



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 (DWWQ) *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**	
Total Impacts:					1487		2192

\*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		
Totals:			0.47**		0.94

\*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

<b>EA Wetland Impacts Alternate A-1</b>	<b>EA Wetland Impacts Alternate A-2 (Recommended)</b>	<b>FONSI Wetland Impacts Alternate A-2 (Recommended)</b>
0.98 acres	0.2 acres	0.26 acres
<b>EA Stream Impacts Alternate A-1</b>	<b>EA Stream Impacts Alternate A-2 (Recommended)</b>	<b>FONSI Stream Impacts Alternate A-2 (Recommended)</b>
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,

A handwritten signature in black ink, appearing to read "G. J. Thorpe".

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 COUNTY NC STATE	
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) Section, Township, Range, Lat/Lon, and/or Accessors'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.

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

See attached permit drawings.

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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

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

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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

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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. Luck*  
SIGNATURE OF APPLICANT

DATE

*Gregory J. Thayer, PhD*  
SIGNATURE OF AGENT

*11-24-09*  
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.



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 is 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**



# Memorandum

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)
Eugene 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 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.

1600 Perimeter Park Drive  
Morrisville, NC 27560  
(919) 461-1100 Phone  
(919) 461-1415 Fax

**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: 15421 @ SR

NAME	AGENCY/ UNIT	<del>PHONE</del> E-MAIL
MARSHALL CLAWSON	HYDRAULICS	MCLAWSON@NCDOT.GOV
Dennis Hoyte	URS	DENNIS-HOYTE@URSCORP.COM
KRISTY PACE	URS	KRISTY-PACE@URSCORP.COM
Kathy Matthews	EPA	Matthews.Kathy@epa.gov
James PFaum	DOT-NEU	Jrpfaum@ncdot.gov
Racelle Beauregard	" "	Rbeauregard@ncdot.gov
Susan Lancaster	DOT / Roadways	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 GIROLAMI	NCDOT-STR DESIGN	rgirolami@ncdot.gov
Laura Sutton	NCDOT-STR Pgn	lsutton@ncdot.gov
Polly Eason	NCDOT-DIV 7	peason@ncdot.gov



(CONTINUED)

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

NAME	AGENCY/ UNIT	<del>PHONE NO</del> EMAIL
Amy Simes	DEVR	amy.simes@ncmail.net
Andy Williams	USACE	andrew.e.williams2@usace.army.mil
Amy Ealiss	DEVR	amy.ealiss@ncmail.net



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,

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**

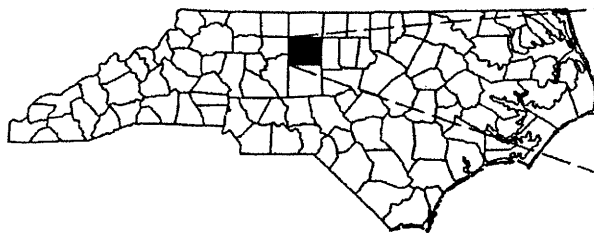
The streams listed in Table 1 have been classified as jurisdictional.

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.

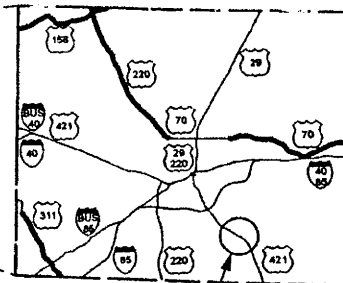
## **BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES**

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.

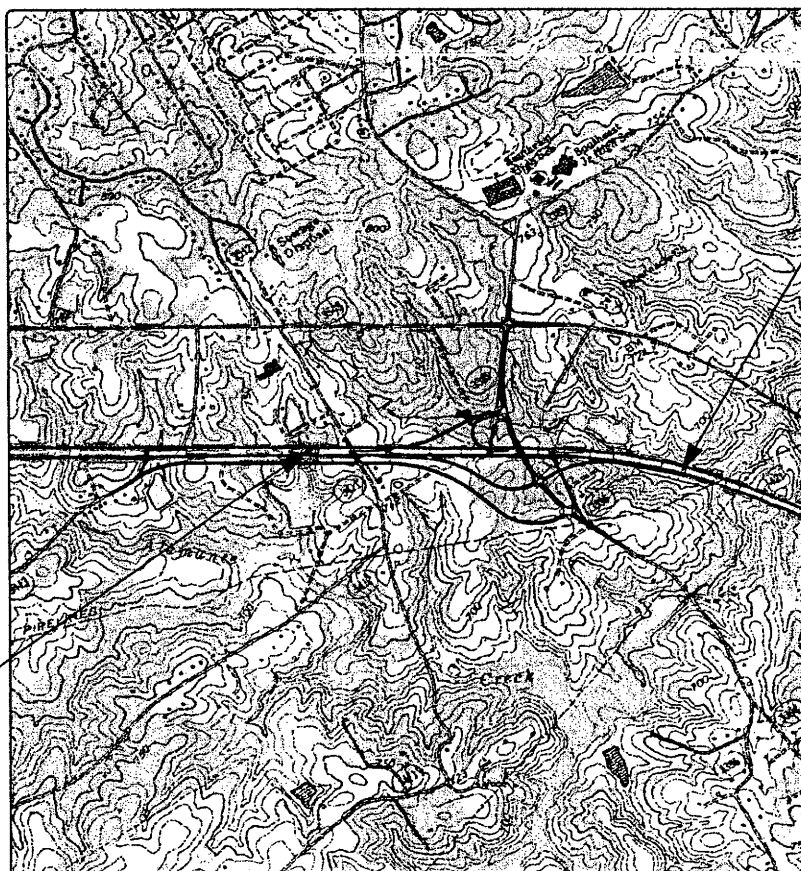


SEE INSET  
BELOW



SITE

# GUILFORD COUNTY



END  
PROJECT

BEGIN  
PROJECT

VICINITY MAP

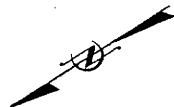
NTS

## WETLAND/STREAM IMPACTS

### NCDOT

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

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



# 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**

**SHEET 3 OF 30**

**12 / 30 / 08**



## WETLAND IMPACTS

## SURFACE WATER IMPACTS

Site No.	Station (From / To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill in Wetlands (ac)	Temporary Fill in Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (Method III) (ac)	Hand Clearing in Wetlands (ac)	Permanent SW Impacts (ac)	Temporary SW Impacts (ac)	Existing Channel Impacts (ft)	Natural Stream Design (ft)	Stream Bank Stabilization (ft)
1	-Y1- 22+10 To 23+03	42" RCP	0.07			0.01		0.02		145		
2	-Y1- 37+08	Sir. No. 9 & 36" RCP						0.02		73		15
3	-Y1- 42+02 To 42+75	Sir. No. 14 to 15 (36" RCP)	0.04			0.01		0.03		201		
4	-Y- 37+28 To 38+86 (RCP- 28+01 To -RPD- 20+71)	30" Class IV RCP	0.08		< 0.01							
5	-Y- 26+27 To 29+56 (-RPB- 23+02 To 28+60 and -LPB- 15+70 To 20+90)	8' X 8' RCBC w/ 1' Sills	0.21		0.02	0.03		0.13		856		
6	-Y2- 12+22 To 12+80	Sir. No. 48 To 49 (3' X 3' Box Culvert)						< 0.01		73		15
7	-Y- 16+75 To 18+21	Sir. No. 52 to 53 (Exist. 48" Conc. Pipe)						0.01		94		15
TOTALS:			0.40		0.02	0.05		0.21		1442		45

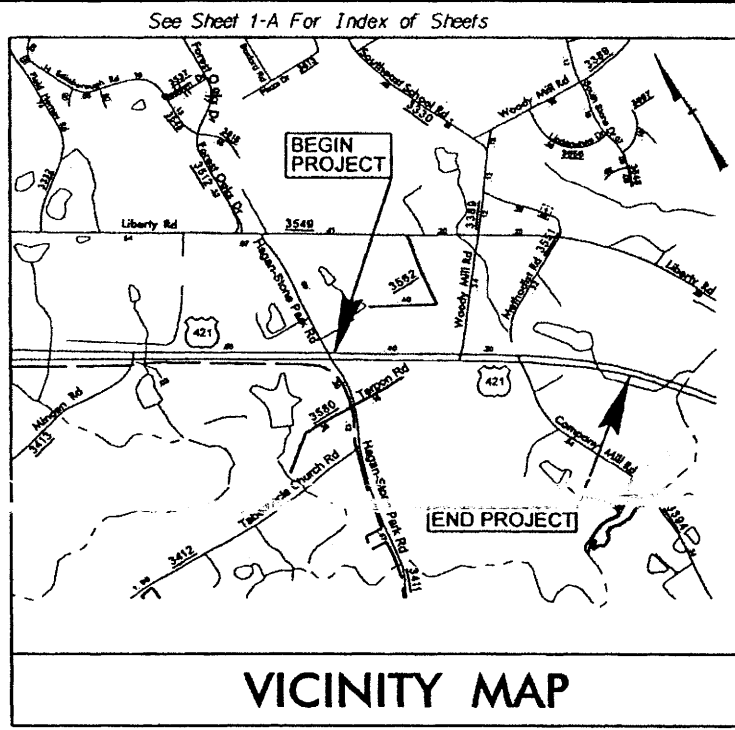
**NC DOT  
DIVISION OF HIGHWAYS  
GUILFORD COUNTY  
PROJECT: 33463.1.1 (R-2612A)  
US 421 AT SR 3369  
(WOODY MILL ROAD)  
SOUTH OF GREENSBORO**

09/08/99

7/15/2009  
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eleni.riggs

TIP PROJECT: R-2612A

CONTRACT:



VICINITY MAP

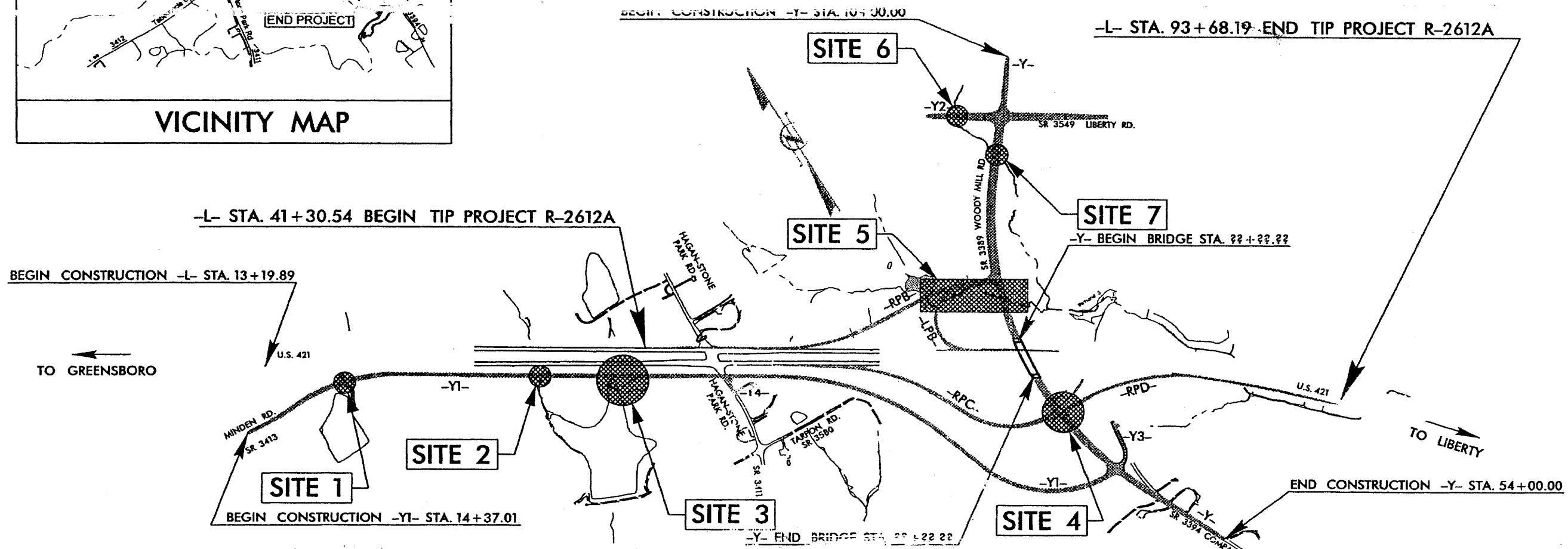
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# GUILFORD COUNTY

LOCATION: US 421 AT SR 3389 (WOODY MILL ROAD)  
SOUTH OF GREENSBORO  
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES

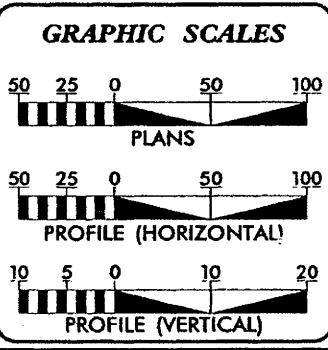
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2612A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33483.1.1	NHF-421(11)	P.E.	
Permit Drawing			
Sheet <u>5</u> of <u>30</u>			

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

WETLAND/STREAM IMPACTS



DESIGN DATA

ADT 2010	=	25,900
ADT 2030	=	41,200
DHV	=	11 %
D	=	70 %
T	=	14 % *
V	=	55 MPH
* (TTST 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	GLENN W. MUMFORD, PE PROJECT ENGINEER
RIGHT OF WAY DATE: OCTOBER 17, 2008	SUSAN C. LANCASTER, PE PROJECT DESIGN ENGINEER
LETTING DATE: MAY 18, 2010	

HYDRAULICS ENGINEER

SIGNATURE: _____ ROADWAY DESIGN ENGINEER
SIGNATURE: _____ STATE HIGHWAY DESIGN ENGINEER

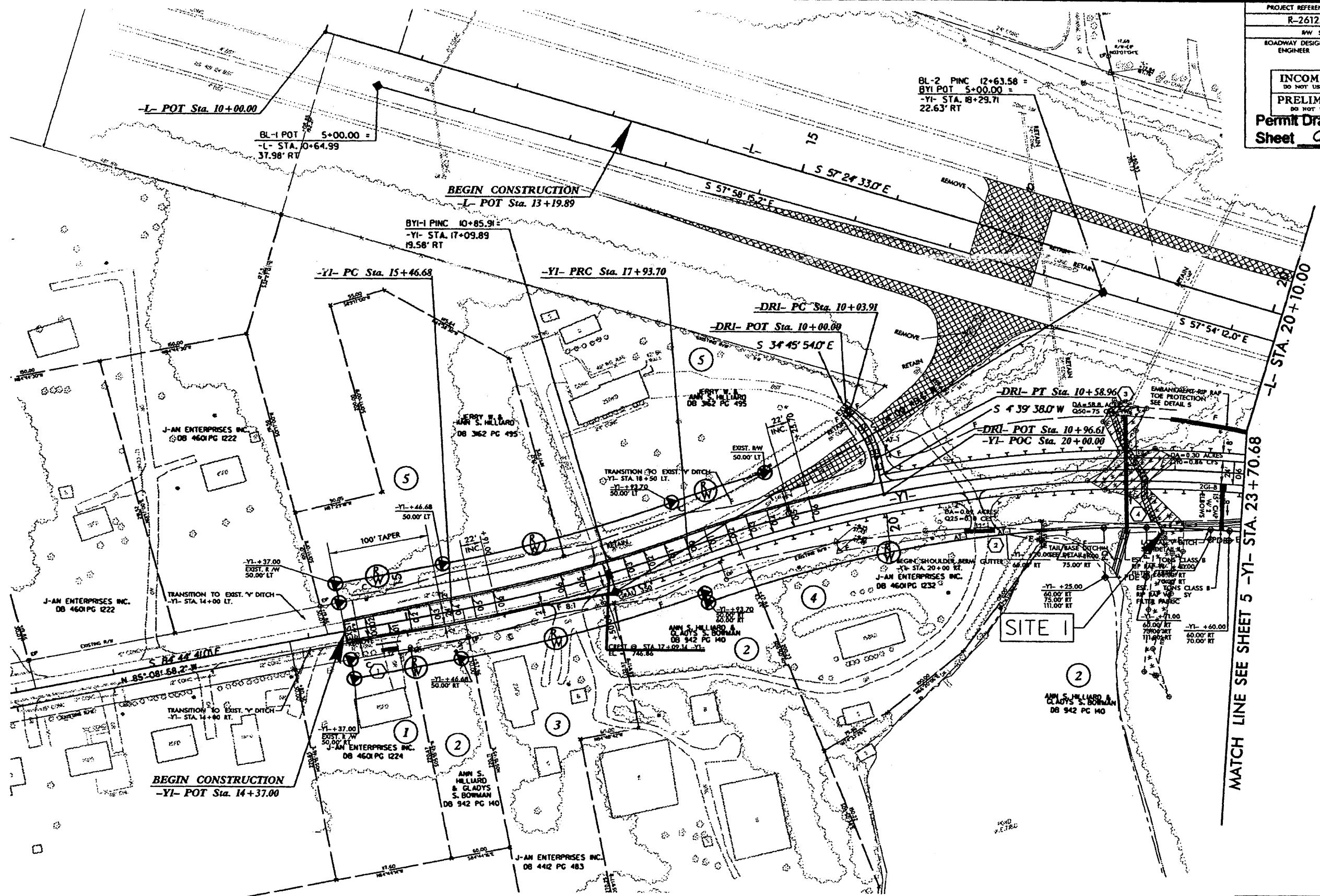
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

8/17/99

7/8/2009  
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2612a.dwg

PROJECT REFERENCE NO.		SHEET NO.	
R-2612A		4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<b>INCOMPLETE PLANS</b> DO NOT USE FOR E/R ACQUISITION			
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION			
Permit Drawing Sheet <b>6</b> of <b>30</b>			



-YI-		-DRI-	
PI Sta 16+70.46	PI Sta 22+43.17	PI Sta 10+32.57	
$\Delta = 91^{\circ} 51' 00''$ (LT)	$\Delta = 36^{\circ} 49' 45''$ (RT)	$\Delta = 39^{\circ} 25' 32''$ (RT)	
D = 3' 45' 25.6"	D = 4' 14' 38.9"	D = 7' 37' 11.0"	
L = 247.02'	L = 867.77'	L = 550.5'	
T = 123.78'	T = 449.47'	T = 28.66'	
R = 1525.00'	R = 1350.00'	R = 80.00'	

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

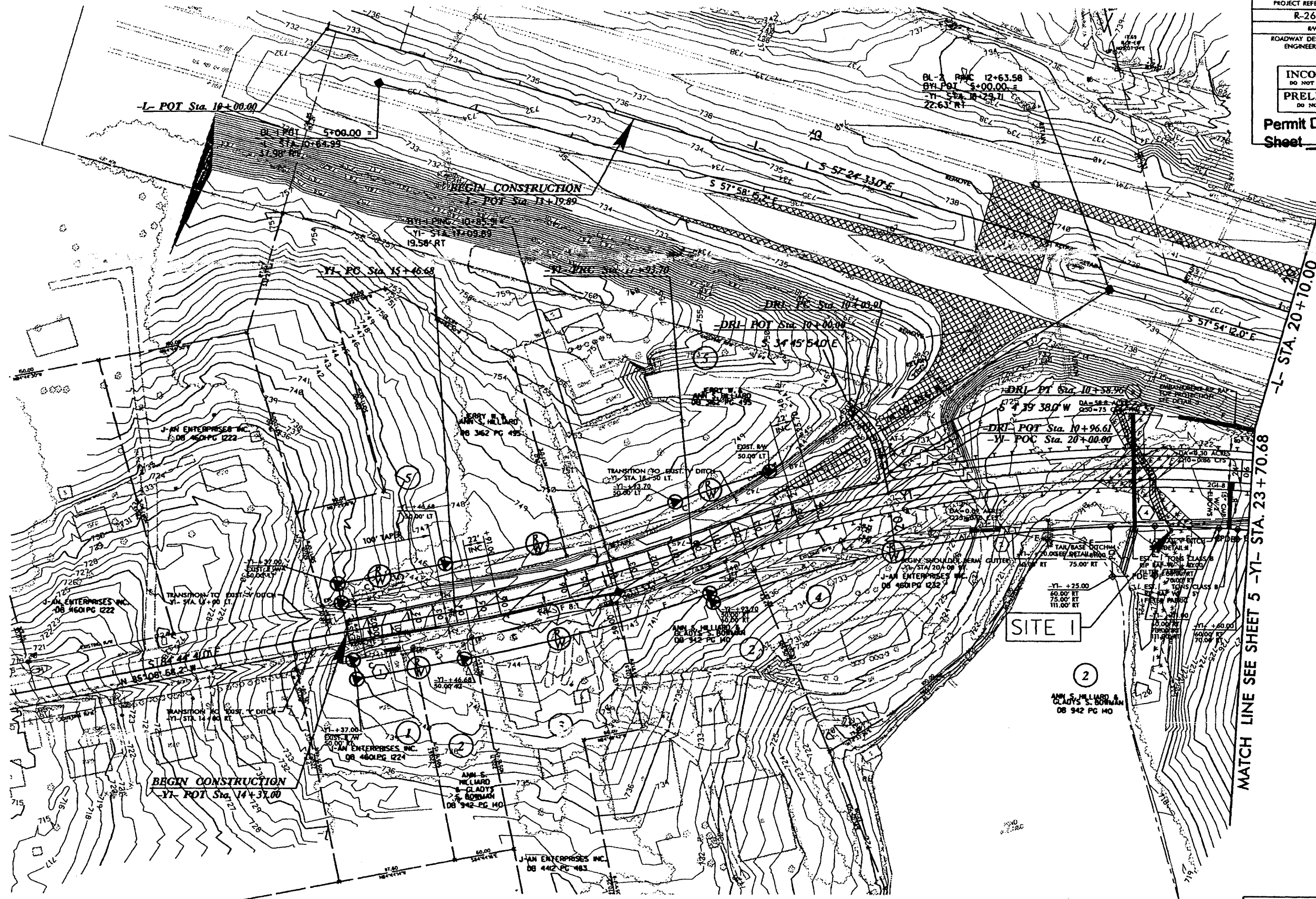
PAVEMENT REMOVAL

- NOTES
- 1) FOR -L- PROFILE, SEE SHEET 14
  - 2) FOR -YI- PROFILE, SEE SHEETS 19 AND 20
  - 3) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

B/17/99

8/15/2009  
R:\S\2009  
Permit Drawings\2612a\2612a\_permit.dgn

REVISIONS



PROJECT REFERENCE NO.		SHEET NO.	
R-2612A		4	
RAW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Permit Drawing Sheet <u>7</u> of <u>30</u>			

88' 0" N

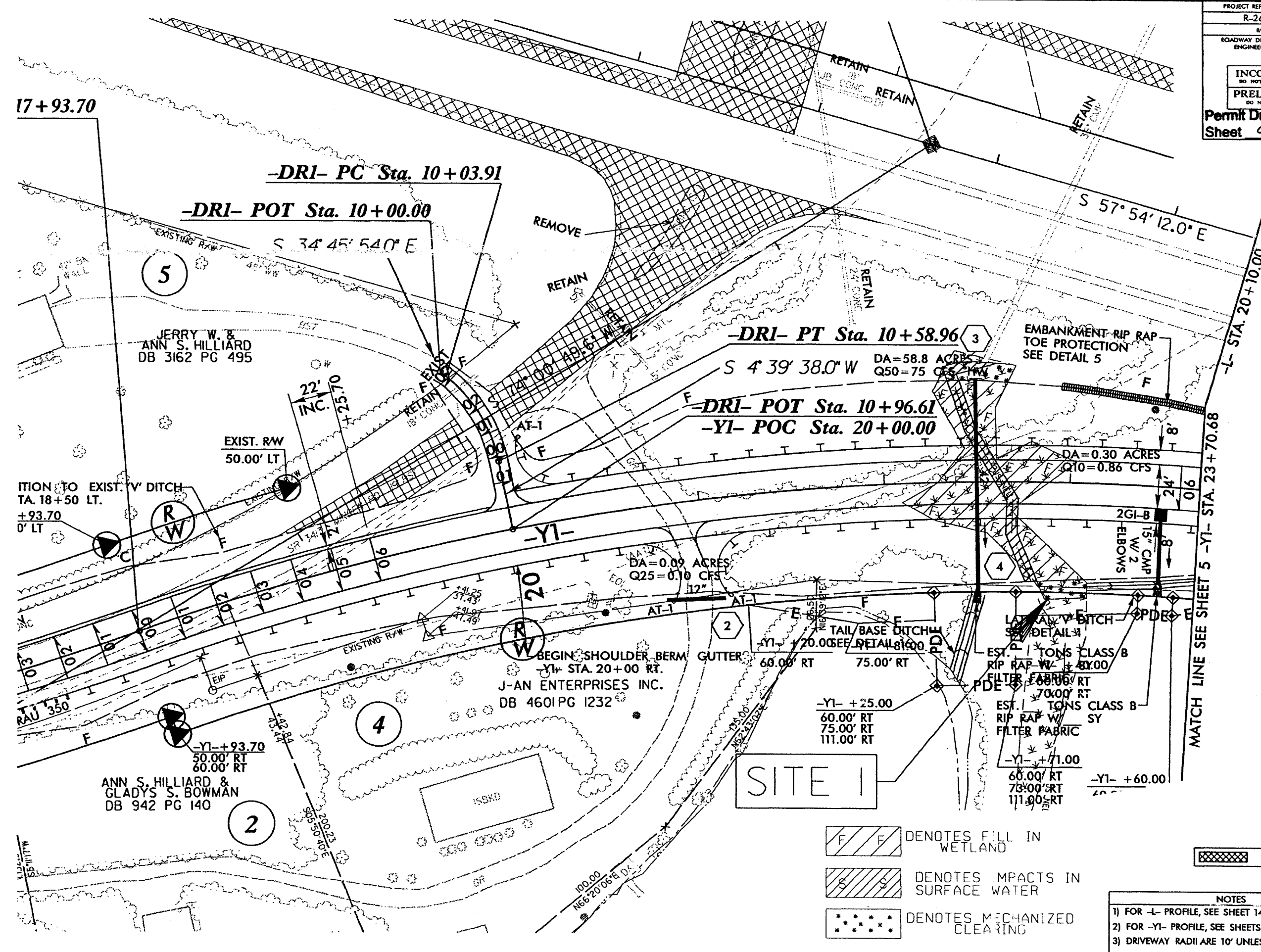
-YI-		-DRI-	
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$\Delta = 9' 16" 51.0' (LT)$	$\Delta = 36' 49" 45.7' (RT)$	$\Delta = 39' 25" 32.0' (RT)$	
$D = 3' 45" 25.6'$	$D = 4' 14" 38.9'$	$D = 7' 37" 11.0'$	
$L = 247.02'$	$L = 867.77'$	$L = 55.05'$	
$T = 123.78'$	$T = 449.47'$	$T = 28.66'$	
$R = 1525.00'$	$R = 1350.00'$	$R = 80.00'$	

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

PAVEMENT REMOVAL

- NOTES
- 1) FOR -L- PROFILE, SEE SHEET 14
  - 2) FOR -YI- PROFILE, SEE SHEETS 19 AND 20
  - 3) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

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



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

**NOTES**

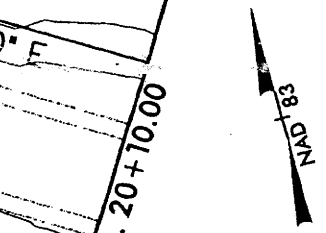
1) FOR -L- PROFILE, SEE SHEET 14

2) FOR -YI- PROFILE, SEE SHEETS 19 AND 20

3) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED




8/17/99  
 7/15/2009  
 R-2612A-Drainage-Permit Drawings R-2612A-permit.sh8.dgn  
 11/11/11





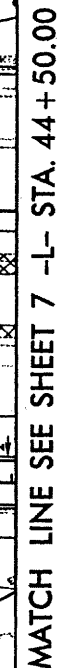
## REVISIONS

SITE 1

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

 PAVEMENT REMOVAL

NOTES
1) FOR -L- PROFILE, SEE SHEET 14
2) FOR -YI- PROFILE, SEE SHEETS 19 AND 20
3) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED



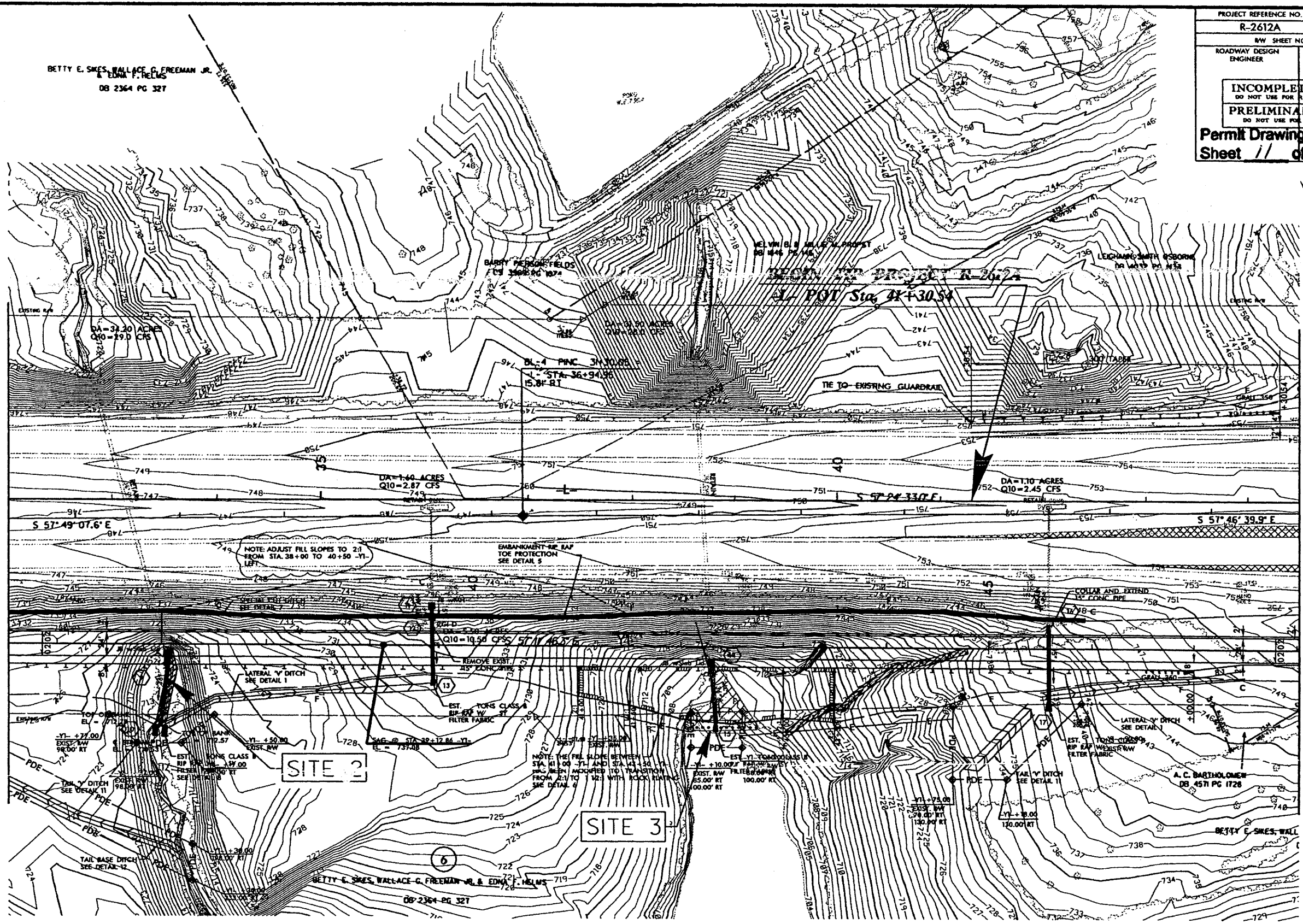
NOTES
1) FOR -L- PROFILE, SEE SHEETS 14 AND 15
2) FOR -YI- PROFILE, SEE SHEET 20

