STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

December 10, 2008

U. S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Mr. Dave Baker
NCDOT Coordinator

SUBJECT: **Clean Water Act Section 404 and 401 Individual Permit Applications** for the proposed US 221 widening from the South Carolina line to US 74 Bypass in Rutherford County, T.I.P. No. R-2233A, Division 13, Debit $570 from WBS Element 34400.1.1.

Dear Mr. Baker:

The North Carolina Department of Transportation (NCDOT) proposes to widen existing US 221 to a multi-lane facility from the South Carolina state line to the US 74 Bypass in Rutherford County. The proposed widening will be constructed as a four-lane roadway with 12-foot travel lanes and 8-foot shoulders and a 46-foot median. The proposed project is composed of two sections, which are both in final design, R-2233AA and R-2233AB. Included in this application package are the following: (1) ENG Form 4345, (2) property owner address labels, (3) North Carolina Ecosystem Enhancement Program (EEP) acceptance letter, (4) "Rapanos" Jurisdictional Determination Forms, (5) copies Concurrence Point 3, 4A, 4B, and 4C meeting minutes, (6) permit drawings for R-2233AA, (7) permit drawings for R-2233AB, (8) a set of half size plans for R-2233AA, and (9) a set of half size plans for R-2233 AB,

Purpose and Need: The purpose of the proposed project is to improve travel time, safety and system linkage along existing US 221 intrastate corridor between the South Carolina Line and US 74 Bypass in Rutherford County.

Summary of Impacts: The proposed project is in the Broad River Basin, Hydrologic Unit 03050105. Impacts on jurisdictional areas from the proposed project consist of a total of 3,342 feet of permanent stream impacts and 0.01 acres of fill in wetlands.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-715-1334
FAX: 919-715-5501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
SUITE 240
RALEIGH, NC 27604

Summary of Mitigation:
The project has been designed to avoid and minimize impacts to jurisdictional areas throughout the NEPA and design processes. However, project impacts will necessitate compensatory mitigation for the unavoidable impacts. Detailed descriptions of these actions are presented in the mitigation portion of this application. The EEP will provide compensatory mitigation for the 2,870 feet of stream impacts that require mitigation and 0.01 acres of fill in wetlands.

PROJECT SCHEDULE

For construction purposes, the proposed project will be constructed in two sections. Both sections have a let date of December 15, 2009.

NEPA DOCUMENT STATUS

A State Environmental Assessment (SEA) for R-2233A was completed on May 2005 and the State Finding of No Significant Impact (FONSI) was completed July 2006. Copies of the environmental documents were circulated to the agencies shortly after completion. Additional copies are available upon request.

In compliance with the NEPA/404 Merger Process, Concurrence Points 4B and 4C were reached for section AA on July 27, 2006 and January 24, 2008 respectively. Concurrence Points 4B and 4C were reached for section AB on September 27, 2006 and May 14, 2008 respectively.

INDEPENDENT UTILITY

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

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

(2) The project is usable and a reasonable expenditure, even if no additional transportation improvements are made in the area;

(3) The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

ALTERNATIVES CONSIDERED

The project was divided into five sections in order to evaluate alternatives. Widening both to the east and west side of US 221 were evaluated within each section. The Concurrence Point 3 meeting was held with the Merger Team on February 14, 2006 to reach concurrence on the Least Environmentally Damaging Practical Alternative (LEDPA). Concurrence was gained on the following alternative:

Section 1: West Side Widening
Section 2: East Side Widening
Section 3: East Side Widening
Section 4: East Side Widening
Section 5: East Side Widening

RESOURCE STATUS

Wetland and stream determinations within R-2233A were conducted using the field delineation method outlined in the 1987 Corps of Engineers Wetland Delineation Manual

by biologists from Lochner. The stream and wetland determinations, and mitigation requirements were field verified by the Steve Lund of the USACE on July 29, 2003. At the request of David Baker of the USACE, Rapanos forms have been attached to this letter.

Wetlands:
There will be a total of <0.01 acre of impacts to one riparian wetland in Section AA (Site 3) of the proposed project.

Streams:
Stream impacts occur at 10 sites in Section AA and 4 sites in Section AB. Impacts to streams occur within HUC 03050105 of the Broad River Basin. Tables 1A and 1B are a list of surface water impacts including stream name, type of structure, amount of impacts, mitigation required, DWQ stream index number, and DWQ classification. No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), Water Supply II (WS-II) or 303(d) waters occur within 1.0 miles of the project study area. No waters classified as trout waters by the NC Wildlife Resources Commission will be impacted by this project.

Table 1A – R-2233AA Surface Water Impacts

Site	Stream Name and Intermittent (I), Perennial (P), or Both (B)	Structure/ Size Type	Permanent Impacts (feet)	Mitigation Required (feet)	Temporary Impacts (acres)	DWQ Index number	DWQ Class
1	UT to Broad River(I)	18" RCP	90	0		9-(25.5)	C
2	UT to Broad River(P)	5x4 RCBC	205	205		9-(25.5)	C
3	UT to Broad River(P)	5x4 RCBC	109	109		9-(25.5)	C
4	UT to Broad River(P)	36" RCP	188	188		9-(25.5)	C
5	Broad River(P)	Bridge	0*	0	0.13	9-(25.5)	C
6	UT to Floyds Creek(I)	Roadway Fill	156	0		9-(25.5)	C
7	UT to Floyds Creek(P)	3x3 RCBC	615	615		9-37	C
8	UT to Floyds Creek(B)	5x6 RCBC	832	832		9-37	C
9	UT to Floyds Creek(P)	7x7 RCBC	210	210		9-37	C
10	UT to Floyds Creek(P)	Roadway Fill	408	408		9-37	C
Total			**2813**	**2567**	0.13		

***<0.01 Acres of impacts from bridge bents**

Table 1B – R-2233AB Surface Water Impacts

Site	Stream Name and Intermittent (I) or Perennial (P)	Structure/ Size Type	Permanent Impacts	Mitigation Required (feet)	Temporary Impacts (acre)	DWQ Index number	DWQ Class
1A	Floyds Creek (P)	Bridge	0	0		9-37	C
1	UT to Floyds Creek (P)	42" CSP	60	60	<0.01	9-37	C
2	UT to Floyds Creek(I)	36" CSP	226	0		9-37	C
3	UT to Floyds Creek(P)	2-9'x8' RCBC	228	228	0.01	9-37	C
4	UT to Floyds Creek	10' Base Ditch	15	15	<0.01	9-37	C
Total			**529**	**303**	0.01		

JURISDICTIONAL IMPACT DESCRIPTIONS

A site by site description of wetland and stream impacts is included below. Design details are included on the attached permit drawings and half size plans.

R-2233AA

Site 1: The existing 18" RCP will be extended on the east and west side of the roadway with an 18" RCP. Extension of the pipe will result in approximately 90 feet of permanent impacts to an intermittent UT to the Broad River.

Site 2: The existing 5'x4' RCBC will be extended on the east and west side of the roadway with a 5'x4' RCBC. Extension of the pipe will result in approximately 205 feet of permanent impacts to a perennial UT to the Broad River.

Site 3: The existing 5'x4' RCBC will be extended on the west side of the roadway with a 5'x4' RCBC. Extension of the pipe will result in approximately 109 feet of permanent impacts to an intermittent UT to the Broad River and less then 0.01 acre of fill and mechanized clearing in a riverine wetland.

Site 4: The existing 36" RCP will be extended on the east side of the roadway with a 36" RCP. Extension of the pipe will result in approximately 188 feet of permanent impacts to a perennial UT to the Broad River.

Site 5: The existing bridge over the Broad River will be replaced with two new 36-foot wide, 561-foot long bridges. Construction of the north bound bridge will result in < 0.01 acre of permanent impacts in the Broad River from the construction of the bridge bents in the channel of the Broad River. Temporary impacts of 0.13 acre will occur form temporary work causeways required to construct the new bridges. Construction of the causeways will be phased so that no more than half of the channel is blocked at one time.

Site 6: Widening of the road bed will result in 156 feet of fill in an intermittent UT to Floyds Creek. The UT to Floyds Creek will relocated into a lateral base ditch.

Site 7: The existing 3'x3' RCBC will be extended on the east and west side of the roadway with a 3'x3' RCBC in order to allow for the widening of the roadbed. Extension of the pipe will result in approximately 615 feet of permanent impacts to two UTs to Floyds Creek.

Site 8: The existing 5'x6' RCBC will be extended on the east and west side of the roadway with a 5'x6' RCBC. Extension of the pipe will result in approximately 477 feet of permanent impacts to two intermittent UTs to Floyds Creek and 355 feet of permanent impacts to one perennial UT to Floyds Creek.

Site 9: The existing 7'x7' RCBC will be extended on the east and west side of the roadway with a 7'x7' RCBC. Extension of the pipe will result in approximately 210 feet of permanent impacts to an UT to Floyds Creek.

Site 10: Widening of the road bed will result in 408 feet of fill in an UT to Floyds Creek. A portion of the UT to Floyds Creek will be relocated into special base ditch.

R-2233AB

Site 1A: The existing bridge over Floyds Creek will be replaced with two 3-span, 220-foot long bridges. Both bridges will span Floyds Creek. No impacts will occur at this site from the bridge construction or removal of the old bridge.

Site 1: The existing 42" CMP under Jaynes Road will be extended on the north and south side of the roadway with a 42" CSP. Extension of the pipe will result in 60 feet of permanent impacts to an UT to Floyds Creek.

Site 2: The existing 24" CSP will be removed and replaced with a longer 36" CSP to accommodate for the road widening. Replacement of the pipe will result in 226 feet of impacts to an UT to Floyds Creek.

Site 3: The existing double 7'x7' concrete culvert will be replaced and lengthened with two 9'x8' RCBC to accommodate the road widening. Replacement of the pipe will result in 228 feet of permanent impacts to an UT to Floyds Creek.

Site 4: A 10' lateral base ditch will be constructed to convey roadside drainage. The lateral base ditch will result in 15 feet of impacts to the stream banks of a UT to Floyds Creek.

FEDERALLY-PROTECTED SPECIES

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 31, 2008 the US Fish and Wildlife Service (USFWS) lists five federally protected species for Rutherford County (Table 2).

Table 2: Federally Protected Species of Rutherford County

Scientific Name	Common Name	Federal Status	Biological Conclusion	Habitat Present
Myotis sodalis	Indiana bat	E	No Effect	No
Hexastylis naniflora	Dwarf flowered heartleaf	T	May effect, likely to adversely effect	Yes
Isotria medeoloides	Small whorled pogonia	T	No Effect	Yes
Sisyrinchium dichotomum	White irisette	E	No Effect	Yes
Gymnoderma lineare	Rock gnome lichen	E	No Effect	No

Field surveys were updated during the spring for all species with habitat. Seven populations of dwarf flowered heartleaf are located within the project study area. A Biological Assessment for the dwarf flowered heartleaf has been prepared by the NCDOT and a copy will be forwarded to the USACE and the USFWS separately.

CULTURAL RESOURCES

Historic Architecture:

There are properties over 50 years of age within the project's Area of Potential Effect (APE), but based on historical information available and photographs of each property, these properties are not considered eligible for the National Register and no further evaluation is necessary. There are no National Register-listed properties within the APE. The State Historic Preservation Office concurred with this finding on December 12, 2002. A copy of the concurrence form was included in Appendix A of the SEA.

Archaeology:

The State Environmental Assessment contains a project commitment to conduct an archaeological survey to identify significant archaeological resources prior to construction activities. On this State-funded undertaking, the United States Army Corps of Engineers (USACE) is the lead Federal Agency with respect to Section 106 of the National Historic Preservation Act. In a letter dated August 7, 2008, the USACE defines the APE in respect to the permit area for the project, and details the archaeological level of effort by high probability versus low probability. Consultation with the Office of State Archaeology (OSA) has continued, including identifying specific high and low probability locations for subsurface testing. Upon completion of the investigation and survey report, the USACE will consult with the State Historic Preservation Office (SHPO) and the Tribal Historic Preservation Office of the Eastern Band of the Cherokee Indians (THPO) to seek fulfillment of Section 106 responsibilities

FEMA COMPLIANCE

This project will have no impacts on the 100-year floodplain.

UTILITY IMPACTS

There will be no proposed impacts to Waters of the U.S. due to utility construction.

ICE STUDY

An Indirect and Cumulative Effect study for this project has been completed and the report was distributed to the appropriate agencies. Copies of this report are available upon request.

ESSENTIAL FISH HABITAT

The project will not have any impacts on any essential fish habitat.

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.

Avoidance:

Avoidance has been employed to the maximum extent practical. All wetland areas not affected by the project will be protected from unnecessary encroachment.

General avoidance measures incorporated into the project design

- No Staging of construction equipment or storage of construction supplies will be allowed in wetlands or near surface waters.
- No borrow or waste areas will be located in wetland areas without a permit from the USACE.

Minimization:

Minimization has been employed in the project area to the maximum extent practical. Unnecessary wetland takings were reduced by the selection of alternatives that minimized stream and wetland impacts.

Project Wide Minimization Measures

- Use of 2:1 and 1.5:1 side slopes in jurisdictional areas.
- Strict adherence to the procedures contained in Best Management Practices for Protection of Surface Waters, as well as NC Department of Environment and Natural Resources (NCDENR), Division of Land Resources, Land Quality Section's *North Carolina Erosion and Sediment Control Planning and Design Manual* will aid in avoiding and minimizing impacts to water resources and aquatic communities.
- No Erosion control structures will be placed in waters of the U.S.
- Clearing and grubbing activities will be minimized to reduce impacts to riparian buffers.
- Ditch front slopes will be reduced from 18 feet to 15 feet, reducing the project foot print by 3 feet.
- Riprap will be placed on the banks and not in the bottom of channels.
- The NCDOT will place the dwarf flowered heartleaf population located near Station – Y2- 12+50 in a conservation easement.

Site Specific Minimization Measures

- Station –L-40+98- The fill slopes have been changed to 1.5:1 to minimize impacts to the stream, wetlands and the dwarf flowered heartleaf population.
- Station –L-96+49-The deck drains will be collected in a system and discharged over the riprap at the south abutment.
- Station –L-118+00-As requested during the 4A meeting, the intermittent channel has been relocated in a lateral base ditch instead of being piped.
- Station –L-232+53 to 234+90- The fill slopes have been changed to 1.5:1 to minimize impacts to the streams and the dwarf flowered heartleaf population.
- Station –L-272+34 to 274+00- The fill slopes have been changed to 1.5:1 to minimize impacts to the streams and the dwarf flowered heartleaf population.
- Station -Y2-12-70 - The fill slopes have been changed to 1.5:1 to minimize impacts to the stream.
- Station –L-456+60 to 457+64- An energy dissipater will be constructed at the outlet of the storm drainage system to reduce erosion to the stream.
- Station –L-534+17- A 2-foot sill will be placed in the overflow pipe and four baffles will be placed in both pipes to mimic the natural stream flow.

Compensatory Mitigation:
The construction of the R-2233A will result in 2,870 feet of stream impacts that will require mitigation within the Broad River Basin.

The NCDOT evaluated all streams on the project, including the three streams recommended during the 4A concurrence meeting, for onsite mitigation following the selection of the Least Environmentally Damaging Practical Alternative (LEDPA). All streams evaluated were determined not to be practical for onsite mitigation due to the steep topography in the vicinity of the streams.

The mitigation for the 2,870 feet of permanent impacts to cool water streams, and 0.01 acre of permanent impacts to a riparian wetland within HUC 03040105 will be provided by EEP (See attached letter).

SUMMARY

Section 404 Permit: Application is hereby made for a Department of the Army Section 404 Individual Permit for the above-described activities for the proposed TIP project R-2233A. A copy of this permit application will be posted on the NCDOT website at: *http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html*.

Section 401 Permit: Application is hereby made for a 401 Water Quality Certification to the DWQ for the above-described activities. In compliance with Section 143-215.3D(e) of the NCAC, we will provide $570 to act as payment for the processing of the Section 401 Permit. We are providing five copies of this application to the NCDWQ.

Thank you for you assistance with this project. If you have any questions or need any additional information about this project, please contact Brett Feulner at (919) 715-1488.

Sincerely,

E. L. Lusk

for Greg Thorpe, P.E., Environmental Management Director
Project Development and Environmental Analysis Branch

GT/bmf
cc: w/ attachments
Mr. Brian Wrenn, NCDWQ (5 Copies)
Ms. Marla Chambers, NCWRC
w/o attachments
Dr. David Chang, P.E., Hydraulics
Mr. Victor Barbour, P.E., Project Services
Mr. Greg Perfetti, P.E., Structure Design
Mr. Art McMillan, P.E., Highway Design
Ms. Beth Harmon, EEP
Ms. Jameelah El-Amin, PDEA
Mr. Todd Jones, NCDOT External Audit
Ms. Marella Buncick, USFWS
Ms. Kathy Matthews, USEPA-Whitter, NC
Mr. Roger Bryan, Division 13
Mr. J.J. Swain, P.E., Division 13
Mr. Mark Staley, Roadside Environmental
Mr. Scott McLendon, USACE, Wilmington
Mr. Drew Joyner, PE, Human Environment Unit
Mr. Majed Alghandour, P. E., Prog. and TIP
Mr. Clarence Coleman, P.E., FHWA

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)	OMB APPROVAL NO. 071-0003 Expires December 31, 2004

The public reporting burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes 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 (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided, 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 location of the proposed activity. An application that is not completed in full will be returned.

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

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

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANTS NAME Gregory J. Thorpe, Ph.D., Environmental Management Director Project Development and Environmental Analysis North Carolina Department of Transportation	8. AUTHORIZED AGENTS NAME AND TITLE (an agent is not required) Not applicable
6.APPLICANTS ADDRESS 1598 Mail Service Center Raleigh, North Carolina 27699-1548	9. AGENTS ADDRESS
7. APPLICANTS PHONE NOS. WITH AREA CODE a. Residence b. Business (919) 715-1488	10. AGENTS PHONE NOS. 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—2233A-Widening of US 221, South of Rutherfordton

13. NAME OF WATERBODY, IF KNOWN (*if applicable*) Too many to list here, please see attached cover letter	14. PROJECT STREET ADDRESS (*if applicable*) NA
LOCATION OF PROJECT **Rutherfordton** COUNTIES **NC** STATE	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (*see instructions*)
Too many to list here, please see attached cover letter

17. DIRECTIONS TO THE SITE
See the attached permit drawings and half size plan sheets.

18. Nature of Activity (*Description of project, include all features*)
Widening of US 221 from a two lane facility to a four lane divided highway.

19. Project Purpose (*Describe the reason or purpose of the project, see instructions*)
The purpose of the project is to improve travel time and safety and system linkage along existing US 221 intrastate corridor between the South Carolina state line and US 74 Bypass in Rutherfordton.

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

20. Reason(s) for Discharge
Construction of new highway that impacts several jurisdictional waters of the US

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards
See the attached permit drawings.

22. Surface Area in Acres of Wetlands or Other Waters Filled (*see instructions*)
See impact summary table in the attached permit drawings.

23. Is Any Portion of the Work Already Complete? YES_x_ NO _x_ IF YES, DESCRIBE THE COMPLETED 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).
Please see affected adjacent landowner table in the attached permit drawings.

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**

*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 is 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.

E. L. Lusk — 12-9-08

SIGNATURE OF APPLICANT — DATE — SIGNATURE OF AGENT — DATE

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

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

Ecosystem Enhancement
PROGRAM

September 29, 2008

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

R-2233AA, US 221 from Just North of Floyd's Creek to Just North of US 74, Rutherford County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the stream and riparian wetland mitigation for the subject project. Based on the information supplied by you on September 22, 2008, the impacts are located in CU 03050105 of the Broad River Basin in the Southern Piedmont (SP) Eco-Region, and are as follows:

Cool Stream:	2,870 feet
Riparian Wetland:	0.01 acre

EEP commits to implementing sufficient compensatory stream and riparian wetland mitigation credits to offset the impacts associated with this project by the end of the MOA Year in which this project is permitted, in accordance with Section X of the Amendment No. 2 to the Memorandum of Agreement between the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, fully executed on March 8, 2007. If the above referenced stream and wetland impact amounts are revised, then this

mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

James B. Stanfill for

William D. Gilmore, P.E.
EEP Director

cc: Mr. David Baker, USACE – Asheville Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: R-2233AA

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:North Carolina County/parish/borough: Rutherford City: Rutherfordton
Center coordinates of site (lat/long in degree decimal format): Lat. 35.3064° N, Long. -81.9216° W.
Universal Transverse Mercator:
Name of nearest waterbody:
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows:
Name of watershed or Hydrologic Unit Code (HUC):
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): Originally verified in the field by USACE Rep, Steve Lund on July 29, 2003

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Are no *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There Are *"waters of the U.S."* within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☒ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: 2557 linear feet: width (ft) and/or acres.
      Wetlands: 0.01 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: .

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: .

   Summarize rationale supporting determination: The Broad River is used for canoeing and kayaking.

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": NA.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: Pick List
   Drainage area: Pick List
   Average annual rainfall: inches
   Average annual snowfall: NA inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through Pick List tributaries before entering TNW.

   Project waters are Pick List river miles from TNW.
   Project waters are Pick List river miles from RPW.
   Project waters are Pick List aerial (straight) miles from TNW.
   Project waters are Pick List aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: North.
   Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☒ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: Pick List.

Primary tributary substrate composition (check all that apply):

☐ Silts	☐ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: e.
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: Pick List
Tributary gradient (approximate average slope): 1 %

(c) Flow:
Tributary provides for: Pick List
Estimate average number of flow events in review area/year: Pick List
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: Pick List. Characteristics: .

Subsurface flow: Pick List. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

■ High Tide Line indicated by:	■ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: Pick List. Explain: .

Surface flow is: Pick List

Characteristics: .

Subsurface flow: Pick List. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are Pick List river miles from TNW.

Project waters are Pick List aerial (straight) miles from TNW.

Flow is from: Pick List.

Estimate approximate location of wetland as within the Pick List floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: Pick List

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☒ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: Streams are blue lines on the USGS Topography map.
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☒ Tributary waters: **2557** linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Wetland is bisected by the RPW.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  - Identify type(s) of waters: .
- ☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☐ U.S. Geological Survey Hydrologic Atlas: .
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☐ U.S. Geological Survey map(s). Cite scale & quad name: .
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date): .
  - or ☐ Other (Name & Date): .
- ☒ Previous determination(s). File no. and date of response letter: Field Meeting July 29, 2003 .
- ☐ Applicable/supporting case law: .
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:North Carolina County/parish/borough: Rutherford City: Rutherfordton
Center coordinates of site (lat/long in degree decimal format): Lat. 35.3064° N, Long. -81.9216° W.
Universal Transverse Mercator:
Name of nearest waterbody:
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows:
Name of watershed or Hydrologic Unit Code (HUC):
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): Originally verified in the field by USACE Rep, Steve Lund on July 29, 2003

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☒ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: Broad River.

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** *"waters of the U.S."* within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☒ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☒ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☒ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: 592 linear feet: width (ft) and/or acres.
      Wetlands: 0.01 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: .

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: **Broad River.**

   Summarize rationale supporting determination: The Broad River is used for canoeing and kayaking.

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": NA.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: Pick List
   Drainage area: Pick List
   Average annual rainfall: inches
   Average annual snowfall: NA inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through Pick List tributaries before entering TNW.

   Project waters are Pick List river miles from TNW.
   Project waters are Pick List river miles from RPW.
   Project waters are Pick List aerial (straight) miles from TNW.
   Project waters are Pick List aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: North.
   Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☒ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: Pick List.

Primary tributary substrate composition (check all that apply):

☐ Silts	☐ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: e.
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: Pick List
Tributary gradient (approximate average slope): 1 %

(c) Flow:
Tributary provides for: Pick List
Estimate average number of flow events in review area/year: Pick List
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: Pick List. Characteristics: .

Subsurface flow: Pick List. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: Pick List. Explain: .

Surface flow is: Pick List

Characteristics: .

Subsurface flow: Pick List. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are Pick List river miles from TNW.

Project waters are Pick List aerial (straight) miles from TNW.

Flow is from: Pick List.

Estimate approximate location of wetland as within the Pick List floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: Pick List

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☒ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☒ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: Streams are blue lines on the USGS Topography map.
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☒ Tributary waters: **592** linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☒ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☒ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Wetland is bisected by the RPW.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: **0.01**acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  - Identify type(s) of waters: .
- ☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource: .
- ☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☐ U.S. Geological Survey Hydrologic Atlas: .
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☐ U.S. Geological Survey map(s). Cite scale & quad name: .
- ☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☐ National wetlands inventory map(s). Cite name: .
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date): .
  - or ☐ Other (Name & Date): .
- ☒ Previous determination(s). File no. and date of response letter:Field verified July 29, 2003.
- ☐ Applicable/supporting case law: .
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

March 8, 2006

MEMORANDUM TO: File

FROM: Beverly Robinson BRobinson
Project Development Engineer
Project Development and Environmental Analysis Branch

SUBJECT: Merger Team Meeting for TIP Project
R-2233A, US 221 Widening from the South Carolina State Line to US 74 Bypass, Rutherford County

A NEPA/404 merger team meeting for the subject project was held on February 14, 2006. The following persons were in attendance:

Steve Lund	US Army Corps of Engineers – Asheville
Christopher Militscher	US Environmental Protection Agency – Raleigh
Marella Buncick	US Fish and Wildlife Service - teleconference
Brian Wrenn	NC Division of Water Quality
Marla Chambers	NC Wildlife Resources Commission
Sarah McBride	Cultural Resources – SHPO
Heather Renniger	H.W. Lochner, Inc.
Gregory Christo	Isothermal RPO
Ricky Tipton	Division 13 - teleconference
Roger Thomas	Roadway Design
Sandra Stepney	Roadway Design
Mike Little	Roadway Design
Brian Robinson	Roadway Design
Paul Rochester	Roadway Design
Rick DeCola	Roadway Design
David Chang	Hydraulics Unit
Paul Atkinson	Hydraulics Unit
Ed Lewis	PDEA/Human Environment Unit – PICS
Carla Dagnino	PDEA/Natural Environment Unit
Teresa Hart	Project Development and Environmental Analysis Branch
Jay McInnis	Project Development and Environmental Analysis Branch
Steve Brown	Project Development and Environmental Analysis Branch
Kim Gillespie	Project Development and Environmental Analysis Branch
Beverly Robinson	Project Development and Environmental Analysis Branch

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LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

The purpose of this meeting was to gain concurrence on the least environmentally damaging and practicable alternative (LEDPA) (Concurrence Point 3) for the project.

Project Status

Concurrence was reached on purpose and need and alternatives to study in detail in August 2002. Concurrence Point 2A (bridging decisions) was reached on December 17, 2003. At this meeting the project was broken into six sections. Following the Concurrence Point 2A meeting, Sections 5 and 6 were combined to form Section 5. East side and west side widening alternatives were studied for all sections along the proposed project. The east side widening alternative was eliminated from the study for Section 1. West side widening was eliminated from the study for Sections 3 and 4.

The environmental assessment was approved on May 27, 2005. The public hearing for the proposed project was held September 27, 2005.

Meeting Discussion

NCDOT recommended the following LEDPA for the project:

Section 1: West side widening
Section 2: West side widening from the end of Section 1 to north of the Broad River and east side widening from north of the Broad River to the end of Section 2.
Section 3: East side widening
Section 4: East side widening
Section 5: East side widening

The entire project would have a 46-foot median divided typical section.

Impacts for NCDOT's recommended alternative are as follows:

Section	Stream Impacts (ft)	Wetland Impacts (ac)	Dwarf-flowered Heartleaf Impacts (ac)	Relocatees	
				Homes	Businesses
Section 1	224	0.02	0.01	6	2
Section 2	1091	0.025	0.3	5	0
Section 3	1022	0	0	21	6
Section 4	873	0.05	0.07	13	2
Section 5	592	0.04	0	64	10
Total	3802	0.135	0.38	109	20

Chris Militscher of the US EPA had concerns about the impacts for the combined widening alternative for Section 2. The team discussed the challenges with widening all to the east and all to the west. West side widening from the beginning of Section 2 to north of the Broad River was recommended by NCDOT to avoid impacting a powerline transmission tower and a cemetery on the east side of the roadway along this portion of

Section 2. East side widening from north of the Broad River to the end of Section 2 was proposed as the recommended alternative by NCDOT to avoid impacts to Riverstone Industrial Park. A large dwarf-flowered heartleaf population would also be impacted with west side widening along this portion of Section 2. Mitigation costs along with possible proximity damages to the industrial park, wetland and stream impacts for the combined widening alternative for Section 2 would be higher than that of all east side widening. Ricky Tipton, NCDOT Division 13, commented that constructing a retaining wall at the powerline transmission tower because of east side widening for this portion of Section 2 is acceptable and may be less expensive than impacting the industrial park. The team decided on east side widening as the preferred alternative for Section 2.

The merger team agreed on the following as the preferred alternative for the proposed project.

Section 1:	West side widening
Section 2:	East side widening
Section 3:	East side widening
Section 4:	East side widening
Section 5:	East side widening

The entire project would have a 46-foot median divided typical section. Impacts for the preferred alternative are presented in the table below:

Section	Stream Impacts (ft)	Wetland Impacts (ac)	Dwarf-flowered Heartleaf Impacts (ac)	Relocatees	
				Homes	Businesses
Section 1	224	0.02	0.01	6	2
Section 2	666	0	0.33	1	0
Section 3	1022	0	0	21	6
Section 4	873	0.05	0.07	13	2
Section 5	592	0.04	0	64	10
Total	3377	0.11	0.41	105	20

At the next meeting, information regarding avoidance and minimization for the subject project will be presented to the merger team. Additional information requested by the merger team for the next meeting include the following:

Wildlife passage areas
Possible floodplain piping areas
Possible stream relocations
More detailed Dwarf-flowered heartleaf information

The signed concurrence form is attached. If there are any changes or corrections to these minutes please call me at (919) 733-7844 extension 254.

Section 404\NEPA Merger Project Team Meeting Agreement
Concurrence Point No. 3
Selection of the Least Environmentally Damaging and Practicable Alternative (LEDPA)

Project Description/TIP No./Project No./WBS Element:

NCDOT Project Description: US 221 Widening from the South Carolina State Line to US 74 Bypass, TIP Project No.: R-2233A, State Project No.: 8.1891001, WBS Element: 34509.1.1

The Least Environmentally Damaging and Practicable Alternative for the proposed project is:

Section 1
X West Side Widening
Section 2
X East Side Widening
___ West Side Widening
Section 3
X East Side Widening
Section 4
X East Side Widening
Section 5
X East Side Widening
___ West Side Widening

Additional Information: 46' median along entire length of project.

The Section 404/NEPA Merger project Team concurred on the 14th day of February 2006 with the alternates marked with an "x" listed above.

U.S. Army Corps of Engineers Steven W. [illegible] 2-14-06

U.S. Environmental Protection Agency [illegible] 2-14-06

U.S. Fish and Wildlife Services [illegible] 2/28/06

N.C. Wildlife Resources Commission Mark Chambers 2-14-06

N.C. Department of Cultural Resources [illegible]

N.C. Department of Environment and Natural Resources – DWQ [illegible] 2/14/06

N.C. Department of Transportation Beverly Robinson

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 27, 2006

MEMORANDUM TO: File

FROM: Beverly Robinson
Project Development Engineer
Project Development and Environmental Analysis Branch

SUBJECT: Merger Team Meeting for TIP Project R-2233A, US 221 Widening from the South Carolina State Line to US 74 Bypass, Rutherford County

A NEPA/404 merger team meeting for the subject project was held on May 10, 2006. The following persons were in attendance:

Steve Lund	US Army Corps of Engineers – Asheville
Christopher Militscher	US Environmental Protection Agency – Raleigh
Kathy Matthews	US Environmental Protection Agency- Wetlands Section
Marella Buncick	US Fish and Wildlife Service
John Hennessy	Division of Water Quality
Amy Simes	NCDENR – Liaison for Transportation
Marla Chambers	NC Wildlife Resources Commission
Sarah McBride	Cultural Resources – SHPO
Jake Riggsbee	FHWA
Heather Renniger	H.W. Lochner, Inc.
Gregory Christo	Isothermal RPO
Brian Skeens	Division 13
Roger Thomas	Roadway Design
Sandra Stepney	Roadway Design
Mike Little	Roadway Design
Paul Rochester	Roadway Design
Jay Twisdale	Hydraulics Unit
Carla Dagnino	PDEA/Natural Environment Unit
Brett Feulner	PDEA/Natural Environmental Unit
Zach McNeill	PDEA/Natural Environment Unit
Gene J. Noderino	PDEA/Natural Environment Unit - Mitigation
Teresa Hart	Project Development and Environmental Analysis Branch
Jay McInnis	Project Development and Environmental Analysis Branch
Andy Hussey	Project Development and Environmental Analysis Branch
Beverly Robinson	Project Development and Environmental Analysis Branch

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WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

The purpose of this meeting was to gain concurrence on avoidance and minimization measures (Concurrence Point 4A) for the project.

Project Status

The last merger team meeting was held on February 14, 2006. At that meeting, the team concurred on the Least Environmentally Damaging and Practicable Alternative (LEDPA) (Concurrence Point 3).

The project is divided into 5 sections. These five sections were used to evaluate alternatives. Both east-side and west-side widening were considered in each section. In addition, both a 23-foot and 46-foot median were considered within Section 5.

At the February meeting, the merger team agreed on the following as the preferred alternative for the proposed project:

Section 1:	West side widening
Section 2:	East side widening
Section 3:	East side widening
Section 4:	East side widening
Section 5:	East side widening

The entire project will have a 46-foot median divided typical section.

Meeting Discussion

The following avoidance and minimization measures were made to the project design following the public hearing:

The typical section for the proposed project will involve directional crossovers. This involves providing U-turn bulbs along the proposed project. Several U-turn bulbs were relocated or eliminated to minimize impacts in the project area following the public hearing.

In addition, cut sections along the project will allow a saving of 3 feet minimum as a result of ditch front slopes being reduced from 18 feet to 15 feet. The proposed ditch typical section and the original ditch typical section were included in the Concurrence Point 4A handout.

Several y-lines along the project were adjusted. These adjustments minimized impacts to the project area.

At the last merger meeting, a request was made to evaluate the project for potential wildlife crossing. Following that meeting, accident data for the last six years was reviewed. No areas were found that meet FHWA's definition of "hot spot" for animal collisions. The NCDOT District Office mentioned there have been some deer collisions north of the Broad River, but not enough to warrant a deer crossing sign.

Dwarf-flowered heartleaf site 7 is a North Carolina Heritage Program Registered Heritage Area. Marella Buncick of the US Fish and Wildlife Service suggested trying to avoid this site. Mike Little of the Roadway Design Unit mentioned the slope stakes on the figures do not take into account the headwall for the pipes, therefore, actual impacts may be less.

All streams, wetlands and dwarf-flowered heartleaf locations identified within the project limits were discussed at the meeting. As a result of that discussions the following avoidance and minimization efforts will be investigated:

- Stream K will be ditched instead of piped, if possible.
- Contact property owners at Heartleaf Sites 1 and 5 to discuss possibility for conservation easement.
- Extend right of way at Heartleaf Site 2 to eliminate invasives.
- Revise slope stakes at Heartleaf Site 6, Stream J and Wetland J if possible once hydraulic design is complete.
- Determine if Streams GB and Q upstream are jurisdictional.
- Investigate Y-line issues at Wetland Site Q. The suggestion was made to move the y-line further north. This may increase stream impacts but would avoid a wetland and reduce heartleaf impacts.
- Determine if $1^{1/2}$:1 slopes can be used at Streams GA, GB and G.

Site N is a not jurisdictional. There are no impacts associated with Site N.

There was discussion regarding possible locations along the project for stream relocation. Based on the topography of the project area, there are no locations where stream relocation is feasible.

Jay Twisdale of the Hydraulics Unit mentioned a stream which was not called jurisdictional in the Natural Resources Technical Report which goes through a 4x4 culvert. During his preliminary review of this stream it appeared as if it could be relocated, but after further review he did not think relocation was possible. John Hennessy of the Division of Water Quality asked that this site be reviewed further. Mr. Hennessy said he thinks the stream could be relocated.

Following the Concurrence Point 4A meeting it was determined that Stream Sites J, G and M are potential sites for mitigation.

Chris Militscher, USEPA, requested information regarding locations of 2:1 slopes in the project area be included in the meeting minutes. 2:1 slopes are being used in the vicinity of the following wetlands and streams in the proposed project:

Stream L	Heartleaf Site 5
Stream O	Stream UTI
Heartleaf Site 6	Stream GB
Stream J	Stream GA
Wetland J	Stream G
Heartleaf Site 7	Stream H

Stream M	Stream F
Stream P	Heartleaf Site 2
Heartleaf Site 5	Heartleaf Site 210A
Stream F	Stream D
Stream I	Stream C

The signed concurrence form is attached. If there are any changes or corrections to these minutes please call me at (919) 733-7844 extension 254.

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

Project No./TIP No./Name/Description:
NCDOT Project: 8.1891001, TIP Project: R-2233A, US 221 widening from the South Carolina State Line to US 74 Bypass

Minimization

The typical section for the proposed project will involve directional crossovers. This involves providing U-turn bulbs along the proposed project. Since the public hearing in September 2005 several U-turn bulbs were relocated or eliminated to minimize impacts in the project area.

In addition, cut sections along the project will allow a saving of 3 feet minimum as a result of ditch front slopes being reduced from 18 feet to 15 feet. The proposed ditch typical section and the original ditch typical section are attached.

Several y-lines along the project were adjusted. These adjustments minimize impacts to the project area.

Additional Avoidance\Minimization Measures

- Ditch Stream K if possible.
- Discuss Conservation easement with property owners at Heartleaf Sites 1 and 5.
- Extend R/W at Heartleaf Site 2 to eliminate invasives.
- Revise slope stakes if possible at Heartleaf Site 6, Stream J and Wetland J once Hydraulic design is completed.
- Determine if Streams GB and Q are jurisdictional.
- Investigate Y-line issues at Wetland Site Q.
- Determine if 1½:1 slope stakes can be used at Stream Sites GA, GB and G.

The Section 404/NEPA Merger Project Team concurred on the 10th day of May 2006 with the Avoidance/Minimization measures listed above.

U.S. Army Corps of Engineers	Steven W. Lund
U.S. Environmental Protection Agency	5/10/06
U.S. Fish and Wildlife Services	5/10/06
N.C. Wildlife Resources Commission	5/10/06
N.C. Department of Cultural Resources	
N.C. Department of Environment and Natural Resources – DWQ	
Federal Highway Administration	N/A
N.C. Department of Transportation	

TO: **FILE**

FROM: **Jonathan Henderson, PE**

DATE: **July 27, 2006**

SUBJECT: **R-2233AA 4B Meeting**

HDR

MEMORANDUM
Raleigh, North Carolina

Project Name: **R-2233AA**
WBS 34400.1.1
Rutherford County, NC

On July 26, 2006, following the steps of the "Merger 01" process, the 4B concurrence meeting was held in the Hydraulics Unit conference room for the above-referenced project. In attendance at the meeting were:

Marshall Clawson	NCDOT Hydraulics Unit
John Hennessy	NCDWQ
Jonathan Henderson	HDR
James Rice	HDR
Phil May	HDR
John Jamison	HDR
Mark Staley	NCDOT REU
Carla Dagnino	NCDOT PDEA - NEU
Steve Lund	USACE – Asheville NC
Marella Buncick	USFWS
Chris Militscher	USEPA
Kathy Matthews	USEPA
Donnie Brew	FHWA
Quang Nguyen	NCDOT Structure Design
Beverly Robinson	NCDOT PDEA
Paul Rochester	NCDOT – Roadway Design
Mike Little	NCDOT – Roadway Design
Marla Chambers	NCWRC

Marshall Clawson began the meeting by starting introductions and reviewing a brief history of the project and its prior concurrence points. Jonathan Henderson then began a detailed discussion of the plans as described below sheet by sheet. Comments not related to a specific station or site, or applying to all sites, are included as general comments below. Italics refer to the response given or action needed to resolve the comment.

General Comments:

- John Hennessy, attending in lieu of Brian Wrenn, asked about the status of the 4A concurrence meeting approval and if the stream calls had been confirmed. *4A was approved 5/10/06. The USACE said that the stream calls were confirmed at the July 29,2003 Jurisdictional Determination.*

- Jonathan Henderson discussed the typical sections and where the crown point is located and the available shoulder width on the bridges.
- The streams were labeled on the review set of plans and will be discussed in this meeting using the designations used in the NRTR dated September 2003.
- This project is located in a mountainous region of the State. Because of the fill heights required at culvert locations, shoulder berm gutter is required to protect the slopes from erosion. Based on the topography of this area there were few alternatives for outleting the two grate inlets in the gutter. In general these outlets discharged at the culverts, which are typically located on jurisdictional features. These outlets are CSP pipes with two elbows that follow the slope and discharge from a flat portion of pipe at the bottom.
- All waters on project are class 'C'. Not in water supply watershed, therefore, no HSB
- Steve Lund and an NEU representative are likely to revisit the site over the next few weeks.

Sheet 4:

- Stream O, from the NRTR, is located on this sheet. It is classified as ephemeral and is not a jurisdictional feature.

Sheet 5:

- Stream L is located on this sheet. It is classified as perennial and therefore jurisdictional.
- On the West side of the road, upstream from stream L, there is a pond that we are proposing to breach and drain. A question was asked about the reason for draining the pond. *The pond is to be drained because its embankment falls within the proposed right-of-way. NCDOT does not want to accept the liability and future maintenance of such a facility. Temporary easement will be provided for the draining of the pond.*
- The existing culvert connecting the pond with stream L will be extended to line up with the existing stream.
- The existing drainage swales tying into stream L are not considered jurisdictional. Shoulder berm gutter outlet is discharging into one of these swales north of stream L.

Sheet 6:

- Stream J is located on this sheet and is classified as perennial and therefore jurisdictional.
- .SB gutter outlet at Sta 41+00 right discharges into stream J. Based on the steep topography there are no practical alternatives to this discharge location. These outlets will be CSP with elbows that follow the fill slope down with the last elbow before the outlet so the discharge exists from a flat pipe.

Sheet 7:

- John Hennessy asked if the drainage feature crossing through the 30" RCP at Sta 53+30 was jurisdictional. John asked that this be verified in the field. *This feature was verified to be non-jurisdictional at the July 2003 Jurisdictional Determination.*

Sheet 10:

- Stream P is located on this sheet and classified as intermittent and therefore jurisdictional.

- A spring box will be provided that ties into the 36" RCP upstream of stream P.
- There is a channel running parallel down the north side of Y2. Where this feature crosses the existing road there is a 30" RCP (Sta 86+70) that was not originally included in the plans. *Although, not verified as wetland or stream in the July 2003 JD, these areas will be investigated by* NEU *and* USACE.
- Pipes at Sta 83+50 and Sta 86+70 need to be cleaned out during construction. This will be noted in the plans.

Sheet 11:

- Stream M is located on this sheet and classified as perennial and therefore jurisdictional.
- The Broad River bridge crossing is also located on this sheet. Deck drains will be required on the inside 4 ft shoulder. A trunkline will be provided to convey the deck-drainage beyond the surface water. USFWS was concerned about the potential for scour resulting from the deck drain discharges, as has been observed on other recent projects. Deck drains will outlet over rip-rap on the South abutment.
- The bridge survey report was reviewed and there was a discussion about bent locations and spans. It was decided to leave the bents in the locations proposed for now.
- Preformed scour holes are provided at the outlets of the SB gutter on the bridge approaches. This is one of the few locations where the topography allows these types of measures.

Sheet 13:

- Stream K is located on this sheet and was determined to be intermittent at the July 2003 JD. *This stream will be reviewed in the field by USACE and NEU.*

Sheet 15:

- Stream I is located on this sheet and classified as perennial and therefore jurisdictional. Stream UT I is also on this sheet and is classified as intermittent/perennial. Areas of DFHL are located on both sides of the road in the area of this culvert.
- Relocation of stream UT I from Sta. 146+00 to Sta 148+50 parallel to the road am not feasible due to the surrounding steep topography. This was discussed in 4A as well.
- Crossing at Sta 138+00 (18" RCP) is non-jurisdictional.

Sheet 16:

- Stream UT I continues onto this sheet.

Sheets 22/23:

- Streams GA, GB and G are located on these sheets, classified as perennial, intermittent and intermittent respectively, and all jurisdictional.
- There was some discussion about stream relocation in this area. Current design recommends relocating streams in a lateral ditch beyond the construction limits.
- 1.5:1 slopes would not eliminate the impacts to the stream at the culvert outlet.
- SB gutter outlets directly into stream. No feasible alternative due to topography.

Sheet 24:

- Stream H is located on this sheet but is not impacted by the project at this location.
- There was a discussion about developing a specific line style so that areas of DFHL would be clear on the plans. A *line-type will be developed for endangered species.*

Sheet 25:

- Stream H continues on this sheet. Stream H is classified as perennial and therefore is jurisdictional.
- Stream H is conveyed though an extended culvert on this sheet.
- SB gutter directly discharges into stream H adjacent to the culvert outlet. Topography does not allow for another discharge location. This outlet will be through CSP with two elbows.

Sheet 26:

- Stream F is located on this sheet and is classified as intermittent and therefore jurisdictional.
- Stream F was proposed to be relocated outside of the fill slope in this area and conveyed to the culvert extension. This layout required two 90 degree turns. Stream stabilization was a concern at this site. It was therefore decided to pipe stream F in place and tie that pipe to the culvert with a junction box instead of the open channel. *This change will be incorporated into the design.*
- The culvert outlet will be shortened as much as possible to minimize impacts to the receiving channel. 1.5:1 slopes and a retaining/endwall will be investigated to provide more distance between the outlet of the culvert and the existing 90 degree turn the stream takes ~30 feet downstream.
- An energy dissipater will also be investigated for the outlet of this culvert.
- There is also an area of DFHL near the outlet of this culvert.
- The Floyds Creek bridge crossing is located on this sheet. The bridge survey report was reviewed and there were no comments.

Meeting adjourned.

The preceding minutes are the interpretation of the writers and are assumed to be true. Any errors should be directed to the writers as soon as practical.

cc: Meeting attendees
File

jjj/jrr/jrh

Subject: Minutes from Interagency Hydraulic Design Review Meeting on September 27, 2006 for R-2233AB in Rutherford County, 1:00 PM to 2:00 PM

Team Members:

Rick Tipton – NCDOT Division 13	(present)
Brett Feulner – PDEA-NEU	(present)
Erin Schubert –PDEA – NEU	(present)
Carla Dagnino – PDEA –NEU	(present)
Steve Lund – COE Ashville	(present)
Kim Gillespie – PDEA	(present)
Jameelah El-Amin – PDEA	(present)
Donnie Brew – FHWA	(present)
Chris Militscher – USEPA	(present)
Marla Chambers – NCWRC	(present)
Denise Moldenhau – USFWS	(present)
Brian Wrenn – DWQ	(absent)

Participants:
Marshall Clawson, NCDOT Hydraulics
Stacey Bailey, Greenhorne & O'Mara
Steve Bondor, Greenhorne & O'Mara
Roger Thomas, NCDOT Roadway Design
Brian Robinson, NCDOT Roadway Design
Sterling Ragland, NCDOT Roadway Design
Quang Nguyen, NCDOT Structure Design
Mark Staley, NCDOT Roadside Env. Unit

GENERAL NOTES

- NCDOT and Greenhorne & O'Mara are working together to develop construction plans to widen US 221 from North of Floyd's Creek to North of US 74 Bypass.
- The R-2233AB project has three jurisdictional streams that cross the project and four wetland sites in the vicinity of the project limits. The jurisdictional streams and wetlands are shown on the following plan sheets: sheet 8, 17, 23 and 26.
- Energy dissipation at pipe system outlets will be evaluated, where appropriate.
- At jurisdictional crossings rip rap will be placed on banks and not on the channel bottom.

Plan Sheet 8

- Pipe Crossing at Sta. 12+70 –Y2- (Existing 42" CSP) Jurisdictional Stream to Floyds Creek, wetlands, and endangered species the Dwarf-Flowered Heartleaf population.
  - Preliminary investigation indicates that the pipe is in good condition.
  - The outlet end of the existing pipe is perched approximately 3 to 5 feet above the natural ground, which caused a large scour hole.
  - The proposed grade on –Y2- is approximately 15' higher than the existing roadway. Roger Thomas from NCDOT Roadway Design noted that they attempted to reduce the impacts to the wetland by using a 1.5:1 slope on the roadway fill in the area of the wetland. The NCDOT Geotechnical Branch will have to approve the use of the 1.5:1 slope before it can be proposed for construction.

- Greenhorne and O'Mara proposed to extend the existing 42" CSP pipe with pipe collars to the fill slope.

Plan Sheet 17

- System Outlet at 457+00 –L- RT (Proposed 30" RCP) Jurisdictional Stream to Floyds Creek.

  - The existing channel banks of the jurisdictional stream are eroded in several areas and there is a large scour hole in the channel approximately 250' downstream of the existing pipe 24" CSP

  - The proposed storm drainage system is increasing the discharge from 19 cfs to 35 cfs.

  - Greenhorne and O'Mara proposed to place an energy dissipater at the end of the storm drainage system to reduce the erosion of the jurisdictional stream. This was agreed upon as the best approach.

  - Treatment of the roadway runoff will come from the roadway cut and median ditches before the water enters the storm drainage system.

Plan Sheet 23

- Culvert Crossing at Sta. 534+50 -L- (Existing Double 7'X7' RCBC) Jurisdictional Stream along Long Branch, wetland Sta. 532+50 –L- RT.

  - The existing Culvert is in good condition.

  - NCDOT Structure Design Unit will determine if the existing culvert is adequate for the extra proposed10 feet of fill. If the existing culvert is not able to handle this additional fill, the existing culvert will be replaced with new double 7' X 7' RCBC instead of extending the existing culvert.

  - It was requested that a sill be placed in one barrel of the culvert to a depth of 1' and that baffles be placed in the culvert barrels to mimic the existing stream flow. If the culverts are extended baffles will only be placed in the extensions. If the culverts are replaced baffles will be placed though out the culvert.

    Request was made by WRC (Marla Chambers) to retrofit the culvert with baffles in the existing portion of the culvert, if extended.

  - The 18" pipe that helps to feed the wetland is undersized and needs to be replaced with a 30" pipe.

  - It was decided that instead of replacing the existing 18" pipe in place with a 30" pipe, a lateral ditch would be added along the fill slope from the driveway at Sta. 530+00 –L- RT to the top of the steep slope at Sta. 532+60-L- RT where it will then be picked up in a storm drainage system and piped to the bottom of the slope and discharged into an energy dissipater.

- An earth berm will be placed from the energy dissipater that directs the water back towards the wetland.

Plan Sheet 26

- Jurisdictional stream and wetlands on both sides of the road just past project limits.

  - Greenhorne & O'Mara proposed inlets at the end of the roadway cut ditches with the discharge piped to a preformed scour hole. There was no objection to handling the drainage this way.

  - The treatment for the water in these systems will be provided by the roadway ditches upstream of the inlets.

Meeting Adjourned

TO: **FILE**

FROM: **Jonathan Henderson, PE**

DATE: **January 24, 2008**

SUBJECT: **R-2233AA 4C Meeting**

HDR

MEMORANDUM
Raleigh, North Carolina

Project Name: **R-2233AA**
WBS 34400.1.1
Rutherford County, NC

On January 23, 2008, following the steps of the "Merger 01" process, the 4C concurrence meeting was held in the Hydraulics Unit conference room for the above-referenced project. In attendance at the meeting were:

Marshall Clawson	NCDOT Hydraulics Unit
Dan Duffield	NCDOT Hydraulics Unit
Brian Wrenn	NCDWQ
Marla Chambers	NCWRC
Dave Baker	USACE
Marella Buncick	USFWS
Troy Wilson	USFWS
Kathy Matthews	USEPA
Lonnie Brooks	NCDOT Structure Design
Mark Staley	NCDOT REU
Carla Dagnino	NCDOT PDEA - NEU
Brett Feulner	NCDOT PDEA - NEU
Jameelah El-Amin	NCDOT PDEA
John Nigro	NCDOT – Project Services
Mike Little	NCDOT – Roadway Design
Jonathan Henderson	HDR
James Rice	HDR
Wyatt Yelverton	HDR
Vickie Miller	HDR
John Jamison	HDR

Marshall Clawson began the meeting by starting introductions and reviewing a brief history of the project and its prior concurrence points. Jonathan Henderson then began a detailed discussion of the permit impact sheets described below sheet by sheet. Italics refer to the response given or action needed to resolve the comment.

Sheet 4: Site 1

- No comments

Sheet 5: Site 2

- Brian Wrenn asked about the construction sequence for draining the pond and breaching the embankment. *Marshall replied that Hydraulics typically does not provide that but that he would check with the Construction Unit for any details.*
- Brian Wrenn wanted to be sure that impacts had been accounted for through the end of the outlet rip-rap. *This impact area had been accounted for on the impact sheet and in the summary table.*
- Kathy Matthews inquired about the proposed head ditch at the culvert entrance. *The head ditch shown on the impact sheets is the breach through the embankment. Some discussion followed about whether or not the property owner would rebuild the pond. The pond was used for irrigation and may be rebuilt outside the right-of-way. It had to be breached for this project because NCDOT does not want structural embankment in their right-of-way due to the liability.*

Sheet 6: Site 3

- Used 1.5:1 slopes to minimize wetland and endangered plant impacts at culvert inlet.
- Marella Buncick asked if the actual location of the *Hexastylis naniflora* population was known relative to the impacts. There are also potential indirect effects (clearing, etc.) on the plant population beyond the actual fill slope impacts. *The boundary shown is an approximate area. NCDOT NEU will be responsible for further clarification of impacts during Section 7 consultation.*
- Brian Wrenn asked if rip-rap was placed in the stream. *The rip-rap will not be placed in the bed of jurisdictional streams; there is a note on the plan sheets.*

Sheet 10: Site 4

- The jurisdictional stream and spring box were pointed out on this sheet. *No comments.*

Sheet 11: Site 5

- This site is the Broad River crossing.
- Brian Wrenn asked where the 36 ft of permanent impact was located. *The impacts are for the first bent on the northbound side of the bridge; there is an enlargement of this area on the impact sheet since it is difficult to see.*
- The deckdrains will be collected in a system and discharged over the rip-rap at the south abutment; no drainage will be directed towards the north abutment.

Sheet 12: Site 6

- The jurisdictional stream location has been added by NEU to this sheet and drainage adjusted accordingly following direction given at 4B.

Sheet 15/16: Site 7

- Brian Wrenn questioned if the impacts had been accounted for through the rip-rap outlet protection. *These impacts have been accounted for.*

Sheet 22/23: Site 8

- Fill slope was changed to 1.5:1 to reduce impacts.
- Marla Chambers inquired about the length and slope of the culvert and extensions and condition of the stream. There was a discussion about potentially baffling the extensions. *The stream is very degraded at the existing inlet end. Sediment at the inlet would have to be removed before adding the extension. The area immediately upstream had been logged. It was discussed that there would not be much benefit in providing baffles in the extension due to the remaining long section of existing culvert that would not be baffled.*
- Marla asked if Natural Channel design had been considered. *It had been considered in this area, however the existing topography would not allow it due to steep slopes.*
- Marella Buncick asked about the stability of the realigned channel and its tie to the culvert inlet. *The channel was designed to be stable in the 5 year storm event; it requires rip-rap lining. Channel improvements are required from the inlet of the culvert along the main channel to tie to existing. Steep terrain surrounding this area does not allow for a better entrance angle for the channel.*
- Question was asked about the grade on the proposed channel. *It is relatively flat for this area, the grade is broken and ranges from about 1.5% to 2.5%.*
- Question was asked about stepping the channel down. *The grades are relatively flat, the channel is designed to be stable and stepping the channel could provide the opportunity for a head cut.*

Sheet 25: Site 9

- Marella Buncick inquired about the amount of discharge and if there was any pretreatment for the pipe outleting into this site. *Some of the discharge is running though the roadside ditches and collected into this system; however, there are areas of expressway gutter discharging here also. This site was discussed at the 4B meeting and due to the steepness of the surrounding topography there was no feasible alternative. For outlet stability this outlet was moved to tie into the culvert outlet pad.*
- There was a question about the jurisdiction of an existing channel running parallel to the road on the west side. *Brett Feulner responded that this feature was not jurisdictional.*

Sheets 26: Site 10

- This is the last sheet on the AA portion of the project. The impacts were stopped at the end of AA, station 274+00. We were directed to include all of the impacts for site 10, including those that fall on the AB portion. *All impacts for site 10, up to but not including Floyd's Creek, will be incorporated into the AA impact sheets and summary table.*
- This was another crossing where a 1.5:1 slope was used on the west side of the road to minimize impacts.

Meeting adjourned.

The preceding minutes are the interpretation of the writers and are assumed to be true. Any errors should be directed to the writers as soon as practical.

cc: Meeting attendees
File

jrh

Subject: Minutes from Interagency 4C Permit Drawing Review Meeting on May 14, 2008 for R-2233AB in Rutherford County, 9 AM to 10 AM

Team Members:

Rick Tipton – NCDOT Division 13	(absent)
Jay McInnis – PDEA	(present)
Erin Schubert –PDEA – NEU	(absent)
Carla Dagnino – PDEA –NEU	(absent)
Steve Lund – COE Ashville	(present)
Jameelah El-Amin – PDEA	(present)
Donnie Brew – FHWA	(present)
Kathy Mathews – USEPA	(present)
Marla Chambers – NCWRC	(present)
Marcella Bunlick – USFWS	(present)
Brian Wrenn – DWQ	(absent)
David Wainwright – DWQ	(present)
Tim Arey– Progressive Design Group, Inc	(present)

Participants:
Marshall Clawson, NCDOT Hydraulics
Steve Bondor, Greenhorne & O'Mara
Brian Robinson, NCDOT Roadway Design
Sterling Ragland, NCDOT Roadway Design
Quang Nguyen, NCDOT Structure Design
Mark Staley, NCDOT Roadside Env. Unit
David Bissette, NCDOT Traffic Control
Jeff Walston, NCDOT Roadside Env. Unit

General Comments

- Add site numbers to individual plan sheets
- Add stream names to individual plan sheets
- NCDOT Roadside Environmental will confirm clearing method required, plans currently show Method II

Plan Sheet 8

- Pipe Crossing at Sta. 12+70 –Y2- 42" CSP
  - The agencies requested that NCDOT confirm the upstream limit of the jurisdictional stream. Subsequent to the meeting NCDOT confirmed that the limit shown on the permit drawings is correct.

Plan Sheet 17

- System Outlet at 457+00 –L- RT (Proposed 30" RCP)
  - Confirmed that energy dissipater is larger than pre-formed scour hole (detail will be added to permit drawings).
  - Confirmed that energy dissipater is located within the jurisdictional stream.
  - Confirmed that jurisdictional stream is perennial.

Plan Sheet 23

- Culvert Crossing at Sta. 534+79 -L- (Proposed Double 9'S x 8'R RCBC)

  - Confirmed that bankfull sill is located in left barrel of culvert (this will be noted on drawing).

  - Confirmed that riprap is required on channel banks at downstream end.

Plan Sheet 26

- Jurisdictional stream and wetlands on both sides of the proposed road just past project limits.

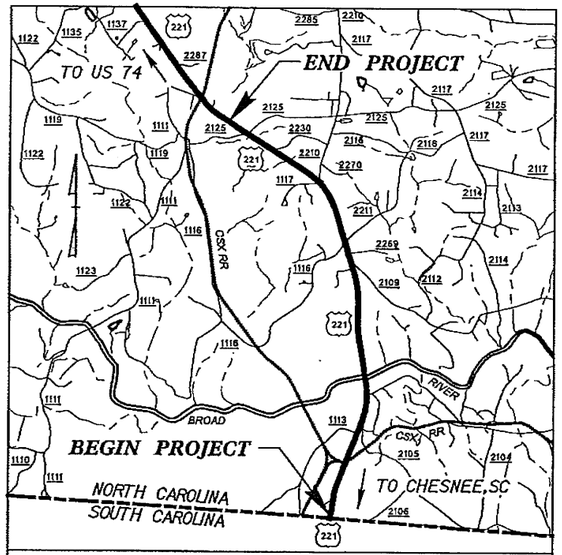
  - Confirmed that the proposed roadway design in the impact area is temporary until the adjacent future project is constructed. The future project will increase the impacts. Discussion occurred to consider revising project limits to include all potential impacts with this project instead of future project. Further discussion however concluded that project limits are acceptable as is because the permanent impacts associated with this project are so small.

Meeting Adjourned

TIP PROJECT: R-2233AA

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

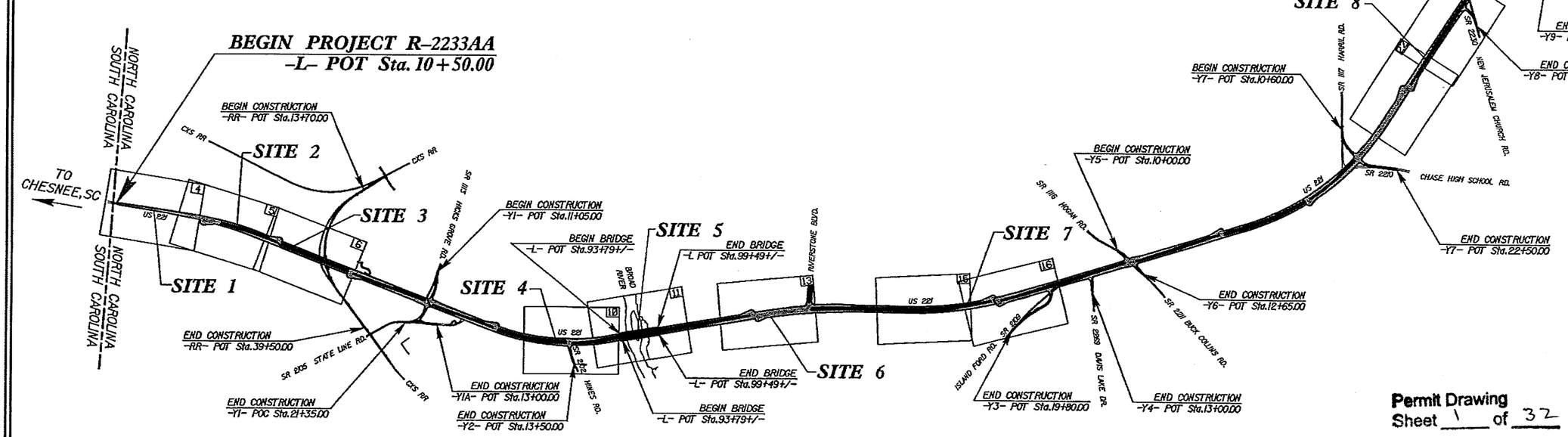
RUTHERFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2233AA	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34400.1.1		P.E.	

LOCATION: US 221 FROM SOUTH CAROLINA STATE LINE TO SOUTH OF FLOYD'S CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES AND RAILROAD REALIGNMENT

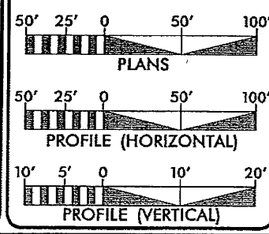
R-2233AA Permit Drawings



R-2233AA Permit Drawings

Permit Drawing Sheet 1 of 32

GRAPHIC SCALES



DESIGN DATA

ADT 2005 =	9,100
ADT 2030 =	16,700
DHV =	11 %
D =	55 %
T =	12 % *
V =	60 MPH
FUNC. CLASS. =	ARTERIAL

* TTST 7% DUAL 5%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2233AA = 4.883 MI.

LENGTH STRUCTURE TIP PROJECT R-2233AA = 0.108 MI.

TOTAL LENGTH OF TIP PROJECT R-2233AA = 4.991 MI.

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh, NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 2007

LETTING DATE: JUNE 16, 2009

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISTION

REVISIONS

NORTH CAROLINA
SOUTH CAROLINA

NAD 83/95

00+00

15+00

20+00

-L- STA. 23+00.00

SEE SHEET NO.5

MATCH LINE

SPECIAL CUT DITCH

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 100 TONS
222 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 3 TONS
10 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 3 TONS
11 SY FILTER FABRIC

2GI(D) W/FLAT GRATE

2GI(B) W/FLAT GRATE

JB

18" CSP*

18" RCP

15"

FALSE SUMP

RETAIN

REMOVE

EXISTING R/W

EIP

US 221
24' WIDE

SITE 1

NORTH CAROLINA
SOUTH CAROLINA

Permit Drawing
Sheet 2 of 32

FILL IN SURFACE WATERS

NOTE: SEE SHEET 29 FOR -L- PROFILE
**ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS*
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

1/9/2008
R:\R2233AA\Permits\r-2233aa_hyd_per_psh04.dgn
cmyers

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS

NAD 8395

SITE 2

DRAIN POND

POND
WET TYP

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 29 TONS
77 SY FILTER FABRIC

LATERAL BASE DITCH

POND BREACH
CLASS 'I' RIP RAP
EST. 20 TONS

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 53 TONS
117 SY FILTER FABRIC

BASE HEAD DITCH
EST. 75 CY DIKE

BERM DITCH

FALSE CUT

PLUG

HW

TOE PROTECTION

REMOVE

EXTEND
5x4 RCBC

MATCH LINE

SEE SHEET NO.4

-L- STA.23+00.00

25+00

30+00

35+00

-L- STA.36+00.00

SEE SHEET NO.6

MATCH LINE

2GI(B)
W/FLAT GRATE
STD 852.06

2GI(B)

FALSE SUMP

18"

15"

24"

EXISTING R/W

US 221

RETAIN

COLLAR
& EXTEND
24" CSP

24" CSP

JB

GRADE
TO
DRAIN

EXTEND
5x4
RCBC
HW

CLASS 'B' RIP RAP
EST. 6 TONS
16 SY FILTER FABRIC

CLASS 'I' RIP RAP
EST. 20 TONS
56 SY FILTER FABRIC

EIP

FILL IN SURFACE WATERS

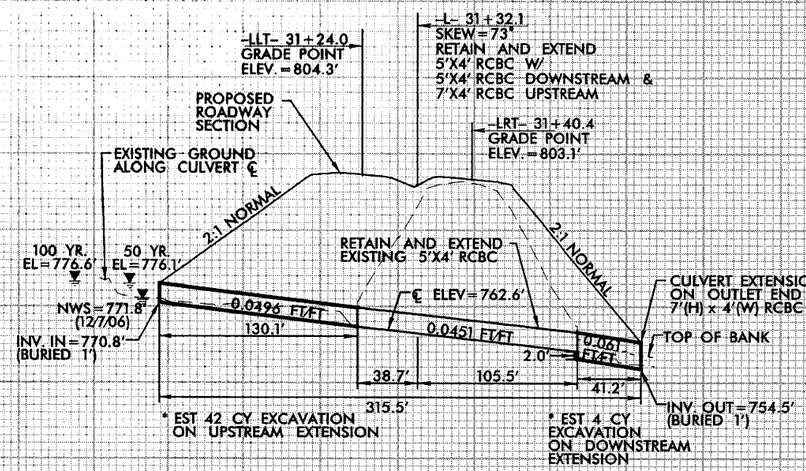
NOTE: SEE SHEET 30 FOR -L-, -LLT- & -LRT- PROFILES
*ALL CSP SHALL HAVE ROD AND LUG
W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED
OF JURISDTICIONAL STREAMS

Permit Drawing
Sheet 3 of 3

1/9/2008
R:\R2233AA\Permits\r-2233aa_hyd_per_psh05.dgn
cmiers

5/28/99

SITE 2 R2233 AA



HYDRAULIC DATA

DRAINAGE AREA	54 ACRES
DESIGN DISCHARGE	100 CFS
DESIGN FREQUENCY	50 YEAR
DESIGN HIGH WATER ELEV	776.1 FEET
BASE DISCHARGE	120 CFS
BASE HIGH WATER ELEV	776.6 FEET
OVERTOPPING DISCHARGE	690 CFS
OVERTOPPING ELEV.	803.5 FEET

PROFILE ALONG ℄ OF CULVERT

*1' HIGH CONCRETE SILLS TO BE PLACED ON 10' CENTERS ALONG THE FULL LENGTH AND WIDTH OF CULVERT.

*NO UPSTREAM STRUCTURES WILL BE IMPACTED BY THE PROPOSED STRUCTURE

*DEBRIS POTENTIAL IS LOW

*THERE WILL BE A 2' DROP AT THE OUTLET END OF THE EXISTING CULVERT TO REDUCE VELOCITY

*ALL DISTANCES ARE MEASURED ALONG THE CULVERT ℄

*NWS WAS OBSERVED AT THE INVERT OF THE EXISTING CULVERT.

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	CSR-5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 4 of 32

1/9/2008
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mwells

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS

MATCH LINE SEE SHEET NO.27 -RR- STA.22+75.00

NAD 83/95

-L- STA.36+00.00

SEE SHEET NO.5

MATCH LINE

SITE 3

40+00

25+00

45+00

30+00

-L- STA.49+00.00

SEE SHEET NO.7

MATCH LINE

-RR- STA.32+50.00

SEE SHEET NO.28

MATCH LINE

EPB

EPB

EXTEND 5:4 ROCK

1.5:1 FILL SLOPE W/ROCK PLATING FOR DFHL

2GI(B) W/FLAT GRATE STD. 852.06

2GI(B) FALSE SUMP

2GI(D)

2GI(B) W/FLAT GRATE

RETAIN

EXISTING R/W

US 221

22 BST

PLUG

REMOVE

BERM DITCH SEE DETAIL "I"

BERM DRAINAGE OUTLET (STD. 850.11)

BERM DITCH

CLASS I RIP RAP EST. 25 TONS 36 SY FILTER FABRIC EST. 15 CY DDE

CLASS B RIP RAP EST. 3 TONS 11 SY FILTER FABRIC

POND WE 7+0

MECHANIZED CLEARING

FILL IN SURFACE WATERS

FILL IN WETLANDS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

Permit Drawing Sheet 5 of 37

1/9/2008
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cmiers

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	CSR-6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

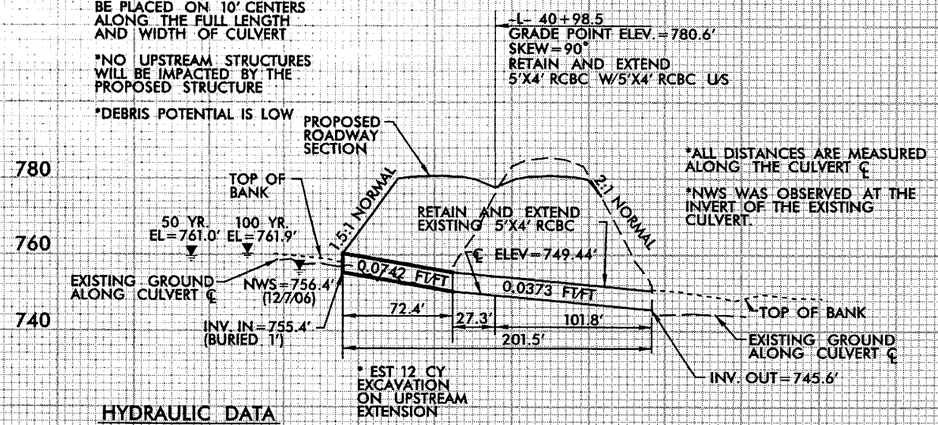
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 3 R2233 AA

*1' HIGH CONCRETE SILLS TO BE PLACED ON 10' CENTERS ALONG THE FULL LENGTH AND WIDTH OF CULVERT

*NO UPSTREAM STRUCTURES WILL BE IMPACTED BY THE PROPOSED STRUCTURE

*DEBRIS POTENTIAL IS LOW



*ALL DISTANCES ARE MEASURED ALONG THE CULVERT ℄

*NWS WAS OBSERVED AT THE INVERT OF THE EXISTING CULVERT.

