



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA.
SECRETARY

April 3, 2013

Mr. Brad Shaver
U.S. Army Corps of Engineers
Regulatory Field Office
69 Darlington Ave.
Wilmington, NC 28402-1890

Mr. Stephen Lane
N.C. Dept. of Environment and Natural Resources
Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557

Subject: **Modification Request to the Individual Section 404 and Section 10 Permits, Section 401 Water Quality Certification and Isolated Wetlands Permit and CAMA Major Development Permit Application** for the Wilmington Bypass from north of US 74/76 in Brunswick County to US 421 in New Hanover County. Federal Aid Project Nos. NHF-0017 (96) and STM-0017 (97), Division 3, TIP No. R-2633B. Debit \$475 from WBS Element 34491.2.3

Reference: Section 404 Individual Permit, issued January 13, 2011, USACE Action ID SAW-1994-03352
Section 401 Water Quality Certification No. 003842, issued January 13, 2011
CAMA Consistency Concurrence – CD11-003, issued January 14, 2011

Dear Sirs:

The North Carolina Department of Transportation (NCDOT) proposes to construct a fully controlled access freeway on new alignment from north of US 74/76 in Brunswick County to US 421 in New Hanover County approximately 7.6 miles. This project is the continuation of an urban loop around Wilmington, North Carolina.

Permits have been previously obtained as noted in the reference line with preliminary impacts reported for Section B. Section B is now in final design and this modification request updates these impacts. This is the final section of the project and is scheduled to be let for construction on September 17, 2013. The review date is July 2, 2013.

The purpose of this letter is to request approval for a modification to the Section 404 Individual Permit, Section 10 Permit, Section 401 Water Quality Certification and Isolated Wetlands Permit, and apply for a CAMA Major Development Permit. This permit modification package

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FAX: 919-212-5785
WEBSITE: WWW.NCDOT.ORG

LOCATION:
CENTURY CENTER BLDG. B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610-4328

includes the cover letter, CAMA MP Forms, ESA Section 7 concurrence email from NMFS, letter from the City of Wilmington, EEP acceptance letter, Hydraulic Review (Concurrence Point 4B and 4C) meeting minutes for Section B, Stormwater Management Plan, permit drawings, utility drawings and half size roadway plans.

This permit modification request has been evaluated for compliance with the avoidance/minimization criteria and all surveys and conclusions summarized in the October 18, 2010 permit application are still valid including the following: ICE, Aquatic Life passage, FEMA compliance, and Cultural Resources.

PROTECTED SPECIES

Golden sedge (*Carex lutea*) was recently added to the USFWS list for New Hanover County just before the submittal of the original permit application (10/18/10). This species is listed as endangered and has a record status of "probably/potential" for being in the County. This species was not included in the FEIS. A habitat assessment for golden sedge was conducted on January 8, 2013. The study area consisted of the proposed Right of Way in New Hanover County only. Almost all the area is upland ridge with the northeastern most point highly commercially developed. One part of the study area is a cutover pocosin that leads into a xeric ridge. At the time of this assessment, the ridge had been highly disturbed by logging (clearcut) and contained no habitat. One small area contained an isolated wetland near the railroad tracks. This wetland is a small depression within an upland area. The middle contains herbaceous vegetation but was dry at the time of our site visit. It contained younger red maple and black gum trees on the edges then transitioned directly to a xeric ridge. The site did not appear to be wet enough to support golden sedge nor did it contain much of an ecotone between the wetland and upland areas. No habitat exists for golden sedge in this portion of the study area. Therefore, this project will have No Effect on golden sedge.

The Atlantic sturgeon was recently added to the USFWS lists for both New Hanover and Brunswick Counties. A Section 7 concurrence request letter was sent to National Marine Fisheries Service (NMFS) dated December 18, 2012. Concurrence from NMFS was received in an email dated February 26, 2013 and is enclosed with this request. The same conservation measures we have agreed upon for the shortnose sturgeon will apply. This includes the following moratorium:

- No in-water work moratorium in the Cape Fear River and Toomers Creek between February 1 and June 15 of any year. For the purposes of this moratorium, in-water is defined as extending 35 meters from the main channel (where vegetation line meets open water) into adjacent wetlands. The 35 meter buffer extends to both riverbanks but does not include uplands. The in-water moratorium prohibits pile installation (both vibratory and impact) and activities associated with the construction of any temporary work bridge.

All other protected species were addressed in the previous permit application dated October 18, 2010 and remain valid.

RESOURCE STATUS

Wetland and stream determinations, originally verified with an approved Jurisdictional Determination (JD) for Sections A and B in August 2004, expired in August 2009. The wetlands and streams were re-verified for Section B in July 2010 by the USACE (Brad Shaver) and DWQ (Mason Herndon). The USACE issued a Final JD for Section B on October 1, 2012. Wetlands were re-verified using the field delineation method outlined in the Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region. The North Carolina Division of Water Quality's (DWQ) Identification Methods for the Origins of Intermittent and Perennial Streams was used to make stream determinations. Tributaries to Waters of the US are defined as jurisdictional water bodies that carry flow directly or indirectly into traditional navigable waters and that contain an ordinary high water mark.

During the reverification, a few changes were made to the wetlands and streams. Conditions have changed since the original delineation. Several acres of wetlands lost their jurisdictional status since the original delineation. Stream SA, which was originally called a jurisdictional stream was verified and called a tributary to waters of the U.S. This is jurisdictional but is not a part of the linear stream footage impacts and no mitigation is required by the USACE or DWQ.

After the Final JD was issued by the USACE in July 2010, utility impacts extended beyond the limits of what was verified. NCDOT biologists extended wetland lines to wetlands WH, WE and WP. NCDOT received a preliminary JD for these areas on February 5, 2013.

CAMA wetlands were verified during a site visit on May 19, 2011 by Steven Lane with the NC Division of Coastal Management.

Changes made to the jurisdictional sites from what was presented in the FEIS and original JD are included in the section below. The "JD Package ID" column in the tables refer to the final JD package (2012) sent to the USACE for Section B.

IMPACTS TO WATERS OF THE UNITED STATES

Wetlands

Wetland impacts occur in the Cape Fear River Basin in HUC 03030005. Permanent riparian wetland impacts total 1.29 acres and non-riparian impacts total 41.26 acres for R-2633B. Table 1 lists permanent impacts (fill, excavation, and mechanized clearing), temporary impacts and hand clearing. Impacts are based upon final design for R-2633B. There will be 0.75 acres of temporary fill in hand clearing areas of the Section 404 wetlands for erosion control measures.

Utility Impacts

There will be 0.15 acres of hand clearing in wetlands associated with relocation of overhead electric lines (see Utility Permit Drawing Sheet 14 of 15, Site 1). Additionally, there will be 0.04 acres of temporary excavation and 1.36 acres of hand clearing in non-riparian wetlands resulting from relocation of a 4" gas line (see Utility Permit Drawing Sheet 3 of 15, Site 2). The hand clearing for the gas line at this site is necessary due to limited access for the western tie-in.

Timber matting will be utilized to minimize impacts. The impacts associated with the excavation at Site 2 are considered temporary as the areas will be allowed to re-vegetate after the tie-ins are completed.

CAMA Wetland Impacts

There will be a total of 12.90 acres of hand clearing in CAMA wetlands for this project. These impacts are due the construction of the permanent bridge and temporary work bridges over the Cape Fear River. There will be 0.08 acres of permanent fill in CAMA wetlands for the permanent bridge bents and 0.16 acres of temporary fill in CAMA wetlands for the temporary work bridge. All of the above impacts occur at Site 15.

Table 1. R-2633B Wetland Impacts (Final) ¹

Permit Site No.	Wetland ID in FEIS.	JD Package ID	Riparian or Non-riparian	Preliminary Impacts (ac)	Final Impacts (ac)	Preliminary Temporary Impacts (ac)	Final Temporary Impacts (ac)	Hand Clearing (ac)
3	33, 34	WM	Non-riparian	9.49	8.00	0	0	0.57
4 ²	32	WM	Non-riparian	0.07	0	0	0	0
5	35	WL	Non-riparian	1.04	1.14	0	0	0.11
6	36	WG	Non-riparian	18.79	10.12	0	0	1.12
6A ³	-	MB1	Non-riparian	-	0.68	0	0	0
6B ³	-	MB2	Non-riparian	-	0.41	0	0	0.02
7	37	WP	Non-riparian	10.62	10.93	0	0	0.96
8 ²	38	-	Non-riparian	0.06	0	0	0	0
9	40	WA	Non-riparian	1.10	1.04	0	0	0.09
10 ²	39	WB	Non-riparian	0.02	0	0	0	0
11	41	WC	Non-riparian	15.37	8.72	0	0	0.93
12 ²	42, 43	-	Non-riparian	3.31	0	0	0	0
13	44	-	Non-riparian	3.89	0	0	0	0
14	-	WD	Riparian	0.01	0.03	<0.01	0	0.30
15	-	WH, WQ	Riparian	0.91	1.22	0.11	0	29.39
16	45	WJ	Non-riparian (Isolated)	0.46 ⁴	0.22 ⁴	0	0	0
19	-	WO	Riparian	0	0	0	0.06	0.03
20	-	WF	Riparian	0.01	0.04	<0.01	0	0.31
Utility Site 1	-	WE, WF	Riparian	-	0	-	0	0.15
Utility Site 2	37	WP	Non-riparian	-	0	-	0.04	1.36
Total				65.15	42.55	0.11	0.10	35.34

¹ Sites 1, 2, 17, 18 and a portion of Sites 3 and 4 were moved to and accounted for in the R-2633AA&AB Project since the 4C meeting.

² Site deleted due to new delineation

³ new site due to new delineation

⁴ does not require mitigation

Surface Waters

Surface water impacts occur in the Cape Fear River Basin in HUC 03030005. Permanent stream impacts for R-2633B are 5 linear feet and surface water impacts are 0.20 acres. Tables 2-3 list the site number, reference number, stream name, amount of permanent impacts, amount of mitigation required, DWQ classification, and DWQ index number. Impacts are based upon final design for R-2633B.

No streams within the study area are listed in the Final 2012 303(d) report. Streams on the Final 2012 303(d) report within 1.0 mile downstream of the study area is the Cape Fear River from the upstream mouth of Toomers Creek to a line across the river between Lilliput Creek and Snows Cut and is listed for copper, low dissolved oxygen, low pH, and turbidity. This is just over a mile downstream of the study area. No streams within one mile of the project are classified as ORW, HQW, WS-I or WS-II.

David Wainwright from the NCDWQ requested a letter from the City of Wilmington stating that they have no future intention of ever using the water intake pump on Toomers Creek. If so, then hazardous spill basins will not be required. The letter from the City of Wilmington is enclosed with this request.

CAMA Surface Water Impacts

There will be a total of 0.02 acres of permanent surface water impact in CAMA surface waters, Cape Fear River and Toomers Creek, from permanent bridge bents. There will 0.01 acres of temporary CAMA surface water impacts from the temporary work bridge.

Table 2. R-2633B Stream Descriptions

Permit Site No.	Stream ID in EIS	JD Package ID	Stream Name	Perennial/Tributaries to Waters of the US	DWQ Classification	DWQ Index No.
11	S18	SA	UT to Mill Creek	Tributary to Waters of the US	C; Sw	18-77-1-1
14	S22	SD	UT to Cartwheel Branch	Perennial	SC: Sw	18-72
15	-	Cape Fear River	Cape Fear River	Perennial	SC	18-(71)
	-	Toomers Creek	Toomers Creek	Perennial	WS-IV	18-73-(1)
19	S14	SC	Rowell Branch	Perennial	C; Sw	18-77-1-1-1
20	CART	SB	Cartwheel Branch	Perennial	SC; Sw	18-72

Table 3. R-2633B Final Surface Water Impacts

Permit Site No.	Preliminary Permanent Stream Impacts (ft)	Final Permanent Stream Impacts (ft)	Final Temporary Stream Impacts (ft)	Preliminary Mitigation Obtained (ft)	Final Mitigation Needed (2:1)
11	222	(0.07 acres)*	0	222	0
14	0	0	0	0	0
15	50	0	0	50	0
19	4	5	129	4	5
20	0	0	0	0	0
Total	276	5	129	276	5

*-This stream determined to be tributary to waters of the US so impacts reported in acres and no mitigation is required by USACE or NCDWQ.

MITIGATION OPTIONS

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

Avoidance and Minimization

All jurisdictional features were delineated, field verified and surveyed within the right of way for R-2633B. Using these surveyed features, preliminary designs were adjusted to avoid and/or minimize impacts to jurisdictional areas. NCDOT employs many strategies to avoid and minimize impacts to jurisdictional areas in all of its designs. Many of these strategies have been incorporated into BMP documents that have been reviewed and approved by the resource agencies and which will be followed throughout construction. All wetland areas not affected by the project will be protected from unnecessary encroachment. Individual avoidance and minimization items are as follows:

- The project was designed to avoid or minimize disturbance to aquatic life movements.
- Wetland and stream impacts were avoided and minimized during the planning process.
- NCDOT will minimize long-term water quality impacts using the most recent Best Management Practices for Protection of Surface Waters.
- Ditches will not be used in wetlands, storm systems will outlet onto rip rap pads in the wetlands in lieu of ditches.
- The bridge over Cartwheel Branch (Site 20) and UT to Cartwheel Branch (Site 14) were lengthened for wildlife crossing and span the stream and wetlands.
- Reinforced Concrete Box Culvert wildlife crossing on Sheet 10.
- A closed deck drain system will be used over the Cape Fear River.
- The use of preformed scour holes where applicable.

- Grass lined ditches will be used throughout the project to provide stormwater treatment. These are summarized in the Stormwater Management Plan.
- Rip rap pads will be used in order to dissipate energy and reduce velocities at pipe outlets in the wetlands.
- The use of hand clearing in wetlands at bridge locations.
- The use of wetland equalizer pipes to enhance hydraulic conductivity.
- 3:1 slopes were used in wetland areas.
- The bridge over the Cape Fear River spans the adjacent wetlands.

Compensation

As described above, the NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent possible. No onsite mitigation opportunities were feasible for Section B. The wetland at Site 16 has been determined to be an isolated wetland and since impacts are below an acre, it does not require mitigation. Total riparian and non-riparian wetland impacts for Section B requiring mitigation are 1.29 and 41.26 acres, respectively. Total stream impacts requiring mitigation are 5 linear feet.

Total permanent impacts to streams and wetlands for Section B and therefore, the entire project (Sections A and B) have decreased (shown below). NCDOT originally mitigated for 8.09 acres of riparian wetlands, 80.14 acres of non-riparian wetlands and 780 feet of stream from the Ecosystem Enhancement Program (EEP). Riparian impacts have increased by 0.36 acres due to changes in final design. Non-riparian impacts have decreased by 22.5 acres mainly due to a new verified delineation. Stream impacts have decreased because one stream is now considered a tributary to Waters of the U.S. and does not require mitigation. Total wetland impacts were reduced by 22.14 acres. NCDOT will request a revised EEP acceptance letter based on the reduction in impacts.

Table 4. Summary of Mitigation Required (Section B)

Section	Riparian Wetlands (ac)	Non-riparian Wetlands (ac)	Streams (ft)
R-2633B (Preliminary)	0.93	63.76	276
R-2633B (Final)	1.29	41.26	5

Table 5. Summary of Mitigation Required (Sections A and B)

Section	Riparian Wetlands (ac)	Non-riparian Wetlands (ac)	Streams (ft)
R-2633 AA/AB (Final)	8.09	16.38	627
R-2633B (Final)	1.29	41.26	5
Total	9.38	57.64	632
On-site Restoration Credit (Section A)	0.63	0	66
On-site Preservation Credit (Section A)	0.30	0	57
Total from EEP	8.45	57.64	509

REGULATORY APPROVALS

Section 404

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

Section 401

Application is hereby made for a modification to the Section 401 Water Quality Certification from the N. C. Division of Water Quality. We are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their approval.

Isolated Wetlands Permit

Application is hereby made for a modification to the Isolated Wetlands Permit from the N. C. Division of Water Quality.

CAMA: NCDOT requests that the proposed work be authorized under a Coastal Area Management Act Major Development Permit. The landowner receipts are provided with this permit modification request. The return receipts will be forwarded once they have been received. Authorization to debit the \$475 Permit Application Fee from WBS Element 34528.1.1 is hereby given.

U.S. Coast Guard Permit: NCDOT submitted a request for a United States Coast Guard (USCG) permit for R-2633B on July 13, 2012.

A copy of this permit modification request will be posted on the DOT website at:
<https://connect.ncdot.gov/resources/Environmental/Pages>. If you have any questions or need additional information, please contact Rachelle Beauregard at rbeauregard@ncdot.gov or (919) 707-6105.

Sincerely,

E. L. Lusk
for

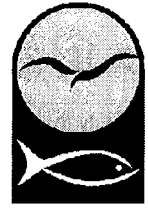
Gregory J. Thorpe, Ph.D., Manager
Project Development and Environmental Analysis Unit

cc:

NCDOT Permit Application Standard Distribution List.

APPLICATION for Major Development Permit

(last revised 12/27/06)



North Carolina DIVISION OF COASTAL MANAGEMENT

1. Primary Applicant/ Landowner Information

Business Name N.C. Department Of Transportation		Project Name (if applicable) R-2633B	
Applicant 1: First Name Gregory	MI J	Last Name Thorpe	
Applicant 2: First Name	MI	Last Name	
<i>If additional applicants, please attach an additional page(s) with names listed.</i>			
Mailing Address 1598 Mail Service Center		PO Box	City Raleigh
		State NC	
ZIP 27699 1598	Country US	Phone No. 919 - 707 - 6015 ext.	FAX No. 919 - 212 - 5785
Street Address (if different from above) 1020 Birch Ridge Road		City Raleigh	State NC
		ZIP 27610- .	
Email rbeauregard@ncdot.gov			

2. Agent/Contractor Information

Business Name N/A			
Agent/ Contractor 1: First Name	MI	Last Name	
Agent/ Contractor 2: First Name	MI	Last Name	
Mailing Address		PO Box	City
		State	
ZIP		Phone No. 1 - - ext.	Phone No. 2 - - ext.
FAX No.	Contractor #		
Street Address (if different from above)		City	State
		ZIP -	
Email			

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3. Project Location

County (can be multiple) Brunswick New Hanover	Street Address Wilmington Bypass from US 74/76 to US 421		State Rd. # N/A
Subdivision Name	City Wilmington and Leland	State NC	Zip N/A -
Phone No. N/A - - ext.	Lot No.(s) (if many, attach additional page with list) N/A, , ,		
a. In which NC river basin is the project located? Cape Fear	b. Name of body of water nearest to proposed project Cape Fear River and Toomers Creek		
c. Is the water body identified in (b) above, natural or manmade? ☒ Natural ☐ Manmade ☐ Unknown	d. Name the closest major water body to the proposed project site. Cape Fear River and Toomers Creek		
e. Is proposed work within city limits or planning jurisdiction? ☐ Yes ☒ No	f. If applicable, list the planning jurisdiction or city limit the proposed work falls within. NA		

4. Site Description

a. Total length of shoreline on the tract (ft.) 600 feet Cape Fear River and 614 feet Toomers Creek	b. Size of entire tract (sq.ft.) 11,873,100
c. Size of individual lot(s) N/A, (If many lot sizes, please attach additional page with a list)	d. Approximate elevation of tract above NHW (normal high water) or NWL (normal water level) 27.74 ft to 72.74 ft ☒ NHW or ☐ NWL
e. Vegetation on tract Wooded and marsh	
f. Man-made features and uses now on tract some buildings, railroads, roads, private houses and some commercial businesses	
g. Identify and describe the existing land uses <u>adjacent</u> to the proposed project site. Rural and some commercial	
h. How does local government zone the tract? Rural	i. Is the proposed project consistent with the applicable zoning? (Attach zoning compliance certificate, if applicable) ☒ Yes ☐ No ☐ NA
j. Is the proposed activity part of an urban waterfront redevelopment proposal? ☐ Yes ☒ No	
k. Has a professional archaeological assessment been done for the tract? If yes, attach a copy. If yes, by whom?	☒ Yes ☐ No ☐ NA NCDOT, see R-2633A/B EIS submitted under separate cover
l. Is the proposed project located in a National Registered Historic District or does it involve a National Register listed or eligible property? ☒ Yes ☐ No ☐ NA	

<Form continues on next page>

m. (i) Are there wetlands on the site?	☒ Yes ☐ No
(ii) Are there coastal wetlands on the site?	☒ Yes ☐ No
(iii) If yes to either (i) or (ii) above, has a delineation been conducted? (Attach documentation, if available)	☒ Yes ☐ No
n. Describe existing wastewater treatment facilities. Private Septic Tanks, Brunswick County and New Hanover County	
o. Describe existing drinking water supply source. Private Wells, Brunswick County and New Hanover County	
p. Describe existing storm water management or treatment systems. NA	

5. Activities and Impacts

a. Will the project be for commercial, public, or private use?	☐ Commercial ☒ Public/Government ☐ Private/Community
b. Give a brief description of purpose, use, and daily operations of the project when complete. Strategic Transportation Corridor	
c. Describe the proposed construction methodology, types of construction equipment to be used during construction, the number of each type of equipment and where it is to be stored. Heavy highway earthwork equipment and bridge construction equipment	
d. List all development activities you propose. 4-Lane Highway with 12 foot travel lanes and grassed median. Major structures include dual bridge crossing of Cartwheel Branch on -L-, dual bridge crossing of the the Cape Fear River and Toomer's Creek on -L-, bridge crossing of Cartwheel Branch on -Y8-, culvert crossing of Rowel Branch on -Y7-.	
e. Are the proposed activities maintenance of an existing project, new work, or both?	New work
f. What is the approximate total disturbed land area resulting from the proposed project?	12,038,400 Acres ☒ Sq.Ft or ☐
g. Will the proposed project encroach on any public easement, public accessway or other area that the public has established use of?	☒ Yes ☐ No ☐ NA
h. Describe location and type of existing and proposed discharges to waters of the state. See attached permit drawings	
i. Will wastewater or stormwater be discharged into a wetland?	☒ Yes ☐ No ☐ NA
If yes, will this discharged water be of the same salinity as the receiving water?	☐ Yes ☒ No ☐ NA
j. Is there any mitigation proposed?	☒ Yes ☐ No ☐ NA
If yes, attach a mitigation proposal.	

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6. Additional Information

In addition to this completed application form, (MP-1) the following items below, if applicable, must be submitted in order for the application package to be complete. Items (a) – (f) are always applicable to any major development application. Please consult the application instruction booklet on how to properly prepare the required items below.

- a. A project narrative.
- b. An accurate, dated work plat (including plan view and cross-sectional drawings) drawn to scale. Please give the present status of the proposed project. Is any portion already complete? If previously authorized work, clearly indicate on maps, plats, drawings to distinguish between work completed and proposed.
- c. A site or location map that is sufficiently detailed to guide agency personnel unfamiliar with the area to the site.
- d. A copy of the deed (with state application only) or other instrument under which the applicant claims title to the affected properties.
- e. The appropriate application fee. Check or money order made payable to DENR.
- f. A list of the names and complete addresses of the adjacent waterfront (riparian) landowners and signed return receipts as proof that such owners have received a copy of the application and plats by certified mail. Such landowners must be advised that they have 30 days in which to submit comments on the proposed project to the Division of Coastal Management.
- | | |
|---------------|-----------|
| Name see list | Phone No. |
| Address | |
| Name | Phone No. |
| Address | |
| Name | Phone No. |
| Address | |
- g. A list of previous state or federal permits issued for work on the project tract. Include permit numbers, permittee, and issuing dates.
See cover letter of application
- h. Signed consultant or agent authorization form, if applicable.
- i. Wetland delineation, if necessary.
- j. A signed AEC hazard notice for projects in oceanfront and inlet areas. (Must be signed by property owner)
- k. A statement of compliance with the N.C. Environmental Policy Act (N.C.G.S. 113A 1-10), if necessary. If the project involves expenditure of public funds or use of public lands, attach a statement documenting compliance with the North Carolina Environmental Policy Act.

7. Certification and Permission to Enter on Land

I understand that any permit issued in response to this application will allow only the development described in the application. The project will be subject to the conditions and restrictions contained in the permit.

I certify that I am authorized to grant, and do in fact grant permission to representatives of state and federal review agencies to enter on the aforementioned lands in connection with evaluating information related to this permit application and follow-up monitoring of the project.

I further certify that the information provided in this application is truthful to the best of my knowledge.

Date 4.3.13 Print Name Gregory J. Thorne, PhD
Signature E. F. Fush

Please indicate application attachments pertaining to your proposed project.

- ☐ DCM MP-2 Excavation and Fill Information ☒ DCM MP-5 Bridges and Culverts
- ☐ DCM MP-3 Upland Development
- ☐ DCM MP-4 Structures Information

BRIDGES and CULVERTS

Attach this form to Joint Application for CAMA Major Permit, Form DCM MP-1. Be sure to complete all other sections of the Joint Application that relate to this proposed project. Please include all supplemental information.

1. BRIDGES☐ This section not applicable

- a. Is the proposed bridge:
☐ Commercial ☒ Public/Government ☐ Private/Community
- b. Water body to be crossed by bridge:
 Cape Fear River and Toomers Creek
- c. Type of bridge (construction material):
 Concrete
- d. Water depth at the proposed crossing at NLW or NWL:
 50 feet
- e. (i) Will proposed bridge replace an existing bridge? ☐ Yes ☒ No
 If yes,
 (ii) Length of existing bridge: _____
 (iii) Width of existing bridge: _____
 (iv) Navigation clearance underneath existing bridge: _____
 (v) Will all, or a part of, the existing bridge be removed?
 (Explain)

- f. (i) Will proposed bridge replace an existing culvert? ☐ Yes ☒ No
 If yes,
 (ii) Length of existing culvert: _____
 (iii) Width of existing culvert: _____
 (iv) Height of the top of the existing culvert above the NHW or NWL: _____
 (v) Will all, or a part of, the existing culvert be removed?
 (Explain)

- g. Length of proposed bridge: 7,183 feet
- h. Width of proposed bridge: Dual bridges each with 42 feet clear width
- i. Will the proposed bridge affect existing water flow? ☐ Yes ☒ No
 If yes, explain:

- j. Will the proposed bridge affect navigation by reducing or increasing the existing navigable opening? ☐ Yes ☒ No
 If yes, explain:

- k. Navigation clearance underneath proposed bridge: 55 feet
- l. Have you contacted the U.S. Coast Guard concerning their approval? ☒ Yes ☐ No
 If yes, explain: Coast Guard Application sent 7/16/12

- m. Will the proposed bridge cross wetlands containing no navigable waters? ☒ Yes ☐ No
 If yes, explain: Bridge extends over wetlands

- n. Height of proposed bridge above wetlands: The low point of the dual bridges over CAMA wetlands occurs below the left lane bridge near Bent 47 which is at station 376+75 -L-. The approximate elevation at the bottom of the girder is 25.8 feet

2. CULVERTS☒ This section not applicable

- a. Number of culverts proposed: _____
- b. Water body in which the culvert is to be placed:

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c. Type of culvert (construction material):

d. (i) Will proposed culvert replace an existing bridge?

☐ Yes ☐ No

If yes,

(ii) Length of existing bridge: _____

(iii) Width of existing bridge: _____

(iv) Navigation clearance underneath existing bridge: _____

(v) Will all, or a part of, the existing bridge be removed?
(Explain)

e. (i) Will proposed culvert replace an existing culvert?

☐ Yes ☐ No

If yes,

(ii) Length of existing culvert(s): _____

(iii) Width of existing culvert(s): _____

(iv) Height of the top of the existing culvert above the NHW or
NWL: _____(v) Will all, or a part of, the existing culvert be removed?
(Explain)

f. Length of proposed culvert: _____

g. Width of proposed culvert: _____

h. Height of the top of the proposed culvert above the NHW or NWL.
_____i. Depth of culvert to be buried below existing bottom contour.
_____j. Will the proposed culvert affect navigation by reducing or
increasing the existing navigable opening? ☐ Yes ☐ NoIf yes, explain:

_____k. Will the proposed culvert affect existing water flow?
☐ Yes ☐ NoIf yes, explain:

_____**3. EXCAVATION and FILL**☐ This section not applicablea. (i) Will the placement of the proposed bridge or culvert require any
excavation below the NHW or NWL? ☐ Yes ☐ No

If yes,

(ii) Avg. length of area to be excavated: N/A

(iii) Avg. width of area to be excavated: _____

(iv) Avg. depth of area to be excavated: _____

(v) Amount of material to be excavated in cubic yards: _____

b. (i) Will the placement of the proposed bridge or culvert require any
excavation within coastal wetlands/marsh (CW), submerged
aquatic vegetation (SAV), shell bottom (SB), or other wetlands
(WL)? If any boxes are checked, provide the number of square
feet affected.☐ CW _____ ☐ SAV _____ ☐ SB N/A☐ WL _____ ☐ None

(ii) Describe the purpose of the excavation in these areas:

N/A

_____c. (i) Will the placement of the proposed bridge or culvert require any
high-ground excavation? ☐ Yes ☐ No

If yes,

(ii) Avg. length of area to be excavated: N/A

(iii) Avg. width of area to be excavated: _____

(iv) Avg. depth of area to be excavated: _____

(v) Amount of material to be excavated in cubic yards: _____

d. If the placement of the bridge or culvert involves any excavation, please complete the following:

(i) Location of the spoil disposal area: N/A

(ii) Dimensions of the spoil disposal area: _____

(iii) Do you claim title to the disposal area? ☐ Yes ☐ No (If no, attach a letter granting permission from the owner.)

(iv) Will the disposal area be available for future maintenance? ☐ Yes ☐ No

(v) Does the disposal area include any coastal wetlands/marsh (CW), submerged aquatic vegetation (SAVs), other wetlands (WL), or shell bottom (SB)?

☐ CW ☐ SAV ☐ WL ☐ SB ☐ None

If any boxes are checked, give dimensions if different from (ii) above.

(vi) Does the disposal area include any area below the NHW or NWL? ☐ Yes ☐ No

If yes, give dimensions if different from (ii) above.

e. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item d above) to be placed below NHW or NWL? ☒ Yes ☐ No

If yes,

(ii) Avg. length of area to be filled: _____

(iii) Avg. width of area to be filled: _____

(iv) Purpose of fill: see plans

f. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item d above) to be placed within coastal wetlands/marsh (CW), submerged aquatic vegetation (SAV), shell bottom (SB), or other wetlands (WL)? If any boxes are checked, provide the number of square feet affected.

☒ CW 10,454 ☐ SAV _____ ☐ SB _____

☒ WL 1,811,211 ☐ None

(ii) Describe the purpose of the excavation in these areas:

Permanent Bridge and temporary bridge for the coastal wetlands and the other wetlands include the permanent and temporary bridge impacts along with roadway fill.

g. (i) Will the placement of the proposed bridge or culvert result in any fill (other than excavated material described in Item d above) to be placed on high-ground? ☐ Yes ☐ No

If yes,

(ii) Avg. length of area to be filled: _____

(iii) Avg. width of area to be filled: _____

(iv) Purpose of fill: see plans

4. GENERAL

a. Will the proposed project require the relocation of any existing utility lines? ☒ Yes ☐ No

If yes, explain: see cover letter

b. Will the proposed project require the construction of any temporary detour structures? ☐ Yes ☒ No

If yes, explain:

If this portion of the proposed project has already received approval from local authorities, please attach a copy of the approval or certification.

< Form continues on back >

c. Will the proposed project require any work channels?

☐ Yes ☒ No

If yes, complete Form DCM-MP-2.

d. How will excavated or fill material be kept on site and erosion controlled?

Erosion control measures and BMP's will be used throughout the project.

e. What type of construction equipment will be used (for example, dragline, backhoe, or hydraulic dredge)?

Heavy earthwork moving equipment, barges and bridge construction equipment will be used.

f. Will wetlands be crossed in transporting equipment to project site?

☒ Yes ☐ No

If yes, explain steps that will be taken to avoid or minimize environmental impacts.

Temporary work bridge provided.

g. Will the placement of the proposed bridge or culvert require any shoreline stabilization?

☐ Yes ☒ No

If yes, complete form MP-2, Section 3 for Shoreline Stabilization only.

4.3.13

Date

R-2633B

Project Name

NC Department of Transportation

Applicant Name

E. L. Luck for Gregory J. Thorpe, PhD

Applicant Signature

Beauregard, Rachelle

From: Joseph Cavanaugh - NOAA Federal <joseph.cavanaugh@noaa.gov>
Sent: Tuesday, February 26, 2013 3:15 PM
To: Beauregard, Rachelle
Subject: Wilmington Bypass Atlantic Sturgeon Request

Dear Ms. Beauregard,

NMFS received your request for reinitiation concurrence for the Wilmington Bypass from north US 74/76 intersection in Brunswick County, to US 421 in New Hanover County (Federal Aid Project No. STPNHF-17 (1) on December 18, 2012. We have reviewed the previously authorized project under a 2006 Letter of Concurrence under Section 7 of the ESA to determine if the project guidelines as indicated at that time would impact the now listed Atlantic sturgeon. After careful review, we believe that the restrictions currently in place (see below) will satisfactorily minimize impacts for Atlantic sturgeon as they currently do for Shortnose sturgeon in this particular project. In other words, the addition of Atlantic sturgeon does not change our previous routes of effects analysis and effects determinations. The in-water moratoriums in place for shortnose sturgeon will apply to Atlantic sturgeon to minimize potential impacts to this species.

No in-water work moratorium in the Cape Fear River and Toomers Creek between February 1 and June 15 of any year. For the purposes of this moratorium, in-water is defined as extending 35 meters from the main channel (where vegetation line meets open water) into adjacent wetlands. The 35 meter buffer extends to both riverbanks but does not include uplands. The in-water moratorium prohibits pile installation (both vibratory and impact) and activities associated with the construction of any temporary work bridge.

Thank you for your compliance with Section 7 on the project.

Best regards,

Joe

--

Joseph Cavanaugh
Natural Resource Specialist
Protected Resources Division
National Marine Fisheries Service
263 13th Avenue S
St. Petersburg, FL 33701-5505
Ph: (727) 551-5097



Public Utilities
Water Treatment
407 Hilton Street
PO Box 1810
Wilmington, NC 28402-1810

**CITY OF
WILMINGTON**
NORTH CAROLINA

R-2633B

910 343-3690
910 341-4657 fax
wilmingtonnc.gov

April 23, 2008

Vince Rhea, P.E.
NCDOT
PD and EA Branch
1548 Mail Service Center
Raleigh, NC 27699-1548

RECEIVED
APR 30 2008
DIVISION OF HIGHWAYS
HYDRAULICS UNIT

Re: City of Wilmington, PWSID #04-65-010
Toomers Creek Raw Water Pumping Station

Dear Mr. Rhea:

The City of Wilmington currently owns the abandoned structure that was once the Toomers Creek Raw Water Pumping Station. This PS is no longer in service and has been decommissioned since 1994.

The Toomers Creek PS served the City of Wilmington from around 1922 until 1943 as the primary source of raw water from the Cape Fear River to the treatment plant. Due to tidal influence the river water was at times brackish and very difficult to treat. In the late 1930's it was determined that the City would need a larger treatment plant and a better quality of raw water. It was determined that a pumping station would be built just above Lock and Dam #1 in Bladen County and a pipeline installed to bring raw water back to the City of Wilmington that was not brackish.

After the construction of the Kings Bluff Raw Water Pumping Station, the Toomers Creek PS became a backup emergency supply and was kept operational for that purpose. Over the years that followed, the Toomers Creek PS became less important as the backup raw water supply.

Since the hurricanes of 1996, the Toomers Creek PS has not been operated and we have no intention of reactivation of the PS. The current structure has no roof on it, the windows are broken and the pumps and motors have not been operated since 1994. Currently there exist no power lines to the structure and would probably require extensive effort by progress Energy to reactivate.

The City of Wilmington installed an additional raw water connection with Lower Cape Fear Water and Sewer Authority in 1994 to give an additional alternate

supply of raw water to the Sweeney WTP. It is our expectation that the Toomers Creek site would only be used in the event of a major failure and no alternative supplies.

Additionally, the water in and around the Toomers Creek PS area is subject to be brackish at high tide during certain periods of the year and thereby making it difficult for us to treat with the conventional water treatment facilities that we operate.

Please contact me if you have additional questions relating to this matter at 910-343-3690 or by email at mike.richardson@wilmingtonnc.gov.

Yours truly,

A handwritten signature in black ink, appearing to read "Mike Richardson", written in a cursive style.

Mike E. Richardson
Water Treatment Division Superintendent

Pc: Richard King, Public Utilities Department Acting Director
Frank Styers, Cape Fear Public Utility Authority
Brad Jones, Water Treatment Division Plant Supervisor
Kevin House, Water Treatment Division Maintenance Supervisor



January 21, 2011

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

R-2633A and B, US 17 (Wilmington Bypass) from NC 87 South of Bishop to West of US 421 North of Wilmington, Brunswick and New Hanover Counties

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream, riparian, and non-riparian wetland mitigation for the subject project. Based on the information supplied by you on October 12, 2010 and January 20, 2011, the impacts are located in CU 03030005 of the Cape Fear River Basin in the Southern Outer Coastal Plain (SOCP) Eco-Region, and are as follows:

Cape Fear 03030005 SOCP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	780	8.09	80.14	0	0	0
Mitigation Units (Credits-up to 2:1)	0	0	1,560	16.18	160.28	0	0	0

This mitigation acceptance letter replaces the mitigation acceptance letters issued on October 20, 2009 and October 12, 2010. EEP commits to implementing sufficient compensatory stream, riparian, and non-riparian wetland mitigation credits to offset the impacts associated with this project in accordance with the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

William D. Gilmore, P.E.
EEP Director

cc: Mr. Brad Shaver, USACE -- Wilmington Regulatory Field Office
Mr. Brian Wrenn, Division of Water Quality, Wetlands/401 Unit
Mr. Steve Sollod, Division of Coastal Management
Files: R-2633 A and B Revised

Restoring... Enhancing... Protecting Our State



Subject: Meeting Minutes from Interagency Hydraulic Design Review
Meeting on August 22, 2007 for R-2633B in Brunswick and New
Hanover Counties

Team Members:

Jennifer Frye-USACE	(absent)
Gary Jordan-USFWS	(present)
Travis Wilson-NCWRC	(present)
Cathy Brittingham-NCDCM	(absent)
Steve Sollod-NCDCM	(present)
David Wainwright-NCDWQ	(present)
Chris Militcher-USEPA	(absent)
Kathy Matthews-USEPA	(present)
Donnie Brew-FHWA	(present)
Derrick G. Weaver-NCDOT-PDEA	(absent)

Participants:

Marshall Clawson, NCDOT Hydraulics
Dan Duffield, NCDOT Hydraulics
Stephen Lane, NCDCM
Marissa Rodman, NCDOT-NEU
Vince Rhea, NCDOT-PDEA
Mark Staley, NCDOT-REU
Chris Riverbark, NCDOT-NEU
Rachelle L. Beauregard-NCDOT-NEU
Joe Blair-NCDOT Division 3
Mason Herndon, NCDOT Division 3
Doug Taylor, NCDOT Roadway
Chris Smitherman, NCDOT Roadway
Lonnie I. Brooks-NCDOT Structures
Kevin Alford, Mulkey E & C
Matthew Harvey, Mulkey E & C
Dennis Hoyle, URS
Kristy Pace, URS

Introductions were skipped due to this project being a continuation of the previously held Interagency Hydraulic Design Review on R-2633A. Kevin Alford proceeded with the review.

General

- 3:1 fill slopes will be used in wetland areas in lieu of 4:1 slopes in order to minimize impacts to the wetlands.
- Rip rap pads will be used throughout the project to outlet systems from the -L- line into the wetlands. In all cases we made an effort to outlet outside the wetlands. Rip rap pads were used in lieu of preformed scour holes, since preformed scour holes would require excavation in the wetlands. Also, the rip rap is needed in order to acquire non-erosive velocities in the wetlands.
- Rip rap pads will also be used prior to outleting ditches into wetlands in order to obtain a non-erosive velocity.
- Equalizer pipes have been placed through the wetlands. 48" concrete equalizer pipes were used and the inverts were not buried. A note will be placed on the plan sheets that states the inverts will not be buried for equalizer pipes. The equalizer pipes were

spaced approximately 500 to 600 feet apart. The 48" pipe size is due to the fact that it can be used as a wildlife crossing.

- Grass swale treatment will occur throughout the project in the median.
- Kathy Matthews asked about looking into onsite mitigation. Marissa Rodman stated that no sites were found except for a historic property, but since it would only be preservation it would not be looked at any further.

Sheet 6

- Loop D will be a total take, but the entire loop will not be filled in. Equalizer pipes will be used to connect the wetlands throughout the interchange.
- Rachelle Beauregard will check to see if the channel east of -RP D1- is a jurisdictional stream.

Sheet 8

- The decision was made that all equalizer pipes will be laid on natural ground, unless NCWRC requests a site specific burial.
- Equalizer pipe connecting wetlands at Sta. 82+68+/-.
- No ditching will occur in the wetland that is located near Sta. 82+40+/- Lt.

Sheet 10

- Proposed wildlife crossing at Sta. 105+80+/- will also function as an equalizer pipe.

Sheet 12

- Per Rachelle Beauregard, the stream crossing at Sta. 137+00+/- is non-jurisdictional.

Sheet 14

- A cross pipe will not be placed at Sta. 153+40+/- . Based on field observation, the ditch heads up at the railroad and flows away from the railroad.

Sheet 15

- There will be no impacts from the pavement removal or the addition of the cul-de-sac on -SV RD7-. Existing fill slopes will be utilized at the wetland.

Sheet 17

- Proposed cross pipe at Sta. 220+00+/- . Mill Branch is a Jurisdictional Stream.

Sheet 18

- Per Rachelle Beauregard, the stream crossing at Sta. 231+50+/- is non-jurisdictional.

Sheet 21

- Bridge Crossing was set with a 30' horizontal offset from the wetland. The proposed bridge has a minimum 8.0' vertical clearance under it, in order to also serve as a wildlife crossing. There is no defined channel under the bridge. The proposed

crossing is skewed to the floodplain. As stated in the project commitments this bridge will be built with a work bridge. The bents from the bridge will be permanent fill in wetland impacts.

Sheet 24

- Beginning of Bridge over the Cape Fear River that spans from wetland to wetland.
 - Temporary Work Bridges will be needed up to river on both sides of bridge.
 - Closed deck drain system over the Cape Fear River.
 - For deck drainage not over the Cape Fear River, deck drains will be used. The deck drains will be spaced out every 12 feet. The deck drain spacing will be reduced to one every 6 feet when the vertical clearance under the bridge deck is 15 feet or less. There will be one row placed in the median and one row on the low side of the super.

Sheet 25

- There will be permanent surface water impacts in the Cape Fear River from the proposed bridge bents, and temporary surface water impacts from the proposed temporary work bridge bents.
 - Cape Fear River is a Jurisdictional crossing.
- There will be permanent fill in wetland impacts from the proposed bridge bents and temporary fill in wetland impacts from the temporary work bridge bents.

Sheet 26

- Both streams are Jurisdictional.
- There will be permanent fill in wetland impacts from the proposed bridge bents and temporary fill in wetland impacts from the temporary work bridge bents.

Sheet 27

- All streams are Jurisdictional.
- There will be permanent fill in wetland impacts from the proposed bridge bents and temporary fill in wetland impacts from the temporary work bridge bents.

Sheet 28

- All streams are Jurisdictional.
- There will be permanent fill in wetland impacts from the proposed bridge bents and temporary fill in wetland impacts from the temporary work bridge bents.
- City of Wilmington has an abandoned water intake pump on Toomers Creek. This site is only half a mile from the critical area, but since the pump has been abandoned no hazardous spill basin will be required.
 - *Per written comments from David Wainwright: As long as NCDOT can get a letter from the City of Wilmington stating that they have no intention of ever using the stream as a water supply again, then hazardous spill basins will not be needed. If NCDOT plans to pursue this, a copy of the letter will need to be included with the 401 application.*

Sheet 29

- There will be permanent fill in wetland impacts from the proposed bridge bents and temporary fill in wetland impacts from the temporary work bridge bents.

Sheet 30

- Wetland located at Sta. 400+00 will be a total take.

Sheet 31

- Rachelle Beauregard is checking on the wetlands right of Sta. 408+50+/- . These wetlands were shown in the wetland file, but they were not identified as wetlands on the plans from to Mulkey showing the jurisdictional streams and wetlands.

Sheet 34

- Retain and extend existing 42" RCP at -Y5- Sta. 16+27+/- Rt. & Lt.
 - There will be stream impacts at the inlet and outlet.
 - There will be wetland impacts at the outlet of the pipe.
 - Alligator Branch Tributary is a jurisdictional stream.
- Retain and extend 24" RCP at -Y5- Sta. 20+40+/- Lt.
 - Alligator Branch is a jurisdictional stream.

Sheet 37

- Existing 2 @ 84" CMP at Sta. 52+05+/-
 - Pipes to be replaced with culvert due to hydraulic design controls.
 - Roswell Branch is a jurisdictional Stream.

Sheet 38A

- H.W. Lochner, Roadway Design Engineers for this project, is waiting on updated surveys in order to complete design. Per Rachelle Beauregard, no jurisdictional streams were located on this sheet.

Sheet 40

- Bridge Crossing was set with a 10' horizontal offset from the wetland. The proposed bridge has a minimum 4.0' vertical clearance under it, in order to also serve as a small wildlife crossing.
 - Good site for wetland mitigation due to the removal of the existing roadway.
 - A grade change made at the intersection is going to cause this bridge to lengthen, but will have no effect on the wetland offset nor the wildlife crossing clearance.

Meeting Adjourned.

Subject: Meeting Minutes from 4C Permit Drawings Review
February 24, 2010 for R-2633B in Brunswick and New Hanover
Counties

Team Members:

Brad Shaver-USACE	(present)
Gary Jordan-USFWS	(present)
Travis Wilson-NCWRC	(absent)
Steve Sollod-NCDCM	(present)
Stephen Lane-NCDCM	(absent)
David Wainwright-NCDWQ	(present)
Chris Militcher-USEPA	(present)
Ron Lucas-FHWA	(absent)
David Harris-REU	(absent)
Bryan D. Taylor-Roadway	(absent)
Lonnie I. Brooks-Structure	(absent)
Derrick G. Weaver-PDEA	(absent)
Rachelle Beauregard-NEU	(present)
Jackson Provost-Division 3	(absent)

Participants:

Marshall Clawson, NCDOT Hydraulics
Dan Duffield, NCDOT Hydraulics
Mason Herndon, NCDOT Division 3
Chris Riverbark, NCDOT-NEU
Clayton Walston, NCDOT Roadway
Alan Ray, NCDOT Roadway
Marissa Rodman, NCDOT-PDEA-NEU
Mark Staley, NCDOT-REU
Jeff Garland, NCDOT-Design Build
Jonathan Scarce, Mulkey E & C
Matthew Harvey, Mulkey E & C

Introductions were initiated by Marshall Clawson. Introductions were made by all in attendance. Jonathan Scarce proceeded with the review.

General

- All waters within the project are either SC; Sw or C; Sw.
- Project falls within the Cape Fear River Basin in which riparian buffer rules are not applicable.
- The Design Build Project R-2633AA/AB that is tying into R-2633B at plan sheet 5 will now be tying in at plan sheet 6 just past the proposed US 74 Interchange. The tie in will occur line ahead of loops A1 and D1 around Station 48+00 –L-. This change will transfer permit site 1 and 2 and a large portion of site 3 to the design build project.
- There were concerns about wetland fill entering into the Hand Clearing and not being accounted for. All fill in wetlands will end at the slope stake.
- The Jurisdictional status of all streams and wetlands will be reevaluated by NEU, due to the lapse of time since original calls.

Sheet 5

- Sheet was removed from project. All impacts will be added to the Design Build Project R-2633AA/AB.

Sheet 6A

- Permanent fill in wetlands from roadway fill at -RP_D1- 22+50. (Permit Site 4)
- A majority of the site 3 impacts on this sheet will be eliminated due to the Design Build Project.

Sheet 6B

- The Design Build Project tie in will follow the -LP_A1- fill slope and cross over RP_A1- around station 23+75 thus eliminating a majority of the impacts on this sheet.
- Fill in wetlands from roadway fill along -RP_A1- will be a total take. (Site 3)

Sheet 6C

- Permanent fill in wetlands from roadway fill with equalizer pipes connecting the wetlands. (Site 3 Cont.)

Sheet 7

- Permanent fill in wetlands from roadway fill with equalizer pipes connecting the wetlands. (Site 3 Cont.)

Sheet 8

- Permanent fill in wetlands from roadway fill with an equalizer pipe connecting the wetlands. Site 5 will be a total take.
- There were concerns about the drainage design at this location. The roadway drainage is outletting to the west side in order to prevent a direct discharge into the wetland. The equalizer pipe is being placed in order to keep the existing drainage pattern.

Sheet 9

- Permanent fill in wetlands from roadway fill. (Site 6)

Sheet 10

- Permanent fill in wetlands from roadway fill with equalizer pipes connecting the wetlands. (Site 6 Cont.)
- There is a proposed 12' x 6' RCBC Wildlife Crossing at -L- 105+80 – The culvert was missing a size label in the plan view.
- There were concerns with the 12' x 6' RCBC not being buried. It was stated that the culvert will be buried 1 foot and that a 1 foot sill will be added to the structure. This culvert will be backfilled to the top of sill, and now become a 12' x 7'.
- There is currently a cover issue at the median ditch and RCBC. The ditches will need to be flattened out in order to obtain adequate cover. This change will result in the median outlet pipe being shifted back to -L- 105+00.

Sheet 11

- Permanent fill in wetlands from roadway fill with equalizer pipes connecting the wetlands. (Site 6 Cont.)

Sheet 12

- Permanent fill in wetlands from roadway fill with equalizer pipes connecting the wetlands. (Site 6 Cont.)

Sheet 13

- Permanent fill in wetlands from roadway fill with equalizer pipes connecting the wetlands. (Site 6 Cont.)
- Permanent fill in wetlands from roadway fill. (Site 7)

Sheet 14

- Permanent fill in wetlands from roadway fill with equalizer pipes connecting the wetlands. (Site 7 Cont.)

Sheet 15A

- Permanent fill in wetlands from roadway fill. (Site 8)

Sheet 15B

- Permanent fill in wetlands from roadway fill at -SVRD7- from the cul-de-sac and the proposed 30" RCP. (Site 9)
- Permanent fill in wetlands from roadway fill at -L- 189+90. (Site 9)
- Permanent fill in wetlands from roadway fill at -RP_D2- 19+20. (Site 10)
- Turn off the PSRM hatching 190+00 RT so as not to be confused with impact hatching.

Sheet 16

- Permanent fill in wetlands from roadway fill with equalizer pipes connecting the wetlands. (Site 11)

Sheet 17

- Permanent fill in wetlands from roadway fill with equalizer pipes connecting the wetlands. (Site 11 Cont.)
- Mill Branch is a Jurisdictional Stream. The proposed cross pipe will be 3 @ 42" RCP. The inlets will be buried 20% and the outlets will be buried 1.5 feet for positive slope on pipes.

Sheet 18

- Permanent fill in wetlands from roadway fill with an equalizer pipe connecting the wetlands. (Site 11 Cont.)
- Permanent fill in wetlands from roadway fill. (Site 12)
- Wetland lines separating Site 11 and Site 12 will be verified by NEU.

Sheet 19

- Permanent fill in wetlands from roadway fill with an equalizer pipe connecting the wetlands. (Site 12 Cont.)

- Permanent fill in wetlands from roadway fill. (Site 13)

Sheet 20

- Permanent fill in wetlands from roadway fill with an equalizer pipe connecting the wetlands. (Site 13 Cont.)

Sheet 21

- Bridge over Cartwheel Branch will serve as a wildlife crossing and to span wetlands. The bridge has a 30' offset to the wetland with an 8 foot minimum vertical clearance.
- There will permanent fill in wetlands from the proposed bridge bents, and temporary fill in wetlands from the temporary work bridge bents.
- There will be two work bridges; one placed on the outside of each of the dual bridge, along with a finger at each bent location.

Sheet 24

- Beginning of Bridge over Cape Fear River. There will be permanent fill in wetlands from the 15' x 25' bridge footings, and temporary fill in wetlands from the temporary work bridge bents. The closed deck drainage system begins at bent 5.
- The work bridges will need to extend into the Cape Fear to serve as landing platform for the barges. This will need to be done for each work bridge on both the south and north side of the river. The platform will be "L" shaped and needs to terminate in a minimum water depth of 6 feet.
- There were concerns with the bridge caps not having a minimum clearance of 4 foot above the wetlands. It was stated that URS will either have to raise the caps or mechanized clearing in wetlands impacts will need to be offset 3 feet around the bridge footing impacts.
- Parcel 59 is currently being developed by TDM Partners. They are currently planning a mitigation site with wetland preservation. The project footprint will not be included in the mitigation site.
- The hand clearing needs revised on the south side of the bridge so that it does not include the dirt access road.

Sheet 25

- Cape Fear River is a Jurisdictional crossing.
- There will be permanent surface water impacts in the Cape Fear River from the proposed bridge bents, and temporary surface water impacts from the proposed work bridge extensions, serving as landing platforms for the barges.
- There will be permanent fill in wetlands from the proposed bridge bents and temporary fill in wetlands from the temporary work bridge bents.
- The deck drainage system will end at bent 9. Rip rap pads will need to be added to dissipate the flow of the deck drainage system into the wetlands. Permanent fill in wetlands will need to be added around each of the bridge footings to account for the rip rap pads.

Sheet 26

- Both streams are Jurisdictional.
- There will be permanent fill in wetlands from the proposed bridge bents and temporary fill in wetlands from the temporary work bridge bents.

Sheet 27

- All streams are Jurisdictional.
- There will be permanent fill in wetlands from the proposed bridge bents and temporary fill in wetlands from the temporary work bridge bents.

Sheet 28

- All streams are Jurisdictional except for the one that runs from -L- 373+88 to 376+08. This should be shown as permanent fill in wetlands and the relocation will be excavation in wetlands.
- The closed deck drainage systems will end at the bent near station 332+00. Rip Rap pads will be added to dissipate the discharge at the pipe outlets. There will be fill in wetlands associated with these pads.
- A note should be added to the plans to keep temporary work bridge bents out of Toomers Creek.
- There were concerns of the height of the temporary work bridges over Toomers Creek due to the possibility of it having a Public Trust Waters designation. It was stated that if the height of the work bridges was increased they would not be able to construct the bridge caps.
- There will be permanent fill in wetlands from the proposed bridge bents and temporary fill in wetlands from the temporary work bridge bents.
- City of Wilmington has an abandoned water intake pump on Toomers Creek. This site is only half a mile from the critical area, but since the pump has been abandoned no hazardous spill basin will be required.
 - A letter from the City of Wilmington stating that they have no intention of ever using the pump station will be included in the permit.

Sheet 29

- There will be permanent fill in wetlands from the proposed bridge bents and temporary fill in wetlands from the temporary work bridge bents.

Sheet 30

- Permanent fill in wetlands from roadway fill. Site 16 will be a total take.
- The easement on the North side of the sheet is for the proposed haul roads. The haul roads are needed to construct the bridge bents without crossing the railroad tracks. CP&L were planning to expand to a total of 4 tracks in this area, but due to their conversion from coal to natural gas in 2012 it is unlikely the tracks will be added.

Sheet 34

- Removed from project. All impacts will be added to Design Build Project R-2633AA/AB.

Sheet 37

- Existing 2 @ 84" CMP at Sta. 52+05+/-
 - Pipes to be replaced with culvert due to hydraulic design controls. Culvert will be buried 1 foot.
 - Rowel Branch is a jurisdictional stream.
- There will be temporary surface water impacts at the inlet of the proposed culvert
- There will be permanent surface water impacts at the inlet of the proposed culvert. The outlet will not have permanent impacts due to the proposed structure being shorter in length than the existing.
- The southeast quadrant has new wetlands due to a wetland delineation on R-4063 which is an adjacent project.
- Detour impacts are shown on sheet 2-K.

Sheet 2-K

- Temporary surface water impacts at 2 @ 84" CMP detour pipes.
- There was concern about the impact that the temporary detour pipes would have on the existing channel. It was stated that a temporary bridge would be looked at for the detour, along with filling the entire channel with temporary pipes that would be laid on filter fabric and back filled with rip rap. Due to the significant cost difference between the temporary pipes versus the temporary bridge DOT is proceeding forward with the pipes.

Sheet 40

- The bridge over Cartwheel Branch will serve as a small wildlife crossing, as well as to span wetlands. The crossing was set with a 10' horizontal offsets from the wetlands, and has a minimum 4.0' vertical clearance.
- The wetland mitigation site under the bridge will be removed from the project due to the cost of relocating the waterline. This was reviewed by Marissa after the 4C meeting.
- Hand Clearing needs to be added to the PDE at the ditch entering the wetlands
- The hand clearing needs to be removed from inside the stream boundary.
- The Location Survey stream flow arrow needs to be adjusted and NEU plans to verify the wetland boundaries.

Meeting Adjourned.

STORMWATER MANAGEMENT PLAN

Revised 4/3 2013

State Project: 34491.1.2

TIP Project: R-2633B

Brunswick & New Hanover Counties, North Carolina

Hydraulics Project Engineer: Kevin B. Alford, PE

NCDOT Hydraulics Project Engineer: Marshall W. Clawson, PE

Project Description:

This project, designated as the “B” section, will be US 17 (Wilmington Bypass) from US 74/76 to East of Malmo in Brunswick County to US 421 North of Wilmington in New Hanover County. The project is a proposed multilane facility on new location. The overall project is 8.02 miles.

Environmental Description

This project is located in the Cape Fear River Basin, for which no buffer regulations have been implemented. The Cape Fear River will be crossed once by the proposed action. The Cape Fear River is listed on the NCDENR classifications as Class SC. Class SC waters are tidal salt waters protected for aquatic life propagation and survival, fishing, wildlife and secondary recreation. The Cape Fear River is included on the 303(d) list for impaired streams. The reasons for listing the Cape Fear River are as follows: low dissolved oxygen and low pH. Cartwheel Branch will be crossed twice by the proposed action. Cartwheel Branch is listed on the NCDENR classifications list as Class SC Sw. Class SC Sw waters are tidal salt swamp waters protected for aquatic life propagation and survival, fishing, wildlife and secondary recreation. Cartwheel Branch was not listed in the 303(d) list for impaired streams. Rowel Branch will be crossed once by the proposed action. Rowel Branch is listed on the NCDENR classifications list as Class C Sw. Class C Sw waters are fresh swamp waters protected for aquatic life propagation and survival, fishing, wildlife, secondary recreation and agriculture. Rowel Branch was not listed in the 303(d) list for impaired streams. Neither High Quality Waters (HQW), Water Supplies (WS-I or WS-II) nor Outstanding Resource Waters (ORW) occur within 1.0 miles of the project. The project passes thru a Water Supply Watershed and adjacent to a Water Supply Watershed Critical area beside the Cape Fear River. Per the City of Wilmington, the pumping station that carried the water to this area to make it a Water Supply Watershed, as well as a Water Supply Watershed Critical area is no longer active and they have no plans of ever making it active again. For this reason, hazardous spill basins will not be required on this project. Wetlands are located along a majority of the project corridor.

Roadway Description:

The proposed roadway cross section is a 4-lane facility, consisting of 12 foot travel lanes, 4 foot full depth paved shoulders toward the grass median, 2 foot grass shoulders toward the median, 12 full depth paved shoulders toward the outside, 2 foot grass shoulders toward the outside and a maximum 34 foot (or minimum 24.44 foot) grass median. The entire project is in fill. The project drainage system will consist mainly of ditches, cross pipes and equalizer pipes. Storm systems will be used to pick up median drainage along the project and outlet the drainage at the toe of the fill slopes (or into ditches). Ditches will not be used in the wetlands, so storm systems will be outleted onto rip rap pads in the wetlands in lieu of ditches in order to dissipate the stormwater. Storm systems will also be used in order to pick up drainage in the gore areas of the interchanges and discharge them into a ditch.

Shoulder berm gutter will be utilized in areas of high fill with guardrail. In these instances, the runoff will be collected in a 2GI and discharged at the toe of fill.

Best Management Practices and Major Structures:

- ***Major Structures***

- ***Dual Bridge Crossing of Cartwheel Branch at Station-L- Station 263+85.00 to -L- Station 267+20.00***

This bridge will be placed on new location. In order to allow for adequate wildlife crossing, the bridge is designed so that the spill-thru abutments are located a minimum of 30 feet horizontal offset from the wetlands on each side of the bridge and a minimum 8 feet vertical clearance. One bent on each of the dual bridges will be placed in the wetlands. Each bridge has two additional bents, but they will be placed outside of the wetland boundary. The bridge is also designed so that no deck drains will be used in order to avoid any direct discharges into Cartwheel Branch. All deck drainage will be picked up and discharged outside of the wetlands to allow only non-erosive velocities to enter the wetlands. Also, by outleting the deck drainage outside of the wetlands, the storm drainage will attain some treatment through grass lined ditches and sheet flow prior to entering the wetlands. Temporary work bridges will be used for bridge construction.

- ***Dual Bridge Crossing of the Cape Fear River at Station-L- Station 317+41.31 to -L- Station 389.24.54***

This bridge will be placed on new location over the Cape Fear River and adjacent wetlands. The bents from the bridge will cause permanent impacts to the surface waters and permanent impacts to wetlands. Only one bent will be placed in the channel of the Cape Fear River. All other bents will be placed in wetlands outside the top of banks of the river. A

closed deck drainage system will be used over the Cape Fear River. The drainage from the closed deck drainage system will outlet at the top of the footing and discharge onto a Class 'B' rip rap pad. The outlets for the closed deck drainage system will be located within 100 feet of the river banks in order to keep from allowing direct discharge into the Cape Fear River. For deck drainage not over the Cape Fear River, open deck drains will be used. The open deck drains will be spaced out every 12 feet when the vertical clearance is more than 25 feet. When the height of the deck drains is greater than 25 feet, there is enough elevation above the wetlands that the stormwater will likely be dissipated before hitting the ground at an erosive rate. The open deck drain spacing will be reduced to one every 6 feet when the vertical clearance under the bridge deck is 25 feet or less in order to minimize the erosive velocities of the freefalling water from the open deck drains to the wetlands below. There will be one row placed in the median and one row on the low side of the super. Temporary work bridges will be used for bridge construction.

➤ ***Bridge Crossing of Cartwheel Branch at Station -Y8- Station 47+20.00 to -Y8- Station 50+40.00***

This bridge will be placed downstream of the existing location. The bridge will replace two 36" CMP pipes. In order to allow for adequate wildlife crossing, the bridge is designed so that the spill-thru abutments are located a minimum of 10 feet horizontal offset from the wetlands on each side of the bridge and a minimum 4 feet vertical clearance. All three bents of the bridge will be placed in the wetlands. No bents will be placed in the stream crossing. The bridge is also designed so that no deck drains will be used in order to avoid direct discharges into Cartwheel Branch. All deck drainage will be picked up and discharged outside of the wetlands to allow only non-erosive velocities to enter the wetlands. Also, by outleting the deck drainage outside of the wetlands, the storm drainage will attain treatment using grass lined ditches prior to entering the wetlands. Temporary work bridges will be used for bridge construction.

➤ ***Culvert Crossing of Rowel Branch at Station -Y7- Station 52+09.00***

This culvert will be placed in the location of the existing culvert. The culvert will replace two 84" CMP pipes with headwalls with a 1@12'x11' RCBC. The culvert inverts will be buried one foot below the existing stream bed. This site will have a detour structure downstream of the proposed culvert. The detour structure will consist of two 84" CMP pipes with headwalls.

- ***Rip Rap Pads***

Rip Rap pads will be used in order to dissipate energy and reduce velocities at pipe outlets in the wetlands. These structures are located throughout the project.

- ***Preformed Scour Holes***

Preformed scour holes will be used in order to dissipate energy, reduce velocities and allow sheet flow at pipe outlets outside the wetlands where grass lined ditches were not used. These structures are located throughout the project.

- ***Grass Lined Ditches***

Grass lined ditches will be used in order to filter pollutants from highway runoff and allow diffused flow, as well as non-erosive velocities prior to entering the wetlands. These ditches will end prior to entering the wetlands. These structures will also be used to carry stormwater to existing channels or streams. The ditch side slopes used on these ditches are 3:1 or flatter. Grass lined ditches are located throughout the project.

- ***Equalizer Pipes***

Equalizer pipes will be used throughout the project in order to allow for wetland nourishment. All equalizer pipes used on the project will be 36" RCP pipes with a maximum spacing of 500 feet between each pipe. The equalizer pipe inverts will be set at the natural ground elevation of the wetlands.

- ***Cross Pipes***

Cross pipes in jurisdictional streams will have the inverts buried a minimum of 20% of the diameter of the proposed pipe size, up to and including 48" diameter. Pipes greater than 48" in jurisdictional streams will be buried 1 foot. All crosspipes in ephemeral streams and ditches will not be required to have the inverts buried unless the pipe size is 60" or greater. For all pipes 60" or greater in ephemeral streams as well as ditches, the inverts will be buried one foot. These structures will be used throughout the project.

- ***Modified Infiltration Basin at -L-435+00 LT.***

The Modified Infiltration Basin is provided as a means for storing the 100 year volume of runoff from a portion of the proposed new location highway. There are currently no positive outfalls for the drainage along Fredrickson Road or the area just north and adjacent to this road. The Modified Infiltration Basin will be constructed on a NCDOT parcel of land just west of the proposed highway location (-L- 435+00 LT.) and used to alleviate potential increases in flooding due to the proposed highway improvements. The basin captures and stores, with 1.5 feet of freeboard, the entire 100 year volume of water generated from all of

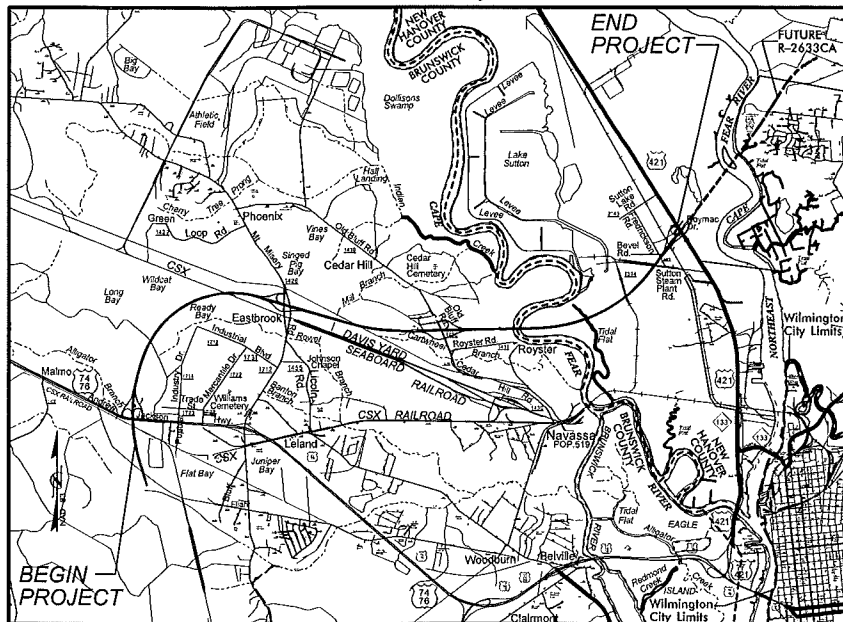
NCDOT's property draining to this area. The runoff is then released via infiltration through the basin floor and sides. Other alternatives were investigated as well. One such design alternative was piping under the railroad and ditching line back to the Cape Fear River. This option would have created the need to ditch thru wetlands and would have also resulted in additional R/W needs to include both a large ditch footprint and additional bridge construction staging areas. Another alternative was to try and drain the area to the north along Fredrickson Road, to existing outfalls located north of the project. Due to the distance away from our project, and the need to create positive outfall to those areas, those existing outfalls would have been undercut as well.

09/08/99

TIP PROJECT: R-2633B

CONTRACT:

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



VICINITY MAP FOR STATE PROJECT R-2633B

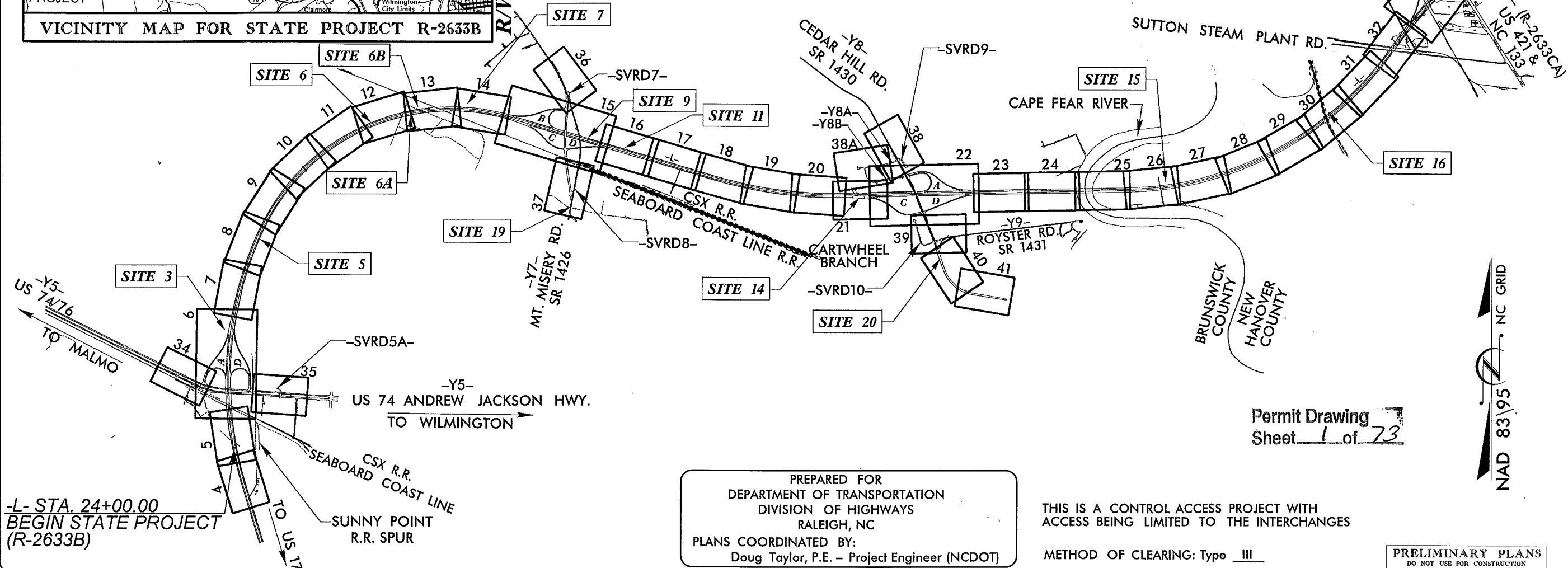
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
**BRUNSWICK &
NEW HANOVER COUNTIES**

LOCATION: US 17 (WILMINGTON BYPASS) FROM US 74/76
EAST OF MALMO IN BRUNSWICK COUNTY TO US 421
NORTH OF WILMINGTON IN NEW HANOVER COUNTY

**STREAM &
WETLAND IMPACTS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2633B	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34491.1.2	STPNHF-17(1)	P.E.	
34491.2.3		R / W	

-L- STA. 447+24.07
END STATE PROJECT
(R-2633B)



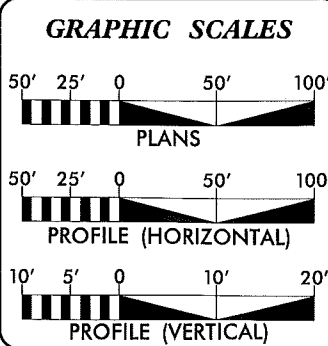
-L- STA. 24+00.00
BEGIN STATE PROJECT
(R-2633B)

PREPARED FOR
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, NC
PLANS COORDINATED BY:
Doug Taylor, P.E. - Project Engineer (NCDOT)

THIS IS A CONTROL ACCESS PROJECT WITH
ACCESS BEING LIMITED TO THE INTERCHANGES

METHOD OF CLEARING: Type III

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA	
ADT 2009 =	16,400
ADT 2025 =	24,900
DHV =	12 %
D =	60 %
T =	15 % *
V =	70 MPH
* TTST 10%	DUAL 5%
FUNC. CLASS. =	INTERSTATE

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT R-2633B =	6.24 Miles
LENGTH STRUCTURES TIP PROJECT R-2633B =	1.78 Miles
TOTAL LENGTH STATE TIP PROJECT R-2633B =	8.02 Miles

THIS IS A FULL CONTROLLED-ACCESS PROJECT
WITH ACCESS BEING LIMITED TO POINTS
SHOWN ON THE PLANS.

Prepared In the Office of: LOCHNER H. W. LOCHNER, INC. 2840 PLAZA PLACE, SUITE 202 RALEIGH, NC 27612	
2006 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: June 20, 2008	Brian K. Eason, P.E. PROJECT ENGINEER
LETTING DATE: July 19, 2011	Jeffrey R. Hext PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER	
SIGNATURE:	P.E.
ROADWAY DESIGN ENGINEER	
SIGNATURE:	P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA	
STATE HIGHWAY DESIGN ENGINEER	

\$\$\$SYTIME\$\$\$
\$\$\$DGN\$\$\$
\$\$\$USERNAME\$\$\$

8/17/99

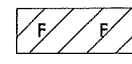
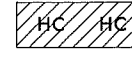
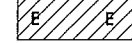
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12/1/2012
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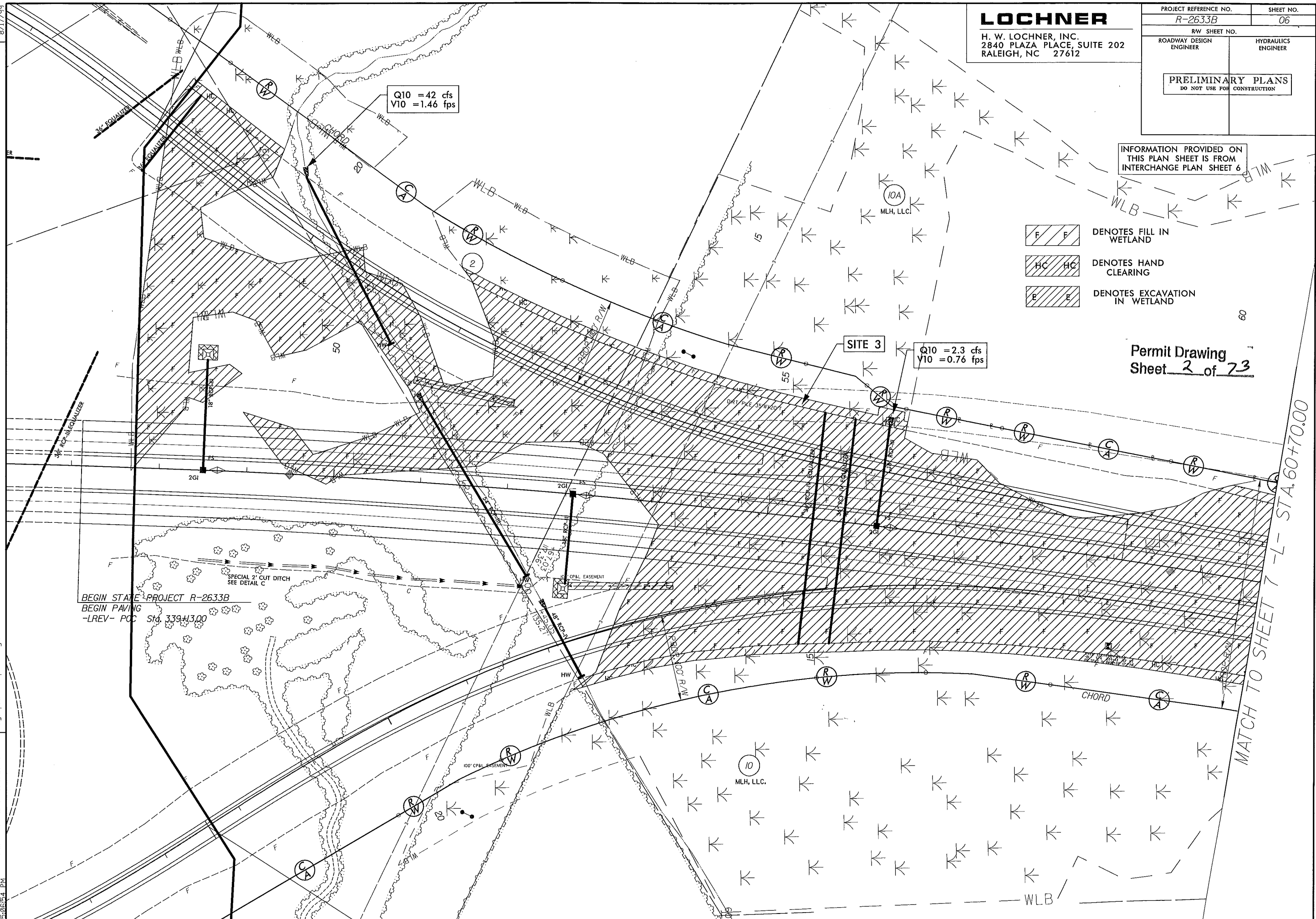
LOCHNER
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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.		SHEET NO.	
R-2633B		06	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

INFORMATION PROVIDED ON
THIS PLAN SHEET IS FROM
INTERCHANGE PLAN SHEET 6

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

Permit Drawing
Sheet 2 of 23



8/17/99

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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.

R-2633B

SHEET NO.

06

RW SHEET NO.

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

INFORMATION PROVIDED ON
THIS PLAN SHEET IS FROM
INTERCHANGE PLAN SHEET 6

F F

DENOTES FILL IN
WETLAND

HC HC

DENOTES HAND
CLEARING

E E

DENOTES EXCAVATION
IN WETLAND

SITE 3

Q10 = 2.3 cfs
V10 = 0.76 fps

Permit Drawing
Sheet 3 of 73

BEGIN STATE PROJECT R-2633B
BEGIN PAVING
LREV - POC Sta. 339+13.00

SPECIAL 2' CUT DITCH
SEE DETAIL C

HW

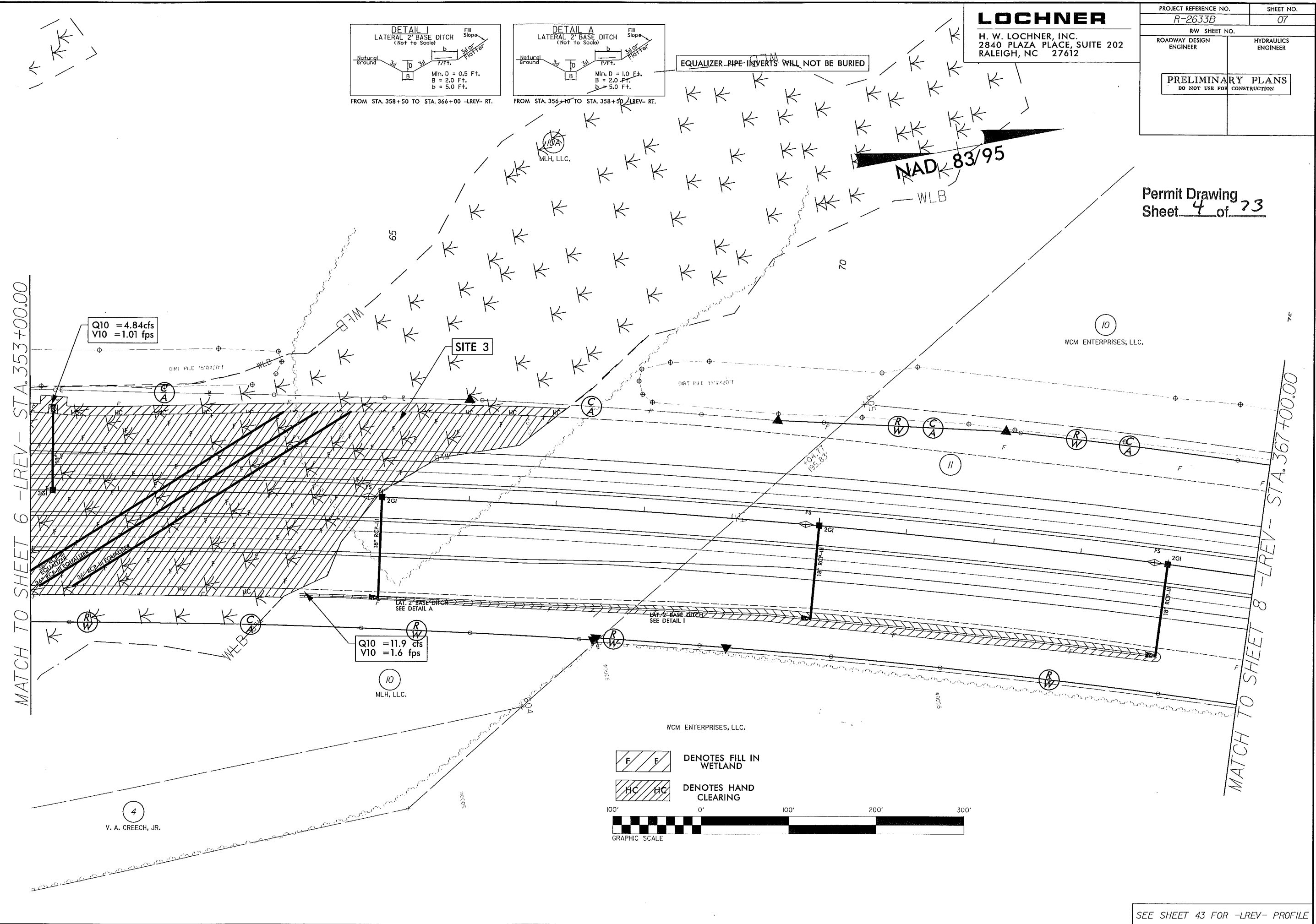
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MATCH TO SHEET 7-L- STA. 60+70.00

REVISIONS

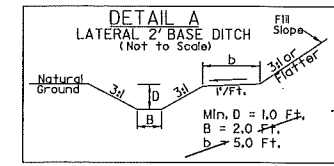
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8/17/99
R/W REVISION: 10/ /09 - NAME AND DEED CHANGE PARCEL 10. PROPERTY OWNER NAME CHANGE FROM WCM ENTERPRISES, LLC TO CKC, LLC
R/W REVISION: 11/ /09 - ADJUSTED MONUMENT ON PARCEL 10A. MOVED PROPERTY OWNER NAME ON PARCEL 10.
12/3/2012
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SEE SHEET 43 FOR -LREV- PROFILE

12/3/2012
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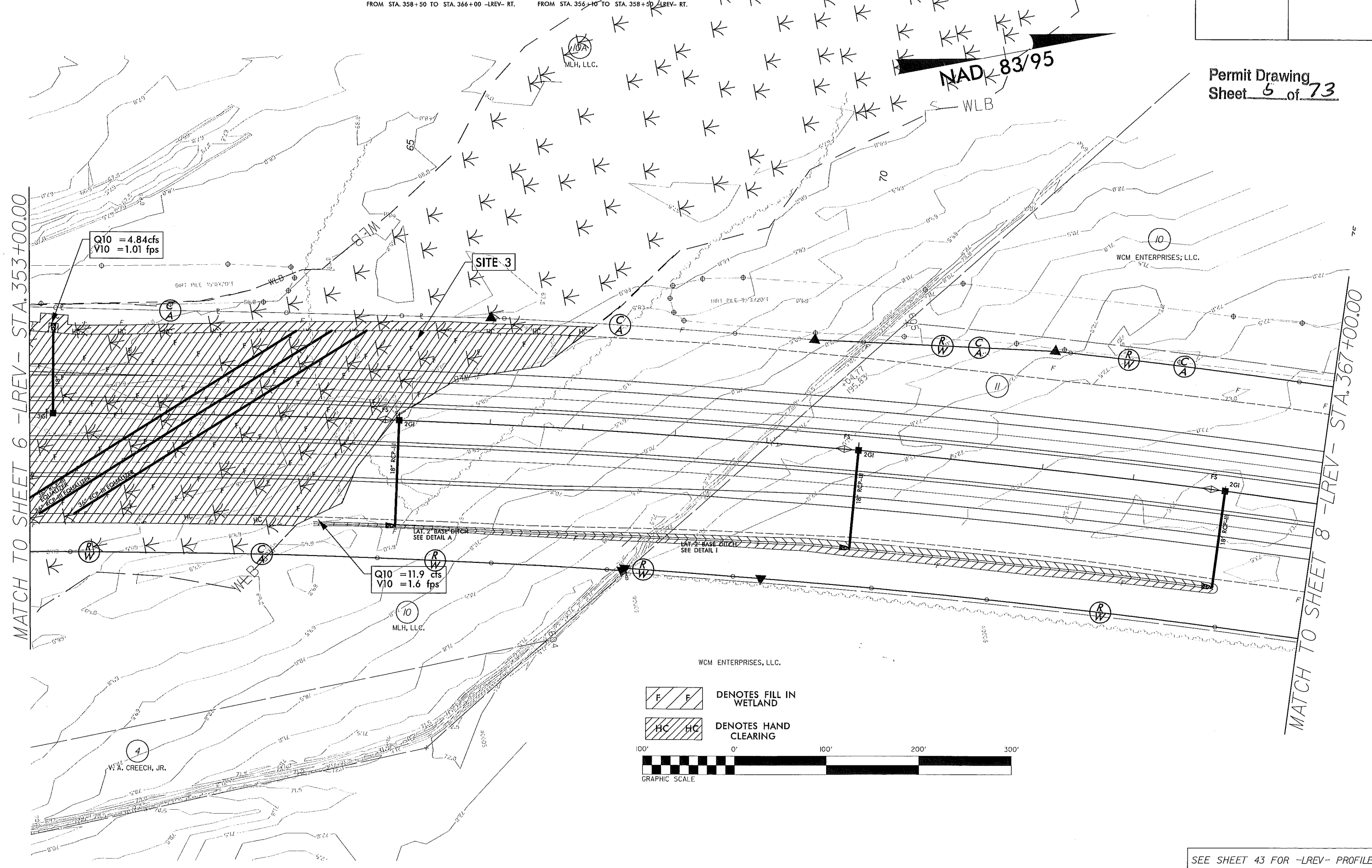


~~EQUALIZER PIPE INVERTS~~ WILL NOT BE BURIED

NAD 83/95

MATCH TO SHEET 6 - LREV - STA. 353+00.00

MATCH TO SHEET 8 - LREV - STA. 367+00.00



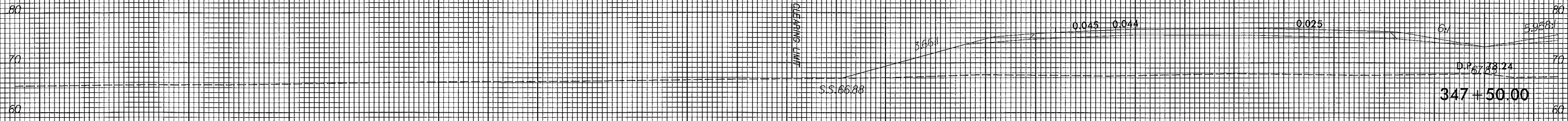
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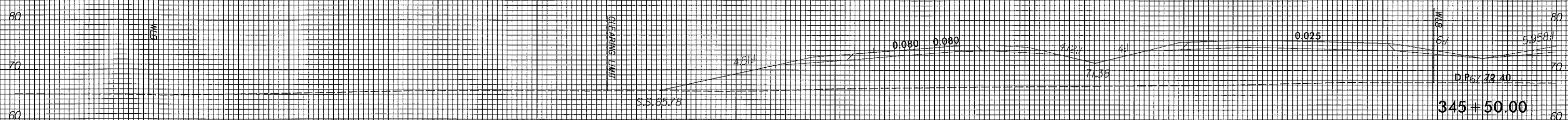
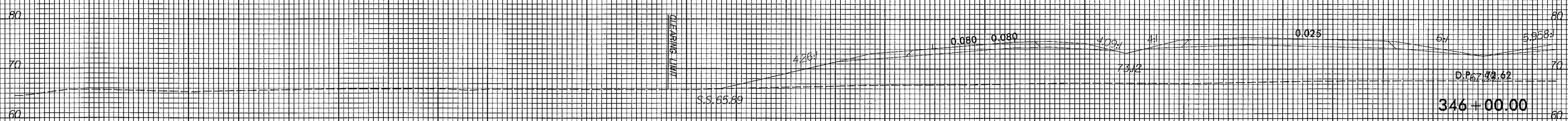
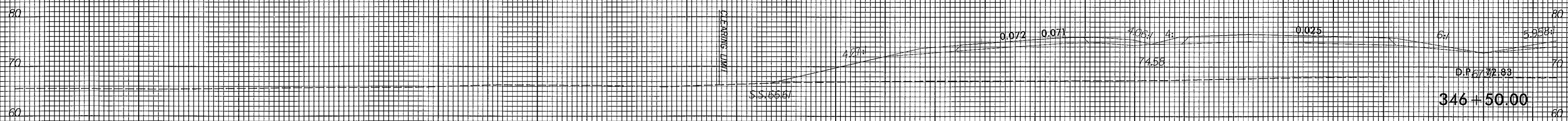
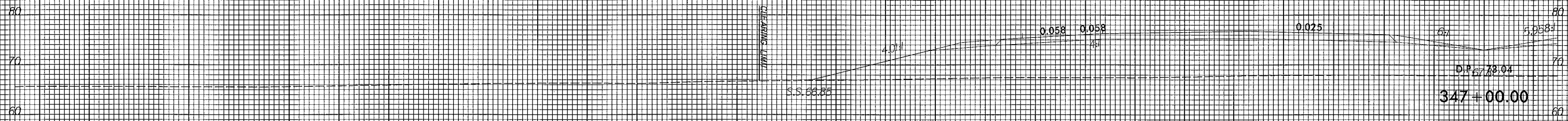
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R-2633BA

SHEET NO.
X-4

WETLAND CROSS SECTION
SITE 3



Permit Drawing
Sheet 6 of 7.3



-1 Rev

8/23/99

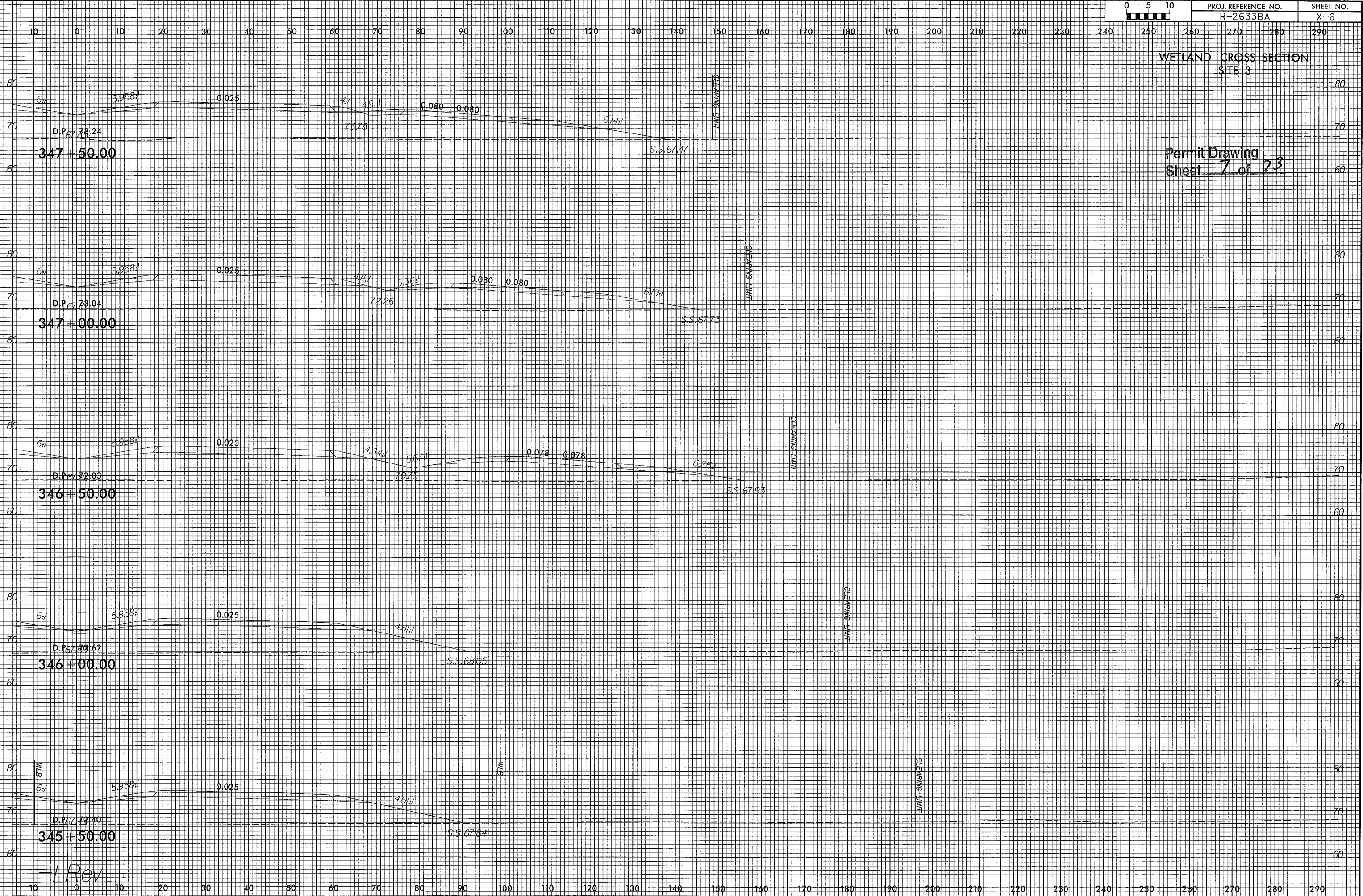


PROJ. REFERENCE NO.
R-2633BA

SHEET NO.
X-6

WETLAND CROSS SECTION
SITE 3

Permit Drawing
Sheet 7 of 23



-1/Rev

8/23/95

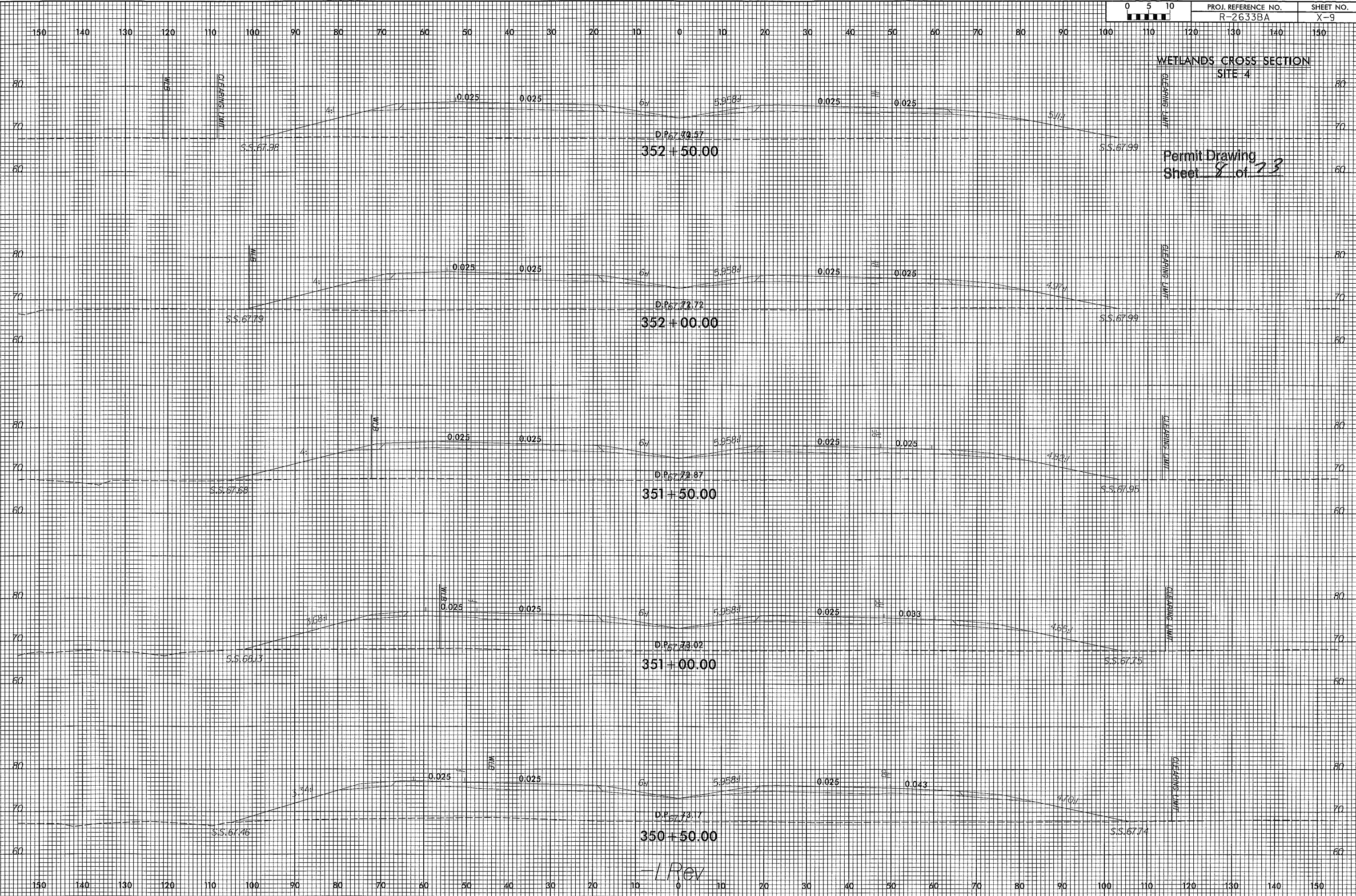


PROJ. REFERENCE NO.
R-2633BA

SHEET NO.
X-9

WETLANDS CROSS SECTION
SITE 4

Permit Drawing
Sheet 8 of 23



-1 Rev

8/17/99

REVISIONS

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R/W REVISION: 11/11 - MOVED OWNERS NAME ON PARCEL 11.

