



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE  
GOVERNOR

EUGENE A. CONTI, JR.  
SECRETARY

November 24, 2009

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 Water Quality Certification**, Interchange additions at SR 3389 (Woody Mill Road), Guilford County. Federal Aid No. NHF-421(11); State Project 8.1493301; TIP No. R-2612A.

Reference: R-2612A&B Permit Application October 2, 2009

Debit \$570.00 from WBS Element 34483.1.1.

Dear Sir:

Per conversations with Andy Williams and Amy Euliss on November 5, 2009 the North Carolina Department of Transportation (NCDOT) is rescinding the application submitted October 2, 2009 for R-2612 Sections A and B. We are submitting this application in its place. NCDOT proposes to construct one interchange at SR 3389 (Woody Mill Road, R-2612 Section A) and replace only one corresponding temporary, at-grade intersections along US 421 in Greensboro, Guilford County, North Carolina. Section B will be reevaluated for permitting when final design and impacts have been completed. The proposed interchange (R-2612 Section A) consists of 0.73 mile modified diamond design at SR 3389. This application package consists of the cover letter, ENG Form 4345, permit drawings, half size plan sheets, Hydraulic Design Review (4B and 4C) meeting minutes, Stormwater Management Plan, and the Ecosystem Enhancement Program (EEP) confirmation letter.

**Project Schedule**

The review date for R-2612 Section A is September 28, 2010 with a Let date of November 16, 2010. However, these let dates may advance as additional funds become available.

**MAILING ADDRESS:**

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

TELEPHONE: 919-715-1334  
FAX: 919-715-5501  
WEBSITE: [WWW.NCDOT.ORG](http://WWW.NCDOT.ORG)

**LOCATION:**

2728 CAPITAL BLVD.  
SUITE 240  
RALEIGH NC 27604

## **Purpose and Need**

The main purpose of this project is to construct interchanges at the signed-as-temporary, at-grade intersection along this section of US 421 where proposed interchanges were not constructed in 1972 when US 421 was realigned and widened to a four-lane, median-divided facility. At that time, project funding was such that these interchanges could not be constructed. These two at-grade intersections were allowed and signed to provide temporary, at-grade local access to US 421.

Since these proposed interchanges will be constructed at the intersection of US 421 and Woody Mill Road, the remaining at-grade intersections within the project area will be permanently closed. The purpose of this project is to construct the interchanges that were originally required in these locations for this type of facility. Since growth and traffic are ever increasing in the Pleasant Garden Community, safety along this section of US 421 will be enhanced by replacing numerous, temporary at-grade intersections with these two originally-intended interchanges and a service road.

## **Summary of Impacts**

The project lies in the Piedmont Physiographic Province in the Cape Fear River Basin (HUC 03030002, sub-basin 03-06-03). This project will permanently impact 1487 ft (0.21 acres) of stream and there will be 45 ft of bank stabilization activity. There will be 0.40 acres of riparian wetland impacts due to permanent fill, 0.05 acres of riparian wetland impacts due to mechanized clearing and 0.02 acres of riparian wetland impacts due to excavation. No impacts to jurisdictional resources will occur due to the relocation or installation of utilities in the project area.

## **Summary of Mitigation**

Throughout the design and NEPA process this project has been designed to avoid and minimize impacts to jurisdictional areas. EEP will provide mitigation as required for 1126 linear feet of stream impacts and for the 0.47 acres of riparian wetland impacts for the proposed project.

## **NEPA DOCUMENT STATUS**

An Environmental Assessment (EA) was approved October 30, 1998. A Finding of No Significant Impact (FONSI) was approved on July 14, 2008. The EA and FONSI have been provided to regulatory review agencies. 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.

The functionalities of the proposed Neeley Road interchange and the proposed Woody Mill Road interchange with US 421, within the project limits, are not interdependent or interconnected. These proposed interchanges will be independently significant and usable. The construction of either interchange alone would be a reasonable expenditure, even if no additional transportation improvements were made along US 421 in the Pleasant Garden Community or within the project limits.

## **RESOURCE STATUS**

Wetland delineations within R-2612 were conducted using the field delineation method outlined in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987), and the North Carolina Division of Water Quality's (DWQ) *Identification Methods for the Origins of Intermittent and Perennial Streams*, respectively.

Within the R-2612A project area five streams and four riparian wetlands were identified. Jurisdictional areas were verified by United States Army Corp of Engineers (USACE) representative Andy Williams and North Carolina Division of Water Quality (NCDWQ) representative Sue Homewood on May 8, 2007. Rapanos forms and request for jurisdictional determination was sent to the USACE and NCDWQ on August 15, 2007. An official jurisdictional determination from the USACE has not been issued for this project.

## **IMPACTS TO WATERS OF THE UNITED STATES**

The project is located in the Cape Fear River Basin in Guilford County. This area is part of Hydrologic Cataloging Unit 03030002 of the South Atlantic-Gulf Coast Region. Big Alamance Creek and its perennial and intermittent tributaries [NCDWQ classification C; WS-IV; NSW; Index # 16-19-(1)] are located within the project area.

There are no designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), Water Supply (WS-II), or 303 (d) listed waters within 1.0 mile of the project area.

Total impacts for R-2612 A are 0.47 acres of riparian wetlands and 1487 feet of streams.

**Streams:****Table 1. Surface water impacts for R-2612A**

Site	Stream Name JD Package	Stream Name FONSI	Classification	Impact Type	Impact Length (ft)	Mitigation Ratio	Mitigation Required (ft)
1	Stream 5	Stream 5	Perennial	Fill	145	0*	0
2		Stream 4-A	Perennial	Fill	73	2:1	146
				Bank Stabilization	15	0**	
3	Stream 4	Stream 4	Intermittent	Fill	201	0*	0
5	Stream 2	Stream 2	Perennial	Fill	856	2:1	1712
6		Stream L	Perennial	Fill	73	2:1	161
				Bank Stabilization	15	1:1**	
7		Stream L	Perennial	Fill	94	2:1	203
				Bank Stabilization	15	1:1**	
<b>Total Impacts:</b>					<b>1487</b>		<b>2192</b>

\*All streams with a mitigation ratio of 0 were deemed unimportant by the USACE and do not require mitigation.

\*\* NCDOT will mitigate at 1:1 ratio for bank stabilization per stream for impacts  $\geq$  150 feet for NCDWQ

**Wetlands:****Table 2. \*Wetland impacts for R-2612A**

Site	Wetland Name (FONSI and JD)	Impact Type	Permanent Impacts (acres)	Mitigation Ratio	Mitigation Required (acres)
1	Wetland 6	Permanent Fill	0.07	2:1	0.16
		Mechanized Clearing	0.01		
3	Wetland 7	Permanent Fill	0.04	2:1	0.10
		Mechanized Clearing	0.01		
4	Wetland 5	Permanent Fill	0.08	2:1	0.16
		Excavation	<0.01		
5	Wetland 1 and Wetland 1a	Permanent Fill	0.21	2:1	0.52
		Excavation	0.02		
		Mechanized Clearing	0.03		
<b>Totals:</b>			<b>0.47**</b>		<b>0.94</b>

\*All wetlands are Riparian

\*\*This number is due to rounding <0.01 acres of excavation at Site 4

Note: Wetland 1a was added at the 4C meeting because it was outside of the original project area, it does not appear in the FONSI or JD package. Wetland 1a was verified by Andy Williams (USACE) at the request of the current property owner.

Site 1: There will be 145 linear feet of impacts to Stream 5 (intermittent, unimportant) and 0.07 acres of permanent fill and 0.01 acres of mechanized clearing due to the placement of a 42" Reinforced Corrugated Pipe (RCP). The pipe is necessary to convey the stream and associated wetland drainage under the roadway fill that will be used to construct the new location service road.

Site 2: There will be 73 linear feet of permanent impacts and 15 feet of bank stabilization to the perennial Stream 4-A. These impacts are due to the placement of a 36" RCP and rip rap. The pipe is necessary to convey the stream under the roadway fill that will be used to construct the new location service road. Rip rap placement is necessary to prevent scour and erosion at the southern outlet of the pipe.

Site 3: There will be 201 linear feet of permanent impacts to Stream 4 (intermittent unimportant), 0.04 acres of permanent fill, and 0.01 acres of mechanized clearing in Wetland 7 (riparian). These impacts are due to the placement of roadway fill, 36" RCP, and rip rap to convey associated drainage under the new location service road. Rip rap placement is necessary to prevent scour and erosion at the southern outlet of the pipe.

Site 4: There will be 0.08 acres of permanent fill and <0.01 acres of excavation in Wetland 5 (riparian) due to the placement of a 30" Class IV RCP and roadway fill. The

pipe is necessary to allow drainage under the new location service road at the intersection of Company Mill Road.

Site 5: There will be 0.21 acres of permanent fill, 0.02 acres of excavation, and 0.03 acres of mechanized clearing in Wetland 1 (riparian) and Wetland 1a (riparian) due to the placement of roadway fill. There will also be 856 feet of permanent stream impacts to Stream 2 (perennial, important) due to the placement of one 8' x 8' Reinforced Concrete Box Culvert with one foot sills (RCBC). The culvert will maintain drainage under Woody Mill Road and the associated interchange ramps. The culvert will be buried one foot below stream bed to maintain normal stream flow and natural substrate.

Site 6 and 7: There will be 73 feet of fill and 15 feet of bank stabilization to Stream L (perennial important) due to the extension of a 3' x 3' box culvert. There will also be 94 feet of fill and 15 feet of bank stabilization to Stream L due to the extension of a 48" Concrete Pipe. Both of these structure extensions are due to the intersection realignment of Woody Mill Road and Liberty Road.

## **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 of 1973, as amended. As of January 31, 2008 the USFWS lists one federally protected species for Guilford County, small whorled pogonia (*Isotria medeoloides*). Species description and biological conclusion were not stated in the EA because the small whorled pogonia was not listed when the document was completed. A biological conclusion of no effect was given in the FONSI and remains valid. A search of the North Carolina Natural Heritage Database (updated May 2009) indicated no known occurrences of federally protected species within 1.0 mile of the project area.

### Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*), originally listed for Guilford County when the EA and FONSI were completed, was delisted from the Endangered Species Act as of August 8, 2007. However, it is still protected under the Bald and Golden Eagle Protection Act. No suitable nesting or foraging habitat exists within 660 feet of the project limits.

## **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 Section A:

- NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters will be enforced.
- The proposed 8'x 8' RCBC at Site 5 will be buried one foot below the streambed to allow for natural aquatic passage, as stated in the Stormwater Management Plan.
- To avoid further impacts to wetlands at Sites 1, 3, and 5 fill slopes were set at 2:1 and rock plating was used, as stated in the Stormwater Management Plan.
- No additional and/or temporary stream impacts at Site 6 will be necessary as construction can be kept inside the slope stake lines.
- V-ditches tying into jurisdictional streams at Sites 5 and 7 will not impact below the ordinary high water mark.
- The alternatives with the least amount of wetland impacts was chosen, all of the alternatives generally had the same impacts and location.
- Section A, a ramp was eliminated to avoid impacts to Stream 2, as stated in the FONSI and Hydraulic Design Review Meeting July 23, 2008
- Bank stabilization activities will not place rip rap on the stream bottom
- Fill slopes at Site 3 were changed from 2:1 to 1.5:1 (with rock plating) to reduce wetland impacts

#### Compensatory Mitigation

Impacts requiring mitigation for Section A are 0.47 acres of riparian wetlands and 1126 linear feet of streams. Mitigation will be provided by the EEP (see attached).

The NCDOT does not propose mitigation for stream bank stabilization activities. Stabilizing the bank of a stream does not require fill in the stream bed and, therefore, under Section 404 of the Clean Water Act, does not constitute Loss of Waters of the U.S. and is not subject to compensatory mitigation per the USACE. NCDOT will mitigate at a 1:1 ratio for bank stabilization for NCDWQ at Sites 6 and 7 because impacts to Stream L exceed 150 feet.

### **CULTURAL RESOURCES**

The North Carolina Department of Cultural Resources, State Historic Preservation Office conducted a review of the project, and in a letter dated January 10, 2006 stated that no properties of architectural, historic, or archaeological significance will be affected by the proposed project. This letter is included in the FONSI.

### **FEMA COMPLIANCE**

There are no streams with FEMA designated flood zones on project R-2612A.

## UTILITY IMPACTS

No jurisdictional impacts will occur due to the removal or relocation of utilities.

## INDIRECT AND CUMULATIVE EFFECTS

Analysis of Indirect and Cumulative Effects can be found on page 18 of the FONSI.

## 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.*).

## REGULATORY APPROVALS

Application is hereby made for a Department of the Army Section 404 Individual Permit as required for the above-described activities for the proposed TIP project R-2612A&B. We are also hereby requesting a Section 401 Water Quality Certification from the Division of Water Quality. In compliance with Section 143-215.3D(e) of the NCAC, we will provide \$570 to act as payment for processing the Section 401 permit. We are providing five copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their review and approval.

## ALTERNATIVES ANALYSIS

### R-2612A (Woody Mill Road) Anticipated Stream and Wetland Impacts

EA Wetland Impacts Alternate A-1	EA Wetland Impacts Alternate A-2 (Recommended)	FONSI Wetland Impacts Alternate A-2 (Recommended)
0.98 acres	0.2 acres	0.26 acres
EA Stream Impacts Alternate A-1	EA Stream Impacts Alternate A-2 (Recommended)	FONSI Stream Impacts Alternate A-2 (Recommended)
574 linear feet	1,213 linear feet*	1,875 linear feet**

EA = Environmental Assessment

WL = Wetland

\* 590 linear feet of stream relocation required.

\*\*662 linear feet of additional streams located in FONSI re-verification.

A copy of this application will be posted on the NCDOT website at <http://www.ncdot.org/doh/preconstruct/pe/permits.html>. Thank you for your time and assistance with this project. Please contact James Pflaum at [jrpflaum@ncdot.gov](mailto:jrpflaum@ncdot.gov) or (919) 431-6527 if you have any questions or need additional information.

Sincerely,

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

cc:

w/attachment

Mr. Brian Wrenn, NCDWQ (5 Copies)

Ms. Kathy Matthews, USEPA

W/o attachment (see website for attachments)

Dr. David Chang, P.E., Hydraulics

Mr. Greg Perfetti, P.E., Structure Design

Mr. Victor Barbour, P.E., Project Services Unit

Mr. Mark Staley, Roadside Environmental

Mr. J. M. Mills, P.E., Division 7 Engineer

Mr. Jerry Parker, Division 7 Environmental Officer

Mr. Jay Bennett, P.E., Roadway Design

Mr. Majed Alghandour, P. E., Programming and TIP

Mr. Art McMillan, P.E., Highway Design

Ms. Karen Reynolds, PDEA

Mr. Scott McLendon, USACE, Wilmington

Mr. Gary Jordan, USFWS

Mr. Travis Wilson, NCWRC

Ms. Beth Harmon, EEP

Mr. Phillip Ayscue, NCDOT External Audit Branch

Mr. Drew Joyner, PE, Human Environment Unit Head

Mr. Clarence W. Coleman, P.E., FHWA



**APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT  
(33 CFR 325)****OMB APPROVAL NO. 0710-003  
Expires December 31, 2004**

Public reporting burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

**PRIVACY ACT STATEMENT**

Authority: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research and Sanctuaries Act, 33 USC 1413, Section 103. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

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

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED
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**(ITEMS BELOW TO BE FILLED BY APPLICANT)**

5. APPLICANT'S NAME North Carolina Department of Transportation	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
6. APPLICANT'S ADDRESS 1598 Mail Service Center Raleigh, NC 27699-1548	9. AGENT'S ADDRESS
7. APPLICANT'S PHONE NOs. W/AREA CODE a. Residence b. Business (919) 431-6527	10. AGENT'S PHONE NOs. W/AREA CODE a. Residence b. Business

**11. STATEMENT OF AUTHORIZATION**

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

APPLICANT'S SIGNATURE

DATE

**NAME, LOCATION, AND DESCRIPTION OR PROJECT OR ACTIVITY**

12. PROJECT NAME OR TITLE (see instructions)

NCDOT TIP No. R-2612A, Guilford County, NC

13. NAME OF WATERBODY, IF KNOWN (if applicable)

Big Alamance Creek and an unnamed tributaries to Big Alamance Creek.

14. PROJECT STREET ADDRESS (if applicable)

15. LOCATION OF PROJECT

Guilford

NC

COUNTY

STATE

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) Section, Township, Range, Lat/Lon, and/or Assessors's Parcel Number, for example.

17. DIRECTIONS TO THE SITE I-40 to US 421 S in Greensboro, NC

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

Interchange additions at SR 3389 (Woody Mill Road), Guilford County. The proposed interchanges consist of a modified diamond design at SR 3389.

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

The purpose of this project is to improve safety along a section of US 421 that is defined by numerous at-grade intersections.

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

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## 20. Reason(s) for Discharge

Needed in order to construct 42" RCP, two 36" RCP, 30" Class IV RCP, one 8'x 8' RCBC with one foot sills, 3'x 3' box culvert, and to extend 48" concrete pipe for proposed interchange ramps and wider roadway.

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

See attached permit drawings.

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

1442 linear feet of permanent impacts to streams, 0.47 acres of permanent impacts to riparian wetlands, and 45 feet of bank stabilization

23. Is Any Portion of the Work Already Complete? Yes        No  X   IF YES, DESCRIBE THE COMPLETED WORK

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

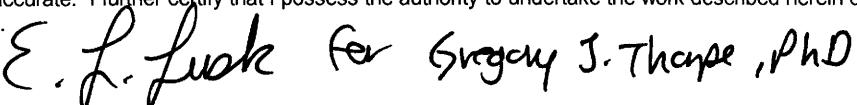
See Attached List

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

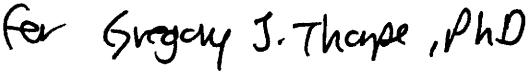
AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
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\* Would include but is not restricted to zoning, building, and flood plain permits

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

 E. L. Lusk

DATE

 Gregory J. Thayne, PhD

DATE

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 disguise 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.

Date: July 23, 2008

Subject: **Minutes from Interagency Hydraulic Design Review Meeting on July 23, 2008 for R-2612A in Guilford County, 1:00 PM to 2:00 PM**

**Team Members:**

David Wainwright – DWQ	(present)
Amy Euliss – DWQ	(present)
Andrew Williams – USACE	(present)
Rachelle Beauregard – DOT – NEU	(present)
James Pflaum – DOT – NEU	(present)
Brad Chilton – DOT – NEU	(present)
Ashley Cox – DOT – NEU	(present)
Karen Reynolds – PDEA	(present)
Ron Lucas – FHWA	(present)
Patty Eason – NCDOT Division 7	(present)

**Participants:**

Marshall Clawson, NCDOT Hydraulics
Vincent Rivers, NCDOT Hydraulics
Dennis Hoyle, URS Corporation
Eleni Riggs, URS Corporation
Susan Lancaster, NCDOT Roadway Design
Glenn Mumford, NCDOT Roadway Design
Roy Girolami, NCDOT Structure Design

**GENERAL NOTES**

- The R-2612A project underwent a revision which removed a ramp and replaced it with a loop in order to reduce the impacts to an Unnamed Tributary to Big Alamance Creek. This revision reduced the impacts by approximately 100 feet.
- The R-2612A project has seven jurisdictional streams that cross the project and five wetland sites in the vicinity of the project limits. The jurisdictional streams and wetlands are shown on the following plan sheets: sheet 4, 6, 8, 10 and 11.
- At jurisdictional streams where pipes outlet, rip rap will be placed on banks and not in the channel bottom.

**Plan Sheet 4**

- Pipe Crossing at Sta. 19+00 –L- (Existing 36" CMP) Jurisdictional Stream to wetlands and pond.  
1600 Perimeter Park Drive  
Morrisville, NC 27560  
(919) 461-1100 Phone  
(919) 461-1415 Fax

- Pipe Crossing at Sta. 22+50 –Y1- (Proposed 42" Pipe) Wetlands to wetlands and pond.
  - Preliminary investigation indicates that the pipe is in good condition.
  - The outlet end of the existing pipe has an 18" scour hole.
  - The discharge from the existing pipe currently flows into wetlands and then into a pond. The proposed –Y1- line will fill portion of wetlands (0.17 acres). URS proposed to pipe under the –Y1- line with a proposed 42" pipe and discharge into the wetlands and pond. Wetlands outside of the proposed fill slope from the –Y1- line will remain.

#### **Plan Sheet 6**

- Pipe Crossing at Sta. 33+15 –L- (Existing 36" CMP) Jurisdictional Stream to pond.
  - Preliminary investigation indicates that the pipe is in good condition.
  - The fill slopes extend into the stream at this location and there was a discussion about bringing the roadway fill slopes in at 1.5:1 instead of 2:1 to reduce the stream impacts. It was decided that this would not reduce the impacts significantly and the slopes should remain at 2:1.
  - URS proposed to place a junction box at the outlet of the existing 36" CMP and then have a 36" pipe from the junction box to the edge of the fill slope.
  - Rip rap will be placed on the channel banks at this location since it is a jurisdictional stream.
- Pipe Crossing at Sta. 38+70 –L- (Existing 36" CMP) Jurisdictional Stream to wetlands and pond.
  - Preliminary investigation indicates that the pipe is in good condition.
  - The fill slopes extend into the wetlands at this location and there was a discussion about bringing the roadway fill slopes in at 1.5:1 instead of 2:1 to reduce the wetland impacts (impacted area estimated to be 0.05 acres). It was decided that this would be the best option as it would bring the fill slopes in approximately 20' for almost 200 feet and reduce the wetland impacts by almost one half. The steepened slopes will be rock plated to stabilize the slopes.
  - URS proposed to place a traffic bearing drop inlet at the outlet of the existing 36" CMP and then have a 36" pipe from the drop inlet to the edge of the fill slope. With the 2:1 fill slopes the pipe was estimated to outlet at the waters edge of the pond so changing the slopes to 1.5:1 allows the water to be discharged from the pipe prior to reaching the pond.
- Pipe Crossing at Sta. 42+00 Rt. –L- (Existing Drop Inlet in US 421 median to 15" CMP) Pipe system to Jurisdictional Stream.
  - Preliminary investigation indicates that the pipe is in good condition.

- The outlet end of the existing pipe is perched approximately 3 to 5 feet above the natural ground, which caused a large scour hole and flows into a jurisdictional stream. The entire stream is within the proposed fill slope. This stream is not required to be mitigated.
- URS proposed to extend the existing 15" CMP pipe with pipe collars to the fill slope and outlet into a lateral ditch.

**Plan Sheet 8**

- Pipe Crossing at Sta. 38+25 -Y- (Proposed 24" Pipe) Wetland to wetland
  - This area was thought to be a jurisdictional stream but DOT – NEU pointed out that it was actually a wetland. The wetland area is so small that the wetland symbol didn't show up on the plan sheet. Approximately 0.09 acres of wetland will be impacted while approximately 60 linear feet at the outlet end will remain.
  - URS proposed to place a 24" pipe under the –Y- line at the intersection of –RPC- and –RPD-. There is a proposed TBDI with a 15" pipe that drains water from Ramp C directly into the wetland area on the upstream end.

**Plan Sheet 10**

- Culvert Crossing at Sta. 12+30 –Y2- (Existing 3'X3' Box Culvert) Jurisdictional Stream under Liberty Road.
  - Preliminary investigation indicates that the culvert is in good condition.
  - URS proposed to add special junction boxes at each end of the existing 3' x 3' box culvert and extend to both fill slopes with a 48" pipe. Pipes will be angled to and from the junction boxes in order to follow the existing stream flow.
  - Rip rap will be placed on the channel banks at this location since it is a jurisdictional stream.

**Plan Sheet 11**

- Pipe Crossing at Sta. 17+60 –Y- (Existing 48" Concrete Pipe) Jurisdictional Stream under Woody Mill Road.
  - Preliminary investigation indicates that the pipe is in good condition on the upstream end. The downstream end could not be accessed since it is now in a construction zone.
  - URS proposed to add junction boxes at each end of the existing 48" concrete pipe and extend to both fill slopes with a 48" pipe. Pipes will be angled to and from the junction boxes in order to follow the existing stream flow.

- Rip rap will be placed on the channel banks at this location since it is a jurisdictional stream.
- Culvert Crossing at Sta. 28+30 -Y- (Proposed 8'X8' RCBC) Wetland area to Jurisdictional Stream under Woody Mill Road.
  - The existing wetland area was a pond in the past with a large dam that was breached in the past couple of years. The wetland area is no longer holding water but is filled with vegetation. The pond area currently flows into a 60" CMP under Woody Mill Road.
  - URS proposed to add an 8' x 8' RCBC paralleling the existing jurisdictional stream and existing 60" CMP. The culvert inlet will be in the wetland area formed by the pond draining when the dam was breached and the culvert will outlet into a lateral ditch that will flow into the jurisdictional stream. The culvert outlet will be protected with rip rap on the channel banks.
  - With the culvert being constructed parallel to the existing stream and 60" CMP, URS proposed to construct the culvert in the dry. The construction of the culvert would be dependent on the roadway's construction phasing and road closures which have not been determined yet. There are pipes that connect into the culvert but their exact location can't be determined until the construction phasing has been determined.
  - The proposed culvert is approximately 680 feet long with a 2.2% slope. Because of this slope, URS proposed to place three one foot high sills in the culvert, spaced at approximately 200 feet, in order to reduce the slope under 2%. Both the inlet and outlet of the culvert are proposed to be buried one foot.

