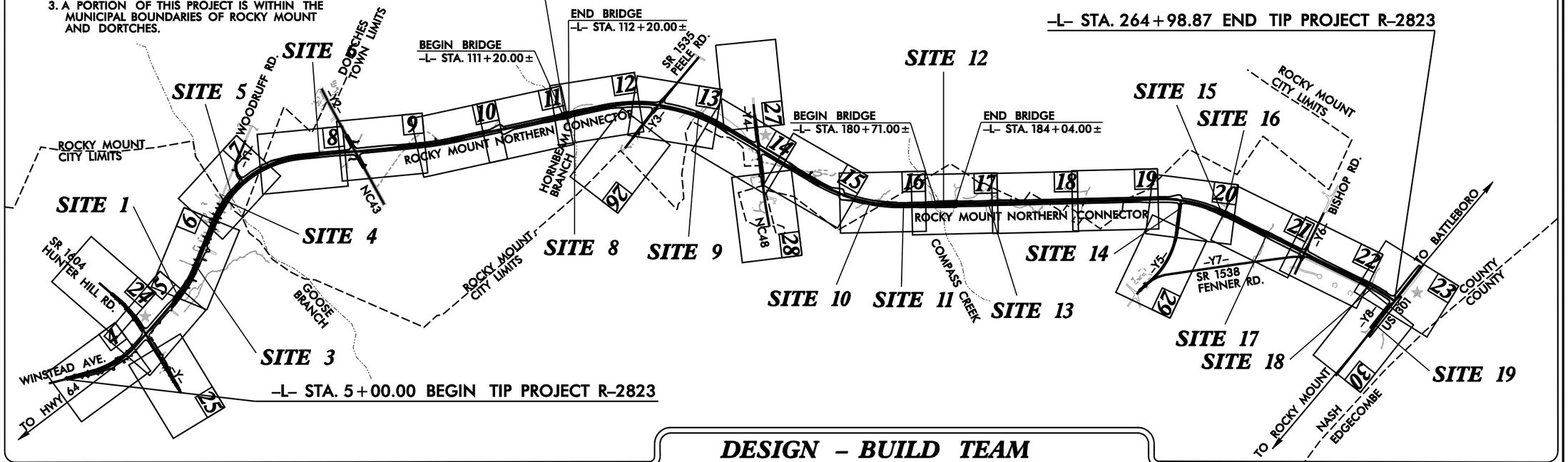
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2823	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
34509.2.GV1	STP-0431(24)	CONST.	

PERMIT DRAWING
SHEET 6 OF 68

LOCATION: ROCKY MOUNT NORTHERN CONNECTOR FROM SR 1604 (HUNTER HILL RD.) TO US 301

TYPE OF WORK: WETLAND AND STREAM PERMIT DRAWINGS

NAD 83/95



-L- STA. 5+00.00 BEGIN TIP PROJECT R-2823

-L- STA. 264+98.87 END TIP PROJECT R-2823

DESIGN - BUILD TEAM

GRAPHIC SCALES

50 0 50 100 PLANS

50 0 50 100 PROFILE (HORIZONTAL)

10 0 10 20 PROFILE (VERTICAL)

DESIGN DATA

ADT 2009	=	12,500
ADT 2030	=	24,000
DHV	=	10%
D	=	60%
T	=	7%
V	=	60 mph

*(TTST = 3%,DUAL= 4%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2823.....	4.842 mi
LENGTH STRUCTURE TIP PROJECT R-2823.....	0.082 mi
TOTAL LENGTH TIP PROJECT R-2823.....	4.924 mi

PLANS PREPARED BY :
RUMMEL, KLEPPER & KAHL, LLP
consulting engineers
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
FOR
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE:
MAY 20, 2008

J. T. Peacock, Jr., P.E.
PROJECT ENGINEER

Brandon J. McInnis, P.E.
PROJECT DESIGN ENGINEER

CONTRACTOR :
PLT CONSTRUCTION CO., INC.
PLT CONSTRUCTION CO., INC.
5676 THOMPSON CHAPEL CHURCH ROAD
WILSON, NORTH CAROLINA 27896

HYDRAULICS ENGINEER
SIGNATURE: P.E.
ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 7 OF 68

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

MATCHLINE -Y- STA. 17+50 SEE SHEET 24

MATCHLINE -L- STA. 17+00 SEE SHEET 4

MATCHLINE -L- STA. 31+00 SEE SHEET 6

MATCHLINE -Y- STA. 27+00 SEE SHEET 25

LP STA. 17+37.56 -L-

HP STA. 21+20.43 -L-

LP STA. 29+80.52 -L-

PSRM

PSH SEE DETAIL C

SITE 1

RIPRAP PAD DATA
-L- 21+80 RT
Q10= 14.93cfs
V10= 0.93ft/s

PREFORMED SCOUR HOLE DATA
-L- 29+55 LT
Q10= 8.41cfs
V10= 0.98ft/s

PER 4B MEETING:
DO NOT BURY #107 1'

DAVID W. COMBS

DAUGHTRIDGE ENTERPRISES INC

BENJAMIN R. RICKS, et al

SAINT PAUL BAPTIST CHURCH

ISBK BAPTIST CHURCH

BARBARA H. BRADSHAW

WILLIAM D. DRIVER

REBECCA D. PARIS

MORRIS J. HURT

CHARLES S. BARTHOLOMEW

WILLIAM D. DRIVER, JR.

REBECCA D. PARIS

SR 1613 WINSTEAD AVE EXT

SR 1604 HUNTER HILL RD

EXISTING R/W WIDTH VARIABLE

LATERAL BASE DITCH SEE DETAIL D

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL J

LATERAL BASE DITCH SEE DETAIL D

48" WW FENCE

REMOVE

PUE

INV=141.25

INV=127.38

INV=128.14

INV=126.40

5 TONS CL B RIPRAP W/14 SY FIL FAB

45 TONS CL I RIPRAP W/75 SY FIL FAB RIPRAP ON BANKS ONLY

DETAIL C
PREFORMED SCOUR HOLE

PLAN VIEW

Perforated Soil Mortar Cement Mixture (PSRM)

Install level and flush with natural ground.

Pipe or Ditch Outlet

Square Preformed Scour Hole (PSH) (Rip Rap in basin not shown for clarity)

Seed with nonlive or dormant vegetation.

B= 4.5Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

SECTION A-A

Pipe or Ditch Outlet

PSRM

Natural Ground

Liner: Class B Rip Rap 1.0' thick with Filter Fabric

1' tuck

5/05

A-A
11.0'
0.0'
2.5'
5.0'

-L- STA. 28+80 RT
-L- STA. 29+55 LT

DETAIL A
LATERAL "V" DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1
Fill Slope
b
1'Ft.
Min. D= 1.0Ft.
b= 2.0Ft.

FROM -L- STA. 25+00 TO STA. 27+26 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1 or Flatter
Front Ditch Slope
Min. D= 1.0Ft.

FROM -Y- STA. 20+00 TO STA. 21+00 RT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1
Fill Slope
b
1'Ft.
B
Min. D= 1.5Ft.
B= 2.0Ft.
b= 2.0Ft.

FROM -L- STA. 17+38 TO STA. 21+00 LT
FROM -L- STA. 26+00 TO STA. 29+50 LT
FROM -Y- STA. 21+00 TO STA. 21+76 RT

DETAIL J
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
D=1.0'

NATURAL GROUND
3:1
3:1

FROM -L- STA. 22+45 TO STA. 26+00 LT
(LINE 25+00 - 26+00 W/PSRM)

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-L-	9+20.00	20+90.46	RT
2'-6" C&G	-L-	21+70.52	27+60.04	RT
2'-6" C&G	-L-	14+84.50	21+48.87	LT
2'-6" C&G	-L-	22+25.97	29+48.22	LT
1'-6" MOUNTABLE C&G	-Y-	24+05.00	27+15.00	MED
2'-6" C&G	-Y-	22+97.82	28+05.00	LT

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

PROJECT REFERENCE NO.	SHEET NO.
R-2823	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 8 OF 68

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

MATCHLINE -Y- STA. 17+50 SEE SHEET 24

MATCHLINE -L- STA. 17+00 SEE SHEET 4

MATCHLINE -L- STA. 31+00 SEE SHEET 6

MATCHLINE -Y- STA. 27+00 SEE SHEET 25

SITE 1

RIPRAP PAD DATA
-L- 28+80 RT
Q10= 14.93cfs
V10= 0.93ft/s

PREFORMED SCOUR HOLE DATA
-L- 29+55 LT
Q10= 8.41cfs
V10= 0.98ft/s

PER 4B MEETING: DO NOT BURY #107 1'

DAUGHTRIDGE ENTERPRISES INC (3)
DAVID W. COMBS (1)
BENJAMIN R. RICKS, et al (5)
SAINT PAUL BAPTIST CHURCH
ISBK BAPTIST CHURCH
BARBARA H. BRADSHAW (4)
WILLIAM D. DRIVER (2)
REBECCA D. PARIS (6)
CHARLES S. BARTHOLOMEW (7)
MORRIS J. HURT (8)
WILLIAM D. DRIVER, JR. (9)
REBECCA D. PARIS (10)

LP STA. 17+37.56 -L-
HP STA. 21+20.43 -L-
LP STA. 29+80.52 -L-

SR 1613 WINSTEAD AVE. EXT.
SR 1604 HUNTER HILL RD

INV=141.25
INV=127.38
INV=128.14
INV=126.40

LATERAL BASE DITCH SEE DETAIL D
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL BACK OF CURB CUT DITCH SEE DETAIL J
LATERAL BASE DITCH SEE DETAIL D
48" WW FENCE
LATERAL V DITCH SEE DETAIL A
PSH SEE DETAIL C

5 TONS CL B RIPRAP W/14 SY FIL FAB INV=128.14

49 TONS CL I RIPRAP W/75 SY FIL FAB RIPRAP ON BANKS ONLY INV=126.40

DETAIL C
PREFORMED SCOUR HOLE
PLAN VIEW
SECTION A-A
B= 4.5Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.
5/05

A-A
11.0'
0.0'
2.5'
5.0'

DETAIL A
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1.0Ft.
D= 2.0Ft.
FROM -L- STA. 25+00 TO STA. 27+26 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1.0Ft.
FROM -Y- STA. 20+00 TO STA. 21+00 RT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5Ft.
B= 2.0Ft.
b= 2.0Ft.
FROM -L- STA. 17+38 TO STA. 21+00 LT
FROM -L- STA. 26+00 TO STA. 29+50 LT
FROM -Y- STA. 21+00 TO STA. 21+76 RT

DETAIL J
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
D=1.0'
FROM -L- STA. 22+45 TO STA. 26+00 LT
(LINE 25+00 - 26+00 W/PSRM)

FOR -L- PROFILE SEE SHT. 31
FOR -Y- PROFILE SEE SHTS. 40 & 41

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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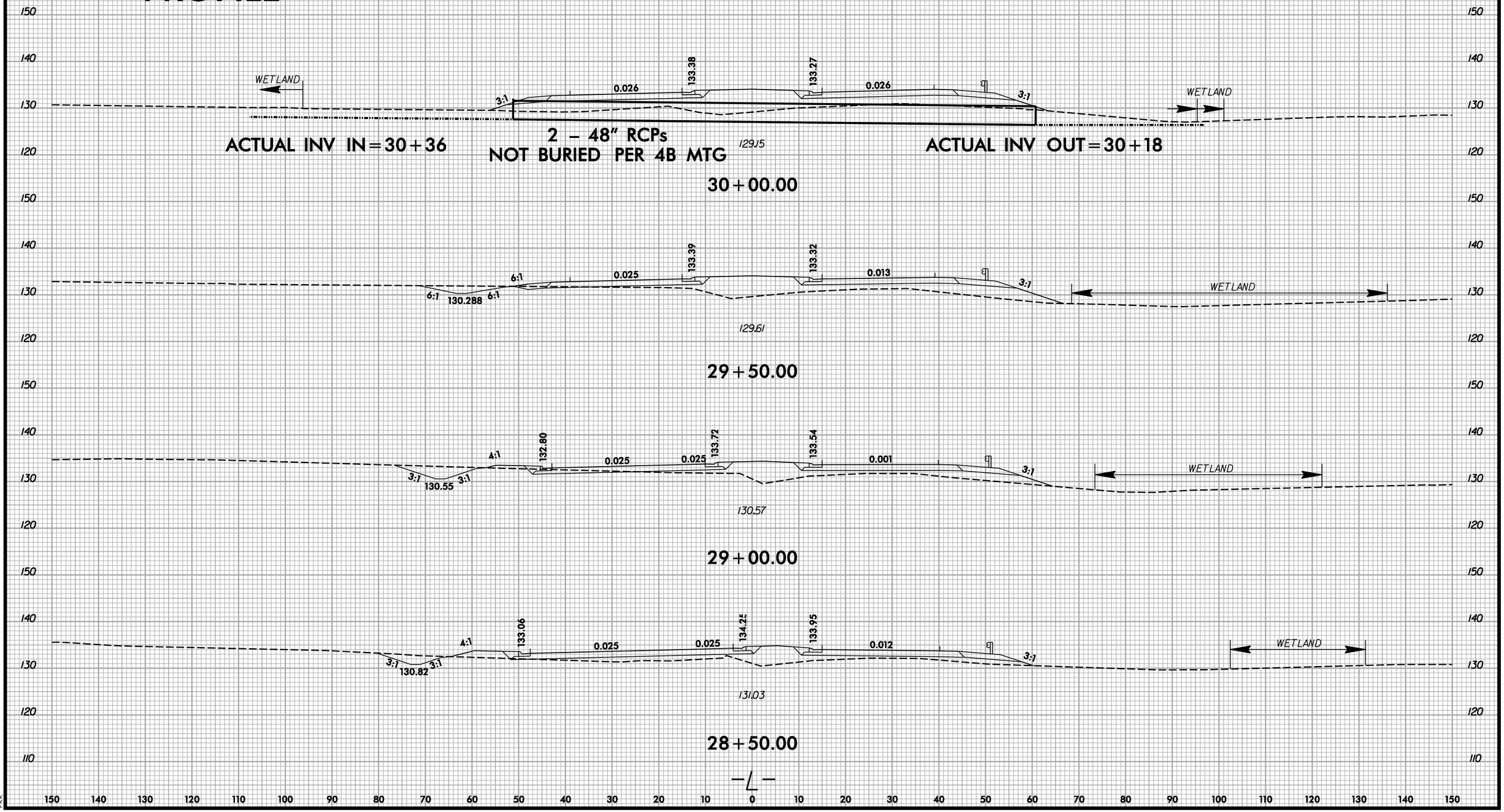
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-12

SITE 1
PERMIT DRAWING
SHEET 9 OF 68

STREAMLINE PROFILE



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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-13

SITE 1

PERMIT DRAWING
SHEET 10 OF 68

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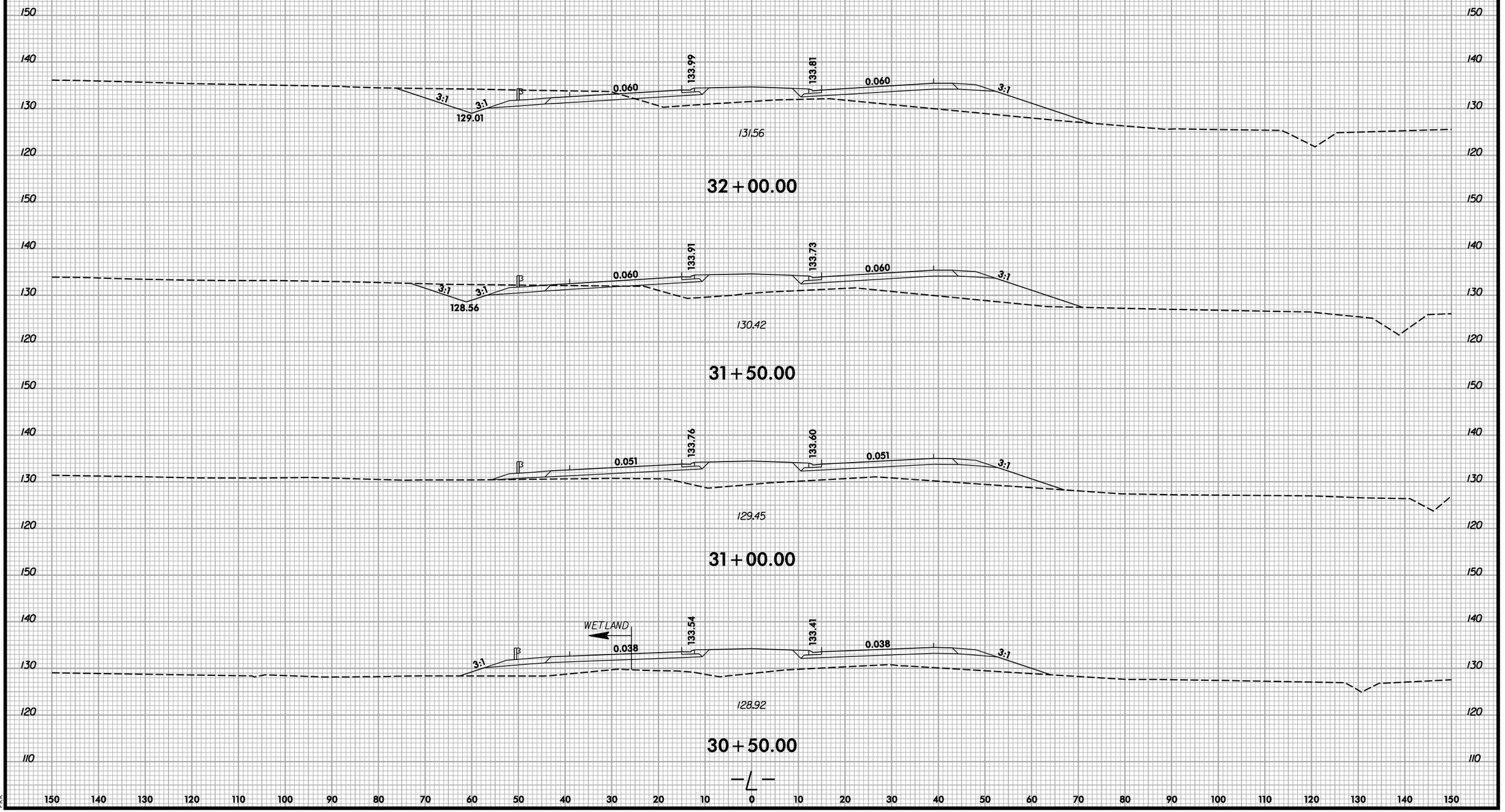

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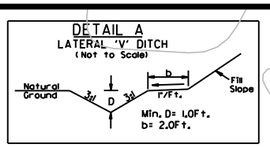
PROJECT REFERENCE NO.	SHEET NO.
R-2823	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 11 OF 68

ENGLISH

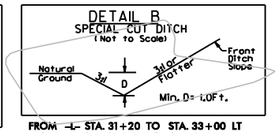
DETAIL A
LATERAL 'V' DITCH
(Not to Scale)



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

FROM -L- STA. 44+00 TO STA. 44+50 RT

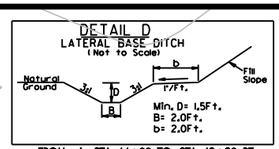
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.0Ft.

FROM -L- STA. 31+20 TO STA. 33+00 LT
FROM -L- STA. 35+00 TO STA. 37+50 LT

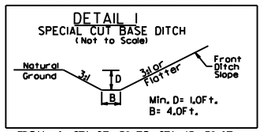
DETAIL D
LATERAL BASE DITCH
(Not to Scale)



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

FROM -L- STA. 44+00 TO STA. 48+20 RT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



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

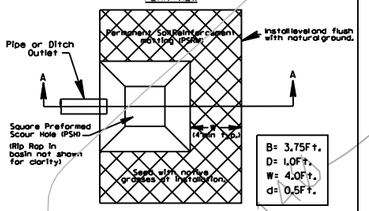
FROM -L- STA. 37+50 TO STA. 45+50 LT

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

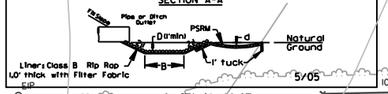
DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW



B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

SECTION A-A



5/05

-L- STA. 31+20 LT

MATCHLINE -L- STA. 31+00 SEE SHEET 5

MATCHLINE -L- STA. 44+50 SEE SHEET 7

BENJAMIN R. RICKS, et al (5)
CULTIVATED
B.W. VARNELL, HEIRS (14)
TOBY E. MITCHELL (16)
TALMAGE LEE WELLS (17)
PAMELA B. GARDNER (22)
WADE L. MEDLIN (23)
ANNIE D. BARTHOLOMEW (19)
REBECCA D. PARIS (10)
MIRIAM V. HAYES (11)
DURWOOD LEE SHREVE (12)
B.W. VARNELL, HEIRS (13)
JOHN R. MORRIS (15)
SHARON B. LANDIS (18)
TAREK R. TRAISH (20)
CLYDE M. KEEN (21)
CLYDE M. KEEN (24)

PSH SEE DETAIL H
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT BASE DITCH SEE DETAIL I
48" WW FENCE
1 TONS CL B RIPRAP W/5 SY. FIL FAB INV = 124.73
SITE 3
LATERAL BASE DITCH SEE DETAIL D
PUE
REMOVE
PPES
EXISTING R/W
WOODRUFF RD 23' BST
GOOSE BRANCH DR 22' BST
TO LP

FOR -L- PROFILE SEE SHTS. 31 & 32

CURB & GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-L-	39+04.00	40+60.63	RT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

PLANS PREPARED BY :
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consulting engineers
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RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/17/99

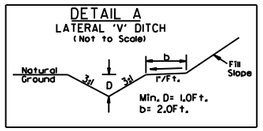
PROJECT REFERENCE NO.	SHEET NO.
R-2823	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 12 OF 68

ENGLISH

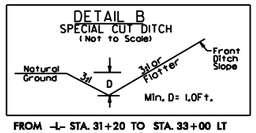
DETAIL A
LATERAL 'V' DITCH
(Not to Scale)



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

FROM -L- STA. 44+00 TO STA. 44+50 RT

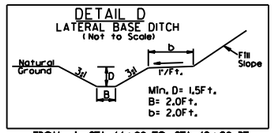
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.0Ft.

FROM -L- STA. 31+20 TO STA. 33+00 LT
FROM -L- STA. 35+00 TO STA. 37+50 LT

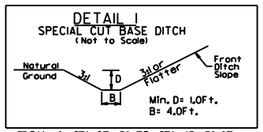
DETAIL D
LATERAL BASE DITCH
(Not to Scale)



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

FROM -L- STA. 44+00 TO STA. 48+20 RT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



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

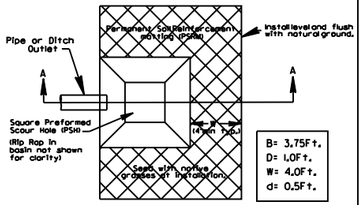
FROM -L- STA. 37+50 TO STA. 45+50 LT

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

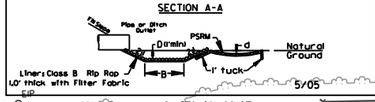
DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW



B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

SECTION A-A



5/05

-L- STA. 31+20 LT

MATCHLINE -L- STA. 31+00 SEE SHEET 5

MATCHLINE -L- STA. 44+50 SEE SHEET 7

BENJAMIN R. RICKS, et al (5) CULTIVATED

B.W. VARNELL, HEIRS (14)

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SHARON B. LANDIS (18)

TAREK R. TRAISH (20)

CLYDE M. KEEN (21)

CLYDE M. KEEN (24)

WOODRUFF RD 23' BST

GOOSE BRANCH DR 22' CMS

SITE 3

PSH SEE DETAIL H

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT BASE DITCH SEE DETAIL I

48" WW FENCE

1 TONS CL B RIPRAP W/5 SY FIL FAB INV = 124.73

LATERAL BASE DITCH SEE DETAIL D

TO LP -L- STA. 14+00

FOR -L- PROFILE SEE SHTS. 31 & 32

CURB & GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-L-	39+04.00	40+60.63	RT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

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FOR
DIVISION OF HIGHWAYS

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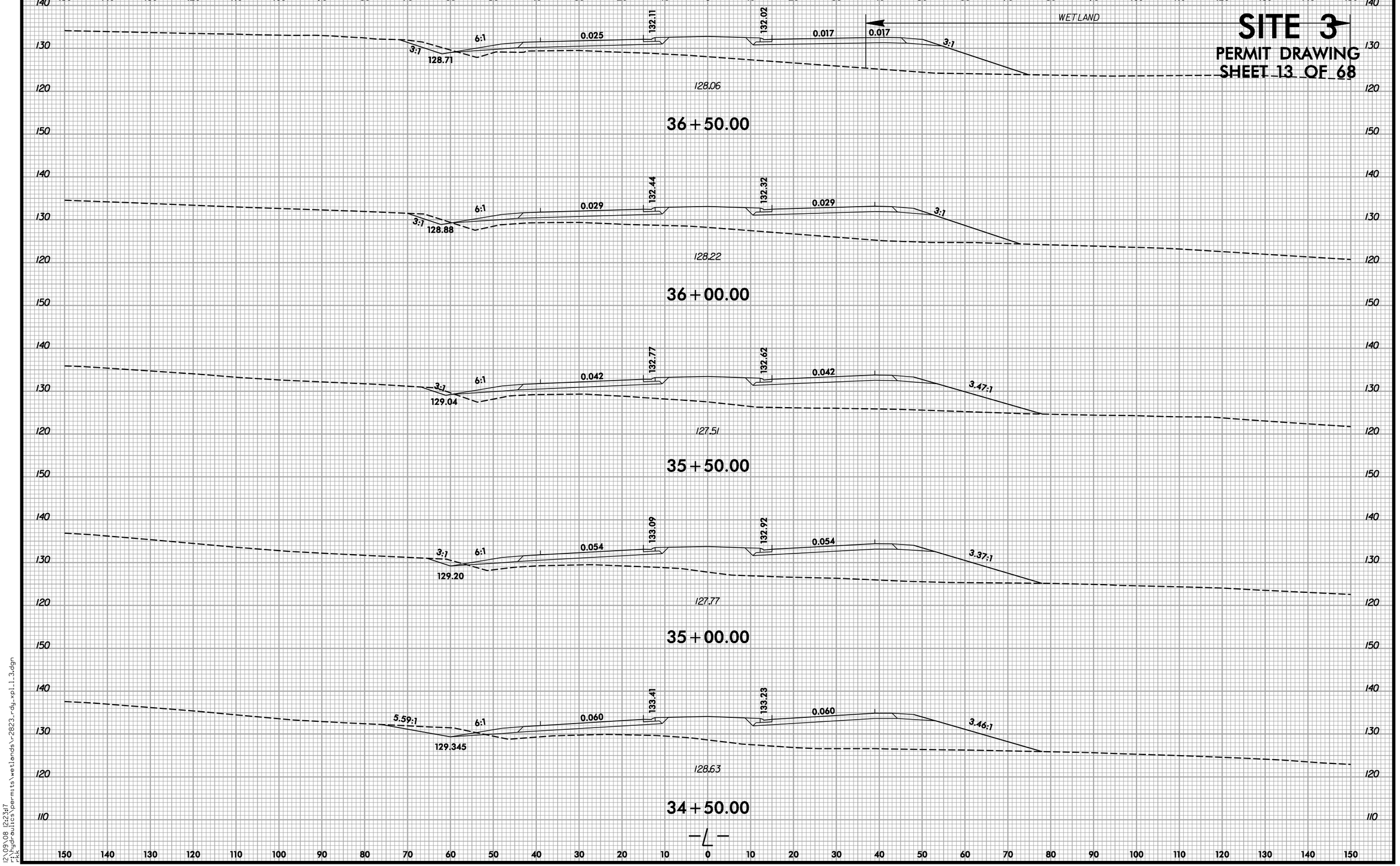
	R-2823	X-15

SITE 3

PERMIT DRAWING
SHEET 13 OF 68



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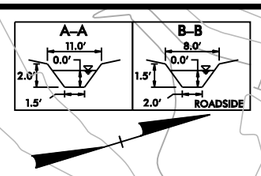
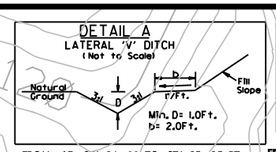
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

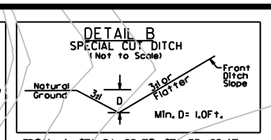
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 14 OF 68

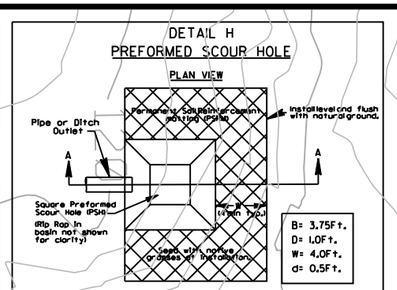




FROM -Y1- STA. 14+00 TO STA. 15+25 RT
FROM -Y1- STA. 14+00 TO STA. 16+00 LT



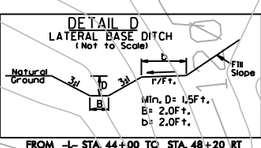
FROM -L- STA. 54+09 TO STA. 55+00 LT
FROM -Y1- STA. 16+00 TO STA. 17+20 LT



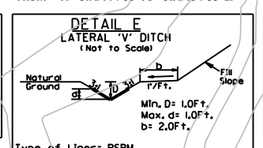
-L- STA. 48+20 RT

GRASS SWALE DATA -L- 41+00 – 48+00 RT	GRASS SWALE DATA -L- 48+25 – 48+85 LT
DA= 2.35ac	DA= 15.58ac
SLOPE= 0.36%	SLOPE= 0.25%
L REQ.= 235'	L REQ.= NA
L PRO.= 270'	L PRO.= NA
Q2= 6.93cfs	Q2= 19.19cfs
V2= 1.44ft/s	V2= 1.64ft/s
D2= 0.98'	D2= 1.00'
Q10= 8.72cfs	Q10= 26.43cfs
V10= 1.68ft/s	V10= 2.01ft/s
D10= 1.02'	D10= 1.09'
GRASS SWALE DATA -L- 48+95 – 49+50 LT	**GRASS SWALE DATA -Y1- 14+00 – 17+20 LT**
DA= 6.09ac	DA= 1.44ac
SLOPE= 0.82%	SLOPE= 0.92%
L REQ.= NA	L REQ.= 144'
L PRO.= NA	L PRO.= 320'
Q2= 8.04cfs	Q2= 3.19cfs
V2= 1.70ft/s	V2= 1.79ft/s
D2= 0.51'	D2= 0.73'
Q10= 11.07cfs	Q10= NA
V10= 1.95ft/s	V10= NA
D10= 0.59'	D10= NA

PREFORMED SCOUR HOLE DATA -L- 48+20 RT
DA= 8.72ac
Q10= 0.99ft/s
V10=
RIPRAP PAD DATA -L- 50+75 RT
Q10= 14.32cfs
V10= 0.92ft/s



FROM -L- STA. 44+00 TO STA. 48+20 RT

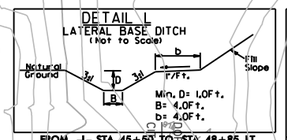


Type of Liner= PSRM

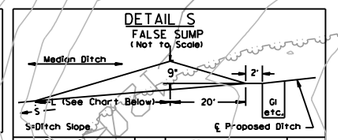
FROM -L- STA. 50+80 TO STA. 52+00 RT

FROM -L- STA. 37+50 TO STA. 45+50 LT

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	46+30.02	49+23.75	RT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

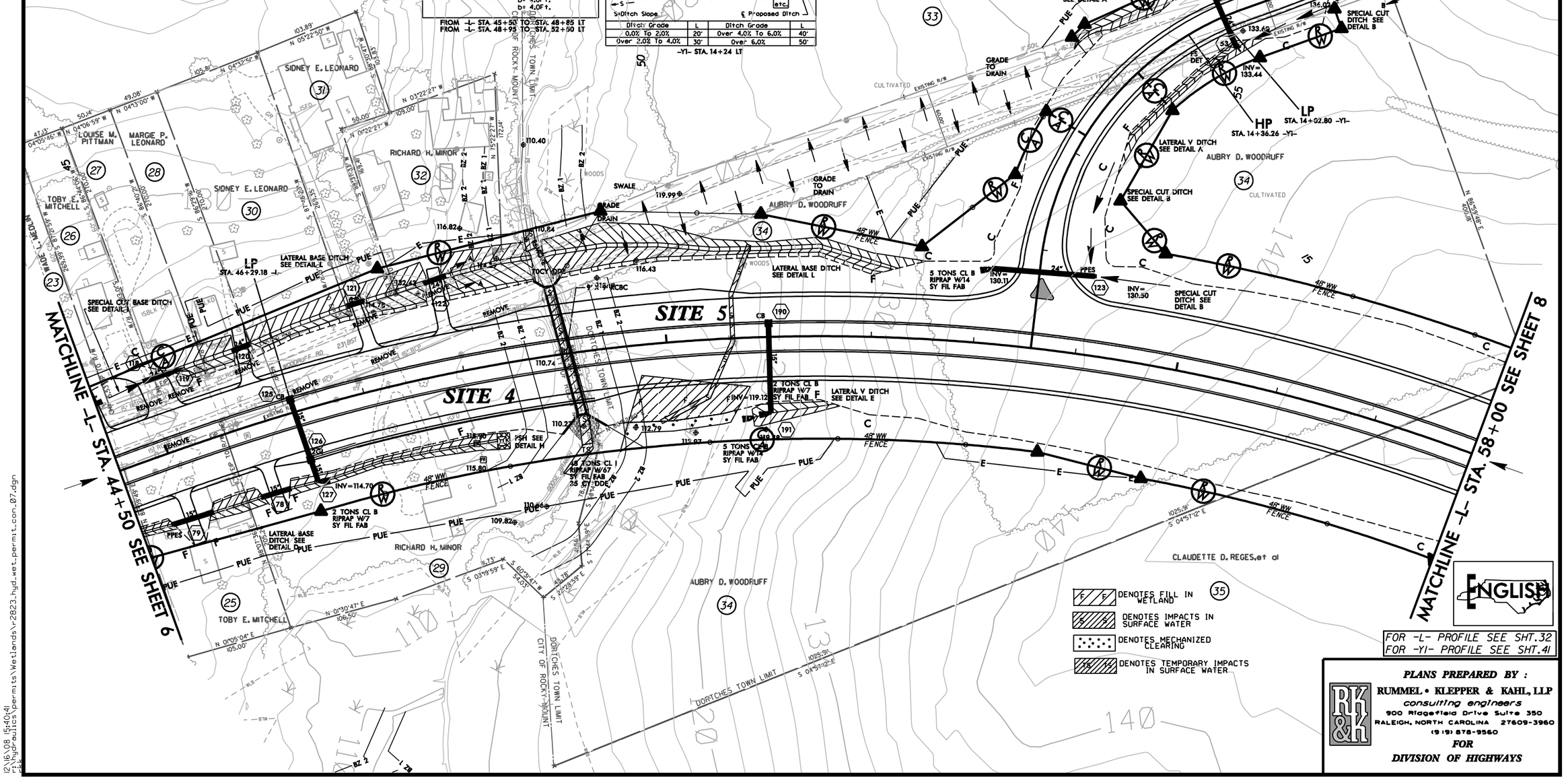


FROM -L- STA. 45+50 TO STA. 48+85 LT
FROM -L- STA. 48+95 TO STA. 52+50 LT



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'

-Y1- STA. 14+24 LT



FOR -L- PROFILE SEE SHT.32
FOR -Y1- PROFILE SEE SHT.41

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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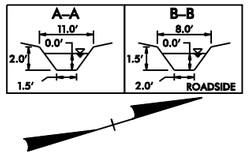
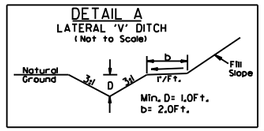
PROJECT REFERENCE NO.	SHEET NO.
R-2823	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

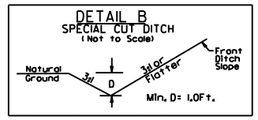
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 15 OF 68

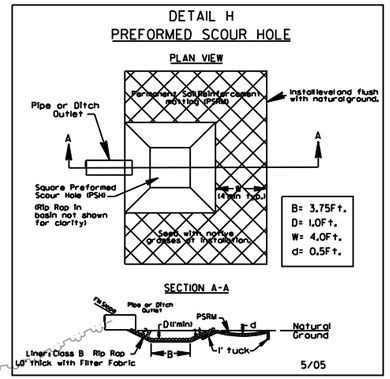




FROM -Y1- STA. 14+00 TO STA. 15+25 RT
FROM -Y1- STA. 14+00 TO STA. 16+00 LT



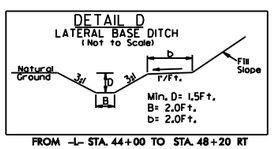
FROM -L- STA. 54+09 TO STA. 55+00 LT
FROM -Y1- STA. 12+89 TO STA. 14+00 LT & RT
FROM -Y1- STA. 16+00 TO STA. 17+20 LT



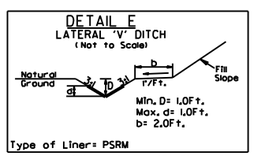
-L- STA. 48+20 RT

GRASS SWALE DATA -L- 41+00 – 48+00 RT	GRASS SWALE DATA -L- 48+25 – 48+85 LT
DA= 2.35ac	DA= 15.58ac
SLOPE= 0.30%	SLOPE= 0.25%
L REQ.= 235'	L REQ.= NA
L PRO.= 270'	L PRO.= NA
Q2= 6.93cfs	Q2= 19.19cfs
V2= 1.44ft/s	V2= 1.64ft/s
D2= 0.98'	D2= 1.00'
Q10= 8.72cfs	Q10= 26.43cfs
V10= 1.68ft/s	V10= 2.01ft/s
D10= 1.02'	D10= 1.09'
GRASS SWALE DATA -L- 48+95 – 49+50 LT	**GRASS SWALE DATA -Y1- 14+00 – 17+20 LT**
DA= 6.09ac	DA= 1.44ac
SLOPE= 0.82%	SLOPE= 0.92%
L REQ.= NA	L REQ.= 144'
L PRO.= NA	L PRO.= 320'
Q2= 8.04cfs	Q2= 3.19cfs
V2= 1.70ft/s	V2= 1.79ft/s
D2= 0.51'	D2= 0.73'
Q10= 11.07cfs	Q10= NA
V10= 1.95ft/s	V10= NA
D10= 0.59'	D10= NA

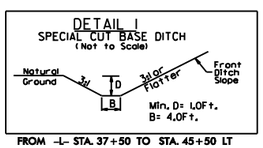
PREFORMED SCOUR HOLE DATA -L- 48+20 RT
Q10= 8.72cfs
V10= 0.99ft/s
RIPRAP PAD DATA -L- 50+75 RT
Q10= 14.32cfs
V10= 0.92ft/s



FROM -L- STA. 44+00 TO STA. 48+20 RT

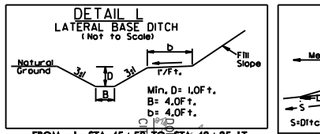


FROM -L- STA. 50+80 TO STA. 52+00 RT

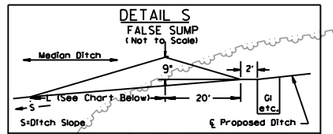


FROM -L- STA. 37+50 TO STA. 45+50 LT

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	46+30.02	49+23.75	RT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

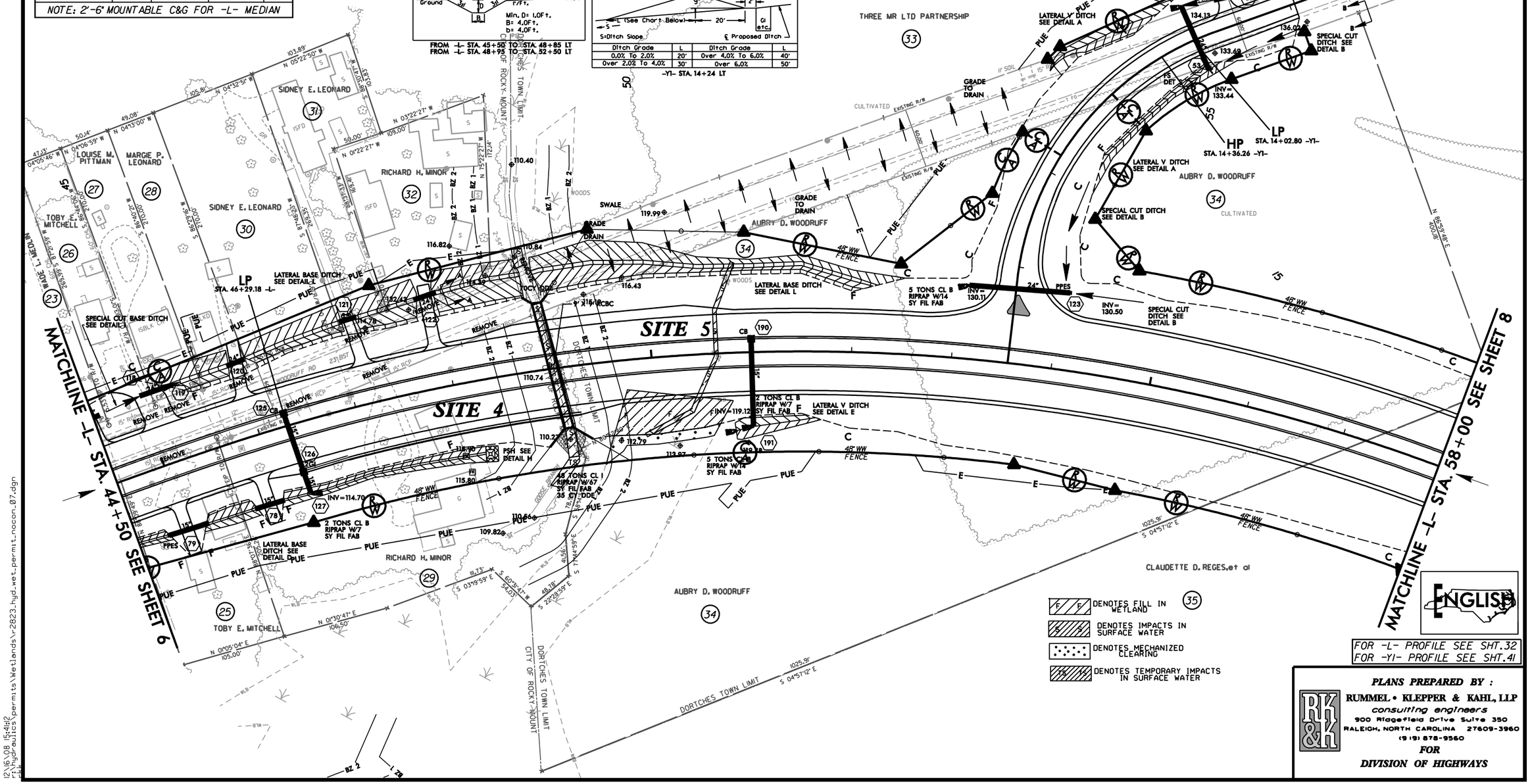


FROM -L- STA. 45+50 TO STA. 48+85 LT
FROM -L- STA. 48+95 TO STA. 52+50 LT



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'

-Y1- STA. 14+24 LT



FOR -L- PROFILE SEE SHT.32
FOR -Y1- PROFILE SEE SHT.41

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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kkk

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 16 OF 68

-L-

PI = 32+65.00
EL = 134.64'
VC = 430'
K = 374

(+)0.5000%
(-)0.6500%
(+)0.89% LT
(-)0.32% LT
(-)0.75% LT
(-)0.6500%
(-)2.3500%
(-)2.59% LT
(-)0.60% LT
(-)2.13% LT
(-)3.26% RT
(-)2.3500%

PROPOSED GRADE

PI = 41+25.00
EL = 129.05'
VC = 350'
K = 206

EXISTING GROUND

BEG. SP. CUT DITCH
-L- STA.35+00 LT
EL. 129.20

END SP. CUT DITCH
-L- STA.33+00 LT
EL. 129.90

END SP. CUT DITCH
BEG. SP. CUT BASE DITCH
-L- STA.37+50 LT
EL. 128.39

PI -L- STA. 41+00 LT
EL. 125.77

PI -L- STA. 43+00 LT
EL. 120.60

PI -L- STA. 44+00 LT
EL. 120.00

PI -L- STA. 45+50 RT
EL. 114.95

BEG. LAT. BASE DITCH
-L- STA. 44+00 RT
EL. 119.84

END SP. CUT BASE DITCH
BEG. LAT. BASE DITCH
-L- STA.45+50 LT
EL. 116.81

32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00

170 160 150 140 130 120 110 100 90 80

RR SPIKE IN BASE OF 8" OAK
-L- STA. 48+90.14 163.45' LT
ELEV.= 114.83'

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 9'x9' RCBC
STA.49+02 -L-

DRAINAGE AREA	1.0	SQ.MI.
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 700	CFS
DESIGN HW ELEVATION	= 120.4	FT
100 YEAR DISCHARGE	= 900	CFS
100 YEAR HW ELEVATION	= 121.6	FT
OVERTOPPING FREQUENCY	= 50 +	YRS
OVERTOPPING DISCHARGE	= 760	CFS
OVERTOPPING ELEVATION	= 121.1	FT

-Y1- STA.17+96.51=
-L- STA.53+56.26

EXISTING GROUND

PROPOSED GRADE

PI = 45+85.00
EL = 118.24'
VC = 570'
K = 140

END LAT. BASE DITCH
-L- STA. 48+20 RT
EL. 114.14

9'x9' RCBC

PI -L- STA. 51+00 LT
EL. 118.71

(+)11.7192%
(-)0.30% RT
(-)2.13% LT
(-)0.25% LT
(+)0.82% LT
(+)4.97% LT
(+)6.73% LT
(+)5.61% RT
(+)3.66% LT

PI -L- STA. 48+25 LT
EL. 110.95

PI -L- STA. 49+50 LT
EL. 111.25

BEG. SP. CUT DITCH
-L- STA. 54+09 LT
EL. 130.50

END SP. CUT DITCH
-L- STA. 55+00 LT
EL. 133.83

END LAT. BASE DITCH
-L- STA. 52+50 LT
EL. 128.81

END LAT. V DITCH
-L- STA. 52+00 RT
EL. 124.73

BEG. LAT. BASE DITCH
-L- STA. 48+95 LT
EL. 110.80

BEG. LAT. V DITCH
-L- STA. 50+80 RT
EL. 118.00

END LAT. BASE DITCH
-L- STA. 48+85 LT
EL. 110.80

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.6 THRU 8

46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00 56+00 57+00 58+00 59+00 60+00

170 160 150 140 130 120 110 100 90 80

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tkirby

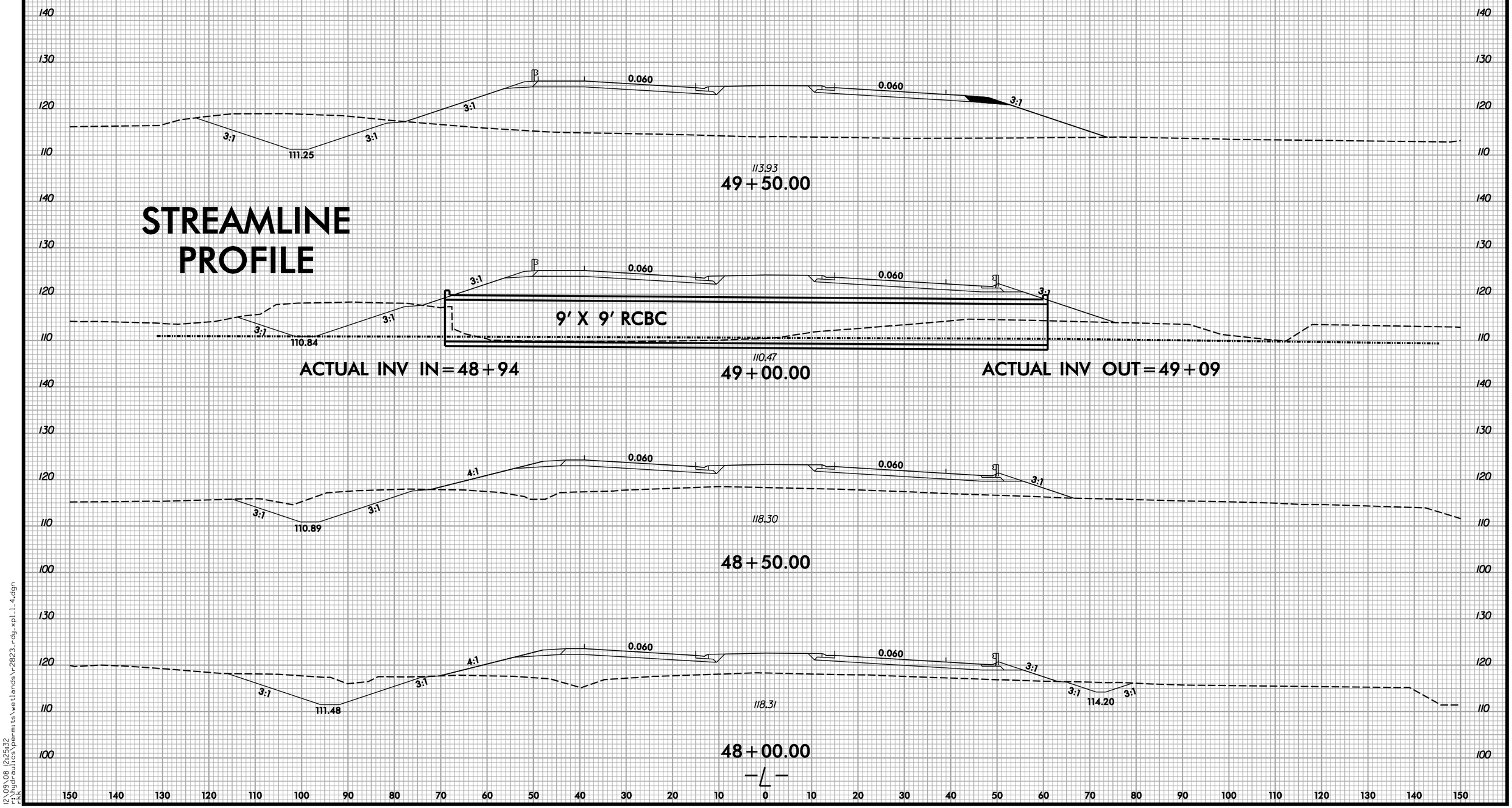
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-21

SITES 4 & 5

PERMIT DRAWING
SHEET 17 OF 68

STREAMLINE PROFILE



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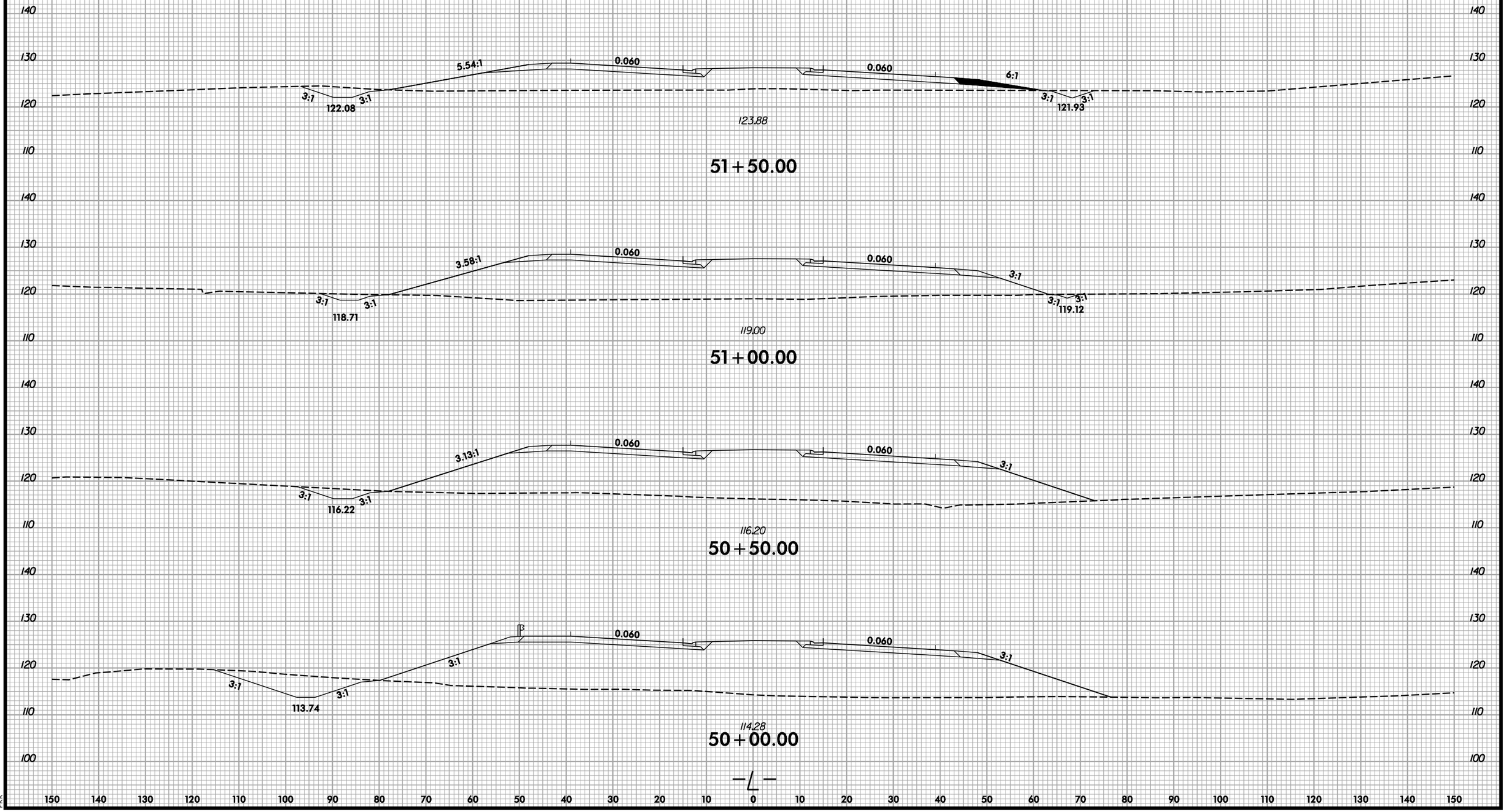
rkk

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-22

SITES 4 & 5

PERMIT DRAWING
SHEET 18 OF 68



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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 19 OF 68

ENGLISH

F/F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

SITE 6

HP
STA. 65+03.61 -L-

MATCHLINE -L- STA. 58+00 SEE SHEET 7

MATCHLINE -L- STA. 72+00 SEE SHEET 9

CLAUDETTE D. REGES,et al (35)

BETTY G. WOODRUFF (36)

AUBRY D. WOODRUFF (34)

BENAN PROPERTIES, LLC

CLAUDETTE D. REGES,et al (37)

CLAUDETTE D. REGES,et al (38)

MARY F. MUTZABAUGH

PUE

ISFBLS

CULTIVATED

WOODS

LATERAL V DITCH SEE DETAIL A

48" WW FENCE

DORTCHES TOWN LIMIT

N 72°45'06" W 664.85'

S 09°22'06" E 1262.80'

S 10°33'38" W 472.20'

S 72°41'47" E 105.43'

S 72°50'56" E 241.25'

S 08°50'12" W 394.68'

S 72°50'56" E 125.51'

N 72°45'30" W 1034.08'

S 09°57'12" E 1034.08'

N 01°23'32" W 603.98'

S 72°41'30" E 1861.78'

S 17°38'30" W 296.46'

N 72°41'30" W 297.78'

S 23°48'02" E 2348.02'

S 06°07'46" E

140

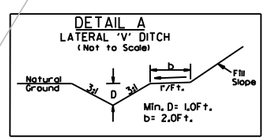
HISTORIC AREA

FOR -L- PROFILE SEE SHTS.32 & 33

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

DETAIL A
LATERAL "V" DITCH
(Not to Scale)



FROM -L- STA. 60+50 TO STA. 63+00 LT

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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PROJECT REFERENCE NO.	SHEET NO.
R-2823	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 20 OF 68

ENGLISH

F/F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

N 01°29'32" W 659.98'

1034.09' S 09°51'12" E

DOORTOWN TOWN LIMIT

N 72°45'06" W 664.82'

DOORTOWN TOWN LIMIT

S 09°27'06" E 912.26'

S 72°41'41" E 105.43'

S 10°33'38" W 472.20'

S 72°50'25" E 241.25'

394.68' S 08°50'12" W

S 72°50'56" E 125.51'

CLAUDETTE D. REGES, et al (35)

CULTIVATED

BETTY G. WOODRUFF (36)

AUBRY D. WOODRUFF (34)

CULTIVATED

WOODS

60

65

70

HP
STA. 65+03.61 -L-

CLAUDETTE D. REGES, et al (37)

BENAN PROPERTIES, LLC

CLAUDETTE D. REGES, et al (38)

CULTIVATED

SITE 6

LATERAL V DITCH
SEE DETAIL A

48" WW FENCE

C

F

I

MATCHLINE -L- STA. 58+00 SEE SHEET 7

MATCHLINE -L- STA. 72+00 SEE SHEET 9

WOODS

CLAUDETTE D. REGES, et al (35)

2348.02' S 06°07'44" E

CLAUDETTE D. REGES, et al (37)

CLAUDETTE D. REGES, et al (38)

PUE

S 12°38'30" W 256.46'

ISFBUS

MARY F. MUTZABAUGH

WOODS

N 72°41'30" W 259.78'

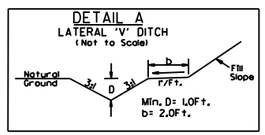
HISTORIC AREA

FOR -L- PROFILE SEE SHTS. 32 & 33

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

DETAIL A
LATERAL "V" DITCH
(Not to Scale)



FROM -L- STA. 60+50 TO STA. 63+00 LT

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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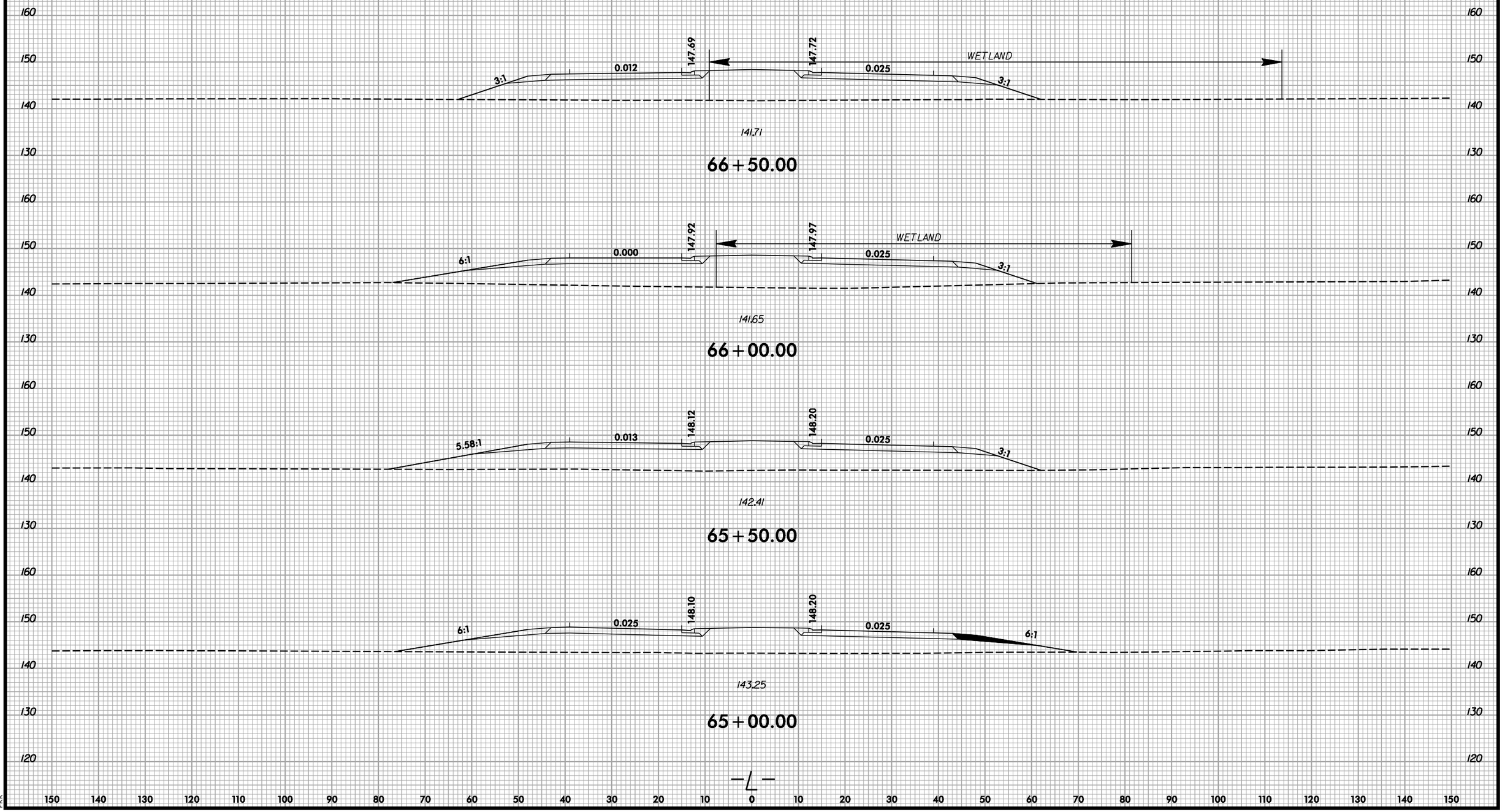
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-30

SITE 6
PERMIT DRAWING
SHEET 21 OF 68



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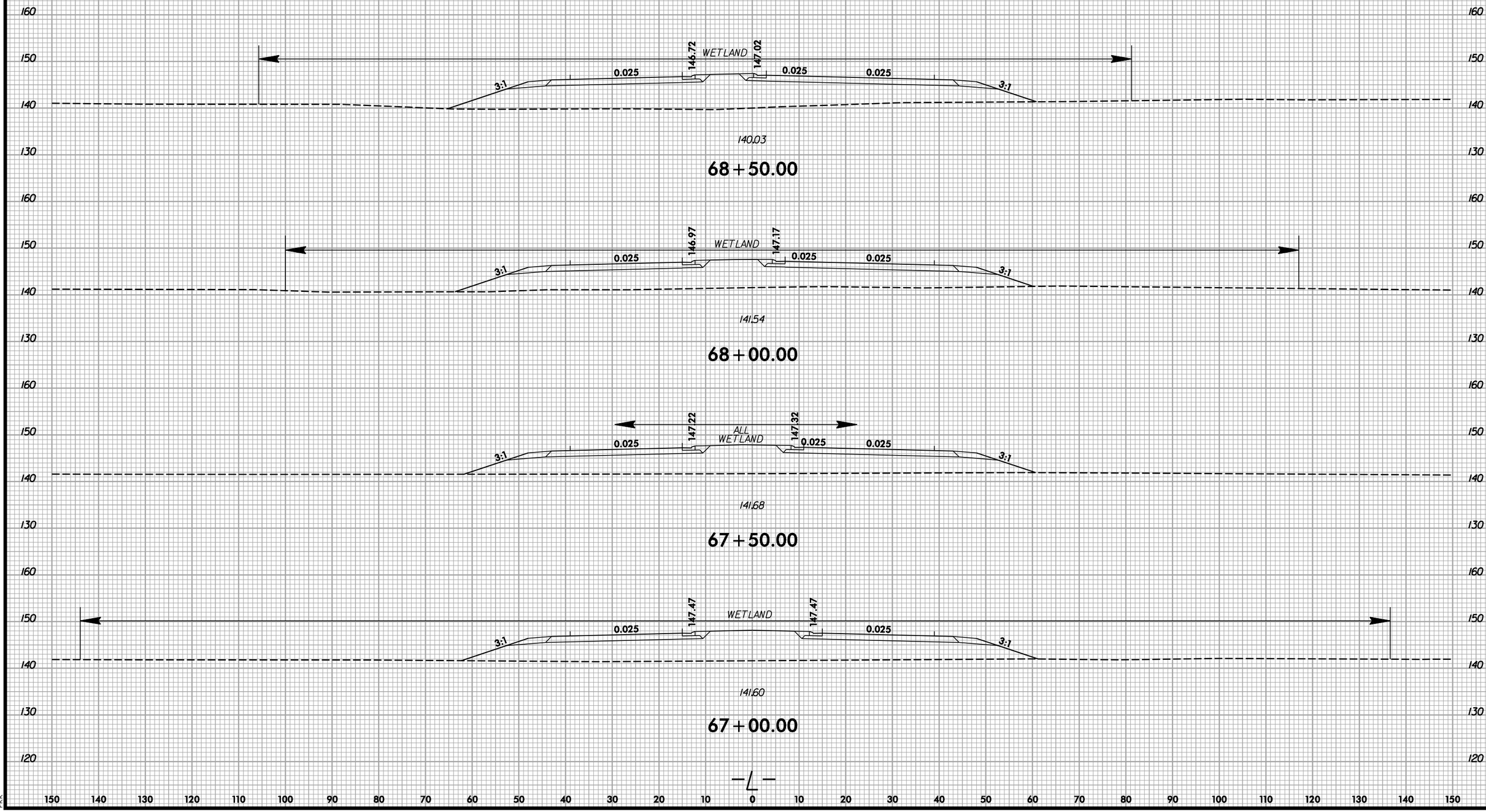
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-31

SITE 6

PERMIT DRAWING
SHEET 22 OF 68



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rkk

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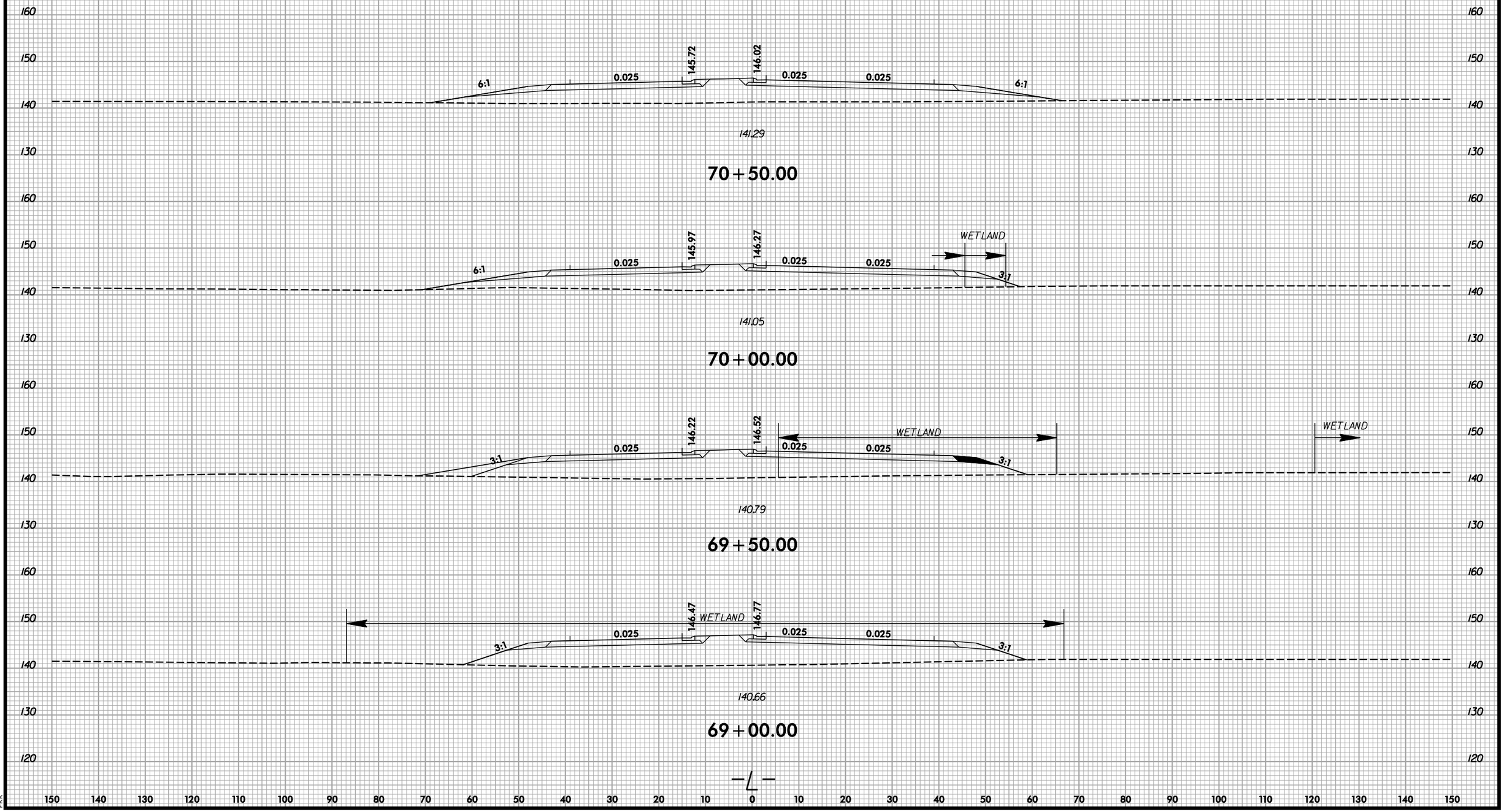
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-32

SITE 6

PERMIT DRAWING
SHEET 23 OF 68



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PROJECT REFERENCE NO.	SHEET NO.
R-2823	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 24 OF 68

ENGLISH

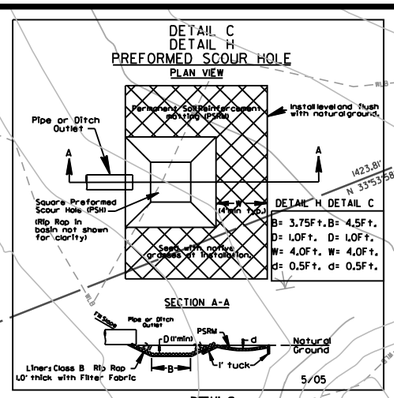
GRASS SWALE DATA
-L- 85+50 = 111+00 RT
DA= 4.54ac
SLOPE= 0.90%
L REQ.= 454'
L PRO.= 1200'
Q2= 7.99cfs
V2= 1.75ft/s
D2= 0.50'
Q10= 11.00cfs
V10= 2.01ft/s
D10= 0.57'

PREFORMED SCOUR HOLE DATA
-L- 111+05 RT
Q10= 11.03cfs
V10= 1.15ft/s

PREFORMED SCOUR HOLE DATA
-L- 114+10 RT
Q10= 3.57cfs
V10= 0.76ft/s

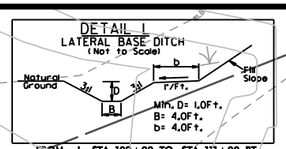
PREFORMED SCOUR HOLE DATA
-L- 114+45 RT
Q10= 13.66cfs
V10= 1.22ft/s

DETAIL C
DETAIL H
PREFORMED SCOUR HOLE



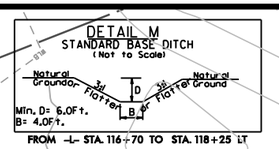
DETAIL C
-L- STA. 111+05 RT
-L- STA. 114+45 RT
DETAIL H
-L- STA. 114+10 RT

DETAIL I
LATERAL BASE DITCH
(Not to Scale)

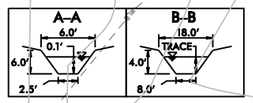


FROM -L- STA. 109+00 TO STA. 111+00 RT

DETAIL M
STANDARD BASE DITCH
(Not to Scale)



FROM -L- STA. 116+70 TO STA. 118+25 LT



F/F DENOTES FILL IN WETLAND
E/E DENOTES EXCAVATION IN WETLAND
S/S DENOTES IMPACTS IN SURFACE WATER
TS/TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
HC/HC DENOTES HAND CLEARING
MC/MC DENOTES MECHANIZED CLEARING

ALMA W. GRIFFEN, HEIRS (42)

LP
STA. 113+98.53 -L-

SITE 7

EXIST. CHANNEL DISSIPATES TO NOTHING. GRADE AWAY FROM -L- TO EXIST. GROUND FOR APPR. 25' TO PREVENT FLOW AGAINST FILL SLOPE

SITE 8

STANDARD BASE DITCH SEE DETAIL M

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W7 SY FIL FAB

48" WW FENCE

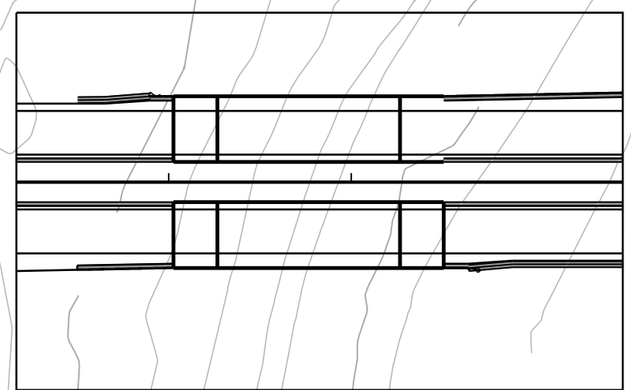
CULTIVATED

WOODS

MATCHLINE -L- STA. 110+50 SEE SHEET 11

MATCHLINE -L- STA. 124+00 SEE SHEET 13

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	110+43.00	110+96.00	RT
SBG	-L-	112+44.00	112+57.61	RT
EXP.GUTTER	-L-	112+57.61	114+00.00	RT
EXP.GUTTER	-L-	110+43.00	110+82.50	LT
SBG	-L-	110+82.50	110+96.00	LT
SBG	-L-	112+44.00	114+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				



FOR -L- PROFILE SEE SHTS. 34 & 35

PLANS PREPARED BY :
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(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 25 OF 68

ENGLISH

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

GRASS SWALE DATA
-L- 85+50 - 111+00 RT
DA= 4.54ac
SLOPE= 0.90%
L REQ.= 454'
L PRO.= 1200'
Q2= 7.99cfs
V2= 1.75ft/s
D2= 0.50'
Q10= 11.00cfs
V10= 2.01ft/s
D10= 0.57'

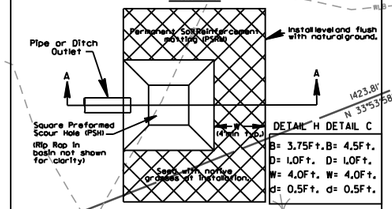
PREFORMED SCOUR HOLE DATA
-L- 111+05 RT
Q10= 11.03cfs
V10= 1.15ft/s

PREFORMED SCOUR HOLE DATA
-L- 114+10 RT
Q10= 3.57cfs
V10= 0.76ft/s

PREFORMED SCOUR HOLE DATA
-L- 114+45 RT
Q10= 13.66cfs
V10= 1.22ft/s

DETAIL C
DETAIL H
PREFORMED SCOUR HOLE

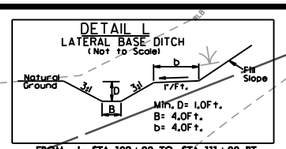
PLAN VIEW



5/05

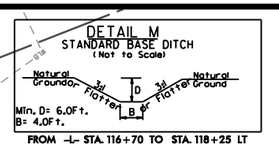
DETAIL C
-L- STA. 111+05 RT
-L- STA. 114+45 RT
DETAIL H
-L- STA. 114+10 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

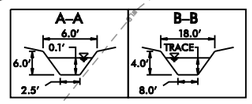


FROM -L- STA. 109+00 TO STA. 111+00 RT

DETAIL M
STANDARD BASE DITCH
(Not to Scale)



FROM -L- STA. 116+70 TO STA. 118+25 LT



ALMA W. GRIFFEN, HEIRS
(42)

LP
STA. 113+98.53 -L-

SITE 7

SITE 8

EXIST. CHANNEL DISSIPATES TO NOTHING. GRADE AWAY FROM -L- TO EXIST. GROUND FOR APPR. 25' TO PREVENT FROM FLOWING AGAINST FILL SLOPE

STANDARD BASE DITCH SEE DETAIL M

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB

48" WW FENCE

CULTIVATED

WOODS

PSH SEE DETAIL C

PSH SEE DETAIL H

LATERAL BASE DITCH SEE DETAIL L

INV=104.77

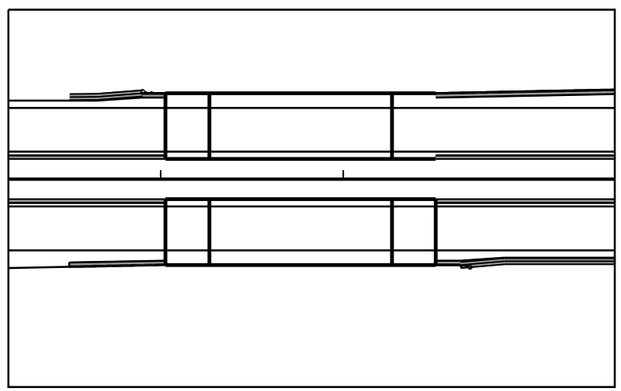
INV=111.73
2 TONS CL B RIPRAP
W/7 SY FIL FAB

MATCHLINE -L- STA. 110+50 SEE SHEET 11

MATCHLINE -L- STA. 124+00 SEE SHEET 13

ALMA W. GRIFFEN, HEIRS
(42)

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	110+43.00	110+96.00	RT
SBG	-L-	112+44.00	112+57.61	RT
EXP.GUTTER	-L-	112+57.61	114+00.00	RT
EXP.GUTTER	-L-	110+43.00	110+82.50	LT
SBG	-L-	110+82.50	110+96.00	LT
SBG	-L-	112+44.00	114+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				



FOR -L- PROFILE SEE SHTS.34 & 35

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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tkk

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 26 OF 68

-L-

PROPOSED GRADE

(-) 2.75% RT

(-) 0.31% RT

BEG. SP. CUT DITCH
-L- STA. 91+00 RT
EL. 134.89

PI -L- STA. 91+87 RT
EL. 132.50

END SP. CUT DITCH
-L- STA. 93+00 RT
EL. 132.15

PI = 98+90.00
EL = 129.93'
VC = 200'
K = 400

(-) 0.85000%

(-) 1.3500%

EXISTING GROUND

(-) 0.52% LT

BEG. SP. CUT DITCH
-L- STA. 100+00 LT
EL. 124.10

END SP. CUT DITCH
-L- STA. 101+50 LT
EL. 123.32

88+00 89+00 90+00 91+00 92+00 93+00 94+00 95+00 96+00 97+00 98+00 99+00 100+00 101+00 102+00

180 170 160 150 140 130 120 110 100 90

BRIDGE HYDRAULIC DATA
STA.111+75 -L-

DESIGN DISCHARGE	= 1,300	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 105.3	FT
BASE DISCHARGE	= 1,500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 105.7	FT
OVERTOPPING DISCHARGE	= 6,100	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 110.9	FT
DATE OF SURVEY	= 06/2008	
W.S. ELEVATION AT DATE OF SURVEY	= 98.5	FT

BM #3
RR SPIKE IN BASE OF 14" POPLAR
-L- STA. 110+35.94 57.16' RT
ELEV.= 107.11'

PROPOSED GRADE

EXISTING GROUND

(-) 3.62% RT

(-) 1.45%

(-) 1.45% RT

END SP. CUT BASE DITCH
BEG. LAT. BASE DITCH
-L- STA. 109+00 RT
EL. 110.73

(-) 8.56% RT

PI -L- STA. 109+50 RT
EL. 110.00

(-) 0.90% RT

BEG. SP. CUT DITCH
-L- STA. 106+00 RT
EL. 117.25

END SP. CUT DITCH
BEG. SP. CUT BASE DITCH
-L- STA. 107+00 RT
EL. 113.63

PI -L- STA. 110+50 RT
EL. 101.45

END LAT. BASE DITCH
-L- STA. 111+00 RT
EL. 101.00

BEGIN BRIDGE
-L- STA.111+20 +/-

END BRIDGE
-L- STA.112+20 +/-

HORNBEAM CREEK

(-) 1.3500%

(+) 2.8500%

PI = 114+50.00
EL = 108.87'
VC = 500'
K = 147

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.10 THRU 12

102+00 103+00 104+00 105+00 106+00 107+00 108+00 109+00 110+00 111+00 112+00 113+00 114+00 115+00 116+00

160 150 140 130 120 110 100 90 80 70

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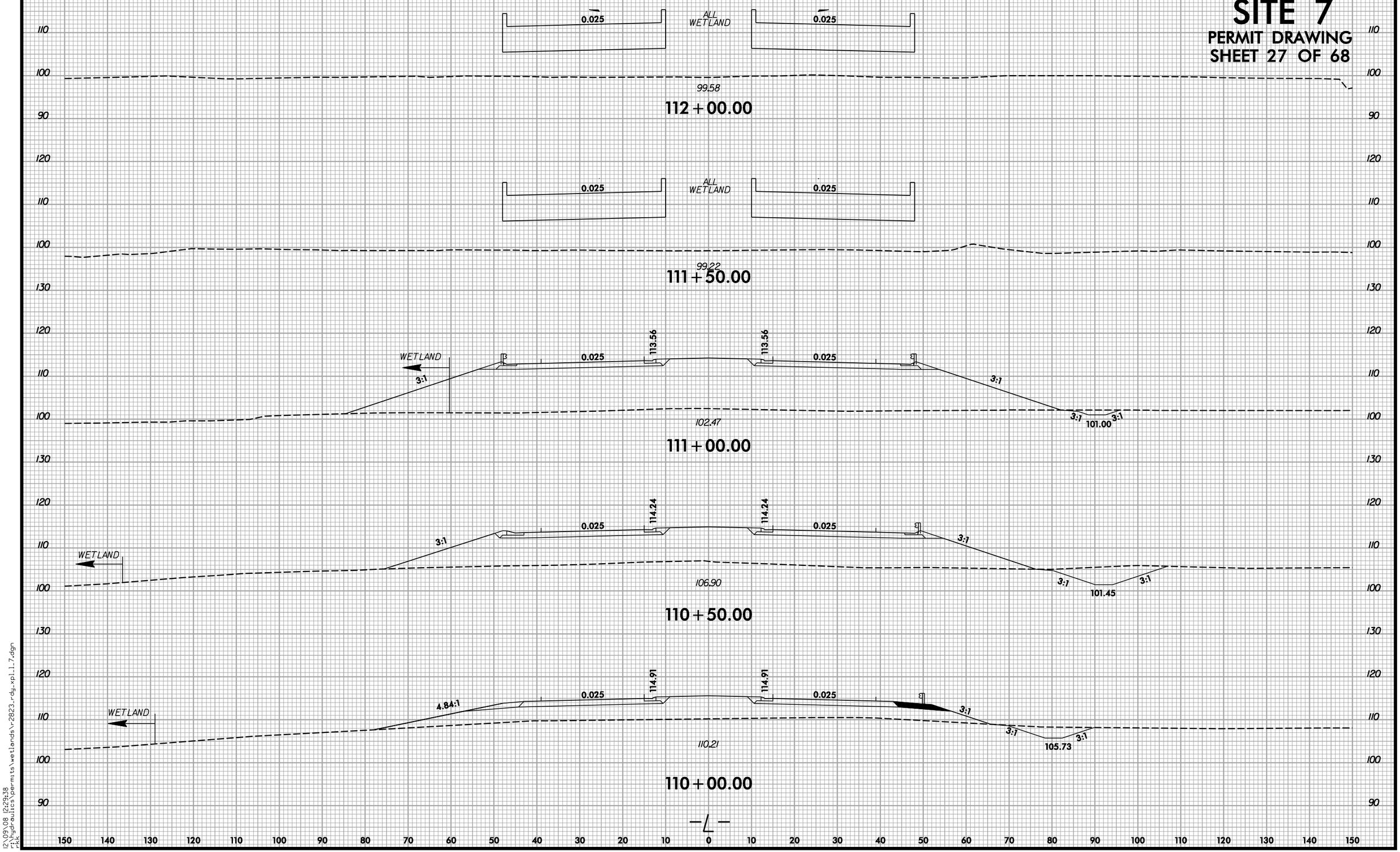
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-51

SITE 7
PERMIT DRAWING
SHEET 27 OF 68



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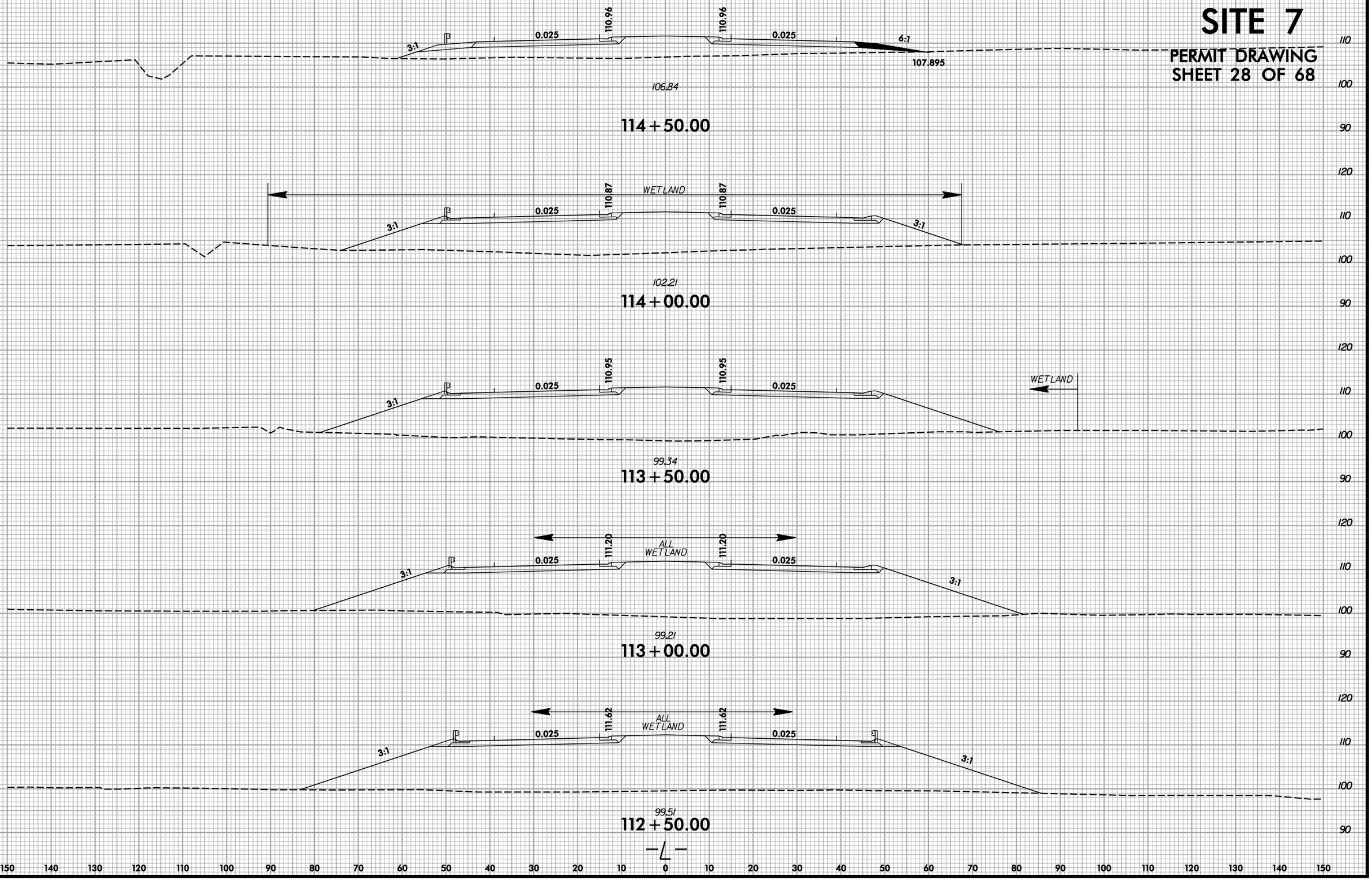
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-52

SITE 7

PERMIT DRAWING
SHEET 28 OF 68



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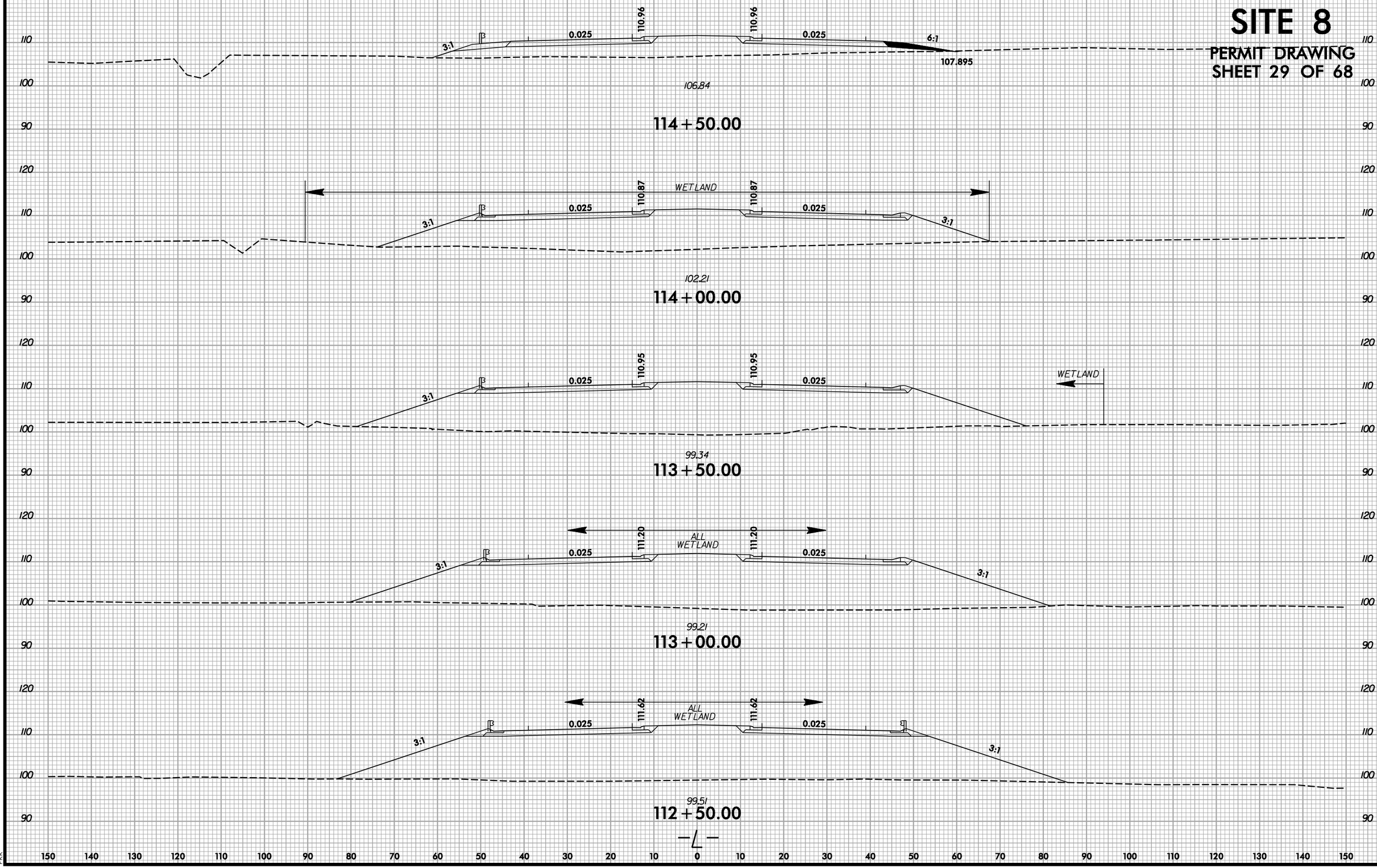
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-52