HYDRAULIC DATA

DRAINAGE AREA	109 ACRES
DESIGN DISCHARGE	110 CFS
DESIGN FREQUENCY	50 YEAR
DESIGN HIGH WATER ELEV.	761.0 FEET
BASE DISCHARGE	140 CFS
BASE HIGH WATER ELEV.	761.9 FEET
OVERTOPPING DISCHARGE	490 CFS
OVERTOPPING ELEV.	780.0 FEET

PROFILE ALONG ℄ OF CULVERT

Permit Drawing
Sheet 6 of 32

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

NAD 83/95

-L- STA. 80+00.00

85+00

90+00

MATCH LINE

SEE SHEET NO.9

SEE SHEET NO.11

-L- STA. 91+00.00

-Y2-

N 74° 33' 19.0" E

N 67° 55' 28.2" E

SITE 4

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 81 TONS
113 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 7 TONS
22 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 8 TONS
21 SY FILTER FABRIC

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 34 TONS
73 SY FILTER FABRIC

LATERAL 'V' DITCH
CLASS 'B' RIP RAP
EST. 24 TONS
53 SY FILTER FABRIC

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 36 TONS
80 SY FILTER FABRIC

LATERAL 'V' DITCH

LATERAL BASE DITCH

SPECIAL CUT DITCH

24" CMP

RETAIN

COLLAR AND EXTEND 24" RCP

PLUG 18" RCP

1st CMP PLUG

FALSE SUMP

COLLAR AND EXTEND 24" RCP 2GI(B)

SPRING BOX

JB

2GI(B)

15"

18"

36"

HW

2GI(B) W/FLAT GRATE

CLEAN OUT PIPE AND DITCH THEN COLLAR AND EXTEND 30" RCP

30" RCP

15" EXISTING R/W

COLLAR AND EXTEND 30" RCP

RETAIN

EXISTING R/W

JB W/MH

INV=697.87

18" CMP

PLUG

24" RCP

GRADE TO DRAIN

SPECIAL CUT DITCH

EXISTING R/W

CMP PLUG

RETAIN

SR 2402 HINES RD.

Permit Drawing
Sheet 7 of 32

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

1/9/2008
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cmyers

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

NAD 83-95

SITE 5

-L- STA.94+00.00

-L- STA.103+00.00

95+00

100+00

PREFORMED SCOUR HOLE

+64 128' LT

BEGIN 6" DECK DRAINS 12' SPACING STA. 93+88 OUTSIDE SHLD.

BRIDGE IDENTIFICATION
STATION -L- 96+49.00
72" MBT
1@89'; 3@120'; 1@99'
SKEW = 90

END DECK DRAINS STA. 94+44 OUTSIDE SHLD.

GRADE TO DRAIN

2GI(B) W/FLAT GRATE

18" CSP

15"

18"

US 221

SEE SHEET NO.10

SEE SHEET NO.12

MATCH LINE

SPECIAL CUT DITCH

CLASS 'II' RIP RAP

+64 110' RT

*REQ'D 6" DECK DRAINS @ 12' SPACING FROM STA. 93+88 TO 96+40 OUTSIDE SHOULDERS ON EACH BRIDGE

END DECK DRAINS STA. 96+40 OUTSIDE SHLD.

BEGIN 6" DECK DRAINS 12' SPACING STA. 93+88 OUTSIDE SHLD.

TS

TOE PROTECTION

+34 116' LT

PREFORMED SCOUR HOLE

FALSE SUMP

CONCRETE LINED DITCH

+34 107' RT

CLASS 'B' RIP RAP
EST. 3 TONS
10 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 3 TONS
30 SY FILTER FABRIC

TS TEMPORARY FILL IN SURFACE WATERS

FILL IN SURFACE WATERS

** CAUSEWAY MUST BE PHASED SO THAT NO MORE THAN HALF THE RIVER WIDTH WILL BE BLOCKED AT ONE TIME.

Permit Drawing Sheet 8 of 32

NOTE: SEE SHEET 33 FOR -L- PROFILE
**ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS - DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS*

1/9/2008
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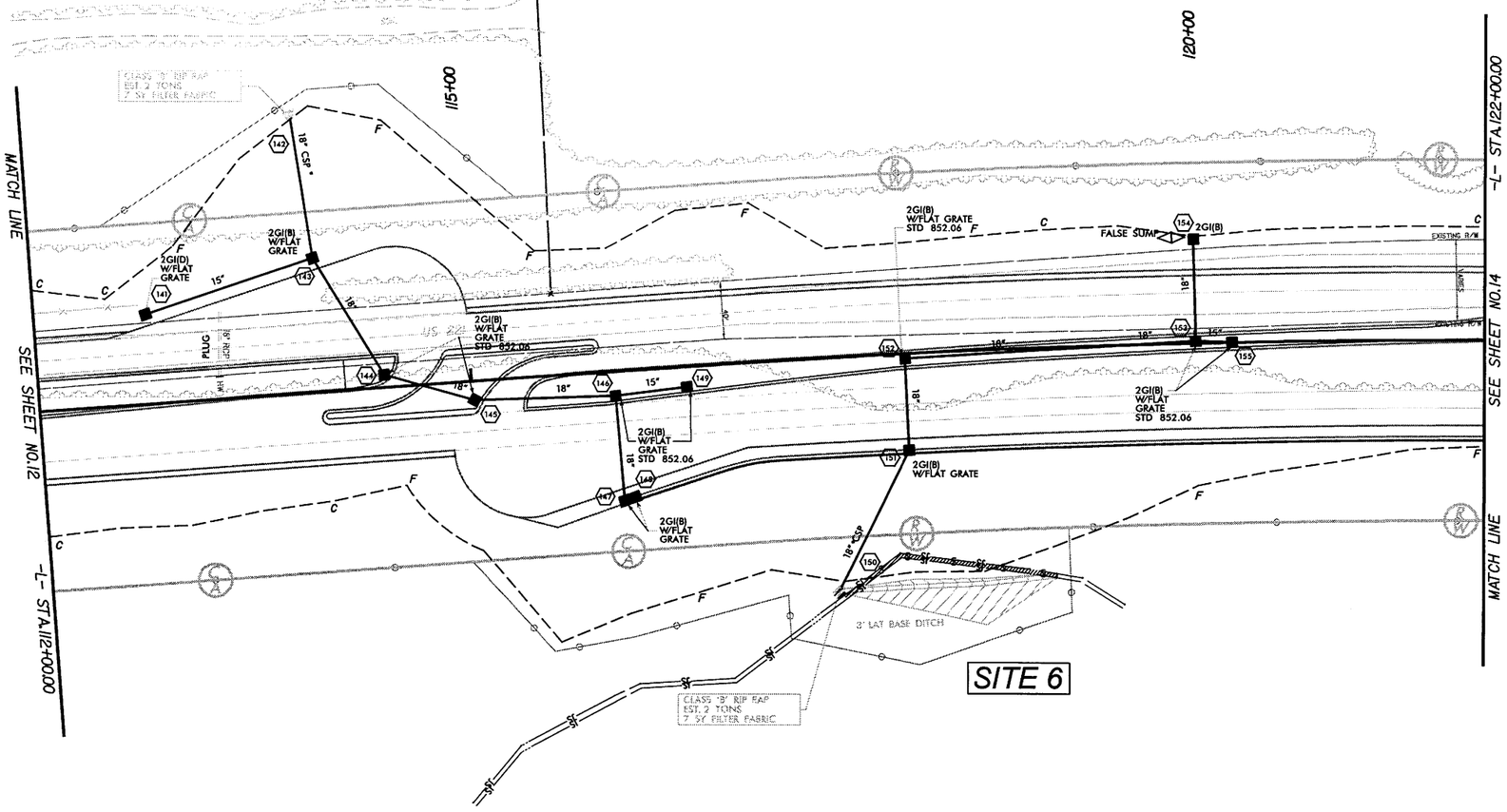
dmiers

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

NAD 83/95



Permit Drawing
Sheet 9 of 32

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

1/9/2008
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cmyers

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

NAD 83/95

-L- STA.135+00.00

135+00

140+00

145+00

MATCH LINE

SEE SHEET NO.14

SEE SHEET NO.16

-L- STA.148+50.00

CLASS 'B' RIP RAP
EST. 5 TONS
7 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 10 TONS
28 SY FILTER FABRIC

SPECIAL CUT DITCH

SPECIAL CUT DITCH

RETAIN

COLLAR AND EXTEND 18" RCP

N 1°05'09.0" E

EXISTING R/W

EXISTING R/W

FALSE SUMP

2GI(B)

18" CSP

24" CSP

2GI(B) W/FLAT GRATE

HW

JB W/SLAB

CLASS IV W/METH B

JB W/SLAB

2GI(B)

FALSE SUMP

EIP

SITE 7

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

Permit Drawing
Sheet 10 of 32

1/9/2008
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cmyers

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

NAD 83/95

-L- STA.148+50.00

MATCH LINE

SEE SHEET NO.15

150+00

155+00

160+00

MATCH LINE

SEE SHEET NO.17

-L- STA.162+50.00

LATERAL V DITCH

BERM DITCH
CLASS "B" RIP RAP
851.29 TONS
464 SY FILTER FABRIC

BERM DRAINAGE OUTLET
(STD. 850.11)

2' BASE
BERM DITCH

BERM DITCH

BERM
DRAINAGE OUTLET
(STD. 850.11)

JB W/SLAB

COLLAR AND
EXTEND 18" RCP

CLASS A
METH B

CLASS B RIP RAP

RETAIN

EXISTING R/W

FALSE SUMP

2GI(B)

24" CSP*

2GI(B)
W/FLAT
GRATE
STD. 852.06

EIP

SITE 7

LATERAL BASE DITCH
CLASS "B" RIP RAP
EST. 24 TONS
53 SY FILTER FABRIC

CLASS "B" RIP RAP
EST. 3 TONS
11 SY FILTER FABRIC

SPECIAL CUT DITCH

REMOVE

SR 2209
ISLAND FORD RD.

S 32° 44' 11.0" E

S 49° 50' 11.5" E

CLASS "B" RIP RAP
EST. 5 TONS
14 SY FILTER FABRIC

SPECIAL BASE DITCH

LATERAL V DITCH

15+00

Permit Drawing
Sheet 11 of 32

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

1/9/2008
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dhurst

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS

NAD 83/95

-L- STA 221+00.00

-L- STA 233+50.00

SEE SHEET NO.21

SEE SHEET NO.23

MATCH LINE

MATCH LINE

225+00

230+00

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 52 TONS
116 SY FILTER FABRIC

HW

EXTEND 4x4 RCBC

RETAIN

FALSE SUMP

2GI(B)

2GI(B) W/FLAT GRATE STD 852.06

N 57°53'00" W

US 221

EXISTING R/W

EIP

RIP RAP @ OF TRANS. EST 2 TONS

REMOVE W/ROCK PLATING

1.5:1 FILL SLOPE

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 2 TONS
7 SY FILTER FABRIC

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 14 TONS
31 SY FILTER FABRIC

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 112 TONS
252 SY FILTER FABRIC

SITE 8

Permit Drawing
Sheet 12 of 32

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

1/31/2008
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cmulgrew

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS

NAD 83/95

-L- STA 233+50.00

SEE SHEET NO.22

MATCH LINE

-L- STA 247+00.00

SEE SHEET NO.24

MATCH LINE

235+00

240+00

245+00

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 147 TONS
326 SY FILTER FABRIC

CLASS 'I' RIP RAP
EST. 100 TONS
EST. 80 SY FILTER FABRIC
EST. 65 CY DDE

1.5:1 FILL SLOPE W/ROCK PLATING

EXTEND 5x6 RCBC

5'-6" CONC

24" CONC FES

RETAIN

293

294

295

2GI(B) W/FLAT GRATE

24"

18"

2GI(B)

296

297

298

299

300

301

302

303

304

305

306

307

308

15"

EIP

EXISTING R/W

US. 221
22' EST

N 57° 53' 10.0" W

PLUG

FALSE SUMP

REMOVE

R/W MON

1.5:1 FILL SLOPE W/ROCK PLATING

EXTEND 5x6 RCBC

HW

CULVERT IS HALF FULL OF SILT AND NEEDS TO BE CLEANED BEFORE EXTENDING

SITE 8

EST 125 CY DDE

LATERAL BASS DITCH
CLASS 'B' RIP RAP
EST. 113 TONS
232 SY FILTER FABRIC

GRADE TO DRAIN

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 33 TONS
73 SY FILTER FABRIC

SPECIAL CUT DITCH

N 75° 22' 23.5" E

NEW JERUSALEM CHURCH RD.

EST. LEAMON DR.

12" CONC

18" CONC

Permit Drawing
Sheet 13 of 32

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

1/9/2008
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cmyers

5/28/99

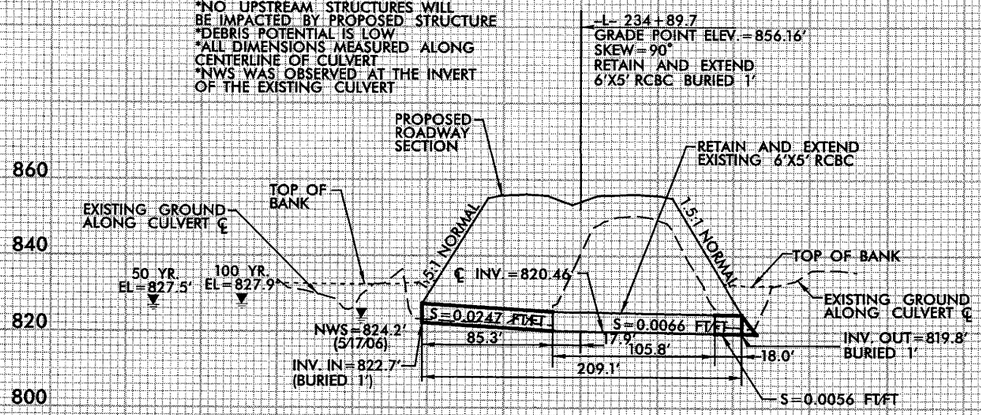
PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	CSR-23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 8 R2233 AA

*NO UPSTREAM STRUCTURES WILL BE IMPACTED BY PROPOSED STRUCTURE
*DEBRIS POTENTIAL IS LOW
*ALL DIMENSIONS MEASURED ALONG CENTERLINE OF CULVERT
*NWS WAS OBSERVED AT THE INVERT OF THE EXISTING CULVERT



HYDRAULIC DATA

DRAINAGE AREA	76 ACRES
DESIGN DISCHARGE	120 CFS
DESIGN FREQUENCY	50 YEAR
DESIGN HIGH WATER ELEV	827.5 FEET
BASE DISCHARGE	140 CFS
BASE HIGH WATER ELEV.	827.9 FEET
OVERTOPPING DISCHARGE	780 CFS
OVERTOPPING ELEV.	855.7 FEET

PROFILE ALONG ℄ OF CULVERT

Permit Drawing
Sheet 14 of 32

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5/8/2008
R-2233AA
culvert

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS

1/9/2008
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cmiers

MATCH LINE SEE SHEET NO.26

-L- STA 269+00.00

NAD 83/95

D&H, LLC

2GI(B) W/FLAT GRATE STD 852.06

SPECIAL CUT DITCH

EXISTING R/W

DESIRED R/W

SR 1126 (HARRISTOWN RD)

REMOVE

FALSE SUMP

REBAR

EIP #4 CNF

WOODS

SECONDARY GROWTH

GRASS

FLAGPOLE

EDGE

GRAVEL PARKING

CROSSTIES

A/S GAS TANK

15+00

2GI(B)

EXTEND WITH 7' X 8' RCBC

EXTEND WITH 7' X 7' RCBC

24" CSP*

1.5:1 FILL SLOPE W/ROCK PLATING

EST. 45 CY DDE

RETAIN

CLASS "B" RIP RAP
EST. 8 TONS
EST. 35 SY FILTER FABRIC
EST. 35 CY DDE

CLASS "B" RIP RAP
EST. 2 TONS
7 SY FILTER FABRIC

SITE 9

-L- STA 260+00.00

SEE SHEET NO.24

MATCH LINE

Permit Drawing
Sheet 15 of 32

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	CSR-25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

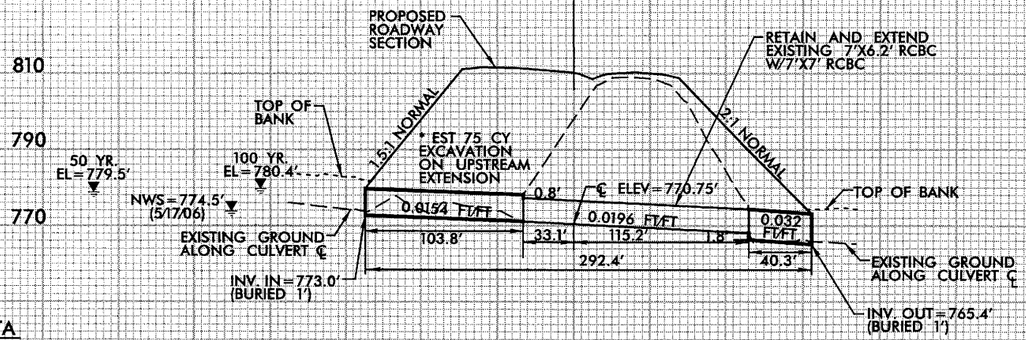
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 9 R2233 AA

*NO UPSTREAM STRUCTURES WILL BE IMPACTED BY THE PROPOSED STRUCTURE
*DEBRIS POTENTIAL IS LOW
*ALL DISTANCES MEASURED ALONG CENTERLINE OF EXISTING CULVERT
*NWS WAS OBSERVED AT THE INVERT OF THE EXISTING CULVERT

-L- 261+30.7
GRADE POINT ELEV.=811.00'
SKEW=120°
RETAIN AND EXTEND 7'X6.2' RCBC W/7'X7' RCBC UPSTREAM & W/7'X8' RCBC DOWNSTREAM



HYDRAULIC DATA

DRAINAGE AREA	.159 ACRES
DESIGN DISCHARGE	.250 CFS
DESIGN FREQUENCY	.50 YEAR
DESIGN HIGH WATER ELEV	.779.5 FEET
BASE DISCHARGE	.310 CFS
BASE HIGH WATER ELEV	.780.4 FEET
OVERTOPPING DISCHARGE	.1355 CFS
OVERTOPPING ELEV	.810.9 FEET

PROFILE ALONG ℄ OF CULVERT

Permit Drawing Sheet 16 of 32

1/9/2008
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jmwise

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS

NAD 83/95

NORTH CAROLINA
SOUTH CAROLINA

10+00

15+00

20+00

-L- STA. 23+00.00

SEE SHEET NO. 5

MATCH LINE

N 9°20'39.2" E

FALSE SUMP

REMOVE

EXISTING R/W

SPECIAL CUT DITCH

2GI(D) W/FLAT GRATE

2GI(B) W/FLAT GRATE

GRAU 350

RETAIN

18" CSP

15" CSP

RETAIN 18

RETAIN 15

REMOVE EXISTING GUARDRAIL

CLASS "B" RIP RAP
EST. 3 TONS
17 SY FILTER FABRIC

SITE 1

EIP

Permit Drawing
Sheet 17 of 32

FILL IN SURFACE WATERS

NOTE: SEE SHEET 29 FOR -L- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

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dmcfee

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISTION

NAD 83'95

REVISIONS

SITE 2

DRAIN POND

LATERAL BASE DITCH
CLASS B RIP RAP
EST. 25 TONS
72 SY FILTER FABRIC

LATERAL BASE DITCH

BERM DITCH

FALSE CUT

MATCH LINE

SEE SHEET NO.4

-L- STA 23+00.00

SEE SHEET NO.6

-L- STA.36+00.00

25+00

30+00

35+00

PLUG

REMOVE

EXTEND 5'x4' RCBC

TOE PROTECTION

RW

2GI(B) W/FLAT GRATE STD 852.06

2GI(B)

FALSE SUMP

RETAIN

COLLAR & EXTEND 24" CSP

EXTEND 5'x4' RCBC HW

GRADE TO DRAIN

EXISTING R/W

EP

Permit Drawing
Sheet 18 of 32

FILL IN SURFACE WATERS

NOTE: SEE SHEET 30 FOR -L-, -LLT- & -LRT- PROFILES
*ALL CSP SHALL HAVE ROD AND LUG
W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED
OF JURISDTICIONAL STREAMS

1/9/2008
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dmyers

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISTION

REVISIONS

MATCH LINE SEE SHEET NO.27 -RR- STA.22+75.00

NAD 83/95

EPB

EPB

SITE 3

-L- STA.36+00.00

-L- STA.49+00.00

40+00

25+00

45+00

30+00

SEE SHEET NO.5

SEE SHEET NO.7

MATCH LINE

MATCH LINE

2GI(B) FALSE SUMP

2GI(B) W/FLAT GRATE STD. 852.06

2GI(D)

2GI(B) W/FLAT GRATE

EXTEND 24" RCP

3.5:1 FILL SLOPE W/ROCK PLATING FOR DFHL

RETAIN

REMOVE

BERM DITCH SEE DETAIL "I"

BERM DRAINAGE OUTLET (STD. 850.11)

18" CSP

24" CSP

15"

18"

24"

EXISTING R/W

CLASS B RIP-RAP 1572 TONS 21 SY FILTER FABRIC

CLASS B RIP-RAP 2457 TONS 32 SY FILTER FABRIC 436 SY FILTER FABRIC

MECHANIZED CLEARING

FILL IN SURFACE WATERS

FILL IN WETLANDS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

SEE SHEET NO.28 -RR- STA.32+50.00

MATCH LINE

Permit Drawing Sheet 19 of 32

1/9/2008
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cmuers

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

NAD 83/95

-L- STA.80+00.00

SHEET NO.9

SEE SHEET

MATCH LINE

85+00

90+00

MATCH LINE

SEE SHEET NO.11

-L- STA.91+00.00

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 91 TONS
114 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 71 TONS
72 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 8 TONS
21 SY FILTER FABRIC

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 66 TONS
74 SY FILTER FABRIC

24" CMP
RETAIN

PLUG
18" RCP
PLUG

COLLAR
AND EXTEND
24" RCP

RETAIN

24"
COLLAR
AND EXTEND
24" RCP 2GI(B)

FALSE SUMP

SPRING BOX

JB

2GI(B)

15"

HW

LATERAL V DITCH

LATERAL BASE DITCH

SITE 4

LATERAL V DITCH
CLASS 'B' RIP RAP
EST. 24 TONS
53 SY FILTER FABRIC

SPECIAL CUT DITCH

EXISTING R/W

N 74°33'19.0" E

-Y2-

DRY PLUG

RETAIN

N 67°55'28.2" E

INV=694.10

2GI(B)
W/FLAT GRATE

CLEAN OUT PIPE
AND DITCH THEN
COLLAR AND
EXTEND 30" RCP

15" SLOTTED R/W

18" CMP

2GI(B)
W/FLAT GRATE

COLLAR
AND EXTEND
30" RCP

RETAIN

EXISTING R/W

JB W/MH

30"

18"

LATERAL V DITCH
CLASS 'B' RIP RAP
EST. 76 TONS
80 SY FILTER FABRIC

GRADE
TO
DRAIN

1%

Permit Drawing
Sheet 20 of 32

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG
W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED
OF JURISDICTIONAL STREAMS

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dmyers

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

NAD 1983

SITE 5

-L- STA. 91+00.00

-L- STA. 103+00.00

95+00

100+00

SEE SHEET NO.10

SEE SHEET NO.12

MATCH LINE

MATCH LINE

PREFORMED SCOUR HOLE

+64 128' LT

GRADE TO DRAIN

2GI(B) W/FLAT GRATE

18" CSP*

15"

BEGIN 6" DECK DRAINS 12' SPACING STA. 93+88 OUTSIDE SHLD.

BRIDGE IDENTIFICATION STATION -L- 96+49.00 72" MBT 1@89', 3@120', 1@99' SKEW = 90

END DECK DRAINS STA. 94+44 OUTSIDE SHLD.

US 221

SPECIAL CUT DITCH

CLASS 'I' RIP RAP

+64 110' RT

END DECK DRAINS STA. 96+40 OUTSIDE SHLD.

*REQ'D 6" DECK DRAINS @ 12' SPACING FROM STA. 93+88 TO 96+40 OUTSIDE SHOULDERS ON EACH BRIDGE

+34 116' LT

TOE PROTECTION

FALSE SUMP

CONCRETE LINED DITCH

+34 107' RT

CLASS 'B' RIP RAP EST. 3 TONS 10 SY FILTER FABRIC

TS TEMPORARY FILL IN SURFACE WATERS

FILL IN SURFACE WATERS

** CAUSEWAY MUST BE PHASED SO THAT NO MORE THAN HALF THE RIVER WIDTH WILL BE BLOCKED AT ONE TIME.

NOTE: SEE SHEET 33 FOR -L- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

Permit Drawing Sheet 21 of 33

1/3/2008
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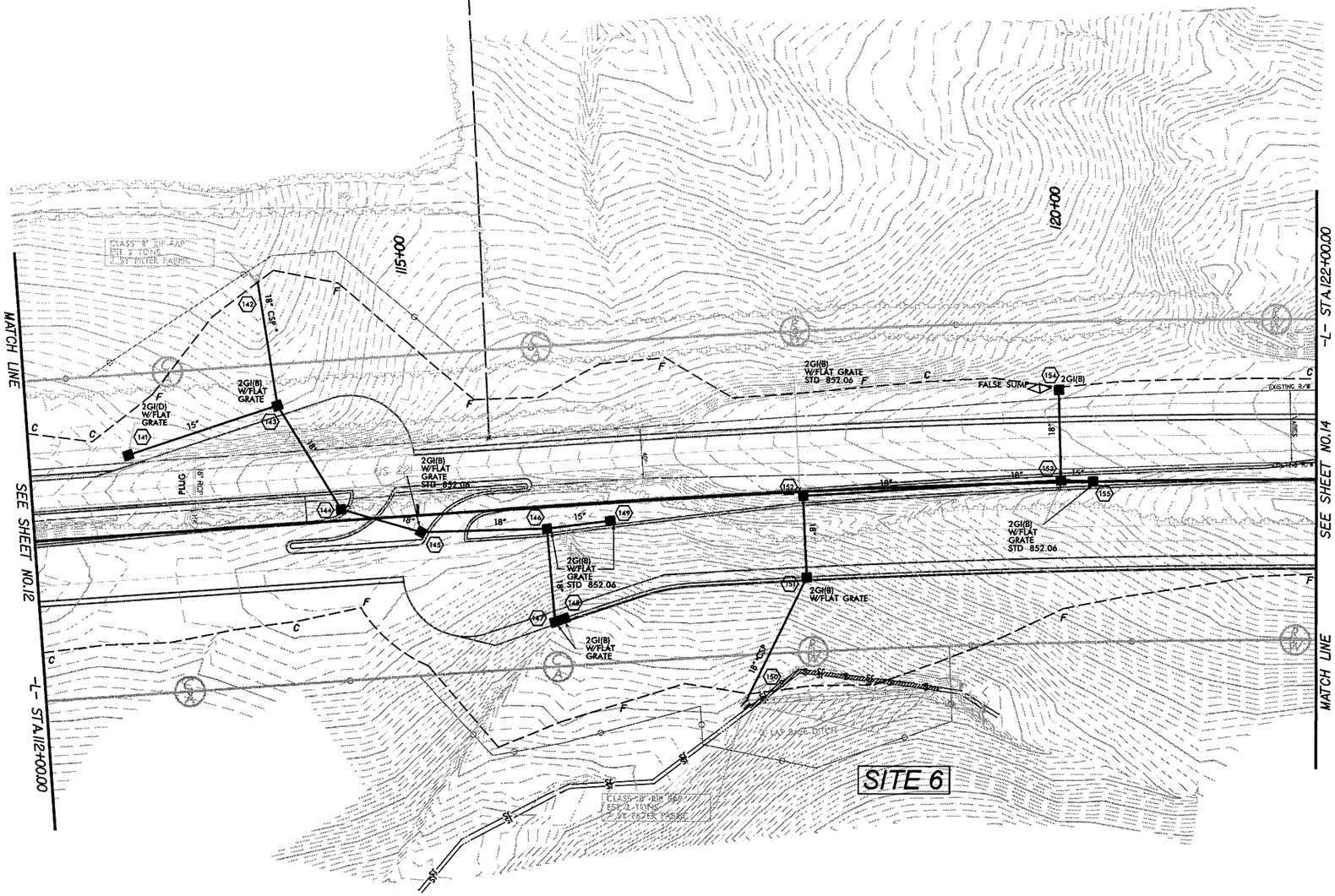
cmuprez

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

NAD 83/95



Permit Drawing
Sheet 87 of 32

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

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emagers

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

NAD 83/95

-L- STA.135+00.00

135+00

140+00

145+00

MATCH LINE

SEE SHEET NO.14

SEE SHEET NO.16

-L- STA.148+50.00

N 1°05'09.0" E

COLLAR AND EXTEND 18" RCP

FALSE SUMP

2GI(B)

2GI(8)

JB W/SLAB

2GI(B) W/FLAT GRATE

18" CSP

24" CSP

30" CLASS IV W/MITH B

RETAIN

SPECIAL CUT DITCH

SITE 7

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

Permit Drawing Sheet 23 of 32

1/3/2008
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omyers

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

NAD 83/95

-L- STA. 148+50.00

SEE SHEET NO. 15

MATCH LINE

150+00

155+00

160+00

MATCH LINE

SEE SHEET NO. 17

-L- STA. 162+50.00

15+00

SITE 7

BERM DRAINAGE OUTLET (STD. 850.11)

2' BASE BERM DITCH

BERM DITCH

RETAIN

FALSE SUMP

2GI(B)

2GI(B) W/FLAT GRATE STD. 852.06

24" CSP

COLLAR AND EXTEND 18" RCP

JB W/SLAB

CLASS 'B' RIP RAP

CLASS IV (MODIFIED) RIP RAP

LATERAL BASE DITCH
CLASS 'B' EIP RAP
EST. 24 TONS
33 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 5 TONS
14 SY FILTER FABRIC

SPECIAL CUT DITCH

SPECIAL BASE DITCH

ISLAND POND RD.

SR 2109

EXISTING R/W

REMOVE

EIP

S 32° 44' 11.0" E

S 49° 50' 11.5" E

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

Permit Drawing
Sheet 84 of 32

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dlupe2

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISTION

REVISIONS

NAD 83/95

-L- STA.221+00.00

-L- STA.233+50.00

SEE SHEET NO.21

SEE SHEET NO.23

MATCH LINE

MATCH LINE

225+00

230+00

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 52 TONS
114 SY FILTER FABRIC

FALSE SUMP

2GI(B)

EXTEND 4x4 RCBC

HW

2GI(B) W/FLAT GRATE STD 852.06

RETAIN

N 57°53'10.0" W

EXISTING R/W

EIP

CSP

1.5:1 FILL SLOPE W/ROCK PLATING REMOVE

RIP RAP @ CP TRANS. EST. 2 TONS

SITE 8

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 14 TONS
31 SY FILTER FABRIC

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 113 TONS
252 SY FILTER FABRIC

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

Permit Drawing
Sheet 25 of 32

1/9/2008
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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISTION

REVISIONS

NAD 83'95

-L- STA. 233+50.00

SEE SHEET NO.22

-L- STA. 247+00.00

SEE SHEET NO.24

MATCH LINE

MATCH LINE

235+00

240+00

245+00

SITE 8

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 147 TONS
326 SY. FILTER FABRIC

CLASS 'B' RIP RAP
EST. 100 TONS
EST. 30 SY. FILTER FABRIC
EST. 45 CY. SOIL

1.5:1 FILL SLOPE W/ROCK PLATING

EXTEND 5x6 RCBC

RETAIN

2GI(B) W/FLAT GRATE

2GI(B)

FALSE SUMP

N 57°53'10.0" W

REMOVE

GRADE TO DRAIN

EXISTING R/W

EIP

EOP

CSP

RCBC

SPECIAL CUT DITCH

N 73°22'29.5" E

LATERAL BASE DITCH
CLASS 'B' RIP RAP
EST. 33 TONS
73 SY. FILTER FABRIC

CULVERT TO BE HALF FULL OF SILT AND NEEDS TO BE CLEANED BEFORE EXTENDING

EST. 125 CY. SOIL

Permit Drawing
Sheet 26 of 32

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISTION

REVISIONS

MATCH LINE

SEE SHEET NO.26

-L- STA 269+00.00

NAD 83/95

D&H, LLC

2GI(B) W/FLAT GRATE STD 852.06

2GI(B)

FALSE SUMP

EXTEND WITH 7' X 8' RCBC

EXTEND WITH 7' X 7' RCBC

1.5:1 FILL SLOPE W/ROCK PLATING

RETAIN

REMOVE

REBAR

CLASS B RIP RAP EST. 2 TONS
2 SY FILTER FABRIC

CLASS B RIP RAP EST. 9 TONS
9 SY FILTER FABRIC
EST. 45 LF DDE

SPECIAL CUT DITCH

SECONDARY GROWTH

WOODS

GRAVEL PARKING

CROSSTIES

EXISTING EDGE

EXISTING R/W

SITE 9

-L- STA 260+00.00

SEE SHEET NO.24

MATCH LINE

Permit Drawing
Sheet 27 of 32

FILL IN SURFACE WATERS

NOTES: SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 42 FOR -RR- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

1/9/2008
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mmoore

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-L- STA.269+00.00

SEE SHEET NO.25

MATCH LINE

NAD 83/95

OTHORNELL HARRIS

ROBERT R. HARRIS

SAMUEL HARRIS

CALLY HARRIS MCCLAIN

HARVEY E. HARRIS

JAMES H. SIMMONS

CLASS 'B' RIP RAP EST. 3 TONS 6 SY FILTER FABRIC

FALSE SUMP

15" CSP

2GI(B)

DI STD 852.06

RETAIN AND EXTEND 4X4 RCBC W/84" RCP

RETAIN 4' X 4' CONC

2-4' CONC WW

18" W.M. 350

2GI(B) W/PLAT GRATE

TYPE B-77

GRAU-350

SPECIAL BASE DITCH SEE DETAIL "D"

LATERAL BASE DITCH SEE DETAIL 'F' EST. 26 CY DOE CLASS 'B' RIP RAP EST. 18 TONS 40 SY FILTER FABRIC

LOCATION OF SEPTIC SYSTEM UNKNOWN?

BRIDGE I.D. STATION -L-280+04.28 -SBL- 63° MST 1@52', 1@105', 1@63' SKEW=70°

PREFORMED SCOUR HOLE

BRIDGE I.D. STATION -L-280+21.17 -NBL- 63° MST 1@52', 1@105', 1@63' SKEW=70°

STATION -L-280+12.73

CLASS II RIP RAP

18" CSP

"RSQ'D 6" DECK DRAIN SYSTEM 15' SPACING ON SOUTH BOUND BRIDGE FROM STA.279+09 TO 279+45 AND FROM STA. 280+12 TO 281+08 ON THE INSIDE SHOULDER.

NO DECKDRAINS REQUIRED

FLOYDS CREEK

SITE 10

US 221

CONC

CHORD

FILL IN SURFACE WATERS

NOTE: SEE SHEET 41 FOR -L- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

Permit Drawing Sheet 28 of 32

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

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SEE SHEET NO.25 -L- STA.269+00.00

MATCH LINE

NAD 83/95

SITE 10

US 221

OTHORNELL HARRIS

ROBERT R. HARRIS

SAMUEL HARRIS

CALLY HARRIS MCCLAIN

HARVEY E. HARRIS

JAMES H. SIMMONS

CLASS 'B' RIP RAP
EST. 1 TONS
& ST. FILTER FABRIC

RETAIN AND EXTEND 4'x4' RCBC W/54" RCP

RETAIN 4' X 4' CONC

FALSE SUMP

SPECIAL BASE DITCH SEE DETAIL "D"

LATERAL BASE DITCH
SEE DETAIL "P"
EST. 26 CY DDE
CLASS 'B' RIP RAP
EST. 18 TONS
40 SY FILTER FABRIC

LOCATION OF SEPTIC SYSTEM UNKNOWN

NO DECK DRAINS REQUIRED.

FIXED 6" DECK DRAIN SYSTEM
6" SPACING ON SOUTH BOUND
BRIDGE FROM STA.279+09 TO 279+45
AND FROM STA.280+12 TO 281+08
ON THE INSIDE SHOULDER.

BRIDGE I.D. STATION
-L-280+04.28 -SBL-
44' WBT
19@7', 1@8', 19@7'
SKEW=70°

STATION -L-280+12.72
PREFORMED SCOUR HOLE
BRIDGE NO. STATION
-L-280+21.17 -NBL-
63' NBT
1@52', 1@105', 1@63'
SKEW=70°

Permit Drawing Sheet 29 of 39

FILL IN SURFACE WATERS

NOTE: SEE SHEET #1 FOR -L- PROFILE
*ALL CSP SHALL HAVE ROD AND LUG W/ SLEEVE GASKET CONNECTORS
- DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	16+67 -L-	18" RCP						<0.01		90		
2	31+32	5 x 4 RCBC						0.022		205		
3	40+98	5 x 4 RCBC	<0.01			<0.01		0.035		109		
4	83+59	36" RCP						0.019		188		
5	96+49	BRIDGE						<0.01	0.130		127	
6	118+00	ROADWAY FILL						0.011		156		
7	146+61 - 149+03	3 x 3 RCBC						0.051		615		
8	232+53 - 234+90	5 x 6 RCBC						0.103		832		
9	261+33	7 x 7 RCBC						0.010		210		
10	272+34 - 274+00	ROADWAY FILL						0.040		408		
TOTALS:			<0.01	0.000	0.000	<0.01	0.000	0.283	0.130	2813	127	0

*36 feet of impacts associated with bridge piers

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY
34400.1.1 (R-2233AA)

SHEET 30 of 32 11/5/2008

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
1	BETTY WEASE ALLEN	RTE. 2, BOX 251 MOORESBORO, NC 28114	1
2	RONALD L. GREENE	7162 US HWY 221S MOORESBORO, NC 28114	2, 3
3	HOWARD L. PARRIS	7061 US HWY 221S MOORESBORO, NC 28114	2, 3
4	MIKEL L. PARRIS	7141 US HWY 221S MOORESBORO, NC 28114	2
5	MARTHA B. SIMS	2541 ROCK RD. RUTHERFORDTON, NC 28139	4
6	FLOYD L. BUCKNER	130 HINES RD. MOORESBORO, NC 28114	4
7	JAMES L. GRANT	794 HARRIS-HOLLY SPRINGS RD. RUTHERFORDTON, NC 28139	4
8	GEORGE W. TURNER	159 WAGON TRAIL MOORESBORO, NC 28114	4, 5
9	LEID CORPORATION	300 DALLAS ST. SPINDALE, NC 28160	5, 6
10	STEPHEN D. LOWE	2507 BETHEL CHURCH RD JONESVILLE, NC 28642	7

NORTH CAROLINA

DIVISION OF HIGHWAYS

RUTHERFORD COUNTY

PROJECT: 34400.1.1 (R-2233AA)

US 221

SHEET 31 OF 32 11/16/07

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
11	BOYCE C. GREENE, SR.	2117 ISLAND FORD RD. MOORESBORO, NC 28114	7
12	FRANK B. GODFREY	5241 US HWY 221S FOREST CITY, NC 28043	8
13	TOMMY M. ROBBINS	164 BROOKFIELD DR. FOREST CITY, NC 28043	8
14	HICKS W. HELTON	1817 ISLAND FORD RD. MOORESBORO, NC 28114	8
15	BILLY D. HONEYCUTT	333 LAMBS GRILL RD. RUTHERFORDTON, NC 28139	8
16	ARNITA CAMP	UNIT 15333 FOREST CITY, NC 28043	8
17	HANNAH R. THOMPSON	212 FOREST ST. FOREST CITY, NC 28043	9
18	JAMES H. SIMMONS	P.O. BOX 31682 CHARLOTTE, NC 28231	9
19	ORTHORNELL HARRIS	5235 W. JEFFERSON ST. PHILADELPHIA, PA 19131	10

NORTH CAROLINA

DIVISION OF HIGHWAYS

RUTHERFORD COUNTY

PROJECT: 34400.1.1 (R-2233AA)

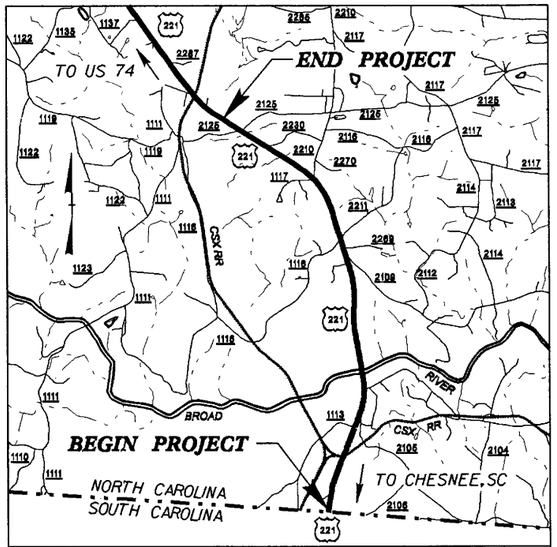
US 221

SHEET 32 OF 32 11/16/07

TIP PROJECT: R-2233AA

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY

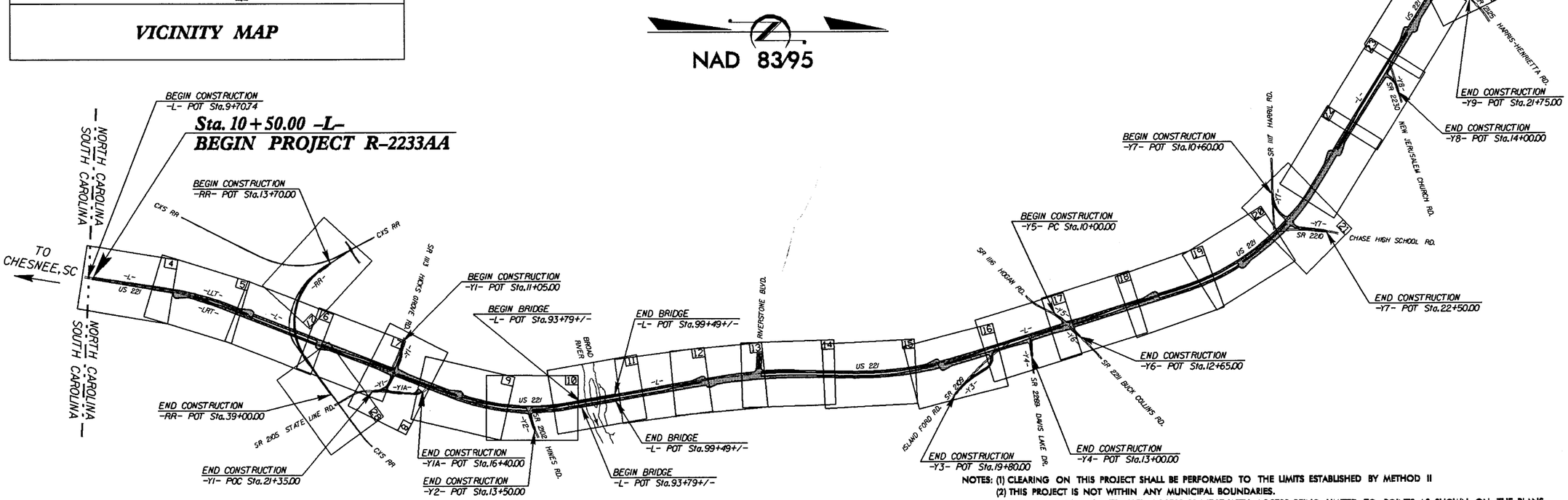
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2233AA	1	

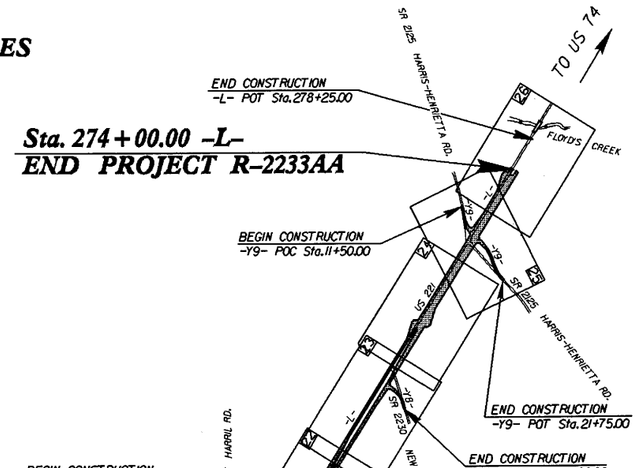
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34400.1.1	NHF-221(9)	P.E.
34400.2.2		R/W & UTIL.

LOCATION: US 221 FROM SOUTH CAROLINA STATE LINE TO SOUTH OF FLOYD'S CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES AND RAILROAD REALIGNMENT

NAD 83/95





NOTES: (1) CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II
(2) THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
(3) THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

GRAPHIC SCALES

PLANS: 50' 25' 0 50' 100'

PROFILE (HORIZONTAL): 50' 25' 0 50' 100'

PROFILE (VERTICAL): 10' 5' 0 10' 20'

DESIGN DATA

ADT 2007 =	9,708
ADT 2030 =	16,700
DHV =	11 %
D =	55 %
T =	12 % *
V =	60 MPH
FUNC. CLASS. =	ARTERIAL

* TTST 7% DUAL 5%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2233AA = 4.898 MI.

LENGTH STRUCTURE TIP PROJECT R-2233AA = 0.108 MI.

TOTAL LENGTH OF TIP PROJECT R-2233AA = 5.006 MI.

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.
Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 29, 2007

LETTING DATE: JUNE 16, 2009

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

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10/25/05

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	1-B

Note: Not to Scale

S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- Existing Control of Access
- Proposed Control of Access
- 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
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — 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 — TV
- 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:

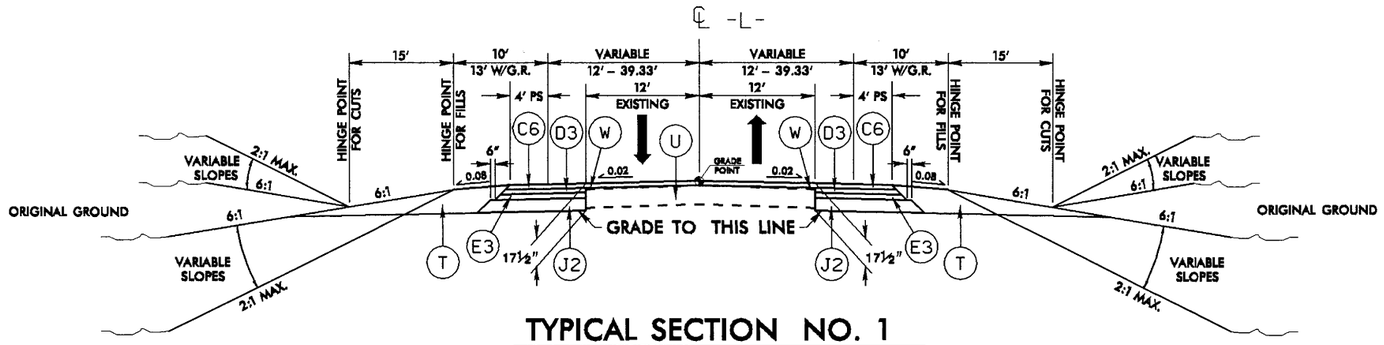
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

6/2/99

C6	3" @ 9.5C
D3	3" @ 10.0C
E3	3½" @ 25.0C
J2	8" ABC
J3	VAR. DEPTH ABC
R3	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

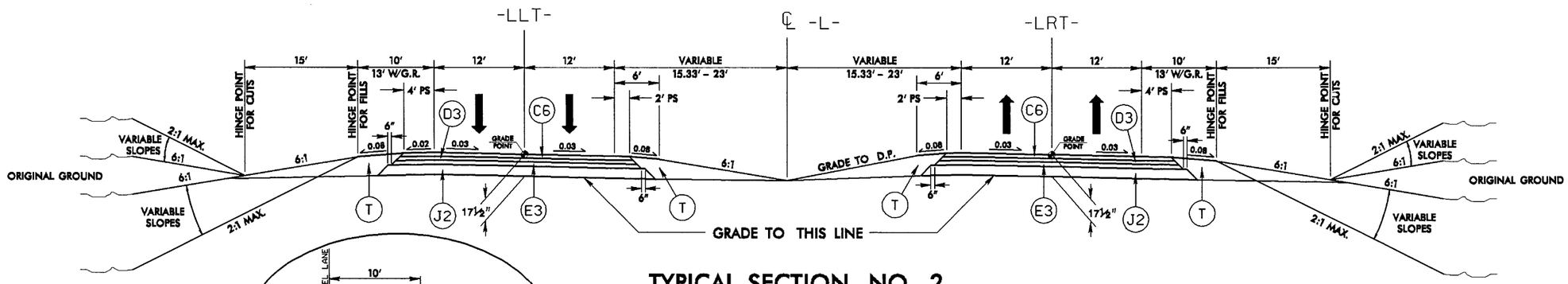
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



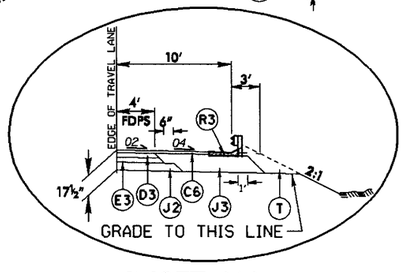
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 10+50.00 TO -L- STA. 27+40.00

USE INSET 'A'
-L- STA. 14+25.00 RT. TO -L- STA. 19+25.00 RT.
-L- STA. 15+00.00 LT. TO -L- STA. 18+75.00 LT.



TYPICAL SECTION NO. 2



INSET 'A'

USE TYPICAL SECTION NO. 2
-LLT- STA. 27+40.00 TO -LLT- STA. 32+02.67
-LRT- STA. 27+40.00 TO -LRT- STA. 31+97.46

USE INSET 'A'
-L- STA. 31+25.00 RT. TO -L- STA. 32+00.00 RT.

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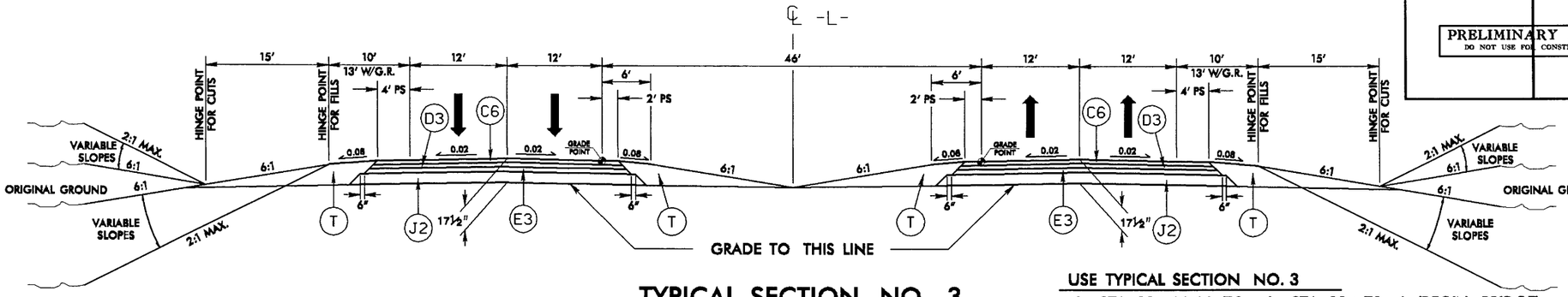
6/2/99

C6	3" @ 9.5C
D3	3" @ 19.0C
E3	3½" @ 25.0C
J2	8" ABC
J3	VAR. DEPTH ABC
R2	CONCRETE EXPRESSWAY GUTTER
R3	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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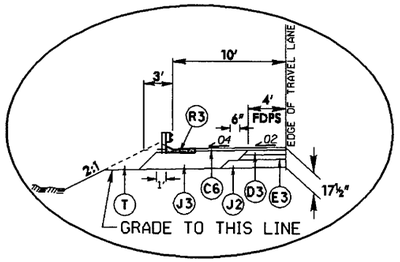
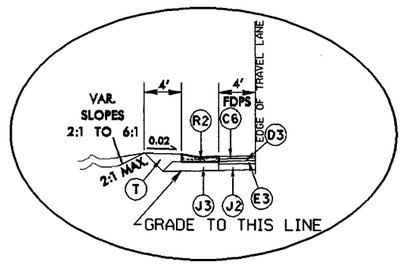


INSET 'A'



INSET 'B'

USE TYPICAL SECTION NO. 3

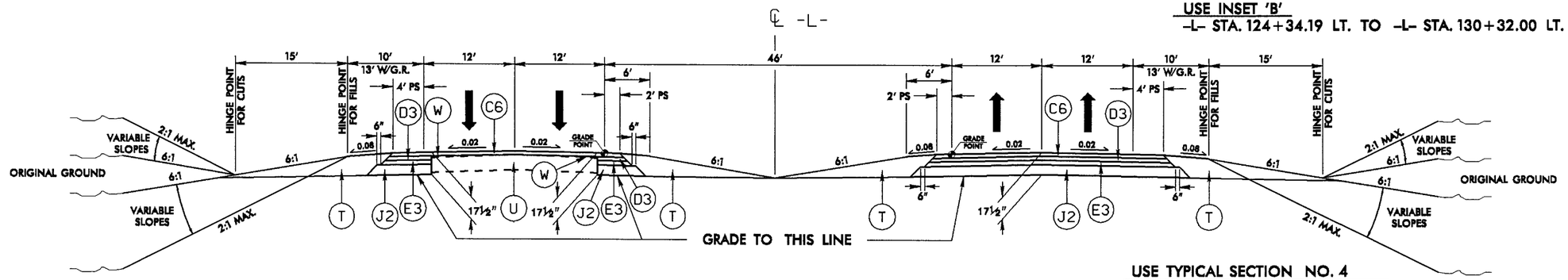
-L- STA. 32+00.00 TO -L- STA. 93+79+/- (BEGIN BRIDGE)
-L- STA. 99+49+/- (END BRIDGE) TO -L- STA. 106+00.00
-L- STA. 119+00.00 TO -L- STA. 130+00.00
-L- STA. 187+00.00 TO -L- STA. 238+00.00

USE INSET 'A'

-L- STA. 32+00.00 RT. TO -L- STA. 33+74.98 RT.
-L- STA. 40+31.00 LT. TO -L- STA. 41+81.00 LT.
-L- STA. 40+56.00 RT. TO -L- STA. 42+06.00 RT.
-L- STA. 51+80.95 RT. TO -L- STA. 56+85.95 RT.
-L- STA. 59+50.40 RT. TO -L- STA. 61+97.71 RT.
-L- STA. 67+31.14 LT. TO -L- STA. 70+75.00 LT.
-L- STA. 82+82.33 LT. TO -L- STA. 88+75.00 LT.
-L- STA. 92+25.00 LT. TO -L- STA. 93+54.00 LT.
-L- STA. 92+88.00 RT. TO -L- STA. 93+54.00 RT.
-L- STA. 99+74.00 LT. TO -L- STA. 103+25.00 LT.
-L- STA. 101+77.00 RT. TO -L- STA. 104+25.00 RT.
-L- STA. 119+00.00 RT. TO -L- STA. 130+00.00 RT.
-L- STA. 192+00.00 LT. TO -L- STA. 195+00.00 LT.
-L- STA. 204+12.46 RT. TO -L- STA. 206+56.41 RT.
-L- STA. 225+00.00 LT. TO -L- STA. 226+50.58 LT.
-L- STA. 229+72.83 RT. TO -L- STA. 232+11.31 RT.
-L- STA. 231+50.02 LT. TO -L- STA. 237+00.00 LT.
-L- STA. 233+11.31 RT. TO -L- STA. 236+25.00 RT.

USE INSET 'B'

-L- STA. 124+34.19 LT. TO -L- STA. 130+32.00 LT.



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-L- STA. 106+00.00 TO -L- STA. 119+00.00
-L- STA. 130+00.00 TO -L- STA. 187+00.00
-L- STA. 238+00.00 TO -L- STA. 274+00.00

USE INSET 'A'

-L- STA. 112+72.84 LT. TO -L- STA. 115+39.63 LT.
-L- STA. 115.98.37 RT. TO -L- STA. 119+00.00 RT.
-L- STA. 130+00.00 RT. TO -L- STA. 130+74.96 RT.
-L- STA. 144+75.00 LT. TO -L- STA. 148+75.00 LT.
-L- STA. 152+95.00 RT. TO -L- STA. 154+75.00 RT.
-L- STA. 246+25.00 RT. TO -L- STA. 249+20.34 RT.
-L- STA. 250+20.35 RT. TO -L- STA. 255+75.00 RT.
-L- STA. 258+50.00 RT. TO -L- STA. 262+25.10 RT.
-L- STA. 258+82.00 LT. TO -L- STA. 263+00.00 LT.

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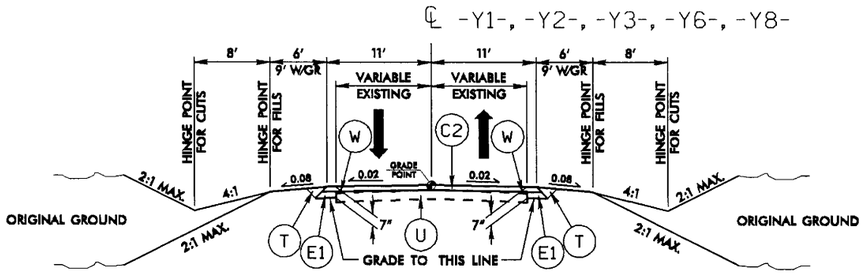
6/2/99

C2	3" BF9.5A
E1	4" B25.0B
J2	8" ABC
J3	VAR. DEPTH ABC
P	PRIME COAT
R3	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

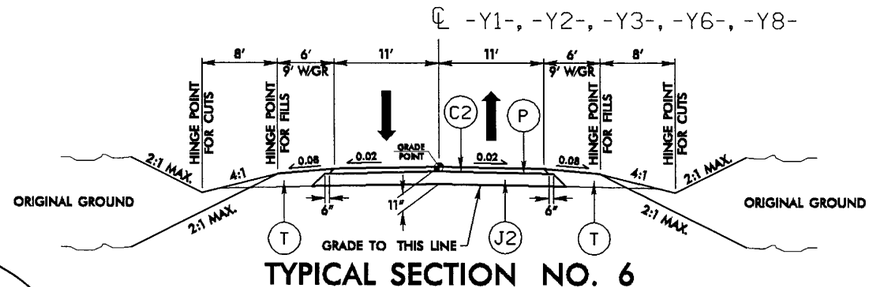
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-Y1- STA. 11+05.00 TO -Y1- STA. 12+00.00 (19' EXISTING)
-Y1- STA. 20+50.00 TO -Y1- STA. 21+35.00 (18' EXISTING)
-Y2- STA. 11+00.00 TO -Y2- STA. 13+50.00 (20' EXISTING)
-Y3- STA. 18+00.00 TO -Y3- STA. 19+80.00 (18' EXISTING)
-Y6- STA. 12+00.00 TO -Y6- STA. 12+65.00 (20' EXISTING)
-Y8- STA. 13+00.00 TO -Y8- STA. 14+00.00 (18' EXISTING)



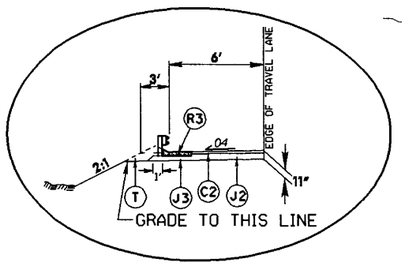
TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

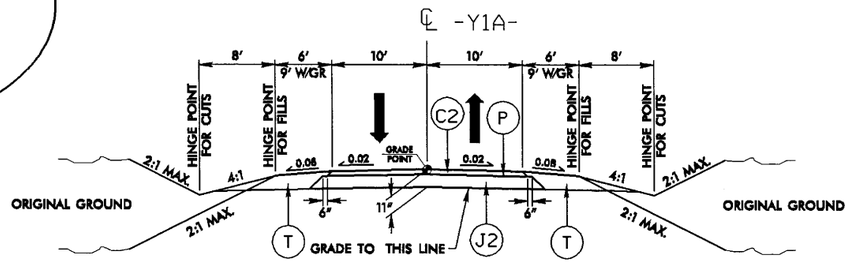
-Y1- STA. 12+00.00 TO -Y1- STA. 15+78.57
-Y1- STA. 16+72.78 TO -Y1- STA. 20+50.00
-Y2- STA. 10+48.87 TO -Y2- STA. 11+00.00
-Y3- STA. 10+47.00 TO -Y3- STA. 18+00.00
-Y6- STA. 10+53.79 TO -Y6- STA. 12+00.00
-Y8- STA. 10+47.00 TO -Y8- STA. 13+00.00

USE INSET 'C'

-Y1- STA. 17+35.56 RT. TO -Y1- STA. 19+75.00 RT.
-Y3- STA. 13+31.55 LT. TO -Y3- STA. 18+00.00 LT.



