STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J TATA
SECRETARY

February 26, 2013

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

ATTN: Mr Andy Williams
NCDOT Coordinator

SUBJECT **Application for Section 404 Individual Permit and Section 401 Individual Water Quality Certification** for the proposed Greensboro Western Loop from north of SR 2176 (Bryan Boulevard) to SR 2303 (Lawndale Drive), Guilford County, Division 7 Federal Aid Project No. STP-NHF-124(1), WBS Element No. 34820 1.2, TIP No. U-2524C and D

Debit $570.00 from WBS Element No. 34820.1.2

Dear Sir·

The North Carolina Department of Transportation (NCDOT) proposes to construct a section of the Greensboro Western Loop from north of SR 2176 (Bryan Boulevard) to SR 2303 (Lawndale Drive) in Greensboro, for a total of 4.8 miles. The project involves constructing a six-lane divided facility on new location.

In addition to this cover letter, the application package consists of an ENG Form 4345, North Carolina Ecosystem Enhancement Program (NCEEP) acceptance letter, Interagency Hydraulic Design Review meeting minutes for U-2524C (Concurrence Points 4B and 4C), Stormwater Management Plan, permit drawings, and half-size roadway plan sheets.

PROJECT SCHEDULE

For construction purposes, the remaining Greensboro Western Loop project has been broken down into two sections, C and D Sections A and B were permitted separately and completed in 2008. Table 1 reflects the project breakdown and section termini.

Table 1. Description of Project Sections for Construction Purposes

Section	Project Termini	Let Date
U-2524A & B	North of I-85 to North of 2176 (10 miles)	Complete (July 3, 2008)
U-2524C	North of SR 2176 to US 220 (3.0 miles)	September 17, 2013
U-2524D	US 220 to SR 2303 (1.8 miles)	October 18, 2016

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

TELEPHONE: 919-707-6000
FAX: 919-212-5785

WEBSITE:NCDOT.GOV

LOCATION:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

Permit drawings for the proposed project have been prepared based on final design for U-2524C and preliminary design for U-2524D The NCDOT will apply for any relevant permit modifications for U-2524D when final design is complete. Construction will not commence on U-2524D until permit modifications have been received based on final designs.

This project calls for a letting date of September 17, 2013 and a review date of July 30, 2013 for Section U-2524C. The letting date for Section U-2524D is October 18, 2016. However, the letting dates may advance as additional funds become available.

PURPOSE AND NEED

The purposes of the proposed project are (1) provide an efficient connection for major thoroughfares such as I-85, I-40, High Point Road, West Market Street, and US 220; (2) improve service for local north-south traffic; and (3) improve access to the Piedmont Triad International Airport and the major employers in the western section of Greensboro from the north and south.

NEPA DOCUMENT STATUS

A Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for U-2524 (includes Sections U-2524C and D) were approved on February 28, 1995 and August 17, 1995, respectively, and have been provided to the appropriate agencies. Right of Way Consultations for U-2524C and U-2524D to update the U-2524 FEIS were approved on May 3, 2011 and June 15, 2011, respectively Additional copies will be provided upon request.

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

Wetland delineations within the U-2524C construction footprint followed the field delineation method outlined in the *1987 Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual. Eastern Mountains and Piedmont Region* (USACE, 2010). Stream identification and classification followed the *Methodology for the Identification of Intermittent and Perennial Streams and Their Origins* (North Carolina Division of Water Quality [NCDWQ], 2010).

Within the U-2524C construction footprint, 16 streams and 17 wetlands were identified. Eight streams were identified within the U-2524D construction footprint. Jurisdictional areas were initially verified by USACE Regulatory Specialist Jean Manuel on December 10, 2001 and re-verified by USACE Regulatory Specialist Todd Tugwell on March 30, 2006. No jurisdictional determination (JD) was received from USACE for either field visits. Jurisdictional features were last re-verified by USACE Regulatory Specialist Andy Williams and NCDWQ representative Amy Euliss on July 25, 2012 for U-2524C only A request packet for the final JD for U-2524C was submitted to the USACE on September 4, 2012. No written JD was received from the USACE for the re-verification.

IMPACTS TO WATERS OF THE UNITED STATES

U-2524C

This project lies within the Piedmont Physiographic Province in the Cape Fear River Basin [Hydrologic Unit Code (HUC) 03030002]. Jurisdictional features within the U-2524C construction footprint that will be impacted include 13 unnamed tributaries (UT) to Horsepen Creek [NCDWQ Classification WS-III; NSW, NCDWQ Index No. 16-11-5-(0.5)], Horsepen Creek and 1 UT to Horsepen Creek [NCDWQ Classification WS-III, NSW, CA, NCDWQ Index No. 16-11-5-(2)] and 15 riparian wetlands.

U-2524D

Jurisdictional features within the U-2524D construction footprint that will be impacted include one UT to Horsepen Creek [NCDWQ Classification WS-III; NSW, CA, NCDWQ Index No. 16-11-5-(2)], Richland Creek, and five UTs to Richland Creek [NCDWQ Classification WS-III; NSW, NCDWQ Index No 16-11-7-(1)]. No wetlands were located within the U-2524D footprint based upon field verification from 2006.

There are no designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) waters within 1.0 mile of the project area. All streams within the project area and within a mile of the project area are listed on the 2012 303(d) Final List of Impaired Waters of North Carolina due to impaired ecological/biological integrity

Surface Waters

U-2524C

Total surface water impacts for U-2524C are 3,084 linear feet of permanent stream impacts and 309 linear feet of temporary stream impacts. Tables 2-3 list the site number, reference number, stream name, amount of permanent and temporary impacts, and amount of mitigation required.

Utilities

A total of 160 linear feet of temporary stream impact will occur due to stream access and utility line removal (Colonial Pipe Line) for Section U-2524C. These impacts will involve trenching the stream banks and replacing to natural grade. Utility impacts for Section U-2524D will be evaluated during the permit modification process.

Table 2. U-2524C Streams Impacted and Their Descriptions

Permit Site No.	Stream ID in CP 4A Packet	JD Package ID	Stream Name	Classification
1	2S	SA	UT to Horsepen Creek	Perennial
2	2S	SA	UT to Horsepen Creek	Perennial
2	2S	SB	UT to Horsepen Creek	Perennial
3	2S	SC	UT to Horsepen Creek	Perennial
3A	2S	SD	UT to Horsepen Creek	Perennial
4	4S	SE	UT to Horsepen Creek	Perennial
5	4S	SF	UT to Horsepen Creek	Perennial
5A	4S	SG	UT to Horsepen Creek	Perennial
6	4S	SH	UT to Horsepen Creek	Intermittent
7	5S	SI	UT to Horsepen Creek	Perennial
7A	5S	SJ	UT to Horsepen Creek	Perennial
8	9S	SL	UT to Horsepen Creek	Perennial
10	12S	SM	UT to Horsepen Creek	Perennial
13	13S	SP	UT to Horsepen Creek	Perennial
13	14S	SO	Horsepen Creek	Perennial
HC1	14S	SO	Horsepen Creek	Perennial
HC2	14S	SO	Horsepen Creek	Perennial
HC3	14S	SO	Horsepen Creek	Perennial
HC4	14S	SO	Horsepen Creek	Perennial
HC5	14S	SO	Horsepen Creek	Perennial
I1			UT to Horsepen Creek	Intermittent

Note: Permit Site Nos. HC1-HC5 and I1 are impacts by Colonial Pipe Line utilities; see utility drawings.

Table 3. U-2524C Surface Water Impacts (Final)

Permit Site No.	Impact Type	Permanent Impact Length (ft)	Impacts requiring NCDWQ mitigation (ft)	Impacts requiring USACE mitigation (ft)[1]	Temporary Impact Length (ft)
1	48" RCP	385	385	385	13
	Bank Stabilization	11	11	0[2]	
2	30" RCP	13	0[3]	13	14
	Bank Stabilization	32	32[4]	0[2]	
		11	0[3]	0[2]	
3	36" RCP	345	345	345	20
	Bank Stabilization	10	10	0[2]	
3A	36" RCP	30	30	30	
4	10' x 7' RCBC	331	331	331	17
	Bank Stabilization	30	30	0[2]	
5	10' x 6' RCBC	688	688	688	20
	Bank Stabilization	37	37	0[2]	
5A	Fill	90	0[3]	90	
	Bank Stabilization	25	0[3]	0[2]	
6	Fill	60	0[5]	0[5]	15
7	30" RCP	227	227	227	10
	Bank Stabilization	11	11	0[2]	
7A	15" RCP	57	0[3]	57	
8	54" RCP	412	412	412	20
	Bank Stabilization	13	13	0[2]	
10	Bank Stabilization	16	0[3]	0[2]	
13	Bridge, Roadway	204	204	204	20
	Bank Stabilization	24	24[6]	0[2]	
		22	0[3]	0[2]	

Permit Site No.	Impact Type	Permanent Impact Length (ft)	Impacts requiring NCDWQ mitigation (ft)	Impacts requiring USACE mitigation (ft)[1]	Temporary Impact Length (ft)
HC1	Utilities				40
HC2	Utilities				20
HC3	Utilities				20
HC4	Utilities				20
HC5	Utilities				20
I1[7]	Utilities				40
Totals		**3,084**	**2,790**	**2,782**	**309**

[1]Determined from USACE during verification site visit on July 25, 2012. [2]Mitigation for bank stabilization not required by USACE. [3]Mitigation not required by NCDWQ (less than 150 linear feet of steam). [4]Same stream as Site 1, different stream than stream with 11 feet of bank stabilization. [5]Stream deemed unimportant by the USACE requiring no mitigation by USACE and NCDWQ. [6]Different stream than stream with 22 feet of bank stabilization. [7]Stream identified by Colonial Pipe Lines and not field verified by NCDOT, USACE, or NCDWQ since it was outside of NCDOT project area limits during field verification process.

U-2524D

Total preliminary surface water impacts for U-2524D are 4,604 linear feet of permanent stream impacts and 80 linear feet of temporary stream impacts. Table 4 below lists the permit site number, reference number, stream name, and amount of preliminary permanent and temporary impacts.

Table 4. U-2524D Surface Water Descriptions and Impacts (Preliminary)

Permit Site No.	Stream ID in CP 4A Packet	Stream Name	Classification	Permanent Impact (ft)	Temporary Impact (ft)
1	16S	UT to Horsepen Creek	Perennial	393	10
2	17S	UT to Richland Creek	Perennial	919	10
3	17S	UT to Richland Creek	Perennial	1,488	10
4	17S	UT to Richland Creek	Perennial	35[1]	
4	19S	Richland Creek	Perennial	1218	20
5	20S	UT to Richland Creek	Perennial	141[1]	10
6	21S	UT to Richland Creek	Perennial	311	10
7	Not Identified	UT to Richland Creek	Perennial	99[1]	10
Total Impacts				**4,604**	**80**

[1]Mitigation not required by NCDWQ (less than 150 linear feet of steam). NCDWQ mitigation for remaining streams are assumed at 1.1 and USACE mitigation for all streams assumed at 2:1 until final field reverification is made.

Wetlands

U-2524C

There will be a total of 6.12 acres of permanent riparian wetland impacts associated with this section. These impacts will result from 4.03 acres of permanent fill, 0.34 acres of excavation, and 1 75 acres of mechanized clearing. There will also be 0.79 acres of temporary excavation impacts due to utilities and 4.38 acres of wetland impacts due to hand clearing. Permanent and temporary wetland impacts are summarized below in Table 5 for U-2524C.

Utilities

There will be 0.52 acres (0.33 acres for Colonial Pipe Line, 0.19 acres for Plantation Pipe Line) of permanent wetland impact due to mechanized clearing for utility lines in Section U-2524C. The 0.79 acres of temporary wetland impacts will involve excavating and sidecasting the wetland soil to remove the existing lines and then replacing the sidecasted soil back.

U-2524D

No wetland impacts are anticipated in Section U-2524D Utility impacts for Section U-2524D will be evaluated during the permit modification process.

Table 5. U-2524C Wetland Impacts (Final)

Permit Site No.	Wetland ID in CP 4A Packet	JD Package ID	Impact Type	Permanent Impacts (ac)	Temporary Impacts (ac)
1	1W	WA and WB	Permanent Fill	0.10	
			Mechanized Clearing	0.02	
7	Not Identified	WC and WD	Permanent Fill	0.01	
9	11W and 12W	WE, WF, WG, WH	Mechanized Clearing	0.02	
11	13W	WK	Mechanized Clearing	0.19	
12	13W	WL	Permanent Fill	1.93 (2:1 Ratio) 0.64 (1 1 Ratio)	
			Mechanized Clearing	0.34 (2:1 Ratio) 0.02 (1 1 Ratio)	
13	13W	WM	Permanent Fill	0.59 (2:1 Ratio) 0.65 (1 1 Ratio)	
			Excavation	0.34	
			Mechanized Clearing	0.22 (2:1 Ratio) 0.42 (1 1 Ratio)	
14	15W	WQ	Permanent Fill	0.11	
W1	13W	WL	Mechanized Clearing	0.20	
W2	13W	WM	Temporary Excavation		0.79
W3	15W	WN	Mechanized Clearing	0.12	

Permit Site No.	Wetland ID in CP 4A Packet	JD Package ID	Impact Type	Permanent Impacts (ac)	Temporary Impacts (ac)
W4	15W	WQ	Mechanized Clearing	0.01	
1*	15W	WN	Mechanized Clearing	0.14	
2*	15W	WO	Mechanized Clearing	0.04	
3*	15W	WP	Mechanized Clearing	0.01	
Total Impacts				**6.12**	**0.79**

Notes: Permit Site Nos. W1 - W4 are from Colonial Pipe Line utilities and Permit Site Nos. 1* - 3* are from Plantation Pipe Line utilities. Most permanent impacts require 2:1 mitigation except for Permit Sites 12 and 13 within the utility easement which USACE determined as 1.1 mitigation.

FEDERALLY PROTECTED SPECIES

Plants and animals with a Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act (ESA) of 1973, as amended. As of December 3, 2012, the U.S. Fish and Wildlife Service (USFWS) list one federally protected species for Guilford County· Small whorled pogonia (*Isotria medeoloides)* A species description and biological conclusion for the small whorled pogonia was not stated in the FEIS because the species was added to the USFWS county list of protected species after the documents were completed. A survey was done by NCDOT biologists on May 20, 2009 and a biological conclusion of "No Effect" was given for small whorled pogonia. A search of the North Carolina Natural Heritage Database on January 18, 2013 revealed no known occurrences of any federally protected species within 1.0 mile of the limits of this section.

Since the FEIS the bald eagle has been delisted for Guilford County The bald eagle has been delisted as of August 2007 and is not subject to Section 7 consultation and a biological conclusion is not required. However, the bald eagle remains protected by the Bald and Golden Eagle Protection Act. No habitat exists in the vicinity of U-2524 for the bald eagle.

CULTURAL RESOURCES

No archaeological sites or historic structures listed on or eligible for the National Register will be impacted by U-2524 The North Carolina Department of Cultural Resources, State Historic Preservation Office (HPO) concurs with this finding. Correspondence from the HPO is included in Appendix B of the FEIS.

FEMA COMPLIANCE

There are streams within the project limits that are within Federal Emergency Management Agency (FEMA)-designated flood zones. Coordination between the NCDOT Hydraulics Unit and FEMA will occur prior to LET to ensure that NCDOT is in full compliance with applicable floodplain ordinances.

INDIRECT AND CUMULATIVE EFFECTS

The ICI is currently underway and will be submitted to the NCDWQ upon completion.

WILD AND SCENIC RIVERS

This 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) or North Carolina Natural and Scenic Rivers.

ESSENTIAL FISH HABITAT

The project will not impact any essential fish habitat afforded protection under the Magnuson-Stevens Act of 1996 (16 U.S.C 1801 *et seq*).

MITIGATION OPTIONS

The USACE has adopted, through the Council on Environmental Quality (CEQ), a wetland mitigation policy that embraces the concept of "no net loss of wetlands" and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of the waters of the United States. CEQ has defined mitigation of wetland and surface water impacts to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20).

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 phase and minimization measures were incorporated as part of the project design. Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts.

Avoidance and Minimization

Avoidance and minimization has been employed in the project area to the maximum extent practicable. The following measures were implemented for the project:

U-2524C Minimization Measures

- NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters will be enforced;
- Use of Design Standards in Sensitive Watersheds through entire project;
- Impacts to wetlands and surface waters were minimized using 2:1 side slopes where practicable;
- Ditches that discharge directly into wetlands have been designed to "daylight" to zero depth just outside the wetland boundaries to diffuse flow and reduce velocities;
- Grass swale (39) treatment will be utilized in drainage systems discharging into jurisdictional streams;

- Impacts from steep cross pipe slopes (discharging into jurisdictional wetlands or streams) have been reduced with the use of junction boxes, flat exit pipe slopes, and non-buried upstream inverts;
- Five hazardous spill basins (one for stormwater treatment as well) will be utilized for receiving waters classified as Critical Area;
- Pre-formed scour holes will be constructed at four locations:–L- 287+50, –L- 297+80, –L- 381+05, and –L- 382+34,
- Elimination and/or reduction of permanent wetland impacts at Permit Sites 9, 11, 12, and 13 due to bridging;
- Elimination and/or reduction of permanent stream impacts at Permit Sites 9 and 13 due to bridging;
- A 1.5 1 fill slope with rock plating will be used at Permit Site 8 to avoid stream impacts.

For additional avoidance/minimization for U-2524C see attached Stormwater Management Plan. Despite these best efforts of NCDOT, permitted stream impacts (7,688 linear feet) for U-2524C/U-2524D did increase from the impacts reported in the FEIS (6,833 linear feet). This increase is mainly due to new streams and additional jurisdictional stream sections to the FEIS listed streams found within the project area that were not calculated in the FEIS. Overall, wetland impacts significantly decreased from 16.6 acres reported in the FEIS to 6.12 acres recorded in this permit application mainly due to bridging.

Compensatory Mitigation

U-2524C

Compensatory mitigation requirements for stream and wetland impacts are summarized in Table 6. The U-2524C section will permanently impact a total of 3,084 feet of warm water streams. There are 242 feet of bank stabilization and 60 feet of an intermittent stream that do not require mitigation by the USACE, resulting in 2,782 feet of stream impacts requiring USACE 2:1 mitigation. Mitigation requirements for U-2524C by NCDWQ is 2,790 feet at 1 1 The USACE requirement exceeds the NCDWQ requirement and will be provided by NCEEP NCEEP will also provide mitigation for the 6.12 acres of permanent riparian wetland impacts resulting from roadway fill, excavation, and mechanized clearing.

Table 6. U-2524C Required Compensatory Mitigation Summary (Final)

	Stream Impacts in Length (ft)	Riparian Wetland Impacts (ac)
Required USACE Mitigation	2,782 @ 2:1	4.39 @ 2:1 1 73 @ 1 1
Total USACE Mitigation	**5,564**	**10.51**
Required NCDWQ Mitigation	2,790 at 1 1	6.12 @ 1 1
Total NCDWQ Mitigation	**2,790**	**6.12**

U-2524D

Compensatory mitigation requirements for stream and wetland impacts are summarized in Table 7 The U-2524D section will permanently impact a total of 4,604 feet of warm water streams requiring USACE 2.1 mitigation. The mitigation requirement for U-2524D by NCDWQ is 4,329 feet at 1 1 The 14,772 feet of mitigation provided by the NCEEP for permanent impacts to warm water streams covers all stream mitigation requirements for U-2524C and D

Table 7. U-2524D Required Compensatory Mitigation Summary (Preliminary)

	Stream Impacts in Length (ft)	Riparian Wetland Impacts (ac)
Required USACE Mitigation	4,604 @ 2.1	0
Total USACE Mitigation	**9,208**	**0**
Required NCDWQ Mitigation	4,329 @ 1 1	0
Total NCDWQ Mitigation	**4,329**	**0**

REGULATORY APPROVALS

Application is hereby made for a Department of the Army Section 404 Individual Permit as required for the above-described activities for the proposed T.I.P Project U-2524C and D The NCDOT understands that a permit modification will be required for Section U-2524D after final design is complete and prior to construction.

We are also hereby requesting a Section 401 Individual Water Quality Certification from NCDWQ 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. We are providing two copies of this application to the North Carolina Department of Environment and Natural Resources (NCDENR), NCDWQ, for their review and approval.

A copy of this permit application and its distribution list will be posted on the NCDOT website at https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx. Thank you for your time and assistance with this project. Please contact Greg Price at either gwprice@ncdot.gov or (919) 707-6148 if you have any questions or need additional information.

Sincerely,

E. L. Luck

FCV Gregory J Thorpe, Ph.D., Manager
Project Development and Environmental Analysis Unit

Cc:
NCDOT Permit Application Standard Distribution List

U.S. ARMY CORPS OF ENGINEERS
APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

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

OMB APPROVAL NO. 0710-0003
EXPIRES: 28 FEBRUARY 2013

Public reporting 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 the 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/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

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

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

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Gregory Middle - J. Last - Thorpe	First - Middle - Last -
Company - NCDOT-PDEA	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- 1598 Mail Service Center	Address-
City - Raleigh State - NC Zip - 27699 Country - USA	City - State - Zip - Country -
7 APPLICANT'S PHONE NOs. w/AREA CODE	**10. AGENTS PHONE NOs. w/AREA CODE**
a. Residence b. Business 919-707-6111 c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

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

_____ SIGNATURE OF APPLICANT _____ DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
U-2524C/U-2524D

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Horsepen Creek and its UTs, Richland Creek and its UTs	Address
15. LOCATION OF PROJECT Latitude: °N 36.135616 Longitude: °W 79.884514	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)
U-2524C/U-2524D proposes to construct a section of the Greensboro Western Loop from north of SR 2176 (Bryan Boulevard) to SR 2303 (Lawndale Drive) in Greensboro, NC for a total of 4.8 miles.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)
The purposes of U-2524C/U-2524D are (1) provide and efficient connection for major thoroughfares such as I-85, I-40, High Point Road, West Market Street, and US 220; (2) improve service for local north-south traffic; and (3) improve access to the Piedmont Triad International Airport and the major employers in the western section of Greensboro from the north and south.

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, construction of roadway on new location, and bridge construction.

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
Linear Feet See attached cover letter.

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

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

a. Address- See attached permit drawings.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

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

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

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

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

E. L. Lusk for Gregory J. Thorpe, PhD — Feb 26, 2013

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
PROGRAM

February 26, 2013

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

U-2524C / D, Greensboro – Western Loop from North of Bryan Boulevard to Lawndale Drive, Guilford County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and riparian wetland mitigation for the subject project. Based on the information supplied by you on February 25, 2013, the impacts are located in CU 03030002 of the Cape Fear River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Cape Fear 03030002 SICP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts* (feet/acres)	0	0	7,386.0	6.12	0	0	0	0

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

EEP commits to implementing sufficient compensatory stream and riparian wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies 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 919-707-8420.

Sincerely,

Michael Ellison
EEP Acting Director

cc: Mr. Andrew Williams, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, Division of Water Quality, Wetlands/401 Unit
File: U-2524C / D

Subject: Draft Minutes from Interagency Hydraulic Design Review Meeting on January 25, 2006 for U-2524C in Guilford County

Team Members:

John Thomas-USACE	(present)
Todd Tugwell-USACE	(present)
Sue Homewood-NCDWQ	(present)
Travis Wilson-NCWRC	(present)
Kathy Matthews-EPA	(present)
Rachelle Beauregard-NCDOT-NEU	(present)
Bill Barrett-NCDOT-NEU	(present)
Erica McLamb-NCDOT-NEU	(present)
Brad Wall-NCDOT-DIV 7	(present)
Donnie Brew-FHWA	(present)

Participants:
Marshall Clawson, NCDOT Hydraulics
Galen Cail, NCDOT Hydraulics
Jamie Byrd, Transite Consulting
Walter Roberts, Transite Consulting
Clayton Walston, NCDOT Roadway
David Garrett, Parsons Transportation Group
John Frye, NCDOT Structures
Bruce Klappenbach, NCDOT Structures

GENERAL NOTES

- Appeared that wetland/stream file was not "attached" to a number of plan sheets.
- There are several sites that NEU, DWQ and the COE will review in the field. Will need to notify necessary units of any revision(s) to present delineation. Sites include but not limited to Sta 321+50 (Sheet 10), Sta 324+00 LT (Sheet 11), Sta 345+50 (Sheet 12)
- Culverts at jurisdictional crossings to be analyzed with 20% burial of pipe diameter up to 1'.

Sheet 10:

Discussion about how to avoid/minimize impact to stream around approx Sta 320+00 LT Discussed either using retaining walls and/or 1.5:1 side slopes (w/ rock plating) to minimize impacts. Also, a –SS- line parallels the existing stream, which may have to be relocated.

Sheet 11:

Expressway gutter RT will be eliminated in order to provide grassed swale treatment.

Sheet 13:

Discussion about how to avoid/minimize impact to stream around approx Sta 358+00 LT Discussed either using retaining walls and/or 1.5 1 side slopes (w/ rock plating) to

minimize impacts. Also, discussed prospect of relocating stream since there is available floodplain.

Sheet 15 & 16:

Hazardous Spill Basins will be provided throughout bridged area where drainage outlets are needed within the critical boundary Included for roadway drainage up to the bridge and for the bridge drainage system that will be needed along the structure.

Discussed possible need for work bridges in the wetlands. However, a causeway will likely be necessary for work done in the vicinity of the Colonial pipeline. Using piles in the vicinity of the pipeline could be treacherous.

Sheet 17 & 18:

Expressway gutter will be eliminated, to extent practical, to provide grassed swale treatment.

Sheet 19 & 20:

Investigate placing cross pipe on sharper skew to tie to existing stream along RT instead relocation with deep cuts and sharp bends.

Retaining wall RT provided to reduce residential impacts.

Sheet 21:

Extensive culverts along Richland Creek and Tribs. Approximately 4000' of impacts. Questioned whether stream(s) were investigated for relocation instead of culverts. Relocation was investigated for Trib LT. The relocated channel would be straight, likely rip rapped, and would have resulted in extensive additional R/W and residential acquisitions. Remaining streams are going through the proposed interchange at Lawndale Drive. Also, discussed constructability issues including trying to combine culverts and reduce number of crossings under Lawndale. This would result in having sharp bends in culverts and may also require the grade separation bridge to be lengthened.

Meeting adjourned

Subject: Draft Minutes from Interagency Permit Drawing Review (4C) Meeting on March 22, 2012 for U-2524C in Guilford County

Team Members:

John Thomas-USACE	Present	**Participants:**
Chris Militscher-USEPA	Present	Patty Eason, Division 7
Amy Eulliss, NCDWQ	Present	Marshall Clawson, NCDOT Hydraulics
Felix Davila, FHWA	Present	Bill Zerman, NCDOT Hydraulics
Travis Wilson, NCWRC	Absent	Michael Abuya, NCDOT TPB
Gary Jordan, USFWS	Absent	Greg Price, NCDOT PDEA NES
		Rachelle Beauregard, NCDOT PDEA NES
		Monroe K. Brown, NCDOT Utilities
		Beverly Robinson, NCDOT PDEA
		Philip Harris, NCDOT PDEA NES
		Steve McKee, NCDOT Utilities
		Mark Staley, NCDOT REU
		Mack Bailey, NCDOT Structures
		Jamie Byrd, HNTB
		Phillip Rogers, HNTB
		Benton Carroll, HNTB

General Notes

- There were several discrepancies between the provided Roadway Plans and Permit Drawings that need to be resolved prior to submission of final permit drawings.
- Agency representatives requested pdf files of permit drawings in addition to std. paper copies.
- Agency representatives also requested that the pdf files be written so that "full size" (1"=50') sheets could be printed. Detail Sheets will be 1"=100'
- NCDWQ questioned whether Hazardous Spill Basins (HSBs) could be reconfigured to provide treatment of stormwater.
  - NCDOT advised that this request will be investigated.
- The agencies advised that pipes in jurisdictional streams with proposed slopes in excess of 5% should not be buried. The reasons for this direction are to prevent upstream "head cutting" and sedimentation of the pipe would likely not occur at that slope.
- Label all retaining walls on the permit drawings.
- After the meeting, Hydraulics advised HNTB that prior to submission of final permit drawings all pipe calls would need to be revised for current standards and guidelines.

Sheet 8

Site 1: Revise pipe design to eliminate buried invert upstream.
Keep junction box (JB) on outlet end of pipe as currently designed.

Site 2: NCDOT-PDEA advised that the stream was not jurisdictional for the length shown.
NCDOT-PDEA will provide HNTB with an updated file showing the JS limits.
A question was raised about the riprap placed downstream of the pipe outlet on the right stream bank. HNTB advised the riprap was placed as bank stabilization for flows from the channel that intersect the receiving stream at 90^0 and that no riprap will be placed in the stream.
NCDOT-PDEA requested that the Impact Summary Sheet be revised to separate bank stabilization impacts from other stream impacts.

Sheet 9

Site 3: NCDWQ inquired about the slope of the 36" RCP at Sta. 296+54.
HNTB advised stated that the slope upstream of the JB was approximately 4%. HNTB added that downstream of the JB, the slope was 0%. This design was utilized to reduce outlet velocities into the JS.
NCDWQ advised that the proposed 4% slope is border line for buryment and directed that the upstream invert not be buried.
NCDWQ advised that the JB and downstream portion of pipe could remain as designed.
HNTB will revise designs accordingly
USEPA questioned the purpose for the "Transition Stone" right of -L- Sta. 301+50.
HNTB advised the transition stone is placed at this location to allow for ditch flows to be discharged offsite into the natural swale.

Sheet 10

Site 4: There were no questions from the Members about this site.

Site 5: NCDOT-PDEA expressed concern about potential conflicts between the proposed 60" RCP and the existing sanitary sewer line and asked if the sanitary sewer line would be relocated.
NCDOT-Utilities advised that the sanitary sewer line would be moved to accommodate the proposed project designs.
NCDOT Hydraulics advised that the stream is now subject to FEMA requirements and that the proposed 60" RCP may be changed to a small RCBC pending completion of additional hydraulic analyses.
Hydraulics added that whether the crossing is a pipe or a box culvert, the impacts are the same.
The agencies agreed and there were no additional comments about this site.

Sheet 11

Site 6: NCDOT-PDEA advised that this site may fall out and no longer be jurisdictional.
If it does, the agencies agreed to "skip" Site 6 on the plans and in the summary to avoid confusion.

Sheet 12

Site 7: NCDOT-PDEA advised that the permanent stream impacts need to be extended to cover the spur stream at left of -L- Sta. 345+00.
HNTB will incorporate the require revision.

Sheet 13

Site 8: NCDWQ advised that the Roadway Plans show a JS stream line left of -L- Sta. Sta. 358+00 that does not appear on the Permit Drawings.
HNTB advised that it would coordinate with Roadway Design to ensure the Plans and Permit Drawings agree when they are resubmitted.
NCDWQ questioned why the retaining wall used to avoid jurisdictional stream impacts left of -L- Sta. Sta. 357+25 to 359+50 was not extended to avoid impacts left of -L- Sta. Sta. 357+25 to 359+50.
Hydraulics advised that the area in question would be reviewed with Roadway Design and that a 1.5:1 fill slope with Rock Plating will likely be used to pull the slope in away from the JS.

Sheet 15

Site 9: NCDOT-PDEA commented that there is a missing JS line from the wetland left of -L- Sta. 382+50 to Horsepen Creek Trib. C.
HNTB will review the latest NEU wet file and revise accordingly

Site 10: NCDWQ asked if the hazardous spill basins (HSBs) had been designed to provide any stormwater treatment.
HNTB advised that they were designed only to meet HSB requirements.
HNTB added that the majority of these proposed HSBs are located in the floodplain of Horsepen Creek and will likely be inundated frequently by storm events.
Hydraulics added that these HSBs will utilize "flap gates" on the outlet pipes to prevent water backing up into the HSB on smaller storm events.

Site 11: There were no questions from the Members about this site.

Misc.: The agencies questioned whether runoff to the stormwater pond off of Drawbridge Parkway was being increased.
HNTB advised that this pond currently receives roadway runoff and that pre and post volumes are approximately equal.

Sheet 16

Site 12: There were extensive discussions between the Members and NCDOT concerning the proposed impacts associated with the relocation of the Colonial Gas Pipeline.
It was decided that the impacts currently shown for the pipeline construction at Site 12 would be removed since the lines would be bored.
It was also discussed that the Colonial Pipeline relocation would likely occur well in advance of the permit application for this project even being submitted.
Hydraulics advised that the contractor will be using a portion of area in quadrant 'B' outside of jurisdictional areas for staging and laydown.
Hydraulics/HNTB to coordinate with Roadway Design to show a Temporary Construction Easement (TCE) in this area.
HNTB will revise the Permit Drawings and Impact Summary Sheet to incorporate the above noted revisions.

Site 13: Similar to site 12, there were extensive discussions about the proposed Colonial Pipeline impacts.
It was decided that the impacts currently shown would remain but be revised to a Temporary Impact since the wetlands would reestablish themselves post construction.
R/W in quadrant 'D' needs to be revised to encompass the proposed access drive to the HSB right of -L- Sta. 419+00.

Site 14: There were no questions from the Members about this site.

Sheet 19

Misc.: NCDWQ questioned if the outlet velocities from the 4 @ 72" pipes would be erosive.
HNTB advised that these pipes were overflow structures with no upstream or downstream ties to Horsepen Creek.
HNTB added that designs for these pipes is currently being finalized and that if outlet protection was required, it would be added.

Meeting adjourned.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2, Released September 2011)

Project/TIP No.: U-2524C **County(ies):** Guilford

General Project Information

Project No.:	U-2524C		**Project Type:** New Location			**Date:**	2/1/2013
NCDOT Contact:	Marshall W. Clawson, PE		**Contractor / Designer:**		HNTB North Carolina, P.C		
	Address: 1020 Birch Ridge Rd Raleigh, NC 27610			**Address:**	343 E Six Forks Road, Suite 200 Raliegh, NC 27609		
	Phone: 919-707-6713			**Phone:**	919-424-0437		
	Email: mclawson@ncdot.gov			**Email:**	jabyrd@hntb.com		
City/Town:	Greensboro		**County(ies):**	Guilford			
River Basin(s):	Cape Fear		**CAMA County?**	No			
Primary Receiving Water:	Horsepen Creek		**NCDWQ Stream Index No.:**	16-11-5-(0.5) & 16-11-5-(2)			
NCDWQ Surface Water Classification for Primary Receiving Water		**Primary:**	Water Supply III (WS-III)				
		Supplemental:	Nutrient Sensitive Waters (NSW)				
Other Stream Classification:	None						
303(d) Impairments:	mercury (Hg)	biological impairment					
Buffer Rules in Effect	N/A						

Project Description

Project Length (lin. Miles or feet):	2.953 Miles	**Surrounding Land Use:**	Residential / Commercial
	Proposed Project		**Existing Site**
Project Built-Upon Area (ac.)	64.40 ac.		0.00 ac.
Typical Cross Section Description:	The proposed typical section for the main line is a 6-lane divided facility consisting of 3-12' Travel Lanes with 2-12' Paved Shoulders in each direction and a 22' Grassed Median		N/A
Average Daily Traffic (veh/hr/day):	Design/Future. 46,200		Existing. n/a (low ADT)
General Project Narrative:	U-2524C is a portion of the Greensboro Western Urabn Loop from North of SR 2176 (Bryan Blvd) to US 220 (Battleground Ave) The proposed roadway typical section is a 6-lane divided facility with a grassed median The project contains dual bridges over Horsepen Creek and the Horsepen Creek Floodplain and a Single Point Urban Interchange (SPUI) at US 220 (Battleground Ave) A portion of the project in the vicinity of US 220 is located within the "Critical Area" of Lake Brandt and will include five Hazardous Spill Basins One of the five Hazardous Spill Basins has been also designed to function as a Dry Stormwater Detention Basin Stormwater runoff throughout the project is being treated mainly by either the grassed median or grassed typical cut ditches In areas where expressway gutter is required due to fill height, pre-formed scour holes are used to promote sheet flow of the runoff		

References

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: U-2524C County(ies): Guilford

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
8	-L- 283+36 -L-284+25	Wetland		UT to Horsepen Creek		N/A	WS-III, NSW	None	Fill	N/A	Swale
8	-L- 283+60 -L- 286+22	Stream		UT to Horsepen Creek		N/A	WS-III, NSW	None	Culvert	N/A	Swale
8	-L- 287+11 -L- 287+21	Stream		UT to Horsepen Creek		N/A	WS-III, NSW	None	Culvert	N/A	Swale
9	-L- 296+41 -L- 297+18	Stream		UT to Horsepen Creek		N/A	WS-III, NSW	None	Culvert	N/A	Swale
10	-L- 312+92 -L- 313+89	Stream		UT to Horsepen Creek		N/A	WS-III, NSW	None	Culvert	N/A	Swale
10	-L- 314+67 -L- 319+84	Stream	Perennial	Horsepen Creek Tributary D		N/A	WS-III, NSW	None	Culvert	N/A	Swale
10	-L- 320+68 -L- 321+95	Stream	Perennial	Horsepen Creek Tributary D		N/A	WS-III, NSW	None	Fill	N/A	Swale
11	-L- 323+60 -L- 324+44	Stream		UT to Horsepen Creek		N/A	WS-III, NSW	None	Culvert	N/A	Swale
12	-L- 345+01 -L- 345+23	Wetland		UT to Horsepen Creek		N/A	WS-III, NSW	None	Fill	N/A	Swale
12	-L- 345+27 -L- 345+49	Wetland		UT to Horsepen Creek		N/A	WS III, NSW	None	Fill	N/A	Swale
12	L- 345+02 L- 345+88	Stream		UT to Horsepen Creek		N/A	WS-III, NSW	None	Culvert	N/A	Swale
13	-L- 358+78 -L- 360+28	Stream		UT to Horsepen Creek		N/A	WS III, NSW	None	Culvert	N/A	Swale
15	L- 380+47 -L- 381+26	Wetland		Horsepen Creek Tributary C		N/A	WS III, NSW	None	Clearing	N/A	N/A
15	-L- 381+36 -L- 382+37	Wetland		Horsepen Creek Tributary C		N/A	WS-III, NSW	None	Clearing	N/A	N/A
15	-L- 380+76 -L- 382+86	Wetland		Horsepen Creek Tributary C		N/A	WS-III, NSW	None	Clearing	N/A	N/A
15	-L- 387+31 -L- 387+46	Stream	Perennial	Horsepen Creek Tributary C		N/A	WS-III, NSW	None	Excavation	N/A	N/A
15 & 16	-L- 389+65 -L- 398+04	Wetland		Horsepen Creek		N/A	WS-III, NSW	None	Clearing	N/A	N/A

* List all stream and surface water impact locations regardless of jurisdiction or size

Equalizer Pipes to be noted as a minimization of impacts

All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures

Description of Minimization of Impacts or Mitigation

BMP's are implemented where feasable to minimize long-term water quality impacts.

-The majority of deck drains on the Horsepen Creek bridges are tied to closed drainage systems and discharge into hazardous spill basins

-Grass swale treatment is utilized in drainage systems discharging into jurisdictional streams

-Preformed scour holes have been placed near jurisdictional wetlands and streams where practical

-Impacts from steep cross pipe slopes (discharging into jurisdictional wetlands or streams) have been reduced with the use of junction boxes, flat exit pipe slopes, and non-buried upstream inverts

-Hazardous Spill Basins are utilized where the project crosses Horsepen Creek Tributary C and Horsepen Creek BMP's are

-Ditches that discharge directly into wetlands have been designed to "daylight" to zero depth just outside the wetland boundaries to difuse flow and reduce vilocities.

References

Project/TIP No.: U-2524C County(ies): Guilford

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
16 & 19	-L- 399+62 -L- 408+54	Wetland		Horsepen Creek		16-11-5 (0.5)	WS III, NSW	mercury (Hg) & Biological Imp.	Clearing	N/A	N/A
16	-L- 407+78 L- 415+79	Wetland		Horsepen Creek		16-11-5 (0.5)	WS-III, NSW	mercury (Hg) & Biological Imp.	Clearing	N/A	N/A

* List all stream and surface water impact locations regardless of jurisdiction or size
Equalizer Pipes to be noted as a minimization of impacts
All proposed SCMs listed must also be listed under Swales, Preformed Scour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

Project/TIP No.: U-2524C County(ies): Guilford

Swales

Sheet No.	Station (From / To)	Stream Crossing Station	Base Width (ft)	Front Slope (H:V)	Back Slope (H:V)	Drainage Area (ac)	Recommended Treatment Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used
7	-L- 265+87 (LT) -L- 270+50 (LT)	-L- 283+78	0 0	6:1	6 1	0 36	36	313	0 70%	1 3	1 0	1 7	1 1	No
7	-L- 265+87 (M) -L- 270+50 (M)	-L- 283+78	0 0	6:1	5:1	0 81	81	313	0 70%	2 8	1 3	3 6	1 3	No
7	-L- 265+87 (RT) -L- 270+50 (RT)	-L- 283+78	0 0	6:1	6:1	1 41	141	313	0 70%	3 6	1 3	4 5	1 4	No
7	-L- 270+50 (M) -L- 273+72 (M)	-L- 283+78	0 0	6:1	5:1	0 98	98	322	0 70%	3 3	1 3	4 2	1 4	No
7	-L- 270+50 (LT) -L- 279+00 (LT)	-L- 283+78	0 0	6:1	6:1	0 87	87	100	0 70%	1 6	1 1	2 0	1 1	No
7	-L- 273+72 (M) -L- 279+00 (M)	-L- 283+78	0 0	6 1	5 1	0 97	97	528	0 70%	3 3	1 3	4 2	1 4	No
7	-L- 270+50 (RT) -L- 279+00 (RT)	-L- 283+78	0 0	6 1	6 1	0 97	97	100	0 70%	3 3	1 3	4 2	1 4	No
8	-L- 279+00 (LT) -L- 282+50 (LT)	-L- 283+78	0 0	6:1	6:1	0 58	58	350	0 70%	1 0	1 0	1 3	1 0	No
8	-L- 279+00 (M) -L- 282+50 (M)	-L- 283+78	0 0	6:1	6:1	0 66	66	350	0 70%	2 2	1 2	2 8	1 2	No
8	-L- 279+00(RT) -L- 282+50 (RT)	-L- 283+78	0 0	6 1	6 1	0 82	82	350	0 70%	2 1	1 2	2 7	1 2	No
8	-L- 282+50 (M) -L- 285+50 (M)	-L- 283+78	0 0	6:1	6:1	0 31	31	300	0 70%	0 8	0 9	1 1	1 0	No
8	-L- 285+50 (M) -L- 287+50 (M)	-L- 283+78	0 0	6 1	6 1	0 21	21	200	0 70%	0 5	0 8	0 7	0 9	No
9	-L- 291+75(LT) -L- 295+50 (LT)	-L- 296+81	0 0	6:1	6:1	0 73	73	375	1 18%	2 0	1 4	2 5	1 5	No
9	-L- 298+00(LT) -L- 301+88 (LT)	-L- 318+07	0 0	6 1	6:1	1 23	123	388	1 18%	3 1	1 6	3 9	1 6	No
9	-L- 292+00(M) -L- 301+88 (M)	-L- 318+07	0 0	6:1	6:1	1 06	106	988	1 18%	3 1	1 6	4 0	1 7	No
9	-L- 301+88(LT) -L- 306+15 (LT)	-L- 318+07	0 0	6 1	6 1	1 22	122	427	1 18%	3 2	1 6	4 1	1 7	No
9	-L- 301+88(M) -L- 306+15 (M)	-L- 318+07	0 0	6:1	6:1	0 46	46	427	1 18%	1 3	1 3	1 7	1 3	No
9	-L- 302+00 (RT) -L- 306+15 (RT)	-L- 318+07	0 0	6:1	6:1	0 94	94	415	1 18%	2 8	1 5	3 6	1 6	No
10	-L- 306+15(LT) -L- 312+50 (LT)	-L- 318+07	0 0	6:1	6:1	2 30	230	635	1 18%	5 6	1 8	7 1	1 9	No
10	-L- 306+15 (M) -L- 312+50 (M)	-L- 318+07	0 0	6 1	6:1	0 67	67	635	1 18%	2 0	1 4	2 5	1 5	No

☑ YES ☐ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanantion of why design criteria was not met

Additional Comments

Project/TIP No.: U-2524C County(ies): Guilford Page 4 of 6

Swale

Sheet No.	Station (From / To)	Stream Crossing Station	Base Width (ft)	Front Slope (H:V)	Back Slope (H:V)	Drainage Area (ac)	Recommended Treatment Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used
10	-L- 306+15 (RT) -L- 312+00 (RT)	-L- 318+07	0 0	6:1	6:1	1 51	151	585	1 18%	4 6	1 7	5 9	1 8	No
10	-L- 312+50 (M) -L- 315+00 (M)	-L- 318+07	0 0	6:1	6:1	0 27	27	250	1 18%	0 8	1 1	1 0	1 2	No
10	-L- 314+50 (LT) -L- 318+00 (LT)	-L- 318+07	0 0	6:1	6 1	0 77	77	350	1 18%	2 1	1 4	2 7	1 5	No
10	-L- 315+00 (M) -L- 318+00 (M)	-L- 318+07	0 0	6 1	6:1	0 32	32	300	1 18%	0 9	1 1	1 2	1 2	No
10	-L- 318+00 (M) -L- 322+50 (M)	-L- 318+07	0 0	6:1	6 1	0 48	48	450	0 90%	1 2	1 1	1 5	1 2	No
10	-L- 319+54 (RT) -L- 323+05 (RT)	-L- 318+07	0 0	6:1	6:1	0 74	74	351	0 90%	1 6	1 2	2 0	1 3	No
10	-L- 322+50 (LT) -L- 329+10 (LT)	-L- 318+07	0 0	6 1	6 1	1 21	121	660	0 90%	3 6	1 5	4 6	1,6	No
10	-L- 322+50 (M) -L- 329+10 (M)	-L- 318+07	0 0	6:1	6:1	0 78	78	660	0 90%	2 4	1 3	3 1	1 4	No
11	-L- 323+05 (RT) -L- 329+10 (RT)	-L- 318+07	0 0	6 1	6 1	1 50	150	605	0 90%	4 1	1 5	5 2	1 6	No
11	-L- 329+10 (LT) -L- 335+68 (LT)	-L- 318+07	0 0	6:1	6:1	0 91	91	100	0 90%	1 8	1 2	2 3	1 3	No
11	-L- 329+10 (M) -L- 333+30 (M)	-L- 318+07	0 0	6:1	6:1	0 79	79	420	0 90%	2 7	1 4	3 5	1 5	No
11	-L- 333+30 (M) -L- 335+68 (M)	-L- 318+07	0 0	9 1	4 1	0 45	45	238	0 90%	1 6	1 2	2 0	1 2	No
12	-L- 335+68 (M) -L- 338+50 (M)	-L- 345+25	0 0	10 1	4 1	0 56	56	282	0 99%	1 9	1 2	2 5	1 3	No
12	-L- 338+50 (M) -L- 342+00 (M)	-L- 345+25	0 0	6:1	5:1	0 63	63	350	0 99%	2 2	1 3	2 8	1 4	No
12	-L- 335+68 (RT) -L- 338+50 (RT)	-L- 345+25	0 0	6 1	6 1	2 05	205	250	0 99%	6 1	1 7	7 8	1 8	No
12	-L- 338+50 (RT) -L- 341+97 (RT)	-L- 345+25	0 0	6:1	6:1	0 12	12	347	0 99%	0 4	0 8	0 5	0 9	No
12	-L- 335+68 (LT) -L- 344+01 (LT)	-L- 345+25	0 0	6:1	6 1	1 53	153	833	0 99%	3 0	1 4	3 8	1 5	No
12	-L- 341+97 (RT) -L- 344+95 (RT)	-L- 345+25	0 0	6:1	6:1	0 83	83	298	0 99%	2 2	1 3	2 8	1 4	No
12	-L- 342+00 (M) -L- 345+34 (M)	-L- 345+25	0 0	6:1	6:1	0 55	55	334	0 99%	1 9	1 2	2 4	1 3	No
							0							

☑ YES ☐ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanantion of why design criteria was not met

Additional Comments

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)
8	-L- 287+50	PFSH	Class 'B'	1 28	Pipe	15	5 8	2 0
9	L- 297+80	PFSH	Class 'B'	0 09	Pipe	15	0 4	0 8
15	-L- 381+05	PFSH	Class 'B'	9 04	Pipe	18	9 8	2 4
15	-L- 382+34	PFSH	Class 'B'	0 42	Pipe	15	2 0	1 5

☑ YES ☐ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox (2008), NCDOT Standard Details, or FHWA HEC-14 (July 2006), been met and verified, as applicable? If No, provide further explanantion of why design criteria was not met

Additional Comments

- The Preformed Scour Hole at Sta 381+05 is utilized at the outlet of a Hazardous Spill Basin / Stormwater Basin

* Refer to the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), NCDOT Standard Details, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria

Project/TIP No.: U-2524C **County(ies):** Guilford

Other Stormwater Control Measures

Sheet No.	Station	SCM Type	Drainage Area (ac)	Required / Minimum Treatment			Design Treatment		All Design Criteria Met?
15	-L- 380+38	Hazardous Spill Basin	9 04	2yr, tc=10 min, td= 5 min storm runoff + 10,000 gal (cf)	23996 00	cf	23996 00	cf	Yes
15	-L- 387+14	Hazardous Spill Basin		Not Designed for Stormwater Treatment		cf		cf	
16	-L- 398+53	Hazardous Spill Basin		Not Designed for Stormwater Treatment		cf		cf	
16	-L- 408+98	Hazardous Spill Basin		Not Designed for Stormwater Treatment		cf		cf	
16	-L- 412+09	Hazardous Spill Basin		Not Designed for Stormwater Treatment		cf		cf	

Additional Comments

A previously proposed HSB right of -L- Sta 419+61 has been removed from the project due to the presence of crystalline rock in the excavation area In order to construct the basin to design elevations, the rock would have required blasting which was deemed hazardous due to its proximity with the relocated Colonial Gas Pipeline Several alternate locations were investigated and found not feasible due to either environmental, topographic, Right-of-Way or Gas Line proximity constraints

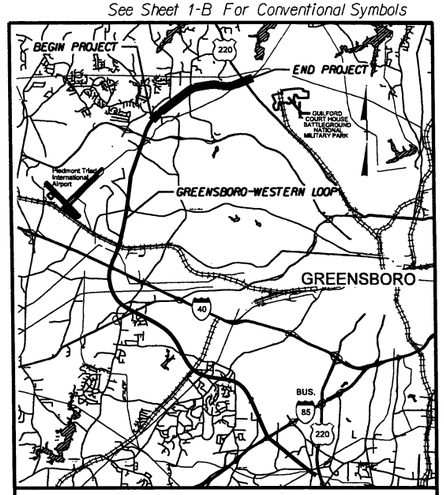
* Equalizer Pipes to be noted as a minimization of impacts

09/08/99

TIP PROJECT: U-2524C

CONTRACT: C203197

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524C	1	

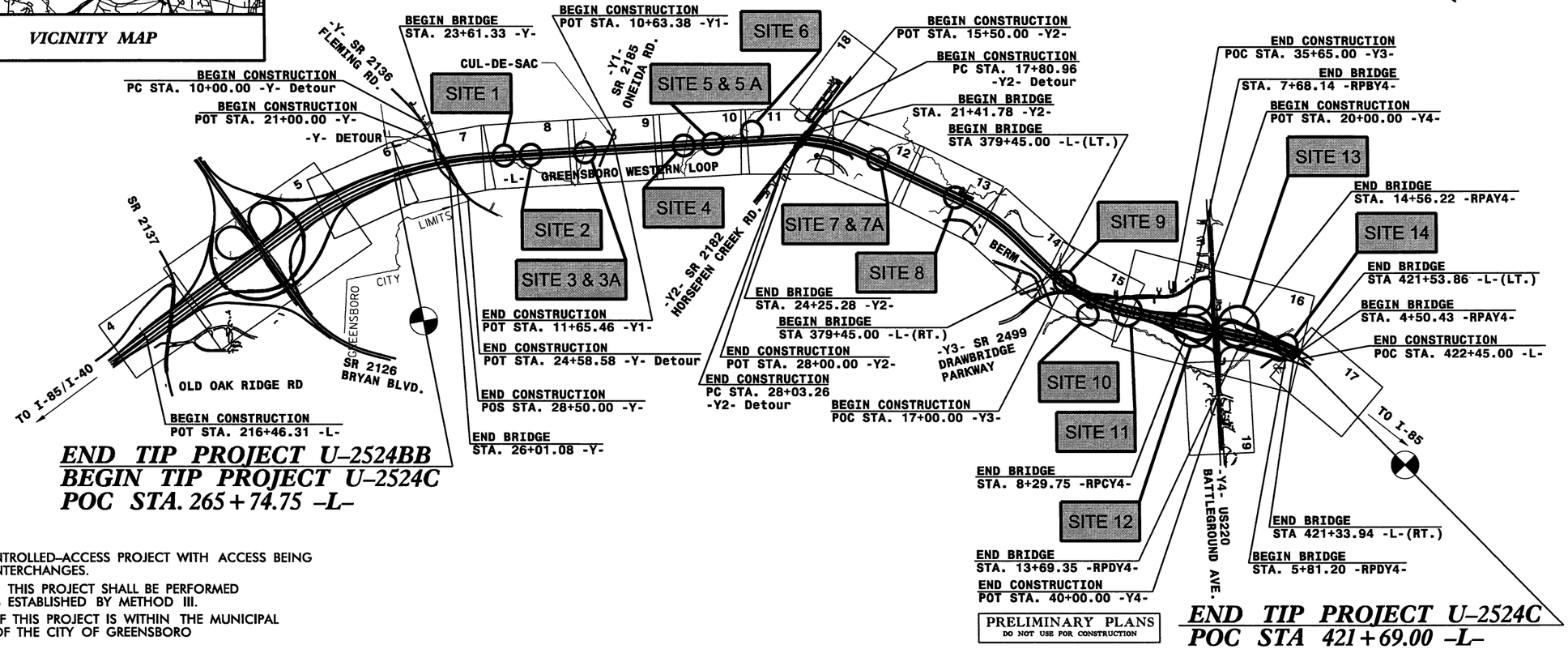
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34820.2.18	NHF-0708(52)	P.E.
34820.2.18	NHF-0708(52)	R.O.W./UTILITY

Permit Drawing Sheet 1 of 39

LOCATION: *GREENSBORO–WESTERN LOOP FROM NORTH OF SR 2176 (BRYAN BOULEVARD) TO US 220 (BATTLEGROUND AVENUE).*

TYPE OF WORK: *GRADING, PAVING, CULVERTS, DRAINAGE, STRUCTURES, SIGNING, ITS, TRAFFIC SIGNAL AND RETAINING WALLS.*

WETLAND & STREAM IMPACTS



END TIP PROJECT U–2524BB
BEGIN TIP PROJECT U–2524C
POC STA. 265+74.75 –L–

END TIP PROJECT U–2524C
POC STA 421+69.00 –L–

NOTES:
THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO

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 2013 = 35,113
ADT 2035 = 46,200
DHV = 11 %
D = 55 %
T = 9 % *
V = 70 MPH
CLASSIFICATION: FREEWAY
4% TTST DUAL 5%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U–2524C = 2.158 MILES
LENGTH STRUCTURES TIP PROJECT U–2524C = 0.795 MILES
TOTAL LENGTH OF TIP PROJECT U–2524C = 2.953 MILES

PLANS PREPARED BY: PARSONS RALEIGH, NORTH CAROLINA FOR THE DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 23, 2011

LETTING DATE: SEPTEMBER 17, 2013

EDWARD S. ROBBINS, P.E.
PROJECT ENGINEER

DAVID GARRETT
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 1
SITE 2
SITE 3 & 3A
SITE 4
SITE 5 & 5A
SITE 6
SITE 7 & 7A
SITE 8
SITE 9
SITE 10
SITE 11
SITE 12
SITE 13
SITE 14

PERMIT DRAWINGS
SHEET 2 OF 39

5/14/99
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U2524C_PRM_QUAD.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-AA
RW SHEET NO.	

HYDRAULICS ENGINEER

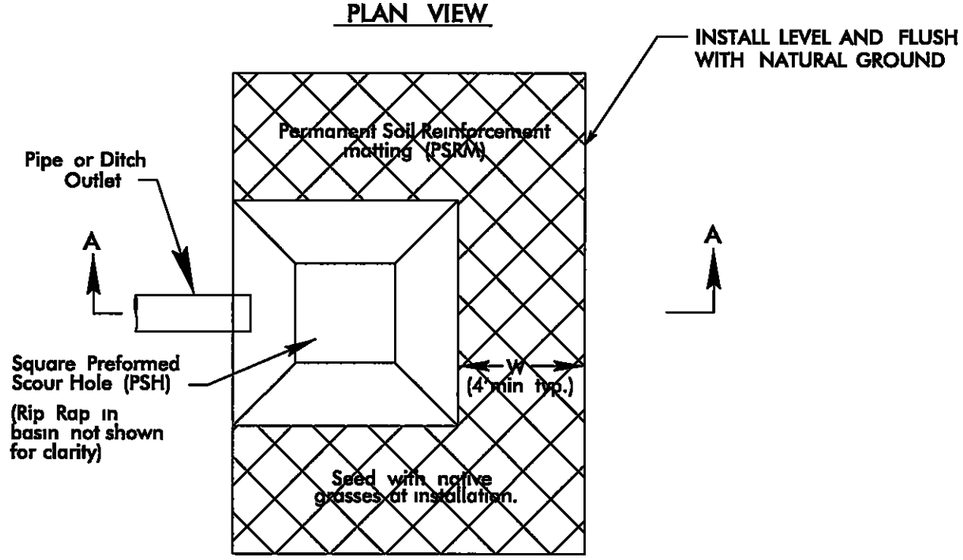
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 3 OF 39

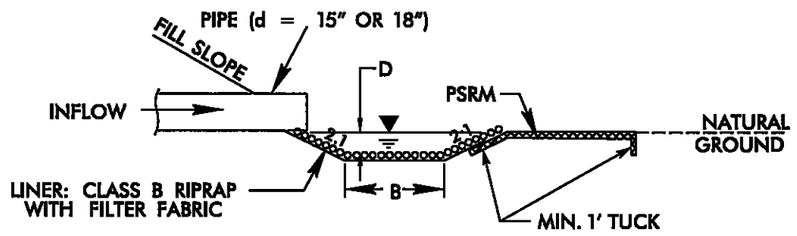
PREFORMED SCOUR HOLE

*NOT TO SCALE

PLAN VIEW



SECTION A–A



REVISIONS 8/17/99

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 4 OF 39

PARSONS
RALEIGH, NORTH CAROLINA

REVISIONS
8/17/99

MATCH LINE -L- STA 281+00 SEE SHEET 7

MATCH LINE -L- STA 295+00 SEE SHEET 9

SITE 1

SITE 2

NAD 83

N 58° 18' 02" E

285+00

295+00

LANDFILL

DEBRIS

M/TEL QUARRY

ISBLKD

GR/PARKING

TOE PROTECTION SEE DETAIL

BEGIN EXPWY GUTTER -L- 7+00

END EXPWY GUTTER 1+50

PDE

FSL

FSM

2GI

BDO

15" CSP w/ ELBOW

30" RCP-III

15" RCP-III

15" CLASS-IV

30" CSP

48" RCP-III

PREFORMED SCOUR HOLE DATA
Q10= 5.8 cfs

2-15" CSP w/ 2 ELBOWS

PREFORMED SCOUR HOLE
B=5' W=5'
D=2' d=0.5'
SEE DETAIL SHEET 2-AA

CL 'B' RIP RAP

CL 'I' RIP RAP

NO RIP RAP TO BE PLACED IN STREAM BED

RIP RAP AT EMBANKMENT SEE DETAIL 'I'

SCALE
1" = 40'

JB

JS

PDE

DETAIL G
TOE PROTECTION
(Not to Scale)

Type of Liner : CL 'B' RIPRAP

DETAIL I
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liners: 30 TONS CL 'I' Rip-Rap
Geotextile SC sy

-L- STA. 287+03 TO 287+30 (RT)

-L- 282+75 to 283+75 LT.
-L- 283+95 to 286+25 LT.
-L- 288+00 to 291+00 LT.
-L- 283+00 to 287+15 RT.

