STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

August 24, 2011

U. S. Army Corps of Engineers
Regulatory Field Office
3331 Heritage Trade Drive Suite 105
Wake Forest, NC 27587

ATTN: Mr. Monte Matthews
NCDOT Coordinator

Dear Sir:

Subject: **Application for an Individual Section 404 and Section 401 Water Quality Certification** for SR 1001 (Connelly Springs Road) from US 321A (Norwood Street) to SR 1712 (Starcross Road) in Caldwell County. Federal Aid Project No. MA-STP-7533(2), Division 11, TIP No. U-2211B. Debit $570 from WBS 34783.1.1.

The North Carolina Department of Transportation (NCDOT) proposes to extend SR 1001 (Connelly Springs Road) on new location with the realignment of SR 1178 (Hibriten Drive) in Lenoir, Caldwell County. The project begins west of US 321A (Norwood Street) and ends approximately 650 feet east of SR 1712 (Starcross Road). The project also includes the construction of a half-clover interchange at US 321. The project will eliminate a portion of SR 1178 (Hibriten Drive) including the existing bridge over US 321. The proposed facility is a four-lane, curb & gutter, median-divided roadway and will provide two 12-foot lanes in each direction, a 17.5-foot median and 10-foot berms.

U-2211B is one part of the two-part TIP project U-2211. U-2211A was completed in 2003 and was the widening and new location portion of SR 1001 (Connelly Springs Road) from SR 1933 (Southwest Boulevard "loop") to US 321A in Lenoir, Caldwell County.

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

TELEPHONE: 919-717-6100
FAX: 919-212-5785

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

LOCATION:
1020 BIRCH RIDGE DRIVE
RALEIGH NC, 27610-4328

Please see the enclosed ENG 4345, Ecosystem Enhancement Program (EEP) mitigation acceptance letter, permit drawing review minutes (Concurrence Points 4B and 4C), Rapanos jurisdictional determination form, State Stormwater Management Plan (SMP), permit drawings and design plans for the above referenced project.

Purpose and Need:
Existing Connelly Springs Road is characterized by a substandard roadway width and poor sight distance. Congestion occurs along Connelly Springs Road and along US 321A (Norwood Street). The accident rate for the existing facility is over two times the statewide average for similar roadways.

The proposed improvements for U-2211 will alleviate congestion by widening the roadway and extending Connelly Springs Road to connect with US 321 (Hickory Boulevard) and SR 1178 (Hibriten Drive). The project will improve the traffic flow and safety along the facility. In addition, it will help relieve some congestion on US 321A in the downtown area going toward NC 18 by connecting with Hibriten Drive as an additional route to NC 18. The project implements a portion of the Lenoir Thoroughfare Plan and will function as an urban connector improving access between Lenoir and the Cajah Mountain area.

Summary of Jurisdictional Impacts:
The project will permanently impact 0.24 acre of wetlands, 1,252 linear feet of streams, and temporarily impact 0.01 acre (73 linear feet) of streams.

Summary of Utility Impacts:
There will be no temporary or permanent impacts to jurisdictional resources due to utility relocations on U-2211B.

Summary of Mitigation:
The project has been designed to avoid and minimize impacts to jurisdictional areas throughout the National Environmental Policy Act (NEPA) and design processes. However, project impacts will necessitate compensatory mitigation for the unavoidable impacts. Detailed descriptions of these actions are presented in the mitigation portion of this application. The EEP will provide compensatory mitigation for 1,252 linear feet of stream impacts. Compensatory mitigation for 0.24 acre of wetland impacts will be provided by debiting the Long Creek Mitigation Site in Mecklenburg County.

NEPA DOCUMENT STATUS

An Environmental Assessment (EA) was prepared for U-2211 in February 1995. A Finding of No Significant Impact (FONSI) was prepared in November 1995. A Reevaluation of the EA/FONSI for U-2211B was completed in 2007 (after U-2211A was completed in 2003). Additional copies will be provided upon request.

In compliance with the NEPA/404 Merger Process, Concurrence Points 4B and 4C were reached for U-2211B on January 23, 2008 and May 13, 2009, respectively (meeting minutes attached).

INDEPENDENT UTILITY

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

(1) The project connects logical termini and is of sufficient length to address environmental matters on a broad scope,
(2) The project is usable and a reasonable expenditure, even if no additional transportation improvements are made in the area;
(3) The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

RESOURCE STATUS

Waters within the project area are located in the Upper Catawba Drainage Basin (HUC 03050101 of the Catawba River Basin within subbasin 03-08-32). No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply (WS-I or WS-II) waters or 303(d) impaired waters occur within 1.0 mile of the project area.

Wetland and stream determinations within U-2211B were conducted using the field delineation method outlined in the 1987 Corps of Engineers Wetland Delineation Manual. Mr. John Thomas of the U.S. Army Corps of Engineers (USACE) field verified the wetland and surface waters and issued a signed jurisdictional determination (JD) on May 5, 2006. This verification was verbally confirmed by Monte Matthews of the USACE on March 1, 2008. As this verification expires before the current let date for this project, a Rapanos jurisdictional determination form has been included with this application for the relevant water resources impacted by U-2211B. The NCDOT requests an updated final JD for this project.

IMPACTS TO WATERS OF THE U.S.

Tables 1A and 1B summarize the impacts to jurisdictional water resources. Site numbers correspond with the permit (hydraulic) drawings included in this application. The stream names correspond to the 2007 NEPA document. A brief description of each impact site will follow the tables.

Table 1A – U-2211B Wetland Impacts.

Site	Wetland Number	Wetland Size (ac)	Permanent Fill in Wetlands (ac)	Mechanized Clearing (ac)	Temporary Fill (ac)	Mitigation Required (ac)
2	W1	0.24	0.24	0	0	0.24
		Total Impacts	**0.24**	**0**	**0**	**0.24***

* Wetland impacted is riparian

Table 1B – U-2211B Stream Impacts.

Site	Stream Name & Intermittent (I) or Perennial (P) [1]	Stream Number	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres)	Mitigation Requirement (linear feet)
1	UT1 to Gunpowder Creek (P)	UT1	Perm. fill	922	--	USACE & DWQ
			Bank Stabilization	78	--	DWQ[2]
			Temp. fill	--	<0.01	--
2	N/A (wetland only)	--	--	--	--	--
3	UT1 to Gunpowder Creek (P)	UT1	Perm. fill	--	--	--
			Bank Stabilization	16	--	DWQ[2]
			Temp. fill	--	--	--
4	UT1 to Gunpowder Creek (P)	UT1	Perm. fill	42	--	USACE & DWQ
			Bank Stabilization	41	--	DWQ[2]
			Temp. fill	--	<0.01	--
5	UT2 to Gunpowder Creek (I)[3]	UT2	Perm. fill	153	--	DWQ[3]
			Bank Stabilization	--	--	--
			Temp. fill	--	<0.01	--
Total Temporary Impacts:				--	**0.01[4]**	--
Total Permanent Impacts (Perm. Fill + Bank Stabilization):				**1,252**	--	--
Permanent Impacts Requiring DWQ Mitigation (1:1):				**1,252**	--	--
Permanent Impacts Requiring USACE Mitigation (2:1):				**964**	--	--
Total Impacts Requiring Mitigation (2:1):				**964**	--	**1,928[5]**

1 - All streams are Class C waters with a DWQ Index Number of 11-55-(0.5)
2 - Mitigation for bank stabilization impacts required by DWQ – not required by USACE
3 - UT2 was determined by the USACE in March 2008 to be an intermittent, unimportant stream (not requiring mitigation from USACE). Since that time, DWQ has changed its policy regarding mitigating for intermittent streams, therefore it now requires mitigation from DWQ at a 1:1 ratio.
4 - Values are based on rounding, due to some of the individual impacts being <0.01 acre
5 - Mitigation proposed by NCDOT (based on mitigation required by the USACE exceeding the amount required by DWQ)

Permit Site 1: The reach of UT1 that extends under the proposed interchange footprint will be culverted. A 7' x 7' reinforced concrete box culvert (RCBC) will be used on the inlet side of US 321, and will be 646 feet in length. This new 7' x 7' RCBC will connect to the existing 7' x 7' RCBC under US 321. The existing culvert is 212 feet in length. The outlet side of the existing culvert will be extended with a 7' x 8' RCBC 214 feet in length. The total culvert length (including the existing section) will be 1,072 feet. This culvert extension on both sides of US 321 will result in 922 linear feet of permanent impacts to UT1. Additionally, there will be <0.01 acre (34 linear feet) of temporary impacts associated with culvert installation and 78 total linear feet of bank stabilization impacts at the inlet and outlet ends of the extension.

Permit Site 2: Wetland W1 is located entirely within the footprint of the new interchange and all 0.24 acre of W1 will be permanently impacted from the new roadway.

Permit Site 3: The existing 12" reinforced concrete pipe (RCP) will be replaced with a new 24" RCP. The rip rap at the outlet end of the new RCP will result in 16 linear feet of bank stabilization to UT1.

Permit Site 4: The existing 72" corrugated metal pipe (CMP), approximately 40' in length, that carries UT1 under Starcross Road (SR 1712) will be replaced with an 8 x 8 RCBC. This RCBC will be slightly longer (64'3") to accommodate the widened portion of Starcross Road, but will be on a better alignment for the stream than the existing CMP. The pipe replacement will result in 42 linear feet of permanent impacts to UT1. Additionally, there will be <0.01 acre (29 linear feet) of temporary impacts associated with culvert installation and 41 linear feet of bank stabilization impacts at the inlet and outlet ends of the new culvert.

Permit Site 5: The existing 24" CMP, approximately 36' in length, that carries UT2 under Hibriten Drive will be removed and replaced with a 54" RCP to accommodate the widened roadway in this location. A portion of the channel on the inlet side of the new pipe will be lined with rip rap for stabilization purposes. This pipe replacement and upstream rip rap will result in 153 linear feet of permanent impacts to UT2. There will also be <0.01 acre (10 linear feet) of temporary stream impacts associated with pipe installation.

MORATORIUM

No moratoria are required by the U.S. Fish and Wildlife Service (USFWS) or were proposed in a letter from the North Carolina Wildlife Resources Commission (NCWRC) dated March 9, 2004.

FEDERALLY PROTECTED SPECIES

Plants and animals with Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of September 22, 2010, the USFWS lists six federally protected species for Caldwell County (Table 2).

Table 2 – Federally protected species listed for Caldwell County.

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
Clemmys muhlenbergii	Bog turtle	T (S/A)	No	Not Required
Glaucomys sabrinus coloratus	Carolina northern flying squirrel	E	No	No Effect
Corynorhinus townsendii virginianus	Virginia big-eared bat	E	No	No Effect
Microhexura montivaga	Spruce-fir moss spider	E	No	No Effect
Hexastylis naniflora	Dwarf-flowered heartleaf	T	Yes	No Effect
Liatris helleri	Heller's blazing star	T	No	No Effect

T(S/A) - Threatened due to similarity of appearance
E – Endangered
T – Threatened

The only species with habitat present within the project area is the dwarf-flowered heartleaf. The entire project area was surveyed for suitable dwarf-flowered heartleaf habitat. All potential habitat was surveyed in April 2008 by walking visual plant-by-plant surveys. No dwarf-flowered heartleaf plants were found, therefore this project will have "No Effect" on

this species. The bog turtle is listed due to similarity of appearance and does not require a biological conclusion. However, per communication with Dennis Herman (NCDOT Biological Surveys Group) the wetland located within the project area is not considered a bog and likely would not provide suitable habitat for bog turtles.

INDIRECT CUMULATIVE IMPACT ANALYSIS

Existing rules for the 401 Water Quality Certification Program (15A NCAC 2H .0506(b)(4) require that the DWQ determine that a project "does not result in cumulative impacts, based on past or reasonably anticipated future impacts, that cause or will cause a violation of downstream water quality standards."

An Indirect and Cumulative Effects Assessment (ICE) was completed for this project in 2005. Copies of this report are available upon request. This report concluded the following:

Indirect and Cumulative Effects to the Human Environment

The project is not expected to result in major induced growth/land changes or substantially contribute to cumulative impacts in the area. The proposed project is located in a mature and stable area of the City south of the downtown urban core. Contingent upon access, the likelihood of development is contained to the few available parcels in the immediate vicinity of the proposed project.

Given that the project will result in new access, commercial infill development is most likely to occur, particularly in the vacant parcels that were converted from residential to commercial uses within the last five years. This project could influence the timing or status of the development likely to occur on these parcels, but only if access is allowed. The type of commercial development likely to occur is small businesses, fast food, or other small-scale commercial uses.

With regard to transitioning existing residential land uses to higher intensity uses, there is the potential for U-2211B to induce land use changes along the US 321 corridor. This is probable because of the corridor's connection with other urban/commercial strips and because it is located close to downtown Lenoir.

The project has the potential for limited cumulative effect resulting from the incremental effects of the proposed interchange with other past project and current and future development activities in the project region. Non-transportation development projects in the area are few, and are limited to infill development of parcels along the US 321 corridor. There is the potential for existing residential parcels to convert to commercial uses, particularly those fronting US 321 north and south of the project. However, this is not necessarily a result of this project, but rather because of the nature of US 321 as a major commercial corridor within the City of Lenoir and through the region.

The project will directly alter the street network by upgrading a portion of Hibriten Drive as part of interchange construction. Although this upgrade will not significantly alter the street

network, volumes will increase on this local street as a result of this project. There is the potential for some homes in the Whitnel neighborhood to convert to home-based businesses. According to the City, the project will not likely alter the stable and cohesive nature of this neighborhood.

Indirect and Cumulative Effects to the Natural Environment

Habitat fragmentation already exists in the study area as the project is located in a suburban area in Lenoir. The project will result in the direct removal of upland habitat. However, it is not anticipated that the project will produce substantial changes in the ecological makeup of the study area.

The interchange will impact two unnamed tributaries to Gunpowder Creek and a small wetland. In combination with TIP Project U-2211A, there is the potential for cumulative effect to the creek system. It is anticipated that the project will not indirectly induce new development that will promote negative cumulative effects in the study area. Potential adverse effect to surface waters will be minimized through implementation of *NCDOT's Best Management Practices for Protection of Surface Waters*, as applicable, during the construction phase of the project to avoid construction impacts to aquatic communities where construction activity occurs as well as to downstream communities.

CULTURAL RESOURCES

Historical Structures:
The State Historic Preservation Office (HPO) requested surveys for historic structures in their memos to NCDOT dated August 17, 2004 and September 2, 2004. A field survey of the Area of Potential Effects (APE) was conducted in January 2005 and July 2006 by an NCDOT architectural historian and eighty structures over fifty years of age within the APE were recorded. The photographs of these properties along with their evaluations were shown to the HPO in three separate meetings: February 22, 2005, May 31, 2005 and August 16, 2006. At those meetings, HPO staff concurred that all eighty properties were not eligible for the National Register and forms were signed that reflect these findings (and were included in the 2007 EA/FONSI Reevaluation). Therefore, there are no National Register-listed or National Register-eligible properties within the APE for this project.

On June 28, 2007, NCDOT met with the property owner of 1318 Hibriten Drive about a tunnel on their property. NCDOT researched the tunnel to see if it was part of an important event and discussed with the state agency (HPO). On August 1, 2007 the HPO agreed that the tunnel was probably not eligible, but they recommended documentation during utility relocation or construction and NCDOT agreed.

Archaeology:
The NCDOT conducted an archaeological survey of the project area. The majority of the project area was determined to be disturbed from previous residential and commercial development. No archaeological sites were recorded, and no evidence of cultural use or occupation of the project area was encountered during the survey. This work was done in

compliance with Section 106 of the National Historic Preservation Act and the guidelines issued by the Advisory Council on Historic Preservation. No further compliance is required.

SECTION 4(f)

There are no section 4(f) properties affected by this project.

FEMA COMPLIANCE

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

WILD AND SCENIC RIVER SYSTEM

The project will not impact any designated Wild and Scenic Rivers or any rivers included in the list of study rivers (Public Law 90-542, as amended).

MITIGATION OPTIONS

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

Avoidance and Minimization:
NCDOT has avoided impacting wetlands and streams and reduced impacts to wetlands and streams to the greatest extent practicable. Specific examples of avoidance and minimization measures include:

- Multiple baffles will be utilized within the downstream portion of the culvert extension at Site 1 to provide energy dissipation within the culvert.
- A 60" floodplain pipe along the culvert extension under US 321 at Site 1 will be required to meet FEMA requirements.
- At Site 1, a benched channel at the inlet and outlet will be utilized to maintain low flow.
- The interior of Loop C of the new interchange will be utilized as a dry-extended detention pond to provide treatment of stormwater runoff prior to discharging into the proposed box culvert extension at Site 1.
- Rip rap pads and preformed scour holes will be used in order to dissipate energy and reduce velocities at stormwater pipe outlets near Site 3.
- Riprap used for outlet protection will be placed on banks only and will not be placed in the streambed.

- Though the majority of roadside ditches were unable to obtain a 3:1 slope or flatter due to the physical constraints of the mountainous topography, most ditches on the project will be lined with rip rap in order to control erosion.

Compensation:
The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent practicable as described above. This project will permanently impact 0.24 acre of wetlands, 1,252 linear feet of streams, and temporarily impact 0.01 acre (73 linear feet) of streams.

Of the 1,252 linear feet of permanent stream impacts, 964 linear feet are permanent impacts to a perennial stream, 135 linear feet are bank stabilization impacts to this same perennial stream and 153 linear feet are permanent impacts to an intermittent, unimportant stream.

Therefore, all 1,252 linear feet of permanent stream impacts require mitigation by DWQ at a ratio of 1:1. A total of 964 linear feet of permanent stream impacts require mitigation by USACE at a ratio of 2:1.

Mitigation for the 0.24 acre of wetland impacts will be provided by debiting the Long Creek Mitigation Site at a ratio of 1:1. Located in Mecklenburg County, the Long Creek Mitigation Site encompasses approximately 156 acres. It is situated off of Beatties Ford Road (SR 2074) and was bisected by I-485. This site provided compensatory mitigation for wetland impacts associated with sections of the Charlotte Outer Loop.

The Long Creek Site is designed to restore a bottomland hardwood forest wetland. It was originally constructed in December of 1996, with 37 acres of the planting occurring in 1997. A 5 acre portion, consisting of the former haul roads, was planted in early 1998. Groundwater, surface water, and rain gauges were installed in early 1998. 2001 is the fourth year of hydrologic monitoring and the fifth year of vegetation monitoring for the site.

To offset 0.24 acres of unavoidable wetland impacts, associated with T.I.P U-2211B, the Long Creek Mitigation Site will be debited 0.24 acre. Table 3 shows the mitigation that has been debited from the Long Creek Site to date.

Table 3 – Long Creek Mitigation Site Debits.

	Mitigation TYPE	DEBIT AMOUNT (ac)	TIP Projects
1	Riverine Wetland Restoration	7.2	R-211,R-2123, R-2248
2	Riverine Wetland Restoration	15	R-2123 AB/BA/BB/CB
3	Riverine Wetland Restoration	9.8	U-2506
4	Riverine Wetland Restoration	2.54	R-2248 AB/BA
5	Riverine Wetland Restoration	1.6	R-2123
6	Riverine Wetland Restoration	5.12	R-2248AC/AD/BA
7	Riverine Wetland Restoration	0.24	U-2211B

The USACE stream mitigation requirement is 1,928 ft (964 ft @ 2:1). The DWQ stream mitigation requirement is 1,252 ft (1,252 ft @ 1:1). Please reference Table 1B in this application for further breakdown of impacts and mitigation requirements. Therefore, the NCDOT proposes to mitigate for the larger of these mitigation requirements, 1,928 ft, by utilizing the EEP (see attached acceptance letter).

PROJECT SCHEDULE

U-2211B calls for a May 15, 2012 let date, and a review date of March 27, 2012. This application provides final design and impacts for the project.

REGULATORY APPROVALS

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

Section 401: We are hereby requesting a 401 Water Quality Certification from the N. C. Division of Water Quality. In compliance with Section 143 215.3D(e) of the NCAC, we will provide $570.00 to act as payment for processing the Section 401 permit application previously noted in this application (see Subject line). We are providing five (5) copies of this application to the NCDWQ for their review and approval.

This project is located in a trout county, therefore comments from the NCWRC will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests NCWRC Review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Erin Cheely at ekcheely@ncdot.gov or (919) 707-6108.

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

Sincerely,

E. L. Fusk

for Gregory J. Thorpe, Ph.D., Branch Manager
Project Development and Environmental Analysis Branch

cc:

NCDOT Permit Application Standard Distribution List.

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 EXPIRES: 31 August 2012

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

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

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

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME:	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
First - Middle - Last –	First - Middle - Last –
Company – North Carolina Department of Transportation - Project Development & Environmental Analysis	Company –
E-mail Address –	E-mail Address –
6. APPLICANT'S ADDRESS. Address - 1548 Mail Service Center	9. AGENT'S ADDRESS Address -
City – Raleigh State – North Carolina Zip – 27699-1548 Country –	City – State – Zip – Country –
7. APPLICANT'S PHONE NOs. W/AREA CODE.	10. AGENT'S PHONE NOs. W/AREA CODE
a. Residence b. Business 919-707-6100 c. Fax 919-212-5785	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

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

_____

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

U-2211B

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
UTs to Gunpowder Creek	Address
15. LOCATION OF PROJECT	
Latitude: °N 35.89065 Longitude: °W -81.51971	City - State – Zip -

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

State Tax Parcel ID Municipality

Section – Township – Range –

17. DIRECTIONS TO THE SITE

Please see attached vicinity map and cover letter.

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

The project will extend SR 1001 (Connelly Springs Road) on new location and realign SR 1178 (Hibriten Drive) in Lenoir. The project also includes construction of a half-clover interchange at US 321. It will eliminate a portion of SR 1178, including the existing bridge over US 321.

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

The purpose of this project is to alleviate congestion by widening the roadway and and extending Connelly Springs Road to connect with US 321. The project will improve traffic flow and safety along the facility and relieve some congestion on US 321A in the downtown area going toward NC 18 by connecting with Hibriten Drive as an additional route to NC 18. The project implements a portion of the Lenoir Thoroughfare Plan and will function as an urban connector improving access between Lenoir and the Cajah Mountain area.

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

20. Reason(s) for Discharge

Impacts will result from widening the roadway and shoulders, constructing a new half-clover interchange and lengthening/replacing hydraulic structures within the project area.

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

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

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

Acres See attached cover letter

Or

Liner Feet

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

See attached cover letter

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

No work associated with U-2211B has been completed. The A section (U-2211A) was completed in 2003 and was the widening and new location portion of SR 1001 from SR 1933 (Southwest Boulevard "loop") to US 321A in Lenoir.

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

Address – Please see adjacent property landowners page in the permit drawing package

City – State – Zip –

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

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

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

E. L. Lusk for Gregory J. Thorpe, PhD — Aug 23, 2011

SIGNATURE OF APPLICANT — DATE — SIGNATURE OF AGENT — DATE

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

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

Ecosystem Enhancement PROGRAM

July 19, 2011

Mr. Gregory J. Thorpe, Ph.D.
Manager, 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:

U-2211B, SR 1001 (Hibriten Drive) from US 321A (Norwood Street) to SR 1712 (Oak Hill School Road), Caldwell County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on July 14, 2011, the impacts are located in CU 03050101 of the Catawba River Basin in the Northern Mountains (NM) Eco-Region, and are as follows:

Catawba 03050101 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	1,252	0	0	0	0	0

EEP commits to implementing sufficient compensatory stream mitigation credits to offset the impacts associated with this project in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

Michael Ellison
EEP Deputy Director

cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
File: U-2211B

Minutes for Hydraulic Design Review Meeting
U-2211B

State Project 34783.1.1
SR 101 (Connelly Springs Road) From US 321A (Norwood Street) to SR 11783 (Starcross Road)
Caldwell County, Division 11

A Hydraulic Design Review Meeting was held on Wednesday, January 23, 2008 in the Hydraulics Conference Room at the NCDOT Century Center Complex, Raleigh.

Team Members:
Andrew Nottingham-Hydraulics (Present)
Monte Matthews-USACE (Present)
Marella Buncick-USFWS (Present)
Marla Chambers-NCWRC (Present)
Amy Euliss-NCDWQ (Absent)
Brian Wrenn-NCDWQ (Absent)
Chris Militscher-EPA (Absent)
Kathy Matthews-EPA (Absent)
Donnie Brew- FHWA (Present)
Davis Harris-REU (Absent)
Gary Lovering-Roadway Design (Present)
Betsy Cox-Structures (Absent)
Charles Cox: PDEA (Absent)
Carla Dagnino: NEU (Present)
Trent Beaver: Division 11 (Present)

Participants:
Doug Petrey-Structures
Michele James-PDEA
Erin Cheely-NEU
Jennifer Harrod-NEU
David Wainwright-NCDWQ
Troy Wilson-USFWS
David Bocker-Mulkey, Inc.
Joe Dudeck-Mulkey, Inc.

The meeting began at 11:00 a.m. with introductions initiated by Andrew Notthingham (NCDOT Hydraulics). David Bocker (Mulkey, Inc.) proceeded with the review of the project as follows:

General Items

- All waters within the project are Class 'C' (suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture).
- Project falls within the Catawba River Basin; but since the project is not on the main stem of the Catawba River riparian buffer rules are not applicable.
- Grass Swale treatment will occur throughout the project in the median and in areas where flat slopes can be maintained.
- Pre-formed scour holes will also be utilized as treatment measures where feasible.
- Proposed culverts will be buried 1 ft to provide for fish passage.
- Cross pipes in jurisdictional intermittent streams will be buried 1ft culverts greater than 48 inches and 20% of the pipe diameter for culvert less than 48 inches in diameter.

Sheet 4

- No jurisdictional streams or wetlands; therefore, no impacts

Sheet 5

- Proposed design will tie into existing 42" Storm Drainage system that directly discharges into Gunpowder Creek @ the 12'x8' RCBC under Norwood St. At that point, most of this drainage basin is impervious, therefore widening of the existing roads should not adversely impact the jurisdictional waters at the outlet of this system.

Sheet 6

- Wetland impacts; total take is unavoidable due to roadway alignment/intersection/interchange.
- Stream impacts – Upstream/Downstream of Culvert Extension @ -Y5- U.S. 321 through –Y4- Berkley St. as well as under Loop C & Ramp C.
- There will be several direct discharges points into the proposed culvert extension in the interchange area.
- Several concerns from NCWRC about the added storm water from the interchange added to culvert. Currently, the area is heavily wooded; the proposed interchange will change to pavement & grass surfaces resulting in changes to the water quality of the creek.
- The use of multiple baffles within the culvert and up-sizing culvert (7'x8') to accommodate was discussed to provide energy dissipation within the culvert.
- Having one long culvert from loop "C" to "Y4" was agreed to be a viable option and will be pursued during the design phase.
- Mulkey will investigate use of stormwater detention in loops prior to discharge into the proposed culvert (Gunpowder Creek).

Sheet 7

- Stream impacts – Upstream and Downstream of existing culvert under –Y9- Starcross Rd. culvert replacement necessary due to intersection improvements.
- Intermittent Stream Impacts – Upstream of existing 24" CMP, due to roadway widening.
- Concern of stability at the outlet of the proposed 54" RCP was expressed, it was explained that the pipe outlet will be located at the stream bed elevation. The current 24" CMP outlet is 3-4 feet above the creek bank. It was also explained that a head ditch would be required on the upstream end of the proposed 54" RCP due to the cross pipe layout and grade of the roadway in this location.
- NEU mentioned that they would further investigate whether or not this is a jurisdictional stream.

Sheets 8, 9, & 10

- No jurisdictional streams or wetlands, therefore, no impacts.