7/15/2009  
I:\Drainage\Permit Drawings\26120-permit-shield.dgn

052008 - DESIGN REVISION: REMOVED ALIGNMENT -RPA-; ADDED ALIGNMENT -LPB-; AND ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR -RPA- TO ACCOMMODATE -LPB-. SCL

7/15/2008  
R:\D:\ainaga\Permit Drawings\R-2612a\permit.dgn  
8/17/08

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



PROJECT REFERENCE NO. R-2612A		SHEET NO. 6	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION			
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Permit Drawing Sheet 11 of 30			

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

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

NOTES

1) FOR -L- PROFILE, SEE SHEETS 14 AND 15

2) FOR -YI- PROFILE, SEE SHEET 20



DA=34.20 ACRES  
Q10=29.0 CFS

DA=1.60 ACRES  
Q10=2.87 CFS

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

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

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**

2GI-D  
DA-5.50 ACRES  
Q10=10.50 CFS

— REMOVE EXIST.  
45" CONC. PIPE

EST.      TONS CLASS B  
RIP RAP W/      SY  
FILTER FABRIC

SAG @ STA. 39+12.86 -Y1-  
EL. = 737.08

NOTES =Y7-+35.00

1) FOR -L- PROFILE, SEE SHEETS 18 & 19  
2) FOR -YT- PROFILE, SEE SHEET 20

SITE 2

REVISIONS

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

11/15/2009  
C:\Program Files\Autodesk\AutoCAD 2009\Permit Drawings\26120-permit.shl.dgn

8/17/99

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

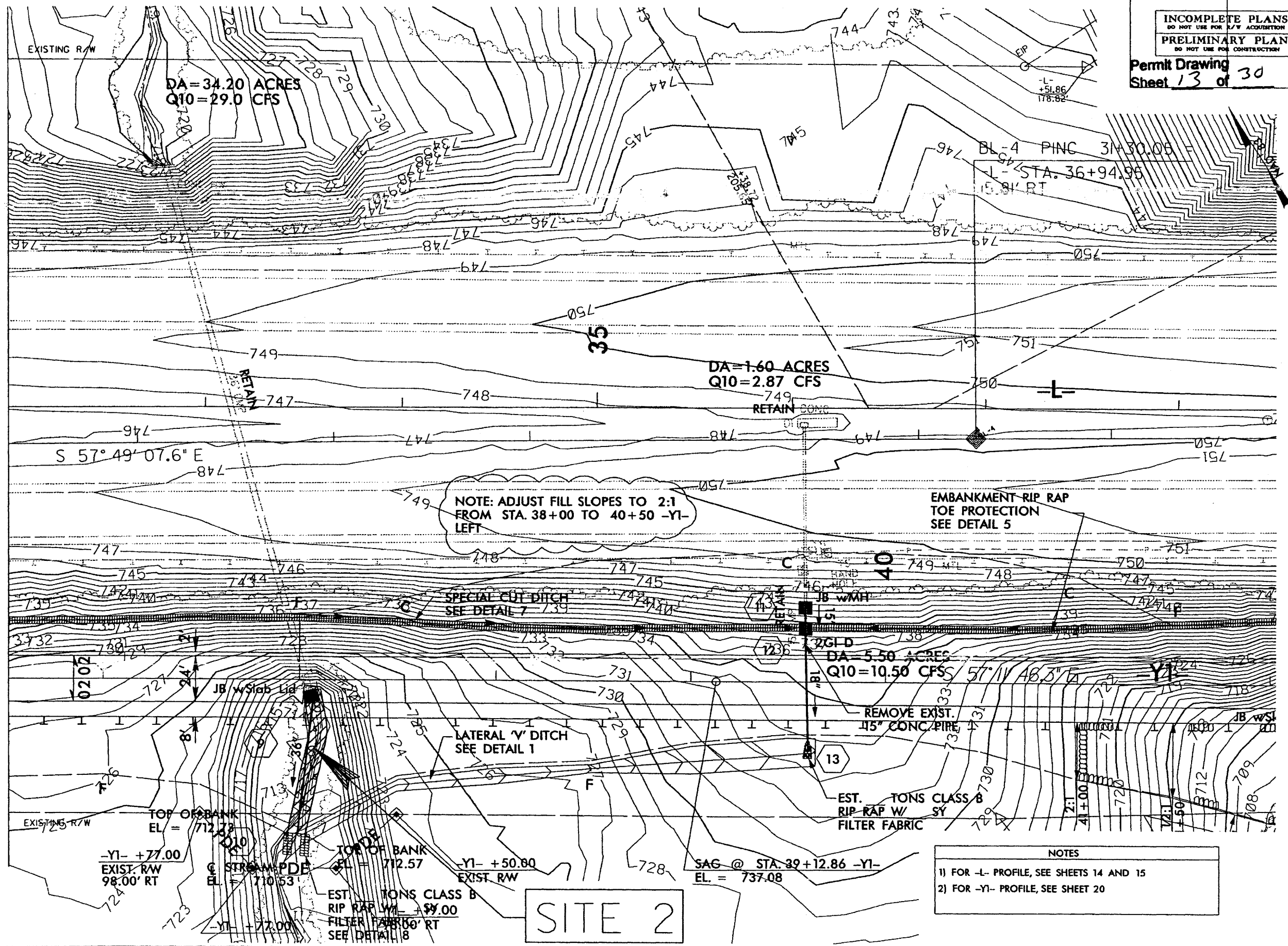
7/5/2008  
R:\000000\Permit Drawings\2612a\permit\2612a.dgn  
alan.r.008



DENOTES IMPACTS IN  
SURFACE WATER

PROJECT REFERENCE NO. R-2612A	SHEET NO. 6
RW 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 13 of 30	

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

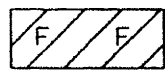
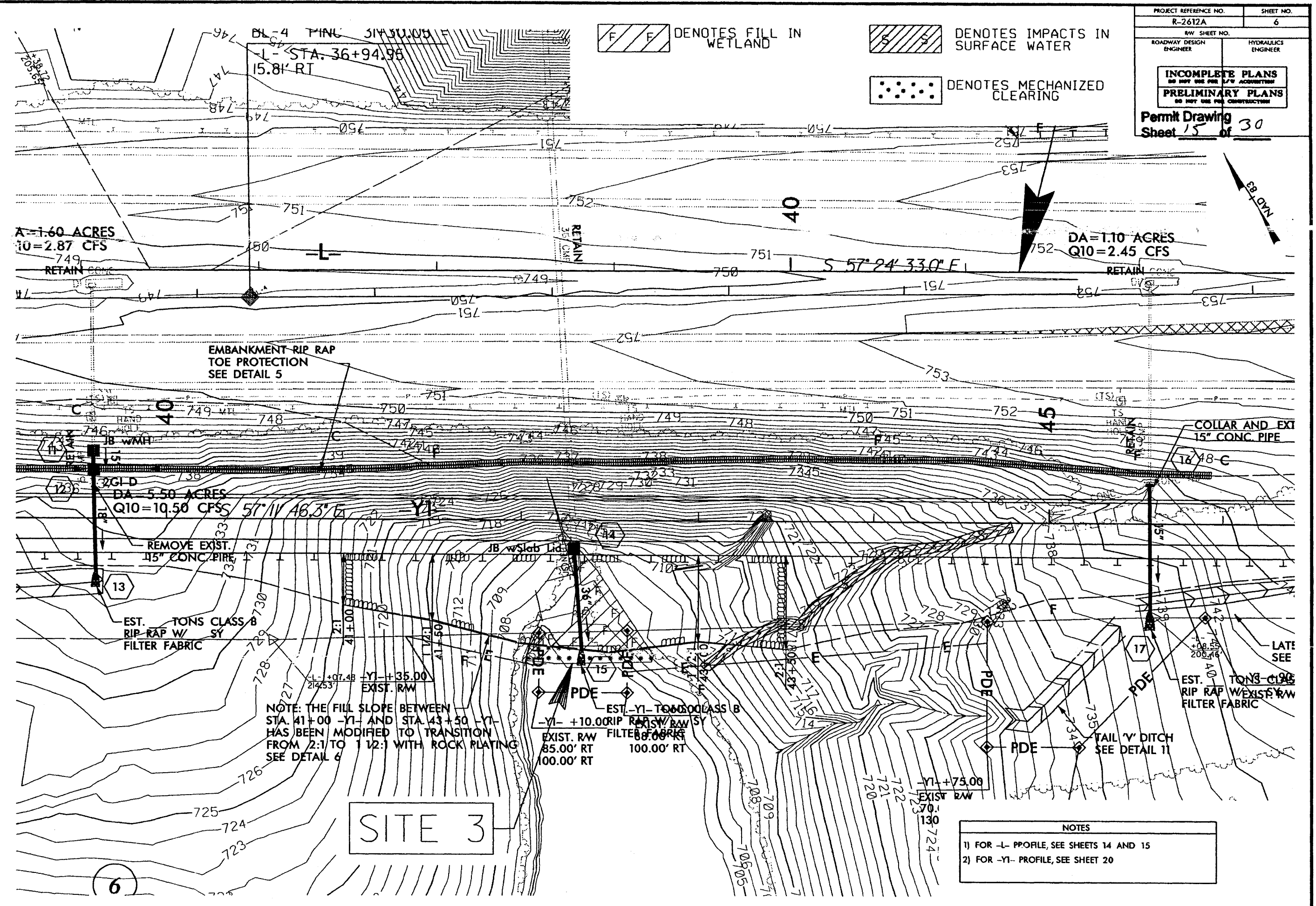


NOTES
1) FOR -L- PROFILE, SEE SHEETS 14 AND 15
2) FOR -YI- PROFILE, SEE SHEET 20

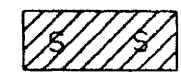
1/15/2009  
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REVISIONS  
05/20/08 - DESIGN REVISION: REMOVED ALIGNMENT -RPA-; ADDED ALIGNMENT -LPB-; AND ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR -RPA- TO ACCOMMODATE -LPB-; SCL

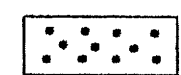
8/17/99  
1/15/2008  
K:\Projects\Permit Drawings\2612a-permit\sh1.dgn  
K:\Projects\Permit Drawings\2612a-permit\sh1.dgn



DENOTES FILL IN  
WETLAND



DENOTES IMPACTS IN  
SURFACE WATER



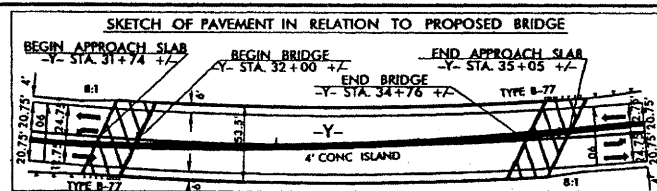
DENOTES MECHANIZED  
CLEARING

PROJECT REFERENCE NO. R-2612A	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR L/P ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Permit Drawing Sheet 15 of 30	

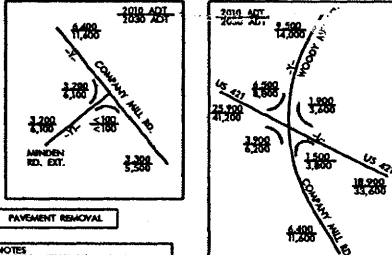
- NOTES
- 1) FOR -L- PROFILE, SEE SHEETS 14 AND 15
  - 2) FOR -Y1- PROFILE, SEE SHEET 20



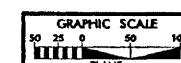
## REVISIONS



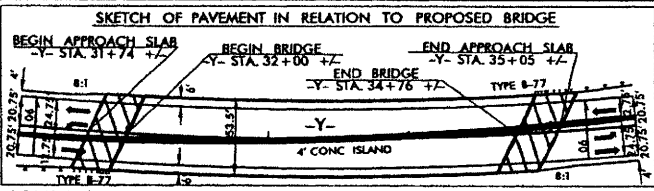
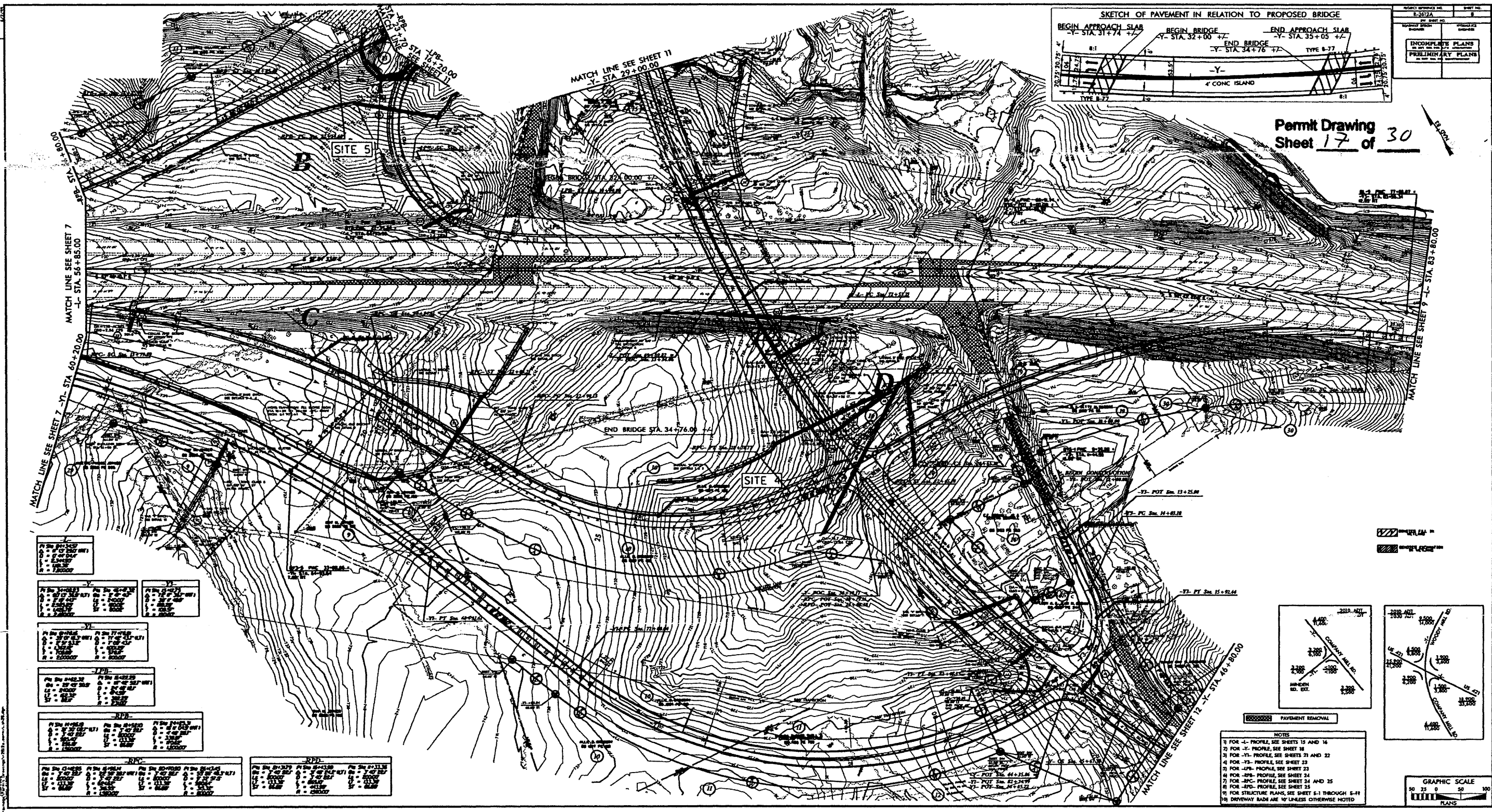
PROJECT REFERENCE NO.	SHEET NO.
E-2612A	8
BY SHEET NO.	
NON-DWY DESIGN SHEETS	WELDED SHEETS
<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>INCOMPLETE PLANS</b></p> <p>DO NOT USE FOR A/C ACQUISITION</p> <p><b>PRELIMINARY PLANS</b></p> <p>DO NOT USE FOR CONSTRUCTION</p> </div>	

[illegible]

- NOTES**
- 1) FOR -J- PROFILE, SEE SHEETS 15 AND 16  
2) FOR -Y- PROFILE, SEE SHEET 18  
3) FOR -Y1- PROFILE, SEE SHEETS 21 AND 22  
4) FOR -Y3- PROFILE, SEE SHEET 23  
5) FOR -JPS- PROFILE, SEE SHEET 23  
6) FOR -LPS- PROFILE, SEE SHEET 24  
7) FOR -APC- PROFILE, SEE SHEET 24 AND 25  
8) FOR -APD- PROFILE, SEE SHEET 25  
9) FOR STRUCTURE PLANS, SEE SHEET S-1 THROUGH S-17  
10) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED



REVISIONS  
05/20/08 - DESIGN REVISION: REMOVED ALIGNMENT -LPA-; ADDED ALIGNMENT -LPA-; ADJUSTED THE HORIZONTAL ALIGNMENT TO PROVIDE ADEQUATE CLEARANCE OR FUTURE WIDENING OF THE BRIDGE. SCL



PROJECT NO.	8-20/2A
SHEET NO.	17
DATE	05/20/08
DESIGNED BY	W. J. BROWN
CHECKED BY	W. J. BROWN
INCOMPLETE PLANS	
PRELIMINARY PLANS	

LPA	
STA 31+74	STA 32+00
STA 32+00	STA 34+76
STA 34+76	STA 35+05
LPA	
STA 31+74	STA 32+00
STA 32+00	STA 34+76
STA 34+76	STA 35+05
LPA	
STA 31+74	STA 32+00
STA 32+00	STA 34+76
STA 34+76	STA 35+05
LPA	
STA 31+74	STA 32+00
STA 32+00	STA 34+76
STA 34+76	STA 35+05

NOTES

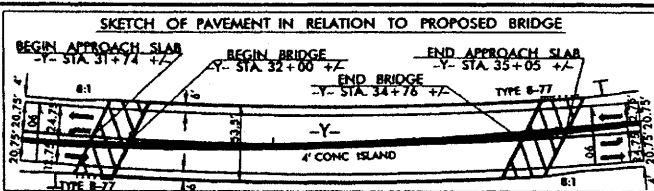
1. FOR -L- PROFILE, SEE SHEETS 15 AND 16
2. FOR -Y- PROFILE, SEE SHEET 18
3. FOR -Y1- PROFILE, SEE SHEETS 21 AND 22
4. FOR -Y2- PROFILE, SEE SHEET 23
5. FOR -LPA- PROFILE, SEE SHEET 23
6. FOR -LPA- PROFILE, SEE SHEET 24
7. FOR -LPA- PROFILE, SEE SHEET 24 AND 25
8. FOR -LPA- PROFILE, SEE SHEET 25
9. FOR STRUCTURE PLANS, SEE SHEET 6-1 THROUGH 6-11
10. DRIVEWAY BATHS ARE 10' UNLESS OTHERWISE NOTED

GRAPHIC SCALE  
0 25 50 100  
FEET

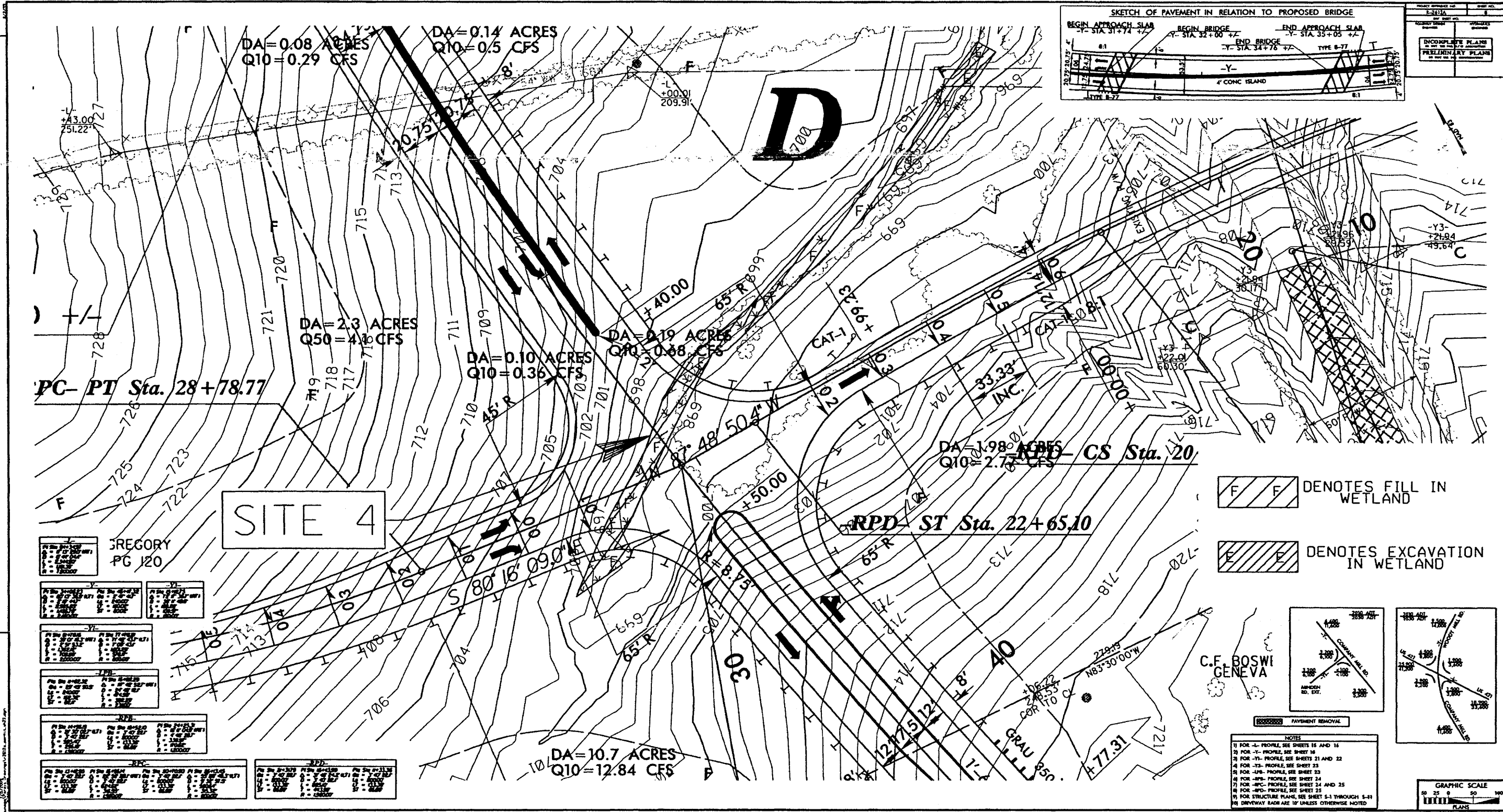




REVISIONS  
05/2008 - DESIGN REVISION: REMOVED ALIGNMENT -RPA- ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR -Y- TO PROVIDE ADEQUATE CLEARANCE FOR FUTURE WIDENING OF THE BRIDGE. SCL



INCOMPLETE PLANS  
PRELIMINARY PLANS  
DO NOT BE USED FOR CONSTRUCTION



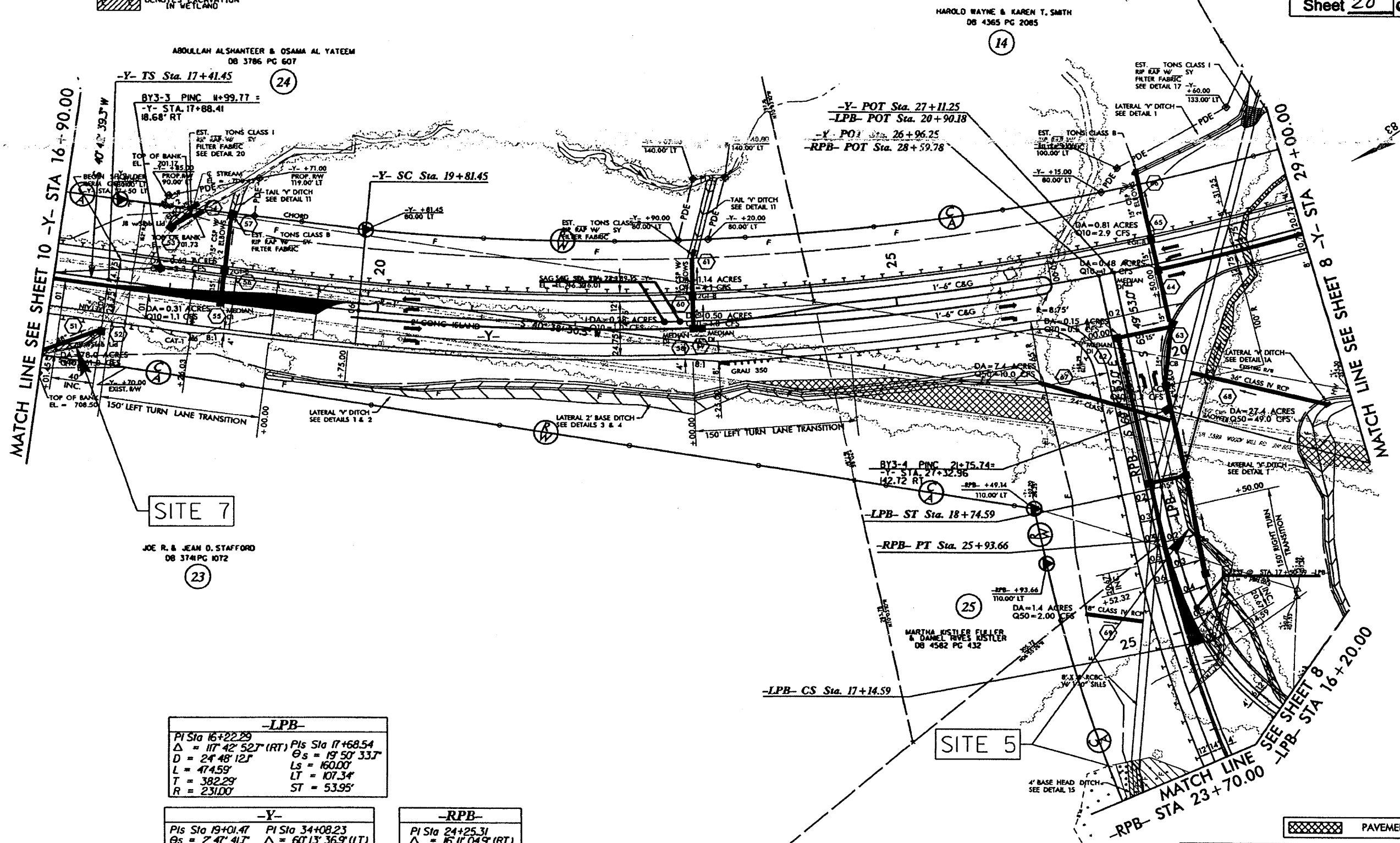


REVISIONS  
05/2008 - DESIGN REVISION; REMOVED ALIGNMENT -RPA-; ADDED ALIGNMENT -LPB-; AND ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR -RPB- TO ACCOMMODATE -LPB-; SCL

7/15/2009  
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- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING
- DENOTES EXCAVATION IN WETLAND

PROJECT REFERENCE NO.	SHEET NO.
R-2612A	11
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Permit Drawing Sheet 20 of 30	



-LPB-	
PI Sta 16+22.29	PIs Sta 17+68.54
$\Delta = 117' 42" 52.7$ (RT)	$\Theta_s = 19' 50" 33.7$
$D = 24' 48" 12.7$	$L_s = 160.00'$
$L = 474.59'$	$LT = 107.34'$
$T = 382.29'$	$ST = 53.95'$
$R = 231.00'$	

-Y-	
PIs Sta 19+01.47	PI Sta 34+08.23
$\Theta_s = 2' 47" 41.7$	$\Delta = 60' 13" 36.9$ (LT)
$L_s = 240.00'$	$D = 2' 19" 44.7$
$LT = 160.02'$	$L = 2,585.85'$
$ST = 80.02'$	$T = 1,426.78'$
	$R = 2,460.00'$

-RPB-	
PI Sta 24+25.31	$\Delta = 16' 11" 04.9$ (RT)
$D = 4' 46" 28.7$	$L = 338.97'$
$T = 170.62'$	$R = 1,200.00'$

- 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  
052008 - DESIGN REVISION: REMOVED ALIGNMENT -RPA-; ADDED ALIGNMENT -LPB-; AND ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR -RPB- TO ACCOMMODATE -LPB-. SCL

7/15/2008  
R:\Drawings\Permit Drawings\2612a\permit\2612a.dgn  
2612a.dgn

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

PROJECT REFERENCE NO.  
R-2612A

SHEET NO.  
11

R/W SHEET NO.