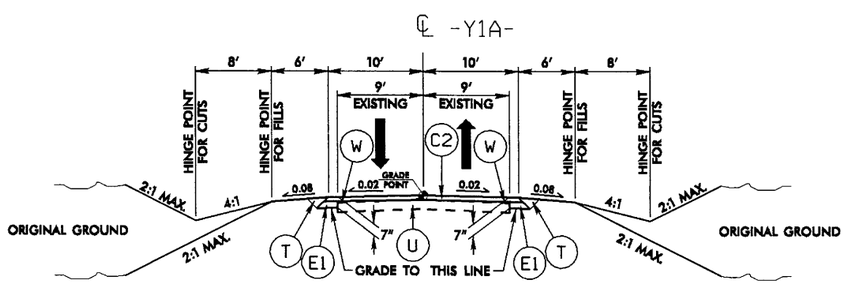
INSET 'C'



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

-Y1A- STA. 10+11.00 TO -Y1A- STA. 12+00.00



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

-Y1A- STA. 12+00.00 TO -Y1A- STA. 13+00.00

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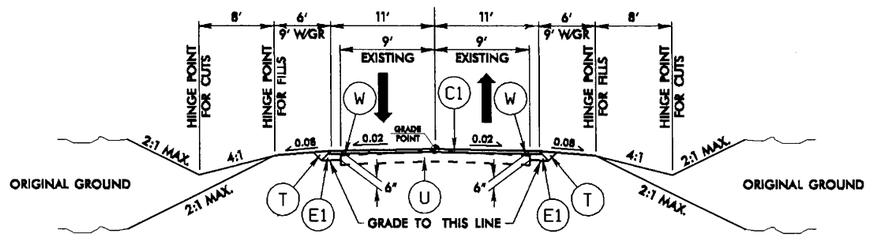
$$$$USER$$$$

C1	2" SF9.5A
E1	4" B25.0B
J2	8" ABC
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

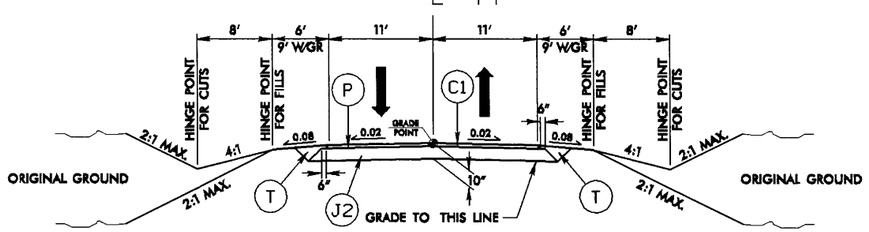
℄ -Y4-



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9
-Y4- STA. 12+25.00 TO -Y4- STA. 13+00.00

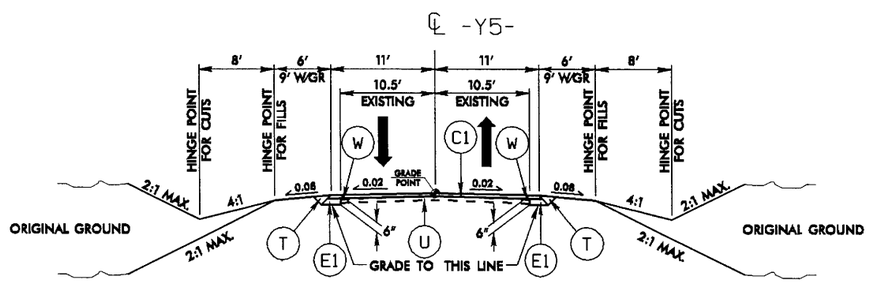
℄ -Y4-



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10
-Y4- STA. 10+48.12 TO -Y4- STA. 12+25.00

℄ -Y5-



TYPICAL SECTION NO. 11

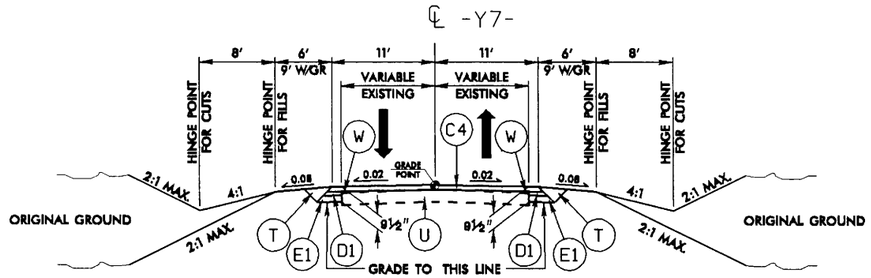
USE TYPICAL SECTION NO. 11
-Y5- STA. 10+00.00 TO -Y5- STA. 12+18.17

6/2/99

C4	3" SB9.5B
D1	2½" I19.0B
E1	4" B25.0B
J2	8" ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

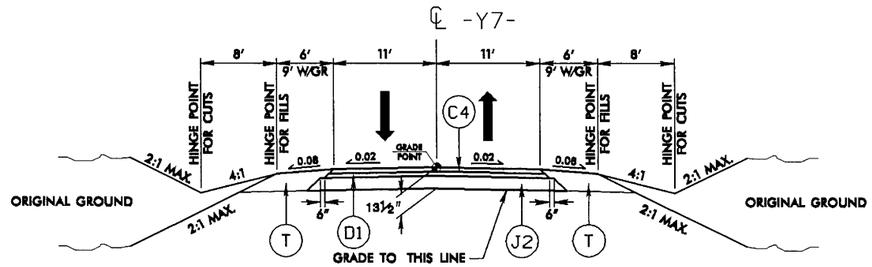
PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



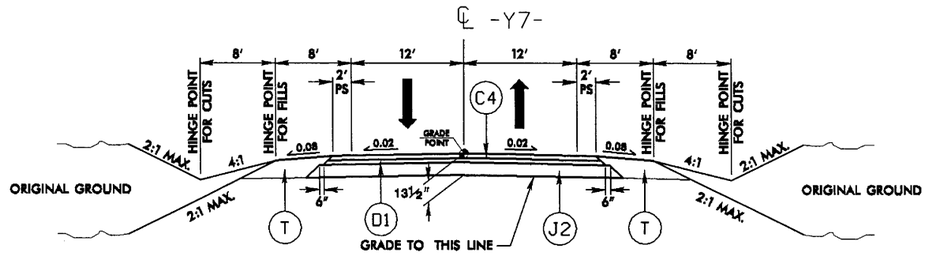
TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12
-Y7- STA. 10+60.00 TO -Y7- STA. 11+25.00 (19' EXISTING)



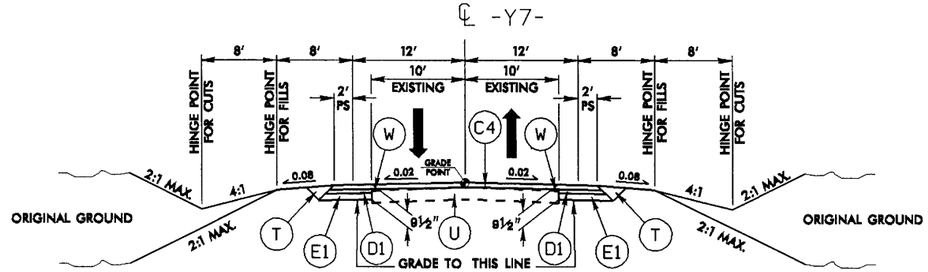
TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13
-Y7- STA. 11+25.00 TO -Y7- STA. 15+46.09



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14
-Y7- STA. 16+40.09 TO -Y7- STA. 20+00.00



TYPICAL SECTION NO. 15

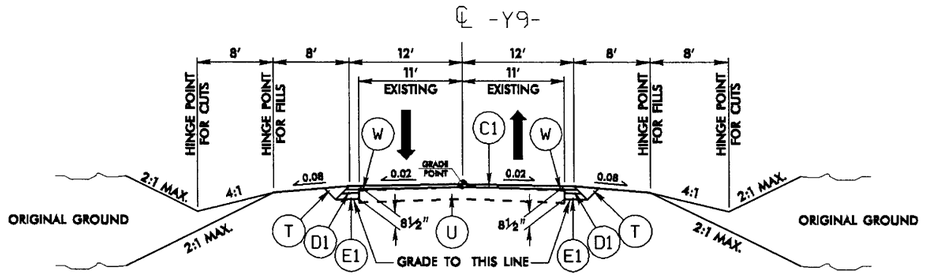
USE TYPICAL SECTION NO. 15
-Y7- STA. 20+00.00 TO -Y7- STA. 22+50.00

6/2/99

C1	2" S9.5A
D1	2½" I19.0B
E1	4" B25.0B
J2	8" ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-F
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

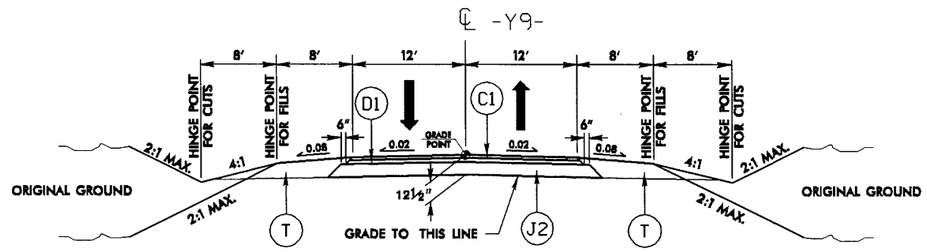
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16

-Y9- STA. 11+50.00 TO -Y9- STA. 13+00.00
-Y9- STA. 20+50.00 TO -Y9- STA. 21+75.00



TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17

-Y9- STA. 13+00.00 TO -Y9- STA. 14+89.48
-Y9- STA. 15+86.45 TO -Y9- STA. 20+50.00

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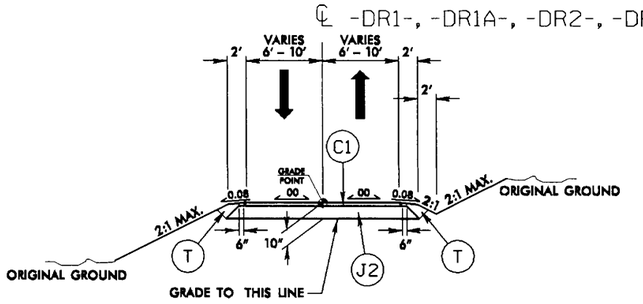
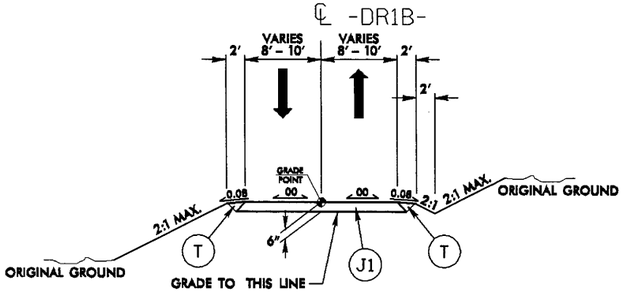
C1	3" SF9.5A
J1	6" ABC
J2	8" ABC
T	EARTH MATERIAL



TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18

-DR1- STA. 10+15.00 TO -DR1- STA. 12+77.84
-DR1A- STA. 10+42.84 TO -DR1A- STA. 15+00.00
-DR2- STA. 10+57.00 TO -DR2- STA. 11+93.00
-DR2A- STA. 10+51.00 TO -DR2A- STA. 12+98.00
-DR3- STA. 10+51.00 TO -DR3- STA. 12+29.00



TYPICAL SECTION NO. 19

USE TYPICAL SECTION NO. 19

-DR1B- STA. 10+47.00 TO -DR1B- STA. 13+29.74

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-G
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

6/2/99

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STRUCTURE TYPICAL SECTIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-H
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DESIGN DATA

MINIMUM VERTICAL CLEARANCE = 16'-6"

@ SLOPES DETERMINED BY GEOTECHNICAL ENGINEERING UNIT

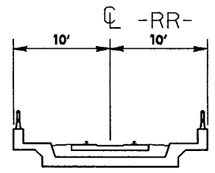
[1] SEE STD. 610.03

[2] SEE STD. 610.01

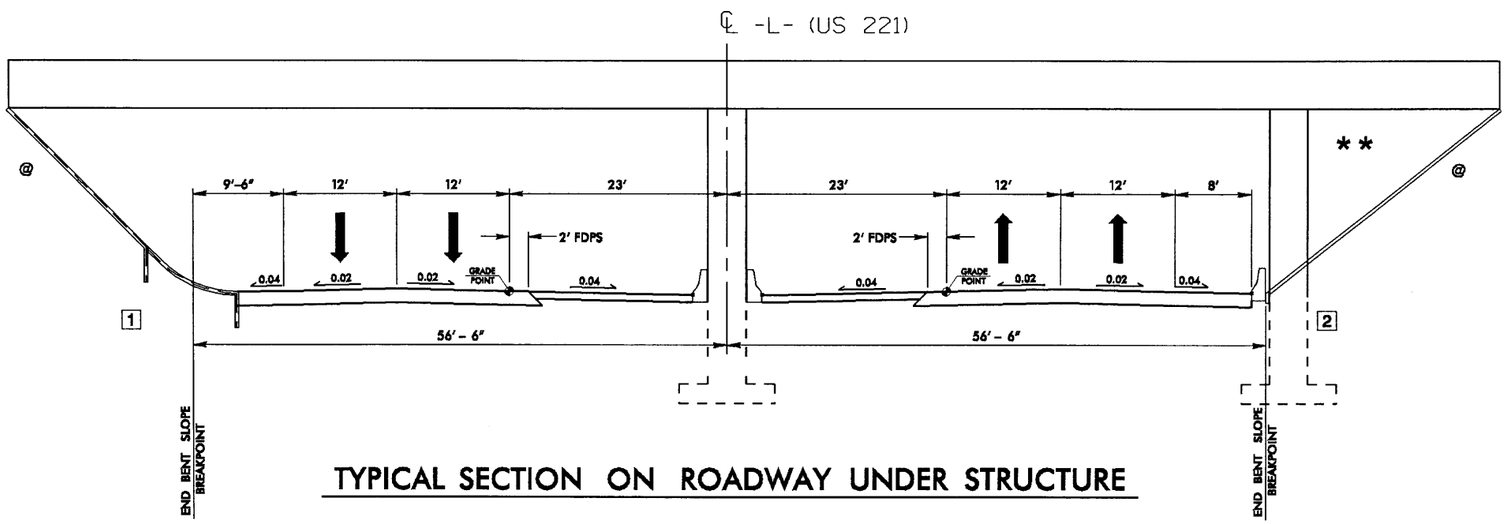
* TYPICAL SECTION ON STRUCTURE TO BE DETERMINED BY STRUCTURE DESIGN

** STRUCTURE DESIGN TO DETERMINE IF PIER IS NECESSARY

–RR– STRUCTURE *



TYPICAL SECTION ON STRUCTURE



TYPICAL SECTION ON ROADWAY UNDER STRUCTURE

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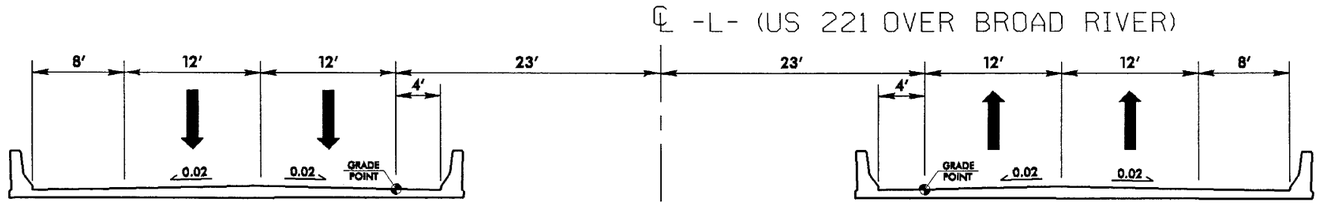
PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L- DESIGN DATA	
ADT 2005 =	8,300
ADT 2030 =	15,800
D =	55%
DHV =	11%
TTST =	7%
DUAL =	5%
V =	60 mph
FUNCT. CLASS =	ARTERIAL

–L– STRUCTURE



TYPICAL SECTION ON STRUCTURE

REVISIONS

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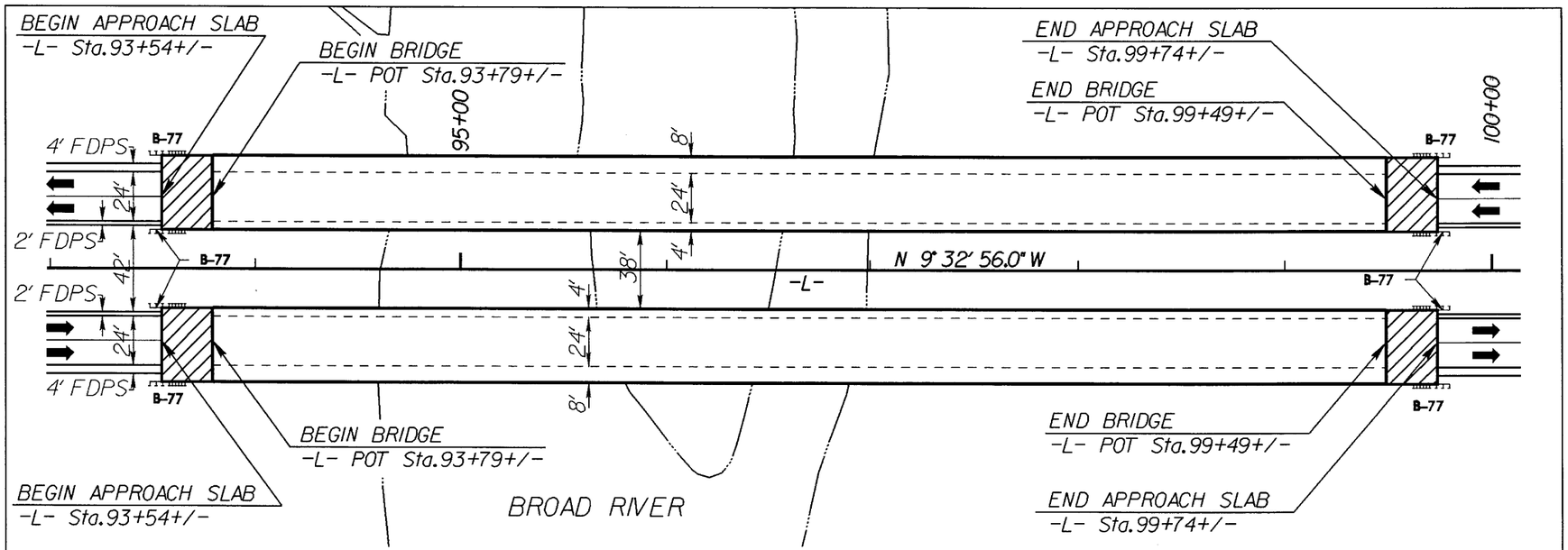
ssessoms

SKETCH SHOWING PAVEMENT WIDTH TO BRIDGE WIDTH RELATIONSHIP



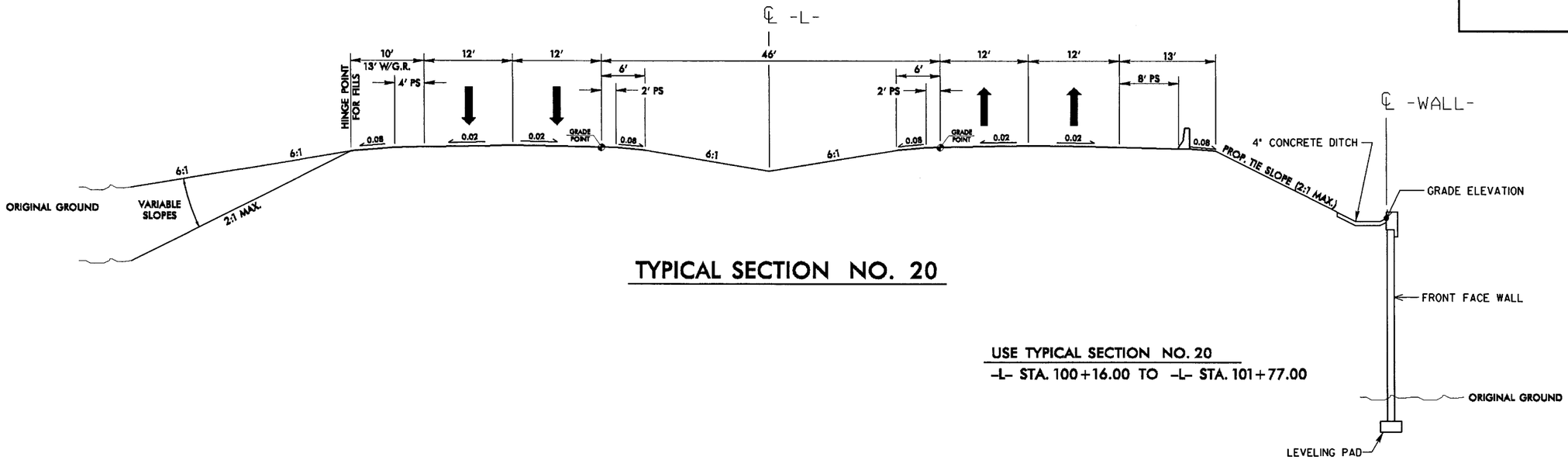
DETAIL SHOWING PAVEMENT / DUAL BRIDGE RELATIONSHIP FOR -L- OVER BROAD RIVER

(NOT TO SCALE)

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-J
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 20

USE TYPICAL SECTION NO. 20
-L- STA. 100+16.00 TO -L- STA. 101+77.00

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-K
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

95+00 | 100+00 | 105+00

S 10° 22' 46.3" E
N 33° 53' 34.2" W
S 57° 21' 11.7" E

DUKE ENERGY
RIGHT OF WAY

LEID CORPORATION
DB 284 PG 250
PB 556 PG 564

NAD 83 NC GRID

END BRIDGE
-L- POT Sta.99+49+/-

REMOVE EXISTING BRIDGE

-BL- 43 PINC 97+77.63 =
-L- STA. 101+20.71 (18.96 LT.)

REMOVE EXISTING GUARDRAIL

PROPOSED SHLD.BERM GUTTER

END PROPOSED SHLD.BERM GUTTER
-L- STA.103+25.00

GRAU 350

INV UNKNOWN

TEST HOLE #2
-L- 104+12.29 32.35' LEFT
TOP UTILITY=743.90'
INV=740.53

US 221

SEAT=712.13

N 10° 13' 07.9" W
N 9° 32' 56.0" W
N 9° 30' 50.7" W

BM #8
-BL- STA. 95+72
4' LEFT
ELEV. 717.58'

TYPE W350

END SPECIAL MEDIAN GRADING

-BL- 44 PINC 105+39.36 =
-L- STA. 108+82.44 (18.49 LT.)

PROPOSED RETAINING WALL

-WALL-
N 9° 32' 56.0" W

BEGIN PROPOSED SHLD.BERM GUTTER
-L- STA.101+77.00

-T4- 110 PINC 11+10.26
ELEV=708.421
NAIL SET

S 0° 58' 11.1" W
N 34° 01' 51.0" W

BEGIN BRIDGE
-L- POT Sta.93+79+/-

END BRIDGE
-L- POT Sta.99+49+/-

NOTE: SEE ROADWAY STANDARD DRAWING, STD.NO.862.01 SHEETS 1 & 2 OF 11 FOR SPECIAL MEDIAN GRADING

-WALL- POT Sta.10+00.00
-L- POT Sta.100+16.00 (112.5' RT)

-WALL- POT Sta.11+83.08
-L- POT Sta.101+77.00 (115.5' RT)

-WALL- POT Sta.11+40.28
-L- POT Sta.101+46.00 (86' RT)

NOTE: SEE ROADWAY STANDARD DRAWING, STD.NO.862.01 SHEETS 1 & 2 OF 11 FOR SPECIAL MEDIAN GRADING

-T4- 111 PINC 15+69.67
ELEV=687.451
NAIL SET

34 LEID CORPORATION DB 284 PG 250 PB 556 PG 564

34A DUKE ENERGY

34 LEID CORPORATION DB 284 PG 250

-WALL-

WALL STA.10+00.00 = -L- STA.100+16.00 EL = 683.72

WALL STA.10+43.28 = -L- STA.100+45.00 EL = 709.26

WALL STA.11+40.28 = -L- STA.101+46.00 EL = 710.80

WALL STA.11+83.08 = -L- STA.101+77.00 EL = 694.75

EXISTING GROUND

700
690
680
670
660

10 11

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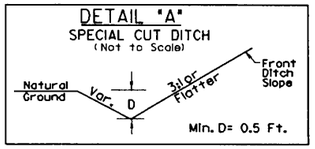
PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	2-L
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

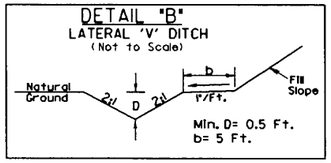
REVISIONS

DETAIL "A"
SPECIAL CUT DITCH
(Not to Scale)



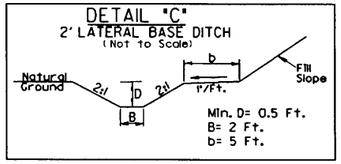
-L- Sta. 10+50 TO -L- Sta. 12+00 (LT)
-L- Sta. 10+50 TO -L- Sta. 12+50 (RT)
-L- Sta. 66+50 TO -L- Sta. 68+00 (RT)
-L- Sta. 66+50 (RRT) TO -L- Sta. 67+00 (RT)
-L- Sta. 67+00 (RT) TO -L- Sta. 67+50 (RRT)
-L- Sta. 90+50 TO -L- Sta. 93+00 (RT)
-L- Sta. 138+00 TO -L- Sta. 138+50 (RT)
-L- Sta. 138+05 TO -L- Sta. 139+00 (LT)
-L- Sta. 179+00 TO -L- Sta. 180+00 (RT)
-L- Sta. 214+50 (LT) TO -Y7- Sta. 14+50 (RT)
-L- Sta. 264+00 (LT) TO -Y9- Sta. 14+50 (RT)
-Y1- Sta. 11+38 TO -Y1- Sta. 12+00 (RT)
-Y1- Sta. 11+05 TO -Y1- Sta. 12+00 (LT)
-Y1- Sta. 20+50 TO -Y1- Sta. 21+35 (LT)
-Y1- Sta. 15+00 (RT) TO -L- Sta. 61+50 (LT)
-Y1- Sta. 15+00 (LT) TO -L- Sta. 63+00 (LT)
-Y1A- Sta. 10+80 TO -Y1A- Sta. 11+50 (RT)
-Y1A- Sta. 12+50 TO -Y1A- Sta. 13+00 (RT)
-Y2- Sta. 12+50 TO -Y2- Sta. 13+37 (RT)
-Y3- Sta. 14+30 TO -Y3- Sta. 16+00 (RT)
-Y3- Sta. 19+00 TO -Y3- Sta. 19+50 (RT)
-Y5- Sta. 10+00 TO -Y5- Sta. 11+50 (RT)
-Y5- Sta. 10+00 TO -Y5- Sta. 11+00 (LT)
-Y5- Sta. 11+50 (LT) TO -L- Sta. 175+25 (LT)
-Y6- Sta. 11+00 TO -Y6- Sta. 12+50 (RT)
-Y7- Sta. 10+60 TO -Y7- Sta. 11+00 (RT)
-Y7- Sta. 10+60 TO -Y7- Sta. 11+00 (LT)
-Y7- Sta. 13+50 (LT) TO -L- Sta. 216+50 (LT)
-Y7- Sta. 17+00 (LT) TO -L- Sta. 216+00 (RT)
-Y7- Sta. 22+00 TO -Y7- Sta. 22+50 (LT)
-Y7- Sta. 22+00 TO -Y7- Sta. 22+50 (RT)
-Y8- Sta. 13+50 TO -Y8- Sta. 14+00 (RT)
-Y9- Sta. 11+50 TO -Y9- Sta. 12+00 (LT)
-Y9- Sta. 14+00 (LT) TO -L- Sta. 266+00 (LT)
-Y9- Sta. 21+00 TO -Y9- Sta. 21+75 (LT)

DETAIL "B"
LATERAL 'V' DITCH
(Not to Scale)



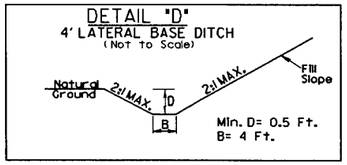
-L- Sta. 52+50 TO -L- Sta. 54+00 (LT)
-L- Sta. 77+00 TO -L- Sta. 77+90 (RT)
-L- Sta. 82+80 TO -L- Sta. 85+00 (RT)
-L- Sta. 86+50 TO -L- Sta. 87+30 (RT)
-L- Sta. 131+00 TO -L- Sta. 133+00 (RT)
-L- Sta. 133+65 TO -L- Sta. 135+00 (LT)
-L- Sta. 148+50 TO -L- Sta. 149+00 (LT)
-L- Sta. 171+25 TO -L- Sta. 172+00 (RT)
-L- Sta. 214+50 (RT) TO -Y7- Sta. 19+50 (RT)
-L- Sta. 248+80 TO -L- Sta. 249+20 (RT)
-Y3- Sta. 11+00 TO -Y3- Sta. 13+50 (RT)
-Y4- Sta. 11+50 TO -Y4- Sta. 13+00 (RT)

DETAIL "C"
2' LATERAL BASE DITCH
(Not to Scale)



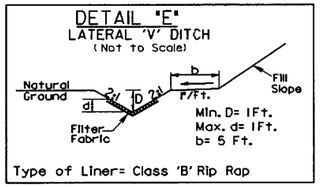
-L- Sta. 28+25 TO -L- Sta. 28+85 (LT)
-L- Sta. 59+50 TO -L- Sta. 60+80 (RT)
-L- Sta. 81+50 TO -L- Sta. 82+80 (RT)
-L- Sta. 178+42 TO -L- Sta. 179+50 (LT)
-L- Sta. 247+10 TO -L- Sta. 248+80 (RT)

DETAIL "D"
4' LATERAL BASE DITCH
(Not to Scale)



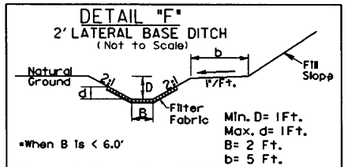
-L- Sta. 272+10 TO -L- Sta. 274+00 (RT)

DETAIL "E"
LATERAL 'V' DITCH
(Not to Scale)



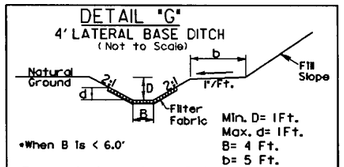
-L- Sta. 54+00 TO -L- Sta. 56+00 (LT)
-L- Sta. 130+50 TO -L- Sta. 131+00 (RT)
-L- Sta. 172+00 TO -L- Sta. 173+50 (RT)
-L- Sta. 208+50 TO -L- Sta. 214+50 (RT)
-Y1- Sta. 17+50 TO -Y1- Sta. 18+80 (LT)
-Y2- Sta. 10+80 TO -Y2- Sta. 12+00 (RT)

DETAIL "F"
2' LATERAL BASE DITCH
(Not to Scale)



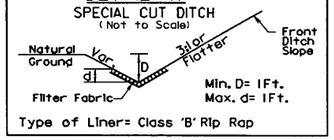
-L- Sta. 27+00 TO -L- Sta. 28+25 (LT)
-L- Sta. 28+85 TO -L- Sta. 30+00 (LT)
-L- Sta. 80+50 TO -L- Sta. 82+20 (LT)
-L- Sta. 86+66 TO -L- Sta. 87+80 (LT)
-L- Sta. 87+30 TO -L- Sta. 88+50 (RT)
-L- Sta. 106+65 TO -L- Sta. 107+50 (LT)
-L- Sta. 176+50 TO -L- Sta. 179+00 (RT)
-L- Sta. 176+50 (RT) TO -Y6- Sta. 11+50 (LT)
-L- Sta. 204+00 TO -L- Sta. 207+50 (RT)
-L- Sta. 246+00 TO -L- Sta. 247+10 (RT)
-L- Sta. 271+50 TO -L- Sta. 272+10 (RT)
-Y6- Sta. 11+50 TO -Y6- Sta. 12+15 (LT)

DETAIL "G"
4' LATERAL BASE DITCH
(Not to Scale)



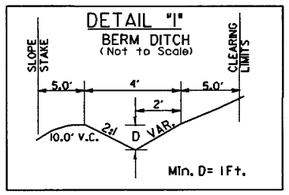
-L- Sta. 16+50 TO -L- Sta. 19+00 (LT)
-L- Sta. 60+41 TO -L- Sta. 61+00 (LT)
-L- Sta. 149+55 TO -L- Sta. 150+50 (RT)
-L- Sta. 224+75 TO -L- Sta. 226+05 (LT)
-L- Sta. 231+85 TO -L- Sta. 232+20 (RT)
-L- Sta. 232+68 TO -L- Sta. 234+45 (RT)

DETAIL "H"
SPECIAL CUT DITCH
(Not to Scale)



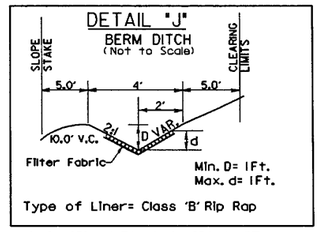
-DR1- Sta. 12+00 (LT) TO -L- Sta. 52+50 (LT)
-L- Sta. 198+25 TO -L- Sta. 198+50 (LT)

DETAIL "I"
BERM DITCH
(Not to Scale)



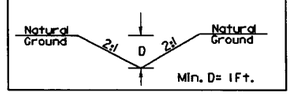
-L- Sta. 24+00 TO -L- Sta. 27+00 (LT)
-L- Sta. 44+70 TO -L- Sta. 46+80 (LT)
-L- Sta. 46+80 TO -L- Sta. 50+00 (LT)
-L- Sta. 46+50 TO -L- Sta. 48+00 (RT)
-L- Sta. 156+85 TO -L- Sta. 158+85 (LT)
-L- Sta. 248+00 TO -L- Sta. 256+50 (LT)

DETAIL "J"
BERM DITCH
(Not to Scale)



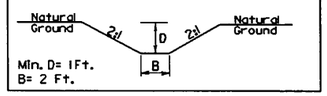
-L- Sta. 153+00 TO -L- Sta. 154+00 (LT)

DETAIL "K"
STANDARD 'V' TAIL DITCH
(Not to Scale)



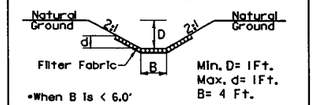
-L- Sta. 212+25 TO -L- Sta. 212+60 (LT)

DETAIL "L"
STANDARD 2' BASE TAIL DITCH
(Not to Scale)



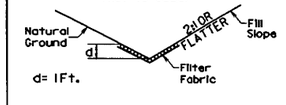
-L- Sta. 196+10 TO -L- Sta. 196+50 (RT)

DETAIL "M"
STANDARD 4' BASE HEAD DITCH
(Not to Scale)



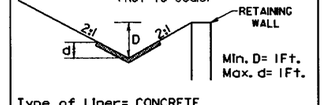
-L- Sta. 53+08 TO -L- Sta. 53+30 (LLT)

DETAIL "N"
TOE PROTECTION
(Not to Scale)



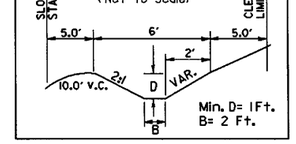
-L- Sta. 30+20 TO -L- Sta. 32+14 (LT)
-L- Sta. 102+00 TO -L- Sta. 103+50 (LT)

DETAIL "O"
STANDARD 'V' DITCH
(Not to Scale)



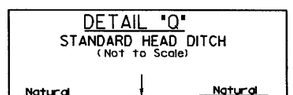
-L- Sta. 100+00 TO -L- Sta. 102+00.

DETAIL "P"
BERM DITCH
(Not to Scale)



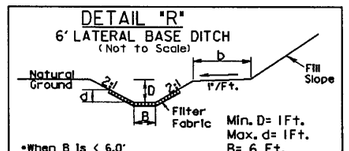
-L- Sta. 154+00 TO -L- Sta. 156+85 (LT)

DETAIL "Q"
STANDARD HEAD DITCH
(Not to Scale)



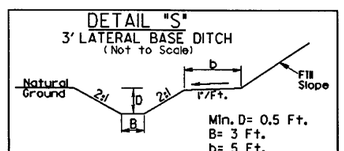
-L- Sta. 163+40 (LT)

DETAIL "R"
6' LATERAL BASE DITCH
(Not to Scale)



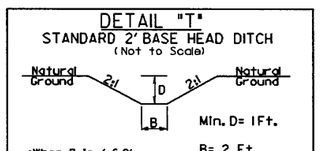
-L- Sta. 234+00 TO -L- Sta. 236+00 (LT)

DETAIL "S"
3' LATERAL BASE DITCH
(Not to Scale)



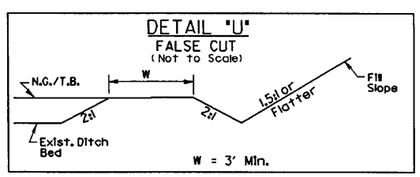
-L- Sta. 117+50 TO -L- Sta. 119+00 (RT)

DETAIL "T"
STANDARD 2' BASE HEAD DITCH
(Not to Scale)



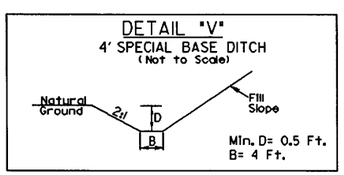
-L- Sta. 27+60 (LT)

DETAIL "U"
FALSE CUT
(Not to Scale)



-L- Sta. 28+25 TO -L- Sta. 28+75 (LT)
-L- Sta. 65+50 TO -L- Sta. 67+00 (LT)

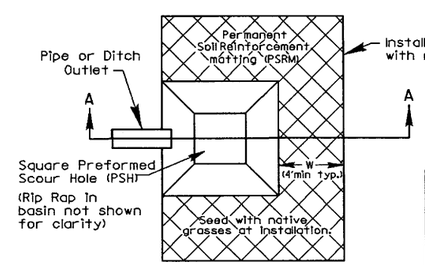
DETAIL "V"
4' SPECIAL BASE DITCH
(Not to Scale)



-Y3- Sta. 11+75 TO -Y3- Sta. 13+30 (LT)

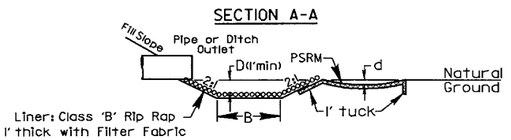
PREFORMED SCOUR HOLE

PLAN VIEW



B= 4.5 Ft.
D= 1 Ft.
W= 4 Ft.
d= .5 Ft.

SECTION A-A



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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L- SPIRAL DATA
PIs Sta 22+51.74
θs = 1° 02' 30.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

NAD 83/95

NORTH CAROLINA
SOUTH CAROLINA
APPROXIMATE LOCATION OF STATE LINE BASED ON PROPERTY INFORMATION

REVISIONS

-L- POT Sta. 9+68.95

BEGIN CONSTRUCTION
-L- POT STA. 9+70.14

BEGIN PROJECT R-2233AA
-L- POT Sta. 10+50.00

1 RON B. FOWLER
DB 759 PG 222

2 ROGER LEDBETTER
DB 438 PG 601

3 DANNY W. GILBERT
DB 749 PG 364

4 BETTY WEASE ALLEN
DB 592 PG 699

5 RONALD L. GREENE
DB 310 PG 428
DB 405 PG 373
DB 699 PG 91

6

-BL- 31 PINC 13+49.82 =
-L- STA. 16+91.54 (15.53' LT.)

-L- STA.13+71 END C/A FENCE
-L- STA.14+31 BEGIN C/A FENCE
-L- STA.19+47 END C/A FENCE
-L- STA.20+07 BEGIN C/A FENCE

ACCESS POINT

2,100' INSIDE LANE & MEDIAN TAPER

LATERAL BASE DITCH
SEE DETAIL "G"
EST. CY DDE
CLASS "B" RIP RAP
EST. 100 TONS
222 SY FILTER FABRIC

CLASS "B" RIP RAP
EST. 3 TONS
10 SY FILTER FABRIC

SPECIAL CUT DITCH
SEE DETAIL "A"

BEGIN C/A FENCE
TIE TO EXISTING FENCE

BEGIN PROPOSED SHLD BERM GUTTER
-L- STA.15+00.00

END PROPOSED SHLD BERM GUTTER
-L- STA.18+75.00

BEGIN PROPOSED SHLD BERM GUTTER
-L- STA.14+25.00

END PROPOSED SHLD BERM GUTTER
-L- STA.19+25.00

REMOVE EXISTING GUARDRAIL

CLASS "I" RIP RAP
EST. 7 TONS
15 SY FILTER FABRIC

-L- TS Sta. 21+18.40

1380' MEDIAN TAPER

BM #1
-BL- STA. 9+38
66' RIGHT
ELEV. 798.06'

EXIST. R/W

-BL- US 221
24' BST

N 9° 27' 30.1" E
N 9° 20' 39.2" E
N 12° 07' 25.7" E

FALSE SUMP
GRAU 350
GRAU 350 FALSE SUMP
2GI(D) W/FLAT GRATE
18" CSP
18" RCP
JB
HW
EP
EIP
MTL
PK NAIL
REMOVE
RETAIN
EXISTING R/W 50' INC.
66.67' INC.
16.45'
R=15'
R=5'
20'
4' PS
48" WW & 45BW
45BW
4SBW
125' R/W
-L-
-BL-

U/G TANKS +/- 500 GAL "EMPTY"
SEPTIC TANK
SEPTIC DRAIN LINES
WELL HOUSE
HTR
WELL (ABAND.)
ISBLKBUS
ISFD
GR
CONC
W/LT
FLAG POLE
WM OH
CONC. MON.
5' MONO. CONC. ISLAND
EXIST. P CORNER
FLAG POLE

S 81°08'57" E 337.07'
S 85°59'56" E 335.75'
S 09°29'21" W 312.28'
N 85°45'58" W 553.54'
N 85°25'06" W 1190.11'
S 18°32'22" W 350.59'

SEE SHEET NO.5
MATCH LINE

NOTES: (1) SEE SHEET 29 FOR -L- PROFILE
(2) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS
(3) DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

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-L- CURVE DATA

Pls Sta 22+51.74	Pl Sta 27+93.13	Pls Sta 33+32.18
Θs = 1°02' 30.3"	Δ = 9°51' 59.2" (RT)	Θs = 1°02' 30.3"
Ls = 200.00'	D = 1°02' 30.3"	Ls = 200.00'
LT = 133.34'	L = 947.11'	LT = 133.34'
ST = 66.67'	T = 474.73'	ST = 66.67'
	R = 5,500.00'	
	SE = SEE PLANS	

-DRIA- CURVE DATA

Pl Sta 14+62.00	Pl Sta 12+00.00
Δ = 94°48' 11.7" (LT)	Δ = 9°02' 04.5" (RT)
D = 114°35' 29.6"	D = 114°35' 29.6"
L = 82.73'	L = 79.44'
T = 54.38'	T = 50.91'
R = 50.00'	R = 50.00'

-LLT- CURVE DATA

Pl Sta 29+71.47
Δ = 4°49' 11.4" (RT)
D = 1°02' 30.3"
L = 462.67'
T = 231.47'
R = 5,500.00'
SE = SEE PLANS

-LRT- CURVE DATA

Pl Sta 29+68.86
Δ = 4°45' 55.8" (RT)
D = 1°02' 30.3"
L = 457.46'
T = 228.86'
R = 5,500.00'
SE = SEE PLANS

NAD 83/95

IDENTITY:
-L- POC Sta.27+40.00 =
-LLT- PC Sta.27+40.00 (27.333' LT)

-BL- 33 PINC 26+34.42 =
-L- STA. 29+76.99 (3.34' RT.)

EQUALITY:
-LLT- PT Sta.32+02.67 (35' LT) LB =
-L- POC Sta.32+00.00 LA

-L- SC Sta.23+18.40

-L- POC Sta.27+10.00 =
-DRIA- POT Sta.10+00.00

-BL- 32 PINC 20+16.49 =
-L- STA. 23+57.82 (14.74' RT.)

-L- CS Sta.32+65.51

-L- ST Sta.34+65.51

-L- STA.36+00.00

-L- STA 23+00.00

-DRIA- PT Sta.14+90.36
-DRIA- POT Sta.15+01.76

END CONSTRUCTION
-DRIA- POT Sta.15+00.00

-DRIA- PT Sta.12+28.53
-DRIA- PC Sta.14+07.62

-DRIA- PC Sta.11+49.09

IDENTITY:
-L- POC Sta.27+40.00 =
-LRT- PC Sta.27+40.00 (27.333' RT)

EQUALITY:
-LRT- PT Sta.31+97.46 (35' RT) LB =
-L- POC Sta.32+00.00 LA

RONALD L. GREENE
DB 310 PG 428
DB 405 PG 373
DB 699 PG 91

CHARLES H. HAMRICK
DB 237 PG 595

HUGH C. ALLEN
DB 633 PG 440

HOWARD L. PARRIS
DB 458 PG 727
DB 743 PG 398
DB 388 PG 647
DB 802 PG 42
DB 421 PG 332
DB 452 PG 238
DB 391 PG 490

MIKEL L. PARRIS
DB 556 PG 242

BETTY WEASE ALLEN
DB 592 PG 699

SEE SHEET NO.4

SEE SHEET NO.6

MATCH LINE

NOTES: (1) SEE SHEET 30 FOR -L-, -LLT- & -LRT- PROFILES
(2) SEE SHEET 47 FOR -DRIA- PROFILE
(3) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS
(4) DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

MATCH LINE SEE SHEET NO.27 -RR- STA.22+75.00

NAD 83/95

-L- STA.36+00.00

-L- STA.49+00.00

SEE SHEET NO.5

SEE SHEET NO.7

MATCH LINE

MATCH LINE

RONALD L. GREENE
DB 310 PG 428
DB 405 PG 373
DB 699 PG 91

CAROLINA, CLINCHFIELD & OHIO RAILWAY
DB 342 PG 276
DB 342 PG 274

DEWEY T. BOTTS
DB 263 PG 231

MIKEL L. PARRIS
DB 556 PG 242

HOWARD L. PARRIS
DB 458 PG 727
DB 743 PG 396
DB 388 PG 647
DB 802 PG 412
DB 421 PG 332
DB 452 PG 238
DB 391 PG 490

CAROLINA, CLINCHFIELD & OHIO RAILWAY
DB 341 PG 625
DB 342 PG 276

PROPOSED TRACK

REMOVE EXISTING TRACK

BEGIN BRIDGE
-RR- STA.26+30.50

-BYI- 76 PINC 18+66.79 =
-RR- STA. 26+02.12 (10L.71 RT)

GPS3 (R2233AA-3) PINC 38+78.63 =
-L- STA. 42+21.74 (17.48 RT.)

-L- POT Sta.45+02.10 =
-RR- POC Sta.27+38.83

BEGIN PROPOSED SHLD. BERM GUTTER
-L- STA.40+31.00

END PROPOSED SHLD.BERM GUTTER
-L- STA.41+81.00

BEGIN SHOULDER AND DITCH TRANSITION FOR GRADE SEPARATION

BERM DITCH SEE DETAIL "I"

BERM DRAINAGE OUTLET (STD. 850.11)

SINGLE FACED CONC. BARRIER

SEE BRIDGE PLANS FOR PROPOSED BRIDGE DETAILS

SPECIAL MEDIAN GRADING 18' SEE X-SECTIONS

5' MONO. CONC. ISLAND

4" PS

GRAU 350

EXTEND WITH 4x5 RCBC

6' CONC WW

5' CONC WW

2GI(B) W/FLAT GRATE

FALSE SUMP

ATTENUATOR TYPE B-77

24" CSP

24" RCP

N 21° 17' 39.0" E

-BL- N 20° 54' 47.2" E

US 221

BEGIN SPECIAL MEDIAN GRADING

RETAIN

5' x 4' CONC

EXISTING R/W

-BL- 34 PINC 33+70.68 =
-L- STA. 37+13.80 (20.86 RT.)

BEGIN PROPOSED SHLD.BERM GUTTER
-L- STA.40+56.00

END PROPOSED SHLD.BERM GUTTER
-L- STA.42+06.00

-L- STA.42+71 BEGIN C/A FENCE

-L- STA.42+11 END C/A FENCE

ACCESS POINT

BEGIN SHOULDER AND DITCH TRANSITION FOR GRADE SEPARATION

CLASS "I" RIP RAP
EST. 26 TONS
34 ST FILTER FABRIC
EST. 15 CY DDE

CLASS "B" RIP RAP
EST. 3 TONS
11 ST FILTER FABRIC

EXISTING STRUCTURE TO BE REMOVED

-BL- POT 40+92.80 =
-BYI- POT 20+03.57
(POINT NOT SET)

BM #3
-BL- STA. 40+57
28' RIGHT
ELEV. 785.14'
OBLITERATE & REMOVE

END BRIDGE
-RR- STA.28+42.01

-BYI- 77 PINC 22+48.61 =
-RR- STA. 29+56.56 (51.22 RT.)

BEGIN CONSTRUCTION
-RR CROSS- POT Sta.10+00.00

-RR CROSS- POT Sta.10+00.00 =
-L- POT Sta.46+01.00 (230' RT.)

END CONSTRUCTION
-RR CROSS- POT Sta.11+70.00

-RR- CS Sta.31+60.36

-RR CROSS- POT Sta.11+70.63 =
-L- POT Sta.47+68.00 (195' RT.)

-RR- STA.32+50.00

CONSTRUCT PROPOSED TRACK

EXISTING TRACK

CUT AND INSTALL EXISTING TRACK

EXIST. R/W

N 53° 11' 19.8" E

N 22° 56' 38.6" E

N 10° 18' 38.3" E

N 67° 26' 18" E

N 64° 40' 15" E

S 78° 45' 32.2" E

S 14° 54' 41" E

N 04° 09' 46" E

N 68° 04' 39" W

S 08° 19' 43" W

S 89° 30' 22" W

N 89° 30' 22" E

-RR- CURVE DATA

PI Sta 25+62.61	PIs Sta 32+01.71
Δ = 86° 26' 10.8" (LT)	θs = 3° 22' 39.8"
D = 5° 27' 00.0"	Ls = 124.00'
L = 1,585.99'	LT = 82.68'
T = 988.24'	ST = 41.35'
R = 1,051.70'	

NOTES: SEE ROADWAY STANDARD DRAWING, STD. NO. 225.09 FOR GUIDE FOR SHOULDER AND DITCH TRANSITION AT GRADE SEPARATIONS

SEE ROADWAY STANDARD DRAWING, STD. NO. 862.01 SHEETS 1 & 2 OF 11 FOR SPECIAL MEDIAN GRADING

NOTES:
(1) SEE SHEET 31 FOR -L- PROFILE
(2) SEE SHEET 42 FOR -RR- PROFILE
(3) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS
(4) DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS
(5) SEE SHEETS S-1 TO S- FOR STRUCTURE DETAILS
(6) SEE SHEETS C-1 TO C- FOR CULVERT DETAILS
(7) SEE SHEET ____ FOR ROCK PLATING DETAIL

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

R/W REVISION: REVISED R/W ON PARCEL 8
ELIMINATED CONSTRUCTION EASEMENT ON PARCEL 8
SHIFTED DRIVE AND MODIFIED ACCESS FOR PARCEL 8
10-29-07 MWL

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-DRI- CURVE DATA

PI Sta 10+59.42	PI Sta 12+14.30
Δ = 76° 30' 00.0" (LT)	Δ = 90° 00' 00.0" (RT)
D = 114° 35' 29.6"	D = 114° 35' 29.6"
L = 667.6'	L = 78.54'
T = 394.2'	T = 50.00'
R = 50.00'	R = 50.00'

NOTE: SEE ROADWAY STANDARD DRAWING, STD. NO. 225.09 FOR GUIDE FOR SHOULDER AND DITCH TRANSITION AT GRADE SEPARATIONS

NAD 83/95

S 61° 34' 22" W 162.28'

N 71° 39' 38" E 517.34'

-DRI- POT Sta. 10+00.00

-L- POT Sta. 52+00.00

-DRI- POT Sta. 13+28.84

BEGIN CONSTRUCTION

-DRI- POT Sta. 10+15.00

-DRI- PC Sta. 10+20.00

-DRI- PT Sta. 10+86.76

N 21° 17' 39.0" E

ACCESS POINT

-L- STA. 49+00.00

-L- STA. 51+50 END C/A FENCE

-L- STA. 52+10 BEGIN C/A FENCE

-L- STA. 55+00

-L- STA. 56+44 END C/A FENCE

-L- STA. 57+04 BEGIN C/A FENCE

-L- STA. 59+50.00

-DRI- PC Sta. 11+64.30

-DRI- PT Sta. 12+42.84

END SHOULDER AND DITCH TRANSITION FOR GRADE SEPARATION

BERM DITCH SEE DETAIL "I"

SPECIAL CUT DITCH
SEE DETAIL "H"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 45 TONS
99 SY FILTER FABRIC

BASE HEAD DITCH
SEE DETAIL "M"
EST. 120 CY DDE
CLASS 'B' RIP RAP
EST. 9 TONS
20 SY FILTER FABRIC

LATERAL 'A' DITCH
SEE DETAIL "E"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 40 TONS
89 SY FILTER FABRIC

LATERAL 'A' DITCH
SEE DETAIL "F"
EST. CY DDE

CLASS 'B' RIP RAP
EST. 26 TONS
42 SY FILTER FABRIC

APPROXIMATE LOCATION OF SEPTIC SYSTEM PER PROPERTY OWNER

SEPTIC TANK

HTR

ISBLKS

ISBKD

ISFD

WD DK

GR

WD

JOE B. STARNES
DB 262 PG 4
DB 407 PG 773

TONY W. LOWE
DB 359 PG 166

JESSE T. LANCASTER
DB 366 PG 238

165.10' N 22° 28' 05" E

S 08° 35' 22" W 134.00'

S 68° 46' 39" E 148.43'

S 14° 59' 48" E 121.17'

S 18° 05' 38" E 39.90'

S 59° 46' 22" E 86.00'

N 22° 56' 38.6" E 382.24'

S 22° 28' 05" W 252.38'

N 22° 28' 05" E 252.38'

N 22° 28' 05" E 165.65'

4' PS

2' PS

EX R/W TO CL

EXISTING R/W

RETAIN

100' STORAGE

22' BST

US 221

50' BR

151' CONC

2GI(B) W/FLAT GRATE

2GI(B) W/FLAT GRATE STD 852.06

2GI(B) - BL -

5' MONO. CONC. ISLAND

FALSE SUMP

FALSE SUMP -L-

18" CSP

20' R=15'

R=15'

R=25'

GRAU-350

CAT-I

PLANTER

CONC

BST

4SBW

48" WW

60" WD RAIL

MTL

POOL

72' CHL

48' CHL

6' BST

9' BST

EIP

ISFD

GPS4 (R2233AA-4) PINC 54+45.85= -L- STA. 57+88.31 (62.61 RT.)

BEGIN PROPOSED SHLD BERM GUTTER -L- STA. 51+80.95

END PROPOSED SHLD BERM GUTTER -L- STA. 56+06.00

COLLAR AND EXTEND 30" RCP

SEE SHEET NO.6

SEE SHEET NO.8

MATCH LINE

MATCH LINE

NOTES: (1) SEE SHEET 31 FOR -L- PROFILE
(2) SEE SHEET 47 FOR -DRI- PROFILE
(3) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

2007 ADT 8,700
2030 ADT 15,600

-L-

540 / 1000	416 / 600	524 / 800
	124 / 400	108 / 200
	8,100 / 15,000	

-Y1-

TRAFFIC DIAGRAM

MATCH LINE — SEE SHEET NO.9

-L- STA.68+50.00
-Y1A- PT Sta. 17+53.54

END CONSTRUCTION
-Y1A- POT Sta.16+40.00

-BL- 38 PINC 63+87.52 =
-BY3- 5+00.00 POT =
-L- STA. 67+29.93 (52.43 RT.)
BEGIN PROPOSED SHLD.BERM GUTTER
-L- STA.67+32.00

-L- STA.66+82
BEGIN C/A FENCE

-L- STA.66+22
END C/A FENCE

-BY3- 81 PINC 6+81.03

-Y1A- PCC Sta. 15+01.48

-Y1A- PC Sta.13+50.36

-Y1- POT Sta.10+00.00

-Y1- PC Sta.11+09.22

-Y1- PT Sta.14+75.51

-Y1- PT Sta.12+27.81

-Y1- PC Sta.12+95.24

-BY2-80 POT 5+00.00 =
-Y1- STA. 10+55.92 (23.39' LT.)

-L- STA.63+24.10
BEGIN C/A FENCE

-L- STA.63+88
END C/A FENCE

-Y1A- PT Sta.11+43.81

-Y1A- PC Sta.10+17.94

-BY3- 82 PINC 10+91.12 =
-Y1A- STA. 11+02.71 (38.04' RT.)

-L- POT Sta.62+30.61 =
-Y1- POT Sta.16+25.67

-L- STA.61+46.30
END C/A FENCE

-L- STA.61+37
END C/A FENCE

-Y1- POC Sta.19+25.00 =
-Y1A- POT Sta.10+00.00
END PROPOSED SHLD.BERM GUTTER
-Y1- STA.19+75.00

-BL- 37 PINC 58+13.83 =
-BY2- POT 11+23.04 =
-L- STA. 61+56.26 (57.91 RT.)

-Y1- PT Sta.20+94.57

-Y1- PC Sta.18+06.08

-Y1- PC Sta.21+29.36

END CONSTRUCTION
-Y1- POC Sta.21+35.00

-Y1- PT Sta.22+66.92

-BY3- 83 PINC 14+93.14

BEGIN CONSTRUCTION
-Y1- POT Sta.11+05.00

-L- STA.59+50.00

MATCH LINE — SEE SHEET NO.7

-Y1A- CURVE DATA

PI Sta 10+84.85	PI Sta 16+35.79	PI Sta 14+25.94
Δ = 48° 04' 48.5" (LT)	Δ = 48° 59' 29.8" (LT)	Δ = 2° 53' 46.9" (LT)
D = 38° 11' 49.8"	D = 19° 26' 11.9"	D = 1° 54' 59.9"
L = 125.87'	L = 252.06'	L = 151.12'
T = 66.91'	T = 134.31'	T = 75.57'
R = 150.00'	R = 294.78'	R = 2,989.41'

-Y1- CURVE DATA

PI Sta 11+68.79	PI Sta 13+86.36
Δ = 13° 35' 20.0" (LT)	Δ = 20° 39' 27.6" (RT)
D = 11° 27' 33.0"	D = 11° 27' 33.0"
L = 118.59'	L = 180.27'
T = 59.57'	T = 91.13'
R = 500.00'	R = 500.00'

PI Sta 19+68.79	PI Sta 21+98.16
Δ = 66° 06' 59.7" (RT)	Δ = 3° 17' 38.8" (LT)
D = 22° 55' 05.9"	D = 2° 23' 41.3"
L = 288.49'	L = 137.55'
T = 162.71'	T = 68.80'
R = 250.00'	R = 2,392.50'

NAD 83/95

JOHN W. JOLLEY DB 298 PG 89

BOBBY D. BRYANT DB 458 PG 185

CATHERYN DEYTON DB 499 PG 635 DB 595 PG 813

GEORGE L. MILLER DB 593 PG 189

HATHLEEN PARRIS DB 375 PG 544

JASON C. WATERS DB 769 PG 186

SAMUEL CURTIS WATERS AND WFE, BETTY JEAN WATERS DB 323 PG 471 DB 665 PG 85 PB 8 PG 8

JOE B. STARNES DB 262 PG 4

CHARLES J., III SMITH DB 629 PG 349

CHESTER WATERS AND WFE, SHARON B. WATERS DB 391 PG 397

HOWARD L. PARRIS DB 458 PG 727 DB 743 PG 398 DB 388 PG 647 DB 802 PG 46 DB 451 PG 238 DB 452 PG 238 DB 391 PG 490

DETROY HENDERSON DB 213 PG 565 DB 787 PG 142

NOTES: (1) SEE SHEET 32 FOR -L- PROFILE
(2) SEE SHEET 43 FOR -Y1- & -Y1A- PROFILES
(3) - ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-L- CURVE DATA

PIs Sta 72+86.89
Θs = 1° 38' 13.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 82+12.23
Δ = 27° 34' 08.4" (LT)
D = 1° 38' 13.3"
L = 1,684.10'
T = 858.68'
R = 3,500.00'
SE = SEE PLANS

NAD 83/95

-L- STA.68+50.00

70+00

75+00

80+00

MATCH LINE

SEE SHEET NO.8

SEE SHEET NO.10

-L- STA.80+00.00

-L- TS Sta.71+53.55

-L- SC Sta.73+53.55

20A DUKE ENERGY

20 JOHN W. JOLLEY DB 298 PG 89

CLASS 'B' RIP RAP EST. 2 TONS 7 SY FILTER FABRIC

END PROPOSED SHLD. BERM GUTTER -L- STA.70+75.00

2GI(B) W/FLAT GRATE

2GI(D) W/FLAT GRATE

50' STORAGE

5' MONO. CONC. ISLAND

FALSE SUMP

24" CSP

18" 2GI(B)

24" CONC

48" WW

POND

EXISTING DUKE ENERGY ROW

N 28° 57' 39.6" E

S 21° 17' 39.0" E

N 12° 56' 44.0" E

-BL- 39 PINC 69+60.58 = -L- STA. 73+02.04 (29.88 RT.)

-BL- 40 PINC 74+56.23 = -L- STA. 77+95.16 (.58 LT.)

-L- STA.75+46 END C/A FENCE

-L- STA.76+04 BEGIN C/A FENCE

-L- STA.77+85 END C/A FENCE

LATERAL 'A' DITCH SEE DETAIL 'B' EST. CY DDE

ACCESS POINT

CROCKET DR.

LARRY CROCKER DB 575 PG 74 DB 592 PG 423

LEWIS E. MCDANIEL DB 231 PG 229 DB 427 PG 407 DB 558 PG 721

JAMES C. SANDERS DB 708 PG 523

LEON W. CROCKER DB 406 PG 202

FILL & CAP WELL

CATHERYN DEYTON DB 499 PG 635 DB 595 PG 813

N 06°15'12" E 132.19'

S 05°09'26" E 78.00'

N 06°50'34" E 73.00'

N 09°26'33" W 341.09'

S 83°52'00" E 648.24'

N 83°52'34" E 300.00'

S 05°37'33" W 165.00'

N 00°07'21" E 235.00'

S 68°48'21" E 165.49'

N 17°31'46" E 501.50'

S 69°49'14" E 383.08'

S 17°11'46" W 100.00'

S 00°10'00" W 349.69'

N 07°07'50" E 215.90'

NOTES: (1) SEE SHEET 32 FOR -L- PROFILE
(2) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

-L- CURVE DATA
PI Sta 82+12.23
Δ = 27° 34' 08.4" (LT)
D = 1° 38' 13.3"
L = 1,684.10'
T = 858.68'
R = 3,500.00'
SE = SEE PLANS

PIs Sta 91+04.32
Θs = 1° 38' 13.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

-Y2- CURVE DATA
PI Sta 12+61.42
Δ = 6° 37' 50.8" (LT)
D = 4° 35' 01.2"
L = 144.66'
T = 72.41'
R = 1,250.00'

-L- POT Sta.90+70.00 =
-DRIB- POT Sta.10+00.00
-L- CS Sta.90+37.65

-L- POC Sta.85+20.00 =
-Y2- POT Sta.10+00.00

END CONSTRUCTION
-Y2- POT Sta.13+50.00

-Y2- PT Sta.13+33.67

-Y2- POT Sta.13+87.13

-BY4- 84 POT 8+84.91 =
-Y2- STA. 13+84.92 (21.74' RT.)

-Bl- 41 PINC 82+09.33 =
-BY4- POT 5+00.00 =
-L- STA. 85+50.27 (4.68 LT.)

-Y2- PC Sta.11+89.01

-DRIB- PC Sta.10+55.31

-DRIB- CURVE DATA
PI Sta 11+03.75
Δ = 88° 10' 47.6" (LT)
D = 114° 35' 29.6"
L = 76.95'
T = 48.44'
R = 50.00'

GEORGE R. TURNER
DB 523 PG 487

REGINA THOMPSON
DB 714 PG 826

GEORGE W. TURNER
DB 281 PG 83

JAMES L. GRANT
DB 725 PG 517

23 JAMES C. SANDERS

25 LEWIS E. MCDANIEL
DB 231 PG 229
DB 427 PG 407
DB 558 PG 721

26 CLYDE E. HENSON
DB 701 PG 488

28 CATHERYN DEATON
DB 595 PG 814

30 ROCKY D. BLACKWELL
DB 575 PG 551

24 MARTHA B. SIMS
DB 534 PG 686

27 FLOYD L. BUCKNER
DB 412 PG 235

18 CATHERYN DEYTON

29 MICHAEL WALKER
DB 381 PG 81

31 ROBERT H. BRADLEY
DB 676 PG 406

32

SR 2102 HINES RD.

SEE SHEET NO.9

SEE SHEET NO.11

MATCH LINE

-L- STA.80+00.00

-L- STA.85+00.00

-L- STA.91+00.00

LATERAL BASE DITCH
SEE DETAIL"F"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 34 TONS
76 SY FILTER FABRIC

LATERAL BASE DITCH
SEE DETAIL"C"
EST. CY DDE

LATERAL 'V' DITCH
SEE DETAIL"B"
EST. CY DDE

LATERAL 'V' DITCH
SEE DETAIL"F"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 24 TONS
53 SY FILTER FABRIC

LATERAL BASE DITCH
SEE DETAIL"F"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 36 TONS
80 SY FILTER FABRIC

CLASS 'T' RIP RAP
EST. 16 TONS
21 SY FILTER FABRIC

CLASS 'T' RIP RAP
EST. 36 TONS
46 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 6 TONS
21 SY FILTER FABRIC

SPECIAL CUT DITCH
SEE DETAIL"A"

BEGIN SPECIAL MEDIAN GRADING

BEGIN PROPOSED SHLD.BERM GUTTER -L- STA.84+50.00

END PROPOSED SHLD.BERM GUTTER -L- STA.88+15.00

-L- STA.80+86 END C/A FENCE
-L- STA.80+97 BEGIN C/A FENCE
-L- STA.82+42 END C/A FENCE
-L- STA.83+04 BEGIN C/A FENCE
-L- STA.84+02 END C/A FENCE
-L- STA.84+65 BEGIN C/A FENCE
-L- STA.84+95.00 END C/A FENCE
-L- STA.86+07.00 BEGIN C/A FENCE
-L- STA.88+62 END C/A FENCE
-L- STA.89+00 BEGIN C/A FENCE
-L- STA.89+20 BEGIN C/A FENCE
-L- STA.89+36 END C/A FENCE

ACCESS POINT

COLLAR AND EXTEND 24" RCP, 2GI(B)

COLLAR AND EXTEND 24" RCP

COLLAR AND EXTEND 30" RCP

CLEAN OUT PIPE AND DITCH THEN COLLAR AND EXTEND 36" RCP

CLEAN OUT PIPE

2GI(B) W/FLAT GRATE

JB W/MH

FALSE SUMP

SPRING BOX

CAT-1

TEST HOLE #1
-L- 82+30.66 15.29' LEFT
TOP UTILITY=718.76

BM #7
-BL- STA. 82+33
54' LEFT
ELEV. 712.84'

RETAIN

200' TAPER

50' TAPER LT & RT

EXIST R/W

TRAFFIC DIAGRAM
8,700 / 15,600
8,900 / 15,800
-L-
216 / 400
416 / 600
2007 ADT
2030 ADT
632 / 1000
-Y2-

NOTES: (1) SEE SHEET 33 FOR -L- PROFILE
(2) SEE SHEET 43 FOR -Y2- PROFILE
(3) SEE SHEET 48 FOR -DRIB- PROFILE
(4) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS
(5) DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS
(6) SEE ROADWAY STANDARD DRAWING STD.NO.862.01 SHEETS 1&2 OF 11 FOR SPECIAL MEDIAN GRADING

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-L- SPIRAL DATA
PIs Sta 91+04.32
θs = 1°38'13.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

NAD 1983

-L- ST Sta.92+37.65

BEGIN BRIDGE
-L- POT Sta.93+79+/-

END BRIDGE
-L- POT Sta.99+49+/-

-L- STA.91+00.00

-L- STA.103+00.00

95+00

100+00

BROAD RIVER

33
GEORGE W. TURNER
DB 281 PG 83

30
ROCKY D. BLACKWELL
DB 575 PG 551

32
JOHN BRADLEY
DB 676 PG 408

34
LEID CORPORATION
DB 284 PG 250
PB 556 PG 564

34A
DUKE ENERGY

EXISTING DUKE ENERGY RIGHT OF WAY

200.00'

532.05' N 82°00'00" E

BEGIN PROPOSED SHLD.BERM GUTTER
-L- STA.92+25.00

PREFORMED SCOUR HOLE

BEGIN 6" DECK DRAINS
12' SPACING
STA. 93+88
OUTSIDE SHLD.

BRIDGE IDENTIFICATION
STATION -L- 96+49.00
72" MBT
1@89'; 3@120'; 1@99'
SKEW - 90

END DECK DRAINS
STA. 94+44 OUTSIDE SHLD.

REMOVE EXISTING BRIDGE

REMOVE EXISTING GUARDRAIL

GRADE TO DRAIN

2GI(B) W/FLAT GRATE

SUBSTA

18" CSP*

15" CSP

4' PS

CAT-1

US 221

TYPE M350

SPECIAL CUT DITCH
SEE DETAIL "A"

-DRIB- N 6°34'42.6" W

CLASS 'II' RIP RAP

BEGIN PROPOSED SHLD.BERM GUTTER
-L- STA.92+88.00

-BL- 42 PINC 89+57.09 =
-L- STA. 93+00.22 (9.36 LT.)

-DRIB- PT Sta.11+32.27

-DRIB- POT Sta.13+29.74

ACCESS POINT

-L- STA.93+64
BEGIN C/A FENCE

BEGIN 6" DECK DRAINS
12' SPACING
STA. 93+88
OUTSIDE SHLD.

-L- STA.93+04
END C/A FENCE

S 08°32'48"E 131.25'

S 82°29'34" W 156.98'

-DRIB- CURVE DATA
PI Sta 11+03.75
Δ = 88°10'47.6" (LT)
D = 114°35'29.6"
L = 76.95'
T = 48.44'
R = 50.00'

N 10°13'07.9" W

-BL-

-L-

Ex R/W To CL

36' CONC

100PR

BM #8
STA. 95+72
4' LEFT
ELEV. 717.58'

*REQ'D 6" DECK DRAINS @ 12' SPACING FROM STA. 93+88 TO 96+40 OUTSIDE SHOULDERS ON EACH BRIDGE

END DECK DRAINS
STA. 96+40 OUTSIDE SHLD.

883.47' N 84°06'46" E

N 3°59'15" E 750.00'

-BL- 43 PINC 97+77.63 =
-L- STA. 101+20.71 (18.96 LT.)

50' INC.

TOE PROTECTION
SEE DETAIL "N"

PROPOSED SHLD.BERM GUTTER

REMOVE EXISTING GUARDRAIL

7SPR

FALSE SUMP

N 9°32'56.0" W

CONCRETE LINED DITCH

PROPOSED RETAINING WALL

CLASS 'II' RIP RAP

-WALL-
N 9°32'56.0" W

S 5°58'11.7" W

N 34°01'52.3" E

BEGIN PROPOSED SHLD.BERM GUTTER
-L- STA.101+77.00

CLASS 'B' RIP RAP
EST. 3 TONS
10 SY FILTER FABRIC

-WALL- POT Sta.11+83.08
-L- POT Sta.101+77.00 (115.5' RT)

-WALL- POT Sta.11+40.28
-L- POT Sta.101+46.00 (86' RT)

-WALL- POT Sta.10+39.28
-L- POT Sta.100+45.00 (86' RT)

NOTE: SEE ROADWAY STANDARD DRAWING, STD.NO.862.01 SHEETS 1 & 2 OF 11 FOR SPECIAL MEDIAN GRADING

-WALL- POT Sta.10+00.00
-L- POT Sta.100+16.00 (112.5' RT)

NOTES: (1) SEE SHEET 33 FOR -L- PROFILE
(2) SEE SHEET 48 FOR -DRIB- PROFILE
(3) SEE SHEET 2-H FOR PAVEMENT - BRIDGE RELATIONSHIP
(4) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS

SEE SHEET NO.10

SEE SHEET NO.12

MATCH LINE

MATCH LINE

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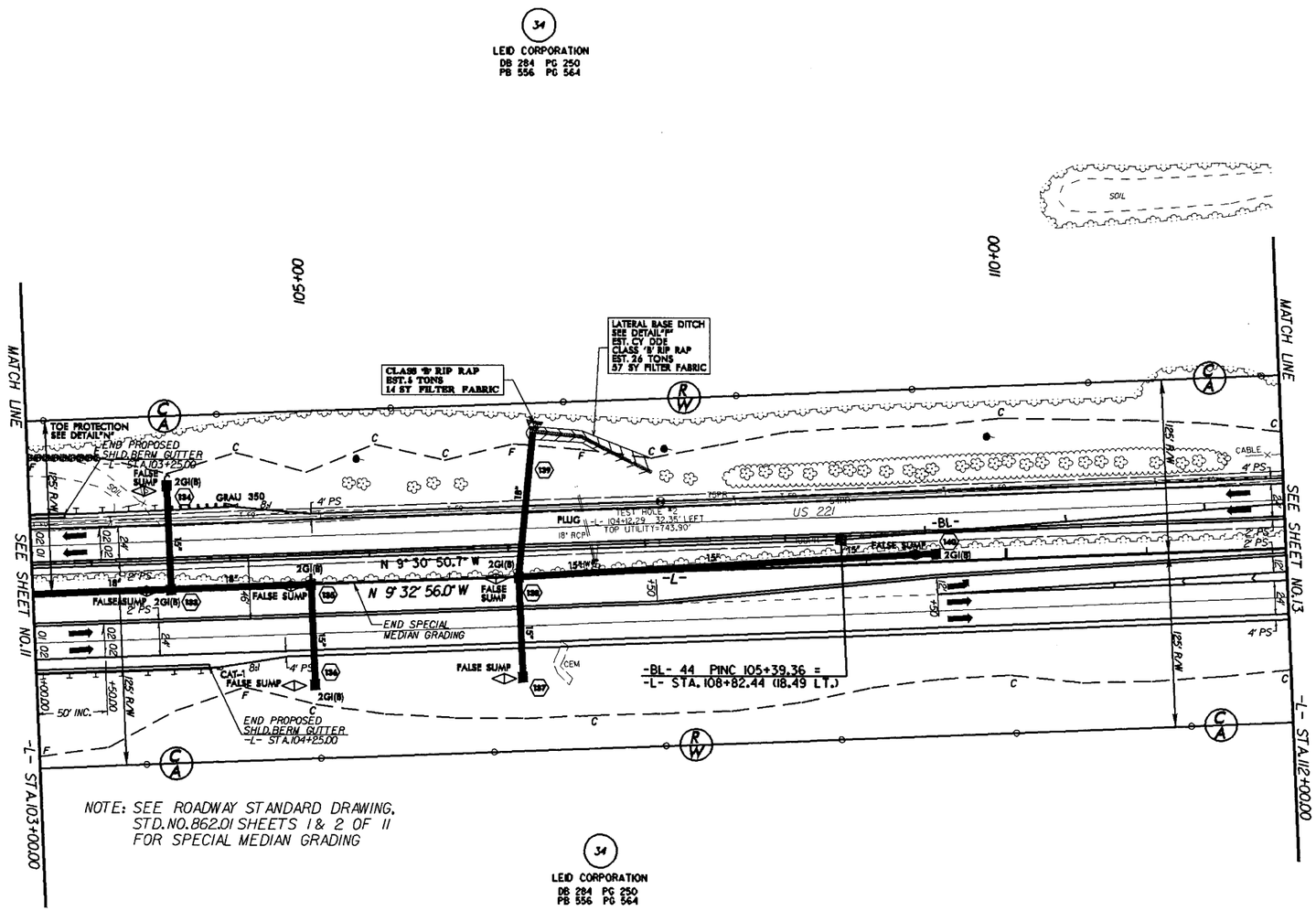
PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

NAD 83/95



NOTE: SEE ROADWAY STANDARD DRAWING, STD.NO.862.01 SHEETS 1 & 2 OF 11 FOR SPECIAL MEDIAN GRADING

NOTE: SEE SHEET 34 FOR -L- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

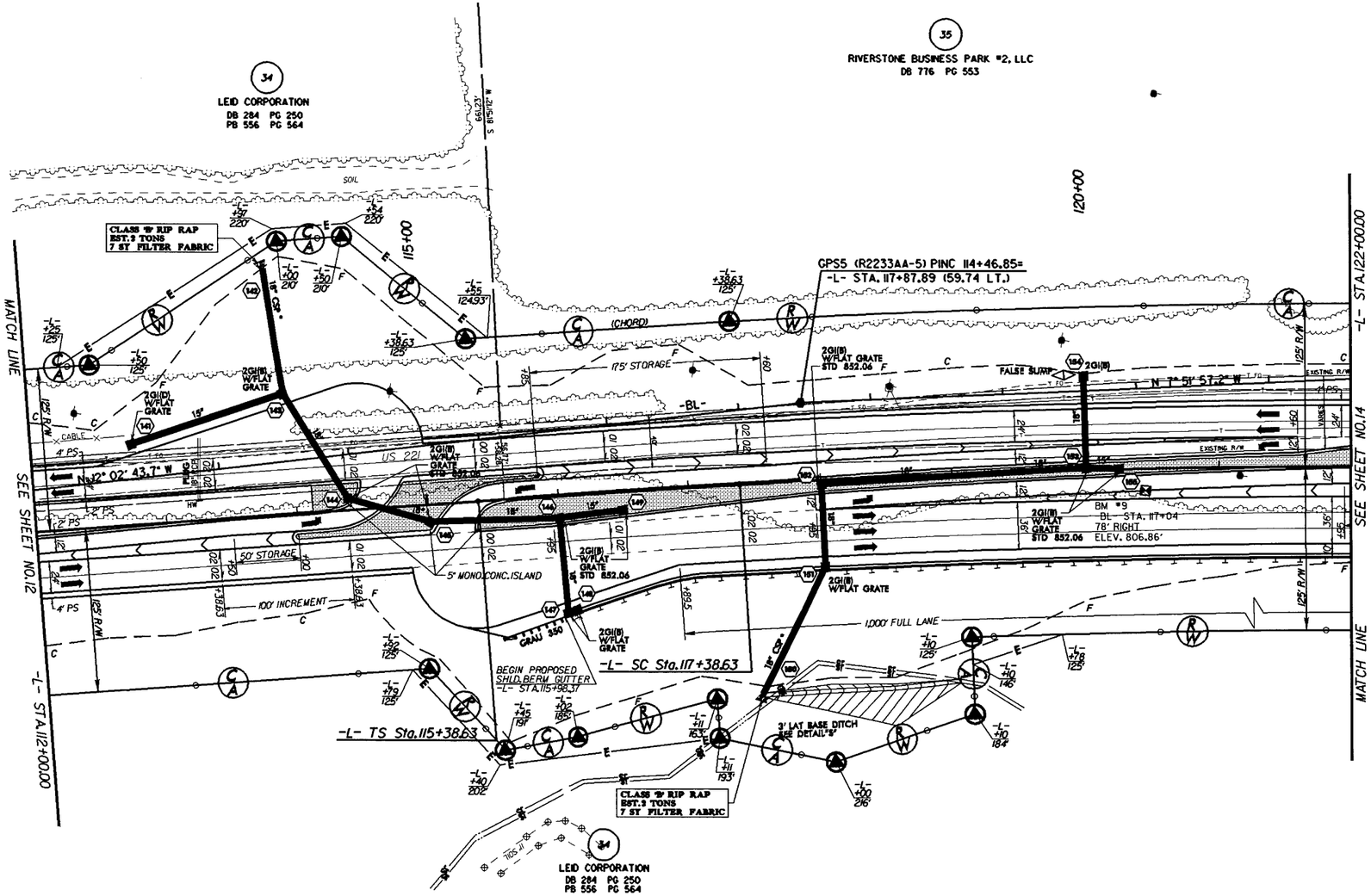
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-L- CURVE DATA

PIs Sta 116+71.96	PI Sta 123+35.93
θs = 0° 45' 50.2"	Δ = 9° 06' 24.6" (RT)
Ls = 200.00'	D = 0° 45' 50.2"
LT = 133.33'	L = 1,192.08'
ST = 66.67'	T = 597.30'
	R = 7,500.00'
	SE = SEE PLANS

NAD 1983



NOTES: (1) SEE SHEET 34 FOR -L- PROFILE
(2) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS
(3) DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-L- CURVE DATA

PI Sta 123+35.93
Δ = 9° 06' 24.6" (RT)
D = 0° 45' 50.2"
L = 1,192.08'
T = 597.30'
R = 7,500.00'
SE = SEE PLANS

PIs Sta 129+97.38
Θs = 0° 45' 50.2"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

NAD 83/95

35
RIVERSTONE BUSINESS PARK #2, LLC
DB 776 PG 553

36
RIVERSTONE BUSINESS PARK #1 LLC
DB 763 PG 283

34
LEID CORPORATION
DB 284 PG 250
PB 556 PG 564

RIVERSTONE BLVD.

-L- STA.122+60
END C/A FENCE
TIE TO EXISTING

ACCESS POINT

-L- STA.124+56
BEGIN C/A FENCE

TIE TO EXISTING 1'-6" CURB & GUTTER

BEGIN EXPRESSWAY GUTTER
-L- STA.124+34.19

GPS6 (R2233AA-6) PINC 124+59.59=
-L- STA. 127+87.89 (117.76 LT.)

