STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

February 25, 2008

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

ATTN: Mr. David Baker
NCDOT Coordinator

SUBJECT: **Nationwide 14 and 33 Permit Application** for the Proposed widening of US 64 from east of the Hiwassee River to east of NC 175 in Clay County. Federal Project No. APD-16-1(20), T.I.P. No. A-0011BB, Division 14, Debit $570 from WBS Element 32574.1.4

Dear Mr. Baker:

Please find enclosed the Preconstruction Notification, Ecosystem Enhancement Program (EEP) mitigation acceptance letter, merger meeting minutes, Stormwater Management Plan, US Army Corp of Engineers (USACE) Approved Jurisdictional Determination Forms, permit drawings, and half-size design plans for the above-mentioned project. The North Carolina Department of Transportation (NCDOT) proposes to widen US 64 from east of the Hiwassee River to east of NC 175 to provide two 12-foot travel lanes and 10-foot useable shoulders (including 4-foot paved shoulders). Turn lanes will also be constructed at selected intersections. Project impacts total 911 feet of permanent stream impacts, 0.03 acres of temporary stream impacts, 0.18 acres of permanent impacts to Lake Chatuge, and 0.07 acres of permanent fill in wetlands.

NEPA DOCUMENT STATUS

A Final Negative Declaration (FND) and the Final Reevaluation of the FND for TIP Project A-0011 were approved by the Federal Highway Administration (FHWA) on July 28, 1981 and January 4, 1996, respectively. Copies of the FND were distributed shortly after completion. Additional copies are available upon request. Construction of TIP Projects A-0011A and A-0011BA were completed in 1994 and 2003, respectively. A Right-of-Way Consultation for A-0011BB was completed in November 2006.

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.
RALEIGH NC

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in the Hiwassee River Basin within HUC 06020002. The project will impact thirteen jurisdictional surface waters and two non-riverine wetlands. Streams and wetland calls were verified by Steve Lund of the USACE on June 8, 2006. The project will impact Unnamed Tributaries (UTs) to Downing Creek, John Reese Branch, UTs to John Reese Branch, Byers Branch, an UT to Byers Branch, Chatuge Lake, and UTs to Hiwassee River. Classifications of the streams are listed in Table 1. No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), Water Supply II (WS-II) waters or 303(d) streams occur within 1.0 mile of the project. No streams in the project area are classified by the NC Wildlife Resources Commission (WRC) as Trout Waters.

Table 1-Stream Classifications

Stream Name	DWQ Index Number	DWQ Classification	WRC Habitat
Downing Creek	1-18	C	Cold
John Reese Branch	1-18-2	C	Cold
Byers Branch	1-14	C	Cool
Chatuge Lake	1-(1)	B	Cool
Hiwasee River	1-(1)	B	Cool

Table 2-Wetland Descriptions

Site	Non-Riverine (NR) or Riverine (R) Wetland Impacts	Cowardin et al. Description
1	NR	PEM
8	NR	PEM

Permanent Impacts: Permanent impacts for the project total 911 feet to streams, 0.18 acres to Lake Chatuge and 0.07 acres to wetlands.

Site 1: The existing 5x3-foot RCBC will be extended with a 60-inch RCP. The extension will result in 28 feet of permanent impacts to an UT to Downing Creek and 0.03 acre of fill and 0.01 acre of mechanized clearing in a non-riverine palustrine wetland on the south side of US 64.

Site 2: The construction of an eastbound turn lane on US 64-East will require the placement of a 24-inch RCP. The pipe will result in 42 feet of permanent fill in an UT to Downing Creek. No mitigation is proposed for the impacts to this intermittent stream channel because it was determined to be biologically un-important.

Site 3: The existing 4x6-foot RCBC will be extended on the south side of US 64 (inlet side) with a 66-inch RCP. Riprap will be placed on the banks of the channel at the outlet of the existing RCBC and the 15" steel pipe to prevent erosion of the channel banks.

Riprap will be placed above mean high water. The extension will result in 45 feet of permanent impacts to an UT to Downing Creek.

Site 4: The existing 5x4-foot RCBC will be extended on the south side of US 64 (inlet side) with a 66-inch RCP. The extension will result in 57 feet of permanent impacts to an UT to John Reese Branch.

Site 5: The existing 4x3-foot RCBC will be extended on the south side of US 64 with a 54-inch RCP. The extension will result in 30 feet of permanent impacts to an UT to John Reese Branch. Riprap will be placed on the banks of the channel at the outlet of the 15" steel pipe to prevent erosion of the channel banks. Riprap will be placed above mean high water.

Site 6: The existing 3x3-foot RCBC will be extended on the south side of US 64 with a 48-inch RCP. The extension will result in 28 feet of permanent impacts to John Reese Branch.

Site 7: The existing 5x3-foot RCBC will be extended on the north side of US 64 (inlet side) with a 5x4-foot RCBC and on the south side of US 64 (outlet side) with a 5x3-foot RCBC. The extension of the existing pipe will result in 38 feet of permanent impacts in Byers Branch. The widening of the fill slopes to accommodate the shoulder widening and installation of the guardrail will also result in 104 feet of permanent impacts to an intermittent UT to Byers Branch on the northern side of US 64. No mitigation is proposed for the impact to the intermittent channel because it was determined to be an un-important stream channel.

Site 8: The existing 4x6-foot RCBC will be extended on the north side of US 64 (inlet side) with a 4x7-foot RCBC and on the south side of US 64 (outlet side) with a 4x6-foot RCBC. The extension of the existing pipe will result in 91 feet of permanent impacts in an UT to Byers Branch and 0.03 acre of permanent impacts to a non-riverine wetland.

Site 9: The widening of the fill slopes to accommodate the paved shoulder and new guardrail will result in 0.17 acre of permanent fill in Lake Chatuge. No widening to the existing culvert under US 64 will be required.

Site 10: The extension of an existing 18-inch CMP with an 18-inch CSP and the widening of the fill slopes to accommodate the paved shoulder will result in 278 feet of permanent impacts to an intermittent UT to the Hiwassee River. Mitigation is not proposed at this site because the site was determined to be an un-important stream channel.

Site 11: The existing 18-inch CMP will be replaced and extended with a 24-inch RCP. The replacement of the existing pipe will result in 170 feet of permanent impacts to an intermittent UT to the Hiwassee River. Mitigation is not proposed at this site because the site was determined to be an un-important stream channel.

Site 12: The existing fill slopes will be widened to accommodate a turn lane for eastbound traffic to turn onto NC 175. The widening of the fill slopes will result in 0.02 acre of permanent fill in Lake Chatuge.

Temporary Impacts: Temporary impacts to streams for the project total 0.03 acre.

Site 1: There will be <0.01 acre of temporary impacts on the north side of US 64 for dewatering during pipe installation.

Site 3: There will be <0.01 acre of temporary impacts on the north side of US 64 for dewatering during pipe installation.

Site 4: There will be <0.01 acre of temporary impacts on the north side of US 64 for dewatering during pipe installation.

Site 5: There will be <0.01 acre of temporary impacts on the north side of US 64 for dewatering during pipe installation.

Site 6: There will be <0.01 acre of temporary impacts on the north side of US 64 for dewatering during pipe installation.

Site 7: There will be <0.01 acre of temporary impacts on the north and south side of US 64 for dewatering during pipe installation.

Site 8: There will be 0.02 acre of temporary impacts on the north side of US 64 for dewatering during pipe installation.

Site 13: There will be <0.01 acre of temporary impacts on the north side of US 64 for dewatering during pipe installation.

Utility Impacts: There will be no impacts to wetlands or streams from the relocation of utilities.

CULTURAL RESOURCES

Historic Architecture:
No National Register-listed properties exist within the project's Area of Potential Effects. In addition, all properties over fifty years old within the project's APE have been evaluated, and NCDOT has concluded that none are eligible for the National Register. The SHPO concurred with the NCDOT's findings in the form dated July 11, 2006.

Archeology:
An archaeological survey was performed for the original US 64 (A-11) widening alternative in 1980 and 1981. A reevaluation of the project's impacts on two sites (31CY6 and 31CY85), necessitated by design changes, was accomplished in 1991. A

second reevaluation of the project's impacts on site 31CY85, necessitated by additional design changes, was accomplished in 1998. No eligible archaeological sites were found within study limits of the BB section.

Additional design changes and expansions have recently been made to the BB section of the project since the surveys were conducted in 1998, including,

- the realignment of several secondary road interchanges with US 64 (-Y-lines),
- widening along the south side of the project for substantial sections of the project,
- additional turn lanes at the NC 175 interchange,
- the realignment of several driveways, and
- hydrologic design improvements

Due to the design changes it was necessary to establish if the original archaeological surveys were broad enough in scope to have covered the areas mentioned above. NCDOT conducted additional archeological surveys in May 2007. No eligible archeological sites were found within the expanded study limits. NCDOT Human Environment Unit will seek concurrence from SHPO regarding the additional surveys. This information will be forwarded as soon as it is available.

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 8, 2008, the Fish and Wildlife Service (FWS) lists two federally protected species for Clay County, the bog turtle and the green pitcher plant. No biological conclusion is required for the bog turtle because it is listed as threatened due to similarity of appearance. Habitat is present in the project study area for the green pitcher plant. Surveys for the green pitcher plant were conducted on May 23, 2006 and October 31, 2007 and no specimens were observed. A search of the NHP database on January 31, 2008 found no occurrence of green pitcher plant within 1.0 mile of the project

Table 3. Federally-Protected Species for Clay County

Common Name	Scientific Name	Federal Status	Habitat Present	Biological Conclusion
Bog Turtle	*Clemmys muhlenbergii*	Threatened-Similar Appearance	No	NA
Green Pitcher Plant	*Sarracenia oreophila*	Endangered	Yes	No Effect

MITIGATION

Avoidance and Minimization: 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 and include:

- The project includes 2:1 side slopes in jurisdictional areas.
- In order to avoid relocating the existing channels for Downing Creek and John Reese Branch, a southward shift of the existing alignment and south-side widening of US 64 are proposed from 0.2 mile east of Hinton Center Road (SR 1148) to 0.6 mile west of W. J. Cabe Road (SR 1201), a distance of approximately 2.0 miles. In this area, the existing north edge of pavement will be shifted approximately 16 feet southward. The proposed alignment shift and south-side widening will avoid impacts of approximately 3,600 feet to two creeks that would have been required if symmetrical widening and no alignment shifts have been performed.
- The east project terminus has been shifted westward, from just east of to just west of NC 175. Under the original project scope, the project would have ended just east of NC 175, resulting in approximately 300 feet of impacts to Licklog Creek, which crosses under US 64 just east of NC 175. Under the final design, the project will tie into the existing two-lane, 24-foot facility with 10-foot useable shoulders that begins just east of SR 1333.
- Roadway drainage will be discharged away from the streams on the south side of US 64 to the maximum extent practicable.
- Grass lined ditches will be used to help treat road drainage.
- If barn swallows are found nesting in the culvert located at Station 202+00 prior to construction, the contractor will be prohibited from performing work on the inhabited culvert during the nesting season of April 1 through August 31.

Compensatory Mitigation:

The NCDOT evaluated the portion of Downing Creek between Station 112+00 through 124+00 for stream restoration. The Hydraulics Unit proposed the restoration project during the May 16, 2007 Concurrence Point 4C meeting. This proposal was followed up with a field meeting at the site on May 31, 2007. The agencies in attendance deemed the site acceptable for restoration; however, time and cost concerns, including the identification of an archeological site in the area created questions as to the feasibility of the site for restoration. Based upon a cost analysis of archeological recovery, construction estimates, R/W acquisition, property survey, and design costs coupled with time constraints, the NCDOT concludes that this stream restoration project should not be pursued.

Project impacts total 911 feet of permanent stream impacts and 0.07 acres of permanent fill in wetlands. Mitigation will not be required for 594 feet of streams determined to be un-important, intermittent streams during the verification conducted with the USACE on June 8, 2006. The Mitigation for the 188 feet of permanent impacts to perennial cold water streams, 129 feet of permanent impacts to perennial cool water streams, and 0.07 acre of permanent impacts to non-riverine wetlands within HUC 0602002 will be provided by EEP (See attached letter).

PROJECT SCHEDULE

The project has a let date of October 21, 2008 and a review date of September 2, 2008.

REGULATORY APPROVALS

Section 404 Permit: NCDOT requests that the construction of project A-0011BB be authorized under Section 404 Nationwide Permit Nos. 14 and 33.

Section 401 Permit: We anticipate 401 General Certification numbers 3704 and 3688 will apply to this project. All general conditions of the Water Quality Certifications will be adhered to, however permanent stream impacts total 911 feet, therefore requiring a major certification and written concurrence. In accordance with 15A NCAC 2H, Section 0.500(a), we are providing five copies of this application to the DWQ for their approval and $570 to act as payment for processing the permit application (see subject line).

This project is located in a trout county. Therefore, comments from the WRC will be required prior to the authorization by the USACE. By copy of this letter and attachments, NCDOT hereby requests WRC review. NCDOT requests that WRC forward their comments to the USACE and the NCDOT within 30 calendar days of receipt of this application.

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 bmfeulner@dot.state.nc.us or (919) 715-1488.

A copy of this permit application will be posted on the DOT website at: http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html.

Sincerely,

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

GT/bmf

cc: w/attachment

Mr. Brian Wrenn, NCDWQ (5 Copies)
Ms. Marla Chambers, NCWRC
Ms. Marella Buncick, USFWS
Mr. Harold Draper, TVA

w/o attachment (See website for attachments)

Mr. Victor Barbour, P.E. Project Services
Dr. David Chang, P.E., Hydraulics
Mr. J.B. Setzer, P.E. Division 14 Engineer
Mr. Art McMillan, P.E., Highway Design
Mr. Majed Alghandour, P. E., Prog. and TIP
Mr. Wilson Stroud, PDEA
Mr. Todd Jones, NCDOT External Audit Branch
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Davis, Div 14 DEO
Mr. Jay Bennett, P.E., Roadway Design
Mr. Scott McLendon, USACE, Wilmington
Ms. Beth Harmon, EEP

Office Use Only: Form Version March 05

USACE Action ID No. _____ **DWQ No.** _____

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

I. Processing

1. Check all of the approval(s) requested for this project:
   - ☒ Section 404 Permit
   - ☐ Section 10 Permit
   - ☒ 401 Water Quality Certification
   - ☐ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ
   - ☐ Express 401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: NW 14 & 33

3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here: ☐

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here: ☒

5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here: ☐

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: 1598 Mail Service Center
   Raleigh, NC 27699
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: gthorpe@dot.state.nc.us

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name: _____
   Company Affiliation: _____
   Mailing Address: _____
   Telephone Number: _____ Fax Number: _____
   E-mail Address: _____

III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: Widening of US 64 from east of the Hieassee River to east of NC 175

2. T.I.P. Project Number or State Project Number (NCDOT Only): A-0011BB

3. Property Identification Number (Tax PIN): N/A

4. Location
   County: Clay Nearest Town: Hayeseville
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.): US 64 in Clay County

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): Attached

6. Property size (acres): N/A

7. Name of nearest receiving body of water: Downing Creek, John Reese Branch, Byers Branch, Chatuge Lake, Hiwassee River

8. River Basin: Hiwassee River
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Forestland, rural residential and rural businesses

10. Describe the overall project in detail, including the type of equipment to be used: Standard DOT construction equipment.

11. Explain the purpose of the proposed work: The purpose is to improve safety along existing US 64.

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules. Streams and Wetlands Reviewed by the USACE and DWQ June 8, 2006

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.
No

VI. Proposed Impacts to Waters of the United States/Waters of the State

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: The project impacts are as follows, 911 feet of permanent stream impacts, 0.033 acre of temporary stream impacts, 0.168 acre of fill in Lake Chatuge, and 0.066 fill in wetlands.

2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

Wetland Impact Site Number (indicate on map)	Type of Impact	Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.)	Located within 100-year Floodplain (yes/no)	Distance to Nearest Stream (linear feet)	Area of Impact (acres)
1	Permanent	Herbaceous	No	Adjacent	0.039
8	Permanent	Herbaceous	No	Adjacent	0.027
Total Wetland Impact (acres)					0.066

3. List the total acreage (estimated) of all existing wetlands on the property: 0.066

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
1	UT to Downing Creek	Permanent/ Temporary	Perennial	5 feet	28/15	0.003/ 0.002
2	UT to Downing Creek	Permanent	Intermittent	2 feet	42	0.002
3	UT to Downing Creek	Permanent/ Temporary	Perennial	3 feet	45/18	0.002/ 0.001
4	UT to John Reese Branch	Permanent/ Temporary	Perennial	4 feet	57/42	0.004/ 0.003
5	UT to John Reese Branch	Permanent/ Temporary	Perennial	5 feet	30/14	0.005/ 0.002
6	UT to John Reese Branch	Permanent/ Temporary	Perennial	4 feet	28/26	0.002/ 0.003
7	Byers Branch	Permanent/ Temporary	Perennial	5 feet	38/31	0.005/ 0.004
7	UT to Byers Branch	Permanent	Intermittent	2 feet	104	0.004
8	UT to Byers Branch	Permanent/ Temporary	Perennial	5 feet	91/23	0.015/ 0.015
10	UT to Hiwassee River	Permanent	Intermittent	1 feet	278	0.013
11	UT to Hiwassee River	Permanent	Intermittent	1 feet	170	0.008
13	UT to Hiwassee River	Temporary	Perennial	3 feet	36	0.003
Total Stream Impact (by length and acreage)					911/205	0.063/ 0.033

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
9	Lake Chatuge	Permanent	Lake	0.168
12	Lake Chatuge	Permanent/ Temporary	Lake	0.016
Total Open Water Impact (acres)				0.184

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

Stream Impact (acres):	0.063
Wetland Impact (acres):	0.066
Open Water Impact (acres):	0.184
Total Impact to Waters of the U.S. (acres)	0.313
Total Stream Impact (linear feet):	911

7. Isolated Waters
Do any isolated waters exist on the property? ☐ Yes ☒ No
Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.

_____

_____

8. Pond Creation
If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.):_____
Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):_____
Current land use in the vicinity of the pond:_____
Size of watershed draining to pond:_____ Expected pond surface area:_____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. Best Management Practices for

the Protection of Surface Waters, 2:1 slopes in jurisdictional areas, widening to the south, grass lined ditches, and discharging roadway drainage away from the streams on the south side of the roadway.

VIII. Mitigation

DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCEEP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at http://h2o.enr.state.nc.us/ncwetlands/strmgide.html.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.
   Mitigation will be provided by EEP.

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP

website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

Amount of stream mitigation requested (linear feet): 317
Amount of buffer mitigation requested (square feet): 0
Amount of Riparian wetland mitigation requested (acres): 0
Amount of Non-riparian wetland mitigation requested (acres): 0.066
Amount of Coastal wetland mitigation requested (acres): 0

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes ☒ No ☐

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes ☒ No ☐

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes ☒ No ☐

X. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)? Yes ☐ No ☒

2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		3 (2 for Catawba)	
2		1.5	
Total			

* Zone 1 extends out 30 feet perpendicular from the top of the near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. _____

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. Approximately the same as current conditions, stormwater will be directed away from streams and treated through grass swales.

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.
N/A

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes ☐ No ☒

Is this an after-the-fact permit application? Yes ☐ No ☒

XIV. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at http://h2o.enr.state.nc.us/ncwetlands. If no, please provide a short narrative description:
Two-lane improvements to US 64 from just east of the Hiwassee River to NC 175

XV. Other Circumstances (Optional):

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).

E. L. Lee 2.28.08

Applicant/Agent's Signature **Date**

(Agent's signature is valid only if an authorization letter from the applicant is provided.)

Ecosystem Enhancement PROGRAM

February 12, 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:

A-11BB, US 64 from East of the Hiwassee River to West of NC 175, Clay County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and wetland mitigation for the subject project. Based on the information supplied by you on February 5, 2008, the impacts are located in CU 06020002 of the Hiwassee River Basin in the Southern Mountain (SM) Eco-Region, and are as follows:

Cool Stream:	129 feet
Cold Stream:	188 feet
Nonriparian Wetland:	0.066 acre

This mitigation acceptance letter replaces the mitigation acceptance letter issued on December 4, 2007. EEP commits to implementing sufficient compensatory stream and wetland mitigation 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 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
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: A-0011BB

Ecosystem Enhancement PROGRAM

February 12, 2008

Mr. David Baker
U. S. Army Corps of Engineers
Asheville Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, North Carolina 28801-5006

Dear Mr. Baker:

Subject: EEP Mitigation Acceptance Letter:

A-0011BB, US 64 Improvements from East of the Hiwassee River to West of NC 175, Clay County; Hiwassee River Basin (Cataloging Unit 06020002); Southern Mountains (SM) Eco-Region

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the stream and nonriparian wetland mitigation for the unavoidable impact associated with the above referenced project. As indicated in the NCDOT's mitigation request dated February 5, 2008, stream and nonriparian wetland mitigation from EEP is required for approximately 129 feet of cool stream impacts, 188 feet of cold stream impacts, and 0.066 acre nonriparian wetland impact.

This mitigation acceptance letter replaces the mitigation acceptance letter issued on December 4, 2007. Stream and nonriparian wetland mitigation associated with this project will be provided in accordance with Section X of the Amendment No. 2 to the Memorandum of Agreement between the N. C. Department of Environment and Natural Resources, the N. C. Department of Transportation, and the U. S. Army Corps of Engineers fully executed on March 8, 2007 (Tri-Party MOA). EEP commits to implement sufficient stream mitigation up to 634 appropriate stream credits and 0.132 nonriparian wetland credits to offset the impacts associated with this project by the end of the MOA year in which this project is permitted. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from 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. Gregory J. Thorpe, Ph.D., NCDOT-PDEA
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: A-0011BB

Minutes of the Permit Drawing Review Meeting (4C) on May 16, 2007 for A-0011BB on US64 in Clay County

Participant:

Team Members:

Randy Henegar, NCDOT Hydraulics (present)
Dave Baker, USACE (present)
Brian Wrenn, NCDWQ (present)
Wilson Stroud, NCDOT PD&EA (present)
Marla Chambers, NCWRC (absent)
Marella Buncick, USFWS (present)
Kathy Matthews, USEPA (present)
David Harris, NCDOT REU (absent)
Jamie Wilson, NCDOT Division 14 (present)
Jimmy Goodnight, NCDOT Roadway (present)
Donnie Brew, FHWA (present)
Chris Militscher, USEPA (absent)
Brett Feulner, NCDOT NEU (lusk sub.)
Neb Bullock, NCDOT Structures (present)
Helen Rucker, TVA (absent)

Other Attendees

Mark Davis, Division 14 DEO
Marc Shown, NCDOT Hydraulics
Rusty Lassiter, NCDOT Hydraulics
Steve Kendall, NCDOT Roadway
Elizabeth Lusk, NCDOT NEU
Carla Dagnino, NCDOT NEU
Zach McNeill, NCDOT NEU
Kent Caldwell, NCDOT PDEA
Mark Staley, NCDOT Roadside
Randy Griffin, NCDOT NEU
Jamie Lancaster, NCDOT NEU
Suriyati B. Supa'at, NCDOT TEA
Gene J Nocerino, NCDOT NEU
Keith Paschal, NCDOT STR

Randy C Henegar started the meeting with introductions and statement that we would review the drawings site by site. He also stated that after the 4-B meeting a field review was held with NCDOT and Agency Personnel and that many issues were resolved. The following are the comments from the permit drawing review.

Site 1 No Comments

Site 2 No Comments

Site 3 No Comments

Site 4 NCDOT will hand place rip rap at outlet of RCBC

Site 5 Rip rap will be placed at the outlet of the15" CSP on Creek Bank

Site 6 No Comments

Site 7 Division 14 commented that the rip rap in the culvert outlet will not stay and recommended not burying the culvert one foot. DWQ indicated it would be preferable to have a countermeasure. If needed, outside of the outlet even though the impacts would be increased. USACE commented that one-foot burial culvert would not be necessary at this site. NCDOT Hydraulics will revise culvert to eliminate one-foot burial on outlet extension.

Site 8 NCDOT Hydraulics will revise the culvert design to eliminate one-foot burial on outlet extension. DWQ voiced concerns about stability at the inlet to the RCBC. Division 14 commented that nets would be used to keep birds from nesting in RCBC during construction and if they were there already delay construction until the birds were no longer present.

Site 9	Division 14 commented on the need for coordination with TVA to get permit approved. NCDOT Hydraulics will contact TVA.
Site 10	No Comments
Site 11	No Comments
Site 12	No Comments
Site 13	Division 14 commented that it might be preferable to realign proposed 42" pipe to go under NC 175 to facilitate construction. Agencies had no objections.

Overall Comments:

NCDOT Hydraulics identified sites that had previously been discussed but were determined to be non-jurisdictional.

NCFWS commented about extending box culverts with pipes that were smaller.

Division 14 commented that at Sta. 164+50 R/W should be obtained to the Creek Bank similar to Sta. 155+00.

NCDOT commented that at the field meeting the possibility of stream enhancement through the planting of woody vegetation was discussed.

NEU proposed stream restoration from Sta. 112+00 to 124+00 +/-, stated that stream was degraded and undercutting roadway embankment and expressed concerns about slope failure.

Division 14 commented that the reason the alignment was shifted and the project was redesigned and delayed was to avoid stream impacts. Concern about additional cost to project was also voiced and a request for additional cost to the project was made. NCDOT Hydraulics indicated that they would supply the Division with the additional cost information.

Concern was expressed about delaying the Let date.

NCDOT Hydraulics will arrange a field meeting with the Agencies to discuss potential stream restoration.

rch

Meeting Minutes for Agency Field Review Meeting on June 28, 2006

Attendees
Brett Feulner-NCDOT-NEU
Randy Henegar-NCDOT-Hydraulics
Marc Shown-NCDOT Hydraulics
Rusty Lassiter-NCDOT Hydraulics
John Stanton- NCDOT Hydraulics
Marella Buncick-USFWS
Marla Chambers-NCWRC
Chris Militscher-USEPA

Station 91+00 and 94+50-The first sites reviewed were the culverts located approximately at Station 91+00 and 94+50. It was noted by the agencies that the culvert at Station 91+00 was perched approximately 3-4 inches.

Station 115+00 to 130+00- Chris Militscher requested the NCDOT investigate this section of stream for possible stream mitigation/ enhancement including planting a wooded buffer adjacent to the stream. The USFWS requested that NCDOT look into acquiring the field located at the intersection of Oak Forest Road (SR 1147) and US 64 for mitigation/ minimization. The onsite mitigation group will review the whole project for potential onsite mitigation opportunities.

Station 137+61- The channel at this station was visited and was reviewed previously and determined to not be jurisdictional.

Station 144+00- The pipe at this jurisdictional stream is perched. The agencies requested that the NCDOT look into placing rock in to the channel at the pipe outlet. NCDOT Hydraulics will look into placing rock at the outlet of this structure during final design.

Station 154+50 to 159+00-The jurisdictional status of the channels located between these stations was previously determined during the verification conducted on June 8, 2006. The channels located at approximately 154+00, 156+75, 158+50 are not jurisdictional. The pipe that outlets at approximately 158+75 appears to be fed by a spring box under the road and is jurisdictional from the pipe outlet to John Reese Branch.

Station 202+00-While reviewing the culvert at this site nesting barn swallows were found in the culvert. Coordination between the NCDOT, WRC and FWS determined that the appropriate dates for excluding the barn swallows from the culvert or avoiding work on this culvert would be from April 1 to August 31.

Final Minutes of the 30% Hydraulic Design Review (4B) Meeting on May 10, 2006 for A-0011BB on US64 in Clay County

Participant:

Team Members:

Randy Henegar, NCDOT Hydraulics (present)
Steve Lund, USACE (present)
Brian Wrenn, NCDWQ (John Hennessy sub.)
Wilson Stroud, NCDOT PD&EA (present)
Marla Chambers, NCWRC (present)
Marella Buncick, USFWS (present)
Kathy Matthews, USEPA (present)
David Harris, NCDOT REU (absent)
Jamie Wilson, NCDOT Division 14 (present)
Jimmy Goodnight, NCDOT Roadway (present)
Donnie Brew, FHWA (present)
Chris Militscher, USEPA (present)
Brett Feulner, NCDOT NEU (present)
Neb Bullock, NCDOT Structures (absent)
Harold Draper, TVA (present)

Other Attendees

Mark Davis, Division 14 DEO
Marc Shown, NCDOT Hydraulics
Rusty Lassiter, NCDOT Hydraulics
Steve Kendall, NCDOT Roadway
Elizabeth Lusk, NCDOT NEU
Carla Dagnino, NCDOT NEU
Vang Moua, NCDOT Utilities

The 4B meeting began with Randy Henegar providing an overview of the project noting that the project was originally designed in 1992.

Construction of that portion of the project west of the Hiwassee River (including the Hiwassee bridge) was completed in 1994.

One of the main concerns of the agencies was the close proximity of the roadway to the streams. Even though the roadway has been shifted south to avoid approximately 1970 feet of channel change, it is still close enough to raise concerns about energy dissipation from direct discharge into the streams. All efforts will be made to dissipate the energy of flow for discharges from proposed and existing pipes and culverts. This will be accomplished by placing cross-vanes, natural rock energy dissipaters, or rip rap pads at the outlets.

It was noted that the wetland and streams have not been verified. NEU will coordinate a field trip to verify jurisdictional sites and review of the project.

USEPA commented on on-site stream enhancement. Randy Henegar stated that Hydraulics and NEU had made a field review and it was determined that Downing Creek and John Reese Branch would not be suitable on-site restoration. Enhancement and Preservation were not considered at that time and will be reviewed by Hydraulics and NEU.

Response: Currently NEU is reviewing Enhancement and Preservation. Will have additional information at 4C.

NCDWQ asked the question about where the project was brought into the Merger Process and had minimization been met. The team agreed that minimization had been met to the extent practicable. The USACE suggested that a paragraph from PD&EA about minimization be included in these minutes. See attached reference to minimization from PD&EA.

With the review of each plan sheet and potential jurisdictional wetland and stream site, comments were as follows:

Site 1. STA. 90.00-L- Ut to Downing Creek. The only wetland site on the project is located on the upstream side of the existing 5x4 RCBC. The existing RCBC will be extended on the upstream (south) side. Division 14 commented that construction could be accomplished by extending with a junction box and pipe. NCWRC commented that she would like DOT to address the drop at the existing outlet. This may be accomplished with a control structure at the outlet and will be considered during the hydraulic design for all structures. USFWS commented on the additional pavement and how additional runoff to the stream will be handled. Randy Henegar stated that there would not be a great increase in runoff (2 lane widening), but that it would be handled by discharging runoff to the south side of the roadway (away from streams) through grass lined ditches to the extent practicable.

Site 2. STA. 94+00-L- Ut to Downing Creek. Existing pipe under roadway will be filled with flowable grout. Runoff will be allowed to drain along the south side of the road through grass lined ditches.

Site 3. STA. 116+00-L- Ut to Downing Creek. The existing RCBC will be extended on the south side. There will be dual 30inch pipes discharging very close to Downing Creek at sta.126+60. An energy dissipation device will be investigated for this outfall.

Response: At the field meeting (see attached) it was decided to not retain the existing 30" pipe, but replace it with a 42" pipe and a riprap pad at the outlet.

Site 4. STA. 90+00-L- to 132+00-L- Downing Creek. There will be no direct impacts to Downing Creek.

Site 5. STA. 137+67-L- Ut to John Reese Branch (JRB). Existing 4x3 RCBC will be extended on south side with a RCBC. The outlet of this structure will be reviewed at the field visit. It appears the outlet channel has been filled in.

Response: This structure will be extended with a junction box and a 54" pipe.

Site 6. STA. 144+00-L- Ut JRB. Existing 5x4 RCBC will be extended with a 66 inch pipe on the south side.

Site 7. STA. 154+50-L- Ut to JRB. Stream at outlet will be reviewed in the field to determine if plugging of the pipe will create an impact.

Response: From the field visit it was determined that this site is not jurisdictional.

Site 8. STA. 158+50-L- Ut to JRB. Stream at outlet will be reviewed in the field to determine if plugging of the pipe will create an impact.

Response: From the field visit it was determined that this site was not jurisdictional.

Site 9. STA. 163+00-L- Ut to JRB. Structure to be extended on the south side with a pipe.

Site 10. STA 172+00-L- Ut to JRB. Structure to be extended on south side with a pipe. NEU commented that JRB did not cross the road but continued on north side.

Site 11. STA. 132+00 to 177+00-L- JRB. There will be no direct impact to JRB between these stations.

Site 12. STA. 191+50-L- Byers Branch. Existing 5x3 RCBC is being extended on both ends with a RCBC. Discussion about the benefit of burying pipes. NCDWQ talked about a study DWQ was doing in regard to burying pipes.

Site 13. STA. 202+00-L- Ut to Byers Branch. Existing 4x6 RCBC will be extended on both ends. NCWRC ask about how wide the stream floodplain was and is it possible to have pipe relief in the floodplain. At the time of the meeting it was not known if floodplain pipes were needed or possible to install. This will be investigated during final design.

Site 14. STA. 226+00-L- Cranford Branch. The existing 6x5 RCBC is located in Chatuge Lake. It's planned to extend the existing headwalls to accommodate additional shoulder work. TVA pointed out that the normal pool elevation for the lake is 1926 not 1913.8 as depicted on the plan.

Site 15. STA. 236+00-L- Patterson Branch/Hiwasse River-Chatuge Lake. It's planned to extend the existing headwalls of the existing 6x5 RCBC to accommodate additional work.

Site 16. STA. 247+00-L- Ut to Hiwasse River-Chatuge Lake. The headwalls on the existing 5x5 RCBC will be extended to accommodate shoulder work.

Site 17. STA. 252+00-L- Ut to Hiwasse River-Chatuge Lake. The stream is shown in the existing roadway ditch on the south side and will need to be reviewed in the field.

Site 18. STA. 254+00-L- Ut to Hiwasse River-Chatuge Lake. The stream is shown in the existing roadway ditch on the south side and will need to be reviewed in the field.

rch

STORMWATER MANAGEMENT PLAN

A-0011BB, State Project 32574.1.4 Date:4/25/07
Clay County
Hydraulics Project Engineer: R.C. Henegar, PE

ROADWAY DESCRIPTION

The project involves two lane improvements to US 64 from just east of the Hiwassee River to NC 175. The overall length of the project is 3.92 miles. The project will widen existing US 64 to provide 12-foot travel lanes and 10-foot useable shoulders (including 4-foot paved shoulders). Turn lanes will be constructed at selected intersections. Where turn lanes are proposed, an additional 12-foot lane will be constructed.

ENVIRONMENTAL DESCRIPTION

This project is located in the Hiwassee River Basin. There are multiple stream crossings and lake crossings on this project. Chatuge Lake has a classification of 'B', John Reese Branch, Byers Branch and Downing Creek have a classification of 'C'. There are two wetland sites on this project.

STORMWATER MANAGEMENT AND MAJOR STRUCTURES

Storm drainage is being discharged as far away from the stream and conveyed as much through grass lined ditches as practicable. There are four RCBC's in Lake Chatuge. None of these culverts will need to be extended. There are 7 culverts being extended on this project. Three are being extended with RCBC's while the rest being extended with pipes.

OTHERS

The proposed roadway was shifted to the south in order to avoid impacts to John Reese Branch. This eliminated the need to extend existing RCBC's on their downstream end adjacent to John Reese Branch. In the vicinity of Lake Chatuge the roadway slopes were steepened in order to minimize surface water impacts.

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:Asheville, NC

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:North Carolina County/parish/borough: Clay City: Hayesville
Center coordinates of site (lat/long in degree decimal format): Lat. 35.0387° N, Long. 83.7644° W.
Universal Transverse Mercator:
Name of nearest waterbody: UT to Hiwassee Branch
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Hiwasee River
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): June 8, 2006

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Pick List *"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 Pick List *"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: 0.184acres in Lake Chatuge linear feet: 442 width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: Pick List
      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: .

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

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: 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]:
   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:
Presence of run/riffle/pool complexes. Explain:
Tributary geometry: Pick List
Tributary gradient (approximate average slope): %

(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: Stream is a blue line 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. Verification on June 8, 2006.

Provide estimates for jurisdictional waters in the review area (check all that apply):
☒ Tributary waters: **448** linear feet width (ft).
☒ Other non-wetland waters: **0.016 (Lake Chatuge)** 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: .

☐ 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 verification June 8, 2006.
- ☒ 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:Asheville, NC

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:North Carolina County/parish/borough: Clay City: Hayesville
Center coordinates of site (lat/long in degree decimal format): Lat. 35.0385° N, Long. 83.7994° W.
Universal Transverse Mercator:
Name of nearest waterbody: UT to Downing Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Hiwasee River
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): June 8, 2006

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Pick List *"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 Pick List *"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: linear feet: 115 width (ft) and/or acres.
   Wetlands: 0.032 acres.

   c. **Limits (boundaries) of jurisdiction** based on: Pick List
   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: .

   Summarize rationale supporting determination: .

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

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: 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]:
   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: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: Pick List
Tributary gradient (approximate average slope): %

(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: .
   - ☒ 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: **115** 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: **Field Verification.**

☐ 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:

---

[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:Hayesville.
- ☐ 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: .
- ☐ 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:Asheville, NC

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:North Carolina County/parish/borough: Clay City: Hayesville
Center coordinates of site (lat/long in degree decimal format): Lat. 35.0387° N, Long. 83.7644° W.
Universal Transverse Mercator:
Name of nearest waterbody: UT to Byers Branch
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Hiwasee River
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): June 8, 2006

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Pick List *"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 Pick List *"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: linear feet: 129 width (ft) and/or acres.
      Wetlands: 0.027 acres.

   c. **Limits (boundaries) of jurisdiction** based on: Pick List
      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: .

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

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: 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]: .
   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: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: Pick List
Tributary gradient (approximate average slope): %

(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: Stream is a blue line 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: 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: .
     - ☐ 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: .

---

[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:Hayesville.
- ☒ 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: June 8, 2006.
- ☒ 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:Asheville, NC

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:North Carolina County/parish/borough: Clay City: Hayesville
Center coordinates of site (lat/long in degree decimal format): Lat. 35.0387° N, Long. 83.7644° W.
Universal Transverse Mercator:
Name of nearest waterbody: John Reese Branch and UTs to John Reese Branch
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Hiwasee River
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): June 8, 2006

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There Pick List *"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 Pick List *"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: linear feet: 115 width (ft) and/or acres.
   Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: Pick List
   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:

   Summarize rationale supporting determination:

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

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: 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]:
   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: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: Pick List
Tributary gradient (approximate average slope): %

(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: Stream is a blue line 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: Verification on June 8, 2006.

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☒ Tributary waters: **115** 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: .
     - ☐ 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: .