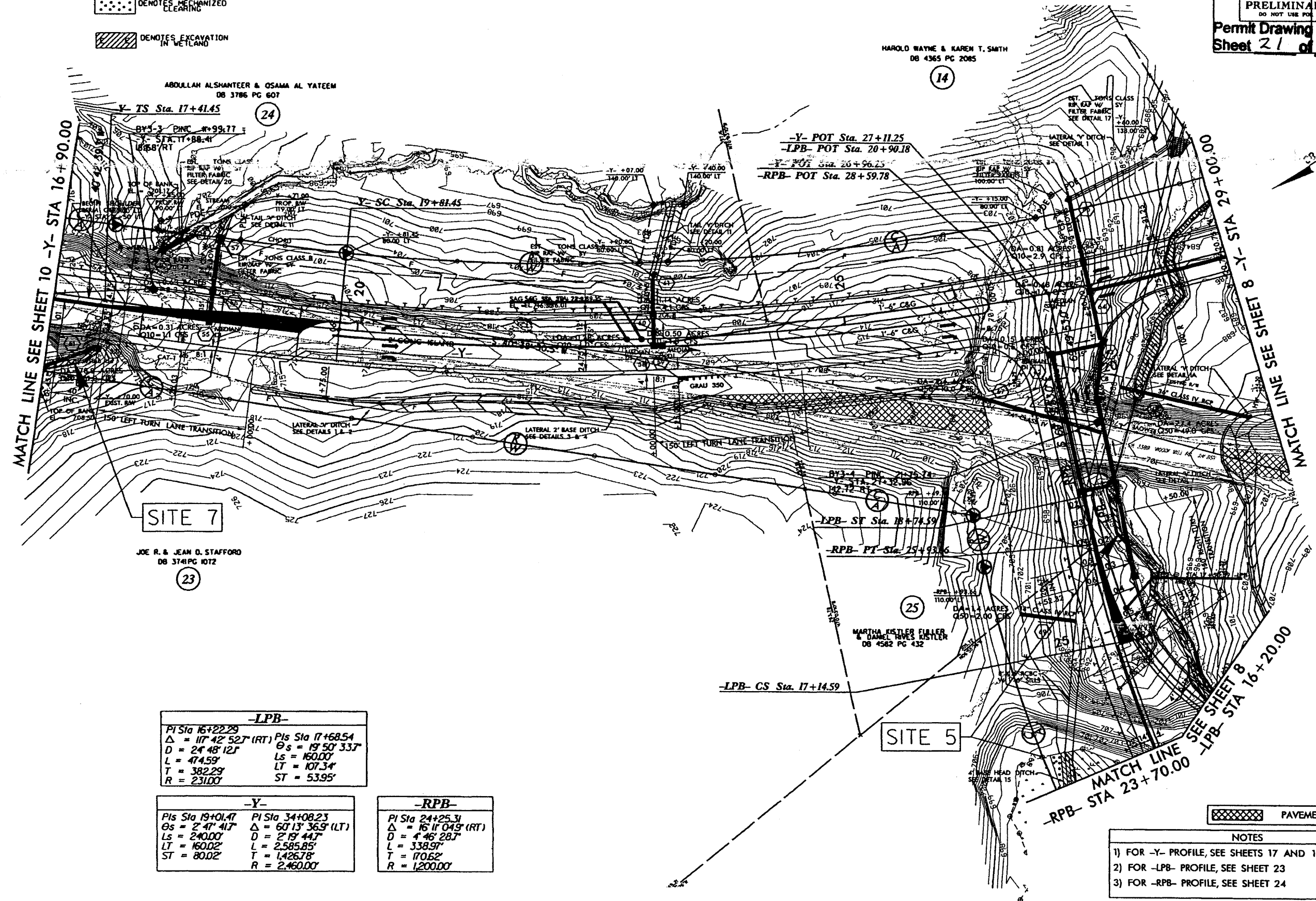
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS  
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

Permit Drawing  
Sheet 21 of 30



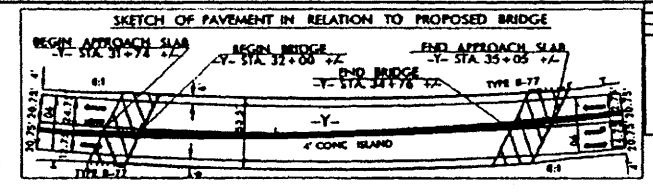
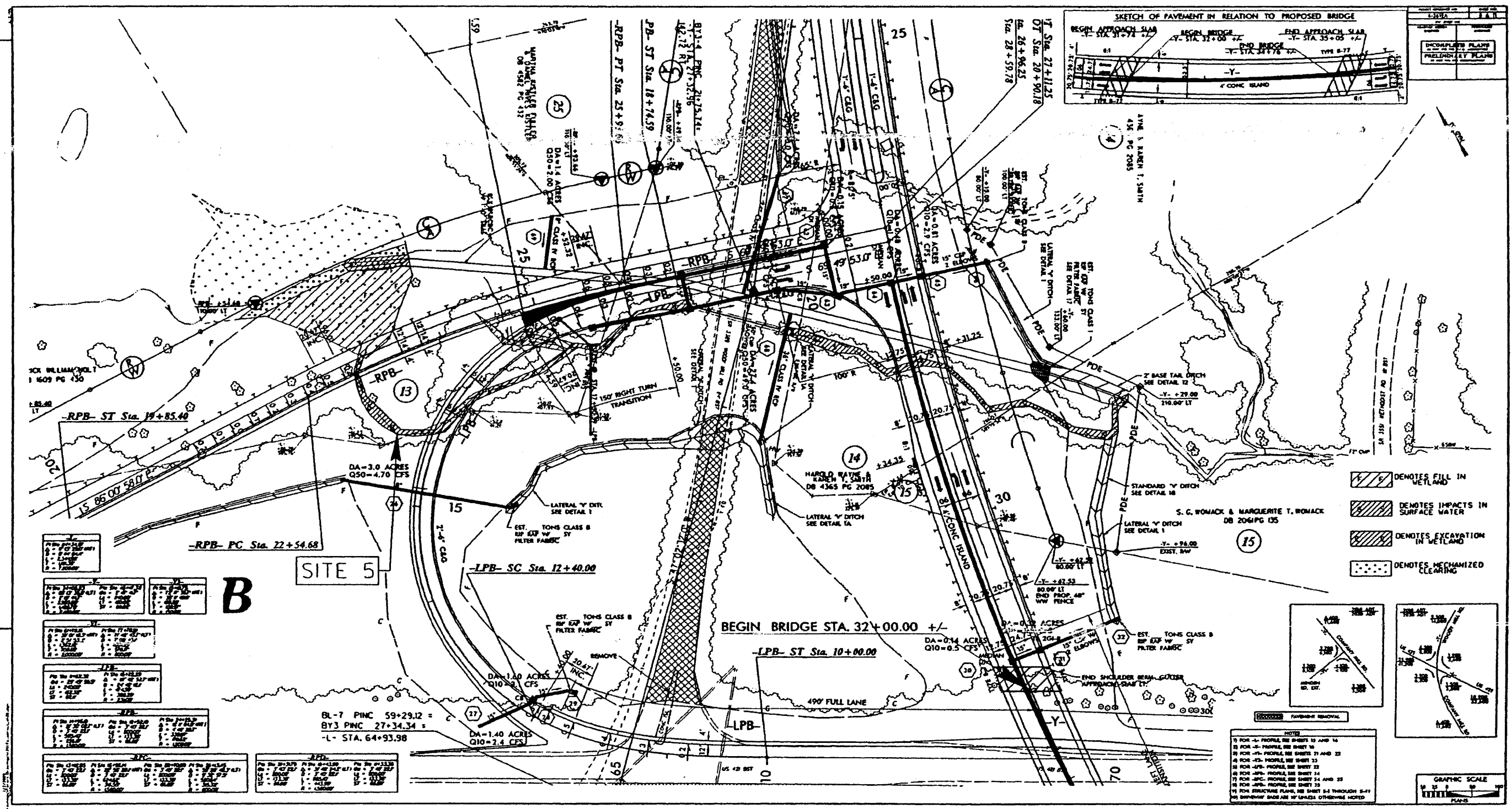
-LPB-	
PI Sta 16+22.29	PI Sta 17+68.54
$\Delta = 117^{\circ} 42' 52"$ (RT)	$\Delta = 19^{\circ} 50' 33"$
$D = 24^{\circ} 48' 12"$	$Ls = 160.00'$
$L = 474.59'$	$LT = 107.34'$
$T = 382.29'$	$ST = 53.95'$
$R = 231.00'$	

-Y-	
PI Sta 19+01.47	PI Sta 34+08.23
$\Delta = 2^{\circ} 41' 41"$	$\Delta = 60^{\circ} 13' 36"$ (LT)
$Ls = 240.00'$	$D = 2^{\circ} 19' 44"$
$LT = 160.02'$	$L = 2,585.85'$
$ST = 80.02'$	$T = 1,426.78'$
	$R = 2,460.00'$

-RPB-	
PI Sta 24+25.31	
$\Delta = 16^{\circ} 11' 04"$ (RT)	
$D = 4^{\circ} 46' 28"$	
$L = 338.97'$	
$T = 170.62'$	
$R = 1,200.00'$	

- 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  
02/008 - DESIGN REVISION: REMOVED ALIGNMENT 27A, ADDED ALIGNMENT 27B, ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR  
SITE TO ACCOMMODATE LPA, AND RAISED THE VERTICAL ALIGNMENT FOR "Y" TO PROVIDE ADEQUATE CLEARANCE FOR FUTURE WIDENING  
OF THE BRIDGE. SEE



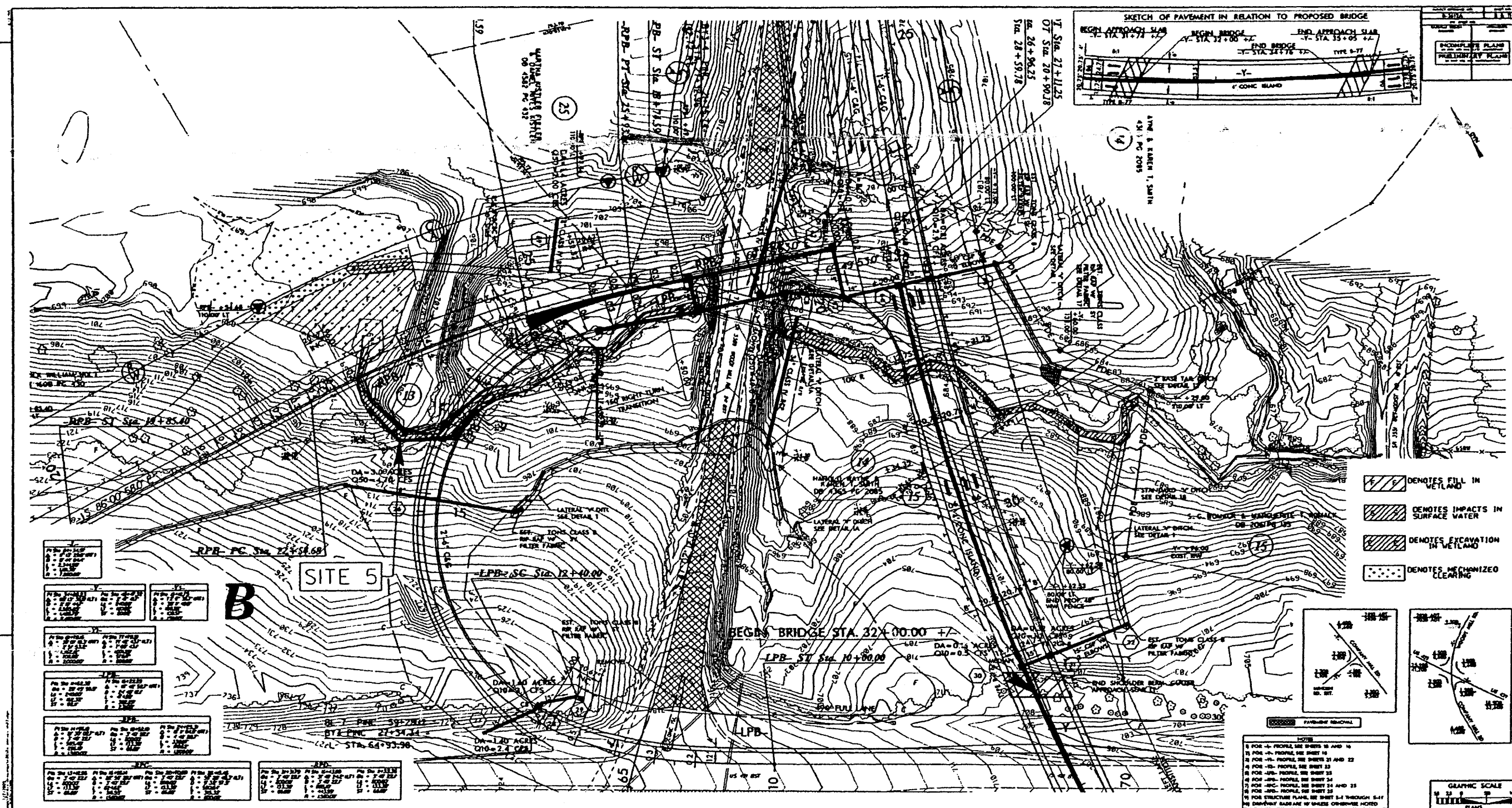
**B**

NO.	DATE	BY	CHKD.	DESCRIPTION
1	02/008	...	...	DESIGN REVISION: REMOVED ALIGNMENT 27A, ADDED ALIGNMENT 27B, ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR SITE TO ACCOMMODATE LPA, AND RAISED THE VERTICAL ALIGNMENT FOR "Y" TO PROVIDE ADEQUATE CLEARANCE FOR FUTURE WIDENING OF THE BRIDGE. SEE

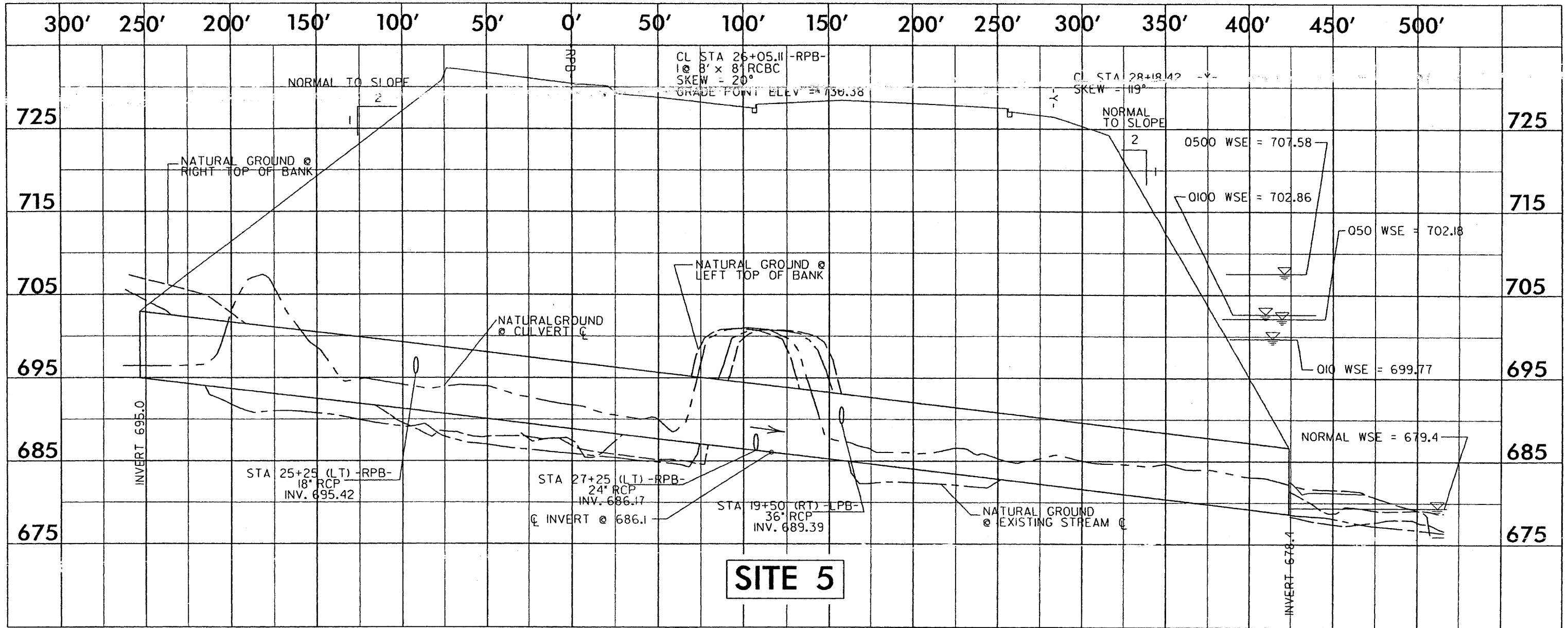
SITE 5

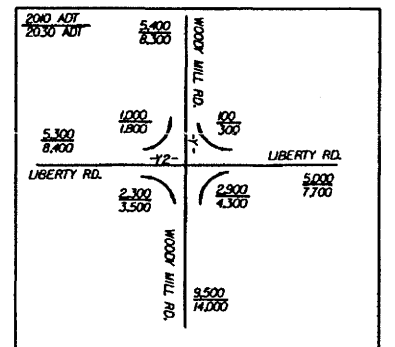
NOTES  
1. FOR ALL PROFILES, SEE SHEETS 12 AND 14.  
2. FOR ALL PROFILES, SEE SHEET 16.  
3. FOR ALL PROFILES, SEE SHEETS 11 AND 22.  
4. FOR ALL PROFILES, SEE SHEET 23.  
5. FOR ALL PROFILES, SEE SHEET 24.  
6. FOR ALL PROFILES, SEE SHEET 25.  
7. FOR ALL PROFILES, SEE SHEET 26.  
8. FOR ALL PROFILES, SEE SHEET 27.  
9. FOR ALL PROFILES, SEE SHEET 28.  
10. FOR ALL PROFILES, SEE SHEET 29.  
11. FOR ALL PROFILES, SEE SHEET 30.









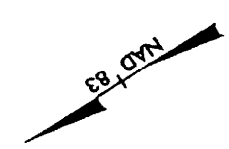


-Y-
PI Sta 14+43.85
$\Delta = 3^\circ 01' 22.6''$ (RT)
$D = 0^\circ 58' 13.1''$
$L = 311.55'$
$T = 155.8'$
$R = 5,905.00'$

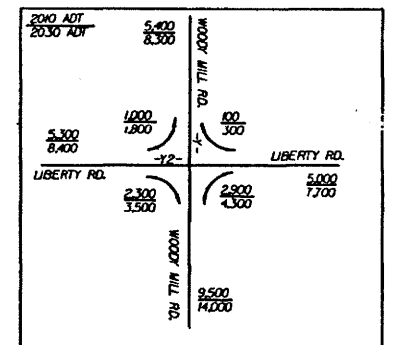
- | NOTES  |
|--|
| 1) FOR -Y- PROFILE, SEE SHEET 17                 |
| 2) FOR -Y2- PROFILE, SEE SHEET 22                |
| 3) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED |

 DENOTES IMPACTS IN SURFACE WATER

Permit Drawing Sheet 26 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

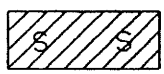
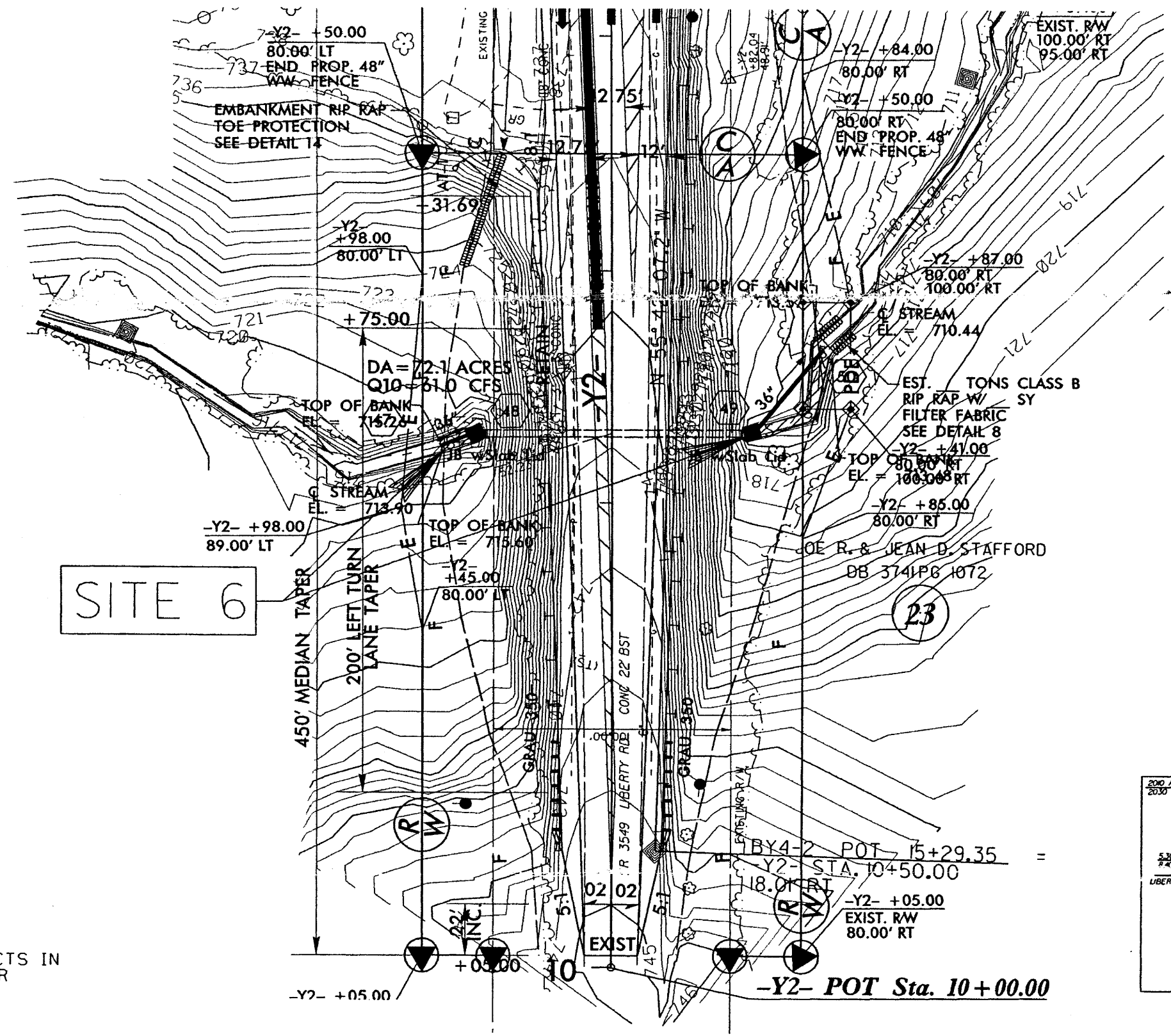
 DENOTES IMPACTS IN SURFACE WATER





REVISIONS

7/15/2009 R:\D:\image\Permit Drawings\2612a\permit.sh3p.dgn

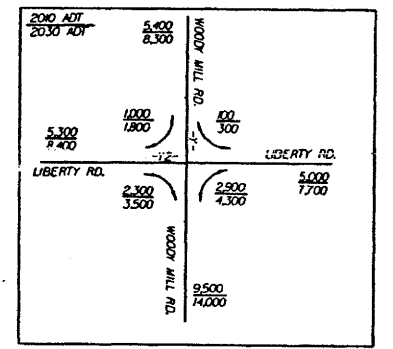


DENOTES IMPACTS IN SURFACE WATER

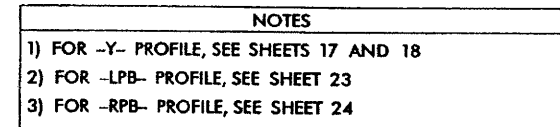
- NOTES**
- 1) FOR -Y- PROFILE, SEE SHEET 17
  - 2) FOR -Y2- PROFILE, SEE SHEET 22
  - 3) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

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

Permit Drawing  
Sheet 28 of 30

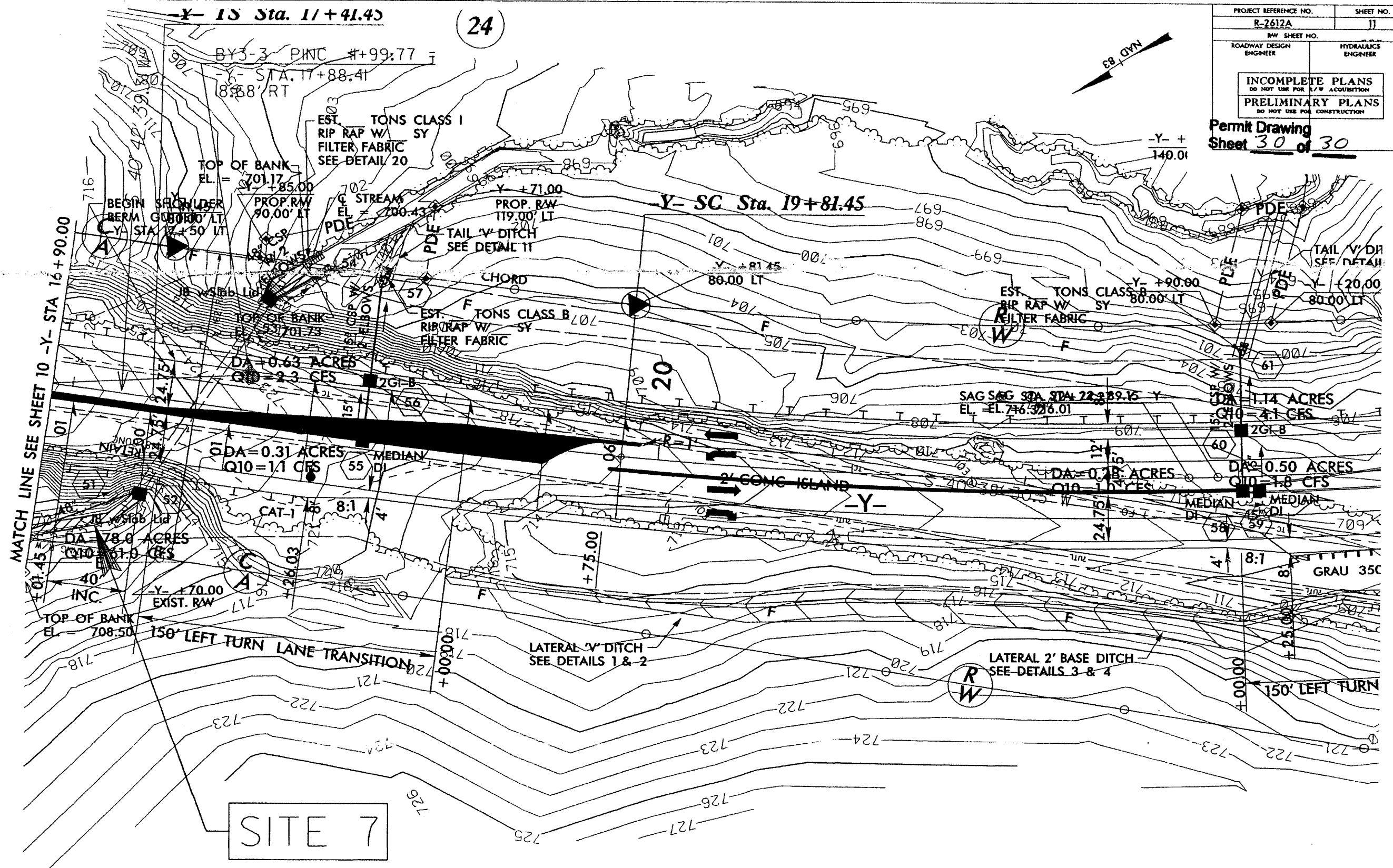


7/15/2009  
31\Drawings\Permit Drawings\2612a-permit-sh38



052008 - DESIGN REVISION: REMOVED ALIGNMENT -RPA-; ADDED ALIGNMENT -LPB-; AND ADJUSTED THE HORIZONTAL AND VERTICAL ALIGNMENTS FOR -RPB- TO ACCOMMODATE -LPB-. SCL

2/15/2009  
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scl



PROJECT REFERENCE NO.	SHEET NO.
R-2612A	11
RAW 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 30 of 30

DENOTES IMPACTS IN SURFACE WATER

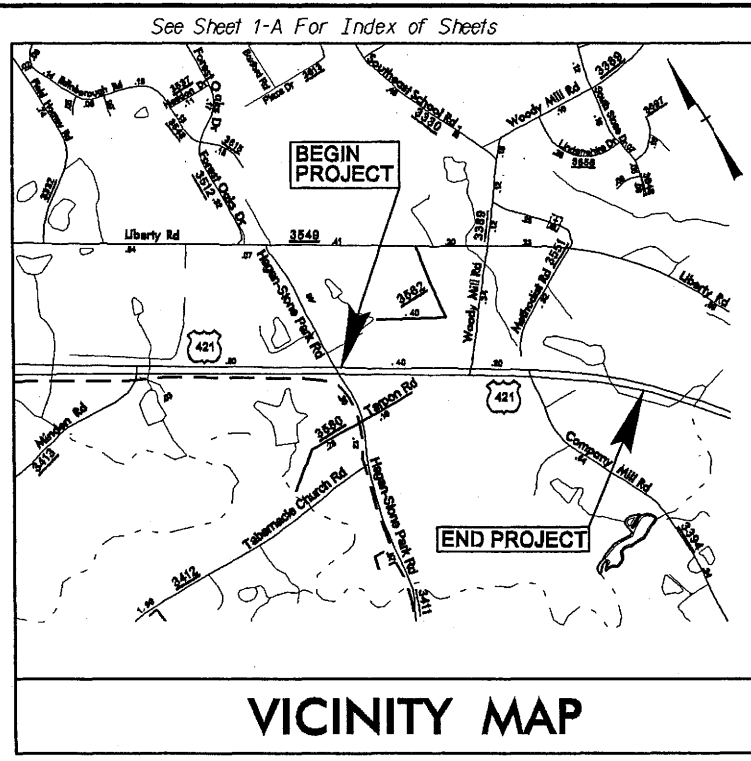
PAVEMENT REMOVAL

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

09/28/99

TIP PROJECT: R-2612A

CONTRACT:



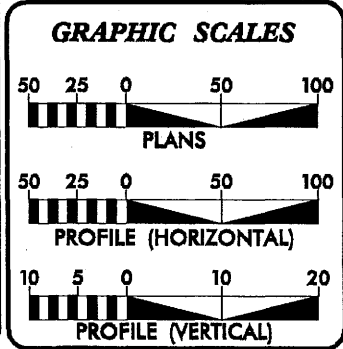
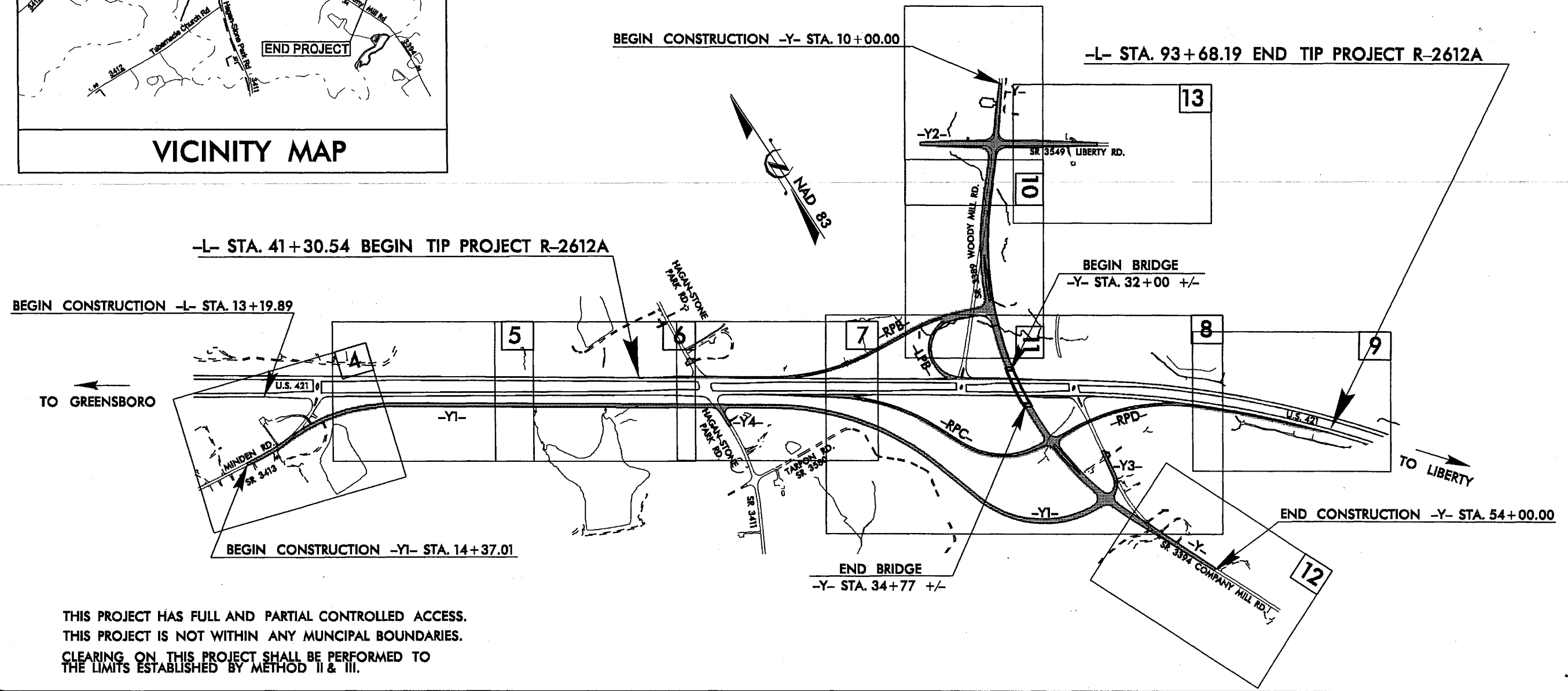
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# GUILFORD COUNTY

LOCATION: US 421 AT SR 3389 (WOODY MILL ROAD)  
SOUTH OF GREENSBORO  
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES,  
AND SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2612A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33483.1.1	NHF-421(11)	P.E.	
34483.2.2	CMNHS-0421(43)	RW & UTIL.	