375' FULL LANE

200' TAPER

END EXPRESSWAY GUTTER
-L- STA.130+32.00

LATERAL 'V' DITCH
SEE DETAIL "B"
EST. CY DDE

MATCH LINE

SEE SHEET NO.13

SEE SHEET NO.15

-L- STA.135+00.00

-L- STA.122+00.00

-BL- N 7° 51' 57.2" W

N 9° 52' 57.9" E

N 7° 05' 09.0" E

US 221

MODIFIED CONCRETE FLUME

5' MONO. CONC. ISLAND

50' STORAGE

FALSE SUMP

2GI(B) W/FLAT GRATE

18" CSP

1,000' FULL LANE

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY FILTER FABRIC

END PROPOSED SHLD.BERM GUTTER
-L- STA.130+75.00

100' INCREMENT

720' TAPER

(CHORD)

LATERAL 'V' DITCH
SEE DETAIL "B"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 10 TONS
22 SY FILTER FABRIC

-BL- 47 PINC 131+20.82 =
-L- STA. 134+37.57 (12.43 LT.)

-L- CS Sta.129+30.71

-L- ST Sta.131+30.71

RIVERSTONE BLVD.

524 / 800 — 2007 ADT / 2030 ADT

8,900 / 15,800 — 208 / 300 — 316 / 500 — 9,008 / 16,000 — -L-

TRAFFIC DIAGRAM

NOTES: (1) SEE SHEET 35 FOR -L- PROFILE
(2) - ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-L- CURVE DATA

PIs Sta 138+48.53	PI Sta 147+84.20
θs = 0° 57' 17.7"	Δ = 16° 28' 55.5" (LT)
Ls = 200.00'	D = 0° 57' 17.7"
LT = 133.34'	L = 1,726.00'
ST = 66.67'	T = 869.00'
	R = 6,000.00'
	SE = SEE PLANS

NAD 83'95

-L- TS Sta.137+15.20

-L- SC Sta.139+15.20

-L- STA.135+00.00

135+00

140+00

145+00

-L- STA.148+05.00

MATCH LINE

SEE SHEET NO.14

SEE SHEET NO.16

BM #10
-BL- STA. 132+90
104' LEFT
ELEV. 842.54'

TEST HOLE #3
-L- 133+78.35 30.83' LEFT
TOP UTILITY=839.79'

34 LEID CORPORATION
DB 284 PG 250
PB 556 PG 564

37 STEPHEN D. LOWE
DB 498 PG 480
DB 678 PG 284

CLASS 'B' RIP RAP
EST. 2 TONS
7 ST FILTER FABRIC

CLASS 'B' RIP RAP
EST. 48 TONS
78 ST FILTER FABRIC

SPECIAL CUT DITCH
SEE DETAIL'A'

(CHORD)

US 221
22' BST

-BL-

-L-

N 1°05'09.0" E

N 1°19' 55.9" W

EXISTING R/W

COLLAR AND EXTEND 18" RCP

RETAIN 18" RCP

FALSE SUMP

2GI(B)

CAT-1

BEGIN PROPOSED SHLD.BEAM GUTTER
-L- STA.144+75.00

-BL- 48 PINC 141+60.82 =
-L- STA. 144+80.14 (19.34 LT.)

-L- STA.145+25
END C/A FENCE

-L- STA.145+84
BEGIN C/A FENCE

-L- STA.148+01
END C/A FENCE

ACCESS POINT

JB W/SLAB

3'x3' CONC WW

24" CSP

2GI(B) W/FLAT GRATE

CLASS IV W/MITH

GRAU 350

38 JEFFREY L. WALKER
DB 678 PG 238
PB 17 PG 112

39 BOYCE C., SR. GREENE
DB 789 PG 823
PB 17 PC 112

S 65°51'02" W 322.36'

N 66°24'57" E 458.31'

S 23°59'16" E 318.20'

NOTES: (1) SEE SHEET 35 FOR -L- PROFILE
(2) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS
(3) DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

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-L- CURVE DATA

PI Sta 147+84.20	PIs Sta 157+07.87
Δ = 16° 28' 55.5" (LT)	Θs = 0° 57' 17.7"
D = 0° 57' 17.7"	Ls = 200.00'
L = 1,726.00'	LT = 133.34'
T = 869.00'	ST = 66.67'
R = 6,000.00'	
SE = SEE PLANS	

-Y3- CURVE DATA

PI Sta 12+30.00	PI Sta 17+25.62
Δ = 74° 34' 11.0" (RT)	Δ = 17° 06' 00.5" (LT)
D = 28° 38' 52.4"	D = 3° 49' 11.0"
L = 260.30'	L = 447.68'
T = 152.28'	T = 225.52'
R = 200.00'	R = 1,500.00'

NAD 83/95

-L- STA.148+50.00

-L- STA.149+85 BEGIN C/A FENCE

-L- STA.149+23 END C/A FENCE

ACCESS POINT

-BL- 49 PINC 150+18.04 = -L- STA. 153+40.58 (15.49 LT.)

-L- CS Sta.156+41.20

-L- ST Sta.158+41.20

-L- STA.158+93 END C/A FENCE

-L- STA.159+53 BEGIN C/A FENCE

-L- POT Sta.161+50.00 = -Y3- POT Sta.10+00.00

MATCH LINE

SEE SHEET NO.15

SEE SHEET NO.17

-L- STA.162+50.00

-L- STA.148+60 BEGIN C/A FENCE

-L- STA.162+05.67 BEGIN C/A FENCE

-BY5- 85 PINC 10+37.07 = -Y3- STA. 14+84.57 (46.49 RT.)

-Y3- PC Sta.10+77.72

-Y3- PT Sta.13+38.02

-Y3- PC Sta.15+00.11

-Y3- PT Sta.19+47.79

-Y3- POT Sta.21+06.78

END CONSTRUCTION -Y3- POT Sta.19+80.00

-BY5- 86 POT 16+59.17 = -Y3- STA. 20+98.82 (16.41' RT.)

BM #11
-BL- STA. 149+59
38' RIGHT
ELEV. 854.85'

BM #12
-BY5- STA. 15+81
14' RIGHT
ELEV. 871.90'

BERM DITCH SEE DETAIL"J" EST. CY DDE CLASS 'B' RIP RAP EST. 20 TONS 44 SY FILTER FABRIC

BERM DRAINAGE OUTLET (STD. 850.11)

2' BASE BERM DITCH SEE DETAIL"P"

BERM DITCH SEE DETAIL"H"

LATERAL "V" DITCH SEE DETAIL"B" EST. CY DDE

LATERAL BASE DITCH SEE DETAIL"G" EST. CY DDE CLASS 'B' RIP RAP EST. 24 TONS 53 SY FILTER FABRIC

CLASS 'B' RIP RAP EST.3 TONS 11 SY FILTER FABRIC

SPECIAL CUT DITCH SEE DETAIL"A"

SPECIAL BASE DITCH SEE DETAIL"V"

CLASS 'B' RIP RAP EST.6 TONS 14 SY FILTER FABRIC

END PROPOSED SHLD.BERM GUTTER -L- STA.148+75.00

BEGIN PROPOSED SHLD.BERM GUTTER -Y3- STA.13+31.55

END PROPOSED SHLD.BERM GUTTER -Y3- STA.18+00.00

STEPHEN D. LOWE DB 498 PG 480 DB 678 PG 284

STEVE T. MODE DB 678 PG 284 PB 17 PG 12

G. & R. BUILDERS DB 733 PG 76

LARRY H. JENKINS DB 756 PG 224

SALOMON P. MENDOZA DB 729 PG 123

ROBBIE G. HUNT DB 709 PG 563 PB 17 PG 12

JOYCE A. PACE DB 706 PG 542

PERRY PACE DB 231 PG 141

APPROXIMATE LOCATION OF SEPTIC SYSTEM PER PROPERTY OWNER

TRAFFIC DIAGRAM

9,008 / 16,000		9,308 / 16,300 -L-
216 / 400	516 / 700	
732 / 1100 -Y3-		2007 ADT / 2030 ADT

NOTES: (1) SEE SHEET 36 FOR -L- PROFILE
(2) SEE SHEET 44 FOR -Y3- PROFILE
(2) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS
(3) DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

LARRY T. PACE
DB 675 PG 687
PB 6 PG 22

CHARLES O. HUMPHRIES
DB 357 PG 729
PB 6 PG 22

WELDON C. CONNER
DB 391 PG 562
PB 6 PG 42

DEWEY S. GOWAN
DB 667 PG 187
PB 6 PG 42

STEPHEN D. LOWE
DB 498 PG 480

JUNE G. THOMPSON
DB 762 PG 55
PB 6 PG 22

STEPHEN M., SR. WAMPLER
DB 771 PG 203

MICHAEL D. REID

PERRY PACE
DB 231 PG 141

DONALD W. MILLIS
DB 408 PG 60

DONALD S. MARGARITA
DB 711 PG 248

MARGARET A. ROBBINS
DB 635 PG 479
PB 6 PG 42

NAD 83/95

-BL- 50 PINC 159+83.99 =
-BY5- POT 5+00.00 =
-L- STA. 163+07.77 (15.48 LT.)

-BL- 51 PINC 165+59.05 =
-BY6- POT 5+00.00 =
-L- STA. 168+82.83 (14.64 LT.)

-BY7- 89 PINC 11+07.29

-L- POT Sta.168+39.22 =
-Y4- POT Sta.10+00.00

END CONSTRUCTION
-Y4- POT Sta.13+00.00
-Y4- POT Sta.13+42.70

-L- STA.162+50.00

-L- STA.172+50.00

SEE SHEET NO.16

SEE SHEET NO.18

MATCH LINE

SR 1116 (HOGAN RD.)

SR 2269 (DAVIS LAKE DR.)

CLASS 'B' RIP RAP
EST. 5 TONS
11 SY FILTER FABRIC

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY FILTER FABRIC

LATERAL 'V' DITCH
SEE DETAIL "B"
EST. CY DDE

LATERAL 'V' DITCH
SEE DETAIL "E"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 26 TONS
60 SY FILTER FABRIC

HEAD DITCH
SEE DETAIL "G"

COLLAR AND
EXTEND 18" RCP

RETAIN

REMOVE

ACCESS POINT

BEGIN C/A FENCE

END C/A FENCE

SEPTIC DRAIN LINES

SEPTIC TANK

5' MONO. CONC. ISLAND

200' TAPER

180' TAPER

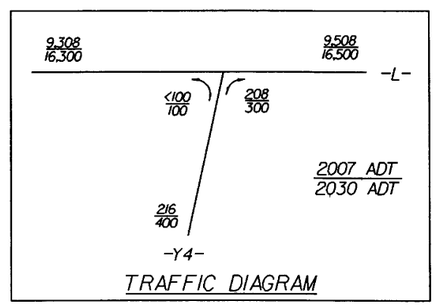
BM #23
-BL- STA. 164+84
100' RIGHT
ELEV. 878.75'

N 17° 13' 19.7" W

N 17° 18' 22.0" W

N 85° 03' 49.9" E

N 16° 51' 40.3" W



TRAFFIC DIAGRAM

NOTES: (1) SEE SHEET 36 FOR -L- PROFILE
(2) SEE SHEET 44 FOR -Y4- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-Y5- CURVE DATA
PI Sta 10+67.81
Δ = 10° 49' 55.8" (RT)
D = 8° 00' 40.5"
L = 135.21'
T = 67.81'
R = 715.20'

NAD 1983

SEE SHEET NO.17

MATCH LINE

SR 1116 HOGAN ROAD

-L- STA.172+50.00

-Y5- PC Sta.10+00.00

BEGIN CONSTRUCTION

-Y5- PT Sta.11+35.21

-L- STA.173+49.90 END C/A FENCE

-L- STA.176+00 BEGIN C/A FENCE

-L- POT Sta.174+98.44 =
-Y5- POT Sta.12+73.29

GPS T (R2233AA-7) PINC 172+09.20=
-BY7- POT 14+83.24 =
-BY8- POT 5+00.00 =
-L- STA. 175+32.97 (9.59 LT.)

-L- STA.179+58 END C/A FENCE

-L- STA.180+18 BEGIN C/A FENCE

-L- STA.181+40 END C/A FENCE

-L- STA.182+00 BEGIN C/A FENCE

-L- STA.183+77 END C/A FENCE

-L- STA.184+37 BEGIN C/A FENCE

-L- STA.186+50.00

-L- STA.186+20 BEGIN C/A FENCE

-L- STA.185+60 END C/A FENCE

-L- STA.183+77 BEGIN C/A FENCE

-L- STA.180+64 BEGIN C/A FENCE

-L- STA.180+04 END C/A FENCE

-L- STA.176+60 BEGIN C/A FENCE

-L- STA.174+02 END C/A FENCE

-BL- 53 PINC 179+74.65 =
-L- 182+98.37 (17.62 LT.)

-L- POT Sta.174+96.40 =
-Y6- POT Sta.10+00.00

END CONSTRUCTION
-Y6- POT Sta.12+65.00

N 43° 35' 08.7" E

-Y6- POT Sta.12+92.94

N 41° 12' 23.9" E

N 17° 54' 26.2" W

N 17° 18' 22.0" W

N 18° 32' 09.8" W

N 47° 40' 36.8" E

SEE SHEET NO.19

MATCH LINE

US 221
22' BST

5' MONO. CONC. ISLAND

SR 2211 BUCK COLLINS RD.

54 MICHAEL D. REID
DB 667 PG 427
PB 6 PG 42

APPROXIMATE LOCATION OF SEPTIC SYSTEM PER PROPERTY OWNER

55 DEWEY D. GOWAN
DB 237 PG 308
PB 6 PG 42

59 STEVE T. MODE
DB 514 PG 747
PB 17 PG 112

60 JOHN M. ALLEN
DB 493 PG 504

63 CARROLL L. WOMACK
DB 664 PG 247
PB 443 PG 791

53 WELDON C. CONNER
DB 391 PG 562
PB 6 PG 42

52 MARGARET A. ROBBINS
DB 635 PG 479
PB 6 PG 42

56 ROGER H. BRYANT
DB 792 PG 724

57 BILLIE F. DIXON
DB 700 PG 79

58 FRANK J. MATUK
DB 747 PG 765

61 JEANNE A. MCDANIEL
DB 683 PG 337
PB 634 PG 97

62 PHILLIP BARKER
DB 657 PG 210

64 TERESA SMITH
DB 796 PG 246

65 ERVIN F. PADGETT
DB 370 PG 503

HILDA E. STANLEY
DB 614 PG 435

BM #13
-BY8- STA. 7+72
48' RIGHT
ELEV. 880.36'

TEST HOLE #6
-L- 171+54.96 43.8' RIGHT
TOP UTILITY=884.24

TEST HOLE #7
-L- 171+58.85 36.5' RIGHT
TOP UTILITY=884.46

TEST HOLE #8
-L- 174+11.48 43.8' LEFT
TOP UTILITY=881.46

LATERAL "V" DITCH
SEE DETAIL "E"
EST. CY DDE
CLASS "B" RIP RAP
EST. 26 TONS
60 SY FILTER FABRIC

SPECIAL CUT DITCH
SEE DETAIL "A"

LATERAL BASE DITCH
SEE DETAIL "C"
EST. CY DDE

LATERAL BASE DITCH
SEE DETAIL "F"
EST. CY DDE
CLASS "B" RIP RAP
EST. 20 TONS
43 SY FILTER FABRIC

LATERAL BASE DITCH
SEE DETAIL "F"
EST. CY DDE
CLASS "B" RIP RAP
EST. 81 TONS
180 SY FILTER FABRIC

CLASS "B" RIP RAP
EST. 5 TONS
14 SY FILTER FABRIC

CLASS "B" RIP RAP
EST. 3 TONS
11 SY FILTER FABRIC

2GI(B) W/FLAT GRATE STD 852.06

2GI(B)

ACCESS POINT

REMOVE

200' TAPER

50' STORAGE

100' STORAGE

100'-30'-100' OFFSET 5'

FALSE SUMP

GATE

ELECTRIC METER

DOUBLE LANE ACCESS POINT

2" PLASTIC

4" PS

2' PS

16' DIP
4' PS

-Y5-
316/500
2007 ADT
2030 ADT
9,508/16,500
<100/100
208/300
9,708/16,700
-L-
216/400
216/400
-Y6-
532/900

TRAFFIC DIAGRAM

NOTES: (1) SEE SHEET 37 FOR -L- PROFILE
(2) SEE SHEET 44 FOR -Y5- PROFILE
(3) SEE SHEET 45 FOR -Y6- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-L- CURVE DATA

PI Sta 194+87.75
Θs = 1° 28' 08.8"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 208+83.67
Δ = 37° 38' 30.3" (LT)
D = 1° 28' 08.8"
L = 2,562.19'
T = 1,329.25'
R = 3,900.00'
SE = SEE PLANS

NAD 83/95

MATCH LINE

SEE SHEET NO.18

SEE SHEET NO.20

-L- STA.186+50.00

-L- STA.195+00.00

-L- STA.199+00.00

63
CARROLL L. WOMACK
DB 664 PG 247
PB 443 PG 791

67
CHARLES T. BEAM
DB 214 PG 444

68
DALE BEAM
DB 333 PG 477

69
ALVIN R. DEDMON
DB 493 PG 563
DB 707 PG 871

65
HAROLD L. CAFFELL
DB 465 PG 65

66
BARBARA C. GREENE
DB 709 PG 752

ERVIN F. PADGETT
DB 370 PG 503

DONALD R. PADGETT
DB 465 PG 63

70

-L- STA.186+95 END C/A FENCE
-L- STA.187+55 BEGIN C/A FENCE
ACCESS POINT
-L- STA.190+50 END C/A FENCE
-L- STA.191+10 BEGIN C/A FENCE
BEGIN PROPOSED SHLD.BERM GUTTER -L- STA.192+00.00
CLASS 'B' RIP RAP EST.5 TONS 11 SY FILTER FABRIC
-BL- 54 PINC 188+45.48 = -L- STA. 191+69.00 (36.32 LT.)
-L- TS Sta.193+54.41
-L- SC Sta.195+54.41
END PROPOSED SHLD.BERM GUTTER -L- STA.196+25.00
-L- STA.197+45 END C/A FENCE
-L- STA.198+07 BEGIN C/A FENCE
SPECIAL CUT DITCH W/CLASS 'B' RIPRAP SEE DETAIL "H"
BEGIN PROPOSED SHLD.BERM GUTTER -L- STA.188+25.00
END PROPOSED SHLD.BERM GUTTER -L- STA.192+00.00
CLASS 'B' RIP RAP EST.1 TONS 4 SY FILTER FABRIC
-L- STA.194+60 BEGIN C/A FENCE
-L- STA.194+00 END C/A FENCE
CLASS 'B' RIP RAP EST.3 TONS 10 SY FILTER FABRIC
BASE TAIL DITCH SEE DETAIL "I" EST. 225 CY DDE
BM #15 -BL- STA 185+71 24' RIGHT ELEV. 892.80'
TEST HOLE #10 -L- 192+70.16 48.90' RIGHT TOP UTILITY=899.75'
TEST HOLE #9 -L- 194+24.60 2.85' RIGHT TOP UTILITY=897.60'
GRAU 350
2GI(B) W/FLAT GRATE
COLLAR & EXTEND 18" CMP
RETAIN
FALSE SUMP
REMOVE
5' MONO.CONC. ISLAND
100' STORAGE
EXISTING R/W
(CHORD)
ACCESS POINT
50' INC.
22' BST
US 221
HTR
ISFD
BST
36" CONC
3" PLASTIC
2" PLASTIC
48" WW
48" WD RAIL
254.86' S 71°51'06" E
143.44' S 49°27'38" E
S 61°55'56" W 53.55'
N 18°09'03" E 224.40'
N 18° 52' 09.8" W
N 17° 18' 22.0" W
N12°25'04"W 127.03'
N12°37'28"E 270.50'

NOTES: (1) SEE SHEET 37 FOR -L- PROFILE
(2) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-L- CURVE DATA
PI Sta 208+83.67
Δ = 37° 38' 30.3" (LT)
D = 1° 28' 08.8"
L = 2,562.19'
T = 1,329.25'
R = 3,900.00'
SE = SEE PLANS

NAD 83/95

VERGE A. DEDMON
DB 433 PG 41

JERRY R. DEDMON
DB 627 PG 709

FRANKIE Z. PEARSON
DB 406 PG 621
DB 450 PG 136

ALVIN R. DEDMON
DB 493 PG 563
DB 707 PG 871

CLYDE R. DEDMON
DB 416 PG 501
DB 567 PG 162

RHONDA L. GREENE
DB 782 PG 258

FRED R. HILL
DB 216 PG 38
DB 642 PG 153

BARBARA C. GREENE

ELIZABETH A. SKIPPER
DB 642 PG 149

JOHNNY HILL
DB 657 PG 684

RONNIE SIMMONS
DB 710 PG 457
PB 18 PG 61

-L- STA.199+00.00
-L- STA.199+29 END C/A FENCE
-L- STA.199+90 BEGIN C/A FENCE
200+00
-L- STA.201+57.04 (17.19 LT.) = BL- 55 PINC 198+27.63
-L- STA.201+76 BEGIN C/A FENCE
-L- STA.201+17 END C/A FENCE
-DR2- PC Sta.10+72.31
-DR2- PT Sta.11+16.93
-DR2- POT Sta.11+93.76
-L- STA.203+22 END C/A FENCE
-L- STA.203+82 BEGIN C/A FENCE
-L- STA.203+43 END C/A FENCE
-DR2- POT Sta.10+00.00 = -L- POC Sta.203+44.00
205+00
-L- STA.204+03 BEGIN C/A FENCE
END CONSTRUCTION
-DR2- POT Sta.11+93.00
-L- STA.205+41.82 BEGIN PROPOSED SHLD.BERM GUTTER
-L- STA.206+56.41 END PROPOSED SHLD.BERM GUTTER
-L- STA.207+70 END C/A FENCE
-L- STA.208+29 BEGIN C/A FENCE
-L- STA.209+81 END C/A FENCE
-L- STA.210+43 BEGIN C/A FENCE
210+00
-L- STA.212+00.00

CLASS 'B' RIP RAP
EST. 10 TONS
39 SY FILTER FABRIC

LATERAL BASE DITCH
SEE DETAIL"F"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 105 TONS
233 SY FILTER FABRIC

CLASS 'I' RIP RAP
EST. 55 TONS
55 SY FILTER FABRIC

LATERAL 'A' DITCH
SEE DETAIL"E"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 120 TONS
267 SY FILTER FABRIC

-DR2- CURVE DATA
PI Sta 10+95.00
Δ = 25° 33' 51.9" (LT)
D = 57° 17' 44.8"
L = 44.62'
T = 22.69'
R = 100.00'

NOTES: (1) SEE SHEET 38 FOR -L- PROFILE
(2) SEE SHEET 47 FOR -DR2- PROFILE
(3) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS

SEE SHEET NO.19
SEE SHEET NO.21
MATCH LINE
MATCH LINE

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

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-L- CURVE DATA
PI Sta 208+83.67
Δ = 37° 38' 30.3" (LT)
D = 1° 28' 08.8"
L = 2,562.19'
T = 1,329.25'
R = 3,900.00'
SE = SEE PLANS

-Y7- CURVE DATA
PI Sta 12+62.32
Δ = 45° 55' 17.3" (LT)
D = 14° 19' 26.2"
L = 320.59'
T = 169.41'
R = 400.00'

PI Sta 17+56.51
Δ = 36° 04' 57.6" (LT)
D = 28° 38' 52.4"
L = 125.95'
T = 65.14'
R = 200.00'

MATCH LINE SEE SHEET NO.22 -L- STA.221+00.00

-BL- 57 PINC 217+07.85 =
-L- STA. 220+51.57 (6.71LT.)

220+00

NAD 83/95

FLOYD'S CREEK BAPTIST CHURCH
DB 345 PG 45
DB 406 PG 81
PB 375 PG 101

END CONSTRUCTION
-Y7- POT Sta.22+50.00

-BY10- 92 POT 12+58.16

SR 2210 CHASE HIGH SCHOOL RD.

BM #18
-BY10- STA12+58
N 47°35'20.1" E 91.67
ELEV. 940.71'

LEO BUCKNER
DB 237 PG 634

BOBBY G. BUCKNER
DB 304 PG 265

-Y7- POT Sta.22+50.34

79
LEEROY CHILDERS
DB 481 PG 403

80
TOMMY M. ROBBINS
DB 491 PG 428

OUTLET CHANNEL NEEDS TO BE CLEANED OUT

CLASS "B" RIP RAP
EST. 6 TONS
14 SY FILTER FABRIC

FALSE SUMP

2GI(B) W/FLAT GRATE STD 852.04

-Y7- PC Sta.16+91.37

-L- STA.215+80.54
BEGIN C/A FENCE

SPECIAL CUT DITCH SEE DETAIL"A"

TIE TO EXISTING DITCH

-Y7- PT Sta.14+13.45

5' MONO. CONC. ISLAND

215+00

N 42° 20' 52.4" E
END C/A FENCE
-L- POC Sta. 215+20.00 =
-Y7- POT Sta.15+93.09

BM #16
-BL- STA. 210+91
32' RIGHT
ELEV. 927.55'

-BY9- 91 PINC 13+75.61=
-Y7- STA. 13+46.24 (80.45' RT.)

N 65° 41' 03.9" E

GUARDRAIL BARRIER

TES

OBLITERATE & REMOVE

RETAIN

"V" TAIL DITCH
SEE DETAIL"K"
EST. 25 CY DDE

75
CLYDE R. DEDMON
DB 416 PG 501
DB 567 PG 152

76
RONNIE SIMMONS
DB 710 PG 457
PB 18 PG 61

77
RONALD M. WELLS
DB 382 PG 74

-Y7- PT Sta.18+17.32

LATERAL "V" DITCH
SEE DETAIL"B"
EST. CY DDE

LATERAL "V" DITCH
SEE DETAIL"E"
EST. CY DDE
CLASS "B" RIP RAP
EST. 120 TONS
267 SY FILTER FABRIC

-BL- 56 PINC 210+04.79 =
-BY9- POT 16+28.57 =
-BY10- POT 5+00.00 =
-L- STA. 213+44.99 (23.83 LT.)

MATCH LINE SEE SHEET NO.20 -L- STA.212+00.00

10+00

-Y7- POT Sta.10+00.00
BEGIN CONSTRUCTION
-Y7- POT Sta.10+60.00

SR 1117 HARPIL RD.
N 88° 41' 15.5" E

-Y7- PC Sta.10+92.85

2007 ADT
2030 ADT

	-L-		
	7,144 / 13,400		
408 / 500	200 / 200	232 / 600	3,220 / 4,600
-Y7-			
	108 / 200	2,888 / 3,900	
		9,708 / 16,700	

TRAFFIC DIAGRAM

NOTES: (1) SEE SHEET 38 FOR -L- PROFILE
(2) SEE SHEET 45 FOR -Y7- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

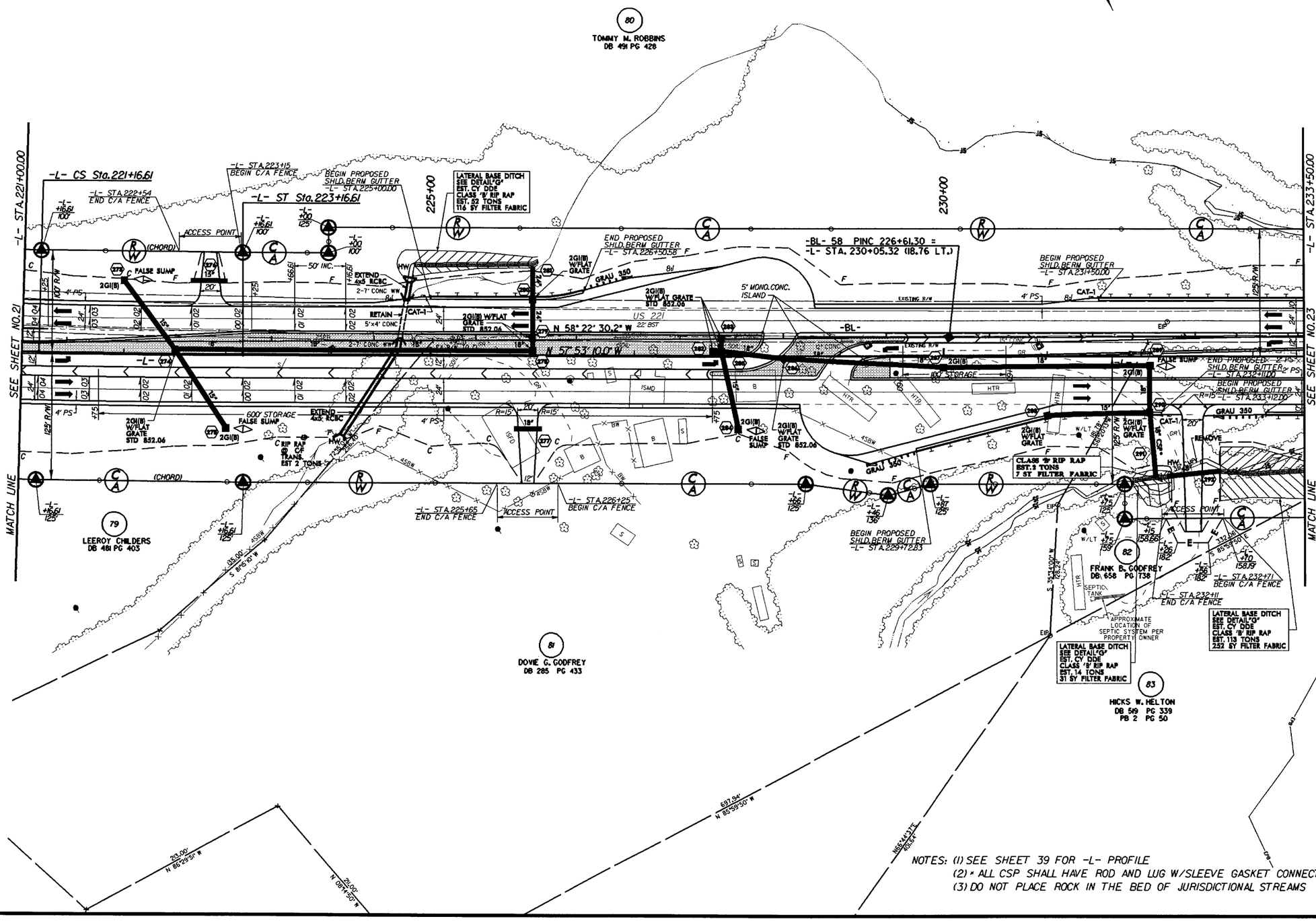
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-L- CURVE DATA

PI Sta 208+83.67	PIs Sta 221+83.28
Δ = 37° 38' 30.3" (LT)	Θs = 1° 28' 08.8"
D = 1° 28' 08.8"	Ls = 200.00'
L = 2,562.19'	LT = 133.34'
T = 1,329.25'	ST = 66.67'
R = 3,900.00'	
SE = SEE PLANS	

NAD 83/95



NOTES: (1) SEE SHEET 39 FOR -L- PROFILE
(2) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS
(3) DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-Y8- CURVE DATA
PI Sta 12+18.69
Δ = 41° 15' 39.5" (RT)
D = 19° 05' 54.9"
L = 216.04'
T = 112.94'
R = 300.00'

NAD 83/93

80 TOMMY M. ROBBINS
DB 491 PG 428

84 ARNITA CAMP
DB 410 PG 389
PB II PG 3

87 LYNETTE B. DOVER
DB 699 PG 220
PB II PG 3

88 DEAVER A. CAMP
DB 452 PG 370
PB II PG 3

89 LUCY K. CAMP
DB 409 PG 510
PB II PG 3

90 ROGER PHILLIPS
DB 420 PG 588
DB 663 PG 146

85 BILLY D. HONEYCUTT
DB 707 PG 503
PB II PG 3

86 MICHAEL D. HONEYCUTT
DB 707 PG 506
PB II PG 3

83 HICKS W. HELTON
DB 519 PG 339
PB 2 PG 50

JERUSALEM BAPTIST CHURCH
DB 189 PG 560

TIMOTHY R. PHILLIPS
DB 545 PG 808

TIMMY PHILLIPS
TAMMY NORMAN
DB 914 PG 524

-L- STA.233+50.00

-L- STA.235+00

-L- STA.240+00

-L- STA.245+00

-L- STA.247+00.00

-L- POT Sta.244+00.00 =
-Y8- POT Sta.10+00.00

-BL- 59 PINC 235+94.38 =
-L- STA. 239+38.40 (19.94 LT.)

-Y8- PC Sta.11+05.74

-Y8- PT Sta.13+21.78

END CONSTRUCTION
-Y8- POT Sta.14+00.00

-Y8- POT Sta.15+73.05

GPS9 (R2233AA-9) PINC 242+85.45=
-BYII- POT 5+00.00 =
-L- STA. 246+29.42 (2.38 LT.)

LATERAL BASE DITCH
SEE DETAIL"G"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 113 TONS
252 SY FILTER FABRIC

LATERAL BASE DITCH
SEE DETAIL"A"
EST. CY DDE
CLASS 'I' RIP RAP
EST. 100 TONS
EST. 80 SY FILTER FABRIC
EST. 65 CY DDE

LATERAL BASE DITCH
SEE DETAIL"F"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 33 TONS
73 SY FILTER FABRIC

SPECIAL CUT DITCH
SEE DETAIL"A"

CULVERT IS HALF FULL OF SILT AND NEEDS TO BE CLEANED BEFORE EXTENDING

EST. 125 CY DDE

EXTEND 6x4 RCBC

EXTEND 6x5 RCBC

2-4' CONC ww

5'x6' CONC

RETAIN

2GI(B) W/FLAT GRATE

GRAU 350 2GI(B)

FALSE SUMP

OBLITERATE & REMOVE

REMOVE

FILL & CAP WELL

ISFD

SEPTIC TANK

APPROXIMATE LOCATION OF SEPTIC SYSTEM PER PROPERTY OWNER

END PROPOSED SHLD.BERM GUTTER -L- STA.237+00.00

END PROPOSED SHLD.BERM GUTTER -L- STA.236+25.00

BEGIN PROPOSED SHLD.BERM GUTTER -L- STA.246+25.00

-L- STA.236+52 END C/A FENCE

-L- STA.237+12 BEGIN C/A FENCE

-L- STA.237+50 END C/A FENCE

-L- STA.238+10 BEGIN C/A FENCE

-L- STA.240+18 END C/A FENCE

-L- STA.240+78 BEGIN C/A FENCE

-L- STA.242+07 END C/A FENCE

-L- STA.242+67 BEGIN C/A FENCE

-L- STA.243+39.23 END C/A FENCE

-L- STA.244+92 END C/A FENCE

-L- STA.245+52 BEGIN C/A FENCE

-L- STA.245+25.21 BEGIN C/A FENCE

ACCESS POINT

US 221
22' BST

N 57° 57' 31.3" W

N 57° 53' 10.0" W -BL-

N 57° 15' 32.6" W

N 32° 06' 50.0" E

5' MONO.CONC. ISLAND

200' TAPER

150' TAPER

50' TAPER LT & RT

N 73° 22' 29.5" E

N 69° 56' 21.5" E

NEW JERUSALEM CHURCH RD. SR 2230

LENNON DR.

N 55° 10' 19" W 514.94'

228.77' 12" CONC N 46° 38' 07" W

EXISTING R/W 4' PS

EXISTING R/W

EXIST.R/W

MTL WINDMILL

PLANTER

GRADE TO DRAIN

MATCH LINE

SEE SHEET NO.22

SEE SHEET NO.24

TRAFFIC DIAGRAM

7,144 / 13,400		7,360 / 13,800
208 / 300	-L-	424 / 700
632 / 1,000	-Y8-	2007 ADT / 2030 ADT

NOTES: (1) SEE SHEET 39 FOR -L- PROFILE
(2) SEE SHEET 45 FOR -Y8- PROFILE
(3) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS
(4) DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS
(5) SEE SHEET ____ FOR ROCK PLATING DETAIL

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

NAD 83'95

-L- STA.247+00.00

-L- STA.260+00.00

250+00

255+00

260+00

MATCH LINE — SEE SHEET NO.23

MATCH LINE — SEE SHEET NO.25

88 DEAVER A. CAMP DB 452 PG 370 PB II PG 3

89 LUCY K. CAMP

90 ROGER PHILLIPS DB 663 PG 146

91 CLYDE R. DEDMON DB 616 PG 298

92 CHERYL L. BAYNARD DB 652 PG 589

93 GARY QUEEN DB 793 PG 166

94 HANNAH R. THOMPSON DB 780 PG 649

95 HANNAH R. THOMPSON DB 780 PG 649

96 JAMES D. QUEEN DB 796 PG 275

97 JAMES H. SIMMONS DB 155 PG 88

VIRGINIA P. KEARNEY DB 735 PG 412

TRENTON PHILLIPS DB 914 PG 522

S 35°18'46" E 231.98'

349.49' S 38°59'18" W

N 38°59'18" E 328.89'

S 01°19'46" E 328.78'

S 35°18'46" E 254.13'

S 18°28'37" W 467.00'

-L- STA.247+04 END C/A FENCE

CORNER ACCESS POINT

-L- STA.247+64 BEGIN C/A FENCE

-L- STA.258+03 END C/A FENCE

GATE ACCESS POINT

-L- STA.258+63 BEGIN C/A FENCE

BUTTERFLY DR.

FORMER HTR SITE

SEPTIC TANK?

APPROXIMATE LOCATION OF SEPTIC SYSTEM PER PROPERTY OWNER

APPROXIMATE LOCATION OF SEPTIC SYSTEM

SEPTIC TANK

HTR

POOL

ISFD

BERM DITCH SEE DETAIL"I"

BERM DRAINAGE OUTLET (STD. 850.10)

-L- POT Sta.249+50.00 = -DR2A- POT Sta.10+00.00

-DR3- POT Sta.10+00.00 = -L- POT Sta.256+11.00

-BL- 61 PINC 251+32.42 =

-L- STA. 254+76.38 (17.90 LT.)

BEGIN PROPOSED SHLD.BERM GUTTER -L- STA.258+82.00

REMOVE

US 221

FALSE SUMP

5' MONO. CONC. ISLAND

50' STORAGE

2GI(B) W/FLAT GRATE STD 840.06

2GI(B) W/FLAT GRATE

CAT-1

GRAU 350

SEAL CUP PLUG

-DR2A- PC Sta.10+90.00

-L- STA.249+88 BEGIN C/A FENCE

-DR2A-

-DR2A- PT Sta.11+68.54

N 57° 53' 10.0" W

-DR2A- POT Sta.12+98.00

END CONSTRUCTION -DR2A- POT Sta.12+98.54

-DR3- PC Sta.11+22.37

-L- STA.256+41 BEGIN C/A FENCE

-DR3- PT Sta.12+29.01

END CONSTRUCTION -DR3- POC Sta.12+29.00

CLASS 'B' RIP RAP EST.4 TONS 5Y FILTER FABRIC

CLASS 'B' RIP RAP EST.3 TONS 7 SY FILTER FABRIC

LATERAL BASE DITCH SEE DETAIL"C" EST. CY DDE

LATERAL 'V' DITCH SEE DETAIL"B" EST. CY DDE

GRADE TO DRAIN

END PROPOSED SHLD.BERM GUTTER -L- STA.249+20.00

BEGIN PROPOSED SHLD.BERM GUTTER -L- STA.253+48.41

END PROPOSED SHLD.BERM GUTTER -L- STA.255+45.00

BEGIN PROPOSED SHLD.BERM GUTTER -L- STA.258+50.00

-L- STA.249+28 END C/A FENCE

N 58°15'35.4" W 199.39'

N 32°06'50.0" E

N 57°10'45.4" W 18'

N 57°53'10.0" W

S 06°47'32" E 310.91'

S 80°17'48" W 233.00'

N 06°42'12" W 185.85'

S 06°47'23" E 302.46'

S 70°52' W 78°58'46" E 370.52'

S 81°07'34" E 142.23'

N 71°35'18" W 277.08'

S 85°42'50" W 185.66'

455.37' S 82°07'58" W

-DR2A- CURVE DATA
PI Sta 11+40.00
Δ = 90° 00' 00.0" (LT)
D = 114° 35' 29.6"
L = 78.54'
T = 50.00'
R = 50.00'

-DR3- CURVE DATA
PI Sta 11+80.80
Δ = 58° 11' 20.0" (LT)
D = 54° 34' 02.7"
L = 106.64'
T = 58.43'
R = 105.00'

NOTES: (1) SEE SHEET 40 FOR -L- PROFILE
(2) SEE SHEET 47 FOR -DR3- PROFILE
(3) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

-Y9- CURVE DATA

PI Sta 11+09.16	PI Sta 13+84.07	PI Sta 17+79.70	PI Sta 20+63.13
Δ = 4° 44' 52.0" (RT)	Δ = 35° 08' 20.6" (LT)	Δ = 25° 00' 55.0" (RT)	Δ = 23° 57' 17.8" (LT)
D = 2° 10' 33.6"	D = 19° 05' 54.9"	D = 11° 27' 33.0"	D = 11° 27' 33.0"
L = 218.19'	L = 183.99'	L = 218.30'	L = 209.05'
T = 109.16'	T = 94.99'	T = 110.92'	T = 106.07'
R = 2,633.07'	R = 300.00'	R = 500.00'	R = 500.00'

NAD 83/95

MATCH LINE

SEE SHEET NO.26

OTHORNELL HARRIS

-L- STA 269+00.00

OTHORNELL HARRIS
DB 253 PG 225

JAMES H. SIMMONS
DB 155 PG 88

D&H, LLC
DB 873 PG 505

BM #25
-BY12- STA 10+60
52' LEFT
ELEV. 790.70'

BEGIN CONSTRUCTION
-Y9- POC Sta.11+50.00

SR 2125
HARRIS HENRIETTA RD.

-Y9- PC Sta.10+00.00

-BY12- 94 PINC 12+81.14 =
-Y9- STA. 11+52.24 (16.67' RT.)

-Y9- PC Sta.12+89.08

-Y9- PT Sta.12+18.19

-Y9- PT Sta.14+73.07

-BL- 62 PINC 260+00.51 =
-BY12- PINC 17+41.76 =
-L- STA. 263+44.41 (7.19 LT.)

-L- POT Sta.264+80.00 =
-Y9- POT Sta.15+37.97

-Y9- PC Sta.16+68.78

-Y9- PT Sta.18+87.08

-Y9- PC Sta.19+57.05

-BY12- 95 POT 21+70.17 =
-Y9- STA. 20+11.25 (6.89' RT.)

-Y9- PT Sta.21+66.10

-Y9- POT Sta.23+75.24

END CONSTRUCTION
-Y9- POT Sta.21+75.00

BM #22
-BY12- STA 21+70
N 80°24'12.9" E 83.37'
ELEV. 836.88'

REBAR

FALSE SUMP

SPECIAL CUT DITCH
SEE DETAIL "A"

5' MONO. CONC. ISLAND

2GI(B) W/FLAT GRATE STD 852.06

150' TAPER

200' TAPER

150' STORAGE

US 221

N 46° 20' 00.0" E

N 79° 30' 50.8" E REMOVE

N 74° 34' 36.9" E

N 8° 28' 20.6" E

N 7° 20' 55.0" E

N 47° 23' 31.2" E

N 52° 50' 50.1" E

N 82° 15' 00.0" E

N 57° 55' 10.1" W

S 67° 09' W
627.00'

TEST HOLE #14
-L- 260+22.37 BUT RIGHT
TOP UTILITY=802.58'

TEST HOLE #15
-L- 263+51.35 BUT RIGHT
TOP UTILITY=801.18'

THIS TELEPHONE LINE COULD NOT BE LOCATED BEYOND THIS POINT. BELLSOUTH PLANS. IT IS DEAD ACCORDING TO

REMOVE

-L- STA.263+22.38
END C/A FENCE

BEGIN C/A FENCE

END PROPOSED SHLD.BERM GUTTER
-L- STA.263+00.00

END PROPOSED SHLD.BERM GUTTER
-L- STA.263+92.10

EXTEND WITH 7' X 8' RCBC

EXTEND WITH 7' X 7' RCBC

1 CAT-1 2GI(B) W/FLAT GRATE

2GI(B) W/FLAT GRATE

RETAIN

CLASS 'B' RIP RAP
EST. 84 TONS
EST. 34 SY FILTER FABRIC
EST. 34 CY DDE

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY FILTER FABRIC

EST. 45 CY DDE

50' TAPER LT & RT

EXIST. R/W OBLITERATE & REMOVE

EXIST. R/W 60'

EXIST. R/W 125'

125' R/W

WOODS

SECONDARY GROWTH

GRAVEL PARKING

A/G GAS TANK

ISMTLBUS

FLAG POLE

GRASS

CONC

CROSSTIES

VAR.GR

EIP #4 CMP

18" CMP

12" CMP

HTR

JAMES H. SIMMONS
DB 155 PG 88

HANNAH R. THOMPSON
DB 780 PG 649

JAMES D. QUEEN
DB 796 PG 275

TRAFFIC DIAGRAM

-L-

-Y9-

	2007 ADT / 2030 ADT
-L-	8,108 / 15,100
-Y9-	1,264 / 2,000
-Y9-	2,212 / 3,500
-Y9-	<100 / 200
-L-	1,280 / 2,200
-Y9-	424 / 700
-Y9-	108 / 200
-L-	7,360 / 13,800

NOTES: (1) SEE SHEET 40 FOR -L- PROFILE
(2) SEE SHEET 46 FOR -Y9- PROFILE
(3) * ALL CSP SHALL HAVE ROD AND LUG W/SLEEVE GASKET CONNECTORS & 2 ELBOWS
(4) DO NOT PLACE ROCK IN THE BED OF JURISDICTIONAL STREAMS

SEE SHEET NO.24

MATCH LINE

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

NAD 83/95

-L- STA. 269+00.00

270+00

275+00

-BL- 63 PINC 268+99.44 =
-L- STA. 272+42.19 (52.50 LT.)

SEE SHEET NO. 25

MATCH LINE

98 OTHORNELL HARRIS DB 253 PG 225

99 ROBERT R. HARRIS DB 442 PG 411

97 JAMES H. SIMMONS DB 155 PG 88

100 HARVEY E. HARRIS DB 442 PG 410

101 SAMUEL HARRIS DB 558 PG 153

ROBERT R. HARRIS DB 442 PG 411

CALLY HARRIS MCCLAIN DB 442 PG 404

CLASS 'B' RIP RAP
EST. 2 TONS
5 SY FILTER FABRIC

5" MONO. CONC. ISLAND

RETAIN AND EXTEND 4X4 RCBC W/34" RCP

RETAIN 4' X 4' CONC

2-4' CONC WW

2GI(B) W/FLAT GRATE STD. 852.04

50' STORAGE

SPECIAL BASE DITCH SEE DETAIL "D"

LATERAL BASE DITCH
SEE DETAIL "F"
EST. CY DDE
CLASS 'B' RIP RAP
EST. 10 TONS
40 SY FILTER FABRIC

END CONSTRUCTION
-L- POT STA. 278+25.00
END C/A FENCE

BEGIN C/A FENCE +50

-L- POT Sta. 280+00.00

END C/A FENCE

END C/A FENCE +18.5

LOCATION OF SEPTIC SYSTEM UNKNOWN?

ISFD (ABAND)

ACCESS POINT

ISFD

BM #23
-BL- STA 275+66
34' RIGHT
ELEV. 761.42

-BL- 64 PINC 277+29.39

US 221

FLOYDS CREEK

END PROJECT R-2233AA
R-2233AA -L- POT Sta. 274+00.00 BK =
R-2233AB -L- POT Sta. 273+96.34 AH
BEGIN PROJECT R-2233AB

NOTES: (1) SEE SHEET 41 FOR -L- PROFILE
(2) SEE SHEET ____ FOR ROCK PLATING DETAIL

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RR- CURVE DATA

PIs Sta 15+33.06	PI Sta 25+62.61
θs = 3° 22' 39.8"	Δ = 86° 26' 10.8" (LT)
Ls = 124.00'	D = 5° 27' 00.0"
LT = 82.68'	L = 1,585.99'
ST = 41.35'	T = 988.24'
	R = 1,051.70'

NAD 83/95

REVISIONS

-BY- 67 POT 40+11.93 =
-L- STA. 48+88.89 (1564.50 LT.)

-RR- POT Sta.10+00.00

10+00

SR 1113 HICKS GROVE RD.
ASPHALT

18" BST

ELECTRIC METER

SIG

CXS RR

CONC

N 21°-08' 37.6" W
-RR-

N 65°-51'-32.4" E
88.17'

2'-6" CMP

CONC HW

SIG LIT

S 31°-06'-29.5" E CXS RR

N 33°-04'-48" W
357.19'

CAROLINA, CLINCHFIELD & OHIO RAILWAY
DB 342 PG 276
DB 342 PG 274

BEGIN CONSTRUCTION
TIE TO EXISTING TRACK
-RR- POT Sta.13+50.00

-RR- TS Sta.14+50.38

-RR- SC Sta.15+74.38

LINE AND SURFACE EXISTING TRACK CUT AND THROW EXISTING TRACK INTO PROPOSED TRACK

15+00

CONSTRUCT NEW TRACK AFTER SHUTDOWN OF EXISTING TRACK

CONSTRUCT PROPOSED TRACK

20+00

PNDP 48" CMP

ARC LENGTH = 330.05'
RADIUS = 1070.17'
CHD. LENGTH = 328.75'
BEARING = 54°54'39"E

ARC LENGTH = 277.72'
RADIUS = 1019.35'
CHD. LENGTH = 276.87'
BEARING = 558°32'49"E

-BYI- 75 PINC 14+75.63 =
-RR- STA. 22+40.41 (74.54-RT)

MATCH LINE

SEE SHEET NO.6

-RR- STA.22+75.00

S 55° 3' 44.2" E CXS RR

TEMPORARY SHORING

48" CMP

EXISTING TRACK TO BE REMOVED

-BY- 68 PINC 36+94.92 =
-BYI- POT 5+00.00 =
-L- STA. 46+54.93 (1350.59 LT.) =
-RR- STA. 12+91.45 (22.23 RT.)

ARC LENGTH = 1415.79'
RADIUS = 2091.83'
CHD. LENGTH = 1388.84'
BEARING = N01°55'43"W

N 12° 30' 17.7" W

-BYI- 74 PINC 10+16.18 =
-RR- STA. 18+01.75 (30.79 RT)

CAROLINA, CLINCHFIELD & OHIO RAILWAY
DB 342 PG 276
DB 342 PG 274

-BY- 69 PINC 31+70.41 =
-L- STA. 42+19.07 (1058.81 LT.)

CONC HW

40" STEEL

CONC HW

N 1° 52' 22.7" E CXS RR

CONC

S 60°-08'-09" W

RONALD L. GREENE
DB 340 PG 428
DB 405 PG 373
DB 699 PG 91

NOTE: SEE SHEET 42 FOR -RR- PROFILE

NO HYDRO DESIGN PROVIDED

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

NAD 83/95

JESSE T. LANCASTER
DB 366 PG 238

HOWARD L. PARRIS
DB 458 PG 727
DB 743 PG 398
DB 388 PG 647
DB 802 PG 482
DB 421 PG 332
DB 452 PG 238
DB 391 PG 490

HICKS E. LANCASTER
DB 235 PG 348

LINE AND SURFACE EXISTING TRACK CUT AND THROW EXISTING TRACK INTO PROPOSED TRACK

-RR- ST Sta. 32+84.36

-RR- STA. 32+50.00

LINE AND SURFACE EXISTING TRACK RUNOFF RAISED TRACK TO EXISTING PROFILE.

-BYI- 78 PINC 27+76.25 =
-RR- STA. 34+74.17 (10.29 RT.)

-RR- POT Sta. 45+89.65

BM #5
-BYI- STA 34+12
60' LEFT
ELEV. 783.51'

-BYI- 79 PINC 33+68.32 =
-RR- STA. 40+65.81 (12.37 LT.)

STATE LINE RD.

SR 2105

CSX RR

N 51° 30' 24.1" E

N 53° 42' 00.0" E

N 56° 01' 41.1" E

N 53°29'39" E

END CONSTRUCTION
TIE TO EXISTING TRACK
-RR- POT Sta. 39+00.00

GEORGE T. WARRICK
DB 636 PG 814

GEORGE T. WARRICK
DB 390 PG 387

JOHN E. BLANCHARD
DB 640 PG 670

-RR- CURVE DATA
PIs Sta 32+01.71
Θs = 3° 22' 39.8"
Ls = 124.00'
LT = 82.68'
ST = 41.35'

NOTE: SEE SHEET 42 FOR -RR- PROFILE

SEE SHEET NO.6

MATCH LINE

NO HYDRO DESIGN PROVIDED

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #1 EL.798.06
RR SPIKE IN BASE OF 10" LOCUST
-BL- STA.9+38 (66' RT.)
-L- STA.12+80.01 (50.14' RT.)

-L-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 2

DRAINAGE AREA	= 0.86	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 2.4	CFS
DESIGN HW ELEVATION	= 796.90	FT
100 YEAR DISCHARGE	= 2.7	CFS
100 YEAR HW ELEVATION	= 797.96	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 15	CFS
OVERTOPPING ELEVATION	= 799.39	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 7 (LT.)
DRAINAGE STRUCTURE NO. 11 (RT.)

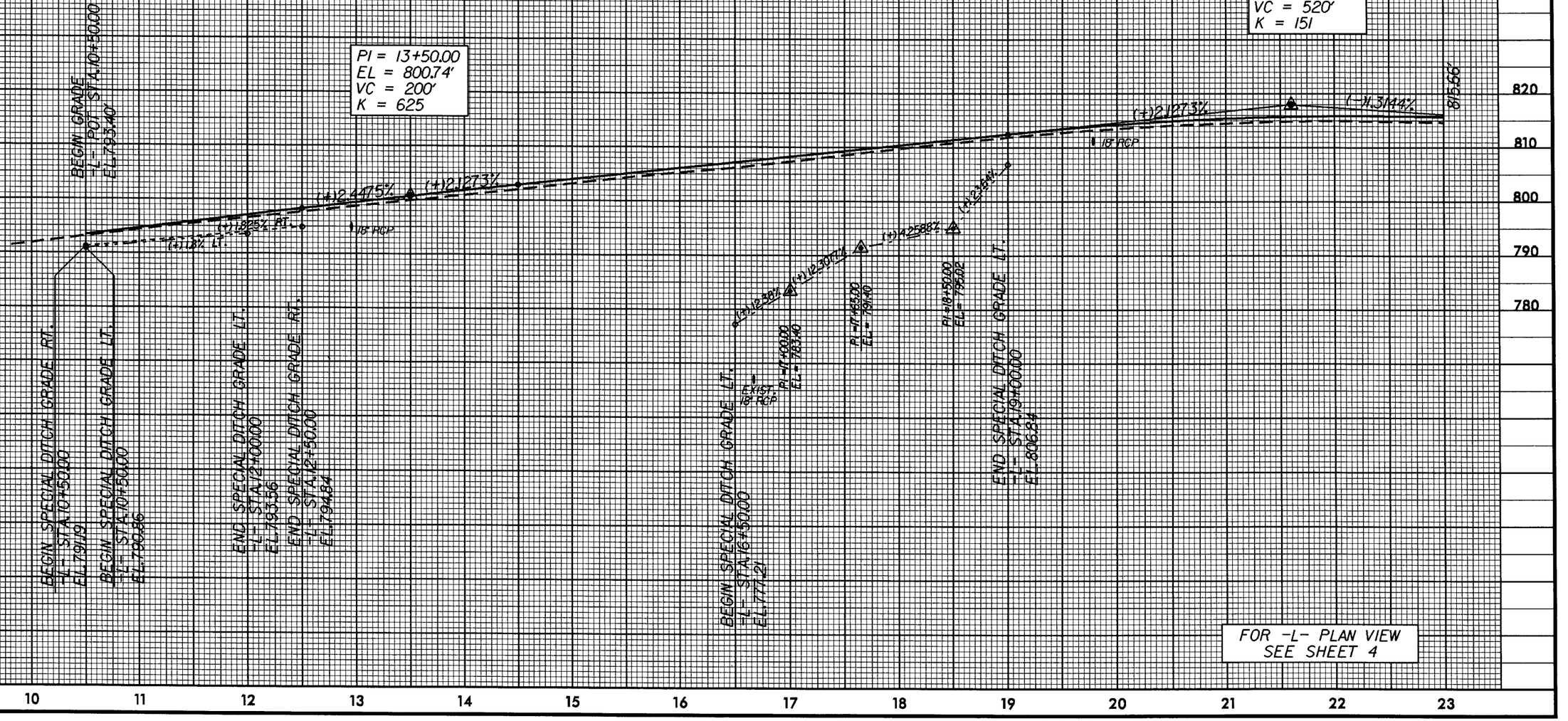
DRAINAGE AREA	= 17.76	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 16.0	CFS
DESIGN HW ELEVATION	= 782.91	FT
100 YEAR DISCHARGE	= 19.0	CFS
100 YEAR HW ELEVATION	= 783.98	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 97	CFS
OVERTOPPING ELEVATION	= 807.49	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 14

DRAINAGE AREA	= 0.46	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 1.3	CFS
DESIGN HW ELEVATION	= 811.30	FT
100 YEAR DISCHARGE	= 1.4	CFS
100 YEAR HW ELEVATION	= 811.31	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 14	CFS
OVERTOPPING ELEVATION	= 813.38	FT

PI = 13+50.00
EL = 800.74'
VC = 200'
K = 625

PI = 21+60.00
EL = 817.97'
VC = 520'
K = 151



FOR -L- PLAN VIEW
SEE SHEET 4

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	30

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-LLT-

-L-

-LRT-

PI = 29+59.11
EL = 808.29'
VC = 200'
K = 182

(-)1.3144%

(-)2.4142%

BM #2 EL.807.27
RR SPIKE IN BASE OF 12" PINE
-BL- STA.25+45 (39' RT.)
-L- STA.28+89.73 (47.79' RT.)

815.66'

IDENTITY:
-L- POC STA.27+10.00 =
-DRIA- POT STA.10+00.00

IDENTITY:
-L- POC STA.27+40.00 LB =
-LLT- BC STA.27+40.00 (27.33' LT.) LA
EL.810.35'
EL.811.17'

IDENTITY:
-L- POC STA.27+40.00 LB =
-LRT- BC STA.27+40.00 (27.33' RT.) LA
EL.809.53'

EQUALITY:
-LLT- PT STA.32+02.67 (35' LT.) LB =
-L- POC STA.32+00.00 LA
EL.802.41'

EQUALITY:
-LRT- PT STA.31+97.46 (35' RT.) LB =
-L- POC STA.32+00.00 LA
EL.802.05'

792.39'

EXIST. 24" CSP

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 28 (RT.)
DRAINAGE STRUCTURE NO. 30 (LT.)

DRAINAGE AREA	= 5.80	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 16.0	CFS
DESIGN HW ELEVATION	= 791.60	FT
100 YEAR DISCHARGE	= 18.0	CFS
100 YEAR HW ELEVATION	= 791.98	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 41	CFS
OVERTOPPING ELEVATION	= 799.65	FT

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 100	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 776.1	FT
BASE DISCHARGE	= 120	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 776.6	FT
OVERTOPPING DISCHARGE	= 690	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 803.5	FT

PI = 30+31.34
EL = 805.70'
VC = 200'
K = 182

C.M. -L- STA.31+32.1
1@4'x5' RCBC (upstream)
1@4'x7' RCBC (downstream)
SKEW 75°

(-)1.3144%

(-)2.4142%

(-)1.9536%

(-)1.1667%

(-)1.9536%

(-)2.4142%

(-)1.3144%

PI=27+40.00
EL=794.80

PI=28+25.00
EL=788.15

PI=28+85.00
EL=781.78

PI=29+45.00
EL=775.41

BEGIN SPECIAL DITCH GRADE LT.
-L- STA.27+00.00
EL.802.90

END SPECIAL DITCH GRADE LT.
-L- STA.30+00.00
EL.772.20

FOR -L-, -LLT- & -LRT- PLAN VIEW
SEE SHEET 5

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	31

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 110	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 761.0	FT
BASE DISCHARGE	= 140	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 761.9	FT
OVERTOPPING DISCHARGE	= 490	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 780.0	FT

—L—

BM #3 EL.785.14
CHISELED X ON TOP OF CONC. SUPPORT WALL
-BL- STA. 40+57 (28' RT.)
-L- STA. 43+98.83 (51.03' RT.)

BEGIN SPECIAL DITCH GRADE LT.
-L- STA. 44+76.00
EL. 802.50

PI = 44+40.00
EL = 772.11'
VC = 860'
K = 137

-L- PRC STA. 45+02.10 =
-RR- PRC STA. 27+38.30

PI = 46+50.00
EL = 800.30

792.39'

806.63'

789.82'

(-)1.047%

(+)2.875%

(+)1.546%

(-)12.4142%

(+)3.8515%

C/L -L- STA. 40+98.5
1 @ 4'x5' RCBC
SKEW 90°

BEGIN SPECIAL DITCH GRADE RT.
-L- STA. 46+50.00
EL. 785.80

END SPECIAL DITCH GRADE RT.
-L- STA. 48+00.00
EL. 797.12

FOR -L- PLAN VIEW
SEE SHEET 6

36 37 38 39 40 41 42 43 44 45 46 47 48 49

810 800 790 780 770 760 750

—L—

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 57 (RT.)
DRAINAGE STRUCTURE NO. 59 (LT.)

DRAINAGE AREA	= 28.33	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 33.0	CFS
DESIGN HW ELEVATION	= 804.47	FT
100 YEAR DISCHARGE	= 40.0	CFS
100 YEAR HW ELEVATION	= 805.14	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 94	CFS
OVERTOPPING ELEVATION	= 814.58	FT

END SPECIAL DITCH GRADE LT.
-L- STA. 50+00.00
EL. 809.50

-L- POT STA. 52+20.00 =
-RR- POT STA. 13+28.84

806.63'

789.82'

812.56'

(+)2.875%

(+)3.8515%

(-)10.325%

(+)1.514%

(+).56%

(+)5.866%

(+)3.8515%

PI = 53+39.00
EL. = 800.00

PI = 54+00.00
EL. = 801.10

30" RCP

PI = 55+25.00
EL. = 802.60

BEGIN SPECIAL DITCH GRADE LT.
-L- STA. 52+50.00
EL. 800.25

END SPECIAL DITCH GRADE LT.
-L- STA. 56+00.00
EL. 810.00

FOR -L- PLAN VIEW
SEE SHEET 7

49 50 51 52 53 54 55 56 57 58 59

840 830 820 810 800 790 780

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	32

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 67 (RT.)
DRAINAGE STRUCTURE NO. 68 (LT.)

DRAINAGE AREA	= 9.32	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 7.9	CFS
DESIGN HW ELEVATION	= 815.78	FT
100 YEAR DISCHARGE	= 9.5	CFS
100 YEAR HW ELEVATION	= 816.06	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 97	CFS
OVERTOPPING ELEVATION	= 828.01	FT

BM #6 EL. 823.24
RR SPIKE IN BASE OF 12" PINE
-BL- STA. 63+23 (12' RT.)
-L- STA. 66+65.39 (65.52' RT.)

-L-

PI = 64+35.00
EL = 848.95'
VC = 1,640'
K = 151

BEGIN SPECIAL DITCH GRADE LT.
-L- STA. 60+41.00
EL. 814.14

826.56

(+)3.851%

END SPECIAL DITCH GRADE LT.
-L- STA. 61+00.00
EL. 822.15

(-)12.553%

(+)11.881%

EXIST. 18" RCP
(-)10.5%

PI = 60+40.00
EL = 805.20

-L- POT STA. 62+30.61 =
-Y- POT STA. 16+25.67

BEGIN SPECIAL DITCH GRADE RT.
-L- STA. 59+50.00
EL. 816.48

END SPECIAL DITCH GRADE RT.
-L- STA. 60+80.00
EL. 805.00

BEGIN SPECIAL DITCH GRADE LT.
-L- STA. 65+50.00
EL. 822.15

(-)3.293%

(+)3.04%

(-)3.53%

PI = 67+00.00
EL = 817.21

814.41

BEGIN SPECIAL DITCH GRADE RT.
-L- STA. 66+50.00
EL. 818.73

END SPECIAL DITCH GRADE RT.
-L- STA. 68+00.00
EL. 813.48

END SPECIAL DITCH GRADE LT.
-L- STA. 67+00.00
EL. 817.21

FOR -L- PLAN VIEW
SEE SHEET 8

60 61 62 63 64 65 66 67 68

814.47

(-)17.00(IT)%

-L-

(-)17.833%

(-)17.00(IT)%

740.41

BEGIN SPECIAL DITCH GRADE RT.
-L- STA. 77+00.00
EL. 758.46

END SPECIAL DITCH GRADE RT.
-L- STA. 77+90.00
EL. 751.50

FOR -L- PLAN VIEW
SEE SHEET 9

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

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	33

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #7 EL.712.84
RR SPIKE IN BASE OF 12" PINE
-BL- STA.82+33 (64' LT.)
-L- STA.85+67.42 (70.39' LT.)

—/—

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.81+50.00
EL.727.84

END SPECIAL DITCH GRADE RT.
-L- STA.85+00.00
EL.716.50

PI = 83+40.00
EL = 715.57'
VC = 1,020'
K = 139

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.102 (RT.)
DRAINAGE STRUCTURE NO.105 (LT.)

DRAINAGE AREA	= 12.82	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 35.0	CFS
DESIGN HW ELEVATION	= 718.62	FT
100 YEAR DISCHARGE	= 40.0	CFS
100 YEAR HW ELEVATION	= 718.86	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 111	CFS
OVERTOPPING ELEVATION	= 725.71	FT

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.90+50.00
EL.715.70

END SPECIAL DITCH GRADE RT.
-L- STA.88+50.00
EL.715.29

BEGIN SPECIAL DITCH GRADE LT.
-L- STA.80+50.00
EL.733.51

END SPECIAL DITCH GRADE LT.
-L- STA.82+20.00
EL.717.80

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.86+50.00
EL.706.12

END SPECIAL DITCH GRADE LT.
-L- STA.87+80.00
EL.701.50

BEGIN SPECIAL DITCH GRADE LT.
-L- STA.86+66.00
EL.694.00

FOR -L- PLAN VIEW
SEE SHEET 10

BM #8 EL.717.58
CHISELED X ON BRIDGE
-BL- STA.95+72 (4' LT.)
-L- STA.99+15.14 (20.55' LT.)

—/—

PI = 103+00.00
EL = 721.88'
VC = 740'
K = 137

END SPECIAL DITCH GRADE RT.
-L- STA.93+00.00
EL.716.95

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 37000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 702.8	FT
BASE DISCHARGE	= 42000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 704.4	FT
OVERTOPPING DISCHARGE	= 105500	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 717.5	FT

BEGIN BRIDGE
-L- POT STA.93+79.47

END BRIDGE
-L- POT STA.99+49.47

EXISTING GROUND ALONG CROWN POINT

FOR -L- PLAN VIEW
SEE SHEET 11

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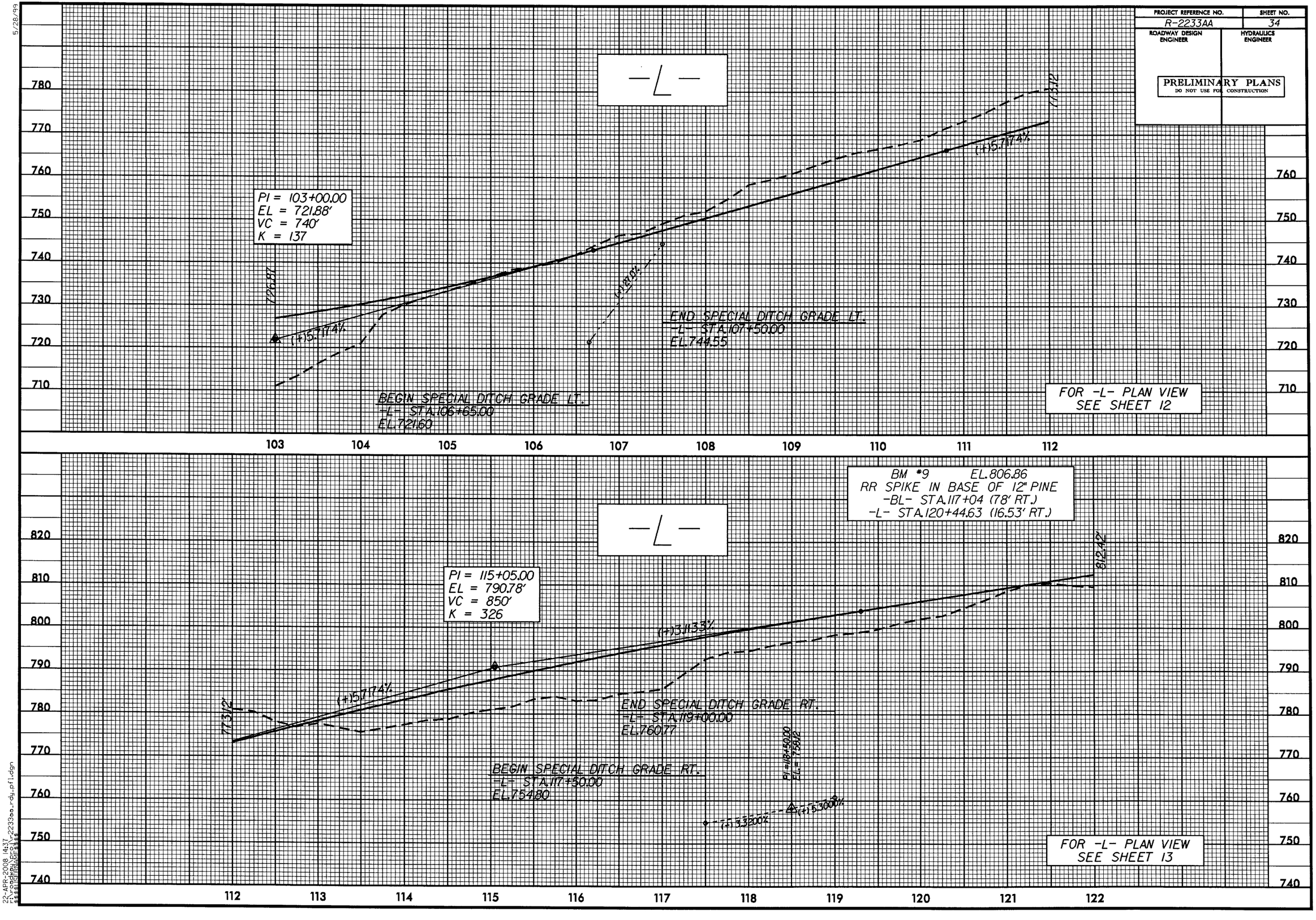
PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PI = 129+50.00
EL = 835.76'
VC = 500'
K = 320

(+)3.11333%

(+)11.55518%

(+)8%

(+)4.90%

(+)4%

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.130+50.00
EL.824.20

BEGIN SPECIAL DITCH GRADE LT.
-L- STA.133+65.00
EL.835.00

END SPECIAL DITCH GRADE RT.
-L- STA.133+00.00
EL.838.06

END SPECIAL DITCH GRADE LT.
-L- STA.135+00.00
EL.841.21

824.20

844.27

FOR -L- PLAN VIEW
SEE SHEET 14

122 123 124 125 126 127 128 129 130 131 132 133 134 135

800 810 820 830 840 850

BM #10 EL.842.54
RR SPIKE IN BASE OF 15" PINE
-BL- STA.132+90 (104' LT.)
-L- STA.136+02.67 (123.56' LT.)

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 166 (LT.)
DRAINAGE STRUCTURE NO. 167 (RT.)

DRAINAGE AREA	= 5.18	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 6.0	CFS
DESIGN HW ELEVATION	= 843.94	FT
100 YEAR DISCHARGE	= 6.8	CFS
100 YEAR HW ELEVATION	= 844.04	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 134	CFS
OVERTOPPING ELEVATION	= 847.49	FT

-L-

PI = 138+60.00
EL = 849.89'
VC = 800'
K = 323

(+)1.55518%

(-)10.92269%

(+)1.42%

(+)5.09926%

18" CSP

END SPECIAL DITCH GRADE RT.
-L- STA.138+50.00
EL.844.80

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.138+00.00
EL.842.59

BEGIN SPECIAL DITCH GRADE LT.
-L- STA.138+05.00
EL.838.00

END SPECIAL DITCH GRADE LT.
-L- STA.139+00.00
EL.843.75

844.27

843.35

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 171 (LT.)
DRAINAGE STRUCTURE NO. 177 (RT.)