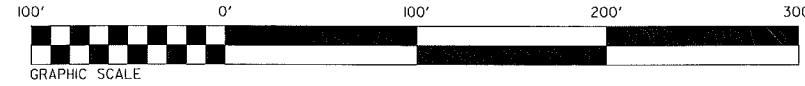
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LOCHNER

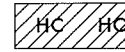
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
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R/W SHEET NO.	
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EQUALIZER PIPE INVERTS WILL NOT BE BURIED



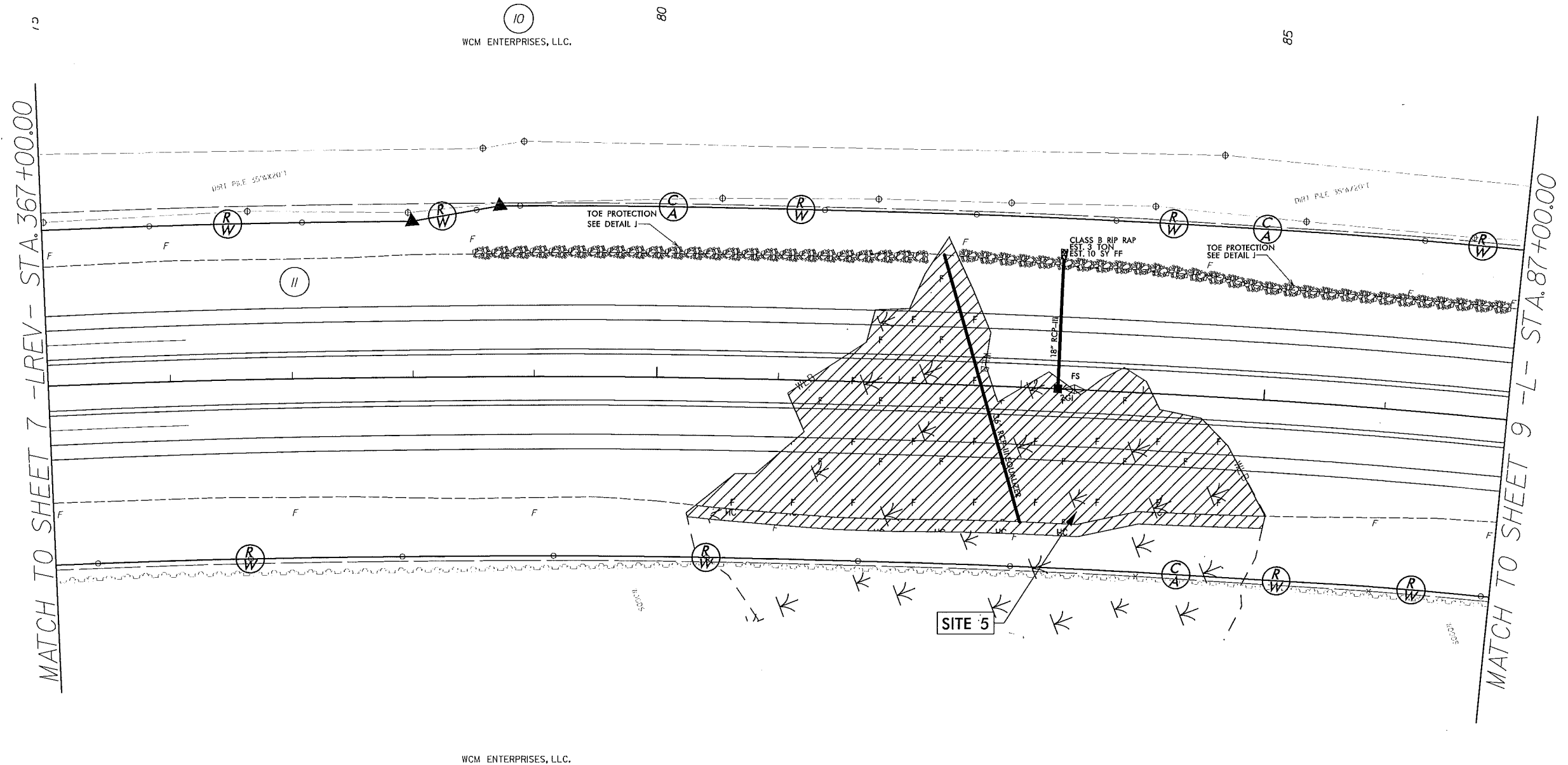
DENOTES FILL IN
WETLAND



DENOTES HAND
CLEARING

NAD 83/95

Permit Drawing
Sheet 9 of 73



SEE SHEET 44 FOR -LREV- PROFILE

8/17/99

REVISIONS

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R/W REVISION: 1/1/11 - MOVED OWNERS NAME ON PARCEL 11.

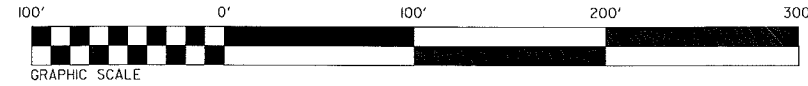
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2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	08
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PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

EQUALIZER PIPE INVERTS WILL NOT BE BURIED



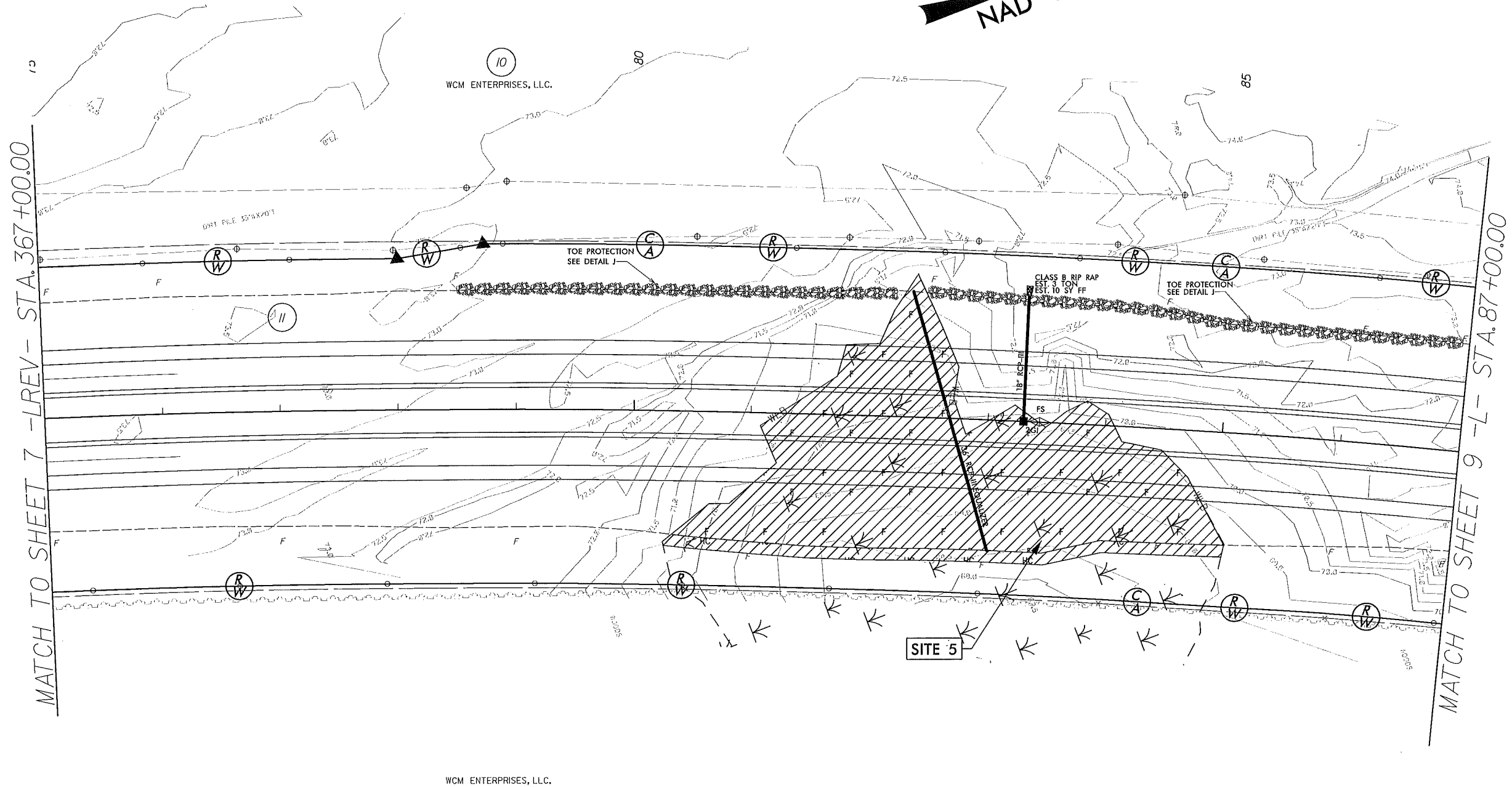
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DENOTES HAND CLEARING

NAD 83/95

Permit Drawing
Sheet 10 of 73



SEE SHEET 44 FOR -LREV- PROFILE

8/23/99

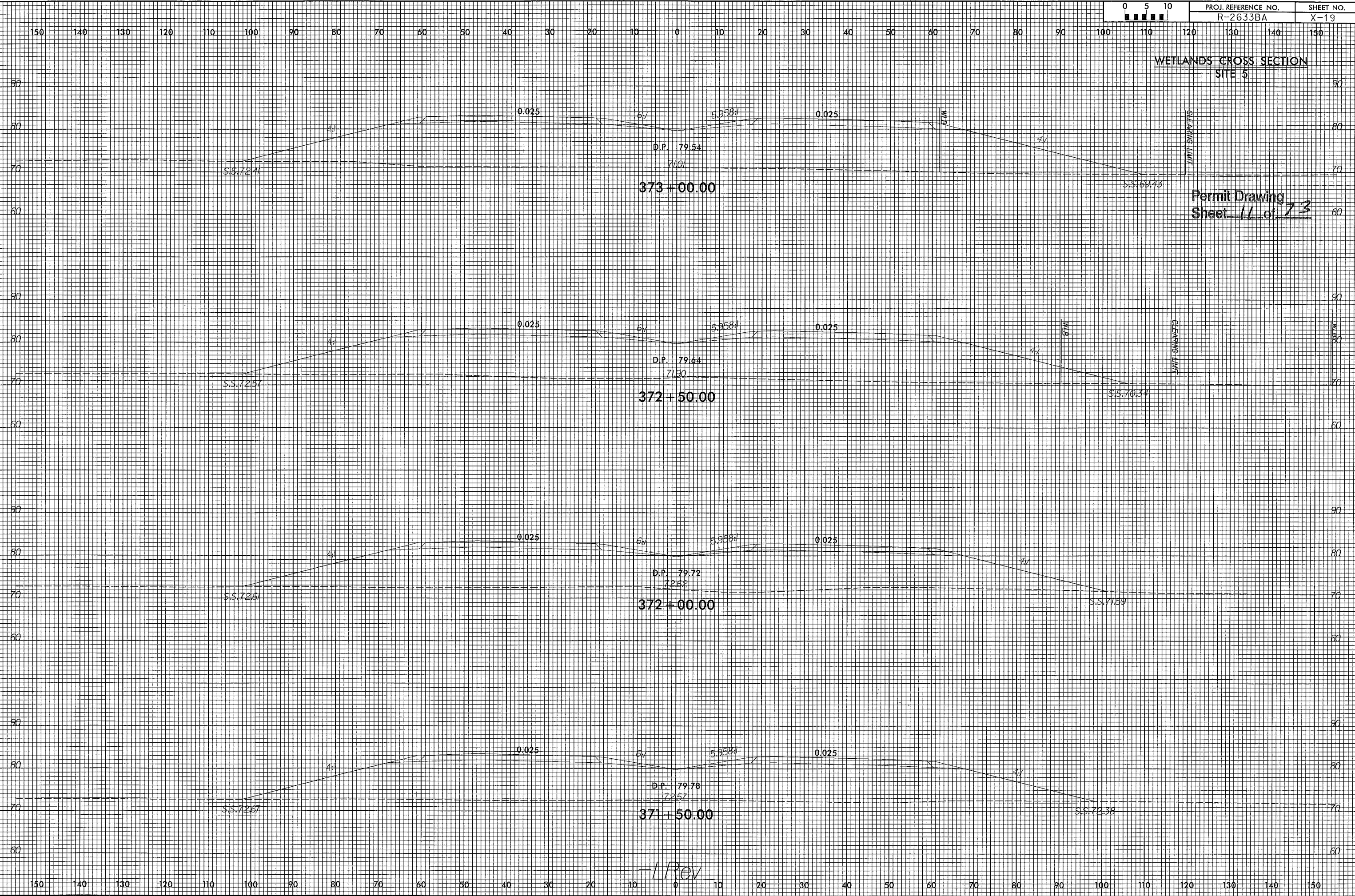


PROJ. REFERENCE NO.
R-2633BA

SHEET NO.
X-19

WETLANDS CROSS SECTION
SITE 5

Permit Drawing
Sheet 11 of 73



-1 Rev

8/23/99

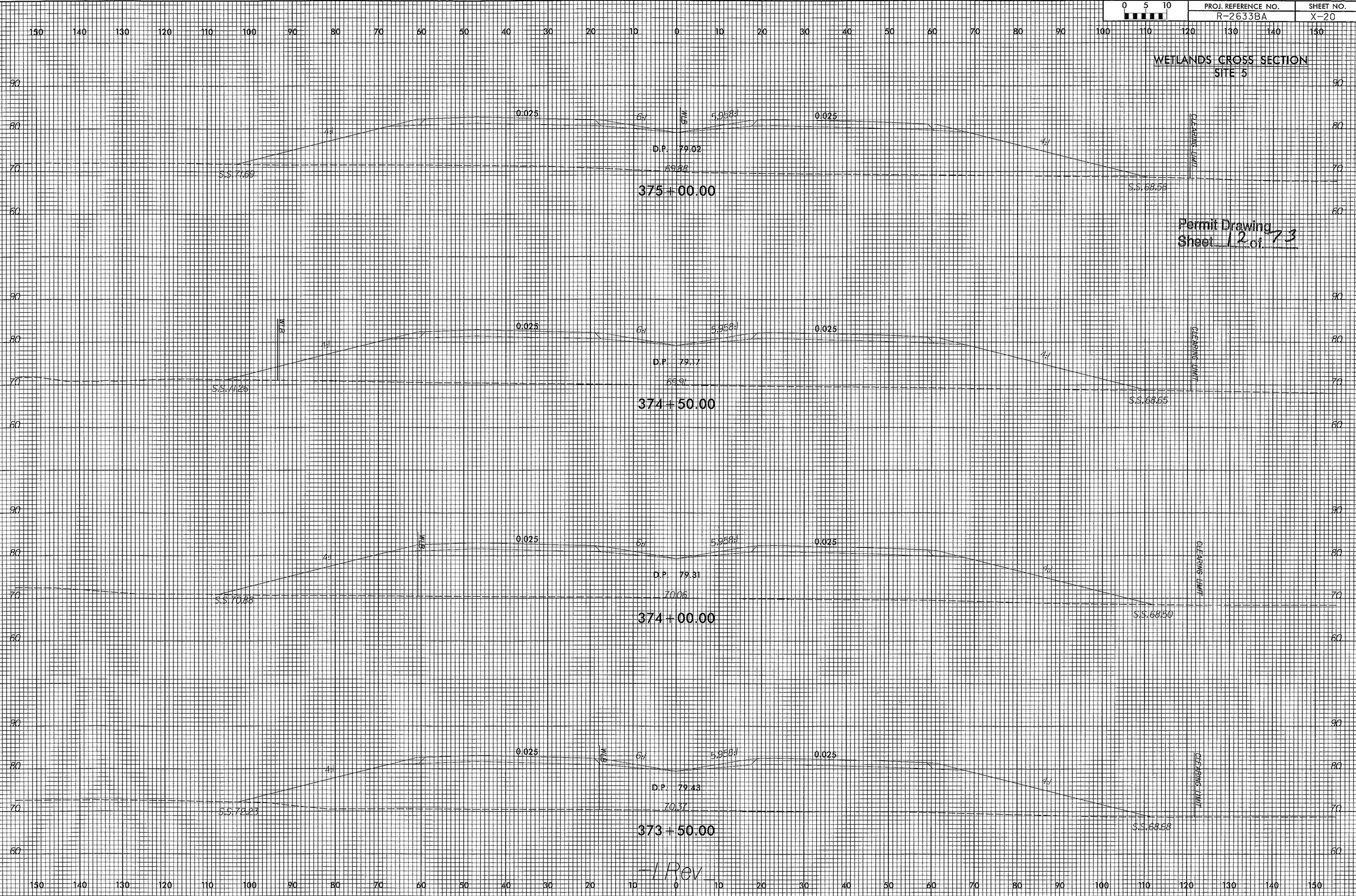


PROJ. REFERENCE NO.
R-2633BA

SHEET NO.
X-20

WETLANDS CROSS SECTION
SITE 5

Permit Drawing
Sheet 12 of 73



8/17/99

REVISIONS

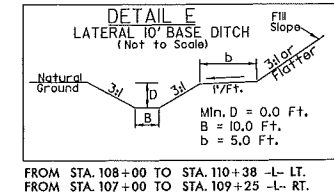
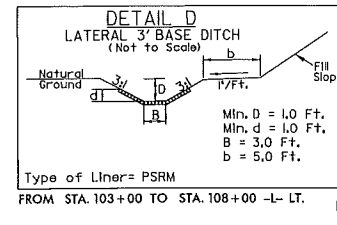
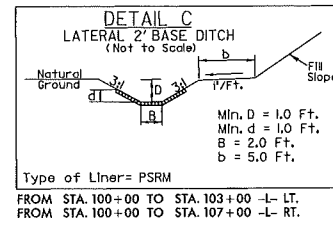
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LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

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

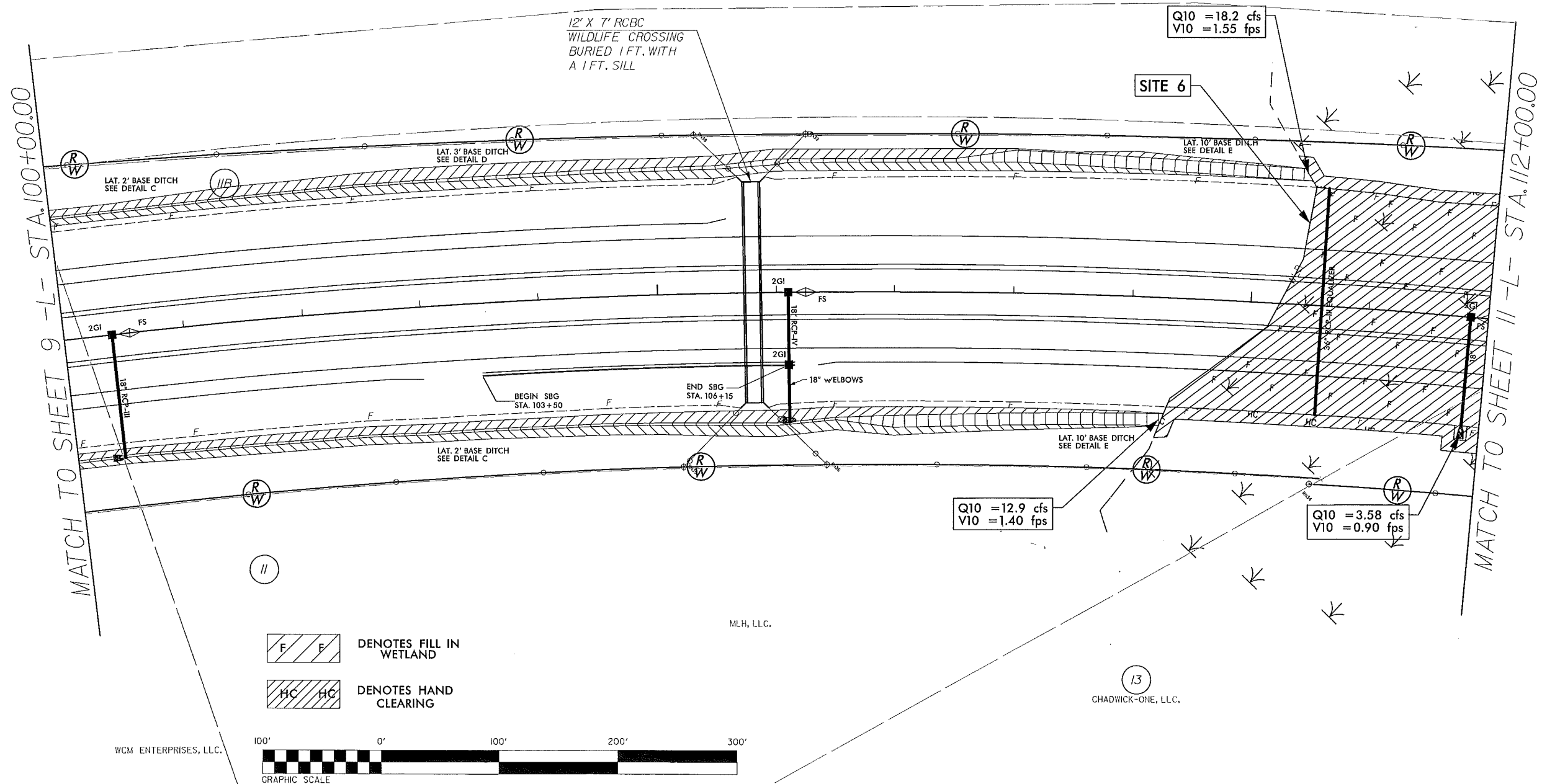
EQUALIZER PIPE INVERTS WILL NOT BE BURIED



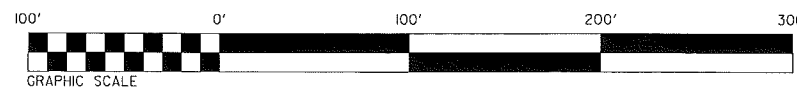
MLH, LLC.

NAD 83/95

Permit Drawing
Sheet 13 of 73



F F DENOTES FILL IN WETLAND
HC HC DENOTES HAND CLEARING



WCM ENTERPRISES, LLC.

MLH, LLC.

CHADWICK-ONE, LLC.

SEE SHEET 45 FOR -L- PROFILE

8/17/99

REVISIONS

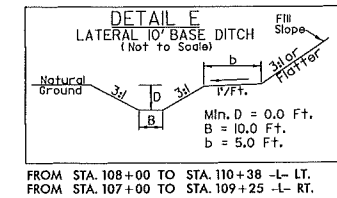
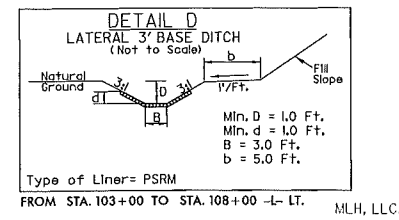
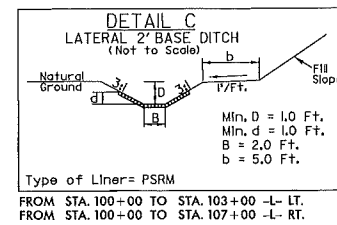
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LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

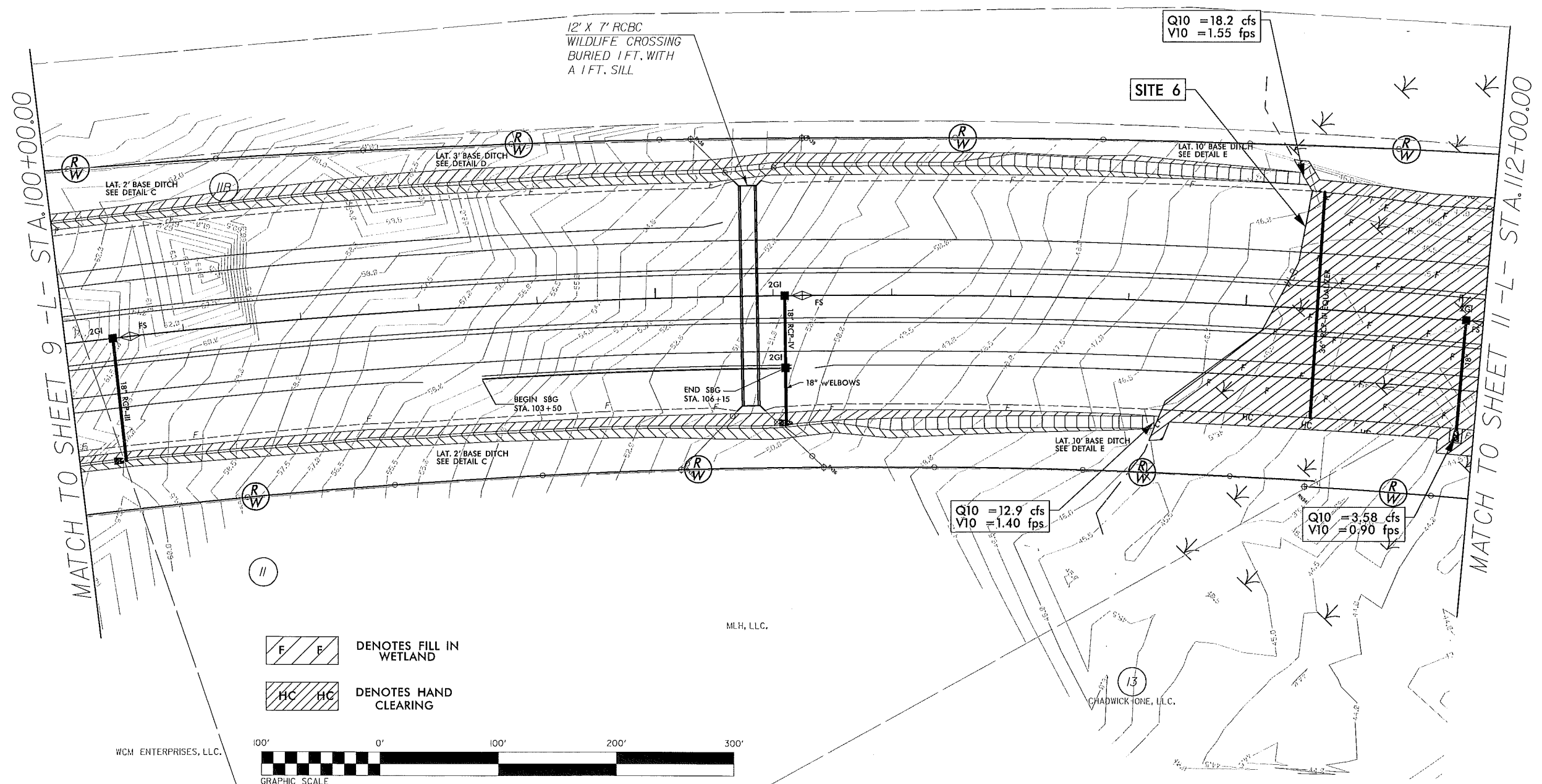
PROJECT REFERENCE NO. R-2633B	SHEET NO. 10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

EQUALIZER PIPE INVERTS WILL NOT BE BURIED

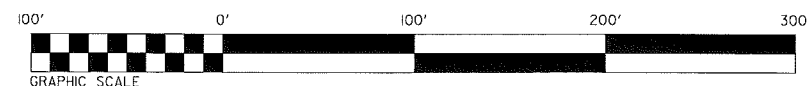


NAD 83/95

Permit Drawing
Sheet 14 of 73



F **E** DENOTES FILL IN WETLAND
HC **HC** DENOTES HAND CLEARING



WCM ENTERPRISES, LLC.

MLH, LLC.

CHADWICK-ONE, LLC.

SEE SHEET 45 FOR -L- PROFILE

8/17/99

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2-25-99

REVISIONS

EQUALIZER PIPE INVERTS WILL NOT BE BURIED

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.

R-2633B

SHEET NO.

11

R/W SHEET NO.

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 15 of 73

NAD 83/95

MATCH TO SHEET 10 -L- STA. 112+00.00

MATCH TO SHEET 12 -L- STA. 125+00.00

MLH, LLC.

CHADWICK-ONE, LLC.

Q10 = 1.91 cfs
V10 = 0.71 fps

SITE 6

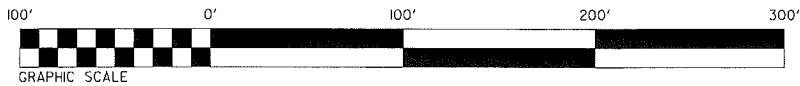
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V10 = 0.90 fps

CHADWICK-ONE, LLC.

Q10 = 3.58 cfs
V10 = 0.90 fps

WCM ENTERPRISES, LLC.

F F DENOTES FILL IN
WETLAND
HC HC DENOTES HAND
CLEARING



SEE SHEET 45 FOR -L- PROFILE

8/17/99

REVISIONS

P:\3\2012
R:\Hydro\Permit\Stream & Wetland\NR-2633B_hyd.prm-wet.psh1.dgn
7-28-2016

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

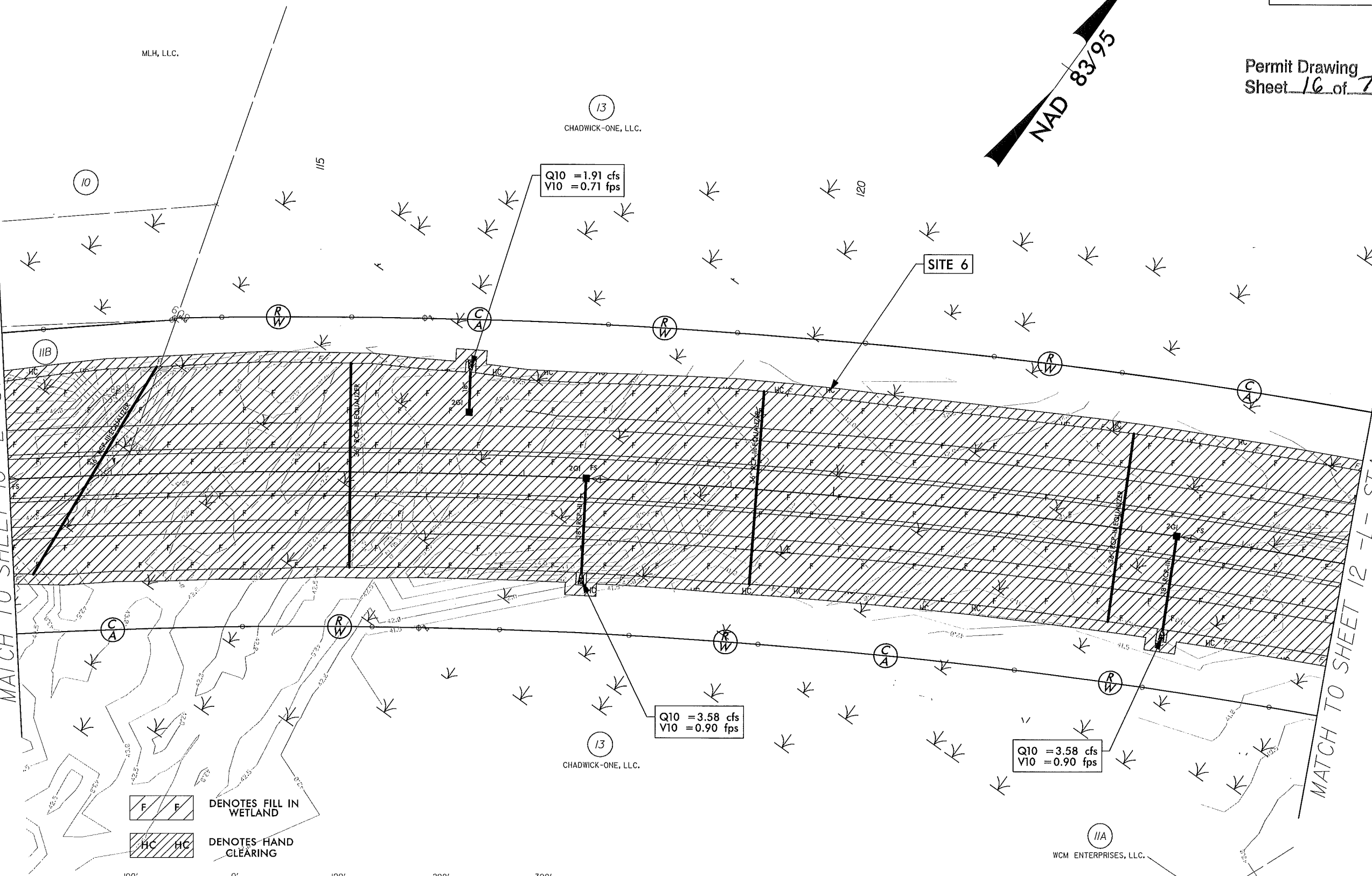
EQUALIZER PIPE INVERTS WILL NOT BE BURIED

NAD 83/95

Permit Drawing
Sheet 16 of 73

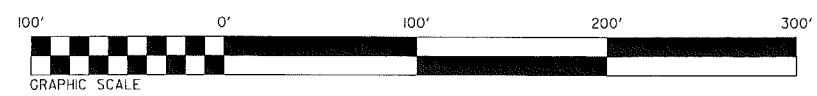
MATCH TO SHEET 10 -L- STA.112+00.00

MATCH TO SHEET 12 -L- STA.125+00.00



F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING



SEE SHEET 45 FOR -L- PROFILE

8/17/99

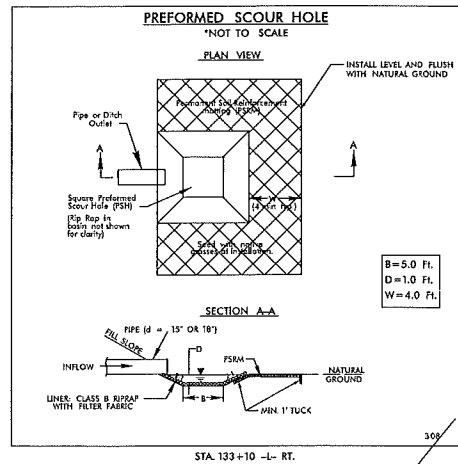
REVISIONS

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10/26/05 AM

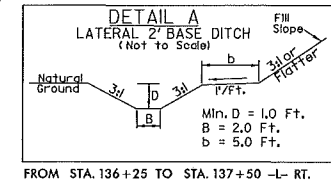
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B	SHEET NO. 12
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



13
CHADWICK-ONE, LLC.



EQUALIZER PIPE INVERTS WILL NOT BE BURIED

11A
WCM ENTERPRISES, LLC.

NAD 83/95

Permit Drawing
Sheet 17 of 73

MATCH TO SHEET 11 -L- STA. 125+00.00

CHADWICK-ONE, LLC.

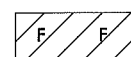
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V10 = 0.90 fps

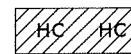
Q10 = 29 cfs
V10 = 1.49 fps

Q10 = 2.54 cfs
V10 = 0.79 fps

SITE 6A

11A
WCM ENTERPRISES, LLC.

 DENOTES FILL IN WETLAND

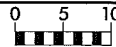
 DENOTES HAND CLEARING



SEE SHEET 46 FOR -L- PROFILE

MATCH TO SHEET 13 -L- STA. 138+60.00

8/23/99

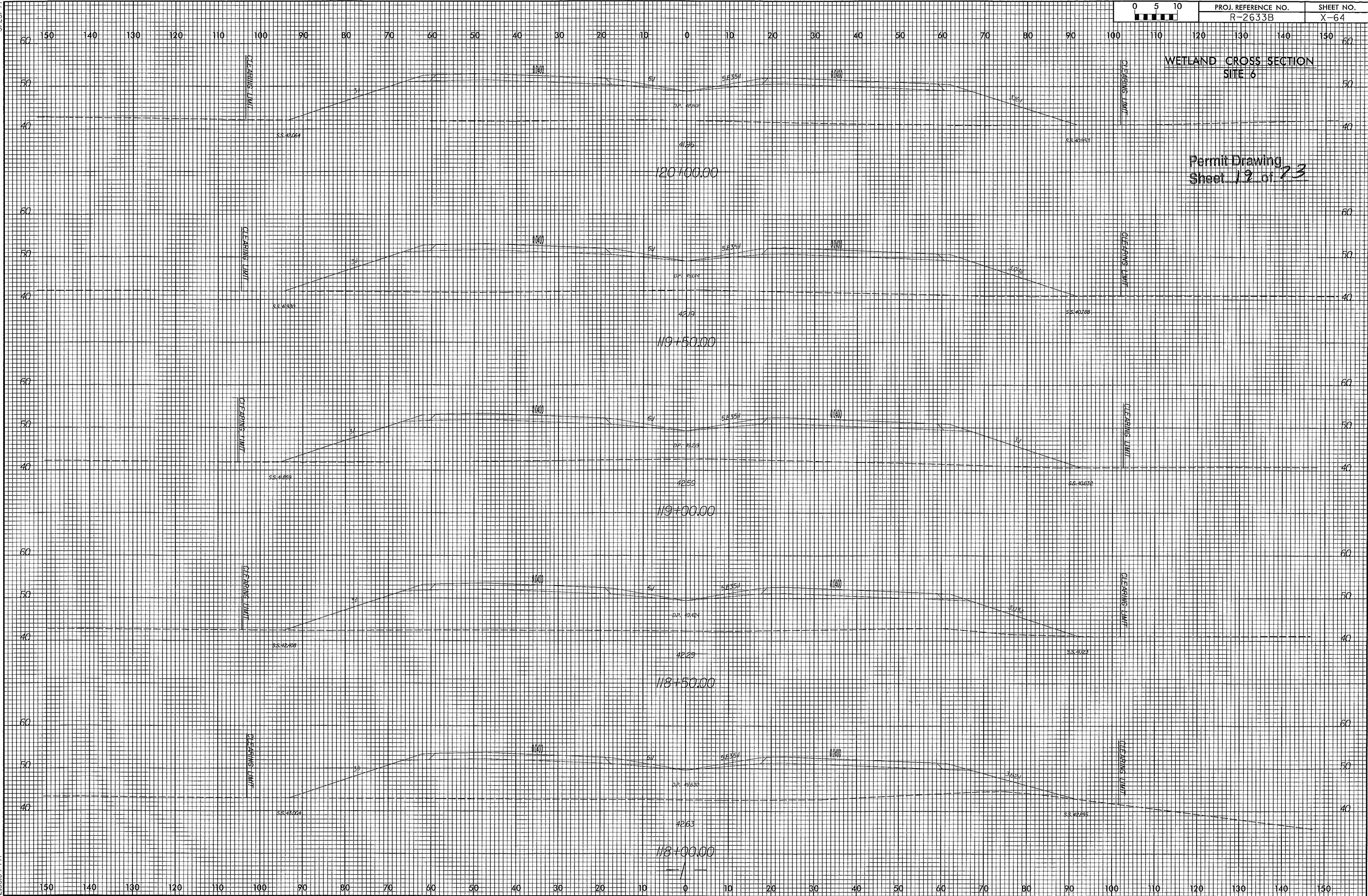


PROJ. REFERENCE NO.
R-2633B

SHEET NO.
X-64

WETLAND CROSS SECTION
SITE 6

Permit Drawing
Sheet 12 of 23



8/23/99

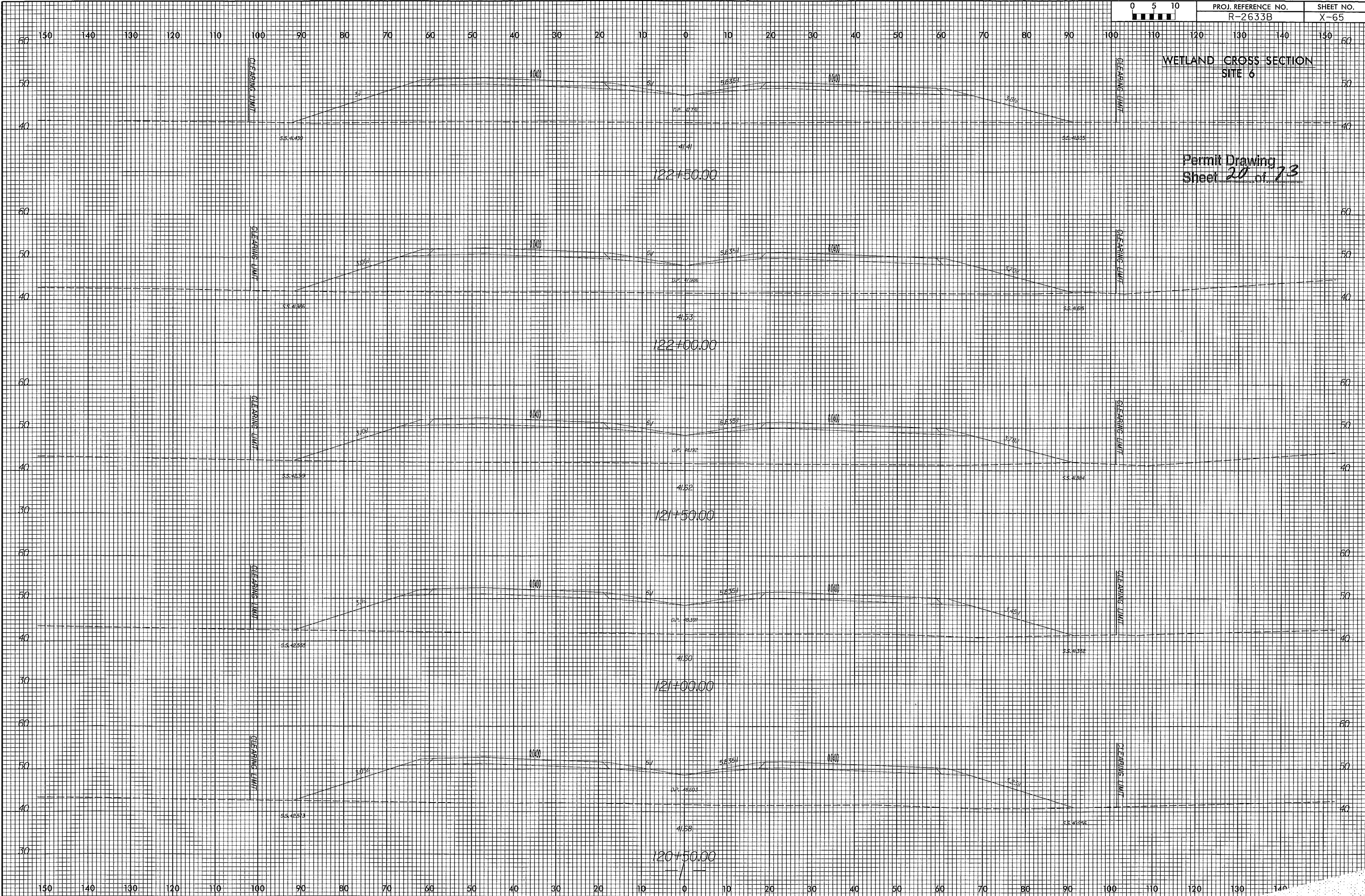


PROJ. REFERENCE NO.
R-2633B

SHEET NO.
X-65

WETLAND CROSS SECTION
SITE 6

Permit Drawing
Sheet 20 of 23



8/17/99

REVISIONS

10/ /09 - CHANGED PARCEL #1 TO IIA COMBINED PARCEL 13 AND 14 AND ELIMINATED 14. CORRECTED PROPERTY LINES AND RAILROAD R/W LINE ON PARCEL 15.
1/ /11 - CHANGED PARCEL #13 TO 13A ADDED CA AND FENCE TO RAILROAD R/W. CHANGED STATION ON MONUMENT TO 142+319.17.

2/8/2013
R:\Hydro\Permit\Stream & Wetland\2633B\hyd.prm.wet.psh13.dgn

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 21 of 23

Q10 = 2.03 cfs
V10 = 1.02 fps

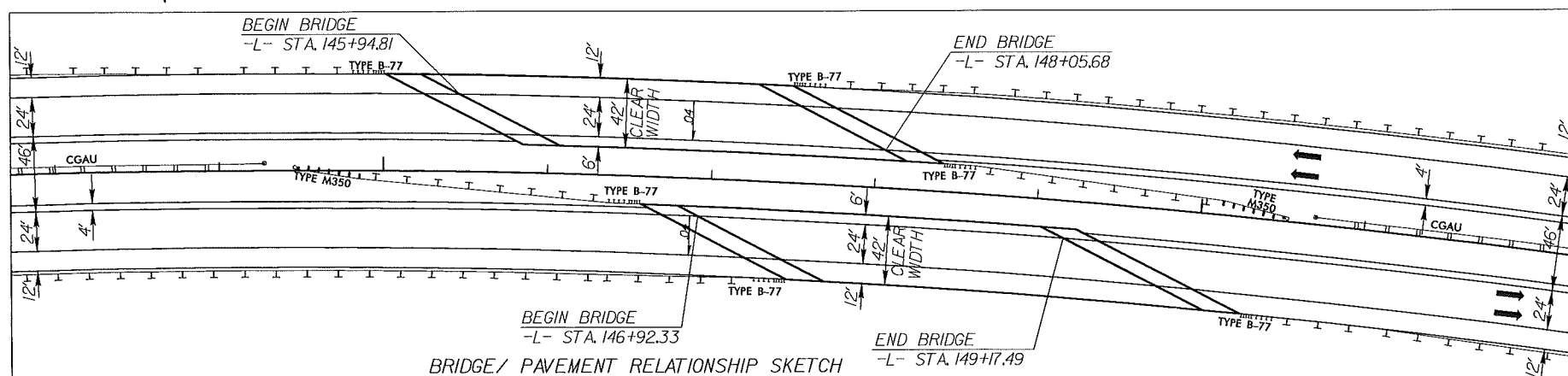
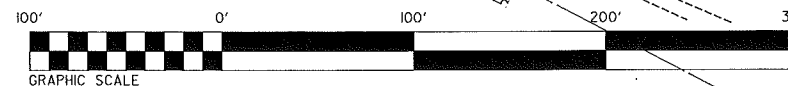
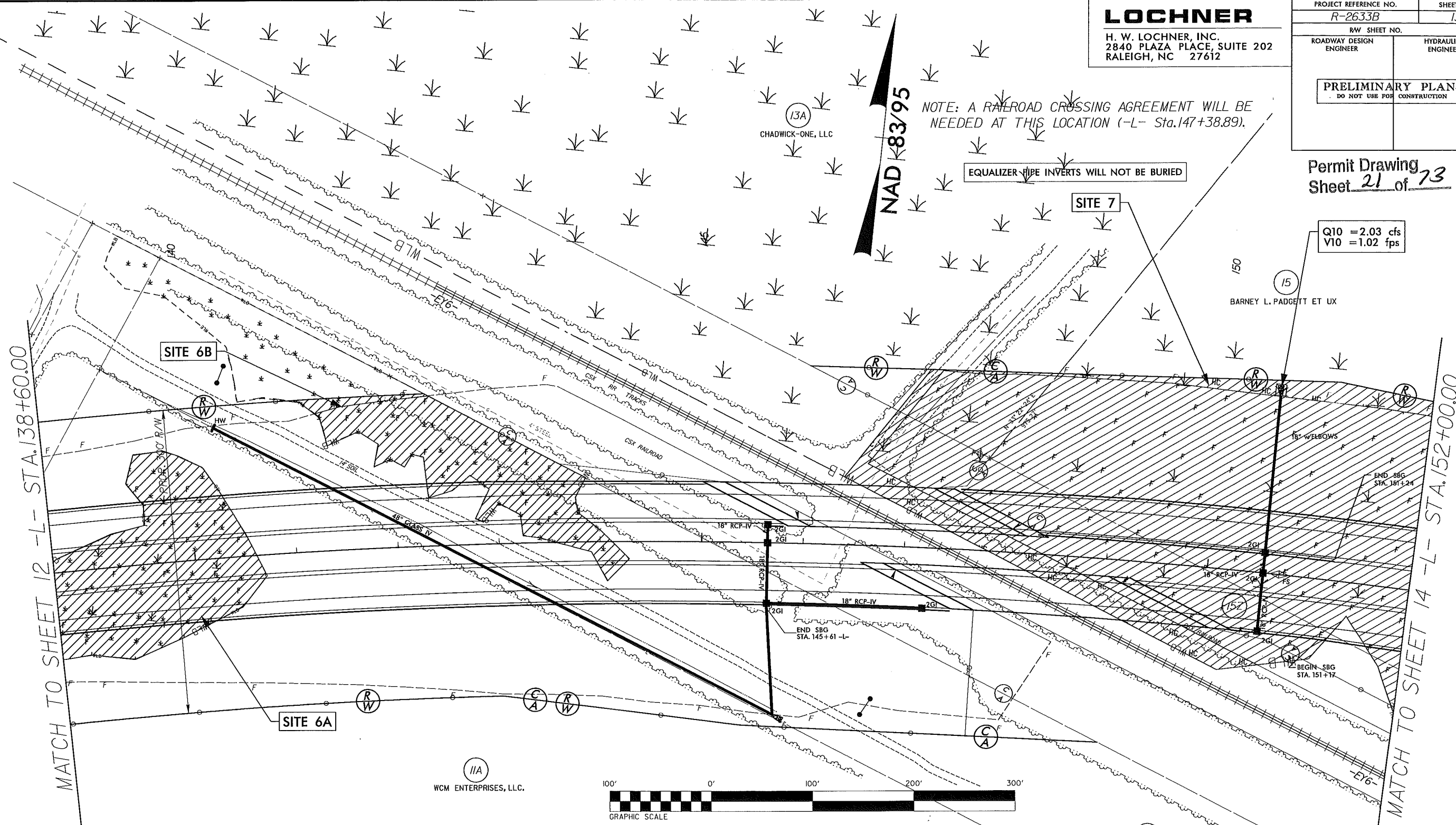
NOTE: A RAILROAD CROSSING AGREEMENT WILL BE NEEDED AT THIS LOCATION (-L- Sta.147+38.89).

EQUALIZER PIPE INVERTS WILL NOT BE BURIED

NAD 83/95

13A
CHADWICK-ONE, LLC

150
15
BARNEY L. PADGETT ET UX



F F DENOTES FILL IN WETLAND
HC HC DENOTES HAND CLEARING

SEE SHEET 46 FOR -L- PROFILE

REVISIONS
10/ /09 - CHANGED PARCEL #11 TO IIA, COMBINED PARCEL 13 AND 14 AND ELIMINATED 14, CORRECTED PROPERTY LINES AND RAILROAD R/W LINE ON PARCEL 15.
1/ /11 - CHANGED PARCEL #13 TO 13A, ADDED CA AND FENCE TO RAILROAD R/W, CHANGED STATION ON MONUMENT TO 142+319.17.

8/17/99

2/8/2013
R:\Hydro\Permit\Stream & Wetland\2633B\hyd.prm_wet.psh13.dgn
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LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 22 of 23

Q10 = 2.03 cfs
V10 = 1.02 fps

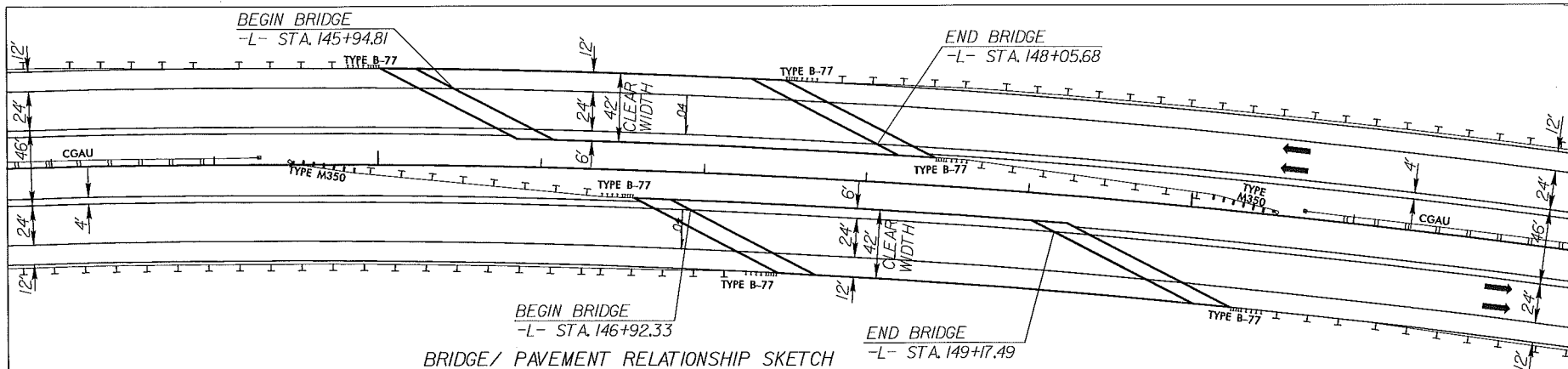
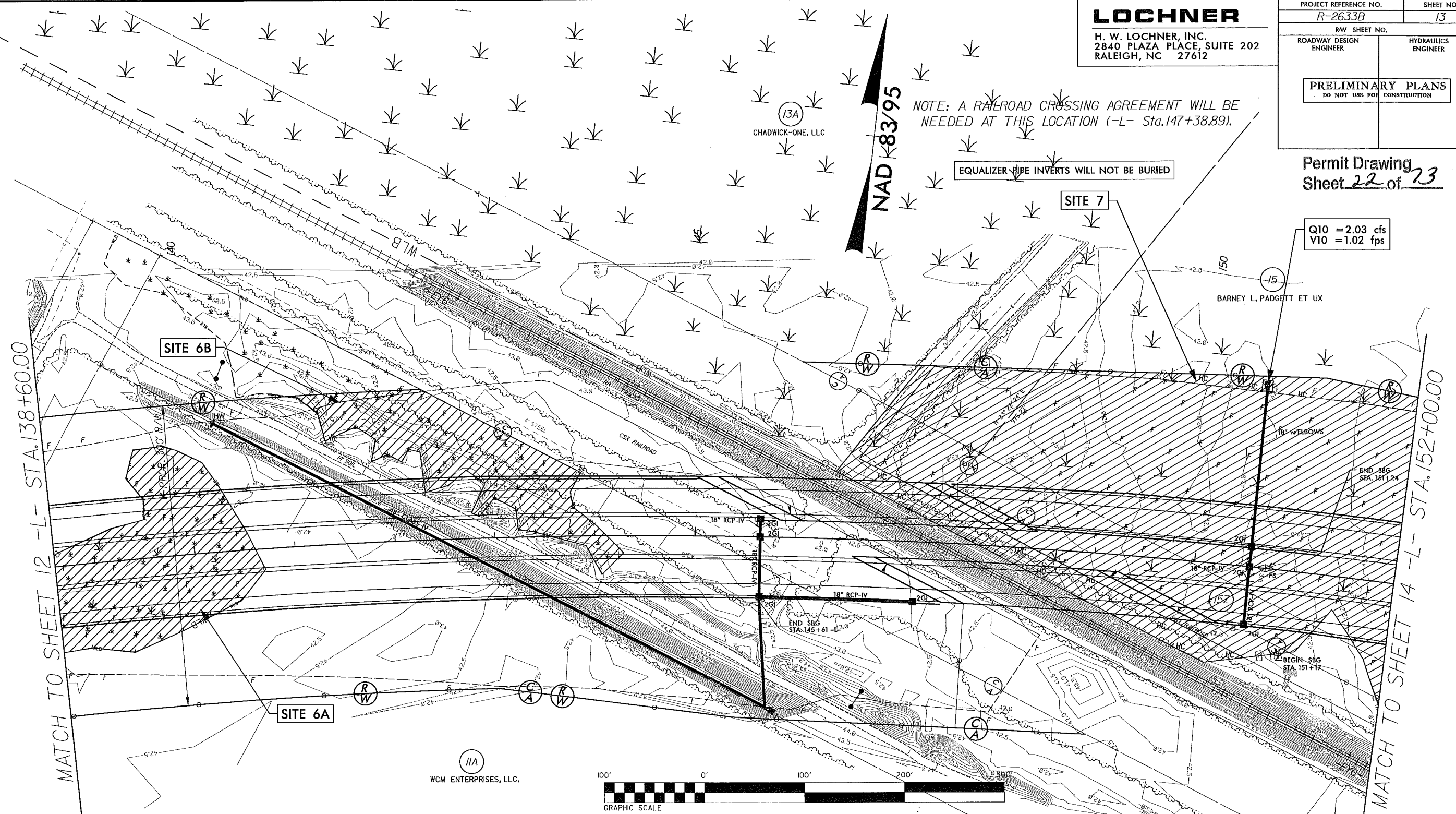
NOTE: A RAILROAD CROSSING AGREEMENT WILL BE NEEDED AT THIS LOCATION (-L- Sta.147+38.89).

EQUALIZER PIPE INVERTS WILL NOT BE BURIED

NAD 83/95

(13A)
CHADWICK-ONE, LLC

BARNEY L. PADGETT ET UX



F F DENOTES FILL IN WETLAND
HC HC DENOTES HAND CLEARING

SEE SHEET 46 FOR -L- PROFILE

8/23/99

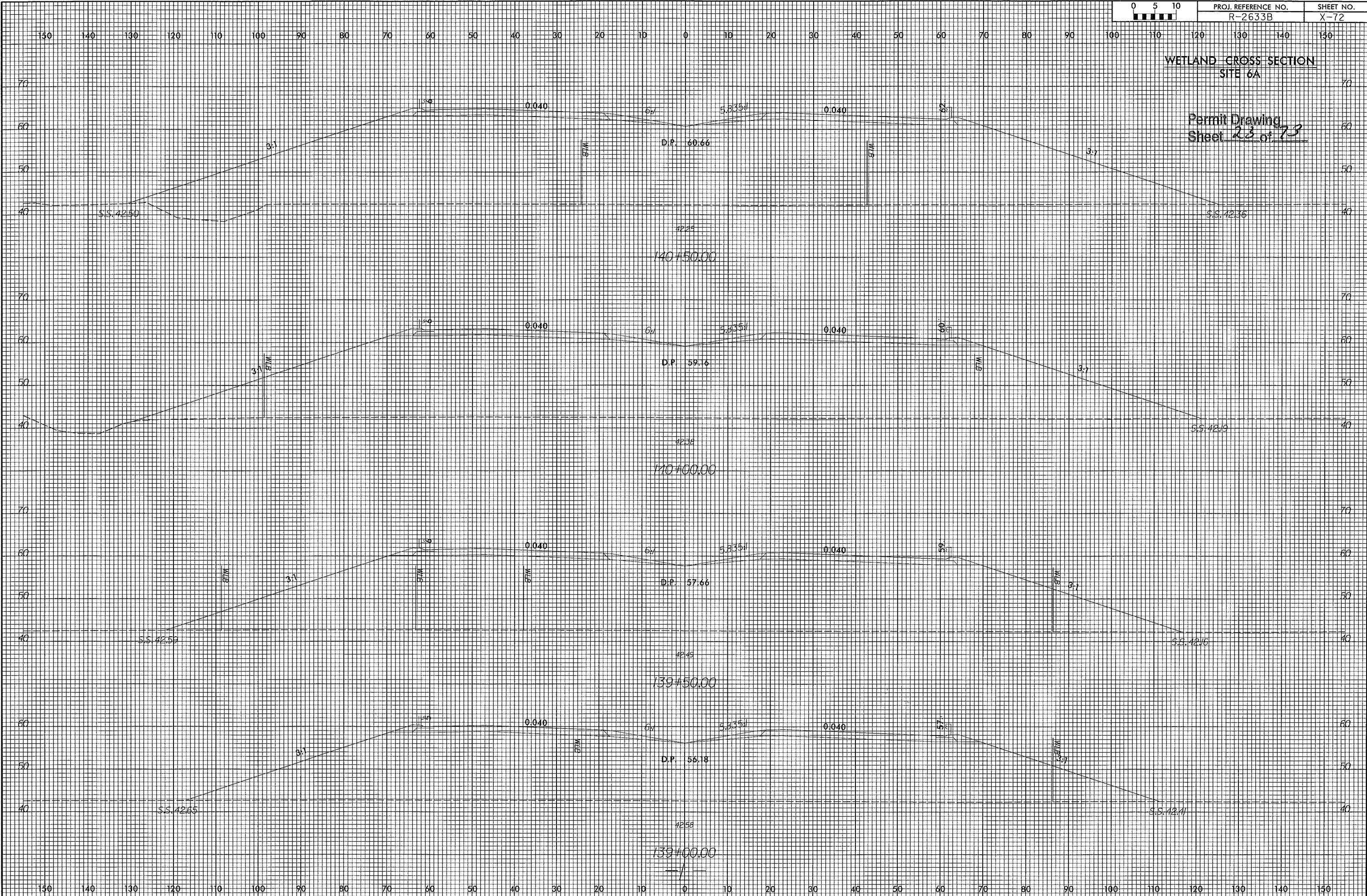


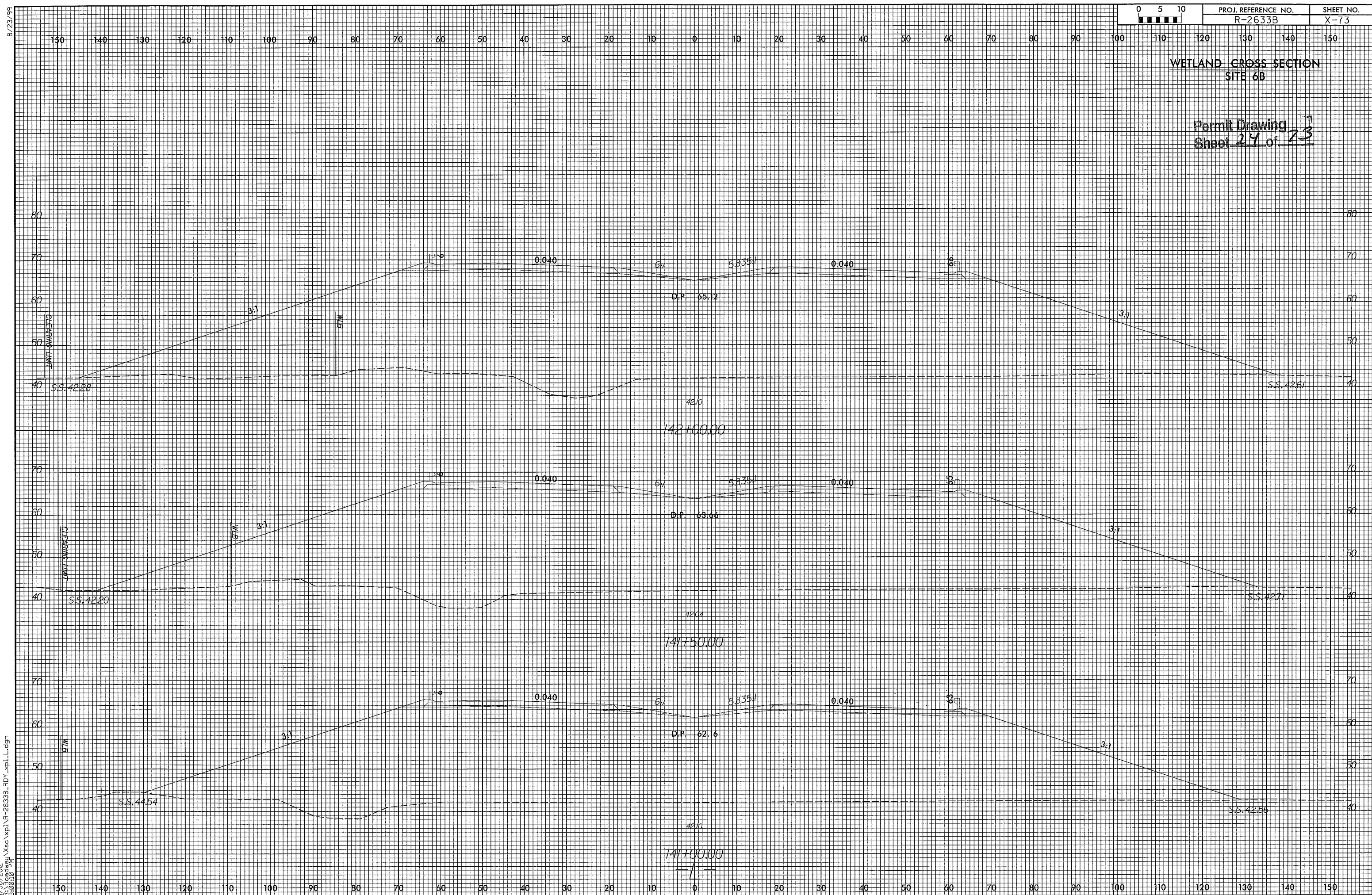
PROJ. REFERENCE NO.
R-2633B

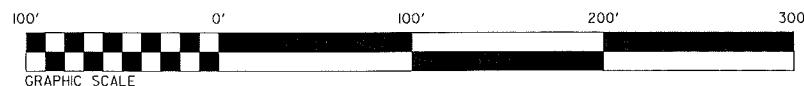
SHEET NO.
X-72

WETLAND CROSS SECTION
SITE 6A

Permit Drawing
Sheet 23 of 23





Permit Drawing
Sheet 25 of 73

DENOTES FILL IN
WETLAND

DENOTES HAND
CLEARING

EQUALIZER PIPE INVERTS WILL NOT BE BURIED

NIAD 83/95

NIAD 83/95

15
BARNEY L. PADGETT ET UX

SITE 7

Q10 = 0.51 cfs
V10 = 0.78 fps

Q10 = 6.68 cfs
V10 = 1.14 fps

Q10 $\frac{1}{2}$ 6.06 cfs
V10 $\frac{1}{2}$ 1.10 fps

15
BARNEY L. PADGETT ET UX

MATCH TO SALE!

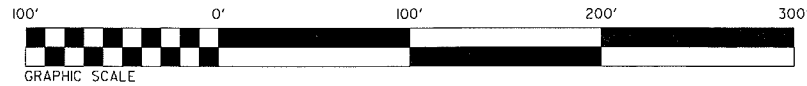
MATCH IS

WCM ENTERPRISES, LLC

SEE SHEET 47 FOR -L- PROFILE	SEE SHEET 64 FOR -RAMP_B2- PROFILE
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8/17/99



DENOTES FILL IN
WETLAND



DENOTES HAND
CLEARING

EQUALIZER PIPE INVERTS WILL NOT BE BURIED

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.

R-2633B

SHEET NO.

14

R/W SHEET NO.

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 26 of 73

NAD 83/95

15
BARNEY L. PADGETT ET UX

160

SITE 7

Q10 = 0.51 cfs
V10 = 0.78 fps

Q10 = 6.68 cfs
V10 = 1.14 fps

Q10 = 6.06 cfs
V10 = 1.10 fps

15
BARNEY L. PADGETT ET UX

IIA
WCM ENTERPRISES, LLC.

MATCH TO SHEET 13 -L- STA.152+00.00

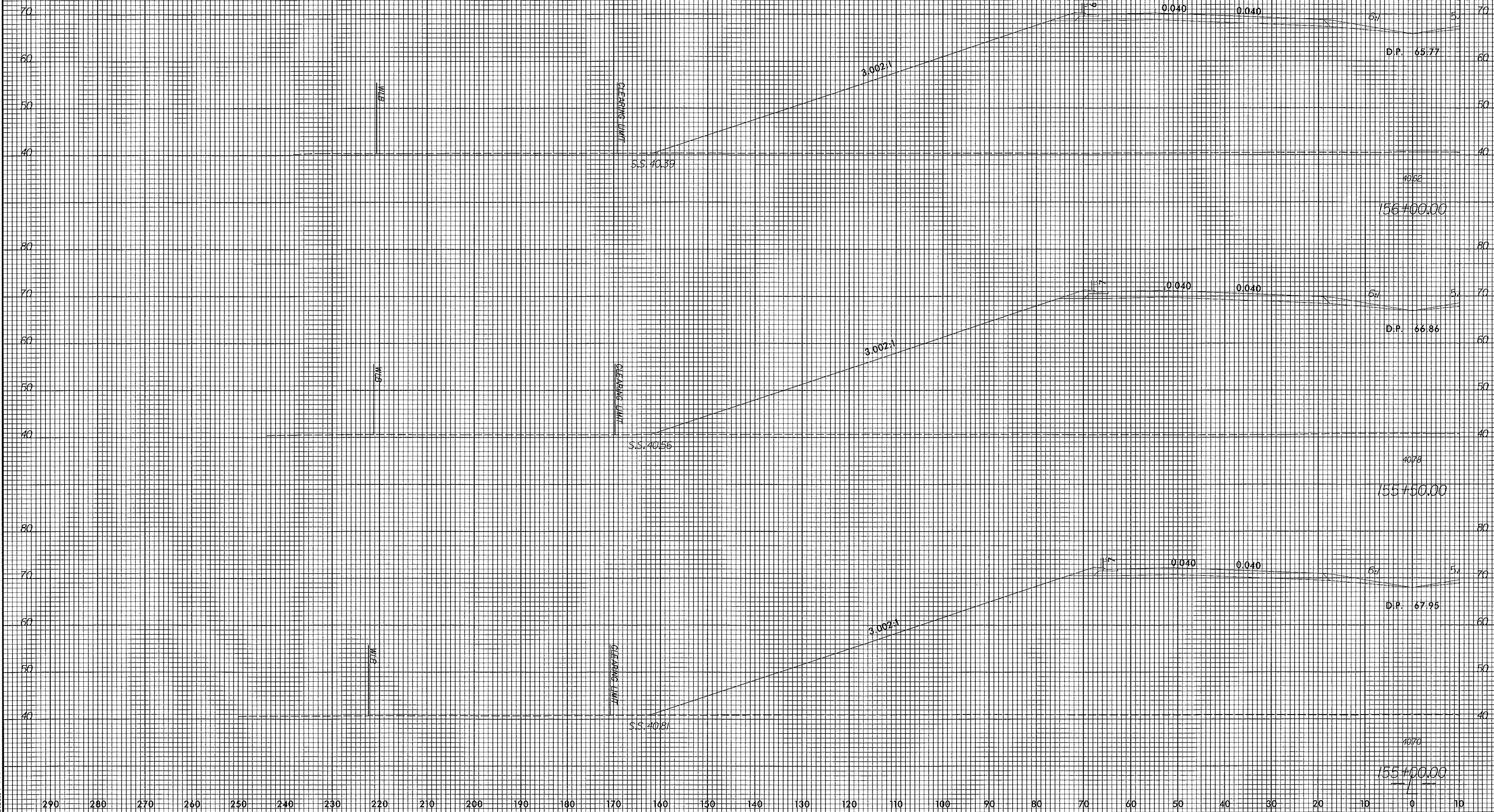
MATCH TO SHEET 15 -L- STA.166+00.00

SEE SHEET 47 FOR -L- PROFILE SEE SHEET 64 FOR -RAMP.B2- PROFILE

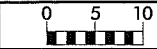
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R-2633B			X-83	
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260	250	240	20	10
230	220	210		
200	190	180		
170	160	150		
140	130	120		
110	100	90		
80	70	60		
50	40	30		
20	10	0		
10	0	10		

WETLAND CROSS SECTION
SITE 7

Permit Drawing
Sheet 27 of 73



8/23/99



PROJ. REFERENCE NO.

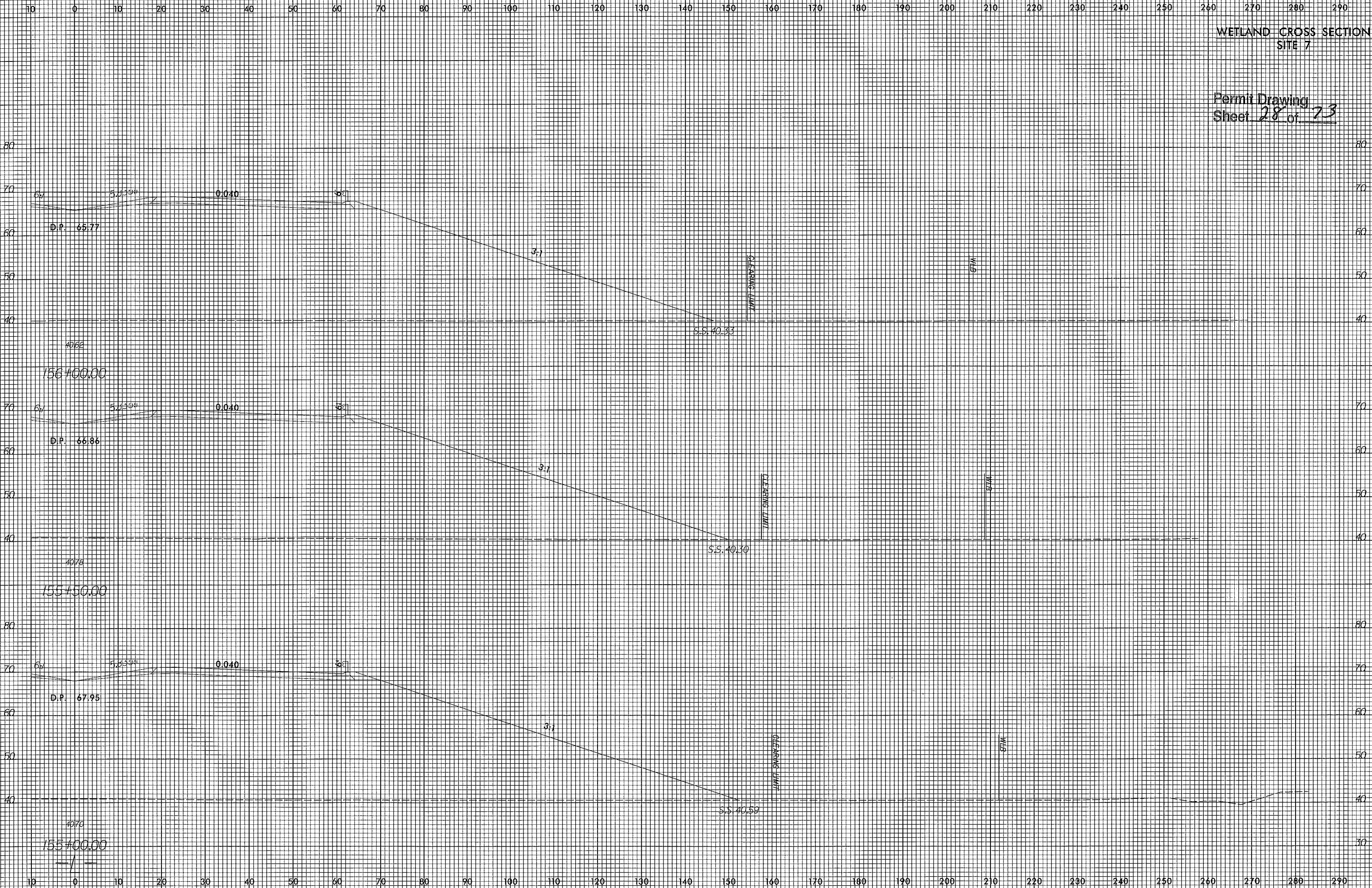
R-2633B

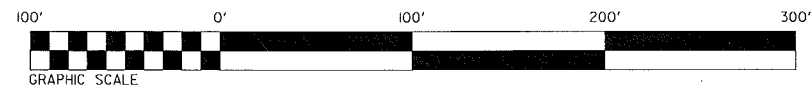
SHEET NO.

X-108

WETLAND CROSS SECTION
SITE 7

Permit Drawing
Sheet 28 of 23





LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

INFORMATION PROVIDED ON
THIS PLAN SHEET IS FROM
INTERCHANGE PLAN SHEET 15

PROJECT REFERENCE NO.

R-2633B

SHEET NO.

15

RW SHEET NO. _____

ROADWAY DESIGN
ENGINEER

**HYDRAULICS
ENGINEER**

PRELIMINARY PLANS

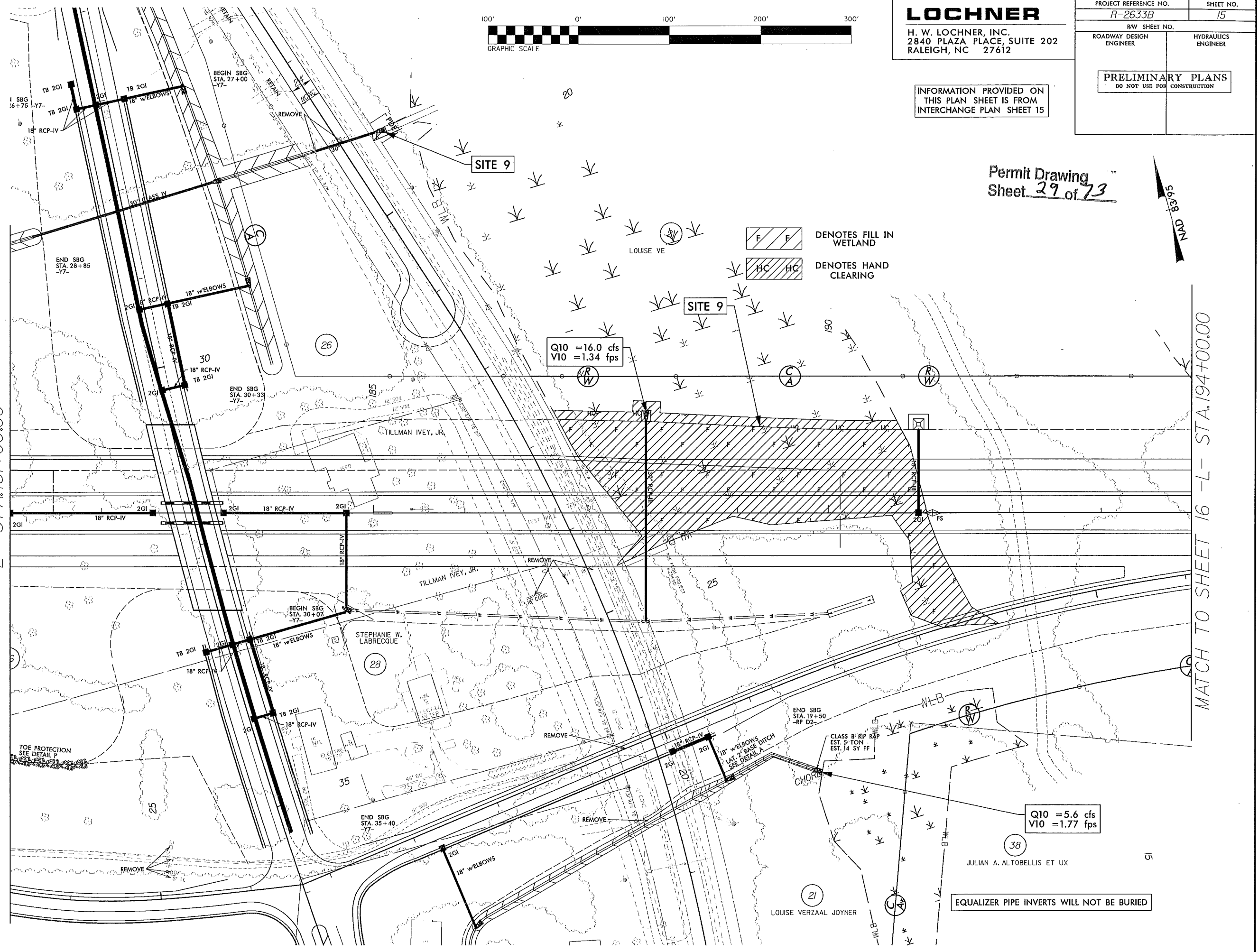
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 29 of 73

NAD 83/95

-L- STA. 181+00.00

MATCH TO SHEET 16 -L- STA. 194+00.00

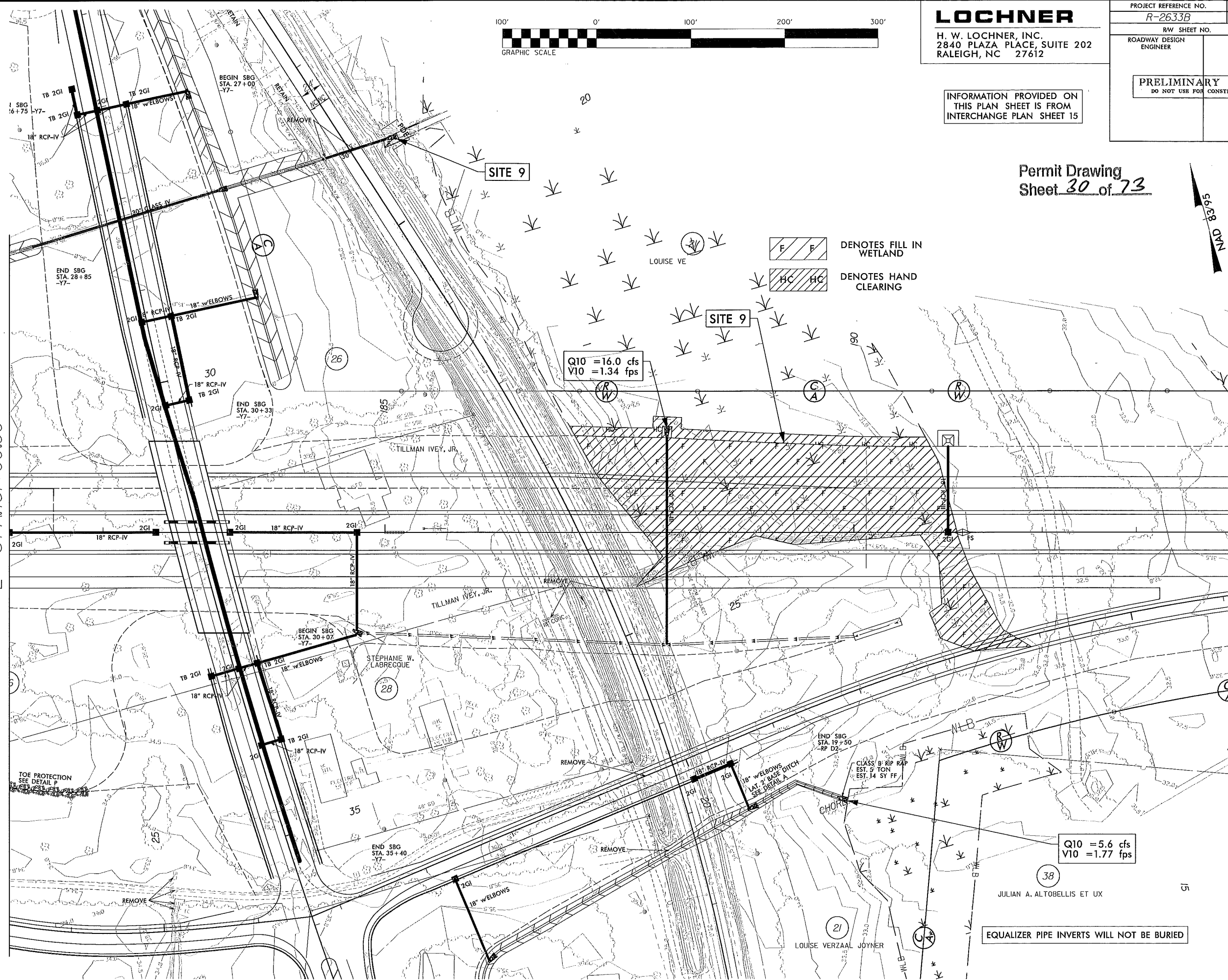


8/17/99

REVISIONS

12/3/2012
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-L- STA. 81+00.00



MATCH TO SHEET 16 -L- STA. 194+00.00

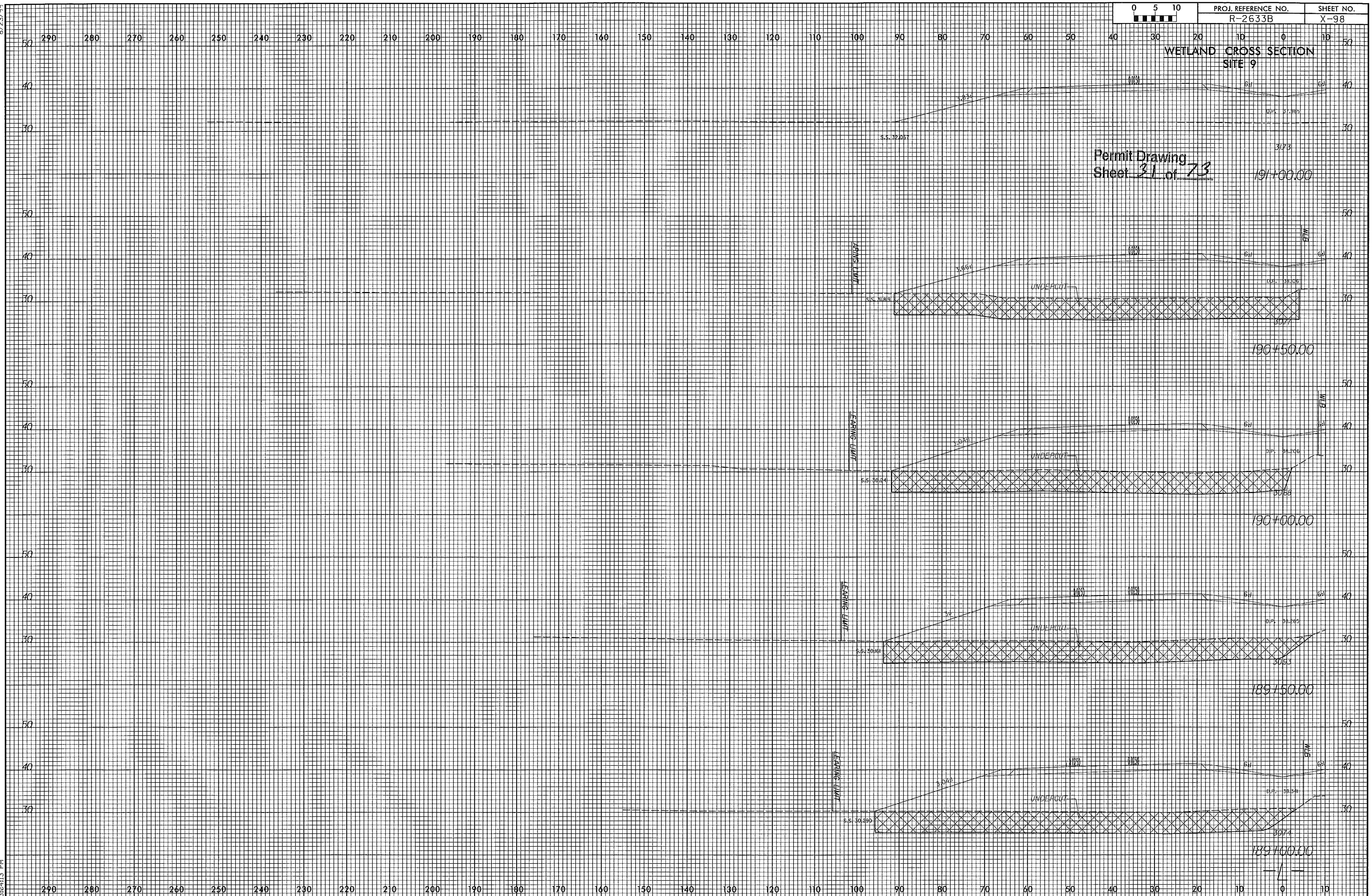
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

INFORMATION PROVIDED ON
THIS PLAN SHEET IS FROM
INTERCHANGE PLAN SHEET 15

PROJECT REFERENCE NO. <i>R-2633B</i>		SHEET NO. <i>15</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

Permit Drawing
Sheet 30 of 73

EQUALIZER PIPE INVERTS WILL NOT BE BURIED

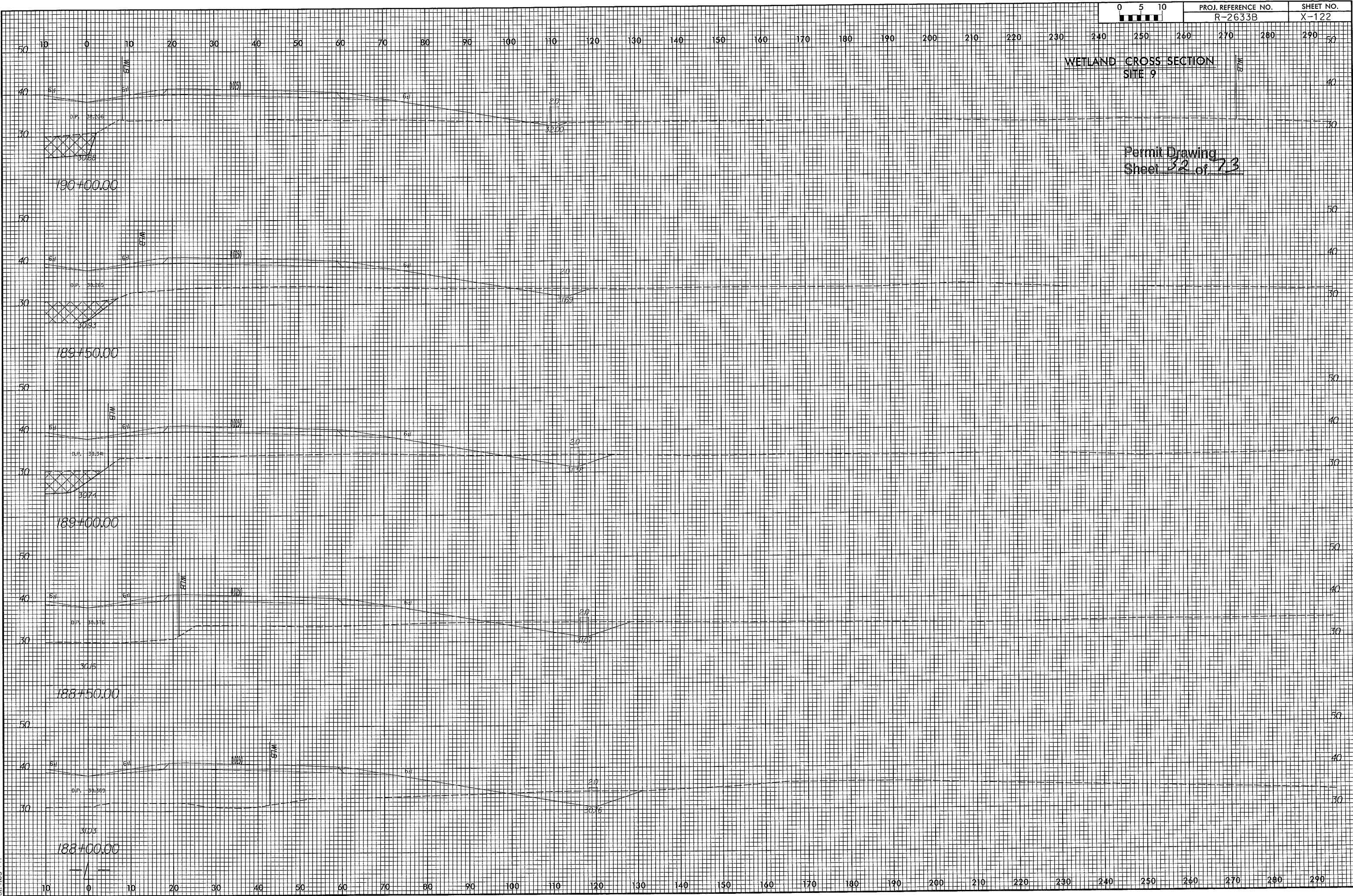


8/23/99

11/30/2012
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WETLAND CROSS SECTION
SITE 9

Permit Drawing
Sheet 32 of 73



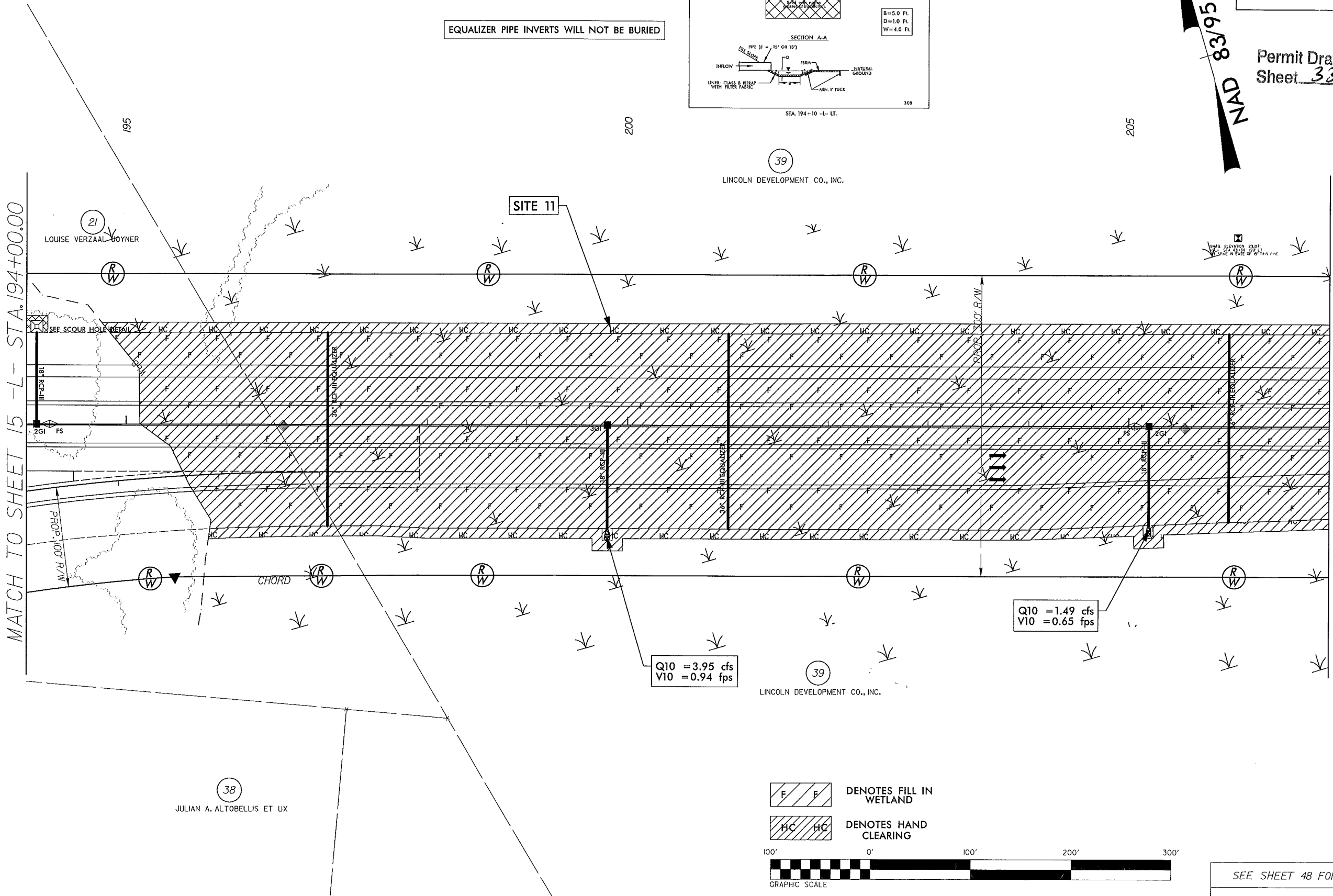
8/17/99

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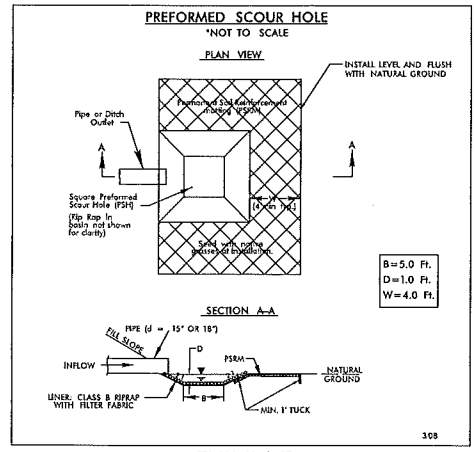
REVISIONS

MATCH TO SHEET 15 -L- STA.194+00.00

MATCH TO SHEET 17 -L- STA.207+00.00



EQUALIZER PIPE INVERTS WILL NOT BE BURIED



LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

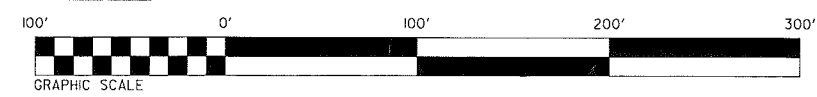
PROJECT REFERENCE NO. R-2633B	SHEET NO. 16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 33 of 73

NAD 83/95

38
JULIAN A. ALTABELLIS ET UX

F F DENOTES FILL IN WETLAND
HC HC DENOTES HAND CLEARING



Q10 = 1.49 cfs
V10 = 0.65 fps

Q10 = 3.95 cfs
V10 = 0.94 fps

SEE SHEET 48 FOR -L- PROFILE
SEE SHEET 66 FOR -RAMP_D2- PROFILE

8/17/99

REVISIONS

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7/15/99

LOCHNER

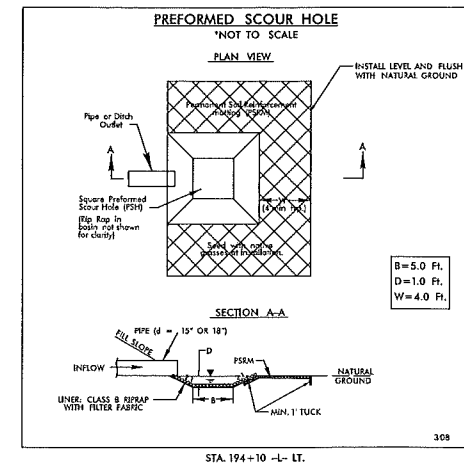
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B	SHEET NO. 16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 34 of 73

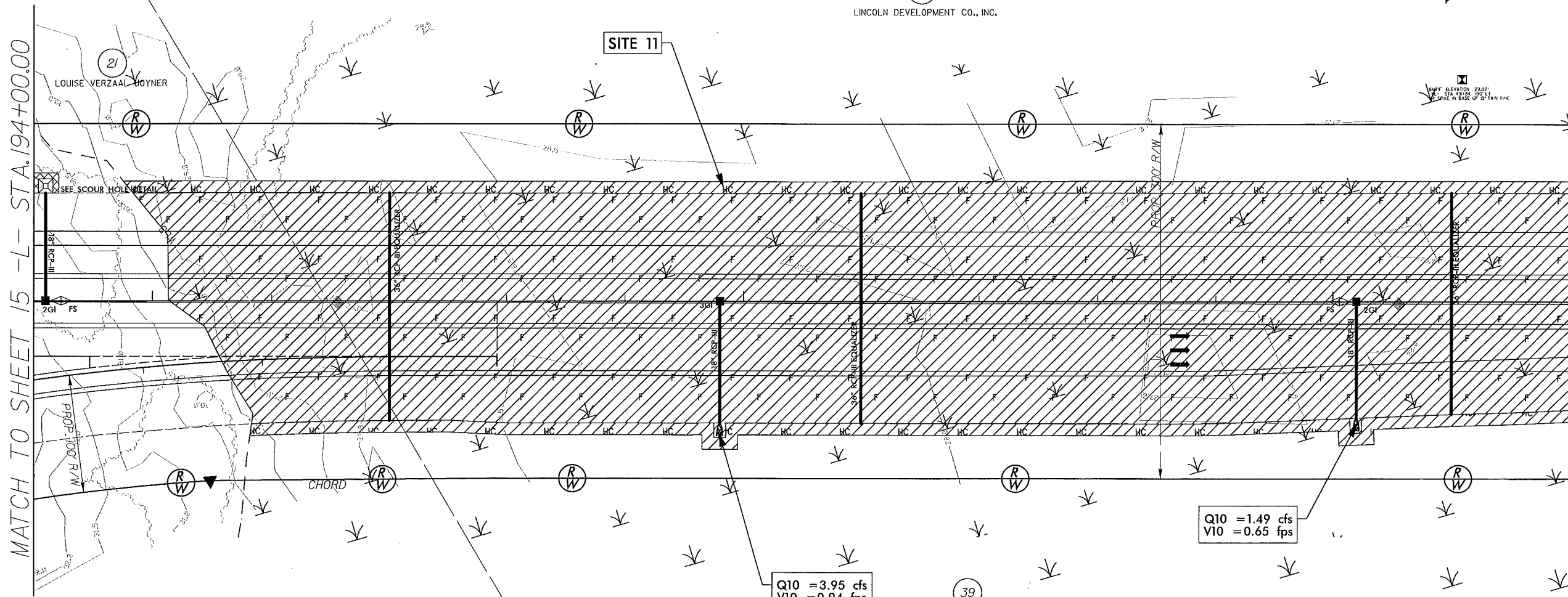
83/95
NAD

EQUALIZER PIPE INVERTS WILL NOT BE BURIED



MATCH TO SHEET 15 -L- STA. 194+00.00

MATCH TO SHEET 17 -L- STA. 207+00.00

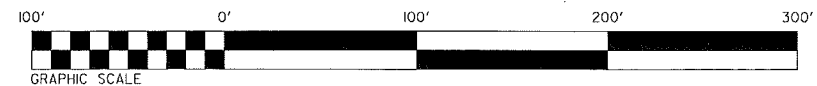


Q10 = 3.95 cfs
V10 = 0.94 fps

Q10 = 1.49 cfs
V10 = 0.65 fps

F F DENOTES FILL IN WETLAND

HC HC DENOTES HAND CLEARING



SEE SHEET 48 FOR -L- PROFILE

SEE SHEET 66 FOR -RAMP_D2- PROFILE

38
JULIAN A. ALTABELLIS ET UX

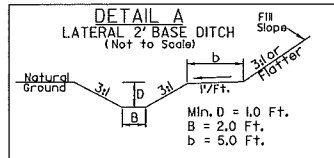
39
LINCOLN DEVELOPMENT CO., INC.