SITE 8

PERMIT DRAWING
SHEET 29 OF 68



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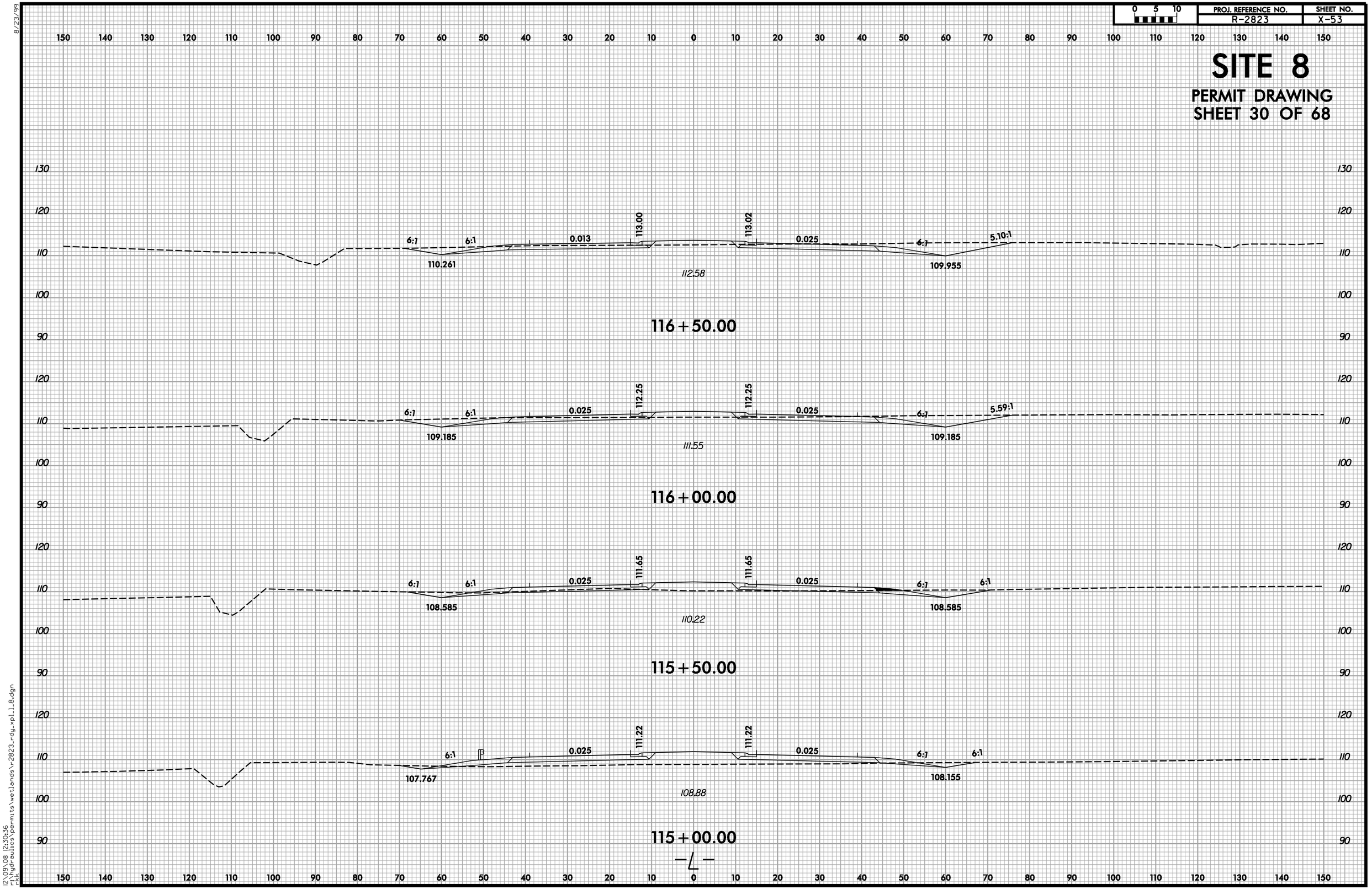
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-53

SITE 8

PERMIT DRAWING
SHEET 30 OF 68



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rkk

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-54

SITE 8

PERMIT DRAWING
SHEET 31 OF 68

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

130 120 110 100

6:1 0.037 116.92 117.05 0.037 6:1 5.84:1

113.636

116.20

118+50.00

130 120 110 100

3:1 3:1 6:1 0.024 115.92 116.01 0.025 6:1 6:1

111.11 112.945

114.83

118+00.00

130 120 110 100

3:1 4:1 0.012 114.92 114.99 0.025 6:1 6:1

109.61 111.920

114.03

117+50.00

130 120 110 100

3:1 4:1 0.001 113.92 113.96 0.025 6:1 6:1

109.61 110.895

113.20

117+00.00

90

—℄—

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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rkk

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 32 OF 68

ENGLISH

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

A–A: 9.0' / 0.0' / 7.0' / 4.0' TRACE WATER
B–B: 10.0' / 0.0' / 7.5' / 4.0' TRACE WATER
C–C: 6.0' / 0.0' / 2.5' / 1.5' / 2.0' ROADSIDE
D–D: 9.0' / 0.0' / 3.5' / 2.0' / 1.0' ROADSIDE
E–E: 6.0' / 0.0' / 2.0' / 3.0' / 2.0' INFALL

MATCHLINE -L- STA. 124+00 SEE SHEET 12

MATCHLINE -L- STA. 138+00 SEE SHEET 14

MATCHLINE -Y3- STA. 26+00 SEE SHEET 26

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL S

HP STA. 127+67.61 -L-

HP STA. 18+50.69 -Y3-

LP STA. 22+00.58 -Y3-

ALMA W. GRIFFEN, HEIRS (42)

E. C. POWELL (43)

STANLEY L. WEST (44)

CULTIVATED

WOODS

45' WW FENCE

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB

SITE 9

3 TONS CL B RIPRAP W/10SY FIL FAB INV=118.68

40 TONS CL I RIPRAP W/75 SY FIL FAB RIPRAP ON BANKS ONLY INV=107.86

SPECIAL CUT BASE DITCH SEE DETAIL I

BERM BASE DITCH SEE DETAIL G

18" SCCS 2 ELBOWS W/ROD AND LUG 3 TONS CL B RIPRAP W/10 SY FIL FAB INV=109.09

BERM Y DITCH SEE DETAIL K

CITY OF ROCKY MOUNT

GRASS SWALE DATA
-L- 132+71 – 135+50 RT
DA= 0.41ac
SLOPE= 2.20%/1.16%
L REQ.= 41'
L PRO.= 250'
Q2= 0.77cfs/0.47cfs
V2= 2.00ft/s/1.34ft/s
D2= 0.51'/0.49'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
-L- 135+50 – 147+24 RT
DA= 4.16ac
SLOPE= 0.65%
L REQ.= 321'
L PRO.= 524'
Q2= 9.03cfs
V2= 1.69ft/s
D2= 0.56'
Q10= 11.58cfs
V10= 1.82ft/s
D10= 0.64'

GRASS SWALE DATA
-L- 134+75 – 135+50 RT
DA= 5.52ac
SLOPE= 0.30%
L REQ.= NA
L PRO.= NA
Q2= 11.98cfs
V2= 1.40ft/s
D2= 0.80'
Q10= 15.36cfs
V10= 1.50ft/s
D10= 0.91'

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

DETAIL S
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'

-L- STA. 132+72 RT
-L- STA. 135+28 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
FROM -L- STA. 132+00 TO STA. 135+50 RT
FROM -Y3- STA. 17+00 TO STA. 18+00 LT & RT
FROM -Y3- STA. 21+55 TO STA. 23+50 LT

DETAIL G
BERM BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 4.0Ft.
b= 3.0Ft.
FROM -L- STA. 134+75 TO STA. 135+50 RT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 4.0Ft.
FROM -L- STA. 135+50 TO STA. 147+24 RT

DETAIL K
BERM "Y" DITCH
(Not to Scale)
Min. D= 1.0Ft.
b= 2.0Ft.
FROM -L- STA. 135+50 TO STA. 147+24 RT
(LINE 135+50 TO 137+50 W/PSRM)

RICKS-BOSEMAN FARM HISTORIC AREA

FOR -L- PROFILE SEE SHT.35
FOR -Y3- PROFILE SEE SHT.42
FOR INTERSECTION DETAILS SEE SHT. 2F

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 33 OF 68

ENGLISH

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

A–A: 9.0' / 0.0' / 7.0' / 4.0' TRACE WATER
B–B: 10.0' / 0.0' / 7.5' / 4.0' TRACE WATER
C–C: 6.0 / 0.0' / 2.5' / 1.5' / 2.0' ROADSIDE
D–D: 9.0' / 0.0' / 3.5' / 2.0' / 1.0' ROADSIDE
E–E: 6.0' / 0.0' / 2.0' / 3.0' / 2.0' INFALL

MATCHLINE -L- STA. 124+00 SEE SHEET 12

MATCHLINE -L- STA. 138+00 SEE SHEET 14

MATCHLINE -Y3- STA. 26+00 SEE SHEET 26

SITE 9

ALMA W. GRIFFEN, HEIRS (42)

E. C. POWELL (43)

STANLEY L. WEST (44)

HP STA. 127+67.61 -L-

HP STA. 18+50.69 -Y3-

LP STA. 22+00.58 -Y3-

LP STA. 132+52.07 -L-

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT BASE DITCH SEE DETAIL I

BERM BASE DITCH SEE DETAIL G

BERM Y DITCH SEE DETAIL K

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB

3 TONS CL B RIPRAP W/105Y FIL FAB INV=118.68

40 TONS CL I RIPRAP W/75 SY FIL FAB RIPRAP ON BANKS ONLY INV=107.86

18" BCCS 2 ELBOWS W/ROD AND LUG 3 TONS CL B RIPRAP W/10 SY FIL FAB INV=109.09

45' WW FENCE

CULTIVATED

WOODS

CITY OF ROCKY MOUNT

GRASS SWALE DATA
-L- 132+71 – 135+50 RT
DA= 0.41ac
SLOPE= 2.20%/1.16%
L REQ.= 41'
L PRO.= 250'
Q2= 0.77cfs/0.47cfs
V2= 2.00ft/s/1.34ft/s
D2= 0.51'/0.49'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
-L- 135+50 – 147+24 RT
DA= 4.16ac
SLOPE= 0.65%
L REQ.= 321'
L PRO.= 524'
Q2= 9.03cfs
V2= 1.69ft/s
D2= 0.56'
Q10= 11.58cfs
V10= 1.82ft/s
D10= 0.64'

GRASS SWALE DATA
-L- 134+75 – 135+50 RT
DA= 5.52ac
SLOPE= 0.30%
L REQ.= NA
L PRO.= NA
Q2= 11.98cfs
V2= 1.40ft/s
D2= 0.80'
Q10= 15.36cfs
V10= 1.50ft/s
D10= 0.91'

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

DETAIL S
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'

-L- STA. 132+72 RT
-L- STA. 135+28 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1.0Ft.
FROM -L- STA. 132+00 TO STA. 135+50 RT
FROM -Y3- STA. 17+00 TO STA. 18+00 LT & RT
FROM -Y3- STA. 21+55 TO STA. 23+50 LT

DETAIL G
BERM BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 4.0Ft.
b= 3.0Ft.
FROM -L- STA. 134+75 TO STA. 135+50 RT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 4.0Ft.
FROM -L- STA. 135+50 TO STA. 147+24 RT

DETAIL K
BERM Y DITCH
(Not to Scale)
Min. D= 1.0Ft.
b= 2.0Ft.
FROM -L- STA. 135+50 TO STA. 147+24 RT
(LINE 135+50 TO 137+50 W/PSRM)

RICKS-BOSEMAN FARM HISTORIC AREA

FOR -L- PROFILE SEE SHT. 35
FOR -Y3- PROFILE SEE SHT. 42
FOR INTERSECTION DETAILS SEE SHT. 2F

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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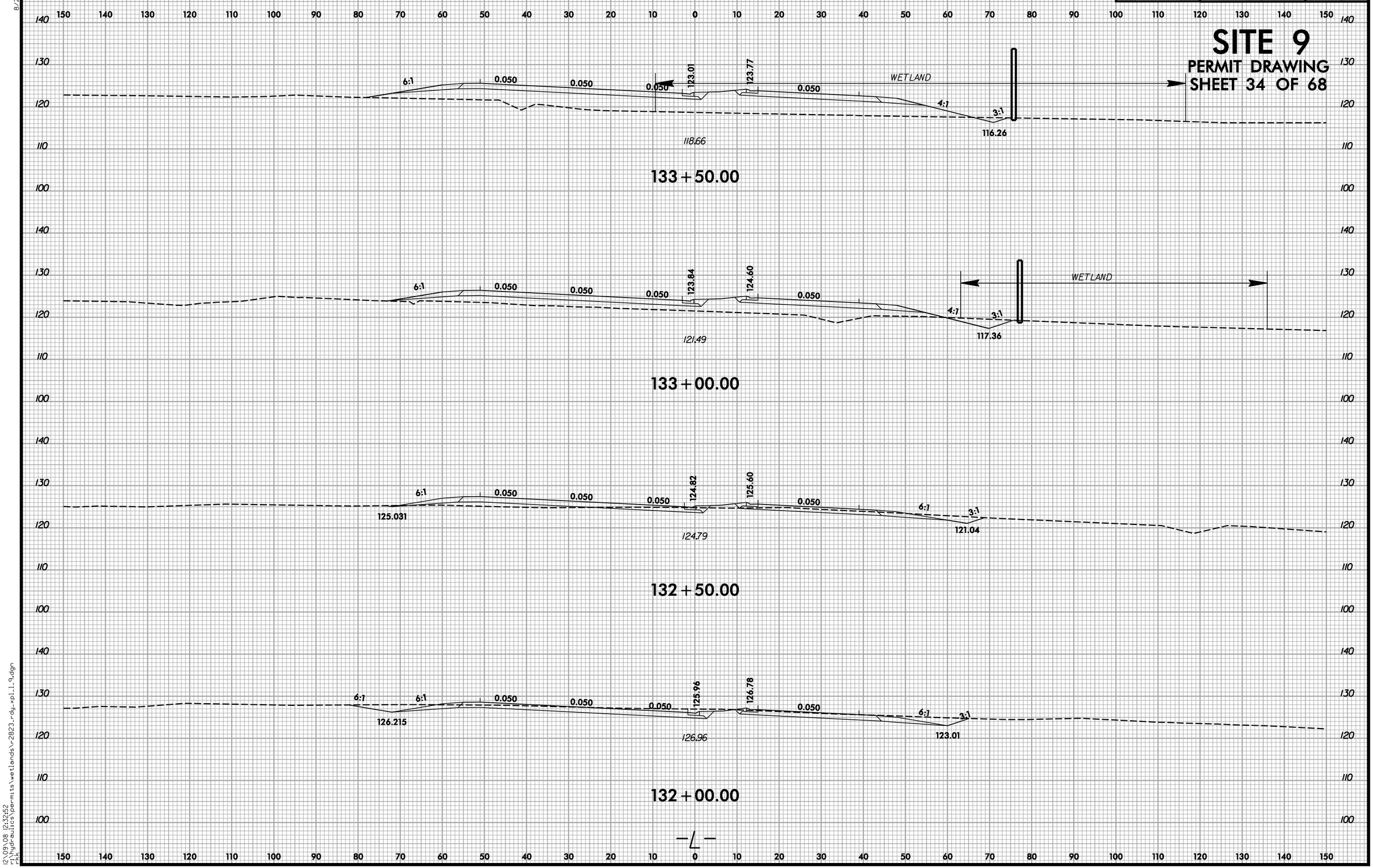
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-62

SITE 9

PERMIT DRAWING
SHEET 34 OF 68



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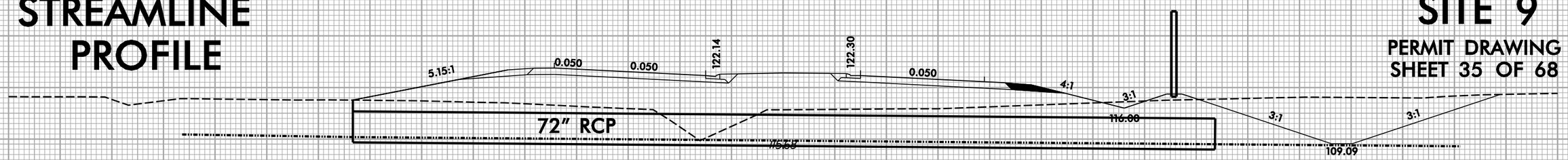
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-63

STREAMLINE PROFILE

SITE 9

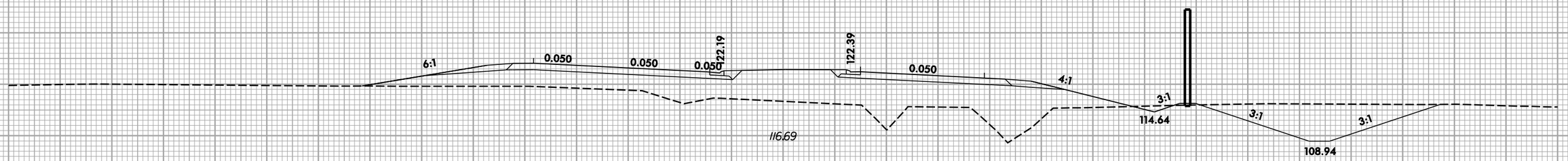
PERMIT DRAWING
SHEET 35 OF 68



ACTUAL INV IN = 135 + 83

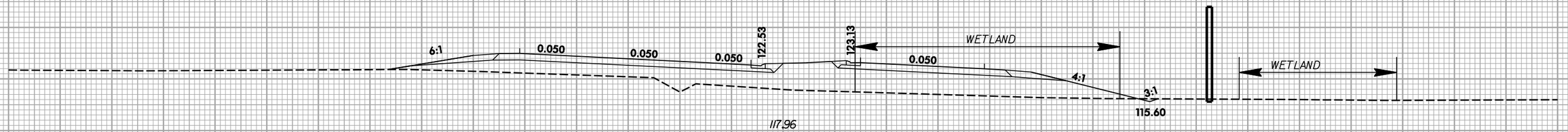
135 + 50.00

ACTUAL INV OUT = 134 + 75



135 + 00.00

134 + 50.00



134 + 00.00

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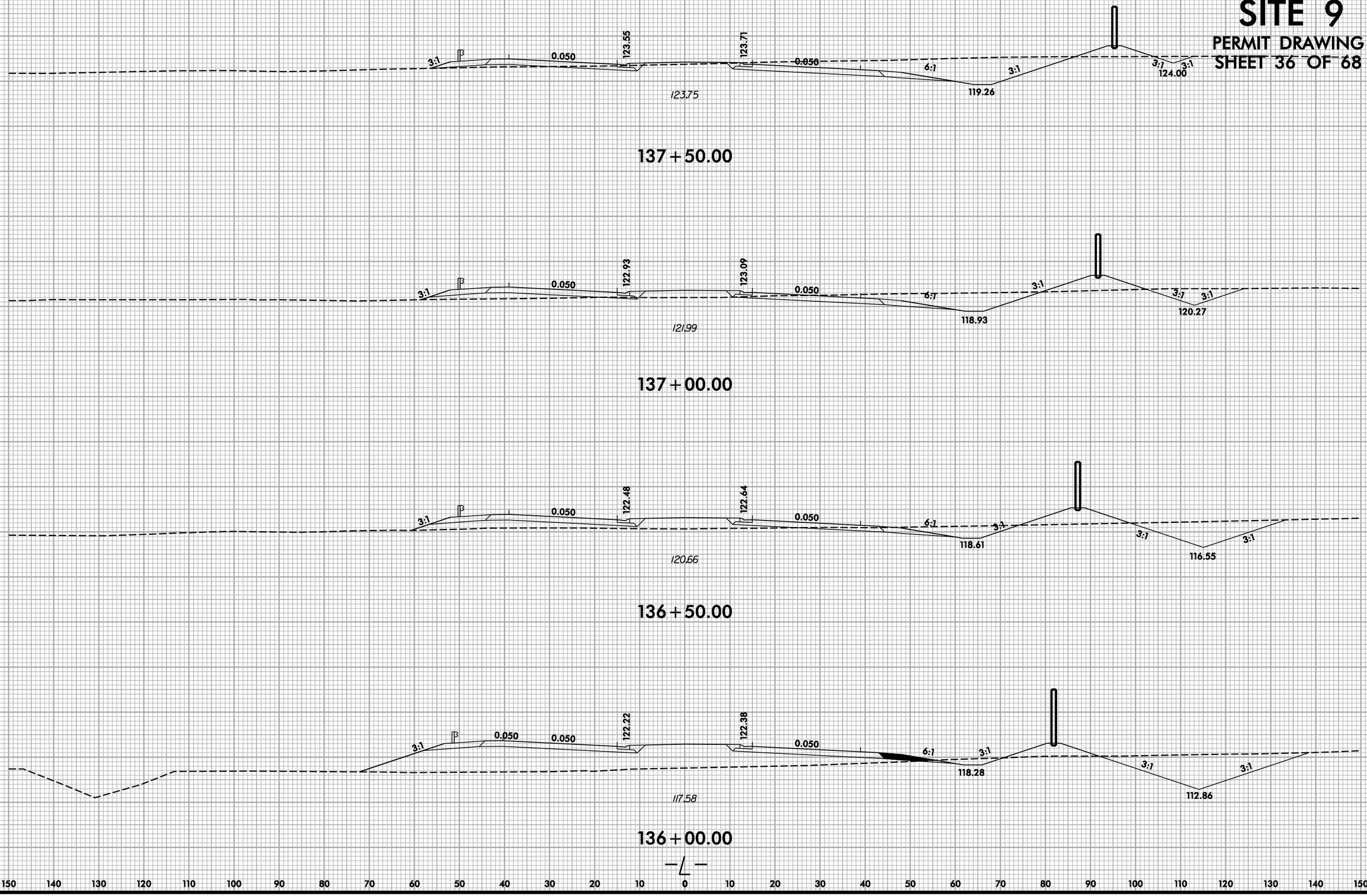
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-64

SITE 9

PERMIT DRAWING
SHEET 36 OF 68



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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 37 OF 68

ENGLISH

F/F DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCHLINE -L- STA. 165+00 SEE SHEET 15

MATCHLINE -L- STA. 177+00 SEE SHEET 17

WILLIAM H. OVERMAN (50)

SATPAL SINGH RATHIE (51)

CITY OF ROCKY MOUNT

CULTIVATED

WOODS

SITE 10

SITE 11
NO OUTFALL

45" WW FENCE

LATERAL BASE DITCH SEE DETAIL L

LATERAL V DITCH SEE DETAIL A

BDO

INV=93.81
48 TONS CL I RIPRAP W/89 SY FIL FAB RIPRAP ON BANKS ONLY

INV=94.81

INV=100.34
PSH SEE DETAIL H

1 TON CL B RIPRAP W/5 SY FIL FAB
INV=99.70
CPES

INV=97.01
HW=0.75

INV=101.80
CPES

CB

HP
STA. 176+76.00 -L-

LP
STA. 172+87.39 -L-

NO OUTFALL

FOR -L- PROFILE SEE SHTS. 36 & 37

GRASS SWALE DATA -L- 148+00 – 169+30 LT	GRASS SWALE DATA -L- 167+75 – 169+50 RT
DA= 6.34ac	DA= 0.53ac
SLOPE= 0.55%	SLOPE= 1.35%
L REQ.= 634'	L REQ.= NA
L PRO.= 680'	L PRO.= NA
Q2= 14.05cfs	Q2= 1.04cfs
V2= 1.82ft/s	V2= 1.89ft/s
D2= 0.75'	D2= 0.61'
Q10= 18.60cfs	Q10= 1.31cfs
V10= 1.97ft/s	V10= 2.00ft/s
D10= 0.86'	D10= 0.66'

PREFORMED SCOUR HOLE DATA -L- 170+75 RT	PREFORMED SCOUR HOLE DATA -L- 173+10 RT
Q10= 1.22cfs	Q10= 0.40cfs
V10= 0.34ft/s	V10= 0.18ft/s

DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

Pipe or Ditch Outlet
Permanent Soil Reinforcement Matting (typical)
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH)
Rip Rap in basin not shown for clarity)
Seed with native grasses or Bahiagrass
B= 3.75ft.
D= 1.0ft.
W= 4.0ft.
d= 0.5ft.

SECTION A-A

Pipe or Ditch Outlet
PSRM
Natural Ground
Liner: Class B Rip Rap 1.0' thick with Filter Fabric
L= tuck

5/05

-L- STA. 170+75 RT
-L- STA. 172+87 LT
-L- STA. 173+15 RT

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

Natural Ground
3:1
D
3:1
b
F/F
Fill Slope
Min. D= 1.0Ft.
b= 2.0Ft.

FROM -L- STA. 167+75 TO STA. 169+50 RT
FROM -L- STA. 170+80 TO STA. 173+10 RT
FROM -L- STA. 175+50 TO STA. 177+25 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1
b
F/F
Fill Slope
B
Min. D= 1.0Ft.
B= 4.0Ft.
b= 4.0Ft.

FROM -L- STA. 162+00 TO STA. 169+30 LT

A–A
8.0'
0.2'
3.5'
5.0'
OUTFALL

B–B
4.0'
0.0'
1.0'
3.0'
TURNS INTO SWALE

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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RALEIGH, NORTH CAROLINA 27609-3960
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FOR
DIVISION OF HIGHWAYS

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 38 OF 68

ENGLISH

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

MATCHLINE -L- STA. 165+00 SEE SHEET 15

MATCHLINE -L- STA. 177+00 SEE SHEET 17

WILLIAM H. OVERMAN (50)

CULTIVATED

WOODS

SITE 10

LATERAL BASE DITCH SEE DETAIL L (61)

INV=93.81 SY 48 TONS CL I RIPRAP W/89 SY FIL FAB RIPRAP ON BANKS ONLY

INV=94.81

INV=97.01 HW=101.5

LATERAL V DITCH SEE DETAIL A

PSH SEE DETAIL H

INV=100.84 PSH SEE DETAIL H (165)

CB (164)

INV=101.80 CPES (167)

INV=99.70 CPES

1 TON CL B RIPRAP W/5 SY FIL FAB

CITY OF ROCKY MOUNT

SATPAL SINGH RATHIE (51)

SITE 11

NO OUTFALL

HP STA. 176+76.00 -L-

LP STA. 172+87.39 -L-

NO OUTFALL

SATPAL SINGH RATHIE (51)

WILLIAM H. OVERMAN (50)

GRASS SWALE DATA -L- 148+00 – 169+30 LT	GRASS SWALE DATA -L- 167+75 – 169+50 RT
DA= 6.34ac	DA= 0.53ac
SLOPE= 0.55%	SLOPE= 1.35%
L REQ.= 634'	L REQ.= NA
L PRO.= 680'	L PRO.= NA
Q2= 14.05cfs	Q2= 1.04cfs
V2= 1.82ft/s	V2= 1.89ft/s
D2= 0.75'	D2= 0.61'
Q10= 18.60cfs	Q10= 1.31cfs
V10= 1.97ft/s	V10= 2.00ft/s
D10= 0.86'	D10= 0.66'

PREFORMED SCOUR HOLE DATA -L- 170+75 RT	PREFORMED SCOUR HOLE DATA -L- 173+10 RT
Q10= 1.22cfs	Q10= 0.40cfs
V10= 0.34ft/s	V10= 0.18ft/s

DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

Permanent Soil Reinforcement Matting (PSRM)

Install level and flush with natural ground.

Pipe or Ditch Outlet

Square Preformed Scour Hole (PSH)

Rip Rap in basin not shown for clarity)

Seed with normal ground cover for stabilization.

B= 3.75ft.
D= 1.0ft.
W= 4.0ft.
d= 0.5ft.

SECTION A-A

Pipe or Ditch Outlet

Dmin

PSRM

d

Natural Ground

Liner: Class B Rip Rap 1.0' thick with Filter Fabric

B

"L" tuck

5/05

-L- STA. 170+75 RT
-L- STA. 172+87 LT
-L- STA. 173+15 RT

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

Natural Ground

3:1

D

3:1

b

F/Ft.

Fill Slope

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

FROM -L- STA. 167+75 TO STA. 169+50 RT
FROM -L- STA. 170+80 TO STA. 173+10 RT
FROM -L- STA. 175+50 TO STA. 177+25 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

Natural Ground

3:1

D

3:1

B

b

F/Ft.

Fill Slope

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

FROM -L- STA. 162+00 TO STA. 169+30 LT

A–A
8.0'
0.2'
3.5'
5.0' OUTFALL

B–B
4.0'
0.0'
1.0'
3.0' TURNS INTO SWALE

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

FOR -L- PROFILE SEE SHTS. 36 & 37

PLANS PREPARED BY :
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DIVISION OF HIGHWAYS

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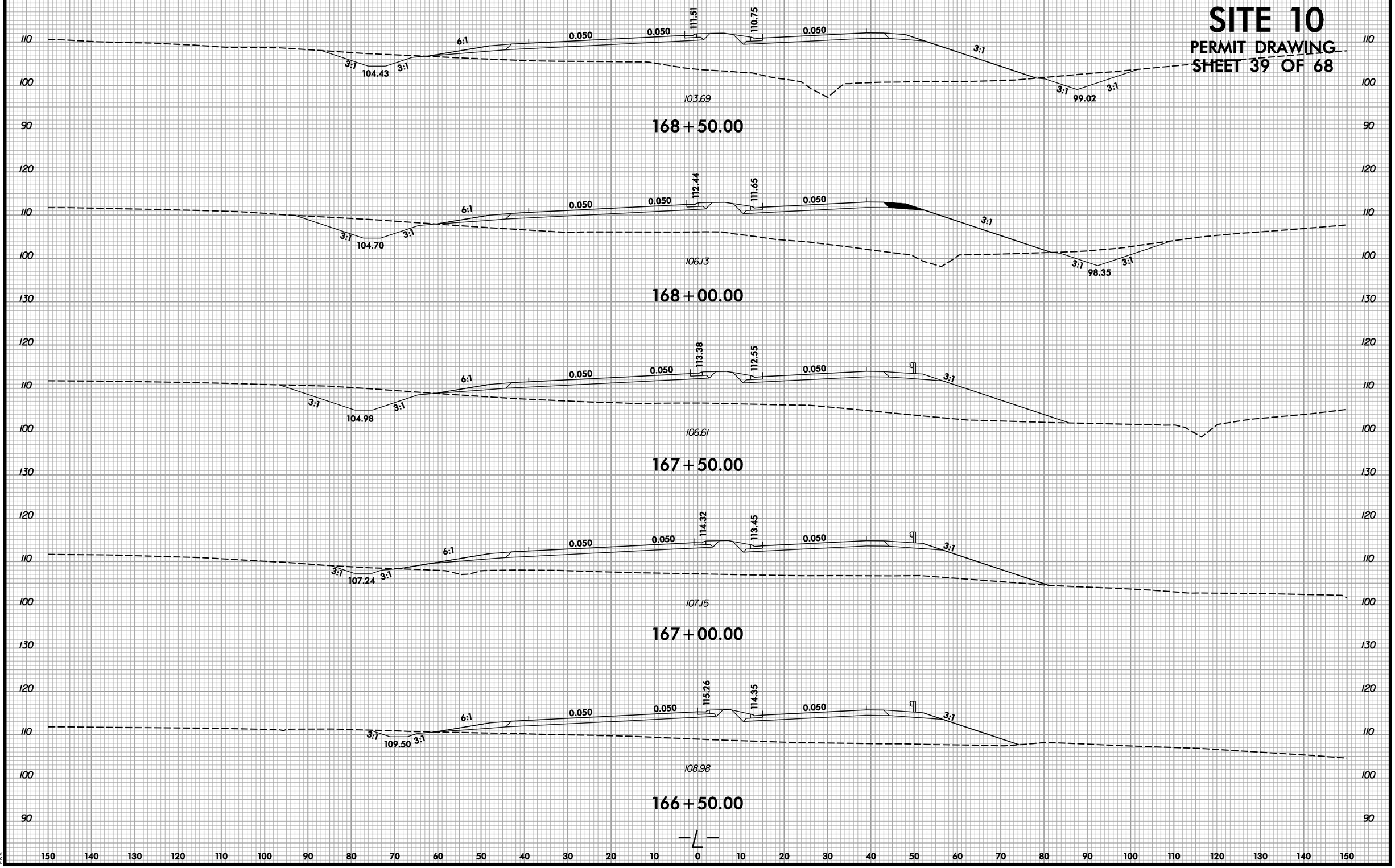
	R-2823	X-80

SITE 10

PERMIT DRAWING

SHEET 39 OF 68



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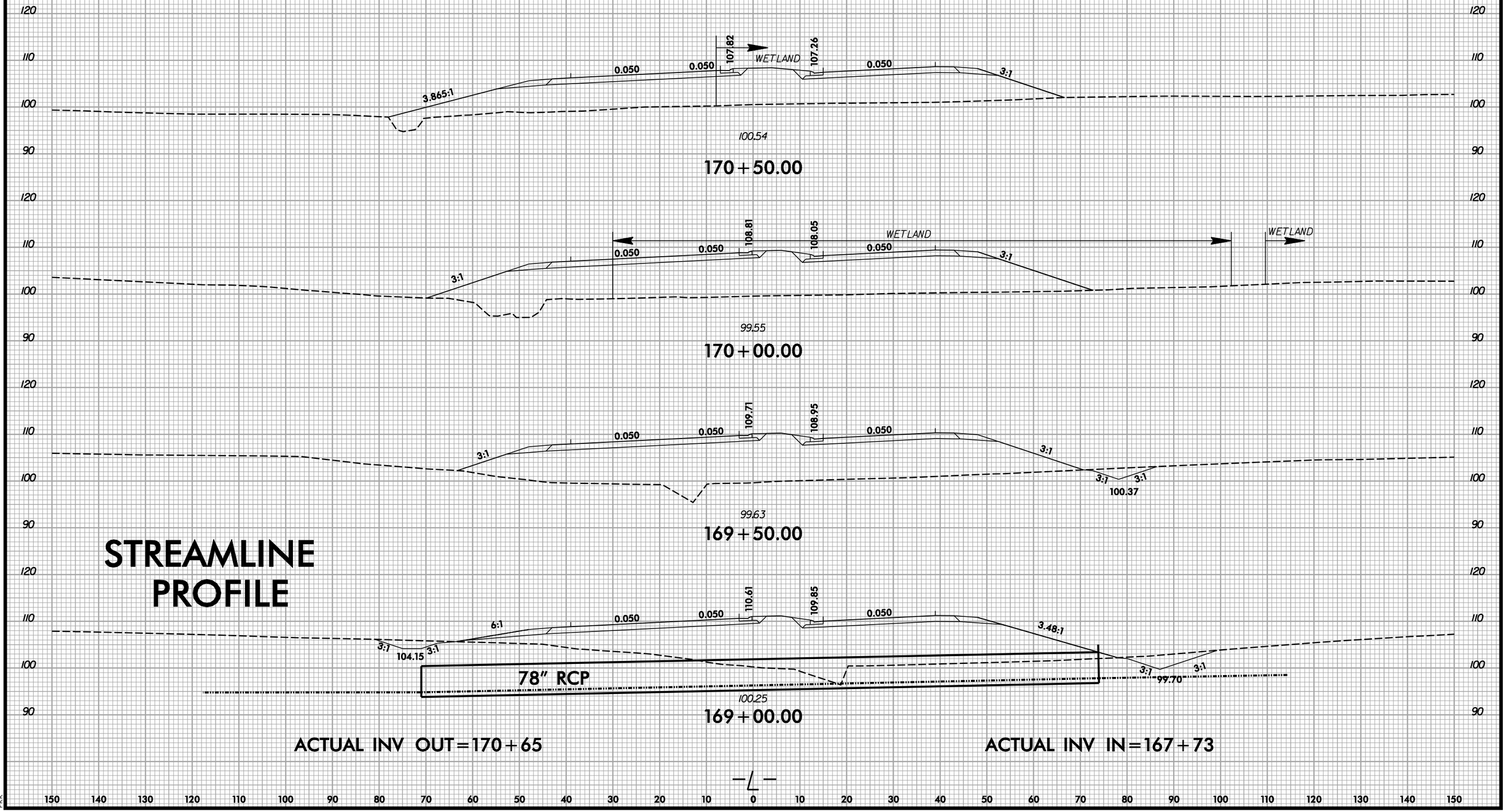
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-81

SITE 10

PERMIT DRAWING
SHEET 40 OF 68

STREAMLINE PROFILE



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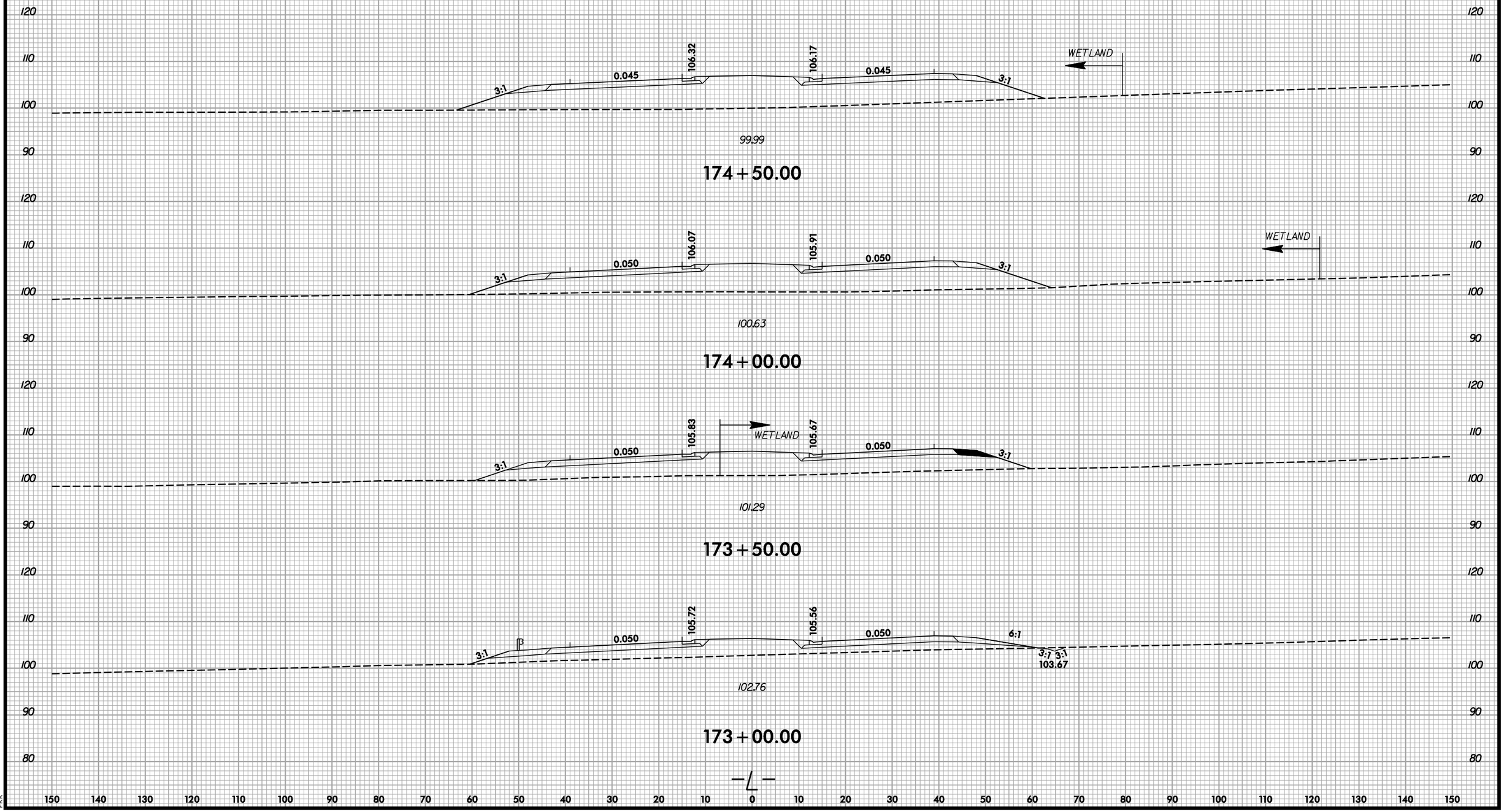
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-83

SITE 11

PERMIT DRAWING
SHEET 41 OF 68



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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-84

SITE 11

PERMIT DRAWING
SHEET 42 OF 68

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

120 / 110 / 100 / 90

6:1 | 0.025 | 107.05 | 107.01 | 0.005 | 6:1 | 3:1 | 3:1 | 101.33

101.95

176+50.00

120 / 110 / 100 / 90

3:1 | 0.025 | 106.97 | 106.90 | 0.007 | 6:1 | 3:1 | 3:1 | 101.48

101.59

176+00.00

120 / 110 / 100 / 90

3:1 | 0.025 | 106.80 | 106.71 | 0.020 | WETLAND | 3:1 | 3:1 | 3:1 | 101.63

100.50

175+50.00

120 / 110 / 100 / 90

3:1 | 0.032 | 106.57 | 106.45 | 0.032 | 3:1 | WETLAND

100.21

175+00.00

80

$-\not{L}-$

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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CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	178+50.00	180+49.00	RT
SBG	-L-	184+28.00	184+44.50	RT
EXP.GUTTER	-L-	178+50.00	179+49.00	LT
SBG	-L-	179+49.00	180+49.00	LT
SBG	-L-	184+28.00	185+00.00	LT

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES EXCAVATION IN WETLAND

PROJECT REFERENCE NO.	SHEET NO.
R-2823	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 43 OF 68

ENGLISH

MATCHLINE -L- STA. 177+00 SEE SHEET 16

MATCHLINE -L- STA. 191+00 SEE SHEET 18

SATPAL SINGH RATHIE (51)

E. C. POWELL (52)

CITY OF ROCKY MOUNT

N 68°19'28" E 92.52'

S 85°06'05" E 740.00'

N 50°03'22" E 47.83'

N 50°03'22" E 250.00'

WOODS

FALLOW

10' SOIL

SITE 12

SITE 13

TEMPORARY WORK BRIDGE

TEMPORARY WORK BRIDGE FINGER

TEMPORARY WORK BRIDGE FINGER

INV=94.44
1 TON CL B RIPRAP W/5 SY FIL FAB

2 ELBOWS W/ ROD AND LUG

PSH SEE DETAIL H

LATERAL V DITCH SEE DETAIL A

1 TON CL B RIPRAP W/5 SY FIL FAB INV=91.57

INV=98.27
2 TON CL B RIPRAP W/7 SY FIL FAB

SPECIAL CUT DITCH SEE DETAIL F

15" RCCP
2 ELBOWS W/ ROD AND LUG

PSRM

2 TON CL B RIPRAP W/7 SY FIL FAB

SPECIAL CUT DITCH SEE DETAIL F

LATERAL BASE DITCH SEE DETAIL L

LATERAL V DITCH SEE DETAIL N

PSH SEE DETAIL H

INV=96.12

CUT/FILL TRANSITION
5 TONS CL B RIPRAP W/14 SY FIL FAB

48" RCCP CLASS III
4 TONS CL B RIPRAP W/99 SY FIL FAB
RIPRAP ON BANKS ONLY
INV=94.33

LP
STA. 187+25.00 -L-

A-A
5.0'
0.0'
1.5'
3.0'
INFALL

DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

Pipe or Ditch Outlet

Permanent Soil Reinforcement Matting (PSRM)

Install level and flush with natural ground.

Square Preformed Scour Hole (PSH)

(4 Min. Typ.)

Rip Rap in basin not shown for clarity)

Seed with native grasses wt Pretreatment

B=3.75F t.
D=1.0F t.
W=4.0F t.
d=0.5F t.

SECTION A-A

Pipe or Ditch Outlet

PSRM

Natural Ground

Liner: Class B Rip Rap 1.0' thick with Filter Fabric

'I' tuck

5/05

-L- STA. 177+30 RT
-L- STA. 189+15 RT
-L- STA. 189+70 RT

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

Natural Ground
3:1
D
b
Fill Slope
F/Ft.
Min. D= 1.0F t.
b= 2.0F t.

FROM -L- STA. 175+50 TO STA. 177+25 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
3:1
D
Front Ditch Slope
3:1 or Flatter
Min. D= 1.5F t.

FROM -L- STA. 184+48 TO STA. 188+50 RT
FROM -L- STA. 184+98 TO STA. 189+00 LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
B
3:1
Fill Slope
F/Ft.
Min. D= 1.0F t.
B= 4.0F t.
b= 4.0F t.

FROM -L- STA. 188+50 TO STA. 189+15 RT
FROM -L- STA. 189+28 TO STA. 191+00 LT

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

Natural Ground
3:1
D
3:1
Fill Slope
F/Ft.
Min. D= 1.5F t.
b= 2.0F t.

FROM -L- STA. 189+00 TO STA. 189+70 LT

GRASS SWALE DATA -L- 184+48 - 189+15 RT	GRASS SWALE DATA -L- 184+98 - 189+70 LT	GRASS SWALE DATA -L- 190+28 - 195+00 LT
DA= 1.32ac	DA= 1.49ac	DA= 3.52ac
SLOPE= 2.10%	SLOPE= 0.22%	SLOPE= 0.87%
L REQ.= 132'	L REQ.= 149'	L REQ.= 352'
L PRO.= 467'	L PRO.= 472'	L PRO.= 422'
Q2= 4.22cfs	Q2= 5.13cfs	Q2= 8.69cfs
V2= 1.84F t/s	V2= 1.77F t/s	V2= 1.85F t/s
D2= 0.29'	D2= 1.39'	D2= 0.51'
Q10= 5.31cfs	Q10= 6.45cfs	Q10= 11.22cfs
V10= 1.98F t/s	V10= 1.87F t/s	V10= 1.99F t/s
D10= 0.32'	D10= 1.52'	D10= 0.59'

PREFORMED SCOUR HOLE DATA -L- 177+30 RT Q10= 2.06cfs V10= 0.41F t/s	PREFORMED SCOUR HOLE DATA -L- 189+15 RT Q10= 5.31cfs V10= 0.85F t/s
PREFORMED SCOUR HOLE DATA -L- 189+70 LT Q10= 6.45cfs V10= 0.90F t/s	RIPRAP PAD DATA -L- 190+30 RT Q10= 20.30cfs V10= 1.10F t/s

FOR -L- PROFILE SEE SHT.37

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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FOR
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8/17/99

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	178+50.00	180+49.00	RT
SBG	-L-	184+28.00	184+44.50	RT
EXP.GUTTER	-L-	178+50.00	179+49.00	LT
SBG	-L-	179+49.00	180+49.00	LT
SBG	-L-	184+28.00	185+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

15 15 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

PROJECT REFERENCE NO.	SHEET NO.
R-2823	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 44 OF 68

ENGLISH

MATCHLINE -L- STA. 177+00 SEE SHEET 16

MATCHLINE -L- STA. 191+00 SEE SHEET 18

SATPAL SINGH RATHIE (51)

E. C. POWELL (52)

CITY OF ROCKY MOUNT

S 80°31'12" E 29.04'

N 68°19'28" E 92.52'

S 85°06'05" E 140.00'

N 80°31'12" W 97.84'

N 80°31'12" W 207.22'

WOODS

FALLOW

10' SOIL

BZ 1

BZ 2

SITE 12

SITE 13

TEMPORARY WORK BRIDGE

TEMPORARY WORK BRIDGE FINGER

TEMPORARY WORK BRIDGE FINGER

INV=94.44
1 TON CL B RIPRAP W/5 SY FIL FAB

2 ELBOWS W/ ROD AND LUG

PSH SEE DETAIL H

LATERAL V DITCH SEE DETAIL A

1 TON CL B RIPRAP W/5 SY FIL FAB
INV=91.57

BEAVER DAM

INV=98.27
2 TON CL B RIPRAP W/7 SY FIL FAB

SPECIAL CUT DITCH SEE DETAIL F

PSRM

2 TON CL B RIPRAP W/7 SY FIL FAB

15" BCCS
2 ELBOWS W/ ROD AND LUG

SPECIAL CUT DITCH SEE DETAIL F

LATERAL BASE DITCH SEE DETAIL L

LATERAL V DITCH SEE DETAIL N

PSH SEE DETAIL H

INV=96.12

CUT/FILL TRANSITION
5 TONS CL B RIPRAP W/1.4 SY FIL FAB

LATERAL BASE DITCH SEE DETAIL L

PSH SEE DETAIL H

40 TONS CL B RIPRAP W/89 SY FIL FAB
RIPRAP ON BANKS ONLY
INV=94.33

LP
STA. 187+25.00 -L-

A-A
5.0'
0.0'
1.5'
3.0'
INFALL

DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

Pipe or Ditch Outlet

Permanent Soil Reinforcement Matting (Typ.)

Install level and flush with natural ground.

Square Preformed Scour Hole (PSH)

(Rip Rap in basin not shown for clarity)

Seed with native grasses wt Prefabricator.

B=3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

SECTION A-A

Pipe or Ditch Outlet

PSRM

Natural Ground

Liner: Class B Rip Rap 1.0' thick with Filter Fabric

5/05

-L- STA. 177+30 RT
-L- STA. 189+15 RT
-L- STA. 189+70 RT

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

Natural Ground

Fill Slope

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

FROM -L- STA. 175+50 TO STA. 177+25 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground

Front Ditch Slope

Min. D= 1.5Ft.

FROM -L- STA. 184+48 TO STA. 188+50 RT
FROM -L- STA. 184+98 TO STA. 189+00 LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

Natural Ground

Fill Slope

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

FROM -L- STA. 188+50 TO STA. 189+15 RT
FROM -L- STA. 189+28 TO STA. 191+00 LT

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

Natural Ground

Fill Slope

Min. D= 1.5Ft.
b= 2.0Ft.

FROM -L- STA. 189+00 TO STA. 189+70 LT

PREFORMED SCOUR HOLE DATA	PREFORMED SCOUR HOLE DATA
-L- 177+30 RT	-L- 189+15 RT
Q10= 2.06cfs	Q10= 5.31cfs
V10= 0.41ft/s	V10= 0.85ft/s
PREFORMED SCOUR HOLE DATA	RIPRAP PAD DATA
-L- 189+70 LT	-L- 190+30 RT
Q10= 6.45cfs	Q10= 20.30cfs
V10= 0.90ft/s	V10= 1.10ft/s

GRASS SWALE DATA -L- 184+48 - 189+15 RT	GRASS SWALE DATA -L- 184+98 - 189+70 LT	GRASS SWALE DATA -L- 190+28 - 195+00 LT
DA= 1.32ac	DA= 1.49ac	DA= 3.52ac
SLOPE= 2.10%	SLOPE= 0.22%	SLOPE= 0.87%
L REQ.= 132'	L REQ.= 149'	L REQ.= 352'
L PRO.= 467'	L PRO.= 472'	L PRO.= 422'
Q2= 4.22cfs	Q2= 5.13cfs	Q2= 8.69cfs
V2= 1.84ft/s	V2= 1.77ft/s	V2= 1.85ft/s
D2= 0.29'	D2= 1.39'	D2= 0.51'
Q10= 5.31cfs	Q10= 6.45cfs	Q10= 11.22cfs
V10= 1.98ft/s	V10= 1.87ft/s	V10= 1.99ft/s
D10= 0.32'	D10= 1.52'	D10= 0.59'

FOR -L- PROFILE SEE SHT.37

PLANS PREPARED BY :
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 45 OF 68

-L-

BRIDGE HYDRAULIC DATA
STA.182+37.5 -L-

DESIGN DISCHARGE	= 2,000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 94.3	FT
BASE DISCHARGE	= 2,300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 94.7	FT
OVERTOPPING DISCHARGE	= 18,750	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 103.7	FT
DATE OF SURVEY	= 06/2008	
W.S.ELEVATION AT DATE OF SURVEY	= 91.9	FT

COMPASS CREEK

BM #6
RR SPIKE IN BASE OF 24" OAK
-L- STA. 185+19.26 218.25' LT
ELEV.= 99.96'

PI = 176+76.00
EL = 107.47'
VC = 300'
K = 300

PROPOSED GRADE

BEGIN BRIDGE
-L- STA.180+71.00 +/-

END BRIDGE
-L- STA.184+04.00 +/-

EXISTING GROUND

(+)1.03%RT
(-)1.17% RT
(+)0.5000%
(+)0.5000%
(-)0.5000%
(-)0.30% RT
18" RCP

END LAT. V DITCH
-L- STA. 173+10 RT
EL. 103.55

PI -L- STA. 172+50 RT
EL. 104.25

BEG. LAT. V DITCH
-L- STA. 175+50 RT
EL. 101.63

END LAT. V DITCH
-L- STA. 177+25 RT
EL. 101.10

TEMPORARY WORK BRIDGE & FINGERS
- MAX. 30' BRIDGE WIDTH
- PIER / SPAN PLACEMENT TO BE DETERMINED BY CONTRACTOR
- LOW CHORD 4' ABOVE NWS=89.7'
- EDGE OF BRIDGE FINGERS PLACED A MINIMUM OF 10' FROM PROPOSED PIERS

ONWS 89.7

BEG. SP. CUT 'V' DITCH
-L- STA. 184+48 RT
EL. 98.53

BEG. SP. CUT 'V' DITCH
-L- STA. 184+98 LT; EL. 98.27

(-)10.35% RT
(-)10.22% LT

172+00 173+00 174+00 175+00 176+00 177+00 178+00 179+00 180+00 181+00 182+00 183+00 184+00 185+00 186+00

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 78" RCP
STA.189+80 -L-

DRAINAGE AREA	= 97	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 220	CFS
DESIGN HW ELEVATION	= 103.7	FT
100 YEAR DISCHARGE	= 250	CFS
100 YEAR HW ELEVATION	= 104.4	FT
OVERTOPPING FREQUENCY	= NA	YRS
OVERTOPPING DISCHARGE	= NA	CFS
OVERTOPPING ELEVATION	= NA	FT

PI = 187+50.00
EL = 102.10'
VC = 300'
K = 250

END SP. CUT 'V' DITCH
BEG. LAT. 'V' DITCH
-L- STA. 189+00 LT
EL. 97.39

(-)0.5000%
(+)0.7000%
(-)0.35% RT
(-)2.08% RT
(-)0.22% LT
(-)0.22% LT
78" PIPE
(+)0.86% LT
(+)0.70% LT
(+)8.12% LT
(+)0.70% LT

END SP. CUT 'V' DITCH
BEG. LAT. 'V' DITCH
-L- STA. 188+50 RT
EL. 97.12

END LAT. BASE DITCH
-L- STA. 189+15 RT
EL. 95.77

END LAT. 'V' DITCH
-L- STA. 189+70 LT.
EL. 97.23

BEG. LAT. BASE DITCH
-L- STA. 190+28 LT.
EL. 97.12

END LAT. BASE DITCH
BEG. SP. CUT BASE DITCH
-L- STA. 191+00 LT.
EL. 97.74

PI -L- STA. 193+00 LT
EL. 99.14

PI -L- STA. 193+50 LT
EL. 103.20

END SP. CUT BASE DITCH
-L- STA. 195+00 LT
EL. 104.25

PROPOSED GRADE
EXISTING GROUND

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.16 THRU 18

186+00 187+00 188+00 189+00 190+00 191+00 192+00 193+00 194+00 195+00 196+00 197+00 198+00 199+00 200+00

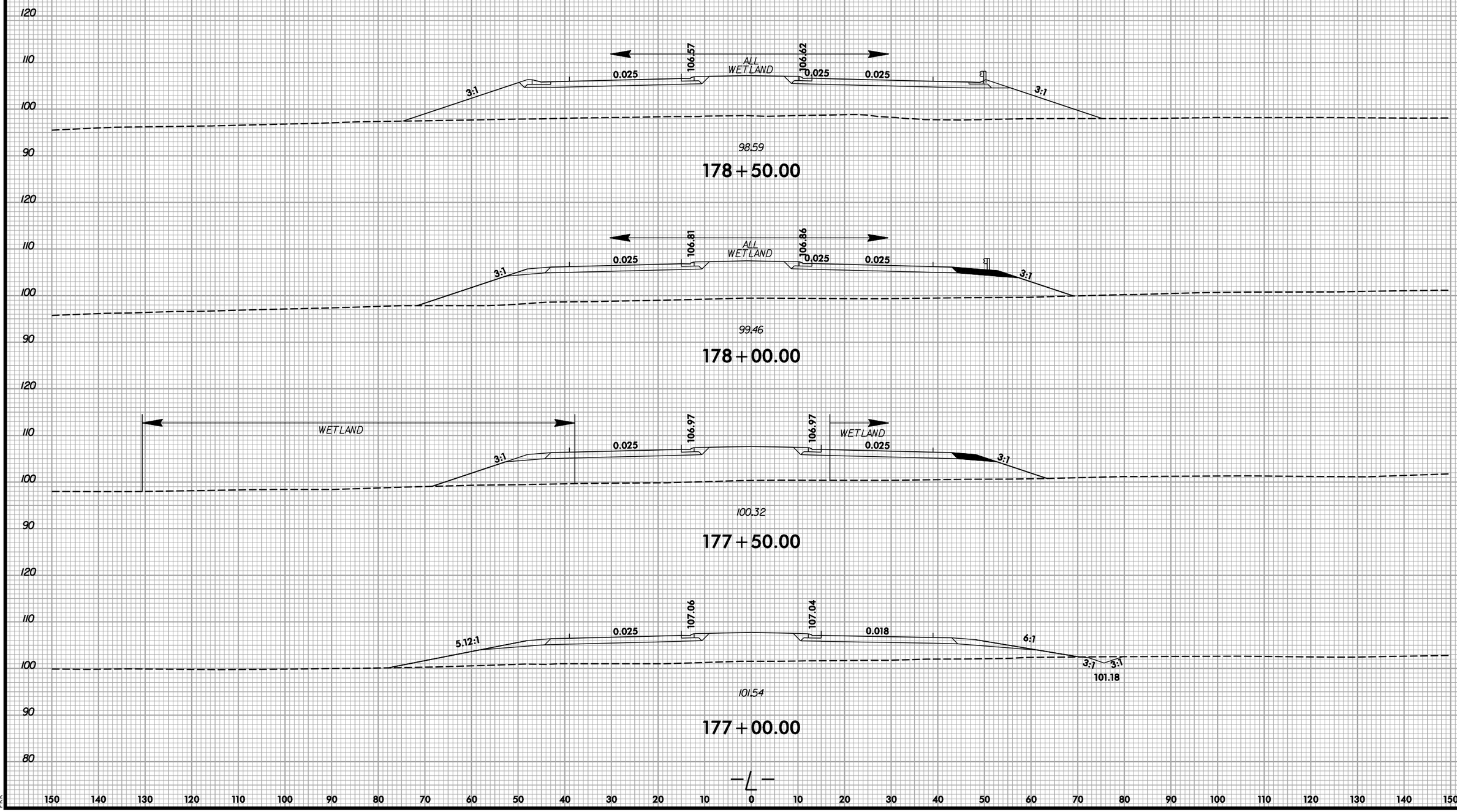
I:\2008\02823\hydraulics\permits\wetlands\r2823_rdy_perm_pf1_37.dgn
12/09/08 12:37:16
kkirkman

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-85

SITE 12

PERMIT DRAWING
SHEET 46 OF 68



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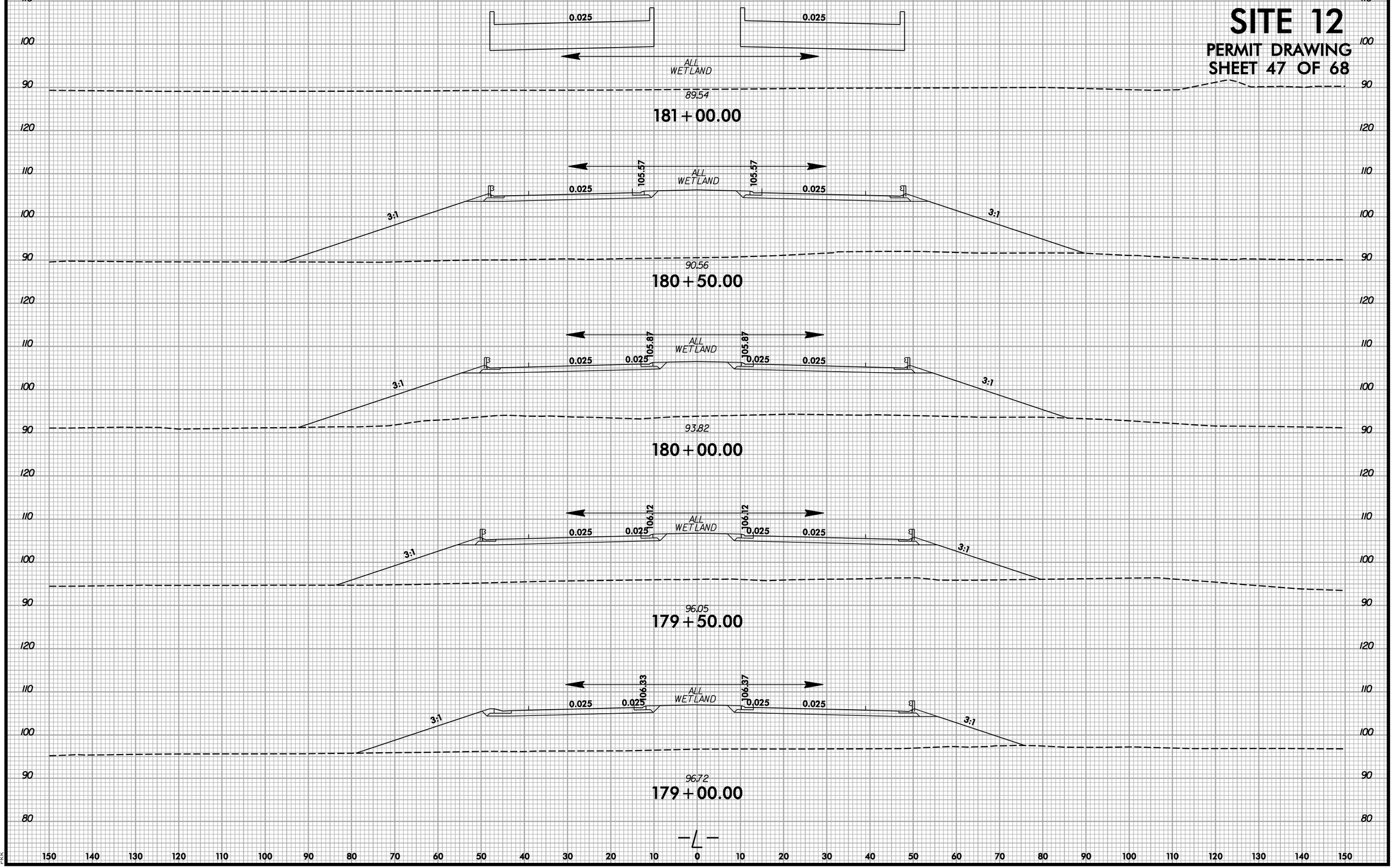
rkk

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-86

SITE 12

PERMIT DRAWING
SHEET 47 OF 68



8/23/99

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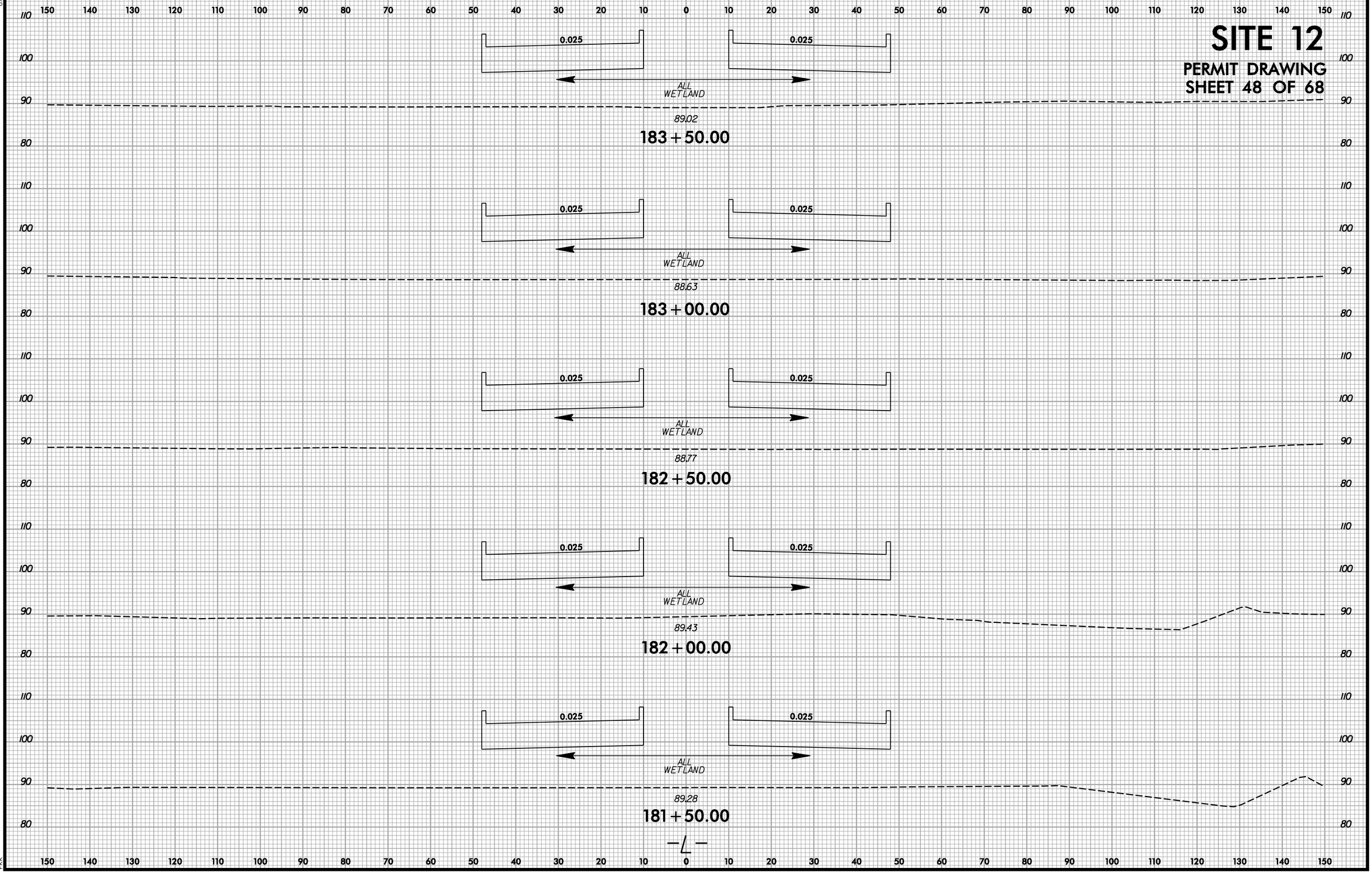
kk

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-87

SITE 12

PERMIT DRAWING
SHEET 48 OF 68



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rkk

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-88

SITE 12

PERMIT DRAWING
SHEET 49 OF 68

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

120 110 100 90

3:1 3:1 98.16 0.025 0.025 103.12 106.41 103.12 0.025 0.025 3:1 3:1 98.18

185+50.00

120 110 100 90

3:1 3:1 98.27 0.025 0.025 103.37 104.56 103.37 0.025 0.025 3:1 3:1 98.35

185+00.00

120 110 100 90

3:1 0.025 0.025 103.62 103.62 0.025 0.025 3:1 3:1 98.52

99.04

184+50.00

80 110 100 90

0.025 WETLAND 0.025

92.66

184+00.00

80

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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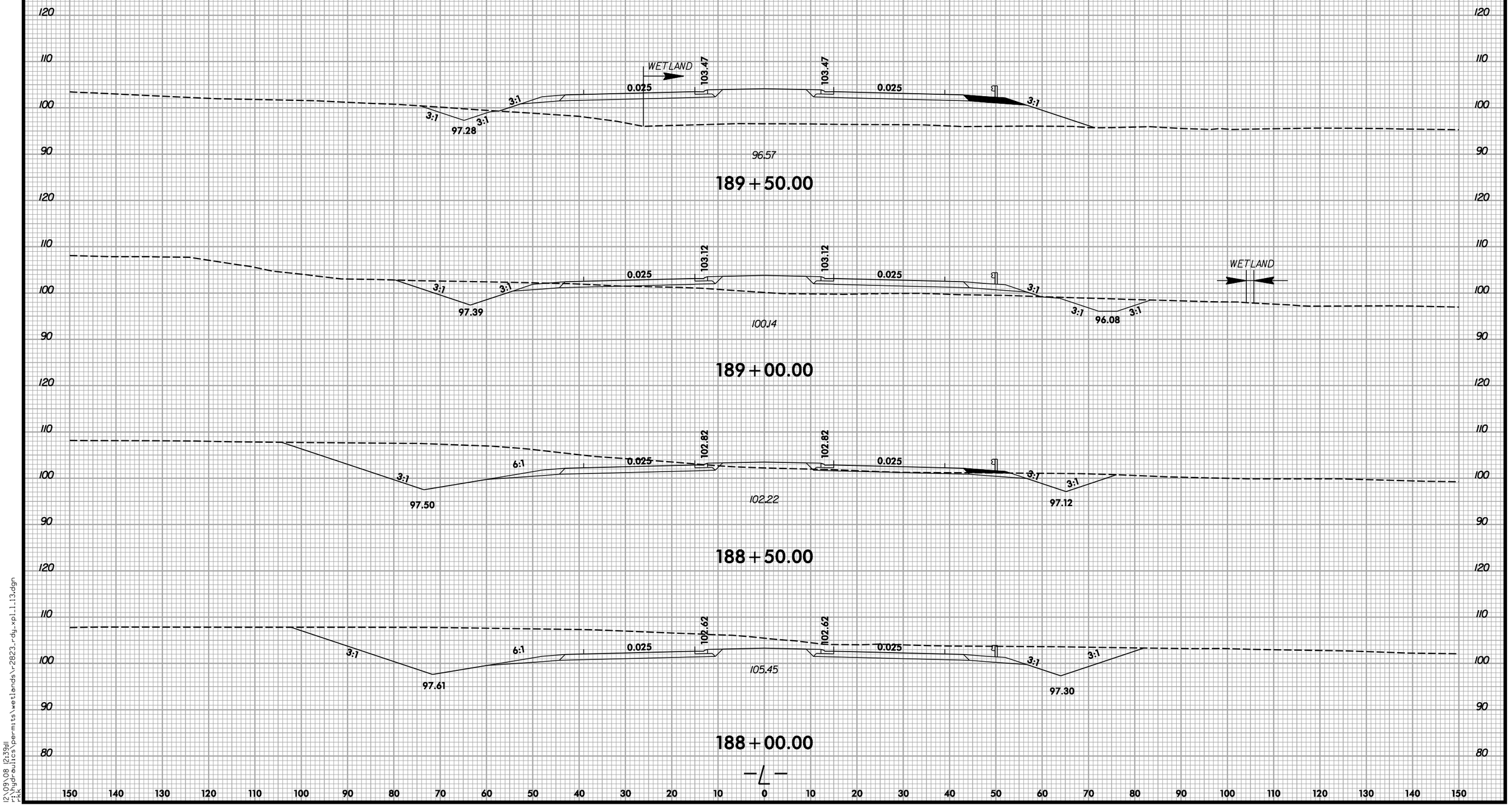
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-90

SITE 13

PERMIT DRAWING
SHEET 50 OF 68



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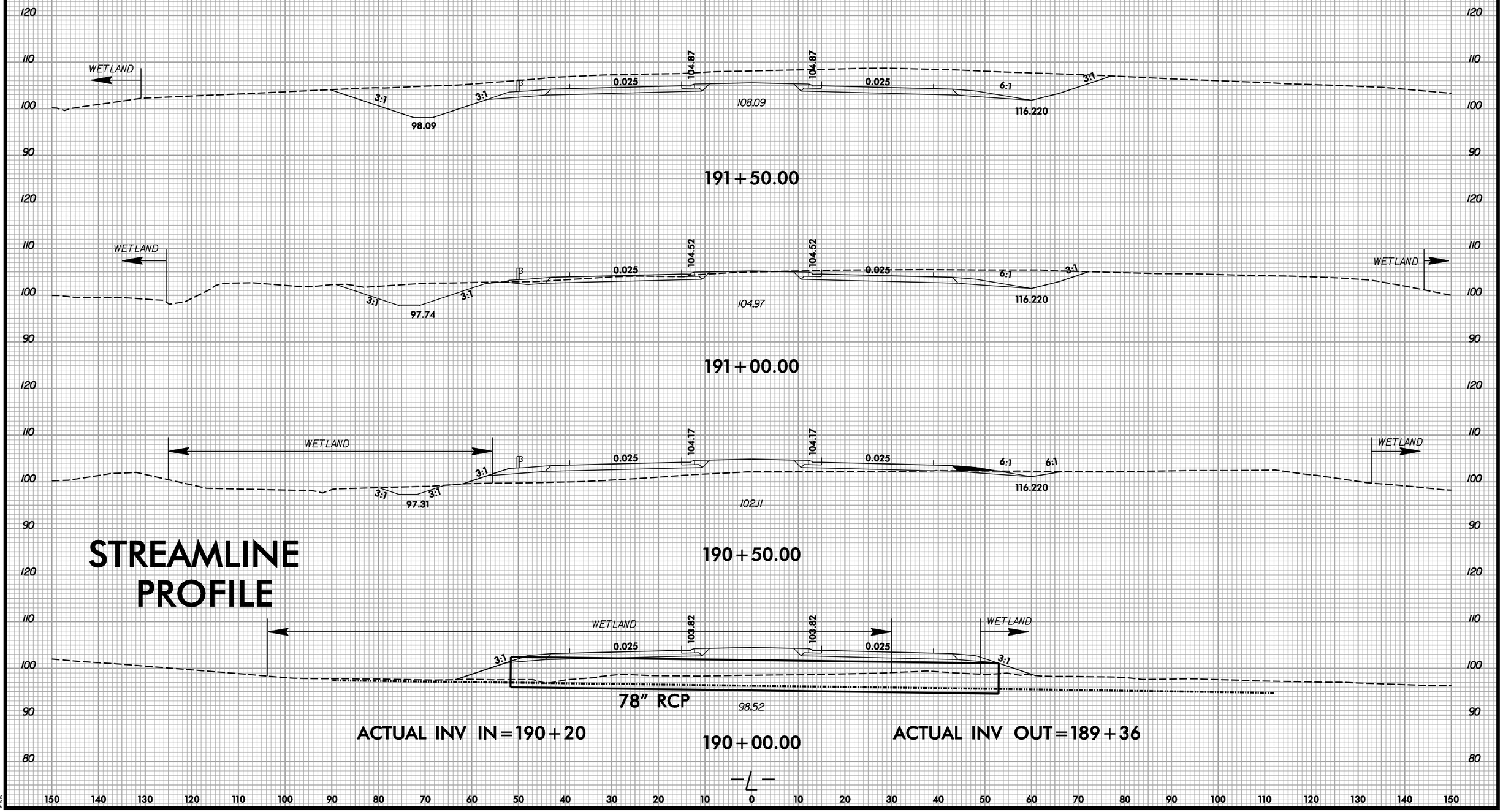
kk

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-91

SITE 13

PERMIT DRAWING
SHEET 51 OF 68



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rkk

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 52 OF 68

ENGLISH

F F DENOTES FILL IN WETLAND

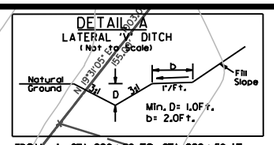
E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES IMPACTS IN SURFACE WATER

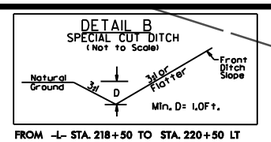
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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



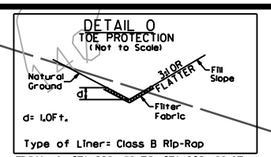
FROM -L- STA. 220+50 TO STA. 223+50 LT
FROM -Y5- STA. 11+00 TO STA. 12+00 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



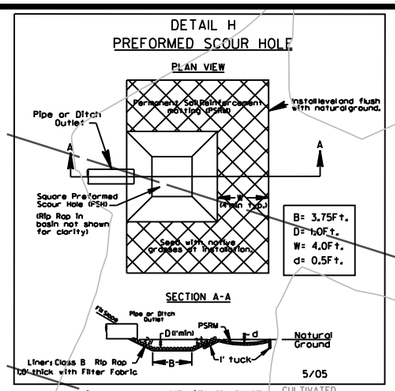
FROM -L- STA. 218+50 TO STA. 220+50 LT

DETAIL Q
TOE PROTECTION
(Not to Scale)



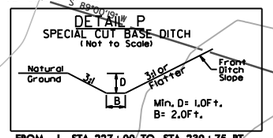
Type of Liner= Class B Rip-Rap
FROM -L- STA. 228+50 TO STA. 232+00 LT

DETAIL H
PREFORMED SCOUR HOLE



-Y5- STA. 11+50 LT

DETAIL P
SPECIAL CUT BASE DITCH
(Not to Scale)

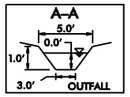


FROM -L- STA. 227+00 TO STA. 230+75 RT

GRASS SWALE DATA
-L- 227+00 - 230+75 RT
DA= 2.08ac
SLOPE= 0.30%
L REQ.= 208'
L PRO.= 250'
Q2= 6.65cfs
V2= 1.42ft/s
D2= 0.96'
Q10= 8.36cfs
V10= 1.66ft/s
D10= 1.00'

PREFORMED SCOUR HOLE DATA
-L- 230+80 RT
Q10= 4.30cfs
V10= 0.80ft/s

A-A



CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

FOR -L- PROFILE SEE SHTS. 38 & 39
FOR -Y5- PROFILE SEE SHT. 43

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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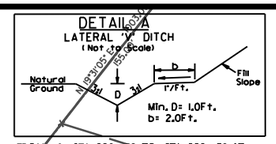
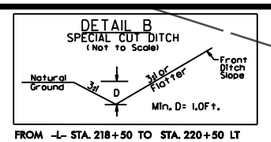
dlk

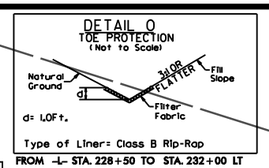
8/17/99



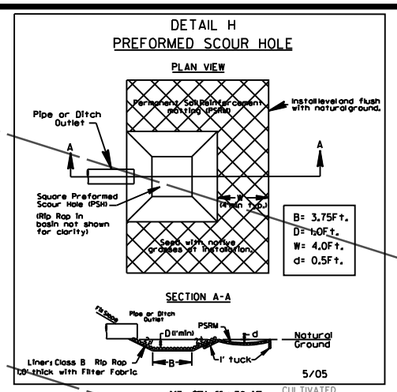
FROM -L- STA. 220+50 TO STA. 223+50 LT
FROM -Y5- STA. 11+00 TO STA. 12+00 RT



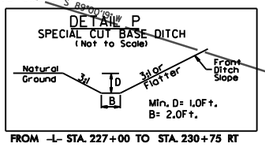
FROM -L- STA. 218+50 TO STA. 220+50 LT



Type of Liner= Class B Rip-Rap
FROM -L- STA. 228+50 TO STA. 232+00 LT



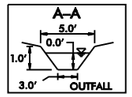
-Y5- STA. 11+50 LT



FROM -L- STA. 227+00 TO STA. 230+75 RT

GRASS SWALE DATA
-L- 227+00 - 230+75 RT
DA= 2.08ac
SLOPE= 0.30%
L REQ.= 208'
L PRO.= 250'
Q2= 6.65cfs
V2= 1.42ft/s
D2= 0.96'
Q10= 8.36cfs
V10= 1.66ft/s
D10= 1.00'

PREFORMED SCOUR HOLE DATA
-L- 230+80 RT
Q10= 4.30cfs
V10= 0.80ft/s



F/F DENOTES FILL IN WETLAND
E/E DENOTES EXCAVATION IN WETLAND
M/M DENOTES MECHANIZED CLEARING
I/I DENOTES IMPACTS IN SURFACE WATER
T/T DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
R-2823	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 53 OF 68

ENGLISH

WILLIAM HERBERT TURNER
220
63
LATERAL V DITCH SEE DETAIL A
45" WW FENCE
HP STA. 222+57.88 -L-
INV=134.98
2 TON CL B RIPRAP W/7 SY FIL FAB
SPECIAL CUT DITCH SEE DETAIL B
201
CPES
CB 200
S 89°00'19" W 1571.99'
MATCHLINE -L- STA. 219+00 SEE SHEET 19
CULTIVATED
JAMES B. MARTIN, JR. ET AL
62
202
LATERAL V DITCH SEE DETAIL A
INV= 132.58'
INV= 131.66
18"
PSH (SEE DETAIL H
WOODS
SITE 14
W. W. EATMON HEIRS
61
S 88°20'07" W 165.50'
N 88°58'23" E 101.30'
N 88°58'23" E 102.70'
CAROLYN EATMON PARKER
S 5°52'23" W 240.40'
W. W. EATMON HEIRS
64
18.30'
MATCHLINE -Y5- STA. 16+00 SEE SHEET 29
225
WILLIAM HERBERT TURNER
65
TOE PROTECTION SEE DETAIL Q
S 89°00'19" W 16.12'
SPECIAL CUT BASE DITCH SEE DETAIL P
WILLIAM HERBERT TURNER
63
207
CB
210
BDO 199
2 TON CL B RIPRAP W/7 SY FIL FAB INV=122.43
INV= 122.13
CULTIVATED
WOODS
S 89°00'19" W 1730.38'
WLB
230
BZ 1
BZ 2
SITE 15
NO DEFINED CHANNEL
123.37
INV=119.50
HW 209
208
CB
119.80
INV= 118.04
117.33
SITE 16
26 TONS CL I RIPRAP W/50 SY FIL FAB RIPRAP ON BANKS ONLY INV=117.04
MATCHLINE -L- STA. 232+00 SEE SHEET 21
S 89°00'19" W 1571.99'
JAMES B. MARTIN, JR. ET AL
62
15
W. W. EATMON HEIRS
64
N 88°58'23" E 738.37'
S 38°25'37" W 400.33'

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

FOR -L- PROFILE SEE SHTS. 38 & 39
FOR -Y5- PROFILE SEE SHT. 43

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
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(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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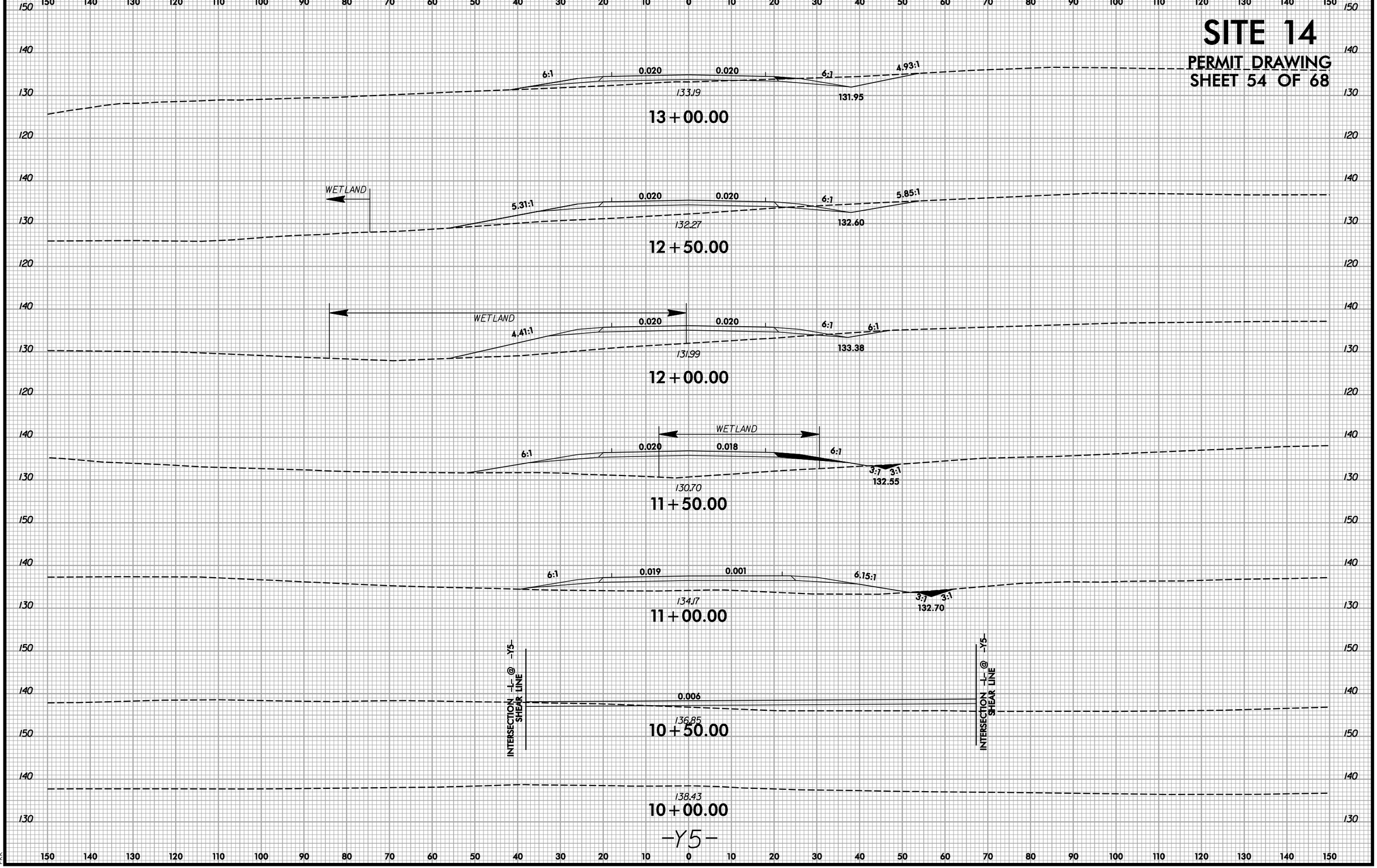
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-149

SITE 14

PERMIT DRAWING
SHEET 54 OF 68



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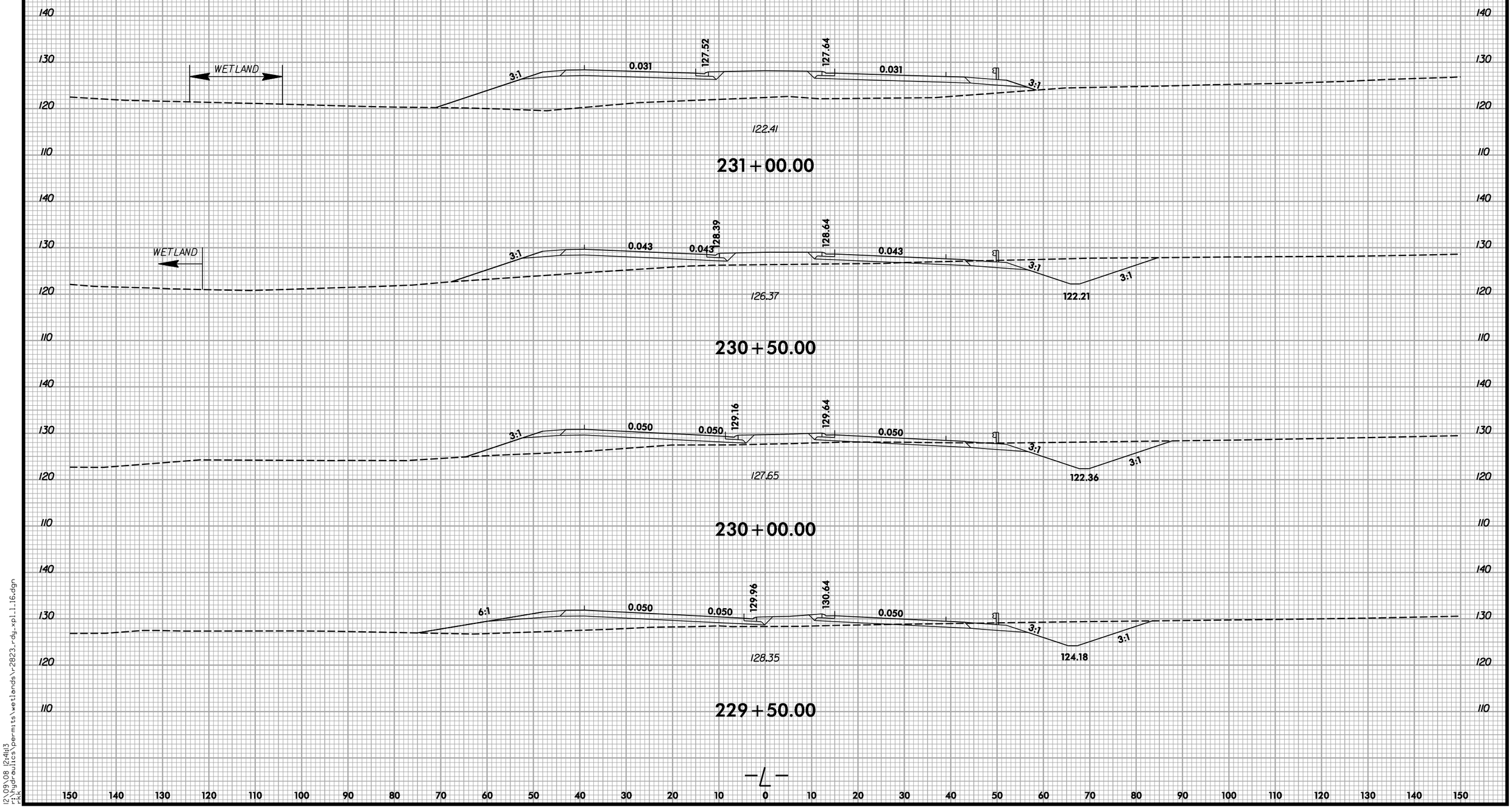
rkk

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-111

SITES 15 & 16

PERMIT DRAWING
SHEET 55 OF 68



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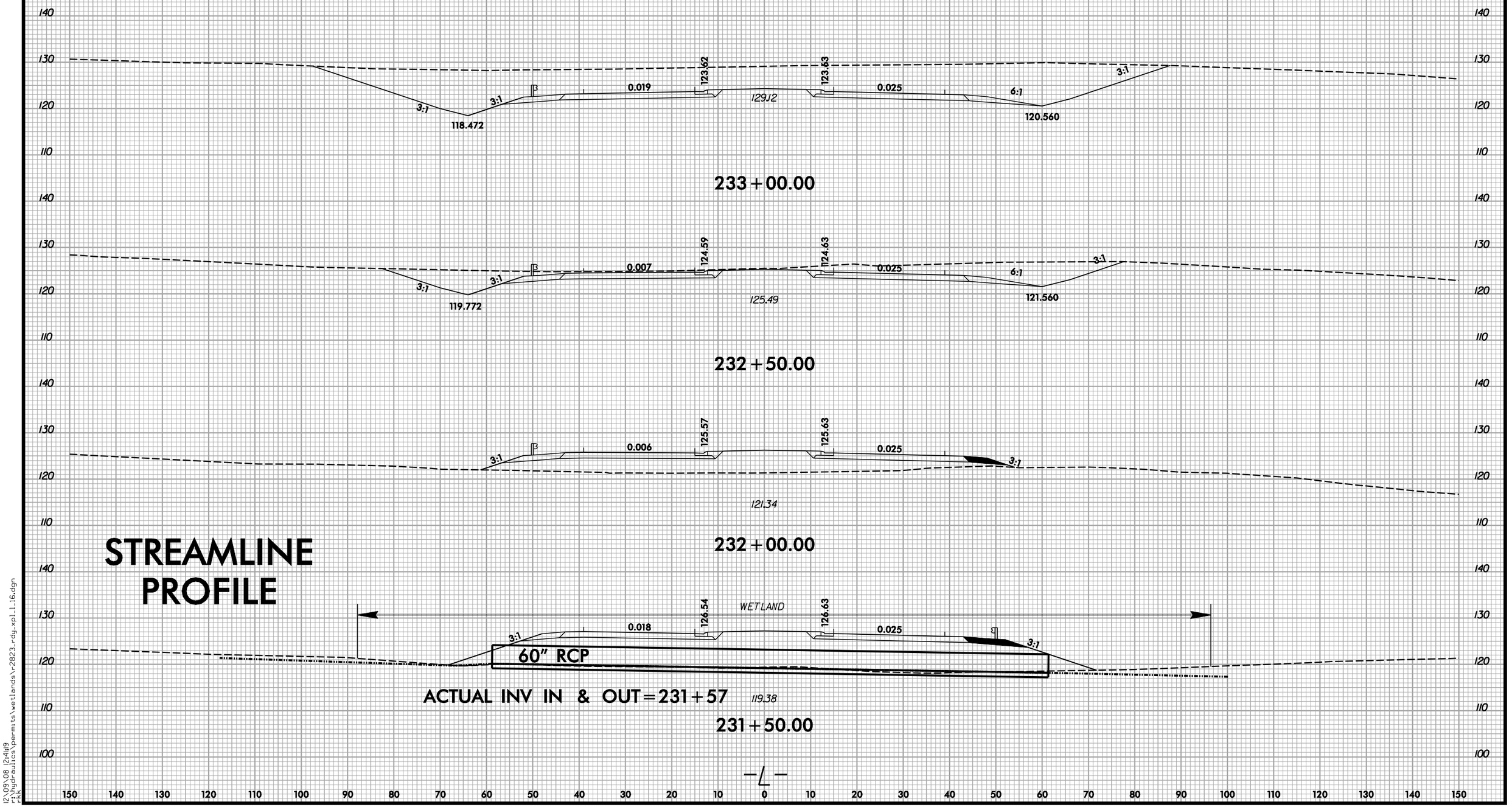
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-112

SITES 15 & 16

PERMIT DRAWING
SHEET 56 OF 68



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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 57 OF 68

ENGLISH

F/F DENOTES FILL IN WETLAND

E/E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

S/S DENOTES IMPACTS IN SURFACE WATER

TS/TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL C
DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

SECTION A-A

Liner: Class B Rip Rap 1.0' thick with Filter Fabric

5/05

DETAIL C
-L- STA. 241+05 LT
DETAIL H
-L-L- STA. 238+25 RT
-L- STA. 239+20 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

Min. D= 1.0Ft.