DRAINAGE AREA	= 34.12	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 52.0	CFS
DESIGN HW ELEVATION	= 801.00	FT
100 YEAR DISCHARGE	= 63.0	CFS
100 YEAR HW ELEVATION	= 801.43	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 356	CFS
OVERTOPPING ELEVATION	= 843.37	FT

FOR -L- PLAN VIEW
SEE SHEET 15

135 136 137 138 139 140 141 142 143 144 145 146 147 148

820 830 840 850 860 870

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	36

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #11 EL.854.85
CHISELED X ON BASE OF BILLBOARD
-BL- STA.149+59 (38' RT.)
-L- STA.152+78.83 (118.09' RT.)

-L-

PI = 157+10.00
EL = 868.86'
VC = 600'
K = 270

BEGIN SPECIAL DITCH GRADE LT.
-L- STA.148+50.00
EL.832.21

PI = 148+80.00
EL = 840.43'
VC = 600'
K = 138

END SPECIAL DITCH GRADE LT.
-L- STA.149+00.00
EL.831.96

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.149+55.00
EL.815.17

END SPECIAL DITCH GRADE RT.
-L- STA.150+50.00
EL.818.00

843.35'

(+)1.05%

(+)3.425%

(+)11.203%

875.59'

-L- PDT STA.161+50.00
-Y3- PDT STA.10+00.00

(-)2.789%

FOR -L- PLAN VIEW
SEE SHEET 16

149 150 151 152 153 154 155 156 157 158 159 160 161 162

880 870 860 850 840 830 820 810

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 210 (RT.)
DRAINAGE STRUCTURE NO. 213 (LT.)

DRAINAGE AREA	= 3.37	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 8.2	CFS
DESIGN HW ELEVATION	= 881.74	FT
100 YEAR DISCHARGE	= 9.3	CFS
100 YEAR HW ELEVATION	= 881.94	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 1.34	CFS
OVERTOPPING ELEVATION	= 883.98	FT

-L-

875.36'

(+)11.203%

867.39'

(+)11.203%

(+)16.0%

875.73'

(+)0.506%

18" RCP

-L- PDT STA.168+39.22
-Y4- PDT STA.10+00.00

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.171+25.00
EL.875.00

PI -L- 171+00.00
EL = 875.38

FOR -L- PLAN VIEW
SEE SHEET 17

163 164 165 166 167 168 169 170 171 172

890 880 870 860 850 840

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	37

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PI = 183+15.00
EL = 900.20'
VC = 200'
K = 221

BEGIN SPECIAL DITCH GRADE LT.
-L- STA.178+92.00
EL.889.10

END SPECIAL DITCH GRADE LT.
-L- STA.179+50.00
EL.892.75

END SPECIAL DITCH GRADE RT.
-L- STA.173+50.00
EL.895.43

-L- POT STA.174+98.44 =
516' POT STA.12+77.29

-L- POT STA.174+96.40 =
514' POT STA.10+75.25

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.176+50.00
EL.880.37

PI=178+59.00
EL.= 888.71

PI=179+00.00
EL.= 888.76

END SPECIAL DITCH GRADE RT.
-L- STA.180+00.00
EL.891.48

887.39'

887.73'

(+)1.6%

(+)5.2000%

(+)5.9800%

(+)3.5796%

(+)1.7200%

(+)1.2031%

(+)10.3000%

901.21'

FOR -L- PLAN VIEW
SEE SHEET 18

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

910 900 890 880 870 860 850 840

-L-

BM #15 EL.892.80
12" SPIKE IN BASE OF BILLBOARD
-BL- STA.185+71 (54' RT.)
-L- STA.188+95.66 (23.07' RT.)

901.21'

(+)0.3000%

(+)0.3000%

904.96'

(+)1.8881%

BEGIN SPECIAL DITCH GRADE LT.
-L- STA.198+25.00
EL.896.00

END SPECIAL DITCH GRADE LT.
-L- STA.198+50.00
EL.900.71

FOR -L- PLAN VIEW
SEE SHEET 19

187 188 189 190 191 192 193 194 195 196 197 198 199

910 900 890 880 870

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	38

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

-L- POC STA.203+44.00 =
-R2- POT STA.410+26.00

PI = 206+50.00
EL = 907.21'
VC = 480'
K = 137

904.95'

(+)0.3000%

(+)3.80147%

925.33'

(+)3.7333%

915.87'

(+)2.23%

(+)2.2%

(+)2.2061%

(+)3.8%

PI=205+70.00
EL= 892.80'

PI=206+50.00
EL= 889.11'

PI=211+80.00
EL= 914.80'

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.204+00.00
EL.892.00

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.208+50.00
EL.907.31

END SPECIAL DITCH GRADE RT.
-L- STA.207+50.00
EL.901.31

FOR -L- PLAN VIEW
SEE SHEET 20

930 920 910 900 890

199 200 201 202 203 204 205 206 207 208 209 210 211 212

BM #16 EL.927.55
CHISELED SQUARE IN SE CORNER CONC.SIGN BASE
-BL- STA.210+91 (32' RT.)
-L- STA.214+33.29 (2.89' RT.)

-L-

-L- POC STA.215+20.00 =
-R- POT STA.15+93.09

PI = 216+05.00
EL = 943.51'
VC = 1,390'
K = 151

(+)3.80147%

925.33'

915.87'

(+)3.7333%

(-)5.40292%

915.44'

END SPECIAL DITCH GRADE RT.
-L- STA.214+50.00
EL.925.20

FOR -L- PLAN VIEW
SEE SHEET 21

950 940 930 920 910

212 213 214 215 216 217 218 219 220 221

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

965.44'

(-)5.4029%

C/L -L- STA.224+69.8
1@ 4'x5' RCBC
SKEW 80°

(-)5.9846%

BEGIN SPECIAL DITCH GRADE LT.
-L- STA.224+75.00
EL.885.00

END SPECIAL DITCH GRADE LT.
-L- STA.226+05.00
EL.877.22

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 24	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 893.6	FT
BASE DISCHARGE	= 28	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 893.8	FT
OVERTOPPING DISCHARGE	= 160	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 896.8	FT

FOR -L- PLAN VIEW
SEE SHEET 22

(-)5.4029%

857.99'

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.231+85.00
EL.837.20

(-)11.4257%

833.28'

828.28'

(-)4.2938%

END SPECIAL DITCH GRADE RT.
-L- STA.232+20.00
EL.834.70

BM #19 EL.845.03
RR SPIKE IN BASE OF 24" POPLAR
-BL- STA.230+82 (49' LT.)
-L- STA.234+25.89 (67.81' LT.)

-L-

PI = 233+55.00
EL = 848.96'
VC = 990'
K = 137

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 120	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 827.5	FT
BASE DISCHARGE	= 140	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 827.9	FT
OVERTOPPING DISCHARGE	= 780	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 855.7	FT

PI = 242+75.00
EL = 865.75'
VC = 730'
K = 153

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.232+68.00
EL.831.80

(+)11.8255%

(-)2.9504%

857.99'

852.32'

840.61'

BEGIN SPECIAL DITCH GRADE LT.
-L- STA.234+00.00
EL.823.90

857.99'

(+)11.8255%

END SPECIAL DITCH GRADE RT.
-L- STA.234+45.00
EL.824.20

END SPECIAL DITCH GRADE LT.
-L- STA.236+00.00
EL.819.10

(-)14.2938%

(-)1.32%

PI = 235+00.00
EL = 820.70

(-)1.16%

C/L -L- STA.234+89.7
1@ 6'x5' RCBC
SKEW 90°

-L- PVT STA.244+00.00
+8 - FOOT SAG VC=100.00

852.32'

840.61'

(-)11.4257%

FOR -L- PLAN VIEW
SEE SHEET 23

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	40

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

-L- POT STA 249+50.00 =
-DR2A- POT STA 10+00.00

-L- POT STA 256+11.00 =
-DR3- POT STA 10+00.00

853.12'

(-)12.9504%

(-)12.5765%

PI = 247+10.00
EL = 839.88

PI = 248+96.00
EL = 837.50

END SPECIAL DITCH GRADE RT.
-L- STA 249+20.00
EL 839.60

814.96'

(-)12.9504%

FOR -L- PLAN VIEW
SEE SHEET 24

247 248 249 250 251 252 253 254 255 256 257 258 259 260

814.96'

(-)12.9504%

(-)12.9504%

788.30'

-L- POT STA 264+90.00 =
-Y9- POT STA 15+37.97

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 250	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 779.5	FT
BASE DISCHARGE	= 310	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 780.4	FT
OVERTOPPING DISCHARGE	= 1355	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 810.9	FT

CYL -L- STA 261+30.1
1 @ 7'x7' RCBC (upstream)
1 @ 7'x8' RCBC (downstream)
SKEW 90°

FOR -L- PLAN VIEW
SEE SHEET 25

260 261 262 263 264 265 266 267 268 269

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 351 (RT.)
DRAINAGE STRUCTURE NO. 354 (LT.)

DRAINAGE AREA	= 32.00	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 61.0	CFS
DESIGN HW ELEVATION	= 761.07	FT
100 YEAR DISCHARGE	= 73.0	CFS
100 YEAR HW ELEVATION	= 761.47	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 206	CFS
OVERTOPPING ELEVATION	= 765.80	FT

END GRADE
-L- POT STA.27+40.00
EL.773.55'

788.30'

(-12.95%)

(-12.95%)

(-7.50%)

(-7.50%)

PI -L- STA.27+40.00
EL.= 768.00'

54" RCP

BEGIN SPECIAL DITCH GRADE RT.
-L- STA.27+50.00
EL.769.50

END SPECIAL DITCH GRADE RT.
-L- STA.27+90.00
EL.759.80

FOR -L- PLAN VIEW
SEE SHEET 26

810 800 790 780 770 760 750 740 730 720 710 700 690

269 270 271 272 273 274 275 276 277 278 279 280

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RR-

PI = 17+00.00
EL = 834.35'
VC = 250'
K = 1062

(-)2.67782%

(-)2.65000%

(-)2.41467%

BVC 42

BEGIN GRADE
-RR- POT STA 13+50.00
EL 843.43'

FOR -RR- PLAN VIEW
SEE SHEETS 6 & 27

850 840 830 820 810 800 790 780

14 15 16 17 18 19 20 21 22 23 24 25 26

-RR-

-RR- POC STA 27+38.83
-L- POT STA 25+00.00

BVC 42

PI = 37+65.00
EL = 784.49'
VC = 250'
K = 317

(-)2.44615% (-)2.43265%

END GRADE
-RR- POT STA 39+00.00
EL 782.30'

FOR -RR- PLAN VIEW
SEE SHEETS 6 & 28

850 840 830 820 810 800 790 780 770 760

27 28 29 30 31 32 33 34 35 36 37 38 39

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 76

DRAINAGE AREA	= 2.9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 8.0	CFS
DESIGN HW ELEVATION	= 810.08	FT
100 YEAR DISCHARGE	= 9.0	CFS
100 YEAR HW ELEVATION	= 810.21	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 33	CFS
OVERTOPPING ELEVATION	= 813.38	FT

-Y1-

BEGIN SPECIAL DITCH GRADE RT.
-Y1- STA.11+38.00
EL.860.42

END SPECIAL DITCH GRADE RT.
-Y1- STA.12+00.00
EL.856.17

BEGIN SPECIAL DITCH GRADE LT.
-Y1- STA.11+05.00
EL.862.57

BEGIN GRADE
-Y1- POT STA.11+05.00
EL.863.82

END SPECIAL DITCH GRADE LT.
-Y1- STA.12+00.00
EL.856.40

-Y1- POT STA.15+78.57 = STA.22+03.75 (47' LT)
EL.828.53

-Y1- POT STA.16+72.78 = STA.22+21.47 (47' RT)
EL.828.55

BEGIN SPECIAL DITCH GRADE LT.
-Y1- STA.17+50.00
EL.823.48

BEGIN SPECIAL DITCH GRADE LT.
-Y1- STA.20+50.00
EL.801.72

END SPECIAL DITCH GRADE LT.
-Y1- STA.18+80.00
EL.804.38

-Y1A- POC STA.19+25.00

-Y1A- POT STA.20+00.00

END GRADE
-Y1- POT STA.21+35.00
EL.798.94

END SPECIAL DITCH GRADE LT.
-Y1- STA.21+35.00
EL.797.75

PI = 12+50.00
EL = 856.46'
VC = 200'
K = 34

PI = 14+80.00
EL = 831.16'
VC = 180'
K = 22

PI = 17+80.00
EL = 824.88'
VC = 200'
K = 45

PI = 20+35.00
EL = 804.90'
VC = 200'
K = 106

(-)5.0000%
(-)11.0000%
(-)12.6688%
(-)13.4234%
(-)11.8563%
(-)7.2136%
(-)17.8363%
(-)15.9669%
(-)7.1469%
24" RCP

FOR -Y1- PLAN VIEW
SEE SHEET 8

-Y1A-

BEGIN GRADE
-Y1A- POT STA.10+11.00 =
-Y1- POC STA.19+25.00 (11' LT)
EL.813.85'

BEGIN SPECIAL DITCH GRADE RT.
-Y1A- STA.10+80.00
EL.808.50

END SPECIAL DITCH GRADE RT.
-Y1A- STA.11+50.00
EL.811.80

END GRADE
-Y1A- POT STA.13+00.00
EL.816.59'

END SPECIAL DITCH GRADE RT.
-Y1A- STA.13+00.00
EL.815.25

PI = 12+30.00
EL = 814.66'
VC = 140'
K = 59

(+)0.3699%
(+)2.7571%
(+)4.8417%
(+)4.7143%

BEGIN SPECIAL DITCH GRADE RT.
-Y1A- STA.12+50.00
EL.812.83

FOR -Y1A- PLAN VIEW
SEE SHEET 8

-Y2-

BEGIN GRADE
-Y2- POT STA.10+48.67 =
-Y2- POC STA.85+33.30 (47' RT)
EL.720.75

BEGIN SPECIAL DITCH GRADE RT.
-Y2- STA.10+80.00
EL.716.50

END SPECIAL DITCH GRADE RT.
-Y2- STA.12+00.00
EL.722.27

END GRADE
-Y2- POT STA.13+50.00
EL.730.33

PI = 12+30.00
EL = 724.19'
VC = 240'
K = 74

(+)11.8970%
(+)15.1200%
(+)3.9810%
(+)4.5083%

BEGIN SPECIAL DITCH GRADE RT.
-Y2- STA.12+50.00
EL.723.95

END SPECIAL DITCH GRADE RT.
-Y2- STA.13+37.00
EL.727.37

FOR -Y2- PLAN VIEW
SEE SHEET 10

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	44
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #12 EL.871.90
RR SPIKE IN BASE OF 12" PINE
-BY5- STA.15+81 (14' RT.)
-Y3- STA.20+19.70 (24.81' RT.)

-Y3-

BEGIN GRADE -Y3- POT STA.10+47.00 = -L- POT STA.16+75.00 (47' RT.) EL.874.15

BEGIN SPECIAL DITCH GRADE RT.
-Y3- STA.14+30.00
EL.863.20

BEGIN SPECIAL DITCH GRADE RT.
-Y3- STA.11+00.00
EL.869.15

PI = 15+15.00
EL = 864.79'
VC = 400'
K = 146

PI = 12+50.00
EL = 869.00'

(-)12.00000%
(-)15.49333%
(-)1.69%
(-)3.22583%
(+)0.68000%
(+)10.73336%

PI = 18+70.00
EL = 867.39'
VC = 200'
K = 669

END SPECIAL DITCH GRADE RT.
-Y3- STA.16+00.00
EL.864.05

END GRADE -Y3- POT STA.19+80.00 = -L- POT STA.17+66.53 (14' RT.) EL.866.53

(+)10.73336%
(+)10.03125%
(+)1.43%

END SPECIAL DITCH GRADE RT.
-Y3- STA.19+50.00
EL.867.55

BEGIN SPECIAL DITCH GRADE LT.
-Y3- STA.11+75.00
EL.860.00

END SPECIAL DITCH GRADE LT.
-Y3- STA.13+30.00
EL.855.00

END SPECIAL DITCH GRADE RT.
-Y3- STA.13+50.00
EL.858.31

BEGIN SPECIAL DITCH GRADE RT.
-Y3- STA.19+00.00
EL.865.38

FOR -Y3- PLAN VIEW
SEE SHEET 16

BM #24 EL.878.75
RR SPIKE IN BASE OF 8" IRONWOOD
-BL- STA.164+84 (61' RT.)
-Y4- STA.10+51.90 (20.84' RT.)

-Y4-

BEGIN GRADE -Y4- POT STA.10+48.12 = -L- POT STA.168+28.91 (47' RT.) EL.882.32'

PI = 11+25.00
EL = 880.78'
VC = 100'
K = 16

(-)12.00000%
(-)18.19900%
(-)16.34612%
(-)27.87873%

END GRADE -Y4- POT STA.13+00.00 EL.869.14'

PI = 12+50.00
EL = 870.53'
VC = 100'
K = 18

BEGIN SPECIAL DITCH GRADE RT.
-Y4- STA.11+50.00
EL.874.47

END SPECIAL DITCH GRADE RT.
-Y4- STA.13+00.00
EL.864.95

FOR -Y4- PLAN VIEW
SEE SHEET 17

-Y5-

BEGIN GRADE -Y5- POT STA.10+00.00 EL.895.74'

PI = 10+95.00
EL = 893.66'
VC = 180'
K = 238

(-)12.18971%
(-)12.94170%
(-)1.28%
(-)15.05533%

END GRADE -Y5- POT STA.12+18.77 = -L- POT STA.174+69.50 (14' LT.) EL.890.03'

BEGIN SPECIAL DITCH GRADE LT.
-Y5- STA.10+00.00
EL.894.36

BEGIN SPECIAL DITCH GRADE RT.
-Y5- STA.10+00.00
EL.893.41

END SPECIAL DITCH GRADE LT.
-Y5- STA.11+00.00
EL.891.56

END SPECIAL DITCH GRADE RT.
-Y5- STA.11+50.00
EL.885.83

FOR -Y5- PLAN VIEW
SEE SHEET 18

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #18 EL.940.71
12" SPIKE IN CUT OFF POWER POLE
-BY10- STA.12+58 N 47° 35' 20.1" E DIST 91.67'
-Y7- STA.22+50.34 N 27° 54' 49.4" E DIST 74.78'

-Y7-

BEGIN SPECIAL DITCH GRADE RT.
-Y7- STA.10+60.00
EL.925.12

BEGIN GRADE
-Y7- POT STA.10+60.00
EL.= 924.77'

END SPECIAL DITCH GRADE LT.
-Y7- STA.11+00.00
EL.925.28

BEGIN SPECIAL DITCH GRADE LT.
-Y7- STA.10+60.00
EL.923.11

BEGIN SPECIAL DITCH GRADE LT.
-Y7- STA.13+50.00
EL.929.36

END SPECIAL DITCH GRADE LT.
-Y7- STA.14+50.00
EL.924.34

PI = 12+40.00
EL = 938.43'
VC = 200'
K = 15

PI = 14+40.00
EL = 927.53'
VC = 200'
K = 40

-Y7- POT STA.15+60.09 = -Y7- POC STA.15+20.00 (47' LT.)
EL.= 927.07'

-Y7- POT STA.16+40.09 = -Y7- POC STA.16+20.00 (47' RT.)
EL.= 928.92'

END SPECIAL DITCH GRADE RT.
-Y7- STA.19+50.00
EL.928.24

BEGIN SPECIAL DITCH GRADE RT.
-Y7- STA.17+00.00
EL.925.35

PI=18+00.00
EL.= 925.59

END SPECIAL DITCH GRADE LT.
-Y7- STA.22+50.00
EL.935.05

BEGIN SPECIAL DITCH GRADE LT.
-Y7- STA.22+00.00
EL.931.59

BEGIN SPECIAL DITCH GRADE RT.
-Y7- STA.22+00.00
EL.931.21

PI = 21+50.00
EL = 932.34'
VC = 200'
K = 71

END GRADE
-Y7- POT STA.22+50.00
EL.= 935.61'

END SPECIAL DITCH GRADE RT.
-Y7- STA.22+50.00
EL.933.90

(+)1.22% (+)5.42% (+)15.87% (-)15.44'31' (-)5.60'20% (-)10.5000% (+)0.54% (+)15.66'7' (+)10.67'07'% (+)3.47'00'% (+)15.58%

FOR -Y7- PLAN VIEW
SEE SHEET 21

BM #13 EL.880.36
12" SPIKE IN LOCUST
-BY8- STA.7+72 (48' RT.)
-Y6- STA.12+76.84 (30.66' RT.)

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 221

DRAINAGE AREA	= 5.36	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 15	CFS
DESIGN HW ELEVATION	= 880.72	FT
100 YEAR DISCHARGE	= 17.0	CFS
100 YEAR HW ELEVATION	= 880.93	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 29.0	CFS
OVERTOPPING ELEVATION	= 882.79	FT

-Y6-

BEGIN SPECIAL DITCH GRADE RT.
-Y6- STA.11+00.00
EL.884.54

BEGIN GRADE
-Y6- POT STA.10+53.79
EL.= 890.67'

-Y6- POT STA.12+22.57 (47' RT.) =
EL.= 890.67'

END GRADE
-Y6- POT STA.12+65.00
EL.= 878.95'

END SPECIAL DITCH GRADE RT.
-Y6- STA.12+50.00
EL.876.99

PI = 11+25.00
EL = 889.25'
VC = 100'
K = 15

(-)12.0000% (-)18.69'1'% (-)15.0000% (-)14.0'13'% (-)12.8462% (+)2.40%

BEGIN SPECIAL DITCH GRADE LT.
-Y6- STA.11+50.00
EL.880.50

PI = 12+25.00
EL = 880.55'
VC = 80'
K = 17

END SPECIAL DITCH GRADE LT.
-Y6- STA.12+15.00
EL.878.65

FOR -Y6- PLAN VIEW
SEE SHEET 18

-Y8-

BEGIN GRADE
-Y8- POT STA.10+47.00 =
-Y8- POT STA.12+44.00 (47' RT.)
EL.= 860.18'

PI = 12+40.00
EL = 861.20'
VC = 320'
K = 121

END GRADE
-Y8- POT STA.14+00.00
EL.= 866.29'

(+)0.52'2'% (+)3.18'28'% (+)2.64'

BEGIN SPECIAL DITCH GRADE RT.
-Y8- STA.13+50.00
EL.862.10

END SPECIAL DITCH GRADE RT.
-Y8- STA.14+00.00
EL.863.40

FOR -Y8- PLAN VIEW
SEE SHEET 23

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #25 EL. 790.70
RR SPIKE IN BASE OF 36" OAK
-BY12- STA. 10+60 (52' LT.)
-Y9- STA. 10+00.00 N 85° 57' 21.5" W DIST 75.24'

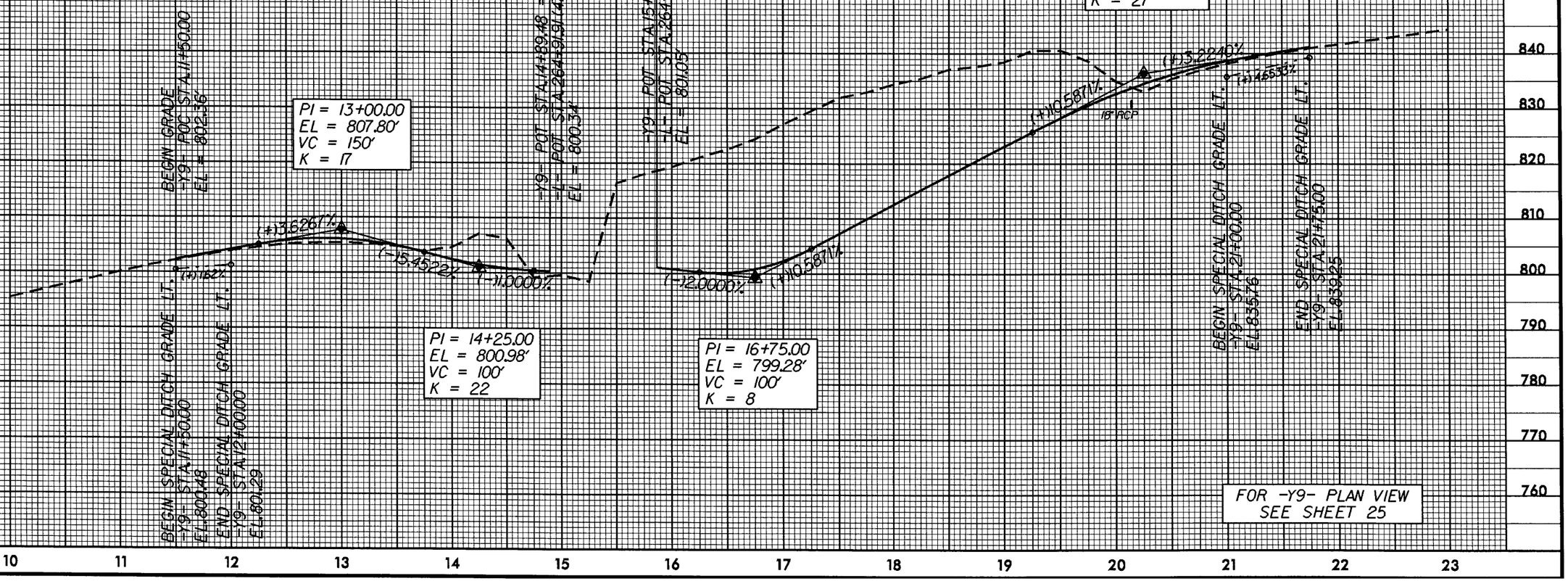
BM #21 EL. 801.01
RR SPIKE IN BASE OF 16" TREE
-BY12- STA. 16+15 (39' RT.)
-Y9- STA. 14+45.62 (97.57' RT.)

BM #22 EL. 836.88
RR SPIKE IN BASE OF 14" PINE
-BY12- STA. 21+70 N 80° 24' 12.9" E DIST 83.37'
-Y9- STA. 20+86.72 (34.93' RT.)

-Y9-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 338

DRAINAGE AREA	= 0.41	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 5.8	CFS
DESIGN HW ELEVATION	= 831.94	FT
100 YEAR DISCHARGE	= 7.0	CFS
100 YEAR HW ELEVATION	= 832.10	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 10.0	CFS
OVERTOPPING ELEVATION	= 832.65	FT



FOR -Y9- PLAN VIEW
SEE SHEET 25

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-DRIA-

BEGIN GRADE
-DRIA- POT STA.10+42.84
-L- POC STA.27+16.00 (42.84' RT.)
EL.809.45'

PI = 11+50.00
EL = 815.00'
VC = 80'
K = 9

PI = 14+54.00
EL = 817.60'
VC = 90'
K = 27

PI = 10+80.00
EL = 808.34'
VC = 60'
K = 5

(+)0.8653%
(-)2.5000%
(-)2.9871%
(+)2.9143%

FOR -DRIA- PLAN VIEW
SEE SHEET 5

-RR CROSS-

END GRADE
-DRIA- POT STA.15+00.00
EL.816.45'

BEGIN GRADE
-RRCROSS- POT STA.10+00.00 =
-L- POT STA.46+01.00 (230' RT.)
EL.797.96'

-RRCROSS- POT STA.10+72.36 =
-RR- POC STA.30+09.41 (4' RT.)
EL.801.61'

PI = 10+15.00
EL = 798.26
VC = 30'
K = 6

PI = 11+45.00
EL = 797.64
VC = 50'
K = 6

PI = 10+55.00
EL = 801.26
VC = 30'
K = 6

-RRCROSS- POT STA.10+77.85 =
-RR- POC STA.30+19.11 (4' LT.)
EL.801.15'

END GRADE
-RRCROSS- POT STA.11+70.00 =
-L- POT STA.47+68.00 (195' RT.)
EL.798.39'

(+)2.0061%
(-)2.2762%
(+)2.0000%
(-)3.0000%

FOR -RR CROSS- PLAN VIEW
SEE SHEET 6

-DRI-

BEGIN SPECIAL DITCH GRADE LT.
-DRI- STA.12+50.00
EL.799.46'

BEGIN GRADE
-DRI- POT STA.10+15.00
EL.811.60'

PI = 11+70.00
EL = 811.09'
VC = 50'
K = 6

PI = 10+45.00
EL = 812.65'
VC = 30'
K = 6

PI = 12+75.34
EL = 801.11'
VC = 5'
K = 0

(-)1.2500%
(-)16.5000%
(-)15.6862%
(+)8.0000%

END GRADE
-DRI- POT STA.12+77.84 =
-L- POT STA.52+00.00 (57' LT.)
EL.801.31'

BEGIN SPECIAL DITCH GRADE LT.
-DRI- STA.12+00.00
EL.807.39'

FOR -DRI- PLAN VIEW
SEE SHEET 7

-DR2-

BEGIN GRADE
-DR2- POT STA.10+57.00
-L- POC STA.203+44.00 (57' RT.)
EL.907.05'

PI = 10+85.00
EL = 907.61'
VC = 50'
K = 2.7

PI = 11+76.00
EL = 892.72'
VC = 50'
K = 1.3

(+)2.0000%
(-)6.2609%
(+)6.4118%

END GRADE
-DR2- POT STA.11+93.00
EL.893.81'

FOR -DR2- PLAN VIEW
SEE SHEET 20

-DR2A-

BEGIN GRADE
-DR2A- POT STA.10+51.00
-L- POT STA.229+90.00 (51' RT.)
EL.845.76'

PI = 12+05.00
EL = 848.84'
VC = 170'
K = 16

(+)2.1000%
(-)8.8571%

END GRADE
-DR2A- POT STA.12+98.00
EL.840.64'

FOR -DR2A- PLAN VIEW
SEE SHEET 24

-DR3-

BEGIN GRADE
-DR3- POT STA.10+51.00
-L- POT STA.235+11.00 (51' RT.)
EL.826.26'

PI = 10+80.00
EL = 826.84'
VC = 50'
K = 4

PI = 12+00.00
EL = 813.75'
VC = 50'
K = 6

(+)2.0000%
(-)10.9091%
(-)12.5112%

END GRADE
-DR3- POC STA.12+29.00
EL.817.62'

FOR -DR3- PLAN VIEW
SEE SHEET 24

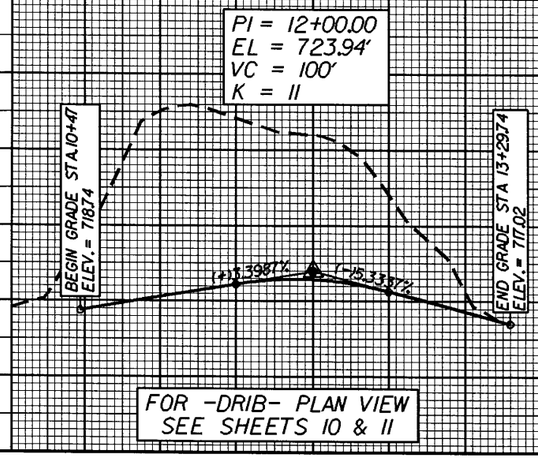
22-APR-2008 14:37
E:\projects\2008\r-2233aa_rdy_pf1.dgn
$$$$USERNAME$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2233AA	48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-DRIB-



FOR -DRIB- PLAN VIEW
SEE SHEETS 10 & 11

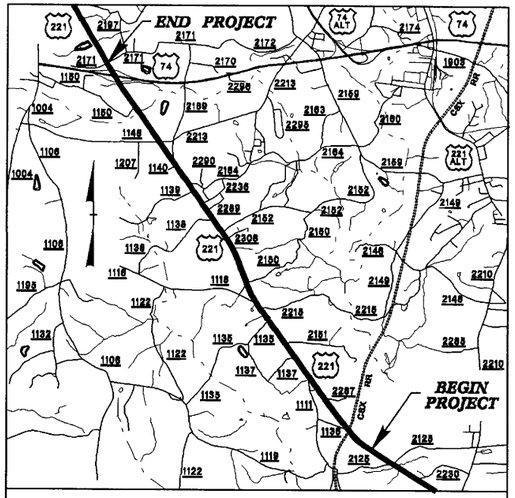
22-APR-2008 14:38
$USERNAME
1DGA1:[DOT.STRUCTURES.ROADWAY.DESIGN]2233aa_rdy_pf1.dgn
1DGA1:[DOT.STRUCTURES.ROADWAY.DESIGN]2233aa_rdy_pf1.dgn

09/08/99

TIP PROJECT: R-2233AB

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

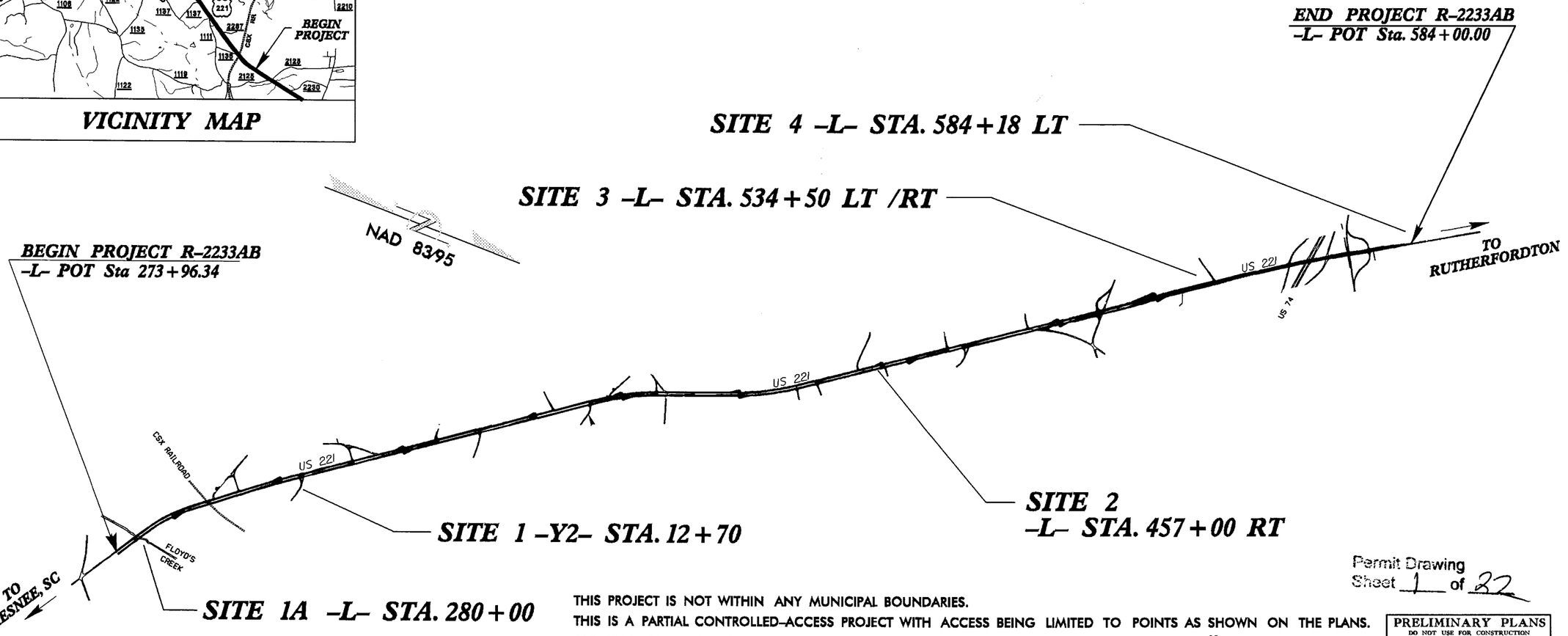
RUTHERFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2233AB	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34400.1.1	NHF-221(9)	P.E.
34400.2.3		R/W, UTIL.

LOCATION: US 221 FROM SOUTH OF FLOYD'S CREEK TO NORTH OF US 74 BYPASS

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES



Permit Drawing
Sheet 1 of 22

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 =	10,900
ADT 2030 =	19,000
DHV =	11 %
D =	55 %
T =	12 % *
V =	60 MPH
FUNC. CLASS =	ARTERIAL
* TTST 7%	DUAL 5%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2233AB = 5.755 MILES
LENGTH STRUCTURE TIP PROJECT R-2233AB = 0.117 MILES
TOTAL LENGTH TIP PROJECT R-2233AB = 5.872 MILES

* LENGTHS BASED ON NBL BRIDGES

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 28, 2007

LETTING DATE: DECEMBER 15, 2009

ROGER D. THOMAS, PE
PROJECT ENGINEER

BRIAN P. ROBINSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

08-SEP-2008 07:30
r:\hydraulics\permits_environmental\drawings\r2233ab_rdy_permit_site_vicinity.dgn
gcall AT HY24457

8/17/99

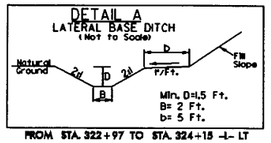
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	2-K
R/W SHEET NO.	

HYDRAULICS ENGINEER

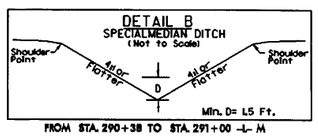
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL A
LATERAL BASE DITCH
(Not to Scale)



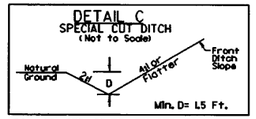
FROM STA. 322+97 TO STA. 324+15 -L- LT
FROM STA. 577+48 TO STA. 578+35 -L- LT

DETAIL B
SPECIAL MEDIAN DITCH
(Not to Scale)



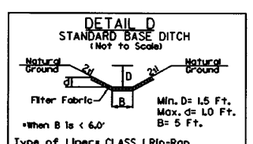
FROM STA. 290+38 TO STA. 291+00 -L- M
FROM STA. 321+08 TO STA. 322+00 -L- M
FROM STA. 344+00 TO STA. 344+70 -L- M
FROM STA. 353+78 TO STA. 355+00 -L- M
FROM STA. 364+06 TO STA. 370+00 -L- M
FROM STA. 377+38 TO STA. 378+50 -L- M
FROM STA. 388+00 TO STA. 389+78 -L- M
FROM STA. 414+63 TO STA. 420+00 -L- M
FROM STA. 429+00 TO STA. 431+00 -L- M
FROM STA. 431+00 TO STA. 435+00 -L- M
FROM STA. 477+00 TO STA. 477+30 -L- M
FROM STA. 483+50 TO STA. 485+00 -L- M
FROM STA. 499+00 TO STA. 499+54 -L- M
FROM STA. 532+00 TO STA. 533+00 -L- M

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 278+00 TO STA. 278+50 -L- RT
FROM STA. 299+80 TO STA. 300+50 -L- LT
FROM STA. 336+50 TO STA. 339+06 -L- RT
FROM STA. 343+00 TO STA. 344+00 -L- RT
FROM STA. 366+28 TO STA. 367+75 -L- LT
FROM STA. 369+68 TO STA. 371+58 -L- RT
FROM STA. 374+50 TO STA.378+00 -L- LT
FROM STA. 378+00 TO STA. 389+00 -L- RT
FROM STA. 381+75 TO STA. 384+95 -L- LT
FROM STA. 389+00 TO STA. 389+50 -L- RT
FROM STA. 390+50 TO STA. 398+00 -L- RT
FROM STA. 405+50 TO STA. 407+60 -L- RT
FROM STA. 406+21 TO STA. 407+15 -L- LT
FROM STA. 409+50 TO STA. 410+75 -L- LT
FROM STA. 414+14 TO STA. 417+85 -L- LT
FROM STA. 415+50 TO STA. 418+00 -L- RT
FROM STA. 418+37 TO STA. 424+50 -L- LT
FROM STA. 443+50 TO STA. 448+50 -L- RT
FROM STA. 447+72 TO STA. 450+20 -L- LT
FROM STA. 457+38 TO STA. 459+00 -L- LT
FROM STA. 459+45 TO STA. 461+00 -L- RT
FROM STA. 463+50 TO STA. 466+00 -L- RT
FROM STA. 483+50 TO STA. 484+23 -L- LT
FROM STA. 501+00 TO STA. 502+00 -L- RT
FROM STA. 510+88 TO STA. 511+50 -L- LT
FROM STA. 521+50 TO STA. 522+00 -L- LT
FROM STA. 537+75 TO STA. 538+50 -L- LT
FROM STA. 573+50 TO STA. 573+65 -L- LT
FROM STA. 10+26 TO STA. 11+00 -Y11T6- LT
FROM STA. 11+00 TO STA. 11+80 -Y11T6- LT
FROM STA. 12+50 TO STA. 15+00 -Y3- LT
FROM STA. 15+56 TO STA. 16+50 -Y3- LT
FROM STA. 11+33 TO STA. 13+00 -Y6- LT
FROM STA. 12+50 TO STA. 13+00 -Y6- RT
FROM STA. 10+74 TO STA. 12+00 -Y16- LT
FROM STA. 15+86 TO STA. 16+56 -Y19- LT
FROM STA. 11+18 TO STA. 13+00 -Y22- RT
FROM STA. 11+80 TO STA. 12+00 -Y23- LT
FROM STA. 17+80 TO STA. 17+94 -Y23- LT
FROM STA. 13+50 TO STA. 14+00 -Y24- LT
FROM STA. 12+50 TO STA. 13+50 -Y28- RT
FROM STA. 18+00 TO STA. 18+50 -Y28- RT
FROM STA. 18+90 TO STA. 19+80 -Y28- LT
FROM STA. 20+00 TO STA. 21+50 -Y28- LT

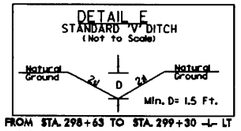
DETAIL D
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CLASS I Rip-Rap

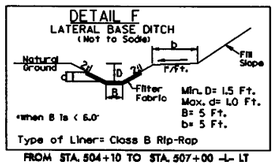
STA. 299+84 -L- RT
STA. 397+17 -L- LT

DETAIL E
STANDARD "V" DITCH
(Not to Scale)



FROM STA. 298+63 TO STA. 299+30 -L- LT
FROM STA. 338+77 TO STA. 339+06 -L- RT
FROM STA. 367+75 TO STA. 368+16 -L- LT
FROM STA. 371+25 TO STA. 371+58 -L- RT
FROM STA. 384+80 TO STA. 384+95 -L- LT
FROM STA. 411+41 TO STA. 411+69 -L- RT
FROM STA. 447+72 TO STA. 448+20 -L- LT
FROM STA. 472+66 TO STA. 473+23 -L- LT
STA. 868+99 -L- RT
FROM STA. 12+18 TO 12+80 -Y22- RT

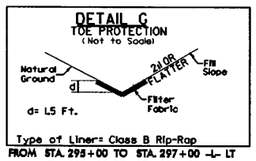
DETAIL F
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM STA. 504+10 TO STA. 507+00 -L- LT

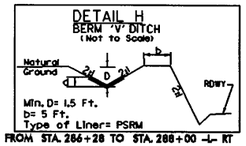
DETAIL G
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap

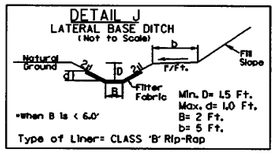
FROM STA. 295+00 TO STA. 297+00 -L- LT
FROM STA. 303+00 TO STA. 306+50 -L- RT
FROM STA. 324+19 TO STA. 325+80 -L- LT
FROM STA. 12+50 TO STA. 14+00 -Y2- LT

DETAIL H
BERM "V" DITCH
(Not to Scale)



FROM STA. 286+28 TO STA. 288+00 -L- RT

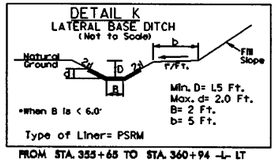
DETAIL J
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CLASS 'B' Rip-Rap

FROM STA. 306+50 TO STA. 306+96 -L- LT
FROM STA. 327+00 TO STA. 330+34 -L- LT
FROM STA. 360+94 TO STA. 362+81 -L- LT
FROM STA. 412+32 TO STA. 413+65 -L- LT
FROM STA. 478+30 TO STA. 479+27 -L- RT
FROM STA. 10+92 TO STA. 11+69 -Y20- LT

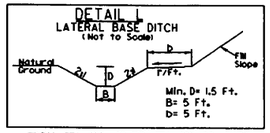
DETAIL K
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

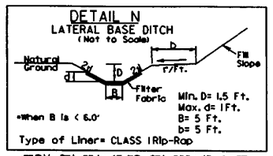
FROM STA. 355+65 TO STA. 360+94 -L- LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 489+62 TO STA. 491+83 -L- RT

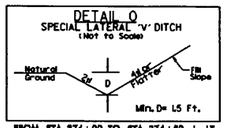
DETAIL N
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CLASS I Rip-Rap

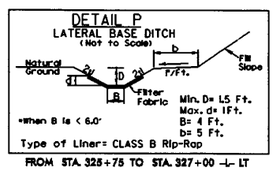
FROM STA. 324+47 TO STA. 328+40 -L- RT

DETAIL O
SPECIAL LATERAL "V" DITCH
(Not to Scale)



FROM STA. 374+00 TO STA. 374+50 -L- LT
FROM STA. 398+37 TO STA. 401+00 -L- LT
FROM STA. 434+80 TO STA. 437+80 -L- LT
FROM STA. 11+94 TO STA. 14+43 -Y3- RT
FROM STA. 12+80 TO STA. 13+60 -Y5- RT
FROM STA. 12+80 TO STA. 14+02 -Y5- LT
FROM STA. 11+08 TO STA. 12+00 -Y12- LT
FROM STA. 11+11 TO STA. 12+77 -Y12- RT
FROM STA. 10+98 TO STA. 11+11 -Y13- LT

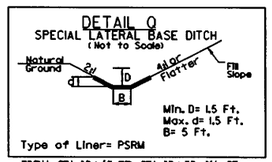
DETAIL P
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CLASS B Rip-Rap

FROM STA. 325+75 TO STA. 327+00 -L- LT

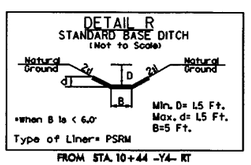
DETAIL Q
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 10+69 TO STA. 12+50 -Y4- RT.

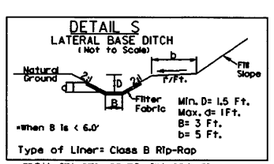
DETAIL R
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 10+44 -Y4- RT

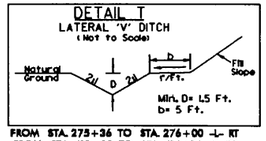
DETAIL S
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

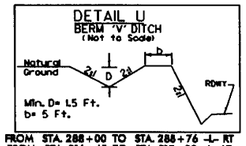
FROM STA. 373+25 TO STA. 374+50 -L- RT
FROM STA. 374+50 TO STA. 377+00 -L- RT
FROM STA. 534+38 TO STA. 535+27 -L- RT
FROM STA. 550+00 TO STA. 553+10 -L- LT

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



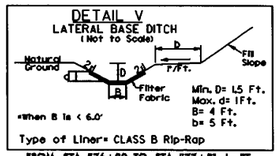
FROM STA. 275+36 TO STA. 276+00 -L- RT
FROM STA. 412+00 TO STA. 414+14 -L- RT

DETAIL U
BERM "V" DITCH
(Not to Scale)



FROM STA. 288+00 TO STA. 288+76 -L- RT
FROM STA. 316+45 TO STA. 317+30 -L- LT

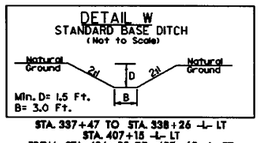
DETAIL V
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CLASS B Rip-Rap

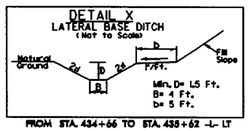
FROM STA. 576+30 TO STA. 577+81 -L- RT
FROM STA. 17+00 TO STA. 17+74 -Y1- LT

DETAIL W
STANDARD BASE DITCH
(Not to Scale)



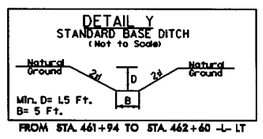
STA. 337+47 TO STA. 338+26 -L- LT
STA. 407+15 -L- LT
FROM STA. 434+88 TO 437+68 -L- RT
FROM STA. 438+40 TO STA. 442+55 -L- RT

DETAIL X
LATERAL BASE DITCH
(Not to Scale)



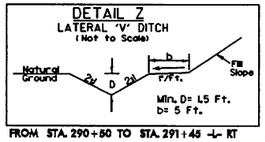
FROM STA. 434+66 TO STA. 438+62 -L- LT

DETAIL Y
STANDARD BASE DITCH
(Not to Scale)



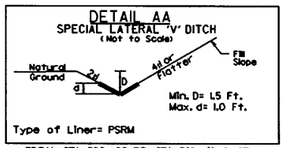
FROM STA. 461+94 TO STA. 462+60 -L- LT

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



FROM STA. 290+50 TO STA. 291+45 -L- RT

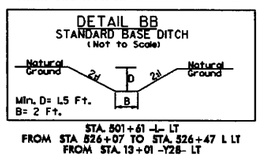
DETAIL AA
SPECIAL LATERAL "V" DITCH
(Not to Scale)



Type of Liner= PSRM

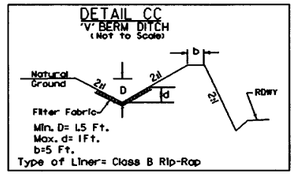
FROM STA. 500+30 TO STA. 501+61 -L- LT
FROM STA. 11+11 TO STA. 12+00 -Y13- LT

DETAIL BB
STANDARD BASE DITCH
(Not to Scale)



STA. 501+61 -L- LT
FROM STA 526+07 TO STA. 526+47 L LT
FROM STA. 13+01 -Y28- LT

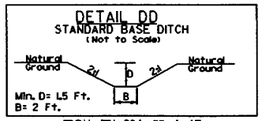
DETAIL CC
"V" BERM DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

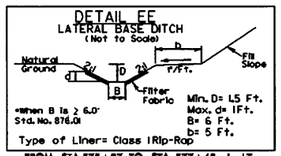
FROM STA. 538+32 TO STA. 541+20 -L- LT

DETAIL DD
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 394+85 -L- LT
FROM STA. 541+20 -L- RT

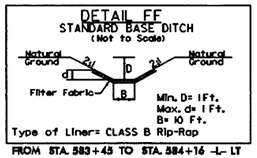
DETAIL EE
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= Class I Rip-Rap

FROM STA.575+37 TO STA. 577+48 -L- LT
FROM STA. 321+87 TO STA. 323+41 -L- RT

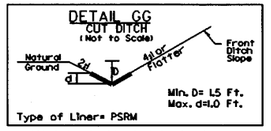
DETAIL FF
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CLASS B Rip-Rap

FROM STA. 583+45 TO STA. 584+16 -L- LT

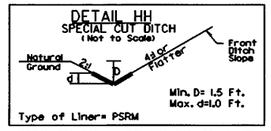
DETAIL GG
CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 541+20 TO STA. 547+45 -L- LT
FROM STA. 574+50 TO STA. 576+30 -L- RT
FROM 15+00 TO STA. 20+00 -Y27- RT
FROM 15+00 TO STA. 20+65 -Y27- LT

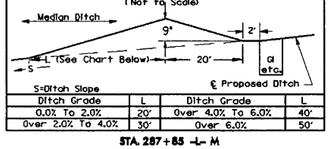
DETAIL HH
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM STA. 543+50 TO STA. 545+00 -L- LT
FROM STA. 20+00 TO STA. 20+65 -Y27- RT

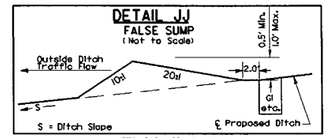
DETAIL II
FALSE SUMP
(Not to Scale)



S=Ditch Slope			
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'

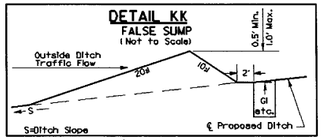
STA. 287+85 -L- M
STA. 299+80 -L- M
STA. 307+70 -L- M
STA. 317+60 -L- M
STA. 385+00 -L- M
STA. 434+50 -L- M
STA. 448+00 -L- M
STA. 452+75 -L- M
STA. 483+00 -L- M
STA. 487+50 -L- M
STA. 490+10 -L- M
STA. 529+00 -L- M
STA. 541+20 -L- M

DETAIL JJ
FALSE SUMP
(Not to Scale)



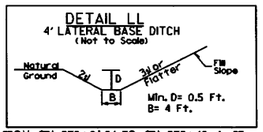
STA. 312+40 -L- LT
STA. 317+30 -L- LT
STA. 360+94 -L- LT
STA. 378+00 -L- RT
STA. 398+12 -L- LT
STA. 424+14 -L- LT
STA. 448+00 -L- RT
STA. 499+34 -L- RT
STA. 522+40 -L- RT
STA. 526+50 -L- RT
STA. 532+81 -L- RT
STA. 543+80 -L- LT
STA. 545+00 -L- LT
STA. 573+65 -L- RT
STA. 582+00 -L- RT

DETAIL KK
FALSE SUMP
(Not to Scale)



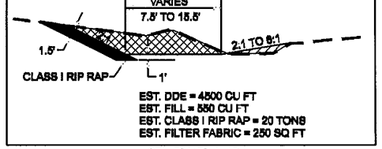
STA. 329+20 -L- RT
STA. 333+84 -L- RT
STA. 344+78 -L- LT
STA. 354+40 -L- RT
STA. 357+10 -L- RT
STA. 358+75 -L- RT
STA. 395+98 -L- RT
STA. 398+27 -L- RT
STA. 399+50 -L- RT
STA. 403+50 -L- RT
STA. 499+34 -L- LT
STA. 522+00 -L- LT
STA. 574+60 -L- LT

DETAIL LL
4' LATERAL BASE DITCH
(Not to Scale)



FROM STA. 273+96.34 TO STA. 275+40 -L- RT

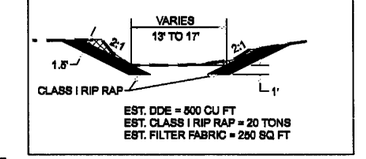
CULVERT INLET DETAIL
NOT TO SCALE



EST. DDE = 4500 CU FT
EST. FILL = 550 CU FT
EST. CLASS I RIP RAP = 20 TONS
EST. FILTER FABRIC = 250 SQ FT

STA. 534+70 -L- LT

CULVERT OUTLET DETAIL
NOT TO SCALE



EST. DDE = 500 CU FT
EST. CLASS I RIP RAP = 20 TONS
EST. FILTER FABRIC = 250 SQ FT

STA. 834+70 -L- RT

Permit Drawing
Sheet 2 of 82

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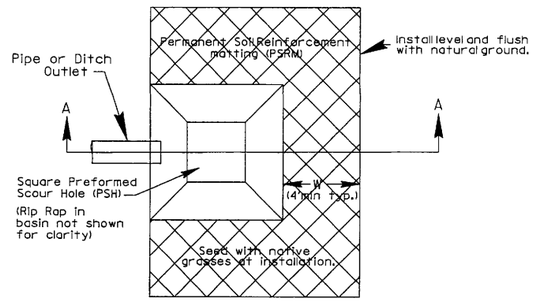

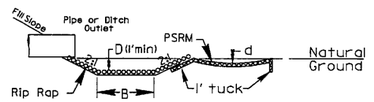

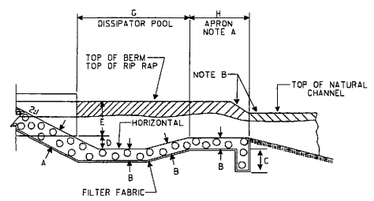

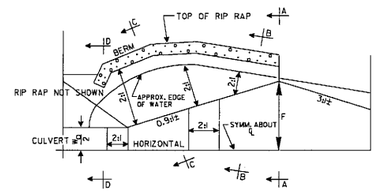

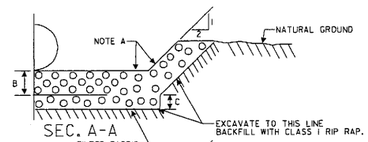

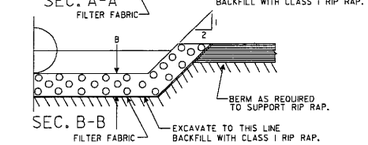

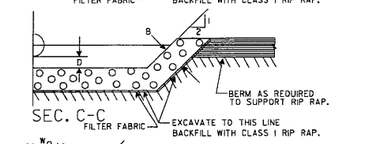

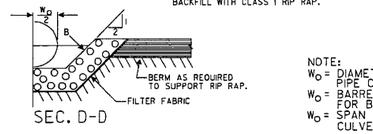

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	2-L
	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PREFORMED SCOUR HOLE

STA. 279+72 -L- RT
STA. 280+44 -L- LT
STA. 297+50 -L- RT
STA. 321+90 -L- RT
STA. 345+30 -L- LT
STA. 351+70 -L- LT
STA. 385+00 -L- LT
STA. 426+50 -L- RT
STA. 543+020 -L- RT
STA. 583+020 -L- RT
STA. 12+50 -Y5- LT
STA. 11+00 -Y7- LT

RIP-RAPPED ENERGY DISSIPATOR BASIN

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

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

NOTE:
W_o = DIAMETER FOR PIPE CULVERT
W_o = BARREL WIDTH FOR BOX CULVERT
W_o = SPAN OF PIPE-ARCH CULVERT

DIM.	RIP RAP BASIN *							
	1	2	3	4	5	6	7	8
A	1.5							
B	0.75							
C	2							
D	2.5							
E	1.5							
F	25							
G	25							
H	13							
I	N/A							
J	N/A							

BASIN *	LOCATION (AT OUTLET)
1	456+87 -L- RT
2	
3	
4	
5	
6	
7	
8	

*ALL DIMENSIONS APPROXIMATE IN FEET

STA. 456+87 -L- RT

6/2/99

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

Permit Drawing
Sheet 3 **of** 22

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

SITE 1A

-DR4-

PI Sta 10+54.78
Δ = 82° 26' 36.3" (LT)
D = 190° 59' 09.4"
L = 43.17'
T = 26.28'
R = 30.00'

PI Sta 13+21.94
Δ = 91° 05' 24.6" (RT)
D = 143° 14' 22.0"
L = 63.59'
T = 40.77'
R = 40.00'

-L-

Pls Sta 282+87.60
θs = 1° 33' 02.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 288+88.82
Δ = 16° 27' 49.5" (RT)
D = 1° 33' 02.3"
L = 1,061.75'
T = 534.56'
R = 3,695.00'
SE = 04

NAD 83/95

OTHORNELL HARRIS
DB 253 PG 225

JERRY R. ALEXANDER
DB 373 PG 357
DB 374 PG 452

ROBERT R. HARRIS
DB 442 PG 48

ARTHUR L. ROBINSON
DB 583 PG 26

RONALD S. SILVER
DB 400 PG 734

PAUL GOWAN
DB 374 PG 448
DB 373 PG 355
DB 82 PG 257
DB 349 PG 353
DB 631 PG 455
DB 374 PG 450

SAMUEL HARRIS
DB 658 PG 353
(PROPERTY OWNER NAME AND DEED INFO CAN BE FOUND UNDER R-2233AB)

CALLY HARRIS MCCLAIN
DB 442 PG 404

EVELYN R. MERCER
DB 380 PG 154
DB 439 PG 275

ROGER W. TATE
DB 450 PG 434
DB 662 PG 145
DB 239 PG 459

HARVEY E. HARRIS
DB 442 PG 480

FLOYD'S CREEK

MATCH LINE SEE SHEET NO.4 -L- STA.277+00

MATCH LINE SEE SHEET NO.6 -L- STA.291+00

END CONSTRUCTION
-DR2- STA. 14+00.00

Q10=8.2 cfs

Q10=7.7 cfs

PREFORMED SCOUR HOLE (SEE DTL 2-L)

N 25° 11' 31.4" E

N 57° 15' 04.9" W

N 57° 53' 10.0" W

N 33° 50' 19.6" E

N 25° 22' 16.4" W

N 8° 43' 38.0" E

-DR2-

PI Sta 11+60.24
Δ = 48° 41' 16.8" (RT)
D = 143° 14' 22.0"
L = 33.99'
T = 18.10'
R = 40.00'

PI Sta 13+09.90
Δ = 24° 05' 54.0" (RT)
D = 28° 38' 52.4"
L = 84.12'
T = 42.69'
R = 200.00'

NOTE: FOR -L- PROFILE SEE SHEET NO.28
FOR -DR2- PROFILE SEE SHEET NO.49
FOR -DR4- PROFILE SEE SHEET NO.49
FOR DITCH DETAILS SEE SHEET NO.2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO.2-L

Permit Drawing Sheet 4 of 82

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 8/17/99

SITE 1A

NAD 8395

-DR4-
PI Sta 10+54.78
Δ = 82° 26' 36.3" (LT)
D = 190° 59' 09.4"
L = 43.17'
T = 26.28'
R = 30.00'

PI Sta 13+21.94
Δ = 91° 05' 24.6" (RT)
D = 143° 14' 22.0"
L = 63.59'
T = 40.77'
R = 40.00'

-L-
PIs Sta 282+87.60
θs = 1° 33' 02.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 288+88.82
Δ = 16° 27' 49.5" (RT)
D = 1° 33' 02.3"
L = 1,061.75'
T = 534.56'
R = 3,695.00'
SE = 04

OTHORNELL HARRIS
DB 253 PG 225

JERRY R. ALEXANDER
DB 373 PG 357
DB 374 PG 452

ROBERT R. HARRIS
DB 442 PG 41

ARTHUR L. ROBINSON
DB 583 PG 26

RONALD S. SILVER
DB 400 PG 134

PAUL GOWAN
DB 374 PG 448
DB 373 PG 365
DB 462 PG 257
DB 349 PG 353
DB 637 PG 455
DB 374 PG 450

SAMUEL HARRIS
DB 658 PG 353

CALLY HARRIS MCCLAIN
DB 442 PG 404

HARVEY E. HARRIS
DB 442 PG 40

EVELYN R. MERCER
DB 380 PG 1541
DB 439 PG 275

ROGER W. TATE
DB 450 PG 434
DB 662 PG 145
DB 239 PG 459

Q10 = 8.2 cfs
Q10 = 7.7 cfs
FLOYDS CREEK
LLOYD'S CREEK
N 25° 11' 31.4" E
N 57° 15' 04.9" W
N 53° 53' 10.0" W
N 33° 50' 08.6" E
N 84° 38' 16.6" W
N 84° 38' 08.0" E
END CONSTRUCTION
-DR2- STA. 14+00.00

-DR2-
PI Sta 11+60.24
Δ = 48° 41' 16.8" (RT)
D = 143° 14' 22.0"
L = 33.99'
T = 18.10'
R = 40.00'

PI Sta 13+09.90
Δ = 24° 05' 54.0" (RT)
D = 28° 38' 52.4"
L = 84.12'
T = 42.69'
R = 200.00'

MATCH LINE SEE SHEET NO.4 -L- STA.277+00

MATCH LINE SEE SHEET NO.6 -L- STA.291+00

SPECIAL CUT DITCH SEE DETAIL C

CLASS II RIP RAP (STRUCTURE PAY ITEM)

PREFORMED SCOUR HOLE (SEE DTL 7-L)

SPECIAL MEDIAN DITCH SEE DETAIL B

CLASS B RIP RAP

BERM 'V' DITCH SEE DETAIL H W/ PSRM

BERM 'V' DITCH SEE DETAIL U

RETAIN FLAGPOLE

18" CMP

48" W/D/BOW

4' LATERAL BASE DITCH SEE DETAIL Z

18" CSP W/ ELBOWS

REMOVE

GAZEBO

HTR

BDO

ISBKD

ISFD

SFD (ABAND)

Per Prop. Owner

NOTE: FOR -L- PROFILE SEE SHEET NO.28
FOR -DR2- PROFILE SEE SHEET NO.49
FOR -DR4- PROFILE SEE SHEET NO.49
FOR DITCH DETAILS SEE SHEET NO.2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO.2-L

Permit Drawing Sheet 5 of 22

08-SEP-2008 14:00
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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS
8/17/99

-DR4-
PI Sta 10+54.78
Δ = 82° 26' 36.3" (LT)
D = 190° 59' 09.4"
L = 43.17'
T = 26.28'
R = 30.00'

PI Sta 13+21.94
Δ = 9° 05' 24.6" (RT)
D = 143° 14' 22.0"
L = 63.59'
T = 40.77'
R = 40.00'

-L-
PIs Sta 282+87.60
θs = 1° 33' 02.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 288+88.82
Δ = 16° 27' 49.5" (RT)
D = 1° 33' 02.3"
L = 1,061.75'
T = 534.56'
R = 3,695.00'
SE = 04

NAD 83'95

OTHORNELL HARRIS
DB 253 PG 225
(PROPERTY OWNER INFO AND DEED INFO CAN BE FOUND UNDER R-2233AA)

JERRY R. ALEXANDER
DB 373 PG 357
DB 374 PG 452

ROBERT R. HARRIS
DB 442 PG 41
(PROPERTY OWNER INFO AND DEED INFO CAN BE FOUND UNDER R-2233AA)

ARTHUR L. ROBINSON
DB 583 PG 25

RONALD S. SILVER
DB 400 PG 734

SAMUEL HARRIS
DB 568 PG 353
(PROPERTY OWNER INFO AND DEED INFO CAN BE FOUND UNDER R-2233AA)

CALLY HARRIS MCCLAIN
DB 442 PG 404
(PROPERTY OWNER INFO AND DEED INFO CAN BE FOUND UNDER R-2233AA)

HARVEY E. HARRIS
DB 442 PG 410
(PROPERTY OWNER INFO AND DEED INFO CAN BE FOUND UNDER R-2233AA)

EVELYN R. MERCER
DB 380 PG 154
DB 439 PG 275

ROGER W. TATE
DB 450 PG 434
DB 662 PG 145
DB 239 PG 459

PAUL GOWAN
DB 374 PG 448
DB 373 PG 355
DB 482 PG 257
DB 549 PG 353 & 125' LT.
DB 637 PG 455 & 125' LT.
DB 374 PG 450

FLOYD'S CREEK

SOLIDIRON

-DR4- POT Sta. 10+00.00
N 25° 11' 31.4" E
-DR4- PC Sta. 10+28.50
-DR4- PT Sta. 10+71.67
-BL- 64 PINC 22+28.88
-L- Sta. 280+68.48 (51.82' LT)
-DR4- PC Sta. 12+81.18
-DR4- PT Sta. 13+44.77
N 57° 15' 04.9" W
-DR4- POT Sta. 13+44.77
N 57° 50' 39.9" W
-L- N 57° 53' 10.0" W
-DR2- PT Sta. 11+76.13
-DR2- PC Sta. 12+57.21
-DR2- PT Sta. 13+51.33
-DR2- POT Sta. 14+21.47
-DR2- STA. 14+00.00
END CONSTRUCTION
-L- TS Sta. 281+54.26
-L- SC Sta. 283+54.26
-L- POC Sta. 283+65.50
-DR4- POT Sta. 14+23.77
-BL- 65 PINC 29+39.55
(NCGS MON. "BESSIE")
-L- Sta. 287+71.74
(61.34' LT)
-L- N 55° 39' 08.0" W
-L- N 33° 50' 19.6" E
N 42° 13' 26.8" W

-DR2-
PI Sta 11+60.24
Δ = 48° 41' 16.8" (RT)
D = 143° 14' 22.0"
L = 33.99'
T = 18.10'
R = 40.00'

PI Sta 13+09.90
Δ = 24° 05' 54.0" (RT)
D = 28° 38' 52.4"
L = 84.12'
T = 42.69'
R = 200.00'

NOTE : SEE ROADWAY STANDARD DRAWING STD. NO. 862.01 SHEETS 1 & 2 OF 11 FOR SPECIAL MEDIAN GRADING

NOTE: FOR -L- PROFILE SEE SHEET NO.28
FOR -DR2- PROFILE SEE SHEET NO.49
FOR -DR4- PROFILE SEE SHEET NO.49
FOR DITCH DETAILS SEE SHEET NO.2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO.2-L

MATCH LINE SEE SHEET NO.4 -L- STA. 277+00

MATCH LINE SEE SHEET NO.6 -L- STA. 291+00

Permit Drawing Sheet 5 of 22

08-SEP-2008 09:46
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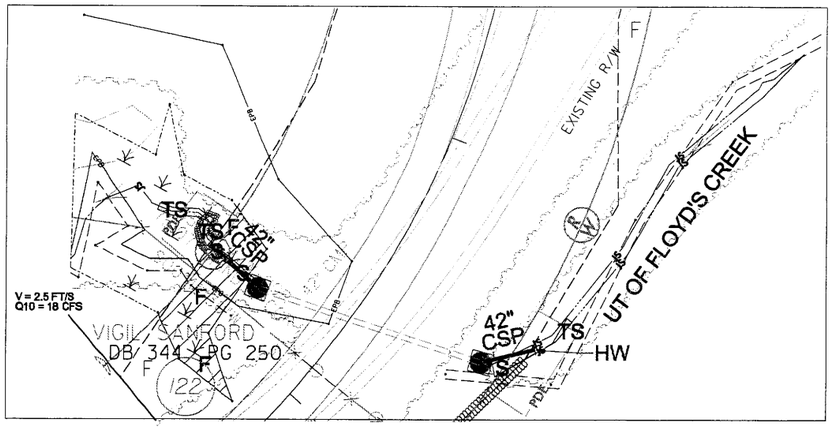
8/17/99

REVISIONS

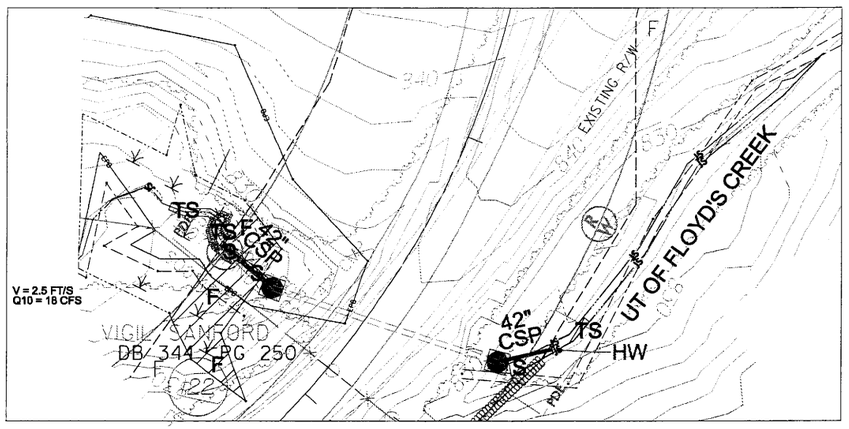
PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

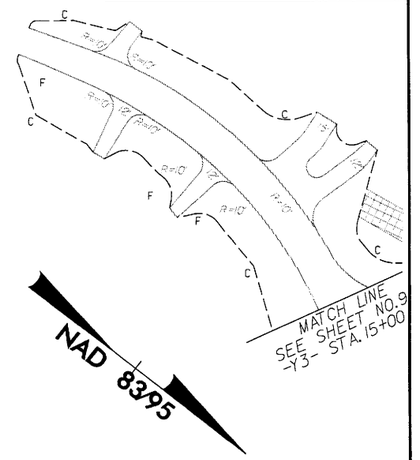
BEGIN CONSTRUCTION
-Y3- POC STA. 12+25.00