Meeting Adjourned

Date: January 14, 2009

To: Marshall Clawson

From: Kristy Pace

Subject: **Minutes from Interagency Permit Drawing Review Meeting on January 14, 2009 for R-2612A in Guilford County, 10:00 PM to 11:00 AM**

**Team Members:**

Kathy Matthews, EPA	(present)
Mark Staley, NCDOT-REU	(present)
Jennifer Parish, NCDOT – REU	(present)
Evgene Tarascio, NCDOT PDEA	(present)
Amy Simes, DENR	(present)
Andy Williams, USACE	(present)
Amy Ealiss, DWQ	(present)
James Pflaum, NCDOT-NEU	(present)
Rachelle Beauregard, NCDOT-NEU	(present)
Patty Eason, NCDOT Division 7	(present)

**Participants:**

Marshall Clawson, NCDOT Hydraulics
Vincent Rivers, NCDOT Hydraulics
Dennis Hoyle, URS Corporation
Kristy Pace, URS Corporation
Susan Lancaster, NCDOT Roadway Design
Laura Sutton, NCDOT Structure Design
Roy Girolami, NCDOT Structure Design

**GENERAL NOTES**

- NCDOT, DWQ, USACE and URS met to review and discuss the permit drawings prepared for the R-2612A project.
- URS discussed that some impacts as shown in the Impact Summary sheet were small and were rounded up. To clarify those impacts less than 0.01 acres, the impacts will be shown as "< 0.01".
- Easements were not shown on the permit drawings, but will be added. PDE's will be provided at all pipe drainage outlets.
- The group discussed the impacts by sheet and by site number. A summary of the comments are noted below.

**Site 1 (Plan Sheet 4)**

- Wetland identified contains marginal headwaters and flows into the pond downstream.
- There are two edge of water line types on the plans and it isn't clear what the difference is. One line is from Location and Surveys Unit and the other is from Aerial Photography. URS will confirm the Location and Survey Unit edge of water line and request that NCDOT delete the other line from the file. Only one line should be shown.

**Site 2 (Plan Sheet 6)**

- The downstream tail ditch does not have PDE shown. (PDE was not included at the time of the permit drawings, but will be added to plans).

**Site 3 (Plan Sheet 6)**

- Marshall noted that rock plating has been added to the slope to reduce impacts, but is not in the actual pond.
- There was concern regarding the two line types shown. NEU and USACE agreed that the wetlands are north of the woven wire fence (R/W line) and surface waters (pond) are south of the fence. Impacts will need to be modified accordingly.

**Site 4 (Plan Sheet 8)**

- The portion of area being impacted by the fill limits is a "linear wetland" rather than a jurisdictional stream. Impacts shown on the permit drawings are current.

**Site 5 (Plan Sheet 8&11)**

- USACE and NEU indicated that the large pond was not delineated for wetlands and was out of the project limits at the time of the initial field work. The area is an old pond bottom wetland. NEU will obtain the survey information and forward it on.
- NEU requested that "Bank Stabilization" for Jurisdictional Streams be a separate line item on the Impacts Summary sheet, particularly for this site.
- URS should consider providing stone at the culvert outlet along the bottom of the channel.
- Clarification was made for impacts in jurisdictional streams as impacts should be accounted for separately. (Bottom of the stream channel vs. bank stabilization)
- The length of the stream bank disturbed for construction needs to be accounted for when ditches tie into jurisdictional streams in linear feet.
- The existing stream that will be abandoned between the fill limits and the new channel tie in should be included and accounted for on the impacts.

**Site 6 (Sheet 10)**

- There is no in-stream impacts proposed outside of the fill slope. The Division Rep. stated that she expects they can build the drainage structures without impacting the stream.
- PDE will be added at the pipe outlets.
- Bank stabilization at outlet will be separated out in the impact summary sheet.
- Add site label to Site 7 (located downstream of Site 6) on Sheet 10.

**Site 7 (Sheets 10&11)**

- PDE will be provided at the pipe outlets.
- Where V ditches tie into stream, linear feet of impacts to channel should be accounted for if at or below the ordinary high water level of the stream.

Meeting Adjourned

## HYDRAULIC DESIGN (4B) / PERMIT DRAWINGS (4C) REVIEW

Location: Location & Survey Conference Room, DOT Century Center

TIP NO: R-2612A

DATE: 1/14/09

COUNTY: GUILFORD

ROUTE: US421 @ SR

NAME	AGENCY/ UNIT	PHONE	E-MAIL
MARSHALL CLAWSON	HYDRAULICS		MCLANSON@NCDOT.GOV
Dennis Hovle	URS		DENNIS_HOVLE@URSCORP.COM
KRISTY PACE	URS		KRISTY_PACE@URSCORP.COM
Kathy Matthews	EPA		Matthews.Kathy@epa.gov
James Pfleum	DOT-NEU		JRPFleum@NCDOT.GOV
Rachelle Beuregard	" "		RBeuregard@ncdot.gov
Susan Lancaster	DOT /Roadway		SLancaster@ncdot.gov
Vincent Rivers	DOT - Hydraulics		VRivers@ncdot.gov
Mark Staley	NCDOT-REU		mstaley@ncdot.gov
Jennifer Parish	NCDOT - REU		jenniferparish@ncdot.gov
Eugene Tarascio	NCDOT - PDEA		gtarascio@ncdot.gov
ROY GIRONIAMI	NCDOT - STR DESIGN		rgironi@ncdot.gov
Laura Sutton	NCDOT - Str Pgr		Lsutton@ncdot.gov
Polly Eason	NCDOT - DIV 7		peason@ncdot.gov

**(CONTINUED)**

**TIP NO:** \_\_\_\_\_



August 18, 2009

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

**R-2612, US 421 Improvements at SR 3389 (Woody Mill Road) and NC 22 (Neeley Road), 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 dated August 11, 2009, 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	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non- Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	2,017	3.99	0	0	0	0
Mitigation Units (Credits-up to 2:1)	0	0	3,858	7.98	0	0	0	0

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

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

Sincerely,

A handwritten signature in black ink that reads "William D. Gilmore, P.E." followed by "for" and "James B. Stanfield".

William D. Gilmore, P.E.  
EEP Director

cc: Mr. Andy Williams, USACE – Raleigh Regulatory Field Office  
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit  
File: R-2612

*Restoring... Enhancing... Protecting Our State*





August 18, 2009

Mr. Andy Williams  
U. S. Army Corps of Engineers  
Raleigh Regulatory Field Office  
331 Heritage Trade Drive, Suite 105  
Wake Forest, North Carolina 27587

Dear Mr. Williams:

Subject: EEP Mitigation Acceptance Letter:

**R-2612, US 421 Improvements at SR 3389 (Woody Mill Road) and NC 22 (Neeley Road), Guilford County; Cape Fear River Basin (Cataloging Unit 03030002); Central Piedmont (CP) Eco-Region**

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 unavoidable impact associated with the above referenced project. Based on the information supplied by the NCDOT dated August 11, 2009, the impacts are located in CU 03030002 of the Cape Fear River Basin in the Central Piedmont (CP) Eco-Region, and the anticipated mitigation credits needed to offset the impacts are as follows:

Cape Fear 03030002	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non- Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	2,017	3.99	0	0	0	0
Mitigation Units (Credits-up to 2:1)	0	0	3,858	7.98	0	0	0	0

Mitigation associated with this project will be provided in accordance with Section X of Amendment No. 2 to the Memorandum of Agreement between the N. C. Department of Environment and Natural Resources, the N. C. Department of Transportation, and the U. S. Army Corps of Engineers fully executed on March 8, 2007 (Tri-Party MOA). EEP commits to implement sufficient compensatory stream and riparian wetland mitigation in the appropriate cataloging unit to offset the impacts associated with this project by the end of the MOA year in which this project is permitted. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

William D. Gilmore, P.E.  
EEP Director

cc: Mr. Gregory J. Thorpe, Ph.D., NCDOT-PDEA  
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit  
File: R-2612

*Restoring... Enhancing... Protecting Our State*



# STORMWATER MANAGEMENT PLAN

Project: 33483.1.1  
TIP No. R-2612A  
Guilford County

3/24/2009

Hydraulics Project Manager: Dennis Hoyle, P.E. (URS Corporation),  
Marshal Clawson, P.E. (NCDOT Hydraulics Unit)

## ROADWAY DESCRIPTION

The project R2612A consists of removing the Woody Mill Road and Company Mill Road at-grade intersections with US 421. The project also consists of the construction of a bridge with access to US 421 and the realignment of the Woody Mill Road interchange with Company Mill Road. It begins just west of the intersection of SR 3413 and US 421 in Guilford County and proceeds 1.02+ miles east, to east of SR 3394. The southern terminus of the project ties to existing SR 3394 and the northern terminus ties in with SR 3389 just north of the intersection with SR 3549. The project R2612A creates impacts to three unnamed tributaries and two other jurisdictional streams. Table 1 lists these streams and the proposed crossing structures. The project drainage system consists of cross pipes, grated inlets with associated pipe systems, tail ditches, and lateral storm water ditches.

**Table 1.** List of Stream Crossings in Project R-2612A

Site #	Station	Stream Name	Drainage area	Proposed Structure
1	-Y1- 37+06	S4-A – From pond into 3' culvert	34.2 acres	Exist. 36" CMP connected to JB w/ 36" RCP
2	-Y1- 43+50	S4 – Drains into wetland and pond	31.5 acres	Exist. 36" CMP connected to JB w/ 36" RCP
3	-RPB- 23+10 -LPB- 15+85	S2-A and S2 – UT to Big Alamance Creek	179.2 acres	8' x 8' RCBC
4	-Y2- 12+30	SL – UT to S2	72.1 acres	36" RCP w/ JB (2 sides) connected to exist. 3'x3' concrete culvert
5	-Y- 17+65	SL – UT to S2	78.0 acres	48" RCP w/ JB connected to exist. 48" RCP connected to JB w/ 48" CSP

## **ENVIRONMENTAL DESCRIPTION**

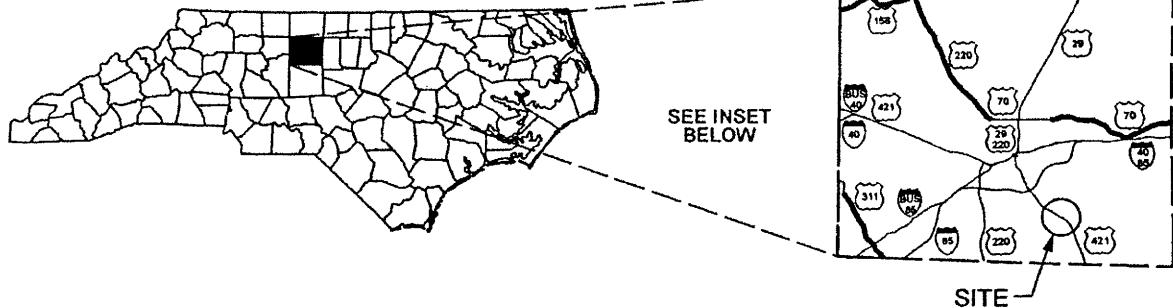
The streams listed in Table 1 have been classified as jurisdictional.

There are also four jurisdictional wetland sites that will be impacted by the proposed project. Wetland impacts have been avoided and minimized by keeping roadway fill slopes at 3:1 or steeper. Rock plating was used along the fill slopes as necessary in order to steepen the fill slopes and minimize wetland impacts.

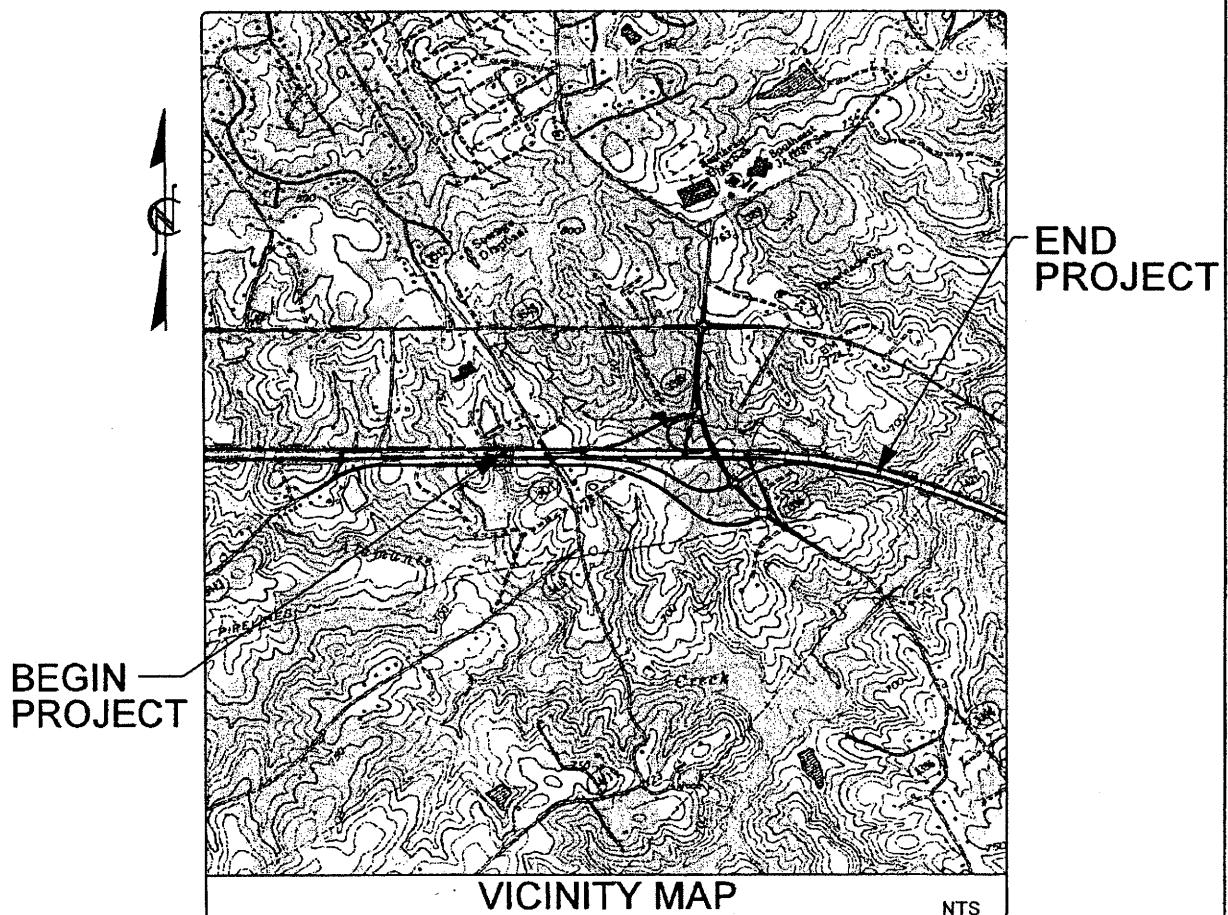
## **BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES**

The primary goal of Best Management Practices (BMPs) is to prevent degradation of the states surface waters by the location, construction and operation of the highway system. The BMPs are activities, practices and procedures taken to prevent or reduce stormwater pollution. The measure that will be used on this project to reduce stormwater impacts is the submergence of culverts below stream beds.

The box culvert at Site # 3 shown in Table 1 will be buried 1-foot below the stream bed or natural ground at the crossings to maintain the normal stream flow and a natural substrate.



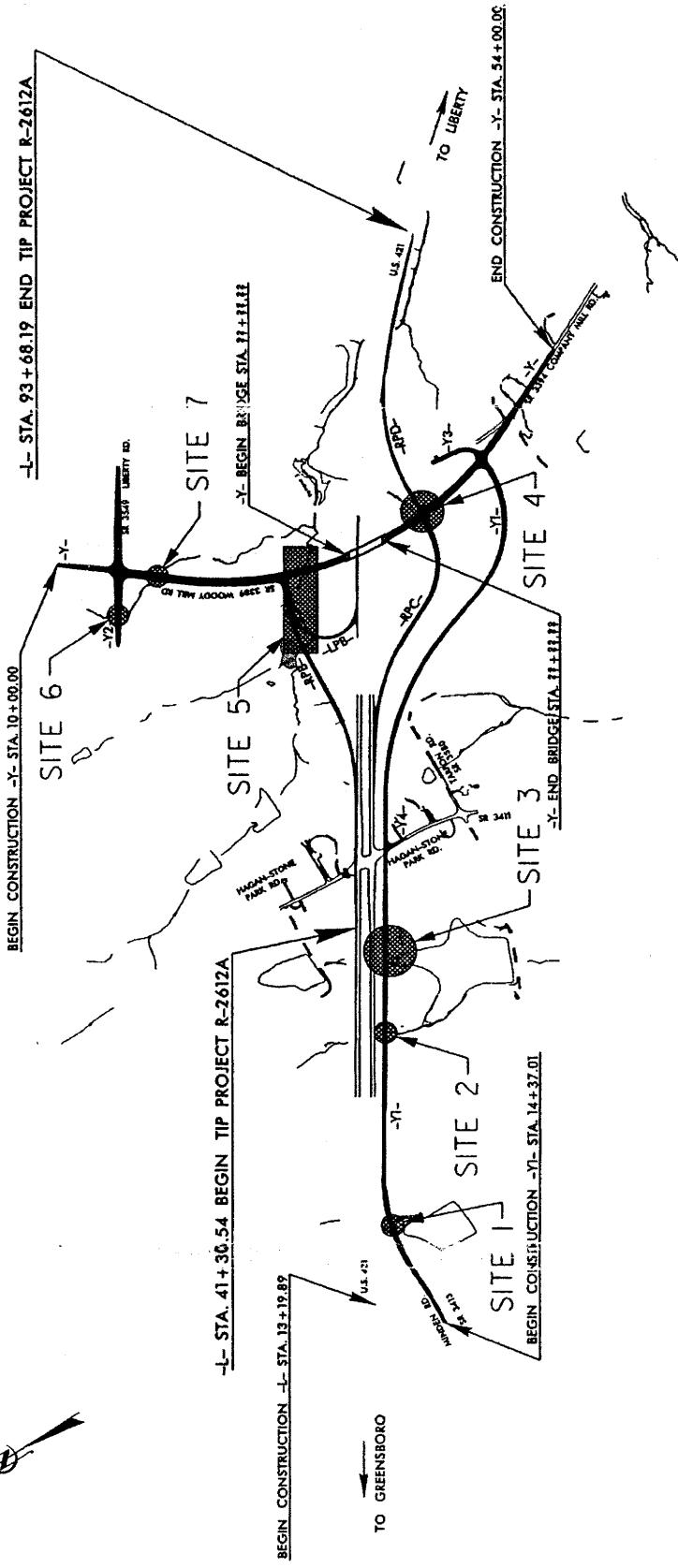
GUILFORD COUNTY



WETLAND/STREAM  
IMPACTS

NC DOT  
DIVISION OF HIGHWAYS  
GUILFORD COUNTY  
PROJECT: 33483.1.1 (R-2612A)

US 421 AT SR 3389  
(WOODY MILL ROAD)  
SOUTH OF GREENSBORO



**NCDOT**  
**DIVISION OF HIGHWAYS**  
**GUILFORD COUNTY**  
**PROJECT 33483.1.1 (R-2612A)**  
**US 421 AT SR 3389**  
**(WOODY MILL ROAD)**  
**SOUTH OF GREENSBORO**

## PLAN VIEW WETLAND/STREAM IMPACT

SHEET 2 OF 30 12/23/08

**PROPERTY OWNERS**  
**NAMES AND ADDRESSES**

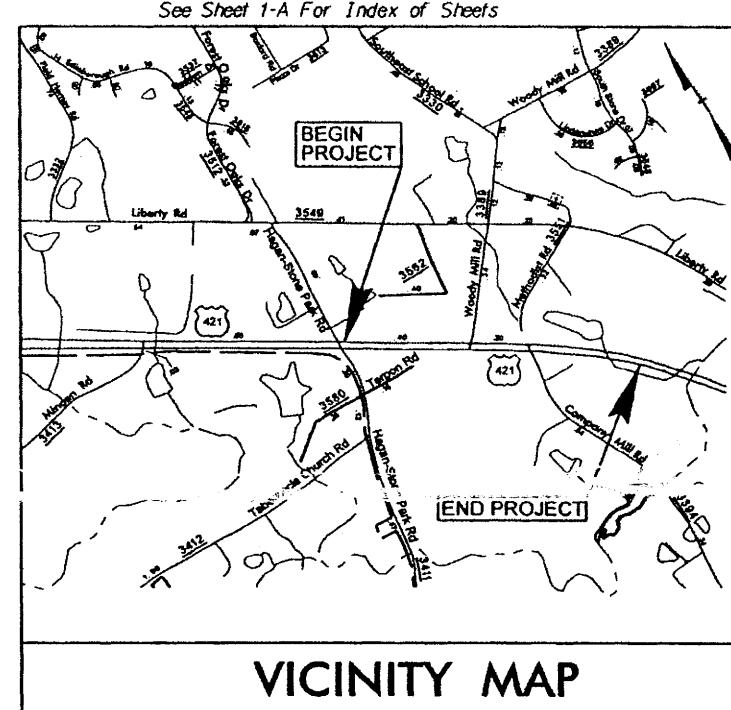
PARCEL NO.	NAMES	ADDRESSES
2	ANN S. HILLIARD & GLADYS S. BOWMAN	
6	BETTY E. SYKES, WALLACE G. FREEMAN JR. & EDNA F. HELMS	
10	ALLIE D. GREGORY	
	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
13	FREDERICK WILLIAM HOLT	
14	HAROLD WAYNE & KAREN T. SMITH	
15	S. G. WOMACK & MARGUERITE T. WOMACK	
23	JOE R. & JEAN D. STAFFORD	
24	ABDULLAH ALSHANTEER & OSAMA AL YATEEM	

**NCDOT**  
**DIVISION OF HIGHWAYS**  
**GUILFORD COUNTY**  
**PROJECT: 33483.1.1 (R-2612A)**  
**US 421 AT SR 3389**  
**(WOODY MILL ROAD)**  
**SOUTH OF GREENSBORO**

**NC DOT**  
**DIVISION OF HIGHWAYS**  
**GUILFORD COUNTY**  
**PROJECT: 3348311 (R-2612A)**  
**US 421 AT SR 3389**  
**(WOODY MILL ROAD)**  
**SOUTH OF GREENSBORO**

## CONTRACT:

## TIP PROJECT: R-2612A



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# GUILFORD COUNTY

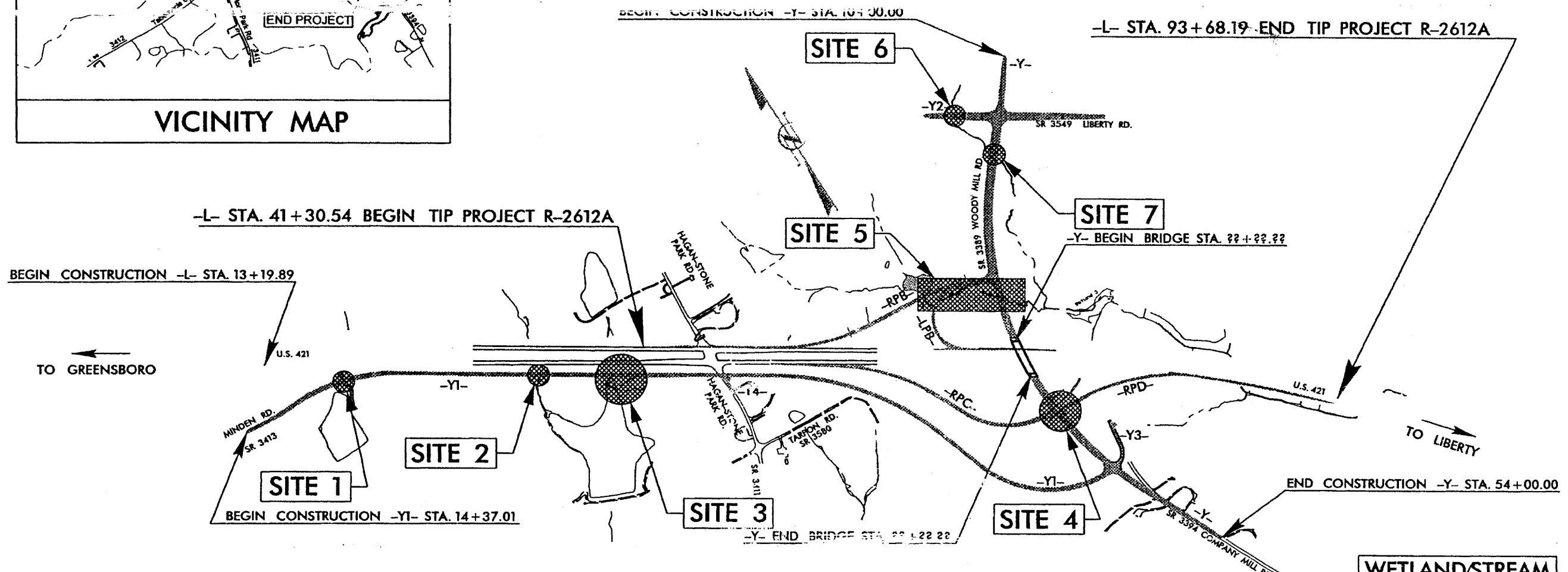
**LOCATION: US 421 AT SR 3389 (WOODY MILL ROAD)  
SOUTH OF GREENSBORO**

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

STATE	STATE PROJECT REFERENCE NO.	PICTURE NO.	TOTAL SHEETS
N.C.	R-2612A	1	
STATE PROJ. NO.	R. A. PROJ. NO.	DESCRIPTION	
33483.1.1	NHF-42(11)	P.E.	

