STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

March 10, 2014

U. S. Army Corps of Engineers
Wilmington Regulatory Office
69 Darlington Avenue
Wilmington, NC 28402-1890

ATTN: Ms. Liz Hair
NCDOT Coordinator

SUBJECT: **Application for Section 404 Individual Permit, Section 401 Water Quality Certification, and Isolated Wetlands General Permit** for the proposed NC 24/27 Troy Bypass from west of SR 1138 (Dairy Road) to just east of Little River, Montgomery County, Division 8. TIP No. R-0623.

Debit $570.00 from WBS Element No. 34352.1.1

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to construct the NC 24/27 Troy Bypass from west of SR 1138 (Dairy Road) to just east of Little River, Montgomery County, for a total of 6.65 miles. In addition to this cover letter, the application package consists of an ENG Form 4345, NCEEP acceptance letter, Interagency Hydraulic Design Review meeting minutes (Concurrence Points 4B and 4C), Stormwater Management Plan, permit drawings, utility drawings, and half-size roadway plan sheets. This project calls for a Let date of November 18, 2014 and a review date of September 30, 2014. However, the Let date may advance as additional funds become available.

PURPOSE AND NEED

The purpose and need for this project is based on current and projected traffic volumes, particularly the high volumes of truck traffic (7% to 10%) traveling through downtown Troy. The proposed bypass would provide additional roadway capacity, accommodate projected traffic volumes, reduce congestion on main arteries in downtown Troy and provide better access to NC 24/27.

NEPA DOCUMENT STATUS

An Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for R-0623 were completed in January 2007 and March 2009, respectively, and have been provided to the appropriate agencies. The EA and FONSI are available on the NCDOT Website at

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

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

WEBSITE:NCDOT.GOV

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

https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx, under *Quick Links > Environmental Documents*.

INDEPENDENT UTILITY

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

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

RESOURCE STATUS

Wetland delineations within the R-0623 project study area followed the field delineation method outlined in the *1987 Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (USACE, 2010). Stream identification and classification followed the *Methodology for the Identification of Intermittent and Perennial Streams and Their Origins* (NC Division of Water Resources [NCDWR], 2010 and 2005).

A jurisdictional determination (JD) for R-0623, dated October 11, 2005, was received from USACE. The JD expired on October 11, 2010. Jurisdictional features were last re-verified by USACE Regulatory Specialist Ronnie Smith and NCDWR representative David Wainwright on March 7, 2012. Following the re-verification site visit, a request packet for the final JD was submitted to the USACE on March 20, 2012. The corresponding JD, dated June 19, 2012, was received from the USACE for the re-verification of R-0623.

This project lies within the Piedmont Physiographic Province in the Yadkin-Pee Dee River Basin (Hydrologic Unit Code 03040104). Jurisdictional features within the R-0623 project study area that will be impacted include 2 unnamed tributaries (UT) to Rocky Creek (NCDWR Classification C; HQW; NCDWR Index No. 13-25-30-[0.5]), Warner Creek and 7 UTs to Warner Creek (NCDWR Classification C; NCDWR Index No. 13-25-30-2), 3 UTs to Turkey Creek (NCDWR Classification C; NCDWR Index No 13-25-25), Smithermans Creek and 5 UTs to Smithermans Creek (NCDWR Classification C; NCDWR Index No. 13-25-21), Long Branch (NCDWR Classification C; NCDWR Index No. 13-25-28), Little River (NCDWR Classification C; NCDWR Index No. 13-25-[19]), 3 ponds, 19 riparian wetlands, and 1 non-riparian (isolated) wetland.

Besides the 2 UTs to Rocky Creek, no other designated High Quality Waters (HQW) are found within the project study area. HQWs including Rocky Creek and Little River are within 1.0 mile downstream of the project study area. There are no designated Outstanding Resource Waters (ORW), Water Supply I (WS-I), Water Supply II (WS-II) waters, or waters listed on the 2012 303(d) Final List of Impaired Waters within the project study area or within 1.0 mile of the project area.

IMPACTS TO WATERS OF THE UNITED STATES

Surface Waters

Total surface water impacts for R-0623 are 4,867 linear feet of permanent stream impacts, 747 linear feet of temporary stream impacts, and 1.37 acres of pond impacts. The jurisdictional stream impacts are summarized below in Table 1. There will be no impacts to surface waters from utilities for R-0623.

Table 1. R-0623 Stream Impacts

Permit Site No.	Stream Name/JD Packet ID	I/P Flow Status	Impact Type	Permanent Impacts (ft)	Impacts requiring USACE mitigation (ft)	USACE Mitigation Ratio[1]	Impacts requiring NCDWR mitigation (ft)	Temp Impacts (ft)
1	UT to Rocky Creek/S1	I	Fill	136	136	1:1	0[3]	16
			BS	11	0[2]		0[3]	0
2	UT to Rocky Creek/S2	I	Fill	39	39	1:1	0[3]	34
3	UT to Warner Creek/S3	P	Fill	294	294	2:1	294	24
4	UT to Warner Creek/S5	P	Fill	271	271	2:1	271	73
5	UT to Warner Creek/S6	P	Fill	295	295	2:1	295	17
			BS	62	0[2]		62	0
5B	UT to Warner Creek/S8	I	Fill	500	500	1:1	0[3]	0
7	Warner Creek/S18	P	BS	43	0[2]		0[4]	0
7A	UT to Warner Creek/S17	P	BS	16	0[2]		0[4]	0
7B	UT to Warner Creek/S13	P	Fill	355	355	2:1	355	72
8	UT to Warner Creek/S76	P	Fill	0	0		0	10
11	UT to Turkey Creek/S37	P	Fill	322	322	2:1	322	83
			BS	15	0[2]		15	0
11A	UT to Turkey Creek/S36	P	Fill	91	91	2:1	0[4]	41
12	UT to Turkey Creek/S40	P	Fill	499	499	2:1	499	38

Table 1. R-0623 Stream Impacts continued

Permit Site No.	Stream Name/JD Packet ID	I/P Flow Status	Impact Type	Permanent Impacts (ft)	Impacts requiring USACE mitigation (ft)	USACE Mitigation Ratio[1]	Impacts requiring NCDWR mitigation (ft)	Temp Impacts (ft)
14	UT to Smithermans Creek/S50	I	Fill	229	229	1:1	0[3]	60
			BS	12	0[2]		0[3]	0
15	UT to Smithermans Creek/S53	P	Fill	370	370		370	31
			BS	13	0[2]		0[4]	0
17	UT to Smithermans Creek/S57	P	Fill	280	280	2:1	280	57
			BS	21	0[2]		21	0
18	UT to Smithermans Creek/S59	I	Fill	297	297	1:1	0[3]	44
			BS	22	0[2]		0[3]	0
19B	UT to Smithermans Creek/S60	P	Fill	0	0		0	17
19C	Smithermans Creek/S64	P	Fill	340	340	2:1	340	0
			BS	9	0[2]		9	0
21	Little River	P	Fill	0	0		0	112
			BS	75	0[2]		0[4]	0
24A	Long Branch/S77	I	Fill	240	240	1:1	0[3]	18
			BS	10	0[2]		0[3]	0
TOTALS (ft)				**4,867**	**4,558**		**3,147**	**747**

Notes: P = Perennial; I = Intermittent; BS = Bank Stabilization. [1]Determined from USACE during verification site visit on March 7, 2012. [2]Mitigation for bank stabilization not required by USACE. [3]Intermittent streams grandfathered from NCDWR mitigation. [4]Mitigation not required by NCDWR (less than 150 linear feet of steam).

Wetlands

There will be a total of 1.22 acres of permanent riparian wetland impacts associated with this section. These impacts will result from 1.17 acres of permanent fill and 0.05 acres of excavation. There will also be 0.37 acres of wetland impacts due to hand clearing. An additional 0.03 acres of temporary fill will occur in the hand clearing areas due to the placement of erosion control measures. Permanent wetland impacts are summarized below in Table 2 for R-0623.

Table 2. R-0623 Wetland Impacts

Permit Site No.	JD Package ID	Permanent Fill (ac)	Excavation (ac)	Total Impacts (ac)
1	W1	0.13		0.13
2	W2		<0.01	<0.01
3	W5		0.01	0.01
4	W52	0.02		0.02
5A	W11	0.04		0.04
5B	W53	0.01		0.01
5C	W13	0.02	0.02	0.04
6	W54	0.08		0.08
7B	W55	0.16		0.16

Table 2. R-0623 Wetland Impacts continued

Permit Site No.	JD Package ID	Permanent Fill (ac)	Excavation (ac)	Total Impacts (ac)
8	W56	<0.01		<0.01
9*	W57	0.03		0.03
10	W25	0.14	<0.01	0.14
13	W62	0.05		0.05
16	W63	0.14		0.14
17	W63	0.10	0.01	0.11
18	W64	0.11	<0.01	0.12
19	W67	0.04		0.04
19A	W68	0.01		0.01
20	W50	0.05		0.05
24	W71	<0.01		<0.01
24A	W72	0.04		0.04
TOTALS (ac)		1.17	0.05	1.22

Notes: Totals are rounded based upon sum of actual impacts. *The wetland at Permit Site 9 is an isolated and therefore, a non-404 regulated wetland. Mitigation for this site will only be required by NCDWR at 2:1 ratio.

A total of 0.05 acres of temporary excavation in wetlands will occur due to open-trench excavation for installation of a water line. An additional 0.05 acres of hand clearing in wetlands will occur for overhead power-line clearing. These utility impacts are detailed in the attached Utility Permit Drawings.

MITIGATION OPTIONS

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

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning phase and minimization measures were incorporated as part of the project design. Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts.

Avoidance and Minimization

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

R-0623 Minimization Measures

- NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters will be enforced;
- Use of Design Standards in Sensitive Watersheds for western (Rocky Creek drainage) and eastern (HQW section of Little River drainage) ends of the project;

- Grass swale treatment will be utilized in drainage systems discharging into HQW streams;
- Impacts to wetlands, streams, and protected species (i.e., Schweinitz's sunflower) were avoided and/or minimized by adjusting alignments and slopes;
- 2:1 slopes or less are used in most wetland areas;
- All storm drainage will be diffused and designed for non-erosive velocities before entering stream and wetland areas to the maximum extent practicable;
- Rip rap stabilization on banks of jurisdictional streams will be implemented to prevent erosion;
- Reduction of permanent stream impacts by bridging Warner Creek and Little River; no deck drains will be used for these crossings to avoid direct discharges to these surface waters. Deck drainage will be collected in storm drain systems off the ends of the bridges and discharged into either grassed ditches or grassed swales before entering the streams.

Permitted stream impacts (4,867 linear feet) for R-0623 decreased from the impacts calculated for the FONSI (6,420 linear feet for Alternative E). This decrease is due to fewer permitted stream crossings (21) compared to the FONSI-listed stream crossings (24) that will be impacted. Also impacts to 14 of the FONSI-listed streams have been either avoided or reduced.

Final permitted wetland impacts (1.25 acres) for R-0623 increased from the impacts calculated from the FONSI (0.78 acres). The increase is primarily due to 13 new wetlands found during the 2012 re-delineation survey that were not calculated in the FONSI.

Compensatory Mitigation

Compensatory mitigation requirements for R-0623 are summarized below in Table 3. This project will permanently impact 4,867 feet of warm water streams. Of these 4,867 feet, there are 309 feet of bank stabilization that do not require mitigation by the USACE, resulting in 4,558 feet of stream impacts requiring USACE mitigation.

The USACE is requiring 2:1 mitigation for 3,117 feet and requiring 1:1 mitigation for 1,441 feet of stream impacts. NCDWR is requiring 1:1 mitigation for 3,147 feet. Therefore, the total USACE mitigation requirement exceeds the NCDWR requirement. The mitigation requirements of 4,558 feet of permanent warm water stream impacts will be provided by the NCEEP for R-0623 (Table 3)

This project will also permanently impact 1.22 acres of wetlands. The wetland at Permit Site 9 (0.03 acres) does not require mitigation by USACE due to its isolated status. However, this wetland will require mitigation by NCDWR at 2:1 ratio. The overall USACE mitigation requirement is 1.19 acres at 2:1 ratio while the overall NCDWR mitigation requirement is 1.22 acres at 2:1 ratio. The NCDWR wetland mitigation requirement exceeds the USACE requirement. The mitigation requirements of 1.19 acres of permanent riparian wetland impacts and 0.03 acres of permanent non-riparian wetland impacts will be provided by the NCEEP for R-0623 (Table 3).

Table 3. R-0623 Required Compensatory Mitigation Summary

	Stream Impacts (ft)	**Wetland Impacts (ac)**
Impacts Requiring Mitigation	**4,558**	**1.22**
Required EEP Mitigation	**3,117 @ 2:1**	**1.19 @ 2:1 Riparian**
	1,441 @ 1:1	**0.03 @ 2:1 Non-riparian**
Total EEP Mitigation	**7,675**	**2.38 Riparian**
		0.06 Non-riparian

FEDERALLY PROTECTED SPECIES

Plants and animals with a Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act (ESA) of 1973, as amended. As of December 26, 2012, the U.S. Fish and Wildlife Service (USFWS) lists three federally protected species for Montgomery County: red-cockaded woodpecker (*Picoides borealis)*, Schweinitz's sunflower (*Helianthus schweinitzii*), and smooth coneflower (*Echinacea laevigata*).

No habitat exists within the project study area for red-cockaded woodpecker. The most recent surveys for Schweinitz's sunflower and smooth coneflower were conducted by NCDOT biologists on September 13, September 25, and September 27, 2012 in areas of suitable habitat. Individuals of Schweinitz's sunflower were found in the same area recorded in 2008. No specimens of smooth coneflower were found within the project study area. The biological conclusion of No Effect still remains valid for both red-cockaded woodpecker and smooth coneflower. The biological conclusion of May Affect-Likely to Adversely Affect also remains valid for Schweinitz's sunflower.

During formal consultation with USFWS, a Biological Assessment (BA) was completed for Schweinitz's sunflower in December 2012. The BA was followed up by a Biological Opinion (BO) issued by the USFWS in January 2013. A Plan is being developed to salvage all the Schweinitz's sunflowers affected by this project. The sunflowers which occur within the project clearing limits will be dug up in the Fall of 2014 just prior to Let. The plants will be moved to a location with appropriate habitat within the Uwharrie National Forest. The selection of the relocation area will be coordinated with the U.S. Forest Service and the North Carolina Plant Conservation Program (NCPCP). A permit will be obtained from the NCPCP for this work.

CULTURAL RESOURCES

Two historic structures that are listed on or are eligible for the National Register of Historic Places (NRHP) include the Wooley-Sanders House and the Neal Clark House. In a May 16, 2006 concurrence form (Appendix A.6 of EA), the North Carolina Department of Cultural Resources, State Historic Preservation Office (HPO) concurred that the proposed project will have no adverse effect on the both the Wooley-Sanders House and the Neal Clark House.

Based upon an intensive archaeological survey and evaluation conducted in 2008, it was determined that one site, Site 31MG1910, was eligible for the NRHP. It was also determined that avoidance of this site was not feasible. Coordination with HPO determined that impact minimization would include the development and implementation of a data recovery plan for the site. In accordance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) (36 CFR 800), the NCDOT filed an "Adverse Effect Determination" with the Advisory Council on Historic Preservation (ACHP) and developed a Memorandum of Agreement (MOA) between the Federal Highways Adminstration (FHWA), HPO, NCDOT, and the Catawba Indian Nation regarding the data recovery plan and other courses of action for the archaeological site adversely affected by the proposed bypass. Correspondence from the ACHP, dated February 19, 2009, and the final MOA are included in Appendix B of the FONSI.

FEMA COMPLIANCE

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

INDIRECT AND CUMULATIVE EFFECTS

An Indirect and Cumulative Impacts (ICI) Assessment of R-0623 was completed in April, 2006. The main function of the proposed project is to provide additional roadway capacity through the county and to improve safety and traffic flow on NC 24/27, primarily by diverting through-travelers and truck traffic around the Town of Troy. Subsequently, the report concluded that the proposed project is not anticipated to cause any substantial ICIs or create substantial changes in population projections or future land use. While potential ICIs could result from some improved accessibility of the project study area, the extent of these effects would be significantly tempered by the project study area's slow growth rate and the limited increase in access created by the project. Partial control of access and the use of superstreet intersections along the proposed bypass would further aid in maintaining traffic flow as well as limit the accessibility and attractiveness of adjacent land. The Town of Troy provides water and sewer within town, but currently does not plan to expand service to undeveloped and rural portions of the project study area; another factor that would largely inhibit growth along the bypass. The proposed bypass is consistent with, and included on, the latest version of the County Wide Land Use Plan (approved by the Montgomery County Commissioners in July, 2010).

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 T.I.P. Project R-0623. We are also hereby requesting a Section 401 Water Quality Certification and an Isolated Wetlands General Permit from NCDWR. In compliance with Section 143-215.3D (e) of the NCAC, we will provide $570.00 to act as payment for processing the Section 401 permit. We are providing two copies of this application to NCDWR for their review and approval.

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

Sincerely,

E. L. Luck

for Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit

Cc: NCDOT Permit Application Standard Distribution List

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

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

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

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

PRIVACY ACT STATEMENT

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

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

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

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Richard Middle - W. Last - Hancock	First - Middle - Last -
Company - NCDOT-PDEA	Company -
E-mail Address -	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address- 1598 Mail Service Center	Address-
City - Raleigh State - NC Zip - 27699 Country - USA	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business 919-707-6001 c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

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

_____ SIGNATURE OF APPLICANT _____ DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
R-0623

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Rocky, Warner, Turkey, & Smithermans Cr., Long Br, Little River	Address
15. LOCATION OF PROJECT Latitude: °N 35.334610 Longitude: °W 79.903305	City - State- Zip-

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID Municipality
Section - Township - Range -

17. DIRECTIONS TO THE SITE

Please see attached vicinity map and cover letter.

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

R-0623 proposes to construct the NC 24/27 Troy Bypass from west of SR 1138 (Dairy Road) to just east of Little River in Montgomery County, NC for a total of 6.65 miles.

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

The purpose and need for this project is based on current and projected traffic volumes, particularly the high volumes of truck traffic (7% to 10%) traveling through downtown Troy. The proposed bypass would provide additional roadway capacity, accommodate projected traffic volumes, reduce congestion on main arteries in downtown Troy and provide better access to NC 24/27.

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

20. Reason(s) for Discharge

Impacts will result from widening the roadway and shoulders, construction of roadway on new location, and bridge construction.

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

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

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

Acres See attached cover letter.

or

Linear Feet See attached cover letter.

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

See attached cover letter.

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

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

a. Address- See attached permit drawings.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

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

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

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

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

E. L. Luck for Richard W. Hancock, PE 3.10.14

SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

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

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

Ecosystem Enhancement PROGRAM

March 7, 2014

Mr. Richard W. Hancock, P.E.
Manager, Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

Subject: EEP Mitigation Acceptance Letter:

R-0623, Troy Bypass – NC 24 / 27 from SR 1138 (Dairy Road) to East of the Little River, Montgomery County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and wetland mitigation for the subject project. Based on the information supplied by you on March 6, 2014, the impacts are located in CU 03040104 of the Yadkin River basin in the Southern Piedmont (SP) Eco-Region, and are as follows:

Yadkin 03040104 SP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	4,558.0	1.19	0.03	0	0	0

*Some of the stream and wetland impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details on the mitigation ratio proposal. EEP is proposing to provide riparian wetland mitigation for all wetland impacts associated with this project.

This mitigation acceptance letter replaces the mitigation acceptance letter issued on February 25, 2014. EEP commits to implementing sufficient compensatory warm stream mitigation and riparian wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-707-8420.

Sincerely,

for Jim Stanfill

James B. Stanfill
EEP Asset Management Supervisor

cc: Ms. Liz Hair, USACE – Wilmington Regulatory Field Office
Mr. David Wainwright, Division of Water Quality, Wetlands/401 Unit
File: R-0623 Revised

Subject: Draft Meeting Minutes from 4B Preliminary Drainage Design Review
May 16, 2012 for R-0623 in Montgomery County

Team Members:

Ronnie Smith-USACE	(present)
Gary Jordan-USFWS	(present)
Travis Wilson-NCWRC	(present)
Felix Davila-FHWA	(absent)
Chris Militscher-EPA	(present)
Mason Herndon-NCDWQ	(absent)
Greg Brew-Roadway	(present)
John Olinger-Division 8	(absent)
Derrick Weaver-PDEA	(absent)
Mack Bailey-Structures	(absent)
Rachelle Beauregard-NES	(present)

Participants:
Marshall Clawson, NCDOT Hydraulics
Bill Zerman, NCDOT Hydraulics
Ronnie Smith, USACOE
Travis Wilson, NCWRC
Gary Jordan, USFWS
Ahmad Al-Sharawneh, NCDOT PDEA
Chris Militscher, USEPA
Greg Price, NCDOT NES
Rachelle Beauregard, NCDOT NES
David Wainwright, NCDWQ
Kevin Fisher, NCDOT Structure Design
Lonnie Brooks, NCDOT SMU
Matthew Harvey, Mulkey E & C
Bill Stephens, Mulkey E & C
Greg Brew, NCDOT Roadway Design
Mark Staley, NCDOT REU
Kevin Aldridge, NCDOT Roadway Design
Imad Younis, NCDOT Roadway Design
Wayne Davis, NCDOT TPB
Art King, NCDOT Division 8
John Nigro, NCDOT Utilities
Phil May, Carolina Ecosystems

Introductions were initiated by Marshall Clawson . Introductions were made by all in attendance. Bill Stephens proceeded with the review.

General

- Project falls within the Yadkin-Pee Dee River Basin in which riparian buffer rules are not applicable.
- The project has six major structures. The major structures consist of 2 bridges and 4 culverts.

Plan Sheet 5 (Site 1)

- Impacts to surface waters from proposed roadway cross pipe, fill in wetlands from proposed roadway fill.
- Both forks of the stream coming into the proposed pipe at –L1- 28+00 +/- left are jurisdictional streams (JS). Location and Surveys should label the smaller fork to the left as a JS.

Plan Sheet 5 (Site 2)

- Impacts to surface waters from proposed roadway fill and cross pipe.
- Location and Surveys should label this stream as a JS.
- It was suggested to move the proposed outlet pipe slightly at this location so as to not discharge directly into the stream.

Plan Sheet 7 (Site 3)

- Impacts to surface waters and wetlands from the proposed 2 @ 8'x 6' RCBC and roadway fill. Existing 5'x 6' box culvert will be removed.

Plan Sheet 8 (Site 4)

- Impacts to surface waters and wetlands from proposed roadway fill and proposed cross pipe.
- The stream branch flowing in from the north at approximate –L- Sta. 71+50 left and labeled S75 is a JS. Location and Survey should label this stream as a JS.

Plan Sheet 9 (Site 5)

- Impacts to surface waters and wetlands from proposed roadway fill and 2 @ 10'x 7' RCBC. Existing 6'x6' box culvert will be removed.
- Baffles are proposed for the box culvert due to its slope.
- It was questioned if the portion of the JS being covered by proposed roadway fill at –L- Sta. 76+00 right could be relocated outside of the fill slope. Mulkey E & C will consider during design process.

Plan Sheet 9 (Site 6)-new delineation(small triangle near station 79+92.68 label)

- Impacts to surface waters (pond) and wetlands from proposed roadway fill.
- Excavation in wetlands from proposed lateral ditch.
- It was asked if a natural stream design could be incorporated into the proposed lateral ditch from –L- Sta. 77+00 to 86+00 right to mitigate the loss of the JS (S8). Due to the business on the right, existing utilities and the steepness of the terrain, a natural stream design would not be feasible.
- Treatment of stormwater drainage will be obtained from proposed roadway and median grassed ditches/swales and the proposed lateral ditch/swale on the right.

<u>Plan Sheet 12 (Site 7)</u>-new delineation

- Proposed bridge over Warners Creek
- Warner Creek is a FEMA Regulated stream.
- Impacts to surface waters and wetlands from proposed roadway fill.
- It was asked if the proposed bridge could be shifted to the east and lengthened to span the area of wetlands on the east side of the creek. NCDOT Hydraulics Unit indicated that the bridge would be sized hydraulically so as not to raise the 100 yr water surface elevation more than 1 foot. It was determined that shifting the bridge would not avoid the wetland areas due to the end bent fill slopes and the bridge will not be shifted and lengthened to avoid the wetland area.

<u>Plan Sheet 13 (Site 8)</u>-new delineation

- Impacts to surface waters and wetlands from proposed roadway fill.
- Mulkey E & C is proposing that the fill slopes be adjusted from 2:1 to 1.5:1 to eliminate/reduce the impacts to the stream and wetlands. 1.5:1 fill slope will be rock plated to protect slope.

<u>Plan Sheet 13 (Site 9)</u>-new delineation

- Impacts to wetlands from proposed roadway fill.

<u>Plan Sheet 14/15 (Site 10)</u>

- Impacts to wetlands from proposed roadway fill.
- Small area of wetlands outside the cut slope at –L- Sta. 149+80 right should be considered a take due to its proximity to the proposed roadway cut slope.
- A dry detention pond may be proposed in this area to reduce discharges to an existing farm pond downstream to the left of the project. Stormwater BMP's should not be placed in wetland areas or Historic Properties.

<u>Plan Sheet 17 (Site 11)</u>

- Impacts to surface waters from proposed roadway fill and cross pipe.
- Do not ditch through the wetlands on the north side of the project as was shown on the preliminary drainage plans to join the two streams. Possibly use a second pipe and junction into the proposed cross pipe.

<u>Plan Sheet 18/19 (Site 12)</u>

- Impacts to surface waters from proposed roadway fill and 2 @ 11' x 8' RCBC.
- It was noted that this stream was not Turkey Creek, it is a tributary to Turkey Creek.

<u>Plan Sheet 20</u>-new delineation

- Impacts to surface waters from proposed roadway fill –L- Sta. 218+00 to 219+00 right.
- Mulkey E & C is proposing that the fill slopes be adjusted from 2:1 to 1.5:l and rock plated to eliminate impacts to the JS.

<u>Plan Sheet 20 (Site 13)</u>-new delineation

- Impacts to wetlands from proposed roadway fill.

<u>Plan Sheet 21 (Site 14)</u>

- Impacts to surface waters from proposed roadway fill and cross pipe.

<u>Plan Sheet 22 (Site 15)</u>

- Impacts to surface waters from proposed roadway fill and cross pipe.

<u>Plan Sheet 23 (Site 16)</u>-new delineation

- Impacts to surface waters and wetlands due to roadway fill and cross pipes.
- It was noted that the drain line through the wetland area on the left is not a JS.

<u>Plan Sheet 23/24 (Site 17)</u>-new delineation

- Impacts to surface waters and wetlands due to roadway fill and cross pipe.

<u>Plan Sheet 24/25 (Site 18)</u>-new delineation

- Impacts to surface waters and wetlands from proposed roadway fill and 2 @ 12' x 7' RCBC.
- There is a Green Sheet commitment for a small animal crossing at this location. Since the proposed structure is a 2-barrel box culvert, the second high flow barrel can be utilized as the animal crossing and no other separate floodplain pipe is required.
- The small tributary entering Smithermans Creek from the west starts as a JS on sheet 24 at the bend in the stream at approximately –L- 282+60 left. Location and Surveys should revise JS limits.

<u>Plan Sheet 27 (Site 19)</u>

- Impacts to wetlands from proposed roadway fill.

<u>Plan Sheet 29 (Site 20)</u>

- Proposed bridge over the Little River.
- There is a Green Sheet commitment to provide a 25 ft setback from the proposed endbent slope to the top of the bank on the west side of the river for a future greenway.

<u>Plan Sheet 30 (Site 21)</u>

- Impacts to surface waters (pond).
- Existing pond is in proposed right of way and is proposed to be drained.

<u>Plan Sheet 31 (Site 22)</u>

- Impacts to surface waters (pond).
- Existing pond is in proposed right of way and is proposed to be drained and filled to the right of way line.

Plan Sheet 33 (Site 23)

- Impacts to surface water and wetlands from proposed roadway fill, cross pipe and lateral ditch.
- The JS starts on the downstream (south) side of the area of wetlands on the north side of –Y7-.
- On the south side of –Y7-, the channel branch on the west side is not a JS. The east channel is a JS and should be labeled as such by Location and Surveys.
- There is a pond on the north side –Y7-. Location and Surveys is to pick up pond to show on the plans.

Meeting Adjourned.

Subject: Final Meeting Minutes from 4C Preliminary Permit Review
May 16, 2013 for R-0623 in Montgomery County

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Ronnie Smith-USACE	(present)
Gary Jordan-USFWS	(absent)
Travis Wilson-NCWRC	(absent)
Felix Davila-FHWA	(absent)
Chris Militscher-EPA	(absent)
David Wainwright-NCDWQ	(present)
Greg Brew-Roadway	(absent)
Rueben Blakley-Division 8	(present)
Derrick Weaver-PDEA	(absent)
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Greg Price-NCDOT NES	(present)

Participants Present:
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Bill Zerman, NCDOT Hydraulics
Charles Smith, NCDOT Hydraulics
Ahmad Al-Sharawneh, NCDOT PDEA
Kevin Fisher, NCDOT Structure Design
Dan Duffield, Mulkey E & C
Bill Stephens, Mulkey E & C
Kevin Aldridge, NCDOT Roadway Design
Imad Younis, NCDOT Roadway Design
John Nigro, NCDOT Utilities
Doumit Ishak, NCDOT Congestion Manag.

Introductions were initiated by Marshall Clawson . Introductions were made by all in attendance. Bill Stephens and Dan Duffield proceeded with the review.

General

- For any ditches/swales that enter a wetland area, any rip rap should end at the wetland boundary and not be placed in the wetland area.
- Bill Stephens pointed out that Site 1 and Site 2 were located in a HQW area.
- NCDOT Hydraulics Unit is to coordinate with NCDOT Structures Unit to ensure that box culverts are backfilled with bed material to a depth of 1 foot and that this information is indicated on the culvert general drawings.

Plan Sheet 5 (Site 1)

- Include bank stabilization impacts to summary sheet for rip rap at outlet. – **done included**
- Check stream impacts, separate stream impacts and bank stabilization. – **done checked**

Plan Sheet 5 (Site 2)

- Stream should be labeled as a JS stream. **– done updated**
- Show any stream impacts on summary sheet **– done updated**

Plan Sheet 7 (Site 3)

- NCDOT Hydraulics Unit is to coordinate with NCDOT Structures Unit to ensure that box culverts are backfilled with bed material to the depth of the sill for the overflow barrel and 1 foot for the main barrel. This information should be indicated on the culvert general drawings. **– DOT Task**
- The channel tie should be shown and should be the same depth of the existing. **– Done – this tie is a transitional area and the tie for the main low flow barrel was tied into the stream as best as possible in a length that was designed to keep the stream stable both u/s and d/s.**

<u>Plan Sheet 8 (Site 4)</u>

- At the inlet end of the proposed 60" pipe there are 2 stream branches that flow into the pipe. The southernmost branch that is existing from the existing 18" pipe is not a JS and the impacts should be removed from the summary. **– done removed**
- The length of the tail ditch for the 60" pipe should be added to detail "T". **– done added to detail.**
- Bank stabilization should be added to the summary sheet. **- done**
- If the channel at the outlet is being re-shaped, the impacts should be included as a permanent impact. **– done included as permanent**
- Extend the impacts to the C/A line **- done**

<u>Plan Sheet 9 (Site 5)</u>

- Site 5 is to be broken up into different areas (5, 5A, 5B, etc). NCDOT – NES is to coordinate this through NCDOT Hydraulics Unit. **done**
- At the culvert outlet, no need to add bank stabilization in the area of channel improvements (permanent impacts). This is double counting impacts. **done**
- Per NCDOT Utilities, add stream bank stabilization at the outlet end of the box culvert from the end of the permanent channel impacts to the R/W line. There is a proposed utility to be installed in this area. **done**
- Include all of the wetlands in the pond as a total take (right of –L- Sta. 84+00+/-). **done**
- The wetlands are isolated and the impacts are not subject to the 404 jurisdiction and should not be included in the 404 impact calculations. **NCDOT**
- Need to make sure we have enough easement for a skimmer basin **NCDOT**

<u>Plan Sheet 12 (Site 7)</u>

- Site 7 to be broken up into subareas, NCDOT – NES is to coordinate this through the NCDOT Hydraulics Unit. **done**
- Include bank stabilization with Site 7 where ditches meet the stream with rip rap at embankment. **done**
- Need to adjust the SS line to stop at the approapate location and tie to the bridges sloping spill thru abutments. **done**

Plan Sheet 17 (Site 11)

- At the inlet end of the proposed 84" pipe, that is one wide stream and not 2 separate streams or a fork. Show impacts as one stream. **done**
- The stream entering the proposed 54" pipe should be labeled "Site 11". **done**
- Revise bank stabilization at the outlet of the proposed 96" pipe to Class II. **done**
- Add bank stabilization along the stream where the lateral base ditch meets the stream at Sta. 188+00 right. Add the bank stabilization to the limits of the PDE. **done**

Plan Sheet 18 (Site 12)

- Remove bank stabilization at the outlet of the culvert since the channel improvements are considered permanent impacts. **done**

Plan Sheet 20 (Site 13)

- Investigate using 3:1 slopes in the wetland area. (Changing to 3:1 slopes may create the need for guardrail, a wider shoulder and the difference in wetland impacts may be minimal). Coordination with Roadway Design needed. **done**
- The wetlands are isolated and the impacts are not subject to the 404 jurisdiction and should not be included in the 404 impact calculations.

Plan Sheet 21 (Site 14)

- Add cross section/pipe profile to permits.- in the past it was determined that any pipes 60" and less did not need a stream profile or cross section. A cross section will not be prepared for this site.
- Need to make sure the TS is legible **done**

Plan Sheet 22 (Site 15)

- Summary is missing permanent stream impacts. **done**
- Add stream bank stabilization at inlet where the 2 ditches tie into the stream. **done**

Plan Sheet 23 (Site 17)

- Add stream bank stabilization at the inlet where the 2 ditches tie to the stream, if the ditches cannot terminate before entering the wetlands. **done**
- Add stream bank stabilization at outlet if the ditch cannot terminate before entering the wetlands. **This will be a fill in wetlands not stream bank stabilization**

Plan Sheet 23 (Site 18)

- Investigate using 3:1 slopes to reduce impacts to this wetland area. Coordination with Roadway design as needed. **Slopes not changed**

Plan Sheet 24 (Site 19)

- Subdivide Site 19 into subareas (19, 19A, 19B, etc). NES to coordinate with NCDOT Hydraulics unit. **done**
- Add a note at the outlet that states a "portion of the stream channel is to remain open". Note this channel is consider a permanent impact and as such the rip rap shown is not to be consider stream bank stabilization as this would be considered double impacts. **done**

Plan Sheet 25 (Site 19)

- Add note "portion of the stream channel is to remain open". **done**
- Add bank stabilization for ditch entering stream on inlet end of culvert. **done**
- Extend sill boulders around 90 degree bend at inlet end of culvert. **done**

Plan Sheet 29 (Site 21)

- A causeway will be added to this permit sheet. Coordination is ongoing with NCDOT concerning the proposed causeway needs. **done**
- The proposed ditches/swales shown draining into the Little River will be extended to the JS and stream bank stabilization will be added. **done**
- The NCDWQ mentioned the possible need for hazardous spill basins on this sheet because the Little River upstream of the project crossing is classified as HQW. NCDWQ to verify this. **NCDOT**
- NCDOT Utilities indicated there will likely be a major utility installed across the Little River along the north side of the roadway. **NCDOT**

Plan Sheet 30 (Site 22)

- JS impacts on the outlet end of the existing 30" cross pipe should be removed. **done**
- The Site 21 label at the outlet of the 30" pipe should be removed. **done**
- Stream impacts need to be revised on the impact summary sheet. No permanent stream impacts will be proposed. **done**

Plan Sheet 31 (Site 23)

- There are no JS impacts at this site.

Plan Sheet 34(Site 24)

- This site is to be subdivided into 2 Sites, NES to coordinate with NCDOT Hydraulics Unit **done**
- On the outlet end of the proposed cross pipe, the west branch of the stream shown on the plans is not a JS. Remove impacts from permit sheet and summary. **done**
- Extend stream at outlet on permit drawings. **done**

Meeting Adjourned.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: 34352.1.1 **County(ies):** Montgomery

General Project Information

Project No.:	34352.1.1	**Project Type:**	New Location	**Date:**	4/16/2013
NCDOT Contact:	Marshall Clawson, P.E.	**Contractor / Designer:**	Mulkey Engineers & Consultants - William T. Stephens, Jr, P.E.		
Address:	Hydraulics Unit 1020 Birch Ridge Road Raleigh, NC 27610	**Address:**	6750 Tryon Road Cary, NC 27518		
Phone:	919-707-6713	**Phone:**	919-858-1877		
Email:	mclawson@ncdot.gov	**Email:**	bstephens@mulkeyinc.com		
City/Town:	Troy	**County(ies):**	Montgomery		
River Basin(s):	Yadkin-Pee Dee	**CAMA County?**	No		
Primary Receiving Water:	Warner Creek (see Environmental Summary for additional)	**NCDWQ Stream Index No.:**	13-25-30-2		
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**	Class C			
	Supplemental:	None			
Other Stream Classification:					
303(d) Impairments:	None				
Buffer Rules in Effect	N/A				

Project Description

Project Length (lin. Miles or feet):	6.65 miles	**Surrounding Land Use:**	Mixed developed and rural

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	79.64 ac.	14.96 ac.
Typical Cross Section Description:	4 Lane divided with grassed median and paved shoulders	
Average Daily Traffic (veh/hr/day):	Design/Future: 18,200	Existing: 12,641

General Project Narrative:

This project is located just to the south of the Town of Troy in Montgomery County and is in the Yadkin Pee-Dee River Basin. The project is a proposed four lane, shoulder section facility with a divided grassed median. The total project length is 6.65 miles. Approximately 1.3 miles of the beginning of the project and 0.9 miles of the end of the project are widening on existing location of NC 24/27. The remaining 4.5 miles of the project is on new location. The project drainage system will consist mainly of ditches, cross pipes, storm drainage systems and box culverts. There are also two bridge crossing locations on the project at Warner Creek and the Little River.

Six named streams or their tributaries are affected by the proposed project:

- Rocky Creek Index # 13-25-30-(0.5) Stream Classification C;HQW
- Warner Creek Index # 13-25-30-2 Stream Classification C
- Long Branch Index #13-25-28 Stream Classification C
- Turkey Creek Index # 13-25-25 Stream Classification C
- Little River Index # 13-25-(19) Stream Classification C;HQW (upstream of project)
- Little River Index # 13-25-(19) Stream Classification C (downstream of project)
- Smitherman Creek Index # 13-25-21 Stream Classification C

Approximately 0.42 miles of the beginning of the project is located in the Rocky Creek drainage area which is listed as HQWs. The project crosses one unnamed tributary to Rocky Creek. Swales are proposed to carry surface water drainage from the project to this tributary. The section of the Little River on the north side of our project is considered HQW. A grassed swale is proposed on the north side of the project to treat surface water drainage before it enters the Little River. None of the streams listed are included on the 303(d) list for impaired streams.

Cross pipes in jurisdictional streams will have the inverts buried a minimum of 20% of the diameter of the pipe size up to and including 60” diameter. For pipes 60” or greater and box culverts, the inverts will be buried 1.0’.

At the two bridge crossings of Warner Creek and the Little River, no deck drains will be used in order to avoid direct discharges into the surface waters. Deck drainage will be collected in storm drain systems off the ends of the bridges and discharged into either grassed ditches or grassed swales before entering the streams.

References

Montgomery County, NC - DWQ Environmental Sensitivity Map 2010, NC Water Quality Classifications By NC River Basin - Yadkin Pee-Dee River Basin.

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Project/TIP No.: 34352.1.1 **County(ies):** Montgomery

Swales

Sheet No.	Station (From / To)	Stream Crossing Station	Base Width (ft)	Front Slope (H:V)	Back Slope (H:V)	Drainage Area (ac)	Recommended Treatment Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used
4	-L1- 25+00 RT -L1- 26+00 RT	-L1- 27+05	6.0	3	3	2.58	258	100	7.70%	5.9	2.5	7.6	3.0	Yes
5	-L1- 26+00 RT -L1- 26+90 RT	-L1- 27+05	6.0	3	3	2.58	258	90	4.44%	5.9	2.1	7.6	2.4	Yes
5	-L1- 26+90 RT -L1- 27+25 RT	-L1- 27+05	6.0	3	3	4.32	432	35	2.90%	10.6	2.5	13.5	2.8	Yes
5	-L1- 27+25 RT -L1- 29+00 RT	-L1- 27+05	6.0	3	3	4.32	432	175	11.20%	10.6	4.1	13.5	4.7	Yes
5	-L- 30+50 RT	-L- 30+50 RT	3.0	3	3	0.48	48	24	10.00%	2.0	1.9	2.6	2.2	No
29	-L- 339+63 LT -L- 340+50 LT	-L- 339+50	6.0	3	3	3.85	385	87	4.00%	9.6	2.7	12.3	3.0	Yes
29	-L- 340+50 LT -L- 343+00 LT	-L- 339+50	6.0	3	3	3.85	385	250	0.67%	9.6	1.3	12.3	1.5	No
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☐ YES ☑ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanantion of why design criteria was not met.

Additional Comments

MEP were utilized in design.

North Carolina Department of Transportation

Highway Stormwater Program

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Phone:	919-707-6713	**Phone:**	919-858-1877
Email:	mclawson@ncdot.gov	**Email:**	bstephens@mulkeyinc.com
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Buffer Rules in Effect	N/A		

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	Proposed Project	Existing Site
Project Built-Upon Area (ac.)	79.64 ac.	14.96 ac.
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- Long Branch Index #13-25-28 Stream Classification C
- Turkey Creek Index # 13-25-25 Stream Classification C
- Little River Index # 13-25-(19) Stream Classification C;HQW (upstream of project)
- Little River Index # 13-25-(19) Stream Classification C (downstream of project)
- Smitherman Creek Index # 13-25-21 Stream Classification C

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FOR LINEAR ROADWAY PROJECTS

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5	-L1- 26+90 RT -L1- 27+25 RT	-L1- 27+05	6.0	3	3	4.32	432	35	2.90%	10.6	2.5	13.5	2.8	Yes
5	-L1- 27+25 RT -L1- 29+00 RT	-L1- 27+05	6.0	3	3	4.32	432	175	11.20%	10.6	4.1	13.5	4.7	Yes
5	-L- 30+50 RT 	-L- 30+50 RT	3.0	3	3	0.48	48	24	10.00%	2.0	1.9	2.6	2.2	No
29	-L- 339+63 LT -L- 340+50 LT	-L- 339+50	6.0	3	3	3.85	385	87	4.00%	9.6	2.7	12.3	3.0	Yes
29	-L- 340+50 LT -L- 343+00 LT	-L- 339+50	6.0	3	3	3.85	385	250	0.67%	9.6	1.3	12.3	1.5	No
							0							
							0							
							0							
							0							
							0							
							0							
							0							
							0							
							0							
							0							
							0							
							0							
							0							
							0							

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

Additional Comments

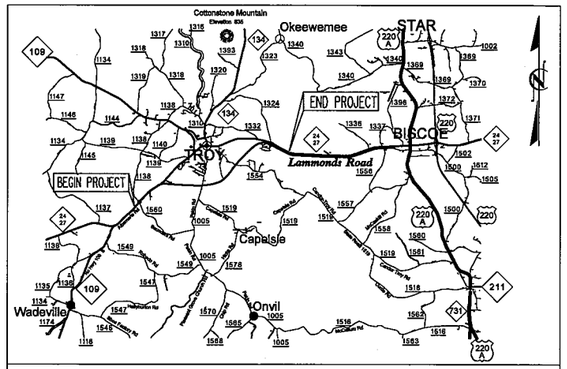
MEP were utilized in design.

09/08/99

TIP PROJECT: R-0623

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARY OF TROY

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY

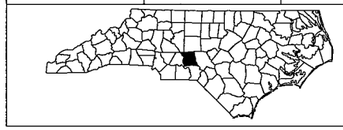
LOCATION: NC 24/27 TROY BYPASS FROM WEST OF SR 1138 (DAIRY ROAD) TO JUST EAST OF LITTLE RIVER

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

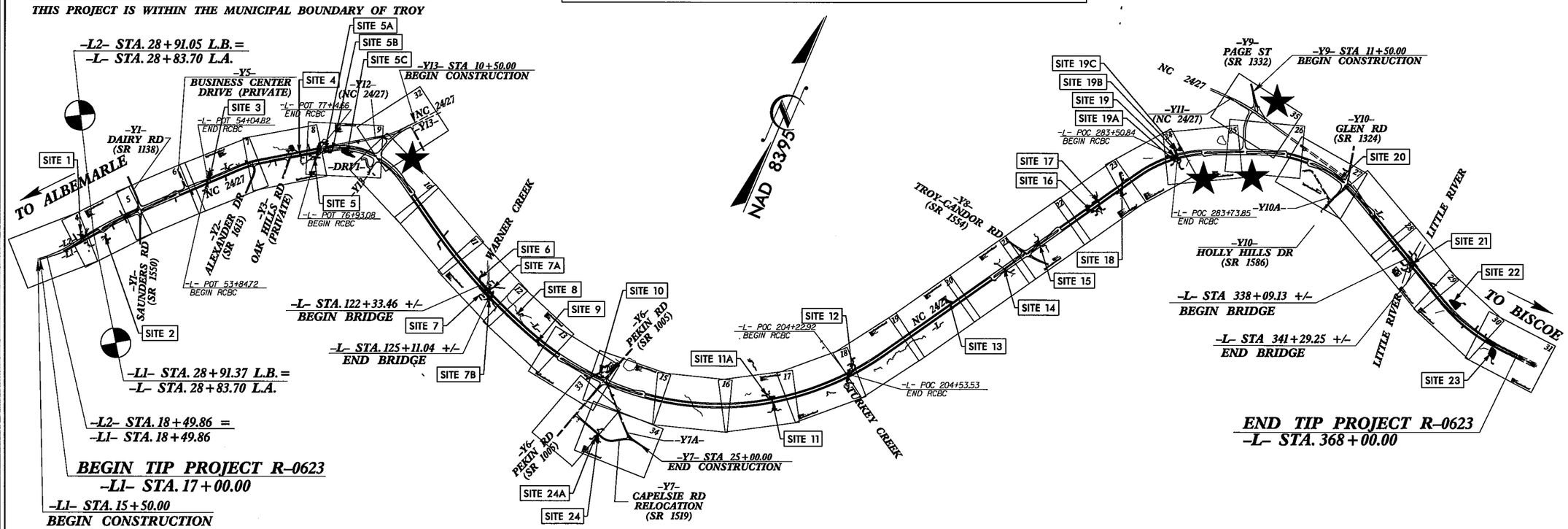
WETLAND AND SURFACE WATER IMPACTS PERMIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-0623	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34352.1.1	STP-24(6)	PE



PERMIT DRAWING SHEET 1 OF 91



★ TRAFFIC SIGNAL

NOTE: THIS PROJECT IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100 — PLANS

50 25 0 50 100 — PROFILE (HORIZONTAL)

10 5 0 10 20 — PROFILE (VERTICAL)

DESIGN DATA

ADT 2014 = 6610 – 12,641
ADT 2040 = 9300 – 18,200
DHV = 10 %
D = 55 %
T = 17 % *
V = 60 MPH
* TTST = 12% DUAL 5%

FUNCTIONAL CLASSIFICATION
RURAL ARTERIAL
REGIONAL TIER PROJECT

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-0623 = 6.518 MILES

LENGTH STRUCTURES TIP PROJECT R-0623 = 0.131 MILES

TOTAL LENGTH OF TIP PROJECT R-0623 = 6.649 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 30, 2013

LETTING DATE: NOVEMBER 18, 2014

G. E. BREW, P.E.
PROJECT ENGINEER

I.T. YOUNIS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA

10/10/2013
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12:02:30 PM

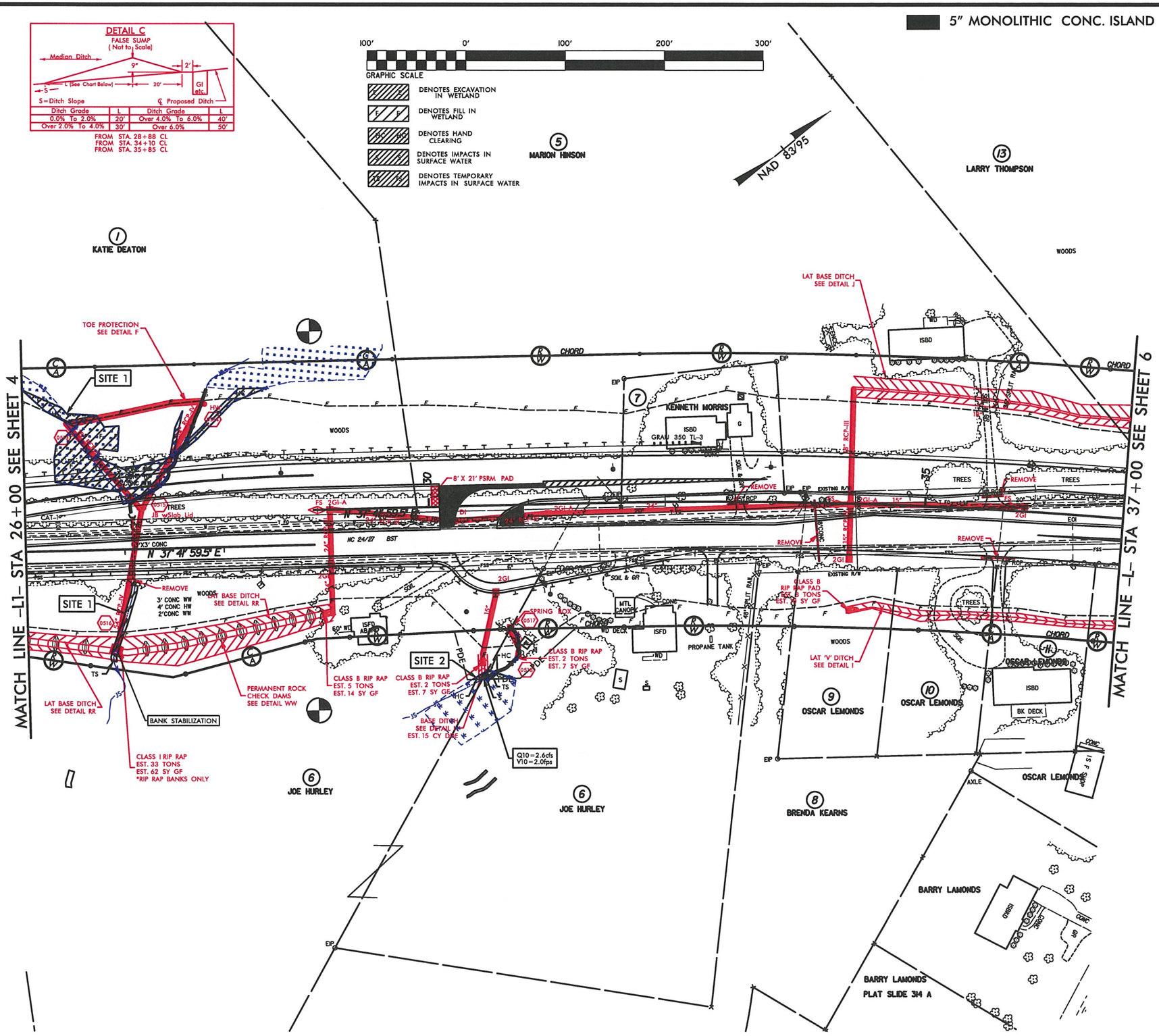
PROJECT REFERENCE NO.	SHEET NO.
R-0623	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 36
FOR PROFILE OF LINE -L1- SEE SHEET 36
FOR PROFILE OF LINE -L2- SEE SHEET 37

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 2 OF 91



REVISIONS

8/17/99

12/2/2013
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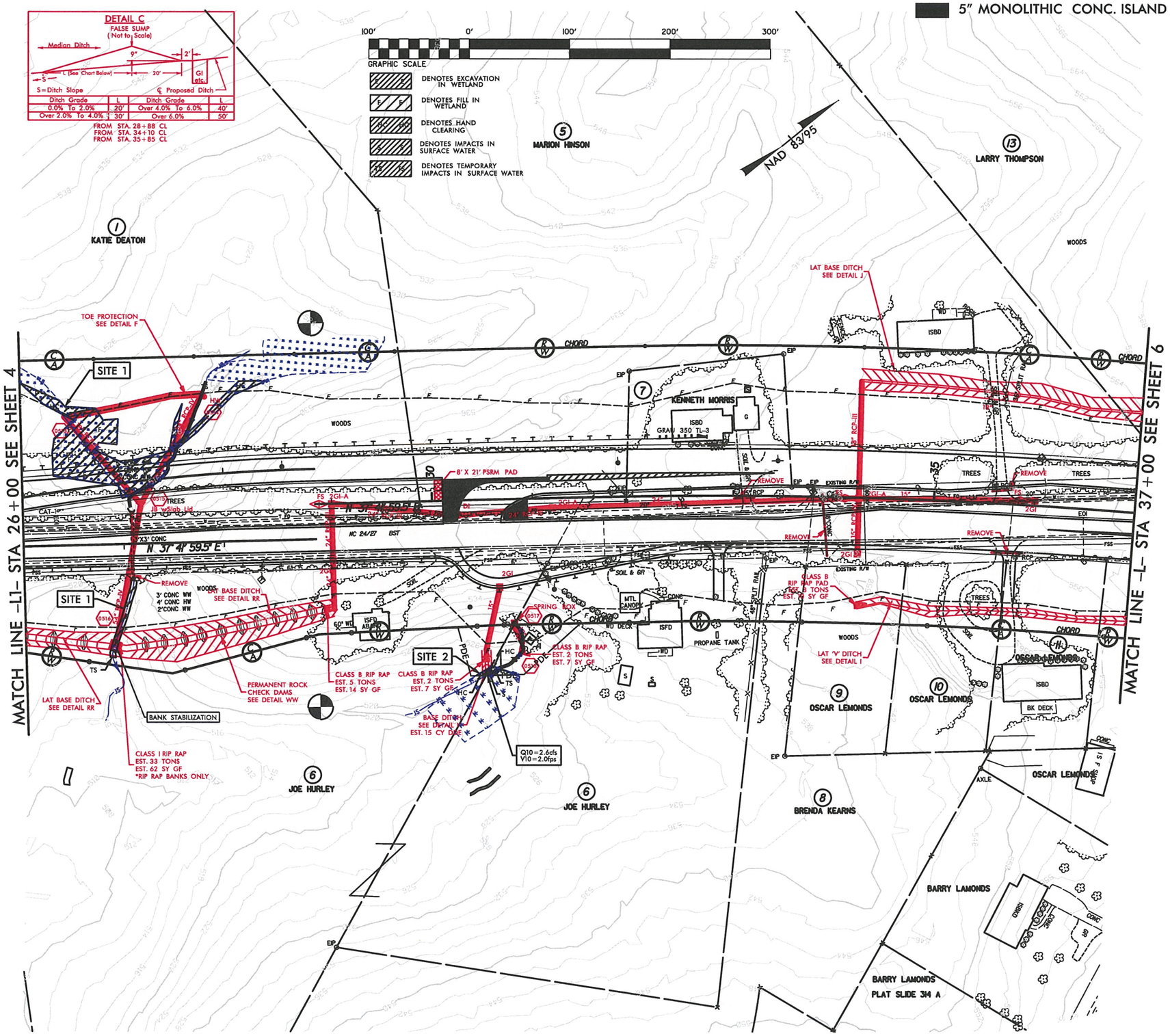
PROJECT REFERENCE NO.	SHEET NO.
R-0623	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE –L– SEE SHEET 36
FOR PROFILE OF LINE –L1– SEE SHEET 36
FOR PROFILE OF LINE –L2– SEE SHEET 37

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 3 OF 91



REVISIONS

8/17/99

12/2/2013
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ENLARGEMENT SHEET

PROJECT REFERENCE NO.	SHEET NO.
R-0623	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

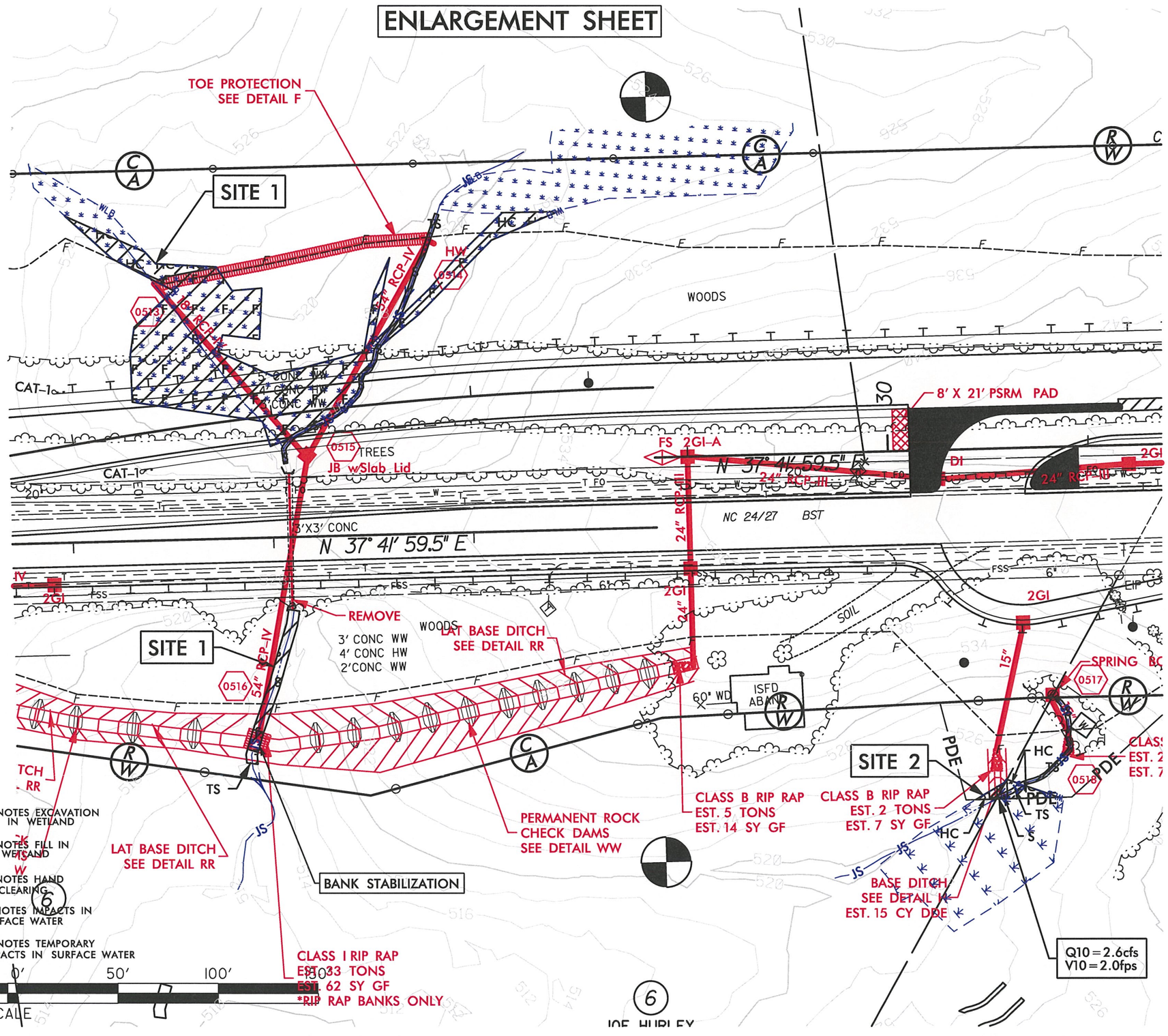
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 36
FOR PROFILE OF LINE -L1- SEE SHEET 36
FOR PROFILE OF LINE -L2- SEE SHEET 37

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 4 OF 91

NAD 83/95



REVISIONS

8/17/99

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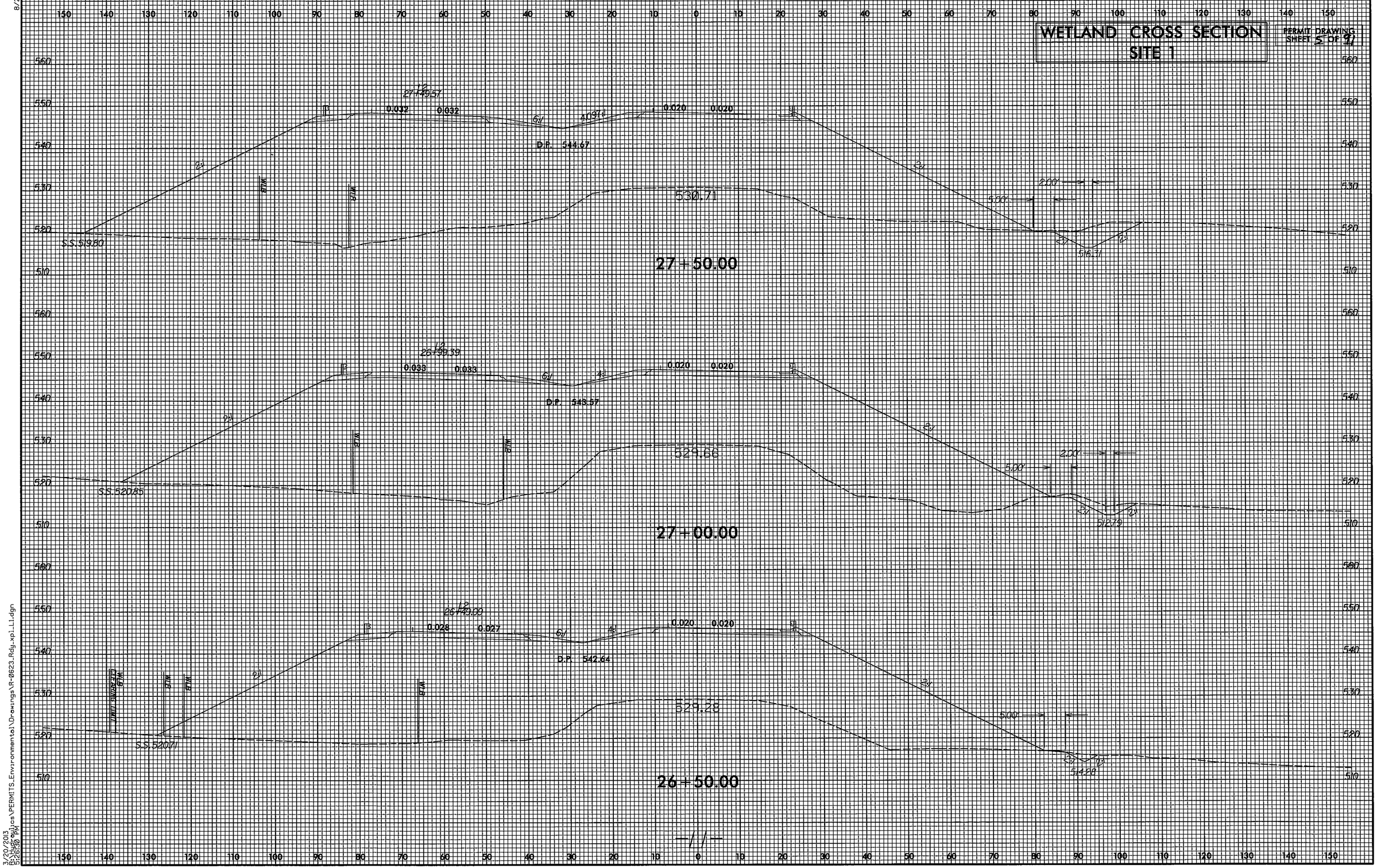
PROJ. REFERENCE NO.	SHEET NO.
R-0623	X-5

WETLAND CROSS SECTION
SITE 1

PERMIT DRAWING
SHEET 5 OF 97



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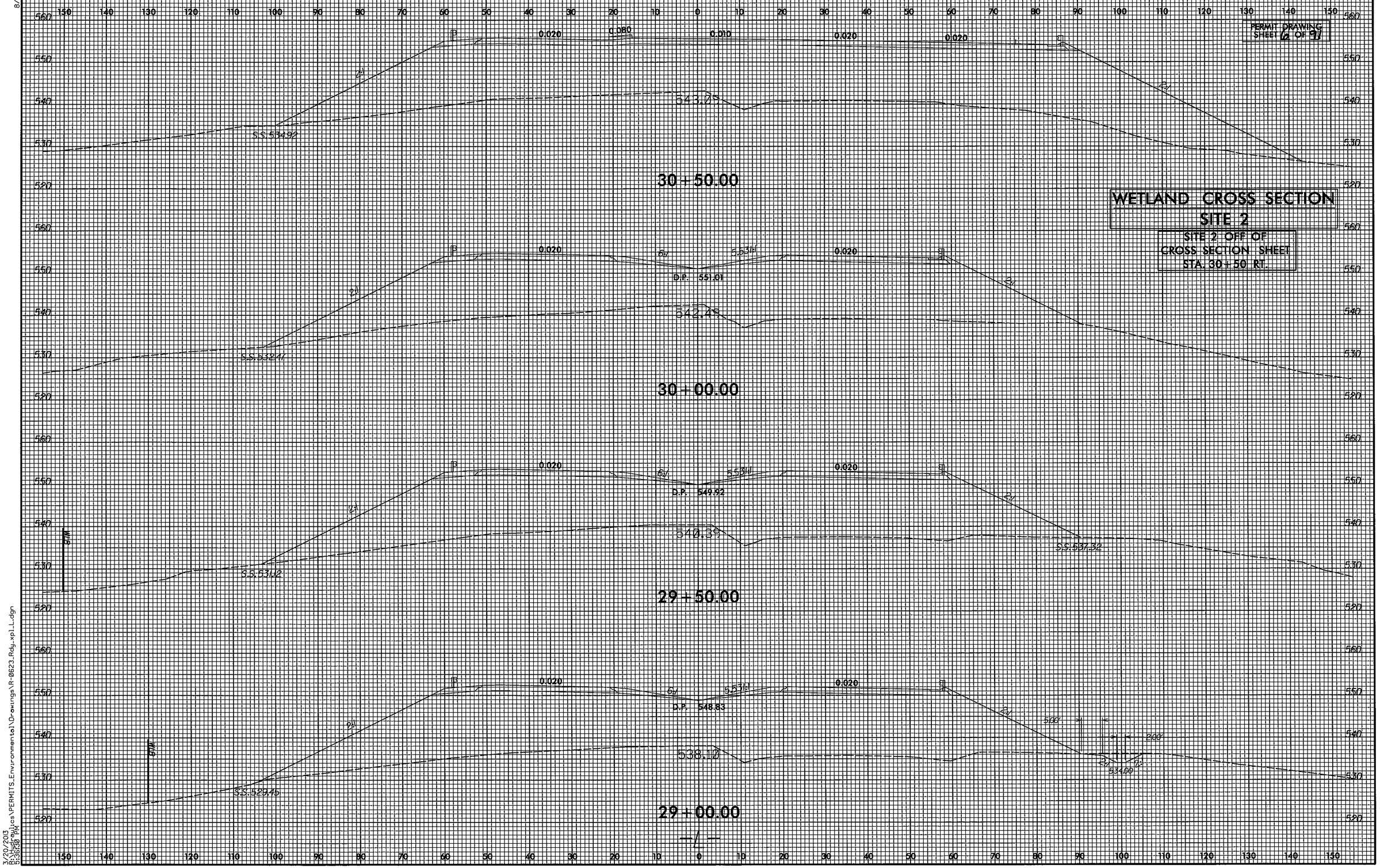
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-7

PERMIT DRAWING
SHEET 16 OF 31

WETLAND CROSS SECTION
SITE 2

SITE 2 OFF OF
CROSS SECTION SHEET
STA. 30+50 RT.



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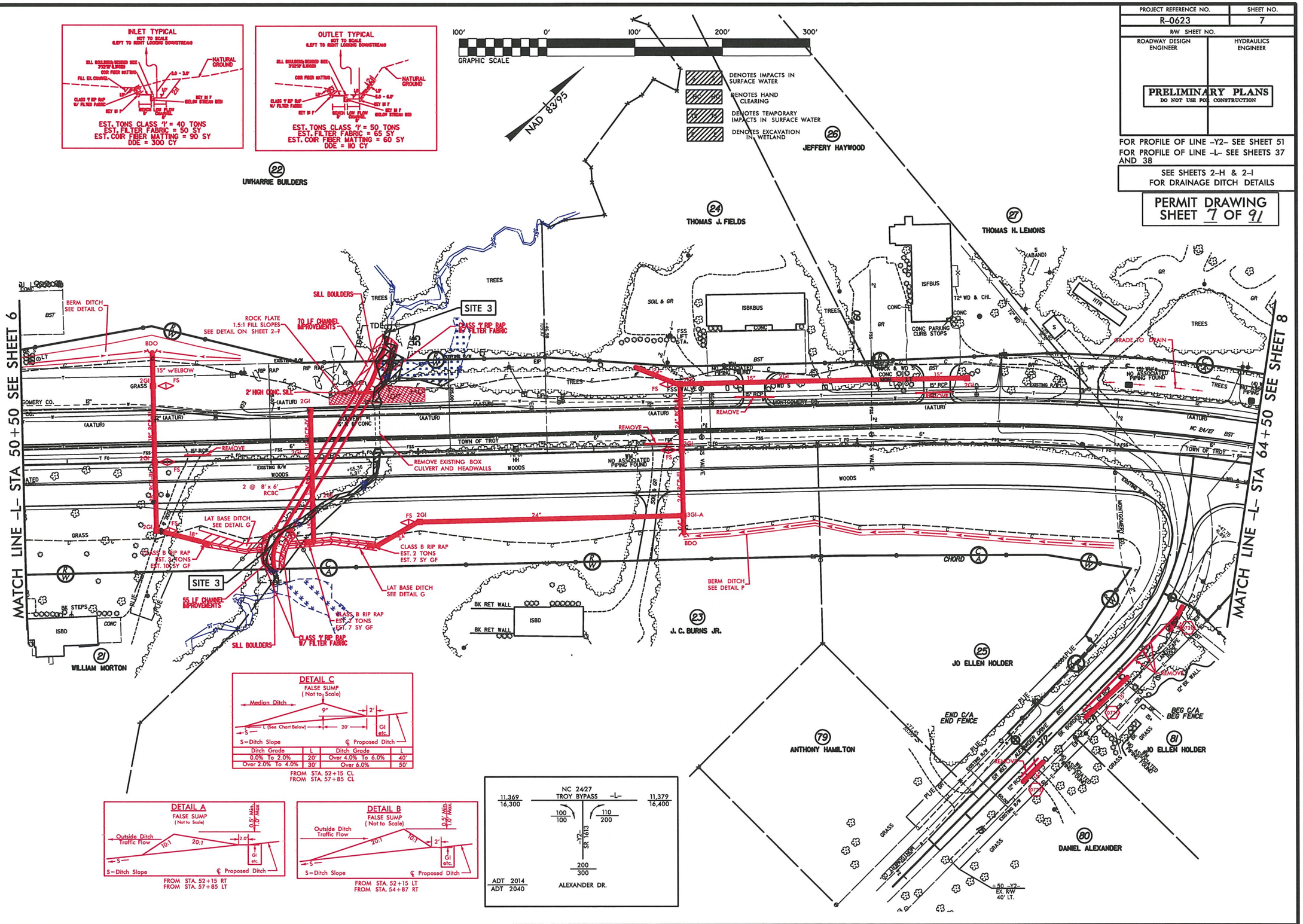
PROJECT REFERENCE NO.	SHEET NO.
R-0623	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -Y2- SEE SHEET 51
FOR PROFILE OF LINE -L- SEE SHEETS 37 AND 38

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 7 OF 91



REVISIONS

8/17/99

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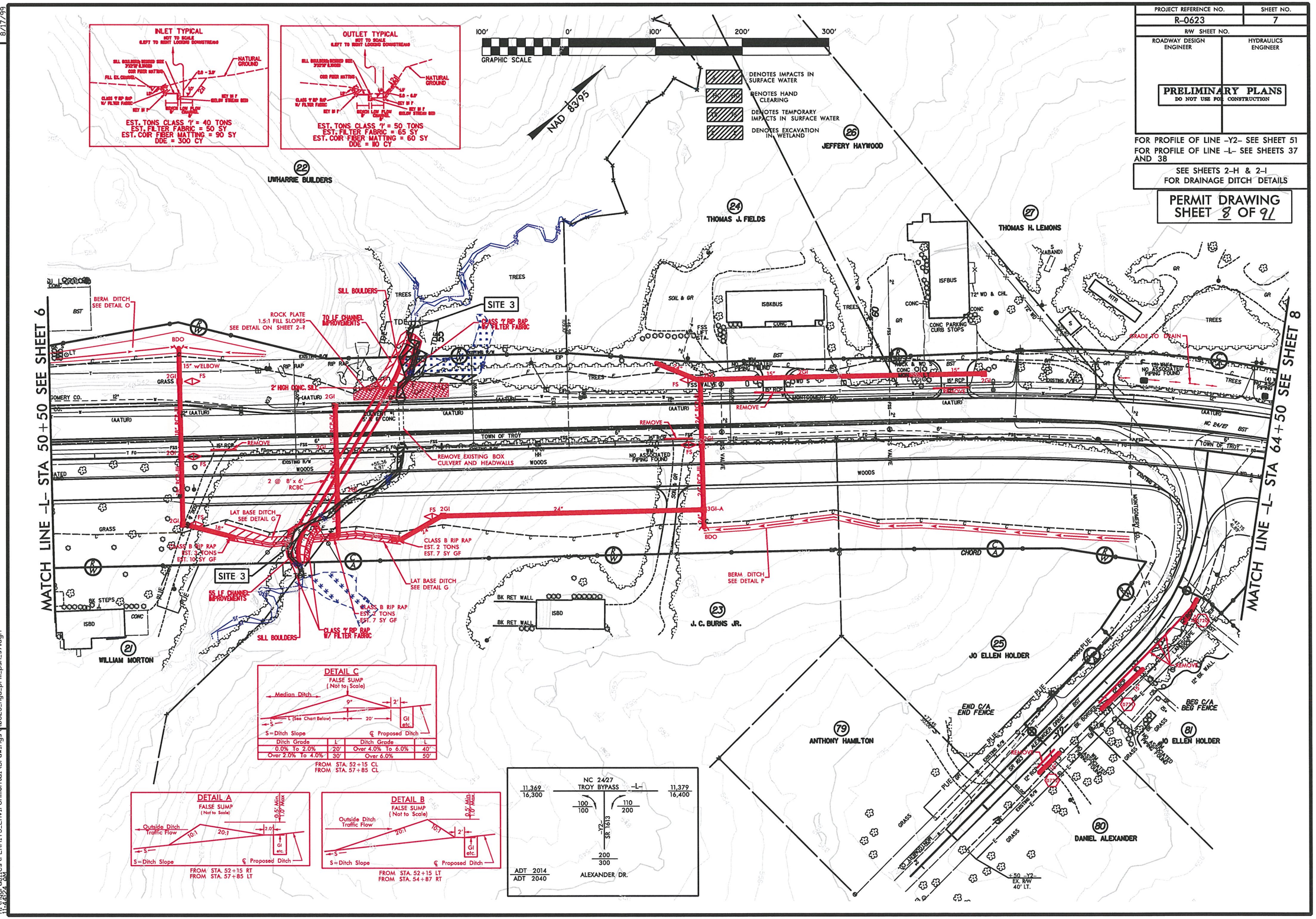
PROJECT REFERENCE NO.	SHEET NO.
R-0623	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -Y2- SEE SHEET 51
FOR PROFILE OF LINE -L- SEE SHEETS 37 AND 38

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 8 OF 91



REVISIONS

8/17/99

12/11/2013
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

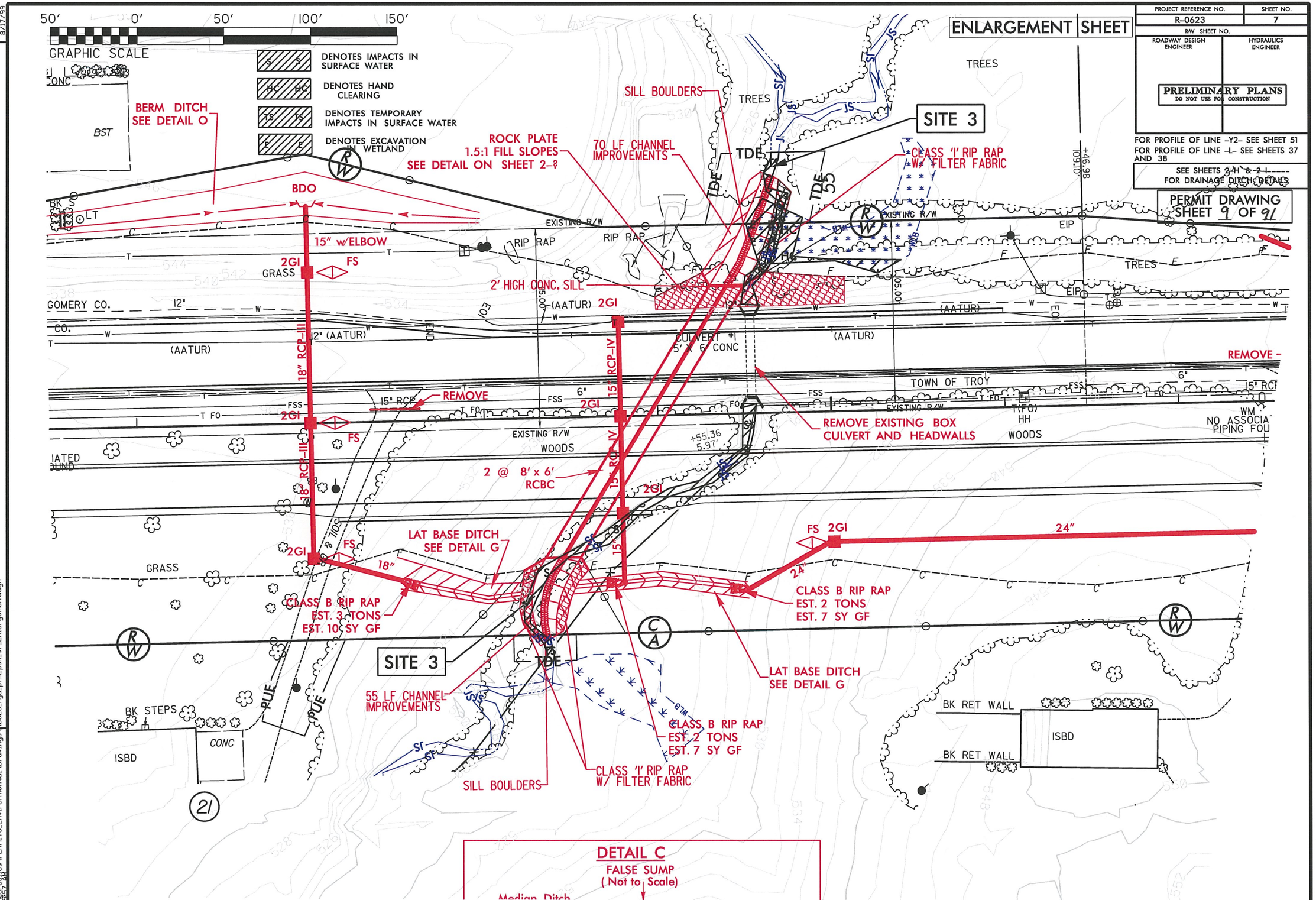
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -Y2- SEE SHEET 51
FOR PROFILE OF LINE -L- SEE SHEETS 37 AND 38

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 9 OF 91

ENLARGEMENT SHEET



REVISIONS

8/17/99

12/11/2013
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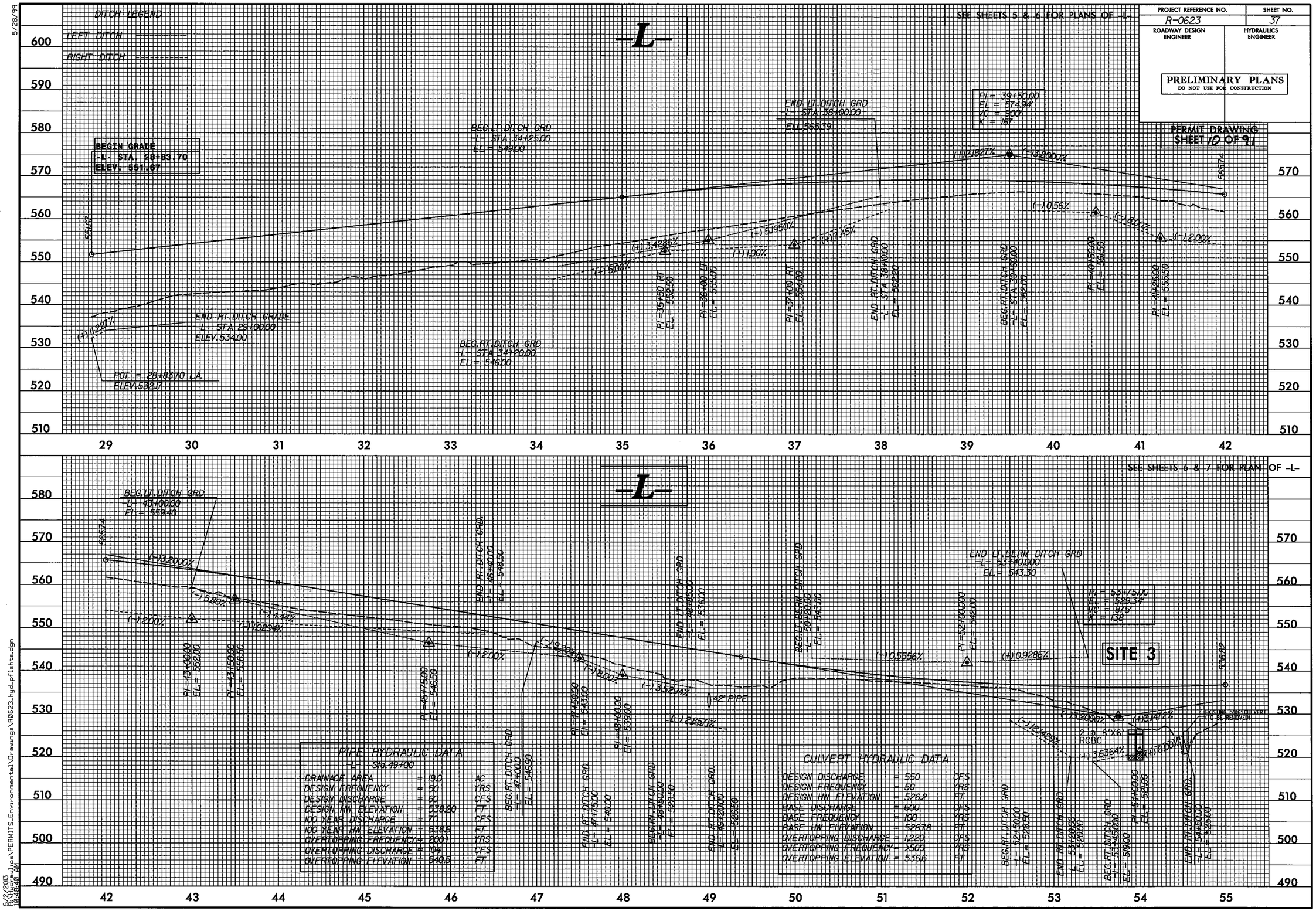
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-0623	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 10 OF 91



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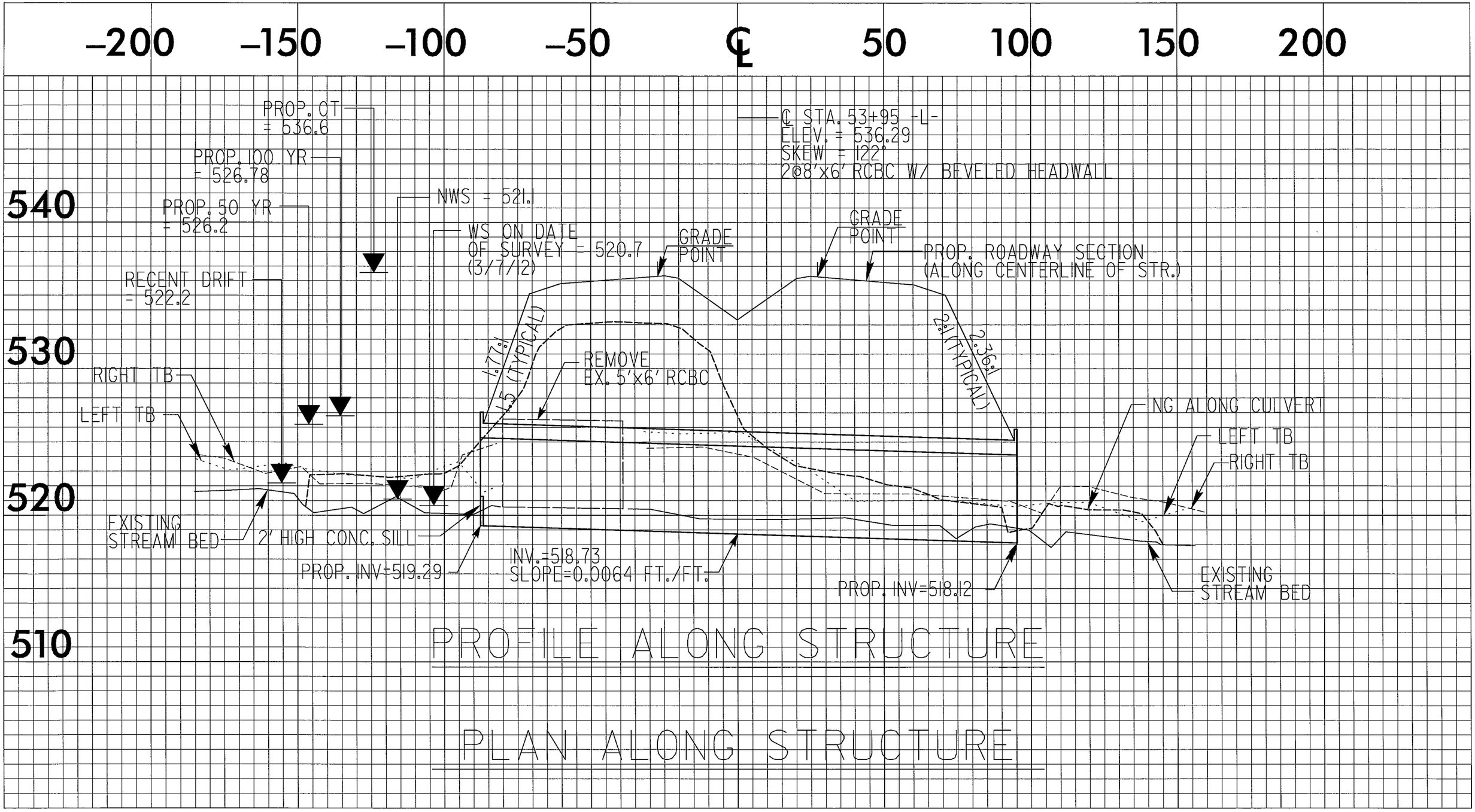
SITE 4

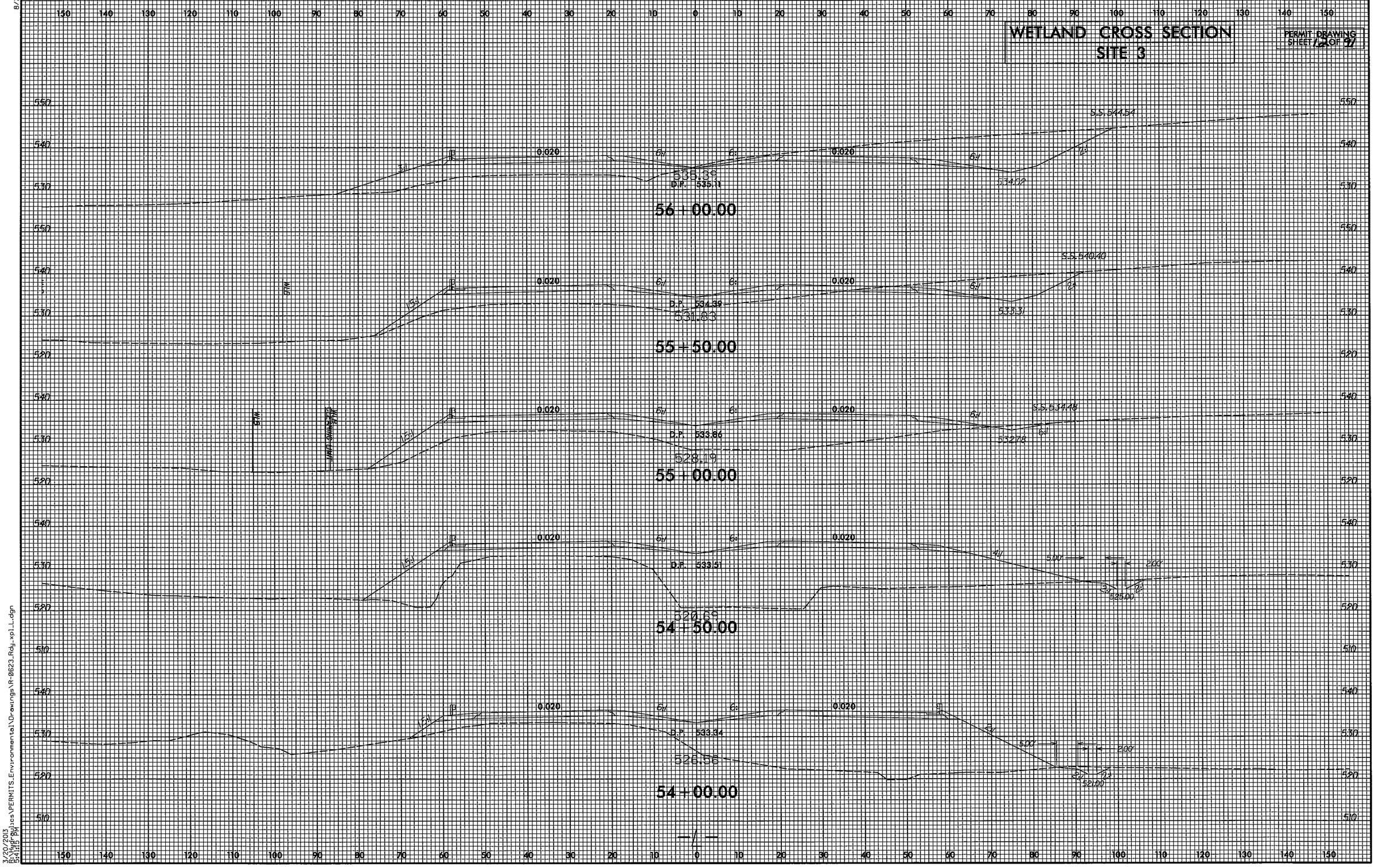
PERMIT DRAWING
SHEET 11 OF 91



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-17

WETLAND CROSS SECTION
SITE 3

PERMIT DRAWING
SHEET 12 OF 21



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8/23/99

PROJECT REFERENCE NO.	SHEET NO.
R-0623	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

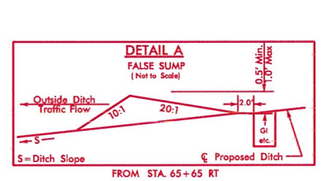
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

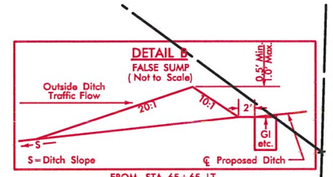
FOR PROFILE OF LINE -L- SEE SHEET 38
FOR PROFILE OF LINE -Y3- SEE SHEET 51

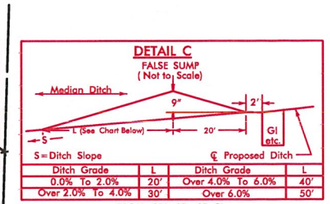
SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 13 OF 91

NAD 83/95

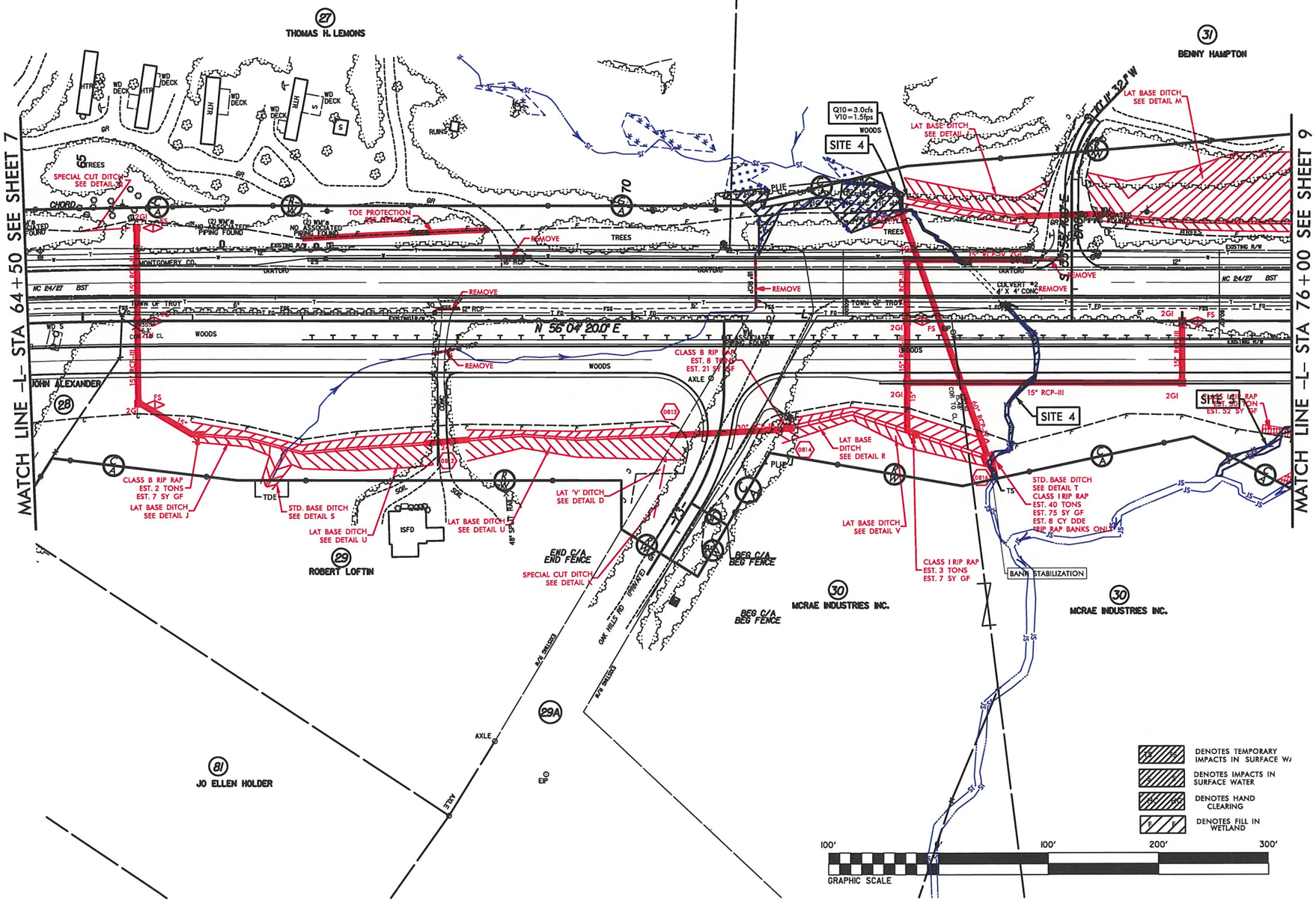






Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 65+65 CL
FROM STA. 72+68 CL
FROM STA. 75+14 CL



REVISIONS

8/17/99

12/4/2013
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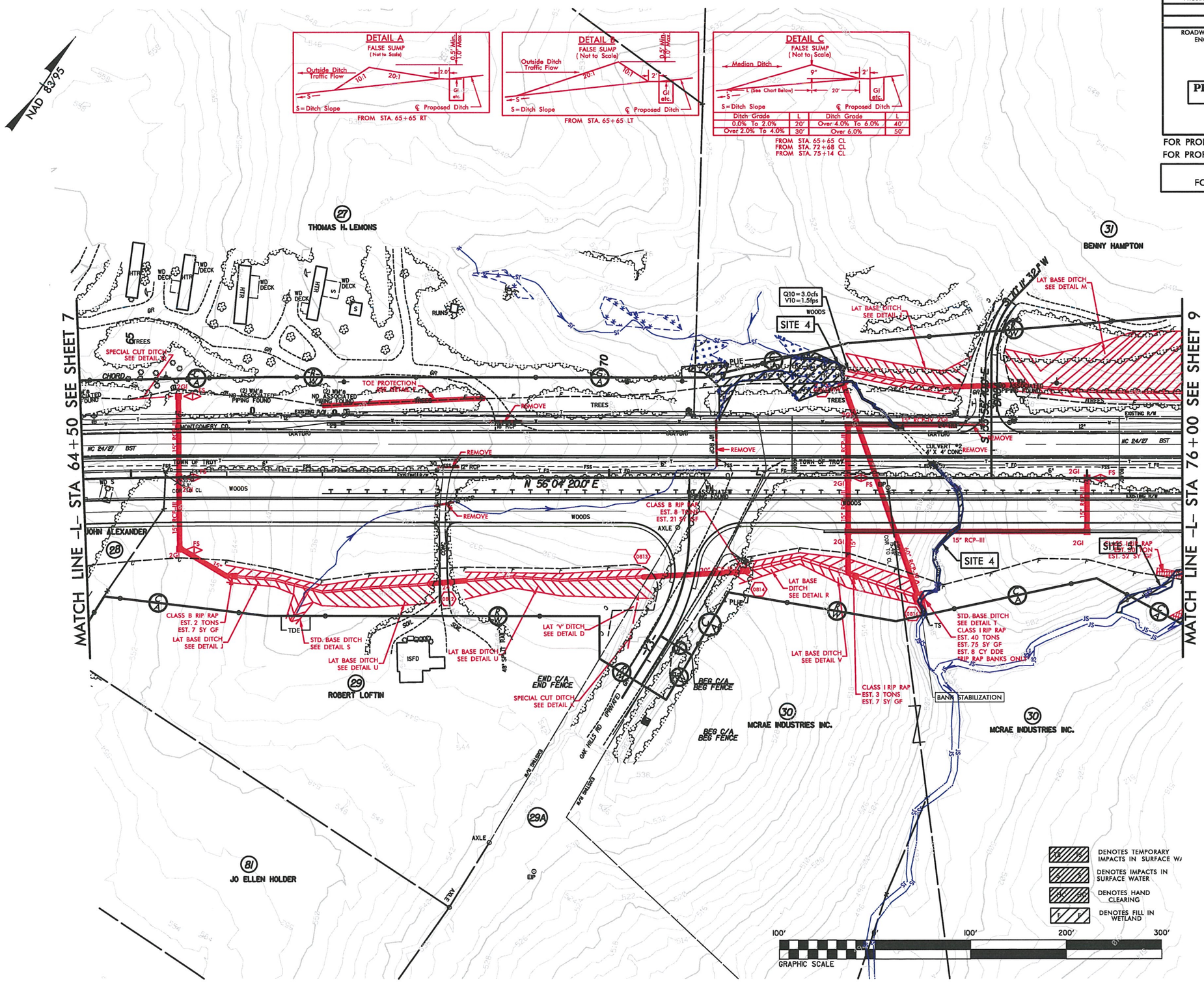
PROJECT REFERENCE NO.	SHEET NO.
R-0623	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 38
FOR PROFILE OF LINE -Y3- SEE SHEET 51