FROM -L- STA. 233+50 TO STA. 235+00 LT
FROM -L- STA. 243+50 TO STA. 244+50 LT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)

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

FROM -L- STA. 241+10 TO STA. 243+50 LT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)

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

FROM -L- STA. 236+00 TO STA. 236+50 LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

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

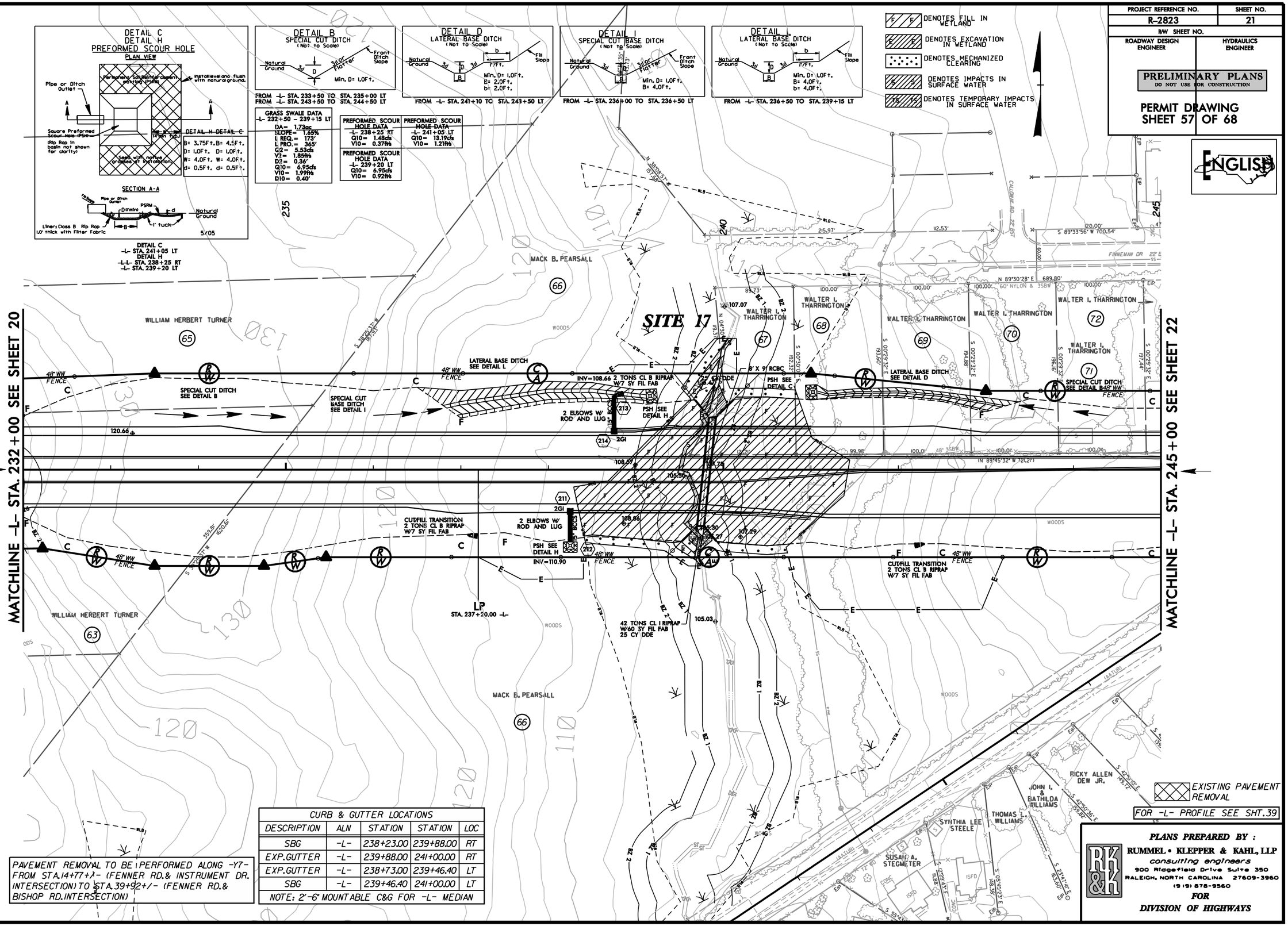
FROM -L- STA. 236+50 TO STA. 239+15 LT

GRASS SWALE DATA
-L- 232+50 - 239+15 LT
DA= 1.73ac
SLOPE= 1.65%
L REQ.= 173'
L PRO.= 365'
Q2= 5.53cfs
V2= 1.85ft/s
D2= 0.36'
Q10= 6.95cfs
V10= 1.99ft/s
D10= 0.40'

PREFORMED SCOUR HOLE DATA
-L- 238+25 RT
Q10= 1.48cfs
V10= 0.37ft/s

PREFORMED SCOUR HOLE DATA
-L- 241+05 LT
Q10= 13.19cfs
V10= 1.21ft/s

PREFORMED SCOUR HOLE DATA
-L- 239+20 LT
Q10= 6.95cfs
V10= 0.92ft/s



CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	238+23.00	239+88.00	RT
EXP.GUTTER	-L-	239+88.00	241+00.00	RT
EXP.GUTTER	-L-	238+73.00	239+46.40	LT
SBG	-L-	239+46.40	241+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

PAVEMENT REMOVAL TO BE PERFORMED ALONG -Y7- FROM STA.14+77+/- (FENNER RD.& INSTRUMENT DR. INTERSECTION) TO STA.39+92+/- (FENNER RD.& BISHOP RD.INTERSECTION)

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 58 OF 68

ENGLISH

F F DENOTES FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

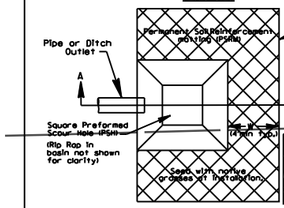
DENOTES MECHANIZED CLEARING

S S DENOTES IMPACTS IN SURFACE WATER

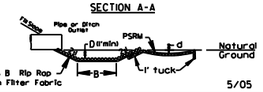
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL C
DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

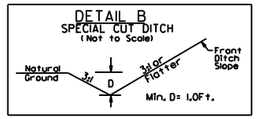


SECTION A-A



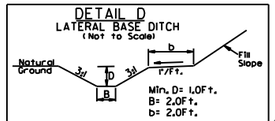
DETAIL C
-L- STA. 241+05 LT
DETAIL H
-L-L- STA. 238+25 RT
-L- STA. 239+20 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



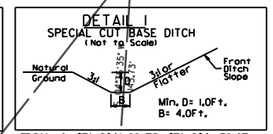
FROM -L- STA. 233+50 TO STA. 235+00 LT
FROM -L- STA. 243+50 TO STA. 244+50 LT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



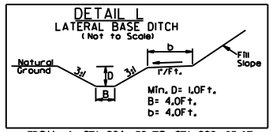
FROM -L- STA. 241+10 TO STA. 243+50 LT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 236+00 TO STA. 236+50 LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



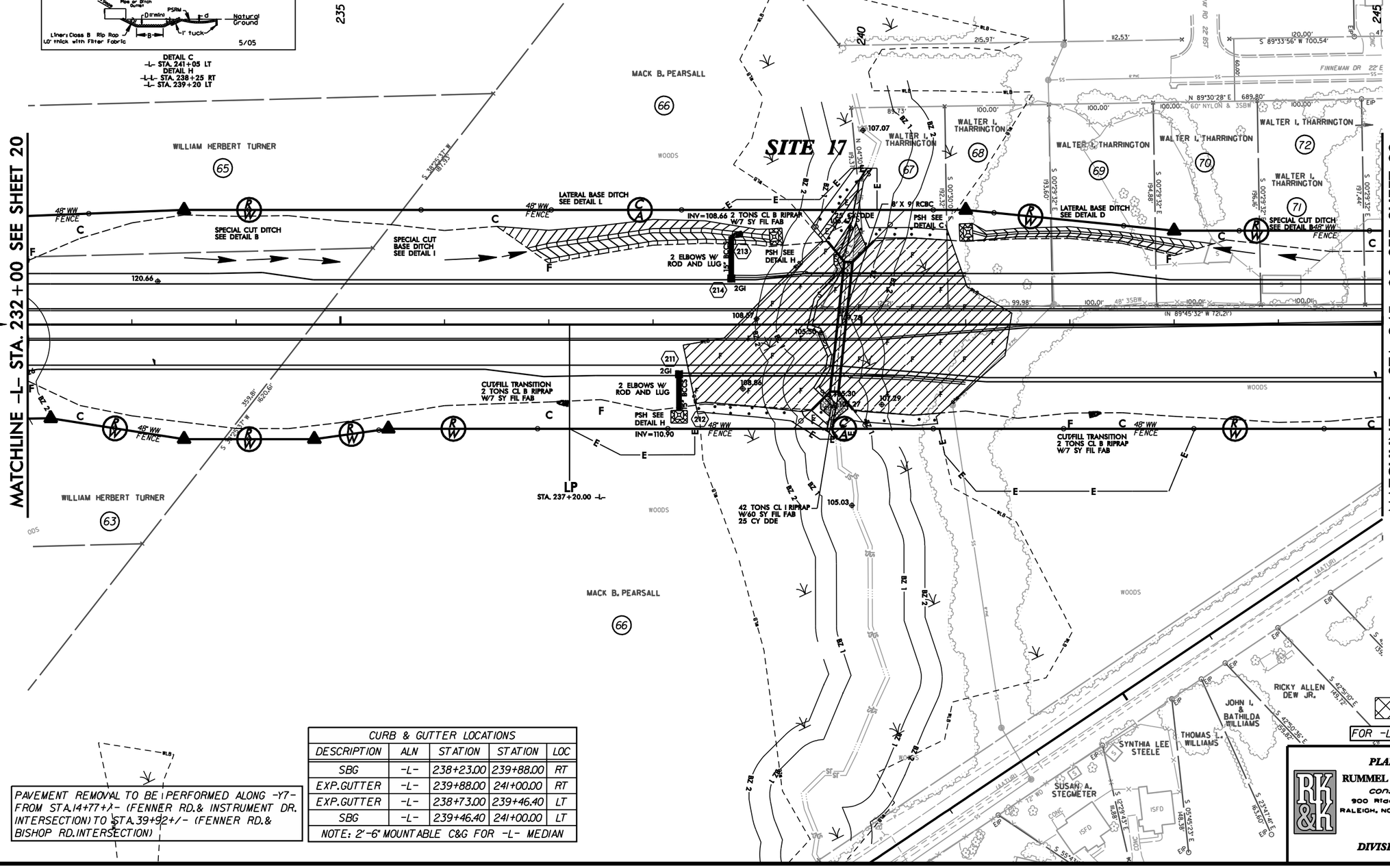
FROM -L- STA. 236+50 TO STA. 239+15 LT

GRASS SWALE DATA
-L- 232+50 - 239+15 LT
DA= 1.73ac
SLOPE= 1.65%
L REQ.= 173'
L PRO.= 365'
Q2= 5.53cfs
V2= 1.85ft/s
D2= 0.36'
Q10= 6.95cfs
V10= 1.99ft/s
D10= 0.40'

PREFORMED SCOUR HOLE DATA
-L- 238+25 RT
Q10= 1.48cfs
V10= 0.37ft/s

PREFORMED SCOUR HOLE DATA
-L- 241+05 LT
Q10= 13.19cfs
V10= 1.21ft/s

PREFORMED SCOUR HOLE DATA
-L- 239+20 LT
Q10= 6.95cfs
V10= 0.92ft/s



CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	238+23.00	239+88.00	RT
EXP.GUTTER	-L-	239+88.00	241+00.00	RT
EXP.GUTTER	-L-	238+73.00	239+46.40	LT
SBG	-L-	239+46.40	241+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

PAVEMENT REMOVAL TO BE PERFORMED ALONG -Y7- FROM STA.14+77+/- (FENNER RD.& INSTRUMENT DR. INTERSECTION) TO STA.39+92+/- (FENNER RD.& BISHOP RD.INTERSECTION)

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 59 OF 68

-L-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 60" RCP
STA. 231+57 -L-

DRAINAGE AREA	= 31	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 124.5	FT
100 YEAR DISCHARGE	= 90	CFS
100 YEAR HW ELEVATION	= 124.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 130	CFS
OVERTOPPING ELEVATION	= 126.5	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 8'x9' RCBC
STA. 239+81 -L-

DRAINAGE AREA	= 356	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 600	CFS
DESIGN HW ELEVATION	= 116.1	FT
100 YEAR DISCHARGE	= 700	CFS
100 YEAR HW ELEVATION	= 117.6	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 935	CFS
OVERTOPPING ELEVATION	= 118.5	FT

BM #7
RR SPIKE IN BASE OF 48" OAK
-L- STA. 230+89.38 244.47' RT
ELEV. = 130.71'

PROPOSED GRADE
EXISTING GROUND

PI = 236+00.00
EL = 117.66'
VC = 400'
K = 160

PI = 241+90.00
EL = 120.61'
VC = 250'
K = 200

(-) 1.80% RT
(-) 7.03% RT
(-) 0.30% RT
(-) 0.30% LT
(-) 12.0000%
(+) 10.5000%
(-) 4.26% LT
(-) 1.65% LT
(+) 10.5000%
(+) 11.7500%
(+) 4.02% LT

60" PIPE

END SP. CUT DITCH
-L- STA. 230+75 RT
EL. 122.13

PI -L- STA. 229+75 RT
EL. 122.43

PI -L- STA. 229+00 RT
EL. 127.70

BEG. SP. CUT DITCH
-L- STA. 233+50 LT
EL. 117.32

END SP. CUT DITCH
-L- STA. 235+00 LT
EL. 116.87

BEG. SP. CUT BASE DITCH
-L- STA. 236+00 LT
EL. 115.81

END SP. CUT BASE DITCH
BEG. LAT. BASE DITCH
-L- STA. 236+50 LT
EL. 113.68

PI -L- STA. 237+00 LT.
EL. 111.55

END LAT. BASE DITCH
-L- STA. 239+15 LT
EL. 108.00

8'x9' RCBC

BEG. LAT. BASE DITCH
-L- STA. 241+10 LT
EL. 108.39

228+00 229+00 230+00 231+00 232+00 233+00 234+00 235+00 236+00 237+00 238+00 239+00 240+00 241+00 242+00

170 160 150 140 130 120 110 100 90 80

PI = 249+21.91
EL = 133.42'
VC = 650'
K = 277

PROPOSED GRADE
EXISTING GROUND

(+) 11.7500%
(-) 10.6000%
(+) 11.7500%
(+) 4.02% LT
(+) 4.02% LT
(+) 0.33% RT

-Y6- STA. 17+85.33=
-L- STA. 247+13.23

END LAT. BASE DITCH
BEG. SP. CUT DITCH
-L- STA. 243+50 LT
EL. 118.04

END SP. CUT DITCH
-L- STA. 244+50 LT
EL. 122.06

BEG. SP. CUT DITCH
-L- STA. 245+50 RT
EL. 123.51

END SP. CUT DITCH
-L- STA. 246+50 RT
EL. 123.84

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS. 20 THRU 22

242+00 243+00 244+00 245+00 246+00 247+00 248+00 249+00 250+00 251+00 252+00 253+00 254+00 255+00 256+00

170 160 150 140 130 120 110 100 90 80

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8/23/99

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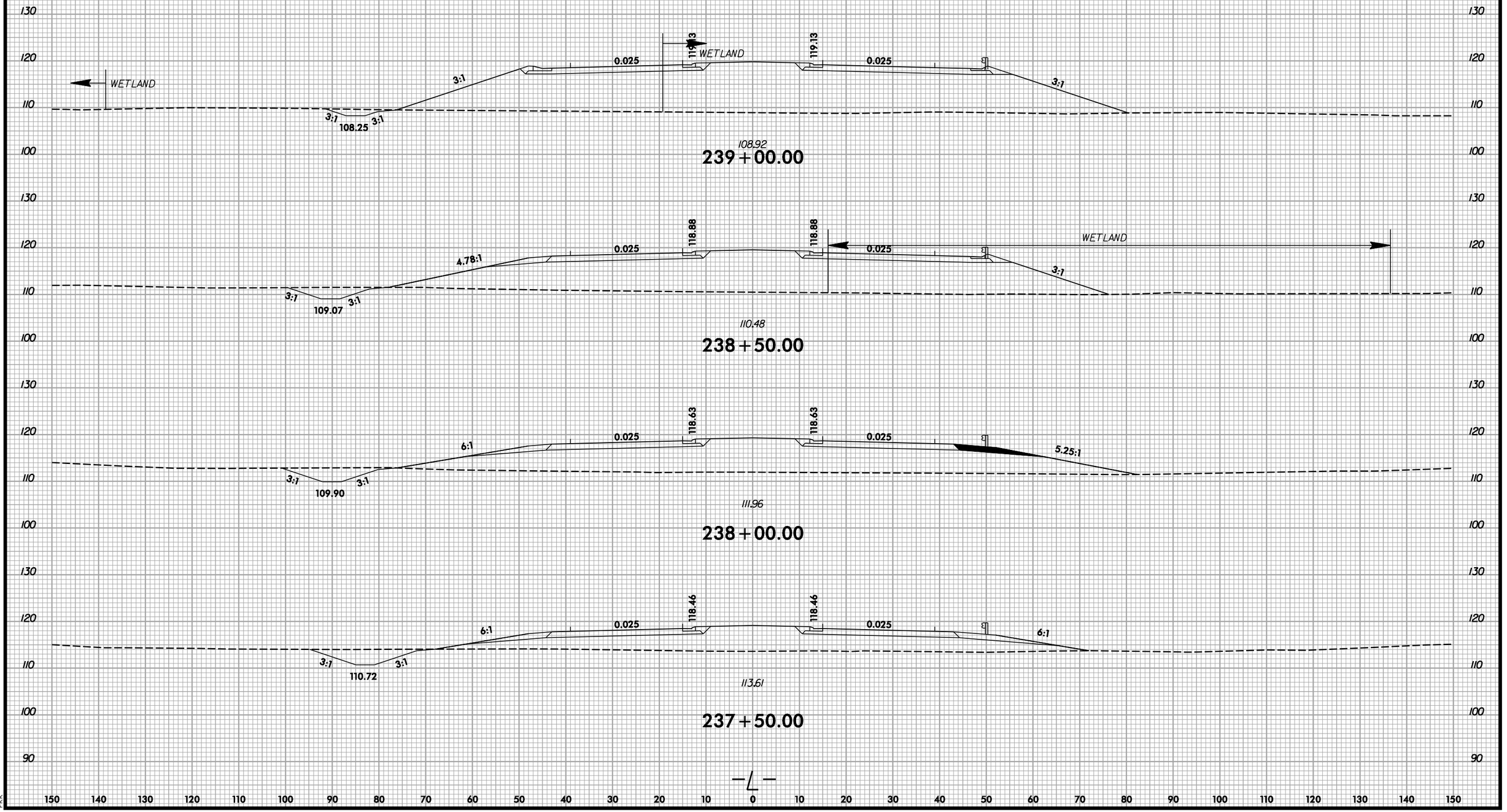
	R-2823	X-115

SITE 17

PERMIT DRAWING
SHEET 60 OF 68



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8/23/99

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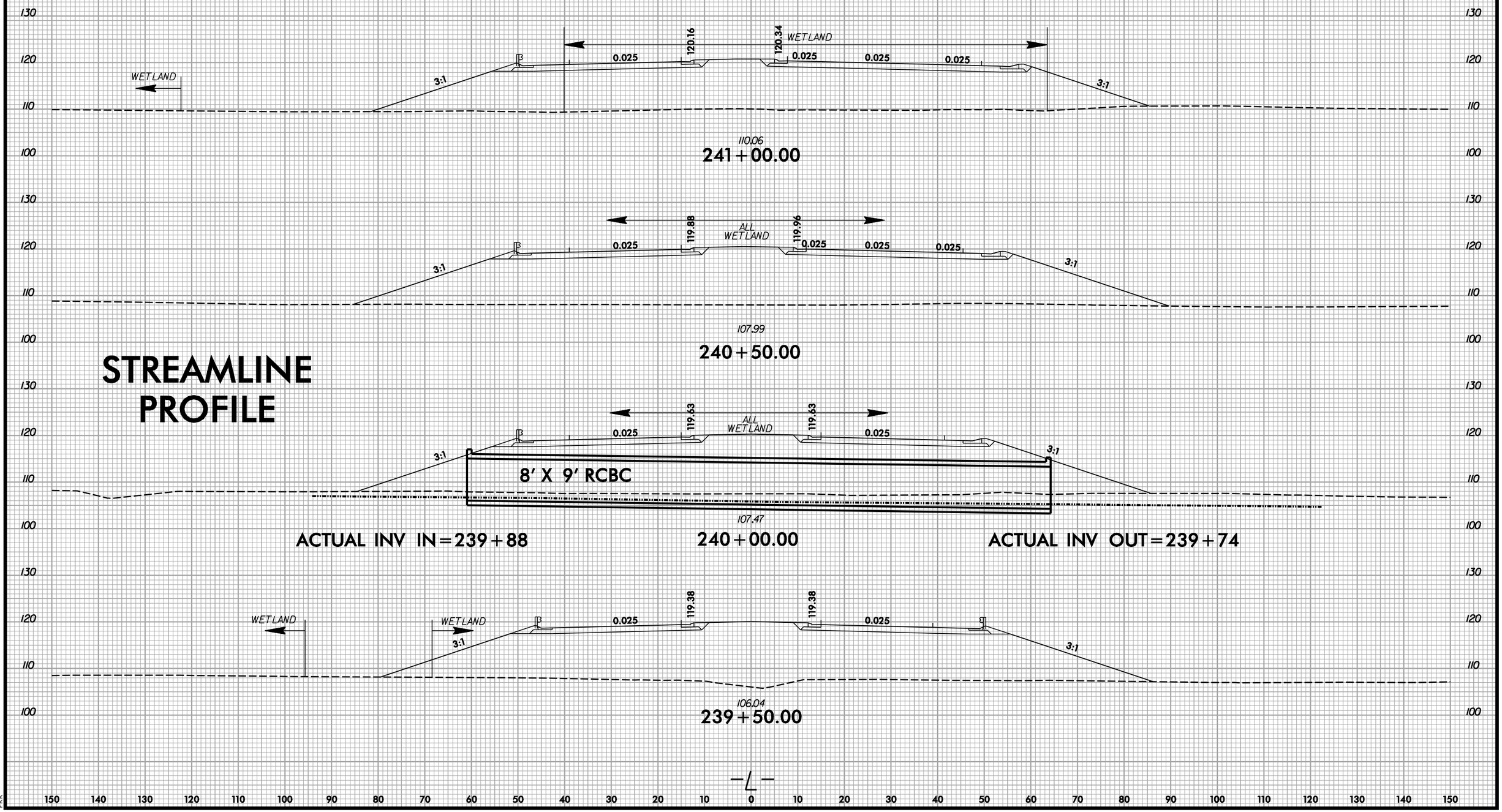
	R-2823	X-116

SITE 17
PERMIT DRAWING
SHEET 61 OF 68

STREAMLINE PROFILE



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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 62 OF 68

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 18

MATCHLINE -L- STA. 259+00 SEE SHEET 22

MATCHLINE -Y8- STA. 20+00 SEE SHEET 30

LP
STA. 263+00.84 -L-

-Y8- S 12°32'01.8"W

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THOMAS PEARSALL JR et al TRUST

MACK B. & THOMAS J. PEARSALL

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WOODS

SPECIAL MEDIAN CUT DITCH SEE DETAIL Q

SPECIAL CUT DITCH SEE DETAIL B

LATERAL BASE DITCH SEE DETAIL L

LATERAL BASE DITCH SEE DETAIL D

BERM 'V' DITCH SEE DETAIL K

SPECIAL CUT BASE DITCH SEE DETAIL I

REMOVE 6'-18" RCP

2 ELBOWS W/ ROD AND LUG

2 TONS CL B RIPRAP W/7 SY FIL FAB

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB

3 TONS CL B RIPRAP W/10 SY FIL FAB

SR 1538 FENNER RD

S 77°24'03" E 430.65'

S 12°33'35" E 64.23'

HP 0.18mi

A-A	B-B	C-C
8.0'	14.0'	8.0'
0.0'	0.0'	0.0'
3.0'	4.5'	2.0'
1.0' ROADSIDE	4.0'	1.0' ROADSIDE

GRASS SWALE DATA -L- 260+02 - 261+00 LT	GRASS SWALE DATA -Y8- 15+00 - 17+39 RT	GRASS SWALE DATA -Y8- 15+00 - 17+00 CL
DA= 0.47ac	DA= 1.22ac	DA= 0.54ac
SLOPE= 3.50%	SLOPE= 1.29%	SLOPE= 1.54%
L REQ.= NA	L REQ.= 122'	L REQ.= 54'
L PRO.= NA	L PRO.= 239'	L PRO.= 200'
Q2= 1.04cfs	Q2= 1.61cfs	Q2= 1.66cfs
V2= 1.87ft/s	V2= 1.92ft/s	V2= 1.47ft/s
D2= 0.21'	D2= 0.64'	D2= 0.44'
Q10= 1.31cfs	Q10= NA	Q10= NA
V10= 2.01ft/s	V10= NA	V10= NA
D10= 0.24'	D10= NA	D10= NA

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1.0Ft.
FROM -L- STA. 261+50 TO STA. 264+00 LT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 2.0Ft.
b= 2.0Ft.
FROM -L- STA. 260+02 TO STA. 261+50 LT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 4.0Ft.
FROM -Y8- STA. 19+04 TO STA. 24+50 RT
FROM -Y8- STA. 19+50 TO STA. 22+46 LT

DETAIL K
BERM 'V' DITCH
(Not to Scale)
Min. D= 1.0Ft.
b= 2.0Ft.
FROM -L- STA. 256+50 TO STA. 260+00 RT

DETAIL I
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 4.0Ft.
b= 4.0Ft.
FROM -L- STA. 257+00 TO STA. 259+98 LT

DETAIL Q
MEDIAN DITCH
(Not to Scale)
Min. D= 1.0Ft.
FROM -Y8- STA. 10+50 TO STA. 13+00 CL
FROM -Y8- STA. 14+00 TO STA. 15+00 CL

FOR -L- PROFILE SEE SHTS.40
FOR -Y8- PROFILE SEE SHT.44

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -Y8- MEDIAN

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 63 OF 68

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 18

MATCHLINE -L- STA. 259+00 SEE SHEET 22

MATCHLINE -Y8- STA. 20+00 SEE SHEET 30

LP
STA. 263+00.84 -L-

-Y8- S 12°32'01.8"W

-L-

SPECIAL MEDIAN CUT DITCH SEE DETAIL Q

SPECIAL MEDIAN CUT DITCH SEE DETAIL Q

LATERAL BASE DITCH SEE DETAIL L

LATERAL BASE DITCH SEE DETAIL D

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL B

BERM 'V' DITCH SEE DETAIL K

SPECIAL CUT BASE DITCH SEE DETAIL I

SPECIAL CUT BASE DITCH SEE DETAIL I

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB

2 TONS CL B RIPRAP W/7 SY FIL FAB

3 TONS CL B RIPRAP W/10 SY FIL FAB

2 ELBOWS W/ ROD AND TUG

2 ELBOWS W/ ROD AND TUG

REMOVE 6'-18" RCP

REMOVE 15" RCP

REMOVE 18" RCP

RETAIN

RETAIN COLLAR

RETAIN

RETAIN

CPES 18" COLLAR

CPES

HW 231 INV=117.36

INV=116.28 18" RCCP

INV=118.00

INV=124.20 PPES

INV=121.93

INV=122.40

DI 219

JB W/MH 232

2GI 223

JB 246

TB 2GI

DI 197

DI 196

DI 220

DI 222

WOODS

N. C. WESLEYAN COLLEGE

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THOMAS PEARSALL JR et al TRUST (88)

SR 1538 FENNER RD

EXISTING R/W

S 77°24'03" E 430.65'

S 12°33'35" E 64.23'

RDWY S 77°25'10" E 264.60'

10

15

20

GRASS SWALE DATA -L- 260+02 – 261+00 LT	GRASS SWALE DATA -Y8- 15+00 – 17+39 RT	GRASS SWALE DATA -Y8- 15+00 – 17+00 CL
DA= 0.47ac	DA= 1.22ac	DA= 0.54ac
SLOPE= 3.50%	SLOPE= 1.29%	SLOPE= 1.54%
L REQ.= NA	L REQ.= 122'	L REQ.= 54'
L PRO.= NA	L PRO.= 239'	L PRO.= 200'
Q2= 1.04cfs	Q2= 1.61cfs	Q2= 1.66cfs
V2= 1.87fps	V2= 1.92fps	V2= 1.47fps
D2= 0.21'	D2= 0.64'	D2= 0.44'
Q10= 1.31cfs	Q10= NA	Q10= NA
V10= 2.01fps	V10= NA	V10= NA
D10= 0.24'	D10= NA	D10= NA

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1 or Flatter, Front Ditch Slope
Min. D= 1.0Ft.

FROM -L- STA. 261+50 TO STA. 264+00 LT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1, B, F/Ft., Fill Slope
Min. D= 1.0Ft.
B= 2.0Ft.
b= 2.0Ft.

FROM -L- STA. 260+02 TO STA. 261+50 LT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1 or Flatter, Front Ditch Slope, B
Min. D= 1.0Ft.
B= 4.0Ft.

FROM -Y8- STA. 19+04 TO STA. 24+50 RT
FROM -Y8- STA. 19+50 TO STA. 22+46 LT

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

Natural Ground, 3:1, D, 3:1, b, RDWY
Min. D= 1.0Ft.
b= 2.0Ft.

FROM -L- STA. 256+50 TO STA. 260+00 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1, b, F/Ft., Fill Slope
Min. D= 1.0Ft.
B= 4.0Ft.
b= 4.0Ft.

FROM -L- STA. 257+00 TO STA. 259+98 LT

DETAIL Q
MEDIAN DITCH
(Not to Scale)

Shoulder Point, 3:1 or Flatter, D, 3:1 or Flatter, Shoulder Point
Min. D= 1.0Ft.

FROM -Y8- STA. 10+50 TO STA. 13+00 CL
FROM -Y8- STA. 14+00 TO STA. 15+00 CL

FOR -L- PROFILE SEE SHTS.40
FOR -Y8- PROFILE SEE SHT.44

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -Y8- MEDIAN

PLANS PREPARED BY :
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consulting engineers
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RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/23/99

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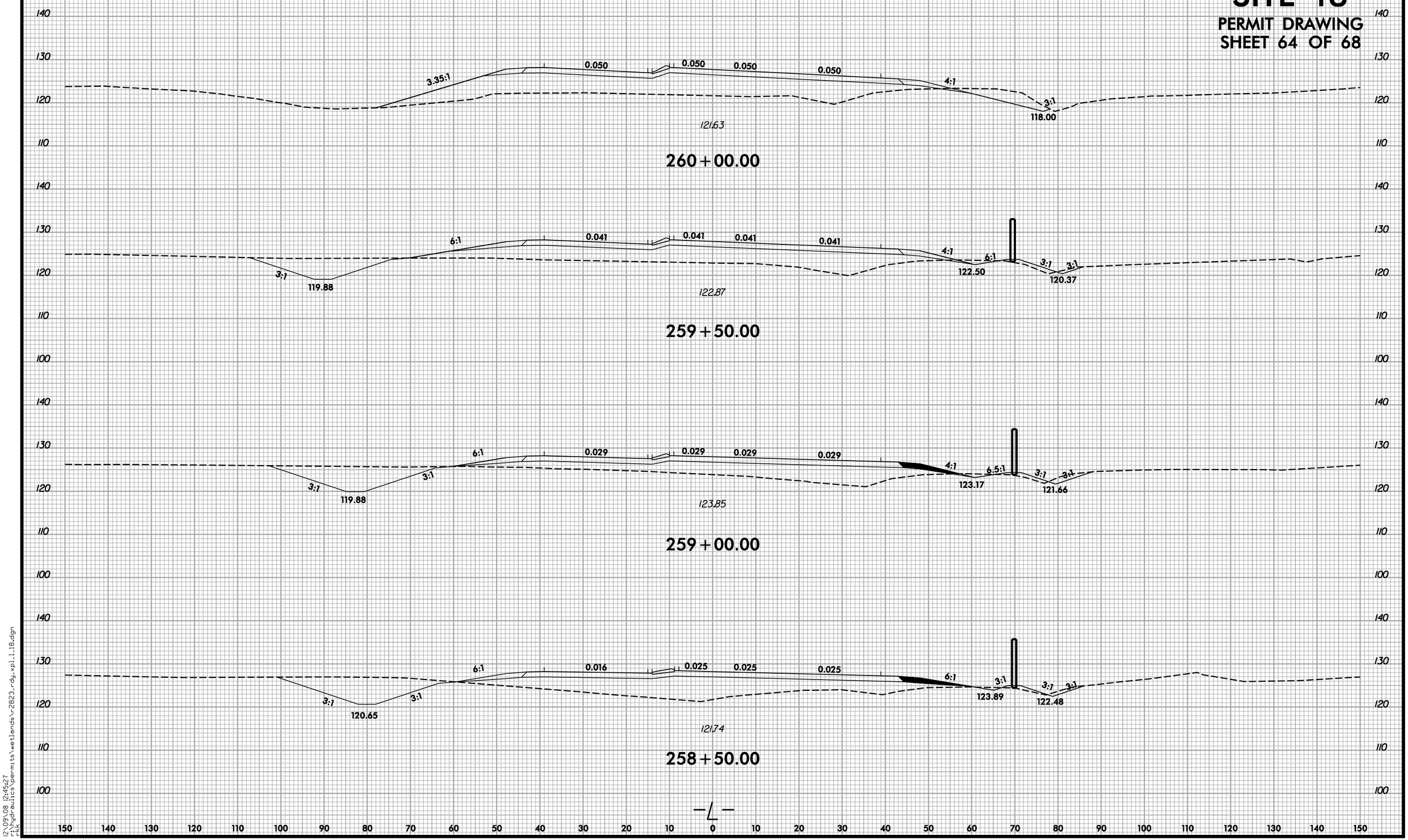
	R-2823	X-126

SITE 18

PERMIT DRAWING
SHEET 64 OF 68



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8/23/99

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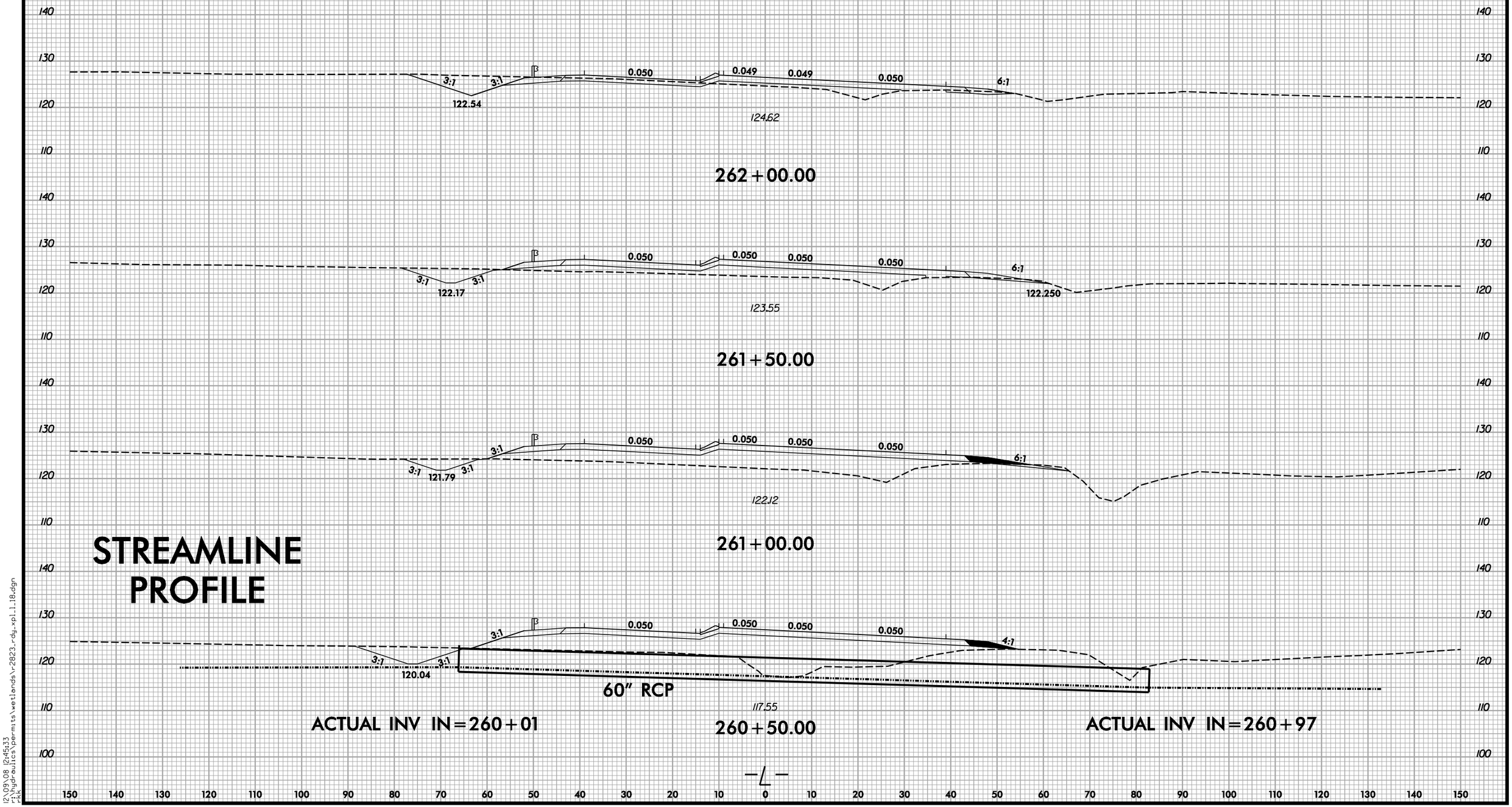
	R-2823	X-127

SITE 18

PERMIT DRAWING
SHEET 65 OF 68

STREAMLINE PROFILE



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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 66 OF 68

ENGLISH

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCHLINE -Y8- STA. 20+00 SEE SHEET 23

SITE 19

THOMAS PEARSALL JR et al TRUST

MACK B. & THOMAS J. PEARSALL

WOODS

BILLBOARD

ABANDON MOTEL

US 301 NBL 25' BST

US 301 SBL 25' BST

33 TONS CL I RIPRAP W/62 SY FIL FAB
RIPRAP ON BANKS ONLY
INV=111.44

BDO INV IN =116.06 OUT=112.90 BDO 24" BCCS 2 ELBOWS W/ ROD AND LUG (237) INV= 111.98 HW

3 TONS CL B RIPRAP W/10 SY FIL FAB (236) INV=116.65

SPECIAL CUT BASE DITCH SEE DETAIL I

SPECIAL CUT DITCH SEE DETAIL B

2 TONS CL B RIPRAP W/7 SY FIL FAB (226) INV=119.76

33 TONS CL I RIPRAP W/62 SY FIL FAB INV=111.90

REMOVE 44' 48" RCP AND PLUG OTCB

REMOVE JB, 20' 54" RCP, 10' 48" RCP, BOTH 18" RCPS

PLUG

GRADE TO DRAIN (225) 2GI

SPECIAL CUT BASE DITCH SEE DETAIL I (194) INV=112.90 HW

26 TONS CL I RIPRAP W/50 SY FIL FAB

REMOVE DI AND PIPE

HP

PDE

TDE

PUE

REMOVE

EXISTING R/W

EXISTING PAVEMENT REMOVAL

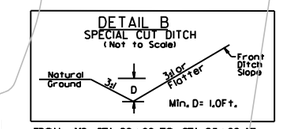
FOR -Y8- PROFILE SEE SHT.44

GRASS SWALE DATA -Y8- 15+00 – 22+26 LT	GRASS SWALE DATA -Y8- 19+04 – 21+08 RT	GRASS SWALE DATA -Y8- 22+00 – 24+50 RT	GRASS SWALE DATA -Y8- 23+00 – 25+38 LT	GRASS SWALE DATA -Y8- 25+30 – 26+50 LT
DA= 4.92ac	DA= 1.94ac	DA= 1.76ac	DA= 1.45ac	DA= 0.84ac
SLOPE= 0.80%	SLOPE= 3.01%	SLOPE= 2.26%	SLOPE= 0.32%	SLOPE= 2.24%
L REQ.= 440'	L REQ.= 72'	L REQ.= 176'	L REQ.= 61'	L REQ.= 84'
L PRO.= 446'	L PRO.= 108'	L PRO.= 250'	L PRO.= 238'	L PRO.= 112'
Q2= 10.15cfs	Q2= 2.56cfs	Q2= 2.72cfs	Q2= 3.92cfs	Q2= 2.48cfs
V2= 1.84ft/s	V2= 1.69ft/s	V2= 1.61ft/s	V2= 1.77ft/s	V2= 1.87ft/s
D2= 0.56'	D2= 0.20'	D2= 0.22'	D2= 1.04'	D2= 0.47'
Q10= 13.68cfs	Q10= NA	Q10= NA	Q10= NA	Q10= NA
V10= 2.01ft/s	V10= NA	V10= NA	V10= NA	V10= NA
D10= 0.65'	D10= NA	D10= NA	D10= NA	D10= NA

CURB & GUTTER LOCATIONS

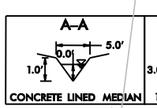
NOTE: 2'-6" MOUNTABLE C&G FOR -Y8- MEDIAN

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

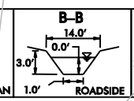


FROM -Y8- STA. 23+00 TO STA. 25+38 LT

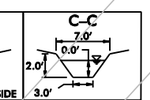
A–A
CONCRETE LINED MEDIAN



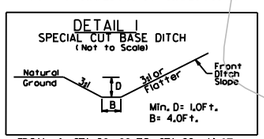
B–B
ROADSIDE



C–C

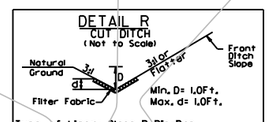


DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 20+00 TO STA. 22+46 LT
FROM -L- STA. 20+00 TO STA. 24+50 RT

DETAIL R
CUT DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM -Y8- STA. 22+46 TO STA. 23+00 LT

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR DIVISION OF HIGHWAYS

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8/17/99

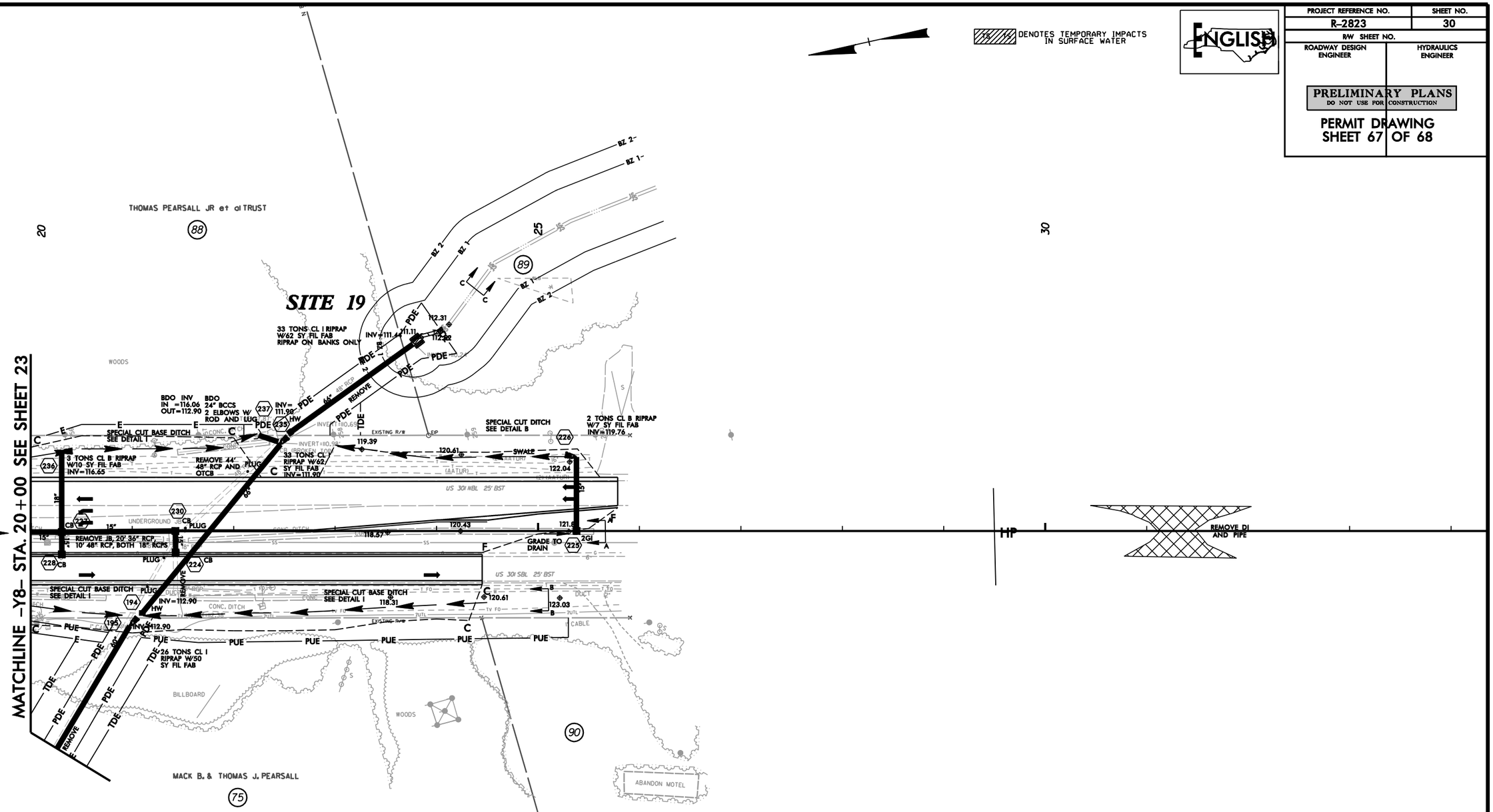
PROJECT REFERENCE NO.	SHEET NO.
R-2823	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 67 OF 68

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

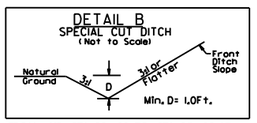
ENGLISH



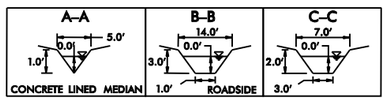
GRASS SWALE DATA -Y8- 15+00 – 22+26 LT	GRASS SWALE DATA -Y8- 19+04 – 21+08 RT	GRASS SWALE DATA -Y8- 22+00 – 24+50 RT	GRASS SWALE DATA -Y8- 23+00 – 25+38 LT	GRASS SWALE DATA -Y8- 25+30 – 26+50 CL
DA= 4.92ac	DA= 1.94ac	DA= 1.76ac	DA= 1.45ac	DA= 0.84ac
SLOPE= 0.80%	SLOPE= 3.01%	SLOPE= 2.26%	SLOPE= 0.32%	SLOPE= 2.24%
L REQ.= 440'	L REQ.= 72'	L REQ.= 176'	L REQ.= 61'	L REQ.= 84'
L PRO.= 446'	L PRO.= 108'	L PRO.= 250'	L PRO.= 238'	L PRO.= 112'
Q2= 10.15cfs	Q2= 2.56cfs	Q2= 2.72cfs	Q2= 3.92cfs	Q2= 2.48cfs
V2= 1.84ft/s	V2= 1.69ft/s	V2= 1.61ft/s	V2= 1.77ft/s	V2= 1.87ft/s
D2= 0.56'	D2= 0.20'	D2= 0.22'	D2= 1.04'	D2= 0.47'
Q10= 13.68cfs	Q10= NA	Q10= NA	Q10= NA	Q10= NA
V10= 2.01ft/s	V10= NA	V10= NA	V10= NA	V10= NA
D10= 0.65'	D10= NA	D10= NA	D10= NA	D10= NA

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -Y8- MEDIAN

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



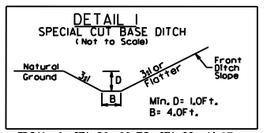
FROM -Y8- STA. 23+00 TO STA. 25+38 LT



EXISTING PAVEMENT REMOVAL

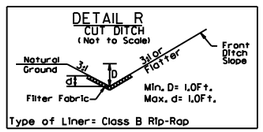
FOR -Y8- PROFILE SEE SHT.44

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 20+00 TO STA. 22+46 LT
FROM -L- STA. 20+00 TO STA. 24+50 RT

DETAIL R
CUT DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM -Y8- STA. 22+46 TO STA. 23+00 LT

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
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RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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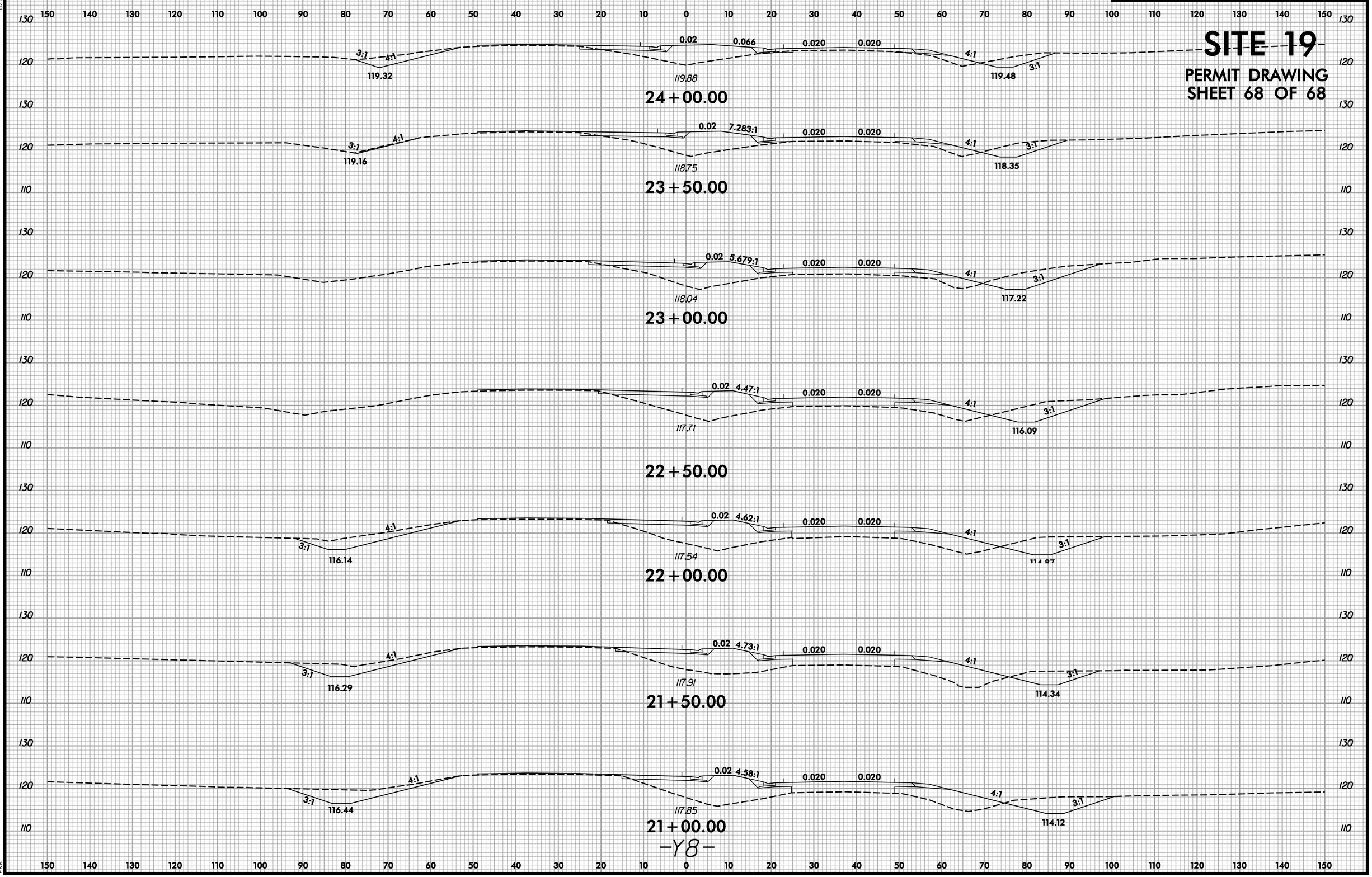
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-160

SITE 19

PERMIT DRAWING
SHEET 68 OF 68



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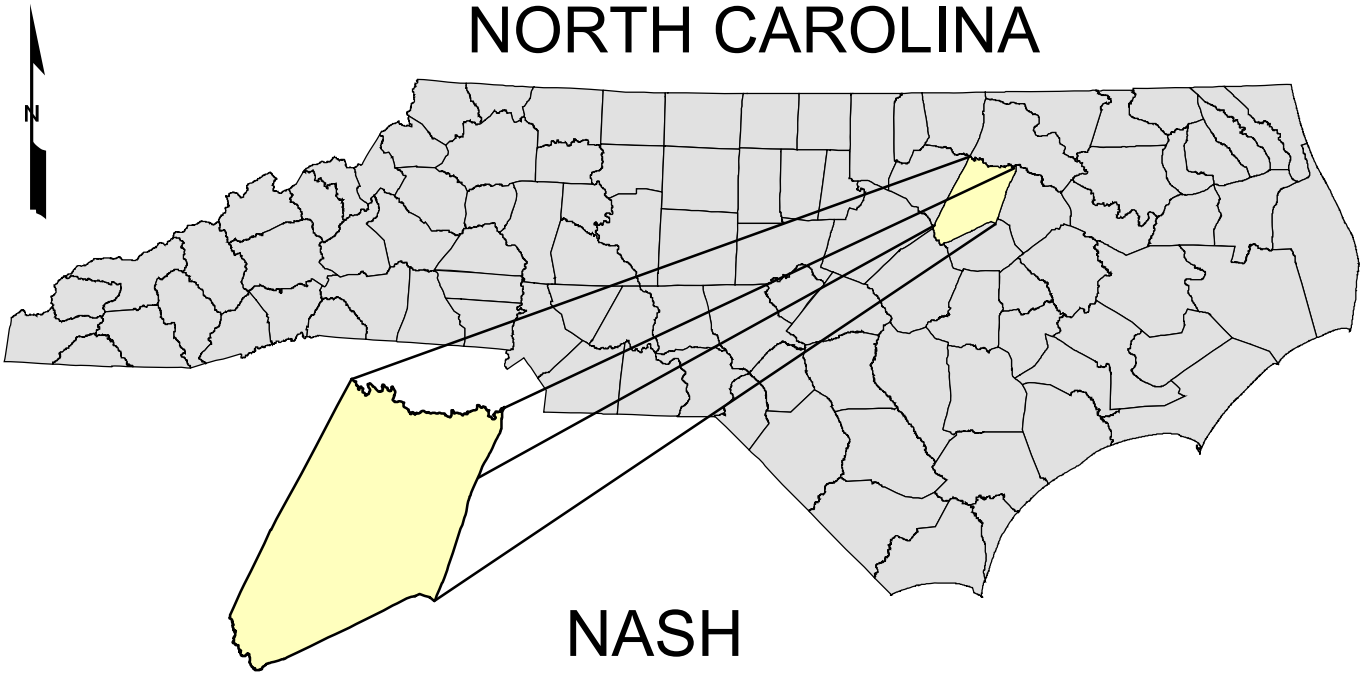
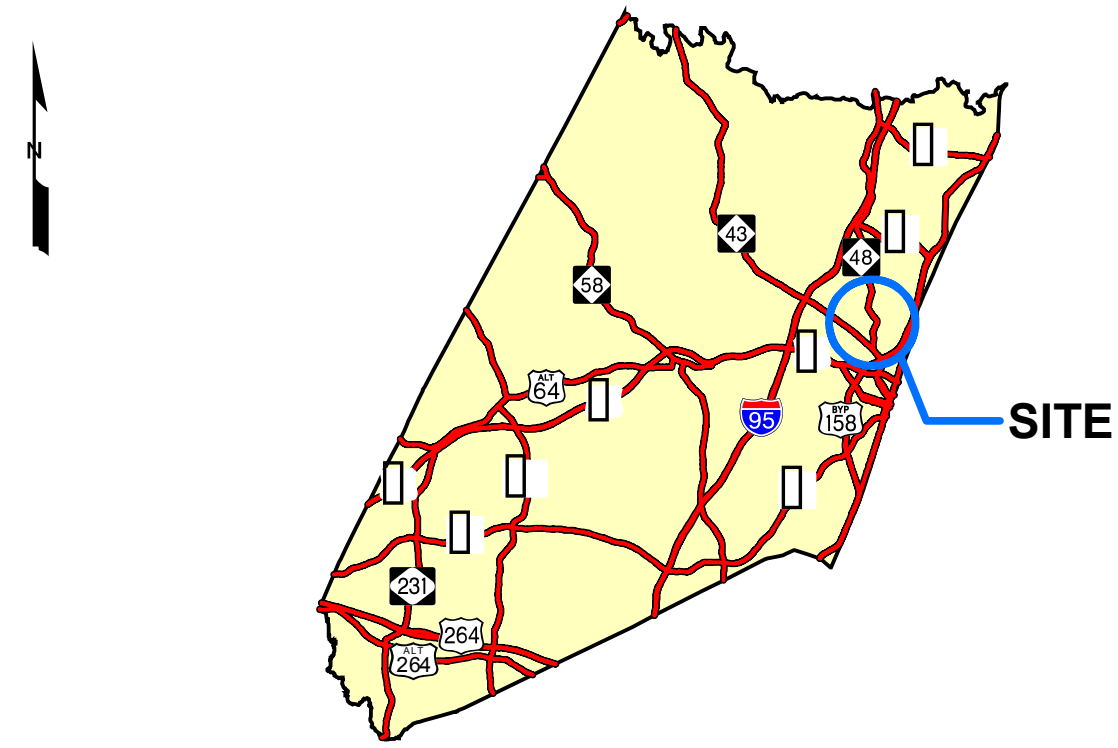




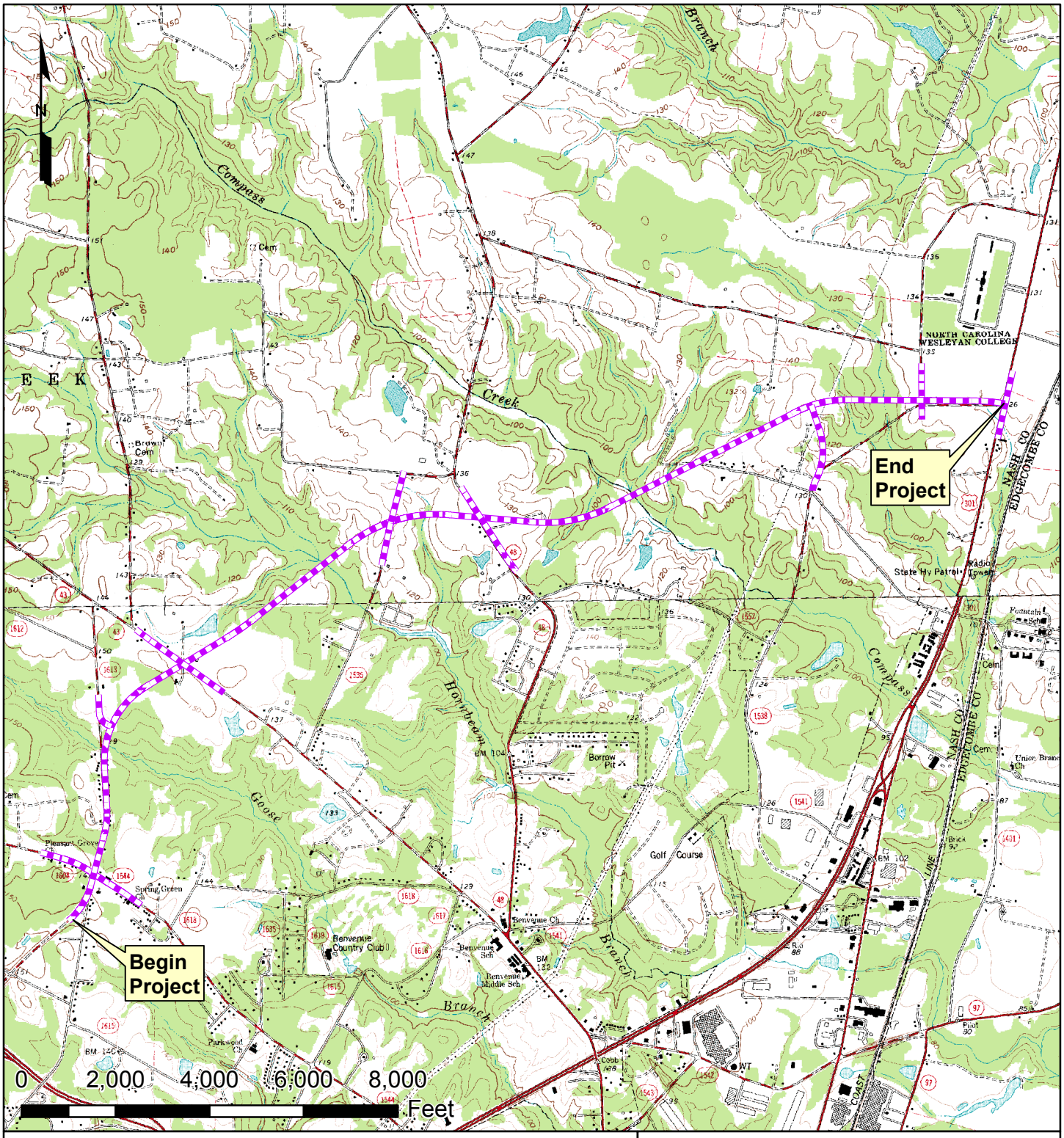
VICINITY MAPS

BUFFER DRAWING SHEET 1 OF 56

NCDOT

DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 34509.2.GV1 (R-2823)
ROCKY MOUNT
NORTHERN CONNECTOR

NOVEMBER 2008



1 inch equals 3,000 feet

LOCATION

NCDOT

DIVISION OF HIGHWAYS
NASH COUNTY
PROJECT: 34509.2.GV1 (R-2823)
ROCKY MOUNT
NORTHERN CONNECTOR

BUFFER DRAWING SHEET 2 OF 56

NOVEMBER 2008

Source: USGS 7.5 Minute Quadrangle, Rocky Mount & Drake, NC

T:\BRIDGE_Maps\R_2823

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	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	2 - 48" RCP	-L- 30+28	X			7865	3903	11768					
2	ROADWAY	-L- 32+50 RT			X				87	1830	1917		
4	9' X 9' RCBC	-L- 49+02	X						10527	6437	16964		
7	BRIDGE	-L- 111+50	X						0	5186	5186		
				X		8967	2235	11202					
9	72" RCP	-L- 135+34	X						14535	9434	23969		
10	78" RCP	-L- 169+16	X						24431	15186	39617		
12	BRIDGE	-L- 182+00	X						8584	7394	15978		
				X		2629	0	2629					
13	78" RCP	-L- 189+80	X						15653	10114	25767		
15	ROADWAY	-L- 231+00	X			180	1530	1710					
16	60" RCP	-L- 231+57	X			6616	5773	12389					
17	8' X 9' RCBC	-L- 239+81	X						14429	8028	22457		
19	66" RCP	-Y8- 23+50 RT	X			1776	411	2187					
TOTAL:						28033	13852	41885	88246	63609	151855		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

NASH COUNTY
PROJECT: C201917 (R-2823)

BUFFER DRAWING SHEET 3 OF 56

BUFFER IMPACTS SUMMARY

		WETLANDS IN BUFFER	
Site	Station	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	-L- 30+28	3268	687
4 / 5	-L- 49+02	41	574
7	-L- 111+50	8967	7217
9	-L- 135+34	0	96
10	-L- 169+16	1174	1626
12	-L- 182+00	7628	4324
13	-L- 189+80	9708	2521
15	-L- 231+00	25	507
16	-L- 231+57	2114	1300
17	-L- 239+81	14199	6891
		47124	25743

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

NASH COUNTY
PROJECT: C201917 (R-2823)

BUFFER DRAWING SHEET 4 OF 68

PROP. NO.	PROPERTY OWNER NAME	PROP. OWNER ADDRESS
5	Benjamin R. Ricks, et al	16084 NC 43, Whitakers, NC 27891
9	William D. Driver, Jr.	3246 Turkey Foot Rd., Rocky Mount, NC 27804
10	Rebecca D. Paris	3545 Mansfield Dr., Rocky Mount, NC 27803
11	Miriam V. Hayes	1801 Woodruff Rd., Rocky Mount, NC 27804
12	Durwood Lee Shreve	1881 Woodruff Rd., Rocky Mount, NC 27804
29 and 32	Richard H. Minor	1444 Jeffreys Rd., Rocky Mount, NC 27804
33	Three MR LTD Partnership	2687 Old Bailey Rd., Nashville, NC 27856
34	Aubry D. Woodruff	2233 Boddie Mill Pond Rd., Nashville NC 27856
42	Alma W. Griffen, Heirs	111 Muscadine Road, Rocky Mount, NC 27804
43 and 52	E. C. Powell	PO Box 2592, Rocky Mount, NC 27804
44	Stanley L. West	1704 Goldrock Rd., Rocky Mount, NC 27804
50	William H. Overman	2709 Coleberry Trail, Rocky Mount, NC 27804
51	Satpal Singh Rathie	115 York Hill Dr., Cary, NC 27513
63 & 65	William Herbert Turner	6316 Settlement Road, Julian, NC 27283
66	Mack B. Pearsall	1 Page Avenue, Ste. 215, Asheville, NC 28801
67	Walter I. Tharrington	3104 Bishop Road, Rocky Mount, NC 27804
73	NC Wesleyan College	3400 N. Wesleyan Blvd., Rocky Mount, NC 27804
88	Thomas Pearsall, Jr. et al Trust	1 Page Avenue, Ste. 215, Asheville, NC 28801
89	Joco Development Co.	P.O. Box 7533, Rocky Mount, NC 27804

BUFFER IMPACTS

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

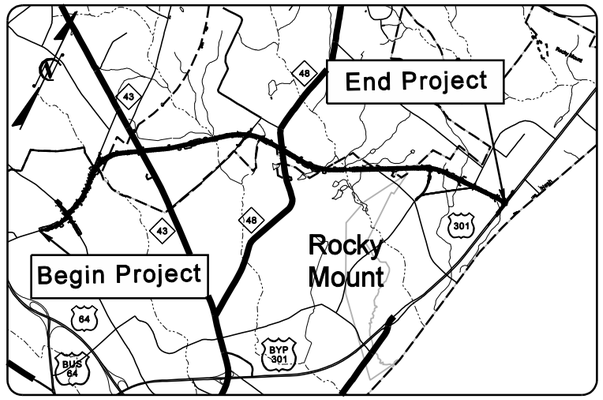
NASH COUNTY
PROJECT: 34509.2.GV1 (R-2823)

BUFFER DRAWING SHEET 5 OF 56

T.I.P. PROJECT: R-2823

CONTRACT: C201917

SEE SHEET 1-B FOR CONVENTIONAL PLAN SHEET SYMBOLS



VICINITY MAP

NOTES:
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
2. THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
3. A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ROCKY MOUNT AND DORTCHES.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

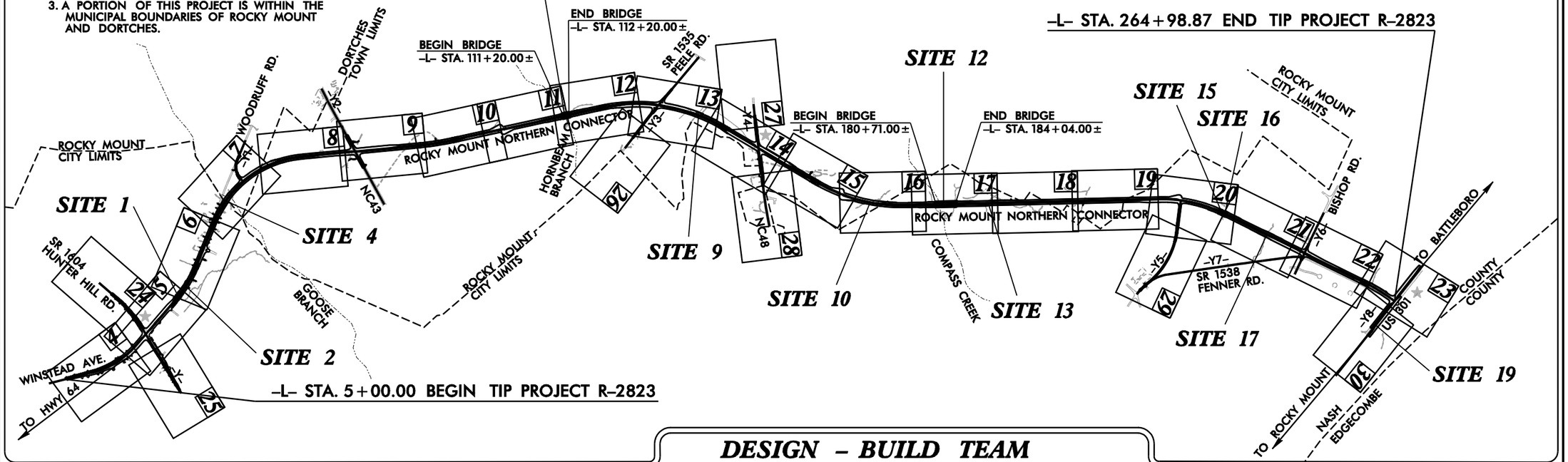
NASH COUNTY

LOCATION: *ROCKY MOUNT NORTHERN CONNECTOR FROM SR 1604 (HUNTER HILL RD.) TO US 301*

TYPE OF WORK: *BUFFER PERMIT DRAWINGS*

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2823	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
34509.2.GV1	STP-0431(24)	CONST.	

BUFFER DRAWING
SHEET 6 OF 56



DESIGN - BUILD TEAM

GRAPHIC SCALES

PLANS: 50 0 50 100

PROFILE (HORIZONTAL): 50 0 50 100

PROFILE (VERTICAL): 10 0 10 20

DESIGN DATA

ADT 2009	=	12,500
ADT 2030	=	24,000
DHV	=	10%
D	=	60%
T	=	7%
V	=	60 mph

*(TTST = 3%,DUAL= 4%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2823.....	4.842 mi
LENGTH STRUCTURE TIP PROJECT R-2823.....	0.082 mi
TOTAL LENGTH TIP PROJECT R-2823.....	4.924 mi

PLANS PREPARED BY :
RUMMEL, KLEPPER & KAHL, LLP
consulting engineers
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
FOR
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE:
MAY 20, 2008

J. T. Peacock, Jr., P.E.
PROJECT ENGINEER

Brandon J. McInnis, P.E.
PROJECT DESIGN ENGINEER

CONTRACTOR :
PLT CONSTRUCTION CO., INC.
PLT CONSTRUCTION CO., INC.
5676 THOMPSON CHAPEL CHURCH ROAD
WILSON, NORTH CAROLINA 27896

HYDRAULICS ENGINEER
SIGNATURE: ***P.E.***
ROADWAY DESIGN ENGINEER
SIGNATURE: ***P.E.***

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR ***DATE***

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8/17/99

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-L-	9+20.00	20+90.46	RT
2'-6" C&G	-L-	21+70.52	27+60.04	RT
2'-6" C&G	-L-	14+84.50	21+48.87	LT
2'-6" C&G	-L-	22+25.97	29+48.22	LT
1'-6" MOUNTABLE C&G	-Y-	24+05.00	27+15.00	MED
2'-6" C&G	-Y-	22+97.82	28+05.00	LT

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
R-2823	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 7 OF 56

MATCHLINE -Y- STA. 17+50 SEE SHEET 24

MATCHLINE -L- STA. 17+00 SEE SHEET 4

MATCHLINE -L- STA. 31+00 SEE SHEET 6

MATCHLINE -Y- STA. 27+00 SEE SHEET 25

SITE 1

DAUGHTRIDGE ENTERPRISES INC

DAVID W. COMBS

BENJAMIN R. RICKS, et al

SAINT PAUL BAPTIST CHURCH

ISBK BAPTIST CHURCH

BARBARA H. BRADSHAW

WILLIAM D. DRIVER

MORRIS J. HURT

REBECCA D. PARIS

CHARLES S. BARTHOLOMEW

WILLIAM D. DRIVER, JR.

HP STA. 21+20.43 -L-

LP STA. 17+37.56 -L-

LP STA. 29+80.52 -L-

SR 1604 HUNTER HILL RD

SR 1613 WINSTEAD AVE. EXT.

480' LEFT TURN LANES

SPECIAL CUT DITCH SEE DETAIL B

LATERAL BASE DITCH SEE DETAIL D

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL J

48" WW FENCE

LATERAL V DITCH SEE DETAIL A

RIPRAP PAD DATA
-L- 21+80 RT
Q10= 14.93cfs
V10= 0.93ft/s

PREFORMED SCOUR HOLE DATA
-L- 29+55 LT
Q10= 8.41cfs
V10= 0.98ft/s

PER 4B MEETING:
DO NOT BURY #107 1'

5 TONS CL B RIPRAP W/14 SY FIL FAB
INV=128.14

45 TONS CL I RIPRAP W/75 SY FIL FAB RIPRAP ON BANKS ONLY
INV=126.40

INV=141.25

INV=132.58

REMOVE

PUE

EXISTING R/W WIDTH VARIABLE

DETAIL C
PREFORMED SCOUR HOLE

PLAN VIEW

Pipe or Ditch Outlet

Permanent Soil Reinforcement Matting (PSRM)

Install level and flush with natural ground.

Square Preformed Scour Hole (PSH)

(Rip Rap in basin not shown for clarity)

Seed with native or desired wildflowers.

B= 4.5Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

SECTION A-A

Liner: Class B Rip Rap 1.0' thick with Filter Fabric

5/05

A-A
11.0'
0.0'
2.5'
5.0'
4:00:40" E

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

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

FROM -L- STA. 25+00 TO STA. 27+26 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

Min. D= 1.0Ft.

FROM -Y- STA. 20+00 TO STA. 21+00 RT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)

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

FROM -L- STA. 17+38 TO STA. 21+00 LT
FROM -L- STA. 26+00 TO STA. 29+50 LT
FROM -Y- STA. 21+00 TO STA. 21+76 RT

DETAIL J
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
D=1.0'

FROM -L- STA. 22+45 TO STA. 26+00 LT
(LINE 25+00 - 26+00 W/PSRM)

FOR -L- PROFILE SEE SHT. 31
FOR -Y- PROFILE SEE SHTS. 40 & 41

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/17/99

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-L-	9+20.00	20+90.46	RT
2'-6" C&G	-L-	21+70.52	27+60.04	RT
2'-6" C&G	-L-	14+84.50	21+48.87	LT
2'-6" C&G	-L-	22+25.97	29+48.22	LT
1'-6" MOUNTABLE C&G	-Y-	24+05.00	27+15.00	MED
2'-6" C&G	-Y-	22+97.82	28+05.00	LT

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
R-2823	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 8 OF 56

MATCHLINE -Y- STA. 17+50 SEE SHEET 24

MATCHLINE -L- STA. 17+00 SEE SHEET 4

MATCHLINE -L- STA. 31+00 SEE SHEET 6

MATCHLINE -Y- STA. 27+00 SEE SHEET 25

SITE 1

RIPRAP PAD DATA
-L- 28+80 RT
Q10= 14.93cfs
V10= 0.93ft/s

PREFORMED SCOUR HOLE DATA
-L- 29+55 LT
Q10= 8.41cfs
V10= 0.98ft/s

PER 4B MEETING: DO NOT BURY #107 1'

LP STA. 17+37.56 -L-

HP STA. 21+20.43 -L-

LP STA. 29+80.52 -L-

DAUGHTRIDGE ENTERPRISES INC

DAVID W. COMBS

BENJAMIN R. RICKS, et al

SAINT PAUL BAPTIST CHURCH

ISBK BAPTIST CHURCH

BARBARA H. BRADSHAW

WILLIAM D. DRIVER

REBECCA D. PARIS

MORRIS J. HURT

WILLIAM D. DRIVER, JR.

CHARLES S. BARTHOLOMEW

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL J

LATERAL BASE DITCH SEE DETAIL D

LATERAL V DITCH SEE DETAIL A

48" WW FENCE

480' LEFT TURN LANES

PSH SEE DETAIL C

5 TONS CL B RIPRAP W/14 SY FIL FAB INV=128.14

40 TONS CL I RIPRAP W/75 SY FIL FAB RIPRAP ON BANKS ONLY INV=126.40

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

FROM -L- STA. 25+00 TO STA. 27+26 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

FROM -Y- STA. 20+00 TO STA. 21+00 RT

DETAIL C
PREFORMED SCOUR HOLE

PLAN VIEW

SECTION A-A

B= 4.5Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

-L- STA. 28+80 RT
-L- STA. 29+55 LT

5/05

DETAIL D
LATERAL BASE DITCH
(Not to Scale)

FROM -L- STA. 17+38 TO STA. 21+00 LT
FROM -L- STA. 26+00 TO STA. 29+50 LT
FROM -Y- STA. 21+00 TO STA. 21+76 RT

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

FROM -L- STA. 22+45 TO STA. 26+00 LT
(LINE 25+00 - 26+00 W/PSRM)

FOR -L- PROFILE SEE SHT. 31
FOR -Y- PROFILE SEE SHTS. 40 & 41

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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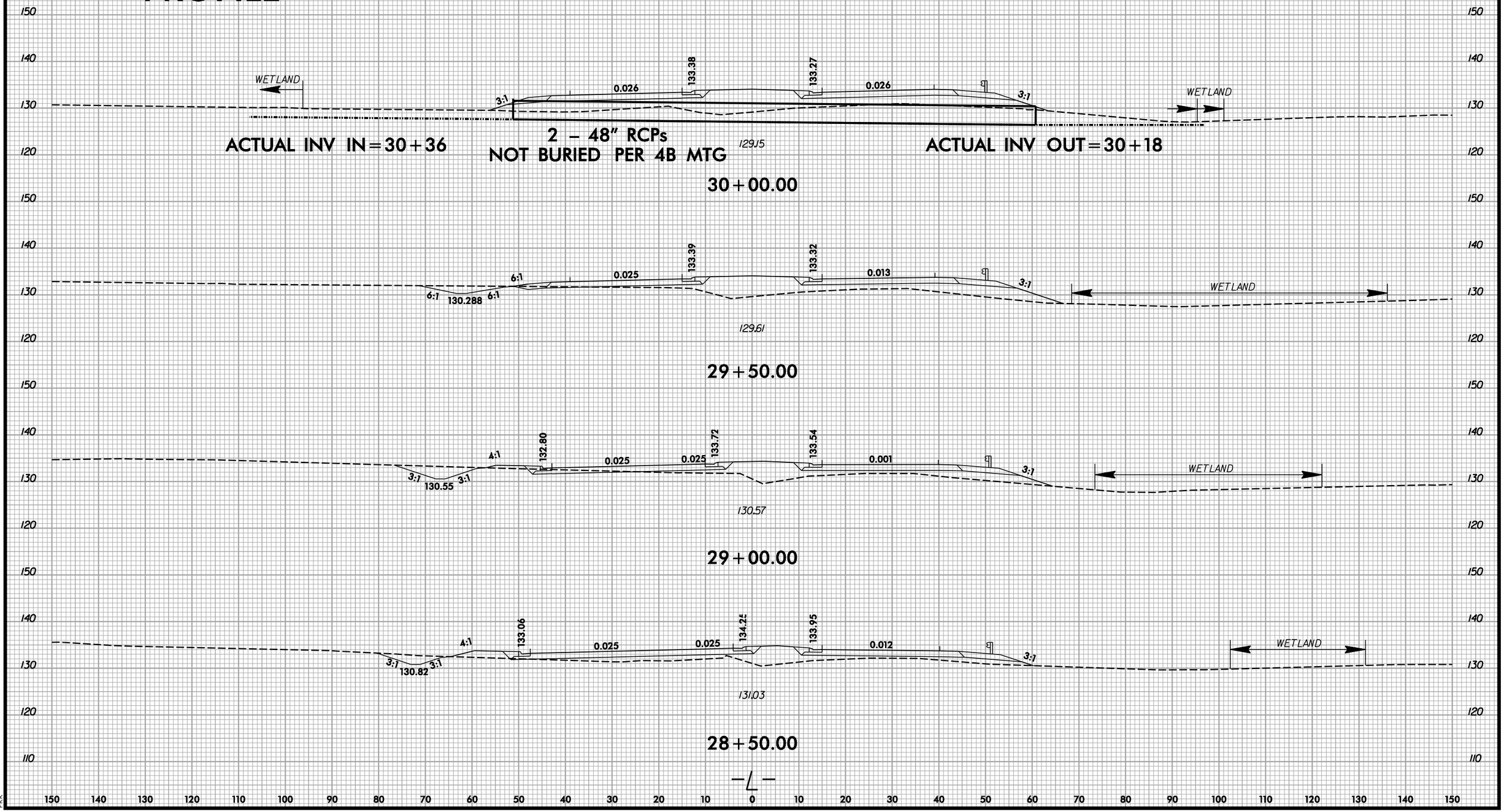
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-12

SITE 1
BUFFER DRAWING
SHEET 9 OF 56

STREAMLINE PROFILE



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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-13

SITE 1

BUFFER DRAWING
SHEET 10 OF 56

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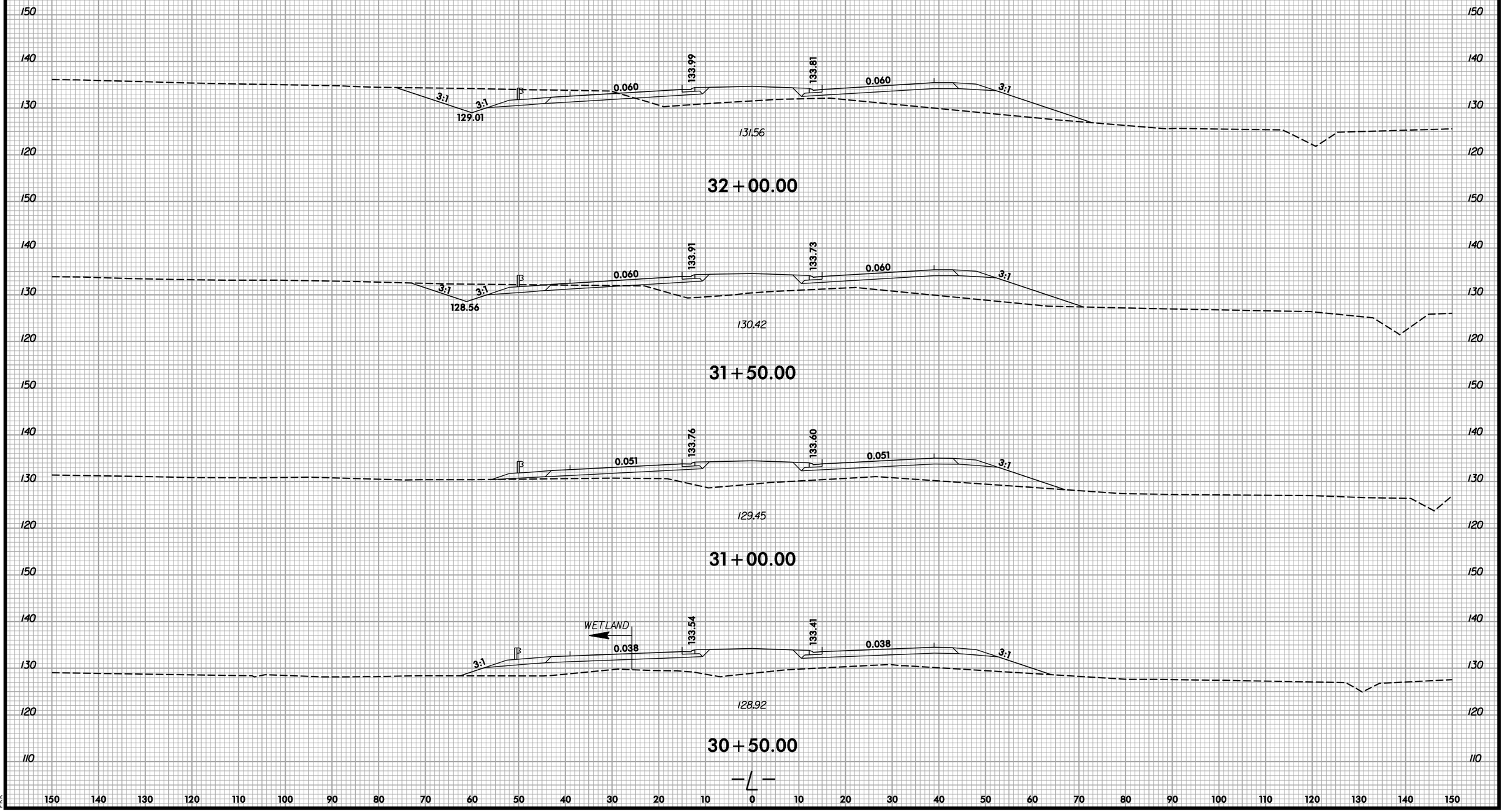

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8/17/99

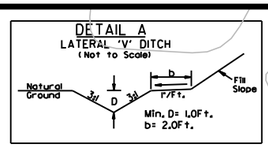
PROJECT REFERENCE NO.	SHEET NO.
R-2823	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 11 OF 56

ENGLISH

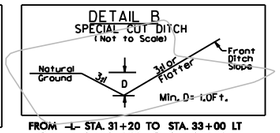
DETAIL A
LATERAL 'V' DITCH
(Not to Scale)



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

FROM -L- STA. 44+00 TO STA. 44+50 RT

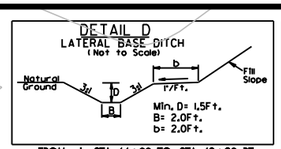
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.0Ft.