Sheet 11

- Stream Impacts – Downstream of Culvert Extension @ -Y5- U.S. 321 and -Y4- (Berkley St.) due to roadway realignment.
- No jurisdictional stream or wetlands; therefore, no impacts.

Minutes for Permit Drawing Review Meeting
U-2211B

State Project 34783.1.1
SR 1001 (Connelly Springs Road) From US 321A (Norwood Street) to SR 1783 (Starcross Road)
Caldwell County, Division 11

A 4C Permit Drawing Review Meeting was held on Wednesday, May 13, 2009 in the Hydraulics Conference Room at the NCDOT Century Center Complex, Raleigh.

Team Members:
Andrew Nottingham - Hydraulics (Present)
Monte Matthews - USACE (Present)
Marella Buncick - USFWS (Conference Call)
Marla Chambers - NCWRC (Conference Call)
Amy Euliss - NCDWQ (Present)
Kathy Matthews -EPA (Absent)
Jake Riggsbee - FHWA (Absent)
David Harris - REU (Absent)
Gary Lovering - Roadway (Absent)
Betsy Cox - Structures (Present)
Charles Cox - PDEA (Absent)
Carla Dagnino - NEU (Absent)
Trent Beaver - Division 11 (Present)

Participants:
Chris Militscher - EPA
Donnie Brew - FHWA
Ron McCollum - Roadway
Tina Snell - Roadway
Christy Alford - Structures
Erin Cheely - NEU
Michael Turchy - NEU
Mark Staley - REU
David Bocker - Mulkey, Inc.

The meeting began at 11:00 a.m. with introductions initiated by Andrew Nottingham (NCDOT Hydraulics). David Bocker (Mulkey, Inc.) proceeded with the review of the project as follows:

General Items

- All waters within the project are Class 'C' (suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture).
- Project falls within the Catawba River Basin; but since the project is not on the main stem of the Catawba River riparian buffer rules are not applicable.

Sheet 6

- Wetland impacts; total take is unavoidable due to proposed roadway alignment/intersection/interchange.
- Stream impacts – Upstream/Downstream of Culvert Extension @ -Y5- U.S. 321 through –Y4- Berkley St. as well as under Loop C & Ramp C.
- In addition to the culvert extension, a 60" floodplain pipe is required to meet FEMA requirements. The 60" pipe inlet is located within the channel on a proposed bench to the left of the box culvert inlet (looking downstream).
- A dry-detention pond has been provided within Loop C to provide treatment of stormwater runoff prior to discharge into the proposed culvert extension.
- It was found that the gore area and loop on the west side of US 321 are not conducive to detention ponds due to the steep grades.

Sheet 7

- Stream impacts – Upstream and Downstream of existing culvert under –Y9- Starcross Rd. culvert replacement necessary due to intersection improvements.
- The proposed culvert under Starcross Rd. was aligned to minimize the bend in UT1 to Gunpowder Creek which will improve bank stability.
- Intermittent Stream Impacts – Upstream of existing 24" CMP (UT2 to Gunpowder Creek), due to roadway widening.
- Pre-formed scour holes have been utilized at the outlet of several storm drainage systems to provide treatment prior to discharge into UT1 to Gunpowder Creek.
- Concern was expressed regarding the proposed head ditch upstream (within the intermittent stream – UT2 to Gunpowder Creek) of the proposed 54" RCP and placement of Class 'B' riprap in the bed of the channel. It was explained that the riprap was utilized due to the steep slope of the head ditch (4.8%) and to prevent possible "head-cutting" and long-term erosion that would require future stabilization by DOT maintenance staff. It was agreed to retain the proposed design utilizing Class 'B' riprap.

Sheet 11

- Stream Impacts – Downstream of Culvert Extension @ -Y5- U.S. 321 and -Y4- (Berkley St.) due to roadway realignment.
- The downstream extension of the existing 7'x7' box culvert under US 321 consists of a 7'x8' box culvert utilizing 1 ft high sills spaced @ 20' intervals to provide energy dissipation within the proposed culvert extension thus reducing the velocity and

subsequently reducing potential erosion at the culvert outlet. It was requested that "alternating" baffles be utilized to promote fish passage. Alternating sills would consist of a 1' high sill for half the width of the culvert and 0.5' high sill for the other half of the width of the culvert. These different heights will be alternated at each sill. The design of the box culvert extension will be modified to reflect these alternating sills as requested.

- The 60" floodplain pipe outlet is located within the channel on a proposed bench to the left of the box culvert inlet (looking downstream).

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

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

SECTION I: BACKGROUND INFORMATION

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

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State: North Carolina County/parish/borough: Caldwell City: Lenoir
Center coordinates of site (lat/long in degree decimal format): Lat. 35.89068° N, Long. -81.51978° W.
Universal Transverse Mercator:
Name of nearest waterbody: Gunpowder Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Catawba River/Lake Hickory
Name of watershed or Hydrologic Unit Code (HUC): 03050101
☒ 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):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

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

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

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

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

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: 3,350 linear feet: 2-10 width (ft) and/or acres.
      Wetlands: 0.24 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Established by OHWM.**
      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: .

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[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: li near 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: UT1 scored >30 on NCDWQ Stream ID form.
   - ☒ 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: UT2 scored >19 and <30 on NCDWQ Stream ID form..

Provide estimates for jurisdictional waters in the review area (check all that apply):
☒ Tributary waters: **3,350** linear feet **2-10** 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: **Located along the floodplain of UT1.**

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

Provide acreage estimates for jurisdictional wetlands in the review area: **0.24** 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 widt h (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): li near 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): li near 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: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

STORMWATER MANAGEMENT PLAN

August 21, 2009

WBS No. (State Project No.): 34783.1.1
TIP Project: U-2211B
Caldwell County, North Carolina
Hydraulics Project Engineer: David P. Bocker, PE
NCDOT Hydraulics Project Engineer: Andrew T. Nottingham, PE

Project Description:

This proposed project includes widening the existing two lane shoulder section to four lane divided curb & gutter section on SR 1001 (Connelly Springs Road) from US 321A (Norwood Street) to SR 1712 (Starcross Road) east of US 321A. The project is a proposed upgrade of the existing two lane road, an addition of an interchange on US 321, and a replacement of the SR 1001 bridge over US 321. The overall project is 0.9 mile in length. There are 2 existing crossings of UT1 to Gunpowder Creek and 1 existing crossing of UT2 to Gunpowder Creek, all of which will be upgraded and extended.

Environmental Description

This project is located in the Catawba Basin, but since the project is not on the main stem of the Catawba River, riparian buffer rules are not applicable. UT1 and UT2 to Gunpowder Creek are classified as class C streams and are not on the 303(d) list for impaired streams. There are a total of 5 permitted sites on the project, with permanent impacts totaling 1252 feet of stream and 0.24 acres of wetlands.

Roadway Description:

The proposed roadway cross section is a 4-lane facility with divided median or concrete island, consisting of 12 foot travel lanes. Several areas along the mainline at intersections also consist of additional turn lanes required for traffic circulation. The project drainage system will consist mainly of storm drainage systems, ditches and cross pipes.

Berm drainage outlets will be used in order to pick up off site drainage at the top of the high cut slopes. The berm drainage outlets will discharge into a 2GI along the bottom of the cut slope. The 2GI will connect into a storm system and outlet into a ditch.

Shoulder berm gutter will be utilized in areas of high fill and/or excessive runoff. In these instances, the runoff will be collected in a 2GI and discharged into a preformed scour hole, ditch or stream.

Best Management Practices and Major Structures:

The primary goal of Best Management Practices (BMPs) is to prevent degradation of the states surface waters by the location, construction and operation of the highway system. The BMPs are activities, practices, and procedures taken to prevent or reduce stormwater pollution. The BMP measures to be used on this project to reduce stormwater impacts are:

- ***Major Structures***

  Station -Y5- 31+08 Existing 7'x7' reinforced concrete box culvert under US 321 will be retained and extended downstream for approximately 214' and upstream for approximately 646'. Multiple baffles will be utilized within the downstream portion of the culvert extension to provide energy dissipation within the culvert. A 60" floodplain pipe under US 321 will be required to meet FEMA requirements. A benched channel at the inlet and outlet will be utilized to maintain low flow.

  Station –Y9- 10+94 Existing 72" Corrugated Metal Pipe will be replaced with an 8'x8' reinforced concrete box culvert under Starcross Road. The culvert will be buried one foot to promote fish passage.

- ***Extended Dry Detention Pond***

  The interior of Loop C will be utilized as a dry-extended detention pond to provide treatment of stormwater runoff prior to discharging into the proposed box culvert extension. The interior of Loop B was not conducive to provide stormwater detention due to its small area and extreme slopes.

- ***Roadside Ditches***

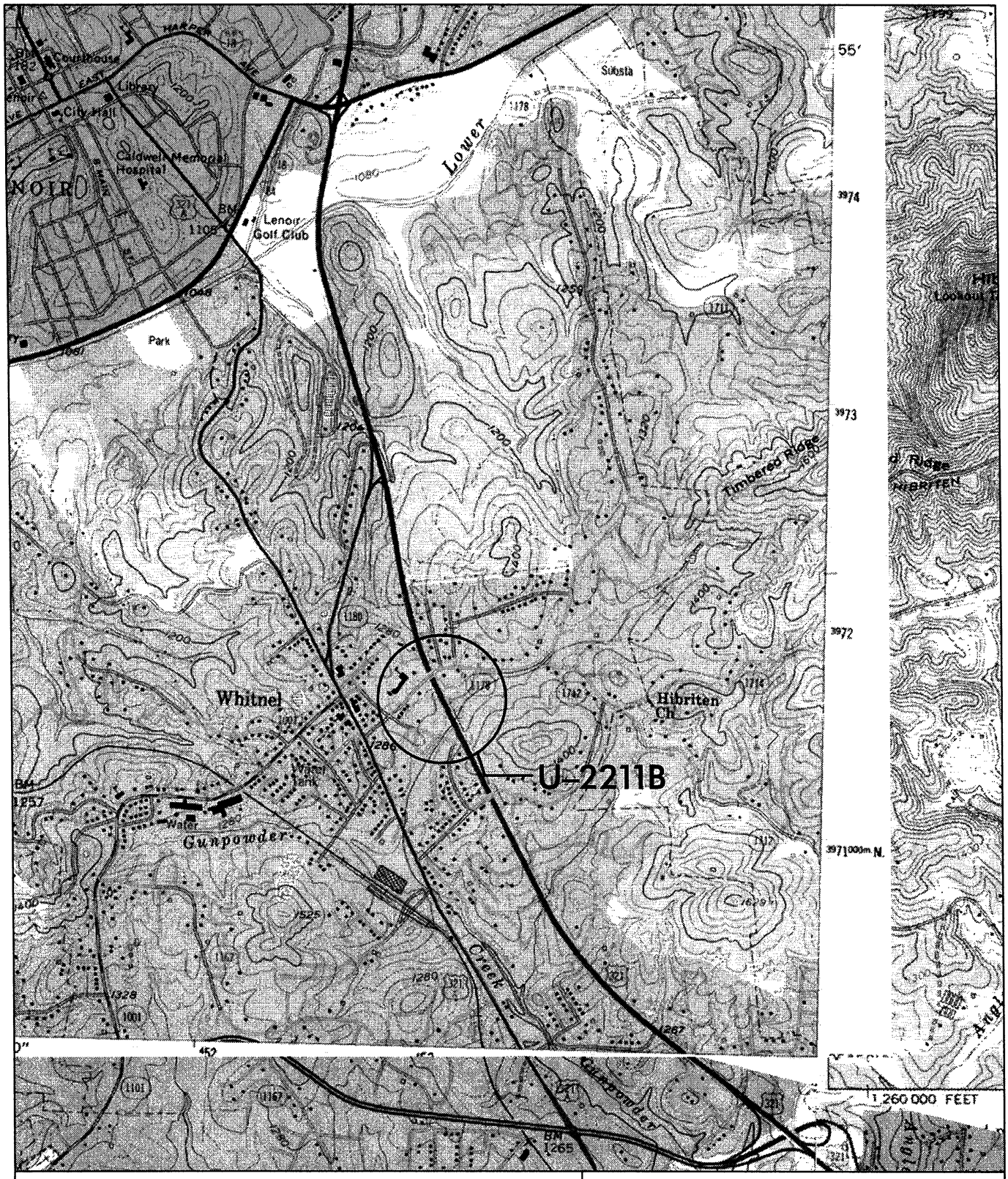
  The majority of roadside ditches on this project were unable to obtain a 3:1 slope or flatter due to the physical constraints of the mountainous topography. Most ditches on this project were lined with rip rap in order to control erosion.

- ***Rip Rap Pads & Preformed Scour Holes***

  Rip Rap pads and Preformed Scour Holes were used in order to dissipate energy and reduce velocities at pipe outlets. These structures are located throughout the project.

- ***Cross Pipes***

  In order to allow for fish passage, cross pipes will be buried a minimum of 20% of the diameter of the proposed pipe size, up to and including 48" diameter. Pipes greater than 48" will be buried 1 foot.



Permit Drawing
Sheet 1 of 14

TOPO MAP

SCALE: 1" : 2000'

NCDOT

DIVISION OF HIGHWAYS
CALDWELL COUNTY

PROJECT: 34783.1.1 (U-2211B)
SR 1001 (CONNELLY SPRINGS ROAD) FROM US 321A (NORWOOD STREET) TO SR 1712 (STARCROSS ROAD) EAST OF US 321

SHEET 1 OF 1 **7/11/2008**

PROPERTY OWNERS

NAMES AND ADDRESSES

	NAMES	ADDRESSES
16	THOMAS SHUFORD & SYBIL BUFF	1229 CAMELOT CT LENOIR, NC 28645
22	NELLIE JACKSON BLAIR	3144 STONEY BROOK DR LENOIR, NC 28645
30	LILLIAN WALDROP	LIVING TRUST AGREEMENT 4-2-04 BRUNSWICK, OH 44212
31	ELIZABETH C CRAVEN	2785 SMOKEY CREEK RD LENOIR, NC 28645
34	RENEE TRIPLETT	1508 STARCROSS RD LENOIR, NC 28645
35	CAROLE K. SWEAT ET AL	1305 HIBRITEN DR SE LENOIR, NC 28645
36	JOSEPH A GOMEZ A/W	527 N BOUNDARY ST RALEIGH, NC 27604
38	EDWIN DUARD PRICE	PRICE JOHN ALLEN & MARK TODD DENVER, NC 28037
60	CALDWELL GARDENS HOUSING INC.	P.O. BOX 1526 LENOIR, NC 28645
61	WILLIAM HARTLEY & STEPHEN ICENHOUR	1514 WINDSOR ST. LENOIR, NC 28645

Permit Drawing
Sheet 2 of 14

NCDOT

DIVISION OF HIGHWAYS

CALDWELL COUNTY

PROJECT: 34783.1.1 (U-2211B)

SR 1001 (CONNELLY SPRINGS RD.) FROM US 321A (NORWOOD ST.) TO SR 1712 (STARCROSS RD.) EAST OF US 321

SHEET OF 08/13/2008

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-Y5- 28+22 LT to 32+83 RT	7' x 7' RCBC (transitions to 7' x 8' RCBC with Baffles)						0.49	<0.01	922	34	
1	-Y5- 28+22 LT	Bank Stabilization						<0.01		38		
1	-Y5- 32+83 RT	Bank Stabilization						0.01		40		
2	-RPC- 23+77 to 24+46 RT	Roadway	0.24									
3	-L- 46+38 to 46+54 RT	Bank Stabilization						<0.01		16		
4	-Y9- 11+95 RT/LT	8'x8' RCBC						<0.01	<0.01	42	29	
4	-Y9- 11+95 RT/LT	Bank Stabilization						0.01		41		
5	-L- 51+44 to 52+41 LT	54" RCP						0.02	<0.01	153	10	
TOTALS:			0.24					0.53	0.01	1252	73	

Permit Drawing Sheet 3 of 17

ATN Revised 3/31/05

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CALDWELL COUNTY
WBS - 34783.1.1 (U-2211B)

SHEET 5/23/2011

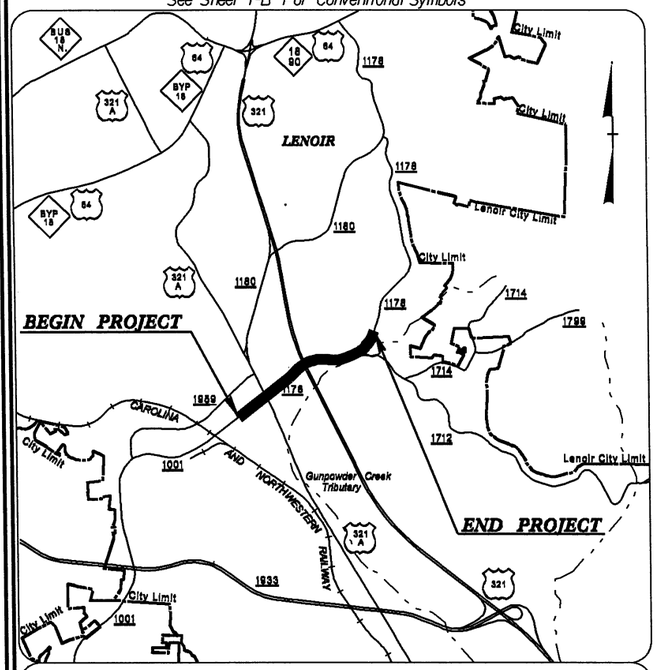
09/08/99

TIP PROJECT: U-2211B

CONTRACT:

$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$DGN$$$$$$$$$$$$
$$$$$$$$USERNAME$$$$$$$$

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

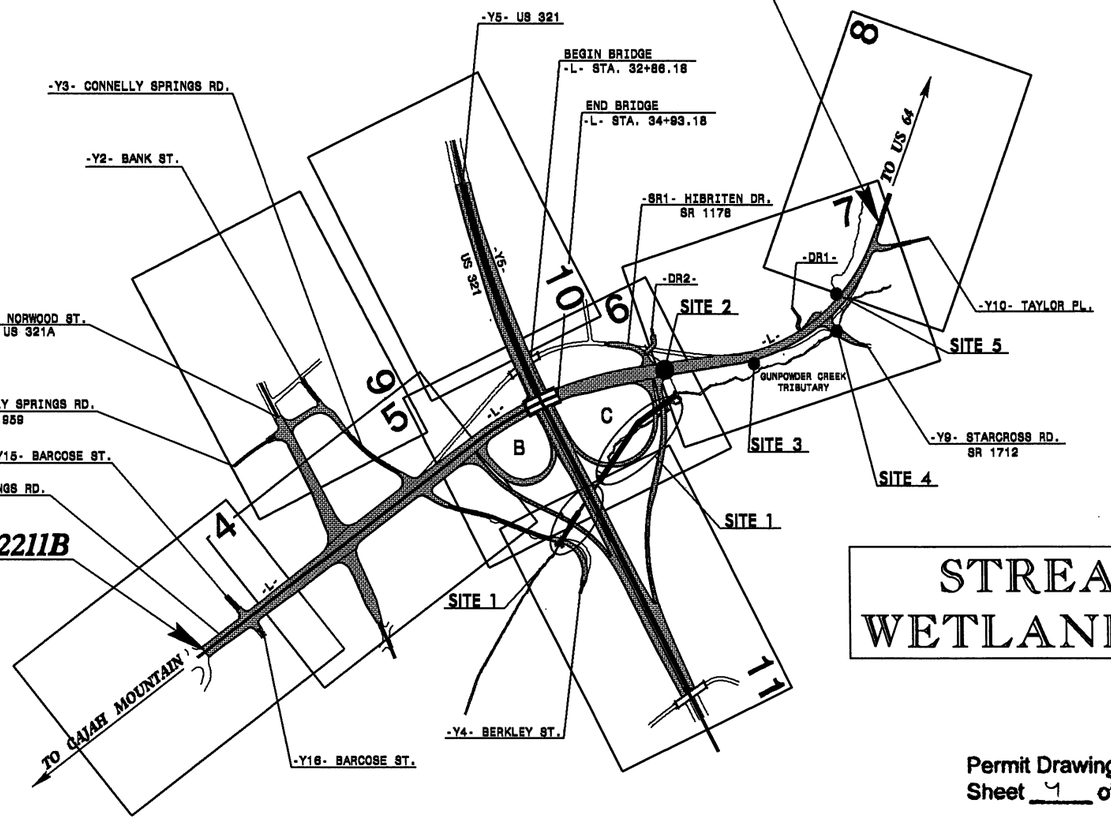
RECEIVED
MAY 26 2011
DIVISION OF HIGHWAYS
PDEA-OFFICE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2211B	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
34783.1.1	MA-STP-7533(2)	P.E.	

LOCATION: *LENOIR – SR 1001 (CONNELLY SPRINGS ROAD) FROM US 321A (NORWOOD STREET) TO SR 1712 (STARCROSS ROAD) EAST OF US 321*

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

STA. 56+50 –L– END TIP PROJECT U-2211B



STA. 10+55 –L– BEGIN TIP PROJECT U-2211B

STREAM AND WETLAND IMPACTS

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

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF LENOIR.

Permit Drawing
Sheet 4 of 14

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
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 2010 = 8,674
ADT 2030 = 14,600
DHV = 10 %
D = 60 %
T = 4 % *
V = 50 MPH
FUNC. CLASS. = URBAN COLLECTOR
* TTST 1% DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2211B = 0.831 MILES
LENGTH STRUCTURE TIP PROJECT U-2211B = 0.039 MILES
TOTAL LENGTH OF TIP PROJECT U-2211B = 0.870 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 19, 2008

LETTING DATE: SEPTEMBER 21, 2010

GARY LOVERING, PE
PROJECT ENGINEER

RON McCOLLUM, PE
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

8/17/99

REVISIONS

▨ DENOTES PERMANENT FILL IN WETLANDS

▨ DENOTES TEMPORARY FILL IN SURFACE WATERS

▨ DENOTES FILL IN SURFACE WATERS

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 5 of 14

$$$$SYSTIME$$$$
$$$$USERNAME$$$$ $$$$DGN$$$$

8/17/99

REVISIONS

DENOTES PERMANENT FILL IN WETLANDS

DENOTES TEMPORARY FILL IN SURFACE WATERS

DENOTES FILL IN SURFACE WATERS

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SEE SHEET 10 -Y5- STA.22+00.00

MATCHLINE SEE SHEET 5 -L- STA.28+00.00

MATCHLINE SEE SHEET 11 -Y5- STA.31+00.00

MATCHLINE SEE SHEET 7 -L- STA.42+00.00

-Y4- STA.13+50.00

-RPB- STA.15+50.00

-Y4- STA.17+00.00

-RPC- STA.20+50.00

CALDWELL COUNTY BOARD OF EDUCATION

MARY ANTHA THOMAS, WIDOW

OPAL SIZER

ANNA LEE PEARSON

TERESA DARNELL APPLETT

MABEL COVINGTON, WIDOW

FRANCES COLVARD TREXLER

STUART & FREIDA RAYLE

EDWARD BLAIR, JR., et al

SYBIL SHUFORD BUFF & THOMAS SHUFORD III

RIS BENFIELD

CALDWELL GARDENS HOUSING INC.

NAD 83/95

-DR3- POT Sta. 10+00.00

-L- POT Sta. 29+32.19 =
-DR3- POT Sta. 18+14.01

PC Sta. 29+39.30

-L- POT Sta. 29+14.69 =
-RPB- POT Sta. 22+14.80

BEGIN CONST. -DR3- STA.10+50.61

-L- POC Sta. 31+00.00 =
-DR3- POT Sta. 11+90.00

PT Sta. 20+85.07

-Y5- POT Sta. 26+35.10, 39' RT =
-LPB- -ST Sta. 10+00.00

ST Sta. 16+87.94

SCSta. 12+00.00

CSSta. 14+87.94

SCSta. 15+91.44

SPSSta. 16+87.46

BEGIN CONST. -Y4- 16+68.00

PCSta. 14+58.30

PTSta. 14+88.32

PCSta. 16+36.32

PT Sta. 16+70.82

PCSta. 17+89.31

-L- POC Sta. 93+87.08 =
-Y5- POC Sta. 25+25.28

BEGIN CONST. -DR2- STA.10+50.61

-L- POC Sta. 12+31.45 =
-DR2- POT Sta. 11+63.90

PT Sta. 12+81.95

-L- POT Sta. 10+27.41 =
-SRI- POT Sta. 13+35.10

PT Sta. 25+60.87

PT Sta. 39+44.51

-L- POT Sta. 40+12.91 =
-LPC- POT Sta. 20+43.35

-L- POT Sta. 40+29.47 =
-RPC- POT Sta. 25+85.14

ST Sta. 19+06.93

PT Sta. 24+40.19

CSSta. 17+06.93

SCSta. 22+06.06

-Y5- POT Sta. 26+86.63, 39' LT. =
-LPC- ST Sta. 10+00.00

BEGIN CONST. -SRI- POC Sta. 10+20

POT Sta. 10+00.00

PC Sta. 11+28.96

PT Sta. 10+72.50

PT Sta. 11+01.95

SITE 1

SITE 2

Permit Drawing
Sheet 6 of 14

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	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

FOR -L- PROFILE SEE SHEET 13
FOR -Y9- PROFILE SEE SHEET 21
FOR -DRI- PROFILE SEE SHEET 22
FOR CURVE DATA SEE SHEET 2-1

▨ TS	DENOTES TEMPORARY FILL IN SURFACE WATERS
▨ S	DENOTES FILL IN SURFACE WATERS

* INSETS SHOWN AT 1"=50'

Permit Drawing
Sheet 7 of 14

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

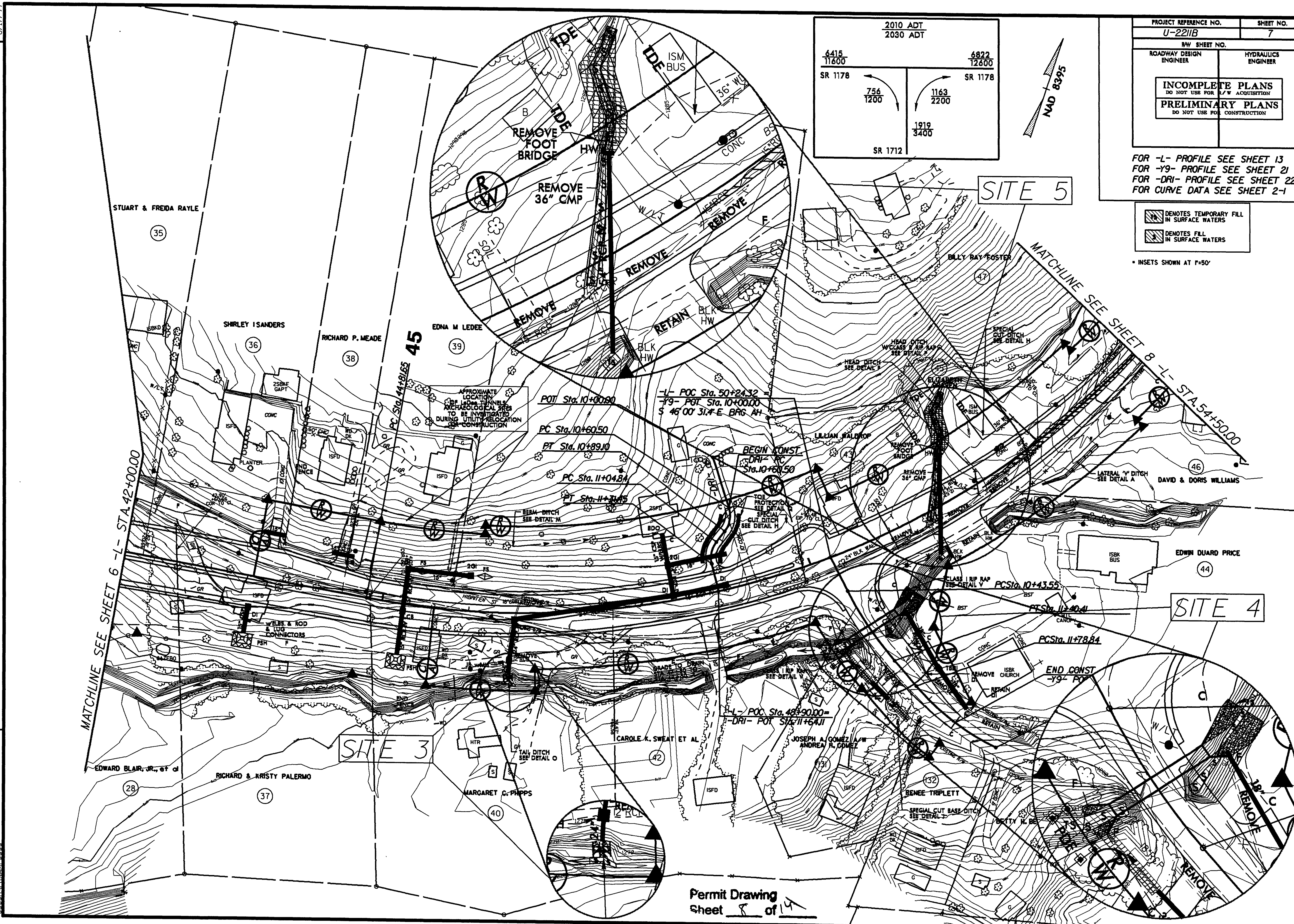
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -L- PROFILE SEE SHEET 13
FOR -Y9- PROFILE SEE SHEET 21
FOR -DRI- PROFILE SEE SHEET 22
FOR CURVE DATA SEE SHEET 2-1