Permit Drawing  
Sheet 5 of 10

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



THIS PROJECT HAS FULL AND PARTIAL CONTROLLED ACCESS.  
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO  
THE LIMITS ESTABLISHED BY METHOD \_\_\_\_\_

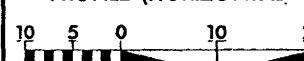
## GRAPHIC SCALES



PLANS



PROFILE (HORIZONTAL)



PROFILE (VERTICAL)

## DESIGN DATA

ADT 2010 = 25,900  
ADT 2030 = 41,200

DHV = 11 %

D = 70 %

T = 14 % \*

V = 55 MPH

\* (TTS% 9% + DUAL 5%)  
FUNCTIONAL CLASS = FREEWAY

## PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2612A = 0.925 MI

TOTAL LENGTH TIP PROJECT R-2612A = 0.925 MI

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27618

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

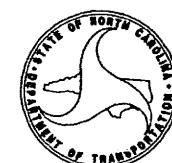
OCTOBER 17, 2008

LETTING DATE:

MAY 18, 2010

GLENN W. MUMFORD, PE  
PROJECT ENGINEERSUSAN C. LANCASTER, PE  
PROJECT DESIGN ENGINEER

## HYDRAULICS ENGINEER

P.E.  
SIGNATURE: ROADWAY DESIGN ENGINEERDIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

Permit Drawing  
Sheet 6 of 30

**PAVEMENT REMOVAL**

NOTES  
SEE SHEET 14  
SEE SHEETS 19 AND 20  
RE 10' UNLESS OTHERWISE NOTED

-  DENOTES FILL IN WETLAND
-  DENOTES IMPACTS SURFACE WATER
-  DENOTES MECHANICAL CLEARING

<u>-YI-</u>	<u>-DRI-</u>
PI Sto 16+70.46	PI Sto 22+43.77
$\Delta = 9^{\circ}16'51.0''$ (LT)	$\Delta = 36^{\circ}49'45.7''$ (RT)
$D = 3^{\circ}45'25.6''$	$D = 1^{\circ}14'38.9''$
$L = 247.02'$	$L = 867.77''$
$T = 123.78'$	$T = 449.42''$
$R = 152500'$	$R = 1350000'$

15/2009 \Drainage\Permit Drawings\r2612a-permit.aspx

Permit Drawing  
Sheet 7 of 30

## PAVEMENT REMOVAL

 F E DENOTES FILL IN  
WETLAND

 DENOTES IMPACTS IN SURFACE WATER

NOTES  
FOR -L- PROFILE, SEE SHEET 14  
FOR -Y- PROFILE, SEE SHEETS 19 AND 20  
DRIVeway RADiS ARE 10' UNLESS OTHERWISE NOTED

<u>-YI-</u>	
PI Sta 16+70.46	PI Sta 22+43.77
$\Delta = 9^{\circ}16'51.0''$ (LT)	$\Delta = 36^{\circ}49'45.7''$ (RT)
$D = 3^{\circ}45'25.6''$	$D = 4^{\circ}14'38.9''$
$L = 247.02'$	$L = 857.77'$
$T = 12.378'$	$T = 449.47'$
$R = 1,525.00'$	$R = 1,350.00'$

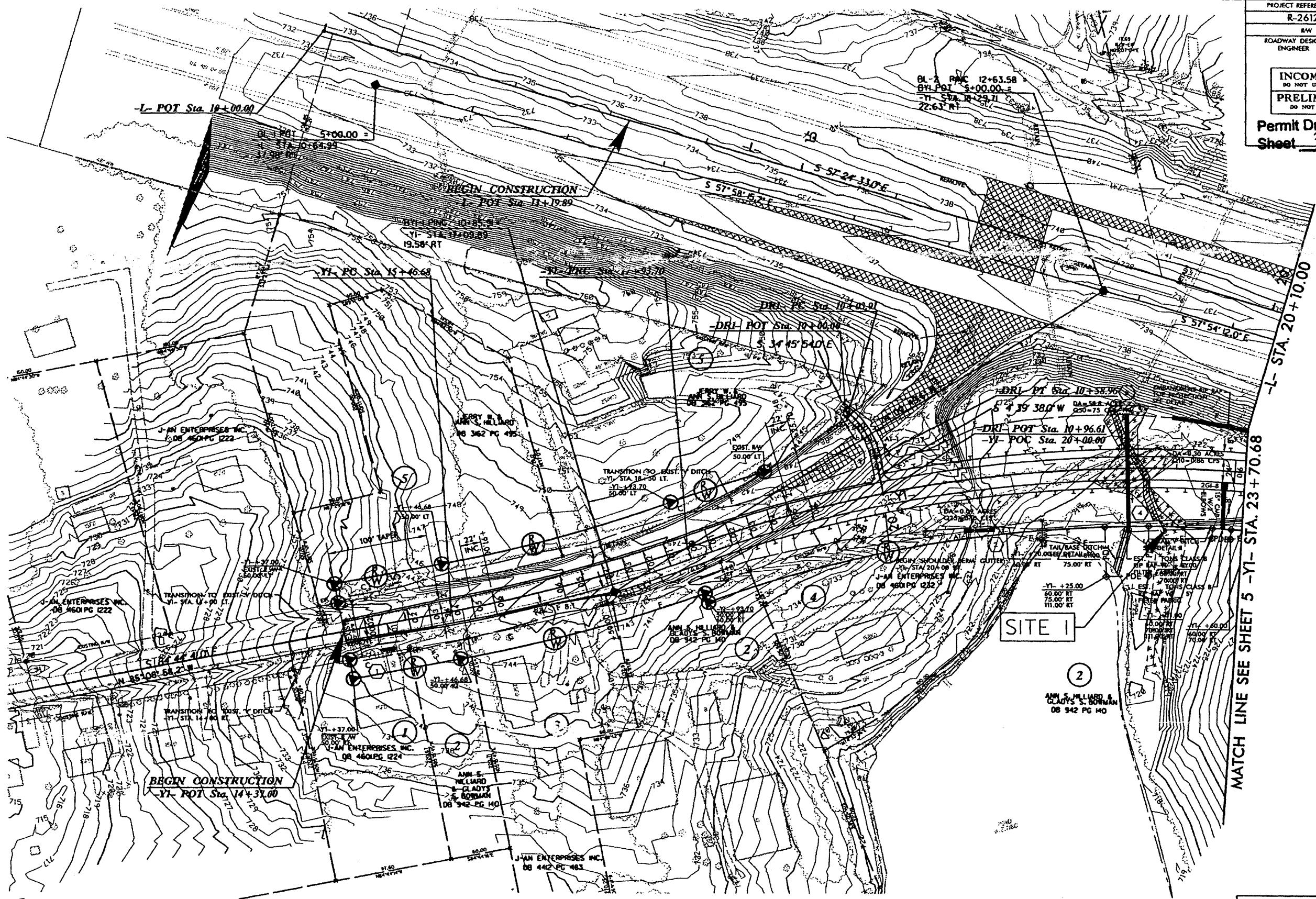
-DRI-

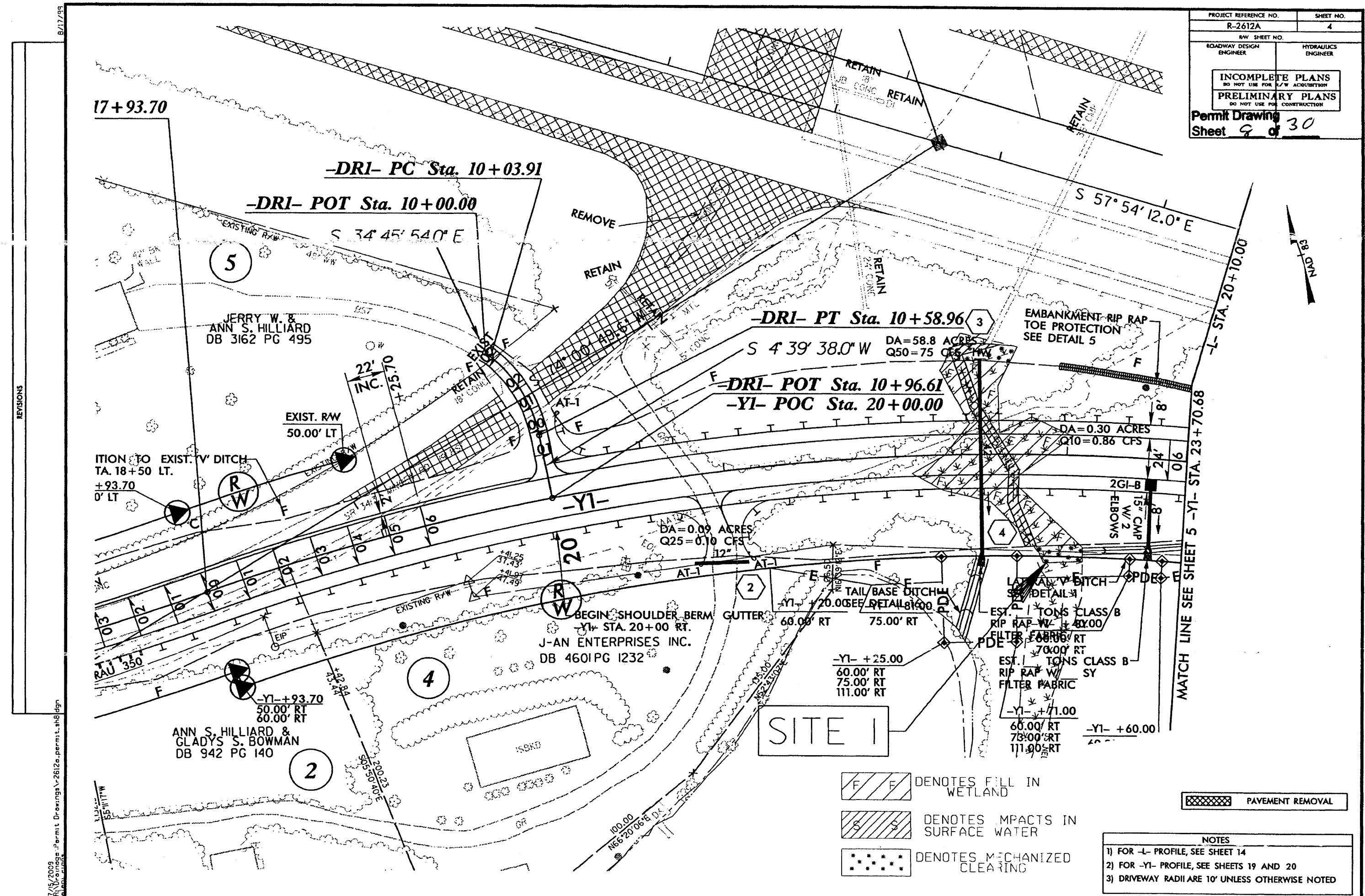
P1	S10	10+32.57
$\Delta$	=	39° 25' 32.0" (RT)
D	=	77 35' 11.0"
L	=	55.05'
T	=	28.66'
R	=	80.00'

## REVISIONS

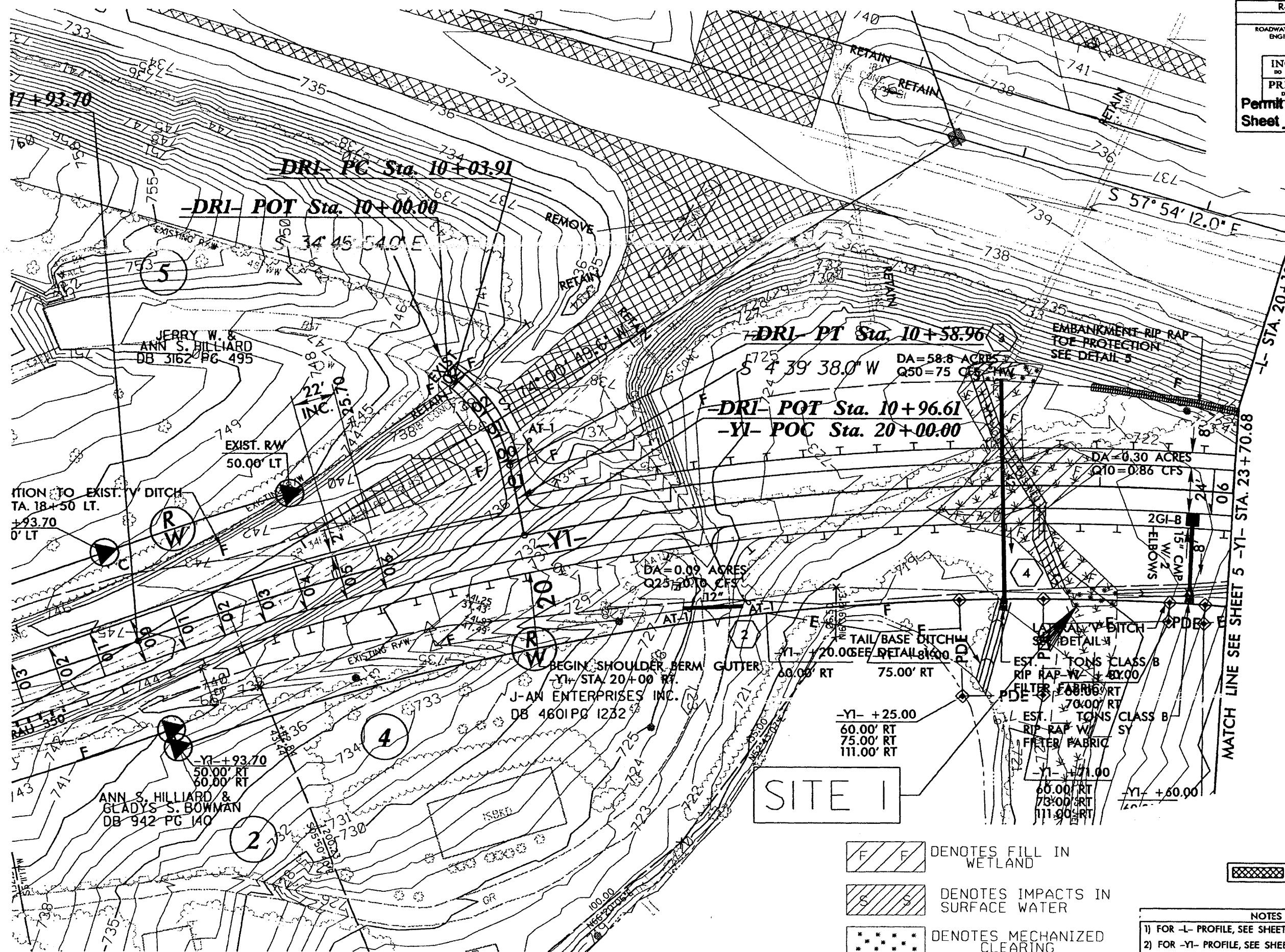
7/15/2009 R:\Drainage\Permit Drawings\r26120-permit-sh7.dgn

212 199





PROJECT REFERENCE NO.	4
R/W SHEET NO.	R-2612A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Permit Drawing Sheet	9 of 30