LEGEND

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

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 22 & 23 FOR -L- PROFILE
SEE GEOTECHNICAL REPORT FOR BURIED LANDFILL. SEE SHEET GR-18 THRU GR-43

2/20/01 PM
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PLANS PREPARED BY
PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 5 OF 39

8/17/99

REVISIONS

MATCH LINE -L- STA 281+00 SEE SHEET 7

MATCH LINE -L- STA 295+00 SEE SHEET 9

SITE 1

SITE 2

NAD 83

N-58° 18' 02.2" E

SCALE
1" = 40'

PREFORMED SCOUR HOLE DATA
Q10= 58 cfs

PREFORMED SCOUR HOLE
B=8' W=5'
D=2' d=0.5'
SEE DETAIL SHEET 2-AA

NO RIP RAP TO BE PLACED IN STREAM BED

RIP RAP AT EMBANKMENT SEE DETAIL

TOE PROTECTION SEE DETAIL

BEGIN RIP RAP OUTLET -L- 50'

BEGIN EXPAN. OUTLET -L- 50'

LANDFILL

DEBRIS

ISOLATED WETLAND

GR/PARKING

DETAIL G
TOE PROTECTION
(Not To Scale)

Type of Liner CL. 'B' RIPRAP

-L- 282+75 to 283+75 LT.
-L- 283+95 to 284+25 LT.
-L- 288+00 to 291+00 LT.
-L- 283+00 to 287+15 RT.

DETAIL H
RIP RAP AT EMBANKMENT
(Not To Scale)

Type of Liner 30 TONS CL 'A' Rip-Rap
Geotextile 30 lb

-L- STA. 287+03 TO 287+30 (RT)

LEGEND

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

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 22 & 23 FOR -L- PROFILE
SEE GEOTECHNICAL REPORT FOR BURIED LANDFILL. SEE SHEET GR-18 THRU GR-43

2/28/47 PM
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5/14/99

PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

880
860
840
820
800

LT
LOD
DITCH
SW
SW
DITCH
LOD
RT
PI
PI
PI

PREPARED IN
PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 7 OF 39

REVISIONS
8/17/99

MATCH LINE -L- STA 295+00 SEE SHEET 8

MATCH LINE -L- STA 309+00 SEE SHEET 10

295+00

300+00

305+00

NAD 83

SITE 3A

SCALE
1" = 40'

HW

PDE

TOE PROTECTION
SEE DETAIL

SITE 3

SCALE
1" = 40'

36'

PDE

CL. 7 RIP RAP

NO RIP RAP TO BE PLACED IN STREAM BED

DETAIL G
TOE PROTECTION
(Not to Scale)

Natural Ground

Fill Slope

Geotextile + Stone

d = 1 F..

*Type of Liner - CL. 7 RIPRAP

-L- 296+00 to 297+50 LT.
-L- 296+45 to 297+55 RT.

BDO

18" CSP w/ 1 ELBOW

2GI

FSL

24" RCP-III

2GI-A

FSM

30" RCP-III

15" RCP-IV

END EXPWY. GUTTER +00 15" RCP-IV

15" CSP w/ 2 ELBOWS

36" RCP-III

PREFORMED SCOUR HOLE
B=5' W=5'
D=2' d=0.5'
SEE DETAIL SHEET 2-AA

PREFORMED SCOUR HOLE DATA
Q10= 3.8 cfs

TRANSITION STONE

S 12° 44' 36" E

S 5° 25' 01" E

N 52° 18' 02" E

S 11° 52' 37" E

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 28 FOR -Y1- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PARSONS
RALEIGH, NORTH CAROLINA

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 8 OF 39

8/17/99

REVISIONS

MATCH LINE -L- STA 295+00 SEE SHEET 8

MATCH LINE -L- STA 309+00 SEE SHEET 10

SITE 3A

SITE 3

SCALE
1" = 40'

HW

PDE

TOE PROTECTION SEE DETAIL

SAG SUMP GUTTER 1.00' 15" RCP-IV

15" CSP w/ 2 ELBOWS

PREFORMED SCOUR HOLE
B=5' W=0'
D=2; d=0.5'
SEE DETAIL SHEET 2-AA

PREFORMED SCOUR HOLE DATA
Q10= 3.8 cfs

CL. 1' RIP RAP

NO RIP RAP TO BE PLACED IN STREAM BED

DETAIL G
TOE PROTECTION
(Not to Scale)

Natural Ground
d
3d
FW Slope
Geotextile Fabric
d = 1 Ft.
Type of Liner - CL. 1' RIPRAP
-L- 296+00 to 297+50 LT.
-L- 296+45 to 297+55 RT.

S 12°48'36" E

S 12°28'07" E 198.55'

S 11°52'34" E

N 82°18'02" E

18" CSP w/ ELBOW

24" RCP-III

30" RCP-III

15" RCP-IV

TRANSITION STONE

LEGEND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 28 FOR -Y1- PROFILE

NAD '83

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USERNAME

PREPARED BY
PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 9 OF 39

8/17/99
REVISIONS

MATCH LINE -L- STA 309+00 SEE SHEET 9

MATCH LINE -L- STA 323+00 SEE SHEET 11

NAD 83

SITE 4

SITE 5

SITE 5A

SCALE 1" = 40'

SCALE 1" = 40'

SCALE 1" = 40'

SCALE 1" = 40'

310+00

315+00

320+00

PROPOSED SINGLE-FACED CONCRETE BARRIER

4' LAT. BASE DITCH SEE DETAIL STREAM BANKS ONLY

RETAINING WALL

CULVERT CHANNEL IMPROVEMENTS (UPSTREAM)

TOE PROTECTION SEE DETAIL

C TOE PROTECTION SEE DETAIL

BOLTED SHUT

BEGIN EXPWY GUTTER +00

END EXPWY GUTTER -00

CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM)

4' LAT. BASE DITCH SEE DETAIL

N 52°18'02" E

DETAIL G
TOE PROTECTION
(Not to Scale)

Type of Liner = CL. F

-L- 312+50 to 313+00 RT.
-L- 313+00 to 313+40 LT.
-L- 318+50 to 319+25 LT.

DETAIL
LATERAL BASE DITCH
(Not to Scale)

Type of Liner: CL "F"

-L- 314+90 to 319+00 RT.
-L- 320+74 to 321+08 LT.

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-W FOR RETAINING WALL ENVELOPE
SEE SHEET 23 & 24 FOR -L- PROFILE

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PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 10 OF 39

REVISIONS
8/17/99

MATCH LINE -L- STA 309+00 SEE SHEET 9

MATCH LINE -L- STA 323+00 SEE SHEET 11

CULVERT CHANNEL IMPROVEMENTS (UPSTREAM)

CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM)

NAD '83

SCALE 1" = 40'

SCALE 1" = 40'

SCALE 1" = 40'

SCALE 1" = 40'

SITE 4

SITE 5

SITE 5A

PROPOSED SINGLE-FACED CONCRETE BARRIER

4' LAT. BASE DITCH SEE DETAIL STREAM BANKS ONLY

RETAINING WALL

CULVERT CHANNEL IMPROVEMENTS (UPSTREAM)

TOE PROTECTION SEE DETAIL

CULVERT CHANNEL IMPROVEMENTS (DOWNSTREAM)

TOE PROTECTION SEE DETAIL

4' LAT. BASE DITCH SEE DETAIL

N 52-18-02 E

DETAIL G
TOE PROTECTION
(Not to Scale)

Type of Liner = CL. F

-L- 312+80 to 313+00 RT.
-L- 313+00 to 313+60 LT.
-L- 318+50 to 319+25 LT.

DETAIL
LATERAL BASE DITCH
(Not to Scale)

*When B is < 6.0'

Type of Liner = CL. F

-L- 314+90 to 319+00 RT.
-L- 320+74 to 321+08 LT.

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-W FOR RETAINING WALL ENVELOPE
SEE SHEET 23 & 24 FOR -L- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #4 ELEVATION = 842.24
N = 866881.E = 1735802
-BL- STATION 52+07 252' RIGHT
R/R SPIKE SET IN 18" PINE

BM #3 ELEVATION = 868.80
N = 867585 E = 1735490
-BL- STATION 55+44 378' LEFT
R/R SPIKE SET IN TRIPLE POPLAR
(12", 18", & 24")

-L- SR 2135 ONETA RD.

PROPOSED GRADE

EXISTING GROUND

BERM 'V' DITCH LT.

'V' DITCH LT.

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.090I
DRAINAGE AREA = 193 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 150 CFS
DESIGN HW ELEVATION = 840.96 FT.
100 YEAR DISCHARGE = 160 CFS
100 YEAR HW ELEVATION = 841.26 FT.
OVERTOPPING FREQUENCY = > 500 YRS
OVERTOPPING DISCHARGE = N/A CFS
OVERTOPPING ELEVATION = 844.00 FT.

PI=292+50.000
EL = 853.00

PI=295+40.000
EL = 850.00

PI=301+75.000
EL = 845.50

PI=301+90.000
EL = 845.50

PI=302+30.000
EL = 852.50

PI=303+40.000
EL = 852.00

PI=305+30.000
EL = 852.50

-L1- = 1.800%

-L2- = 1.125%

-L3- = 3.382%

-L4- = 1.250%

-L5- = 1.875%

-L6- = 0.300%

BM #7 ELEVATION = 812.54
N = 867978 E = 1736736
-BL- STATION 67+78 67' RIGHT
R/R SPIKE SET IN 26" OAK

CURVE #1 HYDRAULIC DATA
DESIGN DISCHARGE = 460 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 818.4 FT
BASE DISCHARGE = 500 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 818.8 FT
OVERTOPPING DISCHARGE = 820 CFS
OVERTOPPING FREQUENCY = 200 YRS
OVERTOPPING ELEVATION = 826.1 FT

NOTE
SEE SHEETS 8.3 & 10 FOR -L- PLAN

CURVE #2 HYDRAULIC DATA
DESIGN DISCHARGE = 440 CFS
DESIGN FREQUENCY = 50 YRS
DESIGN HW ELEVATION = 806.2 FT
BASE DISCHARGE = 460 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 806.6 FT
OVERTOPPING DISCHARGE = ? CFS
OVERTOPPING FREQUENCY = 2500 YRS
OVERTOPPING ELEVATION = 826.1 FT

SITE 4

SITE 5

-L- BASE DITCH RT.

-L- = 0.300%

-L1- = 4.962%

PI=316+50.000
EL = 797.50

PI=317+50.000
EL = 797.50

PI=319+00.000
EL = 796.76

PVI = 319+00
EL = 821.08
VC = 800'
K = 316

PERMIT DRAWINGS
SHEET 11 OF 39

5/28/99

2:14:33 PM U2524C_RDY_PSH_22.dgn

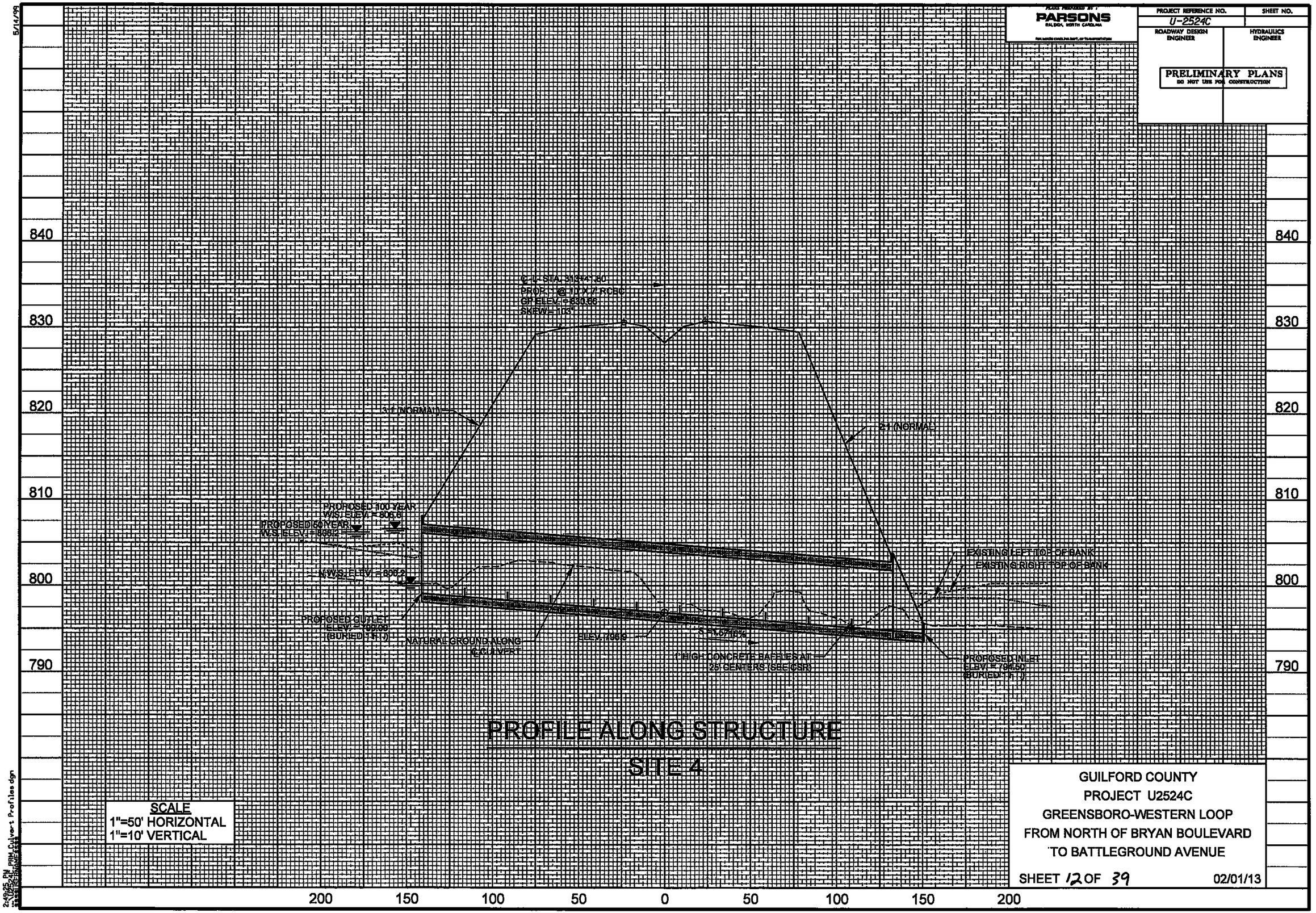
5/14/99

PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROFILE ALONG STRUCTURE
SITE 4

SCALE
1"=50' HORIZONTAL
1"=10' VERTICAL

GUILFORD COUNTY
PROJECT U2524C
GREENSBORO-WESTERN LOOP
FROM NORTH OF BRYAN BOULEVARD
TO BATTLEGROUND AVENUE

SHEET 12 OF 39 02/01/13

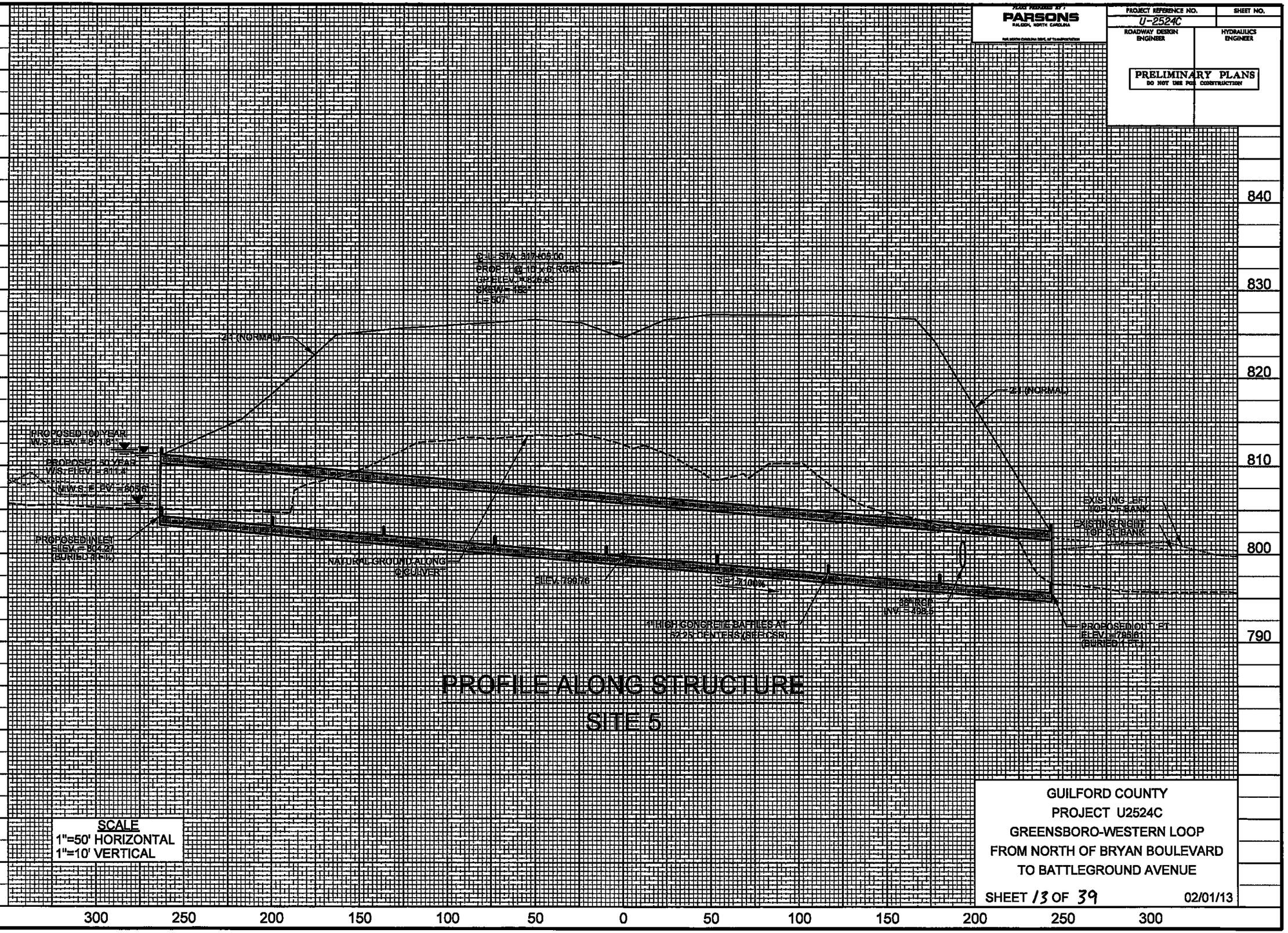
2:49:25 PM
FILENAME=s:\...\PRM Culvert Profiles.dgn

5/14/13

PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROFILE ALONG STRUCTURE
SITE 5

SCALE
1"=50' HORIZONTAL
1"=10' VERTICAL

GUILFORD COUNTY
PROJECT U2524C
GREENSBORO-WESTERN LOOP
FROM NORTH OF BRYAN BOULEVARD
TO BATTLEGROUND AVENUE

SHEET 13 OF 39 02/01/13

2:49:27 PM
U2524_PRM_Culvert Profiles.dgn
USER NAME = ssss

PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	11
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 14 OF 39

8/17/99

REVISIONS

SITE 6

SCALE
1" = 40'

MATCH LINE -Y2- STA 19+00 SEE SHEET 18

MATCH LINE -L- STA 323+00 SEE SHEET 10

MATCH LINE -L- STA 337+00 SEE SHEET 12

NAD 83

325+00

330+00

FILL HEAD CUT w CL 'I' RIP RAP

CL 'B' RIP RAP

BOLTED SHUT

N 52° 18' 02" E

24" RCP-III

15" RCP-III

18" CSP w 1 ELBOW

24" CSP w 1 ELBOW

REMOVE

PROPOSED RETAINING WALL

CONC. DITCH

CL 'B' RIP RAP
EST. 3 TONS
EST. 10 SYGF

RIP RAP

PUE

RETAIN

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-S OR CURVE DATA
SEE SHEET 2-X FOR RETAINING WALL ENVELOPE
SEE SHEET 24 FOR -L- PROFILE
SEE SHEET 29 FOR -Y2- PROFILE
SEE SHEET 2-U FOR -Y2- DETOUR PLAN
SEE SHEET 35 FOR -Y2- DETOUR PROFILE

2-10-03 PM
\Sheets\U2524C_RDY_PSH_11A.dgn

PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	11
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 15 OF 39

8/17/99

REVISIONS

SITE 6

SCALE 1"=40'

MATCH LINE -L- STA 323+00 SEE SHEET 10

MATCH LINE -Y2- STA 19+00 SEE SHEET 18

MATCH LINE -L- STA 337+00 SEE SHEET 12

NAD 83

325+00

330+00

335+00

N 52°18'02"E

PROPOSED RETAINING WALL

CONC. DITCH

CL "B" RIP RAP
EST. 3 TONS
EST. 10 SYDS

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-S OR CURVE DATA
SEE SHEET 2-X FOR RETAINING WALL ENVELOPE
SEE SHEET 24 FOR -L- PROFILE
SEE SHEET 29 FOR -Y2- PROFILE
SEE SHEET 2-U FOR -Y2- DETOUR PLAN
SEE SHEET 35 FOR -Y2- DETOUR PROFILE

2:\WP_PM\U2524C_ROY_PSH_11B.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 16 OF 39

PARSONS

REVISIONS

8/17/99

SITE 7

SITE 7A

SCALE 1" = 40'

NAD 83

NO RIP RAP TO BE PLACED IN STREAM BED

TOE PROTECTION SEE DETAIL

CL. 'I' RIP RAP

PROPOSED RETAINING WALL

BALL FIELD

BALL FIELD

WOODS

BOULDER

340+00

345+00

350+00

N 8°15'24.3" E

MATCH LINE -L- STA 337+00 SEE SHEET 11

MATCH LINE -L- STA 351+00 SEE SHEET 13

DETAIL G
TOE PROTECTION
(Not to Scale)

Natural Ground — d — 2H:1V — Fill Slope — Geotextile Fabric

d = 1 Ft.

Type of Liner CL. 'I'

-L- 344+50 to 345+75 LT.
-L- 345+85 to 346+50 LT.

NOTE:
SEE SHEET 2-S OR CURVE DATA
SEE SHEET 2-X FOR RETAINING WALL ENVELOPE
SEE SHEET 24 & 25 FOR -L- PROFILE

LEGEND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 17 OF 39

8/17/99

REVISIONS

SITE 7

SITE 7A

SCALE 1" = 40'

NAD 83

BALL FIELD

BALL FIELD

BLEACHERS

NO RIP RAP TO BE PLACED IN STREAM BED

TOE PROTECTION SEE DETAIL

CL. 'I' RIP RAP

PROPOSED RETAINING WALL

N 8°15'24.3" E

MATCH LINE -L- STA 337+00 SEE SHEET 11

MATCH LINE -L- STA 351+00 SEE SHEET 13

NOTE:
SEE SHEET 2-S OR CURVE DATA
SEE SHEET 2-X FOR RETAINING WALL ENVELOPE
SEE SHEET 24 & 25 FOR -L- PROFILE

DETAIL G
TOE PROTECTION
(Not to Scale)

Natural Ground
d
Class I Rip Rap
Stone
Geotextile Fabric
d = 1 Ft.
Type of Liner CL. 'I'

-L- 344+50 to 345+75 LT.
-L- 345+85 to 346+50 LT.

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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5/14/99

PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

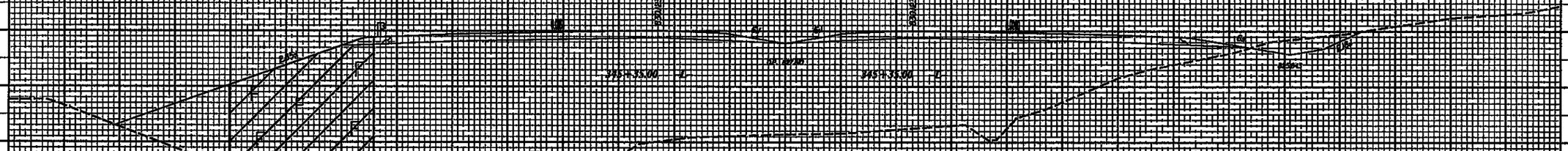
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

840

820

800

780



WETLAND CROSS SECTION
SITE 7

LEGEND
TIDE NOT ESTABLISHED IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

100 80 60 40 20 0 20 40 60 80 100

GUILFORD COUNTY
PROJECT U2524C
GREENSBORO-WESTERN LOOP
FROM NORTH OF BRYAN BOULEVARD
TO BATTLEGROUND AVENUE

SHEET 18 OF 39 10/15/12

9/9/14 AM
U2524C_PRH_Wetland_XSC.dgn

PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 19 OF 39

8/17/99
REVISIONS

SITE 8

SCALE
1" = 40'

NAD 83

MATCH LINE -L- STA 351+00 SEE SHEET 12

MATCH LINE -L- STA 365+00 SEE SHEET 14

355+00

360+00

365+00

CL 'B' RIP RAP
EST. 1 TONS
EST. 5 SYGF

CL. 'B' RIP RAP
EST. 2 TONS
EST. 7 SYGF

NO RIP RAP TO BE PLACED IN STREAM BED

CL 'I' RIP RAP

54" RCP-IV

PROPOSED RETAINING WALL

END EXPWY. GUTTER +25

BEGIN EXPWY. GUTTER +50

N 81° 15' 24.3" E

18" RCP-III

18" RCP-IV

15" CSP

15" CSP w/ 1 ELBOW

BDO

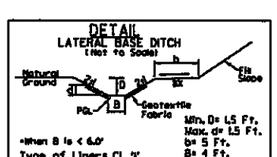
LAT. 'V' DITCH
SEE DETAIL
EST. 27 TONS
EST. 60 SYFF

4' LAT. BASE DITCH
SEE DETAIL
EST. 205 TONS
EST. 455 SYFF

RETENTION POND

WILDFLOWER PLANTING

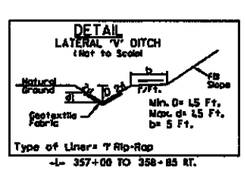
DETAIL
LATERAL BASE DITCH
(Not to Scale)



*When B is < 6.0'
Type of Liner= CL 'I'

-L- 359+00 to 363+00 RT.

DETAIL
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= 'I' Rip-Rap

-L- 357+00 TO 358+85 RT.

LEGEND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 2-W FOR RETAINING WALL ENVELOPE
SEE SHEET 25 FOR -L- PROFILE

2:32:01 PM
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PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 20 OF 39

8/17/99

REVISIONS

MATCH LINE -L- STA 351+00 SEE SHEET 12

MATCH LINE -L- STA 365+00 SEE SHEET 14

SITE 8

SCALE
1" = 40'

NAD 83

355+00

360+00

365+00

CL 'B' RIP RAP
EST. 1 TONS
EST. 5 SYGF

CL 'B' RIP RAP
EST. 2 TONS
EST. 7 SYGF

CL 'I' RIP. RAP

NO RIP RAP TO BE PLACED IN STREAM BED

54" RCP-IV

END DRWY GUTTER +25

PROPOSED RETAINING WALL

BEGIN DRWY GUTTER +50

N 81°15'24.3" E

18" RCP-III

18" RCP-III

54" RCP-IV

BEGIN DRWY GUTTER +30

END DRWY GUTTER +00

18" CSP W/ 1 ELBOW

BDD

LAT. 'A' DITCH
SEE DETAIL
EST. 27 TONS
EST. 60 SYFF

4' LAT. BASE DITCH
SEE DETAIL
EST. 205 TONS
EST. 455 SYFF

RETENTION POND

WILDFLOWER DR.

DETAIL
LATERAL BASE DITCH
(Not to Scale)

Natural Ground
Geotextile Fabric
Fill Slope
PGL
*When B is < 6.0'
Type of Liner* CL 'I'
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
b= 5 Ft.
B= 4 Ft.

-L- 359+00 to 363+00 RT.

DETAIL
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground
Geotextile Fabric
Fill Slope
Type of Liner* 'I' Rip-Rap
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
b= 5 Ft.

-L- 357+00 TO 358+65 RT.

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 2-W FOR RETAINING WALL ENVELOPE
SEE SHEET 25 FOR -L- PROFILE

2:32:07 PM
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PROJECT REFERENCE NO. U-2524C | SHEET NO. 15

RW SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

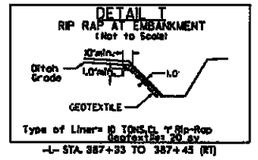
PERMIT DRAWINGS
SHEET 21 OF 39

PARSONS
RALEIGH, NORTH CAROLINA

8/17/99

REVISIONS

DETAIL T
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 10 TONS CL "I" Rip-Rap
Geotextile= 20 SY
-L- STA. 387+33 TO 387+45 (RT)

NAD 83

MATCH LINE -L- STA 379+00 SEE SHEET 14

MATCH LINE -L- STA 393+00 SEE SHEET 16

SITE 9

SITE 10

SITE 11

380+00

385+00

20+00

25+00

WORK BRIDGE

RETENTION POND

CL "C" RIP RAP
EST. 4 TONS
EST. 17 SYGF
HAZARDOUS SPILL BASIN

CL "B" RIP RAP

HAZARDOUS SPILL BASIN

HW w/SLUICE GATE

HW w/FLAP GATE

RIP RAP AT EMBANKMENT SEE DETAIL T

S 36°54'32.0" W

S 55°18'30.8" E

S 18°26'13.2" E

N 71°33'46.8" E

PREFORMED SCOUR HOLE DATA
Q10= 9.8 cfs

PREFORMED SCOUR HOLE DATA
Q10= 2.0 cfs

PREFORMED SCOUR HOLE
B=5' W=5'
D=2' d=0.5'
SEE DETAIL SHEET 2-AA

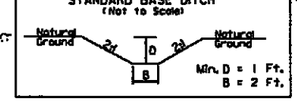
PREFORMED SCOUR HOLE
B=5' W=5'
D=2' d=0.5'
SEE DETAIL SHEET 2-AA

1' BASE DITCH
SEE DETAIL
So=1.1200%

SCALE
1"=40'

LEGEND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES HAND CLEARING
- DENOTES MECHANIZED CLEARING

DETAIL
STANDARD BASE DITCH
(Not to Scale)



-L- 387+50 RT.

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 26 FOR -L- PROFILE
SEE SHEET 30 FOR -Y3- PROFILE
SEE SHEET 16 FOR BRIDGE SKETCH

2:33:31 PM
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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PARSONS
RALEIGH, NORTH CAROLINA

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 22 OF 39

REVISIONS
8/17/99

DETAIL T
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liners to TENS.CL. 'I' Rip-Rap
Geotextile 20 sy
-L- STA. 387+33 TO 387+45 (RT)

NAD 83

MATCH LINE -L- STA 379+00 SEE SHEET 14

MATCH LINE -L- STA 393+00 SEE SHEET 16

SITE 9

SITE 10

SITE 11

WORK BRIDGE

S 18° 26' 13.2" E

N 71° 33' 46.8" E

S 35° 18' 30.8" E

S 36° 54' 52.0" E

PREFORMED SCOUR HOLE DATA
Q10= 9.8' cfs

PREFORMED SCOUR HOLE
B=5' W=5'
D=2' d=0.5'
SEE DETAIL SHEET 2-AA

PREFORMED SCOUR HOLE DATA
Q10= 2.0 cfs

PREFORMED SCOUR HOLE
B=5' W=5'
D=2' d=0.5'
SEE DETAIL SHEET 2-AX

RIP RAP AT EMBANKMENT SEE DETAIL T

HAZARDOUS SPILL BASIN

CL 'B' RIP RAP

HW w/SLUICE GATE

HW w/FLAP GATE

RETAIN

REMOVE

RETENTION POND

SCALE
1" = 40'

DETAIL
STANDARD BASE DITCH
(Not to Scale)

Min. D = 1 Ft.
B = 2 Ft.

-L- 387+80 RT.

LEGEND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES HAND CLEARING
- DENOTES MECHANIZED CLEARING

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 26 FOR -L- PROFILE
SEE SHEET 30 FOR -Y3- PROFILE
SEE SHEET 16 FOR BRIDGE SKETCH

2:32:48 PM
U2524C_RDY_PSH_15B.dgn

PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	16A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 23 OF 39

8/17/99

REVISIONS

MATCH LINE -L- STA 393+00 SEE SHEET 15

MATCH LINE -L- STA 407+00 SEE SHEET 16A

SITE 11

SITE 12

PROPOSED STAGING AREA

PROPOSED STAGING AREA

WORK BRIDGE

WORK BRIDGE

B

C

NAD 83

N 53° 59' 00.0" E

N 56° 06' 20.7" E

N 68° 28' 00.7" E

N 80° 35' 54.9" E

N 81° 34' 55.8" E

REMOVE EXIST. CB COLLAR & EXTEND EXIST. 15" RCP

REMOVE CB CONSTRUCT JB W/MH COVER

REMOVE

COLLAR & EXTEND EXIST. 48" RCP

CL "I" RIP RAP EST. 26 TONS EST. 30 SYGF

CL "B" RIP RAP EST. 3 TONS EST. 11 SYGF

CL "B" RIP RAP (NO RIP RAP TO BE PLACED IN STREAM BED)

HW w/SLUICE GATE

HW w/FLAP GATE

HAZARDOUS SPILL BASIN

HORSEPEN CR

RIP RAP

RETENTION POND

PROPOSED R/W

PROPOSED C.P.C. LINE 4 - 92"

PROPOSED P.P.L.

GAS TO E

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 26 & 27 FOR -L- PROFILE
SEE SHEET 30 FOR -Y3- PROFILE
SEE SHEET 31 FOR -Y4- PROFILE
SEE SHEET 33 FOR RPBY4 PROFILE
SEE SHEET 34 FOR RPCY4 PROFILE

LEGEND
- DENOTES FILL IN WETLAND
- HC DENOTES HAND CLEARING
- DENOTES MECHANIZED CLEARING

2:33:02 PM
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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	16A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 24 OF 39

PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA

REVISIONS
8/17/99

SITE 12

PROPOSED STAGING AREA

SITE 11

PROPOSED STAGING AREA

WORK BRIDGE

WORK BRIDGE

B

C

MATCH LINE -L- STA 393+00 SEE SHEET 15

MATCH LINE -L- STA 407+00 SEE SHEET 16A

N 53° 59' 00.0" E

N 58° 05' 20.3" E

N 68° 08' 20.7" E

N 68° 28' 00.7" E

N 80° 35' 54.9" E

N 80° 35' 54.9" E

NAD 83

REMOVE EXIST. CB COLLAR & EXTEND EXIST. 15" RCP

REMOVE CB CONSTRUCT JB (WITH) COVER

REMOVE 15" RCP

COLLAR & EXTEND EXIST. 15" RCP

REMOVE

CL "I" RIP RAP EST. 26 TONS EST. 100 SYCF

CL "I" RIP RAP EST. 26 TONS EST. 100 SYCF

CL "B" RIP RAP EST. 3 TONS EST. 11 SYCF

CL "B" RIP RAP (NO RIP RAP TO BE PLACED IN STREAM BED)

HW w/SLUICE GATE

HW w/FLAP GATE

HAZARDOUS SPILL BASIN

HORSEPEN CR

PROPOSED R/W

PROPOSED C.P.C. LINE 4-32"

PROPOSED R/W

PROPOSED R/W

PROPOSED R/W

PROPOSED R/W

PROPOSED P.P.L. W

PROPOSED P.P.L. HC

PROPOSED P.P.L. H

GAS TO

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 26 & 27 FOR -L- PROFILE
SEE SHEET 30 FOR -Y3- PROFILE
SEE SHEET 31 FOR -Y4- PROFILE
SEE SHEET 33 FOR RPBY4 PROFILE
SEE SHEET 34 FOR RPCY4 PROFILE

LEGEND
- DENOTES FILL IN WETLAND
- HC DENOTES HAND CLEARING
- DENOTES MECHANIZED CLEARING

2:33:18 PM
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PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	16B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 25 OF 39

REVISIONS
8/17/99

SCALE 1" = 40'

SITE 13

SITE 14

SITE 12

DETAIL S
DECK DRAIN DISSIPATOR PAD
(Not to Scale)

DETAIL T
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 2D TONS CL 'I' Rip-Rap
Geotextile= 50 SY

FROM -L- STA. 412+10 TO STA. 414+90 (LT)
FROM -L- STA. 417+15 TO STA. 420+40 (LT)
FROM -L- STA. 411+25 TO STA. 414+20 (RT)
FROM -L- STA. 416+60 TO STA. 418+80 (RT)

MATCH LINE -L- STA 407+00 SEE SHEET 16A

MATCH LINE -L- STA 421+00 SEE SHEET 17

SEE UTILITIES PERMIT DRAWINGS

LEGEND
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES EXCAVATION IN WETLAND
- DENOTES HAND CLEARING

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 26 & 27 FOR -L- PROFILE
SEE SHEET 31 FOR -Y4- PROFILE
SEE SHEET 32 FOR RPAY4 PROFILE
SEE SHEET 34 FOR RPCY4 PROFILE
SEE SHEET 35 FOR RPDY4 PROFILE
SEE SHEET 36 FOR SPAY4, SPCY4 & SPDY4 PROFILE

12524C_RDY_PSH_16BA.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	T6B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 26 OF 39

PARSONS
RALEIGH, NORTH CAROLINA

SCALE 1" = 40'

SITE 13

SITE 14

SITE 12

DETAIL S
DECK DRAIN DISSIPATOR PAD
(Not to Scale)

DETAIL T
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liners 20 TONS CL "I" Rip-Rap
Geotextile SQ SY
-L- STA. 415+50 (RT)

Type of Liners Class "B" Rip-Rap

FROM	-L-	STA. 412+10	TO STA. 414+90	(LT)
FROM	-L-	STA. 417+15	TO STA. 420+40	(LT)
FROM	-L-	STA. 411+25	TO STA. 414+20	(RT)
FROM	-L-	STA. 416+60	TO STA. 418+80	(RT)

MATCH LINE -L- STA 407+00 SEE SHEET 16A

MATCH LINE -L- STA 421+00 SEE SHEET 17

WORK BRIDGE

HAZARDOUS SPILL BASIN

CL "I" RIP RAP

NO RIP RAP IS TO BE PLACED IN THE STREAM BED

SEE UTILITIES PERMIT DRAWINGS

DECK DRAIN DISSIPATOR PAD SEE DETAIL S

RIP RAP AT EMBANKMENT SEE DETAIL T

LEGEND
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES EXCAVATION IN WETLAND
- HC HC DENOTES HAND CLEARING

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 26 & 27 FOR -L- PROFILE
SEE SHEET 31 FOR -Y4- PROFILE
SEE SHEET 32 FOR RPAY4 PROFILE
SEE SHEET 34 FOR RPCY4 PROFILE
SEE SHEET 35 FOR RPDY4 PROFILE
SEE SHEET 36 FOR SPAY4, SPCY4 & SPDY4 PROFILE

NAD 83

REVISIONS

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PLANS PREPARED BY
PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	19
RW SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 27 OF 39

8/17/99

REVISIONS

MATCH LINE -Y4- STA 35+00 SEE SHEET 16

NAD 83

SITE 12

LEGEND
DENOTES FILL IN WETLAND

NOTE:
SEE SHEET 31 FOR -Y4- PROFILE

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PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWINGS
SHEET 28 OF 39

8/17/99

REVISIONS

MATCH LINE -Y4- STA 35+00 SEE SHEET 16

NAD '83

SITE 12

LEGEND
DENOTES FILL IN WETLAND

NOTE:
SEE SHEET 31 FOR -Y4- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SW #8 ELEVATION = 766.86'
N = 866350.1 E = 1742398
=BL= STATION 15+68 1,285' RIGHT
R/R SPIKE SET IN 20" PINE

STA 379+45 -L-
BEGIN BRIDGE

SITE 9

-L-

-L- Y3 DRAWBRIDGE PKWY. (SR 2499)

PROPOSED GRADE

-L- 0.50000'

EXISTING GROUND

APPROXIMATE BRIDGE ELEV. = 782'

5' GUIDE RAIL (TYP)

SLOPE (TYP) NORMAL TO EP (OUTSIDE EP)

830 820 810 800 790 780 770 760 750 740

376 377 378 379 380 381 382 383 384 385 386 387 388 389 390

SW #9 ELEVATION = 819.53'
N = 871979.1 E = 1745971
=BL= STATION 153+31 2,077' LEFT
R/R SPIKE SET IN 22" OAK

SITE 11

SITE 12

PROPOSED GRADE

-L- 0.50000'

PROPOSED BRIDGE

EXISTING GROUND

APPROXIMATE BRIDGE ELEV. = 798'

NOTE:
SEE SHEETS 14, 15 & 16 FOR -L- PLAN

820 810 800 790 780 770 760 750 740 730

390 391 392 393 394 395 396 397 398 399 400 401 402 403 404

PERMIT DRAWINGS
SHEET 29 OF 39

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 13

BM #10 ELEVATION = 762.62'
N = 870459.8 E = 1748504
-BL- STATION 160+48 94' LEFT
R/R SPIKE SET IN 10" MAPLE

BM #11 ELEVATION = 770.80
N = 868485.6 E = 1746694
-BL- STATION 166+35 216' RIGHT
R/R SPIKE SET IN 32" OAK

-L-

C.S.X. 80' (LEFGROUND) AVE.

PROPOSED GRADE

PROPOSED BRIDGE

0.050007

APPROACHWORK
BRIDGE ELEV. = 755.7'

EXISTING GROUND

APPROACHWORK
BRIDGE ELEV. = 755.7'

0.050007

0.032467

EXIST. 2'-6" CMP

EXIST. 2'-6" CMP

BM #12 ELEVATION = 748.98'
N = 870859.1 E = 1746857
-BL- STATION 174+63 122' LEFT
LARGE HWL SET IN 12" GUM

BM #15 ELEVATION = 806.64'
N = 869,750 E = 1747183
-BL- STATION 179+77 197' RIGHT
R/R SPIKE SET IN 26" MAPLE

STA 421+53.86 -L- LT
STA 421+93.94 -L- RT
END BRIDGE

END TIP PROJECT U-2524C
POC STA #21+00.00 -L-
EL. = 781.85'

PROPOSED GRADE

PROPOSED BRIDGE

0.050007

PVI = 425+00
EL. = 780.78
800' V.C.
K = 295

EXISTING GROUND

END CONSTRUCTION U-2524C
POC STA #22+50.00 -L-

2:1 SLOPES (TYP.)
NORMAL TO CL
(GUIDE RAIL)

0.032467

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 6225	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 751.6	FT
BASE DISCHARGE	= 7362	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 752.4	FT
OVERTOPPING DISCHARGE	= ----	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	=	FT
DATE OF SURVEY	= 06-26-98	
W.S. ELEVATION AT DATE OF SURVEY	= 742.1	FT

NOTE:
SEE SHEET 16 & 17 FOR -L- PLANS

PERMIT DRAWINGS
SHEET 30 OF 39

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PLANS PREPARED BY
PARSONS
RALEIGH, NORTH CAROLINA
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

780
760
740
720

16.7' CLEARING LIMITS

WETLAND

WETLAND CROSS SECTION
SITE 12

LEGEND
DENOTES TAN IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

GUILFORD COUNTY
PROJECT U2524C
GREENSBORO-WESTERN LOOP
FROM NORTH OF BRYAN BOULEVARD
TO BATTLEGROUND AVENUE

SHEET 31 OF 39 10/15/12

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5/14/99

PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

780

760

740

720

16.0' CLEARING LIMITS

16.0' CLEARING LIMITS

Existing Rock

Existing Rock

WETLAND CROSS SECTION
SITE 12

LEGEND
DENOTES LOCATION OF WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

GUILFORD COUNTY
PROJECT U2524C
GREENSBORO-WESTERN LOOP
FROM NORTH OF BRYAN BOULEVARD
TO BATTLEGROUND AVENUE

SHEET 32 OF 39 10/15/12

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PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

780

760

740

720

SITE 13

SITE 12

WETLAND CROSS SECTION
SITE 12 / SITE 13

LEGEND
IDENTIFIES WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

GUILFORD COUNTY
PROJECT U2524C
GREENSBORO-WESTERN LOOP
FROM NORTH OF BRYAN BOULEVARD
TO BATTLEGROUND AVENUE

SHEET 33 OF 39 10/15/12

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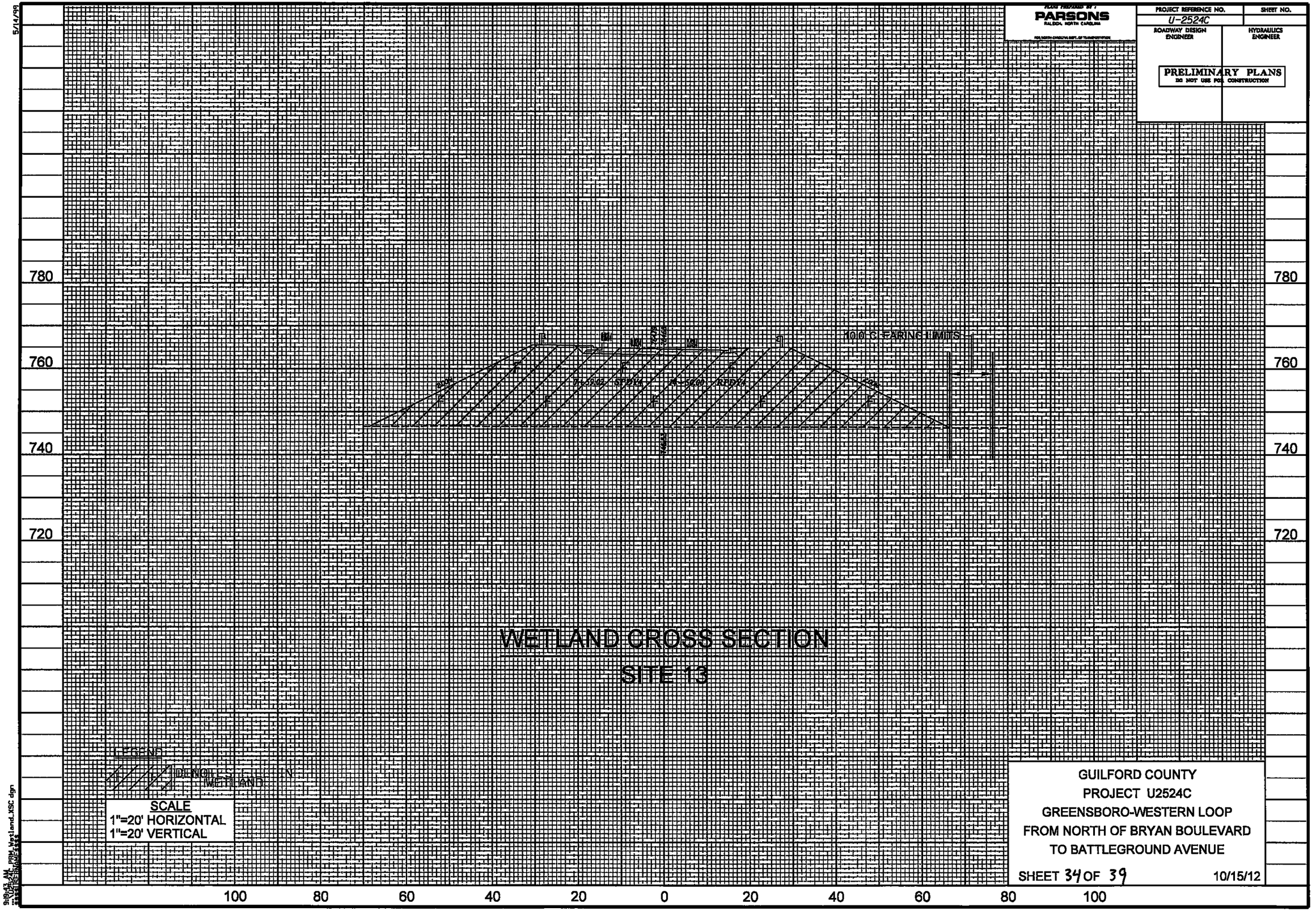
PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



WETLAND CROSS SECTION
SITE 13

LEGEND
IDENTIFIES WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

GUILFORD COUNTY
PROJECT U2524C
GREENSBORO-WESTERN LOOP
FROM NORTH OF BRYAN BOULEVARD
TO BATTLEGROUND AVENUE

SHEET 34 OF 39 10/15/12

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PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA

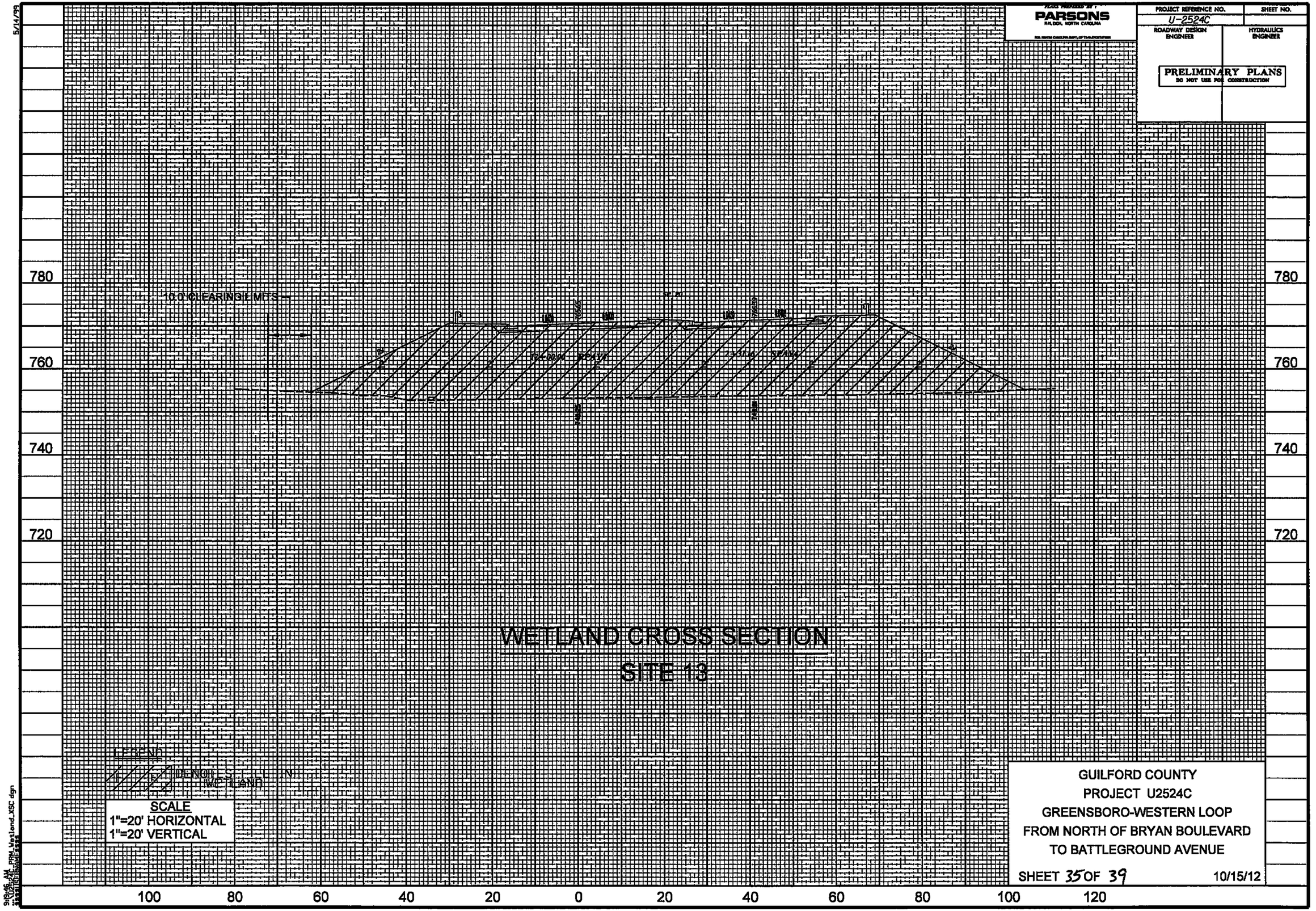
PROJECT REFERENCE NO.	SHEET NO.
U-2524C	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETLAND CROSS SECTION
SITE 13


780
760
740
720
100.0 CLEARING LIMITS
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5/14/99

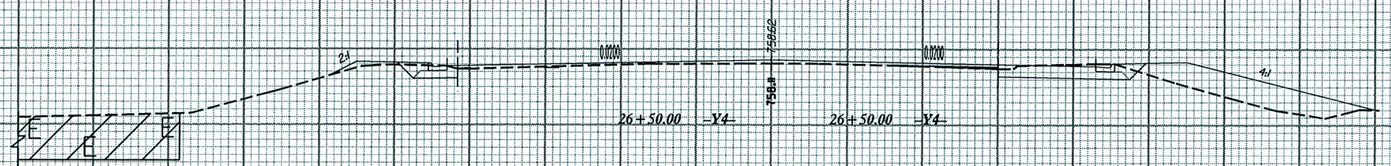
PLANS PREPARED BY :
PARSONS
RALEIGH, NORTH CAROLINA
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



WETLAND CROSS SECTION
SITE 13

LEGEND

E E DENOTES EXCAVATION IN WETLAND

SCALE
1"=20' HORIZONTAL
1"=20' VERTICAL

GUILFORD COUNTY
PROJECT: U2524C
GREENSBORO-WESTERN LOOP
FROM NORTH OF BRYAN BOULEVARD
TO BATTLEGROUND AVENUE

SHEET 36 OF 39 10/15/12

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PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
7	LONELL MITCHELL	3528 LEWISTON RD. GREENSBORO, NC 27410
8	HUGH THOMAS MITCHELL, JR	4518 HAVENWOOD DR. GREENSBORO, NC 27407
9	WILLIAM H. SMITH	2011 KARLINGDALE DR. GREENSBORO, NC 27455
10	DAVID H. GRIFFIN, SR.	2022 SHIMMER DR. JAMESTOWN, NC 27282
12	THELMA S. BURRITT	1412 FLEMING RD. GREENSBORO, NC 27410
13	CORAL JAMES JUDD	5525 DOBSON RD. GREENSBORO, NC 27410
18	RUTH P. JESSUP	3600 LEWISTON RD. GREENSBORO, NC 27410
19	GERALD C. PARKER	212 W. FRIENDLY AVE. GREENSBORO, NC 27401
20	JEROME MORRISON CAIN	PO BOX 1057 LINCOLN, MT 59639
21	C.A.P. STANLEY	2855 HORSE PEN CREEK RD. GREENSBORO, NC 27410
30	JEAN LINDSAY BERRY	C/O FRED BERRY GREENSBORO, NC 27402
31	NCDOT	PO BOX 14996 GREENSBORO, NC 27415
34	MISSION BATTLEGROUND PARK DST	433 E. LAS COLINAS BLVD SUITE 980 IRVING, TX 75039
35	CITY OF GREENSBORO	PO BOX 3136 GREENSBORO, NC 27402
37	NCDOT	PO BOX 14996 GREENSBORO, NC 27415
38	CITY OF GREENSBORO	PO BOX 3136 GREENSBORO, NC 27402
39	BVF KENSINGTON LIMITED PARTNERSHIP	ONE BEACON ST. BOSTON, MA 02108
41	CITY OF GREENSBORO	PO BOX 3136 GREENSBORO, NC 27402

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS HIGHWAY BLDG - PO BOX 25201 RALEIGH, NORTH CAROLINA 27611	Subject:	Bridge impacts			Project:	U-2524C
					Guilford	County
	Prepared by:	DSS	Date:	8/28/12	Station:	407+73.35
	Checked by:	WKF	Date:	10/4/2012	Str. #:	1
					Printed On: 10/4/2012	

Proposed Bridges (New Location, there are no existing bridges)

The new structure is unsimilar dual structures with 30 spans each. Total Length is 4,194' Right Lane and 4,204' Left Lane. The superstructure is 72" and 74" prestressed girders, and steel plate girders with 108" webs. The substructure is end bents on piles with post and beam bents on 4'-0" and 5'-0" drilled shafts. Ramp "A" is 9 spans with Total Length of 1,006' using 72" prestressed girder superstructure, end bents on piles and post and beam bents on 4'-0" drilled shafts. Ramp "B" is 3 spans with Total Length of 332'-10" using 72" prestressed girders, end bent on piles and post and beam bents on 3'-6" drilled shafts. Ramp "C" is 4 spans with Total Length of 413' using 72" prestressed girders, end bent on piles and post and beam bents on 3'-6" drilled shafts. Ramp "D" is 8 spans with Total Length of 844'-3" using 54" and 72" prestressed girders, end bents on piles and post and beam bents on 3'-6" drilled shafts.

Impact of Bents:

Left Lane:

# of Shafts	95	@ Shaft Diam. =	48	in.
# of Shafts	41	@ Shaft Diam. =	60	in.

Area = #Bents * # Shafts * π(Diam./2)^2 = 287833 in^2 **0.05 acres**

Right Lane:

# of Shafts	87	@ Shaft Diam. =	48	in.
# of Shafts	41	@ Shaft Diam. =	60	in.

Area = #Bents * # Shafts * π(Diam./2)^2 = 273356 in^2 **0.04 acres**

Ramp "A"

# of Shafts	26	@ Shaft Diam. =	48	in.

Area = #Bents * # Shafts * π(Diam./2)^2 = 47048 in^2 **< 0.01 acres**

Ramp "B"

# of Shafts	9	@ Shaft Diam. =	42	in.

Area = #Bents * # Shafts * π(Diam./2)^2 = 12469 in^2 **< 0.01 acres**

Ramp "C"

# of Shafts	12	@ Shaft Diam. =	42	in.

Area = #Bents * # Shafts * π(Diam./2)^2 = 16625 in^2 **< 0.01 acres**

Ramp "D"

# of Shafts	26	@ Shaft Diam. =	42	in.

Area = #Bents * # Shafts * π(Diam./2)^2 = 36022 in^2 **< 0.01 acres**

Total Area = 673353 in^2 **0.11 acres for all permanent bents.**

Permit Drawing
Sheet 38 of 39

A temporary workbridge is needed to construct the middle span of the proposed structure. See the attached general drawing for location.