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION



**DESIGN DATA**

ADT 2010 =	25,900
ADT 2030 =	41,200
DHV =	11 %
D =	70 %
T =	14 % *
V =	55 MPH
* (TTST 9% + DUAL 5%)	
FUNCTIONAL CLASS = FREEWAY	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT R-2612A	= 0.992 MI
TOTAL LENGTH TIP PROJECT R-2612A	= 0.992 MI

Prepared In the Office of:

**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: JANUARY 30, 2009	GLENN W. MUMFORD, PE PROJECT ENGINEER
LETTING DATE: JULY 20, 2010	SUSAN C. LANCASTER, PE PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: _____	P.E.
ROADWAY DESIGN ENGINEER	
SIGNATURE: _____	P.E.
STATE HIGHWAY DESIGN ENGINEER	

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER

17-MAR-2009 12:07  
R:\Roadway\Proj\R-2612a\_rdy\_tsh.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$

3/15/06

Note: Not to Scale

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

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

# CONVENTIONAL PLAN SHEET SYMBOLS

## BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	✕
Property Monument	□ EQM
Parcel/Sequence Number	⑫③
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 U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□ †
Building	□
School	□ S
Church	□ C
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 Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	-----

## 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	-----
U/G Power Cable Hand Hole	-----
H-Frame Pole	-----
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

## TELEPHONE:

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

## WATER:

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

## TV:

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

## GAS:

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

## SANITARY SEWER:

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

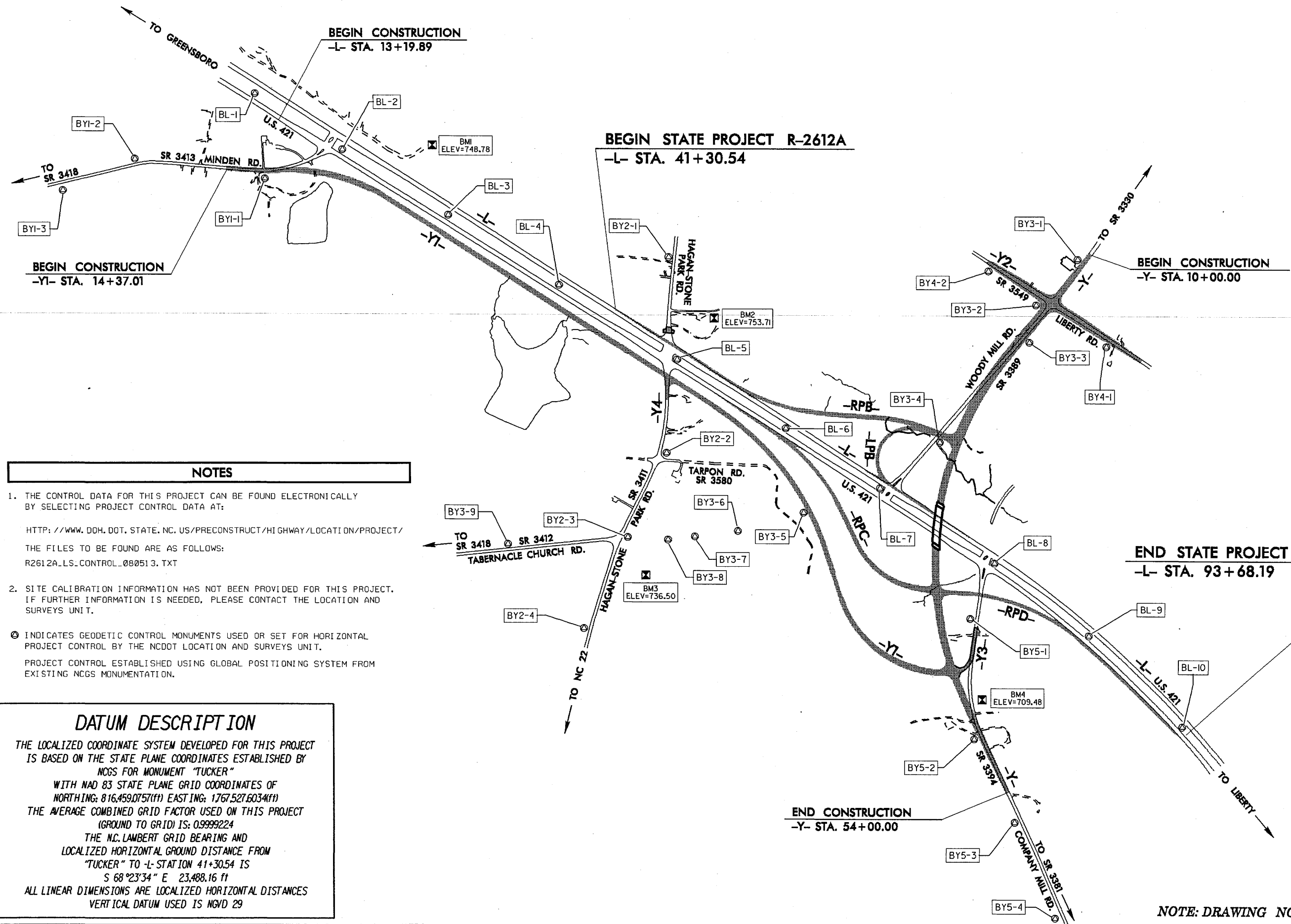
## MISCELLANEOUS:

Utility Pole	-----
Utility Pole with Base	-----
Utility Located Object	-----
Utility Traffic Signal Box	-----
Utility Unknown 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	-----
End of Information	-----

12/01/2005

# R-2612A SURVEY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
R-2612A	1C
Location and Surveys	



## 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:  
R2612A\_LS\_CONTROL\_080513.TXT
  2. 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 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: 816,459,075.71 EASTING: 1767,527,603.41  
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999224  
THE N.C. 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

NOTE: DRAWING NOT TO SCALE

17-MAR-2009 12:07 15-N-2612a-1s-1c-080513.dgn



**R-2612A SURVEY CONTROL SHEET**

## BASELINE DATA

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1		BL-1	889429.0058	1786761.9658	732.72	10+64.99	30.98 RT
2		BL-2	889024.0391	1787409.3159	737.27	18+28.54	37.40 RT
3		BL-3	888542.4859	1788177.0769	742.63	27+34.79	22.67 RT
4		BL-4	888031.0939	1788989.7442	748.64	36+94.95	15.81 RT
5		BL-5	887506.9201	1789821.4016	753.19	46+77.99	9.48 RT
6		BL-6	886984.5392	1790636.5395	740.21	56+46.15	10.55 RT
7		BL-7	886532.7757	1791354.0105	719.41	64+93.98	4.72 RT
8		BL-8	886003.7013	1792158.1867	692.00	74+56.92	14.67 RT
9		BL-9	885460.8162	1792871.4188	665.60	83+55.34	12.95 RT
10		BL-10	884792.1503	1793557.0316	651.25	93+15.31	14.13 RT

## BENCHMARK DATA

```

BM1      ELEVATION = 749.78
N 809072      E 1788072
L STATION 23-61 367 LEFT
RR SPIKE SET IN PP ON SOUTH SIDE OF
CHAPPARAL ROAD
*****

BM2      ELEVATION = 753.71
N 807802      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 805908      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 804995      E 1792091
Y STATION 47-06 120 LEFT
RR SPIKE IN 20' OAK ON EAST SIDE OF
COMPANY HILL ROAD

```

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

② 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: 816,459.075(11) EASTING: 1767,527,603.4(11)  
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT  
(GROUND TO GRID) IS: 0.9999224  
THE N.C. 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

BY1	POINT	DESC.	NORTH	EAST	ELEVATION	Y1 STATION	OFFSET
33		BL-2	809024.0391	1787409.3159	737.27	22+31.09	183.99 LT
11		BY1-1	808862.6753	1786846.0621	746.50	17+09.89	19.58 RT
12		BY1-2	808941.6689	1785915.1936	710.57	OUTSIDE PROJECT LIMITS	
13		BY1-3	808774.9838	1785358.7908	748.24	OUTSIDE PROJECT LIMITS	

BY2	POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
14		BY2-1	808231.1739	1789795.0730	761.11	OUTSIDE PROJECT LIMITS	
34		BL-5	807506.9201	1789821.4016	753.19	OUTSIDE PROJECT LIMITS	
15		BY2-2	806796.3093	1789757.5097	743.04	15+69.18	40.94 LT
16		BY2-3	806193.5457	1789457.3220	728.19	OUTSIDE PROJECT LIMITS	
17		BY2-4	805509.8050	1789189.1040	722.71	OUTSIDE PROJECT LIMITS	

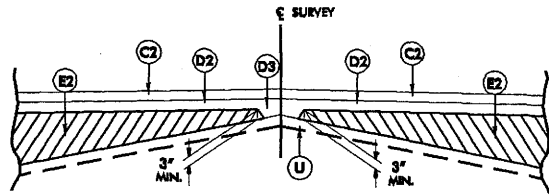
BY3	POINT	DESC.	NORTH	EAST	ELEVATION	STATION	OFFSET
18		BY3-1	808215.9912	1792818.3984	749.37	Y 18+92.42	17.07 RT
19		BY3-2	807913.5839	1792548.8598	736.25	Y 14+92.96	35.57 RT
20		BY3-3	807654.0422	1792398.4667	722.56	Y 17+89.41	19.68 LT
21		BY3-4	806913.4803	1791762.7985	700.18	Y 27+32.96	142.72 RT
35		BL-7	806532.7757	1791354.0185	719.41	L 64+93.98	4.72 RT
22		BY3-5	806402.4056	1790793.6651	738.03	Y1 64+93.64	7.82 RT
23		BY3-6	806268.3734	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 28+79.34	304.20 LT
36		BY2-3	806193.5457	1789457.3220	728.19	Y4 OUTSIDE	PROJECT LIMITS
36		BY3-9	806111.9442	1788620.9270	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		BY3-2	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

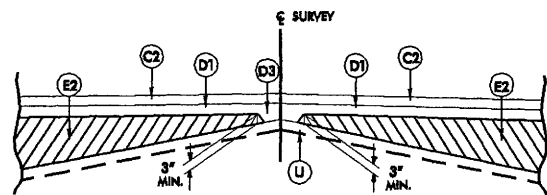
BY5	POINT	DESC.	NORTH	EAST	ELEVATION	STATION	OFFSET
38		BL-8	806003.7013	1792158.1867	692.00	Y3 OUTSIDE PROJECT LIMITS	
29		BY5-1	805582.2074	1792034.4399	719.68	Y3 11+44.90	15.92 RT
30		804717.7062	1792060.3184	724.51	Y 49+44.90	24.92 RT	
31		BY5-3	804104.7957	1792358.8962	697.92	Y 56-26.59	14.61 RT
32		BY5-4	803407.4985	1792667.5092	648.71	Y OUTSIDE PROJECT LIMITS	

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 188 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. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0B, AT AN AVERAGE RATE OF 286 LBS. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0B, AT AN AVERAGE RATE OF 466 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 119.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 466 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 6½" 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)

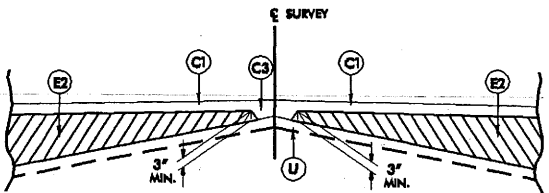
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



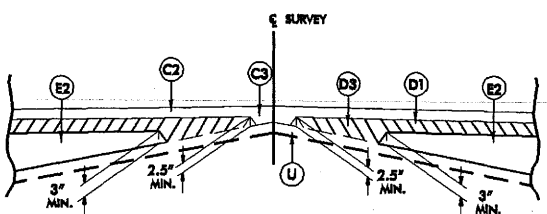
Detail Showing Method of Wedging No. 1



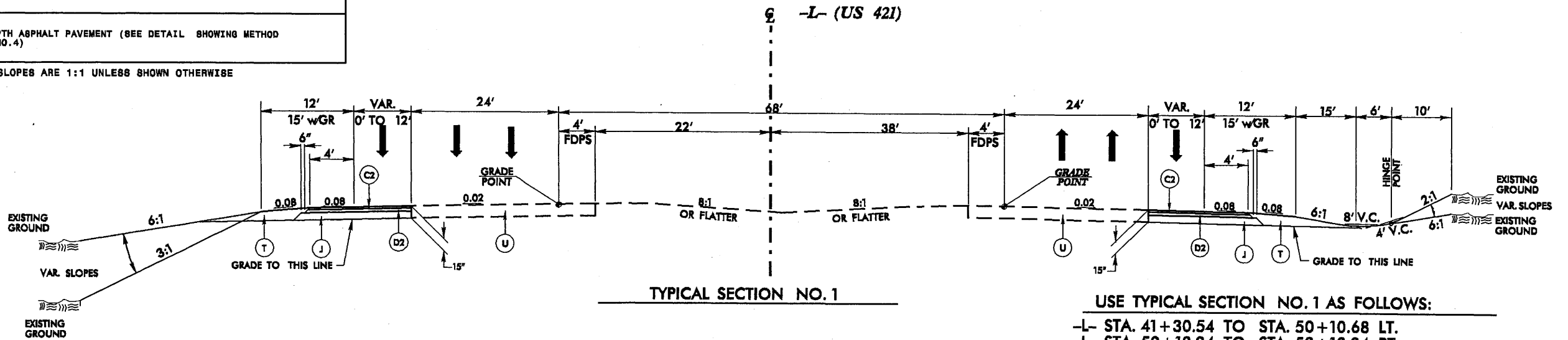
Detail Showing Method of Wedging No. 2



Detail Showing Method of Wedging No. 3



Detail Showing Method of Wedging No. 4



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:

- L- STA. 41+30.54 TO STA. 50+10.68 LT.
- L- STA. 50+18.24 TO STA. 53+18.24 RT.
- L- STA. 66+48.53 TO STA. 72+18.25 LT.
- L- STA. 68+00.00 TO STA. 72+00.00 RT.
- L- STA. 84+88.19 TO STA. 93+68.19 RT.

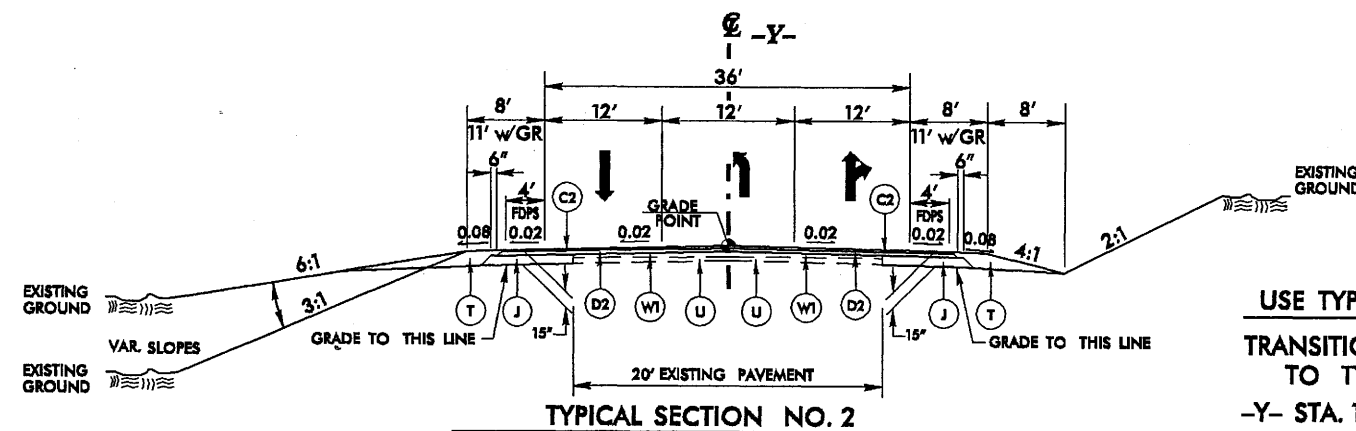
PROJECT REFERENCE NO.	SHEET NO.
R-2612A	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



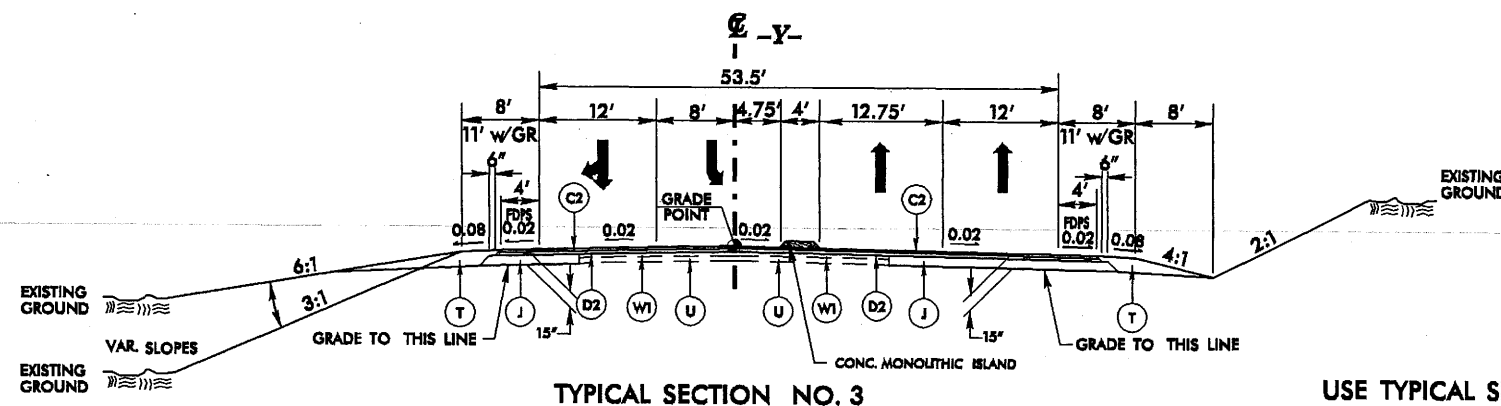
81799

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

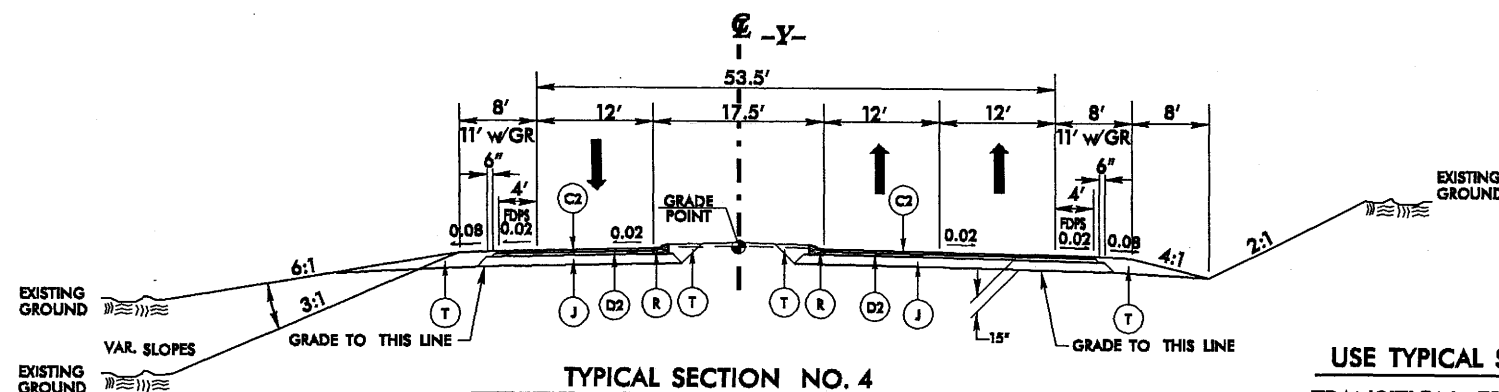
PROJECT REFERENCE NO.	SHEET NO.
R-2612A	2-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



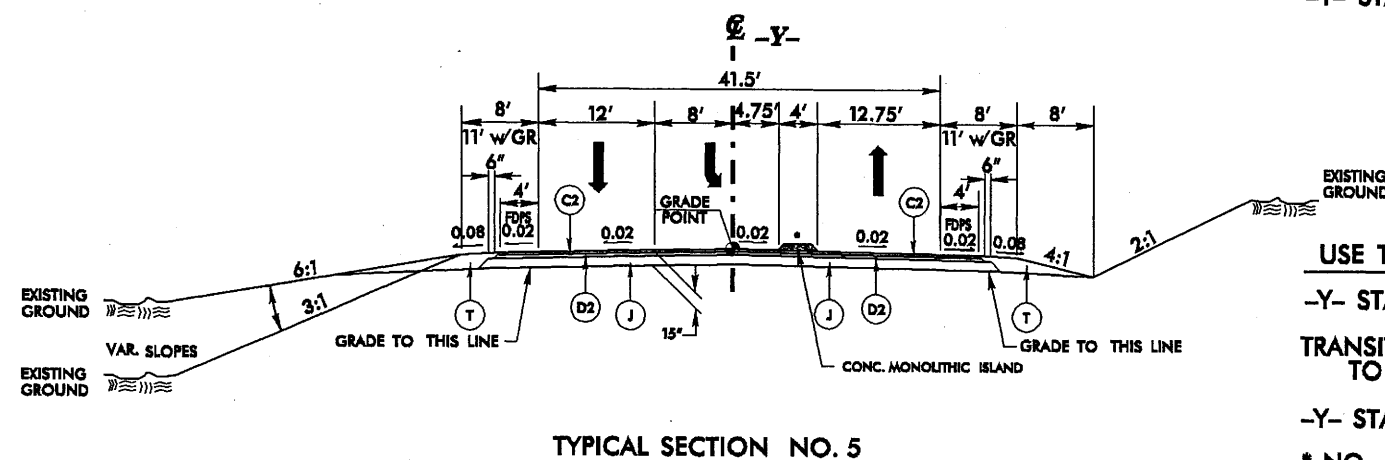
USE TYPICAL SECTION NO. 2 AS FOLLOWS:  
TRANSITION FROM EXISTING AT -Y- STA.10+00.00  
TO TYPICAL NO. 2 AT -Y- STA. 12+00.00  
-Y- STA. 12+00.00 TO STA. 15+35.00



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

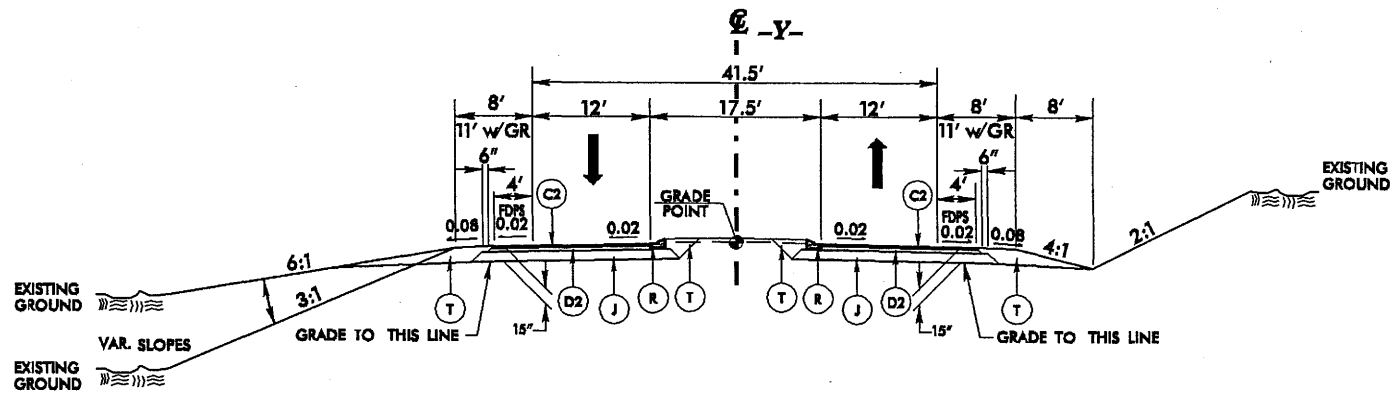


USE TYPICAL SECTION NO. 5 AS FOLLOWS:  
-Y- STA. 26+50.00 TO STA. 31+50.00  
TRANSITION FROM TYPICAL NO. 5 AT -Y- STA. 31+50.00  
TO REVERSE OF TYPICAL NO. 5 AT STA. 35+50.00  
-Y- STA. 35+50.00 TO STA. 38+50.00 (REVERSE)  
\* NO ISLAND FROM 26+50.00 TO 27+50.00 AND  
37+40.00 TO 38+50.00

8/17/99

C1	2" 89.5B
C2	3" 89.6B
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'-8" 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