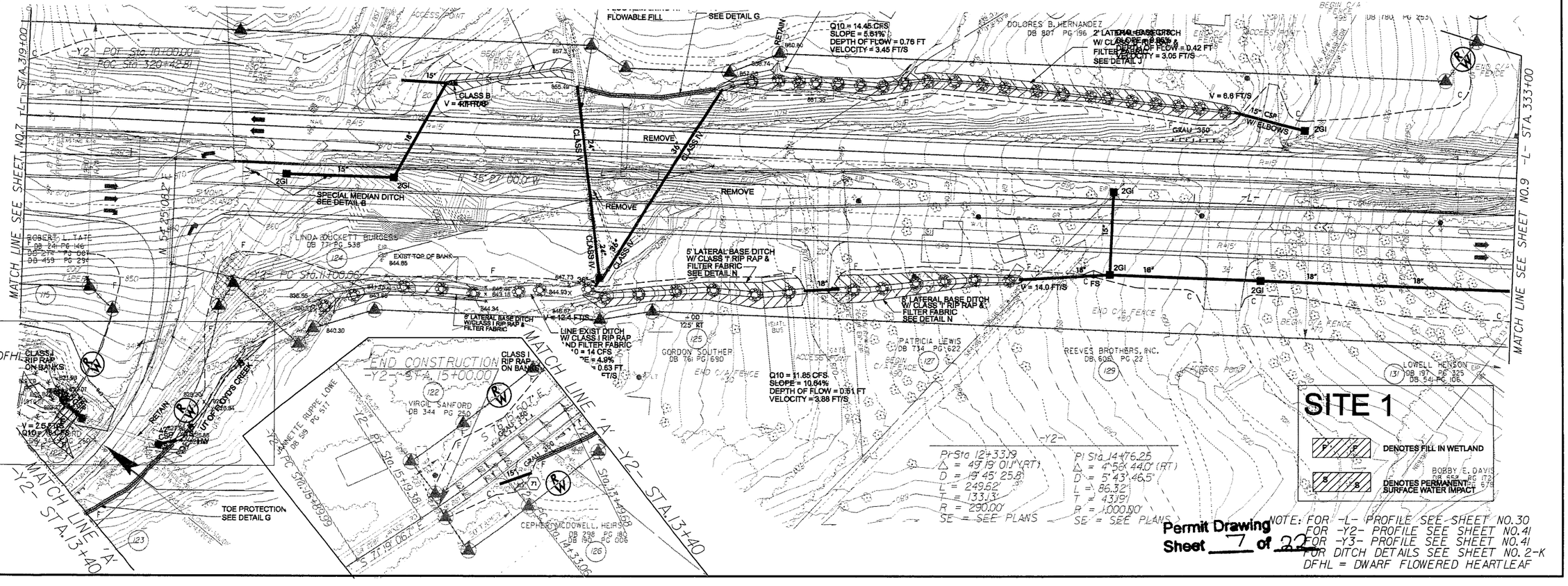


SITE 1 ENLARGED PLAN



SITE 1 ENLARGED PLAN (WITH CONTOURS)





SITE 1

▨ F F	DENOTES FILL IN WETLAND
▨ S S	DENOTES PERMANENT SURFACE WATER IMPACT

Permit Drawing
Sheet 7 of 22

NOTE: FOR -L- PROFILE SEE SHEET NO.30
FOR -Y2- PROFILE SEE SHEET NO.41
FOR -Y3- PROFILE SEE SHEET NO.41
FOR DITCH DETAILS SEE SHEET NO. 2-K
DFHL = DWARF FLOWERED HEARTLEAF

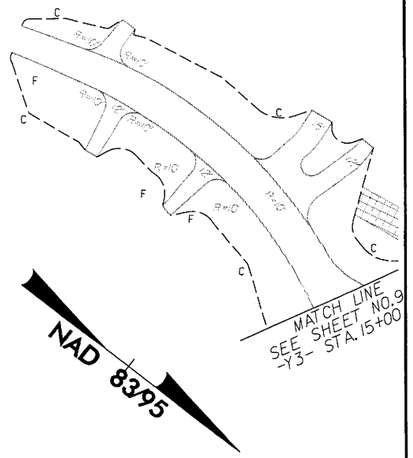
PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

SITE 1 SEE ENLARGED PLAN



BEGIN CONSTRUCTION
-Y3- POC STA. 12+25.00

-Y2- POT Sta. 10+00.00=
-L- POC Sta 320+42.81

MATCH LINE SEE SHEET NO.7 -L- STA. 319+00

MATCH LINE SEE SHEET NO.9 -L- STA. 333+00

FLOWABLE FILL

SEE DETAIL G

CLASS B
V = 4.1 FT/S

SPECIAL MEDIAN DITCH
SEE DETAIL B

REMOVE

CLASS IV

Q10 = 14.45 CFS
SLOPE = 5.81%
DEPTH OF FLOW = 0.76 FT
VELOCITY = 3.45 FT/S

DOLORES B. HERNANDEZ
DB 807 PG 196

2' LATERAL BASE DITCH W/ CLASS I RIP RAP & FILTER FABRIC
SLOPE = 8.85%
DEPTH OF FLOW = 0.42 FT
VELOCITY = 3.05 FT/S
SEE DETAIL J

V = 6.6 FT/S

15" CSP W/ ELBOWS

GRAU 350

5' LATERAL BASE DITCH W/ CLASS 'I' RIP RAP & FILTER FABRIC
SEE DETAIL N

V = 14.0 FT/S

ROBERT L. TATE
DB 241 PG 146
DB 274 PG 007
DB 459 PG 294

LINDA DUCKETT BURGESS
DB 771 PG 538

EXIST TOP OF BANK

-Y2- PC Sta. 11+00.00

8' LATERAL BASE DITCH W/CLASS I RIP RAP & FILTER FABRIC

LINE EXIST DITCH W/ CLASS I RIP RAP AND FILTER FABRIC
Q10 = 14 CFS
SLOPE = 4.9%
DEPTH = 0.63 FT
VELOCITY = 4.1 FT/S

GORDON SOUTHER
DB 761 PG 690

Q10 = 11.85 CFS
SLOPE = 10.64%
DEPTH OF FLOW = 0.61 FT
VELOCITY = 3.88 FT/S

PATRICIA LEWIS
DB 734 PG 622

REEVES BROTHERS, INC.
DB 606 PG 22

LOWELL HENSON
DB 197 PG 325
DB 541 PG 106

BOBBY E. DAVIS
DB 655 PG 172
DB 678 PG 678

DFHL

CLASS I RIP RAP ON BANKS

V = 2.5 FT/S
Q10 = 18.0 CFS

RETAIN

TOP OF BANK OF ROCKY CREEK

TOE PROTECTION
SEE DETAIL G

END CONSTRUCTION
-Y2- STA. 15+00.00

CLASS I RIP RAP ON BANKS

MATCH LINE -A- -Y2- STA. 13+40

MATCH LINE -A- -Y2- STA. 13+40

JANNETTE RUPPE LOWE
DB 569 PG 517

VIRGIL SANFORD
DB 344 PG 250

CEPHES MCDOWELL, HEIRS
DB 298 PG 180
DB 190 PG 006

-Y2-

PI Sta 12+33.19
Δ = 49° 19' 01.1" (RT)
D = 19° 45' 25.8"
L = 249.62'
T = 133.13'
R = 290.00'
SE = SEE PLANS

PI Sta 14+76.25
Δ = 4° 56' 44.0" (RT)
D = 5° 43' 46.5"
L = 86.32'
T = 43.19'
R = 1,000.00'
SE = SEE PLANS

SITE 1

F F DENOTES FILL IN WETLAND

S S DENOTES PERMANENT SURFACE WATER IMPACT

NOTE: FOR -L- PROFILE SEE SHEET NO.30
FOR -Y2- PROFILE SEE SHEET NO.41
FOR -Y3- PROFILE SEE SHEET NO.41
FOR DITCH DETAILS SEE SHEET NO. 2-K
DFHL = DWARF FLOWERED HEARTLEAF

Permit Drawing
Sheet 8 of 22

$SYSTIME$
$SDGN$
$USERNAME$
$USERNAME$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-2233AB	X-139

13+50.00

13+00.00

0.0300

0.0300

0.0500

0.0500

837.66

836.50

2:1

3:1

4.5:1

-Y12-

Permit Drawing
Sheet 21 of 22

18-APR-2007 14:31
R:\Projects\R2233ab_rdy_xpl_y2.dgn
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

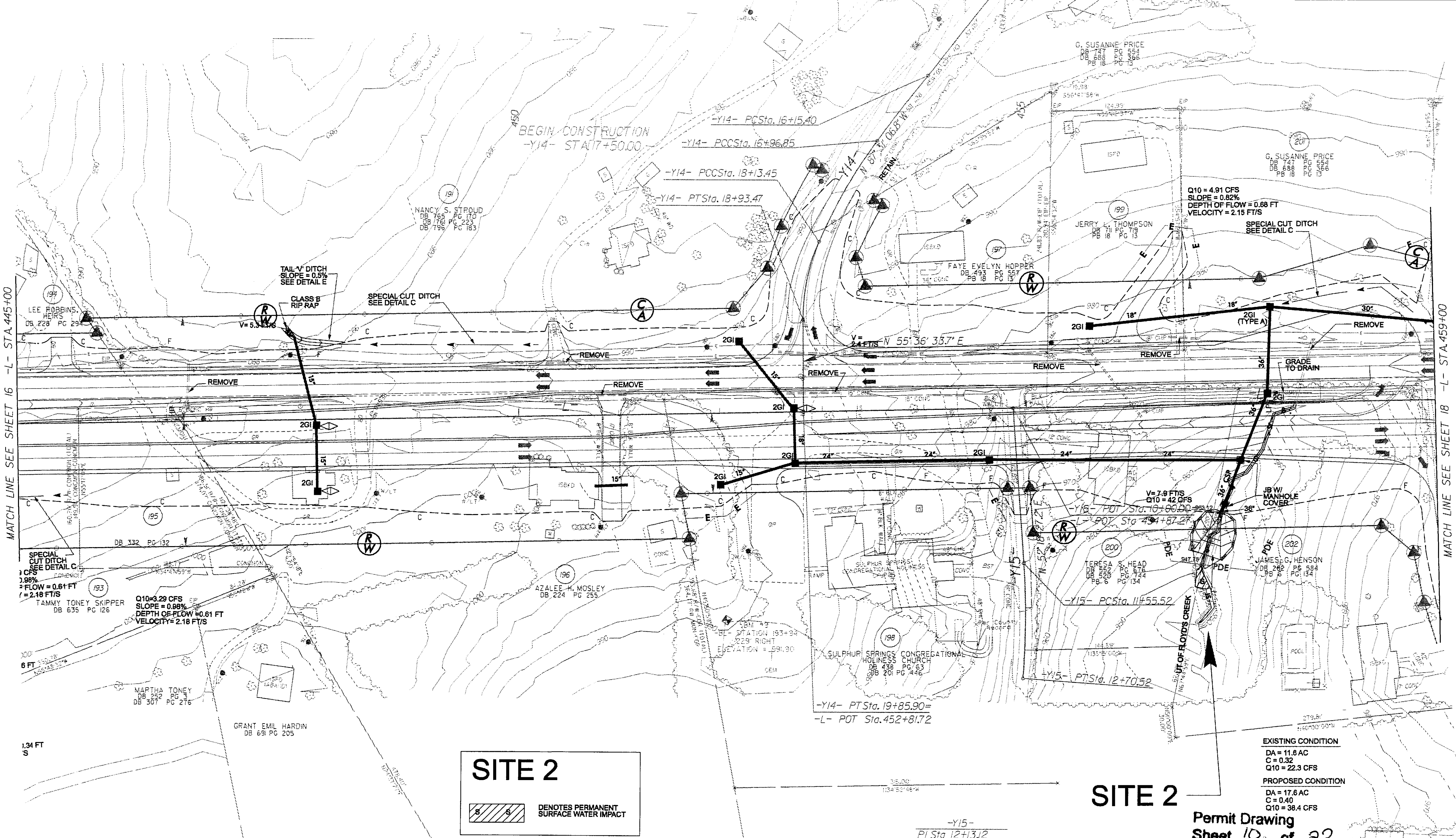
NAD 83/95

-Y14-

PI Sta 16+56.13	PI Sta 17+55.42	PI Sta 18+54.03
Δ = 1° 33' 20.1" (LT)	Δ = 13° 21' 41.4" (LT)	Δ = 23° 30' 39.5" (LT)
D = 1° 54' 35.5"	D = 11° 27' 33.0"	D = 29° 22' 56.8"
L = 81.45'	L = 116.60'	L = 80.02'
T = 40.73'	T = 58.57'	T = 40.58'
R = 3,000.00'	R = 500.00'	R = 195.00'
		SE = SEE PLANS

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

SR 1138 -Y14- 600 / 1000
100 / 300 — 500 / 700 -L-
10100 / 18200 — 10500 / 18600
2005 ADT
2030 ADT
NEWTON COLE RD.



EXISTING CONDITION
DA = 11.6 AC
C = 0.32
Q10 = 22.3 CFS

PROPOSED CONDITION
DA = 17.6 AC
C = 0.40
Q10 = 38.4 CFS

SITE 2

▨ DENOTES PERMANENT SURFACE WATER IMPACT

-Y15-

PI Sta 12+13.12
Δ = 8° 14' 11.0" (RT)
D = 7° 09' 43.1"
L = 115.00'
T = 57.60'
R = 800.00'

Permit Drawing
Sheet 10 of 22

NOTE: FOR -L- PROFILE SEE SHEET NO.34
FOR -Y14- PROFILE SEE SHEET NO.44
FOR DITCH DETAILS SEE SHEET NO. 2-K

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

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 8/17/99

NAD 83/95

-Y14-
PI Sta 16+56.13
Δ = 1° 33' 20" (LT)
D = 1° 54' 35.5"
L = 81.45'
T = 40.73'
R = 3,000.00'

PI Sta 17+55.42
Δ = 13° 21' 41.4" (LT)
D = 11° 27' 33.0"
L = 116.60'
T = 58.57'
R = 500.00'

PI Sta 18+54.03
Δ = 25° 30' 39.5" (LT)
D = 29° 22' 56.8"
L = 80.02'
T = 40.58'
R = 195.00'
SE = SEE PLANS

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

SR 1138 -Y14- 600 / 1000

100 / 300 | 500 / 700 -L-

10100 / 18200 | 10500 / 18600

2005 ADT / 2030 ADT

NEWTON COLE RD.

BEGIN CONSTRUCTION
-Y14- STA 17+50.00

-Y14- PCSta. 16+15.40
-Y14- PCCSta. 16+96.85
-Y14- PCCSta. 18+13.45
-Y14- PTSta. 18+93.47

-Y14- N 87° 51' 06.8" W

RETAIN

DAVID MICHAEL MOSLEY
DB 765 PG 726
DB 765 PG 256

S 85° 57' 46.6" E

C. SUSANNE PRICE
DB 747 PG 544
DB 688 PG 346
PB 18 PG 13

NANCY S. STROUD
DB 765 PG 170
DB 761 PG 263
DB 796 PG 183

JERRY L. THOMPSON
DB 715 PG 719
PB 18 PG 13

FAYE EVELYN HOPPER
DB 451 PG 357
PB 162 PG 13

LEE ROBBINS HEIRS
DB 228 PG 29

CLASS B RIP RAP

V= 5.2 FT/S

V= 2.4 FT/S

N 55° 36' 33.7" E

REMOVE

2GI

15"

18"

30"

36"

24"

GRADE TO DRAIN

2GI (TYPE A)

JB W/ MANHOLE COVER

V= 7.9 FT/S
Q10 = 42 CFS

-Y15- POT Sta. 10+00.00
-L- POT Sta 434+87.27

-Y15- PCSta. 11+55.52

-Y15- PTSta. 12+70.52

-Y14- PTSta. 19+85.90=
-L- POT Sta. 452+81.72

Q10 = 4.91 CFS
SLOPE = 0.82%
DEPTH OF FLOW = 0.68 FT
VELOCITY = 2.15 FT/S

Q10=3.29 CFS
SLOPE = 0.98%
DEPTH OF FLOW =0.61 FT
VELOCITY= 2.18 FT/S

TAMMY TONEY SKIPPER
DB 635 PG 126

AZALEE H. MOSLEY
DB 224 PG 255

MARTHA TONEY
DB 252 PG 3
DB 307 PG 276

GRANT EMIL HARDIN
DB 691 PG 205

SULPHUR SPRINGS CONGREGATIONAL HOLINESS CHURCH
DB 436 PG 53
DB 201 PG 446

TERESA S. HEAD
DB 292 PG 676
DB 520 PG 744
PB 6 PG 134

JAMES G. HENSON
DB 282 PG 584
PB 6 PG 134

-L- STATION 195+34
22.9' RIGHT
ELEVATION = 991.90

DB 332 PG 132

MATCH LINE SEE SHEET 16 -L- STA 445+00

MATCH LINE SEE SHEET 18 -L- STA 459+00

SITE 2

DENOTES PERMANENT SURFACE WATER IMPACT

-Y15-
PI Sta 12+13.12
Δ = 8° 14' 11.0" (RT)
D = 7° 09' 43.1"
L = 115.00'
T = 57.60'
R = 800.00'

EXISTING CONDITION
DA = 11.6 AC
C = 0.32
Q10 = 22.3 CFS

PROPOSED CONDITION
DA = 17.6 AC
C = 0.40
Q10 = 38.4 CFS

SITE 2

Permit Drawing
Sheet 11 of 82

NOTE: FOR -L- PROFILE SEE SHEET NO. 34
FOR -Y14- PROFILE SEE SHEET NO. 44
FOR DITCH DETAILS SEE SHEET NO. 2-K

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

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

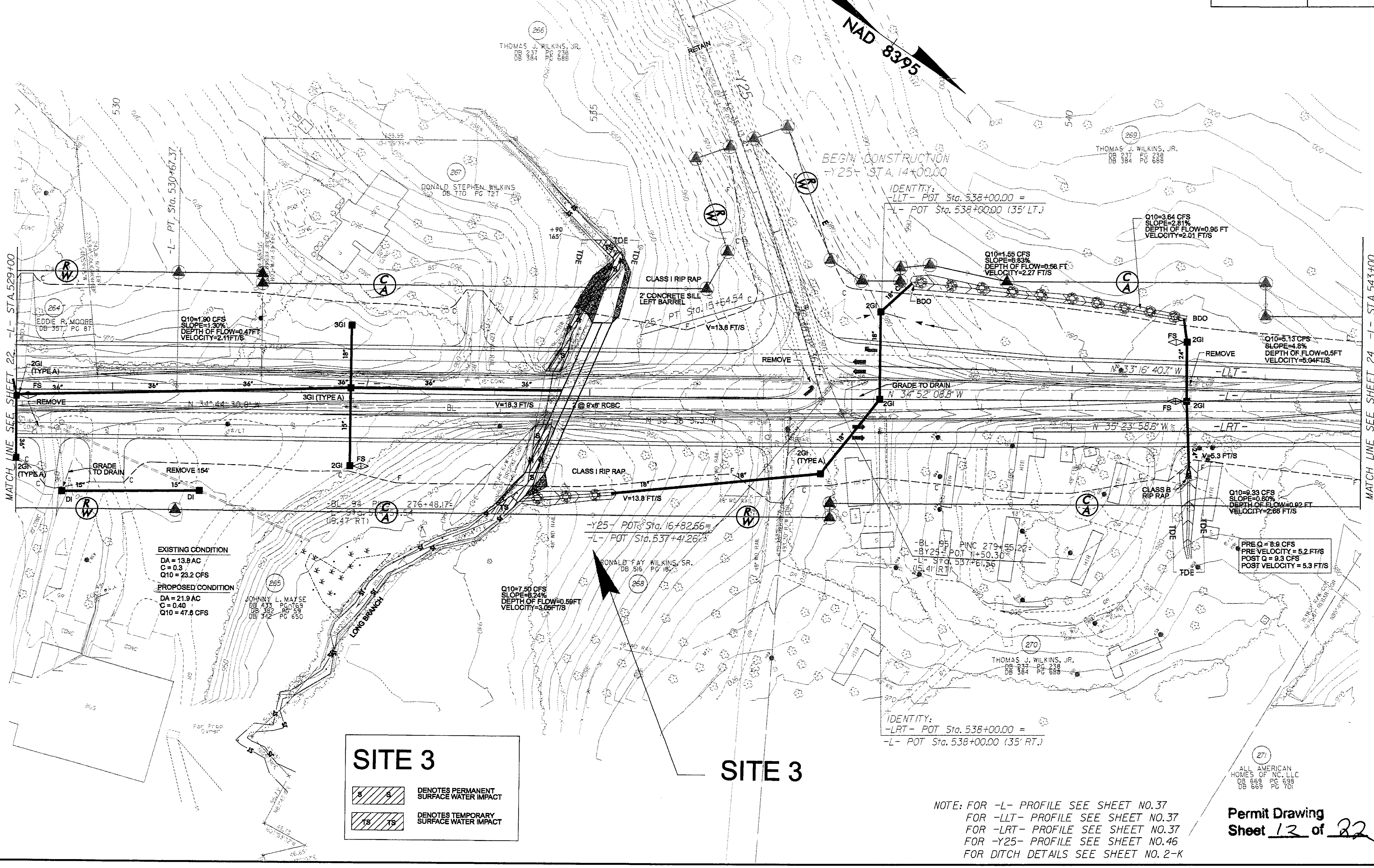
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
SR 1150 -Y25- 400/600
200/300 200/300
-L- 6900/13500 6900/13500
2005 ADT
2030 ADT
LONGBRANCH RD.

-L-
PI Sta 526+53.60
Δ = 2° 44' 00.1" (RT)
D = 0° 19' 48.5"
L = 827.70'
T = 413.93'
R = 17,350.00'

-Y25-
PI Sta 10+74.16
Δ = 10° 35' 32.3" (LT)
D = 7° 09' 43.1"
L = 147.90'
T = 74.16'
R = 800.00'

PI Sta 14+12.05
Δ = 5° 29' 58.0" (RT
D = 1° 48' 06.3"
L = 305.23'
T = 152.73'
R = 3,180.00'
SE = SEE PLANS



SITE 3

▨ S S	DENOTES PERMANENT SURFACE WATER IMPACT
▨ TS TS	DENOTES TEMPORARY SURFACE WATER IMPACT

NOTE: FOR -L- PROFILE SEE SHEET NO.37
FOR -LLT- PROFILE SEE SHEET NO.37
FOR -LRT- PROFILE SEE SHEET NO.37
FOR -Y25- PROFILE SEE SHEET NO.46
FOR DITCH DETAILS SEE SHEET NO. 2-K

Permit Drawing
Sheet 13 **of** 22

REVISIONS

8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/95

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
SR 1510 -Y25-
400 / 600
200 / 300 200 / 300
-L-
6900 / 13500 6900 / 13500
2005 ADT / 2030 ADT
LONGBRANCH RD.

-L-
PI Sta. 526+53.60
Δ = 2° 44' 00.1" (RT)
D = 0° 19' 48.8"
L = 827.70'
T = 413.93'
R = 17,350.00'

-Y25-
PI Sta. 10+74.6
Δ = 10° 35' 32.3" (LT)
D = 7° 09' 43.1"
L = 147.90'
T = 74.16'
R = 800.00'

PI Sta. 14+12.05
Δ = 5° 29' 58.0" (RT)
D = 1° 48' 06.3"
L = 305.23'
T = 152.73'
R = 3,180.00'
SE = SEE PLANS

-Y25- PT Sta. 11+47.90
-Y25- PC Sta. 12+59.30
N 31° 42' 38.7" E
NAD 83/95
RETAIN

(266) THOMAS J. WILKINS, JR. DB 237 PG 236 DB 384 PG 558

(267) DONALD STEPHEN WILKINS DB 770 PG 727

(264) EDDIE R. MOORE DB 357 PG 87

(265) JOHNNY L. MAYSE DB 433 PG 769 DB 382 PG 53 DB 342 PG 650

(268) RONALD FAY WILKINS, SR. DB 516 PG 181

(269) THOMAS J. WILKINS, JR. DB 237 PG 236 DB 384 PG 558

(270) THOMAS J. WILKINS, JR. DB 237 PG 236 DB 384 PG 558

(271) ALL AMERICAN HOMES OF NC, LLC DB 669 PG 698 DB 669 PG 701

BEGIN CONSTRUCTION -Y25- STA. 14+00.00

IDENTITY:
-LLT- POT Sta. 538+00.00 =
-L- POT Sta. 538+00.00 (35' LT)

IDENTITY:
-LRT- POT Sta. 538+00.00 =
-L- POT Sta. 538+00.00 (35' RT.)

-L- PT Sta. 530+67.37

-L- STA. 529+00

-L- STA. 543+00

MATCH LINE SEE SHEET 22

MATCH LINE SEE SHEET 24

Q10=1.90 CFS
SLOPE=1.30%
DEPTH OF FLOW=0.47FT
VELOCITY=2.11FT/S

3GI

2GI (TYPE A)

FS 36"

REMOVE

3GI (TYPE A)

N 34° 44' 30.8" W

2GI (TYPE A)

GRADE TO DRAIN

REMOVE 154'

DI

EXISTING CONDITION
DA = 13.8 AC
C = 0.3
Q10 = 23.2 CFS

PROPOSED CONDITION
DA = 21.9 AC
C = 0.40
Q10 = 47.6 CFS

-BL- 94 PNC 276+48.17=
-L- Sta. 537+61.54
(19.47' RT)

-Y25- POT Sta. 16+82.66=
-L- POT Sta. 537+41.26

-BL- 95 PNC 279+55.22=
-BY25- POT 11+50.30
-L- Sta. 537+61.38
(15.41' RT)

CLASS I RIP RAP

2' CONCRETE SILL
LEFT BARREL

V=13.8 FT/S

2@ 8'x8' RCBC

Q10=7.50 CFS
SLOPE=8.24%
DEPTH OF FLOW=0.59FT
VELOCITY=3.05FT/S

LONG BRANCH

Q10=3.64 CFS
SLOPE=2.81%
DEPTH OF FLOW=0.95 FT
VELOCITY=2.01 FT/S

Q10=1.55 CFS
SLOPE=6.83%
DEPTH OF FLOW=0.58 FT
VELOCITY=2.27 FT/S

BDO

2GI

GRADE TO DRAIN
N 34° 52' 08.8" W

N 33° 16' 40.7" W

-LLT-

-L-

-LRT-

N 35° 23' 58.6" W

Q10=5.13 CFS
SLOPE=4.8%
DEPTH OF FLOW=0.5FT
VELOCITY=5.04FT/S

V=5.3 FT/S

CLASS B RIP RAP

Q10=9.33 CFS
SLOPE=0.60%
DEPTH OF FLOW=0.92 FT
VELOCITY=2.68 FT/S

PRE Q = 8.9 CFS
PRE VELOCITY = 5.2 FT/S
POST Q = 9.3 CFS
POST VELOCITY = 5.3 FT/S

TDE

SITE 3

S DENOTES PERMANENT SURFACE WATER IMPACT

TS DENOTES TEMPORARY SURFACE WATER IMPACT

SITE 3

NOTE: FOR -L- PROFILE SEE SHEET NO. 37
FOR -LLT- PROFILE SEE SHEET NO. 37
FOR -LRT- PROFILE SEE SHEET NO. 37
FOR -Y25- PROFILE SEE SHEET NO. 46
FOR DITCH DETAILS SEE SHEET NO. 2-K

Permit Drawing
Sheet 13 of 22

$$$$$$SYSTIME$$$$$$
$$$$$$LOGIN$$$$$$
$$$$$$ENGAGE$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RIGHT DITCH

BEGIN GRADE
-L- STA. 273+96.34
EL. = 771.33

BEGIN V-LATERAL DITCH RT.
-L- STA. 274+00.00
EL. = 768.06

-L- POT STA. 274+00.00 BK =
-L- POT STA. 273+96.34 AH

(-)12.99%

(-)1.157587

6.00%

END LATERAL V-DITCH RT.
STA. 276+00
EL. = 763.35

-L- STA. 275+36
EL. 758.80

767.54

NOTE: SEE SHEET NO.4 FOR PLAN VIEW

265 266 267 268 269 270 271 272 273 274 275 276 277

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 4500	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 745.3'	FT
BASE DISCHARGE	= 5400	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 746.3'	FT
OVERTOPPING DISCHARGE	= 55500	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 765.6'	FT

PI = 278+90.00
EL = 758.99'
VC = 980'
K = 152

Proposed 1@52'x10'10.5'x@6.3' --- MBI

BEGIN BRIDGE
-L- STA. 278+34.26

END BRIDGE
-L- STA. 281+14.26

REMOVE EXISTING BRIDGE

767.54

(+)2.950%

1.48%

(+)3.476%

BEGIN SPECIAL CUT DITCH RIGHT
-L- STA. 278+00
EL. = 763.17

END SPECIAL CUT DITCH RIGHT
-L- STA. 279+50
EL. = 762.35

EXISTING GROUND ALONG CROWN POINT

Normal Water Surface
= 733.9'

PROFILE ALONG STRUCTURE (SBL)

MEDIAN DITCH
RIGHT DITCH

-L- STA. 290+38
ELEV. = 799.31'
BEGIN DITCH MEDIAN

PI = 290+50.00
EL = 799.31'
VC = 310'
K = 433

-L- STA. 289+00
ELEV. = 801.15'
END DITCH MEDIAN

+5.80263

+5.8082%

-L- STA. 288+50
ELEV. = 798.43'
BEGIN DITCH RIGHT

-L- STA. 287+00
ELEV. = 796.25'

-L- STA. 286+00
ELEV. = 795.06'

-L- STA. 285+50
ELEV. = 794.87'
END DITCH RIGHT

-L- STA. 285+28
ELEV. = 795.00'
BEGIN DITCH RIGHT

1.03%

5.92%

3.85%

5.78%

BEGIN V DITCH

0.20%

SPECIAL MEDIAN DITCH

V-LATERAL BASE DITCH

1.64%

NOTE: SEE SHEET NO.5 FOR PLAN VIEW

Permit Drawing
Sheet 4 of 82

277 278 279 280 281 282 283 284 285 286 287 288 289 290 291

08-SEP-2008 07:44
C:\Projects\Projects_environmental\drawings\r2233ab_permit_pf1.dgn
default

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH

PI = 516+75.00
EL = 1034.68'
VC = 1,528'
K = 151

+3.50%

-1.69%

SPECIAL CUT DITCH

-1.70%

-16.52.60"

PIPE / HYDRAULIC DATA
DRAINAGE STRUCTURE NO. --
DRAINAGE AREA = 1.08 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 27 CFS
DESIGN HW ELEVATION = 969.2 FT
100 YEAR DISCHARGE = 32 CFS
100 YEAR HW ELEVATION = 969.5 FT
OVERTOPPING FREQUENCY = +500 YRS
OVERTOPPING DISCHARGE = +48 CFS
OVERTOPPING ELEVATION = 971.5 FT

30" RCP

969.53

NOTE: SEE SHEET NO. 22 FOR PLAN VIEW

LEFT DITCH
MEDIAN DITCH
RIGHT DITCH

RM #14
RAILROAD SPIKE IN BASE OF 14" OAK
-BL- STATION 518+15.24 (31.63' LT)
-L- STATION 536+18.10 (300.35' LT)
ELEV. 975.01'

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 480	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 947.8	FT
BASE DISCHARGE	= 600	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 948.0'	FT
OVERTOPPING DISCHARGE	= 950+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 955.2	FT

-L- STA 536+32.00
ELEV = 963.63'
BEGIN DITCH LEFT

-L- STA 536+32.00
ELEV = 963.63'
BEGIN DITCH MEDIAN

-L- STA 536+32.00
ELEV = 963.63'
BEGIN DITCH RIGHT

-L- STA 536+32.00
ELEV = 963.63'
END DITCH LEFT

-L- STA 536+32.00
ELEV = 963.63'
END DITCH MEDIAN

-L- STA 536+32.00
ELEV = 963.63'
END DITCH RIGHT

0.30%

0.77%

SPECIAL MEDIAN DITCH

-16.52.60"

EXIST 2 @ 7' X 7'

3' LATERAL BASE DITCH

NATURAL GROUND

PROPOSED
2 @ 9' X 8' RCBC

6.24%

PI = 537+50.00
EL = 958.42'
VC = 1,295'
K = 115

-L- STA 538+32
ELEV = 963.63'
BEGIN DITCH LEFT

-L- STA 538+32
ELEV = 963.63'
BEGIN DITCH MEDIAN

-L- STA 538+32
ELEV = 963.63'
BEGIN DITCH RIGHT

-L- STA 538+32
ELEV = 963.63'
END DITCH LEFT

-L- STA 538+32
ELEV = 963.63'
END DITCH MEDIAN

-L- STA 538+32
ELEV = 963.63'
END DITCH RIGHT

-L- STA 540+00
ELEV = 988.46'

-L- STA 540+38
ELEV = 988.46'

-L- STA 539+00
ELEV = 987.92'

-L- STA 541+20
ELEV = 987.27'
END DITCH LEFT

BERM W DITCH

+14.64.54"

+14.50.54"

+14.16.43"

2.68%

6.79%

1.44%

PI = 542+00.00
EL = 988.04'
VC = 200'
K = 77.3

PI = 539+50.00
EL = 976.78'
VC = 200'
K = 77.3

SPECIAL CUT DITCH

6.24%

IDENTITY:
-L- POT STA 538+00.00=
EL = 969.39'
-LRT- POT STA 538+00.00 (35' LT)
EL = 969.63'

0.52%

+14.16.43"

+14.20.04"

PI = 539+50.00
EL = 976.78'
VC = 200'
K = 59.7

PI = 542+00.00
EL = 987.55'
VC = 200'
K = 59.7

NOTE: SEE SHEET NO. 23 FOR PLAN VIEW

Permit Drawing
Sheet 13 of 82

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

150 100 50 CL 50 100 150

531+00 532+00 533+

65

55

45

35

CL STA. 534+79 -L-
GP ELEV. = 958.5'
SKEW = 113.5°
2 @ 9' x 8' RCBC

2:1 NORMAL
EXISTING 2 @ 7' X 7' RCBC
2:1 NORMAL
Q50 W.S. ELEV = 947.8'
PROPOSED 2 @ 9' x 8' RCBC
LEFT BANK
Q100 W.S. ELEV = 948.0'
RIGHT BANK
36"
INVERT ELEV = 941.0
2.23%
2.25%
PROPOSED CHANNEL GRADE
ELEV RCBC @ CL = 938.0
NORMAL W.S. ELEV = 941.9'
SURVEY = 9/12/06
BURY INVERT 1'
NATURAL GROUND
BED MATERIAL: SILT, SAND, AND ROCK

PI = 531+50.00
EL = 938.42'
VC = 1,295'
K = 115

(-)6.5260%

(+)4

PROFILE

3' LATERAL BASE DITCH W/ CLASS B RIP RAP AND FILTER FABRIC

SKEW = 113.5°

2 @ 9'x8' RCBC

2' CONC. SILL

CLASS 1 RIPRAP

TOP OF BANK

TOP OF BANK

36"

2@9'x8' RCBC

CLASS 1 RIPRAP

NAD 83

PLAN VIEW

FLOW

20'

NOTES:

SPACE BAFFLES THROUGH CULVERT AT 20' CENTERS.

PLACE BED MATERIAL TO TOP OF RELATIVE BAFFLE ELEVATIONS. USE EXCAVATED SITE BED MATERIAL, IF AVAILABLE, OTHERWISE USE CLASS B RIP RAP IN CULVERT.

BAFFLE PLACEMENT I

INLET DETAIL

NOT TO SCALE

VARIES
7.5' TO 15.5'

1.5'

2:1

2:1 TO 6:1

1'

1.5'

CLASS I RIP

EST. DDE = 4500 CU FT
EST. FILL = 550 CU FT
EST. CLASS I RIP RAP = 20 TONS
EST. FILTER FABRIC = 250 SQ FT

DDE FILL

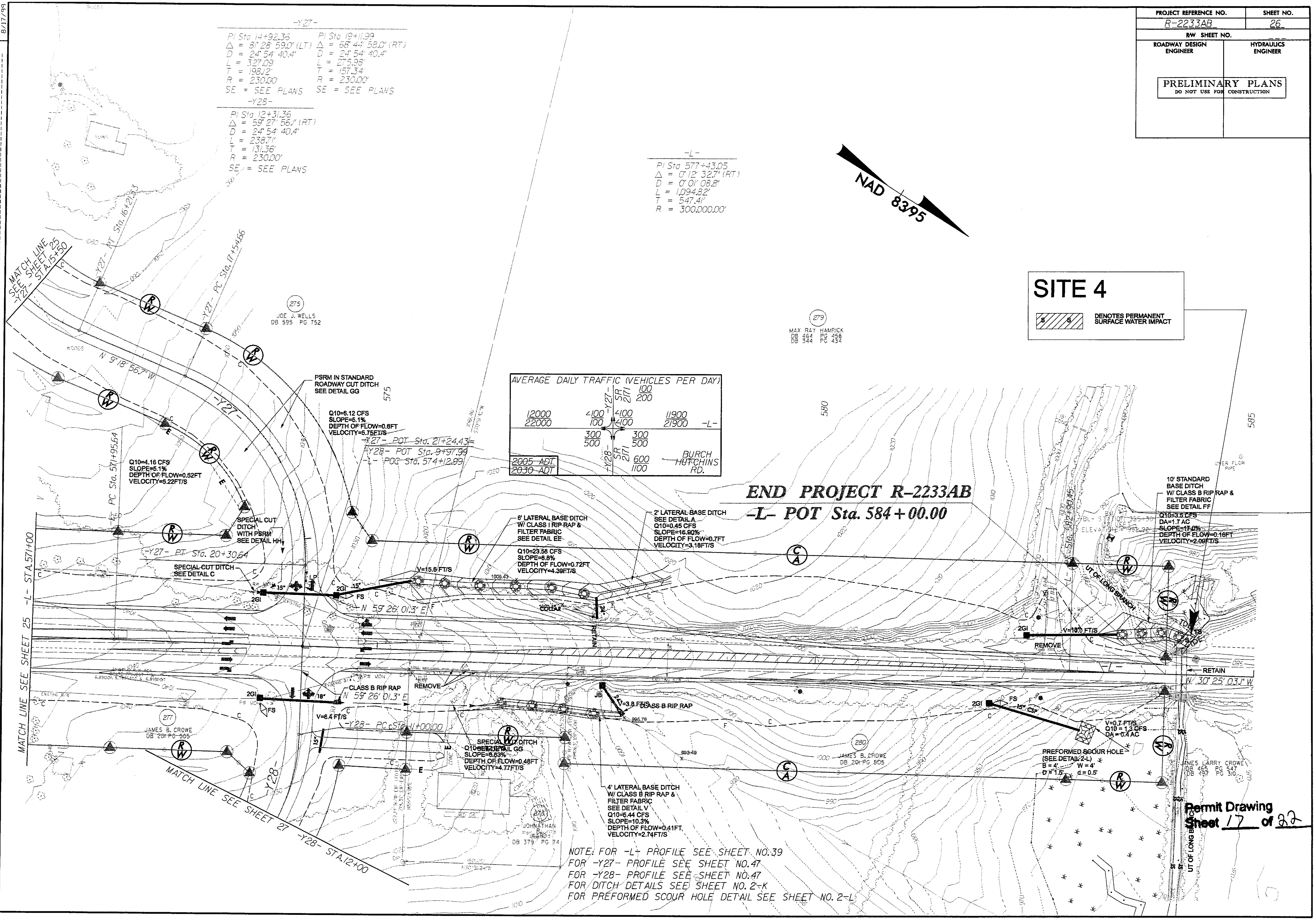
Permit Drawing
Sheet 16 of 22

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



-Y27-

PI Sta 14+92.36
Δ = 81° 28' 59.0" (LT)
D = 24° 54' 40.4"
L = 327.09'
T = 198.12'
R = 230.00'
SE = SEE PLANS

PI Sta 19+11.99
Δ = 68° 44' 58.0" (RT)
D = 24° 54' 40.4"
L = 275.98'
T = 157.34'
R = 230.00'
SE = SEE PLANS

-Y28-

PI Sta 12+31.36
Δ = 59° 27' 56.1" (RT)
D = 24° 54' 40.4"
L = 238.71'
T = 131.36'
R = 230.00'
SE = SEE PLANS

-L-

PI Sta 577+43.05
Δ = 0° 12' 32.7" (RT)
D = 0° 01' 08.8"
L = 1,094.82'
T = 547.41'
R = 300,000.00'

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

SITE 4

▨ DENOTES PERMANENT SURFACE WATER IMPACT

END PROJECT R-2233AB
-L- POT Sta. 584+00.00

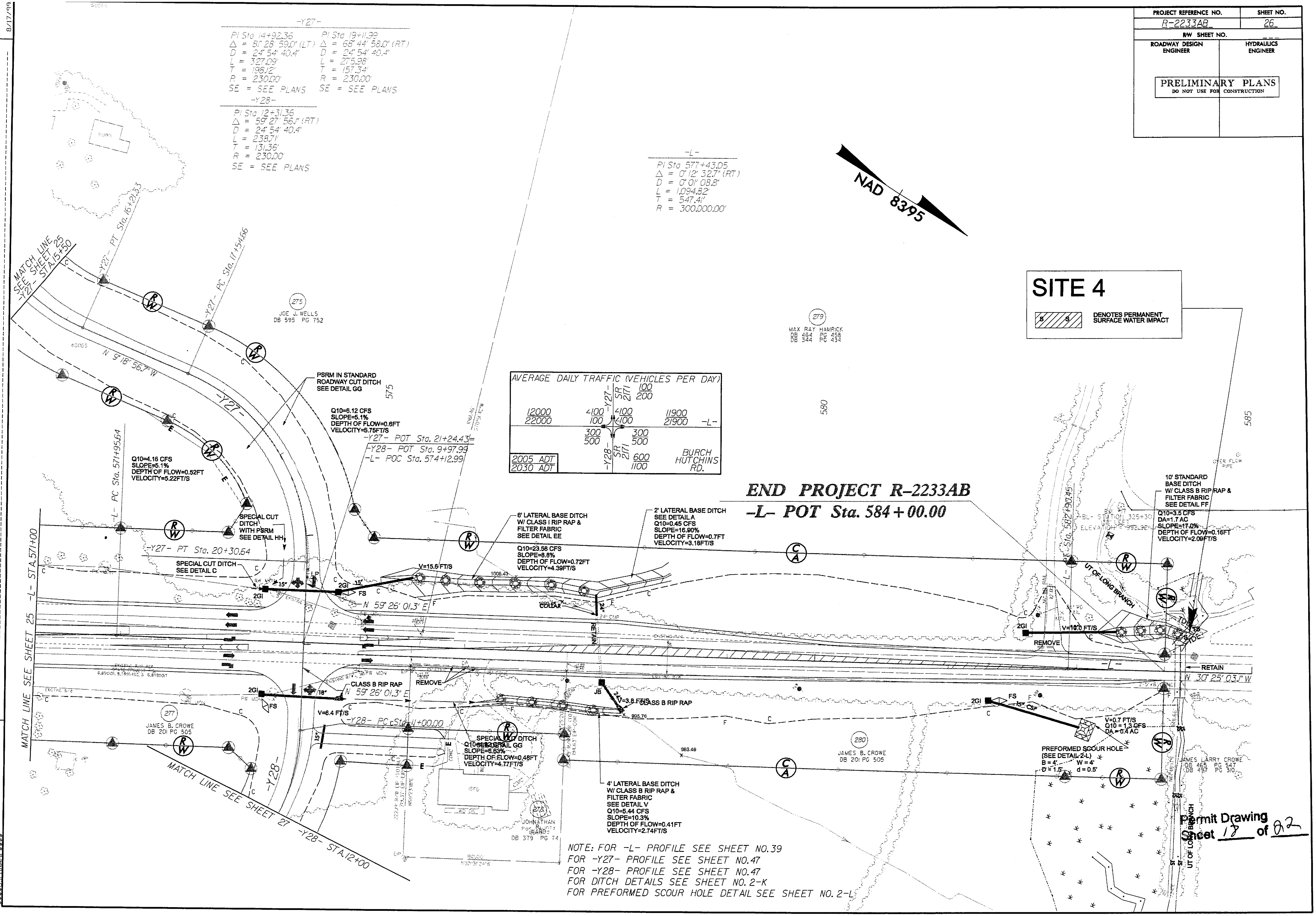
NOTE: FOR -L- PROFILE SEE SHEET NO.39
FOR -Y27- PROFILE SEE SHEET NO.47
FOR -Y28- PROFILE SEE SHEET NO.47
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L

Permit Drawing
Sheet 17 **of** 22

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

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTE: FOR -L- PROFILE SEE SHEET NO.39
FOR -Y27- PROFILE SEE SHEET NO.47
FOR -Y28- PROFILE SEE SHEET NO.47
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L

Permit Drawing
Sheet 17 of 82

COUNTY LOCATION VICINITY MAP

SITE LOCATION
IN RUTHERFORD COUNTY

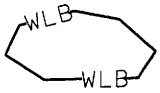
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RUTHERFORD COUNTY

PROJECT: 34400.1.1 (R-2233AB)
US 221 FROM SOUTH OF
FLOYD'S CREEK TO
NORTH OF US 74 BYPASS

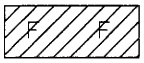
SHEET 19 OF 22 7-16-08

WETLAND LEGEND

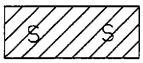
WLB WETLAND BOUNDARY



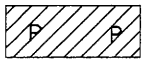
WETLAND



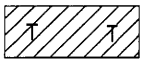
DENOTES FILL IN WETLAND



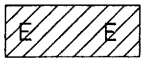
DENOTES FILL IN SURFACE WATER



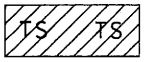
DENOTES FILL IN SURFACE WATER (POND)



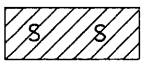
DENOTES TEMPORARY FILL IN WETLAND



DENOTES EXCAVATION IN WETLAND



DENOTES TEMPORARY SURFACE WATER IMPACTS



DENOTES PERMANENT SURFACE WATER IMPACTS

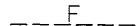

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

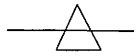
TOP OF BANK

EDGE OF WATER

PROP. LIMIT OF CUT



PROP. LIMIT OF FILL


PROP. RIGHT OF WAY

NG NATURAL GROUND

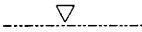
PROPERTY LINE

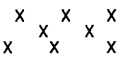
TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

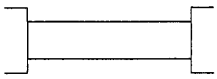
EPB EXIST. ENDANGERED PLANT BOUNDARY

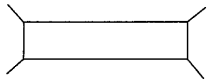

WATER SURFACE


LIVE STAKES


BOULDER

CORE FIBER ROLLS


PROPOSED BRIDGE


PROPOSED BOX CULVERT

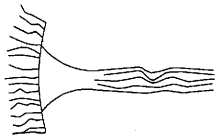

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)


SINGLE TREE


WOODS LINE

DRAINAGE INLET

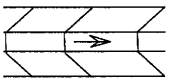

ROOTWAD


RIP RAP

ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE


PREFORMED SCOUR HOLE (PSH)


LEVEL SPREADER (LS)


GRASS SWALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RUTHERFORD COUNTY

PROJECT: 34400.1.1 (R-2233AB)
US 221 FROM SOUTH OF
FLOYD'S CREEK TO
NORTH OF US 74 BYPASS

SHEET 20 OF 22 7-16-08

PROPERTY OWNERS

PARCEL	OWNER NAME	ADDRESS
122	VIRGIL SANFORD	775 S. CHURCH ST. APT. 602-A FOREST CITY, NC 28043
123	L. C. WRIGHT	147 JAYNES RD. FOREST CITY, NC 28043
200	TERESA S. HEAD	2943 US HIGHWAY 221 SOUTH FOREST CITY, NC 28043
202	JAMES G. HENSON	128 ROBBINS DR. FOREST CITY, NC 28043
266	THOMAS J. WILKINS	2257 US HIGHWAY 221 SOUTH FOREST CITY, NC 28043
267	DONALD STEPHEN WILKINS	2150 US HIGHWAY 221 SOUTH FOREST CITY, NC 28043
279	MAX RAY HAMRICK	1800 US HIGHWAY 221 SOUTH FOREST CITY, NC 28043

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY
PROJECT: 3400.1.1 (R-2233AB)
US 221 FROM SOUTH OF
FLOYD'S CREEK TO
NORTH OF US 74 BYPASS

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts - Bank Stabilization (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1A	-L- 280+00	Bridge						0	0	0	0	0	
1	-Y2-12+58 TO 13+18 RT	42" CSP	0.020							50	10	20	
2	-L- 456+60 TO 457+64 RT	36" CSP						0.02		170	56		
3	-L- 534+17 RT TO 535+17 LT	2 - 9' x 8' RCBC						0.05	0.010	134	94	45	
4	-L-584+11 TO 584+34 LT	10' BASE DITCH AT BANK									15	10	
TOTALS:			0.02	0.00	0.00	0.00	0.00	0.07	0.01	354		75	0

No Impacts anticipated to construct proposed or remove existing bridges.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RUTHERFORD COUNTY
PROJECT 34400.1.1 (R-2233AB)
US 221 FROM SOUTH OF FLOYD'S CREEK TO
NORTH OF US 74 BYPASS
SHEET 82 OF 82 September-08

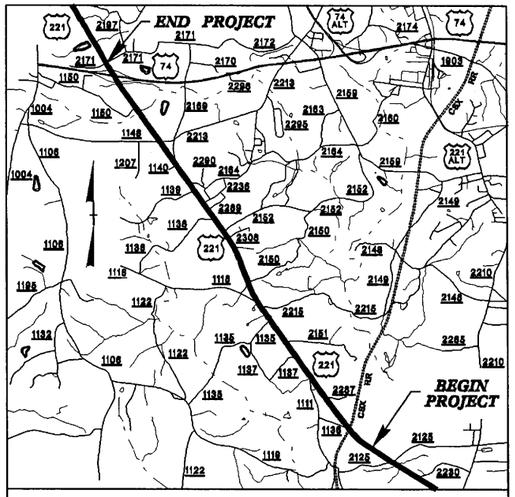
ATN Revised 3/31/05

09/08/99

TIP PROJECT: R-2233AB

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

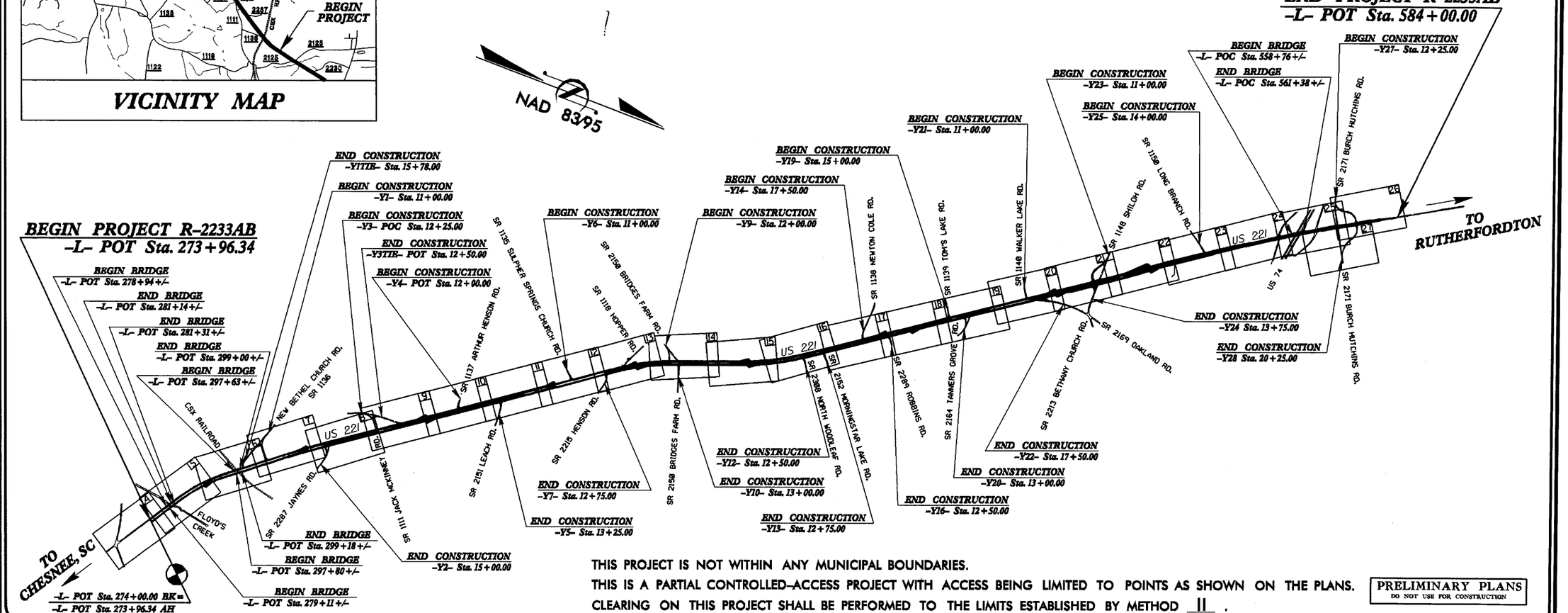
RUTHERFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2233AB	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34400.1.1	NHF-221(9)	P.E.
34400.2.3		R/W, UTIL.

LOCATION: US 221 FROM SOUTH OF FLOYD'S CREEK TO NORTH OF US 74 BYPASS

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II .

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 10,900
ADT 2030 = 19,000
DHV = 11 %
D = 55 %
T = 12 % *
V = 60 MPH
FUNC. CLASS = ARTERIAL
* TTST 7% DUAL 5%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2233AB = 5.755 MILES
LENGTH STRUCTURE TIP PROJECT R-2233AB = 0.117 MILES
TOTAL LENGTH TIP PROJECT R-2233AB = 5.872 MILES

*LENGTHS BASED ON NBL BRIDGES

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 28, 2007

LETTING DATE: DECEMBER 15, 2009

ROGER D. THOMAS, PE
PROJECT ENGINEER

BRIAN P. ROBINSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

20-JUN-2008 13:43
r:\roadway\proj\r2233ab_rdy_tsh.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

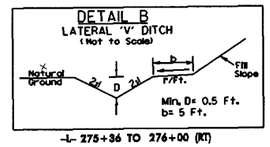
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99 R/W REVISION - UPDATED PROPERTY LINES ON PARCELS 100 AND 101. 6/10/08 SKR

20-JUN-2008 13:43
S:\Engineering\projects\R-2233ab\r-dy_dsn_psht04.dgn
$$$$USERNAME$$$$

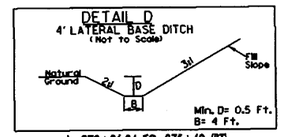
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 0.5 Ft.
b= 5 Ft.

-L- 275+36 TO 276+00 (RT)

DETAIL D
4' LATERAL BASE DITCH
(Not to Scale)



Min. D= 0.5 Ft.
B= 4 Ft.

-L- 273+96.34 TO 275+40 (RT)

NAD 8395

-BL- 62 POT 5+00.00

-L- POT Sta. 265+00.00

SR 2125 HARRIS-HEMPLETT RD. 22'-0"R

265

270

275

-BL- 63 PINC 13+98.92
-L- Sta. 272+42.18
(52.50' LT)

98

99

100

101

102

-BL- US 221

N 60° 46' 31.0" W

-L-

N 57° 50' 19.9" W

N 57° 53' 10.0" W

N 32° 06' 50.0" E

BEGIN PROJECT R-2233AB
-L- POT Sta. 273+96.34

-DR2- POT Sta. 10+00.00 =
-L- POT Sta. 276+40.00

-DR2- PC Sta. 10+75.00

-L- POT Sta 274+00.00 BK =
-L- POT Sta 273+96.34 AH

-DR2- PRC Sta. 11+42.14

-L- STA. 277+00

MATCH LINE SEE SHEET NO.5 -L-

PROP. R/W UNDER PROJECT R-2233AA

EXISTING R/W

EST. 25 TONS CL I RIP RAP W/6" SY FILTER FABRIC

1.5:1 FILL SLOPE W/ROCK PLATING FOR DFHL

CAT-I

RETAIN & EXTEND 4'x4' RCBC W/54" RCP

18" W/MC

2-4' CONC. WW 50' LNG.

EXPRESSWAY GUTTER

2GI(B) W/FLAT GRATE

RETAIN AND EXTEND 4'x4' RCBC W/54" RCP

GRAU 350

LATERAL 'V' DITCH SEE DETAIL B

DITCH TIE

4' LATERAL BASE DITCH SEE DETAIL D

LOCATION OF SEPTIC SYSTEM UNKNOWN?

DFHL

-DR2-

PI Sta 11+19.56	PI Sta 11+60.24
Δ = 96° 10' 22.8" (LT)	Δ = 48° 41' 16.8" (RT)
D = 143° 14' 22.0'	D = 143° 14' 22.0'
L = 67.14'	L = 33.99'
T = 44.56'	T = 18.10'
R = 40.00'	R = 40.00'

NOTE : SEE ROADWAY STANDARD DRAWING STD. NO. 862.01 SHEETS 1 & 2 OF 11 FOR SPECIAL MEDIAN GRADING

NOTE: FOR -L- PROFILE SEE SHEET NO.28
FOR -DR2- PROFILE SEE SHEET NO.49
DFHL = DWARF-FLOWERED HEARTLEAF

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99 R/W REVISION - UPDATED PROPERTY LINES ON PARCELS 100,101,AND 103 - MODIFIED THE TEMP.CONST.EASEMENT ON -DR2- FOR PARCEL 103. 6/10/08 SKR

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, Var. D, Major Flat or Front Ditch Slope, Min. D= 0.5 Ft.

-L- 278+00 (RT) TO 278+50

NAD 83/95

-DR4-
PI Sta 10+54.78
Δ = 82° 26' 36.3" (LT)
D = 190° 59' 09.4"
L = 43.17'
T = 26.28'
R = 30.00'

PI Sta 13+21.94
Δ = 91° 05' 24.6" (RT)
D = 143° 14' 22.0"
L = 63.59'
T = 40.77'
R = 40.00'

-L-
PIs Sta 282+87.60
θs = 1° 33' 02.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 288+88.82
Δ = 16° 27' 49.5" (RT)
D = 1° 33' 02.3"
L = 1,061.75'
T = 534.56'
R = 3,695.00'
SE = 04

OTHORNELL HARRIS
DB 253 PG 225
(PROPERTY OWNER INFO AND DEED INFO CAN BE FOUND UNDER R-2233AA)

JERRY R. ALEXANDER
DB 373 PG 351
DB 374 PG 452

RONALD S. SILVER
DB 400 PG 734

ROBERT R. HARRIS
DB 442 PG 408
(PROPERTY OWNER INFO AND DEED INFO CAN BE FOUND UNDER R-2233AA)

ARTHUR L. ROBINSON
DB 583 PG 26

SAMUEL HARRIS
DB 466 PG 353
(PROPERTY OWNER INFO AND DEED INFO CAN BE FOUND UNDER R-2233AA)

CALLY HARRIS MCCLAIN
DB 442 PG 404
(PROPERTY OWNER INFO AND DEED INFO CAN BE FOUND UNDER R-2233AA)

HARVEY E. HARRIS
DB 442 PG 410
(PROPERTY OWNER INFO AND DEED INFO CAN BE FOUND UNDER R-2233AA)

EVELYN R. MERCER
DB 380 PG 154
DB 439 PG 275

ROGER W. TATE
DB 450 PG 434
DB 662 PG 145
DB 239 PG 459

PAUL GOWAN
DB 374 PG 448
DB 373 PG 355
DB 482 PG 257
DB 349 PG 353
DB 637 PG 455 & 125' LT.
DB 374 PG 450

-BL- 64 PINC 22+28.88
-L- Sta. 280+68.48
(51.82' LT)

-BL- 65 PINC 29+39.55
(NCGS MON. "BESSIE")
-L- Sta. 287+71.74
(61.34' LT)

-DR4- POT Sta. 10+00.09
N 25° 11' 31.4" E
-DR4- PC Sta. 10+28.50
-DR4- PT Sta. 10+47.67
-DR4- PC Sta. 12+81.18
-DR4- PT Sta. 13+44.77
N 57° 15' 04.9" W

-L- TS Sta. 281+54.26
-L- SC Sta. 283+54.26
-L- POC Sta. 283+65.50
-DR4- POT Sta. 14+23.77

-DR2- PC Sta. 11+76.13
-DR2- PT Sta. 13+51.33
END CONSTRUCTION
-DR2- STA. 14+00.00
-DR2- POT Sta. 14+21.47
N 57° 53' 10.0" W

-DR2-
PI Sta 11+60.24
Δ = 48° 41' 16.8" (RT)
D = 143° 14' 22.0"
L = 33.99'
T = 18.10'
R = 40.00'

PI Sta 13+09.90
Δ = 24° 05' 54.0" (RT)
D = 28° 38' 52.4"
L = 84.12'
T = 42.69'
R = 200.00'

FLOYD'S CREEK

MATCH LINE SEE SHEET NO.4 -L- STA.277+00

MATCH LINE SEE SHEET NO.6 -L- STA.291+00

NOTE : SEE ROADWAY STANDARD DRAWING STD. NO. 862.01 SHEETS 1 & 2 OF 11 FOR SPECIAL MEDIAN GRADING

NOTE: FOR -L- PROFILE SEE SHEET NO.28
FOR -DR2- PROFILE SEE SHEET NO.49
FOR -DR4- PROFILE SEE SHEET NO.49
FOR MORE DITCH DETAILS SEE SHEET NO.2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO.2-L

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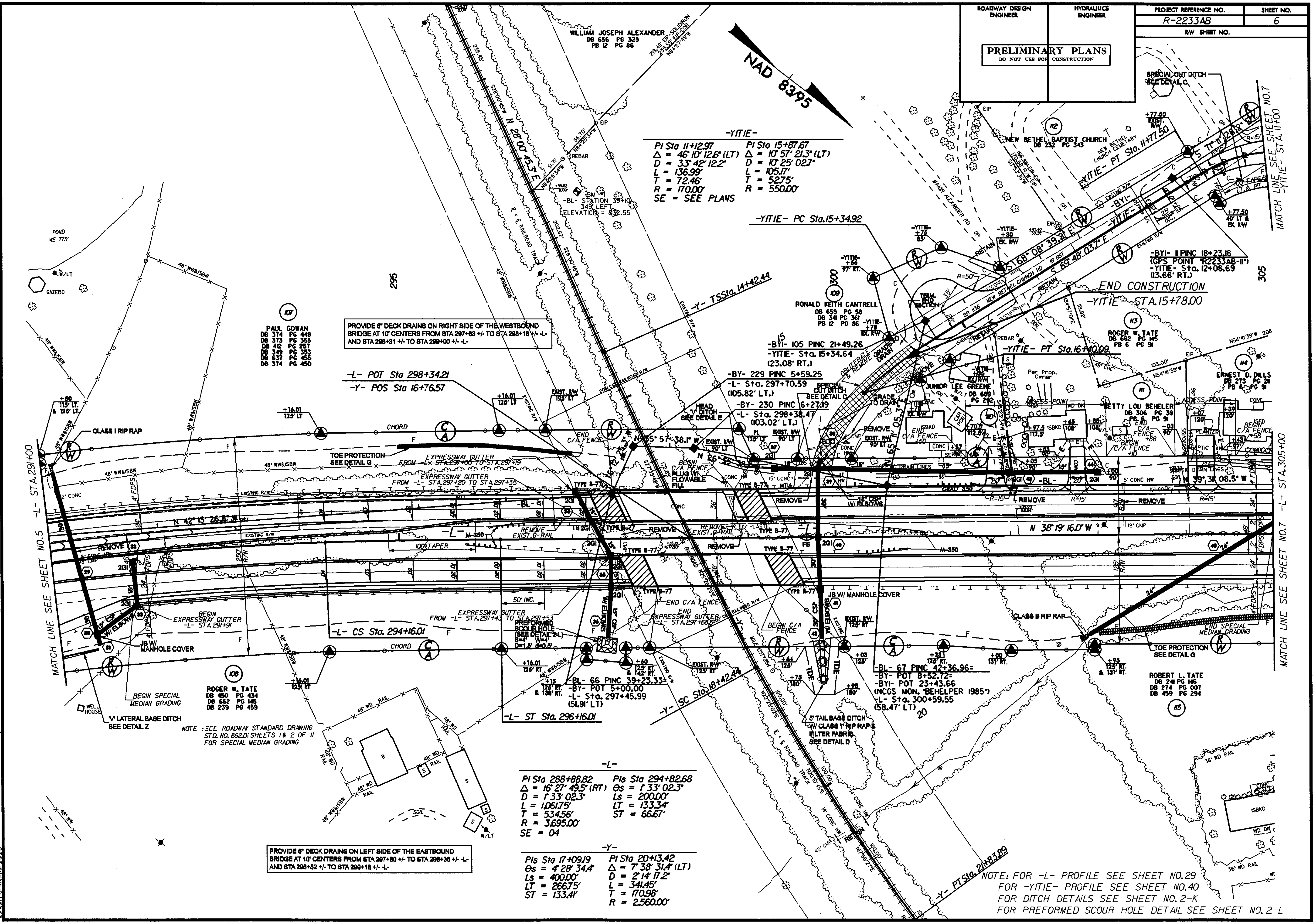
8/17/99

REVISIONS

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	PROJECT REFERENCE NO.	SHEET NO.
		R-2233AB	6
		R/W SHEET NO.	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROVIDE 6" DECK DRAINS ON RIGHT SIDE OF THE WESTBOUND BRIDGE AT 10' CENTERS FROM STA 297+63 +/- TO STA 298+18 +/- -L- AND STA 298+31 +/- TO STA 299+00 +/- -L-

NOTE : SEE ROADWAY STANDARD DRAWING STD. NO. 862.01 SHEETS 1 & 2 OF 11 FOR SPECIAL MEDIAN GRADING

PROVIDE 6" DECK DRAINS ON LEFT SIDE OF THE EASTBOUND BRIDGE AT 10' CENTERS FROM STA 297+80 +/- TO STA 298+36 +/- -L- AND STA 298+52 +/- TO STA 299+18 +/- -L-

-YITIE-

PI Sta 11+12.97
Δ = 46° 10' 12.6" (LT)
D = 33° 42' 12.2"
L = 136.99'
T = 72.46'
R = 170.00'
SE = SEE PLANS

PI Sta 15+87.67
Δ = 10° 57' 21.3" (LT)
D = 10° 25' 02.7"
L = 105.17'
T = 52.75'
R = 550.00'

-YITIE- PC Sta.15+34.92

-L-

PI Sta 288+88.82
Δ = 16° 27' 49.5" (RT)
D = 1° 33' 02.3"
L = 1,061.75'
T = 534.56'
R = 3,695.00'
SE = 04

PIs Sta 294+82.68
θs = 1° 33' 02.3"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

-Y-

PIs Sta 17+09.19
θs = 4° 28' 34.4"
Ls = 400.00'
LT = 266.75'
ST = 133.41'

PI Sta 20+13.42
Δ = 7° 38' 31.4" (LT)
D = 2° 14' 17.2"
L = 341.45'
T = 170.98'
R = 2,560.00'

NOTE: FOR -L- PROFILE SEE SHEET NO.29
FOR -YITIE- PROFILE SEE SHEET NO.40
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

-L-
PI Sta 315+25.43
Δ = 2° 52' 16.0" (RT)
D = 0° 14' 59.9"
L = 1,148.53'
T = 574.38'
R = 22,920.00'

-YITIE-
PI Sta 11+12.97
Δ = 46° 10' 12.6" (LT)
D = 33° 42' 12.2"
L = 136.99'
T = 72.46'
R = 170.00'
SE = SEE PLANS

-Y1-
PI Sta 13+89.34
Δ = 58° 04' 56.7" (LT)
D = 19° 05' 54.9"
L = 304.12'
T = 166.57'
R = 300.00'
SE = SEE PLANS

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

SR 1136 -Y1- 200 / 300
7500 / 15100 — 100 / 100 — 100 / 200 — 7600 / 15200 -L-
2005 ADT / 2030 ADT
NEW BETHEL CHURCH RD.

BEGIN CONSTRUCTION
-Y1- STA. 11+00.00

RONALD KEITH CANTRELL
DB 659 PG 58
DB 348 PG 361
PB 12 PG 86

NEW BETHEL BAPTIST CHURCH
DB 232 PG 343

JEFFREY STEPHEN ESTEP
DB 830 PG 371
PB 6 PG 91

MICHAEL S. ESTEP AND WIFE, JUDY TATE ESTEP
DB 342 PG 393
PB 6 PG 91

ROGER W. TATE
DB 662 PG 145
PB 6 PG 91

CHAD DAVID GREEN
DB 689 PG 624
PB 6 PG 91

LEWIS EDWARD WALLACE, JR.
DB 708 PG 320
PB 6 PG 91

HERBERT D. TATE
DB 317 PG 541
DB 296 PG 401
PB 6 PG 91

ROBERT BOYCE HARRILL
DB 693 PG 438
DB 324 PG 247
DB 317 PG 137
PB 6 PG 91

ERNEST D. DILLS
DB 273 PG 28
PB 6 PG 91

CURTIS M. RODDY
DB 245 PG 692
DB 278 PG 569
PB 6 PG 91

LEWIS EDWARD WALLACE, JR.
DB 708 PG 320
PB 6 PG 91

ROBERT L. TATE
DB 24 PG 146
DB 274 PG 007
DB 459 PG 294

ALBERT DANIEL WARE
DB 451 PG 170

-Y1- POT Sta. 10+00.00
-Y1- POC Sta. 14+50.00
SPECIAL CUT DITCH SEE DETAIL C
-Y1- PT Sta. 15+26.89
-Y1- PC Sta. 12+22.77
-YITIE- PC Sta. 10+40.51
-YITIE- POT Sta. 10+00.00=
-Y1- POT Sta. 18+74.34=
-L- POC Sta. 305+82.81
-L- PC Sta. 309+51.05
-BL- 68' PINC
-L- Sta. 53+18.94=
(54.88' LT)

MATCH LINE SEE SHEET NO.6 -YITIE- STA. 11+00
MATCH LINE SEE SHEET NO.6 -L- STA. 305+00
MATCH LINE SEE SHEET NO.8 -L- STA. 319+00

4' LATERAL BASE DITCH W/ CLASS 'B' RIP RAP & FILTER FABRIC SEE DETAIL V
2' LATERAL BASE DITCH W/ CLASS 'B' RIP RAP & FILTER FABRIC SEE DETAIL J
BERM 'V' DITCH SEE DETAIL U
TOE PROTECTION SEE DETAIL G
CLASS B RIP RAP
CLASS I RIP RAP
CONVERT DI TO JB W/ MANHOLE COVER
JB W/ MANHOLE COVER
GRADE TO DRAIN
REMOVE
ACCESS POINT
BEGIN C/A FENCE
END C/A FENCE
200' TAPER
5' MONO. CONC. ISLAND
18" CSP W/ ELBOWS
24" RCP
30" CMP
12" CONC
8" CMP
5' CONC HW
WELLHOUSE
CAR PORT
ISFD
WD DK
PLANTERS
HTR
GRAU 350
CAT-1

N 38° 05' 20.7" W
N 38° 19' 16.0" W
N 36° 30' 14.5" W
S 25° 37' 51.2" E
S 71° 11' 28.2" E

NOTE: FOR -L- PROFILE SEE SHEET NO.29
FOR -Y1- PROFILE SEE SHEET NO.40
FOR -YITIE- PROFILE SEE SHEET NO.40
FOR DITCH DETAILS SEE SHEET NO. 2-K
DFHL = DWARF-FLOWERED HEARTLEAF

DFHL

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

R/W REVISION - CHANGED DUPLICATED PARCEL NUMBER FOR LULA S. WOOD FROM THE PREVIOUSLY USED NUMBER 132 TO PARCEL NUMBER 132A 6/10/08 SKR

NOTE:
PROVIDE ROCK PLATING AT THE FOLLOWING STATIONS:
STA. 321+76 TO 325+75 -L- RT
STA. 11+26 TO 12+75 -Y2- LT
STA. 12+75 TO 13+25 -Y2- RT
SEE DETAIL ON SHEET 2-M

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

7600 / 15200 -L- 7700 / 15300

∠100 / 100 — 100 / 200 — SR 2287 -Y2- — 100 / 300

2005 ADT / 2030 ADT

JAYNES RD.