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 14 OF 91



REVISIONS

8/17/99

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ENLARGEMENT SHEET

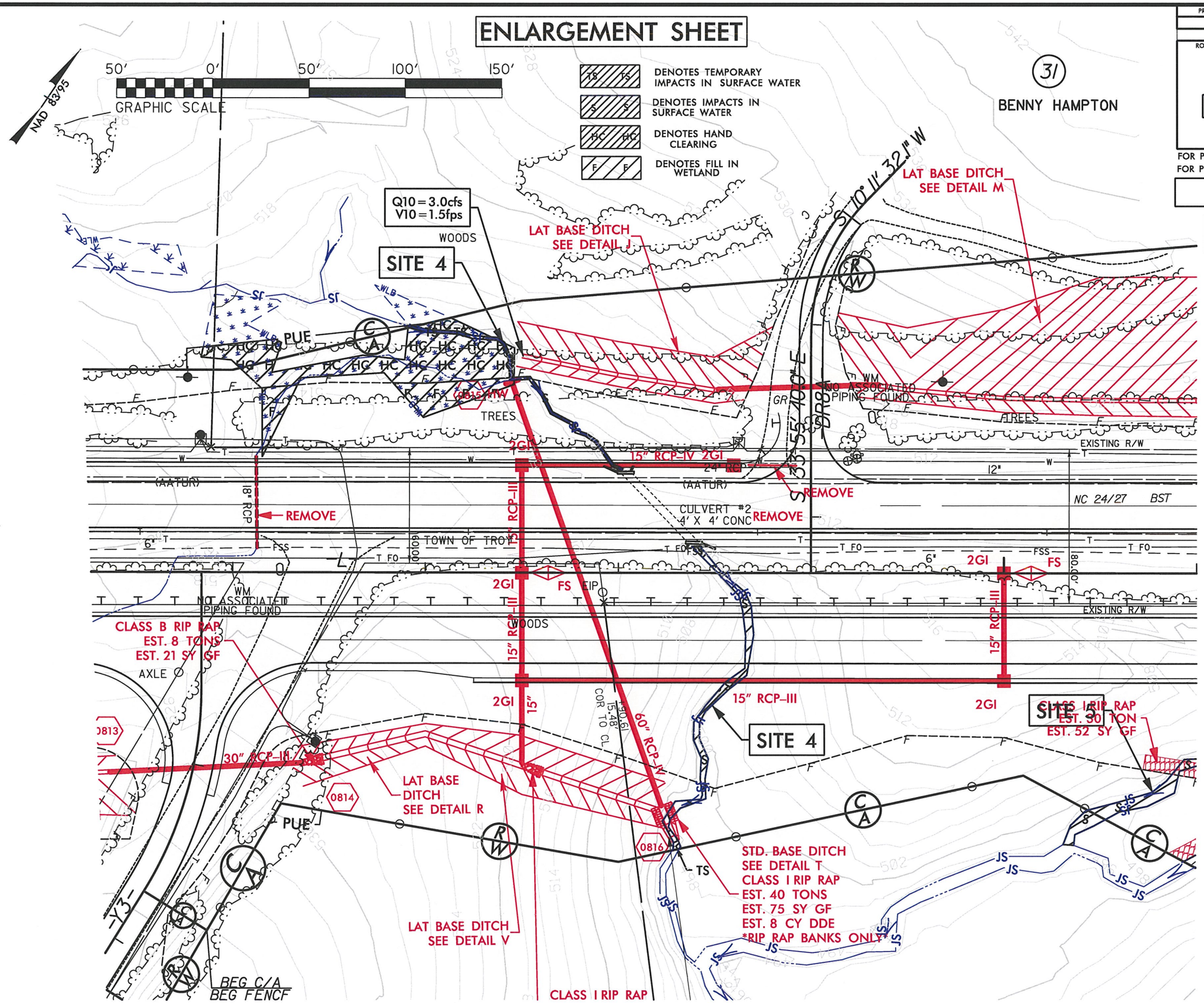
PROJECT REFERENCE NO.	SHEET NO.
R-0623	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 38
FOR PROFILE OF LINE -Y3- SEE SHEET 51

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 15 OF 91



REVISIONS

8/17/99

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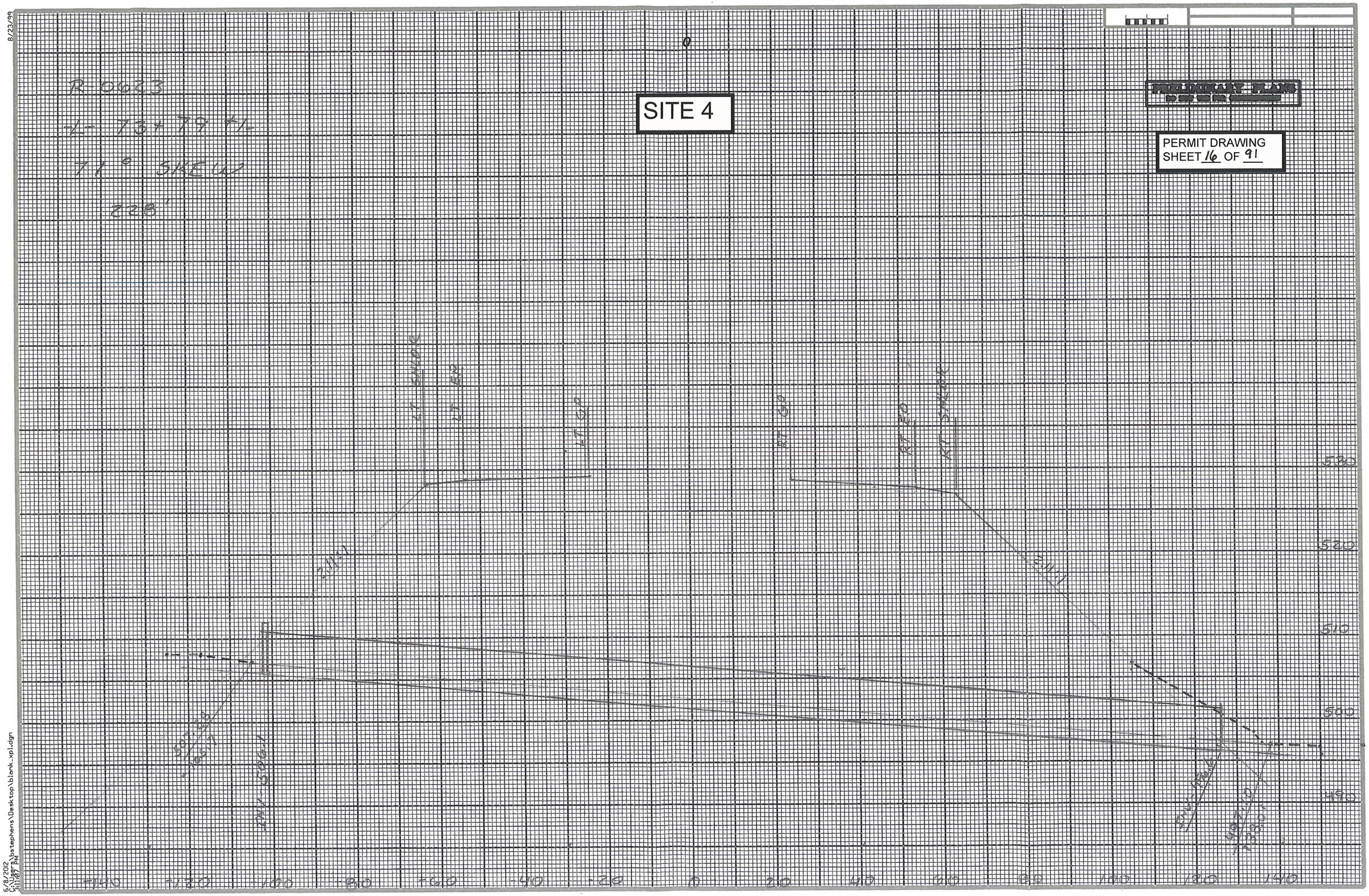
SITE 4
PRELIMINARY PLANS
PERMIT DRAWING
SHEET 16 OF 91
R 0623
71° SKEW
320'
LT EDGE
RT EDGE
RT SPLAY
530
520
510
500
490
-140
-120
-100
-80
-60
-40
-20
0
20
40
60
80
100
120
140
6/8/2012
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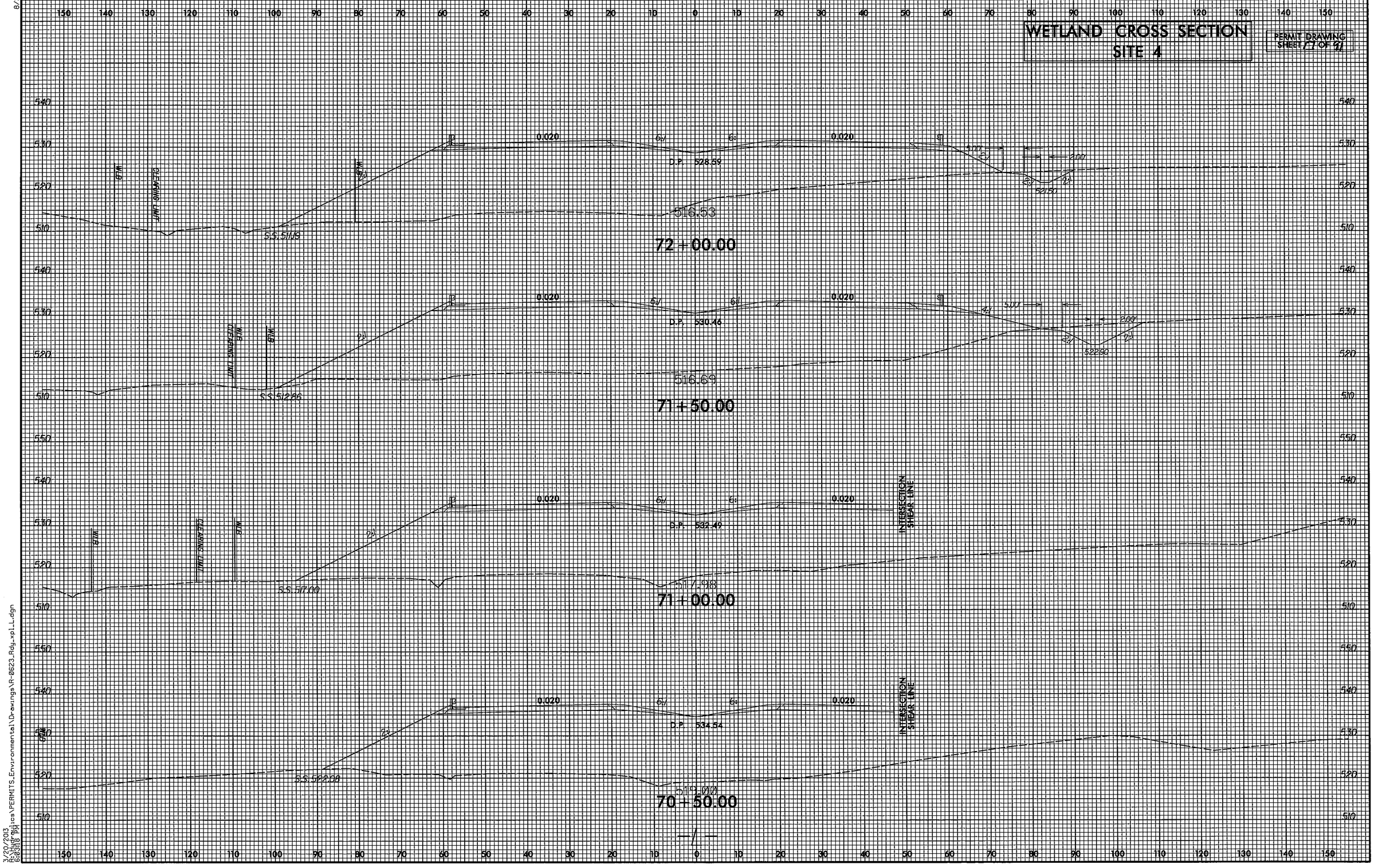
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-23

WETLAND CROSS SECTION
SITE 4

PERMIT DRAWING
SHEET 17 OF 41



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8/17/99

REVISIONS

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

SEE SHEET 2-I FOR PREFORMED SCOUR HOLE DETAIL

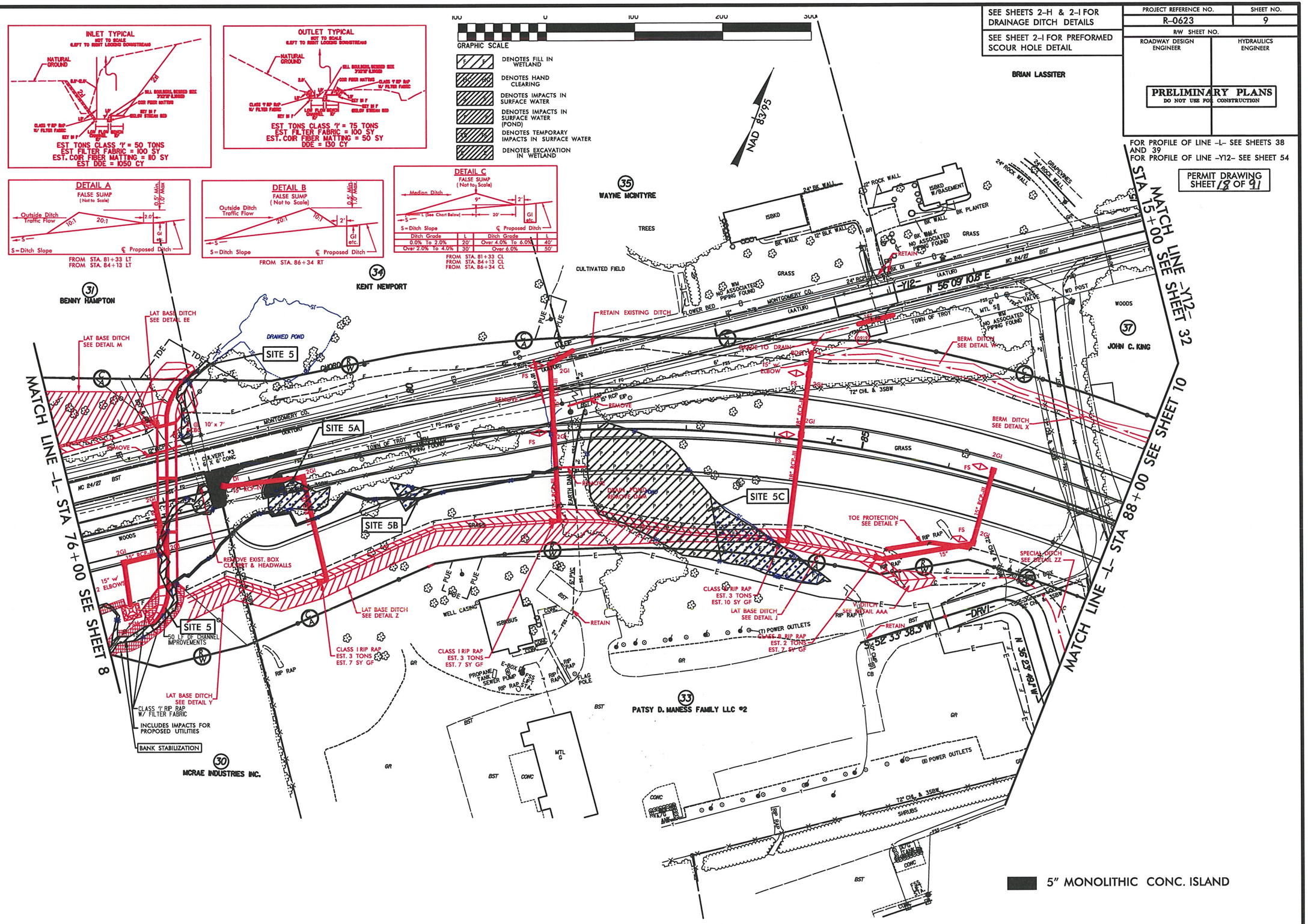
PROJECT REFERENCE NO.	SHEET NO.
R-0623	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

BRIAN LASSITER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 38 AND 39
FOR PROFILE OF LINE -Y12- SEE SHEET 54

PERMIT DRAWING SHEET 18 OF 91



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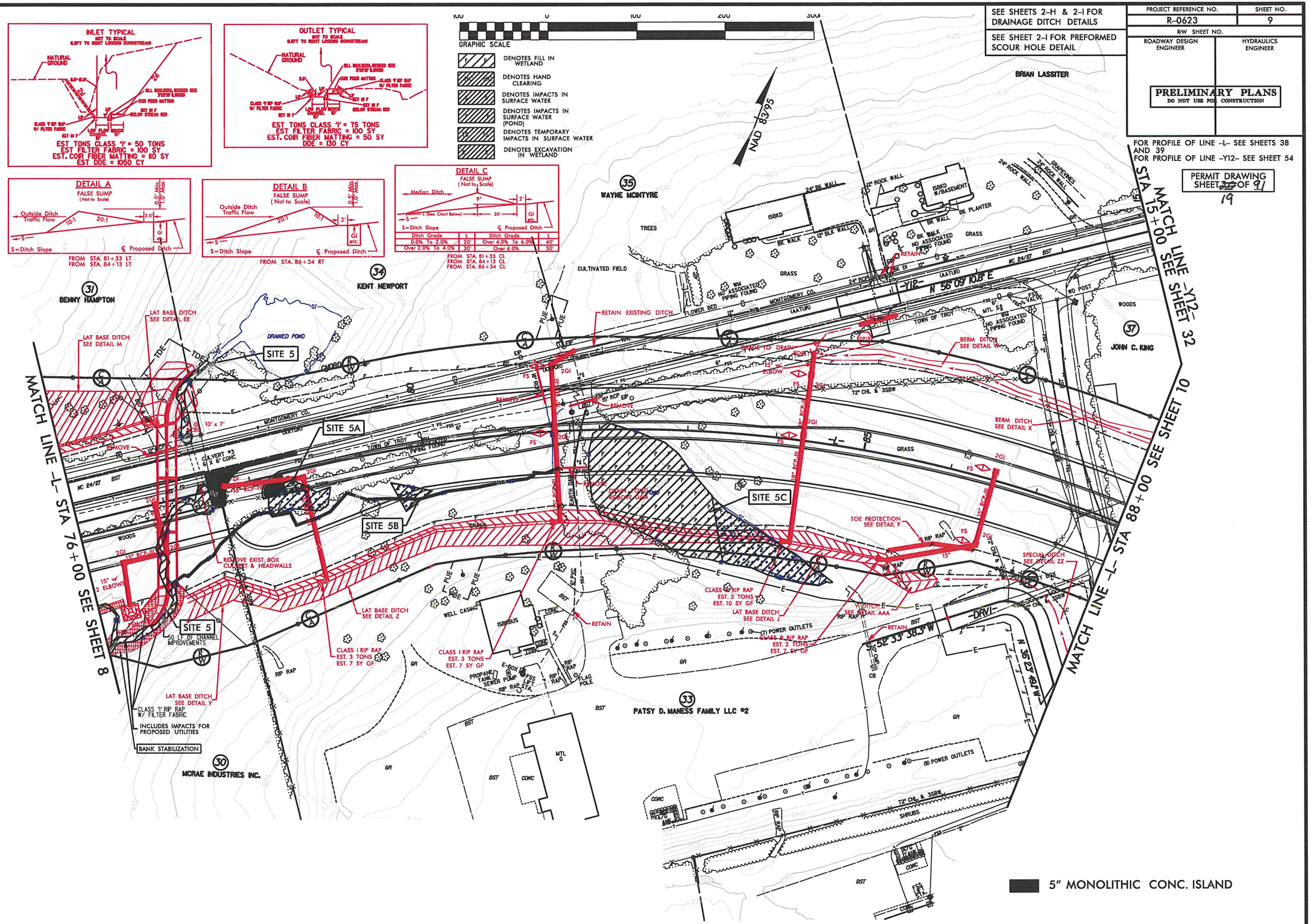

REVISIONS

8/17/99

12/4/2013
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

SEE SHEET 2-I FOR PREFORMED SCOUR HOLE DETAIL

FOR PROFILE OF LINE -L- SEE SHEETS 38 AND 39
FOR PROFILE OF LINE -Y12- SEE SHEET 54

PERMIT DRAWING
SHEET 20 OF 91

ENLARGEMENT SHEET

GRAPHIC SCALE 50' 0' 50' 100' 150'

NAD 83/95

FROM STA. 81+33 LT
FROM STA. 84+13 LT

S = Ditch Slope

℄ Proposed Ditch

FROM STA. 86+34 RT

FROM STA. 81+33 CL
FROM STA. 84+13 CL
FROM STA. 86+34 CL

DENOTES FILL IN WETLAND

DENOTES HAND CLEARING

DENOTES IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER (POND)

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

31 BENNY HAMPTON

34 KENT NEWPORT

LAT BASE DITCH SEE DETAIL EE

LAT BASE DITCH SEE DETAIL M

DRAINED POND

SITE 5

SITE 5A

SITE 5B

TDE

CHORD

MONTGOMERY CO.

(AATUR)

TOWN OF TROY

NO ASSOCIATED PIPING FOUND

10' x 7'

2 @ RCBC

REMOVE

12" RCP

CULVERT #3
6' X 6' CONC

NC 24/27 BST

WOODS

GRASS

15" RCP-III

15" RCP-IV

2GI

DI

15" w/ 2 ELBOWS

REMOVE EXIST. BOX CULVERT & HEADWALLS

50 LF OF CHANNEL IMPROVEMENTS

LAT BASE DITCH SEE DETAIL Z

LAT BASE DITCH SEE DETAIL Y

CLASS I RIP RAP
EST. 3 TONS
EST. 7 SY GF

RIP RAP

PUE

WELL CASING

ISBKBUS

PROPANE TANK

SEWER

E-BOX

EARTH DAM

FS

18" RCP

15" RCP

6"

8" RCP

REMOVE

8/17/99

REVISIONS

12/4/2013
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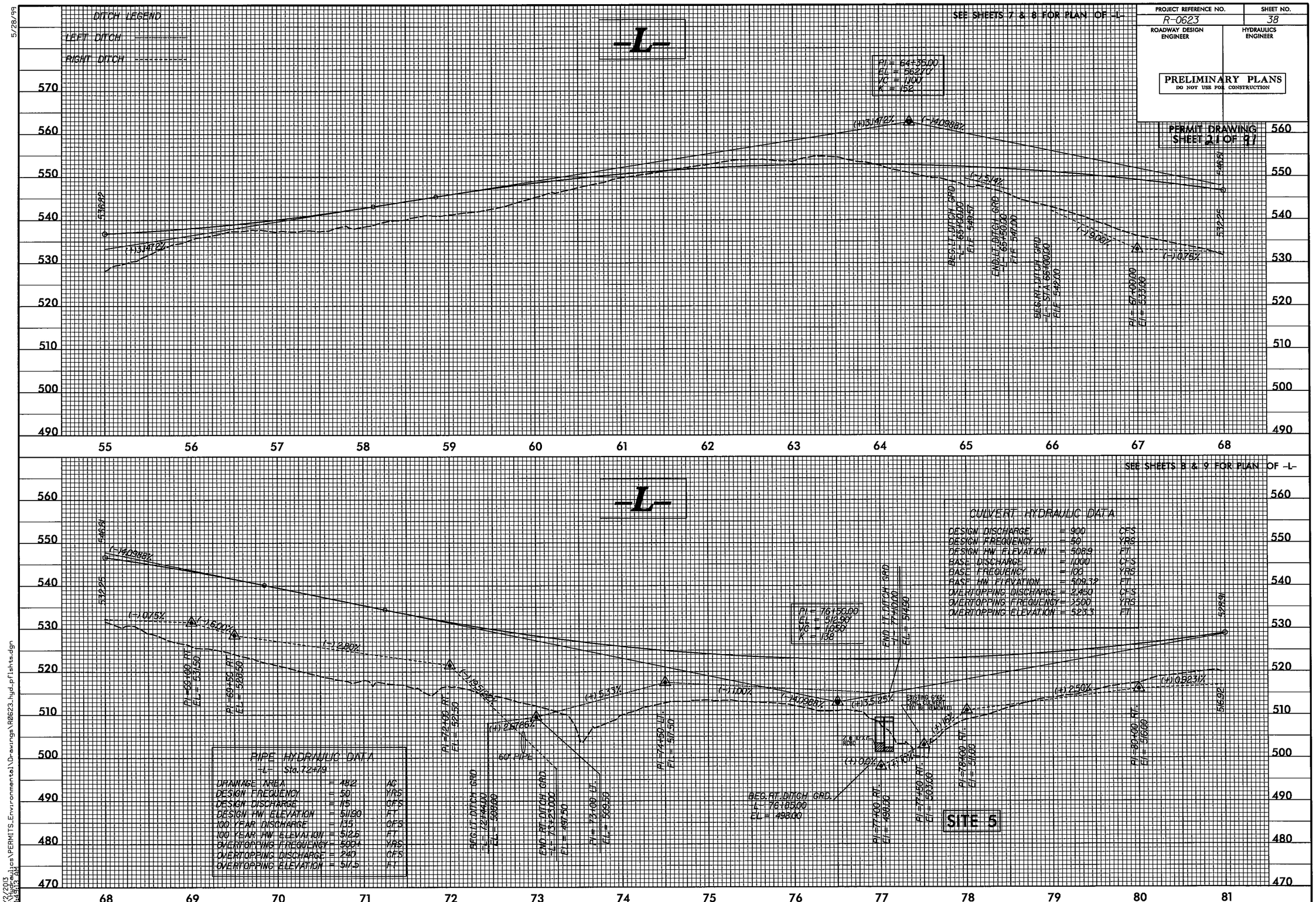
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-0623	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 21 OF 97



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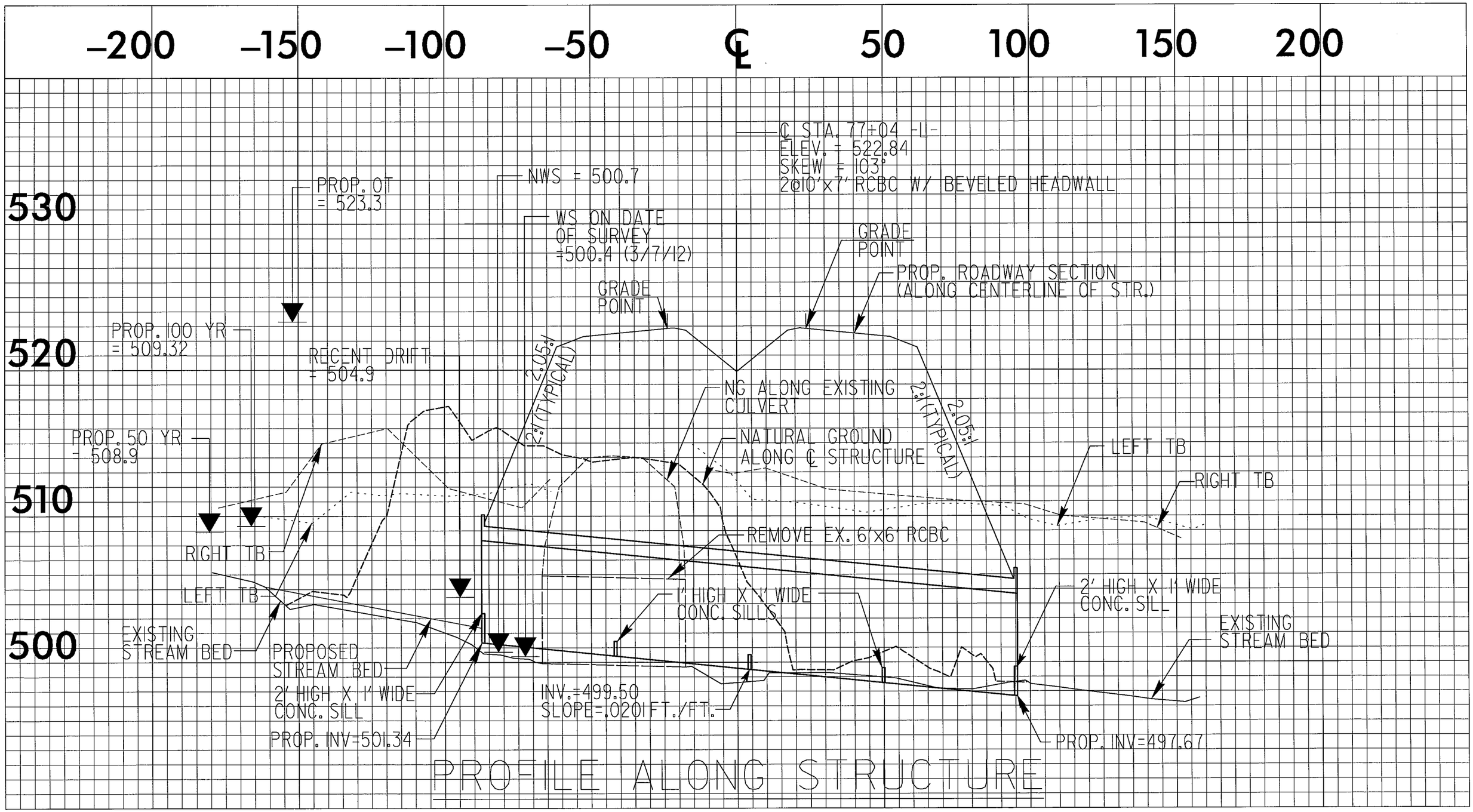
SITE 5

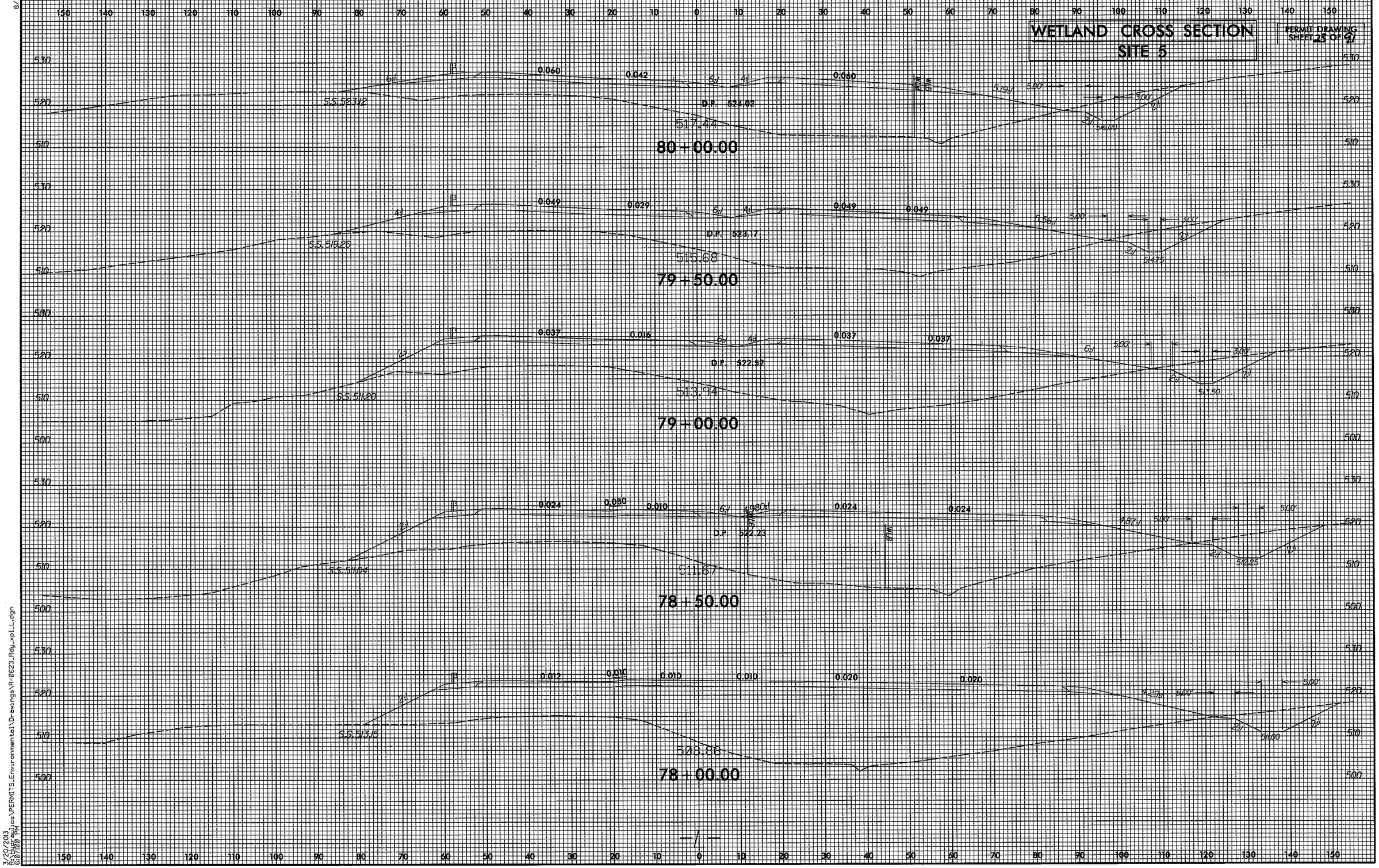
PERMIT DRAWING
SHEET 22 OF 91



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-27

WETLAND CROSS SECTION
SITE 5

PERMIT DRAWING SHEET 25 OF 91



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3/20/2013
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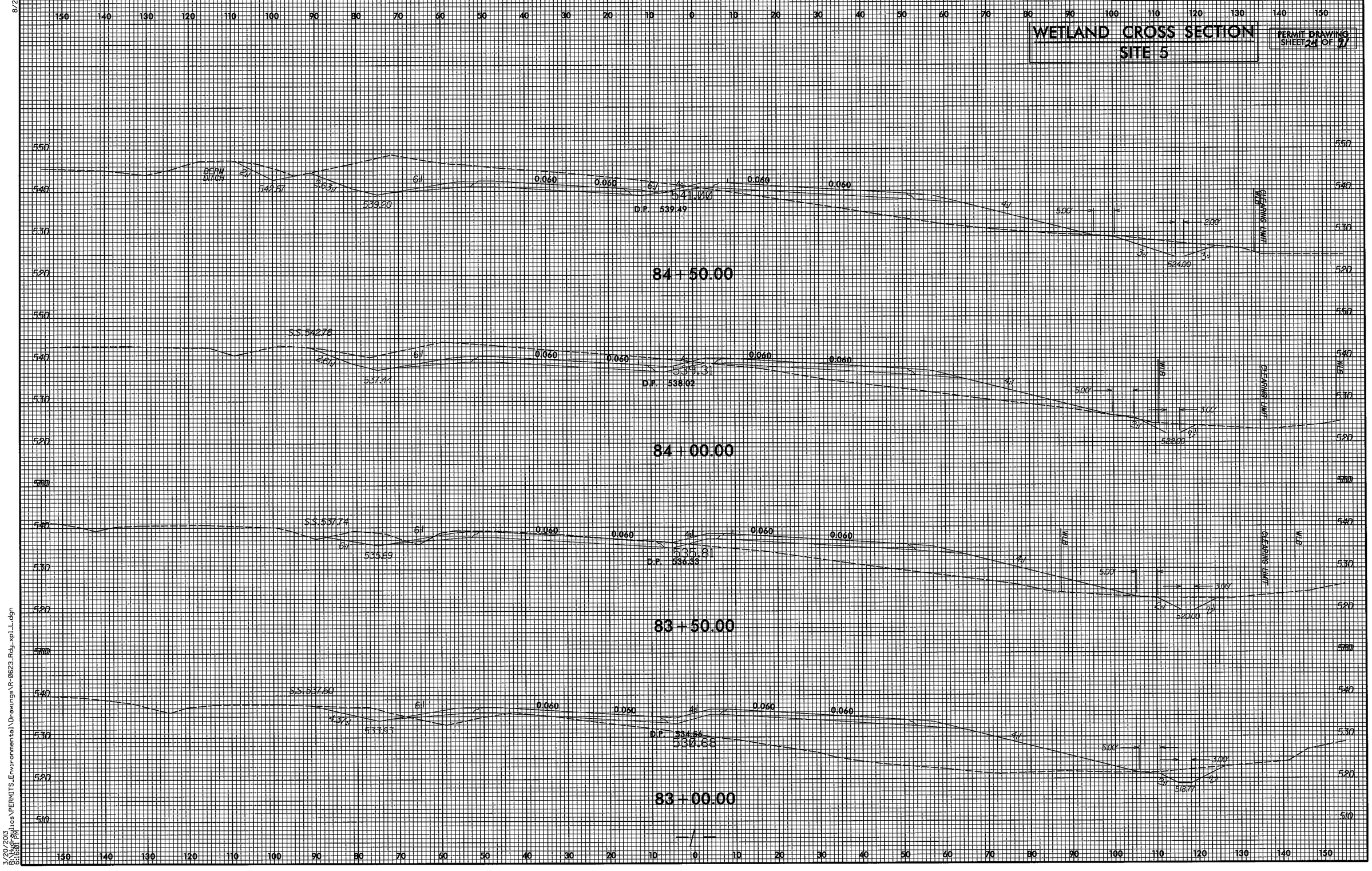
PROJ. REFERENCE NO.	SHEET NO.
R-0623	X-29

WETLAND CROSS SECTION
SITE 5

PERMIT DRAWING
SHEET 24 OF 27



8/23/99

3/20/2013
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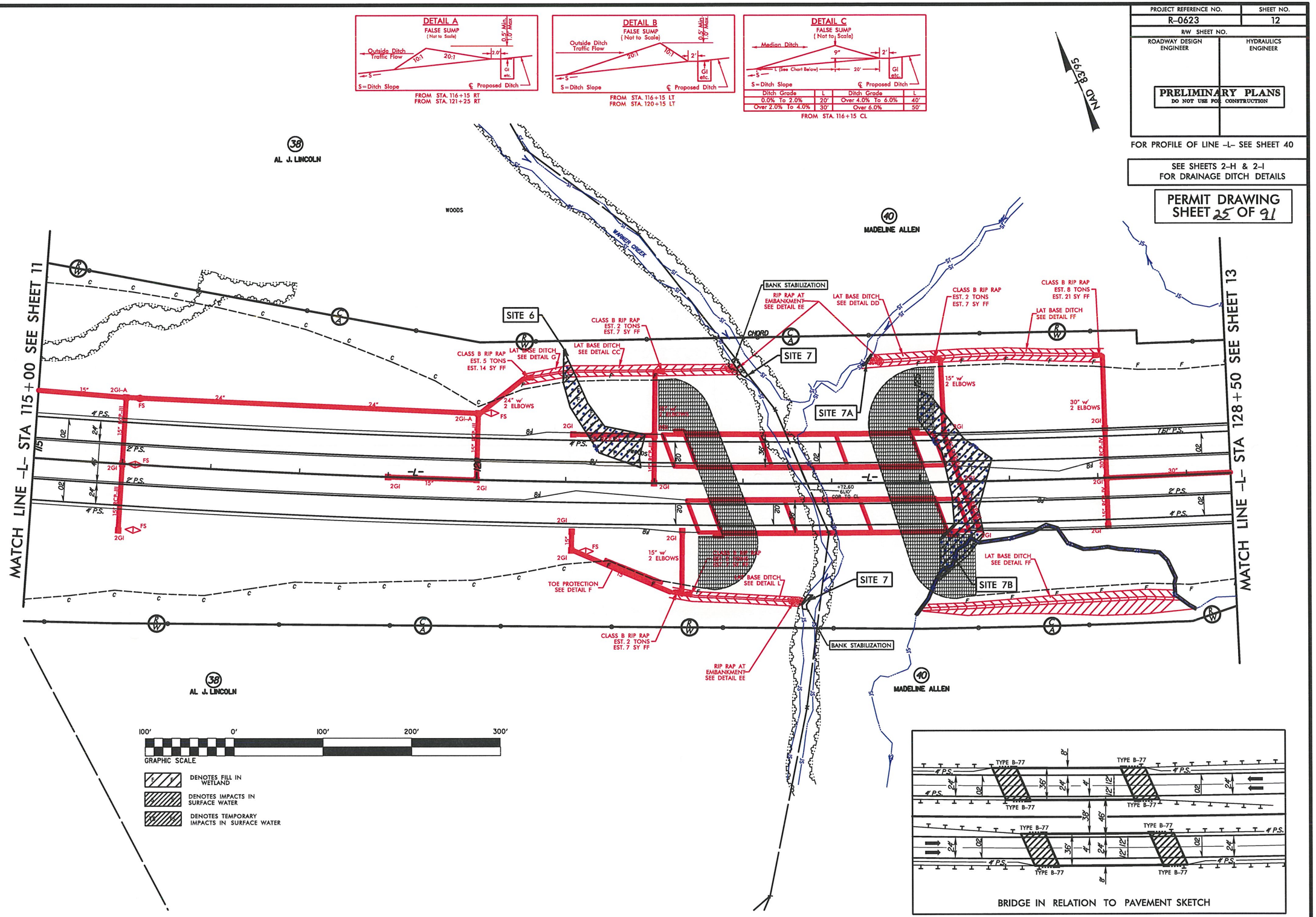
PROJECT REFERENCE NO.	SHEET NO.
R-0623	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 40

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 25 OF 91



REVISIONS

8/17/99

6/14/2013
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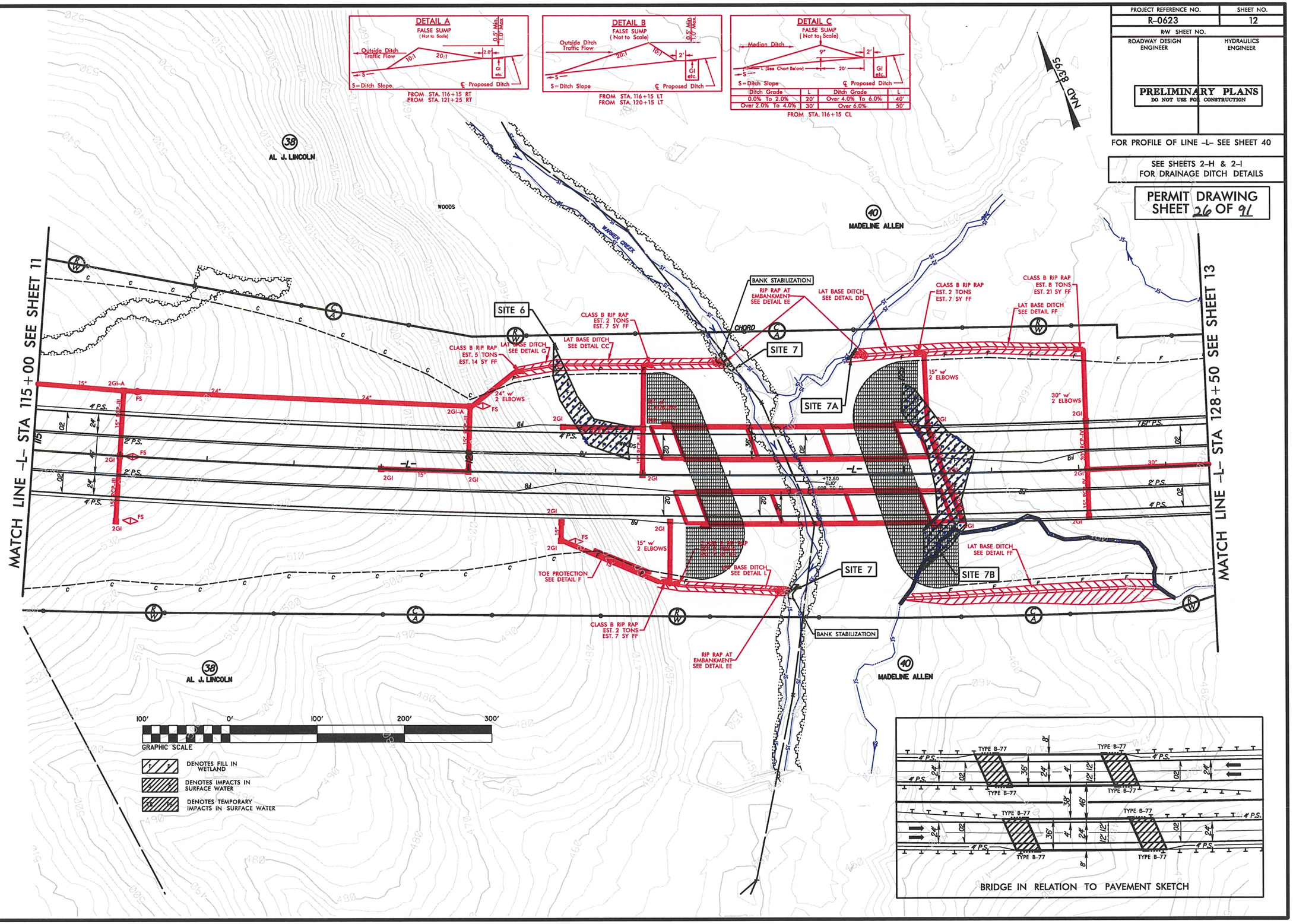
PROJECT REFERENCE NO.	SHEET NO.
R-0623	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 40

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 26 OF 91



REVISIONS

8/17/99

6/14/2013
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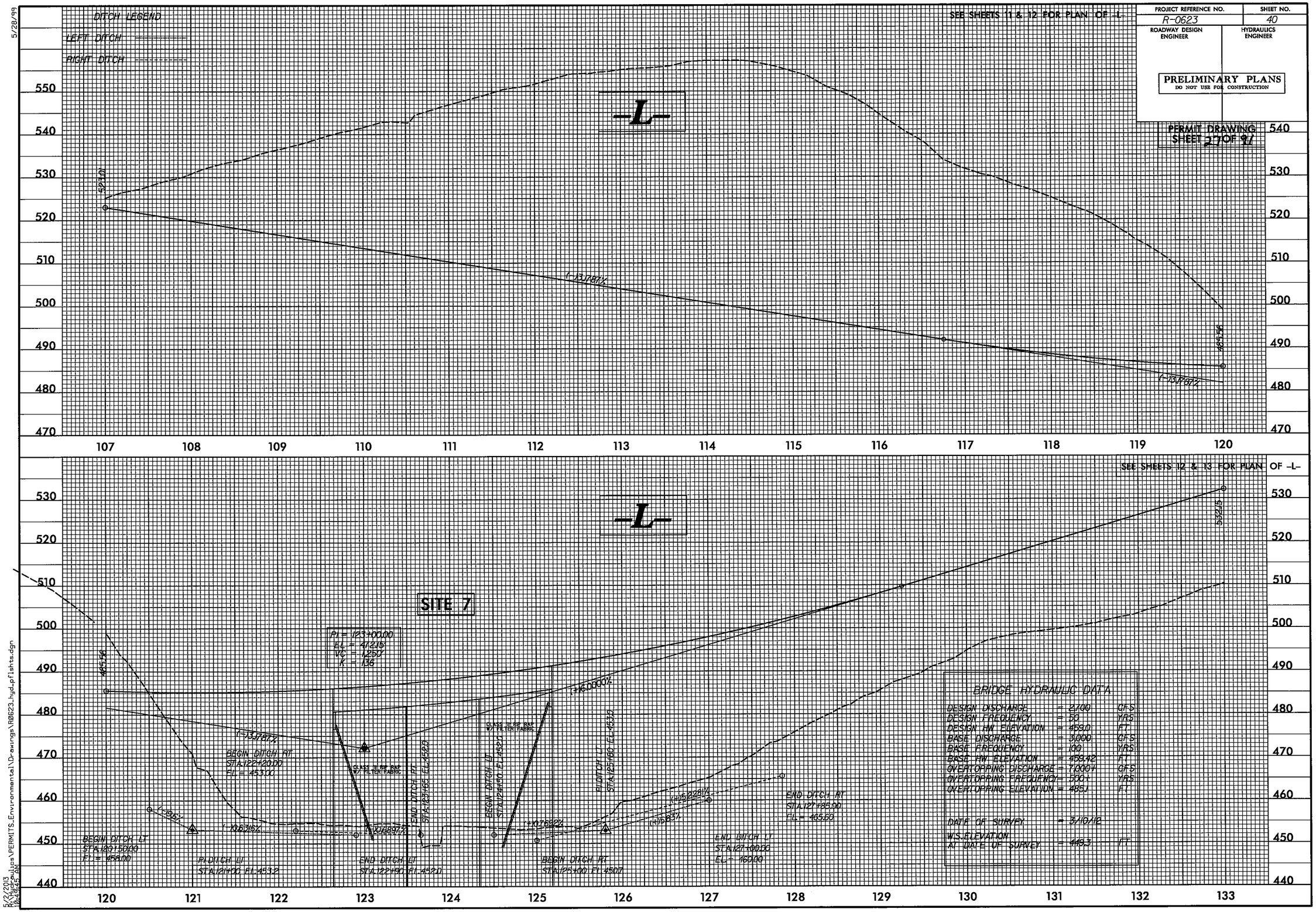
PROJECT REFERENCE NO.	SHEET NO.
R-0623	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 27 OF 97



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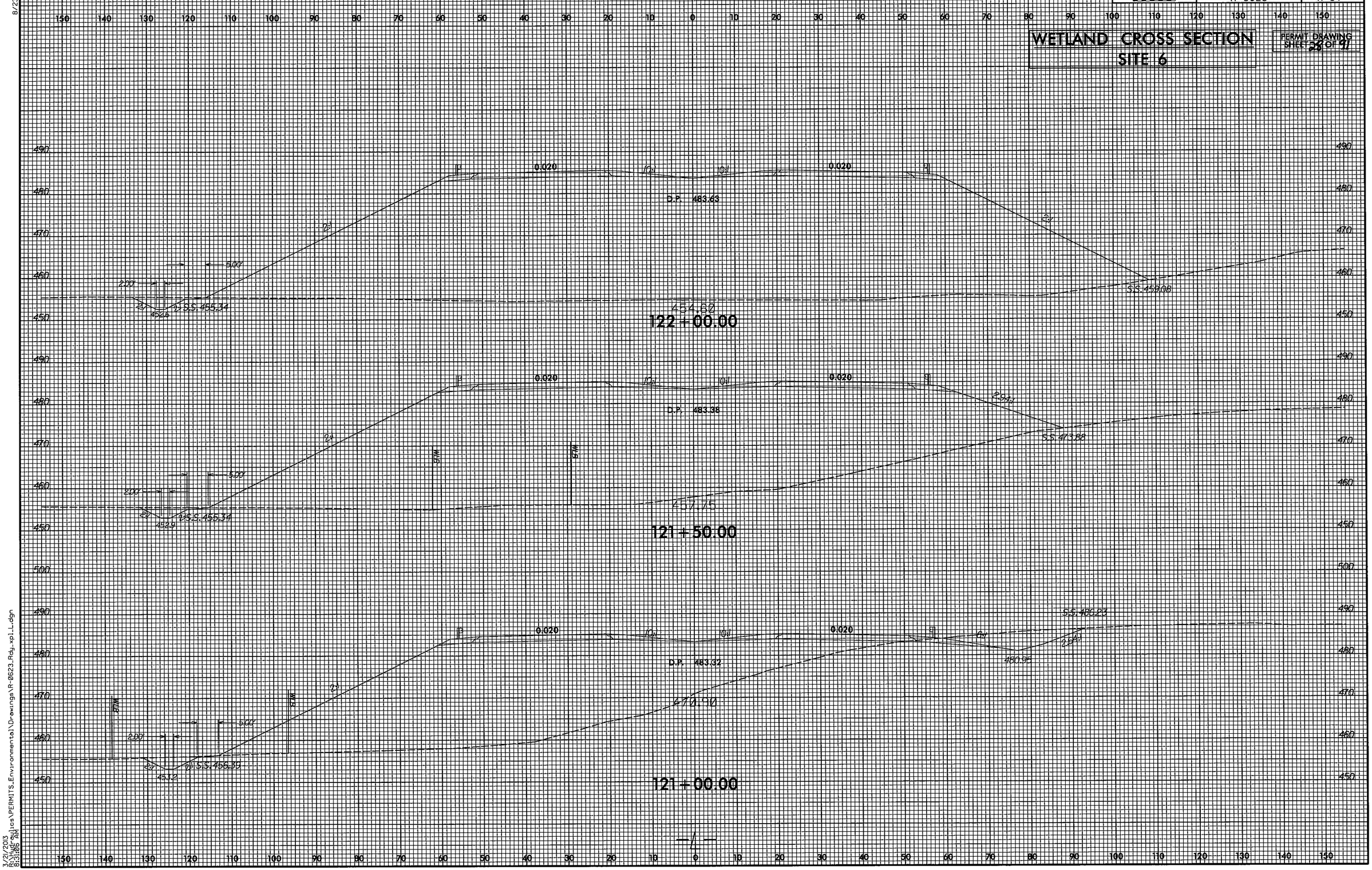
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-51

WETLAND CROSS SECTION
SITE 6

PERMIT DRAWING SHEET 28 OF 29



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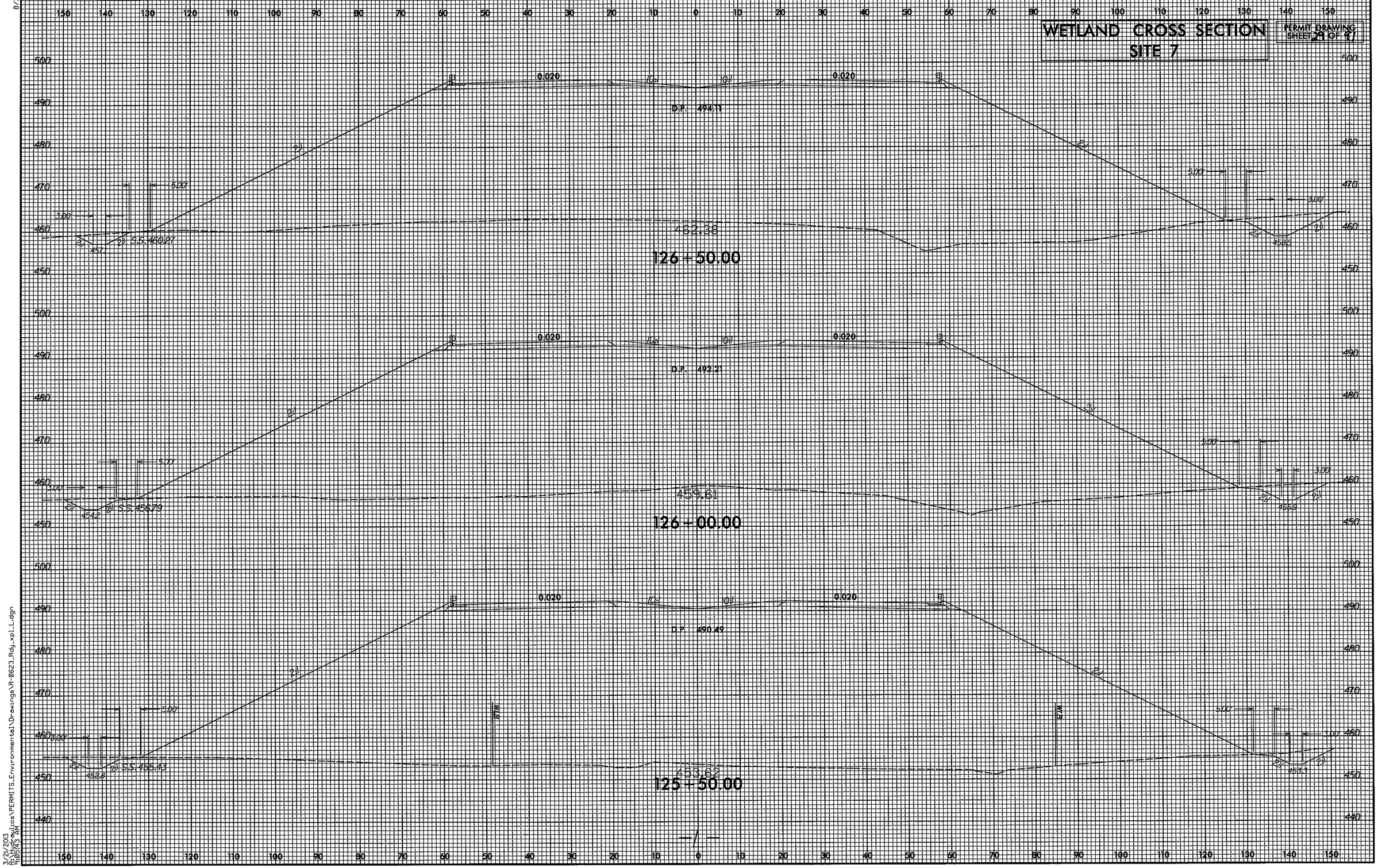
PROJ. REFERENCE NO.	SHEET NO.
R-0623	X-54

WETLAND CROSS SECTION
SITE 7

PERMIT DRAWING
SHEET 29 OF 47



8/23/99

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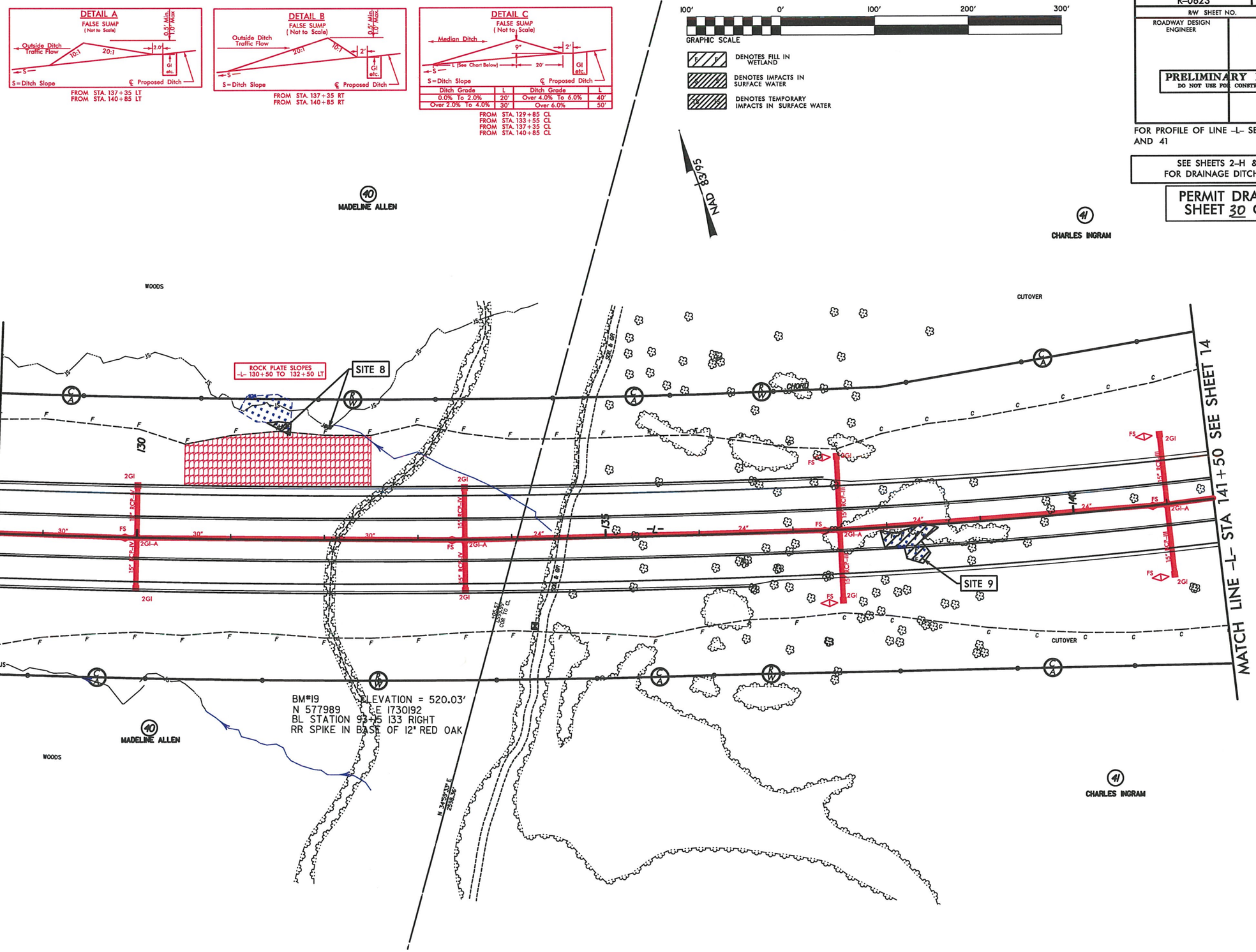
PROJECT REFERENCE NO.	SHEET NO.
R-0623	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 40 AND 41

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 30 OF 91



REVISIONS

8/17/99

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12:37:47 PM

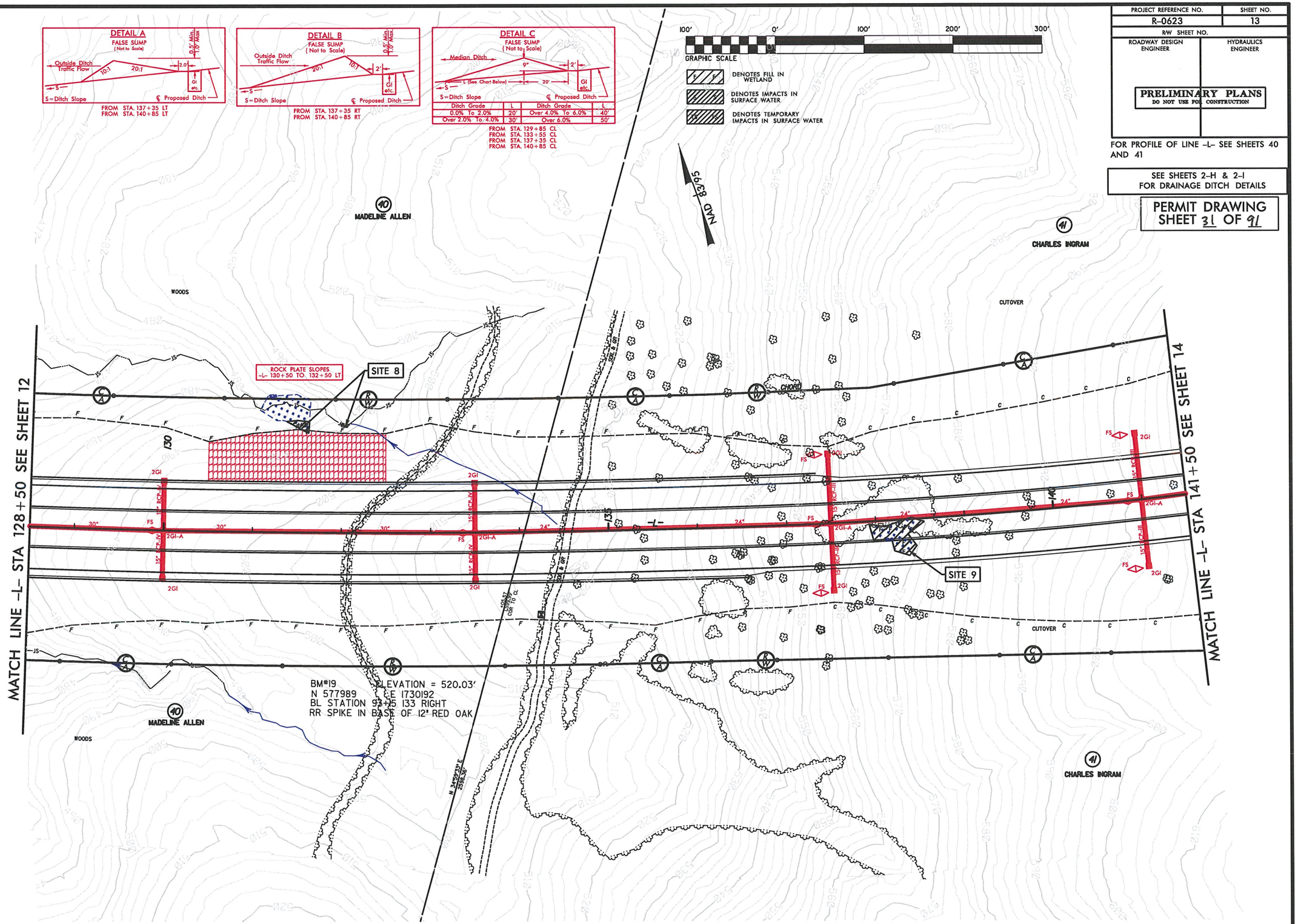
PROJECT REFERENCE NO.	SHEET NO.
R-0623	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 40 AND 41

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 31 OF 91



REVISIONS

8/17/99

6/14/2013
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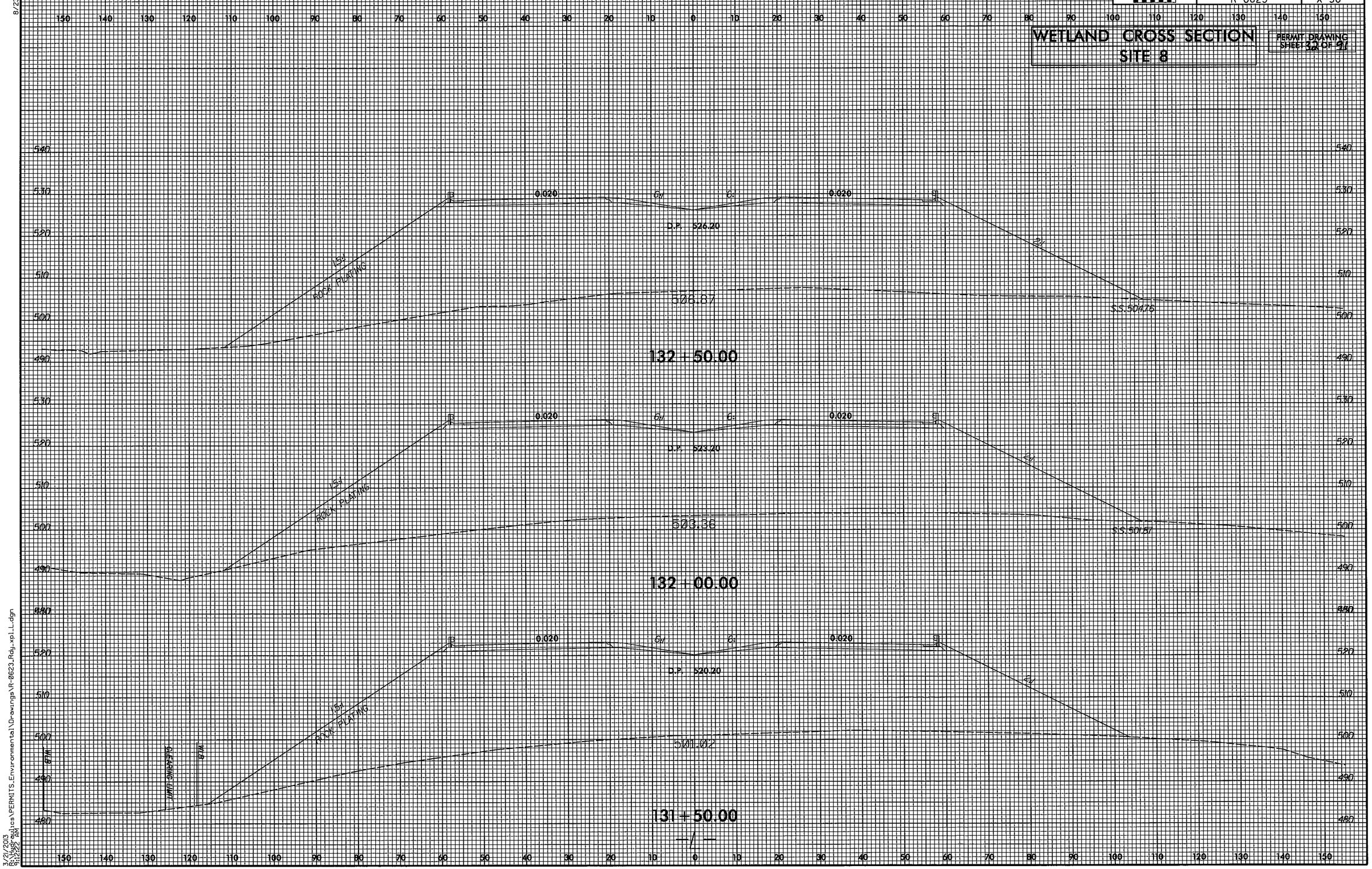
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-58

WETLAND CROSS SECTION
SITE 8

PERMIT DRAWING SHEET 32 OF 41



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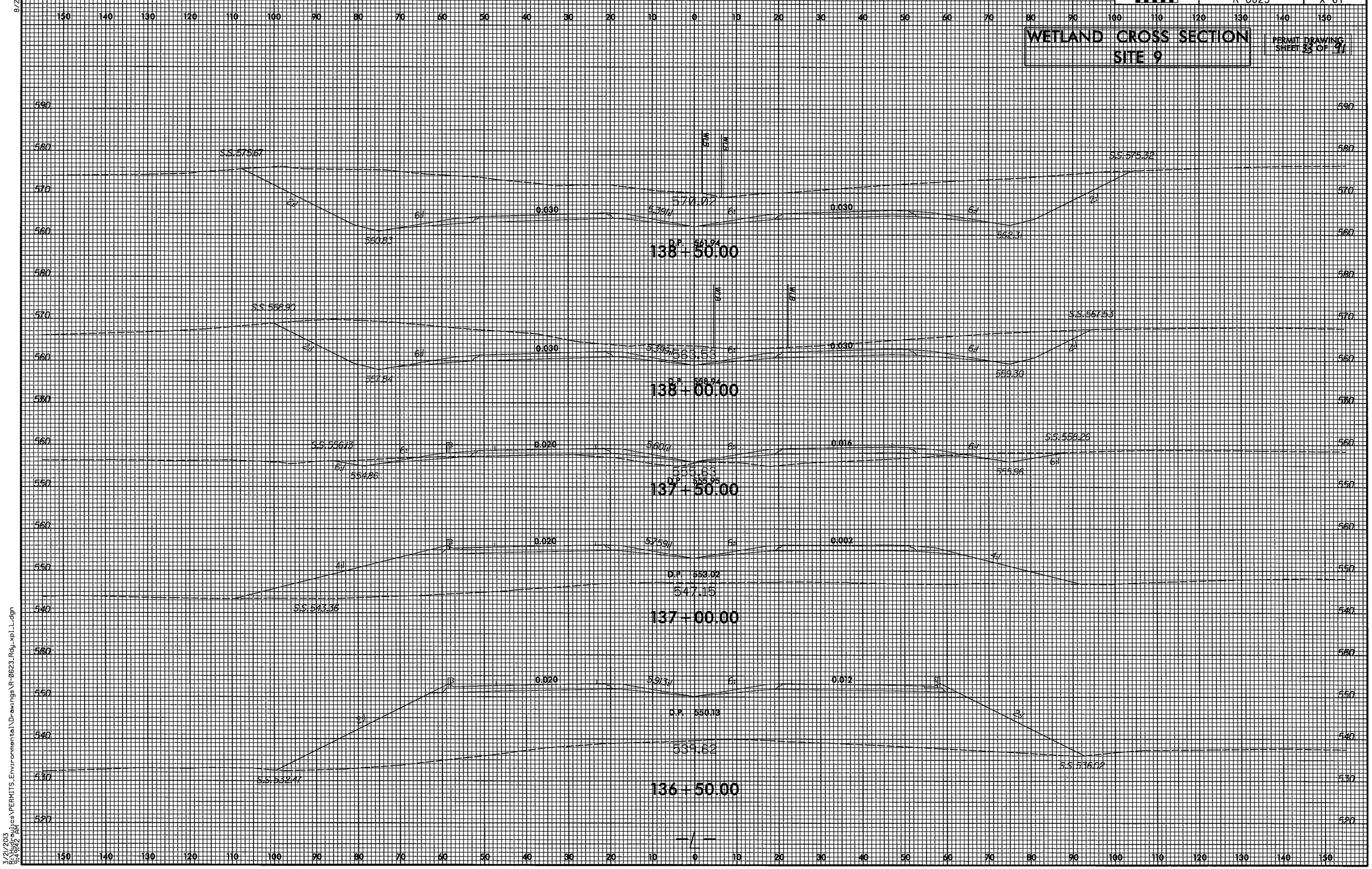
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-61

WETLAND CROSS SECTION
SITE 9

PERMIT DRAWING SHEET 33 OF 41



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8/23/99

3/21/2013
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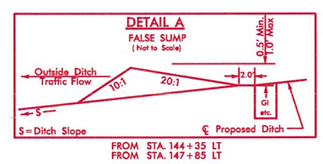
PROJECT REFERENCE NO.	SHEET NO.
R-0623	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

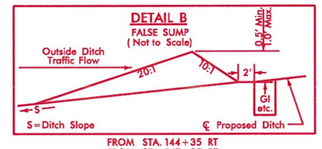
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

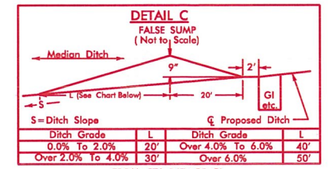
FOR PROFILE OF LINE -L- SEE SHEETS 41 AND 42

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 34 OF 91





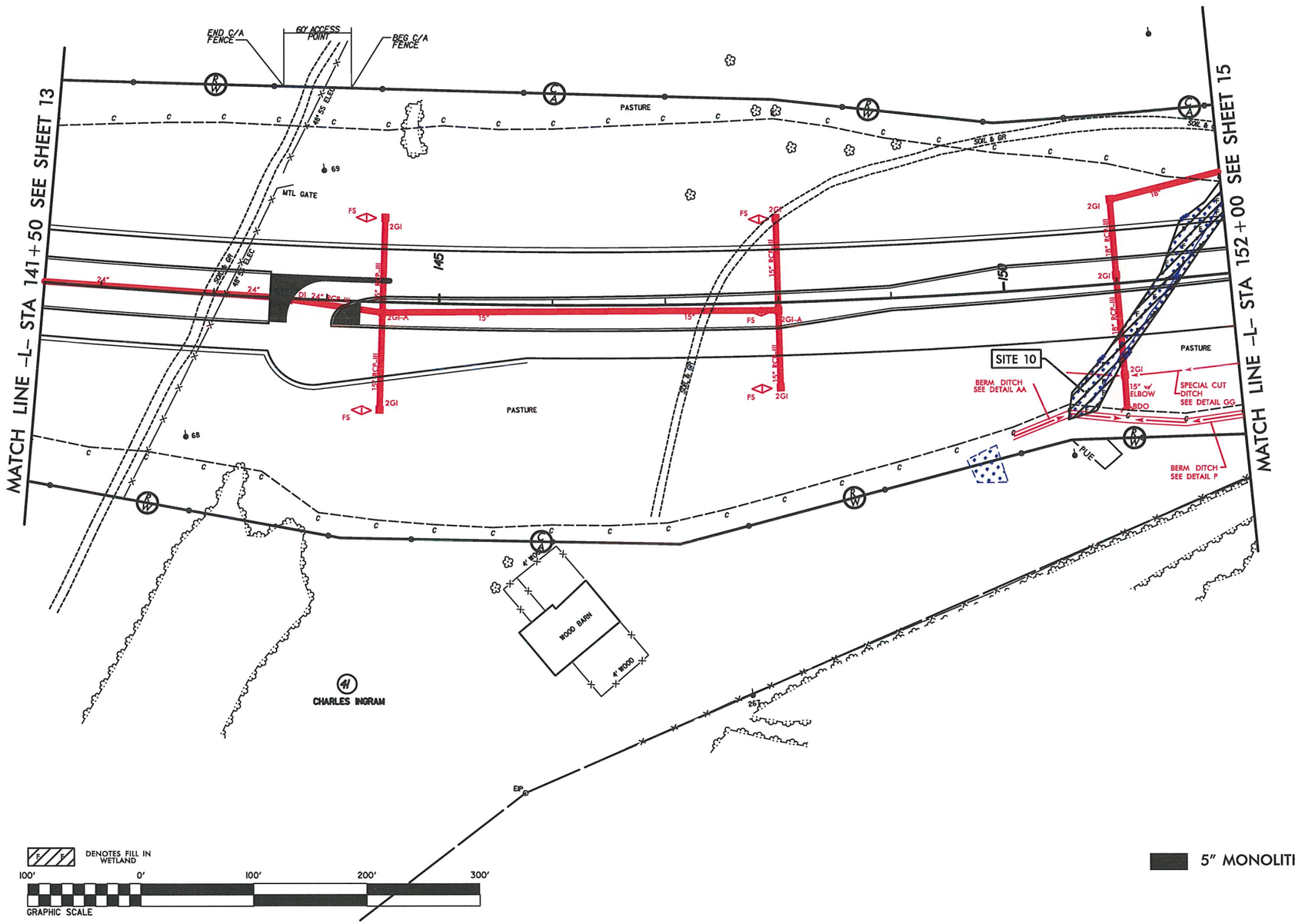


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 147+85 CL

NAD 83/95

41
CHARLES INGRAM



REVISIONS

8/17/99

6/14/2013
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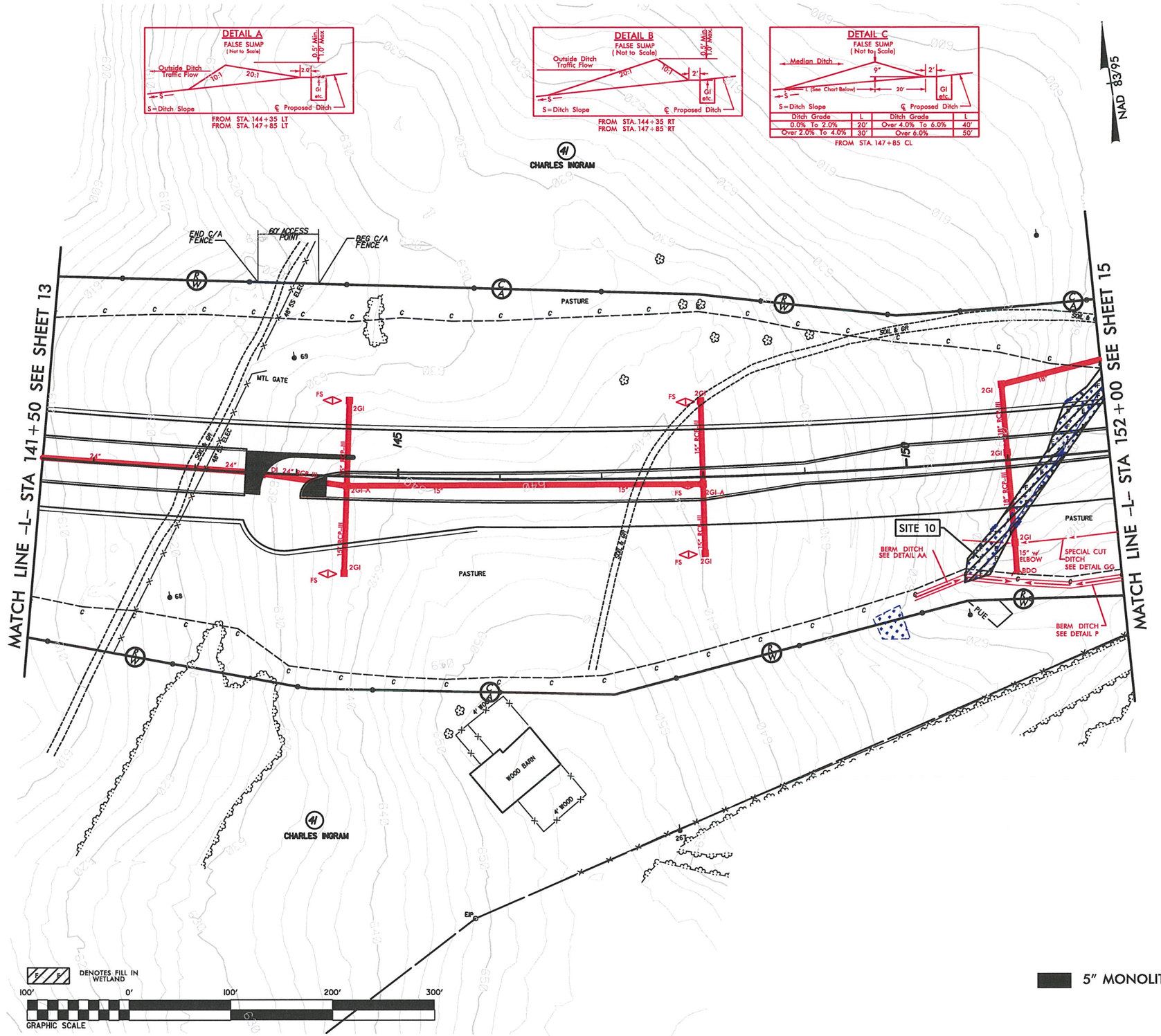
PROJECT REFERENCE NO.	SHEET NO.
R-0623	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 41 AND 42

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 35 OF 91



8/17/99

REVISIONS

6/14/2013
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 42
FOR PROFILE OF LINE -Y6- SEE SHEET 51

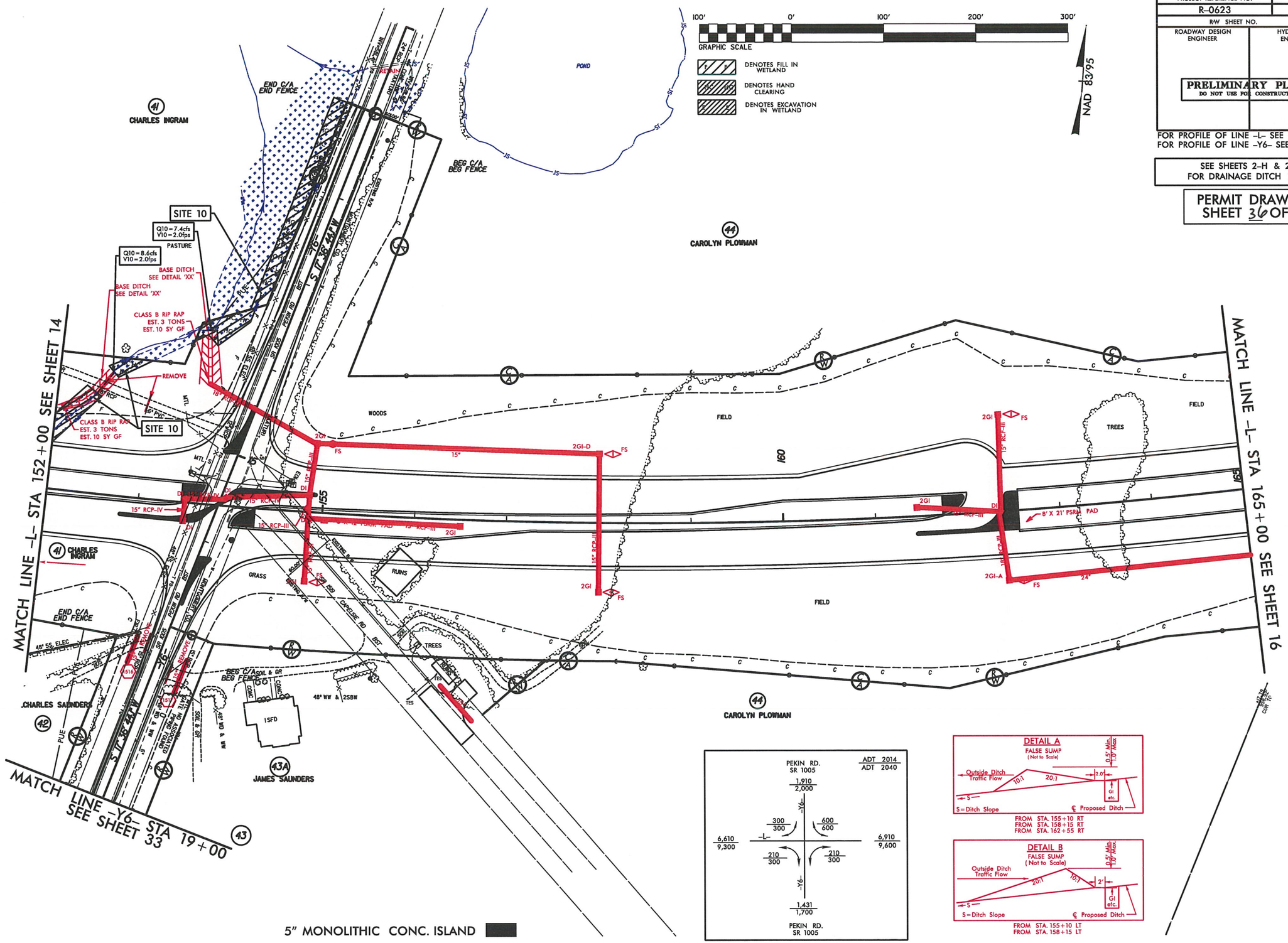
SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 36 OF 91

GRAPHIC SCALE 100' 0' 100' 200' 300'

DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
DENOTES EXCAVATION IN WETLAND

NAD 83/95



REVISIONS

8/17/99

12/2/2013
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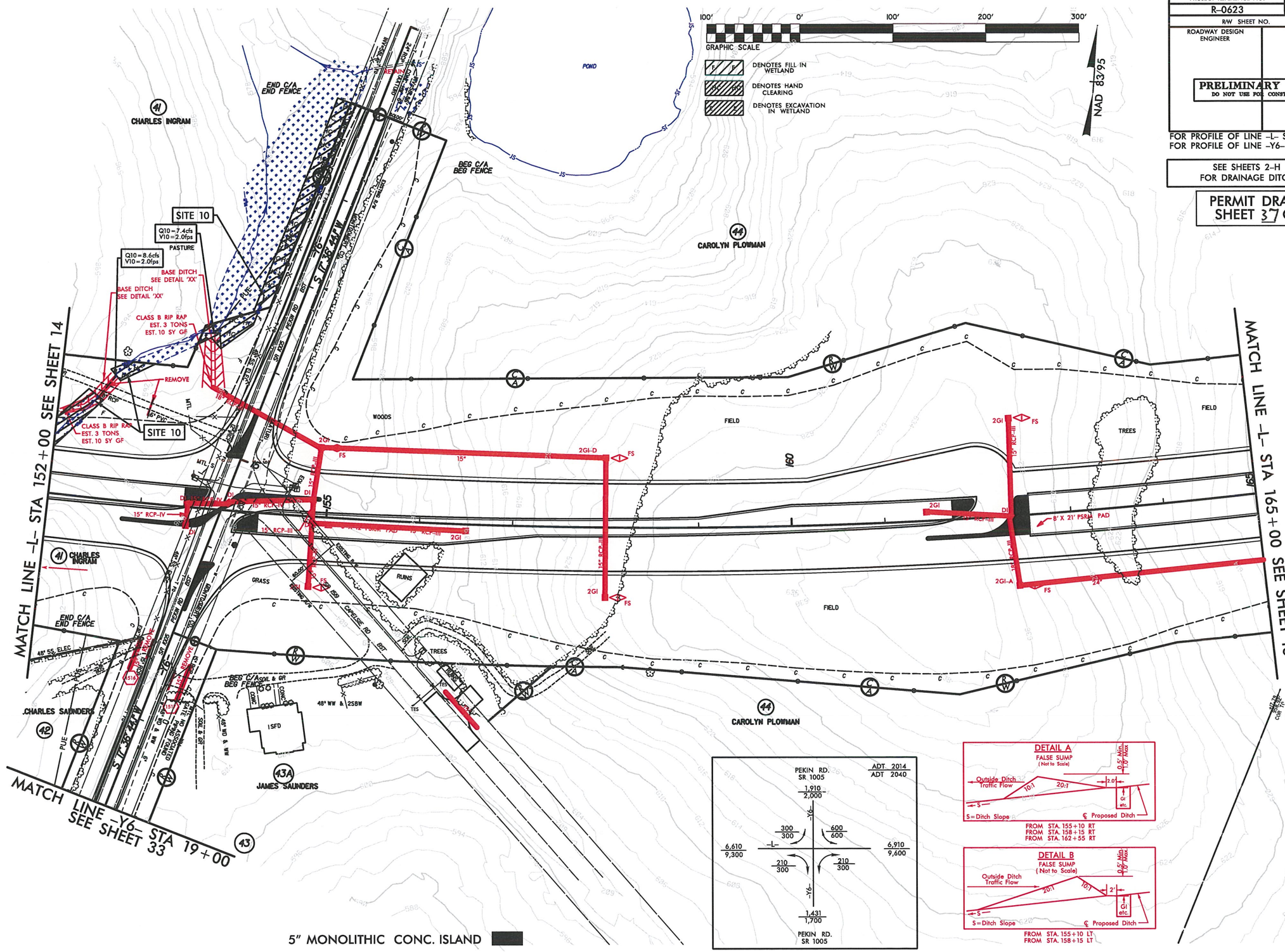
PROJECT REFERENCE NO.	SHEET NO.
R-0623	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 42
FOR PROFILE OF LINE -Y6- SEE SHEET 51

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 37 OF 91



REVISIONS

8/17/99

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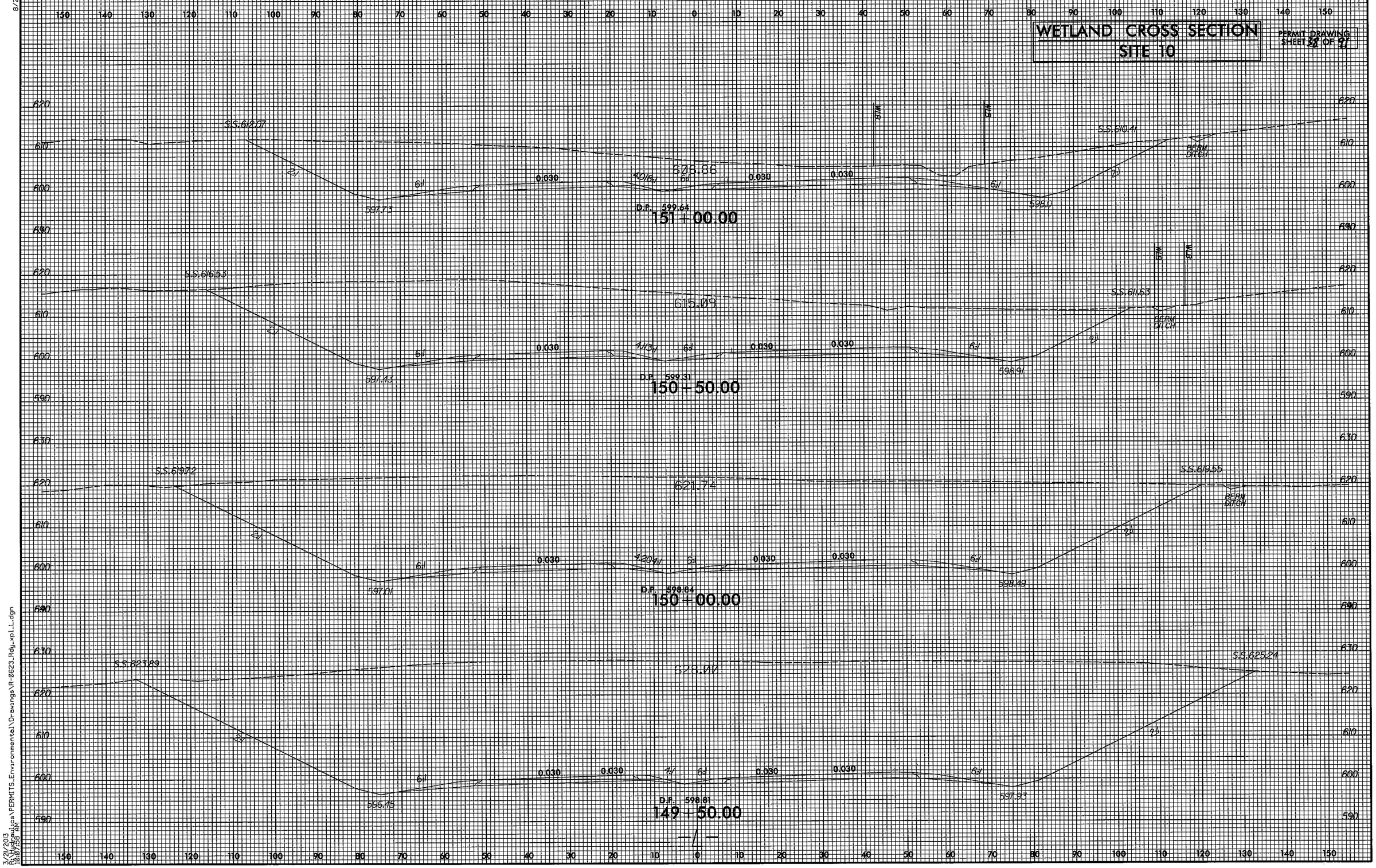
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-70

WETLAND CROSS SECTION
SITE 10

PERMIT DRAWING SHEET 22 OF 27



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3/21/2013
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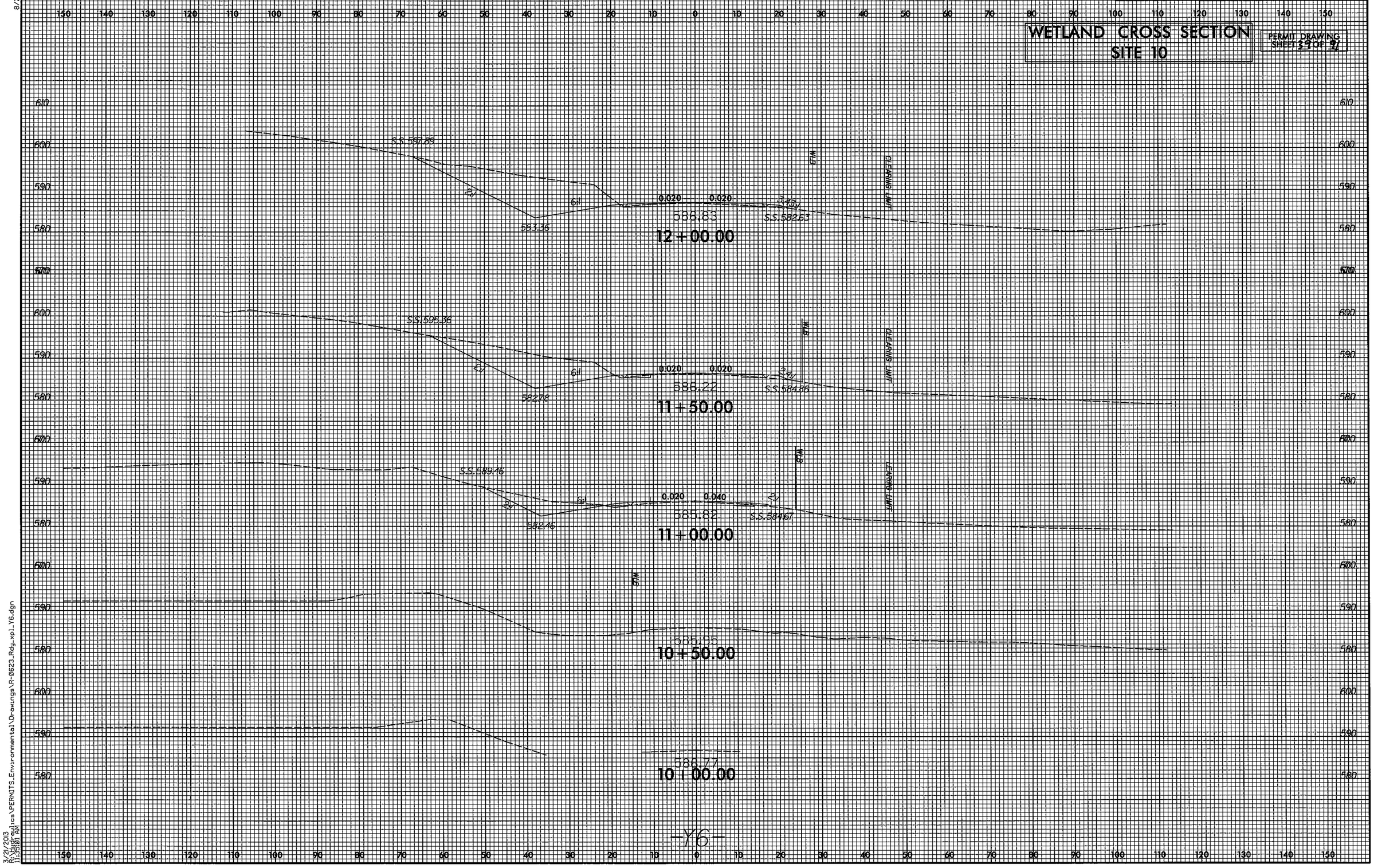
PROJ. REFERENCE NO.	SHEET NO.
R-0623	X-185

WETLAND CROSS SECTION
SITE 10

PERMIT DRAWING SHEET 39 OF 91



-Y6-

8/23/99

3/21/2013
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 43

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

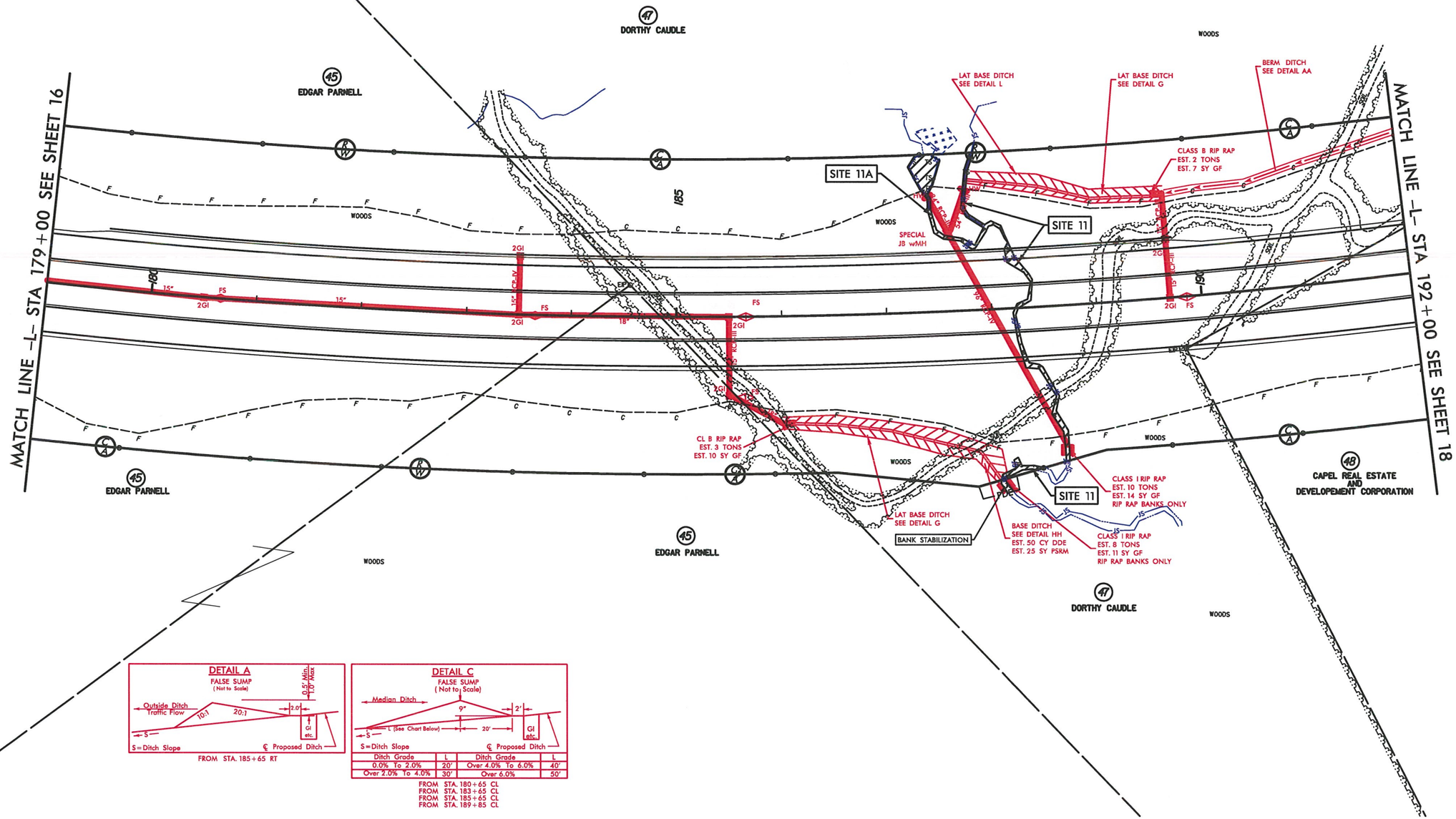
PERMIT DRAWING SHEET 40 OF 91

100' 0' 100' 200' 300'
GRAPHIC SCALE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95



FROM STA. 185+65 RT

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 180+65 CL
FROM STA. 183+65 CL
FROM STA. 185+65 CL
FROM STA. 189+85 CL

REVISIONS

8/17/99

R/2/2013
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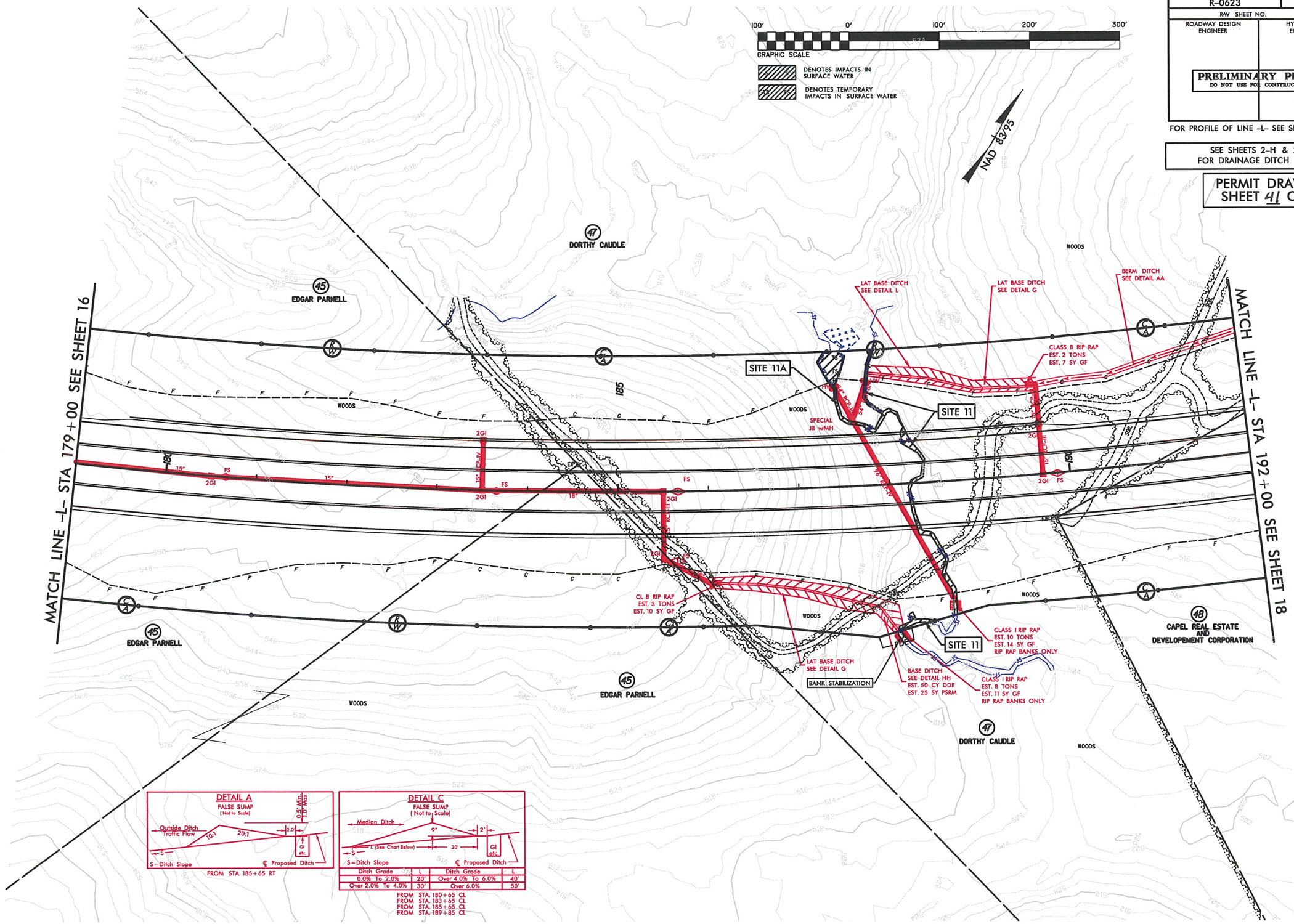
PROJECT REFERENCE NO.	SHEET NO.
R-0623	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 43