---

[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:Hayesville.
- ☐ 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 verification June 8, 2006.
- ☐ Applicable/supporting case law: .
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

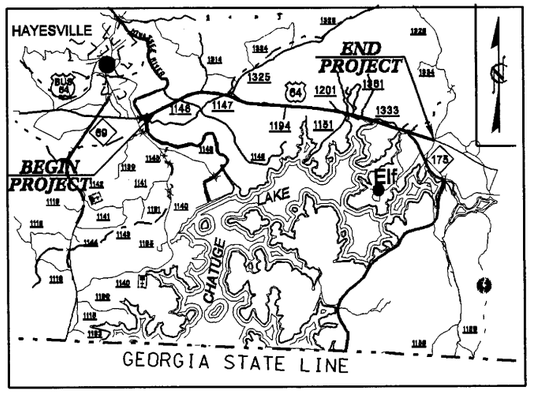
B. ADDITIONAL COMMENTS TO SUPPORT JD:

09/08/99

TIP PROJECT: A-0011BB

CONTRACT: 32574.1.4

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLAY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A-0011BB	1	

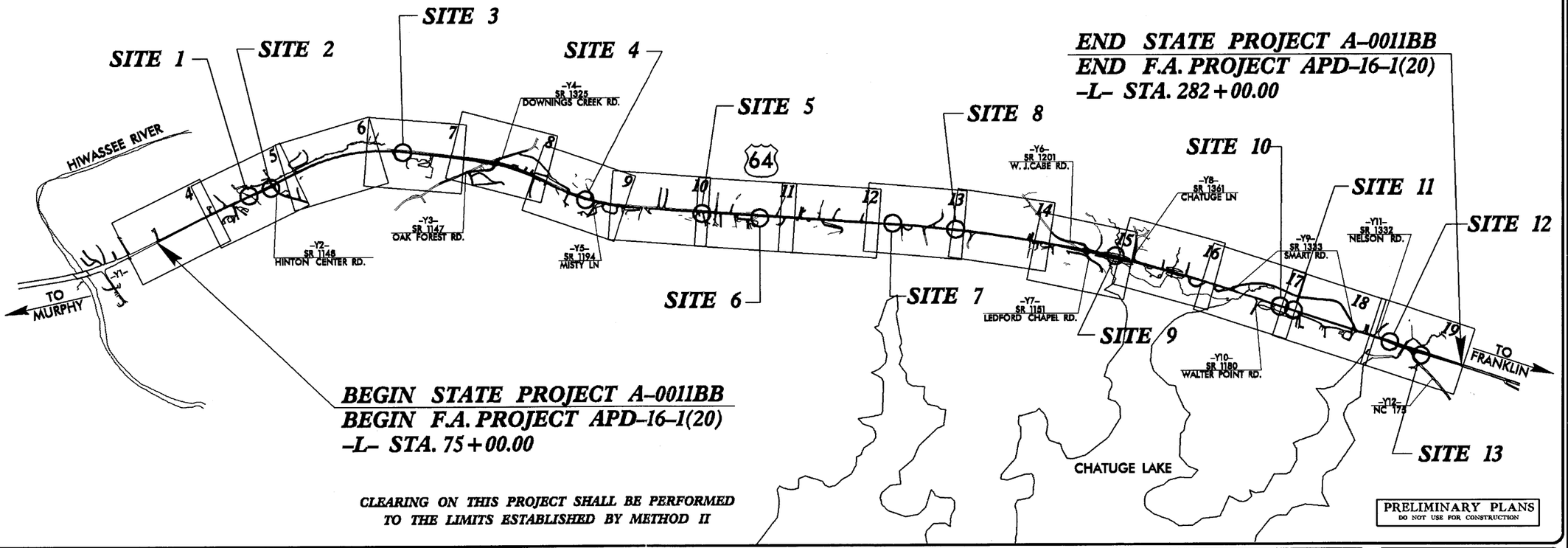
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
32574.1.4	APD-16-1(20)	P. E.

LOCATION: *US 64 FROM EAST OF THE HIWASSEE RIVER TO EAST OF NC 175*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE GUARDRAIL, AND CULVERTS*

NAD 83

WETLAND PERMIT



BEGIN STATE PROJECT A-0011BB
BEGIN F.A. PROJECT APD-16-1(20)
-L- STA. 75+00.00

END STATE PROJECT A-0011BB
END F.A. PROJECT APD-16-1(20)
-L- STA. 282+00.00

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 2003 = 6,000 - 7,600
ADT 2030 = 6,800 - 13,400
DHV = 12%
D = 60%
T = 8% *
V = 60 MPH

* TTST = 2%
DUAL = 6%

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT APD-16-1(20) = 3.920 MILES
TOTAL LENGTH STATE PROJECT 32574.1.4 = 3.920 MILES

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 2006

LETTING DATE: OCTOBER 2008

J. S. GOODNIGHT
PROJECT ENGINEER

S. D. KENDALL
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

10-SEP-2007 08:15
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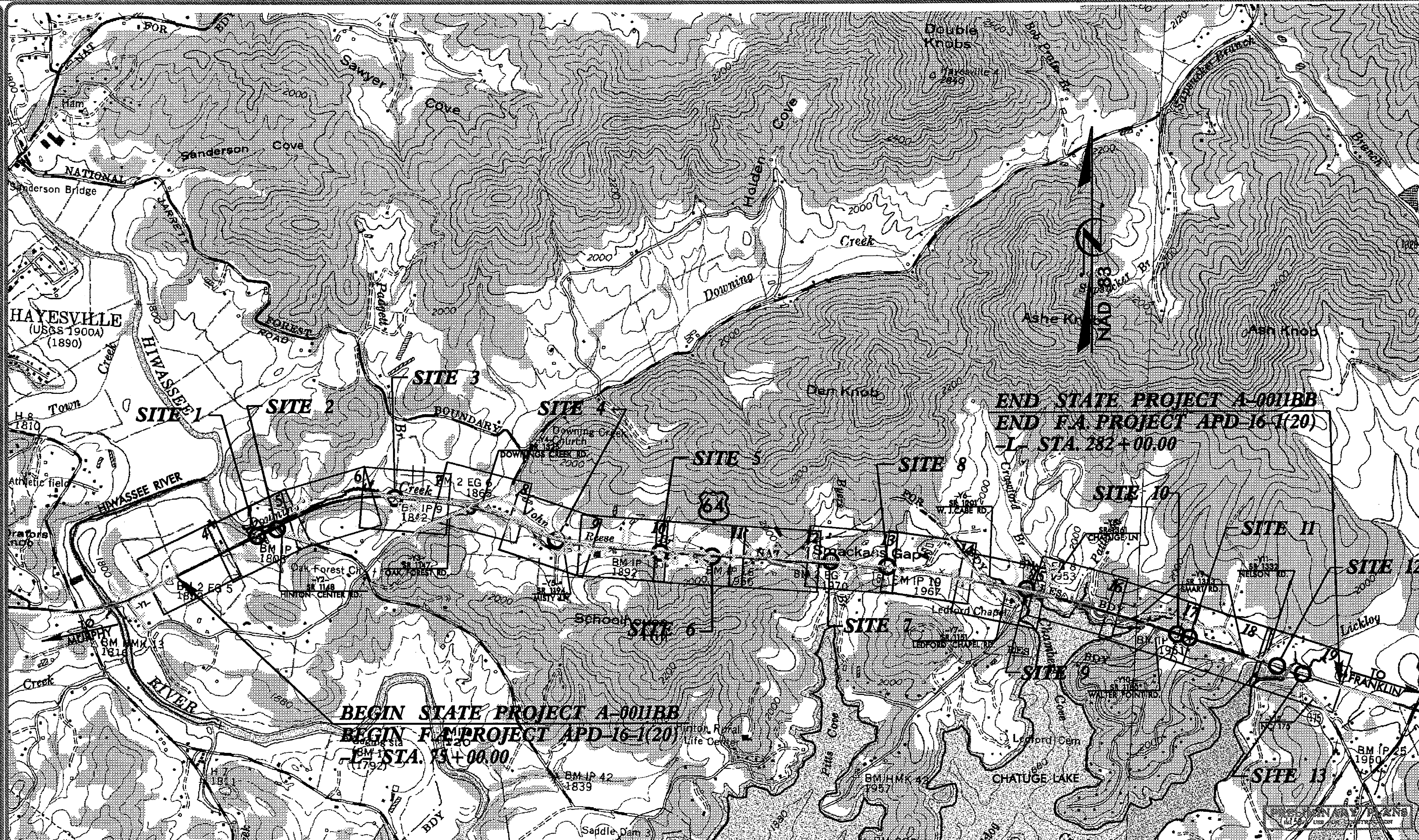
rlassiter
A1 HY221542

Permit Drawing
Sheet 1 of 35

TIP PROJECT: A-0011BB

CONTRACT: 32574.1.4



GRAPHIC SCALES	DESIGN DATA
50 25 0 50 100 PLANS	ADT 2003 = 6,000 - 7,600
50 25 0 50 100 PROFILE (HORIZONTAL)	ADT 2030 = 6,800 - 13,400
10 5 0 10 20	DHV = 12%
	D = 60%
	T = 8% *
	V = 60 MPH

WETLAND PERMIT

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 2006 — J. S. GOODNIGHT, PROJECT ENGINEER

LETTING DATE: OCTOBER 2008 — S. D. KENDALL, PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Permit Drawing
Sheet 2 of 35

6/2/99

PAVEMENT SCHEDULE

(PRELIMINARY PAVEMENT DESIGN)

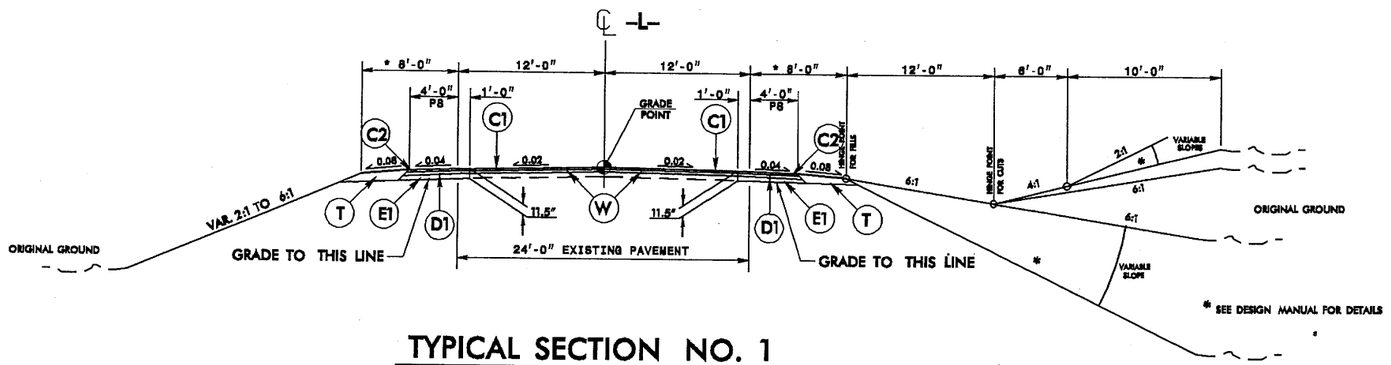
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 166 LBS. PER SQ. YD.	E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 166 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.	T	EARTH MATERIAL.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE 2-A FOR WEDGING DETAILS).

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

PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

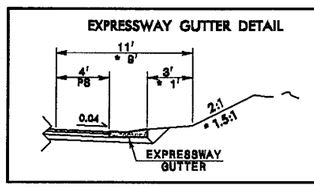


TYPICAL SECTION NO. 1

-L- Sta. 75+00.00 to Sta. 85+00.00
-L- Sta. 190+00.00 to Sta. 284+00.00

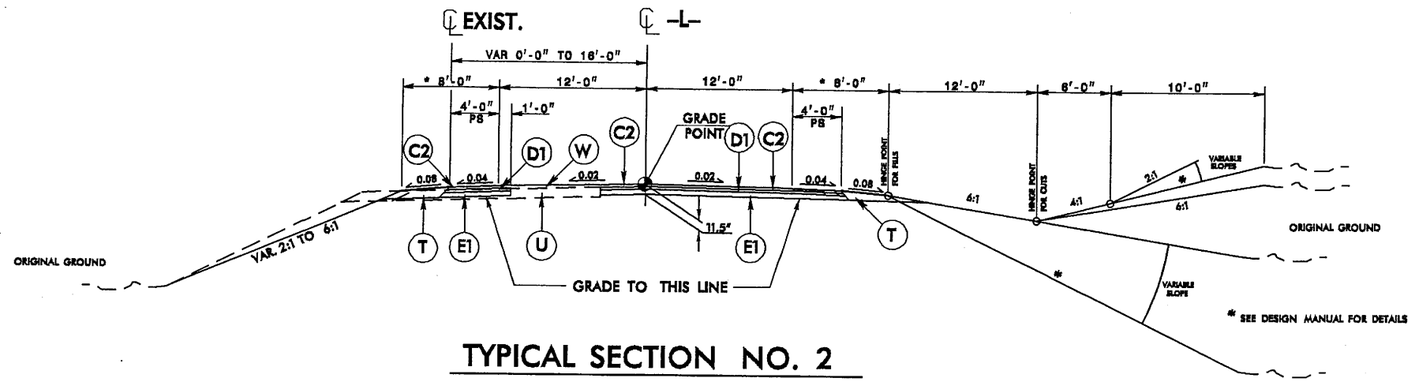
* 11' w/ GUARDRAIL

EXPRESSWAY GUTTER DETAIL



USE WITH TYPICAL SECTION NO. 1 & 2

-L- Sta. 83+00 to Sta. 87+74 +/- RT.
-L- Sta. 150+94 to Sta. 153+32 +/- RT.
* -L- Sta. 179+41 to Sta. 186+00 +/- RT.
-L- Sta. 216+84 to Sta. 221+68 +/- RT.
-L- Sta. 256+10 to Sta. 262+50 +/- RT.

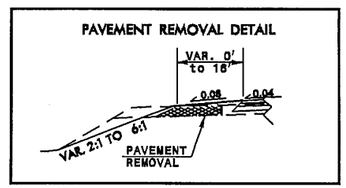


TYPICAL SECTION NO. 2

-L- Sta. 85+00.00 to Sta. 190+00.00

* 11' w/ GUARDRAIL

PAVEMENT REMOVAL DETAIL



USE WITH TYPICAL SECTION NO. 2

-L- Sta. 85+00.00 to Sta. 129+90.00 LT.
-L- Sta. 132+15.00 to Sta. 190+00.00 LT.

Permit Drawing
Sheet 3 of 35

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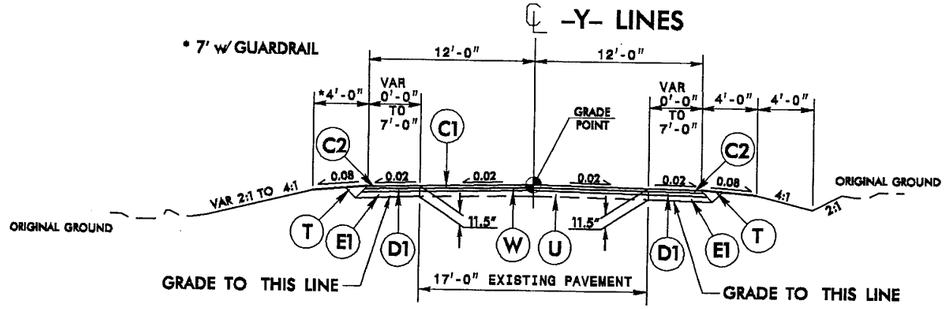
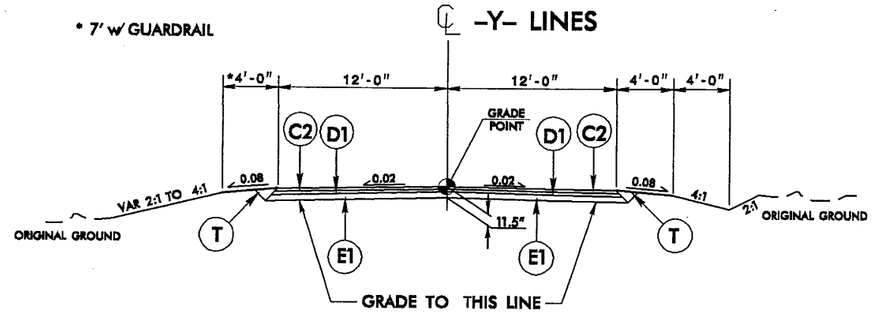
$$$$USERNAME$$$$



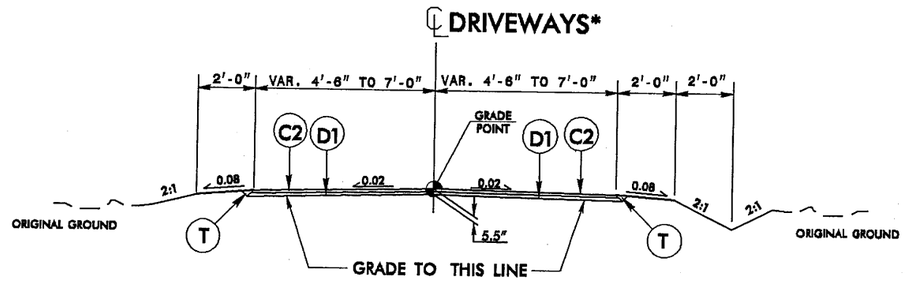
TYPICAL SECTION NO. 3

–Y2– Sta. 10+12.06 to Sta. 11+18.57
–Y3– Sta. 14+75.00 to Sta. 15+50.00
–Y4– Sta. 16+30.00 to Sts. 17+88.77
–Y5– Sta. 11+25.00 to Sta. 11+70.00
–Y6– Sta. 10+75.00 to Sta. 11+50.00
–Y7– Sta. 10+12.02 to Sta. 11+47.66
–Y8– Sta. 13+50.00 to Sta. 14+56.73
–9A– Sta. 10+12.02 to Sta. 11+22.75
–9B– Sta. 30+80.00 to Sta. 32+00.65
–Y10– Sta. 10+12.32 to Sta. 11+30.00



TYPICAL SECTION NO. 4

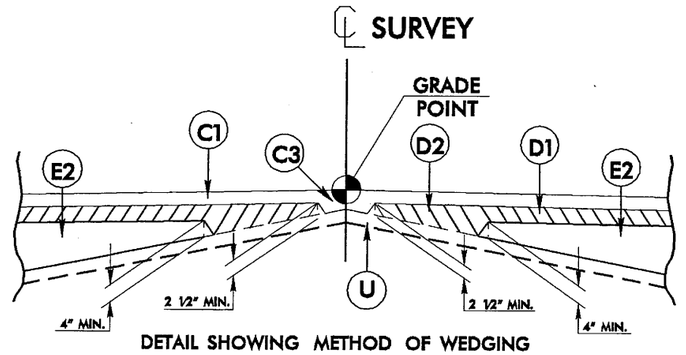
–Y3– Sta. 10+29.03 to Sta. 14+75.00
–Y5– Sta. 10+26.20 to Sta. 11+25.00
–Y6– Sta. 11+50.00 to Sta. 12+14.61



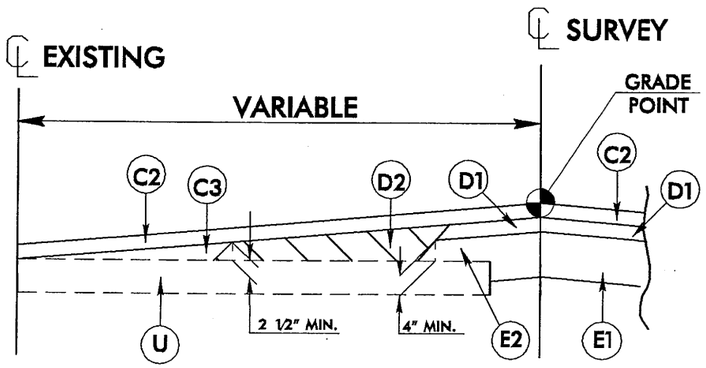
TYPICAL SECTION NO. 5

–DR1LT– Sta. 10+00.00 to Sta.11+66.73
–DR1RT– Sta. 10+12.04 to Sta. 11+84.01
–DR2RT– Sta. 10+12.00 to Sta. 12+48.17

*ALL EXISTING GRAVEL DRIVEWAYS TO BE PAVED TO THE PROPOSED R/W OR AS DIRECTED BY THE ENGINEER (SEE TYPICAL SECTION NO. 5 FOR PAVEMENT DESIGN)



DETAIL SHOWING METHOD OF WEDGING



Detail Showing Method Of Wedging

PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	2-A

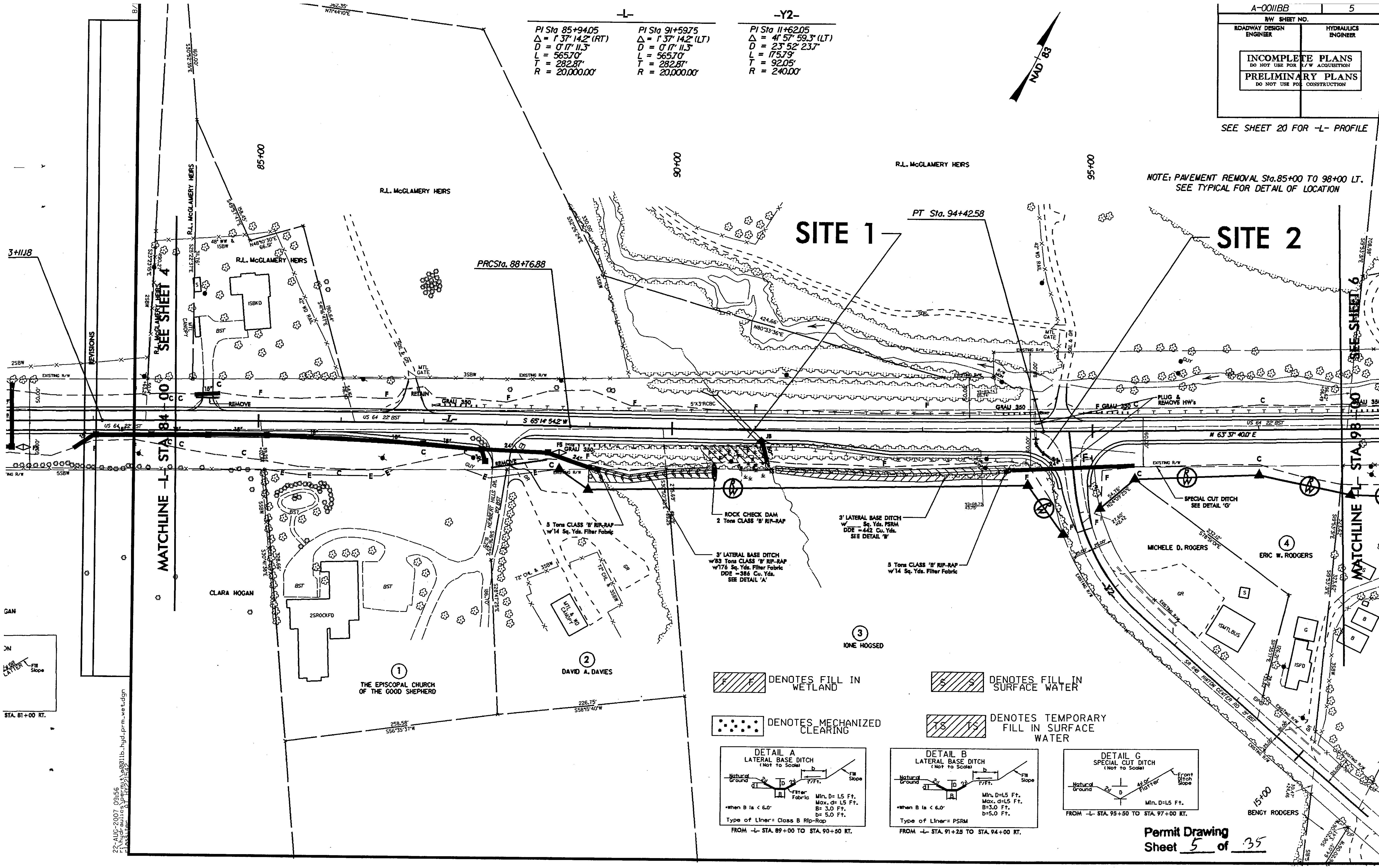
ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

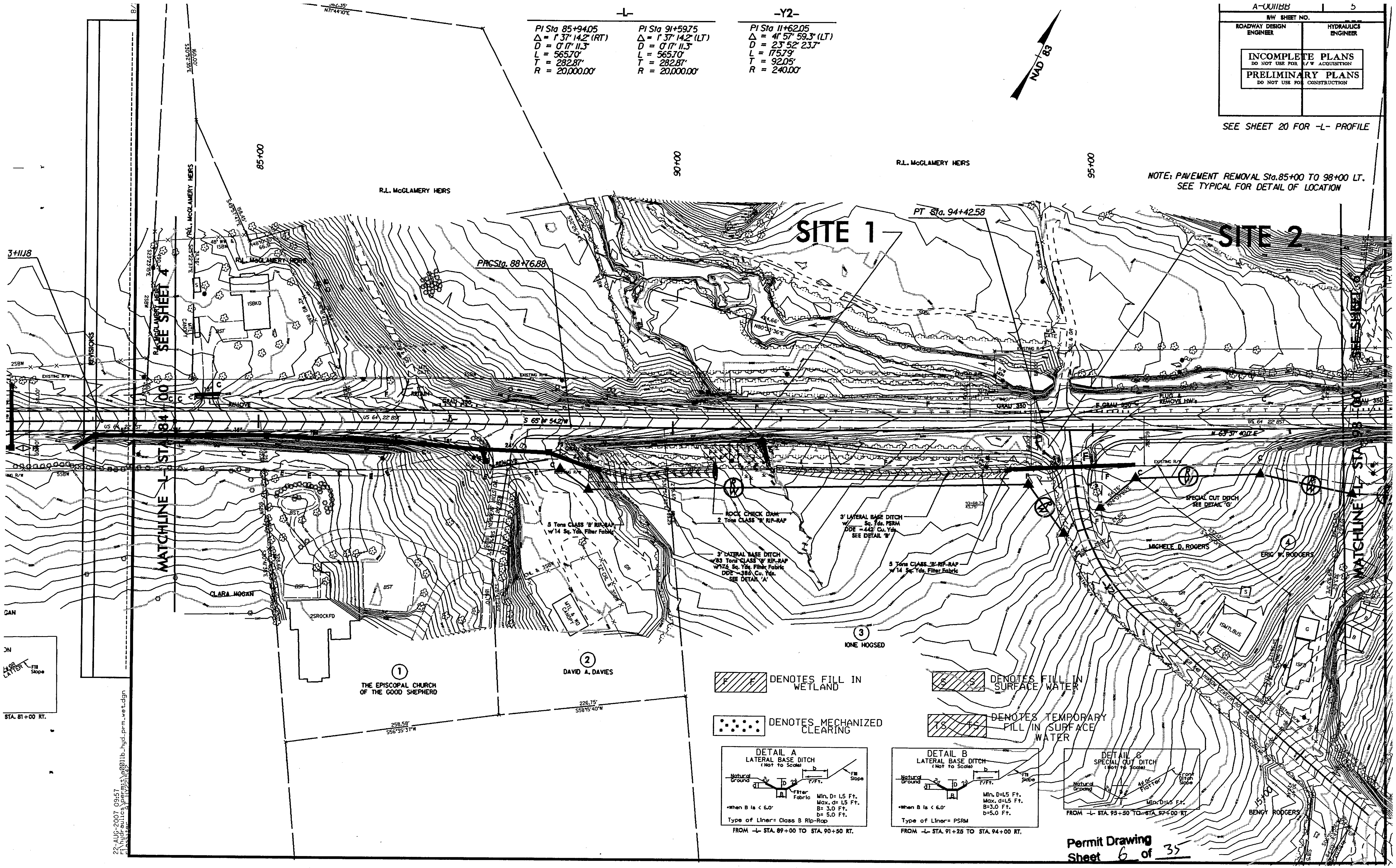
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

C1	1½" ACSC TYPE S9.5B
C2	3" ACSC TYPE S9.5B
C3	VAR. ACSC TYPE S9.5B
D1	3" ACIC TYPE I19.0B
D2	VAR. ACIC TYPE I19.0B
E1	5½" ACBC TYPE B25.0B
E2	VAR. ACBC TYPE B25.0B
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

Permit Drawing
Sheet 4 of 35



A-0011BB 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SEE SHEET 20 FOR -L- PROFILE
-L-
PI Sta 85+94.05
PI Sta 91+59.75
-Y2-
PI Sta 11+62.05
NAD 83
NOTE: PAVEMENT REMOVAL Sta.85+00 TO 98+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION
SITE 1
SITE 2
PT Sta. 94+42.58
PRCSta. 88+76.88
R.L. McCLAMERY HEIRS
MATCHLINE -L- STA. 84+00 SEE SHEET 4
MATCHLINE -L- STA. 98+00 SEE SHEET 6
ROCK CHECK DAM
2 Tons CLASS 'B' RIP-RAP
3' LATERAL BASE DITCH
SPECIAL CUT DITCH
SEE DETAIL 'G'
CLARA HOGAN
THE EPISCOPAL CHURCH OF THE GOOD SHEPHERD
DAVID A. DAVIES
IONE HOGSED
MICHELE D. ROGERS
ERIC W. RODGERS
BENGY RODGERS
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY FILL IN SURFACE WATER
DETAIL A
LATERAL BASE DITCH
FROM -L- STA. 89+00 TO STA. 90+50 RT.
DETAIL B
LATERAL BASE DITCH
FROM -L- STA. 91+25 TO STA. 94+00 RT.
DETAIL G
SPECIAL CUT DITCH
FROM -L- STA. 95+50 TO STA. 97+00 RT.
Permit Drawing
Sheet 5 of 35


-L-
PI Sta 85+94.05
Δ = 1° 37' 14.2" (RT)
D = 0° 17' 11.3"
L = 565.70'
T = 282.87'
R = 20,000.00'
PI Sta 91+59.75
Δ = 1° 37' 14.2" (LT)
D = 0° 17' 11.3"
L = 565.70'
T = 282.87'
R = 20,000.00'
-Y2-
PI Sta 11+62.05
Δ = 41° 57' 59.3" (LT)
D = 23° 52' 23.7"
L = 175.79'
T = 92.05'
R = 240.00'
NAD 83
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SEE SHEET 20 FOR -L- PROFILE
NOTE: PAVEMENT REMOVAL Sta.85+00 TO 98+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION
R.L. McCLAMERY HEIRS
SITE 1
SITE 2
PT Sta. 94+42.58
PRCSta. 88+76.88
MATCHLINE -L- STA. 84+00
SEE SHEET 4
MATCHLINE -L- STA. 98+00
US 64 22' BST
ROCK CHECK DAM
2 Tons CLASS 'B' RIP-RAP
5 Tons CLASS 'B' RIP-RAP
W/14 Sq. Yds. Filter Fabric
SPECIAL CUT DITCH
SEE DETAIL 'G'
CLARA HOGAN
MICHELE D. ROGERS
ERIC W. RODGERS
BENCY RODGERS
1 THE EPISCOPAL CHURCH OF THE GOOD SHEPHERD
2 DAVID A. DAVIES
3 IONE HOGSED
DENOTES FILL IN WETLAND
DENOTES FILL IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY FILL IN SURFACE WATER
DETAIL A
LATERAL BASE DITCH
(Not to Scale)
Type of Liner= Class B Rip-Rap
FROM -L- STA. 89+00 TO STA. 90+50 RT.
DETAIL B
LATERAL BASE DITCH
(Not to Scale)
Type of Liner= PSRM
FROM -L- STA. 91+25 TO STA. 94+00 RT.
DETAIL G
SPECIAL CUT DITCH
(Not to Scale)
FROM -L- STA. 95+50 TO STA. 97+00 RT.
Permit Drawing
Sheet 6 of 35

A-0011BB | X-8

SITE 1

WETLAND BOUNDARY

WETLAND BOUNDARY

1812.97

90+50.0000

1814.63

89+50.0000

1816.53

89+00.0000

Permit Drawing Sheet 2 of 3

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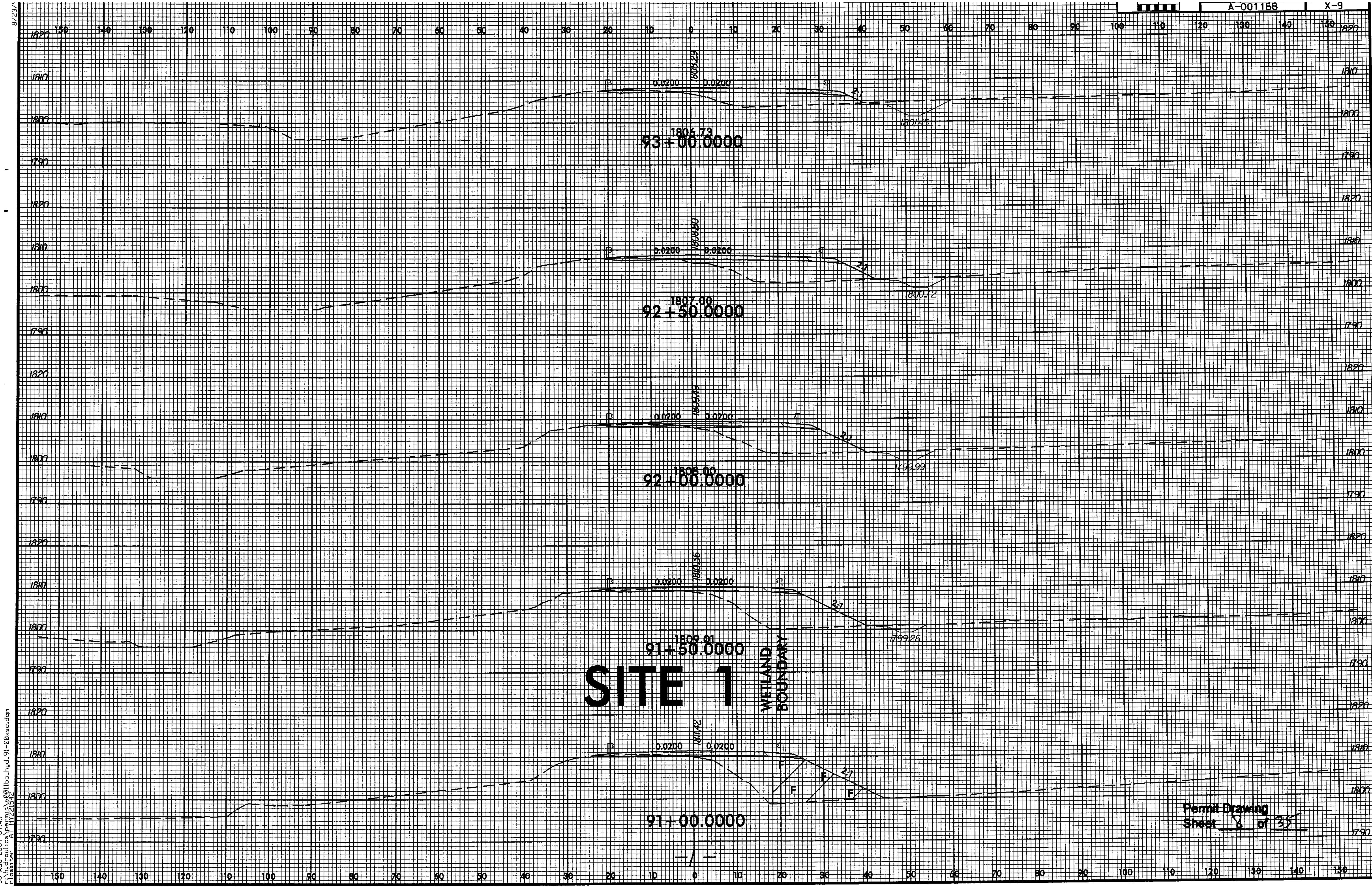
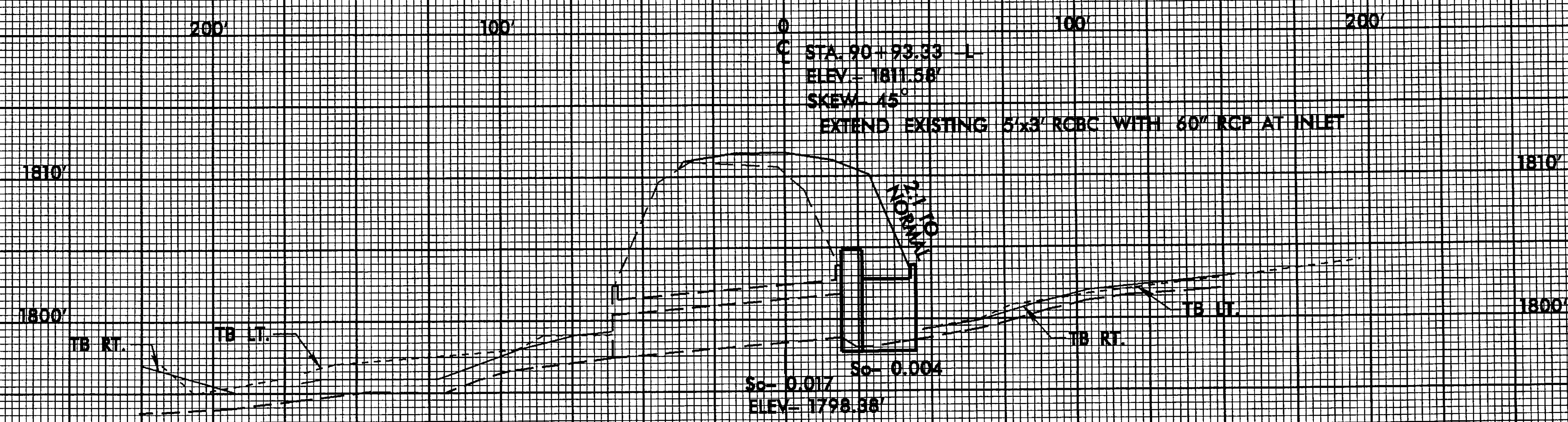


A-0011BB
X-9
1806.73
93+00.0000
180129
1800.45
1807.00
92+50.0000
1808.30
1800.72
1808.00
92+00.0000
1809.49
1799.99
1809.01
91+50.0000
1810.36
1799.26
SITE 1
WETLAND BOUNDARY
91+00.0000
1811.42
0.0200
2:1
F
Permit Drawing
Sheet 8 of 35