39
LINCOLN DEVELOPMENT CO., INC.

8/17/99

11/30/2002
H:\Hydro\Projects\Permit\Stream & Wetland\NR-2633B_hyd_prm_wet.psh17.dgn
11/17/99

REVISIONS



FROM STA. 216+10 TO STA. 221+00 -L- LT.
FROM STA. 216+00 TO STA. 221+00 -L- RT.

EQUALIZER PIPE INVERTS WILL NOT BE BURIED

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B	SHEET NO. 17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

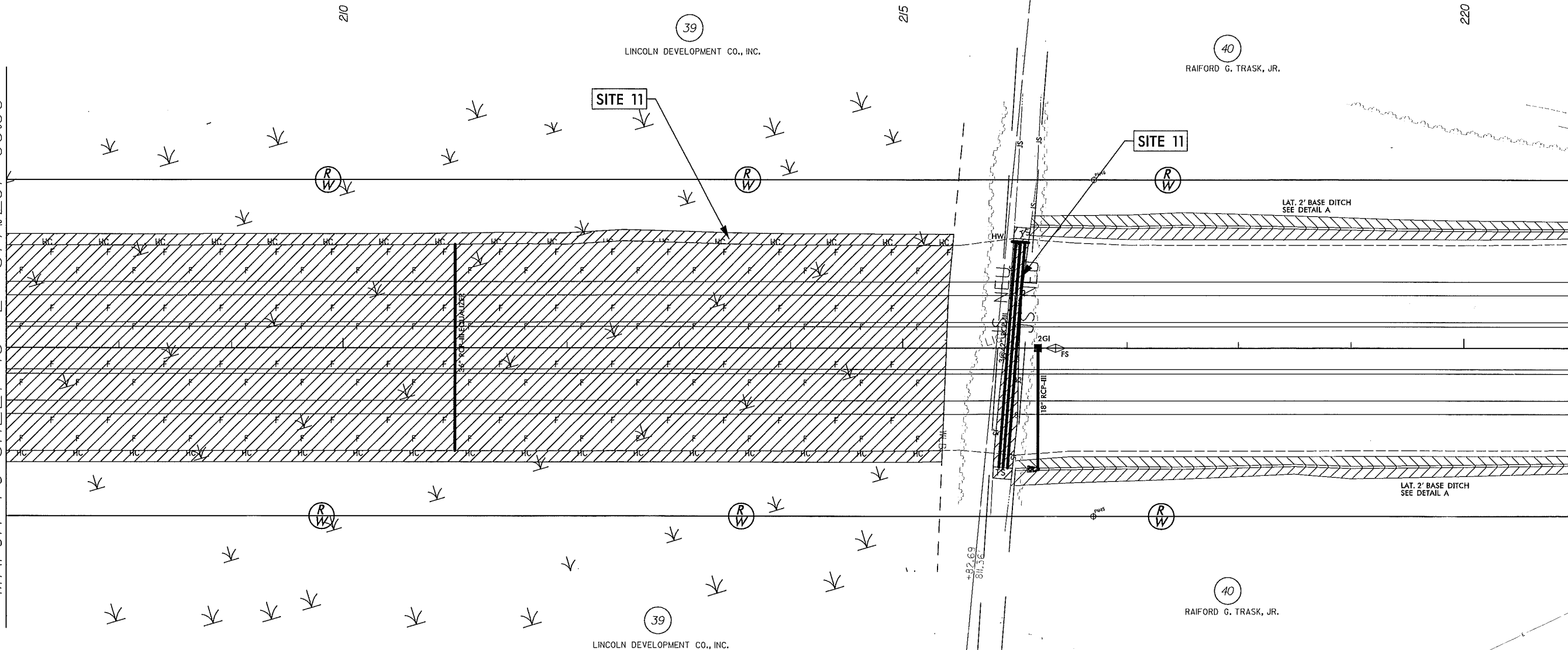
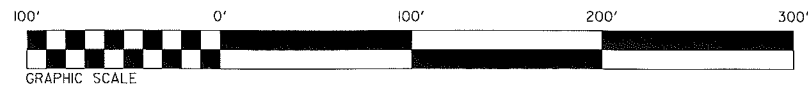
Permit Drawing
Sheet 36 of 73

NAD 83/95

MATCH TO SHEET 16 -L- STA. 207+00.00

MATCH TO SHEET 18 -L- STA. 221+00.00

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

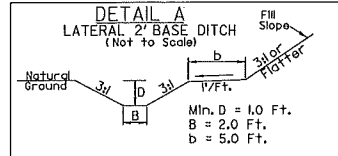


SEE SHEET 49 FOR -L- PROFILE

8/17/99

REVISIONS

I:\20\2012\Projects\Permit\Stream & Wetland\R-2633B_hyd.prm_wet.psh17.dgn
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EQUALIZER PIPE INVERTS WILL NOT BE BURIED

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	17
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 36 of 73

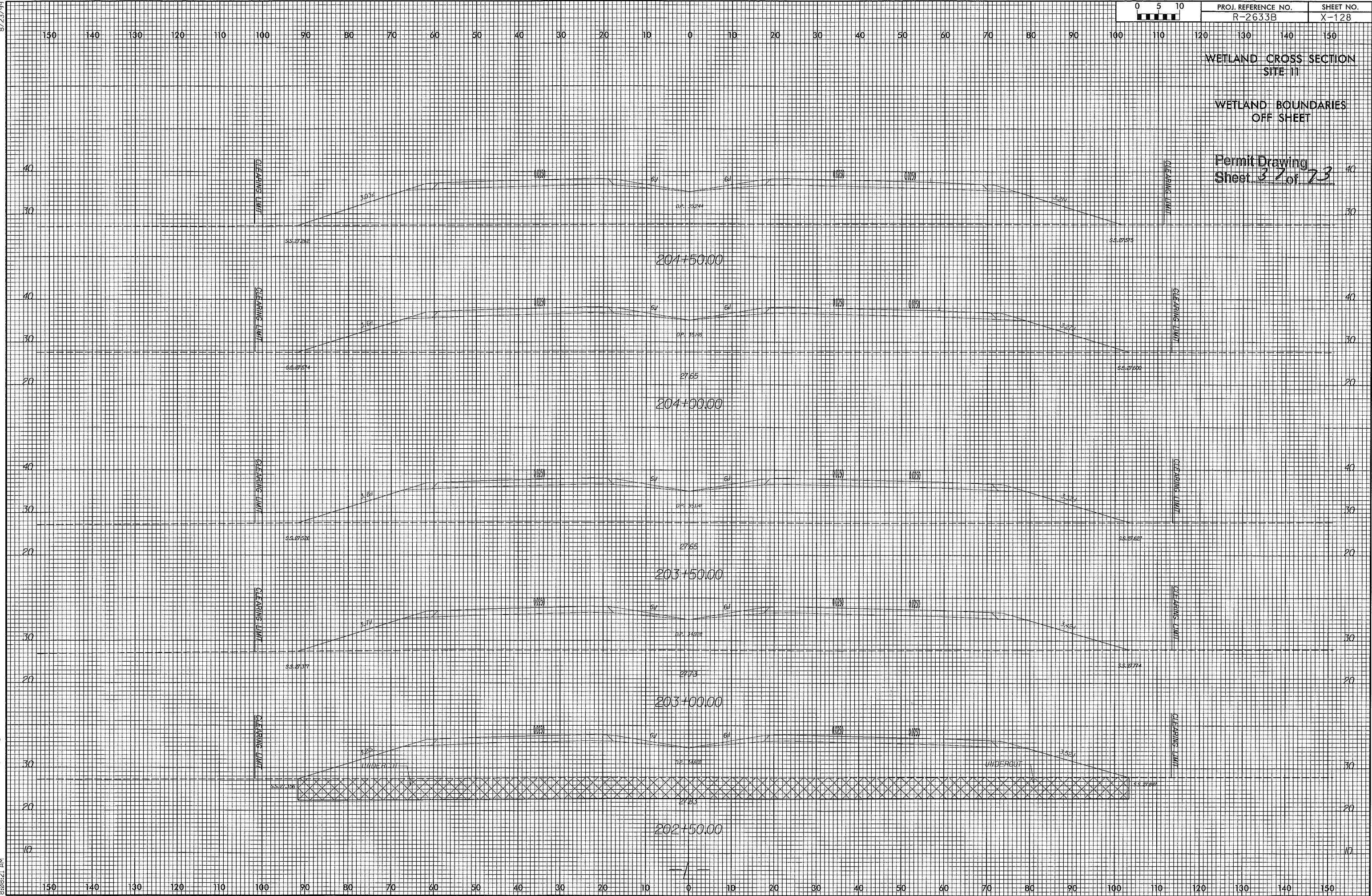
MATCH TO SHEET 16 -L- STA. 207+00.00

MATCH TO SHEET 18 -L- STA. 221+00.00

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

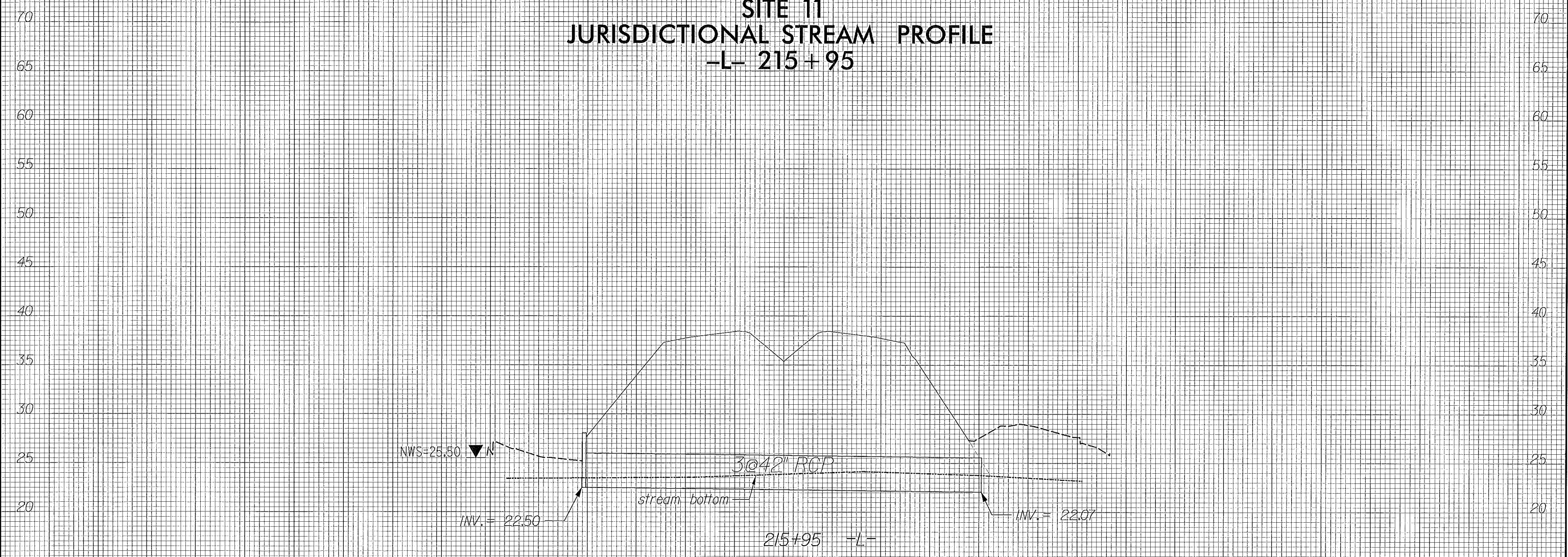


NAD 83/95



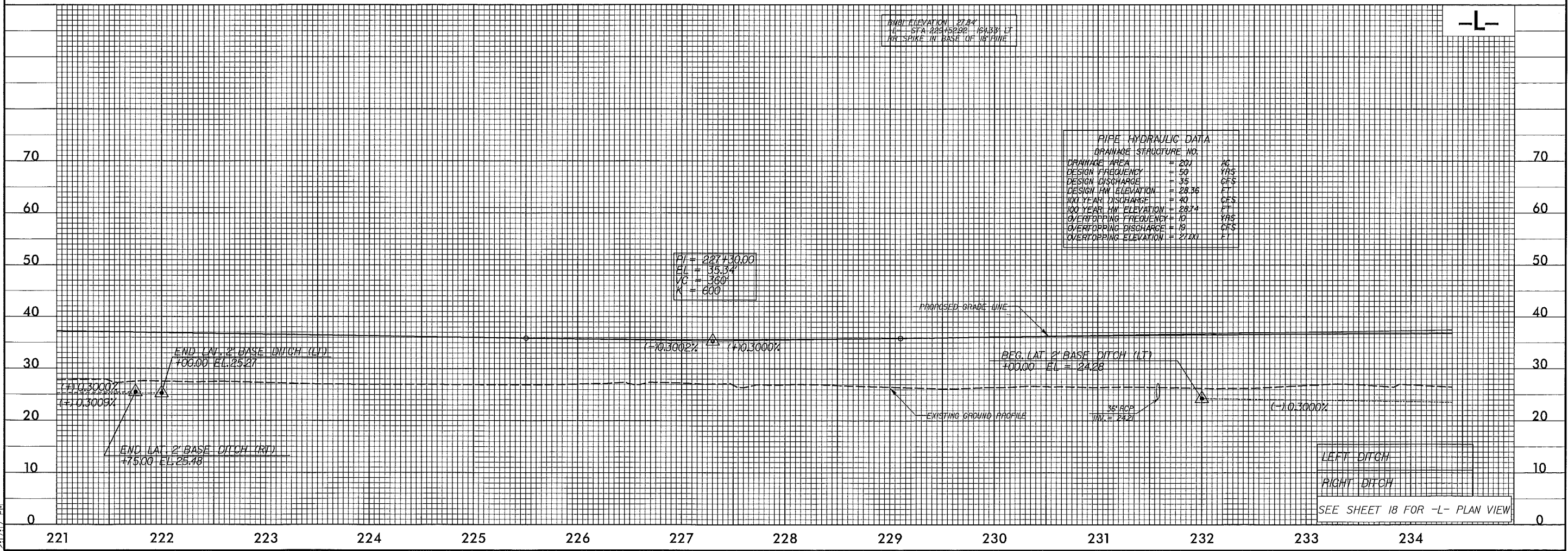
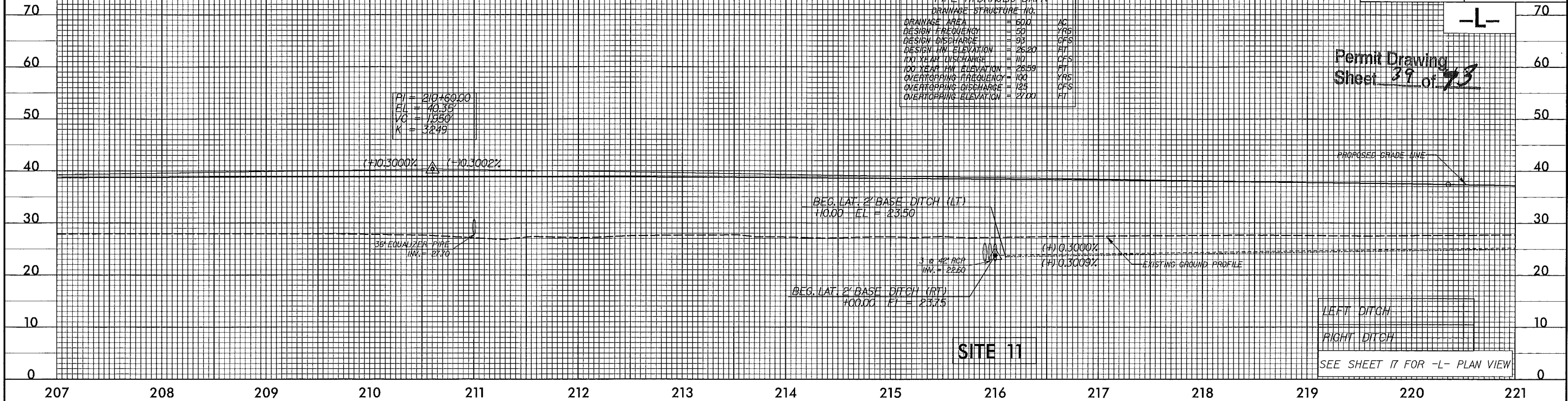
Permit Drawing
Sheet 38 of 73

SITE 11
JURISDICTIONAL STREAM PROFILE
-L- 215+95



5/28/99

PROJECT REFERENCE NO. R-2633B		SHEET NO. 49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



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2/17/99

8/17/99

REVISIONS

RPW Revision: August 5, 2008, Revised to label from -RP_C2- to -RP_C3-

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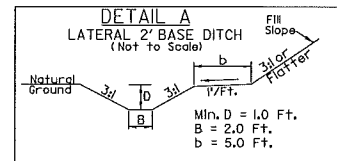
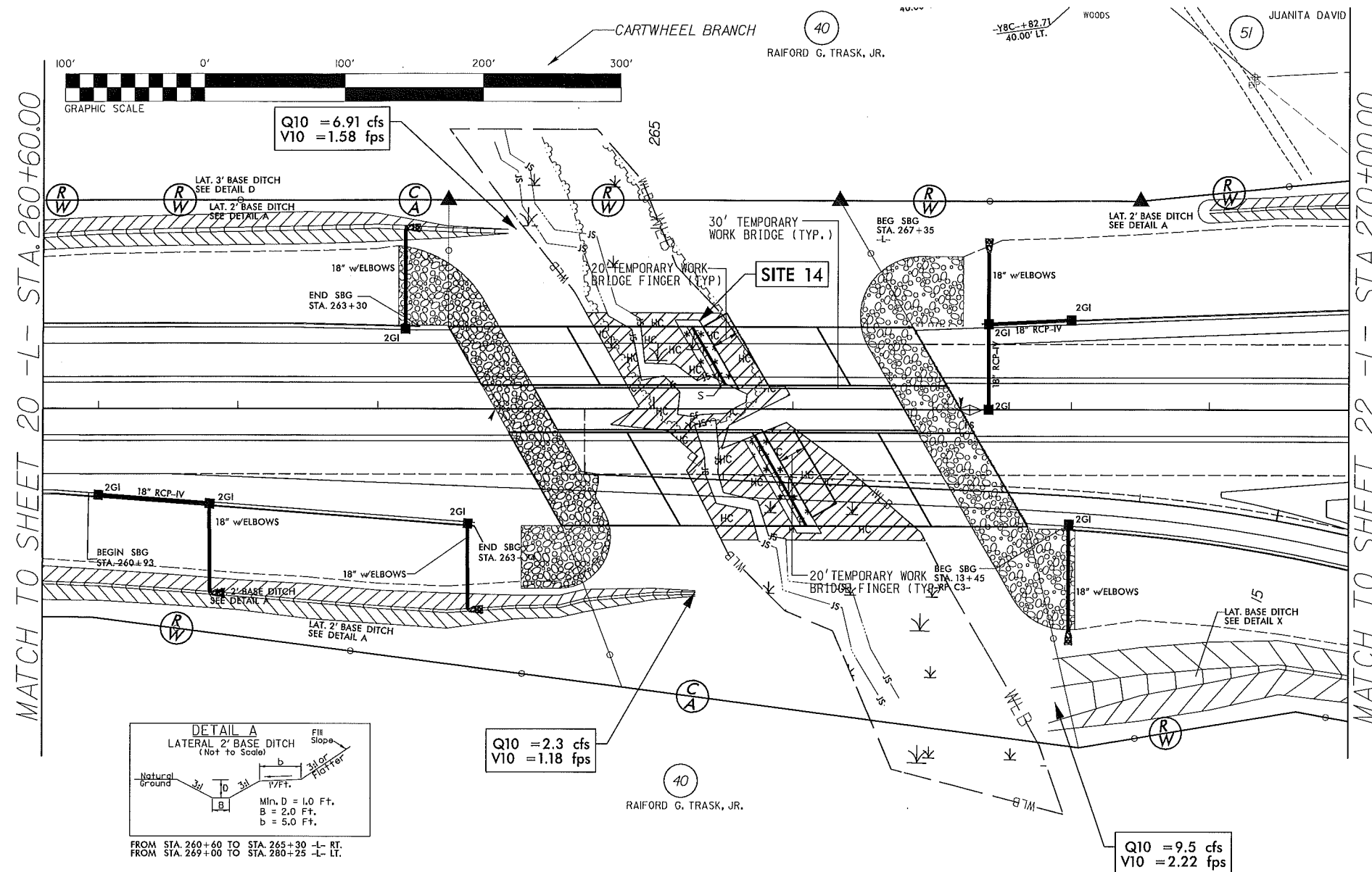
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

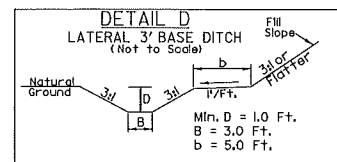
PROJECT REFERENCE NO.	SHEET NO.
R-2633B	21
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 40 of 73

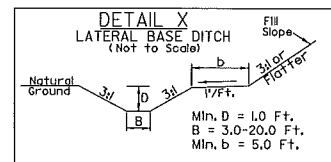
NAD 83



FROM STA. 260+60 TO STA. 263+30 -L- RT.
FROM STA. 269+00 TO STA. 280+25 -L- LT.

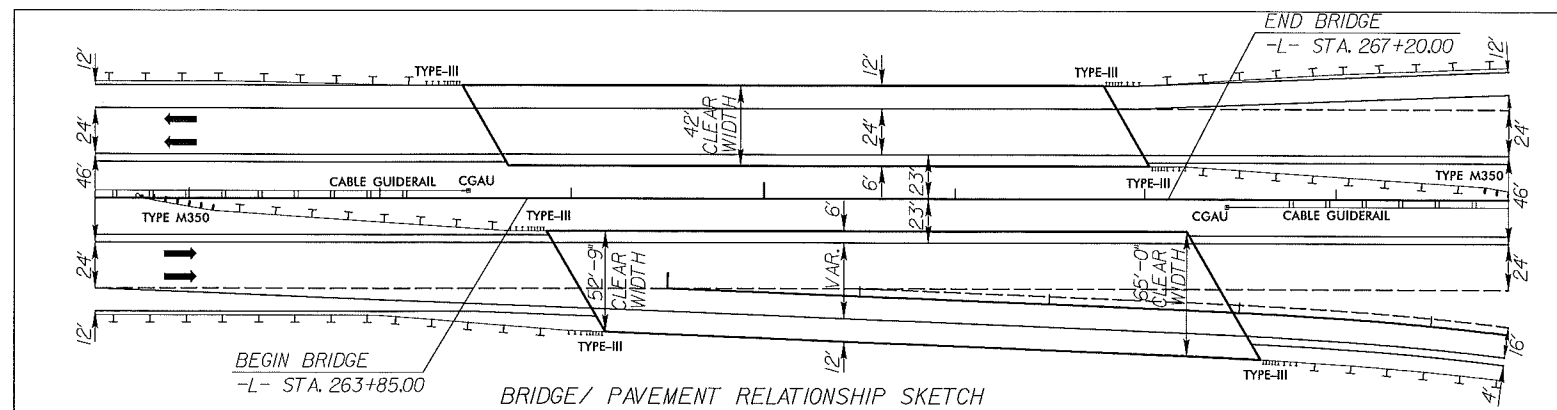


FROM STA. 260+60 TO STA. 264+00 -L- LT.



FROM STA. 13+45 TO STA. 15+75 -RP C3- RT.

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



SEE SHEETS 72 FOR -RP_C3- PROFILE
SEE SHEET 51 FOR -L- PROFILE

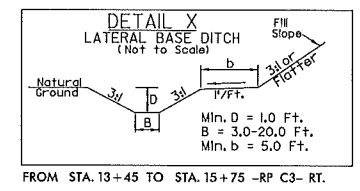
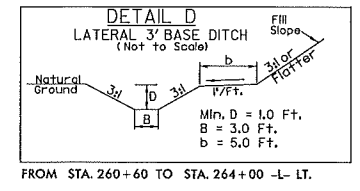
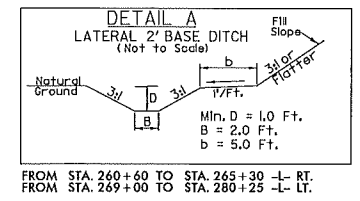
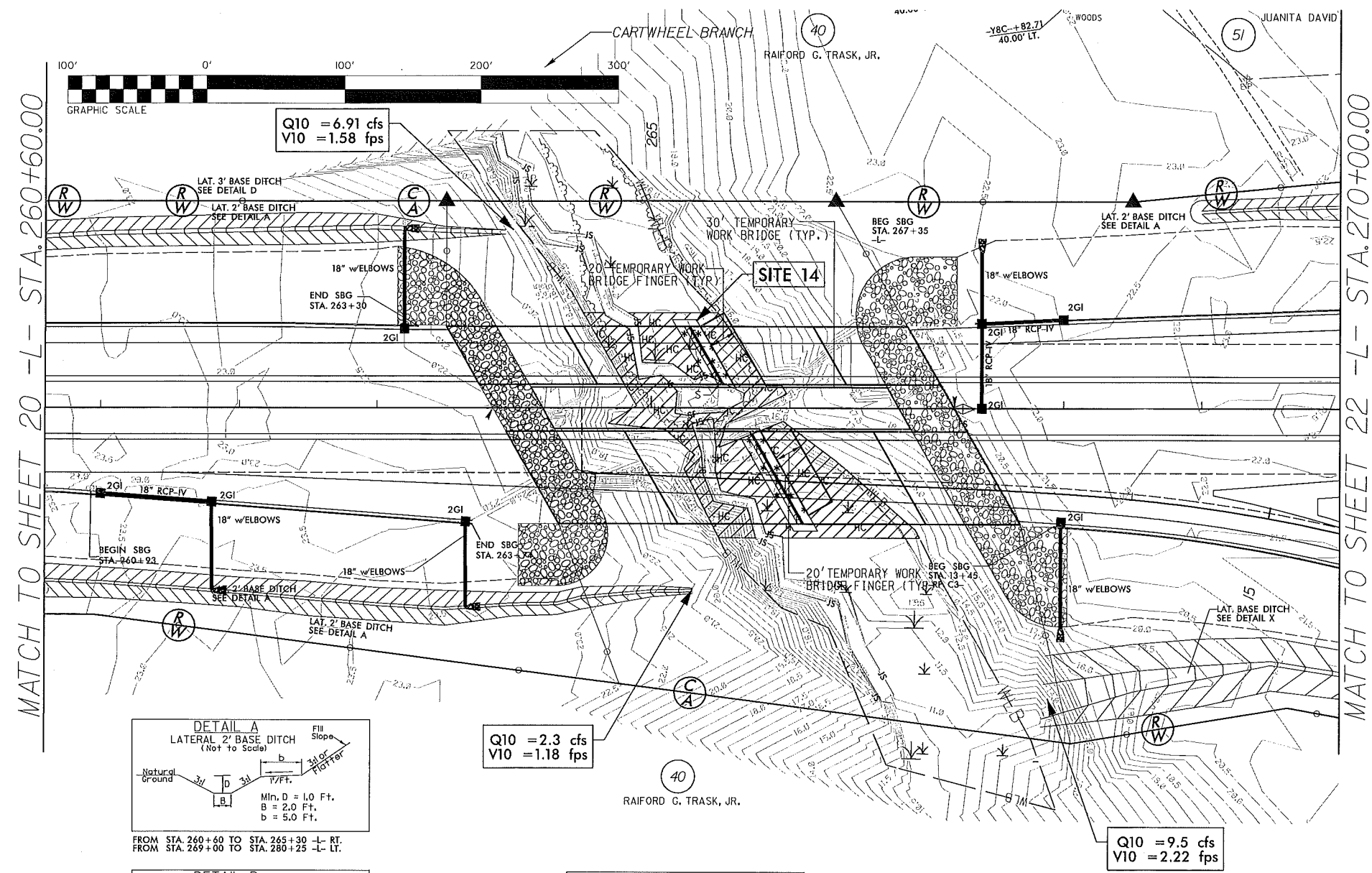
8/17/99

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

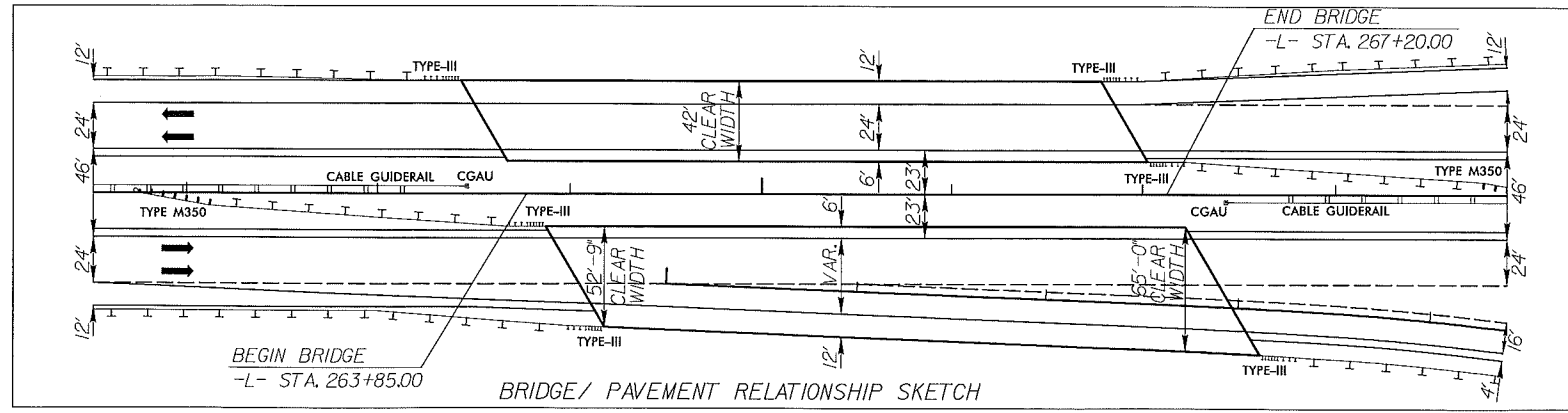
PROJECT REFERENCE NO. R-2633B	SHEET NO. 21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 41 of 73

NAD 83



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



SEE SHEETS 72 FOR -RP_C3- PROFILE
SEE SHEET 51 FOR -L- PROFILE

REVISIONS
RW Revision: August 5, 2008, Revised r/w label from -RP_C2- to -RP_C3-.

K:\30\2012
R-2633B
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5/28/99

EMBE ELEVATION BASE
LL STA 263+61.69 187.64 FT
BR SLOPE IN BASE OF BRIDGE

PROJECT REFERENCE NO.
R-2633B

SHEET NO.
51

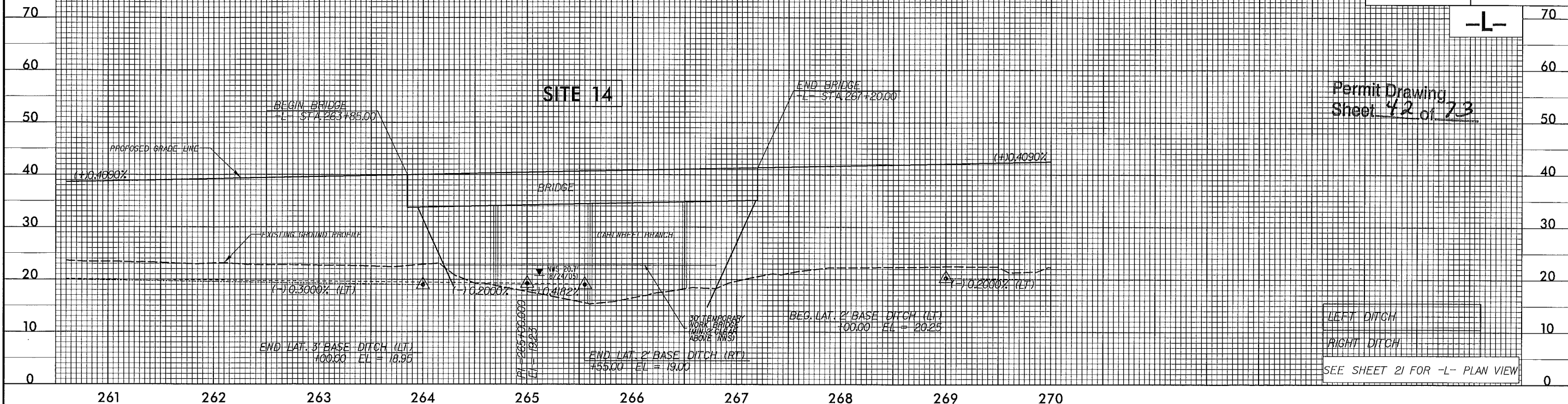
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

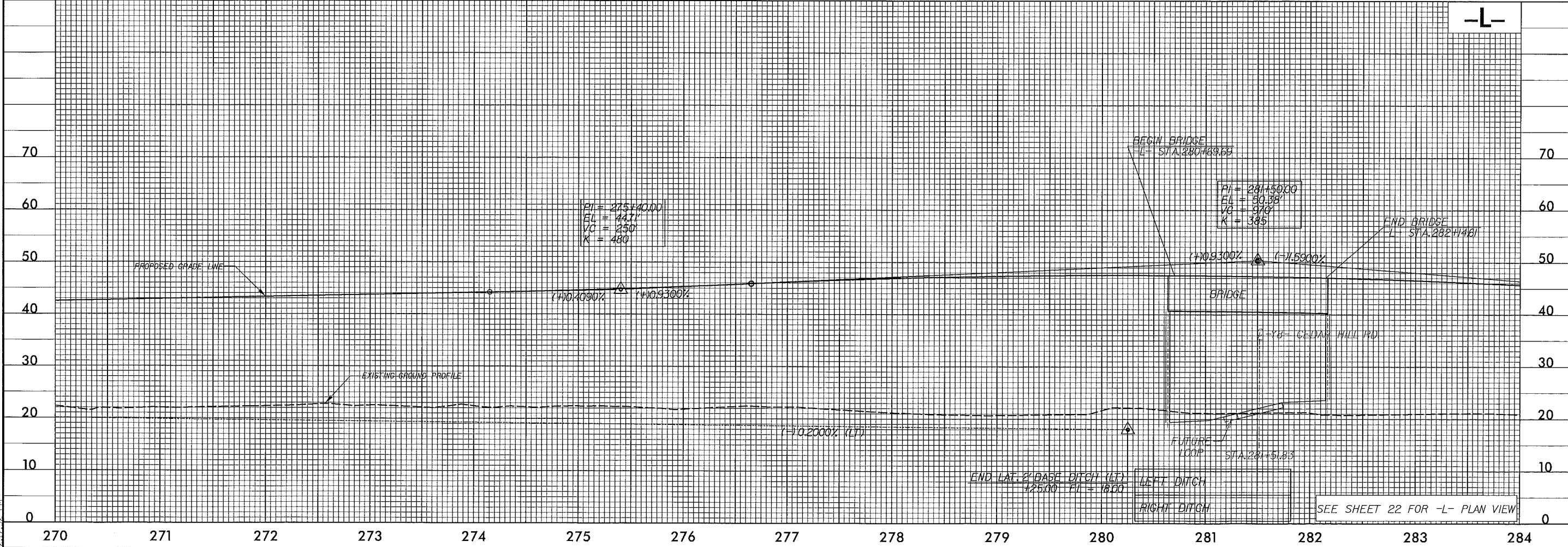
-L-

Permit Drawing
Sheet 42 of 73



LEFT DITCH
RIGHT DITCH
SEE SHEET 21 FOR -L- PLAN VIEW

-L-

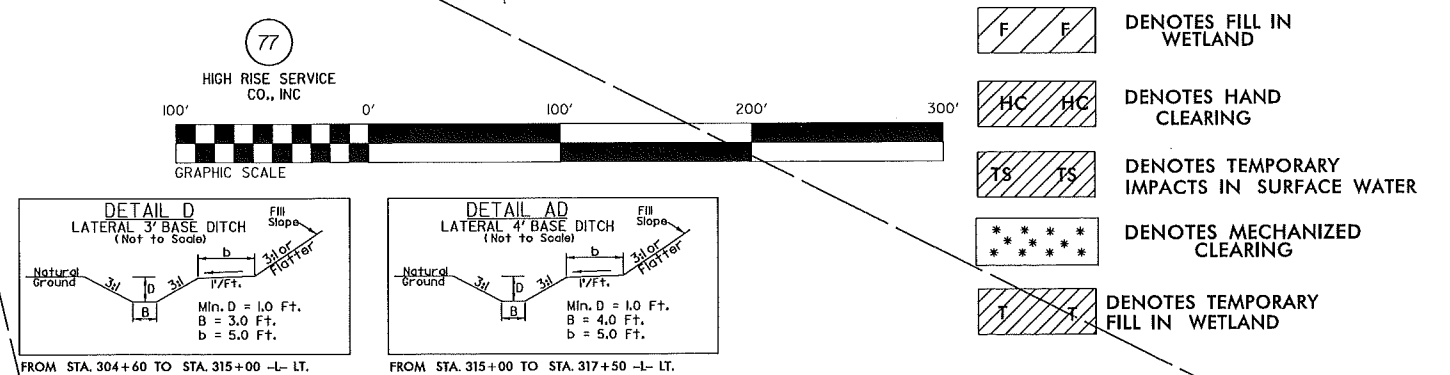
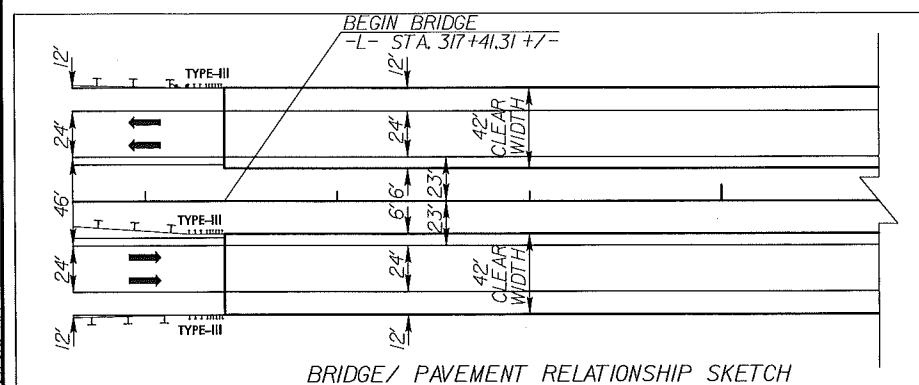
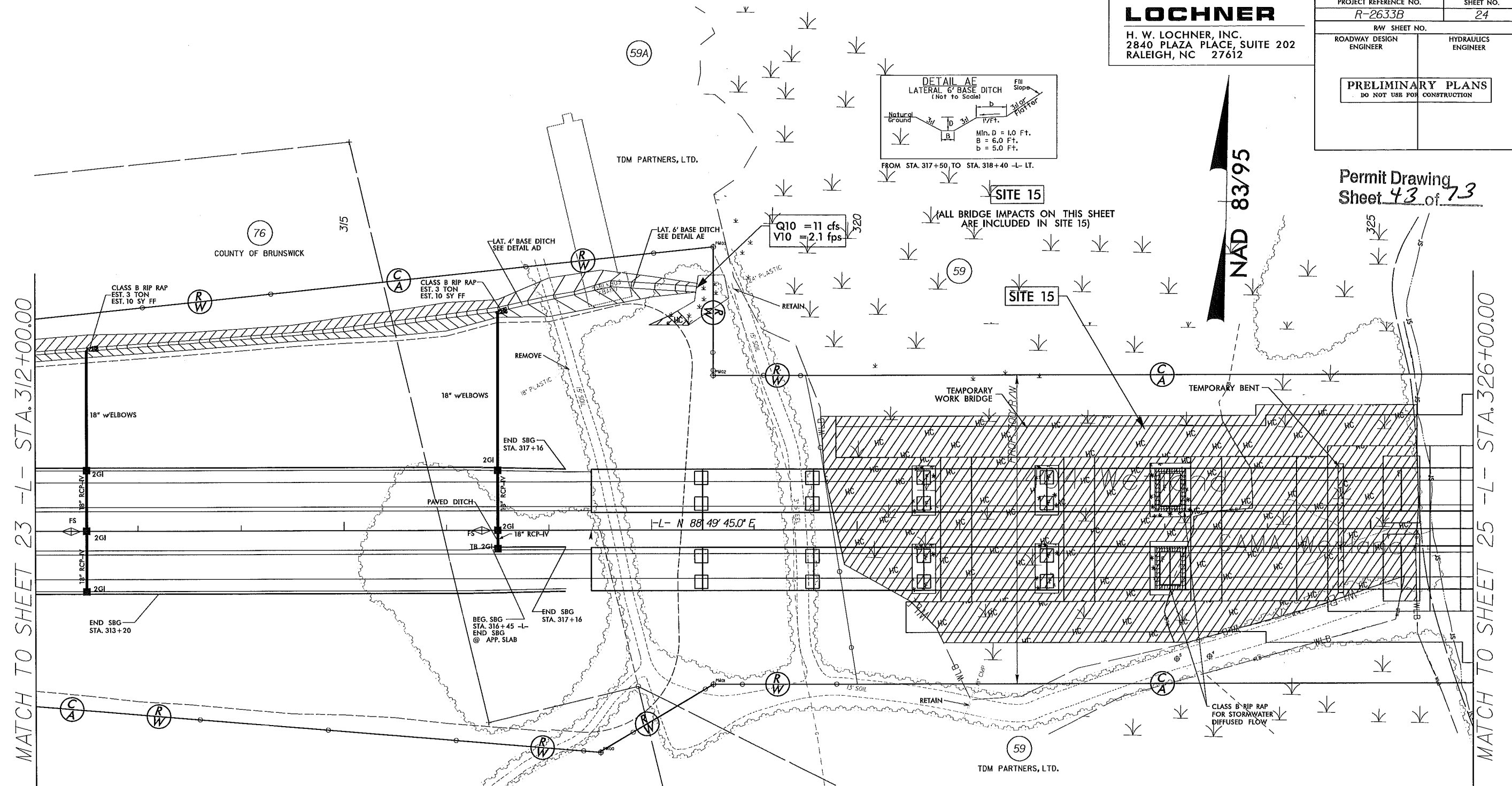


LEFT DITCH
RIGHT DITCH
SEE SHEET 22 FOR -L- PLAN VIEW

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Permit Drawing
Sheet 43 of 73

NAD 83/95



SEE SHEET 53 FOR -L- PROFILE

8/17/99

REVISIONS

2/8/2013
Hydrolics/Permit/Stream & Wetland/R-2633B_hyd.prm_wet.psh24.dgn
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LOCHNER

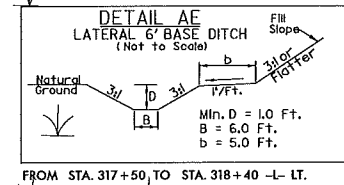
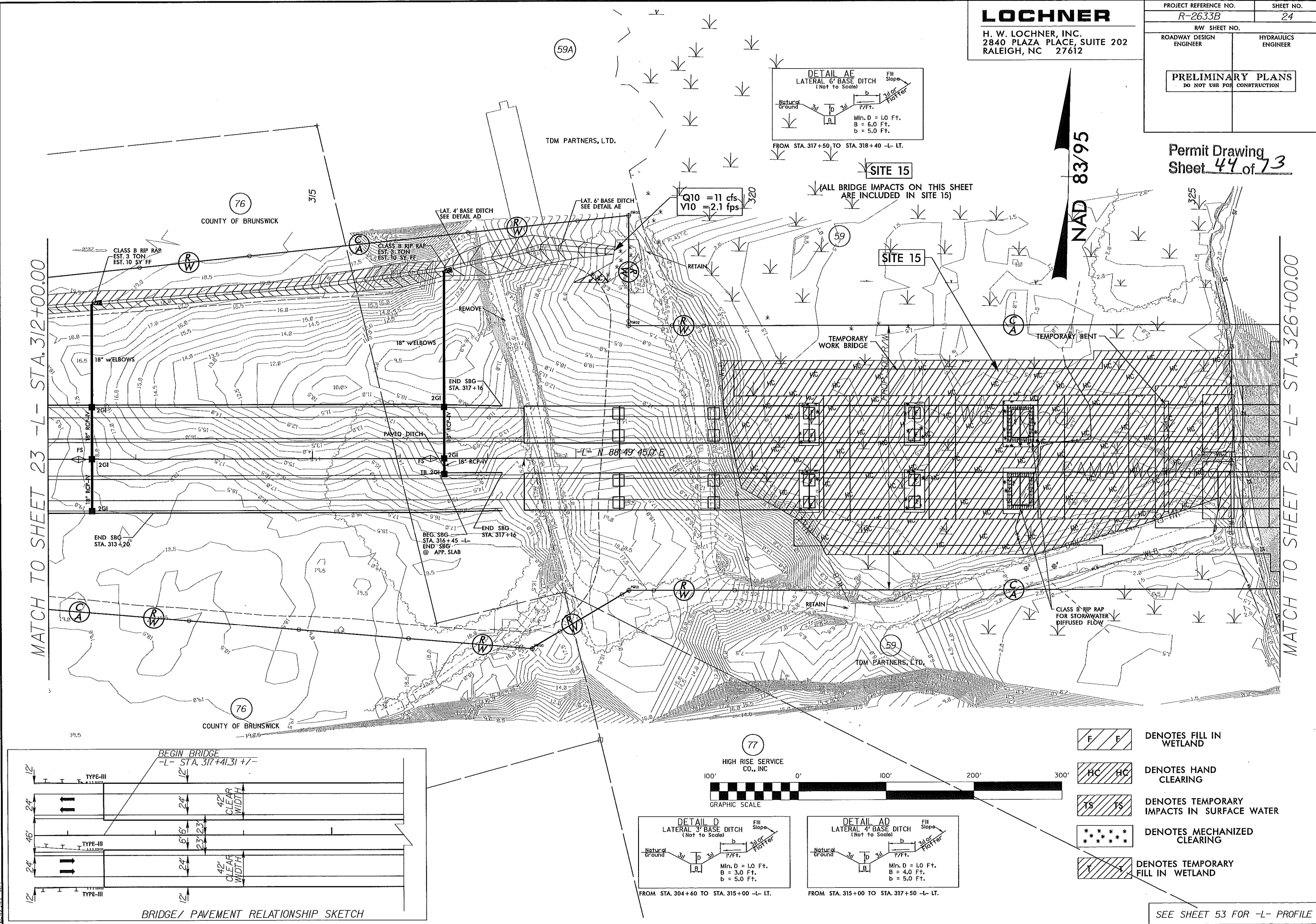
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 44 of 73

MATCH TO SHEET 23 -L- STA. 312+00.00

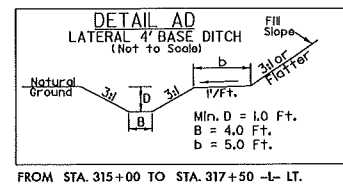
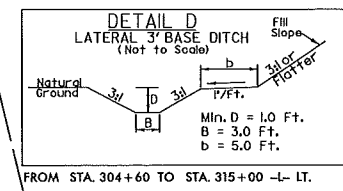
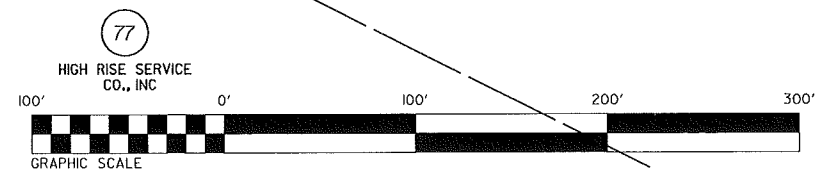
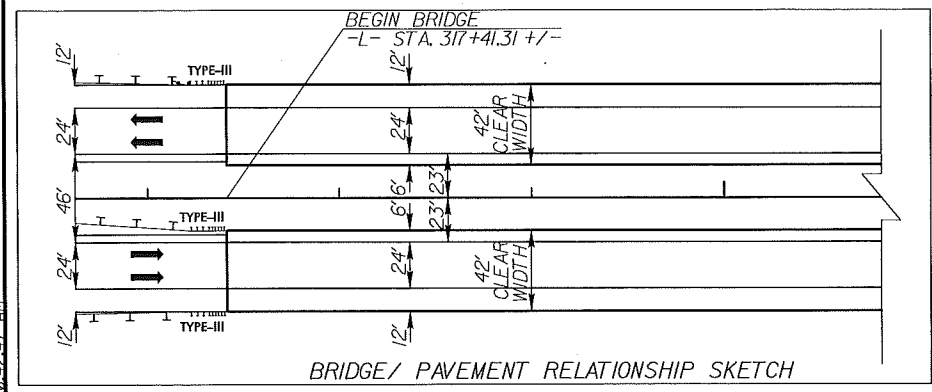
MATCH TO SHEET 25 -L- STA. 326+00.00



SITE 15

ALL BRIDGE IMPACTS ON THIS SHEET
ARE INCLUDED IN SITE 15

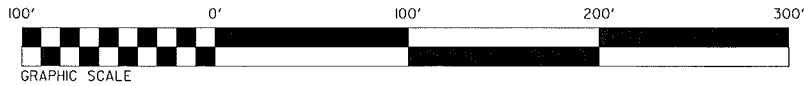
Q10 = 11 cfs
V10 = 2.1 fps



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

SEE SHEET 53 FOR -L- PROFILE

8/17/99



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

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

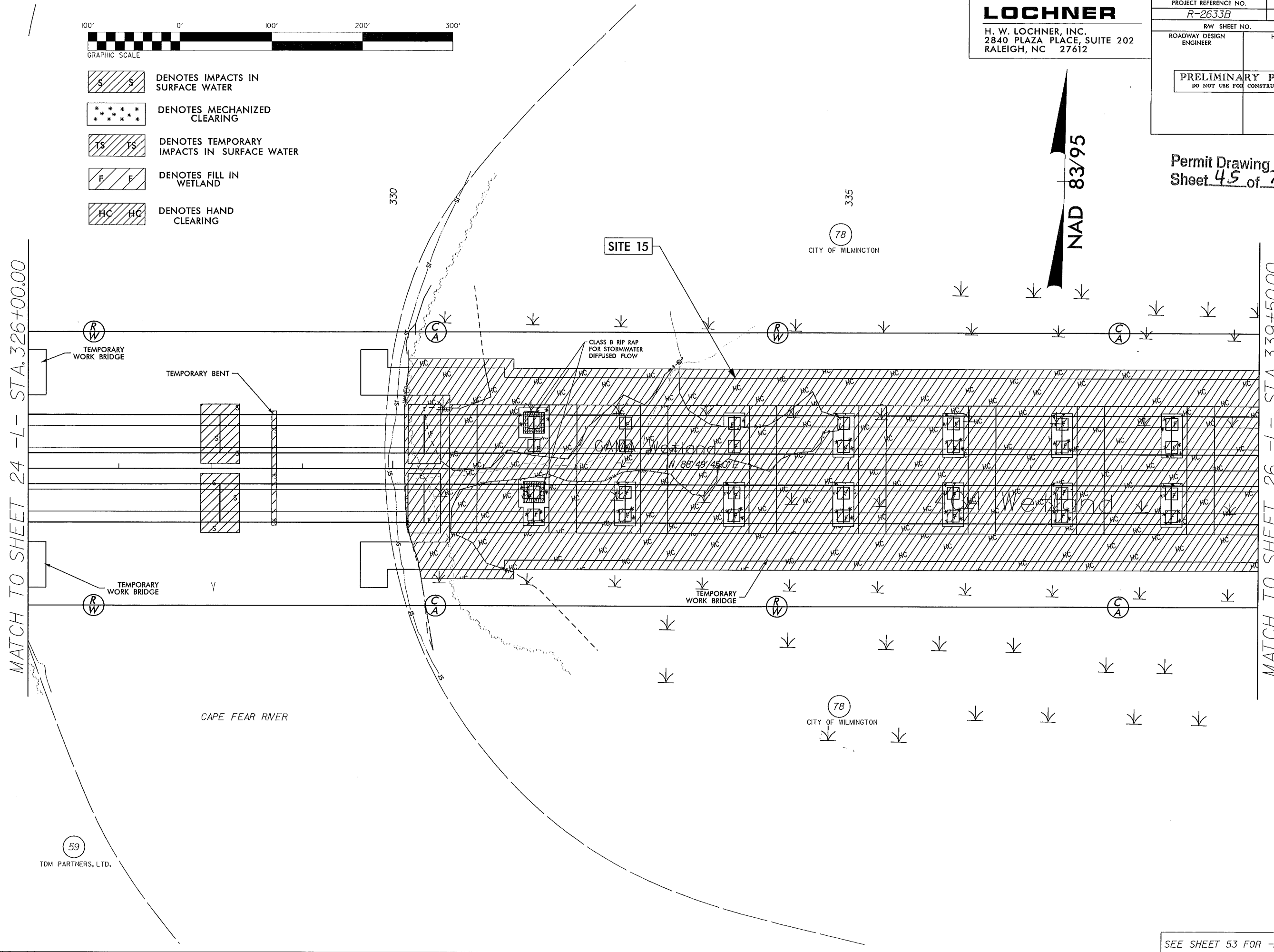
PROJECT REFERENCE NO.	SHEET NO.
R-2633B	25
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 45 of 73

NAD 83/95

MATCH TO SHEET 24 -L- STA. 326+00.00

MATCH TO SHEET 26 -L- STA. 339+50.00



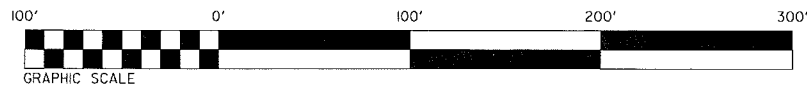
REVISIONS

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59
TOM PARTNERS, LTD.

SEE SHEET 53 FOR -L- PROFILE

8/17/99



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

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

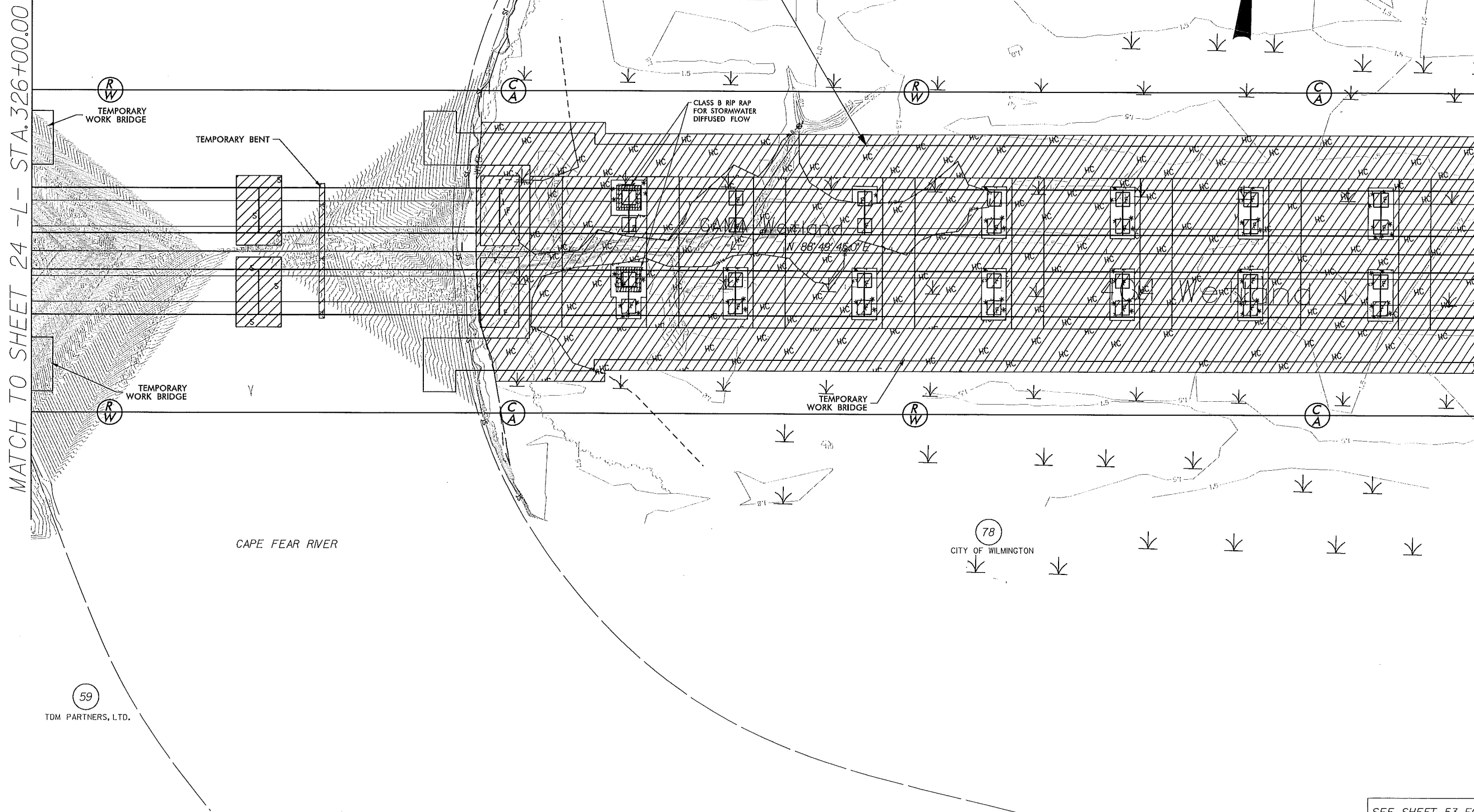
PROJECT REFERENCE NO. R-2633B	SHEET NO. 25
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 46 of 73

NAD 83/95

MATCH TO SHEET 24 -L- STA. 326+00.00

MATCH TO SHEET 26 -L- STA. 339+50.00



REVISIONS

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SEE SHEET 53 FOR -L- PROFILE

8/17/99

REVISIONS

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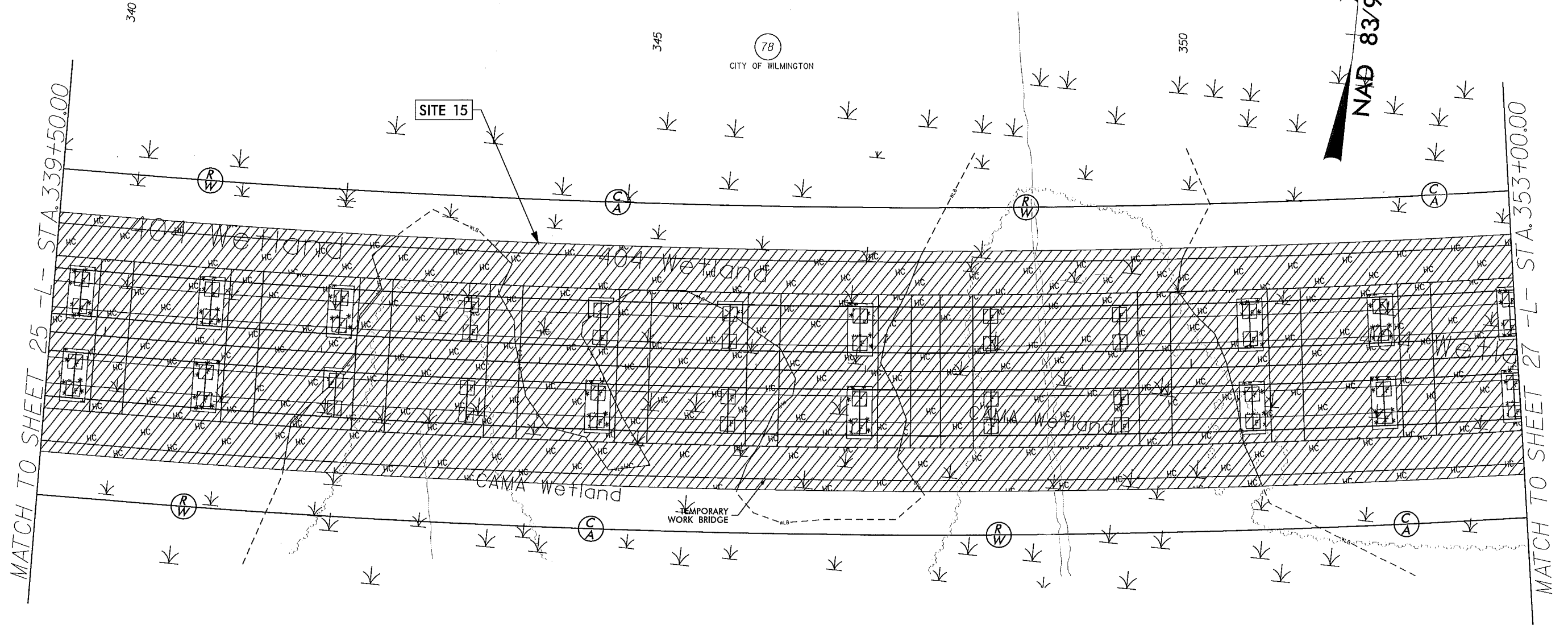
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

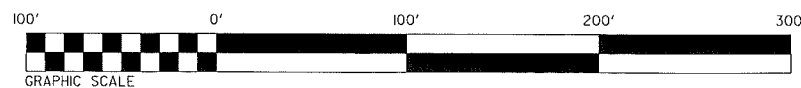
PROJECT REFERENCE NO. R-2633B	SHEET NO. 26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 47 of 73

NAD 83/95



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



SEE SHEET 54 FOR -L- PROFILE

8/17/99

REVISIONS

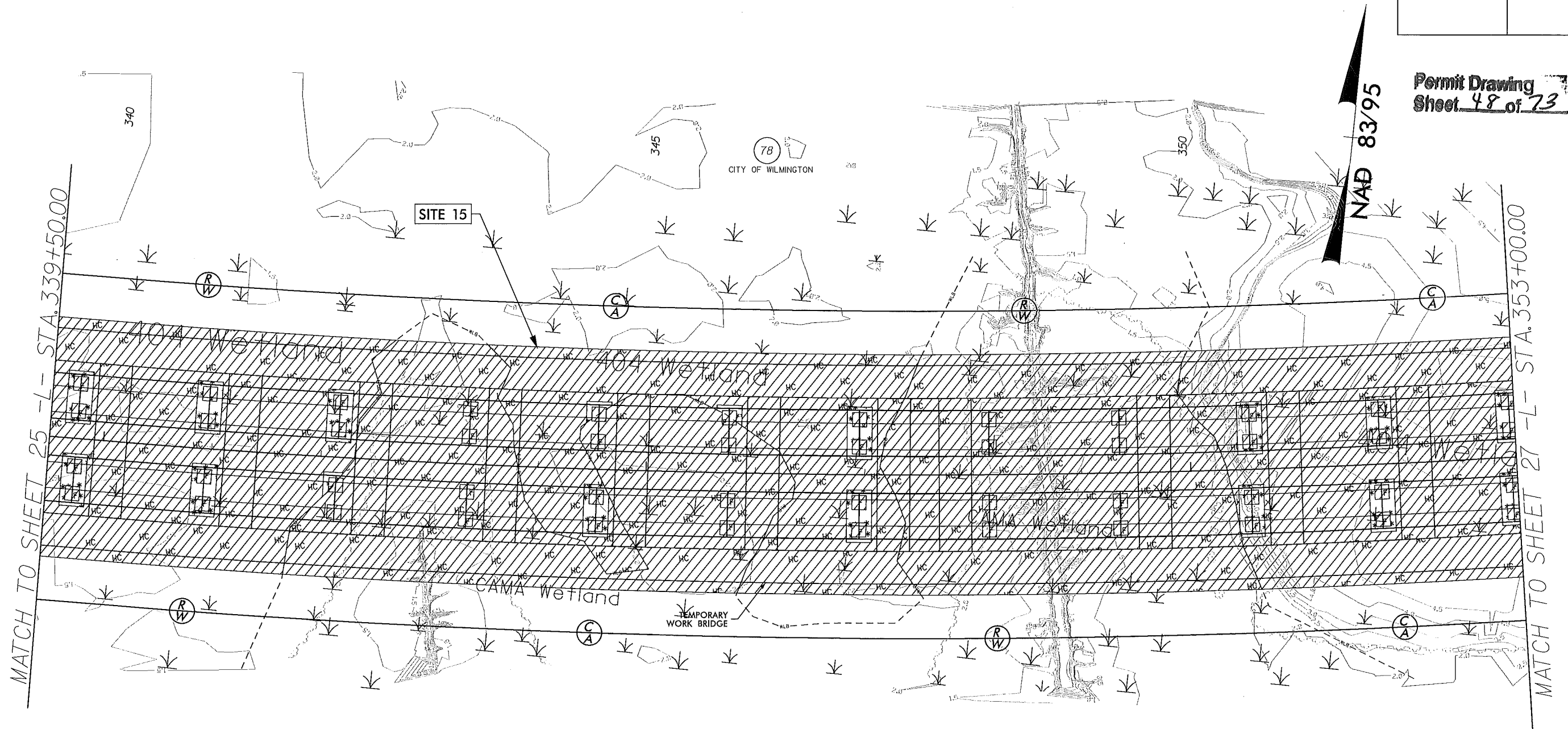
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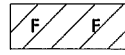
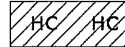
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.		SHEET NO.	
R-2633B		26	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

Permit Drawing
Sheet 48 of 73



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



SEE SHEET 54 FOR -L- PROFILE

8/17/99

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. SHEET NO.

R-2633B 27

RAW SHEET NO.

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 49 of 23

NAD 83/95

MATCH TO SHEET 26 - L - STA. 353+00.00

MATCH TO SHEET 28 - L - STA. 367+00.00

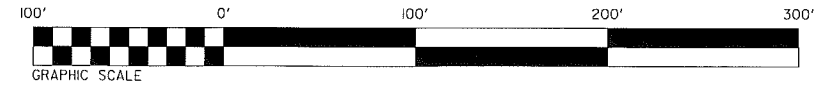
SITE 15

78
CITY OF WILMINGTON

78
CITY OF WILMINGTON

TEMPORARY
WORK BRIDGE

- * * * * * DENOTES MECHANIZED CLEARING
- F F DENOTES FILL IN WETLAND
- HC HC DENOTES HAND CLEARING



SEE SHEET 54 FOR -L- PROFILE

REVISIONS

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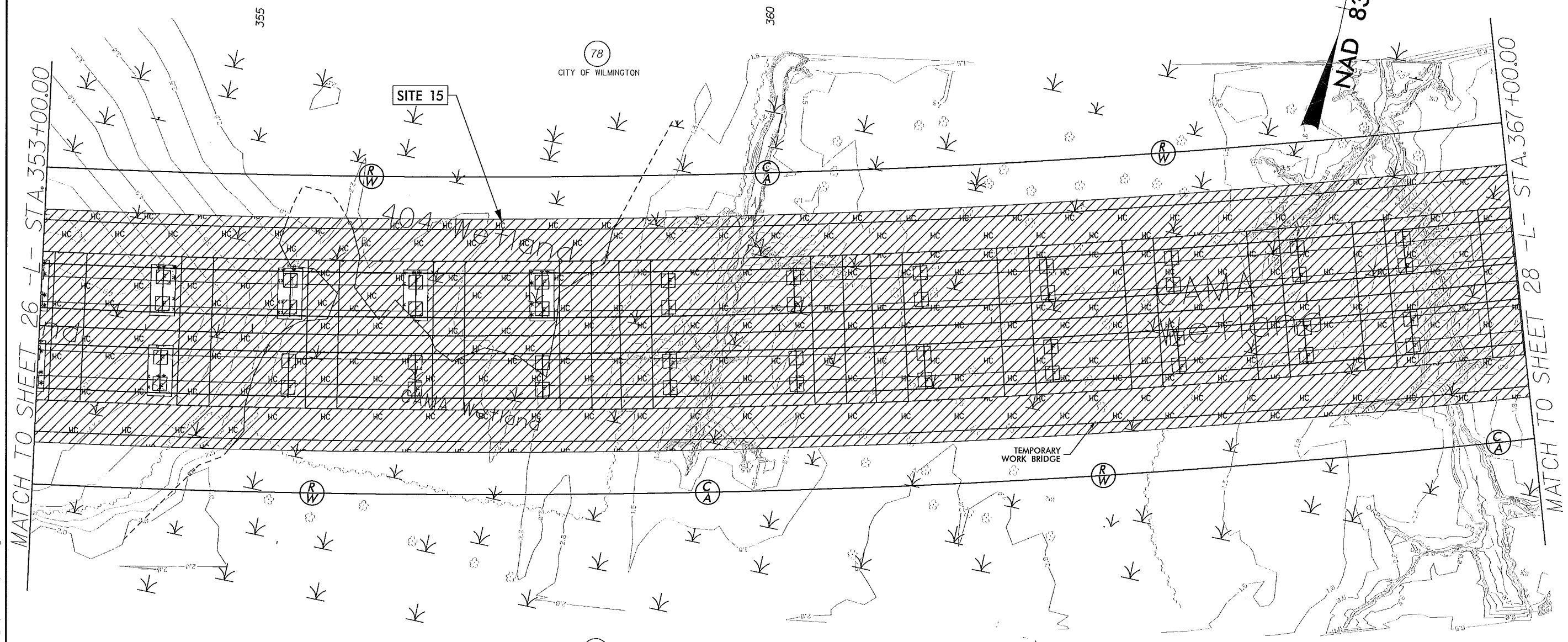
8/17/99

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

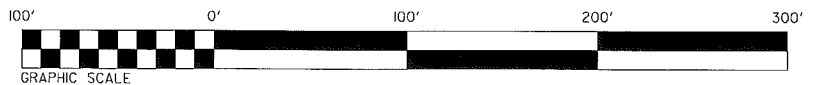
PROJECT REFERENCE NO. R-2633B	SHEET NO. 27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 50 of 73

NAD 83/95



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



SEE SHEET 54 FOR -L- PROFILE

REVISIONS

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8/17/99

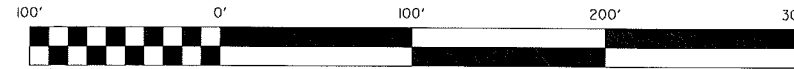
REVISIONS

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LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

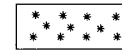
PROJECT REFERENCE NO.	SHEET NO.
R-2633B	28
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



DENOTES FILL IN WETLAND



DENOTES HAND CLEARING



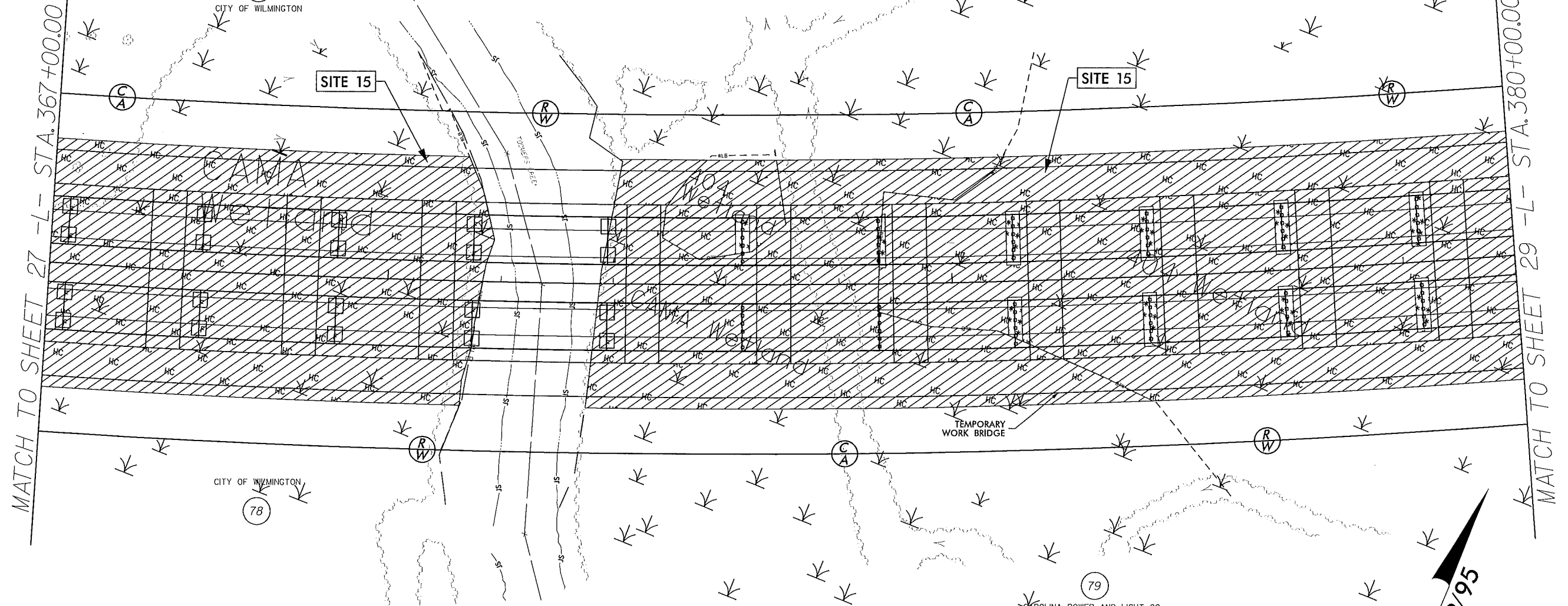
DENOTES MECHANIZED CLEARING

CAROLINA POWER AND LIGHT CO.

79

Permit Drawing
Sheet 51 of 73

MATCH TO SHEET 27 -L- STA. 367+00.00



MATCH TO SHEET 29 -L- STA. 380+00.00

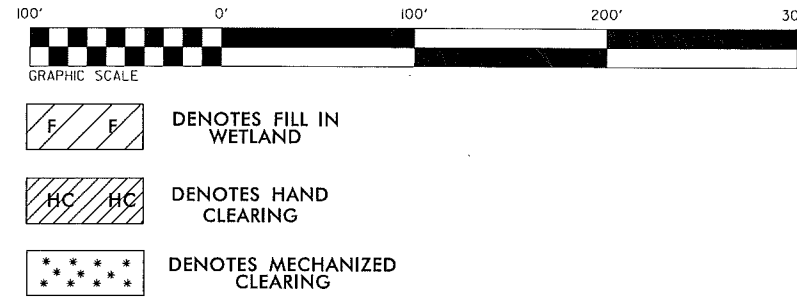
NAD 83/95

SEE SHEET 55 FOR -L- PROFILE

8/17/99

REVISIONS

11/30/2012
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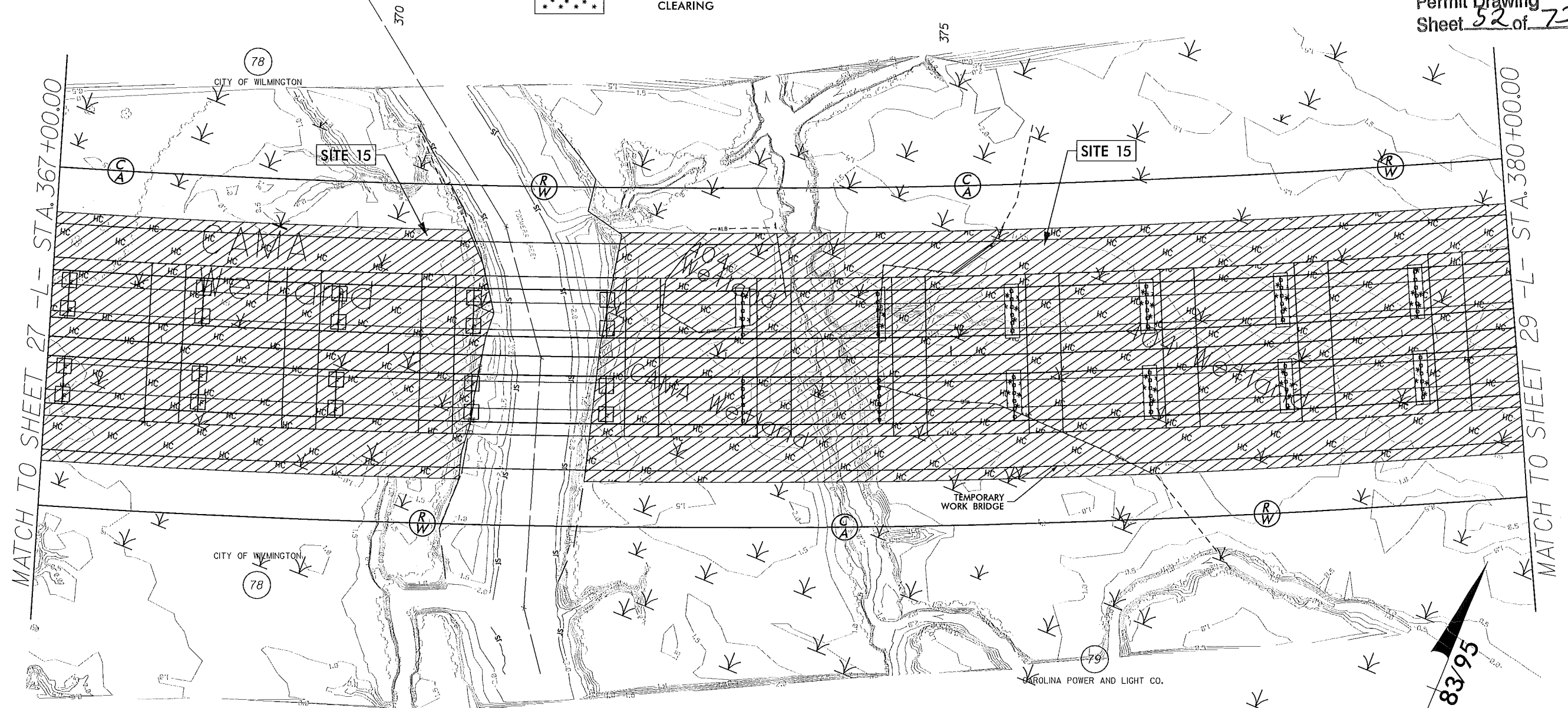
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

CAROLINA POWER AND LIGHT CO.

PROJECT REFERENCE NO. R-2633B	SHEET NO. 28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 52 of 73



SEE SHEET 55 FOR -L- PROFILE

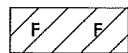
8/17/99

REVISIONS

11/30/2012
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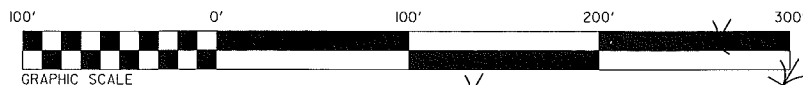
DENOTES MECHANIZED
CLEARING



DENOTES FILL IN
WETLAND



DENOTES HAND
CLEARING



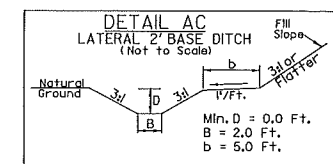
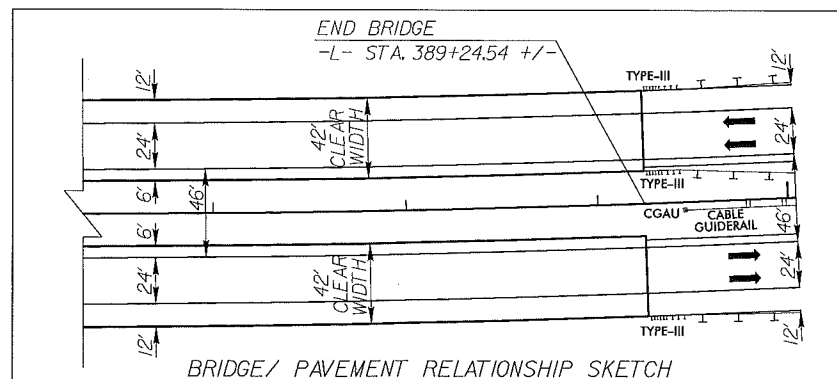
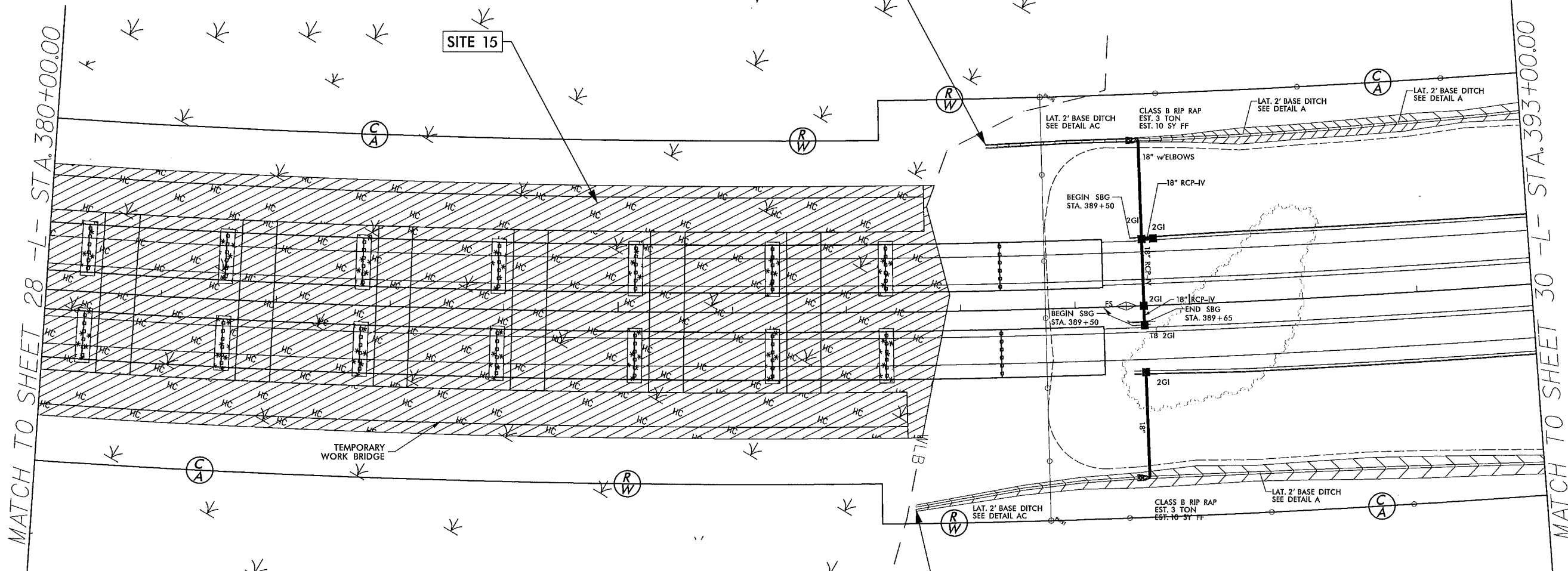
GRAPHIC SCALE

LOCHNER

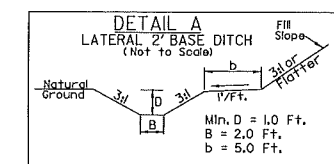
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B	SHEET NO. 29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 53 of 73



FROM STA. 388+25 TO STA. 390+50 -L- LT.
FROM STA. 387+60 TO STA. 389+00 -L- RT.

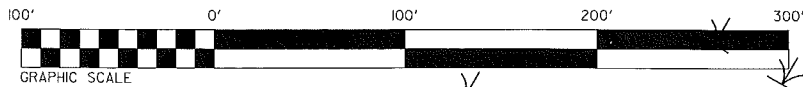


FROM STA. 390+50 TO STA. 397+20 -L- LT.
FROM STA. 389+00 TO STA. 397+00 -L- RT.

SEE SHEET 55 FOR -L- PROFILE

8/17/99

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



LOCHNER

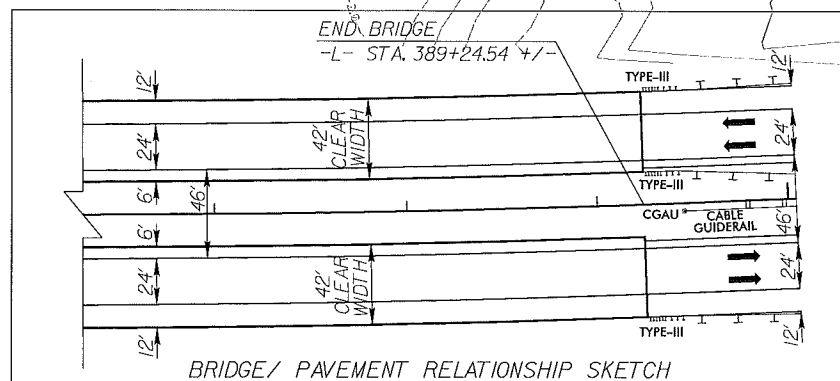
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B	SHEET NO. 29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 54 of 73

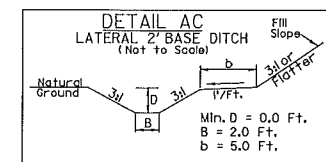
MATCH TO SHEET 28 -L- STA. 380+00.00

MATCH TO SHEET 30 -L- STA. 393+00.00

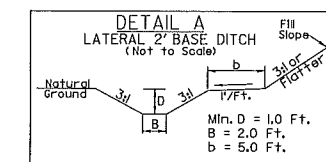


WAD 83/95
Q10 = 16 cfs
V10 = 1.3 fps

Q10 = 7 cfs
V10 = 1.4 fps



FROM STA. 388+25 TO STA. 390+50 -L- LT.
FROM STA. 387+60 TO STA. 389+00 -L- RT.



FROM STA. 390+50 TO STA. 397+20 -L- LT.
FROM STA. 389+00 TO STA. 397+00 -L- RT.