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 41 OF 91



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

REVISIONS

8/17/99

12/2/2013
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ENLARGEMENT SHEET

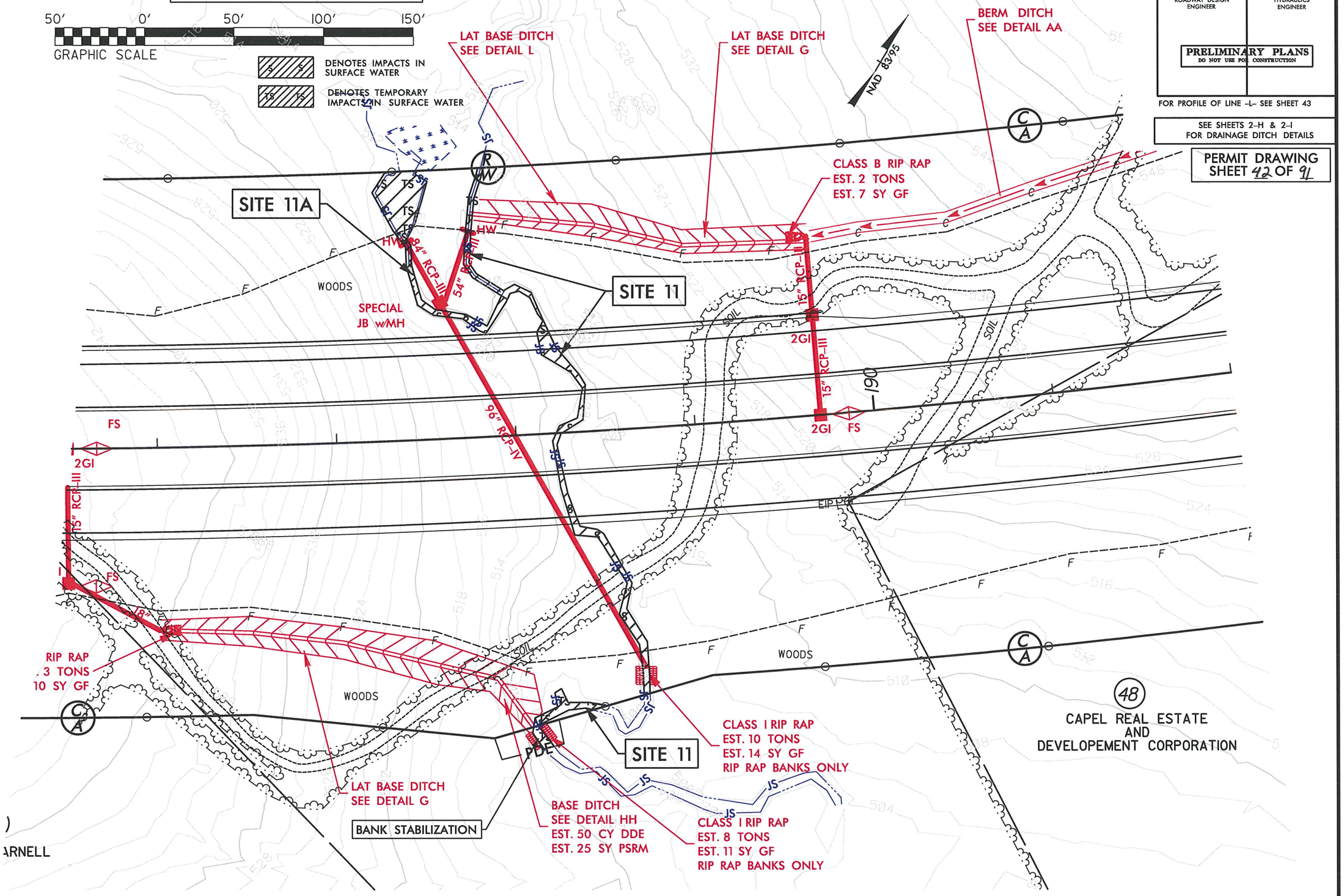
PROJECT REFERENCE NO.	SHEET NO.
R-0623	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 43

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 42 OF 91



REVISIONS

8/17/99

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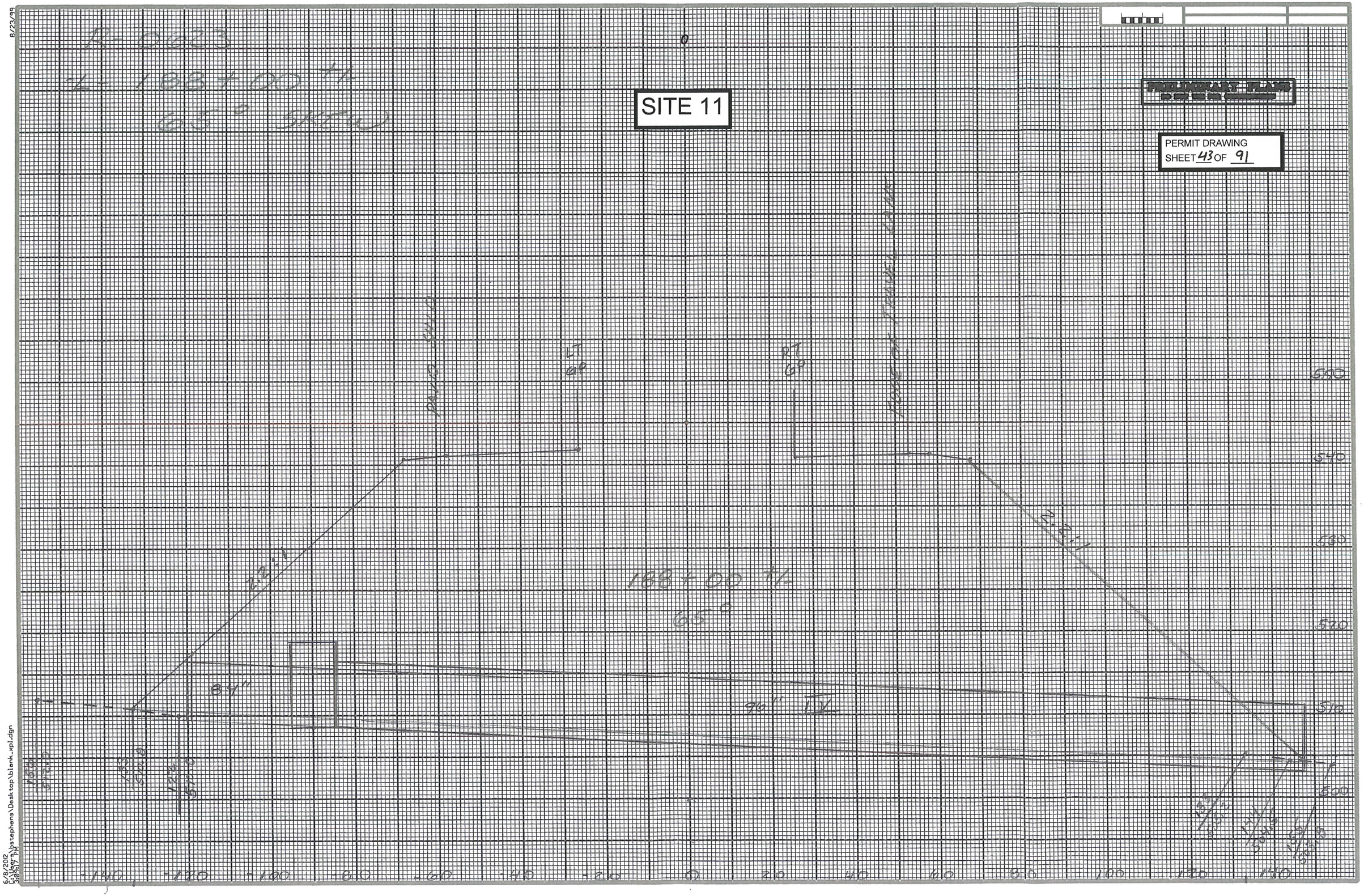
8/23/99



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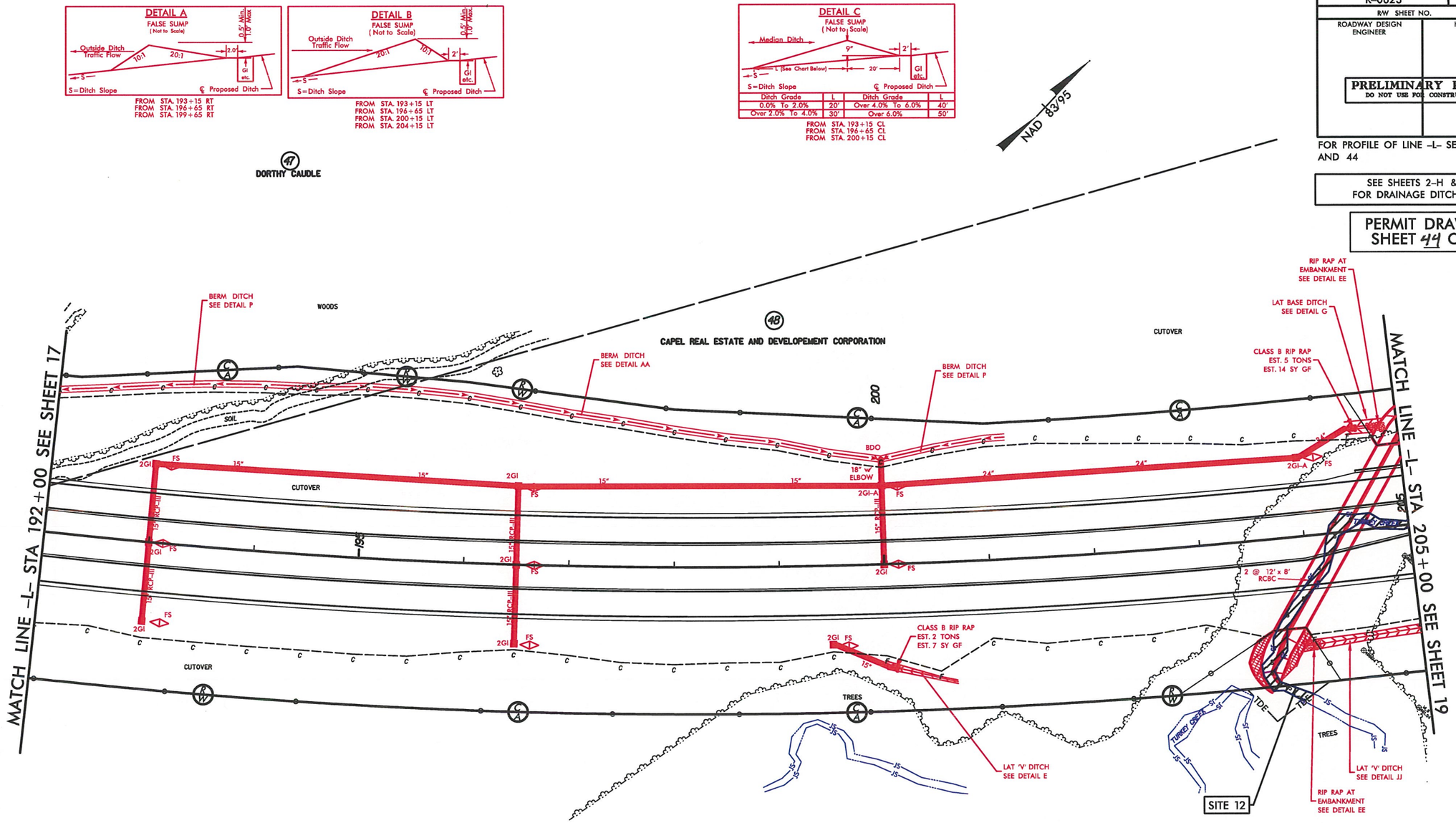
PROJECT REFERENCE NO.	SHEET NO.
R-0623	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 43 AND 44

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 44 OF 91



REVISIONS

8/17/99

12/2/2013
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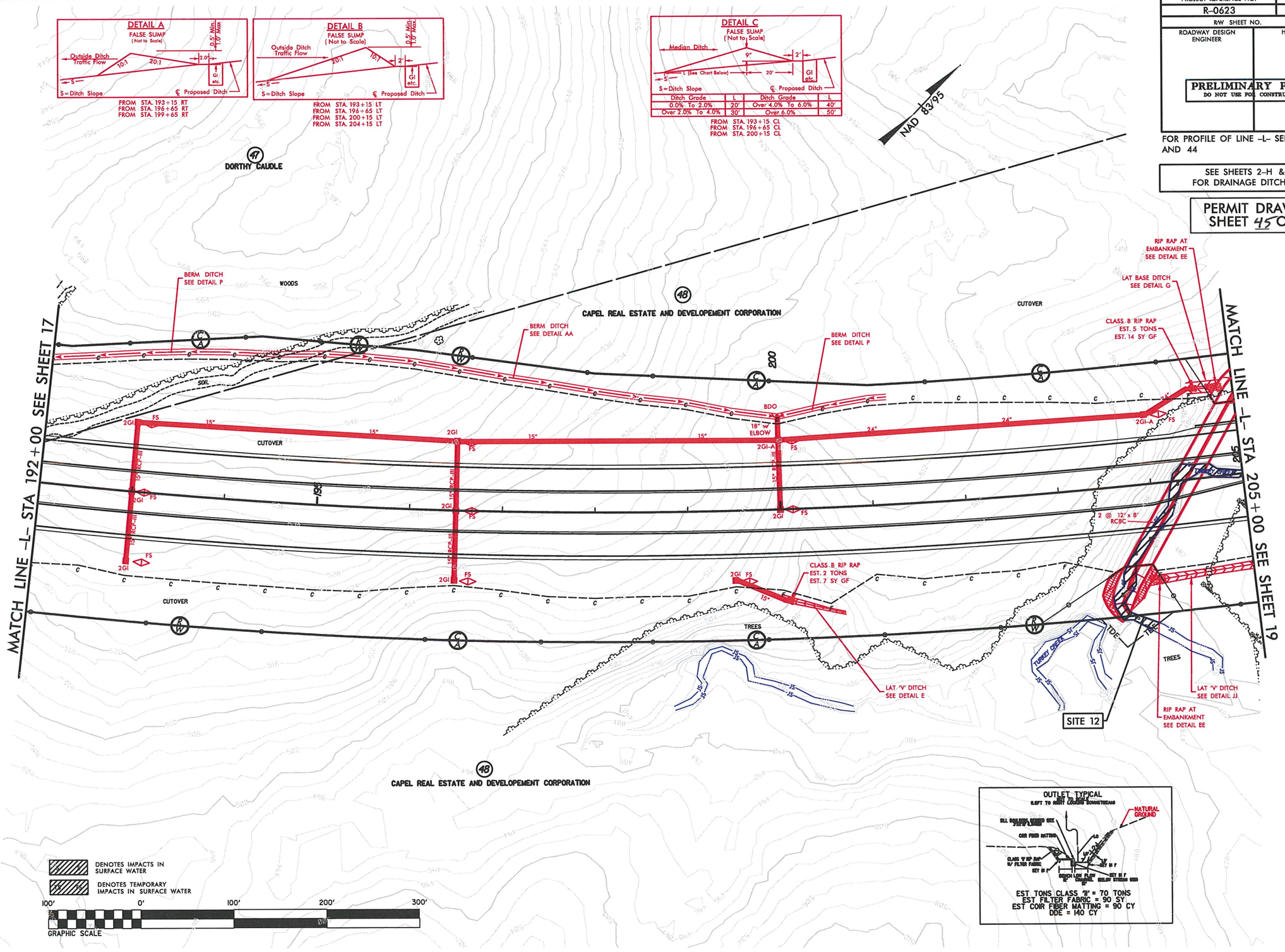
PROJECT REFERENCE NO.	SHEET NO.
R-0623	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 43 AND 44

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 45 OF 91



REVISIONS

8/17/99

12/2/2013
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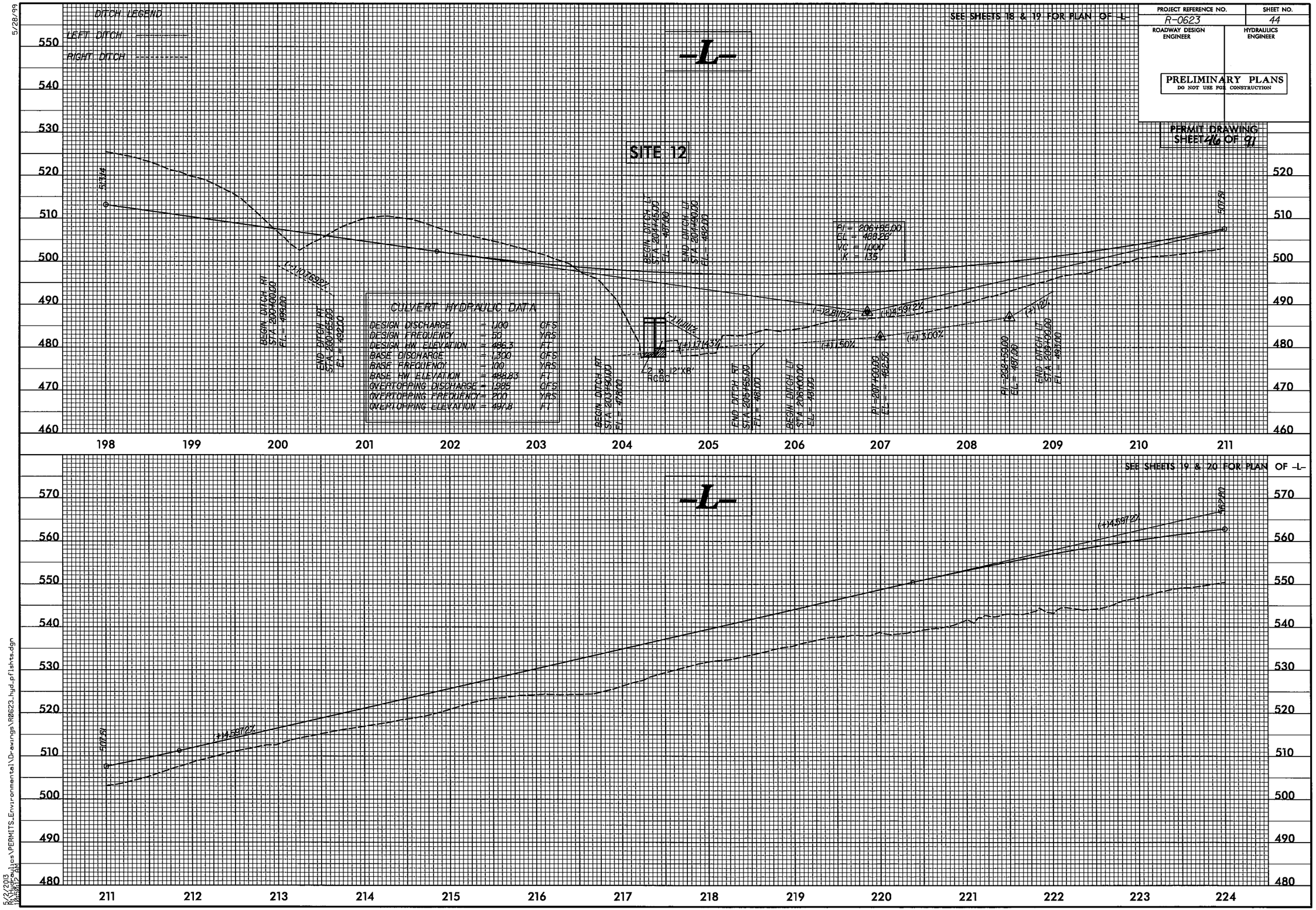
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-0623	44
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 46 OF 91



5/2/2013
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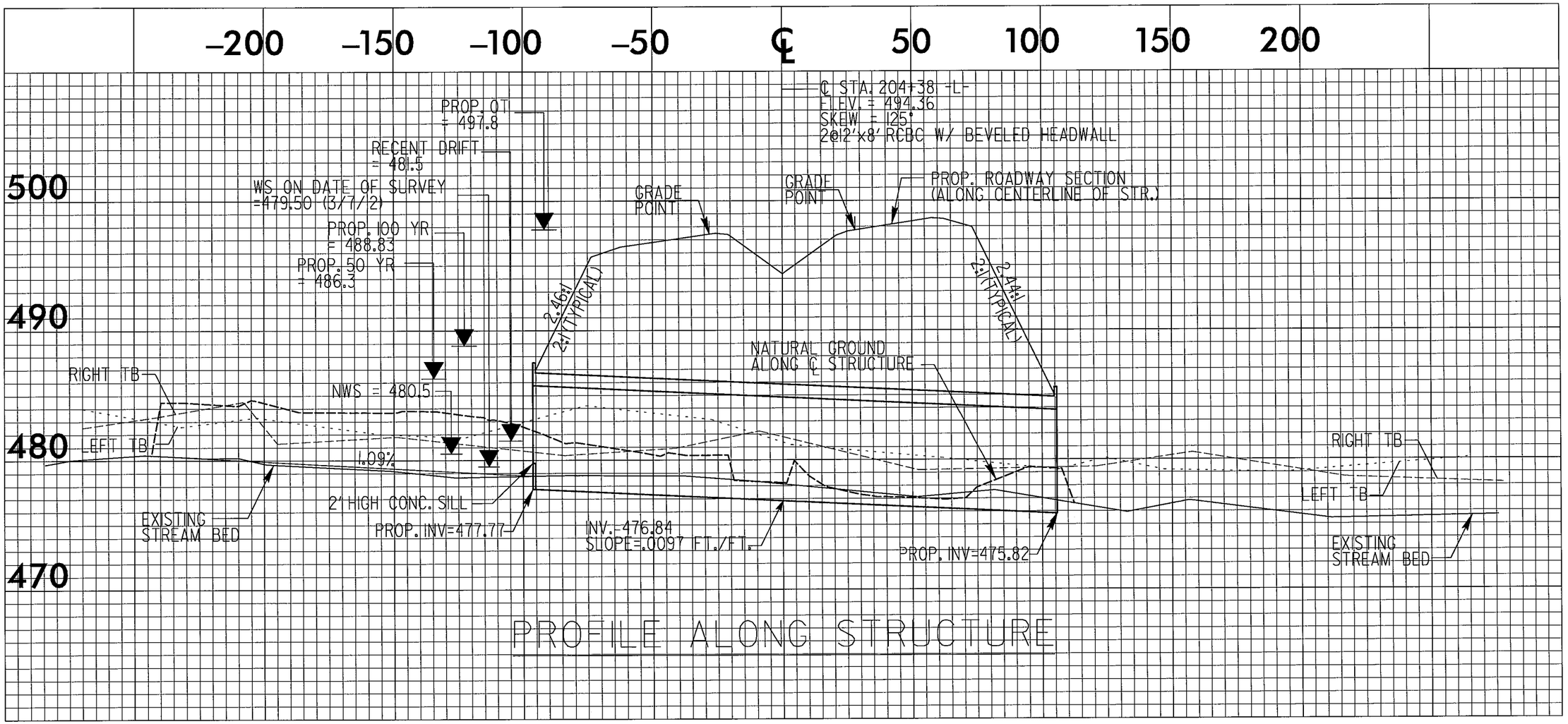
PERMIT DRAWING
SHEET 47 OF 91

SITE 12



PROFILE ALONG STRUCTURE

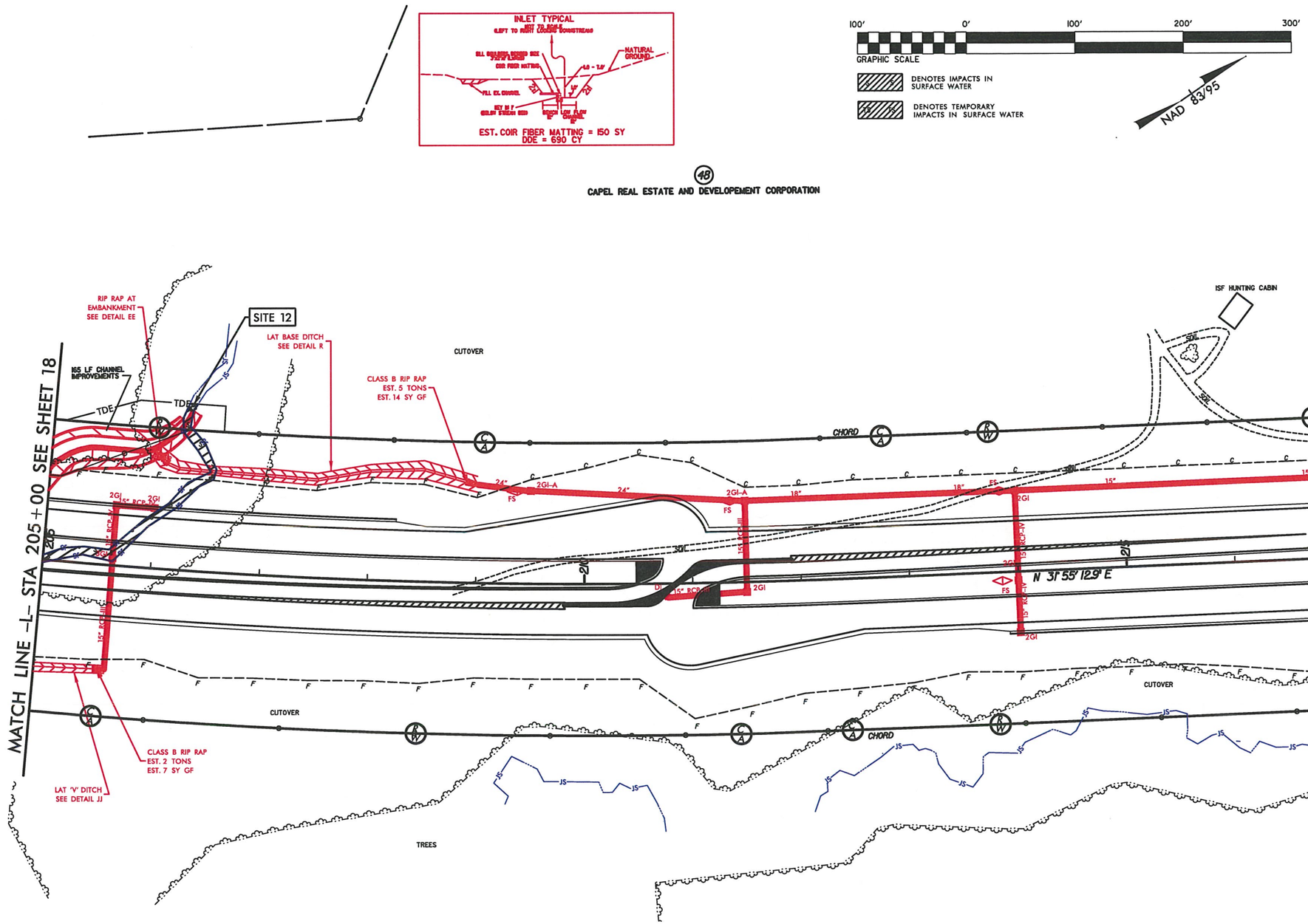
PROJECT REFERENCE NO.	SHEET NO.
R-0623	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 44

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 48 OF 91



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

REVISIONS

8/17/99

11/5/2013
R:\Hydraulics\PERMITS_Environmental\Drawings\R0623_hyd_prm_psh_s19.dgn
8:31:16 AM

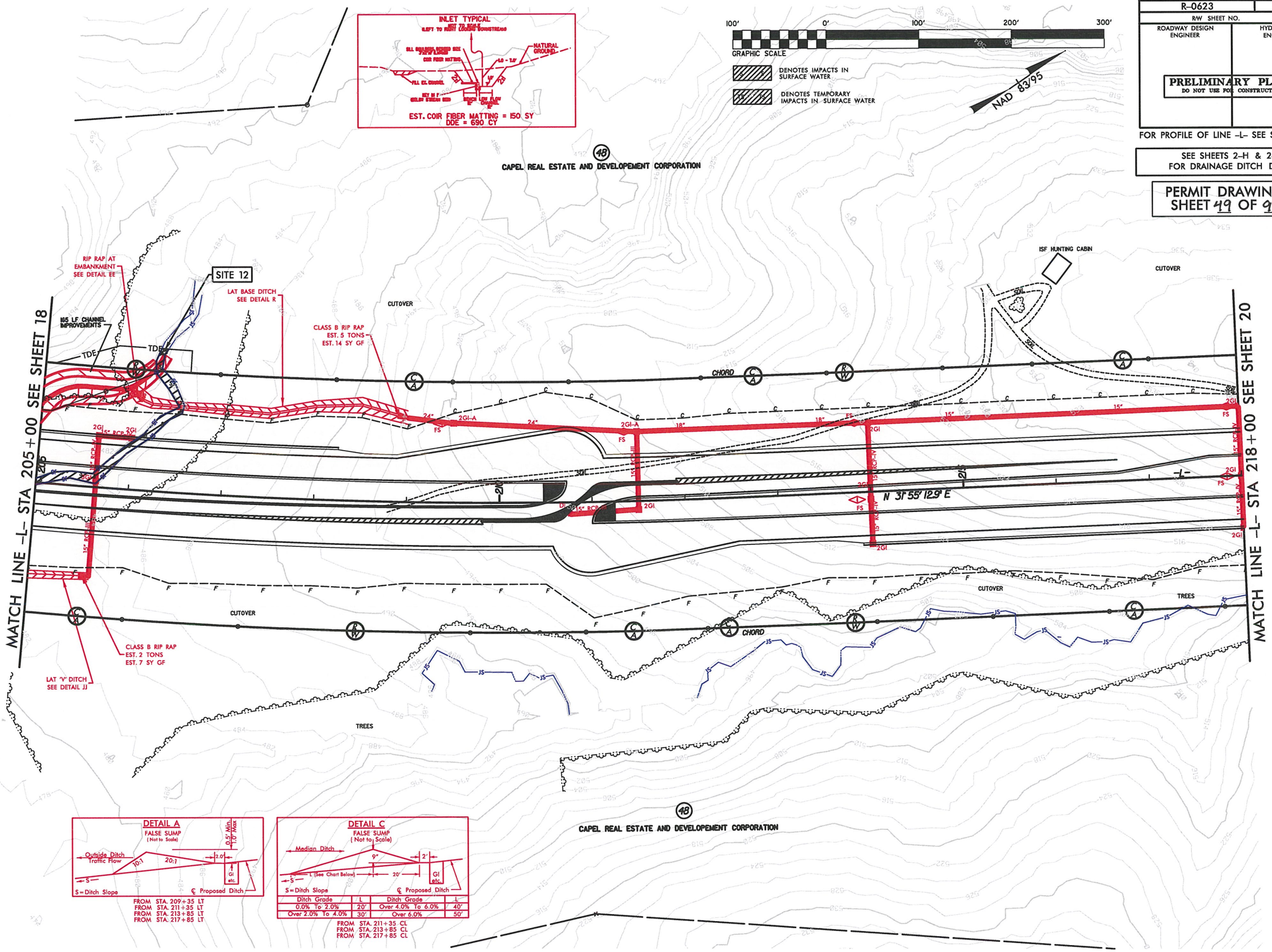
PROJECT REFERENCE NO.	SHEET NO.
R-0623	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 44

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 49 OF 91



REVISIONS

8/17/99

11/5/2013
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8:39:56 AM

PROJECT REFERENCE NO.	SHEET NO.
R-0623	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 44 AND 45

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

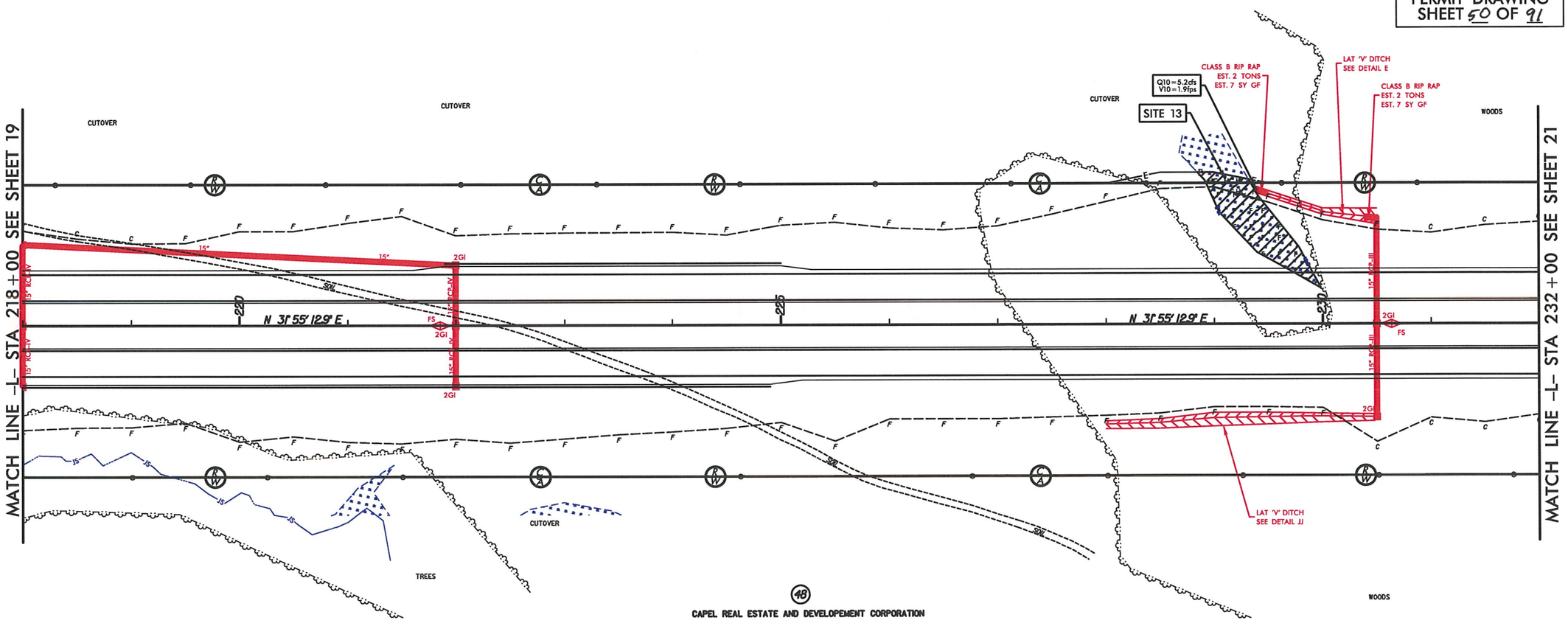
PERMIT DRAWING
SHEET 50 OF 91

100' 0' 100' 200' 300'
GRAPHIC SCALE

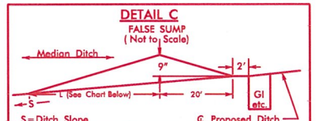
DENOTES FILL IN WETLAND

DENOTES HAND CLEARING

NAD 83/95



DETAIL C
FALSE SUMP
(Not to Scale)



S = Ditch Slope
℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 221+85 CL
FROM STA. 230+65 CL

REVISIONS

8/17/99

5/15/2013
8:42:44 AM
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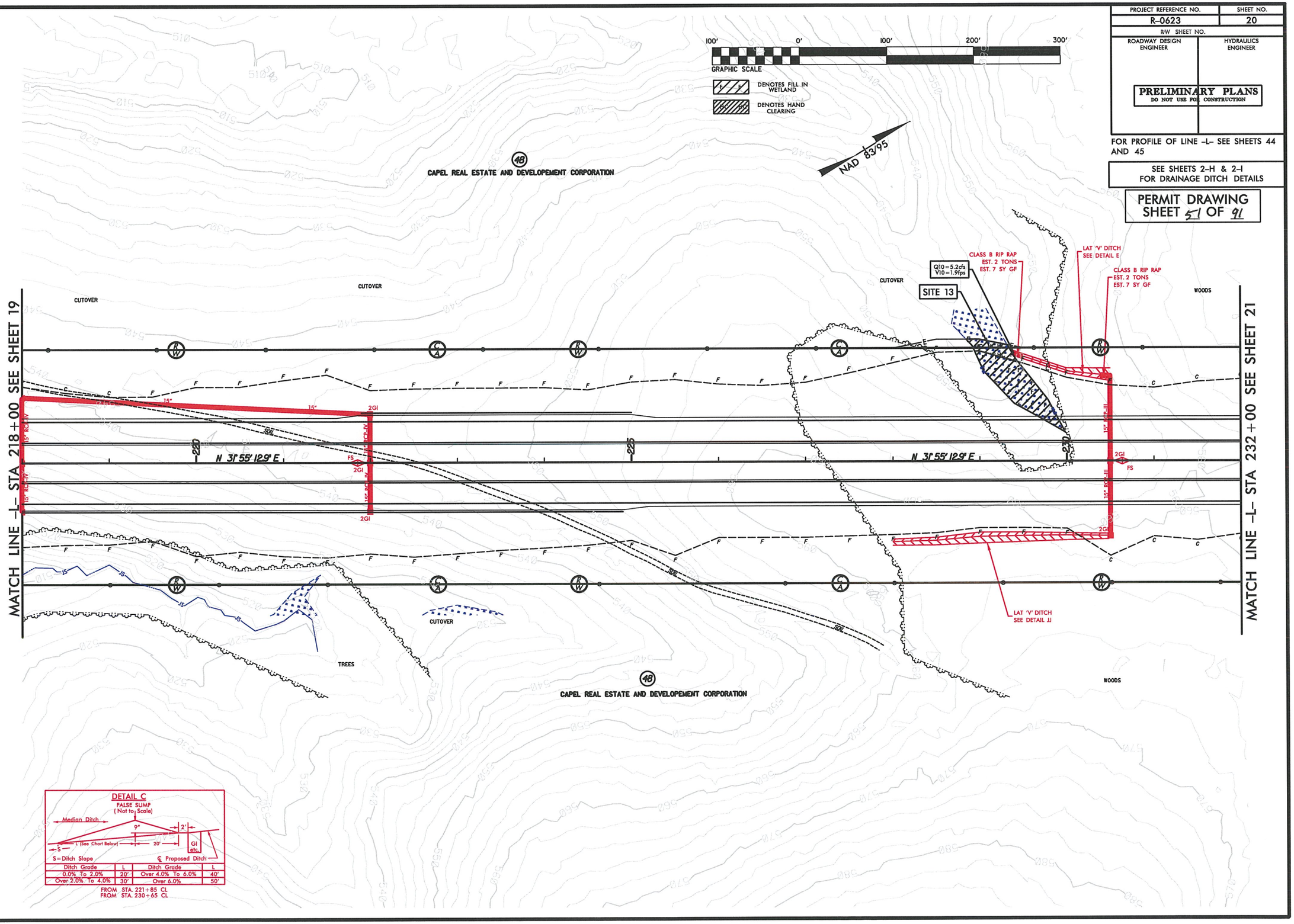
PROJECT REFERENCE NO.	SHEET NO.
R-0623	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 44 AND 45

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 51 OF 91



REVISIONS

8/17/99

5/15/2013
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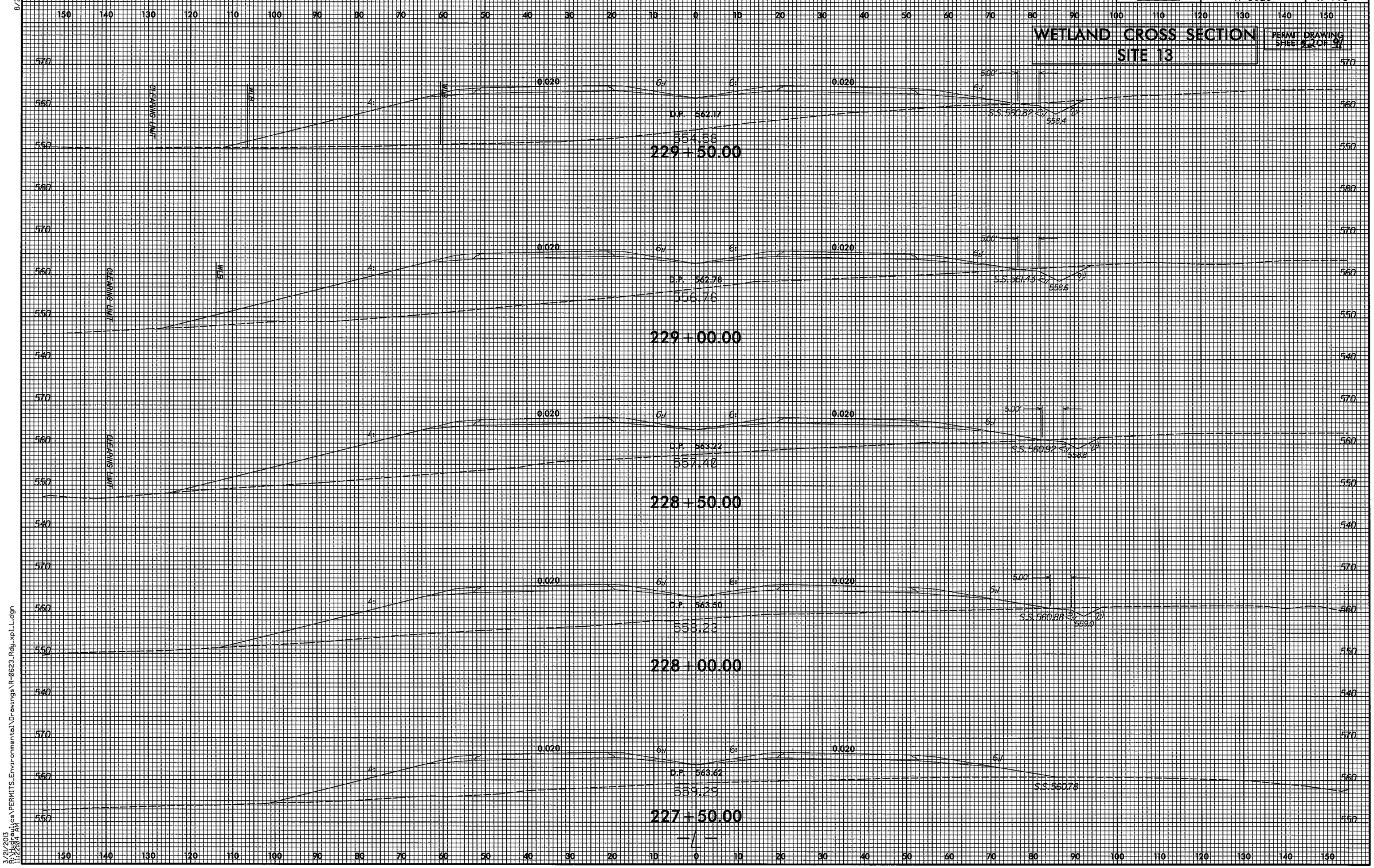
PROJ. REFERENCE NO.	SHEET NO.
R-0623	X-110

WETLAND CROSS SECTION
SITE 13

PERMIT DRAWING SHEET 7 OF 97



8/23/99

3/21/2013
R:\Roadways\Plans\PERMITS_Environmental\Drawings\R-0623_Rdy_xpl_L.dgn

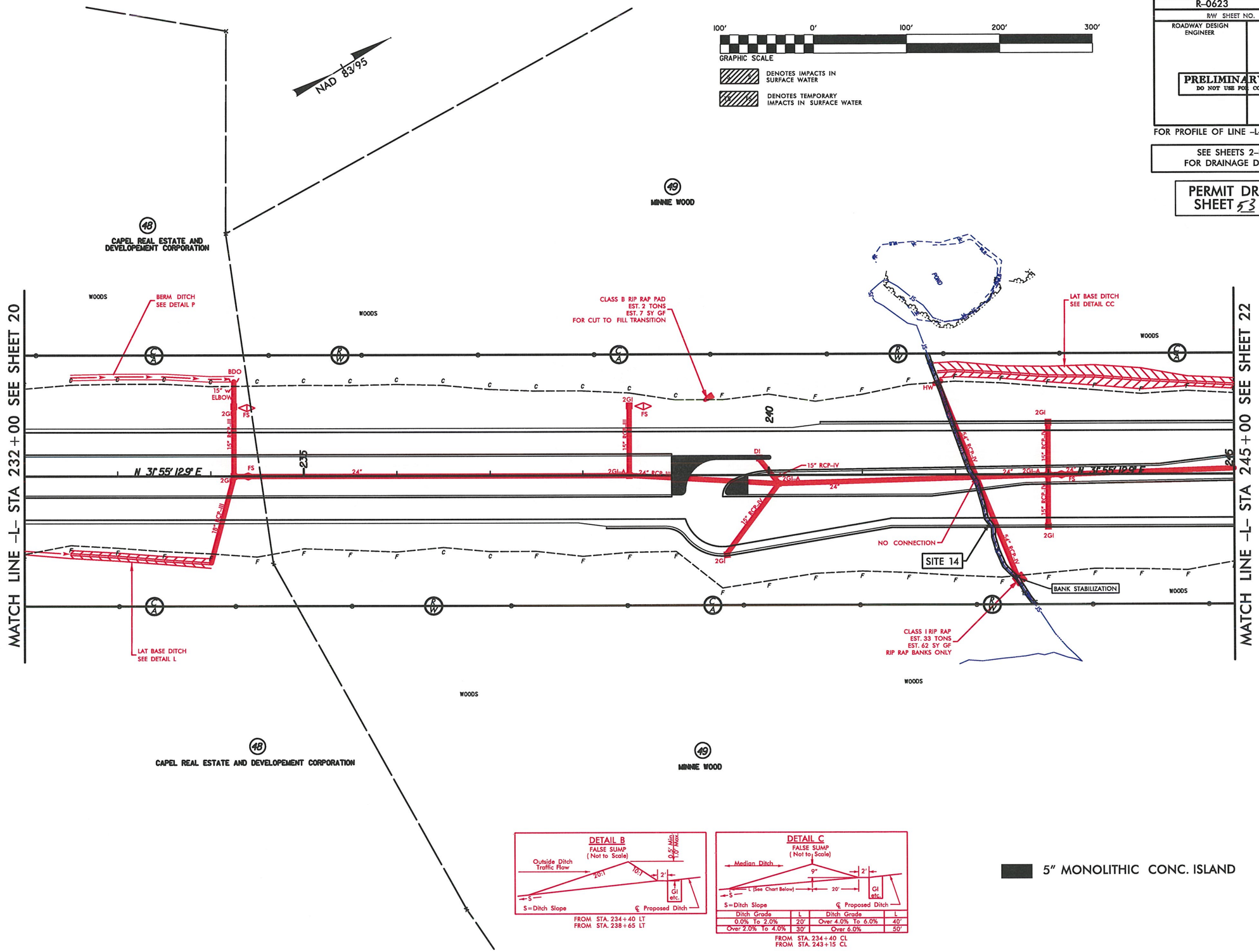
PROJECT REFERENCE NO.	SHEET NO.
R-0623	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 45

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 53 OF 91



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

REVISIONS

8/17/99

12/4/2013
11:24:52 AM
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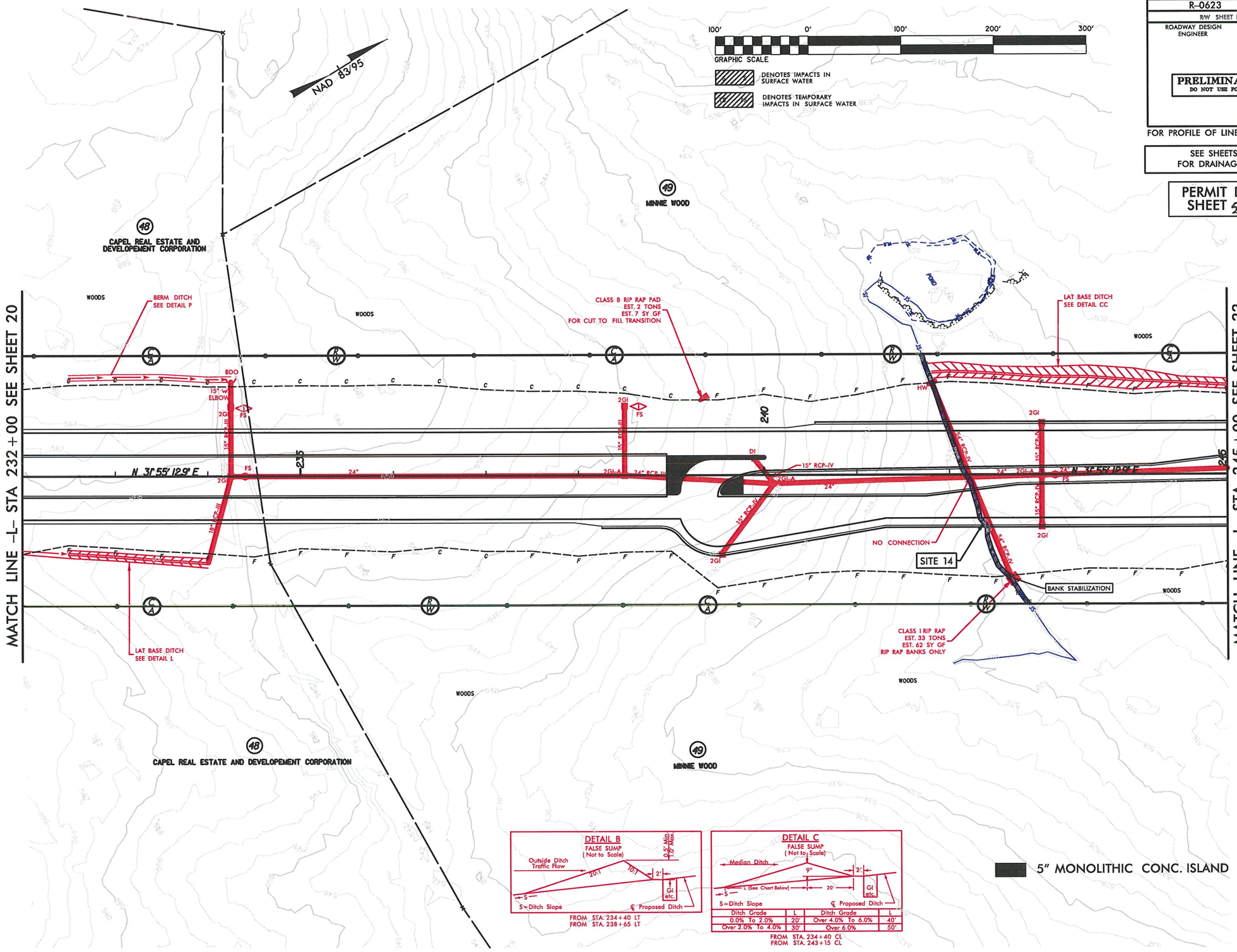
PROJECT REFERENCE NO.	SHEET NO.
R-0623	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE –L– SEE SHEET 45

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 54 OF 91



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

REVISIONS

8/17/99

12/4/2013
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11:25:52 AM

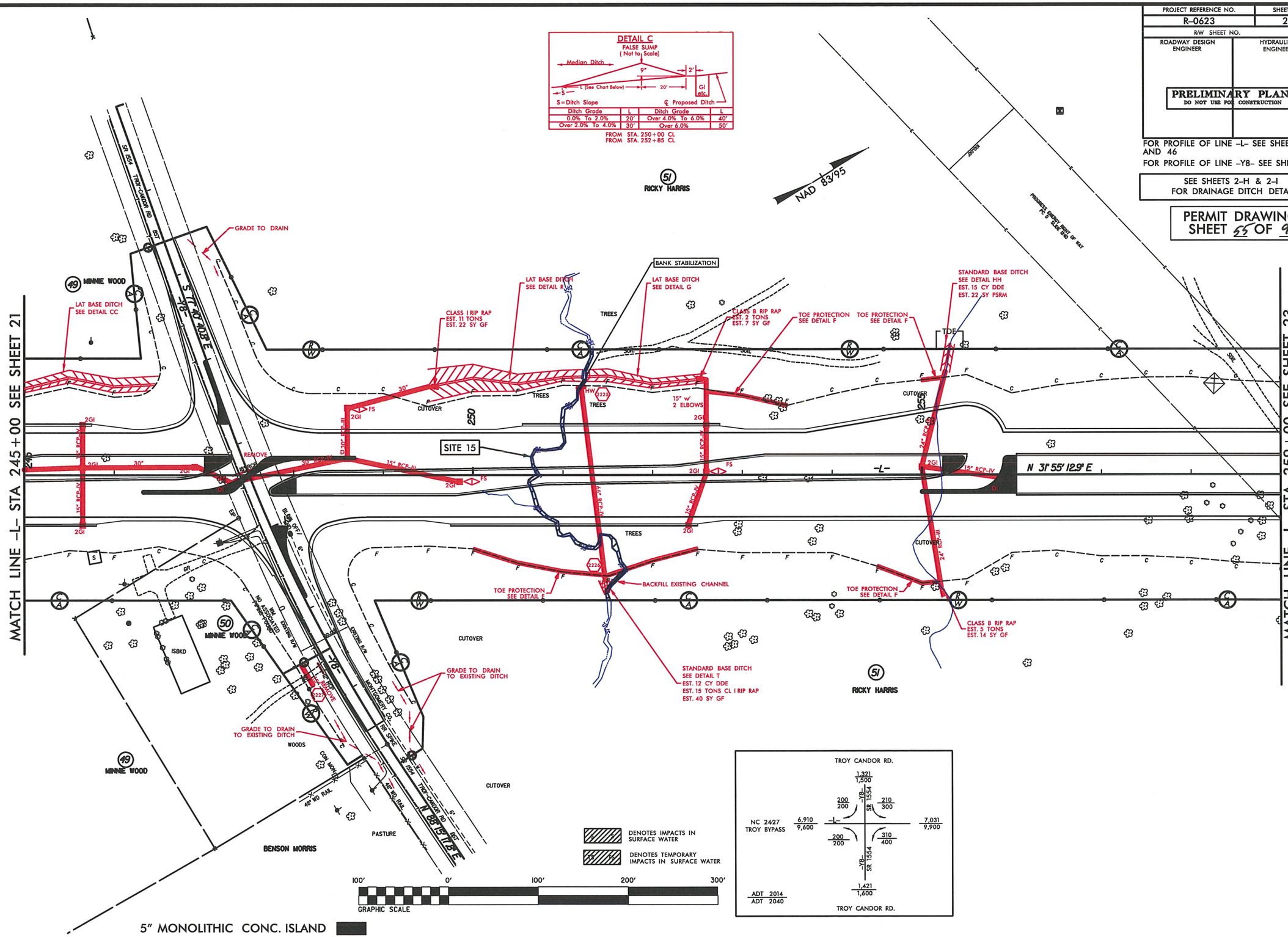
PROJECT REFERENCE NO.	SHEET NO.
R-0623	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 45 AND 46
FOR PROFILE OF LINE -Y8- SEE SHEET 52

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 55 OF 91



REVISIONS

8/17/99

12/2/2013
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11:06:52 AM

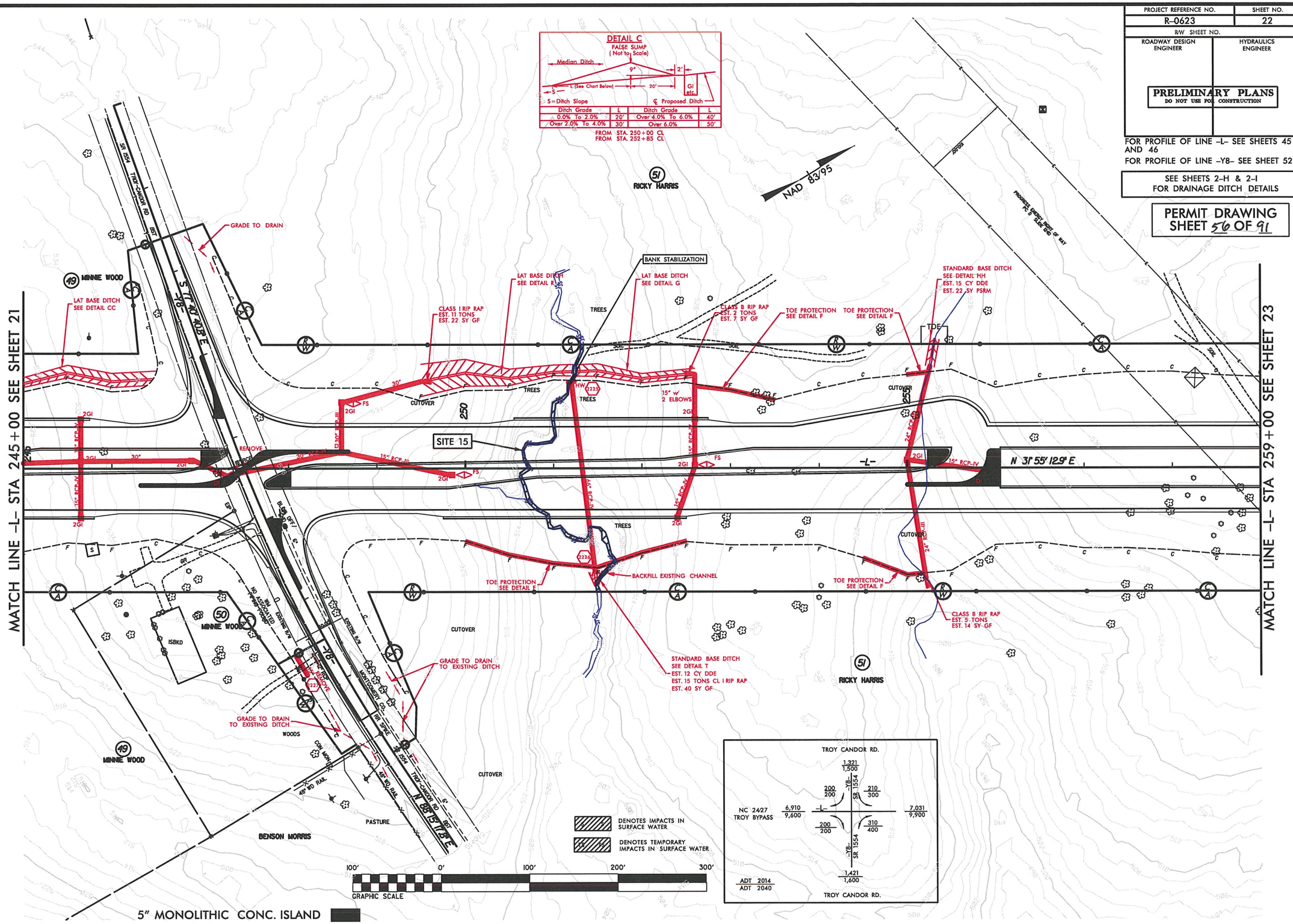
PROJECT REFERENCE NO.	SHEET NO.
R-0623	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 45 AND 46
FOR PROFILE OF LINE -Y8- SEE SHEET 52

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 56 OF 91



REVISIONS

8/17/99

12/2/2013
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11:41:19 AM

PRELIMINARY PLANS NOT FOR CONSTRUCTION

PERMIT DRAWING
SHEET 57 OF 91

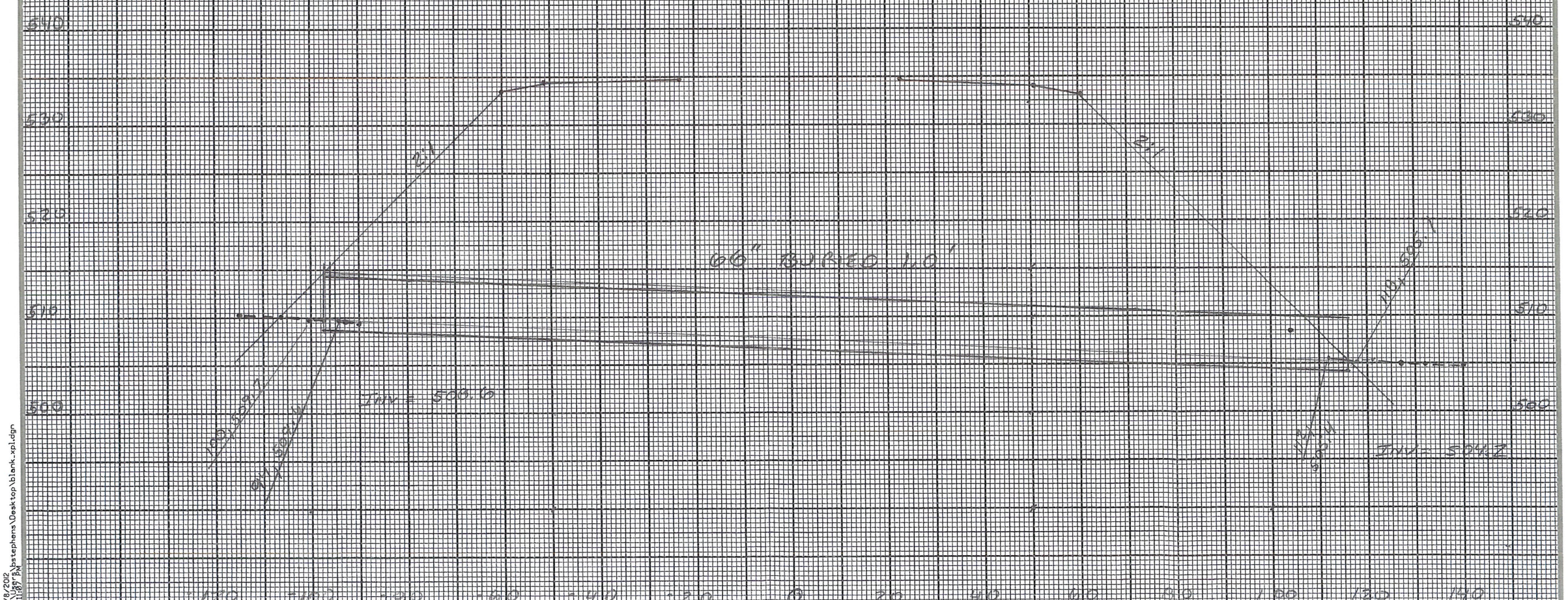
SITE 15

L 251 + 32 ft 83° SKEW ft

66" RCP w/ HW BURIED 1'

BELOW STREAM BED

216', C4 TR



8/23/99
6/8/2012
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3:11:07 PM

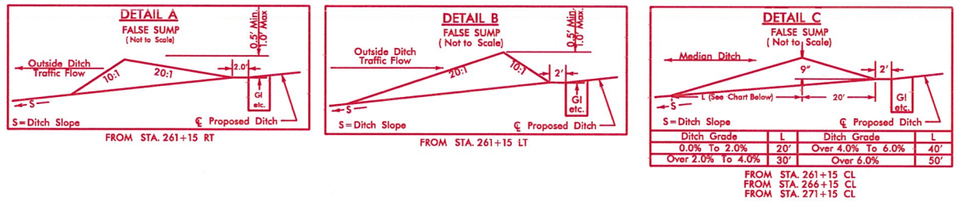
PROJECT REFERENCE NO.	SHEET NO.
R-0623	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 46

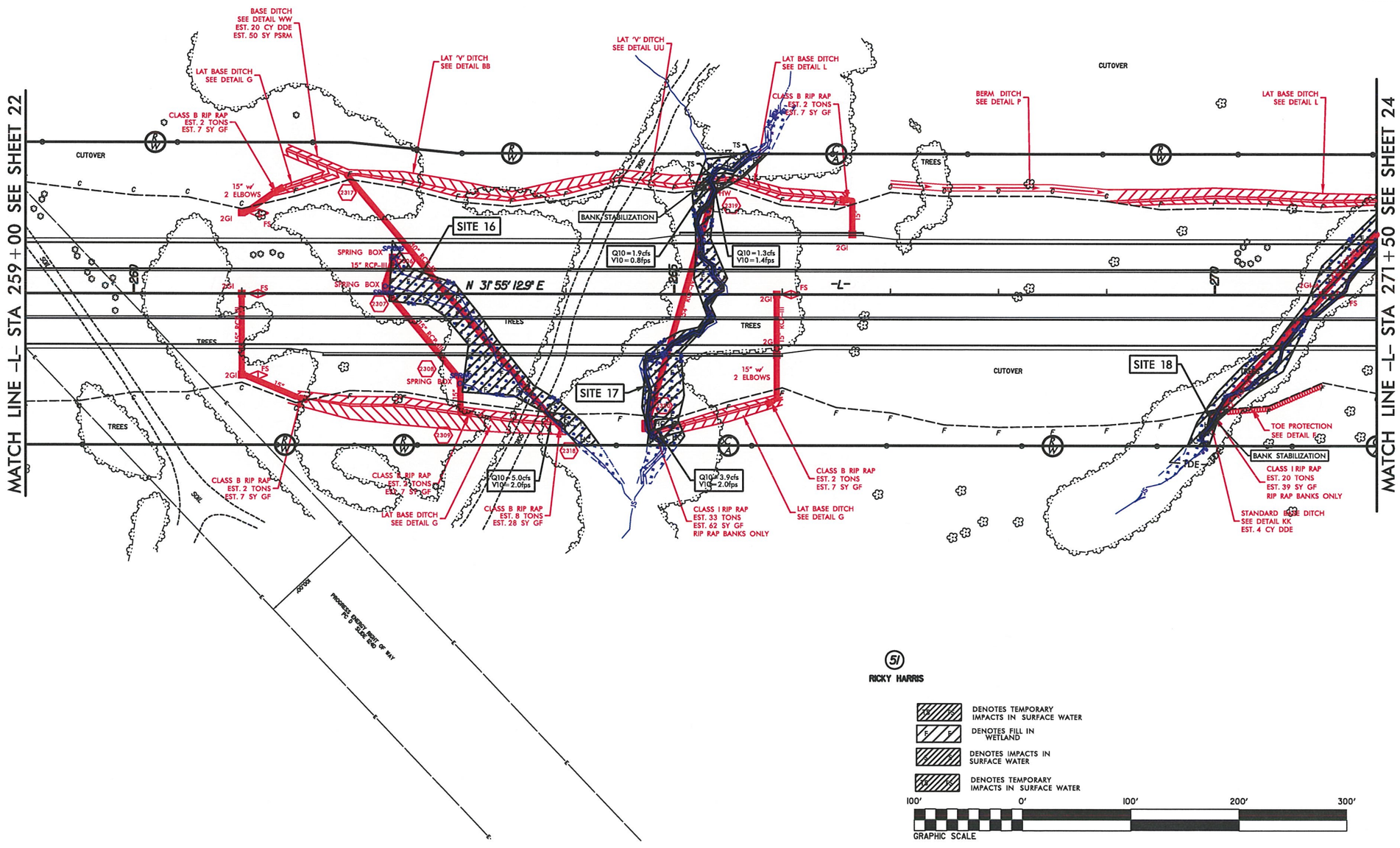
SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 58 OF 91



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 261+15 CL
FROM STA. 266+15 CL
FROM STA. 271+15 CL



REVISIONS

8/17/99

12/4/2013
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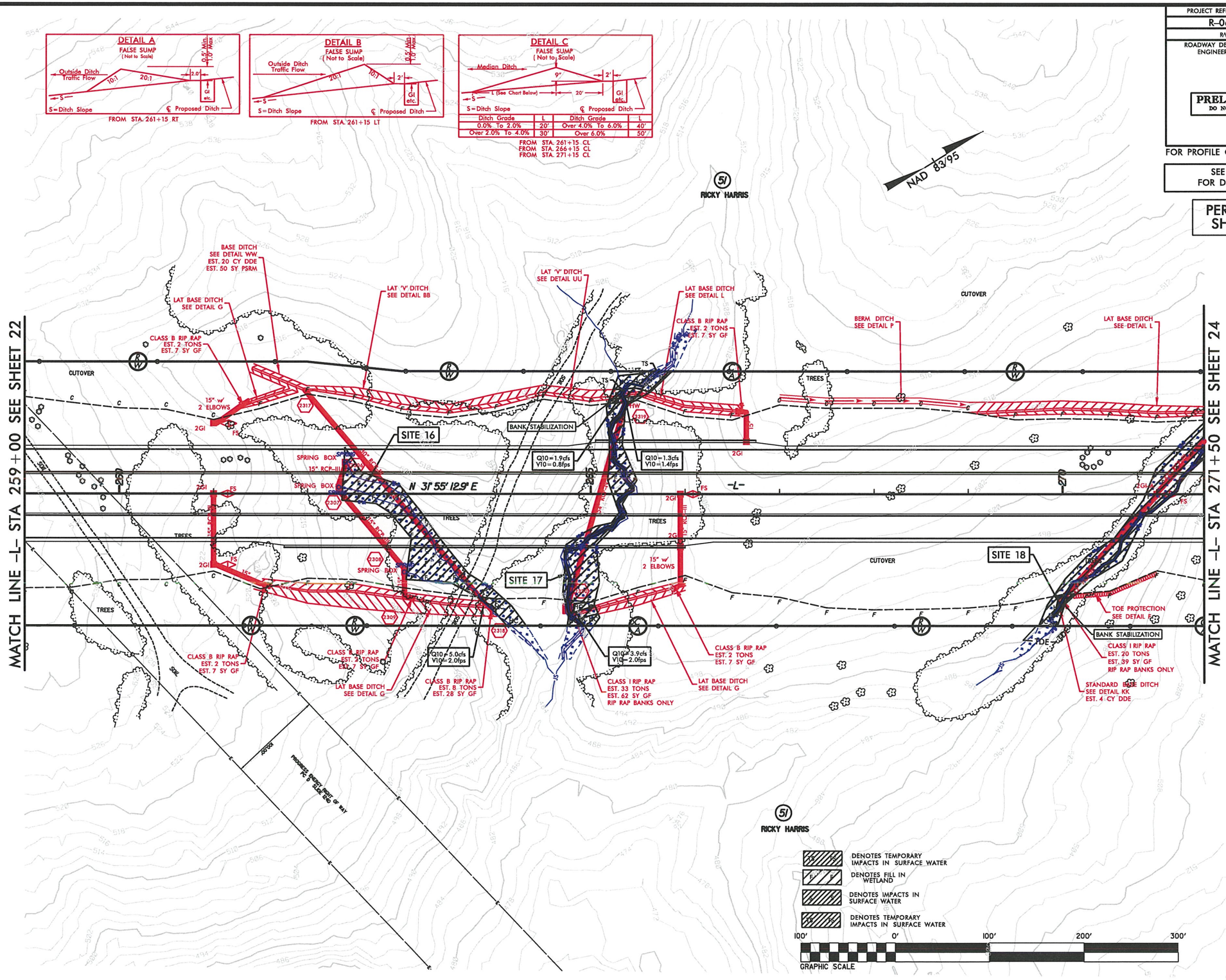
PROJECT REFERENCE NO.	SHEET NO.
R-0623	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 46

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 59 OF 91



REVISIONS

8/17/99

12/4/2013
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12:47 PM

PROJECT REFERENCE NO.	SHEET NO.
R-0623	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

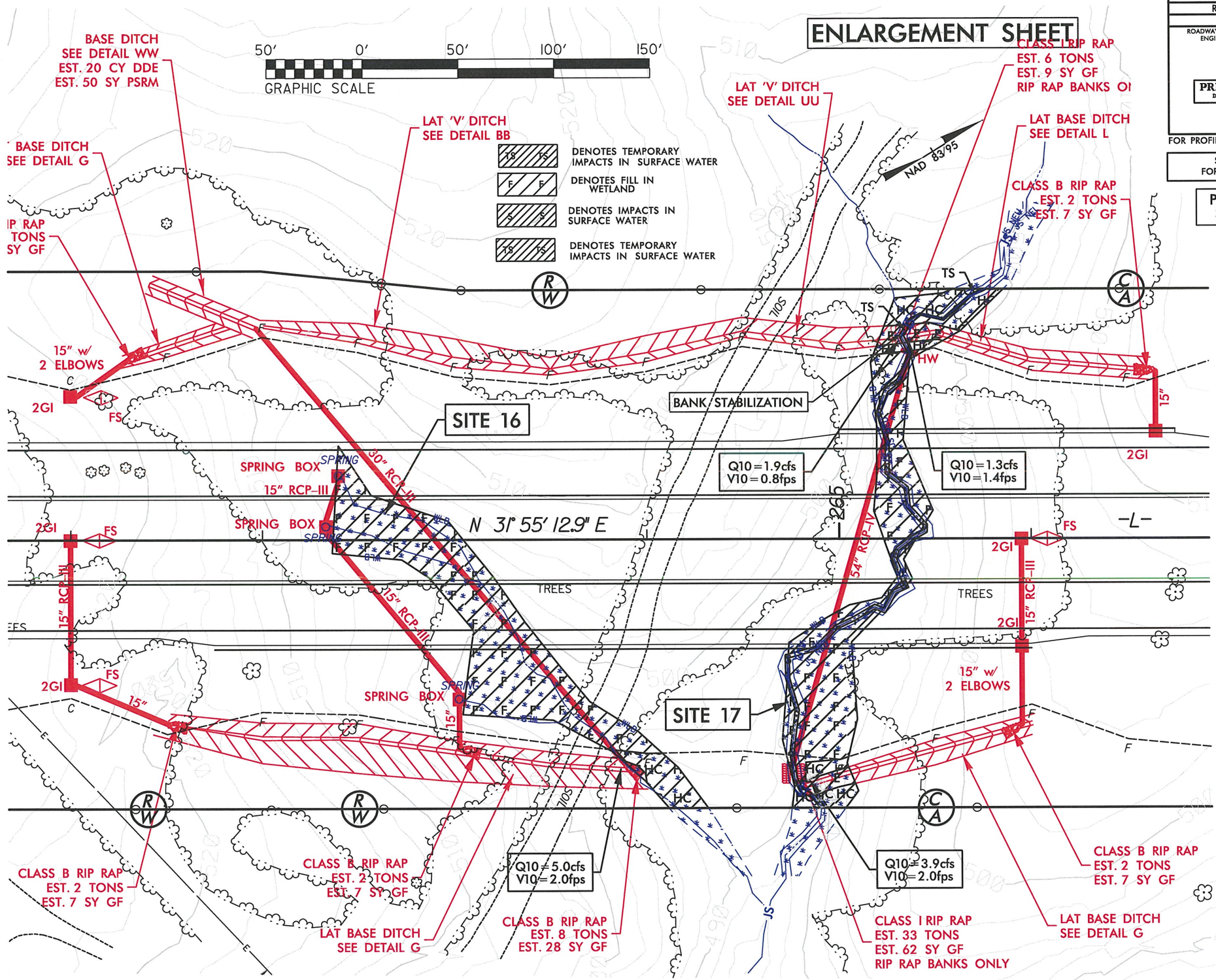
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 46

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 60 OF 91

ENLARGEMENT SHEET



REVISIONS

8/17/99

8/14/2013
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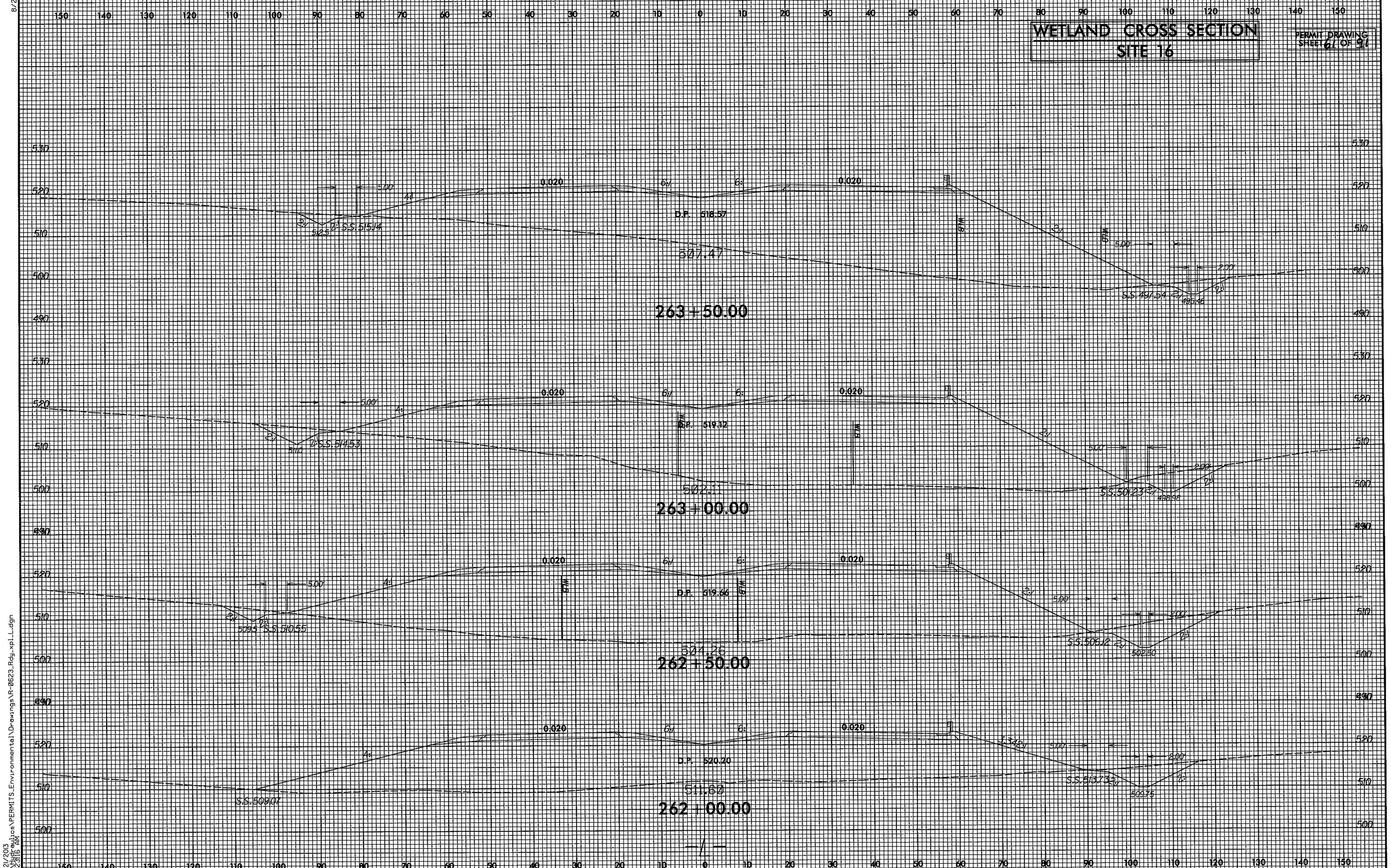
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-124

WETLAND CROSS SECTION
SITE 16

PERMIT DRAWING SHEET 61 OF 91



8/23/99

3/21/2013
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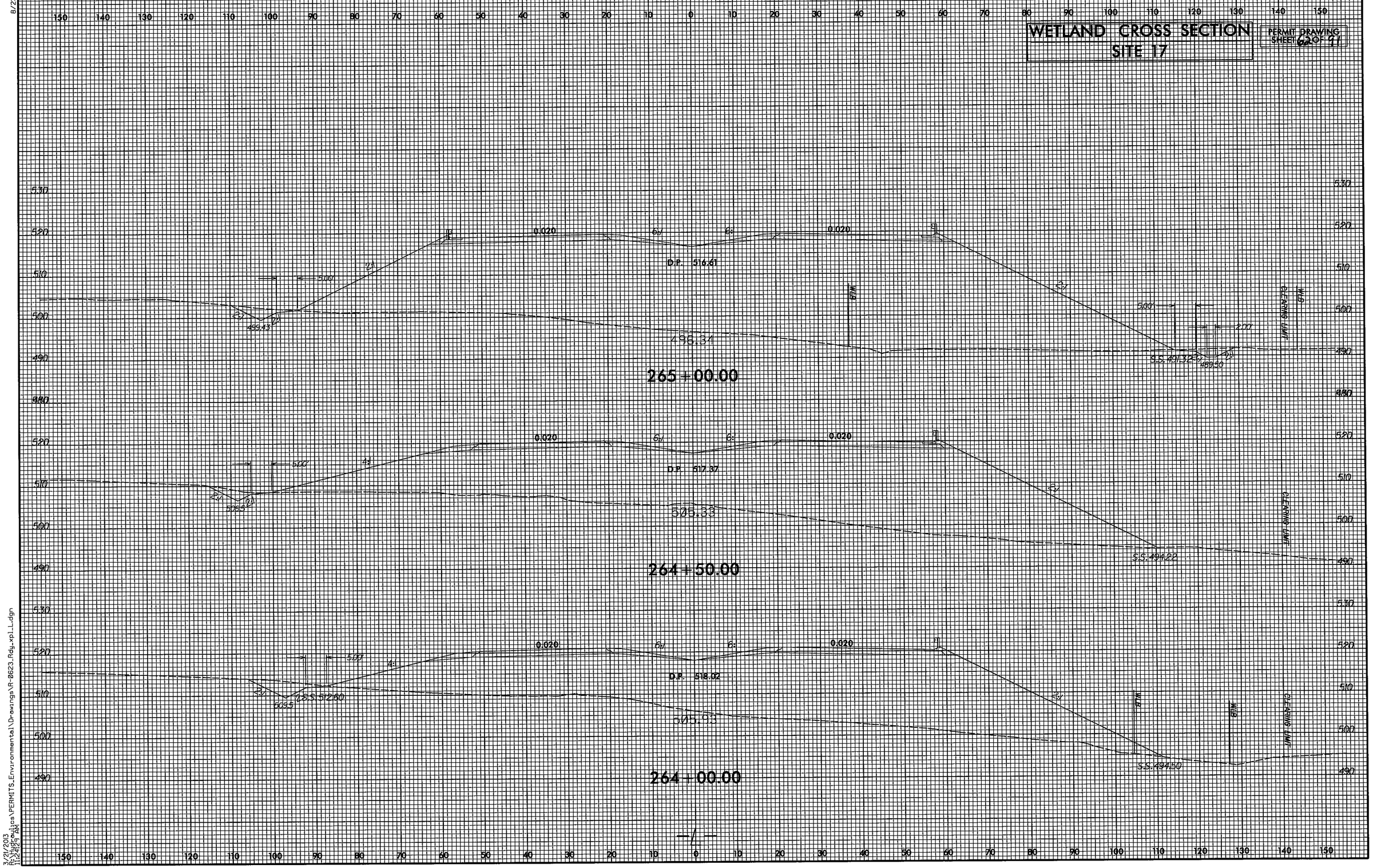
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-125

WETLAND CROSS SECTION
SITE 17

PERMIT DRAWING
SHEET 62 OF 91



8/23/99

3/21/2013
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11:24:29 AM

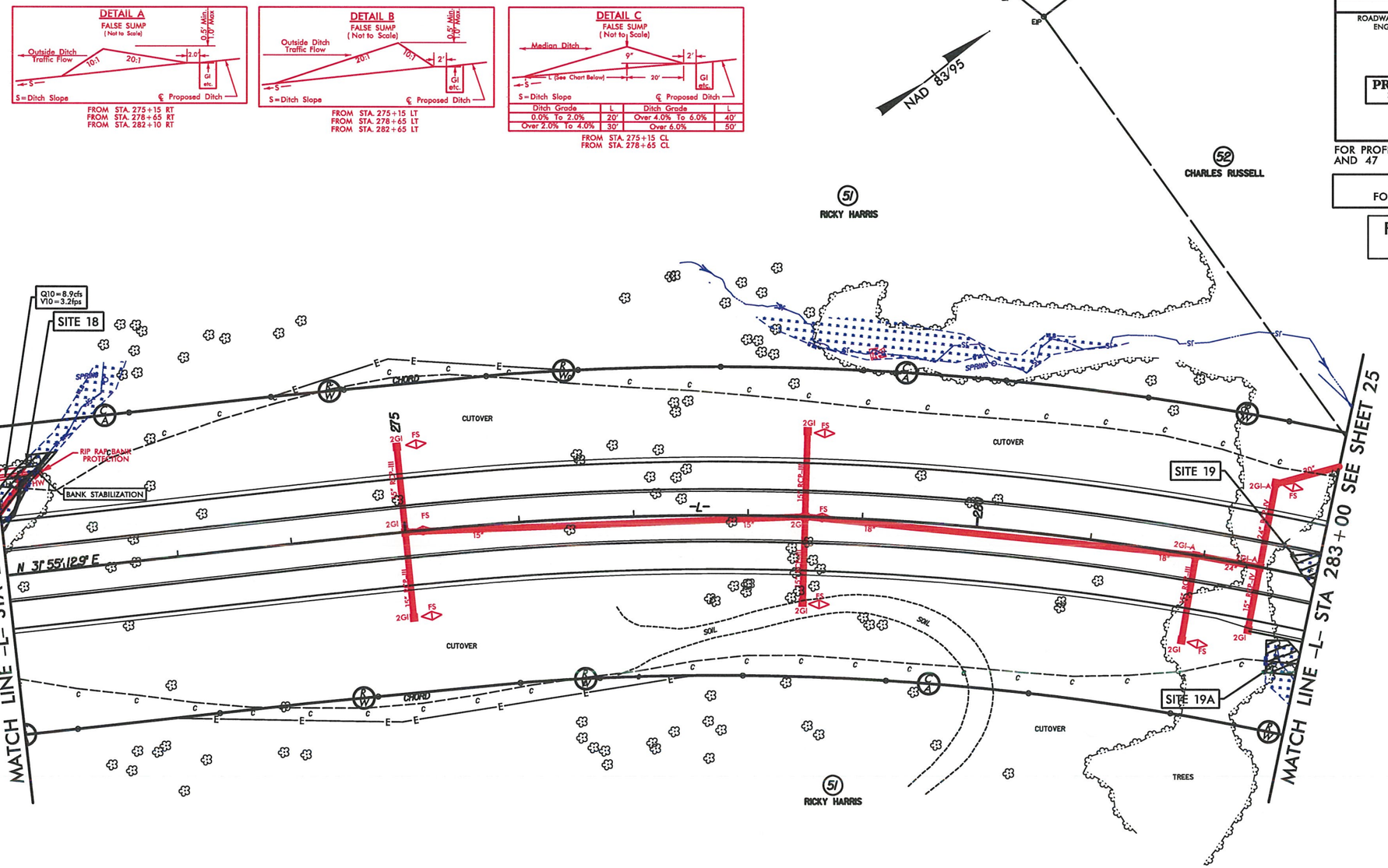
PROJECT REFERENCE NO.	SHEET NO.
R-0623	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 46 AND 47

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 63 OF 91



DENOTES FILL IN WETLAND

DENOTES HAND CLEARING

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100' 200' 300'

GRAPHIC SCALE

REVISIONS

8/17/99

6/14/2013
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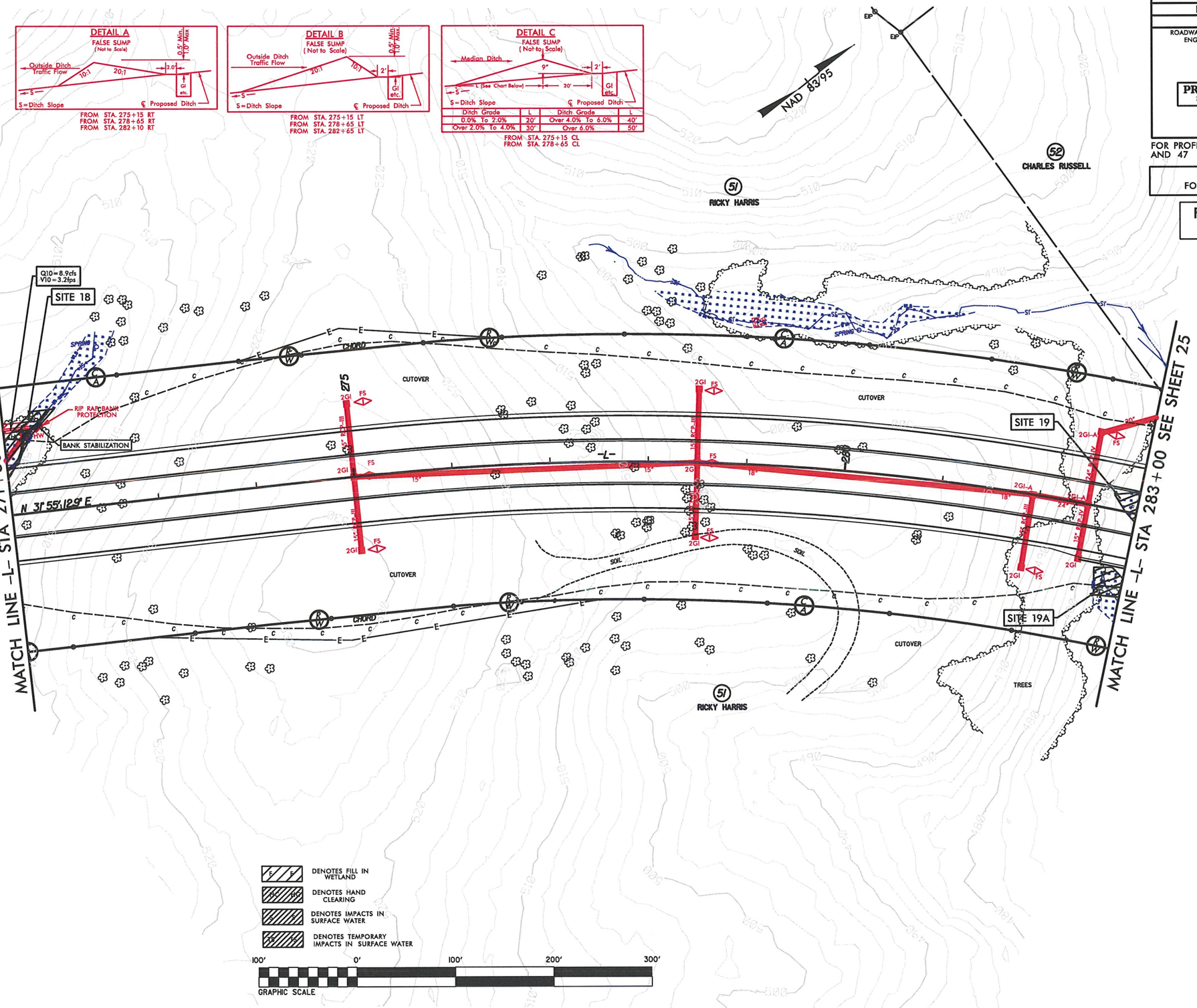
PROJECT REFERENCE NO.	SHEET NO.
R-0623	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 46 AND 47

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 64 OF 91



REVISIONS

8/17/99

6/14/2013
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$$USER$$

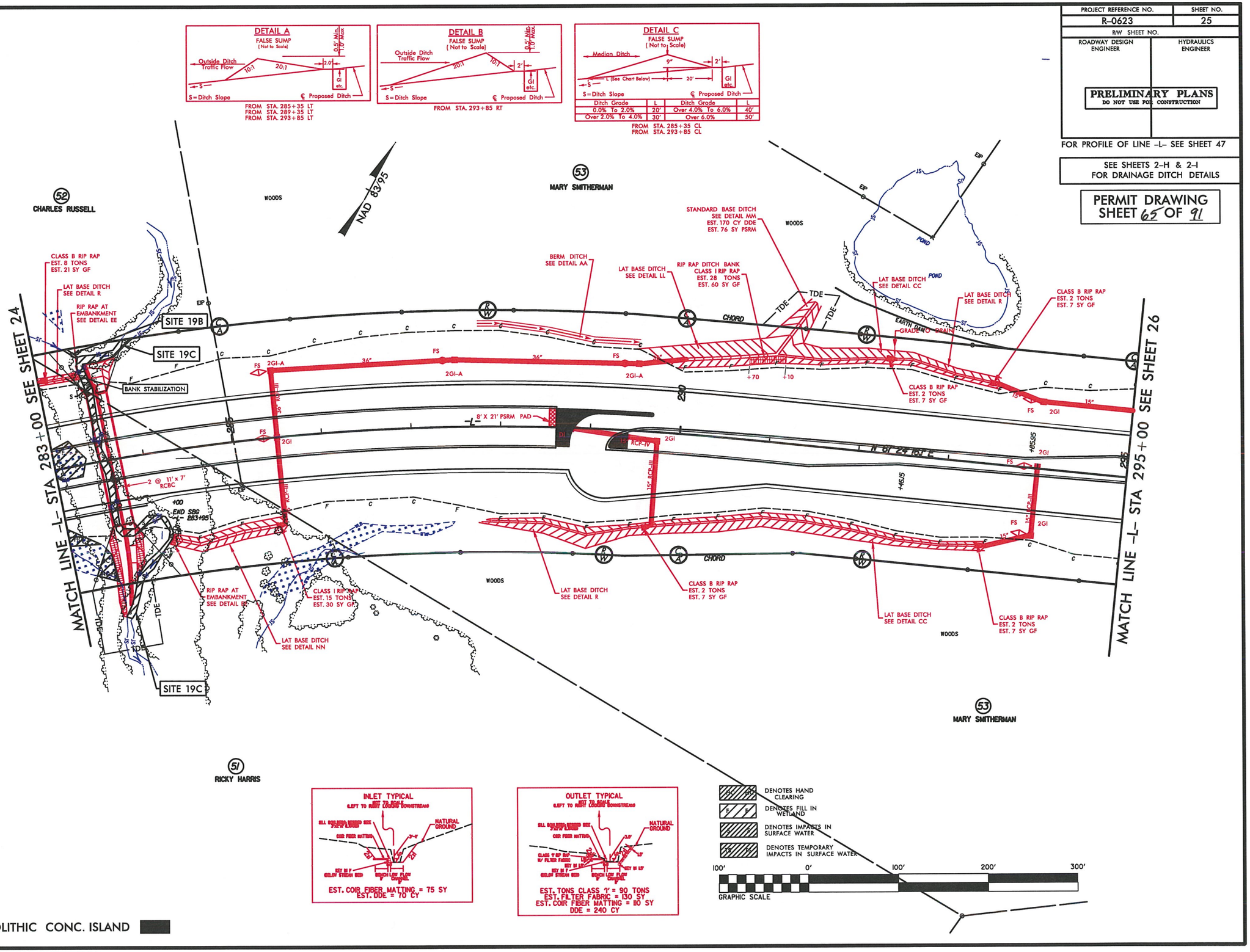
PROJECT REFERENCE NO.	SHEET NO.
R-0623	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 47

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 65 OF 91



REVISIONS

8/17/99

12/2/2013
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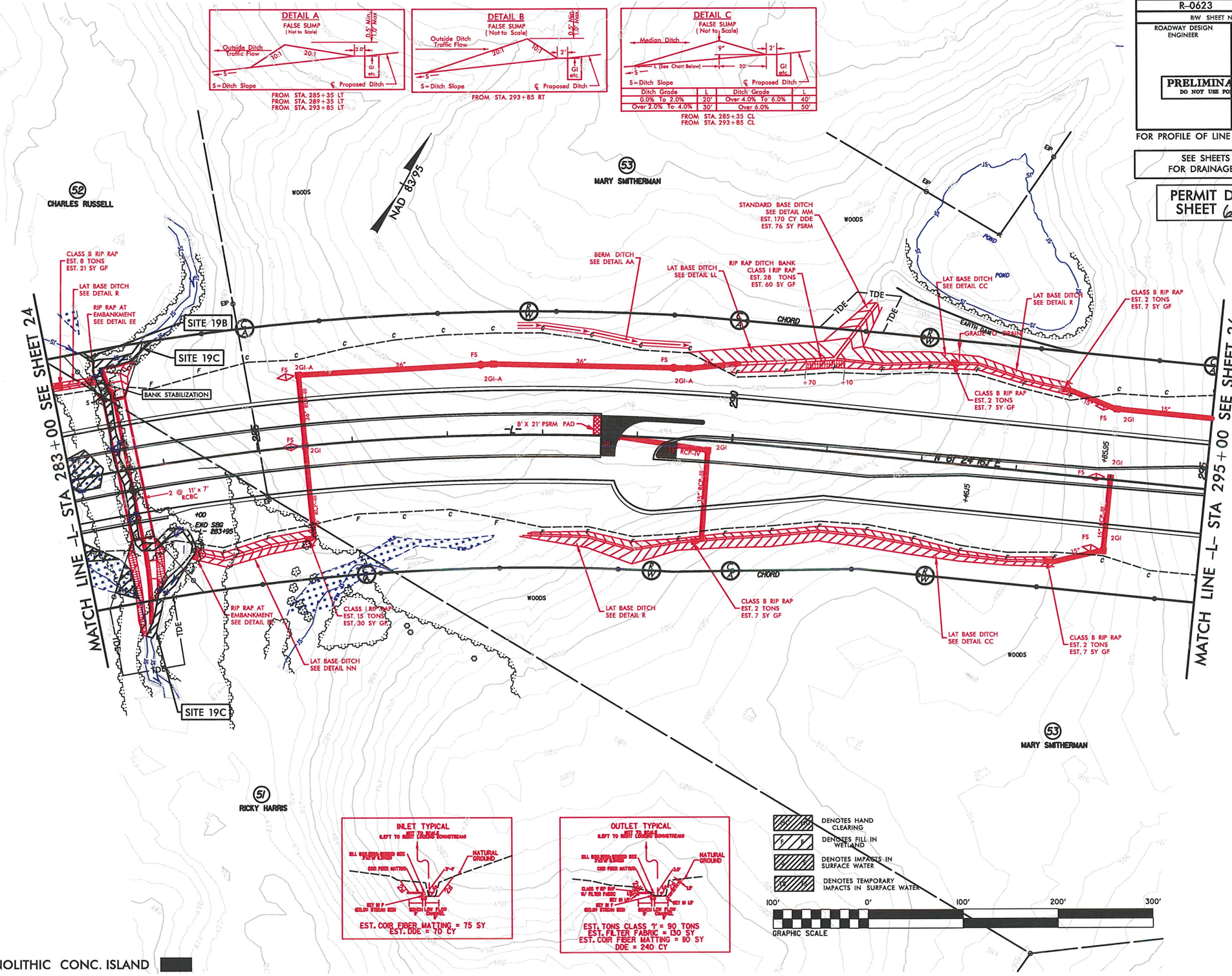
PROJECT REFERENCE NO.	SHEET NO.
R-0623	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 47

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 66 OF 91



REVISIONS

8/17/99

12/2/2013
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

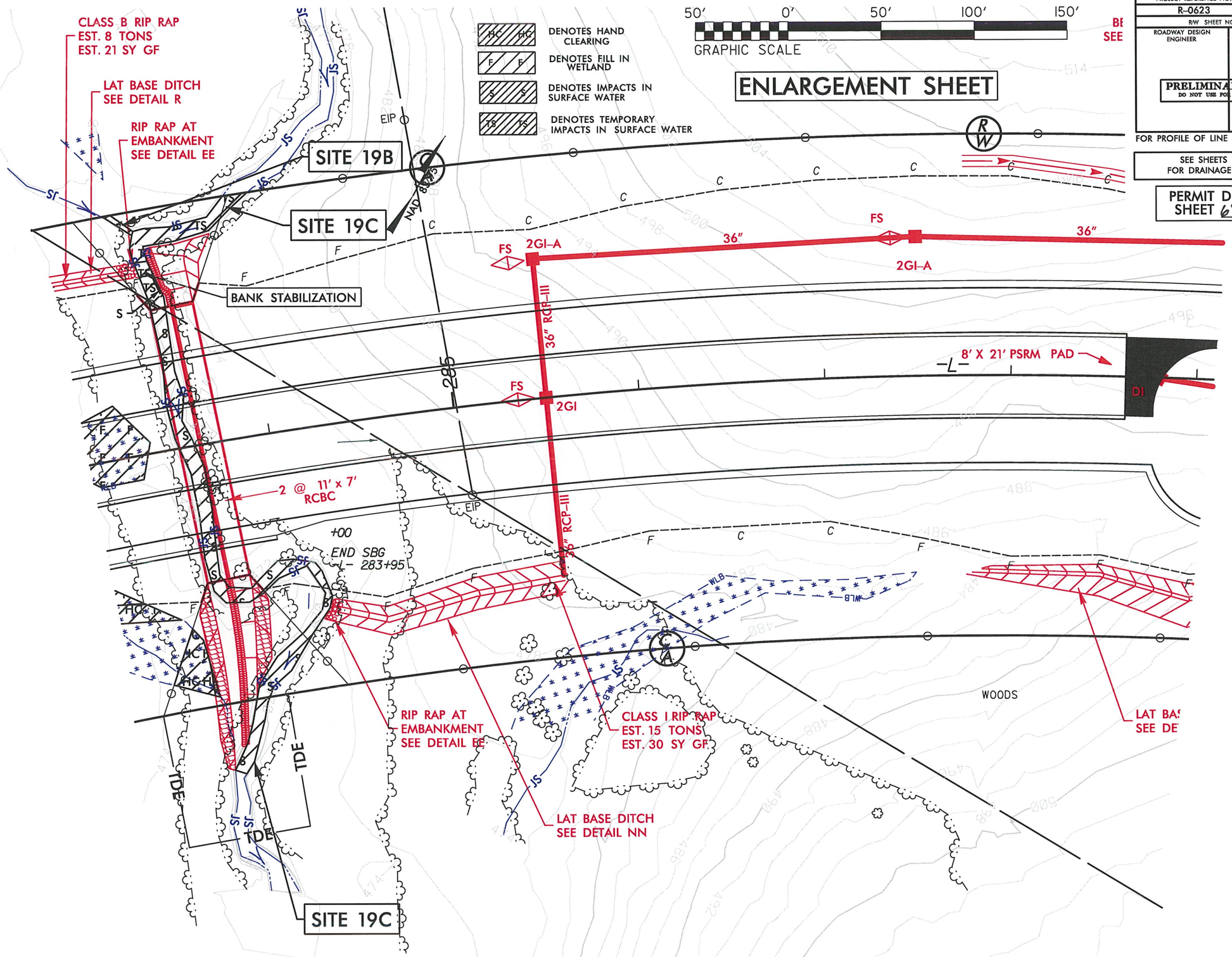
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 47