SITE 1

Permit Drawing
Sheet 9 of 35

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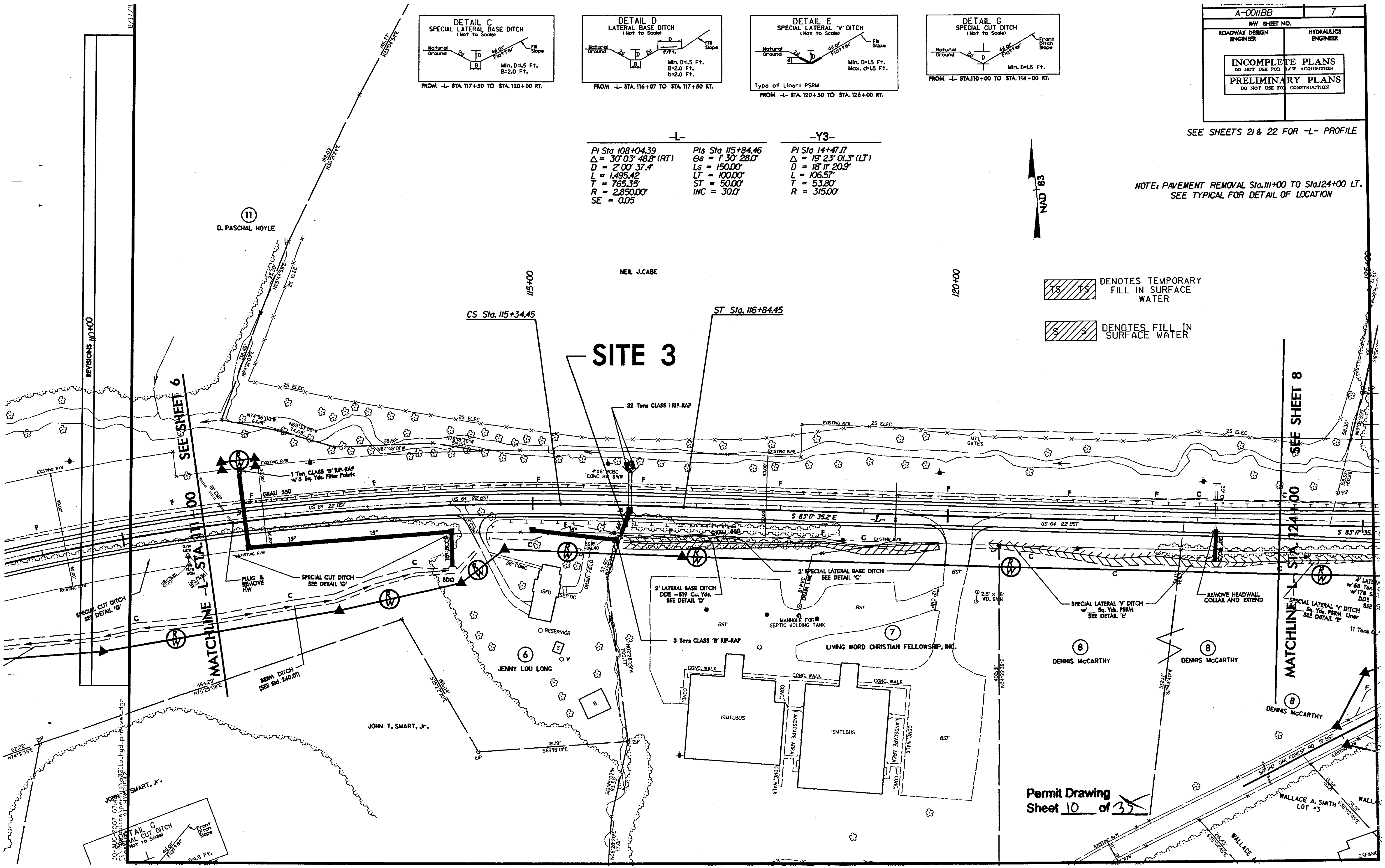
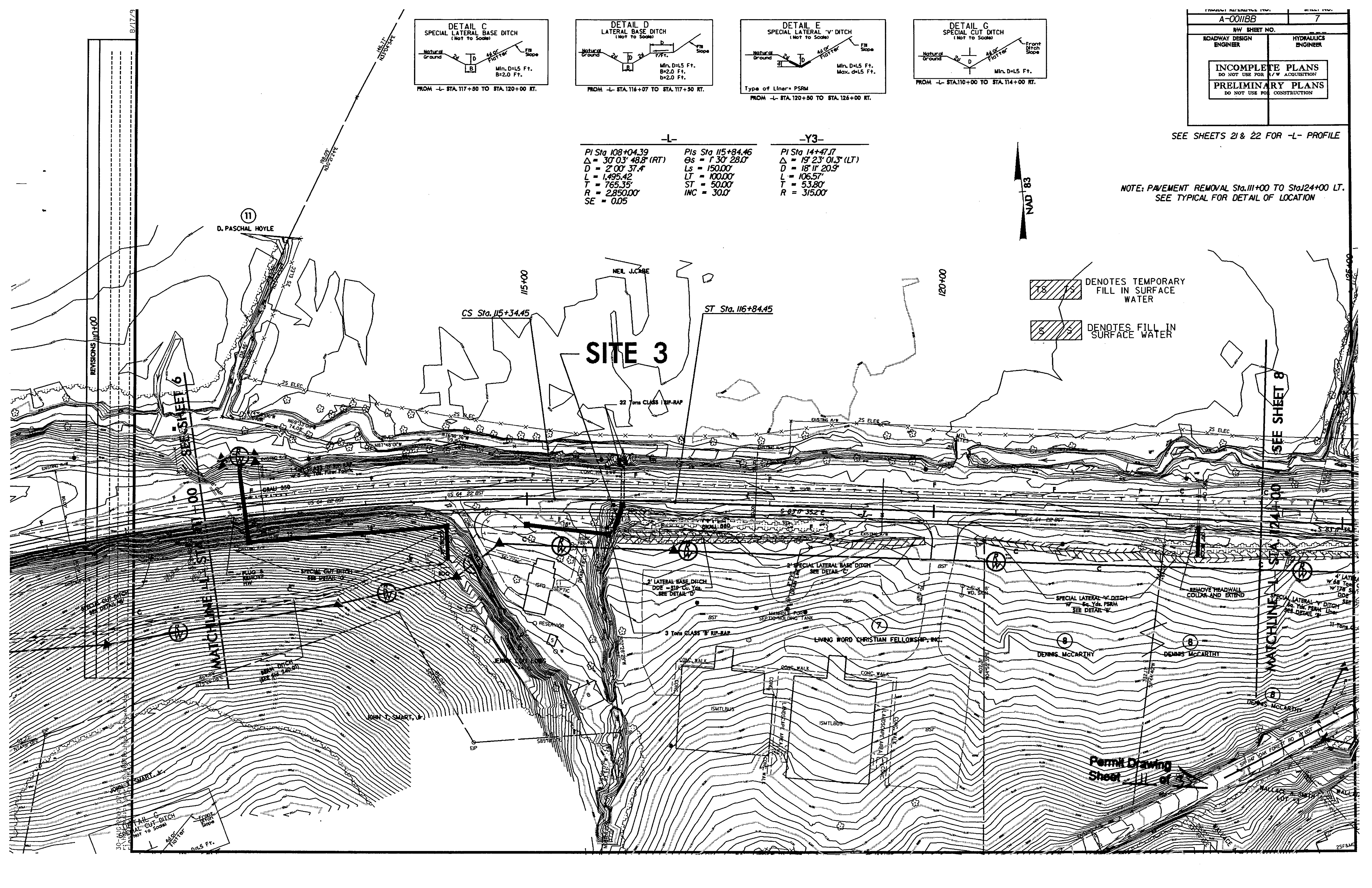


A-0011BB
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DETAIL C
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D=1.5 Ft.
B=2.0 Ft.
FROM -L- STA. 117+50 TO STA. 120+00 RT.
DETAIL D
LATERAL BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
B=2.0 Ft.
b=2.0 Ft.
FROM -L- STA. 116+07 TO STA. 117+50 RT.
DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D=1.5 Ft.
Max. d=1.5 Ft.
Type of Liner= PSRM
FROM -L- STA. 120+50 TO STA. 126+00 RT.
DETAIL G
SPECIAL CUT DITCH
(Not to Scale)
Front Ditch Slope
Min. D=1.5 Ft.
FROM -L- STA.110+00 TO STA. 114+00 RT.
SEE SHEETS 21 & 22 FOR -L- PROFILE
-L-
PI Sta 108+04.39
Δ = 30°03' 48.8" (RT)
D = 2°00' 37.4"
L = 1,495.42
T = 765.35'
R = 2,850.00'
SE = 0.05
PIs Sta 115+84.46
θs = 1° 30' 28.0"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'
-Y3-
PI Sta 14+47.17
Δ = 19° 23' 01.3" (LT)
D = 18° 11' 20.9"
L = 106.57'
T = 53.80'
R = 315.00'
NAD 83
NOTE: PAVEMENT REMOVAL Sta.111+00 TO Sta.124+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION
DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER
SITE 3
CS Sta. 115+34.45
ST Sta. 116+84.45
D. PASCHAL HOYLE
NEIL J.CABE
REVISIONS
SEE SHEET 6
SEE SHEET 8
MATCHLINE -L- STA. 111+00
MATCHLINE -L- STA. 124+00
32 Tons CLASS I RIP-RAP
1 Ton CLASS 'B' RIP-RAP w/ 5 Sq. Yds. Filter Fabric
PLUG & REMOVE HW
SPECIAL CUT DITCH SEE DETAIL 'G'
2' SPECIAL LATERAL BASE DITCH SEE DETAIL 'C'
2' LATERAL BASE DITCH DDE =519 Cu. Yds. SEE DETAIL 'D'
3 Tons CLASS 'B' RIP-RAP
SPECIAL LATERAL 'V' DITCH SEE DETAIL 'E'
REMOVE HEADWALL COLLAR AND EXTEND
BERM DITCH (SEE Std. 240.01)
US 64 22' BST
S 83°17' 35.2" E
JENNY LOU LONG
JOHN T. SMART, Jr.
LIVING WORD CHRISTIAN FELLOWSHIP, INC.
MANHOLE FOR SEPTIC HOLDING TANK
DENNIS McCARTHY
WALLACE A. SMITH LOT #3
SR 1147 OAK FOREST RD 18' BST
Permit Drawing
Sheet 10 of 35



A-0011BB
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DETAIL C
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
B=2.0 Ft.
FROM -L- STA. 117+50 TO STA. 120+00 RT.
DETAIL D
LATERAL BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
B=2.0 Ft.
b=2.0 Ft.
FROM -L- STA. 116+07 TO STA. 117+50 RT.
DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D=1.5 Ft.
Max. d=1.5 Ft.
Type of Liner= PSRM
FROM -L- STA. 120+50 TO STA. 126+00 RT.
DETAIL G
SPECIAL CUT DITCH
(Not to Scale)
Min. D=1.5 Ft.
FROM -L- STA.110+00 TO STA. 114+00 RT.
SEE SHEETS 21 & 22 FOR -L- PROFILE
-L-
PI Sta 108+04.39
Δ = 30° 03' 48.8" (RT)
D = 2° 00' 37.4"
L = 1,495.42
T = 765.35'
R = 2,850.00'
SE = 0.05
PIs Sta 115+84.46
θs = 1° 30' 28.0"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'
-Y3-
PI Sta 14+47.17
Δ = 19° 23' 01.3" (LT)
D = 18° 11' 20.9"
L = 106.57'
T = 53.80'
R = 315.00'
NAD 83
NOTE: PAVEMENT REMOVAL Sta.111+00 TO Sta.124+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION
D. PASCHAL HOYLE
NEIL J. CABE
CS Sta. 115+34.45
ST Sta. 116+84.45
SITE 3
DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER
SEE SHEET 6
SEE SHEET 8
MATCHLINE -L- STA. 111+00
MATCHLINE -L- STA. 124+00
32 Tons CLASS I RIP-RAP
3 Tons CLASS 'B' RIP-RAP
LIVING WORD CHRISTIAN FELLOWSHIP, INC.
DENNIS McCARTHY
JOHN T. SMART, Jr.
SPECIAL LATERAL 'V' DITCH
REMOVE HEADWALL COLLAR AND EXTEND
2' SPECIAL LATERAL BASE DITCH SEE DETAIL 'C'
2' LATERAL BASE DITCH SEE DETAIL 'D'
SPECIAL CUT DITCH SEE DETAIL 'G'
Permit Drawing Sheet of

100'

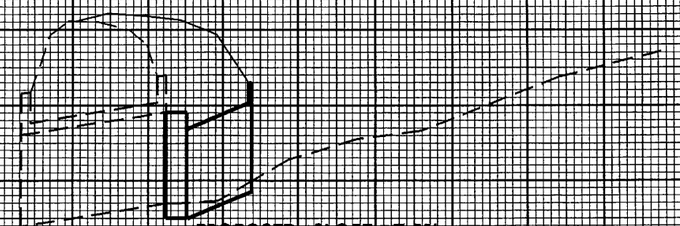
0

100'

℄ STA. 116+18.29 -L-
ELEV= 1845.9
SKEW= 90°
EXTEND 4'x6' RCBC W/66' RCP ON INLET SIDE

1850'

1850'



1840'

1840'

PROPOSED SLOPE= 7.8%

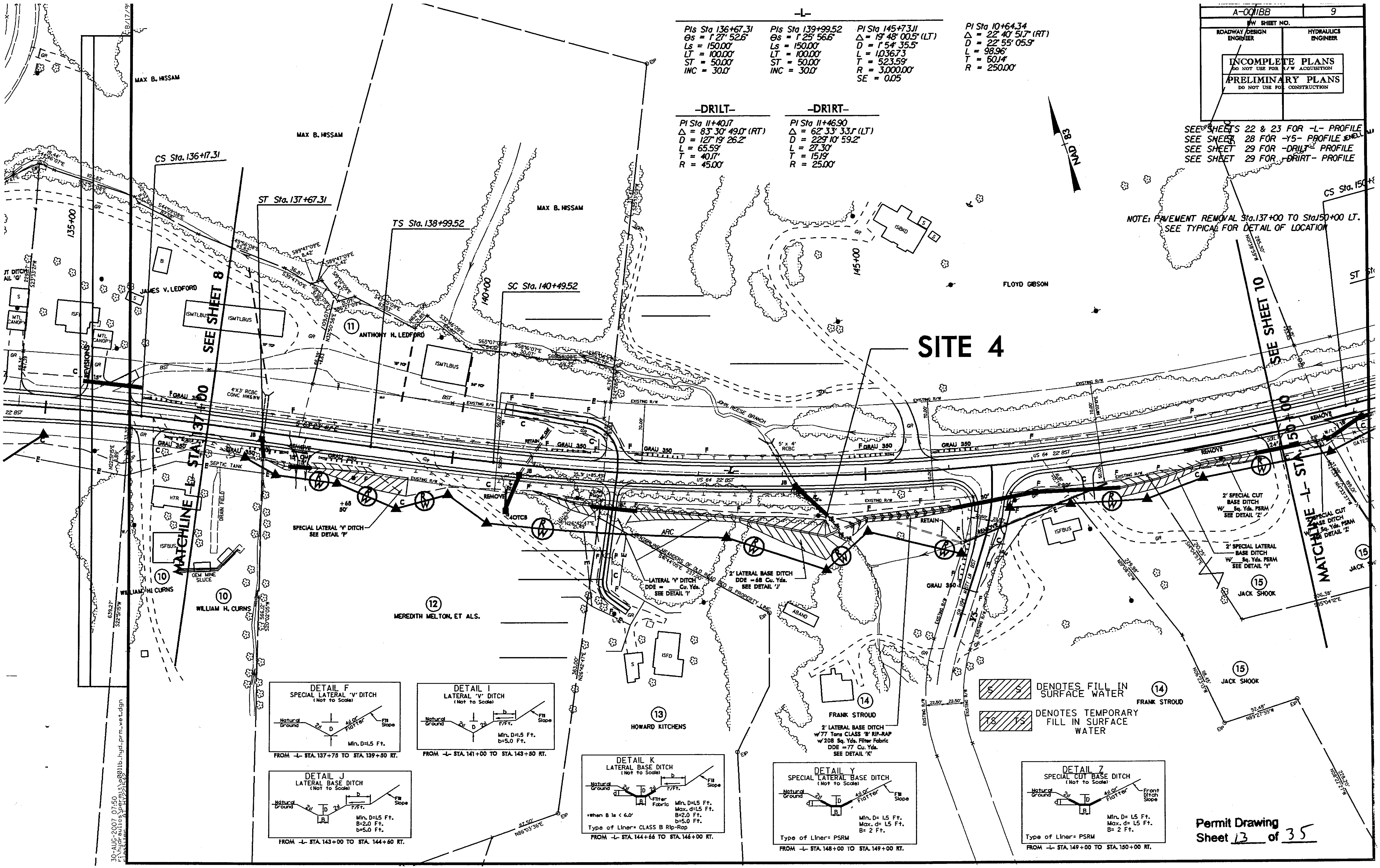
1830'

1830

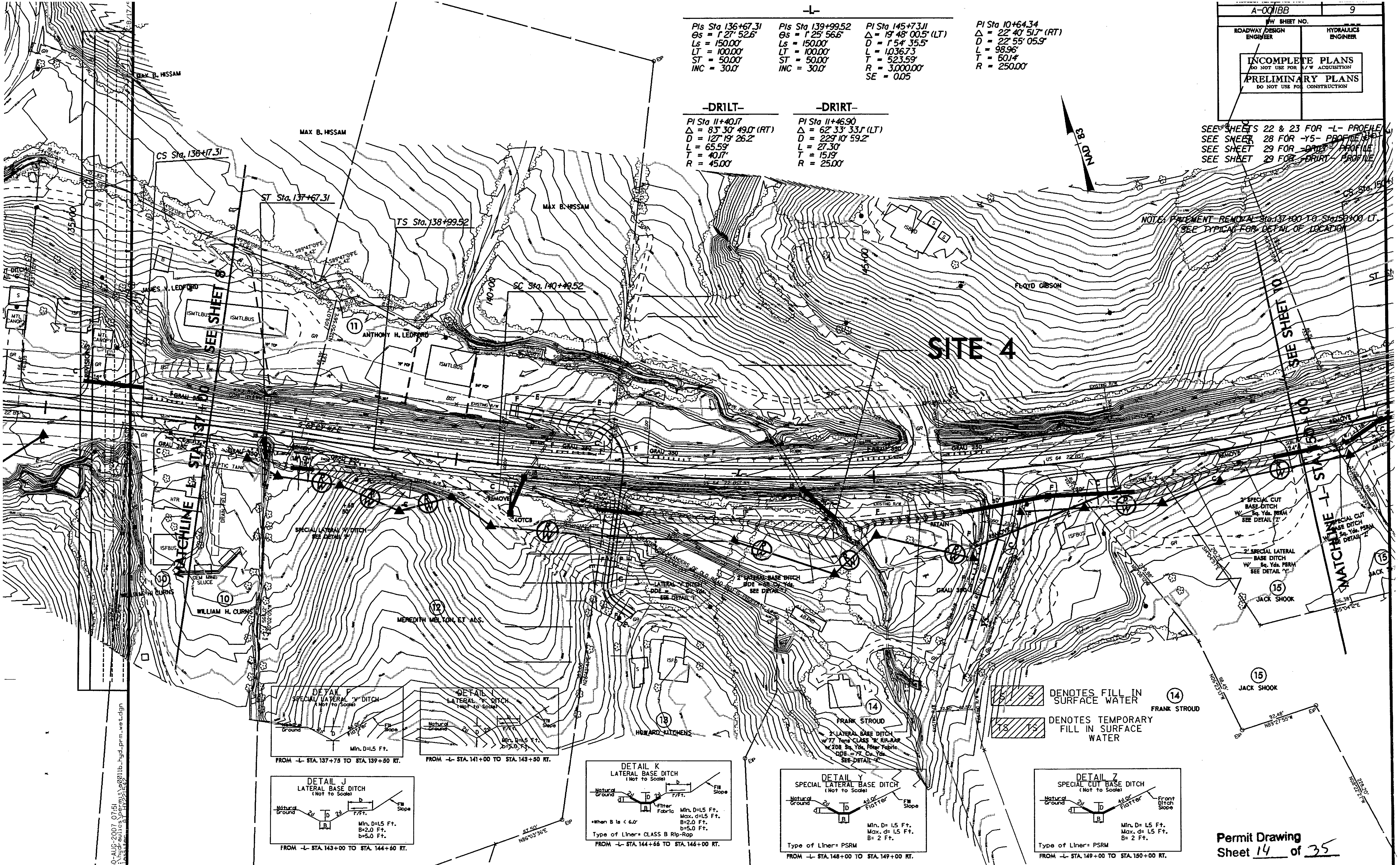
ELEV= 1833.30'
EXISTING BARREL SLOPE =3.16%

SITE 3

Permit Drawing
Sheet 12 of 25



A-0011BB
9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
PIs Sta 136+67.31
Θs = 1° 27' 52.6"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'
PIs Sta 139+99.52
Θs = 1° 25' 56.6"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'
PI Sta 145+73.11
Δ = 19° 48' 00.5" (LT)
D = 1° 54' 35.5"
L = 1,036.73
T = 523.59'
R = 3,000.00'
SE = 0.05
PI Sta 10+64.34
Δ = 22° 40' 51.7" (RT)
D = 22° 55' 05.9"
L = 98.96'
T = 50.14'
R = 250.00'
-DR1LT-
PI Sta 11+40.17
Δ = 83° 30' 49.0" (RT)
D = 127° 19' 26.2"
L = 65.59'
T = 40.17'
R = 45.00'
-DR1RT-
PI Sta 11+46.90
Δ = 62° 33' 33.1" (LT)
D = 229° 10' 59.2"
L = 27.30'
T = 15.19'
R = 25.00'
NAD 83
SEE SHEETS 22 & 23 FOR -L- PROFILE
SEE SHEET 28 FOR -Y5- PROFILE
SEE SHEET 29 FOR -DR1LT- PROFILE
SEE SHEET 29 FOR -DR1RT- PROFILE
NOTE: PAVEMENT REMOVAL Sta.137+00 TO Sta.150+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION
CS Sta. 136+17.31
ST Sta. 137+67.31
TS Sta. 138+99.52
SC Sta. 140+49.52
CS Sta. 150+
ST Sta
MAX B. HISSAM
JAMES V. LEDFORD
ANTHONY H. LEDFORD
FLOYD GIBSON
SITE 4
SEE SHEET 8
SEE SHEET 10
MATCHLINE -L- STA. 137+00
MATCHLINE -L- STA. 150+00
US 64 22' BST
JOHN REESE BRANCH
5' x 4' RCBC
4'X3' RCBC CONC HW&WW
SPECIAL LATERAL 'V' DITCH SEE DETAIL 'F'
LATERAL 'V' DITCH DDE = Cu. Yds. SEE DETAIL 'I'
2' LATERAL BASE DITCH DDE = 68 Cu. Yds. SEE DETAIL 'J'
2' SPECIAL CUT BASE DITCH W/ Sq. Yds. PSRM SEE DETAIL 'Z'
2' SPECIAL LATERAL BASE DITCH W/ Sq. Yds. PSRM SEE DETAIL 'Y'
2' LATERAL BASE DITCH W/77 Tons CLASS 'B' RIP-RAP w/208 Sq. Yds. Filter Fabric DDE = 77 Cu. Yds. SEE DETAIL 'K'
CENTERLINE MEANDERS OF OLD BALD BED IS PROPERTY LINE
WILLIAM H. CURNS
MEREDITH MELTON, ET ALS.
HOWARD KITCHENS
FRANK STROUD
JACK SHOOK
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
DETAIL F
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
4:1 or Flatter
Fill Slope
Min. D=1.5 Ft.
FROM -L- STA. 137+75 TO STA. 139+50 RT.
DETAIL I
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D=1.5 Ft.
b=5.0 Ft.
FROM -L- STA. 141+00 TO STA. 143+50 RT.
DETAIL J
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D=1.5 Ft.
B=2.0 Ft.
b=5.0 Ft.
FROM -L- STA. 143+00 TO STA. 144+60 RT.
DETAIL K
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Filter Fabric
Fill Slope
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
b=5.0 Ft.
*When B is < 6.0'
Type of Liner= CLASS B Rip-Rap
FROM -L- STA. 144+66 TO STA. 146+00 RT.
DETAIL Y
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground
4:1 or Flatter
Fill Slope
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
Type of Liner= PSRM
FROM -L- STA. 148+00 TO STA. 149+00 RT.
DETAIL Z
SPECIAL CUT BASE DITCH
(Not to Scale)
Natural Ground
4:1 or Flatter
Front Ditch Slope
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
Type of Liner= PSRM
FROM -L- STA. 149+00 TO STA. 150+00 RT.
Permit Drawing
Sheet 13 of 35


A-0011BB
9
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
PIs Sta 136+67.31
Θs = 1° 27' 52.6"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'
PIs Sta 139+99.52
Θs = 1° 25' 56.6"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'
PI Sta 145+73.11
Δ = 19° 48' 00.5" (LT)
D = 1° 54' 35.5"
L = 1,036.73
T = 523.59'
R = 3,000.00'
SE = 0.05
PI Sta 10+64.34
Δ = 22° 40' 51.7" (RT)
D = 22° 55' 05.9"
L = 98.96'
T = 60.14'
R = 250.00'
-DR1LT-
PI Sta 11+40.17
Δ = 83° 30' 49.0" (RT)
D = 127° 19' 26.2"
L = 65.59'
T = 40.17'
R = 45.00'
-DR1RT-
PI Sta 11+46.90
Δ = 62° 33' 33.1" (LT)
D = 229° 10' 59.2"
L = 27.30'
T = 15.19'
R = 25.00'
NAD 83
SEE SHEETS 22 & 23 FOR -L- PROFILE
SEE SHEET 28 FOR -Y5- PROFILE
SEE SHEET 29 FOR -DR1LT- PROFILE
SEE SHEET 29 FOR -DR1RT- PROFILE
NOTE: PAVEMENT REMOVAL Sta.137+00 TO Sta.150+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION
CS Sta. 136+17.31
ST Sta. 137+67.31
TS Sta. 138+99.52
SC Sta. 140+49.52
MAX B. HISSAM
JAMES L. LEDFORD
ANTHONY H. LEDFORD
FLOYD GIBSON
SITE 4
MATCHLINE -L- STA. 137+00 SEE SHEET 8
MATCHLINE -L- STA. 150+00 SEE SHEET 10
WILLIAM H. CURNS
MEREDITH MELTON, ET ALS.
HOWARD KITCHENS
FRANK STROUD
JACK SHOOK
SPECIAL LATERAL 'V' DITCH SEE DETAIL 'F'
LATERAL 'V' DITCH SEE DETAIL 'I'
2' LATERAL BASE DITCH SEE DETAIL 'J'
2' LATERAL BASE DITCH W/ 77 Tons CLASS 'B' RIP-RAP W/ 208 Sq. Yds. Filter Fabric SEE DETAIL 'K'
2' SPECIAL CUT BASE DITCH SEE DETAIL 'Z'
2' SPECIAL LATERAL BASE DITCH SEE DETAIL 'Y'
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
DETAIL F
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D=1.5 Ft.
FROM -L- STA. 137+75 TO STA. 139+50 RT.
DETAIL I
LATERAL 'V' DITCH
(Not to Scale)
Min. D=.5 Ft.
b=5.0 Ft.
FROM -L- STA. 141+00 TO STA. 143+50 RT.
DETAIL J
LATERAL BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
B=2.0 Ft.
b=5.0 Ft.
FROM -L- STA. 143+00 TO STA. 144+60 RT.
DETAIL K
LATERAL BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
b=5.0 Ft.
*When B is < 6.0'
Type of Liner= CLASS B Rip-Rap
FROM -L- STA. 144+66 TO STA. 146+00 RT.
DETAIL Y
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
Type of Liner= PSRM
FROM -L- STA. 148+00 TO STA. 149+00 RT.
DETAIL Z
SPECIAL CUT BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
Type of Liner= PSRM
FROM -L- STA. 149+00 TO STA. 150+00 RT.
Permit Drawing
Sheet 14 of 35

8/23/9

200'

100'

0

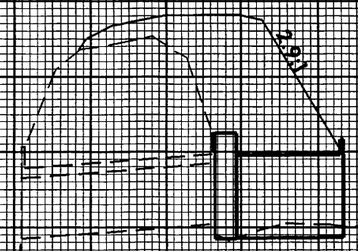
100'

200'

STA. 144+09 -L-
ELEV.- 1874.00
SKEW.- 45°
EXTEND 5'x4' RCBC WITH 66" RCP AT INLET

1870'

1870'



1860'

1860'

PROPOSED SLOPE- 0.3%

ELEV- 1859.97

EXISTING SLOPE- 1.6%

SITE 4

Permit Drawing
Sheet 15 of 25

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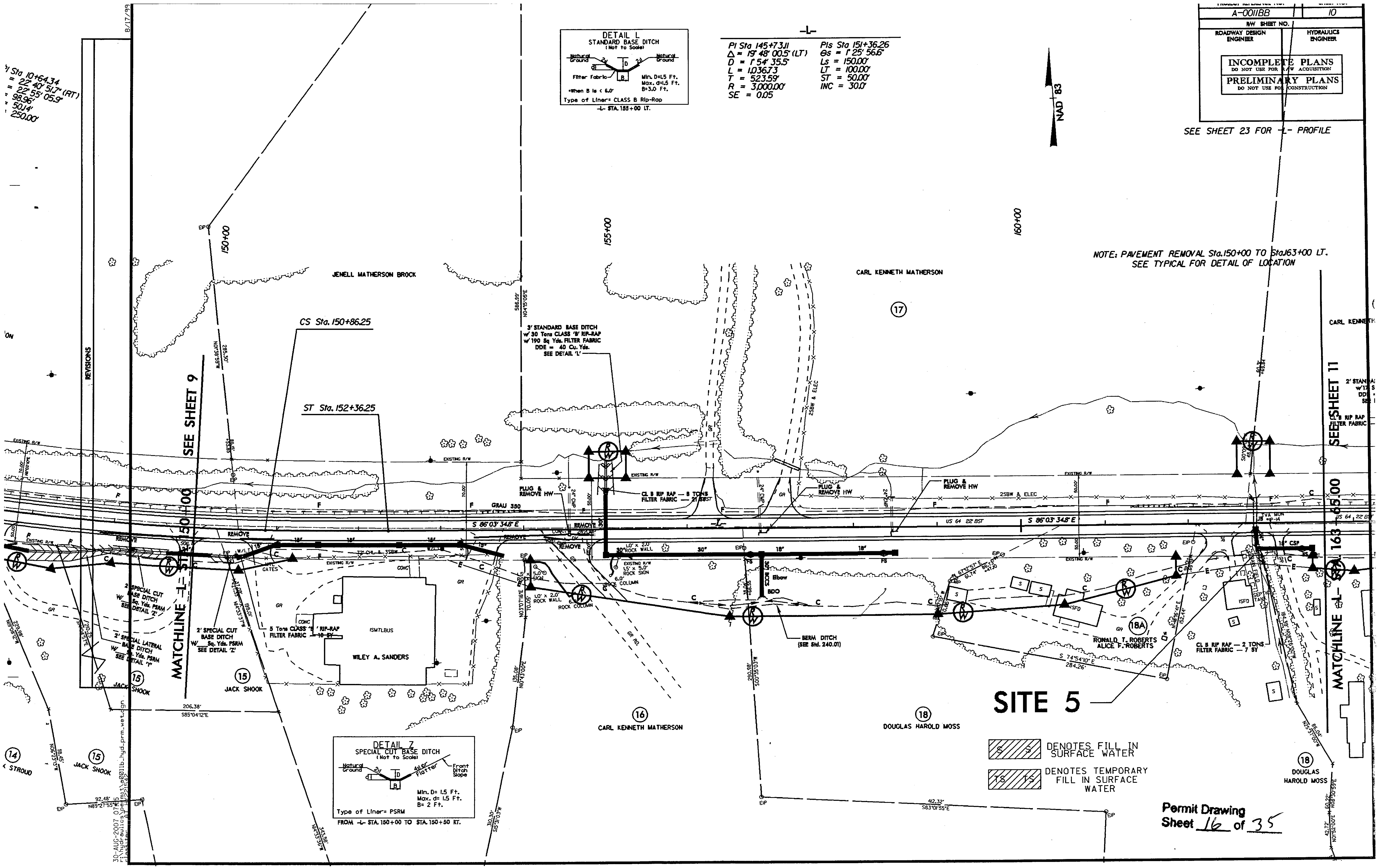

A-0011BB
10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SEE SHEET 23 FOR -L- PROFILE
NAD 83
DETAIL L
STANDARD BASE DITCH
(Not to Scale)
Type of Liner= CLASS B Rip-Rap
-L- STA. 155+00 LT.
-L-
PI Sta 145+73.11
Δ = 19° 48' 00.5" (LT)
D = 1° 54' 35.5"
L = 1,036.73
T = 523.59'
R = 3,000.00'
SE = 0.05
PIs Sta 151+36.26
θs = 1° 25' 56.6"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'
NOTE: PAVEMENT REMOVAL Sta.150+00 TO Sta.163+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION
JENELL MATHERSON BROCK
CARL KENNETH MATHERSON
CS Sta. 150+86.25
ST Sta. 152+36.25
3' STANDARD BASE DITCH
W/ 30 Tons CLASS 'B' RIP-RAP
W/ 190 Sq Yds. FILTER FABRIC
DDE = 40 Cu. Yds.
SEE DETAIL 'L'
SEE SHEET 9
MATCHLINE -L- STA. 150+00
SEE SHEET 11
MATCHLINE -L- STA. 163+65.00
150+00
155+00
160+00
US 64
S 86°03' 34.8" E
PLUG & REMOVE HW
CL B RIP RAP — 8 TONS
FILTER FABRIC — 21 SY
2' SPECIAL CUT BASE DITCH
SEE DETAIL 'Z'
5 Tons CLASS 'B' RIP-RAP
FILTER FABRIC — 10 SY
WILEY A. SANDERS
BERM DITCH
(SEE Std. 240.01)
RONALD T. ROBERTS
ALICE F. ROBERTS
CL B RIP RAP — 2 TONS
FILTER FABRIC — 7 SY
S 74°54'10" E
284.26'
JACK SHOOK
CARL KENNETH MATHERSON
DOUGLAS HAROLD MOSS
SITE 5
DETAIL Z
SPECIAL CUT BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
Type of Liner= PSRM
FROM -L- STA. 150+00 TO STA. 150+50 RT.
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
Permit Drawing
Sheet 16 of 35
30-AUG-2007 07:45

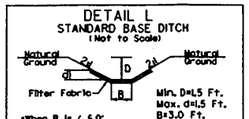
A-0011BB	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 23 FOR -L- PROFILE

DETAIL L
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= CLASS B Rip-Rap

-L- STA. 155+00 LT.

-L-

PI Sta 145+73.11
Δ = 19° 48' 00.5" (LT)
D = 1° 54' 35.5"
L = 1,036.73'
T = 523.59'
R = 3,000.00'
SE = 0.05

PIs Sta 151+36.26
θs = 1° 25' 56.6"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'

NAD 83

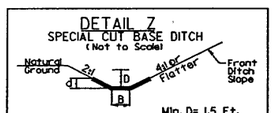
NOTE: PAVEMENT REMOVAL Sta.150+00 TO Sta.163+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION

SITE 5

DENOTES FILL IN SURFACE WATER

DENOTES TEMPORARY FILL IN SURFACE WATER

DETAIL Z
SPECIAL CUT BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA. 150+00 TO STA. 150+50 RT.