FROM -L- STA. 31+20 TO STA. 33+00 LT
FROM -L- STA. 35+00 TO STA. 37+50 LT

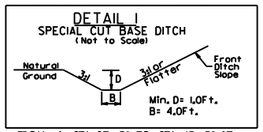
DETAIL D
LATERAL BASE DITCH
(Not to Scale)



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

FROM -L- STA. 44+00 TO STA. 48+20 RT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



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

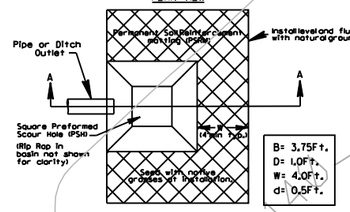
FROM -L- STA. 37+50 TO STA. 45+50 LT

MITIGABLE IMPACTS ZONE 1

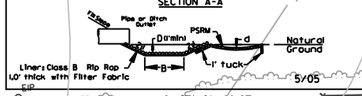
MITIGABLE IMPACTS ZONE 2

DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW



SECTION A-A



5/05

-L- STA. 31+20 LT

MATCHLINE -L- STA. 31+00 SEE SHEET 5

MATCHLINE -L- STA. 44+50 SEE SHEET 7

BENJAMIN R. RICKS, et al (5)

TOBY E. MITCHELL (16)

B.W. VARNELL, HEIRS (14)

TALMAGE LEE WELLS (17)

PAMELA B. GARDNER (22)

WADE L. MEDLIN (23)

ANNIE D. BARTHOLOMEW (19)

REBECCA D. PARIS (10)

MIRIAM V. HAYES (11)

DURWOOD LEE SHREVE (12)

B.W. VARNELL, HEIRS (13)

JOHN R. MORRIS (15)

SHARON B. LANDIS (18)

TAREK R. TRAISH (20)

CLYDE M. KEEN (21)

CLYDE M. KEEN (24)

SITE 2

CULTIVATED

WOODS

SOIL

WOODRUFF RD 23' BST

GOOSE BRANCH DR 22' BST

PSH SEE DETAIL H

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT BASE DITCH SEE DETAIL I

48" WW FENCE

1 TONS CL B RIPRAP W/5 SY. FIL FAB INV = 124.73

LATERAL BASE DITCH SEE DETAIL D

TO LP

FOR -L- PROFILE SEE SHTS. 31 & 32

CURB & GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-L-	39+04.00	40+60.63	RT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

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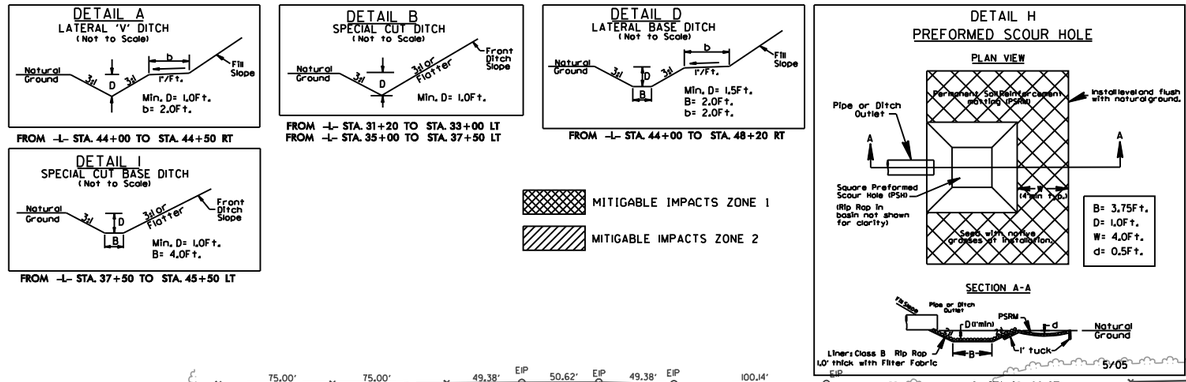
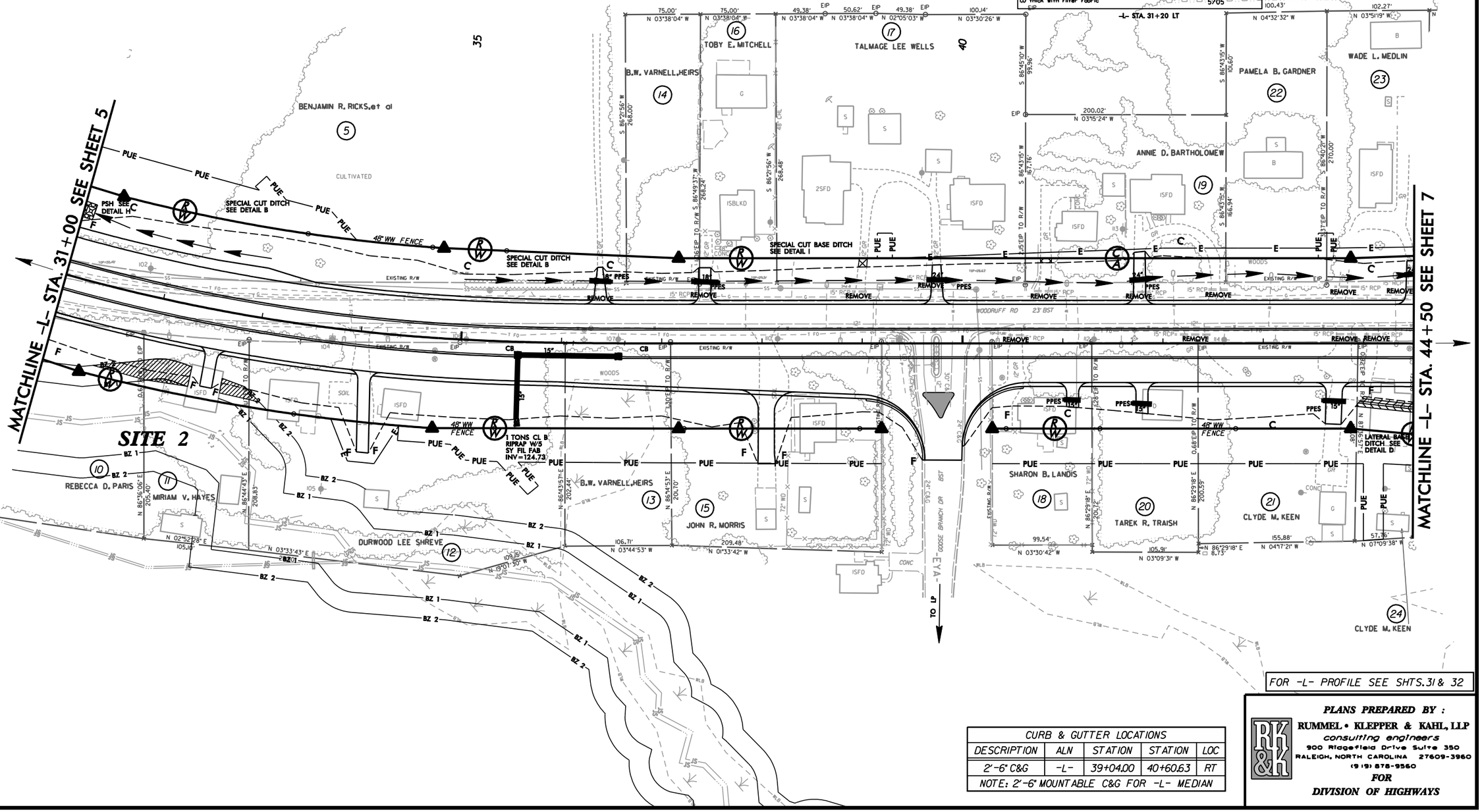
PROJECT REFERENCE NO.	SHEET NO.
R-2823	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 12 OF 56

ENGLISH





CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-L-	39+04.00	40+60.63	RT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

PLANS PREPARED BY :
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-13

SITE 2

BUFFER DRAWING
SHEET 13 OF 56

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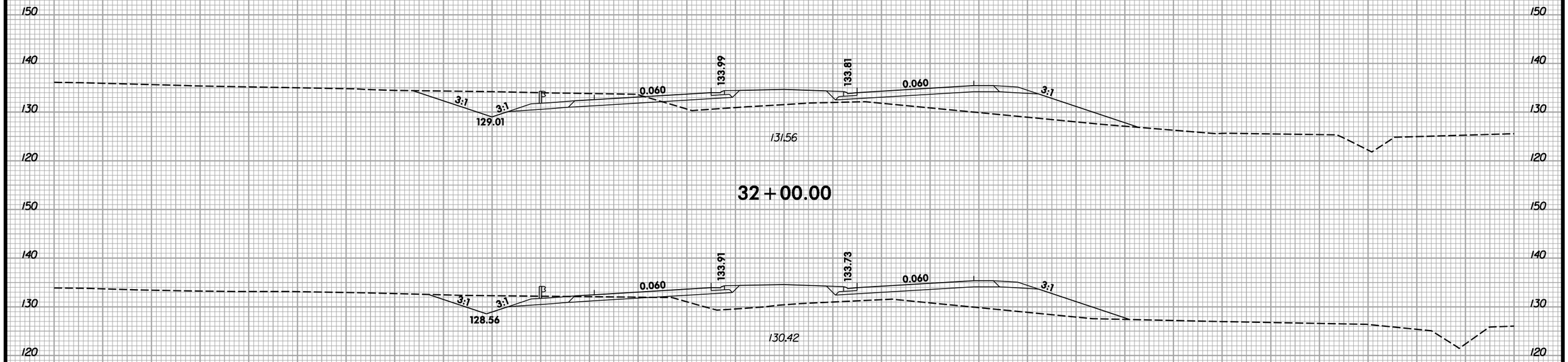
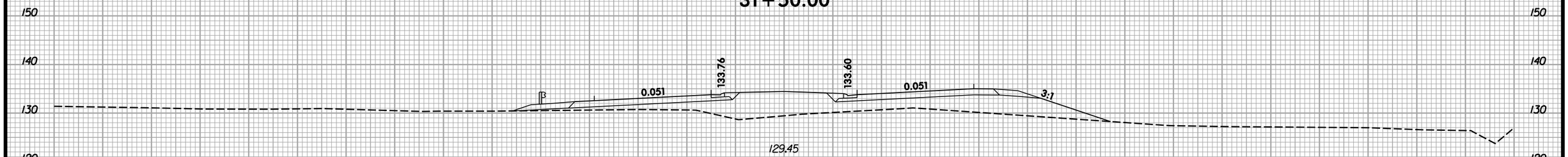
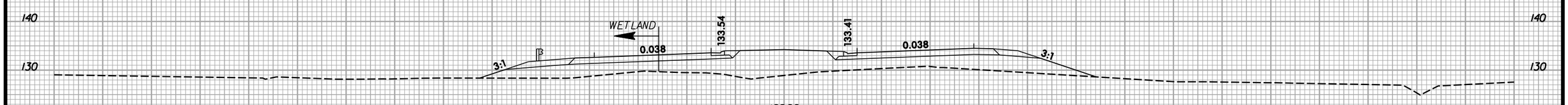


32+00.00

31+50.00



31+00.00



30+50.00

—℄—

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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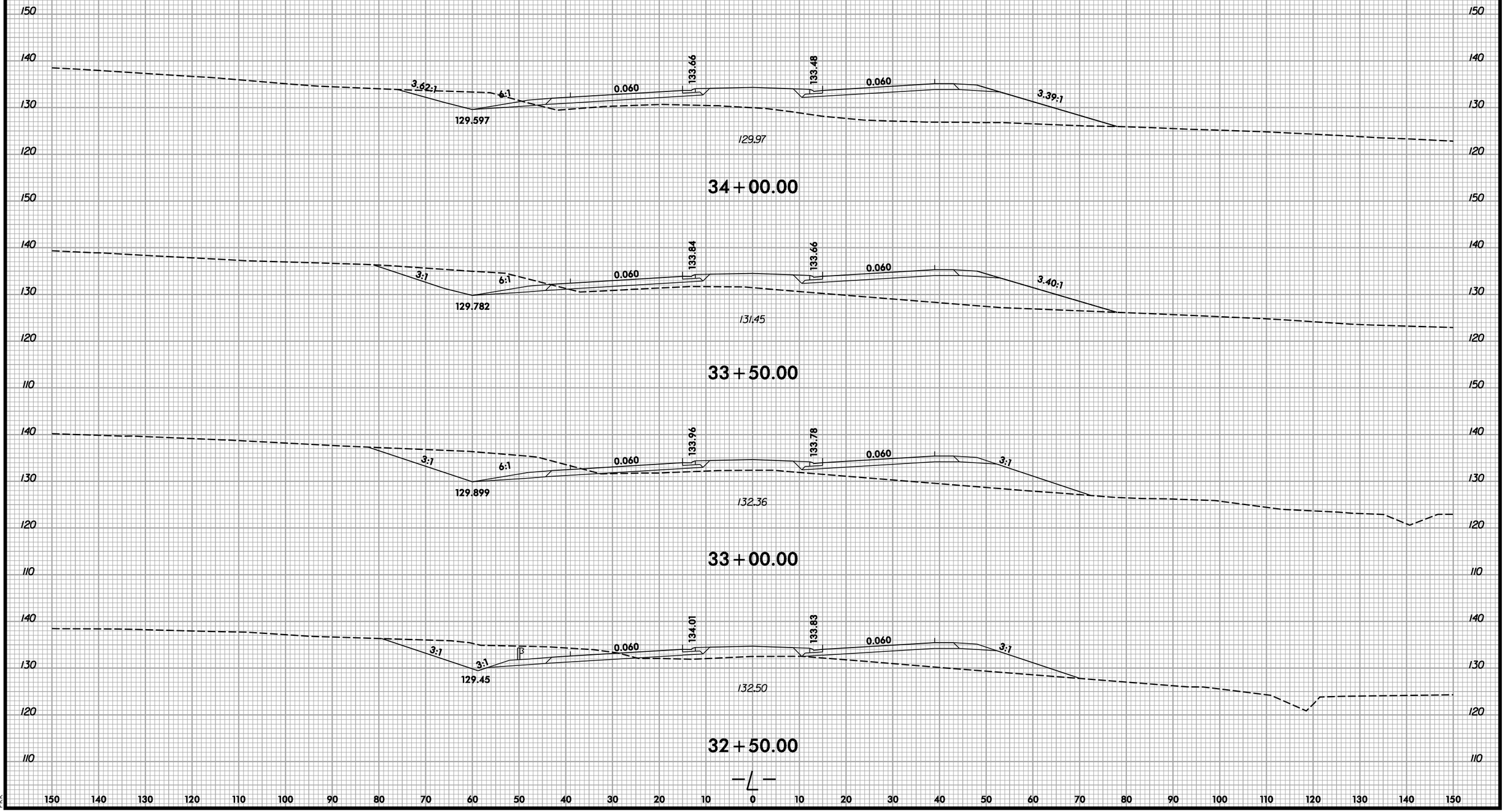
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-14

SITE 2

BUFFER DRAWING
SHEET 14 OF 56



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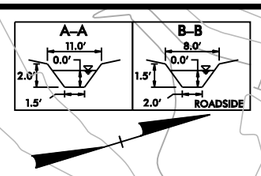
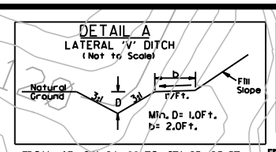
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

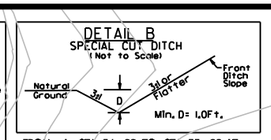
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 15 OF 56

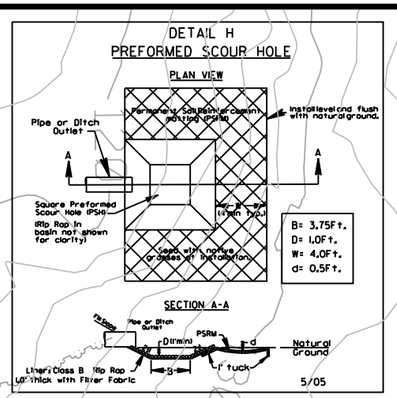




FROM -Y1- STA. 14+00 TO STA. 15+25 RT
FROM -Y1- STA. 14+00 TO STA. 16+00 LT



FROM -L- STA. 54+09 TO STA. 55+00 LT
FROM -Y1- STA. 16+00 TO STA. 17+20 LT

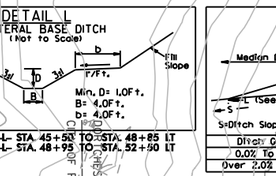


-L- STA. 48+20 RT

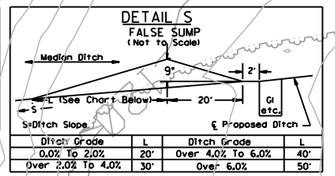
GRASS SWALE DATA -L- 41+00 – 48+00 RT	GRASS SWALE DATA -L- 48+25 – 48+85 LT
DA= 2.35ac	DA= 15.58ac
SLOPE= 0.36%	SLOPE= 0.25%
L REQ.= 235'	L REQ.= NA
L PRO.= 270'	L PRO.= NA
Q2= 6.93cfs	Q2= 19.19cfs
V2= 1.44fps	V2= 1.64fps
D2= 0.98'	D2= 1.00'
Q10= 8.72cfs	Q10= 26.43cfs
V10= 1.68fps	V10= 2.01fps
D10= 1.02'	D10= 1.09'
GRASS SWALE DATA -L- 48+95 – 49+50 LT	**GRASS SWALE DATA -Y1- 14+00 – 17+20 LT**
DA= 6.09ac	DA= 1.44ac
SLOPE= 0.82%	SLOPE= 0.92%
L REQ.= NA	L REQ.= 144'
L PRO.= NA	L PRO.= 320'
Q2= 8.04cfs	Q2= 3.19cfs
V2= 1.70fps	V2= 1.79fps
D2= 0.51'	D2= 0.73'
Q10= 11.07cfs	Q10= NA
V10= 1.95fps	V10= NA
D10= 0.59'	D10= NA

PREFORMED SCOUR HOLE DATA -L- 48+20 RT
DA= 8.72ac
Q10= 8.72cfs
V10= 0.99fps

RIPRAP PAD DATA -L- 50+75 RT
Q10= 14.32cfs
V10= 0.92fps

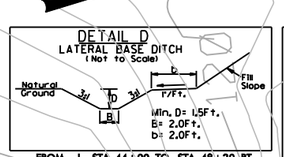


FROM -L- STA. 45+50 TO STA. 48+85 LT
FROM -L- STA. 48+95 TO STA. 52+50 LT



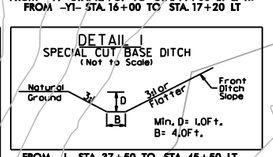
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-Y1- STA. 14+24 LT



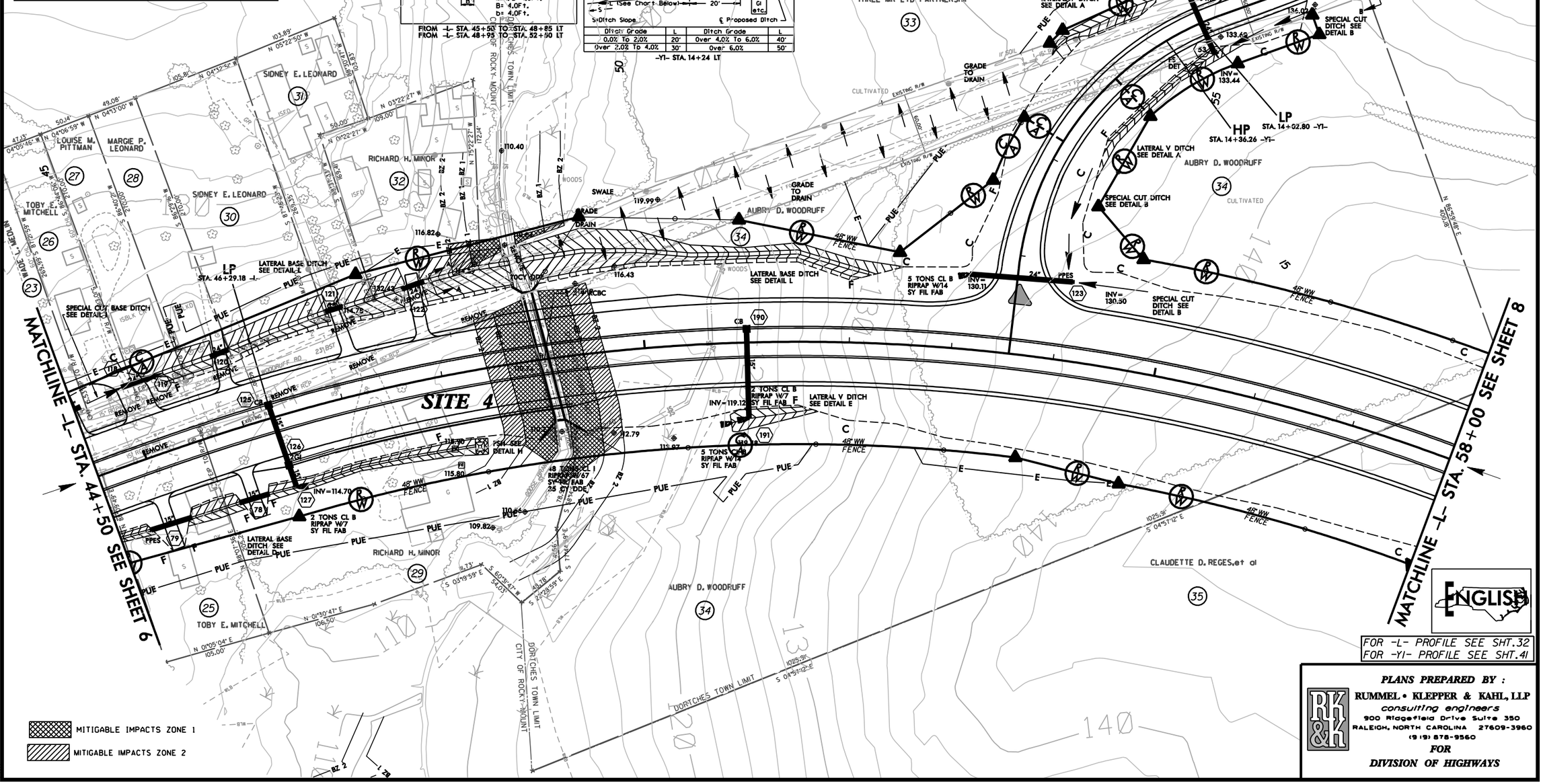
FROM -L- STA. 44+00 TO STA. 48+20 RT

FROM -L- STA. 50+80 TO STA. 52+00 RT



FROM -L- STA. 37+50 TO STA. 45+50 LT

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	46+30.02	49+23.75	RT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				



FOR -L- PROFILE SEE SHT.32
FOR -Y1- PROFILE SEE SHT.41

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FOR
DIVISION OF HIGHWAYS

ENGLISH

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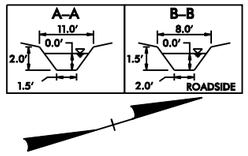
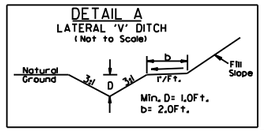
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

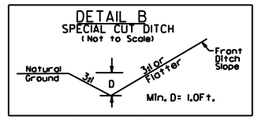
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 16 OF 56

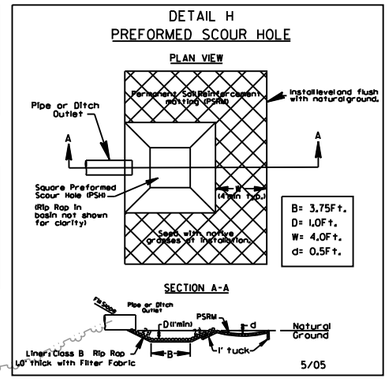




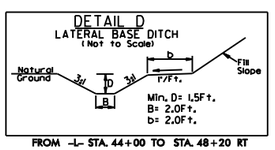
FROM -Y1- STA. 14+00 TO STA. 15+25 RT
FROM -Y1- STA. 14+00 TO STA. 16+00 LT



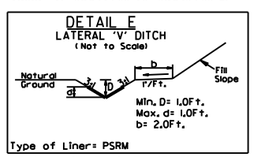
FROM -L- STA. 54+09 TO STA. 55+00 LT
FROM -L- STA. 12+89 TO STA. 14+00 LT & RT
FROM -Y1- STA. 16+00 TO STA. 17+20 LT



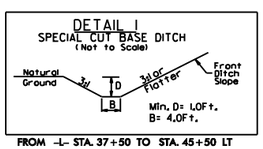
-L- STA. 48+20 RT



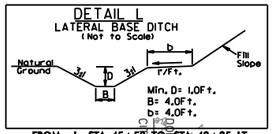
FROM -L- STA. 44+00 TO STA. 48+20 RT



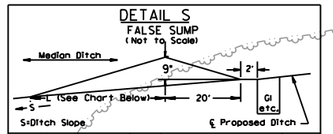
FROM -L- STA. 50+80 TO STA. 52+00 RT



FROM -L- STA. 37+50 TO STA. 45+50 LT



FROM -L- STA. 45+50 TO STA. 48+85 LT
FROM -L- STA. 48+95 TO STA. 52+50 LT



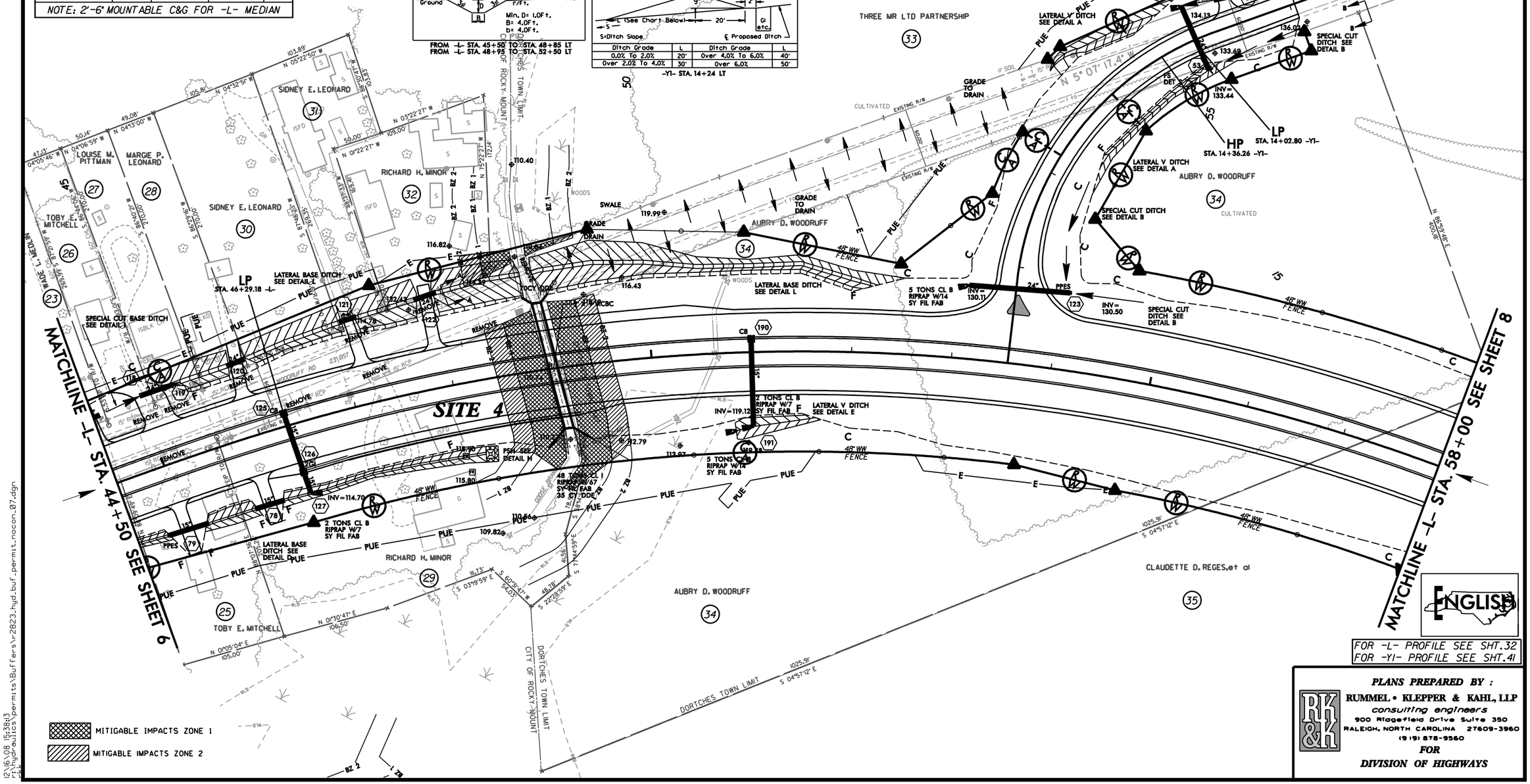
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

-Y1- STA. 14+24 LT

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	46+30.02	49+23.75	RT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

GRASS SWALE DATA -L- 41+00 – 48+00 RT	GRASS SWALE DATA -L- 48+25 – 48+85 LT
DA= 2.35ac SLOPE= 0.30% L REQ.= 235' L PRO.= 270' Q2= 6.93cfs V2= 1.44fps D2= 0.98' Q10= 8.72cfs V10= 1.68fps D10= 1.02'	DA= 15.58ac SLOPE= 0.25% L REQ.= NA L PRO.= NA Q2= 19.19cfs V2= 1.64fps D2= 1.00' Q10= 26.43fs V10= 2.01fps D10= 1.09'
GRASS SWALE DATA -L- 48+95 – 49+50 LT	**GRASS SWALE DATA -Y1- 14+00 – 17+20 LT**
DA= 6.09ac SLOPE= 0.82% L REQ.= NA L PRO.= NA Q2= 8.04cfs V2= 1.70fps D2= 0.51' Q10= 11.07cfs V10= 1.95fps D10= 0.59'	DA= 1.44ac SLOPE= 0.92% L REQ.= 144' L PRO.= 320' Q2= 3.19cfs V2= 1.79fps D2= 0.73' Q10= NA V10= NA D10= NA

PREFORMED SCOUR HOLE DATA -L- 48+20 RT
DA= 2.35ac Q10= 8.72cfs V10= 0.99fps
RIPRAP PAD DATA -L- 50+75 RT
Q10= 14.32cfs V10= 0.92fps



FOR -L- PROFILE SEE SHT.32
FOR -Y1- PROFILE SEE SHT.41

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 17 OF 56

-L-

PI = 32+65.00
EL = 134.64'
VC = 430'
K = 374

(+)0.5000%
(-)0.6500%
(+)0.89% LT
(-)0.32% LT
(-)0.75% LT
(-)0.6500%
(-)2.3500%
(-)2.59% LT
(-)0.60% LT
(-)2.13% LT
(-)3.26% RT
(-)2.3500%

PROPOSED GRADE
EXISTING GROUND

PI = 41+25.00
EL = 129.05'
VC = 350'
K = 206

BEG. SP. CUT DITCH
-L- STA.35+00 LT
EL. 129.20

END SP. CUT DITCH
-L- STA.33+00 LT
EL. 129.90

END SP. CUT DITCH
BEG. SP. CUT BASE DITCH
-L- STA.37+50 LT
EL. 128.39

PI -L- STA. 41+00 LT
EL. 125.77

PI -L- STA. 43+00 LT
EL. 120.60

PI -L- STA. 44+00 LT
EL. 120.00

PI -L- STA. 45+50 RT
EL. 114.95

BEG. LAT. BASE DITCH
-L- STA. 44+00 RT
EL. 119.84

END SP. CUT BASE DITCH
BEG. LAT. BASE DITCH
-L- STA.45+50 LT
EL. 116.81

170 160 150 140 130 120 110 100 90 80

32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00

RR SPIKE IN BASE OF 8" OAK
-L- STA. 48+90.14 163.45' LT
ELEV.= 114.83'

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 9'x9' RCBC
STA.49+02 -L-

DRAINAGE AREA	1.0	SQ.MI.
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 700	CFS
DESIGN HW ELEVATION	= 120.4	FT
100 YEAR DISCHARGE	= 900	CFS
100 YEAR HW ELEVATION	= 121.6	FT
OVERTOPPING FREQUENCY	= 50 +	YRS
OVERTOPPING DISCHARGE	= 760	CFS
OVERTOPPING ELEVATION	= 121.1	FT

-Y1- STA.17+96.51=
-L- STA.53+56.26

EXISTING GROUND
PROPOSED GRADE

PI = 45+85.00
EL = 118.24'
VC = 570'
K = 140

END LAT. BASE DITCH
-L- STA. 48+20 RT
EL. 114.14

9'x9' RCBC

PI -L- STA. 51+00 LT
EL. 118.71

(+)11.7192%
(-)0.30% RT
(-)2.13% LT
(-)0.25% LT
(+)0.82% LT
(+)4.97% LT
(+)6.73% LT
(+)5.61% RT
(+)3.66% LT

PI -L- STA. 48+25 LT
EL. 110.95

PI -L- STA. 49+50 LT
EL. 111.25

BEG. SP. CUT DITCH
-L- STA. 54+09 LT
EL. 130.50

END SP. CUT DITCH
-L- STA. 55+00 LT
EL. 133.83

END LAT. BASE DITCH
-L- STA. 52+50 LT
EL. 128.81

END LAT. V DITCH
-L- STA. 52+00 RT
EL. 124.73

BEG. LAT. BASE DITCH
-L- STA. 48+95 LT
EL. 110.80

BEG. LAT. V DITCH
-L- STA. 50+80 RT
EL. 118.00

END LAT. BASE DITCH
-L- STA. 48+85 LT
EL. 110.80

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.6 THRU 8

170 160 150 140 130 120 110 100 90 80

46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00 56+00 57+00 58+00 59+00 60+00

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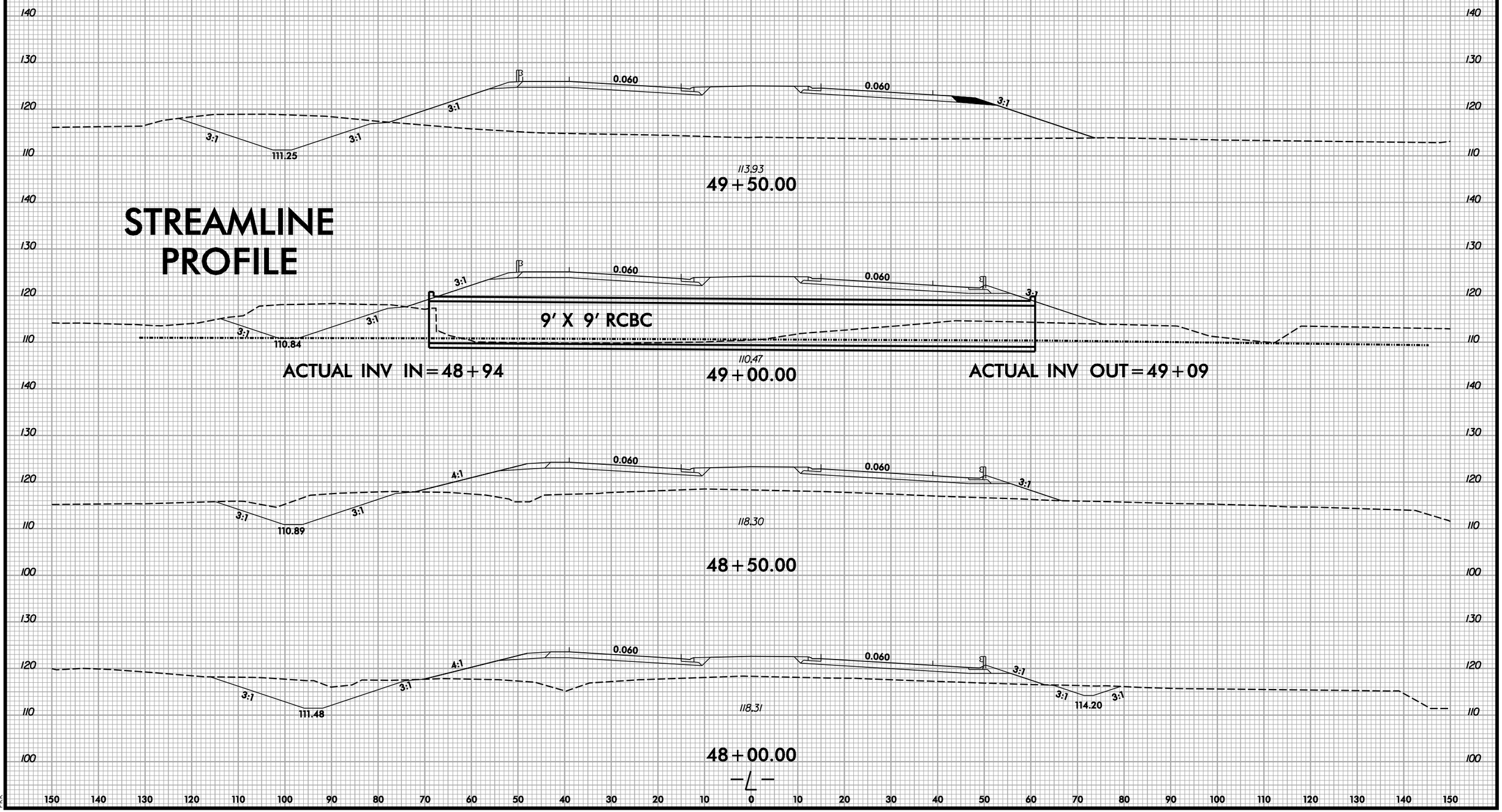
	R-2823	X-21

SITES 4 & 5

BUFFER DRAWING
SHEET 18 OF 56

STREAMLINE PROFILE



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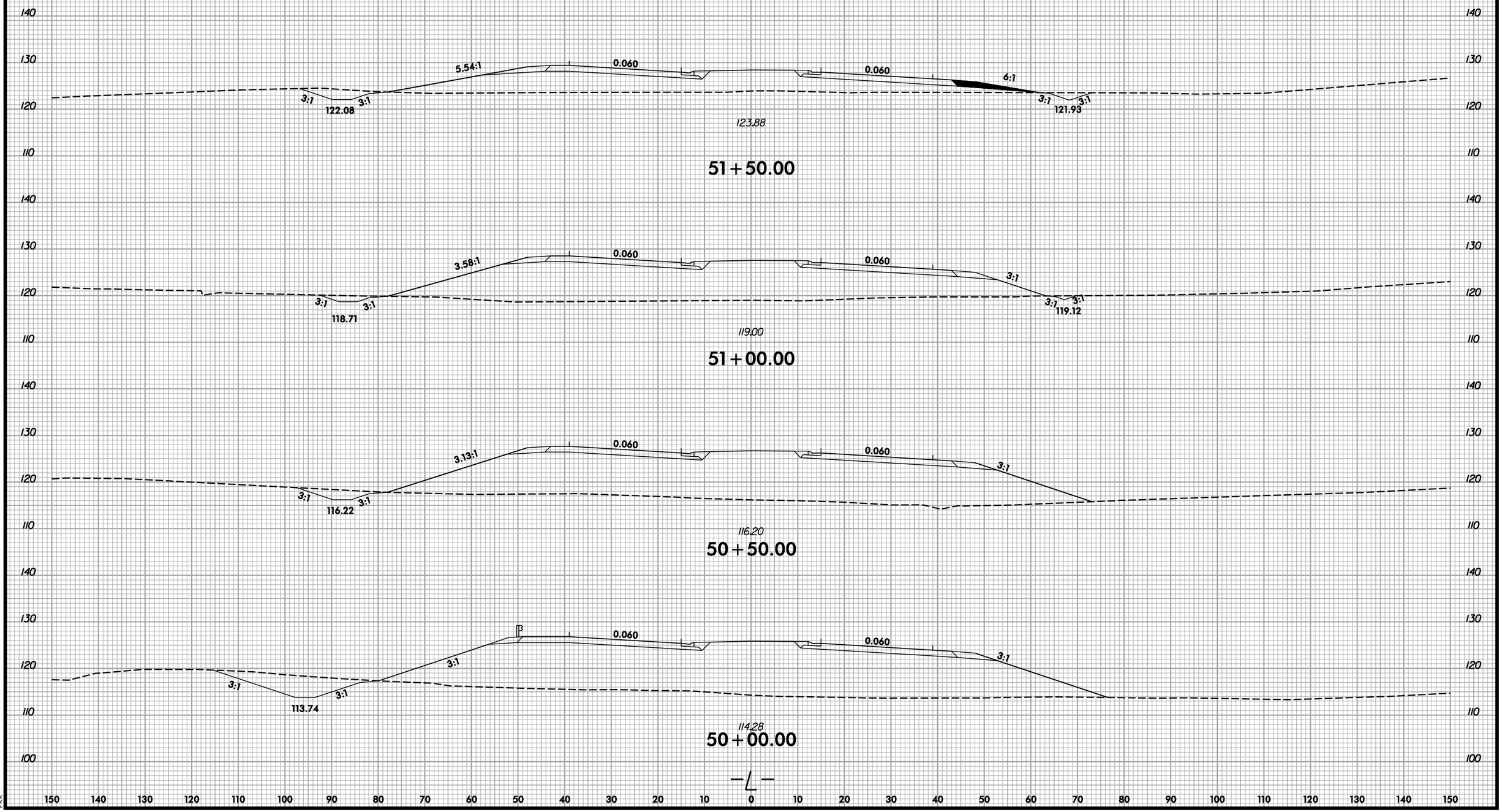
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-22

SITES 4 & 5

BUFFER DRAWING
SHEET 19 OF 56



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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 20 OF 56

ENGLISH

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

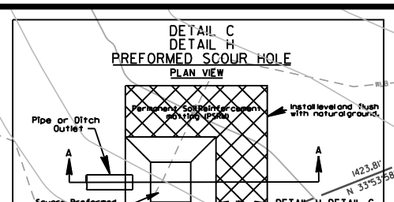
GRASS SWALE DATA
-L- 85+50 - 111+00 RT
DA= 4.54ac
SLOPE= 0.90%
L REQ.= 454'
L PRO.= 1200'
Q2= 7.99cfs
V2= 1.75ft/s
D2= 0.50'
Q10= 11.00cfs
V10= 2.01ft/s
D10= 0.57'

PREFORMED SCOUR HOLE DATA
-L- 111+05 RT
Q10= 11.03cfs
V10= 1.15ft/s

PREFORMED SCOUR HOLE DATA
-L- 114+10 RT
Q10= 3.57cfs
V10= 0.76ft/s

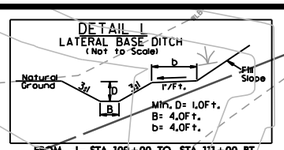
PREFORMED SCOUR HOLE DATA
-L- 114+45 RT
Q10= 13.66cfs
V10= 1.22ft/s

DETAIL C
DETAIL H
PREFORMED SCOUR HOLE
PLAN VIEW



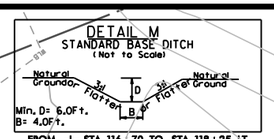
DETAIL C
-L- STA. 111+05 RT
-L- STA. 114+45 RT
DETAIL H
-L- STA. 114+10 RT

DETAIL I
LATERAL BASE DITCH
(Not to Scale)

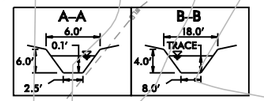


FROM -L- STA. 109+00 TO STA. 111+00 RT

DETAIL M
STANDARD BASE DITCH
(Not to Scale)



FROM -L- STA. 116+70 TO STA. 118+25 LT



ALMA W. GRIFFEN, HEIRS
42
120
115

LP
STA. 113+98.53 -L-

SITE 7

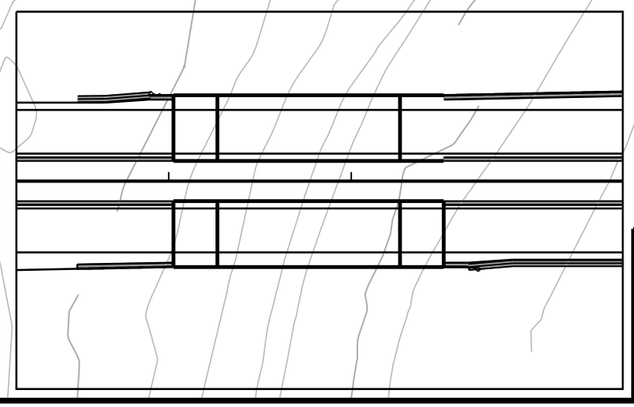
EXIST. CHANNEL DISSIPATES TO NOTHING. GRADE AWAY FROM -L- TO EXIST. GROUND FOR APPR. 25' TO PREVENT FROM FLOWING AGAINST FILL SLOPE

MATCHLINE -L- STA. 110+50 SEE SHEET 11

MATCHLINE -L- STA. 124+00 SEE SHEET 13

102.96
48" WW FENCE
CUT/FILL TRANSITION
2 TONS CL B RIPRAP
W/7 SY FIL FAB
101.30
108.02
STANDARD BASE DITCH
SEE DETAIL M
112.59
48" WW FENCE
CULTIVATED
CUT/FILL TRANSITION
2 TONS CL B RIPRAP
W/7 SY FIL FAB
102.84
150
CB
15"
151
CB
2GI
147
96.94
97.10
101.50
99.31
100.25
148
2GI
149
CPES
PSH SEE DETAIL C
PSH SEE DETAIL H
INV=104.77
48" WW FENCE
CULTIVATED
CPES
152
INV=111.73
2 TONS CL B RIPRAP
W/7 SY FIL FAB
48" WW FENCE
PSH SEE DETAIL C
LATERAL BASE DITCH SEE DETAIL I
WOODS
WOODS
ALMA W. GRIFFEN, HEIRS
42

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	110+43.00	110+96.00	RT
SBG	-L-	112+44.00	112+57.61	RT
EXP.GUTTER	-L-	112+57.61	114+00.00	RT
EXP.GUTTER	-L-	110+43.00	110+82.50	LT
SBG	-L-	110+82.50	110+96.00	LT
SBG	-L-	112+44.00	114+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				



FOR -L- PROFILE SEE SHTS.34 & 35

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 21 OF 56

ENGLISH

GRASS SWALE DATA
-L- 85+50 - 111+00 RT
DA= 4.54ac
SLOPE= 0.90%
L REQ.= 454'
L PRO.= 1200'
Q2= 7.99cfs
V2= 1.75ft/s
D2= 0.50'
Q10= 11.00cfs
V10= 2.01ft/s
D10= 0.57'

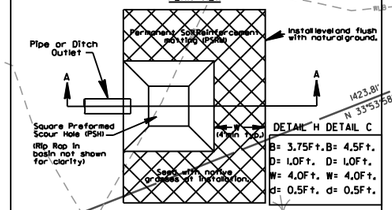
PREFORMED SCOUR HOLE DATA
-L- 111+05 RT
Q10= 11.03cfs
V10= 1.15ft/s

PREFORMED SCOUR HOLE DATA
-L- 114+10 RT
Q10= 3.57cfs
V10= 0.76ft/s

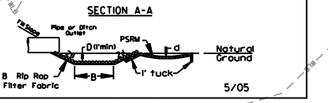
PREFORMED SCOUR HOLE DATA
-L- 114+45 RT
Q10= 13.66cfs
V10= 1.22ft/s

DETAIL C
DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW



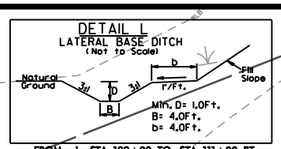
SECTION A-A



5/05

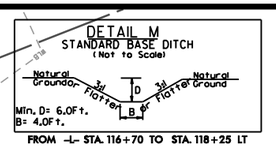
DETAIL C
-L- STA. 111+05 RT
-L- STA. 114+45 RT
DETAIL H
-L- STA. 114+10 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

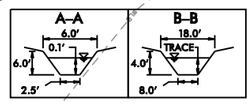


FROM -L- STA. 109+00 TO STA. 111+00 RT

DETAIL M
STANDARD BASE DITCH
(Not to Scale)



FROM -L- STA. 116+70 TO STA. 118+25 LT



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

ALMA W. GRIFFEN, HEIRS
42
120
115

LP
STA. 113+98.53 -L-

SITE 7

EXIST. CHANNEL DISSIPATES TO NOTHING. GRADE AWAY FROM -L- TO EXIST. GROUND FOR APPR. 25' TO PREVENT FLOW FROM FLOWING AGAINST FILL SLOPE

MATCHLINE -L- STA. 110+50 SEE SHEET 11

MATCHLINE -L- STA. 124+00 SEE SHEET 13

112.59
102.96
101.30
108.02
109.84
96.94
97.10
101.50
99.31
100.25
101.44
INV=104.77
INV=111.73

STANDARD BASE DITCH SEE DETAIL M

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB

48" WW FENCE

CULTIVATED

2GI (147) (148) (149)

CB 15" (150) (151)

CPES (152)

PSH SEE DETAIL C

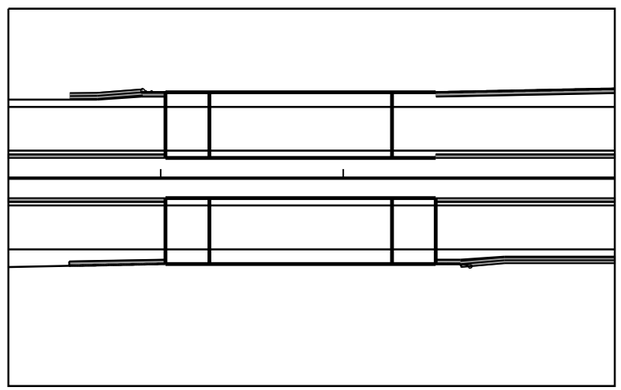
PSH SEE DETAIL H

LATERAL BASE DITCH SEE DETAIL L

WOODS

ALMA W. GRIFFEN, HEIRS
42

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	110+43.00	110+96.00	RT
SBG	-L-	112+44.00	112+57.61	RT
EXP.GUTTER	-L-	112+57.61	114+00.00	RT
EXP.GUTTER	-L-	110+43.00	110+82.50	LT
SBG	-L-	110+82.50	110+96.00	LT
SBG	-L-	112+44.00	114+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				



FOR -L- PROFILE SEE SHTS. 34 & 35

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FOR
DIVISION OF HIGHWAYS

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 22 OF 56

-L-

PROPOSED GRADE

(-) 2.75% RT

(-) 0.31% RT

BEG. SP. CUT DITCH
-L- STA. 91+00 RT
EL. 134.89

PI -L- STA. 91+87 RT
EL. 132.50

END SP. CUT DITCH
-L- STA. 93+00 RT
EL. 132.15

PI = 98+90.00
EL = 129.93'
VC = 200'
K = 400

(-) 0.85000%

(-) 1.13500%

EXISTING GROUND

(-) 0.52% LT

BEG. SP. CUT DITCH
-L- STA. 100+00 LT
EL. 124.10

END SP. CUT DITCH
-L- STA. 101+50 LT
EL. 123.32

BRIDGE HYDRAULIC DATA
STA.111+75 -L-

DESIGN DISCHARGE	= 1,300	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 105.3	FT
BASE DISCHARGE	= 1,500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 105.7	FT
OVERTOPPING DISCHARGE	= 6,100	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 110.9	FT
DATE OF SURVEY	= 06/2008	
W.S. ELEVATION AT DATE OF SURVEY	= 98.5	FT

BM #3
RR SPIKE IN BASE OF 14" POPLAR
-L- STA. 110+35.94 57.16' RT
ELEV.= 107.11'

PROPOSED GRADE

EXISTING GROUND

(-) 3.62% RT

(-) 1.45%

(-) 1.45% RT

BEG. SP. CUT DITCH
-L- STA. 106+00 RT
EL. 117.25

END SP. CUT BASE DITCH
BEG. LAT. BASE DITCH
-L- STA. 109+00 RT
EL. 110.73

PI -L- STA. 109+50 RT
EL. 110.00

END SP. CUT DITCH
BEG. SP. CUT BASE DITCH
-L- STA. 107+00 RT
EL. 113.63

(-) 8.56% RT

(-) 0.90% RT

PI -L- STA. 110+50 RT
EL. 101.45

END LAT. BASE DITCH
-L- STA. 111+00 RT
EL. 101.00

BEGIN BRIDGE
-L- STA.111+20 +/-

END BRIDGE
-L- STA.112+20 +/-

HORNBEAM CREEK

PI = 114+50.00
EL = 108.87'
VC = 500'
K = 147

(-) 1.13500%

(+) 2.85000%

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.10 THRU 12

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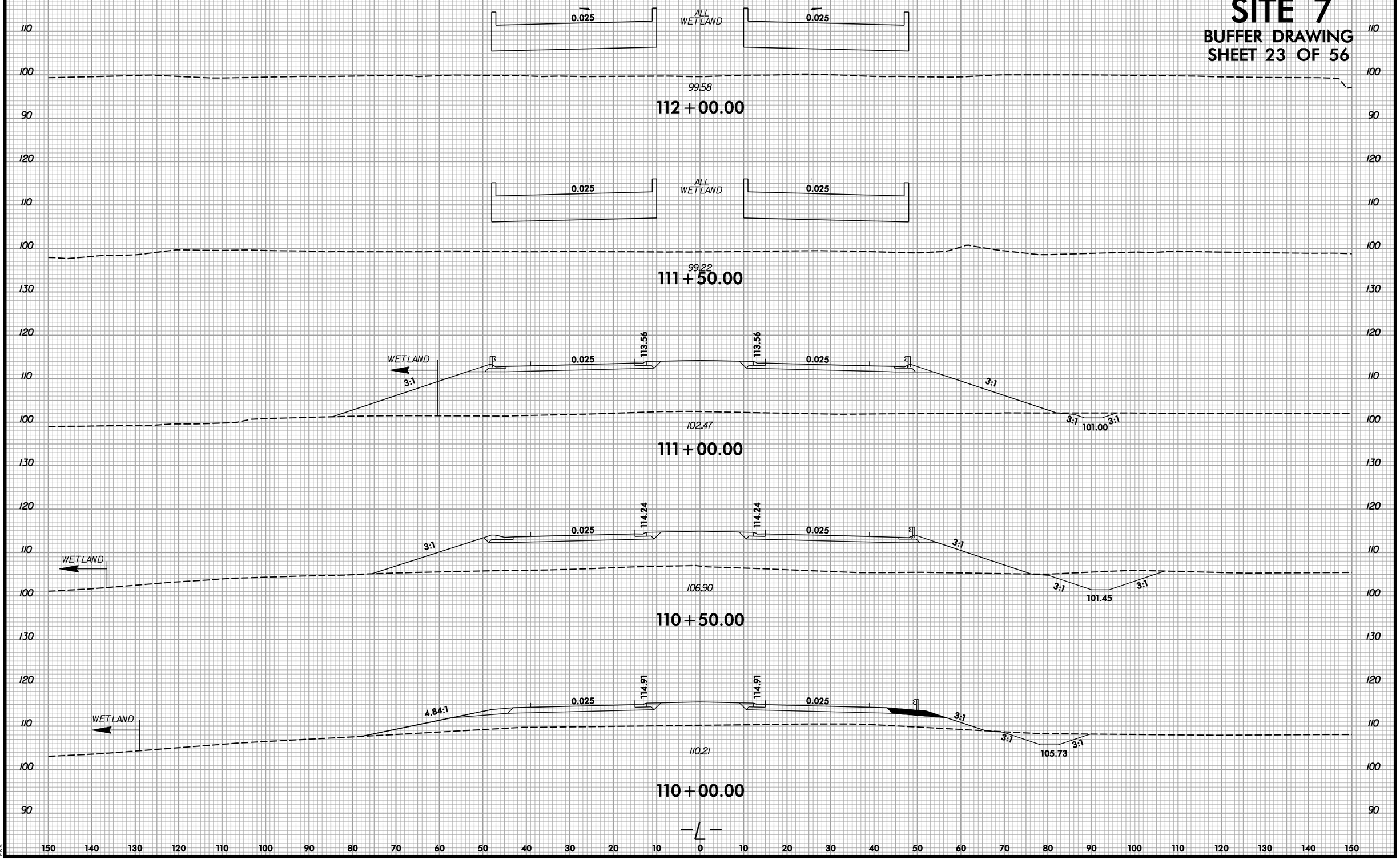
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-51

SITE 7
BUFFER DRAWING
SHEET 23 OF 56



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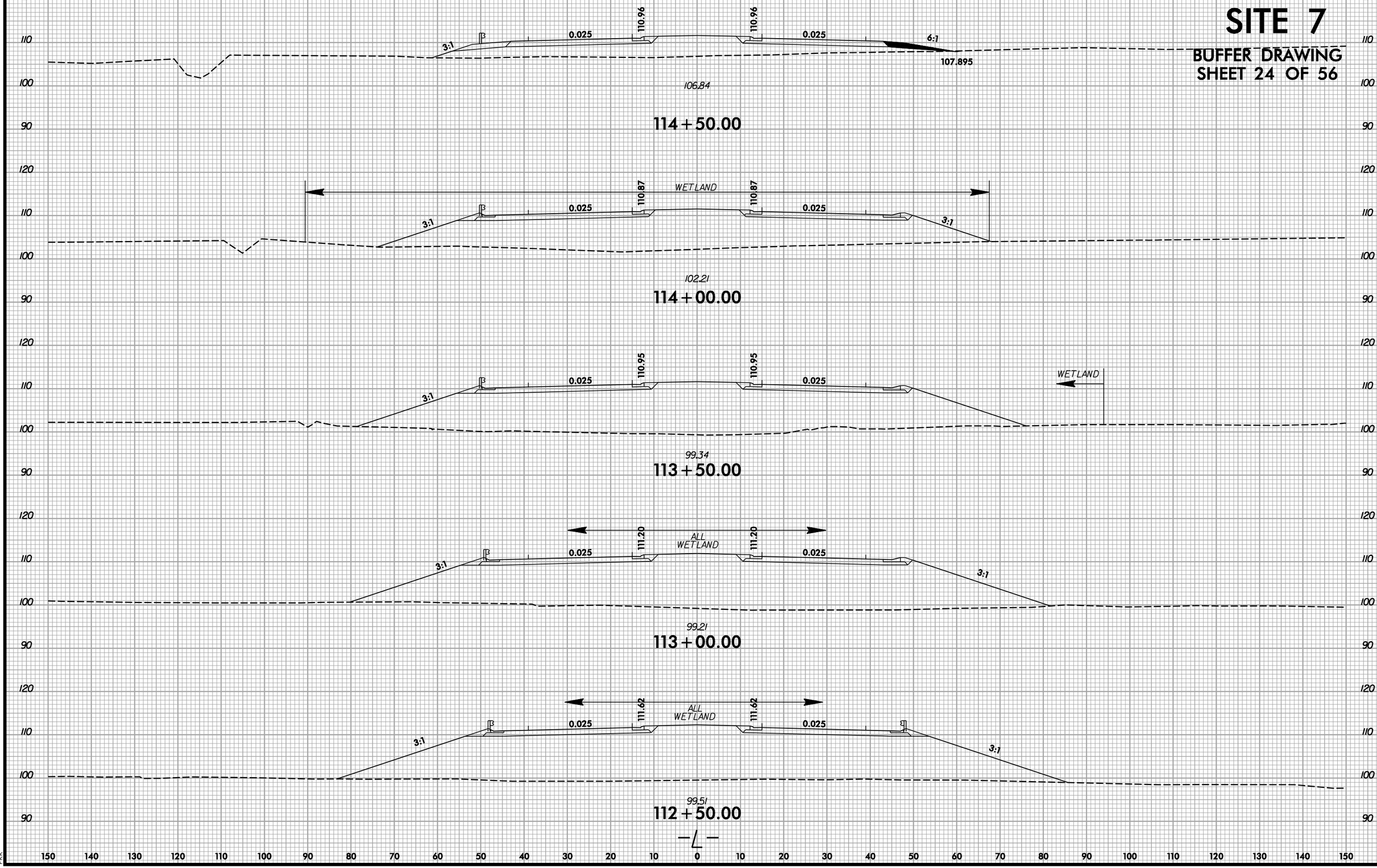
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-52

SITE 7

BUFFER DRAWING
SHEET 24 OF 56



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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 25 OF 56

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

A–A: 9.0' / 0.0' / 7.0' / 4.0' TRACE WATER

B–B: 10.0' / 0.0' / 7.5' / 4.0' TRACE WATER

C–C: 6.0' / 0.0' / 2.5' / 1.5' / 2.0' ROADSIDE

D–D: 9.0' / 0.0' / 3.5' / 2.0' / 1.0' ROADSIDE

E–E: 6.0' / 0.0' / 2.0' / 3.0' / 2.0' INFALL

MATCHLINE –L– STA. 124+00 SEE SHEET 12

MATCHLINE –L– STA. 138+00 SEE SHEET 14

MATCHLINE –Y3– STA. 26+00 SEE SHEET 26

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL S

HP STA. 18+50.69 –Y3–

HP STA. 127+67.61 –L–

LP STA. 22+00.58 –Y3–

ALMA W. GRIFFEN, HEIRS (42)

E. C. POWELL (43)

STANLEY L. WEST (44)

48" WW FENCE

CULTIVATED

WOODS

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB

SITE 9

T8 2GI

FS DET S

SPECIAL CUT DITCH SEE DETAIL B

3 TONS CL B RIPRAP W/10SY FIL FAB INV=118.68

40 TONS CL I RIPRAP W/75 SY FIL FAB RIPRAP ON BANKS ONLY INV=107.86

SPECIAL CUT BASE DITCH SEE DETAIL I

BERM BASE DITCH SEE DETAIL G

18" SCCS 2 ELBOWS W/ROD AND LUG. 3 TONS CL B RIPRAP W/10 SY FIL FAB INV=109.09

BERM V DITCH SEE DETAIL K

CITY OF ROCKY MOUNT

DEERE ROCKY MOUNT

SPECIAL CUT DITCH SEE DETAIL B

PUE

GRASS SWALE DATA
–L– 132+71 – 135+50 RT
DA= 0.41ac
SLOPE= 2.20%/1.16%
L REQ.= 41'
L PRO.= 250'
Q2= 0.77cfs/0.47cfs
V2= 2.00ft/s/1.34ft/s
D2= 0.51'/0.49'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
–L– 135+50 – 147+24 RT
DA= 4.16ac
SLOPE= 0.65%
L REQ.= 321'
L PRO.= 524'
Q2= 9.03cfs
V2= 1.69ft/s
D2= 0.56'
Q10= 11.58cfs
V10= 1.82ft/s
D10= 0.64'

GRASS SWALE DATA
–L– 134+75 – 135+50 RT
DA= 5.52ac
SLOPE= 0.30%
L REQ.= NA
L PRO.= NA
Q2= 11.98cfs
V2= 1.40ft/s
D2= 0.80'
Q10= 15.36cfs
V10= 1.50ft/s
D10= 0.91'

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR –L– MEDIAN

DETAIL S
FALSE SUMP (Not To Scale)
Median Ditch; 9"; 2"; L (See Chart Below); 20'; GI etc.; S=Ditch Slope; ℄ Proposed Ditch

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'

–L– STA. 132+72 RT
–L– STA. 135+28 RT

DETAIL B
SPECIAL CUT DITCH (Not to Scale)
Natural Ground; 3:1; D; 3:1 or Flatter; Front Ditch Slope; Min. D= 1.0Ft.
FROM –L– STA. 132+00 TO STA. 135+50 RT
FROM –Y3– STA. 17+00 TO STA. 18+00 LT & RT
FROM –Y3– STA. 21+55 TO STA. 23+50 LT

DETAIL G
BERM BASE DITCH (Not to Scale)
Natural Ground; 3:1; D; b; RDWY; Min. D= 1.0Ft.; B= 4.0Ft.; b= 3.0Ft.
FROM –L– STA. 134+75 TO STA. 135+50 RT

DETAIL I
SPECIAL CUT BASE DITCH (Not to Scale)
Natural Ground; 3:1; D; B; 3:1 or Flatter; Front Ditch Slope; Min. D= 1.0Ft.; B= 4.0Ft.
FROM –L– STA. 135+50 TO STA. 147+24 RT

DETAIL K
BERM "V" DITCH (Not to Scale)
Natural Ground; 3:1; D; 3:1; RDWY; Min. D= 1.0Ft.; b= 2.0Ft.
FROM –L– STA. 135+50 TO STA. 147+24 RT (LINE 135+50 TO 137+30 W/PSRM)

RICKS-BOSEMAN FARM HISTORIC AREA

FOR –L– PROFILE SEE SHT.35
FOR –Y3– PROFILE SEE SHT.42
FOR INTERSECTION DETAILS SEE SHT. 2F

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FOR
DIVISION OF HIGHWAYS

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 26 OF 56

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

A–A	B–B	C–C	D–D	E–E
9.0' / 0.0'	10.0' / 0.0'	6.0 / 0.0'	9.0' / 0.0'	6.0' / 0.0'
7.0'	7.5'	2.5'	3.5'	2.0'
4.0' TRACE WATER	4.0' TRACE WATER	2.0' ROADSIDE	1.0' ROADSIDE	2.0' INFALL
		1.5'	2.0'	3.0'

MATCHLINE –L– STA. 124+00 SEE SHEET 12

MATCHLINE –Y3– STA. 26+00 SEE SHEET 26

MATCHLINE –L– STA. 138+00 SEE SHEET 14

ALMA W. GRIFFEN, HEIRS (42)

E. C. POWELL (43)

STANLEY L. WEST (44)

HP STA. 127+67.61 –L–

HP STA. 18+50.69 –Y3–

LP STA. 22+00.58 –Y3–

LP STA. 135+52.07 –L–

SITE 9

CULTIVATED

WOODS

48" WW FENCE

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT BASE DITCH SEE DETAIL I

BERM BASE DITCH SEE DETAIL G

BERM V DITCH SEE DETAIL K

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB

3 TONS CL B RIPRAP W/10SY FIL FAB INV=118.68

40 TONS CL I RIPRAP W/75 SY FIL FAB RIPRAP ON BANKS ONLY INV=107.86

19" RCCS 2 ELBOWS W/ROD AND LUG 3 TONS CL B RIPRAP W/10 SY FIL FAB INV=109.09

SR 1735 (OLD FERRELL RD) 20 FT

CITY OF ROCKY MOUNT

RICKS-BOSEMAN FARM HISTORIC AREA

FOR –L– PROFILE SEE SHT.35
FOR –Y3– PROFILE SEE SHT.42
FOR INTERSECTION DETAILS SEE SHT. 2F

GRASS SWALE DATA
–L– 132+71 – 135+50 RT
DA= 0.41ac
SLOPE= 2.20%/1.16%
L REQ.= 41'
L PRO.= 250'
Q2= 0.77cfs/0.47cfs
V2= 2.00ft/s/1.34ft/s
D2= 0.51'/0.49'
Q10= NA
V10= NA
D10= NA

GRASS SWALE DATA
–L– 135+50 – 147+24 RT
DA= 4.16ac
SLOPE= 0.65%
L REQ.= 321'
L PRO.= 524'
Q2= 9.03cfs
V2= 1.69ft/s
D2= 0.56'
Q10= 11.58cfs
V10= 1.82ft/s
D10= 0.64'

GRASS SWALE DATA
–L– 134+75 – 135+50 RT
DA= 5.52ac
SLOPE= 0.30%
L REQ.= NA
L PRO.= NA
Q2= 11.98cfs
V2= 1.40ft/s
D2= 0.80'
Q10= 15.36cfs
V10= 1.50ft/s
D10= 0.91'

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR –L– MEDIAN

DETAIL S
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'

FROM –L– STA. 132+72 RT
FROM –L– STA. 135+28 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1.0Ft.
FROM –L– STA. 132+00 TO STA. 135+50 RT
FROM –Y3– STA. 17+00 TO STA. 18+00 LT & RT
FROM –Y3– STA. 21+55 TO STA. 23+50 LT

DETAIL G
BERM BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 4.0Ft.
b= 3.0Ft.
FROM –L– STA. 134+75 TO STA. 135+50 RT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 4.0Ft.
FROM –L– STA. 135+50 TO STA. 147+24 RT

DETAIL K
BERM "V" DITCH
(Not To Scale)
Min. D= 1.0Ft.
b= 2.0Ft.
FROM –L– STA. 135+50 TO STA. 147+24 RT
(LINE 135+50 TO 137+50 W/PSRM)

PLANS PREPARED BY :
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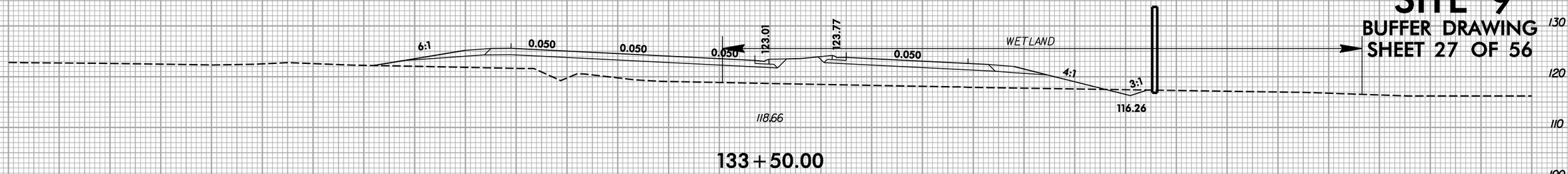
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-62

SITE 9

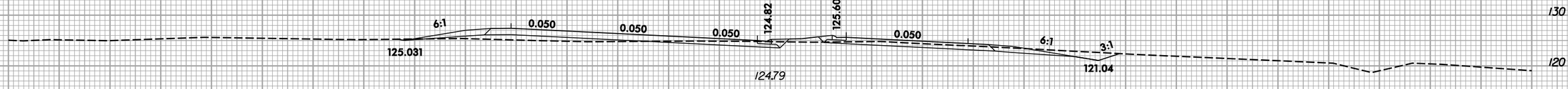
BUFFER DRAWING

SHEET 27 OF 56

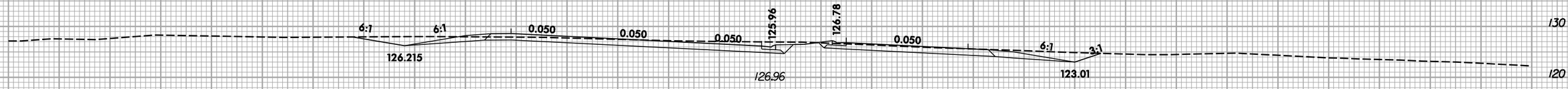


133+50.00

133+00.00



132+50.00



132+00.00

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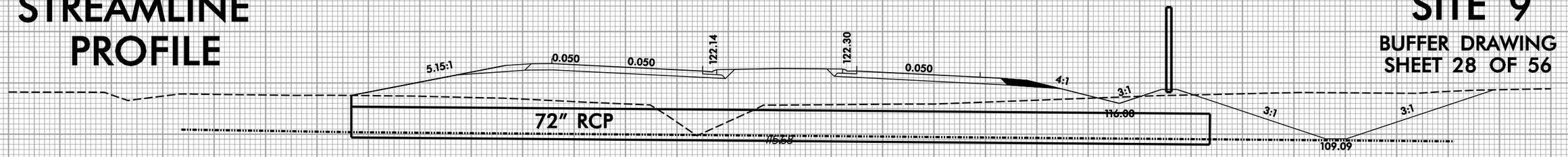
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-63

STREAMLINE PROFILE

SITE 9

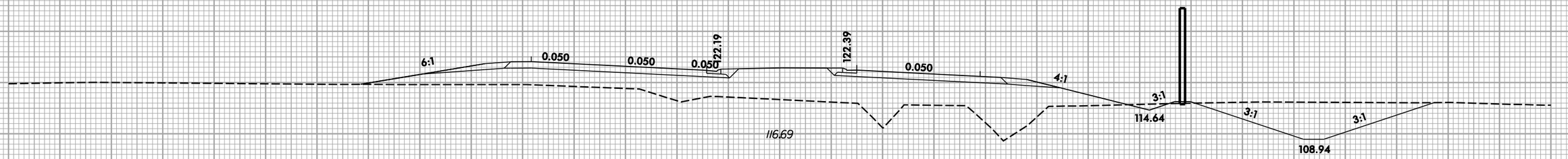
BUFFER DRAWING
SHEET 28 OF 56



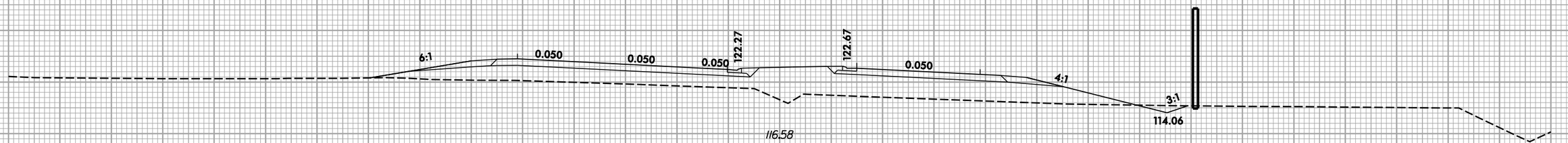
ACTUAL INV IN=135+83

135+50.00

ACTUAL INV OUT=134+75



135+00.00



134+50.00

134+00.00

—℄—

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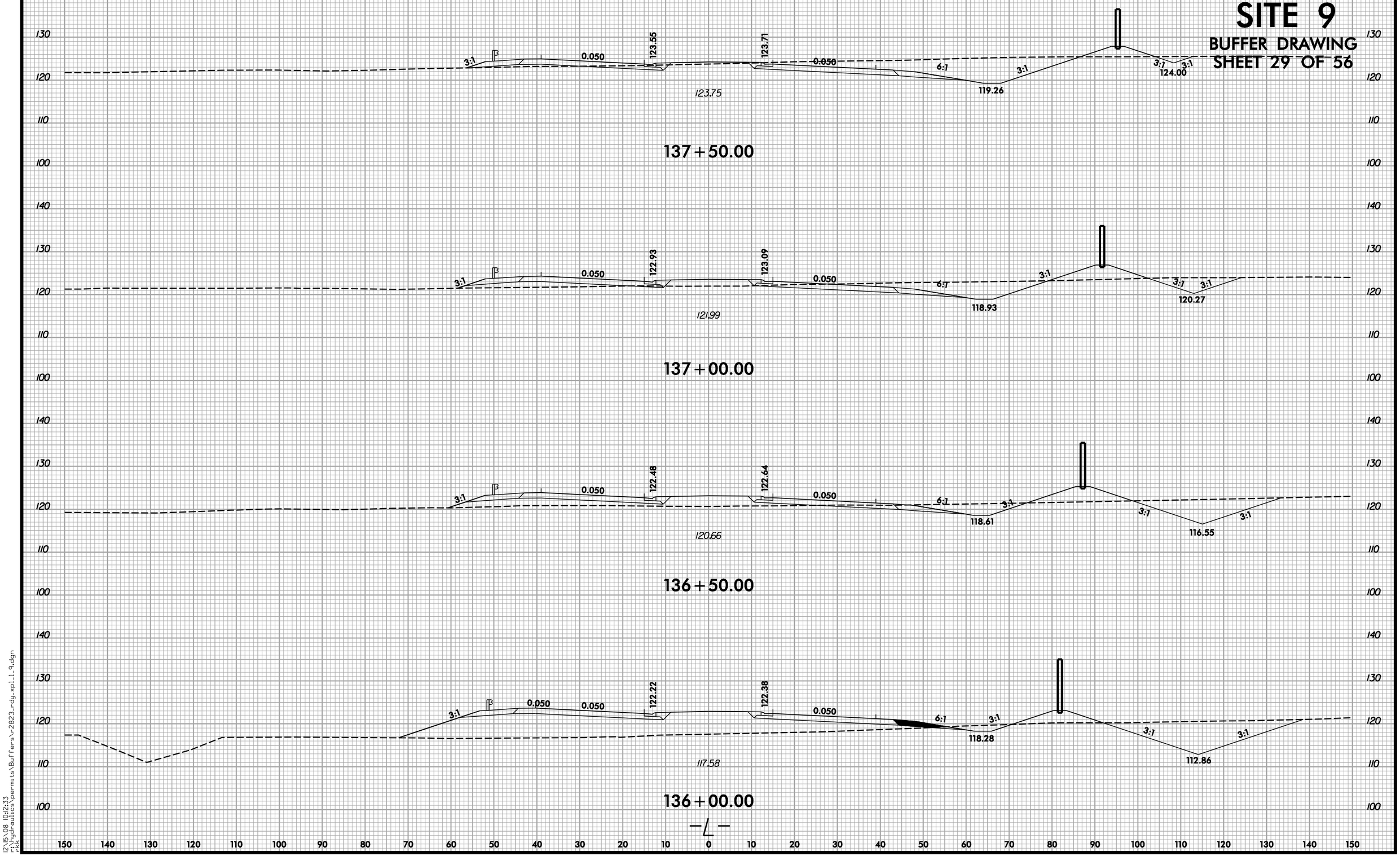
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-64

SITE 9

BUFFER DRAWING

SHEET 29 OF 56



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PROJECT REFERENCE NO.	SHEET NO.
R-2823	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 30 OF 56

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

MATCHLINE -L- STA. 165+00 SEE SHEET 15

MATCHLINE -L- STA. 177+00 SEE SHEET 17

SITE 10

WILLIAM H. OVERMAN (50)

SATPAL SINGH RATHIE (51)

CITY OF ROCKY MOUNT

CULTIVATED

WOODS

45" WW FENCE

LATERAL BASE DITCH SEE DETAIL L

INV=103.20

BDO

INV=93.81
48 TONS CL I RIPRAP W/89 SY FIL FAB
RIPRAP ON BANKS ONLY

INV=99.84
PSH SEE DETAIL H

NO OUTFALL

1 TON CL B RIPRAP W/5 SY FIL FAB
INV=99.70
CPES

PSH SEE DETAIL H

INV=101.80

LATERAL V DITCH SEE DETAIL A

LATERAL V DITCH SEE DETAIL A

LATERAL V DITCH SEE DETAIL A

LP
STA. 172+87.39 -L-

HP
STA. 176+76.00 -L-

GRASS SWALE DATA -L- 148+00 - 169+30 LT	GRASS SWALE DATA -L- 167+75 - 169+50 RT
DA= 6.34ac	DA= 0.53ac
SLOPE= 0.55%	SLOPE= 1.35%
L REQ.= 634'	L REQ.= NA
L PRO.= 680'	L PRO.= NA
Q2= 14.05cfs	Q2= 1.04cfs
V2= 1.82ft/s	V2= 1.89ft/s
D2= 0.75'	D2= 0.61'
Q10= 18.60cfs	Q10= 1.31cfs
V10= 1.97ft/s	V10= 2.00ft/s
D10= 0.86'	D10= 0.66'

PREFORMED SCOUR HOLE DATA -L- 170+75 RT	PREFORMED SCOUR HOLE DATA -L- 173+10 RT
Q10= 1.22cfs	Q10= 0.40cfs
V10= 0.34ft/s	V10= 0.18ft/s

DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

Permanent Soil Reinforcement Matting (PSRM)

Install level and flush with natural ground.

Pipe or Ditch Outlet

Square Preformed Scour Hole (PSH)

(Rip Rap in basin not shown for clarity)

Seed with native grasses at installation.

B= 3.75ft.
D= 1.0ft.
W= 4.0ft.
d= 0.5ft.

SECTION A-A

Pipe or Ditch Outlet

PSRM

Liners Class B Rip Rap 1.0' thick with Filter Fabric

Natural Ground

5/05

-L- STA. 170+75 RT
-L- STA. 172+87 LT
-L- STA. 173+15 RT

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

Natural Ground

Fill Slope

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

FROM -L- STA. 167+75 TO STA. 169+50 RT
FROM -L- STA. 170+80 TO STA. 173+10 RT
FROM -L- STA. 175+50 TO STA. 177+25 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

Natural Ground

Fill Slope

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

FROM -L- STA. 162+00 TO STA. 169+30 LT

A-A
8.0'
0.2'
3.5'
5.0'
OUTFALL

B-B
4.0'
0.0'
1.0'
3.0'
TURNS INTO SWALE

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

FOR -L- PROFILE SEE SHTS. 36 & 37

PLANS PREPARED BY :
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PROJECT REFERENCE NO.	SHEET NO.
R-2823	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 31 OF 56

ENGLISH

MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

MATCHLINE -L- STA. 165+00 SEE SHEET 15

MATCHLINE -L- STA. 177+00 SEE SHEET 17

WILLIAM H. OVERMAN (50)

SATPAL SINGH RATHIE (51)

CITY OF ROCKY MOUNT

CULTIVATED

WOODS

SITE 10

LATERAL BASE DITCH SEE DETAIL L

INV=93.81
48 TONS CL I RIPRAP W/B9 SY FIL FAB RIPRAP ON BANKS ONLY

INV=99.34
PSH SEE DETAIL H

1 TON CL B RIPRAP W/5 SY FIL FAB
INV=99.70
CPES

INV=101.80
CPES

PSH SEE DETAIL H

LATERAL V DITCH SEE DETAIL A

48" WW FENCE

NO OUTFALL

LP
STA. 172+87.39 -L-

HP
STA. 176+76.00 -L-

GRASS SWALE DATA -L- 148+00 - 169+30 LT	GRASS SWALE DATA -L- 167+75 - 169+50 RT
DA= 6.34ac	DA= 0.53ac
SLOPE= 0.55%	SLOPE= 1.35%
L REQ.= 634'	L REQ.= NA
L PRO.= 680'	L PRO.= NA
Q2= 14.05cfs	Q2= 1.04cfs
V2= 1.82ft/s	V2= 1.89ft/s
D2= 0.75'	D2= 0.61'
Q10= 18.60cfs	Q10= 1.51cfs
V10= 1.97ft/s	V10= 2.00ft/s
D10= 0.86'	D10= 0.66'

PREFORMED SCOUR HOLE DATA -L- 170+75 RT	PREFORMED SCOUR HOLE DATA -L- 173+10 RT
Q10= 1.22cfs	Q10= 0.40cfs
V10= 0.34ft/s	V10= 0.18ft/s

DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

Pipe or Ditch Outlet
Permanent Soil Reinforcement Matting (PSRM)
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
Seed with native grasses at installation.
W (4"min typ.)

B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

SECTION A-A

Pipe or Ditch Outlet
PSRM
D (min)
d
Natural Ground
Liners: Class B Rip Rap 1.0' thick with Filter Fabric
B
L' tuck

5/05

-L- STA. 170+75 RT
-L- STA. 172+87 LT
-L- STA. 173+15 RT

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

Natural Ground
3:1
D
3:1
b
F/Ft.
Fill Slope

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

FROM -L- STA. 167+75 TO STA. 169+50 RT
FROM -L- STA. 170+80 TO STA. 173+10 RT
FROM -L- STA. 175+50 TO STA. 177+25 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1
b
F/Ft.
Fill Slope
B

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

FROM -L- STA. 162+00 TO STA. 169+30 LT

A-A	B-B
8.0'	4.0'
0.2'	0.0'
3.5'	1.0'
5.0' OUTFALL	3.0' TURNS INTO SWALE

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

FOR -L- PROFILE SEE SHTS. 36 & 37

PLANS PREPARED BY :
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DIVISION OF HIGHWAYS

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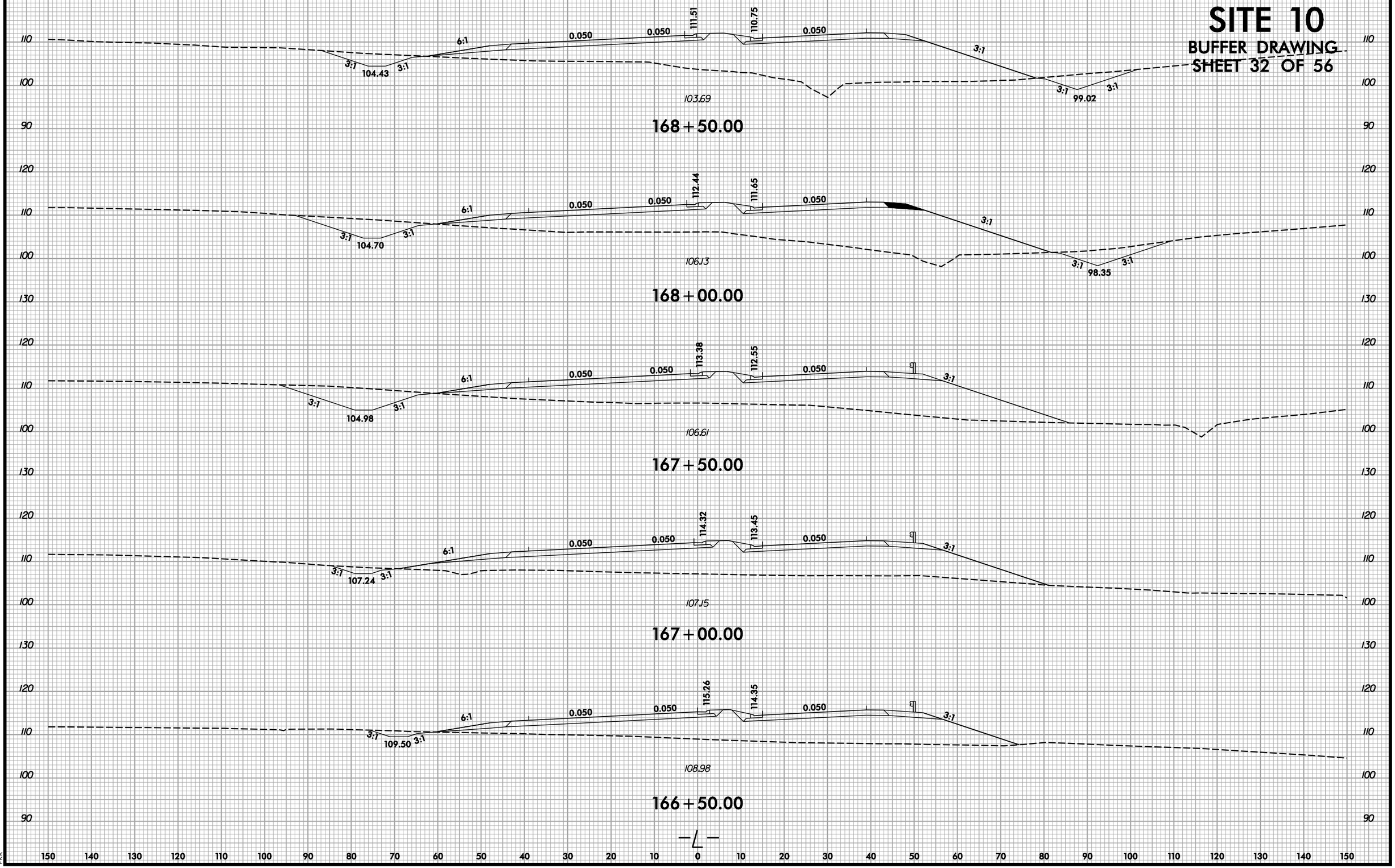
	R-2823	X-80

SITE 10

BUFFER DRAWING
SHEET 32 OF 56



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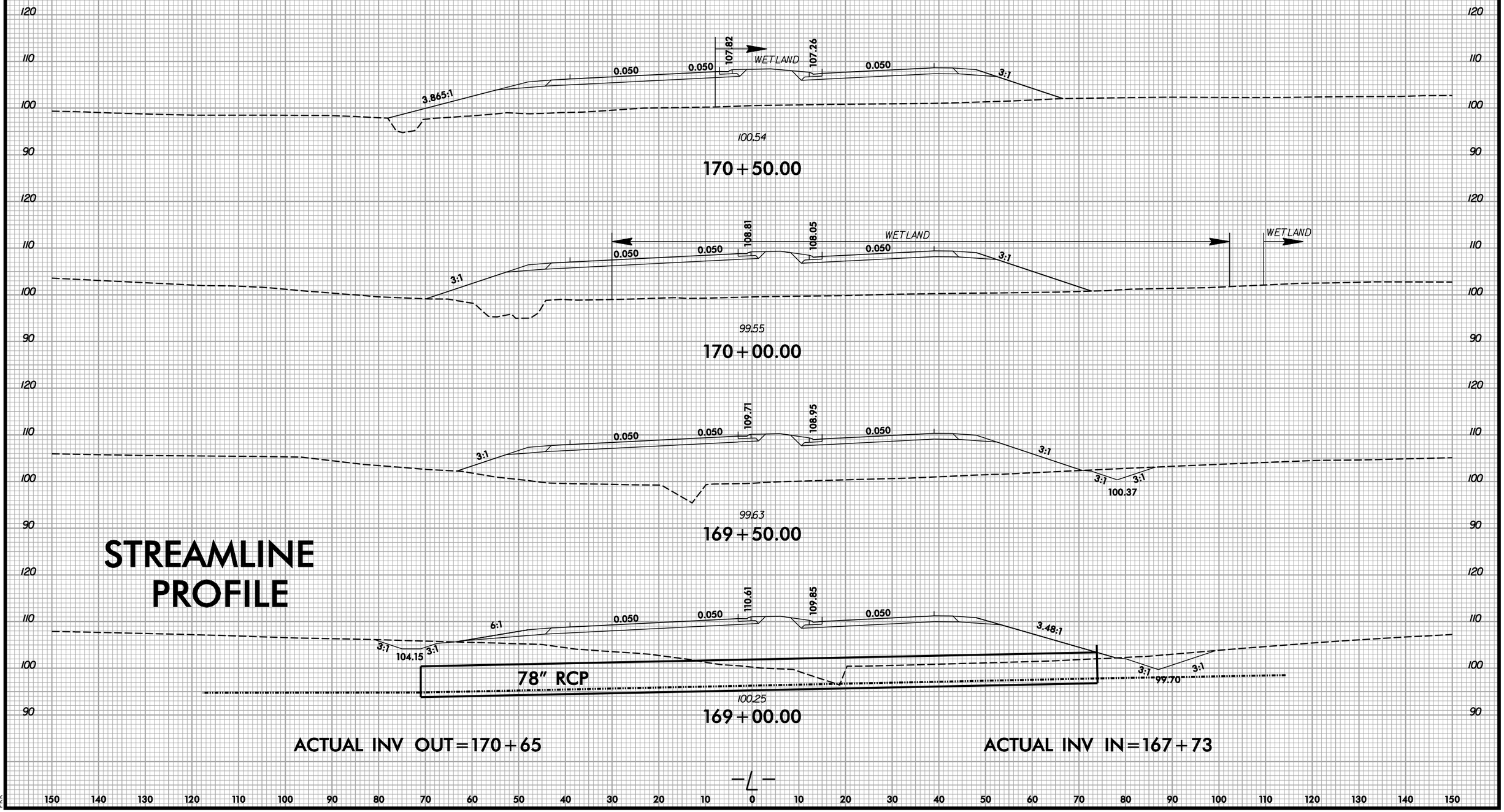
	R-2823	X-81

SITE 10

BUFFER DRAWING
SHEET 33 OF 56



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CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	178+50.00	180+49.00	RT
SBG	-L-	184+28.00	184+44.50	RT
EXP.GUTTER	-L-	178+50.00	179+49.00	LT
SBG	-L-	179+49.00	180+49.00	LT
SBG	-L-	184+28.00	185+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

PROJECT REFERENCE NO.	SHEET NO.
R-2823	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 34 OF 56

ENGLISH

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

MATCHLINE -L- STA. 177+00 SEE SHEET 16

MATCHLINE -L- STA. 191+00 SEE SHEET 18

SATPAL SINGH RATHIE (51)

E. C. POWELL (52)

CITY OF ROCKY MOUNT

N 68°19'28" E 92.52'

S 85°06'05" E 740.00'

WOODS

FALLOW

10' SOIL

BZ 1

BZ 2

SITE 12

INV=94.44
1 TON CL B RIPRAP
W/5 SY FIL FAB

2 ELBOWS W/ ROD AND LUG

PSH SEE DETAIL H

LATERAL V DITCH SEE DETAIL A

1 TON CL B RIPRAP W/5 SY FIL FAB INV=91.57

TEMPORARY WORK BRIDGE

TEMPORARY WORK BRIDGE FINGER

TEMPORARY WORK BRIDGE FINGER

INV=98.27
2 TON CL B RIPRAP
99.89W/7 SY FIL FAB

SPECIAL CUT DITCH SEE DETAIL F

15" RCCS
2 ELBOWS W/ RODAND LUG
INV=98.63

PSRM

2 TON CL B RIPRAP W/7 SY FIL FAB

SPECIAL CUT DITCH SEE DETAIL F

LATERAL BASE DITCH SEE DETAIL L

SITE 13

LATERAL BASE DITCH SEE DETAIL L

LATERAL V DITCH SEE DETAIL N

CUT/FILL TRANSITION
5 TONS CL B RIPRAP
W/14 SY FIL FAB

48" RCCP
RIPRAP ON BANKS ONLY
INV=94.33

LP
STA. 187+25.00 -L-

A-A
5.0'
0.0'
1.5'
3.0'
INFALL

DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

Pipe or Ditch Outlet

Permanent Soil Reinforcement Matting (PSRM)

Install level and flush with natural ground.