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 67 OF 91

ENLARGEMENT SHEET



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REVISIONS

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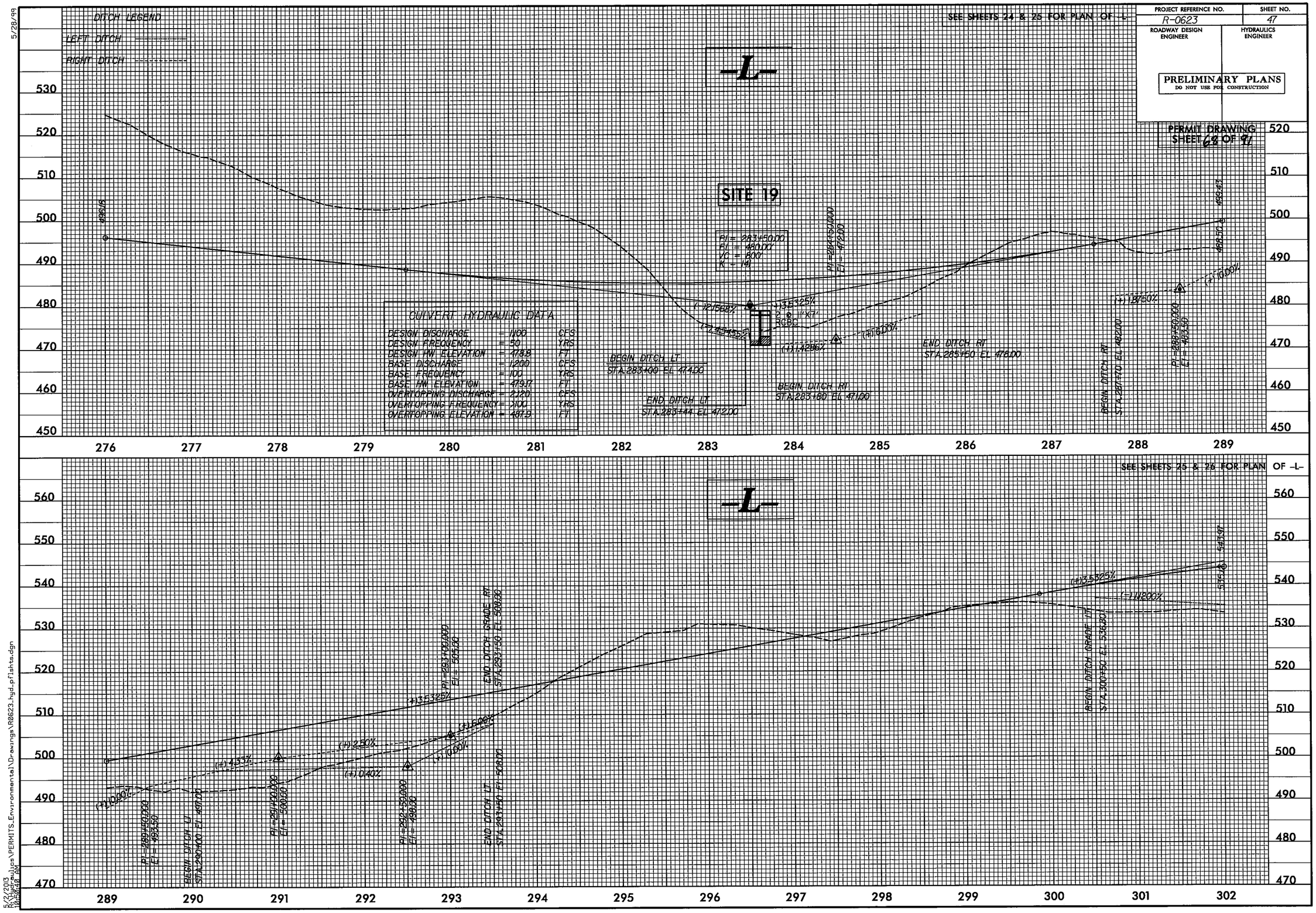
PROJECT REFERENCE NO.	SHEET NO.
R-0623	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 62 OF 91



5/28/99

5/21/2013
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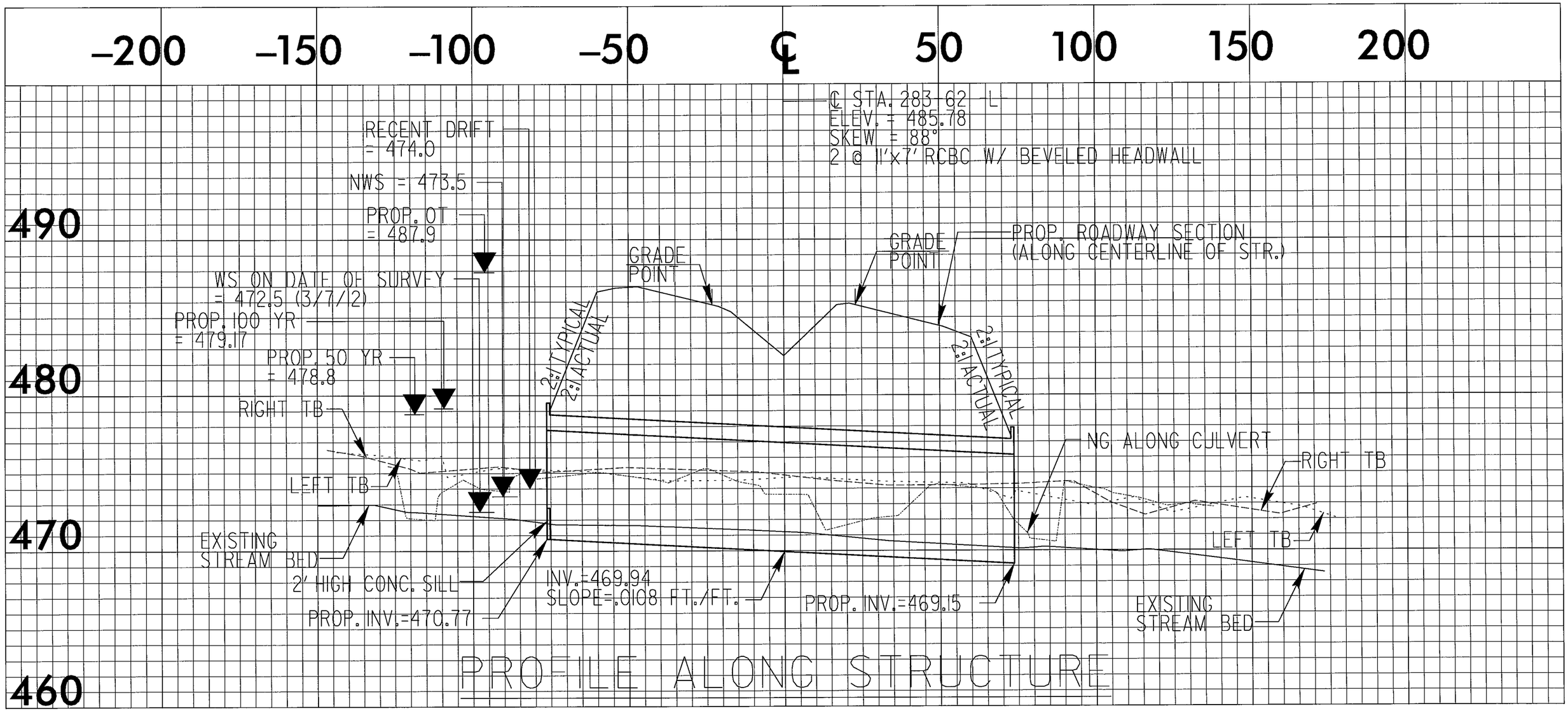
SITE 19

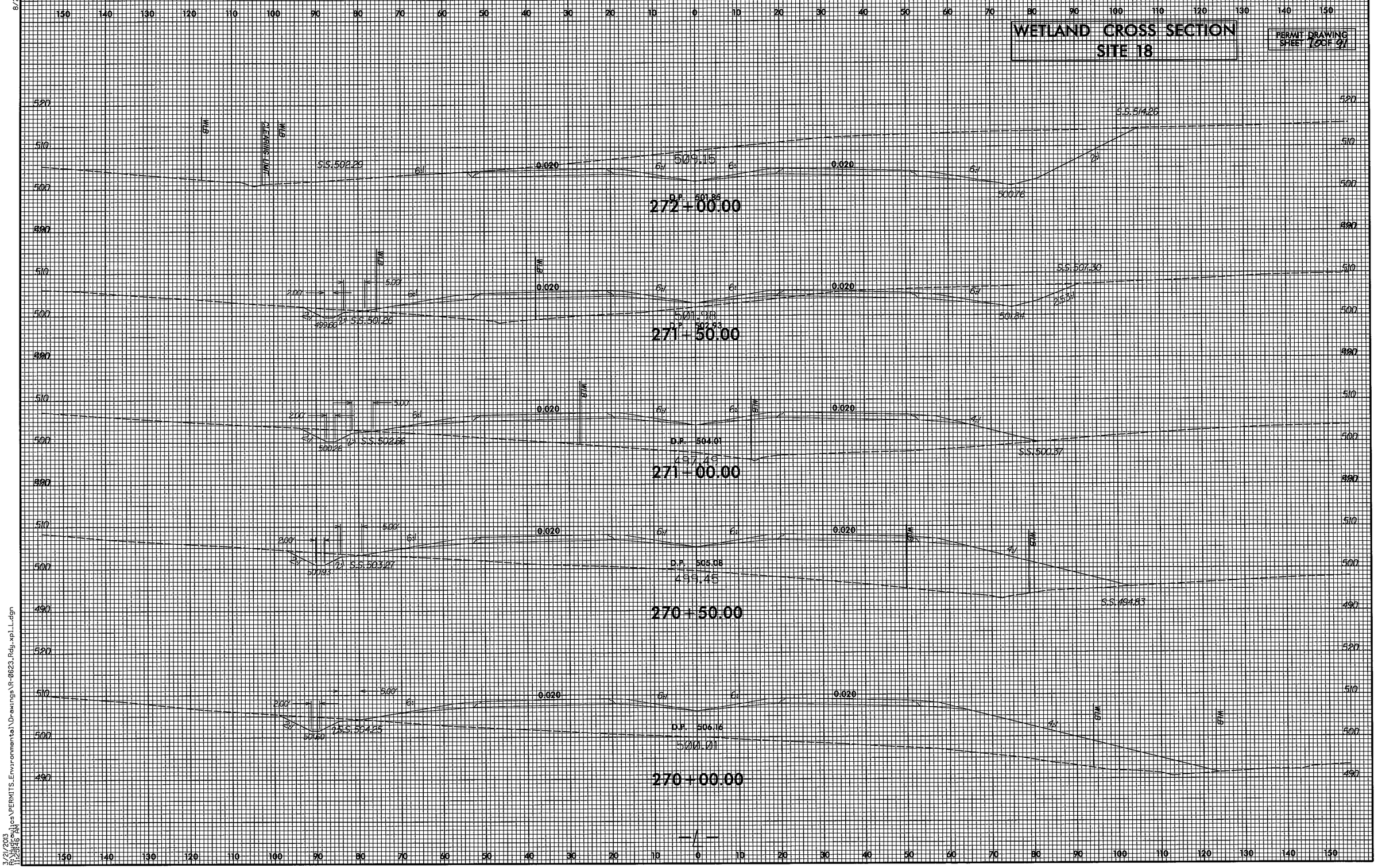
PERMIT DRAWING
SHEET 69 OF 91



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-128

WETLAND CROSS SECTION
SITE 18

PERMIT DRAWING SHEET 1 OF 9



8/23/99
3/21/2013
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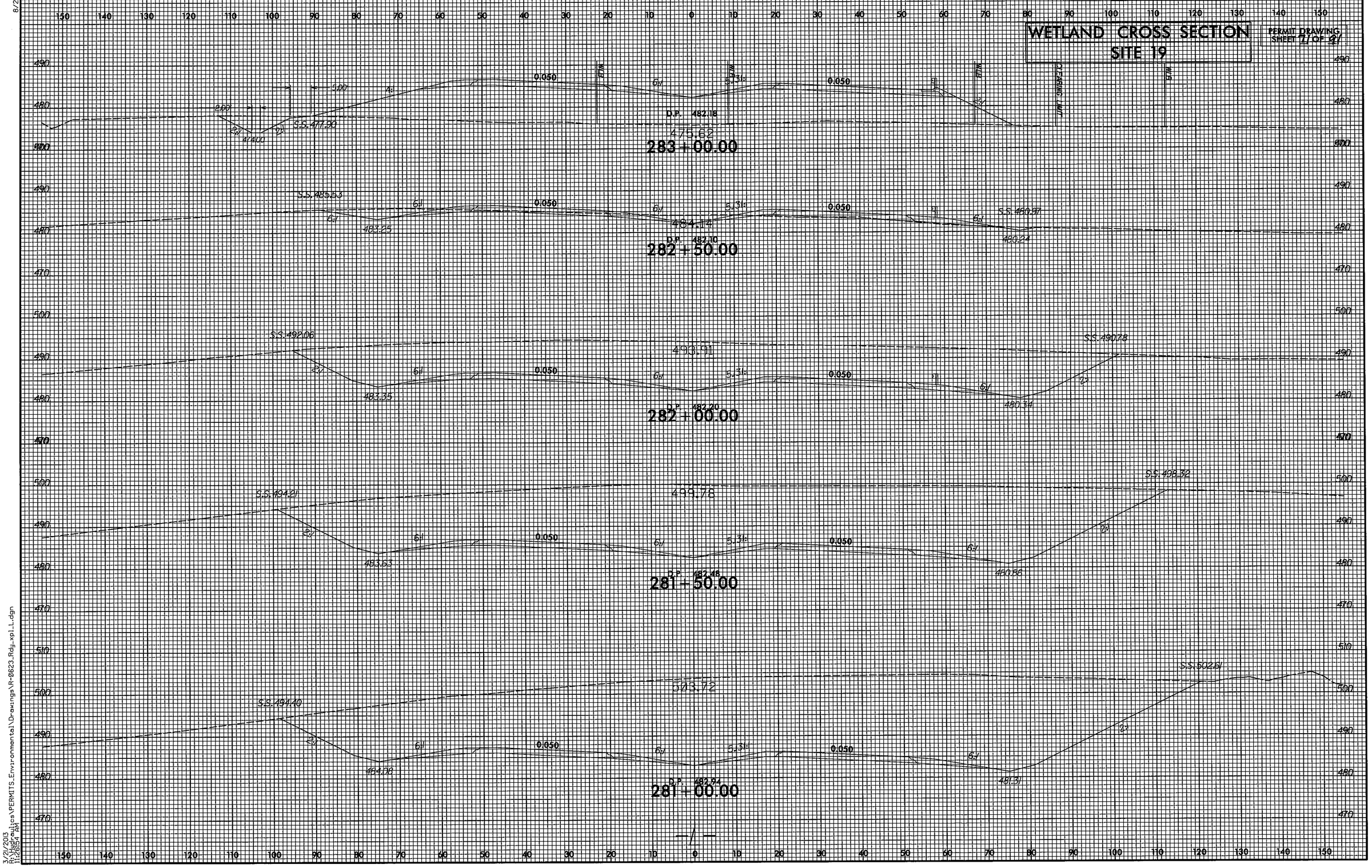
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-134

WETLAND CROSS SECTION
SITE 19

PERMIT DRAWING SHEET 21 OF 21



8/23/99

3/21/2013
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11:05:54 AM

PROJECT REFERENCE NO.	SHEET NO.
R-0623	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 48
FOR PROFILE OF LINE -Y10- SEE SHEET 53
FOR PROFILE OF LINE -Y10A- SEE SHEET 55

PERMIT DRAWING SHEET 72 OF 91

5" MONOLITHIC CONC. ISLAND

77 UNITED STATES OF AMERICA
56 FAMILY WORSHIP MINITRIES, INC.
59 TOWN OF TROY
54 TRUSTEES OF CALVARY TEMPLE
53
55 DANNY SEDBERRY
85 JEFFERY CALLICUTT
ALDENA LEE
57 GOLIA LOFLIN
58 RAJENDRA KALE
82 GOLIA LOFLIN
83 EARNEST HAYWOOD
84 GOLIA LOFLIN

GRADE EXISTING DITCH TO DRAIN TO PROPOSED DITCH
STANDARD BASE DITCH SEE DETAIL QQ EST. 218 CY DDE EST. 86 SY PSRM
CLASS B RIP RAP EST. 2 TONS EST. 7 SY GF
GRADE TO DRAIN
RETAIN EXISTING DITCH
LAT 'V' DITCH SEE DETAIL E
LAT 'V' DITCH SEE DETAIL BB
SPECIAL CUT DITCH SEE DETAIL PP
LAT 'V' DITCH SEE DETAIL JJ
BERM DITCH SEE DETAIL AA
BERM DITCH SEE DETAIL P
DITCH LINER SEE DETAIL Q
SITE 20
NOTE: NO ELECTRONIC INFORMATION OBTAINED OR RECORD INFORMATION FOUND FOR CUT TELEPHONE LINES WHICH WERE RECORDED IN THE PEDESTAL. LINES OBSERVED IN THE PEDESTAL. LINES TO DEPICT THESE LINES.
WM NO ASSOCIATED PIPING FOUND
USFS REFERENCE MONUMENT
MATCH LINE -L- STA 307+50 SEE SHEET 26
MATCH LINE -L- STA 320+50 SEE SHEET 28
NAD 83/95
S 11°32' 48.9" W
N 56°28' 08.9" W

DENOTES FILL IN WETLAND

GRAPHIC SCALE 100' 0' 100' 200' 300'

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

GLEN RD.
NC 24/27 TROY BYPASS
HOLLY HILLS DR.
-L- 12,100 / 17,300 — 12,641 / 18,200
-Y10- SR 1324 731 / 1,000; 100 / 100; 631 / 900
-Y10- SR 1586 100 / 100; 110 / 200; 210 / 300
ADT 2014
ADT 2040

DETAIL A
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow; 10:1; 20:1; 2.0'; 0.5' Min. 1.0' Max.; GI etc.
S = Ditch Slope ℄ Proposed Ditch
FROM STA. 313+65 RT
FROM STA. 315+60 RT
FROM STA. 320+00 RT

DETAIL C
FALSE SUMP
(Not to Scale)
Median Ditch; 9"; 2'; 20'; L (See Chart Below); GI etc.
S = Ditch Slope ℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 313+65 CL

REVISIONS

8/17/99

11/5/2013
R:\Roadway\Proj\R0623_hyd_prm_psh_s27.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-0623	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 48
FOR PROFILE OF LINE -Y10- SEE SHEET 53
FOR PROFILE OF LINE -Y10A- SEE SHEET 55

PERMIT DRAWING SHEET 73 OF 91

5" MONOLITHIC CONC. ISLAND

77 UNITED STATES OF AMERICA
56 FAMILY WORSHIP MINTRIES, INC.
59 TOWN OF TROY
54 TRUSTEES OF CALVARY TEMPLE
53
55 DANNY SEDBERRY
85 JEFFERY CALLICUTT
ALDENA LEE
57 GOLIA LOFLIN
58 RAJENDRA KALE
82 GOLIA LOFLIN
83 EARNEST HAYWOOD
84 GOLIA LOFLIN

SITE 20

GRADE EXISTING DITCH TO DRAIN TO PROPOSED DITCH
STANDARD BASE DITCH SEE DETAIL QQ EST. 218 CY DDE EST. 86 SY PSRM
CLASS B RIP RAP EST. 2 TONS EST. 7 SY GF
GRADE TO DRAIN
RETAIN EXISTING DITCH
REMOVE
RETAIN
LAT 'V' DITCH SEE DETAIL E
LAT 'V' DITCH SEE DETAIL BB
SPECIAL CUT DITCH SEE DETAIL PP
LAT 'V' DITCH SEE DETAIL JJ
BERM DITCH SEE DETAIL AA
BERM DITCH SEE DETAIL P
DITCH LINER SEE DETAIL Q
NOTE: NO ELECTRICAL INFORMATION OBTAINED OR RECORD INFORMATION AVAILABLE FOR CUT TELEPHONE LINES OBSERVED IN THE PEDESTAL. UNABLE TO DEPICT THESE LINES.
WM NO ASSOCIATED PIPING FOUND
USFS REFERENCE MONUMENT
MATCH LINE -L- STA 307+50 SEE SHEET 26
MATCH LINE -L- STA 320+50 SEE SHEET 28
NAD 83/95
S 11° 32' 48.9" W
N 55° 28' 00.4" W

DENOTES FILL IN WETLAND

100' 0' 100' 200' 300'
GRAPHIC SCALE

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

GLEN RD.
NC 2427 TROY BYPASS
HOLLY HILLS DR.
ADT 2014
ADT 2040

DETAIL A
FALSE SUMP (Not to Scale)
Outside Ditch Traffic Flow
S = Ditch Slope
℄ Proposed Ditch
FROM STA. 313+65 RT
FROM STA. 315+60 RT
FROM STA. 320+00 RT

DETAIL C
FALSE SUMP (Not to Scale)
Median Ditch
L (See Chart Below)
S = Ditch Slope
℄ Proposed Ditch

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 313+65 CL

REVISIONS
8/17/99

11/5/2013
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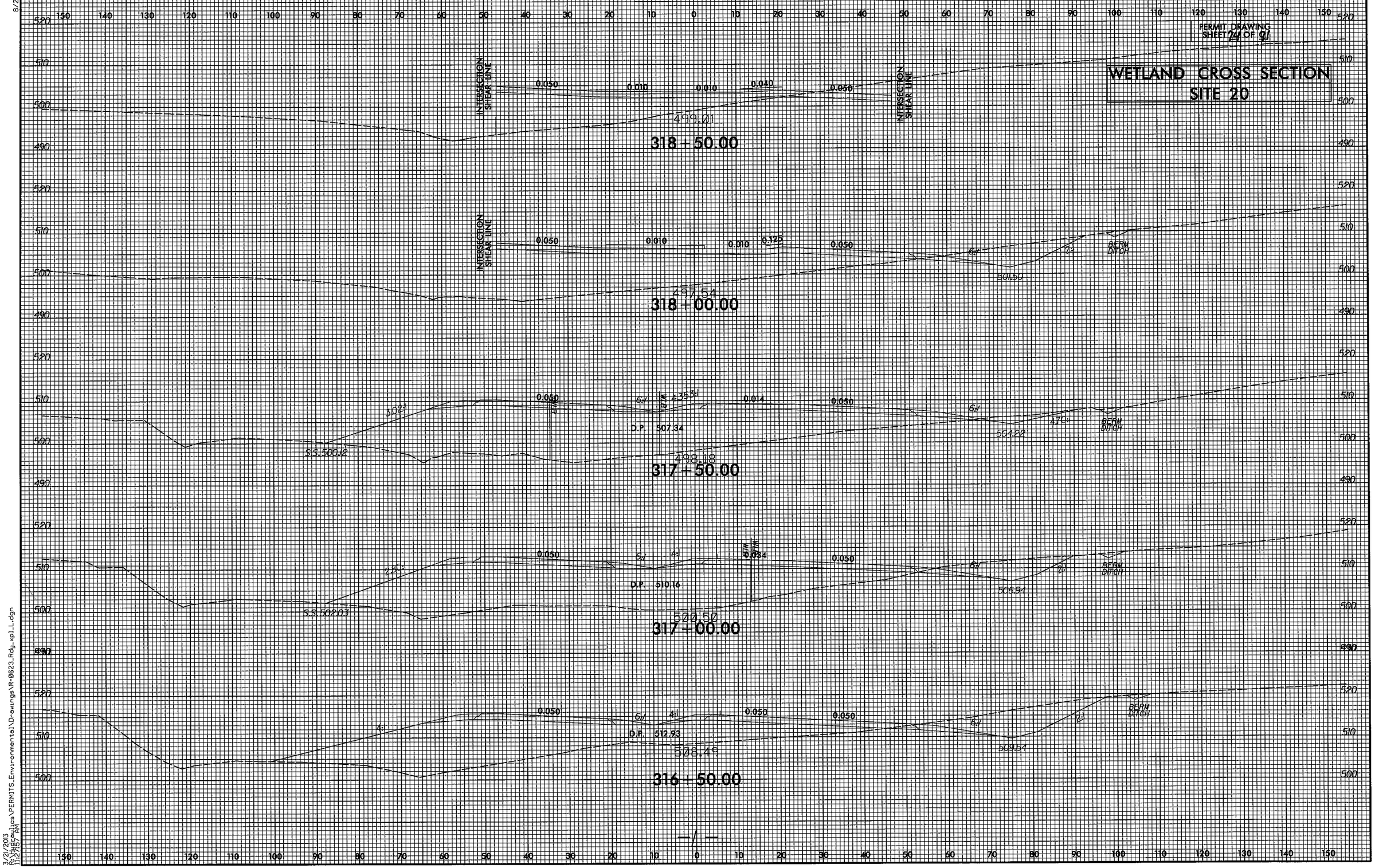
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-0623	X-150

PERMIT DRAWING
SHEET 24 OF 91

WETLAND CROSS SECTION
SITE 20



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3/21/2013
11:12:57 AM
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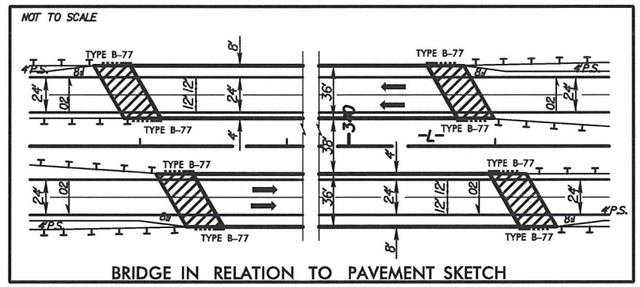
PROJECT REFERENCE NO.	SHEET NO.
R-0623	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

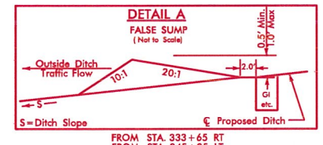
FOR PROFILE OF LINE -L- SEE SHEET 49

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

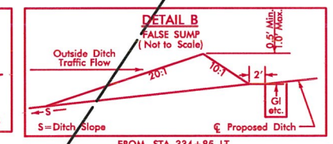
PERMIT DRAWING SHEET 75 OF 91



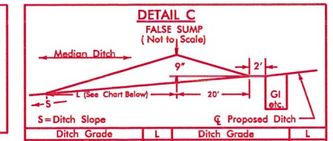
BRIDGE IN RELATION TO PAVEMENT SKETCH



FROM STA. 333+65 RT
FROM STA. 345+85 LT



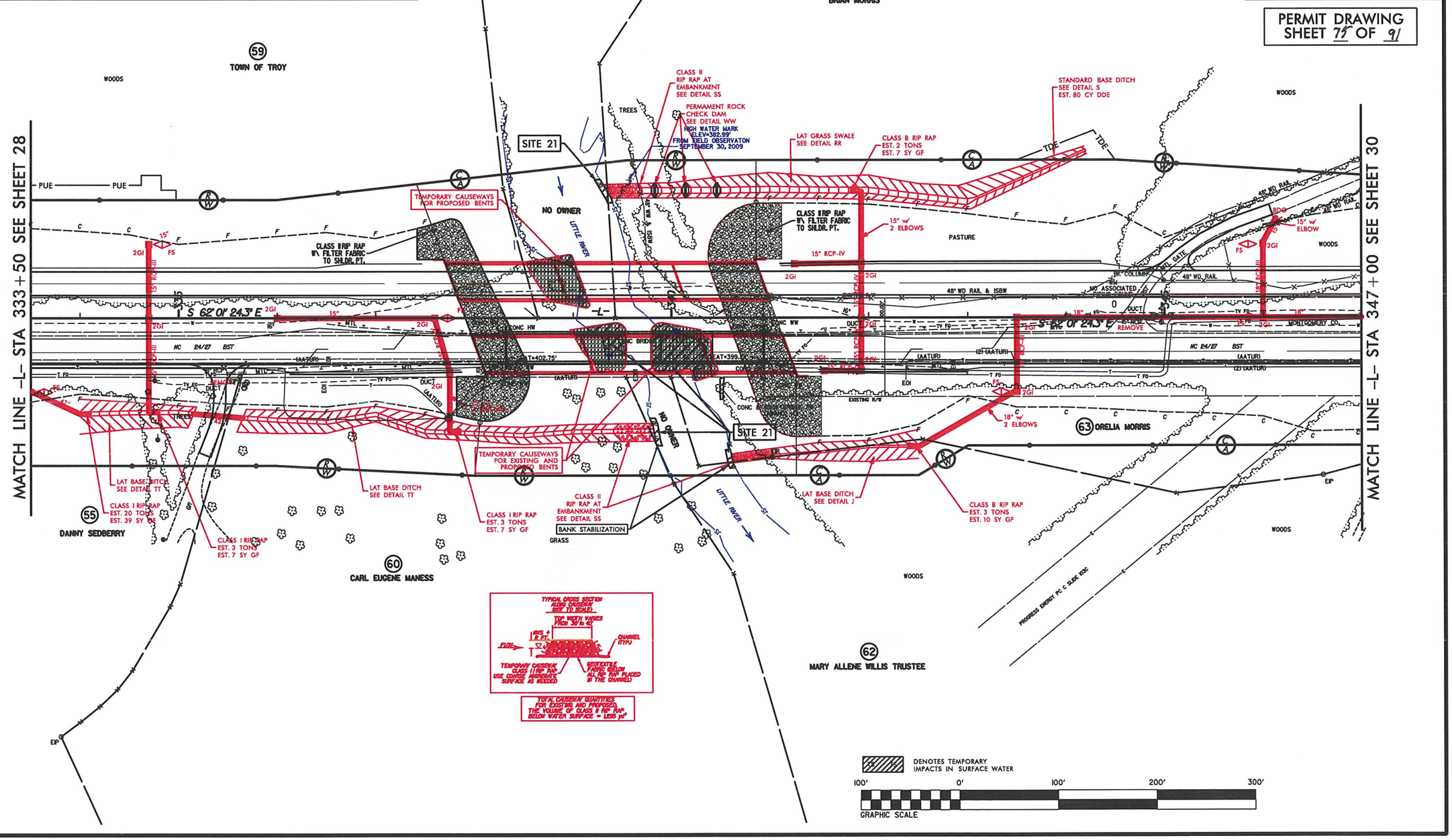
FROM STA. 334+85 LT
FROM STA. 343+35 RT



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 337+75 CL
FROM STA. 345+85 CL

NAD 83/95



REVISIONS

8/17/99

12/4/2013
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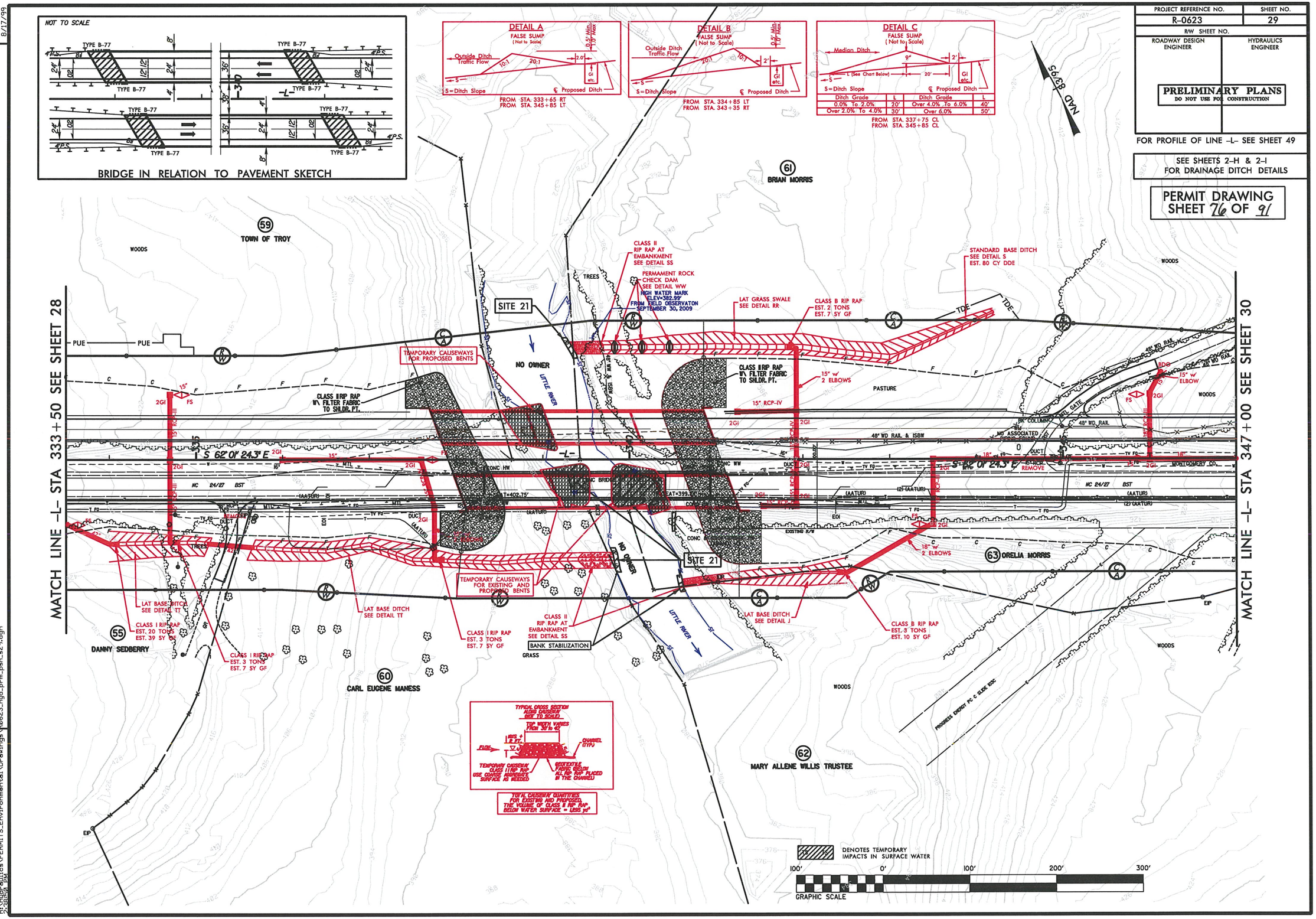
PROJECT REFERENCE NO.	SHEET NO.
R-0623	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 49

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 76 OF 91



REVISIONS 8/17/99

12/4/2013
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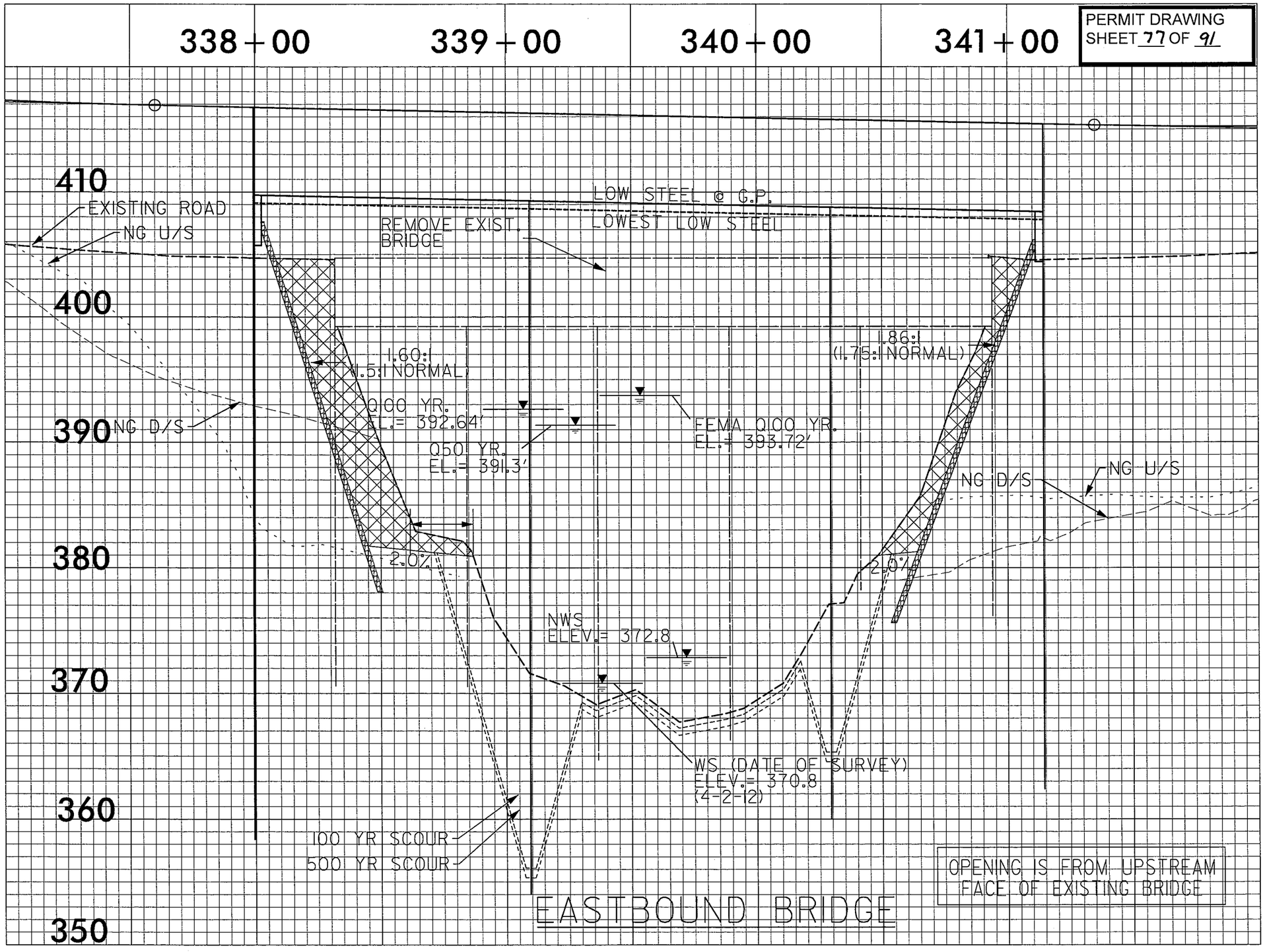
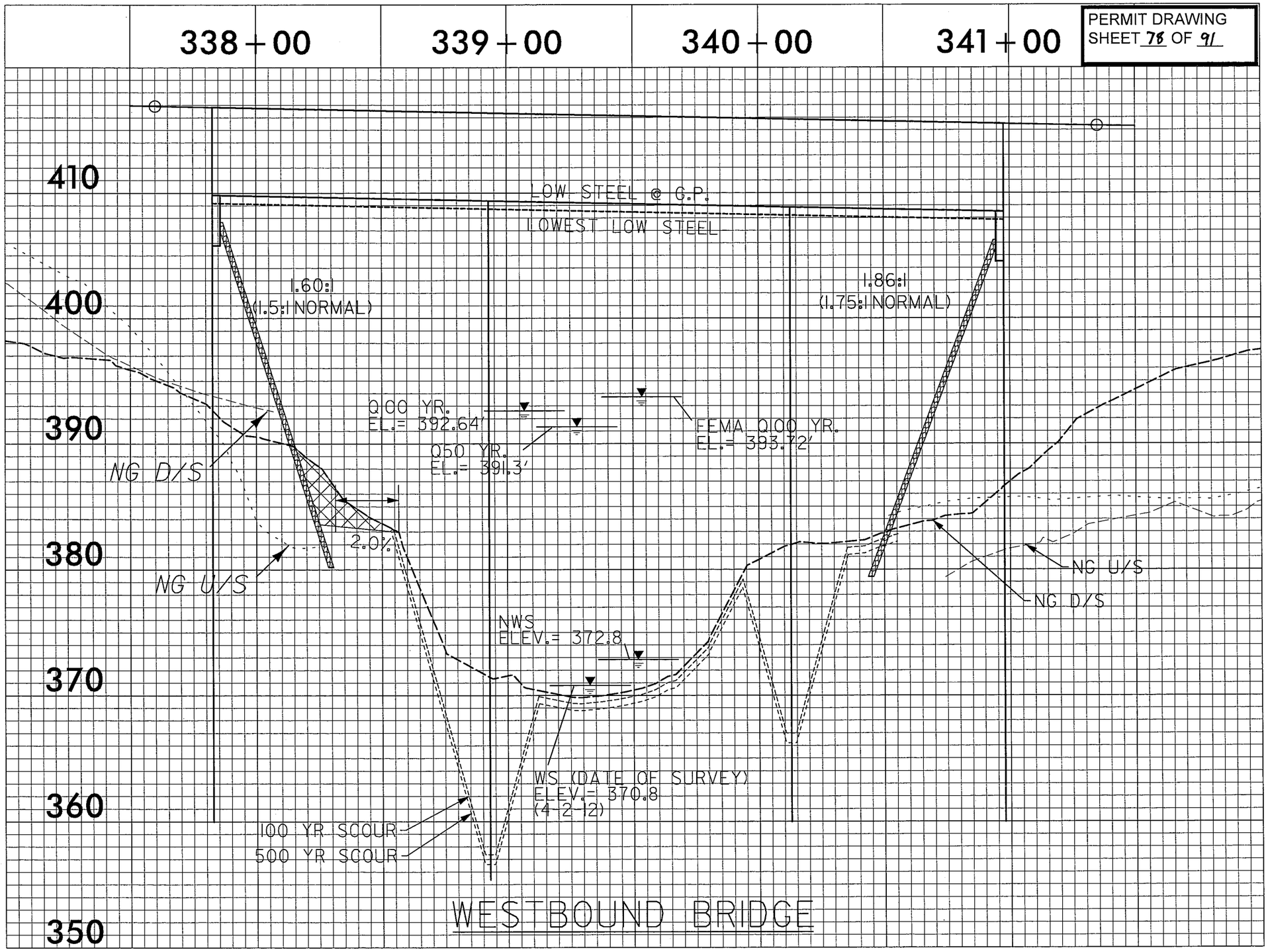
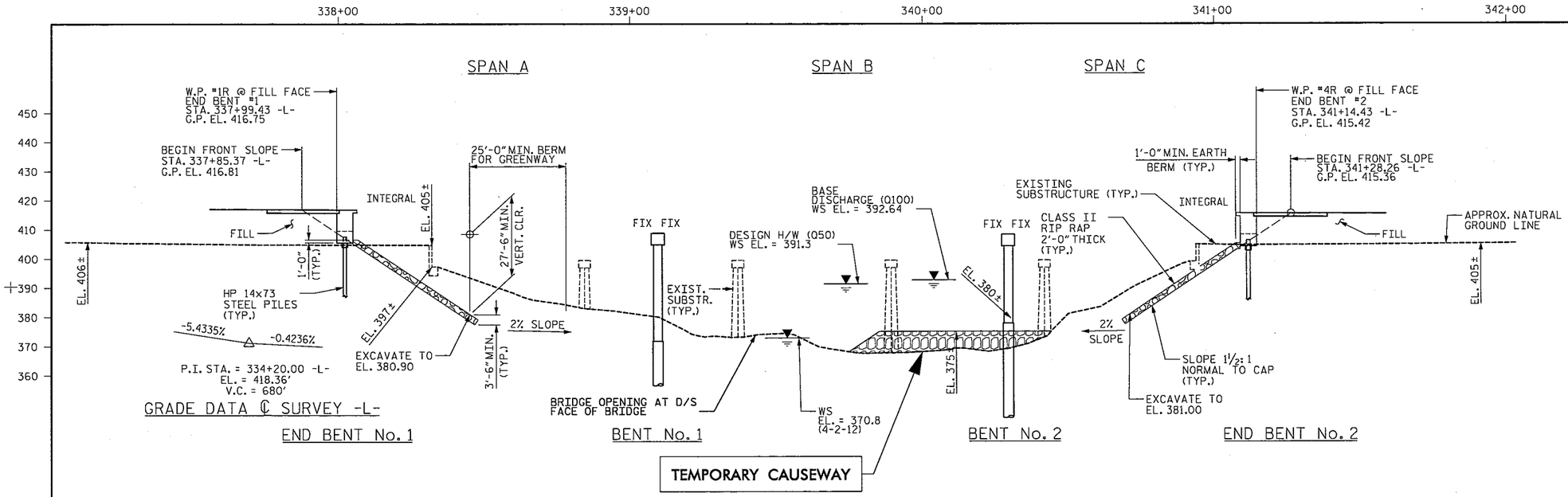

PERMIT DRAWING
SHEET 77 OF 91
338+00
339+00
340+00
341+00
410
400
390
380
370
360
350
EXISTING ROAD
NG U/S
NG D/S
LOW STEEL @ G.P.
LOWEST LOW STEEL
REMOVE EXIST. BRIDGE
1.60:1
(1.5:1 NORMAL)
1.86:1
(1.75:1 NORMAL)
Q100 YR.
EL.= 392.64'
Q50 YR.
EL.= 391.3'
FEMA Q100 YR.
EL.= 393.72'
NG D/S
NG U/S
2.0%
2.0%
NWS
ELEV.= 372.8
WS (DATE OF SURVEY)
ELEV.= 370.8
(4-2-12)
100 YR SCOUR
500 YR SCOUR
OPENING IS FROM UPSTREAM
FACE OF EXISTING BRIDGE
EASTBOUND BRIDGE


PERMIT DRAWING
SHEET 78 OF 91
338+00
339+00
340+00
341+00
410
400
390
380
370
360
350
LOW STEEL @ G.P.
LOWEST LOW STEEL
1.60:1
(1.5:1 NORMAL)
1.86:1
(1.75:1 NORMAL)
Q100 YR.
EL.= 392.64'
Q50 YR.
EL.= 391.3'
FEMA Q100 YR.
EL.= 393.72'
NG D/S
NG U/S
2.0%
NWS
ELEV.= 372.8
WS (DATE OF SURVEY)
ELEV.= 370.8
(4-2-12)
100 YR SCOUR
500 YR SCOUR
NG U/S
NG D/S
WESTBOUND BRIDGE

F.A. PROJECT NO.: STP-24(6)



SECTION ALONG GRADE LINE -EBL-

SECTIONS @ BENTS AND END BENTS ARE @ RIGHT ANGLES

HYDRAULIC DESIGN DATA

DESIGN DISCHARGE	14000 CFS.
FREQUENCY	50 YR.
DESIGN HIGH WATER EL.	391.3
DRAINAGE AREA	148.6 SQ. MI.
BASE DISCHARGE (Q100)	16000 CFS.
BASE HIGH WATER EL.	392.64

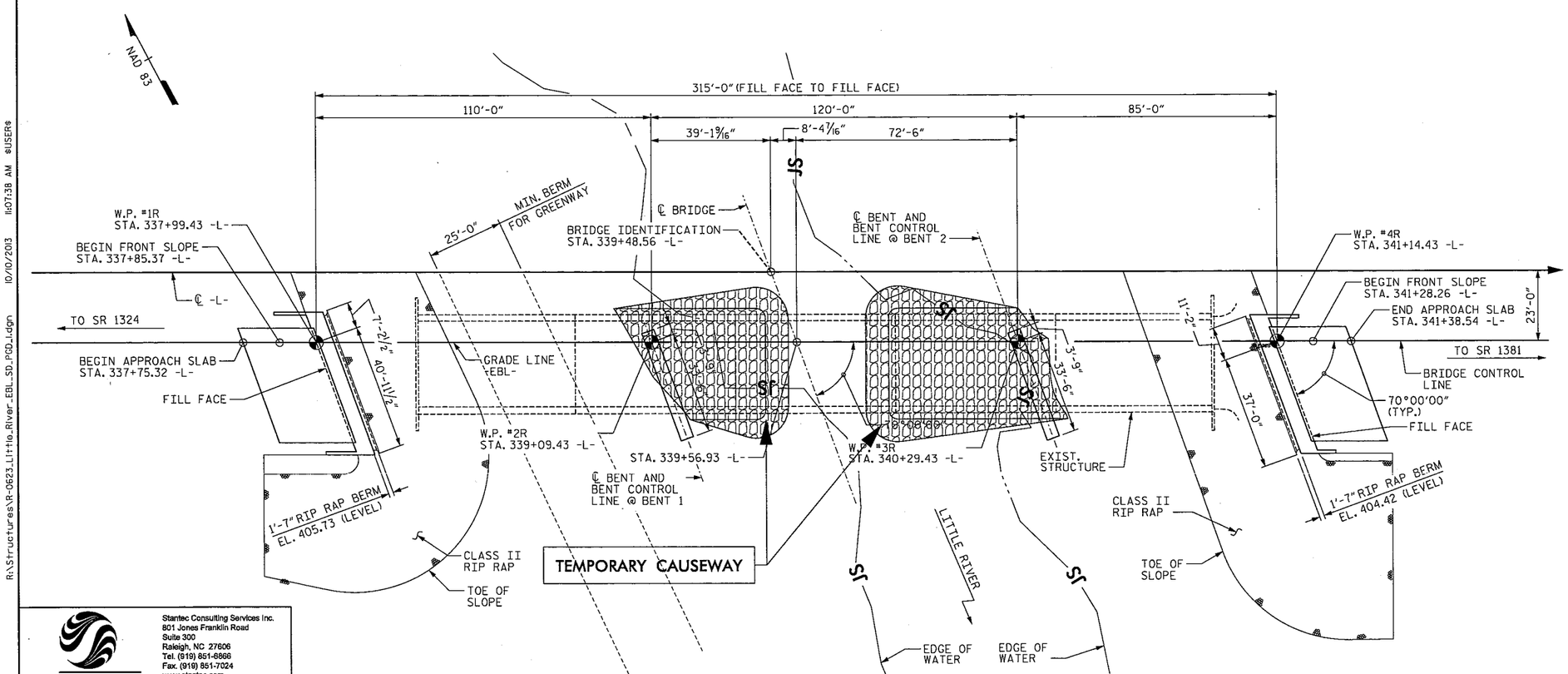
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	73000 CFS.
FREQUENCY	500+ YR.
OVERTOPPING EL.	415.21

PERMIT DRAWING SHEET 79 OF 91

NOTES:

BENTS AND END BENTS ARE PARALLEL.



PLAN ALONG -EBL-

PILES NOT SHOWN IN PLAN VIEW

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. R-0623

MONTGOMERY COUNTY

STATION: 339+48.56 -L-

1 REPLACES BRIDGE NO. 32

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY
GENERAL DRAWING
FOR BRIDGE ON NC 24/27 BYPASS EBL
OVER LITTLE RIVER
BETWEEN SR 1324 AND SR 1381

(EBL)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY: J. L. HENNEKES DATE: 05-28-13
CHECKED BY: T. R. DUDECK DATE: 09-19-13
DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05-14-13

R:\Structures\R-0623_Little_River_EBL_SD_PCD_1.dgn 10/10/2013 11:07:38 AM $USER$

STR. #4

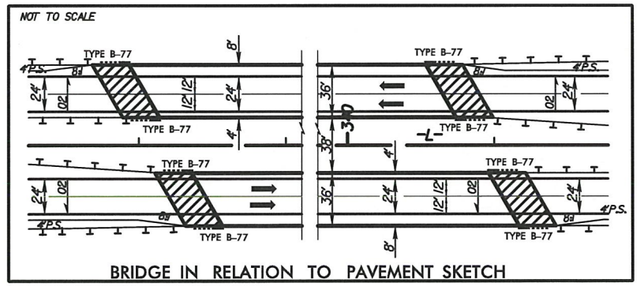
PROJECT REFERENCE NO.	SHEET NO.
R-0623	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

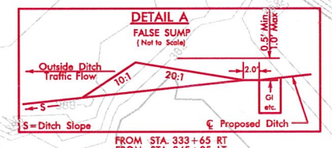
FOR PROFILE OF LINE -L- SEE SHEET 49

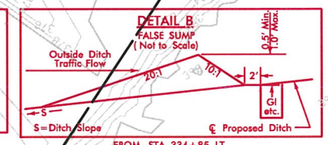
SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

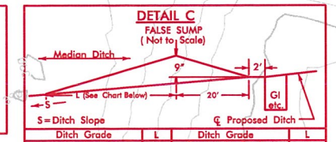
PERMIT DRAWING SHEET 80 OF 91



BRIDGE IN RELATION TO PAVEMENT SKETCH

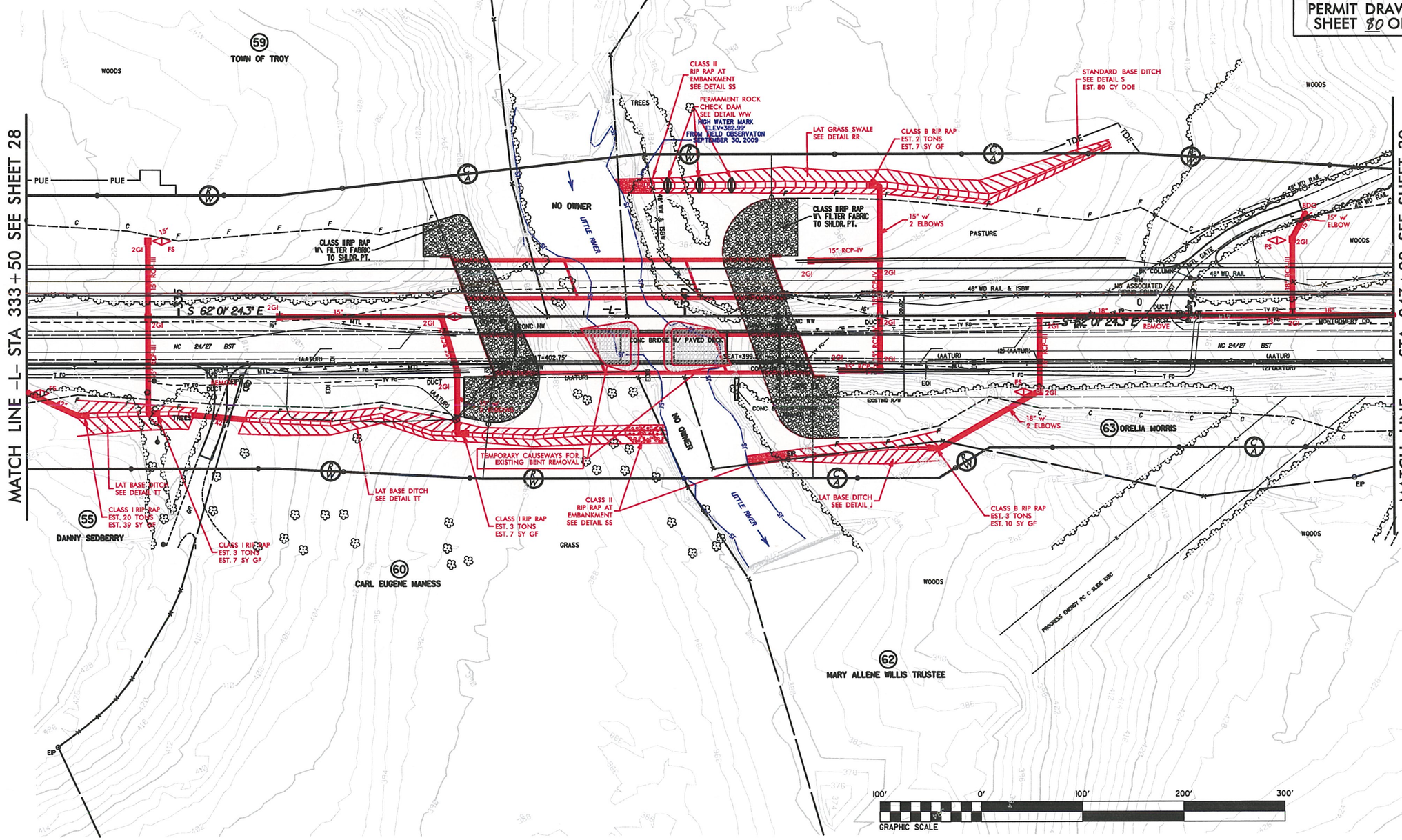






Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 337+75 CL
FROM STA. 345+85 CL



REVISIONS

8/17/99

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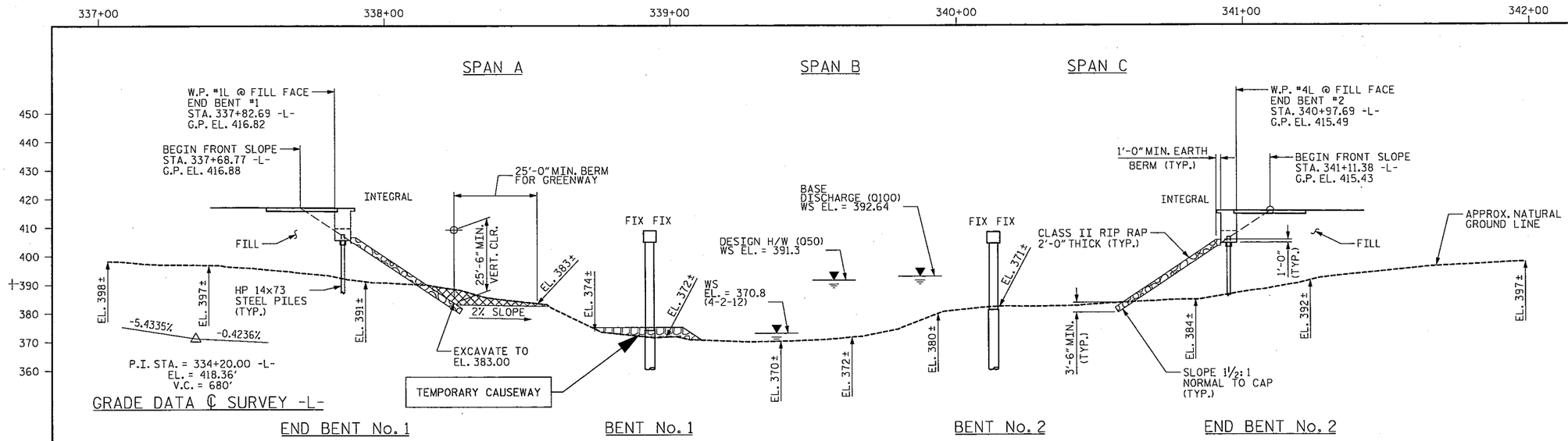
F.A. PROJECT NO.: STP-24(6)



SECTION ALONG GRADE LINE -WBL-

SECTIONS @ BENTS AND END BENTS ARE @ RIGHT ANGLES

HYDRAULIC DESIGN DATA

DESIGN DISCHARGE	14000 CFS.
FREQUENCY	50 YR.
DESIGN HIGH WATER EL.	391.3
DRAINAGE AREA	148.6 SQ. MI.
BASE DISCHARGE (Q100)	16000 CFS.
BASE HIGH WATER EL.	392.64

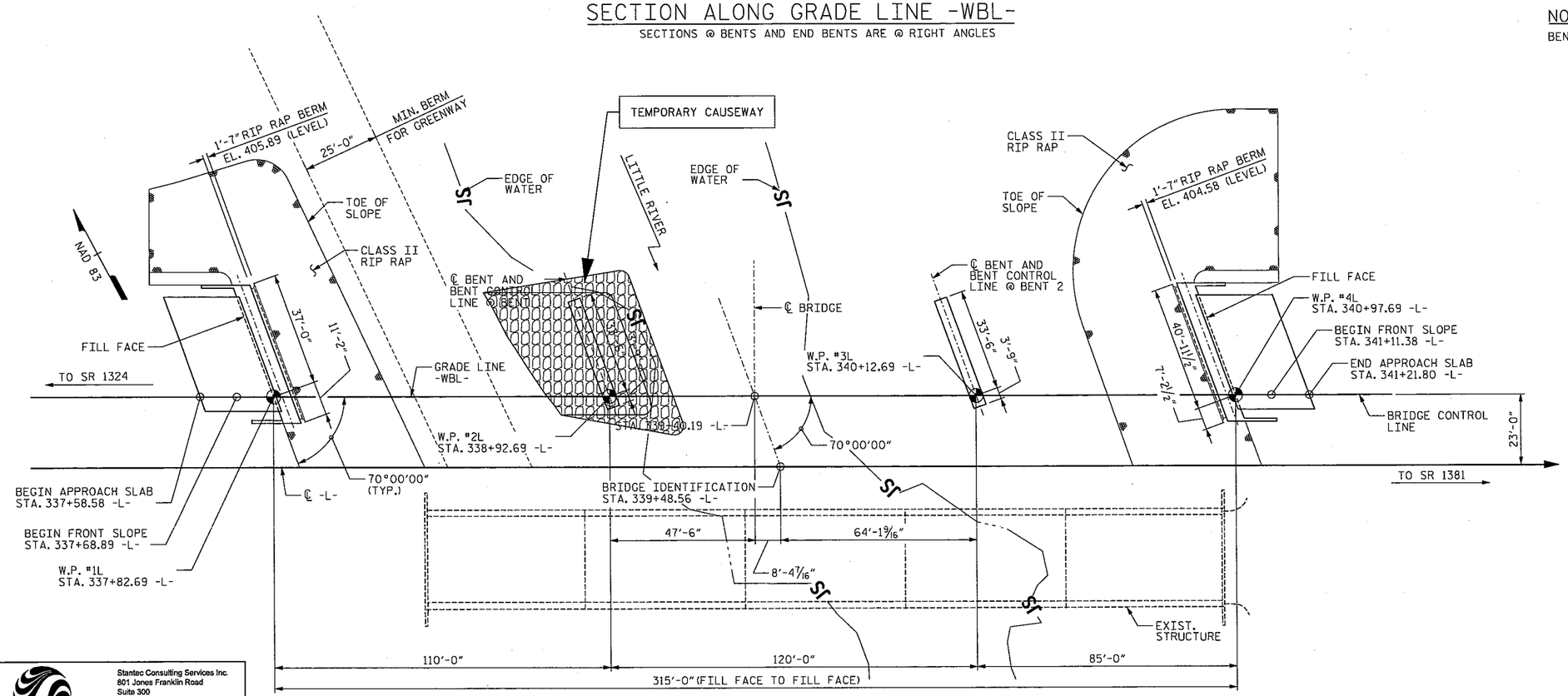
OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	73000 CFS.
FREQUENCY	500+ YR.
OVERTOPPING EL.	415.21

PERMIT DRAWING SHEET 81 OF 91

NOTES:

BENTS AND END BENTS ARE PARALLEL.



PLAN ALONG -WBL-

PILES NOT SHOWN IN PLAN VIEW

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT NO. R-0623

MONTGOMERY COUNTY

STATION: 339+48.56 -L-

1 BRIDGE NO. 266

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRELIMINARY
GENERAL DRAWING
FOR BRIDGE ON NC 24/27 BYPASS WBL
OVER LITTLE RIVER
BETWEEN SR 1324 AND SR 1381

(WBL)

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				TOTAL SHEETS
2			4				

STR. #3

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY : J. L. HENNEKES DATE : 05-28-13
CHECKED BY : T. R. DUDECK DATE : 09-19-13
DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE : 05-14-13

R:\Structures\R-0623_Little_River_WBL_SD_PGD_1.dgn 10/10/2013 10:57:17 AM $USER$

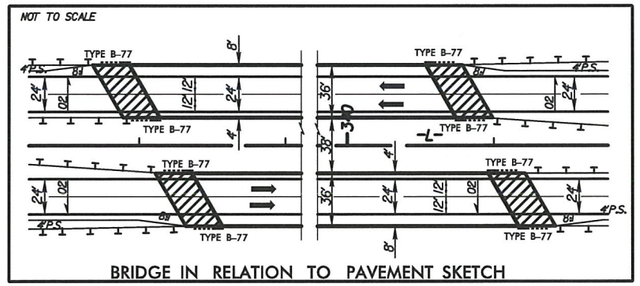
PROJECT REFERENCE NO.	SHEET NO.
R-0623	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

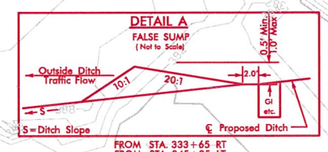
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

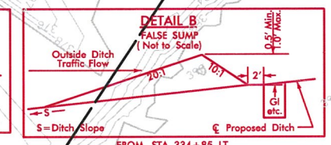
FOR PROFILE OF LINE -L- SEE SHEET 49

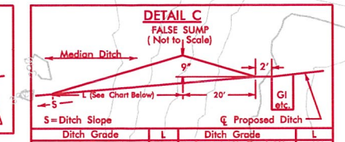
SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 82 OF 91



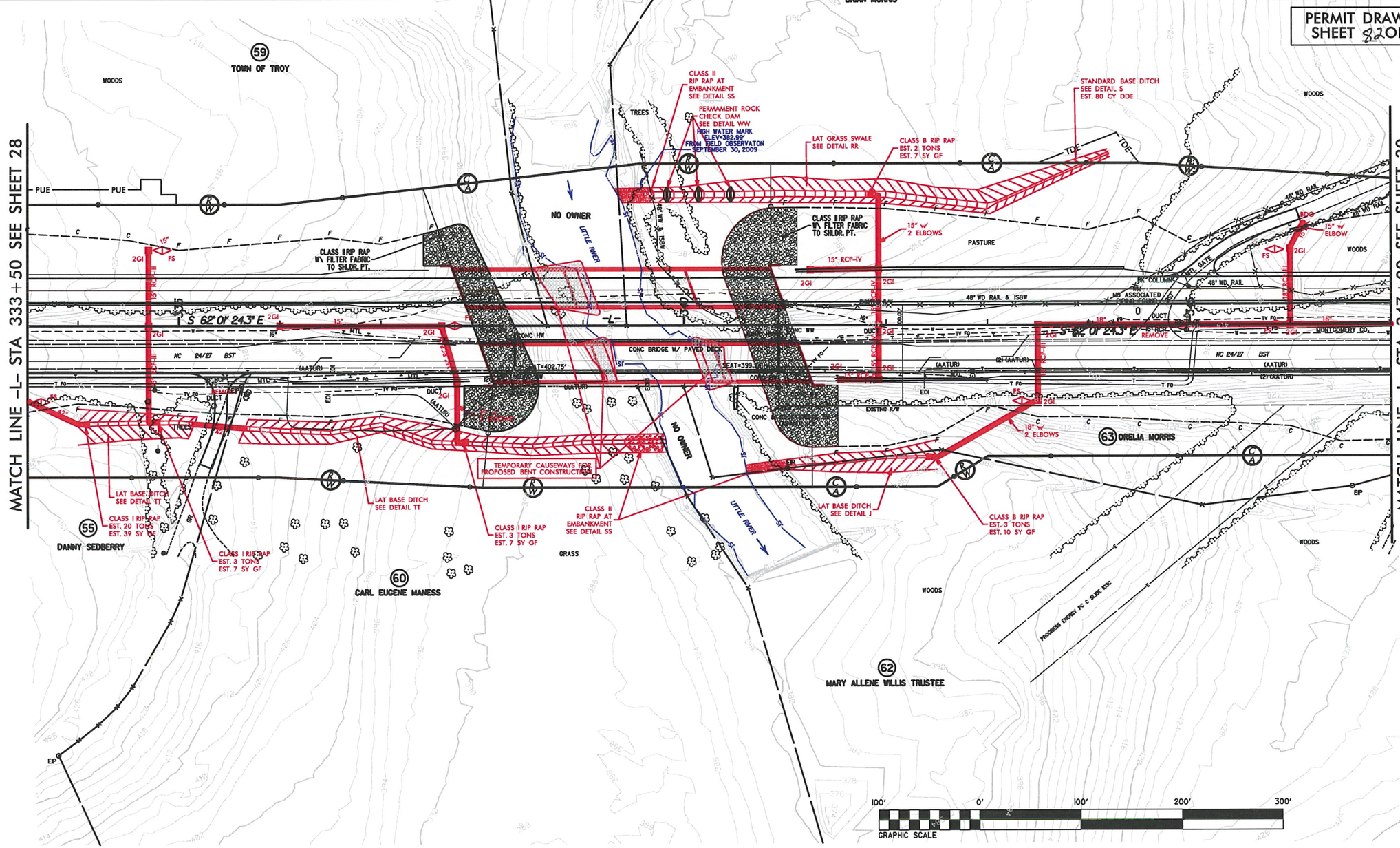






Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 337+75 CL
FROM STA. 345+85 CL



REVISIONS

8/17/99

12/4/2013
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3:02PM EST RM

PROJECT REFERENCE NO.	SHEET NO.
R-0623	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

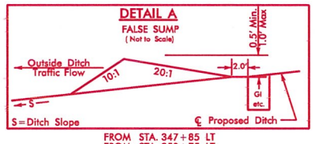
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 49 AND 50

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

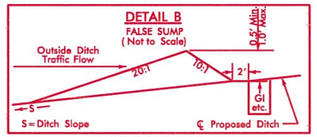
PERMIT DRAWING SHEET 83 OF 91

DETAIL A
FALSE SUMP
(Not to Scale)



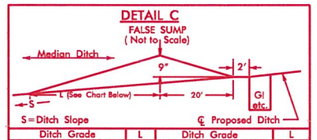
FROM STA. 347+85 LT
FROM STA. 350+75 LT
FROM STA. 352+35 LT
FROM STA. 358+15 LT
FROM STA. 359+35 LT

DETAIL B
FALSE SUMP
(Not to Scale)



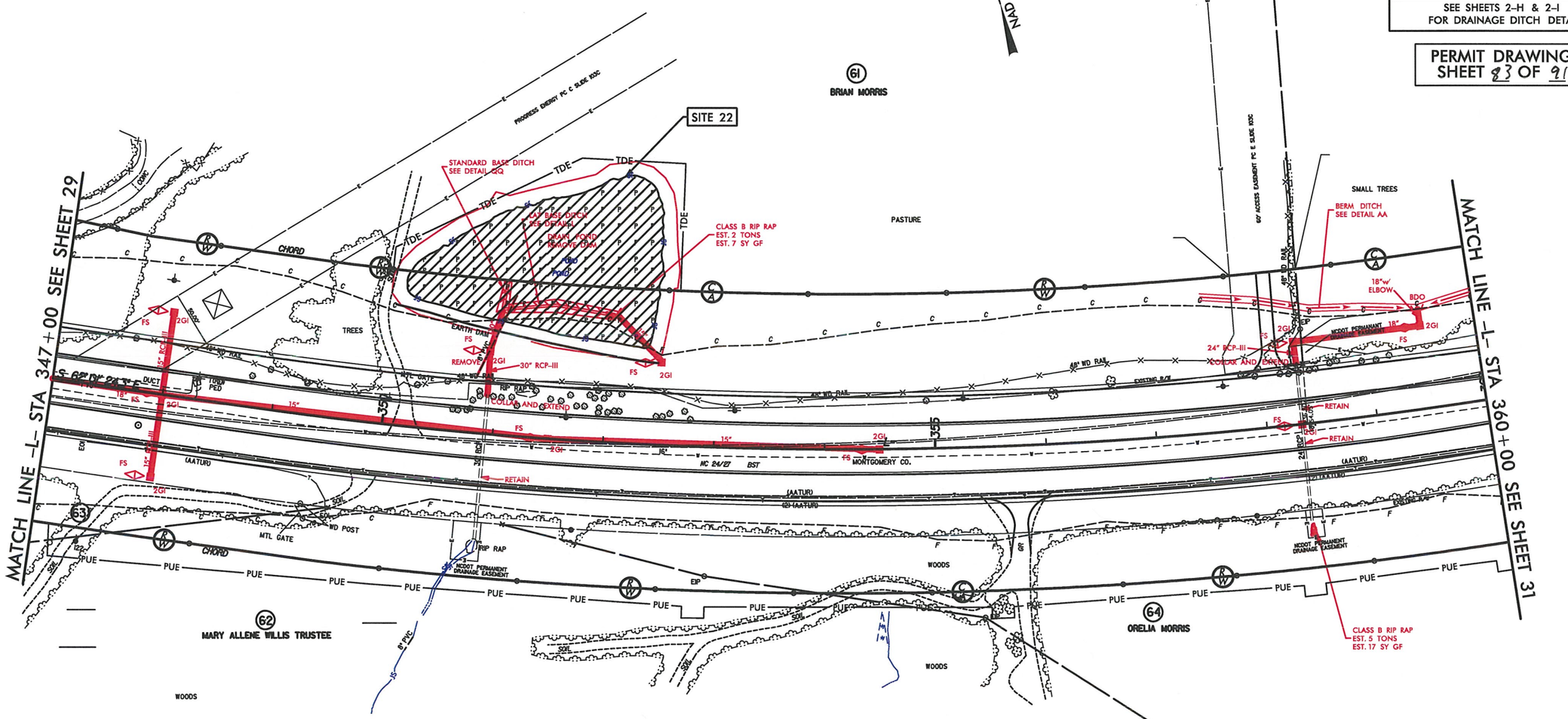
FROM STA. 347+85 RT

DETAIL C
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 347+85 CL
FROM STA. 351+35 CL
FROM STA. 354+35 CL
FROM STA. 358+15 CL



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER (POND)

100' 0' 100' 200' 300'
GRAPHIC SCALE

REVISIONS

8/17/99

8/14/2013
6:28:52 PM
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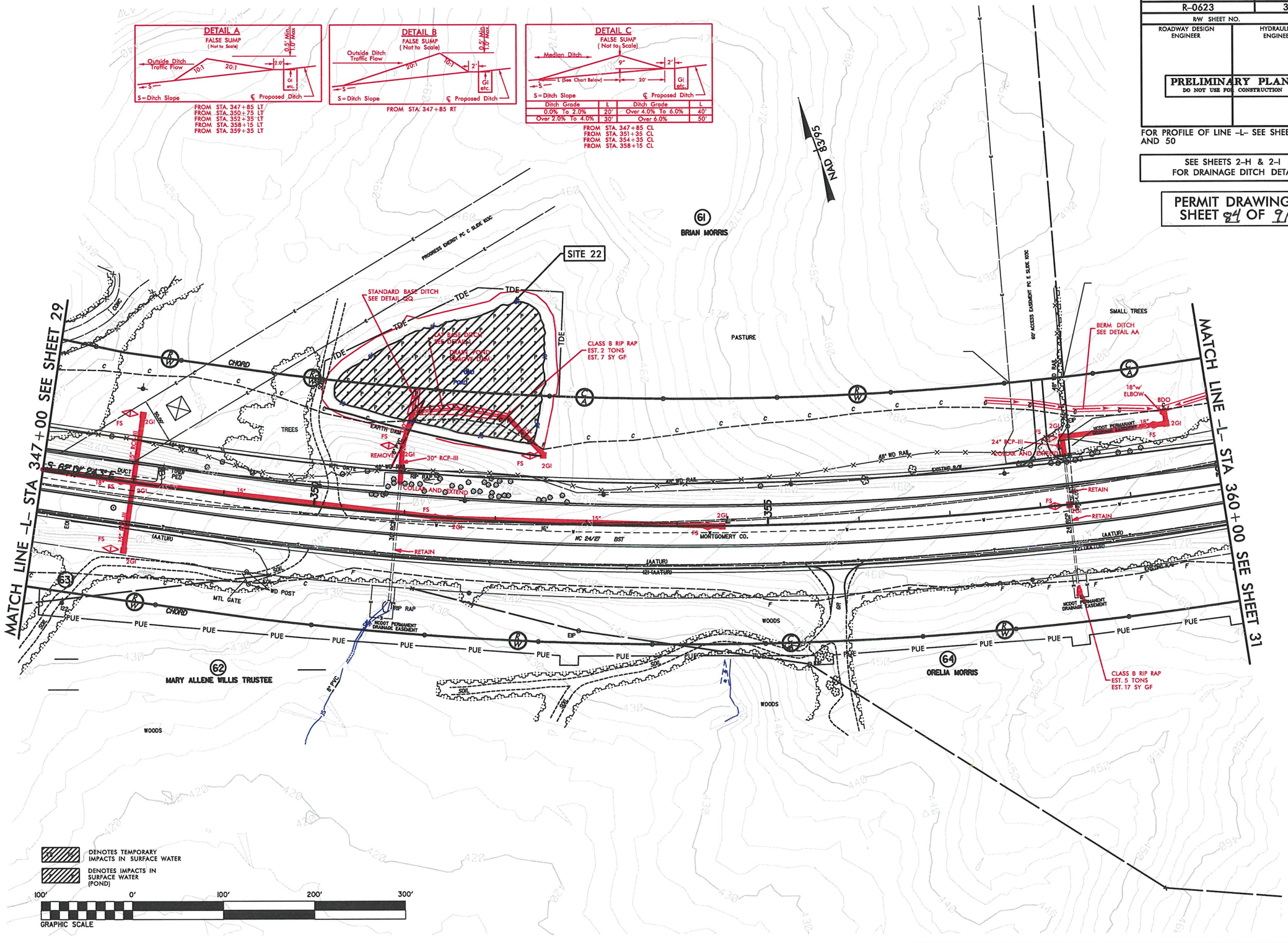
PROJECT REFERENCE NO.	SHEET NO.
R-0623	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 49 AND 50

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 84 OF 91



REVISIONS

8/17/99

6/14/2013
R:\Roadway\Proj\R0623_Lics\PERMITS_Environmental\Drawings\R0623_hyd_prm_psh_s30.dgn
6:29:56 PM

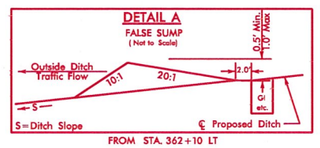
PROJECT REFERENCE NO.	SHEET NO.
R-0623	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

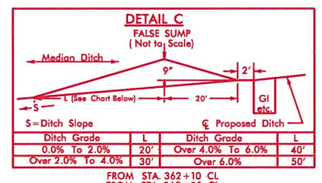
FOR PROFILE OF LINE -L- SEE SHEET 50

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 85 OF 91



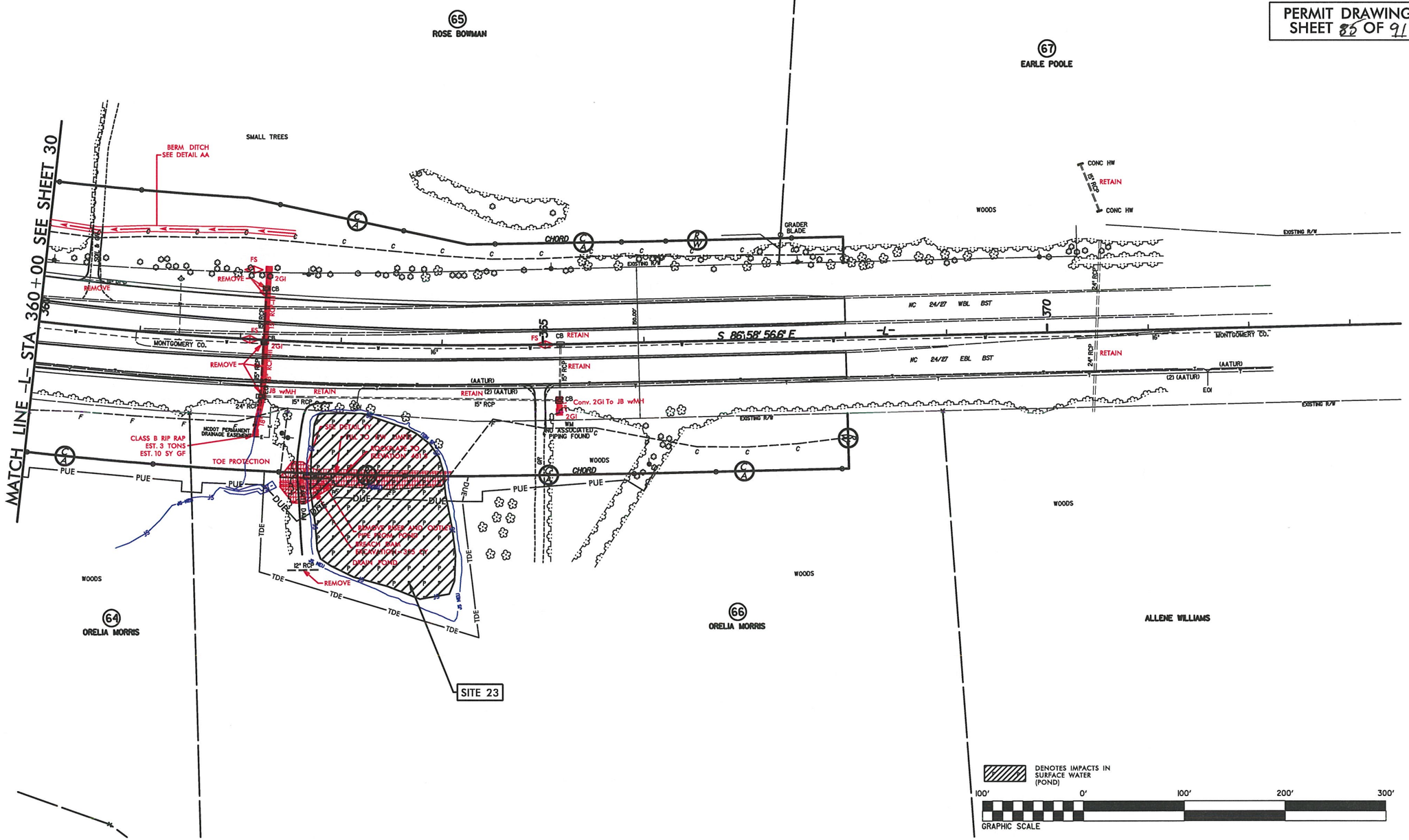
FROM STA. 362+10 LT



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 362+10 CL
FROM STA. 365+00 CL

NAD 83/95



REVISIONS

8/17/99

R2/2013
13:06:PM
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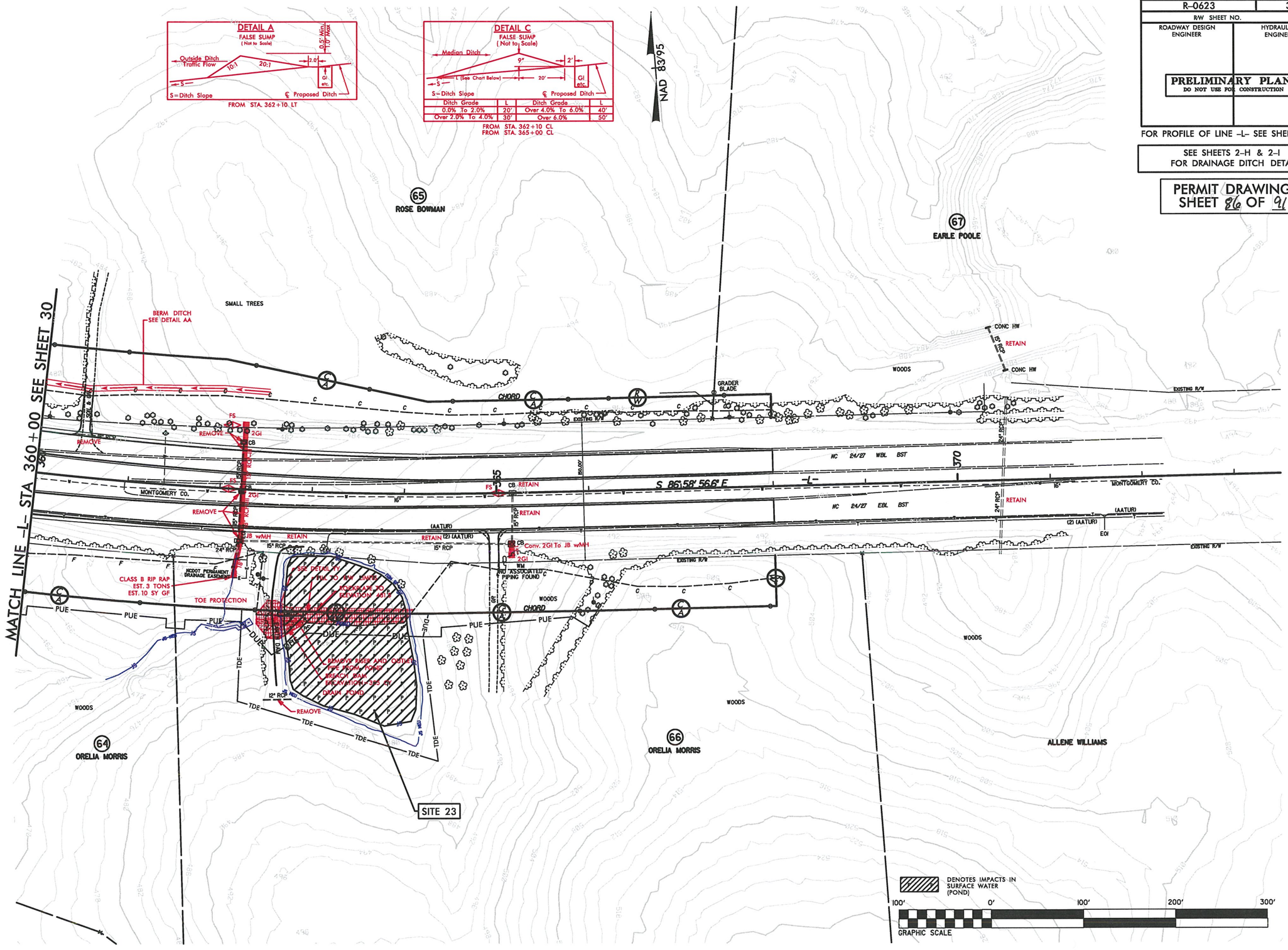
PROJECT REFERENCE NO.	SHEET NO.
R-0623	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 50

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING SHEET 86 OF 91



REVISIONS

8/17/99

12/2/2013
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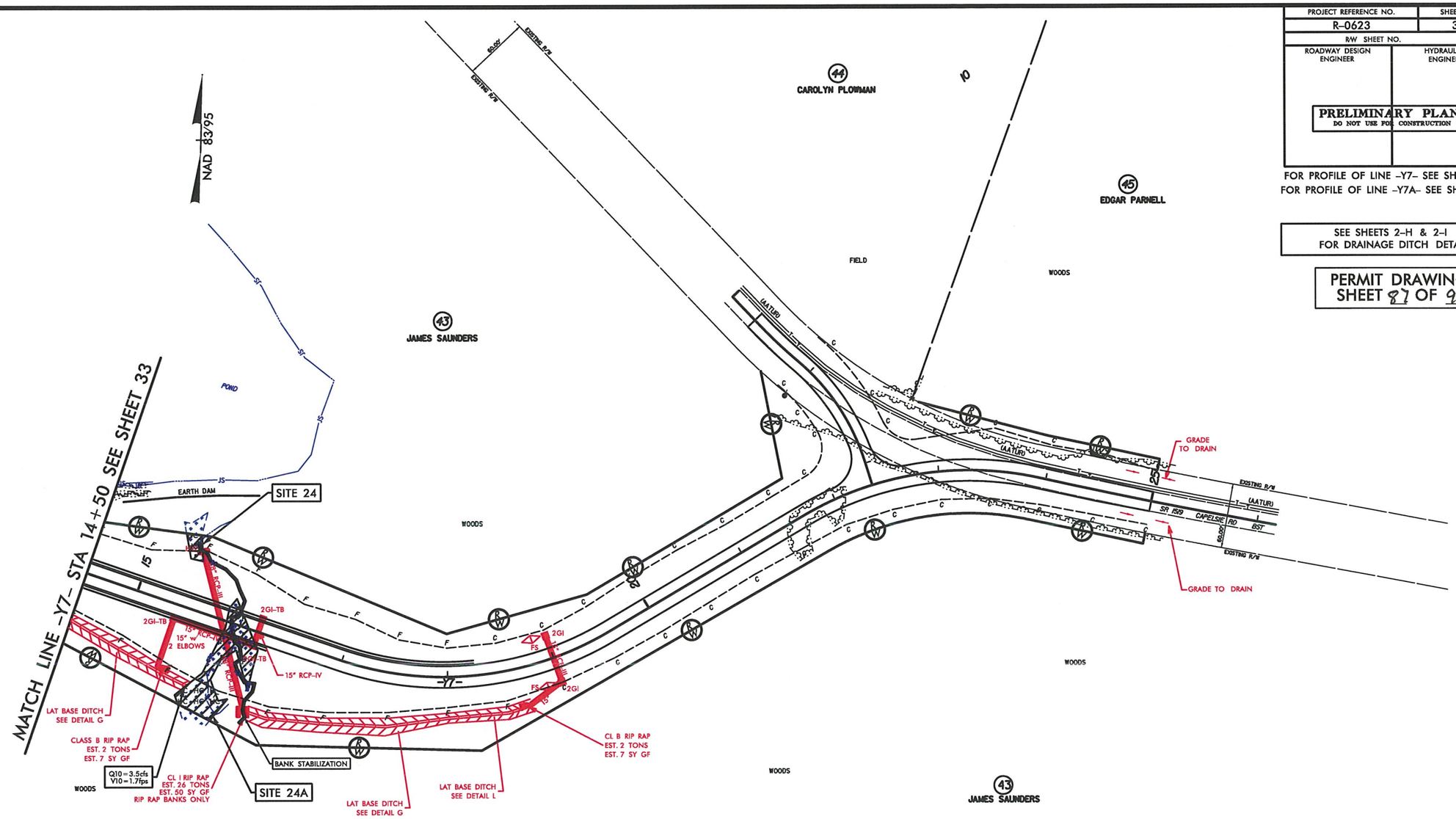
PROJECT REFERENCE NO.	SHEET NO.
R-0623	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -Y7- SEE SHEET 52
FOR PROFILE OF LINE -Y7A- SEE SHEET 55

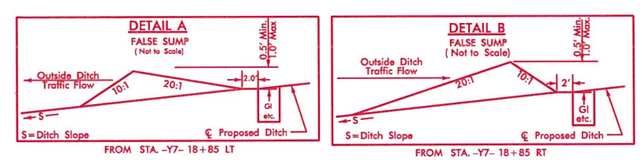
SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 87 OF 91



DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100' 200' 300'
GRAPHIC SCALE



REVISIONS

8/17/99

6/14/2013
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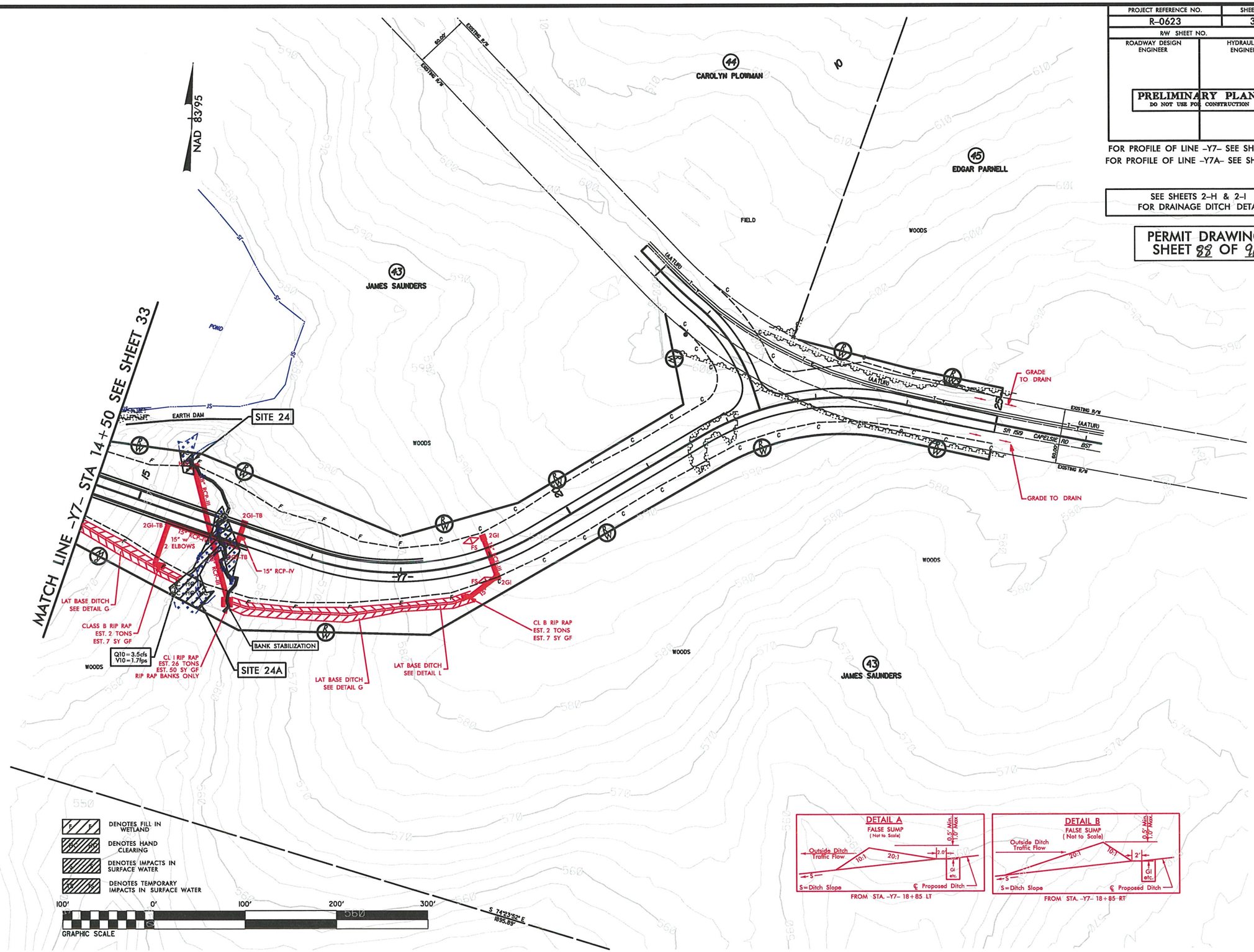
PROJECT REFERENCE NO.	SHEET NO.
R-0623	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -Y7- SEE SHEET 52
FOR PROFILE OF LINE -Y7A- SEE SHEET 55

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PERMIT DRAWING
SHEET 88 OF 91



REVISIONS

8/17/99

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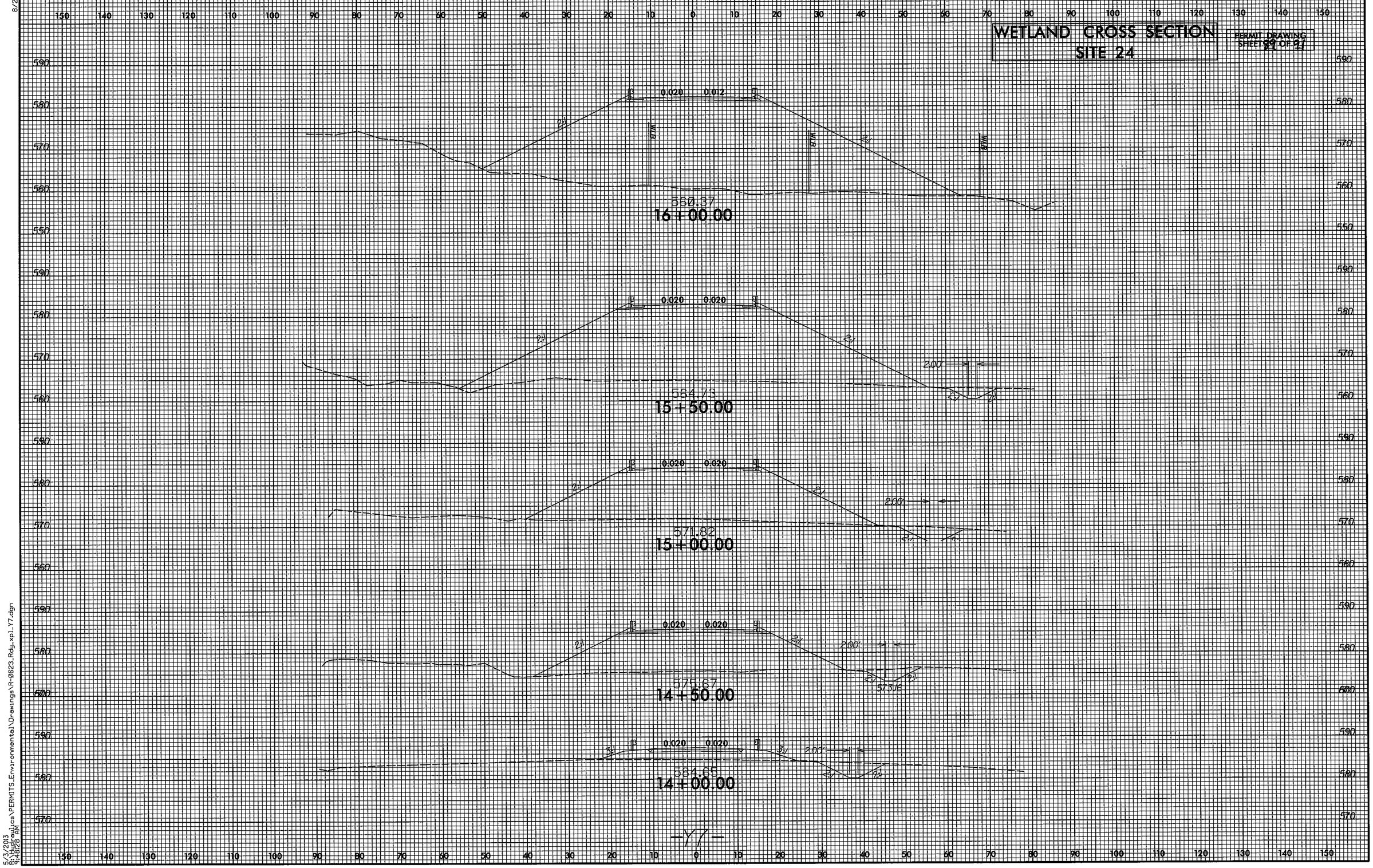
8:30:39 PM

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
R-0623	X-190

WETLAND CROSS SECTION
SITE 24

PERMIT DRAWING
SHEET 22 OF 21



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WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	L2 26+14 to 28+48	Roadway Fill	0.13				0.02	0.01	<0.01	136	16	
		Bank Stabilization							<0.01	11		
2	L 30+39 to 30+81 Rt	15"			<0.01		<0.01	<0.01	<0.01	39	34	
3	L 53+20 to 55+42	2@8'x6' RCBC			0.01		0.01	0.03	<0.01	294	24	
4	L 70+83 to 73+70	60" RCP IV	0.02				0.06	0.01	<0.01	271	73	
5	L 75+30 to 84+50	2@10'x7' RCBC						0.05	<0.01	295	17	
		Bank Stabilization							0.01	62		
5A		Roadway Fill	0.04									
5B		Roadway Fill	0.01					0.02		500		
5C		Pond	0.02		0.02			0.34				
6	L 120+95 to 121+90 Lt	Roadway Fill	0.08									
7	L 122+87 to 123+78	Bank Stabilization							<0.01	43		
7A	L 124+42 Lt	Bank Stabilization							<0.01	16		
7B	L 124+91 to 128+04	Roadway Fill	0.16					0.02	<0.01	355	72	
8	L 131+38 to 132+10 Lt	Roadway Fill	<0.01				<0.01		<0.01		10	
9	L 137+97 to 138+55	Roadway Fill	0.03									
10	L 150+48 to Y6 11+00 Rt	Roadway Fill	0.14		<0.01		0.13					
11	L 187+35 to 188+66	96" RCP IV						0.03	0.01	322	83	
		Bank Stabilization							<0.01	15		
11A	L 187+80 to 187+98	Roadway Fill						0.01	0.02	91	41	
12	L 203+49 to 206+55	2@12'x8' RCBC						0.10	0.01	499	38	
13	L 228+85 to 229+98	Roadway Fill	0.05				0.04					
14	L 241+68 to 242+88	54" RCP IV						0.02	0.01	229	60	
		Bank Stabilization						<0.01		12		
15	L 250+61 to 251+71	66" RCP-IV						0.02	<0.01	370	31	
		Bank Stabilization							<0.01	13		
TOTALS:			0.68		0.03		0.26	0.68	0.07	3573	499	

Rounded totals are based on sum of actual impacts.

Stream Bank Stablization Sites 1-15 = 172 feet

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY
WBS - 34352.1.1 (R-0623)

SHEET 12/6/2013

ATN Revised 3/31/05

PERMIT DRAWING
SHEET 91 OF 91

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
16	L 262+36 to 264+32	30" RCP-III	0.14				0.01					
17	L 264+70 to 265+86	54" RCP-III	0.10		0.01		0.03	0.01	<0.01	280	57	
		Bank Stabilization							<0.01	21		
18	L269+62 to 272+04	42" RCP-III	0.11		<0.01		0.02	0.01	<0.01	297	44	
		Bank Stabilization							<0.01	22		
19	L 282+75 to 283+36	Roadway Fill	0.04									
19A	L 282+68 to 283+49	Roadway Fill	0.01				0.02					
19B	L 283+33 to 283+47	2@11'x7' RCBC							<0.01		17	
19C	L 283+47 to 284+20	2@11'x7' RCBC						0.05		340		
		Bank Stabilization							<0.01	9		
20	L 316+99 to 317+88	Roadway Fill	0.05									
21	L 338+46 to 340+55	Bank Stabilization							0.01	75		
		Causeways							0.08		112	
22	L 350+09 to 352+49 Lt	Pond						0.55				
23	L 362+75 to 364+14 Rt	Pond						0.48				
24	Y7 15+26 to 15+49 Lt	Roadway Fill	<0.01				<0.01					
24A	Y7 15+63 to 16+31	48" RCP	0.04				0.02	0.01	<0.01	240	18	
		Bank Stabilization							<0.01	10		
SHEET TOTALS (SITES 16-24A):			0.49		0.02		0.11	1.12	0.09	1294	248	
SHEET TOTALS (SITES 1-15):			0.68		0.03		0.26	0.68	0.07	3573	499	
TOTALS:			1.17		0.05		0.38	1.80	0.17	4867	747	

Rounded totals are based upon sum of actual impacts.