Impact of Temporary Workbridge over Wetlands:

Temp. Bridge Length	7250	ft.		
# Bents	241	Pile Diam.	30	in.
# of Piles/Bent	5			

Area = #Bents * # Piles * π * Pile Dia.^{2}/4= 851764 in^2 **0.14 acres for all temporary bents.**

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW Impacts (ac)	Temp SW Impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp (ft)	Natural Stream Design (ft)
1	-L- 283+36 TO 286+34	48" RCP	0 10	-	-	0 02	-	0 03	0 01	385	13	-
	-L- 286+11 TO 286+22	Bank Stabilization	-	-	-	-	-	-	-	11	-	-
2	-L- 287+09 TO 287+21	30" RCP	-	-	-	-	-	0 01	0 01	13	14	-
	-L- 287+00 TO 287+30	Bank Stabilization	-	-	-	-	-	-	-	11	-	-
	-L- 287+11 TO 287+17	Bank Stabilization	-	-	-	-	-	-	-	32	-	-
3	-L- 296+40 TO 297+18	36" RCP	-	-	-	-	-	0 03	0 01	345	20	-
	-L- 296+44 TO 296+52	Bank Stabilization	-	-	-	-	-	-	-	10	-	-
3A	-L- 296+82 TO 297+00	Roadway	-	-	-	-	-	0 01	-	30	-	-
4	-L- 312+90 TO 313+91	1 @ 10' x 7' RCBC	-	-	-	-	-	0 06	0 01	331	17	-
	-L- 312+95 TO 313+13	Bank Stabilization	-	-	-	-	-	-	-	30	-	-
5	-L- 314+67 TO 321+11	1 @ 10' x 6' RCBC	-	-	-	-	-	0 10	0 01	688	20	-
	-L- 314+72 TO 315+05	Bank Stabilization	-	-	-	-	-	-	-	37	-	-
5A	-L- 320+85 TO 321+95	Roadway	-	-	-	-	-	0 01	-	90	-	-
	-L- 320+78 TO 321+04	Bank Stabilization	-	-	-	-	-	-	-	25	-	-
6	-L- 323+60 TO 324+44	-	-	-	-	-	-	0 04	0 01	60	15	-
7	-L- 345+01 TO 345+88	30" RCP	0 01	-	-	-	-	0 03	0 01	227	10	-
	-L- 345+74 TO 345+85	Bank Stabilization	-	-	-	-	-	-	-	11	-	-
7A	-L- 345+02 TO 345+49	Roadway	-	-	-	-	-	0 01	-	57	-	-
8	-L- 358+77 TO 360+29	54" RCP	-	-	-	-	-	0 05	0 01	412	20	-
	-L- 359+48 TO 359+57	Bank Stabilization	-	-	-	-	-	-	-	13	-	-
9	-L- 380+47 TO 382+86	Bridge	-	-	-	0 02	0 40	-	-	-	-	-
10	-L- 387+31 TO 387+46	Bank Stabilization	-	-	-	-	-	0 01	-	16	-	-
11	-L- 389+65 TO 398+04	Bridge	-	-	-	0 19	1 44	-	-	-	-	-
12	-L- 399+62 TO 408+51	Bridge & Roadway	2 57	-	-	0 36	0 96	-	-	-	-	-
13	-L- 407+72 TO 415+79	Hazardous Spill Basins, Bridge Roadway & 66" RCP	1 24	-	0 34	0 64	1 58	0 03	0 01	204	20	-
	-L- 409+67 TO 409+73	Bank Stabilization	-	-	-	-	-	-	-	12	-	-
	-L- 410+77 TO 410+89	Bank Stabilization	-	-	-	-	-	-	-	12	-	-
	-L- 414+83 TO 415+16	Bank Stabilization	-	-	-	-	-	-	-	22	-	-
14	-L- 419+09 TO 420+79	Bridge	0 11	-	-	-	-	-	-	-	-	-
TOTALS:			4 03	-	0 34	1 23	4 38	0 42	0 09	3084	149	-

Notes: Permanent Wetland Impacts from bridge construction = 0 11 acres

Temporary Wetland Impacts from work bridge construction = 0 14 acres

See Sheet _____ of _____ for a detailed breakdown of the proposed bridge construction impacts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
U-2524C

Legend

- Stream Impact Location
- Stream
- Wetlands -NCDOT Permanent Impacts
- Wetlands - NCDOT Delineation
- Wetland - CPC Temporary Excavation
- Wetlands - CPC Mechanized Clearing

2b

2a

HC5
HC4
W4
Battleground Ave.
W2
W3
HC2
HC3
W1
I1
HC1

Utility Permit Drawing
Sheet 1 of 6

N

725 362.5 0 725 Feet

Base Map: NCDOT July 25, 2012 Site Meeting

Figure 2
Detailed Site Drawing
WEC Project No. 02-041901

Wetland & Ecological Consultants, LLC
Woodstock, Georgia

Colonial Pipeline Company
Lines 3 and 4 Relocation
Western Urban Loop
Guilford County, NC

Legend

- Stream Impact Location
- Stream
- Wetlands -NCDOT Permanent Impacts
- Wetlands - NCDOT Delineation
- Wetland - CPC Temporary Excavation
- Wetlands - CPC Mechanized Clearing

HC2

I1

HC1

Utility Permit Drawing
Sheet 2 of 6

N

500 250 0 500 Feet

Base Map: NCDOT July 25, 2012 Site Meeting

Figure 2a
Detailed Site Drawing
WEC Project No. 02-041901

Wetland & Ecological Consultants, LLC
Woodstock, Georgia

Colonial Pipeline Company
Lines 3 and 4 Relocation
Western Urban Loop
Guilford County, NC

Legend

- Stream Impact Location
- Stream
- Wetlands -NCDOT Permanent Impacts
- Wetlands - NCDOT Delineation
- Wetland - CPC Temporary Excavation
- Wetlands - CPC Mechanized Clearing

HC5
HC4
W4
Battleground Ave.
W2
W3
HC2
HC3
W1

N

Utility Permit Drawing
Sheet 3 of 6

500 250 0 500 Feet

Base Map: NCDOT July 25, 2012 Site Meeting

Figure 2b
Detailed Site Drawing
WEC Project No. 02-041901

Wetland & Ecological Consultants, LLC
Woodstock, Georgia

Colonial Pipeline Company
Lines 3 and 4 Relocation
Western Urban Loop
Guilford County, NC

SURFACE WATER AND WETLAND PERMIT IMPACT SUMMARY

Site No.	CPC Lines 3 and 4	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
HC1	36" and 32"	60" flume with temp fill									40	
HC2	36" and 32"										20	
HC3	36" and 32"										20	
HC4	36" and 32"										20	
HC5	36" and 32"										20	
I1	36" and 32"	60" flume with temp fill									40	
W1	36" and 32"					0.20						
W2	36" and 32"				0.79							
W3	36" and 32"					0.12						
W4	36" and 32"					0.01						
TOTALS:			0.00	0.00	0.79	0.33	0.00	0.00	0.00	0	160	0

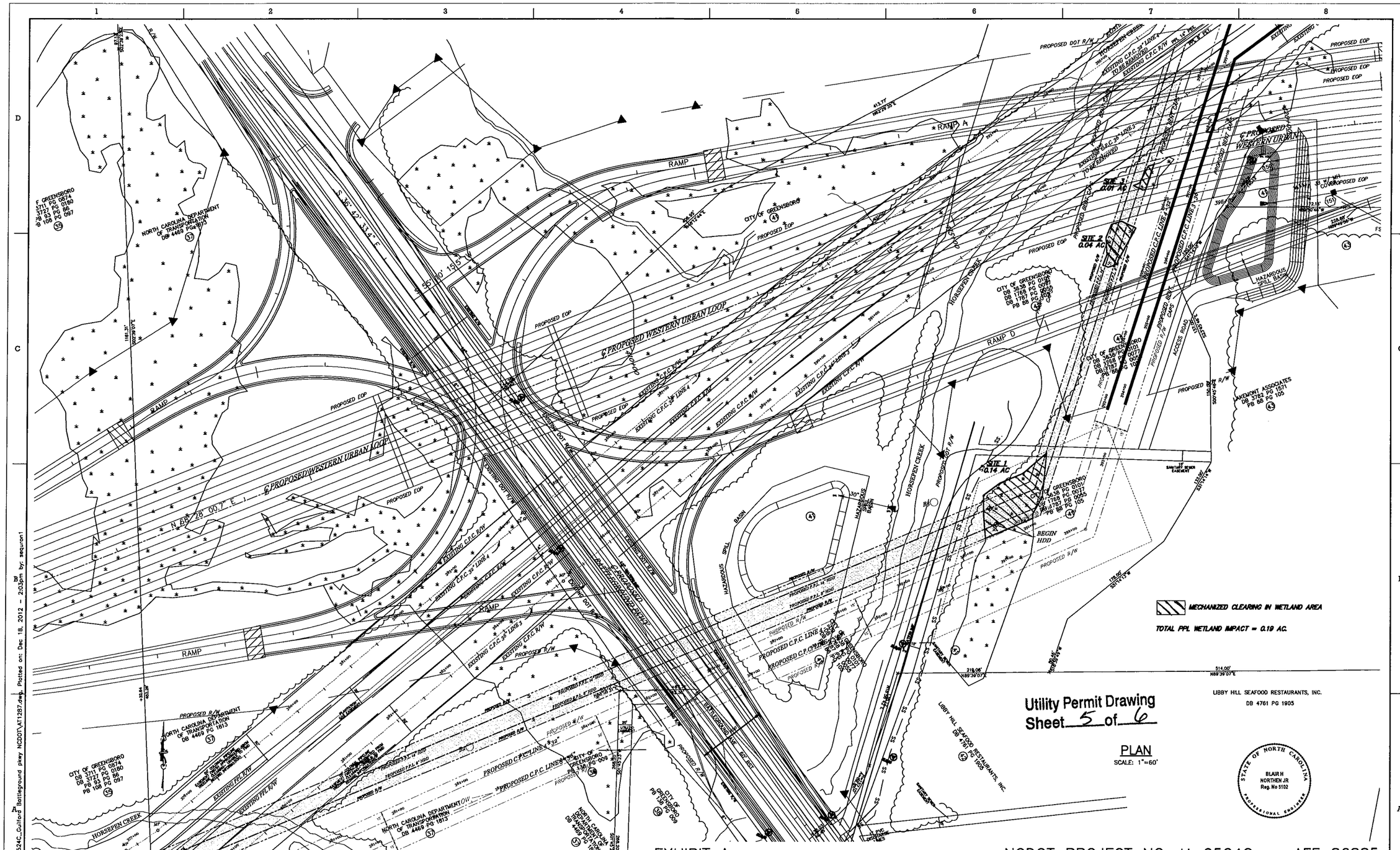
NOTE: Temporary impacts to streams HC1 and I1 are for access, temporary impacts to HC2, HC3, HC4 and HC5 are for excavation for pipelines 3 and 4 removal. Mechanized clearing in wetlands W1, W3 and W4 are for the new ROW and pipelines.

COLONIAL PIPE LINE COMPANY
for NCDOT Project U2524-C
Guilford County, N.C.

Utility Permit Drawing
Sheet 4 of 6

SHT OF

ATN Revised 3/31/05



Utility Permit Drawing
Sheet 5 of 6

PLAN
SCALE: 1"=60'

STATE OF NORTH CAROLINA
BLAIR H NORTHEN JR
Reg. No 5102
PROFESSIONAL ENGINEER

EXHIBIT A

NCDOT PROJECT NO. U-2524C AFE 86885

NO.	DATE	DRAWN	CHECKED	DESCRIPTION	APP.
REVISIONS					

KINDER MORGAN
SOUTHEAST REGION
PLANTATION PIPE LINE COMPANY

DATE: 12-11-12 SCALE: SHOWN CHECKED:
DRAWN: RSS PLOT SCALE: 1 : 1 APPROVED:

RELOCATE PPL 8" AND 14" MAIN LINES
NCDOT BATTLEGROUND/LOOP INTERCHANGE
WETLAND PERMITTING
SEC. 16-B, ROW 482,483 GUILFORD CO, NC

D-AT1287 REVISION 00
SHEET: 1 OF 1

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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	-L- 413+82 TO 415+18	PPL Petro. ROW & WS	-	-	-	0.14	-	-	-	-	-	-
2	-L- 416+90 TO 417+53	PPL Petro. ROW	-	-	-	0.04	-	-	-	-	-	-
3	-L- 417+65 TO 418+01	PPL Petro. ROW	-	-	-	0.01	-	-	-	-	-	-
TOTALS:			0	0	0	0.19	0	0	0	0	0	0

Notes:

Utility Permit Drawing
Sheet 6 of 6

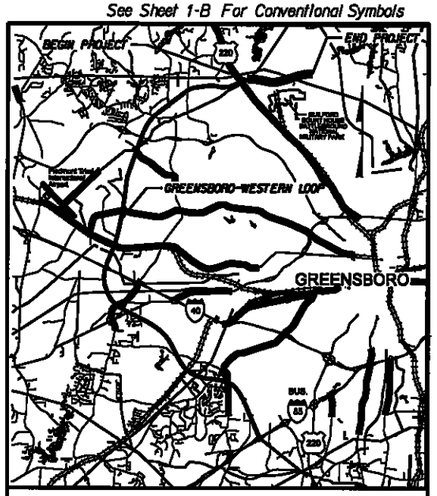
PLANTATION PIPE LINE COMPANY
14" and 8" Liquid Petroleum Pipeline Relication
for NCDOT Project U2524-C
Guilford County, N.C.

BHN 12/17/2012

TIP PROJECT: U-2524D

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524D	1	

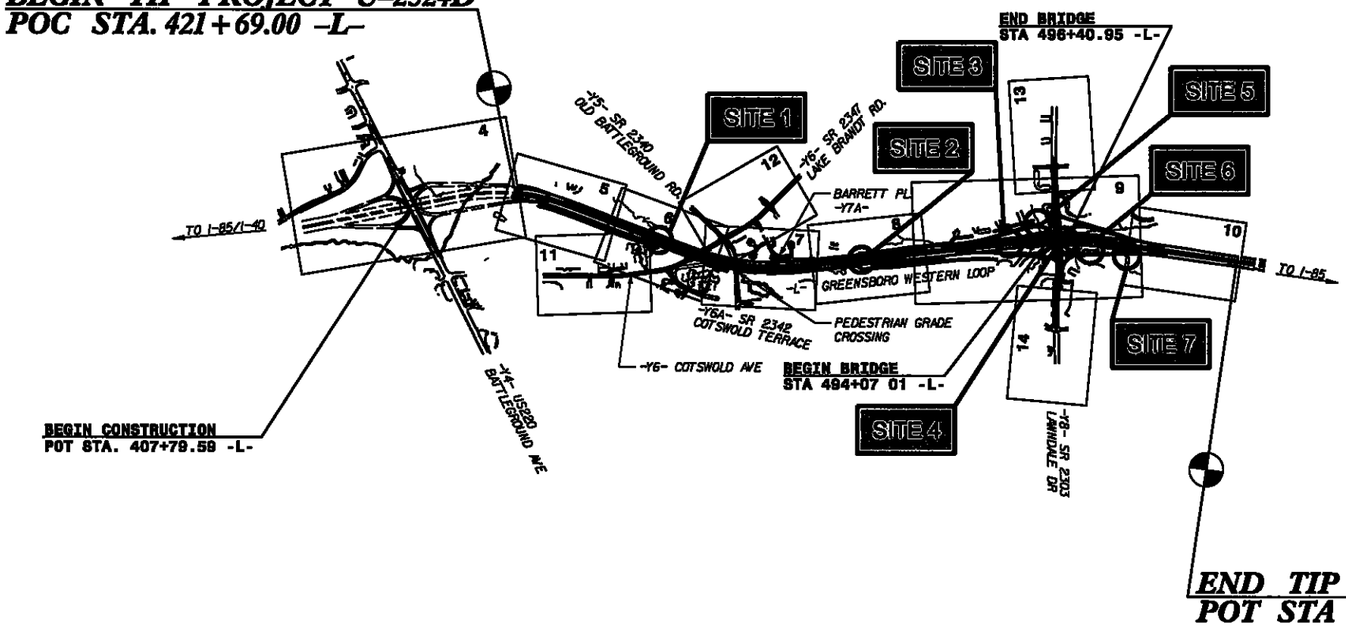
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34820.2.19	NHF-0708(53)	P.E.
34820.2.19	NHF-0708(53)	R.O.W./UTILITY

Permit Drawing
Sheet 1 of 13

LOCATION: GREENSBORO-WESTERN LOOP FROM US 220 (BATTLEGROUND AVENUE) TO SR 2303 (LAWNDALE DRIVE).

TYPE OF WORK: GRADING, PAVING, CULVERTS, DRAINAGE, STRUCTURES, SIGNING, ITS, TRAFFIC SIGNAL AND RETAINING WALLS.

PRELIMINARY WETLAND & STREAM IMPACTS



END TIP PROJECT U-2524D
POT STA 519+00.00 -L-

NOTES:
THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO.

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 2008 = 41,985
ADT 2028 = 71,908
DHV = 10 %
D = 60 %
T = 15 % *
V = 70 MPH

5% TTST DUAL 10%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2524D = 1.799 MILES
LENGTH STRUCTURES TIP PROJECT U-2524D = 0.044 MILES
TOTAL LENGTH OF TIP PROJECT U-2524D = 1.843 MILES

PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA
AND THE
DIVISION OF HIGHWAYS

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 23, 2011

LETTING DATE:
POST YEAR

EDWARD S. ROBBINS, P.E.
PROJECT ENGINEER

DAVID GARRETT
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

11:52:26 AM
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$$$$USERNAME$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 2 of 13

SITE 1

SITE 2

SITE 3

SITE 4

SITE 5

SITE 6

SITE 7

PERMIT DRAWINGS
SHEET ___ OF ___

5/10/99 PM
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PROJECT REFERENCE NO.	SHEET NO.
U-2524D	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS
RALEIGH, NORTH CAROLINA

Permit Drawing
Sheet 3 of 13

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-S & 2-T FOR
RETAINING WALL ENVELOPES
SEE SHEET 16 FOR -L- PROFILE
SEE SHEET 20 FOR -Y6A- PROFILE
SEE SHEET 21 FOR -Y6- PROFILE

NAD 83

MATCH LINE -Y6- STA 28+00 SEE SHEET 12

MATCH LINE -L- STA 435+00 SEE SHEET 5

MATCH LINE -L- STA 449+00 SEE SHEET 7

MATCH LINE SEE SHEET 11

MATCH LINE -Y6- SEE SHEET 11 STA 18+00

PROPOSED RETAINING WALL

SITE 1

435+00
440+00
445+00
25+00
15+00

(APPROXIMATE LOCATION) NOT FIELD LOCATED

LEGEND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

9/17/99

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8/17/99

REVISIONS

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-S & 2-T FOR
RETAINING WALL ENVELOPES
SEE SHEET 16 FOR -L- PROFILE
SEE SHEET 20 FOR -Y6A- PROFILE
SEE SHEET 21 FOR -Y6- PROFILE

PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	6
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 4 of 13

NAD 83

MATCH LINE -Y6- STA 28+00 SEE SHEET 12

MATCH LINE -L- STA 435+00 SEE SHEET 5

MATCH LINE -L- STA 449+00 SEE SHEET 7

MATCH LINE SEE SHEET 11

MATCH LINE -Y6- STA 18+00 SEE SHEET 11

PROPOSED RETAINING WALL

SITE 1

LEGEND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-T & 2-X FOR RETAINING WALL ENVELOPES
SEE SHEET 2-Y FOR NOISE WALL ENVELOPE
SEE SHEET 16 & 17 FOR -L- PROFILE
SEE SHEET 20 FOR PED. PROFILE
SEE SHEET 20 FOR -Y7A- PROFILE

Permit Drawing
Sheet 5 of 13

NAD 83

MATCH LINE SEE SHEET 12

MATCH LINE -L- STA 449+00 SEE SHEET 6

MATCH LINE -L- STA 463+00 SEE SHEET 8

PROPOSED 10' PED. BIKEWAY

PT Sta. 12+40.41 PED.

450+00

455+00

PROPOSED RETAINING WALL

15+00

TOP=850.29'

POC STA. 452+42.11 -L- =
POT STA. 13+62.84 PED.

PROPOSED 10' PED. BIKEWAY

POT Sta. 18+58.34 PED.

MANHOLE NOT RECOVERED

SITE 2

LEGEND
DENOTES IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

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PROJECT REFERENCE NO. U-2524D | SHEET NO. 7

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-T & 2-X FOR RETAINING WALL ENVELOPES
SEE SHEET 2-Y FOR NOISE WALL ENVELOPE
SEE SHEET 16 & 17 FOR -L- PROFILE
SEE SHEET 20 FOR PED. PROFILE
SEE SHEET 20 FOR -Y7A- PROFILE

For this Drawing Sheet 6 of 13

NAD 83

MATCH LINE SEE SHEET 12

MATCH LINE -L- STA 449+00 SEE SHEET 6

MATCH LINE -L- STA 463+00 SEE SHEET 8

PROPOSED 10' PED. BIKEWAY

PT Sta. 12+40.41 PED.

PROPOSED RETAINING WALL

POC STA. 452+42.11 -L- =
POT STA. 13+62.84 PED.

PROPOSED 10' PED. BIKEWAY

POT Sta. 18+58.34 PED.

SITE 2

LEGEND
DENOTES IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2524D	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS
RALEIGH, NORTH CAROLINA

Permit Drawing
Sheet 7 of 13

REVISIONS

8/17/99

MATCH LINE -L- STA 463+00 SEE SHEET 7

MATCH LINE -L- STA 477+00 SEE SHEET 9

NAD 83

SITE 2

465+00

470+00

475+00

12" TERRA COTTA

6" TERRA COTTA

8" TERRA COTTA

PROPOSED NOISE WALL

PROPOSED RETAINING WALL

EOR

EOR

24" CONC

8" DIP

60" CMP

B.O. VALVE NOT FOUND IN FIELD

PUE

-L-

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 17 FOR -L- PROFILE
SEE SHEET 2-U FOR RETAINING WALL ENVELOPE
SEE SHEET 2-Y, 2-Z & 2-BB FOR NOISE WALL ENVELOPES

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PROJECT REFERENCE NO.	SHEET NO.
U-2524D	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PARSONS
RALEIGH, NORTH CAROLINA

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 8 of 13

NAD 83

SITE 2

MATCH LINE -L- STA 463+00 SEE SHEET 7

MATCH LINE -L- STA 477+00 SEE SHEET 9

465+00

470+00

475+00

PROPOSED NOISE WALL

PROPOSED RETAINING WALL

PROPOSED NOISE WALL

PUE

12" TERRA COTTA

8" TERRA COTTA

24" CONC

810

820

830

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 17 FOR -L- PROFILE
SEE SHEET 2-U FOR RETAINING WALL ENVELOPE
SEE SHEET 2-Y, 2-Z & 2-BB FOR NOISE WALL ENVELOPES

REVISIONS

8/17/99

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PARSONS

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	9A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 9 of 13

Drawing
Sheet ___ of ___

8/17/99

REVISIONS

NAD 83

MATCH LINE -L- STA 477+00 SEE SHEET 8

MATCH LINE -L- STA 491+00 SEE SHEET 9B

SITE 3

SITE 3

480+00

485+00

490+00

5+00

5+00

PROPOSED NOISE WALL

END NOT FOUND IRON

B.O. VALVE NOT FOUND IN FIELD

TH 36"

RPBY8

RPCY8

12" TERRA COTTA

18" CMP

24" CONC

30" CMP

36" CMP

42" CMP

48" CMP

PUE

FES

CB

RW

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-U, 2-V & 2-W FOR RETAINING WALL ENVELOPES
SEE SHEET 2-Z, 2-AA, 2-BB & 2-CC FOR NOISE WALL ENVELOPES
SEE SHEET 17 & 18 FOR -L- PROFILE
SEE SHEET 27 FOR RPBY8 PROFILE
SEE SHEET 28 FOR RPCY8 PROFILE

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PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	9A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 10 of 13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

NAD 83

SITE 3

SITE 3

MATCH LINE -L- STA 477+00 SEE SHEET 8

MATCH LINE -L- STA 491+00 SEE SHEET 9B

480+00

485+00

490+00

5+00

5+00

PROPOSED NOISE WALL

PUE

RPBY8

RPCY8

12" TERRA COTTA

24" CONC

18" CMP

B.O. VALVE (NOT FOUND IN FIELD)

PRIVATE SS

LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-U, 2-V & 2-W FOR RETAINING WALL ENVELOPES
SEE SHEET 2-Z, 2-AA, 2-BB & 2-CC FOR NOISE WALL ENVELOPES
SEE SHEET 17 & 18 FOR -L- PROFILE
SEE SHEET 27 FOR RPBY8 PROFILE
SEE SHEET 28 FOR RPCY8 PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-2524D	9B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 11 of 13

SITE 5

SITE 4

SITE 3

SITE 6

SITE 4

SITE 7

MATCH LINE -L- STA 491+00 SEE SHEET 9A

MATCH LINE -L- STA 505+00 SEE SHEET 10

RPAY8

RPDY8

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-U, 2-V & 2-W FOR RETAINING WALL ENVELOPES
SEE SHEET 2-Z, 2-AA, 2-BB & 2-CC FOR NOISE WALL ENVELOPES
SEE SHEET 17 & 18 FOR -L- PROFILE
SEE SHEET 22 FOR -Y8- PROFILE
SEE SHEET 26 FOR RPAY8 PROFILE
SEE SHEET 27 FOR RPBY8 PROFILE
SEE SHEET 28 FOR RPCY8 PROFILE
SEE SHEET 29 FOR RPDY8 PROFILE
SEE SHEET 30 FOR SPAY8 PROFILE
SEE SHEET 30 FOR SPBY8 PROFILE
SEE SHEET 30 FOR SPCY8 PROFILE
SEE SHEET 30 FOR SPDY8 PROFILE

LEGEND
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

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PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA
FOR NORTH CAROLINA DEPT. OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	9B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 12 of 13

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

SITE 5

SITE 4

SITE 3

SITE 6

SITE 4

SITE 7

MATCH LINE -L- STA 491+00 SEE SHEET 9A

MATCH LINE -L- STA 505+00 SEE SHEET 10

RPAY8

RPDY8

NAD 83

LEGEND

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-U, 2-V & 2-W FOR RETAINING WALL ENVELOPES
SEE SHEET 2-Z, 2-AA, 2-BB & 2-CC FOR NOISE WALL ENVELOPES
SEE SHEET 17 & 18 FOR -L- PROFILE
SEE SHEET 22 FOR -Y8- PROFILE

SEE SHEET 26 FOR RPAY8 PROFILE
SEE SHEET 27 FOR RPBY8 PROFILE
SEE SHEET 28 FOR RPCY8 PROFILE
SEE SHEET 29 FOR RPDY8 PROFILE
SEE SHEET 30 FOR SPAY8 PROFILE
SEE SHEET 30 FOR SPBY8 PROFILE
SEE SHEET 30 FOR SPCY8 PROFILE
SEE SHEET 30 FOR SPDY8 PROFILE

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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 440+21 TO 443+32	Pipe Culvert / Roadway	-	-	-	-	-	0.03	0.01	393	10	-
2	-L- 462+50 TO 471+08	Pipe Culvert / Roadway	-	-	-	-	-	0.09	0.01	919	10	-
3	-L- 478+07 TO 494+57	Box Culvert / Roadway	-	-	-	-	-	0.19	0.01	1488	10	-
4	-L- 492+19 TO 503+69	Box Culvert / Roadway	-	-	-	-	-	0.30	0.01	1253	20	-
5	-L- 492+69 TO 493+02	Box Culvert / Roadway	-	-	-	-	-	0.02	0.01	141	10	-
6	-L- 497+67 TO 499+12	Pipe Culvert / Roadway	-	-	-	-	-	0.03	0.01	311	10	-
7	-L- 504+11 TO 504+90	Box Culvert / Roadway	-	-	-	-	-	0.03	0.01	99	10	-
TOTALS:			-	-	-	-	-	0.69	0.07	4604	80	-

PRELIMINARY

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GUILFORD COUNTY
U-2524D

SHEET 13 OF 13 10/18/2012

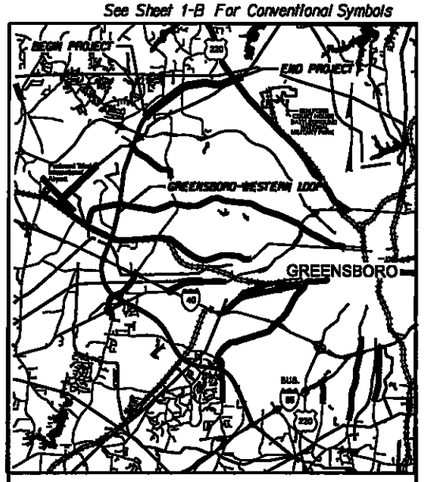
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524C	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34820.2.18	NHF-0708(52)	P.E.
34820.2.18	NHF-0708(52)	R.O.W./UTILITY

TIP PROJECT: U-2524C

CONTRACT: C203197

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



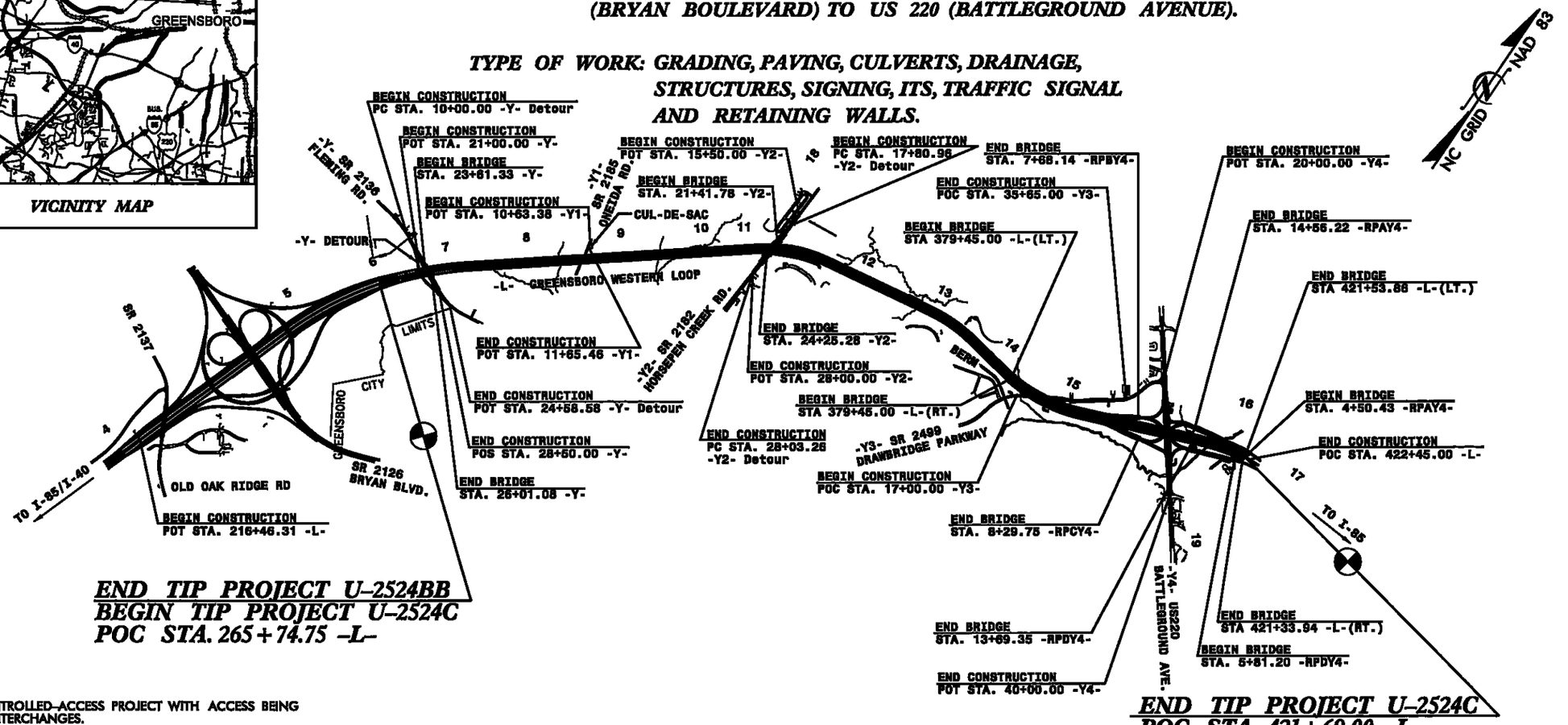
VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: GREENSBORO-WESTERN LOOP FROM NORTH OF SR 2176 (BRYAN BOULEVARD) TO US 220 (BATTLEGROUND AVENUE).

TYPE OF WORK: GRADING, PAVING, CULVERTS, DRAINAGE, STRUCTURES, SIGNING, ITS, TRAFFIC SIGNAL AND RETAINING WALLS.



END TIP PROJECT U-2524BB
BEGIN TIP PROJECT U-2524C
POC STA. 265+74.75 -L-

END TIP PROJECT U-2524C
POC STA 421+69.00 -L-

NOTES:
THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO

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 2013 = 35,113
ADT 2035 = 46,200
DHV = 11 %
D = 55 %
T = 9 % *
V = 70 MPH
CLASSIFICATION: FREEWAY
4% TTST DUAL 5%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2524C = 2.158 MILES
LENGTH STRUCTURES TIP PROJECT U-2524C = 0.795 MILES
TOTAL LENGTH OF TIP PROJECT U-2524C = 2.953 MILES

PLANS PREPARED BY PARSONS

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 23, 2011

LETTING DATE: SEPTEMBER 17, 2013

EDWARD S. ROBBINS, P.E.
PROJECT ENGINEER

DAVID GARRETT
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

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$$$$USERNAME$$$$

8/17/99

PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	1-A
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INDEX OF SHEETS

1	Title Sheet
1-A	Index of Sheets, General Notes, and List of Standards
1-B	Conventional Symbols
1-C thru 1-D	Survey Control Sheets
2 thru 2-R	Typical Sections, and Pavement Schedule
2-S	Curve Data
2-T thru 2-U	Detour Plan Sheets
2-V	Shear Point Layout
2-W thru 2-X	Retaining Walls
2-Y	Earth Berm Plan and Profile
2-Z	Rock Plating Detail
2-AA	Preformed Scour Hole Detail
3	Summary of Quantities
3- thru 3-	Summary of Drainage Quantities
3-	Summary of Pavement Removal & Guardrail Summary
3-A	Summary of Earthwork
3-	Parcel Index Sheet
4 thru 19	Plan Sheets
20 thru 38	Profile Sheets
TCP- thru TCP-	Traffic Control Plans
PM- thru PM-	Pavement Marking Plans
EC- thru EC-	Erosion Control Plans
SIGN- thru SIGN-	Signing Plans
SIG- thru SIG-	Signal Plans
UC- thru UC-	Utility Construction Plans
UO- thru UO-	Utility By Others Plans
X thru X-364	Cross-Sections, Cross-Section Index Sheet, and Cross-Section Summary Sheet

GENERAL NOTES:

2006 SPECIFICATIONS
EFFECTIVE: 7-18-06
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE AREAS IN THE PLANS DESIGNATED SAFETY CLEARING. THE LIMITS ARE AS SHOWN AND THE CLEARING AND GRUBBING IS CONSIDERED A PART OF THE LUMP SUM ITEM FOR "CLEARING AND GRUBBING".

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT AND EARTH SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

UNDERDRAINS:

UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH DETAILS IN PLANS AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE SOUTHERN BELL CO.
DUKE ENERGY CORPORATION, TIME WARNER CABLE TV, CITY OF GREENSBORO, PIEDMONT NATURAL GAS, AND WILLIAMS COMMUNICATIONS.
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

WHEELCHAIR RAMPS:

WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.
THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH DETAILS IN PLANS.

EFF 07-18-06

2006 ROADWAY STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'S' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'S' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.35	Traffic Bearing Drop Inlet
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
848.05	Wheelchair Ramp - Curb Cut
852.01	Concrete Islands
852.04	Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
852.10	Median Construction - with Curb and Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

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3/15/06

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

PARSONS — PROJECT REFERENCE NO. U-2524C — SHEET NO. 1-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — EPM
- Parcel/Sequence Number — 23
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — EWB
- Proposed Wetland Boundary — PWB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- Proposed Right of Way Line with Iron Pin and Cap Marker
- Proposed Right of Way Line with Concrete or Granite Marker
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Proposed Wheel Chair Ramp Curb Cut — WCC
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — T
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

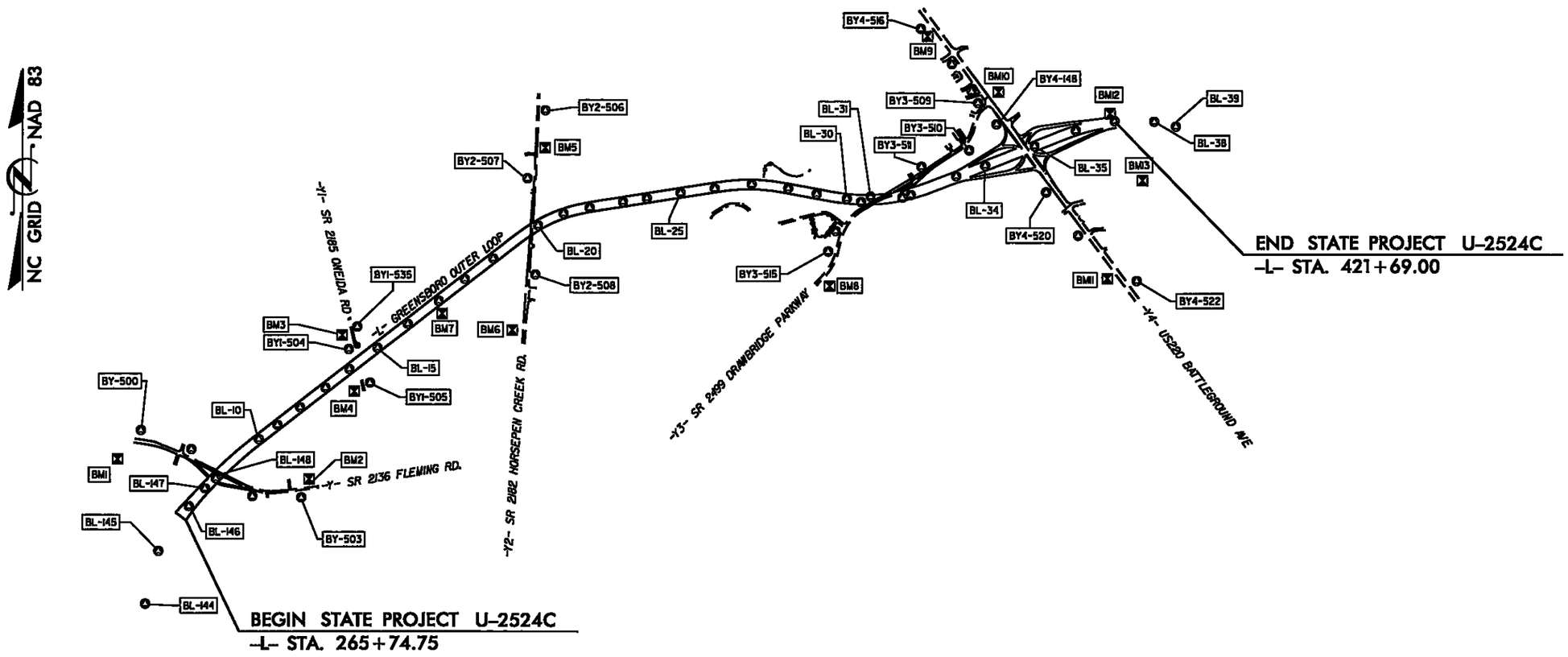
MISCELLANEOUS:

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

12/01/2005

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	1-C
Location and Surveys	

U-2524C SURVEY CONTROL SHEET



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "ROYAL"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 855082.597(GRID) EASTING: 1758541.3714(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99994019
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "ROYAL" TO -L- STATION 265+74.75 IS
N 68° 57' 59.93" W 27,393.804'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
u2524c_ls_control_060209.txt

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

● INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM FROM EXISTING HARN MONUMENTATION.

NOTE. DRAWING NOT TO SCALE

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12/01/2005

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	1-D
Location and Surveys	

U-2524C SURVEY CONTROL SHEET

BASELINE DATA

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
144	U-2524B BL-144	883656.2668	1732997.8778	878.87	251+25.07	118.93 RT
145	U-2524B BL-145	884413.2158	1732838.9348	893.38	259+78.33	3.33 RT
146	U-2524B BL-146	885871.4798	1733984.9988	981.84	267+67.84	9.13 LT
147	U-2524B BL-147	885338.1538	1733332.1848	984.81	271+29.87	8.42 RT
148	U-2524B BL-148	885548.8838	1732528.2068	895.81	274+11.26	1.69 RT
10	BL-10	886853.8188	1734119.2598	876.91	281+45.94	1.64 LT
11	BL-11	886284.8268	1734393.8268	879.11	285+41.99	8.82 LT
12	BL-12	886822.3798	1734725.5488	848.35	289+85.39	8.87 RT
13	BL-13	886811.8888	1735182.6188	848.91	294+37.48	8.19 RT
14	BL-14	887868.9258	1735455.9858	844.96	298+83.96	1.38 LT
15	BL-15	887396.9768	1735889.3748	883.45	304+82.85	5.98 RT
16	BL-16	887761.7968	1736312.6268	858.36	309+59.68	3.85 LT
17	BL-17	888887.7988	1736771.6178	861.98	315+39.35	11.88 RT
18	BL-18	888413.2688	1737155.6438	828.68	320+48.79	12.81 LT
19	BL-19	888716.8258	1737573.1198	848.89	325+56.12	4.89 RT
20	BL-20	889177.3228	1738189.6478	859.46	333+81.74	16.98 LT
21	BL-21	889379.8198	1738889.4878	874.88	337+93.33	3.56 LT
22	BL-22	889481.1118	1738792.3648	864.89	341+85.35	8.79 RT
23	BL-23	889548.7988	1739481.3728	838.78	348+82.25	1.15 LT
24	BL-24	889681.2148	1739833.8188	824.38	352+74.77	8.78 RT
25	BL-25	889677.8688	1740334.8178	824.83	355+44.62	8.88 RT
26	BL-26	889739.7818	1740837.7188	798.23	358+81.96	15.97 RT
27	BL-27	889883.7148	1741381.6888	813.18	368+88.69	3.49 LT
28	BL-28	889741.4748	1741919.8888	821.82	371+42.63	2.32 LT
29	BL-29	889658.8878	1742238.7638	883.82	375+84.33	1.83 RT
30	BL 30	889581.8578	1742783.8878	787.98	388+19.81	8.71 LT
31	BL 31	889538.8448	1743132.8978	781.21	393+88.79	35.84 RT
32	BL 32	889645.8388	1743724.2998	758.44	399+64.58	16.98 RT
33	BL 33	889923.3528	1744392.8798	749.23	398+97.88	14.97 LT
34	BL 34	878878.8428	1744818.3188	748.88	481+29.32	1.58 LT
35	BL 35	878318.8768	1745461.8718	729.28	488+25.49	9.74 RT
36	BL 36	878892.1478	1746153.8188	747.12	415+78.79	2.47 RT
37	BL 37	878738.2868	1746724.9478	788.29	421+57.65	14.87 LT
38	BL 38	878721.4838	1747311.8188	881.13	427+42.83	21.18 LT
39	BL 39	878847.9628	1747631.2288	826.31	430+88.84	3.82 LT

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
580	BY-580	868853.8988	1732382.3318	987.94	12+21.85	37.88 LT
581	BY-581	868817.1758	1732847.8388	983.48	19+21.93	17.98 LT
148	U-2524B BL-148	885548.8838	1733528.2068	895.81	24+74.22	15.21 RT
582	BY-582	868294.1428	1734854.8488	885.33	38+55.23	18.24 RT
583	BY-583	865382.9548	1734748.2968	874.85	OUTSIDE PROJECT LIMITS	

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
535	BY1-535	867879.2138	1735491.2488	878.14	OUTSIDE PROJECT LIMITS	
584	BY1-584	867417.8478	1735536.4298	851.57	11+38.48	11.81 RT
14	BL-14	867883.9258	1735455.9858	844.96	14+81.85	144.91 RT
585	BY1-585	868804.4128	1735659.9728	838.72	OUTSIDE PROJECT LIMITS	

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
586	BY2-586	878948.3878	1736288.8988	853.33	OUTSIDE PROJECT LIMITS	
587	BY2-587	869894.1888	1736186.4438	884.23	18+25.88	28.94 RT
26	BL-26	889177.3228	1738189.6478	859.46	22+41.48	19.84 LT
588	BY2-588	868483.8988	1736128.5198	859.11	29+38.85	29.21 LT

BY3

POINT	DESC.	NORTH	EAST	ELEVATION	Y3 STATION	OFFSET
515	BY3-515	888785.8858	1742887.9418	788.14	OUTSIDE PROJECT LIMITS	
514	BY3-514	879897.5388	1742878.2938	778.58	12+85.22	33.44 LT
513	BY3-513	889484.7378	1743855.6718	762.82	18+38.96	21.11 LT
31	BL-31	889538.8448	1743132.8978	781.21	19+22.43	24.26 LT
512	BY3-512	889878.9388	1743588.9548	761.92	24+82.94	62.11 RT
511	BY3-511	878884.8258	1743741.8288	782.11	28+98.83	2.18 LT
516	BY3-516	878389.7118	1744823.2138	788.81	35+38.87	21.16 RT
589	BY3-589	878961.6778	1744782.2848	771.44	41+77.85	28.87 LT

BY4

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
518	BY4-518	872172.8448	1743773.4738	826.88	OUTSIDE PROJECT LIMITS	
517	BY4-517	871842.8518	1744383.8198	881.13	12+68.32	46.38 RT
516	BY4-516	871194.6588	1744892.3148	774.97	18+15.28	88.38 RT
589	BY3-589	878961.6778	1744782.2848	771.44	28+55.85	117.58 RT
519	BY4-519	878729.3318	1745848.8448	788.58	23+94.42	42.17 RT
35	BL 35	878318.8768	1745461.8718	729.28	29+77.87	42.71 LT
520	BY4-520	880743.8228	1745786.2418	788.82	36+24.45	45.85 RT
521	BY4-521	881114.4218	1746258.2818	758.98	44+15.84	43.88 RT
522	BY4-522	885329.3778	1746961.6878	788.35	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

BM1 ELEVATION 912.89
N 865764 E 1732831
Y STATION 18+88
S 22° 11' 11.1" W DIST 314.14
RR SPIKE IN 28 INCH OAK

BM2 ELEVATION 878.81
N 865382 E 1734861
Y STATION 37+33
N 62° 14' 17.4" E DIST 146.88
RR SPIKE IN DOUBLE OAK

BM3 ELEVATION 882.88
N 867888 E 1735498
Y1 STATION 18+88
N 41° 51' 85.8" W DIST 39.92
RR SPIKE IN TRIPLE POPLAR

BM4 ELEVATION 842.24
N 886881 E 1735882
Y1 STATION 18+87
S 63° 41' 48.4" W DIST 44.31
RR SPIKE IN 18 INCH PINE

BM5 ELEVATION 881.44
N 878344 E 1736253
Y2 STATION 18+72 41 LEFT
RR SPIKE IN 18 INCH PINE

BM6 ELEVATION 856.41
N 867668 E 1736881
Y2 STATION 35+98
S 11° 43' 11.8" W DIST 177.28
RR SPIKE IN 18 INCH BLACK WALNUT

BM7 ELEVATION 812.34
N 867764 E 1736736
L STATION 314+44 75 RIGHT
RR SPIKE IN 26 INCH OAK

BM8 ELEVATION 788.98
N 868368 E 1742398
Y2 STATION 18+88
S 27° 48' 24.8" W DIST 887.87
RR SPIKE IN 28 INCH PINE

BM9 ELEVATION 819.83
N 871879 E 1743971
Y4 STATION 18+88
N 64° 51' 51.7" W DIST 292.18
RR SPIKE IN 22 INCH OAK

BM10 ELEVATION 782.83
N 871189 E 1745814
Y4 STATION 28+38 186 LEFT
RR SPIKE IN 18 INCH MAPLE

BM11 ELEVATION 778.88
N 868481 E 1748694
Y4 STATION 48+93
S 22° 18' 15.9" E DIST 328.45
RR SPIKE IN 32 INCH OAK

BM12 ELEVATION 748.99
N 878634 E 1748857
L STATION 421+83 138 LEFT
NAIL IN 12 INCH GUM

BM13 ELEVATION 888.84
N 867758 E 1747183
Y6 STATION 18+88
S 88° 29' 55.7" W DIST 878.81
RR SPIKE IN 26 INCH MAPLE

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NGS FOR MONUMENT "ROYAL"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 855082.5976(ft) EASTING: 1758541.3714(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99994019
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "ROYAL" TO -L- STATION 265+74.75 IS
N 68° 57' 59.93" W 27,393.8041'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

THE FILES TO BE FOUND ARE AS FOLLOWS:
u2524c_ls_control_060209.txt

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

2. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM FROM EXISTING HARN MONUMENTATION.

17-OCT-2006 09:43
J:\OC_Projects\U2524C_LS_PSH_01-D.dgn

5/2/99

PLANS PREPARED BY: PARSONS RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

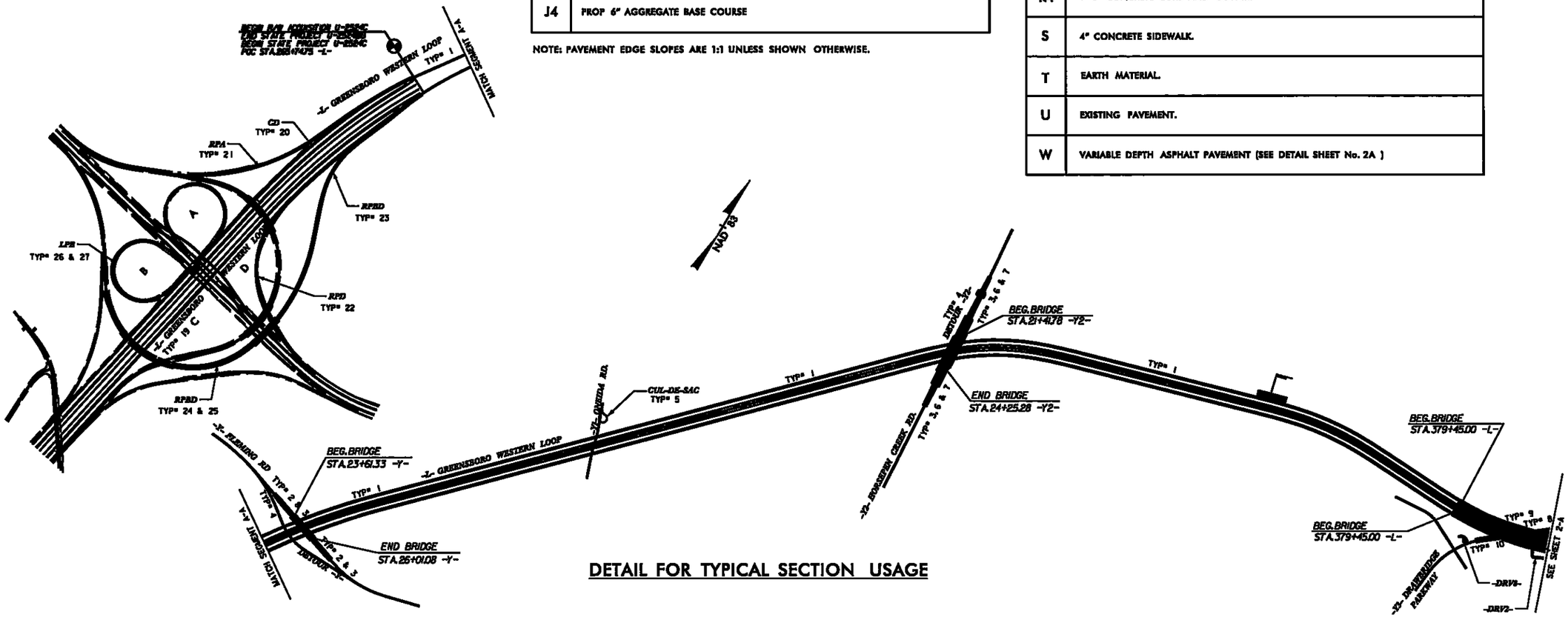
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

CODE	DESCRIPTION
A1	PROP APPROX. 12" PORTLAND CEMENT JOINTED CONCRETE PAVEMENT WITH DOWELS.
C1	PROP APPROX. 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YARD.
C2	PROP APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
C3	PROP APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
C4	PROP.VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER 1 IN DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1 ½" IN DEPTH OR GREATER THAN 2" IN DEPTH.
C5	PROP APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 220 LBS. PER SQ. YARD.
D1	PROP APPROX. 2 ½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YARD.
D2	PROP APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D3	PROP APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D4	PROP APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D5	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 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YARD.
E2	PROP APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.
E3	PROP APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YARD.
E4	PROP APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YARD.
E5	PROP APPROX. 7.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 427.5 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
E6	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 5 1/2 " IN DEPTH.
J1	PROP 8" AGGREGATE BASE COURSE.
J2	PROP 10" AGGREGATE BASE COURSE.
J3	PROP VAR. DEPTH AGGREGATE BASE COURSE
J4	PROP 6" AGGREGATE BASE COURSE

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

CODE	DESCRIPTION
J4	PROP 6" AGGREGATE BASE COURSE.
K	SUBGRADE TO BE TREATED WITH LIME TO A DEPTH OF 8", AT A RATE OF 20 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER. OR SUBGRADE TO BE TREATED WITH CEMENT TO A DEPTH OF 7", AT A RATE OF 55 LBS. PER SQ. YD. AS DIRECTED BY THE ENGINEER.
P	PRIME COAT
R1	2'-6" CONCRETE CURB AND GUTTER.
R2	5" MONOLITHIC CONCRETE ISLAND (KEY-IN)
R3	4' EXPRESSWAY GUTTER
R4	1'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHEET No. 2A)



DETAIL FOR TYPICAL SECTION USAGE

17-OCT-2002 08:43
U:\Projects\U2524C_RDY_PSH_02.dgn

8/2/99

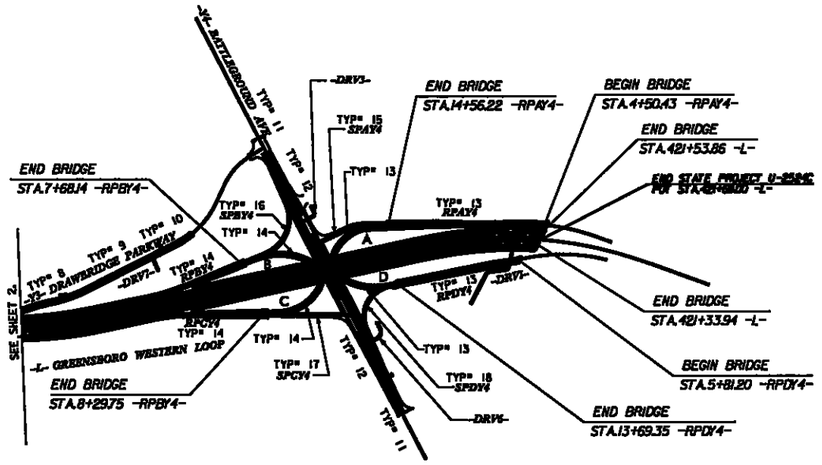
PLANS PREPARED BY: PARSONS RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-A

ROADWAY DESIGN ENGINEER

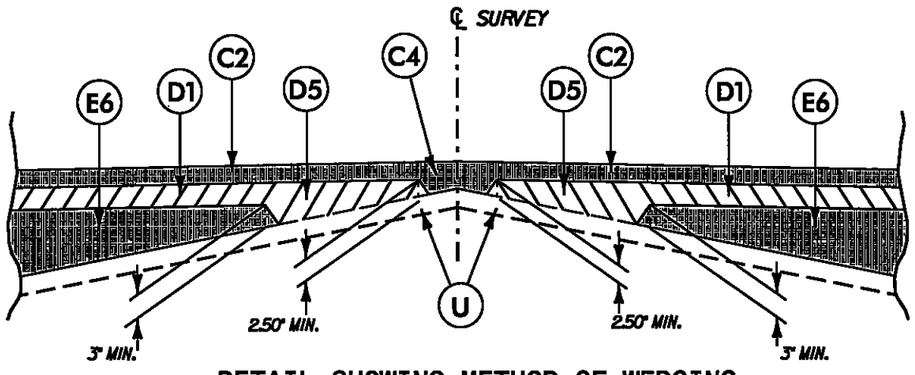
PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

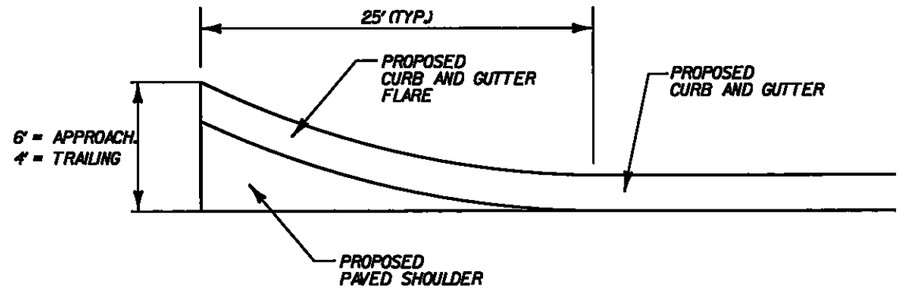


PAVEMENT SCHEDULE (SEE SHT. 2)	
C2	3" A.C.S.C. TYPE S9.5B
C4	VAR. DEPTH A.C.S.C. TYPE S9.5B
D1	2.5" A.C.I.C. TYPE I 19.0B
D3	3" A.C.I.C. TYPE I 19.0C
D5	VAR. DEPTH A.C.I.C. TYPE I19.0B
E6	VAR. DEPTH A.C.B.C. TYPE B25.0B
U	EXISTING PAVEMENT

DETAIL FOR TYPICAL SECTION USAGE



DETAIL SHOWING METHOD OF WEDGING



DETAIL SHOWING FLARE OF CURB AND GUTTER

NOTE: DRAWING NOT TO SCALE

J:\UC\2524C_Greensboro\VP-roj\U2524C_RDY_PSH_02-A.dgn

6/2/99

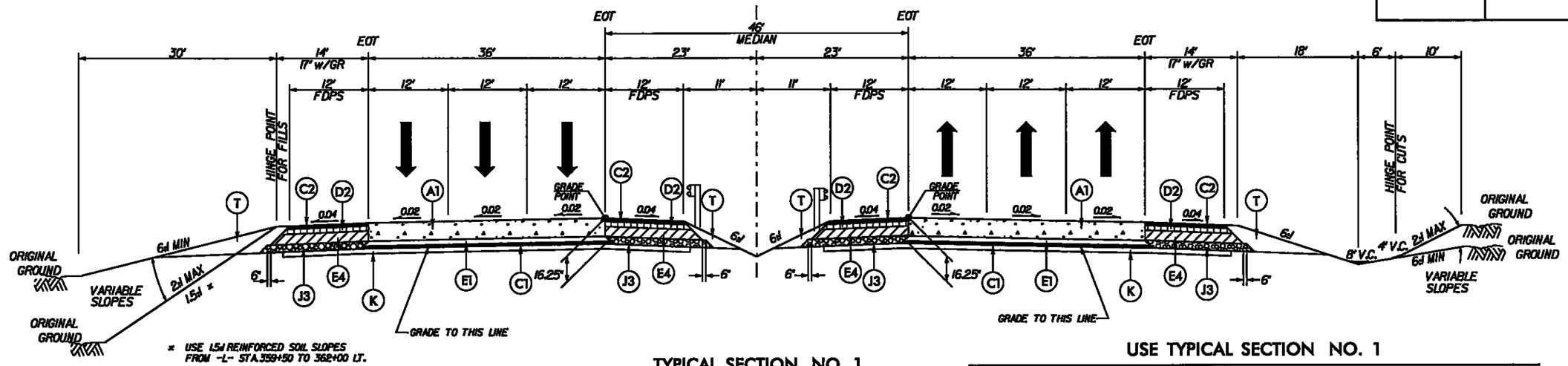
PARSONS

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-B

ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

℄ -L- GREENSBORO WESTERN URBAN LOOP



* USE 1.5d REINFORCED SOIL SLOPES FROM -L- STA.359+50 TO 362+00 LT.