Square Preformed Scour Hole (PSH)

Rip Rap in basin not shown for clarity)

Seed with native grasses wt Prefabrication

B=3.75F t.
D=1.0F t.
W=4.0F t.
d=0.5F t.

SECTION A-A

Pipe or Ditch Outlet

PSRM

Natural Ground

Liner: Class B Rip Rap 1.0' thick with Filter Fabric

5/05

-L- STA. 177+30 RT
-L- STA. 189+15 RT
-L- STA. 189+70 RT

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

Natural Ground
3:1
D
b
Fill Slope
F/Ft.
Min. D= 1.0F t.
b= 2.0F t.

FROM -L- STA. 175+50 TO STA. 177+25 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1 or Flatter
Front Ditch Slope
Min. D= 1.5F t.

FROM -L- STA. 184+48 TO STA. 188+50 RT
FROM -L- STA. 184+98 TO STA. 189+00 LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
B
3:1
b
Fill Slope
F/Ft.
Min. D= 1.0F t.
B= 4.0F t.
b= 4.0F t.

FROM -L- STA. 188+50 TO STA. 189+15 RT
FROM -L- STA. 190+28 TO STA. 191+00 LT

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

Natural Ground
3:1
D
3:1
b
Fill Slope
F/Ft.
Min. D= 1.5F t.
b= 2.0F t.

FROM -L- STA. 189+00 TO STA. 189+70 LT

GRASS SWALE DATA -L- 184+48 - 189+15 RT	GRASS SWALE DATA -L- 184+98 - 189+70 LT	GRASS SWALE DATA -L- 190+28 - 195+00 LT
DA= 1.32ac	DA= 1.49ac	DA= 3.52ac
SLOPE= 2.10%	SLOPE= 0.22%	SLOPE= 0.87%
L REQ.= 132'	L REQ.= 149'	L REQ.= 352'
L PRO.= 467'	L PRO.= 472'	L PRO.= 422'
Q2= 4.22cfs	Q2= 5.13cfs	Q2= 8.69cfs
V2= 1.84ft/s	V2= 1.77ft/s	V2= 1.85ft/s
D2= 0.29'	D2= 1.39'	D2= 0.51'
Q10= 5.31cfs	Q10= 6.45cfs	Q10= 11.22cfs
V10= 1.98ft/s	V10= 1.87ft/s	V10= 1.99ft/s
D10= 0.32'	D10= 1.52'	D10= 0.59'

PREFORMED SCOUR HOLE DATA -L- 177+30 RT	PREFORMED SCOUR HOLE DATA -L- 189+15 RT
Q10= 2.06cfs	Q10= 5.31cfs
V10= 0.41ft/s	V10= 0.85ft/s
PREFORMED SCOUR HOLE DATA -L- 189+70 LT	**RIPRAP PAD DATA -L- 190+30 RT**
Q10= 6.45cfs	Q10= 20.30cfs
V10= 0.90ft/s	V10= 1.10ft/s

FOR -L- PROFILE SEE SHT.37

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	178+50.00	180+49.00	RT
SBG	-L-	184+28.00	184+44.50	RT
EXP.GUTTER	-L-	178+50.00	179+49.00	LT
SBG	-L-	179+49.00	180+49.00	LT
SBG	-L-	184+28.00	185+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

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

PROJECT REFERENCE NO.	SHEET NO.
R-2823	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 35 OF 56

ENGLISH

MATCHLINE -L- STA. 177+00 SEE SHEET 16

MATCHLINE -L- STA. 191+00 SEE SHEET 18

SATPAL SINGH RATHIE (51)

E. C. POWELL (52)

CITY OF ROCKY MOUNT

N 68°19'28" E 92.52'

S 85°06'05" E 140.00'

WOODS

FALLOW

10' SOIL

BZ 1

BZ 2

SITE 12

SITE 13

TEMPORARY WORK BRIDGE

TEMPORARY WORK BRIDGE FINGER

TEMPORARY WORK BRIDGE FINGER

INV=94.44
1 TON CL B RIPRAP W/5 SY FIL FAB

2 ELBOWS W/ ROD AND LUG

PSH SEE DETAIL H

LATERAL V DITCH SEE DETAIL A

1 TON CL B RIPRAP W/5 SY FIL FAB INV=91.57

INV=98.27
2 TON CL B RIPRAP W/7 SY FIL FAB

SPECIAL CUT DITCH SEE DETAIL F

PSRM

2GI

2 TON CL B RIPRAP W/7 SY FIL FAB

SPECIAL CUT DITCH SEE DETAIL F

LATERAL BASE DITCH SEE DETAIL L

LATERAL V DITCH SEE DETAIL N

CUT/FILL TRANSITION
5 TONS CL B RIPRAP W/14 SY FIL FAB

48 TONS CL B RIPRAP W/89 SY FIL FAB
RIPRAP ON BANKS ONLY
INV=94.33

LP
STA. 187+25.00 -L-

BEAVER DAM

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

Natural Ground, 3:1, D, 3:1, b, F/Ft., Fill Slope
Min. D= 1.0Ft.
b= 2.0Ft.

FROM -L- STA. 175+50 TO STA. 177+25 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1 or Flatter, Front Ditch Slope
Min. D= 1.5Ft.

FROM -L- STA. 184+48 TO STA. 188+50 RT
FROM -L- STA. 184+98 TO STA. 189+00 LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1, b, F/Ft., Fill Slope, B
Min. D= 1.0Ft.
B= 4.0Ft.
b= 4.0Ft.

FROM -L- STA. 188+50 TO STA. 189+15 RT
FROM -L- STA. 190+28 TO STA. 191+00 LT

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

Natural Ground, 3:1, D, 3:1, b, F/Ft., Fill Slope
Min. D= 1.5Ft.
b= 2.0Ft.

FROM -L- STA. 189+00 TO STA. 189+70 LT

PREFORMED SCOUR HOLE DATA	PREFORMED SCOUR HOLE DATA
-L- 177+30 RT	-L- 189+15 RT
Q10= 2.06cfs	Q10= 5.31cfs
V10= 0.41ft/s	V10= 0.85ft/s
PREFORMED SCOUR HOLE DATA	RIPRAP PAD DATA
-L- 189+70 LT	-L- 190+30 RT
Q10= 6.45cfs	Q10= 20.30cfs
V10= 0.90ft/s	V10= 1.10ft/s

GRASS SWALE DATA	GRASS SWALE DATA	GRASS SWALE DATA
-L- 184+48 - 189+15 RT	-L- 184+98 - 189+70 LT	-L- 190+28 - 195+00 LT
DA= 1.32ac	DA= 1.49ac	DA= 3.52ac
SLOPE= 2.10%	SLOPE= 0.22%	SLOPE= 0.87%
L REQ.= 132'	L REQ.= 149'	L REQ.= 352'
L PRO.= 467'	L PRO.= 472'	L PRO.= 422'
Q2= 4.22cfs	Q2= 5.13cfs	Q2= 8.69cfs
V2= 1.84ft/s	V2= 1.77ft/s	V2= 1.85ft/s
D2= 0.29'	D2= 1.39'	D2= 0.51'
Q10= 5.31cfs	Q10= 6.45cfs	Q10= 11.22cfs
V10= 1.98ft/s	V10= 1.87ft/s	V10= 1.99ft/s
D10= 0.32'	D10= 1.52'	D10= 0.59'

A-A
5.0'
0.0'
1.5'
3.0'
INFALL

DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

Permanent Soil Reinforcement Matting (PSRM)
Pipe or Ditch Outlet
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
Seed, mulch, fertilize and protect for germination.
B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

SECTION A-A

Pipe or Ditch Outlet
PSRM
D (min)
d
Natural Ground
B
1' tuck
Liner: Class B Rip Rap 1.0' thick with Filter Fabric

5/05

-L- STA. 177+30 RT
-L- STA. 189+15 RT
-L- STA. 189+70 RT

FOR -L- PROFILE SEE SHT. 37

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
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(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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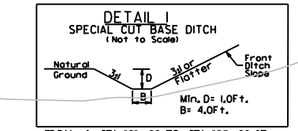
PROJECT REFERENCE NO.	SHEET NO.
R-2823	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 36 OF 56

ENGLISH

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 191+00 TO STA. 195+00 LT

MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

MATCHLINE -L- STA. 191+00 SEE SHEET 17

MATCHLINE -L- STA. 205+00 SEE SHEET 19

REALTEC INCORPORATED (53)
E. C. POWELL (52)
IRVINE BANKS JR. (54)
JAMES A. DAUGHTRIDGE (55)
JEFFERY S. TAYLOR (56)
REALTEC INCORPORATED (57)
MARGIE KING LEWIS
GEORGE CRUSENBERRY (58)

CITY OF ROCKY MOUNT

60' ACCESS BREAK
BEGIN FENCE
END FENCE +50.00
48" WW FENCE
SPECIAL CUT BASE DITCH SEE DETAIL I
SITE 13
GRAU 350
18" RCPES
12'
90'
105'
4' FDPS
12' SOIL
12' RCP
25' BST
HTR
ISFD
ISBKD
POND
WOODS

N 62°55'03.8" E -L-

FOR -L- PROFILE SEE SHTS.37 & 38

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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900 Ridgefield Drive Suite 350
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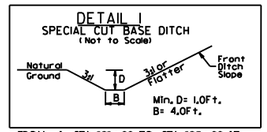
PROJECT REFERENCE NO.	SHEET NO.
R-2823	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 37 OF 56

ENGLISH

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 191+00 TO STA. 195+00 LT

MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

MATCHLINE -L- STA. 191+00 SEE SHEET 17

MATCHLINE -L- STA. 205+00 SEE SHEET 19

REALTEC INCORPORATED (53)
E. C. POWELL (52)
IRVINE BANKS JR. (54)
JAMES A. DAUGHTRIDGE (55)
JEFFERY S. TAYLOR (56)
REALTEC INCORPORATED (57)
MARGIE KING LEWIS
GEORGE CRUSENBERRY (58)

SITE 13
SPECIAL CUT BASE DITCH SEE DETAIL I
60' ACCESS BREAK
BEGIN FENCE +50.00
END FENCE
GRAU 350
15" RCPES
48" WW FENCE
CITY OF ROCKY MOUNT
WOODS
ISFD
ISBKD
LP TANK
POND
PUMP HOUSE
-L-
N 62°55'03.8" E
105'
90'
4' FDPS
12' 12' 4' 30'

FOR -L- PROFILE SEE SHTS.37 & 38

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

PLANS PREPARED BY :
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FOR
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 38 OF 56

-L-

BRIDGE HYDRAULIC DATA
STA.182+37.5 -L-

DESIGN DISCHARGE	= 2,000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 94.3	FT
BASE DISCHARGE	= 2,300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 94.7	FT
OVERTOPPING DISCHARGE	= 18,750	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 103.7	FT
DATE OF SURVEY	= 06/2008	
W.S.ELEVATION AT DATE OF SURVEY	= 91.9	FT

COMPASS CREEK

BM #6
RR SPIKE IN BASE OF 24" OAK
-L- STA. 185+19.26 218.25' LT
ELEV.= 99.96'

PI = 176+76.00
EL = 107.47'
VC = 300'
K = 300

PROPOSED GRADE
BEGIN BRIDGE
-L- STA.180+71.00 +/-
END BRIDGE
-L- STA.184+04.00 +/-
EXISTING GROUND

(+)1.03%RT
(-)1.17% RT
(+)0.5000%
(+)0.5000%
(-)0.5000%
(-)0.30% RT
18" RCP

END LAT. V DITCH
-L- STA. 173+10 RT
EL. 103.55

PI -L- STA. 172+50 RT
EL. 104.25

BEG. LAT. V DITCH
-L- STA. 175+50 RT
EL. 101.63

END LAT. V DITCH
-L- STA. 177+25 RT
EL. 101.10

TEMPORARY WORK BRIDGE & FINGERS
- MAX. 30' BRIDGE WIDTH
- PIER / SPAN PLACEMENT TO BE DETERMINED BY CONTRACTOR
- LOW CHORD 4' ABOVE HWS=89.7'
- EDGE OF BRIDGE FINGERS PLACED A MINIMUM OF 10' FROM PROPOSED PIERS

HWS 89.7

BEG. SP. CUT 'V' DITCH
-L- STA. 184+48 RT
EL. 98.53

BEG. SP. CUT 'V' DITCH
-L- STA. 184+98 LT; EL. 98.27

(-)1.0.35% RT
(-)1.0.22% LT

150 140 130 120 110 100 90 80 70 60

172+00 173+00 174+00 175+00 176+00 177+00 178+00 179+00 180+00 181+00 182+00 183+00 184+00 185+00 186+00

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 78" RCP
STA.189+80 -L-

DRAINAGE AREA	= 97	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 220	CFS
DESIGN HW ELEVATION	= 103.7	FT
100 YEAR DISCHARGE	= 250	CFS
100 YEAR HW ELEVATION	= 104.4	FT
OVERTOPPING FREQUENCY	= NA	YRS
OVERTOPPING DISCHARGE	= NA	CFS
OVERTOPPING ELEVATION	= NA	FT

PI = 187+50.00
EL = 102.10'
VC = 300'
K = 250

PROPOSED GRADE
EXISTING GROUND

(-)0.5000%
(+)0.7000%
(-)0.35% RT
(-)2.08% RT
(-)0.22% LT
(-)0.22% LT
78" PIPE
(+)0.86% LT
(+)0.70% LT
(+)8.12% LT
(+)0.70% LT

END SP. CUT 'V' DITCH
BEG. LAT. 'V' DITCH
-L- STA. 188+50 RT
EL. 97.12

END LAT. BASE DITCH
-L- STA. 189+15 RT
EL. 95.77

END SP. CUT 'V' DITCH
BEG. LAT. 'V' DITCH
-L- STA. 189+00 LT
EL. 97.39

END LAT. 'V' DITCH
-L- STA. 189+70 LT.
EL. 97.23

BEG. LAT. BASE DITCH
-L- STA. 190+28 LT.
EL. 97.12

END LAT. BASE DITCH
BEG. SP. CUT BASE DITCH
-L- STA. 191+00 LT.
EL. 97.74

PI -L- STA. 193+00 LT
EL. 99.14

PI -L- STA. 193+50 LT
EL. 103.20

END SP. CUT BASE DITCH
-L- STA. 195+00 LT
EL. 104.25

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.16 THRU 18

150 140 130 120 110 100 90 80 70 60

186+00 187+00 188+00 189+00 190+00 191+00 192+00 193+00 194+00 195+00 196+00 197+00 198+00 199+00 200+00

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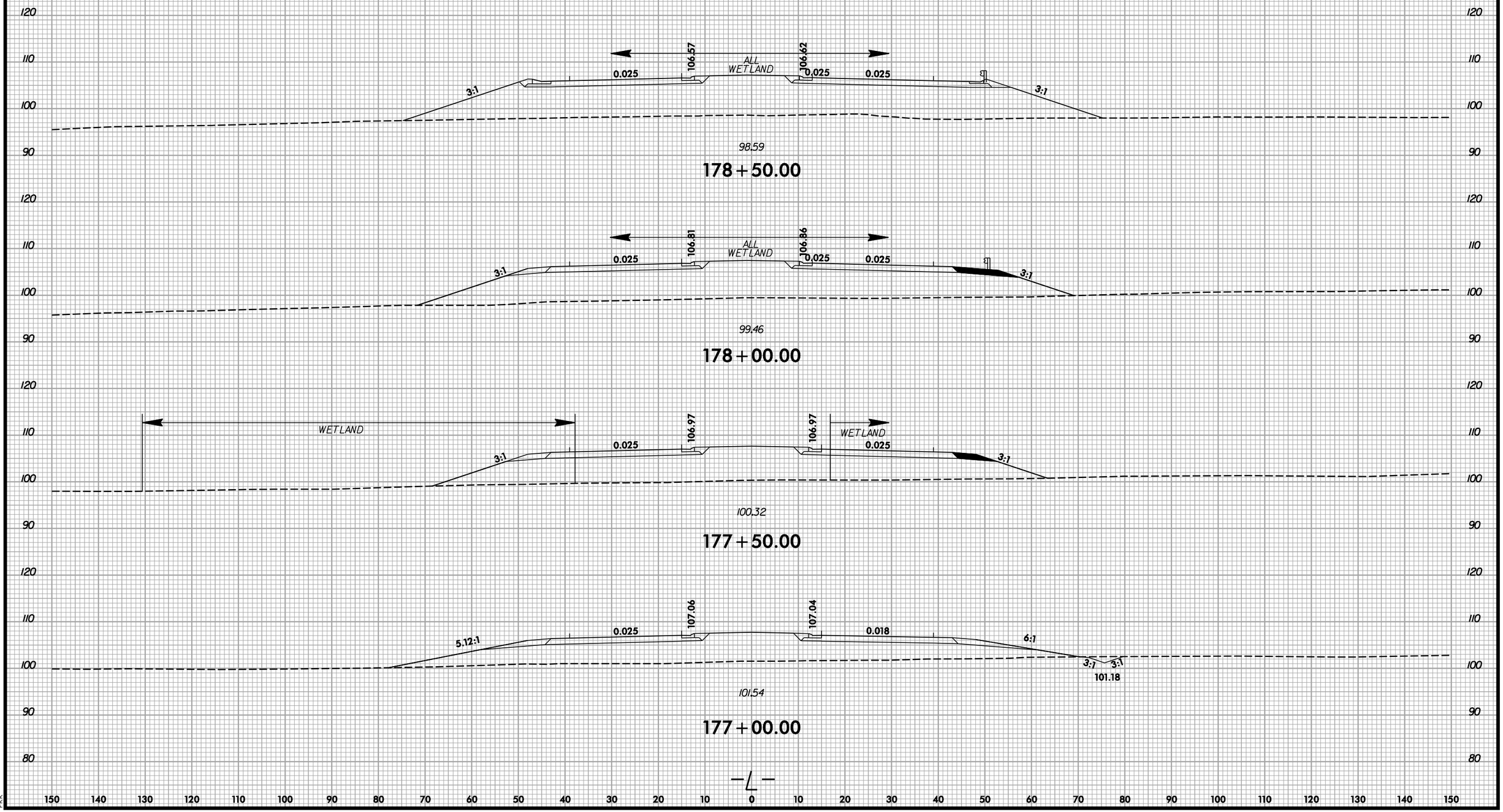
	R-2823	X-85

SITE 12

BUFFER DRAWING
SHEET 39 OF 56



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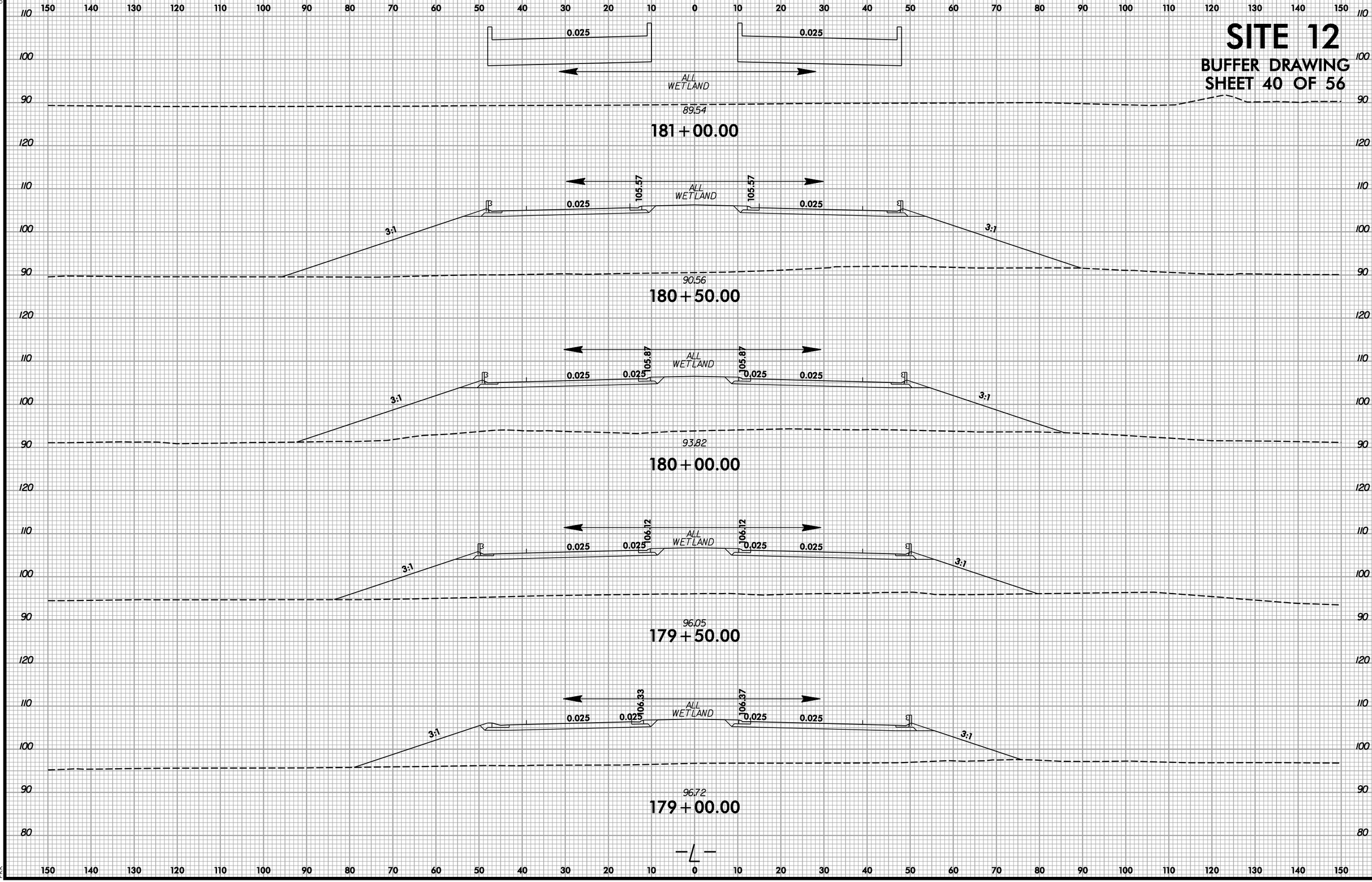
SITE 12

BUFFER DRAWING
SHEET 40 OF 56



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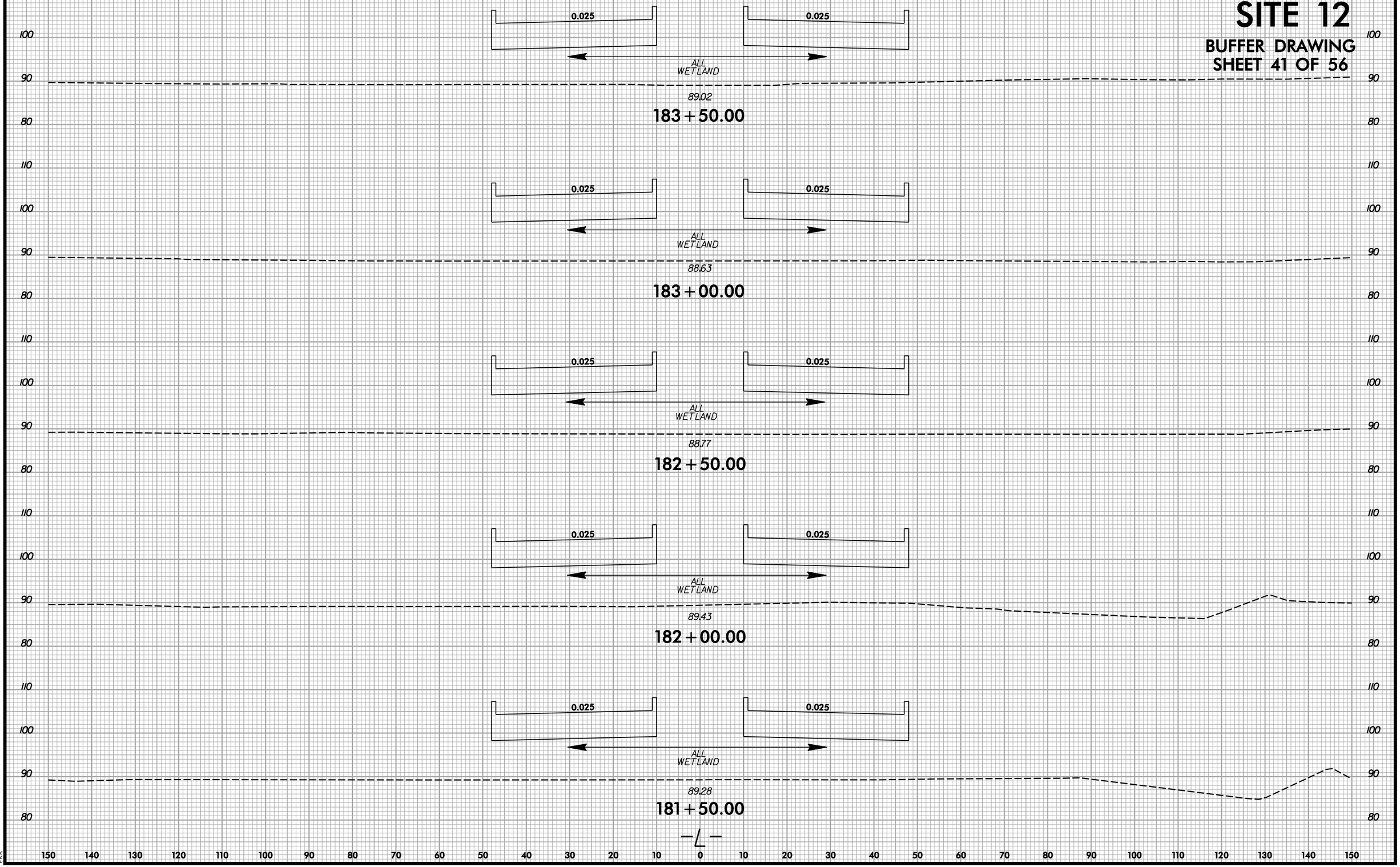
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-87

SITE 12

BUFFER DRAWING
SHEET 41 OF 56



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rkk

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-88

SITE 12

BUFFER DRAWING
SHEET 42 OF 56

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

120 110 100 90

103.12 103.12

0.025 0.025 0.025 0.025

3:1 3:1 3:1 3:1

98.16 98.18

106.41

185+50.00

120 110 100 90

103.37 103.37

0.025 0.025 0.025 0.025

3:1 3:1 3:1 3:1

98.27 98.35

104.56

185+00.00

120 110 100 90

103.62 103.62

0.025 0.025 0.025 0.025

3:1 3:1 3:1

98.52

99.04

184+50.00

80 110 100 90

0.025 WETLAND 0.025

92.66

184+00.00

80

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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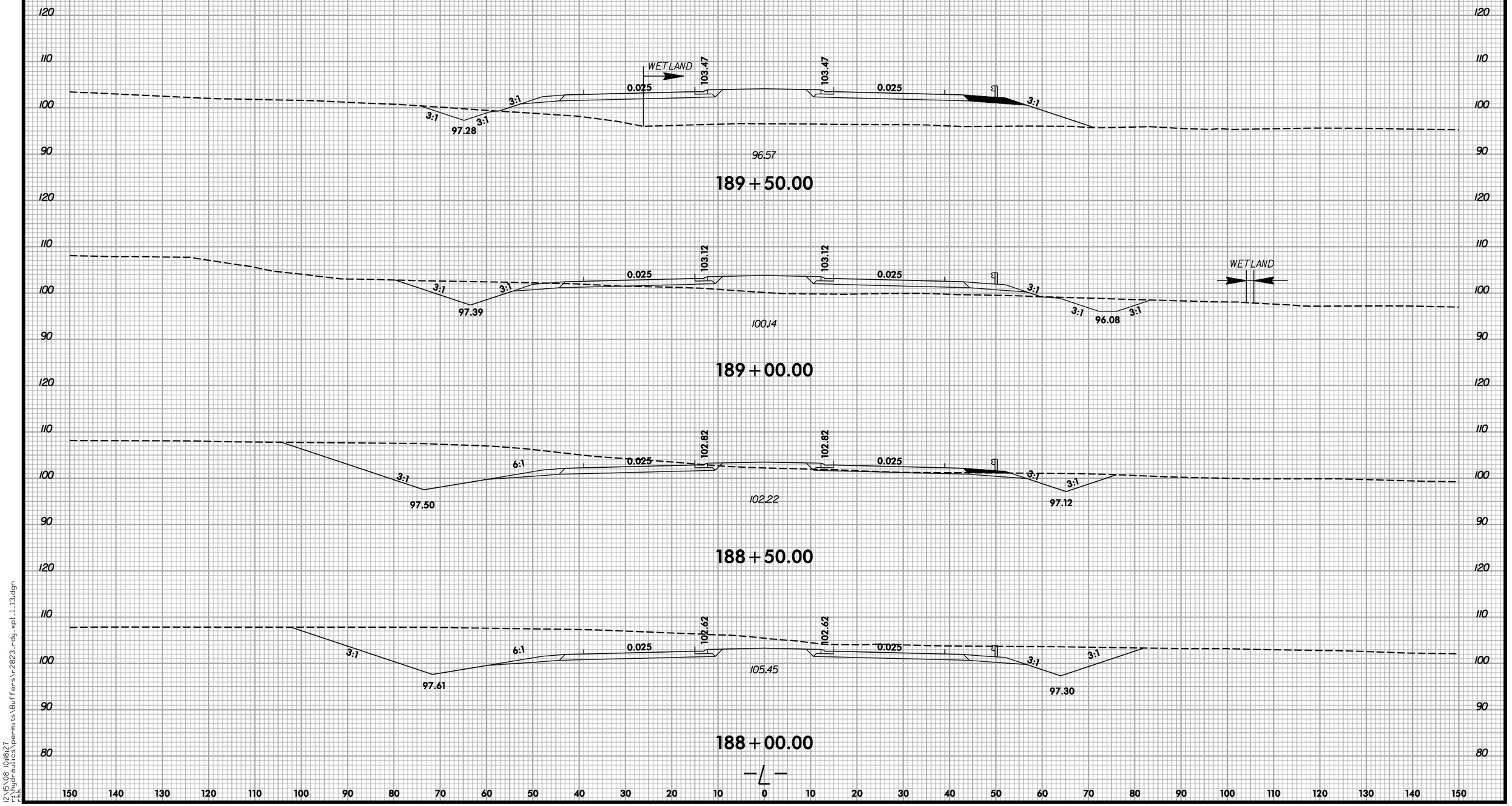
rkk

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-90

SITE 13

BUFFER DRAWING
SHEET 43 OF 56



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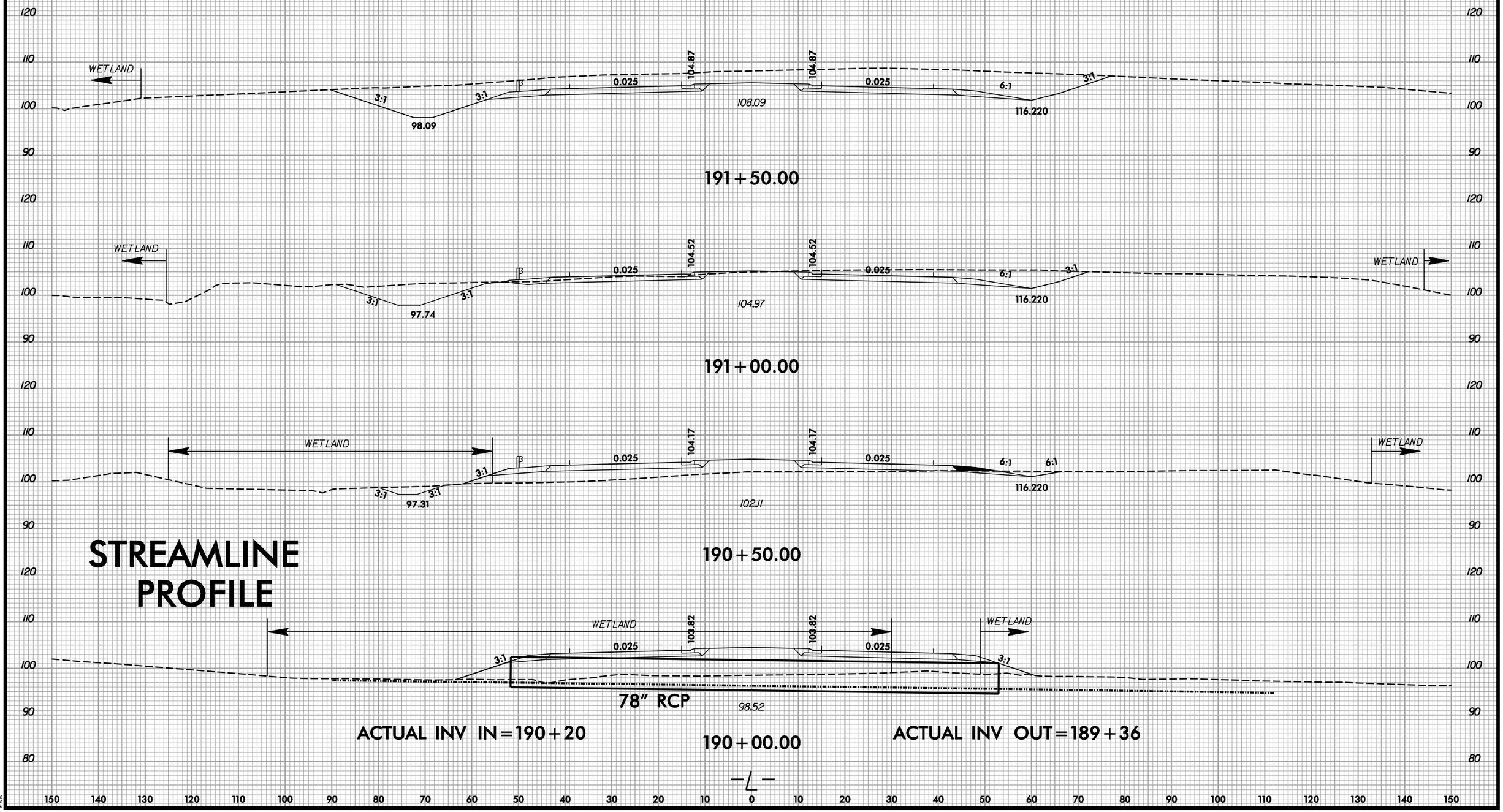
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-91

SITE 13

BUFFER DRAWING
SHEET 44 OF 56



STREAMLINE PROFILE

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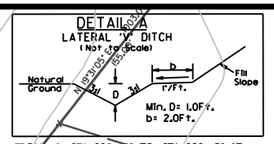
rkk

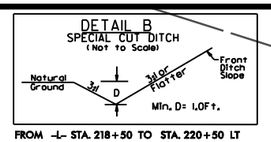
8/17/99

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



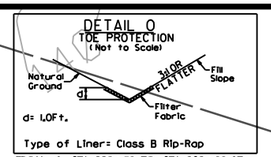
FROM -L- STA. 220+50 TO STA. 223+50 LT
FROM -Y5- STA. 11+00 TO STA. 12+00 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



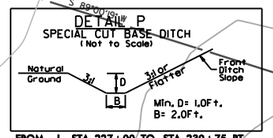
FROM -L- STA. 218+50 TO STA. 220+50 LT

DETAIL O
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap
FROM -L- STA. 228+50 TO STA. 232+00 LT

DETAIL P
SPECIAL CUT BASE DITCH
(Not to Scale)

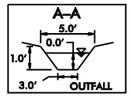


FROM -L- STA. 227+00 TO STA. 230+75 RT

GRASS SWALE DATA
-L- 227+00 - 230+75 RT
DA= 2.08ac
SLOPE= 0.30%
L REQ.= 208'
L PRO.= 250'
Q2= 6.65cfs
V2= 1.42ft/s
D2= 0.96'
Q10= 8.36cfs
V10= 1.66ft/s
D10= 1.00'

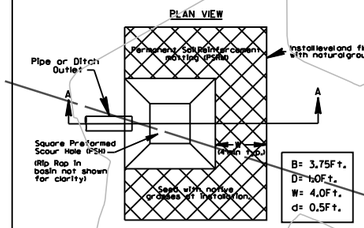
PREFORMED SCOUR HOLE DATA
-L- 230+80 RT
Q10= 4.30cfs
V10= 0.80ft/s

A-A

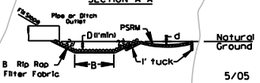


DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW



SECTION A-A



5/05

-Y5- STA. 11+50 LT

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
R-2823	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 45 OF 56

MATCHLINE -L- STA. 219+00 SEE SHEET 19

MATCHLINE -L- STA. 232+00 SEE SHEET 21

MATCHLINE -Y5- STA. 16+00 SEE SHEET 29

WILLIAM HERBERT TURNER (63)
LATERAL V DITCH SEE DETAIL A
48" WW FENCE
HP STA. 222+57.88 -L-
INV=134.98 C
2 TON CL B RIPRAP W/7 SY FIL FAB
SPECIAL CUT DITCH F SEE DETAIL B
CPES
CB 200
S 89°00'19" W 1571.99'
TOE PROTECTION SEE DETAIL O
SITE 15
NO DEFINED CHANNEL
INV=119.50
HW 209
CB 207
SPECIAL CUT BASE DITCH SEE DETAIL P
INV= 131.66 18"
PSH SEE DETAIL H
INV= 132.56
LATERAL V DITCH SEE DETAIL A
JAMES B. MARTIN, JR. ET AL (62)
WOODS
CULTIVATED
W. W. EATMON HEIRS (61)
S 18°00'01" W 165.50'
N 88°58'23" E 107.30'
N 88°58'23" E 102.10'
CAROLYN EATMON PARKER
S 6°32'23" W 240.00'
W. W. EATMON HEIRS (64)
N 88°58'23" E 738.37'
W. W. EATMON HEIRS (64)
S 38°35'37" W 400.93'
WILLIAM HERBERT TURNER (65)
S 89°00'19" W 1730.38'
BZ 1
BZ 2
WLB
WOODS
2 TON CL B RIPRAP W/7 SY FIL FAB INV=122.43
BDO 199
INV= 122.13
SITE 16
117.33
26 TONS CL I RIPRAP W/50 SY FIL FAB RIPRAP ON RANKS ONLY INV=117.04
MW
CULTIVATED
WOODS
JAMES B. MARTIN, JR. ET AL (62)
15

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

FOR -L- PROFILE SEE SHTS.38 & 39
FOR -Y5- PROFILE SEE SHT.43

PLANS PREPARED BY :
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(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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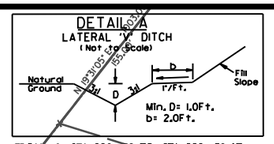
tkk

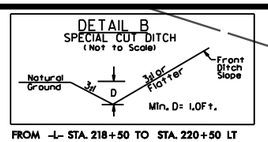
8/17/99

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



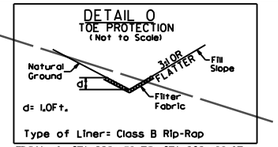
FROM -L- STA. 220+50 TO STA. 223+50 LT
FROM -Y5- STA. 11+00 TO STA. 12+00 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



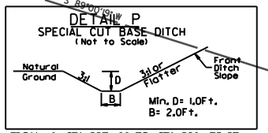
FROM -L- STA. 218+50 TO STA. 220+50 LT

DETAIL Q
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap
FROM -L- STA. 228+50 TO STA. 232+00 LT

DETAIL P
SPECIAL CUT BASE DITCH
(Not to Scale)

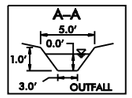


FROM -L- STA. 227+00 TO STA. 230+75 RT

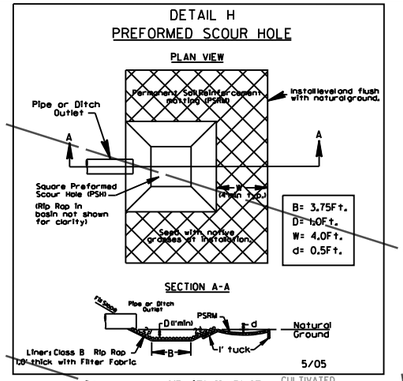
GRASS SWALE DATA
-L- 227+00 - 230+75 RT
DA= 2.08ac
SLOPE= 0.30%
L REQ.= 208'
L PRO.= 250'
Q2= 6.65cfs
V2= 1.42ft/s
D2= 0.96'
Q10= 8.36cfs
V10= 1.66ft/s
D10= 1.00'

PREFORMED SCOUR HOLE DATA
-L- 230+80 RT
Q10= 4.30cfs
V10= 0.80ft/s

A-A



DETAIL H
PREFORMED SCOUR HOLE



-Y5- STA. 11+50 LT

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
R-2823	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 46 OF 56

WILLIAM HERBERT TURNER
63
LATERAL V DITCH SEE DETAIL A
45' WW FENCE
HP
STA. 222+57.88 -L-
INV=134.98
2 TON CL B RIPRAP W/7 SY FIL FAB
SPECIAL CUT DITCH SEE DETAIL B
207
CPES
CB
200
S 89°00'19" W 1571.99'
MATCHLINE -L- STA. 219+00 SEE SHEET 19
CULTIVATED
JAMES B. MARTIN, JR. ET AL
62
LATERAL V DITCH SEE DETAIL A
202
INV= 132.56
INV= 131.66
18"
PSH SEE DETAIL H
WOODS
W. W. EATMON HEIRS
61
S 18°20'07" W 165.50'
N 88°58'23" E 107.30'
N 88°58'23" E 102.70'
CAROLYN EATMON PARKER
S 5°52'23" W 240.00'
18.30'
W. W. EATMON HEIRS
64
MATCHLINE -Y5- STA. 16+00 SEE SHEET 29
WILLIAM HERBERT TURNER
65
225
TOE PROTECTION SEE DETAIL Q
S 89°00'19" W 1612.38'
SPECIAL CUT BASE DITCH SEE DETAIL P
WILLIAM HERBERT TURNER
63
WOODS
JAMES B. MARTIN, JR. ET AL
62
15
W. W. EATMON HEIRS
64
S 38°25'37" W 400.33'
230
WLB
BZ 1
BZ 2
61'M
S 89°00'19" W 1730.38'
WOODS
SITE 15
NO DEFINED CHANNEL
123.37
INV= 119.50
207
CB
209
HW
210
BDO
199
2 TON CL B RIPRAP W/7 SY FIL FAB INV=122.43
INV= 122.13
CULTIVATED
SITE 16
117.33
26 TONS CL I RIPRAP W/50 SY FIL FAB RIPRAP ON BANKS ONLY INV=117.04
MATCHLINE -L- STA. 232+00 SEE SHEET 21

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

FOR -L- PROFILE SEE SHTS.38 & 39
FOR -Y5- PROFILE SEE SHT.43

PLANS PREPARED BY :
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consulting engineers
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RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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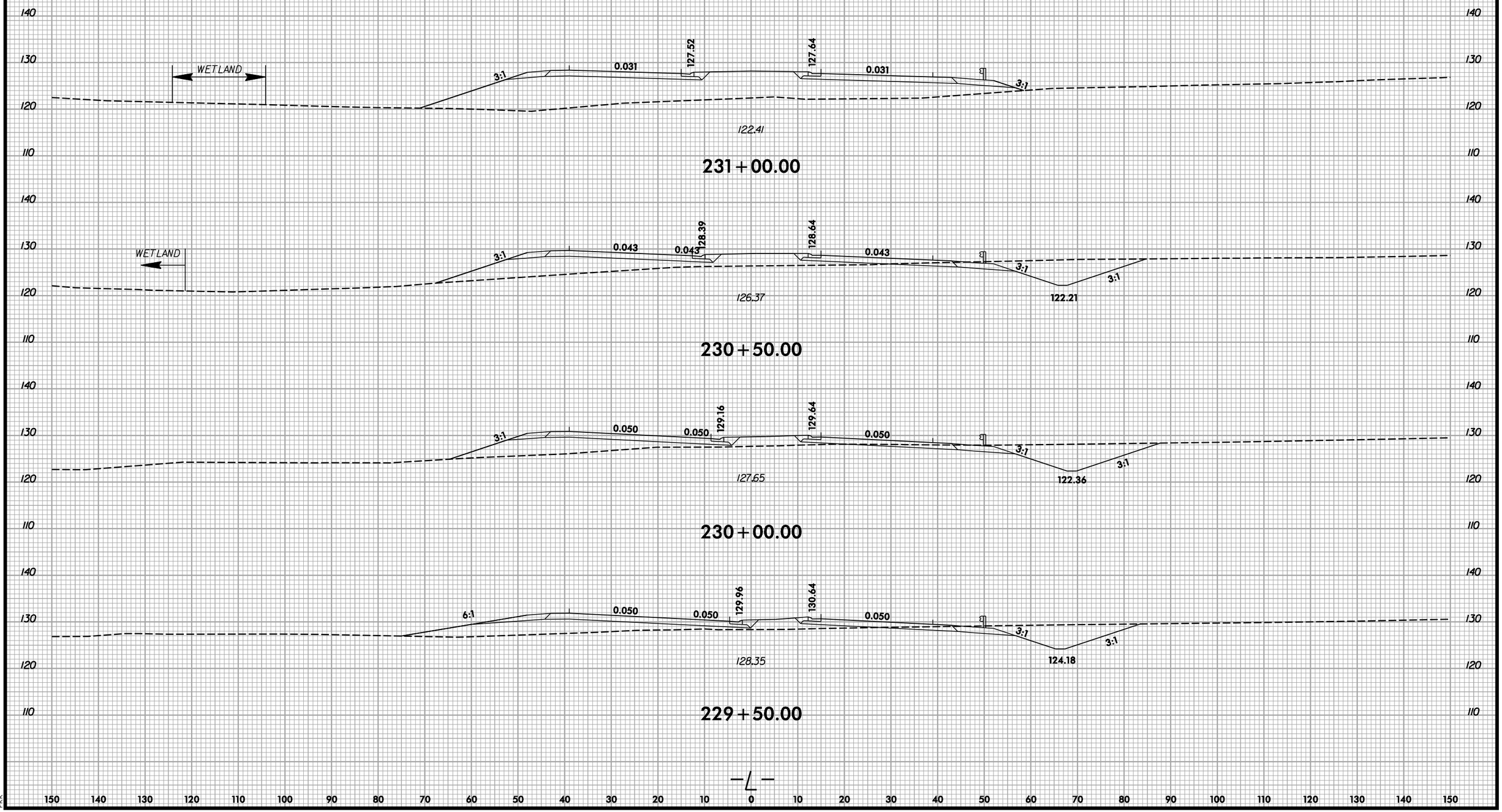
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-111

SITES 15 & 16

BUFFER DRAWING
SHEET 47 OF 56



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8/23/99

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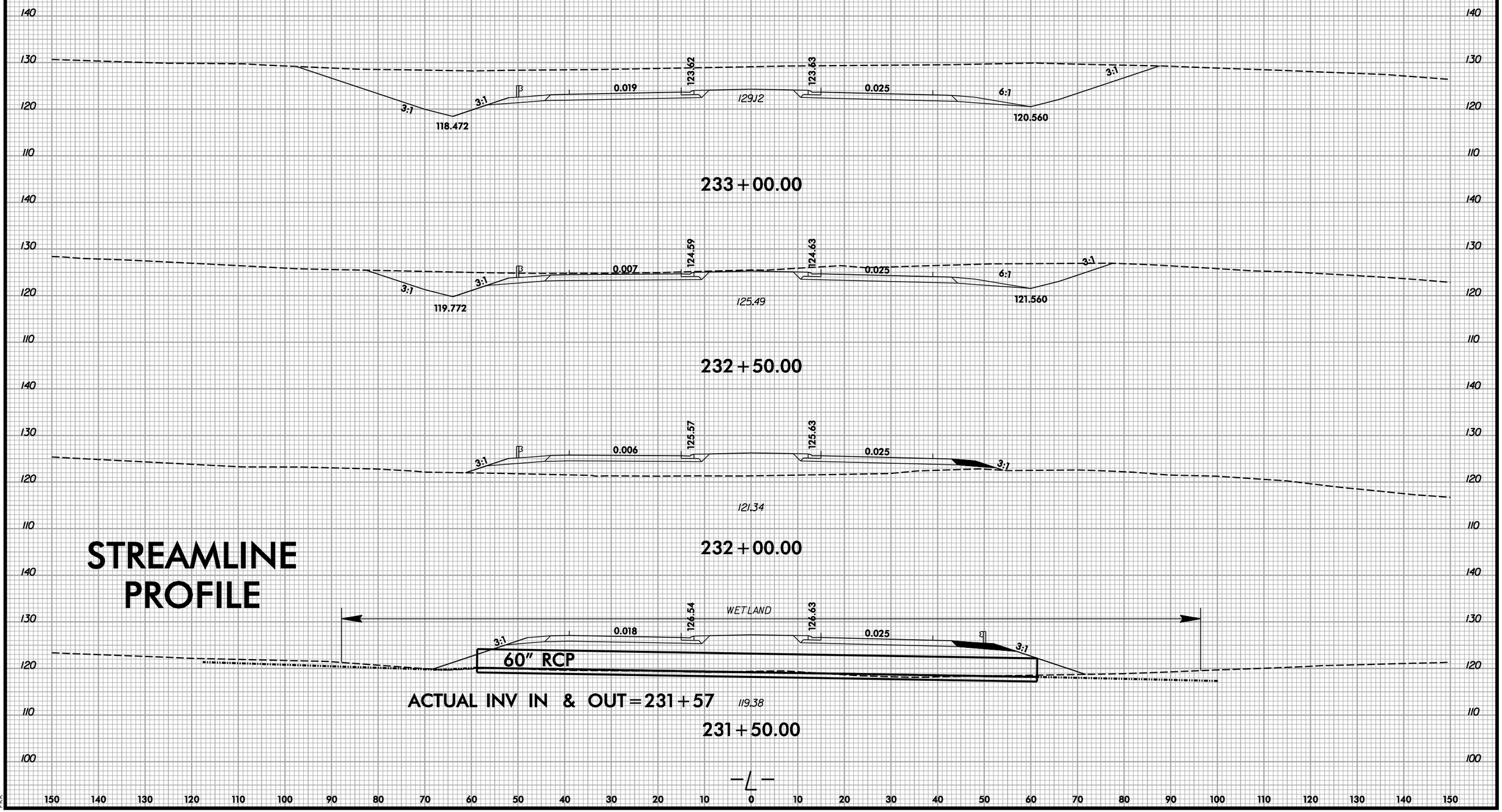
	R-2823	X-112

SITES 15 & 16

BUFFER DRAWING
SHEET 48 OF 56



STREAMLINE PROFILE

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

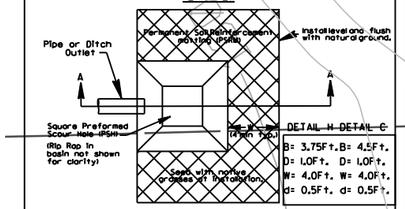
BUFFER DRAWING SHEET 49 OF 56

ENGLISH

MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

DETAIL C
DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

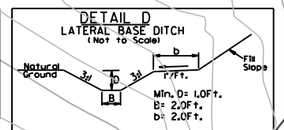


DETAIL C
-L- STA. 241+05 LT
DETAIL H
-L-L- STA. 238+25 RT
-L- STA. 239+20 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

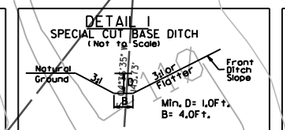
FROM -L- STA. 233+50 TO STA. 235+00 LT
FROM -L- STA. 243+50 TO STA. 244+50 LT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



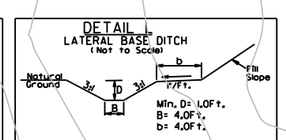
FROM -L- STA. 241+10 TO STA. 243+50 LT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 236+00 TO STA. 236+50 LT

DETAIL J
LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 236+50 TO STA. 239+15 LT

GRASS SWALE DATA
-L- 232+50 - 239+15 LT
DA= 1.73ac
SLOPE= 1.65%
L REQ.= 173'
L PRO.= 365'
Q2= 5.53cfs
V2= 1.85ft/s
D2= 0.36'
Q10= 6.95cfs
V10= 1.99ft/s
D10= 0.40'

PREFORMED SCOUR HOLE DATA
-L- 238+25 RT
Q10= 1.48cfs
V10= 0.37ft/s

PREFORMED SCOUR HOLE DATA
-L- 241+05 LT
Q10= 13.19cfs
V10= 1.21ft/s

PREFORMED SCOUR HOLE DATA
-L- 239+20 LT
Q10= 6.95cfs
V10= 0.92ft/s

MATCHLINE -L- STA. 232+00 SEE SHEET 20

MATCHLINE -L- STA. 245+00 SEE SHEET 22

SITE 17

SITE 16

WILLIAM HERBERT TURNER (65)
MACK B. PEARSALL (66)
WALTER I. THARRINGTON (67, 68, 69, 70, 71, 72)
WILLIAM HERBERT TURNER (63)
MACK B. PEARSALL (66)
RICKY ALLEN DEW JR.
JOHN I. & BATHILDA WILLIAMS
THOMAS L. WILLIAMS
SYNTHIA LEE STEELE
SUSAN A. STEGMETER

SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT BASE DITCH SEE DETAIL I
LATERAL BASE DITCH SEE DETAIL L
LATERAL BASE DITCH SEE DETAIL D
SPECIAL CUT DITCH SEE DETAIL B
48" WW FENCE
8' X 9' RCBC
INV=108.66
2 TONS CL B RIPRAP W/7 SY FIL FAB
2 ELBOWS W/ ROD AND LUG
PSH SEE DETAIL H
PSH SEE DETAIL C
CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB
INV=110.90
LP STA. 237+20.00 -L-
42 TONS CL I RIPRAP W/60 SY FIL FAB 25 CY DDE
EXISTING PAVEMENT REMOVAL
FOR -L- PROFILE SEE SHT.39

PAVEMENT REMOVAL TO BE PERFORMED ALONG -Y7- FROM STA.14+77+/- (FENNER RD.& INSTRUMENT DR. INTERSECTION) TO STA.39+92+/- (FENNER RD.& BISHOP RD.INTERSECTION)

CURB & GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	238+23.00	239+88.00	RT
EXP.GUTTER	-L-	239+88.00	241+00.00	RT
EXP.GUTTER	-L-	238+73.00	239+46.40	LT
SBG	-L-	239+46.40	241+00.00	LT

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

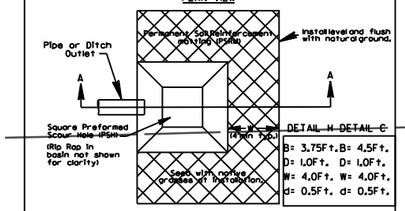
BUFFER DRAWING SHEET 50 OF 56

ENGLISH

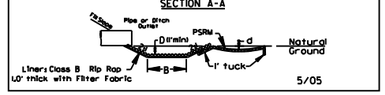
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

DETAIL C
DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

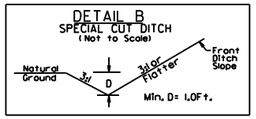


SECTION A-A



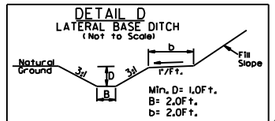
DETAIL C
-L- STA. 241+05 LT
DETAIL H
-L-L- STA. 238+25 RT
-L- STA. 239+20 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



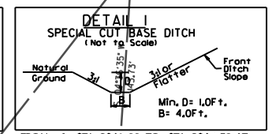
FROM -L- STA. 233+50 TO STA. 235+00 LT
FROM -L- STA. 243+50 TO STA. 244+50 LT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



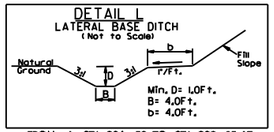
FROM -L- STA. 241+10 TO STA. 243+50 LT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 236+00 TO STA. 236+50 LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



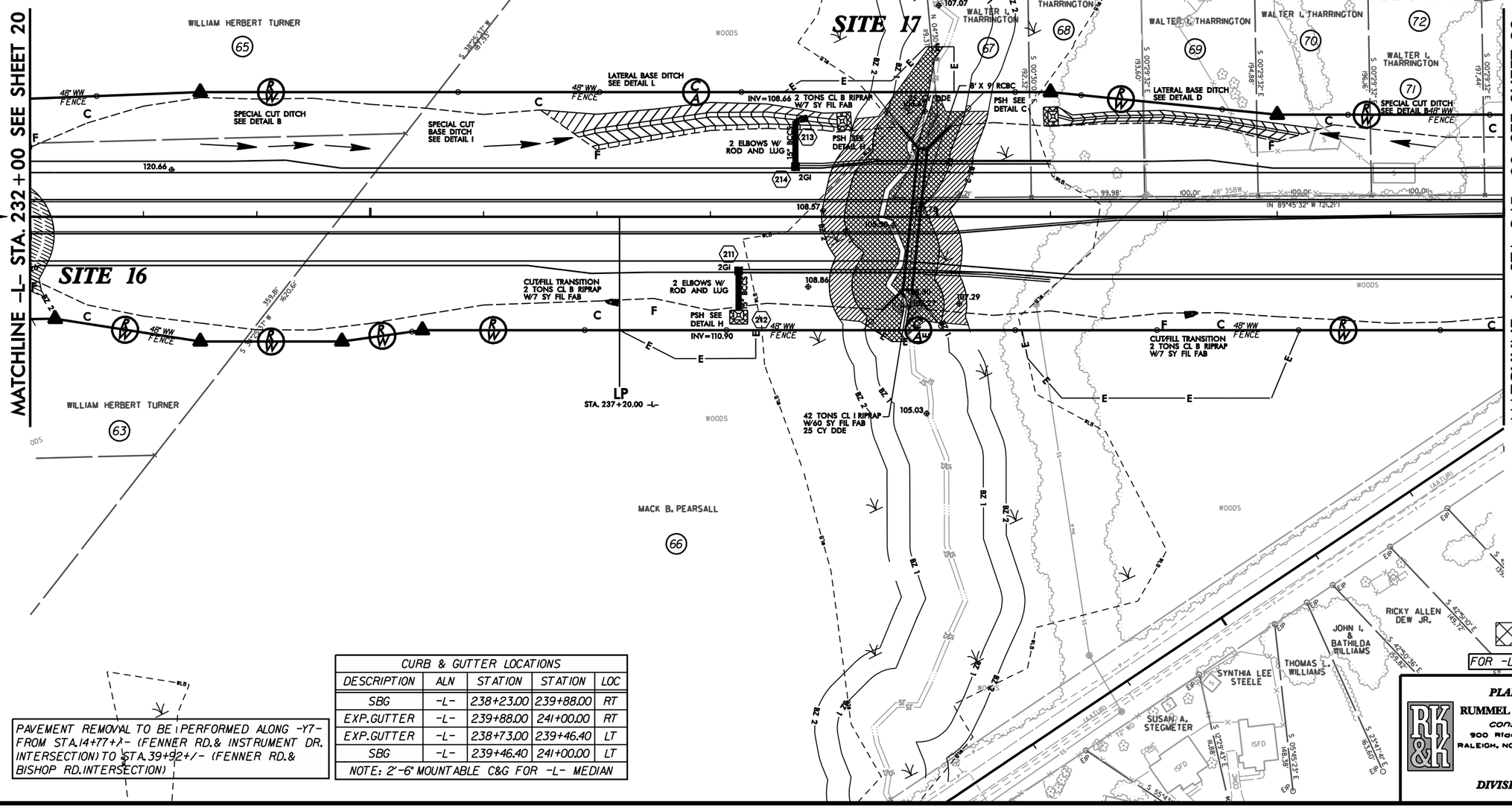
FROM -L- STA. 236+50 TO STA. 239+15 LT

GRASS SWALE DATA -L- 232+50 - 239+15 LT	
DA=	1.73ac
SLOPE=	1.65%
L REQ.=	173'
L PRO.=	365'
Q2=	5.53cfs
V2=	1.85ft/s
D2=	0.36'
Q10=	6.95cfs
V10=	1.99ft/s
D10=	0.40'

PREFORMED SCOUR HOLE DATA -L- 238+25 RT	
Q10=	1.48cfs
V10=	0.37ft/s

PREFORMED SCOUR HOLE DATA -L- 241+05 LT	
Q10=	13.19cfs
V10=	1.21ft/s

PREFORMED SCOUR HOLE DATA -L- 239+20 LT	
Q10=	6.95cfs
V10=	0.92ft/s



CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	238+23.00	239+88.00	RT
EXP.GUTTER	-L-	239+88.00	241+00.00	RT
EXP.GUTTER	-L-	238+73.00	239+46.40	LT
SBG	-L-	239+46.40	241+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

PAVEMENT REMOVAL TO BE PERFORMED ALONG -Y7- FROM STA.14+77+/- (FENNER RD.& INSTRUMENT DR. INTERSECTION) TO STA.39+92+/- (FENNER RD.& BISHOP RD.INTERSECTION)

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 51 OF 56

-L-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 60" RCP
STA. 231+57 -L-

DRAINAGE AREA	= 31	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 124.5	FT
100 YEAR DISCHARGE	= 90	CFS
100 YEAR HW ELEVATION	= 124.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 130	CFS
OVERTOPPING ELEVATION	= 126.5	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 8'x9' RCBC
STA. 239+81 -L-

DRAINAGE AREA	= 356	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 600	CFS
DESIGN HW ELEVATION	= 116.1	FT
100 YEAR DISCHARGE	= 700	CFS
100 YEAR HW ELEVATION	= 117.6	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 935	CFS
OVERTOPPING ELEVATION	= 118.5	FT

BM #7
RR SPIKE IN BASE OF 48" OAK
-L- STA. 230+89.38 244.47' RT
ELEV. = 130.71'

PROPOSED GRADE
EXISTING GROUND

PI = 236+00.00
EL = 117.66'
VC = 400'
K = 160

PI = 241+90.00
EL = 120.61'
VC = 250'
K = 200

(-) 1.80% RT
(-) 7.03% RT
(-) 0.30% RT
(-) 0.30% LT
(-) 12.0000%
(+) 10.5000%
(-) 4.26% LT
(-) 1.65% LT
(+) 10.5000%
(+) 11.7500%
(+) 4.02% LT

60" PIPE

END SP. CUT DITCH
-L- STA. 230+75 RT
EL. 122.13

PI -L- STA. 229+75 RT
EL. 122.43

PI -L- STA. 229+00 RT
EL. 127.70

BEG. SP. CUT DITCH
-L- STA. 233+50 LT
EL. 117.32

END SP. CUT DITCH
-L- STA. 235+00 LT
EL. 116.87

BEG. SP. CUT BASE DITCH
-L- STA. 236+00 LT
EL. 115.81

END SP. CUT BASE DITCH
BEG. LAT. BASE DITCH
-L- STA. 236+50 LT
EL. 113.68

PI -L- STA. 237+00 LT.
EL. 111.55

END LAT. BASE DITCH
-L- STA. 239+15 LT
EL. 108.00

8'x9' RCBC

BEG. LAT. BASE DITCH
-L- STA. 241+10 LT
EL. 108.39

228+00 229+00 230+00 231+00 232+00 233+00 234+00 235+00 236+00 237+00 238+00 239+00 240+00 241+00 242+00

170 160 150 140 130 120 110 100 90 80

PI = 249+21.91
EL = 133.42'
VC = 650'
K = 277

PROPOSED GRADE
EXISTING GROUND

(+) 11.7500%
(-) 10.6000%
(+) 11.7500%
(+) 4.02% LT
(+) 4.02% LT
(+) 0.33% RT

-Y6- STA. 17+85.33=
-L- STA. 247+13.23

END LAT. BASE DITCH
BEG. SP. CUT DITCH
-L- STA. 243+50 LT
EL. 118.04

END SP. CUT DITCH
-L- STA. 244+50 LT
EL. 122.06

BEG. SP. CUT DITCH
-L- STA. 245+50 RT
EL. 123.51

END SP. CUT DITCH
-L- STA. 246+50 RT
EL. 123.84

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS. 20 THRU 22

242+00 243+00 244+00 245+00 246+00 247+00 248+00 249+00 250+00 251+00 252+00 253+00 254+00 255+00 256+00

170 160 150 140 130 120 110 100 90 80

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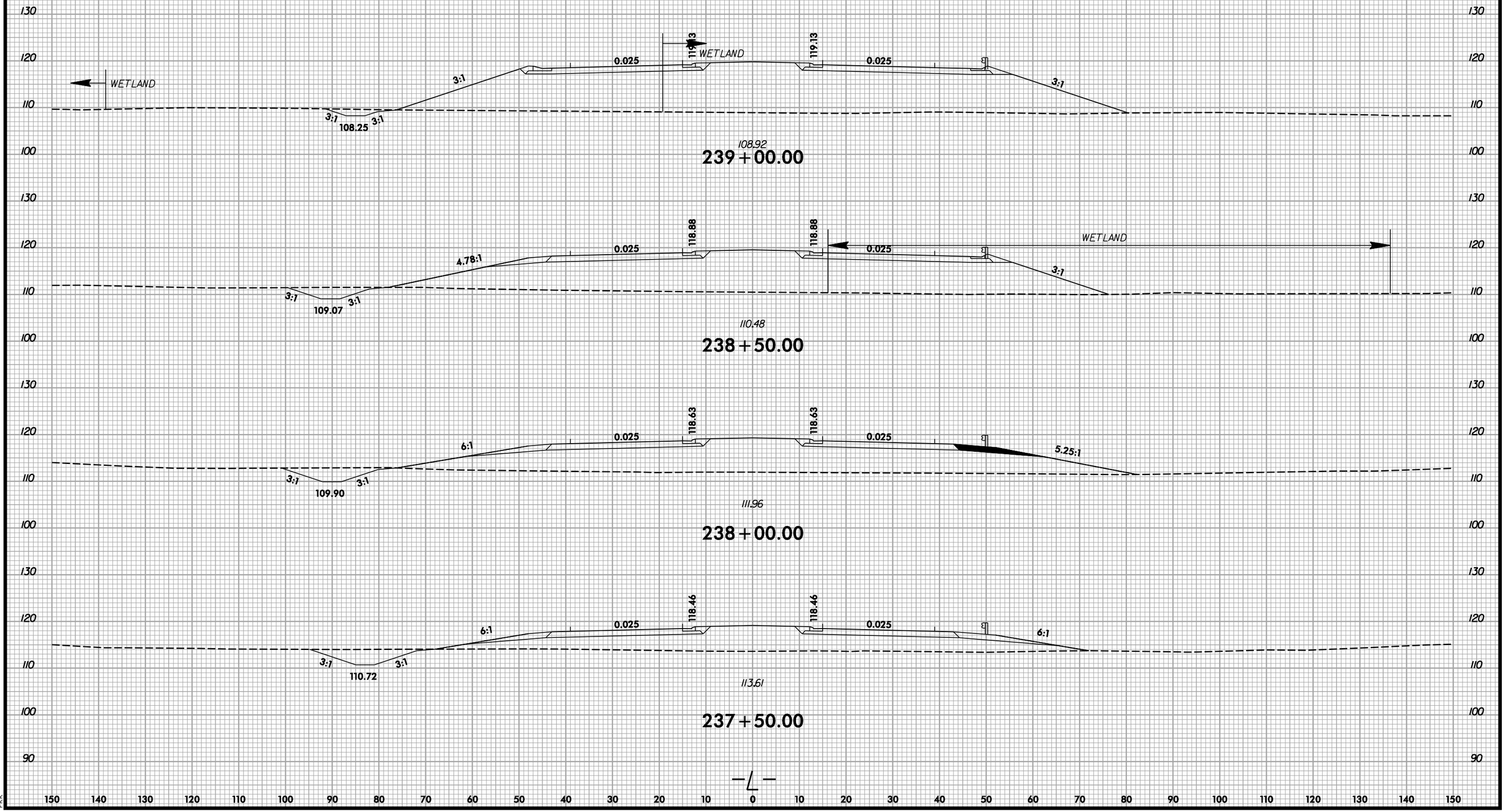
	R-2823	X-115

SITE 17

BUFFER DRAWING
SHEET 52 OF 56



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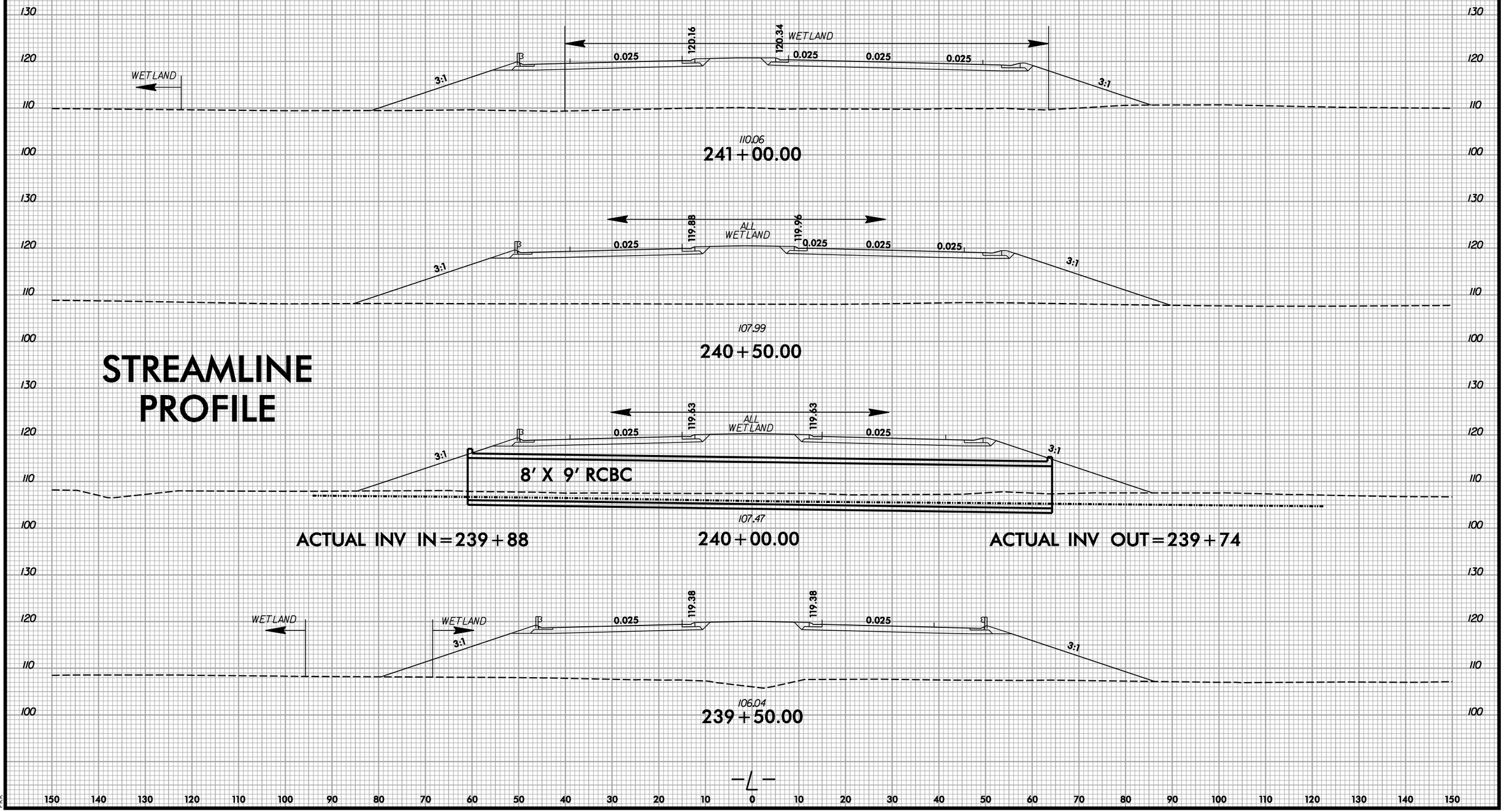
	R-2823	X-116

SITE 17
BUFFER DRAWING
SHEET 53 OF 56

STREAMLINE PROFILE



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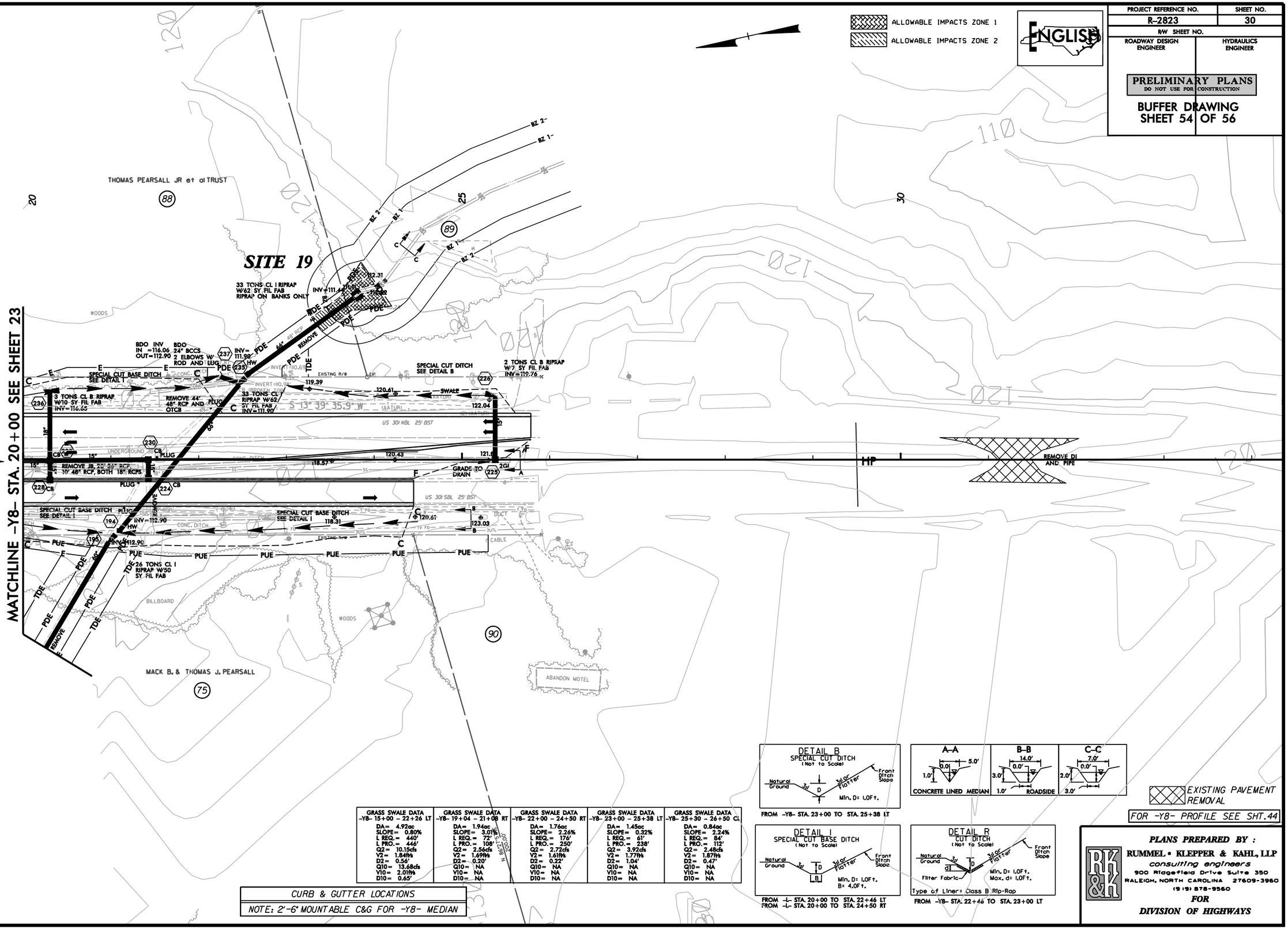
PROJECT REFERENCE NO.	SHEET NO.
R-2823	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 54 OF 56

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

ENGLISH



GRASS SWALE DATA -Y8- 15+00 – 22+26 LT	GRASS SWALE DATA -Y8- 19+04 – 21+08 RT	GRASS SWALE DATA -Y8- 22+00 – 24+50 RT	GRASS SWALE DATA -Y8- 23+00 – 25+38 LT	GRASS SWALE DATA -Y8- 25+30 – 26+50 Cl
DA= 4.92ac	DA= 1.94ac	DA= 1.76ac	DA= 1.45ac	DA= 0.84ac
SLOPE= 0.80%	SLOPE= 3.01%	SLOPE= 2.26%	SLOPE= 0.32%	SLOPE= 2.24%
L REQ.= 440'	L REQ.= 72'	L REQ.= 176'	L REQ.= 61'	L REQ.= 84'
L PRO.= 446'	L PRO.= 108'	L PRO.= 250'	L PRO.= 238'	L PRO.= 112'
Q2= 10.15cfs	Q2= 2.56cfs	Q2= 2.72cfs	Q2= 3.92cfs	Q2= 2.48cfs
V2= 1.84ft/s	V2= 1.69ft/s	V2= 1.61ft/s	V2= 1.77ft/s	V2= 1.87ft/s
D2= 0.56'	D2= 0.20'	D2= 0.22'	D2= 1.04'	D2= 0.47'
Q10= 13.68cfs	Q10= NA	Q10= NA	Q10= NA	Q10= NA
V10= 2.01ft/s	V10= NA	V10= NA	V10= NA	V10= NA
D10= 0.65'	D10= NA	D10= NA	D10= NA	D10= NA

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -Y8- MEDIAN

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1 or Flatter, Front Ditch Slope
Min. D= 1.0Ft.
FROM -Y8- STA. 23+00 TO STA. 25+38 LT

A–A CONCRETE LINED MEDIAN: 5.0', 5.0', 1.0'
B–B ROADSIDE: 14.0', 0.0', 3.0', 1.0'
C–C: 7.0', 0.0', 2.0', 3.0'

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1 or Flatter, Front Ditch Slope, B
Min. D= 1.0Ft.
B= 4.0Ft.
FROM -L- STA. 20+00 TO STA. 22+46 LT
FROM -L- STA. 20+00 TO STA. 24+50 RT

DETAIL R
CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1 or Flatter, Front Ditch Slope, Filter Fabric
Min. D= 1.0Ft.
Max. d= 1.0Ft.
Type of Liner= Class B Rip-Rap
FROM -Y8- STA. 22+46 TO STA. 23+00 LT

EXISTING PAVEMENT REMOVAL

FOR -Y8- PROFILE SEE SHT.44

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
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(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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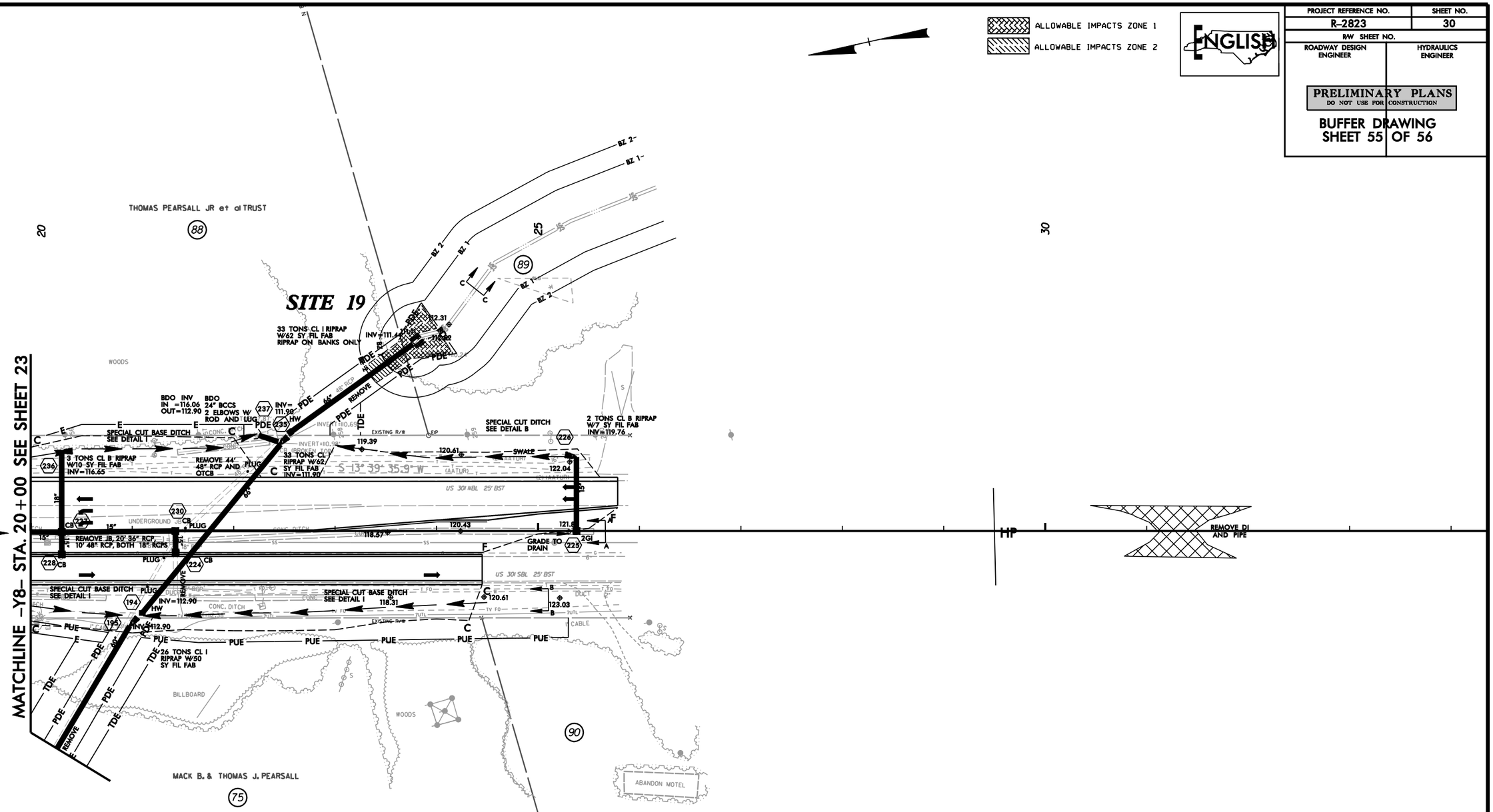
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

ENGLISH

PROJECT REFERENCE NO.	SHEET NO.
R-2823	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BUFFER DRAWING
SHEET 55 OF 56



GRASS SWALE DATA -Y8- 15+00 – 22+26 LT	GRASS SWALE DATA -Y8- 19+04 – 21+08 RT	GRASS SWALE DATA -Y8- 22+00 – 24+50 RT	GRASS SWALE DATA -Y8- 23+00 – 25+38 LT	GRASS SWALE DATA -Y8- 25+30 – 26+50 CL
DA= 4.92ac	DA= 1.94ac	DA= 1.76ac	DA= 1.45ac	DA= 0.84ac
SLOPE= 0.80%	SLOPE= 3.01%	SLOPE= 2.26%	SLOPE= 0.32%	SLOPE= 2.24%
L REQ.= 440'	L REQ.= 72'	L REQ.= 176'	L REQ.= 61'	L REQ.= 84'
L PRO.= 446'	L PRO.= 108'	L PRO.= 250'	L PRO.= 238'	L PRO.= 112'
Q2= 10.15cfs	Q2= 2.56cfs	Q2= 2.72cfs	Q2= 3.92cfs	Q2= 2.48cfs
V2= 1.84f/s	V2= 1.69f/s	V2= 1.61f/s	V2= 1.77f/s	V2= 1.87f/s
D2= 0.56'	D2= 0.20'	D2= 0.22'	D2= 1.04'	D2= 0.47'
Q10= 13.68cfs	Q10= NA	Q10= NA	Q10= NA	Q10= NA
V10= 2.01f/s	V10= NA	V10= NA	V10= NA	V10= NA
D10= 0.65'	D10= NA	D10= NA	D10= NA	D10= NA

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -Y8- MEDIAN

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1 or Flatter
Front Ditch Slope
Min. D= 1.0Ft.
FROM -Y8- STA. 23+00 TO STA. 25+38 LT

A–A
5.0'
5.0'
1.0'
CONCRETE LINED MEDIAN

B–B
14.0'
0.0'
3.0'
1.0'
ROADSIDE

C–C
7.0'
0.0'
2.0'
3.0'

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1 or Flatter
Front Ditch Slope
B
Min. D= 1.0Ft.
B= 4.0Ft.
FROM -L- STA. 20+00 TO STA. 22+46 LT
FROM -L- STA. 20+00 TO STA. 24+50 RT

DETAIL R
CUT DITCH
(Not to Scale)
Natural Ground
3:1
D
3:1 or Flatter
Front Ditch Slope
Filter Fabric
Min. D= 1.0Ft.
Max. d= 1.0Ft.
Type of Liner= Class B Rip-Rap
FROM -Y8- STA. 22+46 TO STA. 23+00 LT

EXISTING PAVEMENT REMOVAL

FOR -Y8- PROFILE SEE SHT.44

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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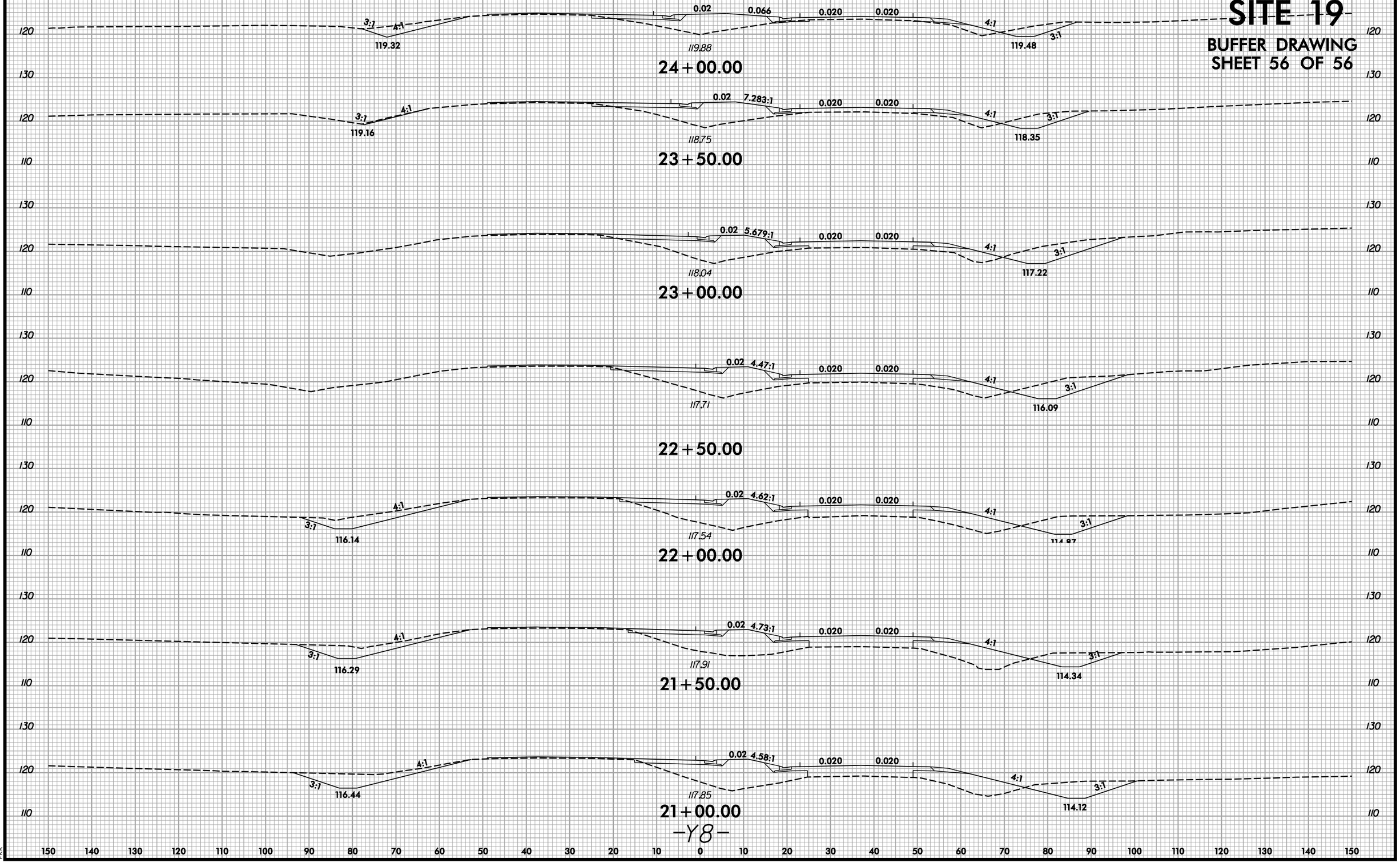
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2823	X-160

SITE 19

BUFFER DRAWING
SHEET 56 OF 56



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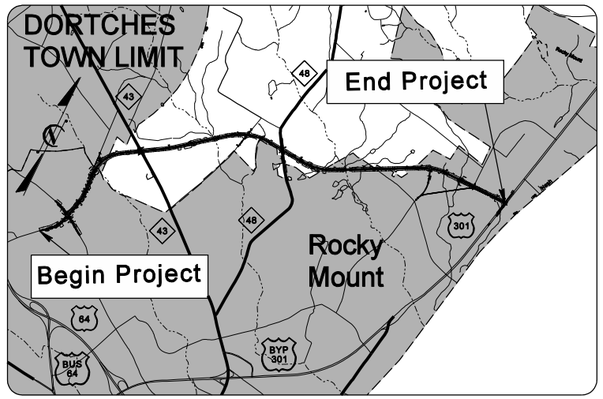
T.I.P. PROJECT: R-2823

CONTRACT: C201917

SEE SHEET 1-B FOR CONVENTIONAL PLAN SHEET SYMBOLS



VICINITY MAP

NOTES:
1. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
2. THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
3. A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ROCKY MOUNT AND DORTCHES.