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

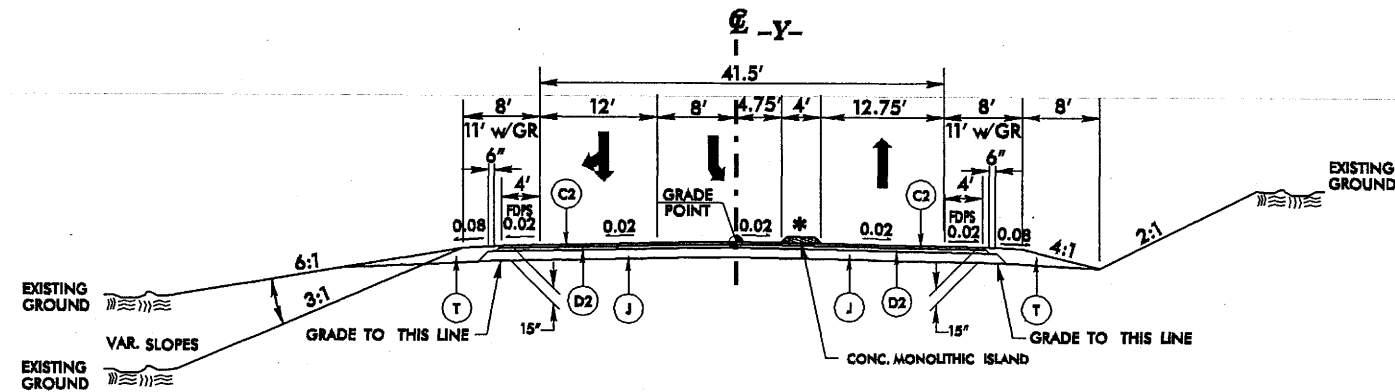


TYPICAL SECTION NO. 6

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



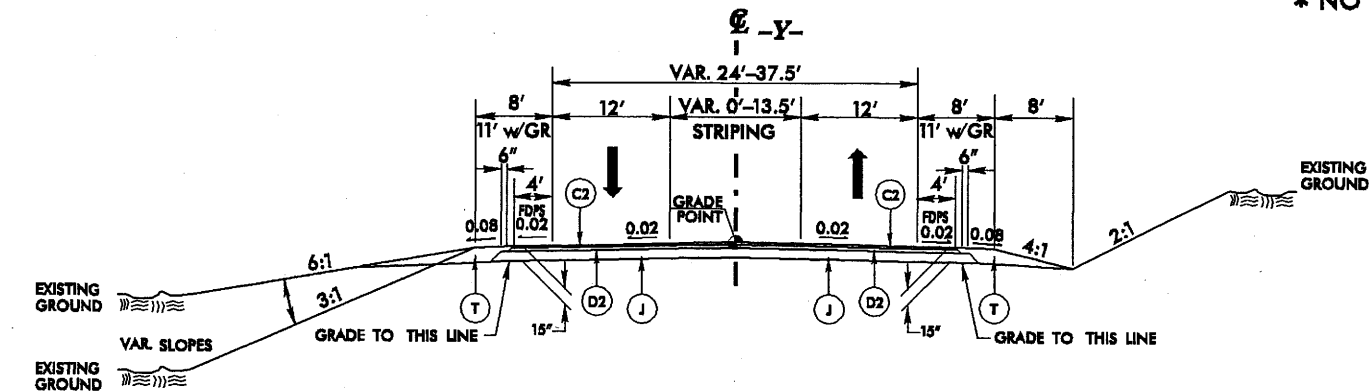
TYPICAL SECTION NO. 7

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



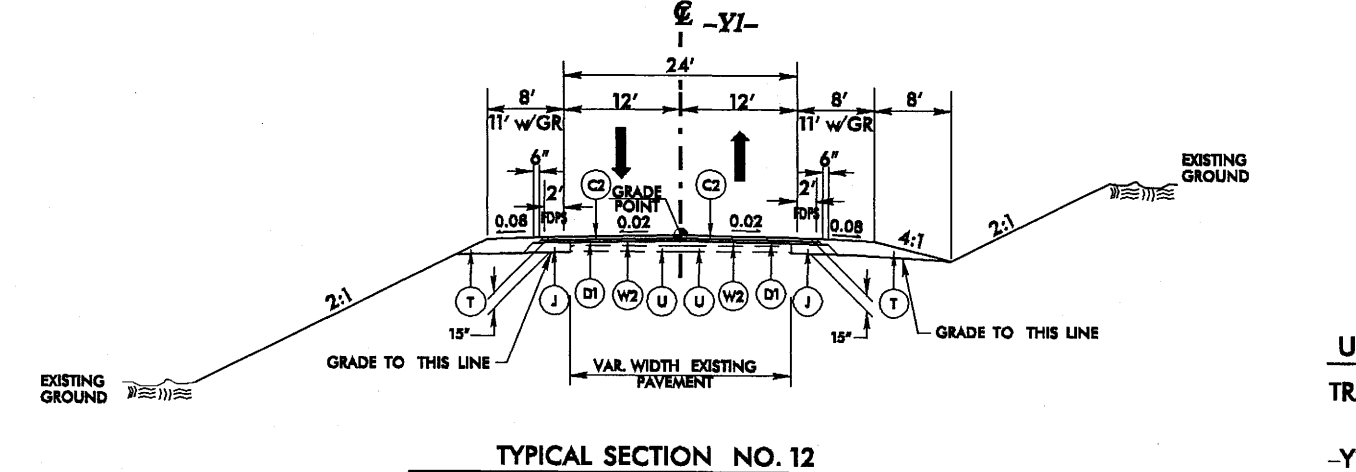
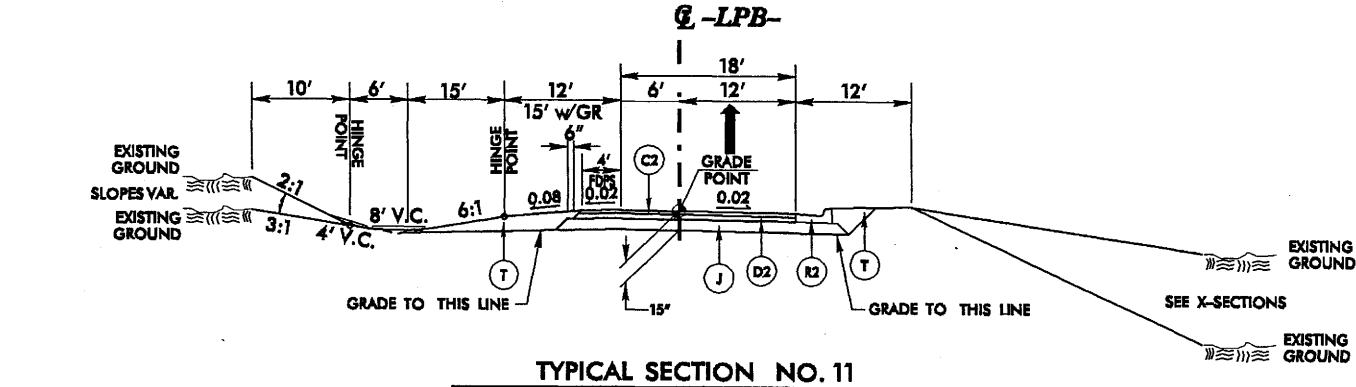
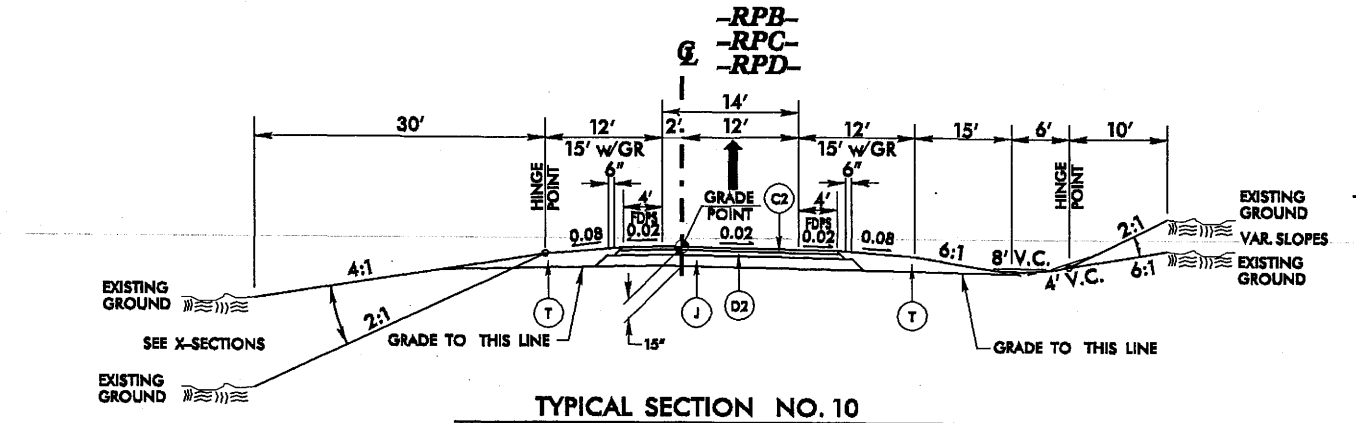
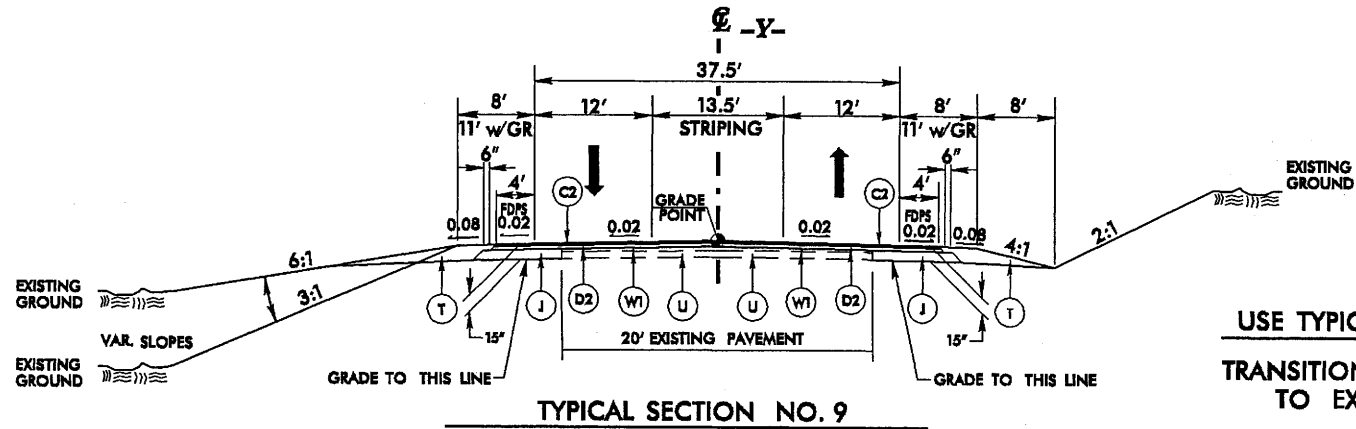
TYPICAL SECTION NO. 8

USE TYPICAL SECTION NO. 8 AS FOLLOWS:

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

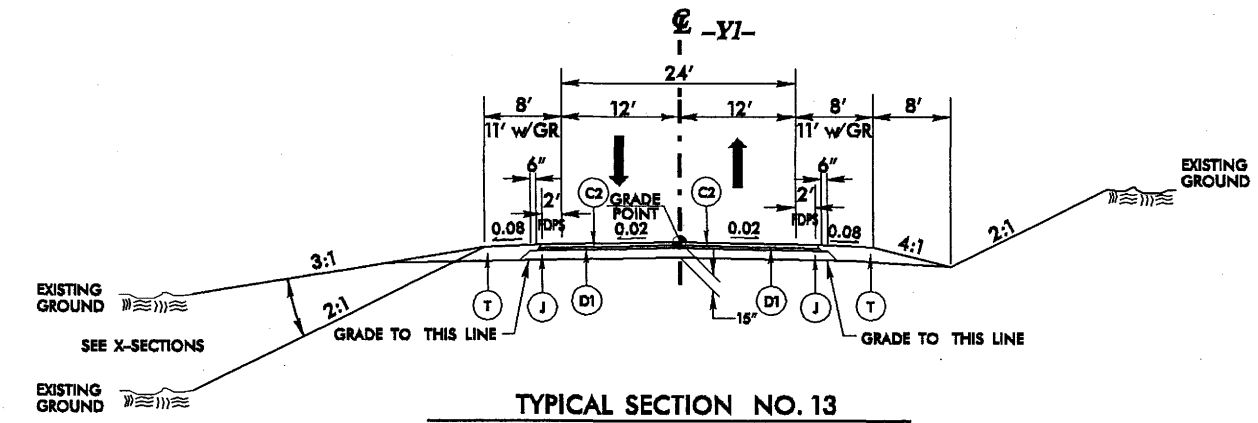
9/7/99

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'-8" 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

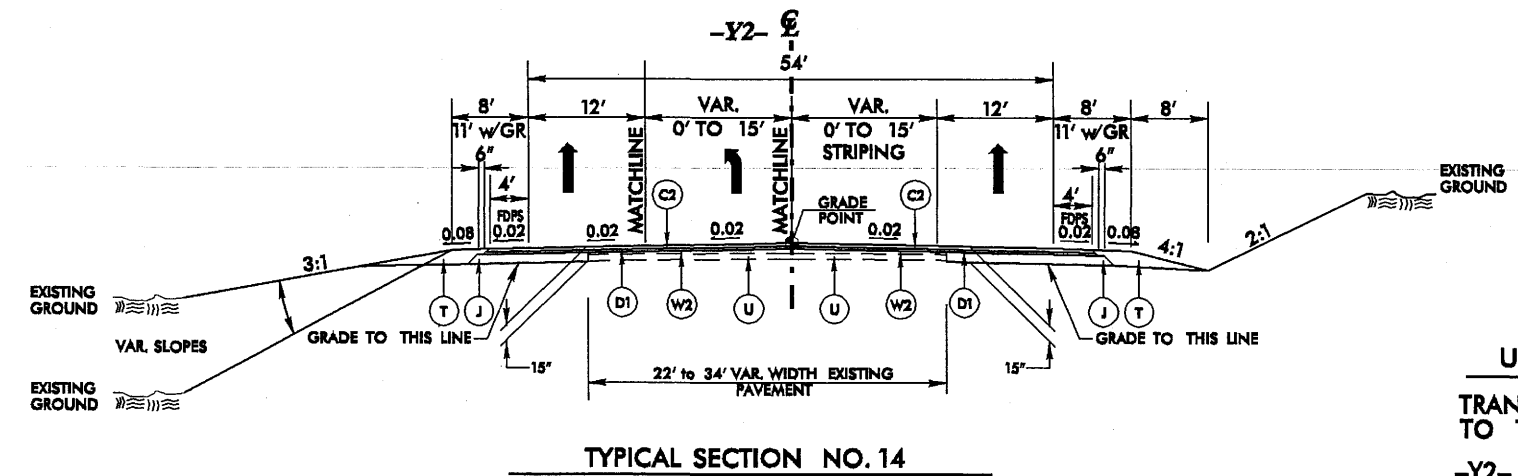


C1	2" 89.5B
C2	3" 89.5B
C3	VAR. 89.5B
D1	2½" I19.0B
D2	4" I19.0B
D3	VAR. I19.0B
E1	4" B25.0B
E2	VAR. B25.0B
J	8" ABC
R1	1'-8" C & G
R2	2'-8" C & G
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING DETAIL No. 1
W2	WEDGING DETAIL No. 2
W3	WEDGING DETAIL No. 3
W4	WEDGING DETAIL No. 4

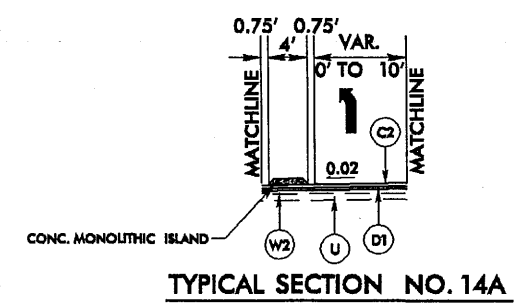
PROJECT REFERENCE NO.	SHEET NO.
R-2612A	2-D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



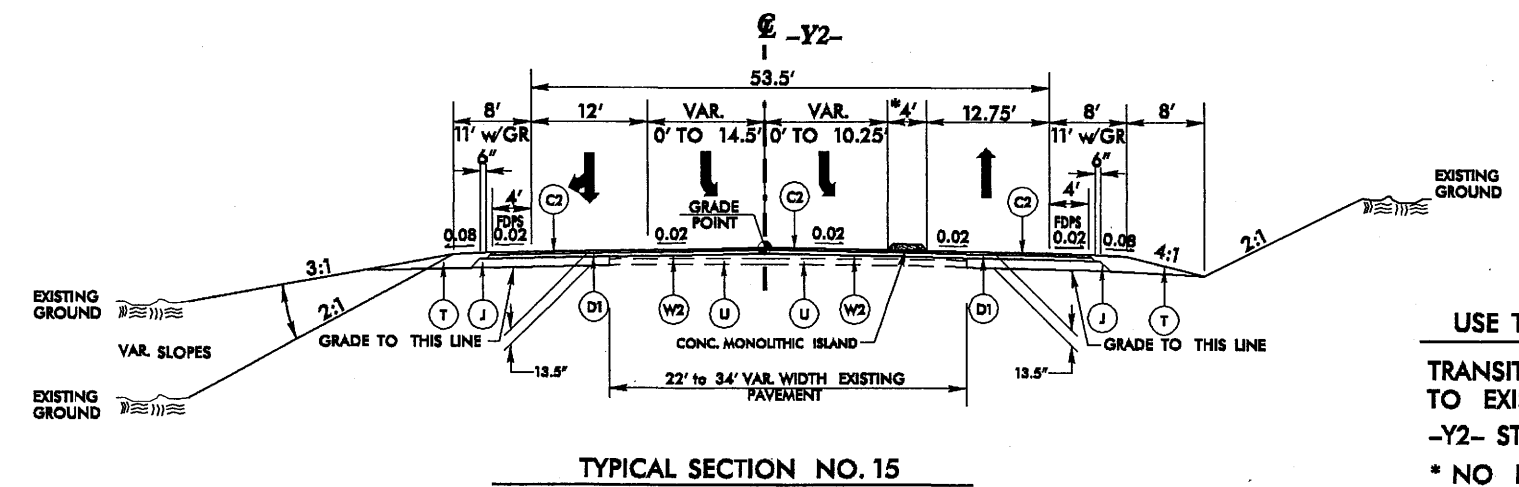
USE TYPICAL SECTION NO. 13 AS FOLLOWS:  
-Y1- STA. 18+99.41 TO STA. 82+52.97



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

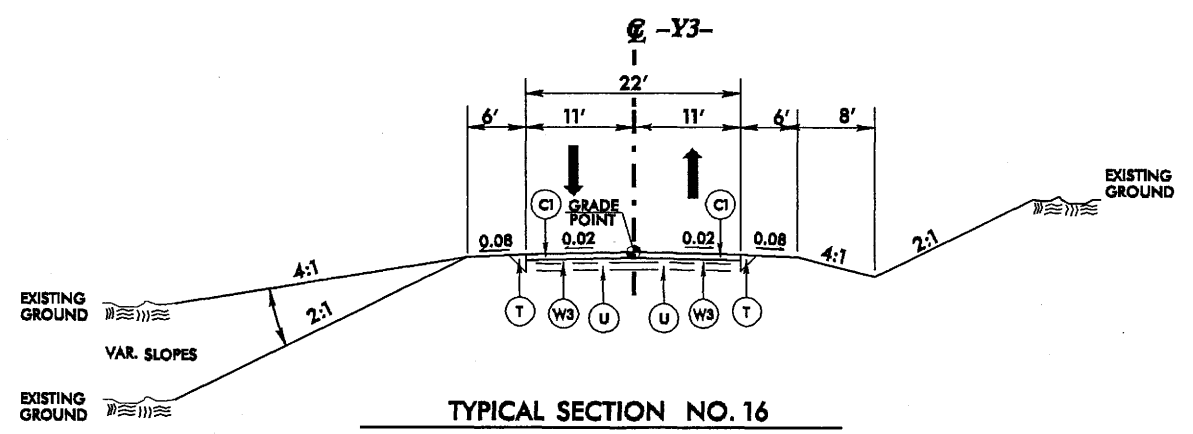


USE TYPICAL SECTION NO. 15 AS FOLLOWS:  
TRANSITION FROM TYPICAL NO. 15 AT -Y2- STA. 18+70.00  
TO EXISTING AT -Y2- STA. 23+50.00  
-Y2- STA. 14+77.98 TO STA. 18+70.00  
\* NO ISLAND FROM -Y2- STA. 14+77.98 TO 16+30.00  
AND -Y2- STA. 18+70 TO 23+50.00

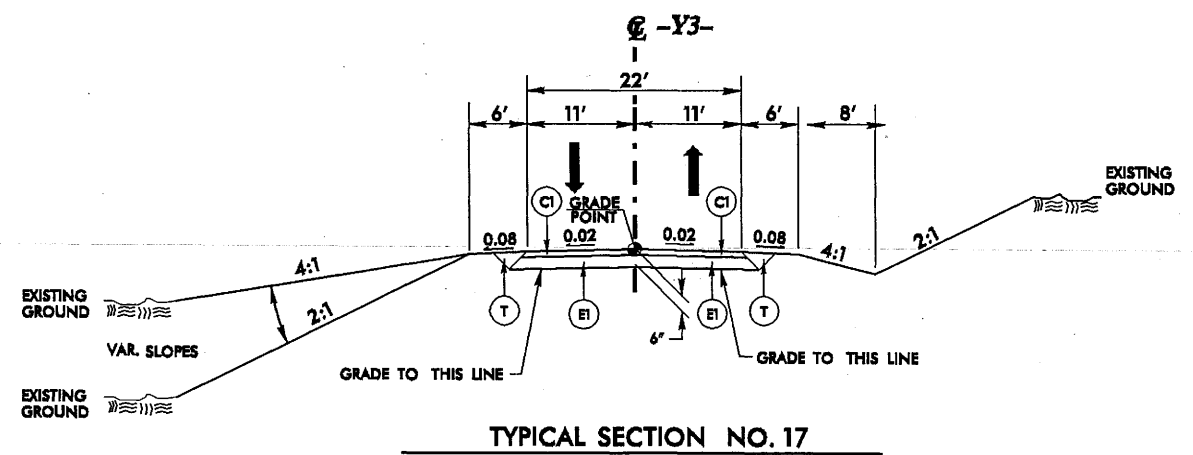
8/17/99

C1	2" 89.5B
C2	3" 89.5B
C3	VAR. 89.5B
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'-8" 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

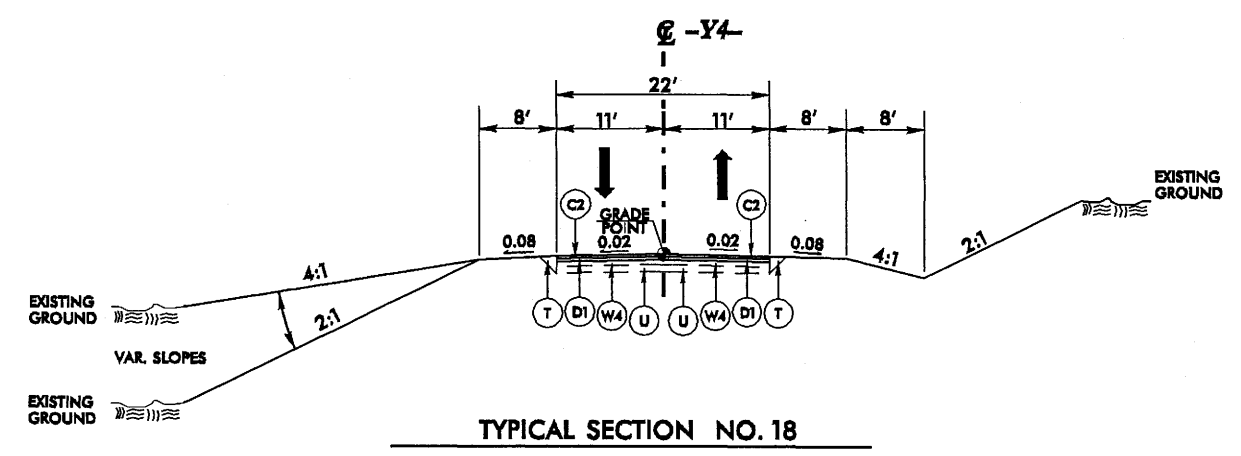
PROJECT REFERENCE NO.		SHEET NO.
R-2612A		2-E
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER	
<div>PRELIMINARY PLANS</div> <div>DO NOT USE FOR CONSTRUCTION</div>		



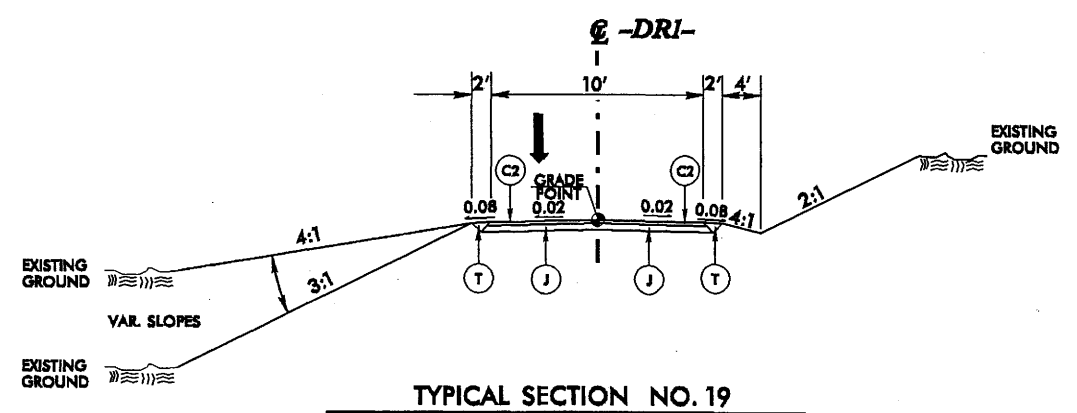
USE TYPICAL SECTION NO. 16 AS FOLLOWS:  
-Y3- STA. 12+00.00 TO STA. 14+50.00



USE TYPICAL SECTION NO. 17 AS FOLLOWS:  
-Y3- STA. 14+50.00 TO STA. 15+84.26

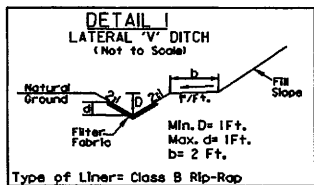


USE TYPICAL SECTION NO. 18 AS FOLLOWS:  
-Y4- STA. 10+00.00 TO STA. 11+25.00  
TRANSITION FROM TYPICAL NO. 18 AT -Y4- STA. 11+25.00  
TO EXISTING AT -Y4- STA. 11+75.00  
NOTE: USE -Y4- PAVEMENT DESIGN FOR T-TURNAROUND  
AT ROAD TERMINUS



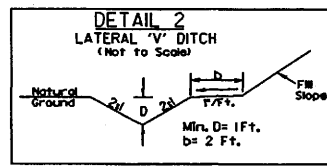
USE TYPICAL SECTION NO. 19 AS FOLLOWS:  
-DR1- STA. 10+00.00 TO STA. 10+84.61

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

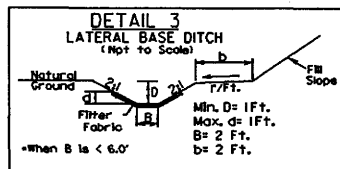


Type of Liner= Class B Rip-Rap

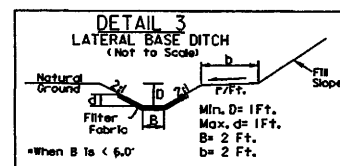
FROM STA. 71+72 TO STA. 72+00 -I- RIGHT  
FROM STA. 50+50 TO STA. 52+22 -I- LEFT  
FROM STA. 19+00 TO STA. 19+50 -Y- RIGHT  
FROM STA. 27+50 TO STA. 29+00 -Y- LEFT  
FROM STA. 29+75 TO STA. 31+65 -Y- LEFT  
FROM STA. 35+25 TO STA. 35+50 -Y- LEFT  
FROM STA. 41+80 TO STA. 42+50 -Y- RIGHT  
FROM STA. 23+10 TO STA. 25+00 -Y1- RIGHT  
FROM STA. 32+50 TO STA. 34+00 -Y1- RIGHT  
FROM STA. 37+00 TO STA. 39+60 -Y1- RIGHT  
FROM STA. 45+50 TO STA. 47+50 -Y1- RIGHT  
FROM STA. 17+50 TO STA. 18+60 -RPS- LEFT  
FROM STA. 18+00 TO STA. 22+50 -RPS- RIGHT  
FROM STA. 23+90 TO STA. 27+00 -RPS- RIGHT  
FROM STA. 19+50 TO STA. 21+65 -RPC- LEFT  
FROM STA. 20+00 TO STA. 21+65 -RPC- RIGHT  
FROM STA. 25+00 TO STA. 28+00 -RPC- RIGHT  
FROM STA. 28+00 TO STA. 29+00 -RPC- LEFT



FROM STA. 19+50 TO STA. 20+00 -Y- RIGHT  
FROM STA. 42+40 TO STA. 43+00 -Y- LEFT  
FROM STA. 47+77 TO STA. 47+98 -Y- RIGHT  
FROM STA. 48+15 TO STA. 49+00 -Y- RIGHT  
FROM STA. 26+00 TO STA. 28+00 -RPC- LEFT

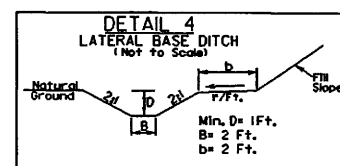


Type of Liner= Class B Rip-Rap  
FROM STA. 22+50 TO STA. 26+25 -Y- RIGHT  
FROM STA. 22+00 TO STA. 22+50 -Y1- RIGHT  
FROM STA. 36+50 TO STA. 37+20 -Y1- RIGHT

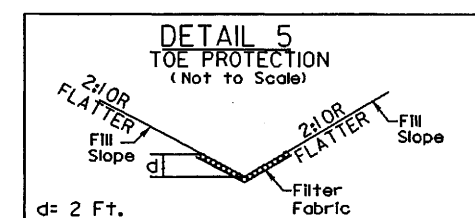


Type of Liner= Class B Rip-Rap

FROM STA. 57+00 TO STA. 59+50 -Y1- LEFT  
FROM STA. 65+50 TO STA. 66+50 -Y1- LEFT  
FROM STA. 20+75 TO STA. 22+00 -RPD- RIGHT

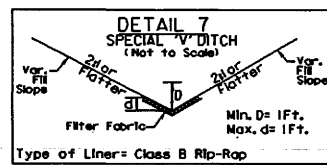
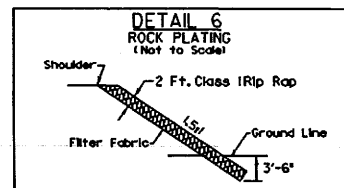


FROM STA. 20+00 TO STA. 22+50 -Y- RIGHT  
FROM STA. 59+50 TO STA. 65+50 -Y1- LEFT

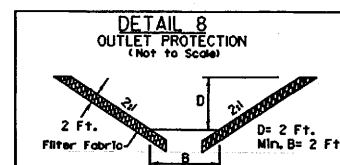


Type of Liner= Class B Rip-Rap

FROM STA. 23+00 TO STA. 25+00 -Y1- LEFT  
FROM STA. 33+00 TO STA. 46+00 -Y1- LEFT

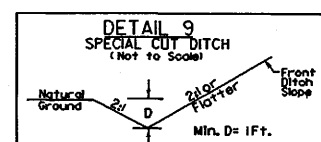


Type of Liner= Class B Rip-Rap  
FROM STA. 37+00 TO STA. 41+00 -Y1- LEFT

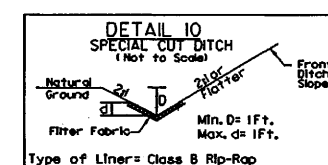


Type of Liner= Class B Rip-Rap

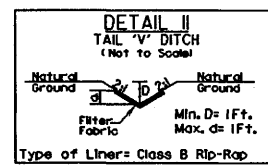
STA. 18+10 -Y- LEFT  
STA. 37+00 -Y1- RIGHT  
STA. 12+65 -Y2- RIGHT



FROM STA. 43+00 TO STA. 43+90 -Y- LEFT  
FROM STA. 53+50 TO STA. 57+00 -Y1- LEFT  
FROM STA. 13+50 TO STA. 15+00 -Y2- LEFT  
FROM STA. 17+00 TO STA. 21+50 -Y2- LEFT  
FROM STA. 14+80 TO STA. 15+50 -Y3- RIGHT  
FROM STA. 18+50 TO STA. 20+00 -RPC- RIGHT

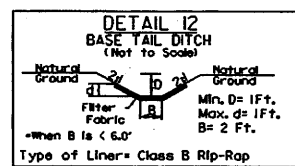


Type of Liner= Class B Rip-Rap  
FROM STA. 42+50 TO STA. 43+63 -Y- RIGHT



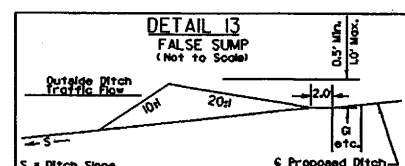
Type of Liner= Class B Rip-Rap

STA. 18+50 -Y- LEFT  
STA. 23+50 -Y- LEFT  
STA. 41+50 -Y- RIGHT  
STA. 34+00 -Y1- RIGHT  
STA. 44+85 -Y1- RIGHT  
STA. 63+40 -Y1- RIGHT

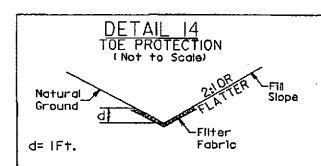


Type of Liner= Class B Rip-Rap

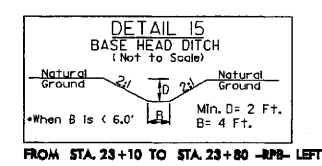
STA. 21+65 -RPC LEFT  
STA. 28+96 -Y- LEFT  
STA. 36+50 -Y1- RIGHT  
STA. 66+50 -Y1- LEFT