Permit Drawing
Sheet 17 of 35

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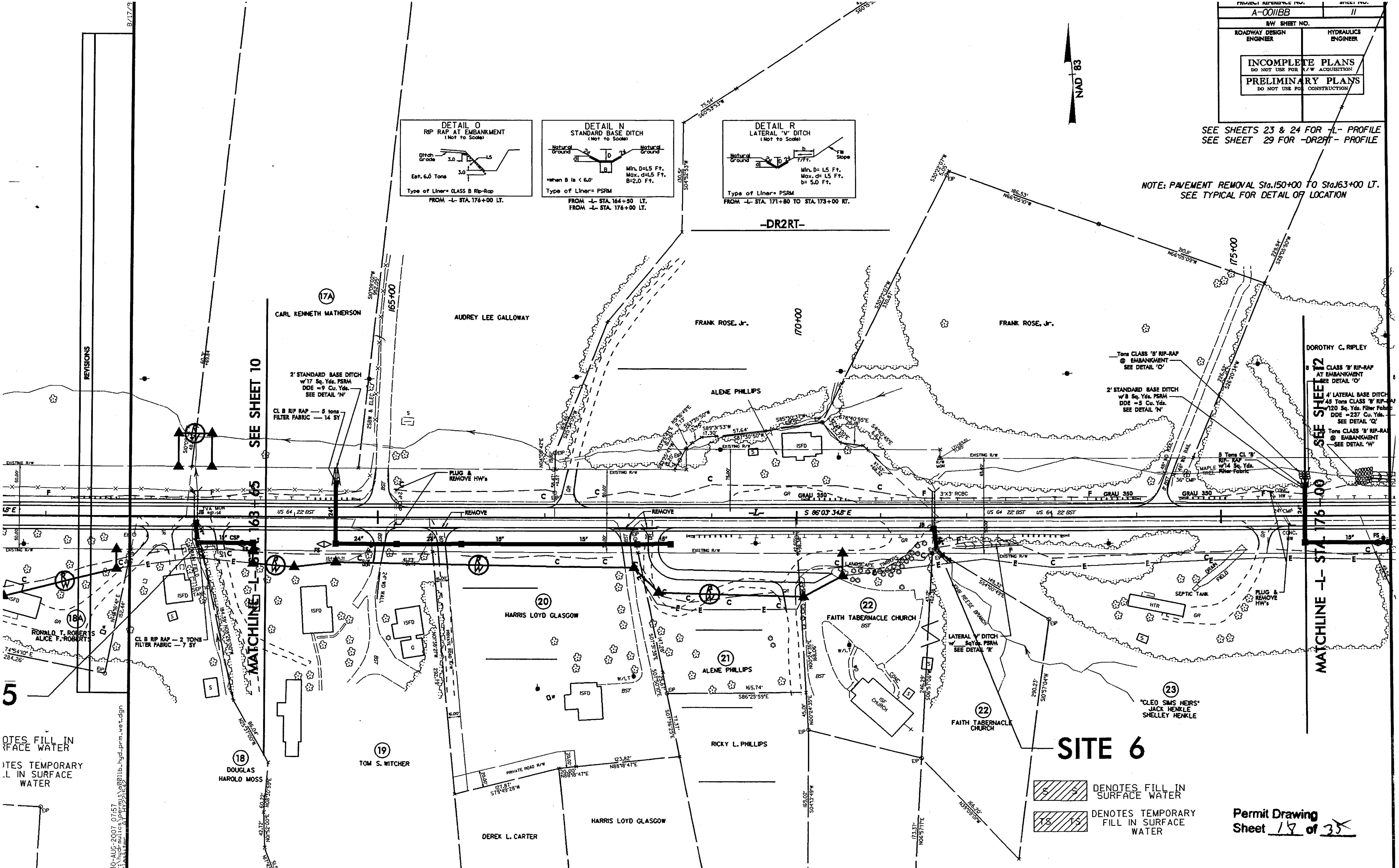
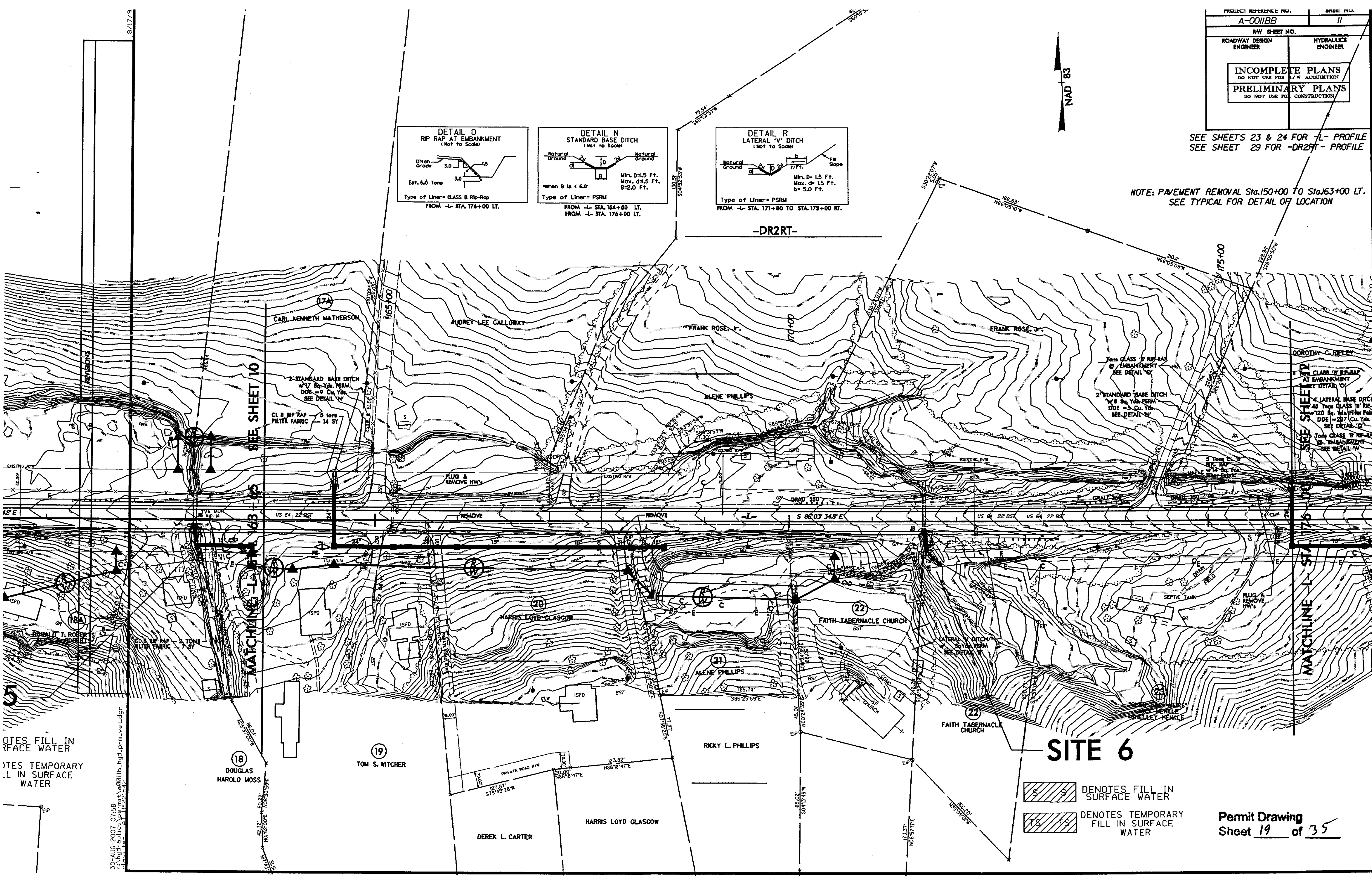
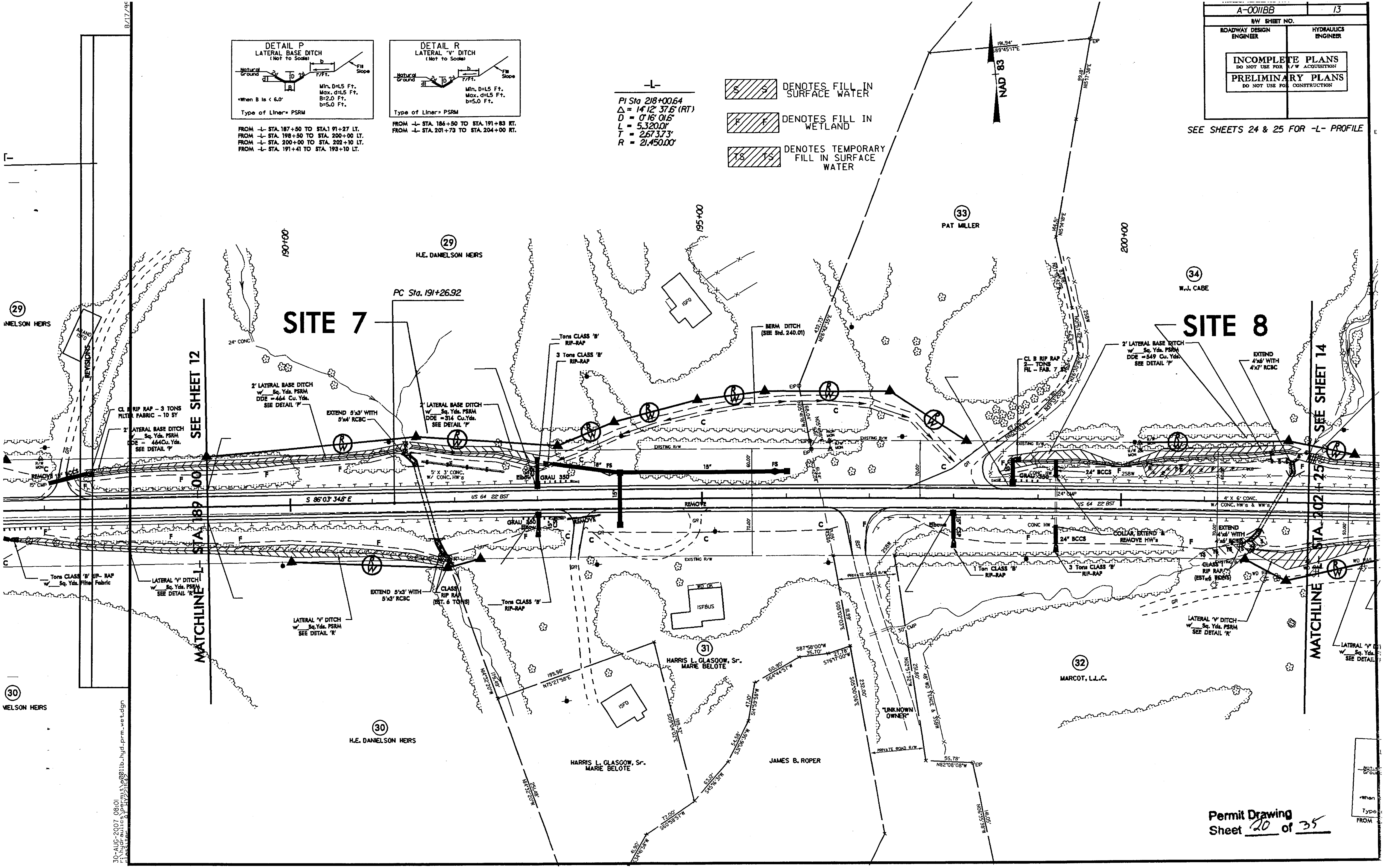


PROJECT REFERENCE NO.
SHEET NO.
A-0011BB
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
SEE SHEETS 23 & 24 FOR -L- PROFILE
SEE SHEET 29 FOR -DR2RT- PROFILE
NOTE: PAVEMENT REMOVAL Sta.150+00 TO Sta.163+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION
DETAIL O
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner= CLASS B Rip-Rap
FROM -L- STA. 176+00 LT.
DETAIL N
STANDARD BASE DITCH
(Not to Scale)
Type of Liner= PSRM
FROM -L- STA. 164+50 LT.
FROM -L- STA. 176+00 LT.
DETAIL R
LATERAL 'V' DITCH
(Not to Scale)
Type of Liner= PSRM
FROM -L- STA. 171+80 TO STA. 173+00 RT.
-DR2RT-
SEE SHEET 10
SEE SHEET 12
MATCHLINE -L- STA. 163+65
MATCHLINE -L- STA. 176+00
CARL KENNETH MATHERSON
AUDREY LEE GALLOWAY
FRANK ROSE, Jr.
ALENE PHILLIPS
DOROTHY C. RIPLEY
RONALD T. ROBERTS
ALICE F. ROBERTS
DOUGLAS HAROLD MOSS
TOM S. WITCHER
HARRIS LOYD GLASGOW
ALENE PHILLIPS
RICKY L. PHILLIPS
FAITH TABERNACLE CHURCH
"CLEO SIMS HEIRS"
JACK HENKLE
SHELLEY HENKLE
DEREK L. CARTER
US 64 22' BST
S 86°03'34.8" E
SITE 6
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
Permit Drawing
Sheet 17 of 35



PROJECT REFERENCE NO.
SHEET NO.
A-0011BB
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
SEE SHEETS 23 & 24 FOR -L- PROFILE
SEE SHEET 29 FOR -DR2RT- PROFILE
NOTE: PAVEMENT REMOVAL Sta.150+00 TO Sta.163+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION
DETAIL O
RIP RAP AT EMBANKMENT
(Not to Scale)
Ditch Grade
Est. 6.0 Tons
Type of Liner= CLASS B Rip-Rap
FROM -L- STA. 176+00 LT.
DETAIL N
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.
*When B is < 6.0'
Type of Liner= PSRM
FROM -L- STA. 164+50 LT.
FROM -L- STA. 176+00 LT.
DETAIL R
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
b= 5.0 Ft.
Type of Liner= PSRM
FROM -L- STA. 171+80 TO STA. 173+00 RT.
-DR2RT-
CARL KENNETH MATHERSON
AUDREY LEE GALLOWAY
FRANK ROSE, Jr.
FRANK ROSE, Jr.
ALENE PHILLIPS
DOROTHY C. RIPLEY
SEE SHEET 10
SEE SHEET 12
MATCHLINE -L- STA. 163+00
MATCHLINE -L- STA. 176+00
165+00
170+00
175+00
S 86°03'34.8" E
US 64
HARRIS LOYD GLASGOW
FAITH TABERNACLE CHURCH
ALENE PHILLIPS
RONALD T. ROBERTS
DOUGLAS HAROLD MOSS
TOM S. WITCHER
HARRIS LOYD GLASCOW
DEREK L. CARTER
RICKY L. PHILLIPS
FAITH TABERNACLE CHURCH
SITE 6
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
Permit Drawing
Sheet 19 of 35



Permit Drawing
Sheet 20 of 35

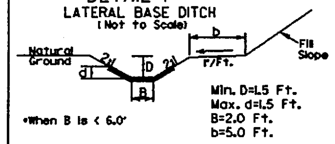
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 24 & 25 FOR -L- PROFILE

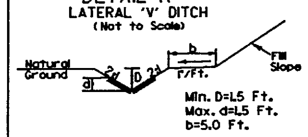
DETAIL P
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA. 187+50 TO STA.1 91+27 LT.
FROM -L- STA. 198+50 TO STA. 200+00 LT.
FROM -L- STA. 200+00 TO STA. 202+10 LT.
FROM -L- STA. 191+41 TO STA. 193+10 LT.

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

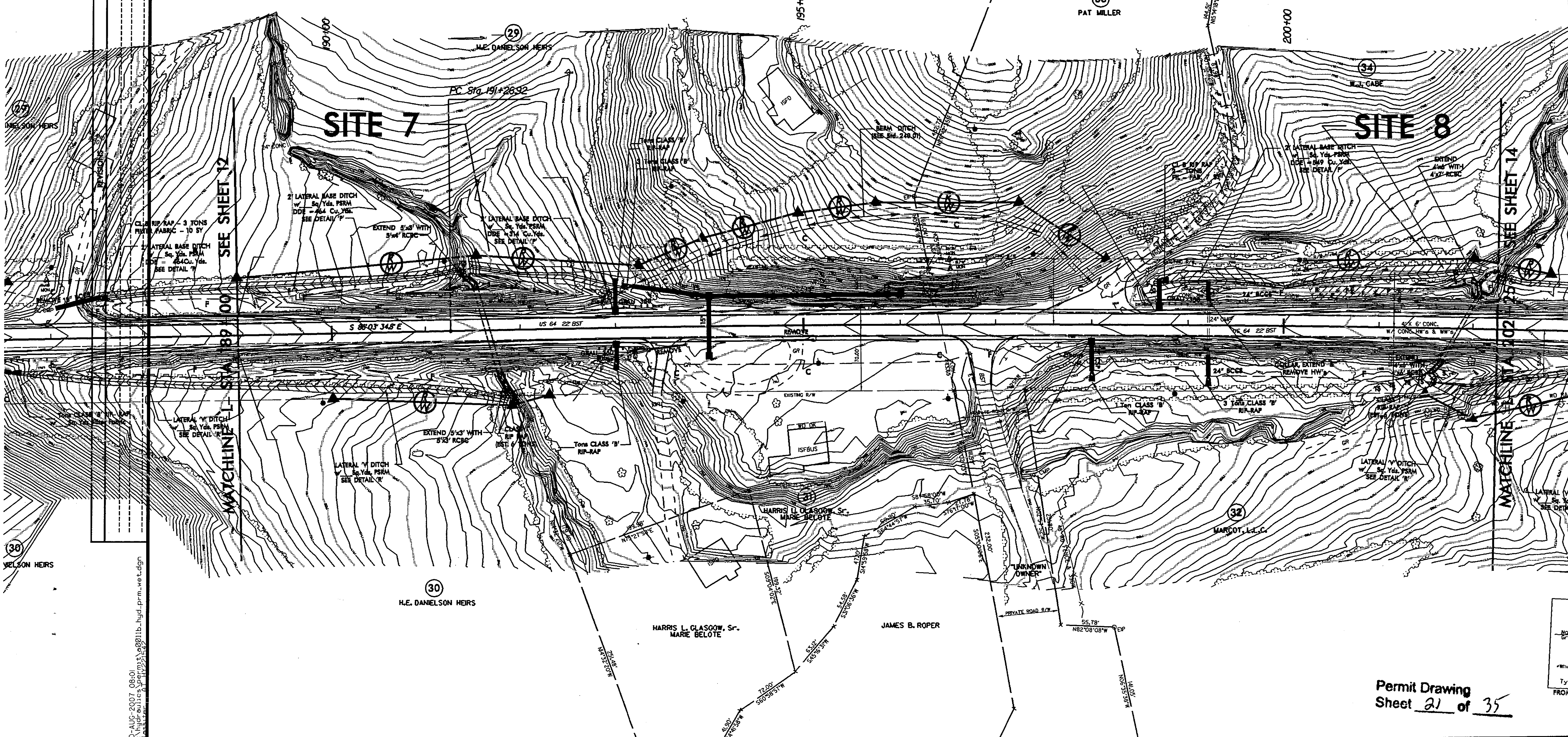


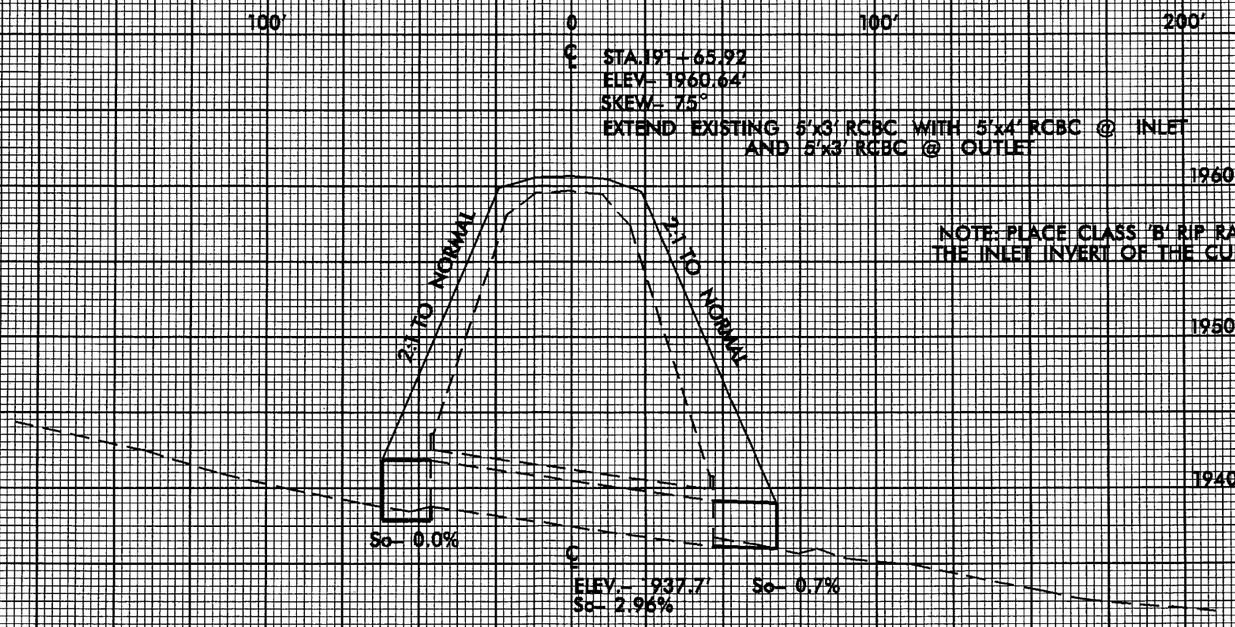
Type of Liner= PSRM

FROM -L- STA. 186+50 TO STA. 191+83 RT.
FROM -L- STA. 201+73 TO STA. 204+00 RT.

-L-
PI Sta 218+00.64
Δ = 14°12' 37.6" (RT)
D = 0°16' 01.6"
L = 5,320.01'
T = 2,673.73'
R = 21,450.00'

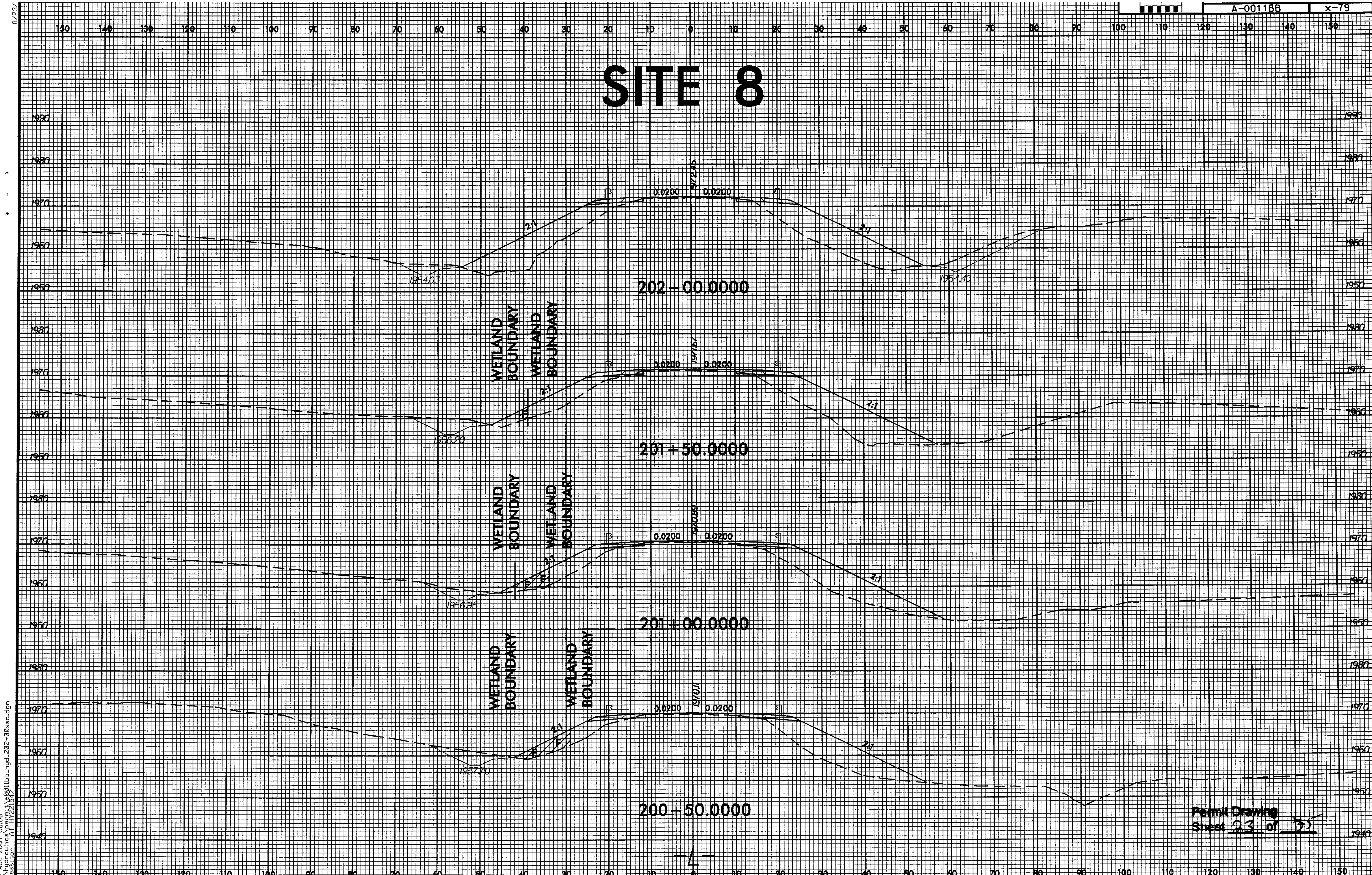
DENOTES FILL IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES TEMPORARY FILL IN SURFACE WATER





SITE 7

Permit Drawing
Sheet 22 of 25



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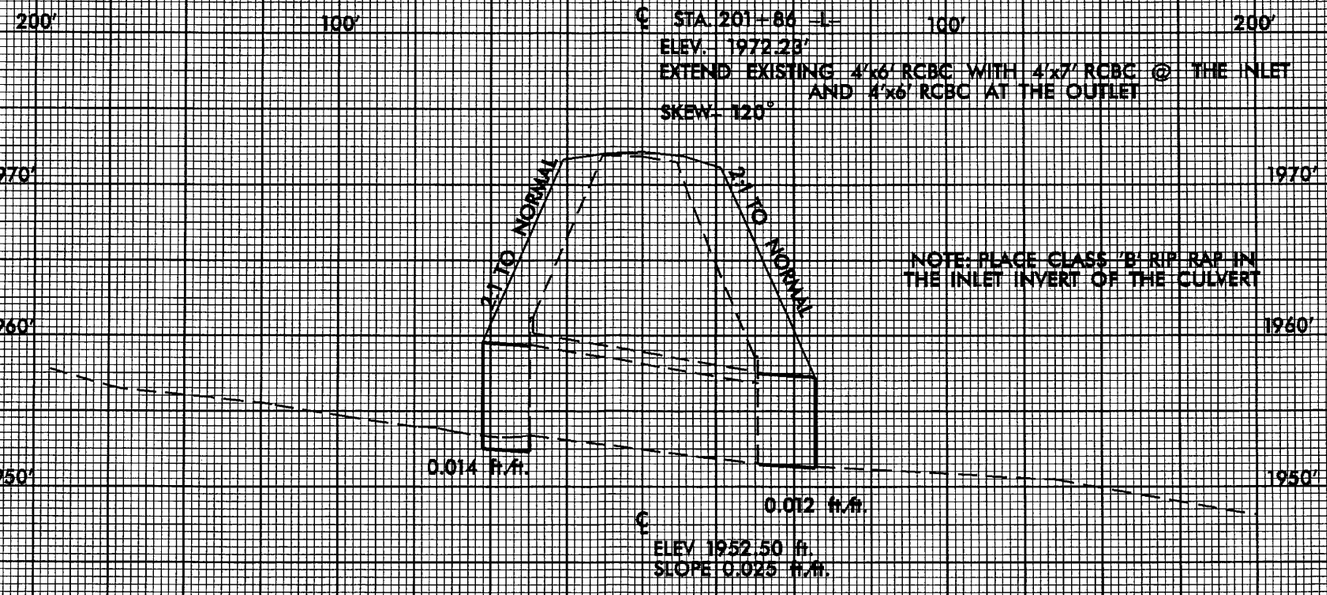


SITE 8

Permit Drawing
Sheet 24 of 35

SITE 9

-L-	-Y6-	
PI Sta 218+00.64	PI Sta 11+77.18	PI Sta 10+84.81
Δ = 14°12' 37.6" (RT)	Δ = 39° 47' 18.1" (LT)	Δ = 70° 30' 06.3" (LT)
D = 0°16' 01.6"	D = 18° 28' 57.0"	D = 47° 44' 47.3"
L = 5,320.01'	L = 215.28'	L = 147.66'
T = 2,671.33'	T = 112.18'	T = 84.81'
R = 21,450.00'	R = 310.00'	R = 120.00'

PI Sta 16+49.04
Δ = 89° 36' 43.3" (RT)
D = 63° 39' 43.1"
L = 140.76'
T = 89.39'
R = 90.00'

SEE SHEETS 25 & 26 FOR -L- PROFILE
SEE SHEET 23 FOR -Y6- PROFILE

PROJECT REFERENCE NO. A-001188 — SHEET NO. 15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

SEE SHEET 14

SEE SHEET 16

MATCHLINE -L- STA. 215

MATCHLINE -L- STA. 228

215+00 220+00 225+00

(35) LEDFORD'S CHAPEL METHODIST CHURCH

(36) "UNKNOWN OWNER"

(37) CONNIE SUE BRISTOL
ROBERT A. BRISTOL

(38) CLARA CHAMBERS

(39) LEDFORD'S CHAPEL METHODIST CHURCH

FRANK L. SULT

DORIS I. SMITH

ARTELL, INC.

WOODS RENTAL PROPERTIES, INC.

CONNIE HUFFMAN BRISTOL

USA-TVA

LAKE CHATUGE W.E.= 1913.8

2' LATERAL BASE DITCH GRASS LINED DDE =337 Cu. Yds. SEE DETAIL 'J'

3' LATERAL BASE DITCH 97 Tons CLASS 1 RIP-RAP w/ Sq. Yds. Filter Fabric DDE =221 Cu. Yds. SEE DETAIL 'AA'

8 Tons CLASS 'B' RIP-RAP

13 Tons CLASS 'B' RIP-RAP

2 Tons CLASS 1 RIP-RAP

TOE PROTECTION w/37 Tons CLASS 'B' RIP-RAP w/ Sq. Yds. Filter Fabric SEE DETAIL 'S'

GRAU 350

REMOVE 18" CMP

REMOVE HW

3' X 3' CONC.

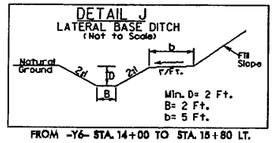
8' X 5' CONC.

US 64 22' BST

SR 165 LEDFORD CHAPEL RD. 17' BST

DENOTES FILL IN SURFACE WATER

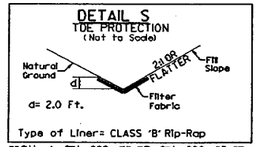
DETAIL J
LATERAL BASE DITCH
(Not to Scale)



Min. D= 2 Ft.
B= 2 Ft.
b= 5 Ft.

FROM -Y6- STA. 14+00 TO STA. 15+80 LT.

DETAIL S
TOE PROTECTION
(Not to Scale)

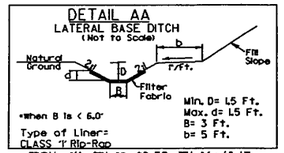


d= 2.0 Ft.

Type of Liner= CLASS 'B' Rip-Rap

FROM -L- STA. 222+75 TO STA. 223+80 RT.

DETAIL AA
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'

Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3 Ft.
b= 5 Ft.

Type of Liner= CLASS 'I' Rip-Rap

FROM -Y6- STA. 15+80 TO STA. 16+60 LT.
FROM -L- STA. 222+50 TO STA. 222+70 LT.

Permit Drawing
Sheet 25 of 35

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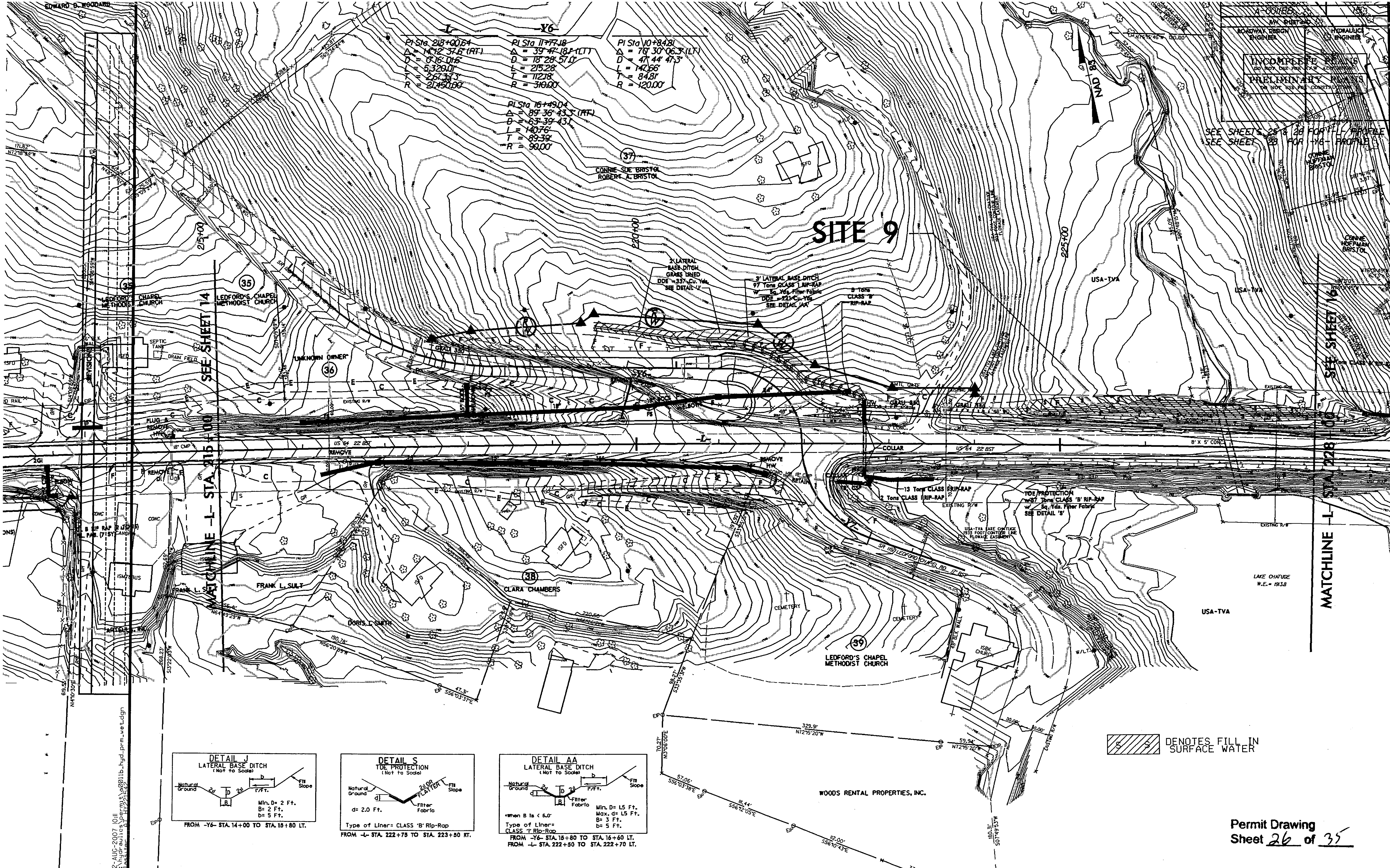
A-0011BB
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
-L-
PI Sta 218+00.64
Δ = 14°12' 37.6" (RT)
D = 0°16' 01.6"
L = 5,320.01'
T = 2,673.73'
R = 21,450.00'
-Y6-
PI Sta 11+77.18
Δ = 39°47' 18.1" (LT)
D = 18°28' 57.0"
L = 215.28'
T = 112.18'
R = 310.00'
PI Sta 10+84.81
Δ = 70°30' 06.3" (LT)
D = 47°44' 47.3"
L = 147.66'
T = 84.81'
R = 120.00'
PI Sta 16+49.04
Δ = 89°36' 43.3" (RT)
D = 63°39' 43.1"
L = 140.76'
T = 89.39'
R = 90.00'
SEE SHEETS 25 & 26 FOR -L- PROFILE
SEE SHEET 28 FOR -Y6- PROFILE
EDWARD D. WOODARD
CONNIE SUE BRISTOL
ROBERT A. BRISTOL
CONNIE HUFFMAN BRISTOL
SITE 9
LEDFORD'S CHAPEL METHODIST CHURCH
"UNKNOWN OWNER"
SEPTIC TANK
DRAIN FIELD
SEE SHEET 14
MATCHLINE -L- STA. 215+00
SEE SHEET 16
MATCHLINE -L- STA. 228+00
2' LATERAL BASE DITCH
GRASS LINED
DDE = 337 Cu. Yds.
SEE DETAIL 'J'
3' LATERAL BASE DITCH
97 Tons CLASS 1 RIP-RAP
W/ Sq. Yds. Filter Fabric
DDE = 221 Cu. Yds.
SEE DETAIL 'AA'
8 Tons CLASS 'B' RIP-RAP
USA-TVA
USA-TVA LAKE CHATUGE 1933 FOOT CONTOUR LINE FLOWAGE EASEMENT
US 64 22' BST
8' X 5' CONC.
COLLAR
REMOVE
PLUG & REMOVE HW
REMOVE HW
CONC. HW 18" CMP RETAIN
13 Tons CLASS I RIP-RAP
2 Tons CLASS I RIP-RAP
TOE PROTECTION
W/37 Tons CLASS 'B' RIP-RAP
W/ Sq. Yds. Filter Fabric
SEE DETAIL 'S'
EXISTING R/W
SR 1151 LEDFORD CHAPEL RD 17' BST
FRANK L. SULT
CLARA CHAMBERS
DORIS L SMITH
CEMETERY
ISBK CHURCH
48" BLK WALL
LAKE CHATUGE
W.E.= 1913.8
WOODS RENTAL PROPERTIES, INC.
DENOTES FILL IN SURFACE WATER
DETAIL J
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D= 2 Ft.
B= 2 Ft.
b= 5 Ft.
FROM -Y6- STA. 14+00 TO STA. 15+80 LT.
DETAIL S
TOE PROTECTION
(Not to Scale)
Natural Ground
2:1 OR FLATTER
Fill Slope
Filter Fabric
d= 2.0 Ft.
Type of Liner= CLASS 'B' Rip-Rap
FROM -L- STA. 222+75 TO STA. 223+50 RT.
DETAIL AA
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
Fill Slope
Filter Fabric
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= CLASS 'I' Rip-Rap
FROM -Y6- STA. 15+80 TO STA. 16+60 LT.
FROM -L- STA. 222+50 TO STA. 222+70 LT.
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Permit Drawing
Sheet 26 of 35

PROJECT REFERENCE NO.	SHEET NO.
A-001IBB	17
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 26 & 27 FOR -L- PROFILE

SITE 10

-L-
PI Sta 218+00.64
Δ = 14° 12' 37.6" (RT)
D = 0° 16' 01.6"
L = 5,320.01'
T = 2,673.73'
R = 21,450.00'

-Y9A-
PI Sta 10+26.63
Δ = 45° 34' 33.1" (RT)
D = 114° 35' 29.6"
L = 39.77'
T = 21.01'
R = 50.00'

-Y9A-
PI Sta 10+84.75
Δ = 12° 05' 15.4" (RT)
D = 28° 38' 52.4"
L = 42.19'
T = 21.18'
R = 200.00'

-Y10-
PI Sta 12+45.61
Δ = 11° 41' 27.2" (RT)
D = 4° 46' 28.7"
L = 244.85'
T = 122.85'
R = 1,200.00'

-Y10-
PI Sta 14+27.84
Δ = 32° 10' 12.1" (RT)
D = 13° 10' 47.2"
L = 244.24'
T = 125.43'
R = 435.00'

JOHN S. HINDSMAN
WALTER LEE WOODY
JUDY S. GILES
CHARLES SMART
ELLEN T. CHASTAIN
MARSHA D. LOCKARD
CHAD DECKER
LOIS LEDFORD
CHARLOTTE LEDFORD
ROBERT W. PAICE
JOHN PATRICK LIST
USA-TVA
UNKNOWN OWNER

SR 1333 SMART RD 18' BST
SR 1405 WALTER PRINT RD 18' BST
US 64 22' BST

MATCHLINE -L- STA. 241+00 SEE SHEET 16
MATCHLINE -L- STA. 254+00 SEE SHEET 18

PT Sta. 244+46.93

LAKE CHATUGE
W.E. = 1913.8

DENOTES FILL IN SURFACE WATER

DETAIL A
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class 'B' Rip-Rap
FROM -L- STA. 247+60 TO STA. 248+65 RT.

DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
Type of Liner= PSRM
FROM -L- STA. 241+68 TO STA. 242+50 LT.

DETAIL F
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1.5 Ft.
FROM -L- STA. 241+00 TO STA. 241+68 LT.

Permit Drawing
Sheet 27 of 35

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PROJECT REFERENCE NO.	SHEET NO.
A-00118B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 26 & 27 FOR -L- PROFILE

-L-
PI Sta 218+00.64
Δ = 14° 12' 37.6" (RT)
D = 0° 16' 00.0"
L = 5,120.01'
T = 2,567.73'
R = 21,450.00'

-Y9A-
PI Sta 10+26.63
Δ = 45° 18' 33.4" (RT)
D = 114° 35' 29.6"
L = 39.77'
T = 21.91'
R = 50.00'

PI Sta 10+84.75
Δ = 13° 05' 15.4" (RT)
D = 28° 38' 52.4"
L = 42.83'
T = 21.79'
R = 200.00'

-Y10-
PI Sta 12+45.61
Δ = 11° 41' 27.2" (RT)
D = 4° 46' 28.7"
L = 244.84'
T = 122.83'
R = 1200.00'

PI Sta 14+27.84
Δ = 32° 10' 36.6" (RT)
D = 13° 10' 47.2"
L = 254.24'
T = 128.43'
R = 435.00'

SHEET 16

SHEET 18

MATCHLINE -L- STA. 241+00

MATCHLINE -L- STA. 254+00

SITE 10

PT Sta. 244+46.93

LAKE CHATUGE
W.E.= 1913.8

S XX DENOTES FILL IN SURFACE WATER

DETAIL A
LATERAL BASE DITCH
(Not to Scale)

Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3 Ft.
b= 5 Ft.
*when B is < 6.0'
Type of Liner= Class 'B' Rip-Rap
FROM -L- STA. 247+60 TO STA. 248+65 RT.