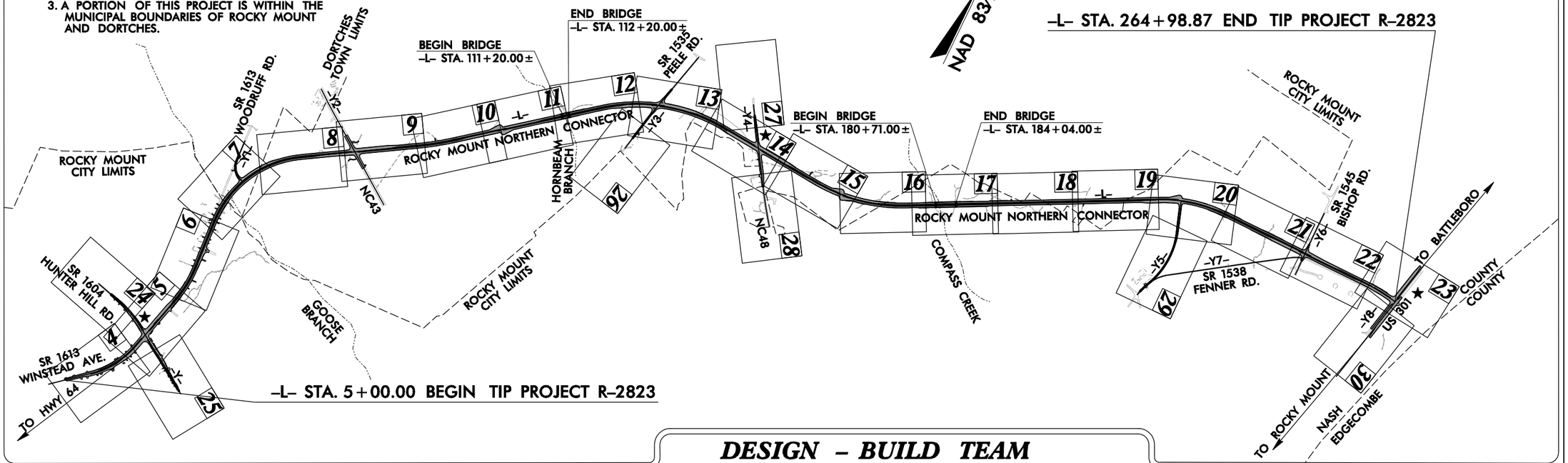
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NASH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2823	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
34509.2.GV1	STP-0431(24)	CONST.	

LOCATION: *ROCKY MOUNT NORTHERN CONNECTOR FROM SR 1604 (HUNTER HILL RD.) TO US 301*

TYPE OF WORK: *PAVING, GRADING, DRAINAGE, UTILITIES, STRUCTURES, CULVERTS, SOUND BARRIER WALLS, SIGNING, & SIGNALS*



DESIGN - BUILD TEAM

GRAPHIC SCALES

PLANS: 50 0 50 100

PROFILE (HORIZONTAL): 50 0 50 100

PROFILE (VERTICAL): 10 0 10 20

DESIGN DATA

ADT 2009	=	12,500
ADT 2030	=	24,000
DHV	=	10%
D	=	60%
T	=	7%
V	=	60 mph

*(TTST = 3%,DUAL= 4%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2823.....	4.842 mi
LENGTH STRUCTURE TIP PROJECT R-2823.....	0.082 mi
TOTAL LENGTH TIP PROJECT R-2823.....	4.924 mi

PLANS PREPARED BY :
RUMMEL, KLEPPER & KAHL, LLP
consulting engineers
900 RIDGEFIELD DRIVE, SUITE 350
RALEIGH, NORTH CAROLINA 27609
FOR
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

LETTING DATE:
MAY 20, 2008

J. T. Peacock, Jr., P.E.
PROJECT ENGINEER

Brandon J. McInnis, P.E.
PROJECT DESIGN ENGINEER

CONTRACTOR :
PLT CONSTRUCTION CO., INC.
5676 THOMPSON CHAPEL CHURCH ROAD
WILSON, NORTH CAROLINA 27896

HYDRAULICS ENGINEER
SIGNATURE: *P.E.*
ROADWAY DESIGN ENGINEER
SIGNATURE: *P.E.*

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

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Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

PROJECT REFERENCE NO.	SHEET NO.
R-2823	1B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 High Quality Wetland Boundary — HQ WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

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
- River Basin Buffer — RBB
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Guage — 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 Marker — RW
- 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 Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equaility 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 — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.
- Proposed Signal

12\16\08 11:16:45
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bgawchains

PROJ. REFERENCE NO.	SHEET NO.
R-2823	1-C

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CENTERLINE COORDINATE LIST

Point #	Chain	Station	Northing (Y)	Easting (X)
1	L	2+00.00	813755.9305	2342496.9530
2	L	2+50.00	813788.2051	2342535.1413
3	L	3+00.00	813820.4798	2342573.3297
4	L	3+50.00	813852.7544	2342611.5180
5	L	4+00.00	813885.0290	2342649.7063
6	L	4+50.00	813917.3037	2342687.8946
7	L	5+00.00	813949.5783	2342726.0830
8	L	5+50.00	813981.8529	2342764.2713
9	L	6+00.00	814014.1276	2342802.4596
10	L	6+50.00	814046.4022	2342840.6479
11	L	7+00.00	814078.6768	2342878.8363
12	L	7+50.00	814110.9515	2342917.0246
13	L	8+00.00	814143.2261	2342955.2129
14	L	8+50.00	814175.5007	2342993.4012
15	L	9+00.00	814207.7754	2343031.5895
16	L	9+50.00	814240.0500	2343069.7779
17	L	10+00.00	814272.3246	2343107.9662
18	L	10+50.00	814305.2381	2343145.6021
19	L	11+00.00	814339.4041	2343182.1049
20	L	11+50.00	814374.7835	2343217.4327
21	L	12+00.00	814411.3361	2343251.5454
22	L	12+50.00	814449.0200	2343284.4040
23	L	13+00.00	814487.7923	2343315.9709
24	L	13+50.00	814527.6087	2343346.2102
25	L	14+00.00	814568.4237	2343375.0874
26	L	14+50.00	814610.1909	2343402.5695
27	L	15+00.00	814652.8626	2343428.6251
28	L	15+50.00	814696.3899	2343453.2244
29	L	16+00.00	814740.7234	2343476.3396
30	L	16+50.00	814785.8123	2343497.9440
31	L	17+00.00	814831.6052	2343518.0132
32	L	17+50.00	814878.0499	2343536.5241
33	L	18+00.00	814925.0933	2343553.4557
34	L	18+50.00	814972.6818	2343568.7886
35	L	19+00.00	815020.7610	2343582.5054
36	L	19+50.00	815069.0802	2343595.3605
37	L	20+00.00	815117.3996	2343608.2150
38	L	20+50.00	815165.7190	2343621.0694
39	L	21+00.00	815214.0384	2343633.9238
40	L	21+50.00	815262.3578	2343646.7783
41	L	22+00.00	815310.6772	2343659.6327
42	L	22+50.00	815358.9966	2343672.4871
43	L	23+00.00	815407.3160	2343685.3415
44	L	23+50.00	815455.6354	2343698.1960
45	L	24+00.00	815503.9547	2343711.0504
46	L	24+50.00	815552.2741	2343723.9048
47	L	25+00.00	815600.5935	2343736.7592
48	L	25+50.00	815648.9129	2343749.6137
49	L	26+00.00	815697.2323	2343762.4681
50	L	26+50.00	815745.5517	2343775.3225
51	L	27+00.00	815793.8711	2343788.1770
52	L	27+50.00	815842.1905	2343801.0314
53	L	28+00.00	815890.5099	2343813.8858
54	L	28+50.00	815938.8293	2343826.7402
55	L	29+00.00	815987.1487	2343839.5946
56	L	29+50.00	816035.4833	2343852.3916
57	L	30+00.00	816083.8957	2343864.8904
58	L	30+50.00	816132.4530	2343876.8130
59	L	31+00.00	816181.2122	2343887.8787
60	L	31+50.00	816230.2156	2343897.8047
61	L	32+00.00	816279.4699	2343906.3986
62	L	32+50.00	816328.9417	2343913.6364
63	L	33+00.00	816378.5936	2343919.5124
64	L	33+50.00	816428.3882	2343924.0224
65	L	34+00.00	816478.2879	2343927.1628
66	L	34+50.00	816528.2551	2343928.9314
67	L	35+00.00	816578.2520	2343929.3315
68	L	35+50.00	816628.2440	2343928.4979
69	L	36+00.00	816678.2115	2343926.7096
70	L	36+50.00	816728.1509	2343924.2531
71	L	37+00.00	816778.0702	2343921.4145
72	L	37+50.00	816827.9831	2343918.4658
73	L	38+00.00	816877.8960	2343915.5152
74	L	38+50.00	816927.8089	2343912.5646
75	L	39+00.00	816977.7217	2343909.6140
76	L	39+50.00	817027.6346	2343906.6634
77	L	40+00.00	817077.5475	2343903.7129
78	L	40+50.00	817127.4603	2343900.7623
79	L	41+00.00	817177.3732	2343897.8117
80	L	41+50.00	817227.2861	2343894.8611
81	L	42+00.00	817277.1989	2343891.9105
82	L	42+50.00	817327.1118	2343888.9599

Point #	Chain	Station	Northing (Y)	Easting (X)
83	L	43+00.00	817377.0246	2343886.0094
84	L	43+50.00	817426.9375	2343883.0588
85	L	44+00.00	817476.8504	2343880.1090
86	L	44+50.00	817526.7687	2343877.2519
87	L	45+00.00	817576.7060	2343874.7537
88	L	45+50.00	817626.6711	2343872.9004
89	L	46+00.00	817676.6617	2343871.9784
90	L	46+50.00	817726.6593	2343872.2697
91	L	47+00.00	817776.6303	2343873.9267
92	L	47+50.00	817826.5369	2343876.9556
93	L	48+00.00	817876.3415	2343881.3543
94	L	48+50.00	817926.0064	2343887.1194
95	L	49+00.00	817975.4942	2343894.2466
96	L	49+50.00	818024.7676	2343902.7305
97	L	50+00.00	818073.7894	2343912.5647
98	L	50+50.00	818122.5225	2343923.7418
99	L	51+00.00	818170.9302	2343936.2533
100	L	51+50.00	818218.9759	2343950.0898
101	L	52+00.00	818266.6235	2343965.2408
102	L	52+50.00	818313.8369	2343981.6949
103	L	53+00.00	818360.5804	2343999.4398
104	L	53+50.00	818406.8190	2344018.4620
105	L	54+00.00	818452.5175	2344038.7471
106	L	54+50.00	818497.6416	2344060.2798
107	L	55+00.00	818542.1572	2344083.0440
108	L	55+50.00	818586.0306	2344107.0223
109	L	56+00.00	818629.2289	2344132.1968
110	L	56+50.00	818671.7193	2344158.5484
111	L	57+00.00	818713.4699	2344186.0572
112	L	57+50.00	818754.4490	2344214.7025
113	L	58+00.00	818794.6258	2344244.4626
114	L	58+50.00	818833.9700	2344275.3151
115	L	59+00.00	818872.4519	2344307.2368
116	L	59+50.00	818910.0423	2344340.2034
117	L	60+00.00	818946.7130	2344374.1902
118	L	60+50.00	818982.4363	2344409.1715
119	L	61+00.00	819017.1852	2344445.1208
120	L	61+50.00	819050.9335	2344482.0111
121	L	62+00.00	819083.6558	2344519.8145
122	L	62+50.00	819115.3272	2344558.5025
123	L	63+00.00	819145.9240	2344598.0459
124	L	63+50.00	819175.4230	2344638.4149
125	L	64+00.00	819203.8206	2344679.5663
126	L	64+50.00	819231.2643	2344721.3605
127	L	65+00.00	819257.9812	2344763.6235
128	L	65+50.00	819284.2075	2344806.1931
129	L	66+00.00	819310.1845	2344848.9153
130	L	66+50.00	819336.1180	2344891.6641
131	L	67+00.00	819362.0515	2344934.4128
132	L	67+50.00	819387.9851	2344977.1615
133	L	68+00.00	819413.9186	2345019.9102
134	L	68+50.00	819439.8521	2345062.6589
135	L	69+00.00	819465.7856	2345105.4077
136	L	69+50.00	819491.7191	2345148.1564
137	L	70+00.00	819517.6526	2345190.9051
138	L	70+50.00	819543.5861	2345233.6538
139	L	71+00.00	819569.5196	2345276.4025
140	L	71+50.00	819595.4531	2345319.1513
141	L	72+00.00	819621.3866	2345361.9000
142	L	72+50.00	819647.3202	2345404.6487
143	L	73+00.00	819673.2537	2345447.3974
144	L	73+50.00	819699.1872	2345490.1461
145	L	74+00.00	819725.1207	2345532.8949
146	L	74+50.00	819751.0542	2345575.6436
147	L	75+00.00	819776.9877	2345618.3923
148	L	75+50.00	819802.9212	2345661.1410
149	L	76+00.00	819828.8547	2345703.8897
150	L	76+50.00	819854.7882	2345746.6385
151	L	77+00.00	819880.7217	2345789.3872
152	L	77+50.00	819906.6553	2345832.1359
153	L	78+00.00	819932.5888	2345874.8846
154	L	78+50.00	819958.5223	2345917.6333
155	L	79+00.00	819984.4558	2345960.3821
156	L	79+50.00	820010.3893	2346003.1308
157	L	80+00.00	820036.3228	2346045.8795
158	L	80+50.00	820062.2563	2346088.6282
159	L	81+00.00	820088.1898	2346131.3769
160	L	81+50.00	820114.1233	2346174.1257
161	L	82+00.00	820140.0568	2346216.8744
162	L	82+50.00	820165.9904	2346259.6231
163	L	83+00.00	820191.9239	2346302.3718
164	L	83+50.00	820217.8574	2346345.1205

Point #	Chain	Station	Northing (Y)	Easting (X)
165	L	84+00.00	820243.7909	2346387.8693
166	L	84+50.00	820269.7244	2346430.6180
167	L	85+00.00	820295.6600	2346473.3654
168	L	85+50.00	820321.6707	2346516.0672
169	L	86+00.00	820347.9148	2346558.6258
170	L	86+50.00	820374.5253	2346600.9562
171	L	87+00.00	820401.5251	2346643.0394
172	L	87+50.00	820428.9120	2346684.8716
173	L	88+00.00	820456.6837	2346726.4495
174	L	88+50.00	820484.8377	2346767.7694
175	L	89+00.00	820513.3717	2346808.8278
176	L	89+50.00	820542.2833	2346849.6212
177	L	90+00.00	820571.5699	2346890.1462
178	L	90+50.00	820601.2291	2346930.3993
179	L	91+00.00	820631.2584	2346970.3771
180	L	91+50.00	820661.6529	2347010.0780
181	L	92+00.00	820692.3392	2347049.5539
182	L	92+50.00	820723.1687	2347088.9181
183	L	93+00.00	820754.0194	2347128.2657
184	L	93+50.00	820784.8701	2347167.6133
185	L	94+00.00	820815.7209	2347206.9608
186	L	94+50.00	820846.5716	2347246.3084
187	L	95+00.00	820877.4224	2347285.6560
188	L	95+50.00	820908.2731	2347325.0036
189	L	96+00.00	820939.1239	2347364.3511
190	L	96+50.00	820969.9746	2347403.6987
191	L	97+00.00	821000.8254	2347443.0463
192	L	97+50.00	821031.6761	2347482.3939
193	L	98+00.00	821062.5268	2347521.7414
194	L	98+50.00	821093.3776	2347561.0890
195	L	99+00.00	821124.2283	2347600.4366
196	L	99+50.00	821155.0791	2347639.7842
197	L	100+00.00	821185.9298	2347679.1317
198	L	100+50.00	821216.7806	2347718.4793
199	L	101+00.00	821247.6313	2347757.8269
200	L	101+50.00	821278.4821	2347797.1744
201	L	102+00.00	821309.3328	2347836.5220
202	L	102+50.00	821340.1836	2347875.8696
203	L	103+00.00	821371.0343	2347915.2172
204	L	103+50.00	821401.8850	2347954.5647
205	L	104+00.00	821432.7358	2347993.9123
206	L	104+50.00	821463.5865	2348033.2599
207	L	105+00.00	821494.4373	2348072.6075
208	L	105+50.00	821525.2880	2348111.9550
209	L	106+00.00	821556.1388	2348151.3026
210	L	106+50.00	821586.9895	2348190.6502
211	L	107+00.00	821617.8403	2348229.9978
212	L	107+50.00	821648.6910	2348269.3453
213	L	108+00.00	821679.5417	2348308.6929
214	L	108+50.00	821710.3925	2348348.0405
215	L	109+00.00	821741.2432	2348387.3881
216	L	109+50.00	821772.0940	2348426.7356
217	L	110+00.00	821802.9447	2348466.0832
218	L	110+50.00	821833.7955	2348505.4308
219	L	111+00.00	821864.6462	2348544.7783
220	L	111+50.00	821895.4970	2348584.1259
221	L	112+00.00	821926.3477	2348623.4735
222	L	112+50.00	821957.1984	2348662.8211
223	L	113+00.00	821988.0492	2348702.1686
224	L	113+50.00	822018.8999	2348741.5162
225	L	114+00.00	822049.7507	2348780.8638
226	L	114+50.00	822080.6014	2348820.2114
227	L	115+00.00	822111.4522	2348859.5589
228	L	115+50.00	822142.3029	2348898.9065
229	L	116+00.00	822173.1537	2348938.2541
230	L	116+50.00	822204.0044	2348977.6017
231	L	117+00.00	822234.8551	2349016.9492
232	L	117+50.00	822265.6820	2349056.3155
233	L	118+00.00	822296.3501	2349095.8055
234	L	118+50.00	822326.6916	2349135.5468
235	L	119+00.00	822356.5351	2349175.6631
236	L	119+50.00	822385.7296	2349216.2541
237	L	120+00.00	822414.2342	2349257.3324
238	L	120+50.00	822442.0409	2349298.8863
239	L	121+00.00	822469.1417	2349340.9040
240	L	121+50.00	822495.5290	2349383.3734
241	L	122+00.00	822521.1951	2349426.2825
242	L	122+50.00	822546.1328	2349469.6190
243	L	123+00.00	822570.3350	2349513.3705
244	L	123+50.00	822593.7946	2349557.5246
245	L	124+00.00	822616.5052	2349602.0687
246	L	124+50.00	822638.4600	2349646.9900

Point #	Chain	Station	Northing (Y)	Easting (X)
247	L	125+00.00	822659.6530	2349692.2757
248	L	125+50.00	822680.0780	2349737.9130
249	L	126+00.00	822699.7293	2349783.8887
250	L	126+50.00	822718.6012	2349830.1898
251	L	127+00.00	822736.6882	2349876.8031
252	L	127+50.00	822753.9854	2349923.7153
253	L	128+00.00	822770.4877	2349970.9129
254	L	128+50.00	822786.1904	2350018.3825
255	L	129+00.00	822801.0891	2350066.1106
256	L	129+50.00	822815.1795	2350114.0835
257	L	130+00.00	822828.4575	2350162.2876
258	L	130+50.00	822840.9195	2350210.7091
259	L	131+00.00	822852.5617	2350259.3342
260	L	131+50.00	822863.3810	2350308.1490
261	L	132+00.00	822873.3742	2350357.1395
262	L	132+50.00	822882.5385	2350406.2919
263	L	133+00.00	822890.8712	2350455.5921
264	L	133+50.00	822898.3700	2350505.0260
265	L	134+00.00	822905.0327	2350554.5795
266	L	134+50.00	822910.8575	2350604.2384
267	L	135+00.00	822915.8426	2350653.9887
268	L	135+50.00	822919.9867	2350703.8161
269	L	136+00.00	822923.2886	2350753.7063
270	L	136+50.00	822925.7473	2350803.6452
271	L	137+00.00	822927.3621	2350853.6186
272	L	137+50.00	822928.1326	2350903.6120
273	L	138+00.00	822928.0585	2350953.6114
274	L	138+50.00	822927.1399	2351003.6023
275	L	139+00.00	822925.3771	2351053.5707
276	L	139+50.00	822922.7770	2351103.5025
277	L	140+00.00	822919.4573	2351153.3918
278	L	140+50.00	822915.6262	2351203.2447
279	L	141+00.00	822911.4947	2351253.0737
280	L	141+50.00	822907.2666	2351302.8946
281	L			

Point #	Chain	Station	Northing (Y)	Easting (X)

8/17/99

REVISIONS

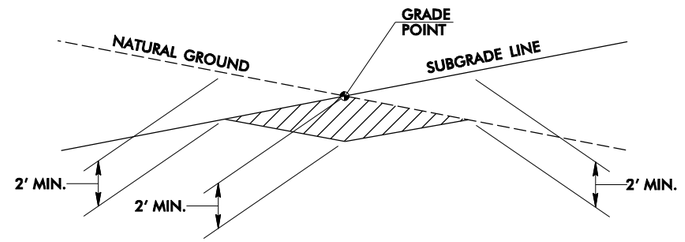
PROJECT REFERENCE NO.	SHEET NO.
R-2823	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

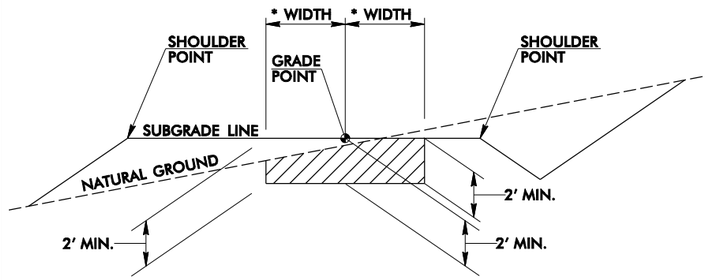
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E6	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	E7	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C3	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J1	PROP. 8" AGGREGATE BASE COURSE.
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	J2	PROP. 10" AGGREGATE BASE COURSE.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	P1	PRIME COAT AT THE RATE OF .35 GAL. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R1	2'-6" CONCRETE CURB AND GUTTER.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	R2	2'-6" MOUNTABLE CONCRETE CURB AND GUTTER.
D4	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	R3	1'-6" MOUNTABLE CONCRETE CURB AND GUTTER.
D5	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	T	EARTH MATERIAL.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E2	PROP. APPROX. 4½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.	W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL No. 1)
E3	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL No. 2)
E4	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.		
E5	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.		

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



PROFILE VIEW

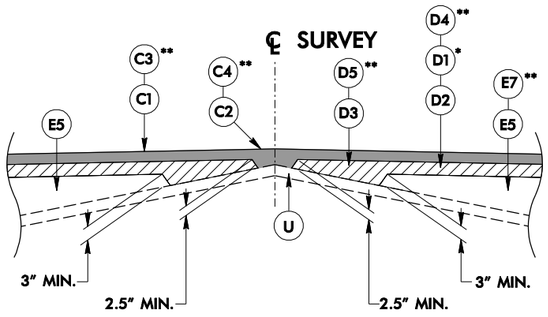
DEPTH AND LOCATION AS NEEDED



CROSS-SECTION VIEW

* WIDTH AS NEEDED

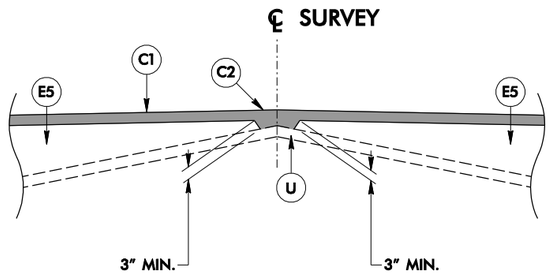
DETAIL OF GRADE POINT UNDERCUT



Detail Showing Method Of Wedging 1

* USE WITH -Y4-

** USE WITH -Y8-



Detail Showing Method Of Wedging 2

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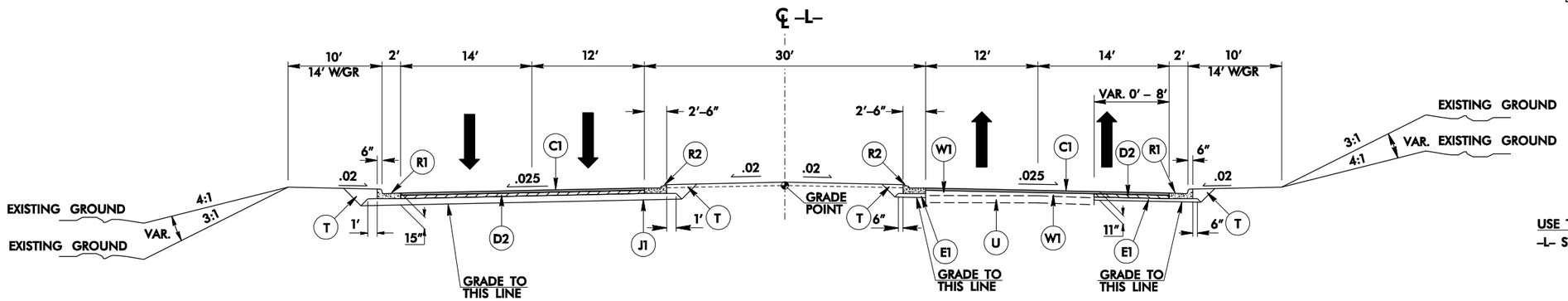
bpaschal

PROJECT REFERENCE NO.	SHEET NO.
R-2823	2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

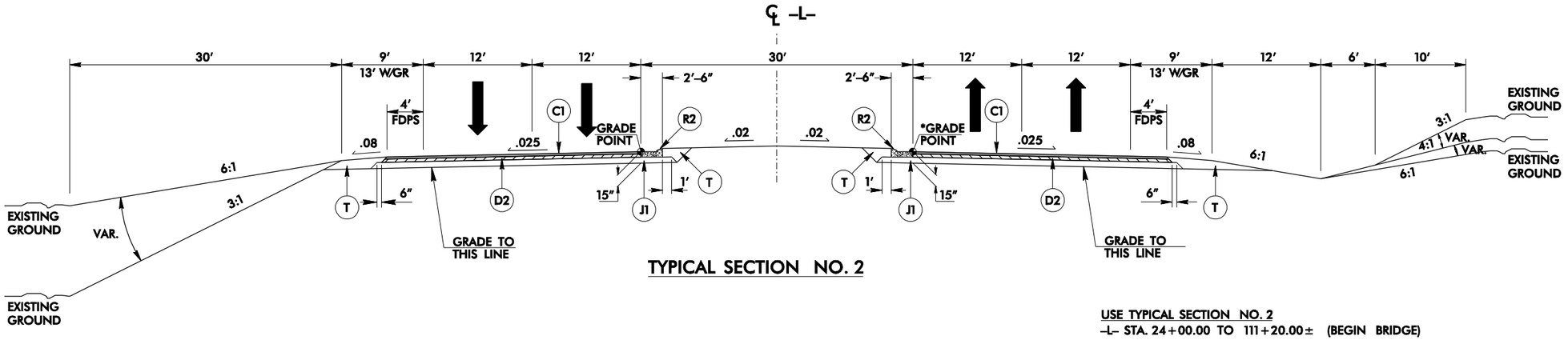


NOTE: SEE PLANS FOR LOCATION OF CONCRETE ISLANDS, AUXILLARY LANES, AND TAPERS.

USE TYPICAL SECTION NO. 1
–L– STA. 15+70.00 TO 24+00.00

TYPICAL SECTION NO. 1

TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1 FROM –L– STA. 5+20.00 TO 15+70.00



TYPICAL SECTION NO. 2

PAVEMENT SCHEDULE	
C1	3″ S9.5B
D2	4″ I19.0B
E1	4″ B25.0B
J1	8″ ABC
R1	2′-6″ CURB & GUTTER
R2	2′-6″ MOUNTABLE CURB & GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W1	WEDGING

USE TYPICAL SECTION NO. 2
–L– STA. 24+00.00 TO 111+20.00± (BEGIN BRIDGE)
–L– STA. 112+20.00± (END BRIDGE) TO 180+73.00± (BEGIN BRIDGE)
–L– STA. 184+04.00± (END BRIDGE) TO 264+49.56
* USE PROFILE –L_WB– FROM –L– STA. 218+75.00 TO 227+25.00

REVISIONS
8/17/99

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beauchaine

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2823	2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

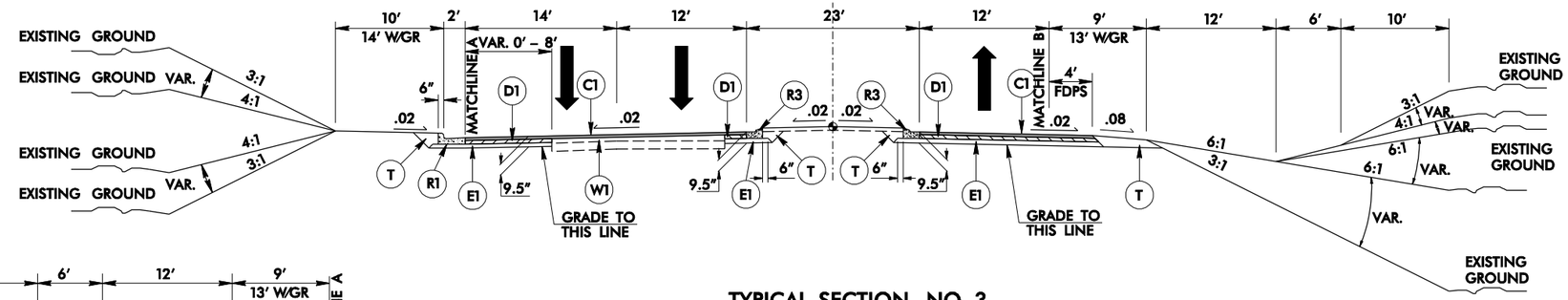
NOTE: SEE PLANS FOR LOCATION OF CONCRETE ISLANDS, AUXILLARY LANES, AND TAPERS.

TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 3 FROM
–Y– STA. 12+85.00 TO 21+45.00

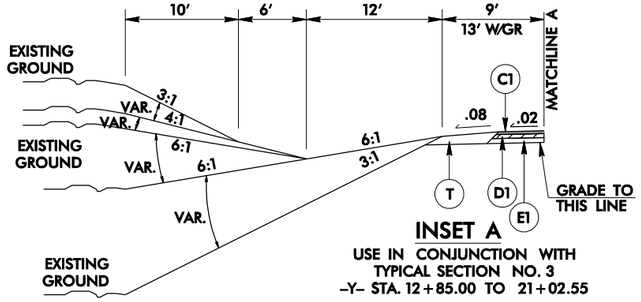
USE TYPICAL SECTION NO. 3
–Y– STA. 21+45.00 TO 28+05.00

TRANSITION FROM TYPICAL SECTION NO. 3 TO EXISTING FROM
–Y– STA. 28+05.00 TO 33+80.00

℄ –Y– HUNTER HILL RD.

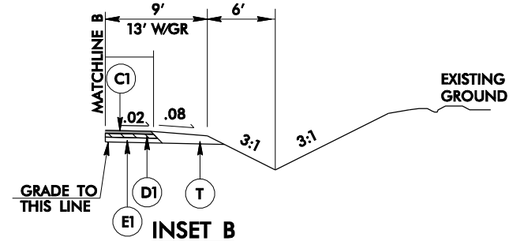


TYPICAL SECTION NO. 3



INSET A

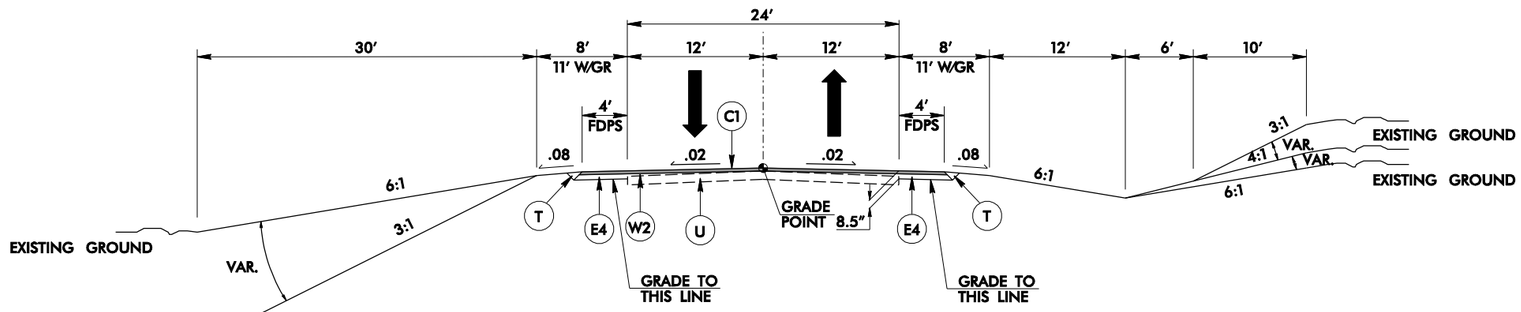
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 3
–Y– STA. 12+85.00 TO 21+02.55



INSET B

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 3
–Y– STA. 30+00.00 TO 33+00.00 RT

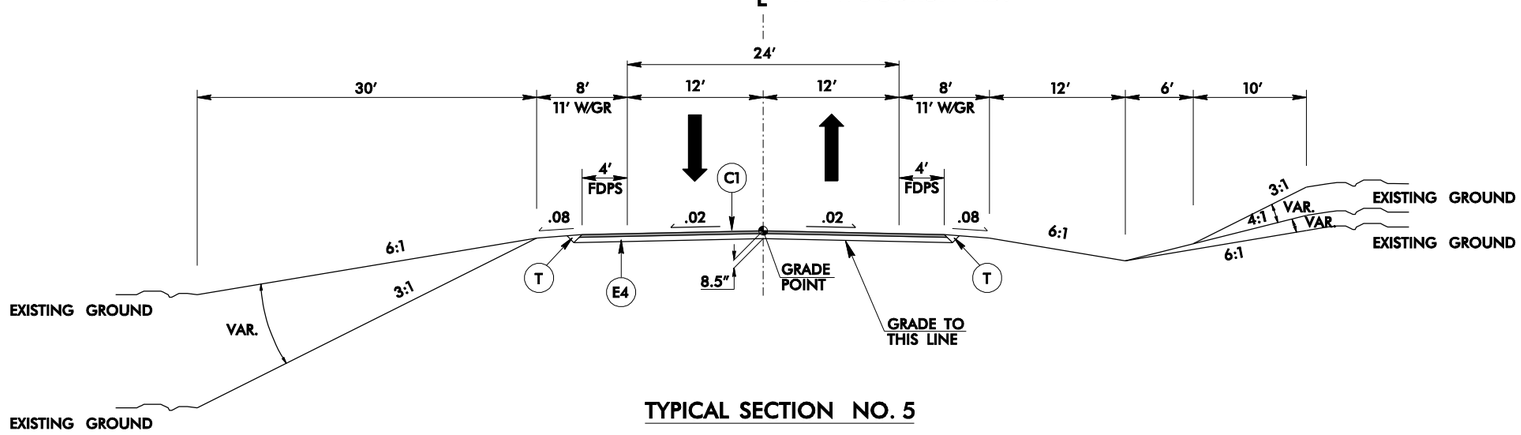
℄ –Y1– WOODRUFF RD.



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
–Y1– STA. 12+95.00 TO 14+95.00

℄ –Y1– WOODRUFF RD.



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
–Y1– STA. 14+95.00 TO 17+81.51

PAVEMENT SCHEDULE	
C1	3″ S9.5B
D1	2.5″ I19.0B
E1	4″ B25.0B
E4	5½″ B25.0B
R1	2′-6″ CURB & GUTTER
R3	1′-6″ MOUNTABLE CURB & GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W1	WEDGING
W2	WEDGING

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	2C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

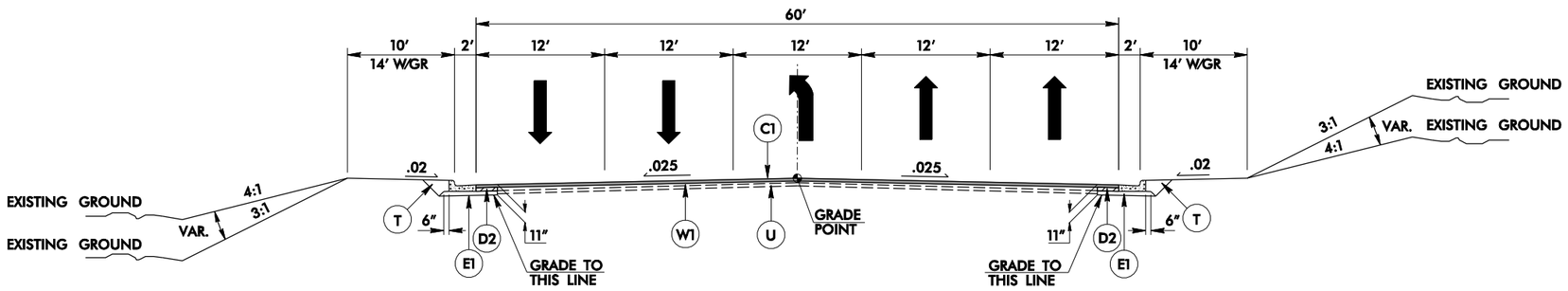
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE: SEE PLANS FOR LOCATION OF AUXILLARY LANES AND TAPERS.

8/17/99

REVISIONS

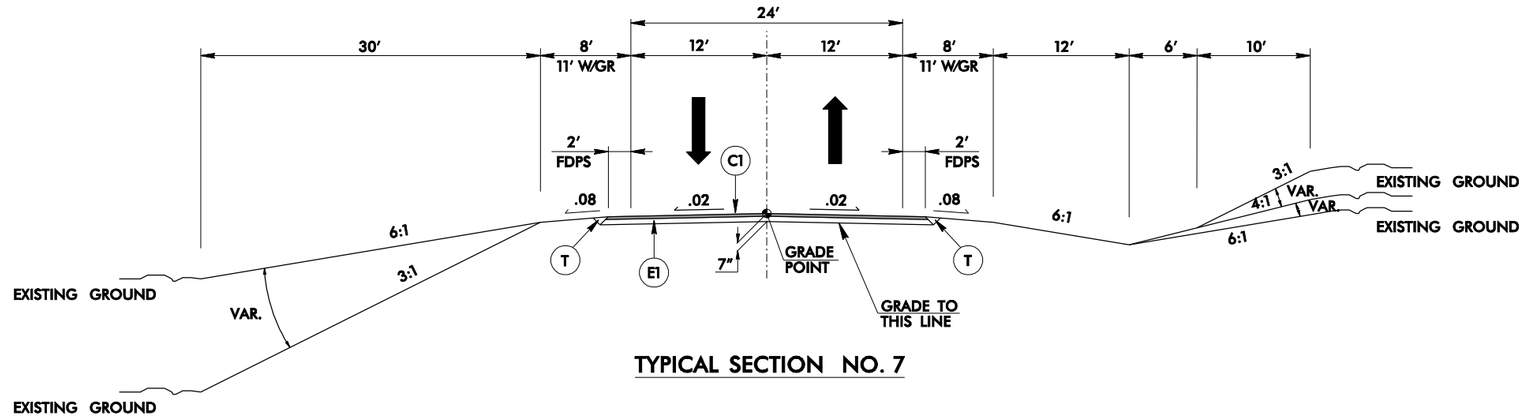
℄ –Y2– NC 43



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6
–Y2– STA. 21+00.00 TO 24+00.00
MILL 1.5″ AND RESURFACE 1.5″ S9.5B
–Y2– STA. 19+30.00 TO 21+00.00
–Y2– STA. 24+00.00 TO 25+75.00

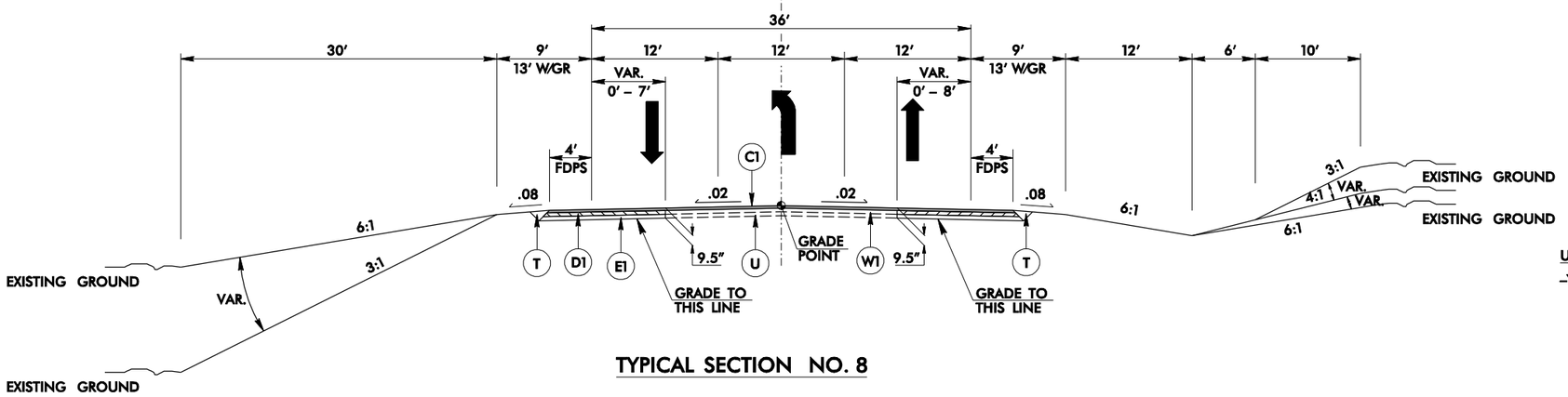
℄ –Y3– PEELE RD.



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7
–Y3– STA. 17+33.00 TO 28+40.00

℄ –Y4– NC 48



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8
–Y4– STA. 11+90.00 TO 22+00.00

PAVEMENT SCHEDULE	
C1	3″ S9.5B
D1	2½″ I19.0B
D2	4″ I19.0B
E1	4″ B25.0B
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W1	WEDGING

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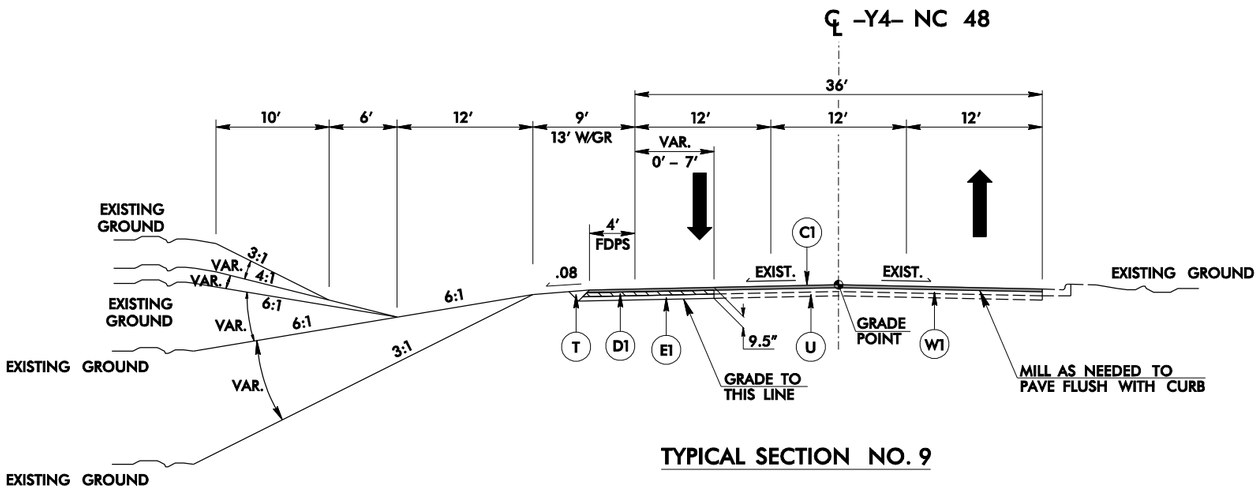
8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2823	2D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

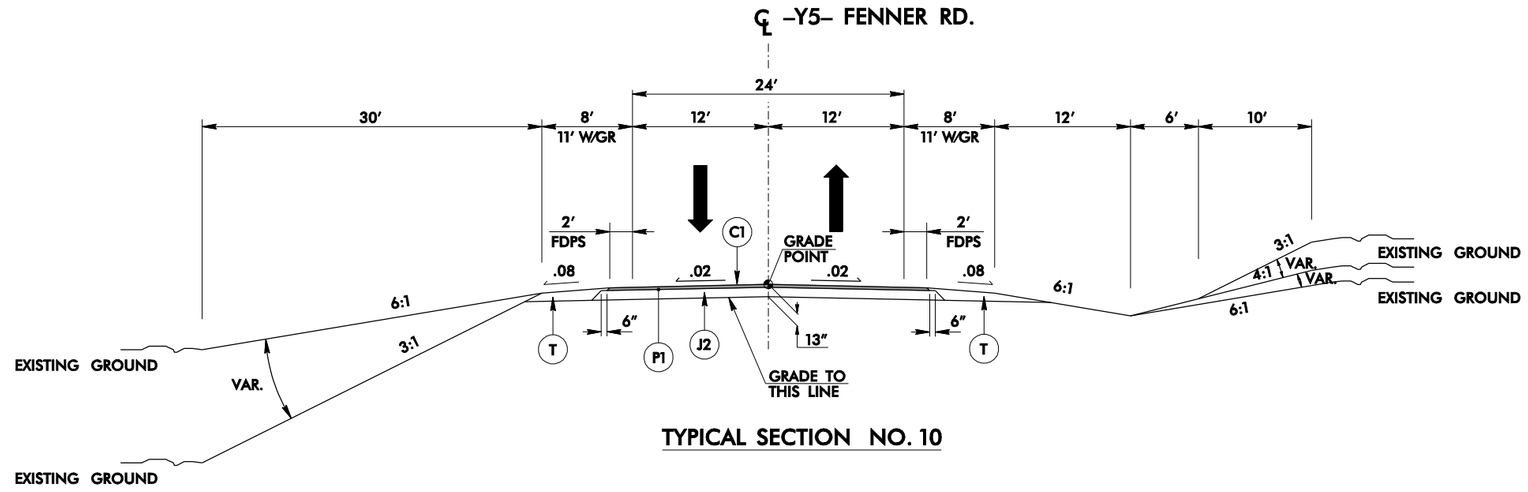
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE: SEE PLANS FOR LOCATION OF AUXILLARY LANES AND TAPERS.



TYPICAL SECTION NO. 9

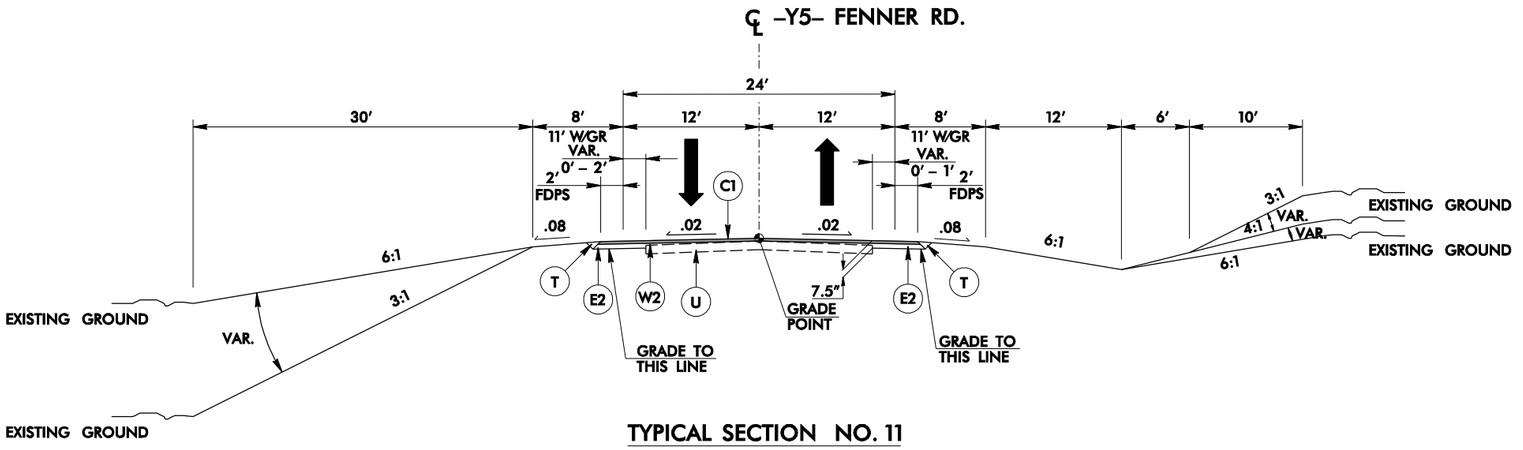
USE TYPICAL SECTION NO. 9
–Y4– STA. 22+00.00 TO 24+50.00



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
–Y5– STA. 10+39.00 TO 24+65.00

PAVEMENT SCHEDULE	
C1	3″ S9.5B
D1	2½″ I19.0B
E1	4″ B25.0B
E2	4½″ B25.0B
J2	10″ ABC
P1	PRIME COAT
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W1	WEDGING
W2	WEDGING



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11
–Y5– STA. 24+65.00 TO 28+15.00

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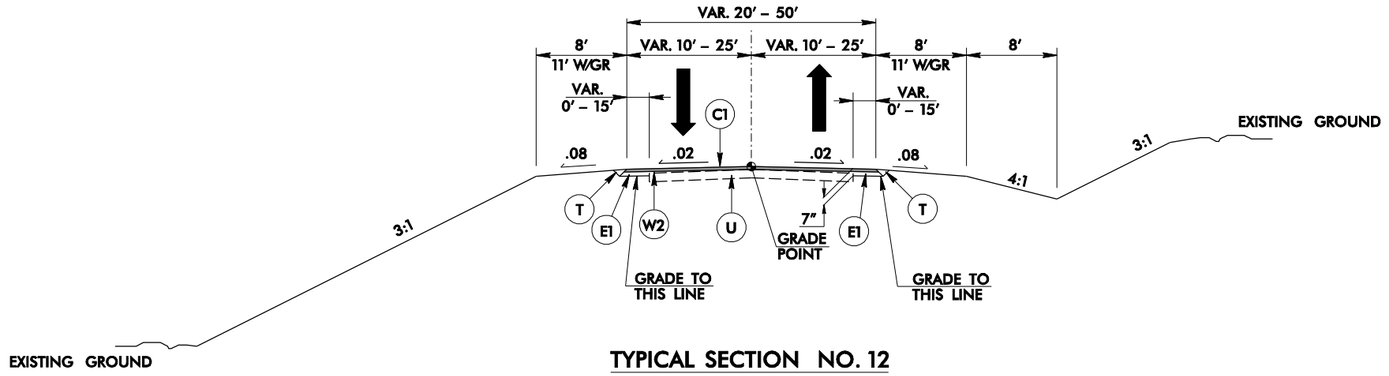
PROJECT REFERENCE NO.	SHEET NO.
R-2823	2E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE: SEE PLANS FOR LOCATION OF AUXILLARY LANES AND TAPERS.

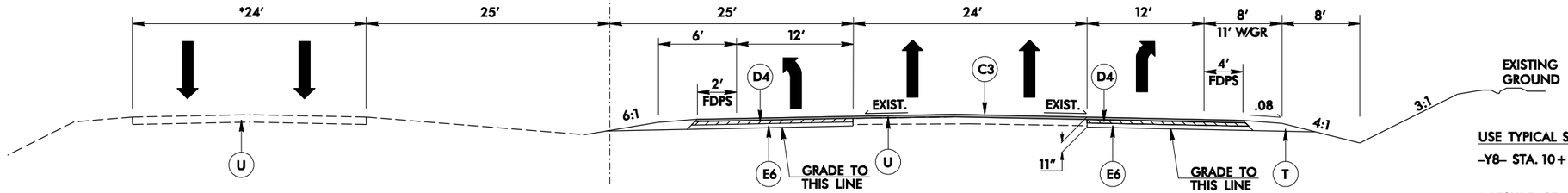
℄ –Y6– BISHOP RD.



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12
–Y6– STA. 16+00.00 TO 19+25.00

℄ –Y8– US 301



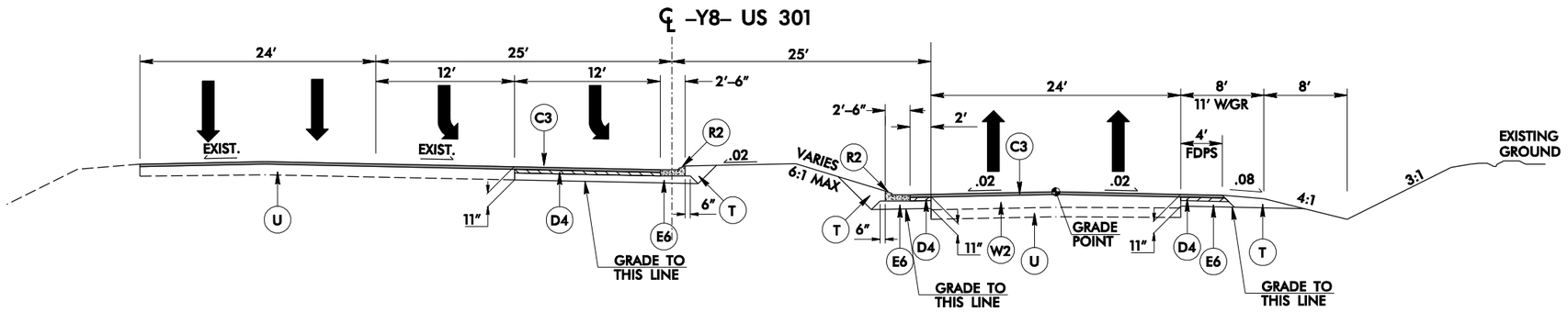
TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13
–Y8– STA. 10+51.50 TO 18+30.00

* RESURFACE NB LANES WITH 3″ S9.5C FROM –Y8– STA. 16+79.96 TO 18+30.00

PAVEMENT SCHEDULE	
C1	3″ S9.5B
C3	3″ S9.5C
E1	4″ B25.0B
D4	4″ I19.0C
E6	4″ B25.0C
R3	2′-6″ MOUNTABLE CURB & GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
W2	WEDGING

℄ –Y8– US 301



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14
–Y8– STA. 18+30.00 TO 25+75.57

REVISIONS
8/17/99

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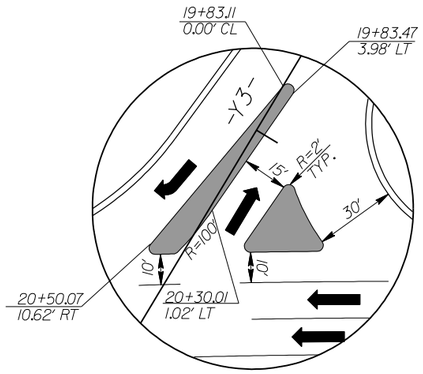
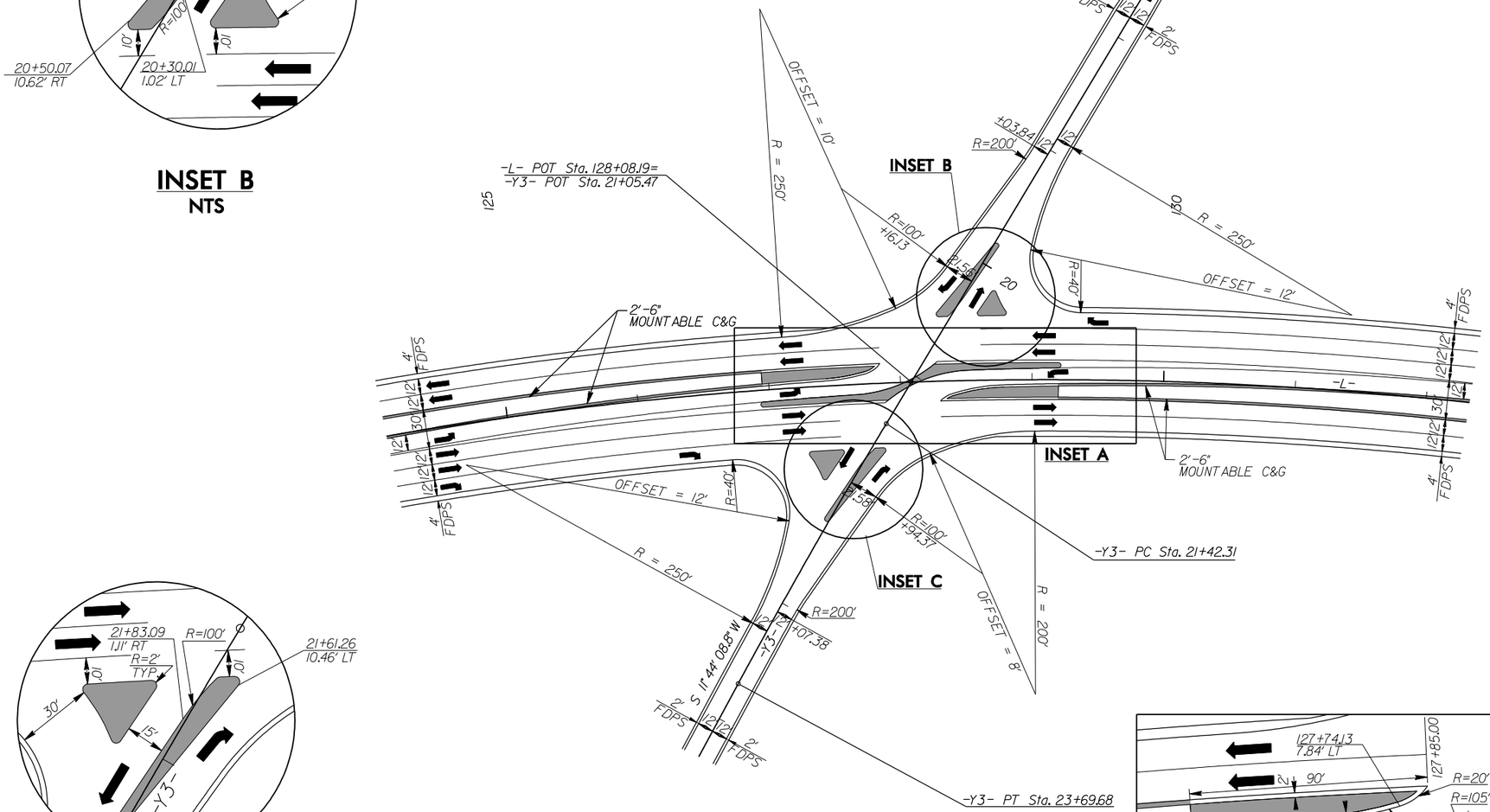
8/17/99

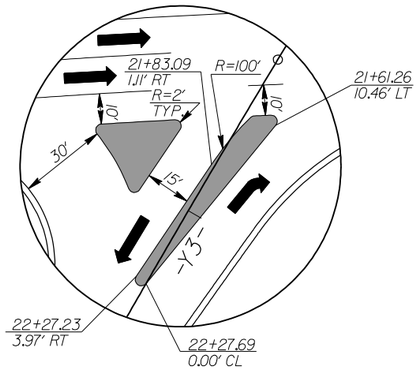
PROJECT REFERENCE NO.	SHEET NO.
R-2823	2F
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

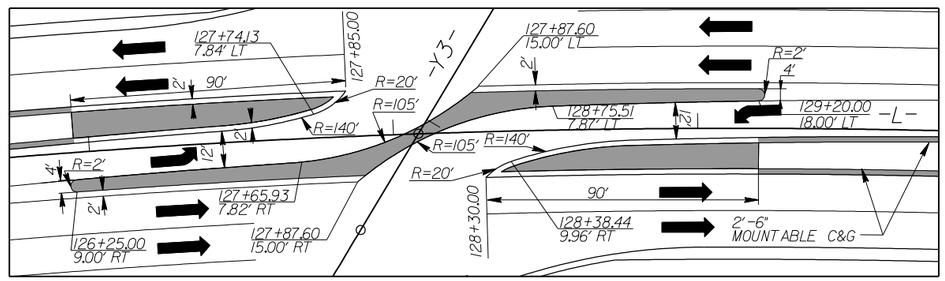


INSET B
NTS





INSET C
NTS



INSET A
NTS

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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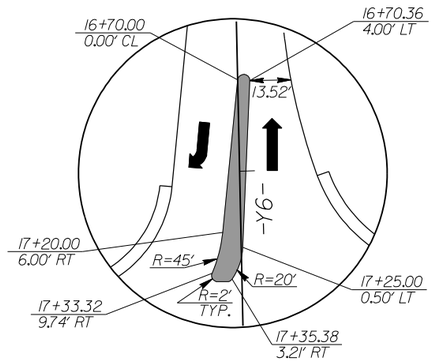
Revisions

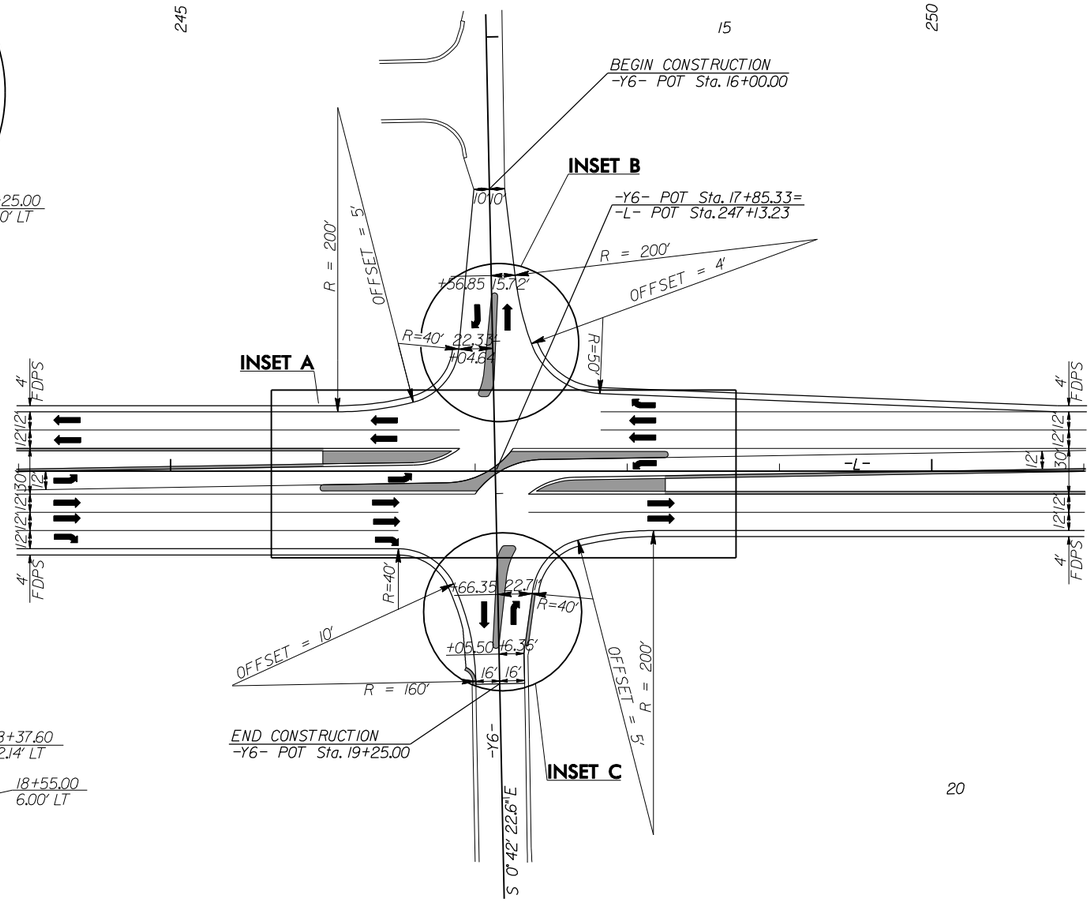
8/17/99

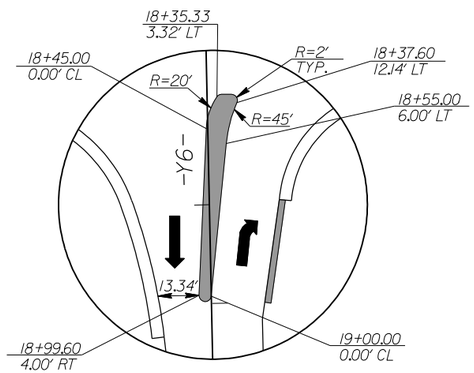
PROJECT REFERENCE NO.	SHEET NO.
R-2823	2G
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

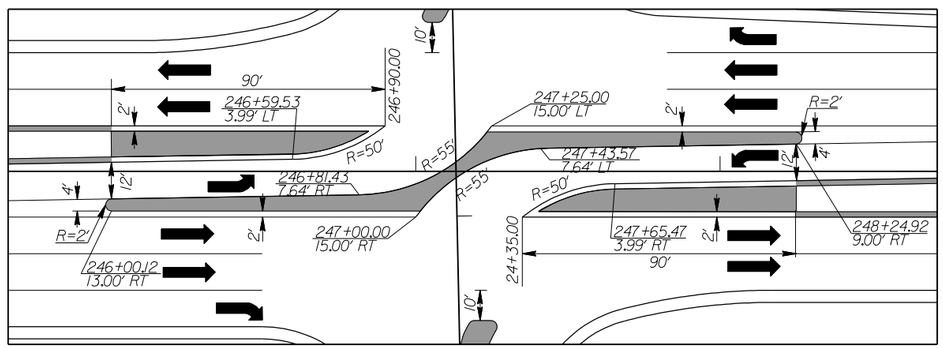


INSET B
NTS





INSET C
NTS



INSET A
NTS

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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jeauclaire

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-4763B	2-H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TEMPORARY DETOUR ON -L-

-DET1-

PI Sta 10+60.02
Δ = 3° 50' 04.7" (LT)
D = 3° 11' 43.9"
L = 120.00'
T = 60.02'
R = 1,793.00'

PI Sta 12+73.48
Δ = 10° 37' 41.8" (LT)
D = 3° 28' 20.9"
L = 306.07'
T = 153.48'
R = 1,650.00'

TO BE CONSTRUCTED PRIOR TO -DET1-

-DET1- PC Sta. 10+00.00 =
-L- SC Sta. 31+36.18 (27.0' LT)

-DET1- PCC Sta. 11+20.00

-DET1- PT Sta. 14+26.07 =
-L- POC Sta. 35+68.56 (29.54' LT)

PER 48 MEETING: DO NOT BURY #107 1'

SPECIAL CUT DITCH SEE DETAIL B

PSH SEE DETAIL H

PSRM

GRAD 350

8:1

BENJAMIN R. RICKS, et al
DB 2222 PG 374
(5)

B.W. VARNELL, HEIRS
DB 843 PG 187
(14)

(16)
TOBY E. MITCHELL
DB 1585 PG 1064

(17)
TALMAGE LEE WELLS
DB 1039 PG 414

ANNIE D. BART
DB 1573 PG
DB 1699 PG

WILLIAM D. DRIVER, JR.
DB 2240 PG 192
(9)

(10)

48" WW FENCE

TONS CL B RIPRAP W/5 SY FIL FAB

REMOVE

WOODRUFF RD 23' BST

N 3° 22' 59.1" W

BEGIN GRADE
-DET1- STA. 10+00.00=
-L- STA. 31+36.18
EL. 133.06'

PI = 10+50.00
EL = 133.21'
VC = 100'
K = 61

(+)0.3000%

(-)1.3359%

END GRADE
-DET1- STA. 12+23.03
EL. 130.89

-DET1-

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/17/99

TEMPORARY CROSSOVERS ON -Y8- (US 301)

PROJECT REFERENCE NO.	SHEET NO.
R-2823	2-I
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

10+00 15+00 20+00

-Y8- POT Sta.10+00.00

-CR2- PC Sta. 10+00.00 =
-Y8- POT Sta.13+12.85 (24.83' LT)

-CR1- PT Sta. 14+03.60 =
-Y8- POT Sta.16+73.13 (24.84' LT)

-Y8- S 12° 32' 01.8" W

-CR1- PC Sta. 10+00.00 =
-Y8- POT Sta.12+75.96 (37' RT)

-CR1- PRC Sta. 12+01.29 | -CR2- PRC Sta. 12+02.61

-CR2- PT Sta. 14+03.90 =
-Y8- POT Sta.17+10.34 (37' RT)

-CR1-	
PI Sta 11+01.46	PI Sta 13+03.27
△ = 17° 44' 35.1" (LT)	△ = 17° 49' 58.5" (RT)
D = 8° 48' 53.0"	D = 8° 48' 53.0"
L = 201.29'	L = 202.31'
T = 101.46'	T = 101.98'
R = 650.00'	R = 650.00'

-CR2-	
PI Sta 11+02.13	PI Sta 13+04.07
△ = 17° 51' 35.3" (RT)	△ = 17° 44' 33.3" (LT)
D = 8° 48' 53.0"	D = 8° 48' 53.0"
L = 202.61'	L = 201.28'
T = 102.13'	T = 101.45'
R = 650.00'	R = 650.00'

TEMP. PAVEMENT FOR MEDIAN CROSSOVERS

25+00 30+00

-CR4- PC Sta. 10+00.00 =
-Y8- POT Sta.29+28.74 (37.21' LT)

-CR3- PRC Sta. 12+02.82

-CR3- PT Sta. 14+05.71 =
-Y8- POT Sta.33+28.14 (37.65' LT)

-Y8- POT Sta. 34+79.91

S 12° 32' 01.8" W

-CR3- PC Sta. 10+00.00 =
-Y8- POT Sta.29+29.02 (25.40' RT)

-CR4- PRC Sta. 12+03.79

-CR4- PT Sta. 14+07.86 =
-Y8- POT Sta.33+29.84 (26.89' RT)

-CR3-	
PI Sta 11+02.24	PI Sta 13+05.09
△ = 17° 52' 41.2" (LT)	△ = 17° 53' 01.6" (RT)
D = 8° 48' 53.0"	D = 8° 48' 53.0"
L = 202.82'	L = 202.89'
T = 102.24'	T = 102.27'
R = 650.00'	R = 650.00'

-CR4-	
PI Sta 11+02.74	PI Sta 13+06.67
△ = 17° 57' 48.5" (RT)	△ = 17° 59' 18.0" (LT)
D = 8° 48' 53.0"	D = 8° 48' 53.0"
L = 203.79'	L = 204.07'
T = 102.74'	T = 102.88'
R = 650.00'	R = 650.00'

TEMP. PAVEMENT FOR MEDIAN CROSSOVERS

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	2-J

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

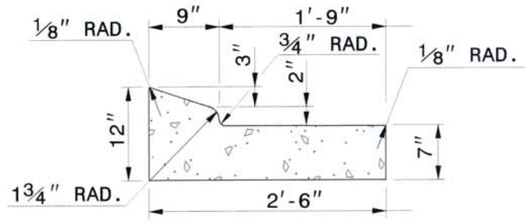
ENGLISH DETAIL DRAWING FOR

2'-6" CONCRETE CURB & GUTTER

SHEET 1 OF 2

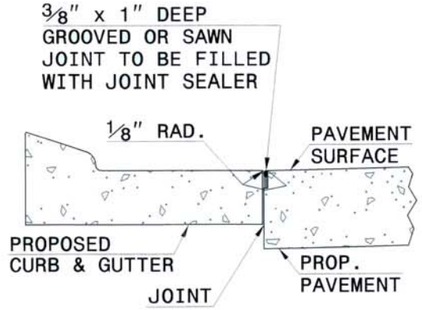
846D01

GENERAL NOTES:
- PLACE CONTRACTION JOINTS AT 10' INTERVALS, EXCEPT THAT A 15' SPACING MAY BE USED WHEN A MACHINE IS USED OR WHEN SATISFACTORY SUPPORT FOR THE FACE FORM CAN BE OBTAINED WITHOUT THE USE OF TEMPLATES AT 10' INTERVALS.
- JOINT SPACING MAY BE ALTERED IF REQUIRED BY THE ENGINEER.
- CONTRACTION JOINTS MAY BE INSTALLED WITH THE USE OF TEMPLATES OR FORMED BY OTHER APPROVED METHODS. MAKE NON-TEMPLATE FORMED JOINTS A MIN. OF 1½" DEEP.
- FILL ALL CONSTRUCTION JOINTS WITH JOINT FILLER AND SEALER.
- SPACE EXPANSION JOINTS AT 90' INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.

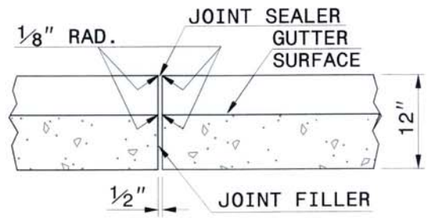


2'-6" CURB AND GUTTER

SECTION VIEW OF CURB AND GUTTER



LONGITUDINAL JOINT



TRANSVERSE EXPANSION JOINT IN CURB AND GUTTER

SECTION VIEW OF JOINTS

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

2'-6" CONCRETE CURB & GUTTER

SHEET 1 OF 2

846D01

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
1/3/08

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: STD. 846.01 DATE:
MODIFIED BY: K.A. KEMPF DATE: 10-19-07
CHECKED BY: DATE:
FILE SPEC.: /usr/details/stand/c&g2'-6".dgn

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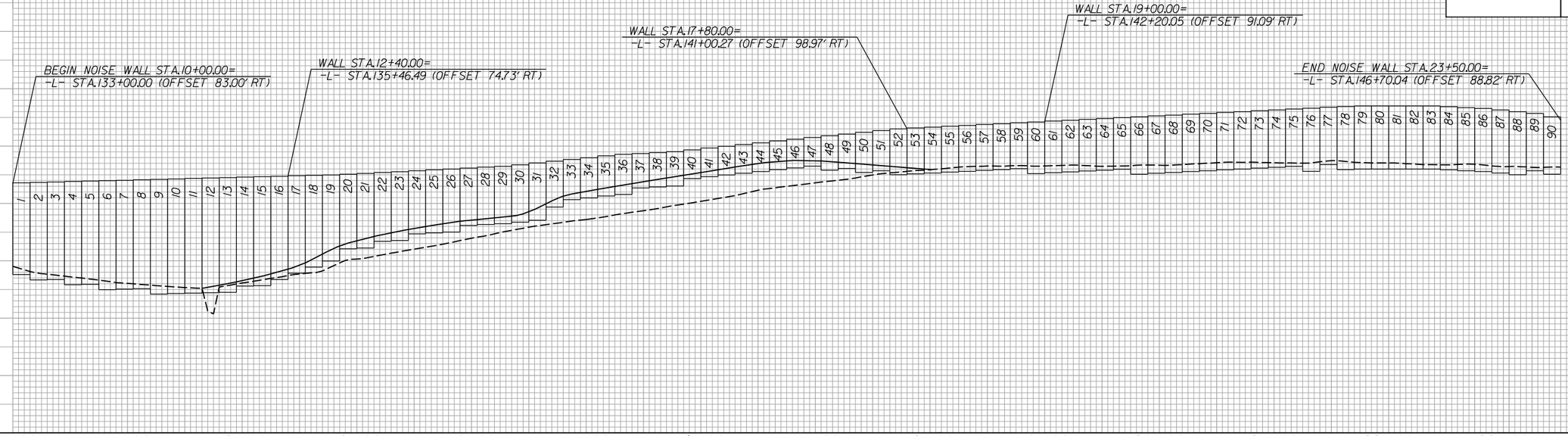
5/28/99

SOUND BARRIER WALL DETAIL

PROJECT REFERENCE NO.	SHEET NO.
R-2823	2-K
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PANEL SEG.NO.	MIN. ELEV.	PANELS 3'	4'	5'	6'
1	133.58		1		2
2	133.65			1	2
3	133.73			1	2
4	133.81				3
5	133.89				3
6	133.96	1	1		2
7	134.04	1	1		2
8	134.12	1	1		2
9	134.19		2		2
10	134.27		2		2
11	134.35		2		2
12	134.43		2		2
13	134.50		2		2
14	134.58	1	1		2
15	134.66	1	1		2
16	134.73				3
17	134.81			1	2
18	134.89		1		2
19	134.89	1			2
20	135.08	1		2	
21	135.23	1		2	

PANEL SEG.NO.	MIN. ELEV.	PANELS 3'	4'	5'	6'
22	135.38				2
23	135.54				2
24	135.69			1	1
25	135.85			1	1
26	136.00		1		1
27	136.15			2	
28	136.31			2	
29	136.46			2	
30	136.73			2	
31	137.04			2	
32	137.35	1		1	
33	137.66	1	1		
34	137.97	1	1		
35	138.28	1	1		
36	138.55	1	1		
37	138.70				1
38	138.86				1
39	139.02				1
40	139.33			1	
41	139.64			1	
42	139.96			1	

PANEL SEG.NO.	MIN. ELEV.	PANELS 3'	4'	5'	6'
43	140.26			1	
44	140.57			1	
45	140.88			1	
46	141.18			1	
47	141.49			1	
48	141.79				1
49	142.10				1
50	142.40	1	1		
51	142.70	1	1		
52	143.00		2		
53	143.15		2		
54	143.30		2		
55	143.45		2		
56	143.60		2		
57	143.75		2		
58	143.90		2		
59	144.05		2		
60	144.20	1			1
61	144.35	1			1
62	144.50	1			1
63	144.65	1			1

PANEL SEG.NO.	MIN. ELEV.	PANELS 3'	4'	5'	6'
64	144.80	1			1
65	144.95	1			1
66	145.10		1		1
67	145.25		1		1
68	145.40		1		1
69	145.55		1		1
70	145.70		1		1
71	145.85		1		1
72	146.00		1		1
73	146.15		1		1
74	146.30		1		1
75	146.45		1		1
76	146.60			1	1
77	146.75		1		1
78	146.90			1	1
79	147.00			1	1
80	147.00			1	1
81	147.00			1	1
82	147.00			1	1
83	147.00			1	1
84	146.85			1	1

PANEL SEG.NO.	MIN. ELEV.	PANELS 3'	4'	5'	6'
85	146.70			1	1
86	146.55			1	1
87	146.30			1	1
88	146.00			1	1
89	145.70		1		1
90	145.10		1		1
TOTAL		21	53	40	84

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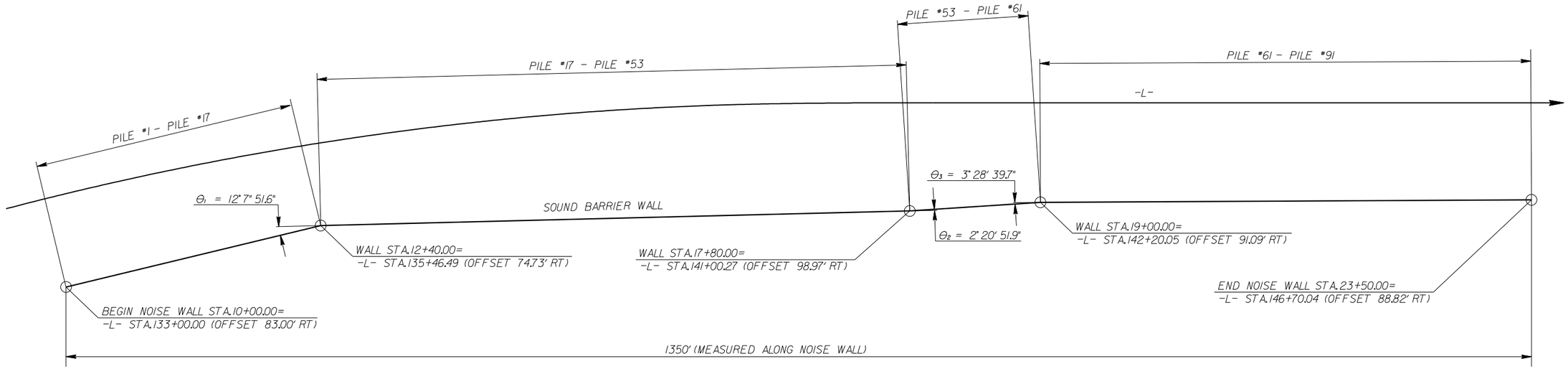
beaucham

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	2-L
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



LOCATION SKETCH

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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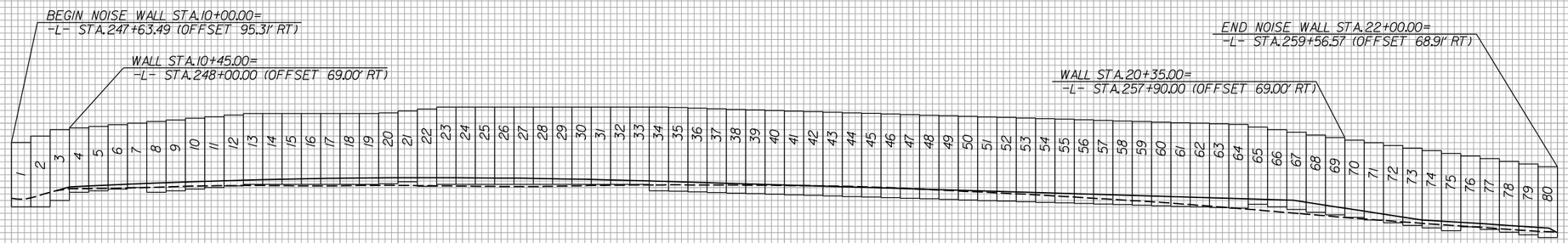
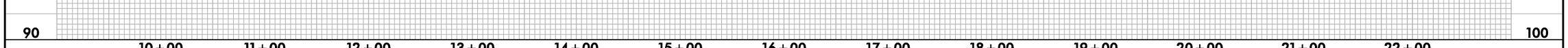
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	2-O
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SOUND BARRIER WALL DETAIL





PANEL SEG.NO.	MIN. ELEV.	PANELS 3'	4'	5'	6'	PANEL SEG.NO.	MIN. ELEV.	PANELS 3'	4'	5'	6'	PANEL SEG.NO.	MIN. ELEV.	PANELS 3'	4'	5'	6'	PANEL SEG.NO.	MIN. ELEV.	PANELS 3'	4'	5'	6'
1	137.00		1		1	22	142.20				2	43	141.69	1	1		1	64	139.80	1	1		1
2	138.00			1	1	23	142.50				2	44	141.60	1	1		1	65	139.39				2
3	139.00			1	1	24	142.50				2	45	141.51	1	1		1	66	138.98				2
4	139.25		1		1	25	142.50				2	46	141.42	1	1		1	67	138.58				2
5	139.50		1		1	26	142.50				2	47	141.33	1	1		1	68	138.17				2
6	139.75		1		1	27	142.50				2	48	141.24	1	1		1	69	137.76				2
7	140.00		1		1	28	142.50				2	49	141.15	1	1		1	70	137.35				2
8	140.25			1	1	29	142.50				2	50	141.06	1	1		1	71	136.94				2
9	140.50			1	1	30	142.50				2	51	140.97	1	1		1	72	136.53				2
10	140.75			1	1	31	142.50				2	52	140.88	1	1		1	73	136.12				2
11	141.00			1	1	32	142.50				2	53	140.79	1	1		1	74	135.71				2
12	141.25			1	1	33	142.50				2	54	140.70	1	1		1	75	135.30				2
13	141.50			1	1	34	142.50	1	1		1	55	140.61	1	1		1	76	134.89			1	1
14	141.50			1	1	35	142.41	1	1		1	56	140.52	1	1		1	77	134.48			1	1
15	141.50			1	1	36	142.32	1	1		1	57	140.43	1	1		1	78	134.06			1	1
16	141.50			1	1	37	142.23	1	1		1	58	140.34	1	1		1	79	133.65			1	1
17	141.50			1	1	38	142.14	1	1		1	59	140.25	1	1		1	80	133.24			1	1
18	141.50			1	1	39	142.05	1	1		1	60	140.16	1	1		1						
19	141.50			1	1	40	141.96	1	1		1	61	140.07	1	1		1	TOTAL		31	36	21	103
20	141.60			1	1	41	141.87	1	1		1	62	139.98	1	1		1						
21	141.90			1	1	42	141.78	1	1		1	63	139.89	1	1		1						

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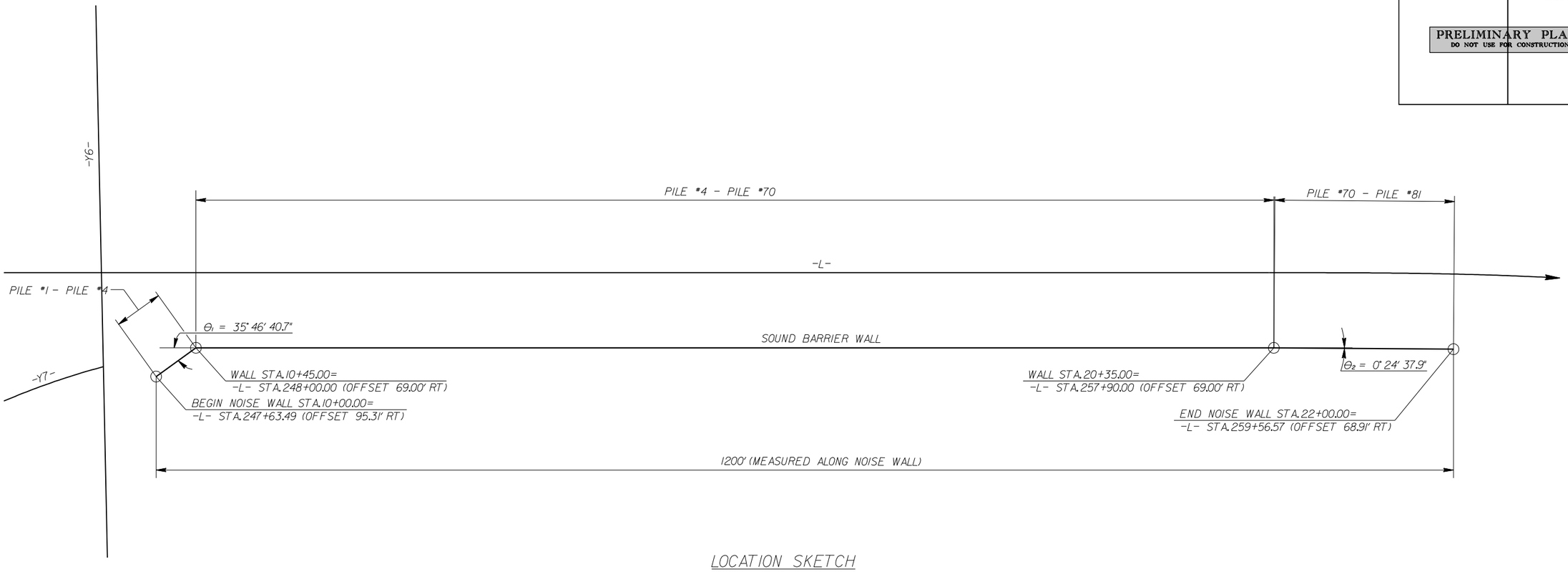
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	2-P
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