DENOTES TEMPORARY FILL IN SURFACE WATERS
DENOTES FILL IN SURFACE WATERS

* INSETS SHOWN AT 1"=50'



2010 ADT
2030 ADT
6415
11600
6822
12600
SR 1178
SR 1178
756
1200
1163
2200
1919
3400
SR 1712
NAD 83/95
SITE 5
SITE 4
SITE 3
MATCHLINE SEE SHEET 8 -L- STA.54+50.00
MATCHLINE SEE SHEET 6 -L- STA.42+00.00
STUART & FREIDA RAYLE
SHIRLEY I SANDERS
RICHARD P. MEADE
EDNA M LEDEE
BILLY RAY FOSTER
LILLIAN WALDROP
DAVID & DORIS WILLIAMS
EDWIN DUARD PRICE
EDWARD BLAIR, JR., et al
RICHARD & KRISTY PALERMO
MARGARET C. PHIPPS
CAROLE K. SWEAT ET AL
JOSEPH A. GOMEZ & W ANDREA R. GOMEZ
RENEE TRIPLETT
REMOVE FOOT BRIDGE
REMOVE 36" CMP
REMOVE
RETAIN
PC Sta. 44+81.65
POT Sta. 10+00.00
PC Sta. 10+60.50
PT Sta. 10+89.10
PC Sta. 11+04.84
PT Sta. 11+31.15
-L- POC Sta. 50+24.32 = -Y9- POT Sta. 10+00.00
S 46°00' 31.4" E BRG AH
BEGIN CONST -DRI- PC Sta. 10+60.50
-L- POC Sta. 48+90.00 = -DRI- POT Sta. 11+64.11
PC Sta. 10+43.55
PT Sta. 11+40.41
PC Sta. 11+78.84
END CONST -Y9- POT
APPROXIMATE LOCATION OF LADY TUNNELS ARCHAEOLOGICAL SITES TO BE INVESTIGATED DURING UTILITY RELOCATION OR CONSTRUCTION
BERM DITCH SEE DETAIL M
TAIL DITCH SEE DETAIL O
LATERAL "V" DITCH SEE DETAIL A
SPECIAL CUT BASE DITCH SEE DETAIL J
REVISIONS

Permit Drawing
Sheet 8 of 14

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

MAY 7,2010 - R/W REVISIONS - PARCEL 22,COMBINED PARCEL 55 WITH PARCEL 22 AND CHANGED THE OWNER NAME;PARCEL 56,CHANGED OWNER NAME;PARCELS 62 & 63, REDUCED EXISTING R/W 5 FEET AND MADE THE EXISTING R/W CONTROLLED ACCESS.

\$\$\$\$\$\$\$\$SYSTIME\$\$\$\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$ICONS\$\$\$\$\$\$\$\$\$\$
\$\$\$\$\$\$\$\$\$\$LICENSE\$\$\$\$\$\$\$\$\$\$

DENOTES TEMPORARY FILL IN SURFACE WATERS

DENOTES FILL IN SURFACE WATERS

NAD 83/95

-RPC- STA.20+50.00

-RPB- STA.15+50.00

-Y4- STA.11+00.00

MATCHLINE SEE SHEET 6 -Y5- STA.31+00.00

SITE

EDWARD H. BLAIR, JR., et al (22)

THOMAS W. SHUFORD, III AND SYBIL SHUFORD BUFF (56)

JAMES D. FARTHING A/W BRENDA S. (35)

DANIEL M. AND KATHLEEN SANDERS (58)

LENOIR NORTH CAROLINA CONGREGATION OF JEHOVAH'S WITNESS INC. (59)

FRED W. PRICE JR. AND DEBRA PRICE PENNELL (57)

EDWARD J. LUTZ A/W CAROLYN W. LUTZ (40)

RAY THOMAS SMITH A/W SYLVIA M. SMITH (45)

STALLINGS FAMILY LIMITED PARTNERSHIP (62)

BARBARA REESE CALL (61)

WILLIAM HARTLEY & STEVE ICENHOUR

JERRY BEVINS (63)

DAVID H HAMBY (64)

HILDA WARREN WINKLER (65)

DAVID H HAMBY (66)

CLORA GREEN KELLER

TERRY BOONE

DAVID & JANE MILLER

SAMORA R BEANE

BILLY & HELEN CORRELL

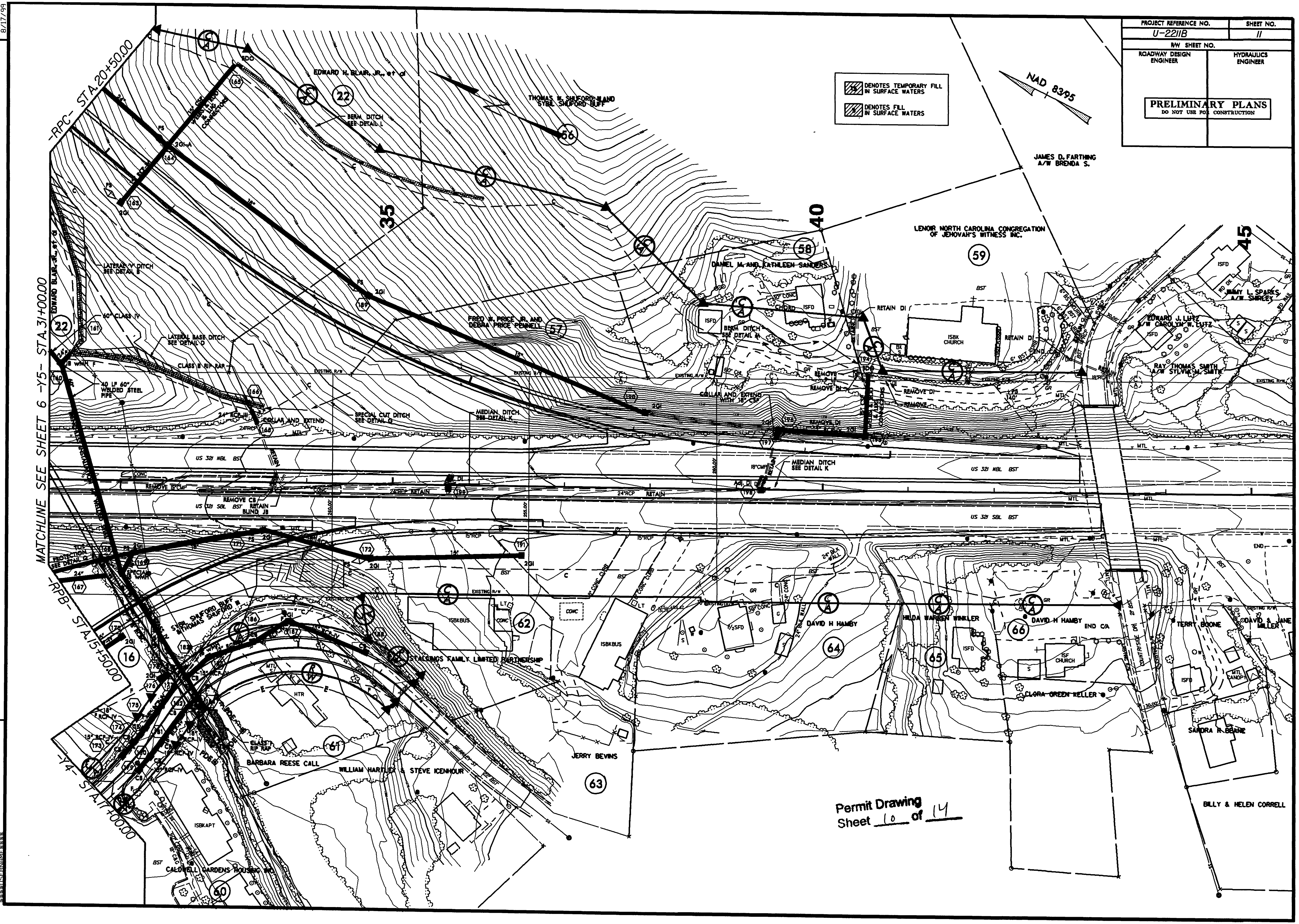
CALDWELL GARDENS HOUSING INC. (60)

Permit Drawing
Sheet 9 of 14

REVISIONS

MAY 7,2010 - R/W REVISIONS - PARCEL 22,COMBINED PARCEL 55 WITH PARCEL 22 AND CHANGED THE OWNER NAME;PARCEL 56,CHANGED OWNER NAME;PARCELS 62 & 63. REDUCED EXISTING R/W 5 FEET AND MADE THE EXISTING R/W CONTROLLED ACCESS.

8/17/99



PROJECT REFERENCE NO.
U-2211B
SHEET NO.
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DENOTES TEMPORARY FILL IN SURFACE WATERS
DENOTES FILL IN SURFACE WATERS
NAD 83/95
MATCHLINE SEE SHEET 6 -Y5- STA.31+00.00
-RPC- STA.20+50.00
-RPB- STA.15+50.00
-Y4- STA.11+00.00
EDWARD H. BLAIR, JR., et al
THOMAS W. SHUFORD III AND SYBIL SHUFORD BUFF
JAMES D. FARTHING A/W BRENDA S.
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DANIEL M. AND KATHLEEN SANDERS
FRED W. PRICE JR. AND DEBRA PRICE PENNELL
EDWARD J. LUTZ A/W CAROLYN W. LUTZ
RAY THOMAS SMITH A/W SYLVIA M. SMITH
US 321 NBL
US 321 SBL
MEDIAN DITCH SEE DETAIL K
DAVID H HAMBY
HILDA WARREN WINKLER
TERRY BOONE
STALLINGS FAMILY LIMITED PARTNERSHIP
CLORA GREEN KELLER
SANDRA R BEANE
BARBARA REESE CALL
WILLIAM HARTLEY & STEVE ICENHOUR
JERRY BEVINS
CALDWELL GARDENS HOUSING INC.
BILLY & HELEN CORRELL
35
40
45
Permit Drawing
Sheet 10 of 14

8/23/

PROJ. REFERENCE NO.	SHEET NO.
U-2211B	X-11

0 5 10

F DENOTES PERMANENT FILL IN WETLANDS

42+50.00

1280.57

0.020 0.020 0.020

5:1 3:1 2:1

42+00.00

1278.61

0.020 0.020 0.020

4:1 3:1 2:1

41+50.00

1275.28

0.014 0.014 0.020

4:1 3:1 2:1

41+00.00

1276.79

1269.78

0.004 0.009 0.020

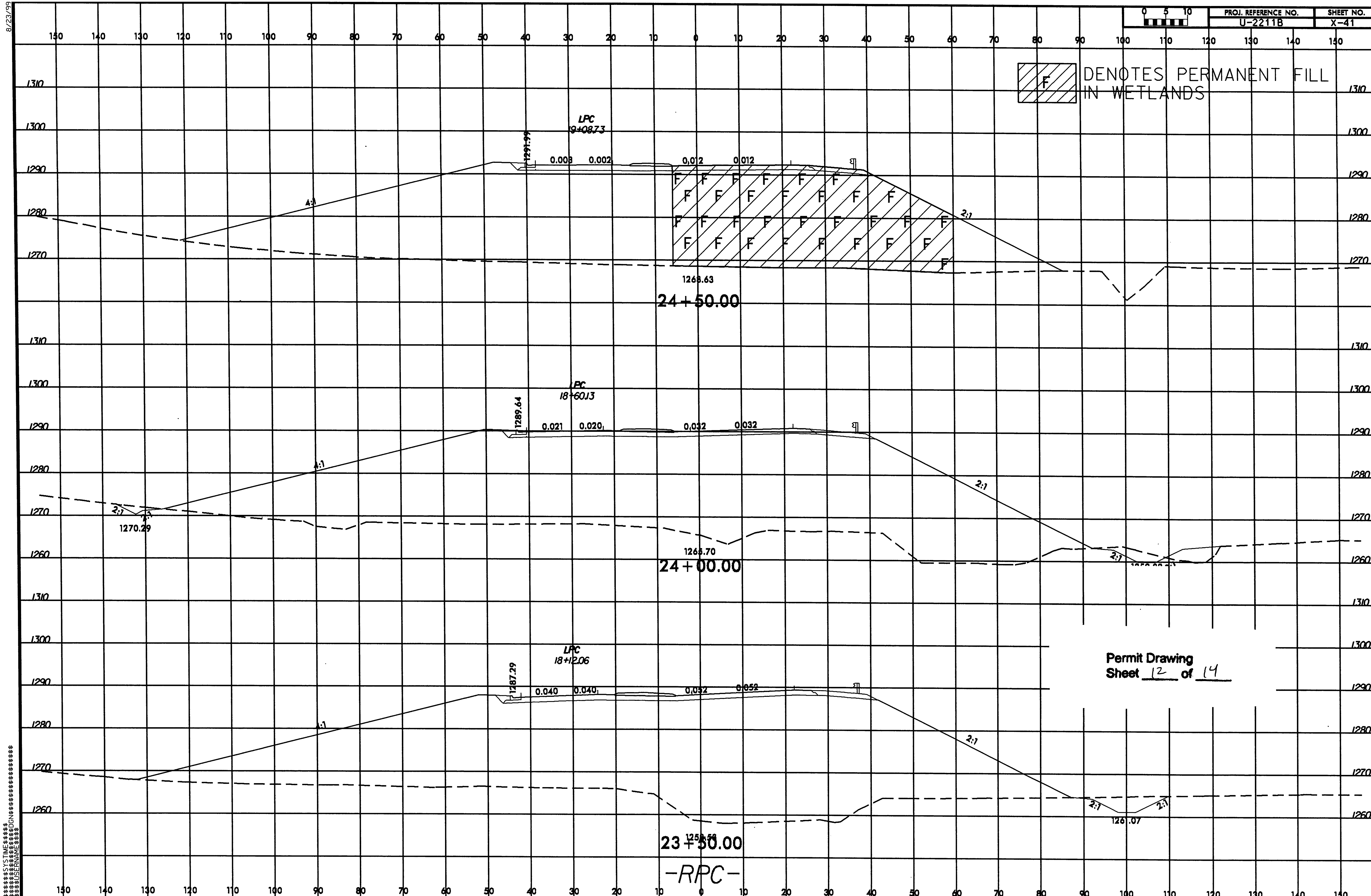
2:1 2:1 4:1 3:1 2.16:1

SP#31
SEE –RPC– Sta. 25+00.00
1283.502

WLB

Permit Drawing
Sheet 11 of 14

$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



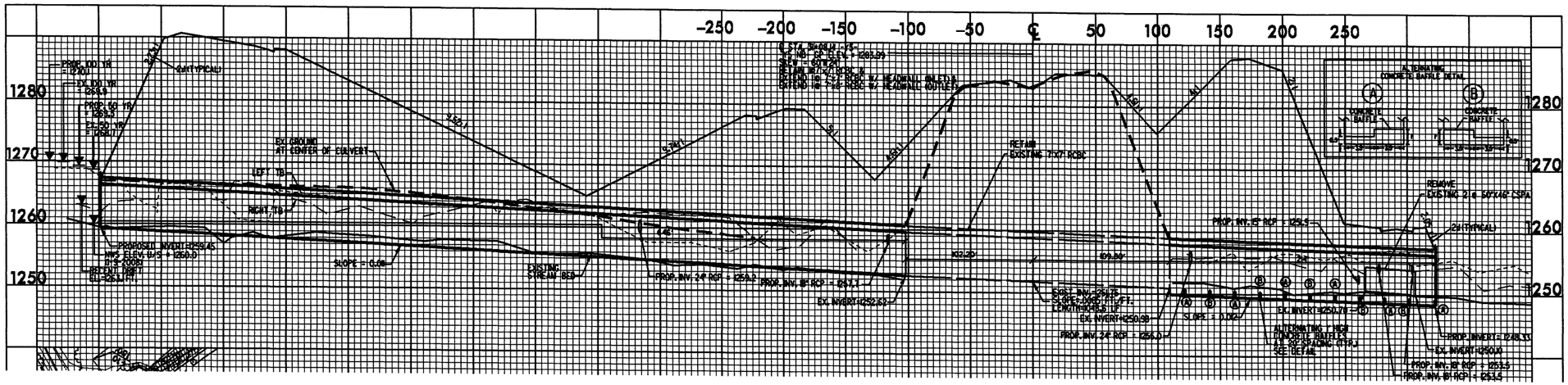
PROJ. REFERENCE NO.
U-2211B
SHEET NO.
X-41
DENOTES PERMANENT FILL IN WETLANDS
LPC
19+08.73
1291.99
0.008
0.002
0.012
0.012
4:1
2:1
1268.63
24+50.00
LPC
18+60.13
1289.64
0.021
0.020
0.032
0.032
4:1
2:1
1270.29
1265.70
24+00.00
LPC
18+12.06
1287.29
0.040
0.040
0.052
0.052
4:1
2:1
1261.07
23+50.00
-RPC-
Permit Drawing
Sheet 12 of 14
8/23/99

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STREAM PROFILE

SITE 1



Permit Drawing
Sheet 13 of 14

5/23/2011

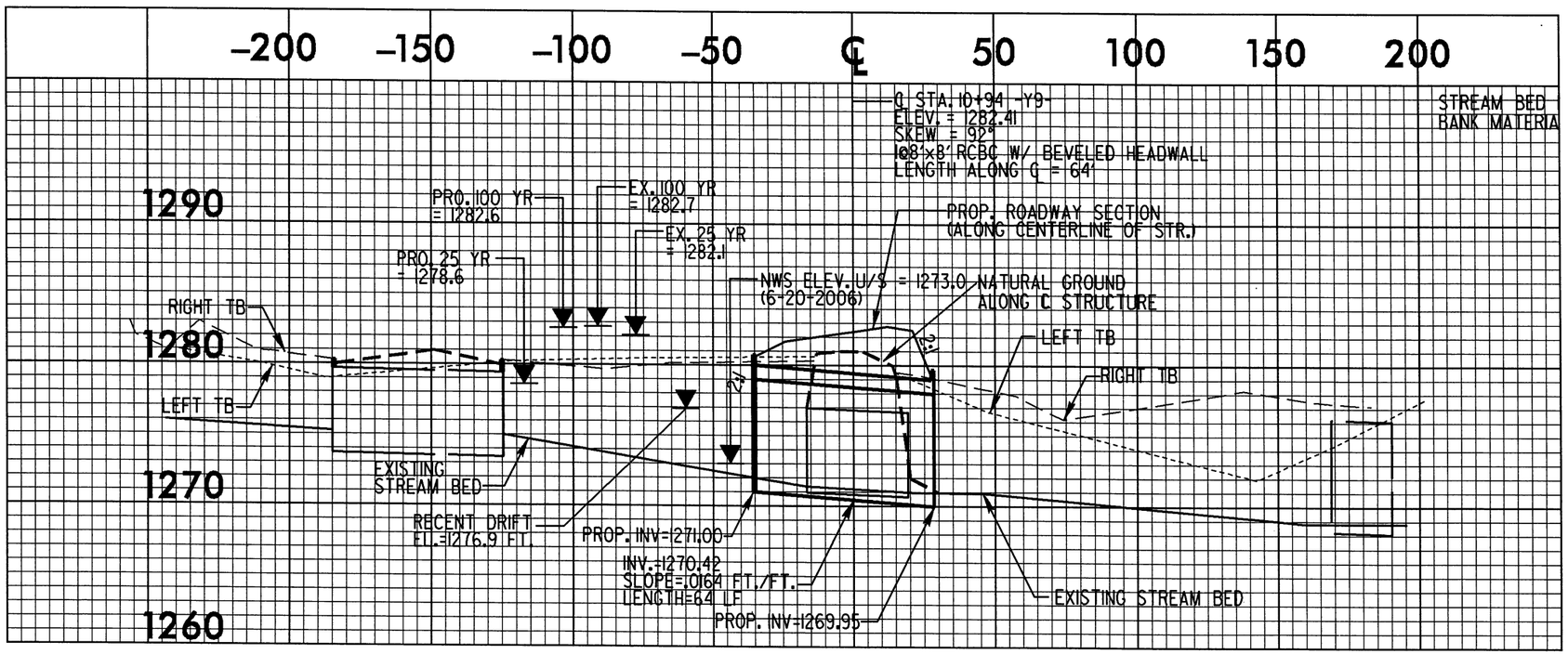
$$$$SYSTIME$$$$
$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

MULKEY
ENGINEERS & CONSULTANTS
7815 E. INDEPENDENCE BOULEVARD
SUITE 100
CHARLOTTE, NC 28227
(704) 537-7300
(704) 537-2811 (FAX)
WWW.MULKEYINC.COM

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

STREAM PROFILE

SITE 4



Permit Drawing
Sheet 14 of 14

MULKEY
ENGINEERS & CONSULTANTS
7815 E. INDEPENDENCE BOULEVARD
SUITE 100
CHARLOTTE, NC 28227
(704) 537-7300
(704) 537-8811 (FAX)
WWW.MULKEYINC.COM

TIP PROJECT: U-2211B

CONTRACT:

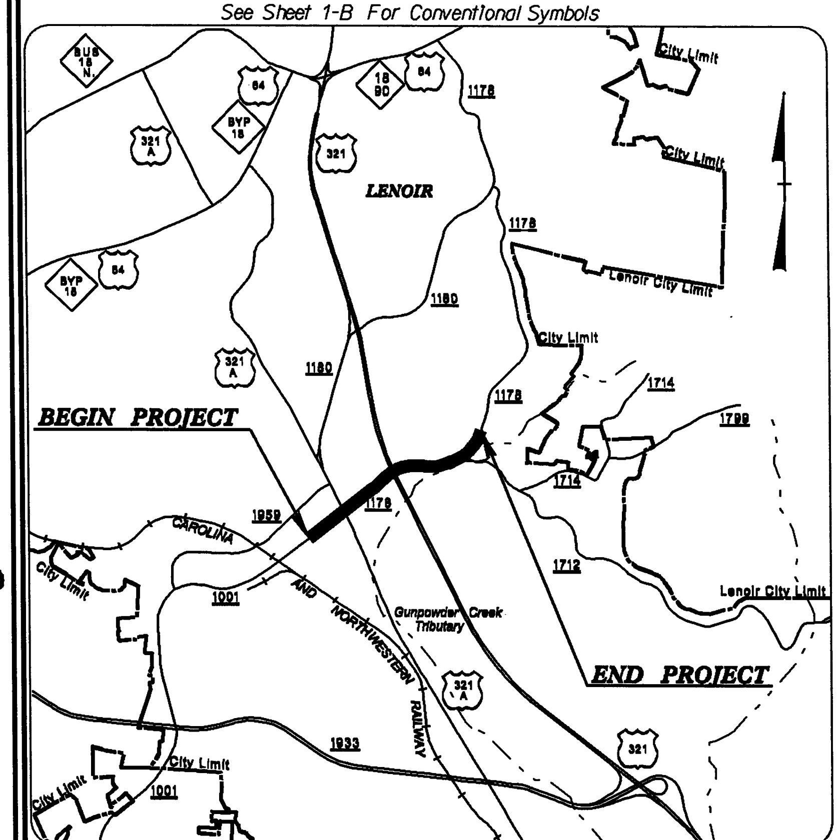
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CALDWELL COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2211B	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34783.1.1	MA-STP-7533(2)	P.E.
34783.2.3	STP-1001(38)	R/W, UTIL.

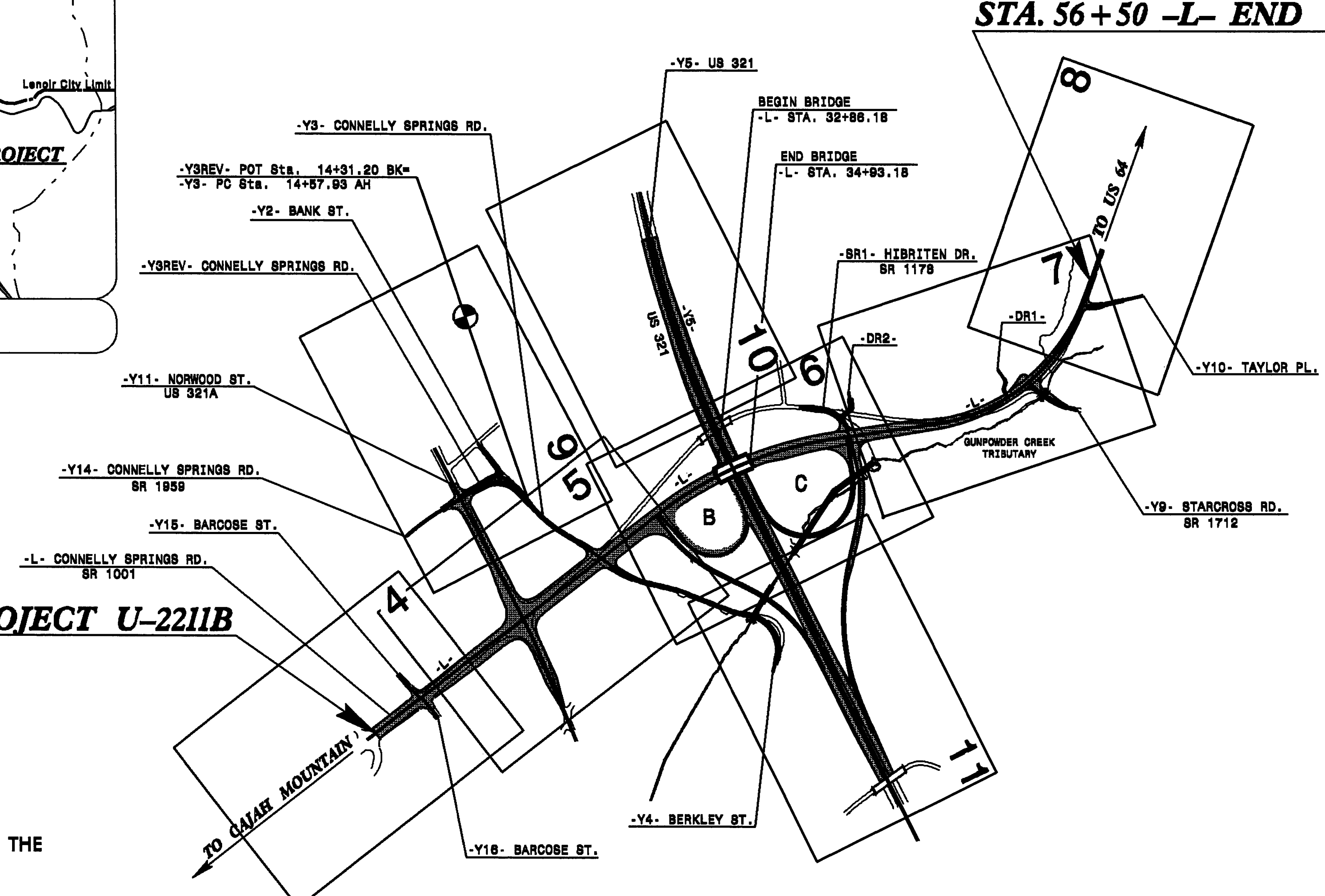


VICINITY MAP

LOCATION: LENOIR - SR 1001 (CONNELLY SPRINGS ROAD) FROM US 321A (NORWOOD STREET) TO SR 1712 (STARCROSS ROAD) EAST OF US 321

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

STA. 56+50 -L- END TIP PROJECT U-2211B



STA. 10+55 -L- BEGIN TIP PROJECT U-2211B

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

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF LENOIR.