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

Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
Type of Liner= PSRM
FROM -L- STA. 241+68 TO STA. 242+50 LT.

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

Min. D= 1.5 Ft.
FROM -L- STA. 241+00 TO STA. 241+68 LT.

Permit Drawing
Sheet 29 of 35

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PROJECT REFERENCE NO. A-001BB | SHEET NO. 18 | TOTAL SHEETS 64

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 17 FOR PLAN

SEE SHEET 19 FOR PLAN

EDWARD D. ANDERSON

SITE 10

SITE 11

MATCHLINE -L- STA. 254+00

MATCHLINE -L- STA. 268+00

ELLEN T. CHASTAIN
MARSHA D. LOCKARD

JOHN S. HINDSMAN

GWENDOLYN SMART

NETTIE GIBBY

NATIONAL INVESTMENTS, LLC

ROBERT W. PAICE

JAMES R. EDDY

CAROLYN GREGORY

EDWARD P. MOSES

CHATUGE VILLAGE COMMUNITY ASSOCIATION "SALEM SQUARE SUBDIVISION"

RONALD J. TWIST

THOMAS L. BOYLAND

WAYNE PONTIOUS

KITTREDGE INVESTMENTS, LLP

USA-TVA

SR 1333 SMART RD

-Y9B-

PI Sta 31+10.68
Δ = 8° 36' 21.9" (RT)
D = 19° 05' 54.9"
L = 45.06'
T = 22.57'
R = 300.00'

PI Sta 31+69.62
Δ = 40° 34' 51.2" (RT)
D = 104° 10' 26.9"
L = 38.95'
T = 20.33'
R = 55.00'

DENOTES FILL IN SURFACE WATER

REVISIONS

2' BASE DITCH GRASS LINED DDE = 86 Cu.Yds. SEE DETAIL 'M'

2' BASE DITCH GRASS LINED DDE = 30 Cu.Yds. SEE DETAIL 'M'

SPECIAL CUT DITCH GRASS LINED SEE DETAIL 'G'

2 Tons CLASS 'B' RIP-RAP

3 Tons CLASS 'B' RIP-RAP

1 Ton CLASS 'B' RIP-RAP

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground | 2:1 | D | 4:1 or Flatter | Front Drive Slope
Min. D= 1.5 Ft.
FROM -L- STA. 262+00 TO STA. 264+00 LT.
FROM -L- STA. 263+00 TO STA. 264+00 RT.

DETAIL M
STANDARD BASE DITCH
(Not to Scale)
Natural Ground | 2:1 | D | 2:1 | Natural Ground
Min. D= 1.5 Ft.
B= 2 Ft.
FROM -L- STA. 254+00 LT.

Permit Drawing
Sheet 29 of 35

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SITE 10

SITE 11

INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 17 FOR CONTINUE

SEE SHEET 19

MATCHLINE -L- STA. 254+00

MATCHLINE -L- STA. 268+00

-Y9B-

PI Sta 31+10.68
Δ = 8° 36' 21.9" (RT)
D = 19° 05' 54.9"
L = 45.06'
T = 22.57'
R = 300.00'

PI Sta 31+69.62
Δ = 40° 34' 51.2" (RT)
D = 104° 10' 26.9"
L = 38.95'
T = 20.33'
R = 55.00'

DENOTES FILL IN SURFACE WATER

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)

Min. D= 1.5 Ft.

FROM -L- STA. 262+00 TO STA. 264+00 LT.
FROM -L- STA. 263+00 TO STA. 264+00 RT.

DETAIL M
STANDARD BASE DITCH
(Not to Scale)

Min. D= 1.5 Ft.
B= 2 Ft.

FROM -L- STA. 254+00 LT.

USA-TVA

Permit Drawing
Sheet 30 of 35

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A-0011BB	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

SITE 12

SITE 13

END PROJECT A-0011BB
-L- Sta. 282+00.00

MATCHLINE -L- STA. 268+00

SEE SHEET 18

42" WELDED STEEL PIPE
0.625" THICKNESS
TRENCHLESS INSTALLATION

TS TS DENOTES TEMPORARY FILL IN SURFACE WATER

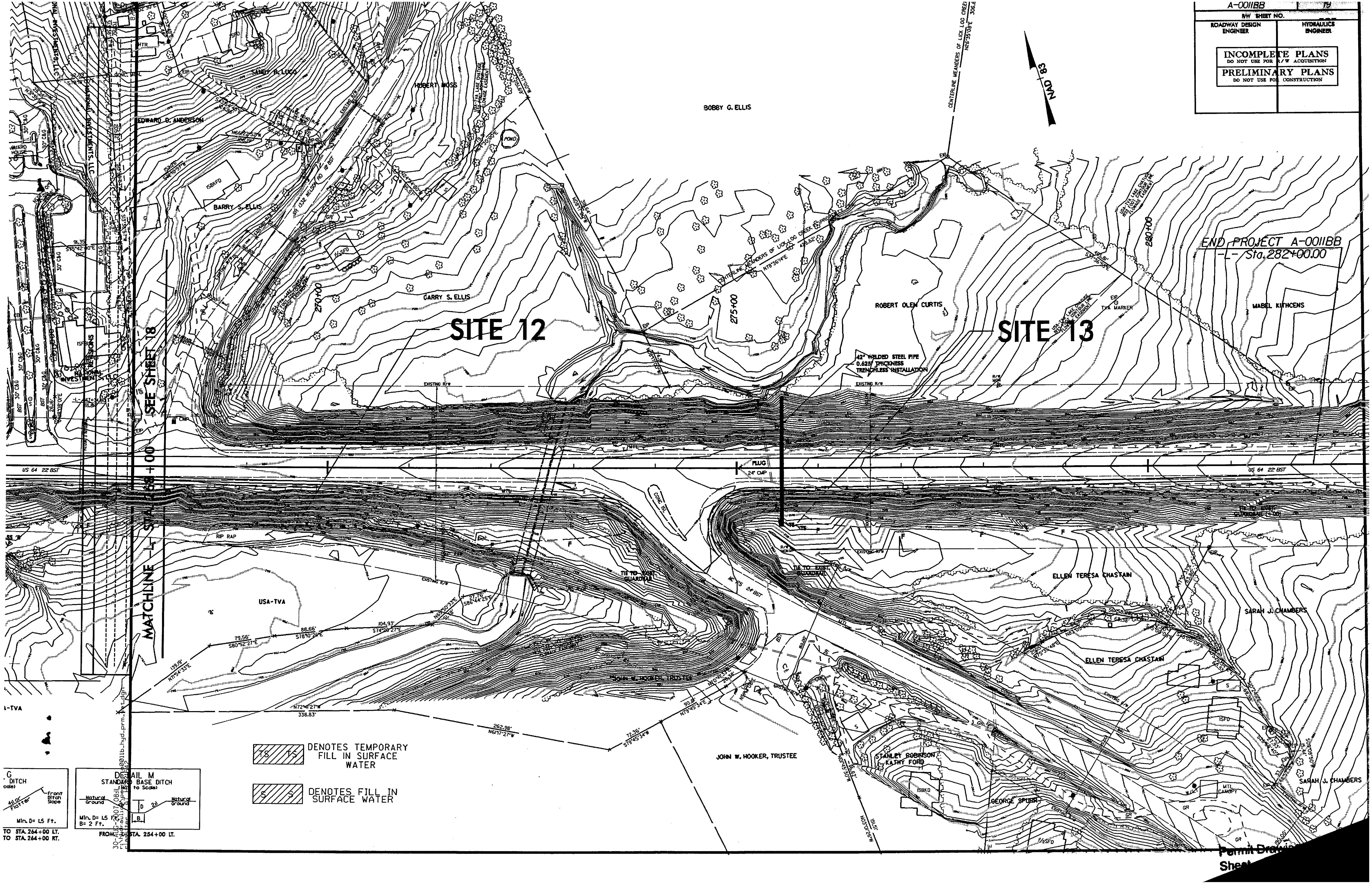
S S DENOTES FILL IN SURFACE WATER

DETAIL M
STANDARD BASE DITCH
(Not to Scale)

Min. D= 1.5 Ft.
B= 2 Ft.

FROM STA. 254+00 LT.
TO STA. 264+00 LT.
TO STA. 264+00 RT.

Permit Drawing
Sheet 31 of 35



A-0011BB
19
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
END PROJECT A-0011BB
-L- Sta. 282+00.00
SITE 12
SITE 13
MATCHLINE -L- STA. 268+00 SEE SHEET 18
42" WELDED STEEL PIPE
0.625" THICKNESS
TRENCHLESS INSTALLATION
BOBBY G. ELLIS
HUBERT MOSS
SANDY B. LUGO
EDWARD D. ANDERSON
BARRY S. ELLIS
GARRY S. ELLIS
ROBERT OLEN CURTIS
MABEL KITHCENS
ELLEN TERESA CHASTAIN
SARAH J. CHAMBERS
USA-TVA
JOHN W. HOOKER, TRUSTEE
STANLEY ROBINSON
KATHY FORD
GEORGE SPURR
US 64 22' BST
NC 175 24' BST
RIP RAP
TIE TO EXIST. GUARDRAIL
PLUG
24" CMP
EXISTING R/W
POND
CENTERLINE MEANDERS OF LICK LOG CREEK
TVA MARKER
275+00
270+00
280+00
DENOTES TEMPORARY FILL IN SURFACE WATER
DENOTES FILL IN SURFACE WATER
DETAIL M
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Min. D= 1.5 Ft.
B= 2 Ft.
FROM -L- STA. 254+00 LT.
TO STA. 264+00 LT.
TO STA. 264+00 RT.
Permit Drawing
Sheet

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
3	IONE HOGSED	601 FAIRVIEW DR. LEXINGTON, N.C. 27292
6	JENNY LOU LONG	1648 HWY 64 E. HAYESVILLE, N.C. 28904
7	LIVING WORD CHRISTIAN FELLOWSHIP	P.O. BOX 511 HAYESVILLE, N.C. 28904
14	FRANK STROUD	53 MISTY LANE HAYESVILLE, N.C. 28904
18	DOUGLAS HAROLD MOSS	2554 HWY 64 E. HAYESVILLE, N.C. 28904
19	TOM S. WITCHER	16 CHESTNUT RIDGE DR. INMAN, S.C. 29349
22	FAITH TABERNACLE CHURCH	5784 OLD HWY 64 E. HAYESVILLE, N.C. 28904
23	SHELLEY HENKLE	4930 AUDETTE AVE. NW MASSILON, OH 44647
29	H.E. DANIELSON	3025 HWY 64 E. HAYESVILLE, N.C. 28904
30	H.E. DANIELSON	3025 HWY 64 E. HAYESVILLE, N.C. 28904

NCDOT

DIVISION OF HIGHWAYS
CLAY COUNTY

PROJECT: 32574.1.1 (A-0011BB)

US 64 FROM EAST OF THE HIWASSEE RIVER TO WEST OF NC 175

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
31	HARRIS L. GLASGOW	1209 44TH AVE. E. BRADENTON, FL. 34203
32	MARCOT, L.L.C.	P.O. BOX 662 HAYESVILLE, N.C. 28904
34	W.J. CABE	201 WJ CABE RD. HAYESVILLE, N.C. 28904

NCDOT

DIVISION OF HIGHWAYS
CLAY COUNTY

PROJECT: 32574.1.4 (A-0011BB)

US 64 FROM EAST OF THE HIWASSEE RIVER TO WEST OF NC 175

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	90+93-L-	60" RCP	0.032			0.007		0.003	0.002	28	15	
2	94+40-L-	24" RCP						0.002		42		
3	116+18 -L-	66" RCP						0.002	0.001	45	18	
4	144+09 -L-	66" RCP						0.004	0.003	57	42	
5	162+80 -L-	54" RCP						0.005	0.002	30	14	
6	171+60 -L-	48" RCP						0.002	0.003	28	26	
7	191+66 -L-	5x3 RCBC						0.009	0.004	142	31	
8	201+86 -L-	4x6 RCBC	0.027					0.015	0.015	91	23	
9	225+00-228+00-L-	8x5 RCBC						0.168				
10	252+00-254+40-L-	18" CSP						0.013		278		
11	254+50-255+60-L-	24" RCP						0.008		170		
12	270+00-L-							0.016				
13	275+50-L-	42" RCP							0.003		36	
TOTALS:			0.059			0.007		0.247	0.033	911	205	

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CLAY COUNTY
WBS - 32574.1.4 (A-0011BB)

SHEET 35 of 35 8/22/2007

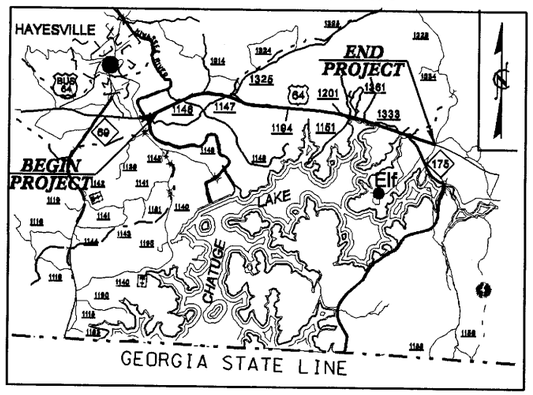
ATN Revised 3/31/05

09/08/99

TIP PROJECT: A-0011BB

CONTRACT: 32574.1.4

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CLAY COUNTY

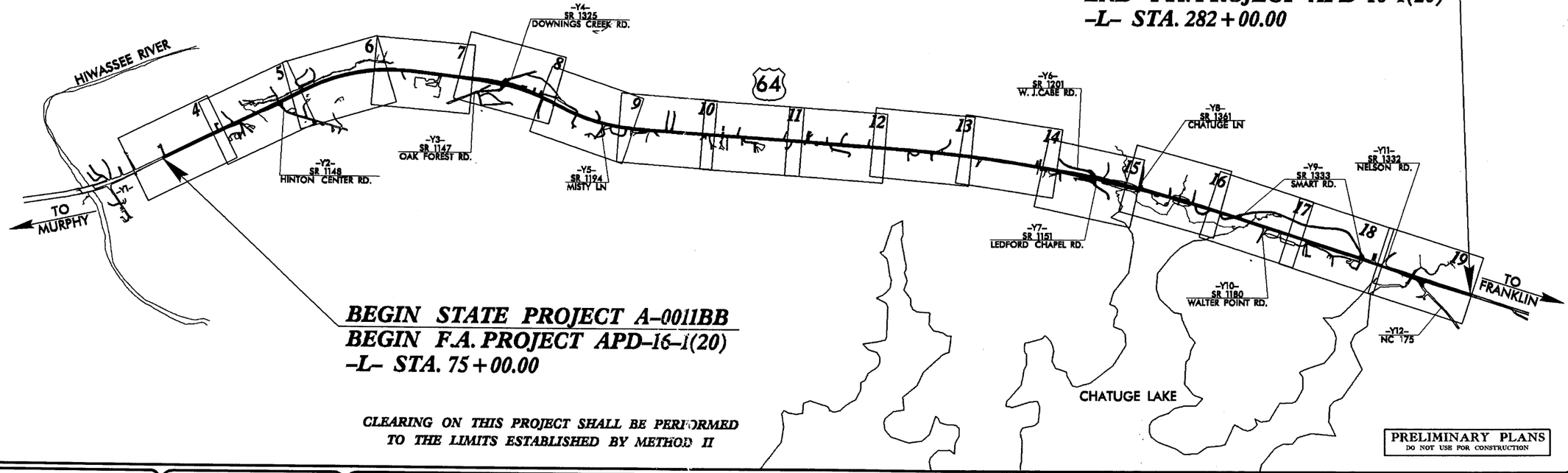
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A-0011BB	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
32574.1.4	APD-16-1(20)	P. E.	

LOCATION: *US 64 FROM EAST OF THE HIWASSEE RIVER TO EAST OF NC 175*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, GUARDRAIL, AND CULVERTS*

NAD 83

END STATE PROJECT A-0011BB
END F.A. PROJECT APD-16-1(20)
-L- STA. 282+00.00



BEGIN STATE PROJECT A-0011BB
BEGIN F.A. PROJECT APD-16-1(20)
-L- STA. 75+00.00

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 2003 = 6,000 – 7,600
ADT 2030 = 6,800 – 13,400
DHV = 12%
D = 60%
T = 8% *
V = 60 MPH

* TTST = 2%
DUAL = 6%

PROJECT LENGTH

LENGTH ROADWAY F.A. PROJECT APD-16-1(20) = 3.920 MILES
TOTAL LENGTH STATE PROJECT 32574.1.4 = 3.920 MILES

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 2006

LETTING DATE: OCTOBER 2008

J. S. GOODNIGHT
PROJECT ENGINEER

S. D. KENDALL
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

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$$$$USERNAME$$$$

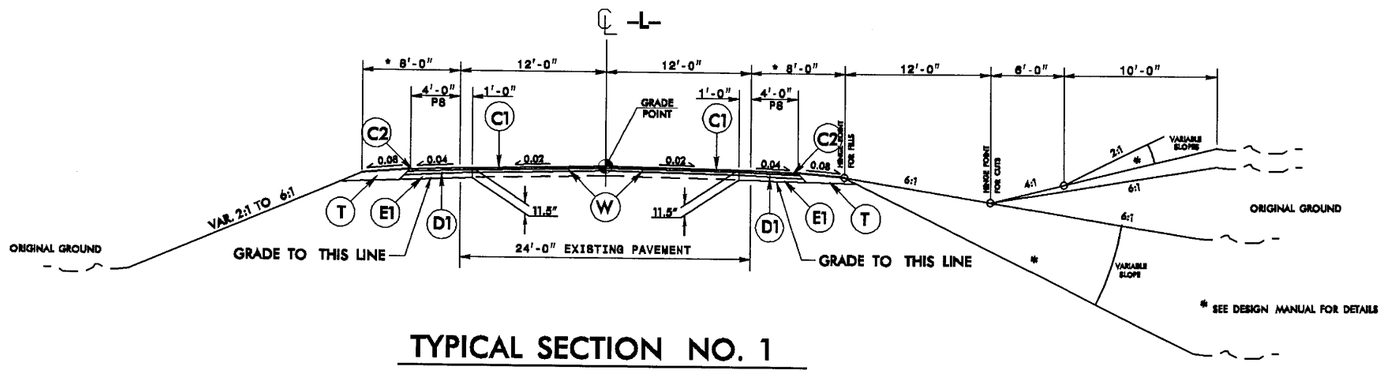
6/2/99

PAVEMENT SCHEDULE

(PRELIMINARY PAVEMENT DESIGN)

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.	T	EARTH MATERIAL.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE 2-A FOR WEDGING DETAILS).

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

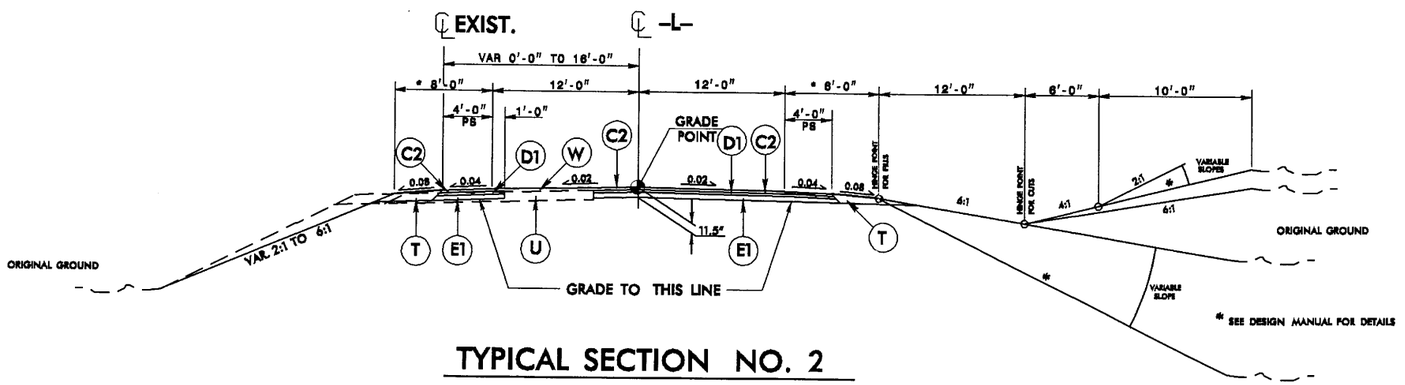


* SEE DESIGN MANUAL FOR DETAILS

TYPICAL SECTION NO. 1

–L– Sta. 75+00.00 to Sta. 85+00.00
–L– Sta. 190+00.00 to Sta. 284+00.00

* 11' w/GUARDRAIL



* SEE DESIGN MANUAL FOR DETAILS

TYPICAL SECTION NO. 2

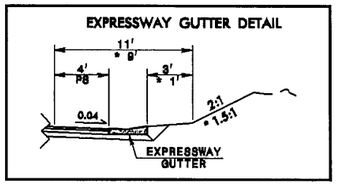
–L– Sta. 85+00.00 to Sta. 190+00.00

* 11' w/GUARDRAIL

PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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

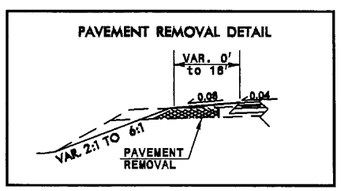
EXPRESSWAY GUTTER DETAIL



USE WITH TYPICAL SECTION NO. 1 & 2

–L– Sta. 83+00 to Sta. 87+74 +/– RT.
–L– Sta. 150+94 to Sta. 153+32 +/– RT.
* –L– Sta. 179+41 to Sta. 186+00 +/– RT.
–L– Sta. 216+84 to Sta. 221+68 +/– RT.
–L– Sta. 256+10 to Sta. 262+50 +/– RT.

PAVEMENT REMOVAL DETAIL



USE WITH TYPICAL SECTION NO. 2

–L– Sta. 85+00.00 to Sta. 129+90.00 LT.
–L– Sta. 132+15.00 to Sta. 190+00.00 LT.

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	2-A

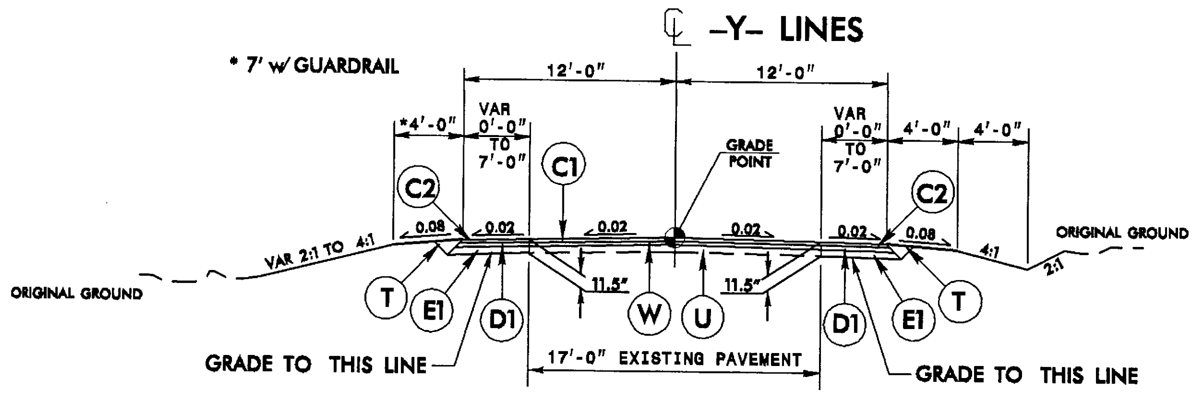
ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

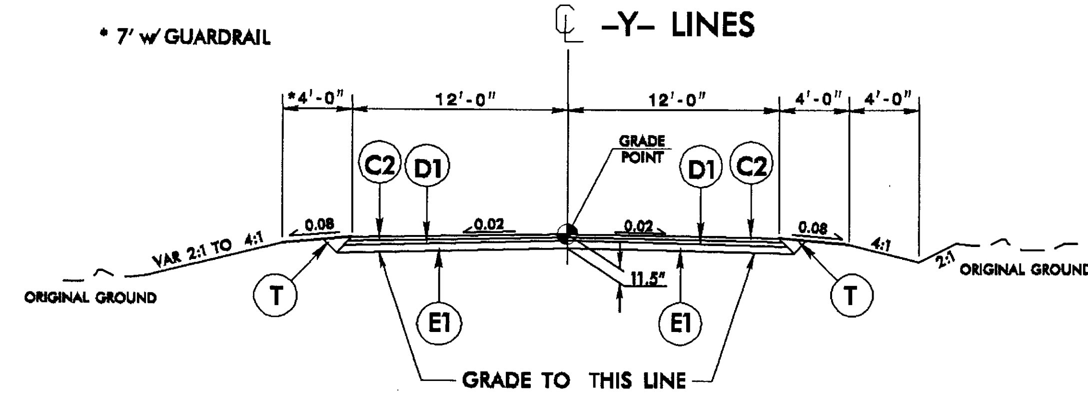
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

C1	1½" ACSC TYPE S9.5B
C2	3" ACSC TYPE S9.5B
C3	VAR. ACSC TYPE S9.5B
D1	3" ACIC TYPE I19.0B
D2	VAR. ACIC TYPE I19.0B
E1	5½" ACBC TYPE B25.0B
E2	VAR. ACBC TYPE B25.0B
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



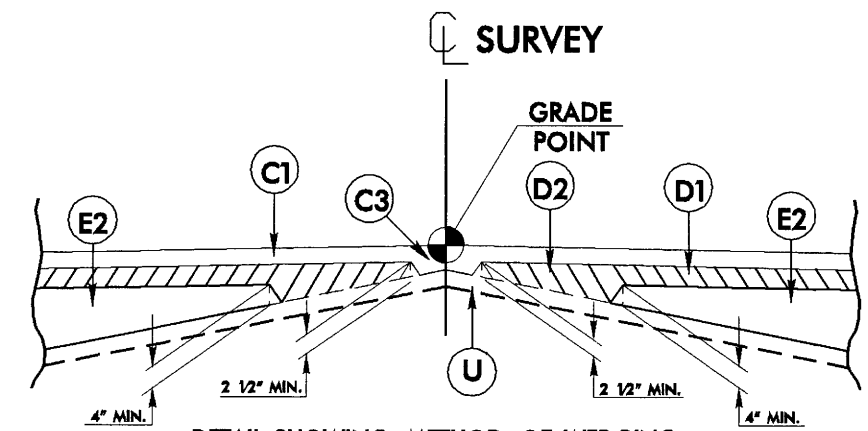
TYPICAL SECTION NO. 3

-Y2- Sta. 10+12.06 to Sta. 11+18.57
-Y3- Sta. 14+75.00 to Sta. 15+50.00
-Y4- Sta. 16+30.00 to Sts. 17+88.77
-Y5- Sta. 11+25.00 to Sta. 11+70.00
-Y6- Sta. 10+75.00 to Sta. 11+50.00
-Y7- Sta. 10+12.02 to Sta. 11+47.66
-Y8- Sta. 13+50.00 to Sta. 14+56.73
-9A- Sta. 10+12.02 to Sta. 11+22.75
-9B- Sta. 30+80.00 to Sta. 32+00.65
-Y10- Sta. 10+12.32 to Sta. 11+30.00

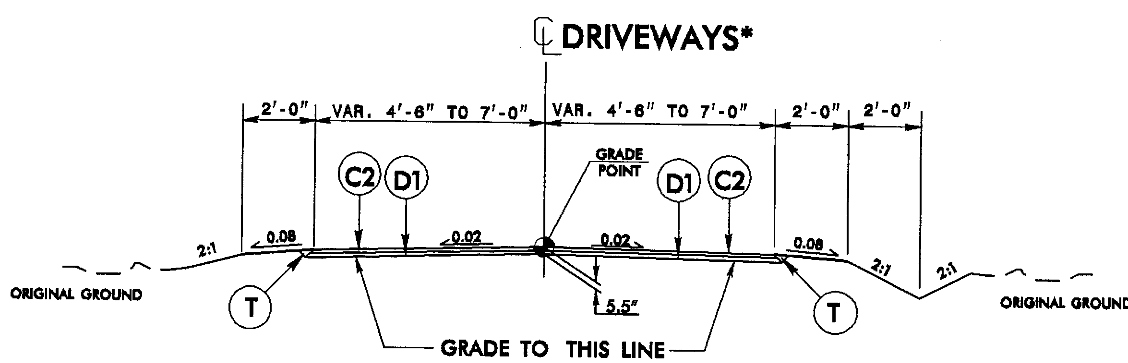


TYPICAL SECTION NO. 4

-Y3- Sta. 10+29.03 to Sta. 14+75.00
-Y5- Sta. 10+26.20 to Sta. 11+25.00
-Y6- Sta. 11+50.00 to Sta. 12+14.61



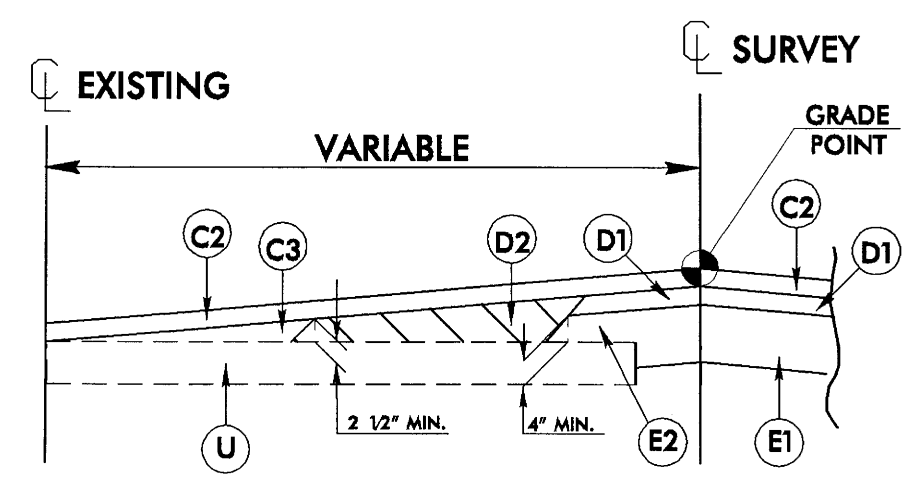
DETAIL SHOWING METHOD OF WEDGING



TYPICAL SECTION NO. 5

-DR1LT- Sta. 10+00.00 to Sta.11+66.73
-DR1RT- Sta. 10+12.04 to Sta. 11+84.01
-DR2RT- Sta. 10+12.00 to Sta. 12+48.17

*ALL EXISTING GRAVEL DRIVEWAYS TO BE PAVED TO THE PROPOSED R/W OR AS DIRECTED BY THE ENGINEER (SEE TYPICAL SECTION NO. 5 FOR PAVEMENT DESIGN)



Detail Showing Method Of Wedging

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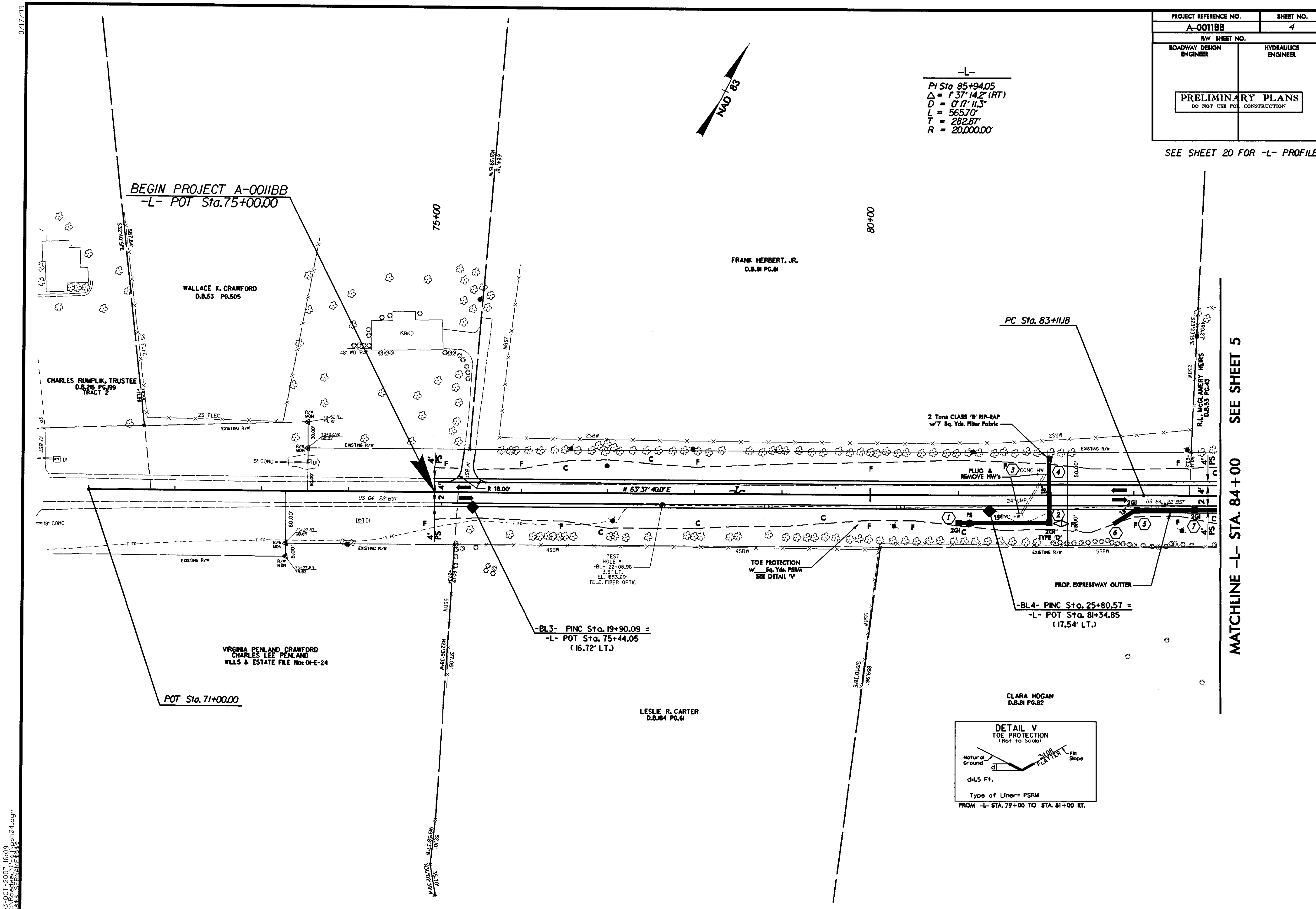
PROJECT REFERENCE NO.
A-0011BB
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SEE SHEET 20 FOR -L- PROFILE
-L-
PI Sta 85+94.05
Δ = 1° 37' 14.2" (RT)
D = 0° 17' 11.3"
L = 565.70'
T = 282.87'
R = 20,000.00'
NAD 83
BEGIN PROJECT A-0011BB
-L- POT Sta.75+00.00
75+00
80+00
WALLACE K. CRAWFORD
D.B.53 PG.505
FRANK HERBERT, JR.
D.B.81 PG.81
CHARLES RUMPLIK, TRUSTEE
D.B.215 PG.199
TRACT 2
PC Sta. 83+11.18
2 Tons CLASS 'B' RIP-RAP
w/7 Sq. Yds. Filter Fabric
PLUG & REMOVE HW's
R.L. McCLAMERY HEIRS
D.B.53 PG.43
SEE SHEET 5
MATCHLINE -L- STA. 84+00
US 64 22' BST
N 63° 37' 40.0" E
EXISTING R/W
TEST HOLE #1
-BL- 22+08.96
3.91' LT.
EL. 1853.69'
TELE. FIBER OPTIC
TOE PROTECTION
W/__Sq. Yds. PSRM
SEE DETAIL 'V'
PROP. EXPRESSWAY GUTTER
-BL3- PINC Sta. 19+90.09 =
-L- POT Sta. 75+44.05
(16.72' LT.)
-BL4- PINC Sta. 25+80.57 =
-L- POT Sta. 81+34.85
(17.54' LT.)
VIRGINIA PENLAND CRAWFORD
CHARLES LEE PENLAND
WILLS & ESTATE FILE No: 01-E-24
POT Sta. 71+00.00
LESLIE R. CARTER
D.B.184 PG.61
CLARA HOGAN
D.B.81 PG.82
DETAIL V
TOE PROTECTION
(Not to Scale)
Natural Ground
2:1 OR FLATTER
Fill Slope
d=1.5 Ft.
Type of Liner= PSRM
FROM -L- STA. 79+00 TO STA. 81+00 RT.
8/17/99
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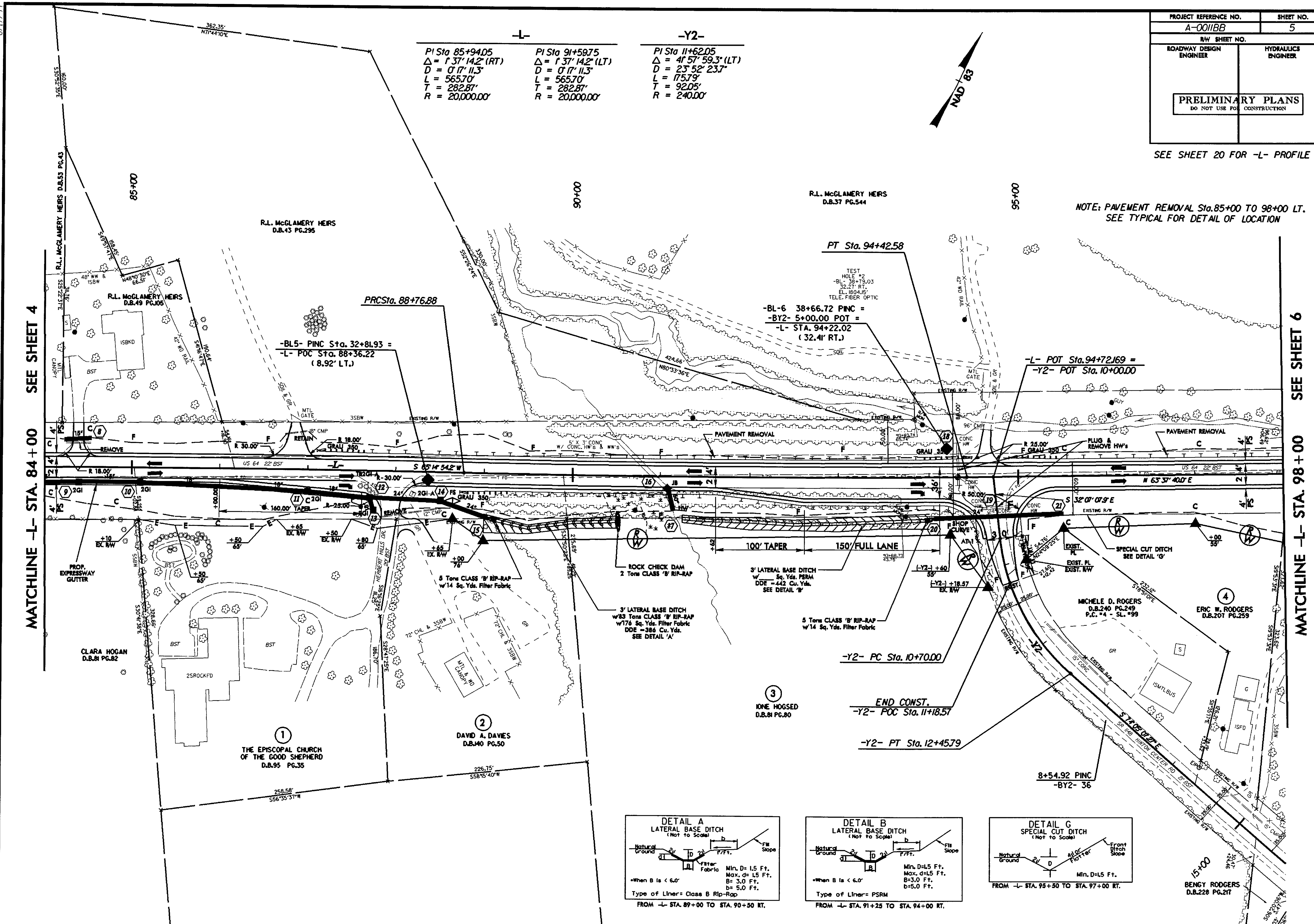
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-		-Y2-
PI Sta 85+94.05	PI Sta 91+59.75	PI Sta 11+62.05
Δ = 1° 37' 14.2" (RT)	Δ = 1° 37' 14.2" (LT)	Δ = 41° 57' 59.3" (LT)
D = 0° 17' 11.3"	D = 0° 17' 11.3"	D = 23° 52' 23.7"
L = 565.70'	L = 565.70'	L = 175.79'
T = 282.87'	T = 282.87'	T = 92.05'
R = 20,000.00'	R = 20,000.00'	R = 240.00'

SEE SHEET 20 FOR -L- PROFILE

NOTE: PAVEMENT REMOVAL Sta.85+00 TO 98+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION


NAD 83
MATCHLINE -L- STA. 84+00
SEE SHEET 4
MATCHLINE -L- STA. 98+00
SEE SHEET 6
85+00
90+00
95+00
15+00
R.L. McGLAMERY HEIRS
D.B.43 PG.295
R.L. McGLAMERY HEIRS
D.B.49 PG.105
R.L. McGLAMERY HEIRS
D.B.37 PG.544
PRCSta. 88+76.88
-BL5- PINC Sta. 32+81.93 =
-L- POC Sta. 88+36.22
(8.92' LT.)
PT Sta. 94+42.58
-BL-6 38+66.72 PINC =
-BY2- 5+00.00 POT =
-L- STA. 94+22.02
(32.41' RT.)
-L- POT Sta.94+72.169 =
-Y2- POT Sta. 10+00.00
PAVEMENT REMOVAL
US 64 22' BST
100' TAPER
150' FULL LANE
ROCK CHECK DAM
2 Tons CLASS 'B' RIP-RAP
3' LATERAL BASE DITCH
w/83 Tons CLASS 'B' RIP-RAP
w/176 Sq. Yds. Filter Fabric
DDE =386 Cu. Yds.
SEE DETAIL 'A'
3' LATERAL BASE DITCH
w/ Sq. Yds. PSRM
DDE =442 Cu. Yds.
SEE DETAIL 'B'
5 Tons CLASS 'B' RIP-RAP
w/14 Sq. Yds. Filter Fabric
SPECIAL CUT DITCH
SEE DETAIL 'G'
PROP. EXPRESSWAY GUTTER
-Y2- PC Sta. 10+70.00
END CONST.
-Y2- POC Sta. 11+18.57
-Y2- PT Sta. 12+45.79
8+54.92 PINC
-BY2- 36
CLARA HOGAN
D.B.81 PG.82
1
THE EPISCOPAL CHURCH
OF THE GOOD SHEPHERD
D.B.95 PG.35
2
DAVID A. DAVIES
D.B.140 PG.50
3
IONE HOGSED
D.B.81 PG.80
4
ERIC W. RODGERS
D.B.207 PG.259
MICHELE D. ROGERS
D.B.240 PG.249
P.C. #4 - SL. #99
BENGY RODGERS
D.B.228 PG.217
DETAIL A
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3.0 Ft.
b= 5.0 Ft.
Type of Liner= Class B Rip-Rap
FROM -L- STA. 89+00 TO STA. 90+50 RT.
DETAIL B
LATERAL BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=3.0 Ft.
b=5.0 Ft.
Type of Liner= PSRM
FROM -L- STA. 91+25 TO STA. 94+00 RT.
DETAIL G
SPECIAL CUT DITCH
(Not to Scale)
Min. D=1.5 Ft.
FROM -L- STA. 95+50 TO STA. 97+00 RT.