LOCATION SKETCH

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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CHECKED BY:	BJM	DATE:	11/5/08

PROJECT REFERENCE NO.	SHEET NO.
R-2823	3-A

WS10820

STATE OF NORTH CAROLINA DIVISON HIGHWAY

RIGHT OF WAY AREA DATA SHEET

PARCEL NO.	PROPERTY OWNERS NAME	TOTAL AREA	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONSTR. EASEMENT	PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT	PERMANENT UTILITY EASEMENT
1	DAVID W. COMBS	28,178 SF	1,352 SF		26,826 SF	1,309 SF			
2	WILLIAM D. DRIVER		0.36 AC						0.19 AC
3	DAUGHTRIDGE ENTERPRISES INC	3.64 AC	0.56 AC		3.08 AC	13 SF			0.47 AC
4	BARBARA H. BRADSHAW	10,097 SF	5,516 SF	4,581 SF					1,218 SF
5	BENJAMIN R. RICKS, et al		2.77 AC			1,950 SF			0.87 AC
6	REBECCA D. PARIS	35,346 SF	1,880 SF		33,466 SF	1,273 SF			
7	CHARLES S. BARTHOLOMEW	4.71 AC	0.31 AC		4.40 AC	2,592 SF			
8	MORRIS J. HURT		0.20 AC			0.11 AC			
9	WILLIAM D, DRIVER, JR	42,266 SF	5,886 SF	36,380 SF					1,125 SF
10	REBECCA D. PARIS	1.01 AC	0.21 AC	0.80 AC					
11	MIRIAN V. HAYES	21,656 SF	6,326 SF	15,330 SF					
12	DURWOOD LEE SHREVE	1.59 AC	0.58 AC	1.01 AC		1,898 SF			0.12 AC
13	B. W. VARNELL, HEIRS	21,384 SF	8,959 SF	12,425 SF					3,601 SF
14	B. W. VARNELL, HERS	19,819 SF	1,870 SF		17,949 SF				
15	JOHN R. MORRIS	43,049 SF	17,924 SF	25,125 SF					7,252 SF
16	TOBY E. MITCHELL	20,417 SF	1,907 SF	18,510 SF					
17	TALMAGE LEE WELLS	1.53 AC	0.14 AC		1.39 AC	326 SF			375 SF
18	SHARON B. LANDIS	20,085 SF	8,523 SF	11,562 SF					3,484 SF
19	ANNIE D. BARTHOULMEW	33,483 SF	4,853 SF		28,630 SF	1,651 SF			
20	TAREK R. TRAISH	22,135 SF	9,082 SF	13,053 SF					3,707 SF
21	CLYDE M. KEEN	31,522 SF	13,711 SF	17,811 SF					5519
22	PAMELA B. GARDNER	27,070 SF	2,391 SF		24,679 SF	923 SF			208 SF
23	WADE L. MEDLIN	27,169 SF	2,384 SF		24,785 SF	891 SF			167 SF
24	CLYDE M. KEEN	11,548 SF	5,316 SF	6,232 SF					3,401 SF
25	TOBY E. MITCHELL	21,015 SF	10,266 SF	10,749 SF					3,061 SF
26	TOBY E. MITCHELL	13,125 SF	1,290 SF		11,835 SF	409 SF			
27	LOUISE M. PITTMAN	13,577 SF	1,361 SF		12,216 SF	363 SF			
28	MARGIE P. LEONARD	13,369 SF	1,401 SF		11,968 SF	17 SF			948 SF
29	RICHARD H. MINOR	1.73 AC	0.99 AC	0.74 AC					0.30 SF
30	SIDNEY E. LEONARD	27,725 SF	2,931 SF		24,794 SF				1,490 SF
31	SIDNEY E. LEONARD	19,123 SF	1,498 SF		17,625 SF				770 SF
32	RIHARD H. MINOR	22,425 SF	2,337 SF		20,088 SF	834 SF			
33	THREE MR LTD PARTNERSHIP		0.10 SF			14 SF			3,241 SF
34	AUBRY D. WOODRUFF		4.41 AC		1.96 AC	0.14 AC			0.34 AC
35	CLAUDETTE D. REGES, et al		3.95 AC		9.85 AC				
36	BETTY G. WOODRUFF		317 SF						
37	CLAUDETTE D. REGES, et al		1.83 AC		0.86 AC				
38	CLAUDETTE D. REGES, et al	3.33 AC	1.29 AC	0.32 AC	1.72 AC	1,210 SF			1,937 SF
39	CLAUDETTE D. REGES, et al		4,185 SF			2,187 SF			3,337 SF
40	FALLS ROAD BAPTIST CHURCH		2.54 AC	2.39 AC		0.20 AC	1,537 SF		
41	CLAUDETTE D. REGES, et al		12.51 AC		24.34 AC	0.35 AC			
42	ALMA W. GRIFFEN, HEIRS		8.89 AC		25.20 AC	0.20 AC			991 SF
43	E. C. POWELL		3.78 AC		2.60 AC	1,302 SF			0.70 AC
44	STANLEY L. WEST	7.40 AC	5.43 AC	0.74 AC	1.23 AC				
45	WINDY OAKS FARM, LLC		0.53 AC			1,930 SF			975 SF
46	WINDY OAKS FARM, LLC		0.12 AC			3,513 SF			68 SF

PARCEL NO.	PROPERTY OWNERS NAME	TOTAL AREA	AREA TAKEN	AREA REMAINING RIGHT	AREA REMAINING LEFT	CONSTR. EASEMENT	PERMANENT DRAINAGE EASEMENT	TEMPORARY DRAINAGE EASEMENT	PERMANENT UTILITY EASEMENT
47	OPRHA GENE WATSON, et al	19,704 SF	2,022 SF	17,682 SF					
48	GREGORY K. WATSON	29,167 SF	2,413 SF	26,754 SF		473 SF			
49	ROBERT D. TREADAWAY	15,047 SF	2,998 SF	12,049 SF		589 SF			769 SF
50	WILLIAM H. OVERMAN	137.61 AC	11.97 AC	16.85 AC	108.79 AC	0.37 AC			0.40 AC
51	SATPAL SINGH RATHIE		4.52 AC		4.85 AC	408 SF			
52	E. C. POWELL	39.84 AC	6.81 AC	23.85 AC	9.18 AC	0.13 AC			
53	REAL TEC INCORPORATIED		5.31 AC	2.00 AC		0.11 AC			
54	IRVINE BANKS JR.	23,603 SF	13,986 SF		9,617 SF				
55	JAMES A DAUGHTRIDGE	19,994 SF	19,011 SF		983 SF				
56	JEFFERY S. TAYLOR	21,749 SF	18,020 SF	3,729 SF					
57	REAL TEC INCORPORATIED	1.05 AC	0.26 AC	0.79 AC					
58	GEORGE CRUSENBERRY	42,405 SF	1,348 SF	41,057 SF					
59	CAROLYN EATMON PARKER	1.44 AC	0.70 AC	0.74 AC	5 SF	5 SF			
60	REAL TEC INCORPORATIED		0.43 AC			0.10 AC			
61	W.W. EATMON HEIRS	5.39 AC	1.30 AC	4.09 AC					
62	JAMES B. MARTIN, JR. et al	8.72 AC	2.58 AC	5.93 AC	0.21 AC	600 SF			
63	WILLIAM HERBERT TURNER	10.32 AC	5.98 AC	2.06 AC	2.28 AC	0.12 AC			
64	W.W. EATMON HEIRS	3.31 AC	0.52 AC	0.92 AC	1.87AC	40 SF			
65	WILLIAM HERBERT TURNER	5.70 AC	0.61 AC		5.09 AC				
66	MACK B. PEARSALL		4.35 AC	19.85 AC		0.43 AC			
67	WALTER I. THARRINGTON	17,527 SF	9,009 SF		8,518 SF	719 SF			
68	WALTER I. THARRINGTON	19,283 SF	8,913 SF		10,370 SF				
69	WALTER I. THARRINGTON	19,413 SF	7,884 SF		11,529 SF				
70	WALTER I. THARRINGTON	19,544 SF	7,176 SF		12,368 SF				
71	WALTER I. THARRINGTON	19,675 SF	7,116 SF		12,559 SF				
72	WALTER I. THARRINGTON	39,784 SF	15,863 SF		23,921 SF				
73	N. C. WESLEYAN COLLEGE		4.85 AC			0.12 AC			
74	RONNIE R. & LISA TEDDER	11,463 SF	NO CLAIM						
75	MACK B. & THOMAS J. REARSALL	6.19 AC	0.16 AC	6.03 AC		3098 SF	943 SF	0.51 AC	0.20 AC
76	E. HARRISON PEEBLES, III	19,772 SF	567 SF	19,205 SF		752 SF			
77	HARVIN HUNT & SHERELL MACKIN	17,584 SF	1,433 SF	16,151 SF		1,367 SF			
78	ELIXABETH MARIE HARPER	22,058 SF	3,593 SF	18,465 SF		1,462 SF			
78A			1,670 SF			300 SF			113 SF
79	JOY HOPE HOLINESS	21,456 SF	884 SF	20,572 SF					1,603 SF
80	BRASWELL APARTMENTS LLC	13,450 SF	307 SF	13,143 SF					1,124 SF
81	ELSIE LEE WYCHE	12,643 SF	277 SF	12,366 SF					1,125 SF
82	KATRINA S. & NATHAN C. ALSTON	8,382 SF	175 SF	8,207 SF		375 SF			
83	E.C. POWELL	4,133 SF	1,277 SF	2,856 SF					
84	PAUL C. BEST	3.64 AC	1,049 SF	3.62 AC		543 SF			
85	PAUL C. BEST	2.29 AC	0.46 AC	1.74 AC	4,039 SF	975 SF	744 SF		
86	MICHAEL W. TUNER & WIFE, JO ANN J. TURNER	4.52 AC	1.42 AC	1.60 AC	1.50 AC	0.18 AC			
87	E. T. PRESS		0.13 AC			766 SF			
88	THOMAS PEARSALL JR et al TRUST	6.74 AC				1,911 SF	910 SF	0.11 AC	
89								986 SF	
90									1,779 SF

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS U4019-10" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 81562.35 (11) EASTING: 234301.5 (2411) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99995099 LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS U4019-10" TO -L- STATION 5+00.00 IS S 9° 49' 57.0" W 1.696.61' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD88

JHH JR. LLC
DB 1754 PG 381

WILLIAM B. THIGPEN
DB 1476 PG 235

PATTON JENKINS FAMILY
DB 1848 PG 245

SOUTHERN INVESTORS OF WILSON
DB 1238 PG 870

CHARLES S. COGGINS
DB 1396 PG 160

R.B.D. INVESTMENTS INC.
DB 1944 PG 276

NORTH WINSTEAD DEVELOPMENT CO.
DB 1610 PG 889

CCLP LLC
DB 1729 PG 621

BENVENUE ESTATES, LLC
DB 2138 PG 742

BROADUS C. COBB
DB 1673 PG 352

ATKINSON WINSTEAD, LLC
DB 1840 PG 691

NASH CO. ABC BOARD
DB 1495 PG 639

SALLIE BET JONES, HEIRS
DB PG UNKNOWN

FREDERICK HAYNES
DB 1479 PG 561

EUGINIA MAE KEARNEY
DB 2017 PG 468

CT&T
DB 1570 PG 907

N 49° 47' 50.6" E

BEGIN GRADE
-L- POT STA. 5+20.00

BEGIN CONSTRUCTION
-L- POT STA. 5+00.00

450' UNIFORM TRANSITION

600' TAPER

-L- PC Sta. 10+00.00

150' TAPER

100' TAPER

50' TAPER

50' TYP

R=7.18°

D=5.52°

R=55'

R=25'

R=2.5' TYP

+20.00

+70.00

+66.67

+91.51

RETAIN SYSTEM

REMOVE 20' 18" RCP

REMOVE 27'

REMOVE

RETAIN

TIE TO EXIST. C & G

TOE PROTECTION SEE DETAIL O

8 TONS CL B RIPRAP W/21 SY FIL FAB

MATCHLINE -L- STA. 17+00 SEE SHEET 5

FOR -L- PROFILE SEE SHT. 31

-L-
PI Sta 14+65.22
Δ = 34° 54' 00.0" (LT)
D = 3° 52' 16.8"
L = 901.50'
T = 465.22'
R = 1,480.00'
Se= 0.04
Runoff = 200'

DETAIL O
TOE PROTECTION
(Not to Scale)

Natural Ground
d
3:1 OR FLATTER
Fill Slope
Fliter Fabric
d= 1.0Ft.
Type of Liner= Class B Rip-Rap
FROM -L- STA. 15+75, L=14'

CURB & GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-L-	9+20.00	20+90.46	RT
2'-6" C&G	-L-	14+84.50	21+48.87	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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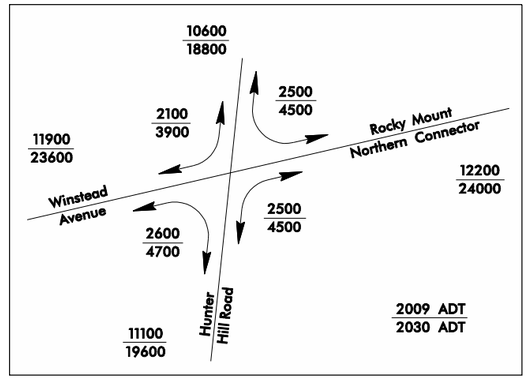
8/17/99

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-L-	9+20.00	20+90.46	RT
2'-6" C&G	-L-	21+70.52	27+60.04	RT
2'-6" C&G	-L-	14+84.50	21+48.87	LT
2'-6" C&G	-L-	22+25.97	29+48.22	LT
1'-6" MOUNTABLE C&G	-Y-	24+05.00	27+15.00	MED
2'-6" C&G	-Y-	22+97.82	28+05.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

PROJECT REFERENCE NO.	SHEET NO.
R-2823	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



MATCHLINE -Y- STA. 17+50 SEE SHEET 24

-L-
PI Sta 14+65.22
Δ = 34° 54' 00.0" (LT)
D = 3° 52' 16.8"
L = 901.50'
T = 465.22'
R = 1,480.00'
Se= 0.04
Runoff = 200'

PIs Sta 30+56.21
Θs = 3° 46' 39.9"
Ls = 240.00'
LT = 160.04'
ST = 80.03'

-Y-
PI Sta 17+97.01
Δ = 18° 42' 42.0" (RT)
D = 2° 51' 53.2"
L = 653.16'
T = 329.51'
R = 2,000.00'
Se= 0.05
Runoff = 150'

PI Sta 24+09.95
Δ = 2° 47' 55.1" (LT)
D = 0° 42' 58.3"
L = 390.77'
T = 195.42'
R = 8,000.00'
Se= NC

PI Sta 28+00.81
Δ = 2° 48' 00.0" (RT)
D = 0° 42' 58.3"
L = 390.95'
T = 195.52'
R = 8,000.00'
Se= NC

-L- PT Sta. 19+01.50

-Y- PT Sta. 21+20.66

-L- TS Sta. 28+96.18

-BL- # 101 POT 5+00.00=
-L- STA. 23+08.12 (8.19' LT.)

-Y- PRC Sta. 26+05.30

-Y- PC Sta. 22+14.53

-Y- POC Sta. 22+25.87=
-L- POT Sta. 21+58.22

MATCHLINE -L- STA. 17+00 SEE SHEET 4

MATCHLINE -L- STA. 31+00 SEE SHEET 6

MATCHLINE -Y- STA. 27+00 SEE SHEET 25

DAVID W. COMBS
DB 1588 PG 709
1

DAUGHTRIDGE ENTERPRISES INC
DB 1448 PG 224
DB 1218 PG83
3

BENJAMIN R. RICKS,et al
DB 2222 PG 374
5

SAINT PAUL BAPTIST CHURCH
DB PG UNKNOWN

BARBARA H. BRADSHAW
DB 1131PG 252
4

WILLIAM D. DRIVER
DB 886 PG 646
2

REBECCA D. PARIS
DB 2240 PG 189
6

CHARLES S. BARTHOLOMEW
DB 1405 PG 779
7

MORRIS J. HURT
DB 1151PG 741
DB 1248 PG 828
DB 1458 PG 816
8

WILLIAM D. DRIVER,JR.
DB 2240 PG 192
9

REBECCA D. PARIS
DB 2240 PG 189
10

+75.00 66.43' LT
+80.00 80' LT
+93.13 90' LT
+85.00 70' LT
DO NOT DISTURB SIGN
+90.72 76.26' LT
+95.80 105' LT
-Y- +45.00 100' RT
-L- +85.00 80' LT
-Y- +70.00 60' RT
+55.00 65' LT
-Y- +35.00 60' LT BEGIN FENCE
-Y- +41.72 70' LT
-L- +11.22 120' LT
-L- +35.00 90' LT
+85.00 120' LT
+96.18 90' LT
+38.96 BEGIN FENCE
+33.05 END FENCE
+41.72
-L- +93.38 87.08' RT
-Y- +75.88 70' RT
-Y- +80.00 55' RT
+05.30 55' RT
+05.30 70' RT
+07.20
+75.00 50' LT
+20.00 48' LT
+60.00 55', 50', 48' LT
+70.00 70' LT + 00.00 80' LT
-L- +35.00 65' RT
-L- +25.00 62' RT
+05.00 57.26' RT
+65.00 62' RT
-Y- +20.00 65' LT
-Y- +18.43 55' LT
+00.00 55' LT
+10.00 55' LT
+25.00 56' LT
+35.00 56' LT
+70.00 50' LT
+70.00 53' LT
+90.00 75', 56.80' RT
+50.00 75' LT
+75.00 85.04' LT
+96.18 85' RT
+80.00 95' LT
+65.00 86.55' LT
+60.00 95' LT
+95.00 160', 85' RT
+10.00 160', 85' RT

PUE
PUE TAPER
275' UNIFORM TRANSITION
SPECIAL CUT DITCH SEE DETAIL B
400' RIGHT TURN LANE
535' LEFT TURN LANE
500' LEFT TURN LANE
500' RIGHT TURN LANE
530' RIGHT TURN LANE
480' LEFT TURN LANES
200' TAPER
150' TAPER
OFFSET = 5'
R = 250'
R=50'
R=90'
R=20'
R=15'
R=25'
LATERAL BASE DITCH SEE DETAIL D
SPECIAL BACK OF CURB CUT DITCH SEE DETAIL J
LATERAL BASE DITCH SEE DETAIL D
48" WW FENCE
LATERAL 'V' DITCH SEE DETAIL A
5 TONS CL B RIPRAP W/14 SY FIL FAB
40 TONS CL I RIPRAP W/75 SY FIL FAB RIPRAP ON BANKS ONLY
PSH SEE DETAIL C
TIE TO EXIST C&G
RETAIN EXIST C&G
AREA OF KNOWN GROUND WATER CONTAMINATION
60' ACCESS BREAK
END FENCE
BEGIN FENCE
PER 4B MEETING: DO NOT BURY #107 1'
SAINT PAUL BAPTIST CHURCH
ISBK BAPTIST CHURCH
ISMTLBUS
-BY-63 PINC 12+68.04 =
U4019-BL-110 =
-Y- STA. 22+62.76 (59.39' LT)

DETAIL C
PREFORMED SCOUR HOLE
PLAN VIEW
SECTION A-A
Pipe or Ditch Outlet
Permanent Soil Reinforcement Matting (PSRM)
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
Seam with mortar or grease wt Petrolatum
Liners: Class B Rip Rap 40" thick with Filter Fabric
B= 4.5Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.
5/05

DETAIL A
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D= 1.0Ft.
b= 2.0Ft.
FROM -L- STA. 25+00 TO STA. 27+26 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Front Ditch Slope
Min. D= 1.0Ft.
FROM -Y- STA. 20+00 TO STA. 21+00 RT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5Ft.
B= 2.0Ft.
b= 2.0Ft.
FROM -L- STA. 17+38 TO STA. 21+00 LT
FROM -L- STA. 26+00 TO STA. 29+50 LT
FROM -Y- STA. 21+00 TO STA. 21+76 RT

DETAIL J
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
D=1.0'
NATURAL GROUND
FROM -L- STA. 22+45 TO STA. 26+00 LT
(LINE 25+00 - 26+00 W/PSRM)

FOR -L- PROFILE SEE SHT. 31
FOR -Y- PROFILE SEE SHTS. 40 & 41

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
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900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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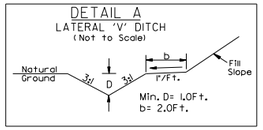
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

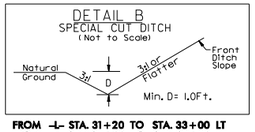
DETAIL A
LATERAL 'V' DITCH
(Not to Scale)



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

FROM -L- STA. 44+00 TO STA. 44+50 RT

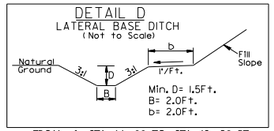
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.0Ft.

FROM -L- STA. 31+20 TO STA. 33+00 LT
FROM -L- STA. 35+00 TO STA. 37+50 LT

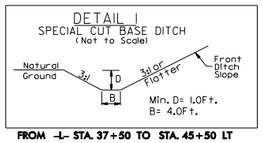
DETAIL D
LATERAL BASE DITCH
(Not to Scale)



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

FROM -L- STA. 44+00 TO STA. 48+20 RT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)

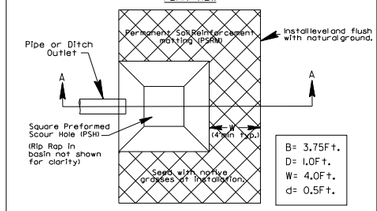


Min. D= 1.0Ft.
B= 4.0Ft.

FROM -L- STA. 37+50 TO STA. 45+50 LT

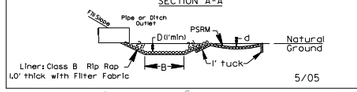
DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW



B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

SECTION A-A



Liner: Class B Rip Rap
1.0' thick with Filter Fabric

5/05

-L- SC Sta. 31+36.18
-BL- # 102 PINC 13+37.96 =
-L- STA. 31+42.66 (37.41' RT.)
-L- CS Sta. 34+76.85
-L- ST Sta. 37+16.85
-BL- #103 PINC 22+03.25 =
-L- STA. 40+03.07 (46.25 LT.)
-L- STA. 31+20 LT

BENJAMIN R. RICKS, et al
DB 2222 PG 374 (5)

B.W. VARNELL, HEIRS
DB 843 PG 187 (14)

TOBY E. MITCHELL
DB 1585 PG 1064 (16)

TALMAGE LEE WELLS
DB 1039 PG 414 (17)

PAMELA B. GARDNER
DB 1130 PG 141 (22)

WADE L. MEDLIN
DB 1022 PG 491 (23)

ANNIE D. BARTHOLOMEW
DB 1573 PG 820
DB 1699 PG 657 (19)

+80.00 140' LT
+70.00 128' LT
+36.18 90' LT
+75.00 125' LT
+05.00 120' LT
+55.00 115' LT
+76.85 90' LT
+85.00 90' LT
+16.85 85' LT
+30.00 110', 85' LT
+15.00 110', 85' LT
+00.00 95' LT
+87.21 85' LT
+70.00 110', 95', 85' LT
+55.00 110', 95', 85' LT

PSH SEE DETAIL H
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT BASE DITCH SEE DETAIL I
48" WW FENCE
GRAU 350
8:1
60' ACCESS BREAK
40' TYP.
EXISTING R/W
18" PPES
12" PPES
24" PPES
15" RCP
REMOVE
WOODRUFF RD 23' BST
N 5° 01' 32.2" W
N 3° 22' 59.1" W
N 1° 41' 11.0" W

MATCHLINE -L- STA. 31+00 SEE SHEET 5

MATCHLINE -L- STA. 44+50 SEE SHEET 7

+00.00 130' RT
+25.00 130' RT
+45.00 105', 90' RT
+76.85 90' RT
+95.00 105' RT
+10.00 120' RT
+40.00 120' RT
+70.00 152' RT
+80.00 90' RT
+60.00 120' RT
+80.00 143' RT
+16.85 85' RT
+19.27 85' RT
END FENCE
+19.33 120' RT
TIE TO EXIST. C&G
+29.71 120' RT
+29.63 85' RT
BEGIN FENCE
+87.21 85' RT
+00.00 196.68', 120' RT
+20.00 195.36', 120' RT

REBECCA D. PARIS
DB 2240 PG 189 (10)

MIRIAM V. HAYES
DB 1335 PG 22 (11)

DURWOOD LEE SHREVE
DB 1003 PG 666 (12)

B.W. VARNELL, HEIRS
DB 843 PG 187 (13)

JOHN R. MORRIS
DB 2129 PG 47 (15)

SHARON B. LANDIS
DB 1252 PG 845 (18)

TAREK R. TRAISH
DB 1801 PG 673 (20)

CLYDE M. KEEN
DB 1088 PG 857 (21)

CLYDE M. KEEN
DB 1072 PG 220 (24)

1 TONS CL B RIPRAP W/ 5 SY FIL FAB

300' RIGHT TURN TAPER

LATERAL BASE DITCH SEE DETAIL D

-L-

PIs Sta 30+56.21	PI Sta 33+07.01	PIs Sta 35+56.89	PIs Sta 45+47.25
Θs = 3° 46' 39.9"	Δ = 10° 43' 29.9" (LT)	Θs = 3° 46' 39.9"	Θs = 3° 46' 39.9"
Ls = 240.00'	D = 3° 08' 53.2"	Ls = 240.00'	Ls = 240.00'
LT = 160.04'	L = 340.68'	LT = 160.04'	LT = 160.04'
ST = 80.03'	T = 170.84'	ST = 80.03'	ST = 80.03'
	R = 1,820.00'		
	Se= 0.06		
	Runoff = 240'		

CURB & GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-L-	39+04.00	40+60.63	RT

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

FOR -L- PROFILE SEE SHTS. 31 & 32

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FOR
DIVISION OF HIGHWAYS

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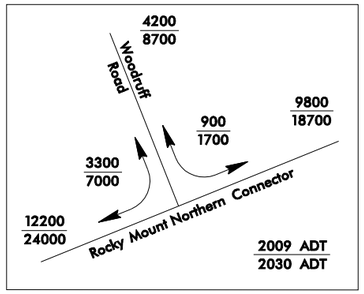
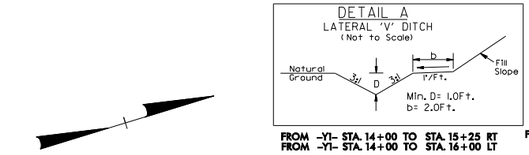
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





FROM -Y1- STA. 14+00 TO STA. 15+25 RT
FROM -Y1- STA. 14+00 TO STA. 16+00 LT

FROM -L- STA. 54+09 TO STA. 55+00 LT
FROM -Y1- STA. 12+89 TO STA. 14+00 LT & RT
FROM -Y1- STA. 16+00 TO STA. 17+20 LT

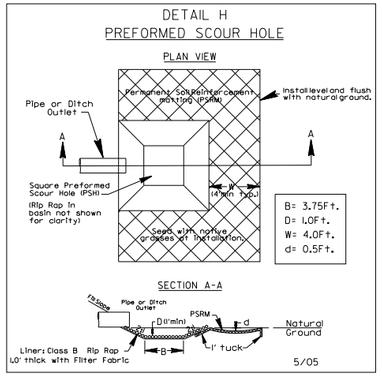
FROM -L- STA. 44+00 TO STA. 48+20 RT

FROM -L- STA. 50+80 TO STA. 52+00 RT

FROM -L- STA. 37+50 TO STA. 45+50 LT

FROM -L- STA. 45+50 TO STA. 48+85 LT
FROM -L- STA. 48+95 TO STA. 52+50 LT

-Y1- STA. 14+24 LT



-L- STA. 48+20 RT

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	46+30.02	49+23.75	RT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

-BL- #104 PINC 30+86.60 =
-L- STA. 48+76.39 (59.97 LT.)

SPAN CULVERT WITH GUARDRAIL
SEE STANDARD 862.01

SIDNEY E. LEONARD
DB 1778 PG 317
(31)

LOUISE M. PITTMAN
DB 1303 PG 444
(27)

MARGIE P. LEONARD
DB 1620 PG 575
(28)

SIDNEY E. LEONARD
UNKNOWN
(30)

TOBY E. MITCHELL
DB 1352 PG 625
(26)

RICHARD H. MINOR
DB 1463 PG 495
(32)

BM#1
STA.48+90.76
63.45 LT.
ELEV.=114.83

+04.76
BEGIN FENCE

+92.00
156.90' LT

+95.89
120' LT

+50.00
133.98' LT
SWALE

GRADE TO DRAIN

+70.00
124.27' LT

+40.00
115' LT

+47.54
130' LT

+48.89
115.27' LT

+85.00
130' LT

+75.00
135', 105' LT

+95.00
125' LT

+62.00
135', 100', 93.34' LT

60' ACCESS BREAK

LATERAL BASE DITCH SEE DETAIL L

SPECIAL CUT BASE DITCH SEE DETAIL I

PUE

REMOVE

9' X 9' RCBC

GRAU 350

CB (190)

2 TONS CL B RIPRAP W/7 SY FIL FAB

LATERAL V DITCH SEE DETAIL E

48 TONS CL I RIPRAP W/67 SY FIL FAB
35 CY DDE

PSH SEE DETAIL H

+32.63
BEGIN FENCE

+86.68
END FENCE

48" WW FENCE

+27.21
100' RT

+60.00
125' RT

SPAN CULVERT WITH GUARDRAIL
SEE STANDARD 862.01

-L- SC Sta. 46+27.21

TOBY E. MITCHELL
DB 1445 PG 225
(25)

RICHARD H. MINOR
DB 1435 PG 14
(29)

AUBRY D. WOODRUFF
DB 925 PG 512
(34)

DORTCHES TOWN LIMIT
CITY OF ROCKY MOUNT

+75.00
150' RT

+65.00
100' RT

+80.00
115' RT

+70.00
100' RT

+75.00
130' RT

+60.00
145' RT

+70.00
155' RT

+95.00
128' RT

+50.00
120' RT

+75.00
100' RT

+85.00
110' RT

+35.00
115' RT

CLAUDETTE D. REGES, et al
DB 994 PG 846
DB 1484 PG 185
(35)

+00.00
110' RT

MATCHLINE -L- STA. 44+50 SEE SHEET 6

MATCHLINE -L- STA. 58+00 SEE SHEET 8

-L-
PIs Sta 45+47.25
Θs = 3° 46' 39.9"
Ls = 240.00'
LT = 160.04'
ST = 80.03'

PI Sta 55+66.27
△ = 54° 35' 04.2" (RT)
D = 3° 08' 53.2"
L = 1,733.88'
T = 939.06'
R = 1,820.00'
Se= 0.06
Runoff = 240'

-Y1-
PI Sta 15+65.93
△ = 63° 41' 04.3" (LT)
D = 19° 05' 54.9"
L = 333.45'
T = 186.31'
R = 300.00'
Se= 0.04
Runoff = 80'

-Y1- POT Sta. 17+96.51=
-L- POC Sta.53+56.26

-Y1- PC Sta. 13+79.62

-Y1- PT Sta. 17+13.07
-L- +70.00
110' LT

-Y1- POT Sta. 12+95.00

BEGIN CONSTRUCTION
-Y1- POT Sta. 12+95.00

THREE MR LTD PARTNERSHIP
DB 1829 PG 797
(33)

AUBRY D. WOODRUFF
DB 925 PG 512
(34)

+00.00
90' RT

+05.00
70' RT

+19.42
70' RT

+41.07
85' RT

+40.00
85' RT

+80.37
45' RT
END FENCE

-Y1- +40.00
45' RT

-Y1- +27.95
100' RT

-L- +45.00
90' LT

-L- +15.00
94.93' LT

+15.00
49.18' RT

+79.62
50' RT

+95.00
50', 30.32' RT

+95.00
50', 29.68' LT

+79.62
50' LT

+00.00
50' LT
BEGIN FENCE

+25.00
60' LT

5 TONS CL B RIPRAP W/14 SY FIL FAB

LATERAL V DITCH SEE DETAIL A

SPECIAL CUT DITCH SEE DETAIL B

PUE

48" WW FENCE

100' UNIFORM TRANSITION

OFFSET=6'

R = 200'

R = 240'

R=2' (TYP.)

530' RIGHT TURN LANE

4" FDPS

S 2°45'13.8" E

N 5°07'17.4" W

S 66°28'18.2" E

FOR -L- PROFILE SEE SHT.32
FOR -Y1- PROFILE SEE SHT.41

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

-BL- #106 PINC 47+57.07 =
-L- STA. 60+32.78 (320.45 LT.)

N 87° 55' 58.7" E

N 01° 25' 32" W
659.98'

S 82° 32' 27.3" E

S 08° 51' 12" E
1034.09'

DORTCHES TOWN LIMIT
N 72° 45' 56" W
664.82'

DORTCHES TOWN LIMIT
S 09° 27' 06" E
512.80'

S 10° 33' 38" W
472.20'

S 72° 41' 41" E
105.43'

S 72° 50' 35" E
241.25'

394.68'
S 08° 50' 02" W

S 72° 50' 56" E
125.51'

CLAUDETTE D. REGES,et al
DB 994 PG 846
DB 1484 PG 185
35

BETTY G. WOODRUFF
DB UNKNOWN
36

AUBRY D. WOODRUFF
DB 925 PG 512
34

CLAUDETTE D. REGES,et al
DB 994 PG 846
DB 1484 PG 185
37

BENAN PROPERTIES, LLC
DB 1900 PG 162

CLAUDETTE D. REGES,et al
DB 1701 PG 5
38

CULTIVATED

WOODS

POND

60

65

70

END FENCE +00.00

60' ACCESS BREAK

BEGIN FENCE

LATERAL 'V' DITCH
SEE DETAIL A

+00.00
110' LT

+50.00
90' LT

+61.09
90' LT

+01.09
90' LT

48" WW FENCE

150' TAPER

97.20'

C
F

12'

12'12'

4' PDS

530' RIGHT TURN LANE

-L-

180'

30'

+00.33'

N 58° 45' 24.9" E
530' LEFT TURN LANE

300' RIGHT TURN TAPER

.06 .05 .04 .03 .025 .02 .01 .00 .01 .02 .025

40' TYP.

+00.00
90' RT

+00.00
110' RT

+61.09
90' RT

+01.09
90' RT

+99.05
160' RT

PUE

-L- CS Sta. 63+61.09

-L- ST Sta. 66+01.09

MATCHLINE -L- STA. 58+00 SEE SHEET 7

MATCHLINE -L- STA. 72+00 SEE SHEET 9

2348.02'
S 06° 07' 41" E

S 72° 40' 30" W
294.46'

N 72° 40' 30" W
294.18'

MARY F. MUTZABAUGH
DB 1110 PG 751

-L-

PI Sta 55+66.27	PIs Sta 64+41.12
△ = 54° 35' 04.2" (RT)	Θs = 3° 46' 39.9"
D = 3° 08' 53.2"	Ls = 240.00'
L = 1,733.88'	LT = 160.04'
T = 939.06'	ST = 80.03'
R = 1,820.00'	
Se= 0.06	
Runoff = 240'	

-BL- #107 PINC 56+33.88 =
-L- STA. 66+43.44 (293.71 RT.)

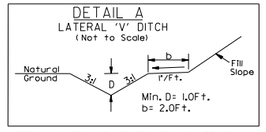
HISTORIC AREA

FOR -L- PROFILE SEE SHTS. 32 & 33

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

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



FROM -L- STA. 60+50 TO STA. 63+00 LT

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FOR
DIVISION OF HIGHWAYS

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Revisions

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE –L– STA. 72+00 SEE SHEET 8

MATCHLINE –L– STA. 86+00 SEE SHEET 10

BEGIN CONSTRUCTION
-Y2- POT Sta. 19+30.00

BEGIN GRADE
-Y2- POT Sta. 21+00.00

-Y2- +90.00
80', 45.85' LT

-Y2- +35.00
80',45.85' LT

EXCAVATE EXIST. GROUND BETWEEN EXIST. AND PROP. INVERTS TO 135.08 TO ALLOW DRAINAGE TO REACH WETLAND

8 TONS CL B RIPRAP W/21 SY FIL FAB +50.00 45.86' LT

-Y2- +00.00
46.46' RT
END FENCE

-Y2- +00.00
45.87' LT
BEGIN FENCE

-L- +70.00
90' LT

-Y2- +65.00
98.63' LT

-L- +30.00
95' LT

+00.00
155' LT

+20.00
170' LT

-GPS R-2823-2 PINC 81+01.96=
-BYI- POT 13+88.84 =
-L- STA. 74+00.07 (22.15 RT.)

-L- POT Sta. 74+28.62=
-Y2- POT Sta. 22+51.68

-BL- #108 PINC 90+72.87 =
-L- STA. 83+68.38 (48.76 LT.)

-L- SC Sta. 85+98.74

-L- TS Sta. 84+78.74

BM#2
-L- STA.85+23.28
180.88' LT.
ELEV.=136.17'

+45.00
170' LT

+00.00
150' LT

+78.74
95' LT

+00.00
95' LT

+98.74
90' LT

+50.00
95' LT

+90.00
100' LT

+55.00
100' LT

+85.00
95' LT

+25.00
95' LT

8 TONS CL B RIPRAP W/21 SY FIL FAB

LATERAL V DITCH SEE DETAIL A

SPECIAL CUT DITCH SEE DETAIL B

150' TAPER

530' RIGHT TURN LANE

530' LEFT TURN LANE

300' RIGHT TURN TAPER

SPECIAL CUT DITCH SEE DETAIL F

40' TYP.

-L- +60.00
90' RT

-L- +25.00
100' RT

-L- +65.00
149.20' RT

-L- +00.00
90' RT

-Y2- +40
65' RT
END FENCE
+68.86
110' RT

+60.00
65' RT

+80.00
65' RT

+00
65',46.38' RT

-Y2- +60.00
45.97' LT
BEGIN FENCE

+15.00
45.99' LT

+30.00
70' LT

+60.00
70' LT

+80.00
46.00' LT

+75.00
90' RT

+20.00
105' RT

+60.00
105' RT

+80.00
90' RT

+78.74
90' RT

+98.74
90' RT

-Y2- +30.00
266.90' RT

END GRADE
-Y2- POT Sta. 24+00.00

END CONSTRUCTION
-Y2- POT Sta. 25+75.00

FALLS ROAD BAPTIST CHURCH
DB 1232 PG 911
(40)

CLAUDETTE D. REGES,et al
DB 1701 PG 5
(38)

CLAUDETTE D. REGES,et al
DB 994 PG 846
DB 1484 PG 185
(39)

CLAUDETTE REGES, et al
DB 1297 PG 825
(41)

MARY F. MUTZABAUGH
DB 1110 PG 751

CURB & GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-Y2-	20+20.35	21+39.50	LT
2'-6" C&G	-Y2-	21+00.00	21+30.20	RT
2'-6" C&G	-Y2-	23+72.75	24+00.00	LT
2'-6" C&G	-Y2-	23+76.00	24+00.00	RT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

-L-

PIs Sta 85+58.74	PI Sta 88+63.19
Θs = 0° 38' 03.4"	Δ = 5° 35' 12.6" (LT)
Ls = 120.00'	D = 1° 03' 25.6"
LT = 80.00'	L = 528.50'
ST = 40.00'	T = 264.46'
	R = 5,420.00'
	Se= 0.03
	Runoff = 120'

HISTORIC AREA

FOR -L- PROFILE SEE SHT.33
FOR -Y2- PROFILE SEE SHT.42

DETAIL A
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1, b, F/T, Fill Slope
Min. D= 1.0Ft.
b= 2.0Ft.
FROM -L- STA. 82+00 TO STA. 83+70 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1 or Flatter, Front Ditch Slope
Min. D= 1.0Ft.
FROM -L- STA. 79+50 TO STA. 82+00 LT
FROM -L- STA. 83+70 TO STA. 85+50 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 3:1, D, 3:1 or Flatter, Front Ditch Slope
Min. D= 1.5Ft.
FROM -L- STA. 79+50 TO STA. 83+70 RT

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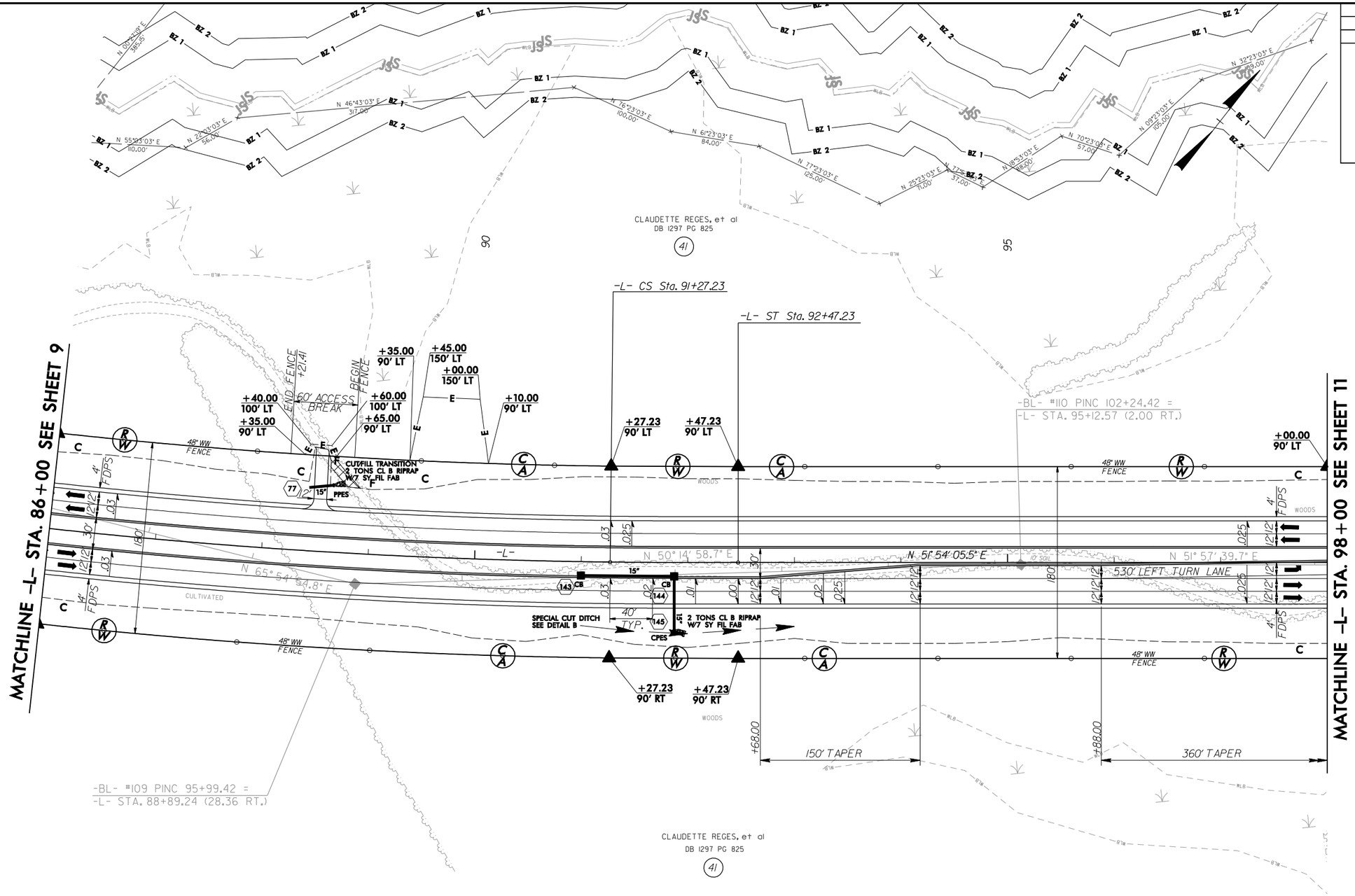
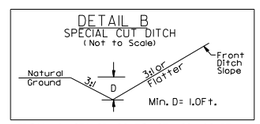
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





FROM -L- STA. 91+00 TO STA. 93+00 RT

-L-

PI Sta 88+63.19	PIs Sta 91+67.23
△ = 5° 35' 12.6" (LT)	Θs = 0° 38' 03.4"
D = 1° 03' 25.6"	Ls = 120.00'
L = 528.50'	LT = 80.00'
T = 264.46'	ST = 40.00'
R = 5,420.00'	
Se= 0.03	
Runoff = 120'	

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

FOR -L- PROFILE SEE SHTS. 33 & 34

PLANS PREPARED BY :
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE -L- STA. 98+00 SEE SHEET 10

MATCHLINE -L- STA. 110+50 SEE SHEET 12

-BL- #111 PINC 105+89.51 =
-L- STA. 98+77.66 (2.38 RT.)

-BL- #112 PINC 112+46.56 =
-L- STA. 105+34.71 (1.89 RT.)

-BL- #113 PINC 115+56.62 =
-L- STA. 108+44.77 (1.94 RT.)

CLAUDETTE REGES, et al
DB 1297 PG 825
41

ALMA W. GRIFFEN, HEIRS
DB 2296 PG 328
42

+00.00 90' LT
+50.00 145' LT
+30.00 90' LT
+65.00 105' LT
+25.00 105' LT
+45.00 90' LT
+40.00 90' LT
+00.00 120', 90' RT
+30.00 120', 90' RT
+00.00 140' RT
+00.00 90' RT
+30.00 90' RT
+00.00 100' RT
+90.00 100' RT
+75.00 115' RT
+30.00 120' RT
+50.00 100' RT
+50.00 120' RT

180' TAPER
360' TAPER
150' TAPER
530' LEFT TURN LANE
-L- N 51° 54' 05.5" E
N 51° 54' 39.2" E
N 51° 51' 33.0" E

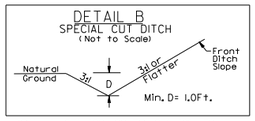
48" WW FENCE
SPECIAL CUT DITCH SEE DETAIL B
CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB
SPECIAL CUT BASE DITCH SEE DETAIL I
LATERAL BASE DITCH SEE DETAIL L
GRAU 350
WOODS

BM#3
-L- STA.110+35.94
57.16' RT.
ELEV.=107.71'

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	110+43.00	110+96.00	RT
EXP.GUTTER	-L-	110+43.00	110+82.50	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

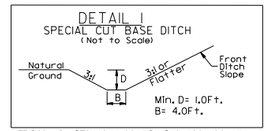
FOR -L- PROFILE SEE SHT.34

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



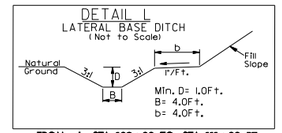
FROM -L- STA. 100+00 TO STA. 101+50 LT
FROM -L- STA. 106+00 TO STA. 107+00 RT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 107+00 TO STA. 109+00 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 109+00 TO STA. 111+00 RT

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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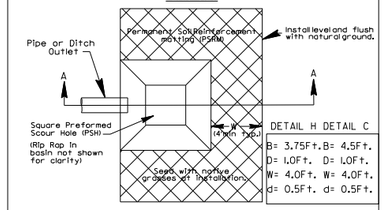
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

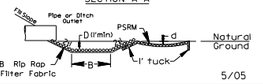
DETAIL C
DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW



DETAIL H DETAIL C
B= 3.75Ft. B= 4.5Ft.
D= 1.0Ft. D= 1.0Ft.
W= 4.0Ft. W= 4.0Ft.
d= 0.5Ft. d= 0.5Ft.

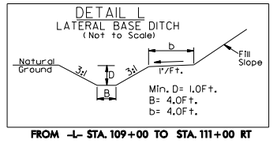
SECTION A-A



5/05

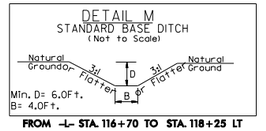
DETAIL C
-L- STA. 111+05 RT
-L- STA. 114+45 RT
DETAIL H
-L- STA. 114+10 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 109+00 TO STA. 111+00 RT

DETAIL M
STANDARD BASE DITCH
(Not to Scale)



FROM -L- STA. 116+70 TO STA. 118+25 LT

ALMA W. GRIFFEN, HEIRS
DB 2296 PG 328
(42)

-BL- #115 PINC 121+75.01 =
-L- STA. 114+63.06 (6.40 LT.)

-BL- #114 PINC 117+80.28 =
-L- STA. 110+68.43 (2.29 RT.)

WOODS

EXIST. CHANNEL DISSIPATES TO NOTHING. GRADE AWAY FROM -L- TO EXIST. GROUND FOR APPR. 25' TO PREVENT FROM FLOWING AGAINST FILL SLOPE

MATCHLINE -L- STA. 110+50 SEE SHEET 11

+10.00 100' LT

+20.00 BEGIN FENCE

+20.00 END FENCE

+20.00 END FENCE

+50.00 120' RT

+20.00 BEGIN FENCE

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB

48" WW FENCE

LATERAL BASE DITCH SEE DETAIL L

PSH SEE DETAIL C

PSH SEE DETAIL H

+00.00 90' RT

+35.00 90' RT

+70.00 110' RT

+45.00 110' RT

+95.00 90' RT

+02.38 100' LT

+02.38 90' RT

STANDARD BASE DITCH SEE DETAIL M

+00.00 90' LT

+00.00 90' RT

150' TAPER RIGHT

CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB

360' TAPER

150' TAPER

530' LEFT TURN LANE

530' RIGHT TURN LANE

40' TYP.

+00.00 115' RT

MATCHLINE -L- STA. 124+00 SEE SHEET 13

CULTIVATED

WOODS

HORNBEAM BRANCH

GRAU 350

2GI

CPES

CB

CAT-1

B-77

N 51° 54' 05.5" E

N 60° 22' 39.3" E

-L- TS Sta. 117+02.38

-L- SC Sta. 119+02.38

-BL- #116 PINC 130+70.56 =
-L- STA. 123+66.02 (72.86 RT.)

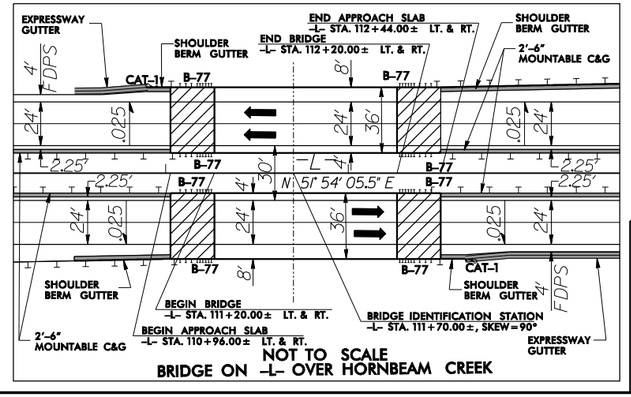
-L-
PIs Sta 118+35.72 PI Sta 129+52.93
Θs = 1° 56' 08.4" Δ = 39° 04' 51.9" (RT)
Ls = 200.00' D = 1° 56' 08.4"
LT = 133.34' L = 2,019.00'
ST = 66.67' T = 1,050.55'
R = 2,960.00'
Se= 0.05
Runoff = 200'

ALMA W. GRIFFEN, HEIRS
DB 2296 PG 328
(42)

CURB & GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	110+43.00	110+96.00	RT
SBG	-L-	112+44.00	112+57.61	RT
EXP.GUTTER	-L-	112+57.61	114+00.00	RT
EXP.GUTTER	-L-	110+43.00	110+82.50	LT
SBG	-L-	110+82.50	110+96.00	LT
SBG	-L-	112+44.00	114+00.00	LT

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN



NOT TO SCALE
BRIDGE ON -L- OVER HORNBEAM CREEK

FOR -L- PROFILE SEE SHTS. 34 & 35

PLANS PREPARED BY :
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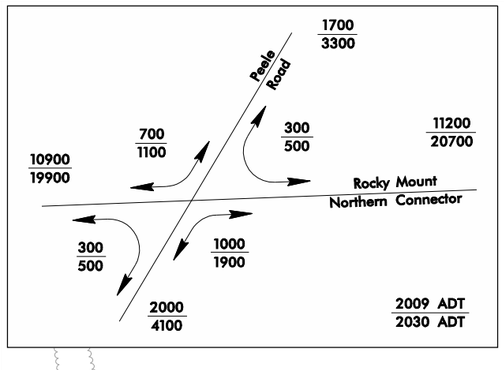
PROJECT REFERENCE NO.	SHEET NO.
R-2823	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



MATCHLINE -L- STA. 124+00 SEE SHEET 12

MATCHLINE -L- STA. 138+00 SEE SHEET 14

MATCHLINE -Y3- STA. 26+00 SEE SHEET 26

BEGIN CONSTRUCTION
-Y3- POT Sta. 17+00.00

BEGIN GRADE
-Y3- POT Sta. 17+33.00

-L- POT Sta. 128+08.19=
-Y3- POT Sta. 21+05.47

-Y3- PC Sta. 21+42.31

-Y3- PT Sta. 23+69.68

-BL- #117 PINC 137+89.68 =
-BY2- PINC 12+17.32 =
-Y3- STA. 17+91.08 (131.68 LT.)

-BL- #118 PINC 144+09.56 =
-L- STA. 135+45.56 (36.64 LT.)

-BY2- # 202 PINC 20+08.52 =
-Y3- STA. 25+83.66 (24.78 LT.)

BM#1
-L- STA. 123+17.98
261.58 LT.
ELEV. 175.32

WINDY OAKS FARM, LLC
DB 1438 PG 109

E. C. POWELL
DB 1642 PG 167
43

ALMA W. GRIFFEN, HEIRS
DB 2296 PG 328
42

STANLEY L. WEST
DB 2195 PG 915
44

CITY OF ROCKY MOUNT

+10.00
70', 28.93' RT

+95.00
70', 28.92' RT

+33.00
50',28.95' RT

+70.00
80', 31.07' LT

+33.00
50',31.04' LT

-Y3- +00.00
50' RT
END FENCE

+40.00
62.01' RT

-Y3- +80.00
50' LT
BEGIN FENCE

-Y3- +97.97
80' LT

-L- +00.00
100' LT

-L- +50.00
90' LT

-L- +40.00
90' RT

-Y3- +55.98
125' LT

-Y3- +55.00
165' LT

-Y3- +75.00
165' LT

-Y3- +75.43
110' LT

-Y3- +20.00
75' LT

-L- +80.00
115' RT

-Y3- +63.06
60' RT

-Y3- +69.68
50' RT
END FENCE

+69.68
50' LT
BEGIN FENCE

+35.00
90' RT

+00.00
90' RT

+60.00
115' RT

+80.00
106.92' RT

+50.00
END FENCE

+58.05
136.55' RT

+51.70
149.03' RT

+60.00
130' RT

+86.10
BEGIN FENCE

-L- +00.00
100' LT

-L- +00.00
90' LT

+78.72
END FENCE

+16.55

CUT/FILL TRANSITION
2 TONS CL B RIPRAP
W/7 SY FIL FAB

SPECIAL CUT DITCH
SEE DETAIL B

SPECIAL CUT BASE DITCH
SEE DETAIL I

3 TONS CL B RIPRAP
W/10SY FIL FAB

40 TONS CL I RIPRAP
W/75 SY FIL FAB
RIPRAP ON BANKS ONLY

BERM BASE DITCH
SEE DETAIL G

18" BCCS
2 ELBOWS W/ROD
AND LUG
3 TONS CL B RIPRAP
W/10 SY FIL FAB

BERM V DITCH
SEE DETAIL K

50' TAPER
EXIST. TPD

360' TAPER

530' LEFT TURN LANE

530' RIGHT TURN LANE

150' TAPER

-L-530' LEFT TURN LANE

40' TYP.

PROP. SOUND BARRIER WALL

48" WW FENCE

CULTIVATED

WOODS

CL OF BRANCH IS PROPERTY LINE

CL OF DITCH IS PROPERTY LINE

DETAIL S
FALSE SUMP
(Not to Scale)

Median Ditch
9"
2"
L (See Chart Below)
20'
S
S=Ditch Slope
℄ Proposed Ditch

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'

-L- STA. 132+72 RT
-L- STA. 135+28 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1 or Flatter
Front Ditch Slope
Min. D= 1.0Ft.

FROM -L- STA. 132+00 TO STA. 135+50 RT
FROM -Y3- STA. 17+00 TO STA. 18+00 LT & RT
FROM -Y3- STA. 21+55 TO STA. 23+50 LT

DETAIL G
BERM BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
B
3:1
3:1
RDWY
Min. D= 1.0Ft.
B= 4.0Ft.
b= 3.0Ft.

FROM -L- STA. 134+75 TO STA. 135+50 RT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1 or Flatter
Front Ditch Slope
B
Min. D= 1.0Ft.
B= 4.0Ft.

FROM -L- STA. 135+50 TO STA. 147+24 RT

DETAIL K
BERM "V" DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1
b
3:1
RDWY
Min. D= 1.0Ft.
b= 2.0Ft.

FROM -L- STA. 135+50 TO STA. 147+24 RT
(LINE 135+50 TO 137+50 W/PSRM)

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

-L-
PI Sta 129+52.93
△ = 39° 04' 51.9" (RT)
D = 1° 56' 08.4"
L = 2,019.00'
T = 1,050.55'
R = 2,960.00'
Se= 0.05
Runoff = 200'

-Y3-
PI Sta 22+56.02
△ = 2° 36' 19.9" (LT)
D = 1° 08' 45.3"
L = 227.38'
T = 113.71'
R = 5,000.00'
Se = NC

RICKS-BOSEMAN FARM
HISTORIC AREA

FOR -L- PROFILE SEE SHT. 35
FOR -Y3- PROFILE SEE SHT. 42
FOR INTERSECTION DETAILS
SEE SHT. 2F

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE -L- STA. 13+40 SEE SHEET 27

MATCHLINE -L- STA. 138+00 SEE SHEET 13

MATCHLINE -L- STA. 152+00 SEE SHEET 15

MATCHLINE -Y4- STA. 23+00 SEE SHEET 28

-Y4- PT Sta. 13+78.71

-BL- #120 PINC 155+81.66 =
-BY3- PINC 11+14.79 =
-Y4- STA. 16+68.36 (27.33 LT.)

-Y4- POT Sta. 17+73.93=
-L- POT Sta.147+29.80

-L- CS Sta. 139+21.38

-L- ST Sta. 141+21.38

-BL- #119 PINC 148+66.72 =
-L- STA. 139+92.58 (71.54 RT.)

GPS-R-2823-3 PINC 159+11.73 =
-BY3- PINC 14+44.86 =
-Y4- STA. 19+98.40 (23.30 LT.)

WINDY OAKS FARM
DB 1438 PG 109 (46)

WINDY OAKS FARM, LLC
DB 1438 PG 109 (45)

STANLEY L. WEST
DB 2195 PG 915 (44)

WILLIAM H. OVERMAN
DB 2007 PG 418
PB 1PG 120 (50)

ORPHA GENE WATSON, et al
DB 1918 PG 240 (47)

GREGORY K. WATSON
DB 2031 PG 910 (48)

ROBERT D. TREADAWAY
DB 1532 PG 903 (49)

DAVID J. DUKE
DB 1204 PG 250

CITY OF ROCKY MOUNT

+78.71 50' LT
+50.00 50' LT
+54.29 65' LT
+60.00 85' LT
+00.00 50' LT BEGIN FENCE

+78.71 60' RT
+78.71 50' RT

+50.00 115', 60', 50' RT
+65.00 115', 60', 50' RT

+00.00 50' RT END FENCE
-Y4- +50.00 50' RT
-Y4- +54.83 60' RT
-L- +25.00 90' LT
SPECIAL CUT DITCH SEE DETAIL B TIE TO EXIST.

-Y4- +40.00 50' LT
-Y4- +89.13 85' LT
SPECIAL CUT DITCH SEE DETAIL B

-L- +75.00 110' LT
SPECIAL CUT DITCH SEE DETAIL B

+21.38 90' LT
+21.38 90' LT
60' ACCESS BREAK
END FENCE 100.00
BEGIN FENCE
48" WW FENCE

+20.55 130' RT
+82.94 106.40' RT
+01.83 99.25' RT
+62.81 100.60' RT
+37.92 102.26' RT
+85.85 103.32' RT
+10.69 110.00' RT

+25.00 BEGIN FENCE
-Y4- +10.00 50' RT END FENCE

-L- +00.00 110' RT

+75.00 50' RT
+85.00 60' RT
+20.00 70' LT

-L- +65.00 95' RT
-Y4- +02.50 95' LT
-Y4- +10.00 70' LT BEGIN FENCE

+50.00 55' RT
+60.00 50' RT

+84.94 50' RT
+20.00 121.19' RT
+31.87 120.13' RT

3 TONS CL B RIPRAP W/10 5' FIL FAB

PLUG

RETAIN EXIST. C&G

RETAIN

530' RIGHT TURN LANE

530' LEFT TURN LANE

400' RIGHT TURN LANE

150' TAPER

PROP. SOUND BARRIER WALL

BERM V DITCH SEE DETAIL K

SPECIAL CUT BASE DITCH SEE DETAIL I

SPECIAL CUT DITCH SEE DETAIL B

S 85° 08' 45.8" E

N 80° 53' 01.2" E

S 31° 51' 15.2" E

S 33° 18' 71.5" E

S 32° 33' 14.2" E

N 18° 43' 18.0" E

S 85° 08' 45.8" E

-L-

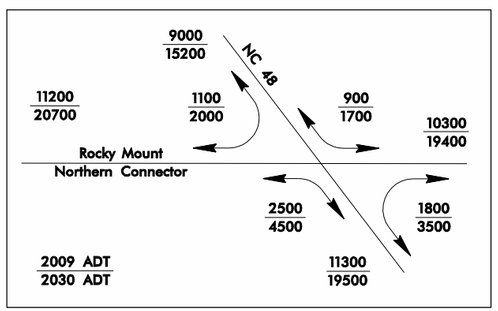
-Y4-

RICKS-BOSEMAN FARM HISTORIC AREA

FOR -L- PROFILE SEE SHTS.35 & 36
FOR -Y4- PROFILE SEE SHT.43

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN



-L-

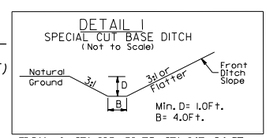
PI Sta 129+52.93
△ = 39° 04' 51.9" (RT)
D = 1° 56' 08.4"
L = 2,019.00'
T = 1,050.55'
R = 2,960.00'
Se= 0.05
Runoff = 200'

PIs Sta 139+88.05
Θs = 1° 56' 08.4"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

-Y4-

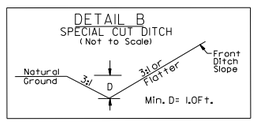
PI Sta 12+67.60
△ = 1° 03' 39.5" (LT)
D = 0° 28' 38.9"
L = 222.21'
T = 111.11'
R = 12,000.00'
Se= NC

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



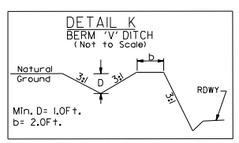
FROM -L- STA. 135+50 TO STA. 147+24 RT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 144+31 TO STA. 146+09 LT
FROM -L- STA. 147+33 TO STA. 148+00 LT
FROM -L- STA. 148+68 TO STA. 150+00 RT
FROM -Y4- STA. 16+00 TO STA. 17+15 LT
FROM -Y4- STA. 18+30 TO STA. 20+00 RT
FROM -Y4- STA. 19+16 TO STA. 22+00 LT
FROM -Y4- STA. 21+50 TO STA. 22+00 RT

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



FROM -L- STA. 135+50 TO STA. 147+24 RT

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FOR
DIVISION OF HIGHWAYS

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WILLIAM H. OVERMAN
DB 2007 PG 418
PB 1 PG 120
(50)

155 160 165

-L- SC Sta. 159+79.19

-L- TS Sta. 157+79.19

-BL- #121 PINC 165+67.22 =
-L- STA. 155+14.36 (17.99 LT.)

MATCHLINE -L- STA. 152+00 SEE SHEET 14

+50.00 110' LT
+50.00 140' LT
+25.00 130' LT
+15.00 101.95' LT
+79.19 100' LT
+95.00 110' LT
+55.00 115' LT
+00.00 107.25' LT
+30.00 100' LT
+45.00 140' LT
+00.00 110' LT

END FENCE +12.00
BEGIN FENCE
60' ACCESS BREAK
LP TANK
ISFD
2' GRAVEL
8' GRAVEL
48" WW FENCE
150' TAPER
180' TAPER
+65.40
+88.00
+39.19
+38.00
+58.00
+68.00
+180.00
+72.00
4' FDPS
SPECIAL CUT BASE DITCH SEE DETAIL I
LATERAL BASE DITCH SEE DETAIL L
2 TONS CL B RIPRAP W/7 SY FIL FAB
CUT/FILL TRANSITION 2 TONS CL B RIPRAP W/7 SY FIL FAB
15" PPES
CB
40' TYP.
530' LEFT TURN LANE
S 85°08' 45.8" E
N 78° 43' 18" E
S 76° 09' 00.3" E
N 72° 56' 36.0" E
R=100'
R=50'
R=20'
R=2'
360° TAPER
CULTIVATED

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

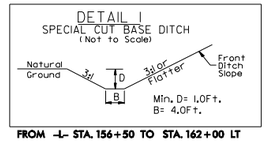
-BL- #122 PINC 171+47.01 =
-L- STA. 160+81.68 (80.34 RT.)

WILLIAM H. OVERMAN
DB 2007 PG 418
PB 1 PG 120
(50)

-L-

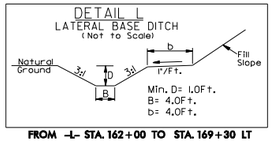
PIs Sta 159+12.54	PI Sta 167+18.99
Θs = 1° 56' 08.4"	Δ = 28° 03' 53.7" (LT)
Ls = 200.00'	D = 1° 56' 08.4"
LT = 133.34'	L = 1,449.88'
ST = 66.67'	T = 739.79'
	R = 2,960.00'
	Se= 0.05
	Runoff = 200'

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 156+50 TO STA. 162+00 LT

DETAIL I
LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 162+00 TO STA. 169+30 LT

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

RICKS-BOSEMAN FARM HISTORIC AREA

FOR -L- PROFILE SEE SHT.36

EIP
CITY OF ROCKY MOUNT
CITY OF ROCKY MOUNT
S 78°45'20" E
974.75'

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE -L- STA. 165+00 SEE SHEET 15

MATCHLINE -L- STA. 177+00 SEE SHEET 17

WILLIAM H. OVERMAN
DB 2007 PG 418
PB 1PG 120
(50)

SATPAL SINGH RATHIE
DB 2161PG 731
PB 33 PG 58
(51)

CITY OF ROCKY MOUNT

-BL- #123 PINC 179+95.14 =
-L- STA. 169+18.08 (66.89 LT.)

-BL- #124 PINC 184+81.74 =
-L- STA. 174+09.01 (13.64 LT.)

BM#5
-L- STA. 170+18.63
192.25' LT.
ELEV.=104.62'

-L- CS Sta. 174+29.08

-L- ST Sta. 176+29.08

+00.00 110' LT
+00.00 110' LT
+35.00 135' LT
+50.00 110' LT
+40.00 135' LT
+75.00 108.29' LT
+00.00 90' LT
+29.08 90' LT
+29.08 90' LT
+45.00 END FENCE
+25.00 115' RT
+20.00 150' RT
+75.00 145' RT
+00.00 118.28' RT
+71.47 END FENCE
+74.88 BEGIN FENCE
+00.00 125' RT
+50.00
+00.00 110' RT
+30.00 90' RT
+80.00 100' RT
+10.00 90' RT
+50.00
+29.08 90' RT
+29.08 95' RT

LATERAL BASE DITCH SEE DETAIL L (61)
BDO
48 TONS CL I RIPRAP W/89 SY FIL FAB RIPRAP ON 1 BANKS ONLY
1 TON CL B RIPRAP W/5 SY FIL FAB
PSH SEE DETAIL H (165)
PSH SEE DETAIL H (164)
PSH SEE DETAIL H (167)
LATERAL V DITCH SEE DETAIL A (166)
LATERAL V DITCH SEE DETAIL A
LATERAL V DITCH SEE DETAIL A
LATERAL V DITCH SEE DETAIL A
CPES
CB
HW
CAT-1
AT-1
GRAU 350

530' LEFT TURN LANE
180' TAPER
360' TAPER
150' TAPER
40' TYP.
60' ACCESS BREAK
BEGIN FENCE
END FENCE

48" WW FENCE
4' FDPS
WOODS
CULTIVATED
WLB

N 72° 56' 36.0" E
N 76° 55' 11.1" E
N 64° 29' 26.6" E
N 62° 55' 03.8" E
N 34° 04' 40" E 706.00'
N 34° 04' 16" E 749.89'

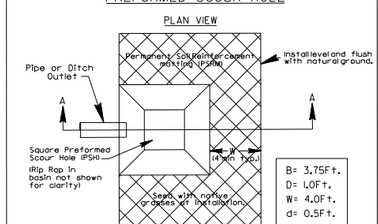
BZ 1
BZ 2

-L-

PI Sta 167+18.99	PIs Sta 174+95.75
Δ = 28° 03' 53.7" (LT)	Θs = 1° 56' 08.4"
D = 1° 56' 08.4"	Ls = 200.00'
L = 1,449.88'	LT = 133.34'
T = 739.79'	ST = 66.67'
R = 2,960.00'	
Se= 0.05	
Runoff = 200'	

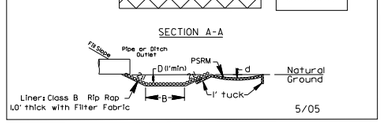
DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW



B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

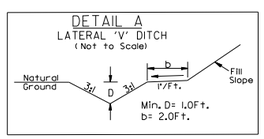
SECTION A-A



5/05

-L- STA. 170+75 RT
-L- STA. 172+87 LT
-L- STA. 173+15 RT

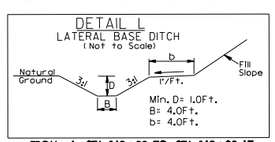
DETAIL A
LATERAL 'V' DITCH
(Not to Scale)



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

FROM -L- STA. 167+75 TO STA. 169+50 RT
FROM -L- STA. 170+80 TO STA. 173+10 RT
FROM -L- STA. 175+50 TO STA. 177+25 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



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

FROM -L- STA. 162+00 TO STA. 169+30 LT

FOR -L- PROFILE SEE SHTS. 36 & 37

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

PLANS PREPARED BY :
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(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	178+50.00	180+49.00	RT
SBG	-L-	184+28.00	184+44.50	RT
EXP.GUTTER	-L-	178+50.00	179+49.00	LT
SBG	-L-	179+49.00	180+49.00	LT
SBG	-L-	184+28.00	185+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

MATCHLINE -L- STA. 177+00 SEE SHEET 16

MATCHLINE -L- STA. 191+00 SEE SHEET 18

-BL- #125 PINC 189+68.34 =
-L- STA. 178+96.01 (3.27 LT.)

-BL- #126 PINC 194+86.11 =
-L- STA. 184+10.52 (61.26 LT.)

-BL- #127 PINC 196+52.94 =
-L- STA. 185+69.43 (112.08 LT.)

-BL- #128 PINC 199+02.18 =
-L- STA. 188+08.47 (41.51LT.)

-BL- #129 PINC 201+46.51 =
-L- STA. 190+50.59 (8.76 LT.)

SATPAL SINGH RATHIE
DB 2161PG 731
PB 33 PG 58
51

E. C. POWELL
DB 1666 PG 822
52

CITY OF ROCKY MOUNT

S 80°31'12" E 29.14'

N 68°19'28" E 92.52'

S 85°06'05" E 140.00'

N 64° 29' 26.6" E

N 56° 29' 10.8" E

N 62° 55' 03.8" E

N 70° 32' 21.2" E

+50.00 90' LT

+00.00 110' LT

+71.00 END FENCE

+04.00 BEGIN FENCE

+17.39 END FENCE

+15.00 100' LT

+20.02 BEGIN FENCE

+75.00 115' LT

+20.00 100' LT

+55.00 110' LT

+20.00 95' RT

+00.00 105' RT

+80.00 105' RT

+30.00 125' RT

1 TON CL B RIPRAP W/5 SY FIL FAB

2 TON CL B RIPRAP W/7 SY FIL FAB

48 TONS CL B RIPRAP W/89 SY FIL FAB RIPRAP ON BANKS ONLY

2 ELBOWS W/ ROD AND LUG

157 BCCS

SPECIAL CUT DITCH SEE DETAIL F

LATERAL V DITCH SEE DETAIL A

LATERAL V DITCH SEE DETAIL N

LATERAL BASE DITCH SEE DETAIL L

PSH SEE DETAIL H

CUT/FILL TRANSITION

48" WW FENCE

GRAU 350

PSRM

CAT-1

2GI

B-77

BZ 1

BZ 2

WOODS

FALLOW

COMPASS CREEK

BEAVER DAM

10' SOIL

BM#6
-L- STA. 185+19.26
28.25'LT.
ELEV.=99.36'

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

Natural Ground, 3:1, D, 3:1, b, 1'/Ft., Fill Slope

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

FROM -L- STA. 175+50 TO STA. 177+25 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1 or Flatter, Front Ditch Slope

Min. D= 1.5Ft.

FROM -L- STA. 184+48 TO STA. 188+50 RT
FROM -L- STA. 184+98 TO STA. 189+00 LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, 3:1, b, 1'/Ft., Fill Slope, B

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

FROM -L- STA. 188+50 TO STA. 189+15 RT
FROM -L- STA. 190+28 TO STA. 191+00 LT

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

Natural Ground, 3:1, D, 3:1, b, 1'/Ft., Fill Slope

Min. D= 1.5Ft.
b= 2.0Ft.

FROM -L- STA. 189+00 TO STA. 189+70 LT

SHOULDER BERM GUTTER
B-77
2'-6" MOUNTABLE C&G
BRIDGE IDENTIFICATION STATION -L- STA. 182+37.50±, SKEW=90°
BEGIN BRIDGE -L- STA. 180+71.00± LT. & RT.
BEGIN APPROACH SLAB -L- STA. 180+47.00± LT. & RT.
END BRIDGE -L- STA. 184+04.00± LT. & RT.
END APPROACH SLAB -L- STA. 184+28.00± LT. & RT.
N 62° 55' 03.8" E
NOT TO SCALE
BRIDGE ON -L- OVER COMPASS CREEK

DETAIL H
PREFORMED SCOUR HOLE

PLAN VIEW

Pipe or Ditch Outlet
Permanent Soil Reinforcement Matting (PSRM)
Install level and flush with natural ground.
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
Seed with native grasses at installation.
(4"min typ.)

B= 3.75Ft.
D= 1.0Ft.
W= 4.0Ft.
d= 0.5Ft.

SECTION A-A

Pipe or Ditch Outlet, PSRM, D (1'min), d, Natural Ground, B, 1' tuck
Liner: Class B Rip Rap 1.0' thick with Filter Fabric

5/05

-L- STA. 177+30 RT
-L- STA. 189+15 RT
-L- STA. 189+70 RT

FOR -L- PROFILE SEE SHT.37

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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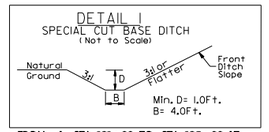
PROJECT REFERENCE NO.	SHEET NO.
R-2823	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 191+00 TO STA. 195+00 LT

MATCHLINE -L- STA. 191+00 SEE SHEET 17

MATCHLINE -L- STA. 205+00 SEE SHEET 19

-BL- #130 PINC 203+59.36 =
-L- STA. 192+61.97 (33.73 LT.)

-BL- #132 PINC 216+70.57 =
-L- STA. 204+33.58 (17.41 LT.)

-BL- #131 PINC 206+95.88 =
-L- STA. 195+80.50 (74.83 RT.)

GPS R-2823-5 PINC 211+44.45 =
-L- STA. 199+88.00 (262.35 RT.)

REALTEC INCORPORATED
DB 2182 PG 153
PB 33 PG 110
(53)

E. C. POWELL
DB 1666 PG 822
(52)

IRVINE BANKS JR.
DB 1761 PG 857
MB 1464 PG 688
(54)

JAMES A. DAUGHTRIDGE
DB 909 PG 575
MB 1464 PG 688
(55)

JEFFERY S. TAYLOR
DB 1464 PG 688
MB 1464 PG 688
(56)

E. C. POWELL
DB 1175 PG 7

REALTEC INCORPORATED
DB 2182 PG 153
PB 33 PG 110
(57)

MARGIE KING LEWIS
DB 569 PG 404

GEORGE CRUSENBERRY
DB 688 PG 121
PB 33 PG 110
(58)

GEORGE CRUSENBERRY
DB 1793 PG 209
PB 33 PG 110

CITY OF ROCKY MOUNT

+40.00 90' LT
+00.00 100' LT
+50.00 END FENCE
BEGIN FENCE
60' ACCESS BREAK
SPECIAL CUT BASE DITCH SEE DETAIL I
GRAU 350
12' 15" PPES (182)
48" WW FENCE
+25.00 155' LT
+80.00 90' LT
+35.00 90' LT
+85.00 105' RT
+60.00 125' RT
+65.00 105' RT
+97.16 99.60' RT
+30.00 105' RT

N 89°09'04" E 604.74'
N 56° 10' 50.3" E
N 62° 55' 03.8" E -L-
N 81° 44' 15.9" E
N 87° 37' 39.5" E
N 30° 47' 43.1" E
S 80°45'33" E 20.00'
S 80°45'33" E 100.00'
S 80°45'33" E 108.30'
S 80°57'48" E 100.00'
S 80°51'33" E 214.81'
S 80°51'33" E 100.00'
S 46°22'08" W 28.31'
N 80°43'55" W 336.70'
N 80°40'01" W 224.88'
S 09°14'30" W 50.04'
S 09°14'30" W 195.38'
N 09°09'58" E 195.92'
S 09°02'10" E 95.41'
N 09°09'58" E 207.42'
S 09°58'21" W 160.08'
N 09°02'57" E 148.42'
N 09°02'57" E 100.13'
S 09°02'57" W 100.00'
S 09°02'10" E 60.00'
S 09°02'57" W 100.00'
S 09°02'57" W 108.30'
S 09°02'57" W 95.13'
S 09°02'57" W 95.92'
S 09°02'57" W 99.03'
S 10°01'25" W 62.77'

FOR -L- PROFILE SEE SHTS. 37 & 38

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

PLANS PREPARED BY :
RUMMEL • KLEPPER & KAHL, LLP
consulting engineers
900 Ridgefield Drive Suite 350
RALEIGH, NORTH CAROLINA 27609-3960
(919) 878-9560
FOR
DIVISION OF HIGHWAYS

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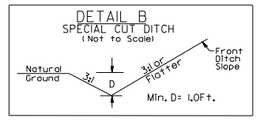
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 218+50 TO STA. 220+50 LT

MATCHLINE -L- STA. 205+00 SEE SHEET 18

MATCHLINE -L- STA. 219+00 SEE SHEET 20

205 210 215

REALTEC INCORPORATED
DB 2182 PG 153
PB 33 PG 110
53

REALTEC INCORPORATED
DB 2182 PG 153
PB 33 PG 110
60

WOODS

S 89°26'04" W 738.81'

+00.00 90' LT

+10.00 90' LT

+50.00 135' LT

+40.00 125' LT

+70.00 90' LT

-BL- #133 PINC 226+15.60 = -L- STA. 213+76.79 (41.09 RT.)

CUT/FILL TRANSITION
2 TONS CL B RIPRAP
W/7 SY FIL FAB

S 89°26'33" W 260.00'

S 40°58'47" W 260.00'

CITY OF ROCKY MOUNT

S 40°58'47" W 46.89'

S 40°58'47" W 207.71'

259.55'

WILLIAM HERBERT TURNER
DB 1017 PG 53
63

JAMES B. MARTIN, JR. ET AL
DB 1002 PG 286
MB 19 PG 161
62

SPECIAL CUT DITCH
SEE DETAIL B

48" WW FENCE

4' FDPS

12' 12' 30' .025

90' 105'

N 66° 27' 59.3" E

N 62° 55' 03.8" E

-L-

180'

+25.00

5.30' LEFT TURN LANE

5.30' RIGHT TURN LANE

150' TAPER

PPES 12" 75 24"

END FENCE

60' ACCESS BREAK

BEGIN FENCE

+50.00

+30.00 105' RT

+20.00 90' RT

+50.00 90' RT

+00.00 105' RT

FALLOW

CULTIVATED

S 43°16'19" W 197.91'

CAROLYN EATMON PARKER
DB 1117 PG 320
PB 33 PG 110
59

PUMP HOUSE

15FD

10' DR

N 17°12'34" W 219.75'

S 62°29'11" E 209.80'

EIP

S 80°37'33" E 473.47'

122.94'

REALTEC INCORPORATED
DB 2182 PG 153
PB 33 PG 110
53

N 64°20'39" W 263.35'

CAROLYN EATMON PARKER
DB 1117 PG 320
PB 33 PG 110

W. W. EATMON HEIRS
DB 1002 PG 286
MB 19 PG 161
61

GEORGE CRUSENBERRY
DB 1668 PG 28
PB 33 PG 110

N 08°22'21" E 166.29'

S 80°37'33" E 103.81'

200.00'

S 18°17'55" W 233.59'

JOHN ALLEN CRUSENBERRY
DB 1630 PG 124
PB 33 PG 110

S 27°33'02" W 186.01'

S 21°38'54" W 165.44'

DAVID W. WILSON
DB 2203 PG 733

106.52'

N 89°00'19" E 417.31'

S 15°32'22" W 206.98'

231.65'

CITY OF ROCKY MOUNT

FOR -L- PROFILE SEE SHT.38

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

PLANS PREPARED BY :
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DIVISION OF HIGHWAYS

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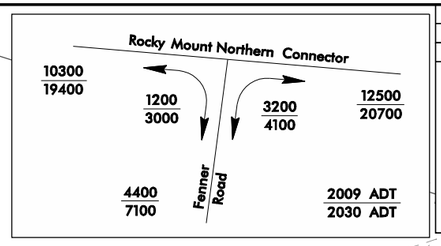
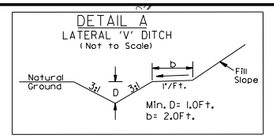
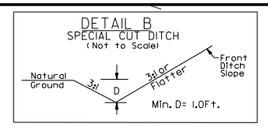
PROJECT REFERENCE NO.	SHEET NO.
R-2823	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

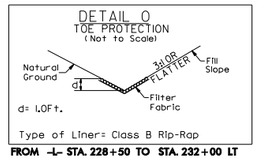




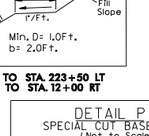
FROM -L- STA. 220+50 TO STA. 223+50 LT
FROM -Y5- STA. 11+00 TO STA. 12+00 RT



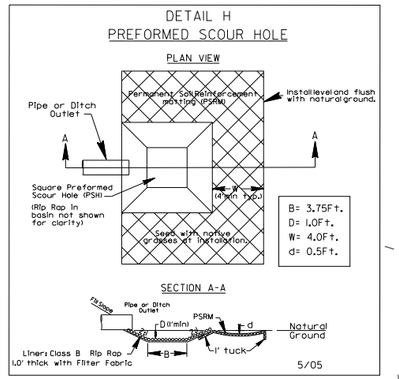
FROM -L- STA. 218+50 TO STA. 220+50 LT



FROM -L- STA. 228+50 TO STA. 232+00 LT



FROM -L- STA. 227+00 TO STA. 230+75 RT



-Y5- STA. 11+50 LT

-BL- #134 PINC 236+01.84 =
-L- STA. 223+61.29 (17.52 LT.)

-BL- #135 PINC 242+22.63 =
-L- STA. 229+81.59 (2.84 RT.)

MATCHLINE -L- STA. 219+00 SEE SHEET 19

MATCHLINE -L- STA. 232+00 SEE SHEET 21

MATCHLINE -Y5- STA. 16+00 SEE SHEET 29

-L- TS Sta. 219+05.52

-L- SC Sta. 221+05.52

-L- CS Sta. 230+22.01

-Y5- PC Sta. 15+43.31

-L- POC STA. 223+50.00=
-Y5- POT Sta. 10+00.00

WILLIAM HERBERT TURNER
DB 1017 PG 53
(63)

WILLIAM HERBERT TURNER
DB 1017 PG 55
(65)

JAMES B. MARTIN, JR. ET AL
DB 1002 PG 286
MB 19 PG 161
(62)

W. W. EATMON HEIRS
DB 1002 PG 286
MB 19 PG 161
(61)

CAROLYN EATMON PARKER
DB 1008 PG 13
MB 19 PG 161
(64)

60' ACCESS BREAK

BEGIN FENCE +60.00

END FENCE

END FENCE +00.00

BEGIN FENCE +50.00

+53.45 END FENCE

+60.09 BEGIN FENCE

48" WW FENCE

180' TAPER

150' TAPER LEFT

530' LEFT TURN LANE

530' RIGHT TURN LANE

335' LEFT TURN LANE

150' TAPER

360' UNIFORM TRANSITION

2 TON CL B RIPRAP W/7 SY FIL FAB

SPECIAL CUT DITCH SEE DETAIL B

LATERAL V DITCH SEE DETAIL A

TOE PROTECTION SEE DETAIL O

SPECIAL CUT BASE DITCH SEE DETAIL P

PSH SEE DETAIL H

26 TONS CL I RIPRAP W/50 SY FIL FAB RIPRAP ON BANKS ONLY

CURB & GUTTER LOCATIONS

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

-L-
PIs Sta 220+38.86
Θs = 2° 28' 10.7"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

-L-
PI Sta 225+69.82
Δ = 22° 38' 02.9" (RT)
D = 2° 28' 10.7"
L = 916.49'
T = 464.30'
R = 2,320.00'
Se= 0.05
Runoff = 200'

-L-
PIs Sta 230+88.69
Θs = 2° 28' 10.7"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

-Y5-
PI Sta 21+06.24
Δ = 43° 48' 32.8" (RT)
D = 4° 05' 33.2"
L = 1,070.46'
T = 562.93'
R = 1,400.00'
Se= 0.06
Runoff = 160'

FOR -L- PROFILE SEE SHTS. 38 & 39
FOR -Y5- PROFILE SEE SHT. 43

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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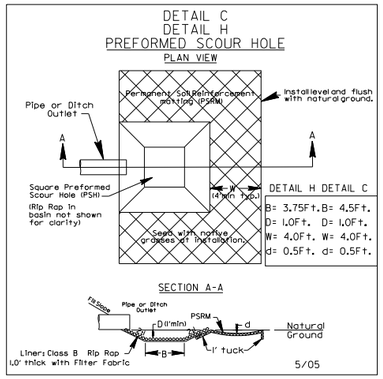
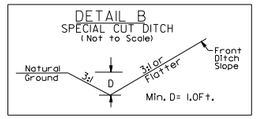
PROJECT REFERENCE NO.	SHEET NO.
R-2823	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

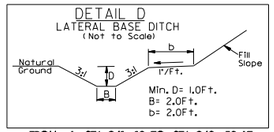
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



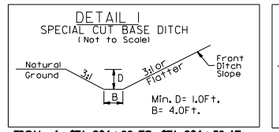
DETAIL C
-L- STA. 241+05 LT
DETAIL H
-L-L- STA. 238+25 RT
-L- STA. 239+20 LT



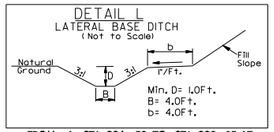
FROM -L- STA. 233+50 TO STA. 235+00 LT
FROM -L- STA. 243+50 TO STA. 244+50 LT



FROM -L- STA. 241+10 TO STA. 243+50 LT



FROM -L- STA. 236+00 TO STA. 236+50 LT



FROM -L- STA. 236+50 TO STA. 239+15 LT

MATCHLINE -L- STA. 232+00 SEE SHEET 20

MATCHLINE -L- STA. 245+00 SEE SHEET 22

-BL- #136 PINC 245+04.97 =
-L- STA. 232+64.16 (7.97 RT.)

-BL- #137 PINC 247+29.43 =
-L- STA. 234+88.62 (7.31 RT.)

WILLIAM HERBERT TURNER
DB 1017 PG 55
65

MACK B. PEARSALL
DB 1209 PG 982
PB 19 PG 161
66

WILLIAM HERBERT TURNER
DB 1017 PG 53
63

MACK B. PEARSALL
DB 1209 PG 982
PB 19 PG 161
66

WALTER I. THARRINGTON
DB 1686 PG 1063
67, 68, 69, 70, 71, 72

SPAN CULVERT WITH GUARDRAIL
SEE STANDARD 862.01

SPECIAL CUT DITCH
SEE DETAIL B

SPECIAL CUT BASE DITCH
SEE DETAIL I

LATERAL BASE DITCH
SEE DETAIL L

LATERAL BASE DITCH
SEE DETAIL D

+50.00
110' LT

+90.00 END FENCE

60' ACCESS BREAK

BEGIN FENCE

+80.00
120' LT

+65.00
110' LT

+15.00
150', 110' LT

+90.00
150' LT

+60.00
120' LT

+67.73
END FENCE

+11.88
BEGIN FENCE

+00.00
110.00' RT

+00.00
90' LT

48" WW FENCE

40' TYP.