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 2010 = 8,674
ADT 2030 = 14,600
DHV = 10 %
D = 60 %
T = 4 % *
V = 50 MPH
FUNC. CLASS. = URBAN COLLECTOR
* TTST 1% DUAL 3%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2211B = 0.831 MILES
LENGTH STRUCTURE TIP PROJECT U-2211B = 0.039 MILES

TOTAL LENGTH OF TIP PROJECT U-2211B = 0.870 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 18, 2008

LETTING DATE: MAY 15, 2012

GARY LOVERING, PE
PROJECT ENGINEER

RICK DECOLA, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

09/08/99
24-MAY-2011 10:19
r:\roadway\proj\u2211b_rdy_tsh.dgn
$$$$USERNAME$$$$

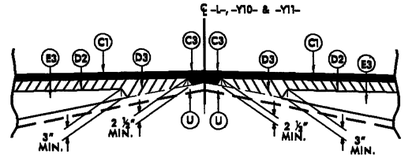
6/2/99

PAVEMENT SCHEDULE

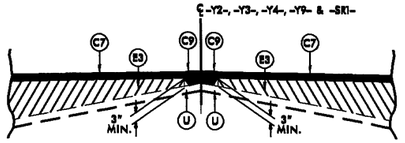
(FINAL PAVEMENT DESIGN)

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 188 LBS. PER SQ. YD.	J1	PROP. 6" AGGREGATE BASE COURSE.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 188 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J2	PROP. 8" AGGREGATE BASE COURSE.
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 2" IN DEPTH.	J3	PROP. 10" AGGREGATE BASE COURSE.
C4	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 188 LBS. PER SQ. YD.	K	SUBGRADE TO BE STABILIZED WITH LIME TO A DEPTH OF 8" AT A RATE OF 20 LBS./SQ. YD. AS DIRECTED BY THE ENGINEER OR SUBGRADE TO BE STABILIZED WITH CEMENT TO A DEPTH OF 7" AT A RATE OF 55 LBS./SQ. YD. AS DIRECTED BY THE ENGINEER
C5	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 188 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.		
C6	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.	R1	1'-6" CONCRETE CURB AND GUTTER.
C7	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.	R2	2'-6" CONCRETE CURB AND GUTTER.
C8	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R3	5" MONOLITHIC CONCRETE ISLAND (KEYED-IN).
C9	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.	R4	EXPRESSWAY GUTTER.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	T	EARTH MATERIAL.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.	V	MILLING BITUMINOUS PAVEMENT VAR.DEPTH.
D4	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT (See Detail Showing Method of Wedging)
D5	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.		
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.		
E2	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.		
E3	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.		
E4	PROP. APPROX. 8" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.		
E5	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.		

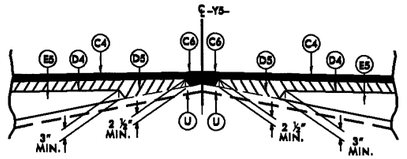
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



Detail Showing Method of Wedging



Detail Showing Method of Wedging

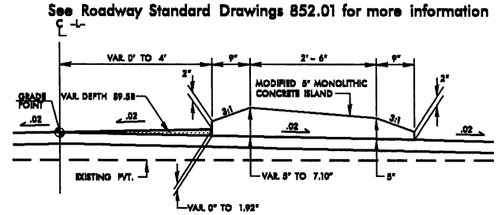


Detail Showing Method of Wedging

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

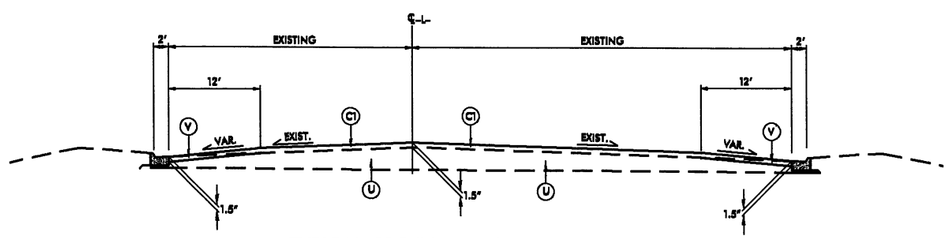
PRELIMINARY PLANS
NOT FOR BID OR CONSTRUCTION

See Roadway Standard Drawings 852.01 for more information



Detail Showing Modified 5" Monolithic Conc. Island

-L- STA. 40+88.00 TO STA. 44+14.99



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

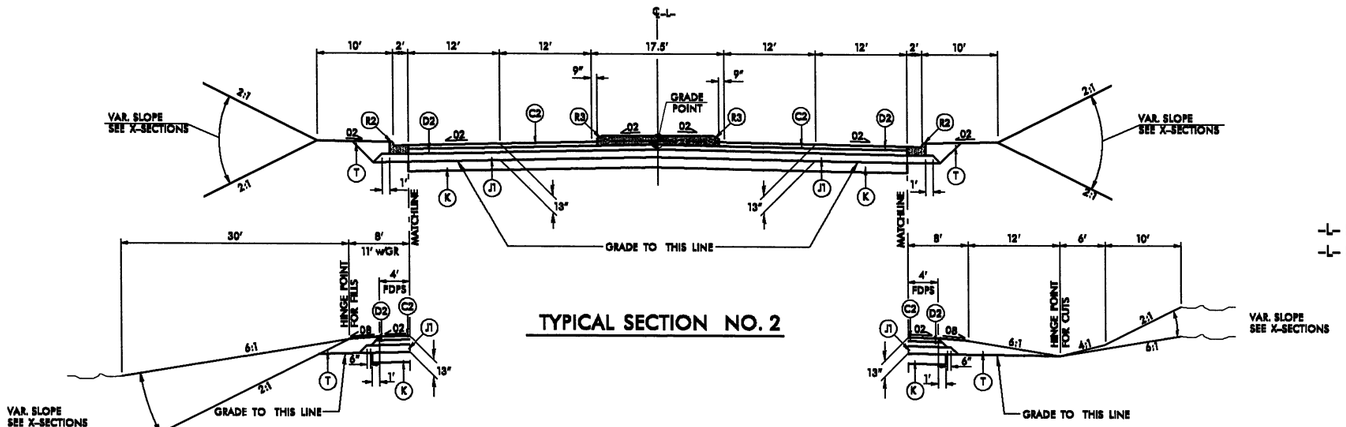
-L- STA. 10+55.00 TO -L- STA. 20+03.80

24-MAY-2011@20
R:\Roadway\Proj\u2211b_rdy_typ.dgn
$$$$USERNAME$$$$

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	1½" SF9.5A
C8	3" SF9.5A
C9	VAR. SF9.5A
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
D4	4" I19.0C
D5	VAR. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
E4	8" B25.0C
E5	VAR. B25.0C
J1	6" ABC
J2	8" ABC
J3	10" ABC
K	8" LTBC OR 7" CTBC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
R4	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

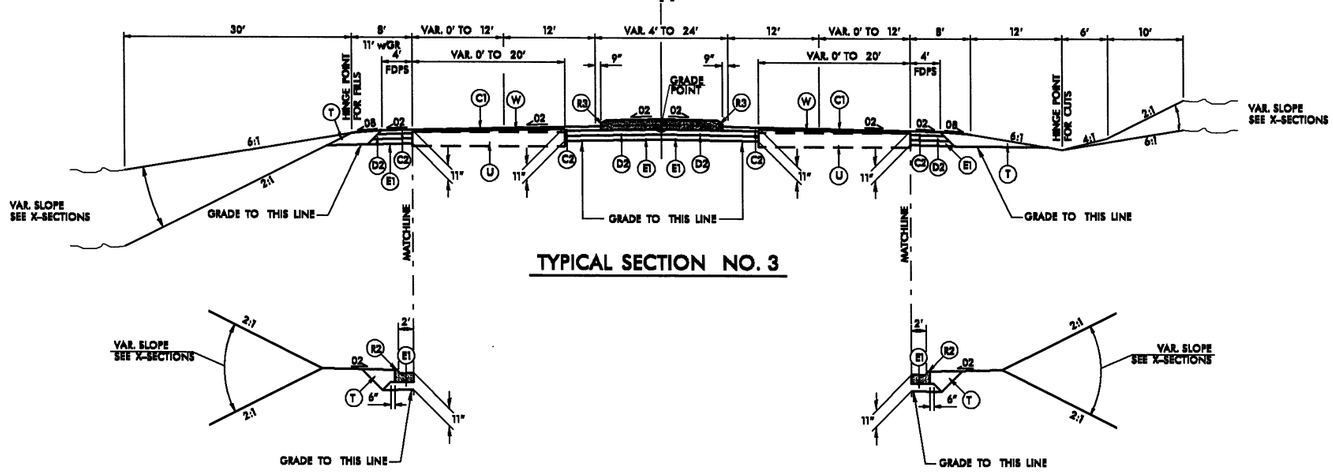
-L- STA. 23+25.00 TO -L- STA. 32+86.18 (BEGIN BRIDGE)
-L- STA. 34+93.18 (END BRIDGE) TO -L- STA. 40+00.00

USE TYPICAL SECTION NO. 2A

-L- STA. 40+00.00 TO -L- STA. 43+25.00
-L- STA. 47+75.00 TO -L- STA. 53+75.00

USE TYPICAL SECTION NO. 2B

-L- STA. 40+00.00 TO -L- STA. 43+25.00
-L- STA. 47+75.00 TO -L- STA. 53+75.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-L- STA. 43+25.00 TO -L- STA. 47+75.00
-L- STA. 53+75.00 TO -L- STA. 56+50.00

USE TYPICAL SECTION NO. 3A

-L- STA. 20+65.03 TO -L- STA. 23+25.00

USE TYPICAL SECTION NO. 3B

-L- STA. 20+65.03 TO -L- STA. 23+25.00

24-MAY-2011\0k20
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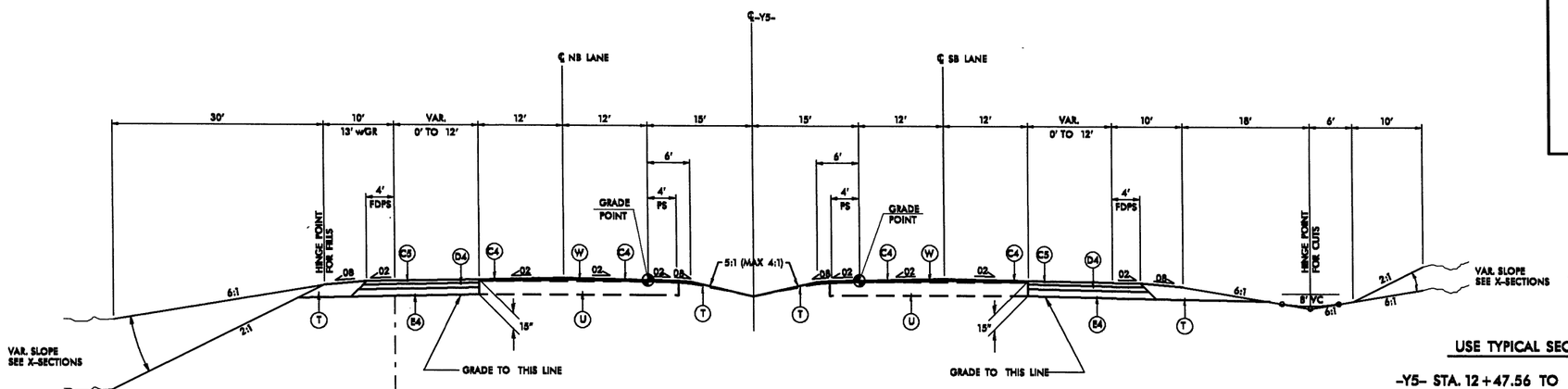
6/2/99

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	1½" SF9.5A
C8	3" SF9.5A
C9	VAR. SF9.5A
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
D4	4" I19.0C
D5	VAR. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
E4	8" B25.0C
E5	VAR. B25.0C
J1	6" ABC
J2	8" ABC
J3	10" ABC
K	6" LTBC OR 7" CTBC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
R4	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



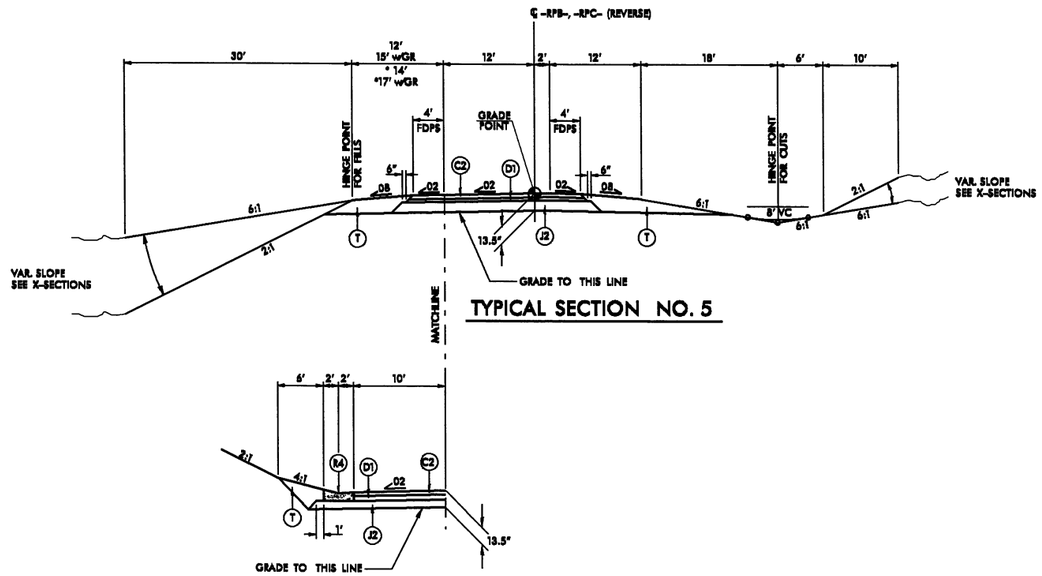
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-Y5- STA. 12+47.56 TO -Y5- STA. 43+00.00 (NB LANE)
-Y5- STA. 12+47.56 TO -Y5- STA. 43+25.00 (SB LANE)

TYPICAL SECTION NO. 4A

-Y5- STA. 40+79.00 TO -Y5- STA. 42+61.48 LT.



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-RPB- STA. 10+00.00 TO -RPB- STA. 21+81.84
*-RPC- STA. 10+00.00 TO -RPC- STA. 25+50.31

TYPICAL SECTION NO. 5A

-RPC- STA. 10+00.00 TO -RPC- STA. 12+94.35 RT.

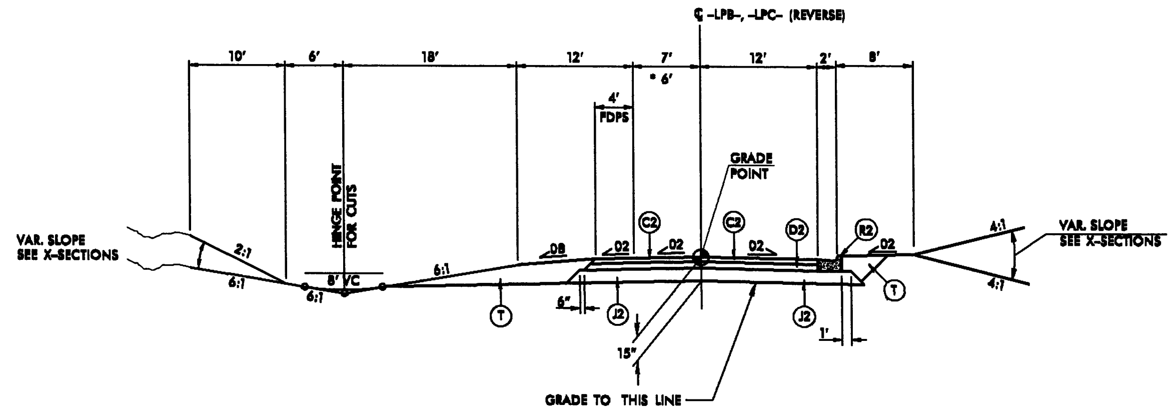
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-C

ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

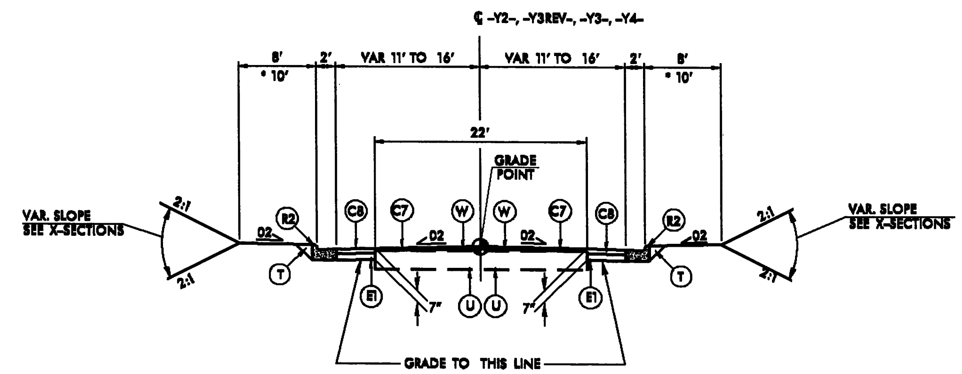
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	1½" SF9.5A
C8	3" SF9.5A
C9	VAR. SF9.5A
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
D4	4" I19.0C
D5	VAR. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
E4	8" B25.0C
E5	VAR. B25.0C
J1	6" ABC
J2	8" ABC
J3	10" ABC
K	6" LTBC OR 7" CTBC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
R4	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

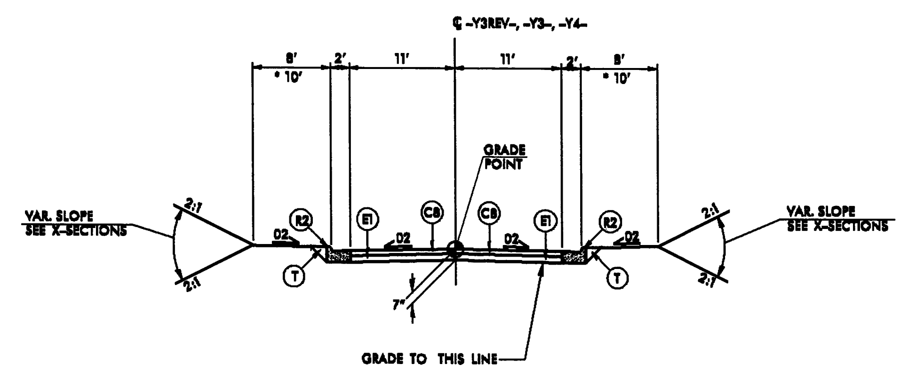
-LPB- STA. 10+00.00 TO -LPB- STA. 17+81.18
*-LPC- STA. 10+00.00 TO -LPC- STA. 20+10.60



TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

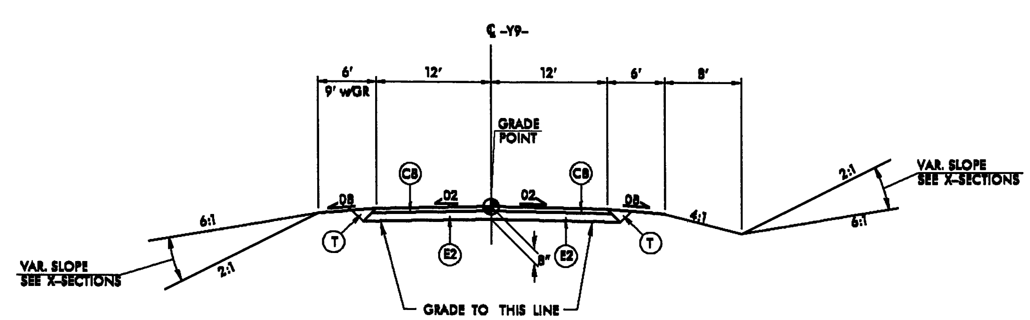
-Y2- STA. 11+00.00 TO -Y2- STA. 12+25.78
-Y3REV- STA. 11+00.00 TO -Y3REV- STA. 12+00.00
-Y3REV- STA. 12+55.00 TO -Y3REV- STA. 14+31.20
-Y3- STA. 17+80.00 TO -Y3- STA. 18+85.03
*-Y4- STA. 11+00.00 TO -Y4- STA. 11+98.04
-Y4- STA. 16+68.00 TO -Y4- STA. 17+25.00
-Y4- STA. 20+75.00 TO -Y4- STA. 21+36.21



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

-Y3REV- STA. 10+30.03 TO -Y3REV- STA. 11+00.00
-Y3REV- STA. 12+00.00 TO -Y3REV- STA. 12+55.00
*-Y4- STA. 10+52.54 TO -Y4- STA. 11+00.00
-Y4- STA. 17+25.00 TO -Y4- STA. 20+75.00



TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

-Y9- STA. 10+20.85 TO -Y9- STA. 11+25.00

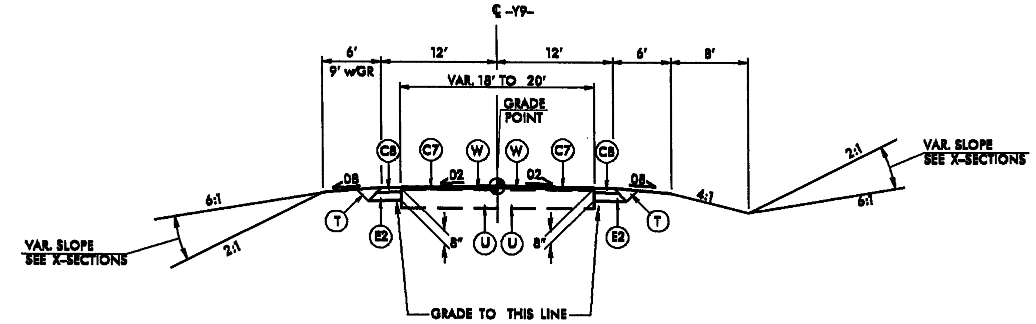
24-MAY-2011 10:20
r:\roadway\proj\u2211b_rdy_typ.dgn
$$$$USERNAME$$$$

6/2/99

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	1½" SF9.5A
C8	3" SF9.5A
C9	VAR. SF9.5A
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
D4	4" I19.0C
D5	VAR. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
E4	6" B25.0C
E5	VAR. B25.0C
J1	6" ABC
J2	8" ABC
J3	10" ABC
K	8" LTBC OR 7" CTBC
R1	1'-6" C & G
R2	2'-6" C & G
R3	6" MCI
R4	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

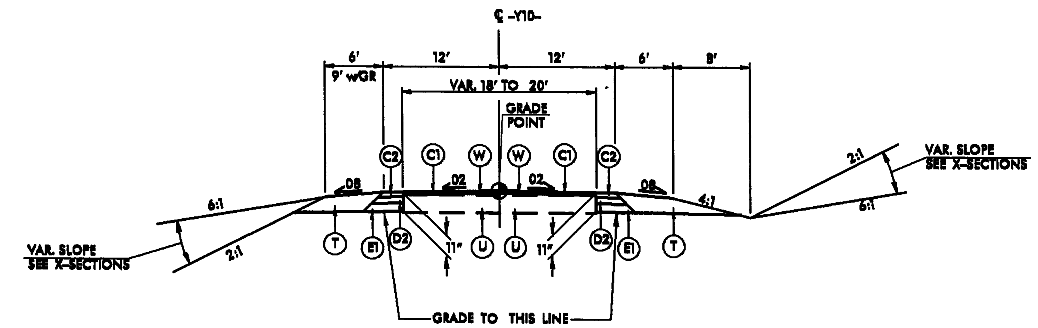
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 10

USE TYPICAL SECTION NO. 10

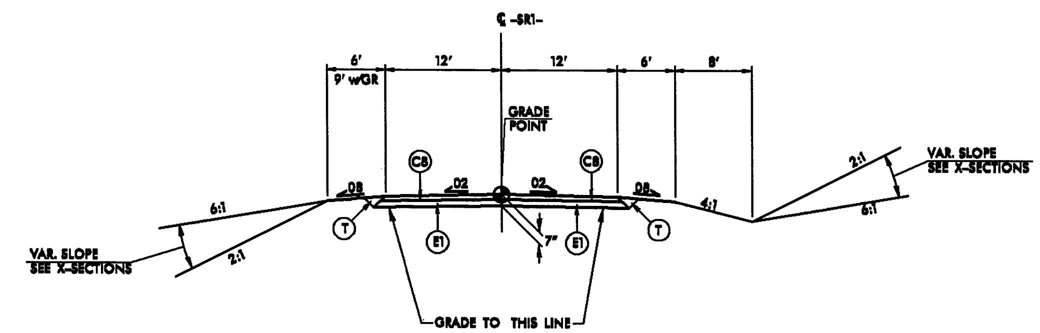
-Y9- STA. 11+25.00 TO -Y9- STA. 12+40.41



TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

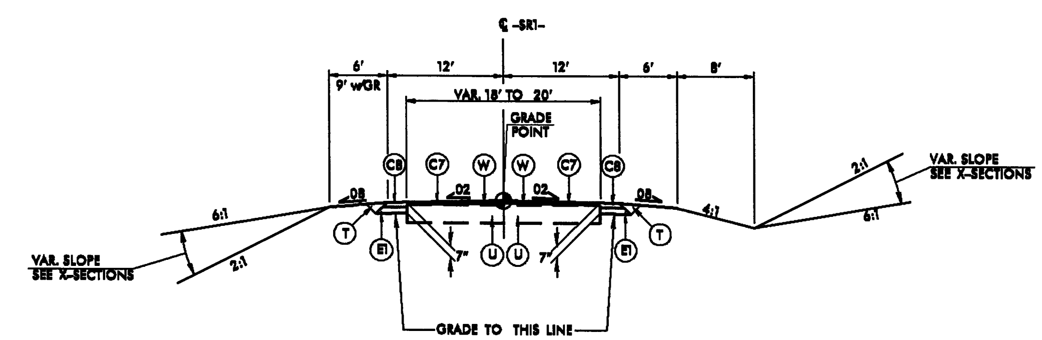
-Y10- STA. 10+12.06 TO -Y10- STA. 10+97.52