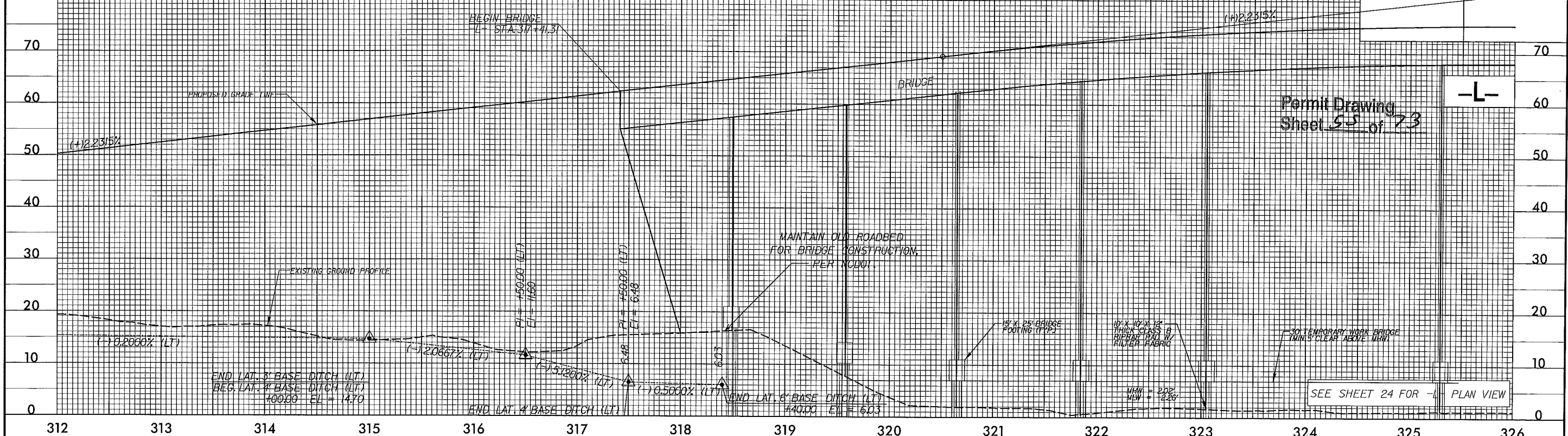
SEE SHEET 55 FOR -L- PROFILE

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	53
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

PI = 326+85.00
EI = 83.37
VC = 1270
K = 247

SITE 15

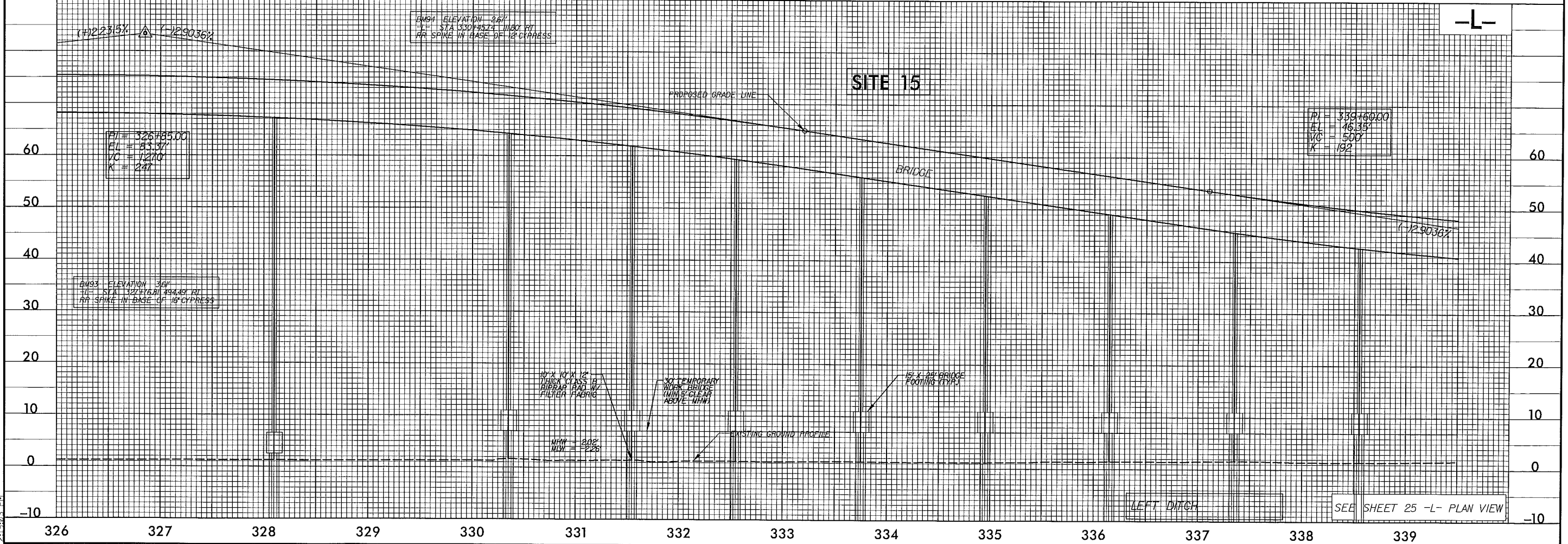


-L-

Permit Drawing
Sheet 53 of 73

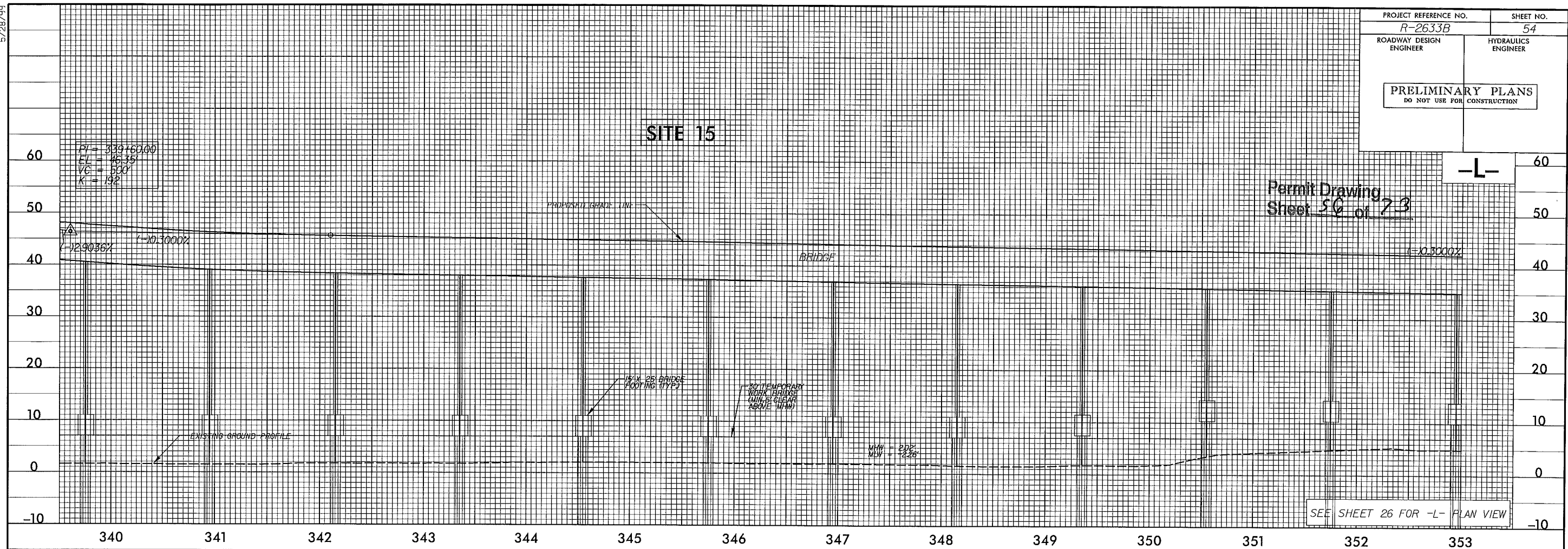
11/30/2012
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SITE 15



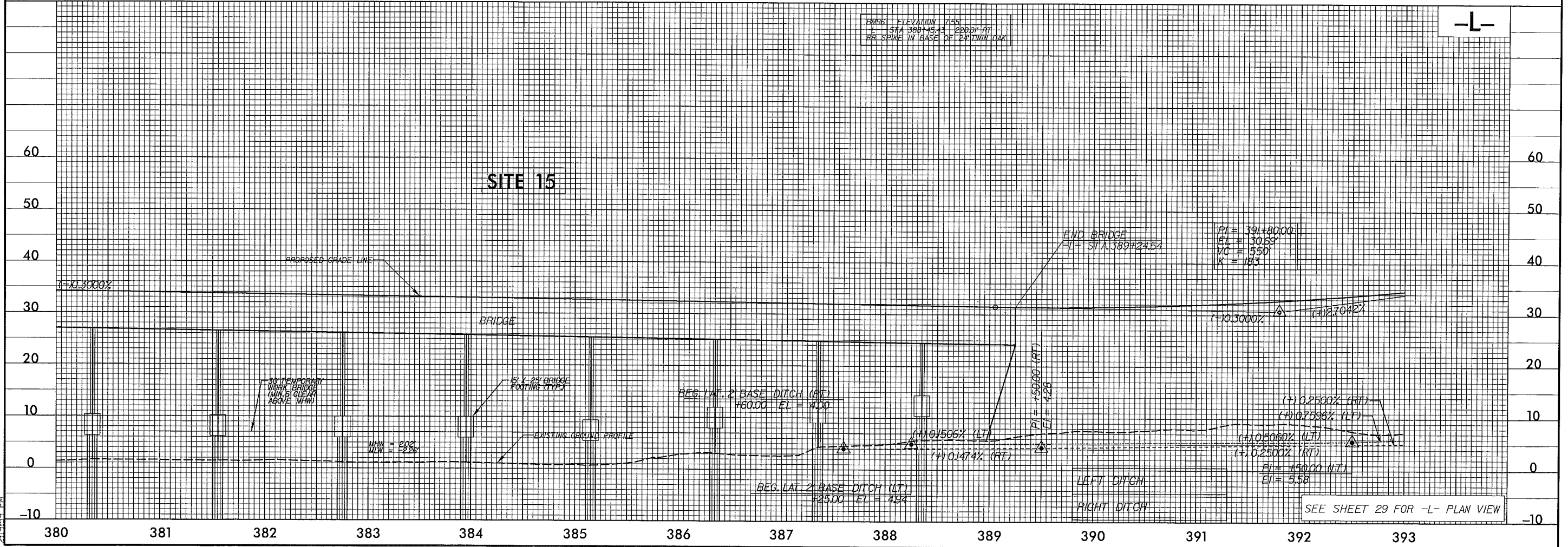
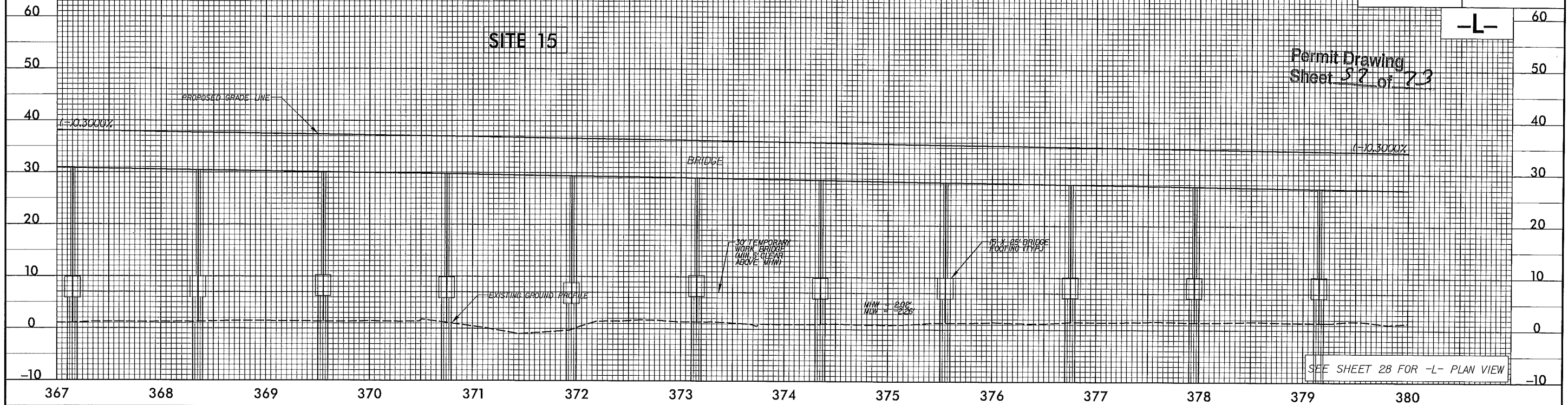
-L-

SEE SHEET 25 -L- PLAN VIEW



5/28/99

PROJECT REFERENCE NO. R-2633B	SHEET NO. 55
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

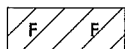


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8/17/95



GRAPHIC SCALE



DENOTES FILL IN WETLAND

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

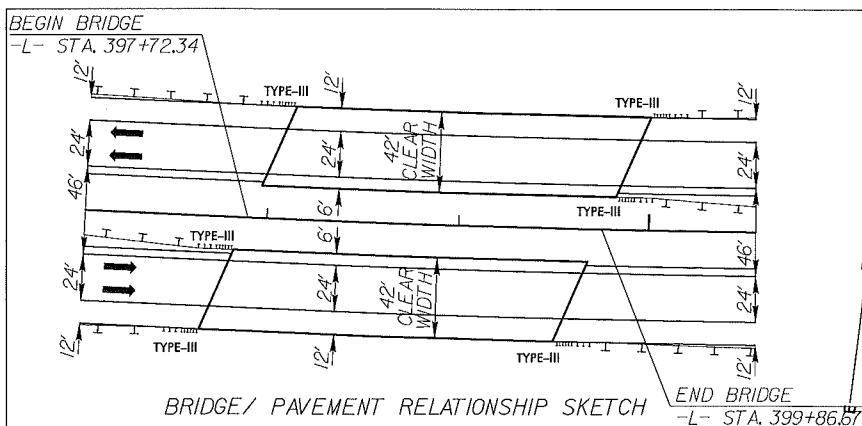
PROJECT REFERENCE NO.	SHEET NO.
R-2633B	30
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

79
CAROLINA POWER AND LIGHT CO.

Permit Drawing
Sheet 58 of 73

MATCH TO SHEET 29 -L- STA. 393+00.00

MATCH TO SHEET 31 -L- STA. 406+40.00



BRIDGE/ PAVEMENT RELATIONSHIP SKETCH

END BRIDGE
-L- STA. 399+86.67

79
CAROLINA POWER AND LIGHT CO.

NAD 83/95

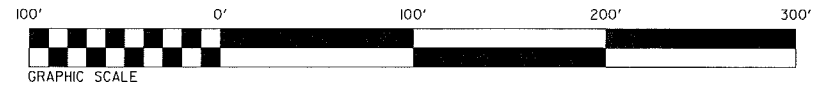
SEE SHEET 56 FOR -L- PROFILE

REVISIONS

R/W Revision: August 5, 2008, Revised r/w label -L- Sta. 397+15 from 205 RT to 195 RT.

11/30/2012
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8/17/99



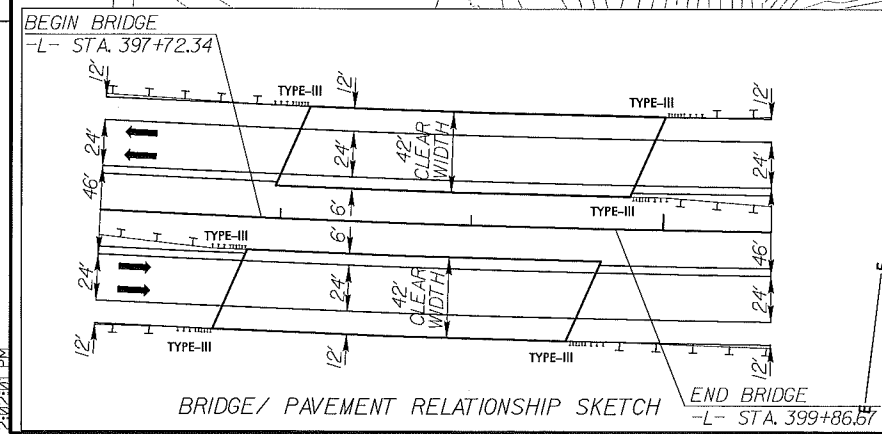
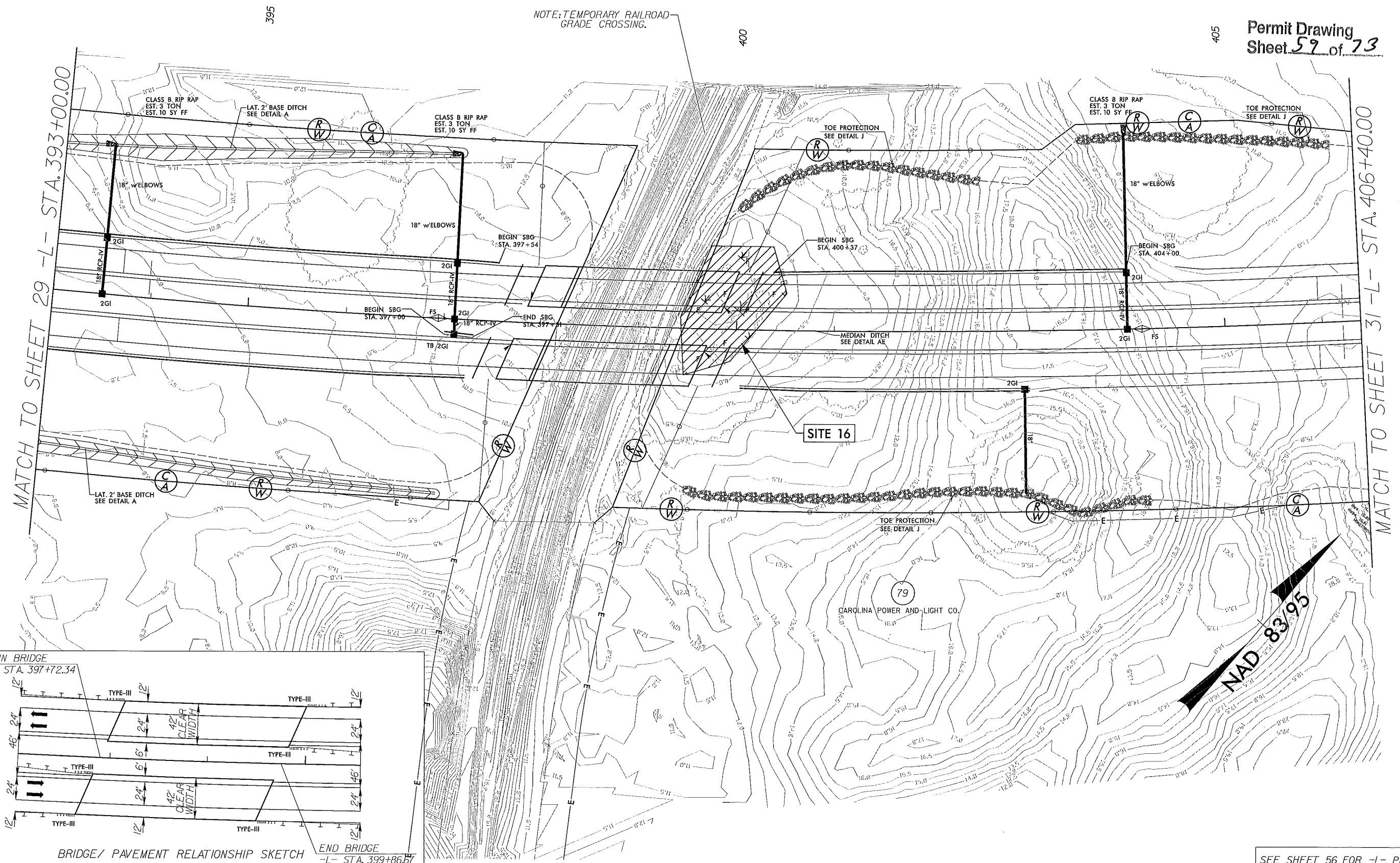
DENOTES FILL IN WETLAND

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B		SHEET NO. 30
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

79
CAROLINA POWER AND LIGHT CO.

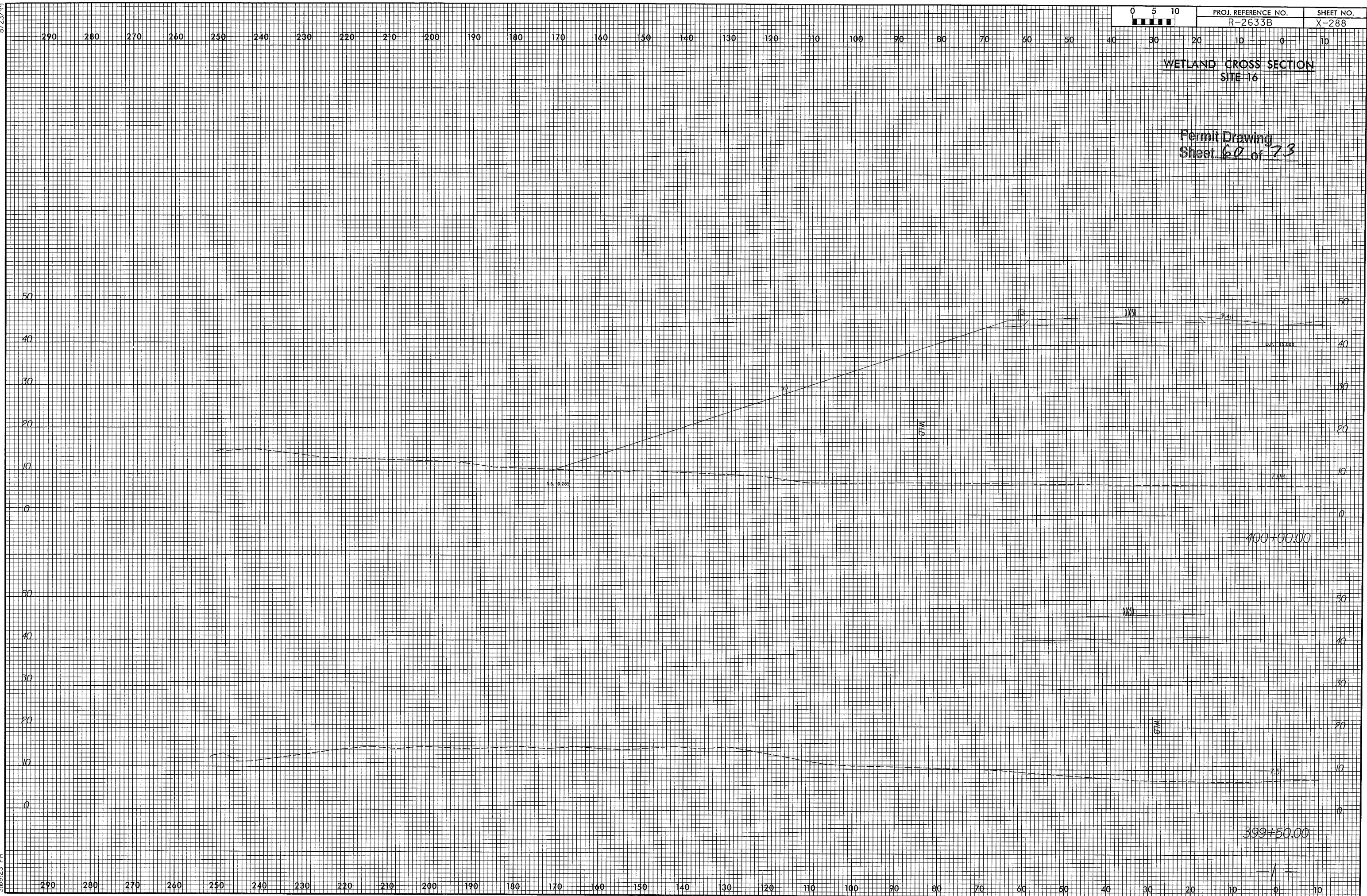
Permit Drawing
Sheet 59 of 73



REVISIONS
RW Revision: August 5, 2008, Revised w label -L- Sta. 397+15 from 205' RT to 195' RT.

1/30/2002
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SEE SHEET 56 FOR -L- PROFILE

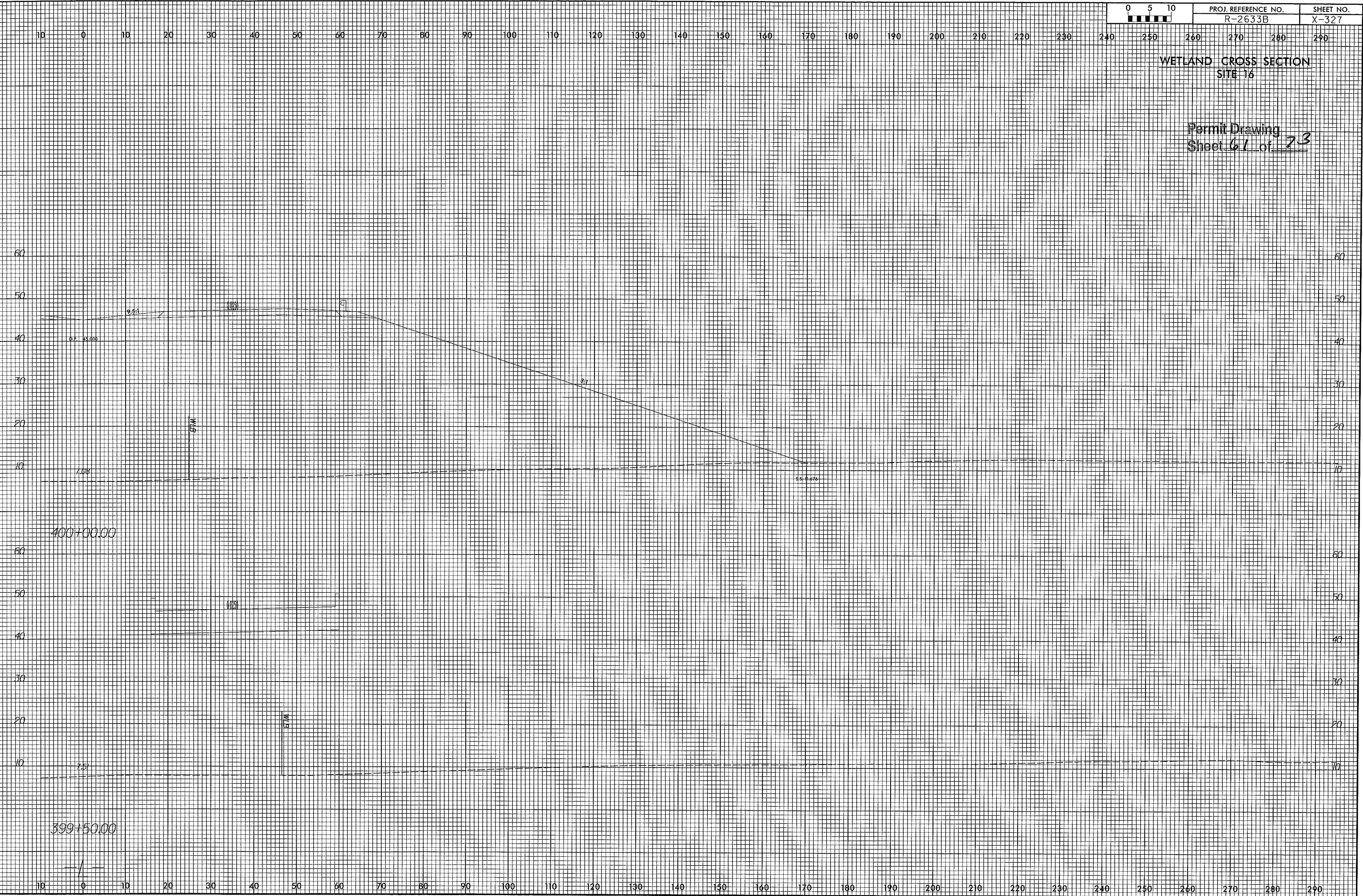


8/23/99

0 5 10			PROJ. REFERENCE NO.		SHEET NO.	
			R-2633B		X-327	

WETLAND CROSS SECTION
SITE 16

Permit Drawing
Sheet 61 of 73

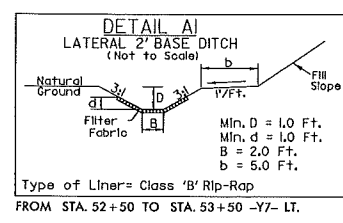
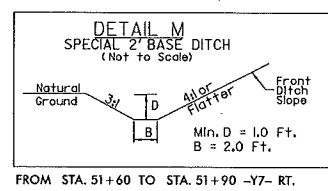
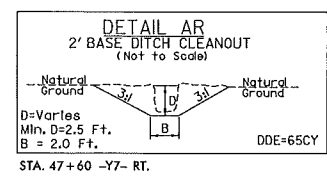


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330\327\p04
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8/17/99

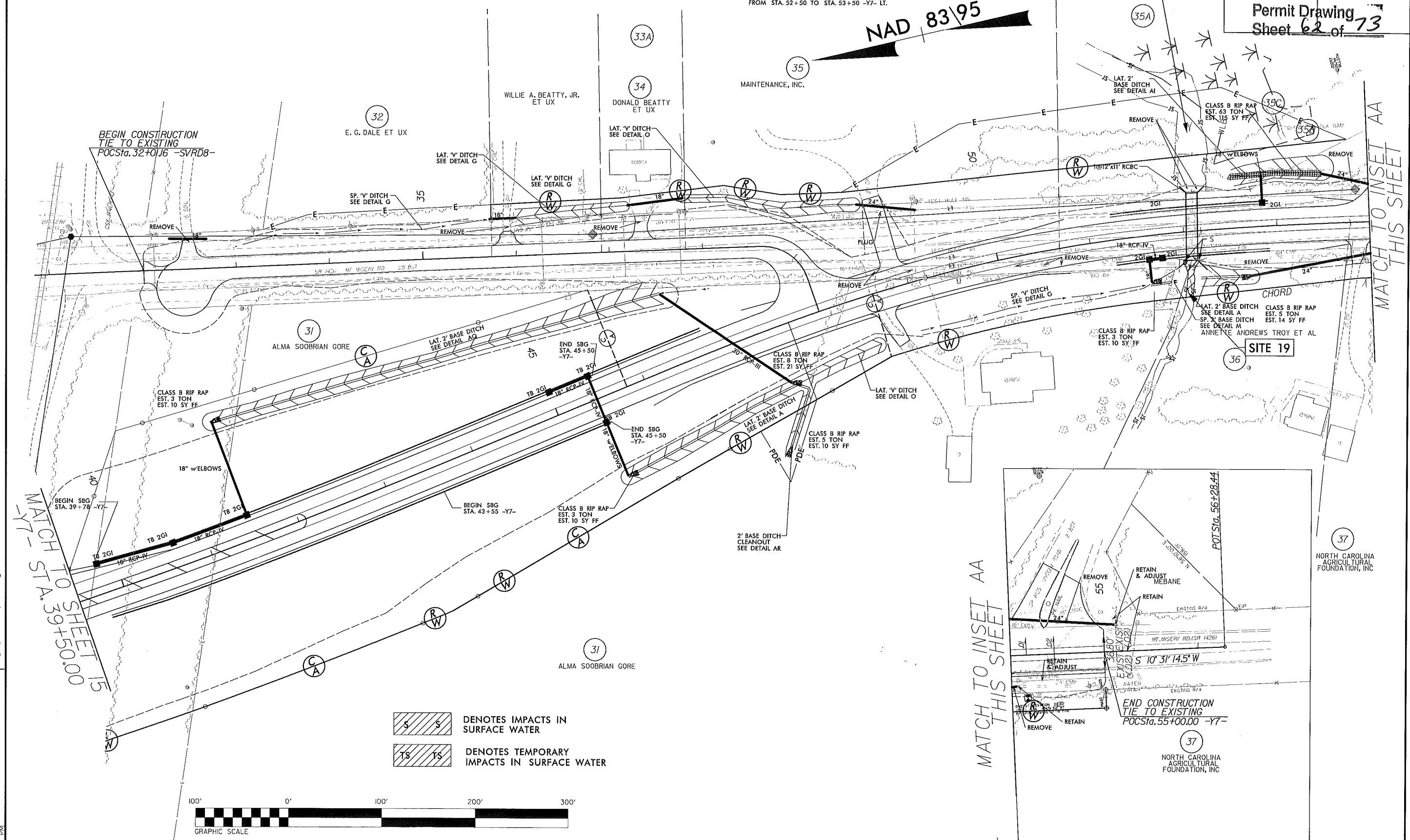
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B		SHEET NO. 37	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DO NOT USE FOR CONSTRUCTION			
Permit Drawing Sheet 62 of 73			



SEE SHEET 2-K FOR
IMPACTS IN THIS AREA

NAD 83/95



DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



NOTE: ALL DRIVEWAY RADIALS TO BE 10',
UNLESS OTHERWISE NOTED.

SEE SHEETS 67 & 68 FOR -SVRD8- PROFILE SEE SHEETS 63 & 64 FOR -Y7- PROFILE

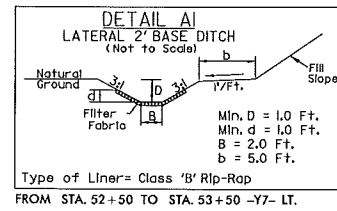
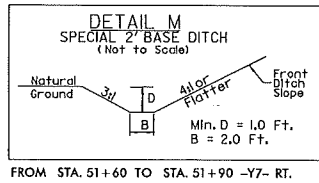
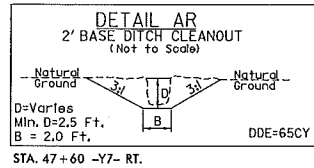
REVISIONS

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8/17/99

\\30.202\jules\Permit\Stream & Wetland\2633B hyd.prm.wet.psh37.dgn
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REVISIONS



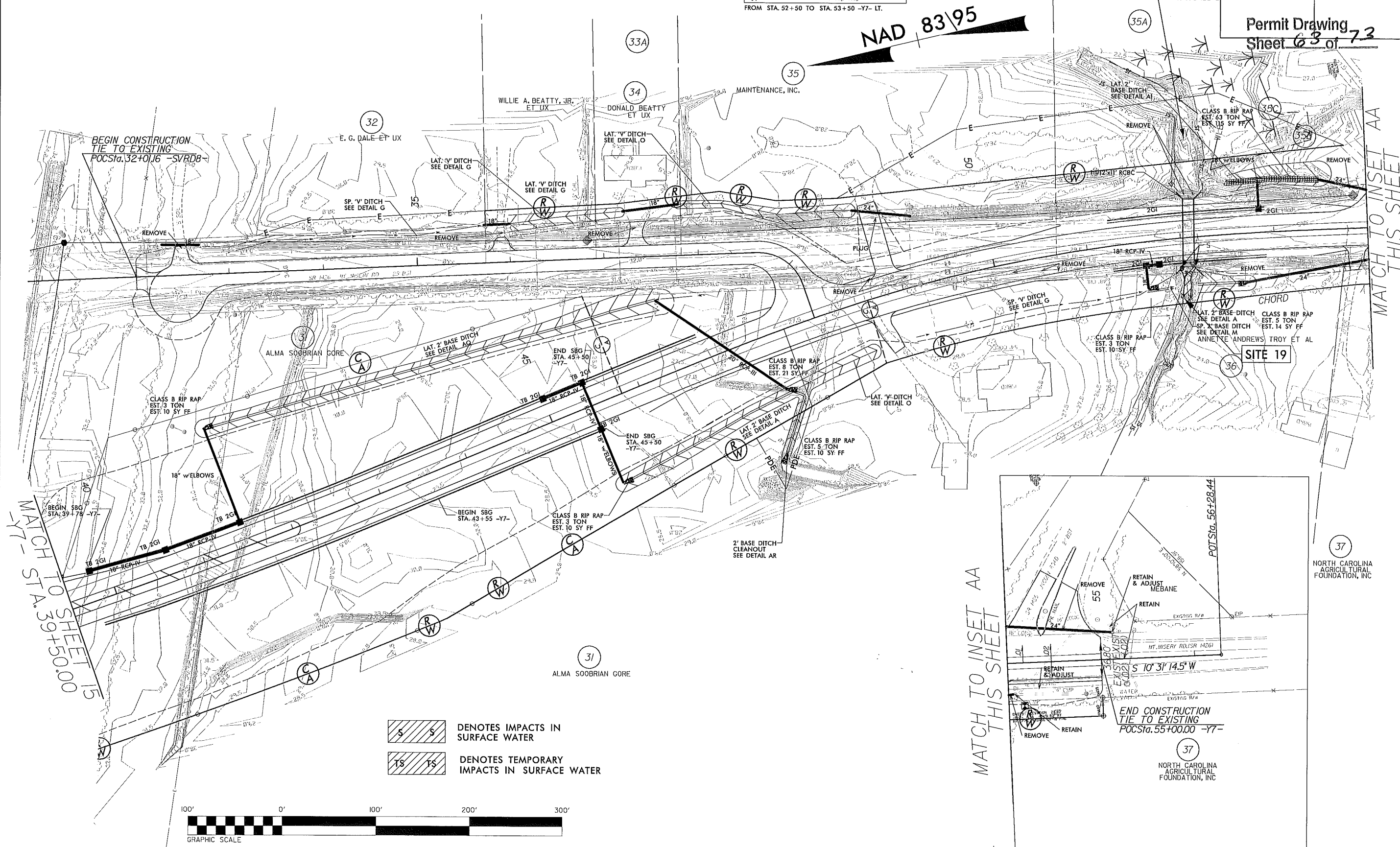
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

SEE SHEET 2-K FOR
IMPACTS IN THIS AREA

PROJECT REFERENCE NO. R-2633B	SHEET NO. 37
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 63 of 73



NOTE: ALL DRIVEWAY RADII ARE TO BE 10', UNLESS OTHERWISE NOTED.

SEE SHEETS 67 & 68 FOR -SVRDB- PROFILE

SEE SHEETS 63 & 64 FOR -Y7- PROFILE

8/17/99



- T T DENOTES TEMPORARY FILL IN WETLAND
- HC HC DENOTES HAND CLEARING
- TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

LOCHNER

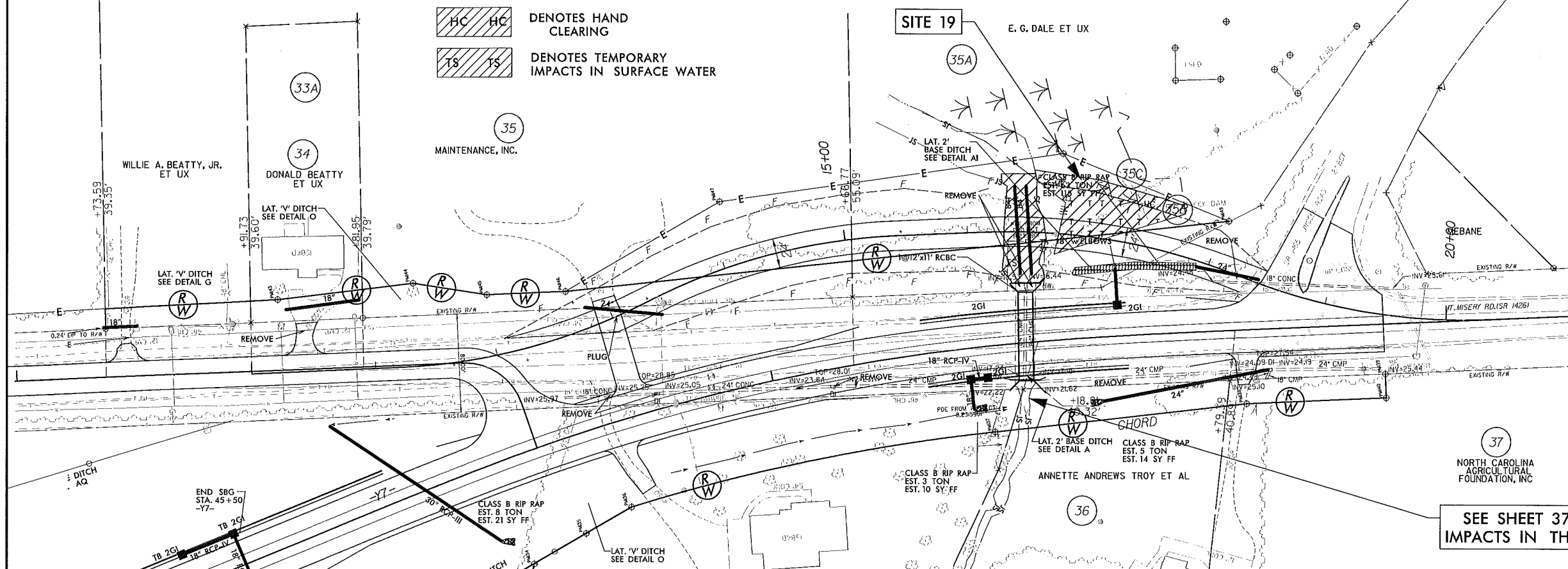
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	2-L
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

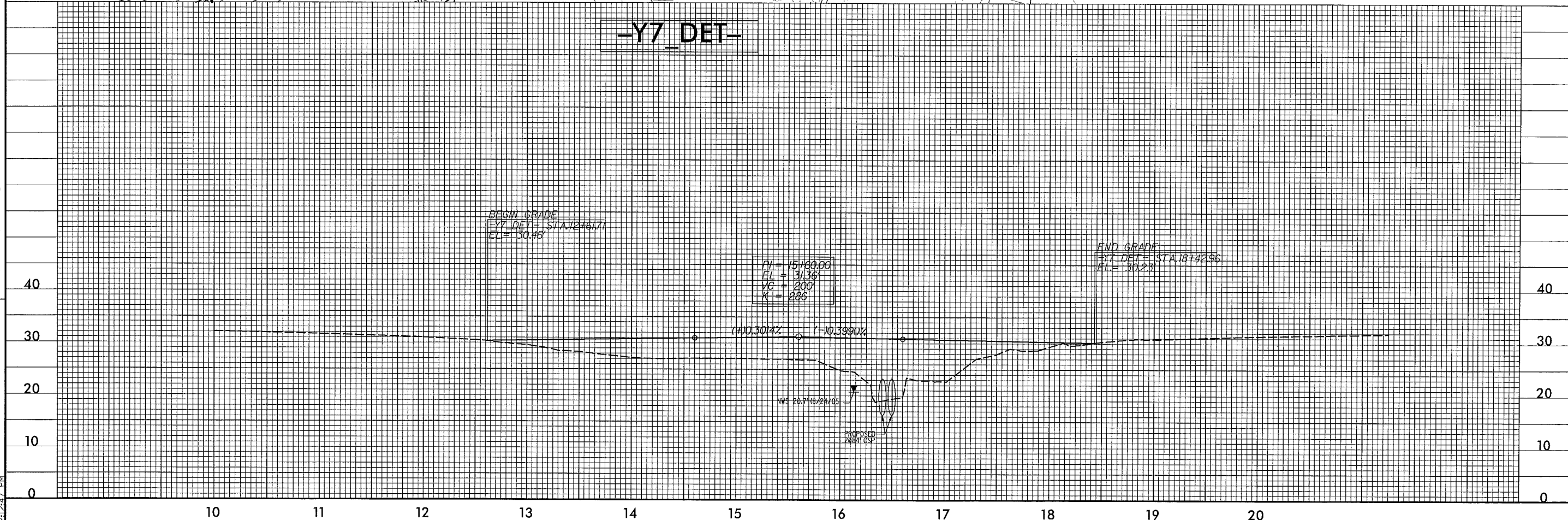
Permit Drawing
Sheet 64 of 73

NAD 83/95

SEE SHEET 37 FOR
IMPACTS IN THIS AREA



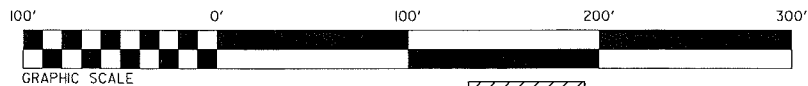
-Y7_DET-



REVISIONS

11/30/2002
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8/17/95



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

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	2-L
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

Permit Drawing
Sheet 65 of 73

NAD 83/95

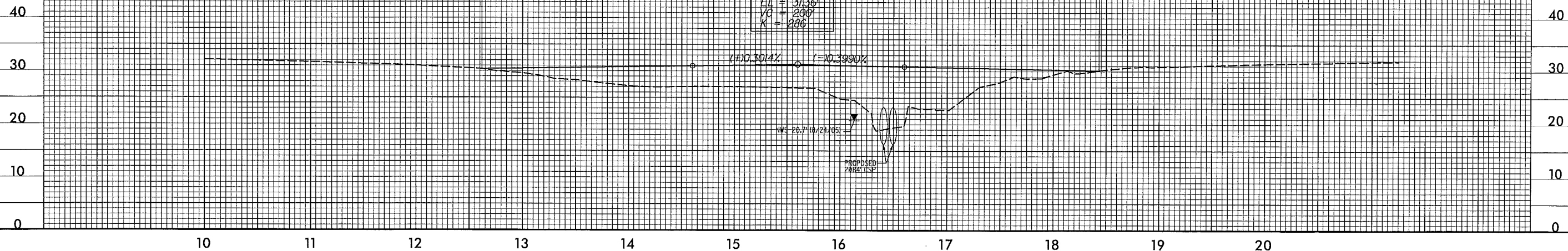
SEE SHEET 37 FOR
IMPACTS IN THIS AREA

-Y7_DET-

BEGIN GRADE
Y7_DET STA 12+61.71
EL = 30.46'

PI = 15+60.00
EL = 31.36'
VO = 200'
K = 236

END GRADE
Y7_DET STA 18+12.96
EL = 30.23'

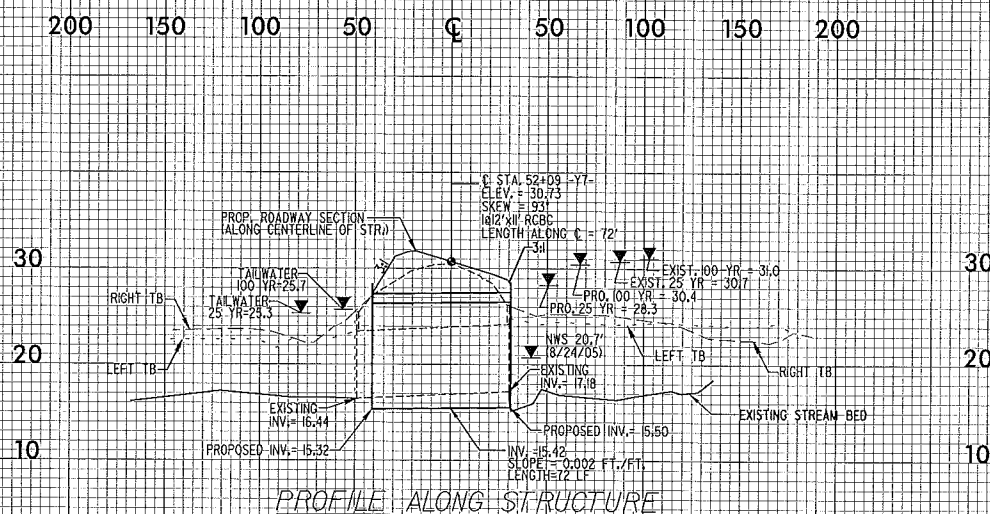


REVISIONS

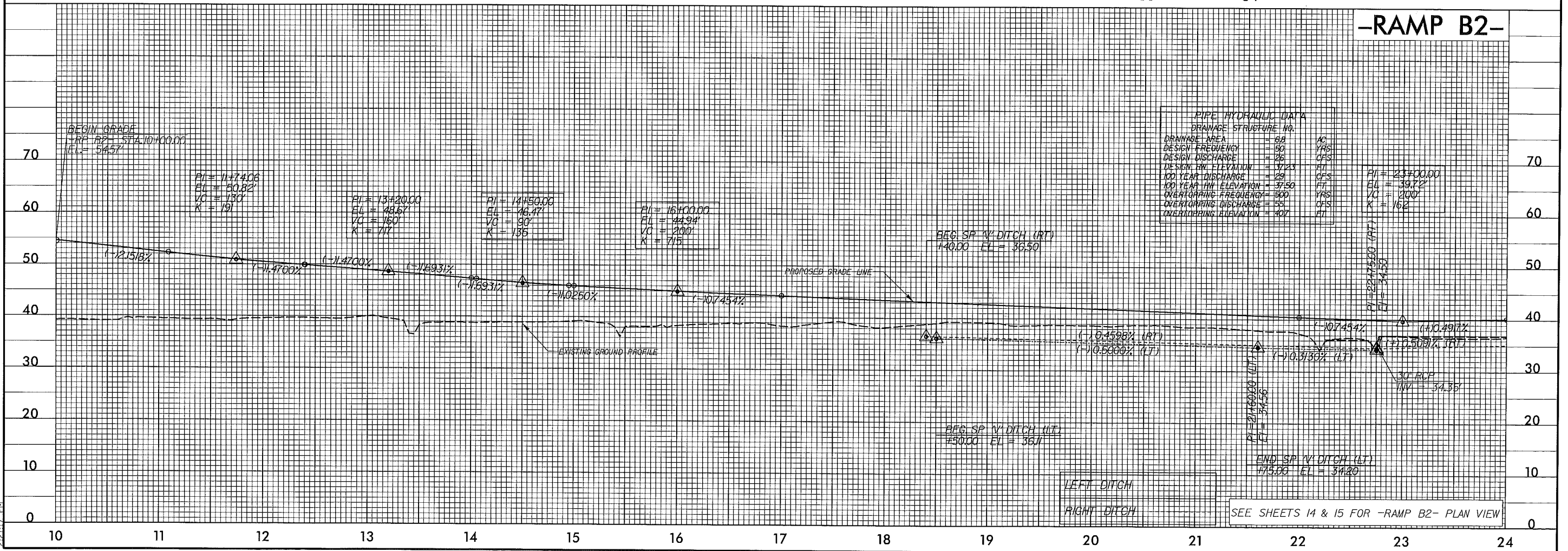
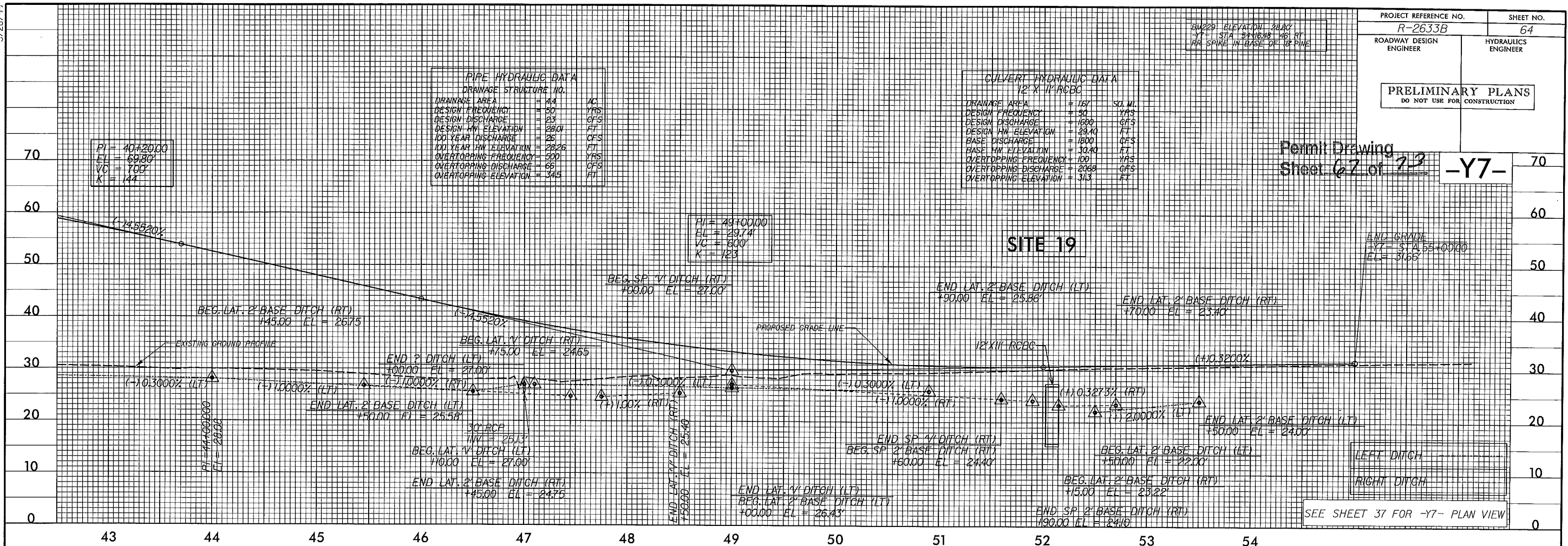
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21:15:55 PM

Permit Drawing
 Sheet 66 of 73

SITE 19 JURISDICTIONAL STREAM PROFILE -Y7- 52+09



Permit Drawing
Sheet 67 of 73 -Y7-



8/17/99

REVISIONS

2/8/2013
H:\Hydro\Permit\Stream & Wetland\2633B\hyd.prm-wet.pst\40.dgn

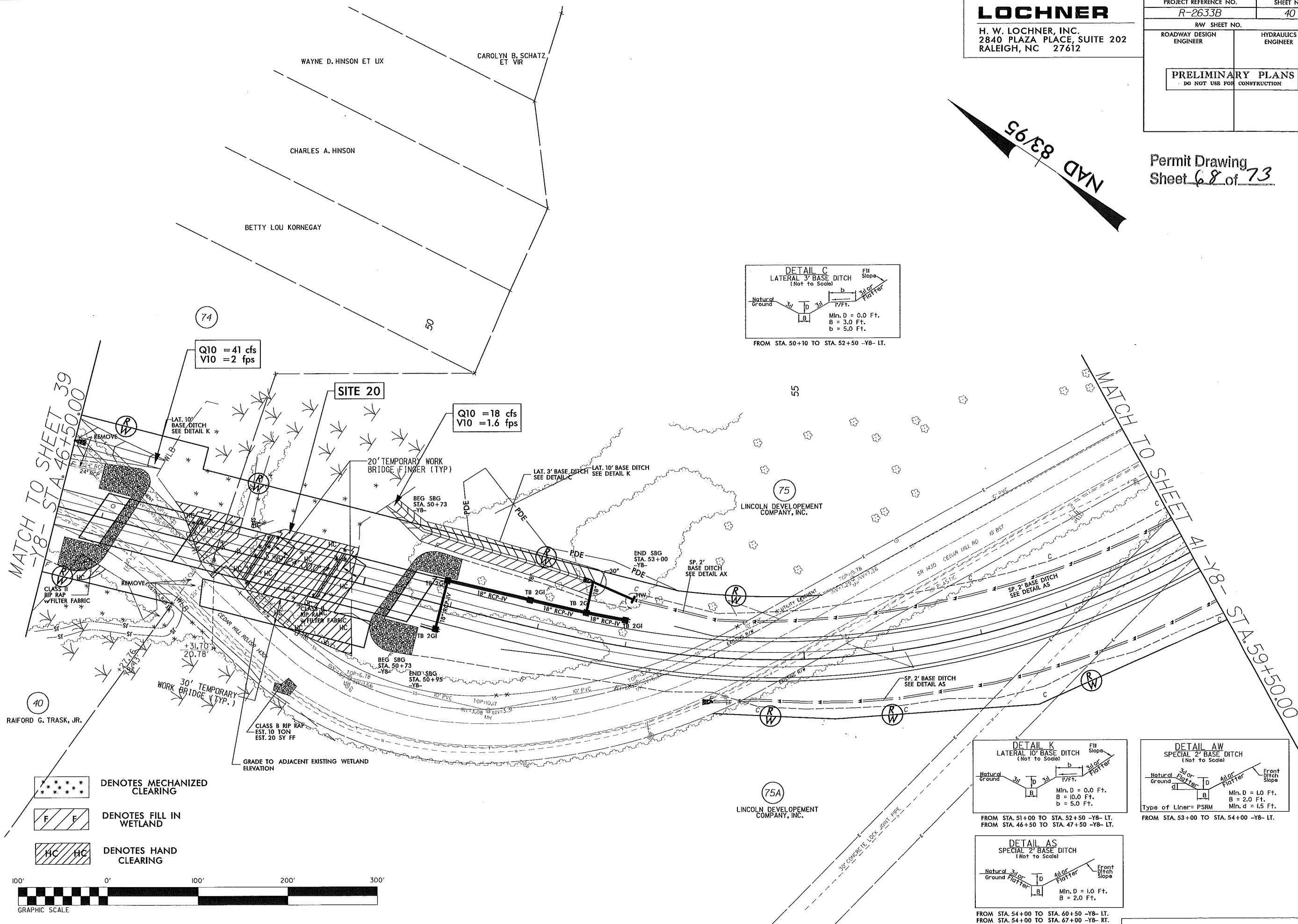
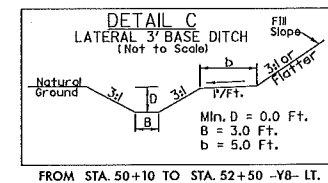
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

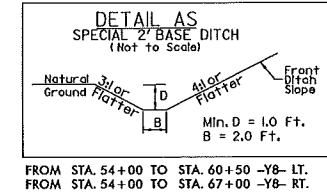
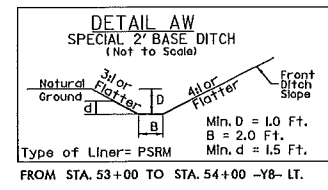
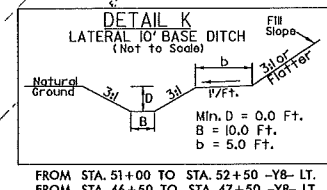
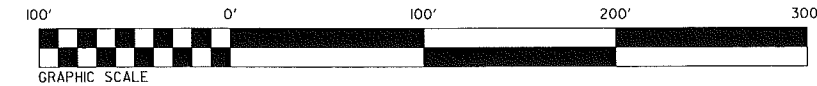
PROJECT REFERENCE NO.	SHEET NO.
R-2633B	40
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Permit Drawing
Sheet 68 of 73

NAD 83/95



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



SEE SHEETS 69 & 70 FOR -Y8- PROFILE

8/17/99

REVISIONS

2/8/2013
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LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.

R-2633B

SHEET NO.

40

R/W SHEET NO.

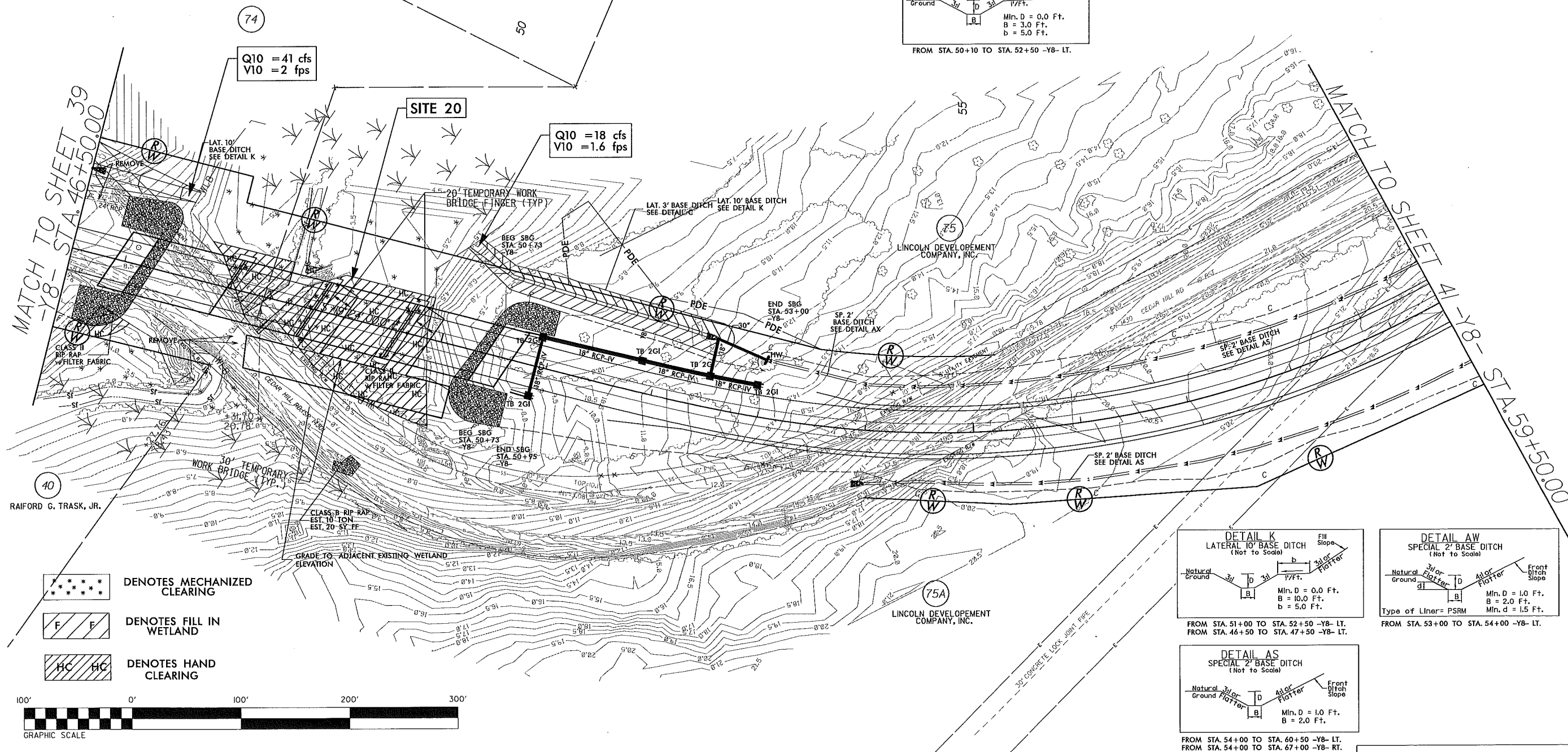
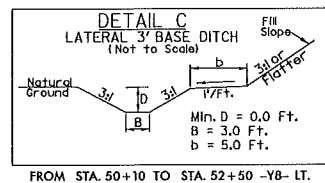
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing
Sheet 69 of 73

NAD 83/95



5/28/99

\\30.202\RA\Highways\Permit\Stream & Wetland\R-2633B.RDY_PFL_SHEETS.dgn
2/22/97 PM

BW233 ELEVATION 23.1W
Y8 STA 37+43.4 14.36' LT
RR SPIKE IN BASE OF 20 PINE

PROJECT REFERENCE NO.
R-2633B
ROADWAY DESIGN
ENGINEER
SHEET NO.
69
HYDRAULICS
ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

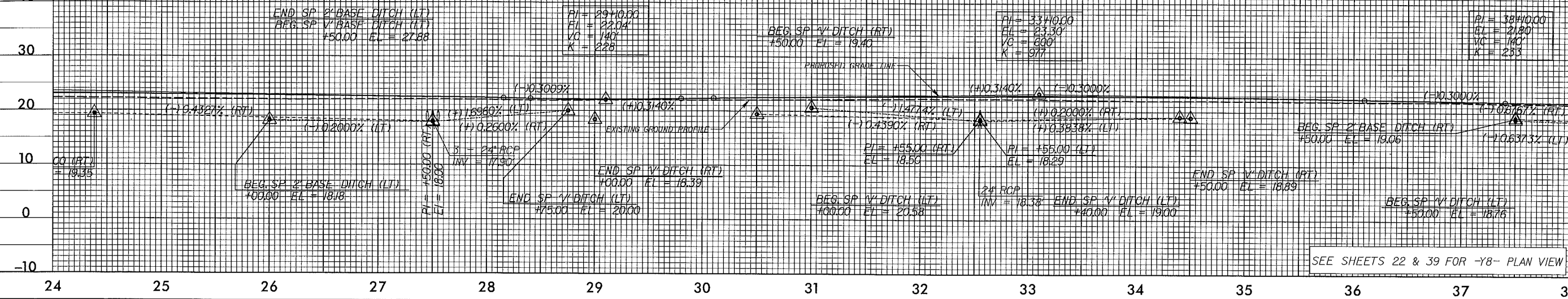
-Y8-

Permit Drawing
Sheet 28 of 72

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 13.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 41	CFS
DESIGN HW ELEVATION	= 20.68	FT
100 YEAR DISCHARGE	= 31	CFS
100 YEAR HW ELEVATION	= 21.1	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 41	CFS
OVERTOPPING ELEVATION	= 20.7	FT

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 3.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 11.3	CFS
DESIGN HW ELEVATION	= 20.35	FT
100 YEAR DISCHARGE	= 12.6	CFS
100 YEAR HW ELEVATION	= 20.50	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 12.6	CFS
OVERTOPPING ELEVATION	= 20.5	FT

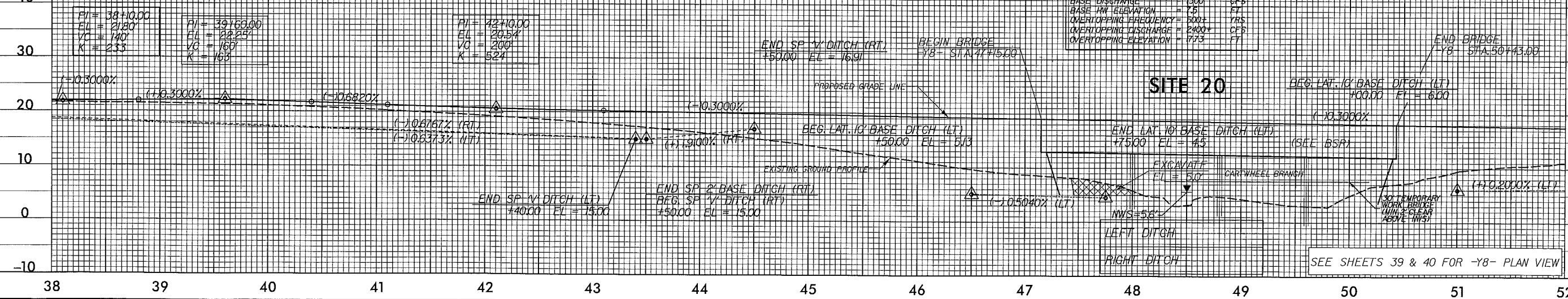
PI = 38+10.00
EL = 21.80
VC = 140'
K = 233



-Y8-

BW234 ELEVATION 11.16
Y8 STA 41+32.2 22.81' LT
RR SPIKE IN BASE OF 18 PINE

BRIDGE HYDRAULIC DATA		
DRAINAGE AREA	= 1	50 MI
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 100	CFS
DESIGN HW ELEVATION	= 7.2	FT
BASE DISCHARGE	= 1300	CFS
BASE HW ELEVATION	= 7.5	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 2400	CFS
OVERTOPPING ELEVATION	= 17.73	FT



PROPERTY OWNERS

NAMES AND ADDRESSES

REFERENCE NO.	NAMES	ADDRESSES
35	E.G.DALE ET UX	PO BOX 157 LELAND, NC 28451
36	ANNETTE ANDREWS TROY ET AL	2107 MT MISERY ROAD LELAND, NC 28451
39	LINCOLN DEVELOPMENT CO.,INC.	PO BOX 2021 WILMINGTON, NC 28402
40	RAEFORD G. TRASK, JR.	1202 EASTWOOD ROAD WILMINGTON, NC 28403
59	TOM PARTNERS, LTD.	1508 MILITARY CUTOFF RD WILMINGTON, NC 28403
74	ESTATE OF ESSIE BLIZZARD	7524 ELKMONT CIRCLE WILMINGTON, NC 28411
75	LINCOLN LAND DEVELOPMENT CO.,INC.	PO BOX 2021 WILMINGTON, NC 28402
78	CITY OF WILMINGTON	PO BOX 1810 WILMINGTON, NC 28408
79	CAROLINA POWER AND LIGHT CO.	410 SOUTH WILMINGTON ST RALEIGH, NC 27601

NCDOT

DIVISION OF HIGHWAYS
BRUNSWICK AND NEW HANOVER
COUNTIES
PROJECT: R-2633B

US 17 FROM 74/76
IN BRUNSWICK COUNTY TO
US 421 IN NEWHANOVER COUNTY

PROPERTY OWNERS

NAMES AND ADDRESSES

REFERENCE NO.	NAMES	ADDRESSES
2	T.F.LIMITED HOLDINGS PARTNERSHIP	1202 EASTWOOD ROAD. WILMIINGTON, NC 28403
3	JOHN M.HEWITT,ETUX	PO BOX 273 LELAND, NC 28451
4	V.A.CREECH, JR.	PO BOX 66 LELAND, NC 28451
10	MLH, LLC.	PO BOX 1967 WILMINGTON, NC 28402
11	WCM ENTERPRISES, LLC.	305 COLONIAL DRIVE WILMINGTON, NC 28403
13	CHADWICK-ONE, LLC.	PO BOX 452 LELAND, NC 28451
15	BARNEY L.PADGETT ET UX	PO BOX 7332 WILMINGTON, NC 28456
21	LOUISE VERZAAL JOYNER	5644 56th WAY WEST PALM BEACH, FL 33409

NCDOT

DIVISION OF HIGHWAYS
BRUNSWICK AND NEW HANOVER
COUNTIES
PROJECT: R-2633B

US 17 FROM 74/76
IN BRUNSWICK COUNTY TO
US 421 IN NEWHANOVER COUNTY

WETLAND PERMIT IMPACT SUMMARY														
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS							SURFACE WATER IMPACTS				
			404 Permanent Fill In Wetlands (ac)	CAMA Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	404 Hand Clearing in Wetlands (ac)	CAMA Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1***	-L- 24+75 Lt.	Roadway Fill												
2***	-L- 37+06 Rt.	Bridge												
3****	-L- 40+57 to 66+97	Roadway Fill	7.97			0.03		0.57						
4	-RP D1- 22+60	Deleted due to new JS delineation												
5*	-L- 80+33 to 85+08	Roadway Fill	1.14					0.11						
6*	-L- 109+28 to 134+54	Roadway Fill	10.12					1.12						
6A**	-L- 138+11 to 140+70	Roadway Fill	0.68											
6B**	-L- 141+20 to 144+29	Roadway Fill	0.41					0.02						
7*	-L- 146+78 to 165+66	Roadway Fill	10.93					0.96						
8	-L 166+60	Deleted due to new JS delineation												
9*	-L- 186+97 to 191+88	Roadway Fill	1.04					0.09						
10	-RP D2- 19+20 Lt.	Deleted due to new JS delineation												
11*	-L- 194+75 to 216+13	Roadway Fill; 3@42"	8.72					0.93		0.07	<0.01	205	20	
12	-L- 230+39 to 242+11	Deleted due to new JS delineation												
13	-L- 256+36 to 265+87	Deleted due to new JS delineation												
14*	-L- 264+32 to 266+94	Bridge					0.03	0.20		<0.01				
		Temp. Work Bridge						0.10						
15*	319+46 to 387+92	Bridge	0.05				1.17	10.06	8.20	0.13	0.03			
		Temp. Work Bridge						6.43	4.70					
16*	-L- 399+43 to 400+51	Roadway Fill	0.22											
17***	-Y5- 16+25 Rt.	48" RCP												
18***	-Y5- 16+25 Lt.	48" RCP												
19*	-Y7- 52+09	Culvert								<0.01	<0.01	5	39	
	-Y7 DET- 16+45	Detour Culvert			0.06			0.03			0.61		90	
20*	-Y8- 47+74 to 49+88	Bridge	<0.01				0.04	0.17						
	-Y8- 48+78 to 49+95	Temp. Work Bridge						0.14						
TOTALS:			41.30		0.06	0.03	1.24	20.93	12.90	0.20	0.63	210	149	0.00
Site 14 See Structures sheet for Bridge Impacts on Cartwheel Branch Site 15 Impacts for Permanent Dual Bridges CAMA=0.08 Ac, 404=0.07 Ac, Surface Water=0.02 Ac; Total=0.17 Ac. Site 15 Impacts for Temporary Work Bridge CAMA=0.16 Ac, 404=0.21 Ac, Surface Water=0.01 Ac; Total=0.38 Ac. * Revised due to new JS Delineation ** New Site due to new JS Delineation *** Sites 1, 2, 17, and 18 are now permitted with R-2633AA & AB and the impacts are included with that project. **** A portion of Site 3 is now permitted with R-2633AA & AB and the impacts are included with that project. 0.75 acres of Temp. Fill in 404 Wetlands in the Hand Clearing areas for Erosion Control Measures										NC DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS BRUNSWICK AND NEW HANOVER COUNTIES WBS - 34491.1.2 (R-2633B)				
ATN Revised 3/31/05										SHEET 73 of 73				

NC 12 NEU Narrative

Utility Owners :

- **Telephone** : AT & T(contact : Mr. Shannon Coston (910)341-1623)
- **Power** : Progress Energy (contact : Mr. Eddie Watkins (919)882-5051)
- **Gas** : Piedmont Natural Gas Mr. Dave Vena (704)731-4496)

General Utility Relocations:

All existing underground telephone cables, power poles and gas lines inside the project construction limits will be abandoned and new underground telephone cables, power poles and gas lines will be installed outside of the project.

Existing Utilities :

- **Telephone** : the existing underground telephone copper cables are located on the west side of SR 1246(Mt. Misery Rd.) and SR 1430(Cedar Hill Rd.).
- **Power** : the existing power poles are located on the east side of SR 1246(Mt. Misery Rd) and west side of SR1430(Cedar Hill Rd.).
- **Gas** : the existing gas lines are located on the south side of CSX R.R., east side of SR 1426(Mt. Misery Rd.) and north side SR 1394(Sutton Plant Rd)

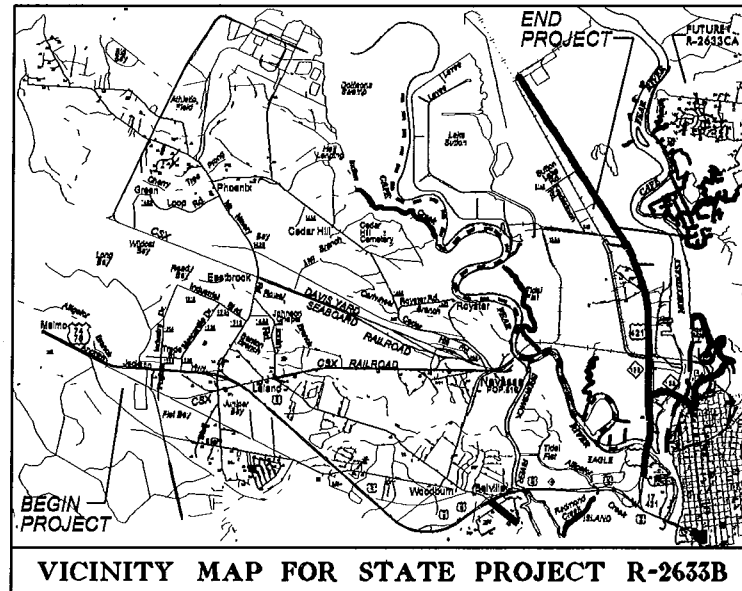
Proposed Utility Relocation :

- **Telephone**: All proposed telephone cables will be directionally bored through the wetland areas. There will be no environmental impacts.
- **Power** : Progress Energy will relocate power poles to outside of the project. Under the proposed over head power lines there will be hand clearing impact on the wet land.
- **Gas** : Piedmont Natural Gas will relocate 4" gas line with directionally bored through the wetland areas. They need least amount of temporary excavation in wetland for the bell holes for the tie-ins between proposed and existing gas lines. They need work space for rig set up of bores, equipment movement and to weld pipes. Timber mats will be used for all these work spaces.

28-MAR-2013 08:52
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\$\$\$\$\$USERNAME\$\$\$\$\$

09/28/95

TIP PROJECT: R-2633B



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NEU PERMIT PLANS BRUNSWICK
-NEW HANOVER COUNTY

LOCATION: US 17(WILMINGTON BYPASS) FROM US 7476
EAST OF MALMO IN BRUNSWICK COUNTY TO US 421
NORTH OF WILMINGTON IN NEW HANOVER COUNTY

TYPE OF WORK: UTILITIES RELOCATION

T.I.P. NO.

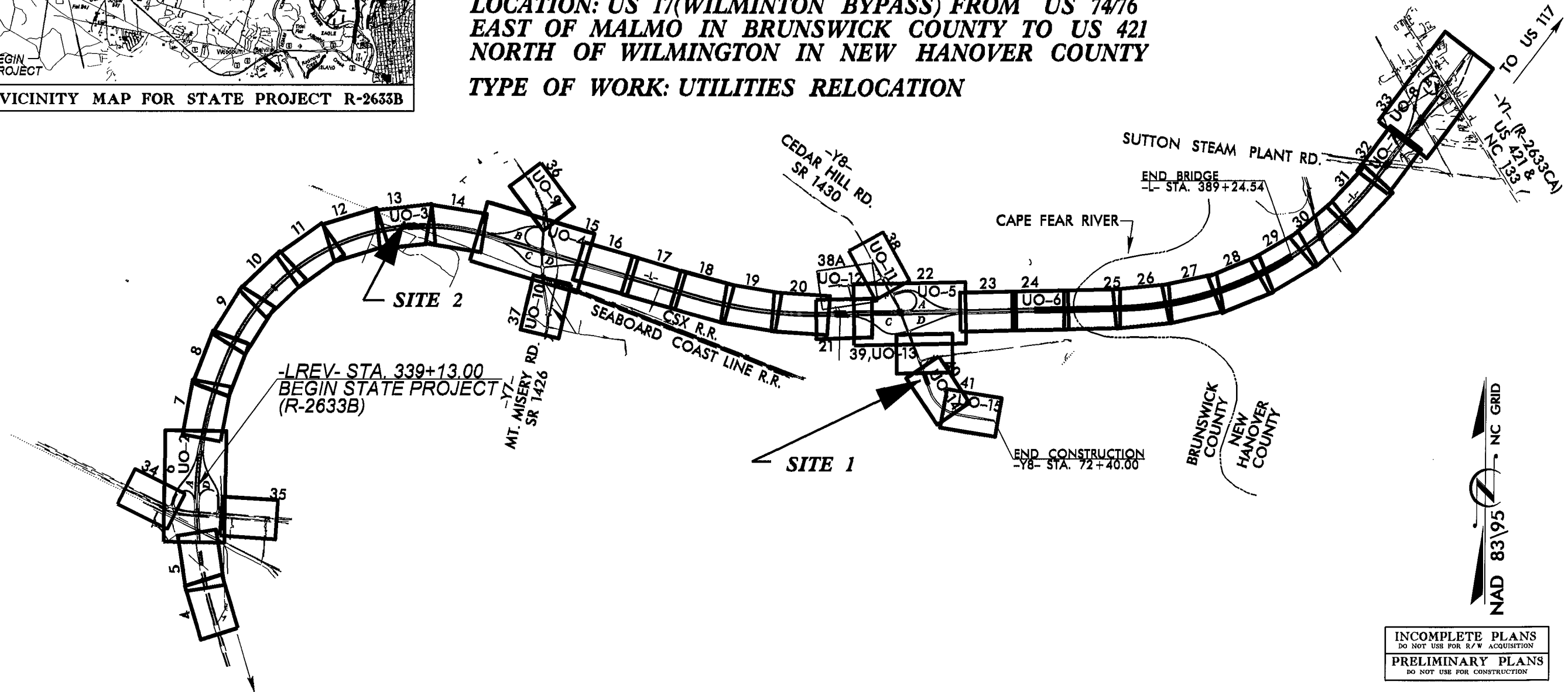
R-2633B

SHEET NO.

1

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Utility Permit Drawing
Sheet 1 of 15
Revised 3/28/13



GRAPHIC SCALES



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
NUO-1	TITLE SHEET
NUO-2 THRU NUO-3	UTILITY'S WETLAND IMPACT

UTILITY OWNERS ON PROJECT

- (1) POWER : PROGRESS ENERGY
- (2) TELEPHONE : AT & T
- (3) GAS : PIEDMONT NATURAL GAS



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

1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-4690
FAX (919) 250-4151

Roger Worthington, P.E. UTILITIES SECTION ENGINEER

R.B. Wilkins, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER

Jong-Tae Yoon UTILITIES PROJECT DESIGNER

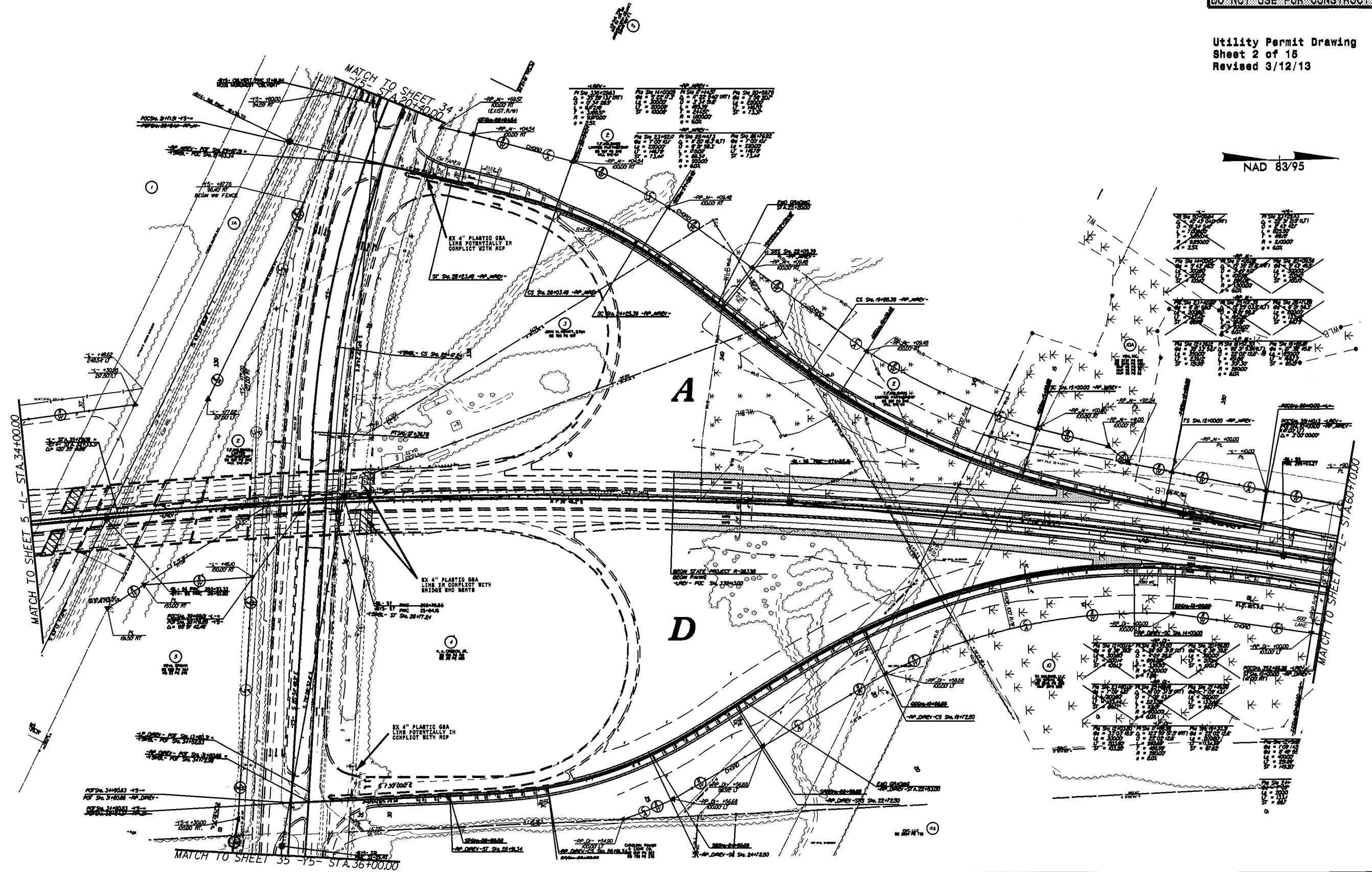
UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Utility Permit Drawing
Sheet 2 of 15
Revised 3/12/13

NAD 83/95



UTILITIES BY OTHERS

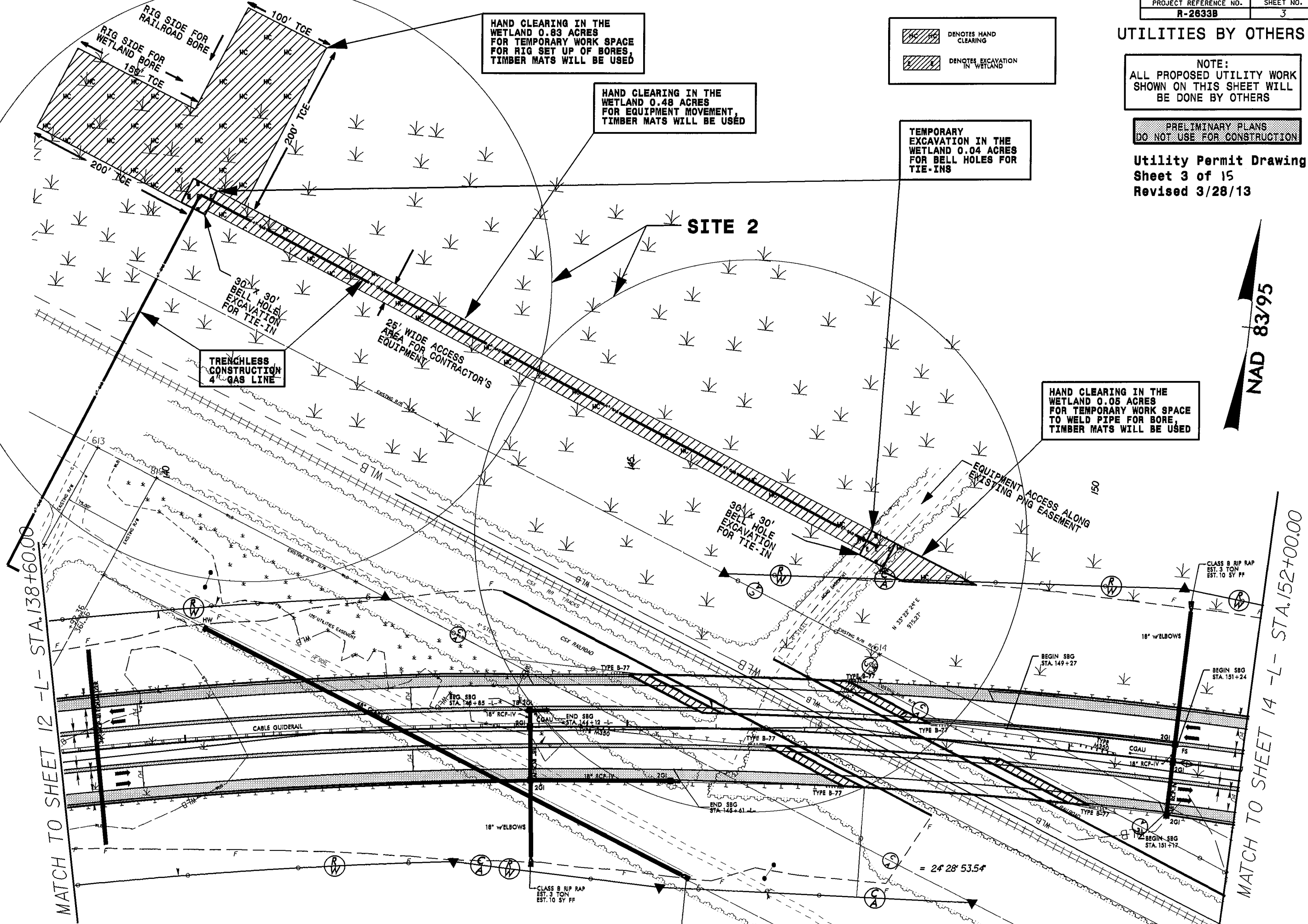
NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Utility Permit Drawing
Sheet 3 of 15
Revised 3/28/13

NAD 83/95

5/14/99
28-MAR-2013 11:43
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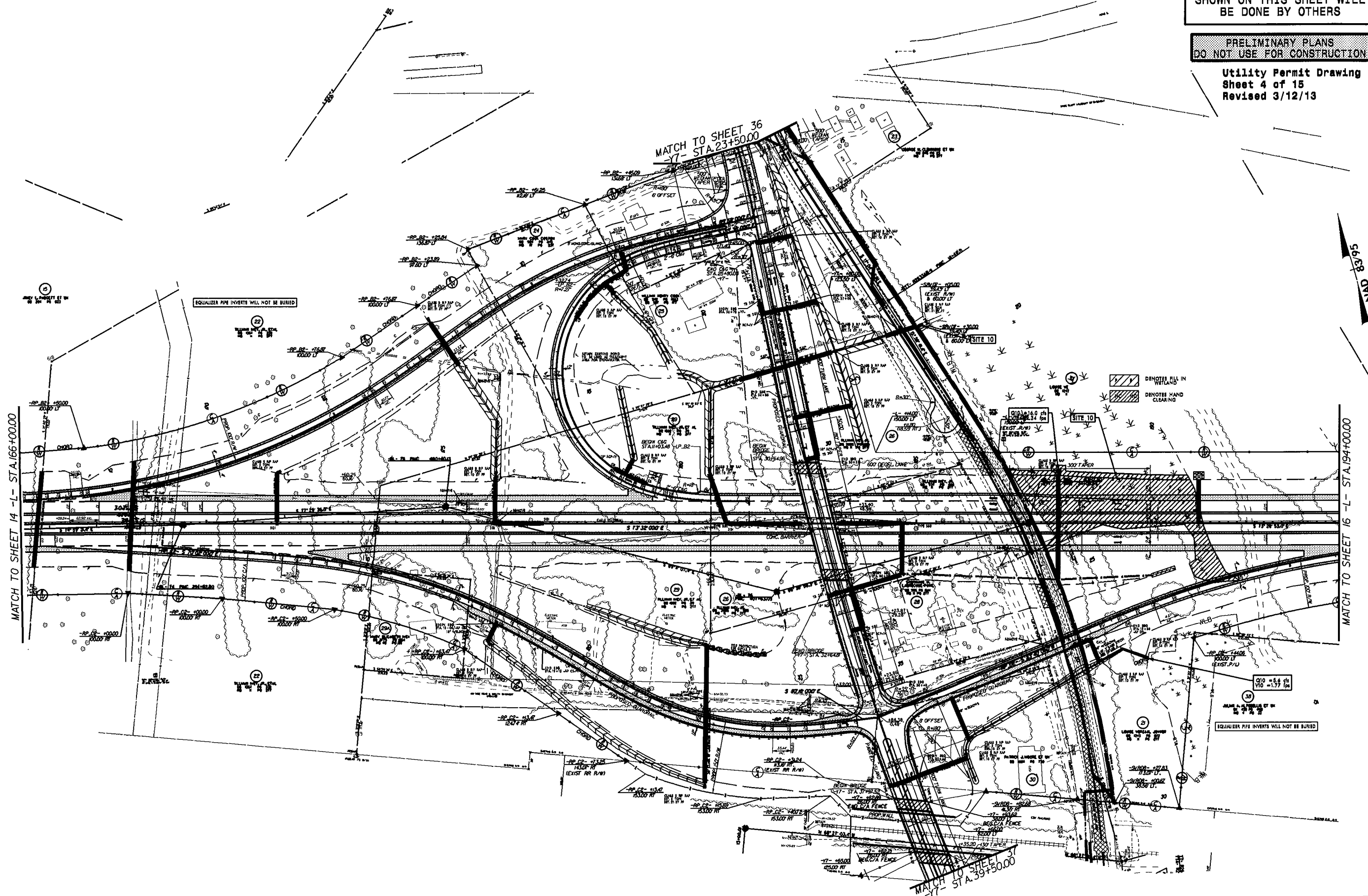


UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

**PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION**

Utility Permit Drawing
Sheet 4 of 15
Revised 3/12/13



12-MAR-2013 09:12
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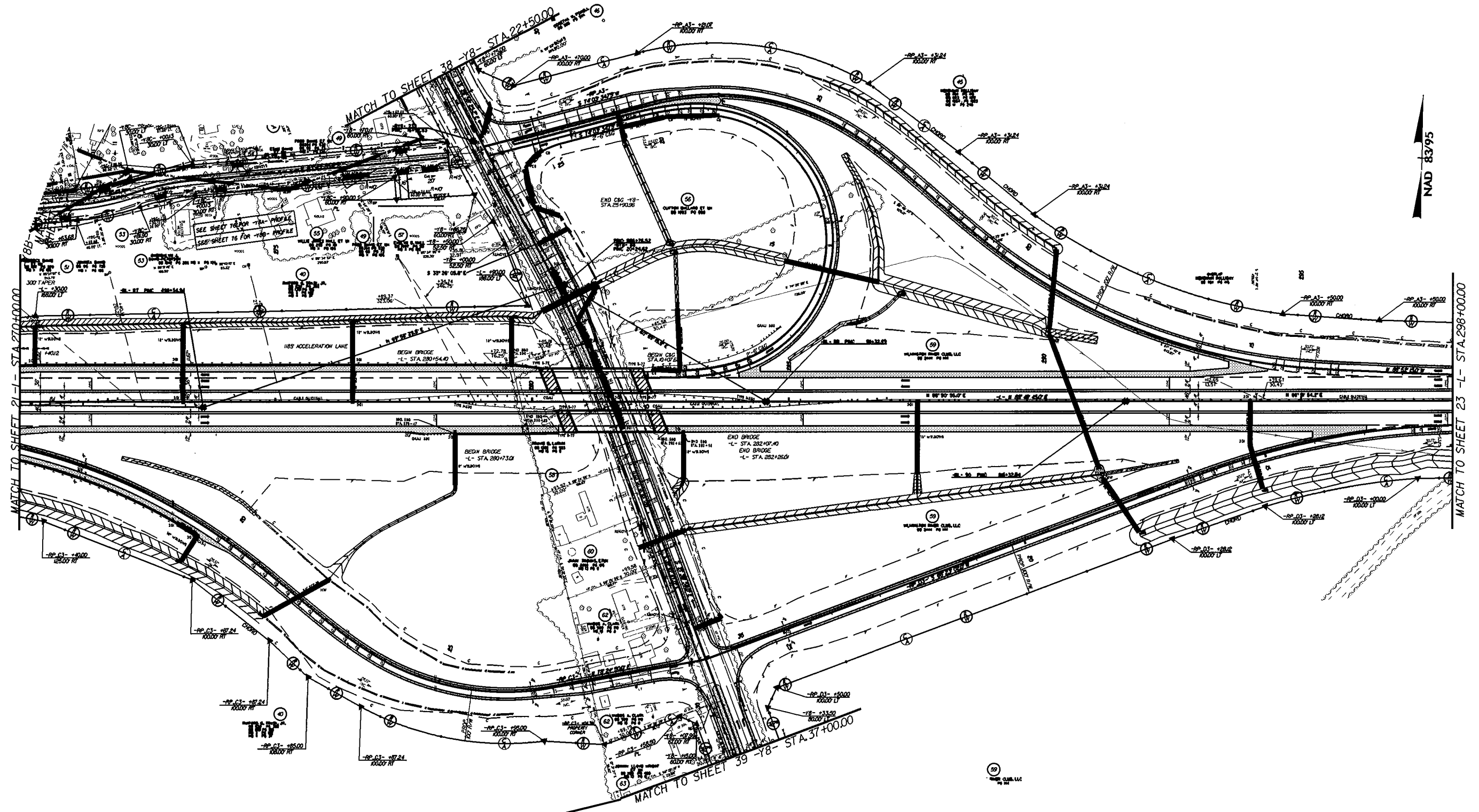
5/14/99

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Utility Permit Drawing
Sheet 5 of 15
Revised 3/12/13



NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

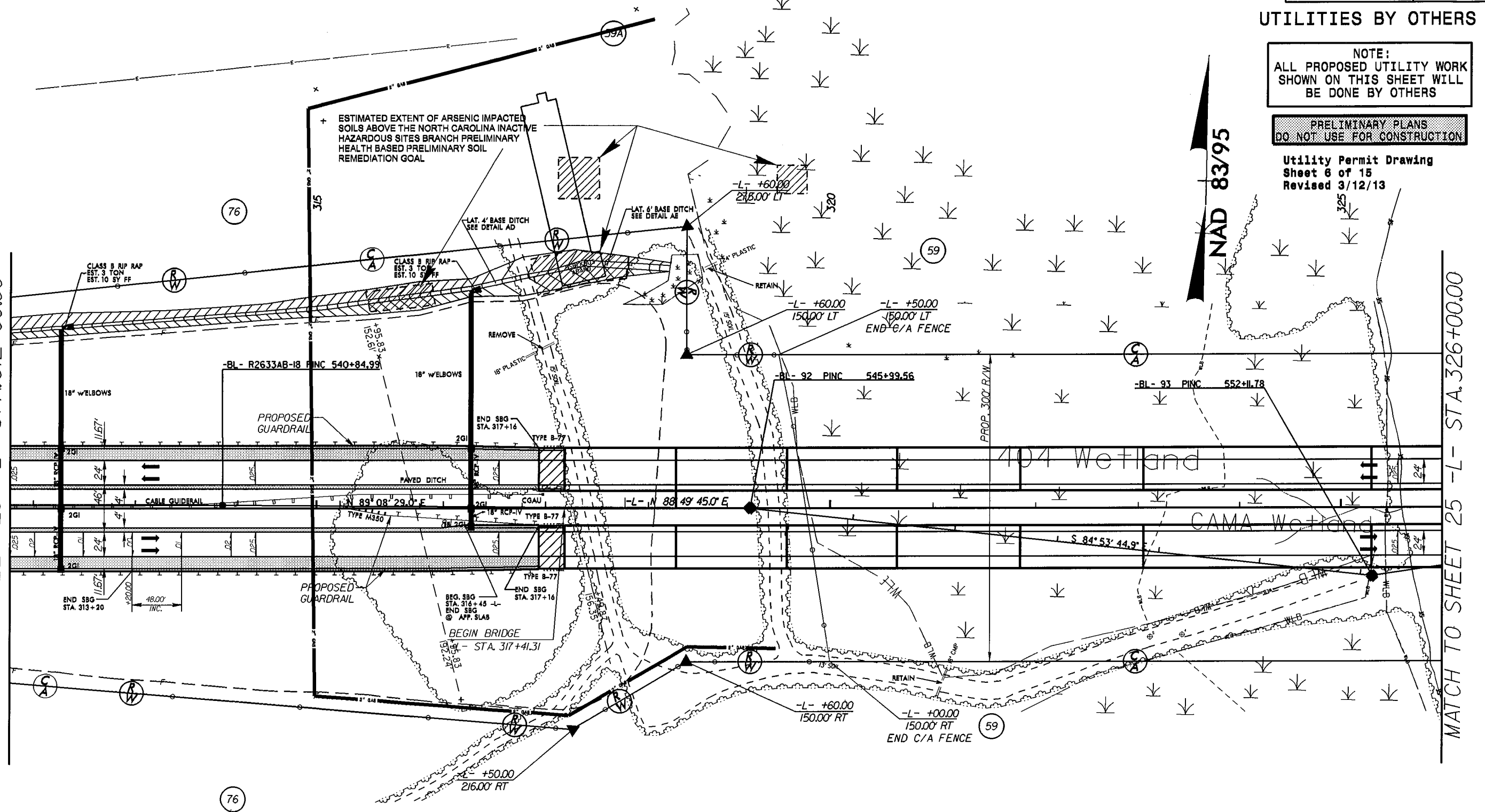
**PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION**

Utility Permit Drawing
Sheet 6 of 15
Revised 3/12/13

NAD 83/95

MATCH TO SHEET 23 -L- STA. 312+00.00

MATCH TO SHEET 25 -L- STA. 326+00.00



UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Utility Permit Drawing
Sheet 7 of 15
Revised 3/12/13

PI Sta 383+94.77
 $\Delta = 51' 49" 22.8" (LT)$
 $D = 0' 38" 11.8"$
 $L = 8,140.34'$
 $T = 4,372.40'$
 $R = 9,000.00'$
 $e = 2.5\%$

CAROLINA POWER AND LIGHT CO.