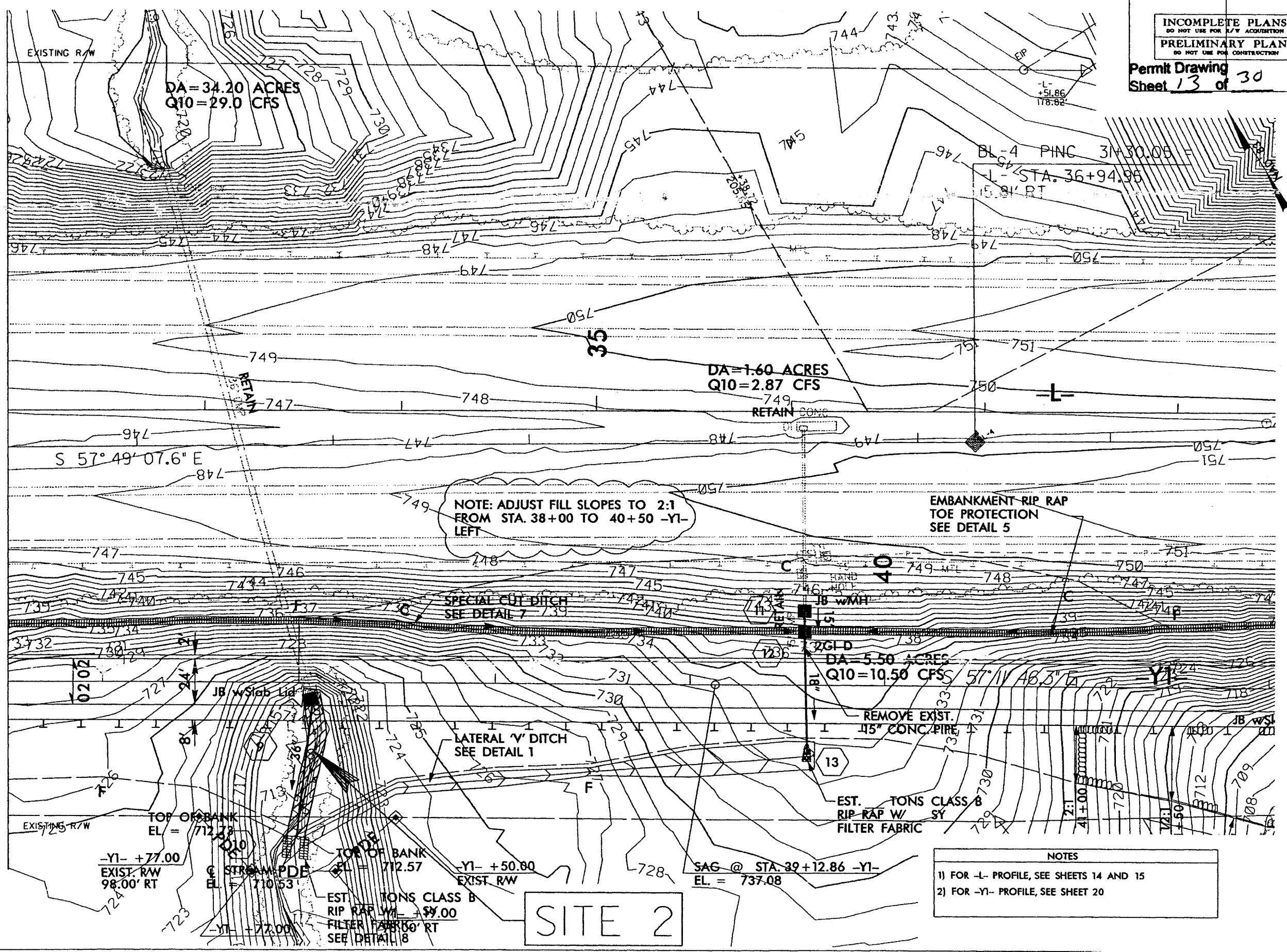


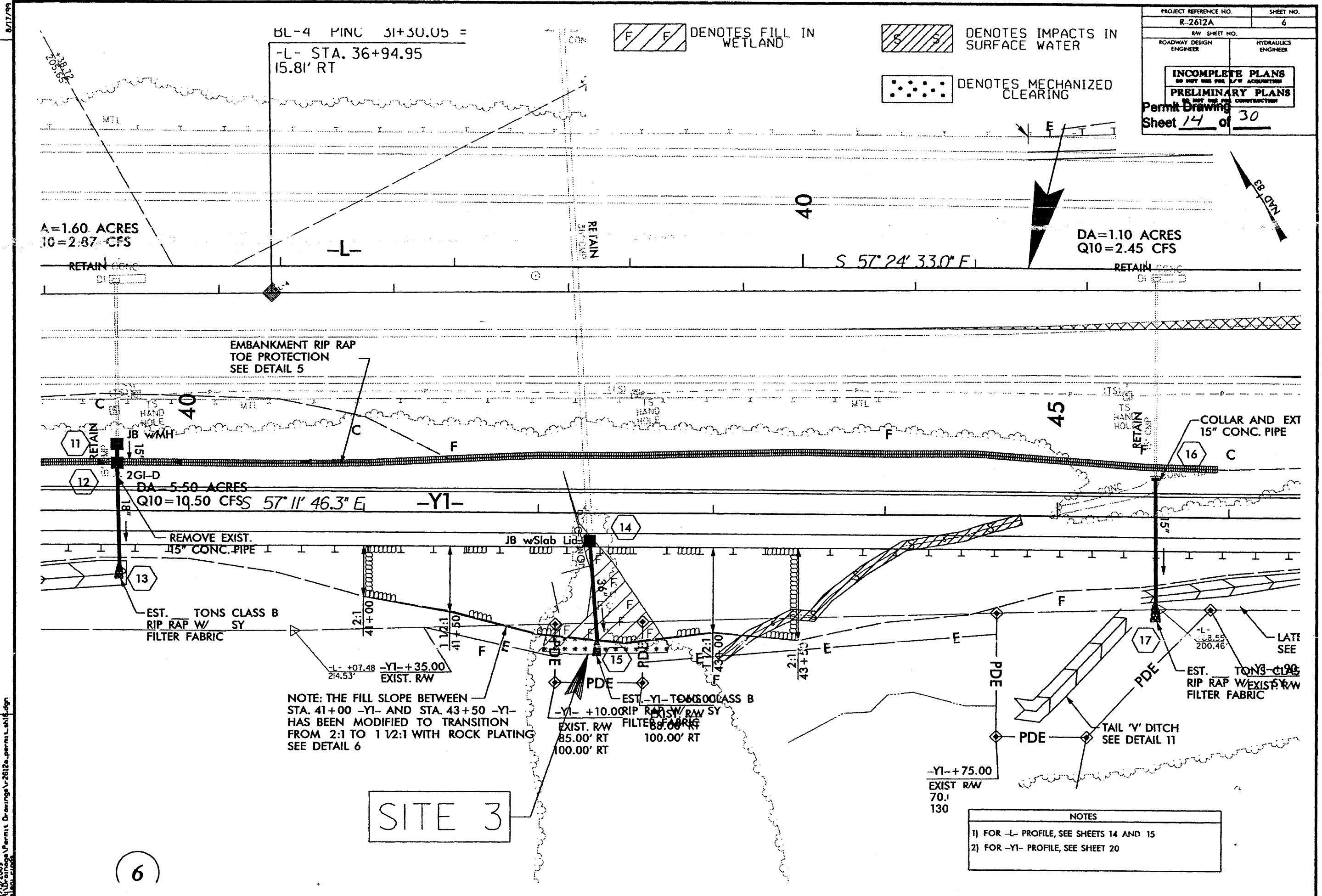


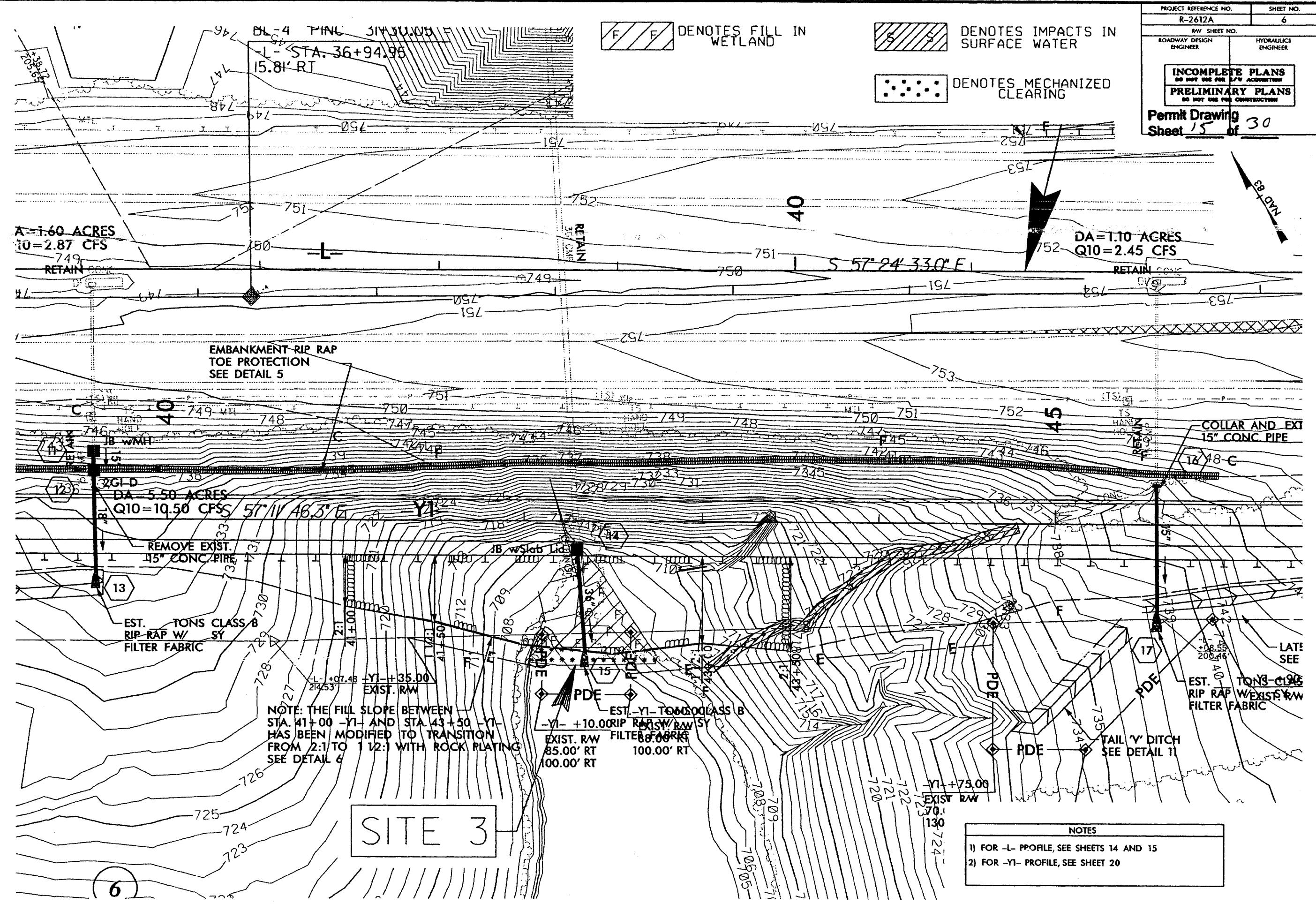


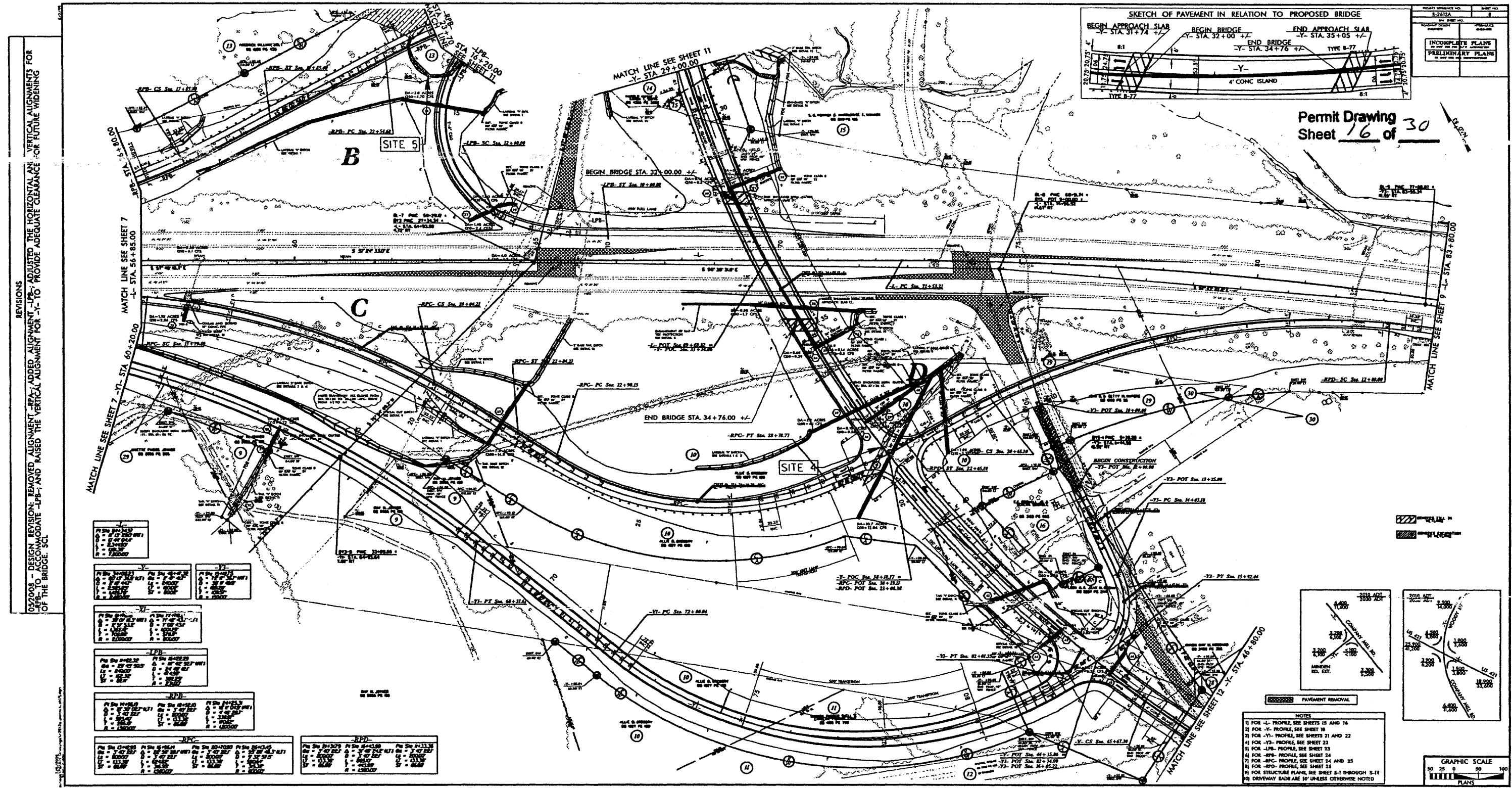
MATCH LINE SEE SHEET 5 -L- STA. 32+00.00

 DENOTES IMPACTS IN SURFACE WATER



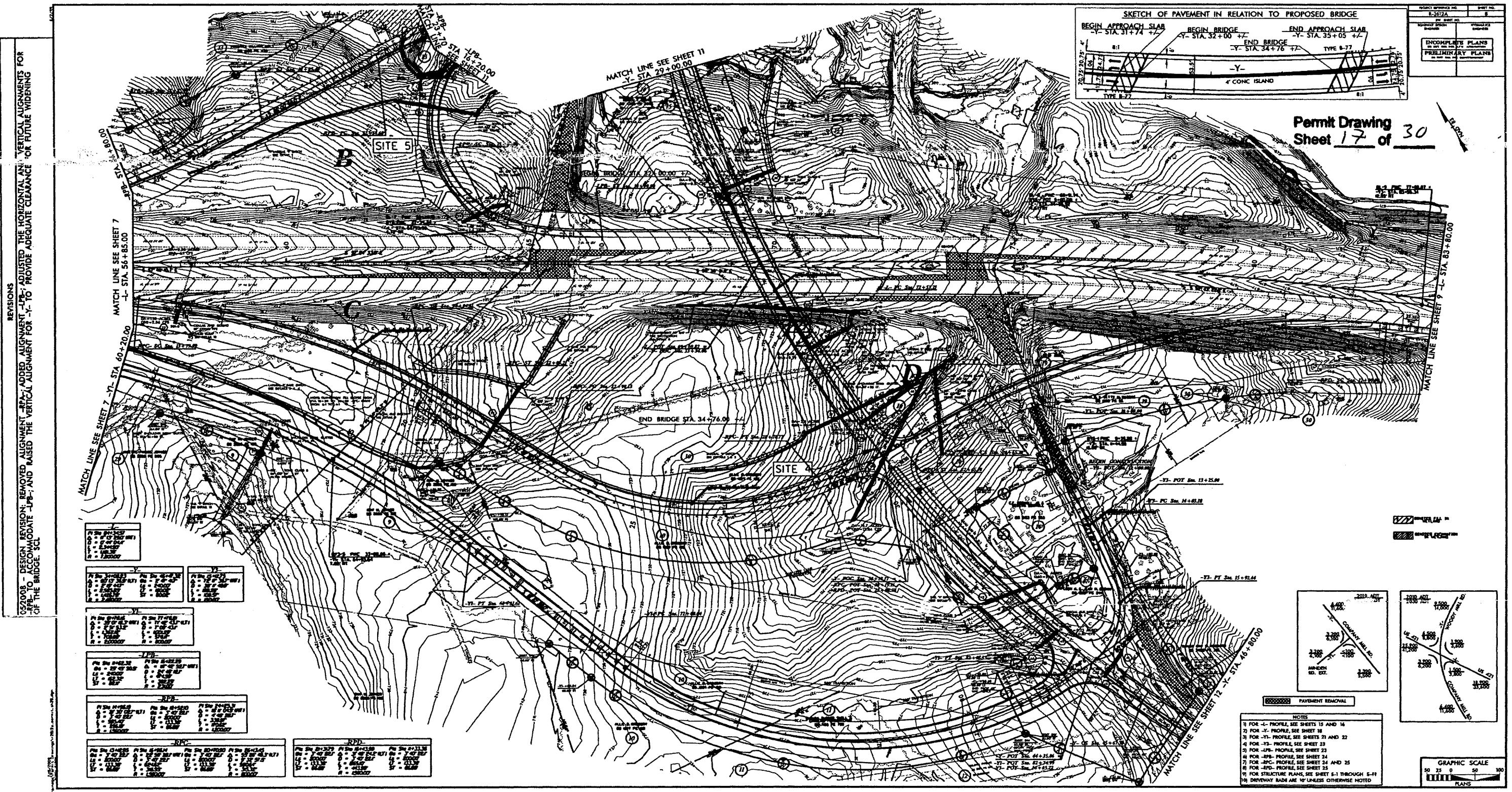


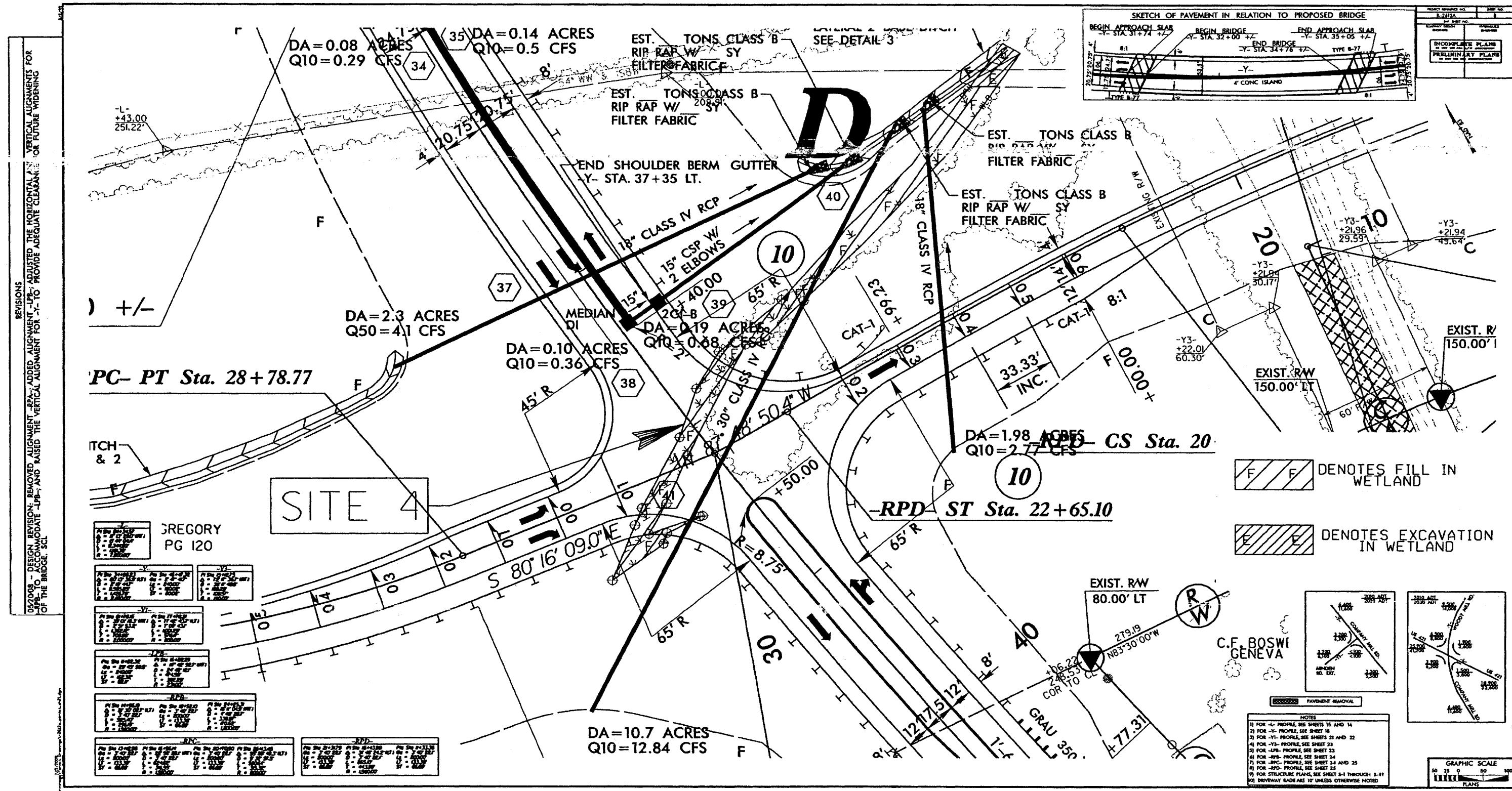


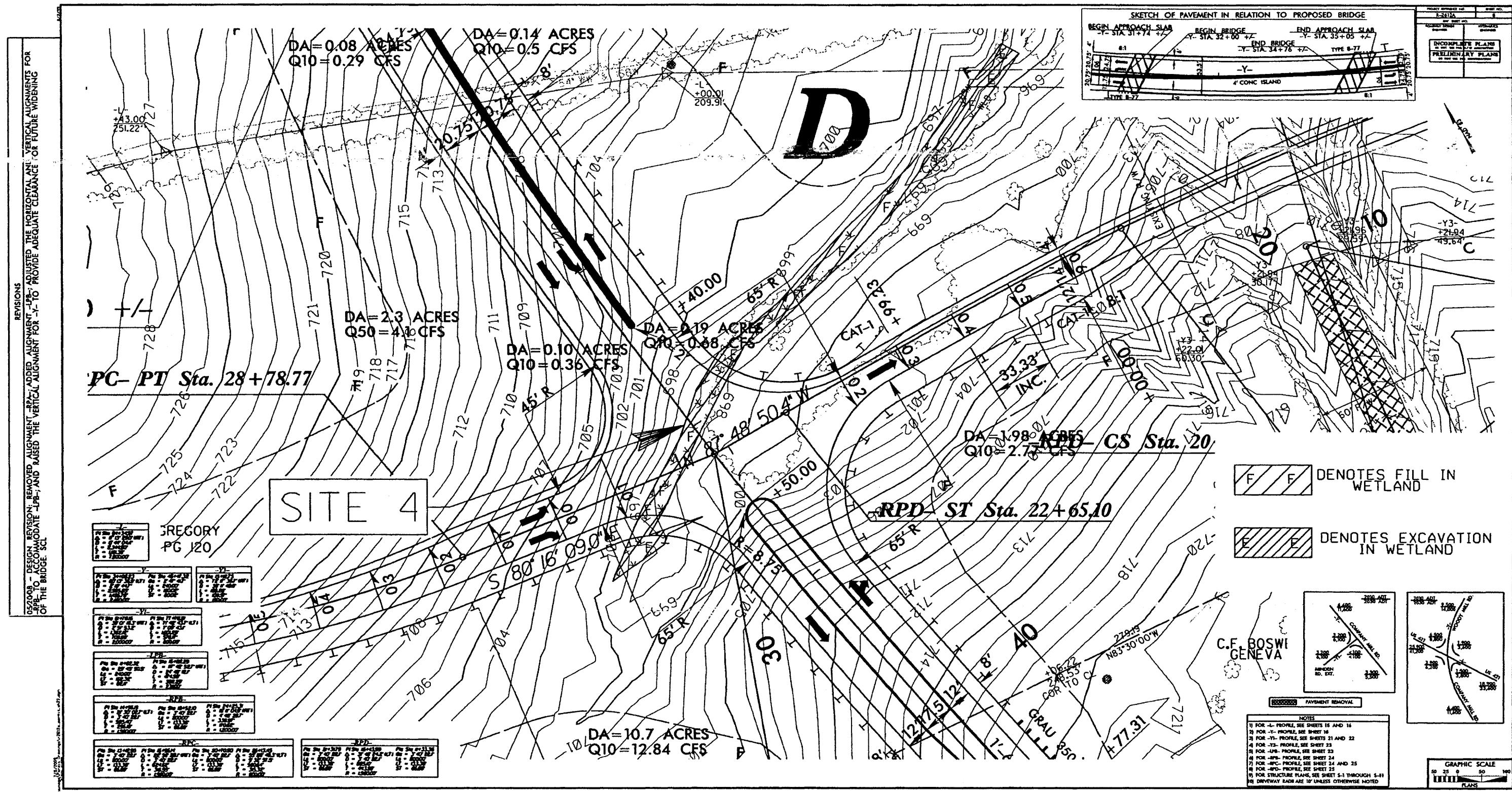


REVISIONS  
02/08/2008 - DESIGN REVISION: REMOVED ALIGNMENT "PA", ADDED ALIGNMENT "PB", ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR "PA", ACCOMMODATE "PB", AND RAISED THE VERTICAL ALIGNMENT FOR "Y" TO PROVIDE ADEQUATE CLEARANCE FOR FUTURE WIDENING

REVIEWS









REVISIONS  
05/20/08 - DESIGN REVISION: REMOVED ALIGNMENT -RPA-, ADDED ALIGNMENT -LPB-, AND ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR  
-RPB- TO ACCOMMODATE -LPB-.

7/15/2009  
R:\\orange\\Permit Drawings\\r-2612a-permit.sldwg

MATCH LINE SEE SHEET 10 - Y- STA 16+90.00

- [F/F] DENOTES FILL IN WETLAND
- [Hatched] DENOTES IMPACTS IN SURFACE WATER
- [Dots] DENOTES MECHANIZED CLEARING
- [Hatched] DENOTES EXCAVATION IN WETLAND

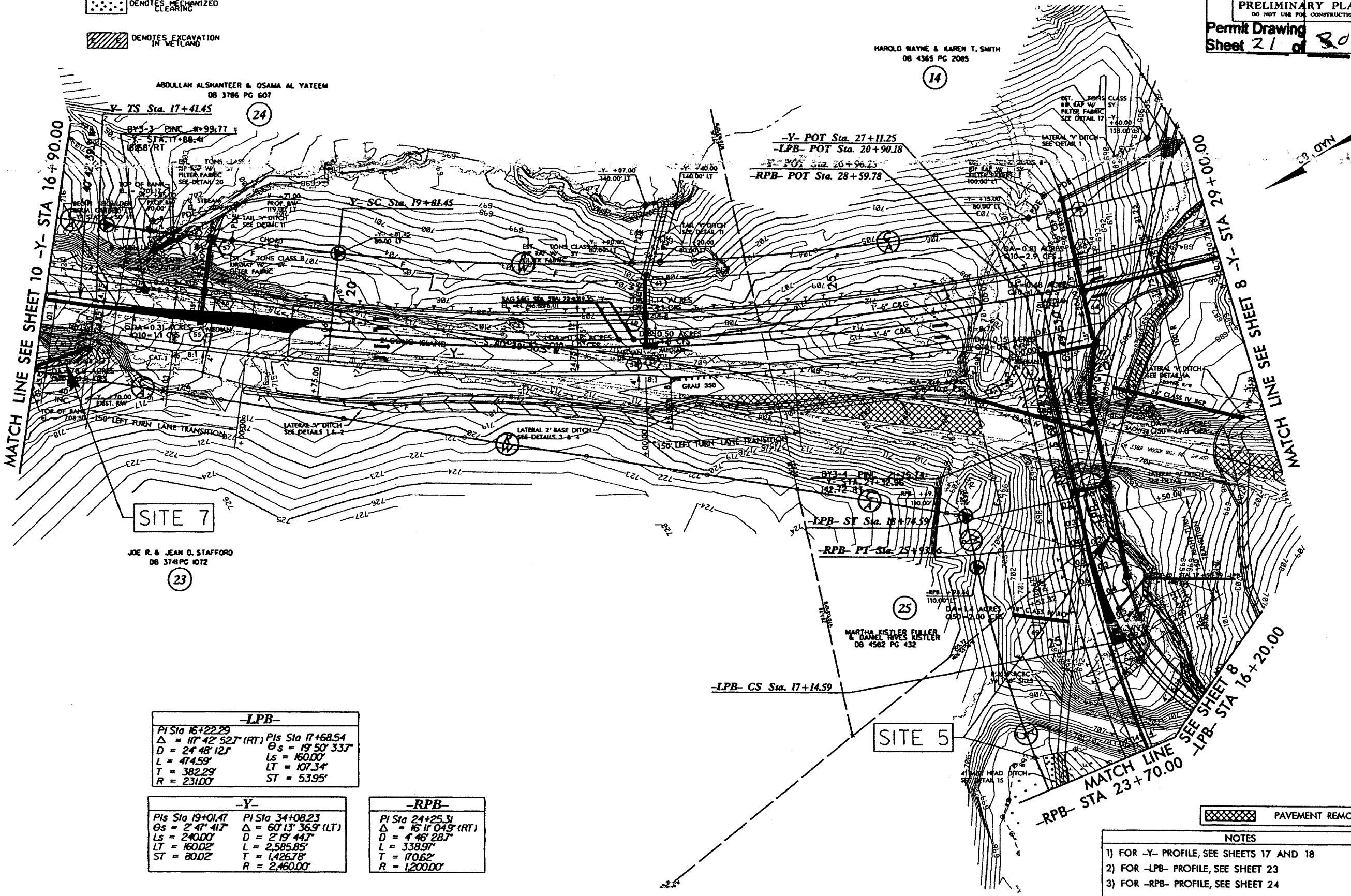
ABDULLAH ALSHANTEER & OSAMA AL YATEEM  
DB 3786 PG 607

Y- TS Sta. 17+41.45

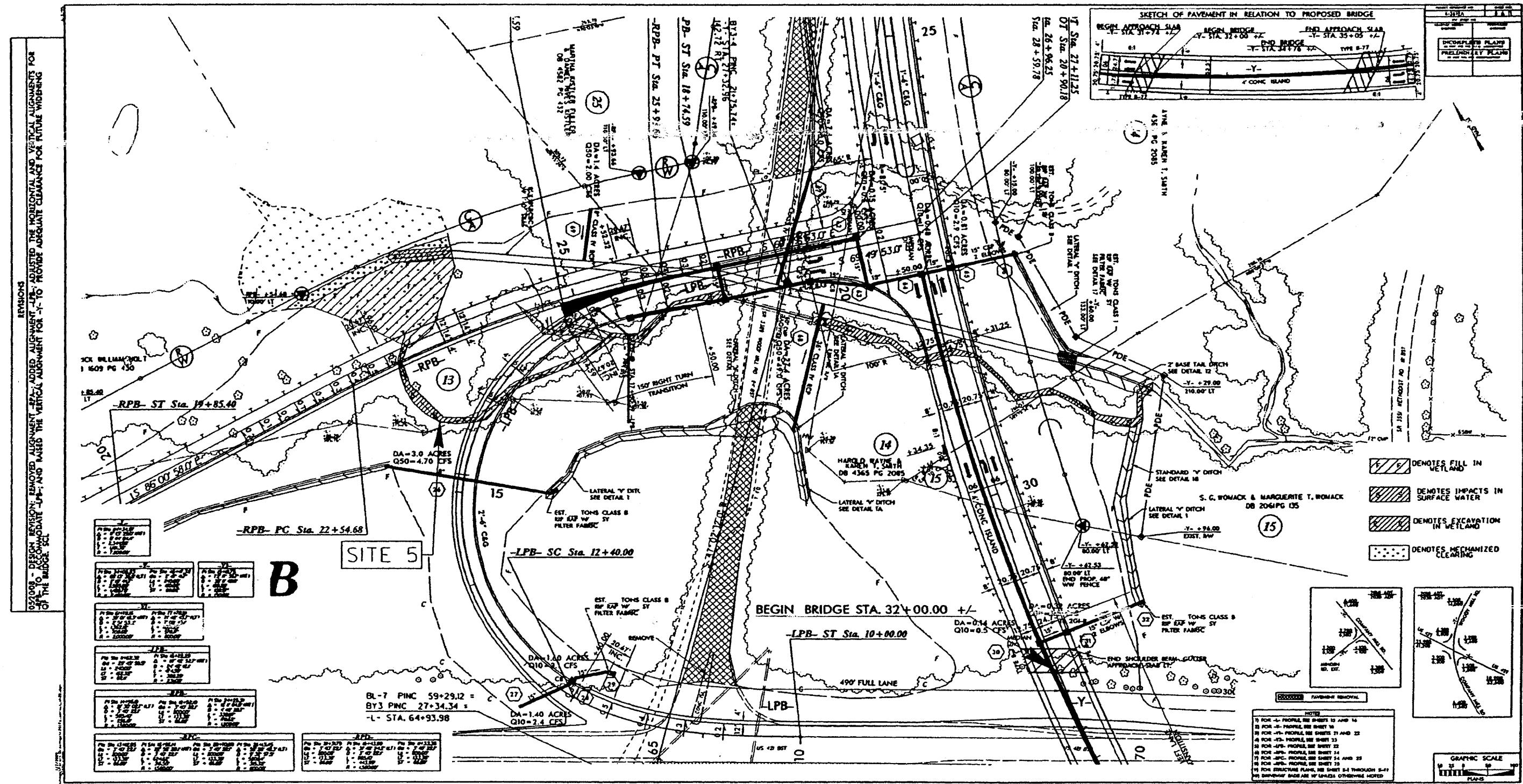
24

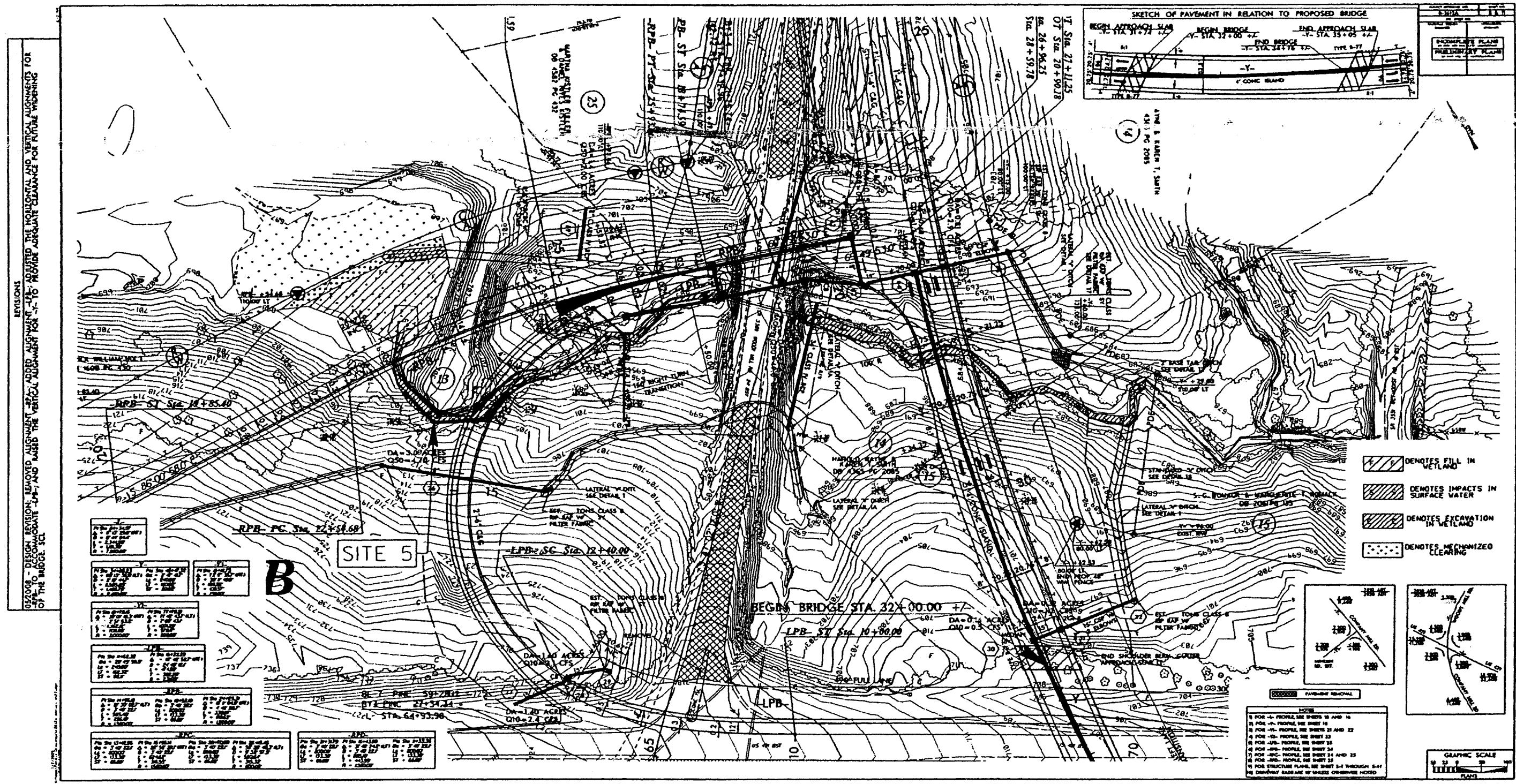
JOE R. & JEAN D. STAFFORD  
DB 3741PG 1072