NAD 83/95

-L-
PI Sta 315+25.43
Δ = 2° 52' 16.0" (RT)
D = 0° 14' 59.9"
L = 1,148.53'
T = 574.38'
R = 22,920.00'

-L- PT Sta. 320+99.58

-Y3-
PI Sta 11+71.10
Δ = 8° 47' 06.9" (RT)
D = 4° 14' 38.9"
L = 207.00'
T = 103.70'
R = 1,350.00'

PI Sta 14+84.01
Δ = 69° 53' 04.7" (RT)
D = 19° 05' 54.9"
L = 365.92'
T = 209.61'
R = 300.00'
SE = SEE PLANS

-Y2-
PI Sta 12+33.19
Δ = 49° 19' 01.1" (RT)
D = 19° 45' 25.8"
L = 249.62'
T = 133.13'
R = 290.00'
SE = SEE PLANS

PI Sta 14+76.25
Δ = 4° 56' 44.0" (RT)
D = 5° 43' 46.5"
L = 86.32'
T = 43.19'
R = 1,000.00'
SE = SEE PLANS

NOTE: FOR -L- PROFILE SEE SHEET NO.30
FOR -Y2- PROFILE SEE SHEET NO.41
FOR -Y3- PROFILE SEE SHEET NO.41
FOR DITCH DETAILS SEE SHEET NO. 2-K
DFHL = DWARF FLOWERED HEARTLEAF

BEGIN CONSTRUCTION -Y3- BOC STA. 12+25.00

-BY3- 109 POT 5+00.00
-Y3- 54 PC 10+04.77
(15.84' LT.)

-Y3- POT Sta. 10+00.00
-Y3- PC Sta. 10+67.40
-Y3- RETAIN
N 24° 01' 10.2" W
N 15° 59' 42.8" E

SPECIAL LATERAL 'V' DITCH SEE DETAIL O

SPECIAL CUT DITCH SEE DETAIL C

MATCH LINE SEE SHEET NO.9 -Y3- STA 15+00

-Y2- POT Sta. 10+00.00=
-L- POC Sta 320+42.81

MATCH LINE SEE SHEET NO.7 -L- STA.319+00

MATCH LINE SEE SHEET NO.9 -L- STA.333+00

-BL- 69 PINC 63+52.47±
-BY2- POT 5+00.00
-L- Sta. 321+72.41
(53.80' LT.)

-BL- 70 PINC 73+90.25
-L- Sta. 332+10.18
(49.84' LT.)

-BY2- 106 PINC 8+92.56=
-Y2- Sta. 12+99.40
(13.25' LT.)

N 36° 30' 14.5" W
N 35° 13' 52.5" W
N 35° 27' 00.0" W
N 44° 25' 08.2" E
N 65° 15' 24.2" E

2' LATERAL BASE DITCH SEE DETAIL A

4' LATERAL BASE DITCH W/ CLASS 'B' RIP RAP & FILTER FABRIC SEE DETAIL P

REMOVE AS NEEDED PLUG REMAINING W/ FLOWABLE FILL

TOE PROTECTION SEE DETAIL G

2' LATERAL BASE DITCH W/ CLASS 'B' RIP RAP & FILTER FABRIC SEE DETAIL J

SPECIAL MEDIAN DITCH SEE DETAIL B

5' LATERAL BASE DITCH W/ CLASS 'I' RIP RAP & FILTER FABRIC SEE DETAIL N

4' LATERAL BASE DITCH W/ CLASS 'I' RIP RAP & FILTER FABRIC SEE DETAIL N

LINE EXIST DITCH W/ CLASS I RIP RAP AND FILTER FABRIC

END CONSTRUCTION -Y2- STA. 15+00.00

MATCH LINE -A- -Y2- STA.13+40

MATCH LINE -A- -Y2- STA.13+40

-Y2- PC Sta. 11+00.06

-Y2- PT Sta. 15+19.38

-Y2- PC Sta. 15+89.99

S 76° 15' 50" E

S 71° 19' 06" E

S 74° 40' 45" E

VIRGIL SANFORD DB 344 PG 250

JANETTE RUPPE LOWE DB 358 PG 577

CEPHERD MCDOWELL, HEIRS DB 288 PG 606 DB 697 PG 606

DFHL

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

	-Y3- SR 1111	-L-	
2005 ADT	1300	7700	9000
2030 ADT	2100	15300	17200

JACK McKINNEY RD.

NAD 83/95

-Y3-
PI Sta 14+84.01
Δ = 69° 53' 04.7" (RT)
D = 19° 05' 54.9"
L = 365.92'
T = 209.61'
R = 300.00'
SE = SEE PLANS

-Y3TIE-
PI Sta 11+10.00
Δ = 52° 55' 10.0" (RT)
D = 38° 11' 49.9"
L = 138.54'
T = 74.66'
R = 150.00'
SE = SEE PLANS

END CONSTRUCTION
-Y3TIE- POT STA.12+50.00

-BY3- 110 PINC 10+27.87
-Y3- Sta. 14+90.08
(91.19' LT.)

-Y3TIE- PT Sta.11+73.89

-Y3TIE- POT Sta.12+50.95

-Y3TIE- PC Sta.10+35.34
N 57° 28' 22.0" W
-Y3- POC Sta.15+25.00
-Y3TIE- POT Sta.10+00.00
-Y3- PT Sta. 16+40.31
-L- POT Sta.333+13.81
N 54° 33' 06" W
-BY3- POT Sta. 18+63.61=
N 1° 25' 49.7" E

-L- POT Sta.339+35.28
N 35° 27' 00.0" W
-BL- 71 PINC 80+13.29=
-BY3- POT 16+24.50
(NCGS MON. "KWIK")
-L- Sta. 338+33.21
(53.05' LT)

-BL- PT Sta. 79+37.48
N 35° 44' 41.7" W

BEGIN 6' X 18' CURB 339+35
END 6' X 18' CURB 343+00
BEGIN C/A FENCE
END C/A FENCE
BEGIN C/A FENCE +22
END C/A FENCE +80
END C/A FENCE +65
BEGIN C/A FENCE +35
BEGIN C/A FENCE +70
END C/A FENCE +15

MATCH LINE SEE SHEET NO.8 -L- STA.333+00
MATCH LINE SEE SHEET 10 -L- STA.347+00

R/W REVISION - CHANGED DUPLICATED PARCEL NUMBER FOR LULA S. WOOD FROM THE PREVIOUSLY USED NUMBER 132 TO PARCEL NUMBER 132A. 6/10/08 SKR

REVISIONS

8/17/99

LULA S. WOOD DB 250 PG 46 (132A)
LANNY DEAN WALKER DB 647 PG 367 (133A)
G. MAX COLE DB 431 PG 69 (134A)
CRAIG HERRMANN DB 754 PG 769 (136)
CHARLES L. PADGETT DB 780 PG 253 (130)
REEVES BROTHERS, INC. DB 587 PG 764, DB 623 PG 536, DB 727 PG 680 (137)
REEVES BROTHERS, INC. DB 606 PG 22 (99)
LOWELL HENSON DB 197 PG 325 WELLHOUSE, DB 54 PG 106 (131)
BOBBY E. DAVIS DB 558 PG 172, DB 580 PG 678
BROAD RIVER WATER AUTHORITY DB 766 PG 503 (340)
ROBBINS RENTALS DB 483 PG 455 (345)
RUTHERFORD MARKETER, INC. DB 764 PG 312 (138)
ROBBINS OIL COMPANY DB 306 PG 373, DB 622 PG 18 (139)
HELEN S. BOWMAN DB 609 PG 780 (140)
ROBBINS RENTALS DB 483 PG 455 (141)
LINDA C. KING DB 749 PG 13, DB 568 PG 458, DB 675 PG 124 (142)
CHARLES ROBERT ARROWOOD DB 148 PG 94 (143)
MARGARET E. BIGGERMAN DB 621 PG 463 (144)

SPECIAL CUT DITCH SEE DETAIL C
SPECIAL MEDIAN DITCH SEE DETAIL B
3' TAIL BASE DITCH SLOPE = 4.5% SEE DETAIL W
TAIL "V" DITCH SLOPE = 0.6% SEE DETAIL E
PREFORMED SCOUR HOLE (SEE DETAIL 2-L)
GRADE TO DRAIN
REMOVE
RETAIN
ABOUT RATE & REMOVE
TERM. END SECTION
ISFD
ISBKD
ISBKD ABAND
TB 2GI
TB RGH
CAT-1
GRAU 350
WATER TOWER
POOL
HTR
TANK
BUS
2 PUMPS
MTL GATES
LANDSCAPE TIMBERS
RUTHERFORD WATER WORKS 15' R/W AND EASEMENT PB 16 PG 9, 41-42

NOTE:

FOR 2GI'S ALONG MONOLITHIC ISLANDS SEE DETAIL ON SHEET 2-N FOR CURB AND GUTTER TRANSITION FROM 1'-6" CURB AND GUTTER TO 2'-6" CURB AND GUTTER

NOTE: FOR -L- PROFILE SEE SHEET NO.30
FOR -Y3- PROFILE SEE SHEET NO.41
FOR -Y3TIE- PROFILE SEE SHEET NO.41
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

-Y4- SR 1137

-L-	9000 / 17200	100 / 200	200 / 300	9100 / 17300
-Y4- SR 1137			300 / 500	

2005 ADT
2030 ADT

ARTHUR HENSON RD.

-Y4-
PI Sta 11+75.44
Δ = 4° 22' 43.0" (RT)
D = 3° 49' 11.0"
L = 1146.3'
T = 573.4'
R = 1,500.00'
SE = SEE PLANS

PI Sta 13+68.20
Δ = 33° 31' 12.5" (LT)
D = 28° 38' 52.4"
L = 117.01'
T = 60.23'
R = 200.00'
SE = SEE PLANS

NAD 83/95

-BY4- III POT 5+00.00

-Y4- POT Sta. 10+00.00

N 85° 40' 43.6" E

BEGIN CONSTRUCTION
-Y4- POT STA. 12+00.00

-Y4- PT Sta. 12+32.74

-Y4- PC Sta. 11+18.09

-Y4- PC Sta. 13+07.96

-Y4- PT Sta. 14+24.95

-Y4- POT Sta. 14+97.74=
-L- POT Sta 353+42.81

-BL- 72 PINC 94+03.62=
-BY4- POT 10+92.70
-L- Sta. 352+23.54
(53.31' LT) F

-BL- N. 35° 27' 39.5" W

N 35° 27' 00.0" W

N 35° 35' 17.9" W

5' TAIL DITCH WITH P&RM SEE DETAIL R

5' SPECIAL LATERAL BASE DITCH WITH P&RM SEE DETAIL Q

2' LATERAL BASE DITCH W/ P&RM SEE DETAIL K

CLASS I RIP RAP

PREFORMED SCOUR HOLE (SEE DETAIL 2-L) D=5' Vw=4' D=2' d=0.8'

SPECIAL MEDIAN DITCH SEE DETAIL B

RETAIN

REMOVE

REMOVE APPROX. 18'

REMOVE APPROX. 12'

REMOVE EX DI AND APPROX 12' OF EX PIPE

5' MONO. CONC. ISLAND

200' TAPER

ACCESS POINT

BEGIN C/A FENCE

END C/A FENCE

EXISTING R/W

685.44'
N35°11'58"W

402.85'
S85°41'28"E

284.16'
N03°29'06"W

1031.80'
N18°05'35"W

M1 ROBBINS RENTALS DB 483 PG 455

M2 CHARLES ROBERT ARROWOOD DB 448 PG 94

M3 MARGARET E. BIGGERMAN DB 621 PG 463

M4 LINDA C. KING DB 749 PG 13 DB 698 PG 458 DB 615 PG 624

M5 ROBBINS INVESTMENTS, LLC DB 724 PG 505

M6 ROBBINS BRICK AND BLOCK, INC. DB 399 PG 490 DB CORP. 10 PG 490

M7 ROBBINS RENTALS DB 466 PG 701

M8 JIM A. ROBBINS DB 429 PG 387 DB 622 PG 21

M9 CLYDE H. ROBBINS, JR. DB 594 PG 8

NOTE:

FOR 2GI'S ALONG MONOLITHIC ISLANDS SEE DETAIL ON SHEET 2-N FOR CURB AND GUTTER TRANSITION FROM 1'-6" CURB AND GUTTER TO 2'-6" CURB AND GUTTER

NOTE: FOR -L- PROFILE SEE SHEET NO.31
FOR -Y4- PROFILE SEE SHEET NO.42
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L

MATCH LINE SEE SHEET 9 -L- STA.347+00

MATCH LINE SEE SHEET 11 -L- STA.361+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99 R/W REVISION - HYDRAULICS REMOVED LATERAL 'V' DITCH ALONG -Y5- ON PARCEL 148 AND TEMPORARY DRAINAGE EASEMENT WAS REMOVED. 6/10/08 SKR

NAD 83/95

MATCH LINE SEE SHEET 10 -L- STA.361+00

MATCH LINE SEE SHEET 12 -L- STA.375+00

(145) ROBBINS BRICK AND BLOCK, INC.
DB 399 PG 490
DB CORP. ID PG 490

(149) CLYDE H. ROBBINS, JR.
DB 594 PG 8

(151) RICHARDSON CREEK FARMS LTD. PARTNERSHIP
DB 735 PG 68

(148) JIM A. ROBBINS
DB 429 PG 387
DB 622 PG 21

(150) MELISSA P. ROBBINS
DB 552 PG 193
DB 533 PG 147
DB 566 PG 145
DB 622 PG 15

2SMTL BUS

ISFD

ISBKD

-Y5- POT Sta. 10+00.00
-L- POT Sta. 363+42.81
-BL- 73 PINC 106+04.04
-BY5- POT 5+00.00
-L- Sta. 364+23.96
(56.21' LT)

-BL- 13 PINC 111+33.75
(GPS POINT "R2233AB-13")
-L- Sta. 369+51.76
(11.23' LT)

-Y5- PC Sta. 10+66.71

-Y5- PCC Sta. 11+81.75

-Y5- PT Sta. 14+26.45

END CONSTRUCTION
-Y5- STA.13+25.00

BEGIN C/A FENCE +00

END C/A FENCE +83

END C/A FENCE +72

BEGIN C/A FENCE +32

END C/A FENCE +28

BEGIN C/A FENCE +88

ACCESS POINT

2' LATERAL BASE DITCH W/ CLASS 'B' RIP RAP & FILTER FABRIC SEE DETAIL J1

SPECIAL CUT DITCH SEE DETAIL C

TAIL 'V' DITCH SLOPE = 0.6% SEE DETAIL E

SPECIAL MEDIAN DITCH SEE DETAIL B

SPECIAL LATERAL 'V' DITCH SEE DETAIL O

SPECIAL LATERAL 'V' DITCH TIE TO EXISTING DITCH SEE DETAIL O

3' LATERAL BASE DITCH W/ CLASS 'B' RIP RAP & FILTER FABRIC SEE DETAIL B

PREFORMED SCOUR HOLE (SEE DETAIL 2-L) B=4' Wint D=1.5' d=0.8'

PREFORMED SCOUR HOLE (SEE DETAIL 2-L) B=5' Wint D=2' d=0.5'

CLASS B RIP RAP

200' TAPER

RETAIN N 37° 46' 11.2" W

N 35° 35' 17.9" W

N 30° 34' 41.9" W

N 35° 25' 00.0" W

REMOVE

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

9100 / 17300		9200 / 17400 -L-
100 / 200	200 / 300	
SR 2151 -Y5-	300 / 500	
2005 ADT / 2030 ADT	LEACH RD.	

-Y5-

PI Sta 11+25.27	PI Sta 13+04.24
Δ = 26° 21' 51.3" (RT)	Δ = 7° 00' 35.0" (RT)
D = 22° 55' 05.9"	D = 2° 51' 53.2"
L = 115.04'	L = 244.69'
T = 58.55'	T = 122.50'
R = 250.00'	R = 2,000.00'
SE = SEE PLANS	SE = SEE PLANS

NOTE: FOR -L- PROFILE SEE SHEET NO.31
FOR -Y5- PROFILE SEE SHEET NO.42
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

6/17/99

REVISIONS

NOTE:

FOR 2GI'S ALONG MONOLITHIC ISLANDS SEE DETAIL ON SHEET 2-N FOR CURB AND GUTTER TRANSITION FROM 1'-6" CURB AND GUTTER TO 2'-6" CURB AND GUTTER

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

SR 1135 -Y6-: 600 / 1000; 200 / 400; 400 / 600

-L-: 9200 / 17400; 9400 / 17600

2005 ADT / 2030 ADT — SULPHUR SPRINGS CHURCH RD.

NAD 83/95

BM #5
-BL- STATION 122+68
315' LEFT
ELEVATION = 969.23'

-Y6- POT Sta. 10+00.00

SR 1135 SULPHUR SPRINGS CHURCH RD

(154) RICHARDSON CREEK FARMS LTD. PARTNERSHIP
DB 735 PG 68

(152) RICHARDSON CREEK FARMS LTD. PARTNERSHIP
DB 735 PG 68

BEGIN CONSTRUCTION
-Y6- STA. 11+00.00

-Y6- POT Sta. 13+78.09=
-L- POT Sta 381+59.11

-BL- 14 PINC 123+92.54
(GPS POINT "R2233AB-14")
-L- Sta. 382+09.52
(62.18' LT)

(154) SADIE R. BRANCH
DB 328 PG 52

375 — 380 — 385

STA. 375+00

MATCH LINE SEE SHEET 11 -L- STA. 375+00

STA. 369+00

MATCH LINE SEE SHEET 13 -L- STA. 369+00

SPECIAL CUT DITCH SEE DETAIL C

SPECIAL MEDIAN DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL G

TAIL 'V' DITCH SLOPE = 0.6% SEE DETAIL E

PREFORMED SCOUR HOLE (SEE DETAIL 2-L)
D=4' W=4'
D=1.5' d=0.5'

BEGIN C/A FENCE +00 53'

END C/A FENCE +18 -Y6- 45' RT

END C/A FENCE +60 125' LT

PROP. R/W 52.5'

200' TAPER

REMOVE

5' MONO. CONC. ISLAND

N 37° 46' 11.21" W

N 34° 51' 37.1" W

N 35° 27' 00.0" W

-BL-

EXISTING R/W

15" CMP

18" CONC

15" CONC

4" FDPS

2GI

FS

CAT-1

3' LATERAL BASE DITCH W/ CLASS B RIP RAP & FILTER FABRIC SEE DETAIL B

END C/A FENCE +25

ACCESS POINT

BEGIN C/A FENCE +95

-Y7- POT Sta. 13+00.20

MATCH LINE SEE SHEET 13 -L- STA. 12+80

S 77° 50' 46.6" E

SR 2225 HENSON RD

(150) MELISSA P. ROBBINS
DB 552 PG 153
DB 605 PG 147
DB 565 PG 745
DB 622 PG 15

844.17' R/W-EP (TOTAL)
820.26' EP-EP
N60°23'42"E

(153) ROBBINS INVESTMENTS, LLC
DB 724 PG 505

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

-L-: 9400 / 17600; 9700 / 17900

SR 2225 -Y7-: 200 / 400; 500 / 700; 700 / 1100

2005 ADT / 2030 ADT — HENSON RD.

NOTE: FOR -L- PROFILE SEE SHEET NO. 32
FOR -Y6- PROFILE SEE SHEET NO. 42
FOR -Y7- PROFILE SEE SHEET NO. 42
FOR DITCH DETAILS SEE SHEET NO. 2-K

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8/17/99

REVISIONS

R/W REVISION - HYDRAULICS MODIFIED THE SPECIAL LATERAL DITCH ON PARCEL 156 AND THE TEMPORARY DRAINAGE EASEMENT WAS MODIFIED. 6/10/08 SKR

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y7-
PI Sta 10+91.99
Δ = 7° 14' 58.4" (RT)
D = 9° 18' 59.0"
L = 77.82'
T = 38.96'
R = 615.00'
SE = SEE PLANS

PI Sta 12+03.38
Δ = 27° 11' 16.0" (RT)
D = 19° 05' 54.9"
L = 142.35'
T = 72.54'
R = 300.00'
SE = SEE PLANS

-Y8-
PI Sta 15+20.90
Δ = 16° 29' 29.4" (LT)
D = 8° 48' 53.0"
L = 187.09'
T = 94.20'
R = 650.00'

-L-
PIs Sta 392+02.51
Θs = 0° 59' 59.7"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 398+98.69
Δ = 12° 32' 20.5" (RT)
D = 0° 59' 59.7"
L = 1,254.00'
T = 629.51'
R = 5,730.00'
SE = 03

NOTE:
FOR 2@18 ALONG MONOLITHIC ISLANDS SEE DETAIL ON SHEET 2-N FOR CURB AND GUTTER TRANSITION FROM 1'-6" CURB AND GUTTER TO 2'-6" CURB AND GUTTER

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
-Y8- SR 1118
600 / 800
400 / 500
200 / 300
-L-
9700 / 17900
9500 / 17700
2005 ADT
2030 ADT
HOPPER RD.

NAD 83/95

-Y7- POT Sta. 10+00.00=
-L- POT Sta 390+12.49

-BL- 76 PINC 135+92.86=
-BY8- POT 11+14.26
-L- Sta. 394+07.55
(55.12' LT)

-L- POC Sta 394+14.61
-Y8- POT Sta. 16+64.13

-Y8- POT Sta. 16+13.80

-BY8- 113 POT 5+00.00
-Y8- Sta. 10+23.90
(12.62' LT.)

-Y8- POT Sta. 10+00.00

-BL- 77 PINC 142+31.86
-L- Sta. 400+40.69
(56.75' LT.)

-Y7- POC Sta. 10+53.03

-Y7- PCC Sta. 11+30.84

-Y7- PT Sta. 12+73.20

-L- SC Sta. 392+69.17

-L- TS Sta. 389+00

MATCH LINE SEE SHEET 12 -L- STA. 389+00

MATCH LINE SEE SHEET 14 -L- STA. 403+00

MATCH LINE SEE SHEET 12 -Y7- STA. 12+80

END CONSTRUCTION
-Y7- STA. 12+75.00

BM #6
-BY8- STATION 5+00
S 34° 01' 48" W 41.63'
ELEVATION = 968.27'

(154) SADIE R. BRANCH DB 328 PG 52

(155) LARRY G. SMITH DB 391 PG 556

(156) SYBIL WALKER DB 299 PG 83

(157) JAMES KENNETH COLE, JR. DB 704 PG 14

(158) PATRICK BRYAN THOMPSON DB 791 PG 489

(159) THOMAS W. WALKER, TRUSTEE DB 689 PG 726

(153) ROBBINS INVESTMENTS, LLC DB 724 PG 506

(151) JAMES R. GREENE DB 472 PG 519

SPECIAL MEDIAN DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL C

2' TAIL BASE DITCH SEE DETAIL DD

SPECIAL LATERAL DITCH SEE DETAIL O

5-TAIL BASE DITCH W/ CLASS 'I' RIP RAP & FILTER FABRIC SLOPE = 2.6% SEE DETAIL D

CLASS B RIP RAP

CLASS 'I' RIP RAP

REMOVE

REMOVE EX 18"

OBLITERATE & REMOVE

2GI (TYPE A)

5' MONO. CONC. ISLAND

200' TAPER

66.67' INC.

BEGIN C/A FENCE

END C/A FENCE

ACCESS POINT

SEPTIC TANK

SEPTIC DRAIN LINES

HTR

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
9400 / 17600
9700 / 17900
-L-
200 / 400
500 / 700
-Y7- 700 / 1100
SR 2215
2005 ADT
2030 ADT
HENSON RD.

NOTE: FOR -L- PROFILE SEE SHEET NO.32
FOR -Y7- PROFILE SEE SHEET NO.42
FOR -Y8- PROFILE SEE SHEET NO.40
FOR DITCH DETAILS SEE SHEET NO. 2-K

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE:

FOR 2GI'S ALONG MONOLITHIC ISLANDS SEE DETAIL ON SHEET 2-N FOR CURB AND GUTTER TRANSITION FROM 1'-6" CURB AND GUTTER TO 2'-6" CURB AND GUTTER

-Y9-
PI Sta 11+41.47
Δ = 5° 10' 03.4" (LT)
D = 3° 24' 37.7"
L = 151.52'
T = 75.81'
R = 1,680.00'

PI Sta 13+41.31
Δ = 34° 28' 52.6" (RT)
D = 14° 19' 26.2"
L = 240.72'
T = 124.13'
R = 400.00'
SE = SEE PLANS

-Y10-
PI Sta 12+00.77
Δ = 2° 41' 32.9" (RT)
D = 1° 16' 23.7"
L = 211.47'
T = 105.75'
R = 4,500.00'
SE = SEE PLANS

-L-
PI Sta 398+98.69
Δ = 12° 32' 20.5" (RT)
D = 0° 59' 59.7"
L = 1,254.00'
T = 629.51'
R = 5,730.00'
SE = 03

PIs Sta 405+89.84
θs = 0° 59' 59.7"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

NAD 83/95

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
-Y9- SR 2150 700/1000 -L-
200/300 400/600
9500/17700 97.00/18000 100/200 100/100 97.00/17900
300/400 SR 2150 BRIDGES FARM RD.
2005 ADT / 2030 ADT

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
500/700
100/200 400/500 -L-
9700/17900 10000/18200
2005 ADT / 2030 ADT HARRIS ELEMENTARY SCHOOL

-BY9- 114 POT 5+00.00
-Y9- POT Sta. 10+00.00
-Y9- PC Sta. 10+65.66
-Y9- PRC Sta. 12+17.18
-Y9- PT Sta. 14+57.90
-Y9- POT Sta. 16+26.31 = -L- POS Sta. 405+80.00
BEGIN CONSTRUCTION -Y9- STA. 12+00.00
-Y10- POT Sta. 10+00.00 = -L- POT Sta 408+01.79
-BL- T8 PINC 150+31.07 = -BY9- POT 11+73.24 = -BY10- POT 5+00.00 -L- Sta. 408+34.03 (68.84' LT)
-Y10- PC Sta. 10+95.01
-Y10- PT Sta. 13+06.48
END CONSTRUCTION -Y10- STA. 13+00.00
-BY10- STATION 8+88 133' RIGHT ELEVATION = 975.73'
BM #7
-L- Sta. 405+23.31
-L- Sta. 403+00
-L- Sta. 417+00

MATCH LINE SEE SHEET 13 -L- STA 403+00

MATCH LINE SEE SHEET 15 -L- STA 417+00

RUBY ESTELLE FOWLER DB 628 PG 478
THOMAS W. WALKER, TRUSTEE DB 689 PG 726
JAMES R. GREENE DB 472 PG 579
FRANCES H. HAMRICK DB 364 PG 697
WINBURN SCOTT BRIDGES DB 526 PG 684
PATRICK K. SMITH DB 364 PG 399 DB 62 PG 12
THOMAS DWIGHT HAMRICK DB 676 PG 139
EDWARD ZYSKOWSKI DB 514 PG 542
RUTHERFORD COUNTY BOARD OF EDUCATION DB 488 PG 444 DB 395 PG 321
R. WAYNE HARRIS DB 706 PG 697
JERRY MAURICE EAVES DB 691 PG 521

NOTE: FOR -L- PROFILE SEE SHEET NO.33
FOR -Y9- PROFILE SEE SHEET NO.43
FOR -Y10- PROFILE SEE SHEET NO.43
FOR DITCH DETAILS SEE SHEET NO. 2-K

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

2005 ADT: 100 / 200 | 100 / 500
2030 ADT: 10000 / 17900 | 10000 / 18200

-L- GREEN MEADOWS RD.

-L-
PIs Sta 424+35.55
θs = 0° 59' 59.7"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

PI Sta 431+10.75
Δ = 12° 07' 27.5" (LT)
D = 0° 59' 59.7"
L = 1,212.52'
T = 608.53'
R = 5,730.00'
SE = 03

NAD 8395

8/17/99

REVISIONS

R. WAYNE HARRIS
DB 706 PG 697

THOMAS W. WALKER
DB 706 PG 217

JERRY SCOTT HUSKEY
DB 600 PG 456

MICHAEL W. JONES
DB 751 PG 767

ANNETTE H. EAVES
DB 691 PG 522
DB 497 PG 366

NANCY EAVES DILLARD
DB 691 PG 515

JERRY MAURICE EAVES
DB 691 PG 521

JUDY EAVES HARDIN
DB 691 PG 305

JOSEPH DEAN SCOTT
DB 649 PG 782
PB 14 PG 69

MICHAEL BENNETT HALSEY
DB 633 PG 768
DB 632 PG 625
PB 10 PG 12

CHARLES E. DAVIS
DB 46 PG 259
DB 458 PG 641
DB 383 PG 705
PB 10 PG 12

JUDY B. MCGEE
DB 697 PG 368

-L- STA 417+00

MATCH LINE SEE SHEET 14

MATCH LINE SEE SHEET 16 -L- STA 431+00

-L- TS Sta. 423+02.22

-L- SC Sta. 425+02.22

-BL- 15 PINC 160+20.68
(GPS POINT "R2233AB-15")
-L- Sta. 418+23.60
(60.02' LT)

-BL- 16 PINC 171+84.36
(GPS POINT "R2233AB-16")
-L- Sta. 429+89.98
(16.98' LT)

-Y11- POT Sta. 10+00.00=
-L- POC Sta. 430+06.79

BM #8
-BL- STATION 171+30
271' LEFT
ELEVATION = 989.24'

-Y11-
PI Sta 12+22.67
Δ = 36° 05' 32.5" (RT)
D = 21° 31' 15.8"
L = 166.93'
T = 86.34'
R = 265.00'

-Y11- PCSta 11+36.33

-Y11- PTSta. 13+03.26

SPECIAL CUT DITCH SEE DETAIL C

SPECIAL MEDIAN DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL C

ACCESS POINT

END C/A FENCE +77

BEGIN C/A FENCE +51

END C/A FENCE +78

END C/A FENCE +40

BEGIN C/A FENCE +56

END C/A FENCE +60

BEGIN C/A FENCE +30

END C/A FENCE +91

BEGIN C/A FENCE +93

END C/A FENCE +25

BEGIN C/A FENCE

REMOVE 36" CMP

REMOVE 18" CMP

REMOVE 15" CMP

200' TAPER

CLASS B RIP RAP

GRADE TO DRAIN

PREFORMED SCOUR HOLE (SEE DETAIL 2-L)
B = 5'
D = 2'
W = 4'
d = 0.5'

EXISTING R/W

5' MONO. CONC. ISLAND

CHORD

NOTE: FOR -L- PROFILE SEE SHEET NO. 33
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL
SEE SHEET NO. 2-L

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

10000 / 18100		10000 / 18100 -L-
100 / 200		100 / 200
2005 ADT / 2030 ADT	200 / 400 -Y12- SR 2308	NORTH WOODLEAF RD.

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

10000 / 18100		10100 / 18200 -L-
200 / 400		300 / 500
2005 ADT / 2030 ADT	500 / 900 -Y13- SR 2152	MORNINGSTAR LAKE RD.

NAD 83/95

-Y12- PC Sta. 10+00.00=
-L- POS Sta 438+10.05

-BL- 81 PINC 178+98.16
-L- STA. 437+06.54
(19.78' LT)

-L- PI Sta 431+10.75
Δ = 12° 01' 27.5" (LT)
D = 0° 59' 59.7"
L = 1,212.52'
T = 608.53'
R = 5,730.00'
SE = 0.3

-L- PIs Sta 437+81.41
θs = 0° 59' 59.7"
Ls = 200.00'
LT = 133.34'
ST = 66.67'

-Y12- PI Sta. 10+55.56
Δ = 1° 03' 40.3" (LT)
D = 0° 57' 17.7"
L = 111.13'
T = 55.56'
R = 6,000.00'
SE = SEE PLANS

-Y12- PT Sta. 11+11.13

-Y12- STA. 12+50.00
-Y12- POT Sta. 12+98.73

-Y13- POT Sta. 10+00.00=
-L- POT Sta 442+71.55

-Y13- STA. 12+75.00
-Y13- POT Sta. 13+21.67

-L- ST. Sta. 439+14.74

-BL- 82 PINC 185+10.70
-L- Sta. 443+19.44
(6.40' LT)

MATCH LINE SEE SHEET 15 -L- STA. 431+00

MATCH LINE SEE SHEET 17 -L- STA. 445+00

178 MICHAEL W. JONES DB 731 PG 167

179 CHARLES E. DAVIS DB 486 PG 259 DB 1158 PG 539 DB 384 PG 705 PB 10 PG 12

180 RAYMOND PAYNE DB 3241 PG 457 DB 3241 PG 460 DB 858 PG 65 PB 14 PG 63

181 DLCL, LLC DB 805 PG 199 PB 14 PG 63

182 CHARLES J. GERVASON DB 367 PG 509

183 RAY PATTERSON TATE DB 762 PG 288

184 JUDITH A. WELLS DB 645 PG 346 PB 10 PG 12

185 DARIN WADE CHILDERS DB 633 PG 561 PB 10 PG 12

186 DELORES MATHERLY DB 377 PG 99 PB 10 PG 12

187 JOHN W. MCGUIRE DB 405 PG 324 DB 384 PG 388 DB 384 PG 388

188 TERESA A. TROTTER DB 488 PG 503 PB 10 PG 12

189 MARVIN KLASSEN DB 780 PG 352

190 JOHN HOWARD DB 785 PG 377

191 TAMMY TONEY SKIPPER DB 635 PG 126

192 JOHN W. MEDFORD DB 1425 PG 185

177 MICHAEL BENNETT HAMBY DB 533 PG 158 DB 548 PG 323 PB 10 PG 12

NANCY S. STROUD DB 768 PG 170 DB 781 PG 224 DB 796 PG 183

LEE ROBBINS HEIRS DB 228 PG 294

MARTHA TONEY DB 252 PG 276 DB 307 PG 276

NOTE: FOR -L- PROFILE SEE SHEET NO.34
FOR -Y12- PROFILE SEE SHEET NO.43
FOR -Y13- PROFILE SEE SHEET NO.43
FOR DITCH DETAILS SEE SHEET NO.2-K

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99 R/W REVISION - HYDRAULICS MODIFIED THE ENERGY DISSIPATOR BASIN ON PARCELS 200 AND 202 AND THE PERMANENT DRAINAGE EASEMENT WAS MODIFIED. 6/10/08 SKR

NAD 83/95

-Y14-
PI Sta 16+56.13
Δ = 1° 33' 20.1" (LT)
D = 1° 54' 35.5"
L = 81.45'
T = 40.73'
R = 3,000.00'

PI Sta 17+55.42
Δ = 13° 21' 41.4" (LT)
D = 11° 27' 33.0"
L = 116.60'
T = 58.57'
R = 500.00'

PI Sta 18+54.03
Δ = 23° 30' 39.5" (LT)
D = 29° 22' 56.8"
L = 80.02'
T = 40.58'
R = 195.00'
SE = SEE PLANS

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
SR 1139 -Y14-
600 / 1000
100 / 300 | 500 / 700
-L-
10100 / 18200 | 10500 / 18600
2005 ADT / 2030 ADT
NEWTON COLE RD.

-BY14- 117 PINC 10+46.78
-Y14- Sta. 51+99.49
(27.67' RT.)

BEGIN CONSTRUCTION
-Y14- STA. 17+50.00

-Y14- PCSta. 16+15.40
-Y14- PCCSta. 16+96.85
-Y14- PCCSta. 18+13.45
-Y14- PTSta. 18+93.47

-BL- 83 PINC 194+46.74=
-BY14- POT 14+16.83
-L- Sta. 452+55.47
(22.34' LT.)

-Y14- PTSta. 19+85.90=
-L- POT Sta. 452+81.72

-Y15- PCSta. 11+55.52
-Y15- PTSta. 12+70.52
-Y15- POT Sta. 10+09.00=
-L- POT Sta 454+87.27

-Y15-
PI Sta 12+13.12
Δ = 8° 14' 11.0" (RT)
D = 7° 09' 43.1"
L = 115.00'
T = 57.60'
R = 800.00'

-BL- STATION 193+94
229' RIGHT
ELEVATION = 891.90

NOTE: FOR -L- PROFILE SEE SHEET NO. 34
FOR -Y14- PROFILE SEE SHEET NO. 44
FOR DITCH DETAILS SEE SHEET NO. 2-K

MATCH LINE SEE SHEET 16 -L- STA. 445+00

MATCH LINE SEE SHEET 18 -L- STA. 459+00

DAVID MICHAEL MOSLEY DB 765 PG 205

G. SUSANNE PRICE DB 747 PG 532 DB 588 PG 156 PB 15 PG 15

NANCY S. STROUD DB 765 PG 170 DB 769 PG 223 DB 796 PG 163

AZALEE H. MOSLEY DB 224 PG 266

FAYE EVELYN HOPPER DB 493 PG 257

JERRY L. THOMPSON DB 778 PG 779 PB 15 PG 13

LEE ROBBINS HEIRS DB 228 PG 291

PUBLIC SERVICE CO. OF NC, INC. DB 332 PG 132

TAMMY TONEY SKIPPER DB 635 PG 126

MARTHA TONEY DB 682 PG 5 DB 301 PG 276

GRANT EMIL HARDIN DB 691 PG 205

SULPHUR SPRINGS CONGREGATIONAL HOLINESS CHURCH DB 138 PG 63 DB 201 PG 446

TERESA S. HEAD DB 382 PG 676 DB 220 PG 124 PB 6 PG 134

JAMES G. HENSON DB 282 PG 584 PB 6 PG 154

RUTHERFORD WATER BOARD 10' R/W AND EASEMENT PB 16 PGS 47-52

ENERGY DISSIPATOR BASIN W/ CLASS I RIP RAP SEE DETAIL ON SHEET 2-L V=2.0 FT/S

SPECIAL CUT DITCH SEE DETAIL C

TAIL 'V' DITCH SLOPE = 0.5% SEE DETAIL E

CLASS B RIP RAP

ACCESS POINT

BEGIN C/A FENCE

END C/A FENCE

BEGIN EXPRESSWAY GUTTER

END EXPRESSWAY GUTTER

REMOVE

RETAIN

5' MONO. CONC. ISLAND

GRADE TO DRAIN

JB W/ MANHOLE COVER

ISFD (ABAND)

ISBKD

POOL

HTR

GRAU 330

CAT-1

N 55° 36' 33.7" E

N 34° 38' 51.3" W

N 35° 23' 56" W

S 85° 57' 46.6" E

S 82° 53' 15.3" E

N 72° 41' 56.6" E

N 27° 15' 26" W

S 56° 47' 58" W

N 35° 02' 37" W

N 55° 55' 52" W

S 54° 57' 24" W

N 55° 48' 11" W

N 34° 47' 59" W

N 55° 48' 32" W

N 24° 19' 17" E

N 40° 00' 00" W

N 47° 44' 59" E

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

-Y16-
PI Sta 11+95.93
Δ = 1° 56' 01.4" (LT)
D = 1° 25' 56.6"
L = 135.00'
T = 67.51'
R = 4,000.00'
SE = SEE PLANS

-Y17-
PI Sta 11+00.92
Δ = 22° 49' 21.1" (LT)
D = 11° 27' 33.0"
L = 199.16'
T = 100.92'
R = 500.00'

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

10500 / 18600		10500 / 18600
<100 / 100	SR 2289 -Y16-	<100 / 100
100 / 200		

2005 ADT
2030 ADT
ROBBINS RD.

-Y17- PCSta. 10+00.00

-BY17- BP POT 5+00.00
-Y17- Sta. 11+91.68
(10.57' LT.)

-Y17+ PT Sta. 11+99.16

BL- 85 PINC 206+04.24
-BY17- EOT 5+24.40
L- Sta. 464+12.78
(4.96' RT.)

BL- 84 PINC 201+19.2
L- Sta. 459+28.12
(17.59' LT.)

-Y16- BCSta. 11+28.43

-Y16- POT Sta. 10+00.00
-L- POT Sta 459+06.10

-L- POT Sta 464+47.95
-Y18- POT Sta. 10+00.00

-Y17- POT Sta. 14+25.27=
-L- POT Sta 461+77.43

-Y16- Sta. 12+50.00

-Y18- POT Sta. 13+02.25

-Y16- PT Sta. 12+63.43

END CONSTRUCTION

NAD 8395

MATCH LINE SEE SHEET 17 -L- STA 459+00

MATCH LINE SEE SHEET 19 -L- STA 473+00

ROBERT N. TAYLOR DB 764 PG 452 PB 18 PG 60

TONI REDFER DB 786 PG 627 PB 18 PG 60

JOHN PAUL TOMS DB 227 PG 453

CAROLYN OWENBY PRICE DB 728 PG 268 PB 18 PG 13

ANGELA FOX BALLARD DB 719 PG 10 PB 18 PG 15

PHILIP SHANER DB 688 PG 222 PB 18 PG 15

JOHN B. HENSLEY DB 724 PG 127 PB 18 PG 15

FRANCES SARAH ROBBINS DB 376 PG 340 Prop. Owner

THOMAS G. COLLINS, III DB 808 PG 543

PAUL C. CHAPMAN DB 317 PG 243

MARTHA ANN CHAPMAN DB 220 PG 436

TIMOTHY E. BRACKETT DB 78 PG 51 Prop. Owner

SHILOH DANIEL TOWN OAKLAND FIRE DEPT. DB 521 PG 171 DB 767 PG 299

MODINE WEBB HAMRICK DB 375 PG 557 PB 6 PG 134

GEORGE C. HUNTSINGER DB 233 PG 70 PB 6 PG 134

GERALD E. ALLEN DB 459 PG 493 PB 6 PG 134

GREGORY NORMAN TREVITZ DB 390 PG 189 PB 6 PG 134

MARK RAYMOND COLE DB 654 PG 127 PB 6 PG 134

ANNIE GREENE COLE DB 278 PG 101 PB 6 PG 134

BILLY FRANKLIN MELTON DB 680 PG 625 PB 6 PG 134

WELDON P. BLANTON DB 552 PG 38 PB 6 PG 134

KAY PREWITT GIVENS DB 652 PG 63 PB 6 PG 134

DAVID GREEN DB 906 PG 699 PB 6 PG 134

ALBERT E. HOLLAND DB 723 PG 38 PB 6 PG 134

DANNIE GETTYS DB 485 PG 58 PB 6 PG 134

VIRGIL A. BAYNARD DB 38 PG 67 PB 6 PG 134

JACK C. RHODES DB 452 PG 383 PB 6 PG 134

JOSE MEFIA DB 773 PG 189 PB 6 PG 134

GENE P. FITE DB 337 PG 612 DB 337 PG 615 PB 6 PG 134

LARSTON EARL HAMES DB 746 PG 436 PB 6 PG 134

PAUL A. CHAPMAN DB 265 PG 283 DB 265 PG 342 PB 6 PG 134

8' HEAD BASE DITCH SEE DETAIL Y W/ ELBOWS

SPECIAL CUT DITCH SEE DETAIL C

TAIL 'V' DITCH SLOPE = 0.44% SEE DETAIL E

GRADE TO DRAIN

RETAIN

REMOVE

BEGIN C/A FENCE

END C/A FENCE

ACCESS POINT

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

10500 / 18600		10400 / 18500
200 / 300	SR 2236 -Y18-	100 / 200
300 / 500		

2005 ADT
2030 ADT
BROOKMONT AVE.

NOTE: FOR -L- PROFILE SEE SHEET NO.35
FOR -Y16- PROFILE SEE SHEET NO.44
FOR -Y18- PROFILE SEE SHEET NO.44
FOR DITCH DETAILS SEE SHEET NO. 2-K

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

NAD 83/95

SHIRLEY ANN MARTIN DB 635 PG 685

ROBERT HAL BRIDGES DB 332 PG 502

JOHN PAUL TOMS DB 227 PG 453

EDWARD ARCHIE COLE DB 263 PG 602

SHILOH DANIEL TOWN OAKLAND FIRE DEPT. DB 521 PG 171 DB 767 PG 259

FRANK A. LEE DB 532 PG 634 DB 446 PG 520

CHARLES E. HUNTLEY DB 229 PG 501 DB 106 PG 749

DAVID WAYNE JACKSON DB 483 PG 200

ROBERT LEWIS FRAZIER DB 348 PG 321

EDNA D. HUNTLEY DB 724 PG 26

MARVIN KLASSEN DB 692 PG 238

DORA W. HARRILL DB 263 PG 442

DAVID GREEN DB 806 PG 699 PB 6 PG 134

PAUL A. CHAPMAN DB 455 PG 283 DB 529 PG 134 PB 6 PG 134

SARAH T. WHITAKER DB 250 PG 121

ANGELA COLE BAYNARD DB T22 PG 273

ALAN LYNN MATHIS DB 782 PG 849

WILLIAM B. ANDERSON DB 332 PG 350

TANNERS GROVE UNITED METHODIST CHURCH DB 619 PG 826 DB 619 PG 834 DB 86 PG 409

WINTERS REAL ESTATE AND INVESTMENT TRADING CORP. DB 466 PG 285 DB 456 PG 17 DB 469 PG 458 DB 412 PG 86

BEGIN CONSTRUCTION
-Y19- STA. 15+00.00
-Y19- PT Sta. 14+97.90

END CONSTRUCTION
-Y20- STA. 13+00.00

-Y19-
PI Sta 14+05.41
Δ = 4° 30' 33.5" (LT)
D = 2° 26' 17.2"
L = 184.95'
T = 92.52'
R = 2,350.00'

-Y19- POT Sta. 17+45.29=
-L- POT Sta. 474+13.91

-BL- 87 PINC 221+45.12=
-BY20- POT 5+00.00
-L- Sta. 479+52.02
(60.57' LT)

-Y19- POT Sta. 12+97.40
-L- Sta. 473+96.02
(19.13' LT)

-BL- 86 PINC 215+87.58=
-BY19- POT 12+97.40
-L- Sta. 473+96.02
(19.13' LT)

-Y20- POT Sta. 10+00.00=
-L- POT Sta. 477+84.65

-Y20- PC Sta. 11+03.93

-BY20- POT 8+79.27
-Y20- Sta. 12+62.72
(20.39' LT)

-Y20- POT Sta. 15+64.26

-Y20- PT Sta. 14+96.26

-Y20- PCC Sta. 14+07.87

-Y20- PCC Sta. 13+05.97

-BY20- STATION 8 +79
S 87°32'08"E
ELEVATION = 982.99'

-Y20-

PI Sta 12+09.75	PI Sta 13+57.07	PI Sta 14+52.33
Δ = 42° 05' 43.3" (RT)	Δ = 10° 36' 57.0" (RT)	Δ = 15° 20' 46.0" (RT)
D = 20° 50' 05.4"	D = 10° 25' 02.7"	D = 17° 21' 44.5"
L = 202.04'	L = 101.90'	L = 88.39'
T = 105.83'	T = 51.10'	T = 44.46'
R = 275.00'	R = 550.00'	R = 330.00'
SE = SEE PLANS		

2' LATERAL BASE DITCH W/ CLASS 'B' RIP RAP & FILTER FABRIC SEE DETAIL J

LATERAL 2' BASE DITCH W/ CLASS 'B' RIP RAP & FILTER FABRIC SEE DETAIL J

SPECIAL MEDIAN DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL C

TAIL 'V' DITCH SEE DETAIL E

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

SR 1139 (TOMS LAKE RD.)
200 400 | 400 600
10400 18500 | 10600 18700
2005 ADT
2030 ADT
TOM'S LAKE RD.

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

10600 18700 | 10900 19000 -L-
200 400 | 500 700
-Y20- SR 2164
700 1100
2005 ADT
2030 ADT
TANNER'S GROVE RD.

NOTE: FOR -L- PROFILE SEE SHEET NO.35
FOR -Y19- PROFILE SEE SHEET NO.44
FOR -Y20- PROFILE SEE SHEET NO.44
FOR DITCH DETAILS SEE SHEET NO. 2-K

MATCH LINE SEE SHEET 18 -L- STA.473+00

MATCH LINE SEE SHEET 20 -L- STA.487+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
2005 ADT 10900
2030 ADT 19000
WALKER LAKE RD. & ROYAL BLUE RD.

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)
2005 ADT 10800 18900
2030 ADT 18900
4100 7000
6800 12000
4200 7100
OAKLAND RD

-Y21-
PI Sta 11+54.69
Δ = 11° 04' 01.2" (LT)
D = 8° 11' 06.4"
L = 135.21'
T = 67.82'
R = 700.00'

-Y21- POT Sta. 10+00.00
-Y21- PC Sta. 10+86.88
BEGIN CONSTRUCTION -Y21- STA. 11+00.00
-Y21- POT Sta. 12+22.09
-Y21- POT Sta. 13+99.26=
-L- POT Sta. 493+17.25
-Y22- POT Sta. 10+00.00=
-L- POT Sta. 494+55.45
-BY21- 121 POT 5+00.00
-Y21- Sta. 11+23.71 (10.45' LT.)
-BL- 89 PINC 239+38.27
-L- Sta. 497+44.03 (18.71' LT)
-BY21- POT 7+66.47=
-BY22- POT 5+00.00
-L- Sta. 493+11.78 (8.13' LT)
-BL- 88 PINC 235+05.89
-BY22-22 PINC 10+39.78
-Y22- Sta. 13+99.27 (17.36' LT)

-Y22-
PI Sta 20+70.25
Δ = 31° 55' 51.0" (RT)
D = 2° 19' 44.7"
L = 1,370.95'
T = 703.79'
R = 2,460.00'
SE = SEE PLANS

NOTE: FOR -L- PROFILE SEE SHEET NO. 36
FOR -Y21- PROFILE SEE SHEET NO. 45
FOR -Y22- PROFILE SEE SHEET NO. 45
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L

NOTE:
FOR 2GI'S ALONG MONOLITHIC ISLANDS SEE DETAIL ON SHEET 2-N FOR CURB AND GUTTER TRANSITION FROM 1'-6" CURB AND GUTTER TO 2'-6" CURB AND GUTTER

MATCH LINE SEE SHEET 19 -L- STA 487+00
MATCH LINE SEE SHEET 21 -L- STA 501+00
MATCH LINE SEE SHEET 21 -Y22- STA. 17+00

FRANK A. LEE DB 532 PG 634 DB 446 PG 520 (24)
JERRY WAYNE LEE DB 764 PG 147
FAYE W. TOWERY DB 662 PG 604
CHRISTOPHER STANLEY HENSON DB 708 PG 735
PAUL A. CHAPMAN DB 469 PG 78
MICHAEL EUGENE HENSON DB 431 PG 246 DB 418 PG 79
JERRY WAYNE LEE DB 764 PG 147 DB 644 PG 478
TED DUNCAN WHITE, III DB 764 PG 664
LUCILLE ROAS DB 725 PG 1
TED DUNCAN WHITE, III DB 725 PG 1
BOBBY RAY JOHNSON DB 638 PG 535
TED DUNCAN WHITE, III DB 638 PG 66
MAYSE MANUFACTURING CO. DB 587 PG 698
HARMONY ANDERSON DB 543 PG 472
ROBERT LEWIS FRAZIER DB 348 PG 324
TOMMY R. LOVELACE DB 446 PG 522
JERRY W. LEE DB 446 PG 524
WINTERS REAL ESTATE AND INVESTMENT TRADING CORP. DB 466 PG 285 DB 456 PG 17 DB 469 PG 158 DB 462 PG 86
SUSAN GRANT DB 804 PG 243 DB 548 PG 255
EDWARD ARCHIE COLE DB 290 PG 559
DONALD STEPHEN WILKINS DB 662 PG 353
CLARA P. WINTERS DB 391 PG 003
PEOPLE'S BAPTIST CHURCH DB 88 PG 877
SHELBY INVESTMENT COMPANY DB 224 PG 367
MARTIN L. TACKETT DB 473 PG 105
LARRY G. SMITH DB 387 PG 96
NELL R. SCRUGGS DB 126 PG 148 DB 86 PG 273

PREFORMED SCOUR HOLE (SEE DETAIL 2-L) B = 4' W = 4' D = 1.5' d = 0.6'
6' LATERAL BASE DITCH SEE DETAIL L
CLASS B RIP RAP V = 8.1 FT/S
SPECIAL LATERAL "V" DITCH W/ PSRM SEE DETAIL AA
SPECIAL MEDIAN DITCH SEE DETAIL B
SPECIAL CUT DITCH SEE DETAIL C
TAIL "V" DITCH SLOPE = 0.88% SEE DETAIL E

REVISIONS
8/17/99

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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	21

R/W SHEET NO.

NOTE:
FOR 2GI'S ALONG MONOLITHIC ISLANDS SEE DETAIL ON SHEET 2-N FOR CURB AND GUTTER TRANSITION FROM 1'-6" CURB AND GUTTER TO 2'-6" CURB AND GUTTER

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

-Y23- SR 1148
-Y24- SR 2213
-L-
SHILOH RD. & BETHANY CHURCH RD.

6800 / 12000	900 / 1300	3200 / 5600	700 / 1800	6900 / 13500
	400 / 600		700 / 1600	
			2700 / 4700	

2005 ADT
2030 ADT

NAD 83'95

-L-
PI Sta 517+44.04
Δ = 2° 33' 56.0" (LT)
D = 0° 22' 55.1"
L = 671.66'
T = 335.89'
R = 15,000.00'

-Y23-
PI Sta 12+97.01
Δ = 24° 22' 25.0" (RT)
D = 11° 14' 04.1"
L = 216.95'
T = 110.14'
R = 510.00'
SE = SEE PLANS

PI Sta 16+96.33
Δ = 43° 49' 19.0" (LT)
D = 24° 54' 40.4"
L = 175.91'
T = 92.51'
R = 230.00'
SE = SEE PLANS

-Y23- PT Sta. 14+03.82
-Y23- PC Sta. 11+86.86
-Y23- PC Sta. 16+03.82
-Y23- PT Sta. 17+97.73
-Y23- POT Sta. 19+09.73=
-Y24- POT Sta. 10+00.00
-L- POT Sta. 509+54.83

BEGIN CONSTRUCTION
-Y23- STA. 11+00.00

254 MAYSE MANUFACTURING CO. DB 587 PG 698

258 CECIL L. GEER, III DB 743 PG 364 DB 686 PG 351

257 LARRY G. SMITH DB 387 PG 96

256 NELL A. SCRUGGS DB 426 PG 148 DB 46 PG 273

259 DANIELTOWN BAPTIST TRUSTEES DB 514 PG 40

ISM DANIELTOWN BAPTIST CHURCH

ISFD

ISMTLBUS

SEPTIC DRAIN LINES

-BY24- 125 PINC 9+80.08
-L- Sta. 512+26.90
(270.08' LT.)

-BL- 90 PINC 245+26.90
-L- Sta. 503+32.66
(20.16' LT)

-BL- 129 PINC 254+21.87=
-BY23- POT 5+00.00=
-BY24- POT 12+30.50
-L- Sta. 512+27.63
(20.47' LT)

-DR3-
PI Sta 11+04.59
Δ = 93° 57' 54.1" (LT)
D = 114° 35' 29.6"
L = 82.00'
T = 53.59'
R = 50.00'

PI Sta 12+57.08
Δ = 59° 10' 16.1" (RT)
D = 76° 23' 39.7"
L = 77.45'
T = 42.58'
R = 75.00'

-Y22-
PI Sta 20+70.25
Δ = 31° 55' 51.0" (RT)
D = 2° 19' 44.7"
L = 1,370.95'
T = 703.79'
R = 2,460.00'
SE = SEE PLANS

PI Sta 11+64.40
Δ = 34° 47' 38.0" (RT)
D = 20° 41' 03.8"
L = 168.21'
T = 86.79'
R = 277.00'
SE = SEE PLANS

PI Sta 14+83.05
Δ = 4° 40' 31.0" (LT)
D = 2° 00' 37.4"
L = 232.56'
T = 116.34'
R = 2,850.00'

-Y24- PCSta. 10+77.61
-Y24- PCSta. 12+45.82
-Y24- PCSta. 13+66.71

-DR3- POT Sta. 10+00.00=
-Y24- POT Sta. 12+92.55

-DR3- PC Sta. 10+51.00
-DR3- PT Sta. 11+33.00
-DR3- PC Sta. 12+14.50
-DR3- PT Sta. 12+91.95
-DR3- POT Sta. 13+80.58

END CONSTRUCTION
-Y22- STA. 17+50.00

END CONSTRUCTION
-Y24- STA. 13+75.00

MATCH LINE SEE SHEET 20 -Y22- STA.17+00

MATCH LINE SEE SHEET 20 -L- STA.501+00

MATCH LINE SEE SHEET 22 -L- STA.515+00

-L- PC Sta. 514+08.15

NOTE: FOR -L- PROFILE SEE SHEET NO.36
FOR -Y22- PROFILE SEE SHEET NO.45
FOR -Y23- PROFILE SEE SHEET NO.46
FOR -Y24- PROFILE SEE SHEET NO.46
FOR -DR3- PROFILE SEE SHEET NO.49
FOR DITCH DETAILS SEE SHEET NO. 2-K

REVISIONS
8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS
8/17/99

NOTE:
FOR 2GI'S ALONG MONOLITHIC ISLANDS SEE DETAIL ON SHEET 2-N FOR CURB AND GUTTER TRANSITION FROM 1'-6" CURB AND GUTTER TO 2'-6" CURB AND GUTTER

NAD 83/95

-L-
PI Sta 517+44.25
Δ = 2° 34' 01.9" (LT)
D = 0° 22' 55.1"
L = 672.09'
T = 336.10'
R = 15,000.00'

PI Sta 526+53.60
Δ = 2° 44' 00.1" (RT)
D = 0° 19' 48.8"
L = 827.70'
T = 413.93'
R = 17,350.00'

MATCH LINE SEE SHEET 21 -L- STA.515+00

MATCH LINE SEE SHEET 23 -L- STA.529+00

-BL- 92 PINC 259+94.34
-L- Sta. 518+00.36
(9.61' LT)

-BL- 93 PINC 268+41.82
-L- Sta. 526+47+86
(12.53' RT)

N 34° 27' 38.6" W

N 37° 26' 08.9" W

-BL- N 35° 36' 10.0" W

N 34° 44' 30.8" W

CECIL L. GEER, III
DB 743 PG 364
DB 686 PG 351

THOMAS R. WILKINS
DB 687 PG 103

THOMAS R. WILKINS
DB 347 PG 203

EDDIE R. MOORE
DB 357 PG 87

WILKINS FURNITURE OUTLET
DB 387 PG 143

DANIELTOWN BAPTIST TRUSTEES
DB 514 PG 40

THOMAS J. WILKINS, JR.
DB 229 PG 284
DB 384 PG 688

JOHNNY L. MAYSE
DB 133 PG 769
DB 382 PG 58
DB 542 PG 650

SPECIAL CUT DITCH
SEE DETAIL C

12' HEAD BASE DITCH
SLOPE = 3.9%
SEE DETAIL BB

NOTE: FOR -L- PROFILE SEE SHEET NO. 37
FOR DITCH DETAILS SEE SHEET NO. 2-K

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

SR 1150 -Y25-

2005 ADT	200	-L-	200
2030 ADT	300		300
	6900		6900
	13500		13500

LONGBRANCH RD.

-L-
PI Sta 526+53.60
Δ = 2° 44' 00.1" (RT)
D = 0° 19' 48.8"
L = 827.70'
T = 413.93'
R = 17,350.00'

-Y25-
PI Sta 10+74.16
Δ = 10° 35' 32.3" (LT)
D = 7° 09' 43.1"
L = 147.90'
T = 74.16'
R = 800.00'

PI Sta 14+12.05
Δ = 5° 29' 58.0" (RT
D = 1° 48' 06.3"
L = 305.23'
T = 152.73'
R = 3,180.00'
SE = SEE PLANS

-Y25- PT Sta. 11+47.90

-Y25- PC Sta. 12+59.32

NAD 83'95

-L- PT Sta. 530+67.37

-L- STA. 529+00

-L- STA. 543+00

BEGIN CONSTRUCTION
-Y25- STA. 14+00.00

IDENTITY:
-LLT- POT Sta. 538+00.00 =
-L- POT Sta. 538+00.00 (35' LT.)

-BL- 95 PINC 279+55.22=
-BY25- POT 11+50.30
-L- Sta. 537+61.56
(15.41' RT)

-Y25- PT Sta. 15+64.54

-BL- 94 PINC 276+48.17=
-L- Sta. 534+54.54
(19.47' RT)

-Y25- POT Sta. 16+82.66=
-L- POT Sta. 537+41.26

IDENTITY:
-LRT- POT Sta. 538+00.00 =
-L- POT Sta. 538+00.00 (35' RT.)

N 34° 44' 30.0" W

N 34° 52' 08.6" W

N 33° 16' 40.3" W

N 35° 23' 58.6" W

N 55° 58' 41.5" W

N 35° 38' 31.3" W

GRADE TO DRAIN

REMOVE

REMOVE #54

SPECIAL MEDIAN DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL C

'V' BERM DITCH W/ CLASS B RIP RAP AND FILTER FABRIC SEE DETAIL CC

PSRM IN STANDARD ROADWAY CUT DITCH SEE DETAIL GG

2' BASE TAIL DITCH SEE DETAIL DD

3' LATERAL BASE DITCH W/ CLASS B RIP RAP AND FILTER FABRIC SEE DETAIL EE

CLASS I RIP RAP

CLASS B RIP RAP

200' TAPER

150' TAPER

5' MONO. CONC. ISLAND

GRAU 350

CAT-1

3GI (TYPE A)

2GI (TYPE A)

2GI

DI

BDO

FS

FES

BEGIN C/A FENCE +43

END C/A FENCE +00

BEGIN C/A FENCE +45

END C/A FENCE +46

BEGIN C/A FENCE +00

END C/A FENCE +65

BEGIN C/A FENCE +25

END C/A FENCE +54

BEGIN C/A FENCE +15

ACCESS POINT

TDE

EDDIE R. MOORE DB 357 PG 87 — 264

DONALD STEPHEN WILKINS DB 770 PG 727 — 267

THOMAS J. WILKINS, JR. DB 237 PG 238, DB 584 PG 688 — 266

THOMAS J. WILKINS, JR. DB 237 PG 238, DB 584 PG 688 — 269

JOHNNY L. MAYSE DB 133 PG 769, DB 1662 PG 645, DB 342 PG 650 — 265

RONALD FAY WILKINS, SR. DB 546 PG 85 — 268

THOMAS J. WILKINS, JR. DB 584 PG 688 — 270

ALL AMERICAN HOME'S OF NC, LLC DB 669 PG 636, DB 569 PG 701 — 271

Per County Record

Per Prop. Owner

BUS

CONC

CONC WALL

48" WD RAIL

36" WD RAIL

W/L RAIL

MTL

HTR

CHL

RCP

CMP

RIPRAP

RBRAP

EIP

EIR

RR SPIKE

CONC MON

RR CONC

60' RD RAIL

255.95' N34°59'39"W

249.43' R/W COR 554°59'00"W

242.46' R/W COR 548°59'00"W

233.89' 550.01' R/W COR

NOTE: FOR -L- PROFILE SEE SHEET NO.37
FOR -LLT- PROFILE SEE SHEET NO.37
FOR -LRT- PROFILE SEE SHEET NO.37
FOR -Y25- PROFILE SEE SHEET NO.46
FOR DITCH DETAILS SEE SHEET NO. 2-K

MATCH LINE SEE SHEET 22 -L-

MATCH LINE SEE SHEET 24 -L-

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 8/17/99

NOTE:

FOR 2GI'S ALONG MONOLITHIC ISLANDS SEE DETAIL ON SHEET 2-N FOR CURB AND GUTTER TRANSITION FROM 1'-6" CURB AND GUTTER TO 2'-6" CURB AND GUTTER

NAD 83/95

-DRI-
PI Sta 11+58.42
Δ = 77° 50' 00.0" (LT)
D = 163° 42' 08.0"
L = 47.55'
T = 28.26'
R = 35.00'

-RAMP_C-
PIs Sta 15+94.69
θs = 7° 30' 00.0"
Ls = 150.00'
LT = 100.09'
ST = 50.08'

PI Sta 17+75.51
Δ = 25° 44' 23.3" (LT)
D = 10° 00' 00.0"
L = 257.40'
T = 130.91'
R = 572.96'

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

		11400 / 24800		
7100 / 13700	400 / 1100	1000 / 2200	12000 / 22000	-L-
	600 / 1200	4900 / 8400		
		16400 / 31100		

2005 ADT
2030 ADT

US HWY 74 BYPASS

MATCH LINE SEE SHEET 23 -L- STA 543+00

MATCH LINE SEE SHEET 25 -L- STA 557+00

MATCH LINE SEE SHEET 25 -RAMPC- STA 17+00

BEGIN CONSTRUCTION
-RAMPC- STA. 17+50.00

-RAMPC- PT Sta. 19+02.00

-RAMPC- POT Sta. 20+00.11=
-L- POC Sta. 555+44.02

IDENTITY:
-LLT- POT Sta. 543+40.21 =
-L- POT Sta. 543+40.00 (20' LT)

-DRI- POT Sta. 10+00.00

-DRI- PC Sta. 11+30.16

-DRI- PT Sta. 11+77.71

-DRI- S 45° 58' 12.0" E

-BL- 96 PINC 288+60.03
-L- Sta. 545+65.21
(26.61' LT)

-L- PC Sta. 546+28.50

IDENTITY:
-LRT- POT Sta. 543+40.02 =
-L- POT Sta. 543+40.00 (30' RT)

-DRI- POT Sta. 12+47.49=
-L- POC Sta. 547+75.07

-RAMPD- POT Sta. 16+86.39=
-L- POC Sta. 555+59.02

BEGIN CONSTRUCTION
-RAMPD- STA. 14+50.00

-BL- 97 PINC 298+08.18=
-RPC- POT 13+67.20=
-RPD- POT 5+00.00
-L- Sta. 556+12.34
(43.29' LT)

-L-
PI Sta 554+77.38
Δ = 4° 14' 33.0" (RT)
D = 0° 15' 00.0"
L = 1697.00'
T = 848.89'
R = 22,918.3'

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

6900 / 13500		7100 / 13700	-L-
	300 / 300	500 / 500	
		600 / 800	

ALL AMERICAN MANUFACTURING FACILITY

2005 ADT
2030 ADT

NOTE: FOR -L- PROFILE SEE SHEET NO. 38
FOR -LLT- PROFILE SEE SHEET NO. 38
FOR -LRT- PROFILE SEE SHEET NO. 38
FOR -DRI- PROFILE SEE SHEET NO. 45
FOR -RAMPC- PROFILE SEE SHEET NO. 48
FOR -RAMPD- PROFILE SEE SHEET NO. 48
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L

269 THOMAS J. WILKINS, JR. DB 237 PG 232 DB 384 PG 668

272 HUSKEY AND ROBBINS, INC. DB 645 PG 626

271 ALL AMERICAN HOMES OF NC, LLC DB 669 PG 698 DB 685 PG 101

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8/17/99

REVISIONS

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	PROJECT REFERENCE NO.	SHEET NO.
		R-2233AB	25
		R/W SHEET NO.	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

		11400 / 24800		
7100 / 13700	400 / 1100	1000 / 2200	12000 / 22000	-L-
	600 / 1200	4900 / 8400		
2005 ADT / 2030 ADT		16400 / 31100	US HWY 74 BYPASS	

NAD 83/95

-Y26- POT Sta. 10+00.00

-Y27-
PI Sta 11+69.08
Δ = 10° 39' 16.6" (LT)
D = 4° 14' 38.9"
L = 251.04'
T = 125.88'
R = 1,350.00'
SE = SEE PLANS

PI Sta 14+92.36
Δ = 81° 28' 59.0" (LT)
D = 24° 54' 40.4"
L = 327.09'
T = 198.12'
R = 230.00'
SE = SEE PLANS

BEGIN CONSTRUCTION
-Y27- STA. 12+25.00

-RAMPC- POT Sta. 10+00.00

S 81° 25' 46.4" E

S 64° 40' 23.5" E

S 74° 28' 27.5" E

-RAMPC-
PIs Sta 15+94.69
Θs = 7° 30' 00.0"
Ls = 150.00'
LT = 100.09'
ST = 50.08'

PI Sta 17+75.51
Δ = 25° 44' 23.3" (LT)
D = 10° 00' 00.0"
L = 257.40'
T = 130.91'
R = 572.96'

-RPC- 133 POT 5+00.00
-RAMPC- Sta. 10+35.33
(9.87' LT.)

-RAMPB- POT Sta. 10+00.00

N 74° 22' 35.2" E

-RPB- 135 PINC 10+94.19
-RAMPB- Sta. 10+67.24 WO
(15.35' RT.)

-BY27- 127 PINC 5+00.00
-Y27- Sta. 14+10.44
(49.30' RT.)

-Y27- PI Sta 12+94.23

MATCH LINE SEE SHEET 26 -Y27- STA.15+50

-RAMPC- TS Sta. 14+94.60

-RPC-

-BY26- 131 PINC 13+44.94
-Y26- Sta. 16+43.61
(5.96' LT.)