79

DB 474 PG 502
DB 720 PG 420
DB 690 PG 555
DB 501 PG 407
DB 434 PG 525
DB 856 PG 823
DB 880 PG 449
DB 1977 PG 643
DB 506 PG 065
DB 853 PG 865
DB 21 PG 56
DB 33 PG 362
DB 39 PG 290

PI Sta 11+33.35
 $\Delta = 3' 00' 00.0"$
 $Ls = 200.00'$
 $LT = 133.35'$
 $ST = 66.68'$

PI Sta 15+04.73
 $\Delta = 18' 07' 51.4" (LT)$
 $D = 3' 00' 00.0"$
 $L = 604.36'$
 $T = 304.73'$
 $R = 1,909.86'$
 $e = 5.5\%$

82

OLD DOMINION
FREIGHT LINE, INC.
DB 2394 PG 539

NAD 83/95

MATCH TO SHEET 31-L- STA 420+00.00

MATCH TO SHEET 33-L- STA 433+60.00

UTILITIES BY OTHERS

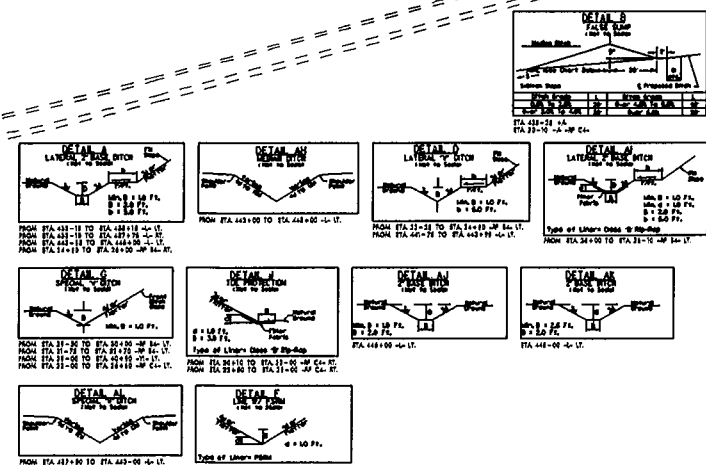
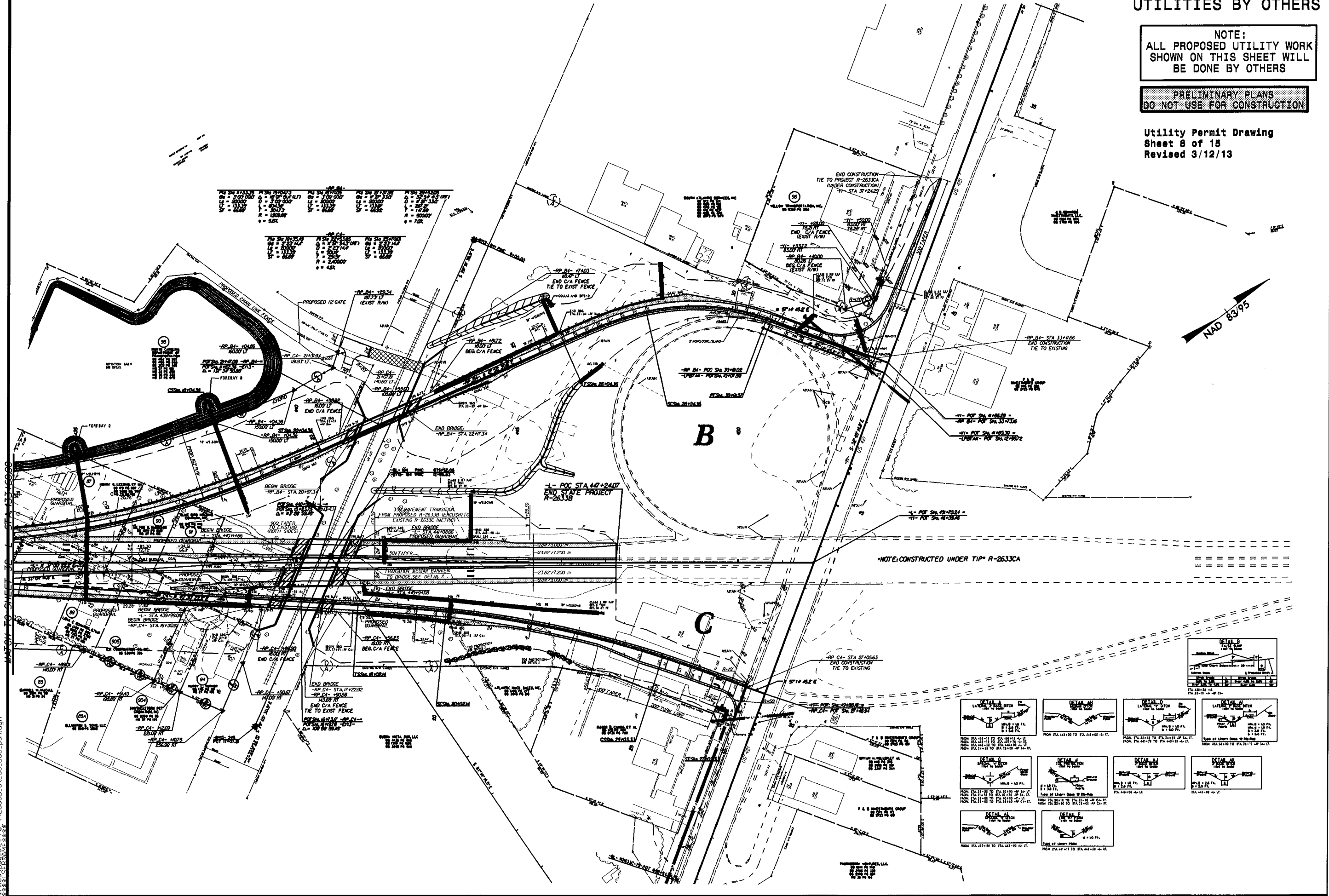
NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Utility Permit Drawing
Sheet 8 of 15
Revised 3/12/13

5/14/99

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UTILITIES BY OTHERS

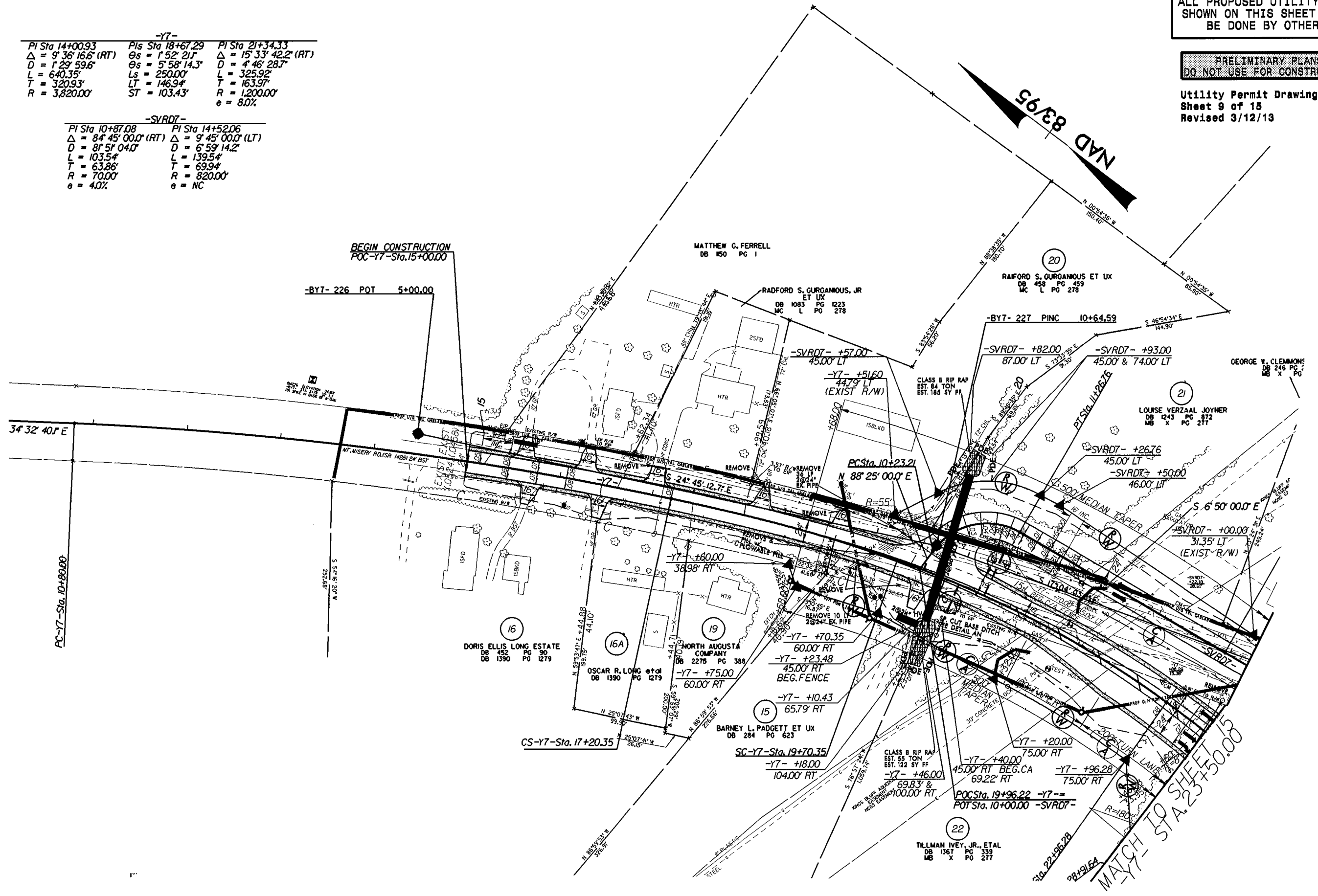
NOTE:
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Utility Permit Drawing
Sheet 9 of 15
Revised 3/12/13

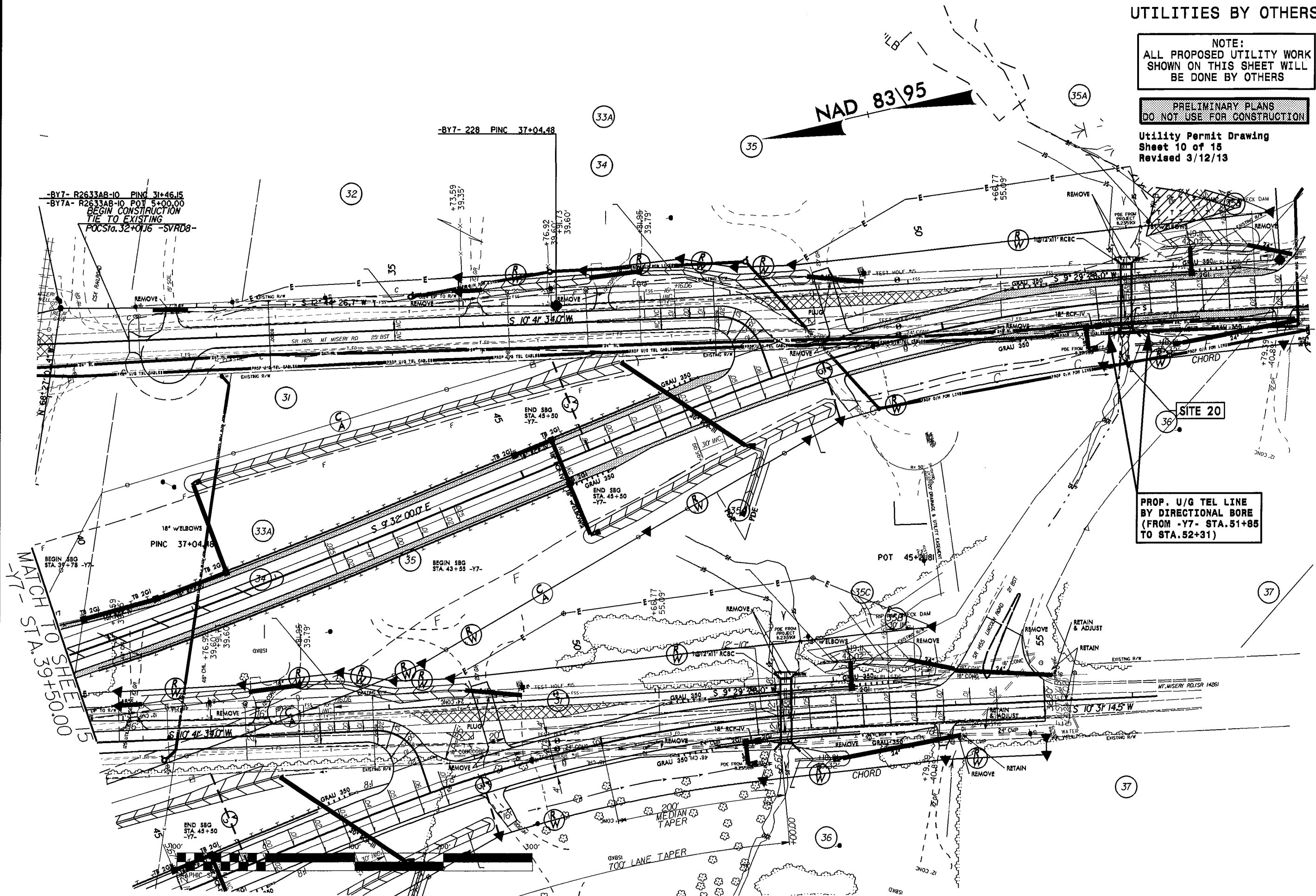
-Y7-		
PI Sta 14+00.93	PIs Sta 18+67.29	PI Sta 21+34.33
$\Delta = 9' 36' 16.6''$ (RT)	$\Theta s = 1' 52' 21''$	$\Delta = 15' 33' 42.2''$ (RT)
$D = 1' 29' 59.6''$	$\Theta s = 5' 58' 14.3''$	$D = 4' 46' 28.7''$
$L = 640.35'$	$Ls = 250.00'$	$L = 325.92'$
$T = 320.93'$	$LT = 146.94'$	$T = 163.97'$
$R = 3,820.00'$	$ST = 103.43'$	$R = 1,200.00'$
		$e = 8.0\%$

-SVRD7-	
PI Sta 10+87.08	PI Sta 14+52.06
$\Delta = 84' 45' 00.0''$ (RT)	$\Delta = 9' 45' 00.0''$ (LT)
$D = 8' 51' 04.0''$	$D = 6' 59' 14.2''$
$L = 103.54'$	$L = 139.54'$
$T = 63.86'$	$T = 69.94'$
$R = 70.00'$	$R = 820.00'$
$e = 4.0\%$	$e = NC$



NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

Utility Permit Drawing
Sheet 10 of 15
Revised 3/12/13

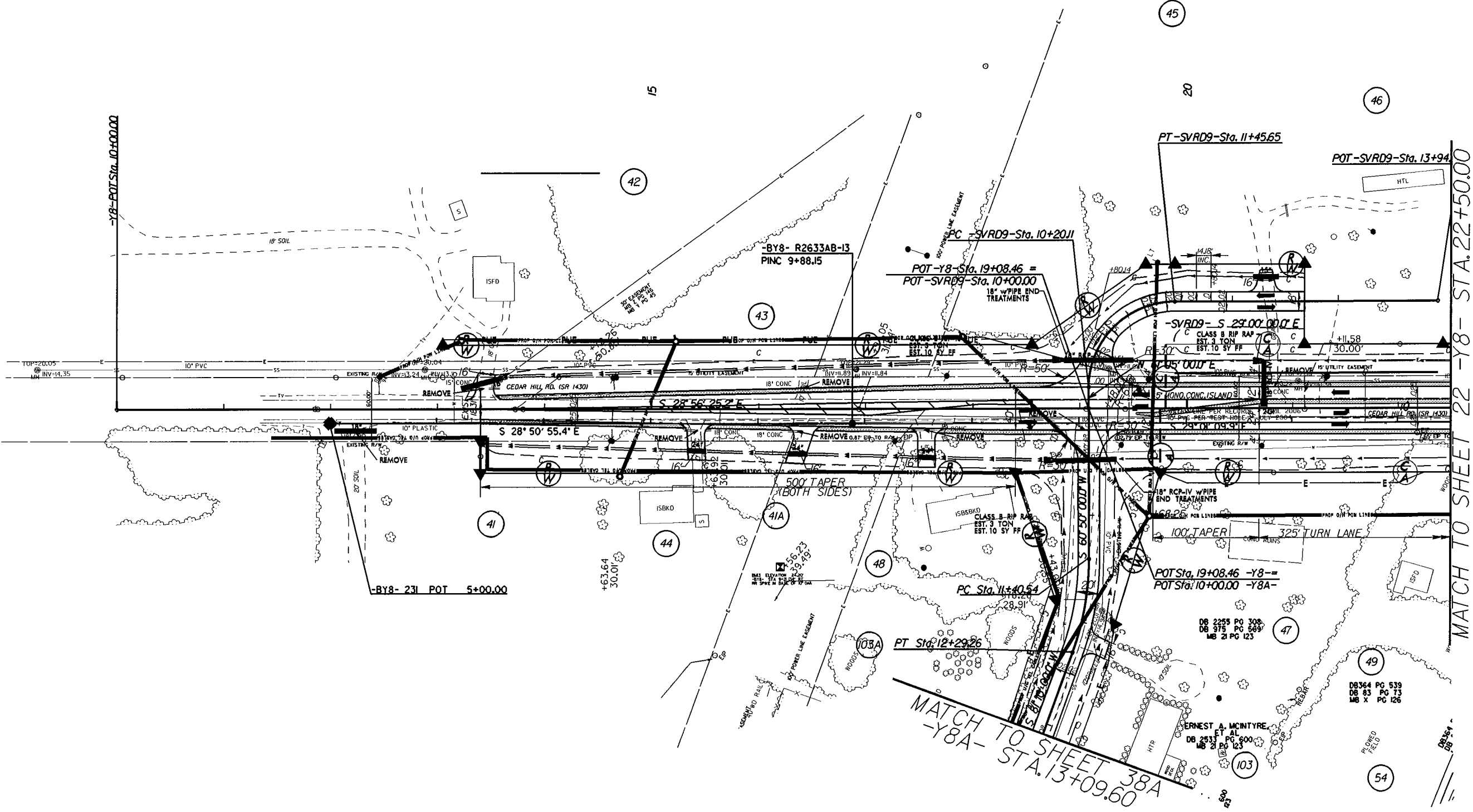
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UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

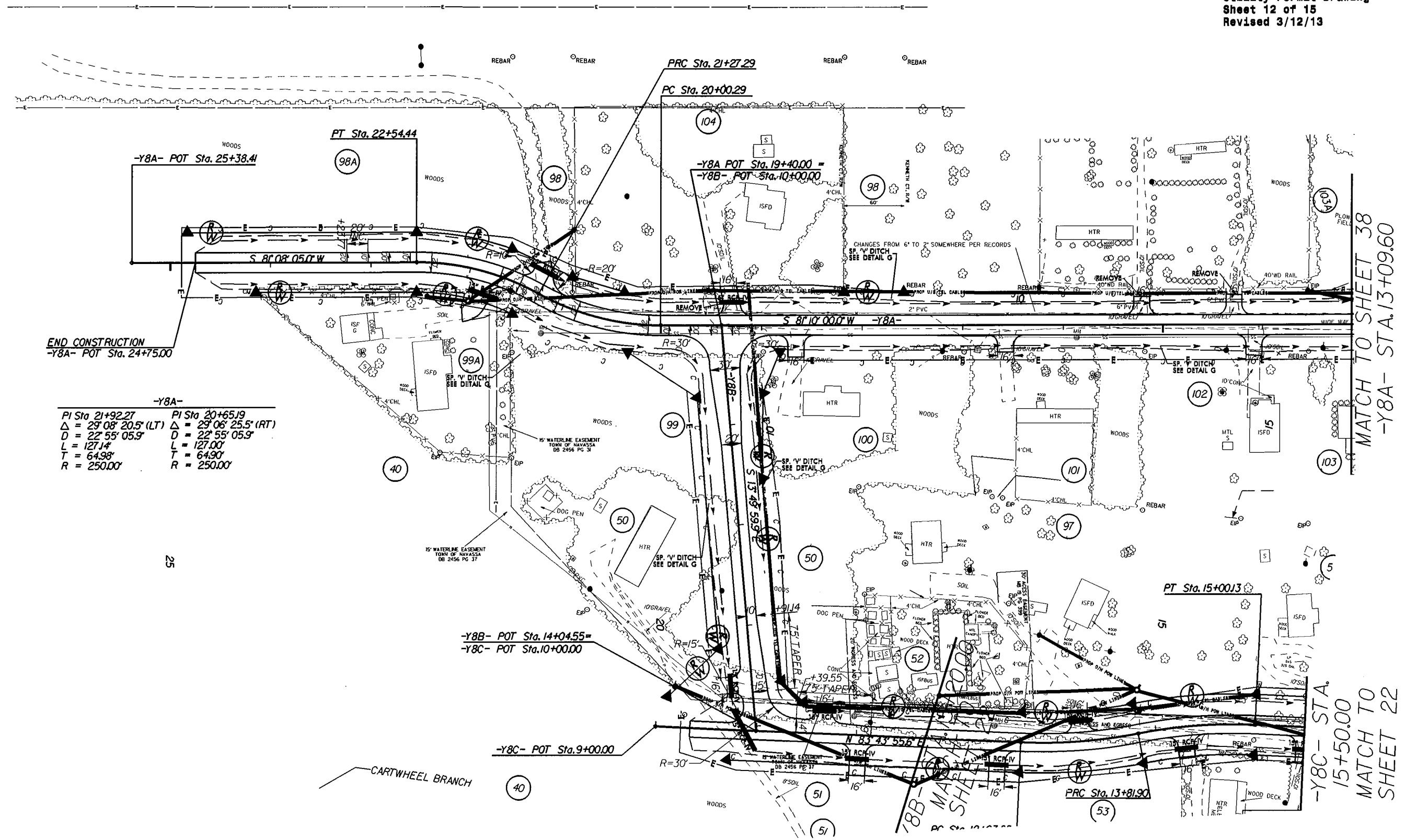
Utility Permit Drawing
Sheet 11 of 15
Revised 3/12/13



NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

**PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION**

Utility Permit Drawing
Sheet 12 of 15
Revised 3/12/13



MATCH TO SHEET 38
-Y8A- STA.13+09.60

—Y8C— STA.
15+50.00
MATCH TO
SHEET 22

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Utility Permit Drawing
Sheet 13 of 15
Revised 3/12/13

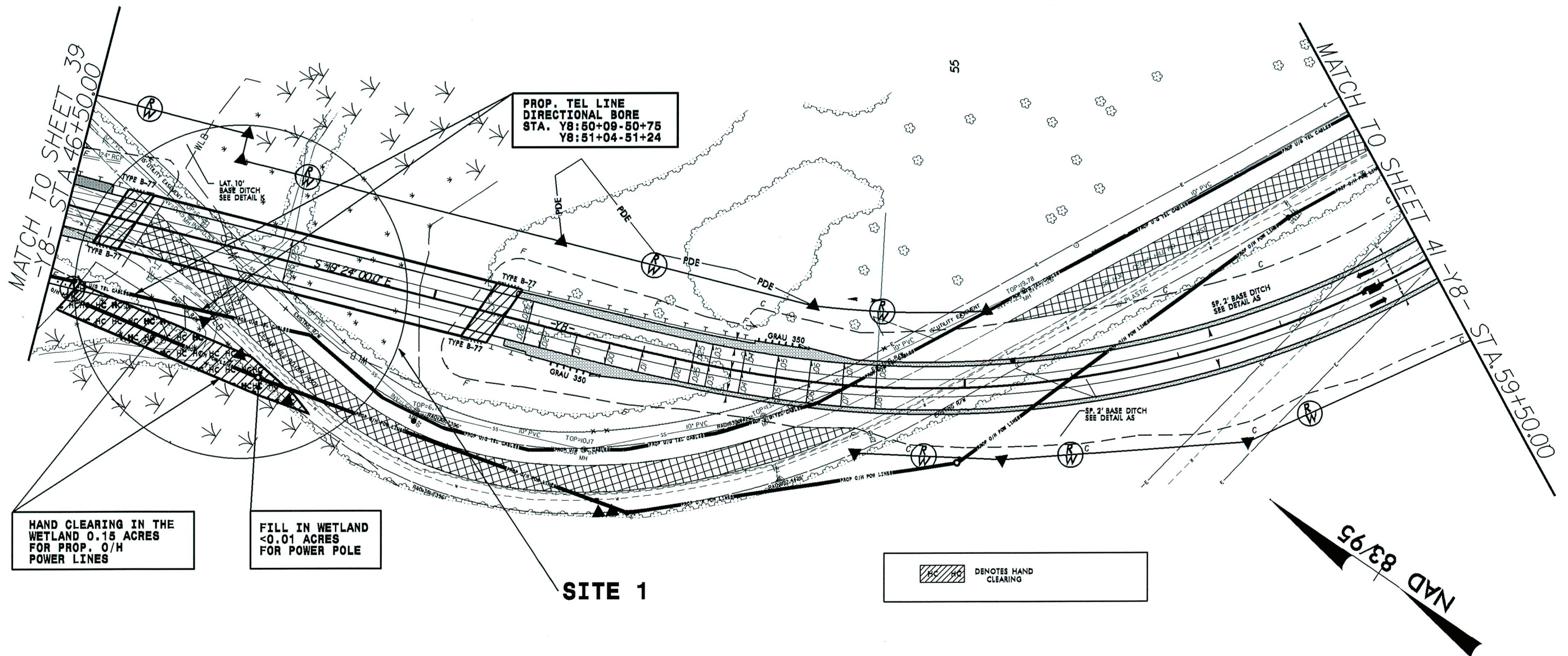
NAD 83/95



NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Utility Permit Drawing
Sheet 14 of 15
Revised 3/28/13



R/W REVISION: 03/30/09 - ADDED PARCEL 75 LINCOLN DEVELOPMENT.
R/W REVISION: 02/11/10 - REVISED R/W ON PARCELS 74 AND 75 TO ACCOMMODATE WORK BRIDGE ALONG PROPOSED STRUCTURE.
R/W REVISION: 02/11/10 - CHANGED MONUMENT ON PARCEL 40 TO FC-ADDED R/W MONUMENTS ON EXISTING R/W-CHANGED PARCEL 75A TO
RODGERS FAMILY PROPERTIES, LLC DB 2722 PG 0782.

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\$\$\$SYNAME\$\$\$

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS							SURFACE WATER IMPACTS				
			404 Permanent Fill In Wetlands (ac)	CAMA Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	404 Hand Clearing in Wetlands (ac)	CAMA 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	-Y8- 46+60	Prop. O/H Power line						0.15						
	-Y8- 48+58	Prop. Power Pole	<0.01											
2	-L- 138+96~141+92	Rig set up of bores 4" gas line						0.83						
	-L- 140+36~140+74	Bell holes for tie-ins 4" gas line				0.02*								
	-L- 140+62~147+63	Equipment Movement						0.48						
	-L- 147+50~147+89	Bell holes for tie-ins 4" gas line				0.02*								
	-L- 147+75~148+80	Weld pipe for bore						0.05						
TOTALS:			<0.01		0.00	0.04	0.00	1.51	0.00	0.00	0.00	0	0	0.00

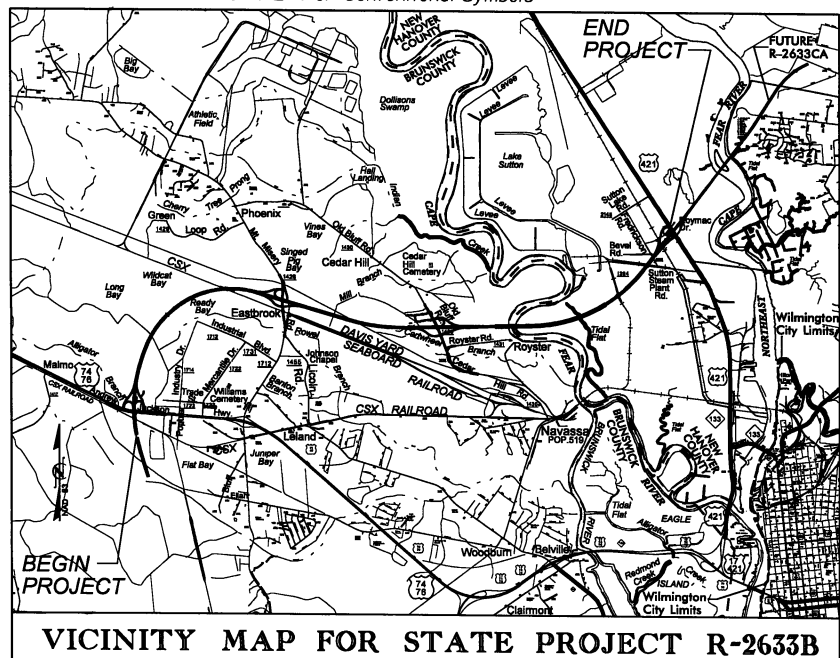
* Temporary Excavation

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 BRUNSWICK AND NEW HANOVER COUNTIES
 WBS - 34491.1.2 (R-2633B)
 SHEET

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

TIP PROJECT: R-2633B

CONTRACT:



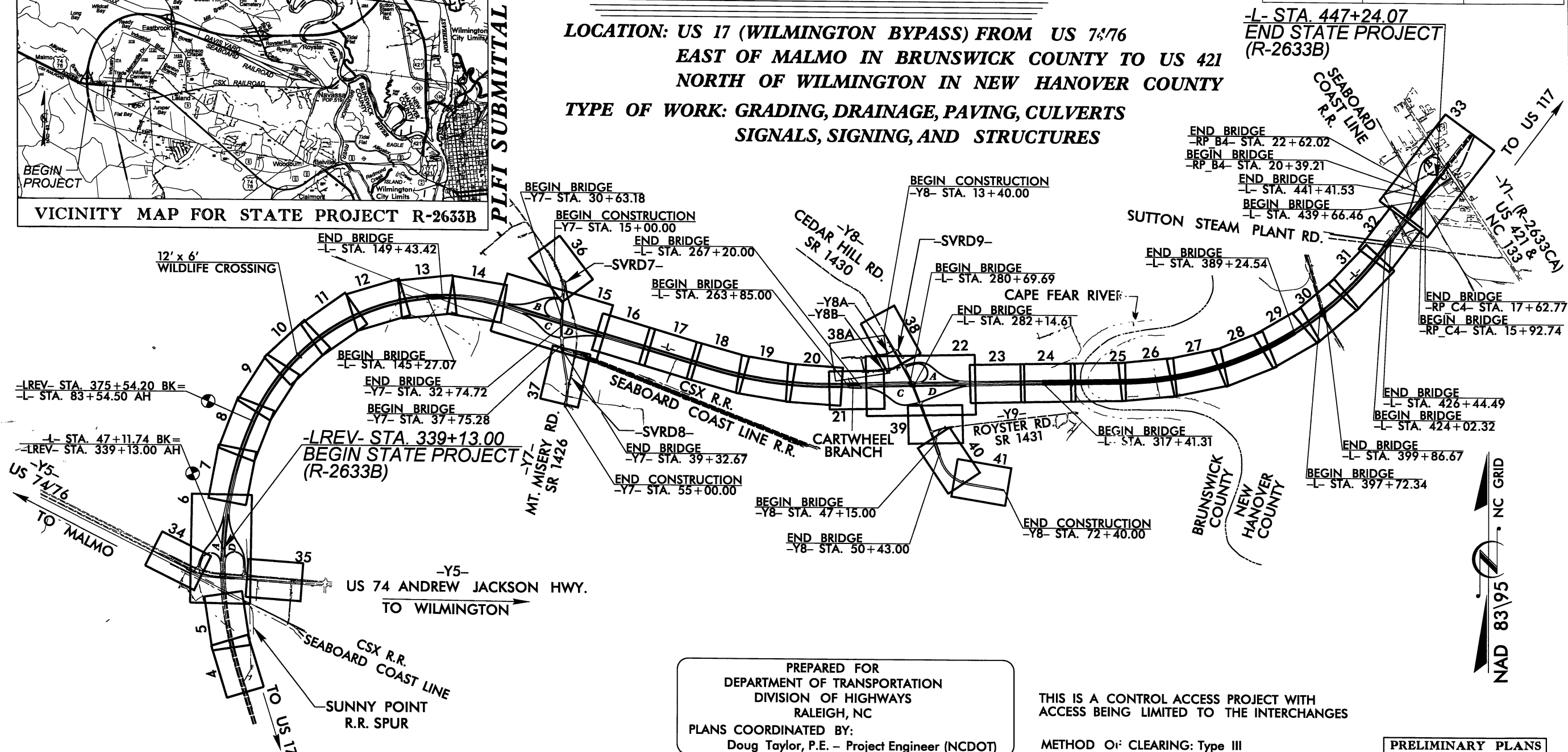
PLFI SUBMITTAL

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
***BRUNSWICK &
NEW HANOVER COUNTIES***

**LOCATION: US 17 (WILMINGTON BYPASS) FROM US 7476
EAST OF MALMO IN BRUNSWICK COUNTY TO US 421
NORTH OF WILMINGTON IN NEW HANOVER COUNTY**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2633B	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34491.1.2	STPNHF-17(1)	P.E.	
34491.2.3		R / W	

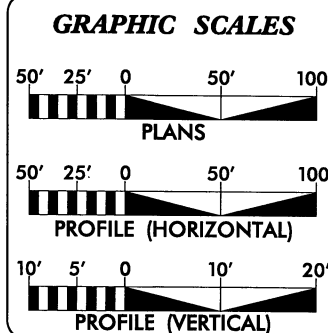


PREPARED FOR
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, NC
PLANS COORDINATED BY:
Doug Taylor, P.E. – Project Engineer (NCDOT)

THIS IS A CONTROL ACCESS PROJECT WITH
ACCESS BEING LIMITED TO THE INTERCHANGES

METHOD OF CLEARING: Type III

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DESIGN DATA
 ADT 2009 = 16,400
 ADT 2025 = 24,900
 DHV = 12 %
 D = 60 %
 T = 15 % *
 V = 70 MPH
 * TTST 10% DUAL 5%
 FUNC. CLASS. = INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2633B= 5.93 Miles
LENGTH STRUCTURES TIP PROJECT R-2633B= 1.65 Miles
TOTAL LENGTH STATE TIP PROJECT R-2633B= 7.58 Miles

**THIS IS A FULL CONTROLLED-ACCESS PROJECT
WITH ACCESS BEING LIMITED TO POINTS
SHOWN ON THE PLANS.**

Prepared In the Office of:
LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 200
RALEIGH, NC, 27612

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
June 20, 2008

LETTING DATE:
September 17, 2013

Brian K. Eason, P.E.
PROJECT ENGINEER

David Martin
PROJECT DESIGN ENGINEER

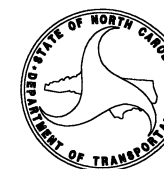
HYDRAULICS ENGINEER

SIGNATURE: _____ **P.E.** _____

**ROADWAY DESIGN
ENGINEER**

SIGNATURE: _____ **P.E.** _____

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA



P.E.

STATE HIGHWAY DESIGN ENGINEER

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.
R-2633B

SHEET NO.
1-B

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EIP
Property Corner	-----x
Property Monument	□ EDM
Parcel/Sequence Number	①23
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	-o-o-o-
Proposed Chain Link Fence	-□-□-□-
Proposed Barbed Wire Fence	-◇-◇-◇-
Existing Wetland Boundary	---WLB---
Proposed Wetland Boundary	---WLB---
Existing High Quality Wetland Boundary	---HQ WLB---
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□ T
Building	□
School	□
Church	□
Dam	□

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
River Basin Buffer	---RBB---
Flow Arrow	←
Disappearing Stream	----->
Spring	○
Swamp Marsh	✕
Proposed Lateral, Tail, Head Ditch	-----
False Sump	▽

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	⊕
Storm Sewer	S

UTILITIES:

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

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Booth	□
Telephone Pedestal	⊕
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	⊕
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	⊕
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	⊕
Utility Unknown U/G Line	UTIL
U/G Tank; Water, Gas, Oil	□
AG Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

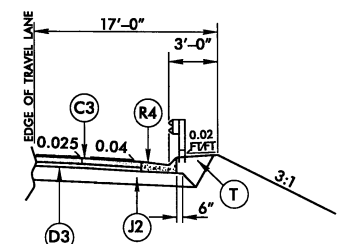
LOCHNER

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

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

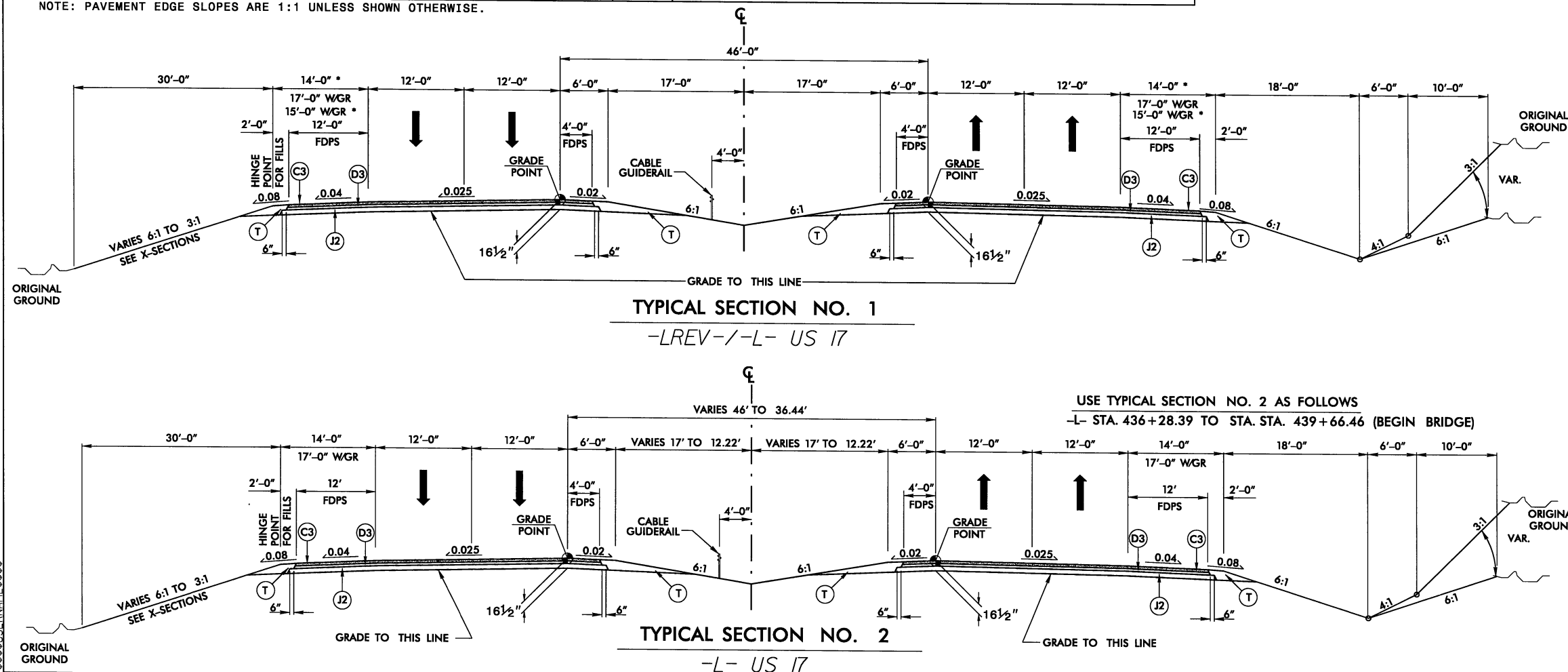
USE TYPICAL SECTION NO. 1 AS FOLLOWS

DETAIL OF SHOULDER BERM GUTTER



USE PARTIAL TYPICAL 1A IN
CONJUNCTION WITH TYPICAL 1 & 2 AT:

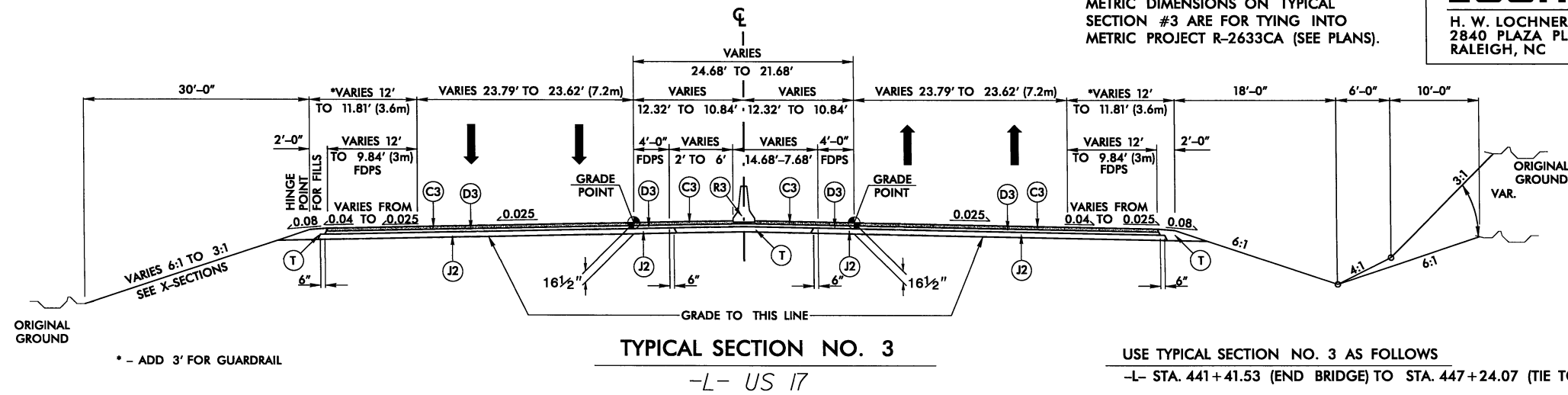
-L- STA. 101+24 RT. TO 106+15 RT.
-L- STA. 137+50 RT. TO 145+81 RT.
-L- STA. 151+19 RT. TO 161+80 RT.
-L- STA. 255+59 RT. TO 263+25 RT.
-L- STA. 260+93 RT. TO 263+70 RT.
-L- STA. 267+35 LT. TO 280+19 LT.
-L- STA. 278+47 LT. TO 280+52 RT.
-L- STA. 282+63 LT. TO 282+95 RT.
-L- STA. 302+50 RT. TO 313+20 RT.
-L- STA. 304+56 RT. TO 317+16 RT.
-L- STA. 389+50 LT. TO 397+54 LT.
-L- STA. 400+37 LT. TO 404+00 LT.
-L- STA. 422+00 RT. TO 424+12 RT.
-L- STA. 423+10 LT. TO 423+40 LT.
-L- STA. 426+32 RT. TO 430+83 34 LT.
-L- STA. 427+05 RT. TO 430+83 34 RT.



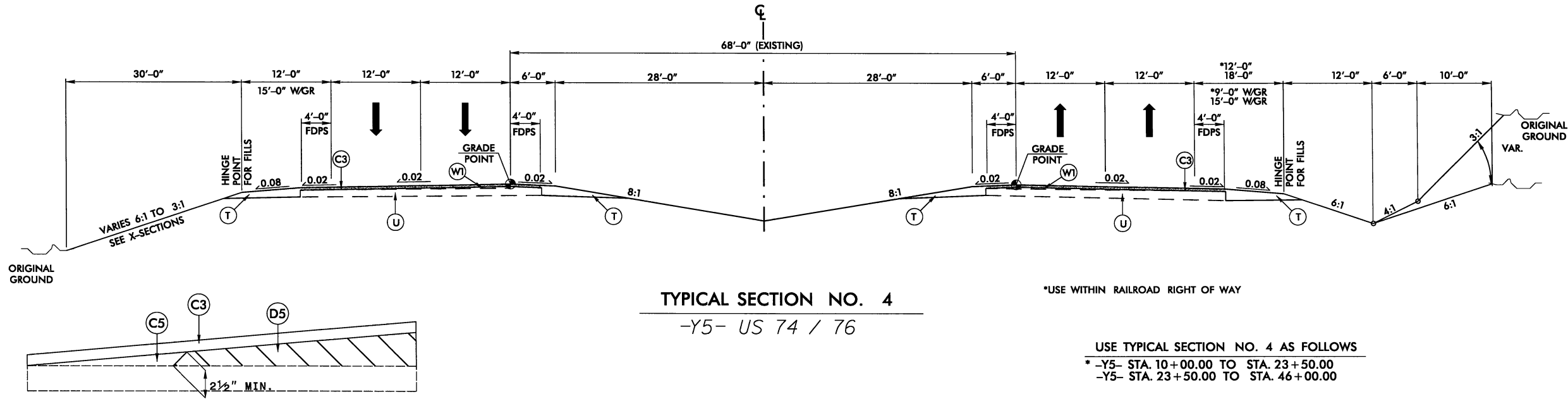
NOTE:
METRIC DIMENSIONS ON TYPICAL
SECTION #3 ARE FOR TYING INTO
METRIC PROJECT R-2633CA (SEE PLANS).

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

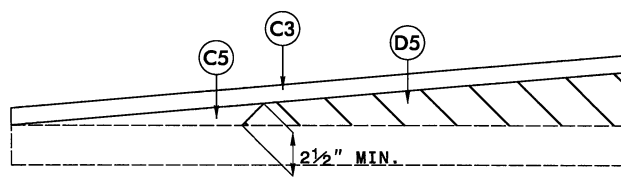
PROJECT REFERENCE NO. R-2633B	SHEET NO. 2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	



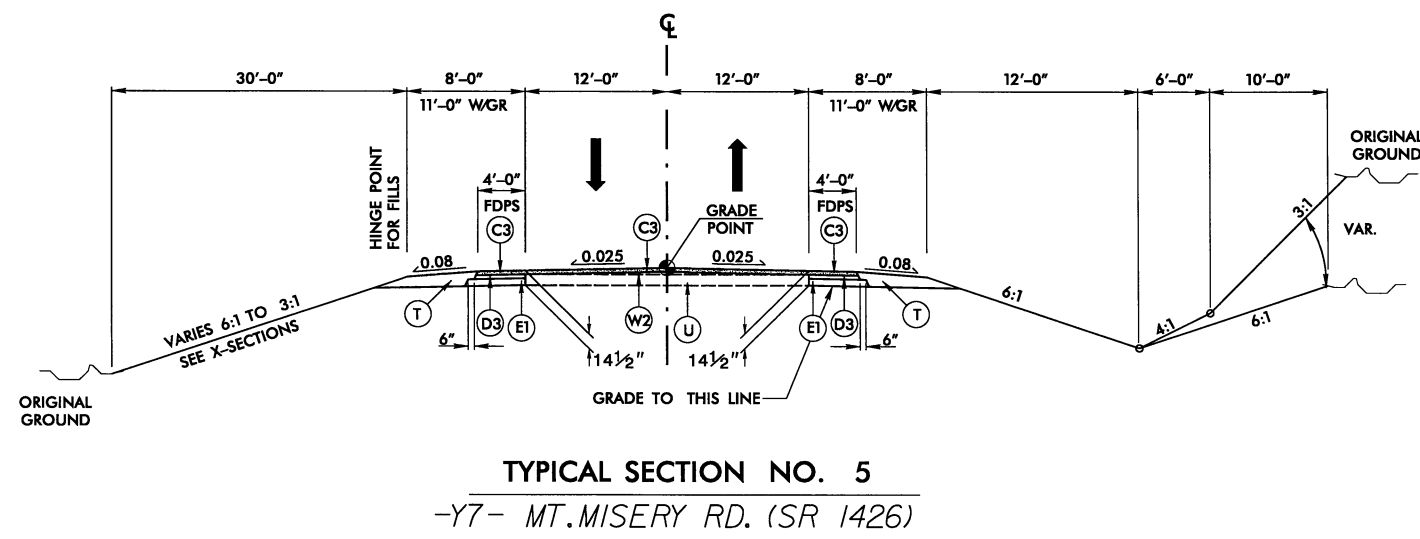
USE TYPICAL SECTION NO. 3 AS FOLLOWS
-L- STA. 441+41.53 (END BRIDGE) TO STA. 447+24.07 (TIE TO EXISTING)



USE TYPICAL SECTION NO. 4 AS FOLLOWS
* -Y5- STA. 10+00.00 TO STA. 23+50.00
-Y5- STA. 23+50.00 TO STA. 46+00.00



USE IN CONJUNCTION WITH TYPICAL SECTION NO. 4



USE TYPICAL SECTION NO. 5 AS FOLLOWS
-Y7- STA. 15+00.00 TO STA. 18+68.00

TRANSITION FROM TYPICAL SECTION NO. 5 TO
TYPICAL SECTION NO. 6 -Y7- STA 18+68.00 TO 23+68.00

PRELIM. PAVEMENT SCHEDULE	
C1	2" TYPE S9.5B
C2	3" TYPE S9.5B
C3	3" TYPE S9.5C
C4	VAR. TYPE S9.5B
C5	VAR. TYPE S9.5C
D1	2 1/2" TYPE I19.0B
D2	4" TYPE I19.0B
D3	3 1/2" TYPE I19.0C
D4	VAR. TYPE I19.0B
D5	VAR. TYPE I19.0C
E1	8" TYPE B25.0C
E2	VAR. TYPE B25.0C
J1	8" ABC
J2	10" ABC
R1	2'-6" C & G
R2	5" MONOLITHIC CONCRETE ISLAND.
R3	CONCRETE MEDIAN BARRIER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING SEE DETAIL 1
W2	WEDGING SEE DETAIL 2

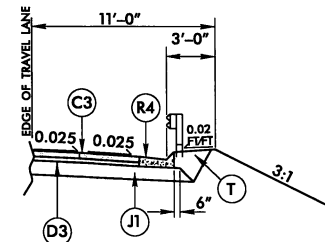
LOCHNERH. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B	SHEET NO. 2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

PRELIM. PAVEMENT SCHEDULE

C1	2" TYPE S9.5B
C2	3" TYPE S9.5B
C3	3" TYPE S9.5C
C4	VAR. TYPE S9.5B
C5	VAR. TYPE S9.5C
D1	2½" TYPE I19.0B
D2	4" TYPE I19.0B
D3	3½" TYPE I19.0C
D4	VAR. TYPE I19.0B
D5	VAR. TYPE I19.0C
E1	8" TYPE B25.0C
E2	VAR. TYPE B25.0C
J1	8" ABC
J2	10" ABC
R1	2'-6" C & G
R2	5" MONOLITHIC CONCRETE ISLAND.
R3	CONCRETE MEDIAN BARRIER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING SEE DETAIL 1
W2	WEDGING SEE DETAIL 2

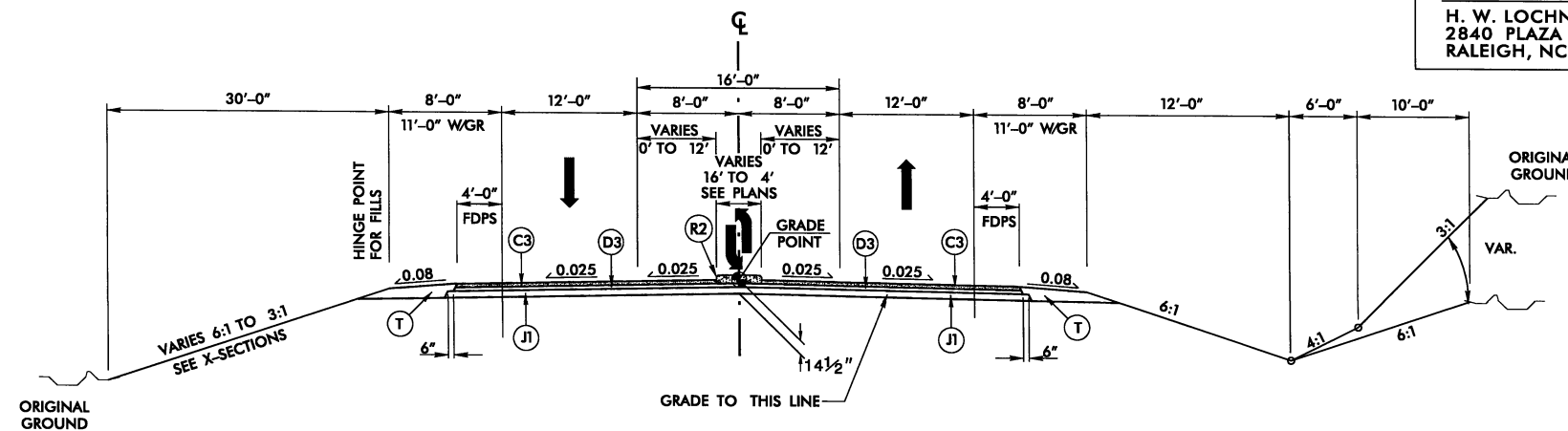
DETAIL OF SHOULDER BERM GUTTER



PARTIAL TYPICAL SECTION NO. 6A

USE PARTIAL TYPICAL 6A IN
CONJUNCTION WITH TYPICAL 6 & 7 AT:

-Y7- STA. 26+75 RT. TO 28+85 RT.
 -Y7- STA. 27+00 LT. TO 30+33 LT.
 -Y7- STA. 33+07 LT. TO 35+40 LT.
 -Y7- STA. 36+23 LT. TO 37+37 LT.
 -Y7- STA. 39+78 LT. TO 45+50 LT.
 -Y7- STA. 43+55 RT. TO 45+50 RT.
 -Y7- STA. 51+25 RT. TO 52+92 RT.
 -Y8- STA. 50+73 RT. TO 53+00 RT.

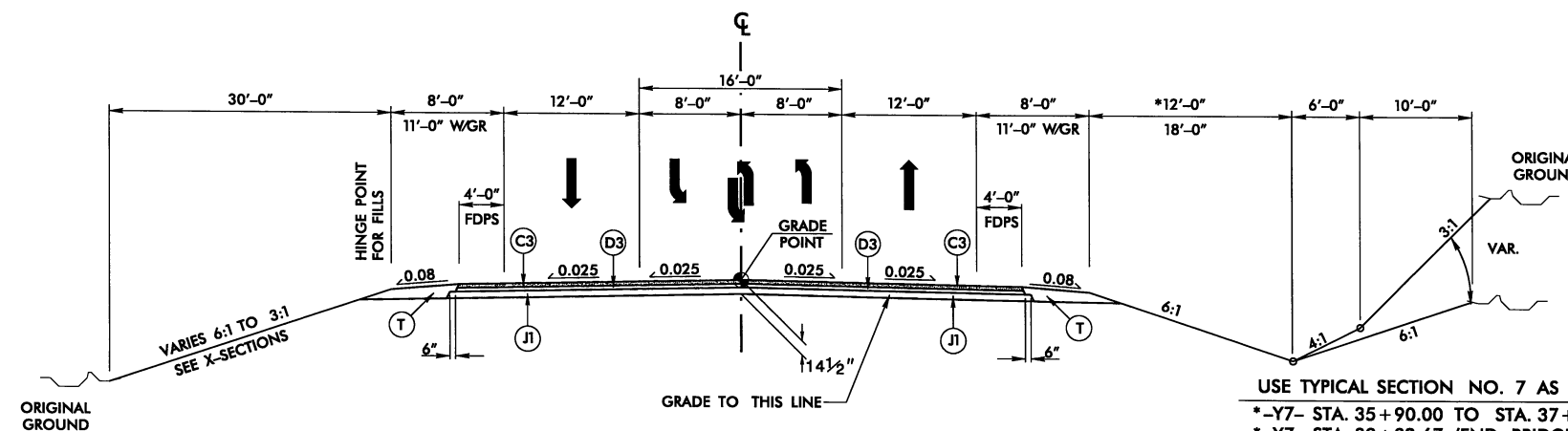


TYPICAL SECTION NO. 6

-Y7- MT. MISERY RD. (SR 1426)

USE TYPICAL SECTION NO. 6 AS FOLLOWS

-Y7- STA. 23+68.00 TO STA. 30+63.18 (BEGIN BRIDGE)
 -Y7- STA. 32+74.72 (END BRIDGE) TO STA. 35+90.00



TYPICAL SECTION NO. 7

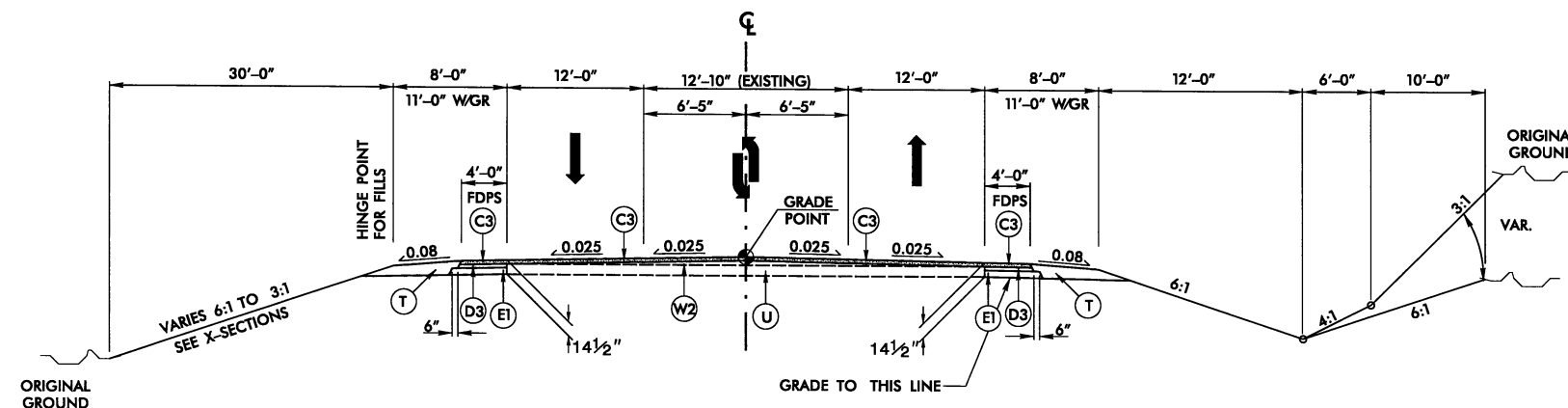
-Y7- MT. MISERY RD. (SR 1426)

-Y8- CEDAR HILL RD. (SR 1430)

USE TYPICAL SECTION NO. 7 AS FOLLOWS

*-Y7- STA. 35+90.00 TO STA. 37+75.28 (BEGIN BRIDGE)
 *-Y7- STA. 39+32.67 (END BRIDGE) TO STA. 50+00.00
 -Y8- STA. 43+82.30 TO STA. 47+15.00 (BEGIN BRIDGE)
 -Y8- STA. 50+43.00 (END BRIDGE) TO STA. 66+00.00

TRANSITION FROM TYPICAL SECTION NO. 7 TO
 TYPICAL SECTION NO. 8 -Y7- STA 50+00.00 TO 52+00.00

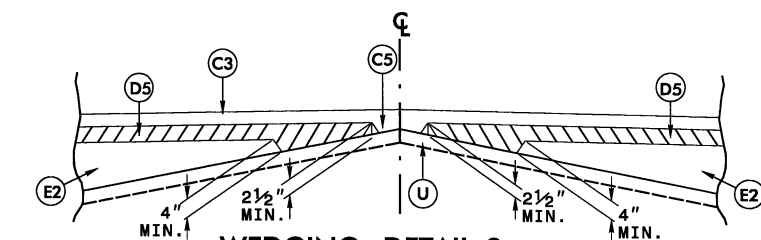


TYPICAL SECTION NO. 8

-Y7- MT. MISERY RD. (SR 1426)

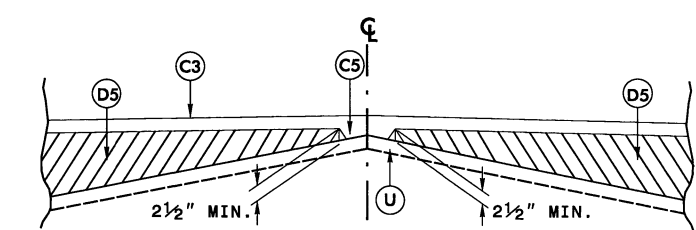
USE TYPICAL SECTION NO. 8 AS FOLLOWS

-Y7- STA. 52+00.00 TO STA. 55+00.00



WEDGING DETAIL 2

USE IN CONJUNCTION WITH
 TYPICAL SECTIONS NO.'s 5 & 8



WEDGING DETAIL 3

USE IN CONJUNCTION WITH
 TYPICAL SECTIONS NO.'s 9 & 10

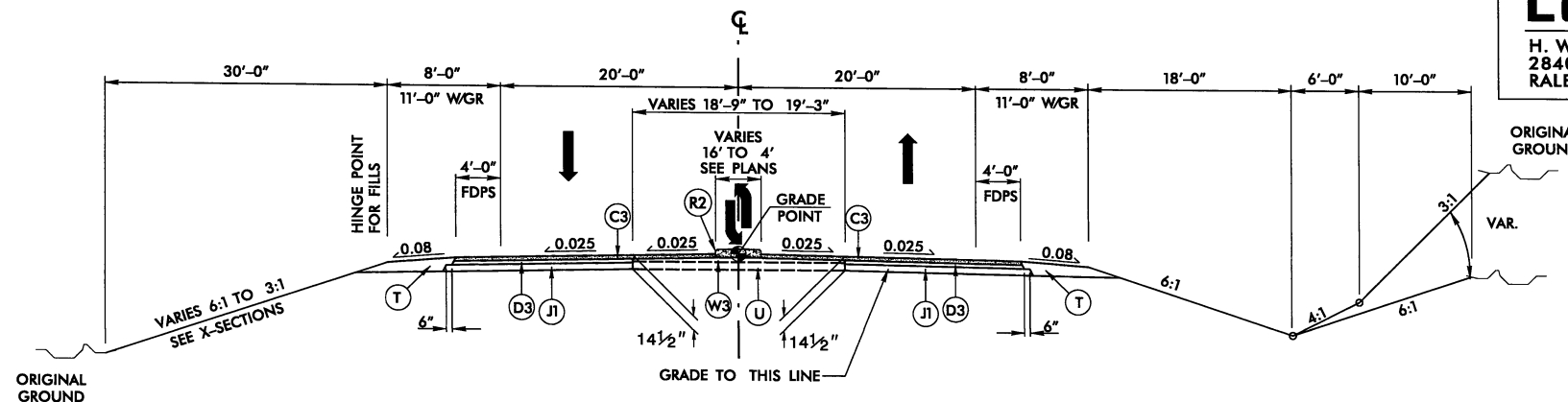
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.		SHEET NO.
R-2633B		2-C
ROADWAY DESIGN ENGINEER	PAYEMENT DESIGN ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		

PRELIM. PAVEMENT SCHEDULE

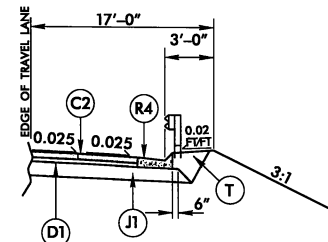
C1	2" TYPE S9.5B
C2	3" TYPE S9.5B
C3	3" TYPE S9.5C
C4	VAR. TYPE S9.5B
C5	VAR. TYPE S9.5C
D1	2½" TYPE I19.0B
D2	4" TYPE I19.0B
D3	3½" TYPE I19.0C
D4	VAR. TYPE I19.0B
D5	VAR. TYPE I19.0C
E1	8" TYPE B25.0C
E2	VAR. TYPE B25.0C
J1	8" ABC
J2	10" ABC
R1	2'-6" C & G
R2	5" MONOLITHIC CONCRETE ISLAND.
R3	CONCRETE MEDIAN BARRIER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W1	WEDGING SEE DETAIL 1
W2	WEDGING SEE DETAIL 2



TYPICAL SECTION NO. 9
-Y8- CEDAR HILL RD. (SR 1430)

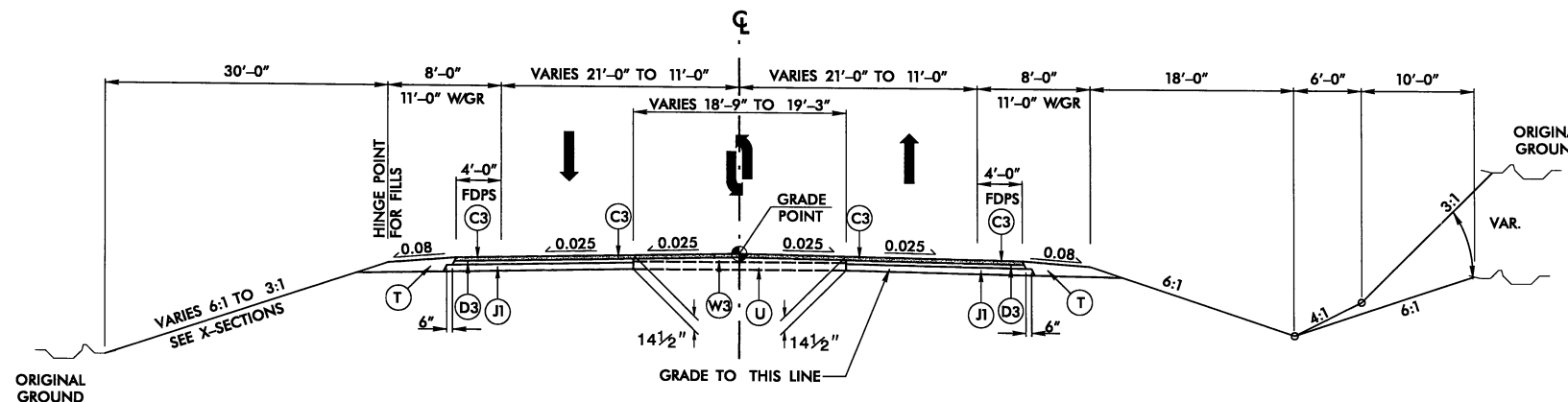
USE TYPICAL SECTION NO. 9 AS FOLLOWS
-Y8- STA. 18+80.00 TO STA. 43+82.30
TRANSITION FROM EXISTING TO
TYPICAL SECTION NO. 9 -Y8- STA 13+40.00 TO 18+80.00

DETAIL OF SHOULDER BERM GUTTER



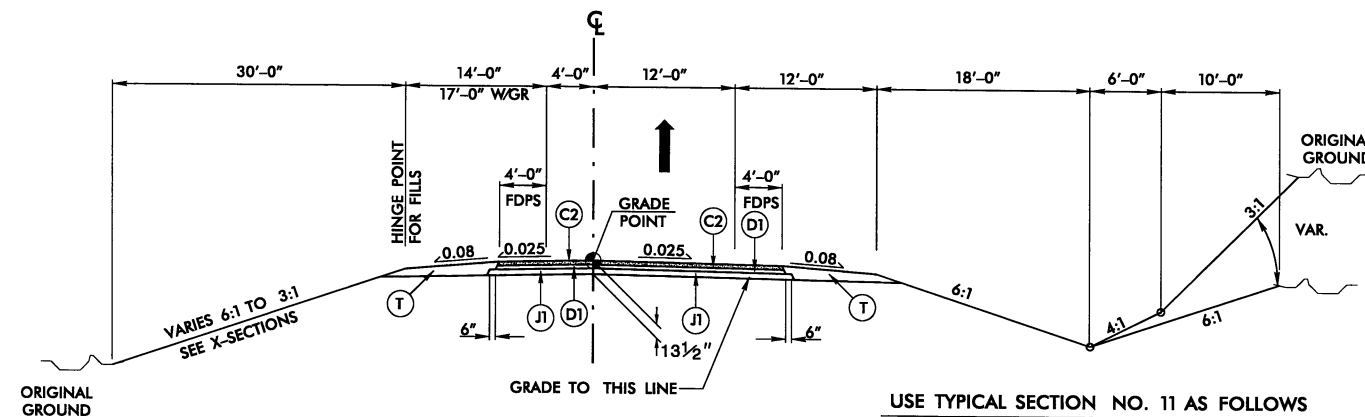
PARTIAL TYPICAL SECTION NO. 11A

USE PARTIAL TYPICAL 11A IN CONJUNCTION WITH TYPICAL 11 & 12 AT:
-RP_C2- STA. 18+00 RT. TO 19+50 RT.
-RP_D2- STA. 19+50 LT. TO 23+78.5 LT.
-RP_C3- STA. 13+45 RT. TO 19+50 RT.
-RP_B4- STA. 10+00 LT. TO 20+19 LT.
-RP_B4- STA. 22+89 LT. TO 26+04 LT.
-RP_C4- STA. 10+00 RT. TO 15+61 RT.
-RP_C4- STA. 17+91 RT. TO 20+13 RT.



TYPICAL SECTION NO. 10
-Y8- CEDAR HILL RD. (SR 1430)

USE TYPICAL SECTION NO. 10 AS FOLLOWS
-Y8- STA. 66+00.00 TO STA. 72+40.00

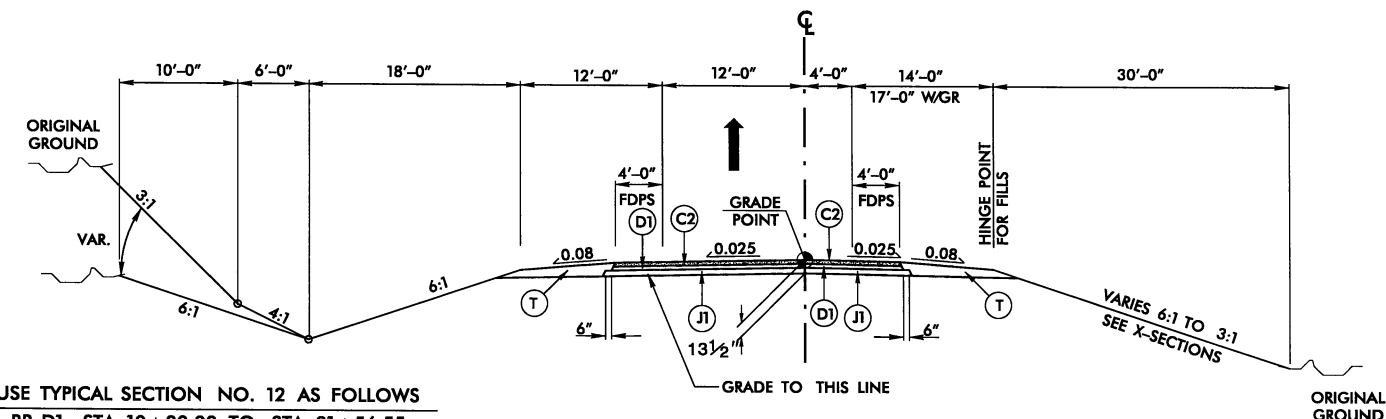


TYPICAL SECTION NO. 11

-RP_A1-
-RP_C2-
-RP_A3-
-RP_C3-
-RP_C4-

USE TYPICAL SECTION NO. 11 AS FOLLOWS

-RP_A1- STA. 10+00.00 TO STA. 29+43.38
-RP_C2- STA. 10+00.00 TO STA. 26+35.42
-RP_A3- STA. 10+00.00 TO STA. 31+34.16
-RP_C3- STA. 10+00.00 TO STA. 30+06.10
-RP_C4- STA. 10+00.00 TO STA. 15+92.74 (BEGIN BRIDGE)
-RP_C4- STA. 17+62.77 (END BRIDGE) TO STA. 27+05.63



TYPICAL SECTION NO. 12

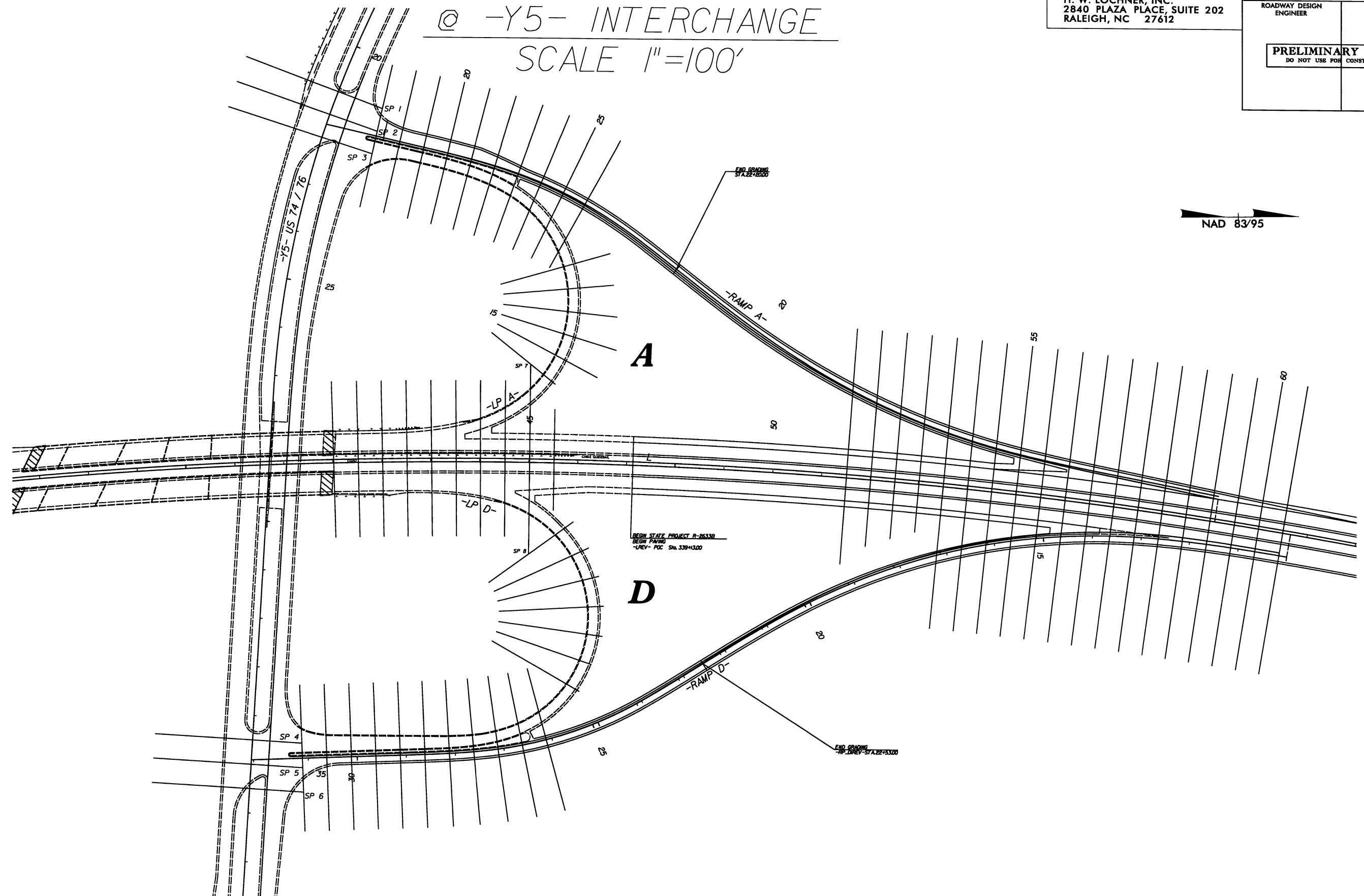
-RP_D1-
-RP_B2-
RP_D2-
RP_D3-
RP_B4-

USE TYPICAL SECTION NO. 12 AS FOLLOWS

-RP_D1- STA. 10+00.00 TO STA. 31+56.55
-RP_B2- STA. 10+00.00 TO STA. 29+58.64
-RP_D2- STA. 10+00.00 TO STA. 23+99.13
-RP_D3- STA. 10+00.00 TO STA. 26+39.30
-RP_B4- STA. 10+00.00 TO STA. 20+39.21 (BEGIN BRIDGE)
-RP_B4- STA. 22+62.02 (END BRIDGE) TO STA. 33+41.66

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

NAD 83/95



8/17/99

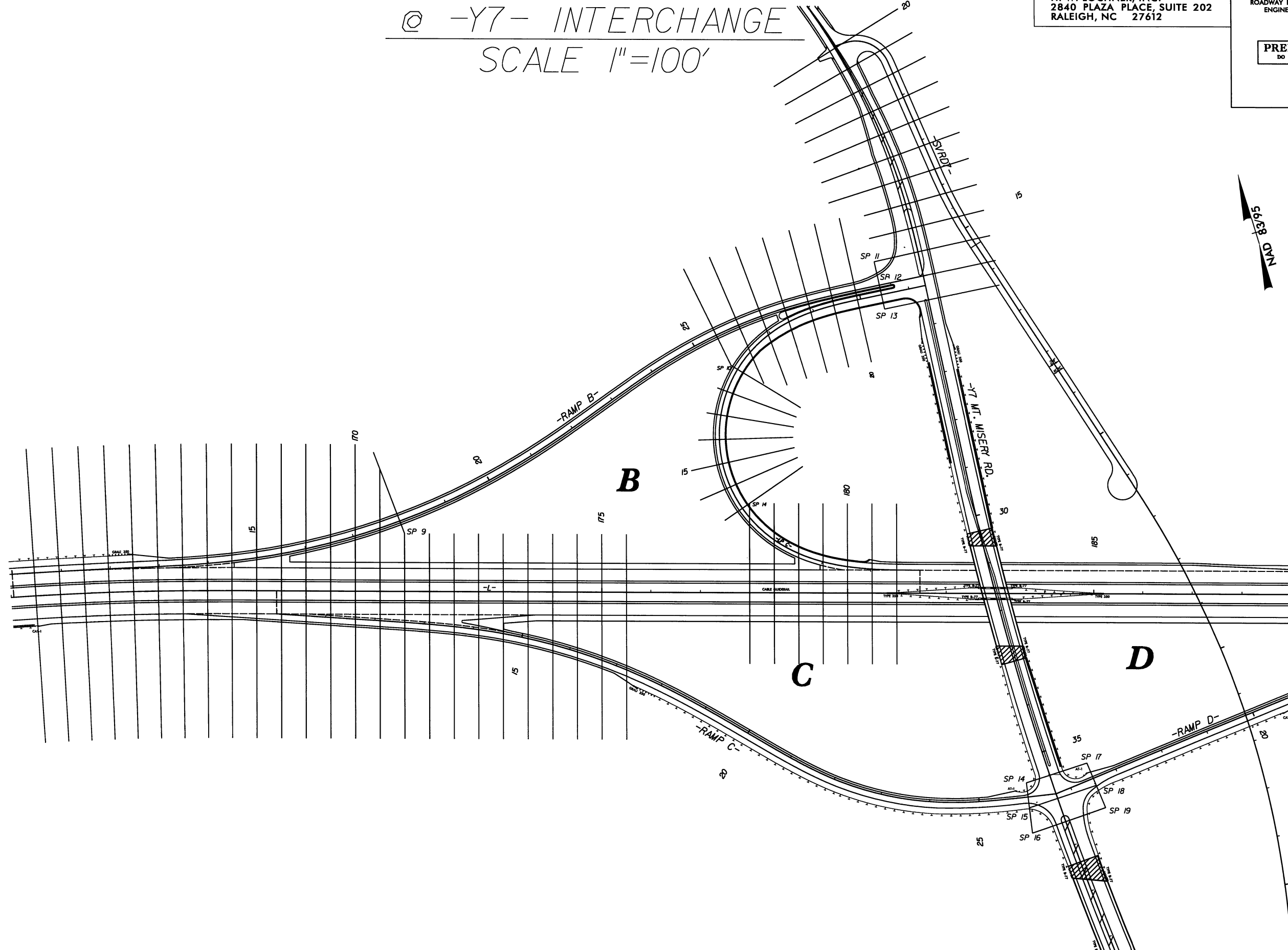
31-OCT-2012 13:05
H:\LOCHNER\PROJECTS\2633B\RDY_PSH0205.dgn
H:\LOCHNER\PROJECTS\2633B\RDY_PSH0205.dgn

X-SECTION LAYOUT & SHEAR POINT DIAGRAM @ -Y7- INTERCHANGE SCALE 1"=100'

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

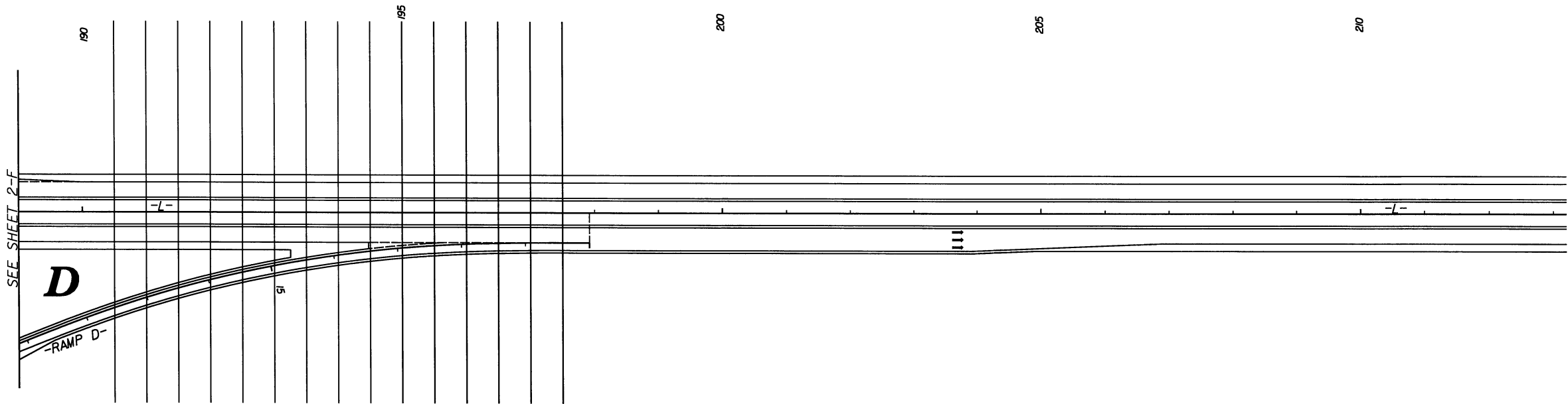
PROJECT REFERENCE NO. R-2633B	SHEET NO. 2-G
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



X-SECTION LAYOUT & SHEAR POINT DIAGRAM
@ -Y7- INTERCHANGE
SCALE 1"=100'

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	2-H
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



8/17/99

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

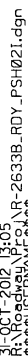
R-2633B

2-1

**ROADWAY DESIGN
ENGINEER**

**HYDRAULICS
ENGINEER**

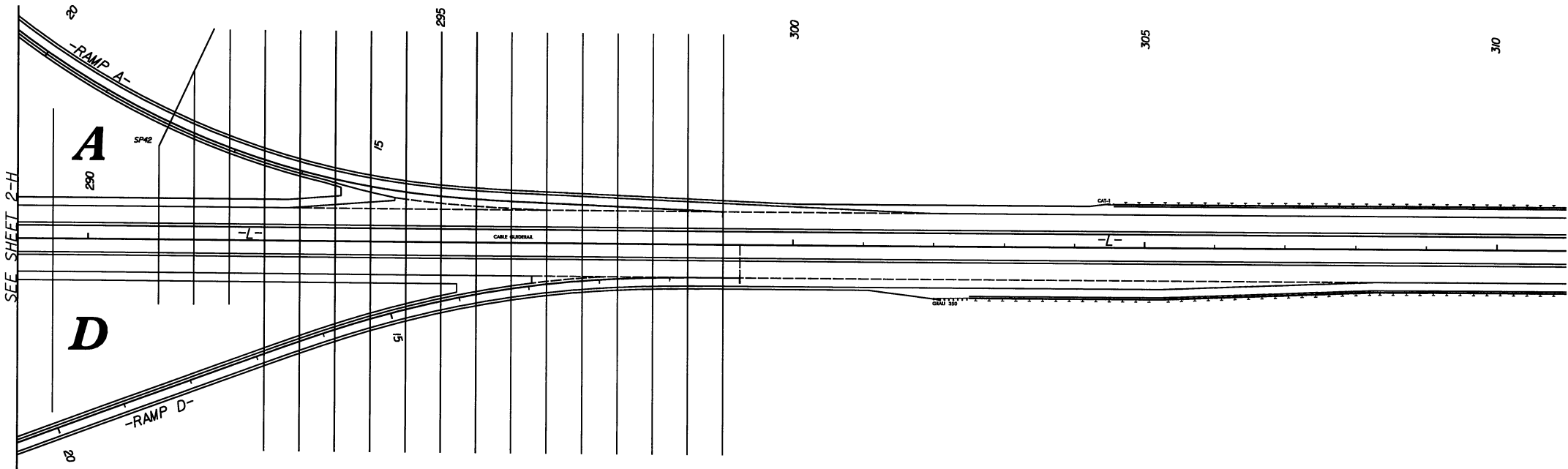
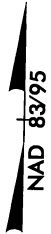
DO NOT USE FOR CONSTRUCTION



X-SECTION LAYOUT & SHEAR POINT DIAGRAM
@ -Y8- INTERCHANGE
SCALE 1"=100'

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B	SHEET NO. 2-J
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

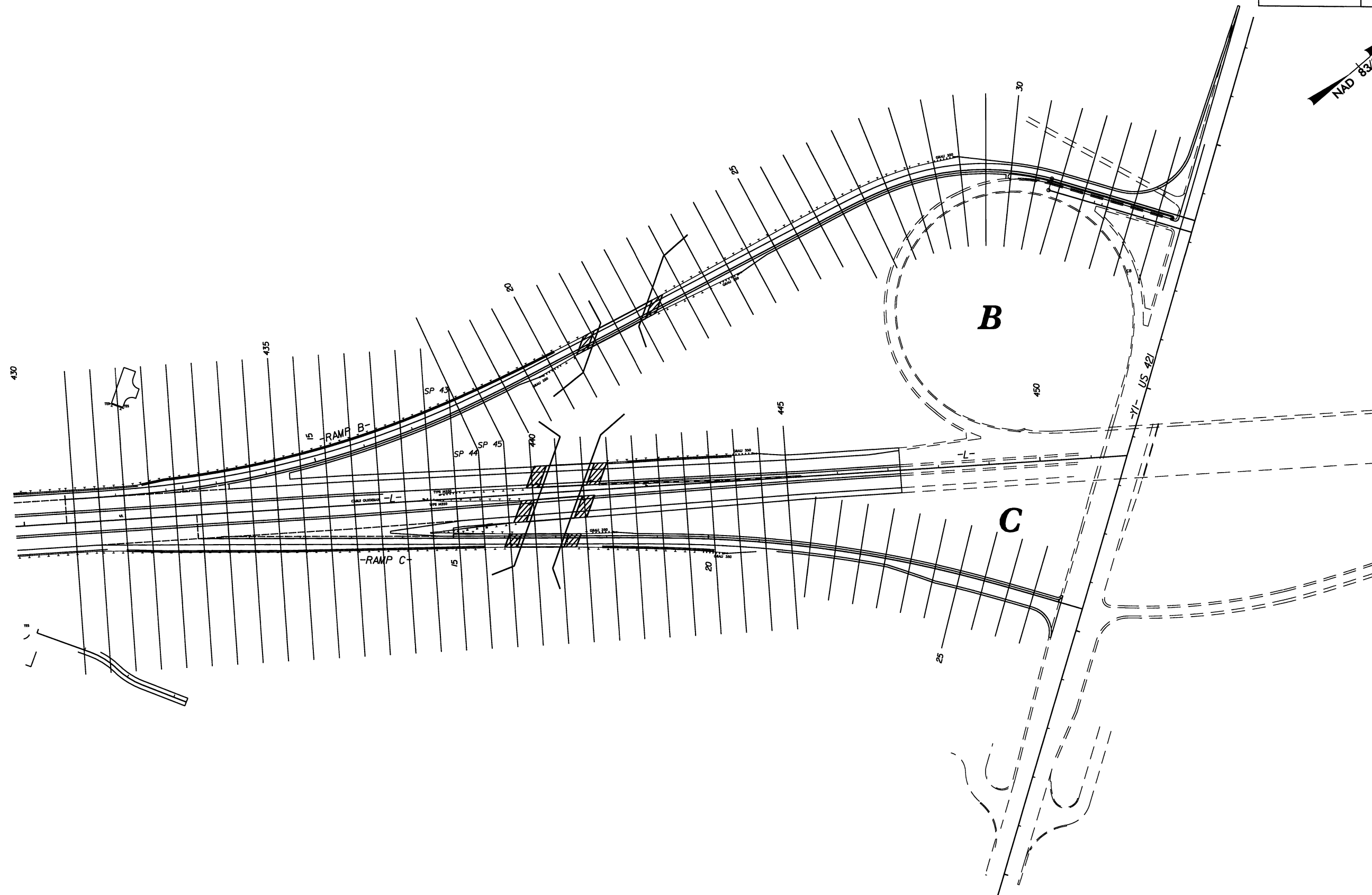


X-SECTION LAYOUT & SHEAR POINT DIAGRAM @ -YI- INTERCHANGE SCALE 1"=100'

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	2-K
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



31-OCT-2012 13:05
R:\Roadway\Proj\R-2633B-RDY_PSH04.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$

R/W REVISION: 10/ /09 - NAME AND DEED CHANGE ON PARCEL 1, ADDED PARCEL 1A CSX

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NAD 83/95

-LREV-

PI Sta	50+09.64
Δ	= 40° 43' 04.0" (RT)
D	= 0° 34' 54.1"
L	= 7,000.00'
T	= 3,655.14'
R	= 9,850.00'
e	= 2.5%

~~| | |
|-------------------|----------------------|
| Pls Sta 305+57.73 | Pl Sta 338+29.63 |
| Os = 0° 43' 08" | Δ = 35° 28' 13" (RT) |
| Ls = 250.00' | D = 0° 34' 28" |
| LT = 166.67' | L = 6.72% |
| ST = 83.33' | T = 3188.57' |
| | R = 9970.00' |
| | e = 2.5% |~~

-L- POC Sta. 301+01.61 =
STATE PROJECT R-2633A

-L- POC Sta. 8+00.00
STATE PROJECT R-2633B

1
SALISBURY PARTNERS, LLC
DB 2863 PG 9
MB 49 PG 68
MB 58 PG 11
MB 62 PG 73

305

15

310

20

-L- +35.63
150.00' LT
BEGIN R-2633B R/W

$$\frac{-L- +54.50}{150.00' LT}$$

-BL- 52 PINC 238+88.54

-BL- 53 PINC 243+95.7

N 17° 02' 06.7" W

N 16° 59' 00.0" W

N 14° 32' 10.7" W

N 14° 00' 05.6" W

GENERAL WOOD
PRESERVING
COMPANY, INC.
DB 572 PG 949
MB 9 PG 11

R/W WILL BE ACQUIRED UNDER T.J.P.PROJECT R-2633B
CONSTRUCTION WILL BE COMPLETED UNDER T.J.P.PROJECT R-2633A

-L- +54.50
150.00' RT

-L- +37.51
150.00' RT
BEGIN R-2633B R/W

DB 2863 PG 9
MB 49 PG 68
MB 58 PG 11
MB 62 PG 73

MATCH TO SHEET 5 -L- STA. 21+00.00

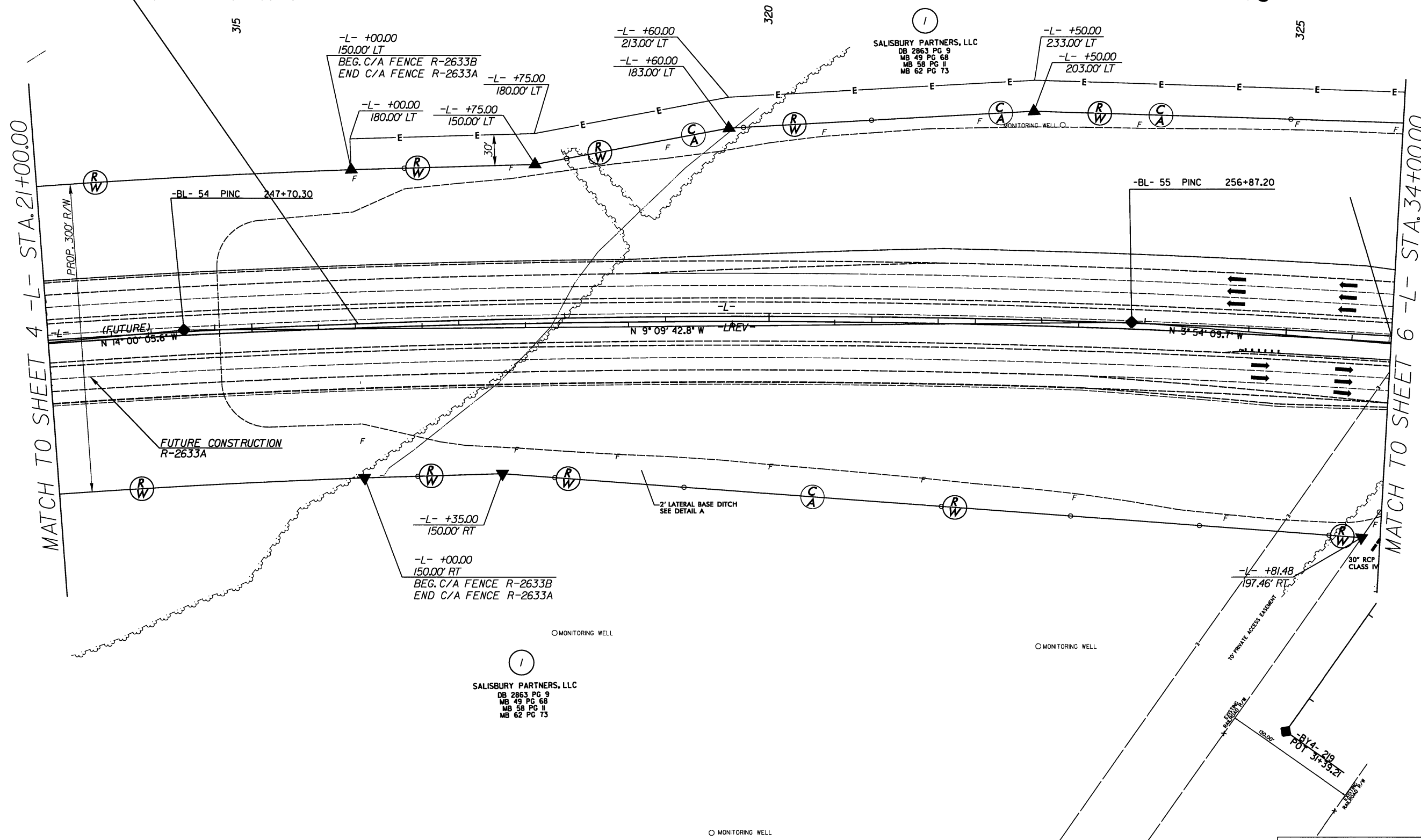
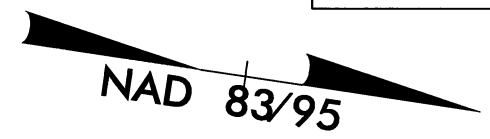
SEE SHEET R-2633AB PROFILE

PROJECT REFERENCE NO. <i>R-2633B</i>		SHEET NO. <i>05</i>
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

~~-LREV-~~
PI Sta 50+09.64
 $\Delta = 40^\circ 43' 04.0''$ (RT)
 $D = 0^\circ 34' 54.1''$
 $L = 7,000.00'$
 $T = 3,655.14'$
 $R = 9,850.00'$
 $e = 2.5\%$

~~-L-~~
PI Sta 338+29.63
 $\Delta = 35^\circ 28' 13.1''$ (RT)
 $D = 0^\circ 34' 28.5''$
 $L = 6,172.18'$
 $T = 3,188.57'$
 $R = 9,970.00'$
 $e = 2.5\%$

-L- POC STA. 24+00.00 =
BEGIN STATE PROJECT R-2633B
-L- POC STA. 316+10.60
END STATE PROJECT R-2633A
BEGIN CONSTRUCTION



REVISIONS

R/W REVISION: 10/ /09 - UPDATED PARCEL NAME ON PARCEL 1, ADDED PARCEL 1A CSA.