Stream Bank Stablization Sites 16-24A = 137 feet

An additional 0.03 acres of temporary wetland impacts in Hand Clearing areas is due to placement of Erosion Control measures.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY
WBS - 34352.1.1 (R-0623)

SHEET 12/6/2013

ATN Revised 3/31/05

T.I.P. NO.	SHEET NO.
R-0623	UEP-1

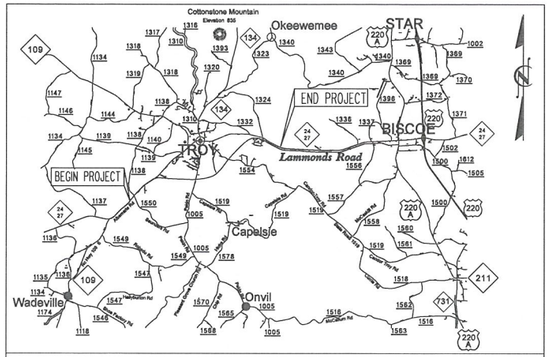
UTILITY SHEET: 1-OF-5

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY ENVIRONMENTAL PLANS
MONTGOMERY COUNTY

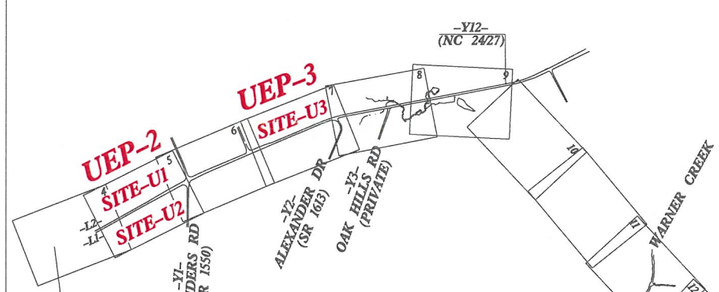
TYPE OF WORK: WATER AND SANITARY SEWER UTILITY CONSTRUCTION

TIP PROJECT: R-0623

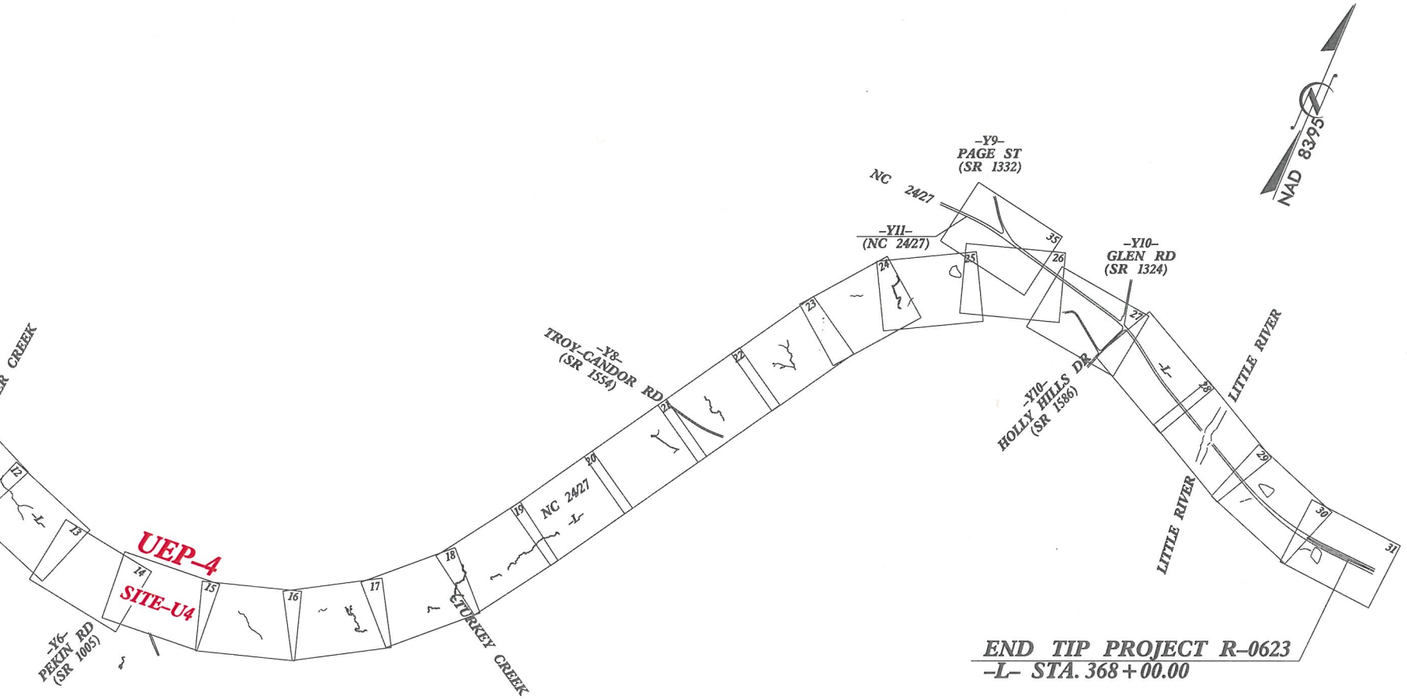


VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARY OF TROY



BEGIN TIP PROJECT R-0623
-L1- STA. 17+00.00



END TIP PROJECT R-0623
-L- STA. 368+00.00

PLAN DATE: 10-16-2013

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UEP-1	TITLE SHEET
UEP-2	UTILITY IMPACT SITES U1, U2
UEP-3	UTILITY IMPACT SITE U3
UEP-4	UTILITY IMPACT SITE U4
UEP-5	IMPACT SUMMARY SHEET

SEAL

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING

1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 707-6690
FAX (919) 250-4151

Roger Worthington, P.E. — UTILITIES SECTION ENGINEER
Ron Wilkins, P.E. — UTILITIES SQUAD LEADER PROJECT ENGINEER
Eric Haugaard — UTILITIES PROJECT DESIGNER

09/08/99
16-OCT-2013 14:02
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$$$$USERNAME$$$$

NCDOT PROJECT R-0623
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U1 AND SITE-U2

PROJECT REFERENCE NO.	SHEET NO.
R-0623	UEP-2
DESIGNED BY: ·	
DRAWN BY: ·	
CHECKED BY: ·	
APPROVED BY: ·	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

UTILITY SHEET 2 OF 5

PLAN DATE: 10-16-2013

PLAN SCALE:

1"=50' (FULL-SIZE SHEET)
1"=100' (HALF-SIZE SHEET)

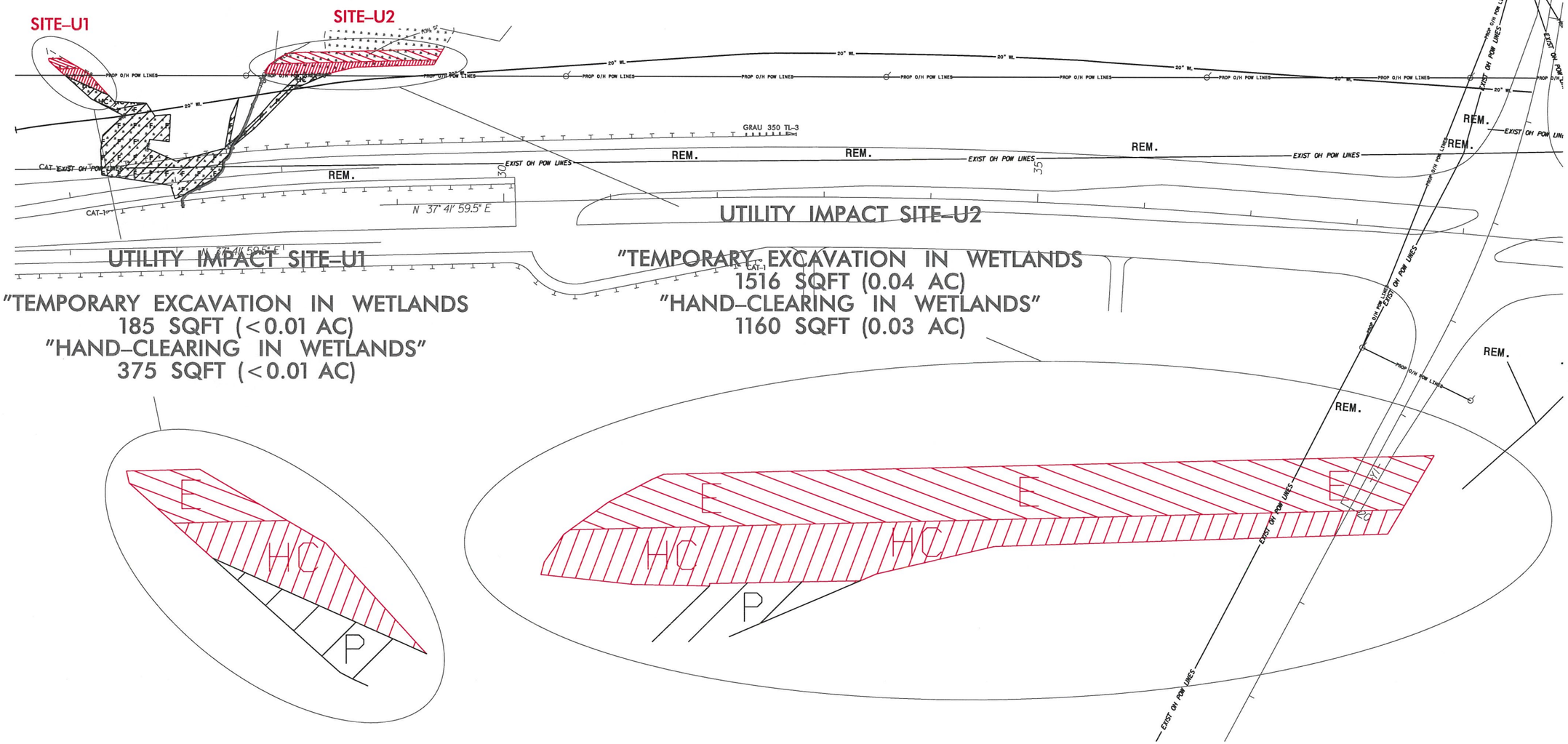
HC = UTILITY IMPACTS

HATCHED AREAS SHOW:
"HAND-CLEARING IN WETLANDS"
FROM UTILITY INSTALLATION

E = UTILITY IMPACTS

HATCHED AREAS SHOW:
"TEMPORARY EXCAVATION IN WETLANDS"
FROM UTILITY INSTALLATION

P = PROJECT IMPACTS (NON-UTILITY)



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NCDOT PROJECT R-0623
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U3

PROJECT REFERENCE NO.	SHEET NO.
R-0623	UEP-3
DESIGNED BY: ·	
DRAWN BY: ·	
CHECKED BY: ·	
APPROVED BY: ·	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

UTILITY SHEET 3 OF 5

PLAN DATE: 10-16-2013

PLAN SCALE:

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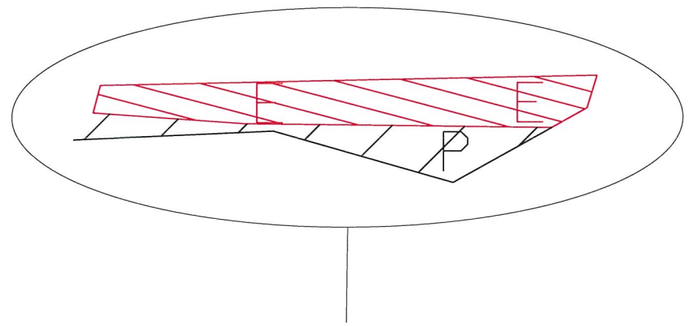
1"=100' (HALF-SIZE SHEET)



UTILITY IMPACT SITE-U3

"TEMPORARY EXCAVATION IN WETLANDS
390 SQFT (<0.01 AC)

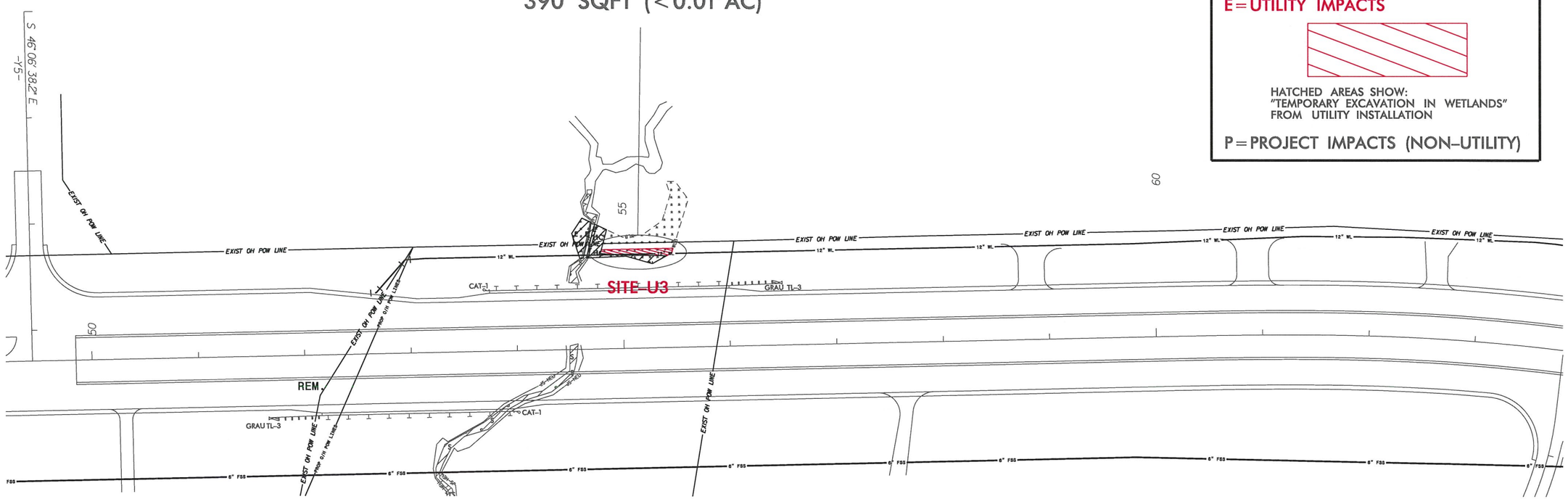
HC = UTILITY IMPACTS

HATCHED AREAS SHOW:
"HAND-CLEARING IN WETLANDS"
FROM UTILITY INSTALLATION

E = UTILITY IMPACTS

HATCHED AREAS SHOW:
"TEMPORARY EXCAVATION IN WETLANDS"
FROM UTILITY INSTALLATION

P = PROJECT IMPACTS (NON-UTILITY)



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NCDOT PROJECT R-0623
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U4

PROJECT REFERENCE NO.	SHEET NO.
R-0623	UEP-4
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

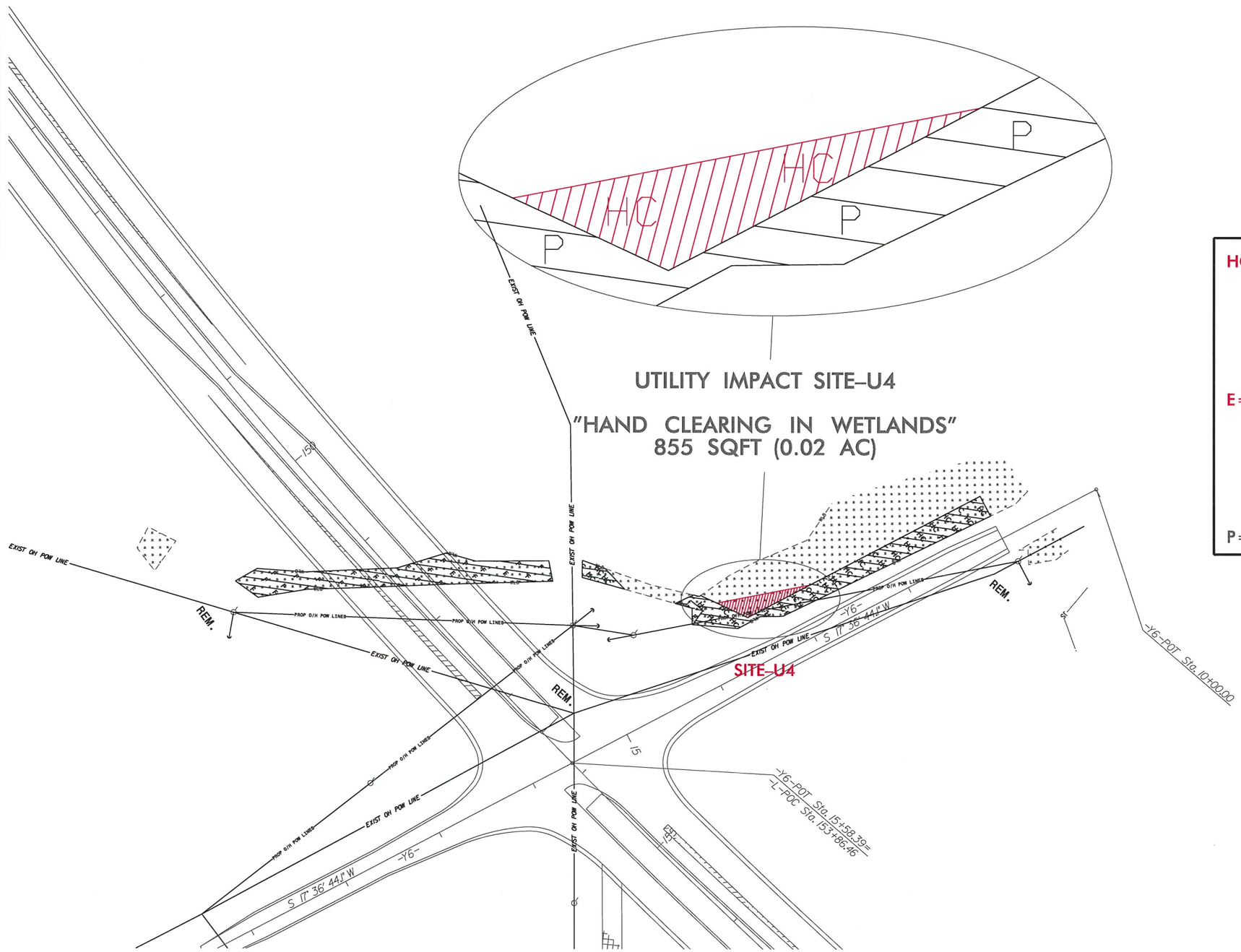
UTILITY CONSTRUCTION

UTILITY SHEET 4 OF 5

PLAN DATE: 10-16-2013

PLAN SCALE:

1"=50' (FULL-SIZE SHEET)
1"=100' (HALF-SIZE SHEET)



HC = UTILITY IMPACTS

HATCHED AREAS SHOW:
"HAND-CLEARING IN WETLANDS"
FROM UTILITY INSTALLATION

E = UTILITY IMPACTS

HATCHED AREAS SHOW:
"TEMPORARY EXCAVATION IN WETLANDS"
FROM UTILITY INSTALLATION

P = PROJECT IMPACTS (NON-UTILITY)

5/14/99

16-OCT-2013 14:02
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UTILITY WETLAND PERMIT IMPACT SUMMARY

Site No.	-L- Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Temp. Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
U1	Sta 28+00L	overhead power line - clear 15' each side of line						< 0.01 (375 SQFT)					
U1	Sta 28+00L	open-trench excavation for installation of water line				< 0.01 (185 SQFT)							
U2	Sta 29+25L	overhead power line - clear 15' each side of line						0.03 (1160 SQFT)					
U2	Sta 29+25L	open-trench excavation for installation of water line				0.04 (1515 SQFT)							
U3	Sta 55+00L	open-trench excavation for installation of water line				< 0.01 (390 SQFT)							
U4	Sta 153+50L	overhead power line - clear 15' each side of line						0.02 (855 SQFT)					
TOTALS:						0.05 (2090 SQFT)		0.05 (2390 SQFT)					

* total calculated summing square footage at each site and then rounding to the nearest one-hundredth acre

UTILITY SHEET 5 of 5

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY
WBS - 37044.1.1 (R-0623)

10/16/2013

ATN Revised 3/31/05

09/08/99

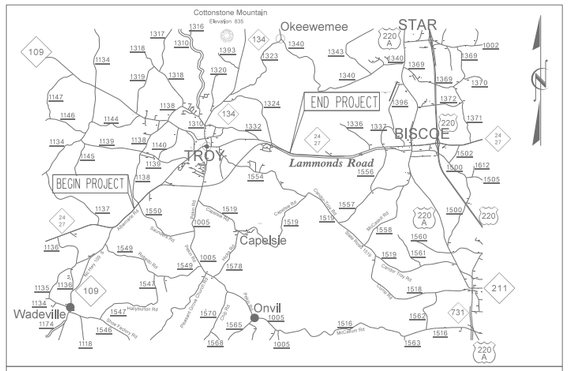
TIP PROJECT: R-0623

T.I.P. NO.	SHEET NO.
R-0623	UEP-1

UTILITY SHEET: 1-OF-5

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

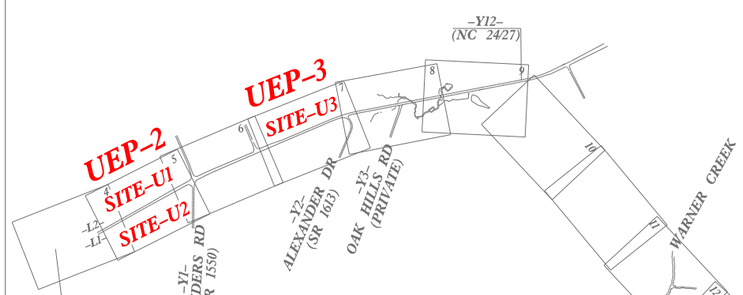
UTILITY ENVIRONMENTAL PLANS
MONTGOMERY COUNTY



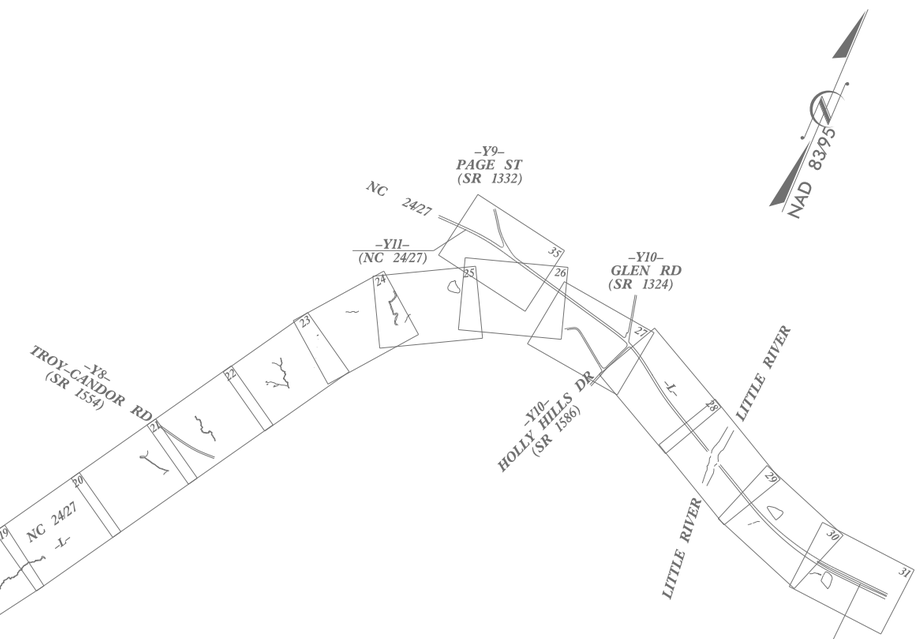
VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARY OF TROY

TYPE OF WORK: WATER AND SANITARY SEWER UTILITY CONSTRUCTION



BEGIN TIP PROJECT R-0623
-L1- STA. 17+00.00



END TIP PROJECT R-0623
-L- STA. 368+00.00

PLAN DATE: 10-16-2013

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UEP-1	TITLE SHEET
UEP-2	UTILITY IMPACT SITES U1, U2
UEP-3	UTILITY IMPACT SITE U3
UEP-4	UTILITY IMPACT SITE U4
UEP-5	IMPACT SUMMARY SHEET

SEAL

PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES UNIT
UTILITIES ENGINEERING

1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 707-6690
FAX (919) 250-4151

Roger Worthington, P.E. — UTILITIES SECTION ENGINEER
Ron Wilkins, P.E. — UTILITIES SQUAD LEADER PROJECT ENGINEER
Eric Haugaard — UTILITIES PROJECT DESIGNER

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PROJECT REFERENCE NO.	SHEET NO.
R-0623	UEP-2
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

NCDOT PROJECT R-0623
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U1 AND SITE-U2

UTILITY CONSTRUCTION

UTILITY SHEET 2 OF 5

PLAN DATE: 10-15-2013

PLAN SCALE:

1"=50' (FULL-SIZE SHEET)
1"=100' (HALF-SIZE SHEET)

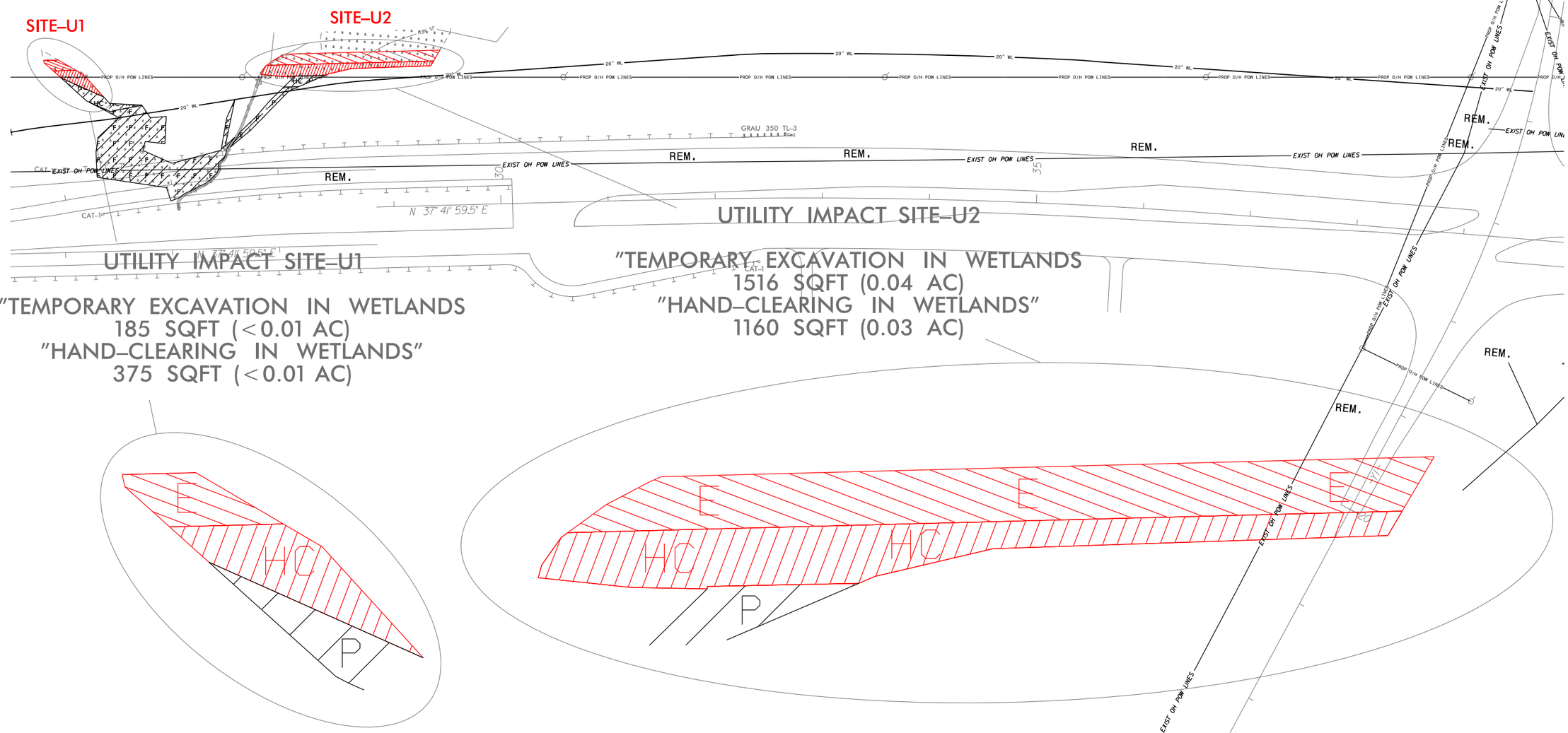
HC = UTILITY IMPACTS

HATCHED AREAS SHOW:
"HAND-CLEARING IN WETLANDS"
FROM UTILITY INSTALLATION

E = UTILITY IMPACTS

HATCHED AREAS SHOW:
"TEMPORARY EXCAVATION IN WETLANDS"
FROM UTILITY INSTALLATION

P = PROJECT IMPACTS (NON-UTILITY)



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NCDOT PROJECT R-0623
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U3

PROJECT REFERENCE NO.	SHEET NO.
R-0623	UEP-3
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

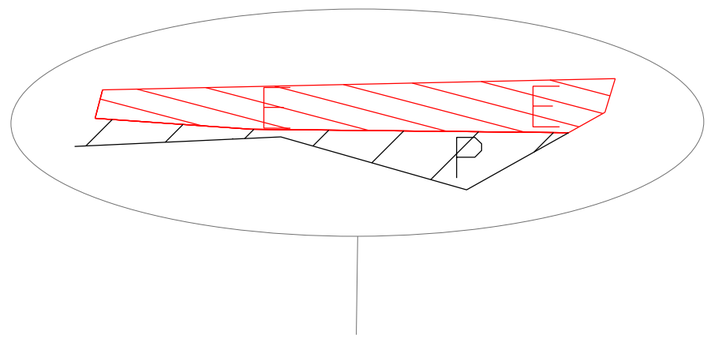
UTILITY CONSTRUCTION

UTILITY SHEET 3 OF 5

PLAN DATE: 10-16-2013

PLAN SCALE:

1"=50' (FULL-SIZE SHEET)
1"=100' (HALF-SIZE SHEET)



UTILITY IMPACT SITE-U3

"TEMPORARY EXCAVATION IN WETLANDS
390 SQFT (<0.01 AC)

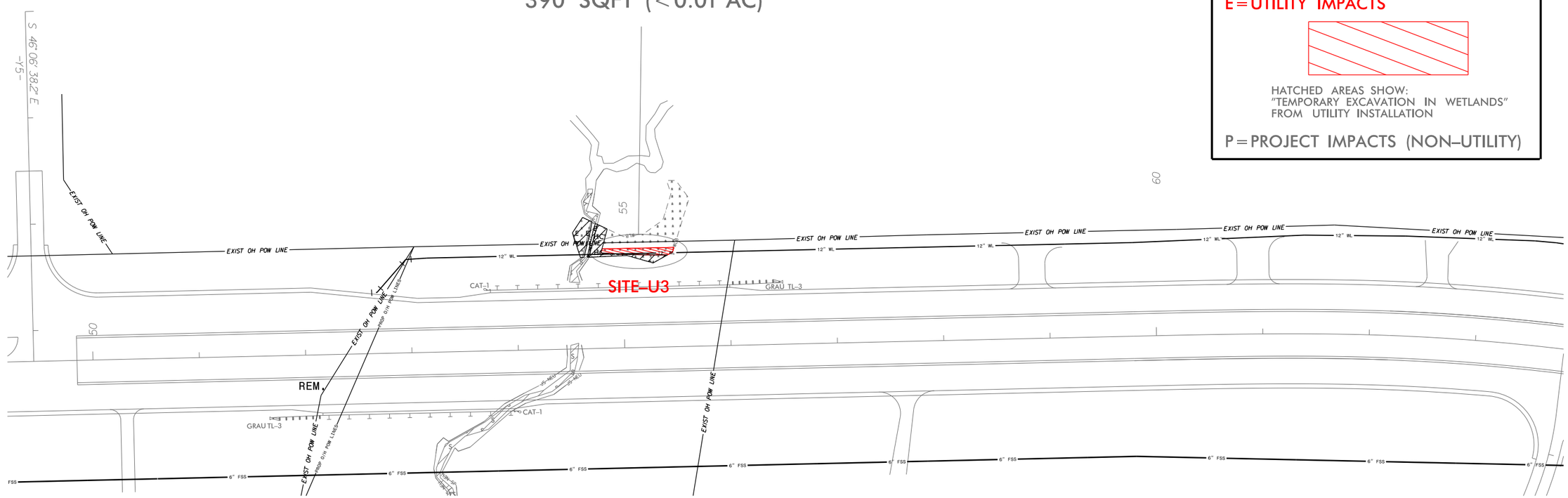
HC = UTILITY IMPACTS

HATCHED AREAS SHOW:
"HAND-CLEARING IN WETLANDS"
FROM UTILITY INSTALLATION

E = UTILITY IMPACTS

HATCHED AREAS SHOW:
"TEMPORARY EXCAVATION IN WETLANDS"
FROM UTILITY INSTALLATION

P = PROJECT IMPACTS (NON-UTILITY)



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NCDOT PROJECT R-0623
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U4

PROJECT REFERENCE NO.	SHEET NO.
R-0623	UEP-4
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

UTILITY SHEET 4 OF 5

PLAN DATE: 10-16-2013

PLAN SCALE:

1"=50' (FULL-SIZE SHEET)
1"=100' (HALF-SIZE SHEET)

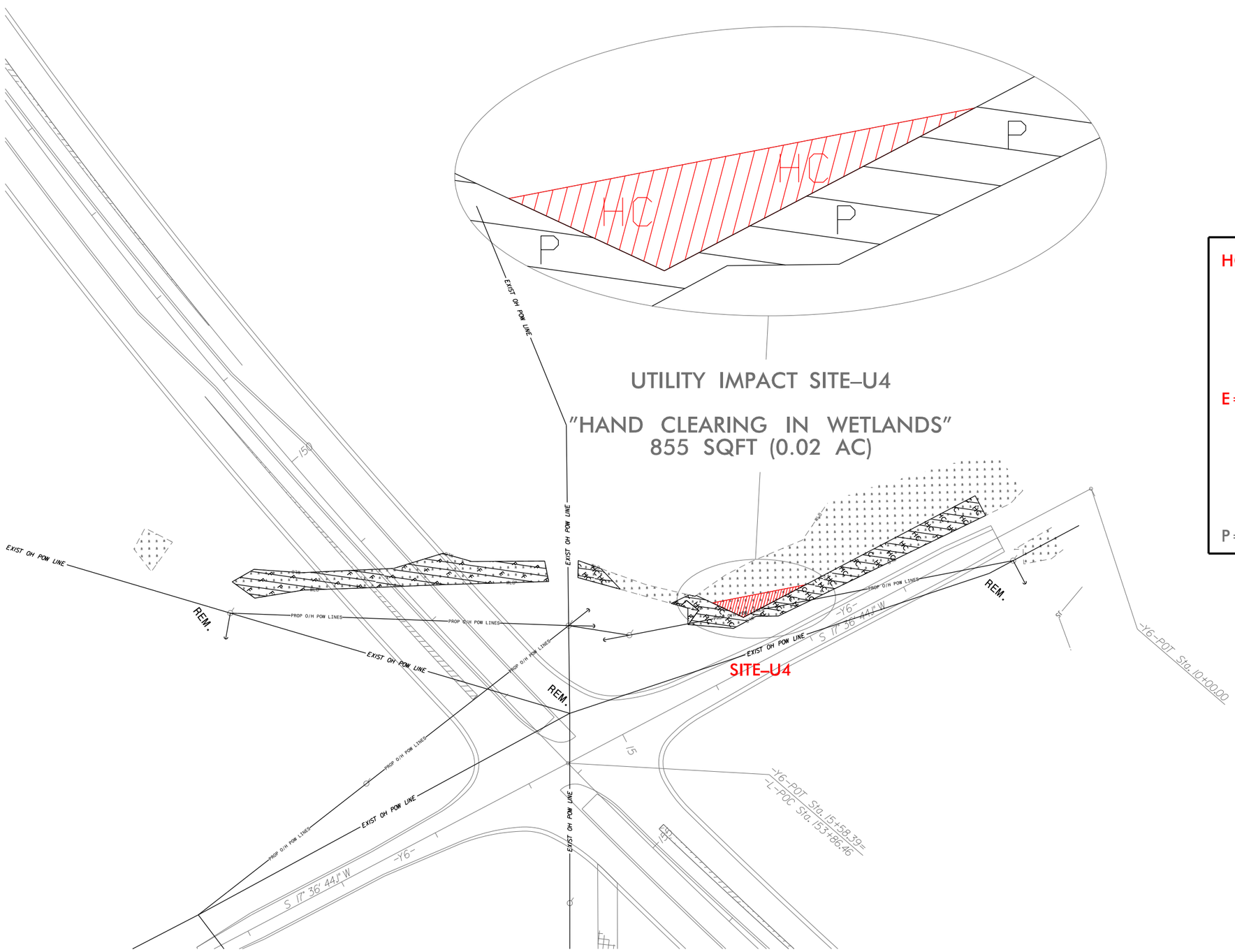
HC = UTILITY IMPACTS

HATCHED AREAS SHOW:
"HAND-CLEARING IN WETLANDS"
FROM UTILITY INSTALLATION

E = UTILITY IMPACTS

HATCHED AREAS SHOW:
"TEMPORARY EXCAVATION IN WETLANDS"
FROM UTILITY INSTALLATION

P = PROJECT IMPACTS (NON-UTILITY)



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UTILITY WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS						SURFACE WATER IMPACTS				
Site No.	-L- Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Temp. Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
U1	Sta 28+00L	overhead power line - clear 15' each side of line						< 0.01 (375 SQFT)					
U1	Sta 28+00L	open-trench excavation for installation of water line				< 0.01 (185 SQFT)							
U2	Sta 29+25L	overhead power line - clear 15' each side of line						0.03 (1160 SQFT)					
U2	Sta 29+25L	open-trench excavation for installation of water line				0.04 (1515 SQFT)							
U3	Sta 55+00L	open-trench excavation for installation of water line				< 0.01 (390 SQFT)							
U4	Sta 153+50L	overhead power line - clear 15' each side of line						0.02 (855 SQFT)					
TOTALS:						0.05 (2090 SQFT)		0.05 (2390 SQFT)					

* total calculated summing square footage at each site and then rounding to the nearest one-hundredth acre

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

MONTGOMERY COUNTY
WBS - 37044.1.1 (R-3101)

UTILITY SHEET 5 OF 5

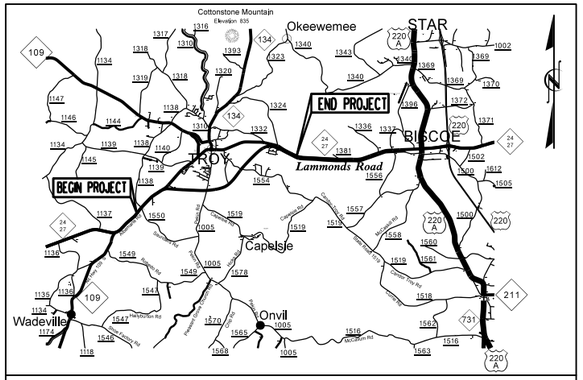
10/16/2013

ATN Revised 3/31/05

TIP PROJECT: R-0623

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARY OF TROY

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

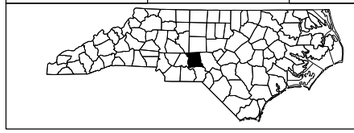
MONTGOMERY COUNTY

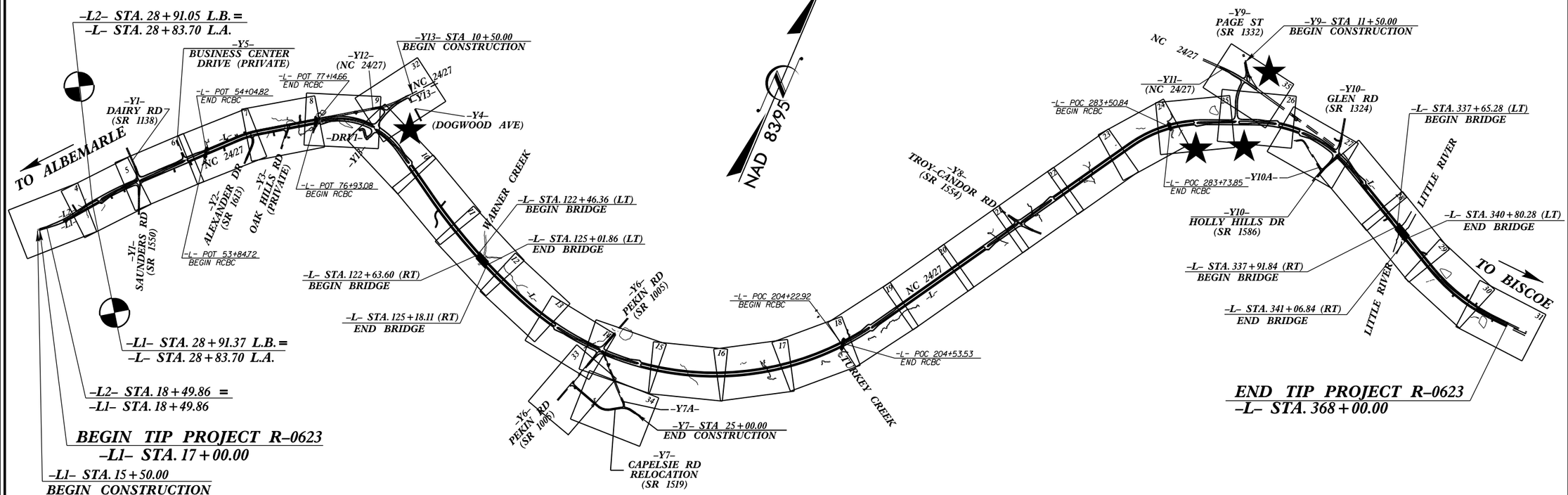
LOCATION: NC 24/27 TROY BYPASS FROM WEST OF SR 1138 (DAIRY ROAD) TO JUST EAST OF LITTLE RIVER

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-0623	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34352.1.1	STP-24(6)	PE
34352.3.U1		R/W & UTIL





★ TRAFFIC SIGNAL

NOTE: THIS PROJECT IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2014 = 6610 - 12,641
ADT 2040 = 9300 - 18,200
K = 10 %
D = 55 %
T = 17 % *
V = 60 MPH
* TTST = 12% DUAL 5%

FUNCTIONAL CLASSIFICATION
RURAL ARTERIAL
REGIONAL TIER PROJECT

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-0623 = 6.523 MILES

LENGTH STRUCTURES TIP PROJECT R-0623 = 0.126 MILES

TOTAL LENGTH OF TIP PROJECT R-0623 = 6.649 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 30, 2013

LETTING DATE:
NOVEMBER 18, 2014

G. E. BREW, P.E.
PROJECT ENGINEER

I.T. YOUNIS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS

STATE OF NORTH CAROLINA

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12/05/11

PROJECT REFERENCE NO.	SHEET NO.
R-0623	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

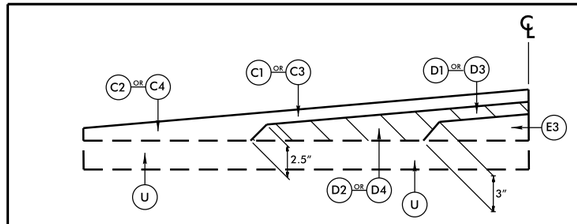
PROJECT REFERENCE NO.	SHEET NO.
R-0623	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PRELIMINARY PAVEMENT SCHEDULE

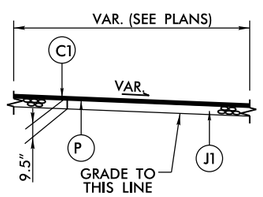
C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	E2	PROP. APPROX. 5½″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH	E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH
C3	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS	J	PROP. 6″ AGGREGATE BASE COURSE
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH	J1	PROP. 10″ AGGREGATE BASE COURSE
D1	PROP. APPROX. 2½″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.	R1	SHOULDER BERM GUTTER
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH	R2	CONCRETE VALLEY GUTTER
D3	PROP. APPROX. 3″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	T	EARTH MATERIAL
D4	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH	U	EXISTING PAVEMENT
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



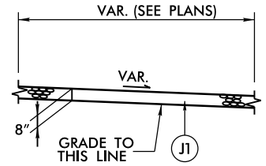
LINE	SURFACE C1	SURFACE C2	SURFACE C3	SURFACE C4	INTERMEDIATE D1	INTERMEDIATE D2	INTERMEDIATE D3	INTERMEDIATE D4		BASE E3		
L (USE WITH TS 1, 2, 3, 4 & 6)			X	X			X	X		X		
Y1 Y2 (USE WITH T.S. 7, 8, 10)	X	X								X		
Y5 Y8 (USE WITH T.S. 12 & 18)	X	X								X		
Y10 Y12 Y13 (USE WITH T.S. 21, 23, 25 & 27)	X	X								X		
Y6 Y11 (USE WITH T.S. 13, 15 & 24)	X	X			X	X				X		

DETAIL SHOWING METHOD OF WEDGING



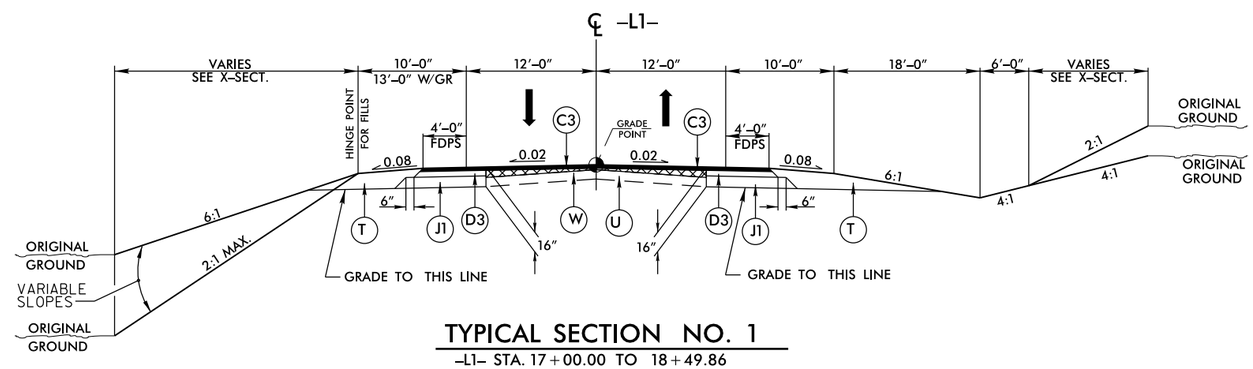
ROADWAY
MISC. PAVED PRIVATE DRIVES AND TURNAROUNDS

REMARKS
SEE PLANS FOR LOCATIONS

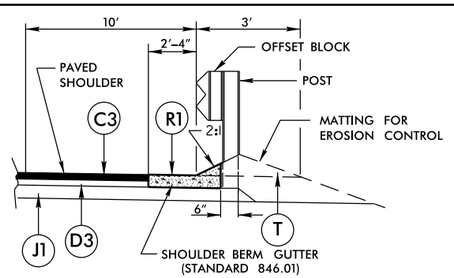


ROADWAY
MISC. UNPAVED PRIVATE DRIVES

REMARKS
SEE PLANS FOR LOCATIONS



TYPICAL SECTION NO. 1
–L1– STA. 17+00.00 TO 18+49.86



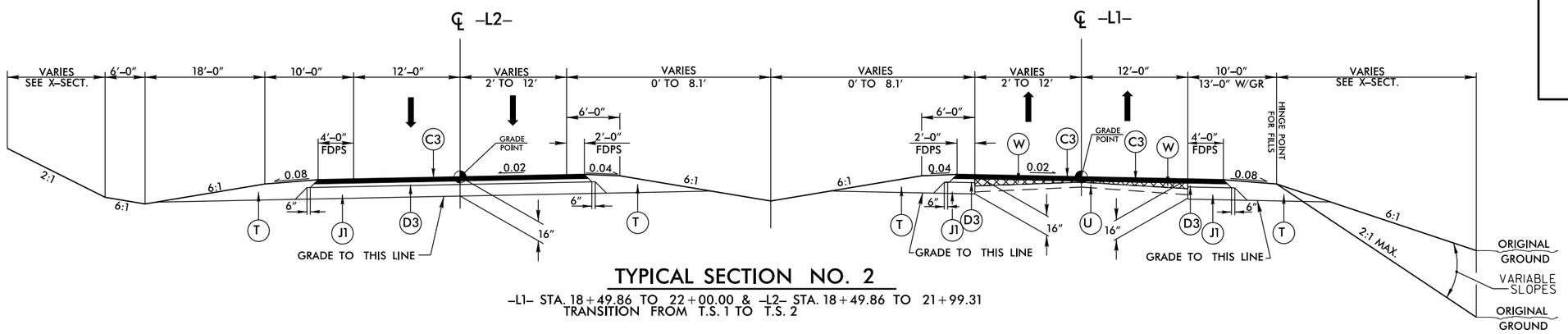
DETAIL SHOWING SHOULDER BERM GUTTER
USE WITH TYPICAL SECTION NO. 3
–L1– STA. 25+04.41 TO 28+91.37 RIGHT

6/2/99
06-DEC-2013 11:19
R:\Roadway\Proj\r0623_rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

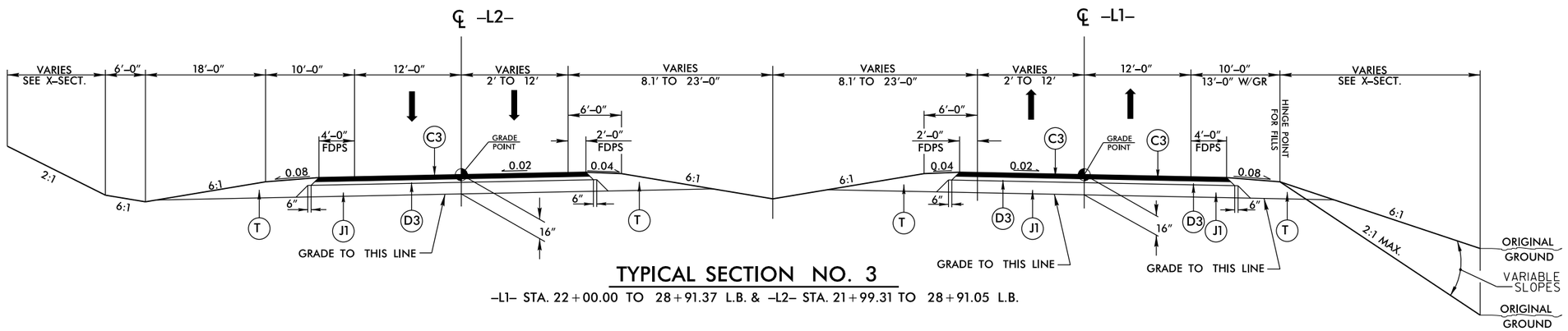
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE	
C1	3.0" S9.5B
C2	VAR S9.5B
C3	3.0" S9.5C
C4	VAR S9.5C
D1	2.5" I19.0B
D2	VAR. I19.0B
D3	3.0" I19.0C
D4	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	VAR. B25.0B
J	6" ABC
J1	10" ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



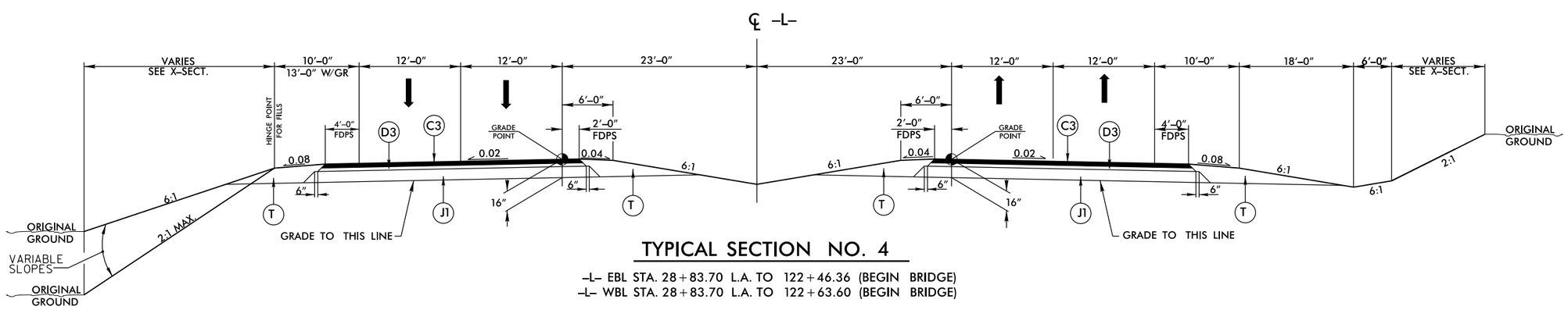
TYPICAL SECTION NO. 2

–L1– STA. 18+49.86 TO 22+00.00 & –L2– STA. 18+49.86 TO 21+99.31
TRANSITION FROM T.S. 1 TO T.S. 2



TYPICAL SECTION NO. 3

–L1– STA. 22+00.00 TO 28+91.37 L.B. & –L2– STA. 21+99.31 TO 28+91.05 L.B.



TYPICAL SECTION NO. 4

–L– EBL STA. 28+83.70 L.A. TO 122+46.36 (BEGIN BRIDGE)
–L– WBL STA. 28+83.70 L.A. TO 122+63.60 (BEGIN BRIDGE)

–L– EBL STA. 125+01.86 (END BRIDGE) TO 337+65.28 (BEGIN BRIDGE)
–L– WBL STA. 125+18.11 (END BRIDGE) TO 337+91.84 (BEGIN BRIDGE)

–L– EBL STA. 340+80.28 (END BRIDGE) TO 350+25.00
–L– WBL STA. 341+06.84 (END BRIDGE) TO 350+25.00

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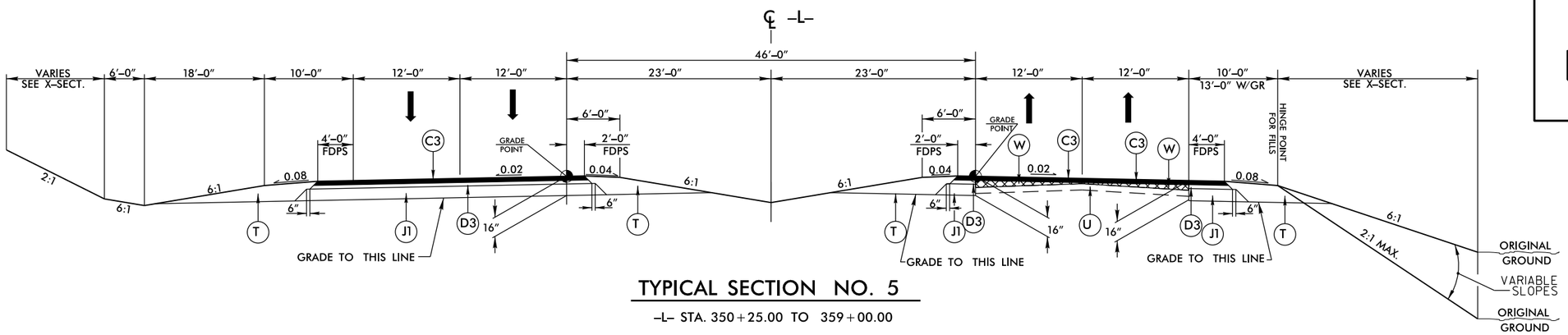
PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

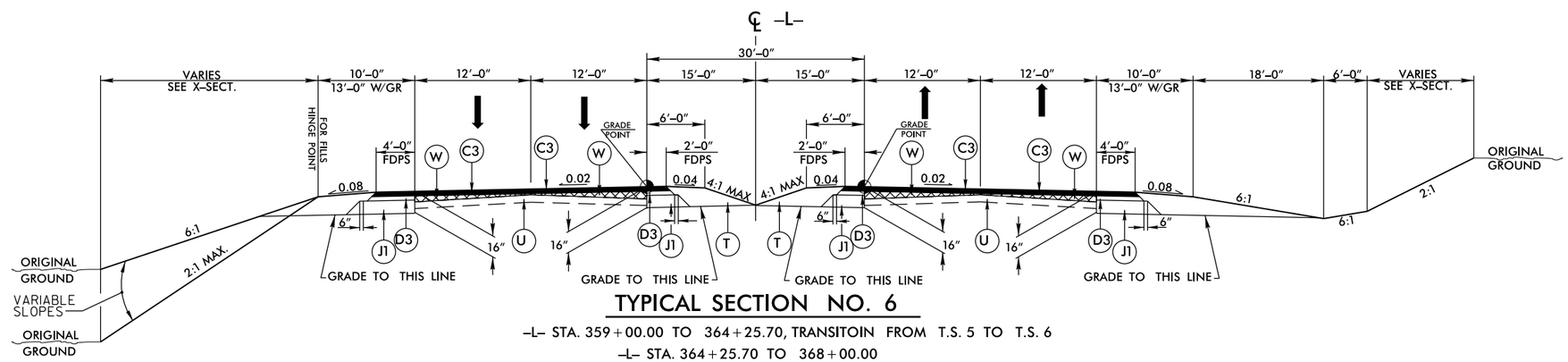
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE	
C1	3.0" S9.5B
C2	VAR S9.5B
C3	3.0" S9.5C
C4	VAR S9.5C
D1	2.5" I19.0B
D2	VAR. I19.0B
D3	3.0" I19.0C
D4	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	VAR. B25.0B
J1	10" ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 5

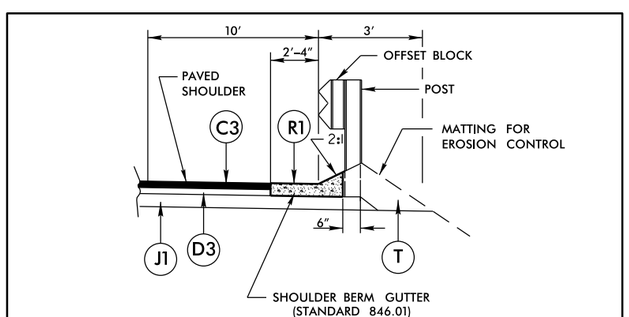
–L– STA. 350+25.00 TO 359+00.00



TYPICAL SECTION NO. 6

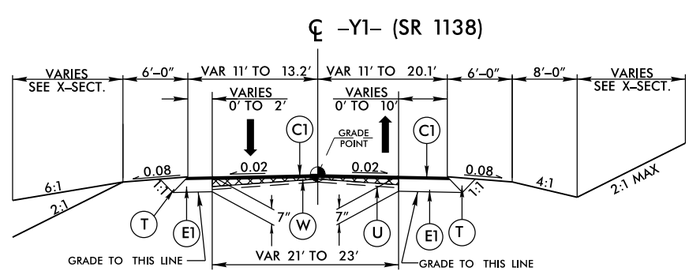
–L– STA. 359+00.00 TO 364+25.70, TRANSITOIN FROM T.S. 5 TO T.S. 6

–L– STA. 364+25.70 TO 368+00.00



DETAIL SHOWING SHOULDER BERM GUTTER

USE WITH TYPICAL SECTION NO. 4
(SEE PLANS FOR LOCATIONS)



TYPICAL SECTION NO. 7

–Y1– STA. 14+00.00 TO 14+50.00
TRANSITION FROM EXISTING TO T.S. 7

–Y1– STA. 14+96.21 TO 15+60.52

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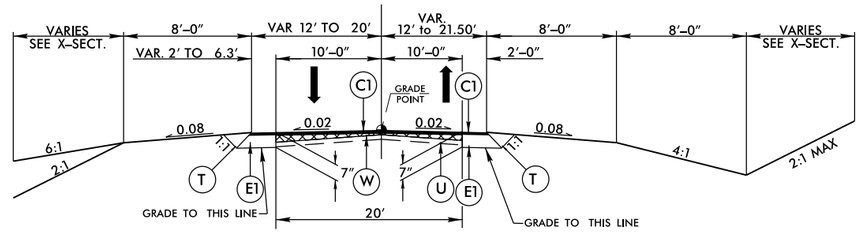
PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE	
C1	3.0" S9.5B
C2	VAR S9.5B
C3	3.0" S9.5C
C4	VAR S9.5C
D1	2.5" I19.0B
D2	VAR. I19.0B
D3	3.0" I19.0C
D4	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	VAR. B25.0B
J1	10" ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

℄ –Y1– (SR 1550)



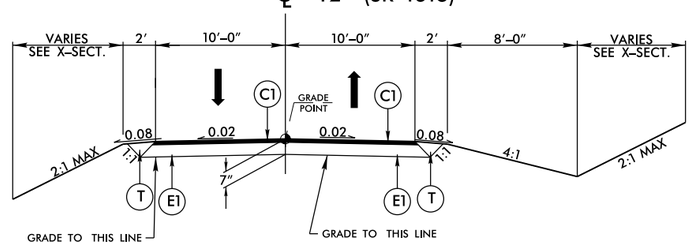
TYPICAL SECTION NO. 8

–Y1– STA. 18+29.12 TO 19+50.00

–Y1– STA. 19+50.00 TO 20+00.00

TRANSITION FROM T.S. 8 TO EXISTING

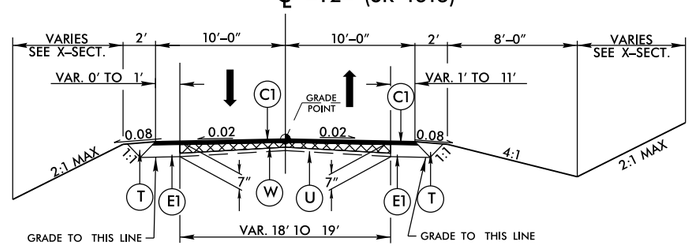
℄ –Y2– (SR 1613)



TYPICAL SECTION NO. 9

–Y2– STA. 11+07.65 TO 13+75.00

℄ –Y2– (SR 1613)

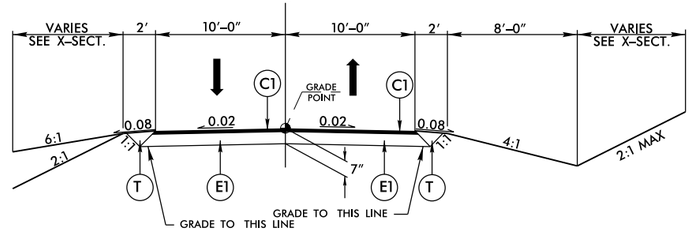


TYPICAL SECTION NO. 10

–Y2– STA. 13+75.00 TO 15+00.00

–Y2– STA. 15+00.00 TO 15+50.00
TRANSITION FROM T.S. 10 TO EXISTING

℄ –Y3– (OAK HILLS RD)

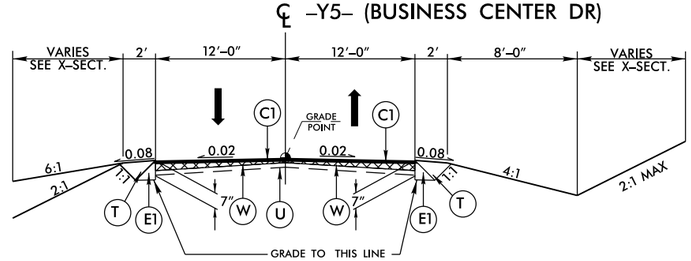


TYPICAL SECTION NO. 11

–Y3– STA. 11+13.34 TO 12+00.00

–Y3– STA. 12+00.00 TO 12+25.00
TRANSITION FROM T.S. 11 TO EXISTING

℄ –Y5– (BUSINESS CENTER DR)



TYPICAL SECTION NO. 12

–Y5– STA. 11+50.00 TO 12+20.03

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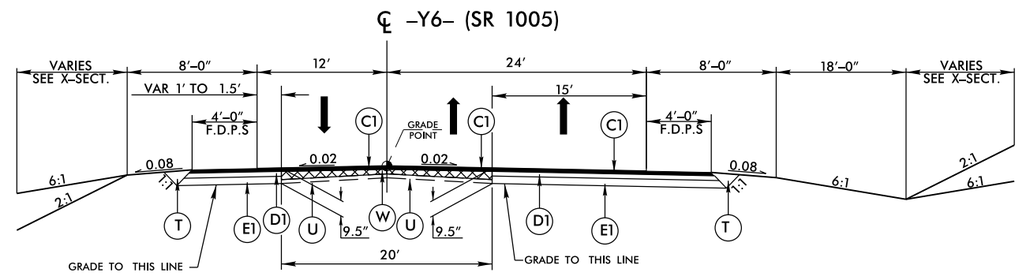
PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

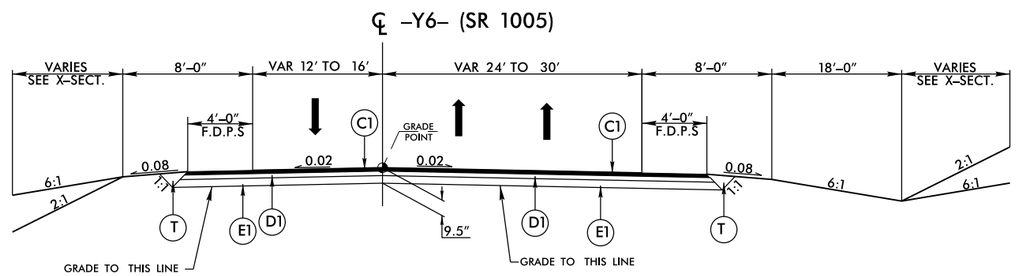
PAVEMENT SCHEDULE	
C1	3.0" S9.5B
C2	VAR S9.5B
C3	3.0" S9.5C
C4	VAR S9.5C
D1	2.5" I19.0B
D2	VAR. I19.0B
D3	3.0" I19.0C
D4	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	VAR. B25.0B
J1	10" ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 13

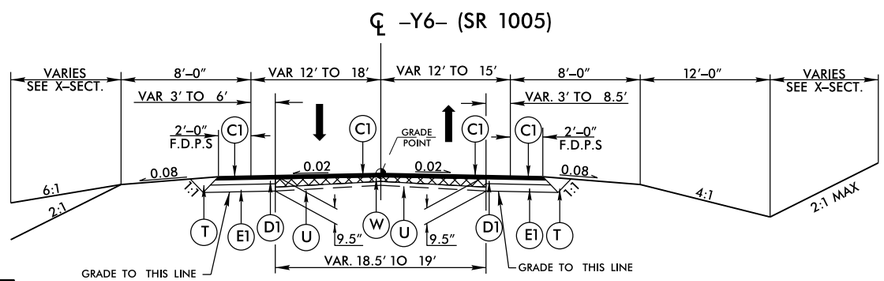
–Y6– STA. 11+00.00 TO 12+00.00
TRANSITION FROM EXISTING TO T.S. 13

–Y6– STA. 12+00.00 TO 13+25.00



TYPICAL SECTION NO. 14

–Y6– STA. 13+25.00 TO 14+26.94

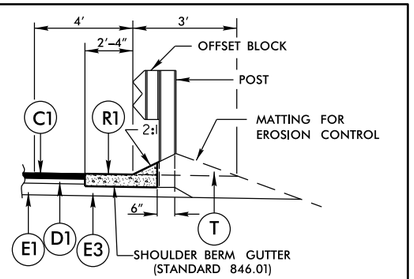


TYPICAL SECTION NO. 15

–Y6– STA. 16+88.33 TO 18+90.00

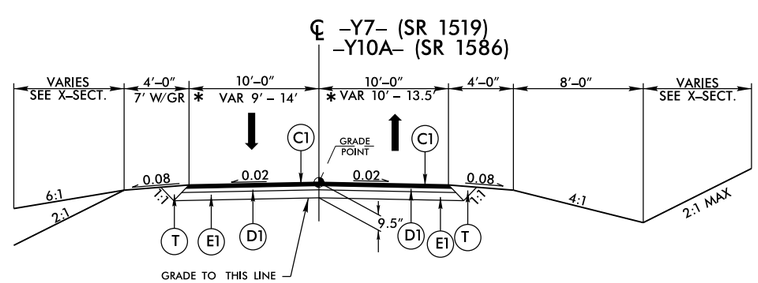
–Y6– STA. 18+90.00 TO 19+50.00

TRANSITION FROM T.S. 15 TO EXISTING



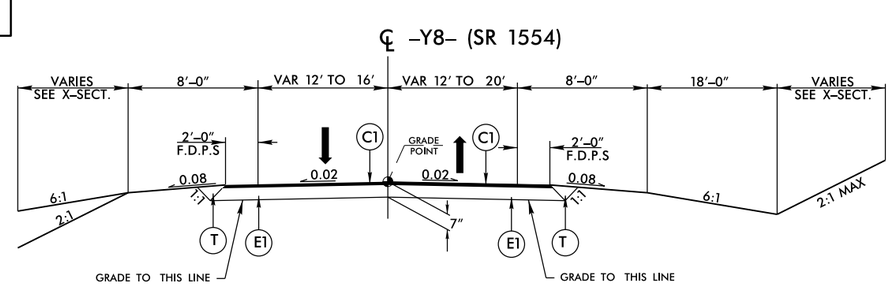
DETAIL SHOWING SHOULDER BERM GUTTER

USE WITH TYPICAL SECTION NO. 16
–Y7– STA. 14+25 TO 18+25 LEFT
–Y7– STA. 14+25 TO 16+30 RIGHT



TYPICAL SECTION NO. 16

–Y7– STA. 10+59.32 TO 24+50.00
–Y7– STA. 24+50.00 TO 25+00.00
TRANSITION FROM T.S. 16 TO EXISTING
* –Y10A– STA. 10+58.04 TO 11+22



TYPICAL SECTION NO. 17

–Y8– STA. 11+60.00 TO 12+10.00
TRANSITION FROM EXISTING TO T.S. 17

–Y8– STA. 12+10.00 TO 12+96.91

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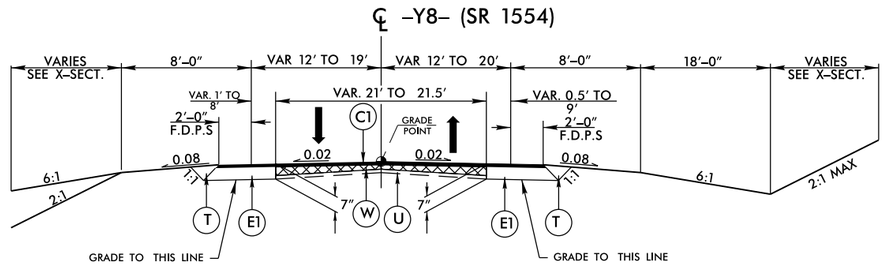
PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

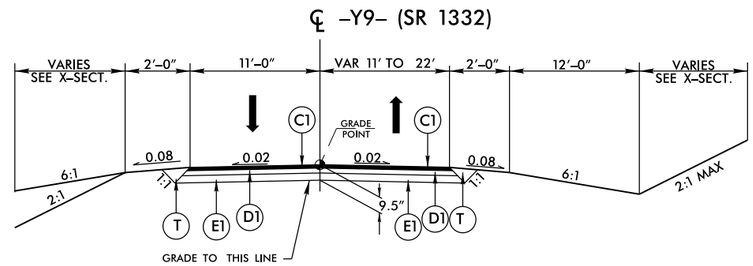
PAVEMENT SCHEDULE	
C1	3.0" S9.5B
C2	VAR S9.5B
C3	3.0" S9.5C
C4	VAR S9.5C
D1	2.5" I19.0B
D2	VAR. I19.0B
D3	3.0" I19.0C
D4	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	VAR. B25.0B
J1	10" ABC
R2	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 18

–Y8– STA. 15+85.57 TO 17+00.00

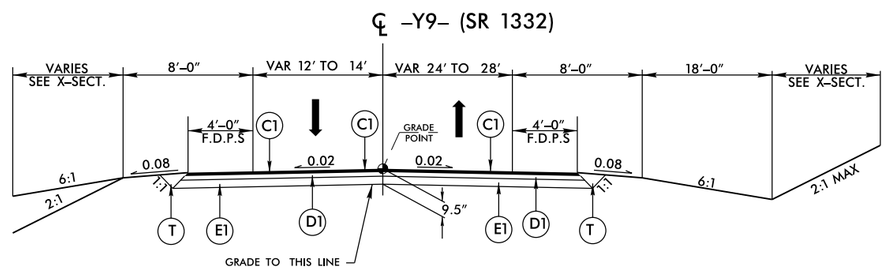
–Y8– STA. 17+00.00 TO 17+50.00
TRANSITION FROM T.S. 18 TO EXISTING



TYPICAL SECTION NO. 19

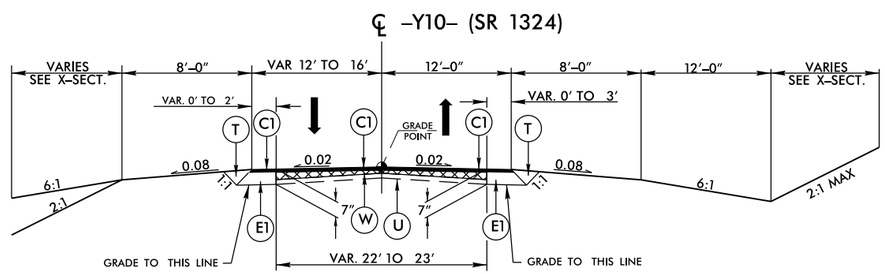
–Y9– STA. 11+50.00 TO 12+00.00
TRANSITION FROM EXISTING TO T.S. 19

–Y9– STA. 12+00.00 TO 14+46.82



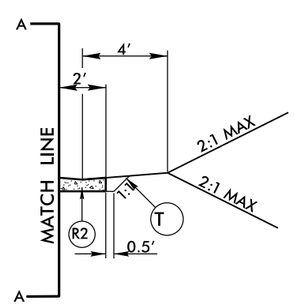
TYPICAL SECTION NO. 20

–Y9– STA. 16+08.63 TO 22+63.64



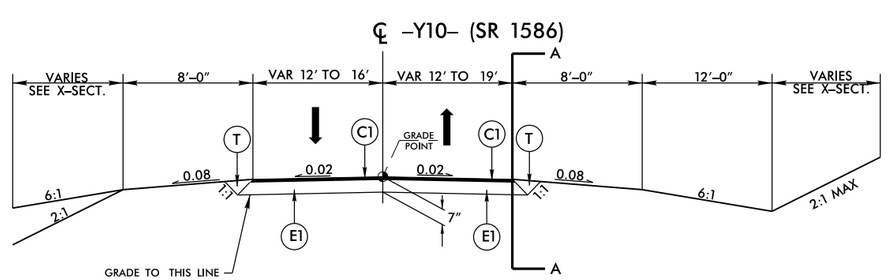
TYPICAL SECTION NO. 21

–Y10– STA. 14+00.00 TO 14+50.00
TRANSITION FROM EXISTING TO T.S. 21



DETAIL SHOWING VALLEY GUTTER

USE WITH TYPICAL SECTIONS 22 & 23
–Y10– STA. 22+14.41 TO 23+38.00 RIGHT



TYPICAL SECTION NO. 22

–Y10– STA. 14+50.00 TO 16+10.86
–Y10– STA. 18+70.40 TO 23+00.00

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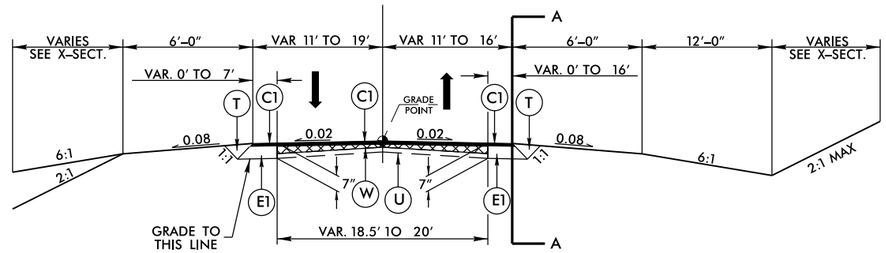
PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-F
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

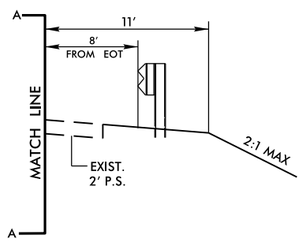
PAVEMENT SCHEDULE	
C1	3.0" S9.5B
C2	VAR S9.5B
C3	3.0" S9.5C
C4	VAR S9.5C
D1	2.5" I19.0B
D2	VAR. I19.0B
D3	3.0" I19.0C
D4	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	VAR. B25.0B
J1	10" ABC
R2	VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

℄ –Y10– (SR 1586)



TYPICAL SECTION NO. 23

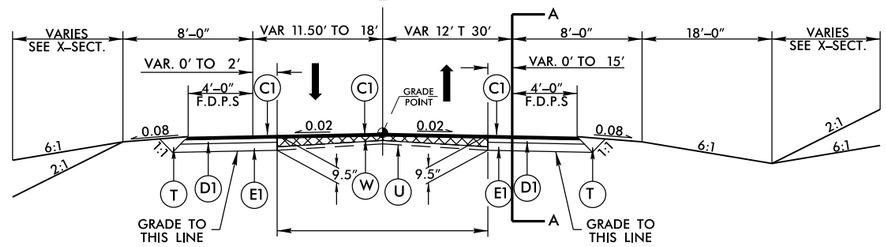
–Y10– STA. 23+00.00 TO 23+50.00
TRANSITION FROM T.S. 23 TO EXISTING



DETAIL SHOWING GUARDRAIL PLACEMENT

USE WITH TYPICAL SECTION 24
–Y11– STA. 23+00.00 TO 25+00.00 RIGHT

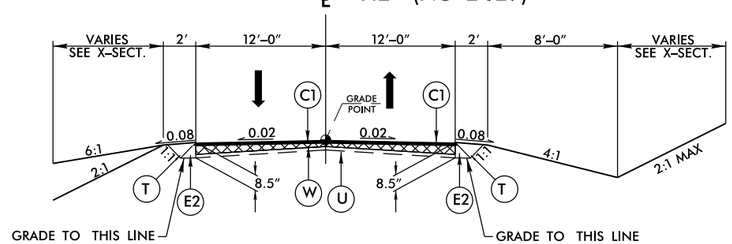
℄ –Y11– (NC 24/27)



TYPICAL SECTION NO. 24

–Y11– STA. 13+50.00 TO 22+00.00

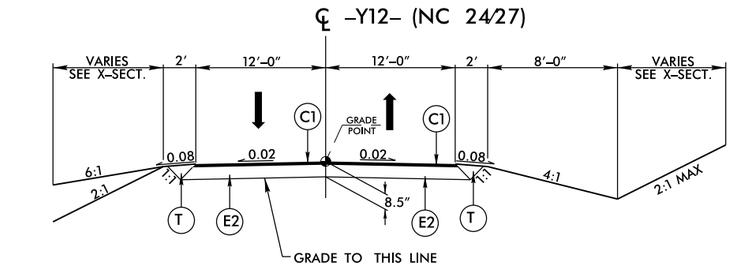
℄ –Y12– (NC 24/27)



TYPICAL SECTION NO. 25

–Y12– STA. 15+00.00 TO 16+25.00

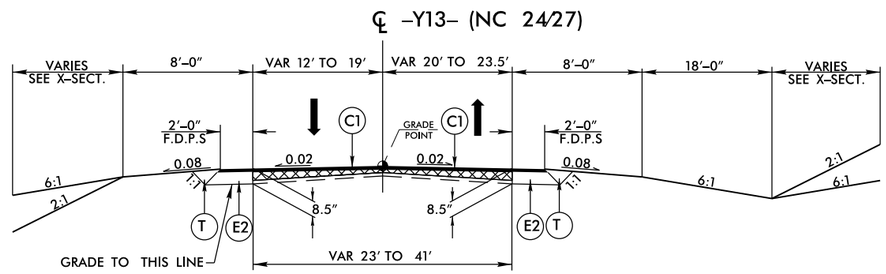
℄ –Y12– (NC 24/27)



TYPICAL SECTION NO. 26

–Y12– STA. 16+25.00 TO 17+52.76

℄ –Y13– (NC 24/27)



TYPICAL SECTION NO. 27

–Y13– STA. 10+50.00 TO 13+10.64

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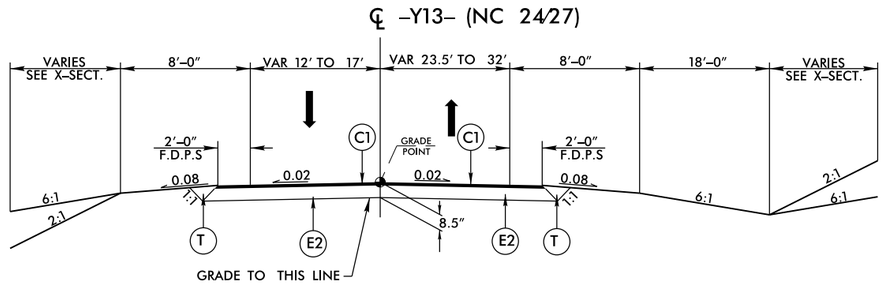
PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-G
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

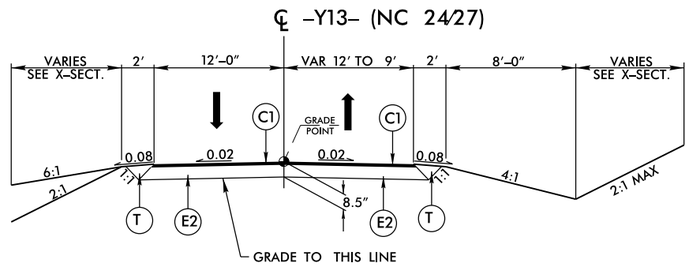
PAVEMENT SCHEDULE	
C1	3.0" S9.5B
C2	VAR S9.5B
C3	3.0" S9.5C
C4	VAR S9.5C
D1	2.5" I19.0B
D2	VAR. I19.0B
D3	3.0" I19.0C
D4	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	VAR. B25.0B
J	6" ABC
J1	10" ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 28

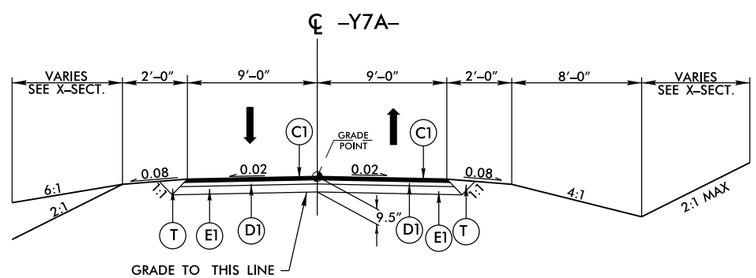
–Y13– STA. 13+10.64 TO 13+50.00
TRANSITION FROM T.S. 27 TO T.S. 28

–Y13– STA. 13+50.00 TO 18+43.67



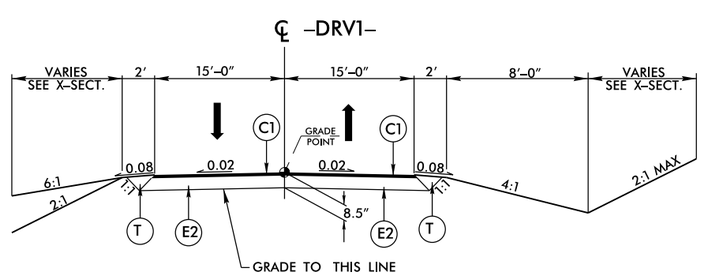
TYPICAL SECTION NO. 29

–Y13– STA. 21+67.32 TO 23+00.00



TYPICAL SECTION NO. 30

TRANSITION FROM EXISTING TO T.S. 30
–Y7A– STA. 10+30.00 TO 12+11.50



TYPICAL SECTION NO. 31

–DRV1– STA. 10+12.00 TO 13+24.36

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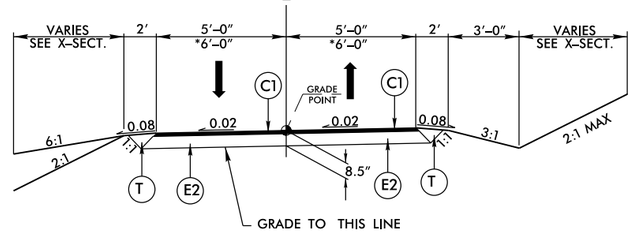
PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-H
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

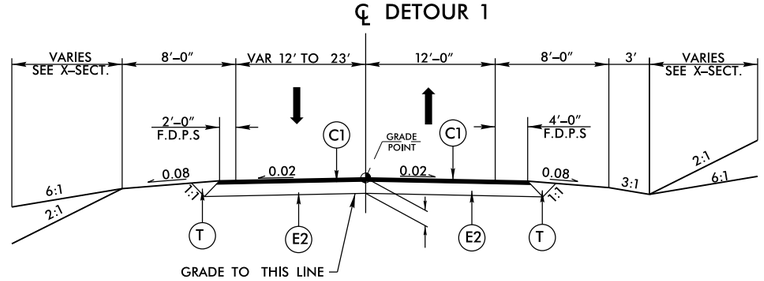
℄ DRIVEWAY



TYPICAL SECTION NO. 32

–DR4A– STA. 10+04.00 TO 11+47.48
–DR11A– STA. 10+83.40 TO 14+30.00
*–DR8A– STA. 10+40.00 TO 11+52.02

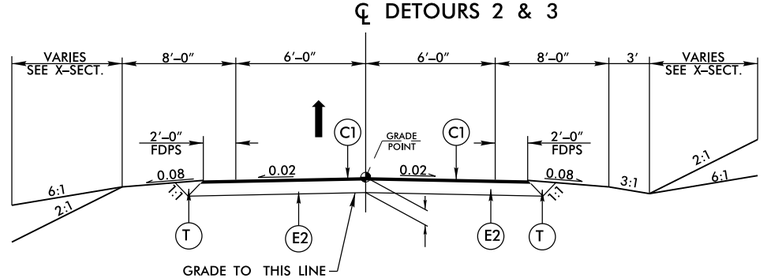
℄ DETOUR 1



TYPICAL SECTION NO. 33

–DET1– STA. 10+00.00 TO 20+50.00

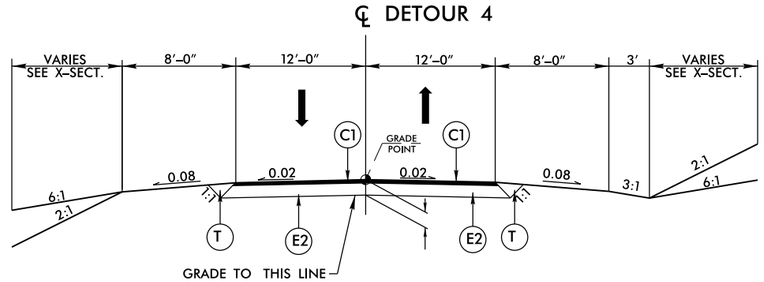
℄ DETOURS 2 & 3



TYPICAL SECTION NO. 34

–DET2– STA. 10+00.00 TO 15+28.88
–DET3– STA. 10+00.00 TO 15+99.81

℄ DETOUR 4



TYPICAL SECTION NO. 35

–DET4– STA. 10+00.00 TO 15+00.00

PAVEMENT SCHEDULE	
C1	3.0" S9.5B
C2	VAR S9.5B
C3	3.0" S9.5C
C4	VAR S9.5C
D1	2.5" I19.0B
D2	VAR. I19.0B
D3	3.0" I19.0C
D4	VAR. I19.0C
E1	4.0" B25.0B
E2	5.5" B25.0B
E3	VAR. B25.0B
J	6" ABC
J1	10" ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING

6/2/99
06-DEC-2013 11:19
R:\Roadway\Proj\r0623_rdy_typ.dgn
$$$$USERNAME$$$$

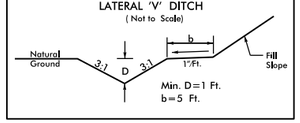
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-H
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

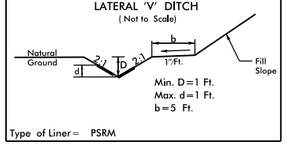
DRAINAGE DITCH DETAILS

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



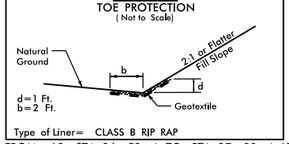
FROM –L1– STA. 23+00 TO –L1– STA. 25+00 RT
FROM –Y3– STA. 11+15+/– TO STA. 11+75+/– RT

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



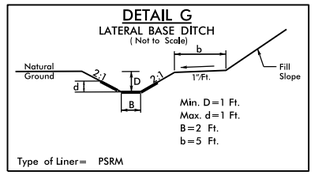
FROM –L1– STA. 25+00 TO STA. 26+90+/– RT
FROM –L– STA. 105+70 TO STA. 105+90 RT.
FROM –L– STA. 303+00 TO STA. 304+50 RT
FROM –L– STA. 307+00 TO STA. 310+35 LT
FROM –L– STA. 90+50 TO STA. 92+00 LT.
FROM –L– STA. 90+50 TO STA. 92+90 RT.
FROM –L– STA. 229+50 TO STA. 230+50 LT
FROM –L– STA. 200+00 TO STA. 200+65 RT
FROM –L– STA. 34+20 TO STA. 38+10+/– RT
FROM –L– STA. 307+00 TO STA. 310+35 LT
FROM –L– 171+70 TO 172+65 LT

DETAIL F
TOE PROTECTION
(Not to Scale)



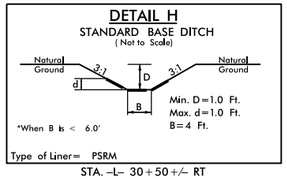
FROM –L2– STA. 26+52+/– TO STA. 27+80+/– LT
FROM –L– STA. 49+20 TO STA. 50+00 RT
FROM –L– STA. 67+00 TO STA. 68+70 LT
FROM –L– STA. 85+50 TO STA. 86+50 RT
FROM –L– STA. 121+40 TO STA. 122+20+/– RT
FROM –L– STA. 250+00 TO STA. 252+50 RT
FROM –L– STA. 252+50 TO STA. 253+50 LT
FROM –L– STA. 254+50 TO STA. 255+20 RT
FROM –L– STA. 254+90 TO STA. 255+25 LT
FROM –L– STA. 270+00+/– TO STA. 271+00+/–RT
FROM –Y7– STA. 15+50 TO STA. 17+50 LT
FROM –DET1– STA. 15+60 TO STA. 20+50 LT

DETAIL G
LATERAL BASE DITCH
(Not to Scale)



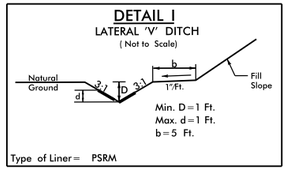
FROM –L– STA. 188+35 TO STA. 189+70 LT
FROM –L– STA. 186+00 TO STA. 188+00 RT
FROM –L– STA. 103+00 TO STA. 105+70 RT.
FROM –L– STA. 92+00 TO STA. 95+00 LT.
FROM –L– STA. 251+25+/– TO STA. 252+60 LT
FROM –L– STA. 204+45 TO STA. 204+90 LT
FROM –L– STA. 328+50 TO STA. 331+00 LT
FROM –L– STA. 120+50 TO STA. 121+00 LT.
FROM –L– STA. 261+25 TO STA. 262+00+/– LT
FROM –L– STA. 261+50 TO 263+85+/– RT
FROM –L– STA. 264+80+/– TO 266+00 RT
FROM –L– STA. 52+50 TO STA. 53+20+/– RT
FROM –L– STA. 53+45 TO STA. 54+50 RT
FROM –Y7– STA. 13+80 TO STA. 15+65 RT
FROM –Y7– STA. 16+30 TO STA. 18+00 RT

DETAIL H
STANDARD BASE DITCH
(Not to Scale)



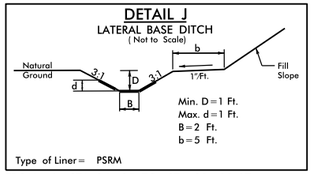
STA. –L– 30+50+/– RT

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



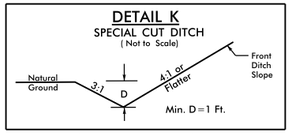
FROM –L– STA. 34+20 TO STA. 38+10+/– RT

DETAIL J
LATERAL BASE DITCH
(Not to Scale)



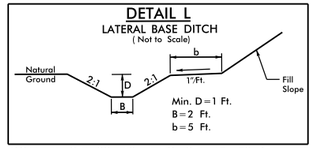
FROM –L– STA. 34+25 TO STA. 38+00 LT
FROM –L– STA. 66+00 TO STA. 66+75 RT
FROM –L– STA. 72+44+/– TO STA. 74+50 LT
FROM –L– STA. 34+25 TO STA. 38+00 LT
FROM –L– STA. 43+00 TO STA. 48+85+/– LT
FROM –L– STA. 84+25 TO STA. 85+50 RT
FROM –L– STA. 341+10+/– TO STA. 342+50 RT

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



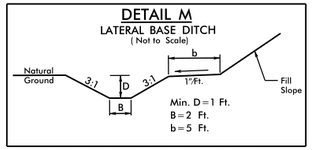
FROM –Y1– STA. 17+85+/– TO STA. 19+50 LT
FROM –Y1– STA. 18+55+/– TO STA. 19+50 RT
FROM –Y3– STA. 11+75 TO STA. 12+25+/– RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



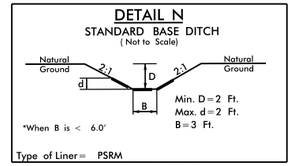
FROM –L– STA. 39+60+/– TO STA. 45+50 RT
FROM –L– STA. 48+50+/– TO STA. 49+00 RT
FROM –L– STA. 122+20 TO STA. 123+65 RT
FROM –L– STA. 152+00 TO STA. 152+36+/– LT
FROM –L– STA. 187+50 TO 188+35 LT
FROM –L– STA. 231+50 TO STA. 234+00 RT
FROM –L– STA. 265+35+/– TO STA. 266+65 LT
FROM –L– STA. 269+00+/– TO 271+80+/– LT
FROM –L– STA. 351+00 TO STA. 352+20 LT
FROM –Y7– STA. 18+00 TO STA. 18+70 RT

DETAIL M
LATERAL BASE DITCH
(Not to Scale)



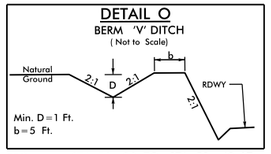
FROM –L– STA. 47+00 TO STA. 47+75 RT
FROM –L– STA. 74+50 STA. TO STA. 77+00+/– LT
FROM –L– STA. 74+50 TO STA. 77+00+/– LT

DETAIL N
STANDARD BASE DITCH
(Not to Scale)



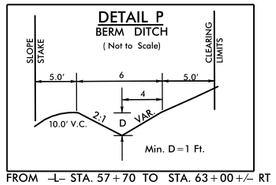
–L– STA. 49+20 RT

DETAIL O
BERM 'V' DITCH
(Not to Scale)



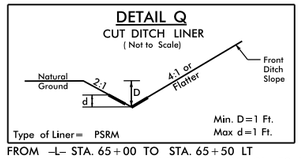
FROM –L– STA. 50+20 TO STA. 53+40 LT

DETAIL P
BERM DITCH
(Not to Scale)



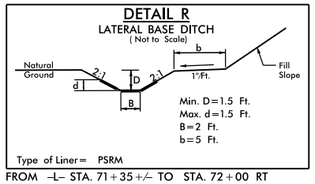
FROM –L– STA. 57+70 TO STA. 63+00+/– RT
FROM –L– STA. 166+50 TO STA. 168+00 LT
FROM –L– STA. 192+00 TO STA. 195+70 LT
FROM –L– STA. 200+00 TO STA. 201+20 LT
FROM –L– STA. 267+00 TO STA. 269+00 LT
FROM –L– STA. 232+50 TO STA. 234+25 LT
FROM –L– STA. 151+00 TO STA. 152+00 RT
FROM –L– STA. 319+85 TO STA. 322+00 RT
FROM –L– STA. 325+00 TO STA. 326+50 RT

DETAIL Q
CUT DITCH LINER
(Not to Scale)



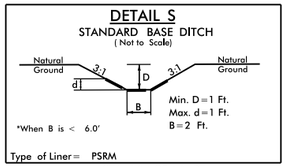
FROM –L– STA. 65+00 TO STA. 65+50 LT
FROM –L– STA. 317+70 RT TO STA. –Y10– 21+50 RT
FROM –DET4– STA. 11+00 LT TO –L– STA. 327+50 –L– LT

DETAIL R
LATERAL BASE DITCH
(Not to Scale)



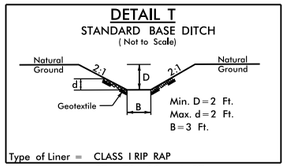
FROM –L– STA. 71+35+/– TO STA. 72+00 RT
FROM –L– STA. 283+00+/– TO STA. 283+44 LT
FROM –L– STA. 287+70+/– TO STA. 291+00 RT
FROM –L– STA. 292+50 TO STA. 293+50 LT
FROM –L– STA. 171+00 TO STA. 173+40 RT
FROM –L– STA. 205+65 TO STA. 209+00 LT
FROM –L– STA. 249+50 TO STA. 251+25+/– LT

DETAIL S
STANDARD BASE DITCH
(Not to Scale)



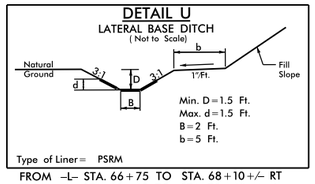
–L– STA. 66+85+/– RT
FROM –L– STA. +/– 343+10 TO STA. +/– 344+20 – LT

DETAIL T
STANDARD BASE DITCH
(Not to Scale)



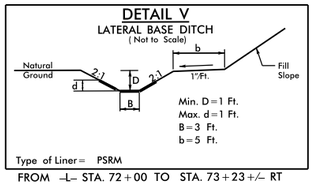
–L– STA. 73+22 +/– RT
–L– STA. 251+50+/– RT

DETAIL U
LATERAL BASE DITCH
(Not to Scale)



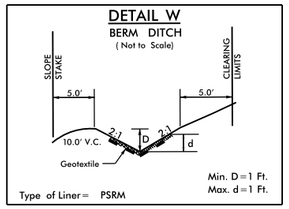
FROM –L– STA. 66+75 TO STA. 68+10+/– RT
FROM –L– STA. 68+45 TO STA. 70+40+/– RT

DETAIL V
LATERAL BASE DITCH
(Not to Scale)



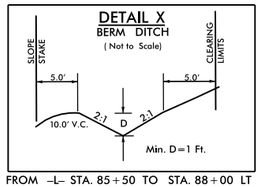
FROM –L– STA. 72+00 TO STA. 73+23+/– RT

DETAIL W
BERM DITCH
(Not to Scale)



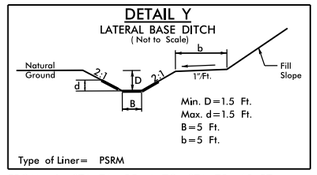
FROM –L– STA. 84+30 TO STA. 85+50 LT

DETAIL X
BERM DITCH
(Not to Scale)



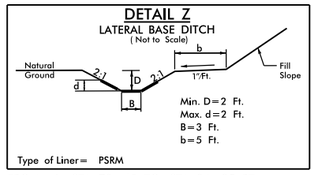
FROM –L– STA. 85+50 TO STA. 88+00 LT

DETAIL Y
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 76+85+/– TO STA. 78+60 RT

DETAIL Z
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 78+60 TO STA. 84+25 RT

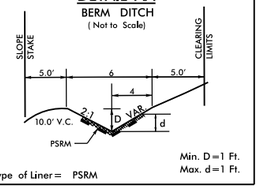
06-DEC-2013 10:33
I:\Roadway\rdg_r\r0623_rdg_drn_details.dgn
$$$$USERNAME$$$$

DRAINAGE DITCH DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

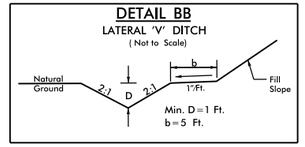
DETAIL AA
BERM DITCH
(Not to Scale)



Type of Liner= PSRM

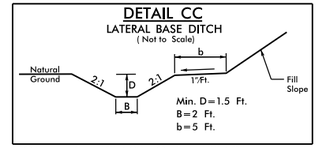
FROM –L– STA. 95+00 TO STA. 95+50 LT
FROM –L– STA. 150+00 TO STA. 151+00 RT
FROM –L– STA. 287+75 TO STA. 290+00 LT
FROM –L– STA. 322+00 TO STA. 326+00 RT
FROM –L– STA. 322+50 TO STA. 325+00 LT
FROM –L– STA. 326+50 TO STA. 329+00 LT
FROM –L– STA. 357+50 TO STA. 362+50 LT
FROM –L– STA. 315+50 TO STA. 318+25+/- RT
FROM –L– STA. 195+70 TO STA. 200+00 LT
FROM –L– STA. 165+00 TO STA. 166+50 LT
FROM –L– STA. 189+70 TO STA. 192+00 LT

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



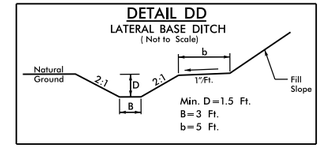
FROM –L– STA. 92+90 TO STA. 94+00 RT
FROM –L– STA. 262+00+/- TO STA. 263+50 LT
FROM –L– STA. 263+50 TO STA. 264+50 LT
FROM –L– STA. 319+50 TO STA. 321+50 LT
FROM –L– STA. 300+50 TO STA. 305+00 LT
FROM –Y12– STA. 16+00 TO STA. 17+50 RT

DETAIL CC
LATERAL BASE DITCH
(Not to Scale)



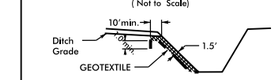
FROM –L– STA. 121+00 TO STA. 122+90 LT
FROM –L– STA. 241+80+/- TO STA. 246+65+/- LT
FROM –L– STA. 291+00 TO STA. 292+50 RT
FROM –L– STA. 291+25 TO STA. 293+50 LT
FROM –L– STA. 241+80+/- TO STA. 246+65+/- LT

DETAIL DD
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 124+50 TO STA. 125+80 LT

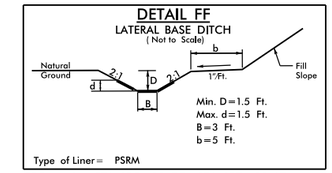
DETAIL EE
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= ? TONS, CL I Rip-Rap
Geotextile= ?sy

–L– STA. 122+90 LT
–L– STA. 123+65 RT
–L– STA. 124+50 LT
–L– STA. 206+10+/- LT
–L– STA. 283+40 LT
–L– STA. 283+90 RT
–L– STA. 203+95+/- RT
–L– STA. 204+90+/-LT

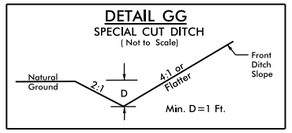
DETAIL FF
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

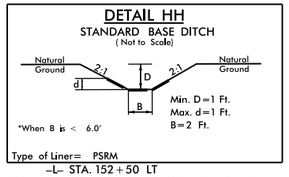
FROM –L– STA. 125+80 TO STA. 127+00 LT
FROM –L– STA. 125+00 TO STA. 127+85 RT

DETAIL GG
SPECIAL CUT DITCH
(Not to Scale)



FROM –L– STA. 150+50 TO STA. 153+00 RT
FROM –Y11– STA. 20+00 TO STA. 21+00 RT

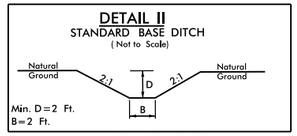
DETAIL HH
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= PSRM

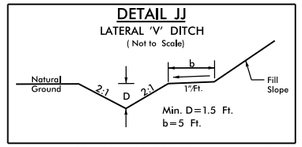
–L– STA. 152+50 LT
FROM –L– STA. 171+50 TO STA. 171+70 LT
FROM –L– STA. 187+80 +/- TO STA. 188+00+/- RT
–L– STA. 255+30+/- LT
–L– STA. 297+40+/- RT
FROM –Y6– STA. 13+84 TO STA. 14+38 RT

DETAIL II
STANDARD BASE DITCH
(Not to Scale)



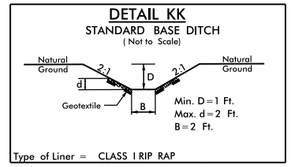
–L– STA. 167+50 RT

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



FROM –L– STA. 203+90 TO STA. 205+65 RT
FROM –L– STA. 228+00 TO STA. 230+50 RT
FROM –L– STA. 307+00 TO STA. 308+50 RT
FROM –L– STA. 203+90 TO STA. 205+65 RT

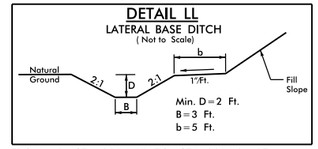
DETAIL KK
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = CLASS I RIP RAP

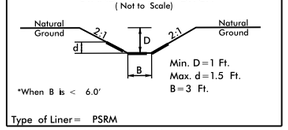
–L– STA. 270+00+/- RT

DETAIL LL
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 290+00 TO STA. 291+25 LT

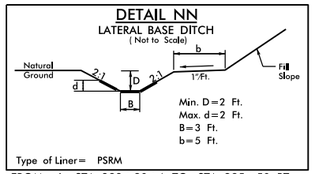
DETAIL MM
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM –L– STA. 291+00 TO STA. 291+37+/- LT

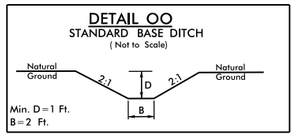
DETAIL NN
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

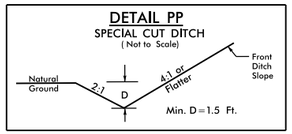
FROM –L– STA. 283+80+/- TO STA. 285+50 RT

DETAIL OO
STANDARD BASE DITCH
(Not to Scale)



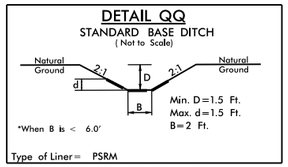
–L– STA. 303+00+/- LT
–L– STA. 303+00+/- RT

DETAIL PP
SPECIAL CUT DITCH
(Not to Scale)



FROM –L– STA. 308+50 TO STA. 310+00 RT

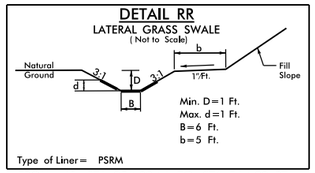
DETAIL QQ
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= PSRM

–Y11– STA. 35+05+/- CL
–L– STA. 351+00+/- LT

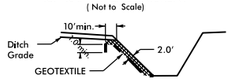
DETAIL RR
LATERAL GRASS SWALE
(Not to Scale)



Type of Liner= PSRM

FROM –L1– STA. 25+00+/- TO STA. 26+90 RT
FROM –L1– STA. 26+90+/- TO STA. 29+00 RT
FROM –L– STA. 339+63+/- TO STA. 343+00 LT

DETAIL SS
RIP RAP AT EMBANKMENT
(Not to Scale)



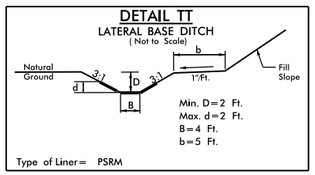
Type of Liner = CLASS II RIP RAP

–L– STA. 339+50+/- RT
EST. 22 TONS CL II RIP RAP
EST. 45 SY GF

–L– STA. 339+63+/- LT
EST. 32 TONS CL II RIP RAP
EST. 62 SY GF

–L– STA. 341+10+/- RT
EST. 14 TONS CL II RIP RAP
EST. 30 SY GF

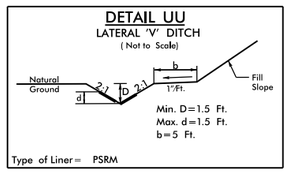
DETAIL TT
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM –L– STA. 334+00 TO STA. 335+15+/- RT
FROM –L– STA. 335+65+/- TO STA. 339+50+/- RT

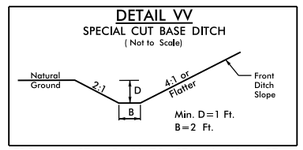
DETAIL UU
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM

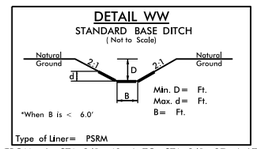
FROM –L– STA. 102+50 TO STA. 105+20 LT.
FROM –L– STA. 264+50 TO STA. 265+30+/- LT
FROM –Y11– STA. 21+35+/- TO STA. 23+70+/- RT

DETAIL VV
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM –L– STA. 45+50 TO STA. 46+40+/- RT

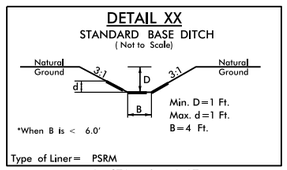
DETAIL WW
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= PSRM

FROM –L– STA. 261+40+/- TO STA. 261+97+/- LT

DETAIL XX
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= PSRM

–L– STA. 152+50 LT
EST. DDE = 54 CY
EST. PSRM = 84 SY

FROM –Y6– STA. 13+84+/- TO STA. 14+38+/- RT
DITCH SLOPE FROM END OF PIPE:
40' AT 4.0%+/-, 12' AT 2% +/-
EST. DDE = 43 CY
EST. PSRM = 68 SY

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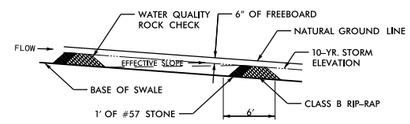
PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-J
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DRAINAGE DITCH DETAILS

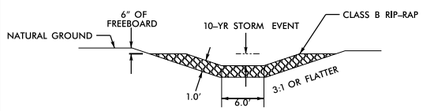
DETAIL WWW

TRAPEZOIDAL GRASSED SWALE
wROCK CHECK DAM

(Not to Scale)



PROFILE



TYPICAL SECTION

NOTES:

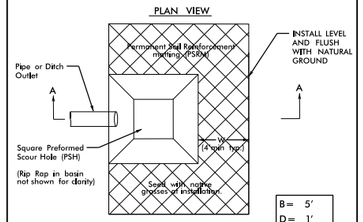
1) DO NOT USE INSIDE CLEAR RECOVERY AREA.
2) NOT PRACTICAL TO USE ON SLOPES > 5%.
3) FOR PERMANENT STRUCTURES IN GRASS SWALE.
4) CHECK DAMS SHOULD BE SPACED SUCH THAT THE BASE OF THE UPSTREAM CHECK IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM CHECK.