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 20 & 21 FOR -L- PROFILE

-L-

PIs Sta 99+89.04
Θs = 1° 30' 28.0"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'

PI Sta 108+04.39
Δ = 30° 03' 48.8" (RT)
D = 2° 00' 37.4"
L = 1,495.42'
T = 765.35'
R = 2,850.00'
SE = 0.05

NAD 83

NOTE: PAVEMENT REMOVAL Sta.98+00 TO Sta.111+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION

TS Sta. 98+89.04

SC Sta. 100+39.04

100+00

105+00

110+00

-BL8- PINC Sta. 50+80.91 =
-L- POC Sta. 106+32.30
(32.46' RT.)

-BL9- PINC Sta. 55+42.71 =
-L- POC Sta. 110+89.46
(47.00' RT.)

-BL7- PINC Sta. 44+05.46 =
-L- POC Sta. 99+58.94
(31.86' RT.)

JAMES EDWARD RODGERS
D.B.74 PG.143

HENRY R. RODGERS HEIRS
D.B.35 PG.603

BENNY RODGERS
D.B.74 PG.142

D. PASCHAL HOYLE
D.B.49 PG.264
P.C.#2 SL.669

JENNY LOU LONG
D.B.99 PG.105
D.B.36 PG.258
D.B.38 PG.250

BENGY RODGERS
D.B.228 PG.217

ERIC W. ROGERS
D.B.235 PG.10

JACK B. SMART
D.B.56 PG.68

JACK B. SMART
D.B.99 PG.108

JOHN T. SMART, Jr.
D.B.99 PG.108

MATCHLINE -L- STA. 98+00

SEE SHEET 5

MATCHLINE -L- STA. 111+00

SEE SHEET 7

3 Tons CLASS 'B' RIP-RAP w/11 Sq. Yds. Filter Fabric

PLUG & REMOVE HW's

PAVEMENT REMOVAL

BERM DITCH (SEE Std. 240.01)

SPECIAL CUT DITCH SEE DETAIL 'G'

DRAIN FIELD

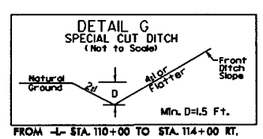
SEPTIC TANK

ISFD

BST

24" WHITE OAK TREE

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)



FROM -L- STA. 110+00 TO STA. 114+00 RT.

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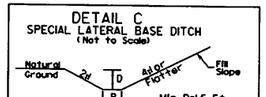
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 21 & 22 FOR -L- PROFILE

NOTE: PAVEMENT REMOVAL Sta.111+00 TO Sta.124+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION

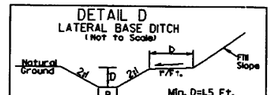
DETAIL C
SPECIAL LATERAL BASE DITCH
(Not to Scale)



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

FROM -L- STA. 117+50 TO STA. 120+00 RT.

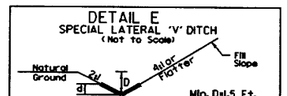
DETAIL D
LATERAL BASE DITCH
(Not to Scale)



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

FROM -L- STA. 116+07 TO STA. 117+50 RT.

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

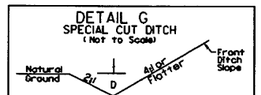


Min. D=1.5 Ft.
Max. d=1.5 Ft.

Type of Liner= PSRM

FROM -L- STA. 120+50 TO STA. 126+00 RT.

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)



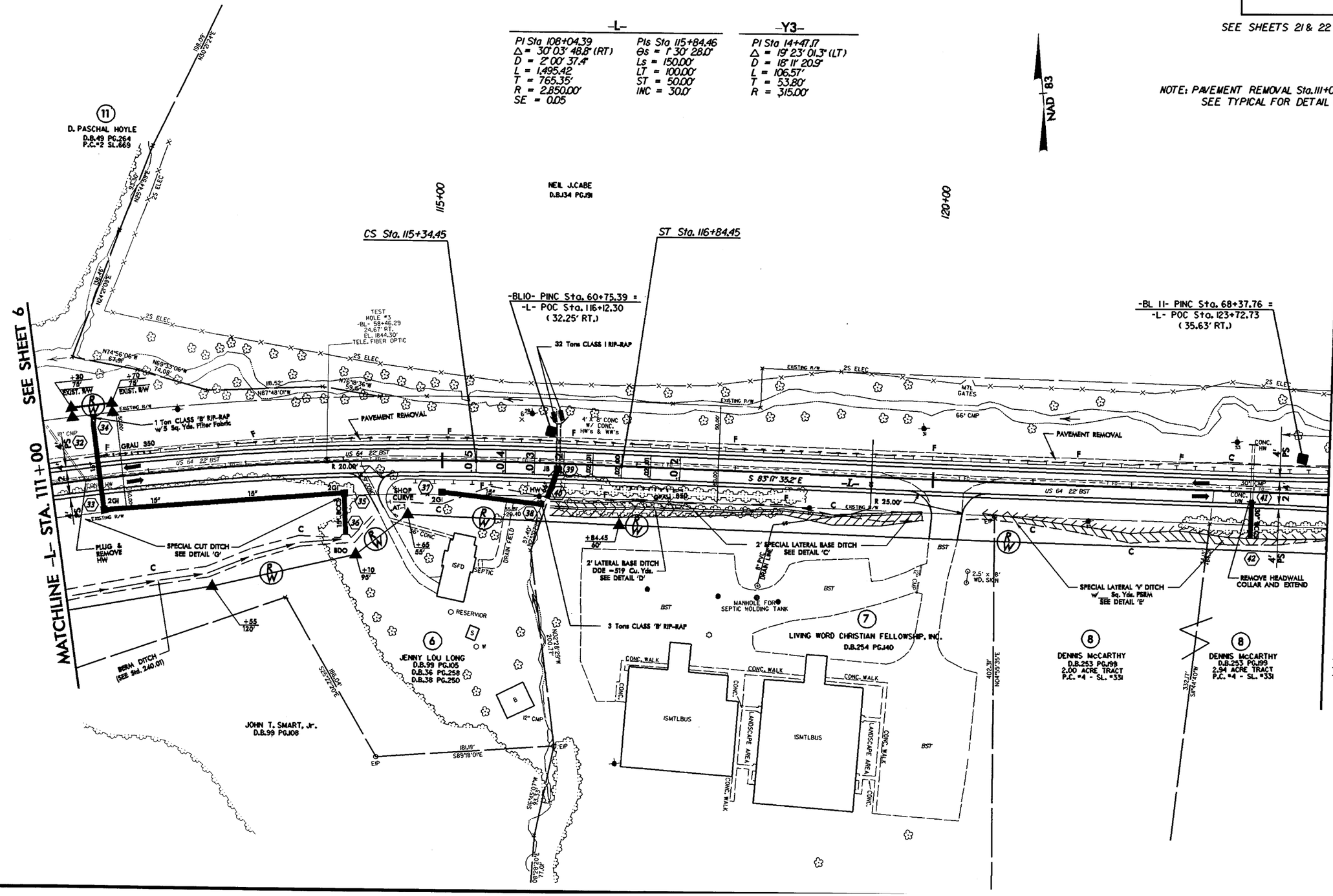
Min. D=1.5 Ft.

FROM -L- STA.110+00 TO STA. 114+00 RT.

-L-	
PI Sta 108+04.39	PIs Sta 115+84.46
Δ = 30° 03' 48.8" (RT)	Θs = 1° 30' 28.0"
D = 2° 00' 37.4"	Ls = 150.00'
L = 1,495.42	LT = 100.00'
T = 765.35'	ST = 50.00'
R = 2,850.00'	INC = 30.0'
SE = 0.05	

-Y3-
PI Sta 14+47.17
Δ = 19° 23' 01.3" (LT)
D = 18° 11' 20.9"
L = 106.57'
T = 53.80'
R = 315.00'

NAD 83



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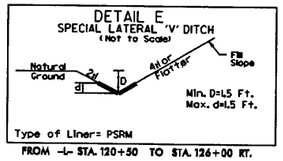
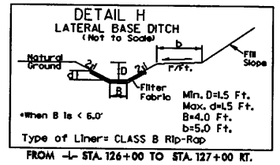
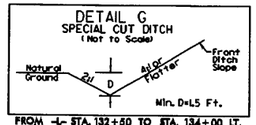
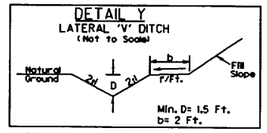
8/17/99









PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 28 FOR -Y3- PROFILE

NAD 83

-L-

Pls Sta 126+98.35
Θs = 1° 27' 52.6"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'

PI Sta 131+86.03
Δ = 16° 58' 08.9" (RT)
D = 1° 57' 10.2"
L = 868.96'
T = 437.68'
R = 2,934.00'
SE = 0.05

Pls Sta 136+67.31
Θs = 1° 27' 52.6"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'

-Y3-

PI Sta 10+99.53
Δ = 74° 01' 33.5" (RT)
D = 57° 17' 44.8"
L = 129.37'
T = 75.53'
R = 100.00'

PI Sta 14+47.17
Δ = 19° 23' 01.3" (LT)
D = 18° 11' 20.9"
L = 106.57'
T = 53.80'
R = 315.00'

-Y4-

PI Sta 17+56.67
Δ = 60° 33' 49.4" (LT)
D = 114° 35' 29.6"
L = 52.85'
T = 29.20'
R = 50.00'

NOTE: PAVEMENT REMOVAL Sta.124+00 TO Sta.137+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION

SEE SHEET 7
MATCHLINE -L- STA. 124+00
MATCHLINE -L- STA. 137+00
SEE SHEET 9

NEIL J. CABE D.B.J34 PG.191

DEBORAH JEAN LEDFORD D.B.J68 PG.150

TS Sta. 125+98.35

BEGIN CONST. -Y4- POT Sta. 16+30.00

-Y4- PC Sta. 17+27.48

-Y4- PT Sta. 17+80.33

-BY3- POT Sta 5+00.00 =
-BY4- POT Sta. 11+73.99 =
-BL12- PINC Sta. 73+96.14 =
-L- POC Sta. 129+30.68
(39.56' RT.)

SC Sta. 127+48.35

DENNIS McCARTHY D.B.253 PG.199 157 ACRE TRACT P.C. #4 - SL. #331

WALLACE A. SMITH D.B.235

-Y4- POT Sta. 15+00.00

JAMES V. LEDFORD D.B.J95 PG.12

JAMES V. LEDFORD D.B.J53 PG.130

CS Sta. 136+17.31

-BL13- PINC Sta. 79+09.35 =
-L- POC Sta. 134+38.30
(40.32' RT.)

330' SHIFT LT./RT.

150' RIGHT TURN -L-

100' TAPER RT.

250' LEFT TURN -L- POC Sta.129+89.76 = -Y3- POT Sta.10+00.00 -Y4-POT Sta. 18+06.77

100' TAPER RT.

-Y3- PT Sta. 14+99.94

PC Sta. 13+93.37

-Y3- PC Sta. 10+24.00

-Y3- PT Sta. 11+53.37

END CONST. -Y3- POT Sta. 15+50.00

9+12.87 PINC

WILLIAM H. CURNS D.B.J94 PG.170

WALLACE A. SMITH D.B.198 PG.235 LOT #1 "OAK FOREST ACRES" P.C. #3 - SL. #142

WALLACE A. SMITH D.B.198 PG.235 LOT #2 "OAK FOREST ACRES" P.C. #3 - SL. #142

WALLACE A. SMITH LOT #3

DENNIS McCARTHY D.B.253 PG.199 2.94 ACRE TRACT P.C. #4 - SL. #331

SPECIAL LATERAL 'V' DITCH w/ ___ Sq. Yds. PSRM Liner SEE DETAIL 'E'

4' LATERAL BASE DITCH w/ 68 Tons CLASS 'B' RIP-RAP w/ 178 Sq.Yds. Filter Fabric DDE = ___ Cu. Yds. SEE DETAIL 'H'

11 Tons CLASS I RIP-RAP

13 Tons CLASS I RIP-RAP

1 Ton CLASS 'B' RIP-RAP

LATERAL 'V' DITCH DDE = ___ Cy. Yds. SEE DETAIL 'Y'

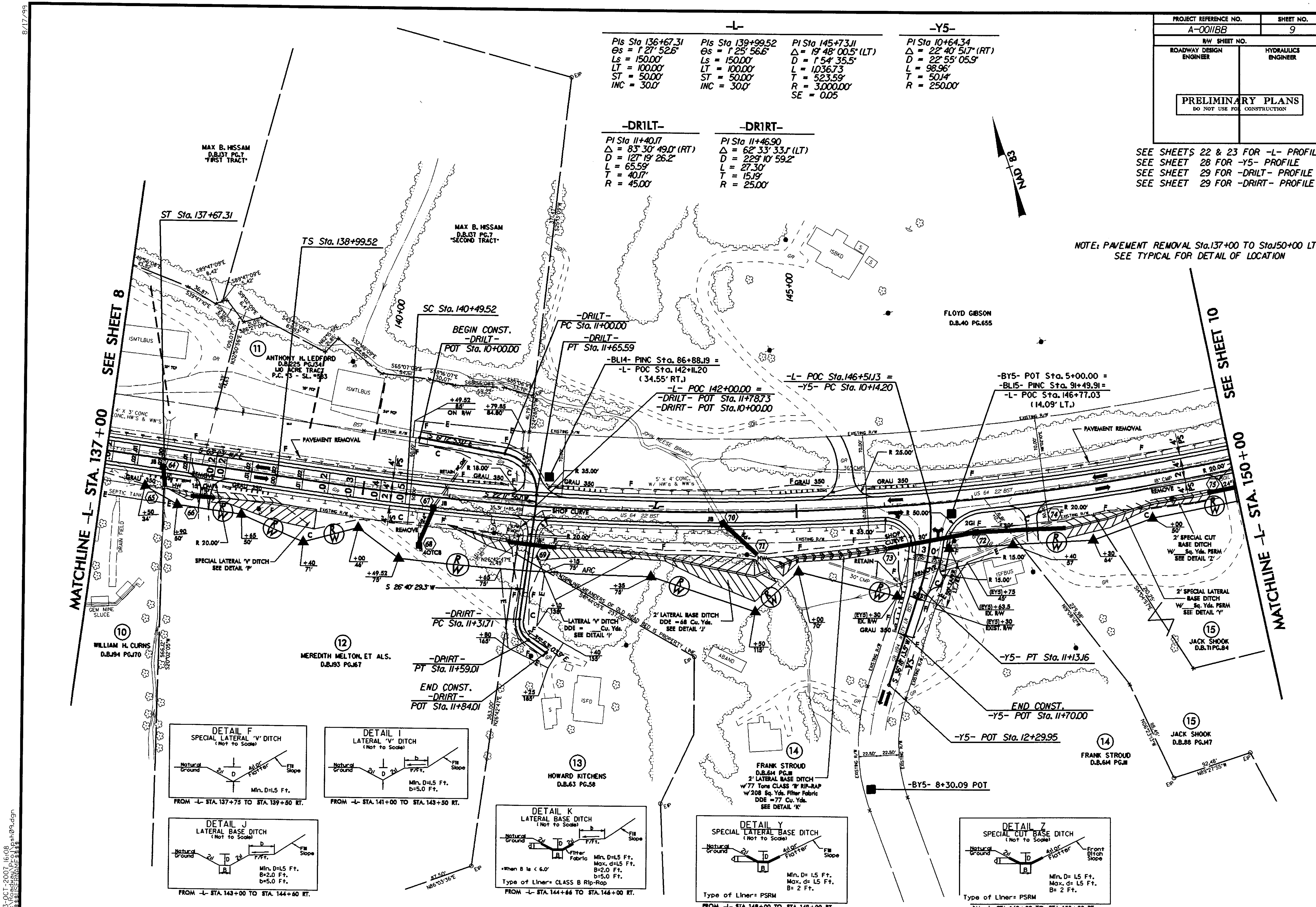
SPECIAL CUT DITCH SEE DETAIL 'G'

BERM DITCH (SEE Std. 240.01)

TEST HOLE #4 -BL- 79+80.32 33.28' RT. EL. 1866.2' TELE. FIBER OPTIC

SR 1525 DOWNINGS CREEK RD 18' BST

US 64 22' BST



PROJECT REFERENCE NO. A-0011BB
SHEET NO. 9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
PIs Sta 136+67.31 Θs = 1° 27' 52.6" Ls = 150.00' LT = 100.00' ST = 50.00' INC = 30.0'
PIs Sta 139+99.52 Θs = 1° 25' 56.6" Ls = 150.00' LT = 100.00' ST = 50.00' INC = 30.0'
PI Sta 145+73.11 Δ = 19° 48' 00.5" (LT) D = 1° 54' 35.5" L = 1,036.73 T = 523.59' R = 3,000.00' SE = 0.05
-Y5-
PI Sta 10+64.34 Δ = 22° 40' 51.7" (RT) D = 22° 55' 05.9" L = 98.96' T = 50.14' R = 250.00'
-DR1LT-
PI Sta 11+40.17 Δ = 83° 30' 49.0" (RT) D = 127° 19' 26.2" L = 65.59' T = 40.17' R = 45.00'
-DR1RT-
PI Sta 11+46.90 Δ = 62° 33' 33.1" (LT) D = 229° 10' 59.2" L = 27.30' T = 15.19' R = 25.00'
SEE SHEETS 22 & 23 FOR -L- PROFILE
SEE SHEET 28 FOR -Y5- PROFILE
SEE SHEET 29 FOR -DR1LT- PROFILE
SEE SHEET 29 FOR -DR1RT- PROFILE
NAD 83
NOTE: PAVEMENT REMOVAL Sta.137+00 TO Sta.150+00 LT. SEE TYPICAL FOR DETAIL OF LOCATION
SEE SHEET 8
SEE SHEET 10
MATCHLINE -L- STA. 137+00
MATCHLINE -L- STA. 150+00
MAX B. HISSAM D.B.137 PG.7 "FIRST TRACT"
MAX B. HISSAM D.B.137 PG.7 "SECOND TRACT"
ST Sta. 137+67.31
TS Sta. 138+99.52
SC Sta. 140+49.52
BEGIN CONST. -DR1LT- POT Sta. 10+00.00
-DR1LT- PC Sta. 11+00.00
-DR1LT- PT Sta. 11+65.59
-BL14- PINC Sta. 86+88.19 = -L- POC Sta. 142+11.20 (34.55' RT.)
-L- POC 142+00.00 = -DR1LT- POT Sta. 11+78.73 -DR1RT- POT Sta. 10+00.00
-L- POC Sta. 146+51.13 = -Y5- PC Sta. 10+14.20
-BY5- POT Sta. 5+00.00 = -BL15- PINC Sta. 91+49.91 = -L- POC Sta. 146+77.03 (14.09' LT.)
FLOYD GIBSON D.B.40 PG.655
11 ANTHONY H. LEDFORD D.B.225 PG.341 1.10 ACRE TRACT P.C. 13 - SL. 583
10 WILLIAM H. CURNS D.B.194 PG.170
12 MEREDITH MELTON, ET ALS. D.B.193 PG.167
13 HOWARD KITCHENS D.B.63 PG.58
14 FRANK STROUD D.B.614 PG.111
15 JACK SHOOK D.B.71 PG.84
15 JACK SHOOK D.B.88 PG.147
PAVEMENT REMOVAL
US 64 22' BST
SHOP CURVE
SPECIAL LATERAL 'V' DITCH SEE DETAIL 'F'
S 26° 40' 29.3" W
-DR1RT- PC Sta. 11+31.71
-DR1RT- PT Sta. 11+59.01
END CONST. -DR1RT- POT Sta. 11+84.01
LATERAL 'V' DITCH DDE = __ Cu. Yds. SEE DETAIL 'I'
2' LATERAL BASE DITCH DDE = 68 Cu. Yds. SEE DETAIL 'J'
2' LATERAL BASE DITCH W/77 Tons CLASS 'B' RIP-RAP W/208 Sq. Yds. Filter Fabric DDE = 77 Cu. Yds. SEE DETAIL 'K'
2' SPECIAL CUT BASE DITCH W/__ Sq. Yds. PSRM SEE DETAIL 'Z'
2' SPECIAL LATERAL BASE DITCH W/__ Sq. Yds. PSRM SEE DETAIL 'Y'
-Y5- PT Sta. 11+13.16
END CONST. -Y5- POT Sta. 11+70.00
-Y5- POT Sta. 12+29.95
-BY5- 8+30.09 POT
DETAIL F SPECIAL LATERAL 'V' DITCH (Not to Scale) Min. D=1.5 Ft. FROM -L- STA. 137+75 TO STA. 139+50 RT.
DETAIL I LATERAL 'V' DITCH (Not to Scale) Min. D=1.5 Ft. b=5.0 Ft. FROM -L- STA. 141+00 TO STA. 143+50 RT.
DETAIL J LATERAL BASE DITCH (Not to Scale) Min. D=1.5 Ft. B=2.0 Ft. b=5.0 Ft. FROM -L- STA. 143+00 TO STA. 144+60 RT.
DETAIL K LATERAL BASE DITCH (Not to Scale) Min. D=1.5 Ft. Max. d=1.5 Ft. B=2.0 Ft. b=5.0 Ft. Type of Liner= CLASS B Rip-Rap FROM -L- STA. 144+66 TO STA. 146+00 RT.
DETAIL Y SPECIAL LATERAL BASE DITCH (Not to Scale) Min. D= 1.5 Ft. Max. d= 1.5 Ft. B= 2 Ft. Type of Liner= PSRM FROM -L- STA. 148+00 TO STA. 149+00 RT.
DETAIL Z SPECIAL CUT BASE DITCH (Not to Scale) Min. D= 1.5 Ft. Max. d= 1.5 Ft. B= 2 Ft. Type of Liner= PSRM FROM -L- STA. 149+00 TO STA. 150+00 RT.
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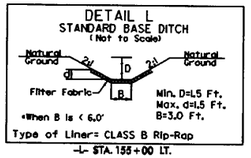
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 23 FOR -L- PROFILE

DETAIL L
STANDARD BASE DITCH
(Not to Scale)



-L- STA. 155+00 LT.

-L-

PI Sta 145+73.11
Δ = 19° 48' 00.5" (LT)
D = 1° 54' 35.5"
L = 1,036.73
T = 523.59'
R = 3,000.00'
SE = 0.05

PIs Sta 151+36.26
Θs = 1° 25' 56.6"
Ls = 150.00'
LT = 100.00'
ST = 50.00'
INC = 30.0'

NAD 83

NOTE: PAVEMENT REMOVAL Sta.150+00 TO Sta.163+00 LT.
SEE TYPICAL FOR DETAIL OF LOCATION

SEE SHEET 9

MATCHLINE -L- STA. 150+00

SEE SHEET 11

MATCHLINE -L- STA. 163+65.00

150+00 | 155+00 | 160+00

CS Sta. 150+86.25
ST Sta. 152+36.25
-BL16- PINC Sta. 98+11.00 = -L- POT Sta. 153+34.98 (5.40' LT.)
-BL17- PINC Sta. 107+44.22 = -L- POT Sta. 162+67.95 (7.11' LT.)

JENELL MATHERSON BROCK
D.B.142 PG.216
4.95 ACRE TRACT
"R. CARL MATHERSON HEIRS"
P.C. #2 - SL. #462

CARL KENNETH MATHERSON
D.B.142 PG.218
35.78 ACRE TRACT
"R. CARL MATHERSON HEIRS"
P.C. #2 - SL. #462
(17)

3' STANDARD BASE DITCH w/ 30 Tons CLASS 'B' RIP-RAP w/ 190 Sq Yds. FILTER FABRIC DDE = 40 Cu. Yds. SEE DETAIL 'L'

PAVEMENT REMOVAL

PLUG & REMOVE HW

CL B RIP RAP — 8 TONS
FILTER FABRIC — 21 SY
R 20.00'

GRAU 350

S 86°03'34.8" E

US 64 22' BST

CONC HW

30" ROCK WALL

1.0' x 2.0' ROCK WALL

1.5' x 5.0' ROCK SIGN

6.0' ROCK COLUMN

6.0' ROCK COLUMN TEST HOLE #5 -BL- 98+77.67 6.11' LT. EL. 1889.98' TELE. FIBER OPTIC

2' SPECIAL CUT BASE DITCH W/ Sq. Yds. PSRM SEE DETAIL 'Z'

5 Tons CLASS 'B' RIP-RAP
FILTER FABRIC — 10 SY

PROP. EXPRESSWAY GUTTER

WILEY A. SANDERS
D.B.231 PG.281

JACK SHOOK
D.B.71 PG.84
(15)

206.38'
S85°04'12"E

CARL KENNETH MATHERSON
D.B.142 PG.218
35.78 ACRE TRACT
"R. CARL MATHERSON HEIRS"
P.C. #2 - SL. #461
(16)

BERM DITCH
(SEE Std. 240.01)

DOUGLAS HAROLD MOSS
D.B.154 PG.104
(18)

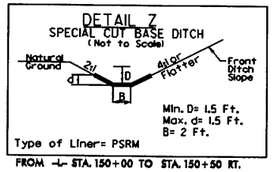
412.32'
S83°01'55"E

RONALD T. ROBERTS
ALICE F. ROBERTS
D.B.302 PG.138
(18A)

CL B RIP RAP — 2 TONS
FILTER FABRIC — 7 SY

DOUGLAS HAROLD MOSS
D.B.154 PG.104
(18)

DETAIL Z
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM -L- STA. 150+00 TO STA. 150+50 RT.

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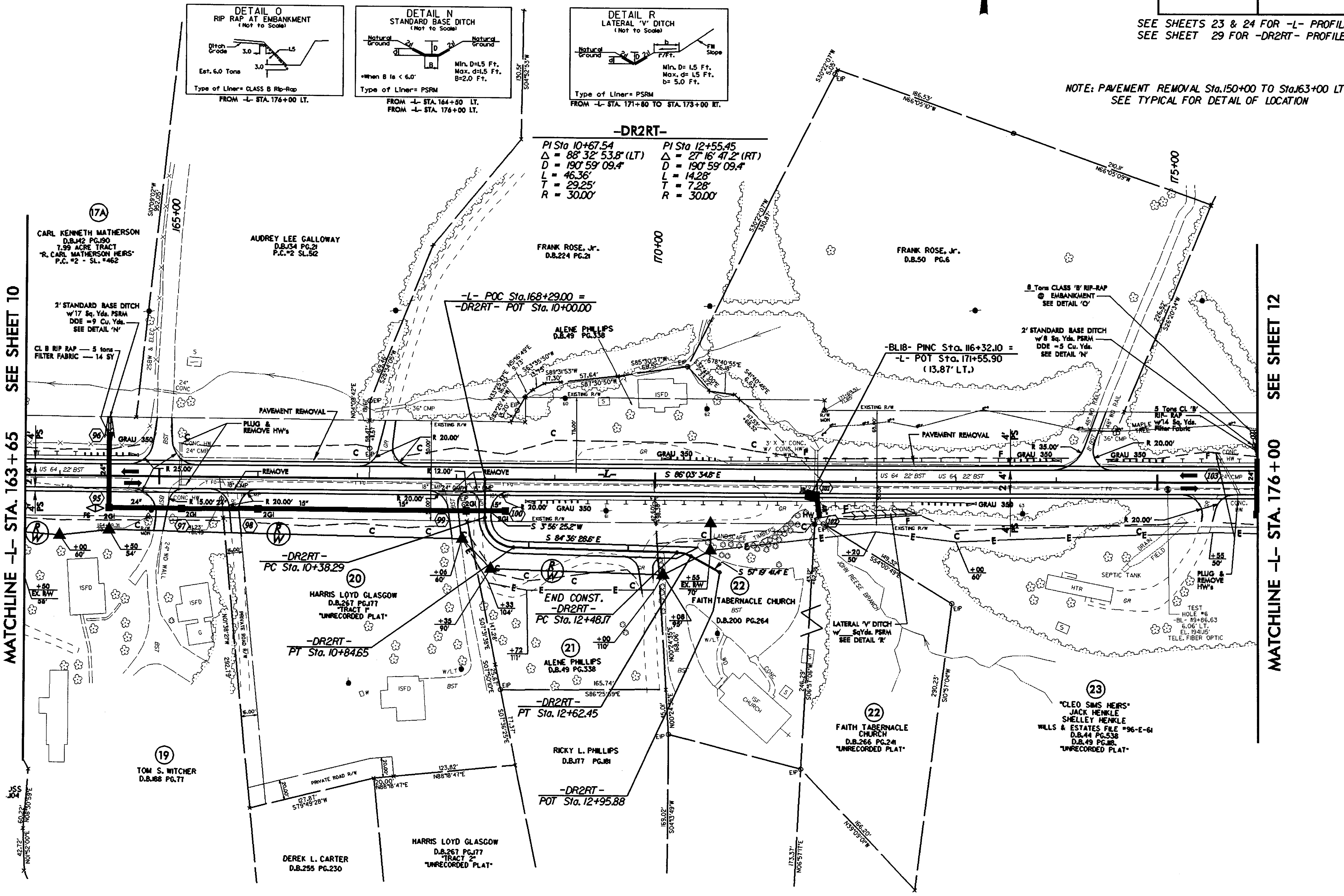
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



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8/17/99

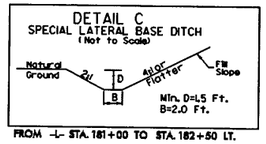
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 24 FOR -L- PROFILE
SEE SHEET 29 FOR -DR3RT- PROFILE

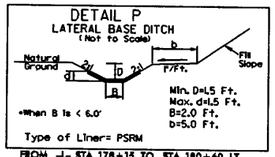
NAD 83

DETAIL C
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 181+00 TO STA. 182+50 LT.

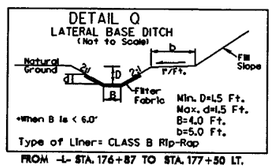
DETAIL P
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA. 178+15 TO STA. 180+60 LT.
FROM -L- STA. 187+50 TO STA. 191+27 LT.

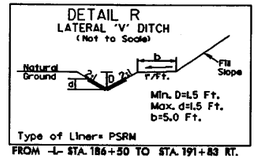
DETAIL Q
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CLASS B Rip-Rap

FROM -L- STA. 176+87 TO STA. 177+50 LT.

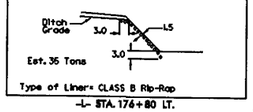
DETAIL R
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

FROM -L- STA. 186+50 TO STA. 191+83 RT.

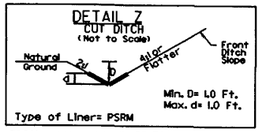
DETAIL W
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= CLASS B Rip-Rap

-L- STA. 176+80 LT.

DETAIL Z
CUT DITCH
(Not to Scale)



Type of Liner= PSRM

FROM -DR3RT- STA. 10+35 TO STA. 13+50 RT.

-DR3RT-

PI Sta 10+86.20	PI Sta 13+90.32
Δ = 56° 45' 02.3" (LT)	Δ = 118° 56' 34.5" (RT)
D = 190° 59' 09.4"	D = 229° 10' 59.2"
L = 29.71'	L = 51.90'
T = 16.20'	T = 42.39'
R = 30.00'	R = 25.00'

MATCHLINE -L- STA. 176+00 SEE SHEET 11

MATCHLINE -L- STA. 189+00 SEE SHEET 13

DOROTHY C. RIPLEY
D.B.50 PG.201

8 Tons CLASS 'B' RIP-RAP AT EMBANKMENT SEE DETAIL 'Q'

8 Tons CLASS 'B' RIP-RAP

4' LATERAL BASE DITCH w/ 45 Tons CLASS 'B' RIP-RAP w/120 Sq. Yds. Filter Fabric DDE =237 Cu. Yds. SEE DETAIL 'Q'

35 Tons CLASS 'B' RIP-RAP @ EMBANKMENT SEE DETAIL 'W'

DAVID DAVENPORT
D.B.140 PG.129

DAVID DAVENPORT
D.B.84 PG.88

NOEL SMART
D.B.52 PG.371

2' LATERAL BASE DITCH w/ Sq. Yds. PSRM DDE = 832 Cu. Yds. SEE DETAIL 'P'

2' SPECIAL LATERAL BASE DITCH w/ Sq. Yds. PSRM SEE DETAIL 'C'

PAVEMENT REMOVAL

5 TONS CLASS 'B' RIP-RAP

GRAU 350 24" CMP

REMOVE 24" CMP

REMOVE 8" CONC

PLUG

US 64 22' BST

-L-

S 86°03'34.8" E

PROP. EXPRESSWAY GUTTER

EXISTING R/W

DRAIN FIELD

SEPTIC

ISFD

ISFBKD

WD DK

WD STEPS

DAVID K. MYERS
D.B.59 PG.103

CYNTHIA LYNN GAEDE
D.B.259 PG.92

TILMON J. FORTNER
D.B.255 PG.273

"CLEO SIMS HEIRS"
JACK HENKLE
SHELLEY HENKLE
WILLS & ESTATES FILE "96-E-61
D.B.44 PG.538
D.B.49 PG.18.
"UNRECORDED PLAT"

GEORGE CONSTANTINE, Jr.
D.B.204 PG.38

H.E. DANIELSON HEIRS
D.B.39 PG.573
D.B.82 PG.43

WOLFGANG HORN
D.B.133 PG.42

-BL19- PINC Sta. 124+68.44 =
-L- POT Sta. 179+92.10
(11.39' LT.)

-BL20- PINC Sta. 129+97.17 =
-L- POT Sta. 185+20.87
(11.87' LT.)