31-OCT-2012 13:05
R:\VC\100\N\26333B_RDW_PSH05.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$

SEE R-2633BA FOR PROFILE

31-OCT-2012 13:05
R:\Roadway\Proj\R-2633B-RDY_PSH07.dgn

SEE SHEET 43 FOR -LREV- PROFILE

LOCHNER

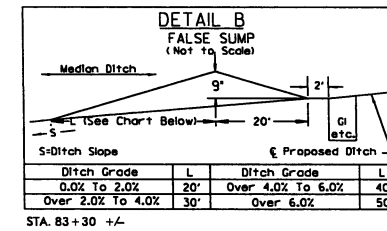
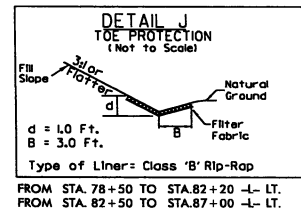
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	08
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

EQUALIZER PIPE INVERTS WILL NOT BE BURIED

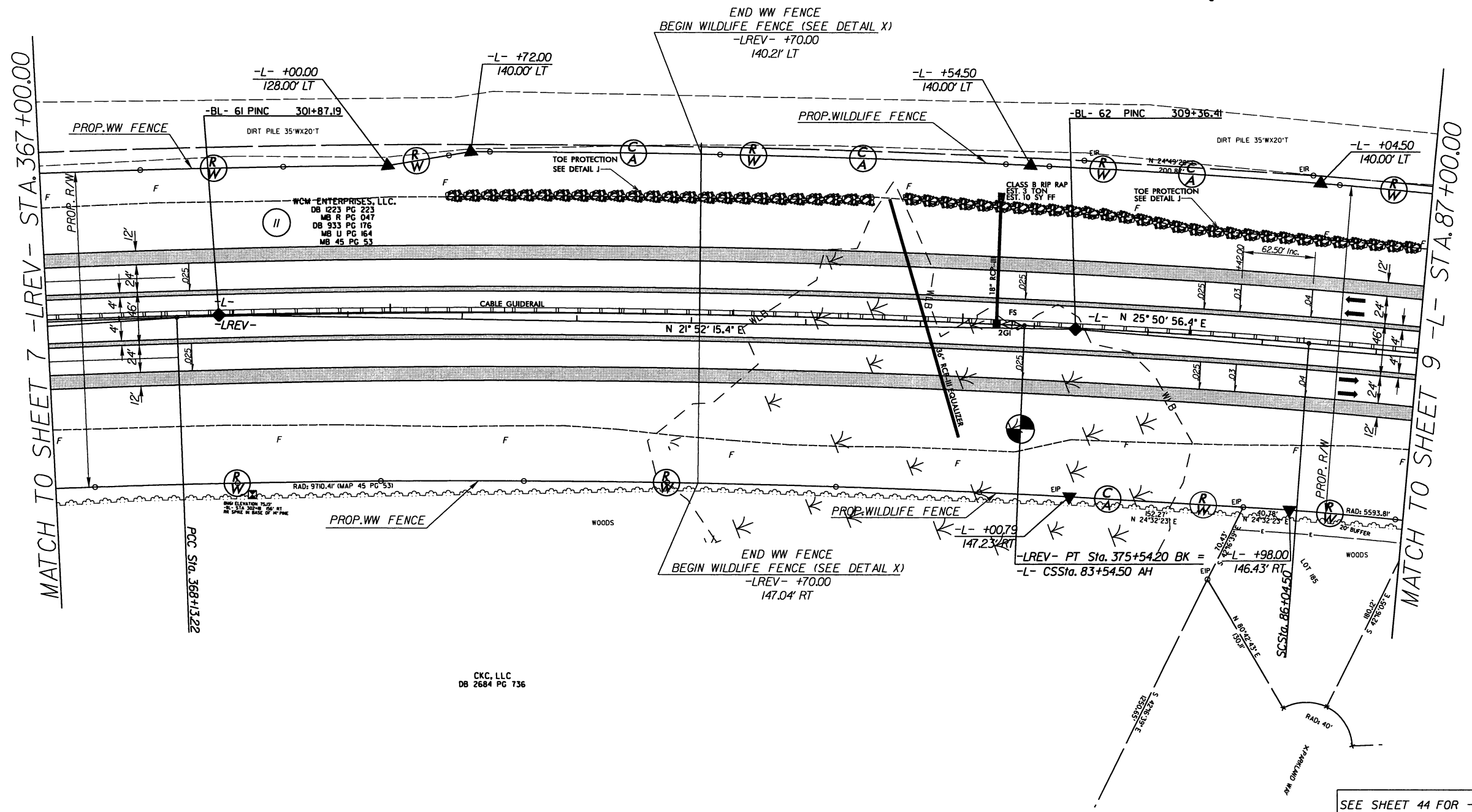
-1-		-1-	
Pis Sta 50+09.64	Pis Sta 84+90.46	Pi Sta 133+87.91	
Δ = 40° 43' 04.0" (RT)	Θs = 0° 43' 37.5"	Δ = 79° 30' 50.4" (RT)	
D = 0° 34' 54.1"	Θs = 1° 14' 14.1"	D = 0° 59' 47.2"	
L = 7.009.00'	Ls = 250.00'	L = 7.979.71'	
T = 3.655.14'	LT = 135.96'	T = 4.783.41'	
R = 9.850.00'	ST = 114.06'	R = 5.750.00'	
e = 2.5%		e = 4.0%	

$$\begin{array}{l} \text{PI Sta } 371+83.90 \\ \Delta = 4^\circ 31' 45.0'' \text{ (RT)} \\ D = 0^\circ 36' 40.5'' \\ L = 740.97' \\ T = 370.68' \\ R = 9,373.62' \\ e = 2.5\% \end{array}$$



74 HOLDING, LLC
DB 2491 PG 750
DB 2846 PG 625
MAP 31 PG 530

NAD 83/95



SEE SHEET 44 FOR -LREV- PROFILE

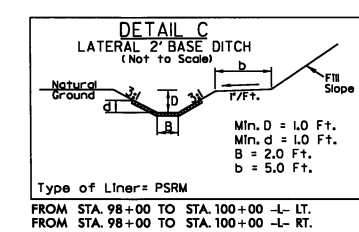
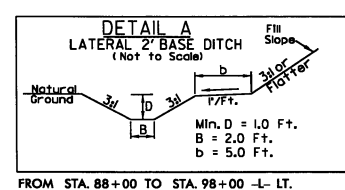
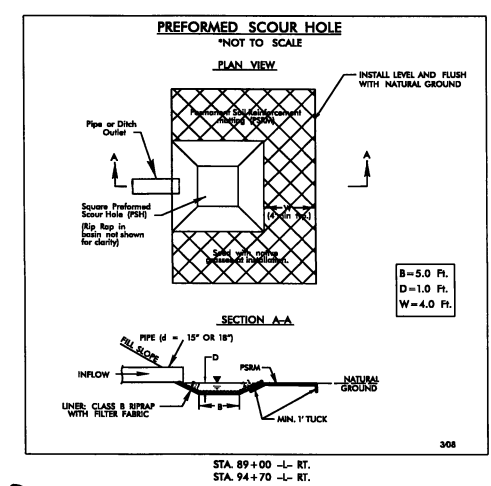
8/17/99

-L-
PI Sta 133+87.91
 $\Delta = 79^\circ 30' 50.4" (RT)$
 $D = 0' 59' 47.2"$
 $L = 7,979.74'$
 $T = 4,783.41'$
 $R = 5,750.00'$
 $e = 4.0\%$

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

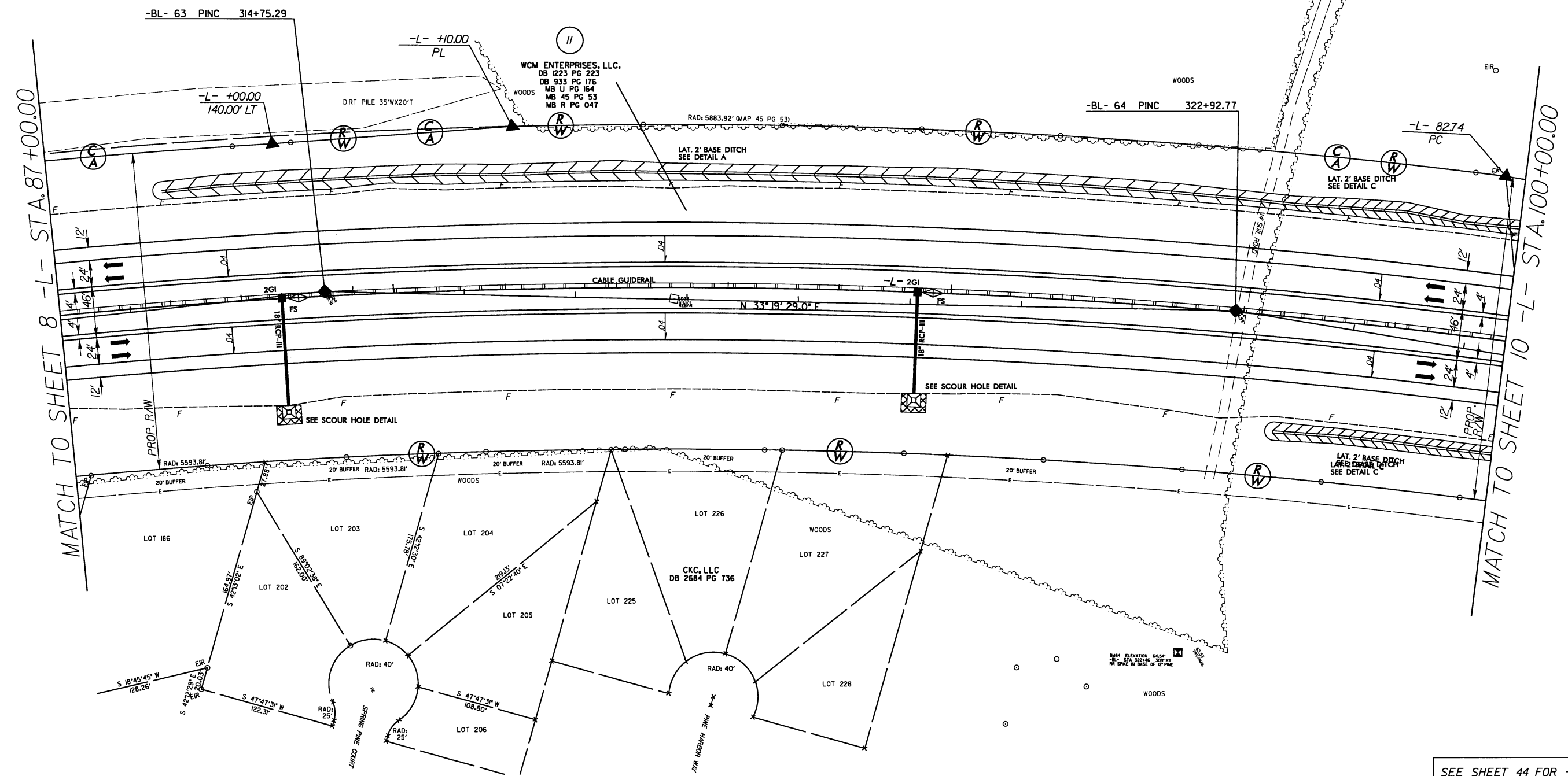
PROJECT REFERENCE NO.	SHEET NO.
R-2633B	09
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



74 HOLDING, LLC
DB 2491 PG 750
DB 2846 PG 625
MAP 31 PG 530

10

NAD 83/95



REVISIONS

R/W REVISION: 10/ 109 - NAME AND DEED CHANGE PARCEL 10.

R/W REVISION: 11/ 111 - EXTENDED ARROW POINTING TO PARCEL 11. REMOVED PARCEL 11B.

31-OCT-2012 13:05
R:\Roadway\Projects\2633B\RDY_PSH01.dgn
SSSUSNAME

8/17/99

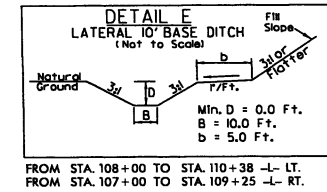
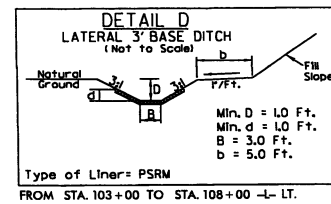
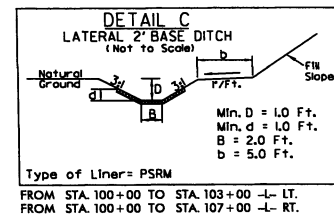
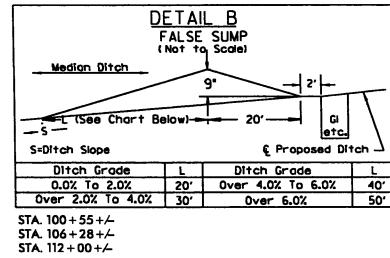
-L-
PI Sta 133+87.91
 $\Delta = 79^\circ 30' 50.4" (RT)$
 $D = 0^\circ 59' 47.2"$
 $L = 7,979.74'$
 $T = 4,783.41'$
 $R = 5,750.00'$
 $e = 4.0\%$

LOCHNER

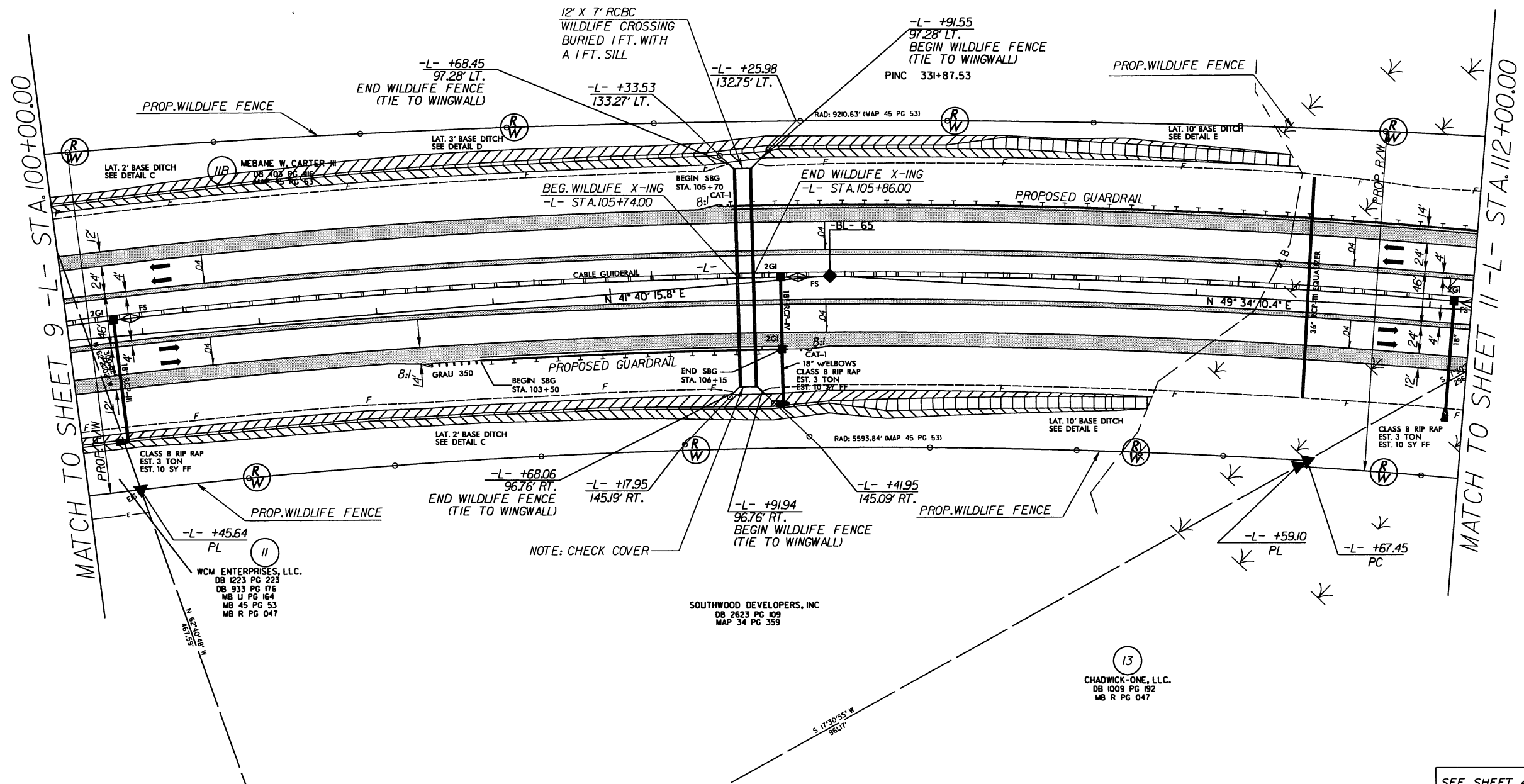
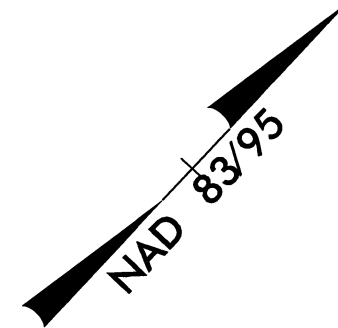
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. <i>R-2633B</i>		SHEET NO. <i>10</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

EQUALIZER PIPE INVERTS WILL NOT BE BURIED



74 HOLDING, LLC
DB 248 PG 750
DB 2846 PG 625
MAP 31 PG 530



SEE SHEET 45 FOR -L- PROFILE

REVISIONS
R/W REVISION: 10/ /09 - NAME AND DEED CHANGE PARCEL 10, ELIMINATED PARCEL 12, NO CLAIM, ADDED PARCEL 11B.
R/W REVISION: 11/ /11 - EDITED MONUMENT STATIONS ON PARCEL 11B AND 13.

12-FEB-2013 13:59
R:\Roadway\2633B\10-11-12\10-11-12.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$

REVISIONS
R/W REVISION:10/ /09 - ADDED PARCEL IIB, CHANGED PARCEL #1 TO IIA.
R/W REVISION:1/ /11 - EDITED PROPERTY CORNER ON PARCEL IIB.

12-FEB-2013 13:59
R:\Roadway\Proj\R-2633B-RDY_PSH11.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$

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

EQUALIZER PIPE INVERTS WILL NOT BE BURIED

PROJECT REFERENCE NO.		SHEET NO.	
R-2633B		11	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

MATCH TO SHEET 12 - L - STA. 125+00.00

PROP. 300' R/W

12'

4'

4'

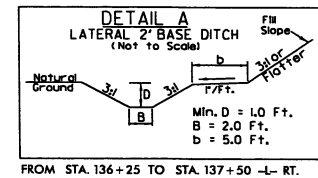
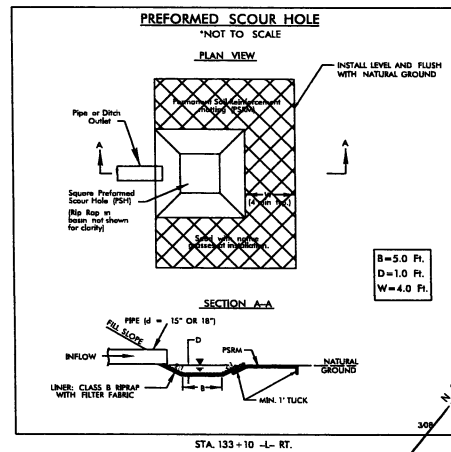
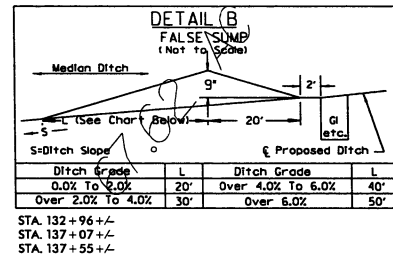
4'

12"

SEE SHEET 45 FOR -L- PROFILE

8/17/99

-L-
PI Sta 133+87.91
 $\Delta = 79^\circ 30' 50.4" (RT)$
 $D = 0' 59' 47.2"$
 $L = 7.97974'$
 $T = 4.78341'$
 $R = 5750.00'$
 $e = 4.0\%$



LOCHNER

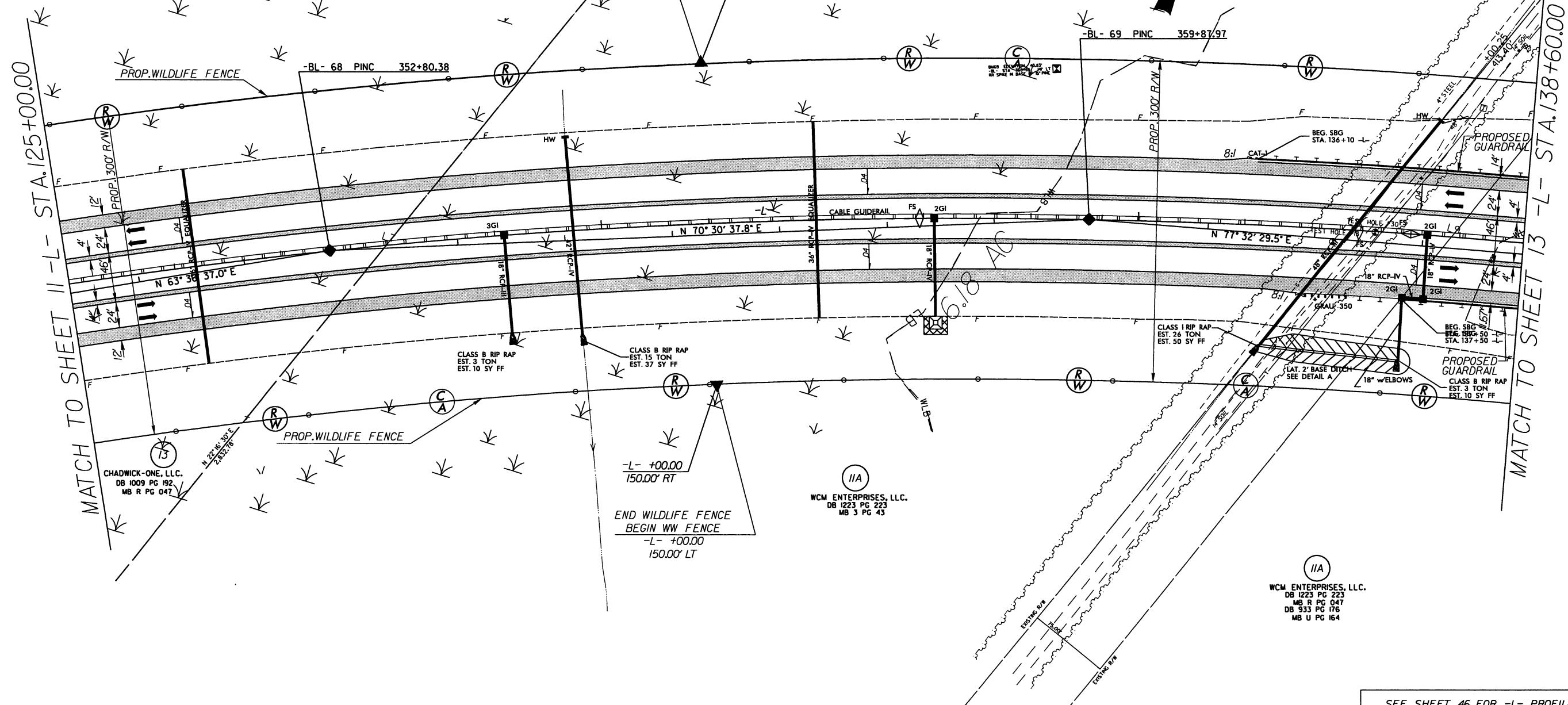
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B	SHEET NO. 12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

REVISIONS

R/W REVISION: 10/ /09 - CHANGE PARCEL # I/TO IIA

12-FEB-2013 13:59
R:\Roadway\Projects\2633B\RDY_PSH12.dgn
\$\$\$\$\$USER\$\$\$\$\$

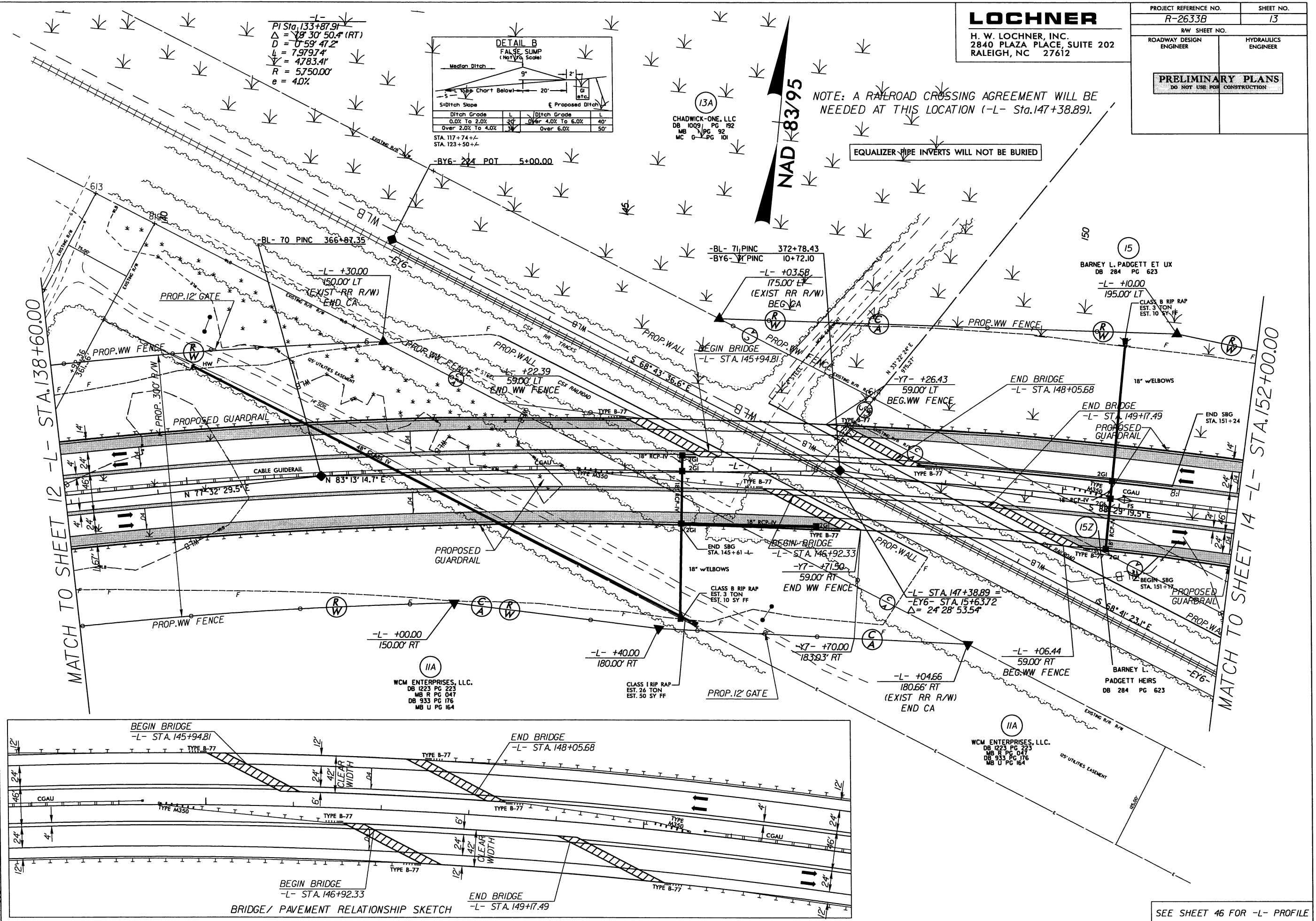


SEE SHEET 46 FOR -L- PROFILE

8/17/99

REVISIONS
10/ /09 - CHANGED PARCEL #11 TO IIA COMBINED PARCEL 13 AND 14 AND ELIMINATED 14. CORRECTED PROPERTY LINES AND RAILROAD R/W LINE ON PARCEL 15.
11/ /11 - CHANGED PARCEL #13 TO 13A. ADDED CA AND FENCE TO RAILROAD R/W. CHANGED STATION ON MONUMENT TO 142+31.19 LT.
10/19/12 - ADDED UPDATED PROPERTY LINE FOR PARCEL 15 AND ADDED PARCEL #15Z

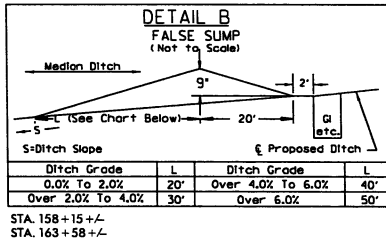
12-FEB-2013 13:59
R:\Roadwork\Projects\2633B.RD\PSH13.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$



8/17/99

-L-
PI Sta 133+87.91
 $\Delta = 79^\circ 30' 50.4" (RT)$
 $D = 0' 59' 47.2"$
 $L = 79797.4'$
 $T = 4783.4'$
 $R = 5750.00'$
 $e = 4.0\%$

-RP_B2-
PI Sta 1+62.31
 $\Delta = 3^\circ 12' 27.2" (RT)$
 $D = 0' 59' 18.1"$
 $L = 32453'$
 $T = 162.31'$
 $R = 5797.00'$
 $e = 4.0\%$



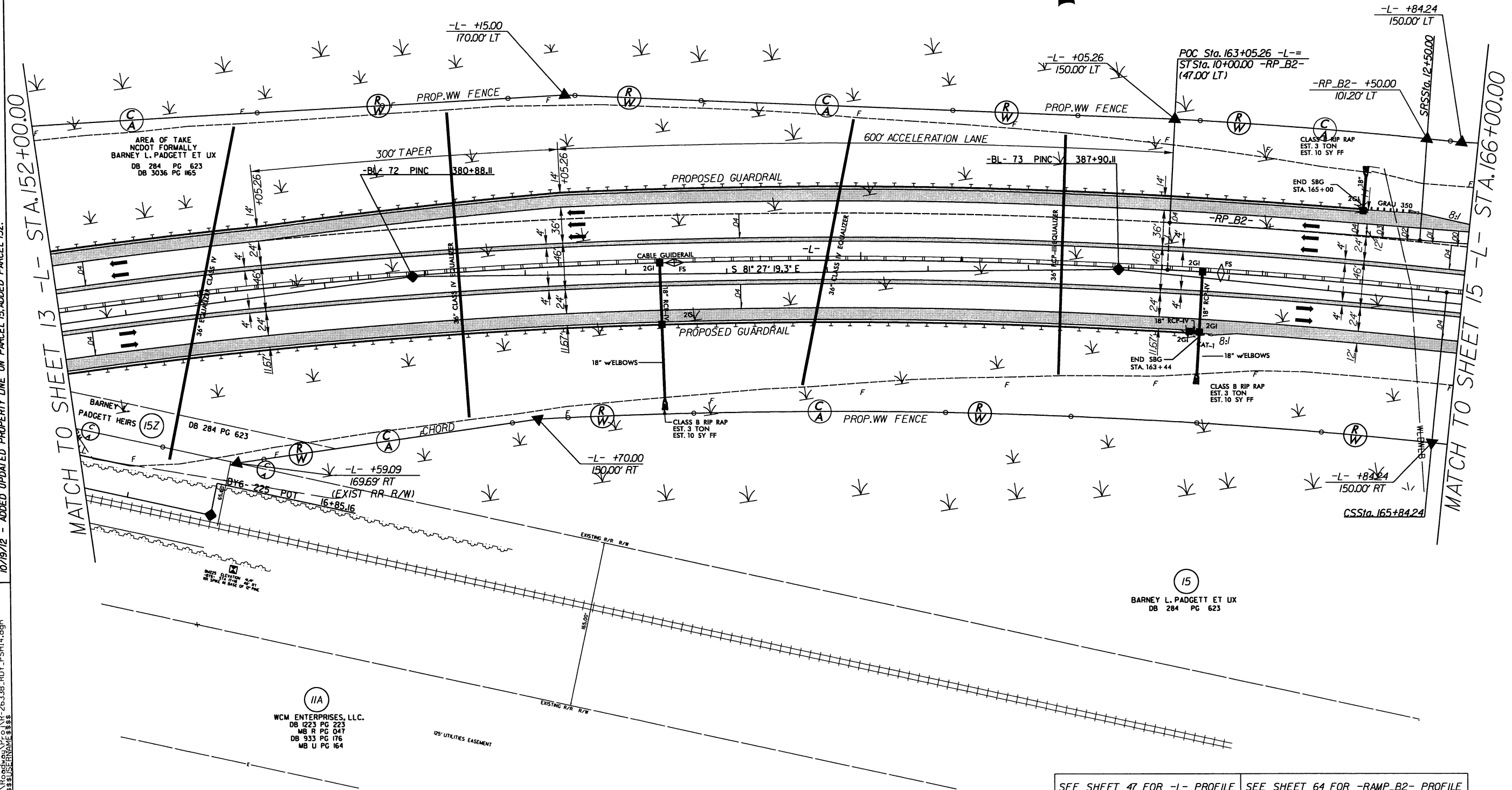
EQUALIZER PIPE INVERTS WILL NOT BE BURIED

LOCHNER

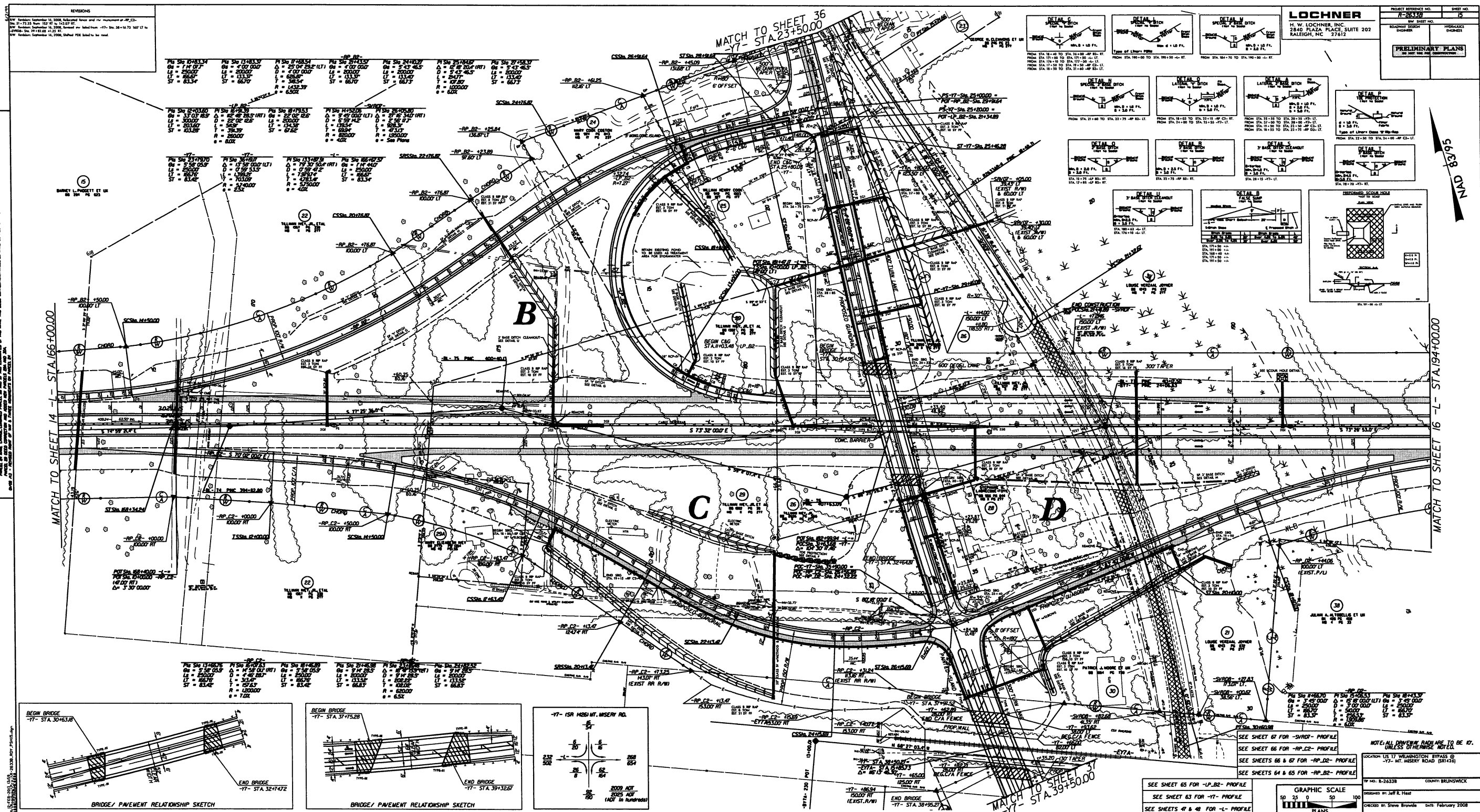
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B		SHEET NO. 14	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NAD 83/95



SEE SHEET 47 FOR -L- PROFILE SEE SHEET 64 FOR -RAMP_B2- PROFILE



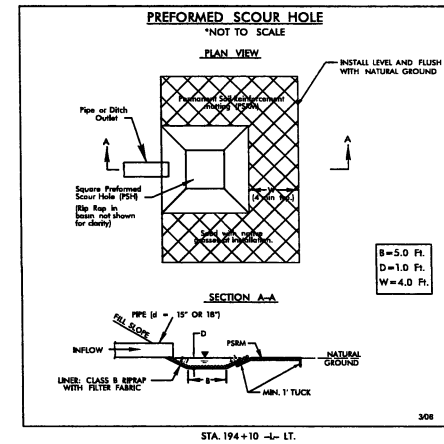
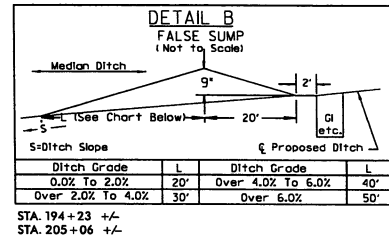
8.17.94

12-FEB-2003 14:00
R:\ROADWAY\PROJECTS\2633B_R01_PSH16.dgn
JULIAN A. ALTARELLI

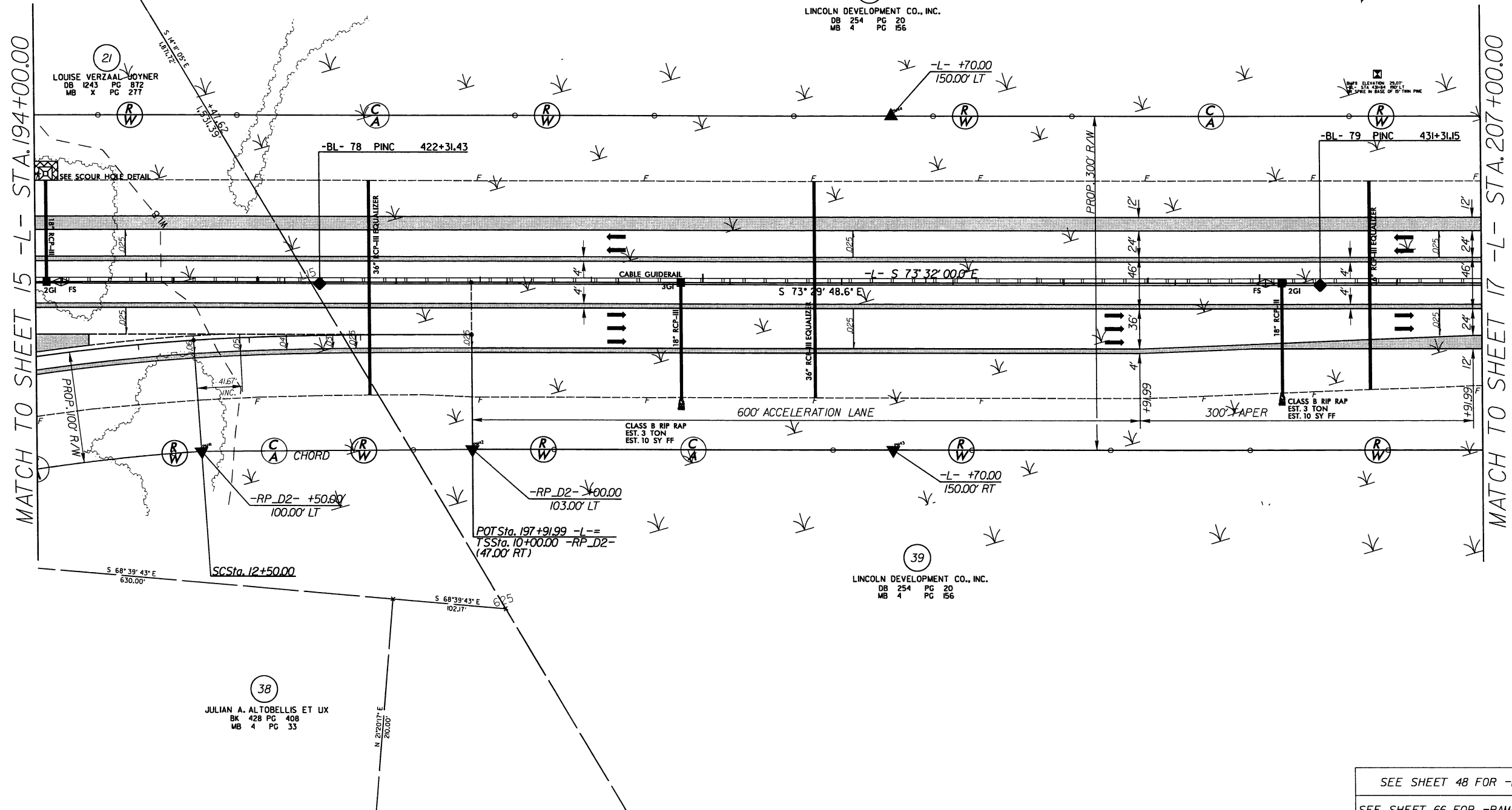
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

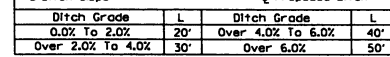
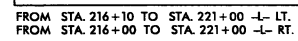
PROJECT REFERENCE NO.	SHEET NO.
R-2633B	16
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



EQUALIZER PIPE INVERTS WILL NOT BE BURIED



SEE SHEET 48 FOR -L- PROFILE
SEE SHEET 66 FOR -RAMP_D2- PROFILE



H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

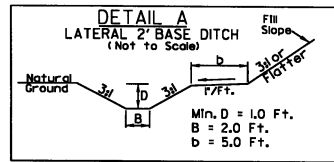
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



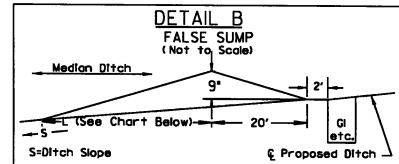
8/17/99

-L-
PI Sta 243+38.67
 $\Delta = 17' 38" 15.0" (LT)$
 $D = 0' 29" 53.6"$
 $L = 3,540.07'$
 $T = 1,784.15'$
 $R = 11,500.00'$
 $e = 2.5\%$

EQUALIZER PIPE INVERTS WILL NOT BE BURIED



FROM STA. 221+00 TO STA. 222+00 -L- LT.
FROM STA. 221+00 TO STA. 221+75 -L- RT.
FROM STA. 232+00 TO STA. 234+40 -L- 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'

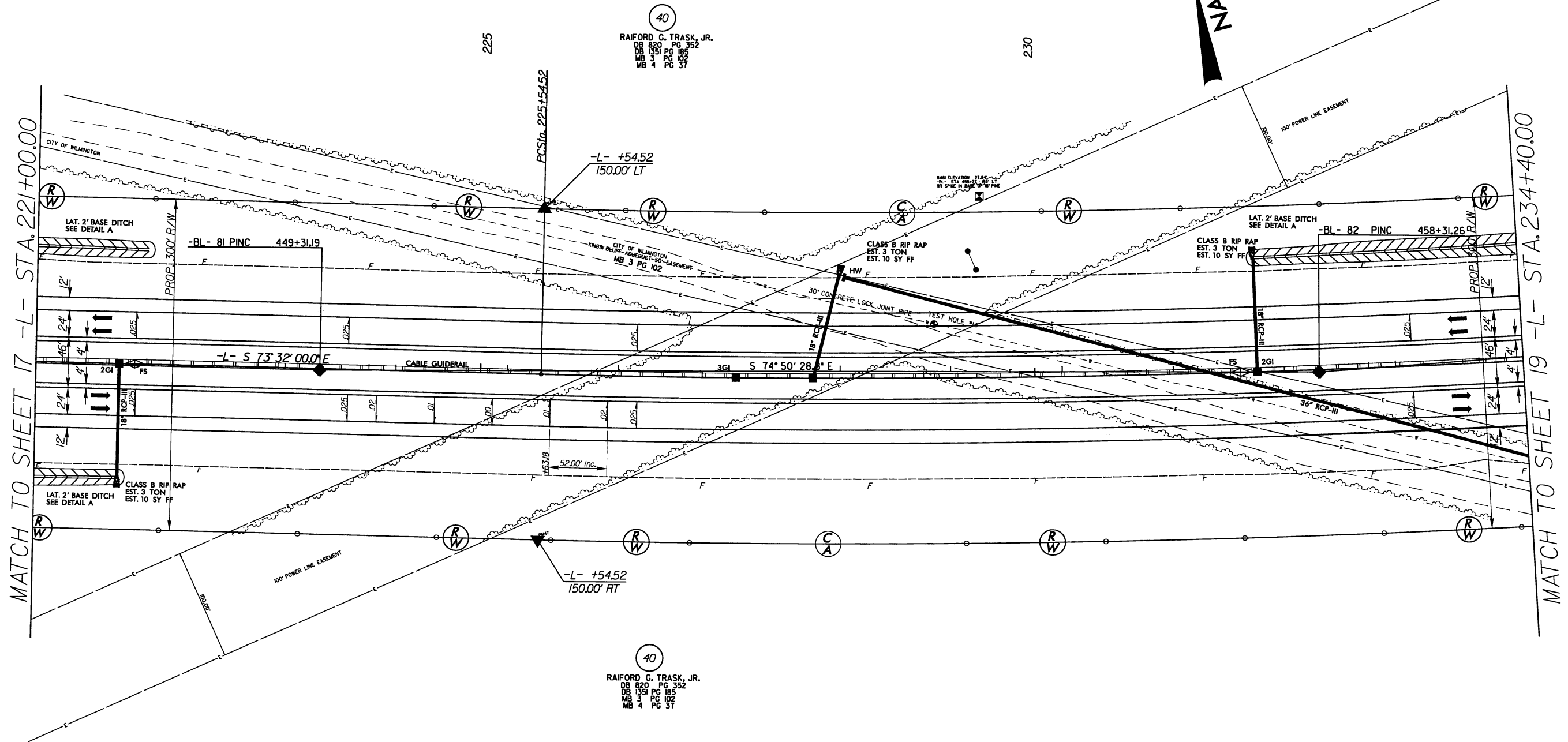
STA. 221+89 +/-
STA. 231+85 +/-

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B	SHEET NO. 18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NAD 83/95



SEE SHEET 49 FOR -L- PROFILE

8/17/99

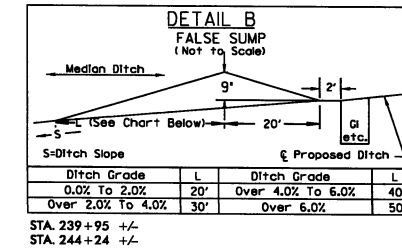
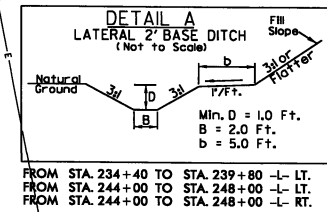
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. <i>R-2633B</i>		SHEET NO. <i>19</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-L-
PI Sta 243+38.67
 $\Delta = 17^\circ 38' 15.0''$ (LT)
 $D = 0' 29' 53.6''$
 $L = 3,540.07'$
 $T = 1,784.15'$
 $R = 11,500.00'$
 $e = 2.5\%$

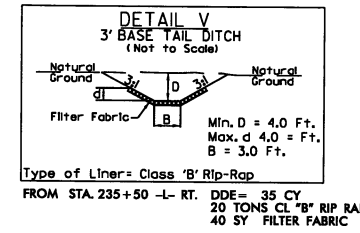
EQUALIZER PIPE INVERTS WILL NOT BE BURIED



NAD 83/95

MATCH TO SHEET 18 -L- STA. 234+40.00

MATCH TO SHEET 20 -L- STA. 248+00.00



RAIFORD G. TRASK, JR.
DB 820 PG 352
DB 1351 PG 185
MB 3 PG 102
MB 4 PG 37

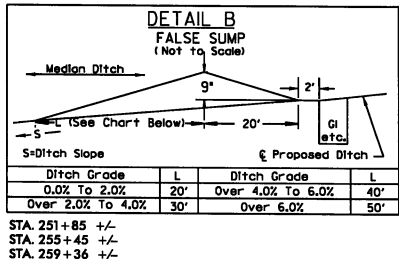
RAIFORD G. TRASK, JR.
DB 820 PG 352
DB 1351 PG 185
MB 3 PG 102
MB 4 PG 37

SEE SHEET 50 FOR -L- PROFILE

8/17/99

3-001-2012 13:06
RAIFORD G. TRASK, JR.
RA-2633B.RDY.PSH20.dgn

-L-
PI Sta 243+38.67
 $\Delta = 17^\circ 38' 15.0''$ (LT)
 $D = 0' 29' 53.6''$
 $L = 3,540.07'$
 $T = 1784.5'$
 $R = 11,500.00'$
 $e = 2.5\%$

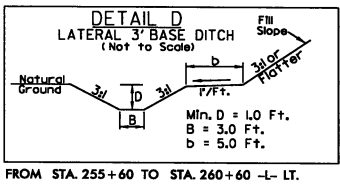
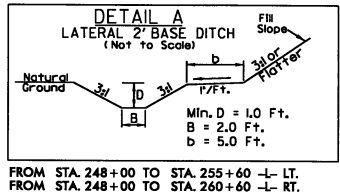
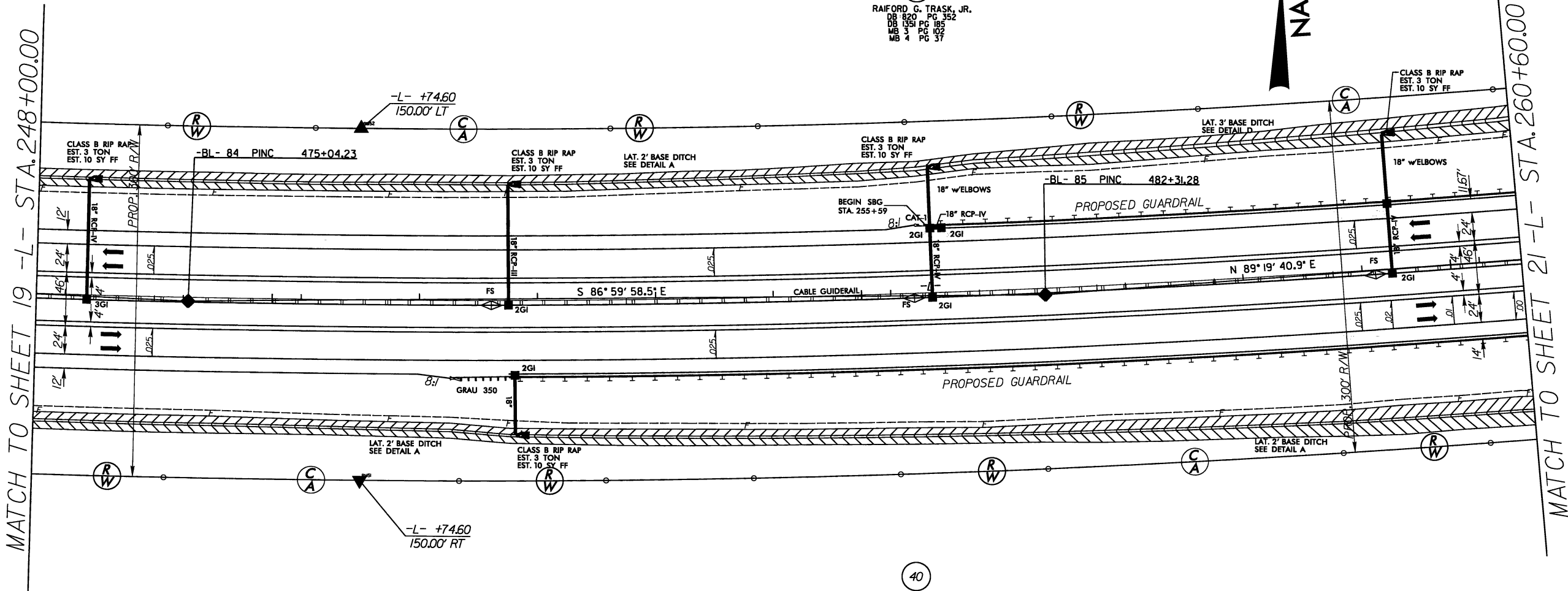


EQUALIZER PIPE INVERTS WILL NOT BE BURIED

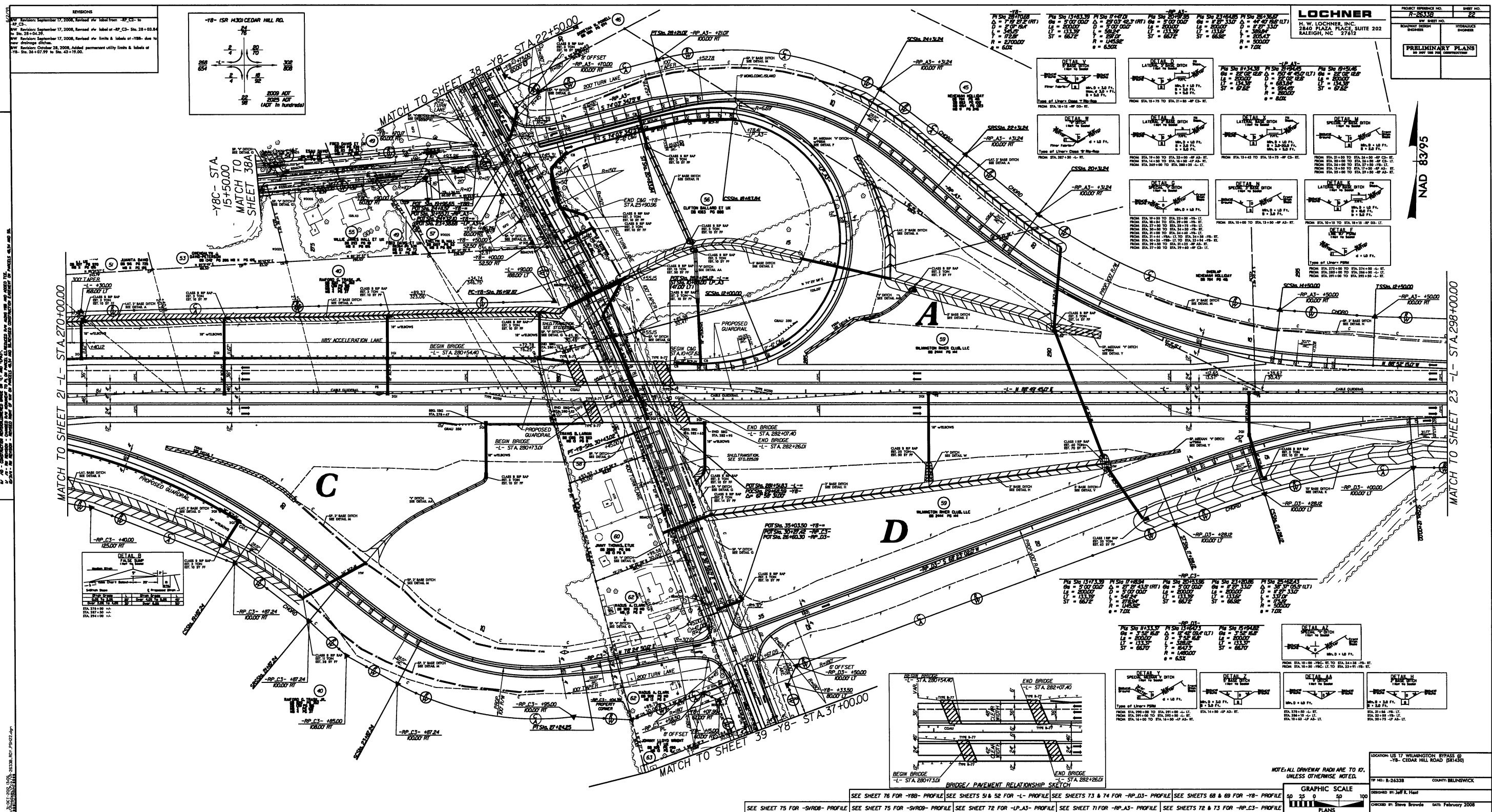
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



SEE SHEET 50 FOR -L- PROFILE



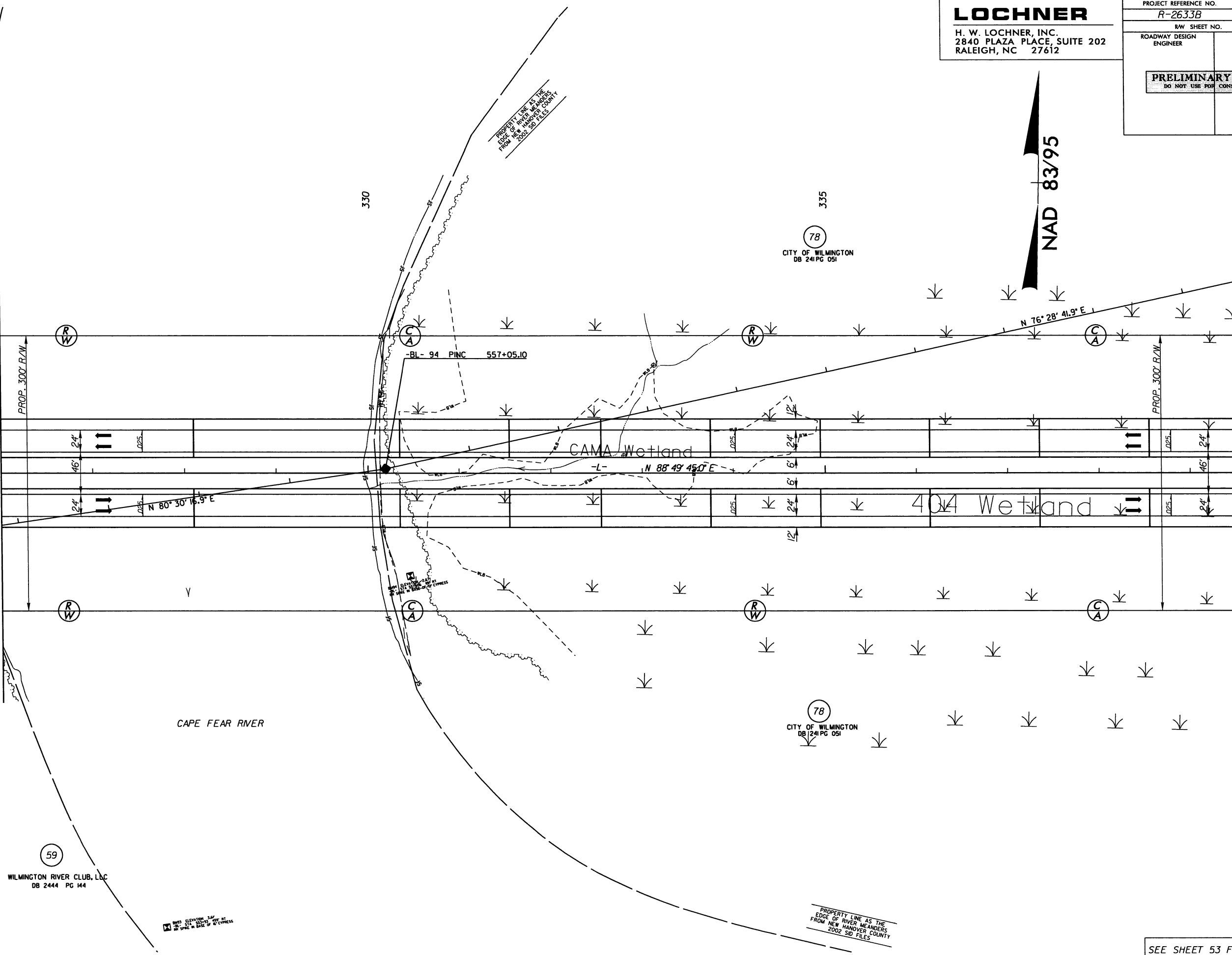
8/17/99

REVISIONS

10/ /09 - NAME AND DEED CHANGE ON PARCEL 59.
1/ /11 - RW REVISION - ADDED CA SYMBOLS.

12-FEB-2013 14:00
R:\PROJECTS\2633B\AR-2633B.FDY_PSH25.dgn
\$\$\$\$\$UNRELEASED\$\$\$\$\$

MATCH TO SHEET 24 -L- STA.326+00.00



LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.
R-2633B

SHEET NO.
25

RAW SHEET NO.

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

MATCH TO SHEET 26 -L- STA.339+50.00

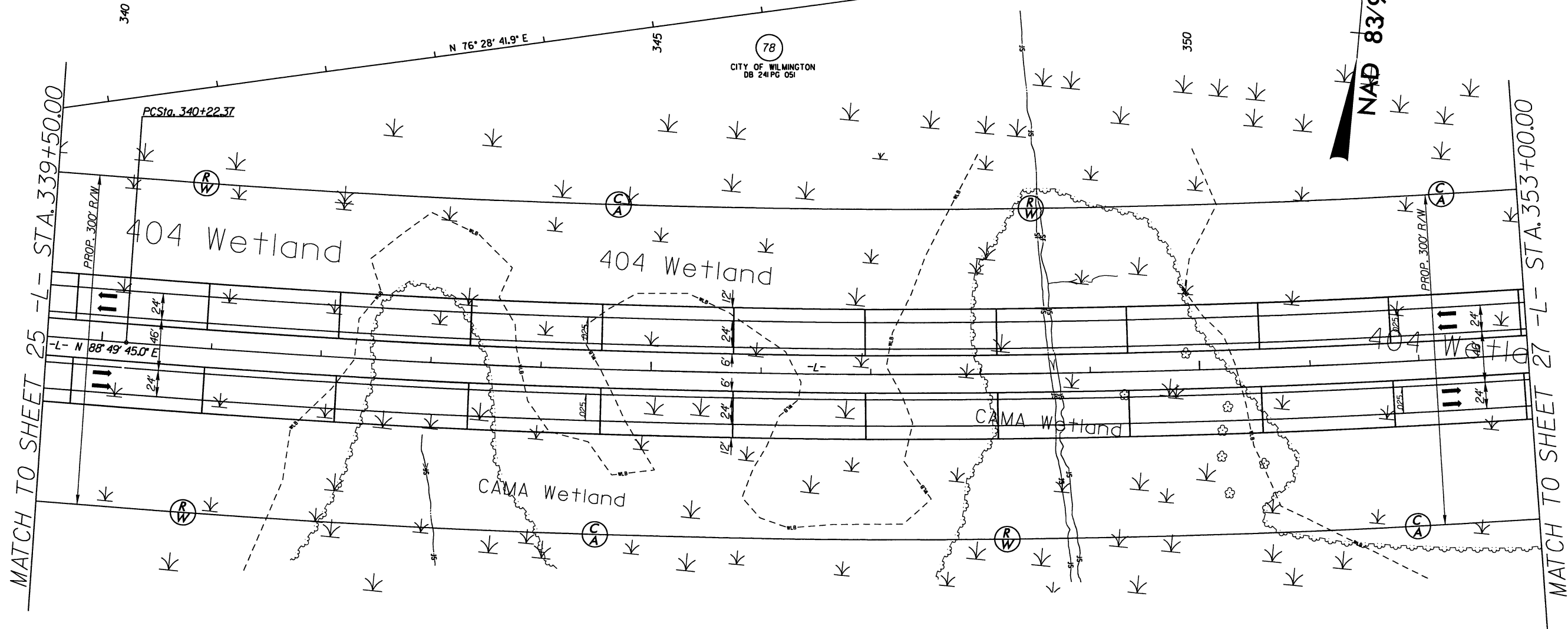
SEE SHEET 53 FOR -L- PROFILE

8/17/99

REVISIONS

1/ 11 - RW REVISION - ADDED CA SYMBOLS.

12-FEB-2013 14:00
H:\PROJECTS\12-2633B.RDY_PSH26.dgn
H:\PROJECTS\12-2633B.RDY_PSH26.dgn
H:\PROJECTS\12-2633B.RDY_PSH26.dgn



LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.

R-2633B

SHEET NO.

26

R/W SHEET NO.

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 54 FOR -L- PROFILE

8/17/99

REVISIONS

1/ 11 - RW REVISION - ADDED CA SYMBOLS.

12-FEB-2013 14:00 R:\Hondan\proj\26338.RDY.PSH27.dgn
R:\Hondan\proj\26338.RDY.PSH27.dgn
R:\Hondan\proj\26338.RDY.PSH27.dgn

-L-
PI Sta 383+94.77
 $\Delta = 51^{\circ} 49' 22.8" (LT)$
 $D = 0' 38" 11.8$
 $L = 8140.34'$
 $T = 4372.40'$
 $R = 9000.00'$
 $e = 2.5\%$

N 76° 28' 41.9" E

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.
R-2633B

SHEET NO.
27

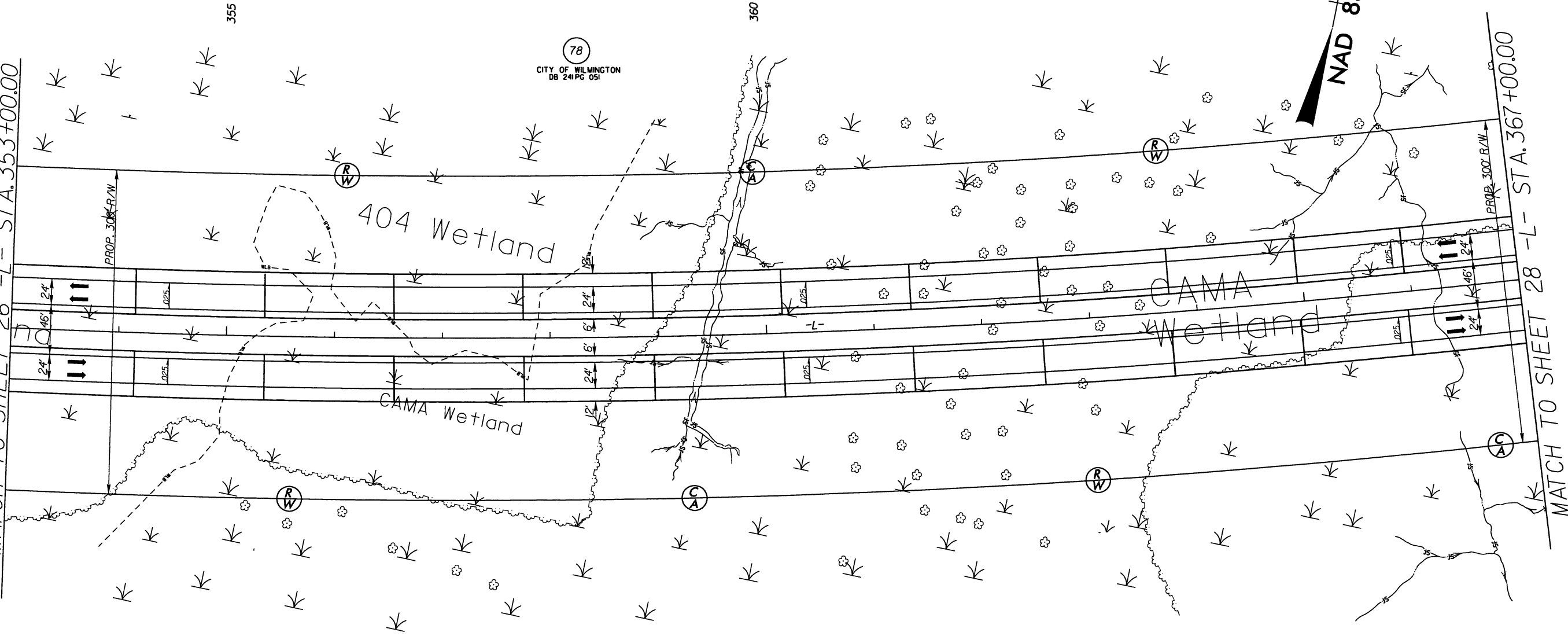
RW SHEET NO.

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCH TO SHEET 26 -L- STA. 353+00.00



MATCH TO SHEET 28 -L- STA. 367+00.00

SEE SHEET 54 FOR -L- PROFILE

1/ /II - RW REVISION - ADDED CA SYMBOLS.

12-FEB-2013 14:00
R:\Roadway\Proj\R-2633B-RDY_PSH28.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$

-L-

PI Sta 383+94.77
 $\Delta = 5^\circ 49' 22.8''$ (LT)
 $D = 0^\circ 38' 11.8''$
 $L = 8,140.34'$
 $T = 4,372.40'$
 $R = 9,000.00'$
 $e = 2.5\%$

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.

R-2633B

SHEET NO.

28

RW SHEET NO.

**ROADWAY DESIGN
ENGINEER**

**HYDRAULICS
ENGINEER**

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DO NOT USE FOR CONSTRUCTION

CAROLINA POWER AND LIGHT CO.

(79)

DB	474	PG	502
DB	720	PG	420
DB	690	PG	555
DB	501	PG	407
DB	4134	PG	52
DB	886	PG	829
DB	880	PG	449
DB	1977	PG	64
DB	506	PG	06
DB	853	PG	865
MB	21	PG	56
MB	33	PG	362
MB	39	PG	210

~~CAROLINA POWER AND LIGHT CO.~~

DB 474 PG 502
DB 720 PG 420
DB 690 PG 555
DB 501 PG 407
DB 4134 PG 52
DB 886 PG 829
DB 880 PG 449
DB 1977 PG 64
DB 506 PG 06
DB 853 PG 865
MB 21 PG 56
MB 33 PG 362
MB 39 PG 210

70

NAD 83/95

SEE SHEET 55 FOR -L- PROFILE

REVISIONS

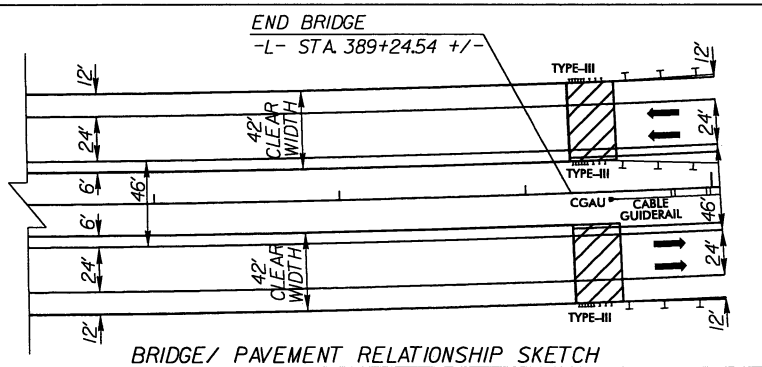
1/ 11 - RW REVISION - ADDED CA SYMBOLS REMOVED TCE ON PARCEL 79.

12-FEB-2013 14:00
K:\Roadwork\2633B\RDY_PSH29.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$

8/17/99

PI Sta 383+94.77
 $\Delta = 51^\circ 49' 22.8" (LT)$
 $D = 0' 38" 11.8"$
 $L = 8140.34'$
 $T = 4372.40'$
 $R = 9000.00'$
 $e = 2.5\%$

MATCH TO SHEET 28 -L- STA.380+00.00



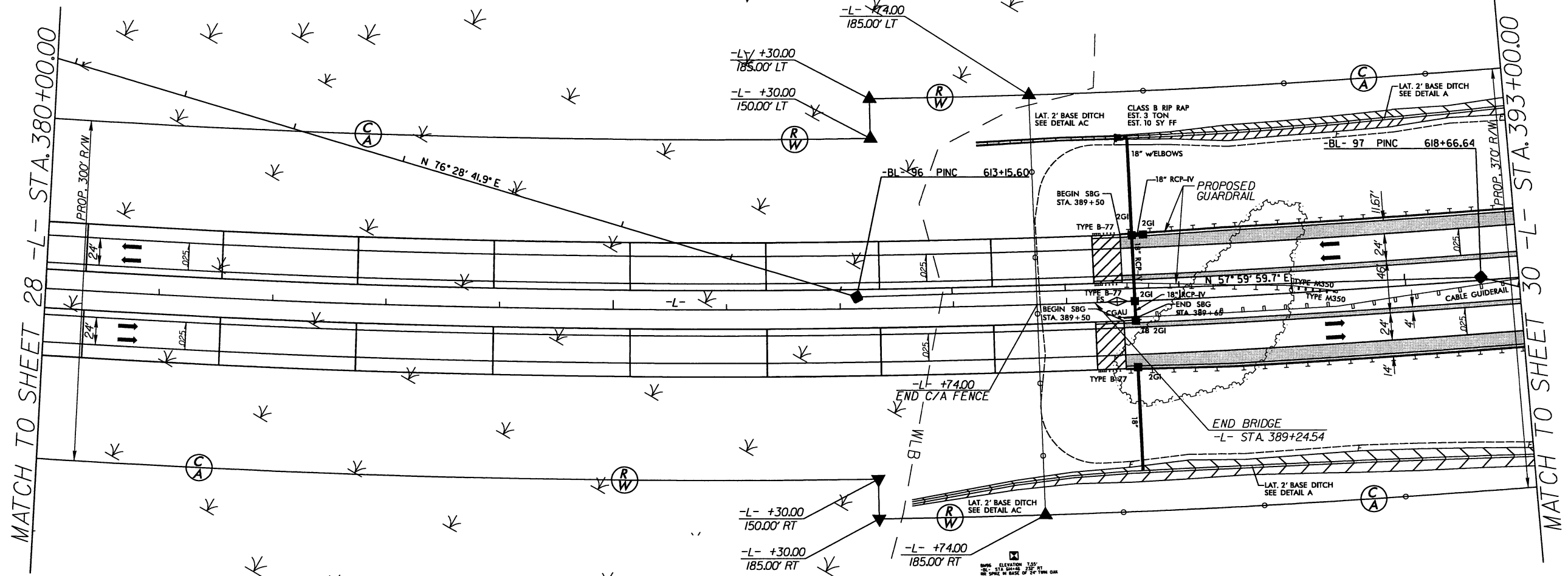
NAD 83/95

CAROLINA POWER AND LIGHT CO.
DB 474 PG 502
DB 720 PG 420
DB 690 PG 555
DB 501 PG 407
DB 434 PG 525
DB 886 PG 829
DB 880 PG 449
DB 1977 PG 643
DB 506 PG 066
DB 853 PG 865
MB 21 PG 56
MB 33 PG 362
MB 39 PG 210

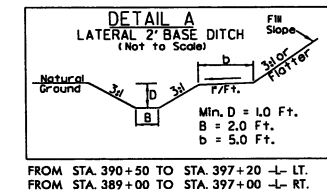
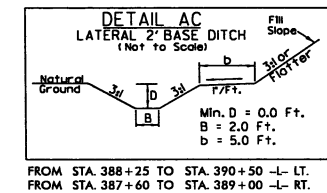
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



CAROLINA POWER AND LIGHT CO.
DB 474 PG 502
DB 720 PG 420
DB 690 PG 555
DB 501 PG 407
DB 434 PG 525
DB 886 PG 829
DB 880 PG 449
DB 1977 PG 643
DB 506 PG 066
DB 853 PG 865
MB 21 PG 56
MB 33 PG 362
MB 39 PG 210



SEE SHEET 55 FOR -L- PROFILE

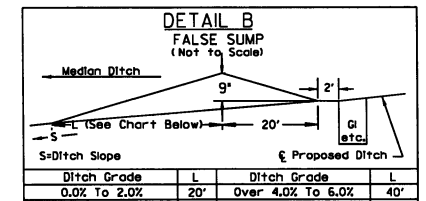
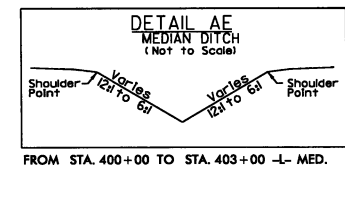
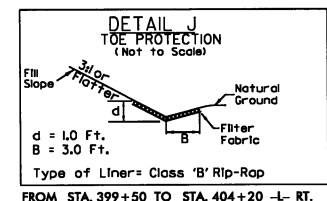
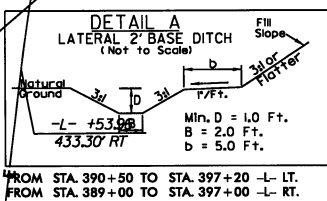
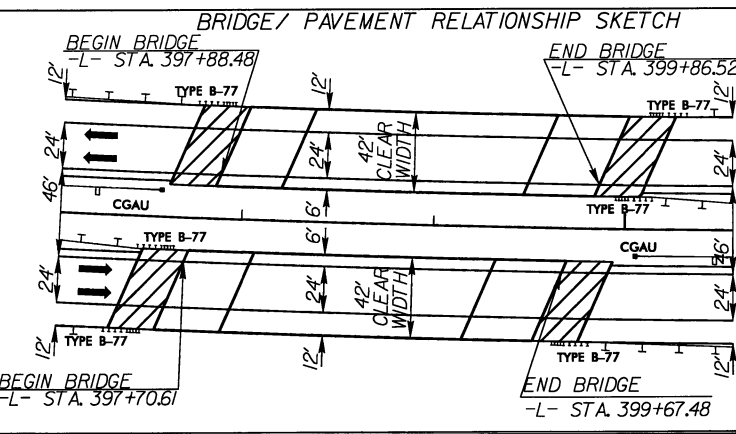
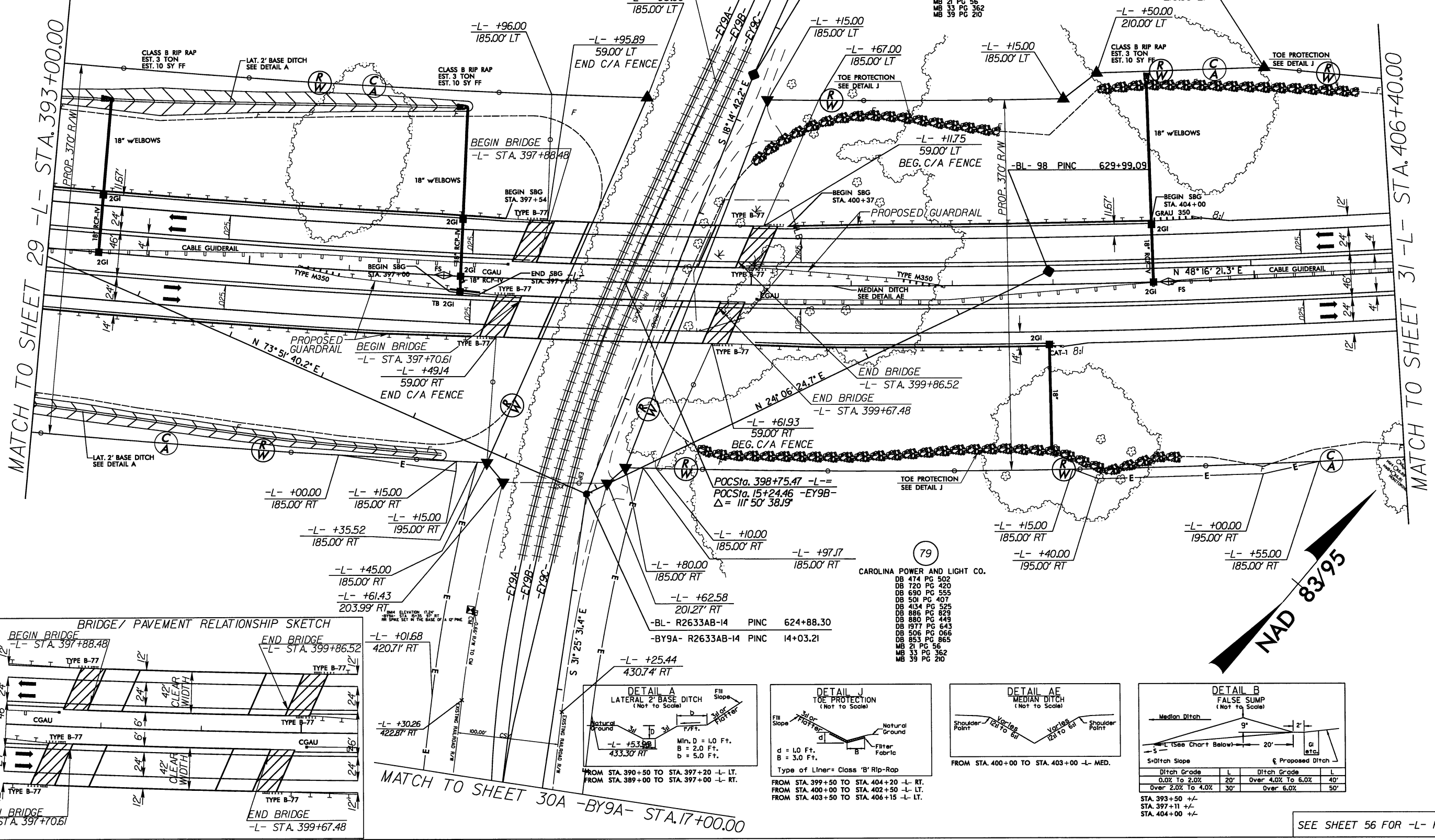
8/17/99

LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B		SHEET NO. 30	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-L-		-EY9A-		-EY9B-		-EY9C-	
PI Sta 383+94.77	Δ = 5° 49' 22.8" (LT)	PI Sta 16+60.58	Δ = 12° 33' 24.2" (LT)	PI Sta 17+30.41	Δ = 17° 54' 50.4" (LT)	PI Sta 16+31.73	Δ = 11° 15' 13.6" (LT)
D = 0° 38' 11.8"		D = 4° 00' 00.0"	Δ = 10° 45' 44.5" (LT)	D = 3° 48' 00.0"	Δ = 17° 54' 50.4" (LT)	D = 4° 55' 00.0"	Δ = 6° 40' 24.9" (LT)
L = 8140.34'		L = 313.92'	L = 215.25'	L = 471.42'	L = 228.89'	L = 105.65'	L = 105.65'
T = 4,372.40'		T = 157.62'	T = 107.98'	T = 237.69'	T = 114.85'	T = 52.91'	T = 52.91'
R = 9,000.00'		R = 1,432.69'	R = 1,462.28'	R = 1,508.06'	R = 1,165.70'	R = 907.52'	R = 907.52'
e = 2.5%							

REVISIONS
RW Revision: September 17, 2008, Revised RW label -L- Sta. 397+15 from 205' RT to 195' RT.
V / 11 RW REVISION - ELIMINATED EXISTING TCE AND ADDED TCE AT RAILROAD. ADDED MONUMENTS AT SS 397+61.43, 397+99' AND 398+62.58, 201.27'.



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SEE SHEET 56 FOR -L- PROFILE

NAD 83/95

CAROLINA POWER AND LIGHT CO.
DB 474 PG 502
DB 720 PG 420
DB 690 PG 555
DB 501 PG 407
DB 4134 PG 525
DB 886 PG 829
DB 880 PG 449
DB 1977 PG 643
DB 506 PG 066
DB 853 PG 865
MB 21 PG 56
MB 33 PG 362
MB 39 PG 210

CAROLINA POWER AND LIGHT CO.

DB	474	PG	502
DB	720	PG	420
DB	690	PG	555
DB	501	PG	407
DB	4134	PG	525
DB	886	PG	829
DB	880	PG	449
DB	1977	PG	643
DB	506	PG	066
DB	853	PG	865
MB	21	PG	56
MB	33	PG	362
MB	39	PG	210

MATCH TO SHEET 30 -BY9A- STA.17+00.00

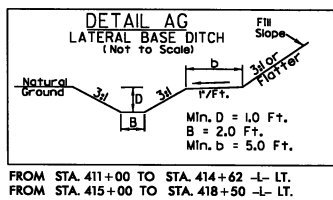
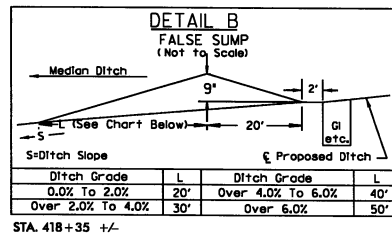
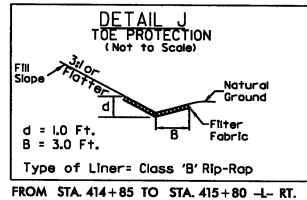
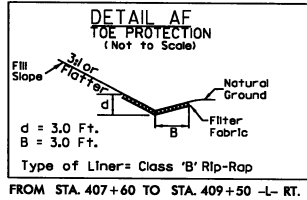
REVISIONS

RAW Revision: V /11 - ADDED TCE ON PARCEL 79.

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31-OCT-2012 13:06
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$$$$$USERNAME$$$$$
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8/17/99

-L-
PI Sta 383+94.77
 $\Delta = 51' 49" 22.8" (LT)$
 $D = 0' 38" 11.8"$
 $L = 8,140.34'$
 $T = 4,372.40'$
 $R = 9,000.00'$
 $e = 2.5\%$



LOCHNER
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

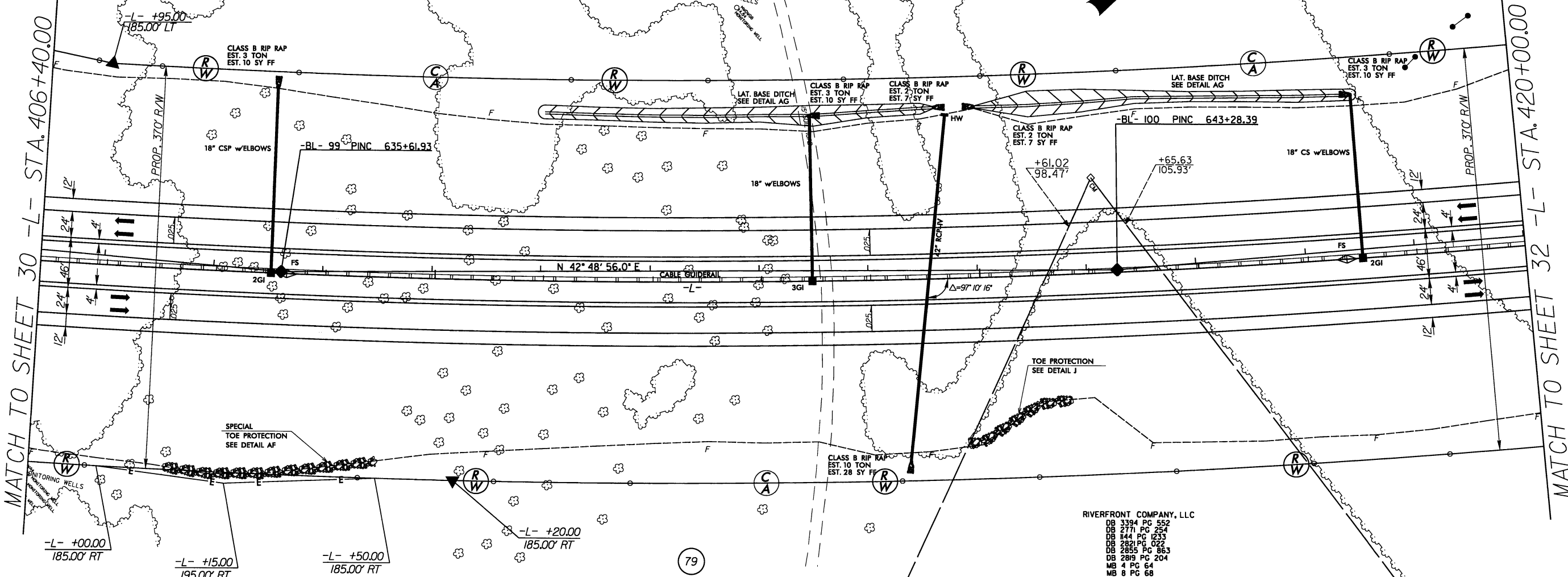
PROJECT REFERENCE NO. <i>R-2633B</i>		SHEET NO. <i>31</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

CAROLINA POWER AND LIGHT CO.

- DB 474 PG 502
- DB 720 PG 420
- DB 690 PG 555
- DB 501 PG 407
- DB 4134 PG 525
- DB 886 PG 829
- DB 880 PG 449
- DB 1977 PG 643
- DB 506 PG 066
- DB 853 PG 865
- MB 21 PG 56
- MB 33 PG 362
- MB 39 PG 210

MONITORING WELLS
CABLE GUIDERAIL

NAD 83/95



- RIVERFRONT COMPANY, LLC
- DB 3394 PG 552
 - DB 2771 PG 254
 - DB 144 PG 1233
 - DB 2821 PG 022
 - DB 2855 PG 863
 - DB 2819 PG 204
 - MB 4 PG 64
 - MB 8 PG 68
 - MB 22 PG 25
 - MB 39 PG 210

CAROLINA POWER AND LIGHT CO.

- DB 474 PG 502
- DB 720 PG 420
- DB 690 PG 555
- DB 501 PG 407
- DB 4134 PG 525
- DB 886 PG 829
- DB 880 PG 449
- DB 1977 PG 643
- DB 506 PG 066
- DB 853 PG 865
- MB 21 PG 56
- MB 33 PG 362
- MB 39 PG 210

REVISIONS

10/ /09 - ADDED DB, PG, AND MB TO PARCEL 80.
1/ /11 - REMOVED TCE ON PARCEL 79.

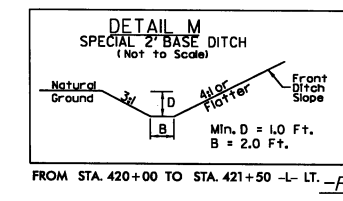
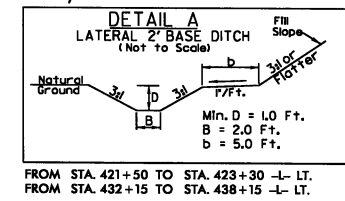
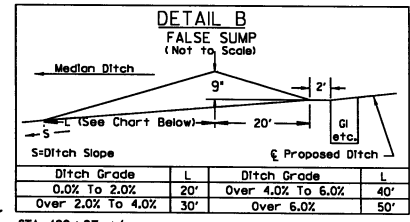
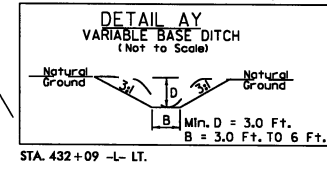
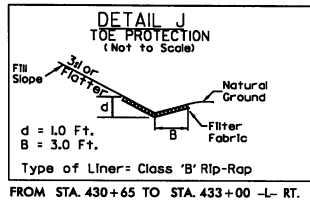
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USER:RANAV

SEE SHEET 56 FOR -L- PROFILE

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



NOTE: TEMPORARY RAILROAD GRADE CROSSING.

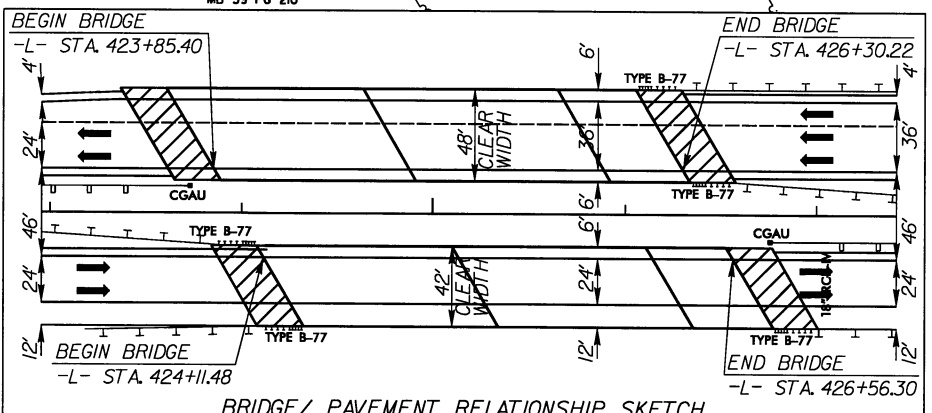
PI Sta 383+94.77
 $\Delta = 51' 49'' 22.8''$ (LT)
 $D = 0' 38'' 11.8''$
 $L = 8,140.34'$
 $T = 4,372.40'$
 $R = 9,000.00'$
 $e = 2.5\%$

- CAROLINA POWER AND LIGHT CO.**
- DB 474 PG 502
 - DB 720 PG 420
 - DB 690 PG 555
 - DB 501 PG 407
 - DB 434 PG 525
 - DB 886 PG 823
 - DB 880 PG 449
 - DB 1977 PG 643
 - DB 506 PG 066
 - DB 853 PG 865
 - MB 21 PG 56
 - MB 33 PG 362
 - MB 39 PG 210

-RP B4-

PIs Sta 11+33.35
 $\Theta_s = 3' 00'' 00.0''$
 $L_s = 200.00'$
 $LT = 133.35'$
 $ST = 66.68'$

PI Sta 15+04.73
 $\Delta = 18' 07'' 51.4''$ (LT)
 $D = 3' 00'' 00.0''$
 $L = 604.36'$
 $T = 304.73'$
 $R = 1,909.86'$
 $e = 5.5\%$



-EY12DRI-

PI Sta 11+42.90
 $\Delta = 23' 53'' 16.7''$ (RT)
 $D = 38' 11'' 49.9''$
 $L = 62.54'$
 $T = 31.73'$
 $R = 150.00'$

PI Sta 12+03.74
 $\Delta = 22' 38'' 45.7''$ (LT)
 $D = 38' 11'' 49.9''$
 $L = 59.29'$
 $T = 30.04'$
 $R = 150.00'$

SEE SHEET 78 FOR -YI- PROFILE
SEE SHEET 75 FOR -RAMP B4- PROFILE
SEE SHEET 57 FOR -L- PROFILE
SEE SHEET 76 FOR -RAMP C4- PROFILE

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	34
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

$\frac{-R}{P} \cdot \frac{1}{L}$
 $\frac{5.22}{3000} = 0.00174$
 $\frac{5.22}{3000} = 0.00174$
 $\frac{5.22}{3000} = 0.00174$
 $\frac{5.22}{3000} = 0.00174$

$\Delta = 6172.16'$
 $D = 3188.5'$
 $L_T R = 9910.0'$
 $L = 95'$
 $R = 95'$
 $PI St 0 = 3534.285'$
 $338 + 2963$
 $151 (RT)$
 $-LREV-$

-Y5-

PI Sta 23+29.43
 $\Delta = 22^\circ 31' 21.9''$ (LT)
 $D = 2^\circ 43' 42.1''$
 $L = 825.50'$
 $T = 418.15'$
 $R = 2100.00'$
 $e = 6.0\%$

2
T.F.HOLDINGS
LIMITED PARTNERSHIP
DB 987 PG 849
WILL 94E-64

DAN 8/3/95

PCSta. 19+11.28

BEGIN CONSTRUCTION
POT Sta. 10+00.00 -Y5-
-Y5- +00.00
BEGIN WW FENCE
(EXIST R/W)

$$\frac{-Y5-13+6}{121.50'}$$

(EXIST R/A)

-Y5- 14+21.30
121.64'
(EXIST R/W)

-Y5- S 63° 23' 26.3" E
S 63° 33' 40.2" E

~~05-74-76 28 BST EB~~

-BY4- 216 POT 5+00.00

$$\begin{array}{r} -Y5- +77.70 \\ -Y \overline{62.13' \text{ EXIST. R/W}} \\ \hline 62.13' \\ \hline (\text{EXIST R/W}) \end{array}$$
$$-Y5 - \frac{Y5^2}{22.72} + 22.72$$

5 63° 26' 22.2" E

$$\frac{-45 - +37.00}{93.00' RT}$$

$\frac{-Y5- +00}{108.00' R}$
 $\frac{-Y5- +50}{108.00' RT}$

MARTIN MARIETTA
MATERIALS, INC.
DB 1064 PG 1104
MB 17 PG 136

-BY4- 217	PINC	10+52.19
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SALISBURY PARTNERS, LLC
DB 2863 PG 9
MB 49 PG 68
MB 58 PG 11
MB 62 PG 73

NOTE: ALL DRIVEWAY RADII ARE TO BE 10',
UNLESS OTHERWISE NOTED.

SEE SHEETS 58 & 59 FOR -Y5- PROFILE

R/W REVISION:10/ /09 - NAME AND DEED CHANGE ON PARCEL 1, ADDED PARCEL 1A
R/W REVISION:03/29/10- ADDED C/A TO PARCEL 1A,ADDED ACCESS EASEMENTS TO PARCEL 1,& REMOVED EXISTING ACCESS PARCEL 2

BI-OCT-2012 13:06
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NAD 83/95

MATCH TO SHEET 6 -Y5- STA. 36+00.00

REVISIONS

R/W REVISION:02/09 - ELIMINATED PARCEL 6 AND TCE. NAME AND DEED CHANGE ON PARCEL 7. ELIMINATED ALABAMA ST. AND CHANGED PROPERTY LINE. ELIMINATED PARCELS 9 AND 9A.
R/W REVISION:03/29/10 - ADDED R/W MONUMENT TO PARCEL 7. EXTENDED C/A FENCE ON PARCEL 8, AND EXTENDED C/A FENCE TO END OF CONSTRUCTION

31-OCT-2012 13:06
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\$\$\$\$\$USERNAME\$\$\$\$\$

-SVRD5A-	
PI Sta 10+98.00	PI Sta 12+51.73
$\Delta = 56^\circ 56' 55.4''$ (LT)	$\Delta = 56^\circ 48' 55.4''$ (RT)
$D = 71^\circ 37' 11.0''$	$D = 71^\circ 37' 11.0''$
$L = 79.52'$	$L = 79.33'$
$T = 43.39'$	$T = 43.27'$
$R = 80.00'$	$R = 80.00'$

NOTE: ALL DRIVEWAY RADII ARE TO BE 10',
UNLESS OTHERWISE NOTED.

SEE SHEET 62 FOR -SVRD5A- PROFILE SEE SHEET 62 FOR -SVRD5- PROFILE SEE SHEETS 58 & 59 FOR -Y5- PROFILE

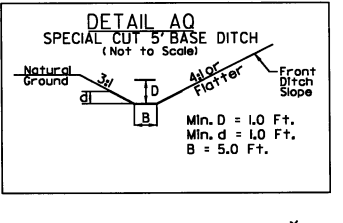
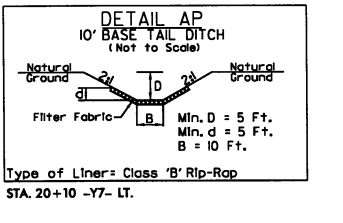
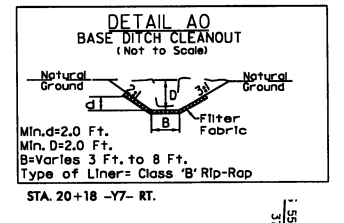
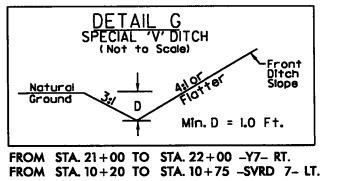
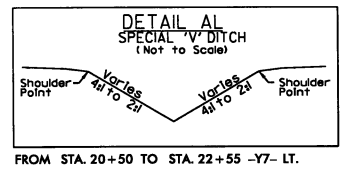
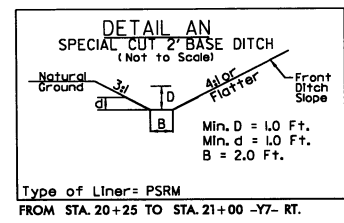
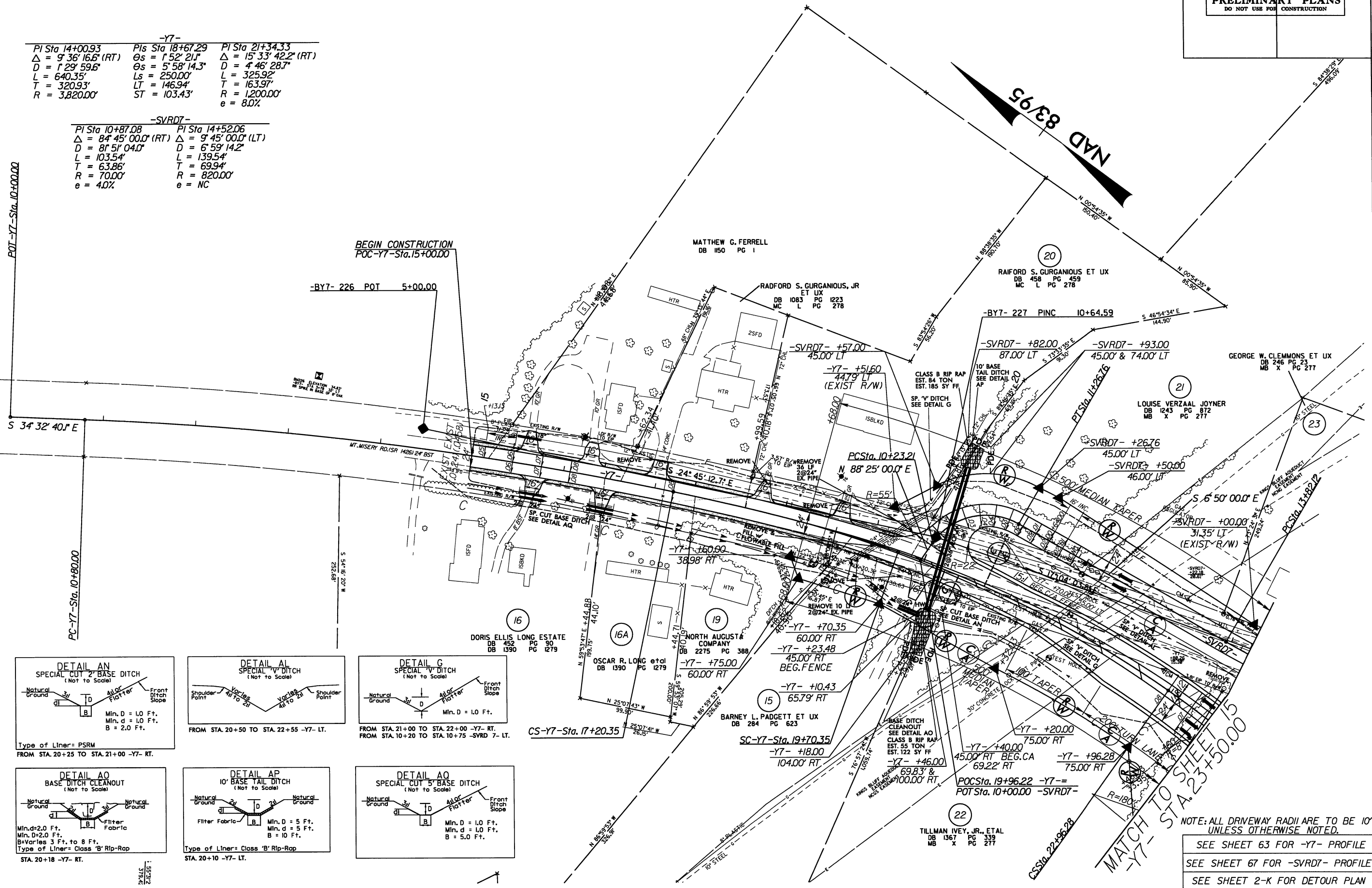
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. <i>R-2633B</i>		SHEET NO. <i>36</i>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-Y7-		
PI Sta 14+00.93 $\Delta = 9' 36'' 16.6''$ (RT) $D = 1' 29' 59.6''$ $L = 640.35'$ $T = 320.93'$ $R = 3,820.00'$	PI Sta 18+67.29 $\Delta = 1' 52' 21''$ $\Theta_s = 5' 58' 14.3''$ $L_s = 250.00'$ $LT = 146.94'$ $ST = 103.43'$	PI Sta 21+34.33 $\Delta = 15' 33' 42.2''$ (RT) $D = 4' 46' 28.7''$ $L = 325.92'$ $T = 163.97'$ $R = 1,200.00'$ $e = 8.0\%$

-SVRD7-	
PI Sta 10+87.08 $\Delta = 84' 45' 00.0''$ (RT) $D = 8' 51' 04.0''$ $L = 103.54'$ $T = 63.86'$ $R = 70.00'$ $e = 4.0\%$	PI Sta 14+52.06 $\Delta = 9' 45' 00.0''$ (LT) $D = 6' 59' 14.2''$ $L = 139.54'$ $T = 69.94'$ $R = 820.00'$ $e = NC$



NOTE: ALL DRIVEWAY RADII ARE TO BE 10', UNLESS OTHERWISE NOTED.