TYPICAL SECTION NO. 12

USE TYPICAL SECTION NO. 12

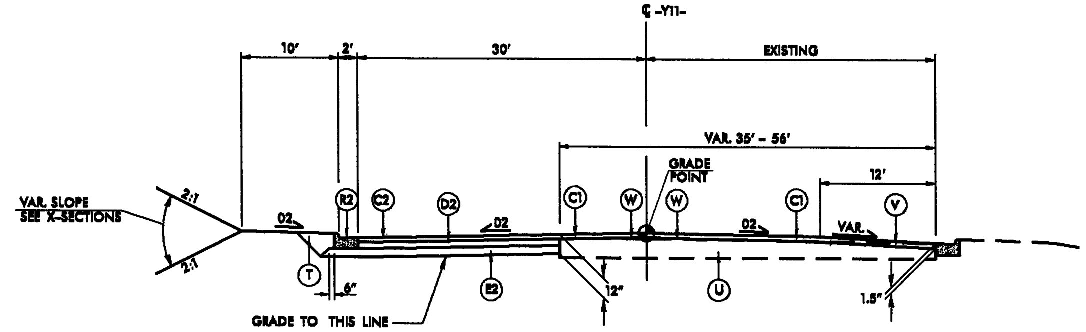
-SR1- STA. 10+75.00 TO -SR1- STA. 13+01.20



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13

-SR1- STA. 10+20.00 TO -SR1- STA. 10+75.00



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14

-Y11- STA. 15+68.54 TO -Y11- STA. 17+15.00
-Y11- STA. 20+45.00 TO -Y11- STA. 23+50.00

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6/2/99

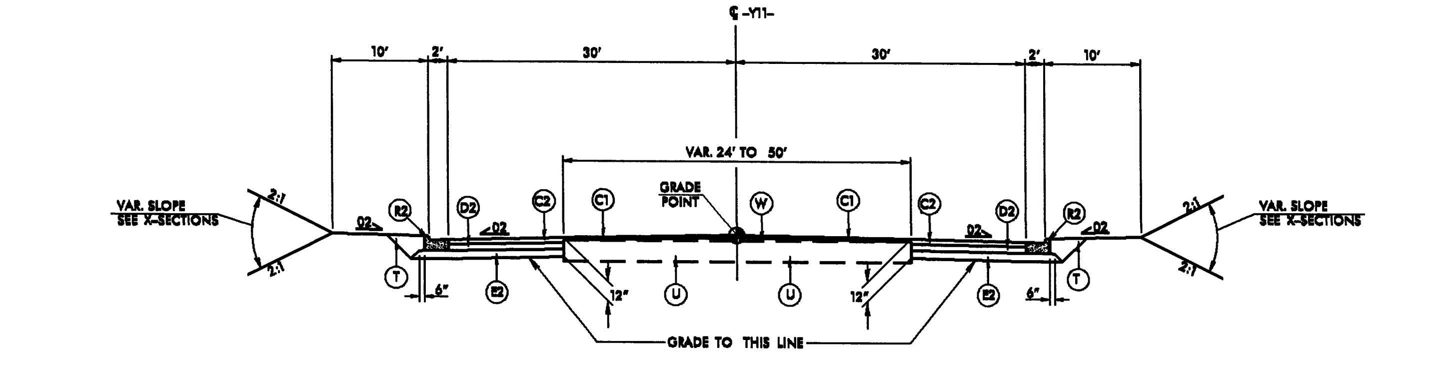
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-E

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

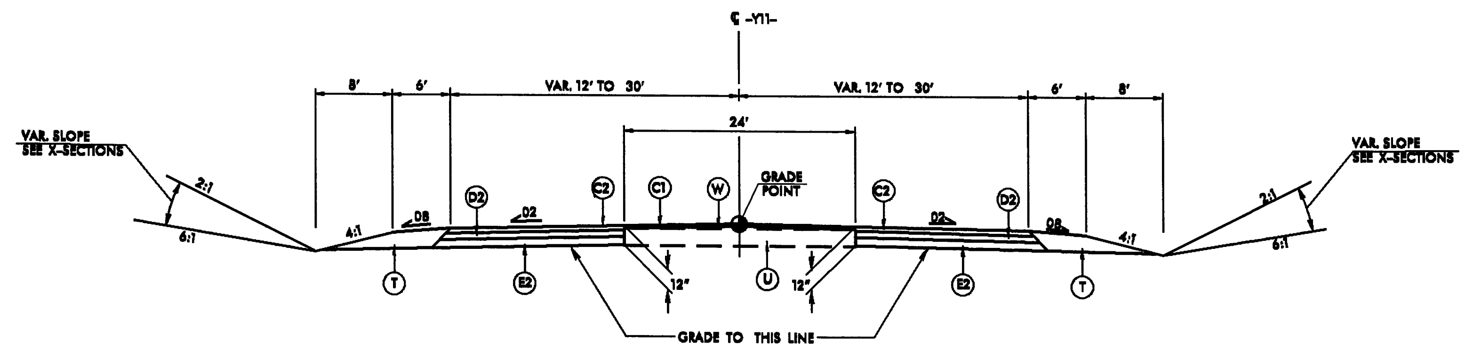
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	1½" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
C4	1½" S9.5C
C5	3" S9.5C
C6	VAR. S9.5C
C7	1½" SF9.5A
C8	3" SF9.5A
C9	VAR. SF9.5A
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
D4	4" I19.0C
D5	VAR. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. B25.0B
E4	6" B25.0C
E5	VAR. B25.0C
J1	6" ABC
J2	8" ABC
J3	10" ABC
K	8" LTBC OR 7" CTBC
R1	1'-6" C & G
R2	2'-6" C & G
R3	5" MCI
R4	EXPRESSWAY GUTTER
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V	MILLING
W	WEDGING



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15

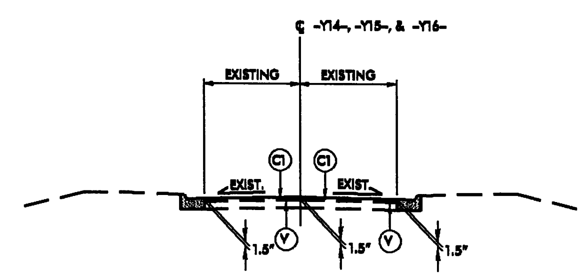
-Y11- STA. 17+15.00 TO -Y11- STA. 20+45.00
-Y11- STA. 23+50.00 TO -Y11- STA. 27+10.00



TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16

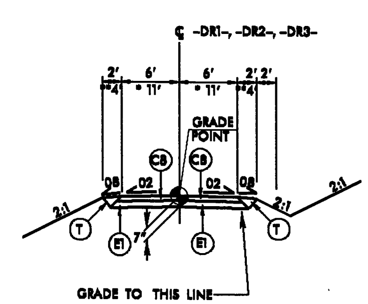
-Y11- STA. 27+10.00 TO -Y11- STA. 28+35.00



TYPICAL SECTION NO. 17

USE TYPICAL SECTION NO. 17

-Y14- STA. 10+17.95 TO -Y14- STA. 10+64.00
-Y15- STA. 11+00.35 TO -Y15- STA. 11+41.65
-Y16- STA. 10+36.15 TO -Y16- STA. 10+81.88



TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18

-DR1- STA. 10+60.50 TO -DR1- STA. 11+39.36
*-DR2- STA. 10+50.00 TO -DR2- STA. 11+53.90
**-DR3- STA. 10+60.61 TO -DR3- STA. 11+45.25

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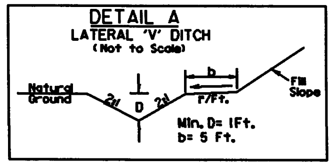
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	2-K
RW SHEET NO.	

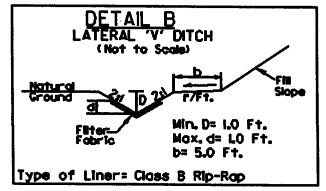
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

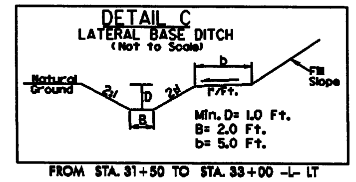
DITCH DETAILS



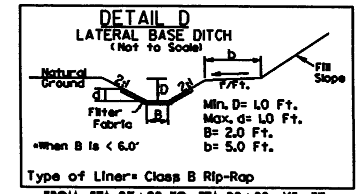
FROM STA. 30+00 TO STA. 31+50 -L- LT
FROM STA. 52+75 TO STA. 53+50 -L- RT



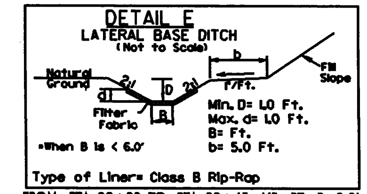
FROM STA. 16+00 TO STA. 17+90 -RPB- RT
FROM STA. 14+00 TO STA. 15+50 -LPC- RT
FROM STA. 17+64.07 TO STA. 18+85 -LPC- LT



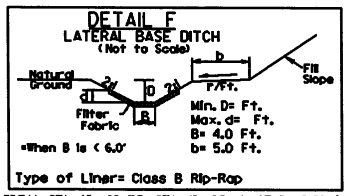
FROM STA. 31+50 TO STA. 33+00 -L- LT



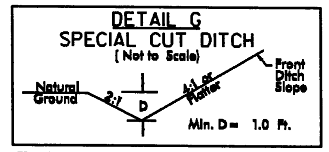
FROM STA. 27+00 TO STA. 28+00 -Y5- RT
FROM STA. 31+18 TO STA. 33+50 -Y5- LT



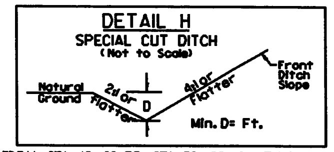
FROM STA. 29+00 TO STA. 30+45 -Y5- RT B=2.0'
FROM STA. 11+65 TO STA. 12+56 -LPC- LT B=3.0'
FROM STA. 10+85 TO STA. 11+10 -DR2- LT B=2.0'



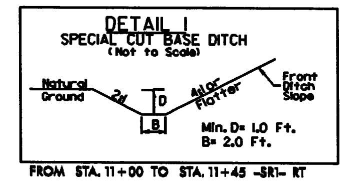
FROM STA. 40+63 TO STA. 41+30 -L- LT. D=3.0', d=3.0'
FROM STA. 21+70 TO STA. 24+20 -RPC- RT. D=2.0', d=1.0'



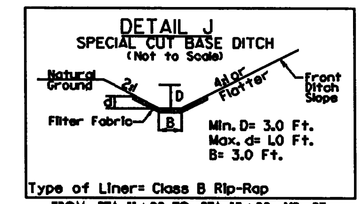
FROM STA. 29+50 TO STA. 30+00 -L- LT
FROM STA. 13+00 TO STA. 15+10 -Y5- LT
FROM STA. 21+50 TO STA. 24+00 -Y5- LT
FROM STA. 26+00 TO STA. 28+00 -Y5- LT
FROM STA. 33+50 TO STA. 34+50 -Y5- LT



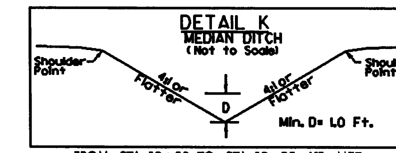
FROM STA. 49+10 TO STA. 50+00 -L- LT MIN D=1.5'
FROM STA. 52+10 TO STA. 53+50 -L- LT MIN D=1.0'
FROM STA. 55+60 TO STA. 56+00 -L- RT MIN D=1.0'



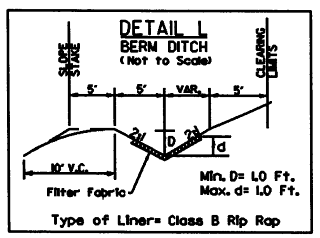
FROM STA. 11+00 TO STA. 11+45 -SR1- RT



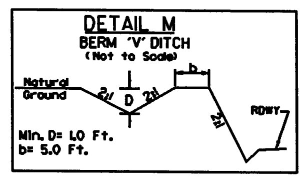
FROM STA. 11+00 TO STA. 12+00 -Y9- RT



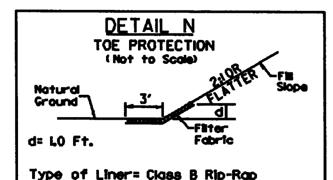
FROM STA. 18+00 TO STA. 18+35 -Y5- MED
FROM STA. 23+00 TO STA. 23+26 -Y5- MED
FROM STA. 27+50 TO STA. 28+19 -Y5- MED
FROM STA. 28+19 TO STA. 28+50 -Y5- MED
FROM STA. 30+33 TO STA. 30+50 -Y5- MED
FROM STA. 35+66 TO STA. 36+00 -Y5- MED
FROM STA. 39+29 TO STA. 39+50 -Y5- MED



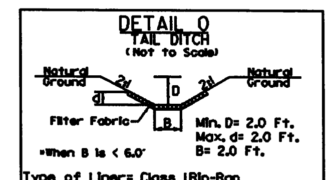
FROM STA. 15+71 TO STA. 18+00 -RPC- RT (USE DETAIL)
FROM STA. 18+00 TO STA. 19+50 -RPC- RT (USE DITCH GRADE)



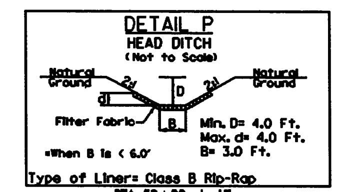
FROM STA. 37+00 TO STA. 37+50 -L- LT
FROM STA. 46+50 TO STA. 48+39 -L- LT
FROM STA. 39+00 TO STA. 40+53 -Y5- LT



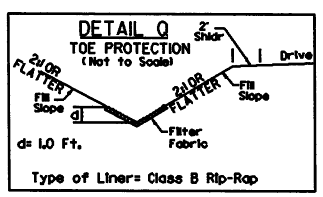
FROM STA. 19+50 TO STA. 21+00 -RPB- LT



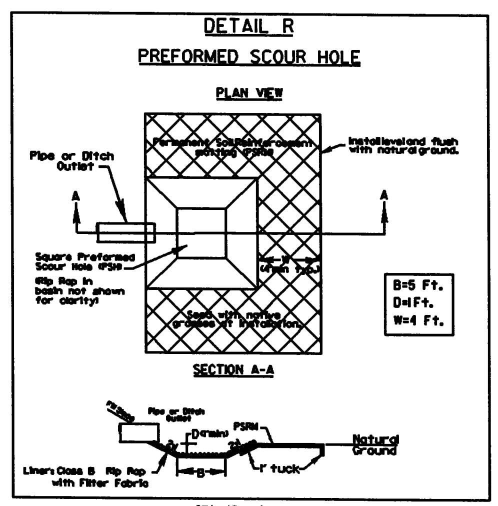
STA. 46+45 -L- RT



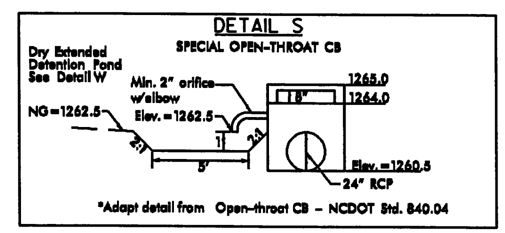
STA. 52+00 -L- LT



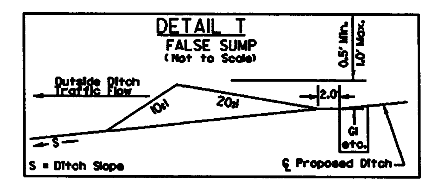
FROM STA. 10+70 TO STA. 11+30 -DR1- LT/RT
FROM STA. 30+51 TO STA. 33+50 -Y5- RT



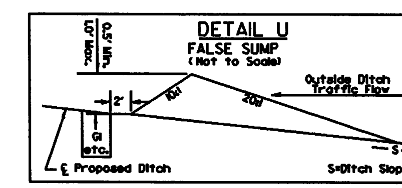
STA. 43+50 -L- RT
STA. 45+25 -L- RT



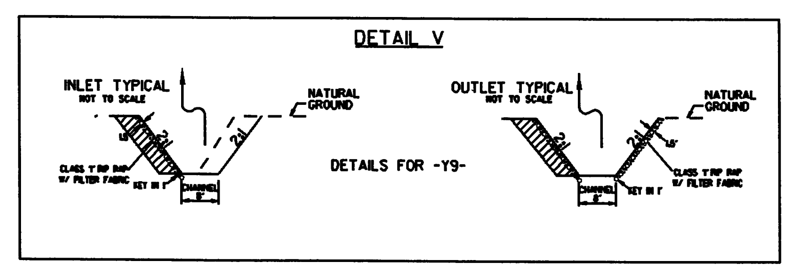
STA. 13+98.45 -LPC- LT



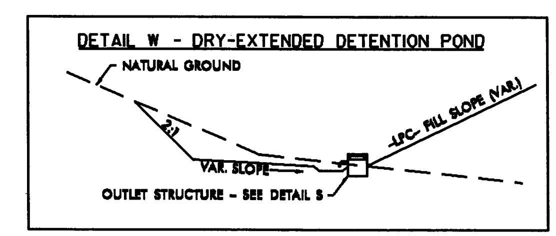
STA. 16+70 -RPC- (44' RT)
STA. 19+64 -RPC- (54' RT)
STA. 20+76 -RPC- (58' RT)
STA. 19+66 -RPC- (32' LT)



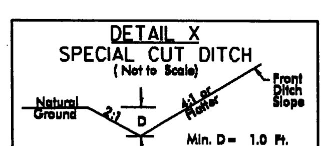
STA. 45+41 -L- (41' LT)
STA. 46+17 -L- (41' LT)
STA. 12+21 -RPB- (42' LT)
STA. 11+33 -LPC- (30' LT)
STA. 18+50 -Y5- (79' LT)
STA. 31+88 -Y5- (87' RT)
STA. 33+36 -Y5- (59' RT)



STA. 10+95 -Y9- LT/RT



MIN. DEPTH =1.5'
MIN. VOLUME = 16,750 CF
EXCAVATE TO ELEV 1262.5



FROM STA. 44+50 TO STA. 46+50 -L- LT

5/14/99

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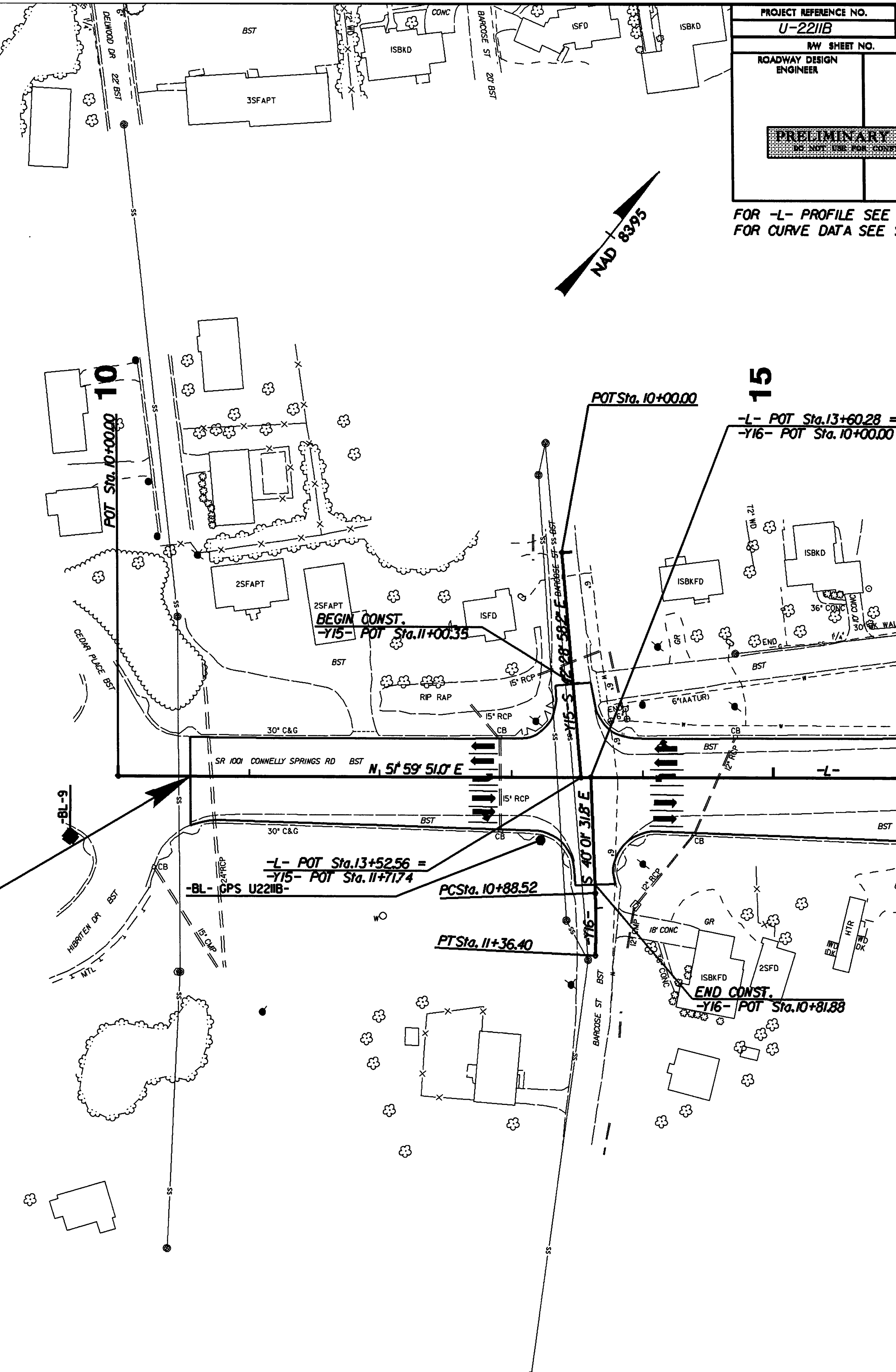
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -L- PROFILE SEE SHEET 12
FOR CURVE DATA SEE SHEET 2-1



NAD 83/95
DEWOOD DR
BARCOSE ST
3SFAPT
1SBKD
1SFD
POT Sta. 10+00.00
POTSta. 10+00.00
-L- POT Sta.13+60.28 =
-Y16- POT Sta. 10+00.00
BEGIN CONST.
-Y15- POT Sta.11+00.35
2SFAPT
RIP RAP
30' C&G
SR 1001 CONNELLY SPRINGS RD BST
N 51° 59' 51.0" E
-L-
-L- POT Sta.13+52.56 =
-Y15- POT Sta. 11+71.74
-BL- GPS U2211B-
PCSta. 10+88.52
PTSta. 11+36.40
END CONST.
-Y16- POT Sta.10+81.88
1SBKFD
2SFD
CEDAR PLACE BST
HIBRITEN DR BST
-BL-9
MATCHLINE SEE SHEET 5 -L- STA.16+00.00
10
15

STA. 10+55 -L- BEGIN TIP PROJECT U-2211B

REVISIONS

8/17/99

24-MAY-2011 10:20
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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -L- PROFILE SEE SHEET 12
FOR -Y11- PROFILE SEE SHEETS 21 & 22
FOR -Y3- PROFILE SEE SHEET 17
FOR -Y4- PROFILE SEE SHEET 17
FOR CURVE DATA SEE SHEET 2-1

REVISIONS

MAY 12,2010 - R/W REVISION - PARCEL 5,ADDED A 36' DRIVEWAY

REVISIONS

24-MAY-2011 10:20
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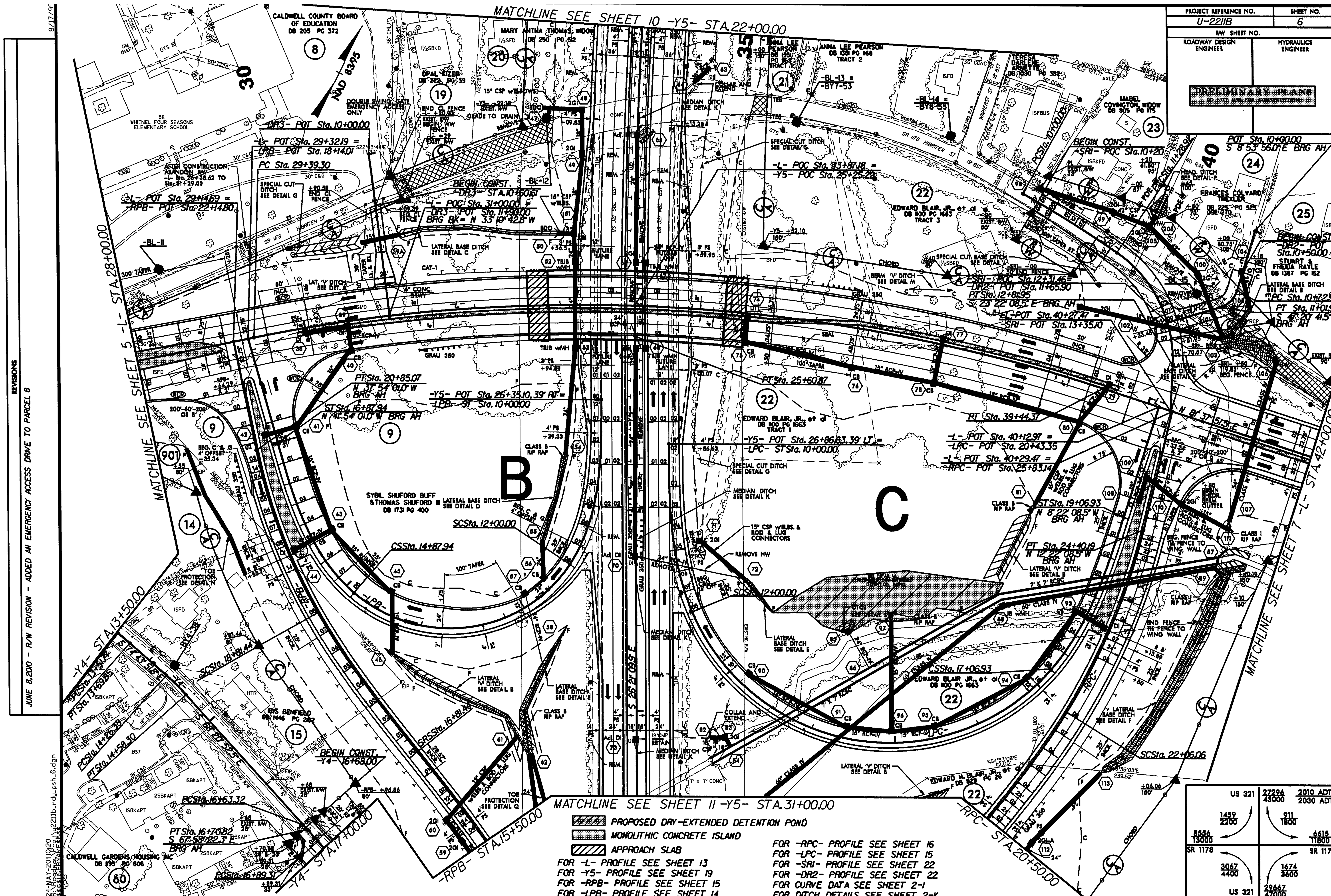
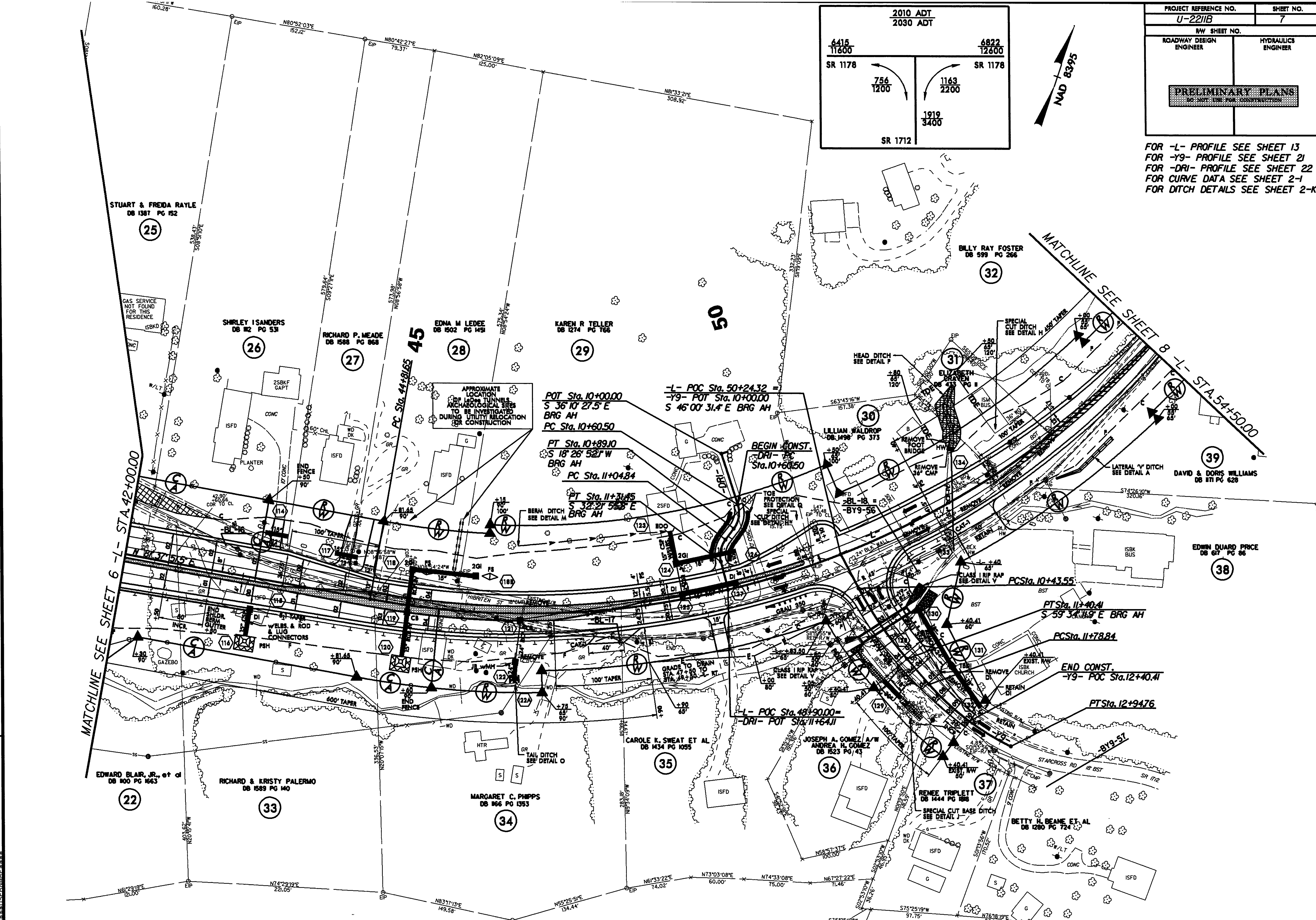