FROM STA. -L1- 25+00 TO STA. -L1- 29+00 RT
FROM STA. -L- 339+50 TO STA. -L- 340+50 LT

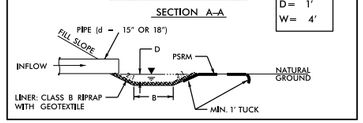
PREFORMED SCOUR HOLE

*NOT TO SCALE

PLAN VIEW



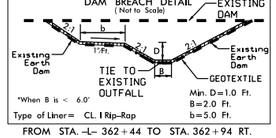
SECTION A-A



B= 5'
D= 1'
W= 4'

DETAIL YY

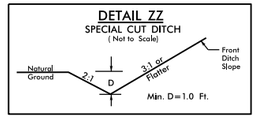
DAM BREACH DETAIL
(Not to Scale)



FROM STA. -L- 362+44 TO STA. 362+94 RT.

DETAIL ZZ

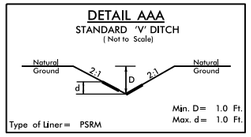
SPECIAL CUT DITCH
(Not to Scale)



FROM -DRV1- STA. 10+25 TO STA. 12+75 Rt
FROM -DET1- STA. 10+12 TO STA. 13+50 Rt

DETAIL AAA

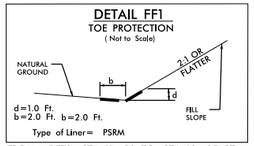
STANDARD 'V' DITCH
(Not to Scale)



FROM -DRV1- STA. 12+75 TO STA. 13+32 RT

DETAIL FF1

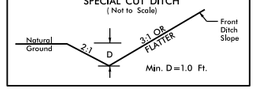
TOE PROTECTION
(Not to Scale)



FROM -DET2- STA. 11+50 TO STA. 12+25 RT

DETAIL

SPECIAL CUT DITCH
(Not to Scale)



FROM -DET1- STA. 10+12 TO STA. 13+50 Rt

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PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

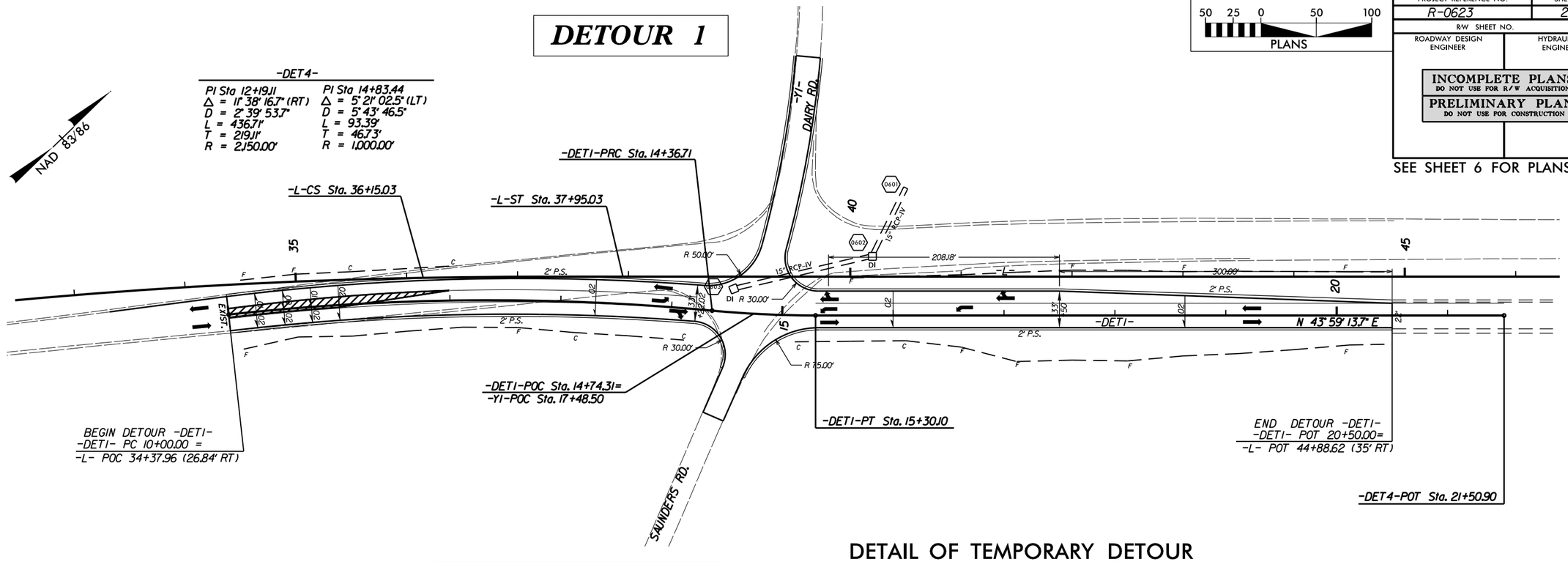
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

50 25 0 50 100
PLANS

SEE SHEET 6 FOR PLANS

DETOUR 1

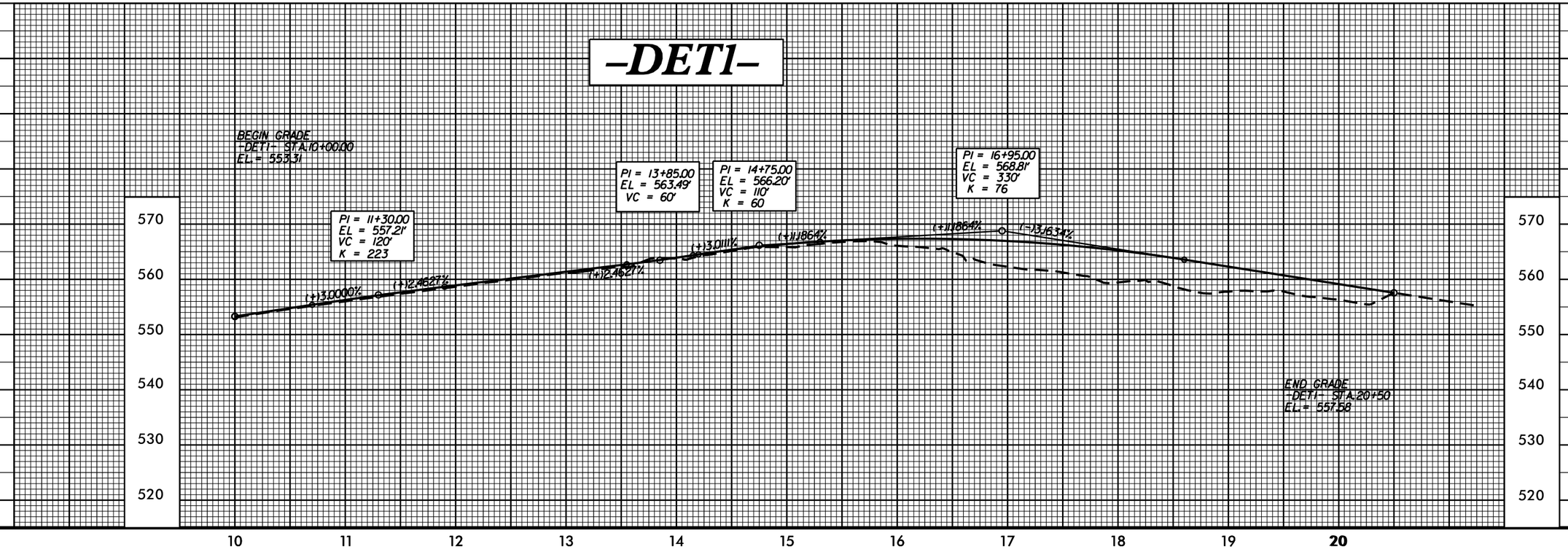


DETAIL OF TEMPORARY DETOUR

DETOUR DESIGN SPEED = 45 MPH

USE THIS SHEET FOR TEMPORARY TRAFFIC MAINTENANCE DURING CONSTRUCTION

-DET1-



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-
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

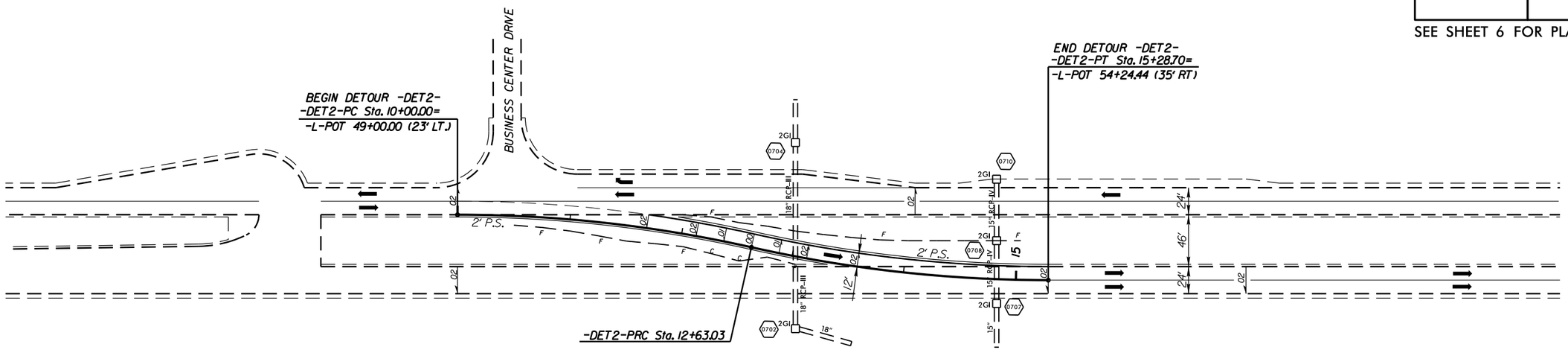
50 25 0 50 100
PLANS

DETOUR 2

-DET2-

PI Sta 11+32.05	PI Sta 13+96.41
Δ = 12° 37' 18.8" (RT)	Δ = 12° 37' 18.8" (LT)
D = 4° 47' 55.1"	D = 4° 45' 03.2"
L = 263.03'	L = 265.67'
T = 132.05'	T = 133.38'
R = 1,194.00'	R = 1,206.00'

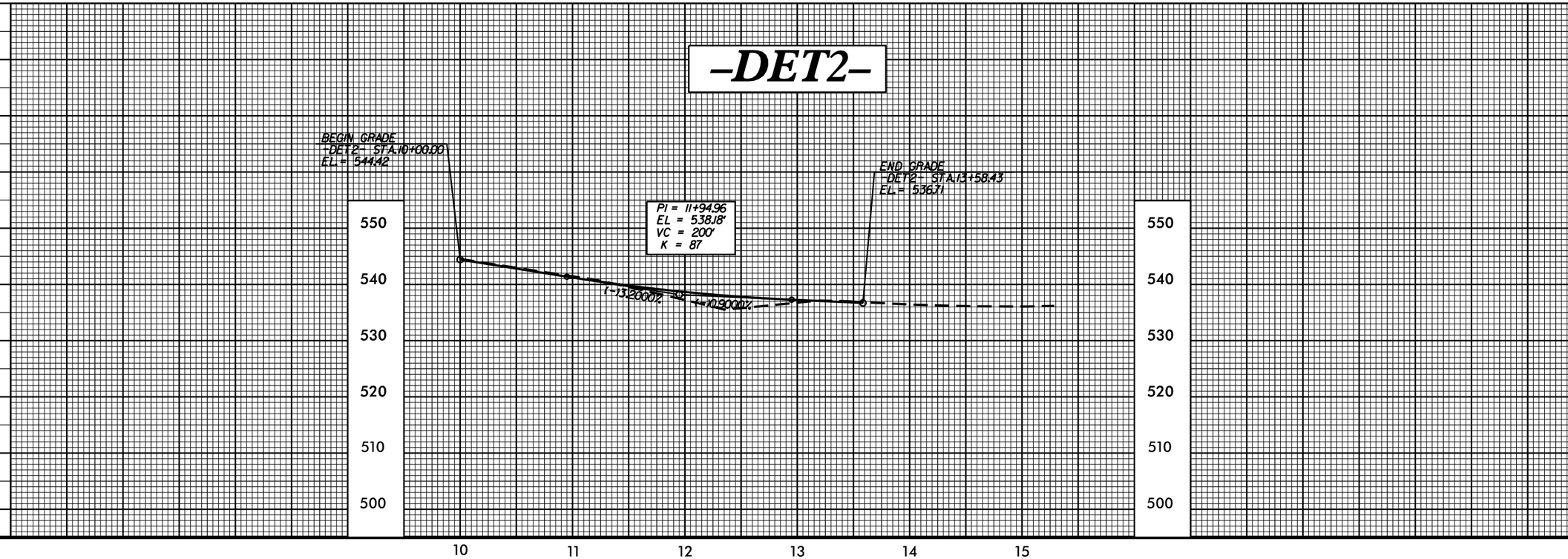
SEE SHEET 6 FOR PLANS



DETAIL OF TEMPORARY DETOUR

DETOUR DESIGN SPEED = 45 MPH

USE THIS SHEET FOR TEMPORARY TRAFFIC MAINTENANCE DURING CONSTRUCTION



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 27 FOR PLANS

DETAIL OF TEMPORARY DETOUR

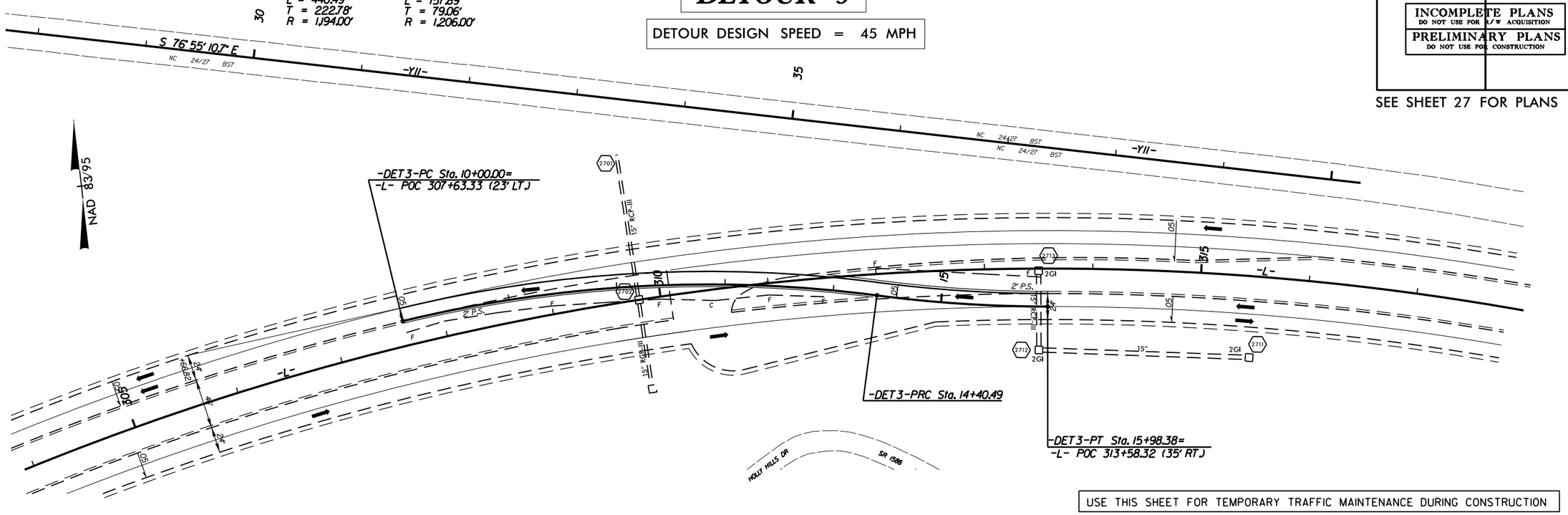
DETOUR 3

DETOUR DESIGN SPEED = 45 MPH

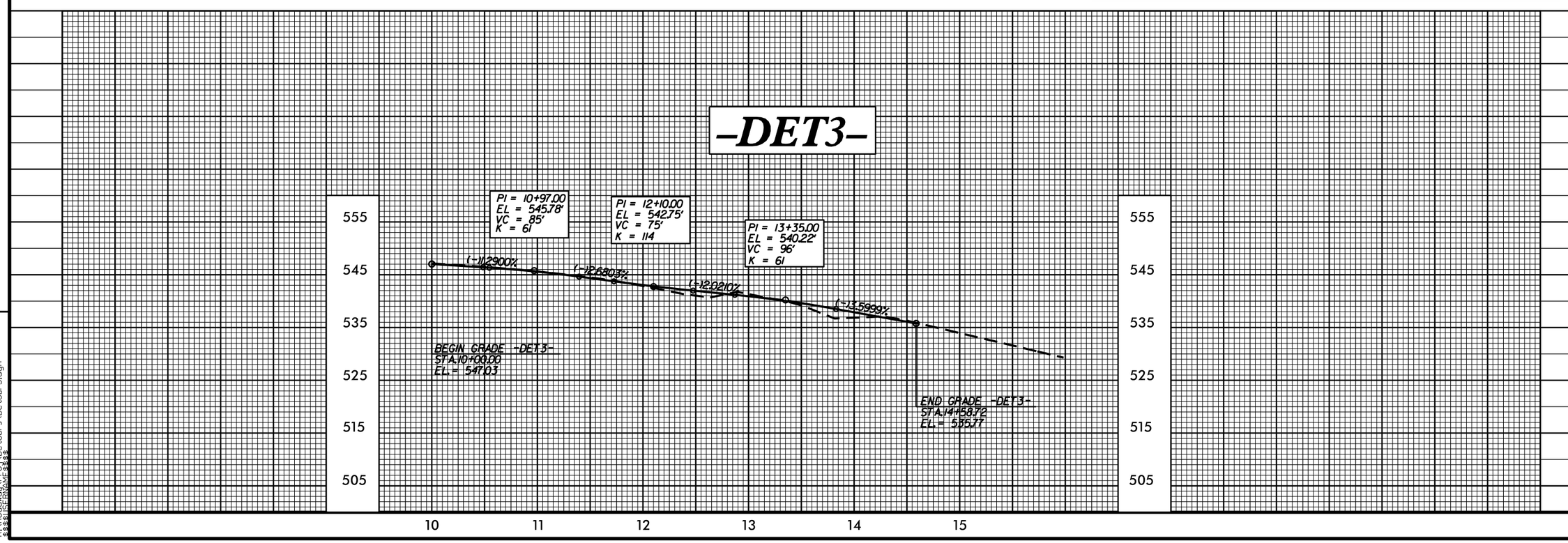
50 25 0 50 100
PLANS

-DET3-

PI Sta 12+22.78	PI Sta 15+19.54
Δ = 21° 08' 14.4" (RT)	Δ = 7° 30' 04.6" (LT)
D = 4° 47' 55.1"	D = 4° 45' 03.2"
L = 440.49'	L = 157.89'
T = 222.78'	T = 79.06'
R = 1,194.00'	R = 1,206.00'



USE THIS SHEET FOR TEMPORARY TRAFFIC MAINTENANCE DURING CONSTRUCTION



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DETAIL OF TEMPORARY DETOUR

DETOUR 3A

DETOUR DESIGN SPEED = 20 MPH

50 25 0 50 100
PLANS

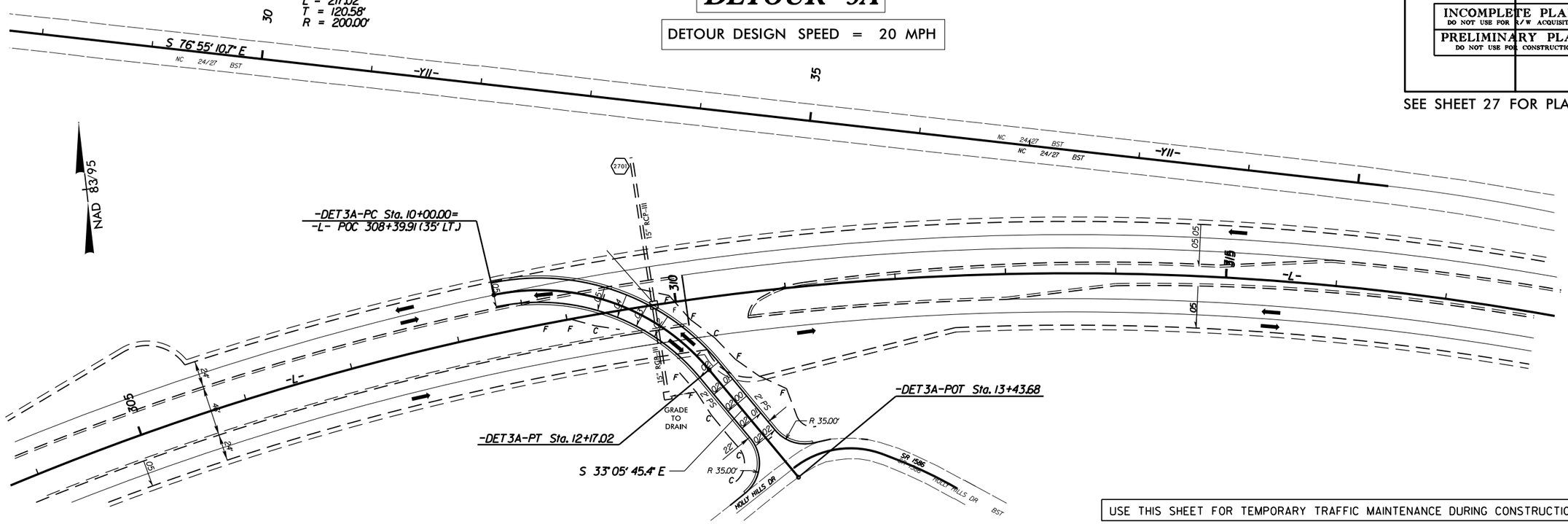
PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

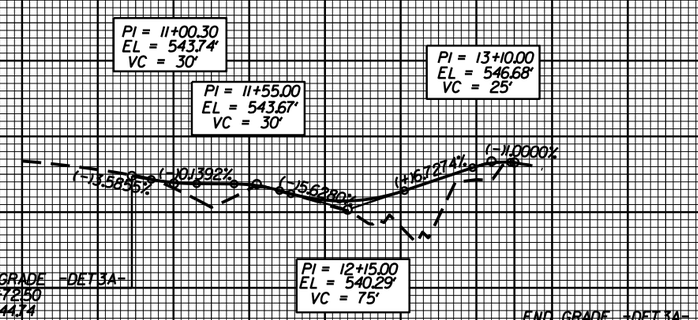
SEE SHEET 27 FOR PLANS

-DET3A-
PI Sta. 11+20.58
Δ = 62° 10' 13.7" (RT)
D = 28° 38' 52.4"
L = 217.02'
T = 120.58'
R = 200.00'



USE THIS SHEET FOR TEMPORARY TRAFFIC MAINTENANCE DURING CONSTRUCTION

-DET3A-



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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

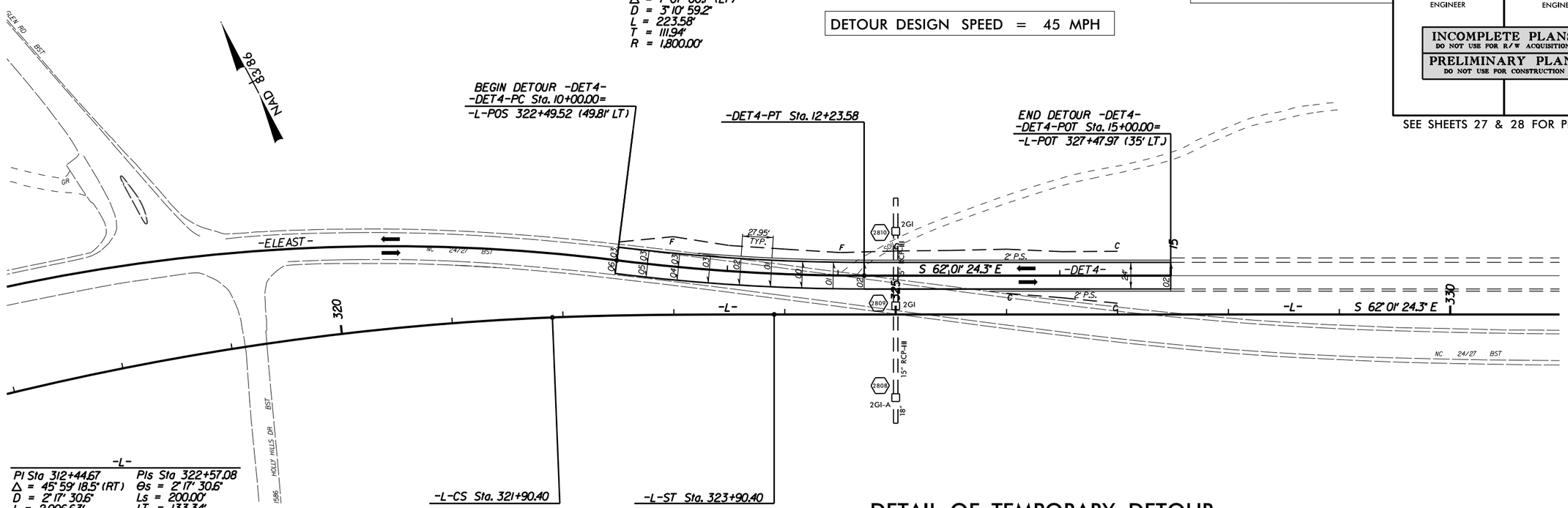
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 27 & 28 FOR PLANS

50' 25' 0 50' 100'
PLANS

DETOUR 4

DETOUR DESIGN SPEED = 45 MPH



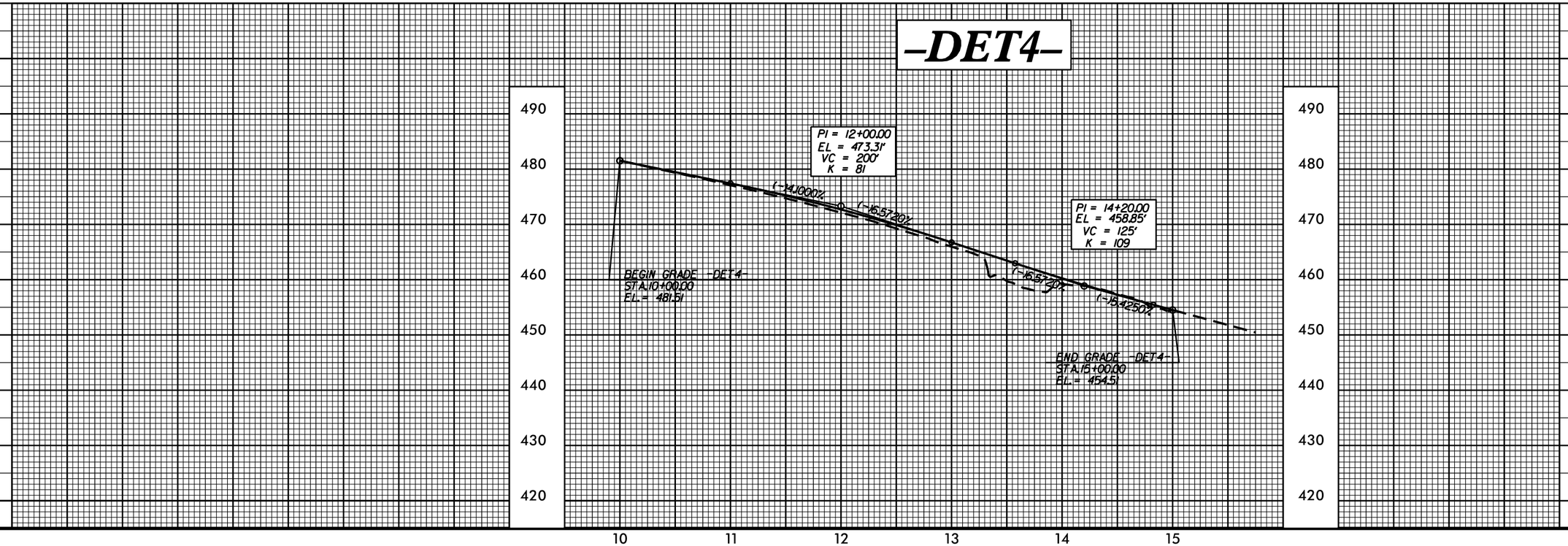
-L-

PI Sta 312+44.67	PIs Sta 322+57.08
Δ = 45° 59' 18.5" (RT)	Θs = 2° 17' 30.6"
D = 2° 17' 30.6"	Ls = 200.00'
L = 2,006.63'	LT = 133.34'
T = 1,060.89'	ST = 66.68'
R = 2,500.00'	
se = 0.05	

DETAIL OF TEMPORARY DETOUR

USE THIS SHEET FOR TEMPORARY TRAFFIC MAINTENANCE DURING CONSTRUCTION

-DET4-



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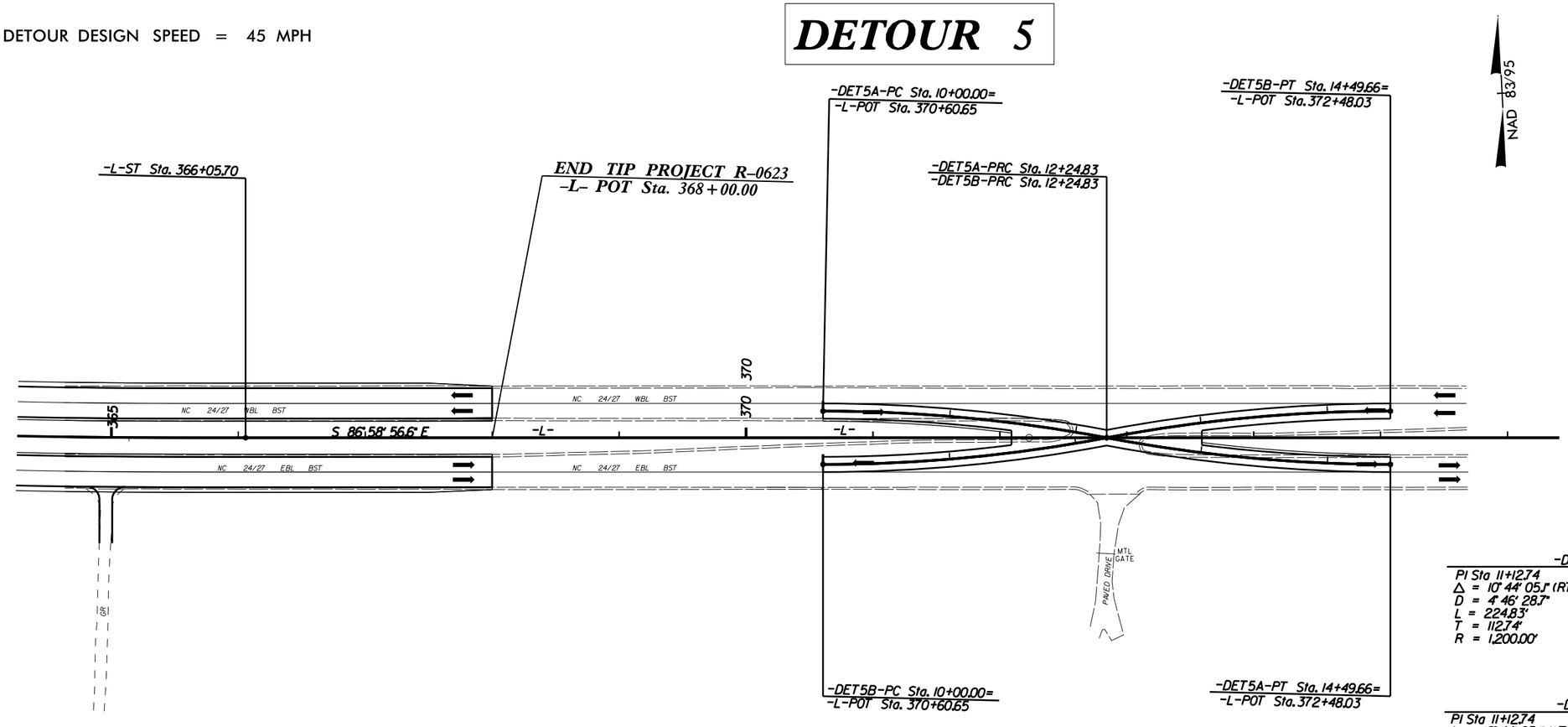
DETOUR DESIGN SPEED = 45 MPH

DETOUR 5

PROJECT REFERENCE NO.	SHEET NO.
R-0623	2-
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

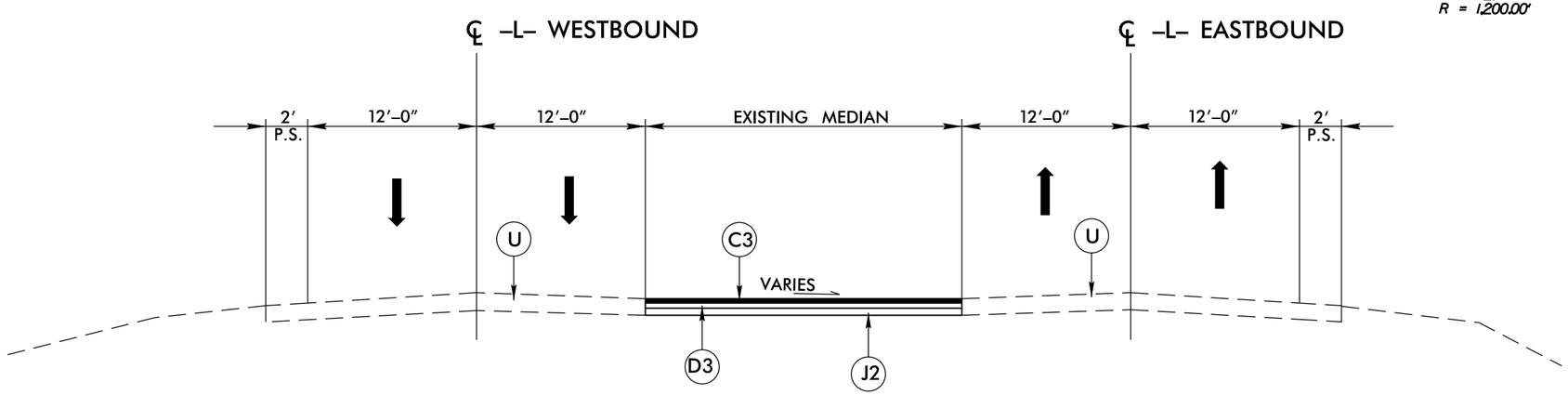


-DET5A-

PI Sta 11+12.74	PI Sta 13+37.57
Δ = 10° 44' 05.1" (RT)	Δ = 10° 44' 05.1" (LT)
D = 4° 46' 28.7"	D = 4° 46' 28.7"
L = 224.83'	L = 224.83'
T = 112.74'	T = 112.74'
R = 1,200.00'	R = 1,200.00'

-DET5B-

PI Sta 11+12.74	PI Sta 13+37.57
Δ = 10° 44' 05.1" (LT)	Δ = 10° 44' 05.1" (RT)
D = 4° 46' 28.7"	D = 4° 46' 28.7"
L = 224.83'	L = 224.83'
T = 112.74'	T = 112.74'
R = 1,200.00'	R = 1,200.00'



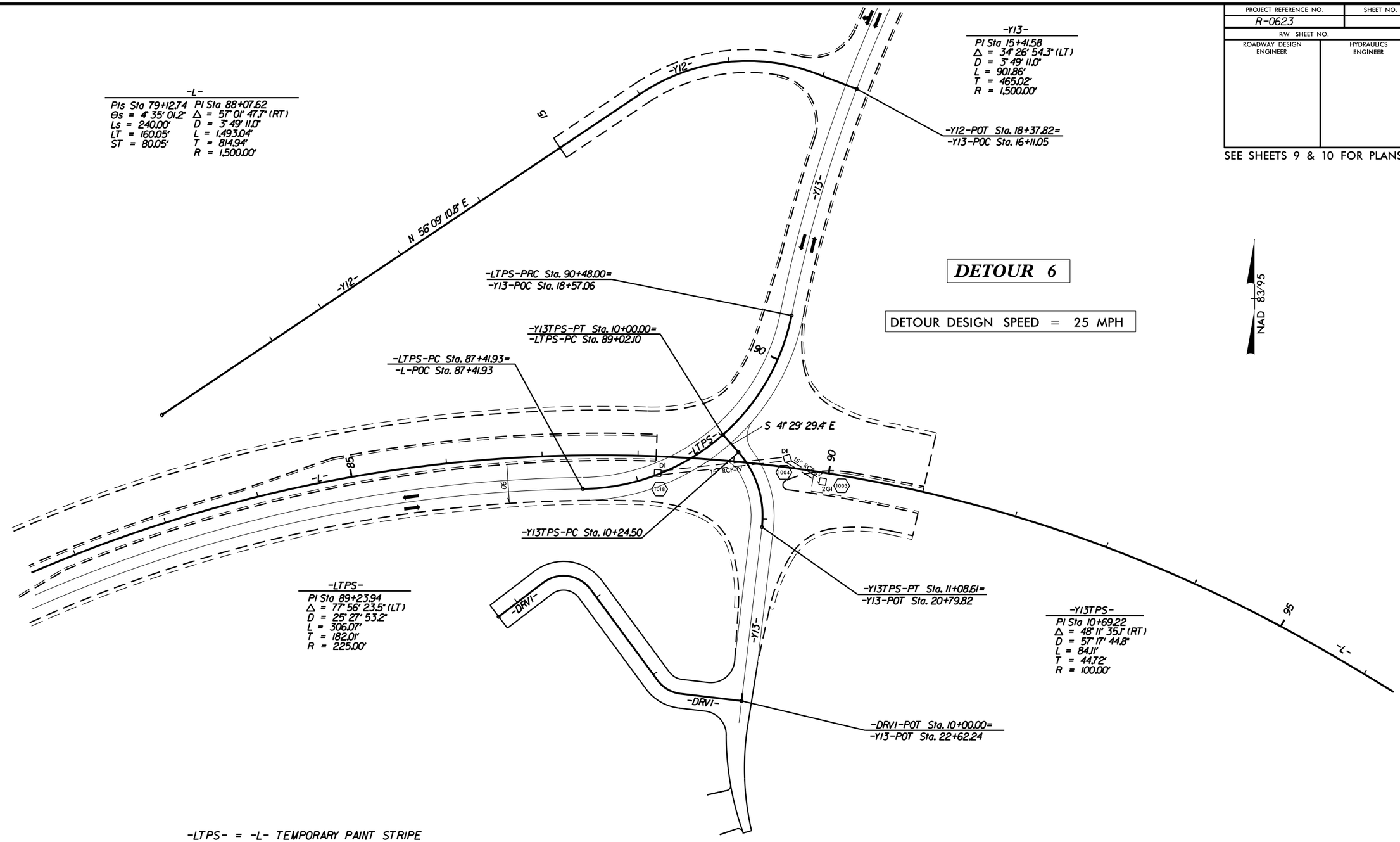
TEMPORARY HOUR GLASS DESIGN

-DET5A- STA. 10+00.00 TO 14+49.66
-DET5B- STA. 10+00.00 TO 14+49.66

06-DEC-2013 10:35
R:\Roadway\Proj\Detours\Detour5.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SEE SHEETS 9 & 10 FOR PLANS



-LTPS- = -L- TEMPORARY PAINT STRIPE
-Y13TPS- = -Y13- TEMPORARY PAINT STRIPE

5/14/99

06-DEC-2013 10:35
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NOTE: –L1– PROPOSED R/W HAS BEEN SET TO ACCOMODATE FUTURE FOUR LANE DIVIDED SECTION

PROJECT REFERENCE NO.	SHEET NO.
R–0623	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

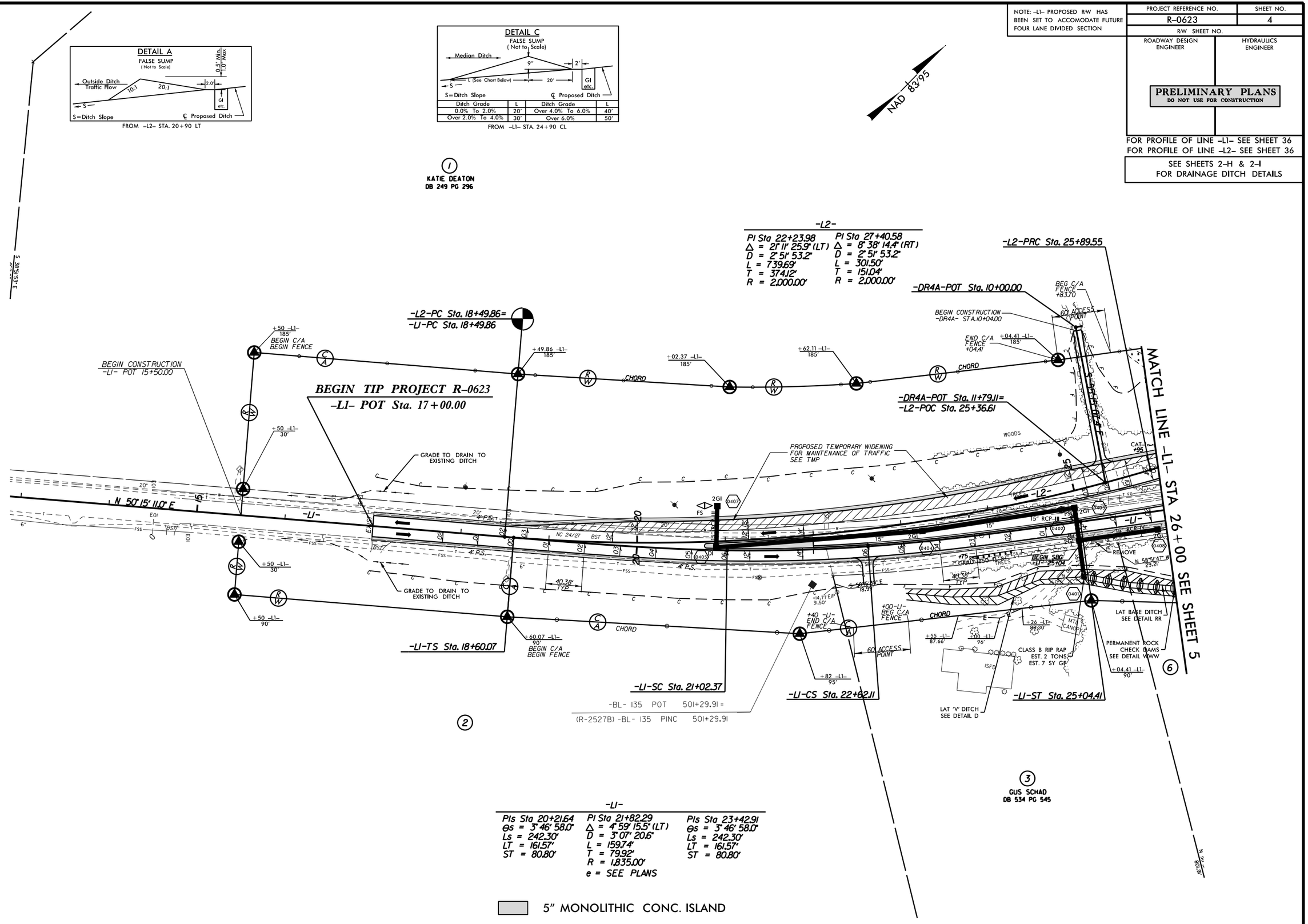
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE –L1– SEE SHEET 36
FOR PROFILE OF LINE –L2– SEE SHEET 36
SEE SHEETS 2–H & 2–I FOR DRAINAGE DITCH DETAILS

REVISIONS

R/W REVISION– REVISED R/W AND ELIMINATED PDE ON PARCEL 3. 5/3/2013 ΠΥ
R/W REVISION– COMBINED PARCELS 4 & 6 INTO PARCEL 6. 7/31/2013 ΠΥ
R/W REVISION– UPDATED O/S FLAGS THAT TIE TO EXIST. R/W ON PARCELS 1,2 & 3. 8/30/2013 – ΠΥ

8/17/99



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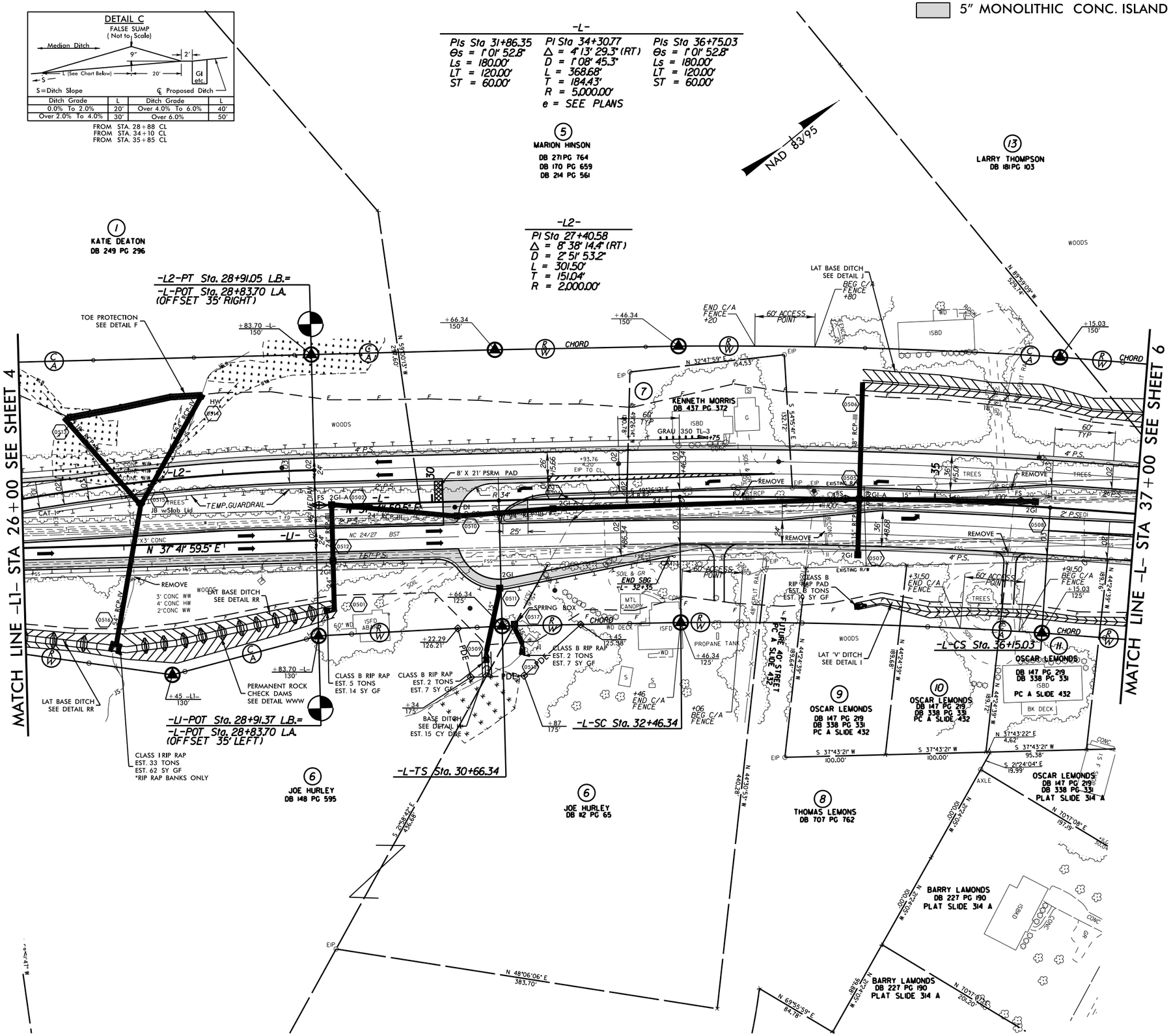
PROJECT REFERENCE NO.	SHEET NO.
R-0623	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 36
FOR PROFILE OF LINE -L1- SEE SHEET 36
FOR PROFILE OF LINE -L2- SEE SHEET 37

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

5" MONOLITHIC CONC. ISLAND



REVISIONS	
R/W REVISION- REVISED R/W AND PDE ON PARCEL 4.	5/31/2013 IY
R/W REVISION- UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 8 AND COMBINED PARCELS 4 & 6 INTO PARCEL 6.	7/31/2013 IY
R/W REVISION- SHIFTED ACCESS POINT ON PARCEL 5 TO -L- 33+20 LT.	7/31/2013 IY

8/17/99

06-DEC-2013 10:12
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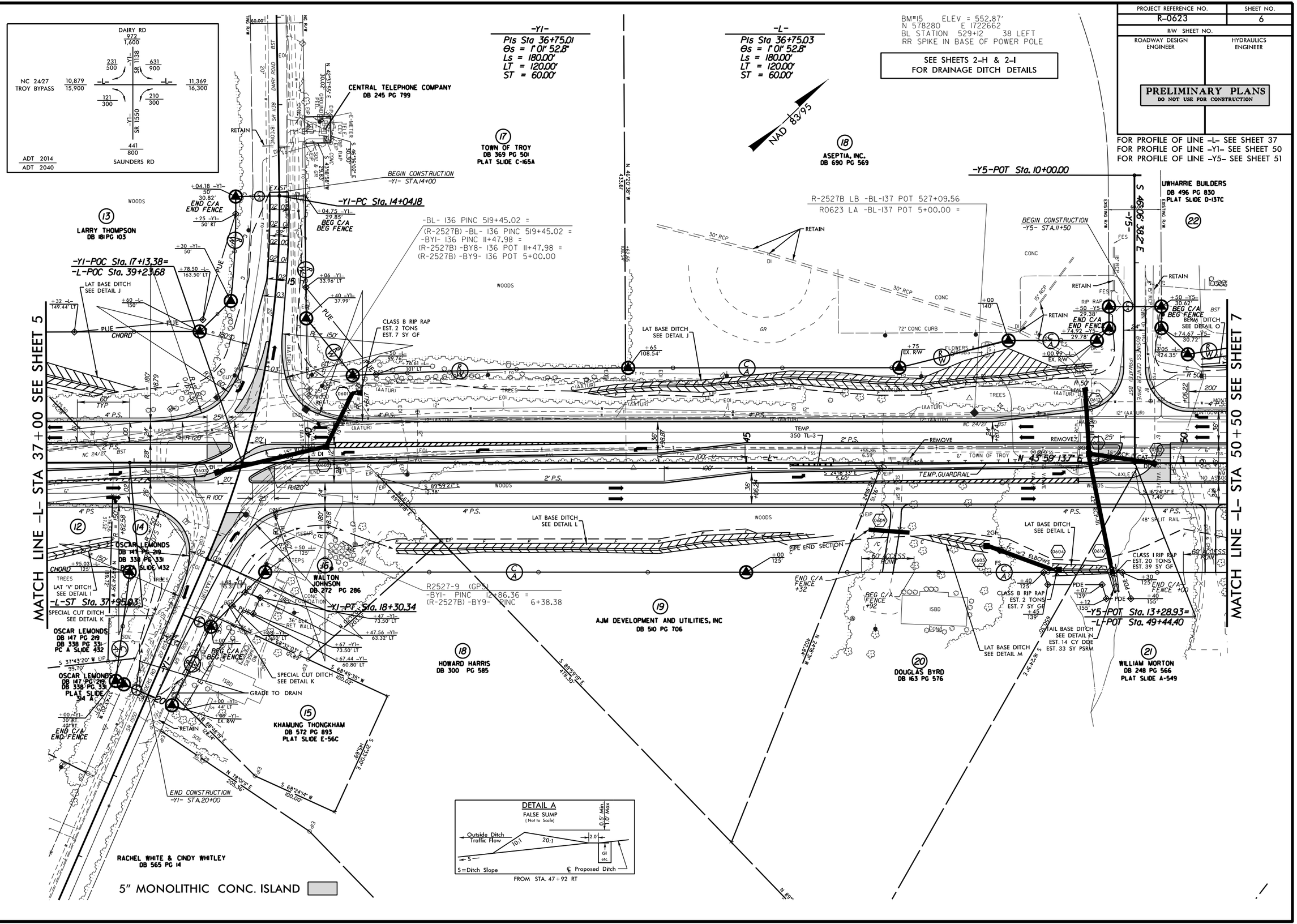
PROJECT REFERENCE NO.	SHEET NO.
R-0623	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 37
FOR PROFILE OF LINE -Y1- SEE SHEET 50
FOR PROFILE OF LINE -Y5- SEE SHEET 51



REVISIONS

R/W REVISION - ADDED ADDITIONAL PUE ON PARCEL 13 - KDA 03/28/2013

R/W REVISION - UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 18A REVISED O/S FLAGS THAT TIE TO EXIST.R/W ON PARCELS 13,17,18A & 22. ADDED STATION & O/S FLAGS TO PUE/PDE INTERSECTION ON PARCEL 18. 08/30/2013 - hr

8/17/99

06-DEC-2013 10:12
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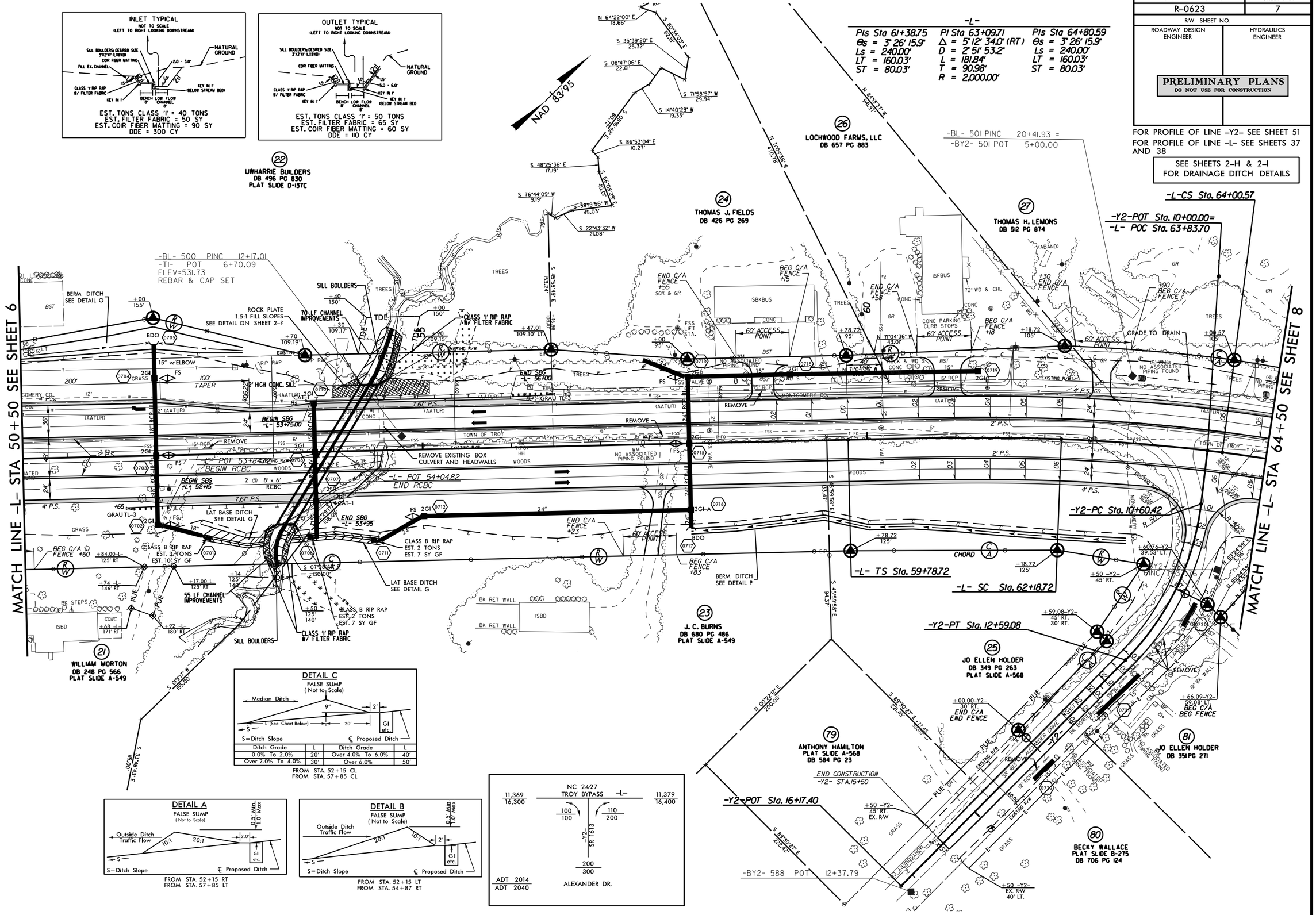
PROJECT REFERENCE NO.	SHEET NO.
R-0623	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -Y2- SEE SHEET 51
FOR PROFILE OF LINE -L- SEE SHEETS 37 AND 38

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS



R/W REVISIONS - REVISED R/W AND ADDED PUE TO PARCELS 25 AND 79. ALSO CONVERTED R/W TO TCE ON PARCELS 80, 81. 7/31/2013 1Y

R/W REVISIONS - UPDATED PROPERTY OWNER INFORMATION ON PARCELS 23, 26 & 80. UPDATED O/S FLAGS THAT TIE TO EX.R/W

R/W REVISIONS - UPDATED PROPERTY OWNER INFORMATION ON PARCEL 26. 7/31/2013 1Y

REVISIONS

8/17/99

06-DEC-2013 10:12
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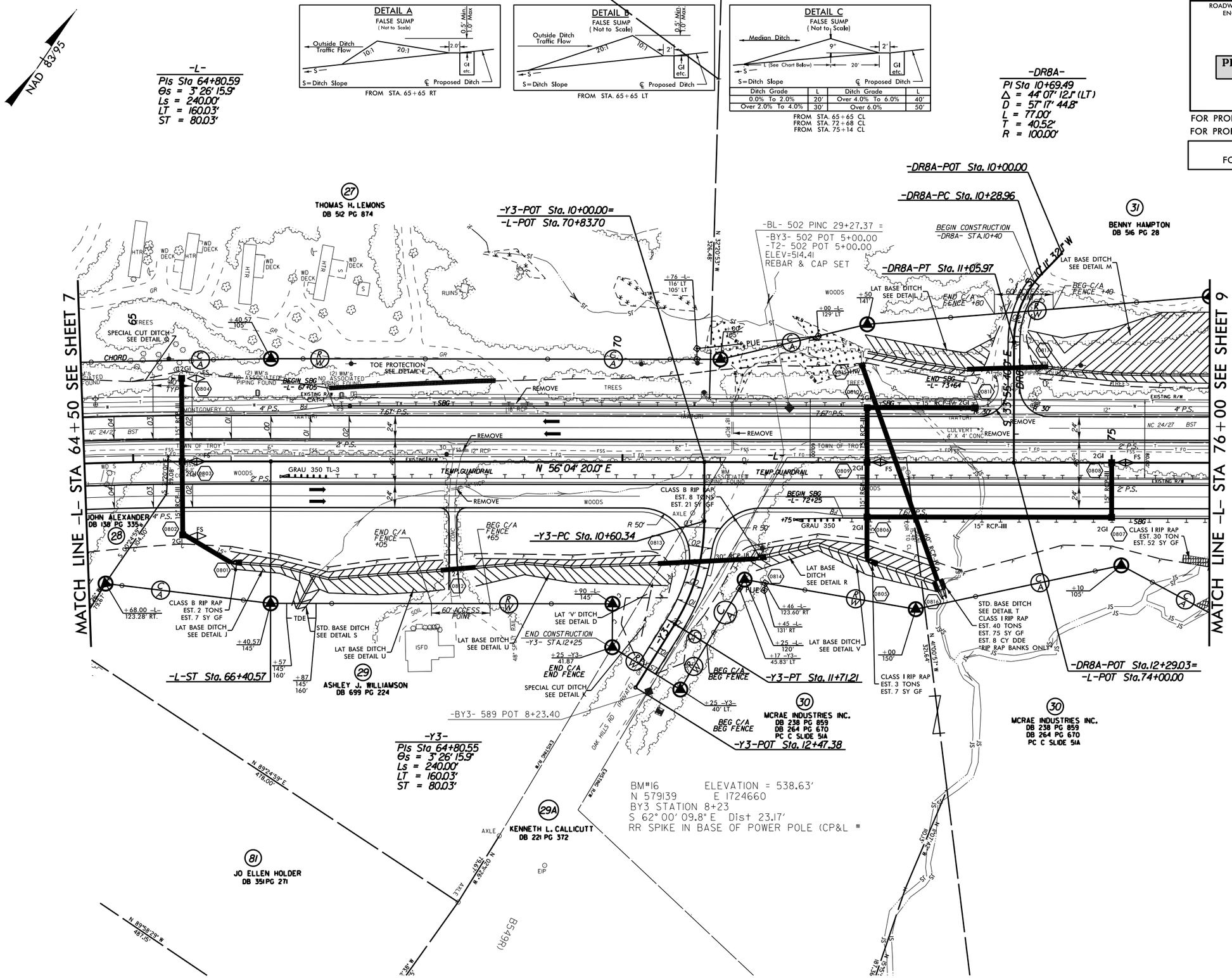
PROJECT REFERENCE NO.	SHEET NO.
R-0623	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 38
FOR PROFILE OF LINE -Y3- SEE SHEET 51

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS



REVISIONS
R/W REVISION- UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 29 COMBINED PARCELS 30 & 32 INTO PARCEL 30. 7/31/2013 -N-
R/W REVISION- ADDED PARCEL 29A AND SHIFTED C/A LIMITS ON PARCEL 30 TO -Y3- 11+71.21. 8/30/2013 -N-

8/17/99

06-DEC-2013 10:12
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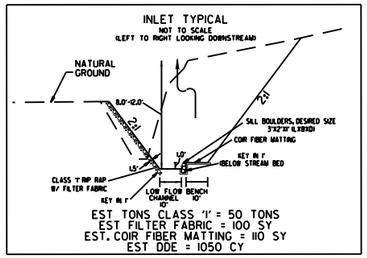
PROJECT REFERENCE NO.	SHEET NO.
R-0623	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

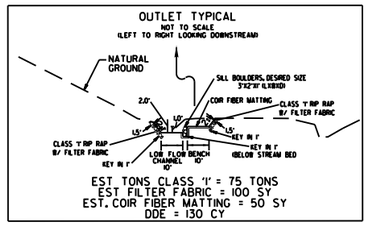
SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

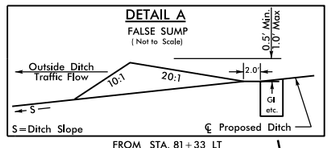
SEE SHEET 2-I FOR PREFORMED SCOUR HOLE DETAIL

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

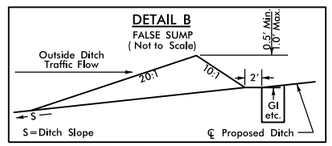
FOR PROFILE OF LINE -L- SEE SHEETS 38 AND 39
FOR PROFILE OF LINE -Y12- SEE SHEET 54



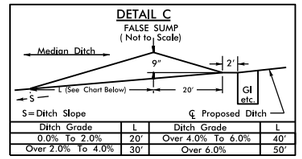




FROM STA. 81+33 LT
FROM STA. 84+13 LT



FROM STA. 86+34 RT



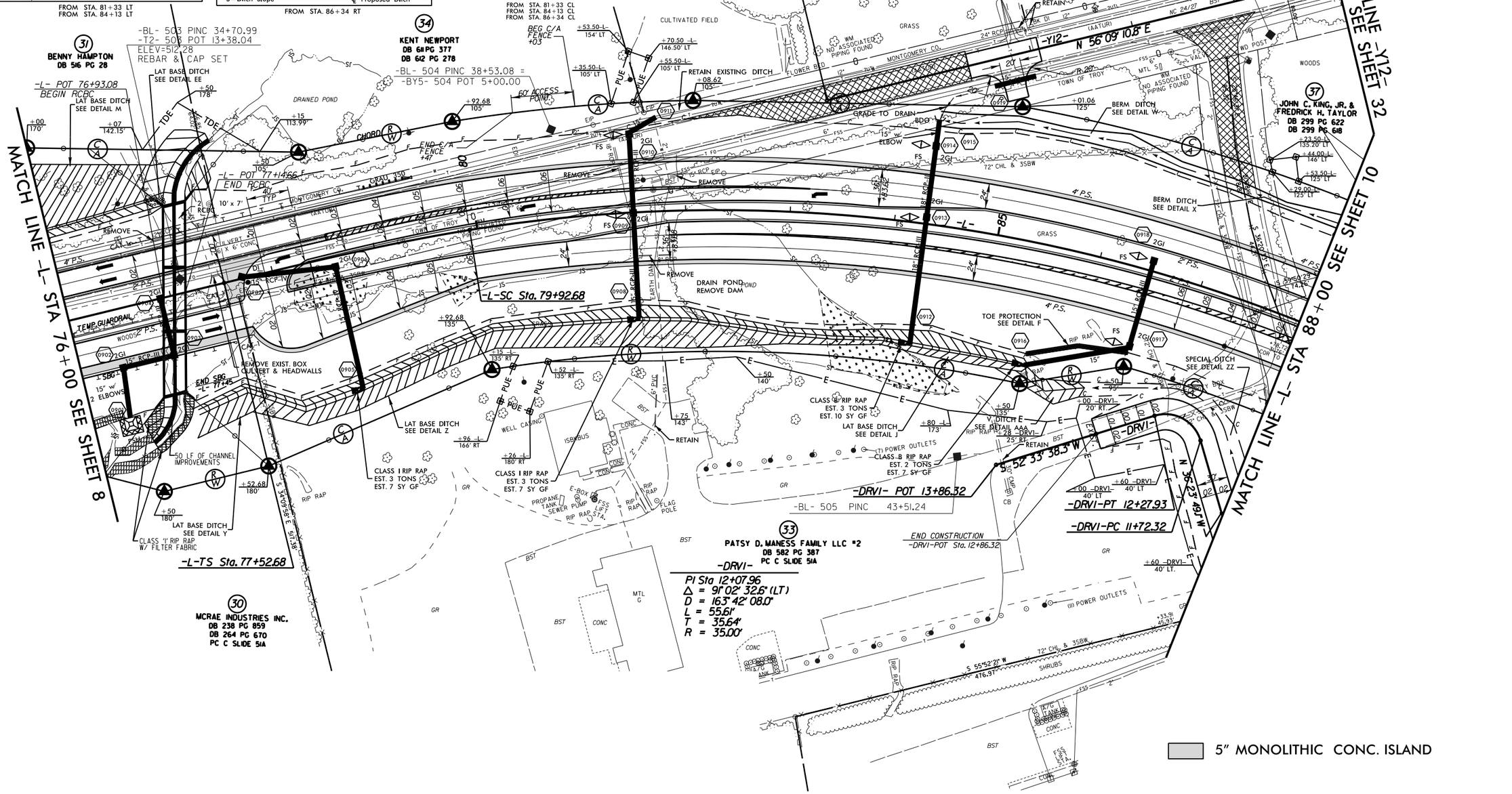
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 81+33 CL
FROM STA. 84+13 CL
FROM STA. 86+34 CL

-L-

PIs Sta 79+12.74
Θs = 4° 35' 01.2"
Ls = 240.00'
LT = 160.05'
ST = 80.05'

PI Sta 88+07.62
Δ = 57° 01' 47.7" (RT)
D = 3° 49' 11.0"
L = 1,493.04'
T = 814.94'
R = 1,500.00'



R/W REVISION- REVISED R/W,TCE & PUE on PARCEL 36. 5/24/2013 TY
R/W REVISION- ADDED ADDITIONAL TCE ON PARCEL 33 AROUND THE POND. 7/31/2013 TY

REVISIONS

R/W REVISION- UPDATED PROPERTY OWNER INFORMATION FOR PARCELS 35 & 37. 7/31/2013 TY
R/W REVISION- CORRECTED PUE O/S FLAG AT -L- STA 80+26 TO 180' INSTEAD OF 188'. 8/30/2013 - TY
R/W REVISION- REVISED TCE ON PARCEL 33. 11/ /2013 TY

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-0623	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 39
FOR PROFILE OF LINE -Y13- SEE SHEET 55

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

ADT 2014	6,348
ADT 2040	8,500

-Y13-

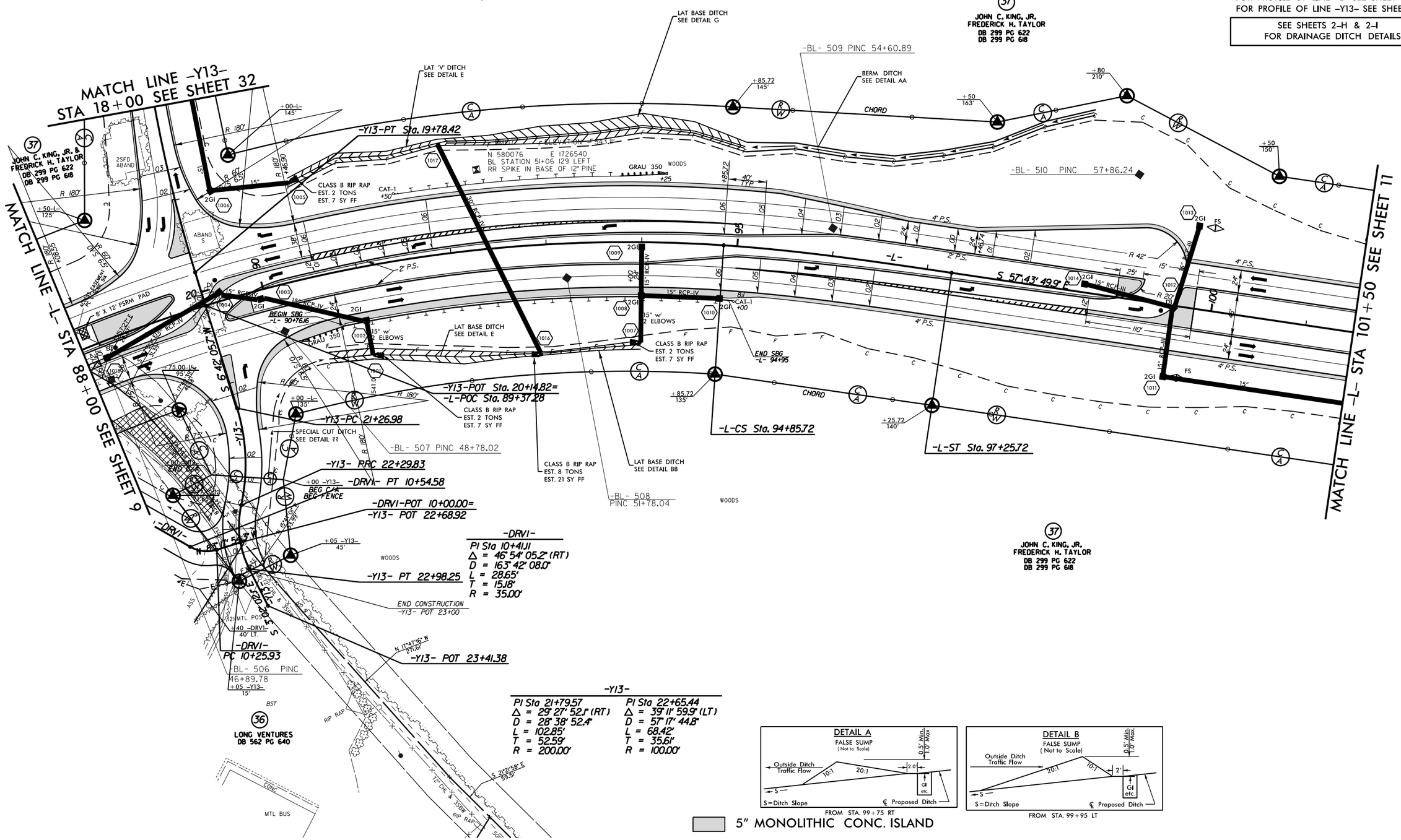
5,559 / 7,800		790 / 700	
NC 24/27 TROY BYPASS	11,379 / 16,400	-L-	-L- 6,610 / 9,300

NAD 83/95

-Y13-
PI Sta 15+41.58
Δ = 34° 26' 54.3" (LT)
D = 3° 49' 11.0"
L = 901.86'
T = 465.02'
R = 1,500.00'

-L-
PI Sta 88+07.62
Δ = 57° 01' 47.7" (RT)
D = 3° 49' 11.0"
L = 1,493.04'
T = 814.94'
R = 1,500.00'

PIs Sta 95+65.77
Θs = 4° 35' 01.2"
Ls = 240.00'
LT = 160.05'
ST = 80.05'



-DRV1-
PI Sta 10+41.11
Δ = 46° 54' 05.2" (RT)
D = 163° 42' 08.0"
L = 28.65'
T = 15.18'
R = 35.00'

-Y13-

PI Sta 21+79.57	PI Sta 22+65.44
Δ = 29° 27' 52.1" (RT)	Δ = 39° 11' 59.9" (LT)
D = 28° 38' 52.4"	D = 57° 17' 44.8"
L = 102.85'	L = 68.42'
T = 52.59'	T = 35.61'
R = 200.00'	R = 100.00'

FROM STA. 99+75 RT

FROM STA. 99+95 LT

5" MONOLITHIC CONC. ISLAND

8/17/99

R/W REVISION - REVISED R/W,TCE & PUE AND ADDED TDE TO PARCELS 36 & 37. 5/24/2013 IY
R/W REVISION - REVISED TCE & TDE ON PARCEL 36. 6/13/2013 IY

REVISIONS

R/W REVISION - UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 37. 7/31/2013 IY
R/W REVISION - REVISED R/W & TCE ON PARCELS 36 & 37. 11/ /2013 IY

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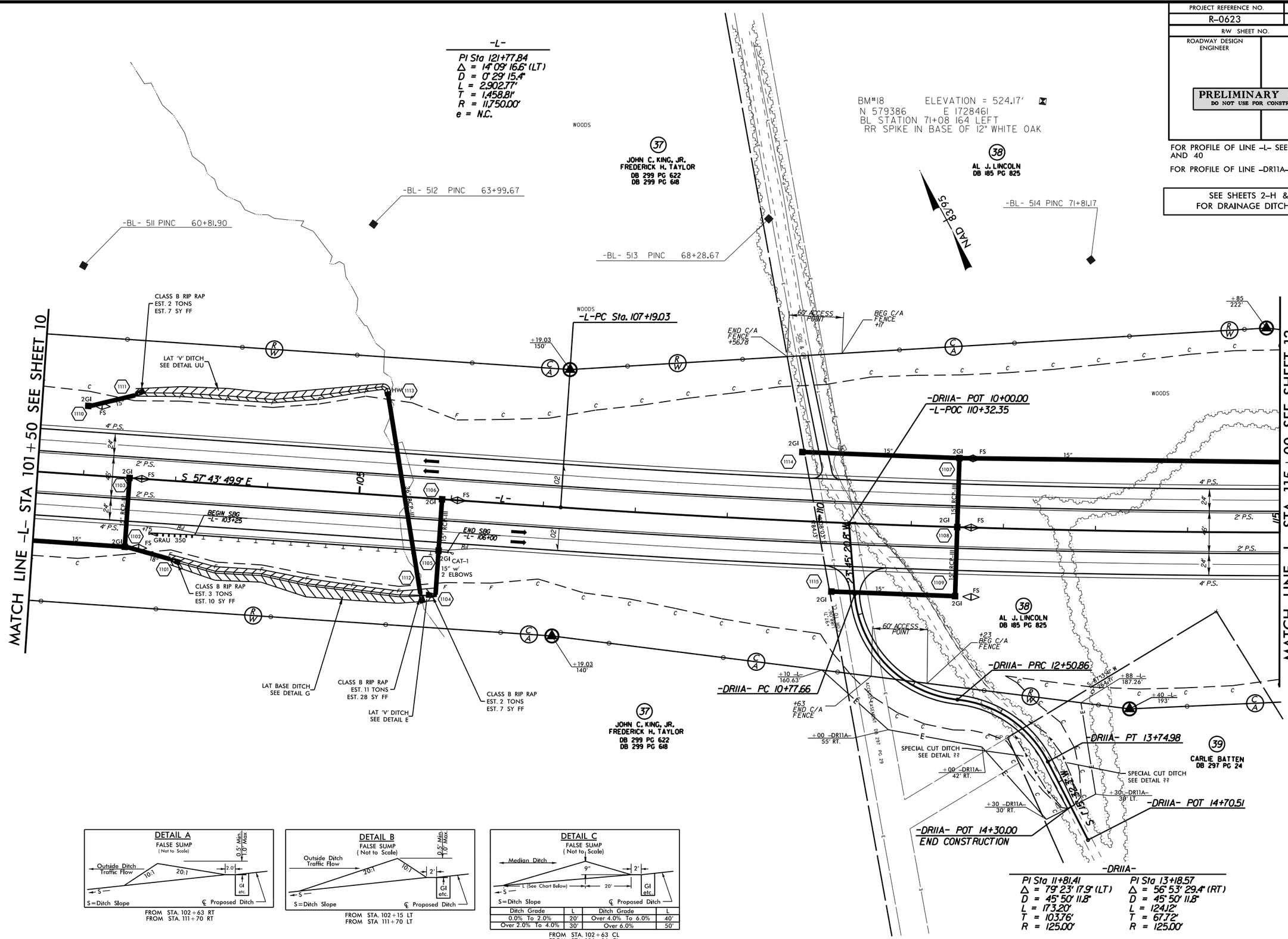
PROJECT REFERENCE NO.	SHEET NO.
R-0623	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 39 AND 40

FOR PROFILE OF LINE -DR11A- SEE SHEET 56

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS



FROM STA. 102+63 RT
FROM STA. 111+70 RT

FROM STA. 102+15 LT
FROM STA 111+70 LT

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 102+63 CL
FROM STA. 106+06 CL
FROM STA. 111+70 CL

REVISIONS

R/W REVISION- UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 37. 7/31/2013 11/

R/W REVISION- ADDED DRIVEWAY CONNECTION -DRIIA- AND TCE TO PARCELS 37,38 & 39. 11/ /2013 11/

8/17/99

05-DEC-2013 10:13
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PROJECT REFERENCE NO.	SHEET NO.
R-0623	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

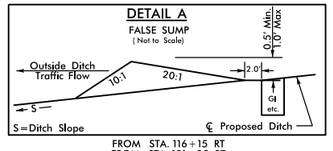
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 40

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

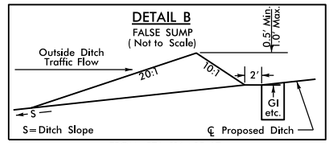
-L-
PI Sta 121+77.84
Δ = 14° 09' 16.6" (LT)
D = 0° 29' 15.4"
L = 2,902.77'
T = 1,458.81'
R = 11,750.00'
e = N.C.

DETAIL A
FALSE SUMP
(Not to Scale)



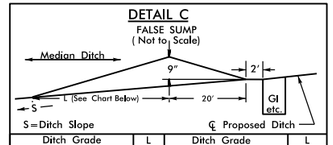
FROM STA. 116+15 RT
FROM STA. 121+25 RT

DETAIL B
FALSE SUMP
(Not to Scale)



FROM STA. 116+15 LT
FROM STA. 120+15 LT

DETAIL C
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 116+15 CL

NAD 83/93

-BL- 515 PINC 74+33.60

-BL- 516 PINC 76+43.69

-BL- 517 PINC 79+69.75

-BL- 518 PINC 81+92.12
-T3-518 POT 6+45.45
-T4-518 POT 8+90.18
ELEV=455.44
REBAR & CAP SET

-BL- 519 PINC 84+78.35

38
AL J. LINCOLN
DB 185 PG 825

40
JAMES B. ALLEN III & OTHERS
DB 660 PG 488

WOODS

WARNER CREEK

N 28°50'24" W 1589.50'

N 13°21'24" W 251.50'

N 03°29'33" W 807.59'

N 35°41'36" E 1789.80'

N 35°41'36" E 26.50'

MATCH LINE -L- STA 115+00 SEE SHEET 11

MATCH LINE -L- STA 128+50 SEE SHEET 13

+00 155'

CLASS B RIP RAP
EST. 5 TONS
EST. 14 SY FF

LAT BASE DITCH
SEE DETAIL G

CLASS B RIP RAP
EST. 2 TONS
EST. 7 SY FF

LAT BASE DITCH
SEE DETAIL CC

CHORD

RIP RAP AT
EMBANKMENT
SEE DETAIL EE

LAT BASE DITCH
SEE DETAIL DD

CLASS B RIP RAP
EST. 2 TONS
EST. 7 SY FF

CLASS B RIP RAP
EST. 8 TONS
EST. 21 SY FF

LAT BASE DITCH
SEE DETAIL FF

+50 165' 150'

24" w/
2 ELBOWS

BEGIN APPROACH SLAB
-L- STA 122+22.20

BEGIN BRIDGE
-L- STA 122+46.56

15" w/
2 ELBOWS

END BRIDGE
-L- STA 125+01.86

END APPROACH SLAB
-L- STA 125+26.02

30" w/
2 ELBOWS

CAT-1
+46.43

TYPE M350

TYPE B-77

END APPROACH SLAB
-L- STA 122+39.54

GRAU 350

15" w/
2 ELBOWS

END BRIDGE
-L- STA 122+63.60

CL II RIPRAP
W/ FILTER FABRIC
TO SHOULDER PT.

END BRIDGE
-L- STA 125+18.11

END APPROACH SLAB
-L- STA 125+42.18

CL II RIPRAP
W/ FILTER FABRIC
TO SHOULDER PT.

LAT BASE DITCH
SEE DETAIL FF

TOE PROTECTION
SEE DETAIL F

BASE DITCH
SEE DETAIL L

CLASS B RIP RAP
EST. 2 TONS
EST. 7 SY FF

RIP RAP AT
EMBANKMENT
SEE DETAIL EE

END C/A
FENCE
+00

60' ACCESS
POINT

BEG C/A
FENCE
+60

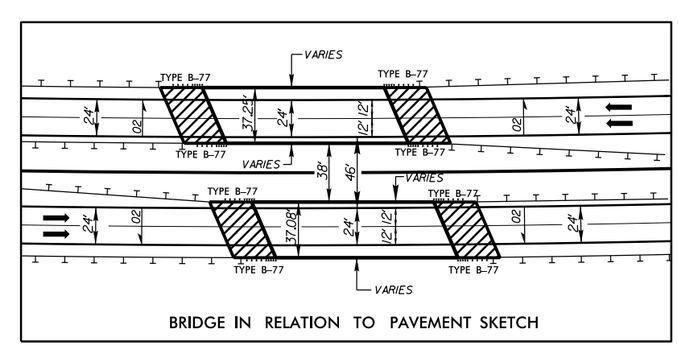
+00 180'

+00 165'

+50 150'

38
AL J. LINCOLN
DB 185 PG 825

40
JAMES B. ALLEN III & OTHERS
DB 660 PG 488



BRIDGE IN RELATION TO PAVEMENT SKETCH

REVISIONS

R/W REVISION- ADDED 60' ACCESS POINT TO PARCEL 38 AT -L- STA 120+00 RT. 7/31/2013 TY
R/W REVISION- UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 40. 8/30/2013 - TY

8/17/99

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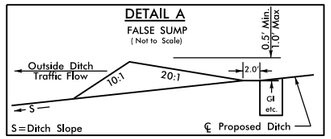
PROJECT REFERENCE NO.	SHEET NO.
R-0623	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

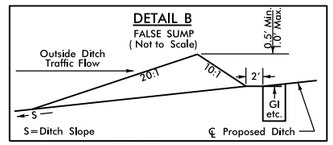
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 40 AND 41

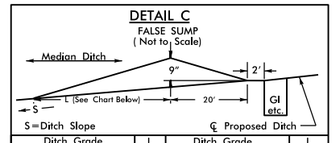
SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS



FROM STA. 137+35 LT
FROM STA. 140+85 LT



FROM STA. 137+35 RT
FROM STA. 140+85 RT

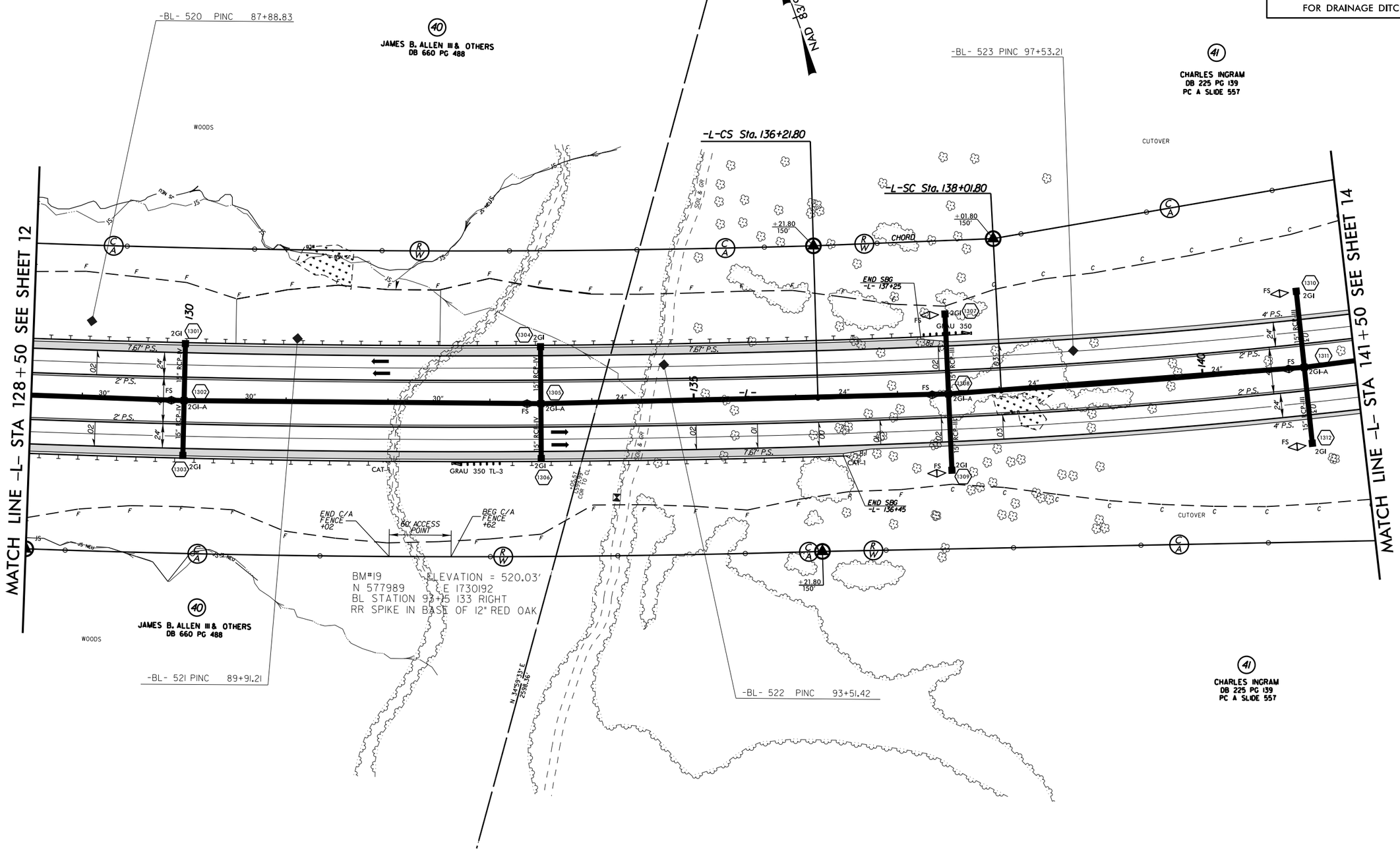


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 129+85 CL
FROM STA. 133+55 CL
FROM STA. 137+35 CL
FROM STA. 140+85 CL

-L-

PI Sta 121+77.84	PIs Sta 137+22.21	PI Sta 180+92.88
Δ = 14° 09' 16.6" (LT)	Θs = 0° 26' 19.9"	Δ = 7° 56' 47.1" (LT)
D = 0° 29' 15.4"	Θs = 0° 54' 16.8"	D = 1° 00' 18.7"
L = 2,902.77'	Ls = 180.00'	L = 7,356.47'
T = 1,458.81'	LT = 100.41'	T = 4,291.08'
R = 11,750.00'	ST = 79.60'	R = 5,700.00'
e = N.C.		



REVISIONS

R/W REVISIONS- UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 40.ADDED ACCESS POINT TO PARCEL 40 AT LEFT -L- STA 132+20 AND ELIMINATED ACCESS POINT ON PARCEL 41 RT.OF -L- STA 134+00. 8/30/2013 - IY

8/17/99

06-DEC-2013 10:13
R:\Roadway\Proj\PlanSheets\R0623_rdy_psh_s13.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

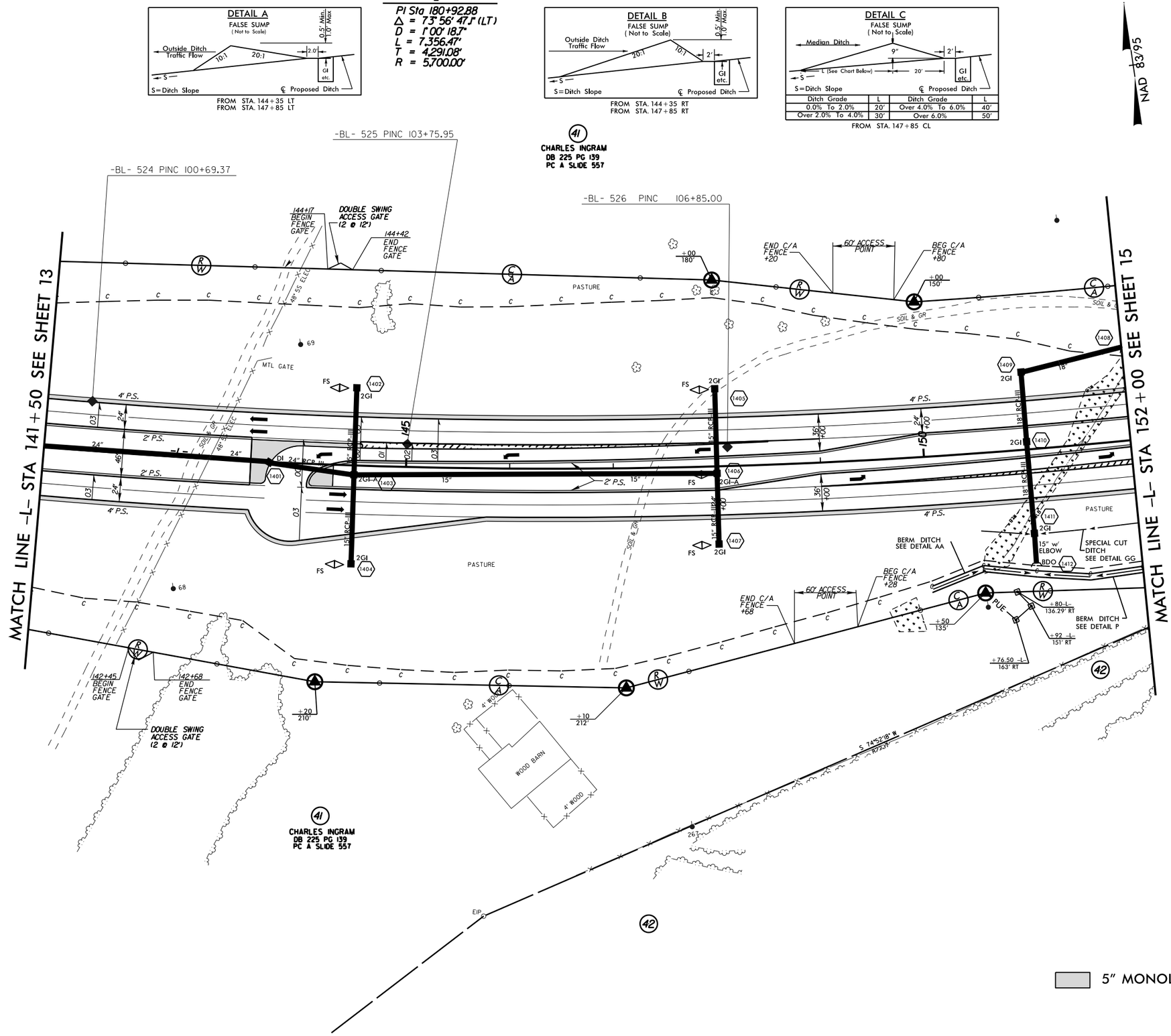
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 41 AND 42

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

-L-
PI Sta 180+92.88
Δ = 73° 56' 47.1" (LT)
D = 1° 00' 18.7"
L = 7,356.47'
T = 4,291.08'
R = 5,700.00'

NAD 83/95



5" MONOLITHIC CONC. ISLAND

REVISIONS

R/W REVISION - ADDED TWO FENCE ACCESS GATES TO PARCEL 41 AT RIGHT OF -L- STA 141+87 AND AT LEFT -L- STA 143+49. ELIMINATED ACCESS POINT AT LT. OF -L- 141+87.
ADDED TWO ACCESS POINT AT RT OF -L- STA 148+68 AND LEFT OF -L- 149+20. 8/30/2013 - ly

8/17/99

06-DEC-2013 10:13
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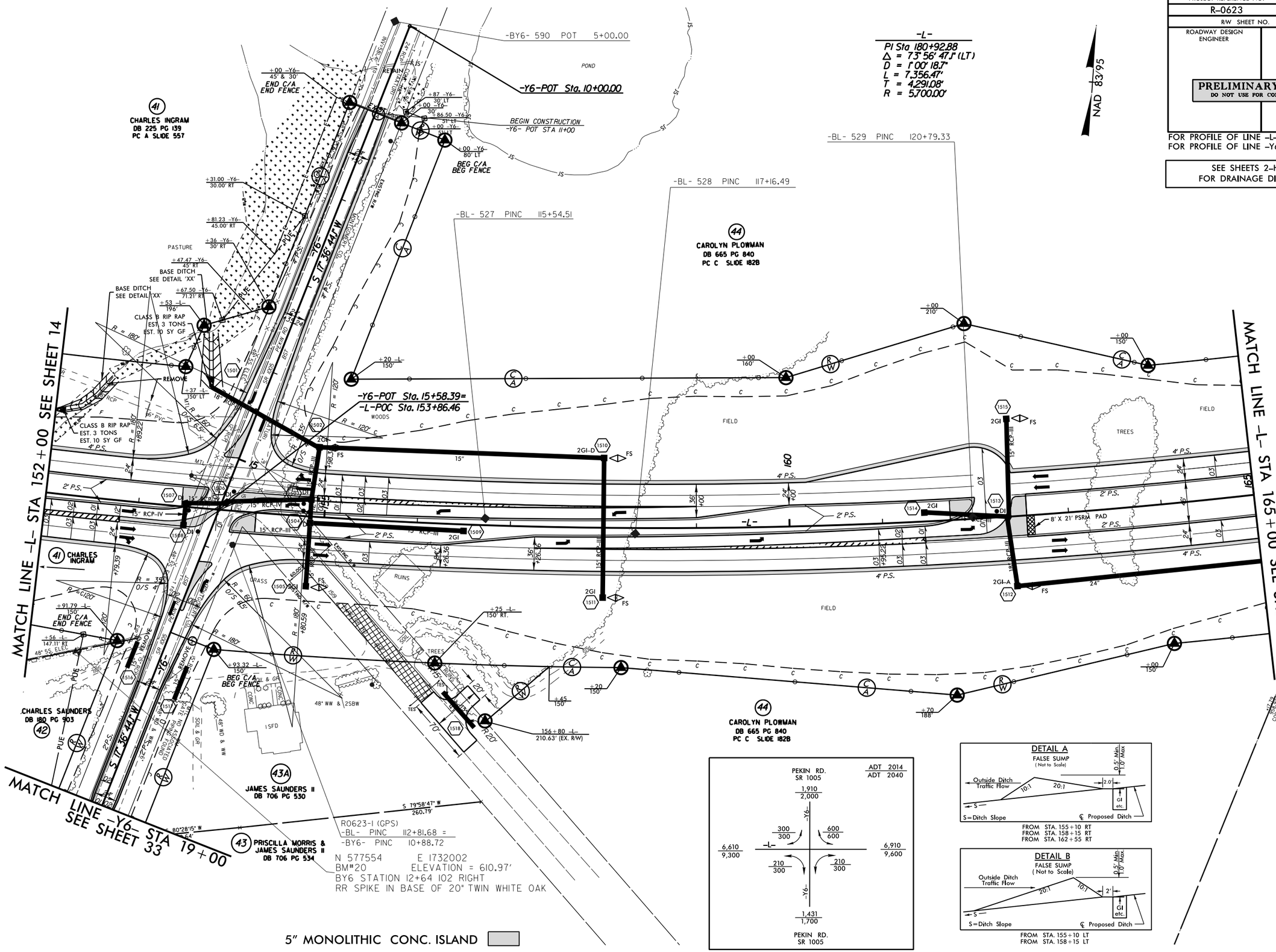
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 42
FOR PROFILE OF LINE -Y6- SEE SHEET 51

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS



REVISIONS

R/W REVISION- ADDED PUE ON PARCEL 41. 11/13/13 - TY.
R/W REVISION- DIVIDED PARCEL 43 INTO 43 AND 43A. 11/19/13 - TY.