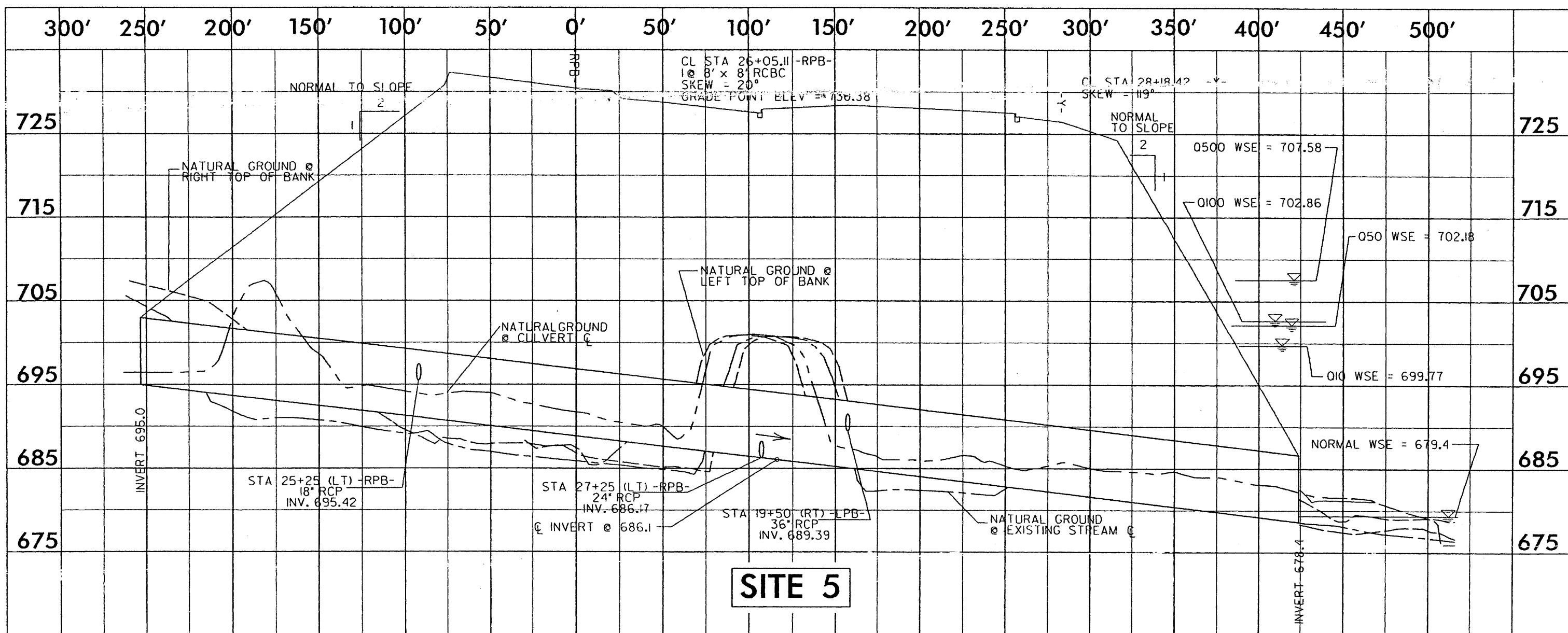
23



PROJECT REFERENCE NO.		SHEET NO.
R-2612A	11	
NW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR V/W ACQUISITION	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Permit Drawing Sheet 21 of 30		





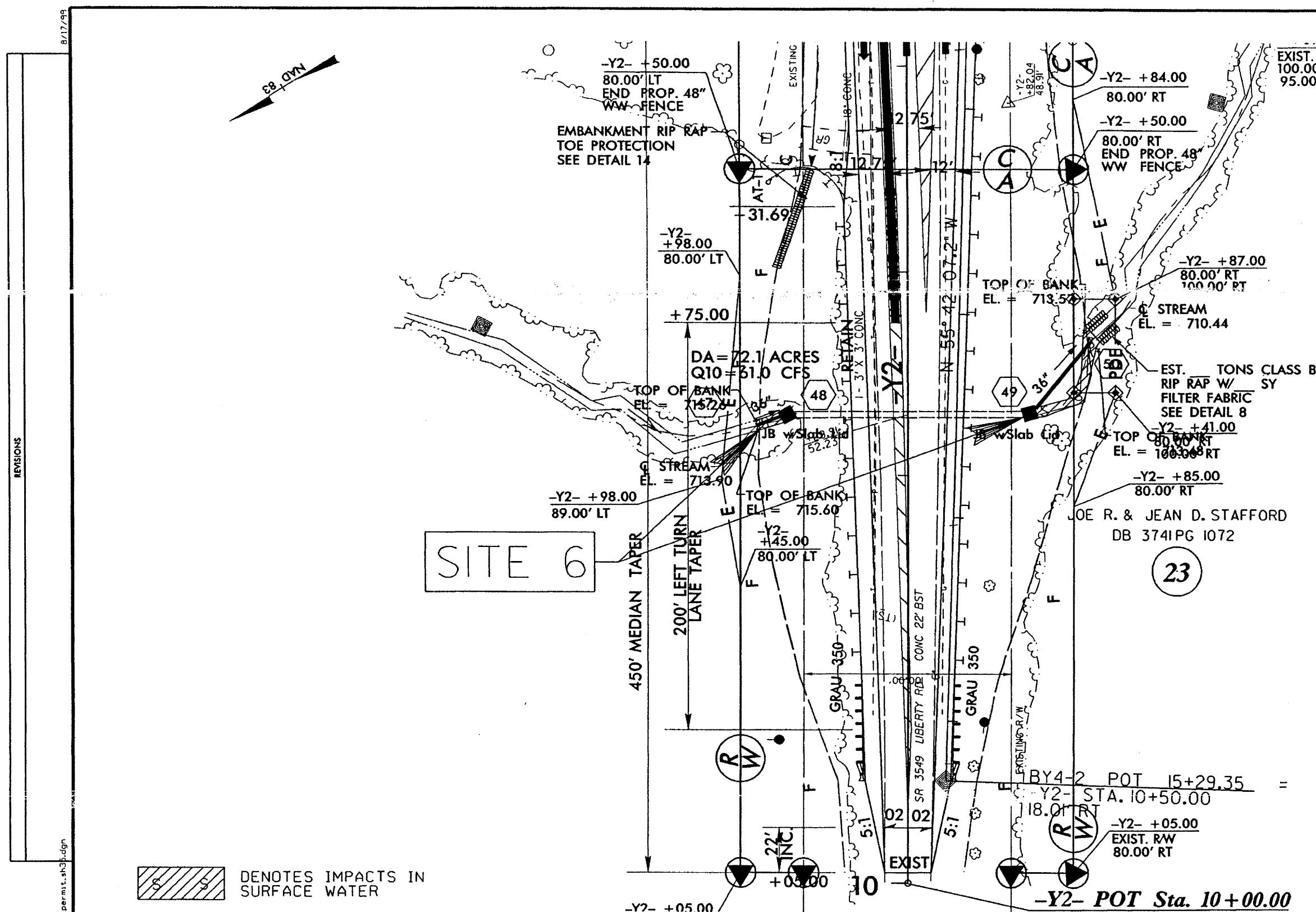




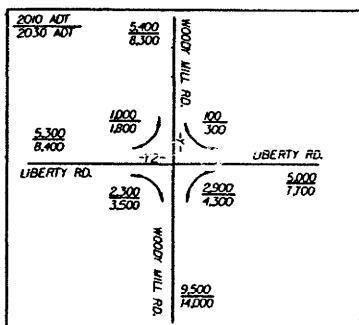


PROJECT REFERENCE NO.	SHEET NO.
R-2612A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

Permit Drawing  
Sheet 27 of 30



NOTES
1) FOR -Y- PROFILE, SEE SHEET 17
2) FOR -Y2- PROFILE, SEE SHEET 22
3) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED





05/2008 - DESIGN REVISION: REMOVED ALIGNMENT -RPB-; ADDED ALIGNMENT -PR-; ACCOMMODATE -PR-; ADDED ALIGNMENT -RPA-; ADDED ALIGNMENT -PR-; AND ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR REVISIONS

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DENOTES IMPACTS IN  
SURFACE WATER

**PAVEMENT REMOVAL**

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**NOTES**

- 1) FOR -Y- PROFILE, SEE SHEETS 17 AND 18
- 2) FOR -LPB- PROFILE, SEE SHEET 23
- 3) FOR -RPB- PROFILE, SEE SHEET 24

REVISIONS  
MENT - PBE AND ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR

052008 - DESIGN REVISION: REMOVE

-RPB- TO ACCOMMODATE -LPB-. SCL

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DENOTES IMPACTS IN  
SURFACE WATER



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**NOTES**

- 1) FOR -Y- PROFILE, SEE SHEETS 17 AND 18
- 2) FOR -LPB- PROFILE, SEE SHEET 23
- 3) FOR -RPB- PROFILE, SEE SHEET 24



3/15/06  
Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. R-2612A  
SHEET NO. 1-B

# CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

State Line \_\_\_\_\_  
County Line \_\_\_\_\_  
Township Line \_\_\_\_\_  
City Line \_\_\_\_\_  
Reservation Line \_\_\_\_\_  
Property Line \_\_\_\_\_  
Existing Iron Pin   
Property Corner   
Property Monument   
Parcel/Sequence Number   
Existing Fence Line   
Proposed Woven Wire Fence   
Proposed Chain Link Fence   
Proposed Barbed Wire Fence   
Existing Wetland Boundary   
Proposed Wetland Boundary   
Existing Endangered Animal Boundary   
Existing Endangered Plant Boundary 

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or UG Tank Cap   
Sign   
Well   
Small Mine   
Foundation   
Area Outline   
Cemetery   
Building   
School   
Church   
Dam 

## HYDROLOGY:

Stream or Body of Water \_\_\_\_\_  
Hydro, Pool or Reservoir   
Jurisdictional Stream   
Buffer Zone 1   
Buffer Zone 2   
Flow Arrow   
Disappearing Stream   
Spring   
Wetland   
Proposed Lateral, Tail, Head Ditch   
False Sump 

## RAILROADS:

Standard Gauge   
RR Signal Milepost   
Switch   
RR Abandoned   
RR Dismantled 

## RIGHT OF WAY:

Baseline Control Point   
Existing Right of Way Marker   
Existing Right of Way Line \_\_\_\_\_  
Proposed Right of Way Line   
Proposed Right of Way Line with Iron Pin and Cap Marker   
Proposed Right of Way Line with Concrete or Granite Marker   
Existing Control of Access   
Proposed Control of Access   
Existing Easement Line   
Proposed Temporary Construction Easement   
Proposed Temporary Drainage Easement   
Proposed Permanent Drainage Easement   
Proposed Permanent Utility Easement   
Proposed Temporary Utility Easement   
Proposed Permanent Easement with Iron Pin and Cap Marker 

## ROADS AND RELATED FEATURES:

Existing Edge of Pavement \_\_\_\_\_  
Existing Curb \_\_\_\_\_  
Proposed Slope Stakes Cut   
Proposed Slope Stakes Fill   
Proposed Wheel Chair Ramp   
Existing Metal Guardrail   
Proposed Guardrail   
Existing Cable Guiderrail   
Proposed Cable Guiderrail 

## VEGETATION:

Single Tree   
Single Shrub   
Hedge   
Woods Line   
Orchard   
Vineyard 

## EXISTING STRUCTURES:

### MAJOR:

Bridge, Tunnel or Box Culvert   
Bridge Wing Wall, Head Wall and End Wall 

### MINOR:

Head and End Wall   
Pipe Culvert \_\_\_\_\_  
Footbridge   
Drainage Box: Catch Basin, DI or JB   
Paved Ditch Gutter \_\_\_\_\_  
Storm Sewer Manhole   
Storm Sewer \_\_\_\_\_

## UTILITIES:

### POWER:

Existing Power Pole   
Proposed Power Pole   
Existing Joint Use Pole   
Proposed Joint Use Pole   
Power Manhole   
Power Line Tower   
Power Transformer   
UG Power Cable Hand Hole   
H-Frame Pole   
Recorded UG Power Line \_\_\_\_\_  
Designated UG Power Line (S.U.E.) \_\_\_\_\_

### TELEPHONE:

Existing Telephone Pole   
Proposed Telephone Pole   
Telephone Manhole   
Telephone Booth   
Telephone Pedestal   
Telephone Cell Tower   
UG Telephone Cable Hand Hole   
Recorded UG Telephone Cable \_\_\_\_\_  
Designated UG Telephone Cable (S.U.E.) \_\_\_\_\_  
Recorded UG Telephone Conduit \_\_\_\_\_  
Designated UG Telephone Conduit (S.U.E.) \_\_\_\_\_  
Recorded UG Fiber Optics Cable \_\_\_\_\_  
Designated UG Fiber Optics Cable (S.U.E.) \_\_\_\_\_

## WATER:

Water Manhole \_\_\_\_\_  
Water Meter \_\_\_\_\_  
Water Valve \_\_\_\_\_  
Water Hydrant \_\_\_\_\_  
Recorded UG Water Line \_\_\_\_\_  
Designated UG Water Line (S.U.E.) \_\_\_\_\_  
Above Ground Water Line 

## TV:

TV Satellite Dish   
TV Pedestal   
TV Tower   
UG TV Cable Hand Hole   
Recorded UG TV Cable \_\_\_\_\_  
Designated UG TV Cable (S.U.E.) \_\_\_\_\_  
Recorded UG Fiber Optic Cable \_\_\_\_\_  
Designated UG Fiber Optic Cable (S.U.E.) \_\_\_\_\_

## GAS:

Gas Valve   
Gas Meter   
Recorded UG Gas Line \_\_\_\_\_  
Designated UG Gas Line (S.U.E.) \_\_\_\_\_  
Above Ground Gas Line 

## SANITARY SEWER:

Sanitary Sewer Manhole   
Sanitary Sewer Cleanout   
UG Sanitary Sewer Line \_\_\_\_\_  
Above Ground Sanitary Sewer   
Recorded SS Forced Main Line \_\_\_\_\_  
Designated SS Forced Main Line (S.U.E.) \_\_\_\_\_

## MISCELLANEOUS:

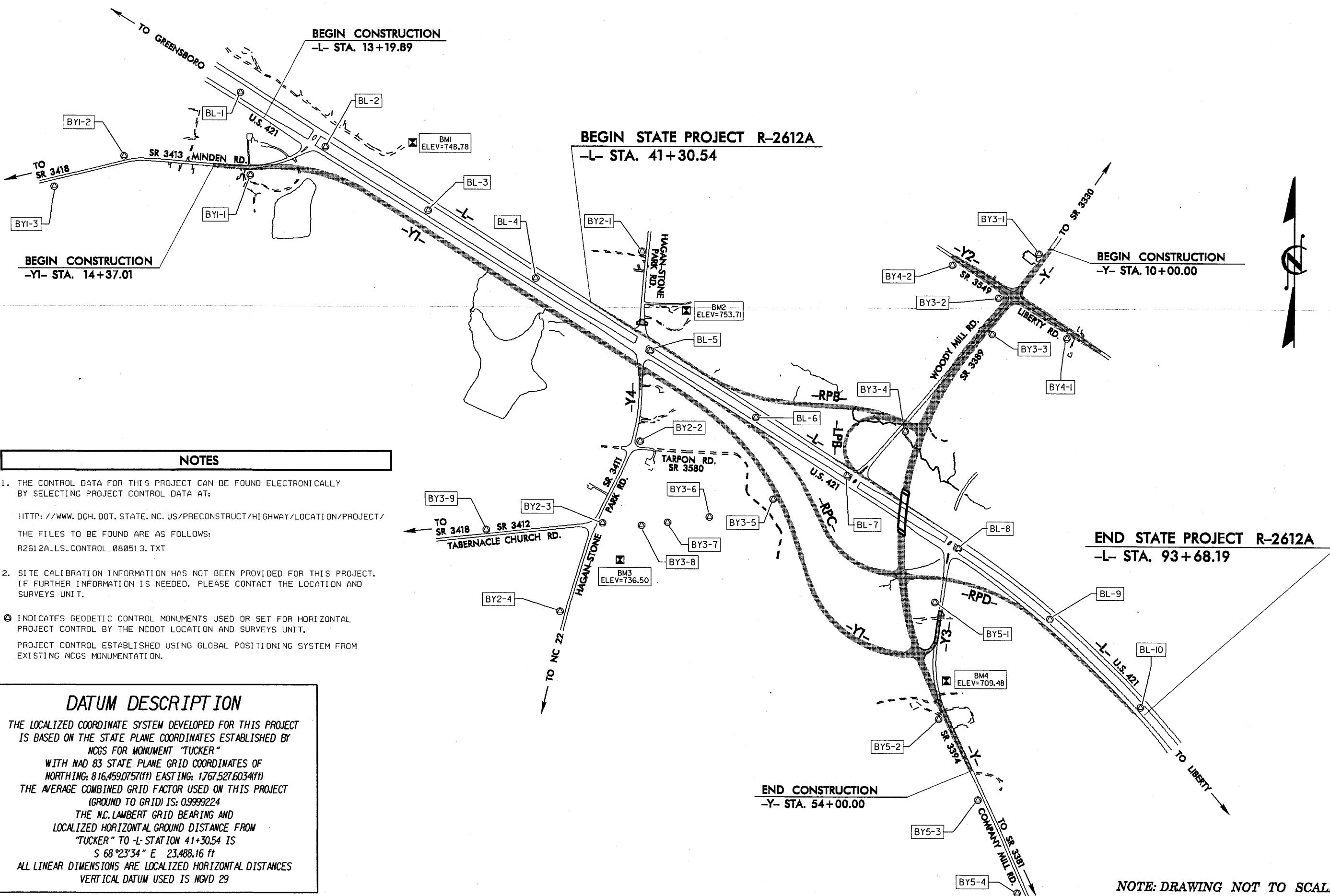
Utility Pole   
Utility Pole with Base   
Utility Located Object   
Utility Traffic Signal Box   
Utility Unknown UG Line \_\_\_\_\_  
UG Tank; Water, Gas, Oil   
A/G Tank; Water, Gas, Oil   
UG Test Hole (S.U.E.)   
Abandoned According to Utility Records \_\_\_\_\_  
End of Information \_\_\_\_\_

AATUR  
E.O.I.

## R-2612A SURVEY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
R-2612A	1C

Location and Surveys



# R-2612A SURVEY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
R-2612A	1D

Location and Surveys

## BASELINE DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1		BL-1	809429.0058	1786761.9658	732.72	10-64.99	37.98 RT
2		BL-2	809024.0391	1787409.3159	737.27	18-28.54	30.49 RT
3		BL-3	808542.4859	1788177.0769	742.63	27-34.79	22.67 RT
4		BL-4	808031.0939	1788969.7442	748.64	36-54.95	15.81 RT
5		BL-5	807506.9281	1789821.4016	753.19	46-77.99	9.48 RT
6		BL-6	806984.5392	1790636.5395	740.21	56-46.15	10.55 RT
7		BL-7	806532.7757	1791354.0195	719.41	64-93.98	4.72 RT
8		BL-8	806003.7013	1792158.1867	692.00	74-56.92	14.67 RT
9		BL-9	805460.8162	1792871.4188	665.60	83-55.34	12.95 RT
10		BL-10	804792.1503	1793557.0316	651.25	93-15.31	14.13 RT

## BENCHMARK DATA

BM1	ELEVATION = 748.78
N 009072	E 1788072
L STATION 23-61 367 LEFT	
RR SPIKE SET IN PP ON SOUTH SIDE OF	
CHAPPARAL ROAD	
BM2	ELEVATION = 753.71
N 007902	E 1790120
L STATION 47-70 400 LEFT	
RR SPIKE SET IN 15' OAK EAST SIDE OF	
HAGAN-STONE PARK ROAD	
BM3	ELEVATION = 736.50
N 005908	E 1789620
Y4 STATION 21-19	
S 17° 49' 03.8" E DIST 420.58	
RR SPIKE IN 20' OAK ON EAST SIDE OF	
HAGAN-STONE PARK ROAD	
BM4	ELEVATION = 709.48
N 004995	E 1792091
Y STATION 47-06 120 LEFT	
RR SPIKE IN 20' OAK ON EAST SIDE OF	
COMPANY MILL ROAD	

## NOTES

- 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:  
 R2612A.LS\_CONTROL\_080513.TXT
- SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

④ 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 NCGS MONUMENTATION.

## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "TUCKER"

WITH NAD 83 STATE PLANE GRID COORDINATES OF  
 NORTHING: 816,459.0757(ft) EASTING: 1767,527,6034(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999224

THE NC. LAMBERT GRID BEARING AND  
 LOCALIZED HORIZONTAL GROUND DISTANCE FROM  
 "TUCKER" TO L-STATION 41+30.54 IS  
 S 68°23'34" E 23,488.16 ft

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NGVD 29

BY3	POINT	DESC.	NORTH	EAST	ELEVATION	STATION	OFFSET
18	BY3-1	808215.9912	1792810.3904	749.37	Y 10-92.42	17.07 RT	
19	BY3-2	807913.5033	1792548.6598	736.25	Y 14-92.96	35.57 RT	
20	BY3-3	807654.0422	1792398.4567	722.56	Y 17-88.41	18.68 LT	
21	BY3-4	806913.4803	1791762.7985	700.18	Y 27-32.96	142.72 RT	
35	BY3-7	806532.7757	1791354.0195	719.41	L 64-93.98	4.72 RT	
22	BY3-5	806442.4056	1790793.6651	738.03	Y1 64-93.64	7.82 RT	
23	BY3-6	806269.3734	1790286.6753	725.04	Y1 63-34.12	513.96 RT	
24	BY3-7	806229.4486	1789971.1723	728.90	Y4 19-72.17	463.65 LT	
25	BY3-8	806205.9486	1789780.4733	735.70	Y4 20-79.34	304.20 LT	
36	BY3-3	806193.5457	1789457.3220	728.19	Y4 OUTSIDE PROJECT LIMITS		
26	BY3-9	806111.9442	1798620.9270	689.22	Y4 OUTSIDE PROJECT LIMITS		

BY4	POINT	DESC.	NORTH	EAST	ELEVATION	Y2 STATION	OFFSET
27	BY4-1	807630.3112	1793021.5996	735.52	20-78.91	16.51 RT	
37	BY4-2	807913.5033	1792548.8598	736.25	15-28.07	32.39 RT	
28	BY4-2	808183.0113	1792153.7464	743.90	10-50.00	18.01 RT	

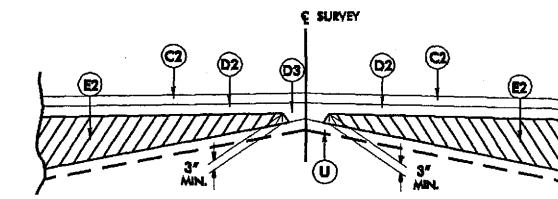
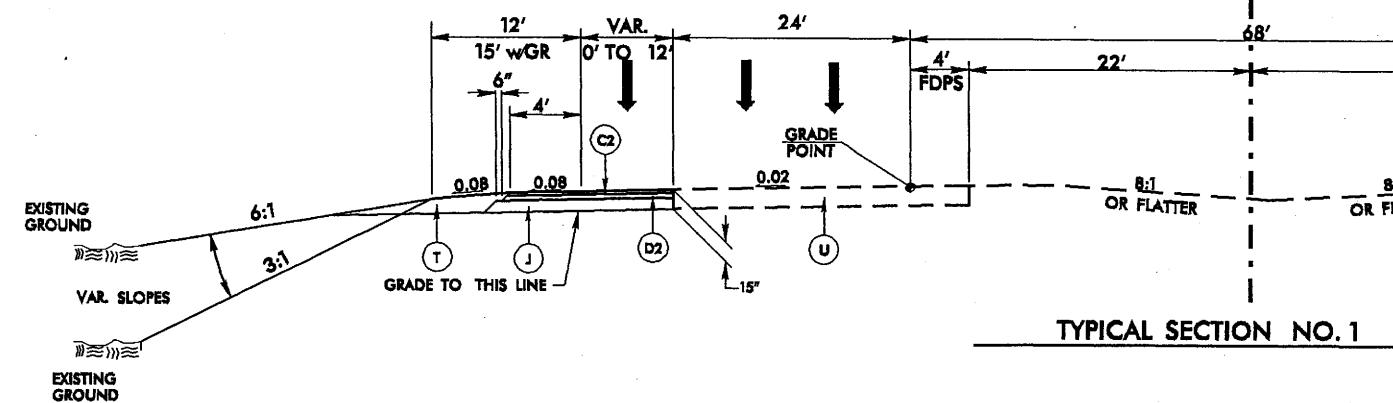
BY5	POINT	DESC.	NORTH	EAST	ELEVATION	STATION	OFFSET
38	BL-8	806003.7013	1792158.1867	692.00	Y3 OUTSIDE PROJECT LIMITS		
29	BY5-1	805582.2074	1792034.4399	719.68	Y3 11-44.98	15.92 RT	
30	BY5-2	804717.7062	1792060.3184	724.51	Y 49-44.90	24.92 RT	
31	BY5-3	804184.7957	1792358.8962	697.92	Y 56-26.59	14.61 RT	
32	BY5-4	803407.4985	1792667.5082	648.71	Y OUTSIDE PROJECT LIMITS		

PROJECT REFERENCE NO. R-2612A	SHEET NO. 2
REV SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>PRELIMINARY PLANS</b> <small>DO NOT USE FOR CONSTRUCTION</small>	

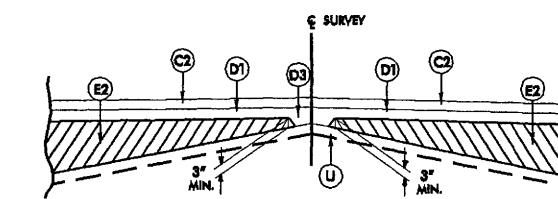
## PAVEMENT SCHEDULE

C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE 89.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE 89.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE 89.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I18.0B, AT AN AVERAGE RATE OF 288 LBS. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I18.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I18.0B, 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. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
J	PROP. 8" AGGREGATE BASE COURSE.
R1	1'-6" CONCRETE CURB AND GUTTER.
R2	2'-6" CONCRETE CURB AND GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING NO.1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING NO.2)
W3	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING NO.3)
W4	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING NO.4)

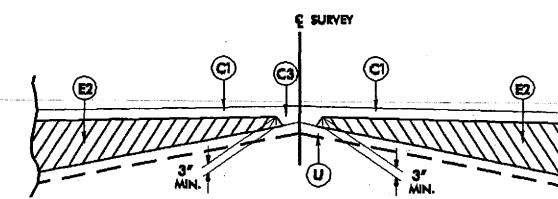
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



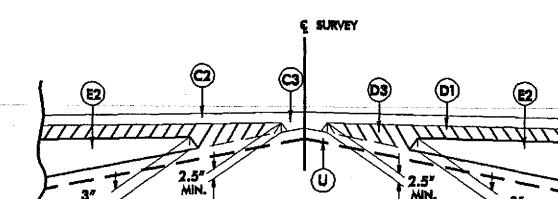
Detail Showing Method of Wedging No. 1



Detail Showing Method of Wedging No. 2

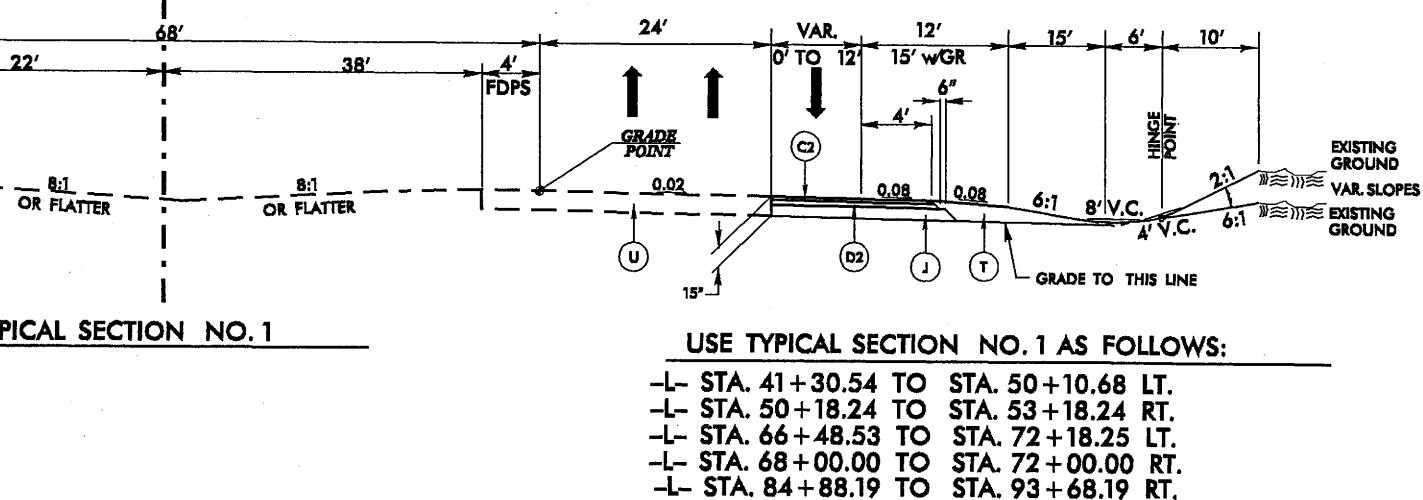


Detail Showing Method of Wedging No. 3



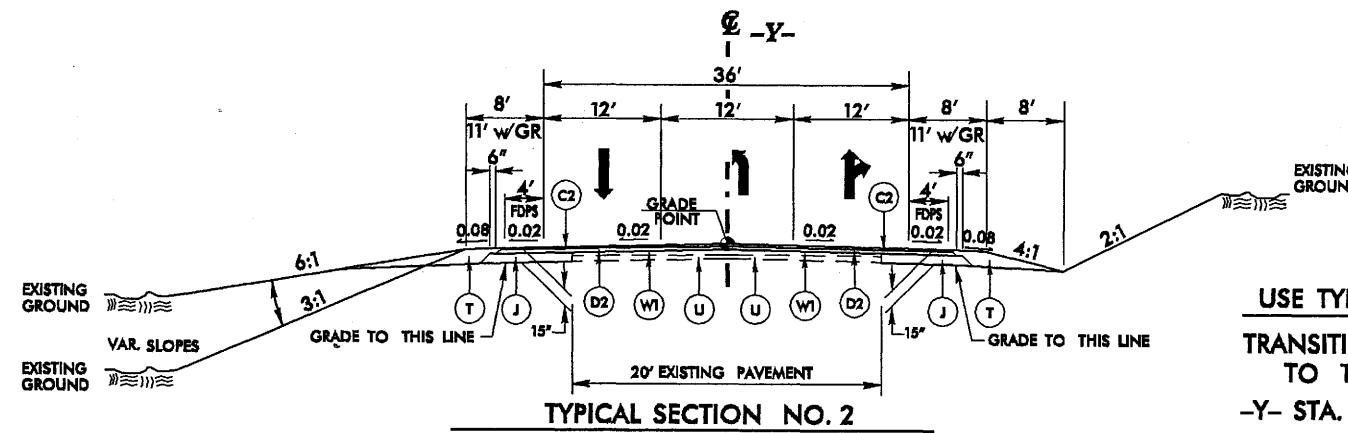
Detail Showing Method of Wedging No. 4

—L— (US 421)

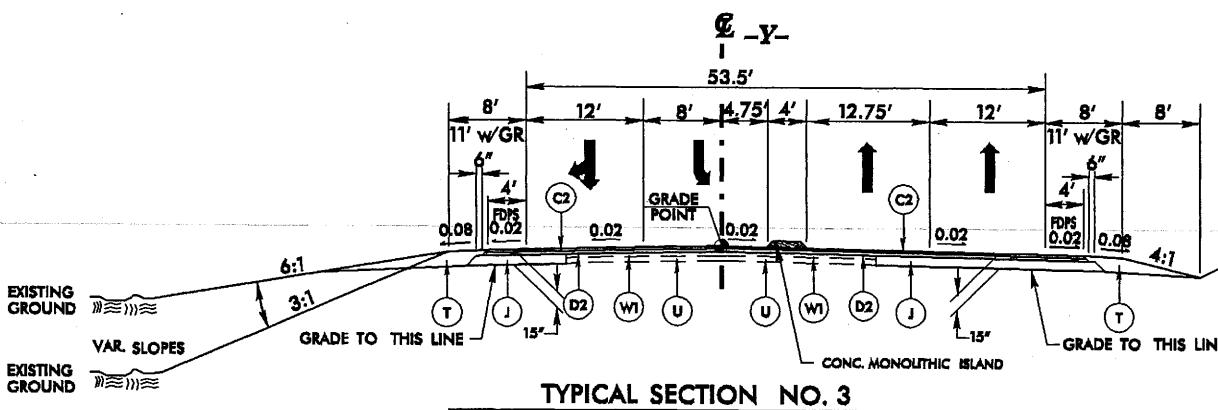


C1	2" 89.5B
C2	3" 89.5B
C3	VAR. 89.5B
D1	2 1/2" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
E1	4" B25.0B
E2	VAR. B25.0B
J	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING DETAIL No. 1
W2	WEDGING DETAIL No. 2
W3	WEDGING DETAIL No. 3
W4	WEDGING DETAIL No. 4

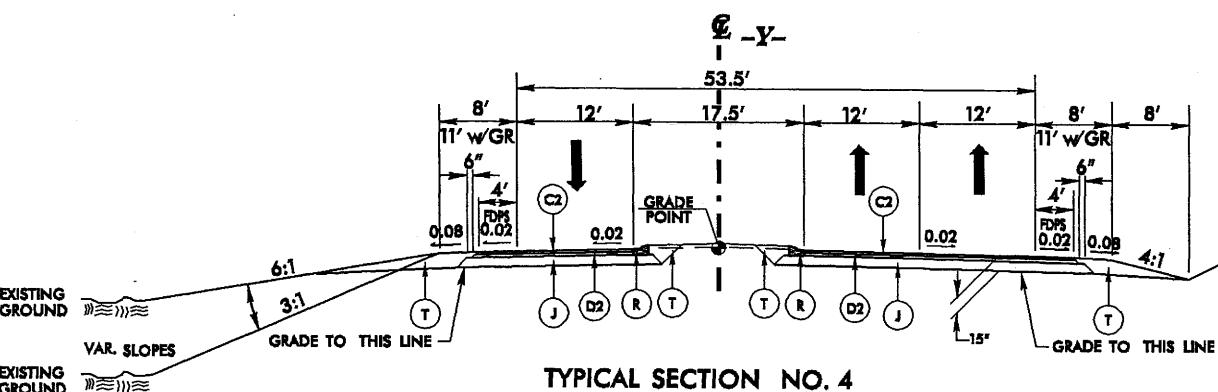
PROJECT REFERENCE NO.	SHEET NO.
R-2612A	2-A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	



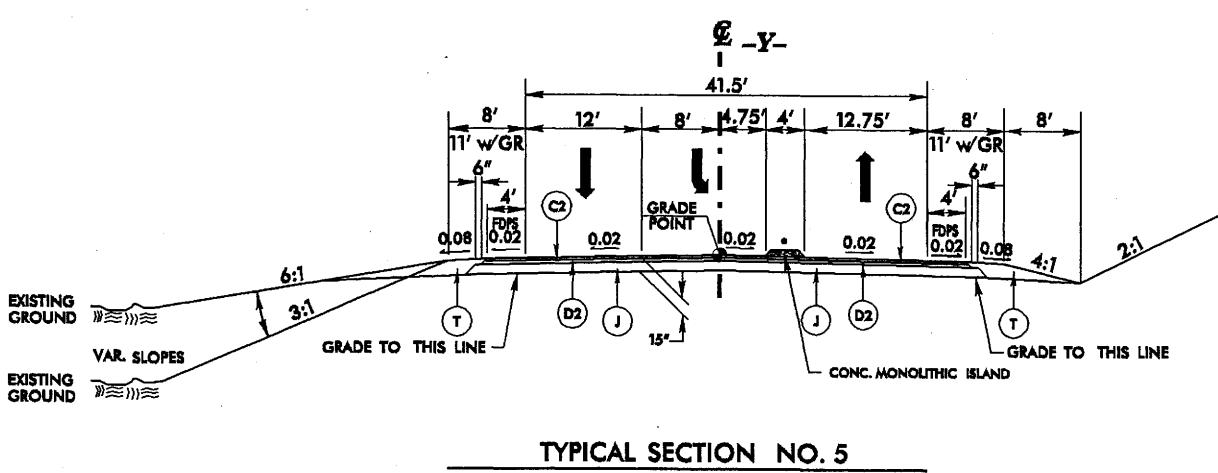
**USE TYPICAL SECTION NO. 2 AS FOLLOWS:**  
**TRANSITION FROM EXISTING AT -Y- STA. 10+00.00  
 TO TYPICAL NO. 2 AT -Y- STA. 12+00.00  
 -Y- STA. 12+00.00 TO STA. 15+35.00**



**USE TYPICAL SECTION NO. 3 AS FOLLOWS:**  
**-Y- STA. 15+35.00 TO STA. 17+50.00**



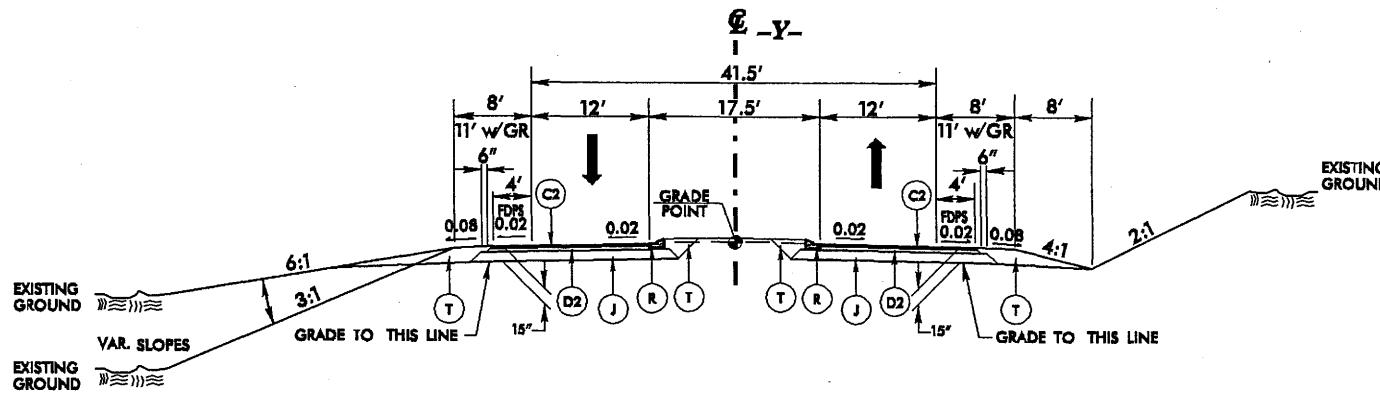
**USE TYPICAL SECTION NO. 4 AS FOLLOWS:**  
**TRANSITION FROM TYPICAL NO. 3 AT -Y- STA. 17+50.00  
 TO TYPICAL NO. 4 AT STA. 19+00.00  
 -Y- STA. 19+00.00 TO STA. 26+50.00**



**USE TYPICAL SECTION NO. 5 AS FOLLOWS:**  
**-Y- STA. 26+50.00 TO STA. 31+50.00  
 TRANSITION FROM TYPICAL NO. 5 AT -Y- STA. 31+50.00  
 TO REVERSE OF TYPICAL NO. 5 AT STA. 35+50.00  
 -Y- STA. 35+50.00 TO STA. 38+50.00 (REVERSE)  
 \* NO ISLAND FROM 26+50.00 TO 27+50.00 AND  
 37+40.00 TO 38+50.00**

8/17/99

C1	2" 69.5B
C2	3" 69.5B
C3	VAR. 69.5B
D1	2 1/2" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
E1	4" B25.0B
E2	VAR. B25.0B
J	8" ABC
R1	1'-6" C & G
R2	2'-8" C & G
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING DETAIL No. 1
W2	WEDGING DETAIL No. 2
W3	WEDGING DETAIL No. 3
W4	WEDGING DETAIL No. 4

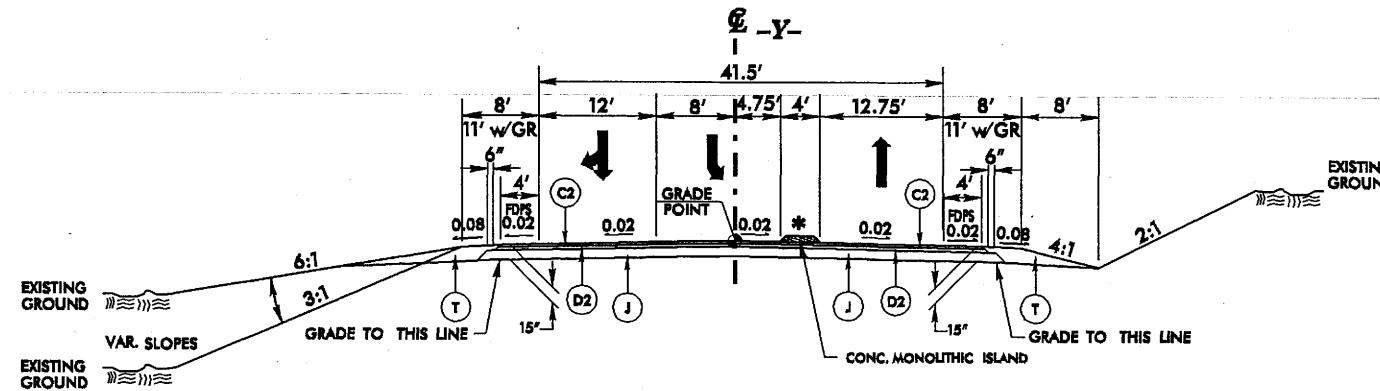


TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS:

-Y- STA. 38+50.00 TO STA. 40+00.00

TRANSITION FROM TYPICAL NO. 6 AT -Y- STA. 40+00.00  
TO TYPICAL NO. 7 AT STA. 41+50.00



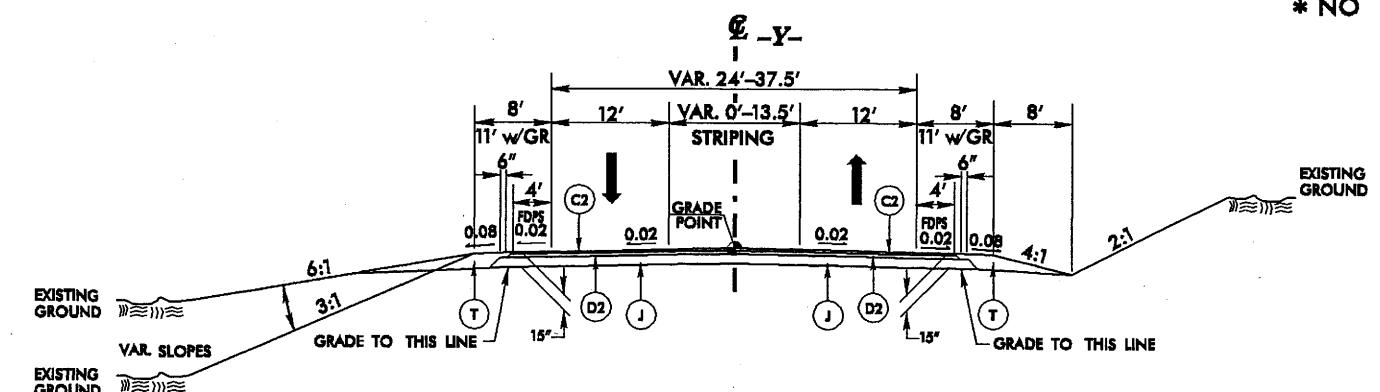
TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7 AS FOLLOWS:

-Y- STA. 41+50.00 TO STA. 44+65.00

-Y- STA. 44+65.00 TO STA. 46+80.00 (REVERSE)

\* NO ISLAND FROM 43+65.00 TO 44+65.00



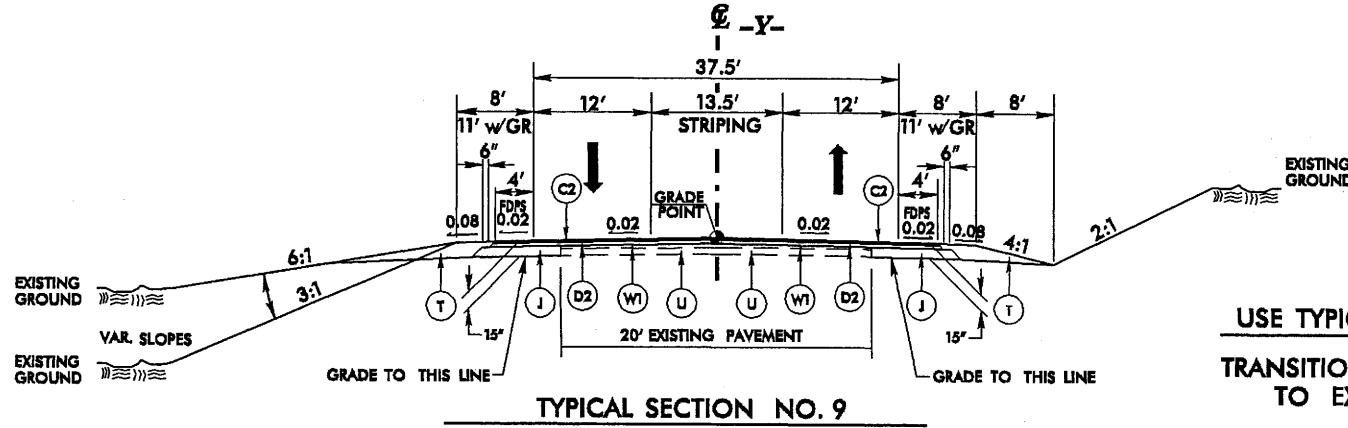
TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 AS FOLLOWS:

-Y- STA. 46+80.00 TO STA. 50+00.00

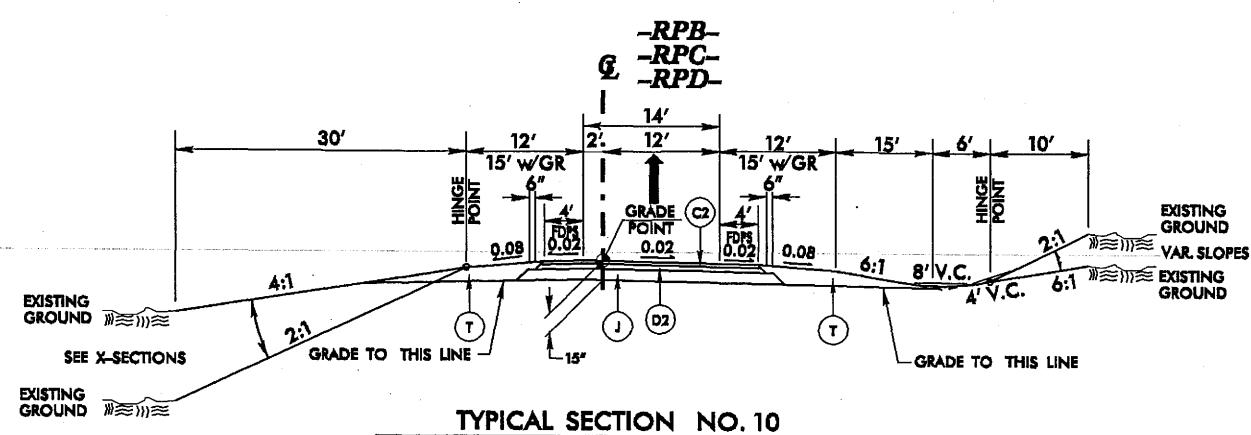
PROJECT REFERENCE NO. R-2612A SHEET NO. 2-B  
R/W SHEET NO. 1  
ROADWAY DESIGN ENGINEER PAVEMENT DESIGN ENGINEER  
PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

C1	2" 89.5B
C2	3" 89.5B
C3	VAR. 89.5B
D1	2 1/2" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
E1	4" B25.0B
E2	VAR. B25.0B
J	8" ABC
R1	1'-6" C & G
R2	2'-8" C & G
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING DETAIL NO. 1
W2	WEDGING DETAIL NO. 2
W3	WEDGING DETAIL NO. 3
W4	WEDGING DETAIL NO. 4