PROJECT REFERENCE NO.
U-2211B
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
REVISIONS
JUNE 8, 2010 - R/W REVISION - ADDED AN EMERGENCY ACCESS DRIVE TO PARCEL 8
MATCHLINE SEE SHEET 10 -Y5- STA.22+00.00
MATCHLINE SEE SHEET 11 -Y5- STA.31+00.00
MATCHLINE SEE SHEET 5 -L- STA.28+00.00
MATCHLINE SEE SHEET 7 -L- STA.42+00.00
B
C
CALDWELL COUNTY BOARD OF EDUCATION DB 205 PG 372
WHITNEL FOUR SEASONS ELEMENTARY SCHOOL
SYBIL SHUFORD BUFF & THOMAS SHUFORD DB 1731 PG 400
EDWARD BLAIR, JR., et al DB 800 PG 1663
CALDWELL GARDENS HOUSING INC.
PROPOSED DRY-EXTENDED DETENTION POND
MONOLITHIC CONCRETE ISLAND
APPROACH SLAB
FOR -L- PROFILE SEE SHEET 13
FOR -Y5- PROFILE SEE SHEET 19
FOR -RPB- PROFILE SEE SHEET 15
FOR -LPB- PROFILE SEE SHEET 14
FOR -RPC- PROFILE SEE SHEET 16
FOR -LPC- PROFILE SEE SHEET 15
FOR -SRI- PROFILE SEE SHEET 22
FOR -DR2- PROFILE SEE SHEET 22
FOR CURVE DATA SEE SHEET 2-I
FOR DITCH DETAILS SEE SHEET 2-K
US 321
27296 / 43000
2010 ADT / 2030 ADT
SR 1178

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

2010 ADT / 2030 ADT	
SR 1178 (west)	6415 / 11600
SR 1178 (east)	6822 / 12600
Left turn	756 / 1200
Right turn	1163 / 2200
SR 1712	1919 / 3400

FOR -L- PROFILE SEE SHEET 13
FOR -Y9- PROFILE SEE SHEET 21
FOR -DRI- PROFILE SEE SHEET 22
FOR CURVE DATA SEE SHEET 2-I
FOR DITCH DETAILS SEE SHEET 2-K



NAD 83/95
MATCHLINE SEE SHEET 6 -L- STA 42+00.00
MATCHLINE SEE SHEET 8 -L- STA.54+50.00
STUART & FREIDA RAYLE DB 1387 PG 152
SHIRLEY I SANDERS DB 1112 PG 531
RICHARD P. MEADE DB 1588 PG 868
EDNA M LEDEE DB 1502 PG 1451
KAREN R TELLER DB 1274 PG 766
BILLY RAY FOSTER DB 599 PG 266
ELIZABETH CRAVEN
LILLIAN WALDROP DB 1498 PG 373
DAVID & DORIS WILLIAMS DB 1171 PG 628
EDWIN DUARD PRICE DB 617 PG 86
EDWARD BLAIR, JR., et al DB 1100 PG 1663
RICHARD & KRISTY PALERMO DB 1589 PG 140
MARGARET C. PHIPPS DB 1166 PG 1353
CAROLE K. SWEAT ET AL DB 1434 PG 1055
JOSEPH A. GOMEZ A/W ANDREA H. GOMEZ DB 1523 PG 43
RENEE TRIPLETT DB 1444 PG 1188
BETTY H. BEANE ET AL DB 1280 PG 724
APPROXIMATE LOCATION OF LeDee TUNNELS ARCHAEOLOGICAL SITES TO BE INVESTIGATED DURING UTILITY RELOCATION OR CONSTRUCTION
PC Sta. 44+81.65
POT Sta. 10+00.00 S 36° 10' 27.5" E BRG AH
PC Sta. 10+60.50
PT Sta. 10+89.10 S 18° 26' 52.1" W BRG AH
PC Sta. 11+04.84
PT Sta. 11+31.45 S 32° 21' 59.8" E BRG AH
-L- POC Sta. 50+24.32 = -Y9- POT Sta. 10+00.00 S 46° 00' 31.4" E BRG AH
BEGIN CONST. -DRI- PC Sta. 10+60.50
-L- POC Sta. 48+90.00= -DRI- POT Sta. 11+64.11
PC Sta. 10+43.55
PT Sta. 11+40.41 S 59° 34' 11.9" E BRG AH
PC Sta. 11+78.84
END CONST. -Y9- POC Sta. 12+40.41
PT Sta. 12+94.76
HIBRITEN ST
STARCROSS RD
SR 1712

REVISIONS
MAY 7,2010 - R/W REVISIONS - PARCEL 22,CHANGED OWNER NAME;PARCEL 27,CHANGED OWNER NAME AND DEED BOOK INFORMATION,AND EXTENDED PAVED DRIVEWAY TO PROPOSED R/W;PARCEL 31,CHANGED OWNER NAME;PARCEL 33,CHANGED OWNER NAME AND DEED BOOK INFORMATION;PARCEL 38,SHORTENED GUARDRAIL ON HIBRITEN TO KEEP ENTIRE EXISTING DRIVEWAY ENTRANCE.
8/17/99
24-MAY-2011 10:21

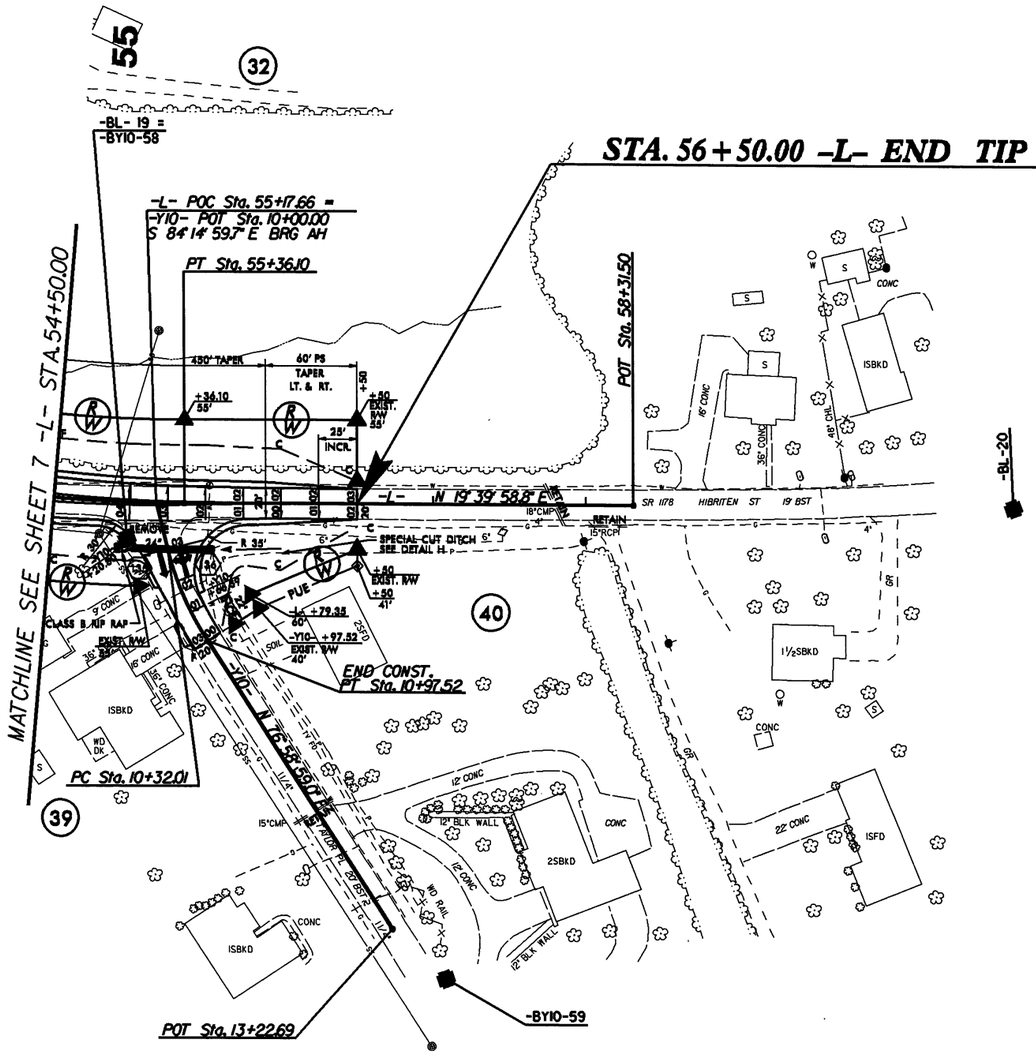
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

FOR -L- PROFILE SEE SHEET 14
FOR -Y10- PROFILE SEE SHEET 21
FOR CURVE DATA SEE SHEET 2-I
FOR DITCH DETAILS SEE SHEET 2-K

STA. 56+50.00 -L- END TIP PROJECT U-2211B



REVISIONS

DECEMBER 1, 2010 - R/W REVISION - REVISIED EXISTING R/W ON PARCELS 39 & 40. REVISED PROPOSED R/W & PROPOSED PUE ON PARCEL 40.
REVISED PROPERTY OWNER NAME. PROPOSED R/W & PROPOSED PUE ON PARCEL 40.

8/17/9

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	9

R/W SHEET NO.

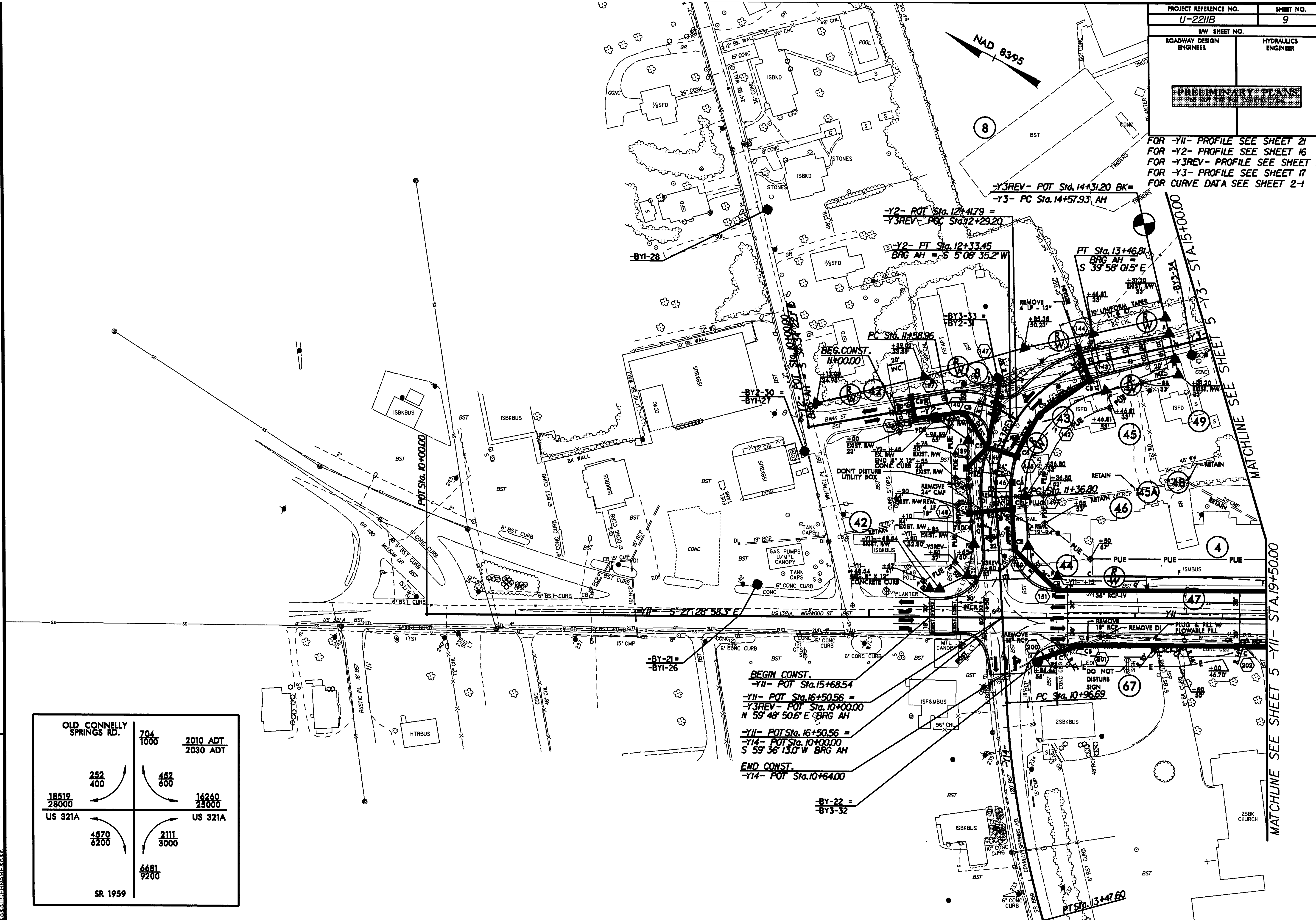
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -Y11- PROFILE SEE SHEET 21
FOR -Y2- PROFILE SEE SHEET 16
FOR -Y3REV- PROFILE SEE SHEET 17
FOR -Y3- PROFILE SEE SHEET 17
FOR CURVE DATA SEE SHEET 2-1

REVISIONS

DECEMBER 1,2010 - R/W REVISION - REVISED PROPERTY LINES ON PARCELS 4,47 & 48.



NAD 83/95
-Y3REV- POT Sta. 14+31.20 BK=
-Y3- PC Sta. 14+57.93 AH
-Y2- POT Sta. 12+41.79 =
-Y3REV- POC Sta. 12+29.20
-Y2- PT Sta. 12+33.45
BRG AH = S 5°06' 35.2" W
PT Sta. 13+46.81
BRG AH =
S 39°58' 01.5" E
BEG. CONST.
11+00.00
PC Sta. 11+38.96
-BY1-28
-BY2-30 =
-BY1-27
-BY3-33 =
-BY2-31
-BY3-34
PC Sta. 11+36.80
POT Sta. 10+00.00
-Y11- S 27°28' 58.3" E
-BY-21 =
-BY1-26
BEGIN CONST.
-Y11- POT Sta. 15+68.54
-Y11- POT Sta. 16+50.56 =
-Y3REV- POT Sta. 10+00.00
N 59°48' 50.6" E BRG AH
-Y11- POT Sta. 16+50.56 =
-Y14- POT Sta. 10+00.00
S 59°36' 13.0" W BRG AH
END CONST.
-Y14- POT Sta. 10+64.00
-BY-22 =
-BY3-32
PC Sta. 10+96.69
PT Sta. 13+47.60
MATCHLINE SEE SHEET 5 -Y3- STA. 15+00.00
MATCHLINE SEE SHEET 5 -Y11- STA. 19+50.00
US 321A
NORWOOD ST
BANK ST
WHITNEL PL
RUSTIC PL
CONNELLY SPRINGS RD.
SR 1959
MCLEAN DR
SR 1180
DON'T DISTURB UTILITY BOX
DO NOT DISTURB SIGN
GAS PUMPS U/MTL CANOPY
2SBK CHURCH

OLD CONNELLY SPRINGS RD.	704 / 1000	2010 ADT / 2030 ADT
252 / 400		452 / 600
US 321A 18519 / 28000		US 321A 16260 / 25000
4570 / 6200		2111 / 3000
	6681 / 9200	
	SR 1959	

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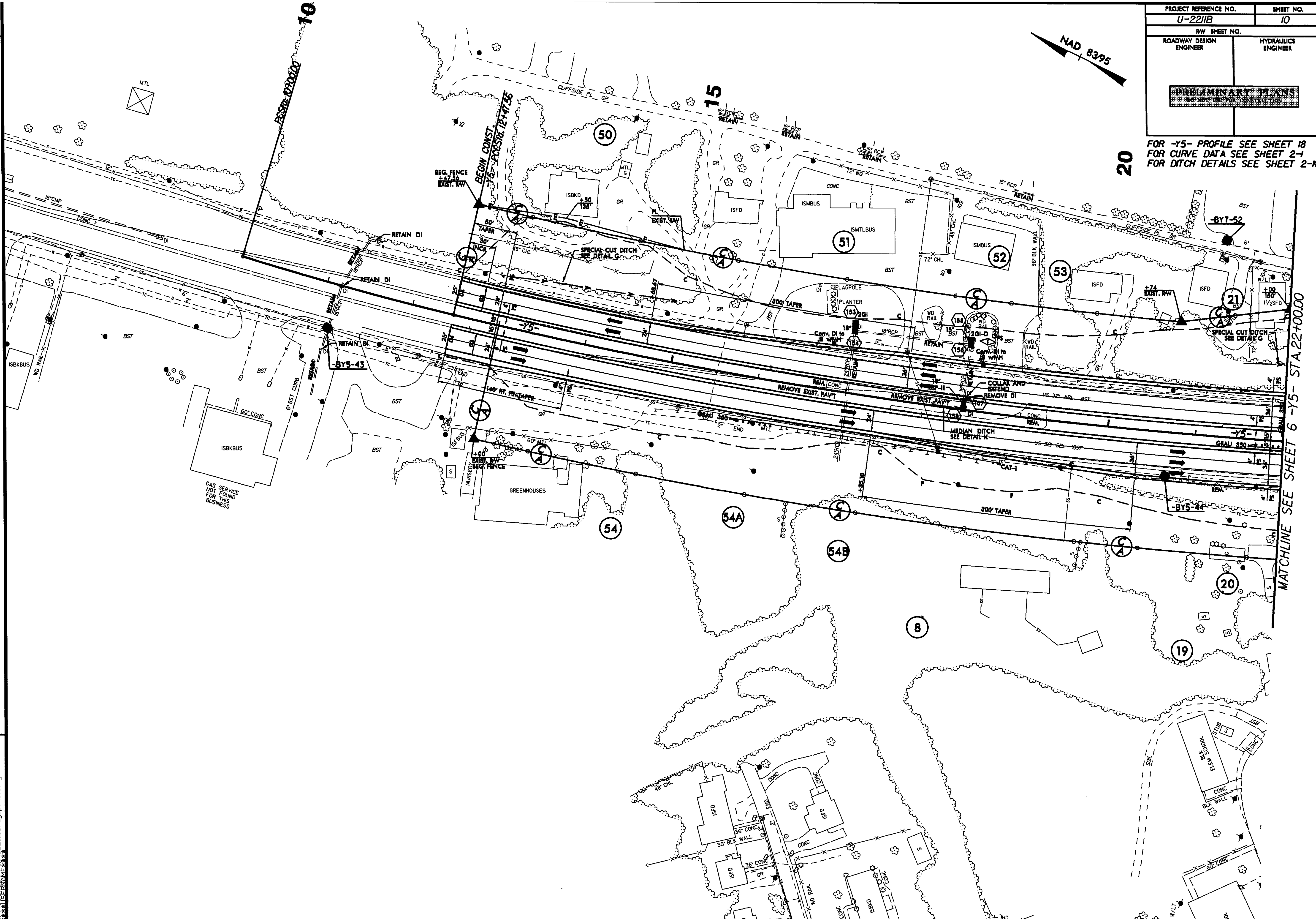
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -Y5- PROFILE SEE SHEET 18
FOR CURVE DATA SEE SHEET 2-I
FOR DITCH DETAILS SEE SHEET 2-K



REVISIONS

MAY 7, 2010 - R/W REVISIONS - PARCEL 20, CHANGED OWNER NAME; PARCEL 54, SUBDIVIDED INTO PARCELS 54, 54A, AND 54B, AND CHANGED OWNER NAME AND DEED BOOK INFORMATION; PARCEL 54A, CHANGED OWNER NAME AND DEED BOOK INFORMATION.

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	11

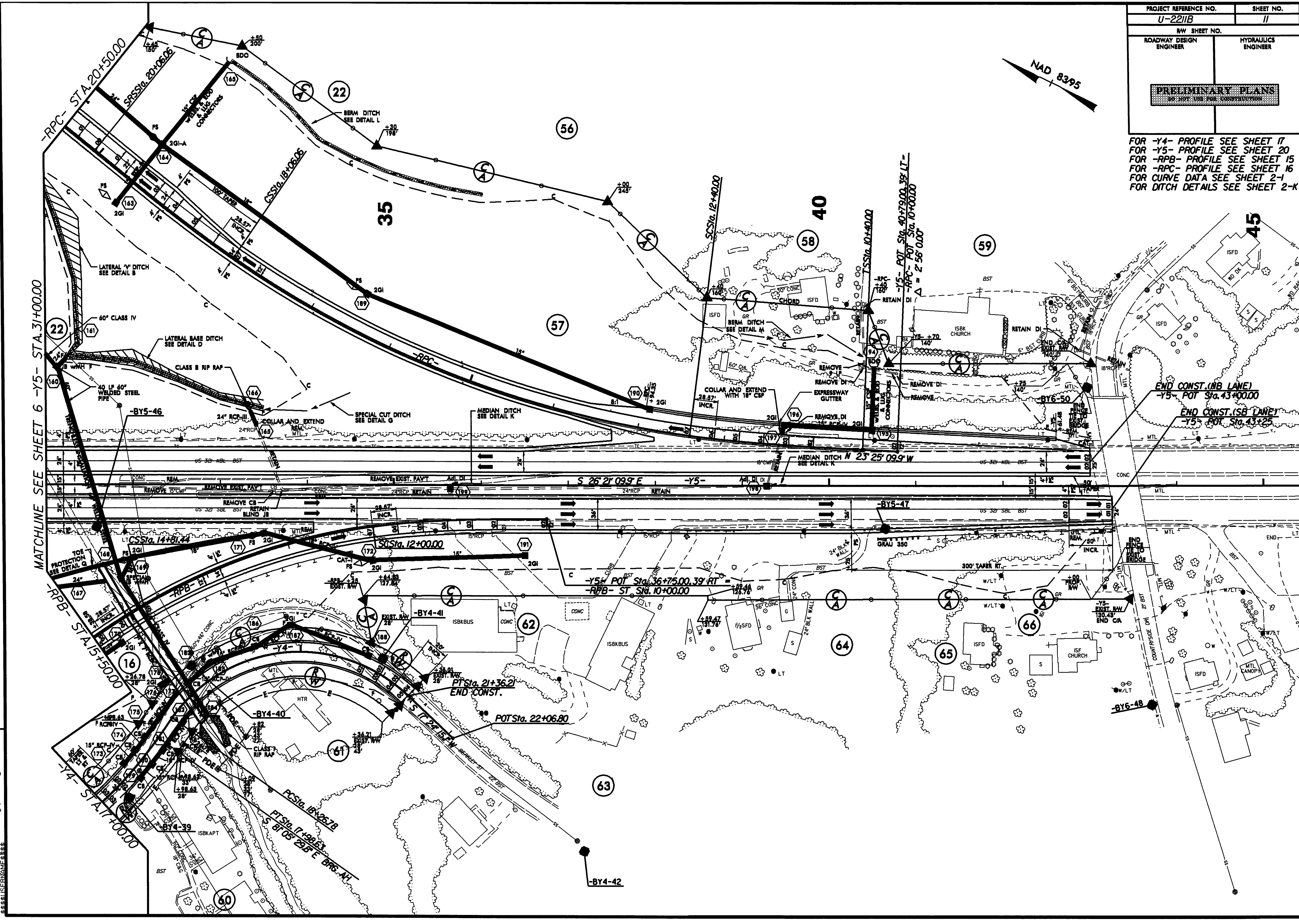
R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -Y4- PROFILE SEE SHEET 17
FOR -Y5- PROFILE SEE SHEET 20
FOR -RPB- PROFILE SEE SHEET 15
FOR -RPC- PROFILE SEE SHEET 16
FOR CURVE DATA SEE SHEET 2-1
FOR DITCH DETAILS SEE SHEET 2-K