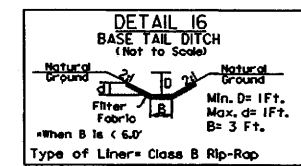
STA. 14+75 -RPC- RIGHT



Type of Liner= Class B Rip-Rap  
FROM STA. 13+00 TO STA. 13+50 -Y2- LEFT

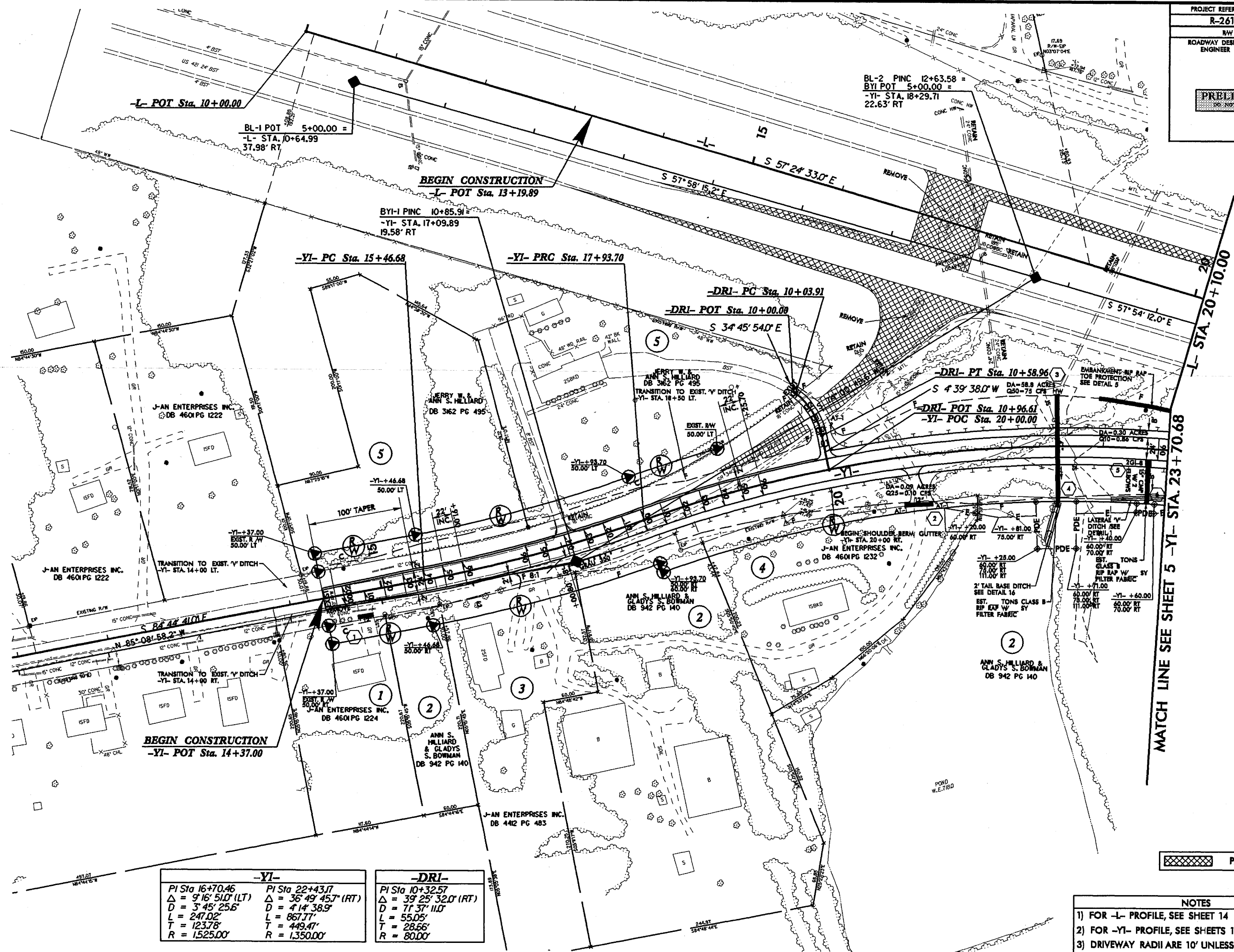


FROM STA. 23+10 TO STA. 23+80 -RPS- LEFT



Type of Liner= Class B Rip-Rap

STA. 22+50 -Y1- RIGHT



### PAVEMENT REMOVAL

## NOTES

- 1) FOR -L- PROFILE, SEE SHEET 14
- 2) FOR -YI- PROFILE, SEE SHEETS 19 AND 20
- 3) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED





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

**BARRY PIERSON FIELDS**  
**DB 3969 PG 1074**

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

LEIGHANN SMITH OSBORNE  
DB 4032 PG 1433

**BEGIN TIP PROJECT R-2612A**

~~-L- POT Sta. 41+30.54~~

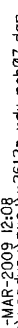
**MATCH LINE SEE SHEET 5 -L- STA. 32+00.00**

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

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

## NOTES

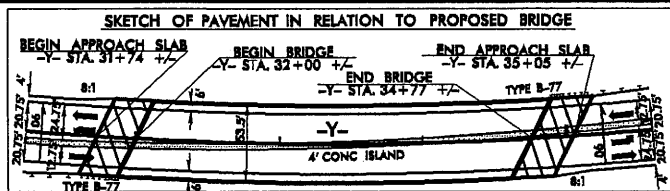
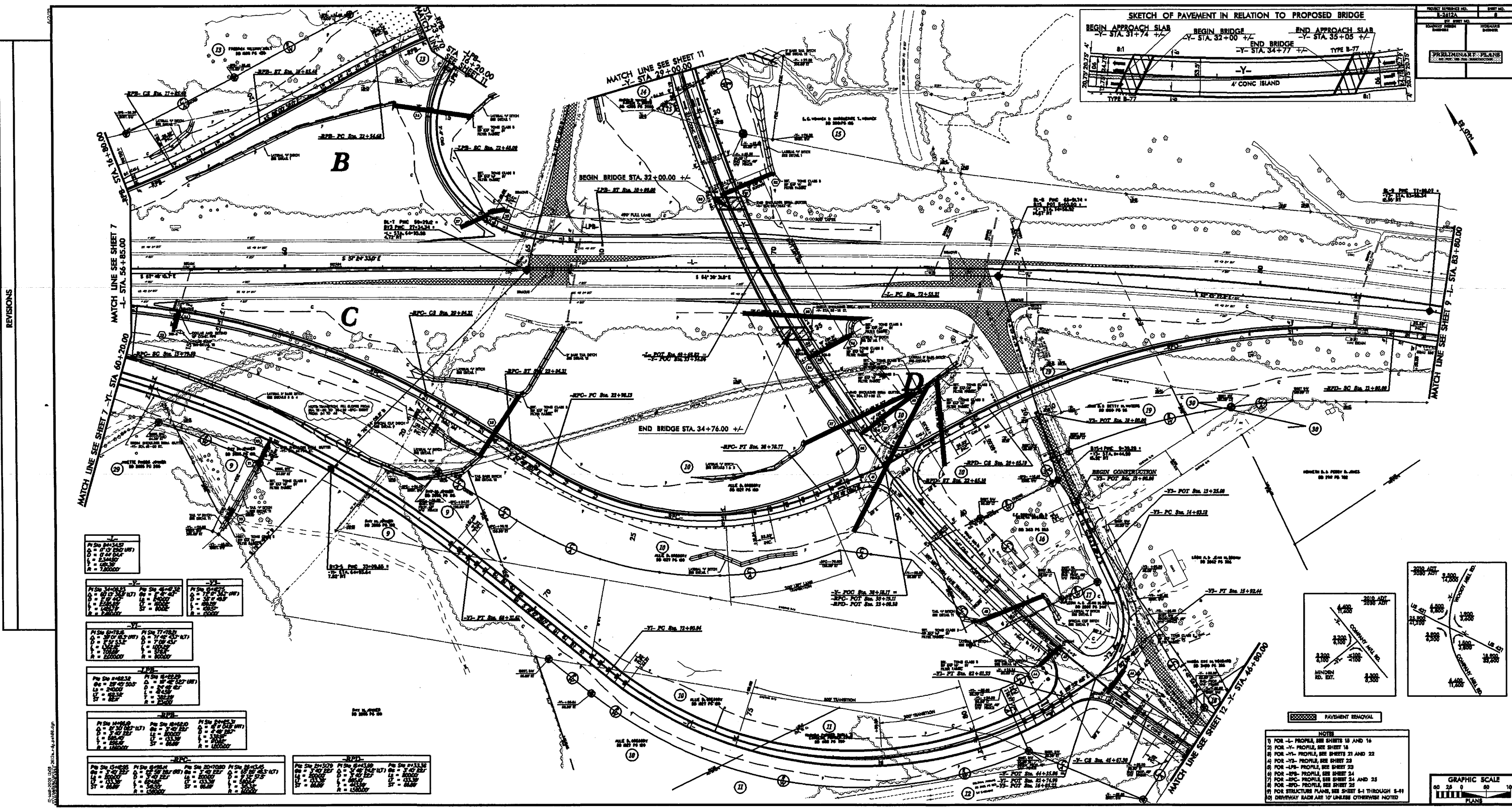
- 1) FOR -L- PROFILE, SEE SHEETS 14 AND 15  
2) FOR -YI- PROFILE, SEE SHEET 20



<b>-RPB-</b>	
Pls Sta 11+33.36	Pl Sta 14+96.19
Os = 3° 40' 22.1"	Δ = 21° 30' 02.7" (LT)
Ls = 200.00'	D = 3° 40' 22.1"
LT = 133.36'	L = 585.40'
ST = 66.69'	T = 296.19'
	R = 1,560.00'

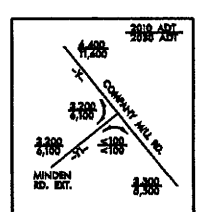
- NOTES**

  - 1) FOR -L- PROFILE, SEE SHEET 15
  - 2) FOR -YI- 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-? THROUGH S-??
  - 7) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED



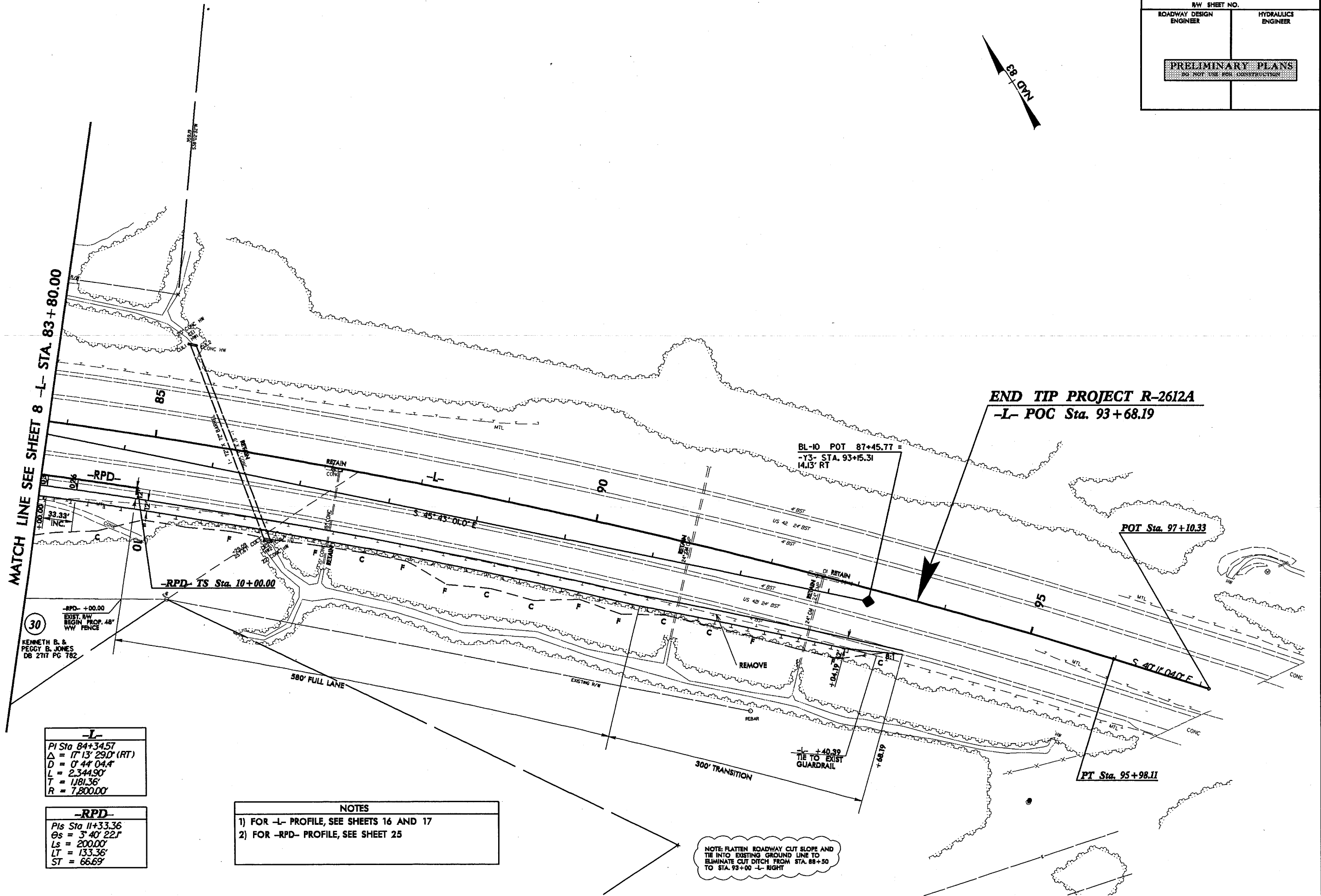
PROJECT NUMBER	8
SHEET NO.	8
DATE	10/1/58
DESIGNED BY	W. H. HARRIS
CHECKED BY	W. H. HARRIS
APPROVED BY	W. H. HARRIS
PRELIMINARY PLANS	

-Y-	
PVI STA 31+74.00 D = 1000.00 ELEVATION = 100.00	PVI STA 32+00.00 D = 1000.00 ELEVATION = 100.00
-Y-	
PVI STA 34+77.00 D = 1000.00 ELEVATION = 100.00	PVI STA 35+05.00 D = 1000.00 ELEVATION = 100.00
-Y-	
PVI STA 36+00.00 D = 1000.00 ELEVATION = 100.00	PVI STA 37+00.00 D = 1000.00 ELEVATION = 100.00
-Y-	
PVI STA 38+00.00 D = 1000.00 ELEVATION = 100.00	PVI STA 39+00.00 D = 1000.00 ELEVATION = 100.00
-Y-	
PVI STA 40+80.00 D = 1000.00 ELEVATION = 100.00	PVI STA 41+80.00 D = 1000.00 ELEVATION = 100.00



- NOTE
- 1) FOR -Y- PROFILE, SEE SHEETS 18 AND 19
  - 2) FOR -Y- PROFILE, SEE SHEET 18
  - 3) FOR -Y- PROFILE, SEE SHEETS 21 AND 22
  - 4) FOR -Y- PROFILE, SEE SHEET 23
  - 5) FOR -Y- PROFILE, SEE SHEET 23
  - 6) FOR -Y- PROFILE, SEE SHEET 24
  - 7) FOR -Y- PROFILE, SEE SHEETS 24 AND 25
  - 8) FOR -Y- PROFILE, SEE SHEET 25
  - 9) FOR STRUCTURE PLANS, SEE SHEETS 4-1 THROUGH 4-11
  - 10) DRIVEWAY SIZES AND 10' UNLESS OTHERWISE NOTED

PROJECT REFERENCE NO.	SHEET NO.
R-2612A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



MATCH LINE SEE SHEET 8 -L- STA. 83+80.00

30  
KENNETH B. &  
PEGGY B. JONES  
DB 2717 PG 782

**-L-**  
PI Sta 84+34.57  
 $\Delta = 17' 13" 29.0" (RT)$   
 $D = 0' 44" 04.4"$   
 $L = 2,344.90'$   
 $T = 1,181.36'$   
 $R = 7,800.00'$

**-RPD-**  
PIs Sta 11+33.36  
 $\theta_s = 3' 40" 22.1"$   
 $L_s = 200.00'$   
 $LT = 133.36'$   
 $ST = 66.69'$

**NOTES**  
1) FOR -L- PROFILE, SEE SHEETS 16 AND 17  
2) FOR -RPD- PROFILE, SEE SHEET 25

NOTE: FLATTEN ROADWAY CUT SLOPE AND TIE INTO EXISTING GROUND LINE TO ELIMINATE CUT DITCH FROM STA. 88+50 TO STA. 93+00 -L- RIGHT

**END TIP PROJECT R-2612A**  
**-L- POC Sta. 93+68.19**

POT Sta. 97+10.33

PT Sta. 95+98.11

88.00M

REVISIONS

8/17/99

17-MAR-2009 12:08  
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\$\$\$\$\$USER\$\$\$\$\$

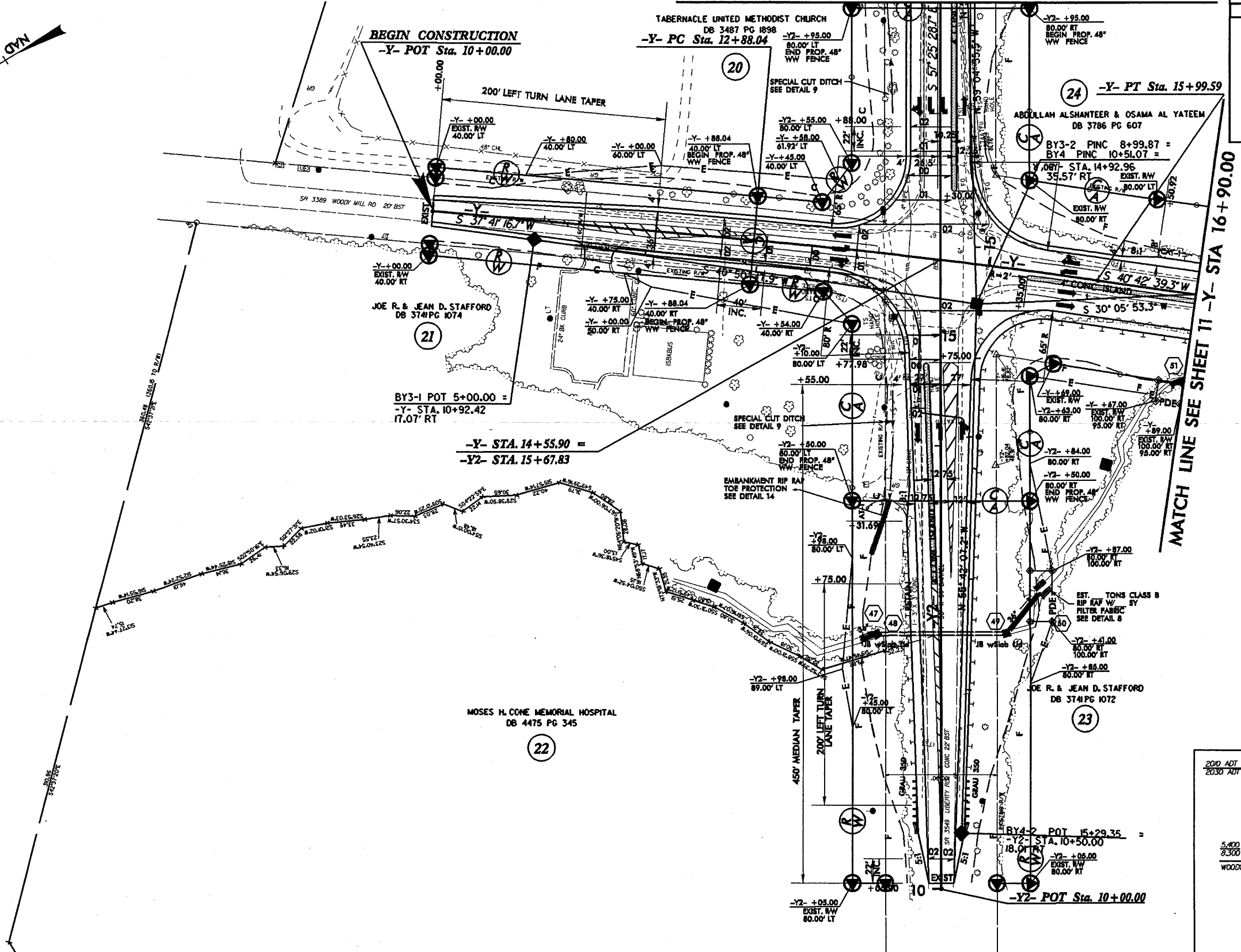
8/17/99

REVISIONS

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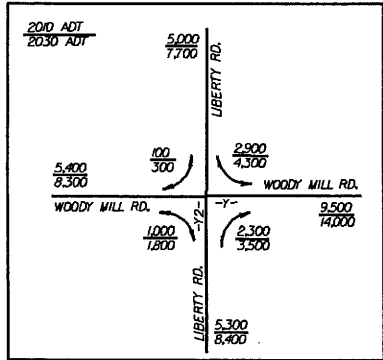
MATCH LINE SEE SHEET 13 -Y2- STA 18+00.00

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

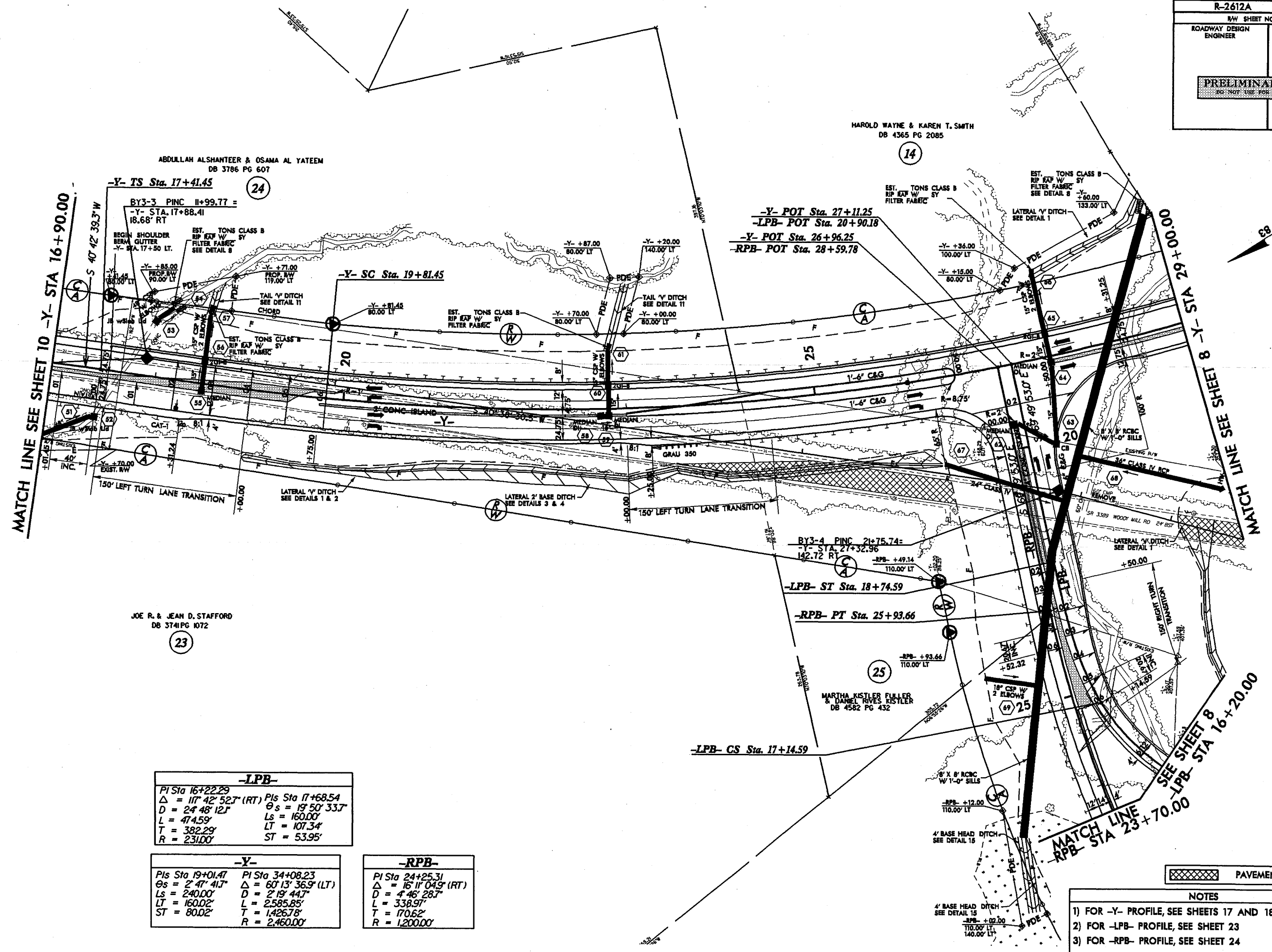


**-Y-**  
PI Sta 14+43.85  
 $\Delta = 3^\circ 01' 22.6''$  (RT)  
D = 0' 58' 13.1"  
L = 311.55'  
T = 155.81'  
R = 5,905.00'

- 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	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER			
<b>PRELIMINARY PLANS</b> DO NOT USE FOR CONSTRUCTION			



-LPB-	
PI Sta 16+22.29	PIs Sta 17+68.54
$\Delta = 117^\circ 42' 52''$ (RT)	$\Delta = 19^\circ 50' 33''$
$D = 24^\circ 48' 12''$	$L_s = 160.00'$
$L = 474.59'$	$LT = 107.34'$
$T = 382.29'$	$ST = 53.95'$
$R = 231.00'$	

-Y-	
PIs Sta 19+01.47	PI Sta 34+08.23
$\Delta_s = 2^\circ 47' 41''$	$\Delta = 60^\circ 13' 36.9''$ (LT)
$L_s = 240.00'$	$D = 2^\circ 19' 44.7''$
$LT = 160.02'$	$L = 2,585.85'$
$ST = 80.02'$	$T = 1,426.78'$
	$R = 2,460.00'$

-RPB-
PI Sta 24+25.31
$\Delta = 16^\circ 11' 04.9''$ (RT)
$D = 4^\circ 46' 28.7''$
$L = 338.97'$
$T = 170.62'$
$R = 1,200.00'$

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

PAVEMENT REMOVAL

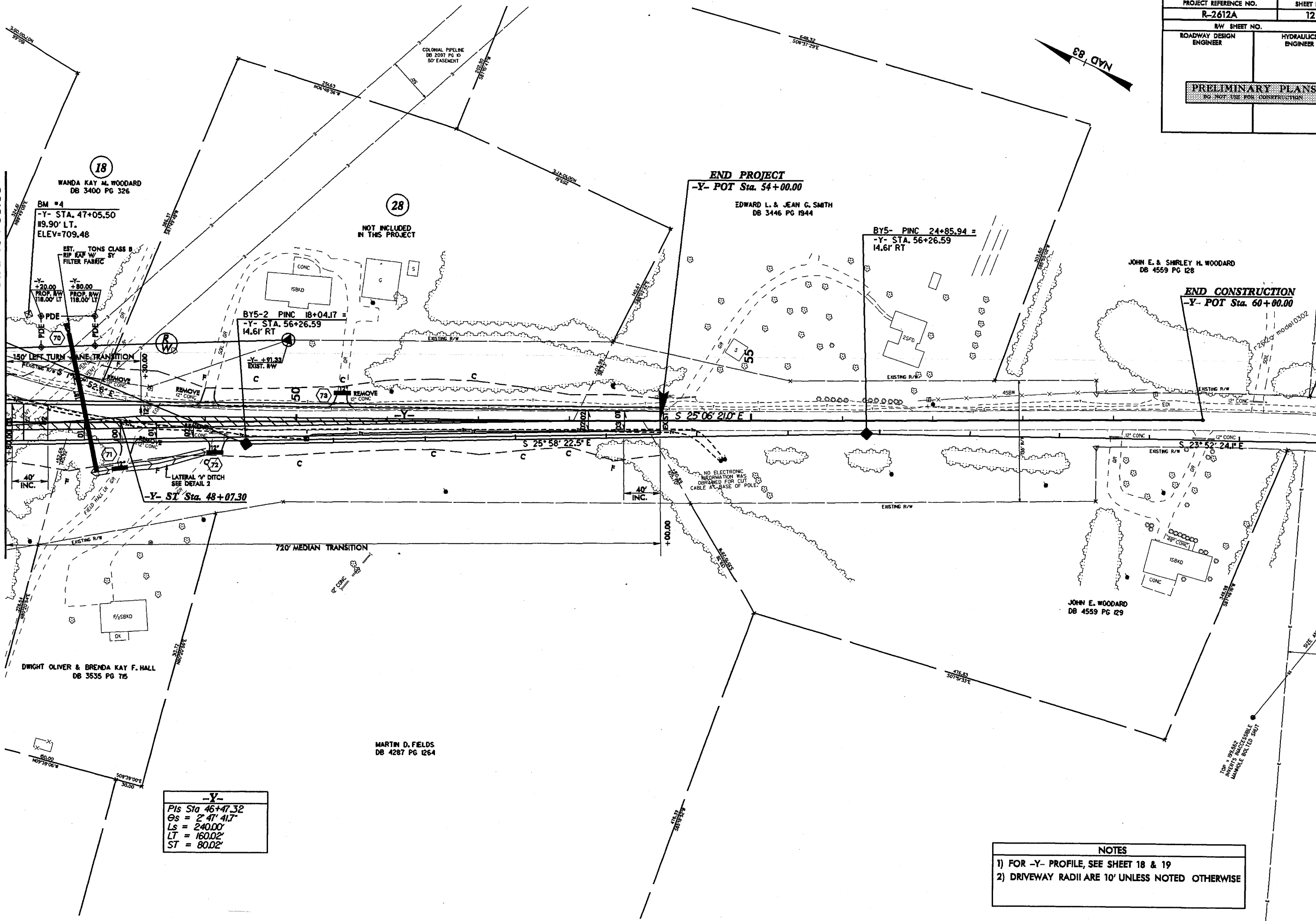
REVISIONS

8/17/99  
17-MAR-2009 12:08  
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PROJECT REFERENCE NO.	SHEET NO.
R-2612A	12
B/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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



-Y-
Pls Sta 46+47.32
Os = 2' 41' 41.7"
Ls = 240.00'
LT = 160.02'
ST = 80.02'