SEE SHEET 63 FOR -Y7- PROFILE

SEE SHEET 67 FOR -SVRD7- PROFILE

SEE SHEET 2-K FOR DETOUR PLAN

REVISIONS

R/W Revision September 17, 2008. Revised R/W on Parcels 15, 16, & 23 to cover driveway pipes. -Y7- Sta. 17+20.35 (RT) to 21+20 (RT).

R/W Revision September 17, 2008. Added R/W offset label at -Y7- Sta. 20+46 69.83 RT.

R/W Revision: 10/30/09 NAME AND DEED CORRECTION ON PARCEL 22 EXTENDED POE TO INCLUDE PIPE ON PARCEL 15. CHANGED NAME ON PARCEL 15. CHANGED NAME ON PARCEL 15.

R/W Revision: 10/30/09 REMOVED PARCELS 17 AND 18 - NO CLAIM, NAME AND DEED CHANGE ON PARCEL 15.

R/W Revision: 1/11/11 ADDED PROPERTY LINE AND ADDED PARCEL 16A.

R/W Revision: 6/22/11 EXTENDED C/A TO -Y7- STA 20+46.00 RT AND FENCE.

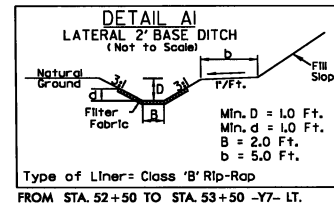
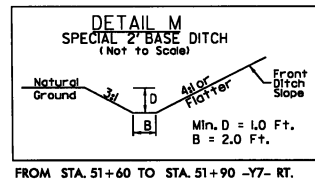
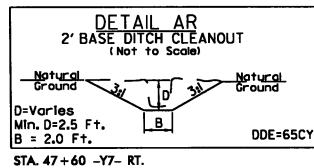
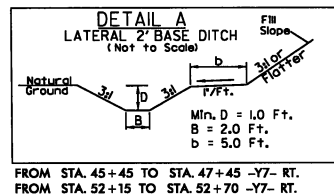
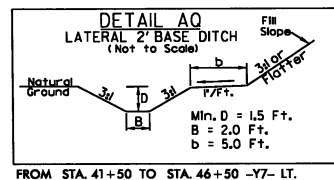
R/W Revision: 9/08/11 REMOVED R/W ON PARCELS 16 AND 16A AND CHANGED R/W ON PARCEL 19.

8/17/99

31 OCT-2012 13:06 R-2633B.RDY_PSH36.dgn

REVISIONS
R/W REVISION: 10/30/09 - LABELED PDE ON PARCEL 31, NAME AND DEED CHANGE ON PARCEL 33, ADDED NEW PARCEL 35A, ADDED NEW PARCEL AND PROPERTY LINE PARCEL 33A, 35B, AND 35C, MOVED CLU-DE-SAC FROM STA 31+50 TO 32+44.18 -SVRD8-
R/W REVISION: 11/11 - DELETED PARCEL 33 AND COMBINED WITH PARCEL 32 AND ADDED DEED BOOK 2922 PAGE 641, CHANGED MONUMENT TO PL CORNER ON PARCEL 32.
R/W REVISION: 6/22/11 - CHANGED PARCEL OWNERS ON PARCELS 33A, 35 AND 35A.

31-OCT-2012 13:06
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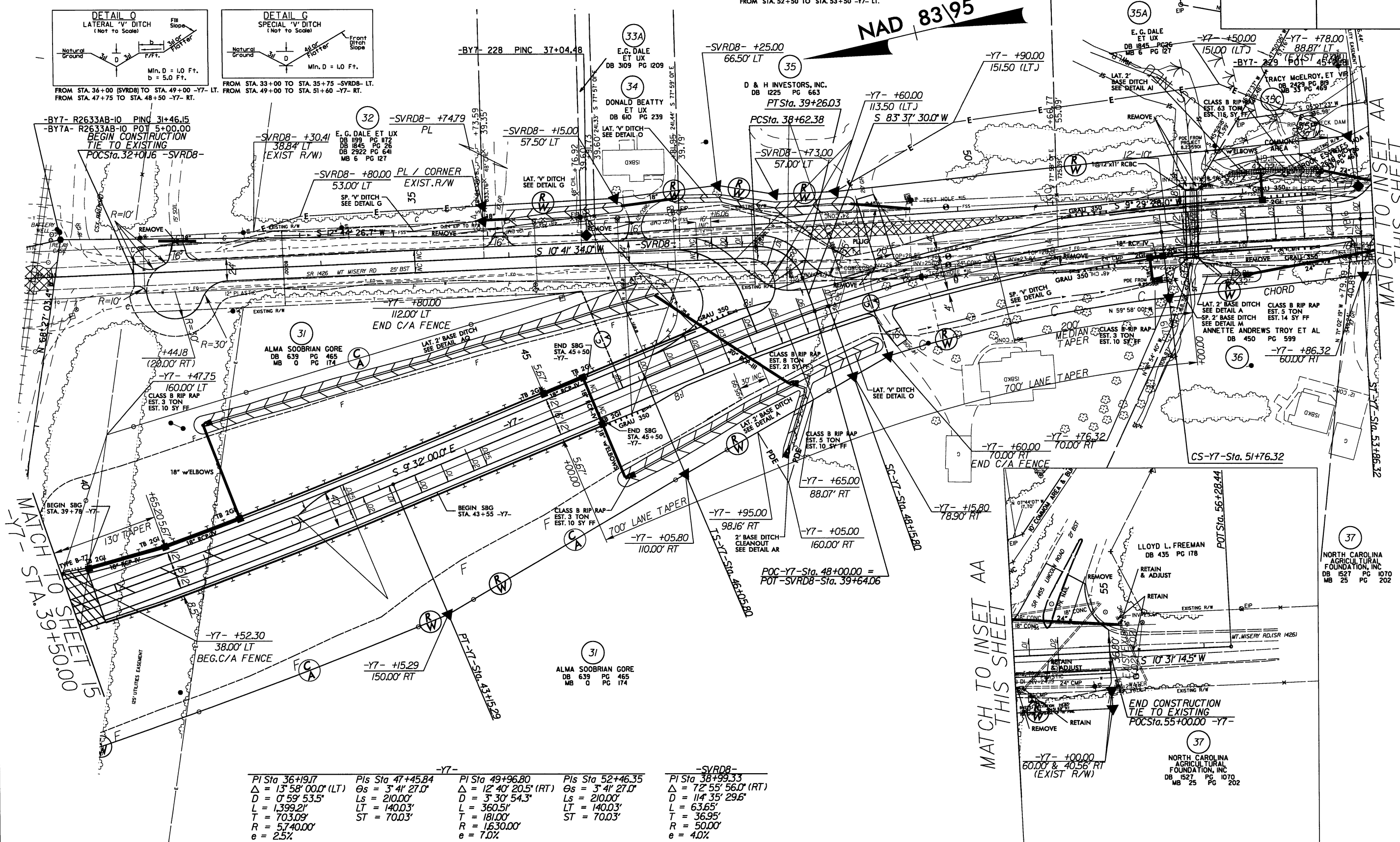
LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. R-2633B SHEET NO. 37

R/W SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-Y7-		-SVRD8-	
PI Sta 36+19.7	PIs Sta 47+45.84	PI Sta 49+96.80	PIs Sta 52+46.35
$\Delta = 13^\circ 58' 00.0''$ (LT)	$\Delta = 3^\circ 41' 27.0''$	$\Delta = 12^\circ 40' 20.5''$ (RT)	$\Delta = 3^\circ 41' 27.0''$
D = 0' 59' 53.5"	Ls = 210.00'	Ls = 3' 30' 54.3"	Ls = 210.00'
L = 1,399.21'	LT = 140.03'	L = 360.51'	LT = 140.03'
T = 703.09'	ST = 70.03'	T = 181.00'	ST = 70.03'
R = 5740.00'		R = 1630.00'	
e = 2.5%		e = 7.0%	

NOTE: ALL DRIVEWAY RADII ARE TO BE 10',
UNLESS OTHERWISE NOTED.

SEE SHEETS 67 & 68 FOR -SVRD8- PROFILE

SEE SHEETS 63 & 64 FOR -Y7- PROFILE

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

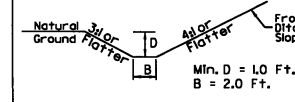
PROJECT REFERENCE NO. <i>R-2633B</i>	SHEET NO. <i>38</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-Y8A-

PI Sta 11+85.37
 $\Delta = 20^\circ 20' 00.0''$ (RT)
 $D = 22^\circ 55' 05.9''$
 $L = 88.72'$
 $T = 44.83'$
 $R = 250.00'$
 $e = 2.0\%$

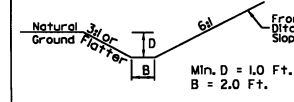
-SVRD9-
PI Sta 10+99.99
 $\Delta = 89^\circ 55' 00.0''$ (RT)
 $D = 71^\circ 37' 11.0''$
 $L = 125.55'$
 $T = 79.88'$
 $R = 80.00'$
 $e = 3.5\%$

DETAIL AS
SPECIAL 2' BASE DITCH
(Not to Scale)



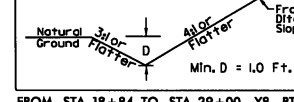
FROM STA. 13+50 TO STA. 18+85 -Y8- LT.

DETAIL AT
TYPICAL 2' BASE DITCH
(Not to Scale)



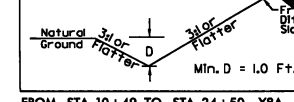
FROM STA. 13+40 TO STA. 18+84 -Y8- RT.

DETAIL G
SPECIAL 'V' DITCH
(Not to Scale)



FROM STA. 19+50 TO STA. 23+50 -Y8- LT

DETAIL AZ
SPECIAL 'V' DITCH
(Not to Scale)



FROM STA. 10+47 TO STA. 19+10 -Y8A-

45

HEHEMIAH HOLLIDAY
DB 784 PG 415
DB 883 PG 1012
DB 1264 PG 1323
MB W PG 246

46
DORETHA W. POWELL
DB 956 PG 974

POT-SVRD9-Sta. 13+94.

MATCH TO SHEET 22 -Y8- STA. 22+50.00

FRED DAVIS ET UX
DB364 PG 539
DB 83 PG 73
MB X PG 126

ESAU DAVID
ET UX
DB 254 PG 142
MB X PG 126

22°04'10" E
220.68'

54

SEE SHEET 68 FOR -Y8- PROFILE

SEE SHEET 76 FOR -Y8A- PROFILE

SEE SHEET 75 FOR -SVRD9- PROFILE

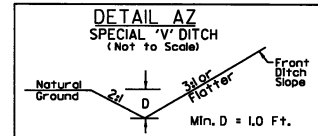
NOTE: ALL DRIVEWAY RADII ARE TO 10' UNLESS OTHERWISE NOTED.

Revision:	September 17, 2008, Removed ϕ_w label at Y8- Sta. 13 + 60 60' LT.
Revision:	September 17, 2008, Revised ϕ_w limits & labels at Y8A- due to new drainage ditches.
Revision:	October 28, 2008, Added permanent utility limits & labels at Y8- Sta. 13 + 04.94 to Sta. 18 + 62.09.
Revision:	Y8- Sta. 13 + 04.94 to Sta. 18 + 62.09.

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\$\$\$\$\$USERNAME\$\$\$\$\$

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO. <i>R-2633B</i>	SHEET NO. <i>38A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



FROM STA. 10+49 TO STA. 24+50 -Y8A- RT.
FROM STA. 10+47 TO STA. 19+10 -Y8A- LT.
FROM STA. 19+74 TO STA. 24+50 -Y8A- LT.
FROM STA. 10+25 TO STA. 13+80 -Y8B- RT.
FROM STA. 10+26 TO STA. 12+50 -Y8B- LT.
FROM STA. 10+00 -Y8C- RT. TO STA. 24+38 -Y8- RT.
FROM STA. 10+50 -Y8C- LT. TO STA. 23+91 -Y8- RT.

KENNETH HALL, ET UX
DB 080 PG 037
MB 23 PG 13

NAD 83/95

MATCH TO SHEET 38
-Y8A- STA. 13+09.60

-Y8C- STA.
15+50.00
MATCH TO
SHEET 22

SEE SHEET 76 FOR -Y8A- PROFILE

SEE SHEET 76 FOR -Y8B- PROFILE

Revisions

R/W Revision: 1/7/11 - REMOVED R/W ON LONG Y8B AND ADDED PARCELS 101A AND 102A. ADDED TCE ON PARCELS 98, 101, 101A, 102, 102A, 103, AND 104. ADDED R/W ON PARCEL 98.

R/W Revision: 1/11 - REDUCED R/W ALONG Y8B AND ADDED TCE REDUCED SIGHT DISTANCE ON PARCEL 100 TO MISS WELL.

R/W Revision: 10/23/11 - ADDED PARCELS 98A AND 99A. REVISOR, RIGHT OF WAY ON PARCELS 50, 51, 52, 53, 54, AND 97. REVISED CONSTRUCTION EASEMENT ON PARCELS 40, 50, 51, 53, 54, 97, 99, 100, 101, 101A, 102, 103 AND 102A REMOVED FROM PLANS, NO CLAIMS.

R/W Revision: September 17, 2008. Revised r/w limits & labels at Y8A- & Y8B- due to new drainage ditches.

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LOCHNER

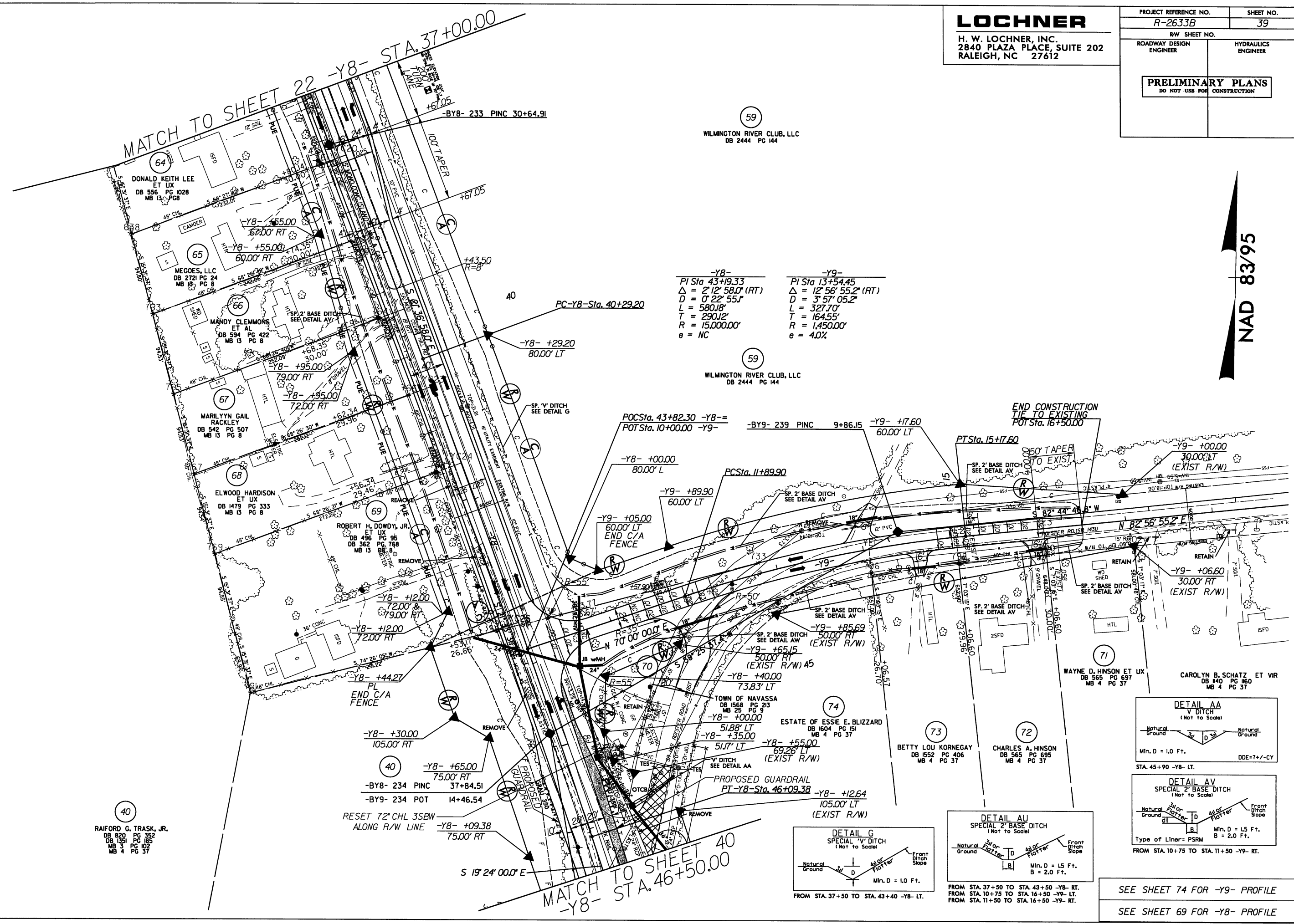
H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	39
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

REVISIONS
R/W Revision: September 17, 2008, Revised T/W label from -Y8- to -Y9- at Sta. 12+85.69 50' RT & Sta. 17+06.60 30' RT.
R/W Revision: September 17, 2008, Removed -SYRDO- along with the r/w and monuments for the alignment.
R/W Revision: October 28, 2008, Added permanent utility limits & labels at -Y8- Sta. 36+07.99 to Sta. 43+19.00.
R/W Revision: October 30, 2009, - ON PARCEL 69 MOVED MONUMENT TO +12.00, ENDED PUE AT INTERSECTION OF NEW R/W LINE MOVED C/A TO PROPERTY LINE MONUMENT.
R/W Revision: 11/17/11 - CHANGED OWNER ON PARCEL 65 TO MEGOS, LLC AND PG ADDED PL ON MONUMENT ON PARCEL 65.
R/W Revision: 9/27/11 - RESET CHAINLINK FENCE ON RIGHT OF WAY LINE ON PARCEL 70.



8/17/99

REVISIONS
109 - ADDED PARCEL 75 LINCOLN DEVELOPMENT.
110 - REVISED R/W ON PARCELS 74 AND 75 TO ACCOMMODATE WORK BRIDGE ALONG PROPOSED STRUCTURE.
111 - CHANGED MONUMENT ON PARCEL 40 TO PC-ADDED R/W MONUMENT'S ON EXISTING R/W CHANGED PARCEL 75A TO R/W REVISION 02.
RODGERS FAMILY PROPERTIES, LLC DB 2722 PG 0782.

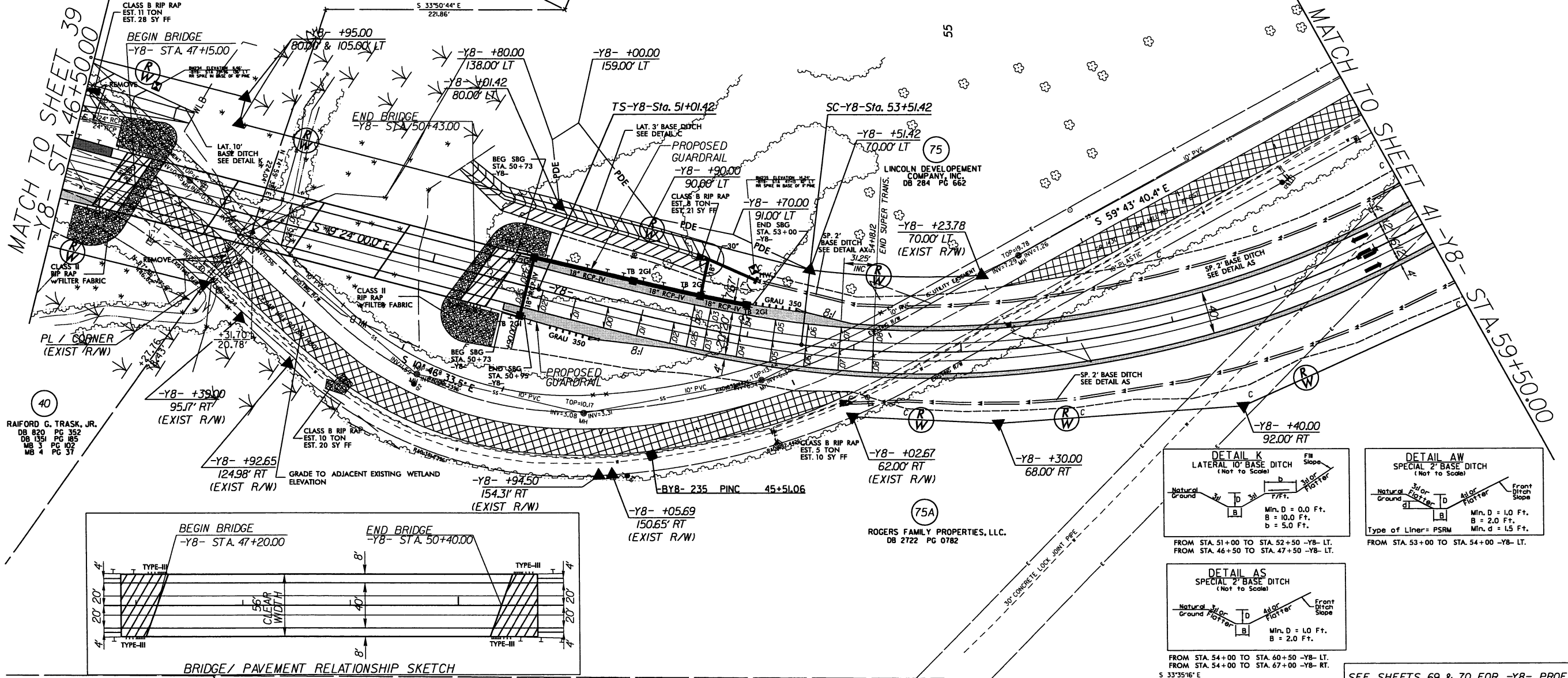
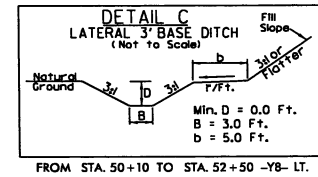
12-FEB-2013 14:00
R-2633B_R-DY_PSH40.dgn
R-2633B_R-DY_PSH40.dgn

LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	40
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-Y8-
PIs Sta 52+68.24 PI Sta 57+60.90
 $\theta_s = 7^\circ 27' 37.4''$ $\Delta = 46^\circ 12' 00.0''$ (LT)
Ls = 250.00' D = 5' 58" 05.9"
LT = 166.81' L = 774.09'
ST = 83.47' T = 409.47'
R = 960.00'
e = 8.0%



SEE SHEETS 69 & 70 FOR -Y8- PROFILE

8/17/99

RAW REVISION: 01 / 11 - CHANGED PARCEL 75A TO RODGERS FAMILY PROPERTIES, LLC DB 2722 PG 0782.

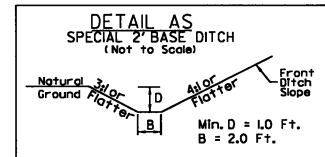
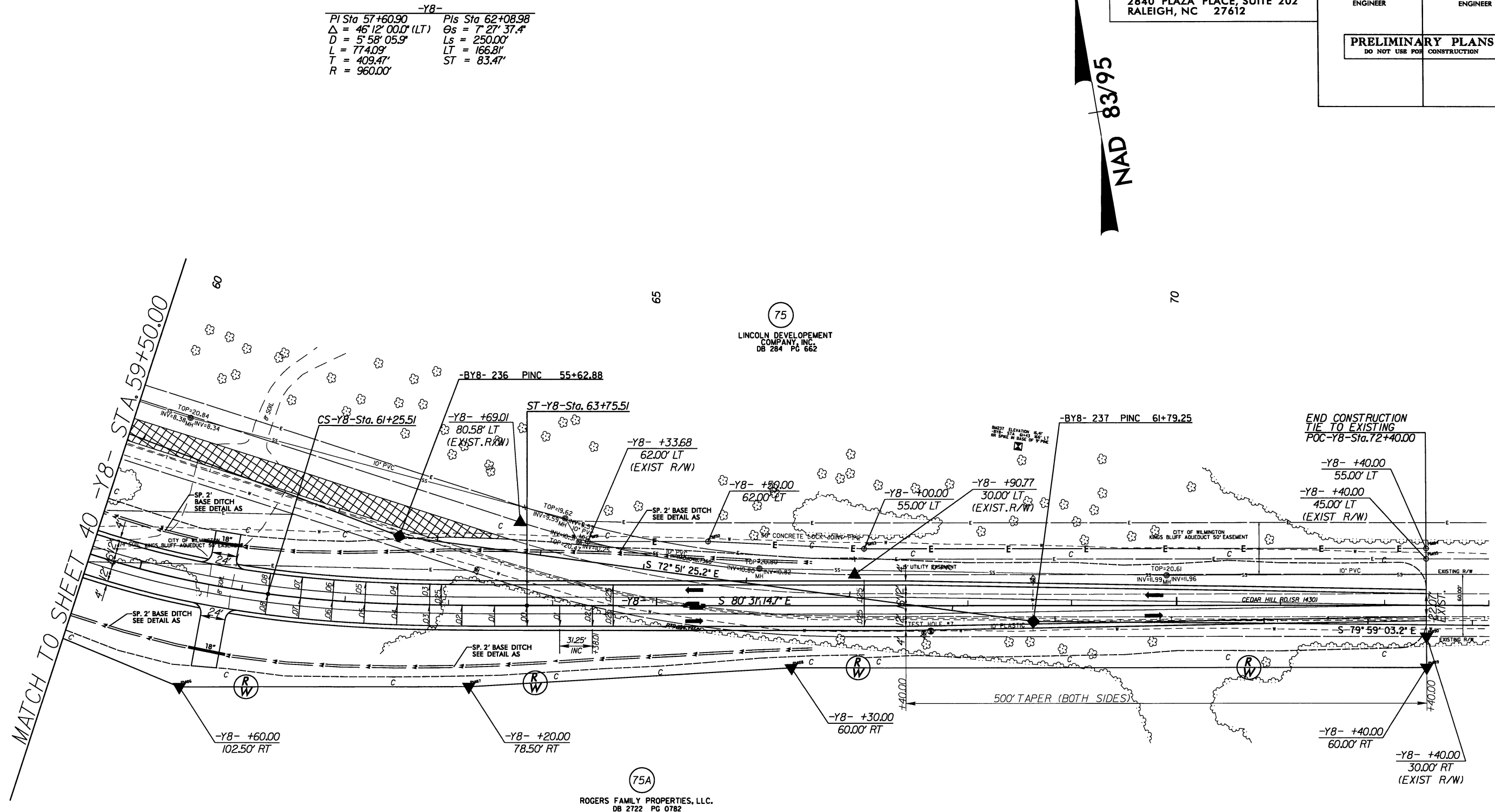
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LOCHNER

H. W. LOCHNER, INC.
2840 PLAZA PLACE, SUITE 202
RALEIGH, NC 27612

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	41
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NAD 83/95



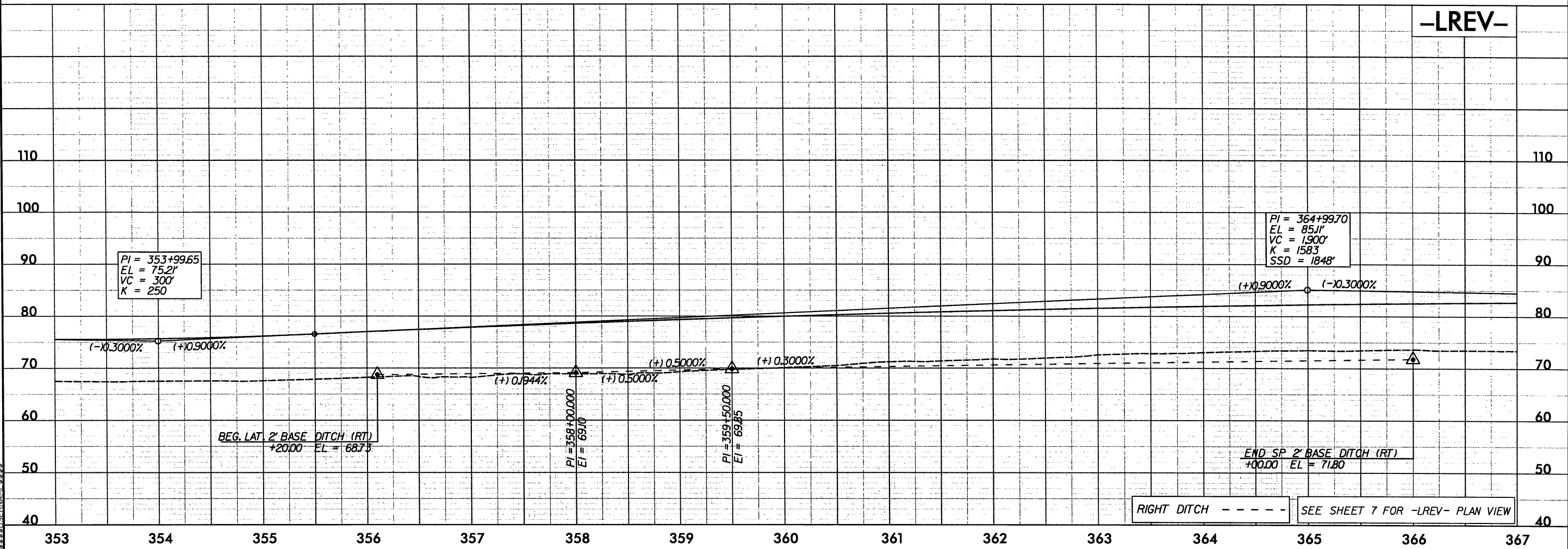
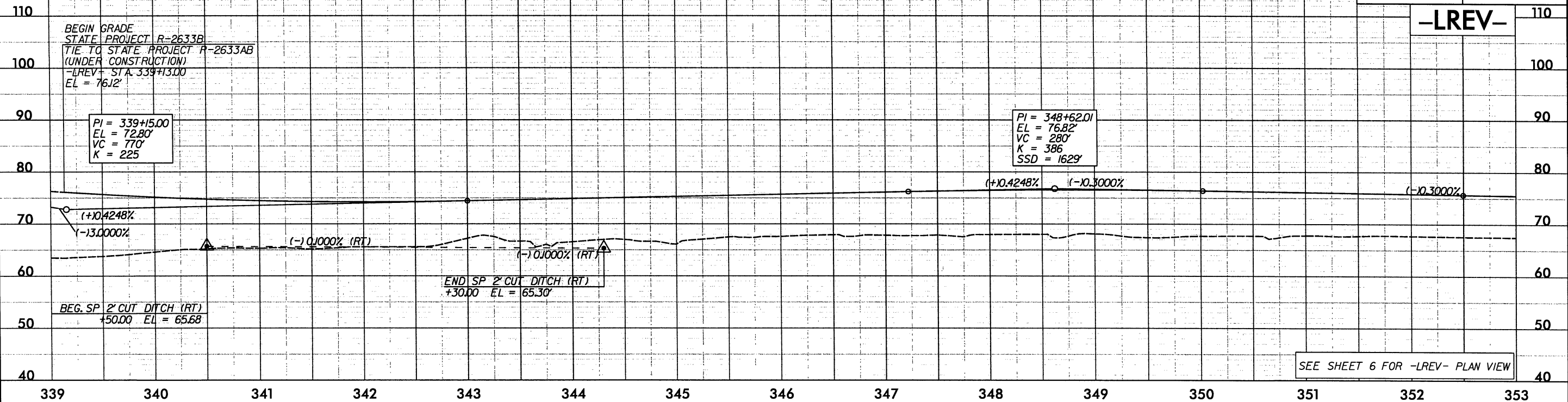
FROM STA. 60+50 TO STA. 67+00 -Y8- LT.
FROM STA. 54+00 TO STA. 67+00 -Y8- RT.

SEE SHEET 70 FOR -Y8- PROFILE

5/28/99

BW59 ELEVATION 69.63'
-L- STA 59+09.45 99.95' RT
RR SPIKE IN BASE OF 10" PINE

PROJECT REFERENCE NO.		SHEET NO.
R-2633B		43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

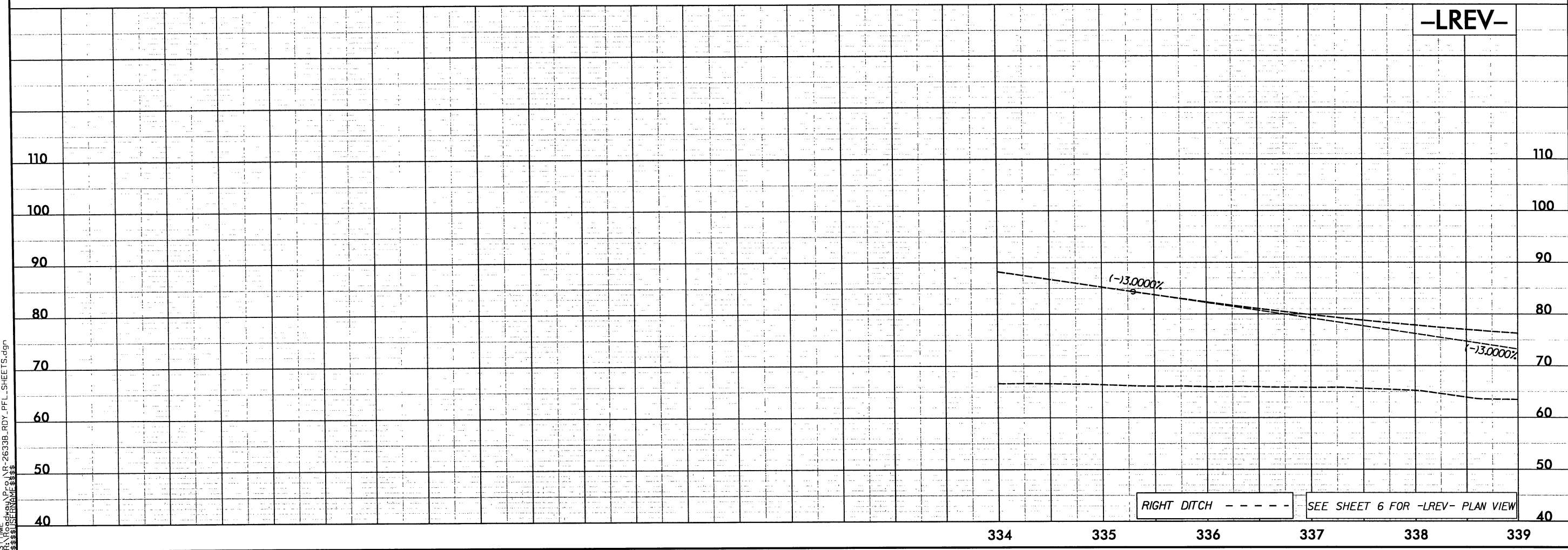


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5/28/99

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PROJECT REFERENCE NO.		SHEET NO.	
R-2633B		42	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



5/28/99

SYTIME 4/14/99 P:\R-2633B.RDY.PFL.SHEETS.dgn
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BM61 ELEVATION 75.13'
-L- STA 76+75.40 157.49' RT
RR SPIKE IN BASE OF 14' PINE

-LREV- STA 375+54.20 BK=
-L- STA 83+54.50 AH=
EL = 81.95'

BM64 ELEVATION 64.54'
-L- STA 97+29.04 310.68' RT
RR SPIKE IN BASE OF 12' PINE

PI = 95+50.00
EL = 78.36'
VC = 700'
K = 537

PI = 98+00.00 (LT)
EI = 65.00

BEG. LAT. 2' BASE DITCH (RT)
+00.00 EL = 63.00

BEG. LAT. 2' BASE DITCH (LT)
+00.00 EL = 70.00

PROJECT REFERENCE NO. R-2633B		SHEET NO. 44	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-LREV-/-L-

SEE SHEET 8 FOR -LREV-/-L- PLAN VIEW

-L-

RIGHT DITCH - - - - -
LEFT DITCH -

SEE SHEET 9 FOR -L- PLAN VIEW

5/28/99

SYTIME
C:\PROGRA~1\AR\2633B.RDY.PFL-SHEETS.dgn
4/23/2000 10:56:33

PROJECT REFERENCE NO.		SHEET NO.
R-2633B		45
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

-L-

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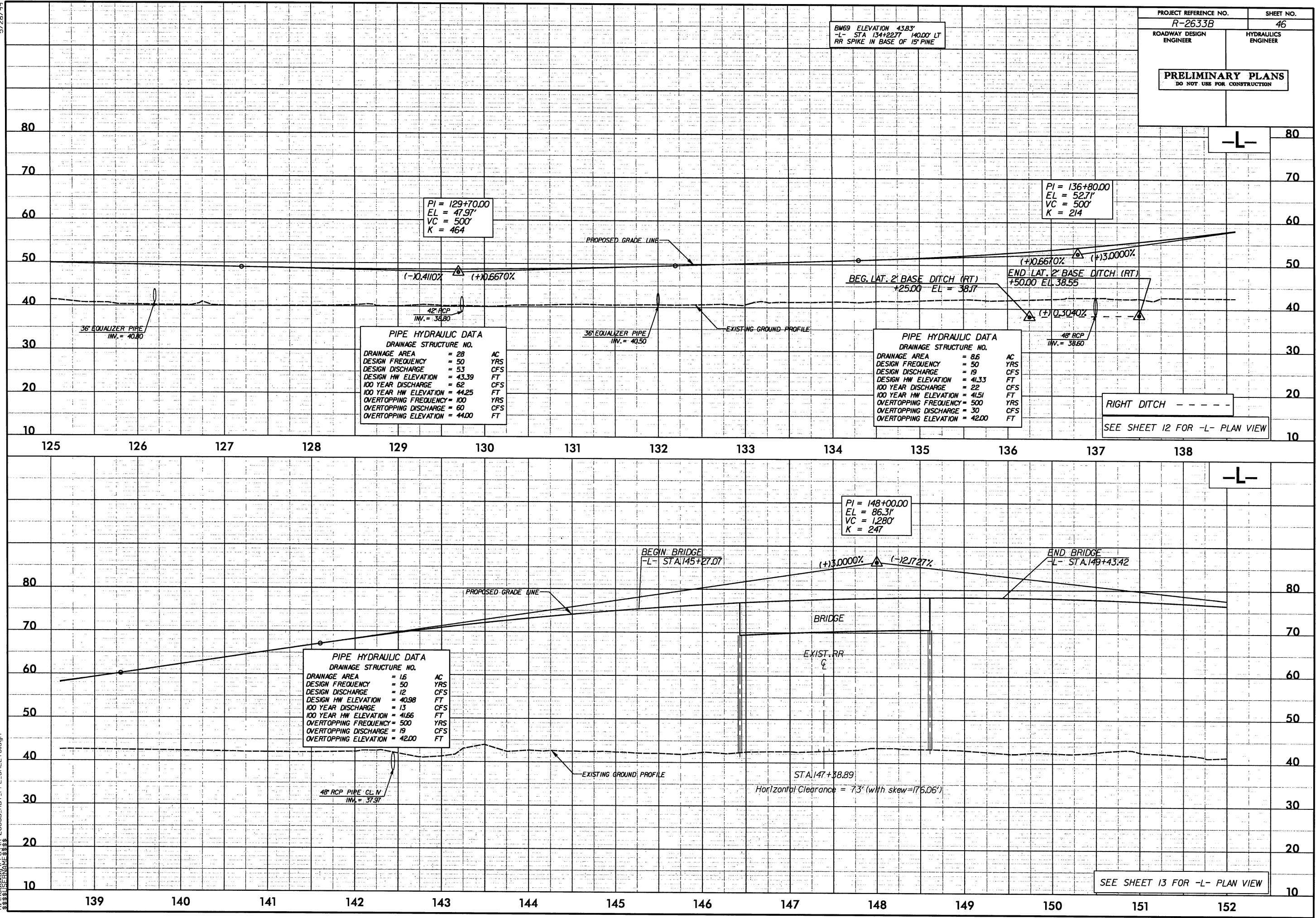
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5/28/99

SYTIME
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25/03/1999 10:00:00



PROJECT REFERENCE NO. R-2633B		SHEET NO. 46
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

-L-

-L-

RIGHT DITCH - - - - -
SEE SHEET 12 FOR -L- PLAN VIEW

SEE SHEET 13 FOR -L- PLAN VIEW

5/28/99

SYTIME
R:\BROWDER\N\PROJECTS\2633B.RD\REFL SHEETS.dgn
\$\$\$\$\$SERVNAME\$\$\$\$\$

BM225 ELEVATION 41.41'
-L- STA 153+42.25 273.82' RT
RR SPIKE IN BASE OF 12" PINE

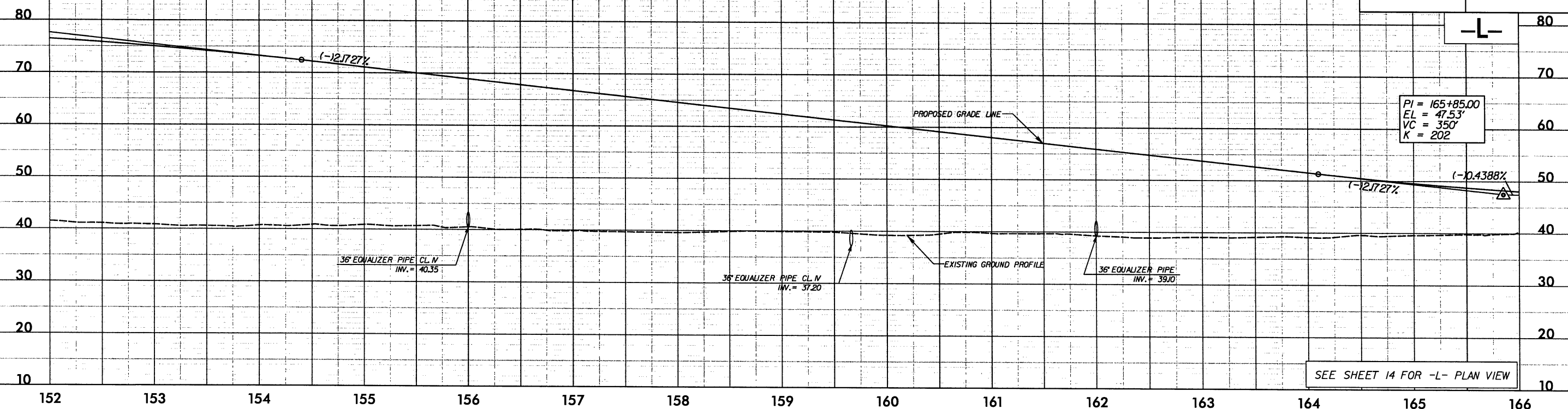
PROJECT REFERENCE NO.
R-2633B
ROADWAY DESIGN
ENGINEER

SHEET NO.
47
HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

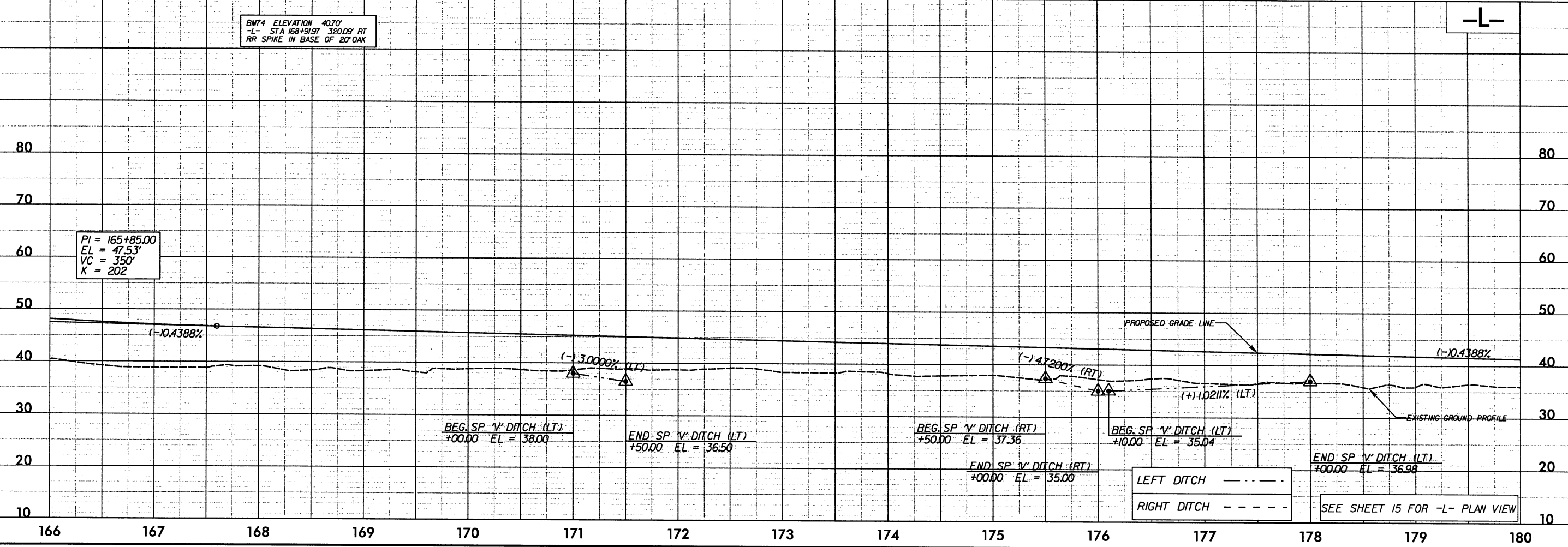
PI = 165+85.00
EL = 47.53'
VC = 350'
K = 202



BM74 ELEVATION 40.70'
-L- STA 168+91.97 320.09' RT
RR SPIKE IN BASE OF 20" OAK

PI = 165+85.00
EL = 47.53'
VC = 350'
K = 202

-L-



5/28/99

PROJECT REFERENCE NO.		SHEET NO.	
R-2633B		48	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-L-

-L-

BM77 ELEVATION 33.54'
-L- STA 186+83.76 177.85' LT
RR SPIKE IN BASE OF 12" OAK

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO.			
DRAINAGE AREA	= 5.1	AC	
DESIGN FREQUENCY	= 50	YRS	
DESIGN DISCHARGE	= 24	CFS	
DESIGN HW ELEVATION	= 33.26	FT	
100 YEAR DISCHARGE	= 27	CFS	
100 YEAR HW ELEVATION	= 33.74	FT	
OVERTOPPING FREQUENCY	= 500	YRS	
OVERTOPPING DISCHARGE	= 67	CFS	
OVERTOPPING ELEVATION	= 40.5	FT	

PI = 182+50.00
EL = 40.22'
VC = 200'
K = 243

PI = 188+80.00
EL = 42.65'
VC = 1,060'
K = 1154

(-0.4388% +0.3852%)

(+0.3852% +0.5336%)

(-0.5000% (RT))

30' RCP
INV. = 30.25

(+0.62% (RT))

PI = 188+00.00
EL = 30.76

BEG. SP. 2' BASE DITCH (RT)
+70.00 EL = 32.41

END SP. 2' BASE DITCH (RT)
+00.00 EL = 32.00

SEE SHEET 15 FOR -L- PLAN VIEW

BM79 ELEVATION 29.07'
-L- STA 206+08.46 187.79' LT
RR SPIKE IN BASE OF 15" TWIN PINE

PI = 199+40.00
EL = 36.99'
VC = 290'
K = 348

(-0.5336%)

(-0.5336% +0.3000%)

36" EQUALIZER PIPE
INV. = 28.70

36" EQUALIZER PIPE
INV. = 28.70

36" EQUALIZER PIPE
INV. = 27.70

RIGHT DITCH - - - -

SEE SHEET 16 FOR -L- PLAN VIEW

SYTIME
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5/28/99 10:00 AM

5/28/99

SYTIME
R:\106054\AP-04\NR-2633B-RDY_PFL-SHEETS.dgn
3/3/99 10:00 AM

PROJECT REFERENCE NO. R-2633B		SHEET NO. 49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

-L-

70

60

50

40

30

20

10

0

207

208

209

210

211

212

213

214

215

216

217

218

219

220

221

PI = 210+60.00
EL = 40.35'
VC = 1950'
K = 3249

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 60.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 93	CFS
DESIGN HW ELEVATION	= 26.20	FT
100 YEAR DISCHARGE	= 110	CFS
100 YEAR HW ELEVATION	= 26.59	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 125	CFS
OVERTOPPING ELEVATION	= 27.00	FT

(+0.3000% (-0.3002%

36" EQUALIZER PIPE
INV. = 27.70

BEG. LAT. 2' BASE DITCH (LT)
+0.00 EL = 23.50

3 x 42" RCP
INV. = 22.60

BEG. LAT. 2' BASE DITCH (RT)
+0.00 EL = 23.75

(+0.3000%
(+0.3009%

PROPOSED GRADE LINE

EXISTING GROUND PROFILE

LEFT DITCH

RIGHT DITCH

SEE SHEET 17 FOR -L- PLAN VIEW

SEE SHEET 17 FOR -L- PLAN VIEW

BMBI ELEVATION 27.84'
-L- STA 229+52.92 164.33' LT
RR SPIKE IN BASE OF 18" PINE

-L-

70

60

50

40

30

20

10

0

221

222

223

224

225

226

227

228

229

230

231

232

233

234

PI = 227+30.00
EL = 35.34'
VC = 360'
K = 600

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 20.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 35	CFS
DESIGN HW ELEVATION	= 28.36	FT
100 YEAR DISCHARGE	= 40	CFS
100 YEAR HW ELEVATION	= 28.74	FT
OVERTOPPING FREQUENCY	= 10	YRS
OVERTOPPING DISCHARGE	= 19	CFS
OVERTOPPING ELEVATION	= 27.00	FT

(+0.3000%
(+0.3009%

END LAT. 2' BASE DITCH (LT)
+0.00 EL 25.27

END LAT. 2' BASE DITCH (RT)
+75.00 EL 25.48

(-0.3002% (+0.3000%

PROPOSED GRADE LINE

BEG. LAT. 2' BASE DITCH (LT)
+0.00 EL = 24.28

36" RCP
INV. = 24.21

(-0.3000%

EXISTING GROUND PROFILE

LEFT DITCH

RIGHT DITCH

SEE SHEET 18 FOR -L- PLAN VIEW

SEE SHEET 18 FOR -L- PLAN VIEW

5/28/99

PROJECT REFERENCE NO.
R-2633B

ROADWAY DESIGN
ENGINEER

SHEET NO.
50

HYDRAULICS
ENGINEER

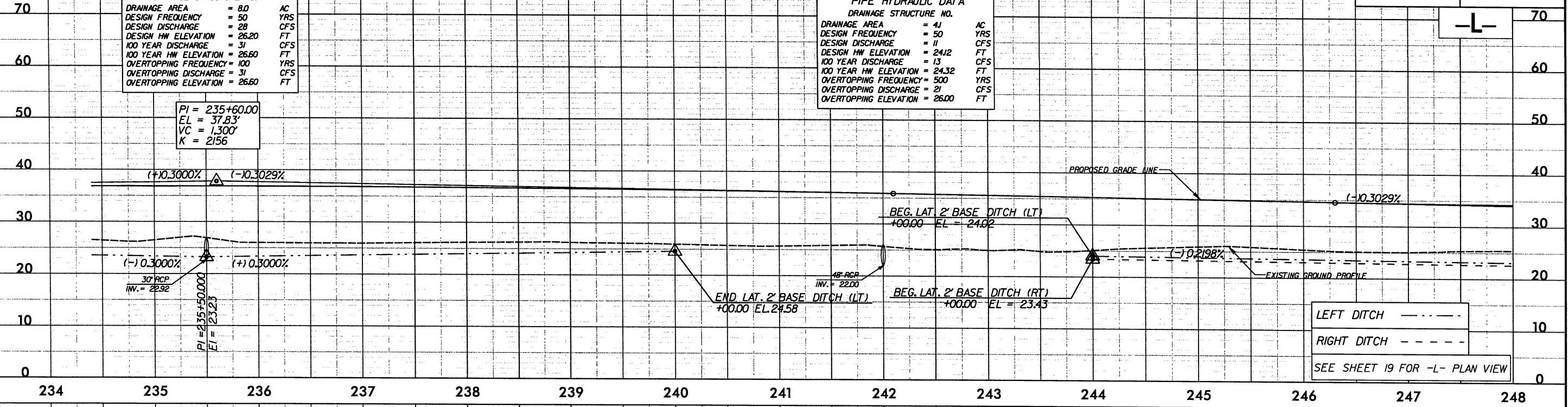
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 8.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 28	CFS
DESIGN HW ELEVATION	= 26.20	FT
100 YEAR DISCHARGE	= 31	CFS
100 YEAR HW ELEVATION	= 26.60	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 31	CFS
OVERTOPPING ELEVATION	= 26.60	FT

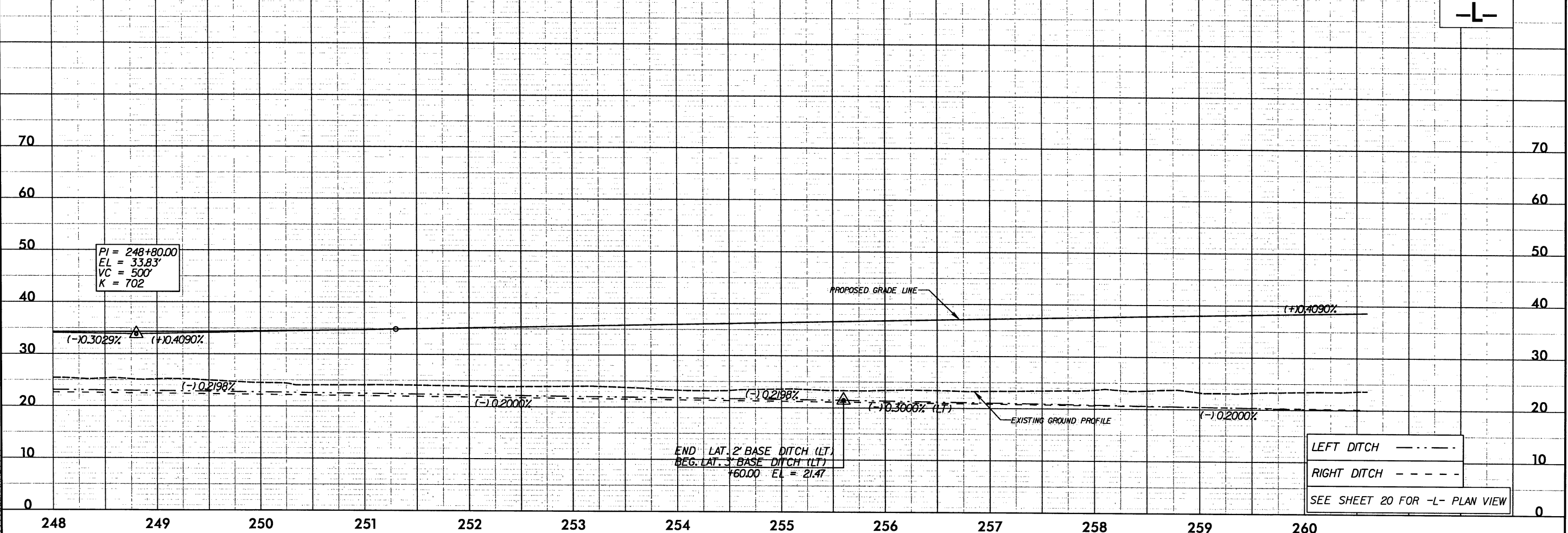
PI = 235+60.00
EL = 37.83'
VC = 1,300'
K = 2156

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 41	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 11	CFS
DESIGN HW ELEVATION	= 24.12	FT
100 YEAR DISCHARGE	= 13	CFS
100 YEAR HW ELEVATION	= 24.32	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 21	CFS
OVERTOPPING ELEVATION	= 26.00	FT

BW83 ELEVATION 27.24'
-L- STA 243+47.72 172.58' LT
RR SPIKE IN BASE OF 8" PINE



PI = 248+80.00
EL = 33.83'
VC = 500'
K = 702



SYTIME
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5/28/99 10:00 AM

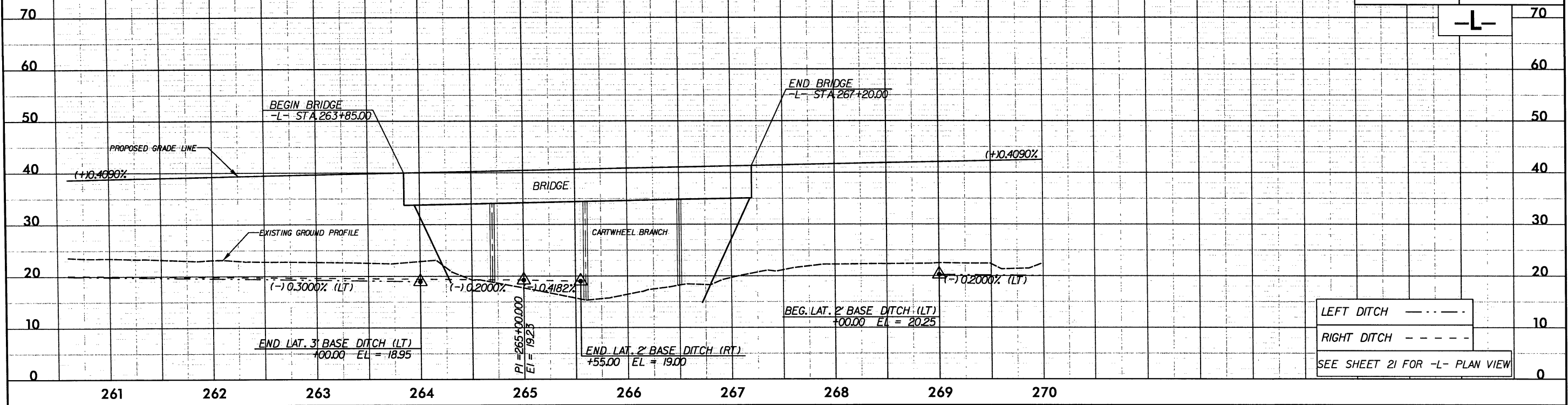
5/28/99

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\$\$\$\$\$USE IN PLOT ONLY\$\$\$\$\$

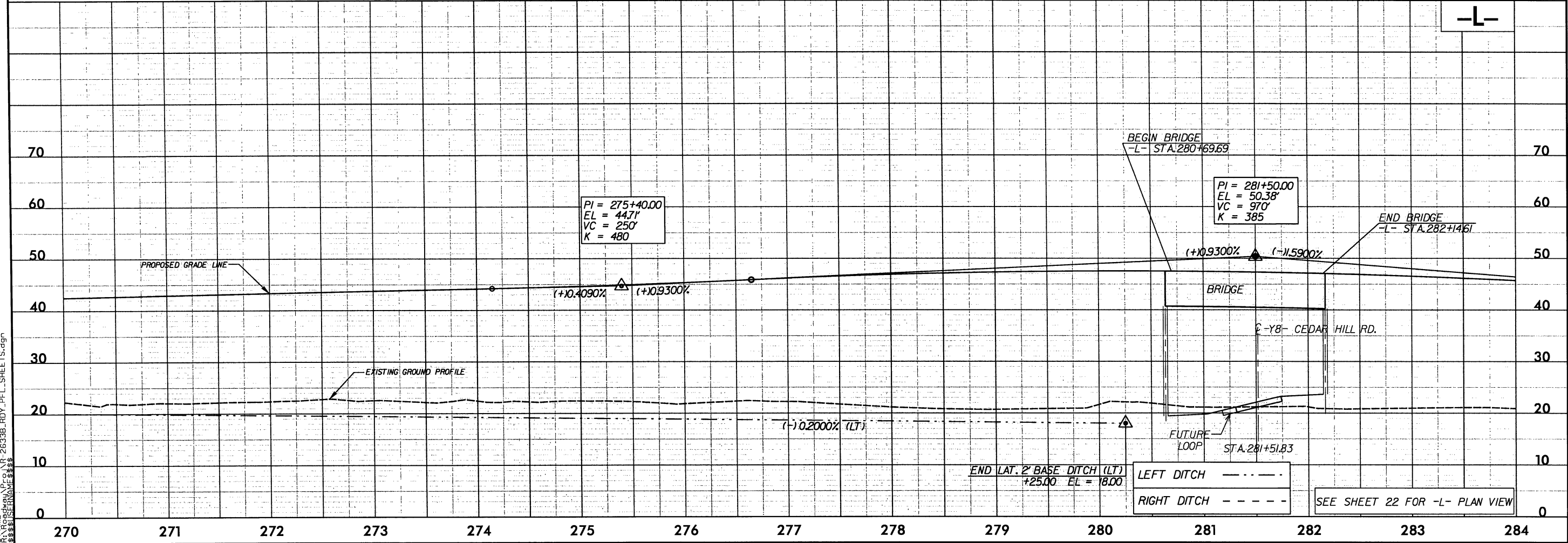
BM86 ELEVATION 2434'
-L- STA 263+61.29 137.64' RT
RR SPIKE IN BASE OF 15' PINE

PROJECT REFERENCE NO. R-2633B		SHEET NO. 51	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-L-



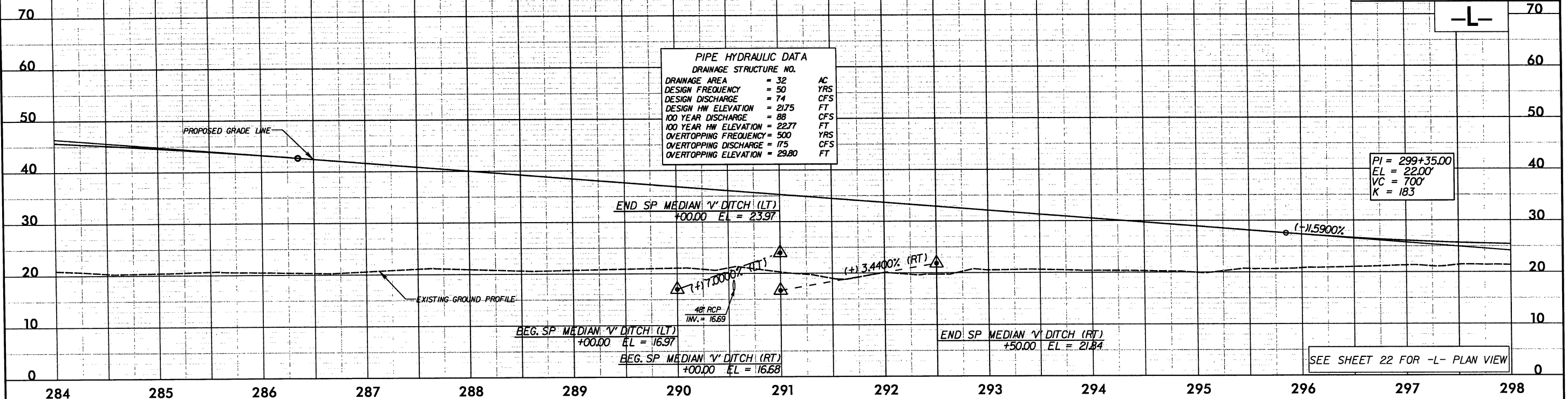
-L-



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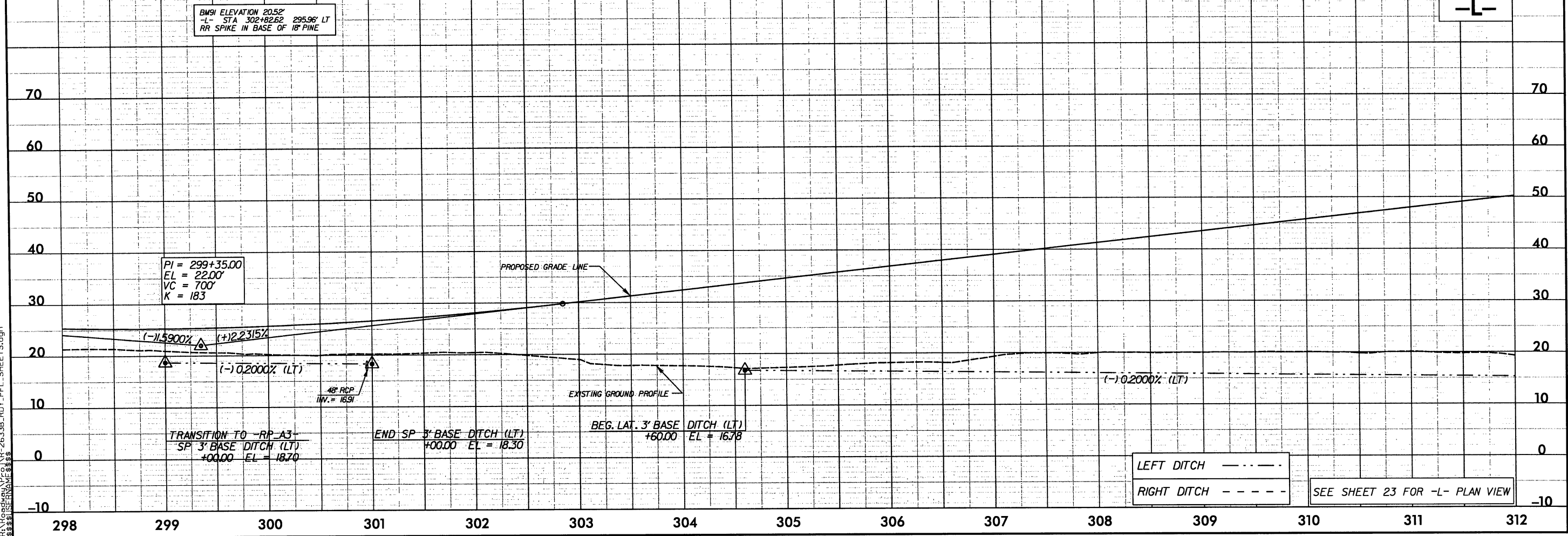
SYTIME
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\$\$\$\$\$151819M\$\$\$\$\$

-L-



BW91 ELEVATION 20.52'
-L- STA 302+82.62 295.96' LT
RR SPIKE IN BASE OF 18" PINE

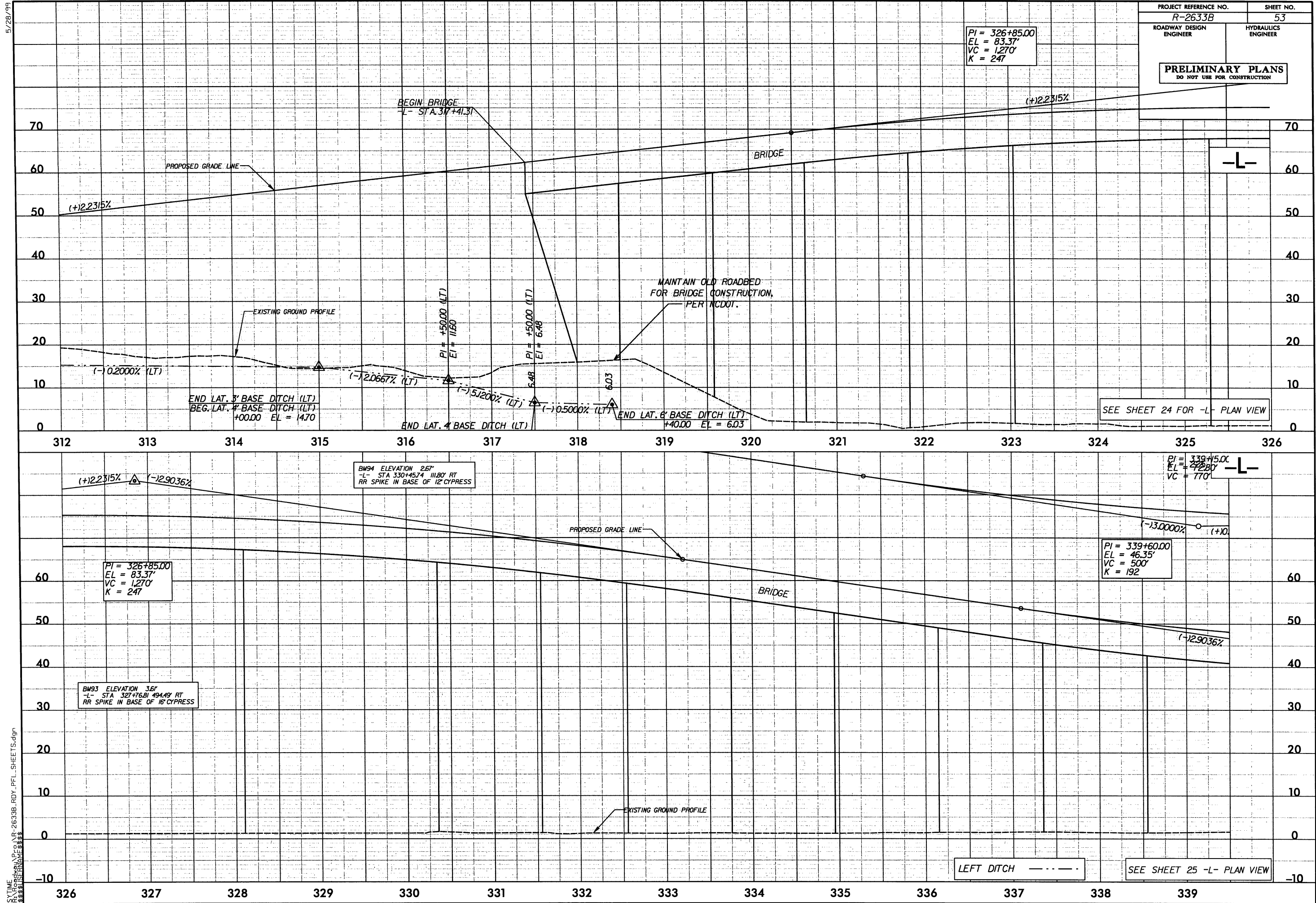
-L-



PI = 299+35.00
EL = 22.00'
VC = 700'
K = 183

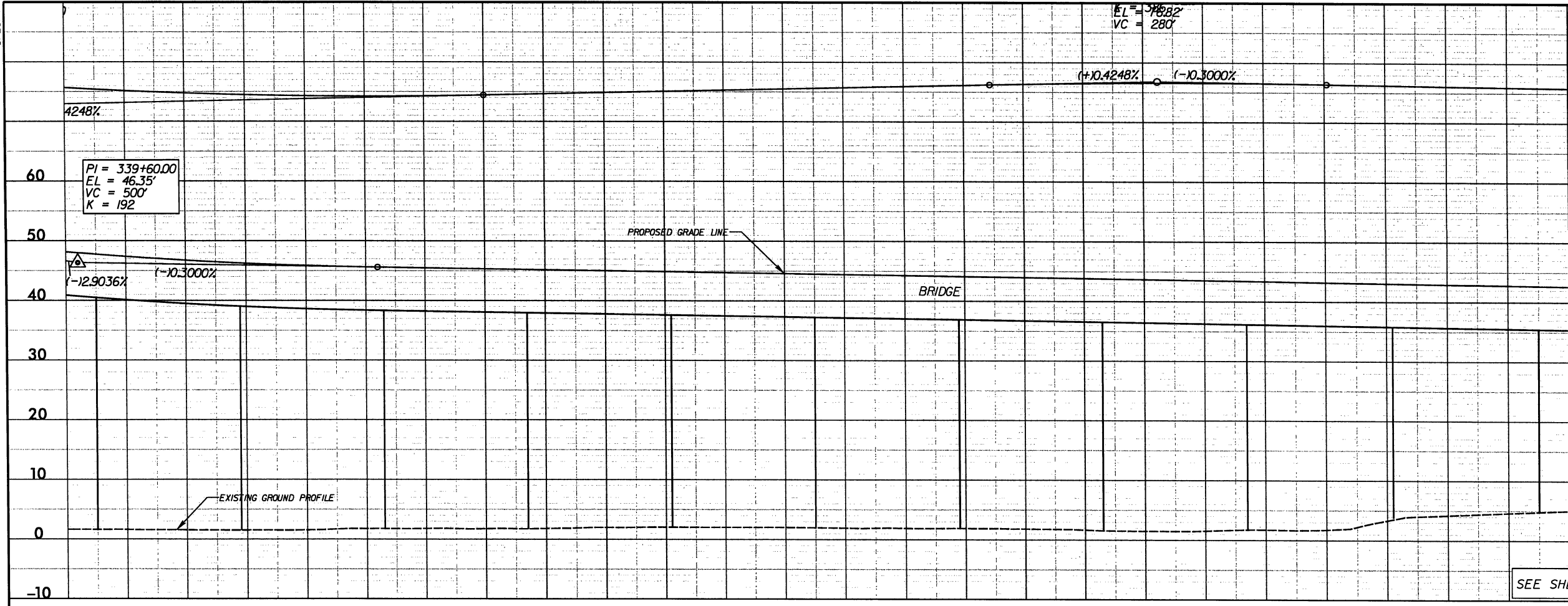
LEFT DITCH - - - - -
RIGHT DITCH - - - - -

SEE SHEET 23 FOR -L- PLAN VIEW



5/28/99

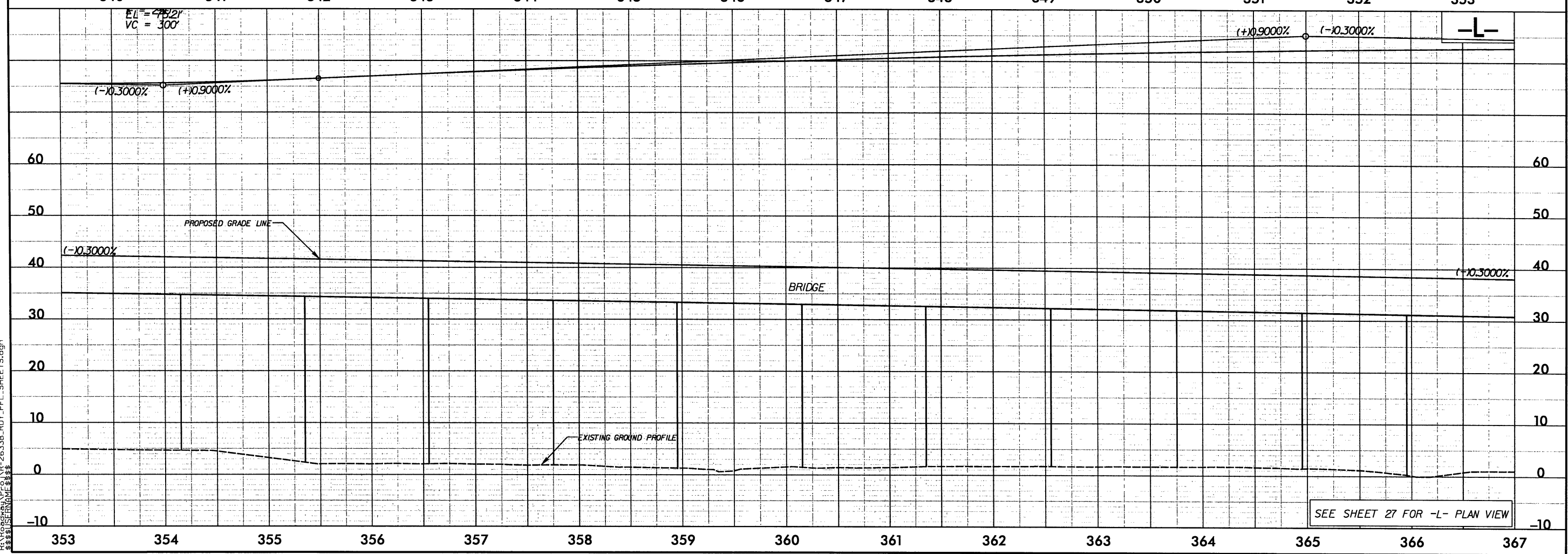
PROJECT REFERENCE NO. R-2633B		SHEET NO. 54
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



SEE SHEET 26 FOR -L- PLAN VIEW

-L-

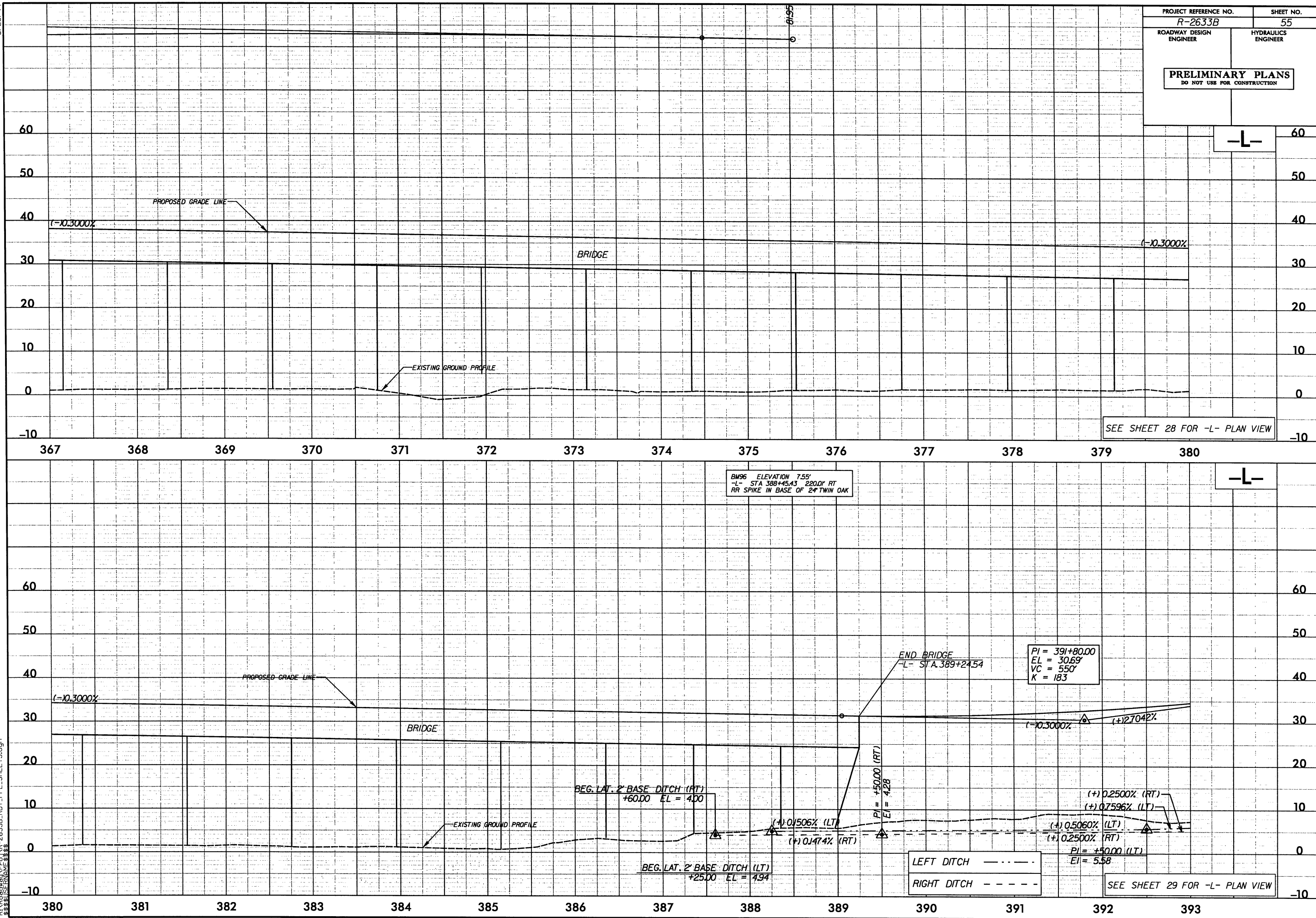
SYTIME
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SEE SHEET 27 FOR -L- PLAN VIEW

-L-

SYTIME
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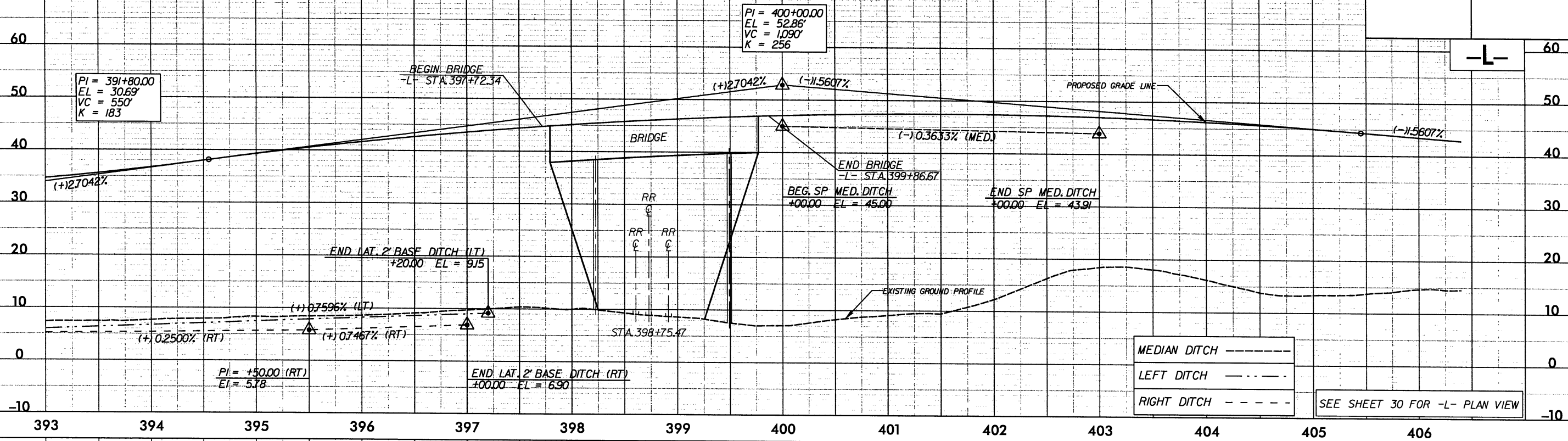


5/28/99

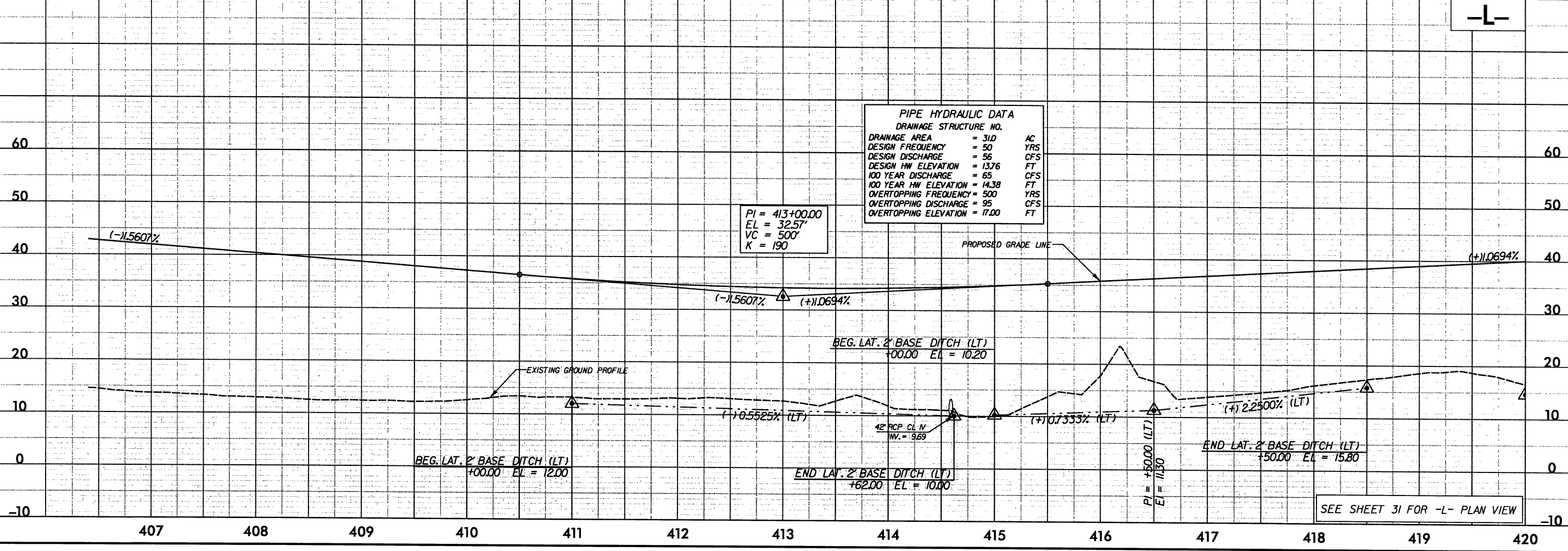
BMI4 ELEVATION 17.24'
-L- STA 397+34.82 332.39' RT
RR SPIKE SET IN THE BASE OF A 12' PINE

PROJECT REFERENCE NO. R-2633B
SHEET NO. 56
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-



-L-



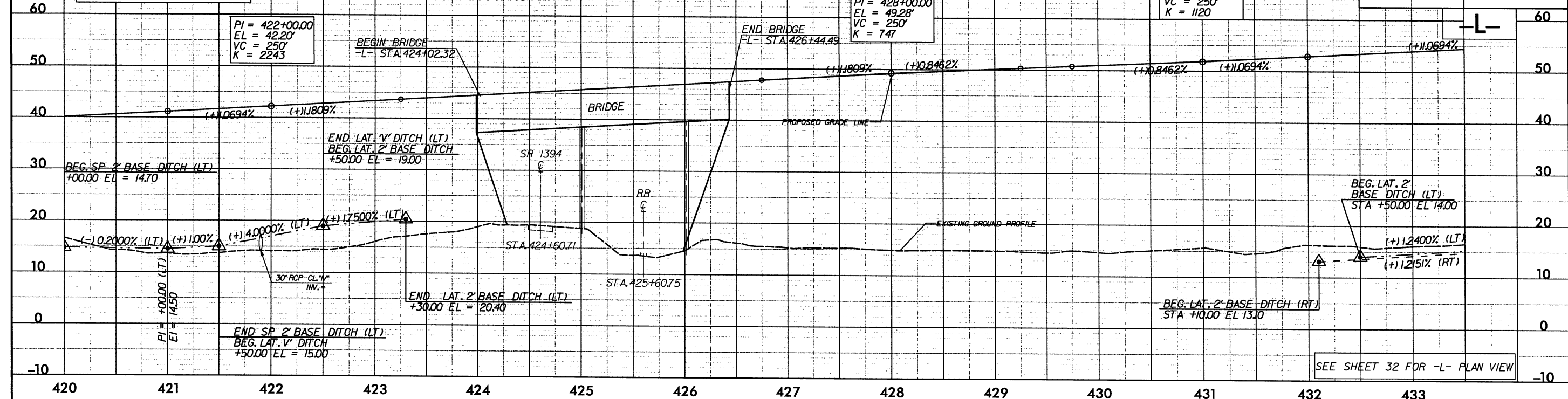
SYTIME
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5/28/99

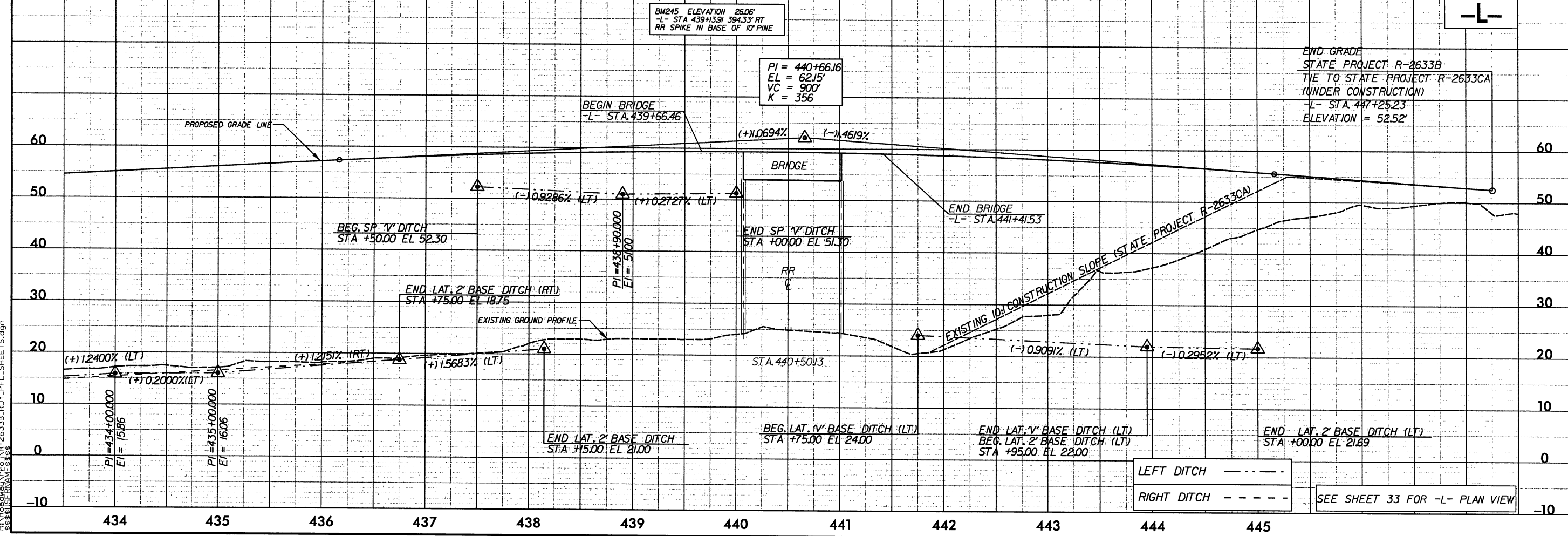
PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO.			
DRAINAGE AREA	= 13	AC	
DESIGN FREQUENCY	= 50	YRS	
DESIGN DISCHARGE	= 26	CFS	
DESIGN HW ELEVATION	= 16.84	FT	
100 YEAR DISCHARGE	= 30	CFS	
100 YEAR HW ELEVATION	= 17.13	FT	
OVERTOPPING FREQUENCY	= 100	YRS	
OVERTOPPING DISCHARGE	= 30	CFS	
OVERTOPPING ELEVATION	= 17.00	FT	

BM101 ELEVATION 16.81'
-L- STA 427+70.26 443.05' RT
RR SPIKE IN BASE OF 18' PINE

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	57
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



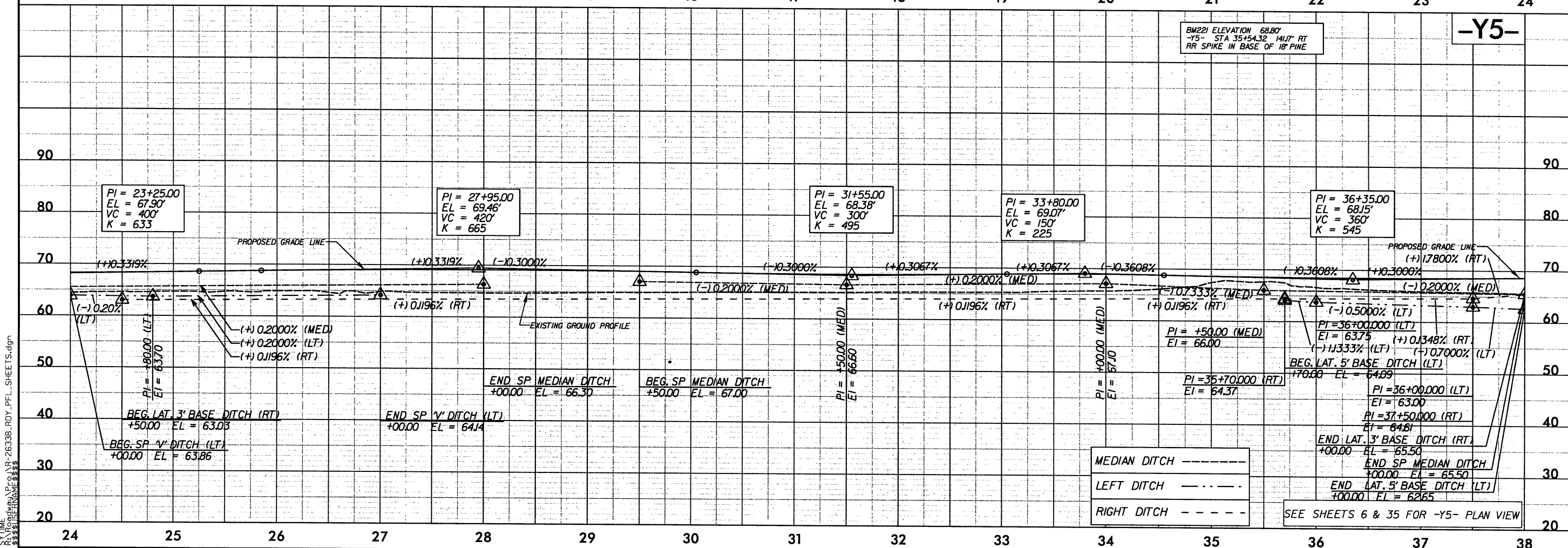
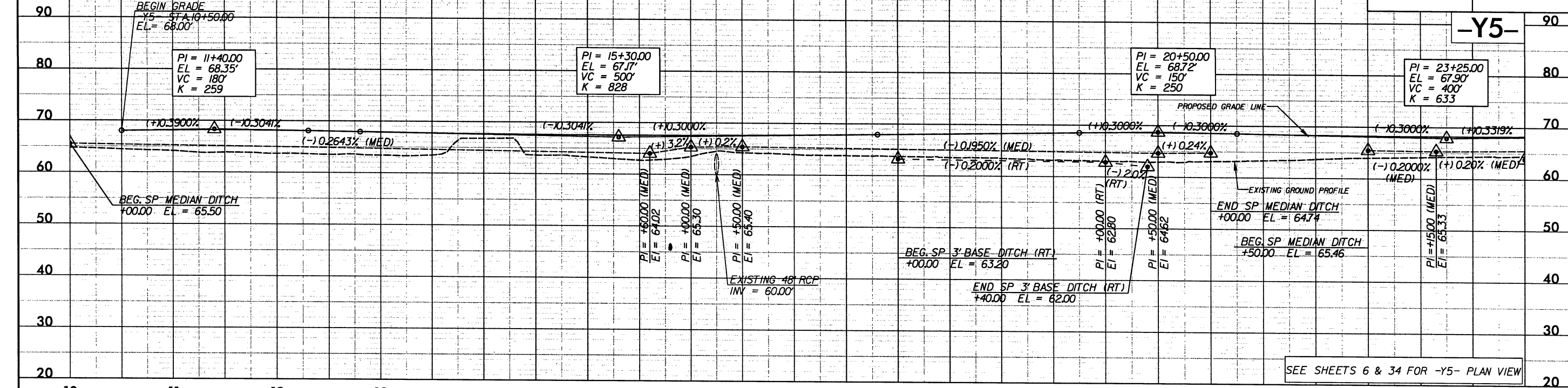
BM245 ELEVATION 26.06'
-L- STA 439+13.91 394.33' RT
RR SPIKE IN BASE OF 10' PINE



SYTIME
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\$\$\$\$\$PROGRAM\$\$\$\$\$

5/28/99

PROJECT REFERENCE NO.		SHEET NO.	
R-2633B		58	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS			
DO NOT USE FOR CONSTRUCTION			



5/28/99

SYTIME 4:41 P:\INR-2633B.RDY_PFL_SHEETS.dgn
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PROJECT REFERENCE NO.
R-2633B