REVISIONS
MAY 7,2010 - R/W REVISIONS - PARCEL 22 COMBINED PARCEL 55 WITH PARCEL 22 AND CHANGED THE OWNER NAME; PARCEL 56,CHANGED OWNER NAME; PARCELS 62 & 63, REDUCED EXISTING R/W 5 FEET AND MADE THE EXISTING R/W CONTROLLED ACCESS.
8/17/99
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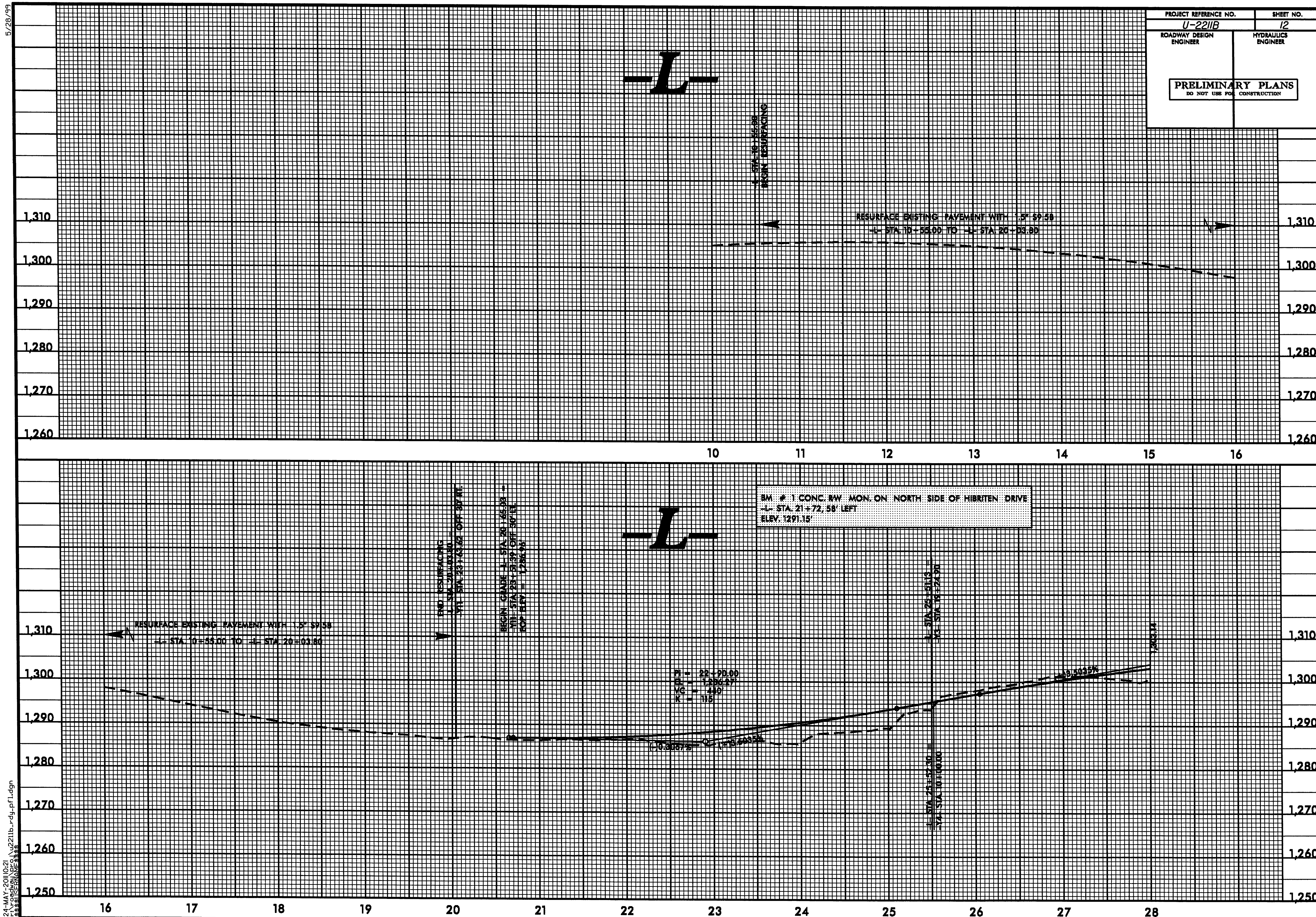
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-
-L- STA. 10+55.00
BEGIN RESURFACING
RESURFACE EXISTING PAVEMENT WITH 1.5" S9.5B
-L- STA. 10+55.00 TO -L- STA. 20+03.80
1,310
1,300
1,290
1,280
1,270
1,260
10
11
12
13
14
15
16
-L-
BM # 1 CONC. R/W MON. ON NORTH SIDE OF HIBRITEN DRIVE
-L- STA. 21+72, 58' LEFT
ELEV. 1291.15'
END RESURFACING
-L- STA. 20+03.80 =
-Y11- STA. 23+63.62 OFF 30' RT.
BEGIN GRADE -L- STA. 20+65.93 =
-Y11- STA. 23+51.39 OFF 30' LT.
EOP ELEV = 1,286.96'
-L- STA. 25+51.13 =
-Y3- STA. 19+24.90
PI = 22+90.00
EL = 1,286.27'
VC = 440'
K = 115
(-)0.3087%
(+)3.5035%
-L- STA. 25+52.30 =
-Y4- STA. 10+00.00
1,250
16
17
18
19
20
21
22
23
24
25
26
27
28

5/28/99

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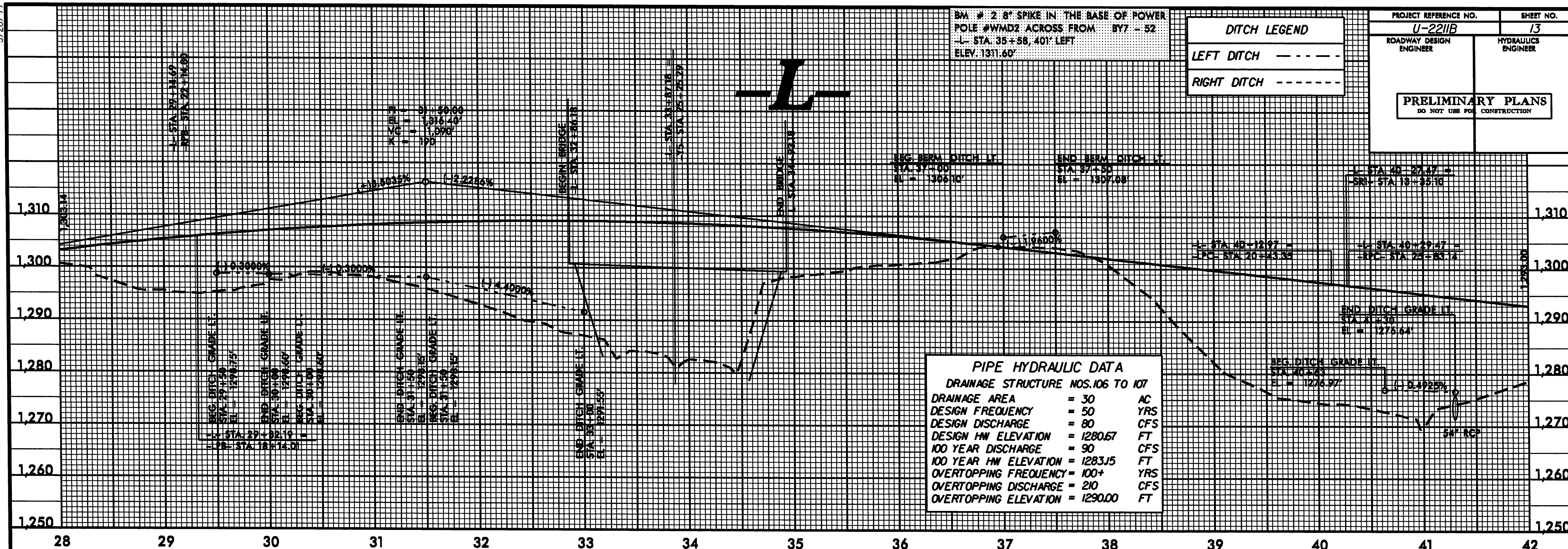
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM # 2 8" SPIKE IN THE BASE OF POWER POLE #WMD2 ACROSS FROM BY7 - 52
-L- STA. 35+58, 401' LEFT
ELEV. 1311.60'

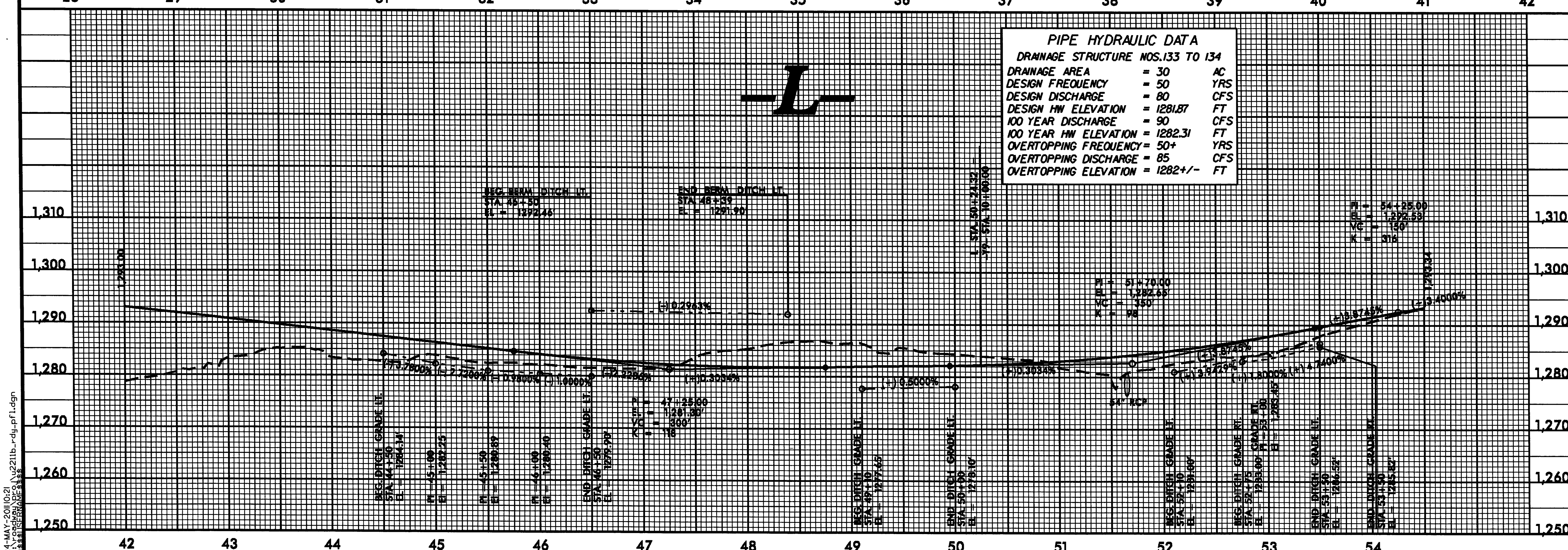
DITCH LEGEND	
LEFT DITCH	— · — · —
RIGHT DITCH	- - - - - - -

-L-



PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NOS.106 TO 107		
DRAINAGE AREA	= 30	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 1280.67	FT
100 YEAR DISCHARGE	= 90	CFS
100 YEAR HW ELEVATION	= 1283.15	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 210	CFS
OVERTOPPING ELEVATION	= 1290.00	FT

-L-



PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NOS.133 TO 134		
DRAINAGE AREA	= 30	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 1281.87	FT
100 YEAR DISCHARGE	= 90	CFS
100 YEAR HW ELEVATION	= 1282.31	FT
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING DISCHARGE	= 85	CFS
OVERTOPPING ELEVATION	= 1282+/-	FT

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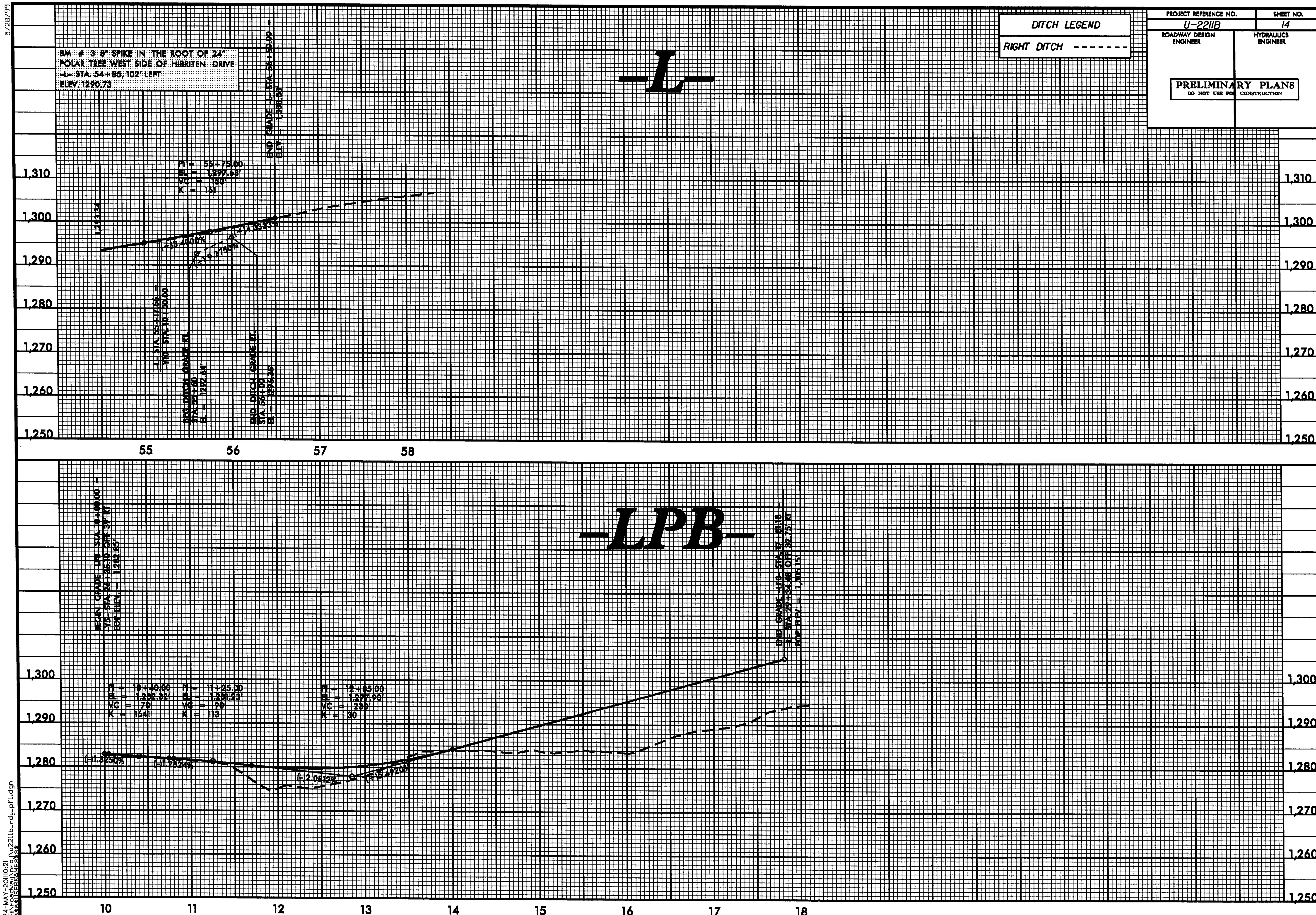
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	14
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DITCH LEGEND
RIGHT DITCH - - - - - - -
-L-
BM # 3 8" SPIKE IN THE ROOT OF 24" POLAR TREE WEST SIDE OF HIBRITEN DRIVE -L- STA. 54+85, 102' LEFT ELEV. 1290.73
END GRADE -L- STA. 56+50.00 = ELEV. = 1,300.88'
PI = 55+75.00
EL = 1,297.63'
VC = 150'
K = 161
1293.34
(+)3.4000%
(+)4.3333%
(+)9.2750%
-L- STA. 55+17.66 = -Y10- STA. 10+00.00
BEG. DITCH GRADE RT. STA. 55+60 EL = 1292.64'
END DITCH GRADE RT. STA. 56+00 EL = 1296.35'
1,310
1,300
1,290
1,280
1,270
1,260
1,250
55
56
57
58
-LPB-
BEGIN GRADE -LPB- STA. 10+00.00 = -Y5- STA. 26+35.10 OFF 39' RT EOP ELEV. = 1,282.65'
END GRADE -LPB- STA. 17+81.18 = -L- STA. 29+34.46 OFF 32.75' RT EOP ELEV. = 1,305.15'
PI = 10+40.00
EL = 1,282.32'
VC = 70'
K = 164
PI = 11+25.00
EL = 1,281.23'
VC = 90'
K = 113
PI = 12+85.00
EL = 1,277.90'
VC = 230'
K = 30
(-)1.3250%
(-)1.2824%
(-)2.0812%
(+)5.4920%
1,300
1,290
1,280
1,270
1,260
1,250
10
11
12
13
14
15
16
17
18

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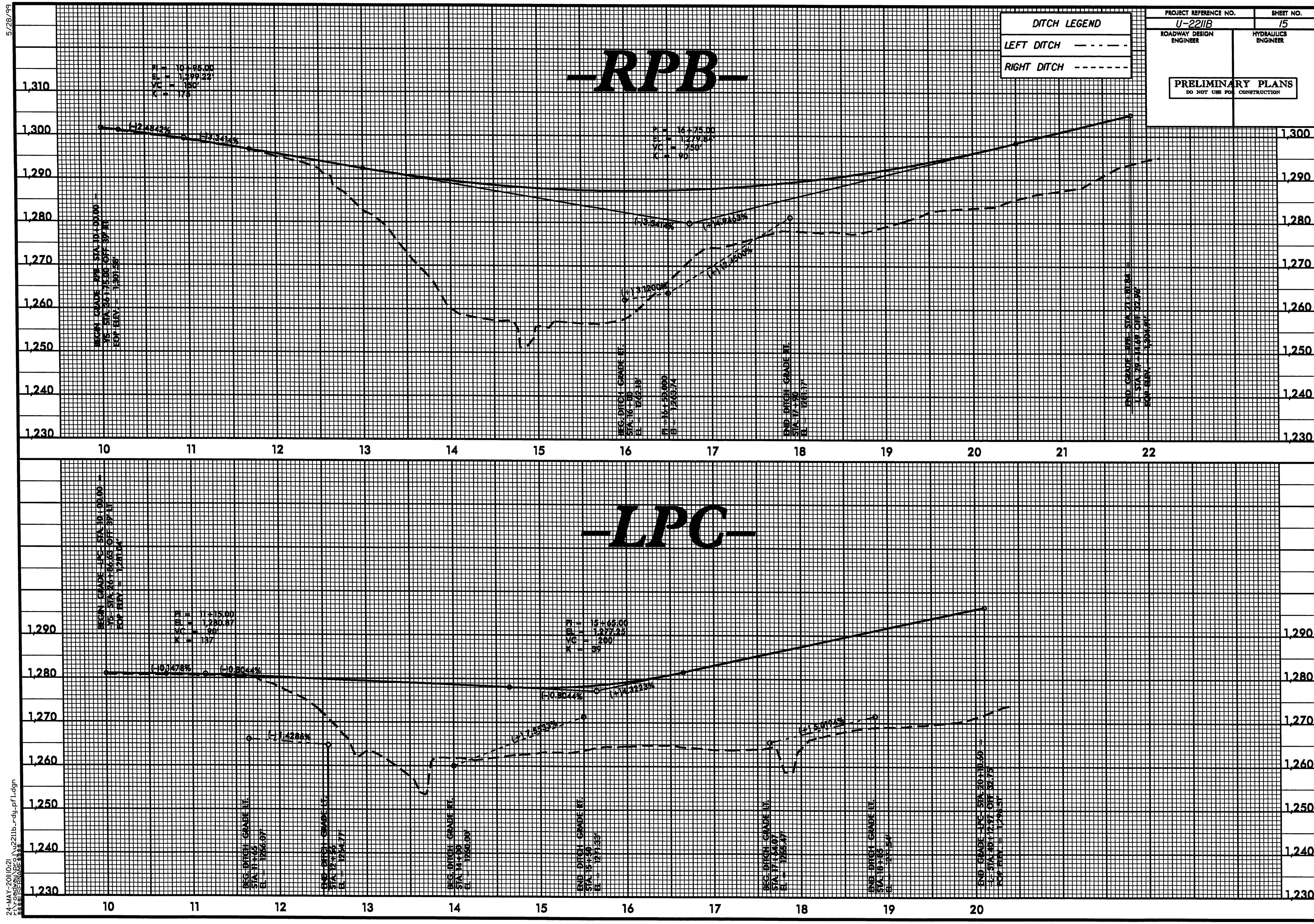
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PROJECT REFERENCE NO.
U-2211B
SHEET NO.
15
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DITCH LEGEND
LEFT DITCH
RIGHT DITCH
-RPB-
PI = 10+95.00
EL = 1,299.22'
VC = 150'
K = 175
(-)2.4842%
(-)3.3414%
PI = 16+75.00
EL = 1,279.84'
VC = 750'
K = 90
(-)3.5414%
(+)4.9403%
(+) 3.1200%
(+)12.4500%
BEGIN GRADE -RPB- STA. 10+00.00 = -Y5- STA. 26+75.00 (OFF 39' RT)
EOP ELEV. = 1,301.56'
BEG. DITCH GRADE RT.
END DITCH GRADE RT.
END GRADE -RPB- STA. 21+81.84 =
-L- STA. 29+14.69 OFF 32.96'
EOP ELEV. = 1,304.97'
1,310
1,300
1,290
1,280
1,270
1,260
1,250
1,240
1,230
10
11
12
13
14
15
16
17
18
19
20
21
22
-LPC-
BEGIN GRADE -LPC- STA. 10+00.00 =
-Y5- STA. 26+86.65 (OFF 39' LT)
EOP ELEV. = 1,281.04'
PI = 11+15.00
EL = 1,280.87
VC = 90'
K = 137
PI = 15+65.00
EL = 1,277.43
VC = 200'
K = 39
(-)0.1478%
(-)0.8044%
(-)0.8044%
(+)4.3223%
(-) 1.4286%
(+)1.5533%
(+)1.5714%
BEG. DITCH GRADE LT.
STA. 11+65
EL. = 1266.07'
END DITCH GRADE LT.
STA. 12+56
EL. = 1264.77'
BEG. DITCH GRADE RT.
STA. 14+00
EL. = 1260.00'
END DITCH GRADE RT.
STA. 15+50
EL. = 1271.33'
BEG. DITCH GRADE LT.
STA. 17+64.07
EL. = 1265.47'
END DITCH GRADE LT.
STA. 18+85
END GRADE -LPC- STA. 20+10.60 =
-L- STA. 30+12.92 OFF 32.75'
EOP ELEV. = 1,296.51'
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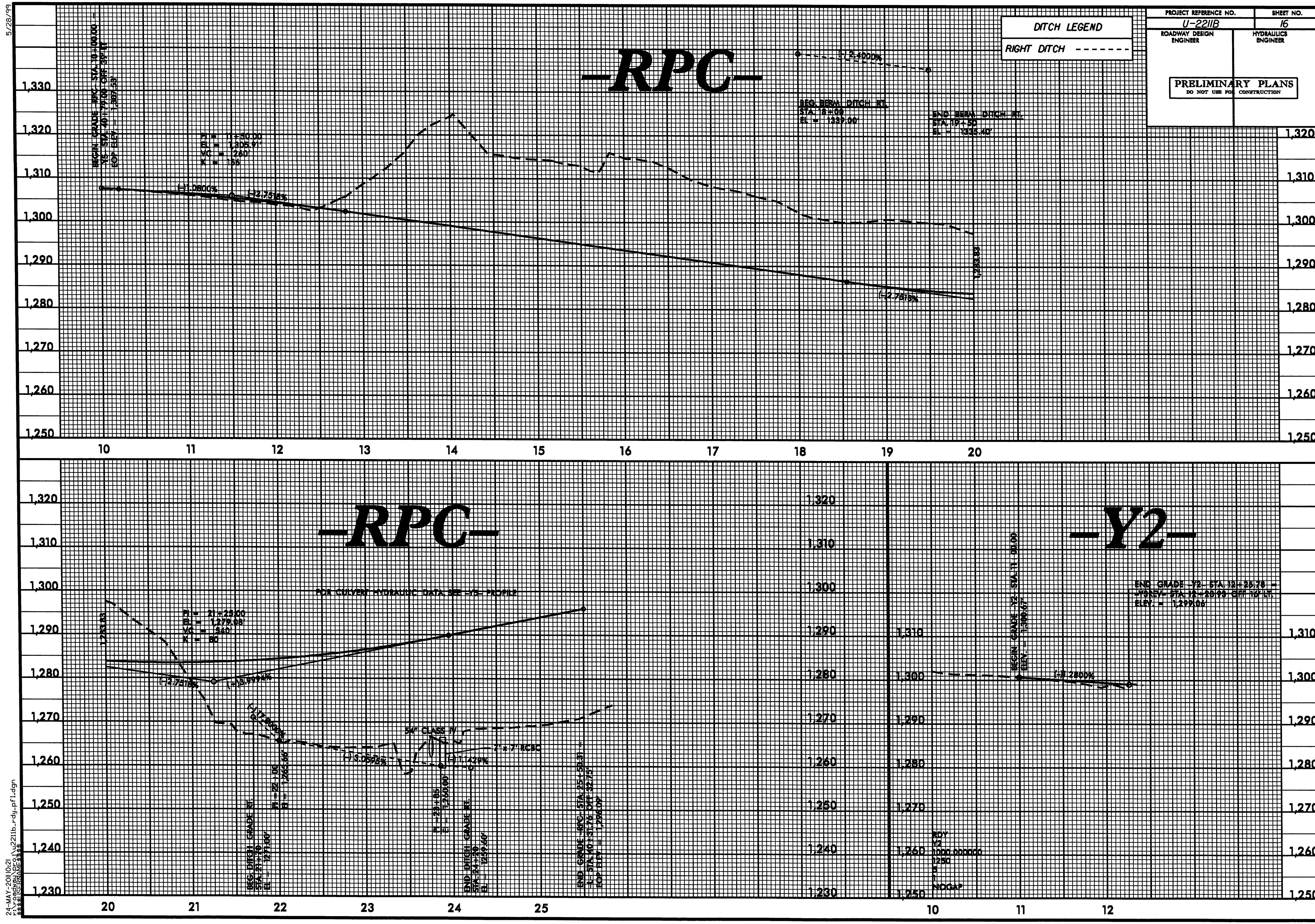