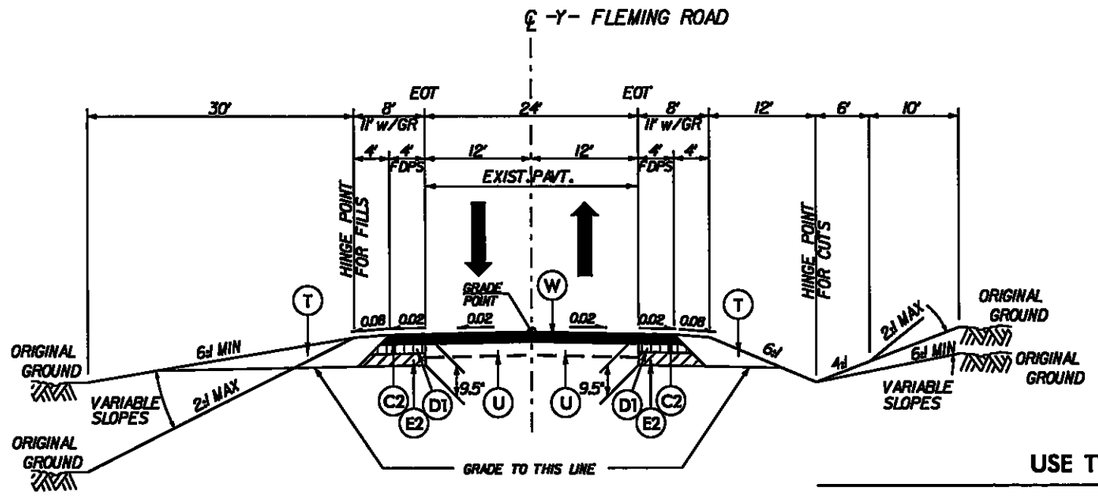
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

-L- STA. 265+74.75 TO STA. 379+45.00 (BEG. BRIDGE)
-L- STA. 421+44 (END BRIDGE) TO STA. 421+69.00

PAVEMENT SCHEDULE (SEE SHT. 2)	
A1	12" P.C.C. JOINTED W/ DOWELS
C1	1.25" A.C.S.C. TYPE SF9.5A
C2	3" A.C.S.C. TYPE S9.5B
D1	2.5" A.C.I.C. TYPE I19.0B
D2	4" A.C.I.C. TYPE I19.0B
E1	3" A.C.B.C. TYPE B25.0B
E2	4" A.C.B.C. TYPE B25.0B
E4	5" A.C.B.C. TYPE B25.0B
J3	PROP. VAR. DEPTH A.B.C.
K	SUBGRADE STABILIZATION
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

℄ -Y- FLEMING ROAD

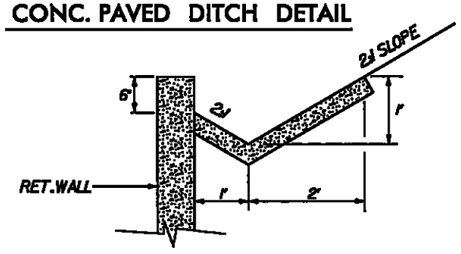


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-Y- STA. 21+50.00 TO STA. 23+61.33 (BEG. BRIDGE)
-Y- STA. 26+01.08 (END BRIDGE) TO STA. 28+00.00

CONC. PAVED DITCH DETAIL



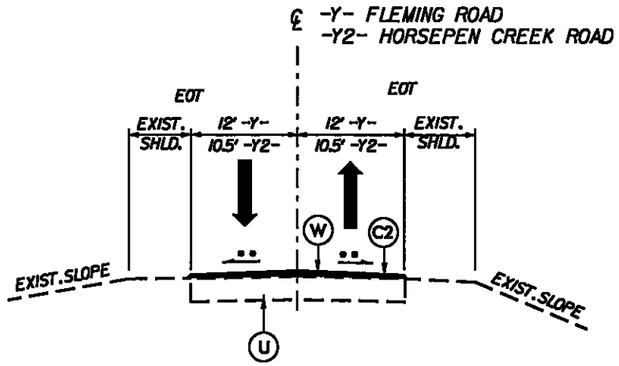
-L- STA. 332+75.00 TO STA. 341+50.00 RT.

JUNE 2005 09:44
C:\Projects\Projects\Proj\U2524C_ROY_PSH_B2-B.dgn
USER:
PSHEET1 PSHEET2

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



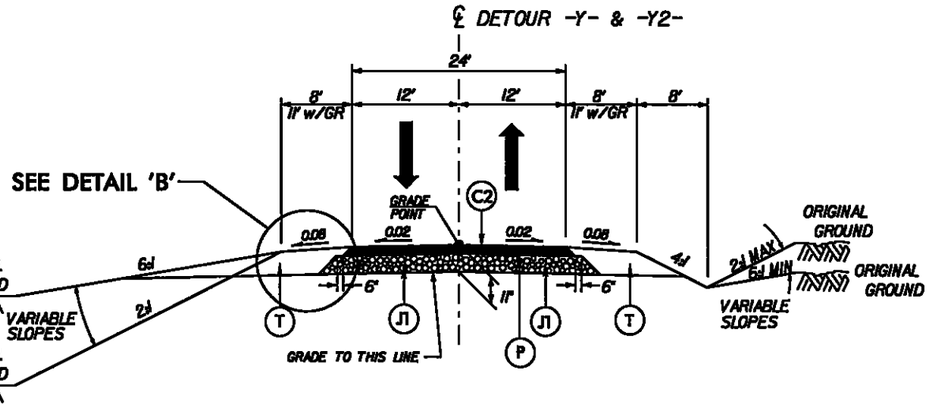
TYPICAL SECTION NO. 3

•• = USE EXIST. SLOPE OR AS DIRECTED BY ENGINEER

USE TYPICAL SECTION NO. 3

-Y- STA. 21+00.00 TO STA. 21+50.00
-Y- STA. 28+00.00 TO STA. 28+50.00
-Y2- STA. 15+50.00 TO STA. 16+00.00
-Y2- STA. 27+50.00 TO STA. 28+00.00

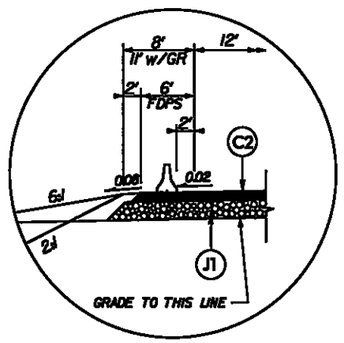
PAVEMENT SCHEDULE (SEE SHT. 2)	
C2	3" A.C.S.C. TYPE S9.5B
J1	8" A.B.C.
J2	10" A.B.C.
P	PRIME COAT
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 4

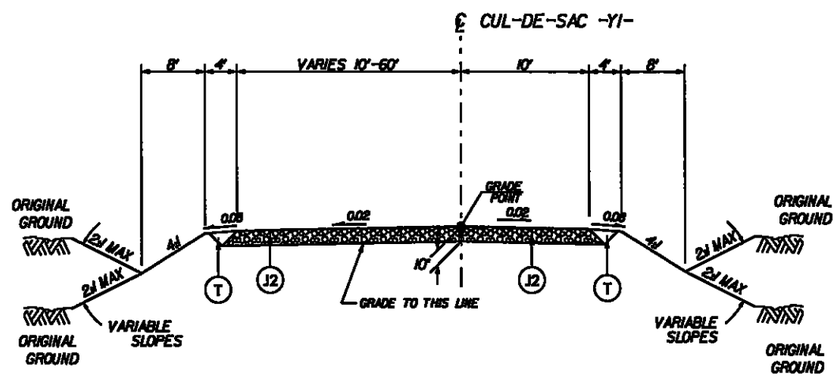
USE TYPICAL SECTION NO. 4

DETOUR -Y- STA. 13+24.15 TO STA. 22+52.14
DETOUR -Y2- STA. 17+80.96 TO STA. 28+03.26



USE DETAIL 'B' IN CONJUNCTION WITH TYPICAL SECTION NO. 4

DETOUR -Y2- STA. 19+72.70 LT.
TO STA. 25+80.00 LT.



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-Y1- STA. 10+63.38 TO STA. 11+65.46

17-OCT-2002 09:44
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########FILENAME#####

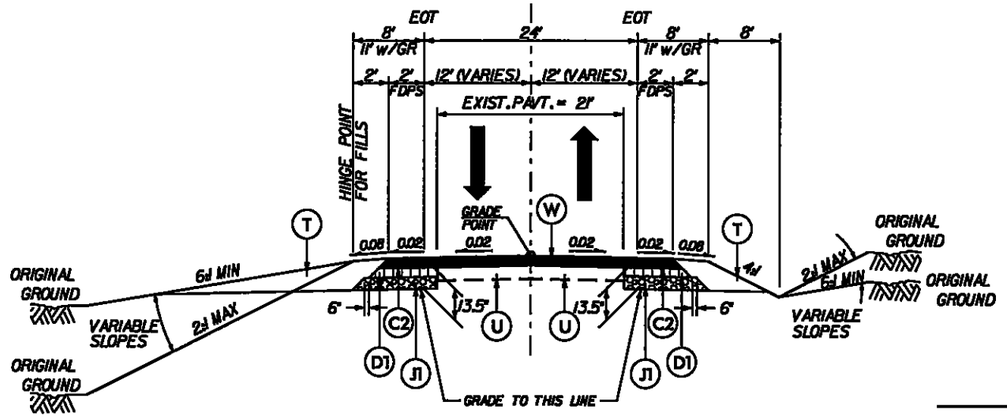
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PARSONS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

℄ -Y2- HORSEPEN CREEK ROAD



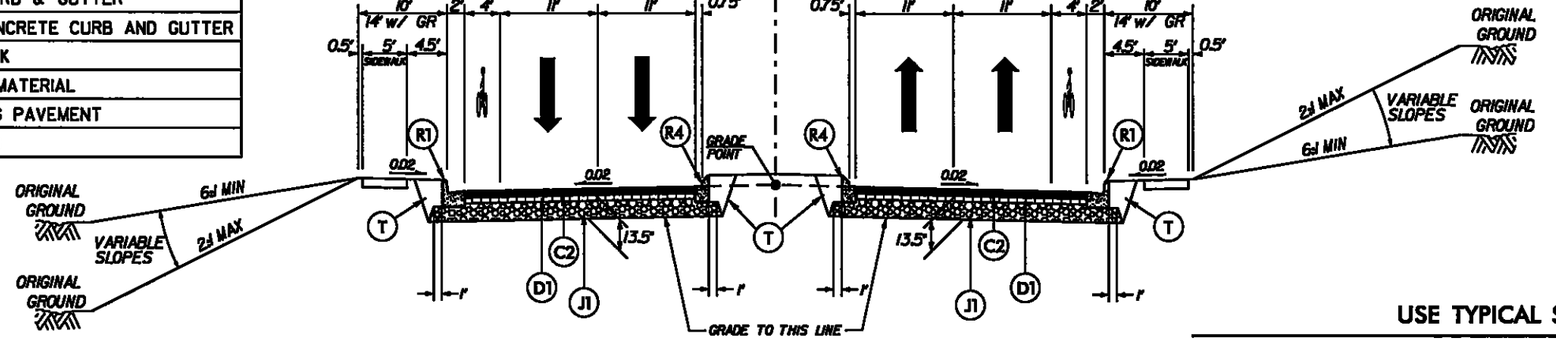
TYPICAL SECTION NO. 6

PAVEMENT SCHEDULE (SEE SHT. 2)	
C2	3" A.C.S.C. TYPE S9.5B
D1	2.5" A.C.I.C. TYPE I 19.0B
D2	4" A.C.I.C. TYPE I 19.0B
J1	8" A.B.C.
R1	2'-6" CURB & GUTTER
R4	1'-6" CONCRETE CURB AND GUTTER
S	SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

USE TYPICAL SECTION NO. 6

-Y2- STA. 16+00.00 TO STA. 19+50.00
-Y2- STA. 26+00.00 TO STA. 27+50.00

℄ -Y2- HORSEPEN CREEK ROAD

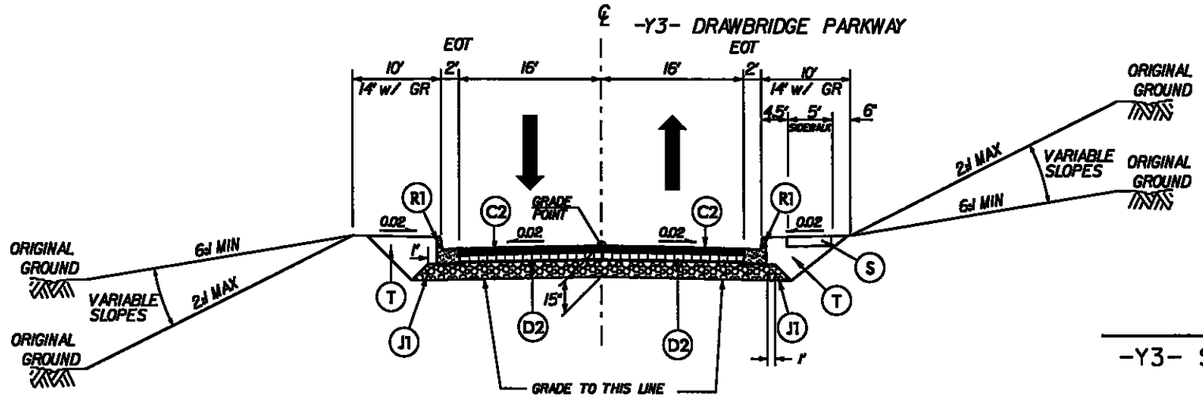


TYPICAL SECTION NO 7

USE TYPICAL SECTION NO. 7

-Y2- STA. 19+50.00 TO STA. 21+41.78 (BEG. BRIDGE)
-Y2- STA. 24+25.28 (END BRIDGE) TO STA. 26+00.00

℄ -Y3- DRAWBRIDGE PARKWAY



TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8

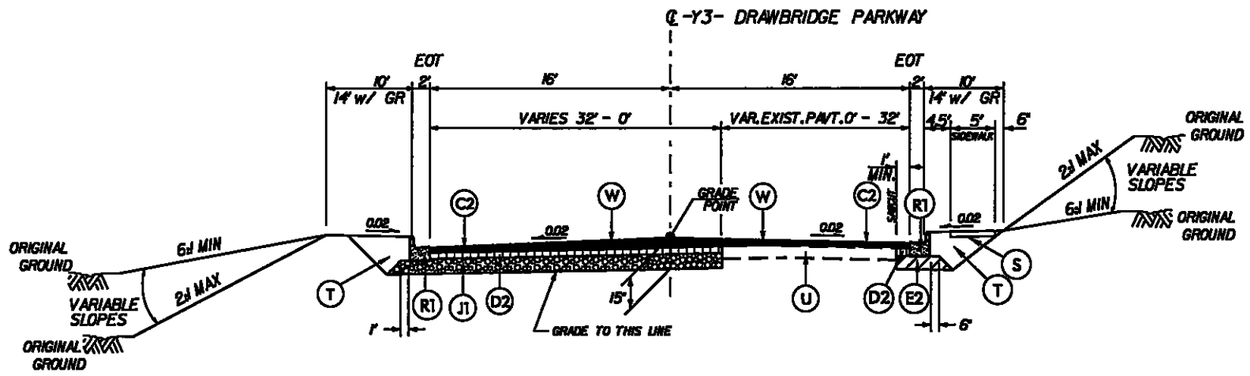
-Y3- STA. 22+51.00+/- TO STA. 26+18.00+/-

17-OCT-2018 09:44
...\Proj\U2524C_RDY_PSH_02-D.dgn

6/2/99

PLANS PREPARED BY PARSONS	PROJECT REFERENCE NO.	SHEET NO.
	U-2524C	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

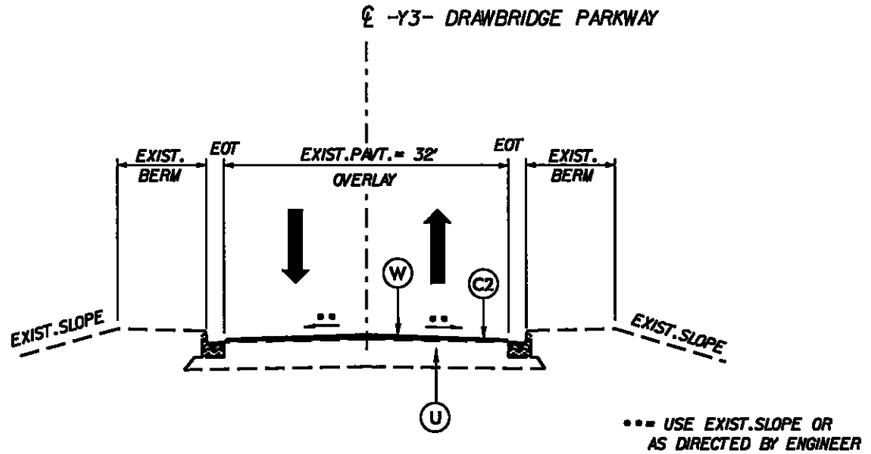


TYPICAL SECTION NO. 9

USE TYPICAL SECTION NO. 9

-Y3- STA. 18+00.00 TO STA. 22+51.00+/-
-Y3- STA. 26+18.00+/- TO STA. 35+00.00

PAVEMENT SCHEDULE (SEE SHT. 2)	
C2	3" A.C.S.C. TYPE S9.5B
C3	3" A.C.S.C. TYPE S9.5C
D2	4" A.C.I.C. TYPE I19.0B
E2	4" A.C.B.C. TYPE B25.0B
J1	8" A.B.C.
R1	2'-6" CURB & GUTTER
S	SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

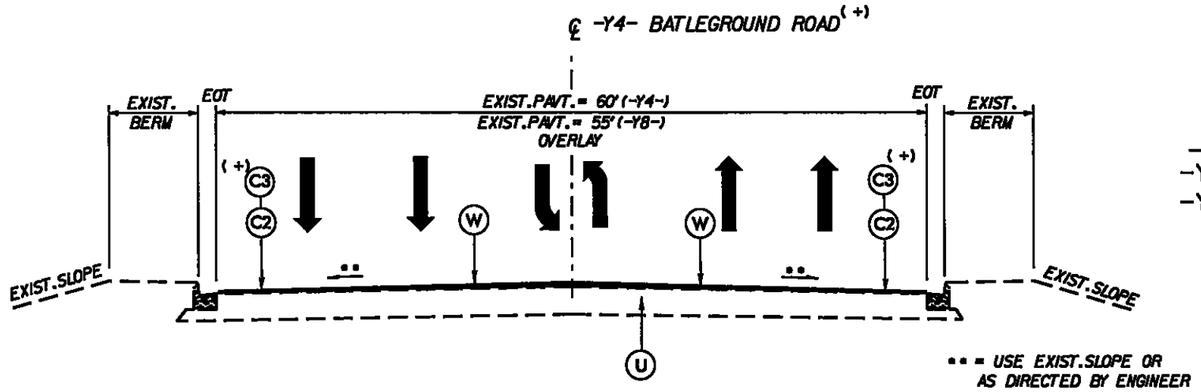


••• USE EXIST.SLOPE OR AS DIRECTED BY ENGINEER

TYPICAL SECTION NO 10

USE TYPICAL SECTION NO. 10

-Y3- STA. 17+00.00 TO STA. 18+00.00
-Y3- STA. 35+00.00 TO STA. 35+65.00



•• = USE EXIST.SLOPE OR AS DIRECTED BY ENGINEER

TYPICAL SECTION NO. 11

USE TYPICAL SECTION NO. 11

-Y4- STA. 20+00.00 TO STA. 21+00.00
-Y4- STA. 39+00.00 TO STA. 40+00.00

U-2524C_RDY_PSHL_02-E.dgn

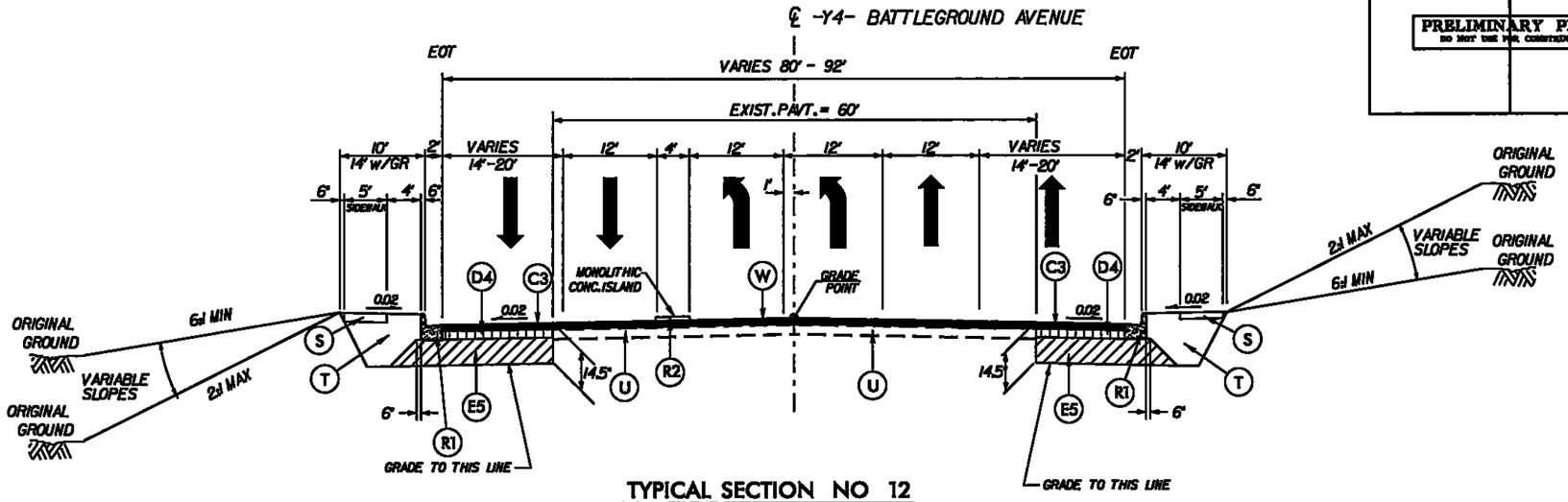
PAVEMENT SCHEDULE (SEE SHT. 2)	
C2	3" A.C.S.C. TYPE S9.5B
C3	3" A.C.S.C. TYPE S9.5C
D2	4" A.C.I.C. TYPE I19.0B
D4	4" A.C.I.C. TYPE I 19.0C
E5	7.5" A.C.B.C. TYPE B25.0C
J1	8" A.B.C.
R1	2'-6" CURB & GUTTER
R2	5" MONO. CONC. ISLAND (KEY-IN)
S	SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

PLANS PREPARED BY PARSONS RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-F

ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER

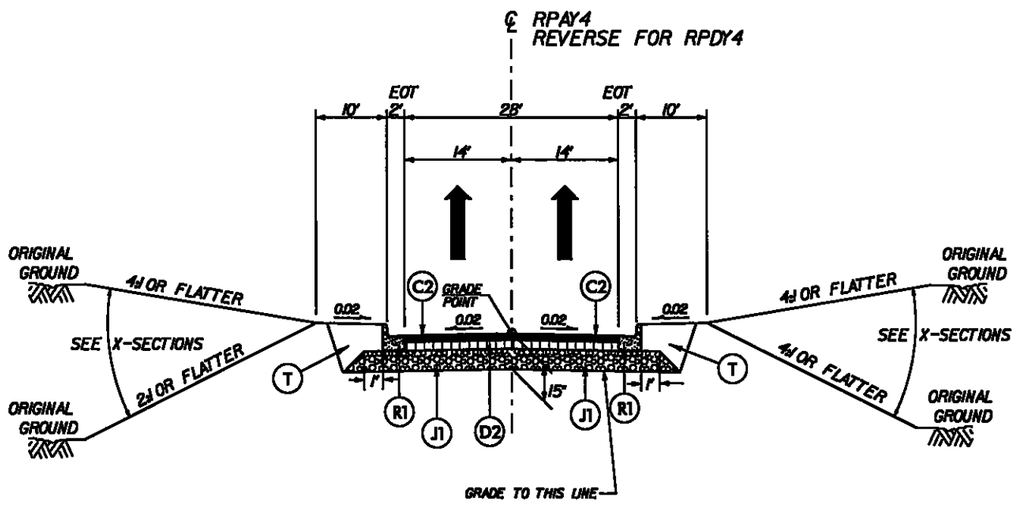
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO 12

USE TYPICAL SECTION NO. 12

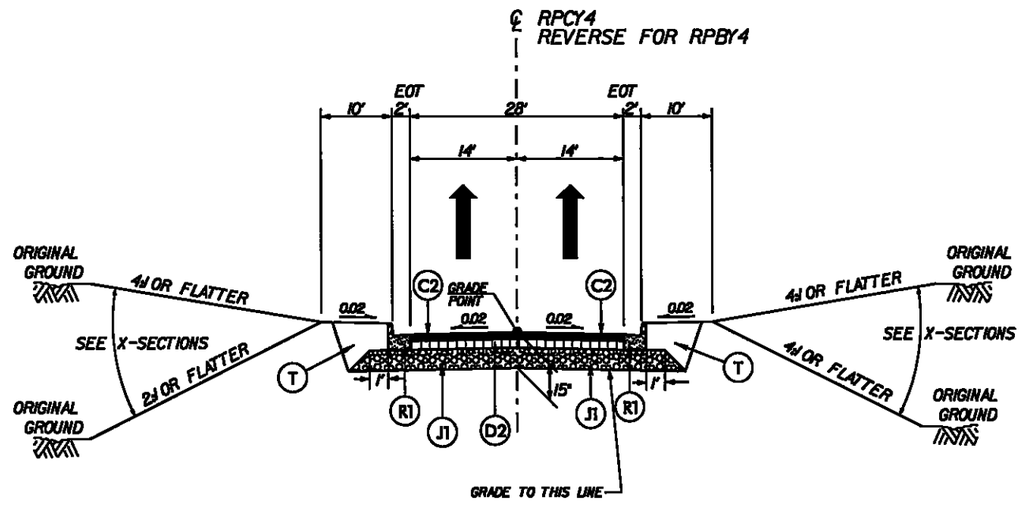
-Y4- STA. 25+75.00 TO STA. 34+00.00



TYPICAL SECTION NO. 13

USE TYPICAL SECTION NO. 13

RPAY4 STA. 14+56.22 (END BRIDGE) TO STA. 18+96.96
RPDY4 STA. 13+69.35 (END BRIDGE) TO STA. 17+17.90



TYPICAL SECTION NO. 14

USE TYPICAL SECTION NO. 14

RPBY4 STA. 7+68.14 (END BRIDGE) TO STA. 12+42.88
RPCY4 STA. 8+29.75 (END BRIDGE) TO STA. 12+90.40

6/2/99

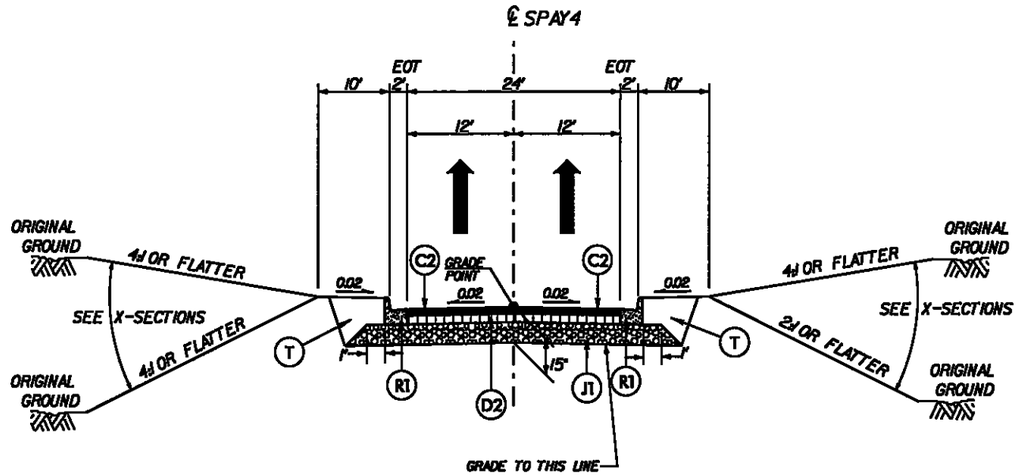
J:\DES\2012_08\44\Engineering\Proj\U2524C_RDY_PSH_02-F.dgn

PARSONS

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-G

ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER

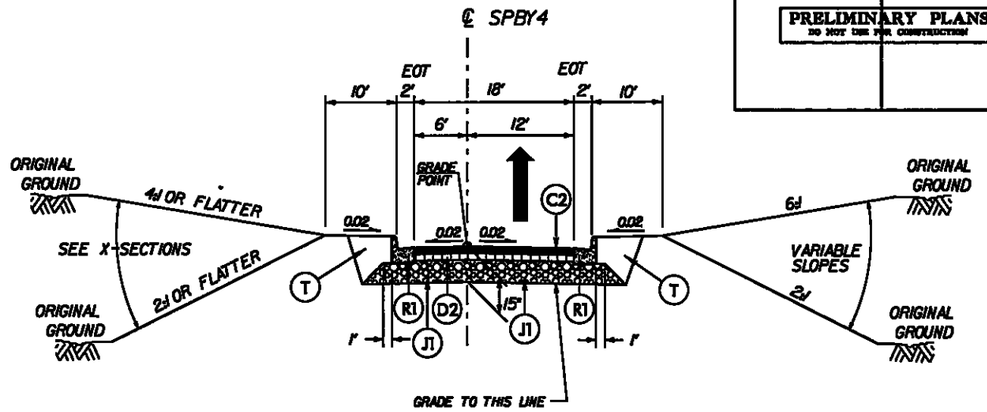
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO.15

USE TYPICAL SECTION NO. 15

SPAY4 STA. 0+00 TO STA. 4+20.54

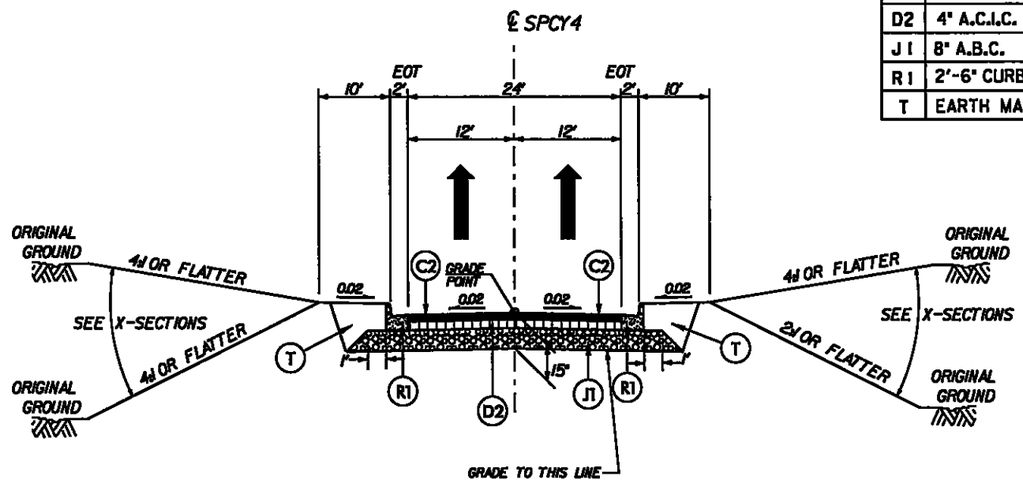


TYPICAL SECTION NO. 16

USE TYPICAL SECTION NO. 16

SPBY4 STA. 0+00 TO STA. 4+46.37

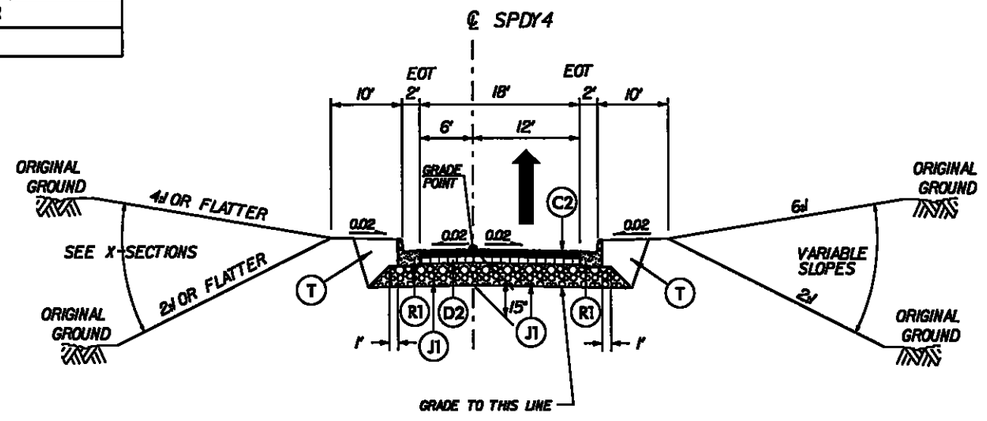
PAVEMENT SCHEDULE (SEE SHT. 2)	
C2	3" A.C.S.C. TYPE S9.5B
D2	4" A.C.I.C. TYPE I 19.0B
J1	8" A.B.C.
R1	2'-6" CURB & GUTTER
T	EARTH MATERIAL



TYPICAL SECTION NO.17

USE TYPICAL SECTION NO. 17

SPCY4 STA. 0+00 TO STA. 4+68.01



TYPICAL SECTION NO. 18

USE TYPICAL SECTION NO. 18

SPDY4 STA. 0+00 TO STA. 3+19.75

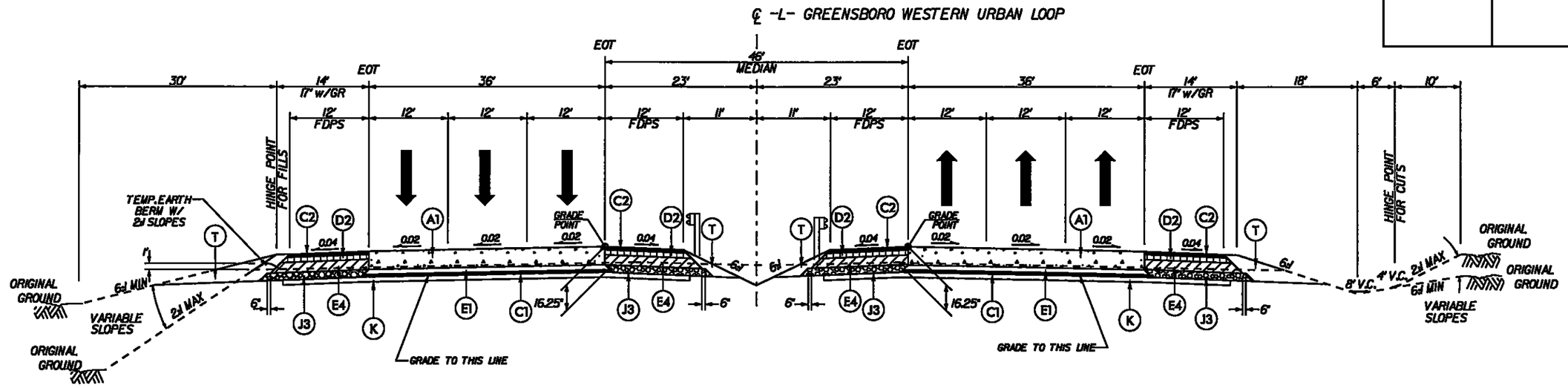
D:\NET-2007_05\Roadway\Proj\U2524C_RDY_PSH_02-G.dgn

6/2/99

PARSONS

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-H
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

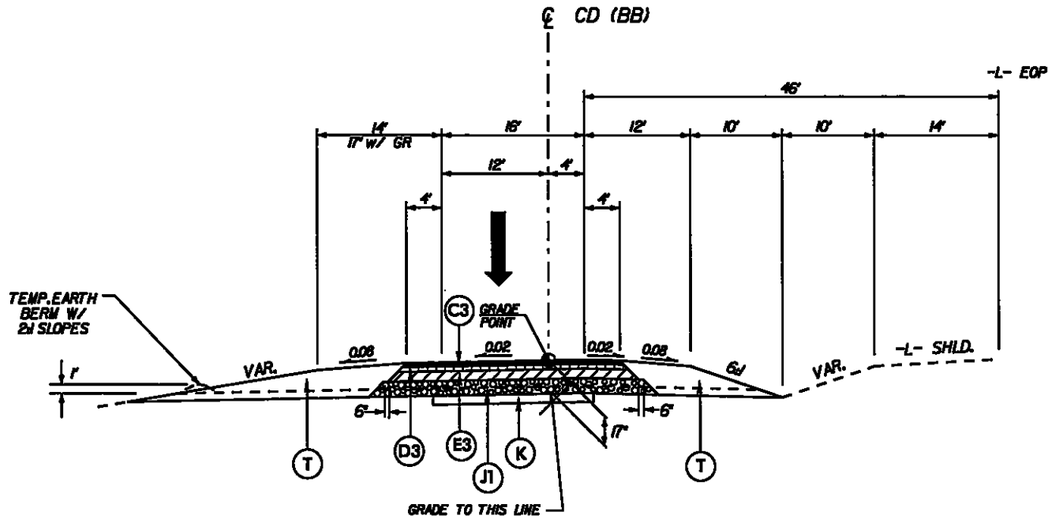


TYPICAL SECTION NO. 19

USE TYPICAL SECTION NO. 19

-L- (BB) STA. 217+14.78 TO STA. 265+74.75

PAVEMENT SCHEDULE (SEE SHT. 2)	
A1	12" P.C.C. JOINTED W/ DOWELS
C1	1.25" A.C.S.C. TYPE SF9.5A
C2	3" A.C.S.C. TYPE S9.5B
C3	3" A.C.S.C. TYPE S9.5C
D2	4" A.C.I.C. TYPE I19.0B
D3	3" A.C.I.C. TYPE I19.0C
E1	3" A.C.B.C. TYPE B25.0B
E3	3"A.C.B.C. TYPE B25.0C
E4	5" A.C.B.C. TYPE B25.0B
J1	8". A.B.C.
J3	VAR. DEPTH A.B.C.
K	SUBGRADE STABILIZATION
T	EARTH MATERIAL



TYPICAL SECTION NO 20

USE TYPICAL SECTION NO. 20

CD (BB) STA. 67+74.92 TO STA. 88+26.50

07-OCT-2002 08:44
J:\DOT2524C_Roadway\Proj\U2524C_RDY_PSH_02-H.dgn

6/2/99

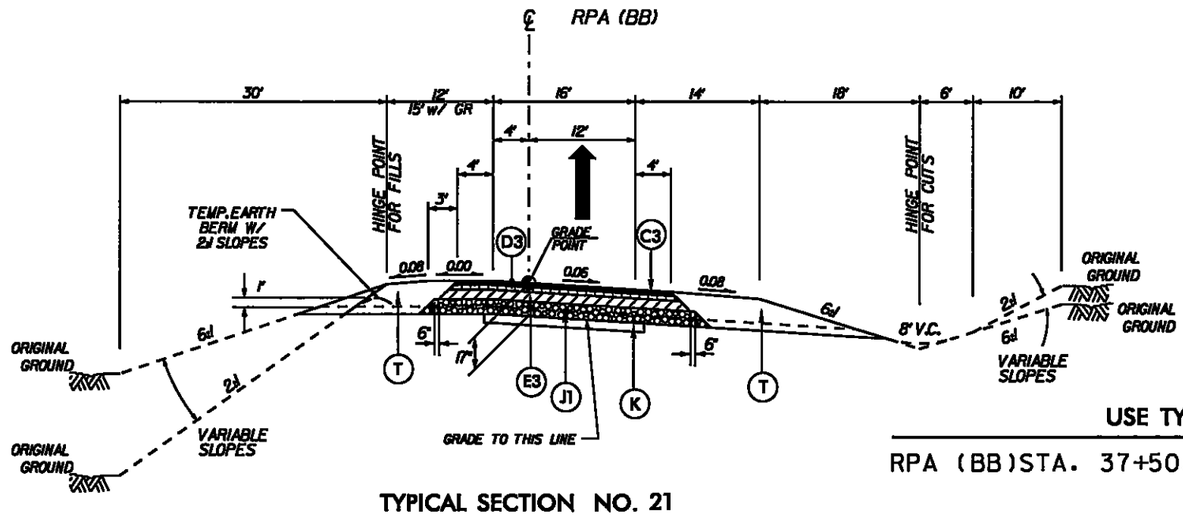
PARSONS

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-1

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

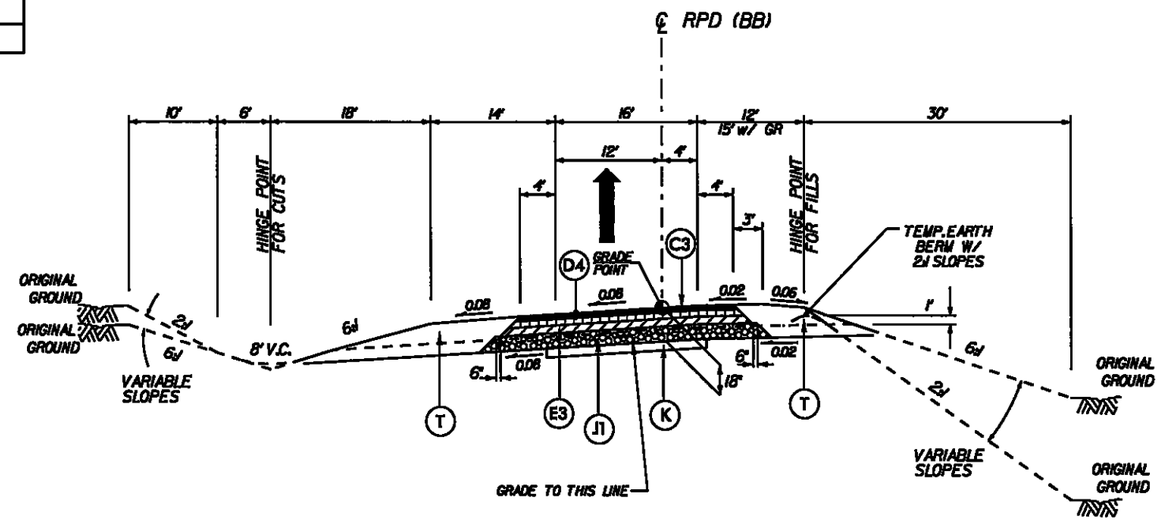


TYPICAL SECTION NO. 21

USE TYPICAL SECTION NO. 21

RPA (BB)STA. 37+50.73 TO STA. 45+27.55

PAVEMENT SCHEDULE (SEE SHT. 2)	
C3	3" A.C.S.C. TYPE S9.5C
D3	3" A.C.I.C. TYPE I19.0C
D4	4" A.C.I.C. TYPE I19.0C
E3	3" A.C.B.C. TYPE B25.0C
J1	8". A.B.C.
K	SUBGRADE STABILIZATION
T	EARTH MATERIAL



TYPICAL SECTION NO. 22

USE TYPICAL SECTION NO. 22

RPD (BB) STA. 39+98.92 TO STA. 64+79.65

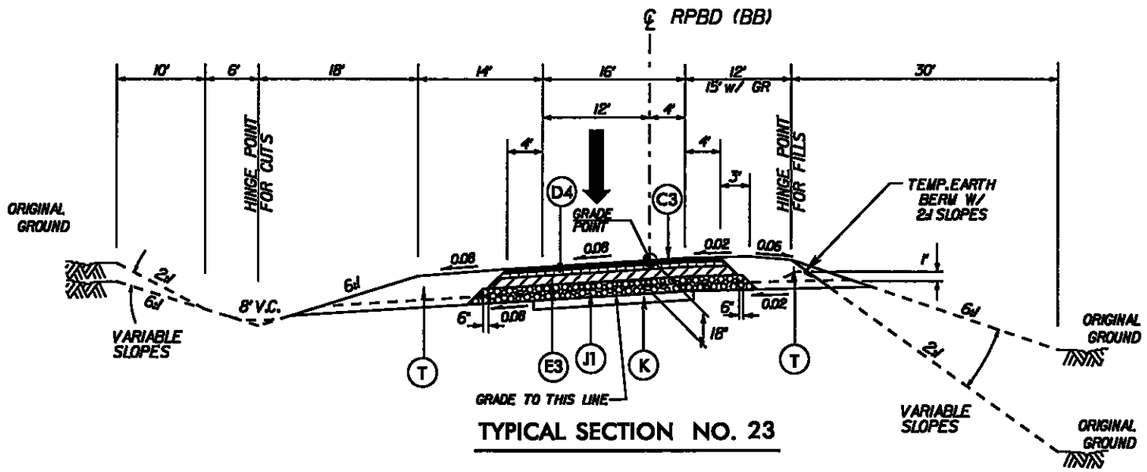
17-OCT-2002 08:44
J:\U-2524C_Roadway\Proj\U2524C_RDY_PSHL02-1.dgn
USER NAME =

6/2/99

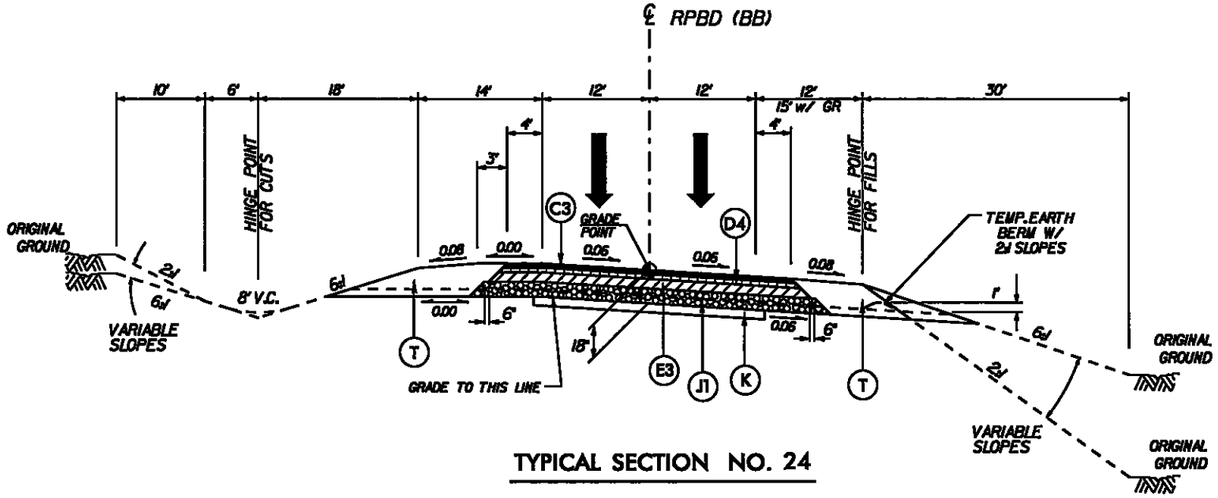
PLANS PREPARED BY: PARSONS, RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-J
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

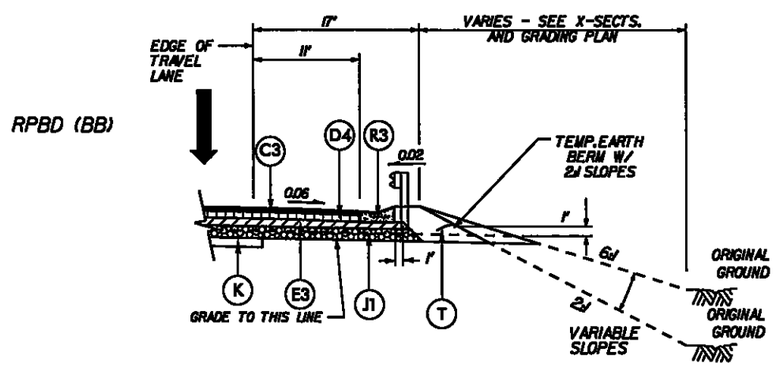
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 23



TYPICAL SECTION NO. 24



TYPICAL SECTION NO. 25

USE TYPICAL SECTION NO. 23

RPBD (BB) STA. 36+14.44 TO STA. 37+40.15

PAVEMENT SCHEDULE (SEE SHT. 2)	
C3	3" A.C.S.C. TYPE S9.5C
D4	4" A.C.I.C. TYPE I19.0C
E3	3" A.C.B.C. TYPE B25.0C
J1	8". A.B.C.
R3	EXPRESSWAY GUTTER
K	SUBGRADE STABILIZATION
T	EARTH MATERIAL

USE TYPICAL SECTION NO. 24

RPBD (BB) STA. 37+40.15 TO STA. 51+09.37 (BEG. BRIDGE)
RPBD (BB) STA. 54+08.98 (END BRIDGE) TO STA. 61+59.24 (BEG. BRIDGE)
RPBD (BB) STA. 67+02.28 (END BRIDGE) TO STA. 69+36.87

USE TYPICAL SECTION NO. 25

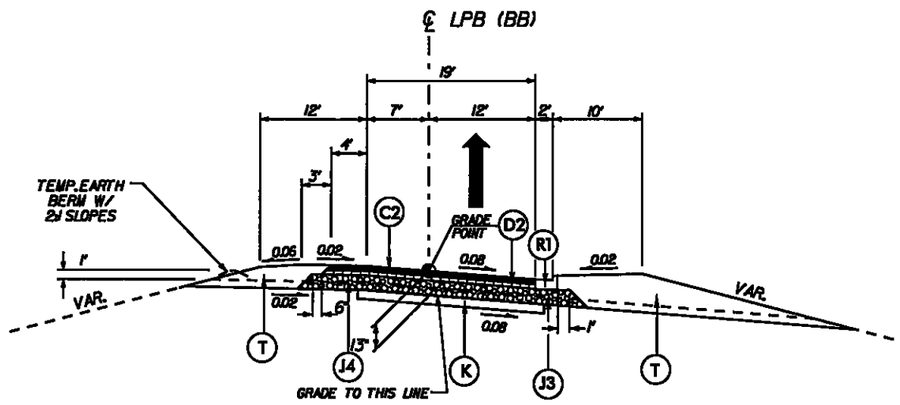
RPBD (BB) STA. 54+08.98 TO STA. 61+59.24
RPBD (BB) STA. 67+02.28 TO STA. 69+36.87

17-OCT-2002 09:45
J:\UE-2524C\Roadway\VP-rp\U2524C_RDY_PSH_02-J.dgn

PLANS PREPARED BY PARSONS RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-K
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

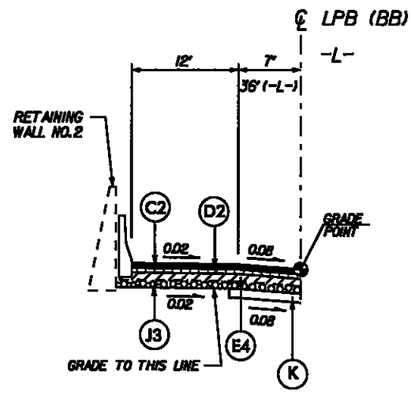
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 26

USE TYPICAL SECTION NO. 26

LPB (BB) STA. 3+93.70 TO STA. 12+42.78

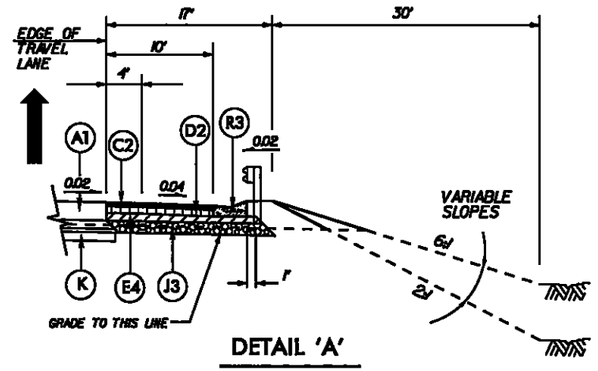


TYPICAL SECTION NO. 27

USE TYPICAL SECTION NO 27

LPB (BB) STA. 7+12.64 TO STA. 8+86.00
-L- STA. 357+25.00 TO STA. 359+00.00 LT.

PAVEMENT SCHEDULE (SEE SHT. 2)	
A1	12" P.C.C. JOINTED W/ DOWELS
C2	3" A.C.S.C. TYPE S9.5B
C5	2" A.C.S.C. TYPE S9.5A
D2	4" A.C.I.C. TYPE I19.0B
E4	5" A.C.B.C. TYPE B25.0B
J1	8". A.B.C.
J3	VAR. DEPTH A.B.C.
J4	6". A.B.C.
R1	2'-6" CURB & GUTTER
R3	EXPRESSWAY GUTTER
K	SUBGRADE STABILIZATION
T	EARTH MATERIAL

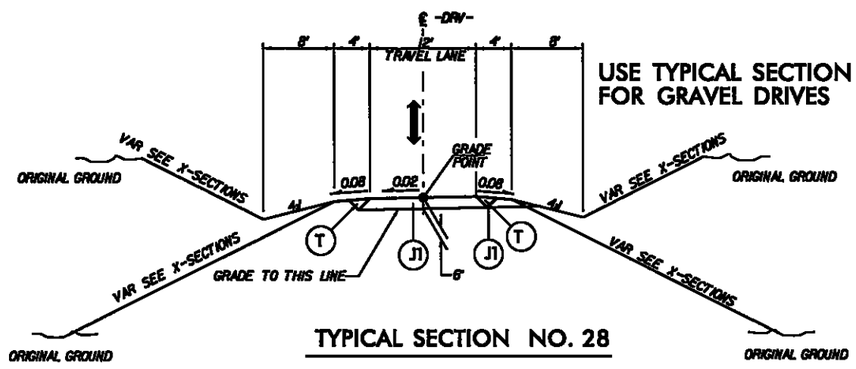


DETAIL 'A'

USE DETAIL 'A' IN CONJUNCTION WITH TYPICAL SECTION NO. 1 & 19

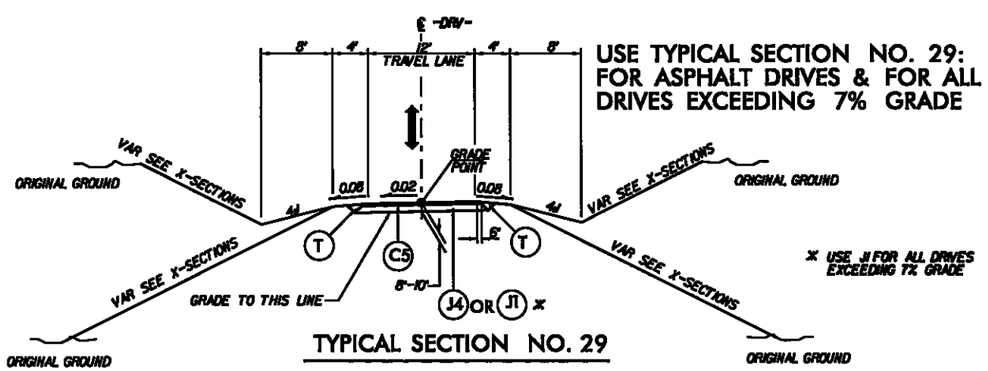
DETAIL 'A'

-L- (BB) STA. 235+89.19 TO STA. 240+20.47 RT.
-L- STA. 283+00.00 TO STA. 285+50.00 LT.
-L- STA. 283+50.00 TO STA. 298+00.00 RT.
-L- STA. 312+00.00 TO STA. 317+00.00 RT.
-L- STA. 356+50.00 TO STA. 357+25.00 LT.
-L- STA. 357+50.00 TO STA. 361+00.00 RT.
-L- STA. 377+00.00 TO STA. 379+20.00 LT.