- NOTES
- 1) FOR -Y- PROFILE, SEE SHEET 18 & 19
  - 2) DRIVEWAY RADII ARE 10' UNLESS NOTED OTHERWISE

8/17/99

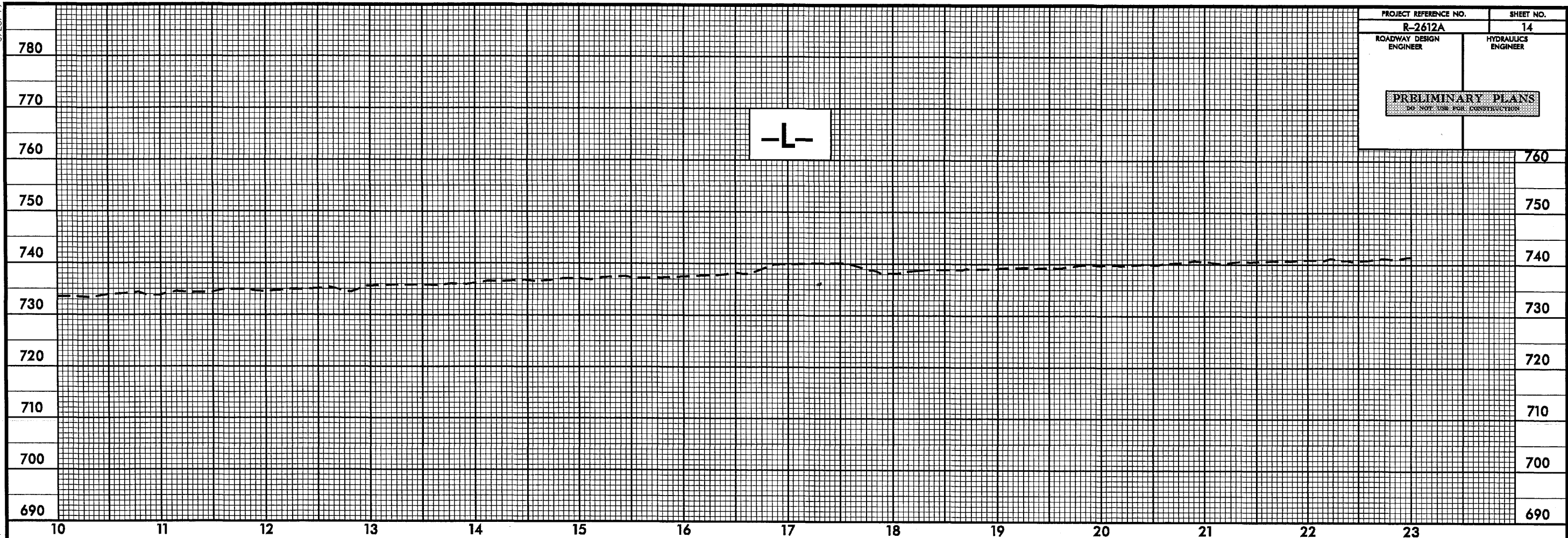
REVISIONS

17-MAR-2009 12:08  
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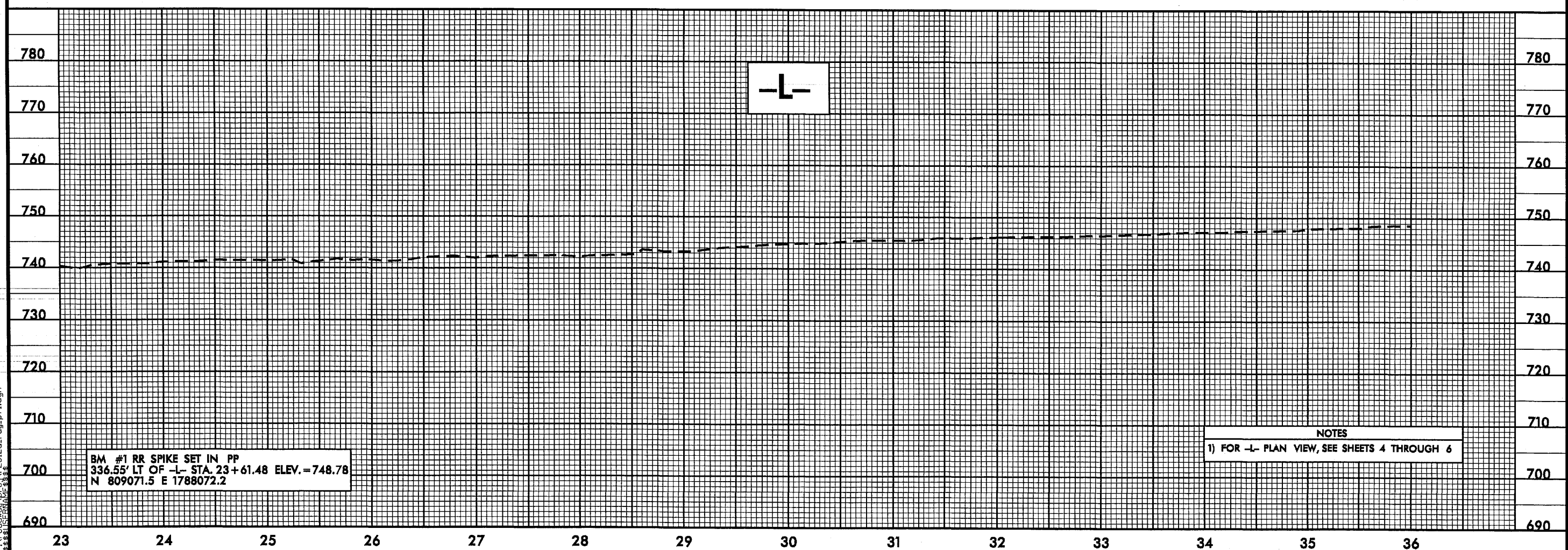




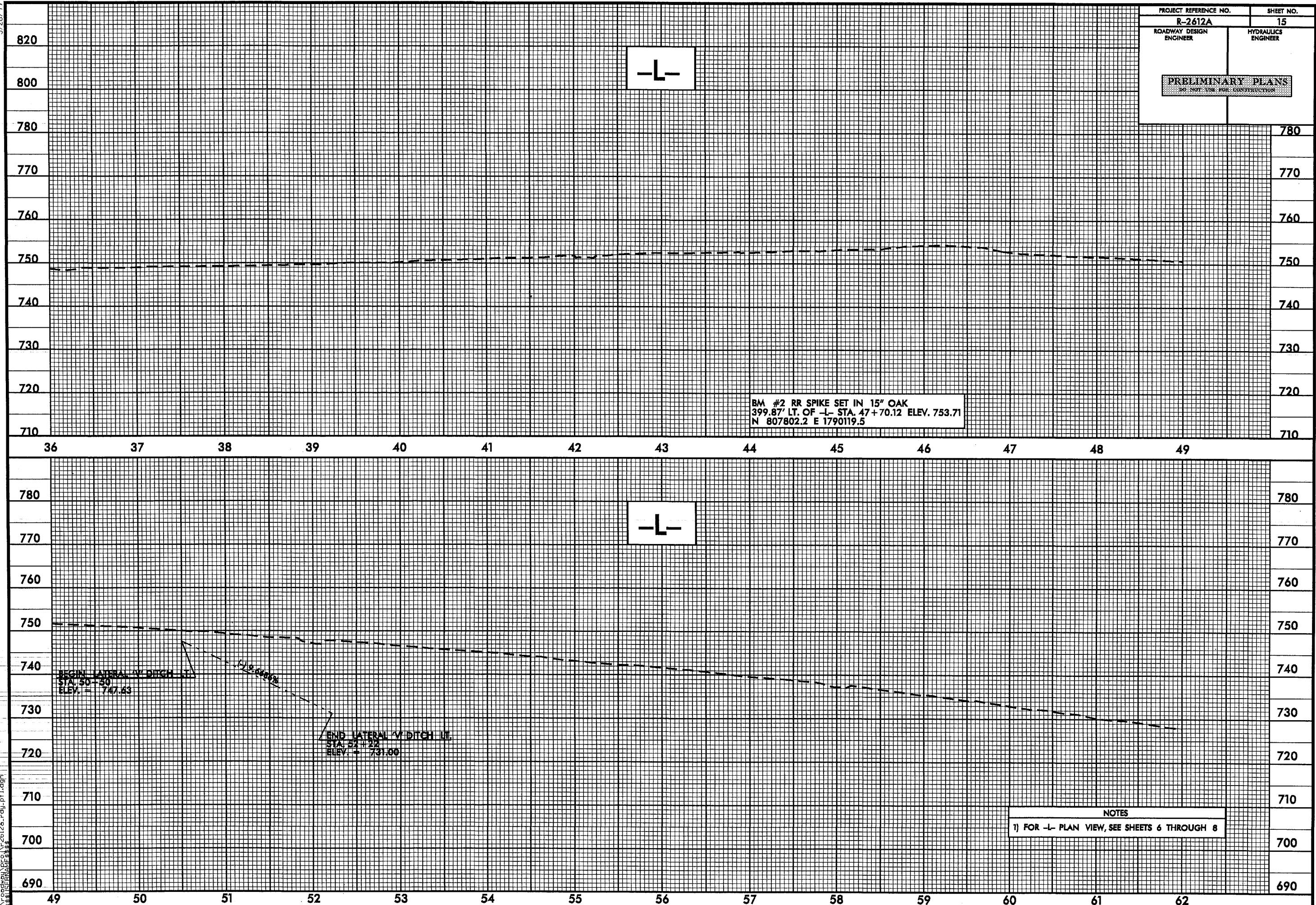
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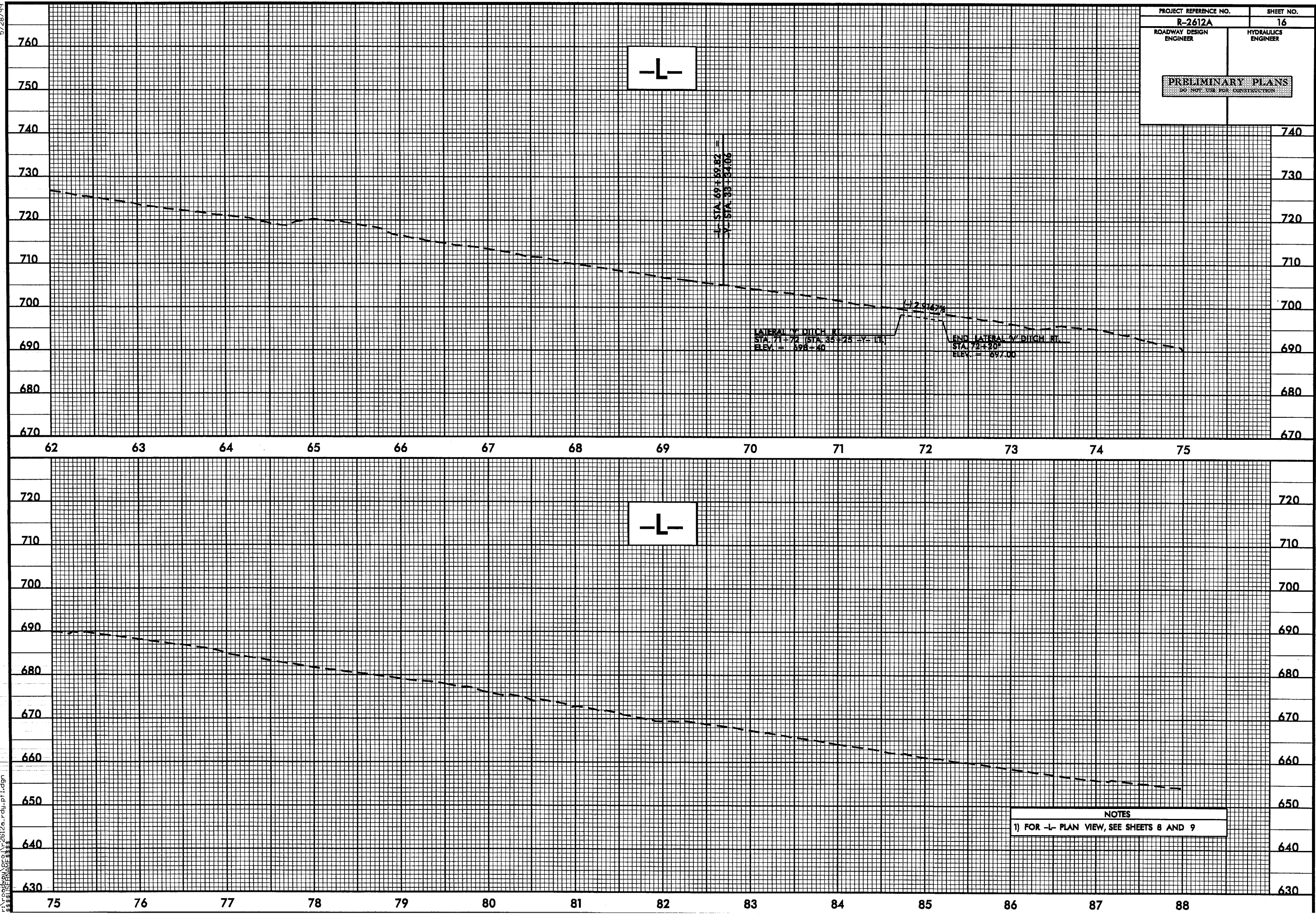
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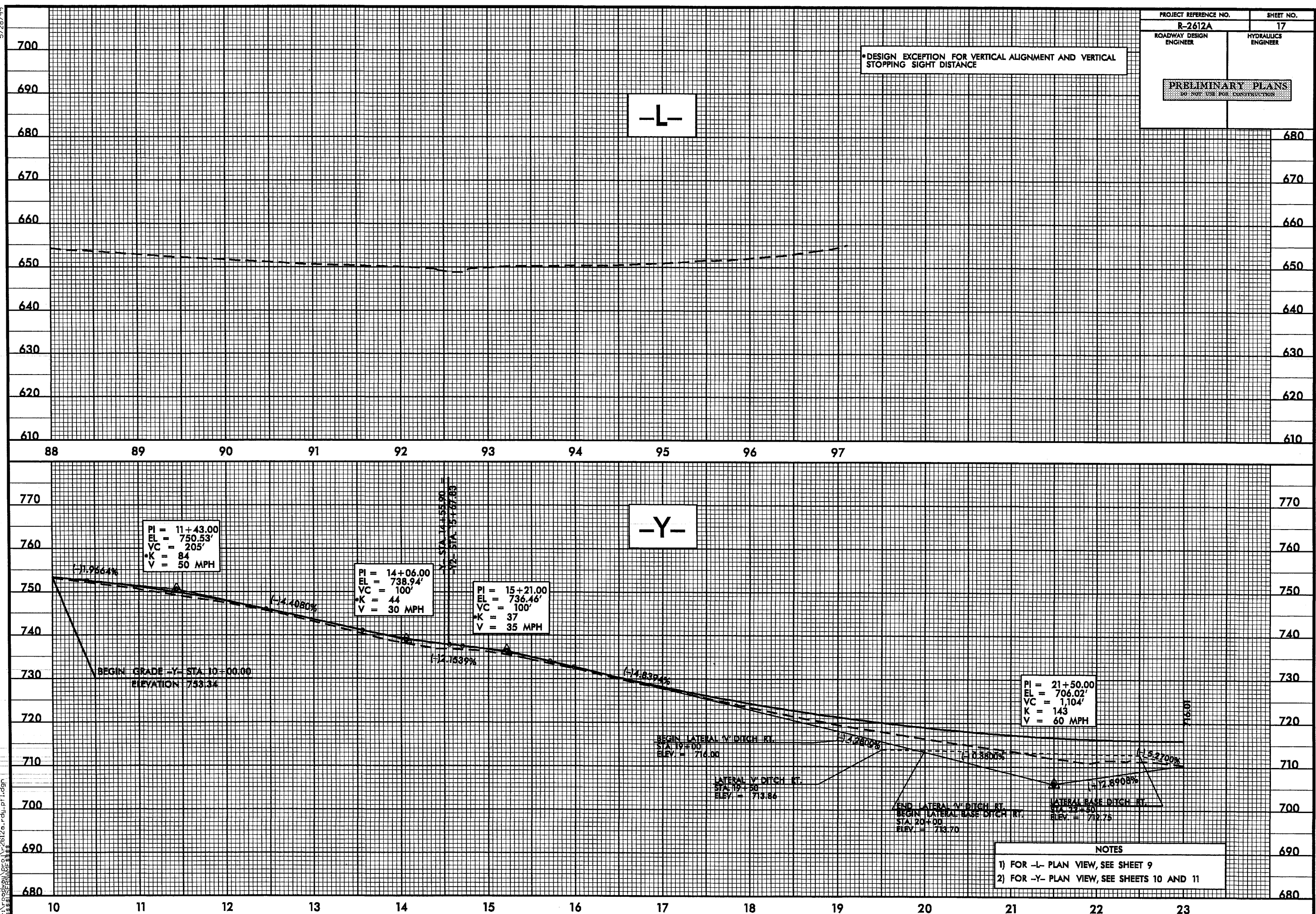
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PROJECT REFERENCE NO.		SHEET NO.	
R-2612A		16	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>PRELIMINARY PLANS</div> <div>DO NOT USE FOR CONSTRUCTION</div>			

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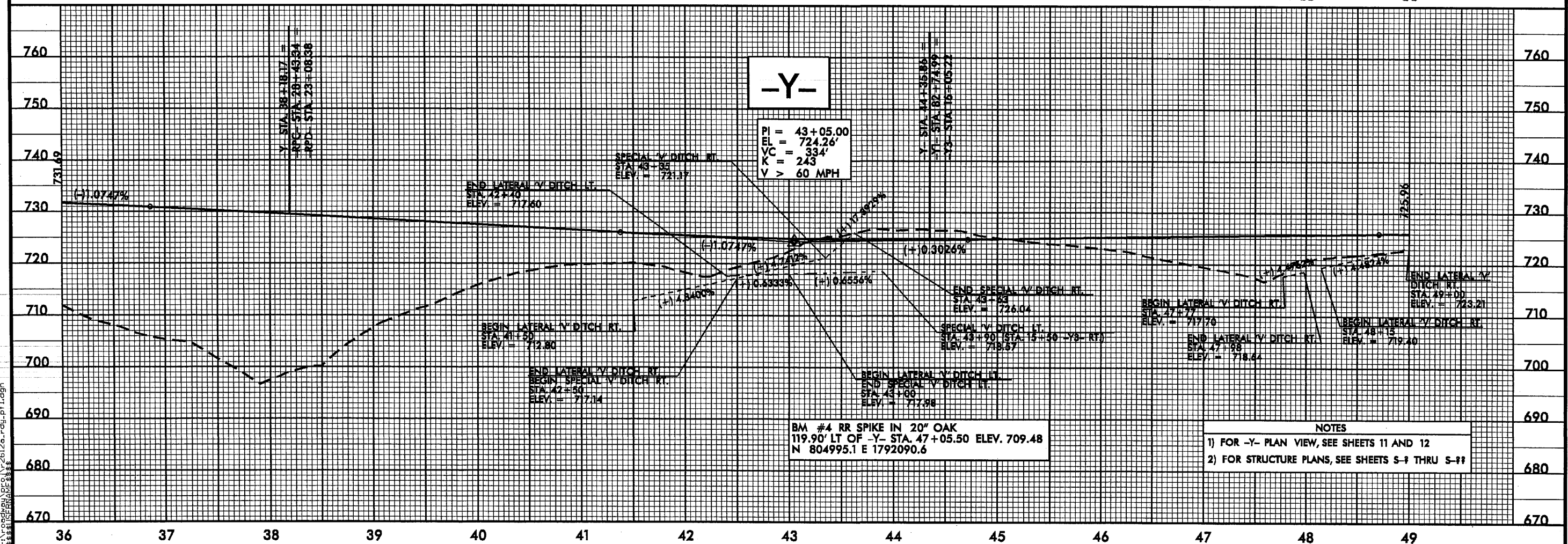
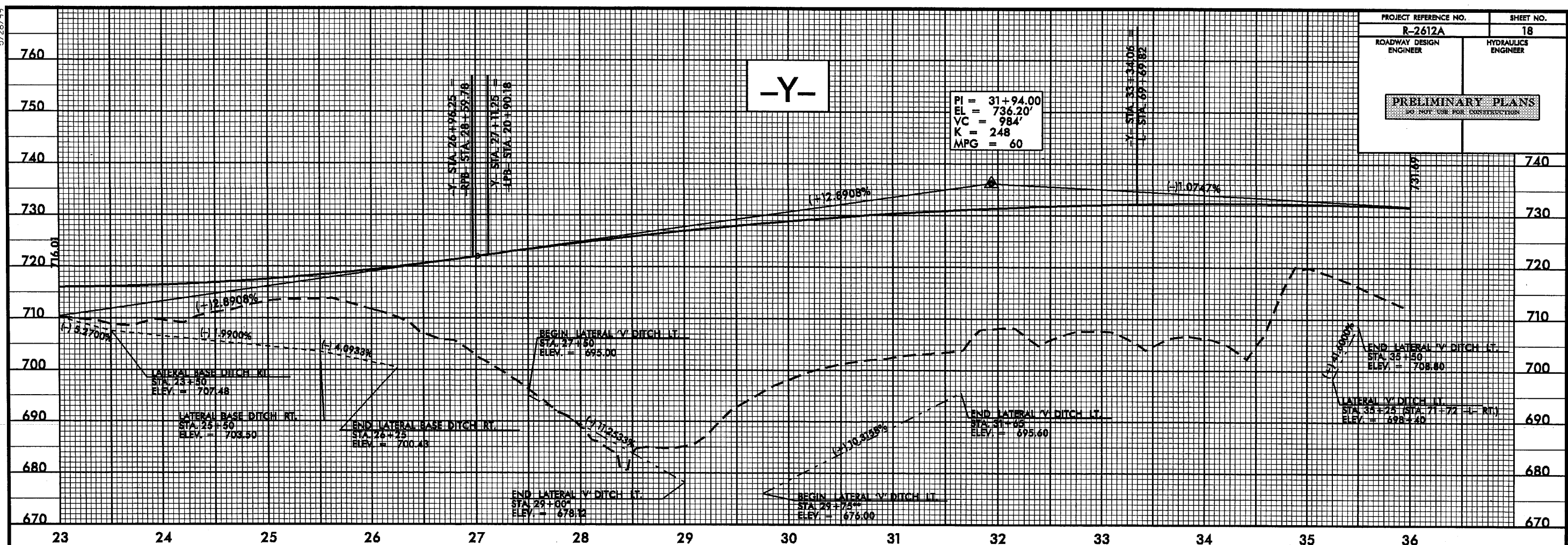


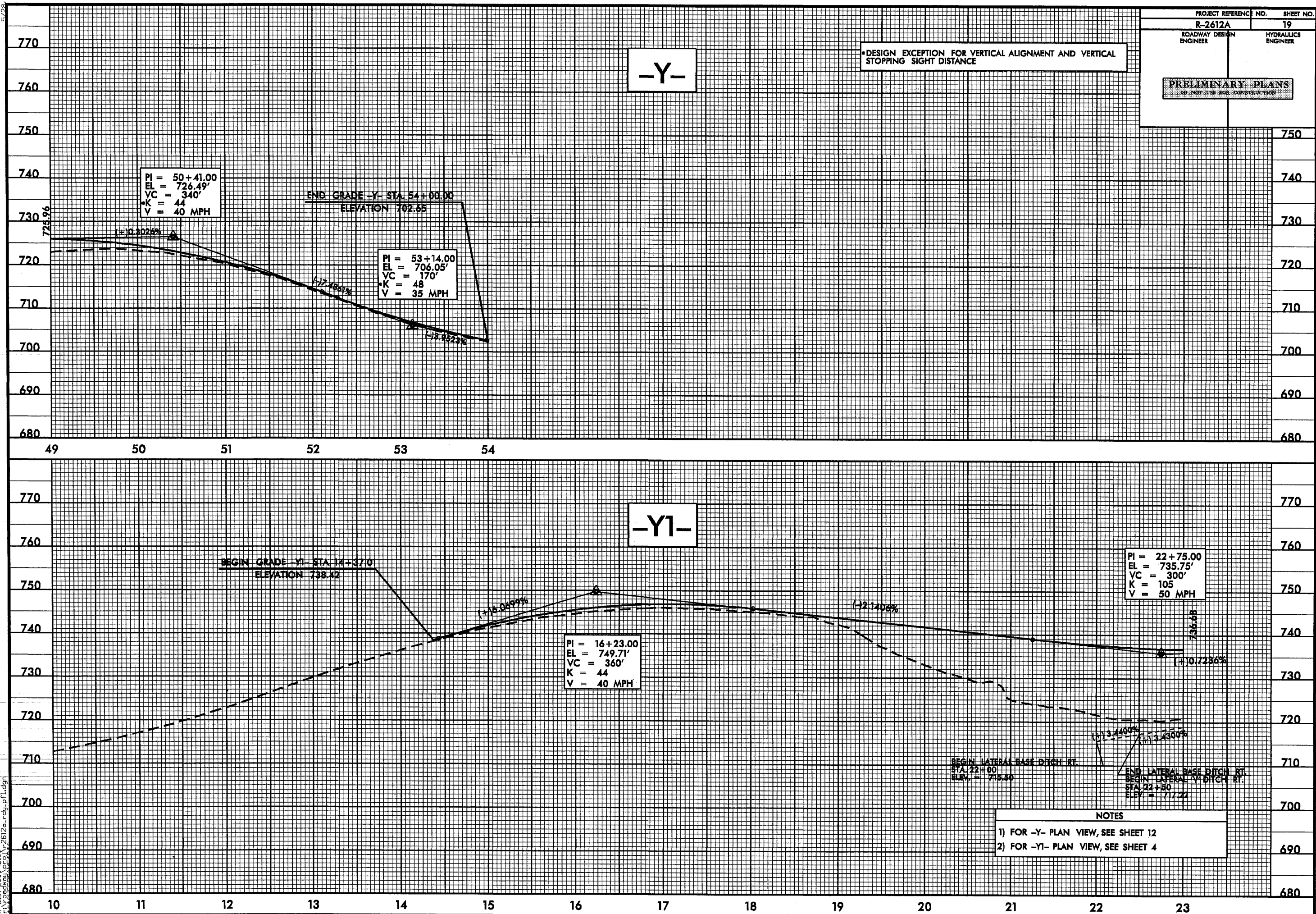


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PROJECT REFERENCE NO.	SHEET NO.
R-2612A	18
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



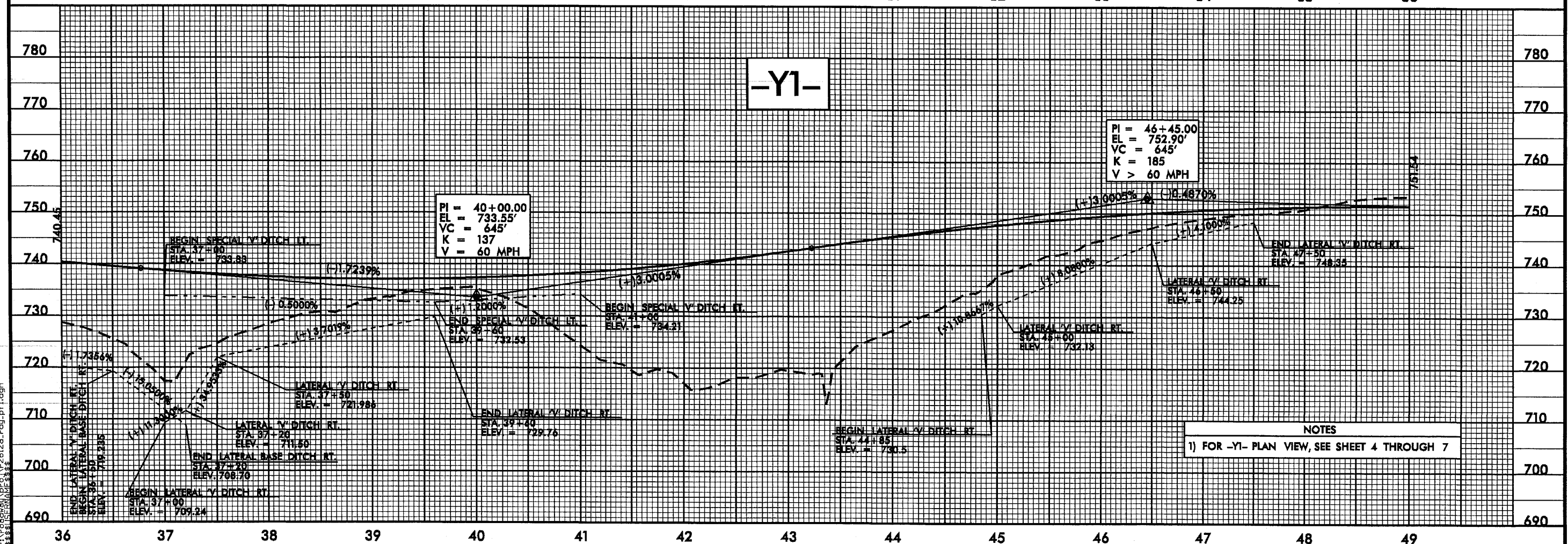


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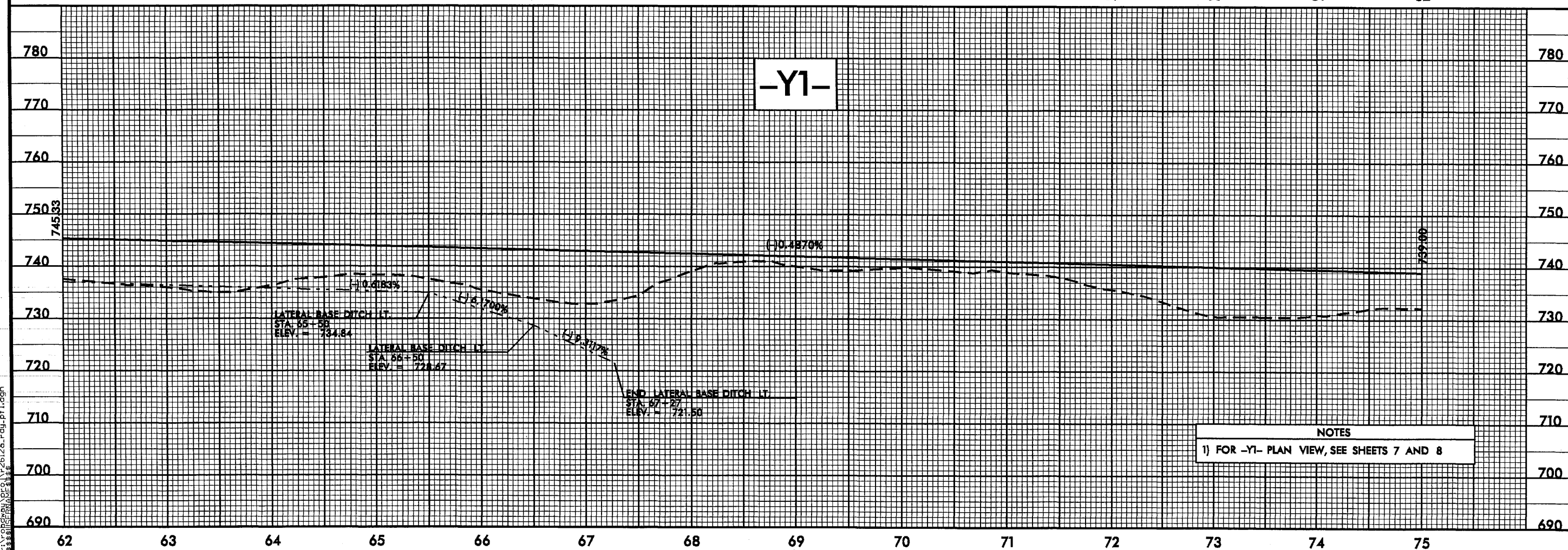
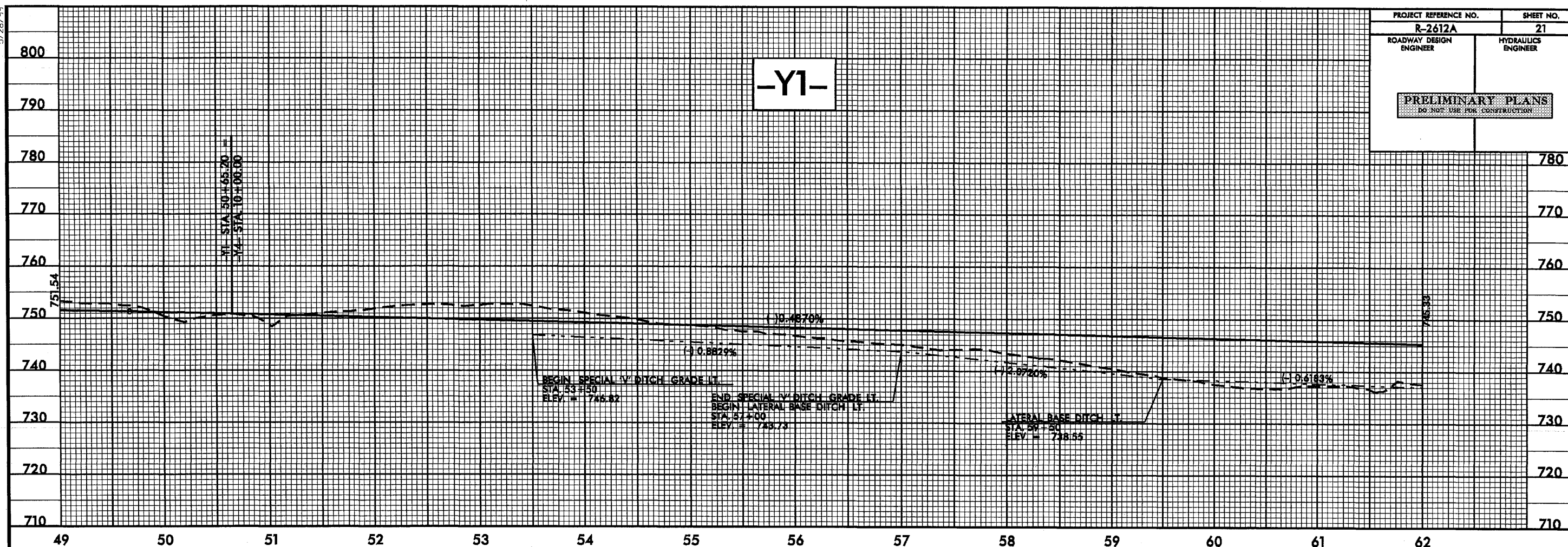
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PROJECT REFERENCE NO. <b>R-2612A</b>		SHEET NO. <b>20</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
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NOTES  
1) FOR -Y1- PLAN VIEW, SEE SHEET 4 THROUGH 7