06-DEC-2013 10:13
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$$$$USERNAME$$$$

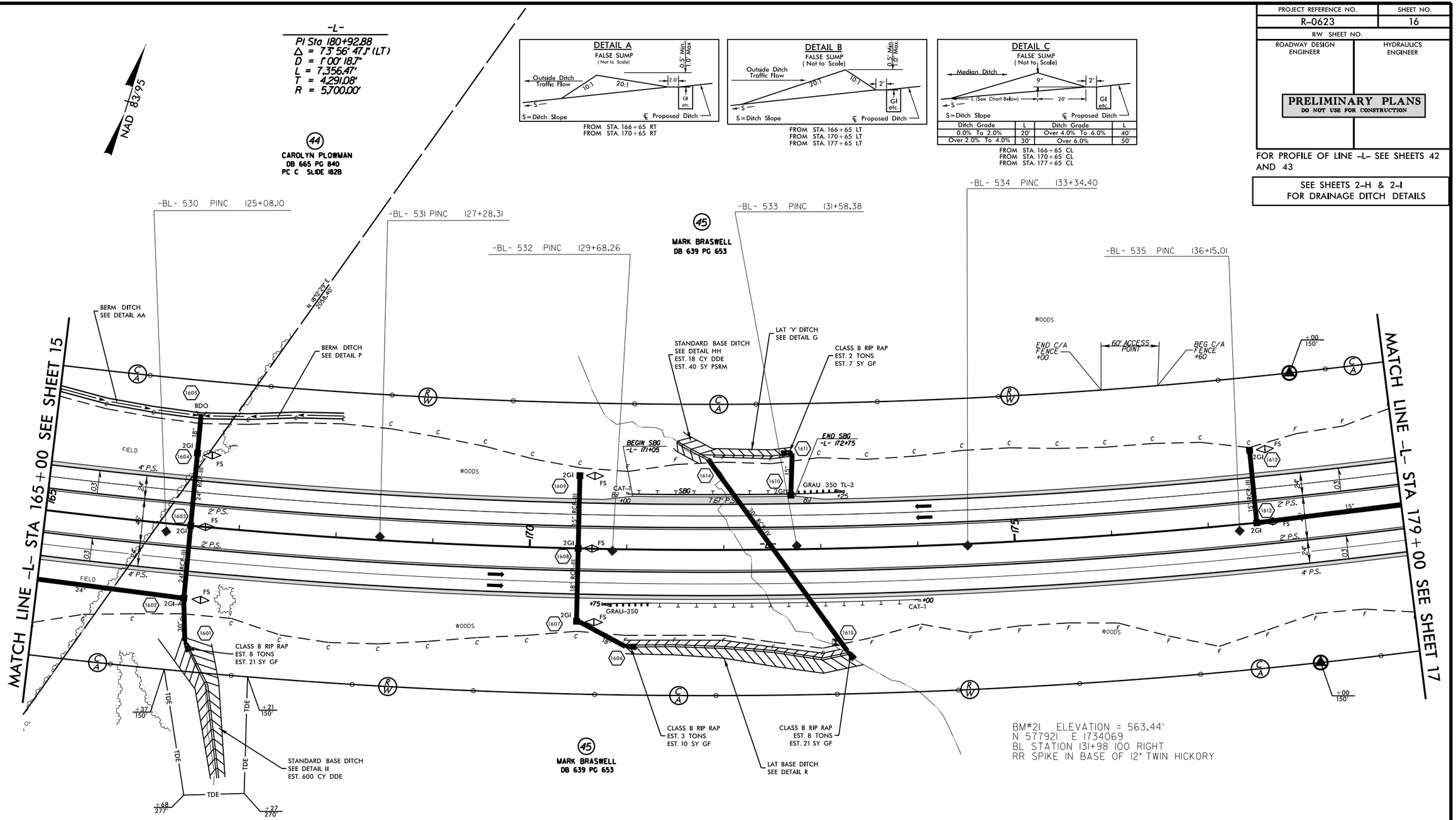
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-0623	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 42 AND 43

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS



REVISIONS

R/W REVISION- UPDATED PROPERTY OWNER INFORMATION FOR PARCELS 44 & 45. ADDED ACCESS POINT TO PARCEL 45 AT LEFT OF -L- STA.176+00. 8/30/2013 - 11

8/17/99

DGN DEC-2013 10:13
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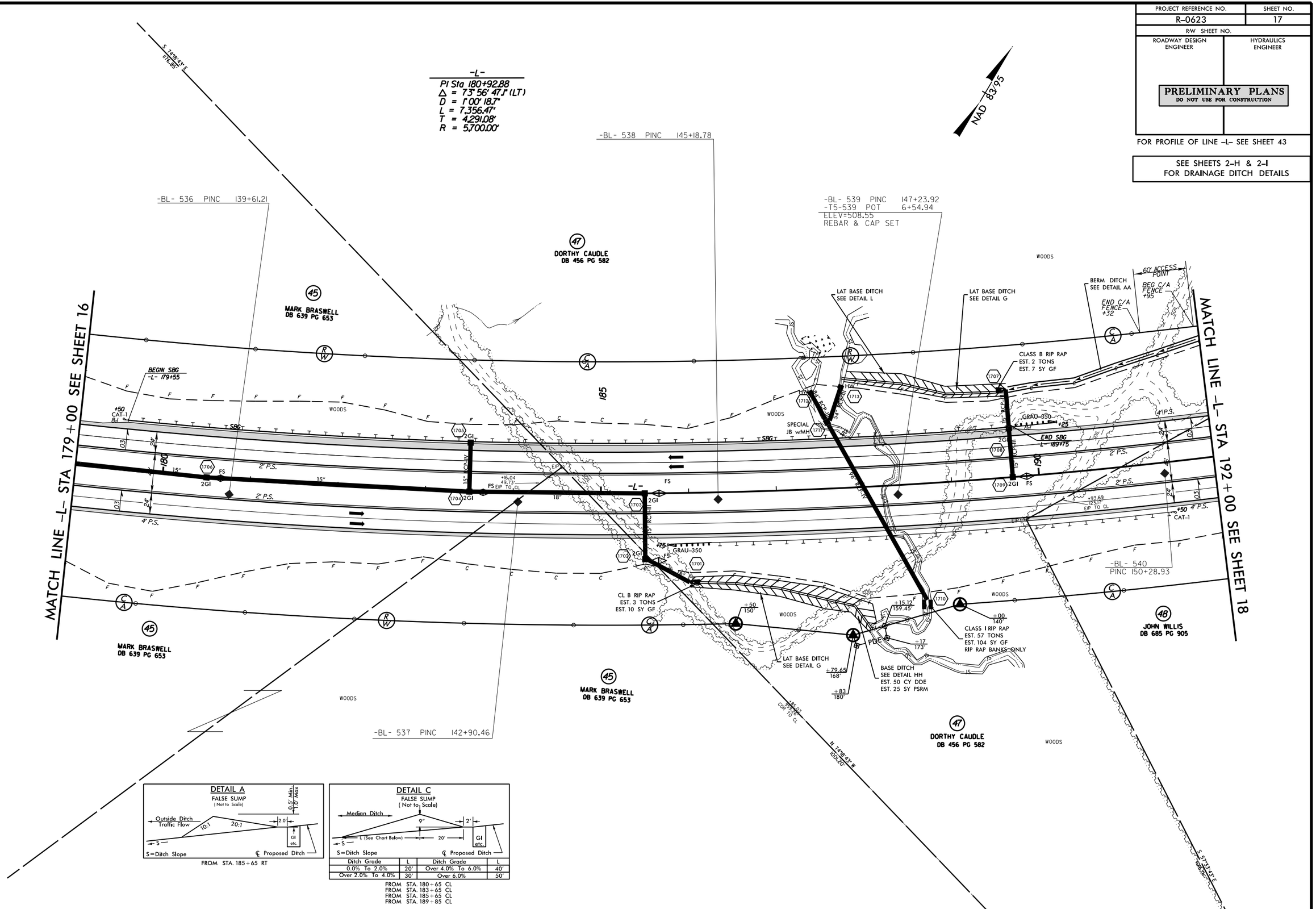
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 43

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS



DETAIL A
FALSE SUMP
(Not to Scale)

FROM STA. 185+65 RT

DETAIL C
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 180+65 CL
FROM STA. 183+65 CL
FROM STA. 185+65 CL
FROM STA. 189+85 CL

8/17/99

REVISIONS

R/W REVISION- UPDATED PROPERTY OWNER INFORMATION FOR PARCELS 45 & 48. COMBINED PARCELS 45 & 46 INTO PARCEL 45. 8/30/2013 - 1Y

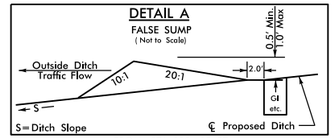
06-DEC-2013 10:13
R:\Roadway\Proj\R0623_rdy_PlanSheets\R0623_rdy_psh_s17.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

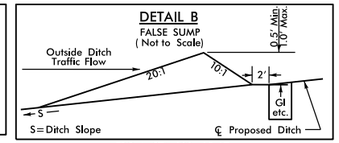
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 43 AND 44

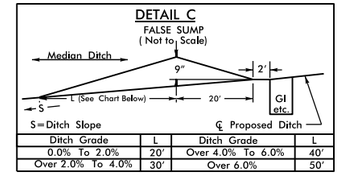
SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS



FROM STA. 193+15 RT
FROM STA. 196+65 RT
FROM STA. 199+65 RT



FROM STA. 193+15 LT
FROM STA. 196+65 LT
FROM STA. 200+15 LT
FROM STA. 204+15 LT

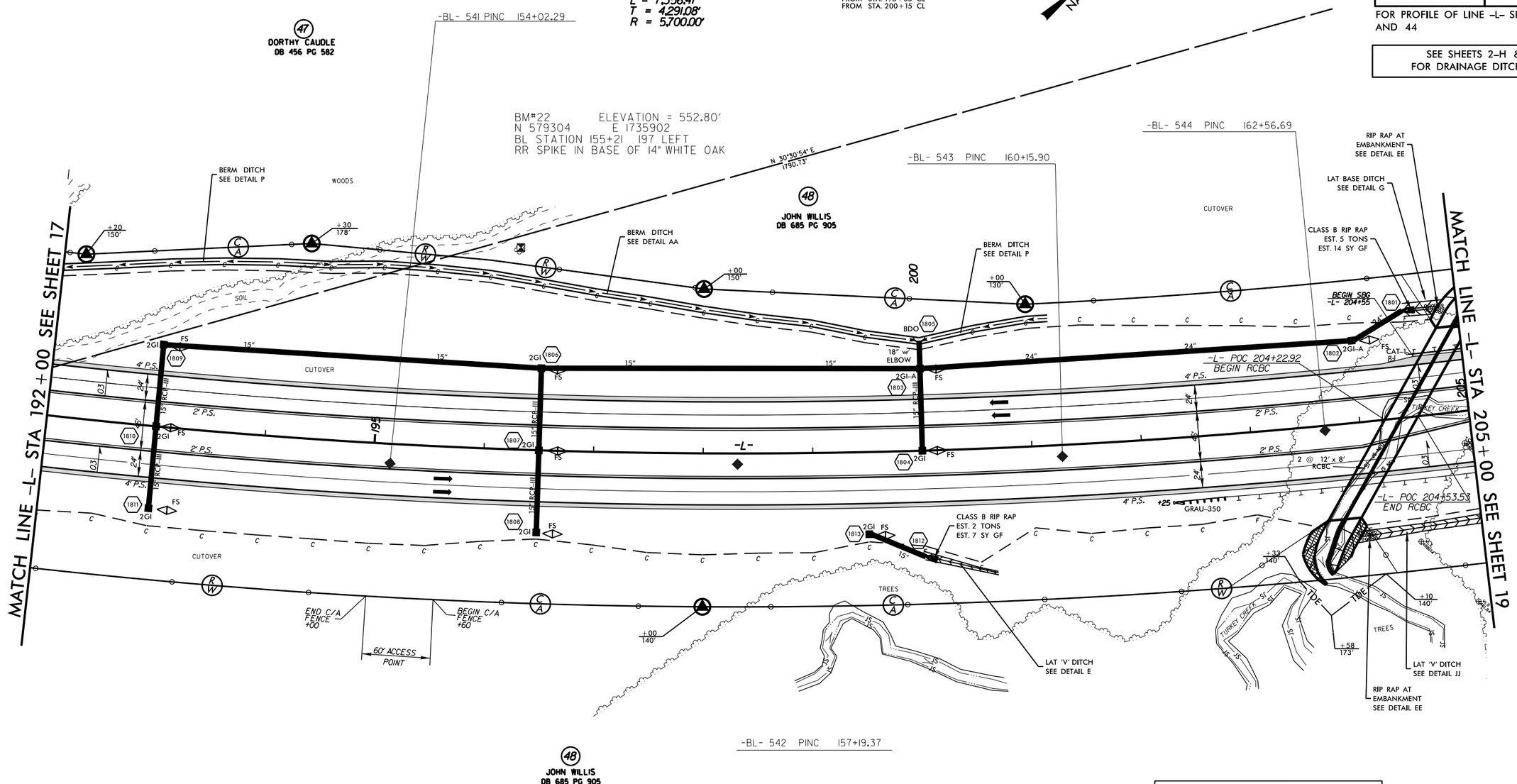


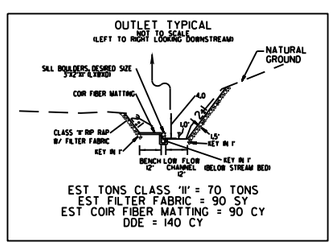
Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 193+15 CL
FROM STA. 196+65 CL
FROM STA. 200+15 CL

-L-
PI Sta 180+92.88
Δ = 73° 56' 47.5" (LT)
D = 1° 00' 18.7"
L = 7,356.47'
T = 4,291.08'
R = 5,700.00'

NAD 83/95





REVISIONS

R/W REVISION- ADDED 60' ACCESS POINT TO PARCEL 48 -L- RT STA 195+00. UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 48. 8/30/2013 - 1Y

8/17/99

06-DEC-2013 10:13
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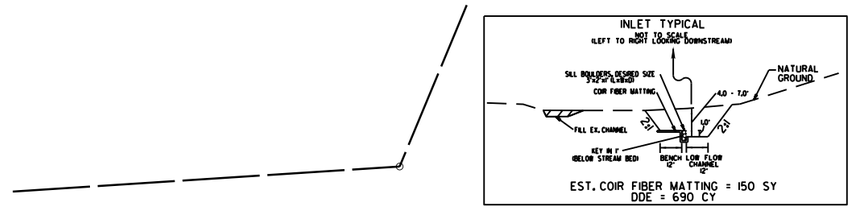
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 44

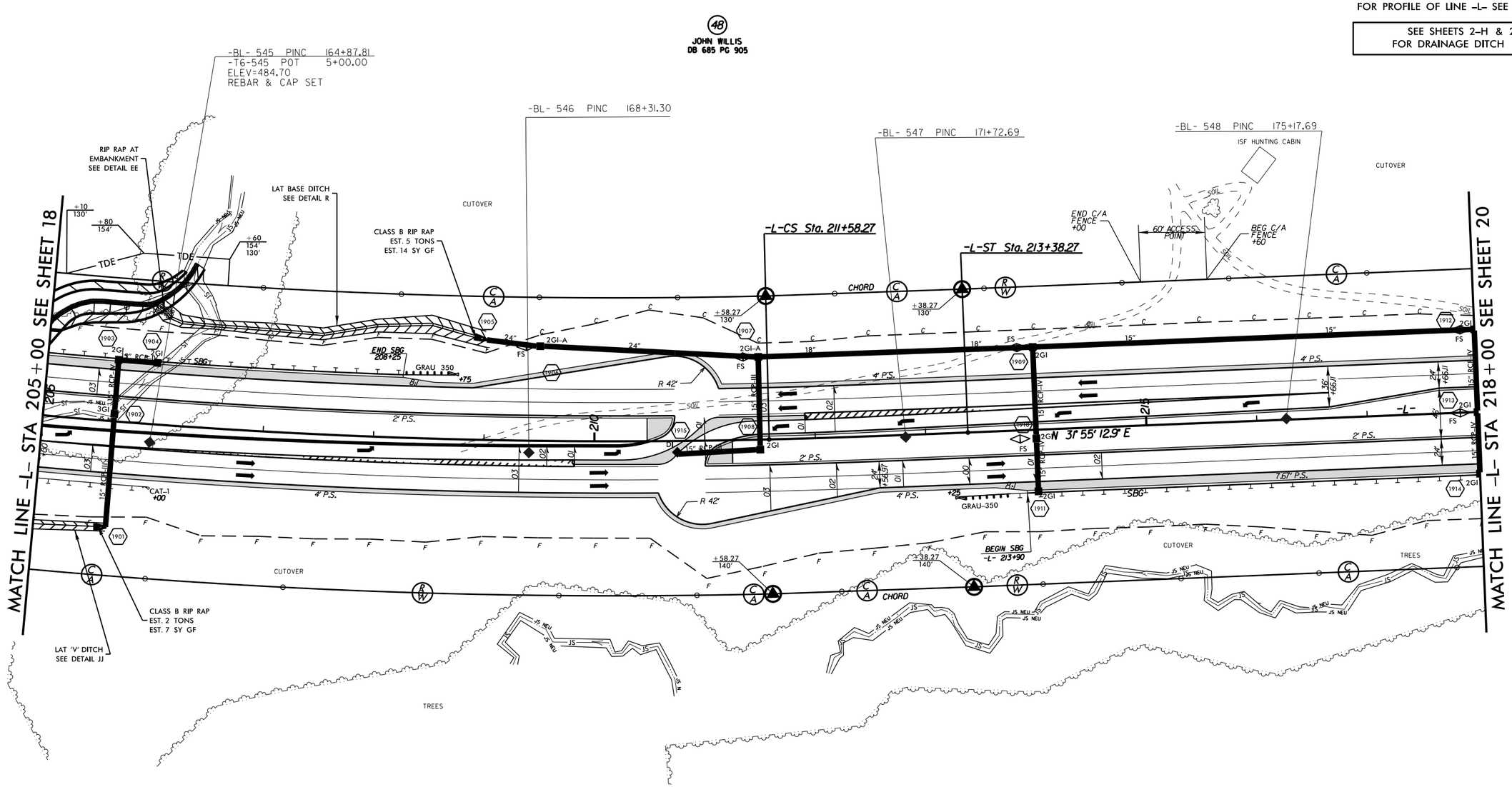
SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

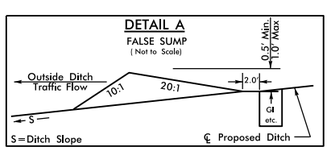


-L-

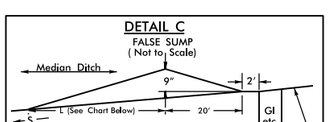
PI Sta 180+92.88	PIs Sta 212+18.27
Δ = 73° 56' 47.1" (LT)	Θs = 0° 54' 16.8"
D = 1° 00' 18.7"	Ls = 180.00'
L = 7,356.47'	LT = 120.00'
T = 4,291.08'	ST = 60.00'
R = 5,700.00'	

NAD 83/95





FROM STA. 209+35 LT
FROM STA. 211+35 LT
FROM STA. 213+85 LT
FROM STA. 217+85 LT



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 211+35 CL
FROM STA. 213+85 CL
FROM STA. 217+85 CL

48
JOHN WILLIS
DB 685 PG 905

8/17/99

REVISIONS

R/W REVISION- UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 48. 8/30/2013- IY

06-DEC-2013 10:13
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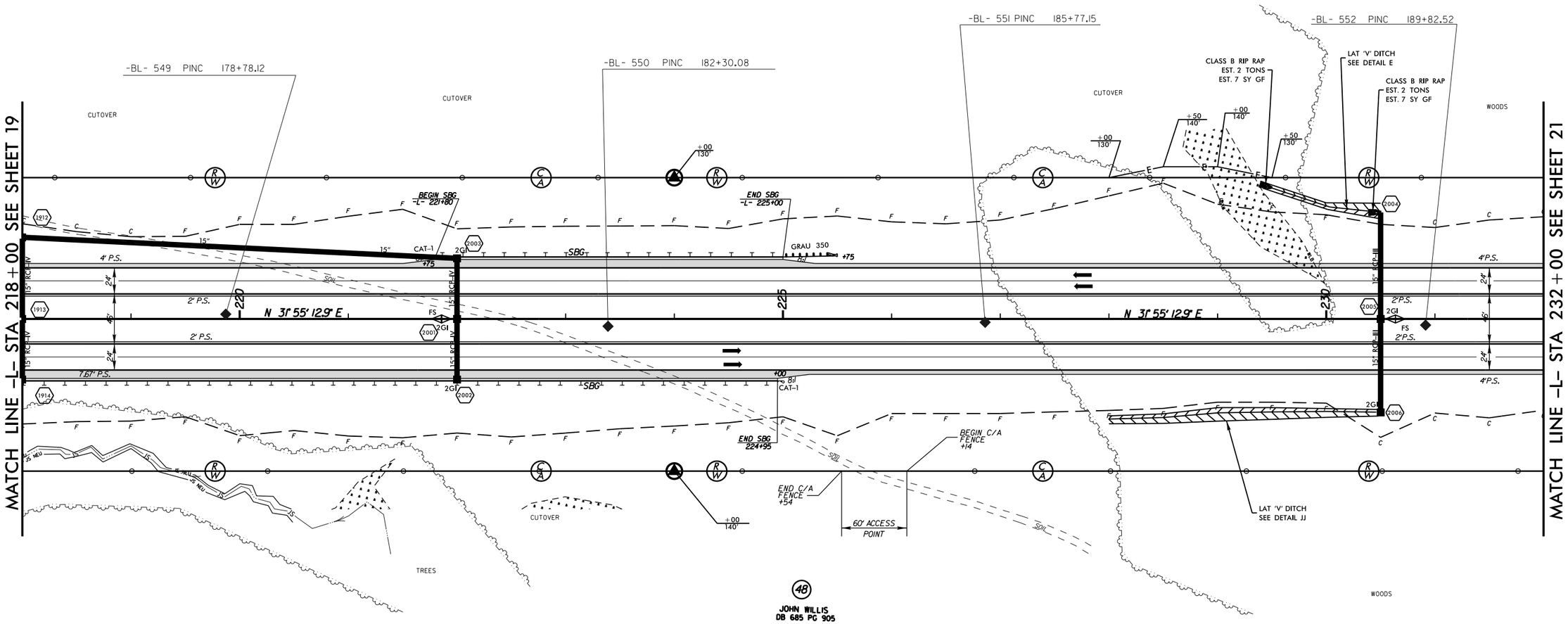
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

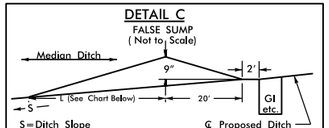
FOR PROFILE OF LINE -L- SEE SHEETS 44 AND 45

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS



DETAIL C

FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 221+85 CL
FROM STA. 230+65 CL

REVISIONS

R/W REVISION- UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 48. 8/30/2013 - IY

8/17/99

06-DEC-2013 10:13
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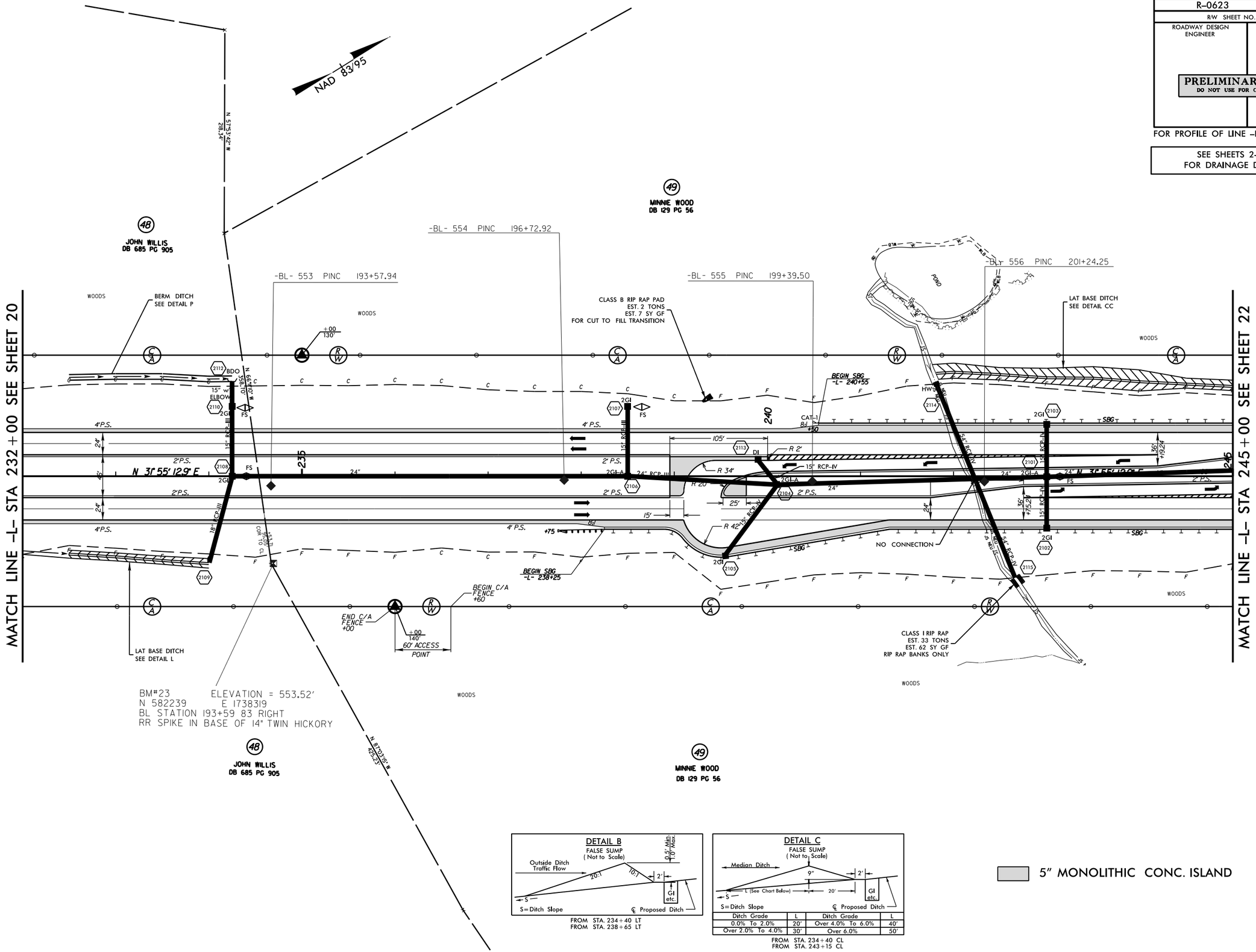
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 45

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS



DETAIL B
FALSE SUMP
(Not to Scale)

FROM STA. 234+40 LT
FROM STA. 238+65 LT

DETAIL C
FALSE SUMP
(Not to Scale)

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 234+40 CL
FROM STA. 243+15 CL

5" MONOLITHIC CONC. ISLAND

REVISIONS

R/W REVISION- ADDED 60' ACCESS POINT TO PARCEL 49 -L- RT STA 236+00. UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 48. 8/30/2013 - 1'

8/17/99

06-DEC-2013 10:13
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$$$$USERNAME$$$$

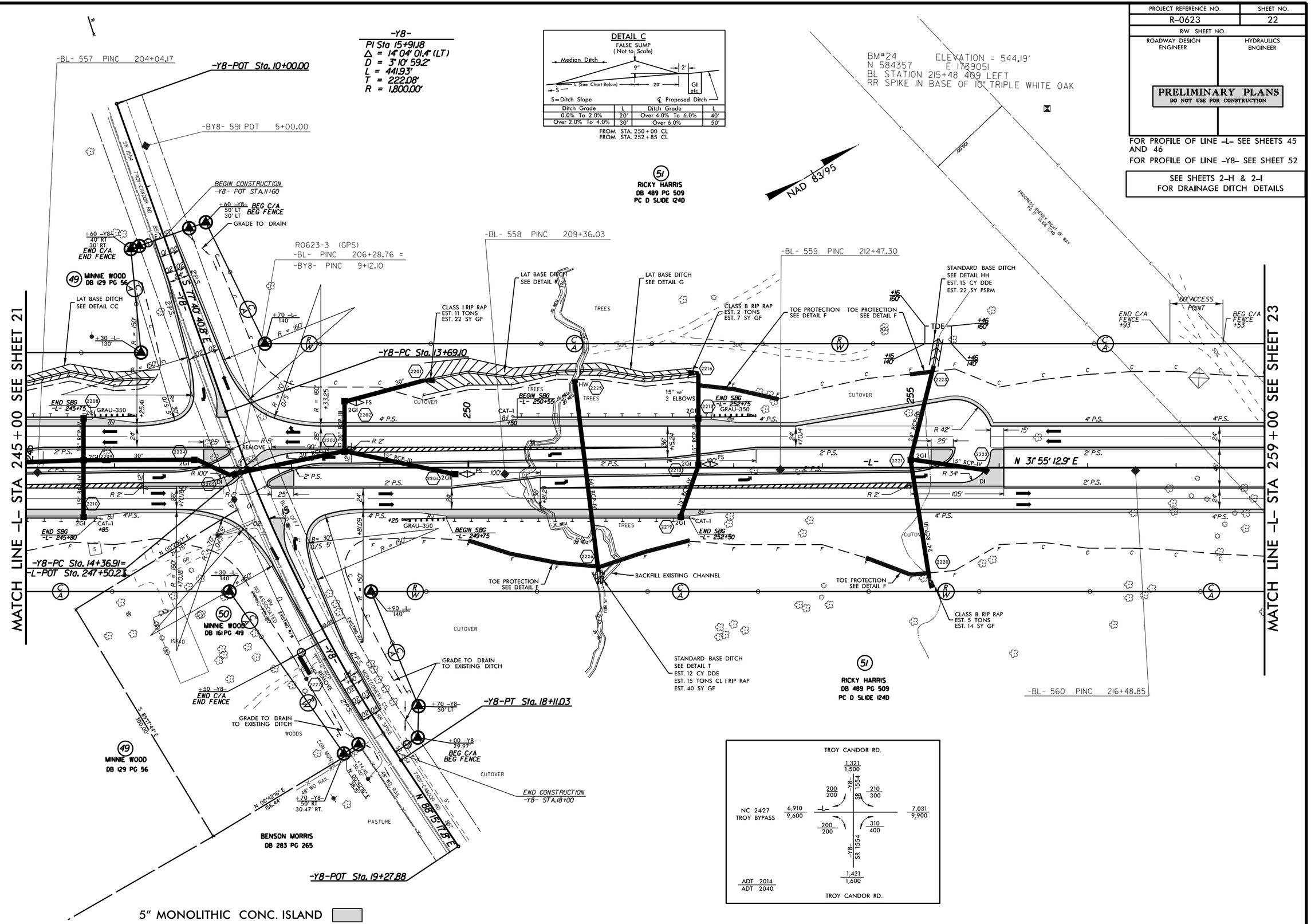
PROJECT REFERENCE NO.	SHEET NO.
R-0623	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 45 AND 46

FOR PROFILE OF LINE -Y8- SEE SHEET 52

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS



REVISIONS

R/W REVISION- UPDATED O/S FLAGS THAT T/E TO EX.R/W ON PARCELS 49,50 & 51. 8/30/2013 -1Y

8/17/99

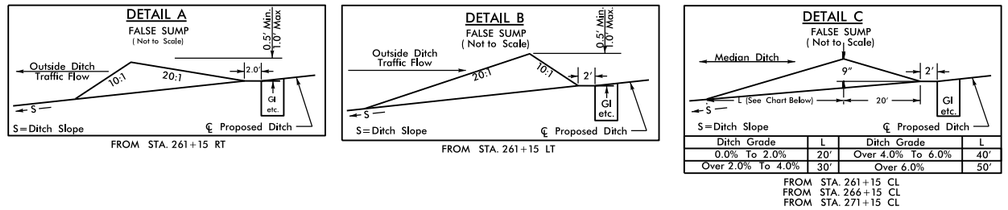
QR DEC-2013 10:13
R:\Roadway\Proj\R0623_r_dy_psh_s22.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

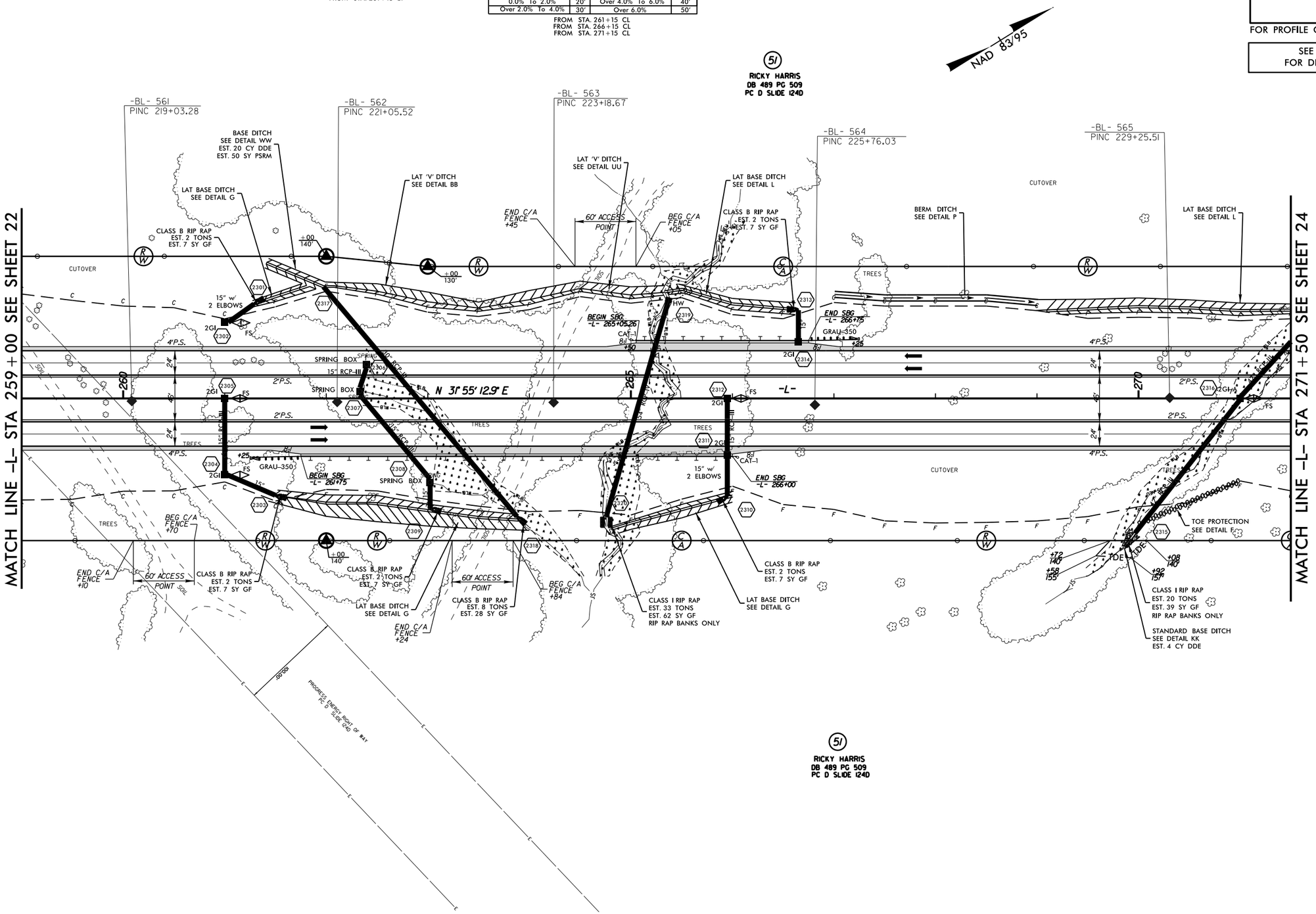
FOR PROFILE OF LINE -L- SEE SHEET 46

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 261+15 CL
FROM STA. 266+15 CL
FROM STA. 271+15 CL



51
RICKY HARRIS
DB 489 PG 509
PC D SLIDE 124D

REVISIONS

8/17/99

06-DEC-2013 10:14
R:\Roadway\Proj\R0623_PlanSheets\VR0623_rdy_psh_s23.dgn
$$$$USERNAME$$$$

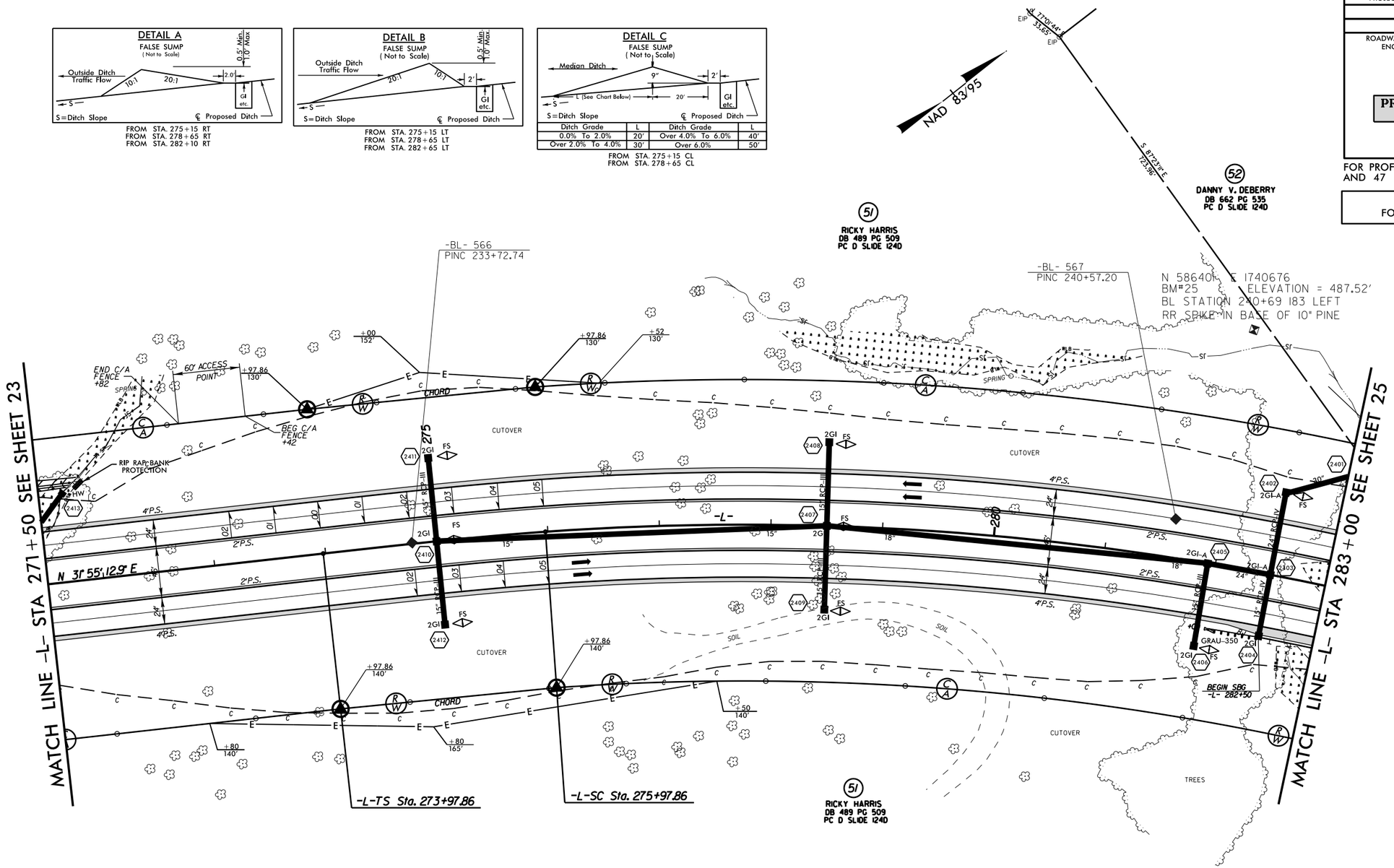
PROJECT REFERENCE NO.	SHEET NO.
R-0623	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 46 AND 47

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'



-L-

PIs Sta 275+31.20	PI Sta 282+88.83
Θs = 2°17' 30.6"	Δ = 30°54' 02.0" (RT)
Ls = 200.00'	D = 2°17' 30.6"
LT = 133.34'	L = 1,348.29'
ST = 66.68'	T = 690.98'
	R = 2,500.00'

REVISIONS

R/W REVISION- ADDED 60' ACCESS POINT TO PARCEL 51 -L- LT.STA 272+82. UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 52. 8/30/2013 N

8/17/99

06-DEC-2013 10:14
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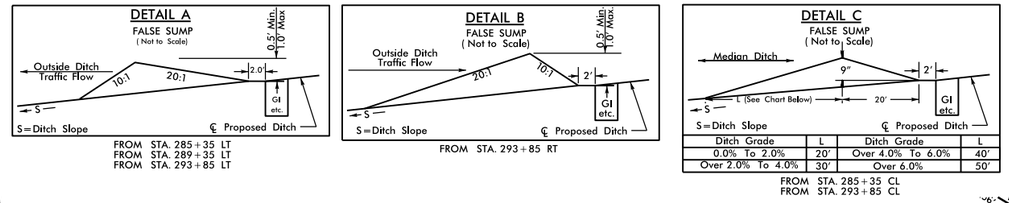
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-0623	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

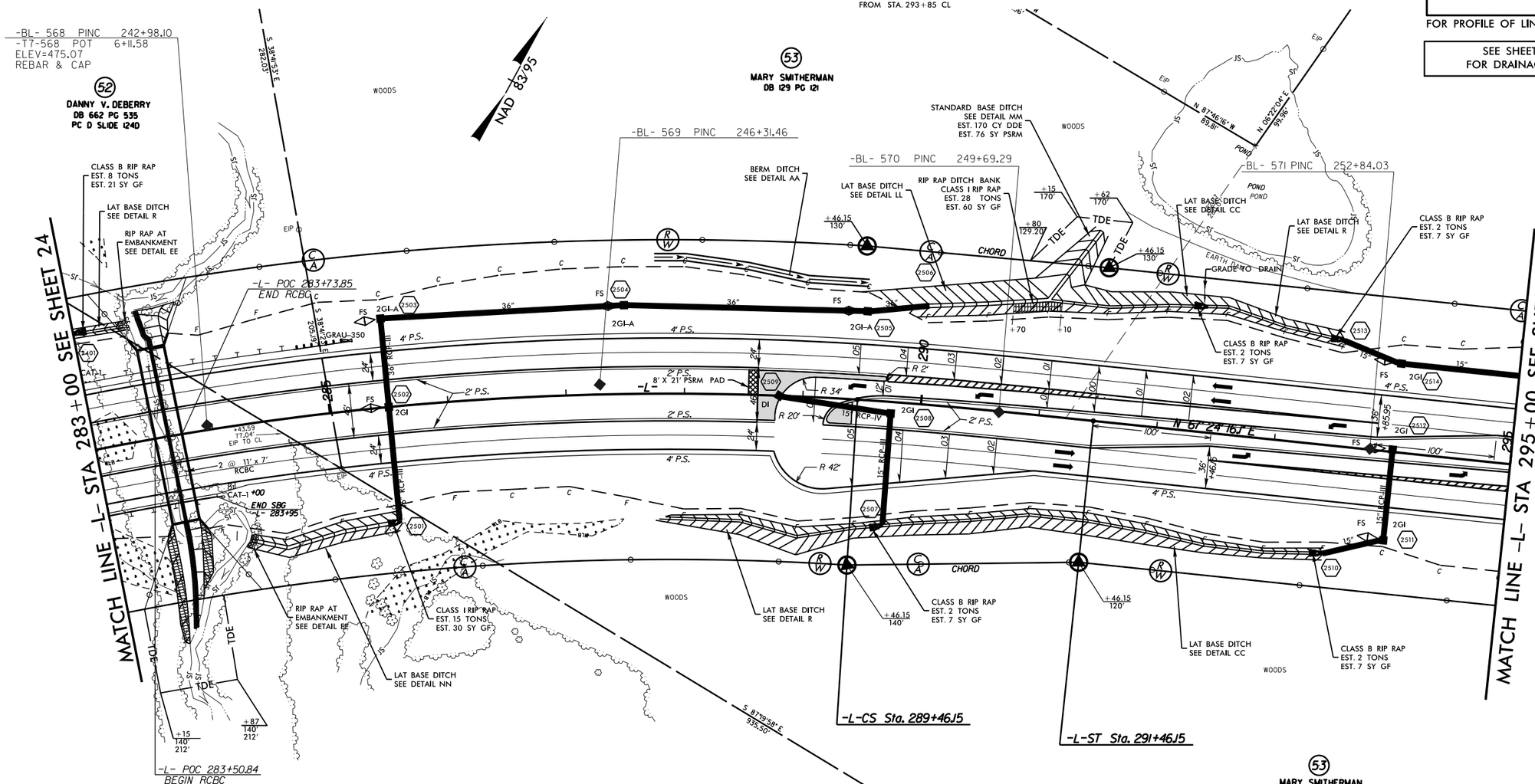
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 47

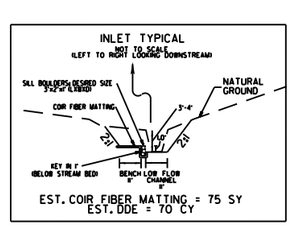
SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

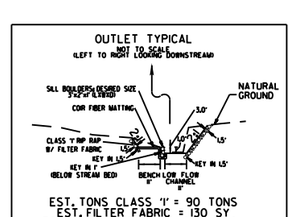


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'



51
RICKY HARRIS
DB 489 PG 509
PC D SLIDE 124D





-L-

PI Sta 282+88.83	PIs Sta 290+12.83
Δ = 30° 54' 02.0" (RT)	θs = 2° 17' 30.6"
D = 2° 17' 30.6"	Ls = 200.00'
L = 1,348.29'	LT = 133.34'
T = 690.98'	ST = 66.68'
R = 2,500.00'	

5" MONOLITHIC CONC. ISLAND

REVISIONS

R/W REVISION- UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 52. 8/30/2013 - 11'

8/17/99

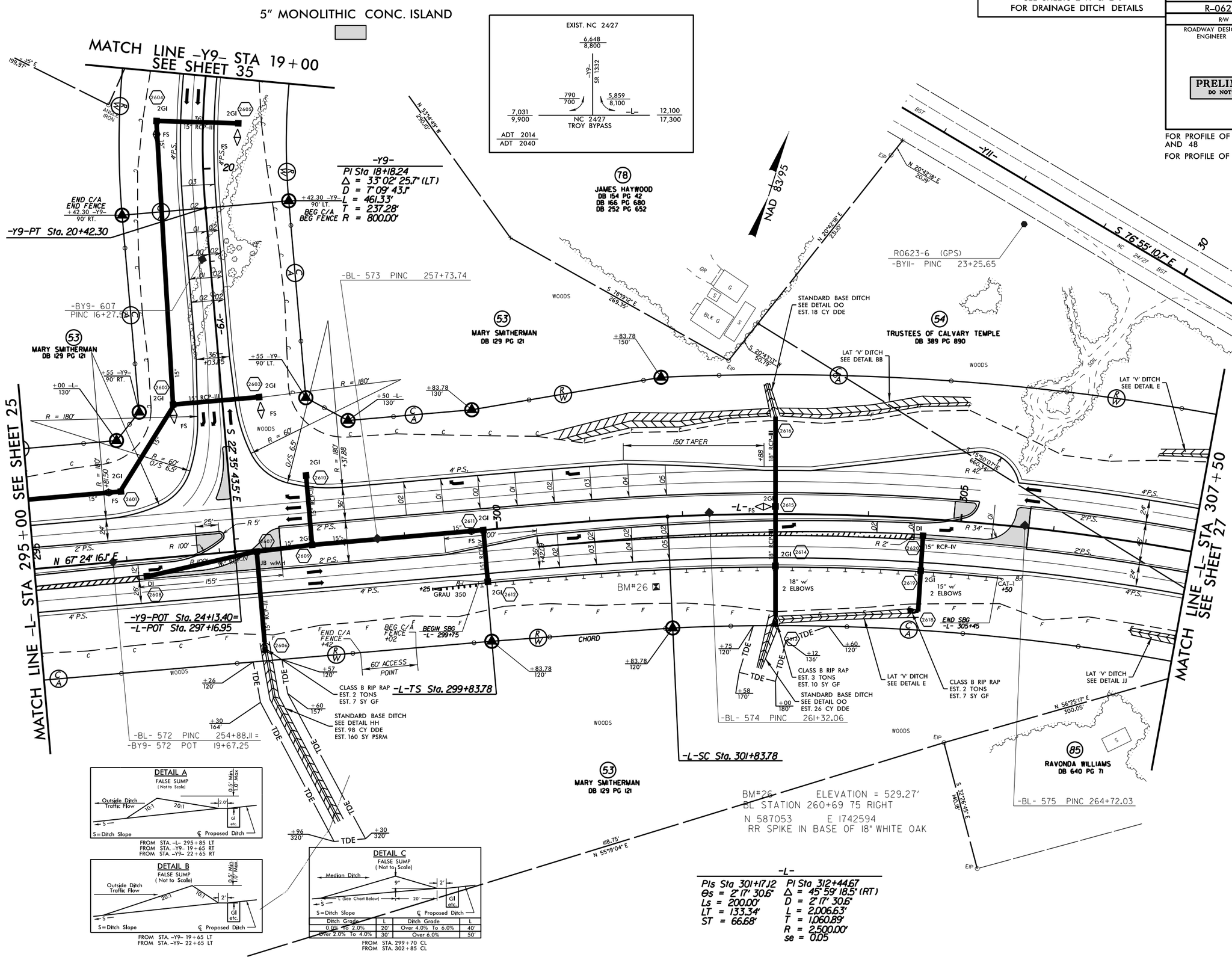
06-DEC-2013 10:14
$$$$USERNAME$$$$
$$$$USERFULLNAME$$$$

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-0623	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 47 AND 48
FOR PROFILE OF LINE -Y9- SEE SHEET 53



REVISIONS

R/W REVISION- ADDED 60' ACCESS POINT TO PARCEL 53 -L- RT.STA 298+42.00. UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 85. 8/30/2013 - IY

8/17/99

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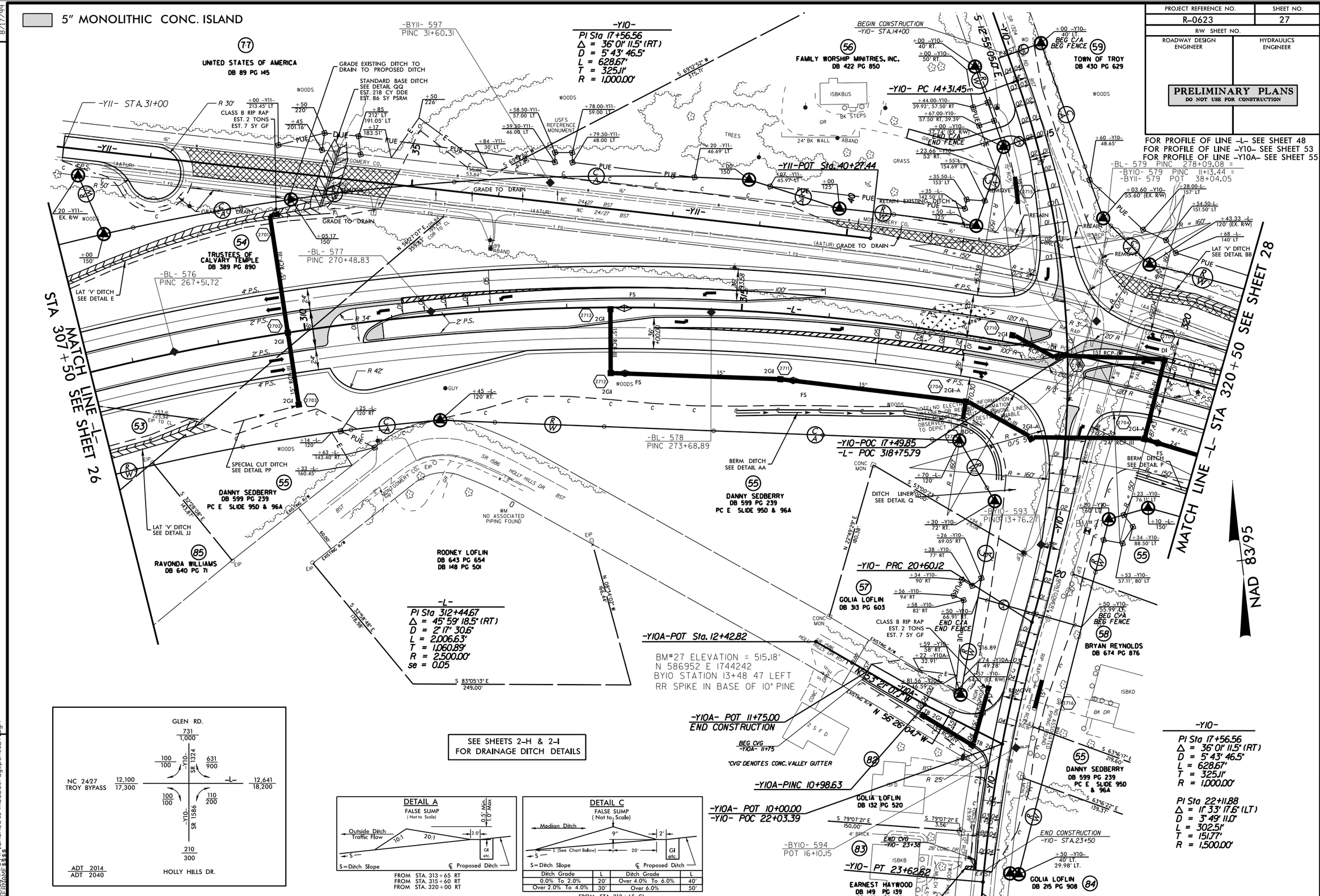
PROJECT REFERENCE NO.	SHEET NO.
R-0623	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 48
FOR PROFILE OF LINE -Y10- SEE SHEET 53
FOR PROFILE OF LINE -Y10A- SEE SHEET 55



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

R/W REVISION -	REVISED PUE AND CONVERTED PDE TO DUE ON PARCEL 77. 5/29/2013 IY.
R/W REVISION -	UPDATED O/S FLAGS THAT TIE TO EX.R/W ON PARCELS 55,56,57,59,77,82,83 & 84. UPDATED PROPERTY OWNER INFORMATION FOR PARCELS 58 & 85. ADDED STATION & O/S AT THE INTERSECTION OF PUE/TCE ON PARCEL 57. 8/30/13 - IY
R/W REVISION -	ELIMINATED TCE FROM PARCEL 82 & 83. 11/25/2013 IY.
R/W REVISION -	ADDED TCE TO PARCEL 55. 11/ /2013 IY.

REVISIONS

8/17/99

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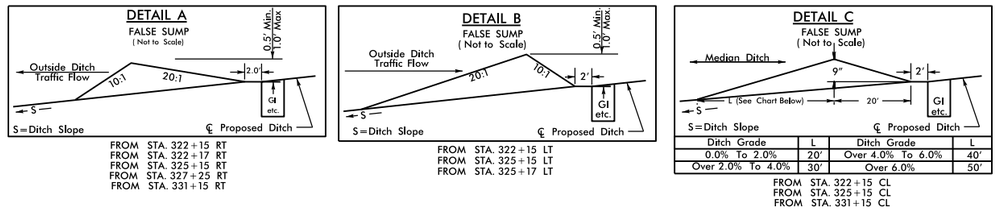
PROJECT REFERENCE NO.	SHEET NO.
R-0623	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

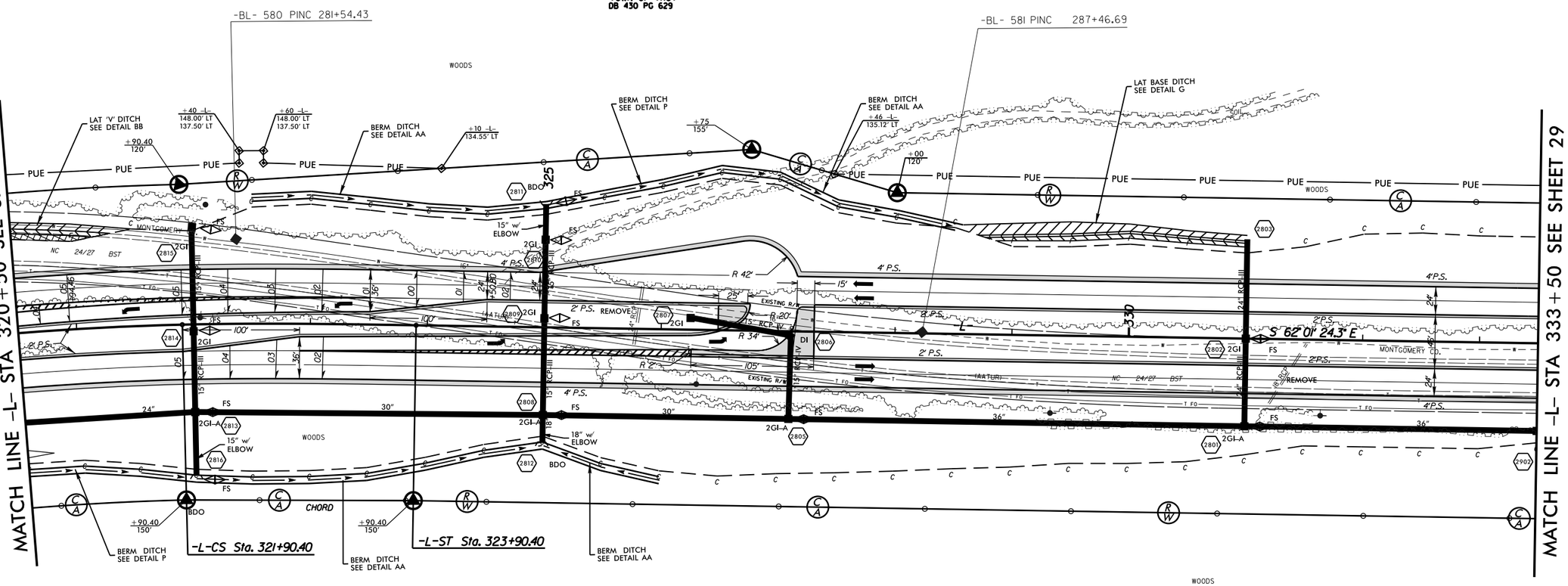
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

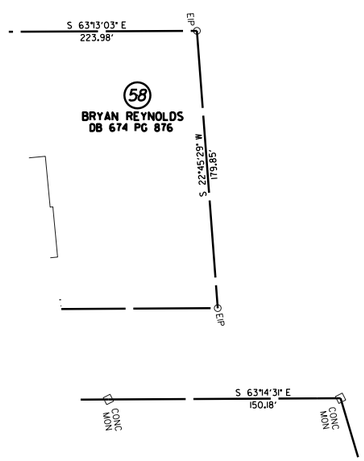
FOR PROFILE OF LINE -L- SEE SHEETS 48 AND 49

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

NAD 83/95







-L-

PI Sta 312+44.67	PIs Sta 322+57.08
Δ = 45° 59' 18.5" (RT)	Θs = 2° 17' 30.6"
D = 2° 17' 30.6"	Ls = 200.00'
L = 2,006.63'	LT = 133.34'
T = 1,060.89'	ST = 66.68'
R = 2,500.00'	
se = 0.05	

REVISIONS

R/W REVISION - UPDATED PROPERTY OWNER INFORMATION FOR PARCEL 58. 8/30/2013 - TT

8/17/99

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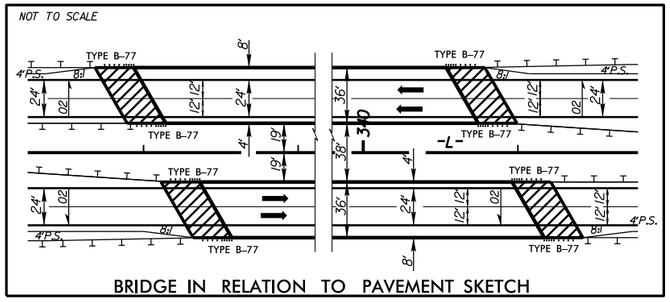
PROJECT REFERENCE NO.	SHEET NO.
R-0623	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

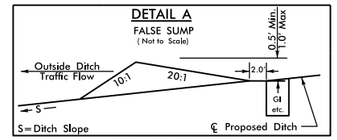
FOR PROFILE OF LINE -L- SEE SHEET 49

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

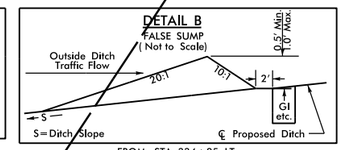
NOT TO SCALE



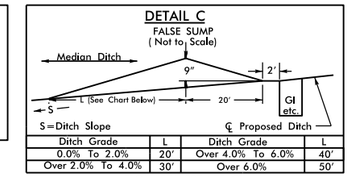
BRIDGE IN RELATION TO PAVEMENT SKETCH



FROM STA. 333+65 RT
FROM STA. 345+85 LT



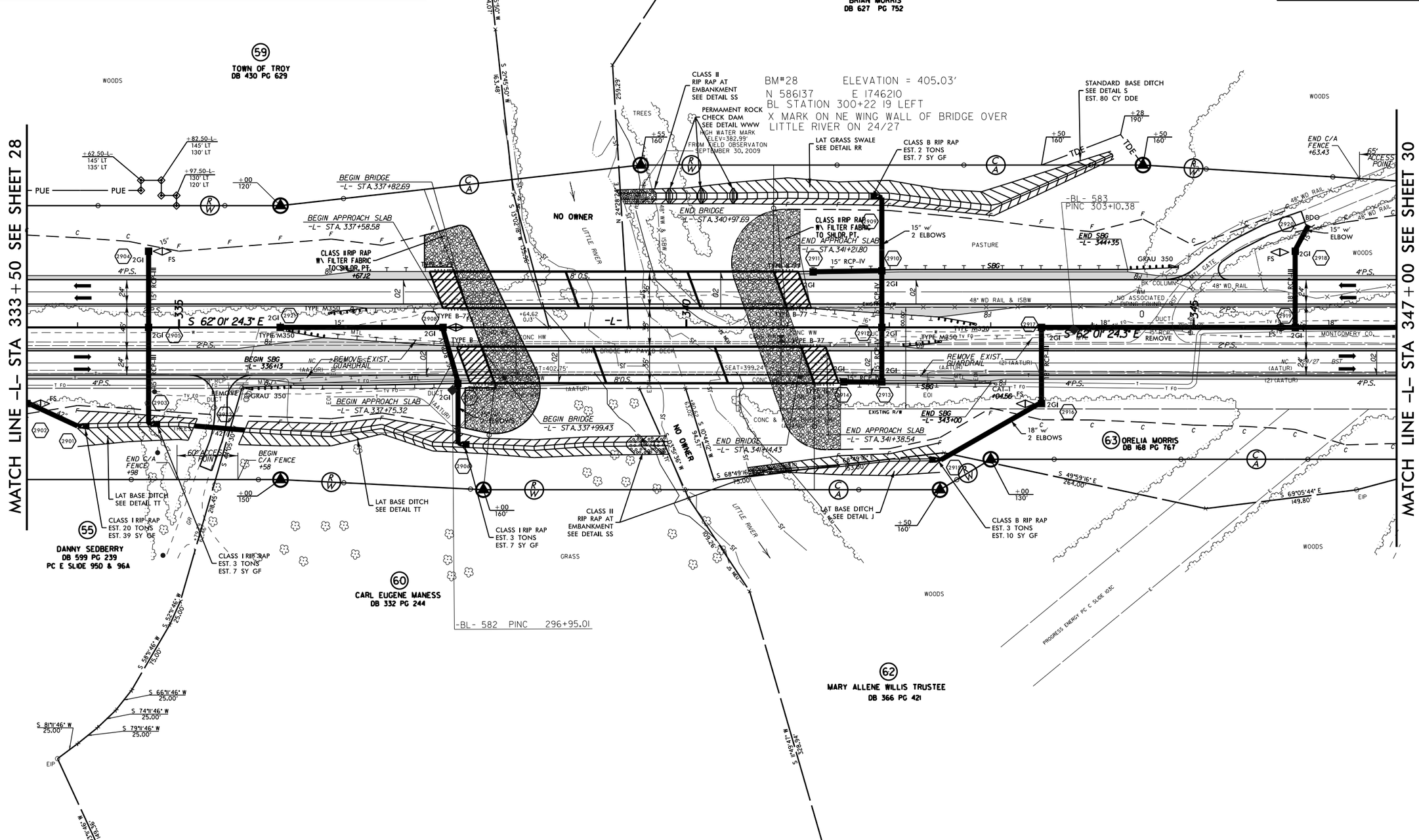
FROM STA. 334+85 LT
FROM STA. 343+35 RT



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 337+75 CL
FROM STA. 345+85 CL

NAD 83/95



REVISIONS

8/17/99

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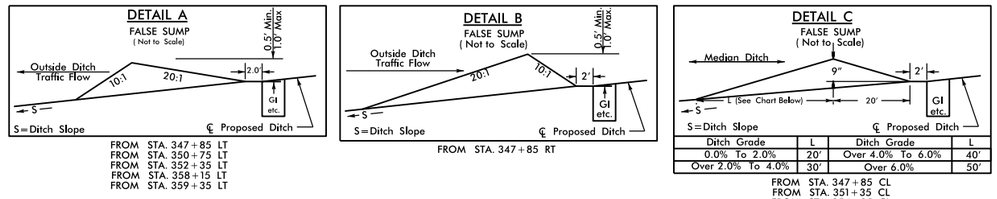
PROJECT REFERENCE NO.	SHEET NO.
R-0623	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEETS 49 AND 50

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

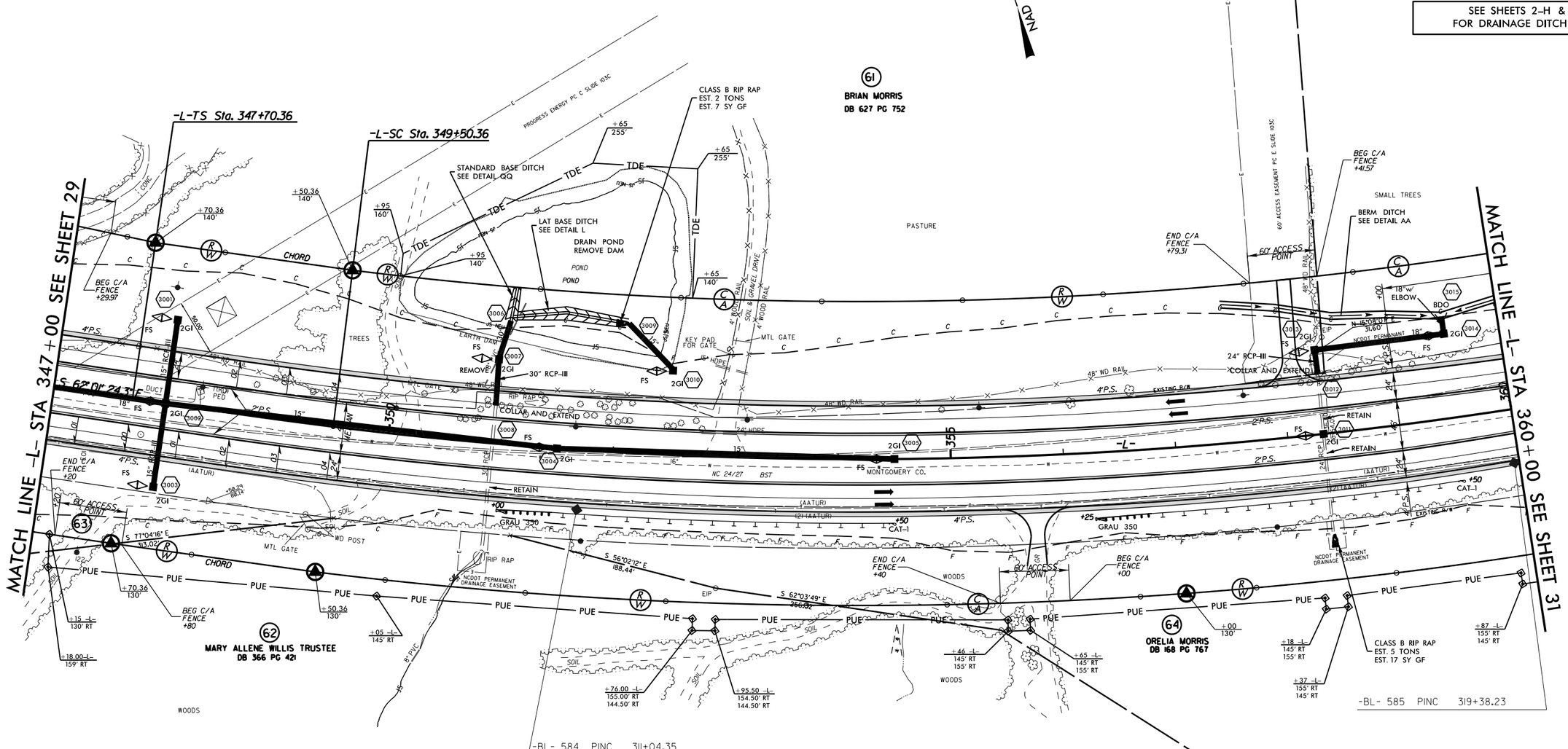


FROM STA. 347+85 LT
FROM STA. 350+75 LT
FROM STA. 352+35 LT
FROM STA. 358+15 LT
FROM STA. 359+35 LT

FROM STA. 347+85 RT

Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

FROM STA. 347+85 CL
FROM STA. 351+35 CL
FROM STA. 354+35 CL
FROM STA. 358+15 CL



-L-

PIs Sta 348+90.36	PI Sta 356+97.44
Θs = 1° 21' 25.2"	Δ = 22° 14' 41.9" (LT)
Ls = 180.00'	D = 1° 30' 28.0"
LT = 120.00'	L = 1,475.34'
ST = 60.00'	T = 747.08'
	R = 3,800.00'
	se = 0.04

8/17/99

REVISIONS

R/W REVISION- UPDATED TOPO.INFORMATION FOR PARCEL 61. 8/30/2013 - 11

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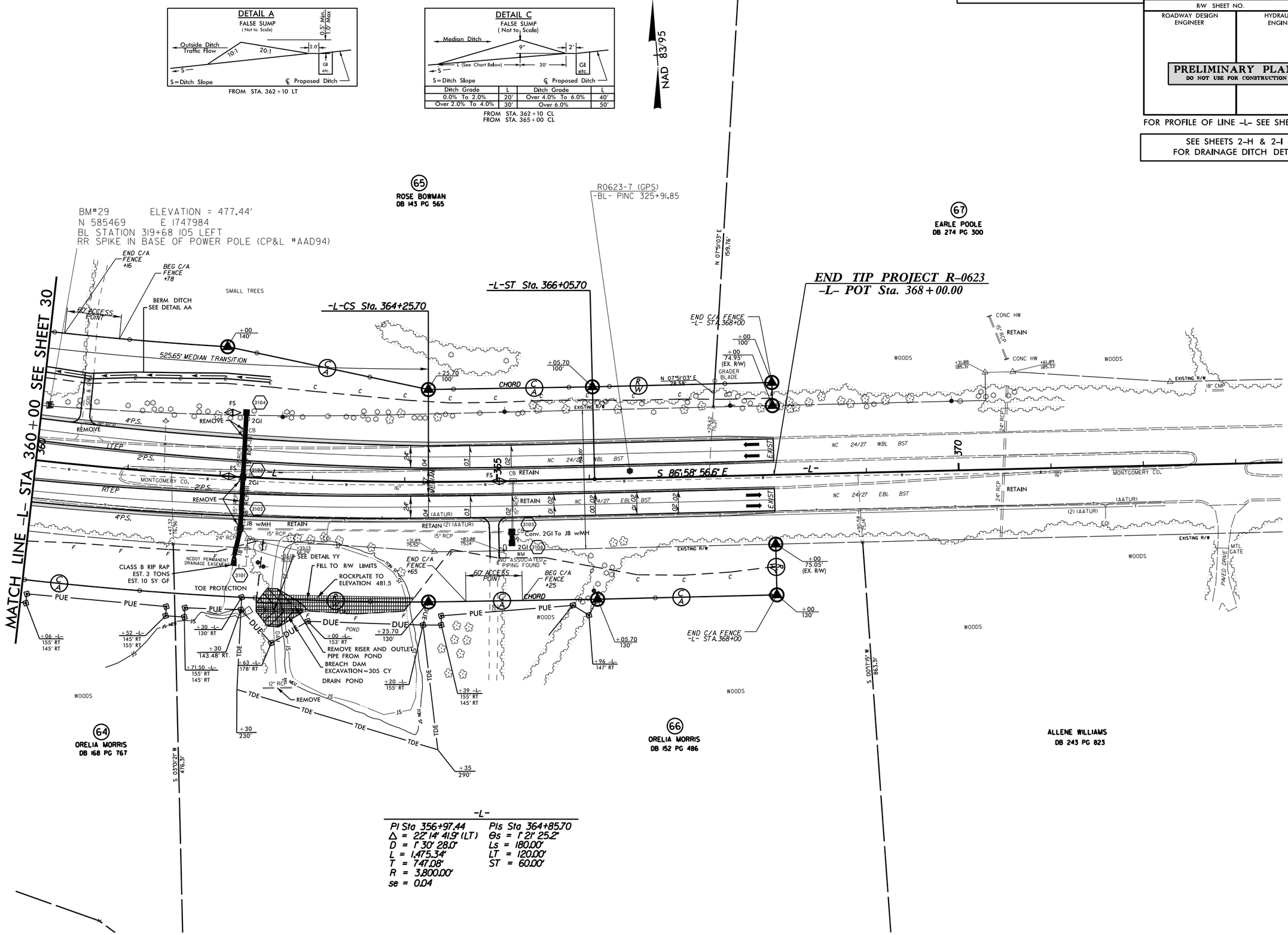
DETOUR DESIGN SPEED = 45 MPH

PROJECT REFERENCE NO.	SHEET NO.
R-0623	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -L- SEE SHEET 50

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS



-L-

PI Sta 356+97.44	PIs Sta 364+85.70
Δ = 22° 14' 41.9" (LT)	Θs = 1° 21' 25.2"
D = 1° 30' 28.0"	Ls = 180.00'
L = 1,475.34'	LT = 120.00'
T = 747.08'	ST = 60.00'
R = 3,800.00'	
se = 0.04	

8/17/99

REVISIONS

R/W REVISIONS- ADDED STA.& O/S FLAG TO INTERSECTION OF PUE/TDE ON PARCEL 66. 8/30/13 -TY
R/W REVISIONS- REVISED PUE AND ADDED DUE TO PARCEL 66. 11/ /13 -TY

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PROJECT REFERENCE NO.	SHEET NO.
R-0623	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

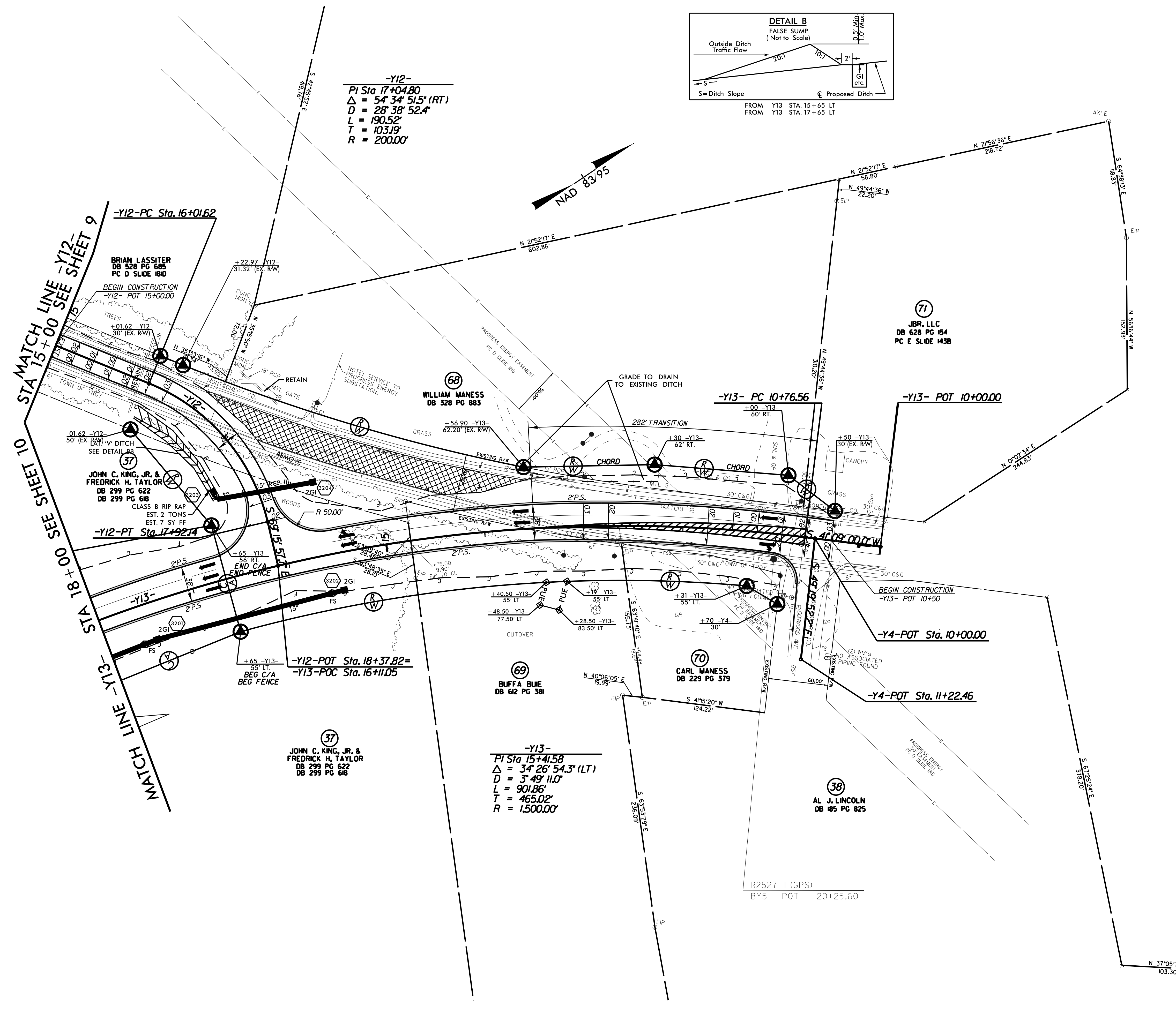
FOR PROFILE OF LINE -Y12- SEE SHEET 54
FOR PROFILE OF LINE -Y13- SEE SHEET 54

SEE SHEETS 2-H & 2-I FOR DRAINAGE DITCH DETAILS

REVISIONS

R/W REVISION - CORRECTED O/S FLAGS THAT TIES TO EX.R/W ON PARCEL 70.UPDATED PROPERTY OWNER INFORMATION ON PARCEL 37. 8/30/2013 -IY

8/17/99



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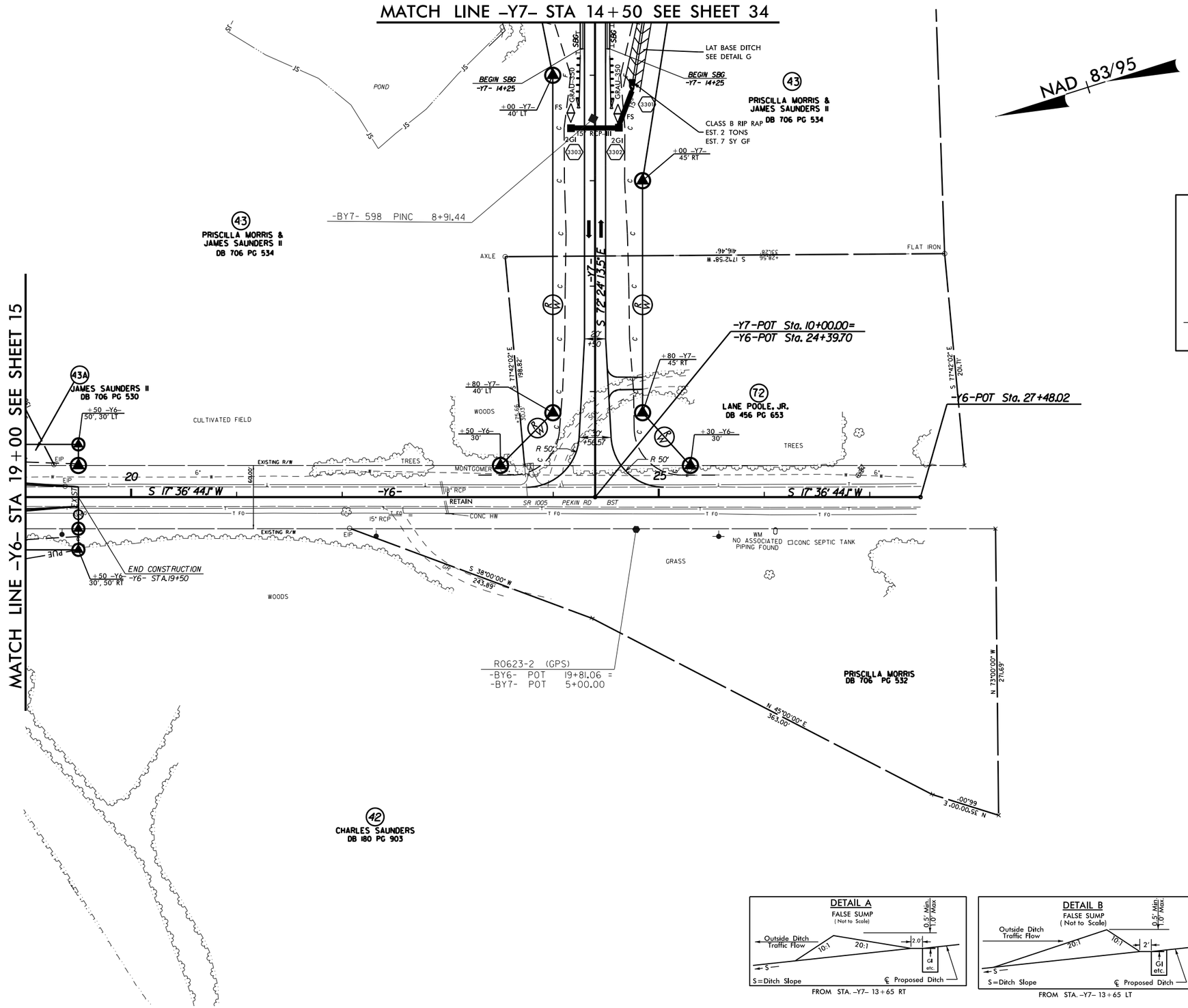
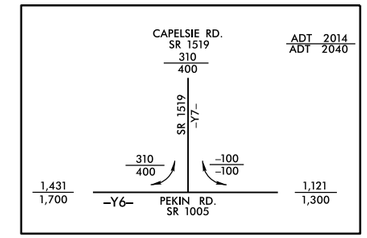
PROJECT REFERENCE NO.	SHEET NO.
R-0623	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -Y6- SEE SHEET 51
FOR PROFILE OF LINE -Y7- SEE SHEET 52

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS





FROM STA. -Y7- 13+65 RT

FROM STA. -Y7- 13+65 LT

8/17/99

REVISIONS

R/W REVISIONS - DIVIDED PARCELS 43 INTO PARCELA 43 & 43A. 11/19/2013 IY

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PROJECT REFERENCE NO.	SHEET NO.
R-0623	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

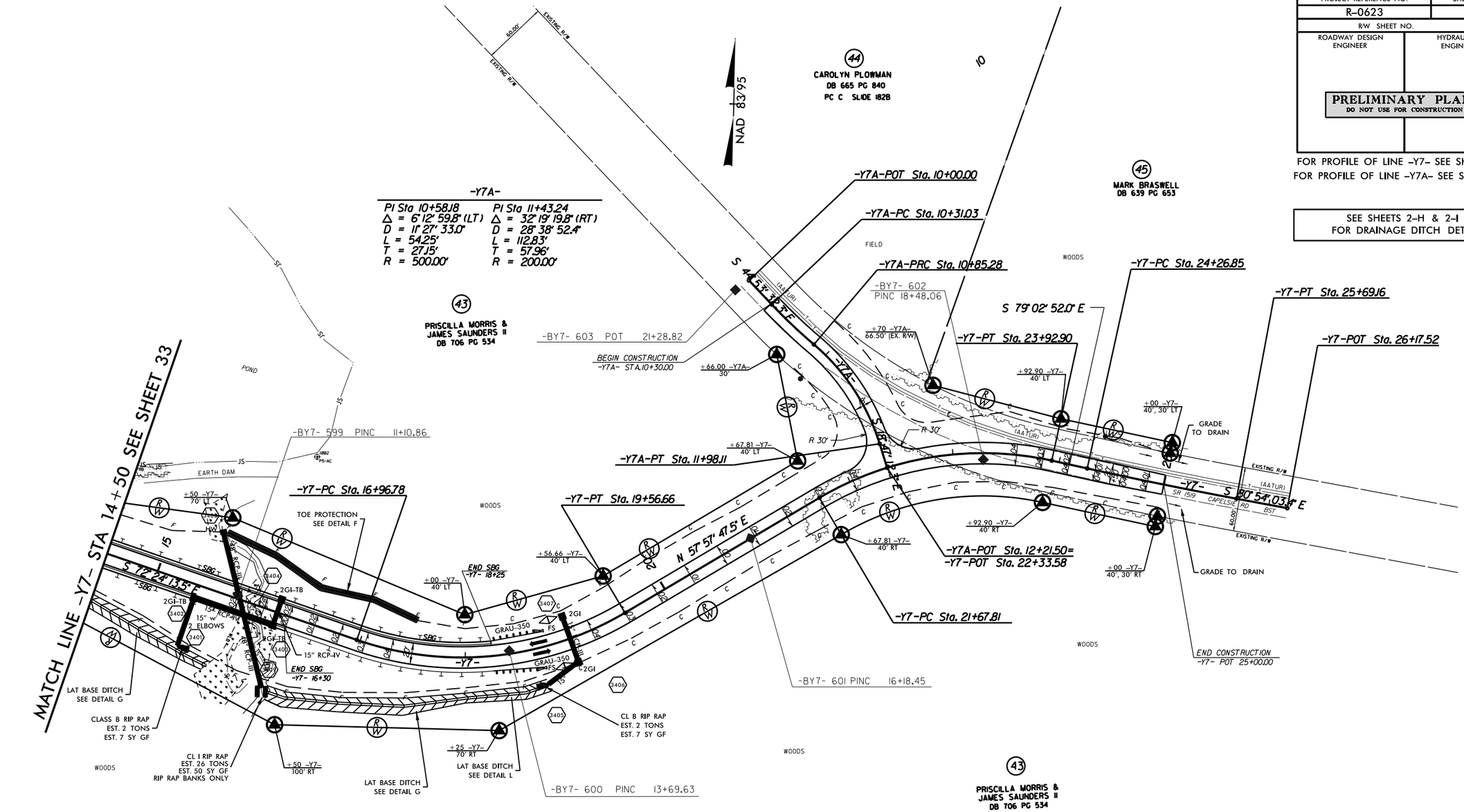
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -Y7- SEE SHEET 52
FOR PROFILE OF LINE -Y7A- SEE SHEET 55

SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

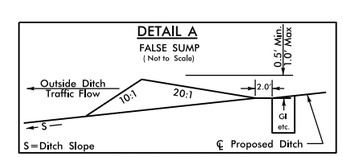
REVISIONS
R/W REVISIONS- UPDATED PROPERTY OWNER INFORMATION FOR PARCELS 43,44 & 45, UPDATED O/S FLAGS THAT TIE TO EX.R/W ON PARCELS 43 . 8/30/2013 -JY

8/17/99

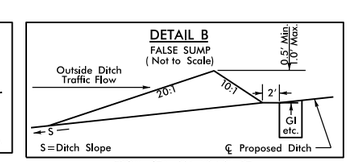


-Y7-

PI Sta 18+35.51	PI Sta 22+85.95	PI Sta 24+98.01
Δ = 49° 37' 59.0" (LT)	Δ = 42° 59' 20.5" (RT)	Δ = 1° 51' 11.4" (LT)
D = 19° 05' 54.9"	D = 19° 05' 54.9"	D = 1° 18' 07.8"
L = 259.88'	L = 225.09'	L = 142.31'
T = 138.72'	T = 118.14'	T = 71.16'
R = 300.00'	R = 300.00'	R = 4,400.00'



FROM STA. -Y7- 18+85 LT



FROM STA. -Y7- 18+85 RT

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PROJECT REFERENCE NO.	SHEET NO.
R-0623	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR PROFILE OF LINE -Y9- SEE SHEET 53
FOR PROFILE OF LINE -Y11- SEE SHEET 54

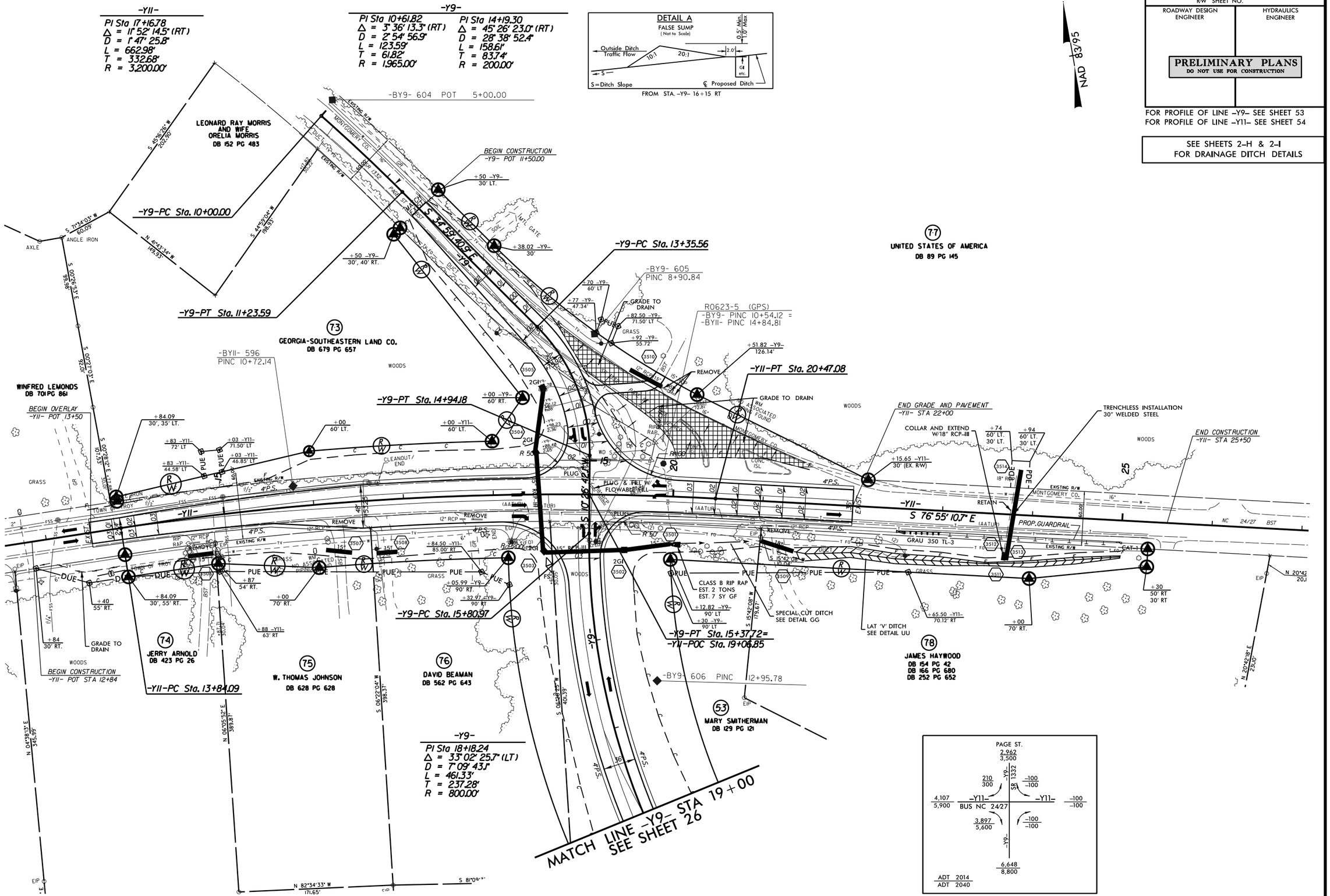
SEE SHEETS 2-H & 2-I
FOR DRAINAGE DITCH DETAILS

NAD 83/95

REVISIONS

R/W REVISIONS - REVISED PUE ON PARCELS 53 AND 78 - KDA 03/28/2013
R/W REVISIONS - UPDATED PROPERTY OWNER INFORMATION ON PARCEL 73. UPDATED O/S FLAGS THAT TIE TO EX.R/W ON PARCELS 73,74,77 & 78. 8/30/2013 11
R/W REVISIONS - REVISED PROPOSED R/W ON PARCEL 78 AND ADDED PDE TO PARCEL 77. 11/ /2013 11

8/17/99



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

SEE SHEETS 4 & 5 FOR PLANS OF –L1–

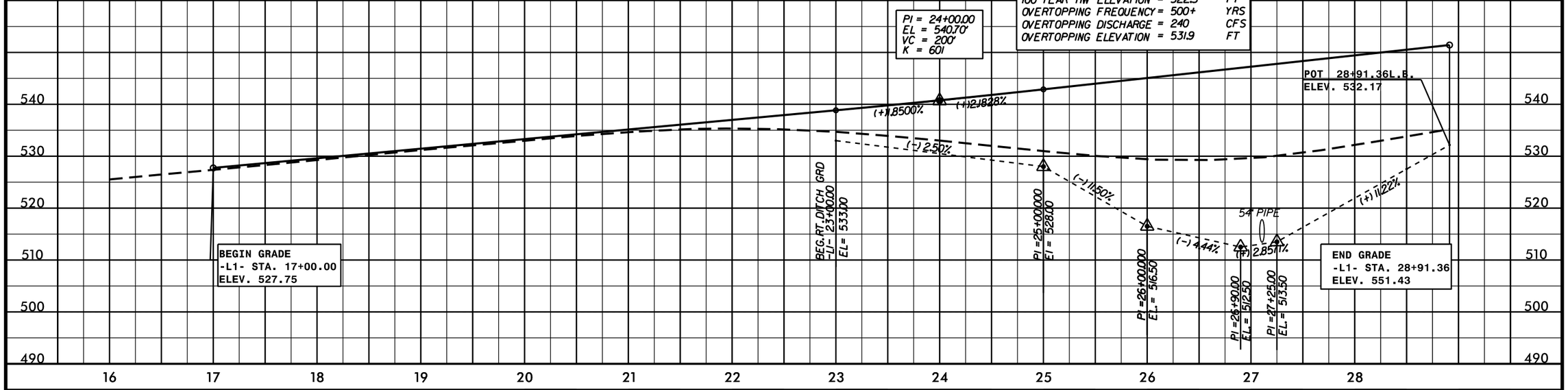
PROJECT REFERENCE NO.	SHEET NO.
R-0623	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1–

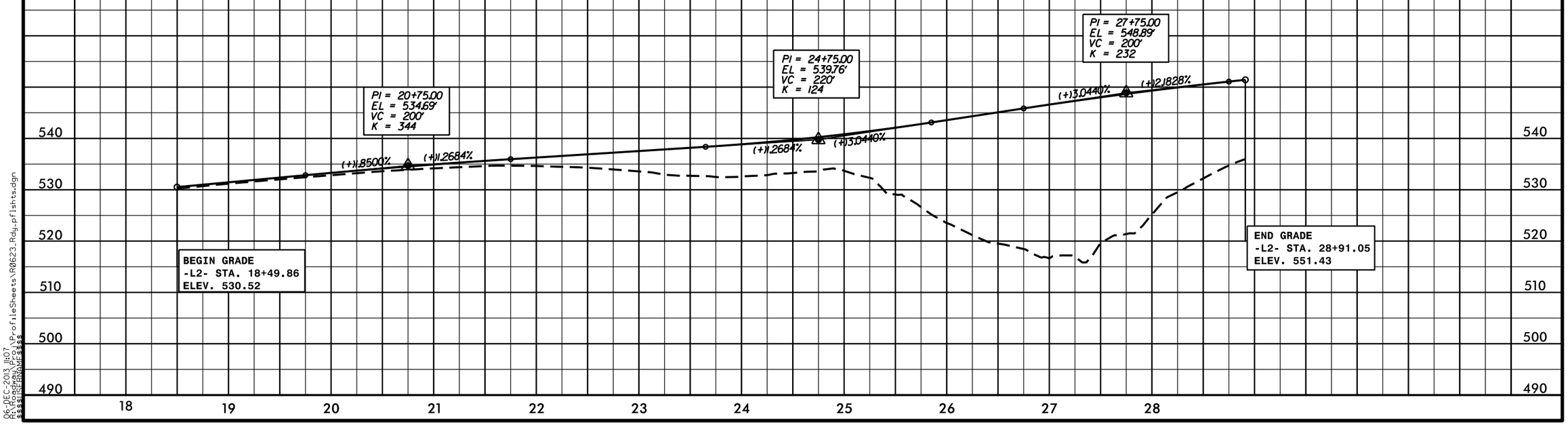
PIPE HYDRAULIC DATA
-L1- Sta.27+10

DRAINAGE AREA	=	33.3	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	84	CFS
DESIGN HW ELEVATION	=	522.0	FT
100 YEAR DISCHARGE	=	97	CFS
100 YEAR HW ELEVATION	=	522.5	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	240	CFS
OVERTOPPING ELEVATION	=	531.9	FT