TYPICAL SECTION NO. 28

USE TYPICAL SECTION NO. 28: FOR GRAVEL DRIVES



TYPICAL SECTION NO. 29

USE TYPICAL SECTION NO. 29: FOR ASPHALT DRIVES & FOR ALL DRIVES EXCEEDING 7% GRADE

17-OCT-2012 09:45
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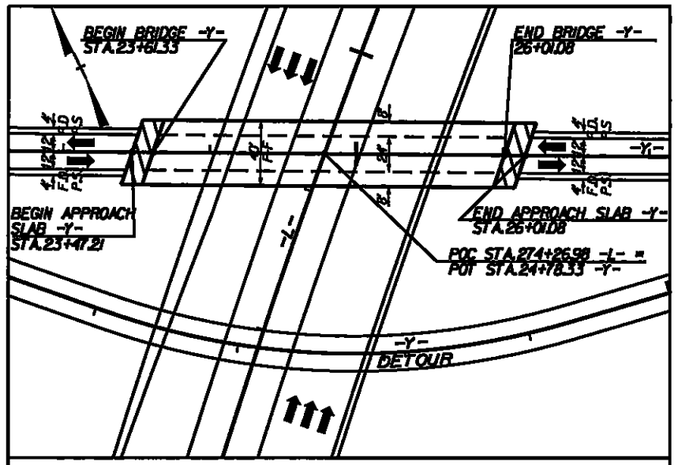
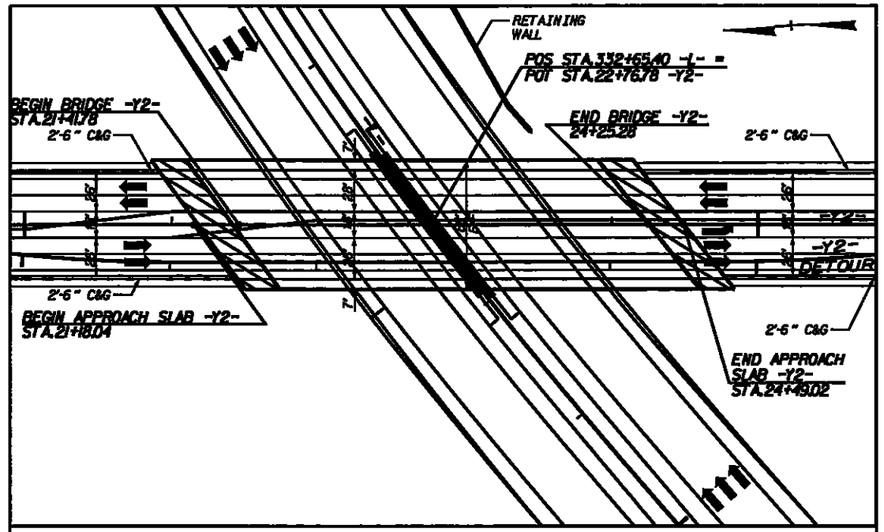
SKETCH SHOWING PAVEMENT WIDTH TO BRIDGE WIDTH RELATIONSHIP



DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -Y- OVER -L-



DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -Y2- OVER -L-

PREPARED BY PARSONS RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-L
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

17-OCT-2002 09:45
$DGN: Roadway\Proj\U2524C_RDY_PSH_02-L.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-M
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PARSONS
RALEIGH, NORTH CAROLINA

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

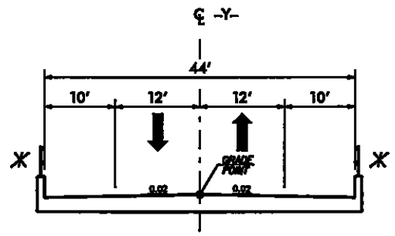
8/17/99

REVISIONS

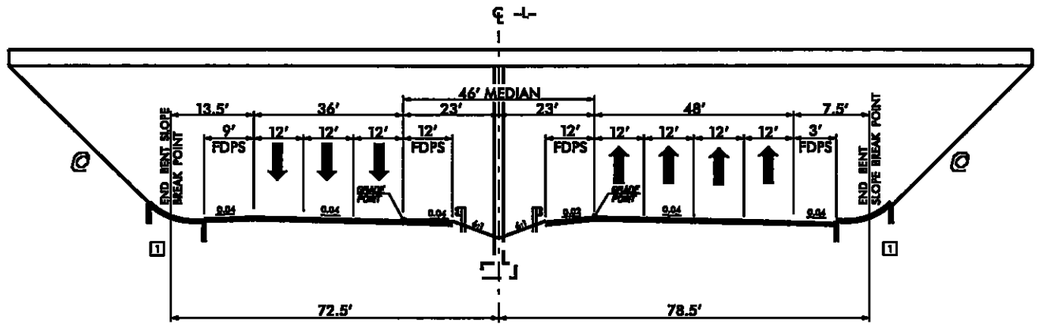
-Y- STRUCTURE

SR 2136 (FLEMING RD)

DESIGN DATA -Y-
ADT 2013 = 13,738
ADT 2035 = 16,400
D = 60%
DHV = 11%
TTST = 1%
DUAL = 2%
V = 50 mph
ROAD TYPE = RURAL COLLECTOR
MIN. VERTICAL CLEARANCE = 17'-6"
X TWO BAR METAL RAIL
@ SLOPES DETERMINED BY GEOTECHNICAL ENGINEERING UNIT.
[1] SEE DETAIL (SHEET 2-R)



TYPICAL SECTION ON STRUCTURE

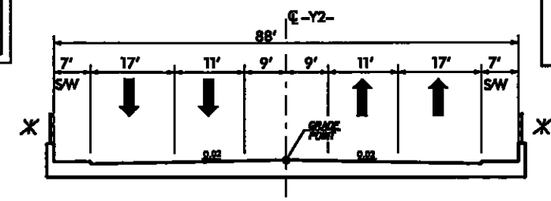


TYPICAL SECTION ON ROADWAY UNDER STRUCTURE

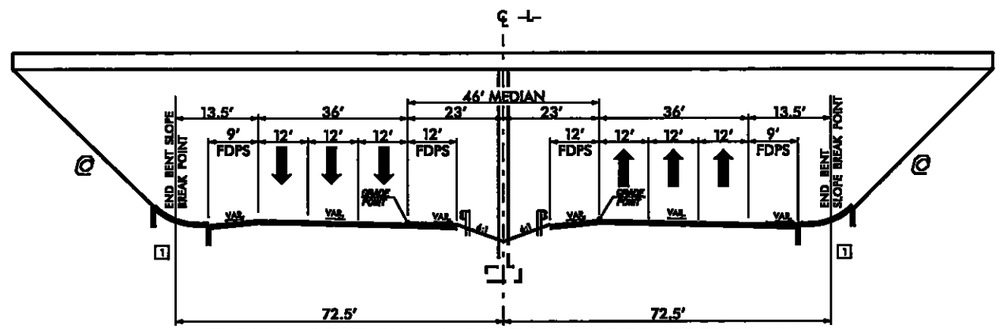
-Y2- STRUCTURE

SR 2182 (HORSEPEN CREEK RD)

DESIGN DATA -Y2-
ADT 2013 = 11,250
ADT 2035 = 16,500
D = 60%
DHV = 10%
TTST = 1%
DUAL = 2%
V = 50 mph
ROAD TYPE = RURAL COLLECTOR
MIN. VERTICAL CLEARANCE = 17'-6"
X THREE BAR METAL RAIL
@ SLOPES DETERMINED BY GEOTECHNICAL ENGINEERING UNIT.
[1] SEE DETAIL (SHEET 2-R)



TYPICAL SECTION ON STRUCTURE

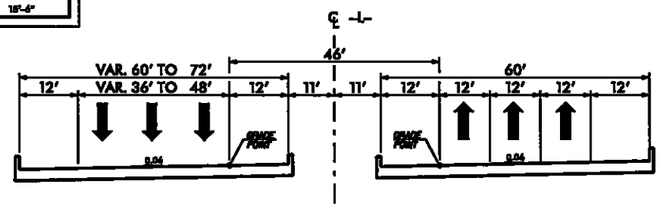


TYPICAL SECTION ON ROADWAY UNDER STRUCTURE

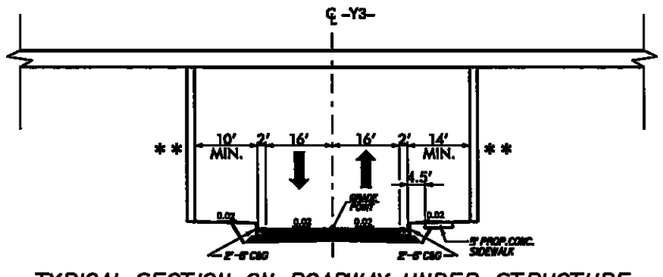
-L- STRUCTURE

GREENSBORO WESTERN LOOP

DESIGN DATA -L-
ADT 2013 = 3,738
ADT 2035 = 44,200
D = 55%
DHV = 11%
TTST = 4%
DUAL = 3%
V = 70 mph
ROAD TYPE = FREEWAY
MIN. VERTICAL CLEARANCE = 16'-6"



TYPICAL SECTION ON STRUCTURES



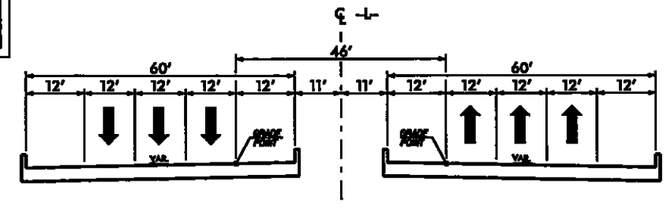
TYPICAL SECTION ON ROADWAY UNDER STRUCTURE

** PIER LOCATION DETERMINED BY STRUCTURE DESIGN.

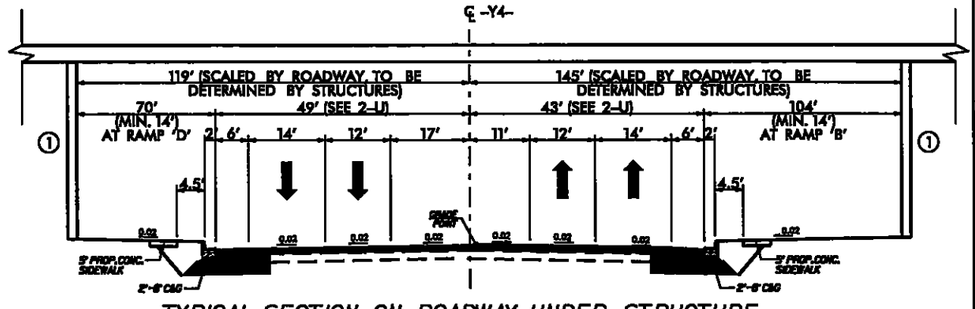
-L- STRUCTURE

GREENSBORO WESTERN LOOP

DESIGN DATA -L-
ADT 2013 = 3,738
ADT 2035 = 44,200
D = 55%
DHV = 11%
TTST = 4%
DUAL = 3%
V = 70 mph
ROAD TYPE = FREEWAY
MIN. VERTICAL CLEARANCE = 17'-0"



TYPICAL SECTION ON STRUCTURES



TYPICAL SECTION ON ROADWAY UNDER STRUCTURE

① PIER LOCATION DETERMINED BY STRUCTURE DESIGN.

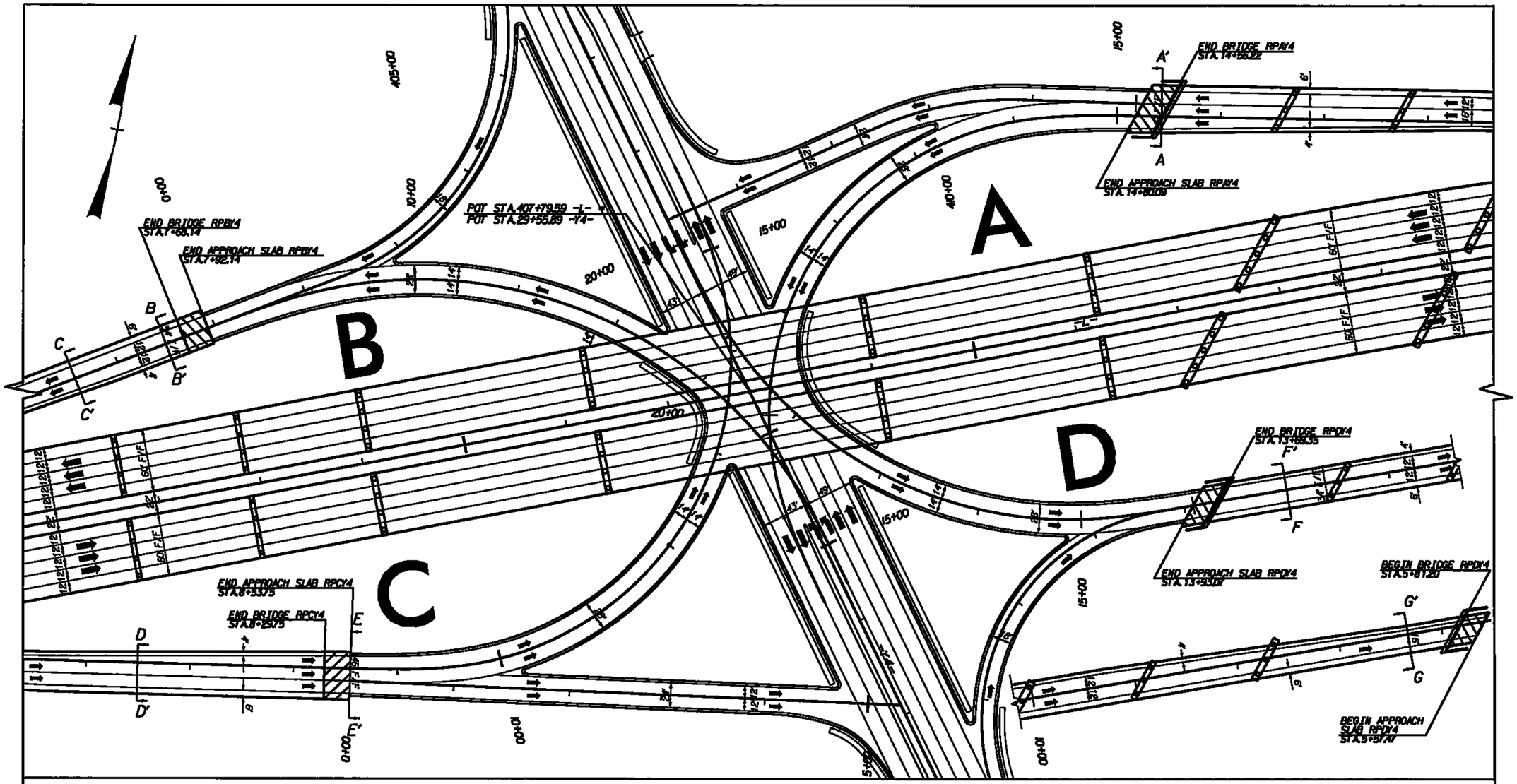
17-OCT-2012 08:45
\\AUS-prod\Projects\Proj\VP-proj\U2524C_RDY_PSH_02-Hdgn

PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-N
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SKETCH SHOWING PAVEMENT WIDTH TO BRIDGE WIDTH RELATIONSHIP



DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -L- OVER -Y4-

REVISIONS
8/17/98

17-OCT-2012 09:45
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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-O
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

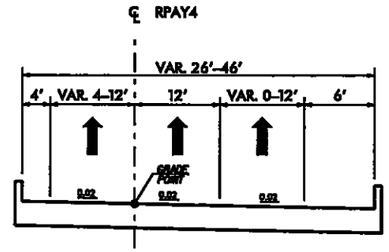
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY:
PARSONS
GOLDEN, NORTH CAROLINA

REVISIONS
8/17/99

DESIGN DATA RPAY4
ADT 2013 = 329
ADT 2035 = 7,890
D = 60%
DHV = 10%
TIST = 4%
DUAL = 5%
V = 60 mph
ROAD TYPE = RAMP

RPAY4 STRUCTURE
GREENSBORO WESTERN LOOP



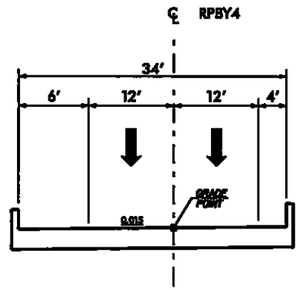
TYPICAL SECTION ON STRUCTURE

TYPICAL SECTION OF GROUND UNDER STRUCTURE

VIEW A-A'
RPAY4 STA. 13+00

DESIGN DATA RPBY4
ADT 2013 = 698
ADT 2035 = 16,050
D = 60%
DHV = 10%
TIST = 3%
DUAL = 4%
V = 30 mph
ROAD TYPE = RAMP

RPBY4 STRUCTURE
GREENSBORO WESTERN LOOP



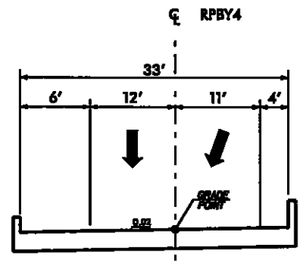
TYPICAL SECTION ON STRUCTURE

TYPICAL SECTION OF GROUND UNDER STRUCTURE

VIEW B-B'
RPBY4 STA. 7+50.00

DESIGN DATA RPBY4
ADT 2013 = 698
ADT 2035 = 16,050
D = 60%
DHV = 10%
TIST = 3%
DUAL = 4%
V = 30 mph
ROAD TYPE = RAMP

RPBY4 STRUCTURE
GREENSBORO WESTERN LOOP



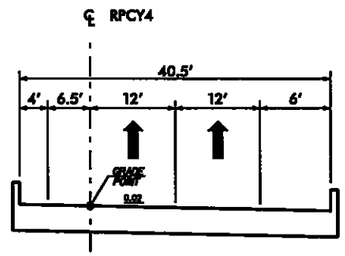
TYPICAL SECTION ON STRUCTURE

TYPICAL SECTION OF GROUND UNDER STRUCTURE

VIEW C-C'
RPBY4 STA. 6+56.00

DESIGN DATA RPCY4
ADT 2013 = 698
ADT 2035 = 16,050
D = 35%
DHV = TPK
TIST = 4%
DUAL = 3%
V = 60 mph
ROAD TYPE = RAMP

RPCY4 STRUCTURE
GREENSBORO WESTERN LOOP



TYPICAL SECTION ON STRUCTURE

TYPICAL SECTION OF GROUND UNDER STRUCTURE

VIEW D-D'
RPCY4 STA. 6+50.00

07-OCT-2012 09:45
J:\PE\2524C_Woodleaf\PP=J\U2524C_RDY_PSH_02-Design

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-P
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY
PARSONS
RALEIGH, NORTH CAROLINA

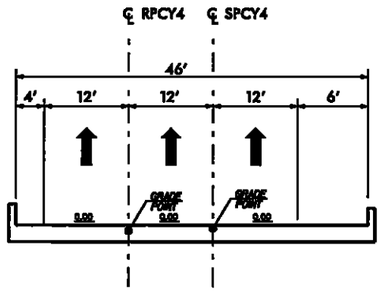
REVISIONS

8/17/98

DESIGN DATA RPCY4
ADT 2013 = 698
ADT 2035 = 16,030
D = 60%
DHV = 11%
TTST = 4%
DUAL = 3%
V = 40 mph
ROAD TYPE = RAMP

RPCY4 STRUCTURE

GREENSBORO WESTERN LOOP



TYPICAL SECTION ON STRUCTURE

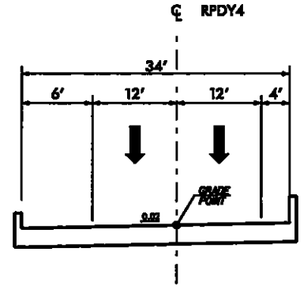
TYPICAL SECTION OF GROUND UNDER STRUCTURE

VIEW E–E′
RPCY4 STA. 8+54.75, SPCY4 STA. 0+00.00

DESIGN DATA RPDY4
ADT 2013 = 329
ADT 2035 = 7,550
D = 60%
DHV = 10%
TTST = 2%
DUAL = 4%
V = 30 mph
ROAD TYPE = RAMP

RPDY4 STRUCTURE

GREENSBORO WESTERN LOOP



TYPICAL SECTION ON STRUCTURE

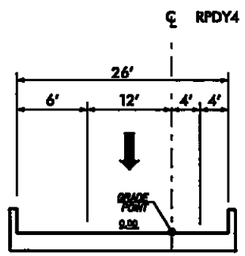
TYPICAL SECTION OF GROUND UNDER STRUCTURE

VIEW F–F′
RPDY4 STA. 13+00.00

DESIGN DATA RPDY4
ADT 2013 = 329
ADT 2035 = 7,550
D = 60%
DHV = 10%
TTST = 2%
DUAL = 4%
V = 30 mph
ROAD TYPE = RAMP

RPDY4 STRUCTURE

GREENSBORO WESTERN LOOP



TYPICAL SECTION ON STRUCTURE

TYPICAL SECTION OF GROUND UNDER STRUCTURE

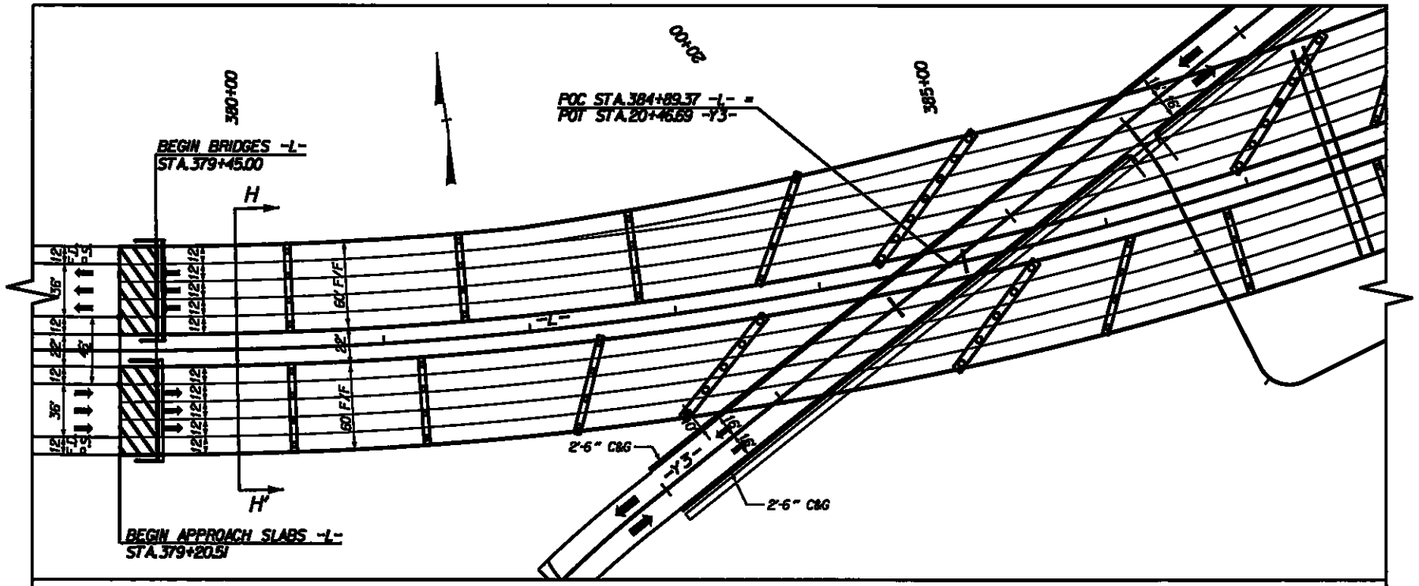
VIEW G–G′
RPDY4 STA. 6+33.17

07-OCT-2002 08:45
J:\DOT-2002\...\U2524C_RDY_PSH_02-P.dgn

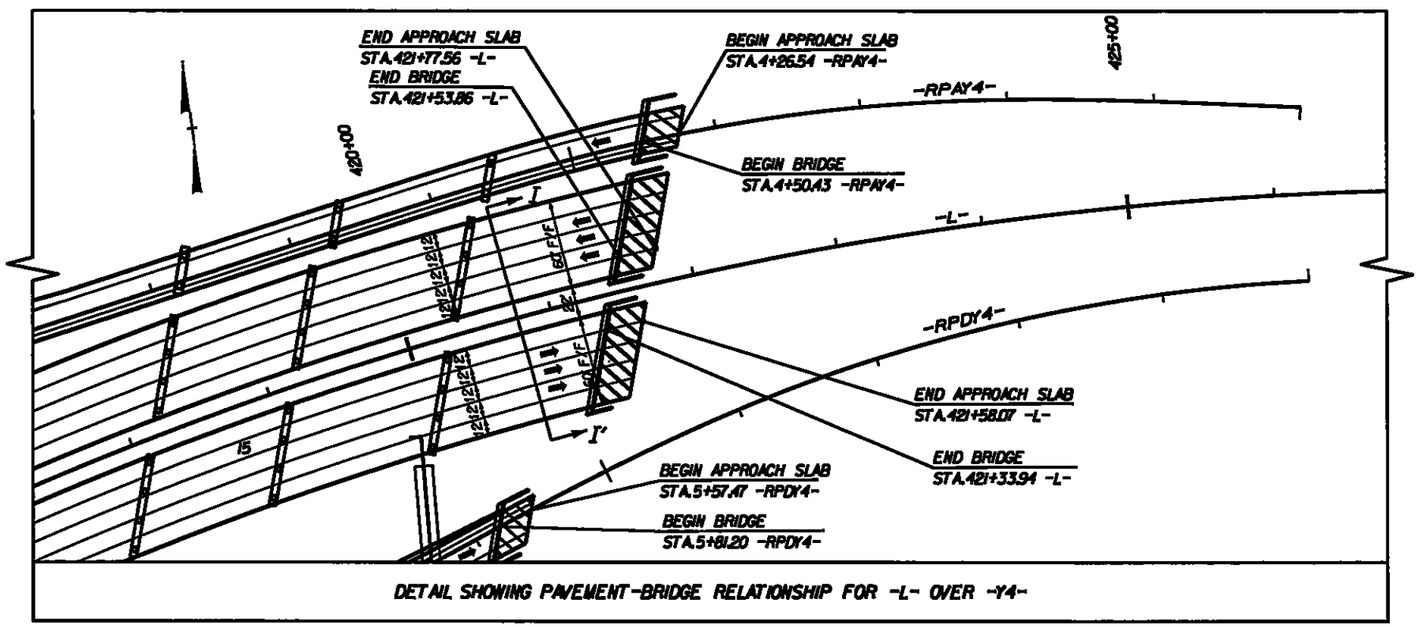
PLANS PREPARED BY: PARSONS RALEIGH, NORTH CAROLINA	PROJECT REFERENCE NO.	SHEET NO.
	U-2524C	2-Q
	RW SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SKETCH SHOWING PAVEMENT WIDTH TO BRIDGE WIDTH RELATIONSHIP



DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -L- OVER -Y3-



DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -L- OVER -Y4-

REVISIONS

8/17/98

17-OCT-2012 09:45
J:\U2524C_Roadway\VP-rp\U2524C_RDY_PSH_02-Q.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-R
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

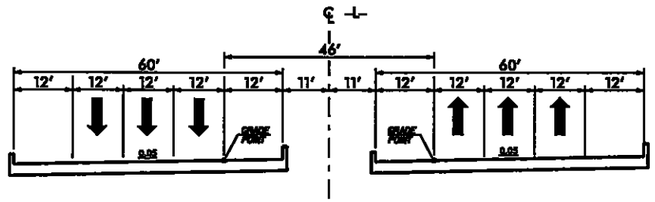
PARSONS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 8/17/98

DESIGN DATA -L-
ADT 2013 = 3,738
ADT 2035 = 46,200
D = 89%
DHV = 11%
TST = 4%
DUAL = 5%
V = 70 mph
ROAD TYPE = FREEWAY
MIN. VERTICAL CLEARANCE = 15'-6"

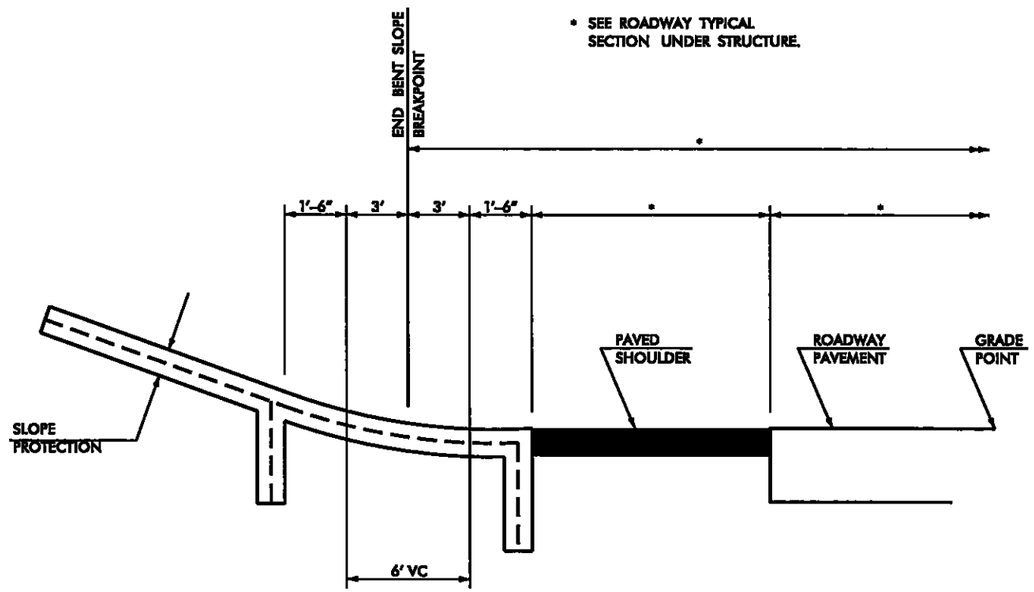
-L- STRUCTURE
GREENSBORO WESTERN LOOP



TYPICAL SECTION ON STRUCTURES

TYPICAL SECTION OF GROUND UNDER STRUCTURE

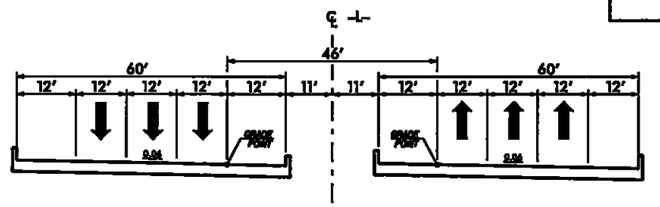
VIEW H–H'
-L- STA. 380+00.00



SPECIAL DETAIL WITHOUT BRIDGE PIER
(USE IN CONJUNCTION WITH STANDARD NO. 610.03)

DESIGN DATA -L-
ADT 2013 = 2,009
ADT 2035 = 44,200
D = 60%
DHV = 10%
TST = 4%
DUAL = 5%
V = 70 mph
ROAD TYPE = FREEWAY
MIN. VERTICAL CLEARANCE = 15'-6"

-L- STRUCTURE
GREENSBORO WESTERN LOOP



TYPICAL SECTION ON STRUCTURES

TYPICAL SECTION OF GROUND UNDER STRUCTURE

VIEW I–I'
-L- STA. 420+77.00

17-OCT-2017 08:45
J:\DESIGN\Projects\Projects\U2524C_RDY_PSH_02-Ridge

CURVE DATA

PARSONS

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-S

ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

-L-

Pts Sta 248+57.47	PI Sta 264+72.96	Pts Sta 280+15.80
θs = 2° 02' 46.6"	Δ = 28° 41' 59.3" (RT)	θs = 2° 02' 46.6"
Ls = 410.00'	D = 0° 59' 52.6"	Ls = 410.00'
LT = 273.42'	L = 2,875.93'	LT = 273.42'
ST = 136.72'	T = 1,468.88'	ST = 136.72'
	R = 5,741.46'	
	e = 0.04	
	D.S. = 70 Mph	
	Runoff = 410.00'	

-L-

Pts Sta 332+30.06	PI Sta 336+35.69	Pts Sta 340+40.78
θs = 6° 35' 39.7"	Δ = 11° 46' 02.8" (RT)	θs = 6° 35' 39.7"
Ls = 600.00'	D = 2° 51' 53.2"	Ls = 600.00'
LT = 400.41'	L = 410.76'	LT = 400.41'
ST = 200.43'	T = 206.11'	ST = 200.43'
	R = 2,000.00'	
	e = 0.10	
	D.S. = 70 Mph	
	Runoff = 600.00'	

-L-

Pts Sta 362+60.50	PI Sta 366+02.39	Pts Sta 369+43.94
θs = 5° 30' 01.4"	Δ = 8° 19' 47.3" (RT)	θs = 5° 30' 01.4"
Ls = 480.00'	D = 2° 17' 30.6"	Ls = 480.00'
LT = 320.15'	L = 363.46'	LT = 320.15'
ST = 160.14'	T = 182.05'	ST = 160.14'
	R = 2,500.00'	
	e = 0.08	
	D.S. = 70 Mph	
	Runoff = 480.00'	

-L-

Pts Sta 379+16.55	PI Sta 385+42.44	Pts Sta 391+58.05
θs = 5° 30' 01.4"	Δ = 21° 01' 10.5" (LT)	θs = 5° 30' 01.4"
Ls = 480.00'	D = 2° 17' 30.6"	Ls = 480.00'
LT = 320.15'	L = 921.52'	LT = 320.15'
ST = 160.14'	T = 466.05'	ST = 160.14'
	R = 2,500.00'	
	e = 0.08	
	D.S. = 70 Mph	
	Runoff = 480.00'	

-L-

Pts Sta 415+25.60	PI Sta 421+58.62	Pts Sta 427+90.87
θs = 5° 30' 01.4"	Δ = 21° 28' 06.8" (RT)	θs = 5° 30' 01.4"
Ls = 480.00'	D = 2° 17' 30.6"	Ls = 480.00'
LT = 320.15'	L = 935.29'	LT = 320.15'
ST = 160.14'	T = 473.18'	ST = 160.14'
	R = 2,500.00'	
	e = 0.06	
	D.S. = 70 Mph	
	Runoff = 480.00'	

-Y-

Pts Sta 13+20.43	PI Sta 15+87.82	Pts Sta 18+53.31
θs = 1° 47' 25.8"	Δ = 12° 52' 42.3" (RT)	θs = 1° 47' 25.8"
Ls = 125.00'	D = 2° 51' 53.2"	Ls = 125.00'
LT = 83.34'	L = 449.54'	LT = 83.34'
ST = 41.67'	T = 225.72'	ST = 41.67'
	R = 2,000.00'	
	e = 0.05	
	D.S. = 50 Mph	
	Runoff = 125.00'	

RPBD (BB)

Pts Sta 34+69.69	PI Sta 37+01.66	Pts Sta 39+31.17
θs = 10° 35' 14.1"	Δ = 20° 55' 33.0" (LT)	θs = 10° 35' 14.1"
Ls = 278.87'	D = 7° 35' 34.6"	Ls = 278.87'
LT = 186.25'	L = 275.60'	LT = 186.25'
ST = 93.26'	T = 139.35'	ST = 93.26'
	R = 754.59'	

RPBD (BB)

Pts Sta 43+87.83	PI Sta 49+40.70	Pts Sta 55+08.84
θs = 3° 34' 51.6"	Δ = 34° 23' 11.8" (RT)	θs = 3° 34' 41.7"
Ls = 196.85'	D = 3° 38' 17.8"	θs = 1° 28' 27.9"
LT = 131.26'	L = 945.13'	Ls = 196.85'
ST = 65.64'	T = 487.28'	LT = 110.28'
	R = 1,574.80'	ST = 87.76'

Pts Sta 66+21.49	Pts Sta 71+02.32
Δ = 10° 20' 16.6" (RT)	θs = 10° 35' 14.1"
D = 7° 35' 34.6"	Ls = 278.87'
L = 1,413.85'	LT = 186.25'
T = 1,086.09'	ST = 93.26'
R = 754.59'	

-Y-

Pts Sta 29+25.73	PI Sta 31+56.99	Pts Sta 33+84.81
θs = 6° 21' 58.3"	Δ = 20° 44' 18.3" (LT)	θs = 6° 21' 58.3"
Ls = 200.00'	D = 6° 21' 58.3"	Ls = 200.00'
LT = 133.42'	L = 325.76'	LT = 133.42'
ST = 66.75'	T = 164.68'	ST = 66.75'
	R = 900.00'	
	e = 0.08	
	D.S. = 50 Mph	
	Runoff = 200.00'	

-Y- DETOUR

Pts Sta 12+41.19	PI Sta 17+72.27
Δ = 22° 43' 45.6" (RT)	Δ = 35° 40' 42.7" (LT)
D = 0° 46' 28.7"	D = 11° 14' 04.1"
L = 476.04'	L = 317.58'
T = 241.19'	T = 164.13'
R = 1,200.00'	R = 510.00'
e = 0.04	e = 0.06
D.S. = 35 Mph	D.S. = 40 Mph
Runoff = 80.00'	Runoff = 126.00'

-Y1-

P.I. = 12+77.23
Δ = 7° 15' 35.0" (RT)
D = 8° 48' 53.0"
T = 41.23'
L = 82.36'
R = 650.00'

-Y1-

P.I. = 14+25.39
Δ = 6° 23' 33.0" (LT)
D = 6° 44' 26.4"
T = 47.41'
L = 94.83'
R = 850.00'

-Y2-

P.I. = 14+67.35
Δ = 1° 38' 05.2" (RT)
D = 0° 54' 34.0"
T = 89.88'
L = 179.75'
R = 6,300.00'
e = 0.02
D.S. = 50 Mph
Runoff = 48.00'

-Y2- DETOUR

Pt Sta 14+67.36
Δ = 1° 38' 05.2" (RT)
D = 0° 54' 34.0"
L = 179.75'
T = 89.88'
R = 6,300.00'
e = 0.04
D.S. = 50ph
Runoff = 96.00'

-Y2- DETOUR

Pt Sta 18+61.00
Δ = 9° 09' 08.1" (RT)
D = 5° 45' 46.5"
L = 159.14'
T = 80.04'
R = 1,000.00'
e = 0.04
D.S. = 50 mph
Runoff = 96.00'

-Y2- DETOUR

Pt Sta 20+20.98
Δ = 9° 10' 49.5" (LT)
D = 5° 45' 46.5"
L = 160.23'
T = 80.29'
R = 1,000.00'
e = 0.04
D.S. = 50 Mph
Runoff = 96.00'

-Y2- DETOUR

Pts Sta 25+64.97
Δ = 9° 05' 22.9" (LT)
D = 5° 43' 46.5"
L = 158.64'
T = 79.49'
R = 1,000.00'
e = 0.04
D.S. = 50 Mph
Runoff = 96.00'

-Y2- DETOUR

Pts Sta 27+23.86
Δ = 9° 01' 04.7" (RT)
D = 5° 43' 46.5"
L = 159.14'
T = 79.74'
R = 1,000.00'
e = 0.04
D.S. = 50 Mph
Runoff = 96.00'

-Y3-

P.I. = 15+03.52
Δ = 45° 43' 30.2" (RT)
D = 7° 38' 22.0"
T = 316.23'
L = 598.54'
R = 750.00'
e = 0.04
D.S. = 45 Mph
RUNOFF = 90.00'

-Y3-

P.I. = 25+54.66
Δ = 10° 18' 17.4" (RT)
D = 6° 09' 39.0"
T = 83.86'
L = 167.28'
R = 930.00'
e = 0.04
D.S. = 50 Mph
Runoff = 96.00'

-Y3-

P.I. = 26+67.44
Δ = 15° 50' 19.3" (LT)
D = 6° 09' 39.7"
T = 129.37'
L = 257.09'
R = 930.00'
e = 0.04
D.S. = 50 Mph
RUNOFF = 96.00'

-Y3-

P.I. = 36+32.62
Δ = 37° 57' 04.2" (LT)
D = 10° 25' 02.7"
T = 189.12'
L = 364.3'
R = 550.00'
e = 0.04
D.S. = 35 Mph
RUNOFF = 75'

-Y3-

P.I. = 40+67.82
Δ = 32° 15' 30.7" (RT)
D = 14° 19' 26.2"
T = 115.68'
L = 225.21'
R = 400.00'
e = 0.04
D.S. = 30 Mph
RUNOFF = 72.00'

RPBD (BB)

Pts Sta 74+96.03	PI Sta 79+84.95	Pts Sta 84+46.28
θs = 4° 11' 49.9"	Δ = 35° 45' 28.1" (LT)	θs = 4° 11' 49.9"
Ls = 196.85'	D = 4° 21' 57.4"	Ls = 196.85'
LT = 131.27'	L = 819.02'	LT = 131.27'
ST = 65.65'	T = 423.34'	ST = 65.65'
	R = 1,312.33'	

RPAY4

Pts Sta 1+71.48	PI = 3+51.09	Pts Sta 5+30.13
θs = 4° 46' 28.73"	Δ = 10° 45' 30.0" (LT)	θs = 4° 46' 28.73"
Ls = 200.00'	D = 4° 46' 28.7"	Ls = 200.00'
LT = 133.38'	L = 225.32'	LT = 133.38'
ST = 66.71'	T = 112.99'	ST = 66.71'
	R = 1,200.00'	
	e = 0.06	
	D.S. = 55.00 Mph	
	Runoff = 200.00'	

RPAY4

Pts Sta 15+65.35	PI = 19+01.74	Pts Sta 21+06.71
θs = 12° 31' 15.35"	Δ = 91° 45' 44.1" (LT)	θs = 12° 31' 15.35"
Ls = 125.00'	D = 20° 02' 00.56"	Ls = 125.00'
LT = 83.54'	L = 458.04'	LT = 83.54'
ST = 41.86'	T = 294.93'	ST = 41.86'
	R = 286.00'	
	e = 0.04	
	D.S. = 30.00 Mph	
	Runoff = 125.00'	

RPBY4

Pts Sta 1+33.36	PI Sta 2+53.23	Pts Sta 3+73.12
θs = 3° 22' 13.2"	Δ = 3° 35' 13.5" (LT)	θs = 3° 22' 13.2"
Ls = 200.00'	D = 3° 22' 13.2"	Ls = 200.00'
LT = 133.36'	L = 106.43'	LT = 133.36'
ST = 66.69'	T = 53.23'	ST = 66.69'
	R = 1,700.00'	
	e = 0.06	
	D.S. = 60 Mph	
	Runoff = 200.00'	

RPBY4

Pts Sta 8+66.54	PI Sta 12+07.00	Pts Sta 14+68.92
θs = 7° 19' 42.7"	Δ = 70° 29' 40.4" (RT)	θs = 7° 19' 42.7"
Ls = 110.00'	D = 13° 19' 28.6"	Ls = 110.00'
LT = 73.40'	L = 529.06'	LT = 73.40'
ST = 36.72'	T = 303.86'	ST = 36.72'
	R = 430.00'	
	e = 0.04	
	D.S. = 30 Mph	
	Runoff = 110.00'	

RPCY4

Pts Sta 1+33.38	PI Sta 2+27.58	Pts Sta 3+21.85
θs = 4° 45' 17.4"	Δ = 2° 37' 19.3" (RT)	θs = 4° 45' 17.4"
Ls = 200.00'	D = 4° 45' 17.4"	Ls = 200.00'
LT = 133.38'	L = 55.14'	LT = 133.38'
ST = 66.71'	T = 27.58'	ST = 66.71'
	R = 1,205.00'	
	e = 0.06	
	D.S. = 55 Mph	
	Runoff = 200.00'	

RPCY4

Pts Sta 9+38.28	PI Sta 12+93.78	Pts Sta 15+04.67
θs = 12° 03' 25.9"	Δ = 93° 11' 36.6" (LT)	θs = 12° 03' 25.9"
Ls = 125.00'	D = 19° 11' 29.4"	Ls = 125.00'
LT = 83.53'	L = 483.08'	LT = 83.53'
ST = 41.84'	T = 314.03'	ST = 41.84'
	R = 297.00'	
	e = 0.04	
	D.S. = 30 Mph	
	Runoff = 125.00'	

RPDY4

Pt Sta 2+06.25
Δ = 20° 20' 08.8" (LT)
D = 4° 58' 56.1"
L = 408.17'
T = 206.25'
R = 1,150.00'
e = 0.06
D.S. = 55 Mph
Runoff = 200.00'

RPDY4

Pts Sta 4+83.23
θs = 5° 36' 40.8"
Ls = 225.00'
LT = 150.08'
ST = 75.07'

RPDY4

Pts Sta 14+64.53	PI Sta 17+17.33	Pts Sta 19+33.02
θs = 8° 02' 20.2"	Δ = 51° 45' 26.9" (RT)	θs = 8° 02' 20.2"
Ls = 110.00'	D = 14° 36' 58.6"	Ls = 110.00'
LT = 73.41'	L = 395.16'	LT = 73.41'
ST = 36.74'	T = 216.21'	ST = 36.74'
	R = 392.00'	
	e = 0.04	
	D.S. = 30 Mph	
	Runoff = 77.00'	

-DRV1-

Pt Sta 12+32.11	PI Sta 13+64.37
Δ = 55° 35' 39.5" (RT)	Δ = 70° 04' 08.7" (LT)
D = 190° 59' 09.4"	D = 208° 20' 53.8"
L = 29.11'	L = 33.63'
T = 15.82'	T = 19.28'
R = 30.00'	R = 27.50'

-DRV2-

Pt Sta 10+38.62	PI Sta 12+12.13
Δ = 12° 02' 44.9" (RT)	Δ = 90° 00' 00.0" (LT)
D = 38° 11' 49.9"	D = 254° 38' 52.5"
L = 31.54'	L = 35.34'
T = 15.83'	T = 22.50'
R = 150.00'	R = 22.50'

-DRV3-

Pt Sta 10+94.70
Δ = 89° 46' 58.0" (LT)
D = 229° 10' 59.2"
L = 39.18'
T = 24.91'
R = 25.00'

SPAY4

Pt Sta 1+83.75
Δ = 25° 50' 28.1" (LT)
D = 11° 54' 17.8"
L = 144.32'
T = 73.41'
R = 320.00'
e = 0.04
D.S. = 25 Mph
Runoff = 68.00'

SPBY4

Pt Sta 4+07.55
Δ = 94° 14' 41.6" (LT)
D = 22° 55' 05.9"
L = 411.22'
T = 269.24'
R = 250.00'
e = 0.04
D.S. = 25 Mph
Runoff = 68.00'

SPDY4

Pt Sta 3+01.03
Δ = 104° 52' 54.8" (LT)
D = 27° 56' 57.0"
L = 375.26'
T = 266.59'
R = 205.00'
e = 0.04
D.S. = 25 Mph
Runoff = 68.00'

RPA (BB)

Pts Sta 36+26.91	PI Sta 43+04.79	Pts Sta 49+36.39
θs = 2° 36' 15.7"	Δ = 38° 06' 23.8" (RT)	θs = 2° 36' 15.7"
Ls = 164.04'	D = 3° 10' 30.8"	Ls = 164.04'
LT = 109.37'	L = 1,200.12'	LT = 109.37'
ST = 54.69'	T = 623.20'	ST = 54.69'
	R = 1,804.46'	

LPB (BB)

Pts Sta 2+70.64	PI Sta 60+09.72	Pts Sta 63+81.47
θs = 42° 58' 18.6"	Δ = 185° 21' 05.7" (RT)	θs = 42° 58' 18.6"
Ls = 339.70'	D = 21° 49' 47.0"	Ls = 339.70'
LT = 270.64'	L = 849.08'	LT = 270.64'
ST = 138.70'	T = 5,616.02'	ST = 138.70'
	R = 262.47'	
	e = 0.04	
	D.S. = 30 Mph	
	Runoff = 125.00'	

RPD (BB)

Pts Sta 33+89.98	PI Sta 36+52.53	Pts Sta 38+92.58
θs = 0° 59' 32.2"	Δ = 6° 55' 53.0" (LT)	θs = 1° 57" 11.8"
θs = 1° 57" 11.8"	D = 1° 59' 04.3"	Ls = 196.85'
Ls = 196.85'	L = 349.27'	LT = 131.24'
LT = 109.15'	T = 174.85'	ST = 65.62'
ST = 87.74'	R = 2,887.13'	
	e = 0.04	
	D.S. = 30 Mph	
	Runoff = 125.00'	

RPD (BB)

Pts Sta 44+83.87	PI Sta 48+85.98	Pts Sta 53+97.08
θs = 1° 00' 03.9"	Δ = 6° 50' 13.1" (LT)	θs = 1° 25' 00.5"
Ls = 196.85'	D = 1° 01' 01.6"	θs = 10° 35' 19.2"
LT = 131.24'	L = 672.20'	Ls = 278.87'
ST = 65.62'	T = 336.50'	LT = 175.10'
	R = 5,633.19'	ST = 104.31'
	e = 0.04	
	D.S. = 30 Mph	
	Runoff = 125.00'	

RPD (BB)

Pts Sta 58+41.68	Pts Sta 62+29.77
Δ = 48° 39' 10.6" (LT)	θs = 3° 54' 19.7"
D = 7° 35' 34.6"	θs = 1° 28' 27.9"
L = 640.76'	Ls = 196.85'
T = 341.13'	LT = 109.03'
R = 754.59'	ST = 88.45'

RPD (BB)

Pts Sta 65+75.51	Pts Sta 69+03.04
Δ = 18° 40' 26.0" (LT)	θs = 3° 0' 37.7"
D = 3° 58' 08.6"	θs = 3° 54' 23.9"
L = 470.49'	Ls = 196.85'
T = 237.35'	LT = 102.71'
R = 1,443.57'	ST = 94.38'

-DRV4-

Pt Sta 11+24.14
Δ = 88° 10' 06.0" (LT)
D = 114° 35' 29.6"
L = 76.94'
T = 48.43'
R = 50.00'

-DRV6-

Pt Sta 10+72.78
Δ = 80° 09' 28.4" (LT)
D = 114° 35' 29.6"
L = 69.95'
T = 42.01'
R = 50.00'

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-T
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS
RALEIGH, NORTH CAROLINA

-Y- DETOUR

NAD 83

CS Sta 278+80.08 -L-

PC Sta 274+98.58 -Y- Detour
POT Sta 274+98.58 -L-

BEGIN BRIDGE Sta 275+83.58 -L-

END BRIDGE Sta 278+08.08 -L-

TS Sta 278+27.08 -L-

SC Sta 279+32.51 -L-

BEGIN CONSTRUCTION
PC Sta 10+00.00 -Y- Detour
POC Sta 17+37.08 -Y-

END CONSTRUCTION
POT Sta 24+58.58 -Y- Detour
POC Sta 31+57.39 -Y-

PT Sta 14+76.04 -Y- Detour
PC Sta 16+08.14 -Y- Detour

PT Sta 19+25.72 -Y- Detour

600' ACCELERATION LANE

30:1 TAPER

PAVEMENT WIDENING

TEMP. GRAVEL DRIVEWAY CONNECTION

SPECIAL LAT. "Y" DITCH SEE DETAIL

SPECIAL CUT DITCH SEE DETAIL

LAT. "Y" DITCH SEE DETAIL

CL. "B" RIPRAP EST. 3 TONS
EST. 10 SYYD

GREENSBORO CITY LIMITS (OUT)

GREENSBORO CITY LIMITS (IN)

DETAIL
SPECIAL CUT DITCH
(Not to Scale)

Min. D = 1 Ft.

STA. 18+00 TO 19+00 RT
STA. 18+80 TO 19+80 LT

DETAIL
SPECIAL LATERAL "Y" DITCH
(Not to Scale)

Min. D = 1 Ft.

STA. 19+00 TO 20+00 RT
STA. 19+80 TO 21+80 LT

DETAIL
LATERAL "Y" DITCH
(Not to Scale)

Min. D = 1 Ft.
b = 5 Ft.

STA. 20+00 TO 20+90 RT.

NOTE:
SEE SHEET 2-S FOR CURVE DATA & DESIGN SPEED
SEE SHEET 37 FOR -Y- DETOUR PROFILE

REVISIONS

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-Y2- DETOUR

PLANS PREPARED BY: PARSONS RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-U
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

NAD 83

Δ= 52°46'04.66"

BEGIN CONSTRUCTION
PC Sta. 17+80.96 -Y2- Detour=
POT Sta.17+80.96 -Y2-

END CONSTRUCTION
PT Sta 28+03.26 -Y2- Detour=
POT Sta.28+00.57 -Y2-

BEGIN BRIDGE
STA.21+41.78 -Y2-

END BRIDGE
STA.24+25.28 -Y2-

POS STA.332+65.40 -L-
POT STA.22+76.78 -Y2-

BEGIN RETAINING WALL STA. 332+75, 92' RT.

PC Sta 21+05.53

PT Sta 24+85.48

PRC Sta 26+44.13

PT Sta 28+03.26

PRC Sta 22+76.78

PRC Sta 23+40.78

PRC Sta 23+72.15

PRC Sta 24+85.48

PRC Sta 25+44.13

PC Sta 17+80.96

PT Sta 21+05.53

PT Sta 24+85.48

PT Sta 28+03.26

PT Sta 23+72.15

PC Sta 23+40.78

PC Sta 22+76.78

PT Sta 22+76.78

PT Sta 23+40.78

PC Sta 23+72.15

PT Sta 23+72.15

PC Sta 24+85.48

PT Sta 24+85.48

PC Sta 25+44.13

PT Sta 25+44.13

PC Sta 26+44.13

PT Sta 26+44.13

PC Sta 28+03.26

PT Sta 28+03.26

PC Sta 29+03.26

PT Sta 29+03.26

PC Sta 30+03.26

PT Sta 30+03.26

PC Sta 31+03.26

PT Sta 31+03.26

PC Sta 32+03.26

PT Sta 32+03.26

PC Sta 33+03.26

PT Sta 33+03.26

PC Sta

PARSONS

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-V
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SHEAR POINT DIAGRAM
GREENSBORO WESTERN LOOP/US 220
INTERCHANGE
SCALE: 1" = 100'

NAD 83

A

B

C

D

REVISIONS

8/17/99

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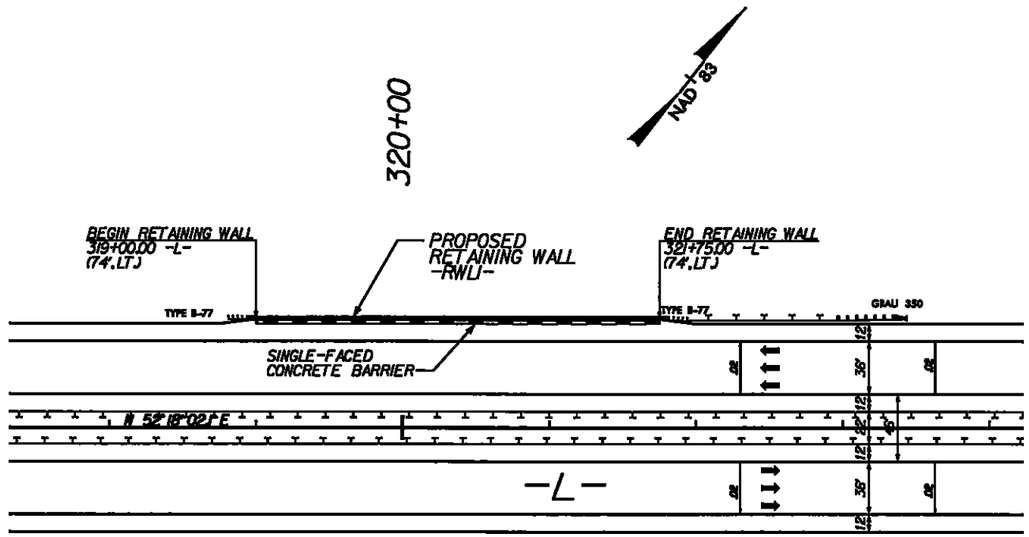
PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-W
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

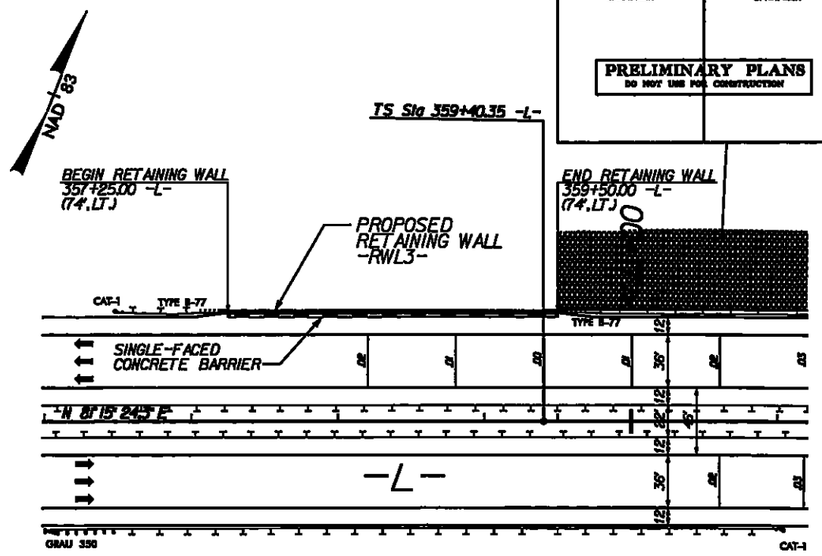
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS
RALEIGH, NORTH CAROLINA

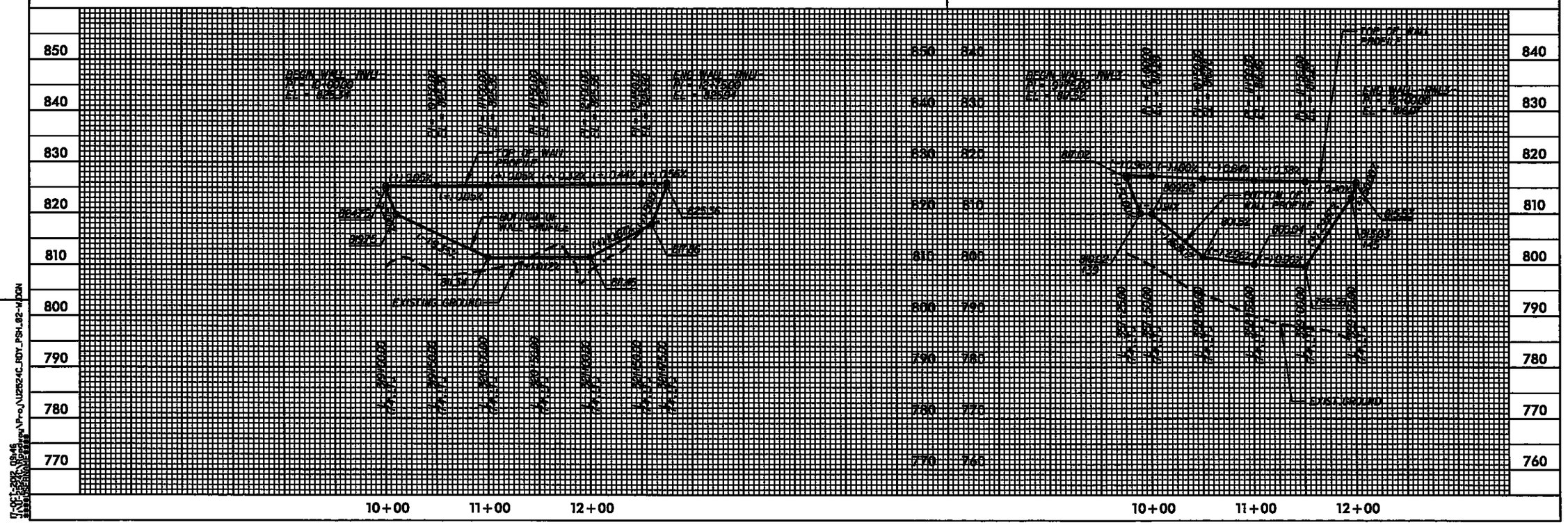
REVISIONS
8/17/99



WALL -RWL1- PLAN & PROFILE



WALL -RWL3- PLAN & PROFILE



PARSONS

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-X
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

R/W REVISION: / / ,EXTENDED RETAINING WALL TO STA.332+75 -L- 92' RT

9/17/99

-Y2-

-L-

335+00

340+00

N43°E

SC Sta 338+40.35 -L-

333+00.00 -L-
(90.0', RT)

336+00.00 -L-
(106', RT)

PROPOSED
RETAINING WALL
-RWL2-

341+00.00 -L-
(106', RT)

END RETAINING WALL
341+50.00 -L-
(145', RT)

BEGIN RETAINING WALL
332+75.00 -L-
(92.0', RT)

WALL -RWL2- PLAN & PROFILE

880
870
860
850
840
830
820
810

10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00

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PARSONS
RALEIGH, NORTH CAROLINA

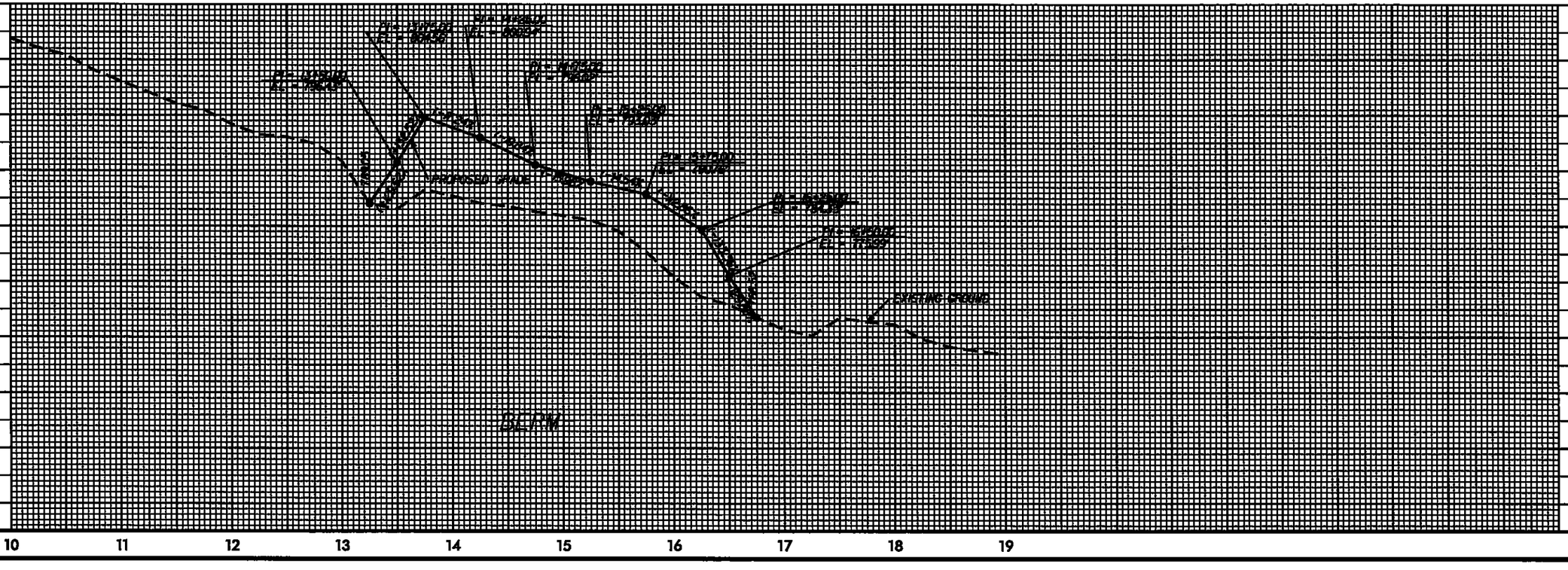
PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-Y
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

EARTH BERM PLAN & PROFILE



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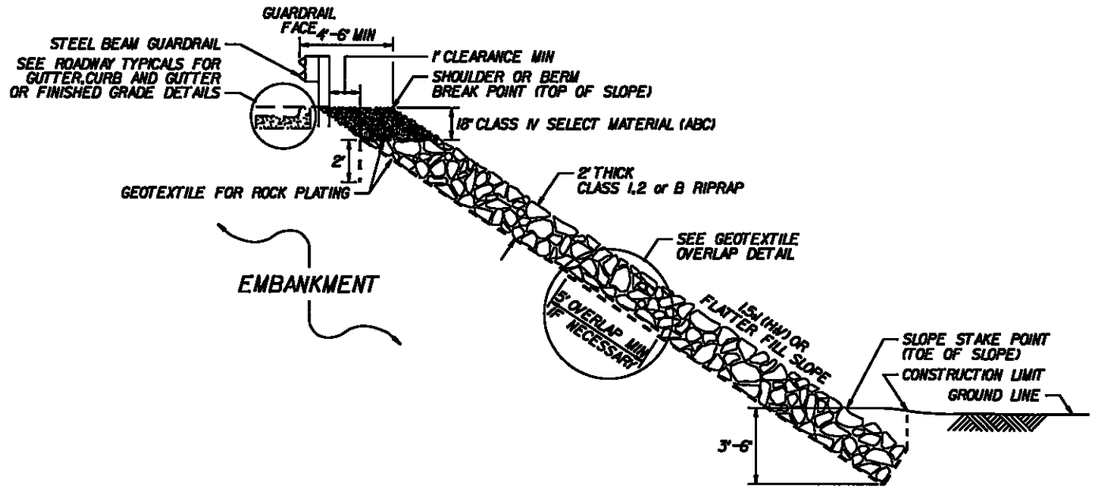
PROJECT REFERENCE NO.	SHEET
U-2524C	2-Z

GEOTECHNICAL ENGINEER | ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

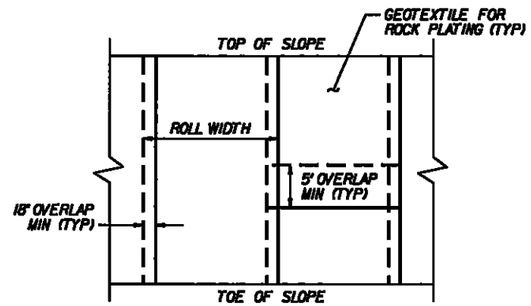
SIGNATURE DATE | SIGNATURE DATE



ROCK PLATING DETAIL NO. 2 – TYPICAL SECTION

USE ROCK PLATING DETAIL NO. 2
AT THE FOLLOWING LOCATIONS:

–L– STA 359+50 ± TO –L– STA 362+00 ±
EXTEND ROCK PLATING LIMITS TO 1.5:1 SLOPES.