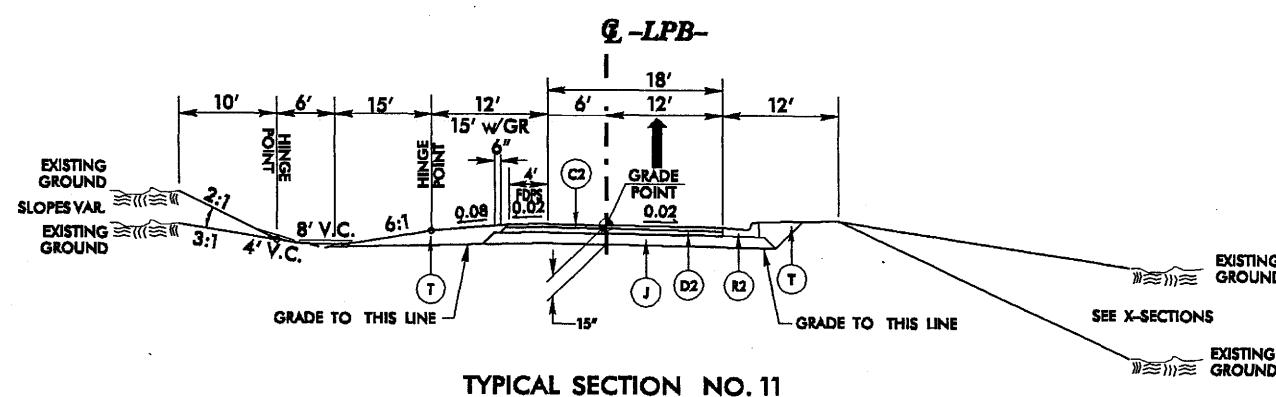
USE TYPICAL SECTION NO. 9 AS FOLLOWS:

TRANSITION FROM TYPICAL NO. 9 TO -Y- STA. 50+00.00  
TO EXISTING AT STA. 54+00.00



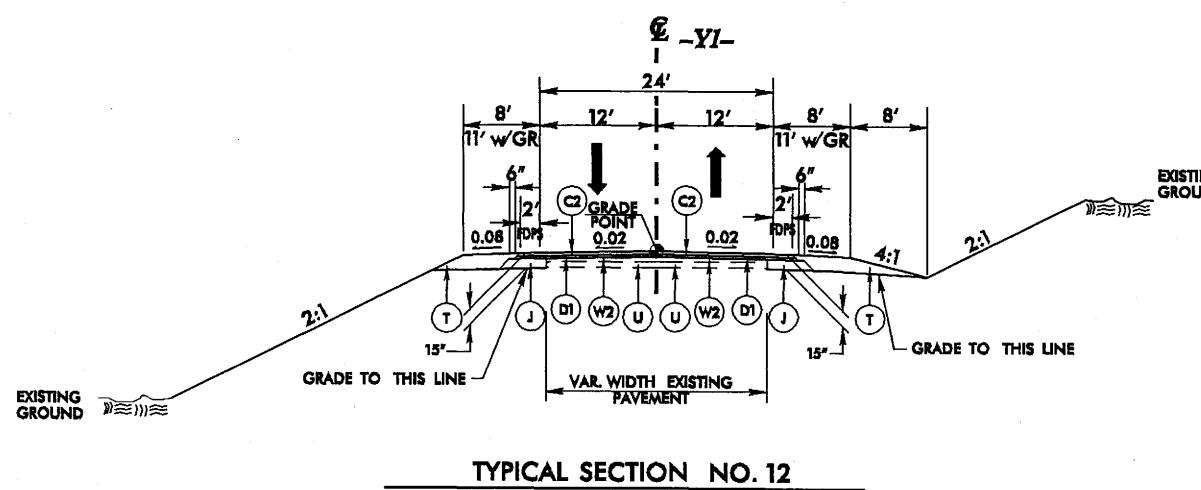
USE TYPICAL SECTION NO. 10 AS FOLLOWS:

-LPB- STA. 10+00.00 TO STA. 20+69.43  
-RPB- STA. 10+00.00 TO STA. 28+39.27 (REVERSE)  
-RPC- STA. 10+00.00 TO STA. 29+97.68  
-RPD- STA. 10+00.00 TO STA. 22+87.47 (REVERSE)



USE TYPICAL SECTION NO. 11 AS FOLLOWS:

-LPB- STA. 12+26.72 TO STA. 20+69.43



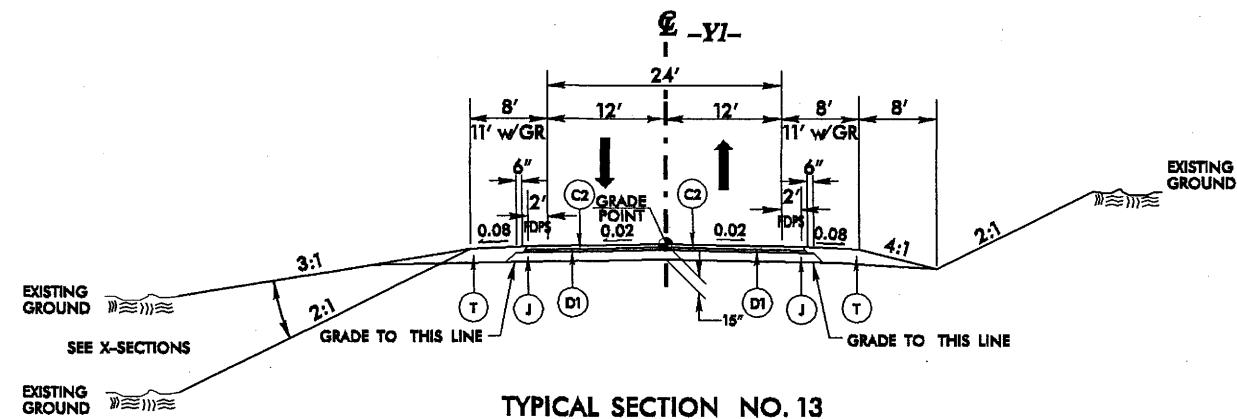
USE TYPICAL SECTION NO. 12 AS FOLLOWS:

TRANSITION FROM EXISTING AT -Y1- STA.14+37.00  
TO TYPICAL NO. 12 AT -Y1- STA. 15+37.00  
-Y1- STA. 15+37.00 TO STA. 18+99.41

PROJECT REFERENCE NO.	R-2612A	SHEET NO.	2-C
REV SHEET NO.	R-2612A		
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

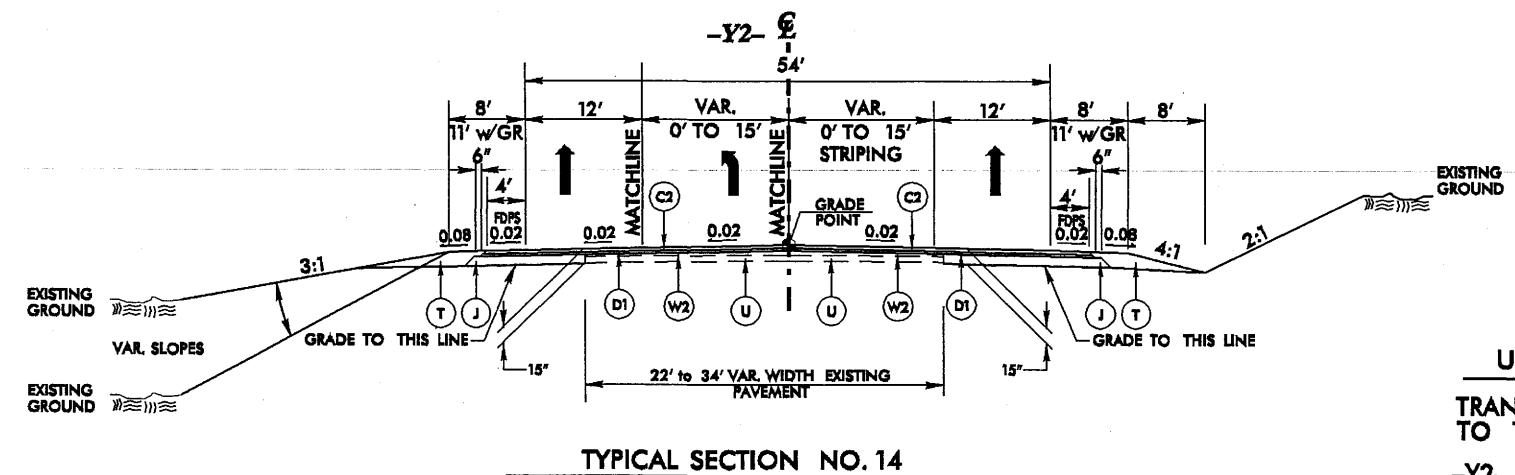
817PP

C1	2" 69.5B
C2	3" 69.5B
C3	VAR. 69.5B
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
E1	4" B25.0B
E2	VAR. B25.0B
J	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING DETAIL No. 1
W2	WEDGING DETAIL No. 2
W3	WEDGING DETAIL No. 3
W4	WEDGING DETAIL No. 4



USE TYPICAL SECTION NO. 13 AS FOLLOWS:

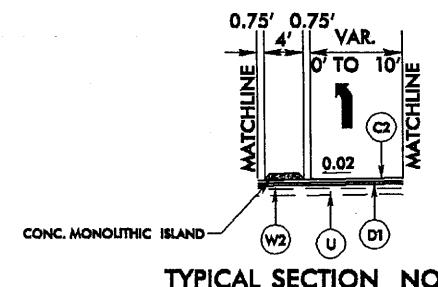
-Y1- STA. 18+99.41 TO STA. 82+52.97



USE TYPICAL SECTION NO. 14 AS FOLLOWS:

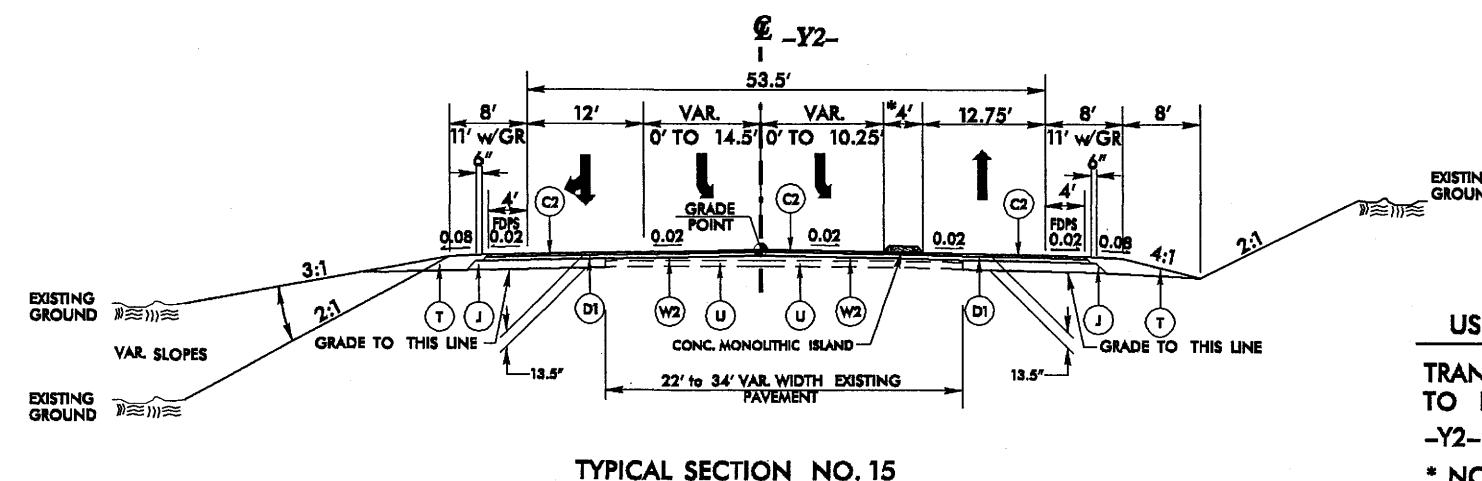
TRANSITION FROM EXISTING AT -Y2- STA. 10+05.00  
TO TYPICAL NO. 14 AT -Y2- STA. 14+75.00

-Y2- STA. 14+75.00 TO STA. 15+34.85



USE IN CONJUNCTION WITH  
TYPICAL SECTION NO. 14 AS FOLLOWS:

-Y2- STA. 12+75.00 TO STA. 14+75.00



USE TYPICAL SECTION NO. 15 AS FOLLOWS:

TRANSITION FROM TYPICAL NO. 15 AT -Y2- STA. 18+70.00  
TO EXISTING AT -Y2- STA. 23+50.00

-Y2- STA. 14+77.98 TO STA. 18+70.00

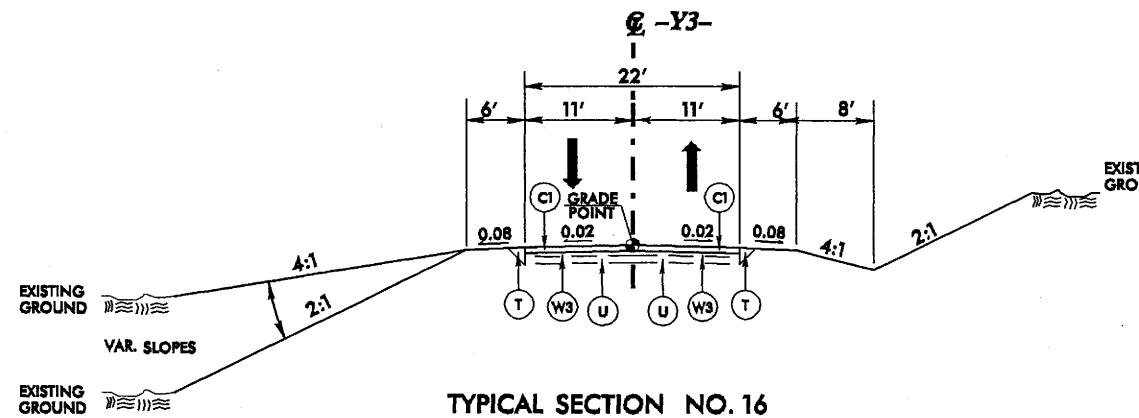
\* NO ISLAND FROM -Y2- STA. 14+77.98 TO 16+30.00  
AND -Y2- STA. 18+70 TO 23+50.00

PROJECT REFERENCE NO.	SHEET NO.
R-2612A	2-D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

**PRELIMINARY PLANS**

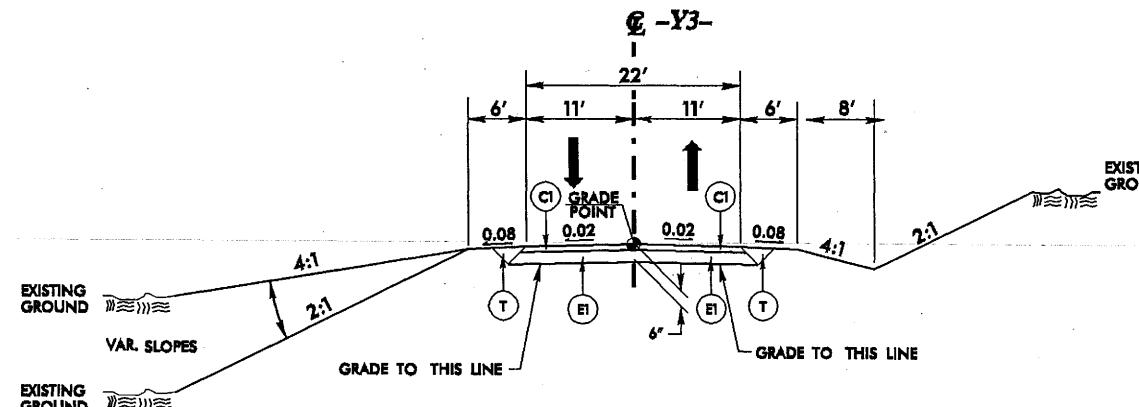
84789

C1	2" 89.5B
C2	3" 89.5B
C3	VAR. 89.5B
D1	2 1/2" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
E1	4" B25.0B
E2	VAR. B25.0B
J	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING DETAIL No. 1
W2	WEDGING DETAIL No. 2
W3	WEDGING DETAIL No. 3
W4	WEDGING DETAIL No. 4



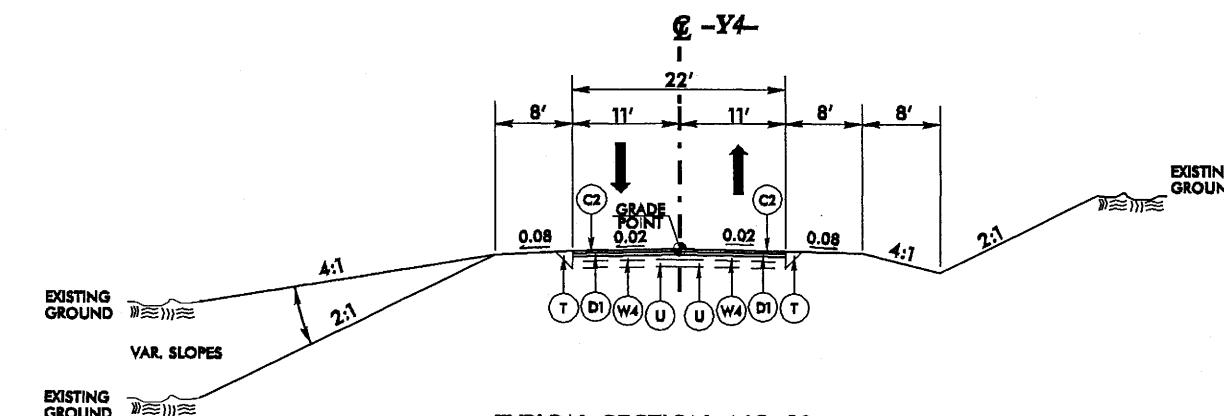
USE TYPICAL SECTION NO. 16 AS FOLLOWS:

-Y3- STA. 12 +00.00 TO STA. 14 +50.00



USE TYPICAL SECTION NO. 17 AS FOLLOWS:

-Y3- STA. 14 +50.00 TO STA. 15 +84.26

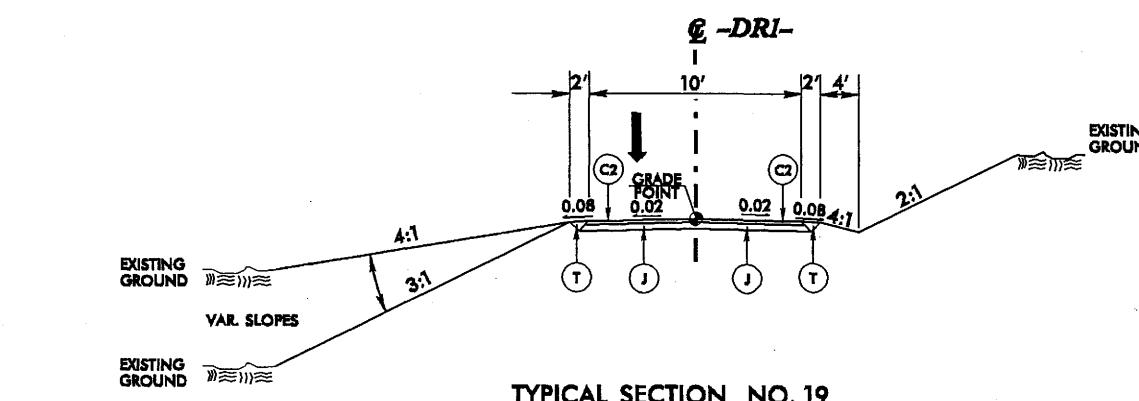


USE TYPICAL SECTION NO. 18 AS FOLLOWS:

-Y4- STA. 10 +00.00 TO STA. 11 +25.00

TRANSITION FROM TYPICAL NO. 18 AT -Y4- STA. 11 +25.00  
TO EXISTING AT -Y4- STA. 11 +75.00

NOTE: USE -Y4- PAVEMENT DESIGN FOR T-TURNAROUND  
AT ROAD TERMINUS

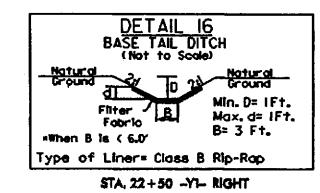
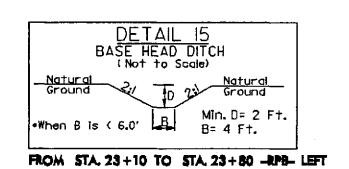
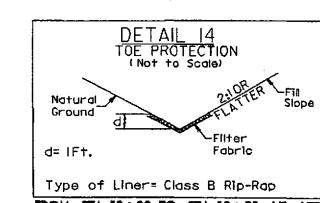
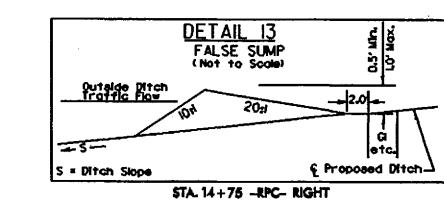
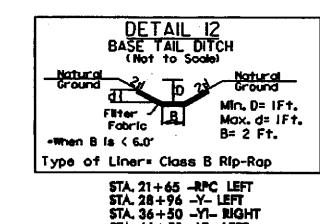
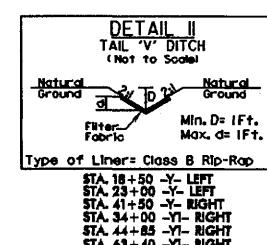
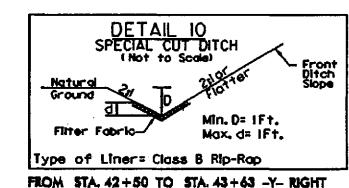
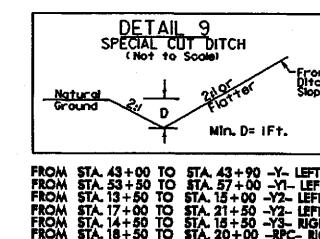
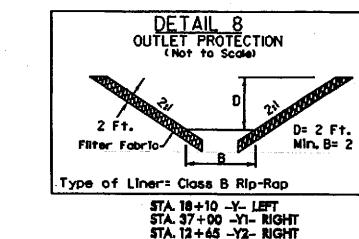
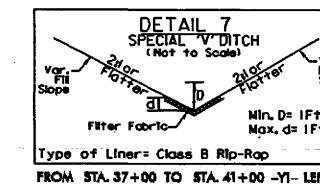
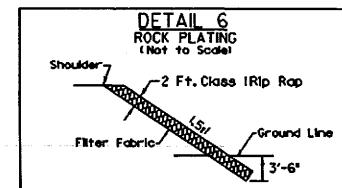
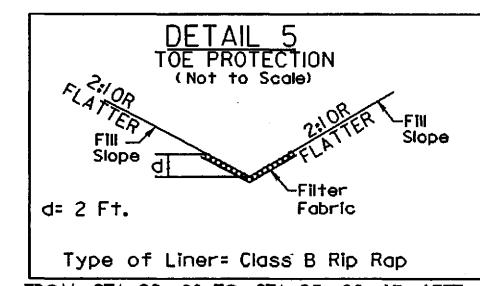
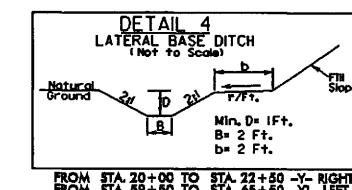
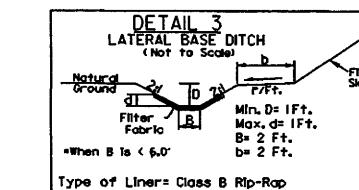
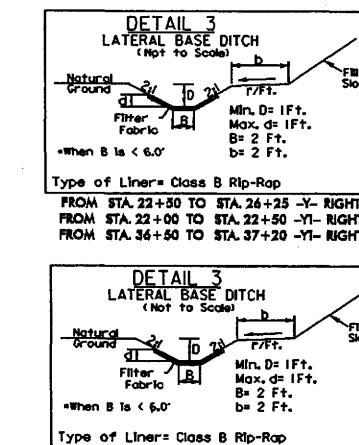
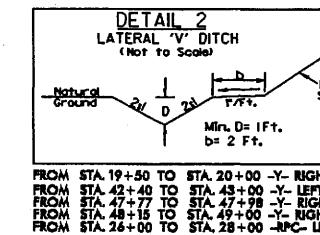
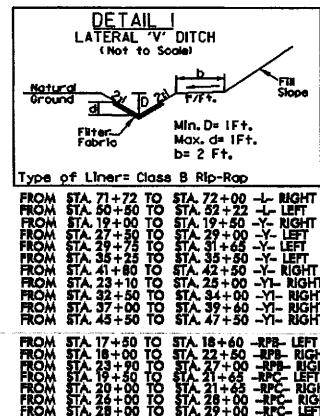