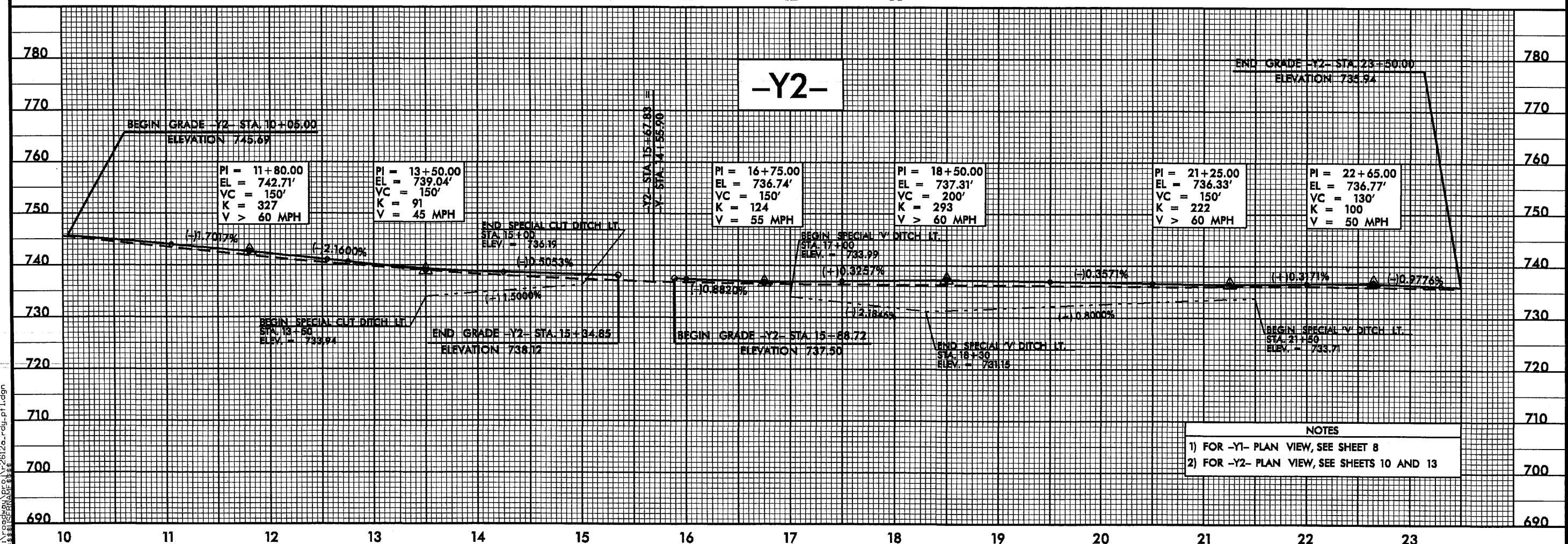
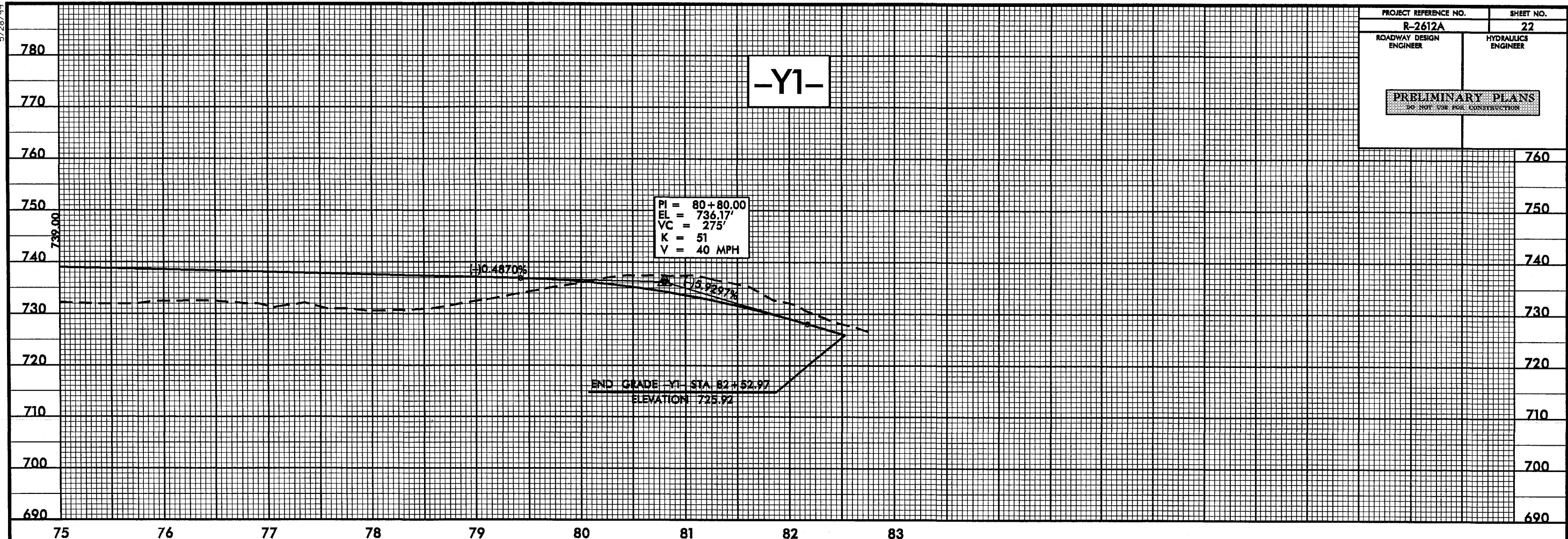
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R-2612A		21	
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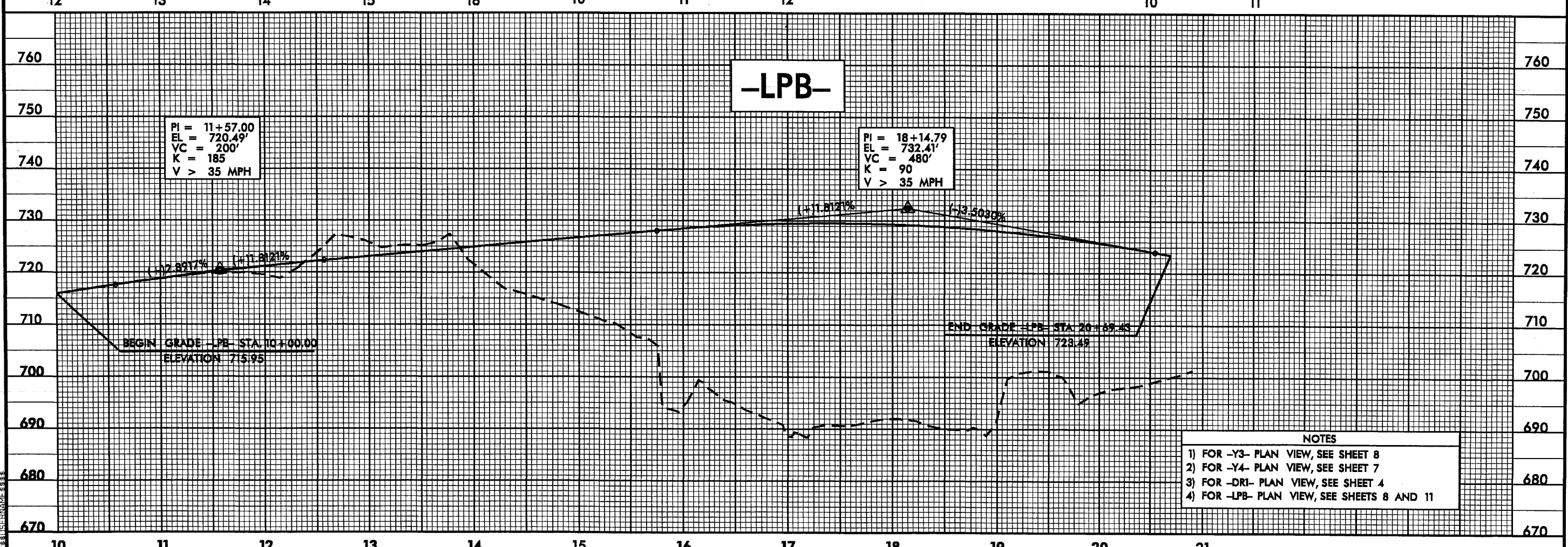
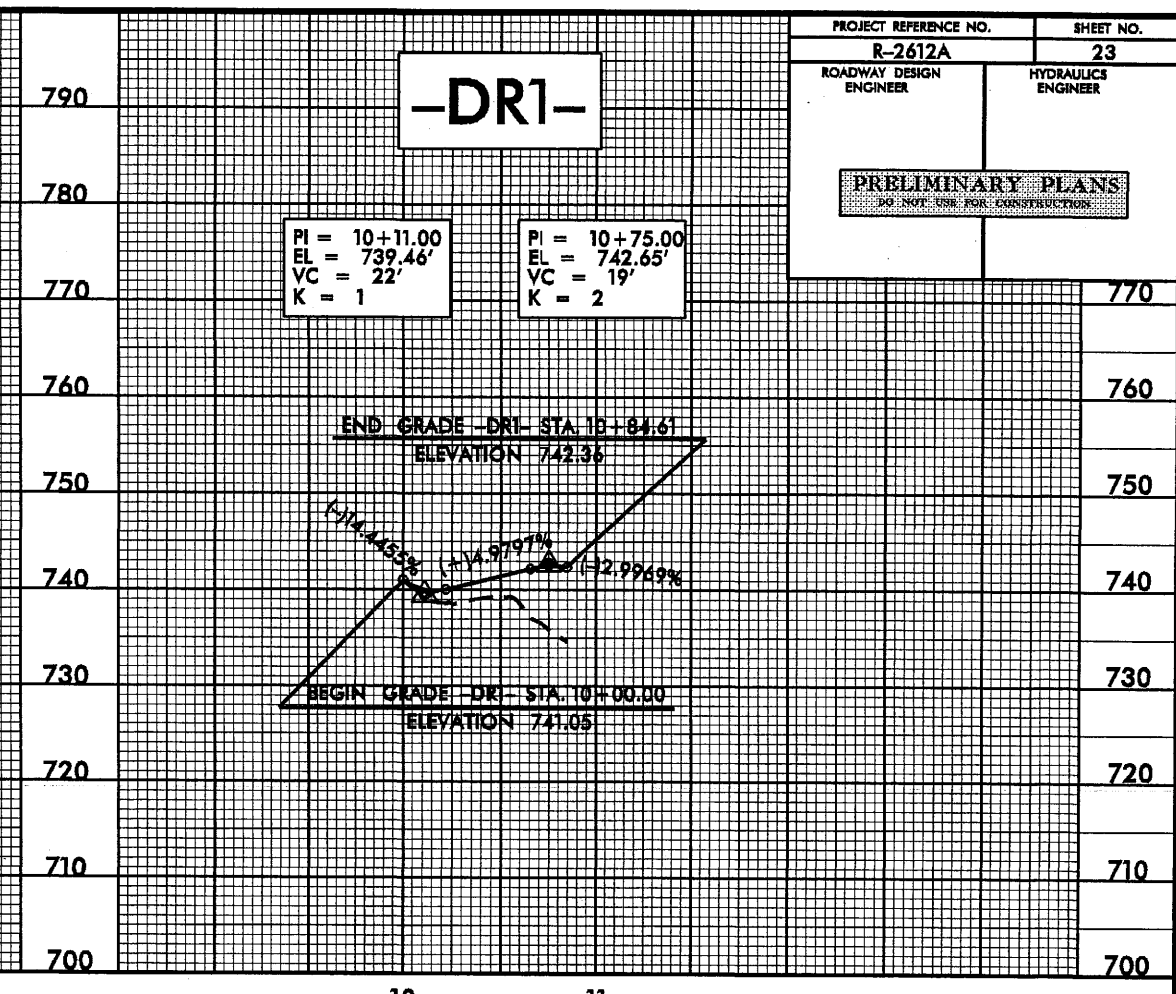
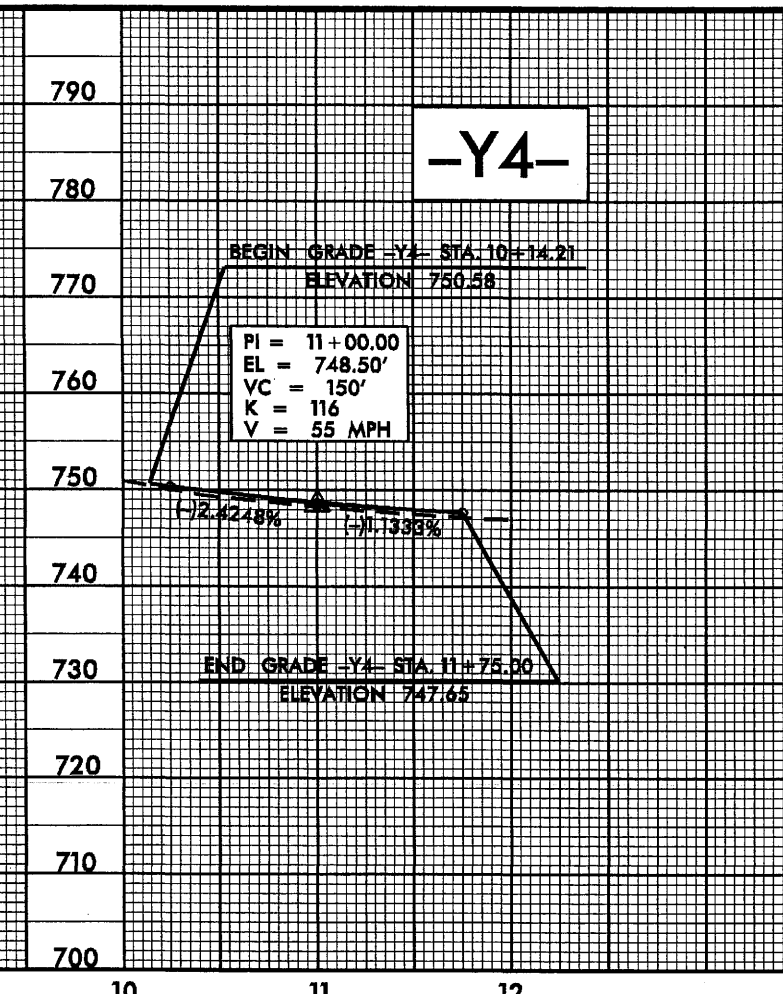
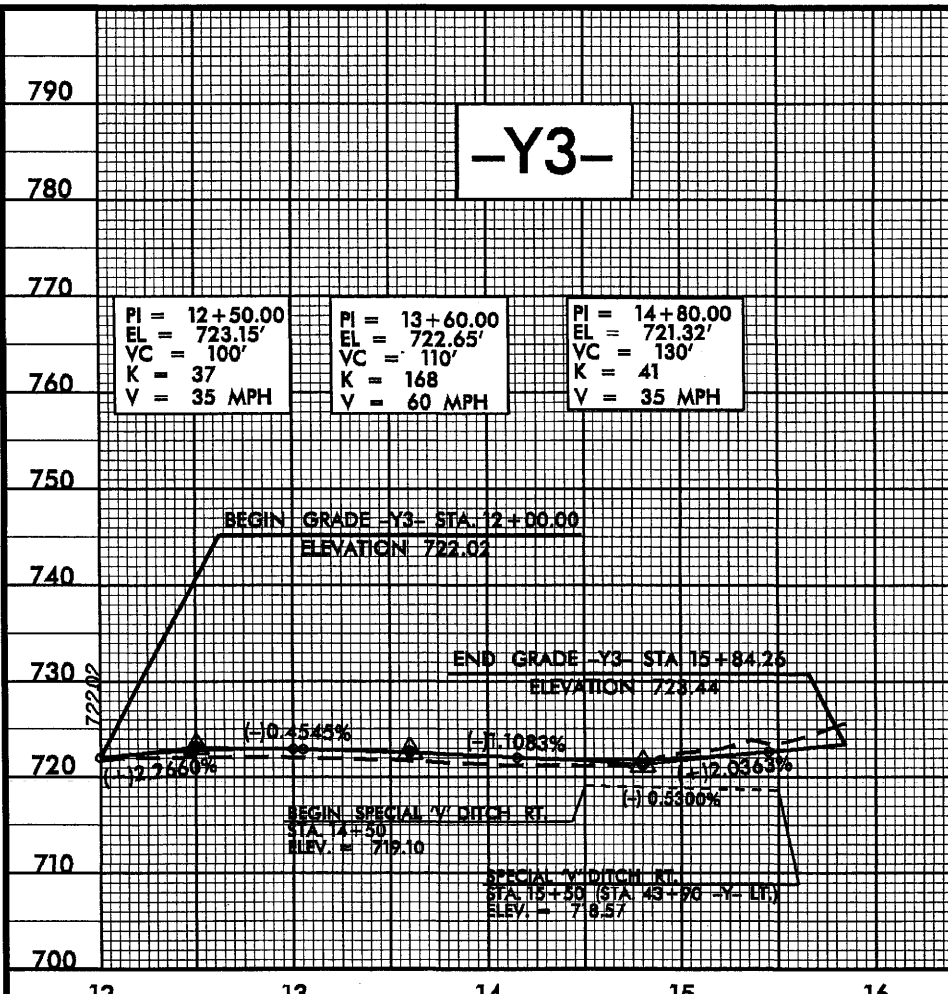
PROJECT REFERENCE NO.	SHEET NO.
R-2612A	22
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



NOTES  
1) FOR -Y1- PLAN VIEW, SEE SHEET 8  
2) FOR -Y2- PLAN VIEW, SEE SHEETS 10 AND 13

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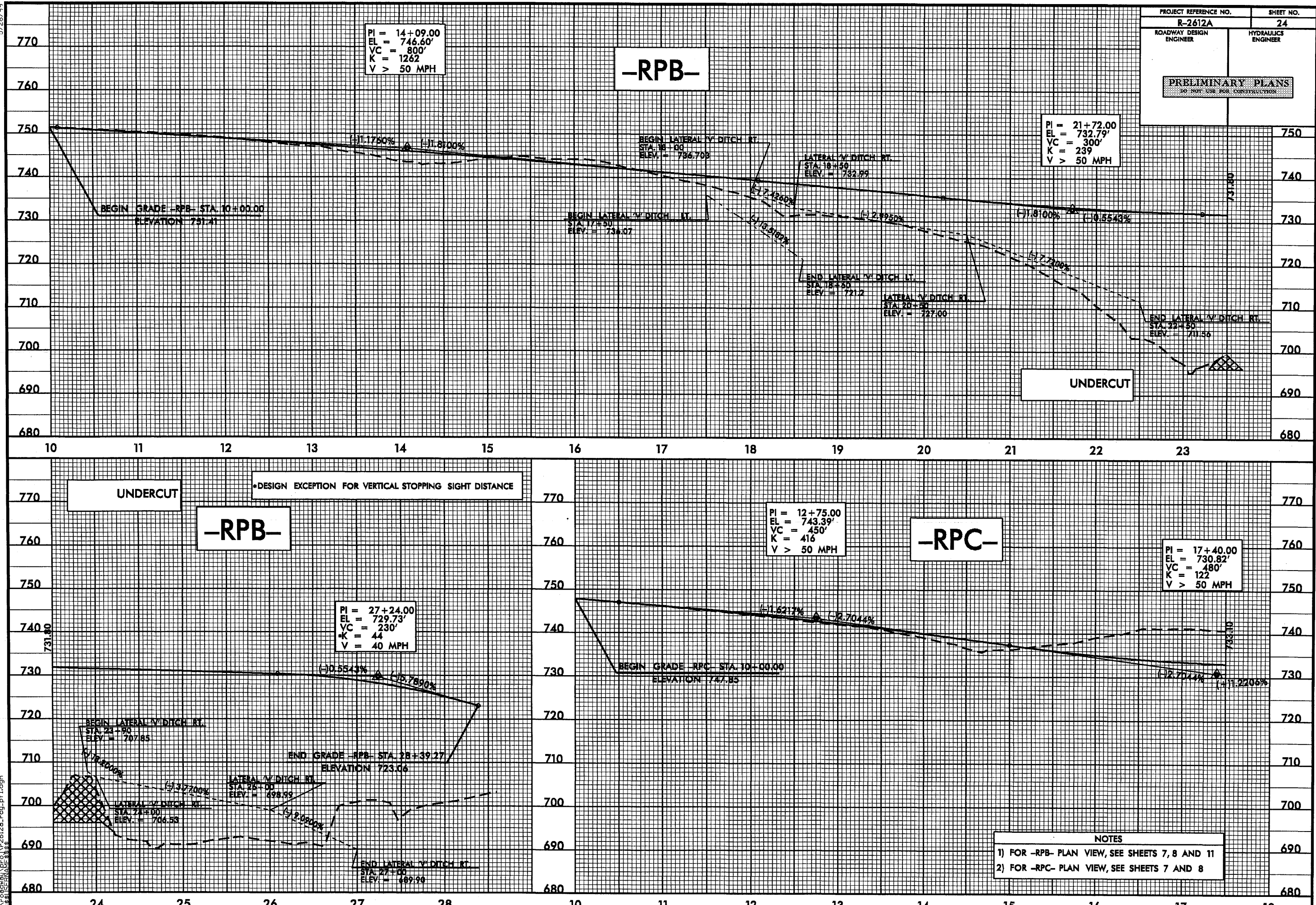
PROJECT REFERENCE NO.	SHEET NO.
R-2612A	23
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



- NOTES
- 1) FOR -Y3- PLAN VIEW, SEE SHEET 8
  - 2) FOR -Y4- PLAN VIEW, SEE SHEET 7
  - 3) FOR -DR1- PLAN VIEW, SEE SHEET 4
  - 4) FOR -LPB- PLAN VIEW, SEE SHEETS 8 AND 11



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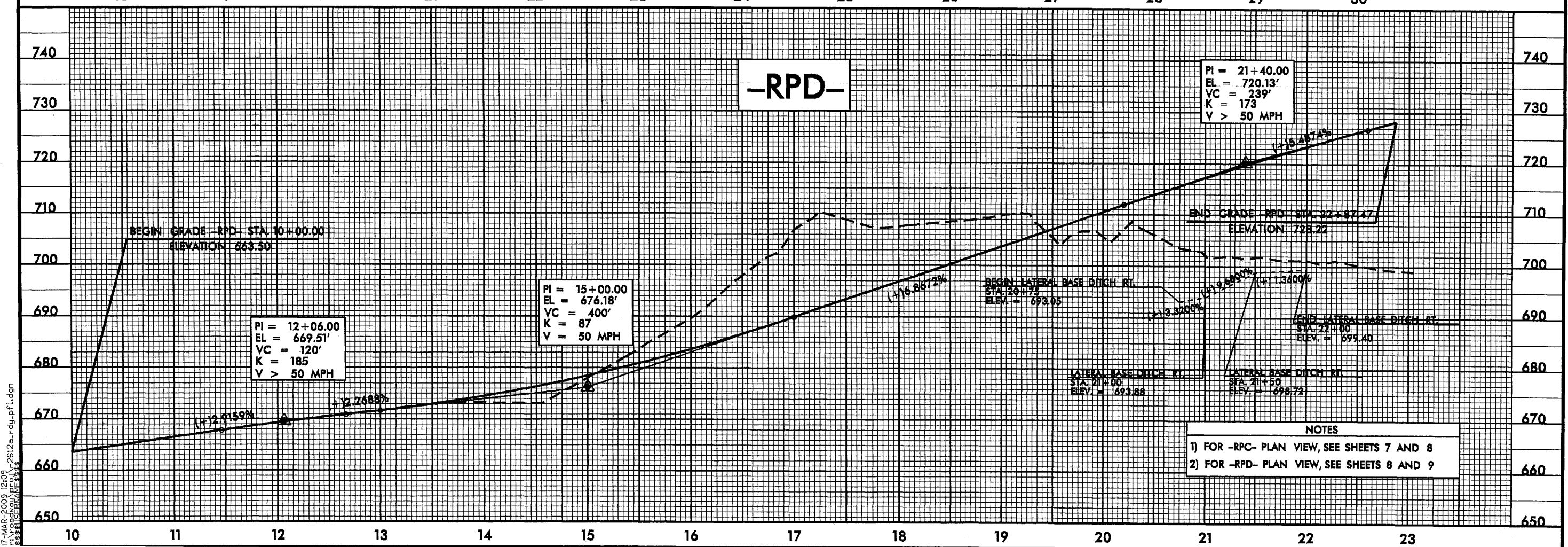
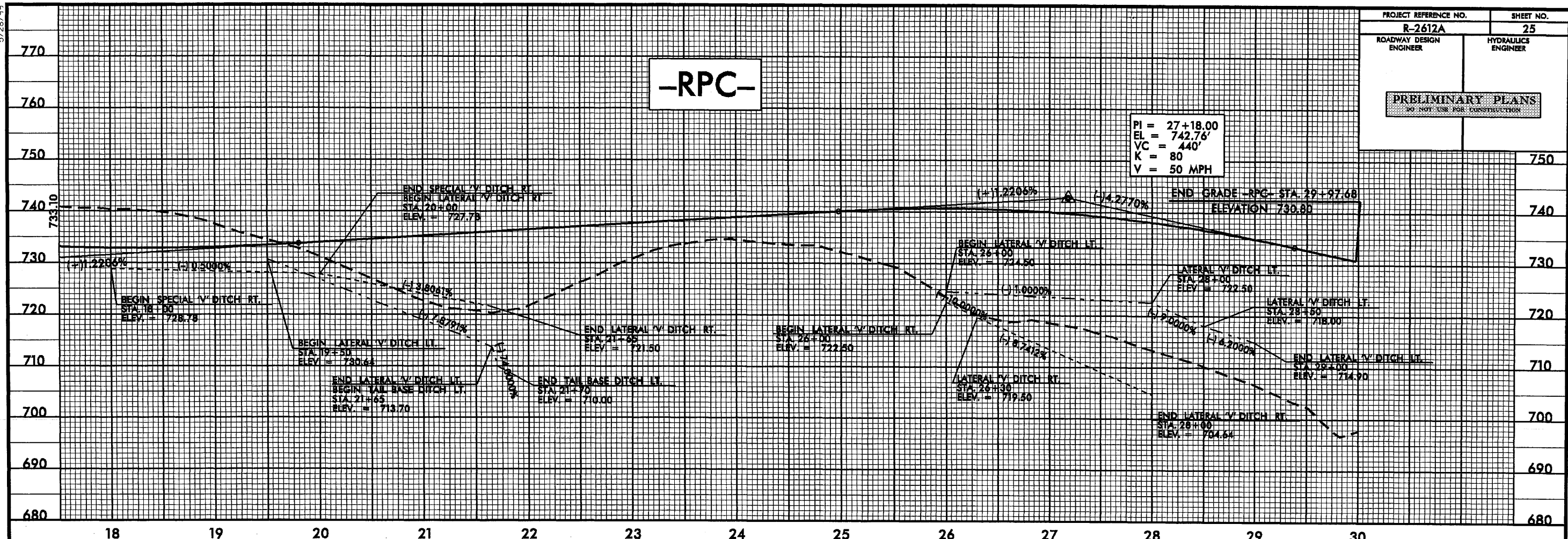


PROJECT REFERENCE NO. R-2612A		SHEET NO. 24	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

NOTES  
1) FOR -RPB- PLAN VIEW, SEE SHEETS 7, 8 AND 11  
2) FOR -RPC- PLAN VIEW, SEE SHEETS 7 AND 8

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PROJECT REFERENCE NO.	SHEET NO.
R-2612A	25
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	
DO NOT USE FOR CONSTRUCTION	



- NOTES
- 1) FOR -RPC- PLAN VIEW, SEE SHEETS 7 AND 8
  - 2) FOR -RPD- PLAN VIEW, SEE SHEETS 8 AND 9

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