GEOTEXTILE OVERLAP DETAIL
(PLAN VIEW)

FOR ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.

GEOTECHNICAL ENGINEERING UNIT
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

STANDARD DRAWING NO. 1802.01

ROCK PLATING DETAILS

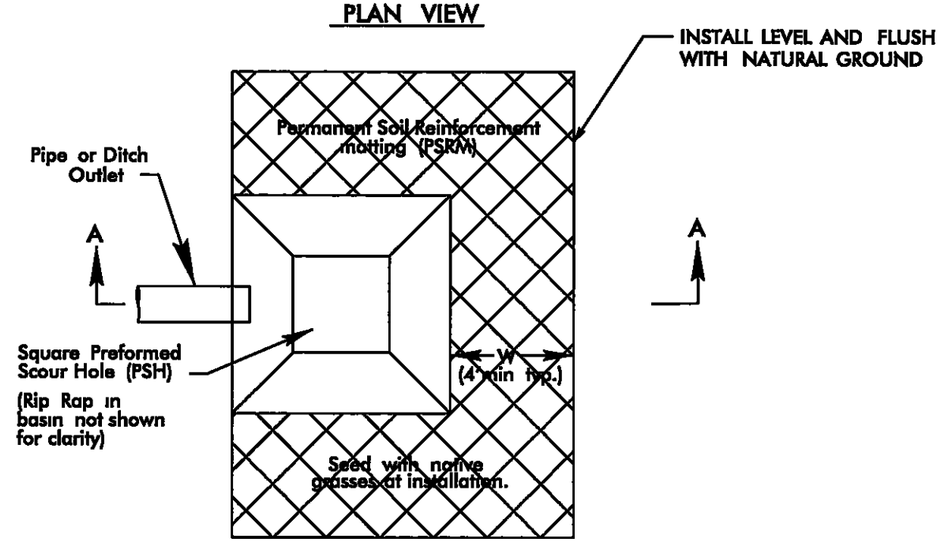
PROJECT REFERENCE NO.	SHEET NO.
U-2524C	2-AA
SW SHEET NO.	
	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

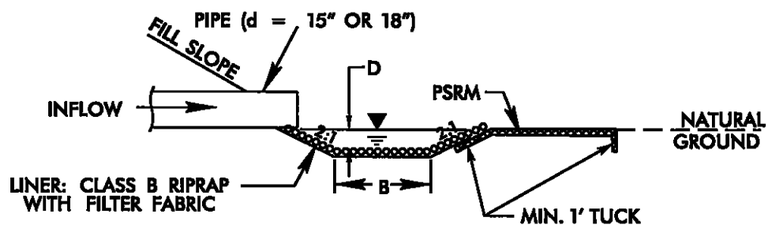
PREFORMED SCOUR HOLE

*NOT TO SCALE

PLAN VIEW



SECTION A-A



REVISIONS 8/17/99

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6/4/99

COMPUTED BY: JRG DATE: 10/2012
CHECKED BY: EL DATE: 10/2012

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT	BORROW	WASTE
266+00 -L- TO 296+00 -L-	326,426	74,779	183,627		142,799
21+50 -Y- TO 28+00 -Y-	956		83		873
12+00 -Y-DTR TO 24+00 -Y-DTR	5,497		3,616		1,881
SUB TOTAL:	332,879	74,779	187,326		145,553
296+00 -L- TO 326+00 -L-	217,099	2,874	126,774		90,325
11+00 -Y1- TO 16+00 -Y1-	568		19		549
SUB TOTAL:	217,667	2,874	126,793		90,874
326+00 -L- TO 356+00 -L-	461,159		16,853		444,306
15+50 -Y2- TO 28+00 -Y2-	1,827		1,763		64
17+81-Y2-DTR TO 28+03 -Y2-DTR	607		2,193	1,586	
SUB TOTAL:	463,593		20,809	1,586	444,370
356+00 -L- TO 379+00 -L-	83,021		177,277	94,256	
SUB TOTAL:	83,021		177,277	94,256	
13+25 -BERM- TO 16+75 -BERM-	0		7,998	7,998	
421+44 -L- TO 422+45 -L-	1,362		14,757	13,395	
18+00 -Y3- TO 35+00 -Y3-	2,115		3,488	1,373	
21+00 -Y4- LT TO 39+00 -Y4- LT	1,441		8,301	6,860	
21+00 -Y4- RT TO 39+00 -Y4- RT	1,160		8,666	7,506	
15+00.00 RPAY4 TO 18+69.92 RPAY4	0		28,149	28,149	
8+00.00 RPBY4 TO 12+25.86 RPBY4	0		38,079	38,079	
8+55.00 RPCY4 TO 12+50.00 RPCY4	0		35,280	35,280	
14+00.00 RPDY4 TO 17+00.00 RPDY4	0		19,863	19,863	
2+31.16 SPAY4 TO 3+82.46 SPAY4	0		5,434	5,434	
1+59.15 SPBY4 TO 4+40.16 SPBY4	0		12,346	12,346	
1+50.00 SPCY4 TO 4+61.12 SPCY4	0		17,403	17,403	
1+13.37 SPDY4 TO 2+89.21 SPDY4	0		8,958	8,958	
SUB TOTAL:	6,078		200,724	194,646	
TOTAL:	1,103,238	77,653	720,927	298,490	680,797
LOSS DUE TO CLEAR. & GRUBBING:	-32,650				-32,650
WASTE TO REPLACE BORROW:				-298,490	-298,490
ADDITIONAL UNDERCUT		2,700			-2,700
PROJECT TOTAL:	1,070,588	80,353	720,927	0	346,957

PRELIMINARY PLANS
NOT FOR CONSTRUCTION
DO NOT USE FOR CONSTRUCTION

PARSONS

PROJECT REFERENCE NO. U-2524C
SHEET NO. 3-A

PLANS PREPARED BY: PARSONS

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 9/17/99

NAD 83

BEGIN CONSTRUCTION U-2524BB
POT STA. 216+46.31 -L-
(FORMERLY METRIC STA. 65+97.80)

TS Sta 107+27.43 Y3BB
SC Sta 108+19.47 Y3BB
CS Sta 103+18.08 Y3BB
ST Sta 104+82.12 Y3BB
SC Sta 101+88.95 Y3BB
ST'S Sta 100+24.91 Y3BB
CS Sta 96+60.87 Y3BB
Y3BB
Y5BB
CS Sta 38+61.09 Y5BB
ST Sta 40+57.94 Y5BB
SC Sta 35+10.49 RPB
POS Sta 34+50.98 RPB
POT Sta 42+05.69 Y5BB
± - 44° 36' 27.2"
ST Sta 32+80.83 RPB =
POT Sta 44+48.24 CD, 11.81' LT.
ST Sta 42+62.09 CD
SC Sta 39+68.31 CD
CS Sta 40+65.24 CD
STS Sta 37+71.46 CD
CS Sta 35+74.61 CD
CD
RPB
RPCA
RPC
POT Sta 43+62.27 RPCA
POT Sta 45+32.68 Y5BB
± - 48° 48' 32.4"
TS Sta. 33+53.72 RPC
POT Sta. 32+80.83 RPC =
POT Sta 46+58.78 RPCA, 11.81' RT.
Δ = 2°17' 00" RT.
POT Sta 46+05.23 CD
POT Sta 42+24.98 Y5BB
± - 48° 48' 32.4"
POT Sta 222+18.16 -L-
POT Sta 43+73.38 Y5BB
TS Sta 49+19.30 Y5BB
BEGIN PROPOSED PAVEMENT
+14.78
RELOCATED CHIMNEY ROCK ROAD
N 9°57'13.7" E
N 19°30'29.6" E
N21°47'29.6"E
S27°18'02.8"E
-L-
MATCH LINE -L- STA 226+50 SEE SHEET 5

C.O. KNIGHT and wife, ELLEN H. KNIGHT
DB 1672 PG 60

ELLEN H. KNIGHT FAMILY LIMITED PARTNERSHIP, LP
DB 4208 PG 0032

PIEDMONT TRIAD AIRPORT AUTHORITY
DB 3409 PG 180
DB 387 PG 504
DB 3688 PG 302
DB 3692 PG 1020
DB 3703 PG 852
DB 3688 PG 1032

OAK RIDGE PROPERTY PARTNERSHIP
DB 1468 PG 875
DB 1521 PG 50
DB 1524 PG 130
DB 1781 PG 32

EXIST. 4' LAT. BASE DITCH W/CL. I RIP RAP & FILTER FABRIC
EXIST. LAT. "V" DITCH CL. "B" RIP RAP & FILTER FABRIC
EXIST. CL. "B" RIP RAP & FILTER FABRIC
EXIST. LAT. "V" DITCH
EXIST. STD. BDO.
EXIST. 2' LAT. BASE DITCH W/CL. B RIP RAP & FILTER FABRIC
EXIST. TB TRENCH DRAIN
EXIST. CL. "B" RIP RAP & FILTER FABRIC
EXIST. STD. CL. "A" RIP RAP DITCH LINER
IB WMH COVER
STD. TBDI
PROP. TYPE XI MOD. ANCHORS
PROP. G.R.
PROP. IA-350
REMOVE EXIST. G.R.
REMOVE EX. TYPE 350 TERMINAL
PROP. SF BARRIER
PROP. GUARDRAIL
REM. EX. TYPE 350 TERMINAL
REM. EX. CAT-1 TERMINAL
PERMANENT SET. DETENTION DEPT.

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 20 FOR -L- PROFILE
SEE TIP PROJECT U-2524BB FOR RAMP/LOOP PROFILES

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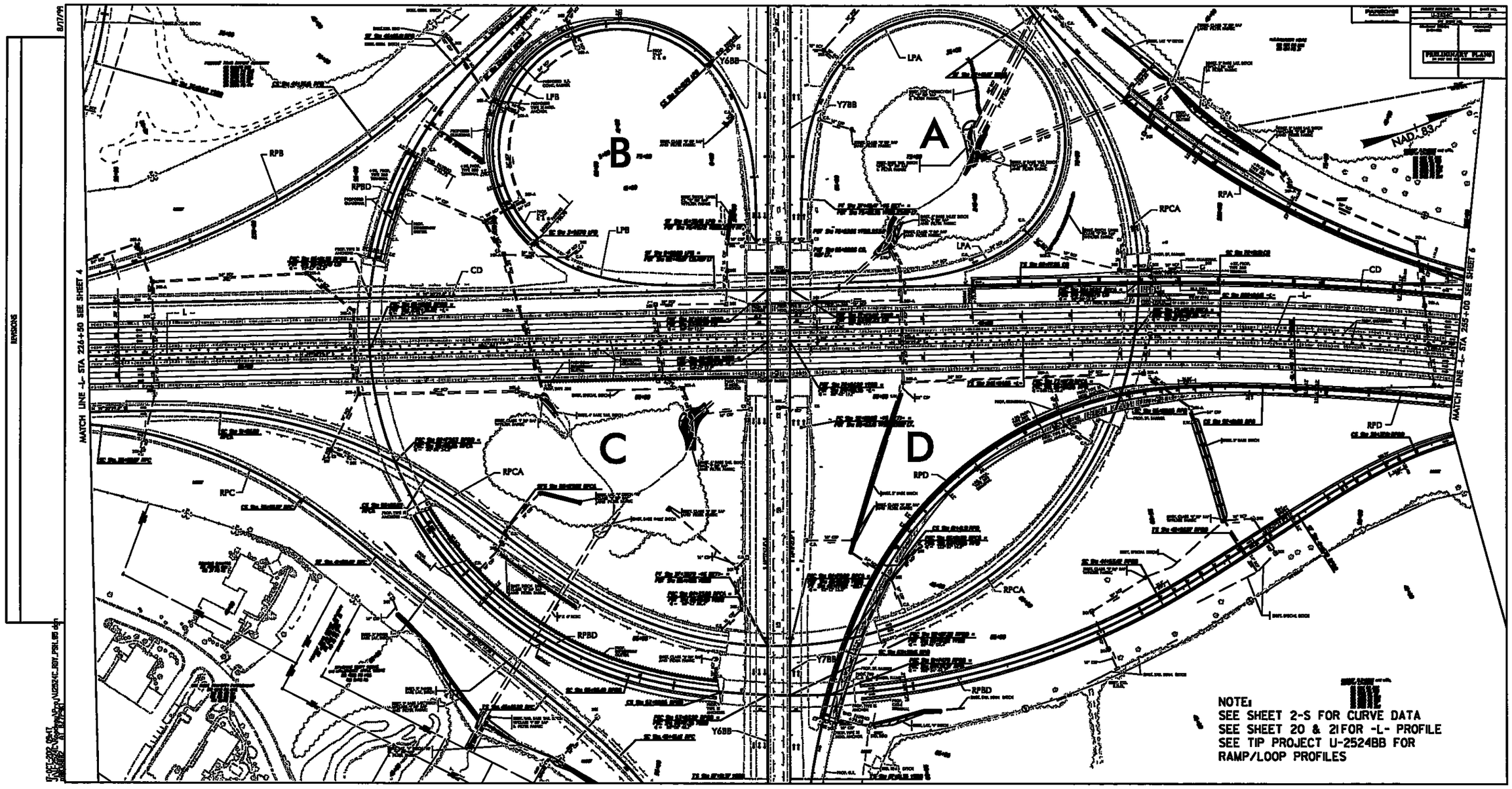
MATCH LINE -L- STA 226+50 SEE SHEET 4
MATCH LINE -L- STA 235+00 SEE SHEET 6
REVISIONS
PRELIMINARY PLANS
NAD 83
B
A
C
D
LPA
LPB
RPA
RPB
RPBD
RPC
RPCA
RPD
CD
Y6BB
Y7BB
NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 20 & 21 FOR -L- PROFILE
SEE TIP PROJECT U-2524BB FOR
RAMP/LOOP PROFILES

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS
RALEIGH, NORTH CAROLINA

REVISIONS
8/17/99

BEGIN STATE PROJECT U-2524C
POC STA. 265+74.75 -L-
BEGIN R/W ACQUISITION U-2524C =
END STATE PROJECT U-2524BB
(METRIC STA. 81+00.000)

NAD '83

MATCH LINE -L- STA 255+00 SEE SHEET 5

MATCH LINE -L- STA 267+00 SEE SHEET 7

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION FORMERLY HUBERT THOMAS DB 4827 PG 1681 ①

POT Sta 32+80.83 RPA =
POC Sta 82+34.89 CD, 11.81' LT
Δ = 1° 00' 00" RT.

RPA

SC Sta 36+48.58 RPA

TS Sta 35+47.54 RPA

CS Sta 83+11.41 CD

SC Sta 85+08.26 CD

CD

CS Sta 88+48.06 CD

RPD

CS Sta 38+26.96 RPD

SC Sta 35+62.31 RPBD

RPBD

SC Sta 45+49.48 RPD

ST Sta 40+23.81 RPD

TS Sta 32+83.44 RPBD
TS Sta 43+52.63 RPD, 11.81' LT.

PROF GUARDRAIL

END CHL FENCE U-2524BB

+37.32 -L- EXIST R/W BEGIN C.L. FENCE U-2524C

+74.73 -L- EXIST R/W

+23.84 -L- EXIST R/W BEGIN C.L. FENCE U-2524C

END PAVING PROJECT
BEGIN RIGHT-OF-WAY PROJECT

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 21 & 22 FOR -L- PROFILE
SEE TIP PROJECT U-2524BB FOR RAMP/LOOP PROFILES

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS

TRAFFIC DIAGRAM

	3738 46,200	FLEMING RD.
GREENSBORO		WESTERN LOOP
2013 ADT 2035 ADT	SR 2136	13738 18,400

MATCH LINE A-A

MATCH LINE B-B

MATCH LINE -L- STA 267+00 SEE SHEET 6

MATCH LINE -L- STA 281+00 SEE SHEET 8

BRIDGE SKETCH FOR -Y- OVER -L-

DETAIL FSM FALSE SUMP

DETAIL FSL FALSE SUMP

DETAIL SPECIAL CUT DITCH

POT=Sta 93+92.73 CD = POC Sta 270+66.87 -L-,58.40' LT. Δ = 1° 00' 00" RT.

PT Sta 14+76.04 -Y- Detour

PC Sta 16+08.14 -Y- Detour

300' TAPER

600' ACCELERATION LANE

Δ = 109°11'13.23"

POC STA 274+26.96 -L- = POT STA 24+78.33 -Y-

BEGIN BRIDGE STA 23+61.33 -Y-
-BL- 148 PINC 27+41.01
-BY- STA. 17+58.62

END BRIDGE STA 25+01.08 -Y-

SC Sta 34+77.68 RPD

CS Sta 32+60.83 RPD = POC Sta 270+66.87 -L-,58.40' RT.

PT Sta 19+25.72 -Y- Detour

TS-Sta 27+92.31 -Y-

SC Sta 29+92.31 -Y-

GS Sta 278+80.08 -L-

BEGIN CONSTRUCTION
PC Sta 10+00.00 -Y- Detour =
POC Sta 17+37.08 -Y-
MATCH EXIST. PVMT SLOPE & ELEV.

END CONSTRUCTION
POT Sta 24+58.58 -Y- Detour =
POC Sta 31+57.39 -Y-
MATCH EXIST. PVMT SLOPE & ELEV.

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 28 FOR -Y- PROFILE
SEE SHEET 2-T FOR -Y- DETOUR PLAN
SEE SHEET 37 FOR -Y- DETOUR PROFILE
SEE GEOTECHNICAL REPORT FOR BURIED LANDFILL. SEE SHEET GR-18 THRU GR-43

NOTE:
SEE TIP PROJECT U-2524BB FOR RAMP/LOOP PROFILES

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION FORMERLY HUBERT THOMAS DB 4827 PG 168

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION FORMERLY FRED FITZGERALD (T04 & T04A) DB 5214 PG 1869

HUGH THOMAS MITCHELL, HENRY MITCHELL DB 2425 PG 0622

HENRY MITCHELL, JR & MARY E. MITCHELL DB 2643 PG 940 PB 58 PG 27

JESSIE A. MITCHELL, HENRY MITCHELL, SPENCER L. MITCHELL, MARIE MITCHELL BADDELL, HILTON MITCHELL, ROBINSON DB 2425 PG 0623

GEORGE B WISEMAN DB2258 PG277

JAD INVESTMENTS DB 5069 PG 69 PB 87 PG 2069

BILL AGAPION DB 3852 PG 0287 PB 37 PG 127

JERRY C CALLICUTT DB 3665 PG 1797

MELVIN E. BORDEN & LORRAINE M. BORDEN DB 2563 PG 230

HENRIETTA HUNTLEY DB 3717 PG 1540

LORRAINE MAY MILLER BORDEN & JOHN SAMUEL MILLER & ARNOLD S MILLER DB 5474 PG 2095

REVISIONS
R/W REVISIONS/S/A, ADDED PUE ALONG -Y- LT ON PARCELS 3,4 AND 5 OMITTED PORTION OF TCE AND ADDED PUE ALONG -Y- LT ON PARCEL 5

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS

REVISIONS

8/17/99

MATCH LINE -L- STA 281+00 SEE SHEET 7

MATCH LINE -L- STA 295+00 SEE SHEET 9

NAD 83

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
FORMERLY FRED FITZGERALD (T04 & T04A)
DB 5214 PG 1883

HUGH THOMAS MITCHELL, JR.
DB 2947 PG 675

LONELL MITCHELL
DB 2947 PG 676

WILLIAM H SMITH
DB 2662 PG 0445

DAVID H. GRIFFIN, SR. & MARYLENE F. GRIFFIN
DB 4955 PG 166

IN. MOORE
DB 2908 PG 0548

CLARENCE MILLER
DB 1594 PG 0172

STATESCAPE TURF MANAGEMENT LLC.
DB 5309 PG 1457

HUGH R MITCHELL HEIRS
DB 1086 PG 0240

JERRY WAYNE RALEIGH, SR.
JOSEPH HOWARD RALEIGH
MARILYN P. RALEIGH
ANNETTE RALEIGH FREEMAN &
CORNELIA ANNA RALEIGH
DB 3486 PG 255

THELMA S BURRITT
DB 3858 PG 0684

TOE PROTECTION
SEE DETAIL
EST. 27 TONS
EST. 80 SYYF

TOE PROTECTION
SEE DETAIL
EST. 70 TONS
EST. 210 SYYF

TOE PROTECTION
SEE DETAIL
EST. 100 TONS
EST. 295 SYYF

TOE PROTECTION
SEE DETAIL
EST. 91 TONS
EST. 243 SYYF

BERM "V" DITCH
SEE DETAIL

CL "I" RIP RAP
EST. 11 TONS
EST. 22 SYYF

CL "I" RIP RAP
EST. 26 TONS
EST. 50 SYYF

CL "I" RIP RAP
EST. 30 TONS

CL "B" RIP RAP
EST. 1 TONS
EST. 5 SYYF

NO RIP RAP TO BE PLACED IN STREAM BED

PREFORMED SCOUR HOLE DATA
Q10= 5.8 cfs

PREFORMED SCOUR HOLE
B=5' W=5'
D=2' d=0.5'
SEE DETAIL SHEET 2-AA

DETAIL FSL
FALSE SUMP
(Not to Scale)

DETAIL FSM
FALSE SUMP
(Not to Scale)

DETAIL FSR
FALSE SUMP
(Not to Scale)

DETAIL
BERM "V" DITCH
(Not to Scale)

DETAIL
TOE PROTECTION
(Not to Scale)

DETAIL
BERM "V" DITCH
(Not to Scale)

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 22 & 23 FOR -L- PROFILE
SEE GEOTECHNICAL REPORT FOR BURIED LANDFILL. SEE SHEET GR-18 THRU GR-43

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY: PARSONS RALEIGH, NORTH CAROLINA

REVISIONS

8/17/98 R/W REVISION: ADDED PUE ALONG -Y1- RT ON PARCEL 12.

MATCH LINE -L- STA 295+00 SEE SHEET 8

MATCH LINE -L- STA 309+00 SEE SHEET 10

DETAIL
FALSE CUT
(Not To Scale)
-L- 304+93 to 305+50 RT.

DETAIL FSB
FALSE SUMP
(Not To Scale)
-L- 306+18 RT.

DETAIL FSM
FALSE SUMP
(Not To Scale)
-L- 301+88 LT.
-L- 306+18 LT.

DETAIL FSL
FALSE SUMP
(Not To Scale)
-L- 301+88 LT.
-L- 306+18 LT.

DETAIL
TOE PROTECTION
(Not To Scale)
d = 1 Ft.
Type of Liner = CL. 'I' RIPRAP
-L- 296+00 to 297+88 LT.
-L- 296+45 to 297+85 RT.

DETAIL
'V' DITCH
(Not To Scale)
-L- 301+50 to 302+50 LT.

DETAIL
MEDIAN 'V' DITCH
(Not To Scale)
-L- 301+15 to 301+50 LT.
-L- 302+50 to 303+05 LT.
-L- 305+22 to 306+12 LT.

STOCO INC.
DB 2498 PG 0226
(14)

DAVID H. GRIFFIN, SR. &
MARYLENE F. GRIFFIN
DB 4955 PG 166
(10)

JAMES CORAL JUDD &
LOUISE G. JUDD
DB 2242 PG 0272
(15)

RUTH P. JESSUP
DB 3437 PG 663
DB 2899 PG 684
(16)

G CENTER LIMITED PARTNERSHIP
DB 6423 PG 186
(17)

GUILFORD COUNTY
DB 0236 PG 017
(5)

NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
FORMERLY GRACE RUMSEY (683)
DB 4756 PG 1934
(15)

THELMA S BURRITT
DB 3856 PG 0684
(12)

JERRY WAYNE RALEIGH, SR.
JOSEPH HOWARD RALEIGH
MARILYN P. RALEIGH
ANNETTE RALEIGH FRIEDMAN &
CORNELIA ANNA RALEIGH
DB 3486 PG 255
(11)

NAD 83

-BL- STA 55+44
378' LEFT
ELEV. 868.80'

BM #4
-BL- STA 52+07
252' RIGHT
ELEV.=842.24'

-BY1- 505 POT

-BY1- 535 POT

POT STA 10+00.00 -Y1-

PC Sta 12+36.00 -Y1-

PT Sta 13+98.36 -Y1-

POT STA.300+50.04 -L-

15+00 POT STA.13+76.06 -Y1-

PC Sta 13+77.92 -Y1-

PT Sta 14+72.76 -Y1-

POT Sta 15+67.11 -Y1-

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 28 FOR -Y1- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PARSONS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

MATCH LINE -L- STA 309+00 SEE SHEET 9

MATCH LINE -L- STA 323+00 SEE SHEET 11

NAD '83

GERALD C. PARKER
DB 6849 PG 1307
(19)

FREDERICK W BOWEN JR.
DB 2754 PG 0089
DB 3750 PG 1485
(20)

RUTH P. JESSUP
DB 3437 PG 583
DB 2899 PG 684
(18)

CAPS STANLEY A
MARIE O STANLEY
DB 1786 PG 0008
DB 259 PG 0453
(21)

BEGIN FENCE
+90.54 -L-
146.50' RT

END FENCE
+59.60 -L-
148.82' RT

TOE PROTECTION
SEE DETAIL
EST. 31 TONS
EST. 72 SYYD

TOE PROTECTION
SEE DETAIL
EST. 57 TONS
EST. 63 SYYD

TOE PROTECTION
SEE DETAIL
EST. 52 TONS
EST. 58 SYYD

4' LAT. BASE DITCH
SEE DETAIL
EST. 375 TONS
EST. 630 SYYD

4' LAT. BASE DITCH
SEE DETAIL
EST. 10 TONS
EST. 24 SYYD
STREAM BANKS ONLY

PROPOSED
RETAINING WALL

PROPOSED SINGLE-FACED
CONCRETE BARRIER

PROPOSED
GUARDRAIL
END FENCE
+91.96 -L-
44.74' RT

BEGIN FENCE
+14.28 -L-
146.78' RT

CULVERT CHANNEL
IMPROVEMENTS
(DOWNSTREAM)

CULVERT CHANNEL IMPROVEMENTS (UPSTREAM)

BM #7
-RL- STA 67+78
67' RIGHT
ELEV. 862.34'

BEGIN ENDWY
GUTTER +00

END ENDWY
GUTTER +00

BERM "V" DITCH
SEE DETAIL

DETAIL FSL
FALSE SUMP
(Not to Scale)

DETAIL FSR
FALSE SUMP
(Not to Scale)

DETAIL FSM
FALSE SUMP
(Not to Scale)

DETAIL
TOE PROTECTION
(Not to Scale)

DETAIL
LATERAL BASE DITCH
(Not to Scale)

DETAIL
LATERAL BASE DITCH
(Not to Scale)

DETAIL
BERM "V" DITCH
(Not to Scale)

NOTE:
SEE SHEET 2-W FOR RETAINING WALL ENVELOPE
SEE SHEET 23 & 24 FOR -L- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PARSONS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

R/W REVISION: 10/15/11, ADDED PUE AND CWTTED TCE ALONG -Y2- LT.
R/W REVISION: 12/15/11, REVISED TCE ON -Y2- RT. ALONG PARCEL NO. 24
R/W REVISION: / /, ADDED TCE ON -L- RT. ALONG PARCEL NO. 27

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MATCH LINE -L- STA 323+00 SEE SHEET 10

MATCH LINE -L- STA 337+00 SEE SHEET 12

MATCH LINE -Y2- STA 19+00 SEE SHEET 18

BEGIN BRIDGE -Y2- STA.21+41.78

END BRIDGE -Y2- STA.24+25.28

POS STA.332+65.40 -L- = POT STA.22+16.78 -Y2-

PC Sta. 24+85.48 -Y2- Detour

PT Sta. 28+03.26 -Y2- Detour

PC Sta. 24+00.95 -Y2- Detour

PT Sta. 21+00.00 -Y2- Detour

-BL- 20 PNC 86+36.41
-BY2- STA. 22+16.59

SC Sta. 334+29.58 -L-

BEGIN RETAINING WALL STA. 332+75, 92' RT.

PROPOSED RETAINING WALL

PROPOSED GUARDRAIL

CALDWELL ACADEMY DB 1491 PG 465

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION FORMERLY TOP ENTERPRISES (1953) DB 4845 PG 0251

CITY OF GREENSBORO DB 4812 PG 0433

CAPS STANLEY & MARIE O STANLEY DB 1796 PG 0081 DB 2659 PG 0453 (21)

FREDERICK W BOWEN JR. DB 2754 PG 0169 DB 3750 PG 1485 (20)

TRAFFIC DIAGRAM

HORSEPEN CREEK RD.
3738 46,200
GREENSBORO
WESTERN LOOP
SR 2182
11,250 16,500
2013 ADT 2035 ADT

BRIDGE SKETCH FOR -Y2- OVER -L-

BRIDGE WILL BE BUILT USING PHASED CONSTRUCTION

BEGIN BRIDGE -Y2- STA.21+41.78
END BRIDGE -Y2- STA.24+25.28
BEGIN APPROACH SLAB -Y2- STA.21+16.04
END APPROACH SLAB -Y2- STA.24+50.02
POS STA.332+65.40 -L- = POT STA.22+16.78 -Y2-
TYPE-II
TYPE-III

DETAIL BERM "V" DITCH (Not to Scale)
-L- 323+00 to 322+50 RT.

DETAIL BERM "V" DITCH (Not to Scale)
b= 3 Ft. Min. D= 1.5 Ft. Max. d= 1.5 Ft.
Type of Liner= CL. "B"
-L- 328+50 to 330+30 RT.

DETAIL BERM BASE DITCH (Not to Scale)
b= 3 Ft. Min. D= 1.2 Ft. B= 2 Ft. Max. d= 1.2 Ft.
Type of Liner= CL. "B"
-L- 324+95 to 331+00 LT.

DETAIL SPECIAL LATERAL "V" DITCH (Not to Scale)
Min. D= 1Ft.
-Y2- 21+30 to 21+50 RT.

DETAIL RIP RAP AT EMBANKMENT (Not to Scale)
Est. 8 Tons
Type of Liner= CL. "B"
-Y2- 24+60 LT.

DETAIL SPECIAL LATERAL "V" DITCH (Not to Scale)
Min. D= 1Ft. Max. d= 1Ft.
Type of Liner= CL. "B"
-Y2- 25+15 to 25+95 RT.

DETAIL SPECIAL CUT DITCH (Not to Scale)
Min. D= 1Ft.
-Y2- 19+00 to 19+30 LT.
-Y2- 19+00 to 19+30 RT.
-Y2- 26+20 to 27+30 LT.
-Y2- 25+95 to 27+00 RT.

DETAIL BERM "V" DITCH (Not to Scale)
b= 3 Ft. Min. D= 1Ft.
-L- 331+00 to 335+00 LT.

NOTE:
SEE SHEET 2-S OR CURVE DATA
SEE SHEET 2-X FOR RETAINING WALL ENVELOPE
SEE SHEET 24 FOR -L- PROFILE
SEE SHEET 29 FOR -Y2- PROFILE
SEE SHEET 2-U FOR -Y2- DETOUR PLAN
SEE SHEET 37 FOR -Y2- DETOUR PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY: PARSONS

REVISIONS
R/W REVISION: 12/5/11, DELETED PARCEL 25, ADDED PARCEL NO 25, OWNER NAME, DB & PG AT STA 349+00 -L-, RT

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MATCH LINE -L- STA 337+00 SEE SHEET 11

MATCH LINE -L- STA 351+00 SEE SHEET 13

BALL FIELD

BALL FIELD

KOTIS PROPERTIES INC.
DB 4543 PG 1250
DB 2721PG 0750

CALDWELL ACADEMY
DB 5935 PG 0641

FOUR FARMS ROAD PARTNERSHIP
DB 3977 PG 1888

CITY OF GREENSBORO
DB 482 PG 0433

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB PG

GUILFORD COUNTY BOARD OF EDUCATION
DB 4657 PG 0742
PB 132 PG 139

NAD '83

340+00

345+00

350+00

-L- STA 344+40.35

PROP.R/W

CHORD

CONC. DITCH

TOE PROTECTION
SEE DETAIL
EST. 42 TONS
EST. 100 SYYD

NO RIP RAP TO BE PLACED IN STREAM BED

CL. 'I' RIP RAP
EST. 11 TONS
EST. 22 SYYD

TOE PROTECTION
SEE DETAIL
EST. 22 TONS
EST. 52 SYYD

PROPOSED GUARDRAIL

SPEC. CUT DITCH
SEE DETAIL

FALSE CUT
SEE DETAIL &
CROSS SECTIONS

END RETAINING WALL
STA. 341+50, 145' RT.

PROPOSED RETAINING WALL

END C.L. FENCE
BEGIN W.W. FENCE

GRAU 350

NOTE:
SEE SHEET 2-S OR CURVE DATA
SEE SHEET 2-X FOR RETAINING WALL ENVELOPE
SEE SHEET 24 & 25 FOR -L- PROFILE

DETAIL
"I" DITCH
(Not to Scale)

-L- 350+00 to 351+00 RT.

DETAIL FSL
FALSE SUMP
(Not to Scale)

S = Ditch Slope

-L- 344+00 LT.

DETAIL
TOE PROTECTION
(Not to Scale)

Type of Liner = CL. 'I'

-L- 344+50 to 345+75 LT.
-L- 345+85 to 346+80 LT.

DETAIL
FALSE CUT
(Not to Scale)

-L- 344+64 to 345+26 RT.

DETAIL
SPECIAL CUT DITCH
(Not to Scale)

-L- 350+50 to 351+00 LT.

DETAIL FSR
FALSE SUMP
(Not to Scale)

-L- 344+98 RT.
-L- 343+09 RT.

DETAIL FSM
FALSE SUMP
(Not to Scale)

-L- 338+50 RT.
-L- 342+85 RT.
-L- 345+34 RT.

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	13
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY: PARSONS RALEIGH, NORTH CAROLINA

REVISIONS
8/17/99 R/W REVISION 12/5/11, DELETED PARCEL 23.

MATCH LINE -L- STA 351+00 SEE SHEET 12

MATCH LINE -L- STA 365+00 SEE SHEET 14

NAD '83

FOUR FARMS ROAD PARTNERSHIP
DB 3977 PG 1668
(28)

PROPOSED ROCK PLATING FROM STA. -L- 359+50 TO STA. -L- 362+00 LT.

CL 'B' RIP RAP EST. 1 TONS EST. 5 SYYF

CL 'B' RIP RAP EST. 2 TONS EST. 7 SYYF

CL 'I' RIP RAP EST. 33 TONS EST. 62 SYYF

NO RIP RAP TO BE PLACED IN STREAM BED

TS Sta 359+40.35 -L-

PROPOSED SINGLE-FACED CONCRETE BARRIER

PROPOSED GUARDRAIL

PROPOSED RETAINING WALL

BERRY JEAN LIMOSAY
DB 1410 PG 0005
(30)

JEAN L BERRY & FOUR FARMS ROAD PARTNERSHIP
DB 1410 PG 0005
(30)

PAMELA M. SLAGLE
DB 5863 PG 1870

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION FORMERLY NETTIE REES (1903) JEAN BURTON (1924), WELLSPRING RETIREMENT COMMUNITY (1939), MICHAEL WEAVER
DB 4778 PG 433
(31)

PROP. R/W

NCDOT
(31)

BEGIN EXPWY GUTTER -150

END EXPWY GUTTER +25

END EXPWY GUTTER +00

60' TYP

CAT-1

TYPE S-77

FSL

FSM

FSR

2GI

GRAU 350

18" CSP w/ 1 ELBOW

18" RCP-IV

15" RCP-IV

24" RCP-IV

BOO

PROPOSED GUARDRAIL

BERM 'V' DITCH SEE DETAIL.

LAT. 'V' DITCH SEE DETAIL. EST. 27 TONS EST. 60 SYYF

4' LAT. BASE DITCH SEE DETAIL EST. 205 TONS EST. 455 SYYF

4' BASE BERM DITCH SEE DETAIL EST. 52 TONS EST. 114 SYYF

CHORD

PROP. R/W

FOUR FARMS ROAD PARTNERSHIP
DB 3977 PG 1668
(28)

MARY BERRY GIBBS
DB 647 PG 2246
(30)

MARY BERRY GIBBS
DB 647 PG 2246
(30)

JOSEPH CLYDE SMITH & SALLY KAREN SMITH
DB 3457 PG 0457
(32)

GUILFORD COUNTY BOARD OF EDUCATION
DB 4857 PG 0742
PB 132 PG 139

GREENSBORO LIFE-CARE RETIREMENT COMMUNITY, INC.
DB 3727 PG 0813
PB 108 PG 097
PB 124 PG 111
(35)

VALLEY VIEW DR.

DETAIL
BERM "V" DITCH
(Not to Scale)
-L- 351+00 to 353+50 Rt.

DETAIL
LATERAL "V" DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 5 Ft.
Type of Liner= 'I' Rip-Rap
-L- 357+00 TO 358+83 Rt.

DETAIL FSM
FALSE SUMP
(Not to Scale)
Median Ditch
2H:1V Slope
-L- 353+50 Rt.
-L- 354+00 Rt.

DETAIL FSL
FALSE SUMP
(Not to Scale)
Outside Shoulder Point
S = Ditch Slope
-L- 351+00 Lt.

DETAIL FSR
FALSE SUMP
(Not to Scale)
Outside Ditch Pavement Point
S=Ditch Slope
-L- 353+50 Rt.
-L- 354+00 Rt.

DETAIL
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 5 Ft.
B= 4 Ft.
*When S is < 5.0'
Type of Liner= CL 'I'
-L- 359+00 to 363+00 Rt.

DETAIL
BERM BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
B= 4 Ft.
Max. d= 1.5 Ft.
Type of Liner= CL 'I'
-L- 363+00 to 364+00 Rt.

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 2-W FOR RETAINING WALL ENVELOPE
SEE SHEET 25 FOR -L- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY
PARSONS
RALEIGH, NORTH CAROLINA

REVISIONS

8/17/99

DETAIL C
FALSE SUMP
(Not to Scale)
-L- 375+50 LT.

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)
-L- 366+50 to 368+00 RT.

DETAIL I
BERM "I" DITCH
(Not to Scale)
-L- 366+00 to 371+80 RT.

NAD 83

JEAN L. BERRY &
FOUR FARMS ROAD PARTNERSHIP
DB 1410 PG 0005

PAMELA M. SLAGLE
DB 6853 PG 1870

JOSEPH CLYDE SMITH &
SALLY KAREN SMITH
DB 3727 PG 0189

NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
FORMERLY HETTIE DEES (905), JEAN
BURY(8241), WELLSPRING RETIREMENT
COMMUNITY (903), MICHAEL WEAVER
DB 414 PG 181
DB 414 PG 182
DB 4033 PG 1886
PB 108 PG 097

NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
FORMERLY HETTIE DEES (905), JEAN
BURY(8241), WELLSPRING RETIREMENT
COMMUNITY (903), MICHAEL WEAVER
DB 414 PG 181
DB 414 PG 182
DB 4033 PG 1886
PB 108 PG 097

ROCK HAVEN ENTERPRISES, LLC
DB 6952 PG 2603

GREENSBORO LIFE-CARE RETIREMENT
COMMUNITY, INC.
DB 3727 PG 0183
PB 108 PG 097
PB 124 PG 18

GREENSBORO LIFE-CARE RETIREMENT
COMMUNITY, INC.
DB 3727 PG 0183
PB 108 PG 097
PB 124 PG 18

CS Sta 367+83.80 -L-
ST Sta 372+63.80 -L-
TS Sta 375+96.39 -L-
POT Sta 10+00.00
BERM PC Sta. 12+72.69
BERM PT Sta. 14+35.02

PROPOSED GUARDRAIL

STORM DRAINAGE OUTFALL & DETENTION BASIN TO BE RELOCATED BY PROPERTY OWNER.

DETAIL A
FALSE SUMP
(Not to Scale)
-L- 376+00 RT.

DETAIL B
FALSE SUMP
(Not to Scale)
-L- 367+00 RT.
-L- 372+00 RT.
-L- 373+00 RT.
-L- 374+00 RT.
-L- 379+00 RT.

25' ACCESS EASEMENT TO PERMANENT DET. RETENTION POND (CENTERED ON EXISTING ROADWAY OR AS IT MAY BE RELOCATED.

25' ACCESS EASEMENT TO PERMANENT DET. RETENTION POND (CENTERED ON EXISTING ROADWAY OR AS IT MAY BE RELOCATED.

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 25 & 26 FOR -L- PROFILE
SEE SHEET 2-Y FOR BERM DETAIL

MATCH LINE -L- STA 365+00 SEE SHEET 13

MATCH LINE -L- STA 379+00 SEE SHEET 15

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ARCHIVE
AT KOWEBER

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

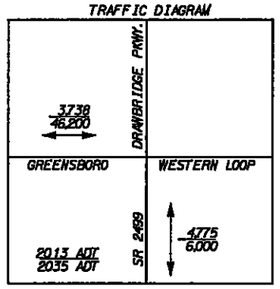
PARSONS
RALEIGH, NORTH CAROLINA

8/17/99

REVISIONS

R/W REVISION: ADDED TCE ON PARCELS 35

TRAFFIC DIAGRAM



NAD 83

BEGIN BRIDGE STA. 379+45.00 -L-

MATCH LINE -L- STA 379+00 SEE SHEET 14

MATCH LINE -L- STA 393+00 SEE SHEET 16

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION FORMERLY HETTIE DEES (905) JEAN BURY(824), WELLSPRING RETIREMENT COMMUNITY (903), MICHAEL WEAVER DB 414 PG 188 DB 484 PG 1812 DB 4033 PG 1886 PB 108 PG 097

MISSION BATTLEGROUND PARK DST DB 6572 PG 3075

MISSION BATTLEGROUND PARK DST DB 6572 PG 3075

GREENSBORO LIFE-CARE RETIREMENT COMMUNITY, INC. DB 3727 PG 0183 PB 108 PG 097 PB 124 PG 101

CITY OF GREENSBORO DB 3787 PG 0874 DB 3727 PG 0180 PB 93 PG 86 PB 108 PG 097

CITY OF GREENSBORO PB 87 PG 75

POT Sta. 22+00.51 -Y3- = POT Sta. 10+00.00 -DRV1-

POC STA. 16+22.85 -Y3- = POT STA. 10+00.00 -DRV5-

POC STA. 384+89.37 -L- = POT STA. 20+46.69 -Y3-

PC Sta. 23+70.80 -Y3-

PRC Sta. 25+38.07 -Y3-

PT Sta. 27+99.16 -Y3-

PC Sta. 11+89.63 -DRV1-

PT Sta. 17+85.82 -Y3-

PT Sta. 12+21.57 -DRV1-

POT Sta. 13+02.48 -DRV1-

CS Sta. 388+18.16 -L-

N 42° 55' 59.6" W

S 55° 18' 30.3" E

S 18° 26' 13.2" E

N 71° 33' 46.8" E

S 34° 58' 58.1" E

Δ = 153° 53' 41.3"

PROPOSED CURB CUT FOR BASIN ACCESS

PROPOSED 5' SIDEWALK

PROPOSED SCOUR HOLE DATA
Q10= 2.0 cfs

PREFORMED SCOUR HOLE
E=5' W=5'
D=2' d=0.5'
SEE DETAIL SHEET 2-AA

DETAIL
BERM "V" DITCH
(Not to Scale)

-Y3- 22+00 to 24+25 LT.
-Y3- 24+75 to 25+00 LT.

DETAIL Q
STANDARD BASE DITCH
(Not to Scale)

Min. D = 1 Ft.
B = 2 Ft.

-L- 387+50 RT.

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

Min. D= 1Ft.

-Y3- 24+25 to 24+75 LT.

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 26 FOR -L- PROFILE
SEE SHEET 30 FOR -Y3- PROFILE
SEE SHEET 16 FOR BRIDGE SKETCH
SEE SHEET 2-Y FOR BERM DETAIL
SEE SHEET 46 FOR -DRVI- & -DRV5- PROFILES

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8/17/99

REVISIONS

R/W REVISION: REVISED R/W LINE ALONG PARCEL NUMBER 4/ NEAR PUMP STATION
R/W REVISION: ADDED TOE ON PARCELS 35 & 43 ADDED PDE ON PARCEL 4

MATCH LINE D-D -Y4- STA 20+00

MATCH LINE -L- STA 393+00 SEE SHEET 15

MATCH LINE -Y4- STA 35+00 SEE SHEET 19

MATCH LINE -L- STA 421+00 SEE SHEET 17

A

B

C

D

BRIDGE SKETCH FOR -L- OVER -Y4-

PRELIMINARY PLANS

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 26 & 27 FOR -L- PROFILE
SEE SHEET 30 FOR -Y3- PROFILE
SEE SHEET 31 FOR -Y4- PROFILE
SEE SHEET 46 FOR -DRV2-, -DRV3-, & -DRV4- PROFILES

NOTE:
SEE SHEET 40 FOR RPAY4 PROFILE
SEE SHEET 41FOR RPBY4 PROFILE
SEE SHEET 42 FOR RPCY4 PROFILE
SEE SHEET 43 FOR RPDY4 PROFILE
SEE SHEET 44 FOR SPAY4, SPBY4, SPCY4 & SPDY4 PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS
RALEIGH, NORTH CAROLINA

8/17/99

REVISIONS

R/W REVISION 3/ /12 ADDED PARCEL NUMBER 41A.

MATCH LINE -L- STA 421+00 SEE SHEET 16

CITY OF GREENSBORO
DB 3638 PG 0101
DB 1768 PG 0077
DB 1787 PG 0055
PB 88 PG 105
41

THE LAURELS TOWNHOMES ASSOCIATION
DB 3874 PG 889
PB 86 PG 86
PB 134 PG 3
MARGARET A. KUSENBURG
DB 6042 PG 1432
ANNA M. LIBERTORE
DB 488 PG 1876
WADE MONROE PEOPLES
DB 3738 PG 45
ROBERT P. EDMONDS
DB 6838 PG 1089
41A

THE LAURELS TOWNHOMES ASSOCIATION
DB 3758 PG 1473
ANNA ELIZABETH PURSER
DB 5272 PG 75
THOMAS R. GOFORTH
DB 5959 PG 864
HUBERT W. & LENA BLACKWOOD
DB 3882 PG 1884
KATIE JEAN VANCE
DB 6325 PG 2193
41A

JAMES W DUNCAN JR. & STACY S DUNCAN
DEREK BRADSHAW
DB 6801 PG 12
HEATHER J. LILES
DB 6638 PG 995
ASHLEY D. BROWN
DB 6319 PG 1462
SANDRA J. JAJEX
DB 6910 PG 13
BARBARA F. SMITH L/T
DB 6466 PG 860
RICHARD M. BOWEN & SARA M. KNOBLOCH
DB 6522 PG 186
LORI ANN WINE & ROBERT J. KIRK
DB 6756 PG 718
DORA MAE BROOKS
DB 6686 PG 267

JENNIFER E. HALL
DB 6539 PG 259
JEFFREY JAY SMITH
DB 6748 PG 1265
MARILYN ELIZABETH HARLESS

JAMES B. BROWN
DB 5208 PG 542
ARTHUR SAUNDERS
DB 6416 PG 2258
REZA MORLANEJAD
DB 5649 PG 1159
WILLIAM J. CAVINESS
DB 5104 PG 1823
LEEANNE THORNTON
DB 5965 PG 2652
GARY J. MEYER
DB 6622 PG 73
DANA R. BOYLAN
DB 6795 PG 339
NATHANIEL EVANS, JR.
DB 5494 PG 753
DAVID A. RIBELIN
DB 5344 PG 2424
RONALD GREEN
DB 6677 PG 244
TINA MICHELLE STEC
DB 5851 PG 2571
TERESA ANNE RENSHAW II
DB 5065 PG 431

CITY OF GREENSBORO
DB 4933 PG 0846
PB 134 PG 003
41

J. WALTON COMPANY, LLC.
PB 5 PG 126
40

CITY OF GREENSBORO
DB 6033 PG 11

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 5318 PG 1563
PB 150 PG 022
45

COTSWOLD PARK, LLC
DB 5432 PG 0324
DB 5432 PG 0320
PB 150 PG 021

LAKEMONT ASSOCIATES
DB 3782 PG 671
PB 88 PG 105
43

TERRACE MEWS ASSOCIATES
DB 4252 PG 0492
PB 91 PG 86
PB 88 PG 105

CITY OF GREENSBORO
DB 1768 PG 0077
DB 1787 PG 0055
41

NAD 83

POC Sta 426+20.73 -L- =
POT Sta 0+00.00 RPAY4.59' LT
△= 5°00'00" RT

PC Sta 0+00.00 RPDY4.59' RT

CS Sta 4+63.42 RPAY4
SC Sta 2+38.10 RPAY4
TS Sta 0+38.10 RPAY4
CS Sta 426+20.73 -L-
ST Sta 431+00.73 -L-
CS Sta 4+08.17 RPDY4

BEGIN BRIDGE
STA.4+50.43 RPAY4

END BRIDGE
STA.421+53.86 -L-

END PROJECT R-2524C
POC STA.421+69.00 -L- =

END CONSTRUCTION
POC STA.422+45.00 -L- =

END BRIDGE
STA.421+33.94 -L-

N 79° 35' 51.2" W

S 79° 05' 49.7" E

DETAIL A
FALSE SUMP
(Not to Scale)

-RPDY4- 4+60 LT.

NOTE:
SEE SHEET 2-S FOR CURVE DATA
SEE SHEET 27 FOR -L- PROFILE
SEE SHEET 40 FOR RPAY4 PROFILE
SEE SHEET 43 FOR RPDY4 PROFILE
SEE SHEET 16 FOR BRIDGE SKETCH

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BRIDGE
ST ROWE DR

REVISIONS

R/W REVISION:12/5/11,EXTENDED PUE ALONG -Y2- LT ON PARCELS 25,25A & 25B.
R/W REVISION:12/19/11,REVISED TCE ON -Y2- RT.ALONG PARCEL NO.24

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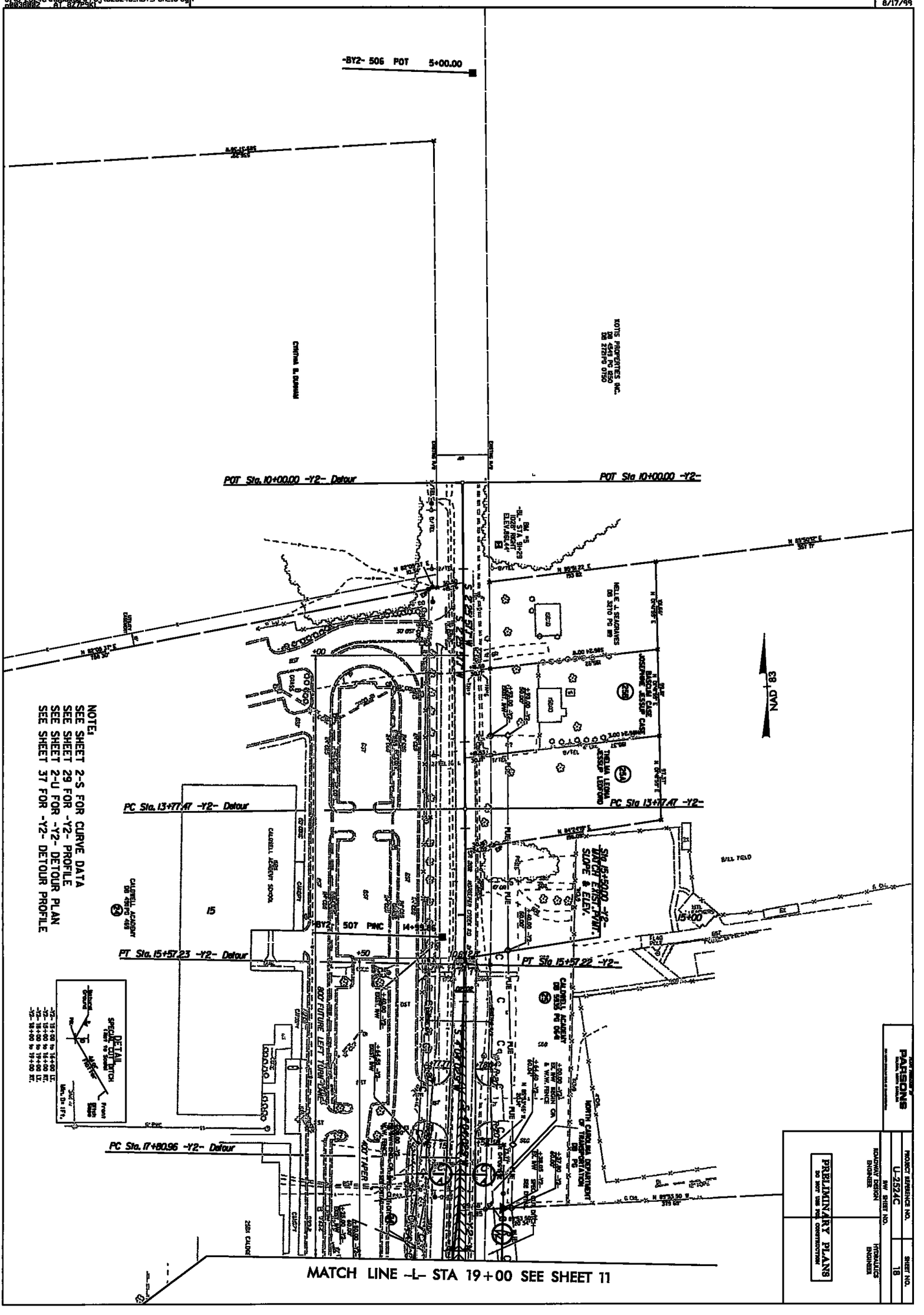
8/17/99



PARSONS

PRELIMINARY PLANS
NO RIGHT OF WAY OR CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	18
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY: PARSONS RALEIGH, NORTH CAROLINA

REVISIONS
R/W REVISION: REVISED R/W LINE ALONG PARCEL NUMBER 42.

8/17/99

MATCH LINE -Y4- STA 35+00 SEE SHEET 16

NAD 83

LIBBY HILL SEAFOOD RESTAURANTS, INC. DB 4758 PG 0105

CITY OF GREENSBORO DB 3638 PG 0001 DB 1758 PG 0077 DB 1757 PG 0055 PB 86 PG 105

END CONST. 40+00.00 -Y4- MATCH EXIST. PVMT SLOPE & ELEV.