GRAU 350

8:1

2 TONS CL B RIPRAP
W/7 SY FIL FAB

25 CY DDE

8'X 9' RCBC

PSH SEE DETAIL C

PSH SEE DETAIL H CAT-1

2 ELBOWS W/ ROD AND LUG

15" BCCS

2GI

150' TAPER

360' TAPER

530' LEFT TURN LANE

530' RIGHT TURN LANE

150' TAPER RIGHT

CUT/FILL TRANSITION GRAU 350
2 TONS CL B RIPRAP
W/7 SY FIL FAB

CUT/FILL TRANSITION
2 TONS CL B RIPRAP
W/7 SY FIL FAB

42 TONS CL I RIPRAP
W/60 SY FIL FAB
25 CY DDE

+22.01
90' RT

-L- ST Sta. 232+22.01

+50.00
110' RT

+75.00
110' RT

+46.00
100' RT

+20.00
100' RT

+25.00
125' RT

+40.00
125', 100' RT

+45.00
100' RT

+52.52
END FENCE

+60.00
110' RT

+90.00
110', 100' RT

+75.00
100' RT

+80.00
125' RT

+10.00
160' RT

+91.95
BEGIN FENCE

+20.00
100' RT

+95.00
160' RT

-BL- #138 PINC 250+26.90 =
-L- STA. 237+83.69 (45.07 RT.)

-BL- #140 PINC 256+51.01 =
-L- STA. 243+86.02 (29.61 RT.)

-BL- #139 PINC 253+48.81 =
-L- STA. 240+97.15 (118.36 RT.)

SPAN CULVERT WITH GUARDRAIL
SEE STANDARD 862.01

-Y7- PT Sta. 33+29.74

-BY7- #211 PINC 27+67.21=
-Y7- STA. 31+94.04 (23.10' LT)

-L-
PIs Sta 220+38.86
Θs = 2° 28' 10.7"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

-Y7-
PI Sta 29+81.28
Δ = 0° 47' 55.0" (RT)
D = 0° 06' 52.5"
L = 696.92'
T = 348.47'
R = 50,000.00'

PAVEMENT REMOVAL TO BE PERFORMED ALONG -Y7- FROM STA.14+77+/- (FENNER RD.& INSTRUMENT DR. INTERSECTION) TO STA.39+92+/- (FENNER RD.& BISHOP RD.INTERSECTION)

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
SBG	-L-	238+23.00	239+88.00	RT
EXP.GUTTER	-L-	239+88.00	241+00.00	RT
EXP.GUTTER	-L-	238+73.00	239+46.40	LT
SBG	-L-	239+46.40	241+00.00	LT
NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN				

EXISTING PAVEMENT REMOVAL

FOR -L- PROFILE SEE SHT.39

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y6- PC Sta. 12+31.98

-Y6- PT Sta. 14+17.00

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

FROM -L- STA. 245+50 TO STA. 246+50 RT
FROM -L- STA. 257+50 TO STA. 259+00 RT
FROM -Y6- STA. 16+00 TO STA. 16+50 LT
FROM -Y6- STA. 16+25 TO STA. 17+24 RT

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

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

FROM -L- STA. 256+50 TO STA. 259+00 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)

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

FROM -L- STA. 257+00 TO STA. 259+98 LT

10300 / 19400	Bishop Road	1400 / 2200
	600 / 1000	700 / 1100
Rocky Mount Northern Connector		12500 / 20700
	400 / 600	500 / 700
2009 ADT / 2030 ADT	1000 / 1400	

-Y7-
PI Sta 39+28.90
△ = 18° 55' 50.7" (RT)
D = 8° 33' 05.8"
L = 221.37'
T = 111.70'
R = 670.00'

-Y6-
PI Sta 13+24.49
△ = 1° 03' 36.2" (LT)
D = 0° 34' 22.6"
L = 185.01'
T = 92.51'
R = 10,000.00'

-L-
PIs Sta 259+18.88
Θs = 1° 46' 45.7"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

GERALD A. CRUSENBERRY & WIFE BECKY J. CRUSENBERRY
DB 1257 PG 37
MB 6 PG 94

FIRST WESLEYAN PROPERTIES
DB 2150 PG 357

FIRST WESLEYAN PROPERTIES
DB 2150 PG 357
MB 34 PG 220

FIRST WESLEYAN PROPERTIES
DB 2150 PG 357
MB 34 PG 220

WALTER I. THARRINGTON
DB 1686 PG 1063

N. C. WESLEYAN COLLEGE
DB 669 PG 212
DB 714 PG 375
DB 688 PG 175
DB 669 PG 190
DB 706 PG 354

-BL- #141PINC 260+21.39 =
-BY6- POT 14+22.76=
-BY7- POT 36+70.55 =
-L- STA. 247+56.33 (36.85 RT.)

BEGIN CONSTRUCTION
-Y6- POT Sta. 16+00.00

+00.00
40', 28.78' RT
-Y6- +50.00
40' RT
END FENCE
-L- +40.00
90' LT

+00.00
40', 31.22' LT
-Y6- +50.00
40' LT
BEGIN FENCE
-Y6- POT Sta. 17+85.33=
-L- POT Sta.247+13.23
-L- +85.00
90' LT

REMOVE 37' 18" RCP
3 TONS CL B RIPRAP W/10 SY FIL FAB
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT DITCH SEE DETAIL B

360' TAPER
300' RIGHT-TURN TAPER
150' TAPER LEFT
530' LEFT TURN LANE
530' RIGHT TURN LANE
5 TONS CL B RIPRAP W/14 SY FIL FAB
2 TONS CL B RIPRAP W/7 SY FIL FAB
PROPOSED SOUND BARRIER WALL
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT DITCH SEE DETAIL B
BERM V DITCH SEE DETAIL K
200' TAPER
REMOVE 48' 18" RCP
REMOVE 77' 18" RCP
REMOVE

+88.11
100.00' RT
END FENCE

+85.00
90' LT
+35.00
105' LT
+40.00
90' LT
+00.00
110' LT
LATERAL BASE DITCH SEE DETAIL L

-L- TS Sta. 257+85.54

-Y6- POT STA.18+71.63=
-Y7- PT Sta. 40+38.57

END CONSTRUCTION
-Y6- POT Sta. 19+25.00

-Y7- PC Sta. 38+17.20

-Y6- POT Sta. 21+95.31

-BL- #142 PINC 268+65.03 =
-L- STA. 255+97.94 (95.35 RT.)

MACK B. PEARSALL
DB 1209 PG 982
PB 19 PG 161

ELBERT S. & MONICA H. WHITEHEAD
DB 1531 PG 26
MB 23 PG 181

KELVIN L. & GLORIA M. PITTMAN
DB 1511 PG 969
MB 21 PG 181

PHILIP RAY SMITH
DB 1511 PG 554

RONNIE R. & LISA TEDDER
DB 2285 PG 368
MB 22 PG 83

WILLIAM JASON HOLDER
DB 2127 PG 26
MB 22 PG 83

VICTOR H. SR. & MARLENE
DB 2075 PG 345
MB 22 PG 83

WALTER STEVE & JUDY B. SUTTON
DB 2148 PG 427
MB 22 PG 83

CARLTON S. & LAKISHA L DANIELS
DB 2081PG 243
MB 22 PG 83

CYNTHIA YVONNE WILKINS
DB 1477 PG 843
MB 22 PG 83

TIMOTHY ALLEN & JULIE COLEY
DB 1872 PG 793
MB 22 PG 83

STEVAN KIRK HYMAN
DB 1738 PG 881
MB 22 PG 83

SALAAM DONALD M. ABDUS
DB 1675 PG 1017
MB 20 PG 205

LORIN E. SMITH
DB 2124 PG 7
MB 22 PG 83

JUDY JONES HOBBS
DB 1702 PG 692
MB 20 PG 205

YAN & YING ZHANG LIU
DB 2240 PG 145
MB 20 PG 205

MAVIS KEARNEY CASH
DB 1574 PG 1021
MB 20 PG 205

NEW HORIZONS INVESTORS, LLC
DB 2052 PG 530
MB 20 PG 205

JERRY O. JR. & ALICE L. BRANHAM
DB 1370 PG 32
MB 20 PG 205

BRIAN P. MUTZABAUGH
DB 1608 PG 543

AMELIA L. & ALLEN S. JOHNSON
DB 1428 PG 36

JEAN M. PERRYMAN
DB 2084 PG 845

MATCHLINE -L- STA. 245+00 SEE SHEET 21

MATCHLINE -L- STA. 259+00 SEE SHEET 23

FOR -L- PROFILE SEE SHTS.39 & 40
FOR -Y6- PROFILE SEE SHT.44
FOR INTERSECTION DETAILS SEE SHT.2G

EXISTING PAVEMENT REMOVAL

PAVEMENT REMOVAL TO BE PERFORMED ALONG -Y7- FROM STA.14+77+/- (FENNER RD.& INSTRUMENT DR. INTERSECTION) TO STA.39+92+/- (FENNER RD.& BISHOP RD.INTERSECTION)

CURB & GUTTER LOCATIONS

DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-Y6-	19+13.83	19+25.00	RT
2'-6" C&G	-Y6-	18+66.35	19+00.29	LT

NOTE: 2'-6" MOUNTABLE C&G FOR -L- MEDIAN

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

29700 / 45900	
12500 / 20700	7200 / 12300
Rocky Mount Northern Connector	US 301
	5300 / 8400
2009 ADT / 2030 ADT	27800 / 42000

-L-

PIs Sta 259+18.88	PI Sta 262+42.75
Θs = 1° 46' 45.7"	Δ = 9° 08' 02.7" (RT)
Ls = 200.00'	D = 1° 46' 45.7"
LT = 133.34'	L = 513.33'
ST = 66.67'	T = 257.21'
	R = 3,220.00'
	Se= 0.05
	Runoff = 200'

N. C. WESLEYAN COLLEGE
DB 669 PG 212
DB 714 PG 375
DB 688 PG 175
DB 669 PG 190
DB 706 PG 354
(73)

+50.00
85', 76.26'

SPECIAL MEDIAN CUT DITCH SEE DETAIL Q

-Y8- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y8- POT Sta. 10+51.50

150' TAPER

4 FDPS

2 FDPS

530' LEFT TURN LANE

WOODS

RETAIN

ISBKBUS

30" C&G

CAROLINA EAGLE DISTRIBUTING
DB 1545 PG 410

+85.00
85' RT

CPES

18" COLLAR (221)

REMOVE 6'-18" RCP (246)

TB 2GI

S 77°24'03" E
430.65'

S 12°32'01.8" W

FRANCIS MARION BARNES
DB 1282 PG 6

MATCHLINE -L- STA. 259+00 SEE SHEET 22

+98.29
END FENCE
LATERAL BASE DITCH SEE DETAIL L

+03.87
BEGIN FENCE
+10.00
120' LT

+00.00
115' LT
+95.00
90' LT
LATERAL BASE DITCH SEE DETAIL D

+65.00
90' LT

-Y8- +05.00
85' RT
END FENCE

-Y8- +02.85
91' RT

-L- +50.00
90' LT

SPECIAL CUT DITCH SEE DETAIL B

48" WW FENCE

535' LEFT TURN LANES

SR 1538 FENNER RD

N 87°06'24" E

SPECIAL CUT DITCH SEE DETAIL B

BERM V DITCH SEE DETAIL K

2 ELBOWS W/ ROD AND LUG

+60.00
82.08' RT

+55.00
100' RT

+70.00
95' RT

-L- SC Sta. 259+85.54

+42.51
87.57' RT

PROPOSED SOUND BARRIER WALL

MACK B. & THOMAS J. PEARSALL
DB 1209 PG 982
(75)

-L- +00.00
88.54' RT
BEGIN FENCE

+95.00
95' RT

+27.00
77.13' RT

BM#3
-L- STA.262+71.10
84.18'RT.
ELEV.=125.25'

MATCHLINE -Y8- STA. 20+00 SEE SHEET 30

R=200'

OFFSET=8'

530' RIGHT TURN LANE

-Y8- S 12°32'01.8" W

+85.00
71.73' RT

+65.00
73.71' RT

CUT/FILL TRANSITION
2 TONS CL B RIPRAP W/7 SY FIL FAB

-L- +30.00
80' RT

-Y8- +62.16
95' RT

-Y8- +70.00
85.84' RT

END FENCE +80.00
85.83' RT

3 TONS CL B RIPRAP W/10 SY FIL FAB

SPECIAL CUT BASE DITCH SEE DETAIL I

2 TONS CL B RIPRAP W/7 SY FIL FAB

+20.00

R=100'

R=200'

R=5'

R=10'

R=150'

REMOVE

RIPRAP

END CONSTRUCTION
-L- PT Sta. 264+98.87=
-Y8- POT STA.18+16.53

BEGIN SB GRADE
-Y8- Sta.18+30.00

THOMAS PEARSALL JR et al TRUST
DB 2123 PG 660
(88)

BEGIN RESURFACING
-Y8- Sta.16+79.96

-BL- #143 POT 278+52.13 =
-BY8- PINC 12+98.74=
-Y8- STA.17+76.93 (81.69' LT)

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
FROM -L- STA. 261+50 TO STA. 264+00 LT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 2.0Ft.
b= 2.0Ft.
FROM -L- STA. 260+02 TO STA. 261+50 LT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 4.0Ft.
FROM -L- STA. 19+04 TO STA. 24+50 RT
FROM -Y8- STA. 19+50 TO STA. 22+46 LT

DETAIL K
BERM "V" DITCH
(Not to Scale)
Min. D= 1.0Ft.
b= 2.0Ft.
FROM -L- STA. 256+50 TO STA. 260+00 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.0Ft.
B= 4.0Ft.
b= 4.0Ft.
FROM -L- STA. 257+00 TO STA. 259+98 LT

DETAIL Q
MEDIAN DITCH
(Not to Scale)
Min. D= 1.0Ft.
FROM -L- STA. 10+50 TO STA. 13+00 CL
FROM -Y8- STA. 14+00 TO STA. 15+00 CL

FOR -L- PROFILE SEE SHTS.40
FOR -Y8- PROFILE SEE SHT.44

CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -Y8- MEDIAN

PLANS PREPARED BY :
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FOR
DIVISION OF HIGHWAYS

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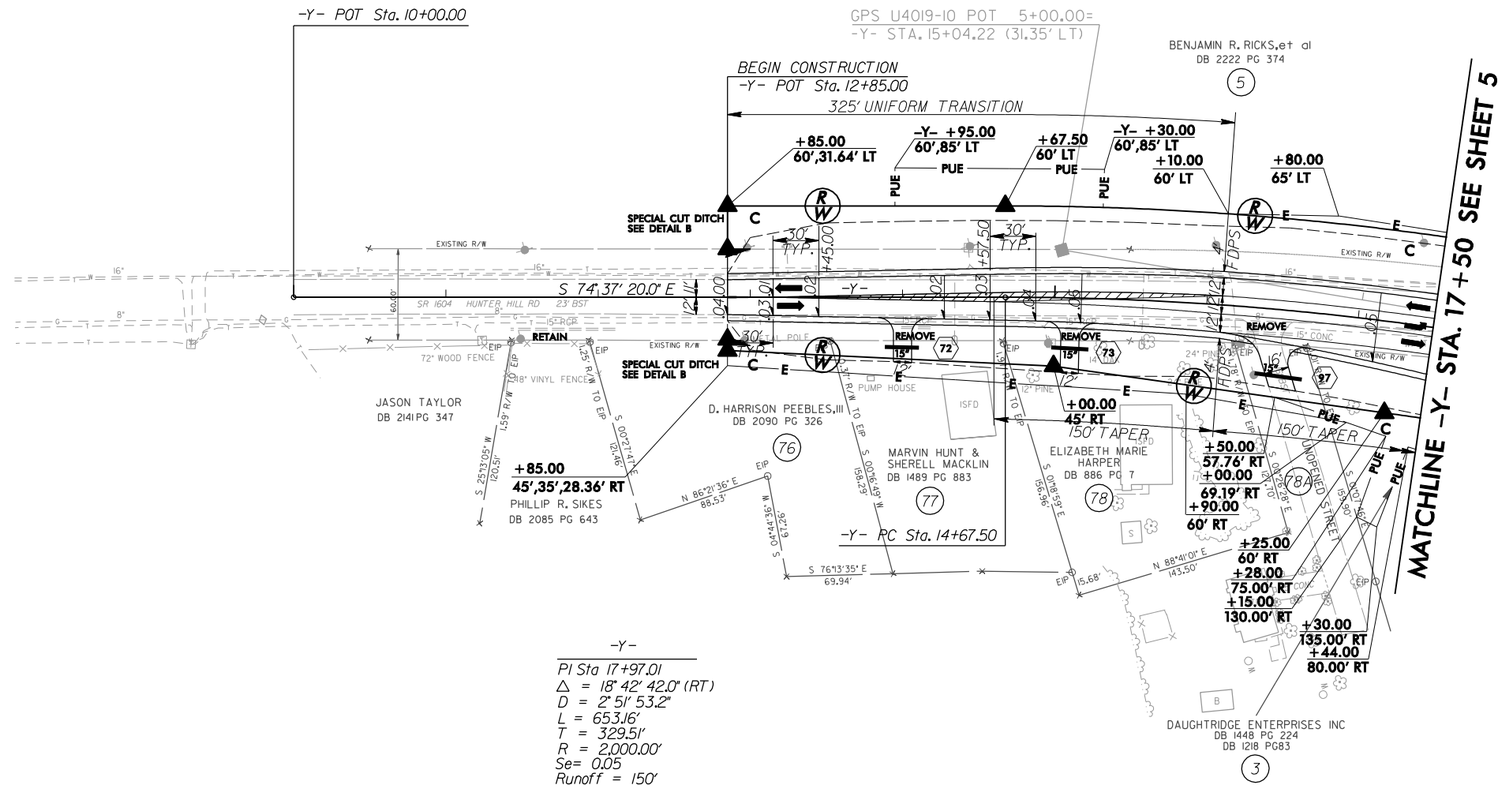
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

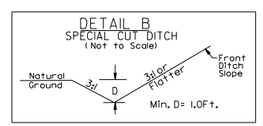
10 15



-Y-
PI Sta 17+97.01
△ = 18° 42' 42.0" (RT)
D = 2° 51' 53.2"
L = 653.16'
T = 329.51'
R = 2,000.00'
Se= 0.05
Runoff = 150'

FOR -Y- PROFILE SEE SHT.40

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM -Y- STA. 12+85 TO STA. 13+00 LT & RT

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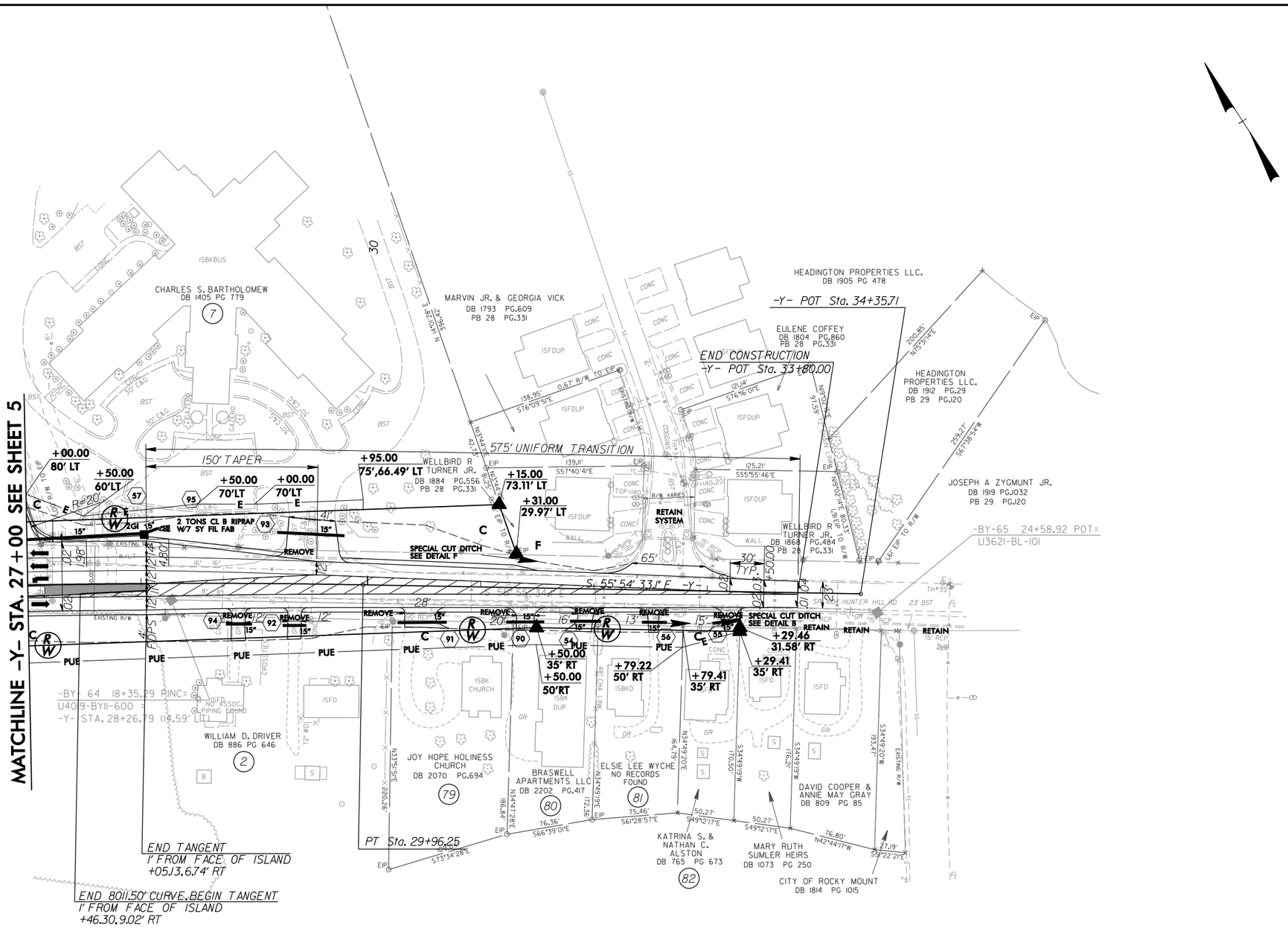
PROJECT REFERENCE NO.	SHEET NO.
R-2823	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

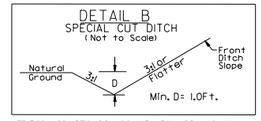
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-Y-
PI Sta 28+00.81
△ = 2° 48' 00.0" (RT)
D = 0° 42' 58.3"
L = 390.95'
T = 195.52'
R = 8,000.00'
Se= NC

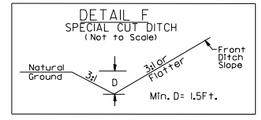
CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
1'-6" MOUNTABLE C&G	-Y-	24+05.00	27+15.00	MED
2'-6" C&G	-Y-	22+97.82	28+05.00	LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM -Y- STA. 33+00 TO STA. 33+50 RT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



FROM -Y- STA. 31+00 TO STA. 31+50 LT

FOR -Y- PROFILE SEE SHT.41

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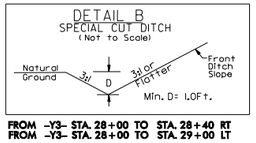
bpaugh

8/17/99

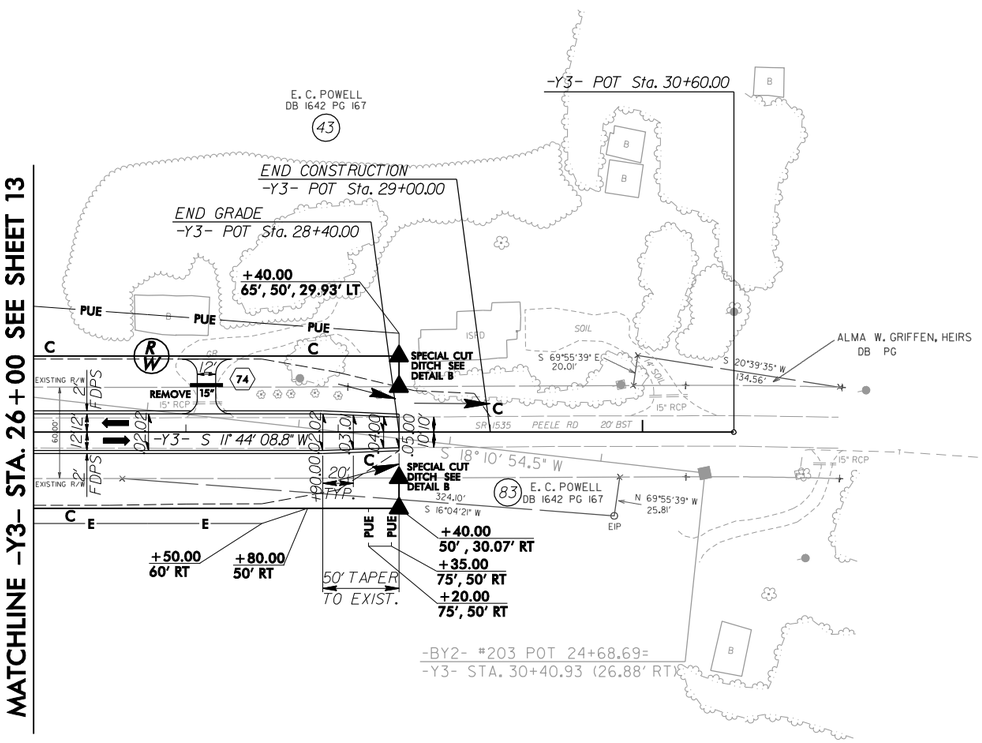


FROM -Y3- STA. 28+00 TO STA. 28+40 RT
FROM -Y3- STA. 28+00 TO STA. 29+00 LT

PROJECT REFERENCE NO.	SHEET NO.
R-2823	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

30



FOR -Y3- PROFILE SEE SHT.42

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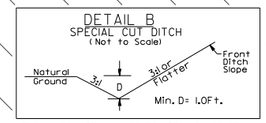
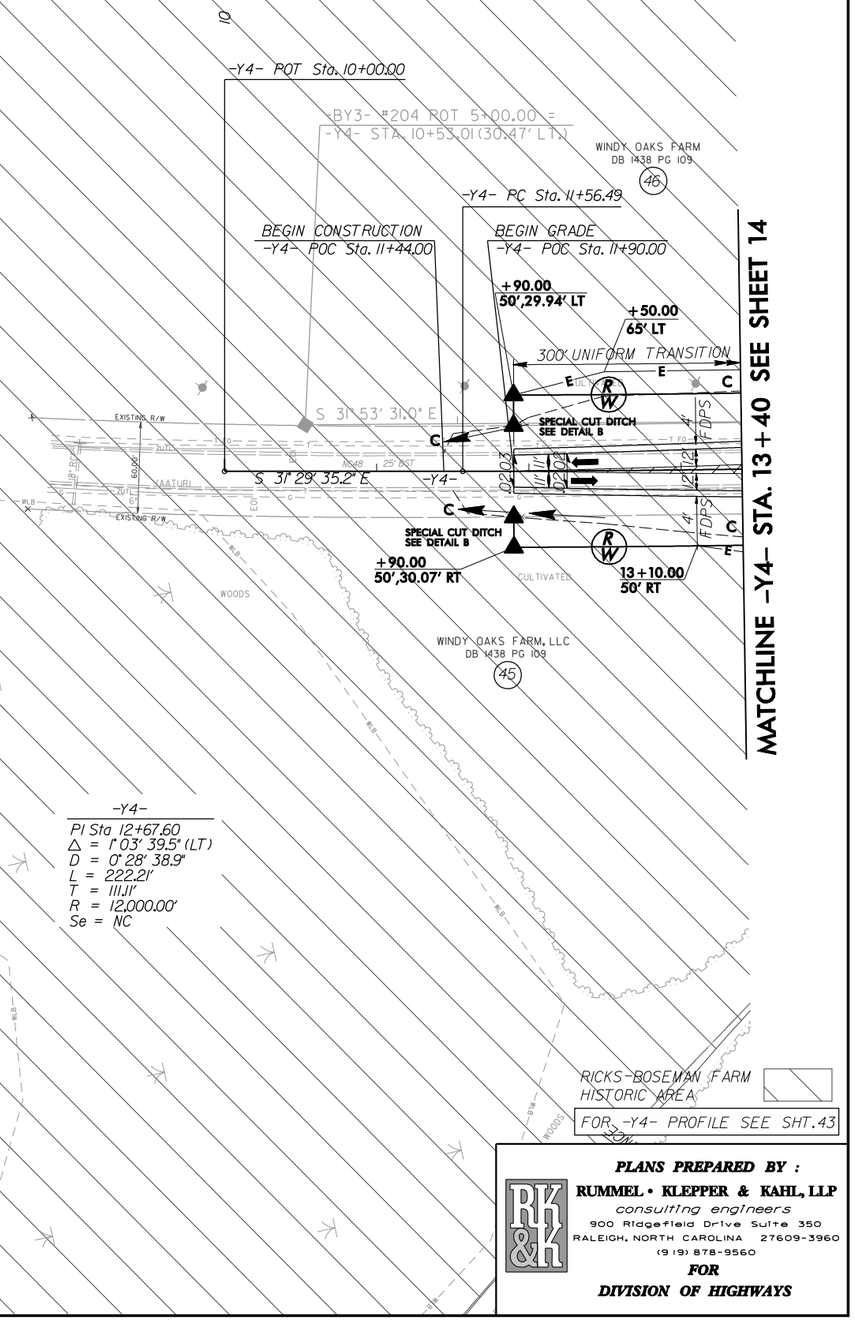
PROJECT REFERENCE NO.	SHEET NO.
R-2823	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM -Y4- STA. 11+44 TO STA. 12+00 LT
FROM -Y4- STA. 11+50 TO STA. 12+50 RT



-Y4-
PI Sta 12+67.60
△ = 1° 03' 39.5" (LT)
D = 0° 28' 38.9"
L = 222.21'
T = 111.11'
R = 12,000.00'
Se = NC

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE -Y4- STA. 23+00 SEE SHEET 14

-Y4-
PI Sta 28+38.21
Δ = 5°19' 54.7" (LT)
D = 0° 49' 27.8"
L = 646.76'
T = 323.61'
R = 6,950.00'

PT Sta. 31+61.36

+50.00
75', 40', 29.96' LT

150' TAPER

COLLAR AND EXTEND 18" RCP 4.0'

REMOVE

WARP CURB TO DRAIN TO CB

RETAIN

RETAIN EXIST. C&G

END CONSTRUCTION
-Y4- POT Sta. 24+50.00

-Y4- PC Sta. 25+14.60

GPS R-2823-4 POT 21+60.26 =
-Y4- STA. 27+14.63 (29.83' LT)

WILLIAM H. OVERMAN
DB 2007 PG 418
PB 1 PG 120

LLOYD B. LEE, JR.
DB 1138 PG 751

JOHN C. FLETCHER
DB 1123 PG 373

VIOLET H. LANIER
DB 1850 PG 208
DB 29 PG 212

LUCILLE ALSTON
WILLIS BOICE WALKER
DB 1888 PG 1034
PB 29 PG 244
DB 1988 PG 244
PB 29 PG 244

NORTHRIDGE PROPERTIES
DB 1764 PG 515
PB 29 PG 243

NORTHRIDGE PROPERTIES LLC
DB 1764 PG 515
PB 29 PG 244

BRYAN H. WHITFORD
DB 1304 PG 59

CITY OF ROCKY MOUNT

SPRUILL-EASLEY HOUSE HISTORIC AREA

FOR -Y4- PROFILE SEE SHT.43

CURB & GUTTER LOCATIONS				
DESCRIPTION	ALN	STATION	STATION	LOC
2'-6" C&G	-Y4-	23+00.00	24+50.00	LT

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

MATCHLINE -Y5- STA. 16+00 SEE SHEET 20

-Y7-
PI Sta 11+41.22
△ = 12° 07' 19.3" (RT)
D = 4° 18' 28.6"
L = 281.39'
T = 141.22'
R = 1,330.00'

PI Sta 14+74.74
△ = 30° 15' 53.9" (RT)
D = 8° 00' 48.2"
L = 377.68'
T = 193.36'
R = 715.00'

-Y5-
PI Sta 21+06.24
△ = 43° 48' 32.8" (RT)
D = 4° 05' 33.2"
L = 1,070.46'
T = 562.93'
R = 1,400.00'
Se= 0.06
Runoff = 160'

PI Sta 27+51.59
△ = 11° 49' 55.9" (LT)
D = 4° 18' 28.6"
L = 274.66'
T = 137.82'
R = 1,330.00'
Se= Exist.

-Y7- PT Sta. 16+59.07

-BY7- #209 PINC 11+09.46 =
-Y5- STA. 23+53.77 (52.94 LT.)

-Y7- PCC Sta. 12+81.39

-Y5- PT Sta. 28+88.43=
-Y7- PC Sta.10+00.00

END CONSTRUCTION
-Y5- POC Sta. 28+15.00

-Y5- PRC Sta. 26+13.77

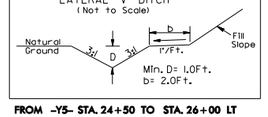
-BY7- #208 POT 5+00

PAVEMENT REMOVAL TO BE PERFORMED ALONG -Y7- FROM STA.14+77+/- (FENNER RD.& INSTRUMENT DR. INTERSECTION) TO STA.39+92+/- (FENNER RD.& BISHOP RD.INTERSECTION)

EXISTING PAVEMENT REMOVAL

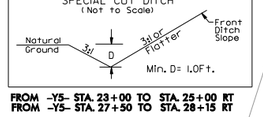
FOR -Y5- PROFILE SEE SHTS.43 & 44

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



FROM -Y5- STA. 24+50 TO STA. 26+00 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM -Y5- STA. 23+00 TO STA. 25+00 RT
FROM -Y5- STA. 27+50 TO STA. 28+15 RT

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE -Y8- STA. 20+00 SEE SHEET 23

THOMAS PEARSALL JR. et al TRUST
DB 2123 PG 660
88

20 25 30

89

-BY8- #214 POT 20+57.60=
-Y8- STA. 25+35.64 (66.78' LT)

-Y8- POT Sta. 26+78.24

+65.00
195' LT

+85.00
225' LT

+20.00
175' LT

+85.00
170' LT

+25.00
126.67', 94.33' LT

+95.00
94.31', 105' LT

33 TONS CL I RIPRAP
W/62 SY FIL FAB
RIPRAP ON BANKS ONLY

+10.00
105', 94.28' LT

+40.00
105' LT

+15.00
94.19' LT

+50.00
105' LT

BDO
24" BCCS
2 ELBOWS W/
ROD AND LUG

SPECIAL CUT BASE DITCH
SEE DETAIL I

SPECIAL CUT DITCH
SEE DETAIL B

2 TONS CL B RIPRAP
W/7 SY FIL FAB

3 TONS CL B RIPRAP
W/10 SY FIL FAB

REMOVE 44' 48" RCP AND PLUG OTCB

33 TONS CL I RIPRAP W/62 SY FIL FAB

300' TAPER

400' LEFT TURN LANES

50' TAPER

S 13° 39' 35.9" W

REMOVE JB, 20' 36" RCP, 10' 48" RCP, BOTH 18" RCPS

PLUG

GRADE TO DRAIN

REMOVE DI AND PIPE

END CONSTRUCTION
-Y8- POT Sta. 25+57.57

+26 TONS CL I
RIPRAP W/50
SY FIL FAB
+30.00
106.89' RT

+65.00
110' RT

+30.00
105.00', 85.58' RT

+20.00
85.77' RT

+08.80
105' RT

+85.00
85.78' RT

+76.54
100' RT

+70.59
110' RT

+45.00
106.46' RT

BILLBOARD

END GRADE
-Y8- POT Sta. 24+55.00

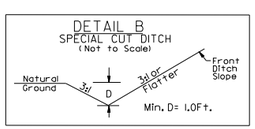
MACK B. & THOMAS J. PEARSALL
DB 1209 PG 982
75

90

ABANDON MOTEL

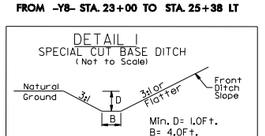
CURB & GUTTER LOCATIONS
NOTE: 2'-6" MOUNTABLE C&G FOR -Y8- MEDIAN

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



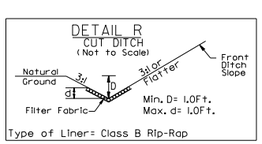
FROM -Y8- STA. 23+00 TO STA. 25+38 LT

DETAIL I
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 20+00 TO STA. 22+46 LT
FROM -L- STA. 20+00 TO STA. 24+50 RT

DETAIL R
CUT DITCH
(Not to Scale)



FROM -Y8- STA. 22+46 TO STA. 23+00 LT

EXISTING PAVEMENT REMOVAL

FOR -Y8- PROFILE SEE SHT.44

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jbeauchaine

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

BEGIN GRADE
-L- STA. 5+20.00
EL. 145.42'

PI = 10+70.00
EL = 147.07'
VC = 500'
K = 710

(+)0.3000%

(−)0.4041%

PROPOSED GRADE

PI = 17+80.00
EL = 144.20'
VC = 200'
K = 142

(−)0.4041%

(+) 0.35% LT

EXISTING GROUND

BEG. LAT. BASE DITCH
-L- STA. 17+38 LT
EL. 141.25

-L- STA. 24+00 EL. 143.64' LB = 143.27' LA
GRADE POINT SHIFTS
FROM ℄ TO 15' OFFSET

-Y- STA. 22+25.87 =
-L- STA. 21+58.22

PI = 22+00.00
EL = 148.40'
VC = 390'
K = 115

PI = 17+80.00
EL = 144.20'
VC = 200'
K = 142

(+)1.0000%

(−)2.3786%

(+)1.0000%

(+) 0.35% LT

END LAT. BASE DITCH
-L- STA. 21+00 LT
EL. 142.50

BEG. SP. BACK OF CURB DITCH
-L- STA. 22+45 LT
EL. 144.78

(−) 2.05% LT

PI -L- STA. 25+00 LT
EL. 139.55

END SP. BACK OF CURB DITCH
BEG. LAT. BASE DITCH
-L- STA. 26+00 LT
EL. 136.28

(−) 3.27% LT

(−) 2.10% RT

(−) 3.28% LT

BEG. LAT. V DITCH
-L- STA. 25+00 RT
EL. 138.00

END LAT. 'V' DITCH
-L- STA. 27+26 RT
EL. 133.25

PI -L- STA. 27+50 LT
EL. 131.36

PI = 28+50.00
EL = 132.56'
VC = 400'
K = 139

EXISTING GROUND

PROPOSED GRADE

(−)2.3786%

(+)0.5000%

(−) 0.54% LT

48" PIPE

END LAT. BASE DITCH
-L- STA. 29+50 LT
EL. 130.28

(+) 0.89% LT

BEG. SP. CUT DITCH
-L- STA. 31+20 LT
EL. 128.29

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE (2)-48" RCP
STA. 30+28 -L-

DRAINAGE AREA	= 59	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 140	CFS
DESIGN HW ELEVATION	= 131.5	FT
100 YEAR DISCHARGE	= 160	CFS
100 YEAR HW ELEVATION	= 132	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 180	CFS
OVERTOPPING ELEVATION	= 132.4	FT

LEFT SIDE DITCH PROFILE ----·----
RIGHT SIDE DITCH PROFILE ---------

FOR -L- PLAN SEE SHTS. 4 THRU 6

190 180 170 160 150 140 130 120 110 100

4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00

90

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 32+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PI = 32+65.00
EL = 134.64'
VC = 430'
K = 374

(+)0.5000%
(-)0.6500%
(+) 0.89% LT
(-)0.32% LT
(-) 0.75% LT
(-)0.6500%
(-)2.3500%
(-) 2.59% LT
(-)0.60% LT
(-) 2.13% LT
(-) 3.26% RT
(-)2.3500%

PROPOSED GRADE
EXISTING GROUND

BEG. SP. CUT DITCH
-L- STA.35+00 LT
EL. 129.20

END SP. CUT DITCH
BEG. SP. CUT BASE DITCH
-L- STA.37+50 LT
EL. 128.39

END SP. CUT DITCH
-L- STA.33+00 LT
EL. 129.90

PI -L- STA. 41+00 LT
EL. 125.77

PI -L- STA. 43+00 LT
EL. 120.60

PI -L- STA. 44+00 LT
EL. 120.00

PI -L- STA. 45+50 RT
EL. 114.95

BEG. LAT. BASE DITCH
-L- STA. 44+00 RT
EL. 119.84

END SP. CUT BASE DITCH
BEG. LAT. BASE DITCH
-L- STA.45+50 LT
EL. 116.81

170 160 150 140 130 120 110 100 90 80

32+00 33+00 34+00 35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00 44+00 45+00 46+00

RR SPIKE IN BASE OF 8" OAK
-L- STA. 48+90.14 163.45' LT
ELEV. = 114.83'

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 9'x9' RCBC
STA.49+02 -L-

DRAINAGE AREA	1.0	SQ.MI.
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 700	CFS
DESIGN HW ELEVATION	= 120.4	FT
100 YEAR DISCHARGE	= 900	CFS
100 YEAR HW ELEVATION	= 121.6	FT
OVERTOPPING FREQUENCY	= 50 +	YRS
OVERTOPPING DISCHARGE	= 760	CFS
OVERTOPPING ELEVATION	= 121.1	FT

-Y1- STA.17+96.51=
-L- STA.53+56.26

EXISTING GROUND

PI = 45+85.00
EL = 118.24'
VC = 570'
K = 140

END LAT. BASE DITCH
-L- STA. 48+20 RT
EL. 114.14

9'x9' RCBC

PI -L- STA. 51+00 LT
EL. 118.71

PROPOSED GRADE

(+)11.7192%
(-) 0.30% RT
(-) 2.13% LT
(-) 0.25% LT
(+) 0.82% LT
(+) 4.97% LT
(+) 6.73% LT
(+) 5.61% RT
(+) 3.66% LT

BEG. SP. CUT DITCH
-L- STA. 54+09 LT
EL. 130.50

END SP. CUT DITCH
-L- STA. 55+00 LT
EL. 133.83

END LAT. BASE DITCH
-L- STA. 52+50 LT
EL. 128.81

PI -L- STA. 49+50 LT
EL. 111.25

END LAT. V DITCH
-L- STA. 52+00 RT
EL. 124.73

PI -L- STA. 48+25 LT
EL. 110.95

BEG. LAT. BASE DITCH
-L- STA. 48+95 LT
EL. 110.80

BEG. LAT. V DITCH
-L- STA. 50+80 RT
EL. 118.00

END LAT. BASE DITCH
-L- STA. 48+85 LT
EL. 110.80

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.6 THRU 8

170 160 150 140 130 120 110 100 90 80

46+00 47+00 48+00 49+00 50+00 51+00 52+00 53+00 54+00 55+00 56+00 57+00 58+00 59+00 60+00

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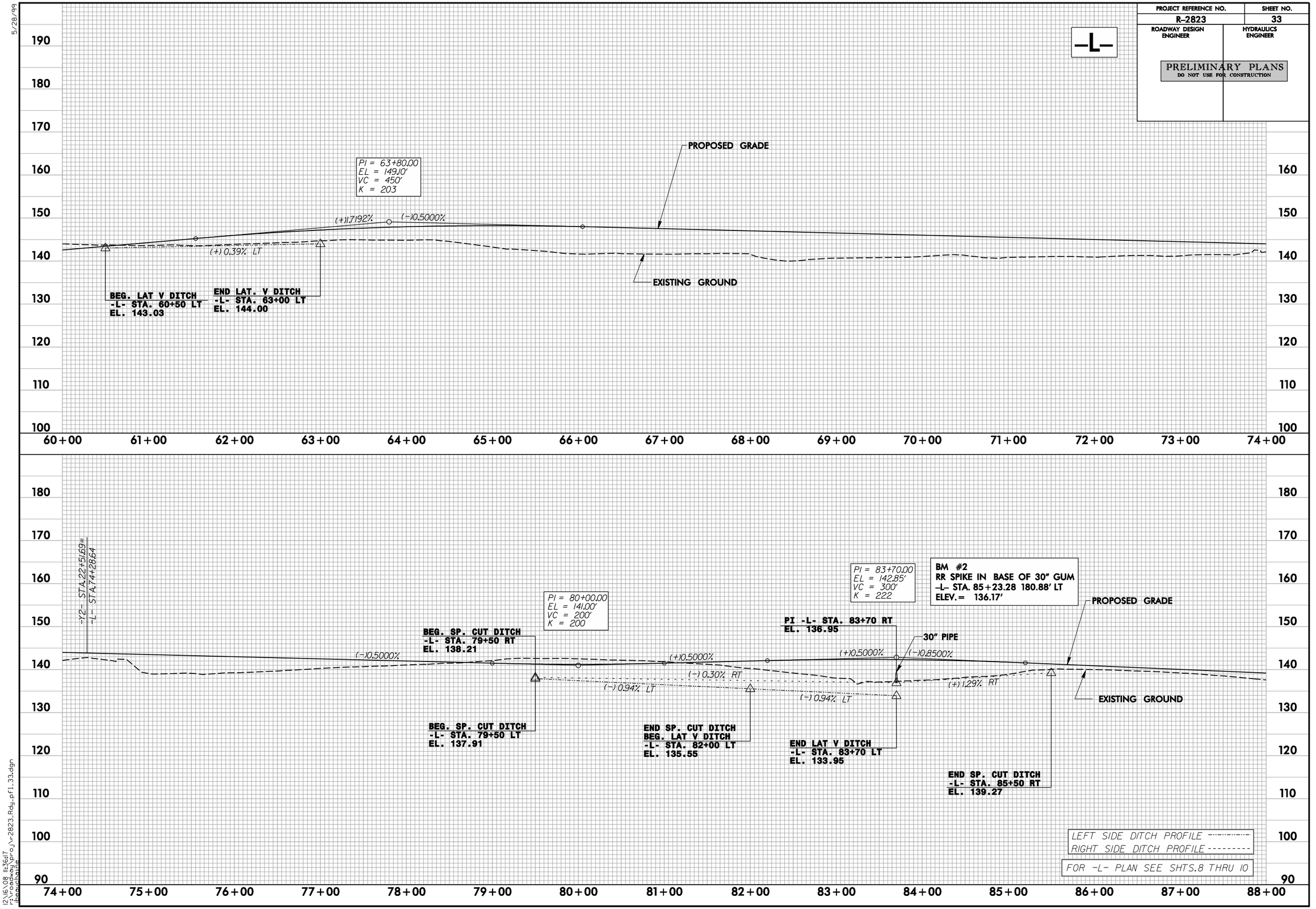
Beauchamp

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-



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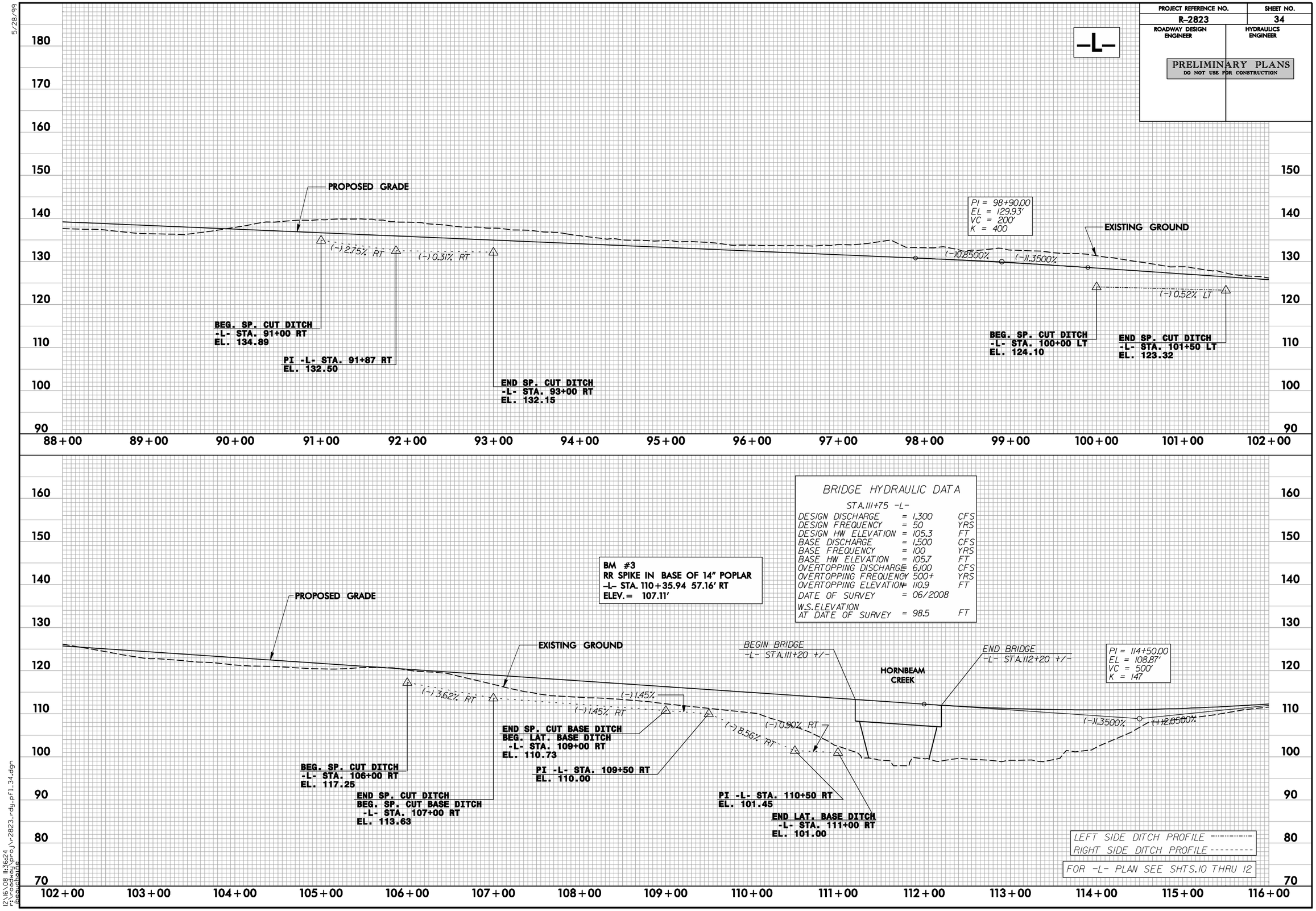
[Preliminary]

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-



BRIDGE HYDRAULIC DATA

STA.111+75 -L-

DESIGN DISCHARGE	= 1,300	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 105.3	FT
BASE DISCHARGE	= 1,500	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 105.7	FT
OVERTOPPING DISCHARGE	= 6,100	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 110.9	FT
DATE OF SURVEY	= 06/2008	
W.S. ELEVATION AT DATE OF SURVEY	= 98.5	FT

BM #3
RR SPIKE IN BASE OF 14" POPLAR
-L- STA. 110+35.94 57.16' RT
ELEV. = 107.11'

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.10 THRU 12

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PI = 128+10.00
EL = 136.75'
VC = 7.80'
K = 170

PROPOSED GRADE

(+)2.0500%

(-)2.5500%

-Y3- STA.121+05.47=
-L- STA.128+08.19

EXISTING GROUND

(+) 1.99% LT

END STANDARD BASE DITCH
-L- STA. 118+25 LT
EL. 111.11

BEG. STANDARD BASE DITCH
-L- STA. 116+70 LT
EL. 108.02

116+00 117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00 127+00 128+00 129+00 130+00

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE 72" RCP
STA.135+35 -L-

DRAINAGE AREA	= 80	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 170	CFS
DESIGN HW ELEVATION	= 116.2	FT
100 YEAR DISCHARGE	= 200	CFS
100 YEAR HW ELEVATION	= 117.1	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 122	CFS
OVERTOPPING ELEVATION	= 309.5	FT

BM #4
RR SPIKE IN BASE OF 14" GUM
-L- STA. 133+17.98 261.59' LT
ELEV.= 125.92'

PI -L- STA. 135+00 RT
EL. 114.64

PI = 135+50.00
EL = 117.88'
VC = 700'
K = 138

PI -L- STA. 134+50 RT
EL. 114.06

EXISTING GROUND

(-) 3.94% RT

(+) 0.30% RT

(-) 12.90% RT

(-)2.5500%

(-) 2.20% RT

(+) 1.16% RT

(+) 0.30% RT

72" PIPE

(+) 2.72% RT

END SP. CUT DITCH
BEG. SP. CUT BASE DITCH
-L- STA. 135+50 RT
EL. 116.00

END BERM BASE DITCH
BEG. BERM V DITCH
-L- STA. 135+50 RT
EL. 109.09

BEG. BERM BASE DITCH
-L- STA. 134+75 RT
EL. 108.86

BEG. SP. CUT DITCH
-L- STA. 132+00 RT
EL. 123.01

PI -L- STA. 132+50 RT
EL. 121.04

PI -L- STA. 132+71 RT
EL. 121.10

PI -L- STA. 133+00 RT
EL. 117.36

PROPOSED GRADE

(+)2.5200%

(+) 3.18% RT

(+) 0.65% RT

(+) 7.46% RT

PI -L- STA. 137+50 RT
EL. 124.00

PI -L- STA. 138+00 RT
EL. 120.74

PI -L- STA. 140+00 RT
EL. 131.95

DITCH GRADE FOLLOWS
TYPICAL SECTION ELEVATIONS

PI -L- STA. 142+50 RT
EL. 136.30

PI -L- STA. 142+00 RT
EL. 136.15

PI = 141+50.00
EL = 133.00'
VC = 500'
K = 352

(+) 0.30% RT

(+) 2.10% RT

(+)1.1000%

(-) 0.27% RT

PROPOSED GRADE

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.12 THRU 14

130+00 131+00 132+00 133+00 134+00 135+00 136+00 137+00 138+00 139+00 140+00 141+00 142+00 143+00 144+00

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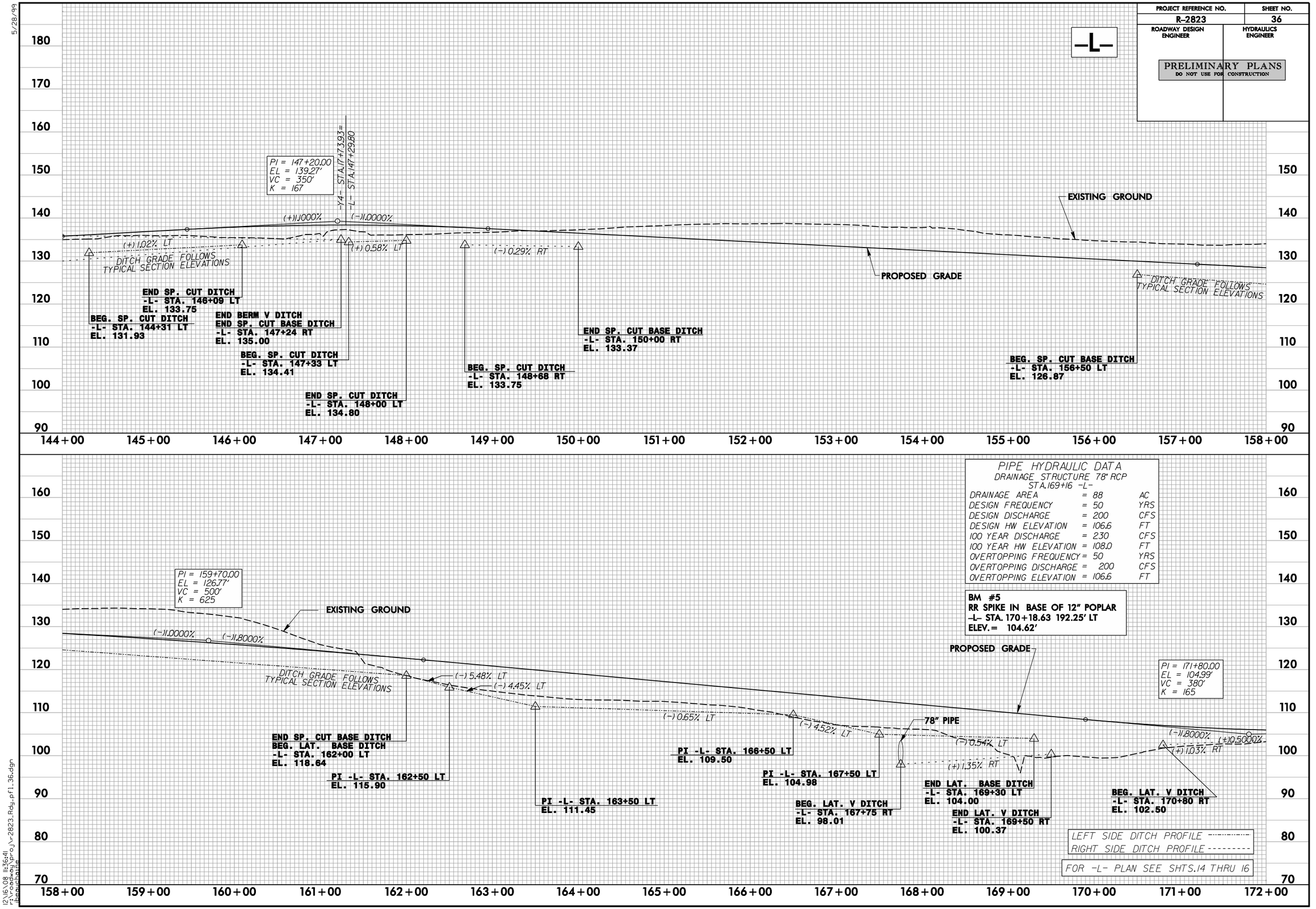
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 78" RCP
STA.169+16 -L-

DRAINAGE AREA	= 88	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 200	CFS
DESIGN HW ELEVATION	= 106.6	FT
100 YEAR DISCHARGE	= 230	CFS
100 YEAR HW ELEVATION	= 108.0	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 200	CFS
OVERTOPPING ELEVATION	= 106.6	FT

BM #5
RR SPIKE IN BASE OF 12" POPLAR
-L- STA. 170+18.63 192.25' LT
ELEV. = 104.62'

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

BRIDGE HYDRAULIC DATA
STA.182+37.5 -L-

DESIGN DISCHARGE	= 2,000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 94.3	FT
BASE DISCHARGE	= 2,300	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 94.7	FT
OVERTOPPING DISCHARGE	= 18,750	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 103.7	FT
DATE OF SURVEY	= 06/2008	
W.S.ELEVATION AT DATE OF SURVEY	= 91.9	FT

COMPASS CREEK

BM #6
RR SPIKE IN BASE OF 24" OAK
-L- STA. 185+19.26 218.25' LT
ELEV.= 99.96'

PI = 176+76.00
EL = 107.47'
VC = 300'
K = 300

PROPOSED GRADE

BEGIN BRIDGE
-L- STA.180+71.00 +/-

END BRIDGE
-L- STA.184+04.00 +/-

EXISTING GROUND

(+) 1.03% RT
(-) 1.17% RT
(+)0.5000%
(+)0.5000%
(-)0.5000%
(-) 0.30% RT
18" RCP

END LAT. V DITCH
-L- STA. 173+10 RT
EL. 103.55

PI -L- STA. 172+50 RT
EL. 104.25

BEG. LAT. V DITCH
-L- STA. 175+50 RT
EL. 101.63

END LAT. V DITCH
-L- STA. 177+25 RT
EL. 101.10

TEMPORARY WORK BRIDGE & FINGERS
- MAX. 30' BRIDGE WIDTH
- PIER / SPAN PLACEMENT TO BE DETERMINED BY CONTRACTOR
- LOW CHORD 4' ABOVE NWS=89.7'
- EDGE OF BRIDGE FINGERS PLACED A MINIMUM OF 10' FROM PROPOSED PIERS

Q_{NWS} ▼ 89.7

BEG. SP. CUT 'V' DITCH
-L- STA. 184+48 RT
EL. 98.53

BEG. SP. CUT 'V' DITCH
-L- STA. 184+98 LT; EL. 98.27

(-) 0.35% RT
(-) 0.22% LT

150 140 130 120 110 100 90 80 70 60

172+00 173+00 174+00 175+00 176+00 177+00 178+00 179+00 180+00 181+00 182+00 183+00 184+00 185+00 186+00

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 78" RCP
STA.189+80 -L-

DRAINAGE AREA	= 97	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 220	CFS
DESIGN HW ELEVATION	= 103.7	FT
100 YEAR DISCHARGE	= 250	CFS
100 YEAR HW ELEVATION	= 104.4	FT
OVERTOPPING FREQUENCY	= NA	YRS
OVERTOPPING DISCHARGE	= NA	CFS
OVERTOPPING ELEVATION	= NA	FT

PI = 187+50.00
EL = 102.10'
VC = 300'
K = 250

END SP. CUT 'V' DITCH
BEG. LAT. 'V' DITCH
-L- STA. 189+00 LT
EL. 97.39

PROPOSED GRADE

EXISTING GROUND

78" PIPE

(-)0.5000% (+)0.7000%

(-) 0.35% RT

(-) 0.22% LT

(-) 2.08% RT

(-) 0.22% LT

(+) 0.86% LT

(+) 0.70% LT

(+) 8.12% LT

(+) 0.70% LT

END SP. CUT 'V' DITCH
BEG. LAT. 'V' DITCH
-L- STA. 188+50 RT
EL. 97.12

END LAT. BASE DITCH
-L- STA. 189+15 RT
EL. 95.77

END LAT. 'V' DITCH
-L- STA. 189+70 LT.
EL. 97.23

BEG. LAT. BASE DITCH
-L- STA. 190+28 LT.
EL. 97.12

END LAT. BASE DITCH
BEG. SP. CUT BASE DITCH
-L- STA. 191+00 LT.
EL. 97.74

PI -L- STA. 193+50 LT
EL. 103.20

PI -L- STA. 193+00 LT
EL. 99.14

END SP. CUT BASE DITCH
-L- STA. 195+00 LT
EL. 104.25

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.16 THRU 18

150 140 130 120 110 100 90 80 70 60

186+00 187+00 188+00 189+00 190+00 191+00 192+00 193+00 194+00 195+00 196+00 197+00 198+00 199+00 200+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PI = 203+80.00
EL = 113.51'
VC = 500'
K = 575

(+)0.7000%

(+)1.5703%

EXISTING GROUND

PROPOSED GRADE

-L_WB-
PI = 223+00.00
EL = 143.66'
VC = 540'
K = 151

-L-
PI = 223+00.00
EL = 143.66'
VC = 850'
K = 238

-Y5- STA.210+00.00=
-L- STA.223+50.00

BEGIN GRADE -L_WB-
-L- STA. 218+75.00
EL. 136.99'

PROPOSED GRADE

(+)1.03% LT

(+) 0.51% LT

(+) 0.51% LT

(+)1.5703%

(-)2.0000%

END GRADE -L_WB-
-L- STA. 227+25
EL. 135.16

(-) 2.92% RT

(-) 1.80% RT

EXISTING GROUND

EXISTING GROUND

BEG. SP.CUT BASE DITCH
-L- STA. 218+50 LT
EL. 133.78

PI -L- STA. 219+66 LT
EL. 134.98

END SP. CUT DITCH
BEG. LAT. V DITCH
-L- STA. 220+50 LT
EL. 135.41

END LAT. V DITCH
-L- STA. 223+50 LT
EL. 136.95

BEG. SP. CUT BASE DITCH
-L- STA. 227+00 RT
EL. 131.86

PI -L- STA. 227+50 RT
EL. 130.40

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -L- PLAN SEE SHTS.18 THRU 20

170 160 150 140 130 120 110 100 90 80

200+00 201+00 202+00 203+00 204+00 205+00 206+00 207+00 208+00 209+00 210+00 211+00 212+00 213+00 214+00

214+00 215+00 216+00 217+00 218+00 219+00 220+00 221+00 222+00 223+00 224+00 225+00 226+00 227+00 228+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 60" RCP
STA. 231+57 -L-

DRAINAGE AREA	= 31	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 124.5	FT
100 YEAR DISCHARGE	= 90	CFS
100 YEAR HW ELEVATION	= 124.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 130	CFS
OVERTOPPING ELEVATION	= 126.5	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 8'x9' RCBC
STA. 239+81 -L-

DRAINAGE AREA	= 356	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 600	CFS
DESIGN HW ELEVATION	= 116.1	FT
100 YEAR DISCHARGE	= 700	CFS
100 YEAR HW ELEVATION	= 117.6	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 935	CFS
OVERTOPPING ELEVATION	= 118.5	FT

BM #7
RR SPIKE IN BASE OF 48" OAK
-L- STA. 230+89.38 244.47' RT
ELEV. = 130.71'

PROPOSED GRADE

EXISTING GROUND

PI = 236+00.00
EL = 117.66'
VC = 400'
K = 160

PI = 241+90.00
EL = 120.61'
VC = 250'
K = 200

(-) 1.80% RT
(-) 7.03% RT
(-) 0.30% RT
(-) 0.30% LT
(-) 12.0000%
(+) 0.5000%
(-) 4.26% LT
(-) 1.65% LT
(+) 0.5000%
(+) 11.7500%
(+) 4.02% LT

60" PIPE

END SP. CUT DITCH
-L- STA. 230+75 RT
EL. 122.13

PI -L- STA. 229+75 RT
EL. 122.43

PI -L- STA. 229+00 RT
EL. 127.70

BEG. SP. CUT DITCH
-L- STA. 233+50 LT
EL. 117.32

END SP. CUT DITCH
-L- STA. 235+00 LT
EL. 116.87

BEG. SP. CUT BASE DITCH
-L- STA. 236+00 LT
EL. 115.81

END SP. CUT BASE DITCH
BEG. LAT. BASE DITCH
-L- STA. 236+50 LT
EL. 113.68

PI -L- STA. 237+00 LT.
EL. 111.55

END LAT. BASE DITCH
-L- STA. 239+15 LT
EL. 108.00

8'x9' RCBC

BEG. LAT. BASE DITCH
-L- STA. 241+10 LT
EL. 108.39

170 160 150 140 130 120 110 100 90 80

228+00 229+00 230+00 231+00 232+00 233+00 234+00 235+00 236+00 237+00 238+00 239+00 240+00 241+00 242+00

PI = 249+21.91
EL = 133.42'
VC = 650'
K = 277

PROPOSED GRADE

EXISTING GROUND

(+) 11.7500%
(-) 10.6000%
(+) 11.7500%
(+) 4.02% LT
(+) 4.02% LT
(+) 0.33% RT

-Y6- STA. 17+65.33 =
-L- STA. 247+13.23

END LAT. BASE DITCH
BEG. SP. CUT DITCH
-L- STA. 243+50 LT
EL. 118.04

END SP. CUT DITCH
-L- STA. 244+50 LT
EL. 122.06

BEG. SP. CUT DITCH
-L- STA. 245+50 RT
EL. 123.51

END SP. CUT DITCH
-L- STA. 246+50 RT
EL. 123.84

LEFT SIDE DITCH PROFILE ----------
RIGHT SIDE DITCH PROFILE ---------

FOR -L- PLAN SEE SHTS. 20 THRU 22

170 160 150 140 130 120 110 100 90 80

242+00 243+00 244+00 245+00 246+00 247+00 248+00 249+00 250+00 251+00 252+00 253+00 254+00 255+00 256+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2823	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 60" RCP
STA. 260+50 -L-

DRAINAGE AREA	= 43	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 100	CFS
DESIGN HW ELEVATION	= 123.1	FT
100 YEAR DISCHARGE	= 120	CFS
100 YEAR HW ELEVATION	= 123.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 156	CFS
OVERTOPPING ELEVATION	= 125.8	FT

BM #9
RR SPIKE IN BASE OF 24" PINE
-L- STA. 262+77.10 84.18' RT
ELEV. = 125.25'

END GRADE
-L- STA. 264+49.56 EL. 125.90' =
-Y8- STA. 18+17.87 79.29' RT

PI = 262+70.00
EL = 125.33'
VC = 200'
K = 218

BEG. BERM V DITCH
-L- STA. 256+50 RT
EL. 125.76

BEG. SP. CUT DITCH
-L- STA. 257+50 RT
EL. 125.35

PI -L- STA. 259+50 RT
SP. CUT DITCH EL. 122.50
BERM V DITCH EL. 120.37

PI -L- STA. 259+00 RT
EL. 121.66

END SP. CUT DITCH
END BERM V DITCH
-L- STA. 260+00 RT
EL. 118.00

PROPOSED GRADE

EXISTING GROUND

(-) 6.33% LT
(-) 1.64% RT
(-) 1.55% LT
(-) 1.43% RT
(-) 12.58% RT
(-) 9.00% RT
(-) 4.74% RT
(+) 3.50% LT
(+) 0.75 LT
(-) 10.6000%
(+) 0.31 1.1%
(+) 0.75% LT

60" PIPE

18" RCP

END LAT. BASE DITCH
-L- STA. 259+98 LT
EL. 118.36

PI -L- STA. 257+58 LT
EL. 122.08

BEG. LAT. BASE DITCH
-L- STA. 260+02 LT
EL. 118.36

BEG. LAT. BASE DITCH
-L- STA. 257+00 LT
EL. 125.75

END LAT. BASE DITCH
BEG. SP. CUT DITCH
-L- STA. 261+50 LT
EL. 122.17

PI -L- STA. 261+00 LT
EL. 121.79

END SP. CUT DITCH
-L- STA. 264+00 LT
EL. 124.04

FOR -L- PLAN SEE SHTS. 22 & 23

256+00 257+00 258+00 259+00 260+00 261+00 262+00 263+00 264+00

170 160 150 140 130 120 110 100 90 80

-Y-

BEGIN GRADE
-Y- STA. 12+85.00
EL. 156.25'

BEG. SP. CUT DITCH
-Y- STA. 12+85 LT
EL. 154.15

END SP. CUT DITCH
-Y- STA. 13+00 LT
EL. 153.66

(-) 1.27% LT
(-) 2.60% RT

PI = 16+15.00
EL = 151.96'
VC = 160'
K = 320

PI = 17+75.00
EL = 149.08'
VC = 160'
K = 152

(-) 1.3000%
(-) 1.8000%
(-) 1.8000%
(-) 0.7500%

EXISTING GROUND

PROPOSED GRADE

BEGIN GRADE
-Y- STA. 22+69.22 EL. 146.10' =
-L- STA. 21+44.14 (41.0' RT)

END GRADE
-Y- STA. 21+82.46 EL. 145.89' =
-L- STA. 21+72.49 (41.0' LT)

PI = 21+00.00
EL = 146.64'
VC = 160'
K = 949

-Y- STA. 22+25.87'
-L- STA. 21+58.22'

(-) 0.7500%
(-) 10.9186%
.025
.020
(-) 0.35% RT
(-) 0.35% RT

PI = 23+45.00
EL = 145.33'
VC = 150'
K = 227

(-) 1.0117%
(-) 10.3500%

BEG. SP. CUT DITCH
-Y- STA. 20+00 RT
EL. 143.11

END SP. CUT DITCH
BEG. LAT. BASE DITCH
-Y- STA. 21+00 RT
EL. 142.76

END LAT. BASE DITCH
-Y- STA. 21+76 RT
EL. 142.50

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -Y- PLAN SEE SHTS. 5 & 24

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00

160 150 140 130 120 110 100

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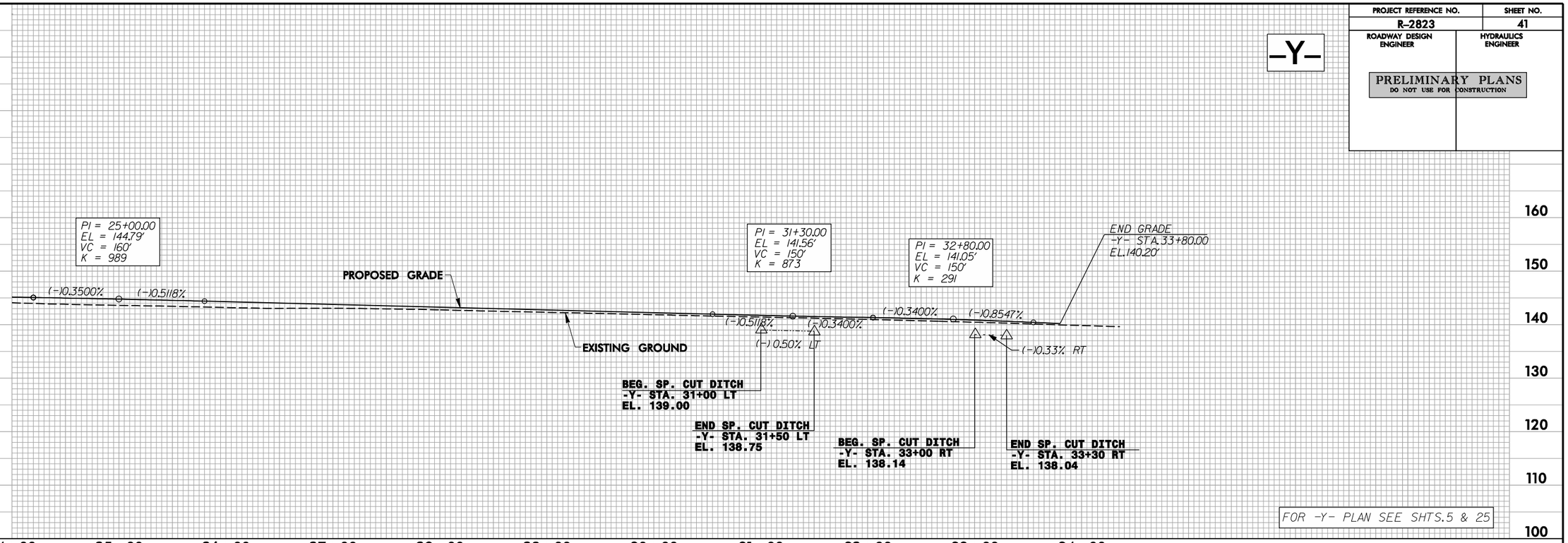
5/28/99

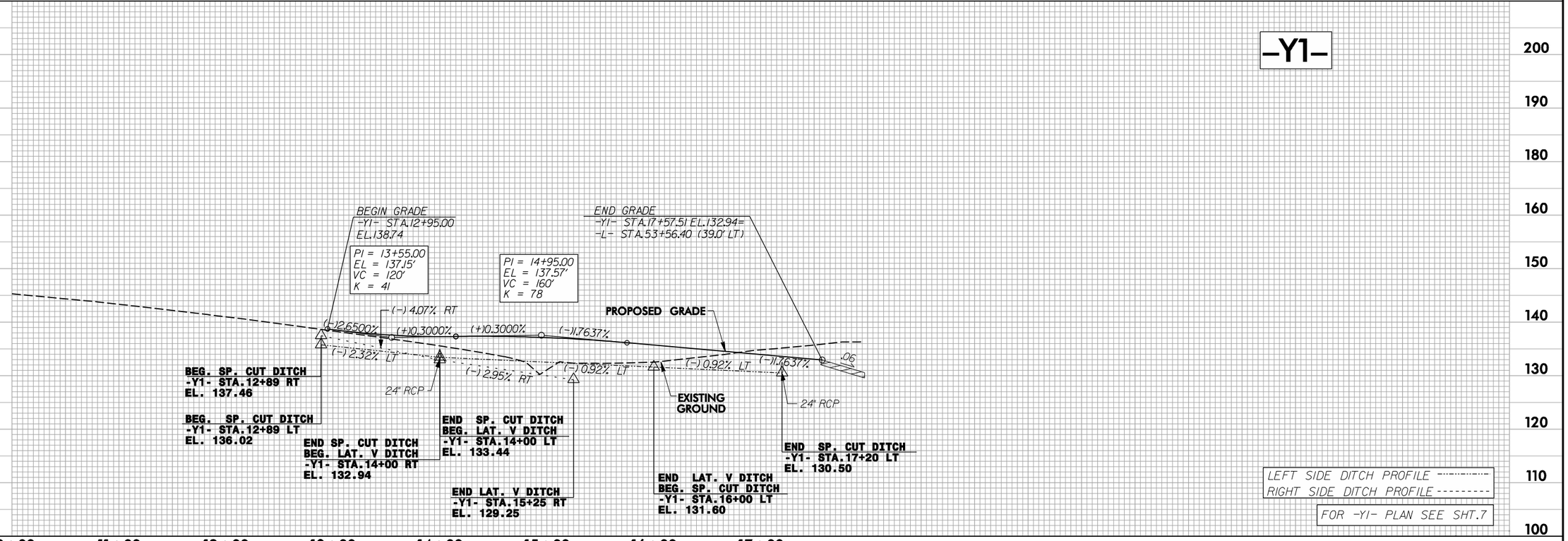
PROJECT REFERENCE NO.	SHEET NO.
R-2823	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y-



-Y1-



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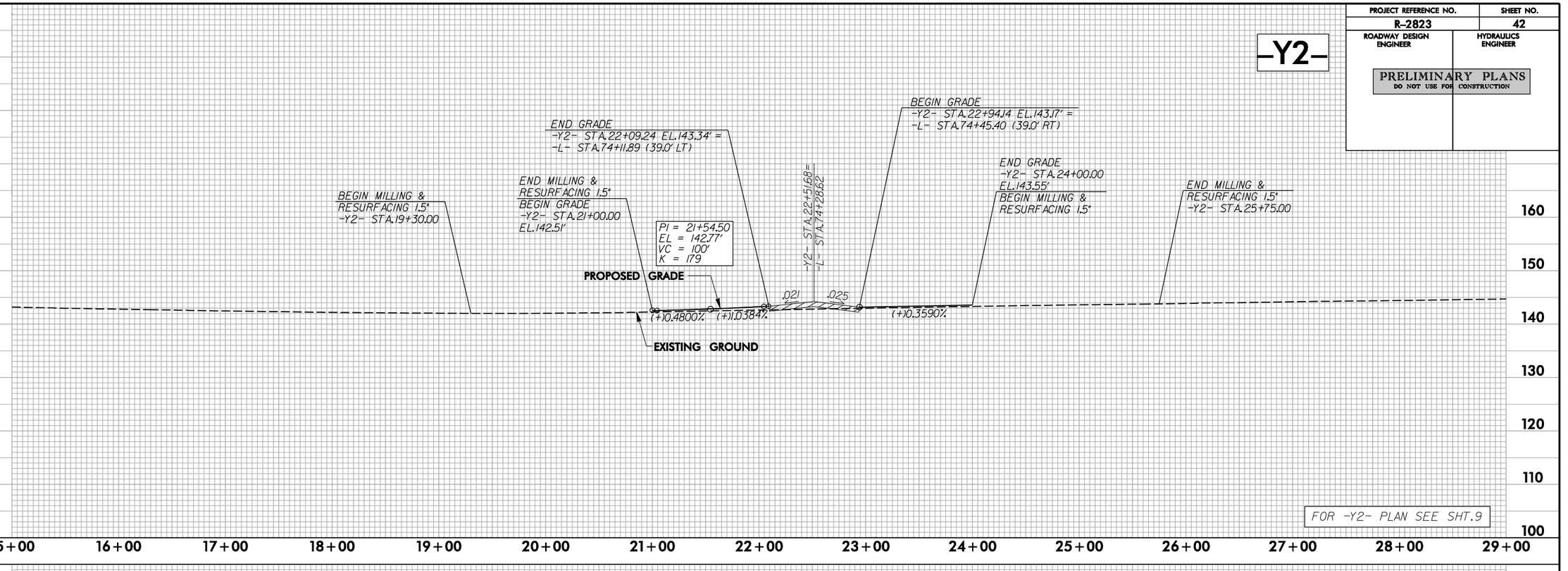
(hpaughan)

5/28/99

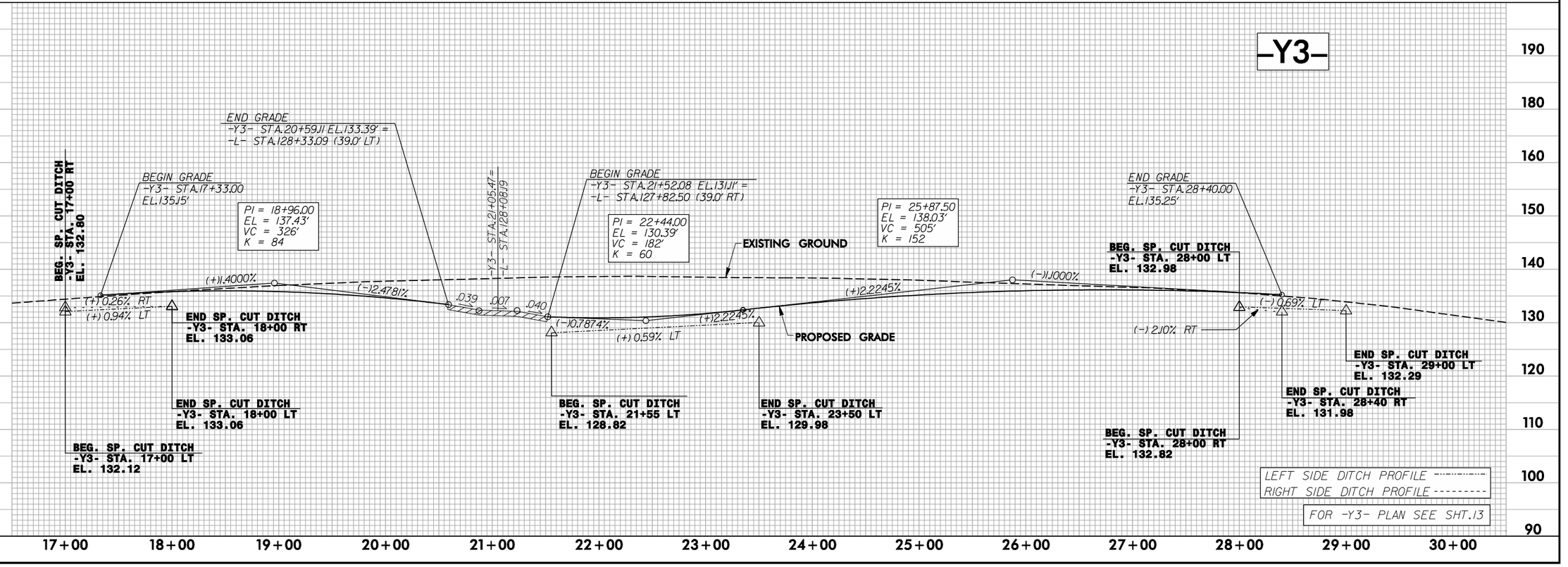
PROJECT REFERENCE NO.	SHEET NO.
R-2823	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y2-



-Y3-



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(mouchina)

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y4-

BEG. SP. CUT DITCH
-Y4- STA. 11+44 LT
EL. 132.57

BEGIN GRADE
-Y4- STA.11+90.00
EL.135.21'

END SP. CUT DITCH
-Y4- STA. 12+00 LT
EL. 132.833

PI = 14+40.00
EL = 137.96'
VC = 250'
K = 179

END GRADE
-Y4- STA.17+24.84 EL.137.73' =
-L- STA.146+99.98 (39.0' LT)

PI = 16+40.00
EL = 137.36'
VC = 150'
K = 204

EXISTING GROUND
PROPOSED GRADE

-Y4- STA.17+73.93 =
-L- STA.147+29.80

BEGIN GRADE
-Y4- STA.18+23.03 EL.137.72' =
-L- STA.147+59.63 (39.0' RT)

END GRADE
-Y4- STA.22+00.00
EL.136.94

PI = 20+60.00
EL = 138.97'
VC = 250'
K = 126

(+)11.1000%
(-)0.3000%
(-)0.3000%
(+)0.4361%
(+)10.5275%
(+)0.43% RT
(+)10.5275%
(-)11.4500%
(-) 2.00% RT
(+) 0.46% LT
(+) 1.87% RT
(-) 0.30% LT
(+) 0.30% LT
.020
.021
18" RCP

END SP. CUT DITCH
-Y4- STA. 12+00 RT
EL. 132.30

BEG. SP. CUT DITCH
-Y4- STA. 11+50 RT
EL. 131.36

BEG. SP. CUT DITCH
-Y4- STA. 16+00 LT
EL. 134.75

END SP. CUT DITCH
-Y4- STA. 17+15 LT
EL. 134.41

BEG. SP. CUT DITCH
-Y4- STA. 18+30 RT
EL. 135.00

BEG. SP. CUT DITCH
-Y4- STA. 19+16 LT
EL. 133.75

END SP. CUT DITCH
-Y4- STA. 20+00 RT
EL. 135.73

BEG. SP. CUT DITCH
-Y4- STA. 21+50 RT
EL. 134.90

END SP. CUT DITCH
-Y4- STA. 22+00 RT
EL. 133.90

END SP. CUT DITCH
-Y4- STA. 22+00 LT
EL. 134.60

FOR -Y4- PLAN SEE SHT.14

200 190 180 160 150 140 130 120 110 100

11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00

-Y5-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 36" RCP
STA.16+87 -Y5-

DRAINAGE AREA	= 21	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 40	CFS
DESIGN HW ELEVATION	= 123.8	FT
100 YEAR DISCHARGE	= 60	CFS
100 YEAR HW ELEVATION	= 125.2	FT
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING DISCHARGE	= 102	CFS
OVERTOPPING ELEVATION	= 129.8	FT

-L-
223+50.00

BEGIN GRADE
-Y5- STA.10+39.00 EL.138.51' =
-L- STA 223+49.95 (39.0' RT)

PI = 11+30.00
EL = 137.04'
VC = 180'
K = 571

.05

(-)11.6154%
(-)11.3000%
(+) 0.30% RT
(+) 1.68% RT

18" PIPE

END LAT. V DITCH
-Y5- STA. 12+00 RT
EL. 133.38

BEG. LAT. V DITCH
-Y5- STA. 11+00 RT
EL. 132.70

PT -Y5- STA. 11+50 RT
EL. 132.55

PROPOSED GRADE

36" PIPE

EXISTING GROUND

PI = 23+80.00
EL = 120.79'
VC = 420'
K = 115

(-)11.3000%
(-) 0.30% RT

BEG. SP. CUT DITCH
-Y5- STA. 23+00 RT
EL. 119.28

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -Y5- PLAN SEE SHTS.20 & 29

180 160 150 140 130 120 110 100 90 80

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2823	44
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y5-

PI = 23+80.00
EL = 120.79'
VC = 420'
K = 115

24" PIPE

(+)12.3500%

(+) 4.26% RT

(+) 3.10% LT

(+) 6.04% LT

(-) 0.30% RT

END LAT. V DITCH
-Y5- STA. 26+00 LT
EL. 123.62

PI -Y5- STA. 25+50 LT
EL. 120.60

END SP. CUT DITCH
-Y5- STA. 25+00 RT
EL. 120.96

BEG. LAT. V DITCH
-Y5- STA. 24+50 LT
EL. 117.50

PI -Y5- STA. 24+50 RT
EL. 118.83

END GRADE
-Y5- STA.28+15.00
EL.128.80'

PI = 27+00.00
EL = 128.31'
VC = 220'
K = 114

(+)0.4261%

(+) 1.42% RT

BEG. SP. CUT DITCH
-Y5- STA. 27+50 RT
EL. 126.45

END SP. CUT DITCH
-Y5- STA. 28+15 RT
EL. 127.37

FOR -Y5- PLAN SEE SHT.29

-Y6-

BEG. SP. CUT DITCH
-Y6- STA. 16+00 LT
EL. 128.61

END GRADE
-Y6- STA.17+46.32 EL.128.91'=
-L- STA.247+12.42 (39.0' LT)

BEGIN GRADE
-Y6- STA.16+00.00
EL.130.54'

PI = 16+80.00
EL = 129.98'

-Y6- STA.17+85.33=
-L- STA.247+13.23

END GRADE
-Y6- STA.19+25.00
EL.127.75'

PROPOSED GRADE

(-)0.7000%

(-)1.6134%

.025

.025

(-)1.1723%

24" PIPE

(-) 1.51% RT

(-) 2.80% LT

BEG. SP. CUT DITCH
-Y6- STA. 16+25 RT
EL. 126.95

END SP. CUT DITCH
-Y6- STA. 16+50 LT
EL. 127.21

END SP. CUT DITCH
-Y6- STA. 17+24 RT
EL. 125.46

BEGIN GRADE
-Y6- STA.18+24.34 EL.128.93'=
-L- STA.247+14.05 (39.0' RT.)

EXISTING GROUND

FOR -Y6- PLAN SEE SHT.22

-Y8-

(-) 0.30% CL

END MEDIAN DITCH
-Y8- STA. 13+00 CL
EL. 128.39

BEG. MEDIAN DITCH
-Y8- STA. 10+50 CL
EL. 129.13

-Y8-

(-) 1.83% CL

(-) 0.30% CL

EXISTING GROUND

END MEDIAN DITCH
-Y8- STA. 15+00 CL
EL. 127.30

PI -Y8- STA. 14+77 CL
EL. 127.72

BEG. MEDIAN DITCH
-Y8- STA. 14+00 CL
EL. 127.95

BEGIN GRADE
-Y8- STA.18+30.00
EL.125.84'

PROPOSED SB LANES
PI = 21+10.00
EL = 118.39'
VC = 560'
K = 121
DS = 56 mph

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE 66" RCP
STA.21+76 -Y8-

DRAINAGE AREA	= 56	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 130	CFS
DESIGN HW ELEVATION	= 118.9	FT
100 YEAR DISCHARGE	= 140	CFS
100 YEAR HW ELEVATION	= 119.7	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 190	CFS
OVERTOPPING ELEVATION	= 121.6	FT

PROPOSED SB LANES

66" PIPE

(-)2.6600%

(+)11.9617%

(-)5.93% LT

(-)5.72% RT

(-) 2.79% RT

(-) 0.30% LT

(+) 1.05% RT

(+) 2.26% RT

(+) 0.30% LT

BEG. SP. CUT BASE DITCH
-Y8- STA. 19+04 RT
EL. 122.40

BEG. SP. CUT DITCH
-Y8- STA. 19+50 LT
EL. 121.39

PI -Y8- STA. 20+00 RT
EL. 116.91

PI -Y8- STA. 20+30 LT
EL. 116.65

PI -Y8- STA. 21+08 RT
EL. 113.90

PI -Y8- STA. 22+00 RT
EL. 114.87

END SP. CUT DITCH
-Y8- STA. 22+26 LT
EL. 116.06

BEG. SP. CUT DITCH
-Y8- STA. 23+00 LT
EL. 119.00

END SP. CUT DITCH
-Y8- STA. 24+50 RT
EL. 120.61

END SP. CUT DITCH
-Y8- STA. 25+38 LT
EL. 119.76

END GRADE
-Y8- STA.24+55.00
EL.125.16'

LEFT SIDE DITCH PROFILE
RIGHT SIDE DITCH PROFILE

FOR -Y8- PLAN SEE SHTS.23 & 30

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