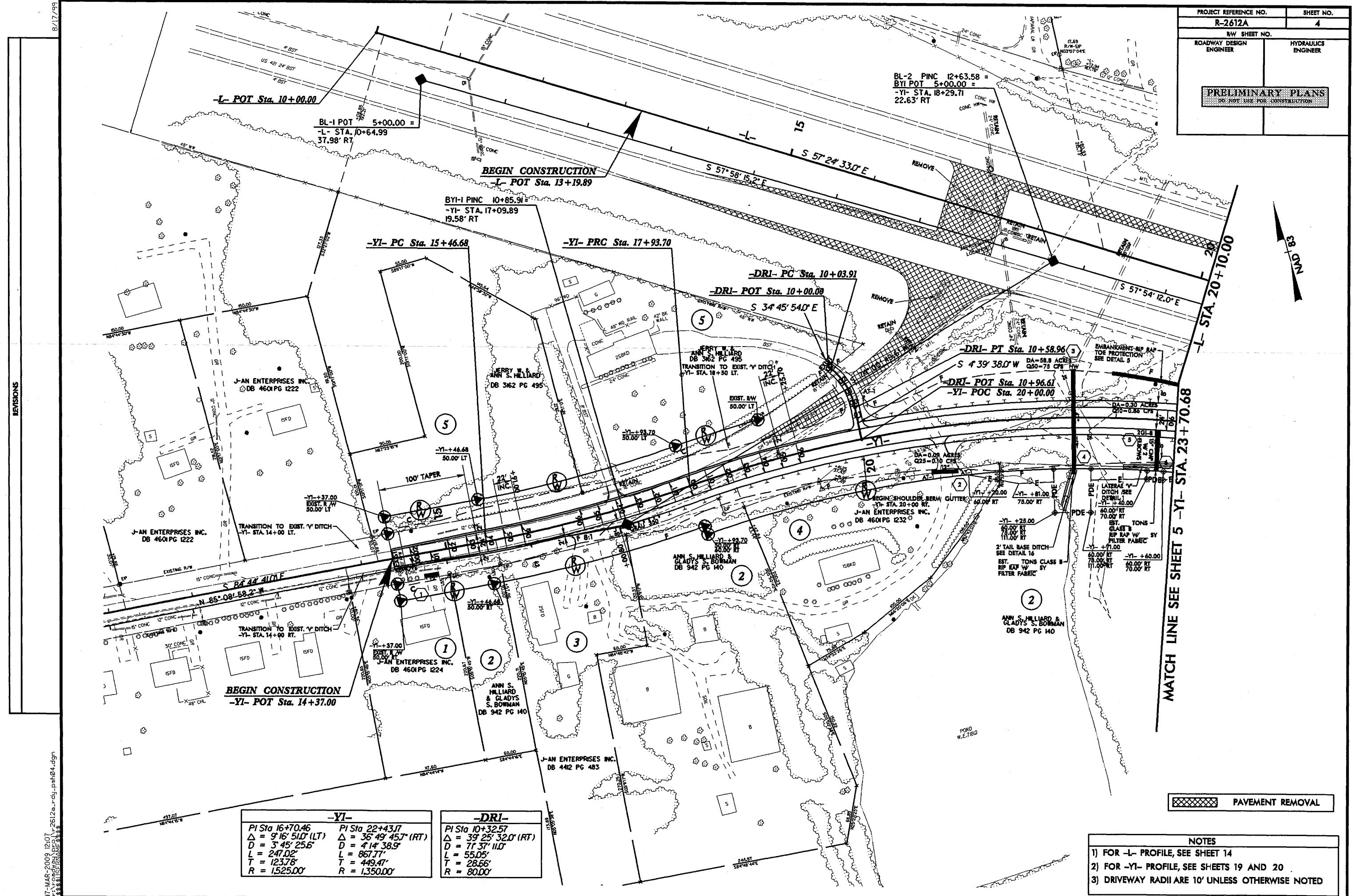
USE TYPICAL SECTION NO. 19 AS FOLLOWS:

-DR1- STA. 10 +00.00 TO STA. 10 +84.61

PROJECT REFERENCE NO.	SHEET NO.
R-2612A	2-E
REV. SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<b>PRELIMINARY PLANS</b> <small>DO NOT USE FOR CONSTRUCTION</small>	

PROJECT REFERENCE NO.	
R-2612A	2-F
REV SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER







## MATCH LINE SEE SHEET 5 -L- STA. 32+00.00

BETTY E. SIKES, WALLACE G. FREEMAN JR.  
& EDNA F. HELMS  
DB 2364 PG 327

POND  
W.E.736.8

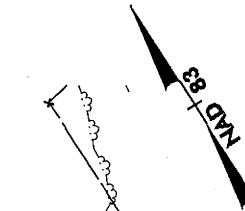
BARRY PIERNON FIELDS  
DB 3969 PG 1074

MELVIN B. & MILLIE M. PROST  
DB 1846 PG 146

LEIGHANN SMITH OSBORNE  
DB 4032 PG 1433

PROJECT REFERENCE NO. R-2612A	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

## MATCH LINE SEE SHEET 7 -L- STA. 44+50.00



BEGIN TIP PROJECT R-2612A  
-L- POT Sta. 41+30.54

BL-4 PINC 31+30.05 =  
-L- STA. 36+94.95  
15.81' RT

TIE TO EXISTING GUARDRAIL

300' TAPER

35

40

45

S 57° 24' 33.0" F

S 57° 46' 39.9" E

S 57° 49' 07.6" E

NOTE: ADJUST FILL SLOPES TO 2:1  
FROM STA. 38+00 TO 40+50 -YI-  
LEFT

EMBANKMENT RIP RAP  
TOE PROTECTION  
SEE DETAIL 5

SPECIAL CUT DITCH  
SEE DETAIL 7

(TS) TS  
HAND  
HOLE

MTL

20' D

24'

28'

32'

36'

40'

44'

48'

52'

56'

60'

64'

68'

72'

76'

80'

84'

88'

92'

96'

100'

104'

108'

112'

116'

120'

124'

128'

132'

136'

140'

144'

148'

152'

156'

160'

164'

168'

172'

176'

180'

184'

188'

192'

196'

200'

204'

208'

212'

216'

220'

224'

228'

232'

236'

240'

244'

248'

252'

256'

260'

264'

268'

272'

276'

280'

284'

288'

292'

296'

300'

304'

308'

302'

306'

310'

314'

318'

312'

320'

324'

328'

322'

330'

334'

338'

332'

340'

344'

348'

352'

356'

360'

364'

368'

372'

376'

380'

384'

388'

392'

396'

400'

404'

408'

412'

416'

420'

424'

428'

432'

436'

440'

444'

448'

452'

456'

454'

458'

460'

464'

468'

472'

476'

480'

484'

488'

492'

496'

500'

504'

508'

512'

516'

520'

524'

528'

532'

536'

540'

544'

548'

552'

556'

560'

564'

568'

572'

576'

580'

584'

588'

592'

596'

600'

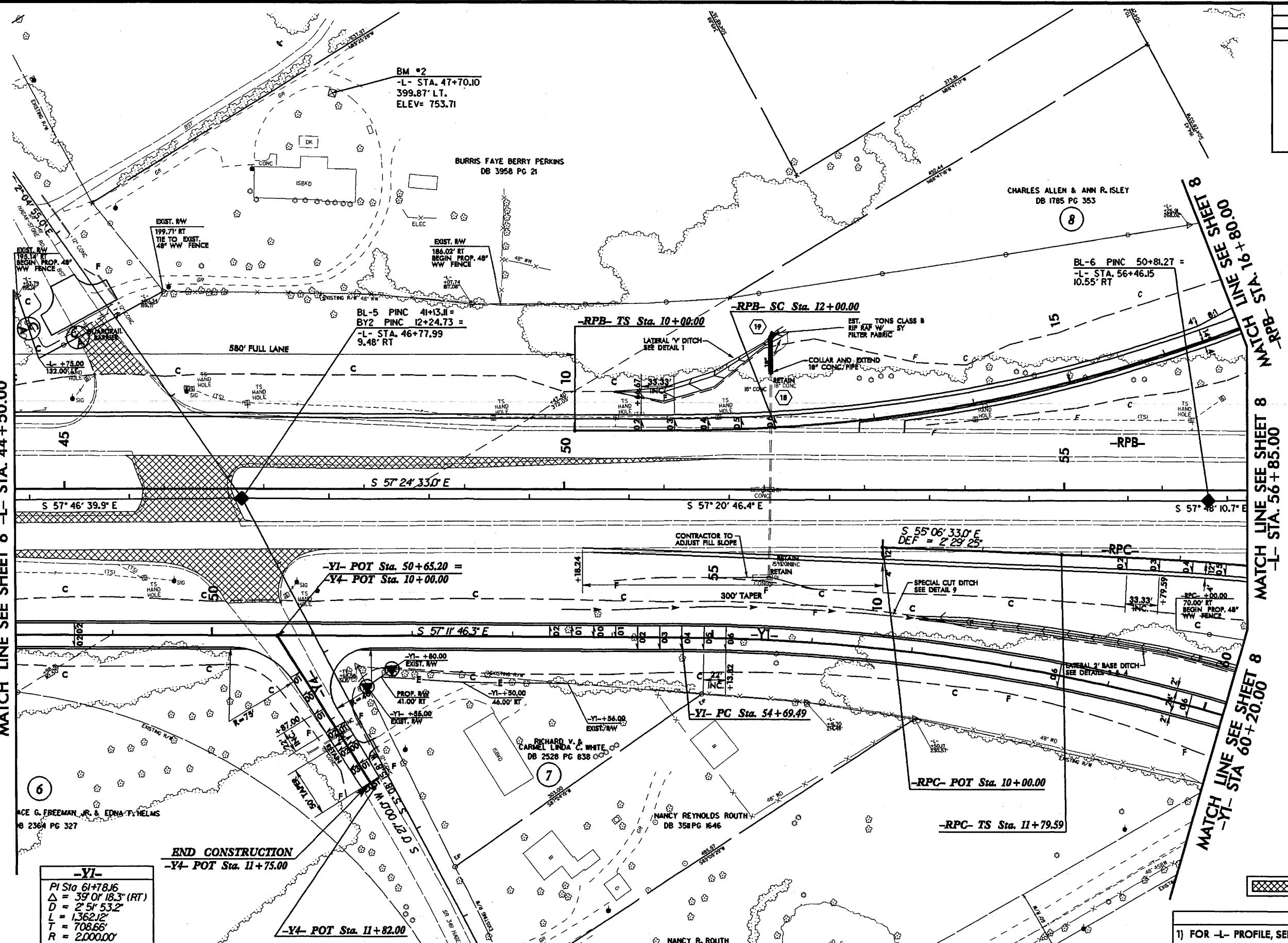
604'

608'

612'

61

MATCH LINE SEE SHEET 6  $\neq$  STA 44 + 50.00



**-YI-**

$P1 S10 61+78.16$
$\Delta = 39^{\circ} 07' 18.3''$ (RT)
$D = 2^{\circ} 51' 53.2''$
$L = 1,362.12'$
$T = 708.66'$
$R = 2,000.00'$

**-RPC-**  
Pls Sta 13+12.95  
θs = 3° 40' 22.5"  
Ls = 200.00'  
LT = 133.36'  
ST = 66.69'

**END CONSTRUCTION**  
**-Y4- POT Sta. 11+75.00**

**-RPB-**

Pls Sta 11+33.36	Pl Sta 14+96.19
θs = 3° 40' 22.5"	Δ = 2° 30' 02.7" (L)
Ls = 200.00'	D = 3° 40' 22.5"
LT = 133.36'	L = 585.40'
ST = 66.69'	T = 296.19'
	R = 1,560.00'

 **PAVEMENT REMOVAL**

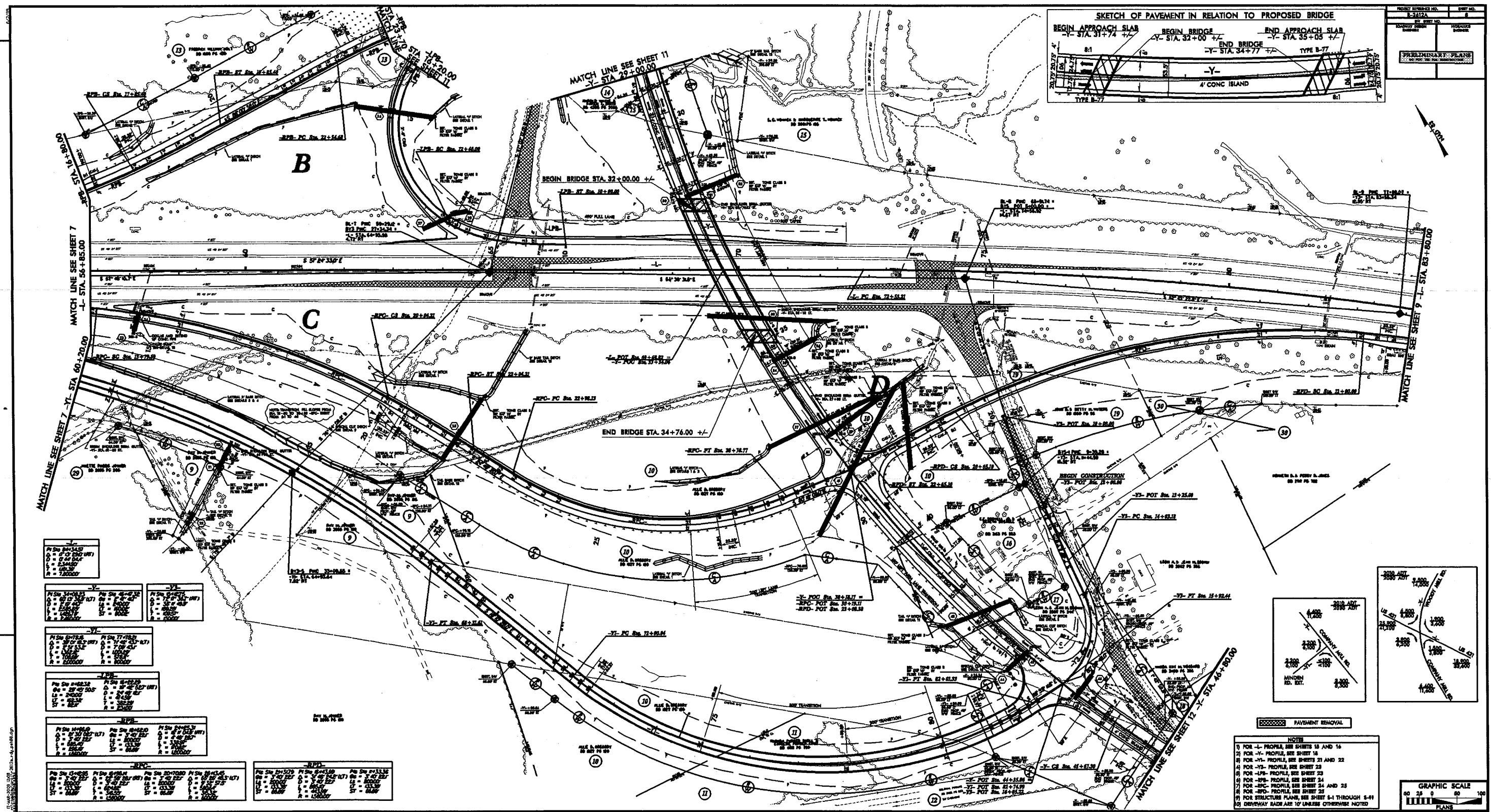
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**NOTES**

**NOTES**

- 1) FOR -L- PROFILE, SEE SHEET 15
- 2) FOR -Y1- PROFILE, SEE SHEETS 20 AND 21
- 3) FOR -RPB- PROFILE, SEE SHEET 24
- 4) FOR -RPC- PROFILE, SEE SHEET 24 AND 25
- 5) FOR -Y4- PROFILE, SEE SHEET 23
- 6) FOR STRUCTURE PLANS, SEE SHEET S-8 THROUGH S-88
- 7) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

REVIEWS





## MATCH LINE SEE SHEET 13 -Y2- STA 18+00.00

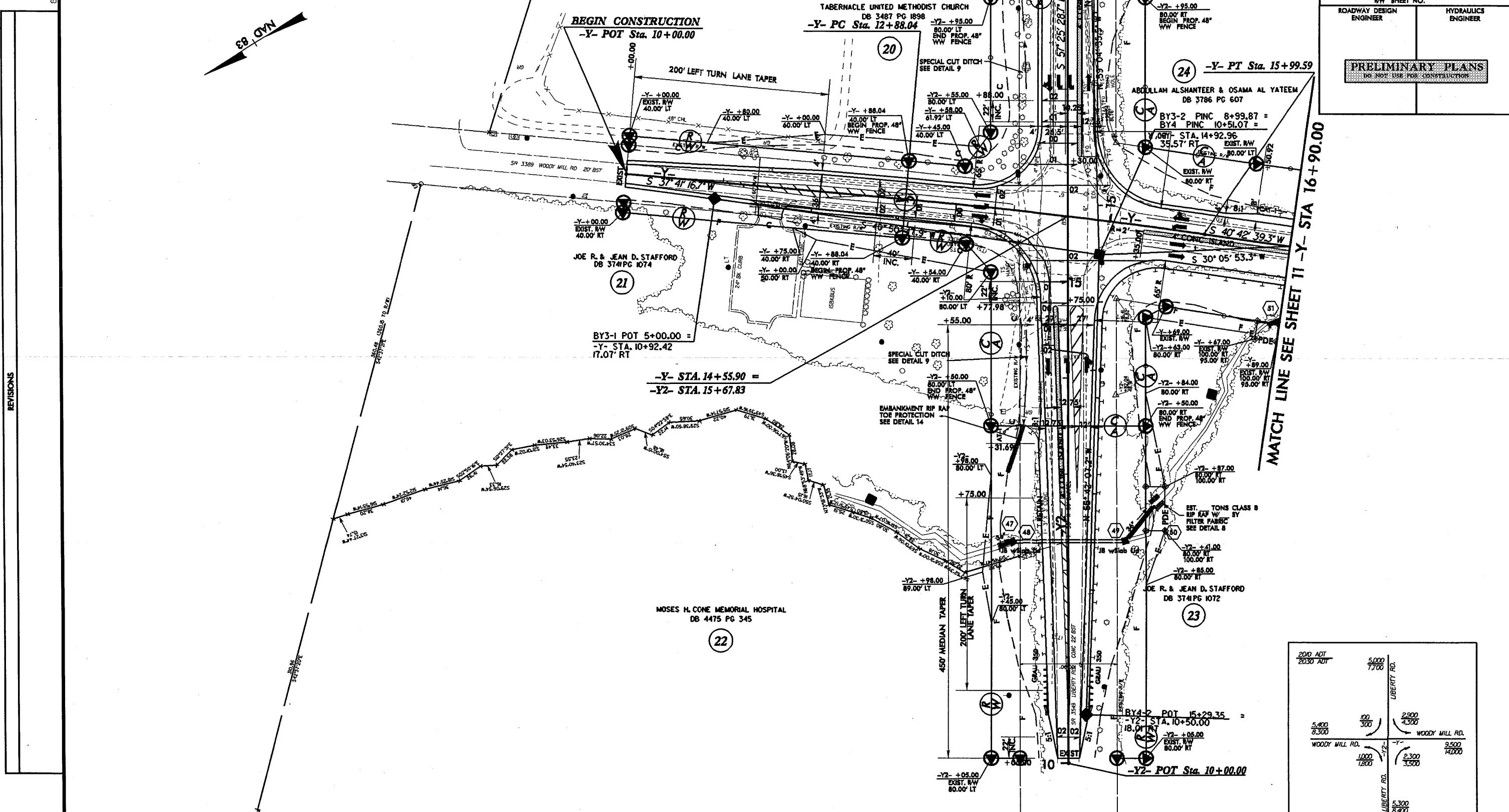
PROJECT REFERENCE NO.	SHEET NO.
R-2612A	10
RW SHEET NO.	

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

**-Y-**  
 PI St 14+43.85  
 $\Delta$  = 3' 0" 22.6° (RT)  
 D = 0' 58" 13.5'  
 L = 311.55'  
 T = 155.8'  
 R = 5,905.00

**NOTES**  
 1) FOR -Y- PROFILE, SEE SHEET 17  
 2) FOR -Y2- PROFILE, SEE SHEET 22  
 3) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED



PROJECT REFERENCE NO.	SHEET NO.
R-2612A	11
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS  
PROJECTURE ON CONSTRUCTION

MATCH LINE SEE SHEET 10 -Y- STA 16+90.00

**-LPB-**  
 PI Sta 16+22.29  
 $\Delta = 11^\circ 42' 52.7''$  (RT)  $\theta_s = 19^\circ 50' 33.7''$   
 $D = 24.48' 12.1''$   $L_s = 160.00'$   
 $L = 474.59'$   $L_T = 107.34'$   
 $T = 382.29'$   $ST = 53.95'$   
 $R = 231.00'$

**-Y-**  
 PI Sta 19+01.47 PI Sta 34+08.23  
 $\theta_s = 2^\circ 47' 41.7''$   $\Delta = 60^\circ 13' 36.9''$  (LT)  
 $L_s = 240.00'$   $D = 219' 44.7''$   
 $L = 2585.85'$   $L_T = 1426.78'$   
 $ST = 80.02'$   $T = 170.62'$   
 $R = 1200.00'$

**-RPB-**  
 PI Sta 24+25.31  
 $\Delta = 16^\circ 11' 04.9''$  (RT)  
 $D = 4.46' 28.7''$   
 $L = 338.97'$   
 $T = 170.62'$   
 $R = 1200.00'$

PAVEMENT REMOVAL

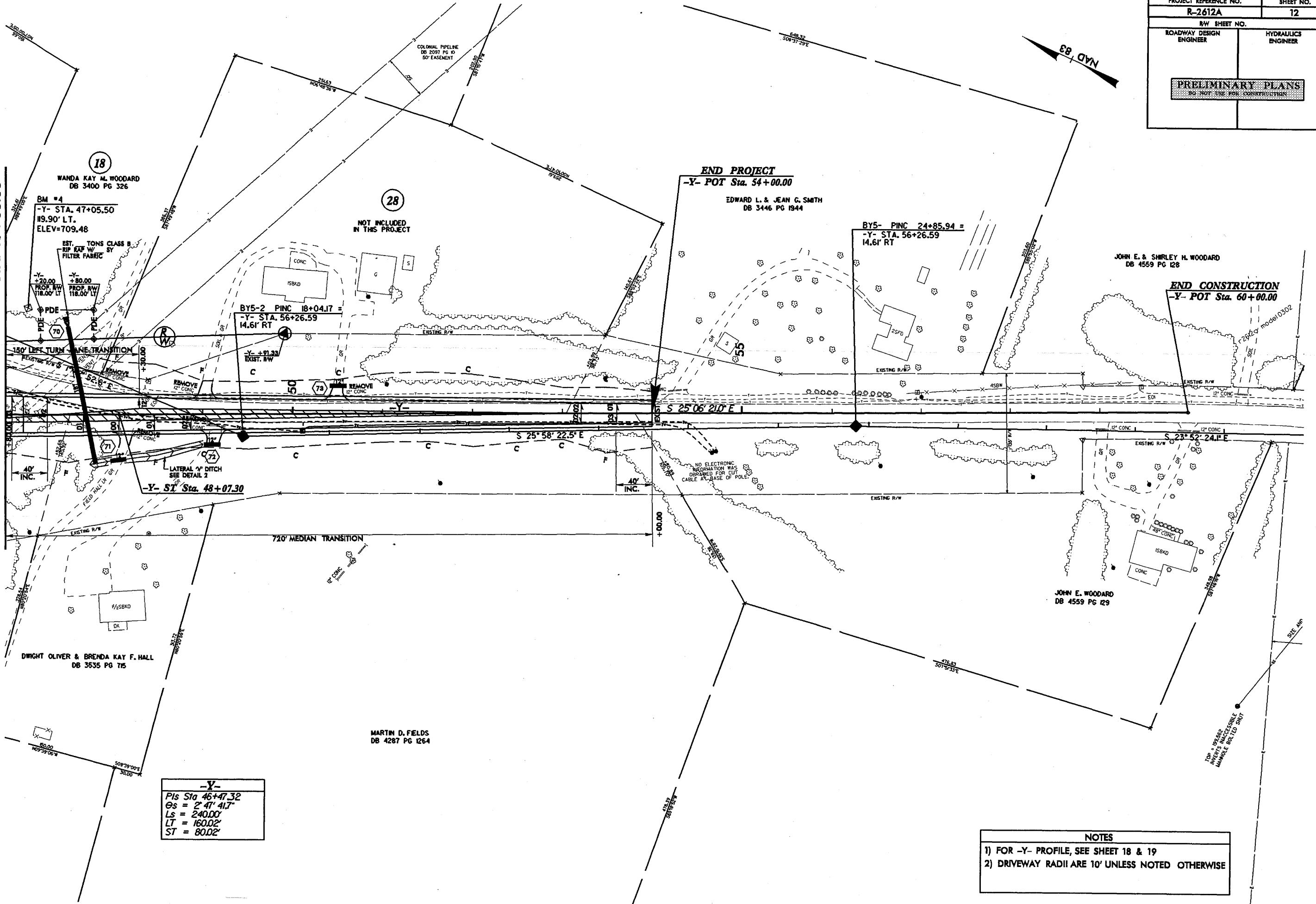
NOTES  
 1) FOR -Y- PROFILE, SEE SHEETS 17 AND 18  
 2) FOR -LPB- PROFILE, SEE SHEET 23  
 3) FOR -RPB- PROFILE, SEE SHEET 24

17-MAR-2009 12:08  
R:\Y-C:\S\W\Y-2612A-rdy-dwg.dwg

REVISIONS

MATCH LINE SEE SHEET 8 -Y- STA. 46 + 80.00

## REVISIONS



PROJECT REFERENCE NO.		SHEET NO.
R-2612A		13
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS NO. 2612A USE FOR CONSTRUCTION		

**-Y2-**  
PI STA 22+67.70  
 $\Delta = 1^{\circ} 42' 10'' (RT)$   
 $D = 0' 30' 00.0''$   
 $L = 340.60'$   
 $T = 170.31'$   
 $R = 11,459.16'$

MATCH LINE SEE SHEET 10 -Y2- STA 18+00.00

TABERNACLE UNITED METHODIST CHURCH  
DB 3487 PG 1698

20

-Y2- PT STA. 24+37.98

END CONSTRUCTION  
-Y2- POT STA. 23+50.00

TABERNACLE UNITED METHODIST CHURCH  
DB 2849 PG 76

27

27

-Y2- PC STA. 20+97.39

-Y2- +97.39

EXIST. RW

80.00' LT

18' CML

22' INC.

22' CML

22' INC.