-L- POC Sta. 560+00.35=
-Y26- POT Sta. 18+27.14

-BL- POT 302+28.03=
-BY26- POT 14+85.24
(POINT NOT SET)

BEGIN CONSTRUCTION
-RAMPB- STA. 14+00.00

-BL- 19 PINC 305+64.25=
-RPA- POT 5+00.00=
-RPB- POT 16+71.52
(GPS POINT "R2233AB-19")
-L- Sta. 563+67.58
(36.80' LT)

S 89° 37' 19.2" E

N 86° 58' 36.1" E

-L- PT Sta. 563+25.49

-RAMPB- POT Sta. 16+54.41=
-L- POT Sta. 564+07.10

-BL- 99 PINC 311+92.05=
-BY27- POT 9+68.39
-BY28- POT 5+00.00
-L- Sta. 569+94.84
(27.65' LT)

N 45° 58.5' E

-BY27-

-BY28-

N 63° 21' 52.3" E

MATCH LINE SEE SHEET 24 -L- STA.557+00

MATCH LINE SEE SHEET 26 -L- STA.571+00

-L-
PI Sta 554+77.38
Δ = 4° 14' 33.0" (RT)
D = 0° 15' 00.0"
L = 1,697.00'
T = 848.89'
R = 22,918.31'

-RAMPA-
PIs Sta 16+17.91
Θs = 7° 30' 00.0"
Ls = 150.00'
LT = 100.09'
ST = 50.08'

PI Sta 18+04.43
Δ = 26° 49' 17.2" (LT)
D = 10° 00' 00.0"
L = 268.21'
T = 136.61'
R = 572.96'
SE = SEE PLANS

-RAMPA- SC Sta. 16+67.82

S 72° 49' 42.2" E

BEGIN CONSTRUCTION
-RAMPA- STA. 17+00.00

-RAMPA- PT Sta. 19+36.03

-RAMPA- POT Sta. 20+07.86=
-L- POT Sta. 564+22.11

S 83° 50' 09.3" W

N 30° 04' 57.0" W

N 30° 37' 35.6" W

N 31° 26' 06.0" W

N 31° 26' 05.9" W

S 81° 25' 46.4" E

S 81° 14' 02.7" E

S 81° 25' 46.4" E

S 81° 50' 58" E

-L- STA.557+00

-L- STA.571+00

-Y26-

-BL-

-RPA-

-RAMPA-

-RAMPB-

-RAMPC-

-RPC-

-Y27-

-BY26-

-BY27-

-BY28-

-L-

-Y27- PI Sta 12+94.23

REMOVE +78 EXIST. R/W

BEGIN CONSTRUCTION -Y27- STA. 12+25.00

CLASS B RIP RAP

REMOVE

RETAIN

TYPE B-83 JB W/ MH COVER

TYPE B-77

TB 2GI

2GI

GRAU 350

CONVERT DI TO JB

TB JB

DI

JB W/ MH COVER

200' TAPER

600' MEDIAN TAPER

375' FULL RT. TURN LANE

530' LEFT TURN LANE

5" MONO. CONC. ISLAND

1'-6" CONC. CURB & GUTTER

REMOVE EXISTING GUARDRAIL

REMOVE EXISTING GUARDRAIL

PLACE 8" DECK DRAINS ON 10' CENTERS FROM STA. 558+33 TO STA. 558+82 -L- RT AND FROM STA. 560+33 TO STA. 560+86 -L- RT

TIE TO EXISTING C/A FENCE

TIE TO EXISTING C/A FENCE

GRADE TO DRAIN

GRADE TO DRAIN

CLASS B RIP RAP

+84 125' EXIST. R/W 125' RT

'V' TAIL DITCH SLOPE = 0.50% SEE DETAIL E

OBLITERATE & REMOVE

OBLITERATE & REMOVE

EXIST. R/W 125' LT

EXIST. R/W 125' RT

EX. R/W 250'

RW MON

EXISTING R/W

END CONTROL OF ACCESS

RETAIN

APPROX. LOCATION OF JB

ISFD

ISBKD

ISBKD

RUINS

RUINS

RUINS

RUINS

W/LT

DAMON HUSKEY DB 203 PG 281 DB 568 PG 287

CARL R. BAYNARD DB 201 PG 186

DAMON HUSKEY DB 203 PG 281 DB 568 PG 287

EMMA B. SPARKS DB 735 PG 486

JOE J. WELLS DB 595 PG 752

JAMES B. CROWE DB 201 PG 505

WOODS

WOODS

BRICK HUTCHINS RD

HUTCHINS RD

NOTE: FOR -L- PROFILE SEE SHEET NO.38
FOR -Y27- PROFILE SEE SHEET NO.47
FOR -RAMPA- PROFILE SEE SHEET NO.48
FOR -RAMPB- PROFILE SEE SHEET NO.48
FOR DITCH DETAILS SEE SHEET NO. 2-K

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TEMPORARY DETOUR SHEET ONLY

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	25-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 8/17/99

NAD 83/95

-L-
PI Sta 554+77.38
Δ = 4° 14' 33.0" (RT)
D = 0° 15' 00.0"
L = 1,697.00'
T = 848.89'
R = 22,918.31'

-DET-
PI Sta 564+04.05
Δ = 11° 04' 06.7" (LT)
D = 7° 32' 20.1"
L = 226.41'
T = 114.05'
R = 760.00'
SE = SEE PLANS

PI Sta 566+31.81
Δ = 11° 16' 05.1" (RT)
D = 7° 32' 20.1"
L = 229.05'
T = 115.40'
R = 760.00'
SE = SEE PLANS

BEGIN DETOUR
-DET- PC Sta. 562+90.00 = -L- PCC Sta. 562+90.00 (87' LT)

-DET- PRC Sta. 565+16.41

-DET- PT Sta. 567+46.46
Per County Record

-L- PT Sta. 563+25.49

REPLACE DI WITH TB JB

REPLACE DI WITH TEMP TB JB -L-

N 30° 30' 56.8" W

N 30° 37' 35.8" W

MATCH LINE SEE SHEET 29 -DET- STA. 571+00

SPECIAL CUT DITCH SEE DETAIL C

DETAIL C
SPECIAL CUT DITCH
(Not To Scale)
Natural Ground
2d
D
4:1 or Flatter
Front Ditch Slope
Min. D=0.75 Ft.
FROM STA. 566+57 TO STA. 567+57 -DET- RT

NOTE: FOR -DET- PROFILE SEE SHEET NO.39

DAMON HUSKEY (273) DB 203 PG 284 DB 568 PG 287

CARL R. BAYNARD (274) DB 201 PG 186

JOE J. WELLS (275) DB 595 PG 752

EMMA B. SPARKS (276) DB 735 PG 486

JAMES B. CROWE (277) DB 201 PG 505

SR 2171 BIRCH HUTCHINS RD

SECONDARY GROWTH

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

WOODS

-Y27-
PI Sta 14+92.36
Δ = 81° 28' 59.0" (LT)
D = 24° 54' 40.4"
L = 327.09'
T = 198.12'
R = 230.00'
SE = SEE PLANS

PI Sta 19+11.99
Δ = 68° 44' 58.0" (RT)
D = 24° 54' 40.4"
L = 275.98'
T = 157.34'
R = 230.00'
SE = SEE PLANS

-Y28-
PI Sta 12+31.36
Δ = 59° 27' 56.1" (RT)
D = 24° 54' 40.4"
L = 238.71'
T = 131.36'
R = 230.00'
SE = SEE PLANS

-L-
PI Sta 577+43.05
Δ = 0° 12' 32.7" (RT)
D = 0° 01' 08.8"
L = 1,094.82'
T = 547.41'
R = 300,000.00'

NAD 83/95

RUINS

MATCH LINE SEE SHEET 25 -Y27- STA.16+50

-Y27- PT Sta. 16+21.33

-Y27- PC Sta. 17+54.66

150' CURVE WIDENING LT 15' TO 10'

275 JOE J. WELLS DB 595 PG 752

WOODS

N 9° 18' 56.7" W

100' CURVE WIDENING RT 10' TO 15'

PSRM IN STANDARD ROADWAY CUT DITCH SEE DETAIL GG

575

-Y27- POT Sta. 21+24.43
-Y28- POT Sta. 9+97.99
-L- POC Sta. 574+12.99

106.46' S70°51'42"W

AVERAGE DAILY TRAFFIC (VEHICLES PER DAY)

		-Y27- SR 2171 100 / 200		
12000 / 22000	4100 / 100	4100 / 4100	11900 / 21900	-L-
	300 / 500	300 / 500		
		-Y28- SR 2171 600 / 1100	BURCH HUTCHINS RD.	

2005 ADT
2030 ADT

580

279 MAX RAY HAMRICK DB 554 PG 438 DB 344 PG 434

585

END PROJECT R-2233AB
-L- POT Sta. 584+00.00

-L- PC Sta. 571+95.64

-Y27- PT Sta. 20+30.64

SPECIAL CUT DITCH SEE DETAIL C

200' TAPER

600' MEDIAN TAPER

-L- STA.571+00

MATCH LINE SEE SHEET 25

N 29° 57' 02.8" W

530' LEFT TURN LANE

277 JAMES B. CROWE DB 201 PG 505

END C/A FENCE

-Y28-

MATCH LINE SEE SHEET 27 -Y28- STA.12+00

SPECIAL CUT DITCH WITH PSRM SEE DETAIL HH

-BL- 100 PINC 316+41.45
-L- Sta. 574+44.22
(23.22' LT)

8' LATERAL BASE DITCH W/ CLASS I RIP RAP & FILTER FABRIC SEE DETAIL EE

2' LATERAL BASE DITCH SEE DETAIL A

250' LT. TAPER

575' MEDIAN TAPER

N 59° 26' 01.3" E

CAT-1 COLLAR

GRAU 350

5' MONO. CONC. ISLAND

CLASS B RIP RAP

BEGIN C/A FENCE

-Y28- PC Sta. 11+00.00

SPECIAL CUT DITCH SEE DETAIL GG

ISFD

JOHNATHAN PERRY TRUSTY HEIRS DB 379 PG 74

4' LATERAL BASE DITCH W/ CLASS B RIP RAP & FILTER FABRIC SEE DETAIL V

222.18' R/W-EIP (TOT)
28.37' EIP-EIP
N59°23'18"E

180.00'
N30°37'24"W

280 JAMES B. CROWE DB 201 PG 505

-BL- 101 PINC 326+30.97=
-T4- 277 POT 5+00
ELEV=979.82
-L- Sta. 584+33.74
(19.70' LT)

PREFORMED SCOUR HOLE (SEE DETAIL-2-L)
B = 4'; W = 4'
D = 1.5'; d = 0.5'

-T4- 315 POT 6+66.24
ELEV=968.98
NAIL SET

10' STANDARD BASE DITCH W/ CLASS B RIP RAP & FILTER FABRIC SEE DETAIL FF

-BL- STATION 325+30 38' LEFT
E+80.48
N 592.92'

OVER FLOW PIPE

REMOVE

RETAIN

EXIST. R/W

N 30° 25' 03.7" W

924.59'

JAMES S. LARRY CROWE DB 293 PG 547 DB 380 PG 360

NOTE: FOR -L- PROFILE SEE SHEET NO.39
FOR -Y27- PROFILE SEE SHEET NO.47
FOR -Y28- PROFILE SEE SHEET NO.47
FOR DITCH DETAILS SEE SHEET NO. 2-K
FOR PREFORMED SCOUR HOLE DETAIL SEE SHEET NO. 2-L

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TEMPORARY DETOUR SHEET ONLY

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	26-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 8/17/99

-DET-

PI Sta 577+21.06
Δ = 18° 03' 28.9" (LT)
D = 7° 32' 20.1"
L = 239.53'
T = 120.77'
R = 760.00'
SE = SEE PLANS

PI Sta 574+81.53
Δ = 18° 03' 28.9" (RT)
D = 7° 32' 20.1"
L = 239.53'
T = 120.77'
R = 760.00'
SE = SEE PLANS

-L-

PI Sta 577+43.05
Δ = 0° 12' 32.7" (RT)
D = 0° 01' 08.8"
L = 1,094.82'
T = 547.41'
R = 300,000.00'

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)

Min. D= 0.75 Ft.

FROM STA. 573+07 TO STA. 573+57 -DET- LT
FROM STA. 575+08 TO STA. 576+11 -DET- RT

DETAIL II
LATERAL BASE DITCH
(Not to Scale)

*When B is ≥ 6.0'
Std. No. 876.01

Min. D= 1.5 Ft.
Max. d= 1Ft.
B= 6 Ft.
b= 0 Ft.

Type of Liner= Class I Rip-Rap

FROM STA. 575+00 TO STA. 576+11 -DET- LT

NAD 83/95

BEGIN TEMP. -Y27- PAVEMENT
TIE TO PROP -Y27- PAVEMENT
-Y27- STA. 17+90.00

-Y27- PT Sta. 16+21.33

-Y27- PC Sta. 17+54.66

N 9° 18' 56.6" W -Y27-

JOE J. WELLS
DB 595 PG 752

WOODS

TEMP. PAVEMENT TO BE REMOVED

SPECIAL CUT DITCH SEE DETAIL C

PROP. R/W

TEMP. 8' LATERAL BASE DITCH W/ CLASS I RIP RAP AND FILTER FABRIC SEE DETAIL II

180' TAPER LT. 10' TO 15'

-DET- POC STA. 574+19.92 =
-Y27- POT Sta. 20+51.65

-DET- PRC Sta. 576+00.29

-L- PC Sta. 571+95.64

-DET- STA. 571+00

-Y27- PT Sta. 20+30.64

N 30° 30' 56.8" W

-DET- PC Sta. 573+60.76

N 30° 37' 35.8" W

MATCH LINE SEE SHEET 28 -DET-

TEMP 2GI

18" TEMP

-DET-

-L- N 59° 26' 01.3" E

ADD TEMP. PAVEMENT AS REQUIRED (TO BE REMOVED)

EXISTING R/W PER STATE PROJECT NOS. 6.899008, 8.1890403, & 8.899001T

-Y27- POT Sta. 21+24.43 =
-Y28- POT Sta. 9+97.99
-L- POC Sta. 574+12.99

-Y28- PC Sta. 10+00.00

JAMES B. CROWE
DB 201 PG 505

-Y28-

-Y28- PT Sta. 13+38.71

S 61° 06' 02.6" E

-Y28- PC Sta. 14+17.04

GRASS

WOODS

222.09' R/W-EIP (TOTAL)
215.37' EIP-EIP
N39°23'08"E

ISFD

JONATHAN Perry & Mary Lou Cox
DB 379 PG 74

180.00'
N30°31'24"W

STA. 578+11 -DET- LT
STA. 578+00 -L- LT
TIE TEMP DITCH TO PROP 6' LATERAL BASE DITCH W CLASS I RIP RAP AND FILTER FABRIC

END DETOUR
-DET- PT Sta. 578+39.82 =
-L- POC Sta. 578+25.00

COLLAR

100' TRANSITION LT.
TO EXIST.

EXISTING R/W

RETAIN

MAX RAY HAMRICK
DB 454 PG 158
DB 344 PG 434

575

580

OVER FLOW PIPE

36" WD RAIL

N 30° 25' 03.1" W

JAMES B. CROWE
DB 201 PG 505

-L- Sta. 582+90.45

JAMES LARRY CROWE
DB 435 PG 547
DB 430 PG 340

-Y27-

PI Sta 14+92.36
Δ = 81° 28' 59.0" (LT)
D = 24° 54' 40.4"
L = 327.09'
T = 198.12'
R = 230.00'

PI Sta 19+11.99
Δ = 68° 44' 58.0" (RT)
D = 24° 54' 40.4"
L = 275.98'
T = 157.34'
R = 230.00'
SE = SEE PLANS

-Y28-

PI Sta 12+31.36
Δ = 59° 27' 56.1" (RT)
D = 24° 54' 40.4"
L = 238.71'
T = 131.36'
R = 230.00'

PI Sta 17+58.25
Δ = 58° 36' 06.8" (LT)
D = 11° 14' 04.1"
L = 521.63'
T = 286.21'
R = 510.00'

NOTE: FOR -DET- PROFILE SEE SHEET NO.39
FOR -Y27TEMP- PROFILE SEE SHEET NO.47

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/95

REVISIONS

NAD 83/95

MATCH LINE SEE SHEET 26 -Y28- STA.12+00

-Y28- PT Sta.13+38.71

-Y28- PC Sta.14+72.04

-Y28- PT Sta. 19+93.67

-Y28- PC Sta. 20+98.63

-Y28- PT Sta. 21+42.22

-Y28- POT Sta. 21+91.39

-BY28- 128 PINC 8+77.66
-Y28- Sta. 16+10.80
(148.44' RT.)

-BY28- 151 POT 12+63.18
-Y28- Sta. 19+28.19
(11.15' LT.)

END CONSTRUCTION
-Y28- STA. 20+25.00

-Y28-
PI Sta 12+31.36
Δ = 59° 27' 56.1" (RT)
D = 24° 54' 40.4"
L = 238.71'
T = 131.36'
R = 230.00'
SE = SEE PLANS

PI Sta 17+58.25
Δ = 58° 36' 06.8" (LT)
D = 11° 14' 04.1"
L = 521.63'
T = 286.21'
R = 510.00'
SE = SEE PLANS

PI Sta 21+20.43
Δ = 1° 14' 55.1" (RT)
D = 2° 51' 53.2"
L = 43.59'
T = 21.79'
R = 2,000.00'

NOTE: FOR -Y28- PROFILE SEE SHEET NO.47
FOR DITCH DETAILS SEE SHEET NO. 2-K

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RIGHT DITCH -------

-L-

BEGIN GRADE
-L- STA 273+96.34
EL = 775.38

(-)2.95%

BEGIN 4' LATERAL BASE DT.
-L- STA 273+96.34
EL = 758.06

(-)1.57%

-L- POT STA 274+00.00 DK=
-L- POT STA 275+96.34 AH

6.00%

-L- STA 275+96
EL = 760.00

END LATERAL DITCH RT.
STA 276+00
EL = 760.15

767.54

-L- STA 275+36
EL = 759.20

NOTE: SEE SHEET NO.4 FOR PLAN VIEW

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 4500	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 745.3'	FT
BASE DISCHARGE	= 5400	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 746.3'	FT
OVERTOPPING DISCHARGE	= 55500	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 765.6'	FT

MEDIAN DITCH — — — -
RIGHT DITCH -------

PI = 278+90.00
EL = 758.99'
VC = 980'
K = 152

767.54

-L- STA 278+96.28
BEGIN BRIDGE

EXISTING BRIDGE

-L- STA 281+46.28
END BRIDGE

(-)1.95%

(+)1.68%

EXISTING GROUND ALONG CROWN POINT

BEGIN SPECIAL CUT DITCH RIGHT
-L- STA 278+00
EL = 763.3'

END SPECIAL CUT DITCH RIGHT
-L- STA 278+80
EL = 762.33'

PROFILE ALONG STRUCTURE (SBL)

PI = 290+50.00
EL = 799.31'
VC = 310'
K = 133

-L- STA 290+38
ELEV = 788.21'
BEGIN DITCH MEDIAN

-L- STA 290+50
ELEV = 788.15'
END DITCH MEDIAN

+5.80%

-L- STA 290+63
ELEV = 788.07'
END DITCH MEDIAN

-L- STA 288+50
ELEV = 788.29'
BEGIN DITCH RIGHT

-L- STA 288+78
ELEV = 788.43'
END DITCH RIGHT

-L- STA 288+00
ELEV = 788.25'

-L- STA 286+58
ELEV = 788.25'
BEGIN DITCH RIGHT

-L- STA 286+50
ELEV = 788.25'

-L- STA 285+00
ELEV = 788.00'

-L- STA 284+90
ELEV = 787.90'

(-)5.92%

3.81%

5.78%

BERM V' DITCH

SPECIAL MEDIAN DITCH

V' LATERAL BASE DITCH

0.70%

1.61%

NOTE: SEE SHEET NO.5 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	29

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RIGHT DITCH - - - - - - -

BM #1
RAILROAD SPIKE SET IN BASE OF 12" OAK
-BL- STATION 39+10.31 (348.64' LT.)
-L- STATION 297+09.27 (398.86' LT.)
ELEV. 832.55'

—L—

PI = 297+00.00
EL = 837.07'
VC = 800'
K = 159

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 1367	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 24	CFS
DESIGN HW ELEVATION	= 791.7	FT
100 YEAR DISCHARGE	= 29	CFS
100 YEAR HW ELEVATION	= 792.8	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 444	CFS
OVERTOPPING ELEVATION	= 801.5	FT

832.65

(+)15.80527

-L- STA. 291+00
ELEV. = 789.43'

-L- STA. 291+45
ELEV. = 789.20'
END DITCH RIGHT

6.6%

30" RCP

V' LATERAL BASE DITCH

(+)0.78547

843.35

1.5%

-L- STA. 299+60
BEGIN DITCH LEFT

-L- STA. 300+50
END DITCH LEFT

SPECIAL 10FT DITCH

24" RCP

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 10.77	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 11	CFS
DESIGN HW ELEVATION	= 838.0	FT
100 YEAR DISCHARGE	= 14	CFS
100 YEAR HW ELEVATION	= 838.2	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 21	CFS
OVERTOPPING ELEVATION	= 841.0	FT

NOTE: SEE SHEET NO.6 FOR PLAN VIEW

LEFT DITCH — - - — -

—L—

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 9.34	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 17	CFS
DESIGN HW ELEVATION	= 846.6	FT
100 YEAR DISCHARGE	= 19	CFS
100 YEAR HW ELEVATION	= 846.8	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +31	CFS
OVERTOPPING ELEVATION	= 850.8	FT

PI = 306+00.00
EL = 844.13'
VC = 200'
K = 237

843.36

(+)0.78654

2' LATERAL BASE DITCH

3.0%

-L- STA. 304+60
BEGIN DITCH LEFT

-L- STA. 305+60
END DITCH LEFT

(+)1.6500%

BERM V' DITCH

-L- STA. 307+46
BEGIN DITCH LEFT

-L- STA. 307+82
END BERM

-L- STA. 308+39
END DITCH LEFT

8.92%

865.32

18" RCP

24" RCP

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 5.34	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 10	CFS
DESIGN HW ELEVATION	= 860.0	FT
100 YEAR DISCHARGE	= 11	CFS
100 YEAR HW ELEVATION	= 860.2	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 18	CFS
OVERTOPPING ELEVATION	= 861.6	FT

NOTE: SEE SHEET NO.7 FOR PLAN VIEW

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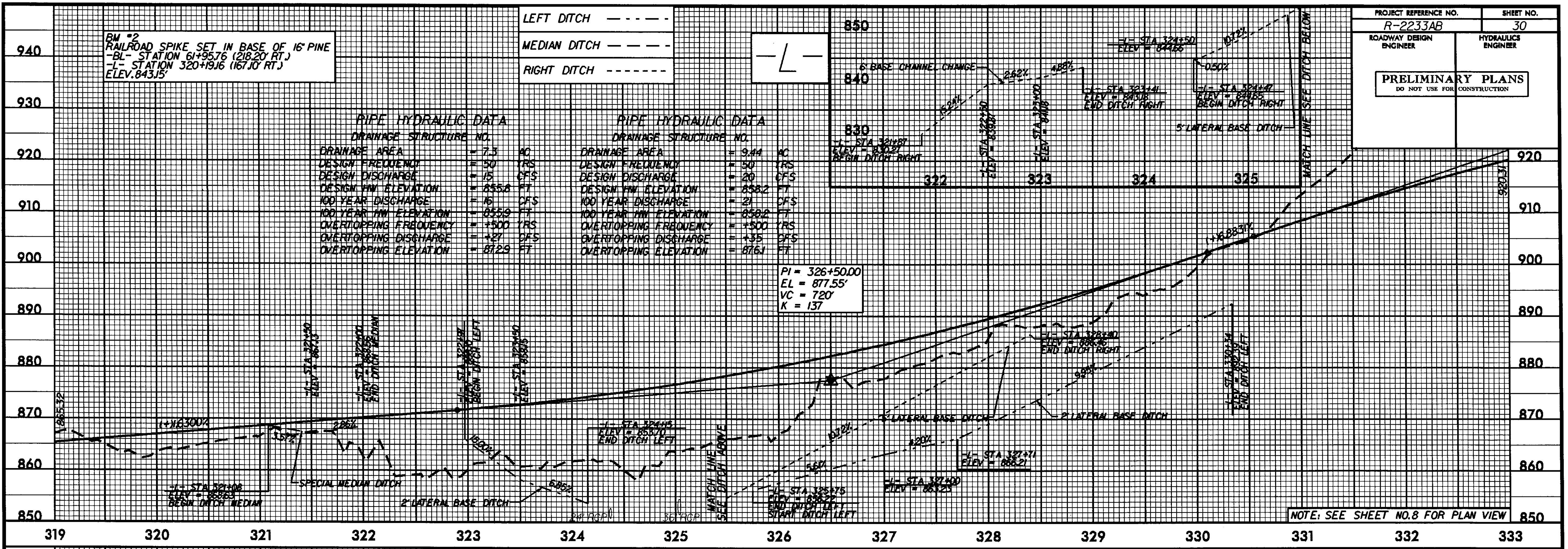
PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



BM #2
RAILROAD SPIKE SET IN BASE OF 16" PINE
-BL- STATION 61+95.76 (218.20' RT.)
-L- STATION 320+19.16 (167.10' RT.)
ELEV. 843.15'

LEFT DITCH — - - —
MEDIAN DITCH — — —
RIGHT DITCH - - - - - - -

-L-

PIPE HYDRAULIC DATA

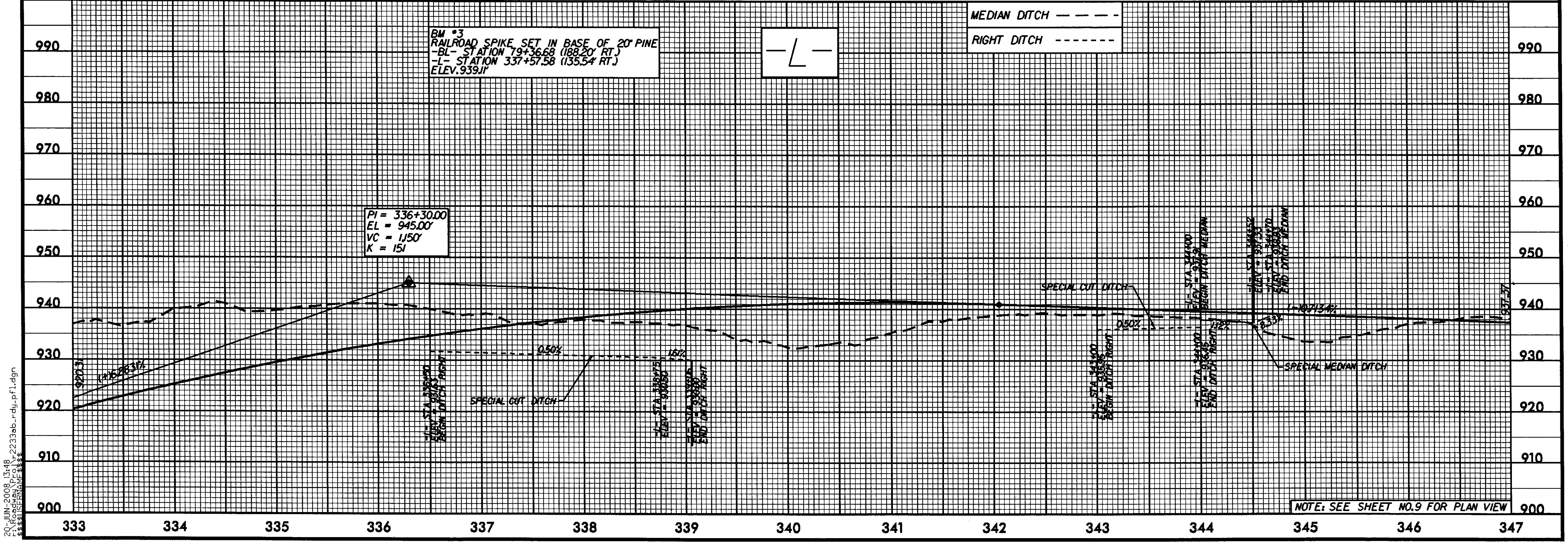
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 7.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 15	CFS
DESIGN HW ELEVATION	= 855.8	FT
100 YEAR DISCHARGE	= 16	CFS
100 YEAR HW ELEVATION	= 855.9	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +27	CFS
OVERTOPPING ELEVATION	= 872.9	FT

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 9.44	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 20	CFS
DESIGN HW ELEVATION	= 858.2	FT
100 YEAR DISCHARGE	= 21	CFS
100 YEAR HW ELEVATION	= 858.2	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +35	CFS
OVERTOPPING ELEVATION	= 876.1	FT

PI = 326+50.00
EL = 877.55'
VC = 720'
K = 137

NOTE: SEE SHEET NO. 8 FOR PLAN VIEW



MEDIAN DITCH — — — —
RIGHT DITCH - - - - - - -

BM #3
RAILROAD SPIKE SET IN BASE OF 20" PINE
-BL- STATION 79+36.68 (188.20' RT.)
-L- STATION 337+57.58 (135.54' RT.)
ELEV. 939.11'

-L-

PI = 336+30.00
EL = 945.00'
VC = 1150'
K = 151

NOTE: SEE SHEET NO. 9 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH — - - — - -
MEDIAN DITCH — — — - -

—L—

PI = 352+50.00
EL = 933.45'
VC = 500'
K = 169

SPECIAL MEDIAN DITCH

2' LATERAL BASE DITCH

NOTE: SEE SHEET NO.10 FOR PLAN VIEW

LEFT DITCH — - - — - -
MEDIAN DITCH — — — - -
RIGHT DITCH - - - - - - -

—L—

BM #4
RAILROAD SPIKE SET IN BASE OF 12" PINE
-BL- STATION 103+62.36 (534.93' RT.)
-L- STATION 361+83.58 (479.30' RT.)
ELEV. 956.79'

PI = 365+45.00
EL = 962.47'
VC = 400'
K = 206

SPECIAL MEDIAN DITCH

SPECIAL CUT DITCH

SPECIAL LATERAL DITCH

2' LATERAL BASE DITCH

3' LATERAL BASE DITCH

NOTE: SEE SHEET NO.11 FOR PLAN VIEW

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 2.65	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 5.9	CFS
DESIGN HW ELEVATION	= 956.07	FT
100 YEAR DISCHARGE	= 6.4	CFS
100 YEAR HW ELEVATION	= 956.13	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +10.6	CFS
OVERTOPPING ELEVATION	= 962.7	FT

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH — - - — -
MEDIAN DITCH — — — -
RIGHT DITCH - - - - - - -

—L—

BM #5
RAILROAD SPIKE SET IN CENTERLINE OF SR 1135
-BL- STATION 122+67.91 (315.41' LT.)
-L- STATION 380+72.22 (372.28' LT.)
ELEV. 969.23'

PI = 389+20.00
EL = 969.59'
VC = 940'
K = 1544

PI = 394+90.00
EL = 967.83'
VC = 200'
K = 140

PI = 402+90.00
EL = 976.75'
VC = 175'
K = 215

BM #6
RAILROAD SPIKE SET IN BASE OF 44" OAK
-BL- STATION 140+99.91 (355.90' LT.)
-L- STATION 398+98.41 (406.33' LT.)
ELEV. 968.27'

NOTE: SEE SHEET NO.12 FOR PLAN VIEW

NOTE: SEE SHEET NO.13 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	33

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH — - - — -
MEDIAN DITCH — — — -
RIGHT DITCH - - - - - - -

—L—

BM #7
RAILROAD SPIKE SET IN BASE OF 26" OAK
-BL- STATION 148+49.18 (368.05' RT.)
-L- STATION 406+71.49 (308.29' RT.)
ELEV. 975.73'

PI = 416+50.00
EL = 980.83'
VC = 200'
K = 333

NOTE: SEE SHEET NO.14 FOR PLAN VIEW

BM #8
RAILROAD SPIKE SET IN BASE OF 14" OAK
-BL- STATION 171+30.28 (270.90' LT.)
-L- STATION 429+65.89 (292.21' LT.)
ELEV. 989.24'

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 4.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 9.2	CFS
DESIGN HW ELEVATION	= 978.2	FT
100 YEAR DISCHARGE	= 16.9	CFS
100 YEAR HW ELEVATION	= 979.3	FT
OVERTOPPING FREQUENCY	= 178	YRS
OVERTOPPING DISCHARGE	= 11.2	CFS
OVERTOPPING ELEVATION	= 980.4	FT

PI = 420+70.00
EL = 979.57'
VC = 150'
K = 165

NOTE: SEE SHEET NO.15 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH — - - — -
MEDIAN DITCH — — — -
RIGHT DITCH - - - - - - -

-L-

PI = 436+25.00
EL = 989.03'
VC = 100'
K = 948

965.84
(+)0.60(3)%
0.32%
SPECIAL MEDIAN DITCH
-L- STA 435+02
ELEV = 988.08'
END DITCH MEDIAN
-L- STA 435+62
ELEV = 988.08'
BEGIN DITCH LEFT
-L- STA 435+62
ELEV = 988.08'
END DITCH LEFT
-L- STA 435+90
ELEV = 988.20'
BEGIN DITCH LEFT
-L- STA 437+40
ELEV = 988.90'
END DITCH LEFT
4' LATERAL BASE DITCH
2.00%
SPECIAL LATERAL 'V' DITCH
(+)0.50(4)%
983.36
0.98%
-L- STA 443+20
ELEV = 986.56'
BEGIN DITCH RIGHT
SPECIAL CUT DITCH
NOTE: SEE SHEET NO.16 FOR PLAN VIEW

LEFT DITCH — - - — -
RIGHT DITCH - - - - - - -

-L-

BM #9
RAILROAD SPIKE SET IN BASE OF 14" OAK
-BL- STATION 193+93.61 (229.13' RT.)
-L- STATION 452+03.79 (207.13' RT.)
ELEV. 991.90'

PI = 447+65.00
EL = 994.76'
VC = 400'
K = 178

993.42
(+)0.50(4)%
0.98%
-L- STA 446+65
ELEV = 990.00'
BEGIN DITCH LEFT
-L- STA 447+65
ELEV = 990.00'
END DITCH LEFT
2%
0.50%
SPECIAL CUT DITCH
-L- STA 447+65
ELEV = 990.00'
BEGIN DITCH LEFT
-L- STA 448+00
ELEV = 990.00'
END DITCH LEFT
SPECIAL CUT DITCH
(-)1.74(16)%
PI = 457+00.00
EL = 978.41'
VC = 450'
K = 149
-L- STA 453+75
ELEV = 986.00'
BEGIN DITCH LEFT
-L- STA 454+20
ELEV = 986.00'
END DITCH LEFT
(+)1.27(28)%
980.56
0.88%
SPECIAL CUT DITCH
NOTE: SEE SHEET NO.17 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RIGHT DITCH - - - - - - -

-L-

PI = 470+85.00
EL = 996.04'
VC = 400'
K = 161

998.98

(+)1.27.28%

0.59%

0.16%

1.20%

4.78%

SPECIAL CUT DITCH

SPECIAL CUT DITCH

998.43

(-)1.21.67%

NOTE: SEE SHEET NO.18 FOR PLAN VIEW

459 460 461 462 463 464 465 466 467 468 469 470 471 472 473

1,040 1,030 1,020 1,010 1,000 990 980 970 960 950

BM #10
RAILROAD SPIKE SET IN CENTERLINE OF SR 1139
-BL- STATION 217+36.06 (681.19' LT.)
-L- STATION 474+93.46 (709.41')
ELEV. 988.46'

BM #11
CHISELED SQUARE IN CONC. BASE OF CHURCH SIGN
-BL- STATION 218+51.33 (395.55' RT.)
-L- STATION 476+88.44 (355.72' RT.)
ELEV. 982.99'

-L-

LEFT DITCH — - - — - -
MEDIAN DITCH — — — - -
RIGHT DITCH - - - - - - -

PI = 474+25.00
EL = 991.90'
VC = 200'
K = 253

993.35

(-)1.21.67%

SPECIAL MEDIAN DITCH

0.60%

(-)2.00.69%

2' LATERAL BASE DITCH

PI = 484+30.00
EL = 971.74'
VC = 650'
K = 143

1.12%

0.50%

1.05%

SPECIAL MEDIAN DITCH

SPECIAL CUT DITCH

(+)2.51.10%

NOTE: SEE SHEETS NO.19 FOR PLAN VIEW

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1,040 1,030 1,020 1,010 1,000 990 980 970 960 950

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Roadway Design

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH — - - — -
MEDIAN DITCH — — — -
RIGHT DITCH - - - - - - -

—L—

BM #12
RAILROAD SPIKE IN BASE OF 34" OAK
-BL- STATION 234+03.79 (169.08' RT.)
-L- STATION 492+03.24 (156.89' RT.)
ELEV. 991.57'

PI = 494+85.00
EL = 998.44'
VC = 650'
K = 156

+1.25%

-1.63%

5' LATERAL BASE DITCH

SPECIAL MEDIAN DITCH

SPECIAL LATERALV DITCH

NOTE: SEE SHEETS NO.20 FOR PLAN VIEW

1,040 1,030 1,020 1,010 1,000 990 980 970 960 950

487 488 489 490 491 492 493 494 495 496 497 498 499 500 501

LEFT DITCH — - - — -
RIGHT DITCH - - - - - - -

—L—

BM #13
RAILROAD SPIKE IN BASE OF 18" OAK
-BL- STATION 250+70.51 (482.99' RT.)
-L- STATION 508+76.44 (462.64' RT.)
ELEV. 1009.10'

PI = 503+00.00
EL = 985.11'
VC = 735'
K = 140

+3.60%

-1.63%

SPECIAL CUT DITCH

5' LATERAL BASE DITCH

SPECIAL LATERALV DITCH

NOTE: SEE SHEET NO.21 FOR PLAN VIEW

1,040 1,030 1,020 1,010 1,000 990 980 970 960 950

501 502 503 504 505 506 507 508 509 510 511 512 513 514 515

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH — - - — -

-L-

PI = 516+75.00
EL = 1,034.68'
VC = 1,525'
K = 151

+3.60%

-1.65%

-6.50%

SPECIAL CUT DITCH

-L- STA 522+50
ELEV = 998.74
DEEP DITCH LEFT

-L- STA 522+00
ELEV = 999.
END DITCH LEFT

1,040
1,030
1,020
1,010
1,000
990
980
970
960

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 11.08	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 27	CFS
DESIGN HW ELEVATION	= 969.2	FT
100 YEAR DISCHARGE	= 32	CFS
100 YEAR HW ELEVATION	= 969.6	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +48	CFS
OVERTOPPING ELEVATION	= 971.5	FT

30" RCP

NOTE: SEE SHEET NO.22 FOR PLAN VIEW

515 516 517 518 519 520 521 522 523 524 525 526 527 528 529

LEFT DITCH — - - — -
MEDIAN DITCH — — — -
RIGHT DITCH - - - - - - -

BM #14
RAILROAD SPIKE IN BASE OF 14" OAK
-BL- STATION 278+15.94 (311.63' LT.)
-L- STATION 536+18.10 (300.35' LT.)
ELEV. 975.07'

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 480	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 947.8'	FT
BASE DISCHARGE	= 600	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 948.0'	FT
OVERTOPPING DISCHARGE	= 950+	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 955.4'	FT

-L-

-LLT-

-LRT-

-L- STA 533+00
ELEV = 963.63
BEGIN DITCH MEDIAN

-L- STA 533+00
ELEV = 963.63
BEGIN DITCH MEDIAN

-L- STA 533+00
ELEV = 963.28
END DITCH MEDIAN

-L- STA 534+35
ELEV = 962.27
DEEP DITCH RIGHT

-L- STA 535+27
ELEV = 961.77
END DITCH RIGHT

-L- STA 538+00
ELEV = 969.39
BEGIN DITCH LEFT

-L- STA 538+32
ELEV = 969.63
END DITCH LEFT

-L- STA 540+00
ELEV = 982.16

-L- STA 540+38
ELEV = 988.00

-L- STA 541+20
ELEV = 987.85
END DITCH LEFT

-L- STA 539+00
ELEV = 977.82

-L- STA 538+50
ELEV = 976.78
END DITCH LEFT

BERM "V" DITCH

+1.47643%

+1.45054%

+1.42290%

6.79%

1.44%

2.66%

2.70%

6.06%

0.52%

0.30%

0.76%

6.24%

-1.55260%

SPECIAL MEDIAN DITCH

3' LATERAL BASE DITCH

EXIST 2 @ 7'X7'

PROPOSED 2 @ 9'X 8' RCBC

NATURAL GROUND

IDENTITY:
-L- POT STA 538+00.00=
EL = 969.39
-LRT- POT STA 538+00.00 (35' RT.)
EL = 969.63'

IDENTITY:
-L- POT STA 538+00.00=
EL = 969.39
-LLT- POT STA 538+00.00 (35' LT.)
EL = 969.63'

PI = 531+50.00
EL = 938.42'
VC = 1,295'
K = 115

PI = 542+00.00
EL = 988.04'
VC = 200'
K = 773

PI = 539+50.00
EL = 976.78'
VC = 200'
K = 773

PI = 542+00.00
EL = 987.85'
VC = 200'
K = 597

PI = 539+50.00
EL = 976.78'
VC = 200'
K = 597

1,010
1,000
990
980
970
960
950
940
930
920

990
980
970
960
950

970
960

962.80
962.80

NOTE: SEE SHEET NO.23 FOR PLAN VIEW

529 530 531 532 533 534 535 536 537 538 539 540 541 542 543

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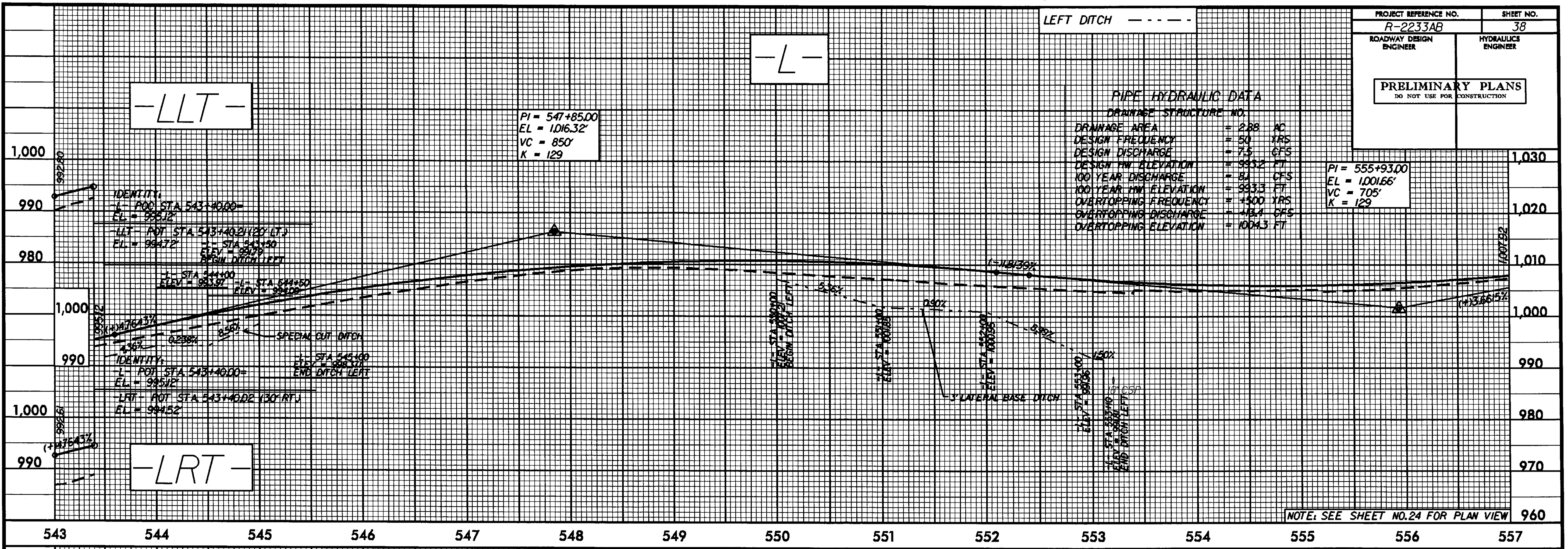
PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

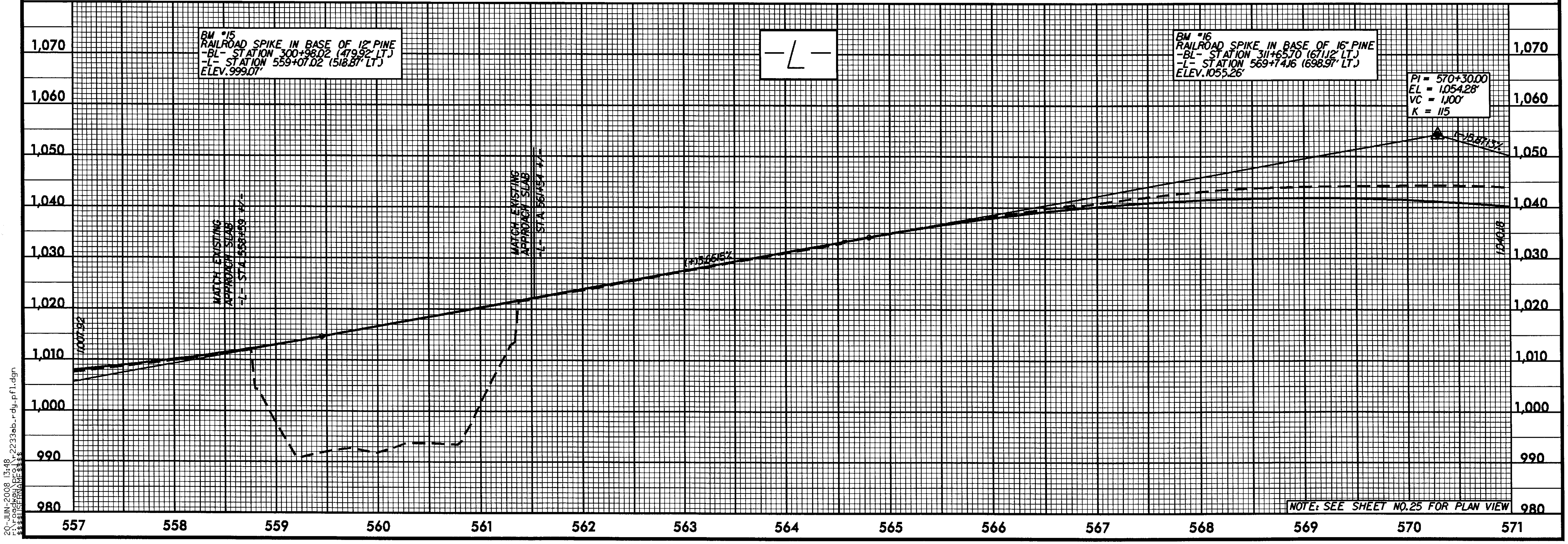
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 2.88	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 7.5	CFS
DESIGN HW ELEVATION	= 993.2	FT
100 YEAR DISCHARGE	= 8.1	CFS
100 YEAR HW ELEVATION	= 993.3	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +13.4	CFS
OVERTOPPING ELEVATION	= 1004.3	FT



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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH — - - — -
RIGHT DITCH - - - - - - -

—L—

PI = 577+50.00
EL = 1,012.00'
VC = 200'
K = 140

BM #17
RAILROAD SPIKE IN BASE OF 22" PINE
-BL- STATION 325+29.80 (137.67' LT.)
-L- STATION 583+33.06 (157.73' LT.)
ELEV. 992.92'

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 15.83	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 23	CFS
DESIGN HW ELEVATION	= 1004.5	FT
100 YEAR DISCHARGE	= 27	CFS
100 YEAR HW ELEVATION	= 1006.7	FT
OVERTOPPING FREQUENCY	= +275	YRS
OVERTOPPING DISCHARGE	= +33	CFS
OVERTOPPING ELEVATION	= 1010.9	FT

NOTE: SEE SHEET NO.26 FOR PLAN VIEW

LEFT DITCH — - - — -
RIGHT DITCH - - - - - - -

—DET—

PI = 571+05.00
EL = 1,051.33'
VC = 765'
K = 84

NOTE: SEE SHEET NO.'S 25-A & 26-A FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH — - - — -

-Y1-

PI = 13+00.00
EL = 877.77'
VC = 300'
K = 51

BEGIN GRADE
-Y1- STA 11+00.00
EL = 882.52

(-)2.37%

(-)10.46%

PI = 17+20.00
EL = 843.07'
VC = 210'
K = 23

END GRADE
-Y1- STA 18+27.34
EL = 839.06

-Y1- STA 17+88.80
ELEV = 840.88
BEGIN DITCH LEFT

(+)1.00%

-Y1- STA 17+88
ELEV = 840.80
LATERAL BASE DITCH

2.46%

-Y1- STA 17+74
ELEV = 840.84
END DITCH LEFT

NOTE: SEE SHEET NO.7 FOR PLAN VIEW

890 880 870 860 850 840 830

10 11 12 13 14 15 16 17 18

LEFT DITCH — - - — -

-YITIE-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 0.18	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.31	CFS
DESIGN HW ELEVATION	= 867.7	FT
100 YEAR DISCHARGE	= 0.36	CFS
100 YEAR HW ELEVATION	= 867.8	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 1.96	CFS
OVERTOPPING ELEVATION	= 868.0	FT

PI = 11+35.00
EL = 873.69'
VC = 200'
K = 19

BEGIN GRADE
-YITIE- STA 10+00.00
EL = 866.34

-YITIE- STA 10+50.00 (11.81 LT)
EL = 866.34

(+)6.69%

6.80%

(-)14.20%

END GRADE
-YITIE- STA 12+50.00
EL = 866.86

BEGIN CUL-DE-SAC GRADE
-YITIE- STA 13+35.00
EL = 866.33

END CUL-DE-SAC GRADE
-YITIE- STA 13+53.92
EL = 866.51

(-)6.80%

SWALE CUT DITCH

-YITIE- STA 10+00.00
ELEV = 866.34
BEGIN DITCH LEFT

-YITIE- STA 10+50.00
ELEV = 866.34
END DITCH LEFT

NOTE: SEE SHEET NO.'S 6 & 7 FOR PLAN VIEW

880 870 860 850 840 830

10 11 12 13 14 15

-Y8-

BEGIN CUL-DE-SAC GRADE
-Y8- STA 13+37.55
EL = 963.42

END CUL-DE-SAC GRADE
-Y8- STA 14+30.12
EL = 966.24

(+)0.87%

NOTE: SEE SHEET NO.13 FOR PLAN VIEW

970 960 950 940

13 14 15

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y2-

PI = 10+85.00
EL = 866.89'
VC = 75'
K = 10

PI = 13+80.00
EL = 839.83'
VC = 240'
K = 17

BEGIN GRADE -Y2- STA 10+41.00 EL = 867.89

L=80.240'

+6.0000%

END GRADE -Y3- STA 15+40.00 EL = 846.83'

42" CMP

NOTE: SEE SHEET NO.8 FOR PLAN VIEW

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 21.28	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 25	CFS
DESIGN HW ELEVATION	= 827.7	FT
100 YEAR DISCHARGE	= 40	CFS
100 YEAR HW ELEVATION	= 828.3	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 160	CFS
OVERTOPPING ELEVATION	= 846.8	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 1.97	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 3	CFS
DESIGN HW ELEVATION	= 912.5	FT
100 YEAR DISCHARGE	= 4	CFS
100 YEAR HW ELEVATION	= 912.6	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 47	CFS
OVERTOPPING ELEVATION	= 915.3	FT

-Y3TIE-

PI = 11+50.00
EL = 918.50'
VC = 200'
K = 299

BEGIN GRADE -Y3TIE- STA 10+12.00 EL = 951.19

-Y3- STA 15+25.00 12" (LT)

(+)12.4330%

(+)3.1024%

END GRADE -Y3TIE- STA 12+50.00 EL = 921.60'

6" H2O

NOTE: SEE SHEET NO.9 FOR PLAN VIEW

-Y3-

LEFT DITCH — - - — -
RIGHT DITCH - - - - - - -

PI = 14+20.00
EL = 913.04'
VC = 200'
K = 169

BEGIN GRADE -Y3- STA 12+25.00 EL = 911.36

(+)0.8156%

+12.0000%

0.50%

10%

SPECIAL CUT DITCH

SPECIAL LATERAL "V" DITCH

-Y3- STA 10+00 BEGIN DITCH RIGHT

-Y3- STA 10+00 EL = 911.00

-Y3- STA 12+25.00 END DITCH RIGHT

-Y3- STA 13+00 BEGIN DITCH LEFT

-Y3- STA 13+00 EL = 908.33

-Y3- STA 14+44.43 END DITCH LEFT

-Y3- STA 15+00 END MICRO-LEFT

-Y3- STA 15+56 BEGIN DITCH LEFT

-Y3- STA 16+50 EL = 913.00 END DITCH LEFT

-Y3- STA 17+66.61 END GRADE

-Y3- STA 18+00.00 EL = 920.98'

NOTE: SEE SHEET NO.'S 8 & 9 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y4-

RIGHT DITCH -------

PI = 12+60.00
EL = 922.95'
VC = 120'
K = 17

BEGIN GRADE
-Y4- STA 12+00.00
EL = 921.93'

PI = 14+00.00
EL = 935.24'
VC = 100'
K = 15

END GRADE
-Y4- STA 14+80.74
-L- STA 14+63.80
EL = 936.26'

(+)12.0000%
(+)6.7857%
(+)1.7000%
0.80%
-Y4- STA 12+50
ELEV = 940.03'
BEGIN DITCH RIGHT
-Y4- STA 14+00
ELEV = 935.24'
END DITCH RIGHT
-Y4- STA 12+50
ELEV = 940.03'
BEGIN DITCH LEFT
-Y4- STA 14+00
ELEV = 935.24'
END DITCH LEFT
5' SPECIAL LATERAL BASE DITCH

NOTE: SEE SHEET NO.10 FOR PLAN VIEW

-Y5-

RIGHT DITCH -------

PI = 11+00.00
EL = 956.87'
VC = 100'
K = 146

PI = 12+00.00
EL = 954.19'
VC = 100'
K = 42

BEGIN GRADE
-Y5- STA 10+50.00
-L- STA 10+63.42
EL = 957.33'

END GRADE
-Y5- STA 13+25.00
-L- STA 13+13.59
EL = 953.34'

(-)12.0000%
(-)12.6571%
(-)10.3000%
0.50%
-Y5- STA 11+50
ELEV = 956.87'
BEGIN DITCH RIGHT
-Y5- STA 13+00
ELEV = 953.34'
END DITCH RIGHT
SPECIAL LATERAL DITCH

NOTE: SEE SHEET NO.11 FOR PLAN VIEW

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 0.7	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 1.4	CFS
DESIGN HW ELEVATION	= 956.3	FT
100 YEAR DISCHARGE	= 1.7	CFS
100 YEAR HW ELEVATION	= 956.9	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +2.8	CFS
OVERTOPPING ELEVATION	= 956.6	FT

LEFT DITCH — - - —
RIGHT DITCH -------

-Y6-

PI = 12+75.00
EL = 966.88'
VC = 105'
K = 69

BEGIN GRADE
-Y6- STA 11+00.00
EL = 966.28'

END GRADE
-Y6- STA 13+80.83
-L- STA 13+39.52
EL = 966.28'

-Y6- STA 11+33
ELEV = 966.28'
BEGIN DITCH LEFT

-Y6- STA 13+00
ELEV = 963.59'
END DITCH LEFT

(-)0.8000%
(+)0.7697%
0.50%
-Y6- STA 12+50
ELEV = 963.59'
BEGIN DITCH RIGHT
-Y6- STA 13+00
ELEV = 963.59'
END DITCH RIGHT
SPECIAL CUT DITCH

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 0.5	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 0.5	CFS
DESIGN HW ELEVATION	= 963.0	FT
100 YEAR DISCHARGE	= 0.6	CFS
100 YEAR HW ELEVATION	= 963.0	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +0.6	CFS
OVERTOPPING ELEVATION	= 966.2	FT

NOTE: SEE SHEET NO.12 FOR PLAN VIEW

-Y7-

PI = 10+85.00
EL = 968.64'
VC = 70'
K = 58

BEGIN GRADE
-Y7- STA 10+46.27
-L- STA 10+50.50
EL = 968.85'

END GRADE
-Y7- STA 12+75.00
EL = 969.38'

(+)0.6500%
(-)0.8571%

NOTE: SEE SHEET NO.'S 12 & 13 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y9-

LEFT DITCH — - - — -

PI = 13+00.00
EL = 976.58'
VC = 200'
K = 70

PI = 15+25.00
EL = 978.92'
VC = 100'
K = 39

BEGIN GRADE
-Y9- STA 12+00.00
EL. = 978.38'

END GRADE
-Y9- STA 15+79.58
-L- STA 405+80.00 (47' RT.)
EL. = 979.00'

(-Y1)0.800%

(-Y1)1.500%

(-Y1)3.400%

13%

18" RCP

18" RCP

-Y9- STA 12+50
EL = 977.30
BEGIN DITCH LEFT

-Y9- STA 15+00
EL = 978.30
END DITCH LEFT

-Y9- STA 15+79.58
EL = 979.00
END DITCH RIGHT

SPECIAL LATERAL 'V' DITCH

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 2.46	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 5.0	CFS
DESIGN HW ELEVATION	= 973.4	FT
100 YEAR DISCHARGE	= 5.9	CFS
100 YEAR HW ELEVATION	= 973.5	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 19.8	CFS
OVERTOPPING ELEVATION	= 977.9	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 1.86	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 3.8	CFS
DESIGN HW ELEVATION	= 970.6	FT
100 YEAR DISCHARGE	= 4.5	CFS
100 YEAR HW ELEVATION	= 970.7	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 17.4	CFS
OVERTOPPING ELEVATION	= 976.8	FT

NOTE: SEE SHEET NO.14 FOR PLAN VIEW

-Y10-

PI = 11+20.00
EL = 976.71'
VC = 145'
K = 26

PI = 12+50.00
EL = 966.89'
VC = 100'
K = 28

BEGIN GRADE
-Y10- STA 10+47.02=
-L- STA 408+00.81 (47' RT.)
EL. = 978.11'

END GRADE
-Y10- STA 13+00.00
EL. = 964.89'

(-Y1)2.000%

(-Y1)5.350%

(-Y1)4.000%

NOTE: SEE SHEET NO.14 FOR PLAN VIEW

-Y12-

LEFT DITCH — - - — -
RIGHT DITCH -------

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 9.20	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 18.8	CFS
DESIGN HW ELEVATION	= 984.7	FT
100 YEAR DISCHARGE	= 22.0	CFS
100 YEAR HW ELEVATION	= 985.1	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 136.8	CFS
OVERTOPPING ELEVATION	= 988.7	FT

PI = 11+00.00
EL = 991.23'
VC = 100'
K = 24

PI = 12+00.00
EL = 988.68'
VC = 100'
K = 19

BEGIN GRADE
-Y12- STA 10+46.99=
-L- STA 408+00.12 (47' RT.)
EL. = 990.58'

END GRADE
-Y12- STA 12+45.00
EL. = 988.07'

(-Y1)6.000%

(-Y1)2.547%

(-Y1)2.800%

-Y12- STA 12+00
ELEV. = 988.68'

-Y12- STA 12+50
EL. = 988.07'
END DITCH RIGHT

-Y12- STA 11+00
EL. = 990.23'
BEGIN DITCH LEFT

-Y12- STA 11+44
ELEV. = 989.84'
BEGIN DITCH RIGHT

-Y12- STA 12+56
EL. = 988.07'
END DITCH LEFT

SPECIAL LATERAL 'V' DITCH

SPECIAL LATERAL 'V' DITCH

NOTE: SEE SHEET NO.16 FOR PLAN VIEW

-Y13-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 3.57	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 9.7	CFS
DESIGN HW ELEVATION	= 987.2	FT
100 YEAR DISCHARGE	= 11.4	CFS
100 YEAR HW ELEVATION	= 987.3	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 45.0	CFS
OVERTOPPING ELEVATION	= 992.3	FT

PI = 10+90.00
EL = 992.52'
VC = 85'
K = 34

BEGIN GRADE
-Y13- STA 10+47.49=
-L- STA 408+78.36 (47' RT.)
EL. = 992.31'

END GRADE
-Y13- STA 12+45.00
EL. = 988.07'

(-Y1)2.997%

(-Y1)3.000%

(-Y1)9.20%

0.50%

24" RCP

-Y13- STA 11+88
ELEV. = 990.68'
BEGIN DITCH LEFT

-Y13- STA 12+00
EL. = 988.38'
END MITER LEFT

-Y13- STA 11+50
EL. = 989.58'

SPECIAL LATERAL 'V' DITCH

NOTE: SEE SHEET NO.16 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	44

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH — - - — -

-Y14-

BEGIN GRADE -Y14- STA.15+50.00 EL = 992.96'

PI = 18+92.00
EL = 985.95'
VC = 90'
K = 22

(-)4.6563%

(-)1.0500%

END GRADE -Y14- STA.19+38.90 (47.17')
-Y1- STA.452+82.25 (47.17')
EL = 985.31'

NOTE: SEE SHEET NO.17 FOR PLAN VIEW

-Y16-

BEGIN GRADE -Y16- STA.10+47.10= -Y1- STA.459+09.08 (47.10')
EL = 980.08'

PI = 11+30.00
EL = 979.43'
VC = 150'
K = 94

(+)2.0000%

(-)0.2857%

(-)0.4285%

SPECIAL CUT DITCH

END GRADE -Y16- STA.12+50.00
EL = 979.93'

NOTE: SEE SHEET NO.18 FOR PLAN VIEW

-Y18-

BEGIN CUT-DE-SAC GRADE -Y18- STA.11+35.51
EL = 980.79'

(-)2.8036%

END CUT-DE-SAC GRADE -Y18- STA.12+35.24
EL = 990.08'

NOTE: SEE SHEET NO.18 FOR PLAN VIEW

LEFT DITCH — - - — -

-Y19-

BEGIN GRADE -Y19- STA.15+00.00
EL = 992.05'

PI = 16+25.00
EL = 992.05'
VC = 55'
K = 87

(-)0.3936%

(+)0.3356%

(-)0.5000%

END GRADE -Y19- STA.16+93.22 (47.17') LT
-Y1- STA.454+82.57 (47.17')
EL = 991.83'

-Y19- STA.16+38
ELEV = 992.21'
BEGIN DITCH LEFT

PI = 15+60.00
EL = 991.83'
VC = 75'
K = 103

SPECIAL CUT DITCH

-Y6- STA.16+56
ELEV = 987.10
END DITCH LEFT

NOTE: SEE SHEET NO.19 FOR PLAN VIEW

-Y20-

BEGIN GRADE -Y20- STA.10+47.00= -Y1- STA.461+08.76 (47.17')
EL = 984.26'

PI = 12+00.00
EL = 980.26'
VC = 200'
K = 44

(-)2.8889%

(+)1.7000%

LATERAL 2' BASE DITCH

-Y20- STA.11+68
ELEV = 987.10
END DITCH LEFT

-Y20- STA.10+92
ELEV = 987.10
BEGIN DITCH LEFT

END GRADE -Y20- STA.13+00.00
EL = 981.26'

NOTE: SEE SHEET NO.19 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y21-

PI = 11+90.00
EL = 997.80'
VC = 110'
K = 13

BEGIN GRADE
-Y21- STA. 10+00.00
EL = 993.58'

(+)4.041%

(-)4.479%

(+)0.5000%

END GRADE
-L- STA. 13+52.92
-Y21- STA. 1+93.16 (LT)
EL = 993.38'

PI = 12+95.00
EL = 993.10'
VC = 100'
K = 20

NOTE: SEE SHEET NO.20 FOR PLAN VIEW

-DR1-

BEGIN GRADE
-DR1- STA. 10+00.00
EL = 1017.85'

PI = 10+60.00
EL = 1017.55'
VC = 100'
K = 17

(+)0.5000%

(-)5.2920%

PI = 12+12.99
EL = 1007.99'
VC = 5'
K = 1

(+)6.0000%

END GRADE
-DR1- STA. 12+15.49 =
-L- STA. 54+73.46 (32' LT)
SHOULDER EL = 1008.19'

NOTE: SEE SHEET NO.24 FOR PLAN VIEW

RIGHT DITCH - - - - - - -

-Y22-

PI = 12+25.00
EL = 994.72'
VC = 140'
K = 52

BEGIN GRADE
-Y22- STA. 10+00.00
EL = 995.20'

-L- STA. 205+19.54
(50' RT)

(+)0.5000%

0.50%

1.075%

(+)2.2185%

-Y22- STA. 11+49.36
BEGIN DITCH RIGHT

-Y22- STA. 12+63.26
END DITCH RIGHT

SPECIAL CUT DITCH

PI = 15+75.00
EL = 1,002.47'
VC = 161'
K = 84

(+)0.3000%

END GRADE
-Y22- STA. 17+50.00
EL = 1002.99'

NOTE: SEE SHEET NO.'S 20 & 21 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LEFT DITCH — - - — -

-Y23-

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 2.40	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 4.9	CFS
DESIGN HW ELEVATION	= 1025.5	FT
100 YEAR DISCHARGE	= 5.8	CFS
100 YEAR HW ELEVATION	= 1025.9	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= 19.6	CFS
OVERTOPPING ELEVATION	= 1026.9	FT

BEGIN GRADE -Y23- STA 11+00.00 EL = 1026.59

PI = 14+45.00
EL = 1,028.35'
VC = 480'
K = 72

PI = 17+75.00
EL = 1,008.16'
VC = 170'
K = 26

END GRADE -Y23- STA 19+67.42 (47' LT.)
EL = 1008.59

(+)0.500% (-)0.500% (+)0.500%

-Y23- STA 11+36 EOEC = 1027.16 BEGIN DITCH LEFT

-Y23- STA 12+66 = 1025.00 END DITCH LEFT

-Y23- STA 12+86 = 1024.90 BEGIN DITCH LEFT

-Y23- STA 18+00 END DITCH LEFT

SPECIAL CUT DITCH

NOTE: SEE SHEET NO.21 FOR PLAN VIEW

-Y24-

LEFT DITCH — - - — -

BEGIN GRADE -Y24- STA 10+47.00 (47' RT.) EL = 1008.22'

PI = 11+30.00
EL = 1,007.06'
VC = 165'
K = 25

PI = 12+95.00
EL = 1,014.53'
VC = 150'
K = 25

END GRADE -Y24- STA 15+75.00 EL = 1,013.33'

(-)2.000% +1.507.3% (-)1.500% 0.50%

-Y24- STA 13+50 EOEC = 1013.69 BEGIN DITCH LEFT

-Y24- STA 14+60 = 1014.60 END DITCH LEFT

SPECIAL CUT DITCH

NOTE: SEE SHEET NO.21 FOR PLAN VIEW

-Y25-

BEGIN GRADE -Y25- STA 14+00.00 EL = 975.02

PI = 14+50.00
EL = 973.95'
VC = 100'
K = 24

END GRADE -Y25- STA 16+33.46 (47' LT.) -L- STA 15+96.81 (47' LT.) EL = 980.12

(-)2.357.3% (-)6.22% (+)0.500%

PI = 15+80.00
EL = 965.85'
VC = 100'
K = 15

NOTE: SEE SHEET NO.23 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RIGHT DITCH - - - - - - -

-Y27-

BEGIN GRADE -Y27- STA. 11+25.00 EL = 1055.16

PI = 14+00.00
EL = 1,057.11'
VC = 200'
K = 44

G=10.5000%

18" HCP

(-)5.0945%

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 2.72	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 4.6	CFS
DESIGN HW ELEVATION	= 1056.5	FT
100 YEAR DISCHARGE	= 5.9	CFS
100 YEAR HW ELEVATION	= 1056.7	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +9.1	CFS
OVERTOPPING ELEVATION	= 1058.1	FT

PI = 19+60.00
EL = 1,028.58'
VC = 250'
K = 41

(+)2.0000%

0.500%

END GRADE -Y27- STA. 20+13.00 (35.5' LT.) EL = 1,029.87

-Y27- STA. 19+60.00 BEGIN DITCH RIGHT

-Y27- STA. 20+41 END DITCH RIGHT

SPECIAL CUT DITCH

NOTE: SEE SHEET NO.'S 25 & 26 FOR PLAN VIEW

-Y27TEMP-

BEGIN -Y27TEMP- GRADE -Y27- STA. 17+90.00 EL = 1,037.28

PI = 18+40.00
EL = 1,034.73'
VC = 100'
K = 26

(-)4.2963%

(-)5.0945%

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 2.82	AC
DESIGN FREQUENCY	= 10	YRS
DESIGN DISCHARGE	= 7.6	CFS
DESIGN HW ELEVATION	= 1032.9	FT
100 YEAR DISCHARGE	= 10.2	CFS
100 YEAR HW ELEVATION	= 1033.3	FT
OVERTOPPING FREQUENCY	= +100	YRS
OVERTOPPING DISCHARGE	= +10.2	CFS
OVERTOPPING ELEVATION	= 1033.3	FT

END GRADE -Y27- STA. 20+39.95 -DET- STA. 19+41.99 (16' LT.) EL = 1037.22

18" HCP

NOTE: SEE SHEET NO.26-A FOR PLAN VIEW

LEFT DITCH — - - - —
RIGHT DITCH - - - - - - -

-Y28-

BEGIN GRADE -Y28- STA. 10+28.00 (25.5' RT.) EL = 1,030.11'

PI = 12+70.00
EL = 1,026.38'
VC = 250'
K = 105

(-)1.5000%

18" RCP

67.8%

-Y28- STA. 12+90 BEGIN DITCH RIGHT

-Y28- STA. 13+40 END DITCH RIGHT

SPECIAL CUT DITCH

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 2.36	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 5.6	CFS
DESIGN HW ELEVATION	= 1022.5	FT
100 YEAR DISCHARGE	= 6.6	CFS
100 YEAR HW ELEVATION	= 1022.7	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +4.0	CFS
OVERTOPPING ELEVATION	= 1026.0	FT

PI = 17+00.00
EL = 1,030.17'
VC = 250'
K = 93

(+)2.8600%

-Y28- STA. 16+90 BEGIN DITCH LEFT

-Y28- STA. 16+40 END DITCH LEFT

SPECIAL CUT DITCH

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 0.3	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 1.8	CFS
DESIGN HW ELEVATION	= 1022.8	FT
100 YEAR DISCHARGE	= 1.8	CFS
100 YEAR HW ELEVATION	= 1022.9	FT
OVERTOPPING FREQUENCY	= +500	YRS
OVERTOPPING DISCHARGE	= +1.0	CFS
OVERTOPPING ELEVATION	= 1025.2	FT

-Y28- STA. 21+00 BEGIN DITCH LEFT

-Y28- STA. 21+50 END DITCH LEFT

SPECIAL CUT DITCH

END GRADE -Y28- STA. 20+25.00 EL = 1022.22

18" RCP

(-)1.8000%

0.50%

NOTE: SEE SHEET NO.'S 26 & 27 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RAMPA-

BEGIN GRADE
-RAMPA- STA. 17+60.00
EL. = 1,019.09'

PI = 18+50.00
EL = 1,027.64'
VC = 150'
K = 50

(+)5.700%

(+)2.712%

END GRADE
-RAMPA- STA. 19+10.00
-L- STA. 556+00.00 (82 RT)
2½' RESURFACING
EL. = 1,030.67'

NOTE: SEE SHEET NO.25 FOR PLAN VIEW

-RAMPB-

BEGIN GRADE
-RAMPB- STA. 14+00.00
EL. = 1,029.03'

PI = 15+70.00
EL = 1,031.27'
VC = 100'
K = 62

(+)3.056%

(+)0.300%

END GRADE
-RAMPB- STA. 16+29.58
-L- STA. 554+28.67 (122 LT)
EL. = 1,031.45'

NOTE: SEE SHEET NO.25 FOR PLAN VIEW

-RAMPC-

BEGIN GRADE
-RAMPC- STA. 17+95.00
EL. = 1,001.27'

PI = 18+25.00
EL = 1,002.67'
VC = 100'
K = 542

(+)1.581%

(+)2.054%

END GRADE
-RAMPC- STA. 19+75.91
-L- STA. 555+54.18 (122 LT)
EL. = 1,006.27'

NOTE: SEE SHEET NO.24 FOR PLAN VIEW

-RAMPD-

BEGIN GRADE
-RAMPD- STA. 14+50.00
EL. = 997.99'

PI = 15+50.00
EL = 1,002.29'
VC = 100'
K = 106

(+)4.300%

(+)3.557%

END GRADE
-RAMPD- STA. 16+53.62
-L- STA. 555+56.68 (142 RT)
EL. = 1,005.27'

NOTE: SEE SHEET NO.24 FOR PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
R-2233AB	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-DR2-

PI = 10+59.50
EL = 767.25'
VC = 5'
K = 1

PI = 12+30.00
EL = 777.45'
VC = 80'
K = 6

PI = 13+15.00
EL = 771.20'
VC = 75'
K = 11

BEGIN GRADE -DR2- STA 10+37.00 = -L- STA 10+56.00 LT
SHOULDER EL = 767.48'

END GRADE -DR2- STA 14+00.00
EL = 770.05'

(-)5.0000%
(+)3.0833%
(-)7.3333%
(-)5.0000%

NOTE: SEE SHEET NO.'S 4 & 5 FOR PLAN VIEW

-DR3-

PI = 10+31.80
EL = 1,012.80'
VC = 5'
K = 1

PI = 13+40.00
EL = 1,024.11'
VC = 80'
K = 17

BEGIN GRADE -DR3- STA 10+23.30 = -L- STA 12+32.55 (29.30' LT)
SHOULDER EL = 1012.95'

END GRADE -DR3- STA 13+80.56
EL = 1025.70'

(-)5.0000%
(+)3.6883%
(-)10.0000%

NOTE: SEE SHEET NO.21 FOR PLAN VIEW

-DR4-

PI = 10+80.00
EL = 765.17'
VC = 100'
K = 19

PI = 13+64.27
EL = 775.72'
VC = 5'
K = 1

BEGIN GRADE -DR4- STA 10+28.50
EL = 765.94'

END GRADE -DR4- STA 14+30.00 = -L- STA 13+93.50 (67.41 LT)
SHOULDER EL = 775.92'

(-)5.0000%
(+)3.7122%
(+)8.0000%

NOTE: SEE SHEET NO.5 FOR PLAN VIEW

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