CL B RIP RAP - 3 TONS FILTER FABRIC - 10 SY

2' LATERAL BASE DITCH w/ Sq. Yds. PSRM DDE = 464 Cu. Yds. SEE DETAIL 'P'

LATERAL 'V' DITCH w/ Sq. Yds. PSRM SEE DETAIL 'R'

Tons CLASS 'B' RIP- RAP w/ Sq. Yds. Filter Fabric

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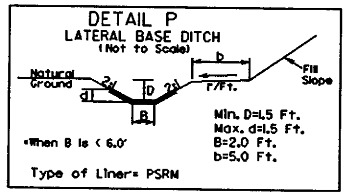
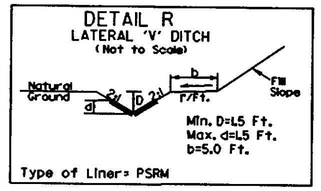
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 24 & 25 FOR -L- PROFILE

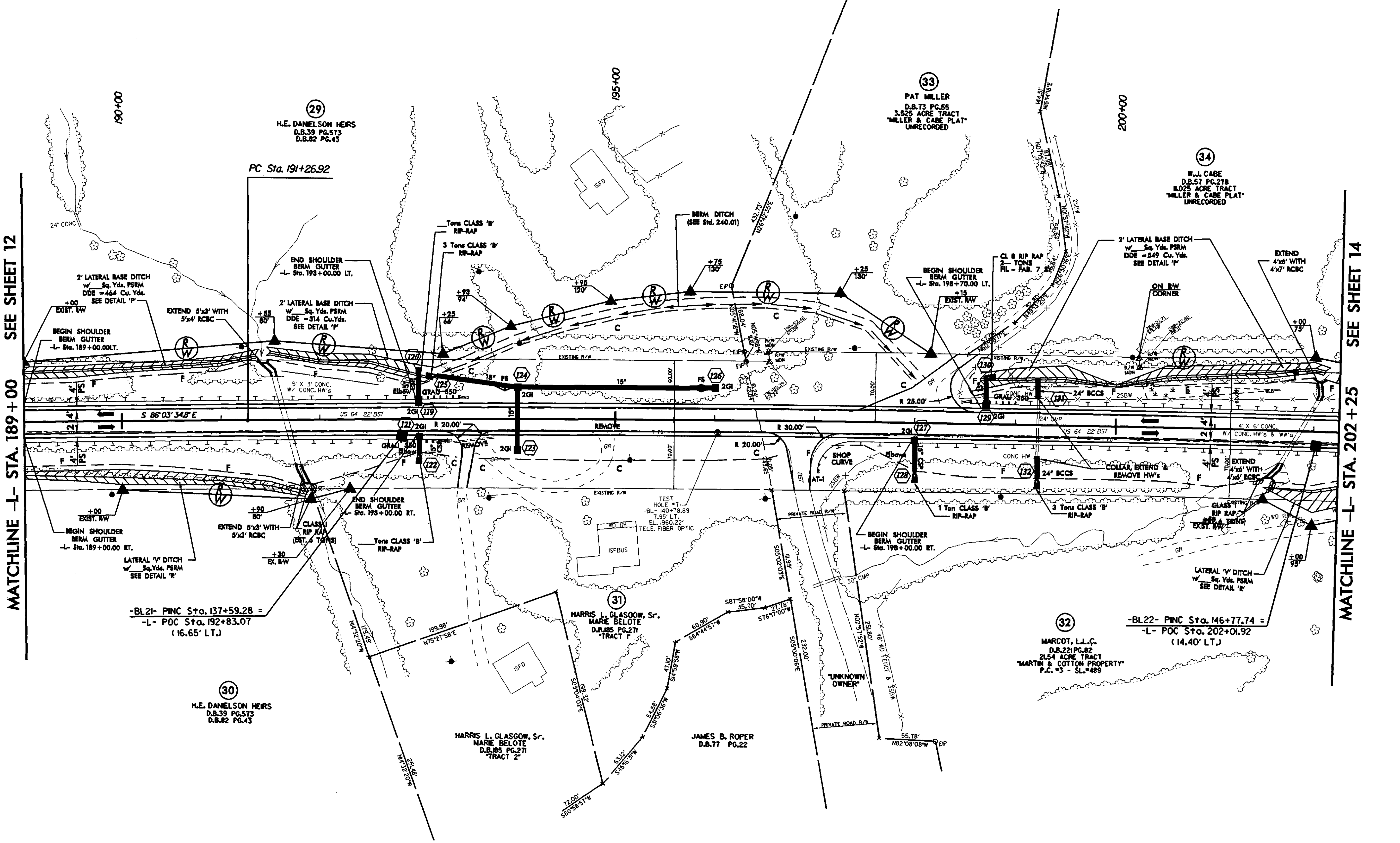


FROM -L- STA. 187+50 TO STA.1 91+27 LT.
FROM -L- STA. 198+50 TO STA. 200+00 LT.
FROM -L- STA. 200+00 TO STA. 202+10 LT.
FROM -L- STA. 191+41 TO STA. 193+10 LT.



FROM -L- STA. 186+50 TO STA. 191+83 RT.
FROM -L- STA. 201+73 TO STA. 204+00 RT.

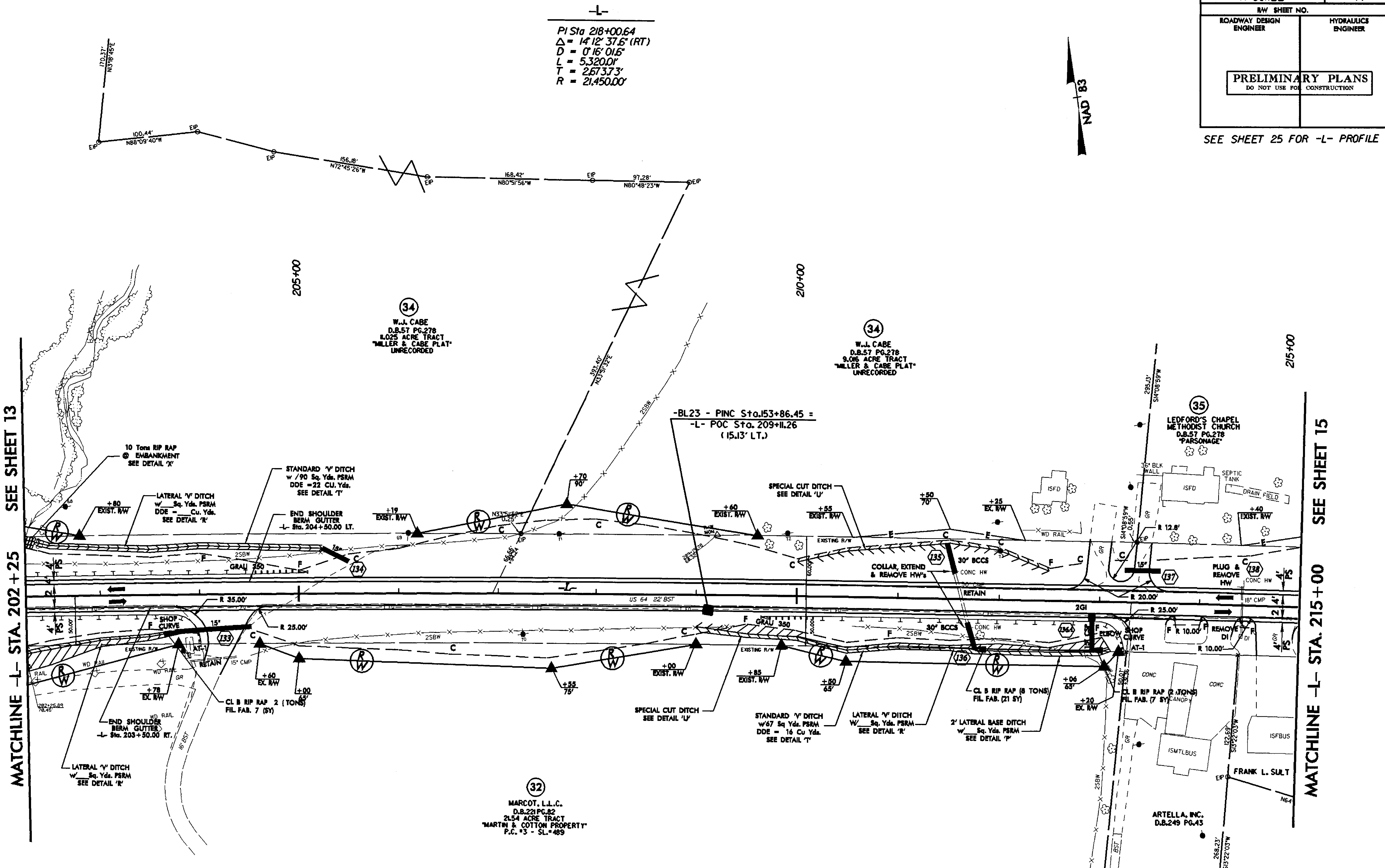
-L-
PI Sta 218+00.64
Δ = 14° 12' 37.6" (RT)
D = 0° 16' 01.6"
L = 5,320.01'
T = 2,673.73'
R = 21,450.00'

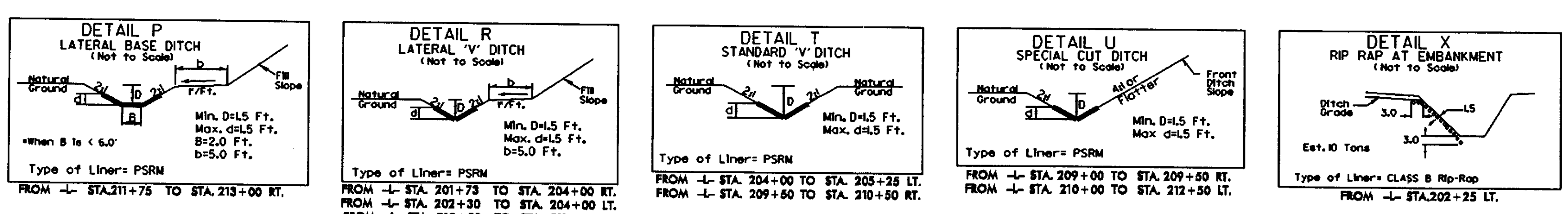


PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 25 FOR -L- PROFILE





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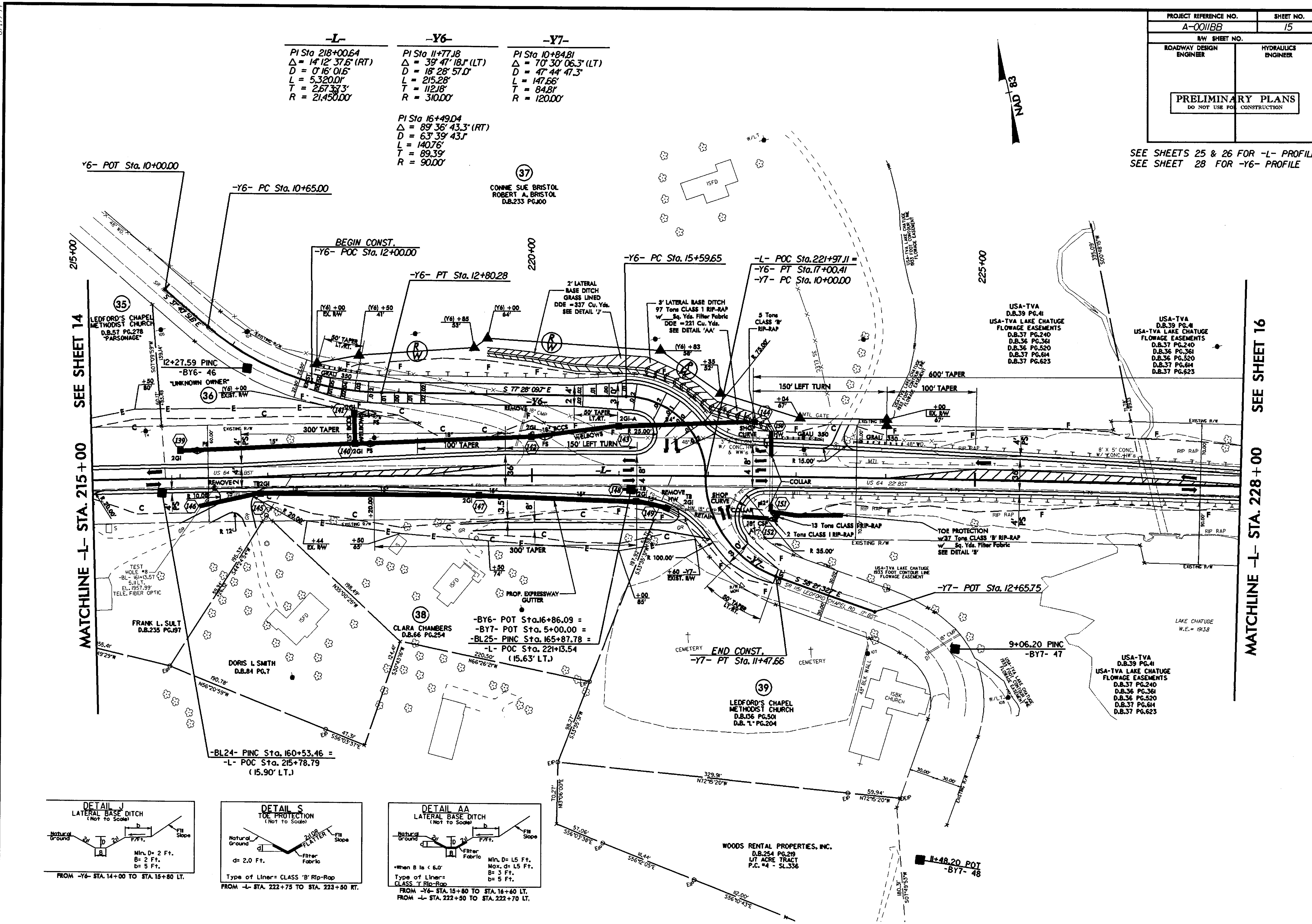

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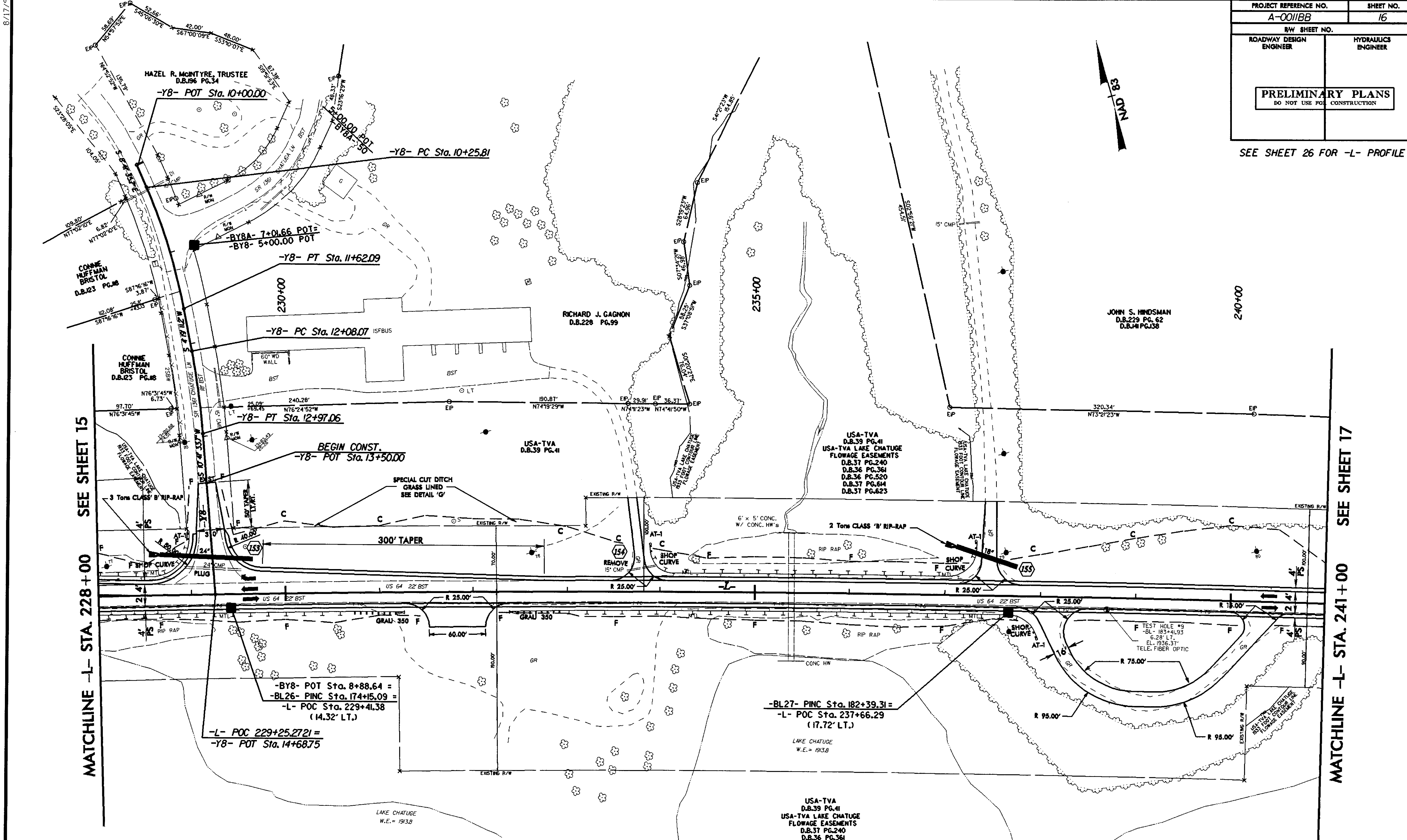
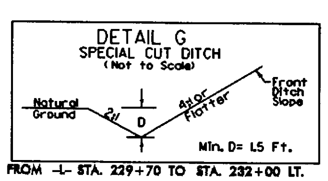
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 26 FOR -L- PROFILE





-L-	-Y8-	
PI Sta 218+00.64	PI Sta 10+94.24	PI Sta 12+52.61
Δ = 14° 12' 37.6" (RT)	Δ = 13° 00' 46.9" (RT)	Δ = 6° 22' 22.5" (RT)
D = 0° 16' 01.6"	D = 9° 32' 57.5"	D = 7° 09' 43.1"
L = 5,320.01'	L = 136.27'	L = 88.98'
T = 2,673.73'	T = 68.43'	T = 44.54'
R = 21,450.00'	R = 600.00'	R = 800.00'

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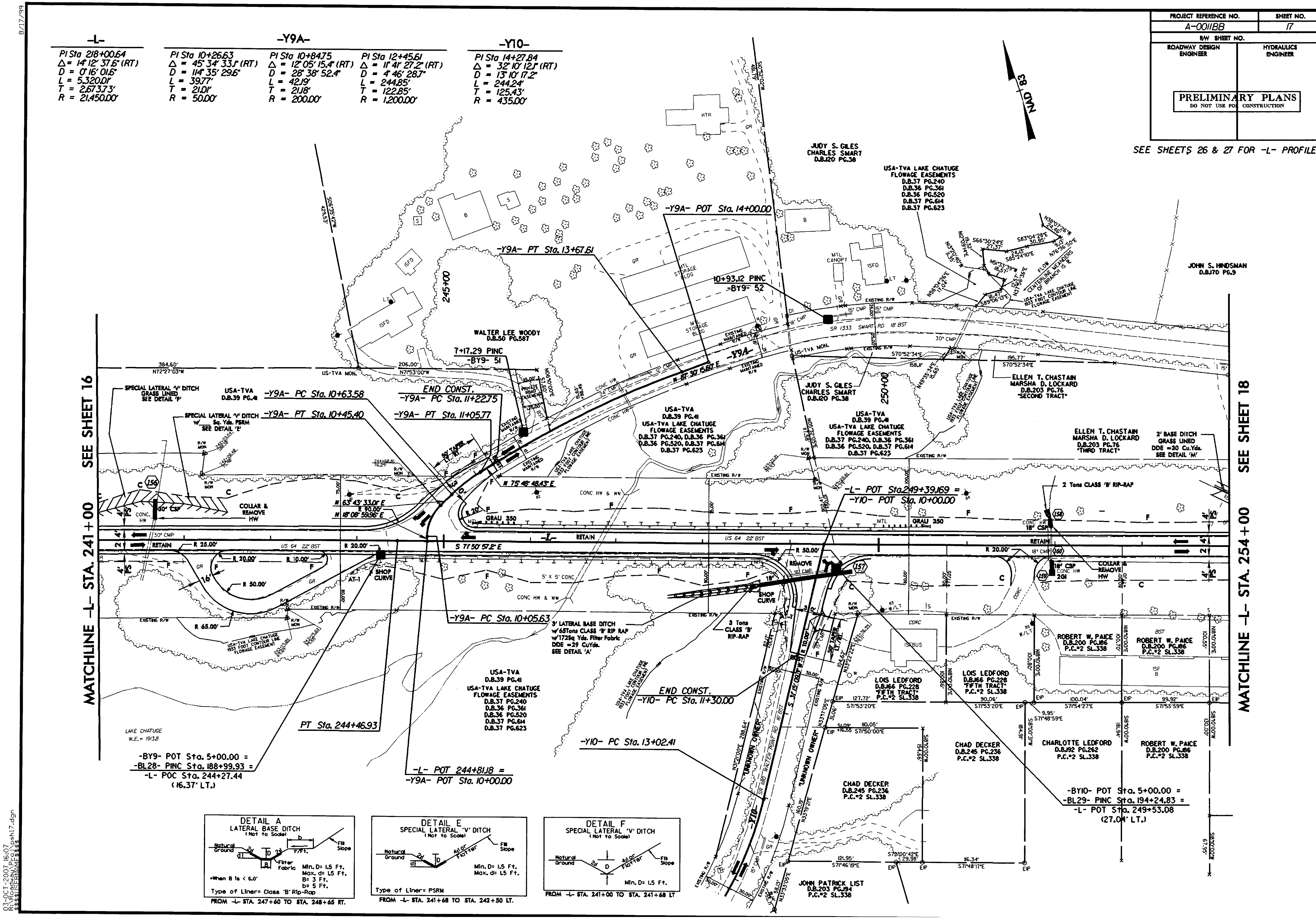

PROJECT REFERENCE NO. A-0011BB
SHEET NO. 17
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SEE SHEETS 26 & 27 FOR -L- PROFILE
-L-
PI Sta 218+00.64
Δ = 14° 12' 37.6" (RT)
D = 0° 16' 01.6"
L = 5,320.01'
T = 2,673.73'
R = 21,450.00'
-Y9A-
PI Sta 10+26.63
Δ = 45° 34' 33.1" (RT)
D = 114° 35' 29.6"
L = 39.77'
T = 21.01'
R = 50.00'
PI Sta 10+84.75
Δ = 12° 05' 15.4" (RT)
D = 28° 38' 52.4"
L = 42.19'
T = 21.18'
R = 200.00'
PI Sta 12+45.61
Δ = 11° 41' 27.2" (RT)
D = 4° 46' 28.7"
L = 244.85'
T = 122.85'
R = 1,200.00'
-Y10-
PI Sta 14+27.84
Δ = 32° 10' 12.1" (RT)
D = 13° 10' 17.2"
L = 244.24'
T = 125.43'
R = 435.00'
NAD 83
MATCHLINE -L- STA. 241+00 SEE SHEET 16
MATCHLINE -L- STA. 254+00 SEE SHEET 18
JUDY S. GILES
CHARLES SMART
D.B.120 PG.38
USA-TVA LAKE CHATUGE FLOWAGE EASEMENTS
D.B.37 PG.240
D.B.36 PG.361
D.B.36 PG.520
D.B.37 PG.614
D.B.37 PG.623
JOHN S. HINDSMAN
D.B.170 PG.9
-Y9A- POT Sta. 14+00.00
-Y9A- PT Sta. 13+67.61
10+93.12 PINC
-BY9- 52
7+17.29 PINC
-BY9- 51
WALTER LEE WOODY
D.B.50 PG.587
SR 1333 SMART RD 18' BST
ELLEN T. CHASTAIN
MARSHA D. LOCKARD
D.B.203 PG.76
"SECOND TRACT"
"THIRD TRACT"
SPECIAL LATERAL 'V' DITCH GRASS LINED SEE DETAIL 'F'
SPECIAL LATERAL 'V' DITCH W/ Sq. Yds. PSRM SEE DETAIL 'E'
USA-TVA
D.B.39 PG.41
-Y9A- PC Sta. 10+63.58
-Y9A- PT Sta. 10+45.40
END CONST.
-Y9A- PC Sta. 11+22.75
-Y9A- PT Sta. 11+05.77
2' BASE DITCH GRASS LINED DDE =30 Cu.Yds. SEE DETAIL 'M'
-L- POT Sta.249+39.169 =
-Y10- POT Sta. 10+00.00
2 Tons CLASS 'B' RIP-RAP
COLLAR & REMOVE HW
US 64 22' BST
S 71° 50' 57.2" E
-Y9A- PC Sta. 10+05.63
3' LATERAL BASE DITCH w/65Tons CLASS 'B' RIP RAP w/172Sq. Yds. Filter Fabric DDE =29 CuYds. SEE DETAIL 'A'
3 Tons CLASS 'B' RIP-RAP
ROBERT W. PAICE
D.B.200 PG.186
P.C.#2 SL.338
LOIS LEDFORD
D.B.166 PG.228
"FIFTH TRACT"
P.C.#2 SL.338
END CONST.
-Y10- PC Sta. 11+30.00
PT Sta. 244+46.93
LAKE CHATUGE W.E.= 1913.8
-BY9- POT Sta. 5+00.00 =
-BL28- PINC Sta. 188+99.93 =
-L- POC Sta. 244+27.44
(16.37' LT.)
-L- POT 244+81.18 =
-Y9A- POT Sta. 10+00.00
-Y10- PC Sta. 13+02.41
CHAD DECKER
D.B.245 PG.236
P.C.#2 SL.338
CHARLOTTE LEDFORD
D.B.192 PG.262
P.C.#2 SL.338
-BY10- POT Sta. 5+00.00 =
-BL29- PINC Sta. 194+24.83 =
-L- POT Sta. 249+53.08
(27.04' LT.)
JOHN PATRICK LIST
D.B.203 PG.194
P.C.#2 SL.338
DETAIL A
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 3 Ft.
b= 5 Ft.
Type of Liner= Class 'B' Rip-Rap
FROM -L- STA. 247+60 TO STA. 248+65 RT.
DETAIL E
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
Type of Liner= PSRM
FROM -L- STA. 241+68 TO STA. 242+50 LT.
DETAIL F
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1.5 Ft.
FROM -L- STA. 241+00 TO STA. 241+68 LT
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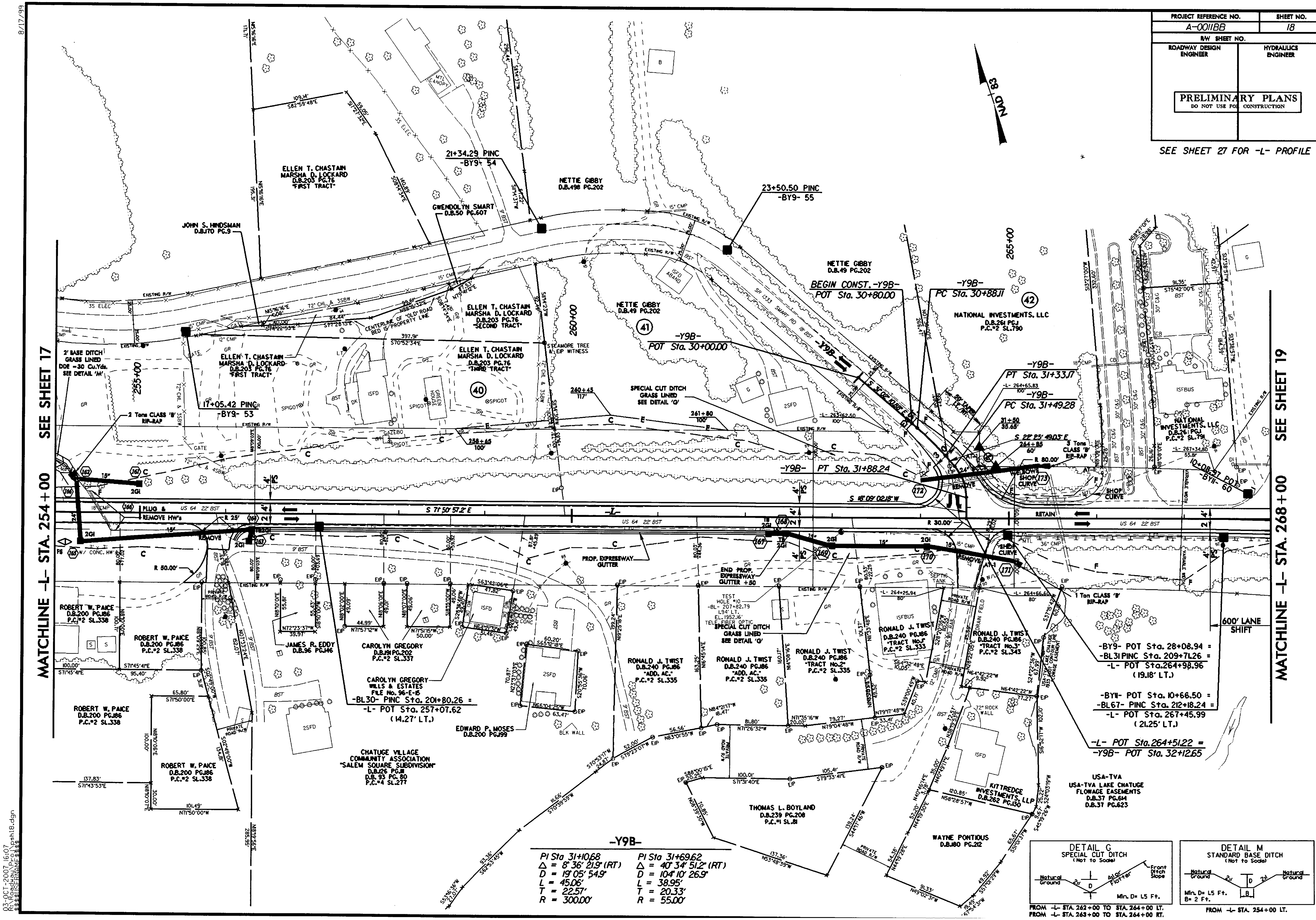

PROJECT REFERENCE NO. A-0011BB
SHEET NO. 18
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SEE SHEET 27 FOR -L- PROFILE
NAD 83
MATCHLINE -L- STA. 254+00
SEE SHEET 17
MATCHLINE -L- STA. 268+00
SEE SHEET 19
ELLEN T. CHASTAIN
MARSHA D. LOCKARD
NETTIE GIBBY
JOHN S. HINDSMAN
GWENDOLYN SMART
NATIONAL INVESTMENTS, LLC
ROBERT W. PAICE
JAMES R. EDDY
CAROLYN GREGORY
EDWARD P. MOSES
CHATUGE VILLAGE COMMUNITY ASSOCIATION "SALEM SQUARE SUBDIVISION"
RONALD J. TWIST
THOMAS L. BOYLAND
KITTREDGE INVESTMENTS, LLP
WAYNE PONTIOUS
USA-TVA
USA-TVA LAKE CHATUGE FLOWAGE EASEMENTS
BEGIN CONST. -Y9B- POT Sta. 30+80.00
-Y9B- PC Sta. 30+88.11
-Y9B- POT Sta. 30+00.00
-Y9B- PT Sta. 31+33.17
-Y9B- PC Sta. 31+49.28
-Y9B- PT Sta. 31+88.24
21+34.29 PINC -BY9- 54
23+50.50 PINC -BY9- 55
17+05.42 PINC -BY9- 53
-BL30- PINC Sta. 201+80.26 = -L- POT Sta. 257+07.62 (14.27' LT.)
-BY9- POT Sta. 28+08.94 = -BL31PINC Sta. 209+7L26 = -L- POT Sta.264+98.96 (19.18' LT.)
-BY11- POT Sta. 10+66.50 = -BL67- PINC Sta. 212+18.24 = -L- POT Sta. 267+45.99 (21.25' LT.)
-L- POT Sta.264+51.22 = -Y9B- POT Sta. 32+12.65
600' LANE SHIFT
US 64 22' BST
S 71°50'57.2" E
-Y9B-
PI Sta 31+10.68
Δ = 8° 36' 21.9" (RT)
D = 19° 05' 54.9"
L = 45.06'
T = 22.57'
R = 300.00'
PI Sta 31+69.62
Δ = 40° 34' 51.2" (RT)
D = 104° 10' 26.9"
L = 38.95'
T = 20.33'
R = 55.00'
SPECIAL CUT DITCH GRASS LINED SEE DETAIL 'G'
2' BASE DITCH GRASS LINED DDE =30 Cu.Yds. SEE DETAIL 'M'
2 Tons CLASS 'B' RIP-RAP
3 Tons CLASS 'B' RIP-RAP
1 Ton CLASS 'B' RIP-RAP
PROP. EXPRESSWAY GUTTER
END PROP. EXPRESSWAY GUTTER +50
DETAIL G
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
6:1 or Flatter
Min. D= 1.5 Ft.
FROM -L- STA. 262+00 TO STA. 264+00 LT.
FROM -L- STA. 263+00 TO STA. 264+00 RT.
DETAIL M
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Min. D= 1.5 Ft.
B= 2 Ft.
FROM -L- STA. 254+00 LT.
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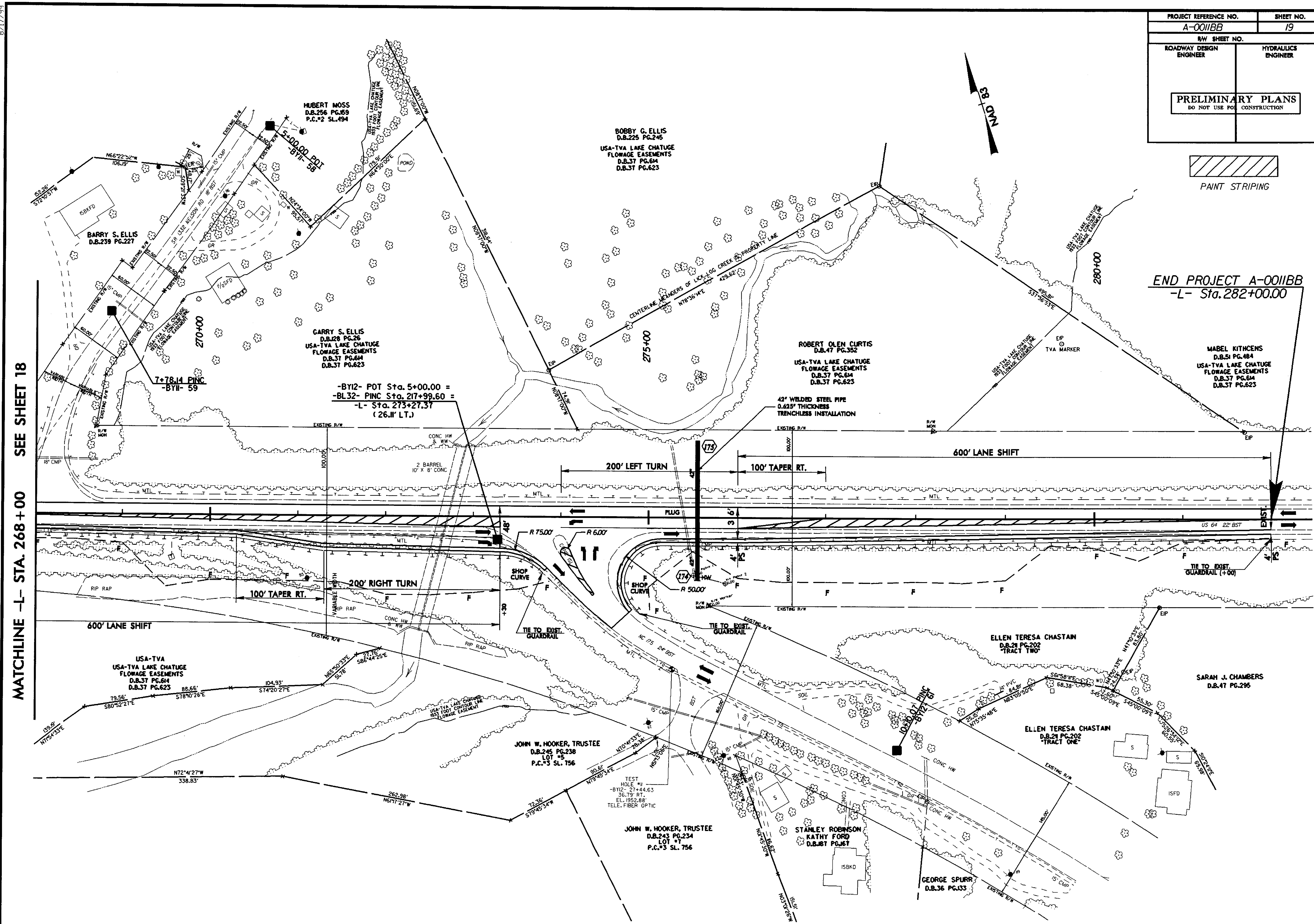
8/17/99



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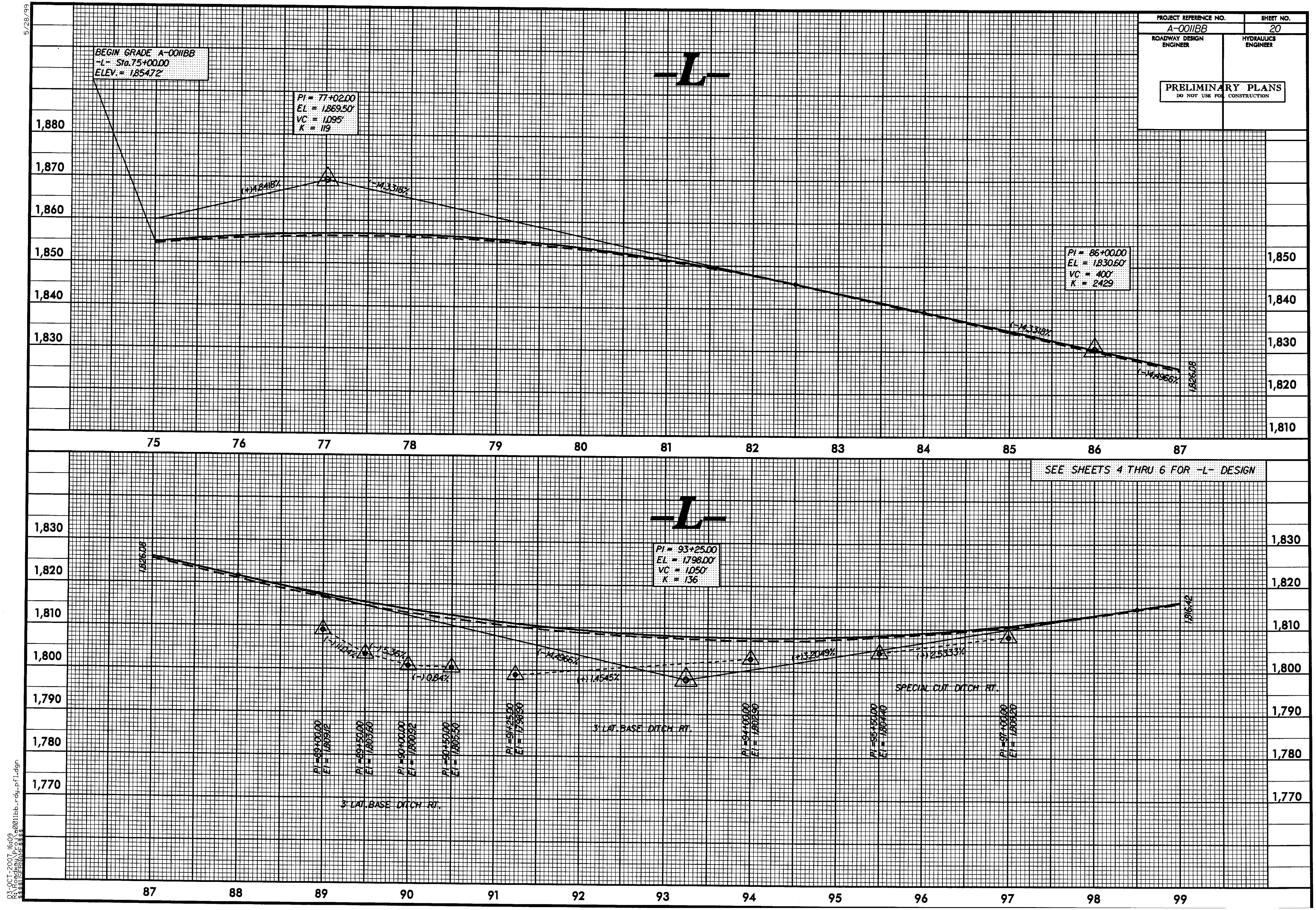

PROJECT REFERENCE NO.
A-0011BB
SHEET NO.
20
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
BEGIN GRADE A-0011BB
-L- Sta.75+00.00
ELEV.= 1,854.72'
PI = 77+02.00
EL = 1,869.50'
VC = 1,095'
K = 119
(+)4.8418%
(-)4.3318%
PI = 86+00.00
EL = 1,830.60'
VC = 400'
K = 2429
(-)4.3318%
(-)4.4966%
1,826.08
SEE SHEETS 4 THRU 6 FOR -L- DESIGN
PI = 93+25.00
EL = 1,798.00'
VC = 1,050'
K = 136
(-)4.4966%
(+)1.4545%
(+)3.2049%
(+)2.5333%
(-)0.84%
SPECIAL CUT DITCH RT.
3' LAT. BASE DITCH RT.
3' LAT. BASE DITCH RT.
PI =89+00.00 EI = 1,809.12
PI =89+50.00 EI = 1,803.60
PI =90+00.00 EI = 1,800.92
PI =90+50.00 EI = 1,800.50
PI =91+25.00 EI = 1,798.80
PI =94+00.00 EI = 1,802.90
PI =95+50.00 EI = 1,804.40
PI =97+00.00 EI = 1,808.20
1,816.42
5/28/99
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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	21
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PI = 101+40.00
EL = 1,824.12'
VC = 580'
K = 27.33

PI = 108+75.00
EL = 1,846.12'
VC = 570'
K = 214

1,860 1,850 1,840 1,830 1,820 1,810 1,800

1,850 1,840 1,830 1,820 1,810 1,800

(+)3.2049% (+)12.9927% (+)12.9927% (+)10.3341% (+)1.0315%

1816.42 1846.78

SPECIAL CUT DITCH RT.