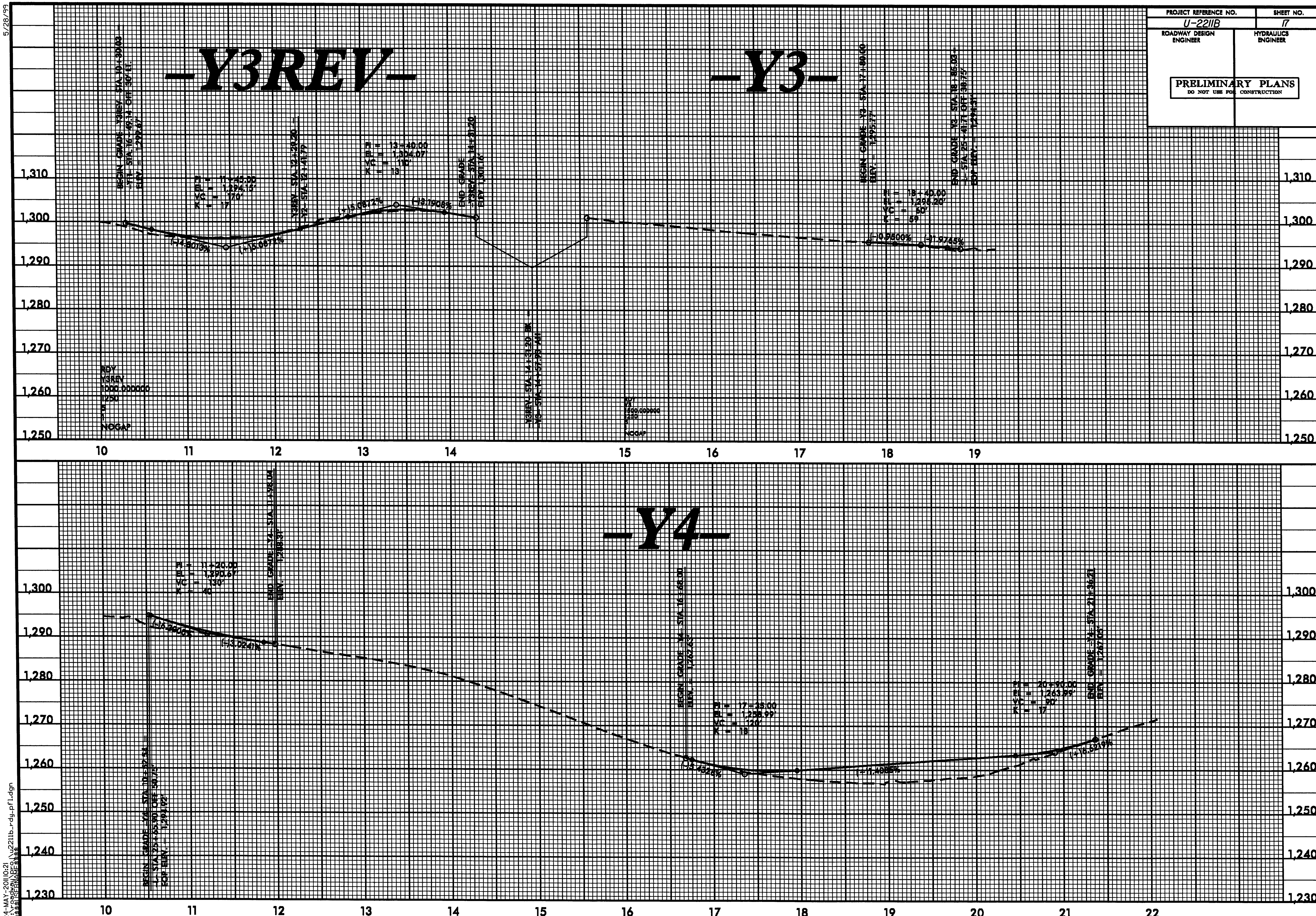
PROJECT REFERENCE NO.
U-2211B
SHEET NO.
16
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DITCH LEGEND
RIGHT DITCH
-RPC-
BEG. BERM DITCH RT.
STA. 18+00
EL = 1339.00'
END BERM DITCH RT.
STA. 19+50
EL = 1335.40'
(-) 2.4000%
(-)1.0800%
(-)2.7518%
-RPC-
FOR CULVERT HYDRAULIC DATA SEE -Y5- PROFILE
PI = 21+25.00
VC = 240
K = 80
54" CLASS IV
7' x 7' RCBC
-Y2-
(-)1.2800%
RDY
Y2
1000.000000
1250
NOGAP

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	17

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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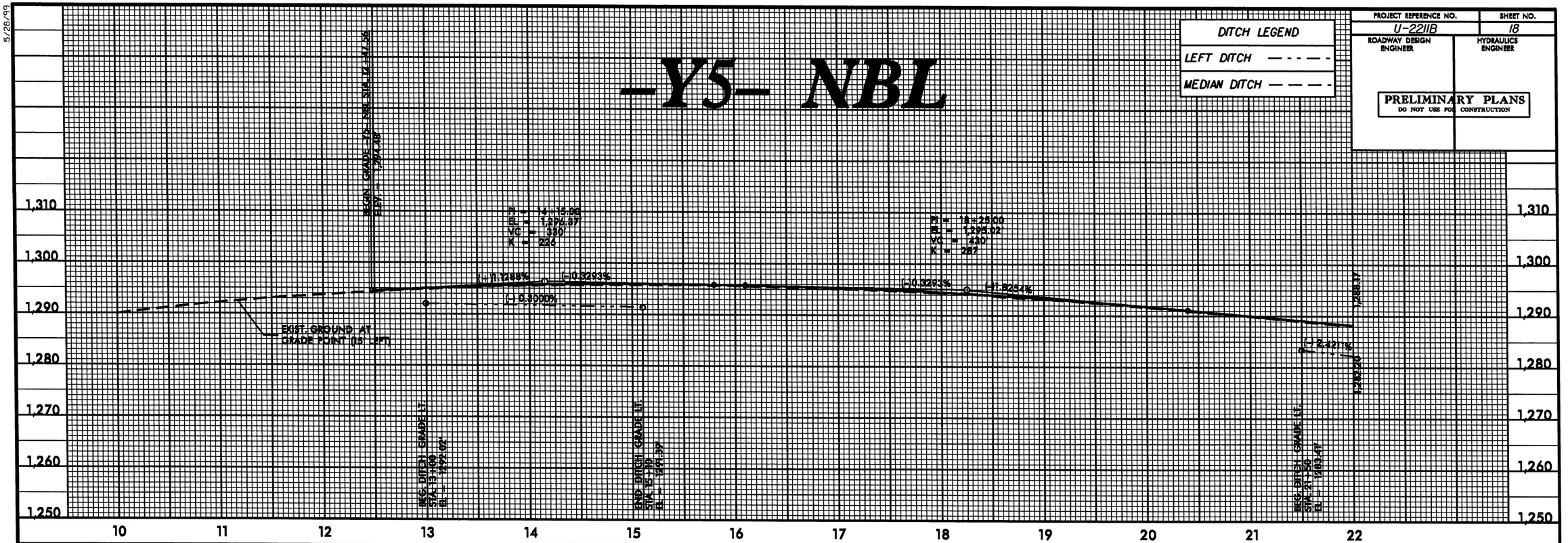
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

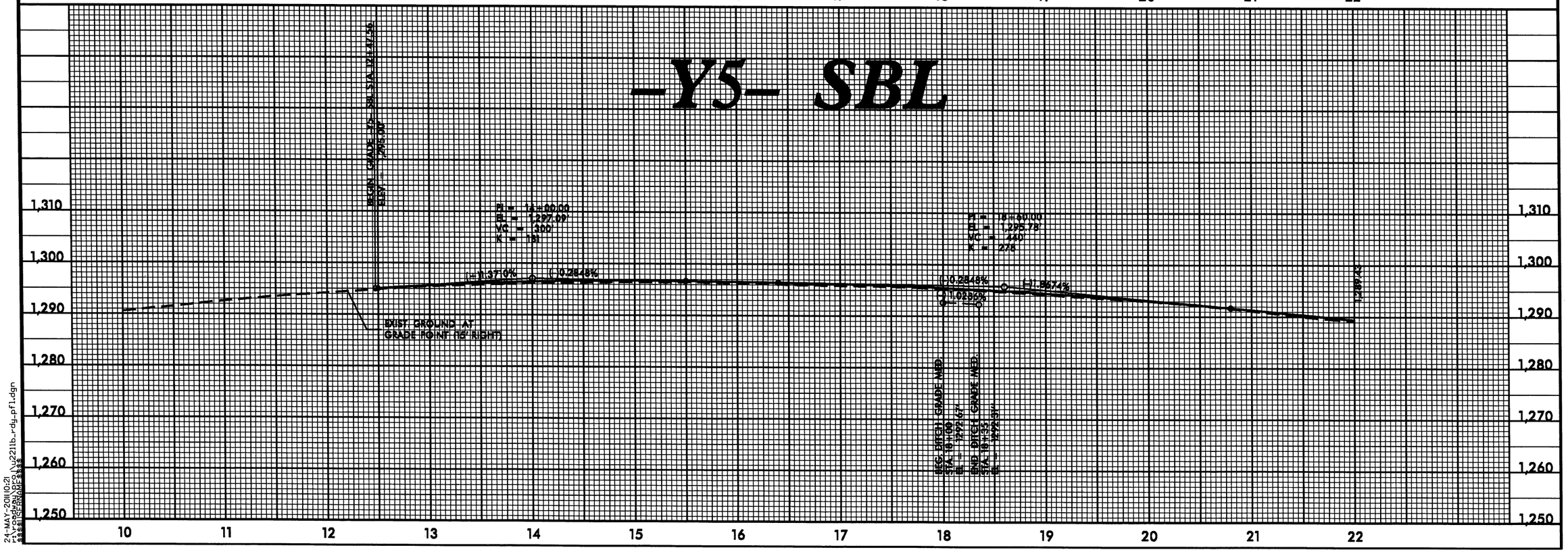
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DITCH LEGEND
LEFT DITCH — - - — -
MEDIAN DITCH — — — -

-Y5- NBL



-Y5- SBL



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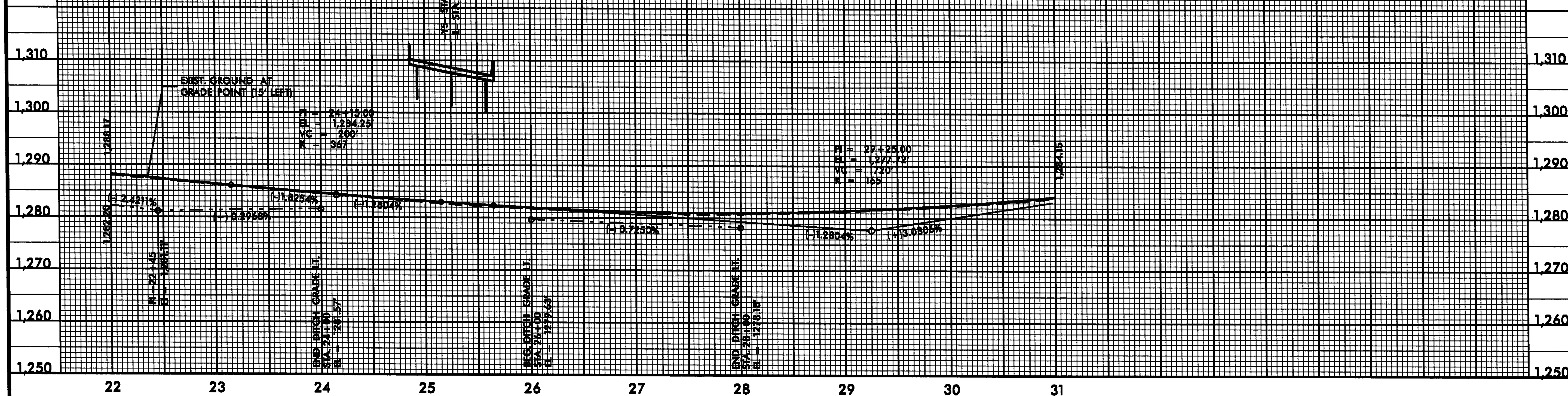
PROJECT REFERENCE NO.	SHEET NO.
U-2211B	19

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

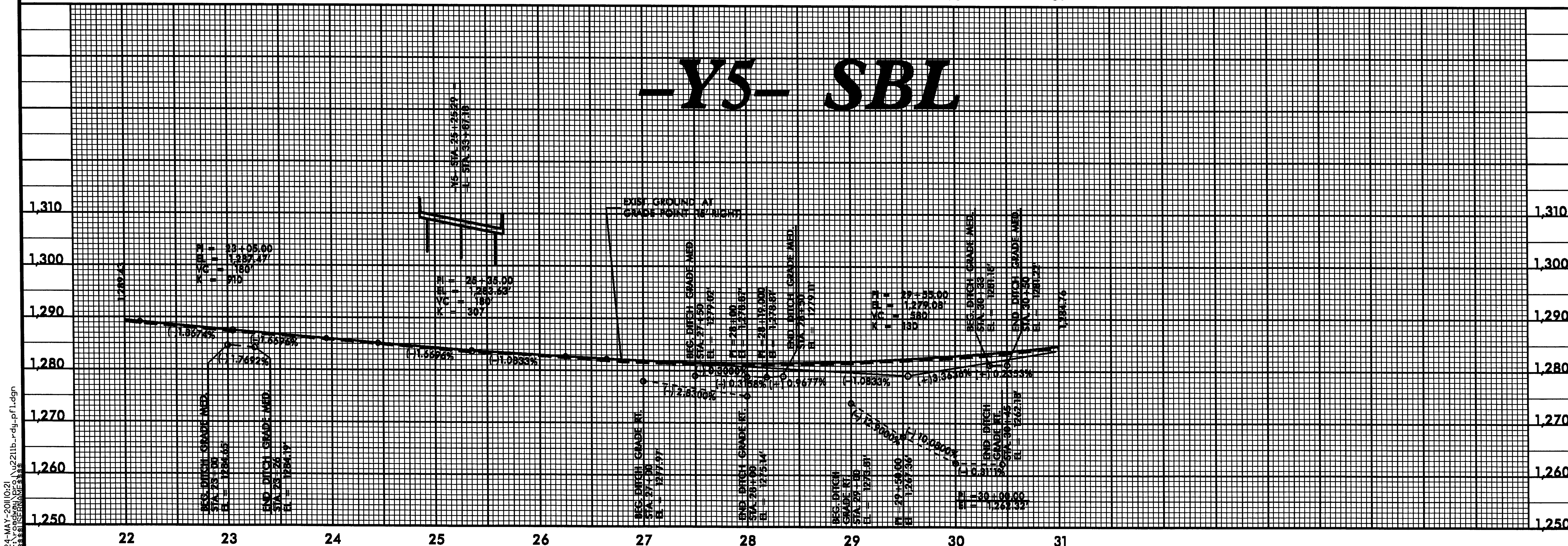
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DITCH LEGEND	
LEFT DITCH	— · — · —
RIGHT DITCH	- - - - - -
MEDIAN DITCH	— — —

-Y5- NBL



-Y5- SBL



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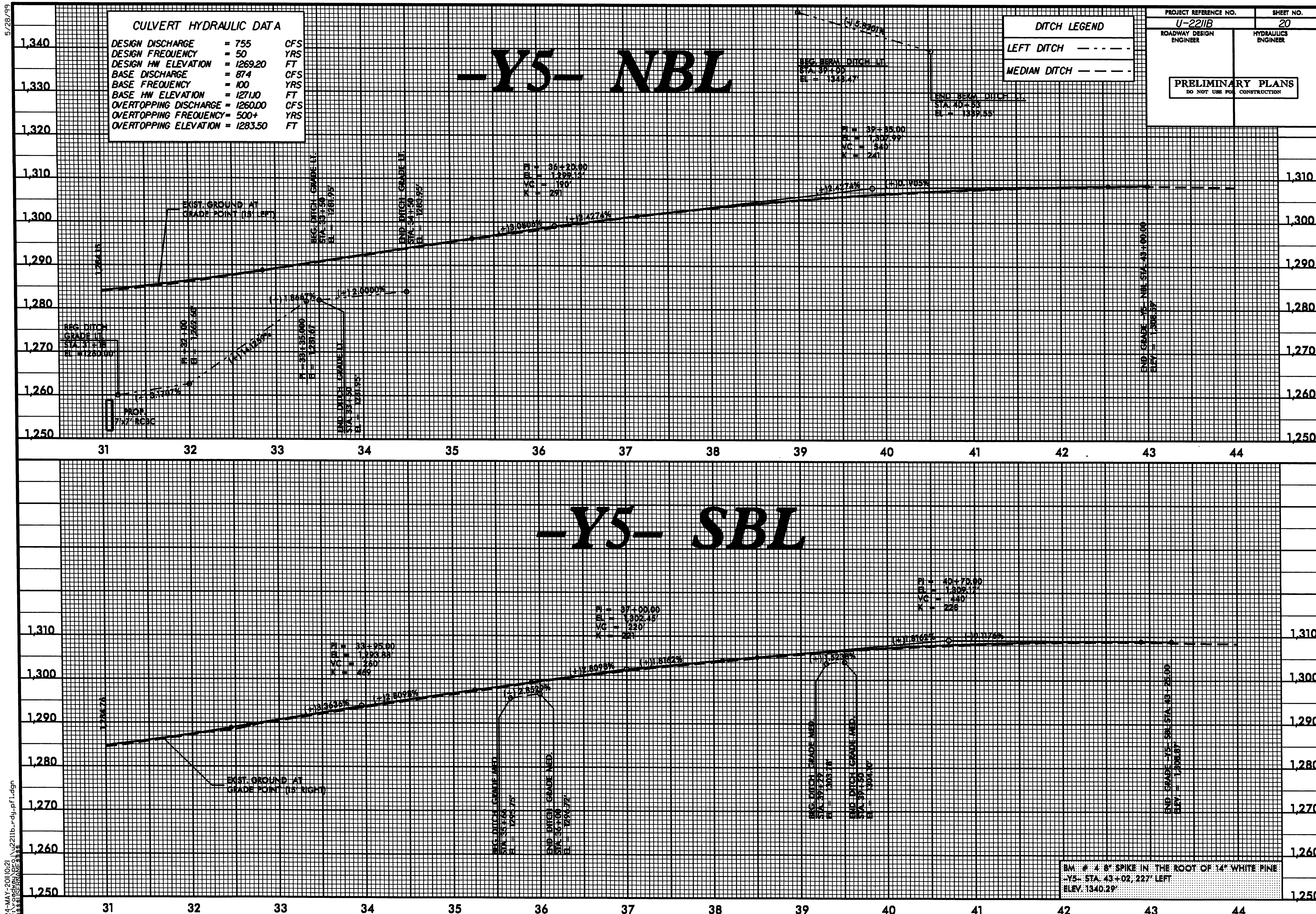

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PROJECT REFERENCE NO. U-2211B
SHEET NO. 20
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CULVERT HYDRAULIC DATA
DESIGN DISCHARGE = 755 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 1269.20 FT
BASE DISCHARGE = 874 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 1271.10 FT
OVERTOPPING DISCHARGE = 1260.00 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 1283.50 FT
DITCH LEGEND
LEFT DITCH
MEDIAN DITCH
-Y5- NBL
BEG. BERM DITCH LT. STA. 39+00 EL = 1348.47'
END BERM DITCH LT. STA. 40+53 EL = 1339.55'
(-)5.8301%
PI = 39+35.00 EL = 1,307.99' VC = 540' K = 241
(+)2.4274%
(+)0.1905%
PI = 36+20.00 EL = 1,299.13' VC = 190' K = 291
(+)3.0800%
(+)2.4274%
EXIST. GROUND AT GRADE POINT (15' LEFT)
BEG. DITCH GRADE LT. STA. 33+50 EL = 1281.95'
END DITCH GRADE LT. STA. 34+50 EL = 1283.95'
END DITCH GRADE LT. STA. 33+50 EL = 1281.95'
(+)1.8667%
(+)2.0000%
BEG. DITCH GRADE LT. STA. 31+15 EL = 1260.00'
(+)9.1707%
PROP. 7'x7' RCBC
END GRADE -Y5- NBL STA. 43+00.00 ELEV = 1,308.37'
1,340
1,330
1,320
1,310
1,300
1,290
1,280
1,270
1,260
1,250
31 32 33 34 35 36 37 38 39 40 41 42 43 44
-Y5- SBL
PI = 40+70.00 EL = 1,309.17' VC = 440' K = 226
PI = 37+00.00 EL = 1,302.45' VC = 220' K = 221
PI = 33+95.00 EL = 1,293.88' VC = 260' K = 469
(+)1.8162%
(+)0.1176%
(+)2.8098%
(+)3.3636%
(+)2.8098%
(+)1.8162%
EXIST. GROUND AT GRADE POINT (15' RIGHT)
BEG. DITCH GRADE MED.
END DITCH GRADE MED.
END GRADE -Y5- SBL STA. 43+25.00 ELEV = 1,308.87'
BM # 4 8" SPIKE IN THE ROOT OF 14" WHITE PINE
-Y5- STA. 43+02, 227' LEFT
ELEV. 1340.29'
24-MAY-2011 10:21
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PROJECT REFERENCE NO.	SHEET NO.
U-2211B	21

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/28/99

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 577	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 1278.60	FT
BASE DISCHARGE	= 874	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 1282.60	FT
OVERTOPPING DISCHARGE	= 775	CFS
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING ELEVATION	= 1282.40	FT

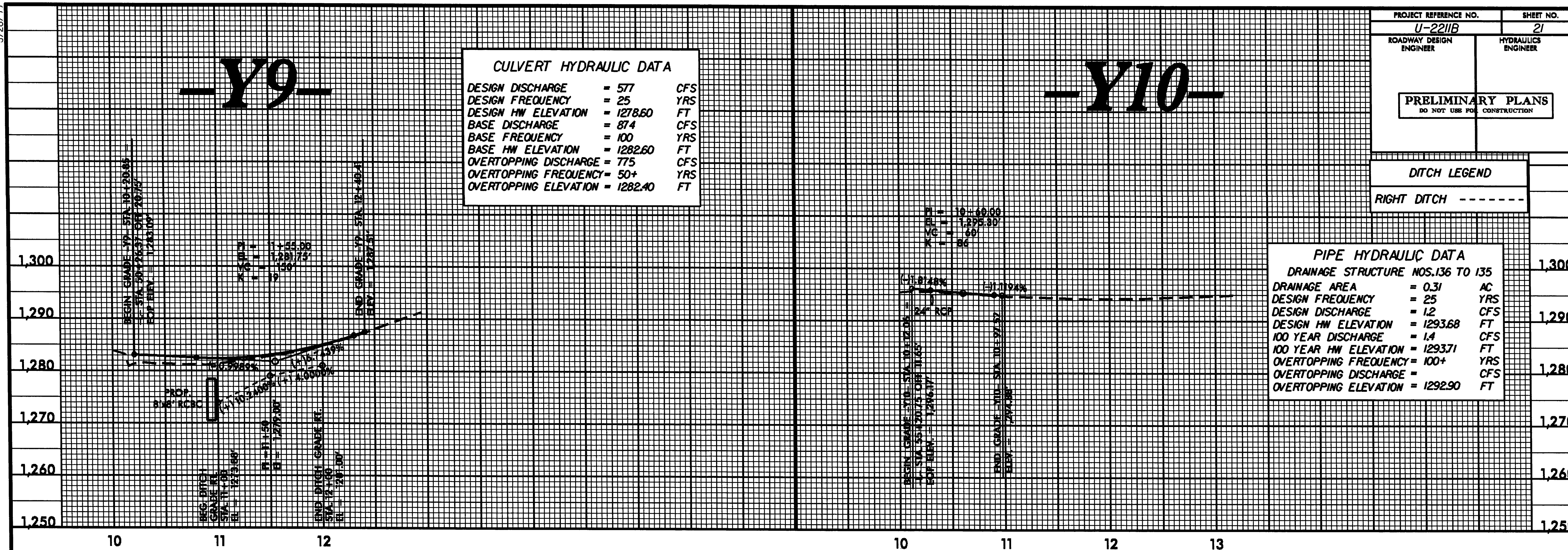
DITCH LEGEND

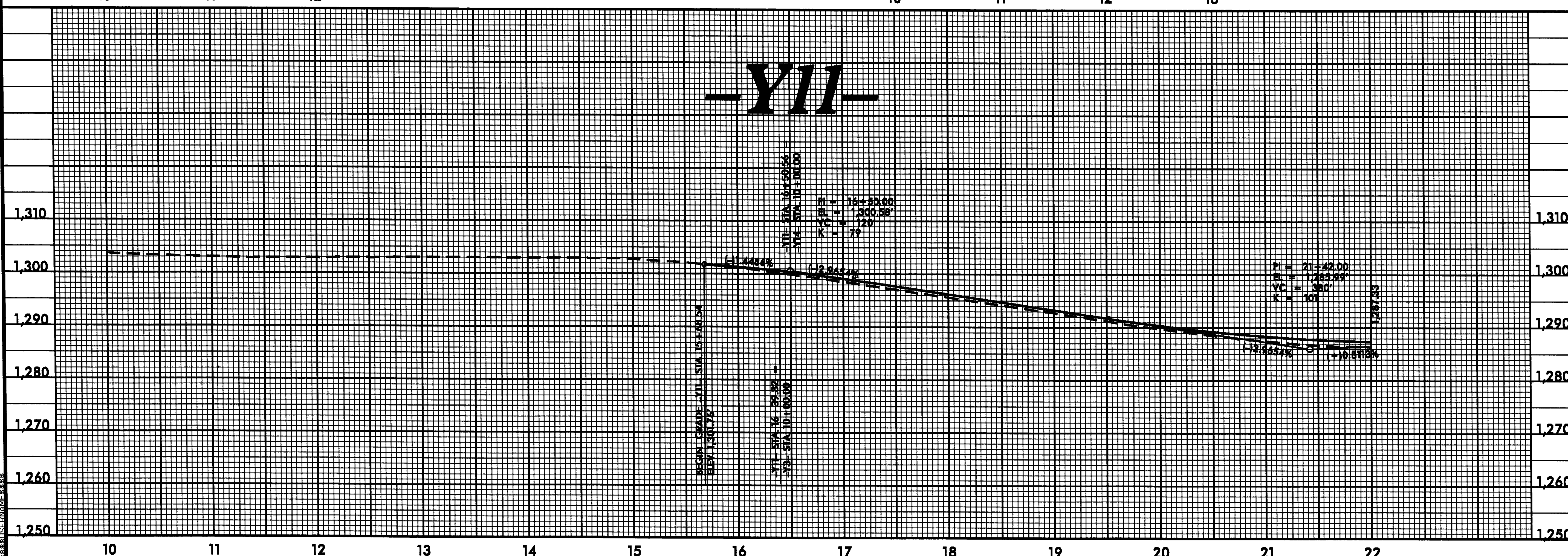
RIGHT DITCH - - - - - - -

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NOS.136 TO 135

DRAINAGE AREA	= 0.31	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 1.2	CFS
DESIGN HW ELEVATION	= 1293.68	FT
100 YEAR DISCHARGE	= 1.4	CFS
100 YEAR HW ELEVATION	= 1293.71	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	=	CFS
OVERTOPPING ELEVATION	= 1292.90	FT





24-MAY-2011 10:21
r:\roadway\pro\u2211b_rdy_pfl.dgn
$$$$$USERNAME$$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-2211B	22

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DITCH LEGEND

LEFT DITCH — - - — -

RIGHT DITCH - - - - - - -

DENOTES UNDERCUT

-Y11-

PI = 25+50.00
EL = 1282.39
VC = 1200'
K = 46

L=200.35

BEGIN GRADE -DR1- STA.10+60.20
ELEV. 1290.10

(-)5.90%

(-)5.50%

END GRADE -DR1- STA.11+99.36
OFF SET = 24.75' LT.
EOP ELEV. = 1280.81

(-)9.9748%

PI = 10+78.00
EL = 1285.24'
VC = 20'
K = 2

PI = 11+25.00
EL = 1280.95'
VC = 20'
K = 1

BEGIN GRADE -DR2- STA.10+60.00
ELEV. 1285.76

(-)2.1000%

(-)3.2400%

PI = 10+69.00
EL = 1285.34'
VC = 20'
K = 1

BEG. DITCH GRADE LT.
STA. 10+69
EL = 1282.00

END DITCH GRADE LT.
STA.11+50
EL = 1275.80'

BEGIN GRADE -DR2- STA.11+46.76
OFF SET = 12.00' LT.
EOP ELEV. = 1294.78'

(+)4.8921%

PI = 11+40.00
EL = 1294.10'
VC = 20'
K = 4

BEGIN GRADE -DR3- STA.10+60.61
EL = 1306.38'

(-)0.7700%

(+)5.0455%

PI = 11+35.00
EL = 1309.73'
VC = 20'
K = 3

END GRADE -DR3- STA.11+45.26
OFF SET = 18.56' LT.
EL = 1309.34'

PI = 10+71.00
EL = 1304.50'
VC = 20'
K = 2

-SR1-

BEGIN GRADE -SR1- STA.10+60.20
ELEV. 1295.85'

END GRADE -SR1- STA.13+61.26
LT. STA.40+18.69 OFF 52.73'
EOP ELEV. = 1297.43'

PI = 10+90.00
EL = 1289.38'
VC = 140'
K = 11

L=140.00

(-)1.0000%

(-)1.8118%

END DITCH GRADE RT.
STA.11+45
EL = 1289.15'

BEG. DITCH GRADE RT.
STA.11+00
EL = 1294.50'

R = 11.50
EL = 1288.39'

(-)0.3400%

(-)2.6445%

BEG. DITCH GRADE RT.
STA.11+00
EL = 1291.48'

END DITCH GRADE RT.
STA.12+10
EL = 1279.67'