PROPOSED CURB CUT FOR BASIN ACCESS

E 250' TAPER

MONOLITHIC CONC. ISLAND

PROPOSED GUARDRAIL

5' CONC. SIDEWALK

END C.L. FENCE

TIE TO EXIST. C&G

RETAIN

-Y4-

CRAYTON-WEST ENTERPRISES, LLP PB 30 PG 100

PATRICK ENTERPRISES, INC. DB 5295 PG 0244 PB 82 PG 75

BURGERBUSTERS, II LLC DB 4626 PG 089 PB 112 PG 75

WALMART

ROBERT B ALLBERT & RUTH A ALLBERT

BATTLE GROUND PLAZA INVESTORS, LLC DB 5016 PG 0088 PB 88 PG 140

S 36°42'33.4" E

REMOVE EXIST. G/R

100' OVERLAY

PROPOSED GUARDRAIL

5' CONC. SIDEWALK

CITY OF GREENSBORO PB 136 PG 009

END C.L. FENCE

TIE TO EXIST. C&G

-BY4- 520 PNC

-BY4- 521 PNC

BATTLE CROSSING I, LLC DB 5467 PG 1884 PB MAPS 99

SHURGARD-MOMMESTAR SELF-STORAGE DB 6212 PG 1887

GOLDEN TOUCH REALTY OF BATTLEGROUND, LLC DB 1847 PG 168 PB 136 PG 009

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DB 4463 PG 183

CHELSEA COMMONS AT BRASSFIELD HOMEOWNERS ASSOCIATION DB 4722 PG 0342 PB 127 PG 149

PARK FOREST TRIAD APT. PORTFOLIO, LLC DB 6587 PG 2075 PB 85 PG 113

NOTE:
SEE SHEET 31 FOR -Y4- PROFILE

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	20

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

890 880 870 860 850 840 830 820 810 800

208 209 210 211 212 213 214 215 216 217 218 219 220 221 222

880 870 860 850 840 830 820 810 800 790

222 223 224 225 226 227 228 229 230 231 232 233 234 235 236

NOTE:
SEE SHEETS 4 & 5 FOR -L- PLAN

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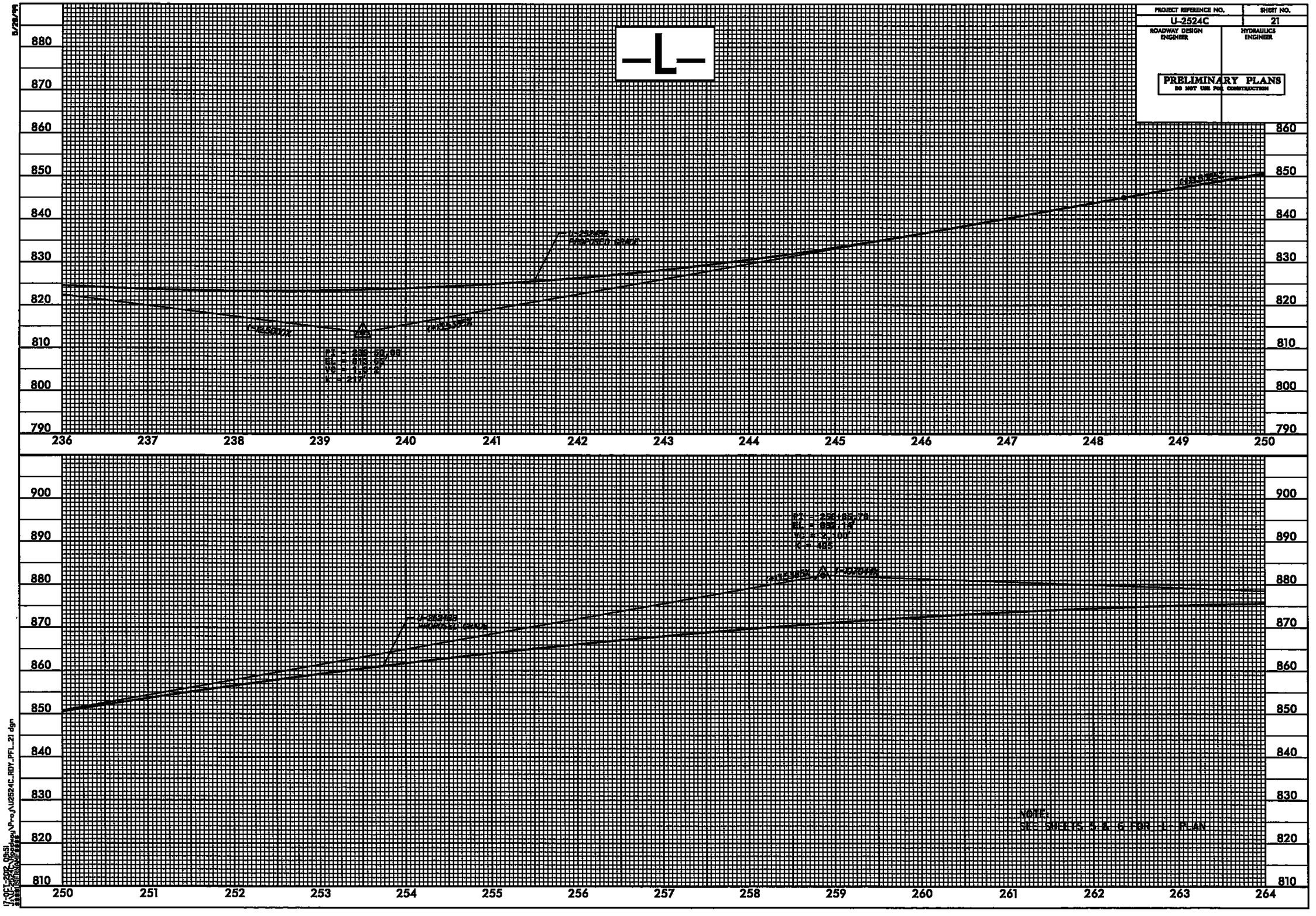
5/28/98

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	21
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	22

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #1 ELEVATION = 912.89'
N = 865764 E = 1732039
-BL- STATION 20+82 1254' LEFT
R/R SPIKE SET IN 20" OAK

-L-

C.L. SR 2136 (FLEMING RD)

EXIST. RIGHT EDGE PVMT.

EXIST. LEFT EDGE PVMT.

PROPOSED PVMT.

SPECIAL DITCH RT.

SPECIAL DITCH LT.

BM #2 ELEVATION = 878.01'
N = 865385 E = 1734861
-BL- STATION 37+08 982' RIGHT
R/R/ SPIKE SET IN DOUBLE OAK
(12" &14")

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.0805

DRAINAGE AREA	= 32	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 80	CFS
DESIGN HW ELEVATION	= 836.12	FT
100 YEAR DISCHARGE	= 95	CFS
100 YEAR HW ELEVATION	= 836.75	FT
OVERTOPPING FREQUENCY	= > 500	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= 856.00	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.0811

DRAINAGE AREA	= 11.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 30	CFS
DESIGN HW ELEVATION	= 835.50	FT
100 YEAR DISCHARGE	= 40	CFS
100 YEAR HW ELEVATION	= 835.98	FT
OVERTOPPING FREQUENCY	= > 500	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= 852.00	FT

PVI = 268+69
EL = 885.62
VC = 300
K = 1962

= 0.40%

= -1.20%

PROPOSED PVMT.

BERM DITCH RT.

EXIST. RIGHT EDGE PVMT.

EXIST. LEFT EDGE PVMT.

NOTE:
SEE SHEETS 6-7 & 8 FOR -L- PLAN

5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	23

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #4 ELEVATION = 842.24'
N = 866881 E = 1735602
-BL- STATION 52+07 252' RIGHT
R/R SPIKE SET IN 18" PINE

BM #3 ELEVATION = 868.80'
N = 867585 E = 1735490
-BL- STATION 55+44 378' LEFT
R/R SPIKE SET IN TRIPLE POPLAR
(12", 8", & 4")

-L-

PROP. 24" RCP

PROPOSED GRADE

EXISTING GROUND

24" RCP

36" RCP

24" RCP

PROP. 24" RCP

PROP. 24" RCP

PROP.

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	24

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #6 ELEVATION = 856.41'
N = 867660 E = 1738009
-BL- STATION 76+26 111' RIGHT
R/R SPIKE SET IN 10" BLACK WALNUT

-L-

-L- HORSEPEN CREEK RD.
(SR 2185)

EXISTING GROUND

PROPOSED GRADE

FLAT BASE DITCH RT.

BENT 1 DITCH RT.

BENT 2 DITCH RT.

DITCH 3 DITCH RT.

DITCH 4 DITCH RT.

DITCH 5 DITCH RT.

DITCH 6 DITCH RT.

DITCH 7 DITCH RT.

DITCH 8 DITCH RT.

DITCH 9 DITCH RT.

DITCH 10 DITCH RT.

DITCH 11 DITCH RT.

DITCH

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.1305

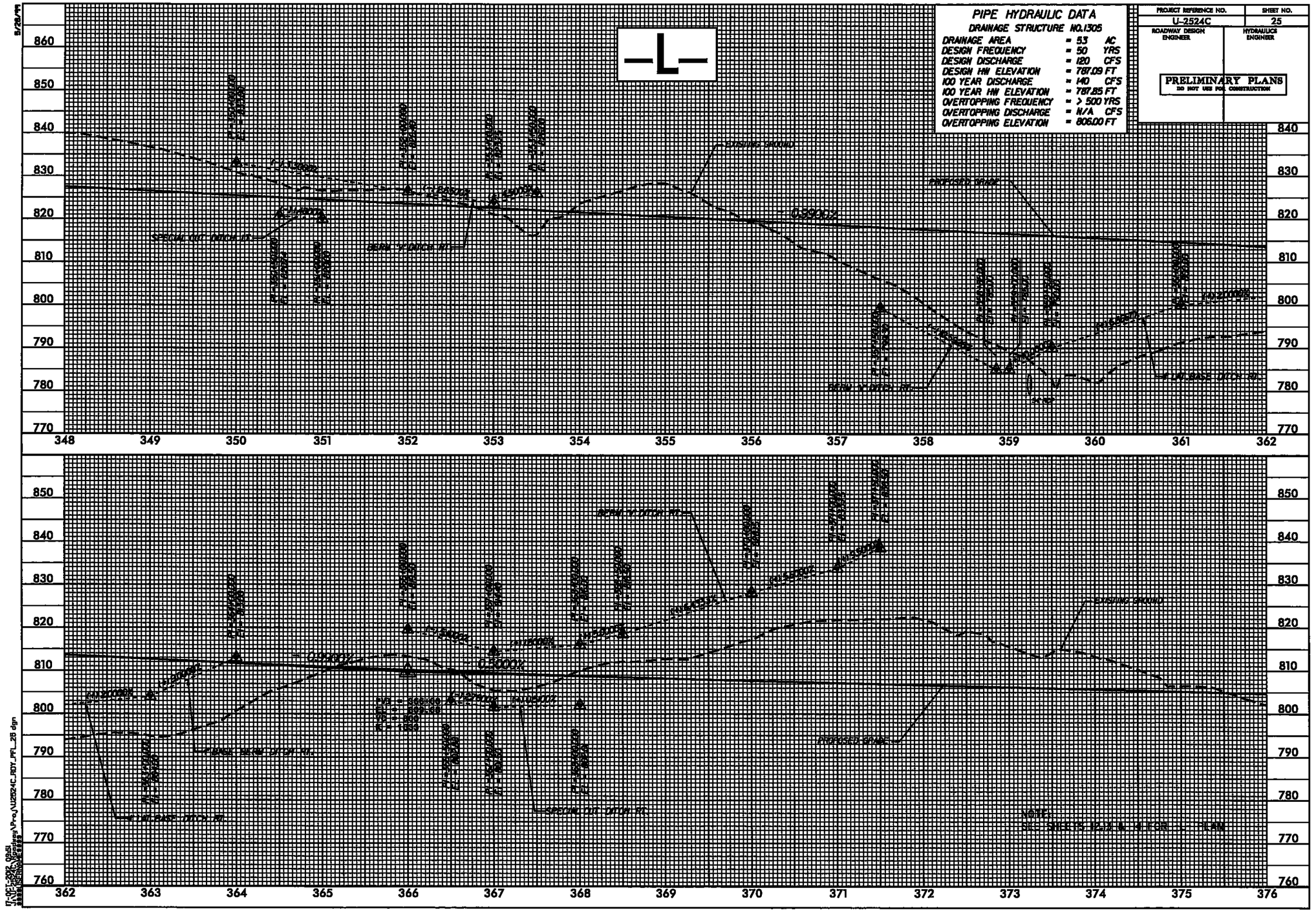
DRAINAGE AREA	= 53	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 120	CFS
DESIGN HW ELEVATION	= 787.09	FT
100 YEAR DISCHARGE	= 140	CFS
100 YEAR HW ELEVATION	= 787.85	FT
OVERTOPPING FREQUENCY	= > 500	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= 806.00	FT

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	25

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
U-2524C	26
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #8 ELEVATION = 766.96'
N = 868350 E = 1742398
-BL- STATION 131+68 1,285' RIGHT
R/R SPIKE SET IN 20" PINE

STA 379+45 -L-
REGEN BRIDGE

-L-

PROPOSED GRADE

= 0.50000

EXISTING GROUND

BM #9 ELEVATION = 819.53'
N = 871979 E = 1743971
-BL- STATION 153+33 2,077' LEFT
R/R SPIKE SET IN 22" OAK

NOTES
SEE SHEETS 4A, 4B & 4C FOR -L- PLAN

8/28/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #10 ELEVATION = 762.53'
N = 871159 E = 1745014
-BL- STATION 160+48 945' LEFT
R/R SPIKE SET IN 10" MAPLE

BM #11 ELEVATION = 770.80'
N = 868461 E = 1746694
-BL- STATION 166+35 2181' RIGHT
R/R SPIKE SET IN 32" OAK

BM #12 ELEVATION = 748.99'
N = 870839 E = 1746657
-BL- STATION 174+63 122' LEFT
LARGE NAIL SET IN 12" GUM

BM #13 ELEVATION = 806.64'
N = 869,750 E = 1747183
-BL- STATION 179+77 973' RIGHT
R/R SPIKE SET IN 26" MAPLE

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 6223	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 751.6	FT
BASE DISCHARGE	= 7302	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 752.3	FT
OVERTOPPING DISCHARGE	= -------	CFS
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING ELEVATION	= -------	FT
	=	FT
DATE OF SURVEY	= 06-26-12	
W.S.ELEVATION AT DATE OF SURVEY	= 742.1	FT

NOTE:
SEE SHEET 16 & 17 FOR "C" PLANS

17-OCT-2012 09:51
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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #1 ELEVATION = 912.89'
N = 865764 E = 1732039
-BL- STATION 20+82 1254' LEFT
R/R SPIKE SET IN 20" OAK

BM #2 ELEVATION = 878.01'
N = 865385 E = 1734861
-BL- STATION 37+08 982' RIGHT
R/R/ SPIKE SET IN DOUBLE OAK
(12" &14")

-Y-

BEGIN CONSTRUCTION
STA 19+50.00 -Y-
EL = 907.72

END OVERLAY
BEGIN CONSTRUCTION
STA 24+50.00 -Y-
EL = 897.28

PVI = 20+00.00
EL = 899.28
50' V.C.
K = 91

PVI = 26+50.00
EL = 890.10
50' V.C.
K = 151

50' OVERLAY

0.980%

-1.420%

PROPOSED GRADE

EXISTING GRADE

BEGIN OVERLAY
STA 21+00.00 -Y-

END CONSTRUCTION
STA 28+00.00 -Y-
EL = 890.10

50' OVERLAY

END OVERLAY
STA 28+50.00 -Y-

NOTE:
SEE SHEET 1 FOR Y1 PLAN

-Y1-

BM #3 ELEVATION = 868.80'
N = 867585 E = 1735490
-BL- STATION 55+44 378' LEFT
R/R SPIKE SET IN TRIPLE POPLAR
(12", 8", & 4")

BM #4 ELEVATION = 842.24'
N = 866881 E = 1735602
-BL- STATION 52+07 252' RIGHT
R/R SPIKE SET IN 18" PINE

BEGIN CONSTRUCTION
STA 10+63.96 -Y1-
EL = 865.43

END CONSTRUCTION
STA 16+63.96 -Y1-
EL = 861.99

PVI STA 13+76.06 -Y1-
EL = 845.91

-1.456%

EXISTING GRADE

NOTE:
SEE SHEET 9 FOR Y1 PLAN

9/28/18

17-OCT-2018 08:51
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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	29

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #5 ELEVATION = 861.44'
N = 870344 E = 1738253
-BL- STATION 91+29 1028' RIGHT
R/R SPIKE SET IN 18" PINE

-Y2-

BEGIN OVERLAY
STA 15+00.00 -Y2-

END OVERLAY
BEGIN GRADE
STA 16+00.00 -Y2-
PI = 16+00.00
PT = 17+36.98
E = 5.00'
K = 9.44
K = 68

50'
OVERLAY

EXISTING GROUND

-L- STA 17+50.00
TIOT STA 17+50.00 -Y2-
PI = 9+38.56

PROPOSED GRADE

-L- STA 20+00.00
TIOT STA 20+00.00 -Y2-
PI = 12+40.00
PT = 13+40.00
PC = 14+43.02
E = 5.00'
K = 9.44
K = 68

-L- STA 20+00.00
TIOT STA 20+00.00 -Y2-
PI = 12+40.00

-Y2-

BM #6 ELEVATION = 856.41'
N = 867660 E = 1738009
-BL- STATION 76+26 111' RIGHT
R/R SPIKE SET IN 10" BLACK WALNUT

PI = 25+85.98
PC = 24+83.79
PT = 26+87.79
K = 9.44
K = 68

END GRADE
BEGIN OVERLAY
STA 27+10.00 -Y2-
PI = 26+00.00

END OVERLAY
STA 28+00.00 -Y2-

50'
OVERLAY

EXISTING GROUND

-L- STA 27+50.00
TIOT STA 27+50.00 -Y2-
PI = 10+10.00

PROPOSED GRADE

NOTE:
SEE SHEET 29 A & B FOR Y2 PLAN

J:\PROJECTS\2020\U2524C_RDY_PFL_29.dgn
07-OCT-2020 09:52
User:jwilliams
PSS=1
PSS=1

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	30

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y3-

BM #8 ELEVATION = 766.96'
N = 868350 E = 1742398
-BL- STATION 131+68 1285' RIGHT
R/R SPIKE SET IN 20" PINE

PROPOSED GRADE

BEGIN OVERLAY
STA. 1+00.00 -Y3-

END OVERLAY
BEGIN GRADE
STA. 14+00.00 -Y3-
EL. = 763.31

100' OVERLAY

PVI = 26+25.00
EL. = 769.81
160' V.C.
K = 69

SPECIAL DITCH @ 0.50%

PVI = 26+90.00
EL. = 769.52
220' V.C.
K = 88

PROPOSED GRADE

-1.66%

-0.62%

PVI = 15+58.00
EL. = 776.77
120' V.C.
K = 69

-2.00%

PVI = 19+00.00
EL. = 769.81
120' V.C.
K = 60

-1.50%

-2.00%

PVI = 24+00.00
EL. = 765.15
160' V.C.
K = 80

EXISTING GROUND

SPECIAL DITCH @ 1.75%

-Y3-

BM #10 ELEVATION = 762.53'
N = 871159 E = 1745014
-BL- STATION 160+48 945' LEFT
R/R SPIKE SET IN 10" MAPLE

END GRADE
BEGIN OVERLAY
STA. 30+00.00 -Y3-
EL. = 760.00

END OVERLAY
STA. 32+50.00 -Y3-

50' OVERLAY

PVI = 30+75.00
EL. = 760.06
100' V.C.
K = 286

PROPOSED GRADE

-0.62%

-1.39%

-0.60%

EXISTING GROUND

PVI = 31+00.00
EL. = 761.73
150' V.C.
K = 167

NOTE:
SEE SHEETS 15 & 16 FOR -Y3- PLAN

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29

29 30 31 32 33 34 35 36 37 38 39 40 41 42

720 730 740 750 760 770 780 790 800 810

17-OCT-2012 09:53
J:\U2524C_Hydraulics\VP-o\U2524C_RDY_PFL_30.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	31

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #9 ELEVATION = 819.53'
N = 871979 E = 1743971
-BL- STATION 153+33 2,077' LEFT
R/R SPIKE SET IN 22" OAK

BM #10 ELEVATION = 762.53'
N = 871159 E = 1745014
-BL- STATION 160+48 945' LEFT
R/R SPIKE SET IN 10" MAPLE

-Y4-

EXISTING GRADE

BEGIN OVERLAY
STA 25+00.00 -Y4-
100' OVERLAY

END OVERLAY
BEGIN GRADE
STA 26+00.00 -Y4-
PT = 770.02'

PVT = 26+40
EL = 769.97'
VC = 700'
K = 96

FINISHED GRADE

-L- = 1.5000%

-Y4- = 0.5000%

BM #11 ELEVATION = 770.80'
N = 868461 E = 1746694
-BL- STATION 166+35 2181' RIGHT
R/R SPIKE SET IN 32" OAK

EXISTING GRADE

PVT STA 407+79.59 -L- =
PC STA 29+65.29 -Y4-
EL = 768.76'

PVT = 29+40
EL = 769.34'
VC = 550'
K = 84

END GRADE
BEGIN OVERLAY
STA 30+00.00 -Y4-
PT = 770.40'

END OVERLAY
STA 40+00.00 -Y4-

-L- = 0.5000%

-Y4- = 0.5533%

NOTE:
SEE SHEETS 10, 11, 12 FOR -Y4- PLANS

7-OCT-2013 09:52
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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RPAY4

BM #12 ELEVATION = 748.99'
N = 870839 E = 1746657
-BL- STATION 174+63 122' LEFT
LARGE NAIL SET IN 12" GUM

BEGIN BRIDGE
STA 4+50.47 RPAY4

BEGIN GRADE
PGL STA 4+25.30 RPAY4 =
EL = 785.38

PROPOSED GRADE

EXISTING GROUND

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 6223	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 751.6	FT
BASE DISCHARGE	= 6242	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 751.50	FT
OVERTOPPING DISCHARGE	= -------	CFS
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING ELEVATION	= -------	FT
	=	FT
DATE OF SURVEY	=	
W.S.ELEVATION AT DATE OF SURVEY	=	FT

PVI = 9+00.00
EL = 784.50
200' V.C.
K = 183

BEGIN CONSTRUCTION
STA 3+95.00 RPAY4

EXISTING GROUND

PROPOSED GRADE

PVI = 11+00.00
EL = 788.44
200' V.C.
K = 181

-0.600%

-3.963%

BM #10 ELEVATION = 762.53'
N = 871159 E = 1745014
-BL- STATION 160+48 945' LEFT
R/R SPIKE SET IN 10" MAPLE

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.1644

DRAINAGE AREA	= 82	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 190	CFS
DESIGN HW ELEVATION	= 753.42	FT
100 YEAR DISCHARGE	= -	CFS
100 YEAR HW ELEVATION	= -	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 190	CFS
OVERTOPPING ELEVATION	= 753.40	FT

END BRIDGE
STA 14+56.22 RPAY4

PROPOSED GRADE

EXISTING GROUND

-1.960%

PVI = 16+25.00
EL = 769.11
120' V.C.
K = 60

END GRADE
PGL STA 19+32.69 RPAY4 =
STA 29+26.0 -YK+45' LT
EL = 758.47

-0.950%

-1.360%

-0.765%

-0.300%

-0.299%

-0.582%

NOTE:
SEE SHEETS 15 & 16 FOR RPAY4 PLAN

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JNF-2224\Wagner\Proj\U2524C_ROY_PFL_32.dgn

RPBY4

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	33

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BEGIN GRADE/BEGIN BRIDGE
STA 0+00 RPBY4 =
STA 39+19.31 -L- =
EL = 794.50

END GRADE
STA 1+40.00 RPBY4 =
STA 29+25.53 -L- =
EL = 759.52

PROPOSED BRIDGE

EXISTING GROUND

-L- 0.500%

-L- 0.400%

0.881%

PVI = 31+40.00
EL = 786.17
VPI 7.5
K = 188

-L- 4.40%

-L- 1.05%

-L- 1.22%

-L- 4.36%

PVI = 40+35.00
EL = 780.28
VPI 7.5
K = 59

-L- 0.36%

-L- 0.25%

-L- 0.31%

-L- 0.56%

BM #10 ELEVATION = 762.53'
N = 871159 E = 1745014
-BL- STATION 160+48 945' LEFT
R/R SPIKE SET IN 10" MAPLE

NOTE:
SEE SHEET 16 FOR RPBY4 PLAN

RPBY4

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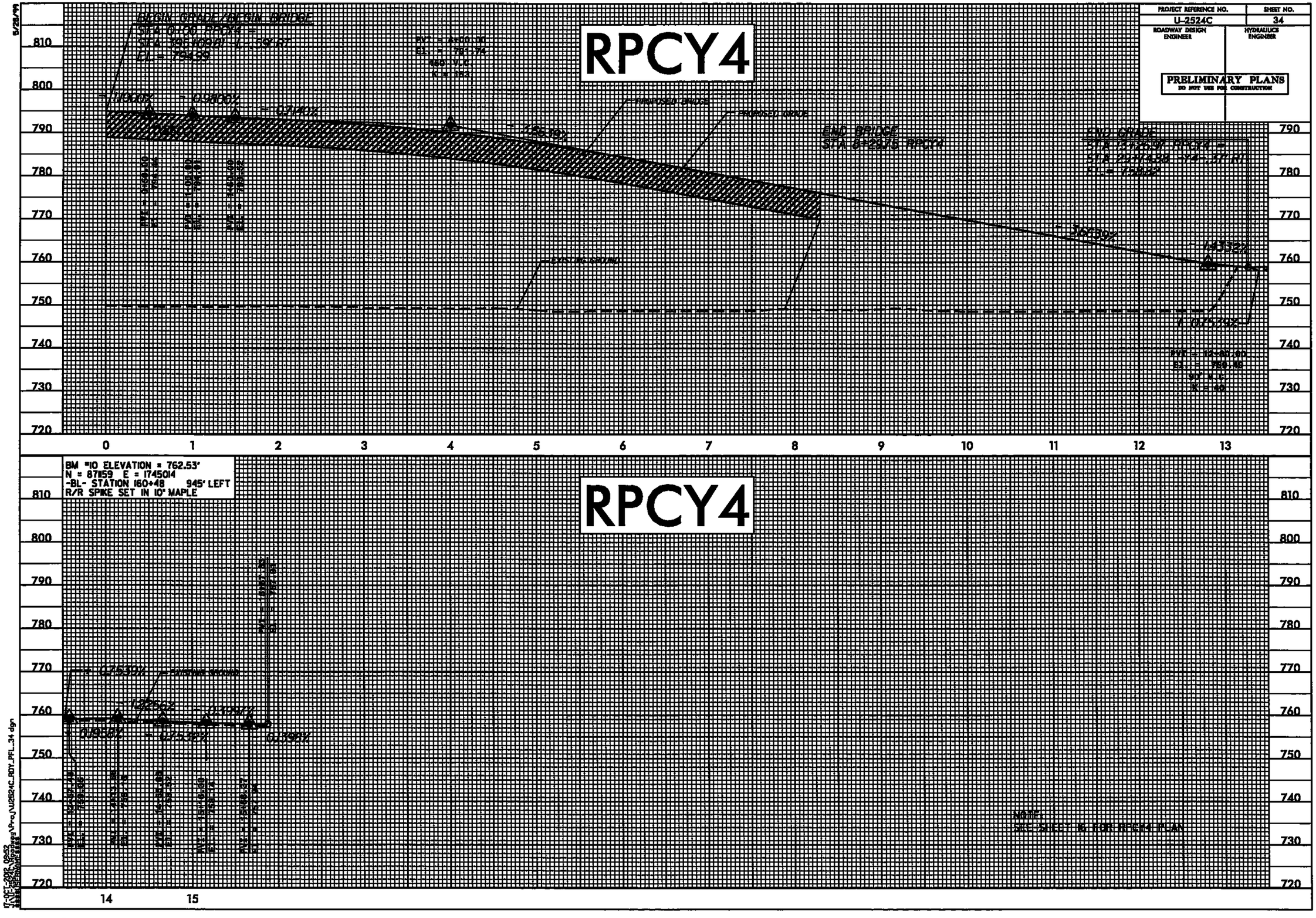
RPCY4

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	34

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



RPDY4

BM #12 ELEVATION = 748.99'
N = 870839 E = 1746657
-BL- STATION 174+63 122' LEFT
LARGE NAIL SET IN 12" GUM

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BEGIN GRADE
STA 3+70.25 RPDY4
EL = 777.81

BEGIN BRIDGE
STA 3+70.25 RPDY4

PVI = STA 3+50.00
EL = 770.62
K = 925

BEGIN CONSTRUCTION
STA 4+95.00 RPDY4

PROPOSED GRADE

EXISTING GROUND

TOP OF SLOPE TYP.
NOTHING TO CUT
OR FILL PER PLAN

PVI = STA 9+00.00
EL = 774.91
K = 888

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 6223	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 751.6	FT
BASE DISCHARGE	= 7302	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 752.02	FT
OVERTOPPING DISCHARGE	= --------	CFS
OVERTOPPING FREQUENCY	= >500+	YRS
OVERTOPPING ELEVATION	= --------	FT
	=	FT
DATE OF SURVEY	=	
W.S.ELEVATION AT DATE OF SURVEY	=	FT

RPDY4

BM #10 ELEVATION = 762.53'
N = 871159 E = 1745014
-BL- STATION 160+48 945' LEFT
R/R SPIKE SET IN 10" MAPLE

END BRIDGE
STA 13+65.75 RPDY4

PROPOSED GRADE

EXISTING GROUND

PVI = STA 17+40.00
EL = 798.18
K = 44

END GRADE
STA 17+90.00 RPDY4
STA 30+12.33 -Y4- 43' LT
EL = 768.62

NOTE:
SEE SHEET 16 & 17 FOR RPDY4 PLAN

17-OCT-2012 09:52
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PROJECT REFERENCE NO.	SHEET NO.
U-2524C	36

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SPAY4

BM #10 ELEVATION = 762.53'
N = 871159 E = 1745014
-BL- STATION 160+48 945' LEFT
R/R SPIKE SET IN 10" MAPLE

BEGIN GRADE
/STA 0+00 SPAY4 =
/STA 1+60.00 PBAY4 12' RT
EL= 774.50

PROPOSED GRADE

END GRADE
/STA 4+32.0 SPAY4 =
/STA 27+73.55 -Y4- 43' LT
EL= 759.72

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.1644

DRAINAGE AREA	= 82	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 190	CFS
DESIGN HW ELEVATION	= 753.42	FT
100 YEAR DISCHARGE	= -	CFS
100 YEAR HW ELEVATION	= -	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 190	CFS
OVERTOPPING ELEVATION	= 753.40	FT

EXISTING GROUND

SPBY4

BM #10 ELEVATION = 762.53'
N = 871159 E = 1745014
-BL- STATION 160+48 945' LEFT
R/R SPIKE SET IN 10" MAPLE

BEGIN GRADE
/STA 0+00 SPBY4 =
/STA 4+67.67 PBBY4 12' LT
EL= 772.45

PROPOSED GRADE

END GRADE
/STA 2+26.57 SPBY4 =
/STA 23+32.92 -Y4- 35.57' RT
EL= 760.42

GRADE CONTROLLED @ PBBY4 12' LT

EXISTING GROUND

SPCY4

BM #10 ELEVATION = 762.53'
N = 871159 E = 1745014
-BL- STATION 160+48 945' LEFT
R/R SPIKE SET IN 10" MAPLE

BEGIN GRADE
/STA 0+00.00 SPCY4 =
/STA 0+34.75 PBCY4 12' RT
EL = 775.07

PROPOSED GRADE

END GRADE
/STA 1+62.62 SPCY4 =
/STA 32+70.38 -Y4- 39' RT
EL = 759.28

EXISTING GROUND

SPDY4

BM #10 ELEVATION = 762.53'
N = 871159 E = 1745014
-BL- STATION 160+48 945' LEFT
R/R SPIKE SET IN 10" MAPLE

BEGIN GRADE
/STA 0+00.00 SPDY4 =
/STA 14+90.36 PBDY4 12' LT
EL = 764.85

PROPOSED GRADE

END GRADE
/STA 2+08.70 SPDY4 =
/STA 34+12.42 -Y4- 42.49' LT
EL = 759.73

EXISTING GROUND

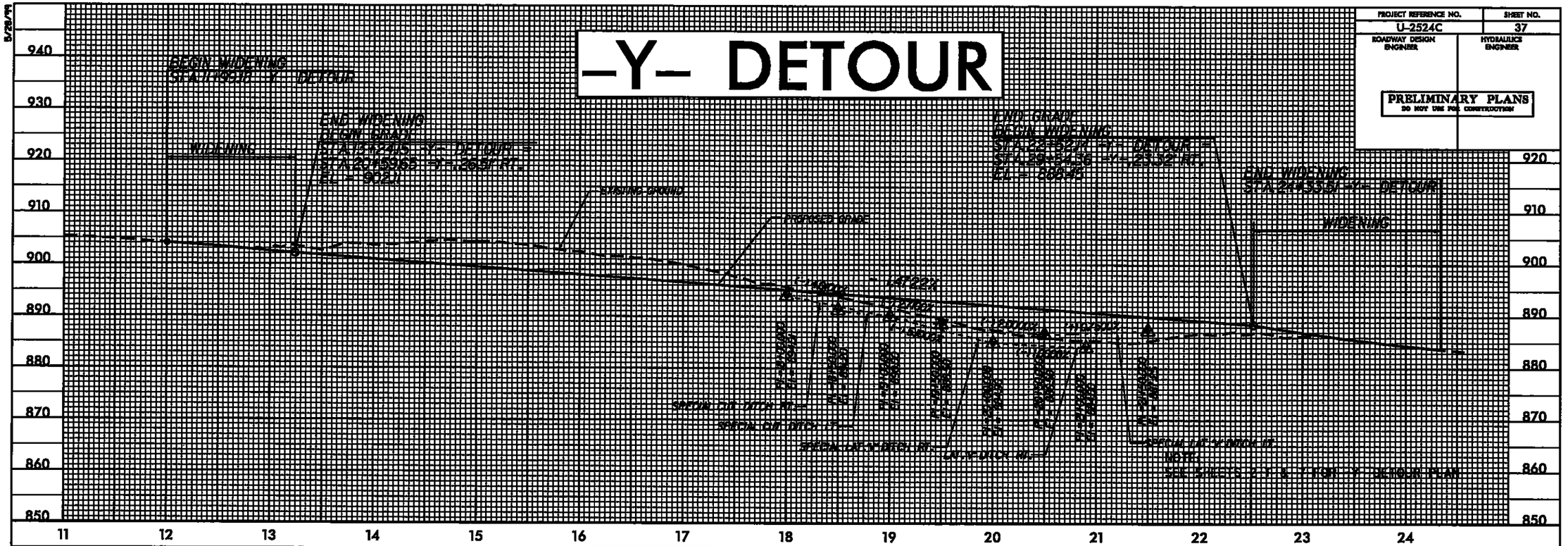
NOTE:
SEE SHEET 36 FOR SPAY4, SPBY4, SPCY4 & SPDY4 PLANS

17-OCT-2012 09:52
J:\NCDOT_Projects\Highway\VP-to_U\U2524C_RDY_PFL_36.dgn

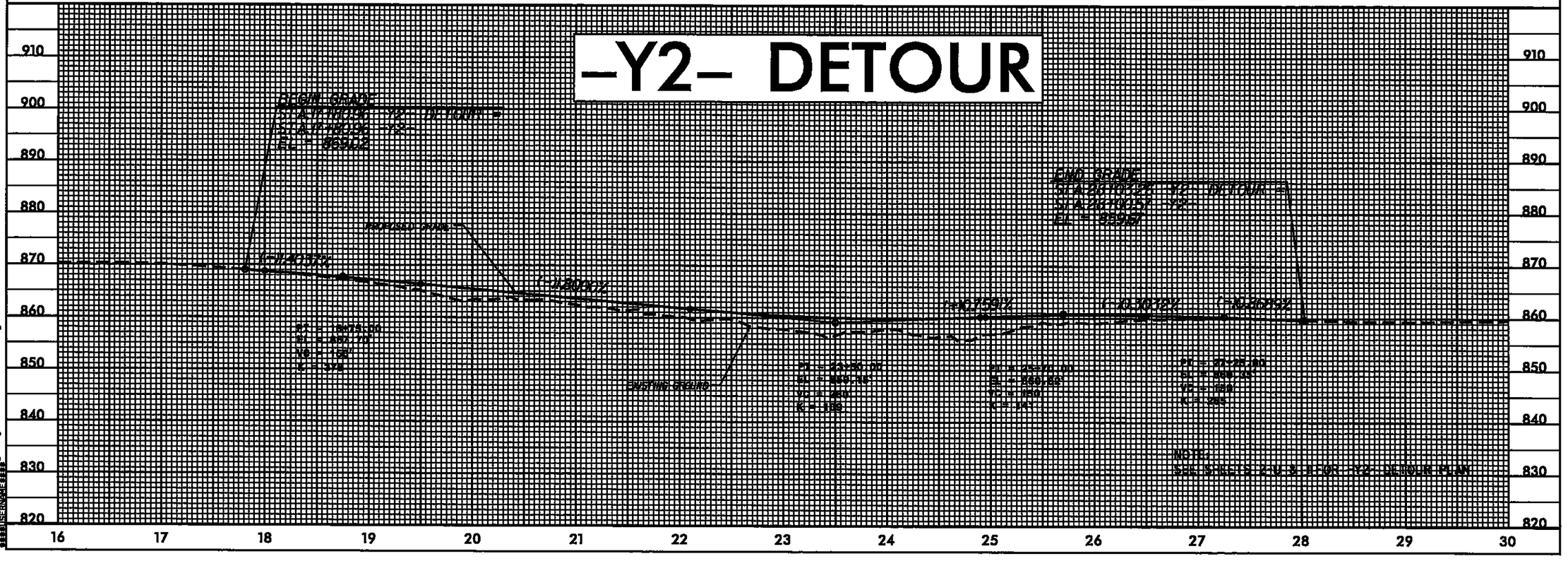
PROJECT REFERENCE NO.	SHEET NO.
U-2524C	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y- DETOUR



-Y2- DETOUR



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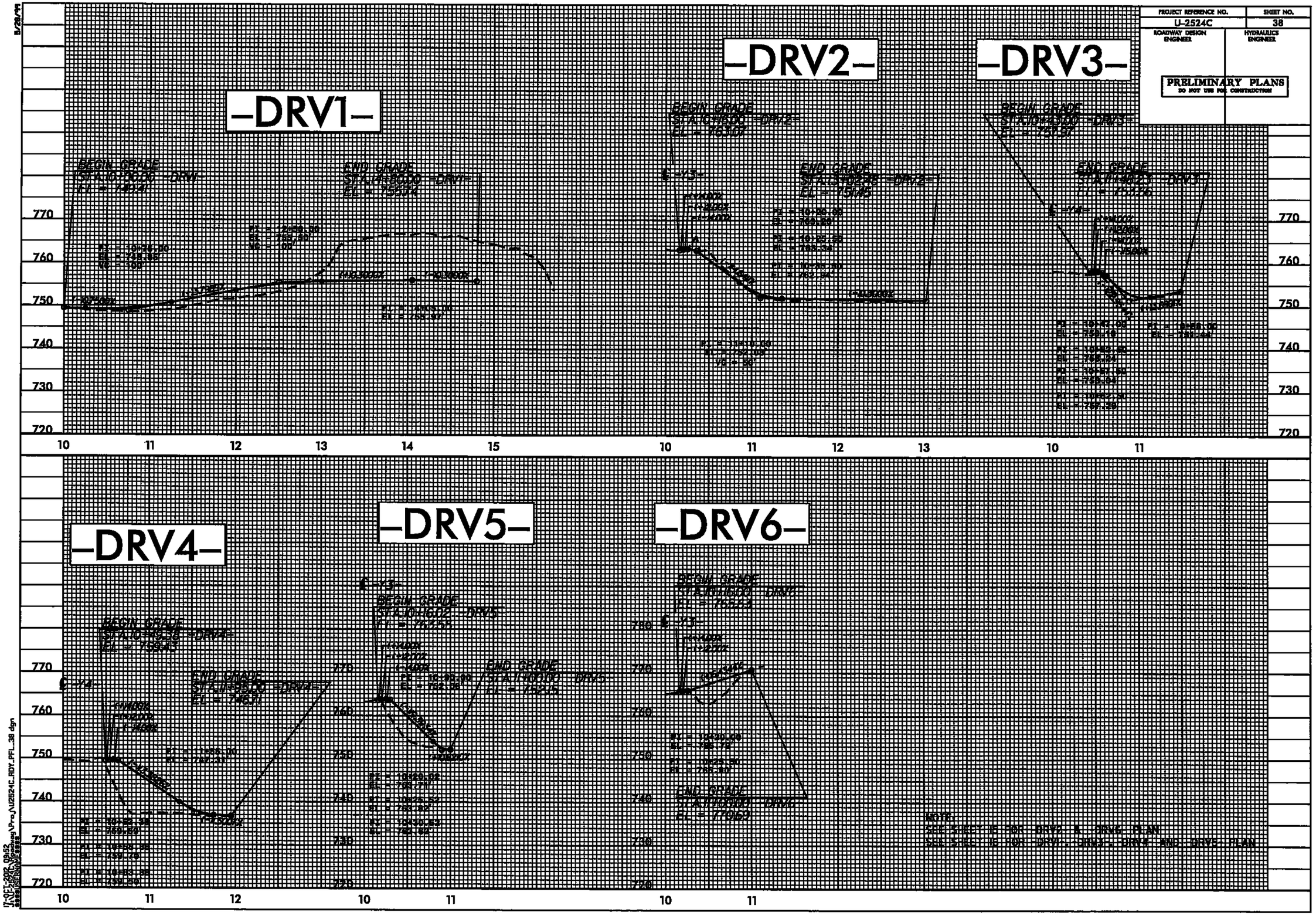
17-OCT-2012 09:52
USER:cbrown

PROJECT REFERENCE NO.	SHEET NO.
U-2524C	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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$$$$USERNAME$$$$
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09/28/99

TIP PROJECT: U-2524D

CONTRACT:

27-SEP-2011 10:41
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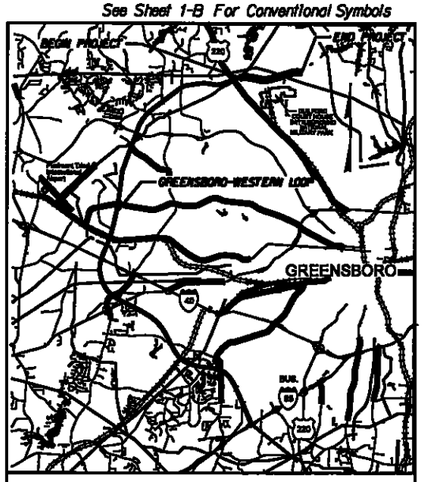
$$$$USERNAME$$$$

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

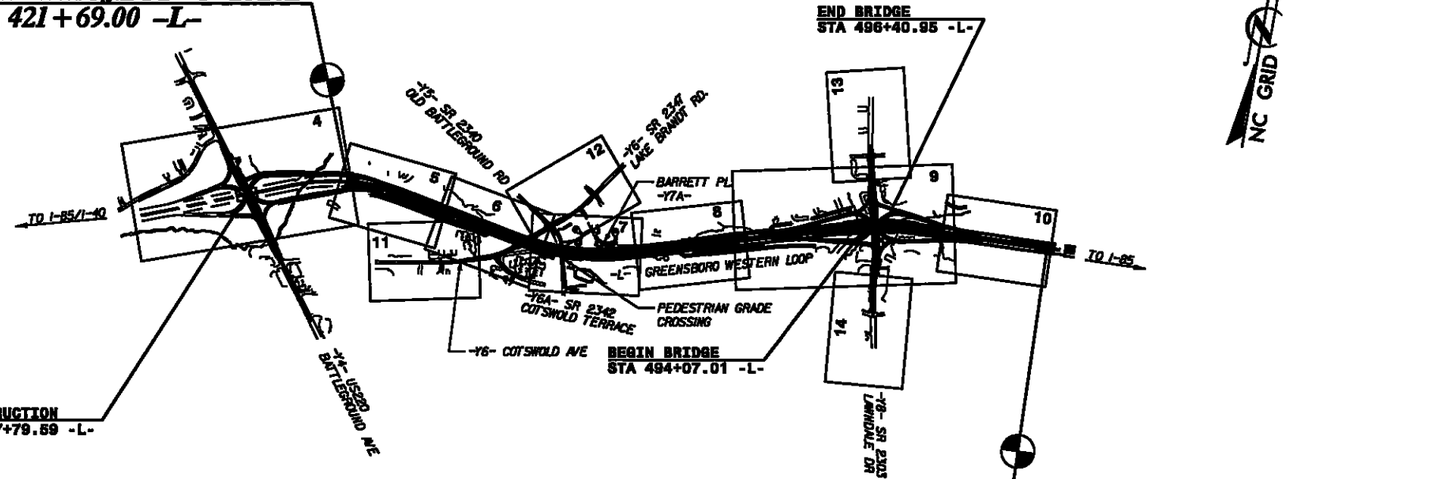
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524D	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34820.2.19	NHF-0708(53)	P.E.
34820.2.19	NHF-0708(53)	R.O.W./UTILITY

LOCATION: GREENSBORO-WESTERN LOOP FROM US 220 (BATTLEGROUND AVENUE) TO SR 2303 (LAWNDALE DRIVE).

TYPE OF WORK: GRADING, PAVING, CULVERTS, DRAINAGE, STRUCTURES, SIGNING, ITS, TRAFFIC SIGNAL AND RETAINING WALLS.

BEGIN TIP PROJECT U-2524D
POC STA. 421+69.00 -L-

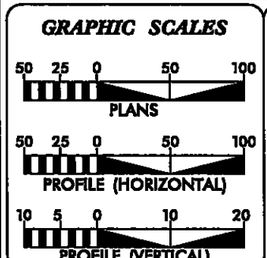


END TIP PROJECT U-2524D
POT STA 519+00.00 -L-

NOTES:
THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2008 = 41,985
ADT 2028 = 71,908
DHV = 10 %
D = 60 %
T = 15 % *
V = 70 MPH

5% TTST DUAL 10%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2524D = 1.799 MILES

LENGTH STRUCTURES TIP PROJECT U-2524D = 0.044 MILES

TOTAL LENGTH OF TIP PROJECT U-2524D = 1.843 MILES

PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA
PVE

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 23, 2011

LETTING DATE: POST YEAR

EDWARD S. ROBBINS, P.E.
PROJECT ENGINEER

DAVID GARRETT
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

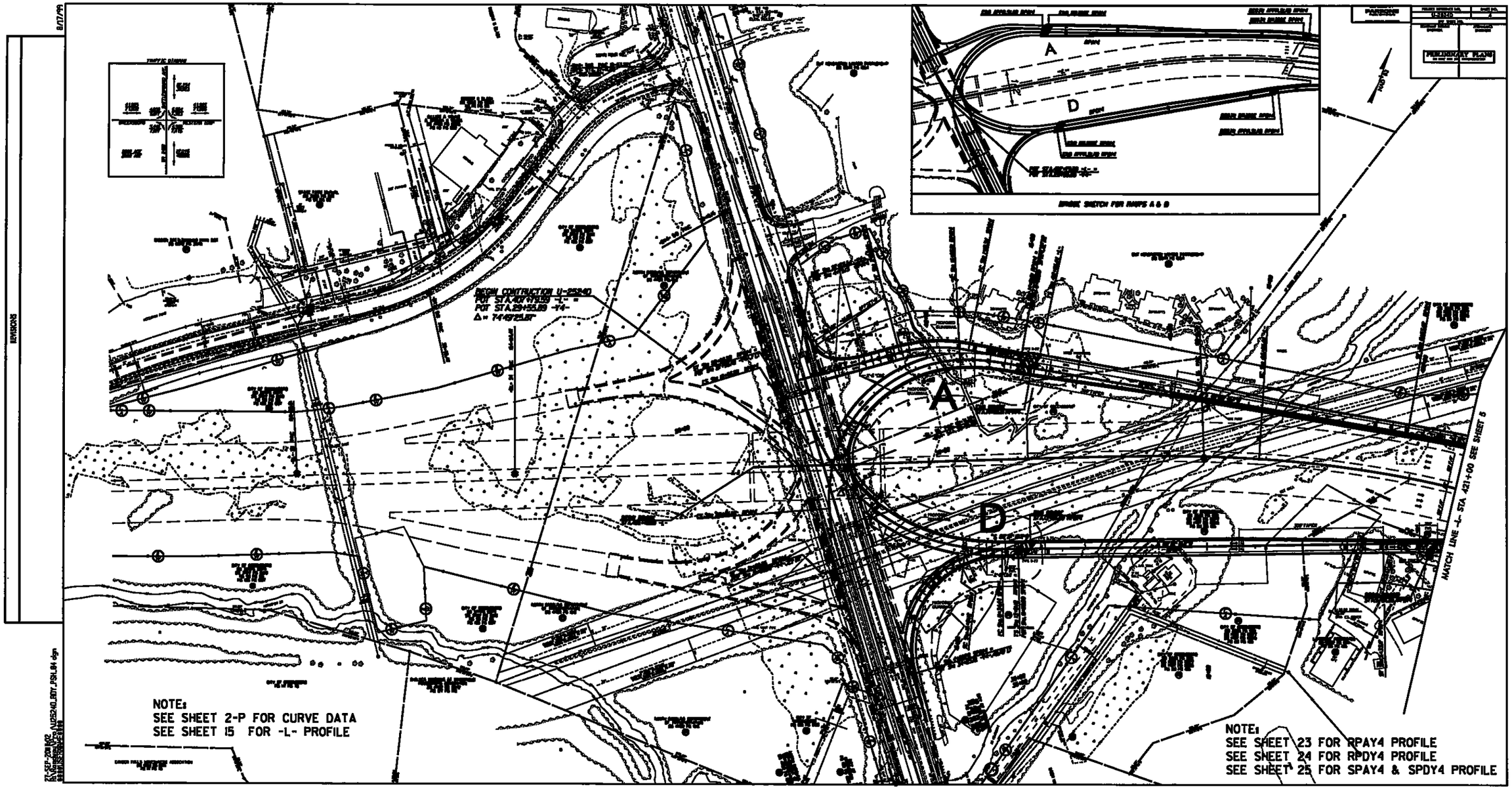
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER


A
D
A
D
NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 15 FOR -L- PROFILE
NOTE:
SEE SHEET 23 FOR RPAY4 PROFILE
SEE SHEET 24 FOR RPDY4 PROFILE
SEE SHEET 25 FOR SPAY4 & SPDY4 PROFILE
MATCH LINE -L- STA 421+00 SEE SHEET 5
PRELIMINARY PLANS

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY PARSONS

NAD 83

MATCH LINE -L- STA 421+00 SEE SHEET 4

MATCH LINE -L- STA 435+00 SEE SHEET 6

CITY OF GREENSBORO DB 3638 PG 001 DB 1768 PG 0077 DB 1787 PG 0055 PB 66 PG 105

THE LAURELS TOWNHOMES ASSOCIATION DB 3874 PG 889 PB 66 PG 65 PB 134 PG 3 MARGARET A. KUSENBURG DB 6042 PG 432 ANNA M. LIBERTORE DB 468 PG 1876 WADE MONROE PEDPLES DB 3738 PG 415 ROBERT P. EDMONDS DB 6538 PG 1089

THE LAURELS TOWNHOMES ASSOCIATION DB 3758 PG 1473

ANNA ELIZABETH PURSER DB 6272 PG 76 THOMAS R. COFORTH DB 5859 PG 864 HUBERT P. & LORI BLACKWOOD DB 3965 PG 1366 KATIE JEAN VARGE DB 6535 PG 2

MARILYN ELIZABETH HARLESS

JAMES W DUNCAN JR. & STACY S DUNCAN

DEREK BRADSHAW DB 6869 PG 12 HEATHER J. LILES DB 6838 PG 2165 ASHLEY D. BROWN DB 6318 PG 1462 SANDRA J. JAJEX DB 6360 PG 13 BARBARA F. SMITH DB 6466 PG 1850 RICHARD W. BORER & SARA M. KNOBLOCH DB 6022 PG 896 LORI ANN VINE & ROBERT J. KING DB 6786 PG 760 DORIS JANE PHELPS DB 6814 PG 1

POC Sta 426+20.73 -L- = POT Sta 0+00.00 RPAY4.59' LT. △ = 5°00'00" RT.

SC Sta 2+38.10 RPAY4

CITY OF GREENSBORO DB 4931 PG 0648 PB 134 PG 003

J. WALTON COMPANY, LLC. PB 6 PG 126.

JAMES B. BROWN DB 5098 PG 342 ARTHUR SAUNDERS DB 5946 PG 2206 REZA MORTAZAVI DB 6419 PG 845 WILLIAM J. CAVENESS DB 5091 PG 1825 LEEANNE THORNTON DB 5985 PG 2652 GARY J. MEYER DB 6622 PG 73 DANA R. BOYLAN DB 6795 PG 839 NATHANIEL EVANS, JR. DB 5494 PG 1151 DAVID A. ROSLIN II DB 6544 PG 2424 RONALD GREEN DB 6877 PG 244 ANA MICHELLE STINSON DB 5989 PG 2571 TERESA ANNE PENDER DB 5085 PG 1470

CITY OF GREENSBORO DB 6033 PG 11

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DB 1391 PG 563 PB 150 PG 022

BM #12 -BL- STA 174+63.22 LT 22' LEFT ELEV. 748.98'

BEGIN BRIDGE STA 4+50.30 RPAY4

SC Sta 4+06.17 RPDY4

ST Sta 6+38.10 RPAY4

ST Sta 4+00.00 RPDY4

BEGIN RETAINING WALL STA. 425+00, 121.3' RT.

POC Sta 426+20.73 -L- = PC Sta 0+00.00 RPDY4.59' RT.

BEGIN PROJECT U-2524D
POC STA. 421+69.00 -L- =

TERRACE MEWS ASSOCIATES DB 4252 PG 0492 PB 91 PG 86 PB 88 PG 105

COTSWOLD PARK, LLC DB 5456 PG 2328 DB 5456 PG 2328 PB 84 PG 0320

1,044' ACCELERATION LANE

S 79°05'40" E

N 79°35'12" W

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-S FOR RETAINING WALL ENVELOPE
SEE SHEET 15 & 16 FOR -L- PROFILE
SEE SHEET 23 FOR RPAY4 PROFILE
SEE SHEET 24 FOR RPDY4 PROFILE
SEE SHEET 4 FOR BRIDGE SKETCH

REVISIONS

8/17/99

27-SEP-2011 02
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PROJECT REFERENCE NO.	SHEET NO.
U-2524D	6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY: PARSONS

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-S & 2-T FOR RETAINING WALL ENVELOPES
SEE SHEET 16 FOR -L- PROFILE
SEE SHEET 20 FOR -Y6A- PROFILE
SEE SHEET 21 FOR -Y6- PROFILE

MATCH LINE -Y6- STA 28+00 SEE SHEET 12

MATCH LINE -L- STA 435+00 SEE SHEET 5

MATCH LINE -L- STA 449+00 SEE SHEET 7

MATCH LINE SEE SHEET 11

MATCH LINE SEE SHEET 11

MATCH LINE -Y6- STA 18+00 SEE SHEET 11

BEGIN BRIDGE -Y6-
END BRIDGE -Y6-
BRIDGE SKETCH FOR -Y6- OVER -L-

POS STA 447+12.23 -L- =
POT STA 25+18.62 -Y6-

END BRIDGE STA 25+50.00 +/- -Y6-

POC STA 20+76.98 -Y6- =
POT STA 10+00.00 -Y6A-

POS STA 23+24.96 -Y6-

BEGIN BRIDGE STA 24+00.00 +/- -Y6-

SUBSTRUCT. & REMOVE

SUPERSTRUCT. STA 24+00.00 -Y6A- MATCH EXIST. ROAD SLOPE & ELEVS.

PROPOSED EXPRESSWAY GUTTER

PROPOSED RETAINING WALL

END RETAINING WALL STA. 442+00, 102.5' RT.

DETAIL FSM
FALSE SUMP
(Not to Scale)

DETAIL 2
PROPOSED OUTLET CHANNEL
(Not to Scale)
W=4'
D= VARIES TO TOP OF BANK
Type of Liner = CL. 'F'
-L- 440+35 LT.

DETAIL
FALSE CUT
(Not to Scale)
-L- 443+10 to 443+60 RT.

41,985 / 71,908		9,823 / 11,439 — 41,985 / 71,908
GREENSBORO	COTSWOLD AVE.	WESTERN LOOP
2006 ADT / 2028 ADT		9,823 / 11,439

REVISIONS

8/17/99

27-SEP-2001 02
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PLANS PREPARED BY:
PARSONS
RALEIGH, NORTH CAROLINA
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	7
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-T & 2-X FOR RETAINING WALL ENVELOPES
SEE SHEET 2-Y FOR NOISE WALL ENVELOPE
SEE SHEET 16 & 17 FOR -L- PROFILE
SEE SHEET 20 FOR PED. PROFILE
SEE SHEET 20 FOR -Y7A- PROFILE

REVISIONS
8/17/99
R/W REVISION (10/27/) ADDED PUE ALONG -L- LT REVISED FENCE LINE ALONG -L- RT. NEAR PED. CROSSING

27-OCT-2011 07:03
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NAD 83

MATCH LINE SEE SHEET 12

MATCH LINE -L- STA 449+00 SEE SHEET 6

MATCH LINE -L- STA 463+00 SEE SHEET 8

PROPOSED RETAINING WALL #1

PROPOSED 10' PED. BIKEWAY

OBLITERATE & REMOVE

PROPOSED SINGLE-FACED CONCRETE BARRIER

POT STA 462+42 Rtep - = POT STA 18+62.84 PED.
Δ= 15°01'40.22"

POT Sta. 18+58.34 PED.

POT STA 13+18.78 -Y7A-

POT STA 13+18.54 -Y7A-

BEGIN CONST. PROPOSED -Y7A- MATCH EXIST. PVMT SLOPE & ELEV.

END CONST. PROPOSED -Y7A- MATCH EXIST. PVMT SLOPE & ELEV.

PROPOSED RETAINING WALL #2

PROPOSED NOISE BARRIER

PROPOSED SINGLE-FACED CONCRETE BARRIER

PROPOSED 10' PED. BIKEWAY

BM #15 STA 206+31 484' RIGHT ELEV. 858.80'

DETAIL 4
LATERAL "V" DITCH
(Not to Scale)

DETAIL 5
LATERAL BASE DITCH
(Not to Scale)

DETAIL FSR
FALSE SUMP
(Not to Scale)

DETAIL FSM
FALSE SUMP
(Not to Scale)

DETAIL
SPECIAL CUT DITCH
(Not to Scale)

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

DETAIL 3
SPECIAL LATERAL BASE DITCH
(Not to Scale)

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS

REVISIONS
8/17/99
R/W REVISION:10/27/11;ADDED PUE ALONG -L- LT.& RT.

MATCH LINE -L- STA 463+00 SEE SHEET 7

MATCH LINE -L- STA 477+00 SEE SHEET 9

NAD 83

JAMES COLIN YODER
DB 3485 PG 0836
ROBERT ADAMS &
CHARLOTTE C ADAMS
DB 3490 PG 0308
GEOFFREY S. ATACK &
LINDA ATACK, TRUSTEE
ATACK L/T
DB 5983 PG 1571
PHYLLIS JEAN MASTERS &
CLARK R MASTERS
DB 4845 PG 1236

NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DB 3742 PG 1729
DB 388 PG 425
DB 4249 PG 816
DB 4261 PG 0170
DB 4393 PG 0518
DB 4178 PG 1781
DB 3458 PG 0512
DB 5488 PG 825
PB 78 PG 124

RALPH BLYTHE &
V. LYNN TOPKINS
DB 3752 PG 0163
PB 73 PG 244

WILLIAM COBB &
REBECCA DALTON
DB 3398 PG 239
PB 73 PG 244

STEPHEN M. &
SUZY SCHAVONE
DB 6779 PG 0835
PB 73 PG 244

TERRENCE CLARK &
MARIA CLARK
DB 6941 PG 0900
PB 73 PG 244

JOEL K. MATTOCKS
& DIXIE D. MATTOCKS
DB 3600 PG 0240
PB 73 PG 244

STEPHEN R. GARDNER
DB 6841 PG 1550
PB 73 PG 244

KEVIN & DONNA
BUTTERFIELD
DB 6398 PG 2350
PB 43 PG 17

GLEN D. HUNT &
DOROTHY C. HUNT
DB 5795 PG 1092
PB 43 PG 17

DANIEL ACEVEDO &
DESIREE ACEVEDO
DB 6780 PG 1
PB 43 PG 17

MICHAEL DEBARTOLO
& JANET DEBARTOLO
DB 3472 PG 1042

KEITH D. WOOD &
CATHERINE T. WOOD
DB 5851 PG 1867

ALLEN BROWN
DB 6913 PG 2715

DEBRA N. KAY
JOSEPH M. KAY
DB 4913 PG 0903

ALLEN MATHEWS
& DIANA MATHEWS
DB 5252 PG 1206
PB 44 PG 32

BRADLEY W
LUECKING &
SARA L HARDY
DB 4094 PG 0865
PB 44 PG 32

DNS REALTY, LLC
DB 6485 PG 841

YANG G TAN
DB 5710 PG 0308

PROVIDENCE PROPERTIES
OF THE TRIAD LLC
DB 6736 PG 1662

WENDELIN J DOUGLAS
DB 4812 PG 0176

JAMES CHARLES ANEMONE &
ANNMARIE MAZZOCCHI ANEMONE
DB 3727 PG 159

VASSE J WALTER CAIN &
WILLIAM C CAIN
DB 5463 PG 0814

CORRIE MITTON
MIDDLETON
DB 3287 PG 0479

PATRICK DOUTT
DB 5010 PG 0704

ROBERT E MONTGOMERY &
NANCY S MONTGOMERY
DB 2600 PG 0384

MARK I. ROSENBAUM
& SECHIA A ELLIS
DB 4656 PG 286

THE HEDGES APARTMENTS, LLC
DB 4495 PG 1732
PB 73 PG 93

NO RIP RAP TO BE PLACED
IN STREAM BED
SEE DETAIL 5

CL I RIP RAP
EST. 22 TONS
EST. 35 SYYP

3' LAT. BASE DITCH
SEE DETAIL 3
EST. 95 TONS
EST. 155 SYYP

BERM "V" DITCH
SEE DETAIL 2
EST. 27 TONS
EST. 43 SYYP

BERM "V" DITCH
SEE DETAIL 2

SPEC. CUT DITCH
SEE DETAIL 4

4' LAT. BASE DITCH
SIZE DETAIL 4
EST. 165 TONS
EST. 280 SYYP

PROPOSED SINGLE-FACED
CONCRETE BARRIER

PROPOSED
NOISE WALL

PROPOSED
RETAINING WALL

300' TAPER

600' ACCELERATION LANE

UTILITY EASEMENT

BM #17
STA 229+39
235' LSET LT
ELEV. 791.36

DETAIL 1
BERM "V" DITCH
(Not to Scale)

DETAIL 2
BERM "V" DITCH
(Not to Scale)

DETAIL 3
LATERAL BASE DITCH
(Not to Scale)

DETAIL 4
FALSE SUMP
(Not to Scale)

DETAIL 5
PROPOSED OUTLET CHANNEL
(Not to Scale)

DETAIL 6
LATERAL BASE DITCH
(Not to Scale)

NOTE:
SEE SHEET 17 FOR -L- PROFILE
SEE SHEET 2-U FOR RETAINING WALL ENVELOPE
SEE SHEET 2-Y, 2-Z & 2-BB FOR NOISE WALL ENVELOPES

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NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 2-U, 2-V & 2-W FOR RETAINING WALL ENVELOPES
SEE SHEET 2-Z, 2-AA, 2-BB & 2-CC FOR NOISE WALL ENVELOPES
SEE SHEET 17 & 18 FOR -L- PROFILE
SEE SHEET 22 FOR -Y8- PROFILE
SEE SHEET 26 FOR RPAY8 PROFILE
SEE SHEET 27 FOR RPBY8 PROFILE
SEE SHEET 28 FOR RPCY8 PROFILE
SEE SHEET 29 FOR RPDY8 PROFILE
SEE SHEET 30 FOR SPAY8 PROFILE
SEE SHEET 30 FOR SPBY8 PROFILE
SEE SHEET 30 FOR SPCY8 PROFILE
SEE SHEET 30 FOR SPDY8 PROFILE

MATCH LINE -Y8- STA 11+50 SEE SHEET 13

MATCH LINE -L- STA 477+00 SEE SHEET 8

MATCH LINE -L- STA 503+00 SEE SHEET 10

MATCH LINE -YB- STA 26+00 SEE SHEET 14

BRIDGE SKETCH FOR -L- OVER -YB-

PRELIMINARY PLANS

REVISIONS

R/W REVISION/DIS/ADDED PIES ALONG -L- & RT.; R/W&SLOPES & RPDB LT.; RPCB & SPCB RT.; REVISED PIE ALONG -L- & RT.; R/W REVISION/DIS/ADDED TIE FROM PARCEL #U03. R/W REVISION/DIS/REMOVED PORTION OF PIE ON PARCEL #U03. R/W REVISION/LY DIS/ADDED PARCEL NUMBERS U01, U01A & U02.