PI=110+00.00
EL= 1,845.82

SEE SHEETS 6 THRU 7 FOR -L- DESIGN

99 100 101 102 103 104 105 106 107 108 109 110 111

-L-

PI = 114+00.00
EL = 1,847.87'
VC = 430'
K = 344

PI = 118+60.00
EL = 1,843.66'
VC = 360'
K = 475

PI = 122+50.00
EL = 1,843.05'
VC = 420'
K = 193

1,860 1,850 1,840 1,830 1,820 1,810

1,860 1,850 1,840 1,830 1,820 1,810

1846.78 (+)0.3341% (+)0.3150% (+)0.3341% (-)0.9157% (-)0.9157% (-)0.9650% (-)0.9780% (-)1.0572% (-)1.0572% (-)1.3626% (+)2.0214% 1844.72 1837.31

SPECIAL CUT DITCH RT.

PI=114+00.00
EL= 1,844.08

2" LAT. BASE DITCH RT.

PI=116+07.00
EL= 1,837.00

PI=117+50.00
EL= 1,836.56

SPECIAL LAT. BASE DITCH RT.

PI=120+00.00
EL= 1,841.62

PI=120+50.00
EL= 1,840.72

SPECIAL LAT. 'V' DITCH RT.

111 112 113 114 115 116 117 118 119 120 121 122 123

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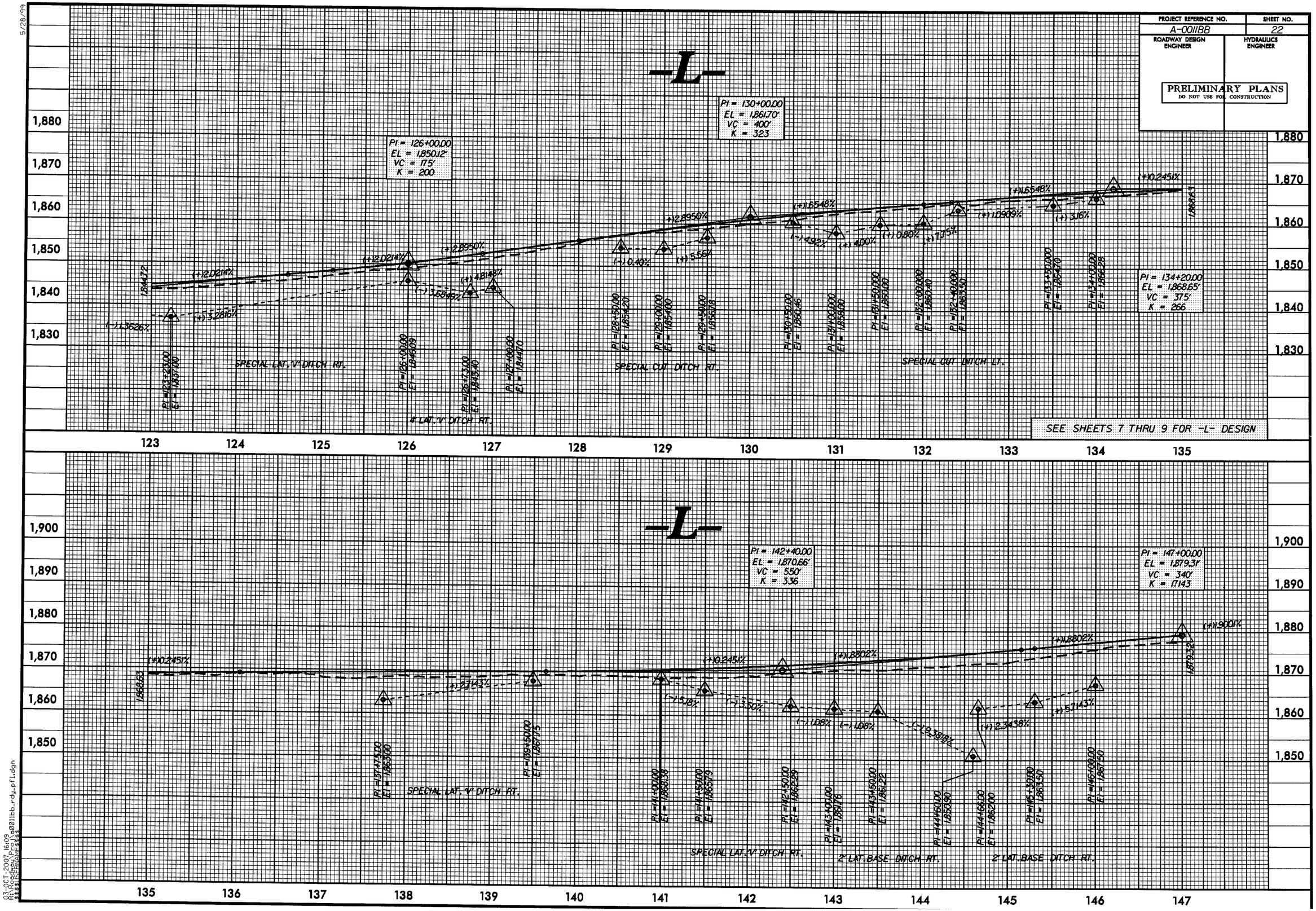
PROJECT REFERENCE NO.	SHEET NO.
A-001IBB	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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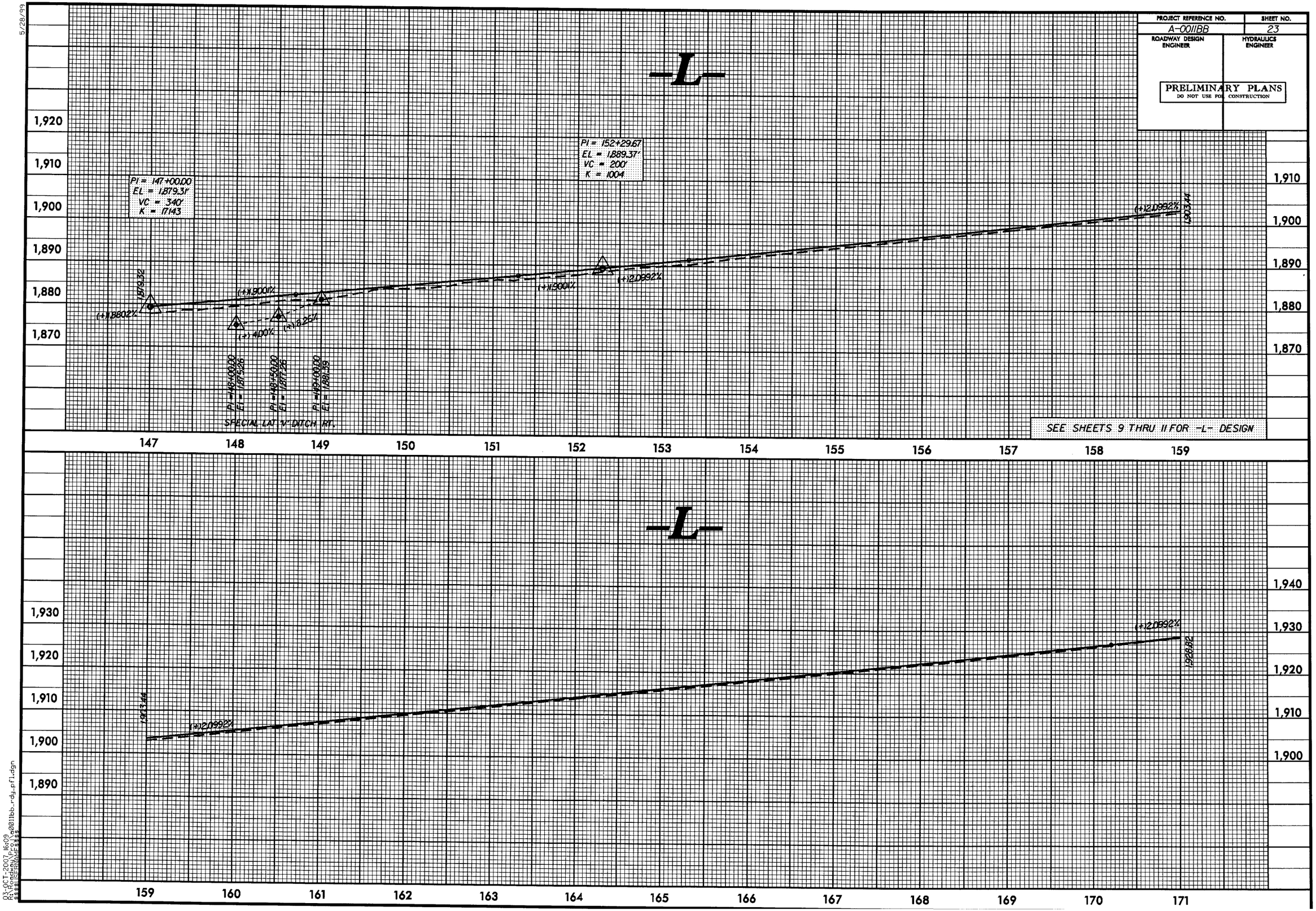
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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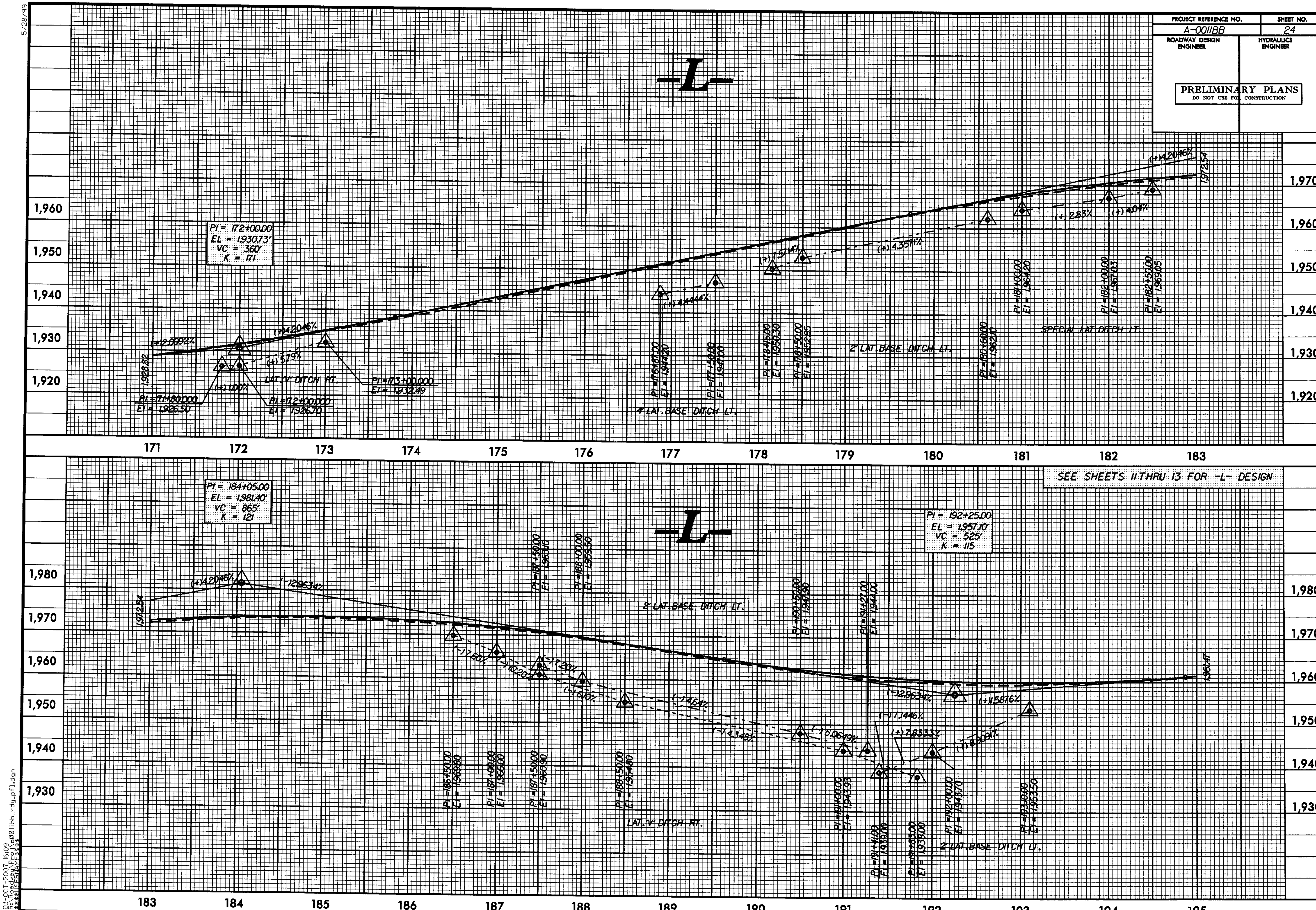
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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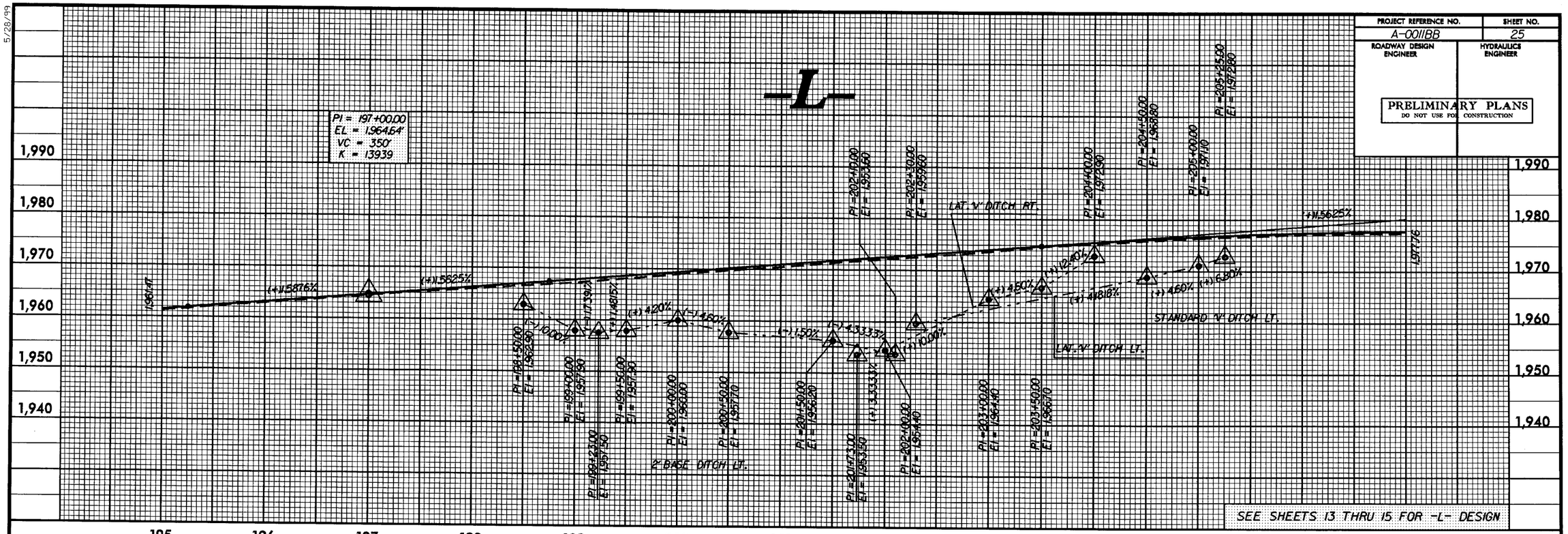
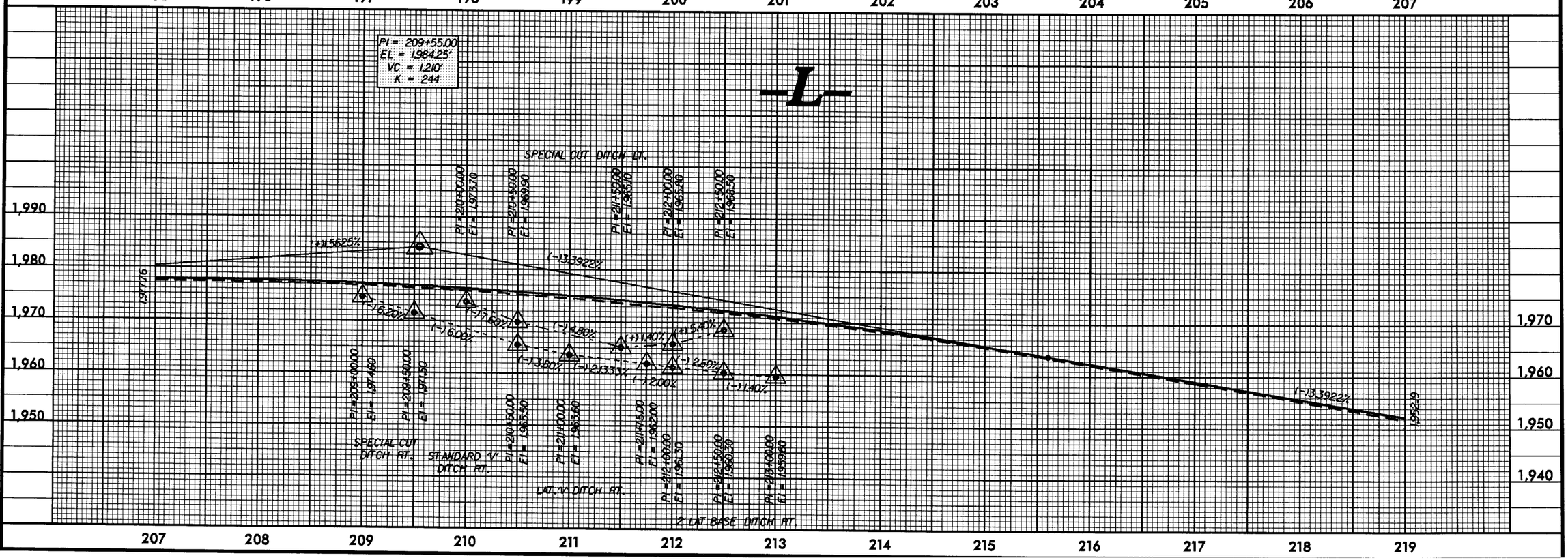
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





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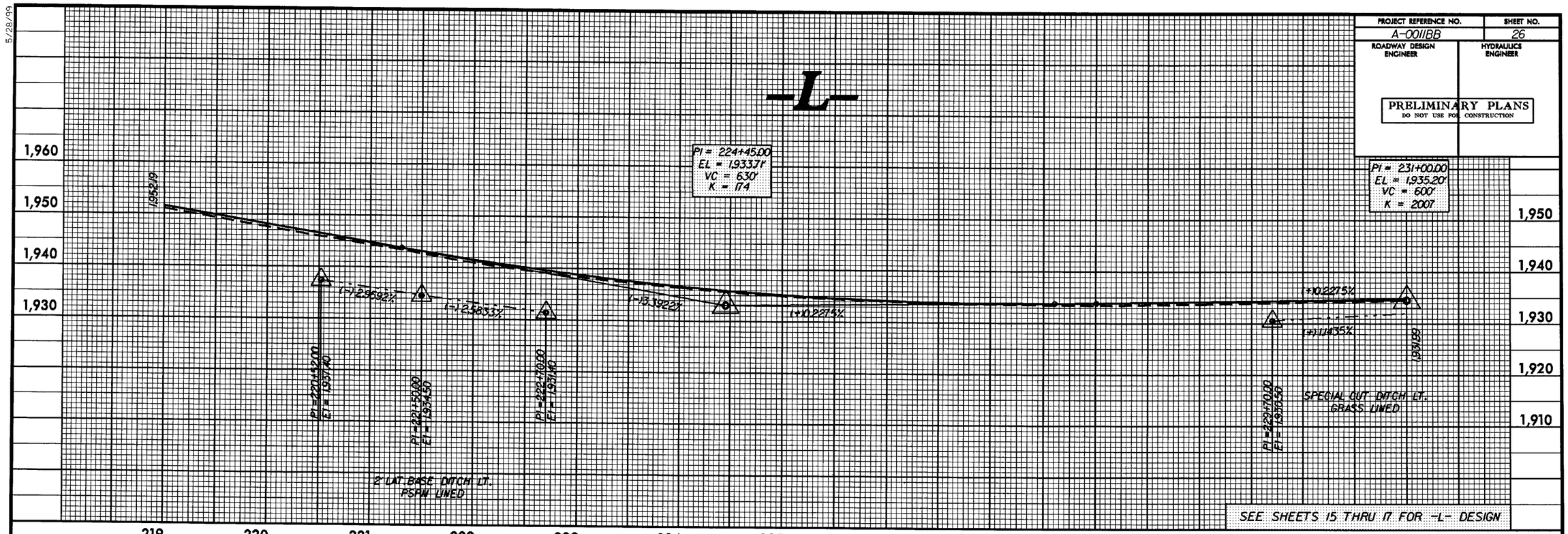
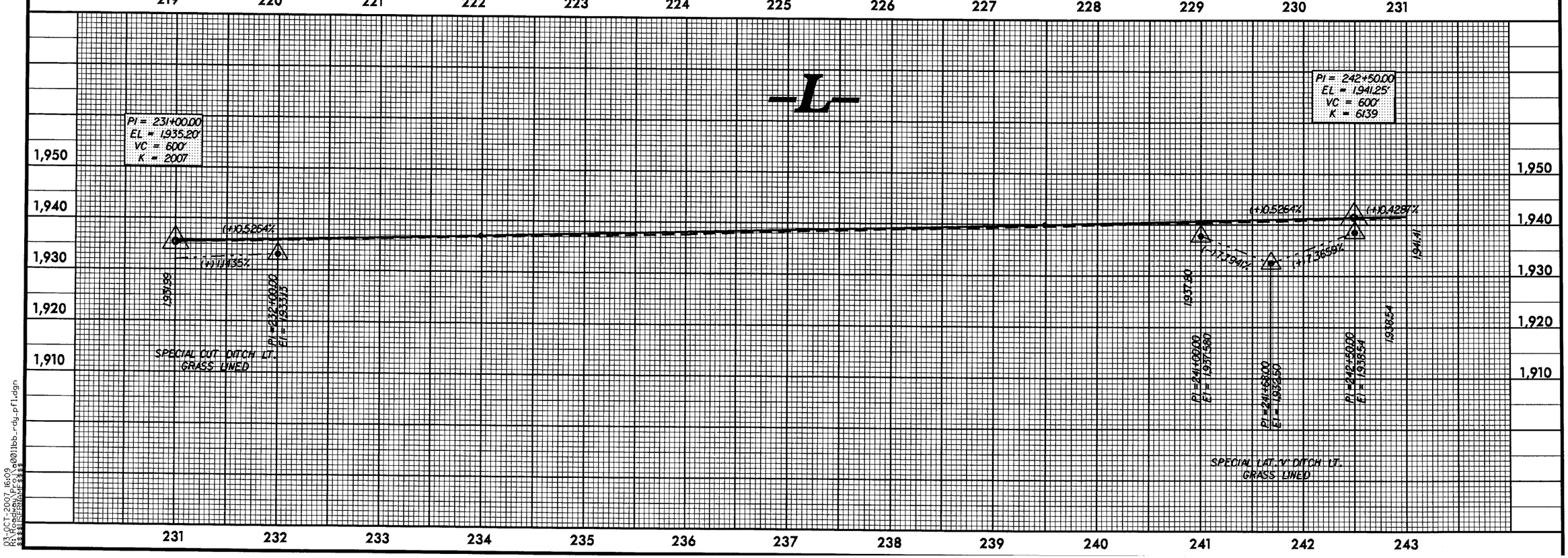
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





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PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PI = 251+00.00
EL = 1,944.89'
VC = 500'
K = 288

1954.41
(+)0.4287%
(+)0.4287%
(+)2.1676%
1953.56
(+)1.6667%
(+)1.1200%
(+) 3.3333%
(+) 8.00%
PI = 247+60.00
EL = 1925.00
PI = 247+75.00
EL = 1925.50
PI = 248+00.00
EL = 1926.50
PI = 248+50.00
EL = 1932.50
PI = 248+95.00
EL = 1935.50
3:1 LAT. BASE DITCH RT. W/ CLASS 'B' RIP-RAP
SEE SHEETS 17 THRU 18 FOR -L- DESIGN

-L-

PI = 258+80.00
EL = 1,961.80'
VC = 600'
K = 164
PI = 264+30.00
EL = 1,953.56'
VC = 340'
K = 196
END GRADE A-0011BB
-L- Sta. 266+00.00
ELEV. = 1,953.95'
1953.56
(+)2.1676%
(-)1.4985%
(-)1.5000%
(-)3.4260%
(-)1.9160%
(-)3.4100%
(-)1.4985%
(+)0.2528%
1948.50
PI = 262+00.00
EL = 1954.37
PI = 262+50.00
EL = 1953.82
PI = 263+00.00
EL = 1952.91
PI = 263+00.00
EL = 1952.91
PI = 264+00.00
EL = 1951.00
PI = 264+00.00
EL = 1940.50
SPECIAL CUT DITCH LT.
RESURFACE TO END OF PROJECT -L- 282+00

1,960
1,950
1,940
1,930
1,920
1,970

243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266

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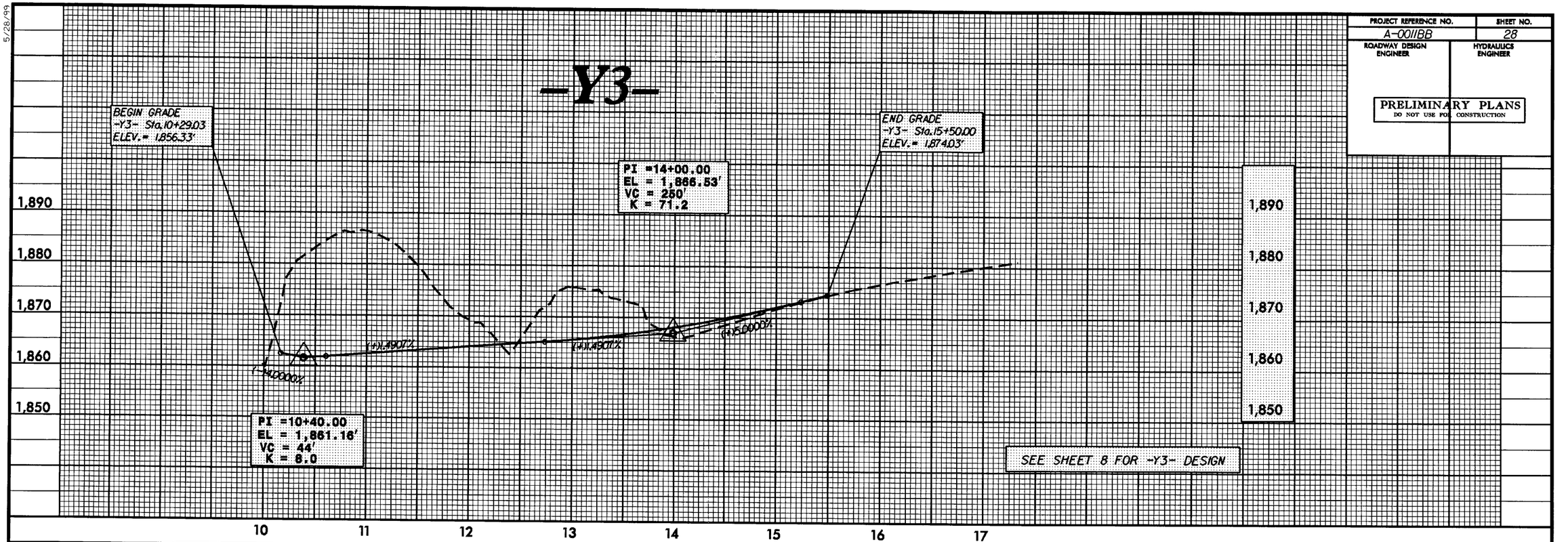
PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

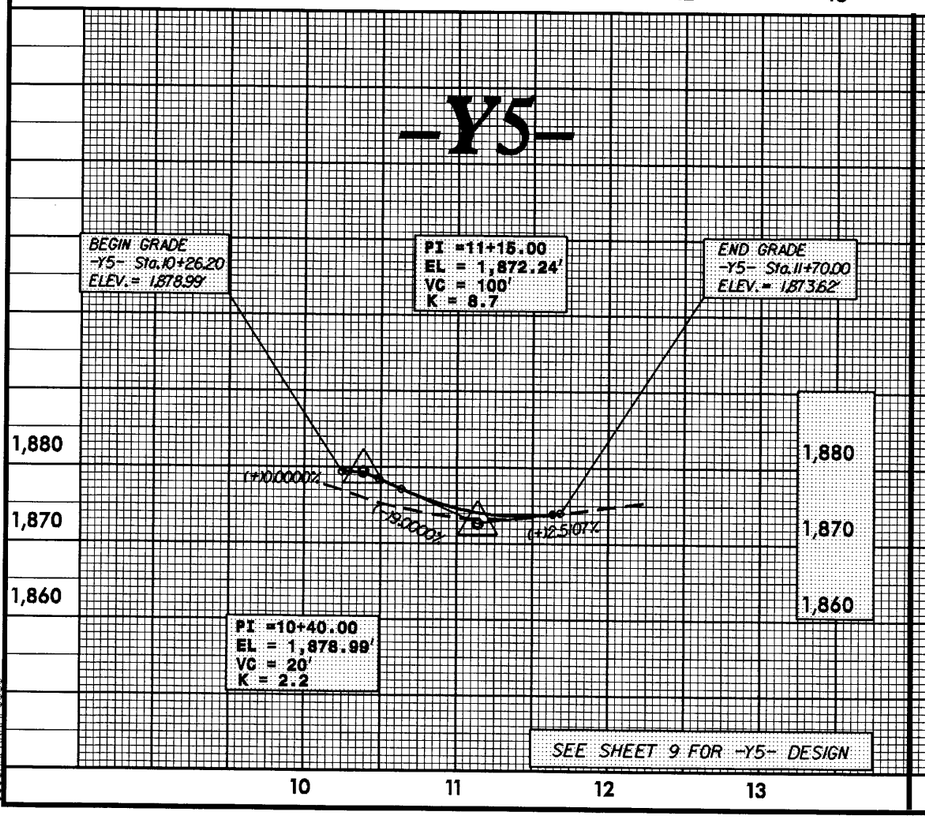
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y3-



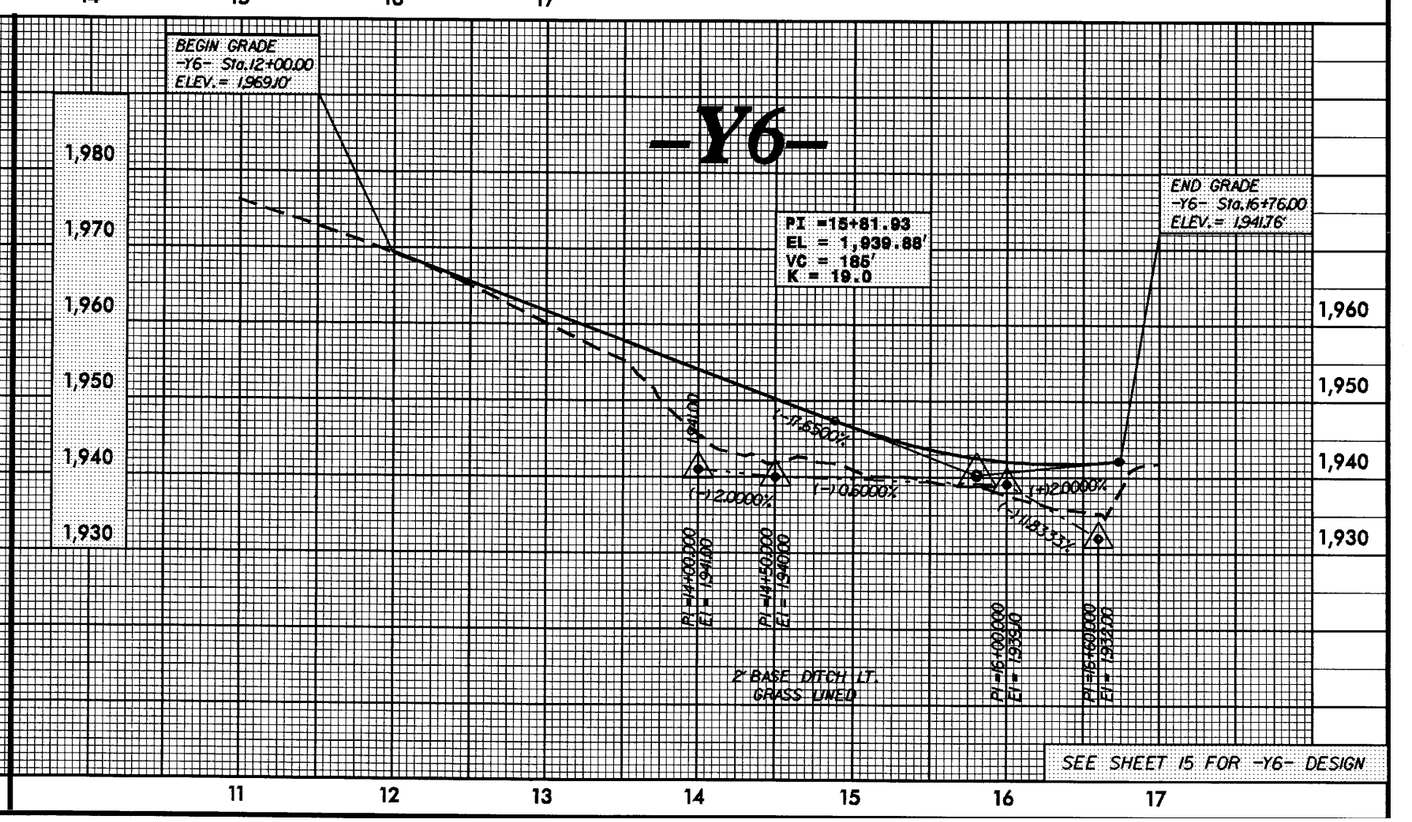
SEE SHEET 8 FOR -Y3- DESIGN

-Y5-



SEE SHEET 9 FOR -Y5- DESIGN

-Y6-



SEE SHEET 15 FOR -Y6- DESIGN

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PROJECT REFERENCE NO.	SHEET NO.
A-0011BB	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-DRILT-

BEGIN GRADE
-DRILT- Sta.10+00.00
ELEV.= 1,857.95'

END GRADE
-DRILT- Sta.11+66.73
ELEV.= 1,870.78'

(+)12.8385%

(+)8.7912%

(+)5.000%

PI =10+20.00
EL = 1,858.52'
VC = 30'
K = 5.0

PI =11+50.00
EL = 1,869.95'
VC = 30'
K = 7.9

1,870
1,860
1,850

SEE SHEET 9 FOR -DRILT- DESIGN

10 11

-DRIRT-

BEGIN GRADE
-DRIRT- Sta.10+12.04
ELEV.= 1,871.71'

END GRADE
-DRIRT- Sta.11+84.00
ELEV.= 1,889.17'

(+)5.000%

(+)11.7747%

(+)17.3760%

PI =10+30.00
EL = 1,872.61'
VC = 35'
K = 5.5

PI =10+60.00
EL = 1,887.40'
VC = 22'
K = 5.5

1,890
1,880
1,870
1,860

SEE SHEET 9 FOR -DRIRT- DESIGN

10 11

-DR2RT-

BEGIN GRADE
-DR2RT- Sta.10+12.50
ELEV.= 1,922.19'

END GRADE
-DR2RT- Sta.12+80.00
ELEV.= 1,941.41'

(+)12.0000%

(+)8.3524%

(+)17.692%

PI =10+30.00
EL = 1,921.84'
VC = 35'
K = 3.4

PI =12+60.00
EL = 1,941.05'
VC = 20'
K = 3.0

1,950
1,940
1,930
1,920

SEE SHEET 12 FOR -DR2RT- DESIGN

10 11 12

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