SEE SHEETS 4 & 5 FOR PLANS OF –L2–

–L2–



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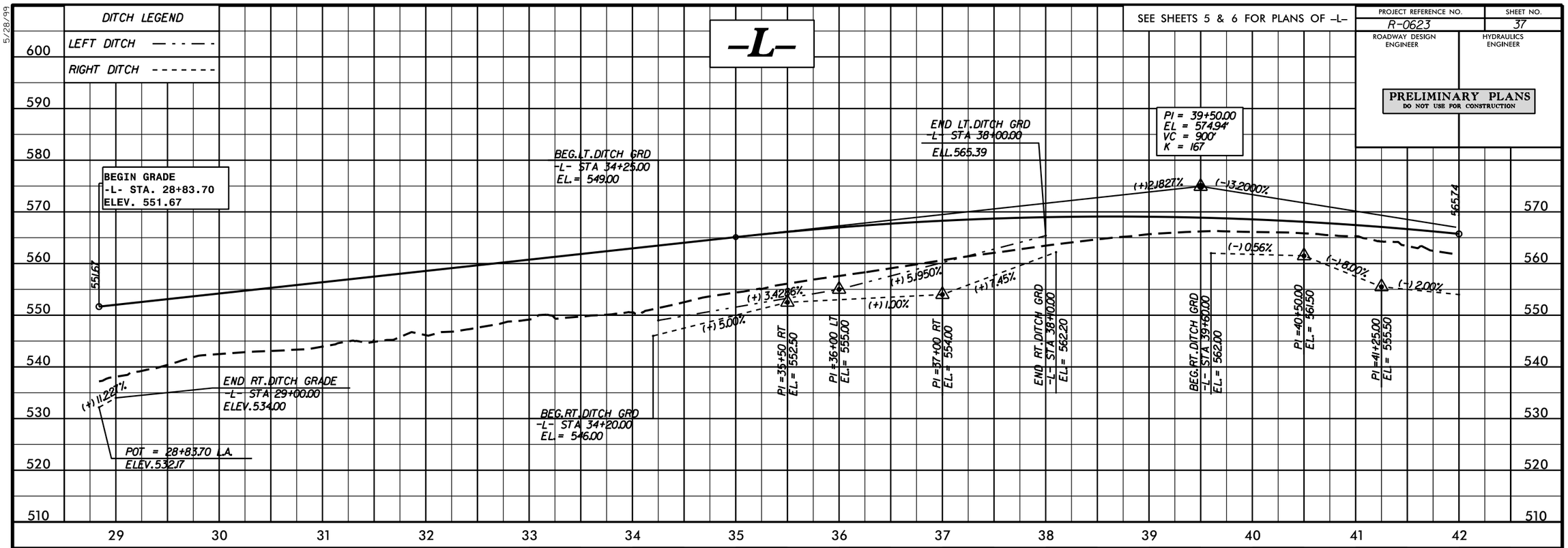
PROJECT REFERENCE NO.	SHEET NO.
R-0623	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PIPE HYDRAULIC DATA
-L- Sta.49+00

DRAINAGE AREA	=	19.0	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	60	CFS
DESIGN HW ELEVATION	=	538.20	FT
100 YEAR DISCHARGE	=	70	CFS
100 YEAR HW ELEVATION	=	538.6	FT
OVERTOPPING FREQUENCY	=	200+	YRS
OVERTOPPING DISCHARGE	=	104	CFS
OVERTOPPING ELEVATION	=	540.5	FT

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	550	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	526.2	FT
BASE DISCHARGE	=	600	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	526.78	FT
OVERTOPPING DISCHARGE	=	1,220	CFS
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING ELEVATION	=	536.6	FT

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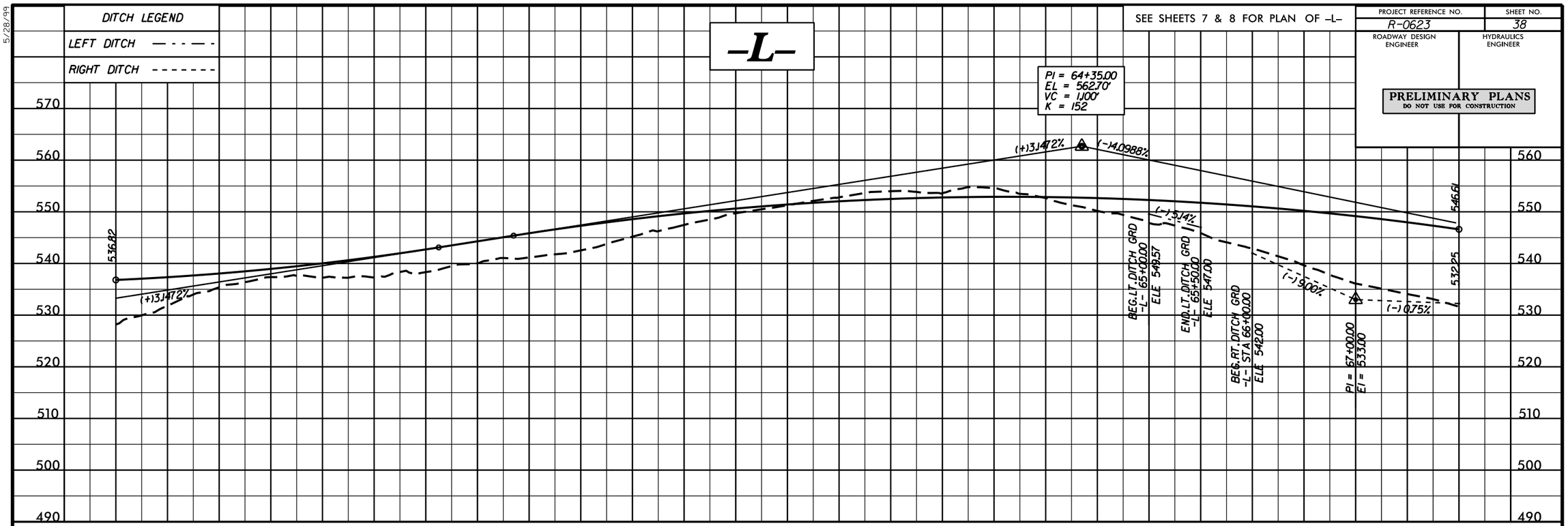
PROJECT REFERENCE NO.	SHEET NO.
R-0623	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

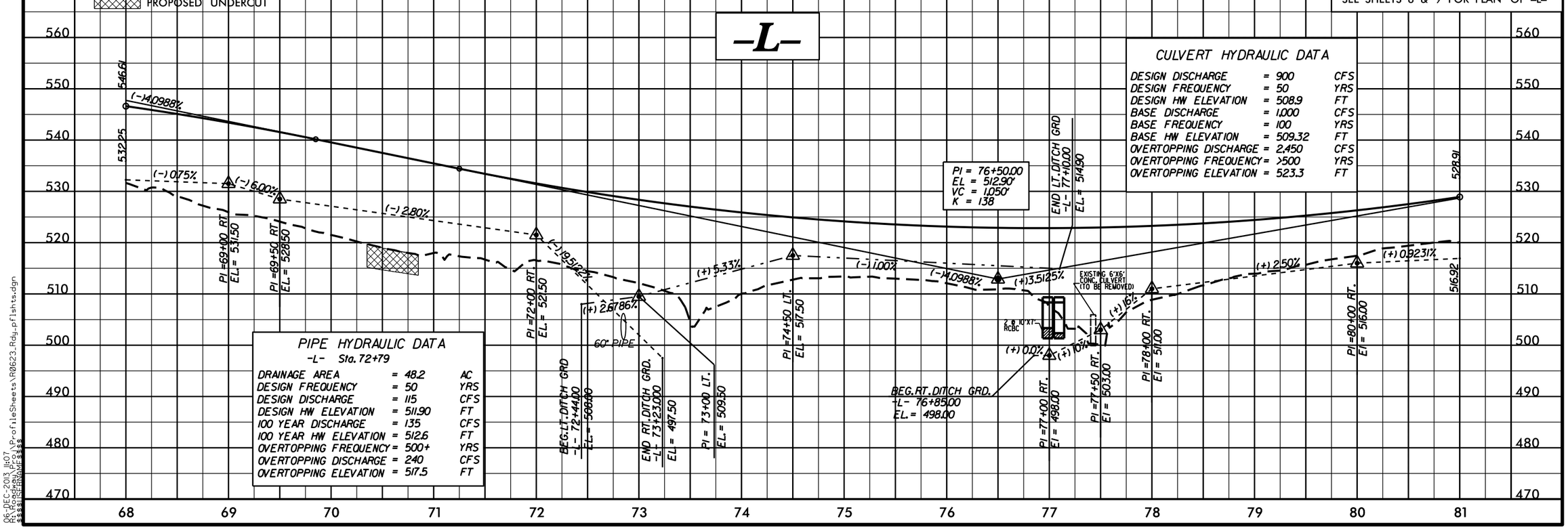
DITCH LEGEND
LEFT DITCH — - - — -
RIGHT DITCH - - - - - - -

SEE SHEETS 7 & 8 FOR PLAN OF –L–



PROPOSED UNDERCUT

SEE SHEETS 8 & 9 FOR PLAN OF –L–



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	900	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	508.9	FT
BASE DISCHARGE	=	1,000	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	509.32	FT
OVERTOPPING DISCHARGE	=	2,450	CFS
OVERTOPPING FREQUENCY	=	>500	YRS
OVERTOPPING ELEVATION	=	523.3	FT

PIPE HYDRAULIC DATA
-L- Sta. 72+79

DRAINAGE AREA	=	48.2	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	115	CFS
DESIGN HW ELEVATION	=	511.90	FT
100 YEAR DISCHARGE	=	135	CFS
100 YEAR HW ELEVATION	=	512.6	FT
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING DISCHARGE	=	240	CFS
OVERTOPPING ELEVATION	=	517.5	FT

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PROJECT REFERENCE NO.	SHEET NO.
R-0623	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DITCH LEGEND

LEFT DITCH — - - — -

RIGHT DITCH - - - - - - -

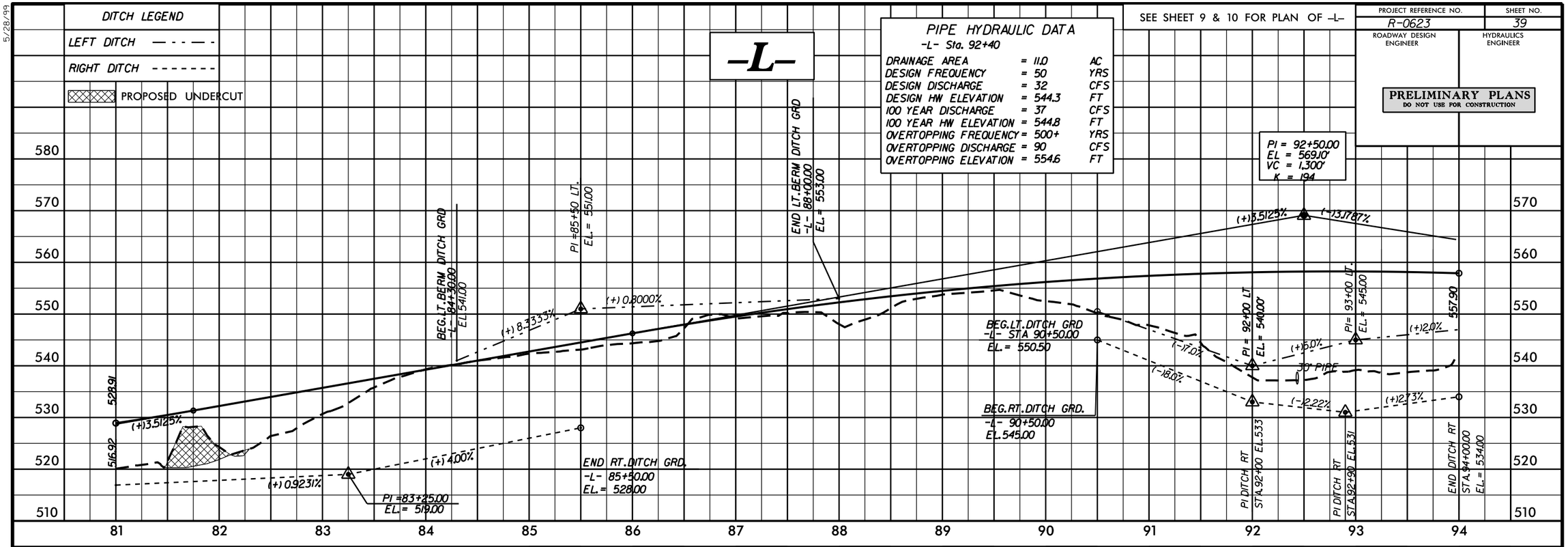
PROPOSED UNDERCUT

SEE SHEET 9 & 10 FOR PLAN OF -L-

-L-

PIPE HYDRAULIC DATA
-L- Sta. 92+40

DRAINAGE AREA	= 11.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 32	CFS
DESIGN HW ELEVATION	= 544.3	FT
100 YEAR DISCHARGE	= 37	CFS
100 YEAR HW ELEVATION	= 544.8	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 90	CFS
OVERTOPPING ELEVATION	= 554.6	FT

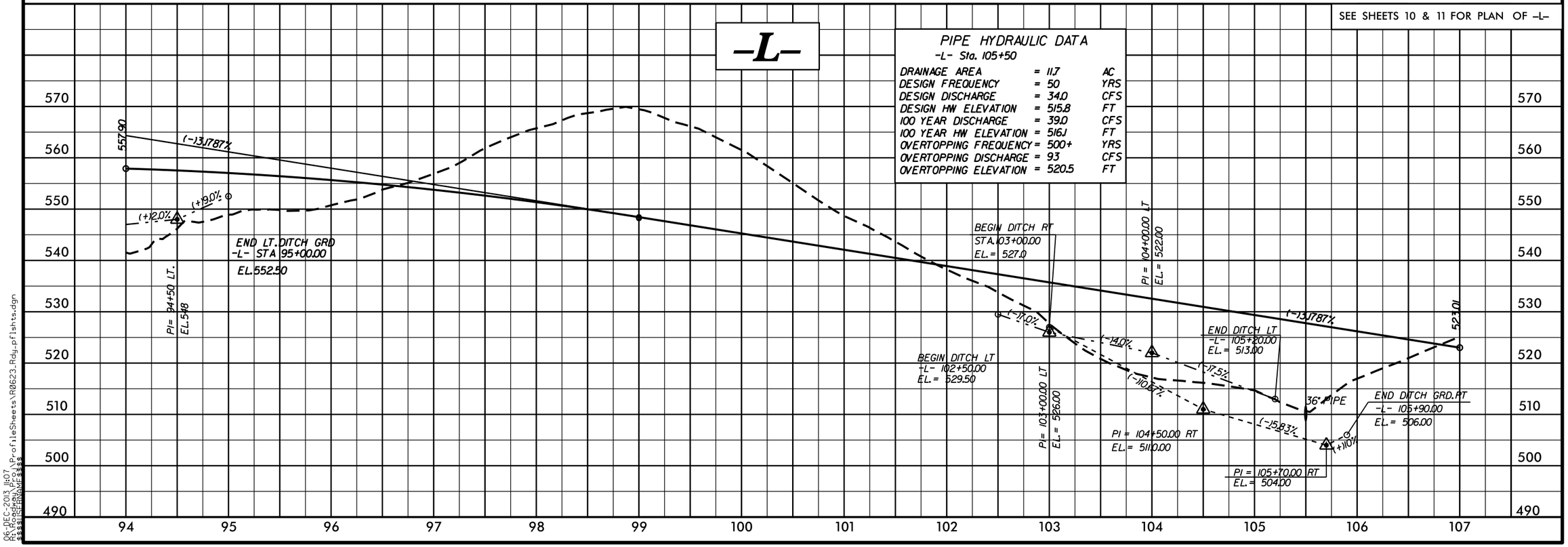


SEE SHEETS 10 & 11 FOR PLAN OF -L-

-L-

PIPE HYDRAULIC DATA
-L- Sta. 105+50

DRAINAGE AREA	= 11.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 34.0	CFS
DESIGN HW ELEVATION	= 515.8	FT
100 YEAR DISCHARGE	= 39.0	CFS
100 YEAR HW ELEVATION	= 516.1	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 93	CFS
OVERTOPPING ELEVATION	= 520.5	FT



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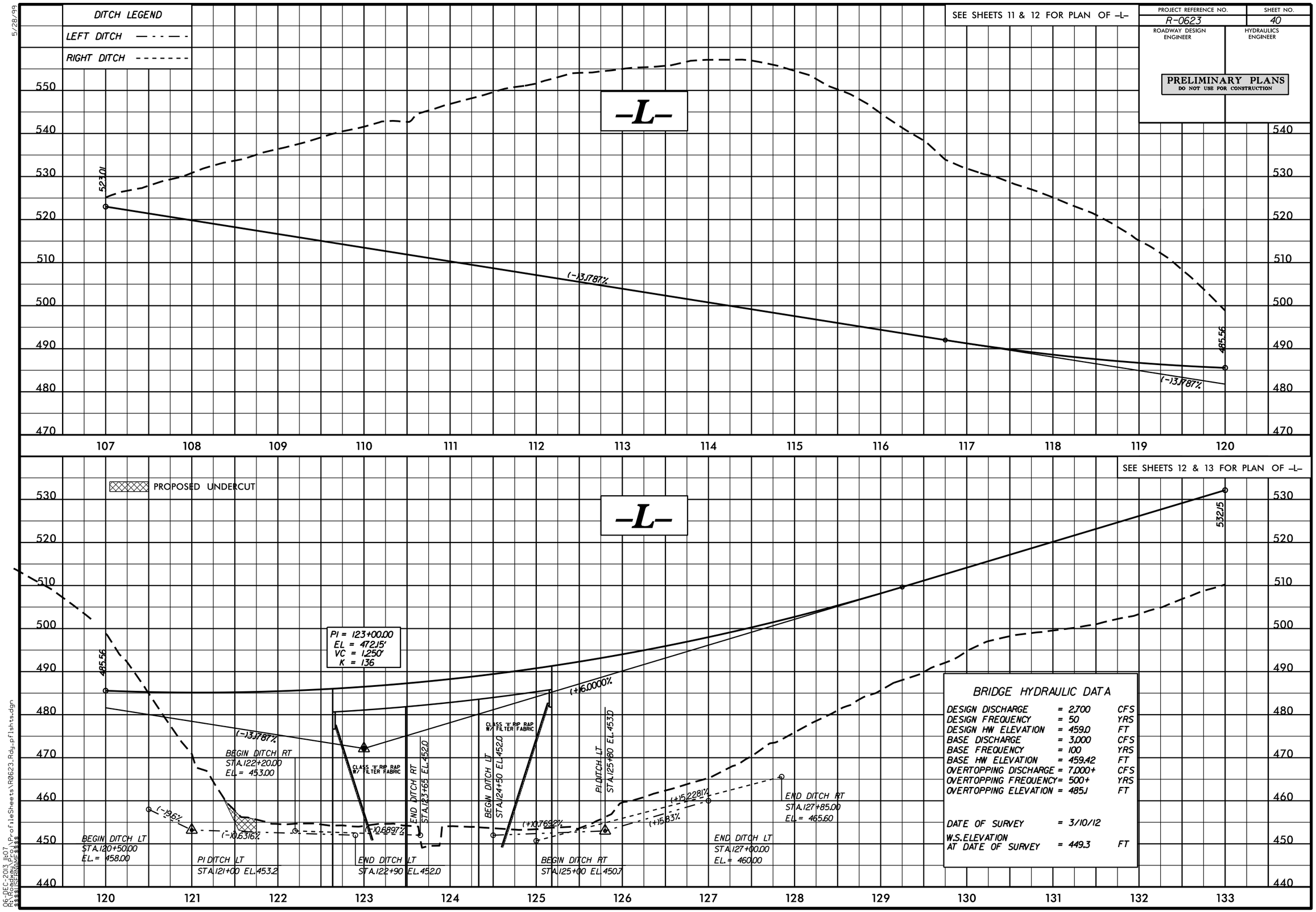
PROJECT REFERENCE NO.	SHEET NO.
R-0623	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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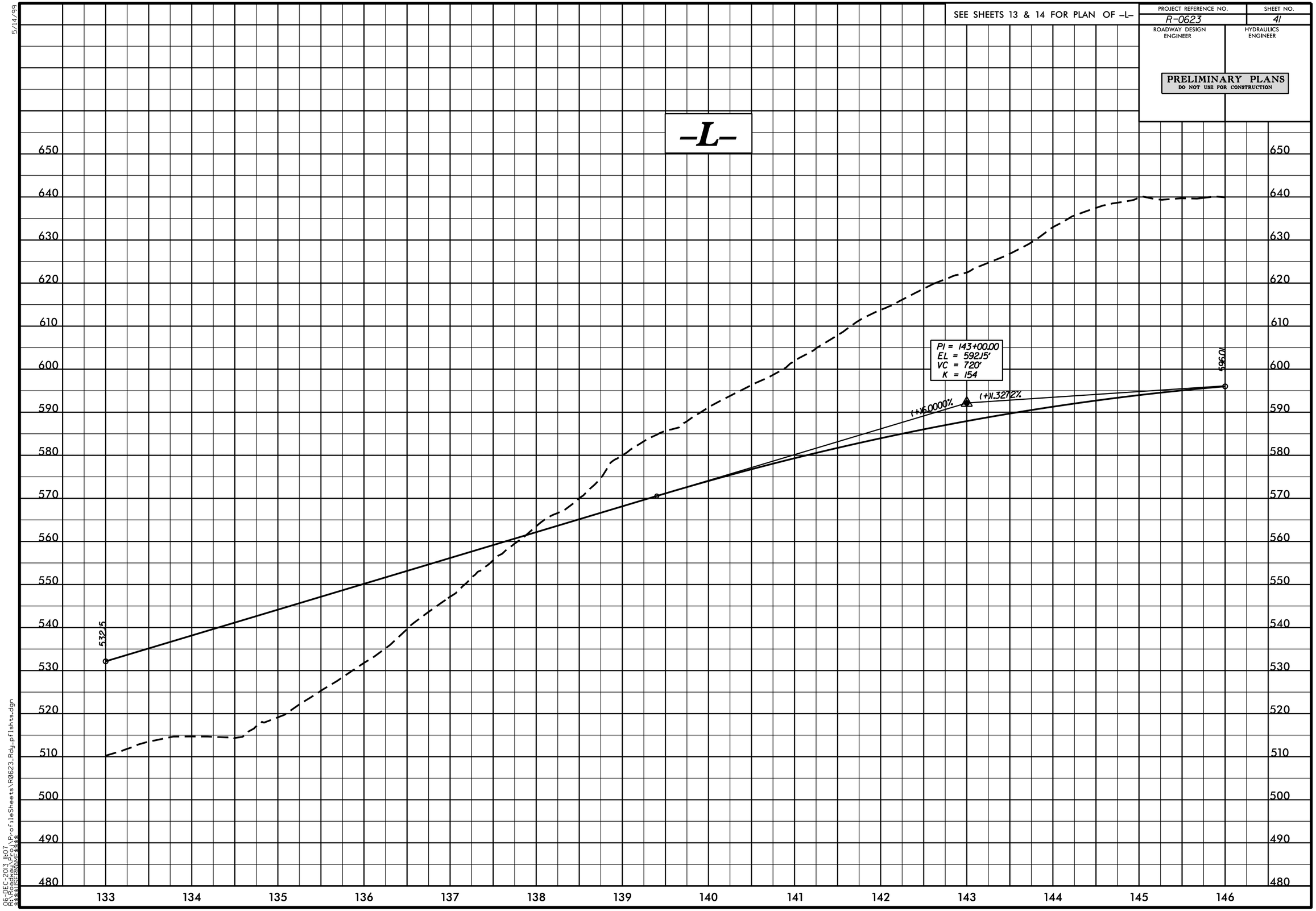
SEE SHEETS 13 & 14 FOR PLAN OF –L–

PROJECT REFERENCE NO.	SHEET NO.
R-0623	41
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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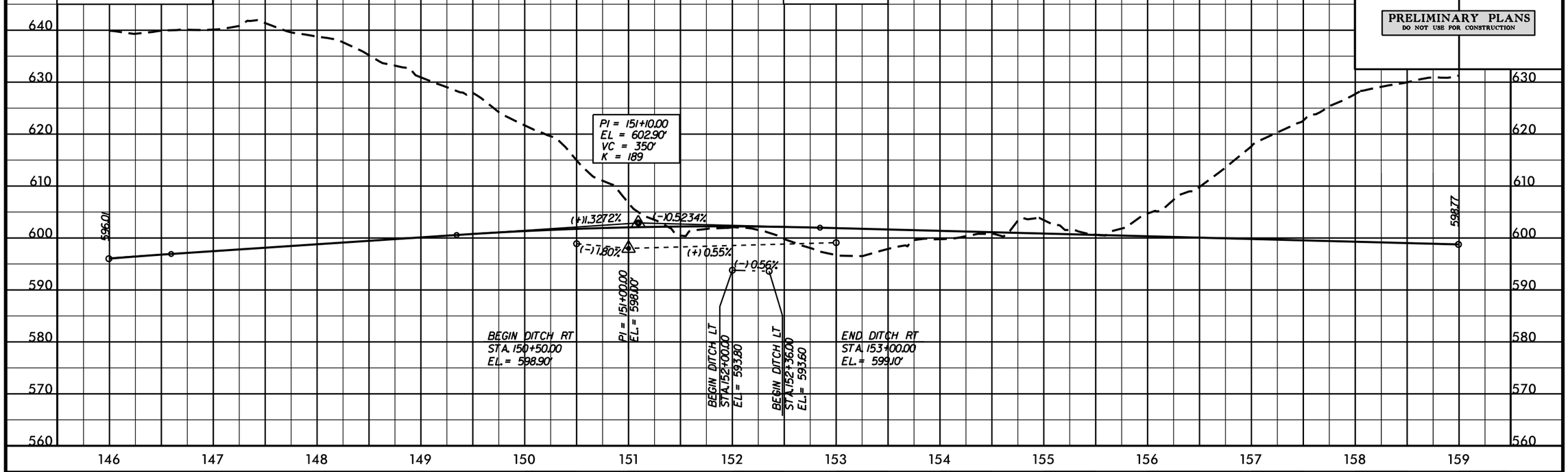
DITCH LEGEND
LEFT DITCH — - - — -
RIGHT DITCH - - - - - - -

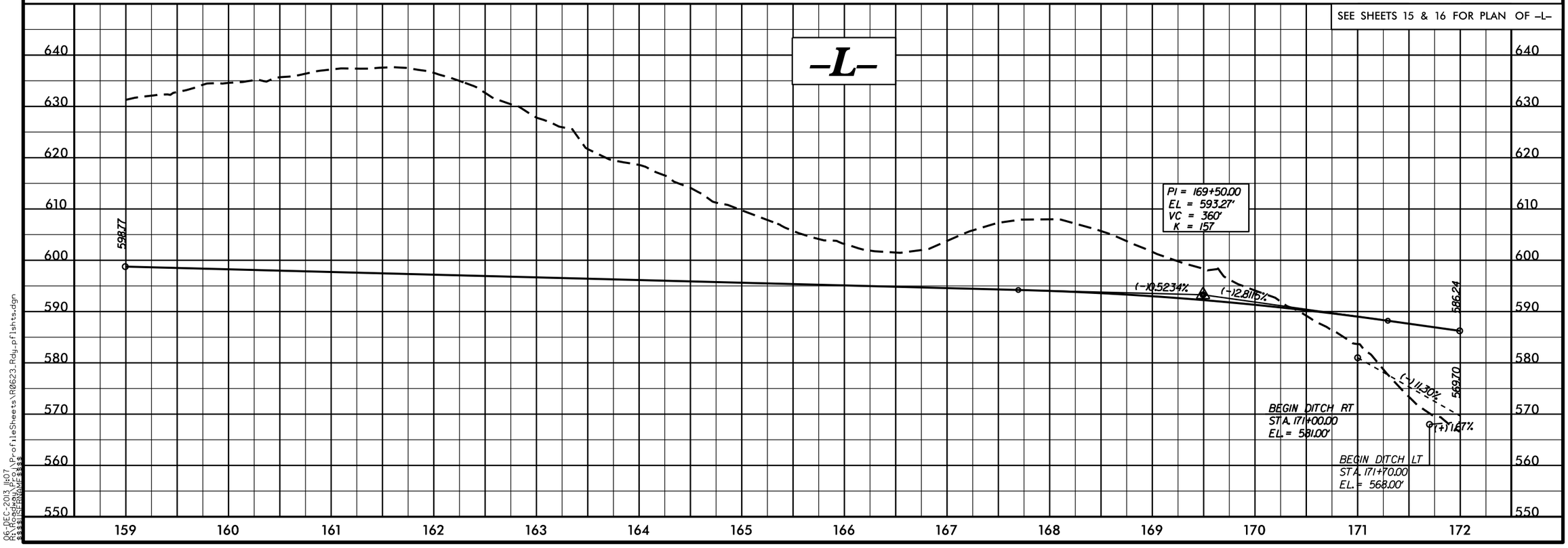
SEE SHEETS 14 & 15 FOR PLAN OF –L–

PROJECT REFERENCE NO.	SHEET NO.
R-0623	42
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SEE SHEETS 15 & 16 FOR PLAN OF –L–



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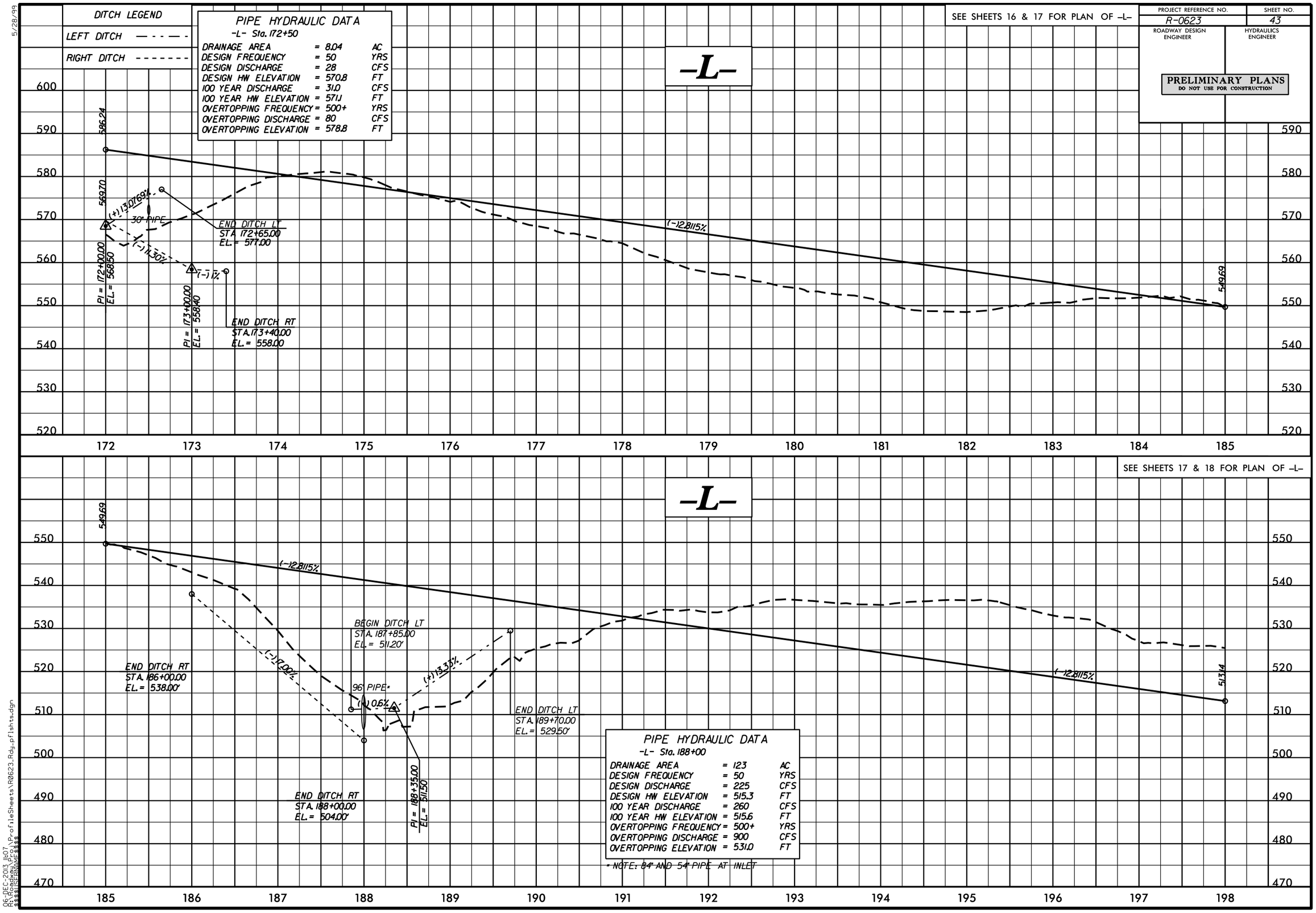
PROJECT REFERENCE NO.	SHEET NO.
R-0623	43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 16 & 17 FOR PLAN OF -L-



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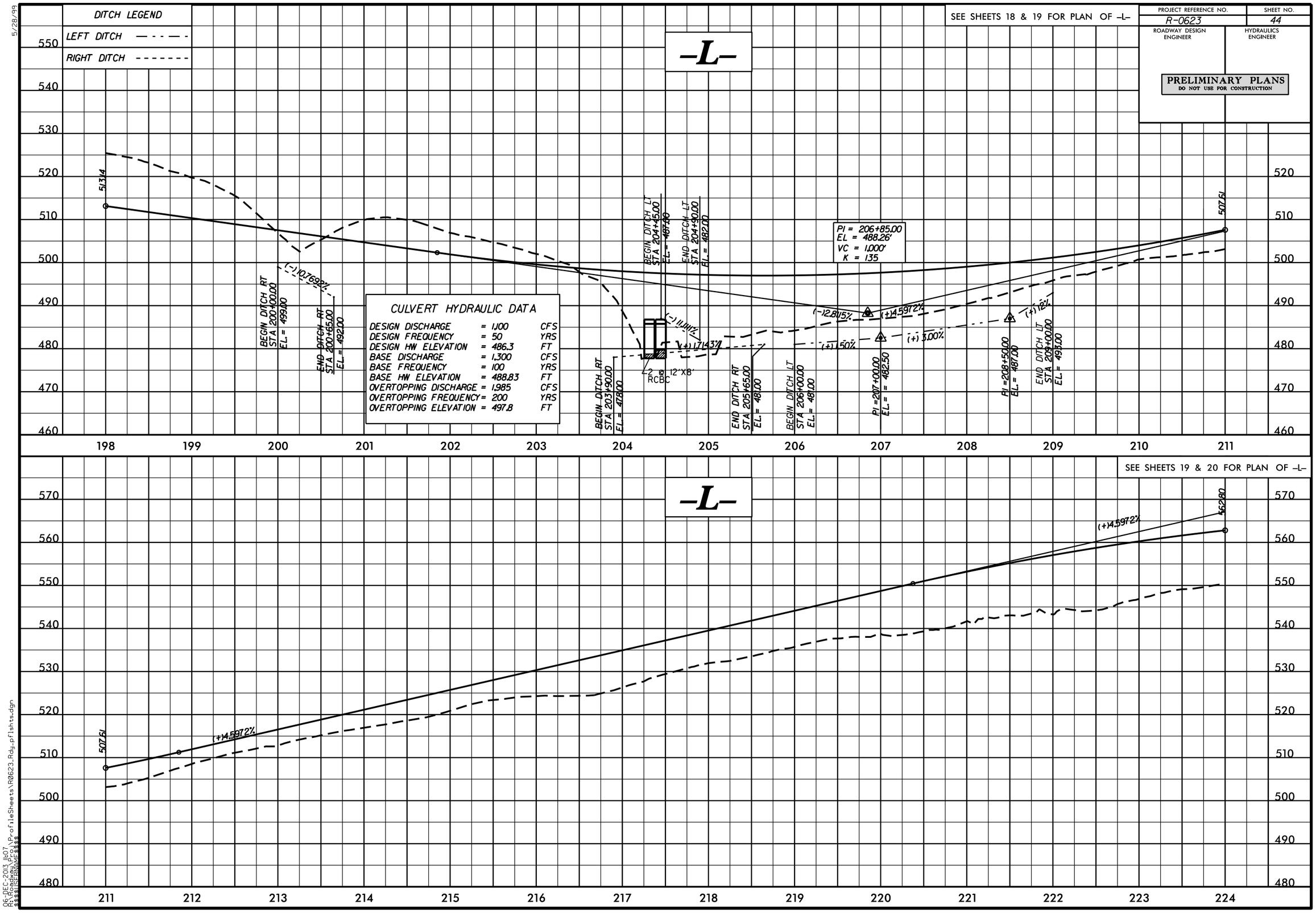
PROJECT REFERENCE NO.	SHEET NO.
R-0623	44
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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PROJECT REFERENCE NO.	SHEET NO.
R-0623	45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

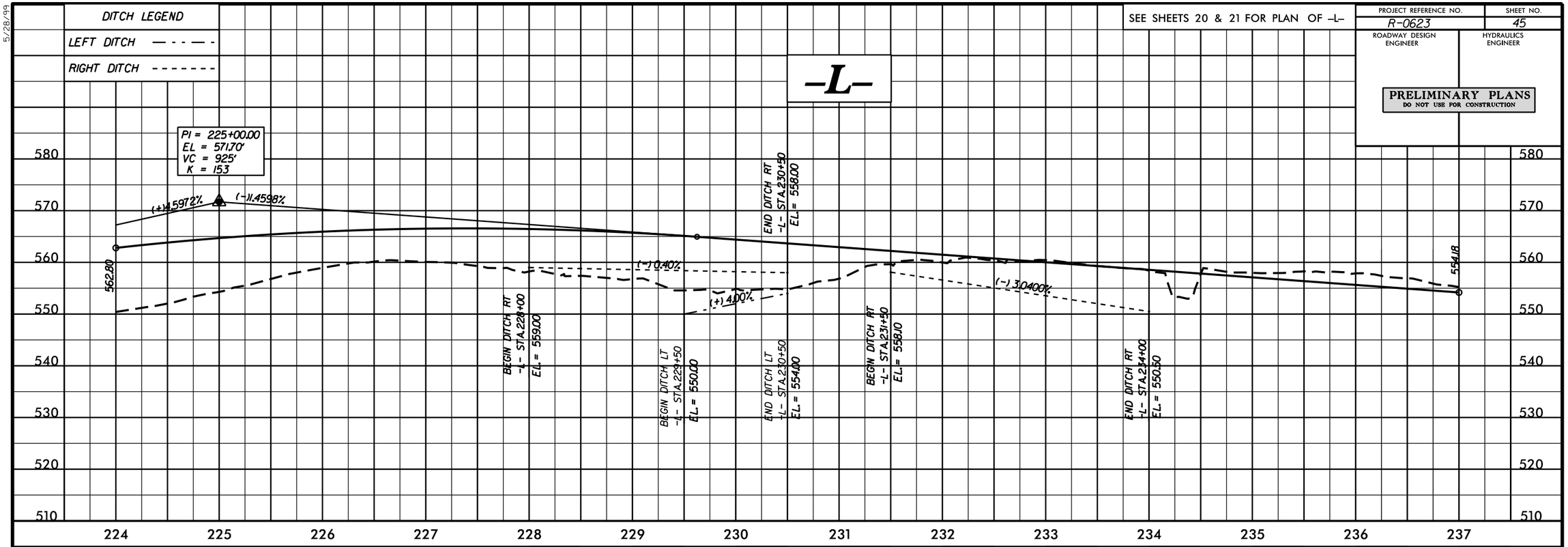
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DITCH LEGEND

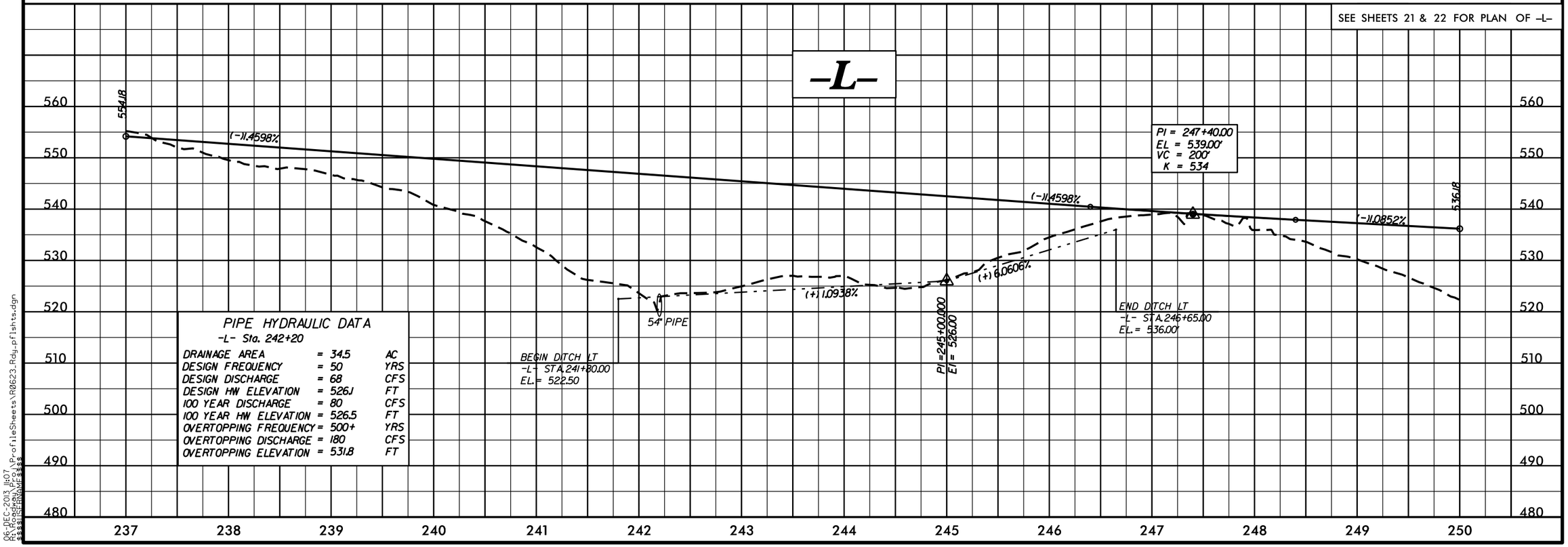
LEFT DITCH — - - — -

RIGHT DITCH - - - - - - -

SEE SHEETS 20 & 21 FOR PLAN OF -L-



SEE SHEETS 21 & 22 FOR PLAN OF -L-



PIPE HYDRAULIC DATA
-L- Sta. 242+20

DRAINAGE AREA	= 34.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 68	CFS
DESIGN HW ELEVATION	= 526.1	FT
100 YEAR DISCHARGE	= 80	CFS
100 YEAR HW ELEVATION	= 526.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 180	CFS
OVERTOPPING ELEVATION	= 531.8	FT

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

SEE SHEETS 22 & 23 FOR PLAN OF –L–

PROJECT REFERENCE NO.	SHEET NO.
R-0623	46
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L–

PROPOSED UNDERCUT

PIPE HYDRAULIC DATA
-L- Sta. 251+32

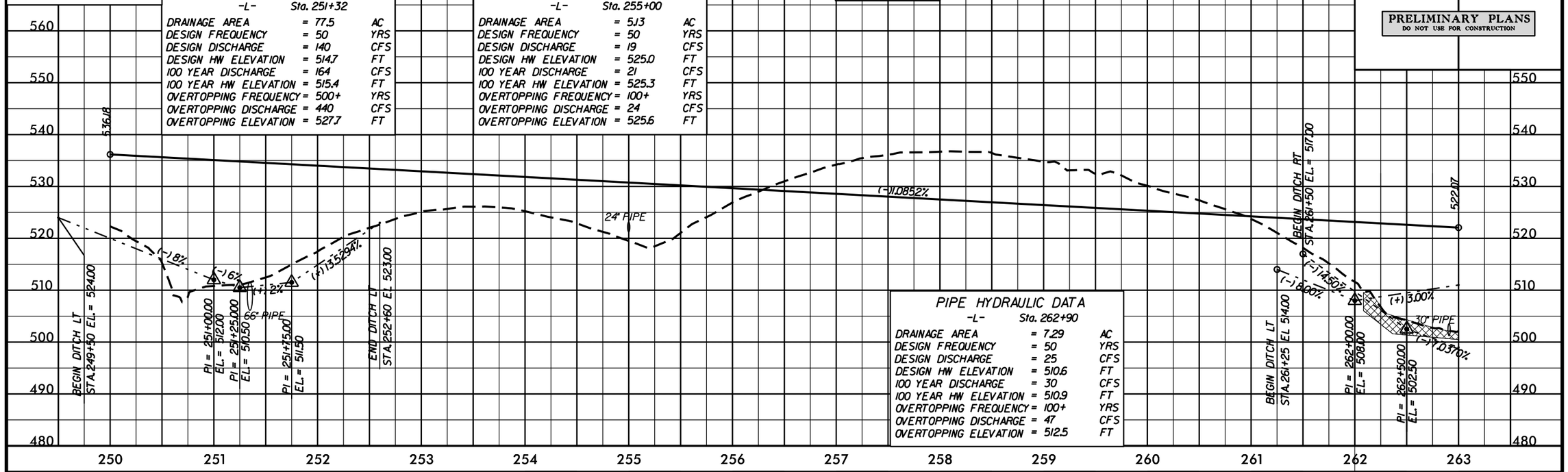
DRAINAGE AREA	= 77.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 140	CFS
DESIGN HW ELEVATION	= 514.7	FT
100 YEAR DISCHARGE	= 164	CFS
100 YEAR HW ELEVATION	= 515.4	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 440	CFS
OVERTOPPING ELEVATION	= 527.7	FT

PIPE HYDRAULIC DATA
-L- Sta. 255+00

DRAINAGE AREA	= 5.13	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 19	CFS
DESIGN HW ELEVATION	= 525.0	FT
100 YEAR DISCHARGE	= 21	CFS
100 YEAR HW ELEVATION	= 525.3	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 24	CFS
OVERTOPPING ELEVATION	= 525.6	FT

PIPE HYDRAULIC DATA
-L- Sta. 262+90

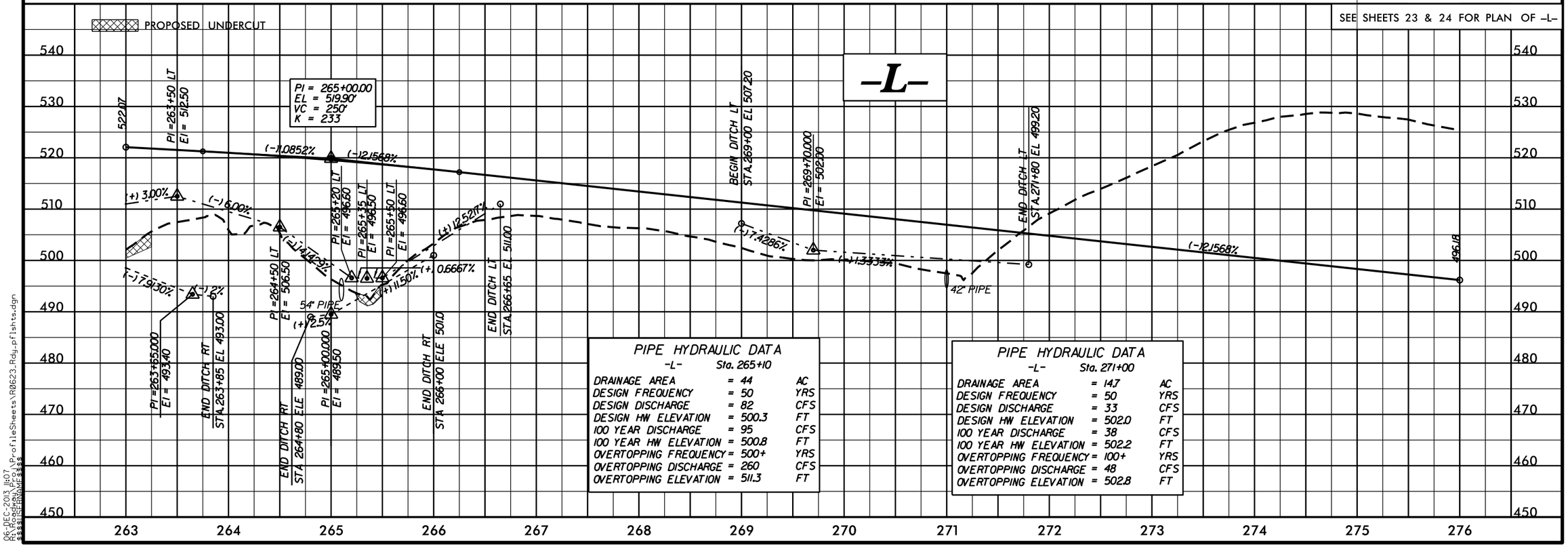
DRAINAGE AREA	= 7.29	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 25	CFS
DESIGN HW ELEVATION	= 510.6	FT
100 YEAR DISCHARGE	= 30	CFS
100 YEAR HW ELEVATION	= 510.9	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 47	CFS
OVERTOPPING ELEVATION	= 512.5	FT



SEE SHEETS 23 & 24 FOR PLAN OF –L–

PROPOSED UNDERCUT

–L–



PIPE HYDRAULIC DATA
-L- Sta. 265+10

DRAINAGE AREA	= 44	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 82	CFS
DESIGN HW ELEVATION	= 500.3	FT
100 YEAR DISCHARGE	= 95	CFS
100 YEAR HW ELEVATION	= 500.8	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 260	CFS
OVERTOPPING ELEVATION	= 511.3	FT

PIPE HYDRAULIC DATA
-L- Sta. 271+00

DRAINAGE AREA	= 14.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 33	CFS
DESIGN HW ELEVATION	= 502.0	FT
100 YEAR DISCHARGE	= 38	CFS
100 YEAR HW ELEVATION	= 502.2	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 48	CFS
OVERTOPPING ELEVATION	= 502.8	FT

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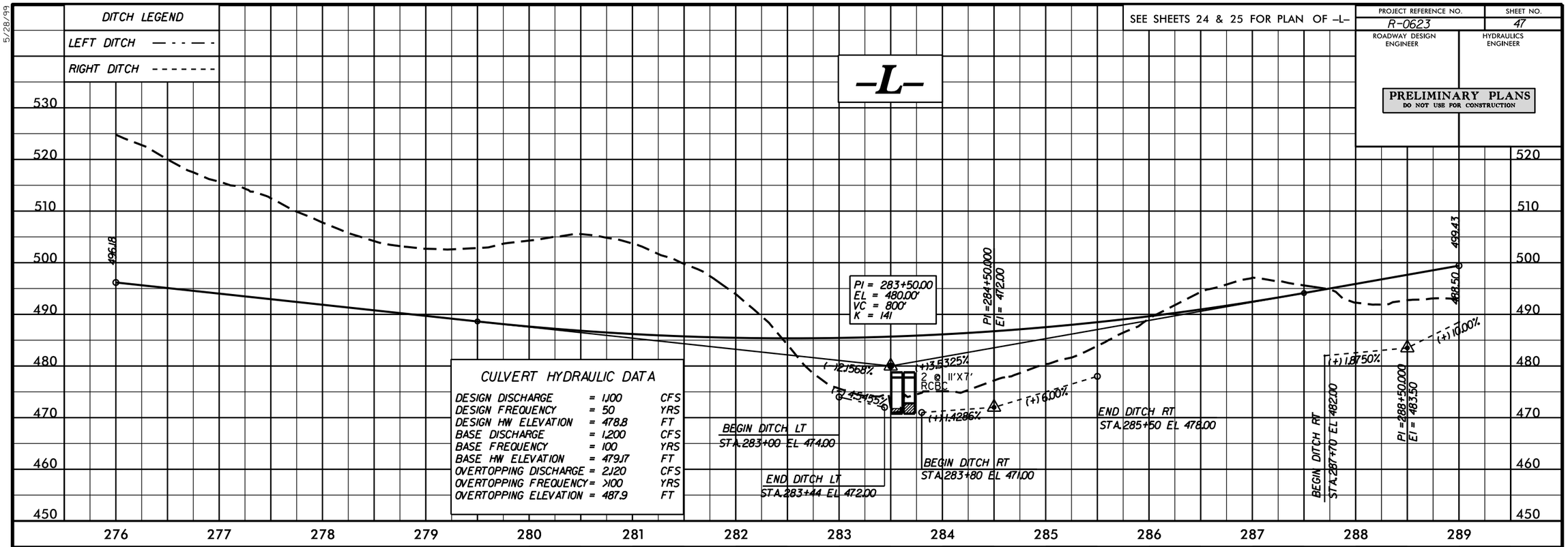
PROJECT REFERENCE NO.	SHEET NO.
R-0623	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

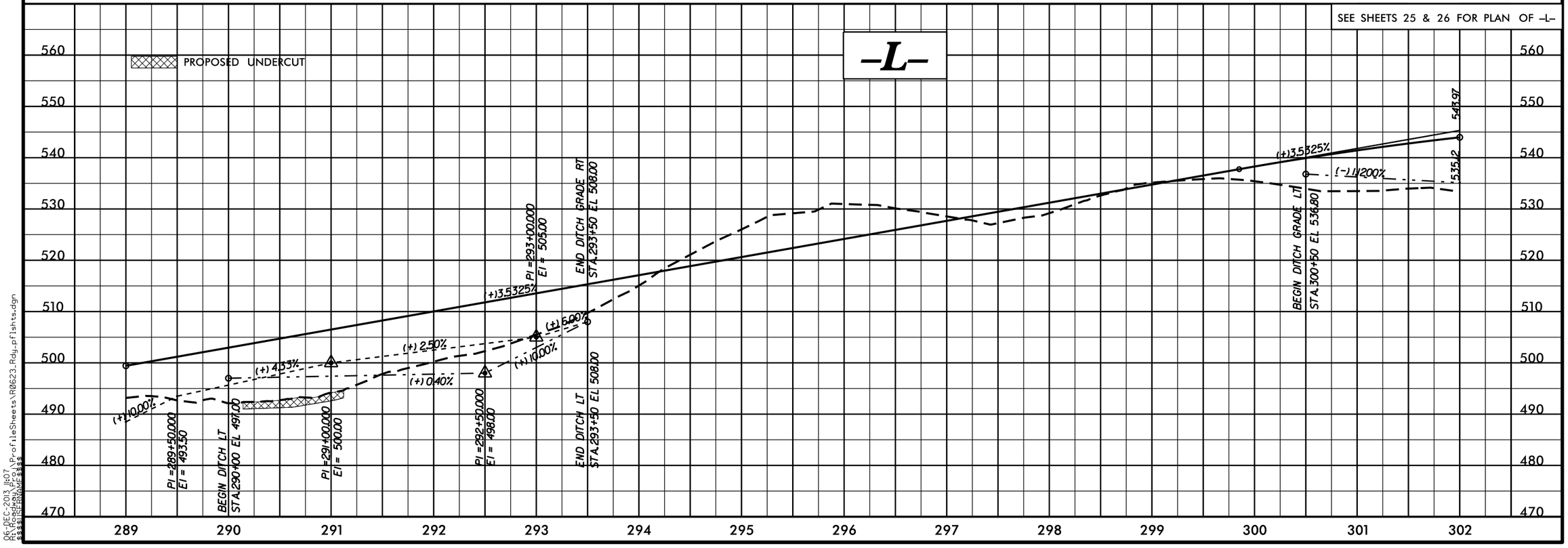
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 24 & 25 FOR PLAN OF –L–

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



SEE SHEETS 25 & 26 FOR PLAN OF –L–



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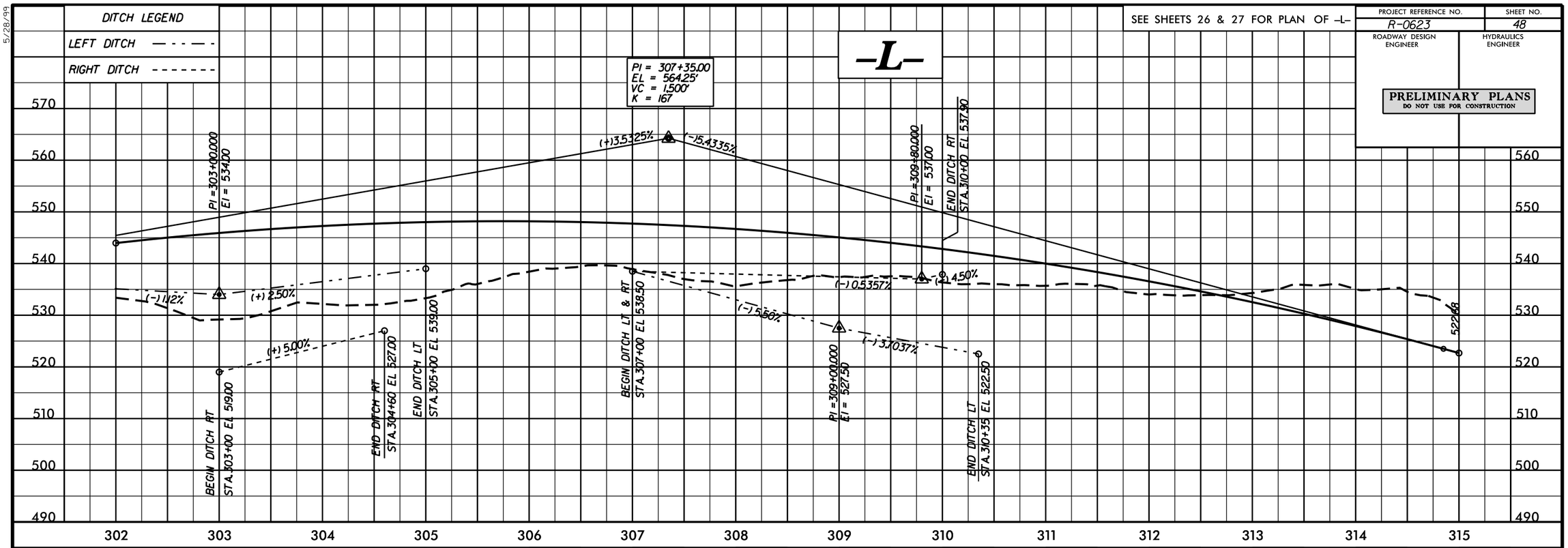
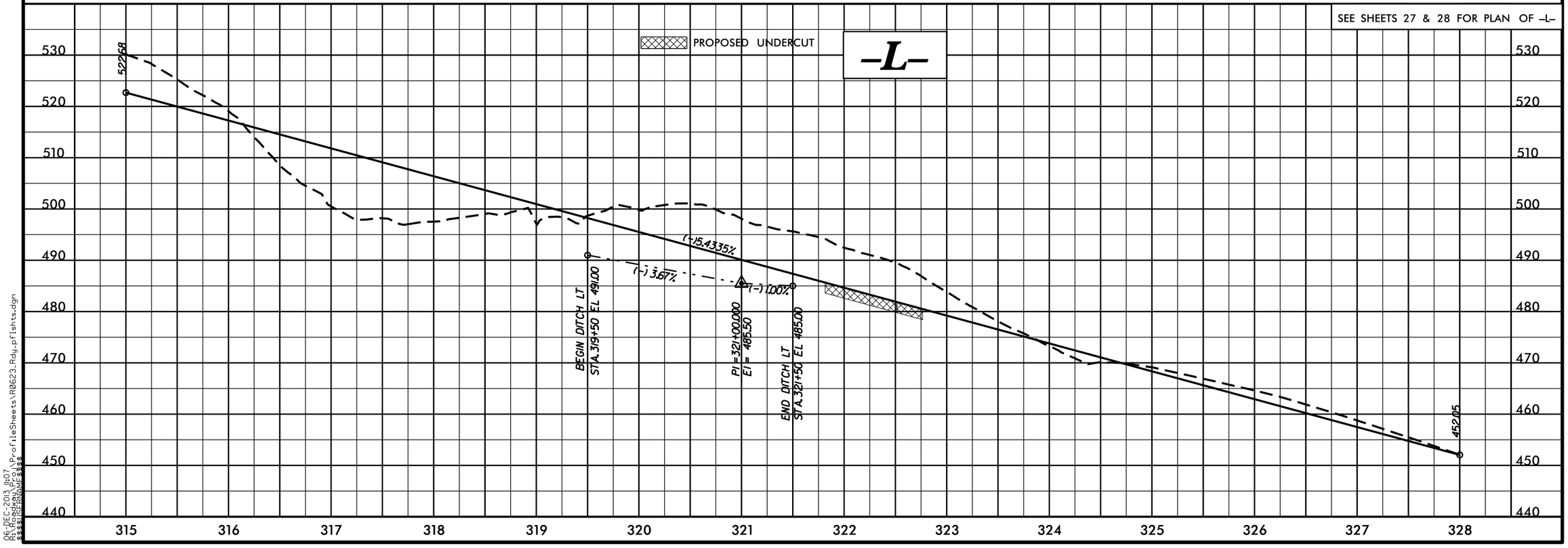
PROJECT REFERENCE NO.	SHEET NO.
R-0623	48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS 26 & 27 FOR PLAN OF –L–



SEE SHEETS 27 & 28 FOR PLAN OF –L–



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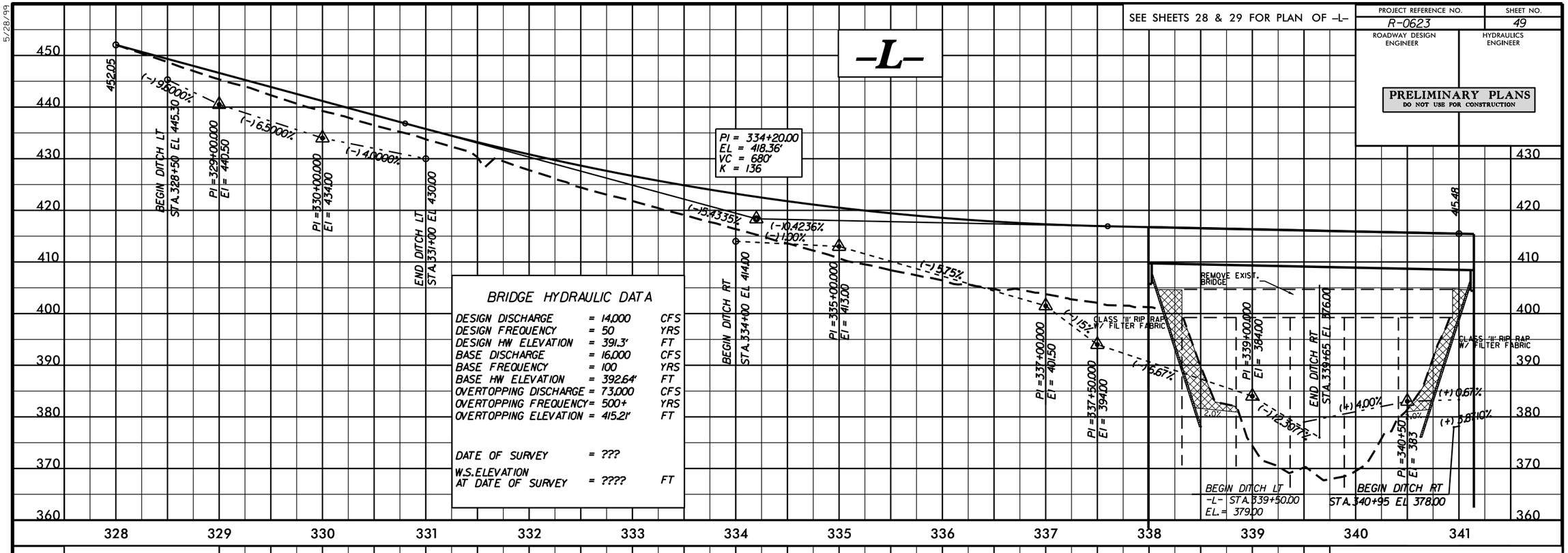
SEE SHEETS 28 & 29 FOR PLAN OF -L-

PROJECT REFERENCE NO.	SHEET NO.
R-0623	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

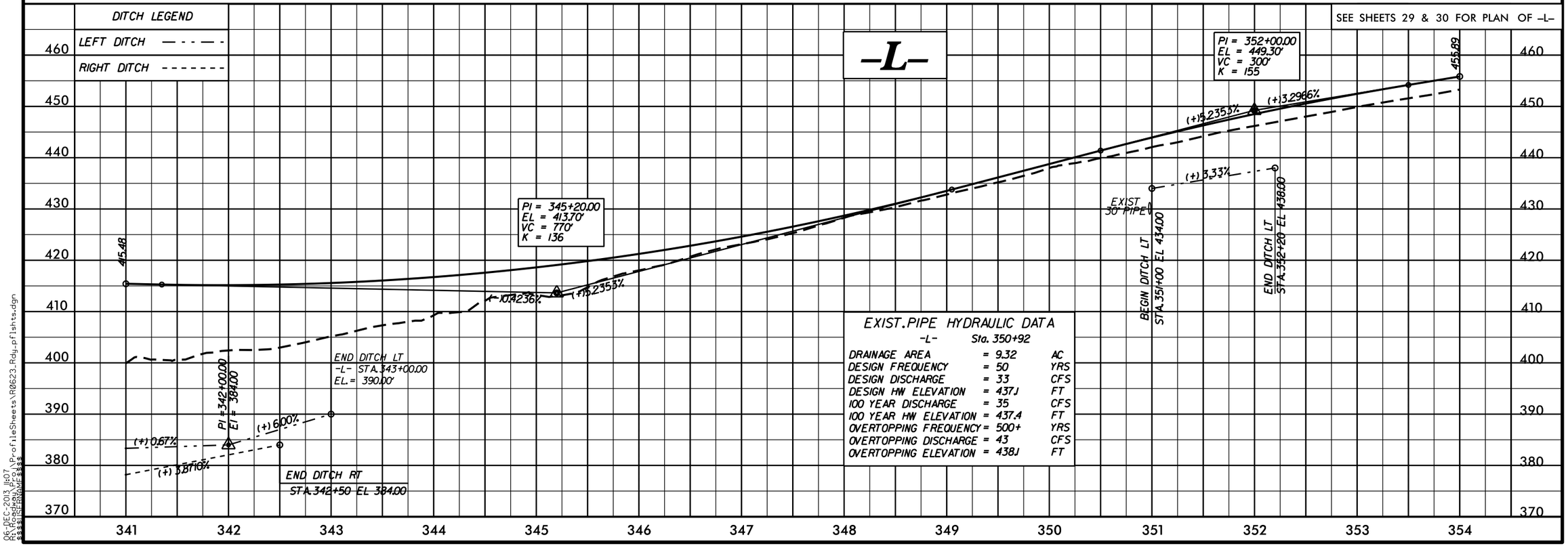
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 14,000	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 391.3'	FT
BASE DISCHARGE	= 16,000	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 392.64'	FT
OVERTOPPING DISCHARGE	= 73,000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 415.21'	FT
DATE OF SURVEY	= ???	
W.S. ELEVATION AT DATE OF SURVEY	= ????	FT

SEE SHEETS 29 & 30 FOR PLAN OF -L-



EXIST. PIPE HYDRAULIC DATA
-L- Sta. 350+92

DRAINAGE AREA	= 9.32	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 33	CFS
DESIGN HW ELEVATION	= 437.1	FT
100 YEAR DISCHARGE	= 35	CFS
100 YEAR HW ELEVATION	= 437.4	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 43	CFS
OVERTOPPING ELEVATION	= 438.1	FT

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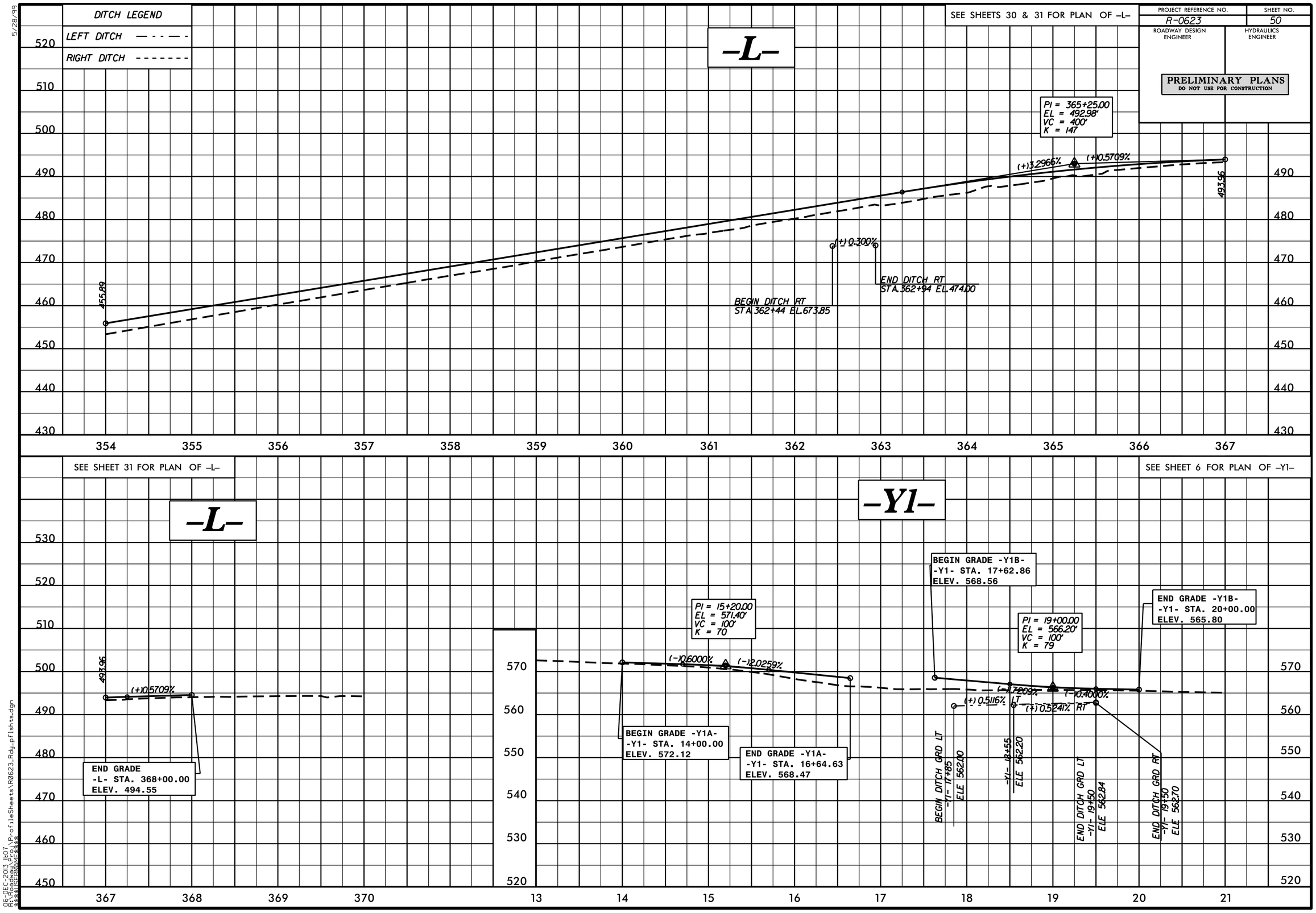
PROJECT REFERENCE NO.	SHEET NO.
R-0623	50
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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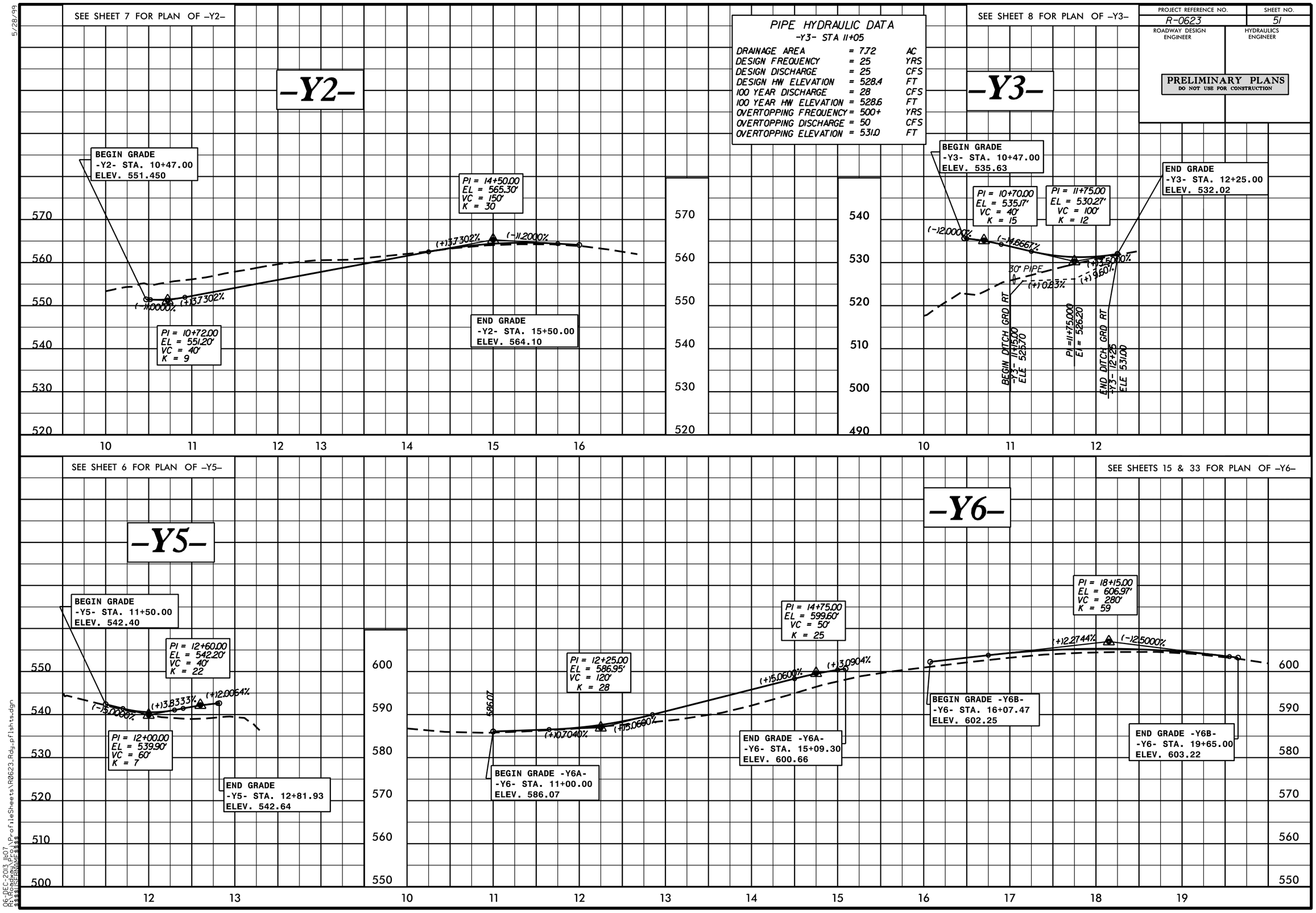
PROJECT REFERENCE NO.	SHEET NO.
R-0623	51
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA
-Y3- STA 11+05

DRAINAGE AREA	= 7.72	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 25	CFS
DESIGN HW ELEVATION	= 528.4	FT
100 YEAR DISCHARGE	= 28	CFS
100 YEAR HW ELEVATION	= 528.6	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 50	CFS
OVERTOPPING ELEVATION	= 531.0	FT



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PROJECT REFERENCE NO.	SHEET NO.
R-0623	52
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

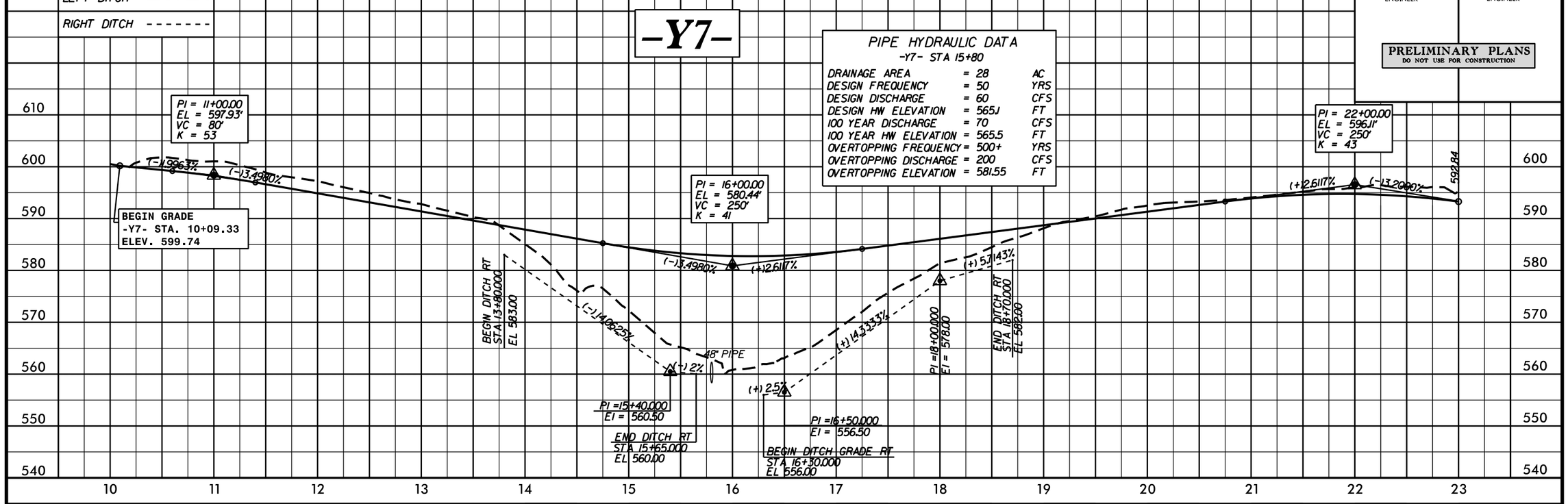
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DITCH LEGEND

LEFT DITCH — - - — -

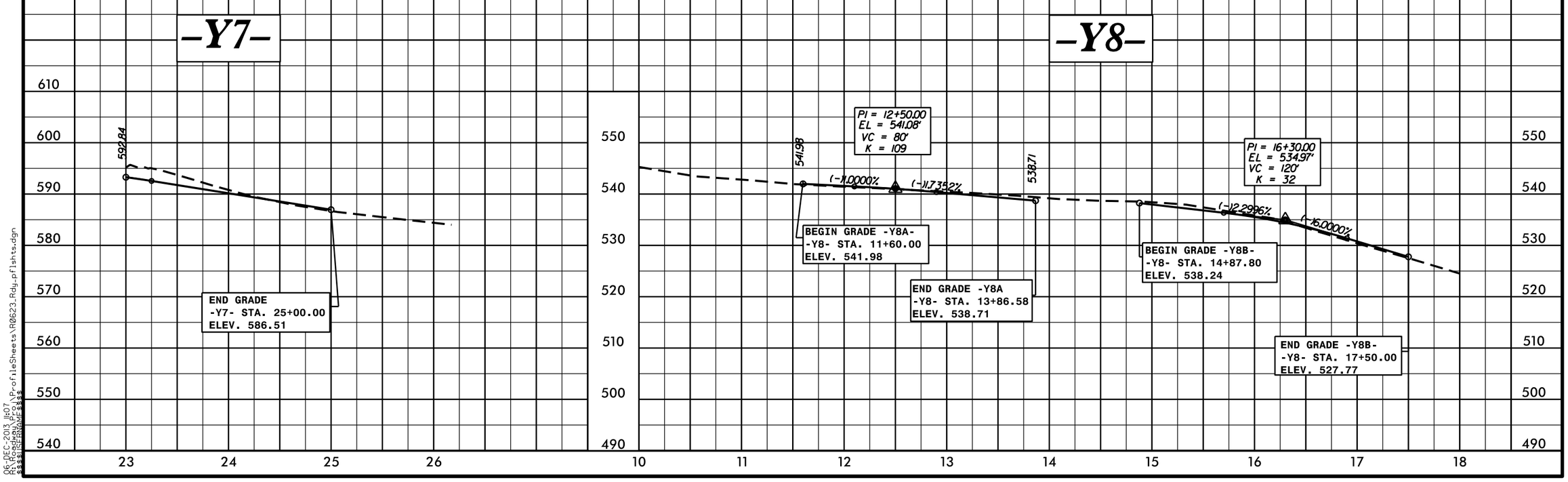
RIGHT DITCH - - - - - - -

SEE SHEETS 33 & 34 FOR PLAN OF –Y7–



SEE SHEET 34 FOR PLAN OF –Y7–

SEE SHEET 22 FOR PLAN OF –Y8–



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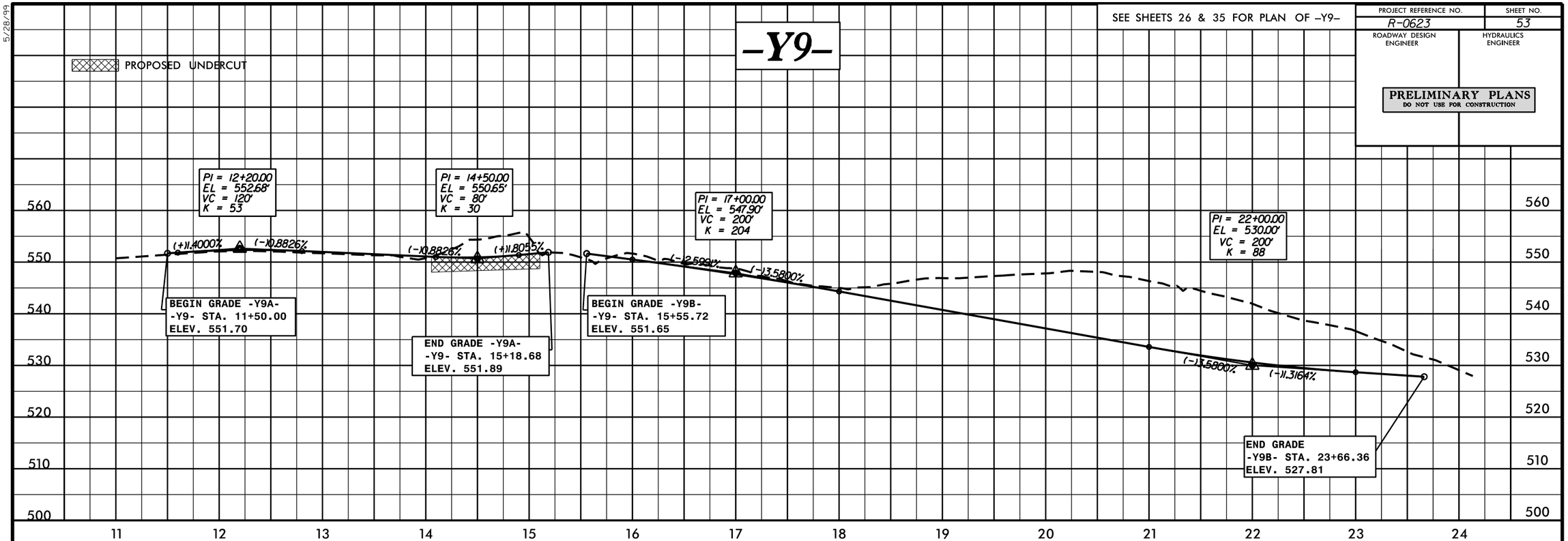
PROJECT REFERENCE NO.	SHEET NO.
R-0623	53
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

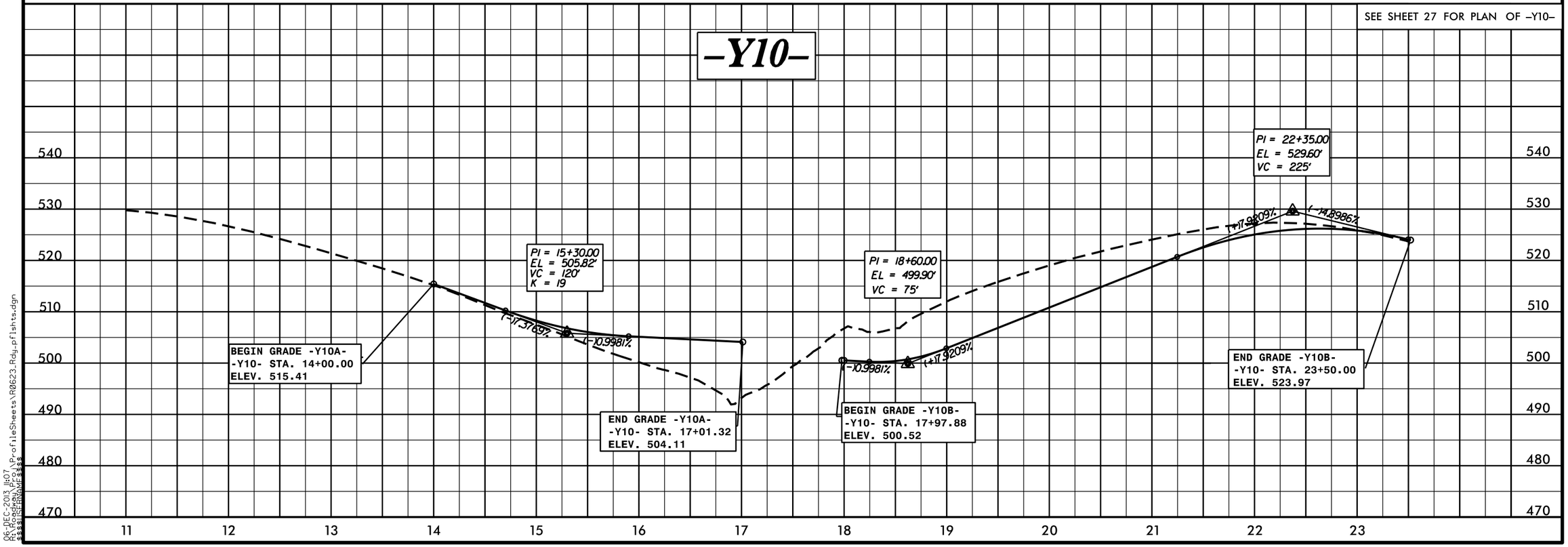
SEE SHEETS 26 & 35 FOR PLAN OF –Y9–

–Y9–



SEE SHEET 27 FOR PLAN OF –Y10–

–Y10–



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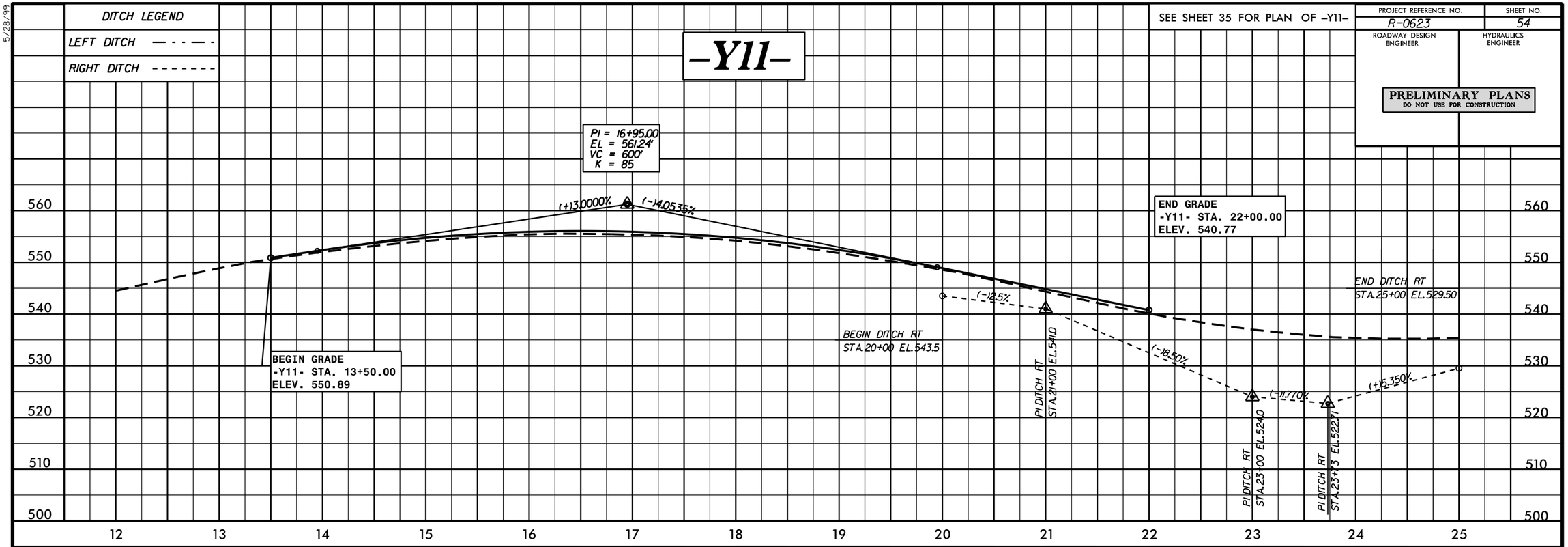
PROJECT REFERENCE NO.	SHEET NO.
R-0623	54
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

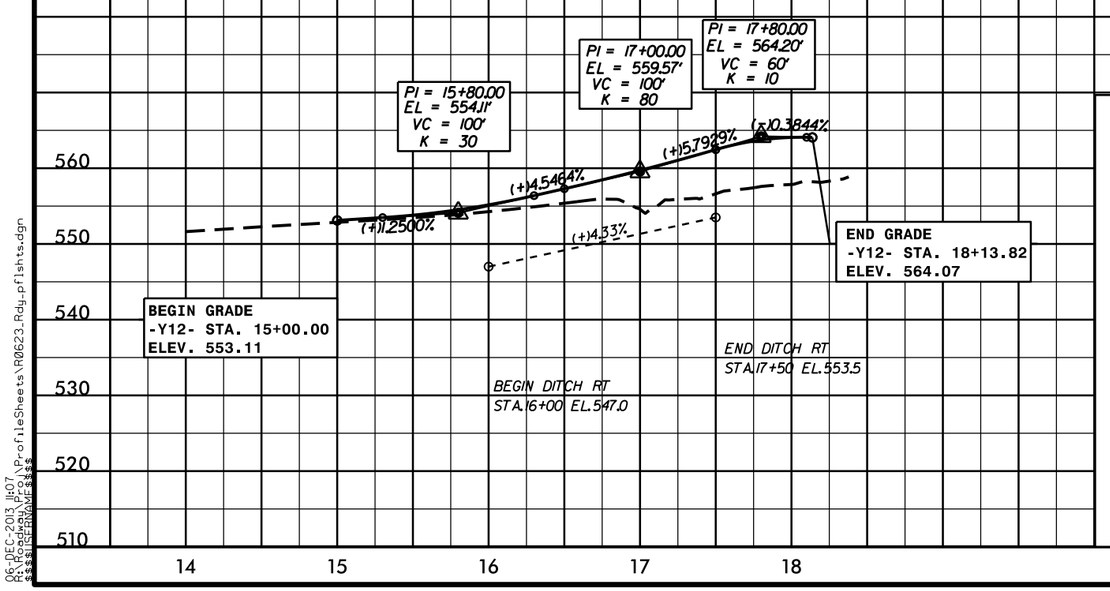
–Y11–

SEE SHEET 35 FOR PLAN OF –Y11–



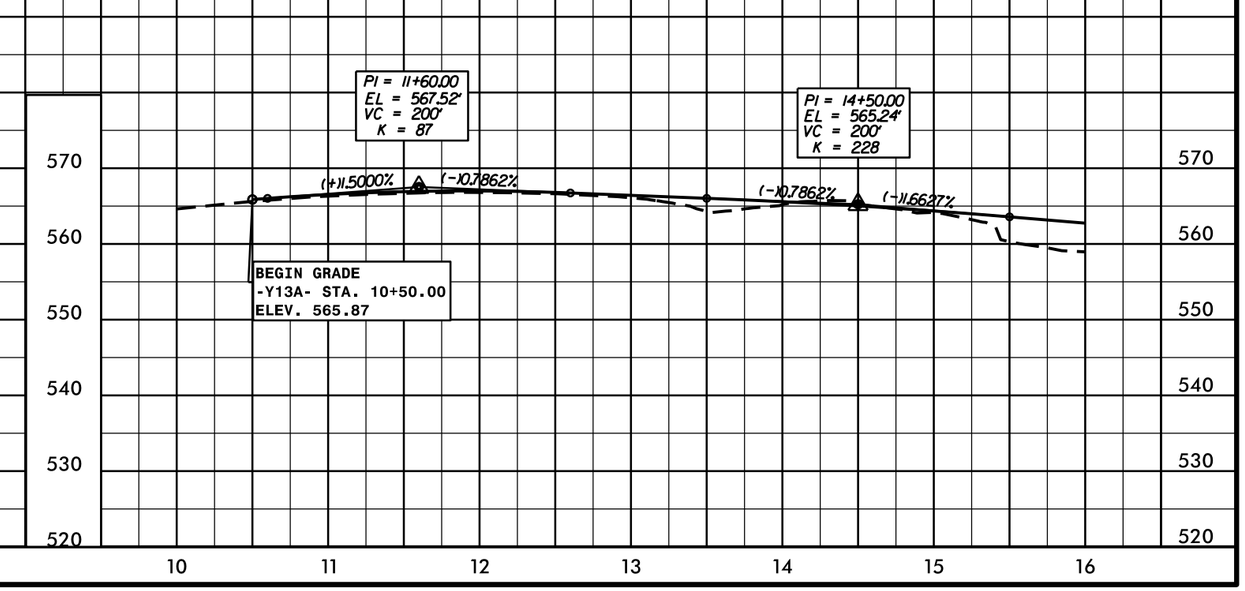
SEE SHEET 32 FOR PLAN OF –Y12–

–Y12–



SEE SHEET 32 FOR PLAN OF –Y13–

–Y13–



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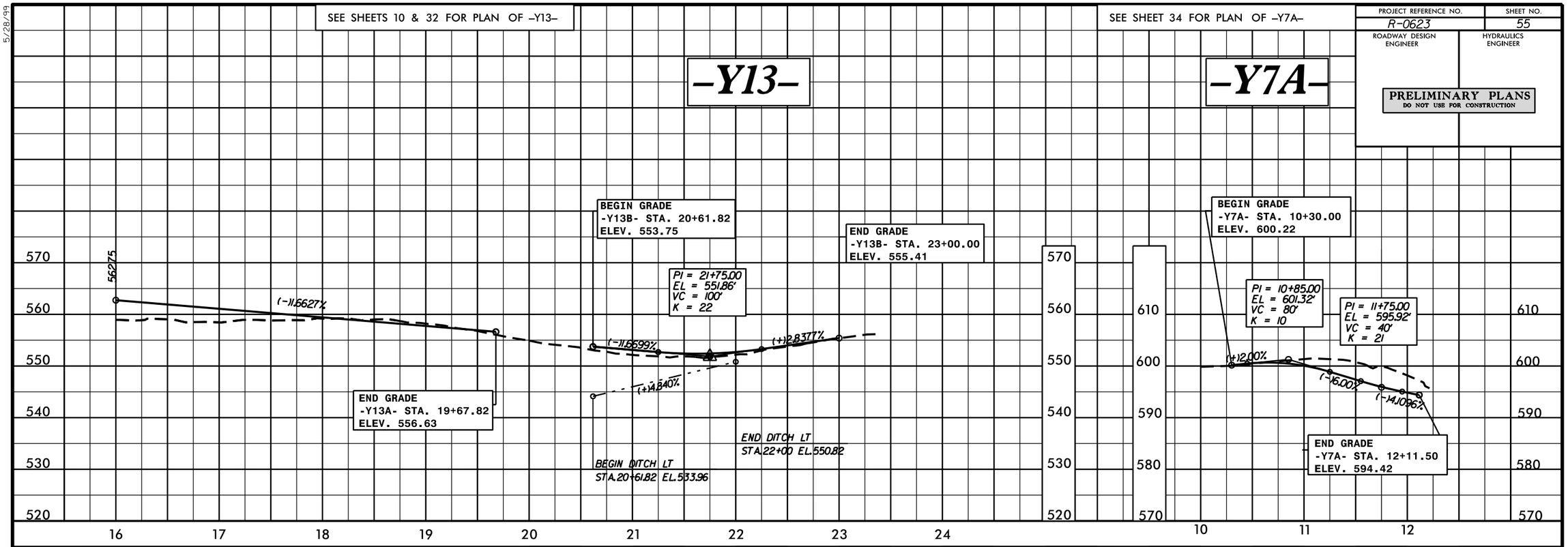
PROJECT REFERENCE NO.	SHEET NO.
R-0623	55
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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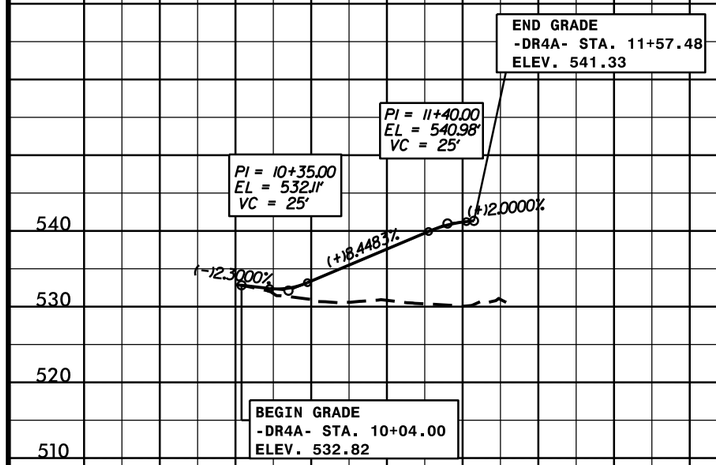
PROJECT REFERENCE NO.	SHEET NO.
R-0623	56
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

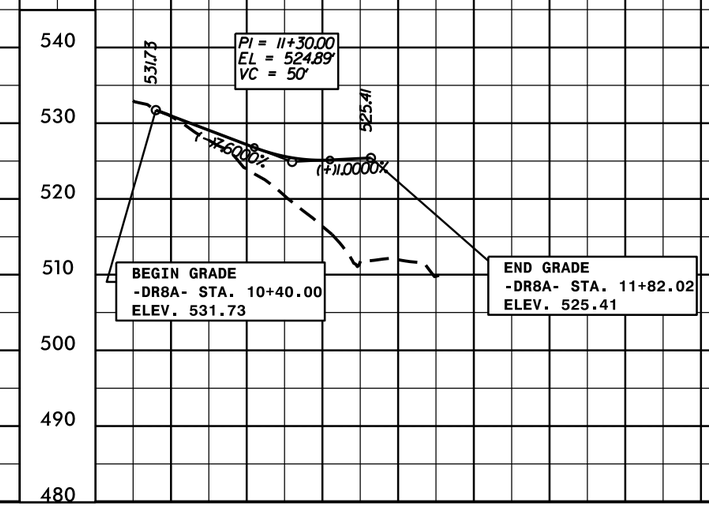
SEE SHEET 4 FOR PLAN OF –DR4A–

–DR4A–



SEE SHEET 8 FOR PLAN OF –DR8A–

–DR8A–



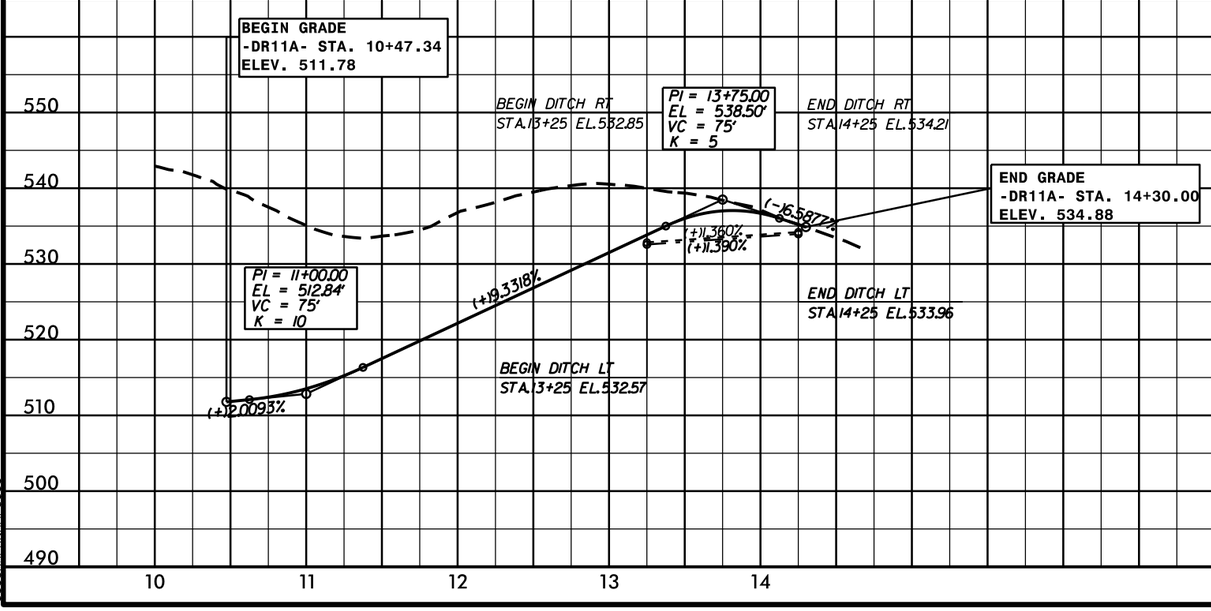
SEE SHEET 11 FOR PLAN OF –DR11A–

DITCH LEGEND

LEFT DITCH — - - — -

RIGHT DITCH - - - - - - -

–DR11A–



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06-DEC-2013 11:07
R:\Roadway\Proj\Profile Sheets\R0623_Rdy_pflshts.dgn
$$$$USERNAME$$$$