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2524D	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS
RALEIGH, NORTH CAROLINA

8/17/99

REVISIONS

R/W REVISION 10/27/11, ADDED PUE ALONG RPAY8 RT.

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MATCH LINE -L- STA 505+00 SEE SHEET 9

MATCH LINE -L- STA 505+00 SEE SHEET 11

NAD 83

DETAIL FSM
FALSE SUMP
(Not to Scale)
-L- 506+00 RT.
-L- 509+35 RT.
-L- 511+50 RT.
-L- 515+50 RT.

DETAIL FSR
FALSE SUMP
(Not to Scale)
-L- 511+50 RT.
-L- 515+50 RT.

DETAIL 4
SPECIAL CUT DITCH
(Not to Scale)
-L- 506+00 to 510+50 RT.

END CONSTRUCTION
END STATE PROJECT U-2524C
BEGIN STATE PROJECT U-2525C
POT STA. 519+00.00 -L-

END CONSTRUCTION
POT STA. 517+93.00 -L-

PROPOSED OUTLET CHANNEL
SEE DETAIL 1
EST. 11 TONS
EST. 26 SYYF

CITY OF GREENSBORO
DB 5449, PG 1841

CITY OF GREENSBORO
DB UNKNOWN
PG 44, PG 71

PROPOSED GUARDRAIL

CL I NF RAP
EST. 10 TONS
EST. 23 SYYF

YOE PROTECTION
SEE DETAIL 3
EST. 10 TONS
EST. 29 SYYF

BERM "V" DITCH
SEE DETAIL 2
EST. 25 TONS
EST. 56 SYYF

36" CSP w/ 1 ELBOW

GRAU 350

BEGIN EXPWY. GUTTER +50

360' DECELERATION LANE

300' TAPER

600' ACCELERATION LANE

SPEC. CUT DITCH NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
SEE DETAIL 4
DB 4975, PG 1249

30" CSP w/ 1 ELBOW

BDO

BERM "V" DITCH
SEE DETAIL 2
EST. 90 TONS
EST. 171 SYYF

END W.W FENCE
+00.00 -L-
150.00'

DETAIL 1
PROPOSED OUTLET CHANNEL
(Not to Scale)
W=4'
D=VARIES TO TOP OF BANK
Type of Liner = CL. 'I'
-L- 505+45 LT.

DETAIL 2
BERM "V" DITCH
(Not to Scale)
b= 3 Ft.
Min. D= 1Ft.
Max. d= 1Ft.
Type of Liner= CL. "B"
-L- 511+85 to 514+00 LT.
-L- 514+50 to 517+00 RT.

DETAIL FSL
FALSE SUMP
(Not to Scale)
-L- 515+50 LT.

DETAIL 3
TOE PROTECTION
(Not to Scale)
d = 1 Ft.
Type of Liner = CL. "B"
-L- 511+45 to 511+85 LT.

NOTES
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 19 FOR -L- PROFILE
SEE SHEET 26 FOR RPAY8 PROFILE
SEE SHEET 29 FOR RPDY8 PROFILE

PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	11
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/18

REVISIONS

NAD '83

MATCH LINE -Y6- STA 18+00 SEE SHEET 6

-BYG- 526 POT

-BYG- 527 PNC

-BYG- 528 PNC

-Y6- STA 10+00.00

POT Sta 10+00.00 -Y6-

PC Sta 13+43.40 -Y6-

PT Sta 14+03.64 -Y6-

BEGIN CONST. 15+50.00 -Y6- MATCH EXIST. PVMT SLOPE & ELEV.

END OF C.L. FENCE +50.00 -Y6- 50.00'

-Y6- N 90° 01' 25.0" E

TERRACE MEWS ASSOCIATES
DB 4253 PG 0432
DM 58 PG 85
PB 88 PG 105

SSOCIATES
PG 1571

ISFDAPTS

ISBKBUS

25FDAPTS

25BKD

35BK APTS

COTSWOLD PARK, LLC
PB 150 PG 021

35BK APTS

JOHN KAVANAUGH COMPANY
DB 5239 PG 1478 CT
DB 2599 PG 489
PB 7 PG 58
SHARON M CROSS
DB 5707 PG 2596
DIANA J KENNEDY
DB 5715 PG 1701
SUSAN D HALL
DB 1579 PG 2926
ALISON S FULLER
DB 5705 PG 1687 ELW
PEGGY [illegible] VAUGHN
DB 5705 PG 1686

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DB 5693 PG 2026

& PROP. R/W

2-6CBAG

TIE TO EXIST.C&G

44.24' E

200' TAPER

OVERLAY

TIE TO EXIST.C&G

MIXED WOODS

CT ASSOCIATES

LOUIS P BELL & PANDORA M BELL

MARLEY JR.) THRASHER
DB 6397 PG 2020
DEBORAH K PATTERSON

STEPHEN CRAYE POE
DB 6826 PG 2687

WALMART

PLANTED SLOPE

MIXED HARDWOODS

25BKAPTS

CONC TENNIS COURT

25FAPTS

BATTLEGROUND OAKS GREENSBORO, LLC
DB 6929 PG 1852
PB 82 PG 15

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 21 FOR -Y6- PROFILE

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PREPARED BY
PARSONS
RALEIGH, NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS
8/17/99

MATCH LINE SEE SHEET 6

-Y6- STA 28+00 SEE SHEET 6 MATCH LINE

MATCH LINE SEE SHEET 7

MATCH LINE SEE SHEET 7

POT Sta 10+00.00 -Y5-

BEGIN CONST.
12+00.00 -Y5-
MATCH EXIST.PVMT
SLOPE & ELEV.

PC Sta 13+72.75 -Y5-

END CONST.
32+40.04 -Y6-
MATCH EXIST.PVMT
SLOPE & ELEV.

PT Sta 35+56.61 -Y6-

POT Sta 38+55.52 -Y6-

PC Sta 15+18.11 -Y5-

PT Sta 29+49.25 -Y6-

POT STA 29+49.25 -Y6-

NAD 83

N 34°22'57" E

OBLITERATE & REMOVE

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 20 FOR -Y5- PROFILE
SEE SHEET 20 FOR PED. PROFILE
SEE SHEET 21 FOR -Y6- PROFILE

BRADNT VILLAGE HOMEOWNERS ASSOCIATION

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PROJECT REFERENCE NO.	SHEET NO.
U-2524D	13
RW SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PARSONS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD '83

BEGIN CONST.
9+33.05 -Y8-
MATCH EXIST.PVMT
SLOPE & ELEV.

MATCH LINE -Y8- STA 11+50 SEE SHEET 9

NOTE:
SEE SHEET 22 FOR -Y8- PROFILE

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2524D	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PARSONS

8/17/99

REVISIONS

R/W REVISION: 10/27/11, CHANGED PARCEL NO. 109 TO 109A

MATCH LINE -Y8- STA 26+00 SEE SHEET 9

MATCH LINE -Y8- STA 36+00 SEE SHEET 15

NAD '83

JORGE ALONZO
DB 4989 PG 1768
CARL M. GRIMALDI &
KATHLEEN A. GRIMALDI
DB 6350 PG 169
ILENE R. CRAIG
DB 5838 PG 1707
OPAL APPLE
DB 2304 PG 0791
DEBORAH L. PETTIFORD
DB 5487 PG 0470
CHARLES MATTHEW FAULKNER
DB 5298 PG 2621
BECKY R. KIMBORTHY
DB 5506 PG 1726
KRISTINA L. SHADOWS
DB 5710 PG 0982

NICHOLAS A. BURNS &
JOE A. BURNS
DB 6540 PG 0058
PIEDMONT TRIAD PROPERTY
MANAGEMENT, LLC
DB 5716 PG 2554
YONG GUAN SONG
DB 6388 PG 1720
LORTON EDWARD SIDMON
DB 4402 PG 0953
DOUGLAS B. CRAWFORD
& ALICE C. CRAWFORD
DB 4861 PG 1834
MARY WINIFRED JONES
DB 2998 PG 0269
CLINTON R. MAROUARDT
DB 5639 PG 1290
CHRISTOPHER S. McKEOWN
DB 5227 PG 1837

SHARON D. LEWIS
DB 4967 PG 0395
PETE KING &
CHELSEA KING
DB 6832 PG 0947
SAMIR KRDZALIC &
INDRA KRDZALIC
DB 5251 PG 2606
RONNIE M. WALLACE
DB 5096 PG 1761
MARK B. WESTMORELAND
DB 669 PG 0620

REDMAN DEVELOPMENT CORPORATION

PT. STA. 28+72.65 -Y8-

S 31°25'58" W 30.00'

+00.00 -Y8-
EXIST. R/W
END CA
C.L. FENCE

50' OVERLAY

SCRAP THE EXISTING

2'-6"C&G

PROP. R/W

5'-0" CONC. SIDEWALK

25+30.99

-BY8- 533 PNC

109A

KH PORTFOLIO I, LLC
DB. 6388 PG 0628
PB 82 PG 82

5" MONOLITHIC CONC. ISLAND

TIE TO EXISTING

+00.00 -Y8-
EXIST. R/W
END CA

END CL FENCE
+00.00 -Y8-
+00.00

END CONST.
27+50.00 -Y8-
MATCH EXIST. PVMT
SLOPE & ELEV.

SR 8303 LAWNDALE DR 54' RSY

S 11°04'02" E

JP HAMPTONS, LLC
PB 63 PG 9

-BY8- 534 POT

NOTE:
SEE SHEET 2-P FOR CURVE DATA
SEE SHEET 22 FOR -Y8- PROFILE

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	15

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #18 ELEVATION = 762.59'
N = 878139.8' E = 1781264'
-PL- STATION 606+48 94' LEFT
R/R SPIKE SET IN 12" MAPLE

BM #19 ELEVATION = 770.80'
N = 880818.2' E = 1784884'
-PL- STATION 665+55 216' RIGHT
R/R SPIKE SET IN 32" OAK

℄ -Y4- BATTLEGROUND AVE.

EXISTING BRIDGE

EXISTING BRIDGE

EXISTING GROUND

BM #18 ELEVATION = 748.38'
N = 878885.8' E = 1781681'
-PL- STATION 606+43 122' LEFT
R/R SPIKE SET IN 12" MAPLE

BM #19 ELEVATION = 806.04'
N = 880750.1' E = 1784781'
-PL- STATION 665+55 216' RIGHT
R/R SPIKE SET IN 26" MAPLE

EXISTING BRIDGE

EXISTING BRIDGE

EXISTING GROUND

EXISTING GROUND

PROPOSED BRIDGE

-L- = 0.500%

PVI = 425+00
K = 284

-L- = 2.244%

NEW 'Y' DROP UP

NOTE:
SEE SHEETS 4 & 5 FOR -L- PLAN

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PROJECT REFERENCE NO.	SHEET NO.
U-2524D	16

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE #1
DRAINAGE AREA = 6 AC
DESIGN Q10 DISCHARGE = 30 CFS
DESIGN Q25 DISCHARGE = 40 CFS
DESIGN HW ELEVATION = 822.75 FT
100 YEAR DISCHARGE = 50 CFS
100 YEAR HW ELEVATION = 824.22 FT
OVERTOPPING FREQUENCY = >200 YRS
OVERTOPPING DISCHARGE = 62 CFS
OVERTOPPING ELEVATION = 825.50FT

BM "1S" ELEVATION = 838.87'
N = 880763.8 E = 1249752
-L- STATION 429+00 560' LEFT
5/8" REBAR SET IN 30" ROW

EXISTING GROUND
PROPOSED GRADE
-L2524A2-
-L2524A2-
-L2524A2-

-L- STATION 429+00 560' LEFT

BM "1S" ELEVATION = 838.87'
N = 880763.8 E = 1249752
-L- STATION 206+51.484 RIGHT
5/8" REBAR SET IN 30" ROW

-L- = -L2524A2- COTSWOLD AVE.

-Y7- = -Y7- GILLIAN DRIVE CROSSLINE

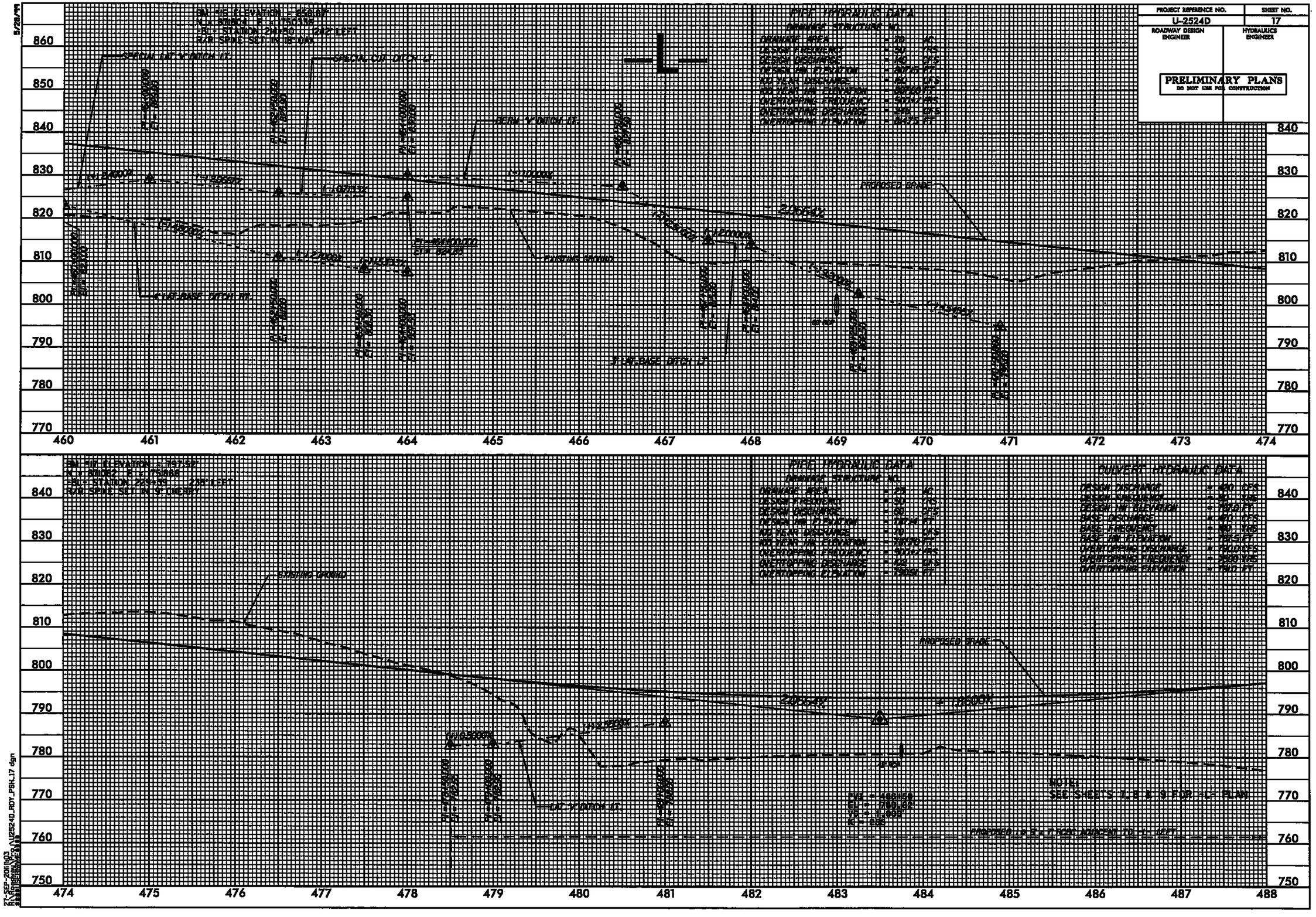
EXISTING GROUND
PROPOSED GRADE
-L2524A2-
-L2524A2-
-L2524A2-

PVC = 860.58
PT = 849.78
L = 200' V.C.
K = 278

SPECIAL CUT DITCH #1
SPECIAL CUT DITCH #2
SPECIAL CUT DITCH #3
SPECIAL CUT DITCH #4
SPECIAL CUT DITCH #5
SPECIAL CUT DITCH #6
SPECIAL CUT DITCH #7
SPECIAL CUT DITCH #8
SPECIAL CUT DITCH #9
SPECIAL CUT DITCH #10
SPECIAL CUT DITCH

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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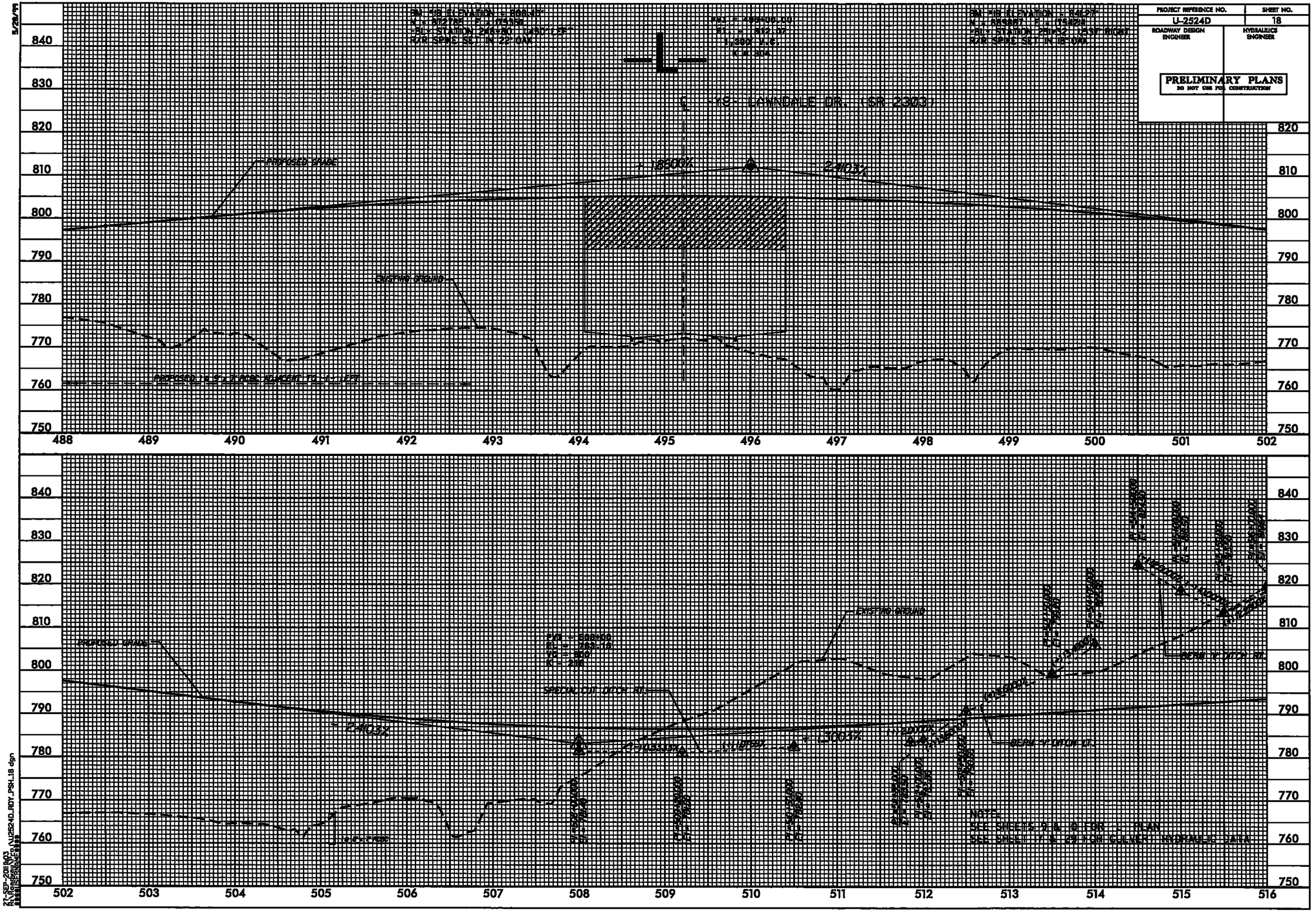
PROJECT REFERENCE NO.	SHEET NO.
U-2524D	18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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USERNAME

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PEDESTRIAN GRADE CROSSING

—Y5—

℄ —Y5—

BEGIN OVERLAY
STA:12+00.00 -Y5-

FOT STA:13+78.95 -Y5-
FOT STA:29+19.29 -Y6-
EL = 852.69

END OVERLAY
BEGIN GRADE
STA:12+22.50 -Y5-
EL = 849.63

END GRADE
BEGIN OVERLAY
STA:15+50.76 -Y5-
STA:29+16.22 -Y6-
20' LT
℄ = N5°14'26"E

25' OVERLAY

PVI = 13+00.00
EL = 852.19
VC = 2.00
K = 20

PVI = 14+00.00
EL = 852.69
VC = 2.00
K = 20

PVI = 15+00.00
EL = 854.69
VC = 2.00
K = 20

PVI = 16+75.00
EL = 859.59
VC = 2.00
K = 19

PVI = 18+00.00
EL = 862.14
VC = 2.00
K = 19

END GRADE
STA:19+00.00 P.O.C.
EL = 864.69

-2.50%
+2.50%
+2.50%
-2.50%
+2.50%
-2.50%
+2.50%
-

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	21

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM #16 ELEVATION = 856.61'
N = 693,750 E = 1,747,165
-RL- STATION 12+17 395' Right
R/R SPIKE SET IN 22" MAPLE

BEGIN OVERLAY
STA 16+50.00 -Y6-

END OVERLAY
STA 16+90.00 -Y6-
BEGIN GRADE
STA 17+00.00 -Y6-
EK = 850.89

—Y6—

50' OVERLAY

EXISTING GROUND

PROPOSED GRADE

-Y6A-

BEGIN OVERLAY
STA 25+00.00 -Y6-
END GRADE
STA 25+10.00 -Y6-
EK = 857.56

PROPOSED GRADE

EXISTING GROUND

PVI = 22+75.00
PVI = 860.24
VC = 250
K = 25

PVI = 20+00.00
PVI = 852.00
VC = 100
K = 25

BM #16 ELEVATION = 856.61'
N = 693,750 E = 1,747,165
-RL- STATION 12+17 395' Right
R/R SPIKE SET IN 22" MAPLE

BM #16 ELEVATION = 856.61'
N = 693,750 E = 1,747,165
-RL- STATION 24+50 442' RIGHT
R/R SPIKE SET IN 30" OAK

—Y6—

-Y6-

BM #16 ELEVATION = 856.61'
N = 693,750 E = 1,747,165
-RL- STATION 29+00 600 LEFT
R/R SPIKE SET IN 30" POPLAR

END GRADE
STA 32+10.04 -Y6-
BEGIN GRADE
STA 32+10.04 -Y6-
EK = 855.32

END OVERLAY
STA 32+50.04 -Y6-

25' OVERLAY

PROPOSED GRADE

-0.79%

+0.79%

EXISTING GROUND

PVI = 30+25.00
PVI = 853.56
210' V.C.
K = 162

BM #16 ELEVATION = 856.61'
N = 693,750 E = 1,747,165
-RL- STATION 24+50 242' LEFT
R/R SPIKE SET IN 18" OAK

NOTE:
SEE SHEET 12 FOR -Y6- PLAN

27-SEP-2011 13:03
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	22

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

—Y8—

BM #18 ELEVATION = 838.48'
N = 692785 E = 1165391
-Y8- STATION 246+80 1.45' LT
RVR SPIKE SET IN 22" OAK

BEGIN OVERLAY
STA 9+35.05 -Y8-

END OVERLAY
BEGIN GRADE
STA 10+00.00 -Y8-
EL = 796.41'

16' +/- OVERLAY

-7.39333%

-1.93000%

PVI = 10+69.00
EL = 776.76
300' V.C.
K = 155.5

PROPOSED GRADE

℄ -L-

EOT STA 69+42.05 +/-
ROM STA 17+77.75 -Y8-
EL = 806.29'

PROPOSED GRADE

PVI = 20+06
EL = 795.38'
VC = 250'
K = 76

EXISTING GROUND

-1.20000%

50' OVERLAY

BM #19 ELEVATION = 842.29'
N = 693661 E = 1165436
-Y8- STATION 28+52 1.55' RIGHT
RVR SPIKE SET IN 18" OAK

END GRADE
BEGIN OVERLAY
STA 27+40.00 -Y8-
EL = 791.54'

END OVERLAY
STA 27+50.00 -Y8-

PROPOSED GRADE

1.66000%

1.66000%

1.66000%

6.34000%

EXISTING GROUND

PVI = 26+58.00
EL = 810.98'

PVI = 26+70.00
EL = 807.52'

PVI = 26+80.00
EL = 805.36'

NOTE:
SEE SHEETS 9 A & B & 10 FOR -Y8- PLAN
SEE SHEET 30 FOR OVERFILL HYDRAULIC DATA

22-SEP-2014 03
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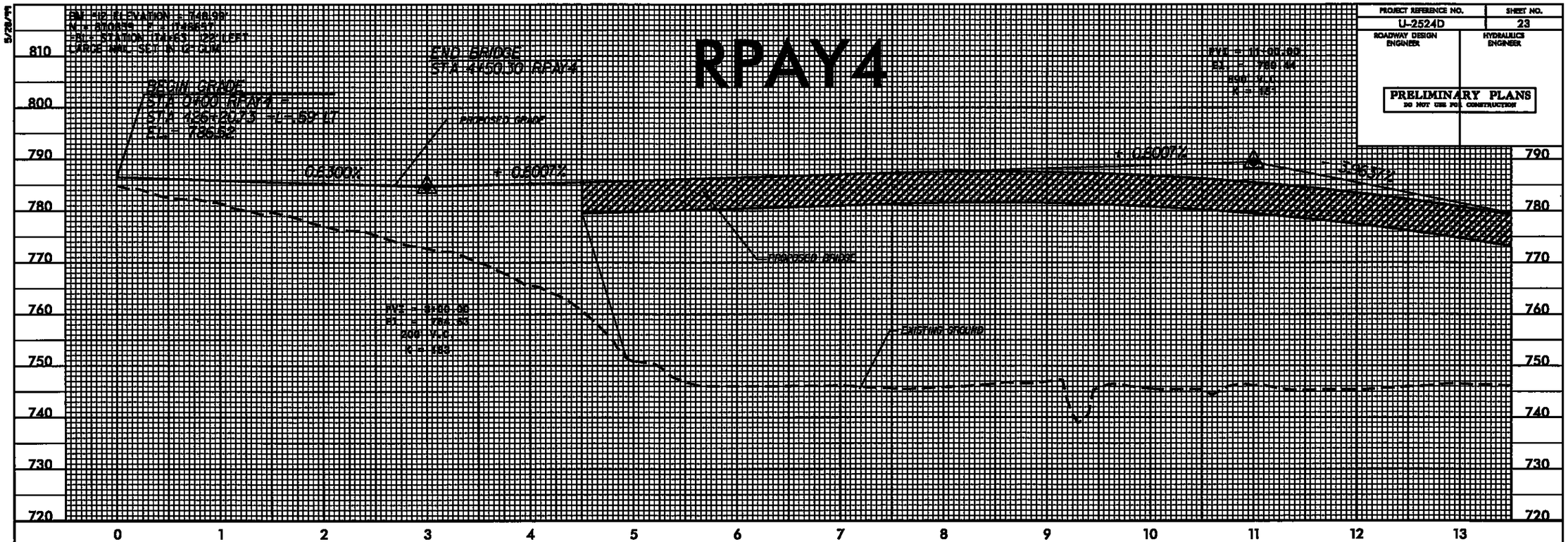
USER:

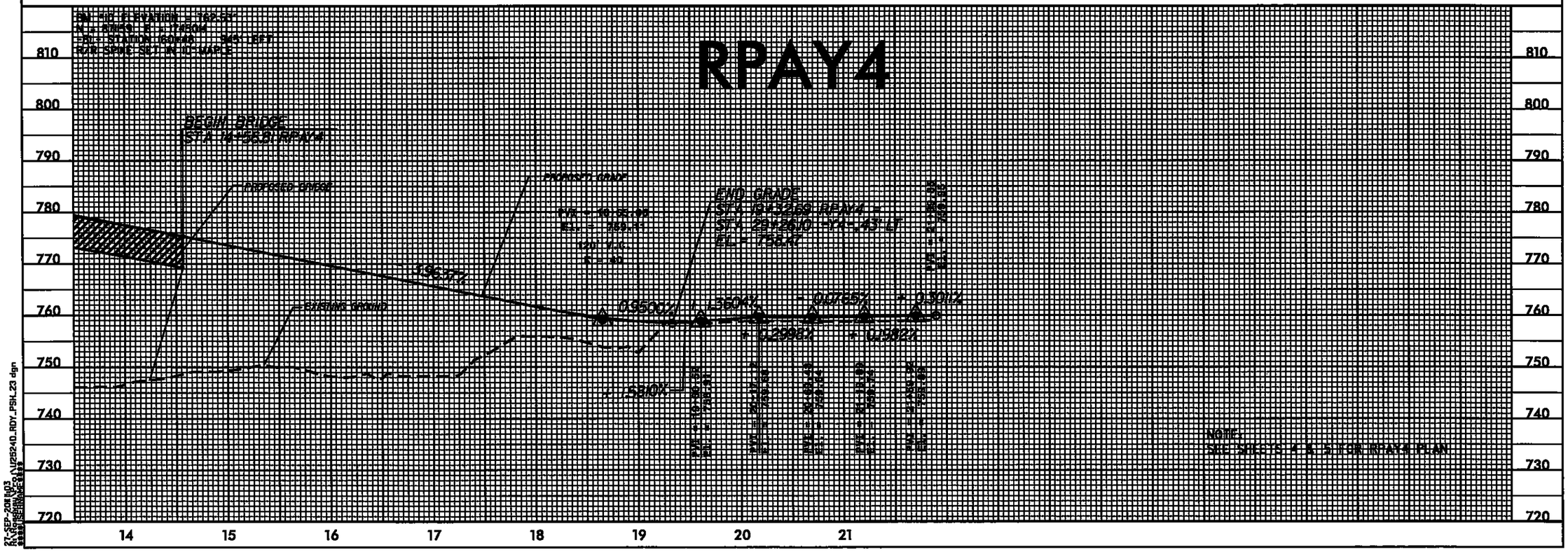
PROJECT REFERENCE NO.	SHEET NO.
U-2524D	23

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RPAY4





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USER:jsmith

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	24
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RPDY4

BEGIN GRADE
STA 0+00 RPDY4 =
STA 426+2073 -L- 59' RT
EL = 762.20

-L- 4.00%

PVI = A+50.00
EL = 776.56
250' V.C.
K = 62.5

-L- 0.56%

PVI = 4+50.00
EL = 778.72
K = 963

-L- 4.00%

END GRADE
STA 5+75.25 RPDY4

PROPOSED GRADE

EXISTING GROUND

PROPOSED GRADE

PROPOSED GRADE

EXISTING GROUND

RPDY4

BEGIN BRIDGE
STA 15+62.50 RPDY4

PVI = 19+40.00
EL = 758.12
K = 44

-L- 4.92%

-L- 0.52634%

-L- 0.40003%

END GRADE
STA 30+20.53 -72'-4.5' LT
EL = 756.94

NOTE:
SEE SHEET 4 & 5 FOR RPDY4 PLAN

27-SEP-2011 03:53:11
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USERNAME

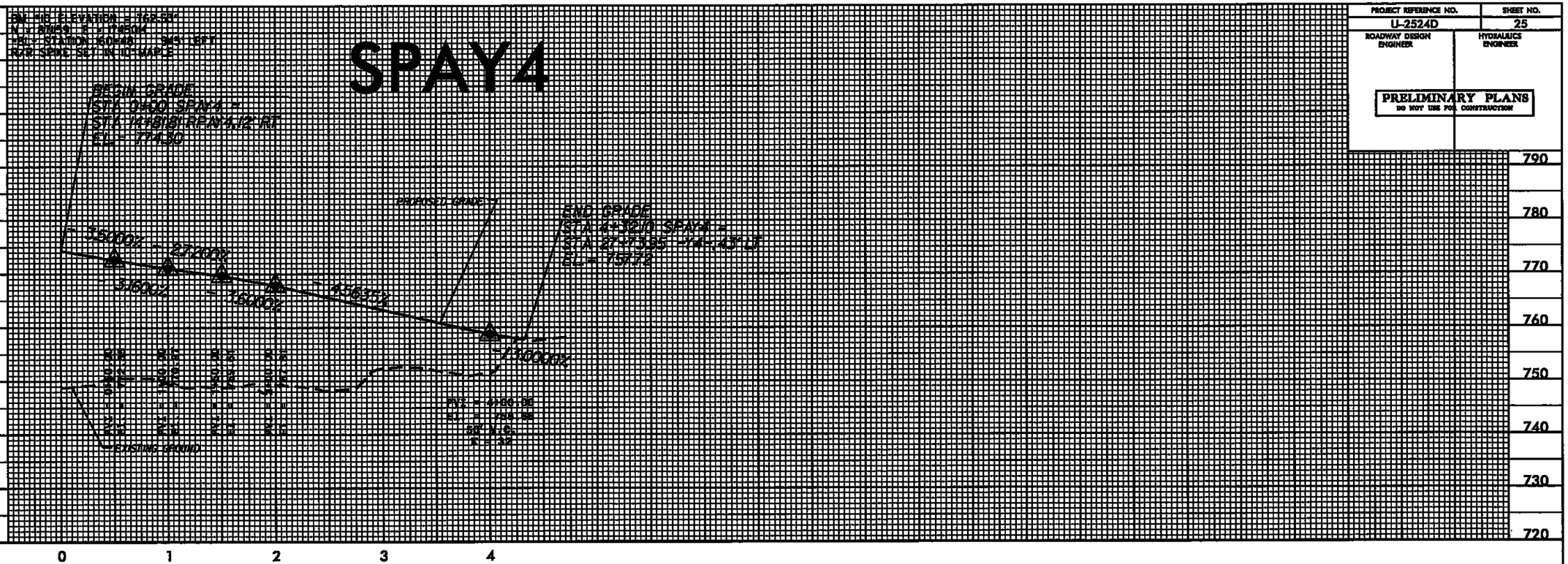
PROJECT REFERENCE NO.	SHEET NO.
U-2524D	25

ROADWAY DESIGN ENGINEER

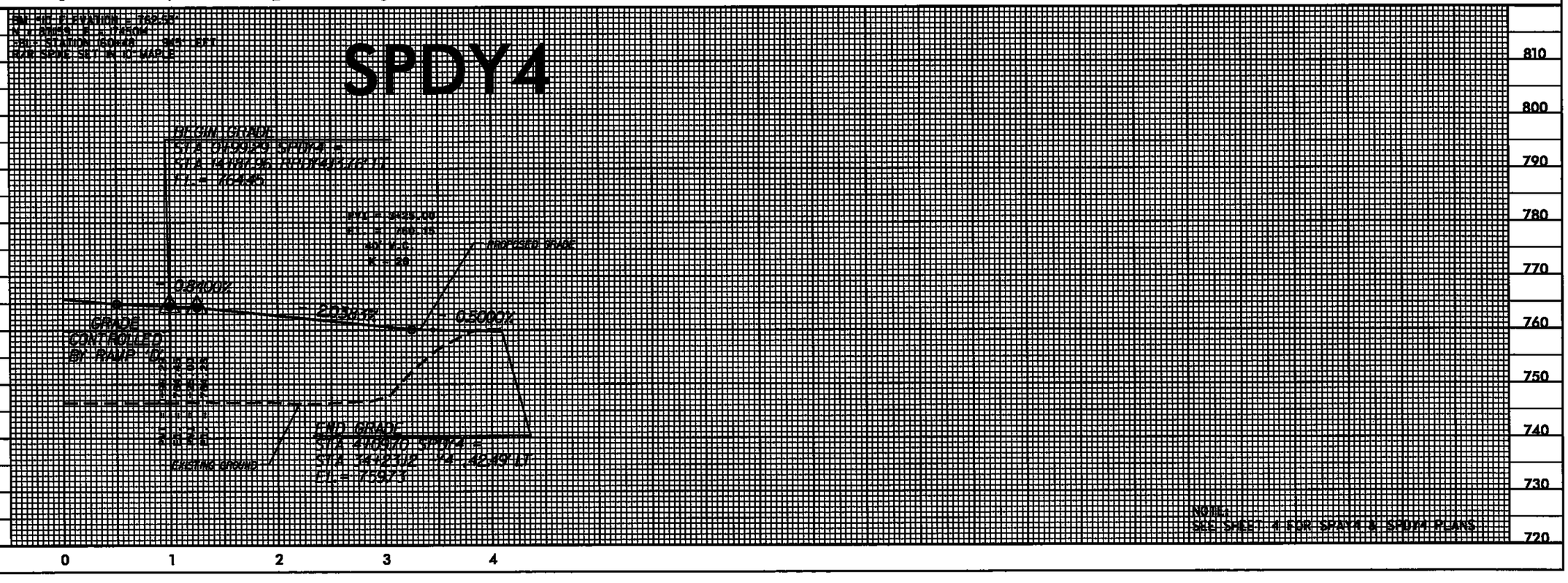
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SPAY4



SPDY4



NOTE:
SEE SHEET 4 FOR SPAY4 & SPDY4 PLANS

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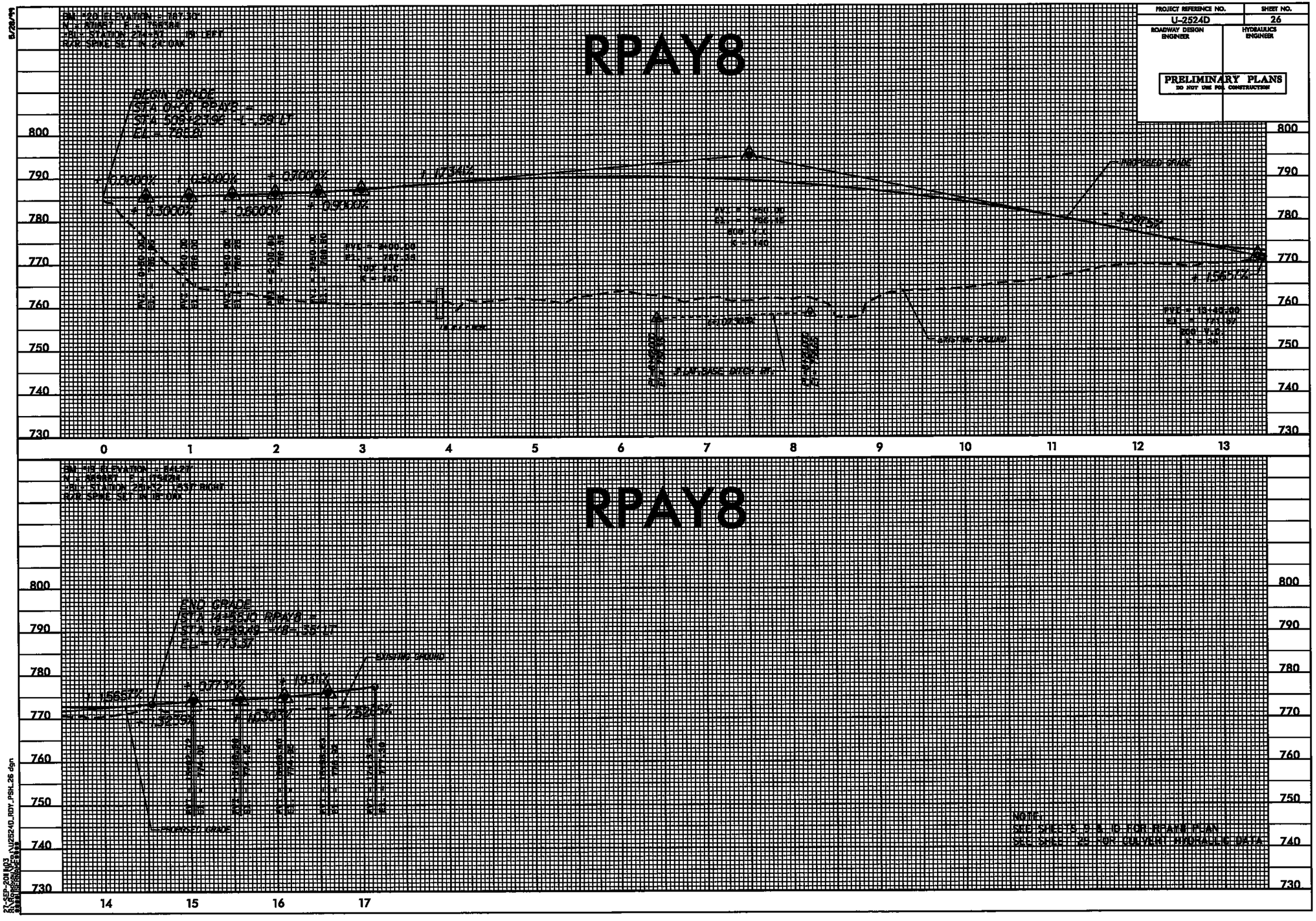
PROJECT REFERENCE NO.	SHEET NO.
U-2524D	26

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RPAY8


BEGIN GRADE
STA 0+20 RPAY8 =
STA 505+23.92 -L- 59°17'
EL = 755.5'
-L- 0.300%
-L- 0.500%
-L- 0.700%
-L- 0.900%
-L- 0.300%
-L- 0.600%
-L- 1.734%
-L- 3.097%
-L- 1.567%
PVC = 3400.00
PVI = 787.55
400' V.C.
K = 120
PVC = 7400.00
PVI = 766.15
800' V.C.
K = 140
PVC = 15,400.00
PVI = 721.19
800' V.C.
K = 30
PVC = 4000.00
PVI = 787.55
400' V.C.
K = 120
-L- 1.567%
-L- 0.700%
-L- 0.900%
-L- 1.930%
-L- 2.526%
-L- 1.567%
-L- 3.275%
-L- 1.930%
-L- 2.526%
-L- 3.275%
-L- 1.930%
-L- 2.526%
-L- 3.275%
-L- 1.930%
-L- 2.526

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RPBY8

PROPOSED GRADE

EXISTING GROUND

NOTE:
SEE SHEETS 3 FOR RPBY8 PLAN

RPBY8

PROPOSED GRADE

EXISTING GROUND

NOTE:
SEE SHEETS 3 FOR RPBY8 PLAN

27-SEP-2011 09:03
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RPCY8

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 23	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 60	CFS
DESIGN HW ELEVATION	= 787.14	FT
100 YEAR DISCHARGE	= 70	CFS
100 YEAR HW ELEVATION	= 787.70	FT
OVERTOPPING FREQUENCY	= 500+/-	YRS
OVERTOPPING DISCHARGE	= 102	CFS
OVERTOPPING ELEVATION	= 790.91	FT

PROJECT REFERENCE NO.	SHEET NO.
U-2524D	28

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RPCY8

NOTE:
SEE SHEET 9 FOR RPCY8 PLAN

5/28/99

27-SEP-2011 M03
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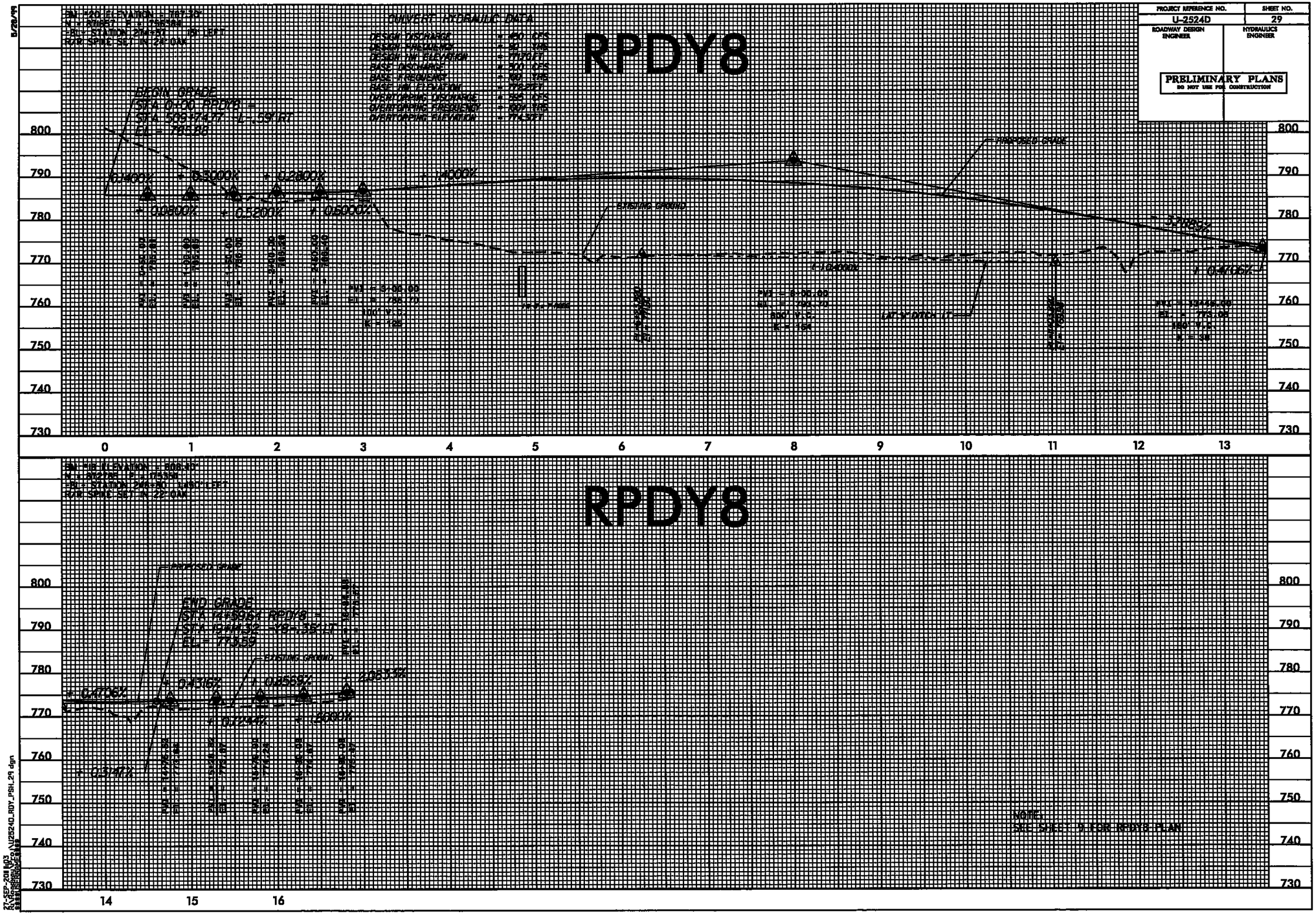
PROJECT REFERENCE NO.	SHEET NO.
U-2524D	29

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RPDY8

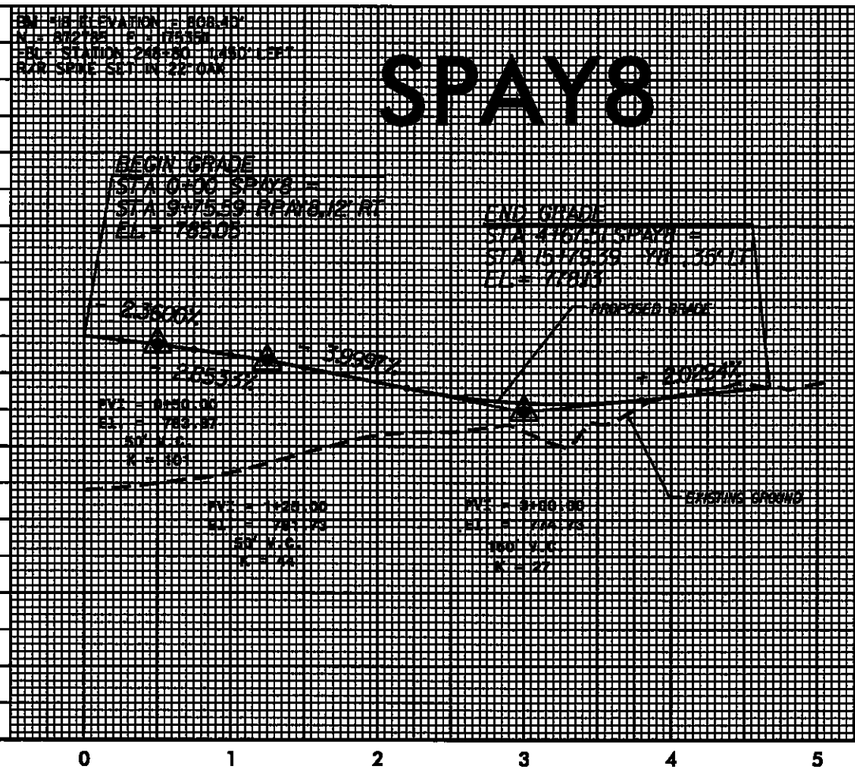


BL =28 ELEVATION = 808.30'
N = 1,282788.18 E = 1,175558.
BL = STATION 240+80 0' LEFT
R/W SPIKE SET IN 22" OAK
PROPOSED GRADE
END GRADE
STA 7+50.51 RPDY8
STA 5+00.00 -0.52%
EL = 773.69
EXISTING GROUND
-0.470%
-0.470%
-0.520%
-0.470%
-0.520%
-0.470%
-0.520

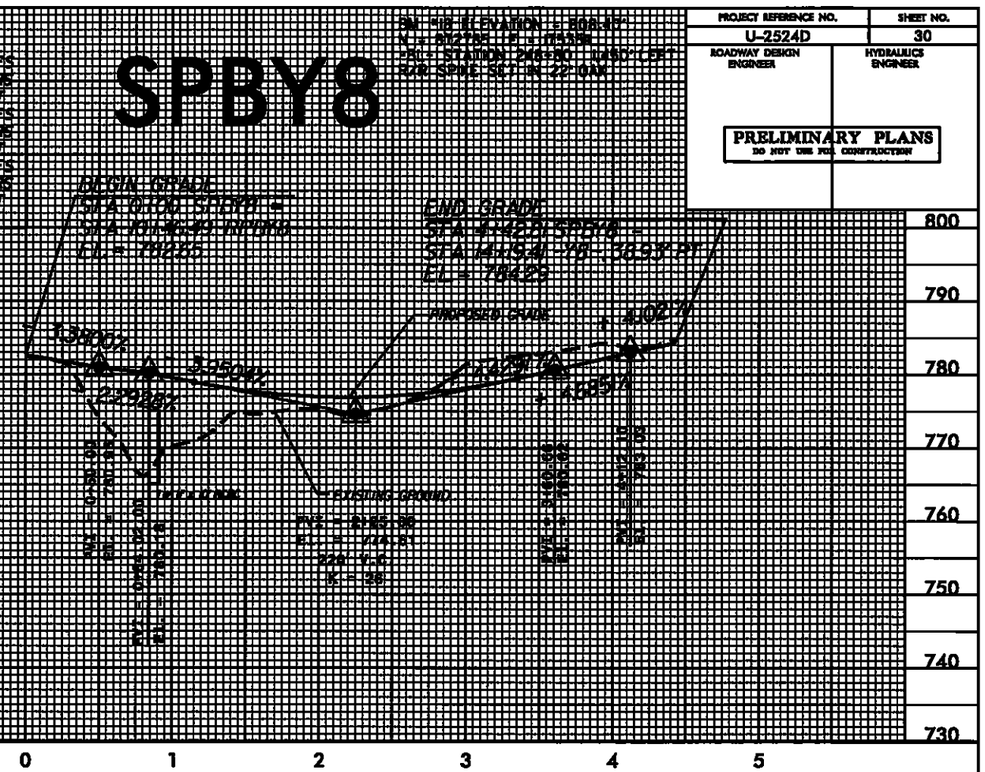
PROJECT REFERENCE NO.	SHEET NO.
U-2524D	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

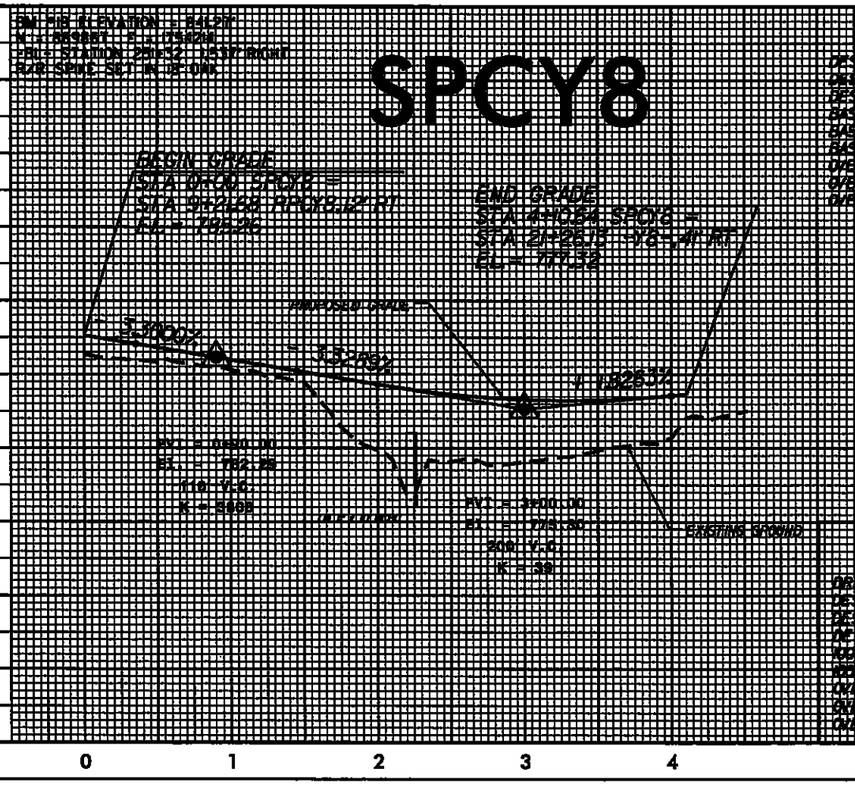
SPAY8



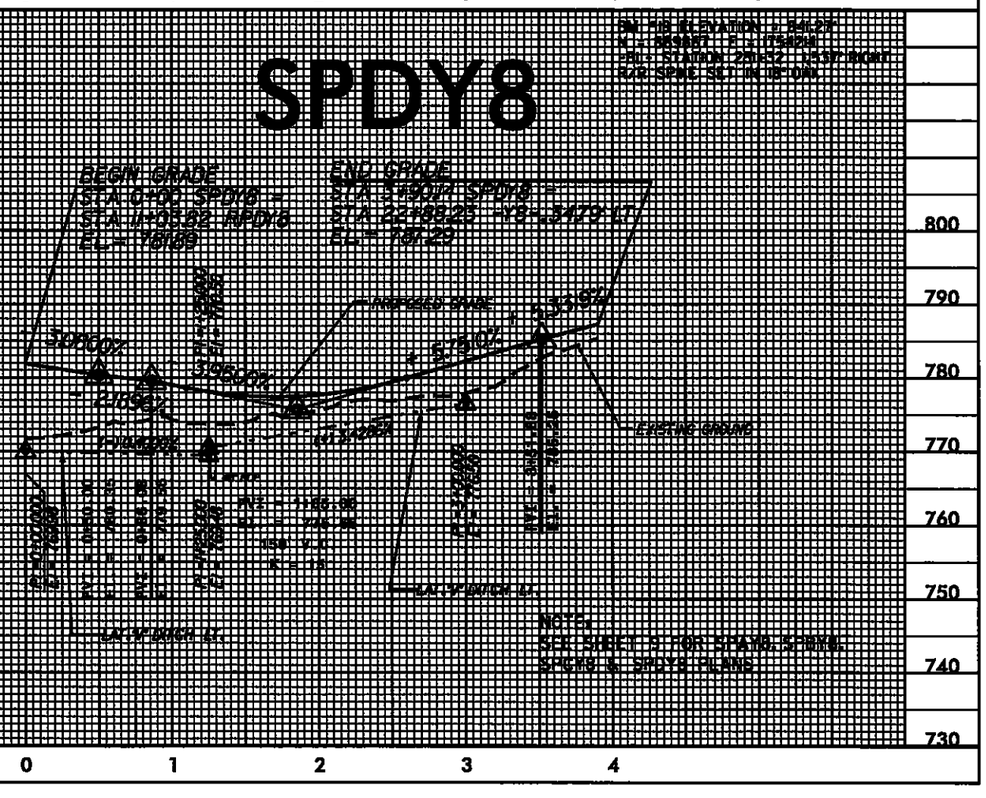
SPBY8



SPCY8



SPDY8



NOTE:
SEE SHEET 9 FOR STA 18+00 &
SPCY8 & SPDY8 PLANS

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