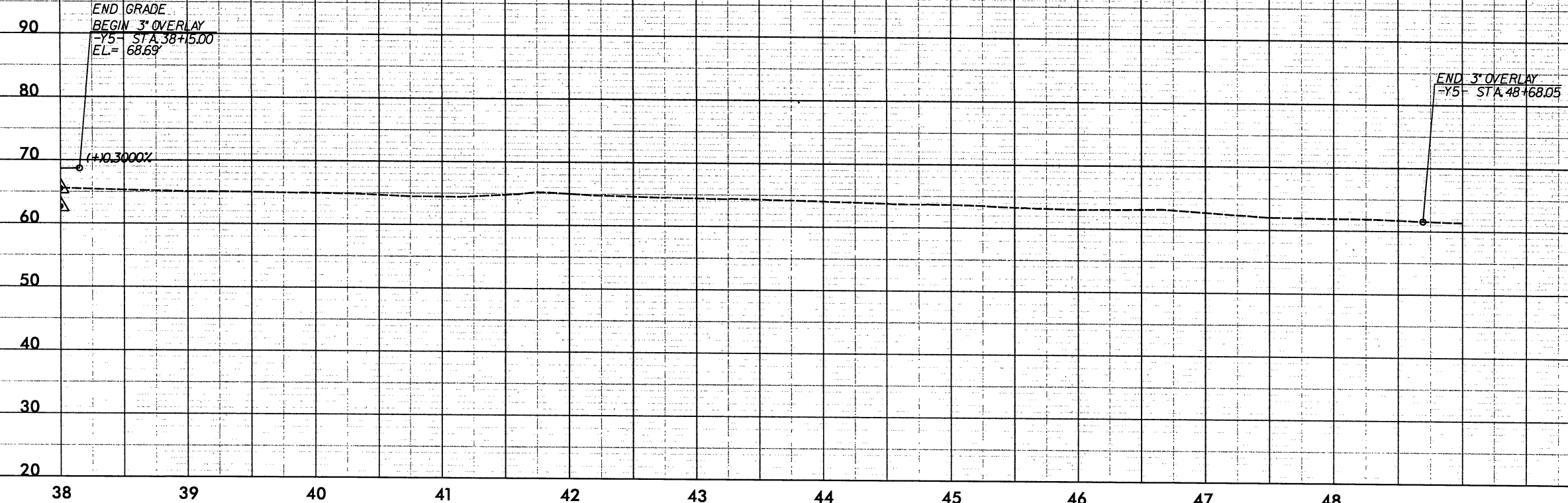
ROADWAY DESIGN
ENGINEER

SHEET NO.
59

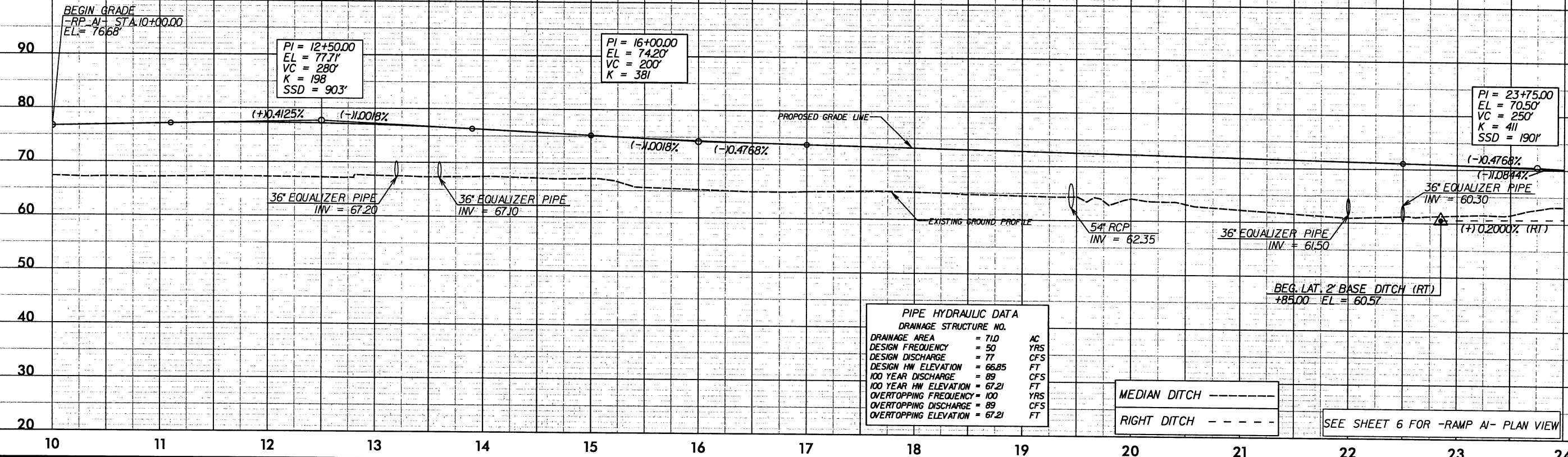
HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y5-



-RAMP A1-



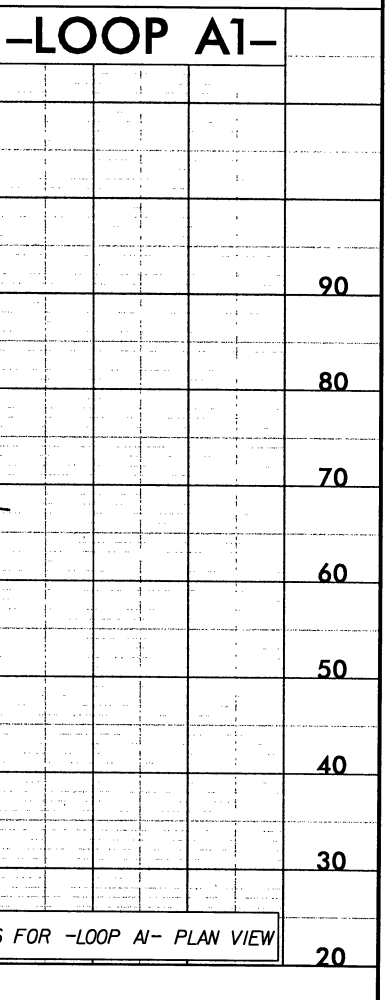
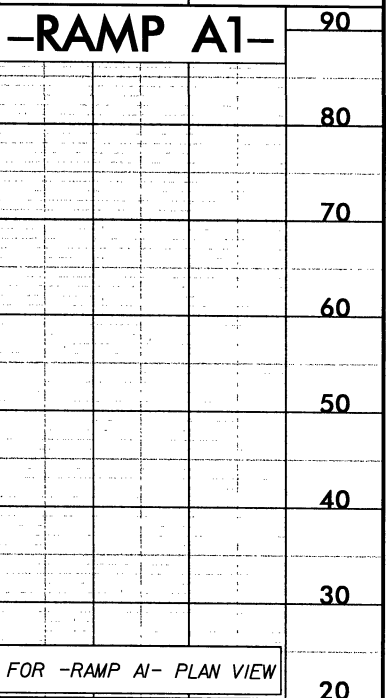
PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 71.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 77	CFS
DESIGN HW ELEVATION	= 66.85	FT
100 YEAR DISCHARGE	= 89	CFS
100 YEAR HW ELEVATION	= 67.21	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 89	CFS
OVERTOPPING ELEVATION	= 67.21	FT

MEDIAN DITCH - - - - -
RIGHT DITCH - - - - -

5/28/99

SYTIME
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PROJECT REFERENCE NO.		SHEET NO.
R-2633B		60
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



5/28/99

SYTIME
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\$\$\$\$\$SUBSTITUTE\$\$\$\$\$

PROJECT REFERENCE NO. <i>R-2633B</i>		SHEET NO. <i>61</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

-RAMP D1-

PI = 23+35.00 EL = 72.68' VC = 275' K = 220
--

(-)-0.9500% (+)-0.3018%

SEE SHEET 6 FOR -RAMP D1- PLAN VIEW

36" EQUALIZER PIPE
INV = 67.70

36" EQUALIZER PIPE
INV = 67.30

EXISTING GROUND PROFILE

48" ROP
INV = 65.77

PROPOSED GRADE LINE

PI = 17+00.00
EL = 72.26'
VC = 300'
K = 165

(-)-0.9275% (+)-0.8936%

PI = 13+00.00
EL = 75.97'
VC = 300'
K = 240
SSD = 1015'

(+)-0.3200% (-)-0.9275%

BEGIN GRADE
-RP D1- STA. 10+00.00
EL = 75.06'

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 71.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 77	CFS
DESIGN HW ELEVATION	= 69.88	FT
100 YEAR DISCHARGE	= 89	CFS
100 YEAR HW ELEVATION	= 70.52	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 140	CFS
OVERTOPPING ELEVATION	= 78.70	FT

PI = 20+50.00
EL = 75.39'
VC = 280'
K = 152
SSD = 725'

(+)-0.8936% (-)-0.9500%

PI = 26+20.00
EL = 73.54'
VC = 295'
K = 155
SSD = 715'

(+)-0.3018% (-)-1.6000%

PROPOSED GRADE LINE

EXISTING GROUND PROFILE

18" EQUALIZER PIPE
INV = 65.20

18" EQUALIZER PIPE
INV = 65.20

END GRADE
-RP D1- STA. 31+56.55
EL = 67.93'

PI = 30+60.00
EL = 66.50'
VC = 170'
K = 55

(-)-1.6000% (+)-1.4811% (+)-1.8664%

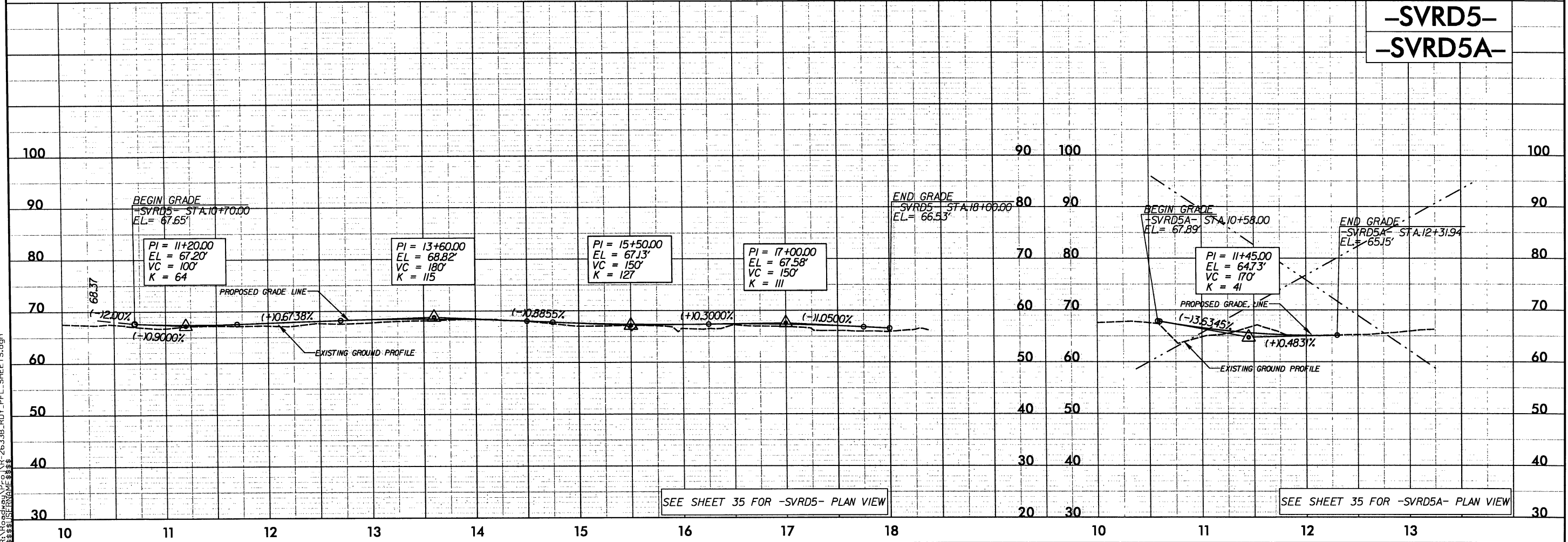
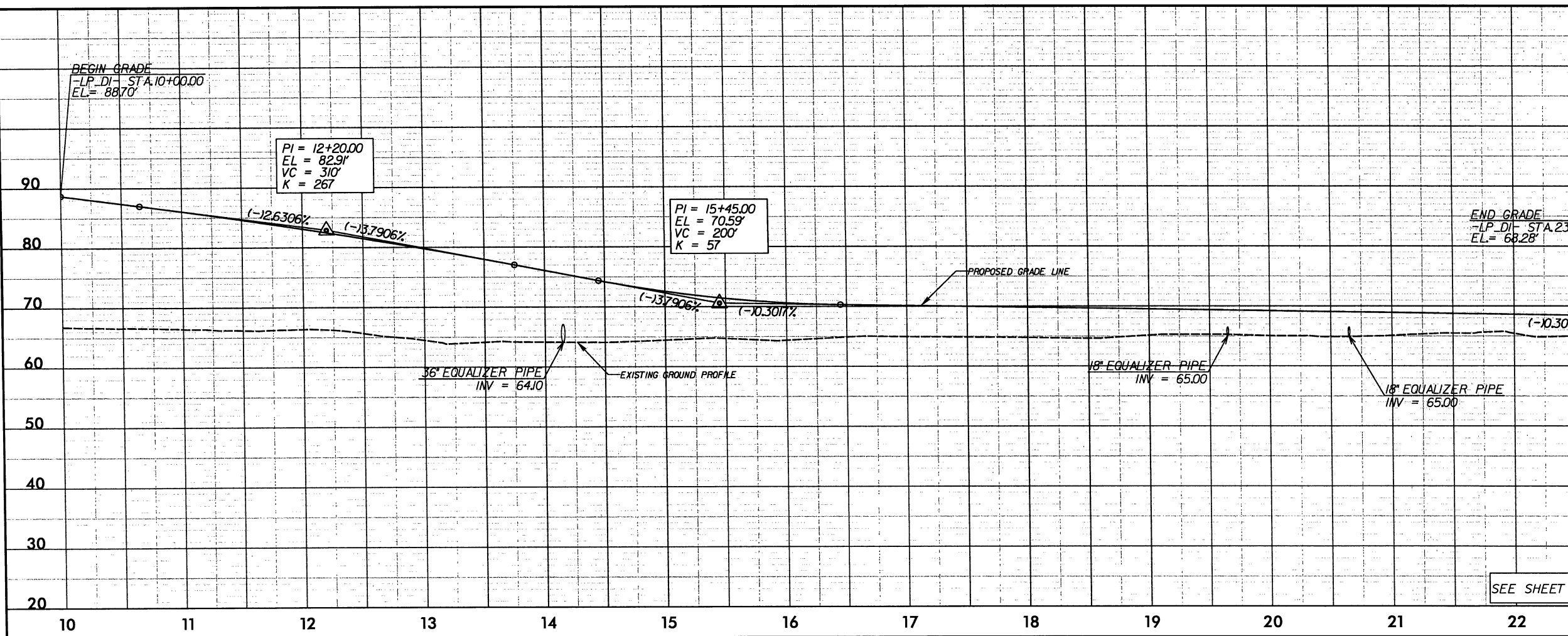
68.38

SEE SHEET 6 FOR -RAMP D1- PLAN VIEW

SEE SHEET 6 FOR -RAMP D1- PLAN VIEW

5/28/99
SYTIME
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PROJECT REFERENCE NO. <i>R-2633B</i>		SHEET NO. <i>62</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		



5/28/99

SYTIME
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\$\$\$\$\$USERNAME\$\$\$\$\$

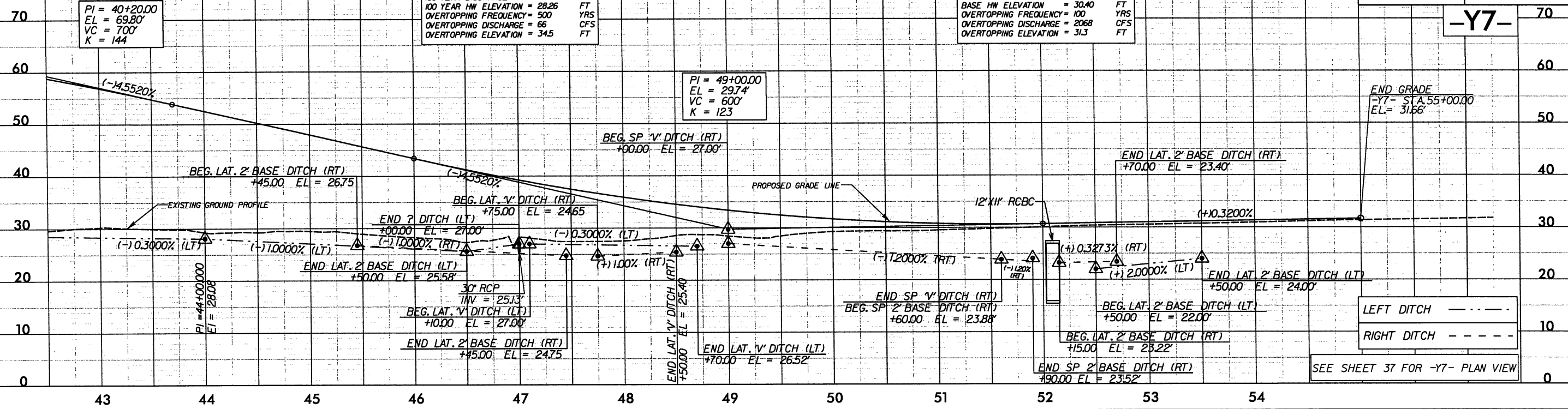
PROJECT REFERENCE NO. R-2633B		SHEET NO. 64	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

BM229 ELEVATION 28.80'
-Y7- STA 54+6.48 46' RT
RR SPIKE IN BASE OF 18" PINE

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 4.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 23	CFS
DESIGN HW ELEVATION	= 28.01	FT
100 YEAR DISCHARGE	= 26	CFS
100 YEAR HW ELEVATION	= 28.26	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 66	CFS
OVERTOPPING ELEVATION	= 34.5	FT

CULVERT HYDRAULIC DATA		
12' X 11' RCBC		
DRAINAGE AREA	= 1.67	SQ. MI.
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 1600	CFS
DESIGN HW ELEVATION	= 29.40	FT
BASE DISCHARGE	= 1800	CFS
BASE HW ELEVATION	= 30.40	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 2068	CFS
OVERTOPPING ELEVATION	= 31.3	FT

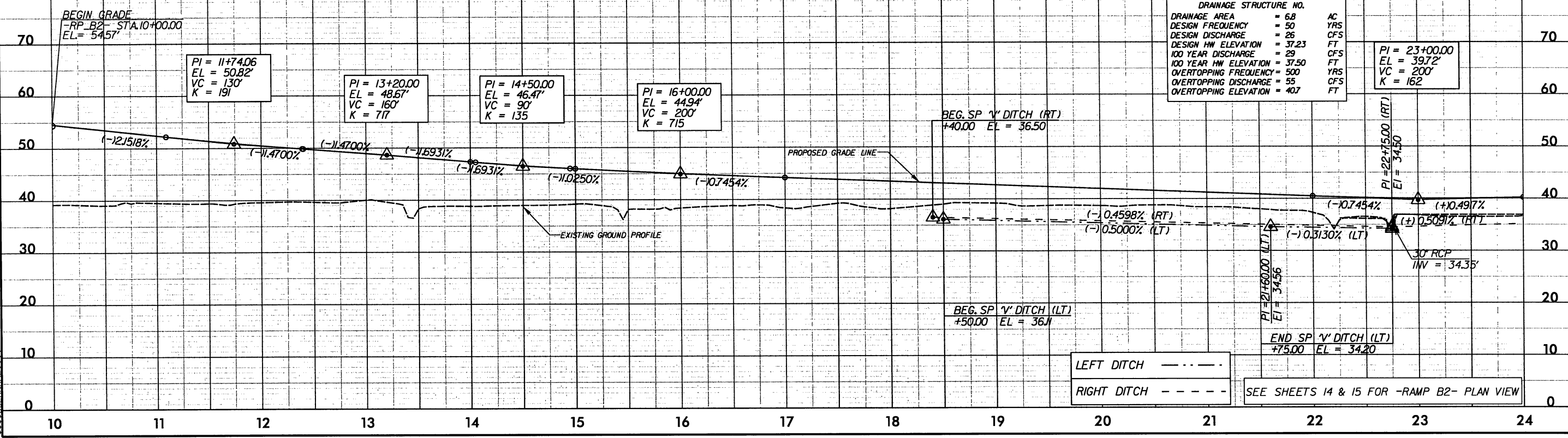
-Y7-



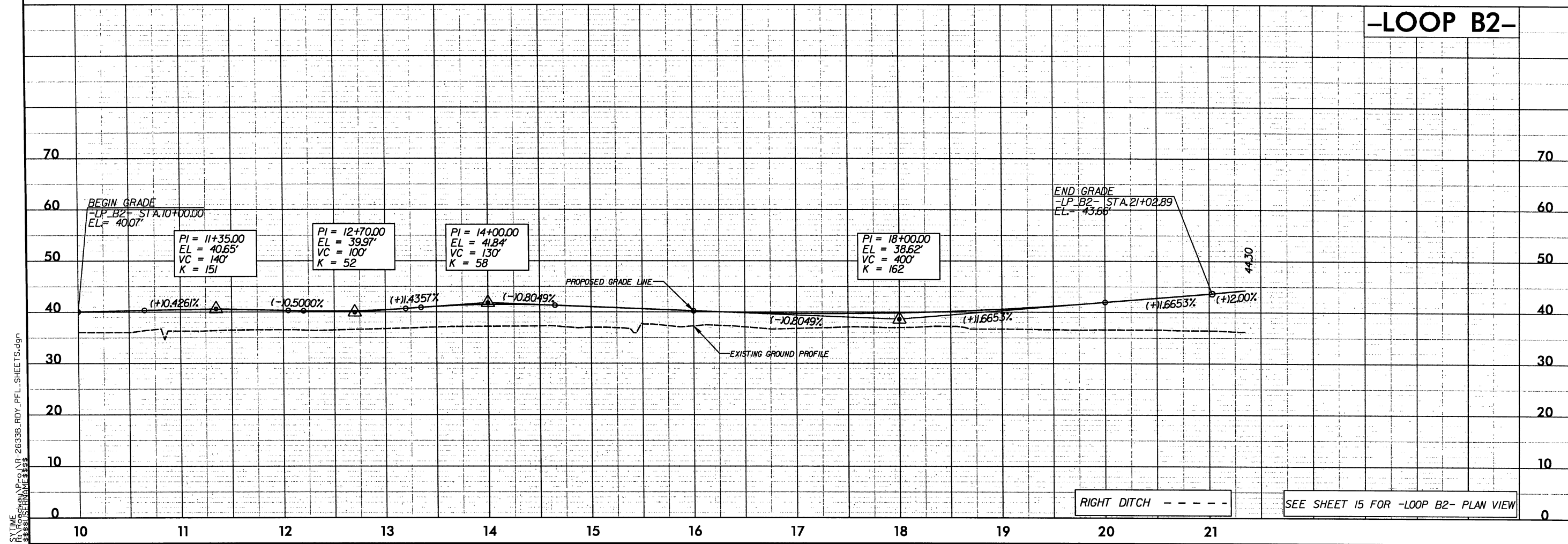
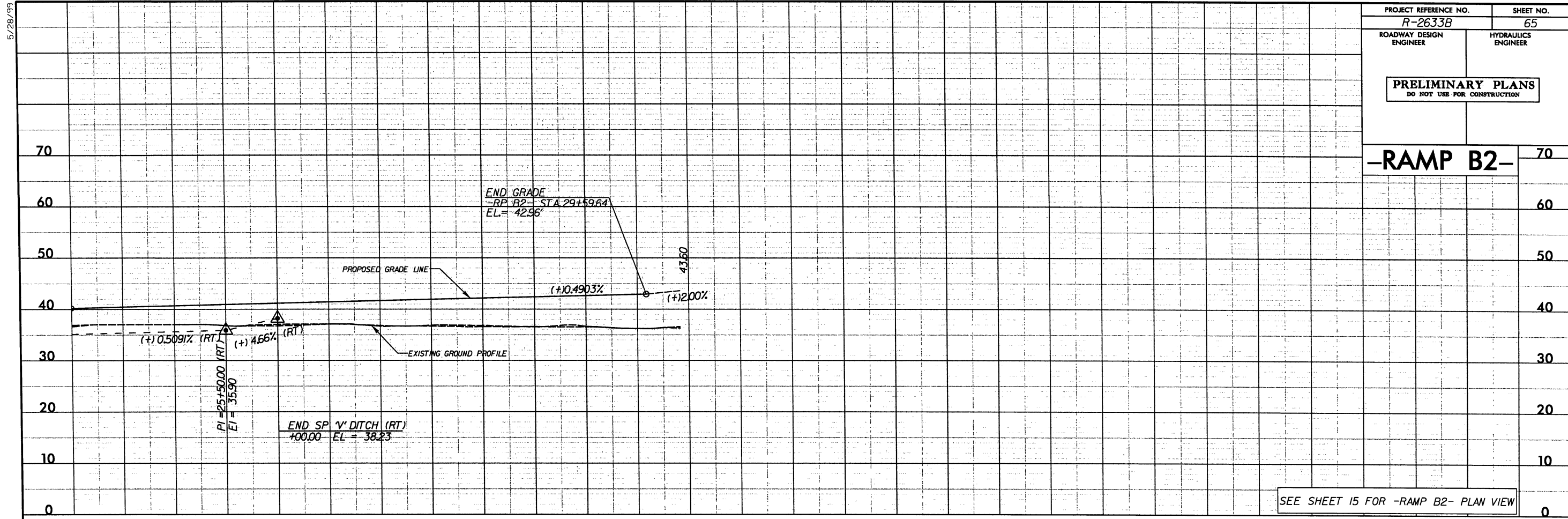
-RAMP B2-

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 6.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 26	CFS
DESIGN HW ELEVATION	= 37.23	FT
100 YEAR DISCHARGE	= 29	CFS
100 YEAR HW ELEVATION	= 37.50	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 55	CFS
OVERTOPPING ELEVATION	= 40.7	FT

PI = 23+00.00
EL = 39.72'
VC = 200'
K = 162



5/28/99



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PROJECT REFERENCE NO. R-2633B		SHEET NO. 66
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

-RAMP C2-

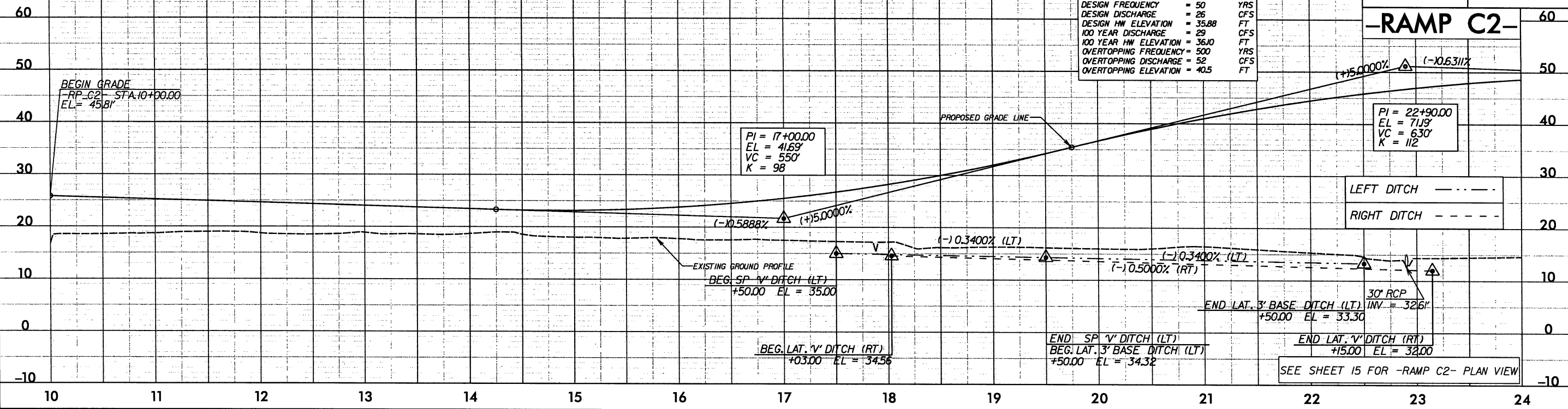
PIPE HYDRAULIC DATA	
DRAINAGE STRUCTURE NO.	
DRAINAGE AREA	= 6.4 AC
DESIGN FREQUENCY	= 50 YRS
DESIGN DISCHARGE	= 26 CFS
DESIGN HW ELEVATION	= 35.88 FT
100 YEAR DISCHARGE	= 29 CFS
100 YEAR HW ELEVATION	= 36.0 FT
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING DISCHARGE	= 52 CFS
OVERTOPPING ELEVATION	= 40.5 FT

PI = 22+90.00
EL = 71.9'
VC = 630'
K = 112

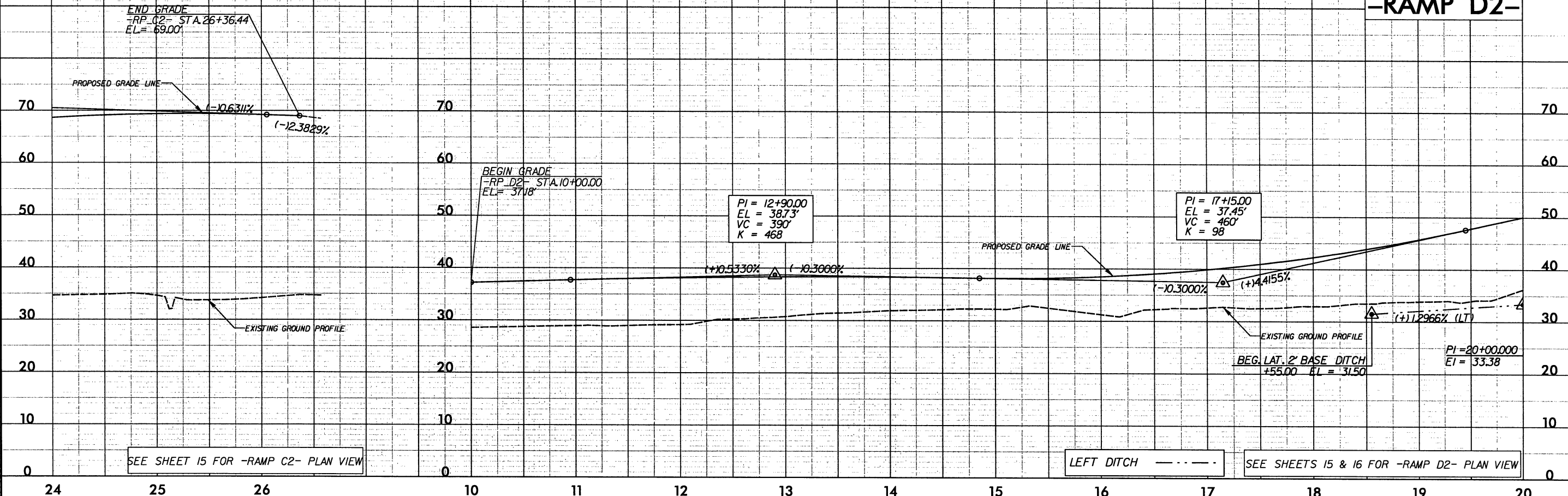
LEFT DITCH - - - - -
RIGHT DITCH - - - - -

30' RCP
END LAT. 3' BASE DITCH (LT) INV = 32.6'
+50.00 EL = 33.30
END LAT. 3' BASE DITCH (RT)
+50.00 EL = 32.00

SEE SHEET 15 FOR -RAMP C2- PLAN VIEW



**-RAMP C2-
-RAMP D2-**

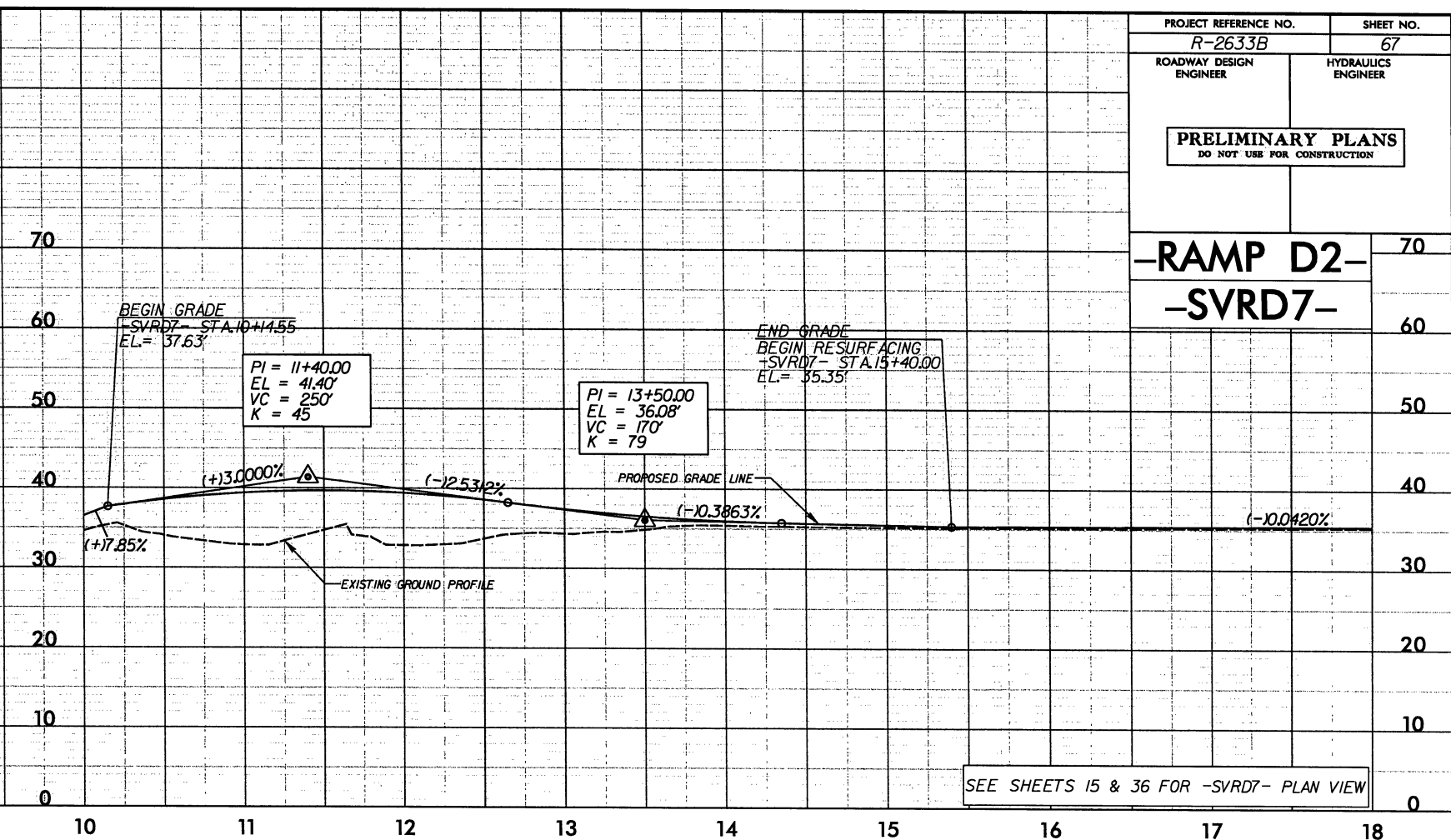
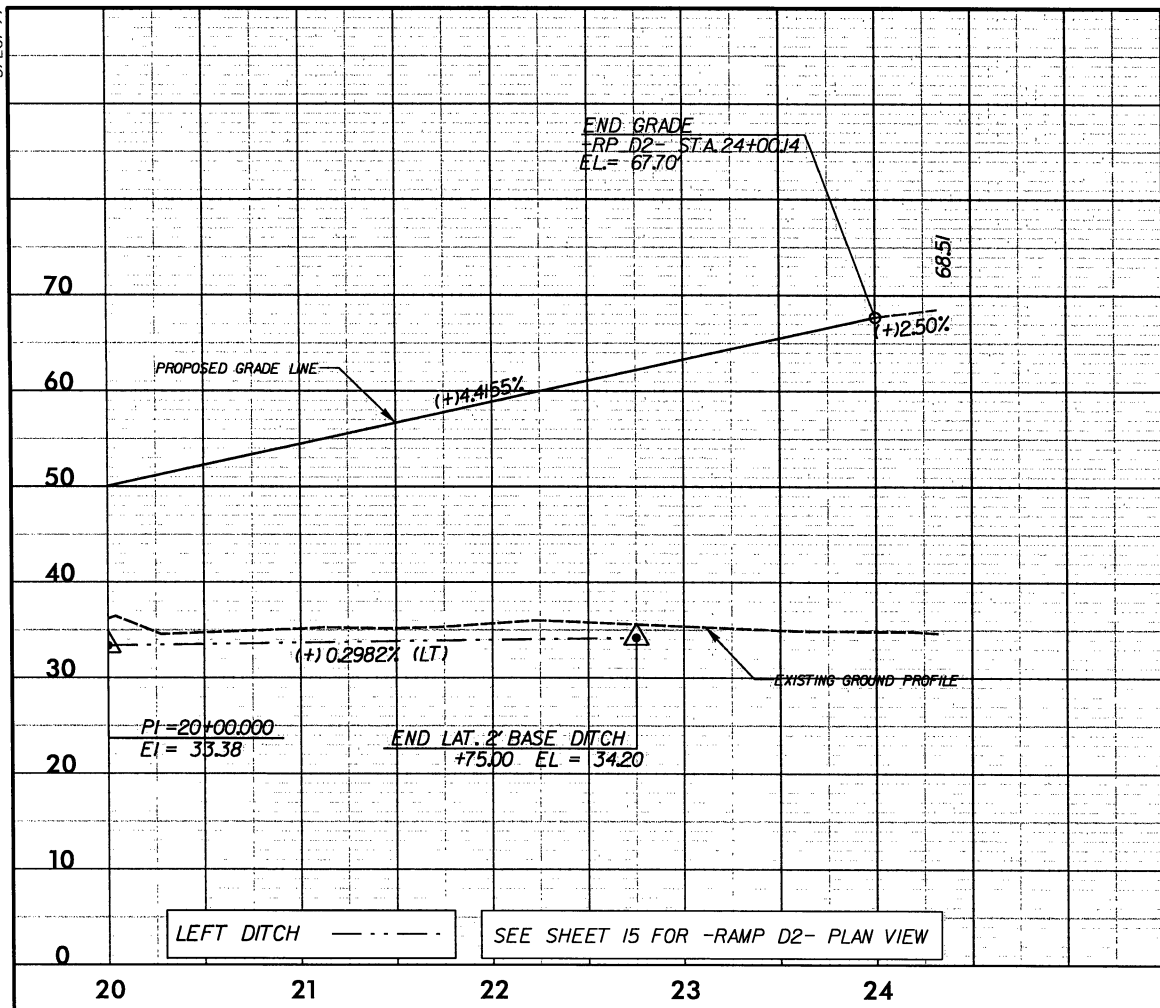


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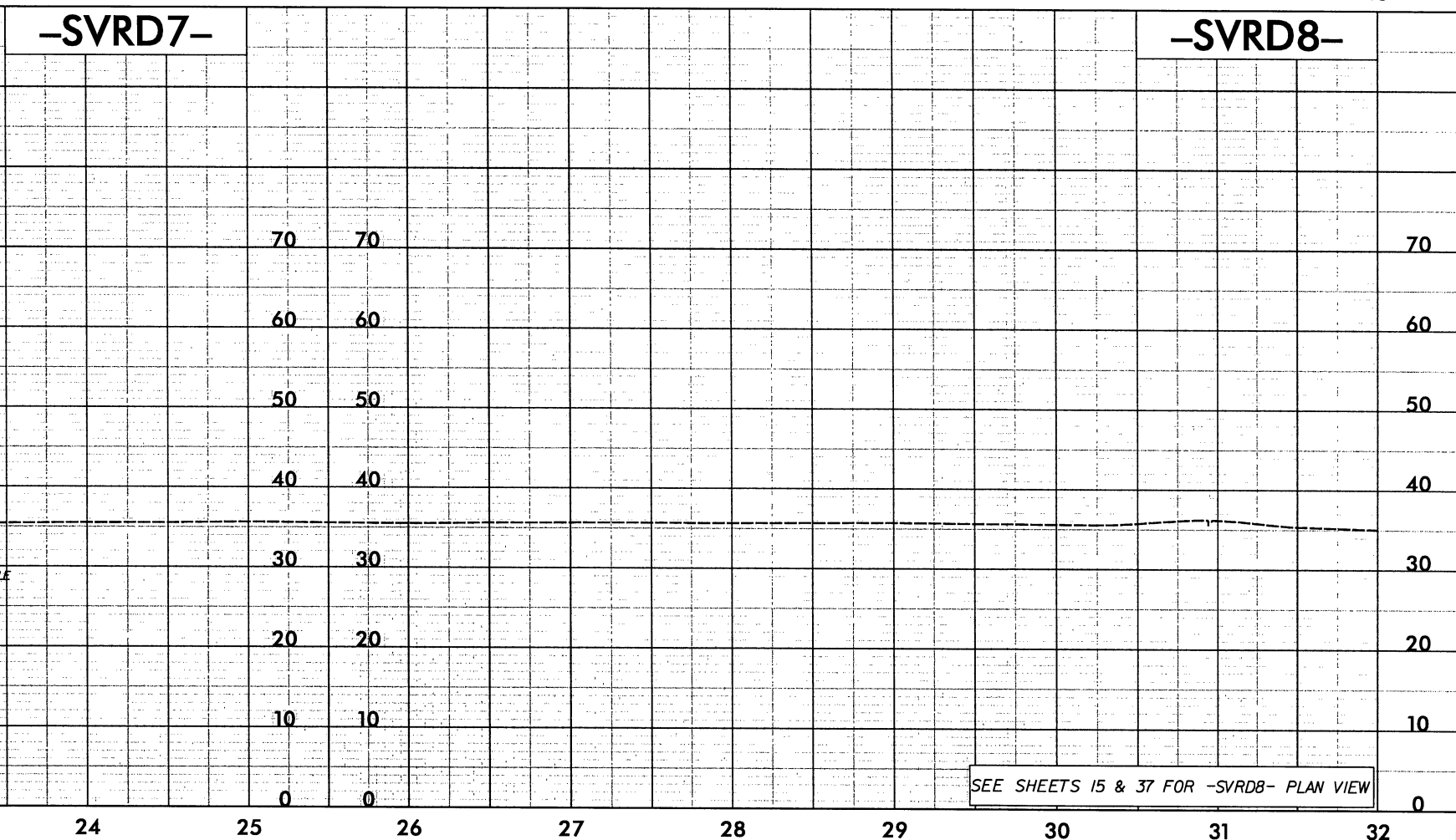
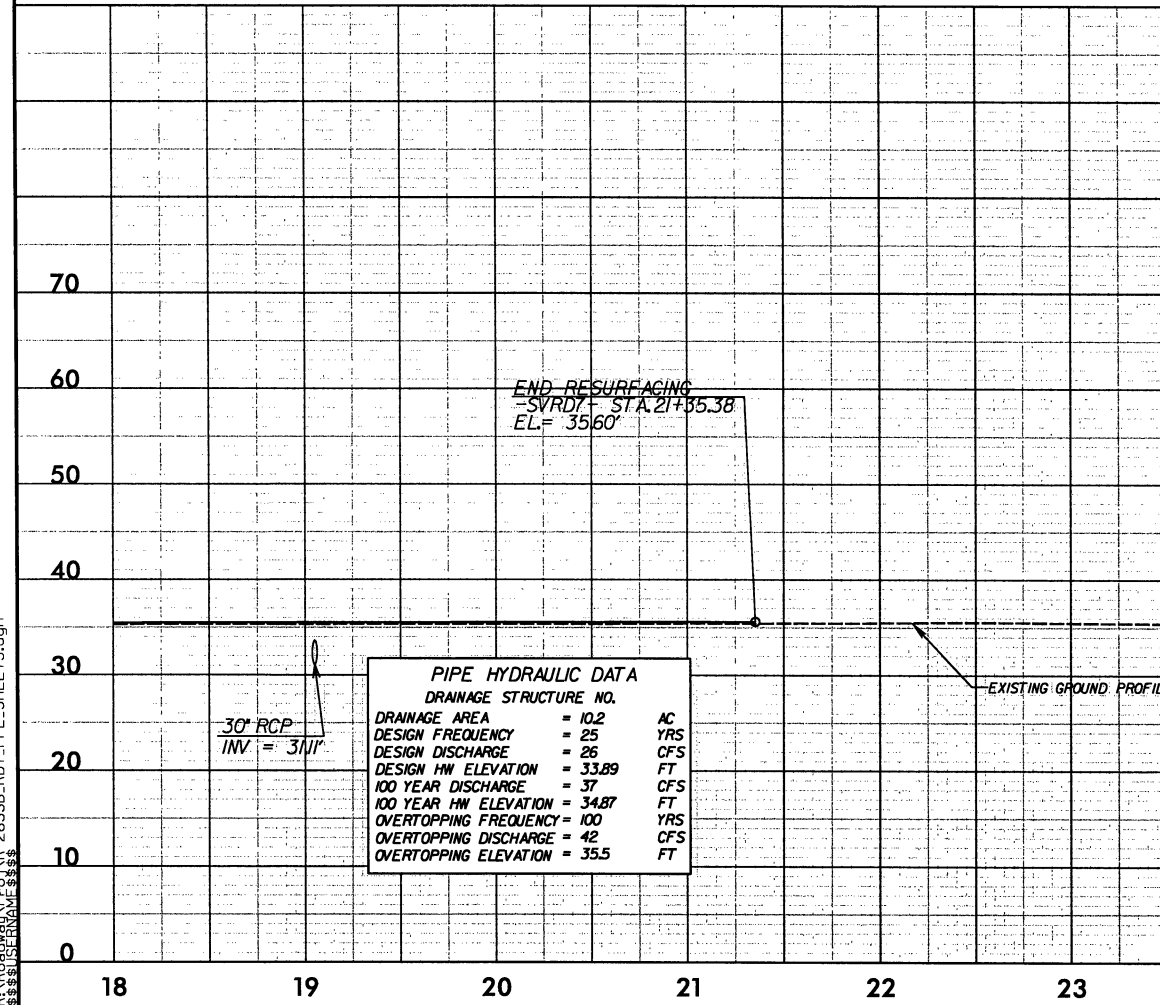
PROJECT REFERENCE NO. R-2633B		SHEET NO. 67	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-RAMP D2-
-SVRD7-



-SVRD7-

-SVRD8-



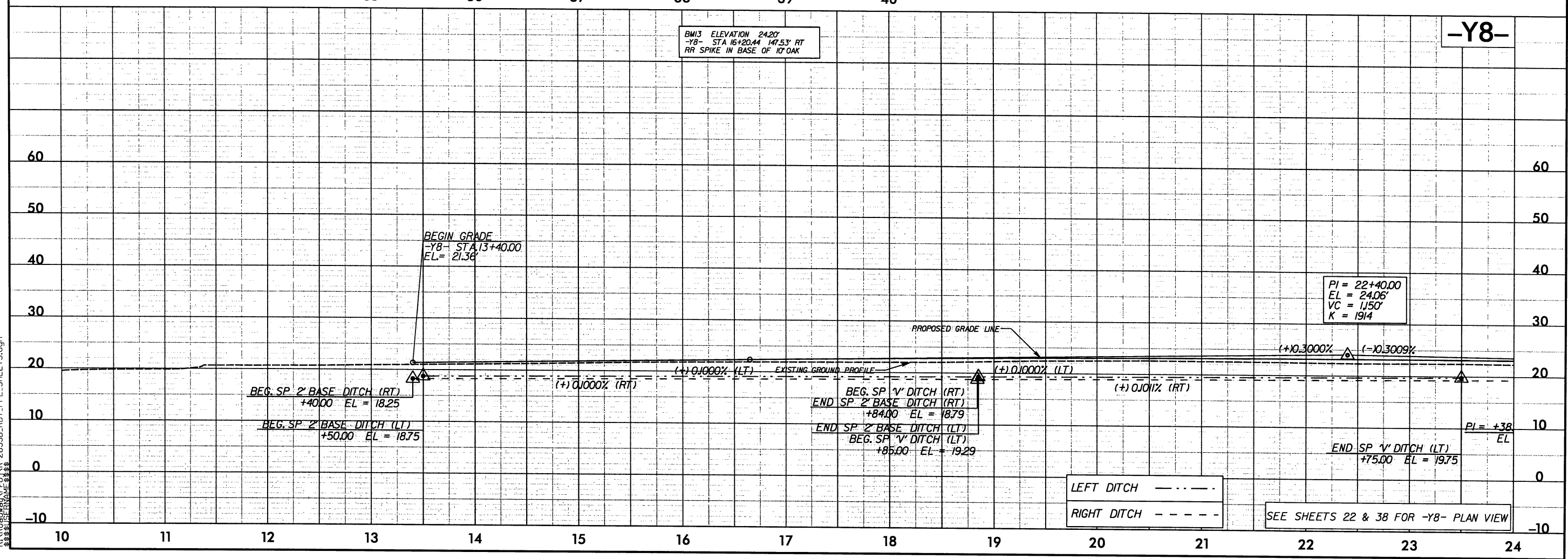
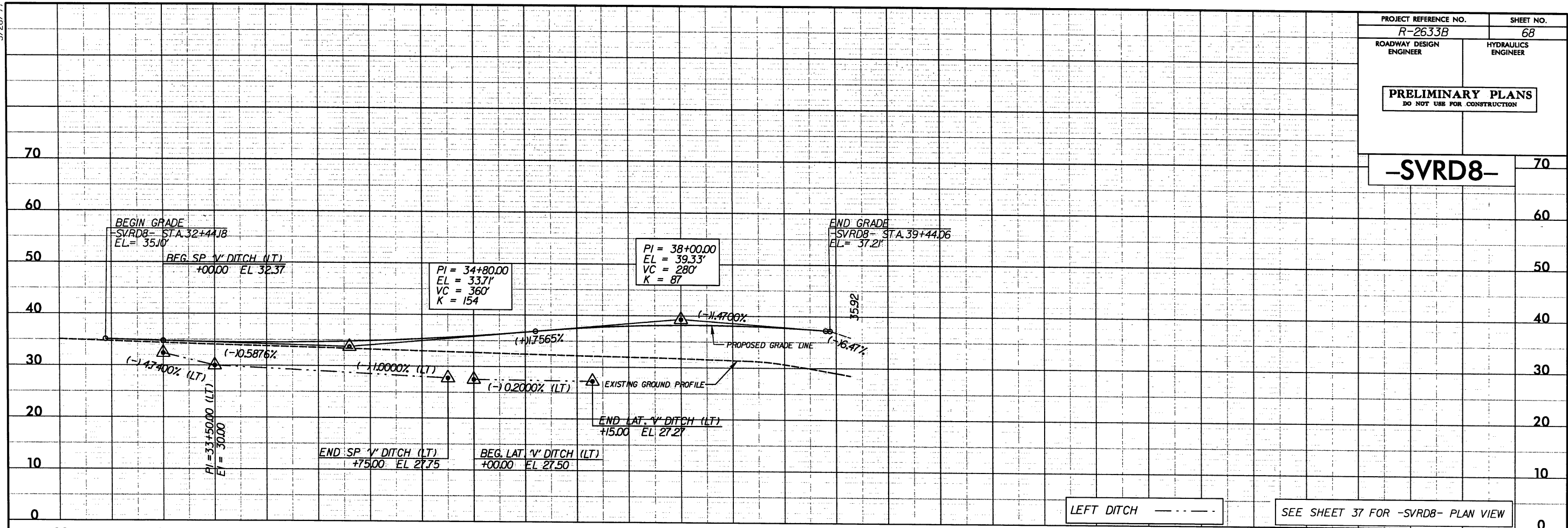
PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 10.2	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 26	CFS
DESIGN HW ELEVATION	= 33.89	FT
100 YEAR DISCHARGE	= 37	CFS
100 YEAR HW ELEVATION	= 34.87	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 42	CFS
OVERTOPPING ELEVATION	= 35.5	FT

SEE SHEETS 15 & 37 FOR -SVRD8- PLAN VIEW

5/28/99

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PROJECT REFERENCE NO. R-2633B		SHEET NO. 68
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
-SVRD8-		



5/28/99

SYTIME
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3:33 PM 5/28/99

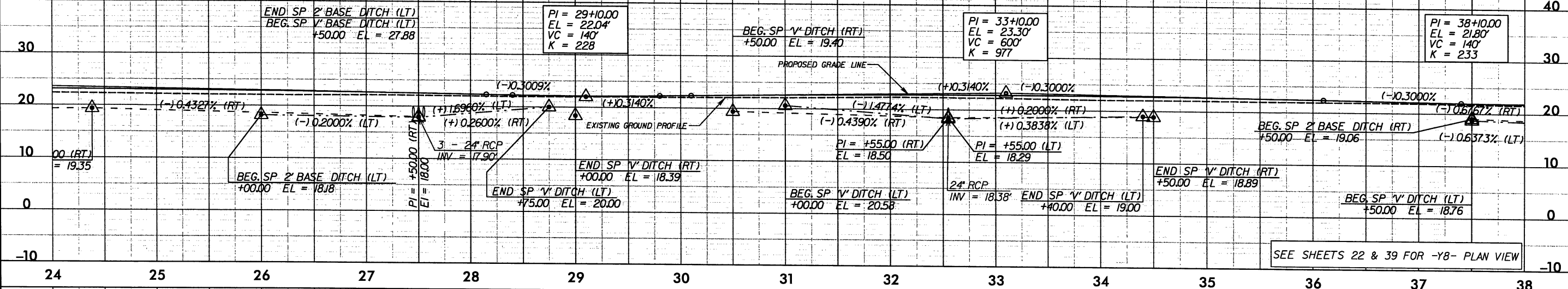
BM233 ELEVATION 2314'
-Y8- STA 37+43.14 114.30' LT
RR SPIKE IN BASE OF 20' PINE

PROJECT REFERENCE NO. R-2633B		SHEET NO. 69	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-Y8-

PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 15.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 41	CFS
DESIGN HW ELEVATION	= 20.68	FT
100 YEAR DISCHARGE	= 47	CFS
100 YEAR HW ELEVATION	= 21.1	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 41	CFS
OVERTOPPING ELEVATION	= 20.7	FT

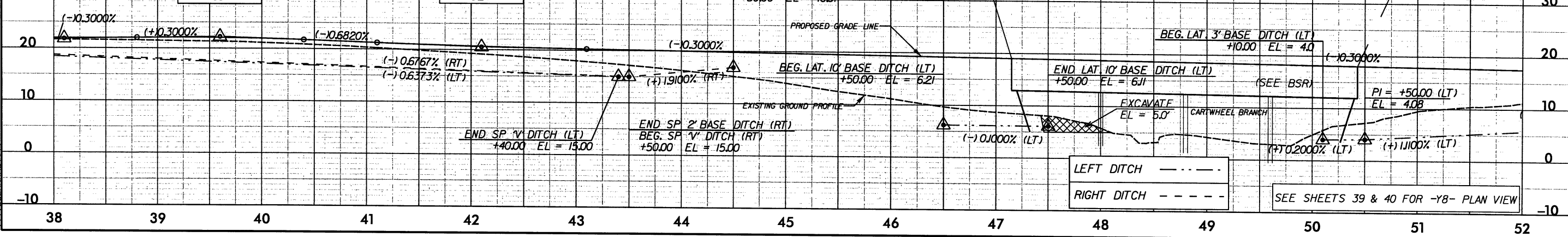
PIPE HYDRAULIC DATA		
DRAINAGE STRUCTURE NO.		
DRAINAGE AREA	= 3.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 11.3	CFS
DESIGN HW ELEVATION	= 20.35	FT
100 YEAR DISCHARGE	= 12.6	CFS
100 YEAR HW ELEVATION	= 20.50	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 12.6	CFS
OVERTOPPING ELEVATION	= 20.5	FT



BM234 ELEVATION 1146'
-Y8- STA 47+22.1 94.5' LT
RR SPIKE IN BASE OF 18' PINE

-Y8-

BRIDGE HYDRAULIC DATA		
DRAINAGE AREA	= 11	SO MI
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 1100	CFS
DESIGN HW ELEVATION	= 7.2	FT
BASE DISCHARGE	= 1300	CFS
BASE HW ELEVATION	= 7.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 2400+	CFS
OVERTOPPING ELEVATION	= 17.73	FT



5/28/99

BM235 ELEVATION 14.24'
-Y8- STA 52+96.29 6275' LT
RR SPIKE IN BASE OF 1" PINE

PROJECT REFERENCE NO. <i>R-2633B</i>		SHEET NO. <i>70</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

-Y8-

60

50

40

30

20

10

0

-10

60

50

40

30

20

10

0

-10

PI = 53+40.00
EL = 17.15'
VC = 200'
K = 137

PI = 56+15.00
EL = 20.34'
VC = 270'
K = 432

PI = 63+90.00
EL = 24.49'
VC = 300'
K = 229

PI = 66+70.00
EL = 22.32'
VC = 210'
K = 154

END LAT. 3' BASE DITCH (LT)
+50.000 EL = 6.3

BEG. SP. 2' BASE DITCH (RT)
+00.00 EL = 17.16

PROPOSED GRADE LINE

EXISTING GROUND PROFILE

PI = +50.00 (LT)
EL = 18.43

SEE SHEETS 40 & 41 FOR -Y8- PLAN VIEW

52

53

54

55

56

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58

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61

62

63

64

65

66

-Y8-

BM237 ELEVATION 16.41'
-Y8- STA 68+49.15 15395' LT
RR SPIKE IN BASE OF 9" PINE

60

50

40

30

20

10

0

-10

60

50

40

30

20

10

0

-10

PI = 66+70.00
EL = 22.32'
VC = 210'
K = 154

PI = 68+75.00
EL = 23.52'
VC = 200'
K = 145

PI = 71+00.00
EL = 21.73'
VC = 110'
K = 235

END GRADE
-Y8- STA 72+00.00
EL = 21.40'

PROPOSED GRADE LINE

EXISTING GROUND PROFILE

END SP. 2' BASE DITCH (RT)
+00.00 EL = 19.76

END SP. 2' BASE DITCH (LT)
+00.00 EL = 19.76

LEFT DITCH - - - - -
RIGHT DITCH - - - - -

SEE SHEET 41 FOR -Y8- PLAN VIEW

66

67

68

69

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71

72

73

74

SYTIME
R:\Roadway\Projects\R-2633B.RDY_PFL_SHEETS.dgn
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5/28/99

PROJECT REFERENCE NO.
R-2633B

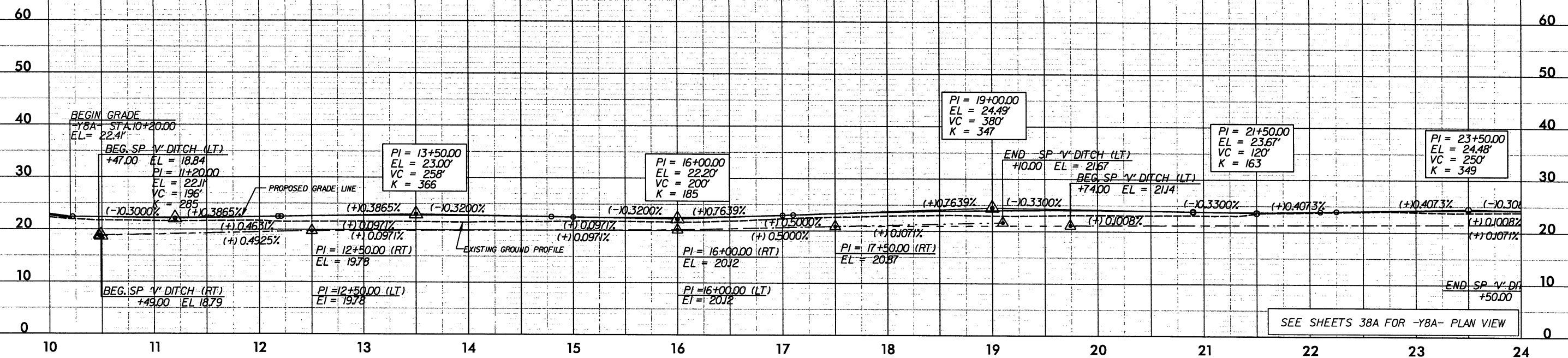
SHEET NO.
69

ROADWAY DESIGN
ENGINEER

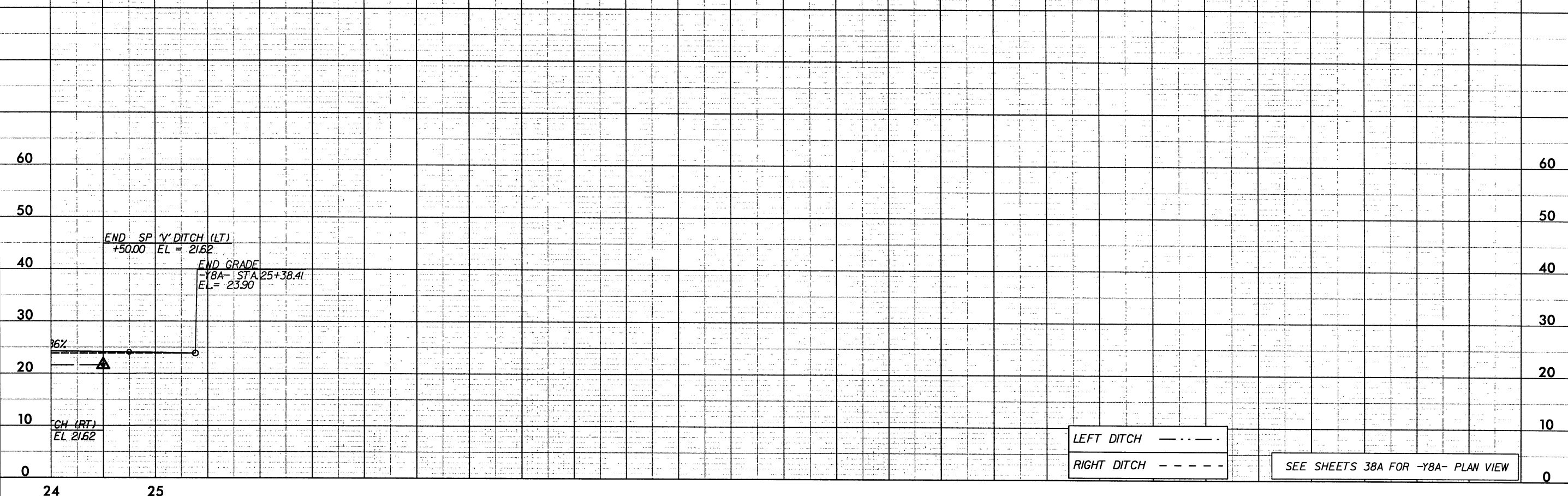
HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y8A-



-Y8A-



LEFT DITCH - - - - -
RIGHT DITCH - - - - -

SEE SHEETS 38A FOR -Y8A- PLAN VIEW

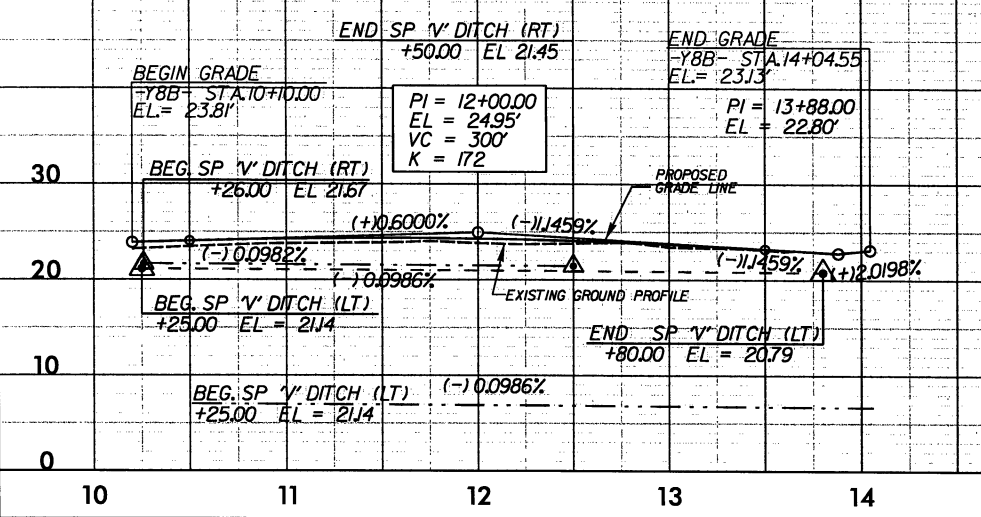
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5/28/99

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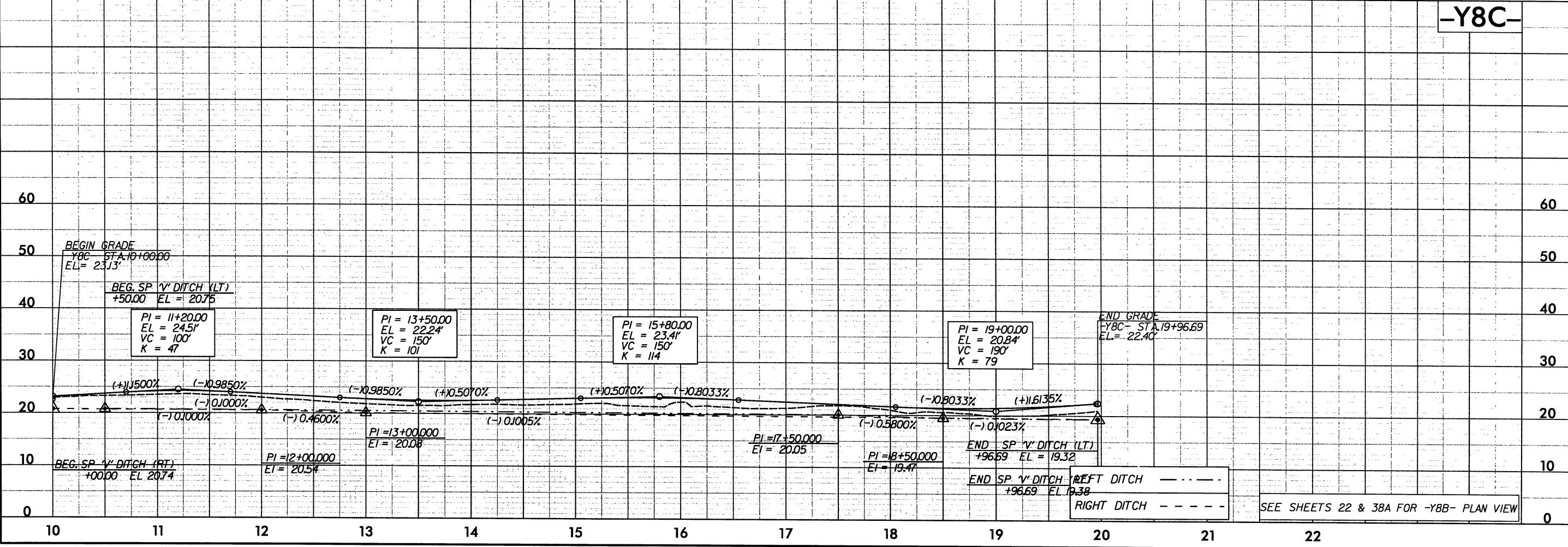
PROJECT REFERENCE NO.	SHEET NO.
R-2633B	70
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-Y8B-



SEE SHEET 38A FOR -Y8B- PLAN VIEW

-Y8C-



SEE SHEETS 22 & 38A FOR -Y8B- PLAN VIEW

5/28/99

SYTIME
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PROJECT REFERENCE NO.
R-2633B

SHEET NO.
71

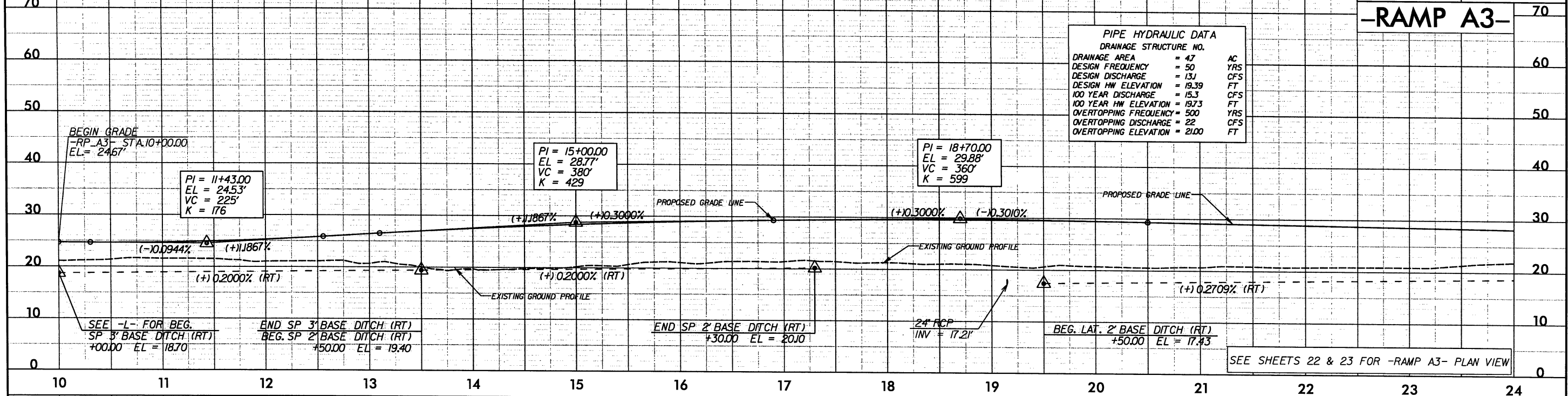
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

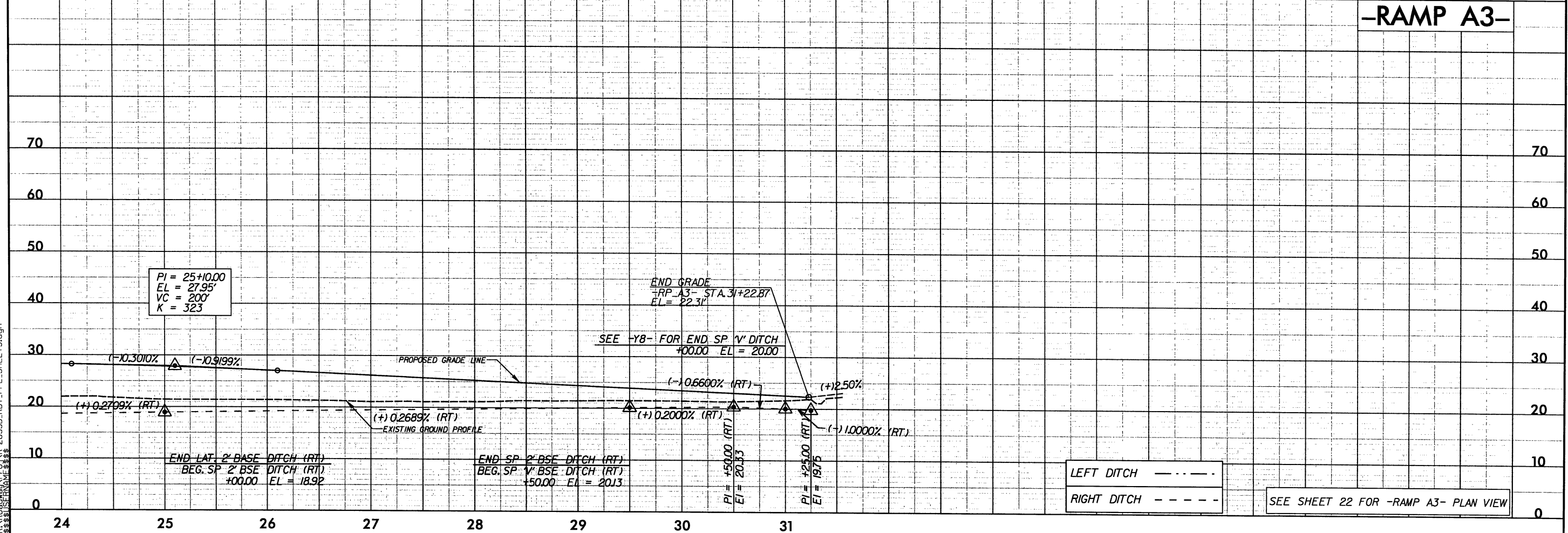
PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

-RAMP A3-

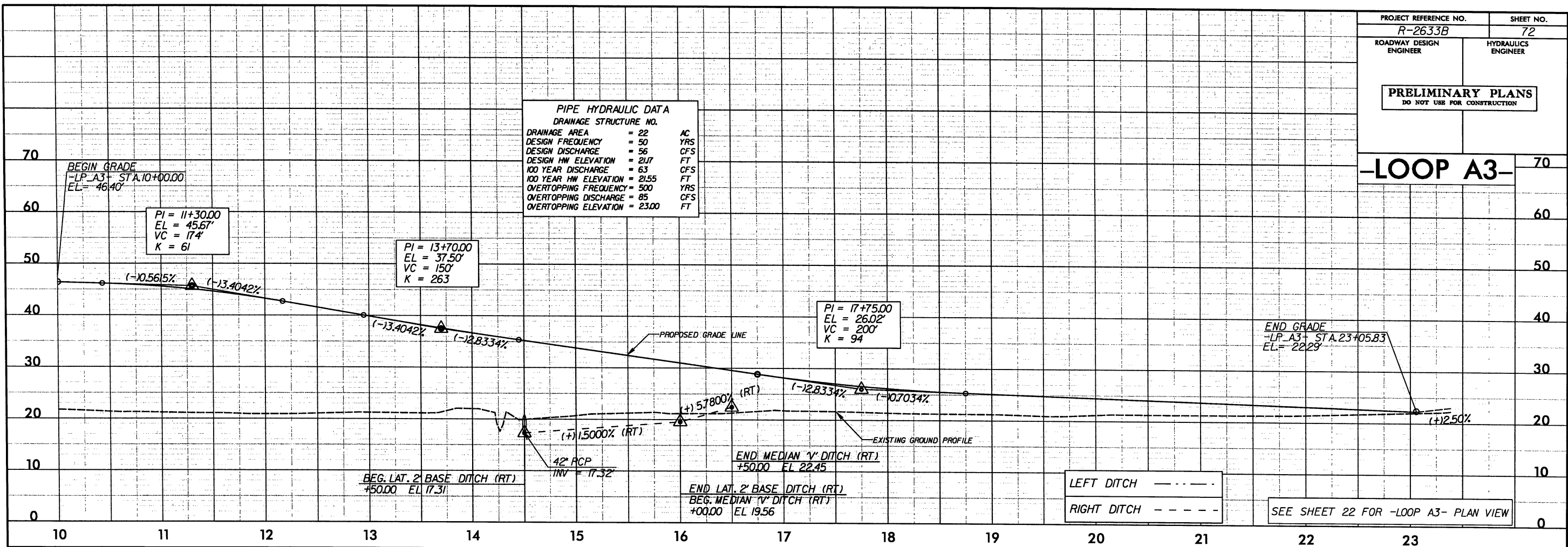


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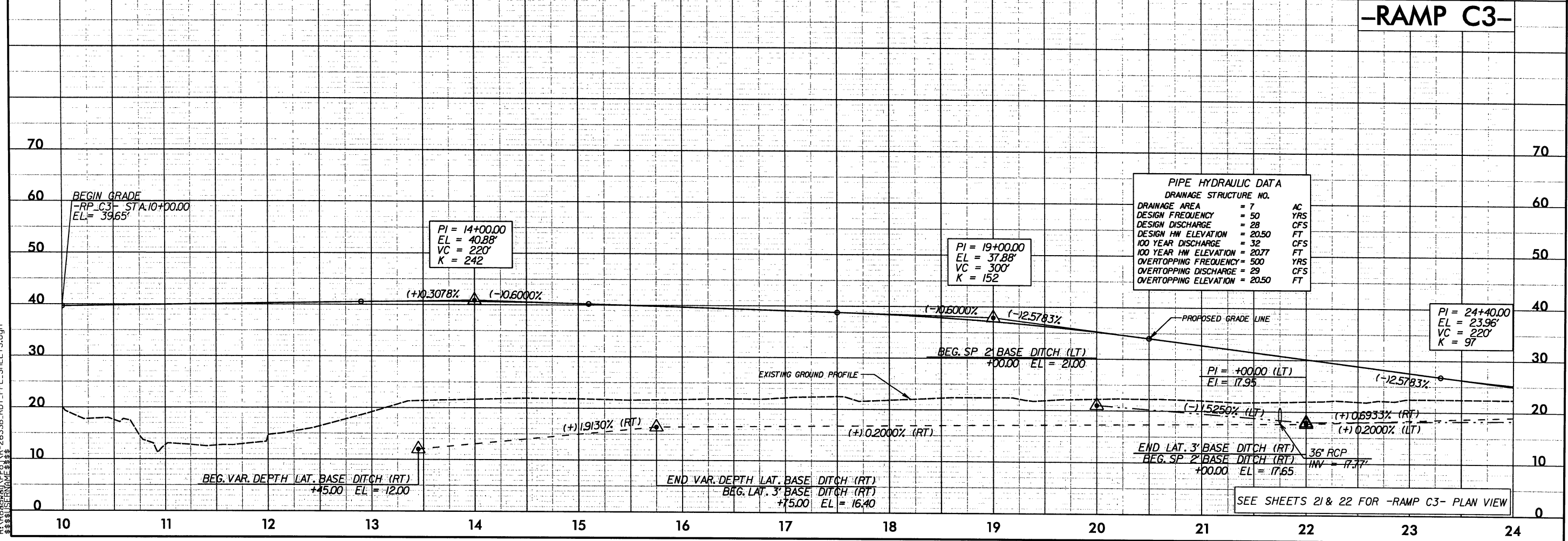


5/28/99

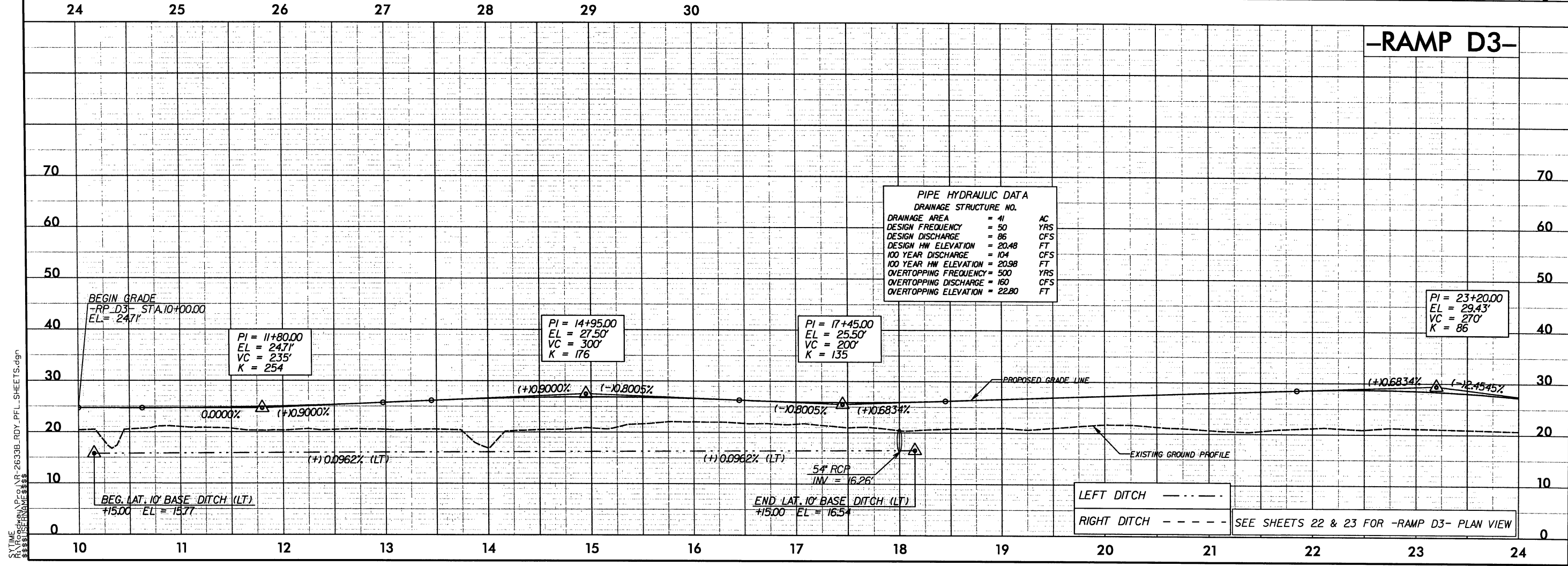
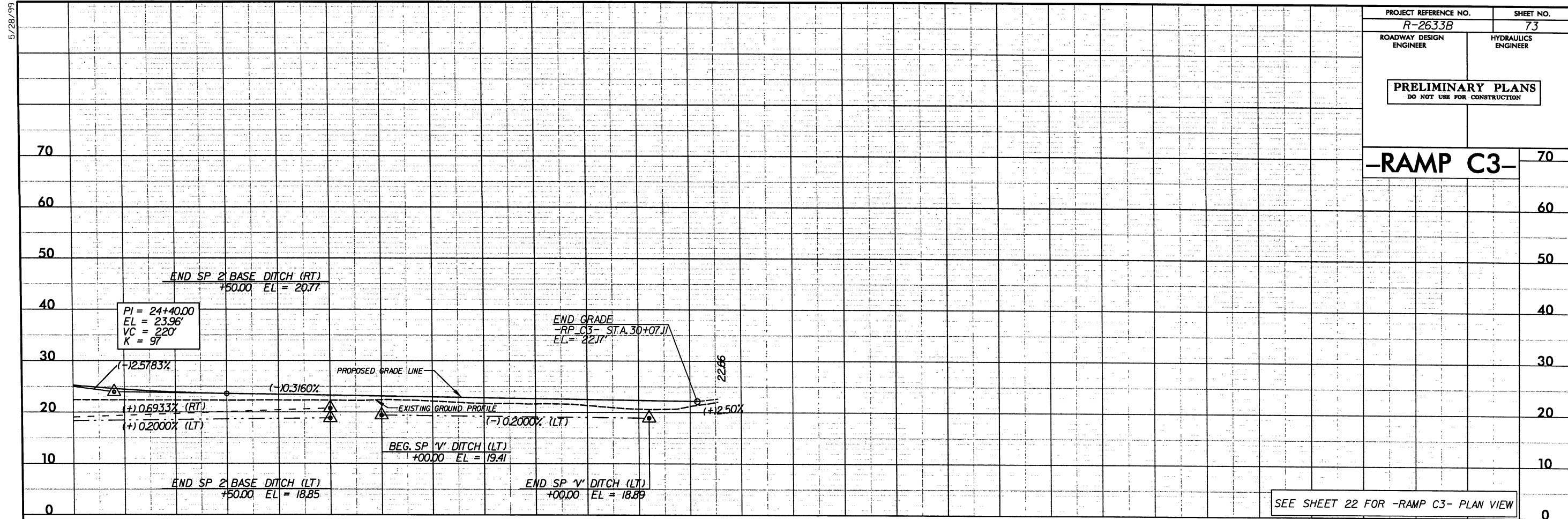
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-RAMP C3-



5/28/99



SYTIME
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5/28/99 10:00 AM

5/28/99

SYTIME
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USER NAME: 5/28/99 11:53 AM

PROJECT REFERENCE NO.	SHEET NO.
R-2633B	74
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-RAMP D3-

70

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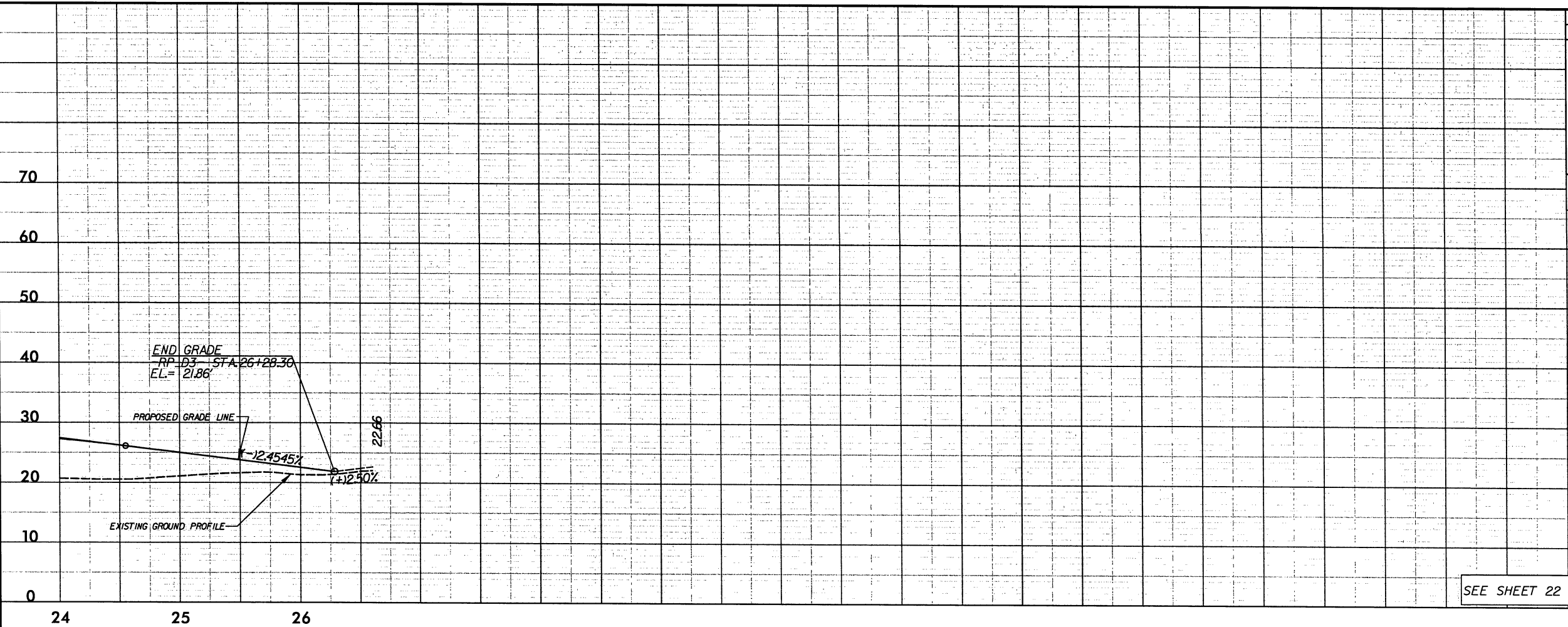
30

20

10

0

SEE SHEET 22 FOR -RAMP D3- PLAN VIEW



-Y9-

70

60

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40

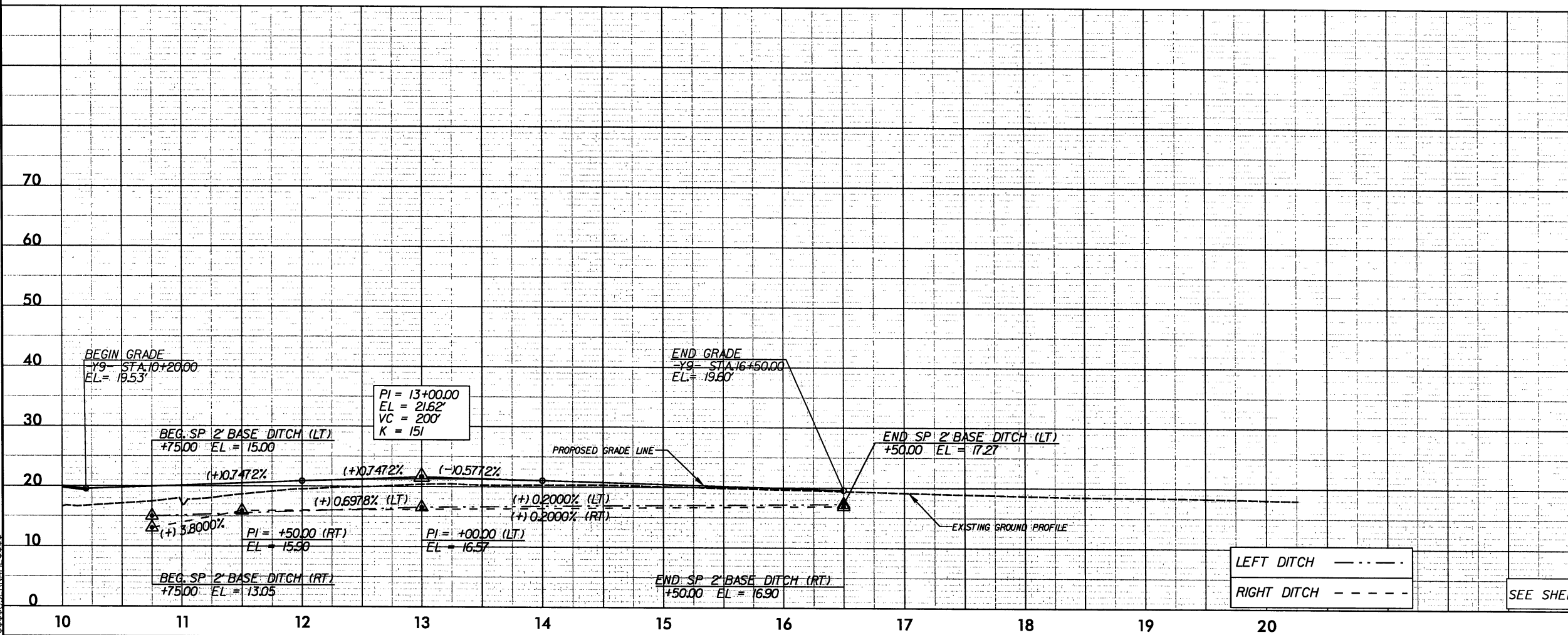
30

20

10

0

SEE SHEET 39 FOR -Y9- PLAN VIEW



SYTIME
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-SVRD9-



SEE SHEET 38 FOR -SVRD9- PLAN VIEW

5/28/99

SYTIME
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\$\$\$\$\$USERNAME\$\$\$\$\$

PROJECT REFERENCE NO. <i>R-2633B</i>		SHEET NO. <i>76</i>
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

-Y8A-

70

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21

SEE SHEET 38 FOR -Y8A- PLAN VIEW

BEGIN GRADE
-Y8A- STA. 10+20.00
EL = 22.41'

BEG. SP. V' DITCH (LT.)
+47.00 EL = 18.84
PI = 11+20.00
EL = 22.11'
VC = 196'
K = 285

PI = 13+50.00
EL = 23.00'
VC = 258'
K = 366

PI = 16+00.00
EL = 22.20'
VC = 200'
K = 185

PI = 19+00.00
EL = 24.49'
VC = 380'
K = 347

END SP. V' DITCH (LT.)
+10.00 EL = 21.67

PI = 21+50.00
EL = 23.67'
VC = 120'
K = 163

PI = 23+50.00
EL = 24.48'
VC = 250'
K = 349

BEG. SP. V' DITCH (RT.)
+49.00 EL = 18.79

PI = 12+50.00 (RT)
EL = 19.78

PI = 12+50.00 (LT)
EL = 19.78

PI = 16+00.00 (RT)
EL = 20.12

PI = 16+00.00 (LT)
EL = 20.12

PI = 17+50.00 (RT)
EL = 20.87

END SP. V' DITCH (RT.)
+50.00

10

11

12

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18

19

20

21

-Y8B-

70

60

50

40

30

20

10

0

10

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23

SEE SHEETS 22 & 38A FOR -Y8B- PLAN VIEW

BEGIN GRADE
-Y8B- STA. 10+10.00
EL = 23.81'

BEG. SP. V' DITCH (RT.)
+26.00 EL = 21.67

BEG. SP. V' DITCH (LT.)
+25.00 EL = 21.14

BEG. SP. V' DITCH (LT.)
+25.00 EL = 21.14

END SP. V' DITCH (RT.)
+50.00 EL = 21.45

PI = 12+00.00
EL = 24.95'
VC = 300'
K = 172

END GRADE
-Y8B- STA. 14+04.55
EL = 23.13'

PI = 13+88.00
EL = 22.80'

PROPOSED GRADE LINE

EXISTING GROUND PROFILE

END SP. V' DITCH (LT.)
+80.00 EL = 20.79

10

11

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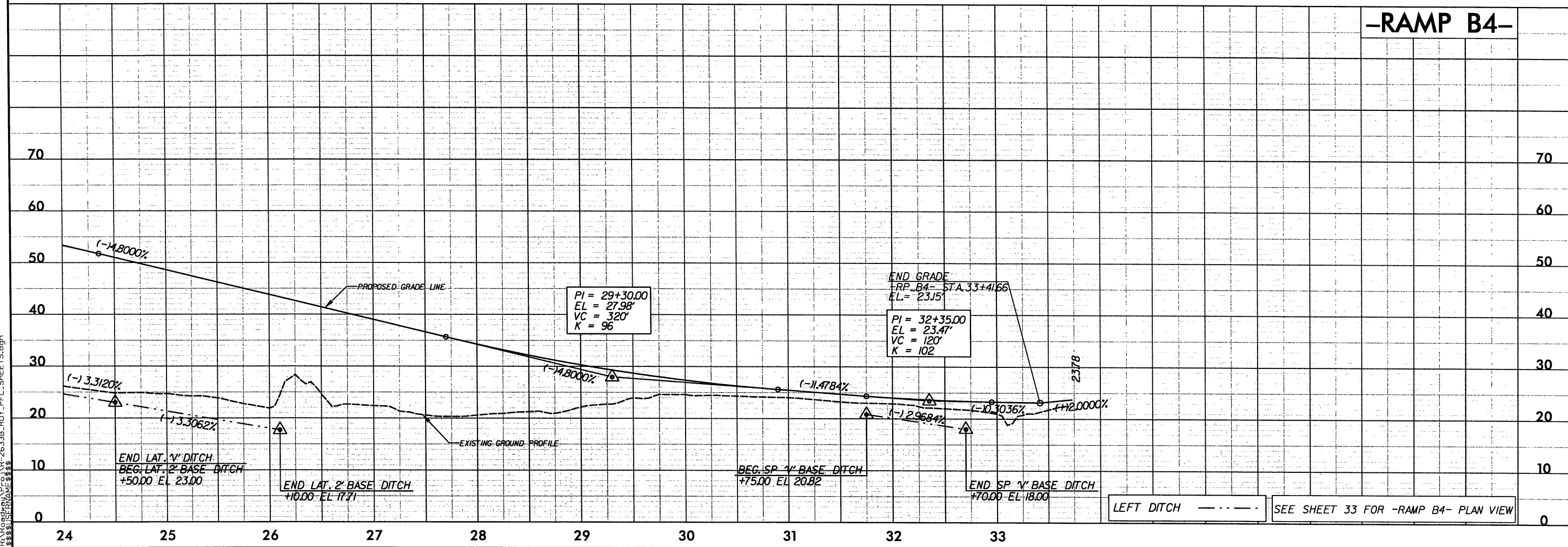
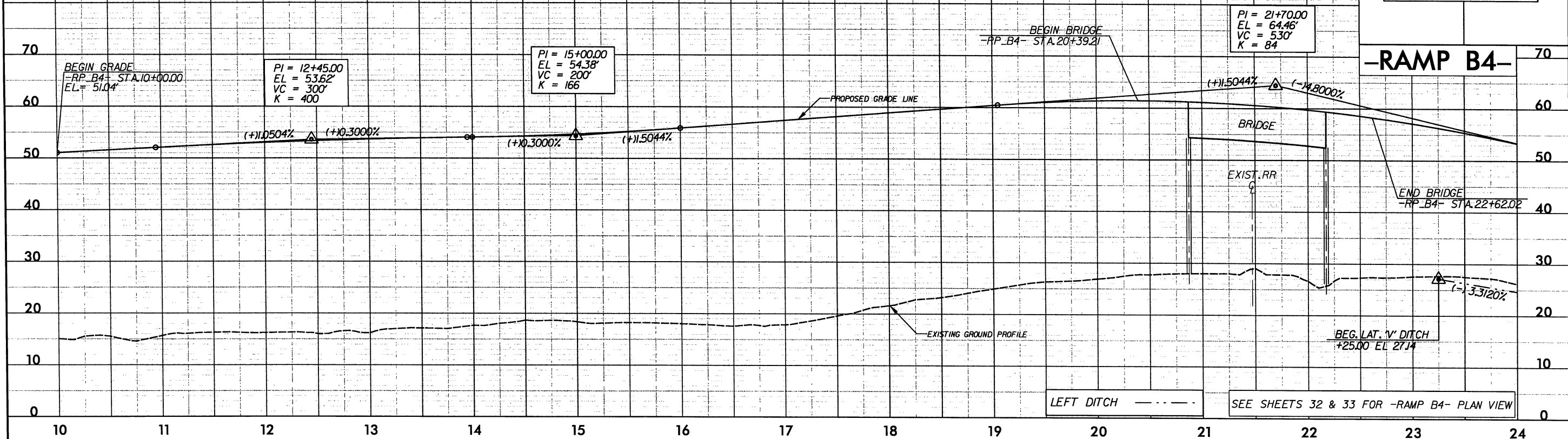
22

23

5/28/99

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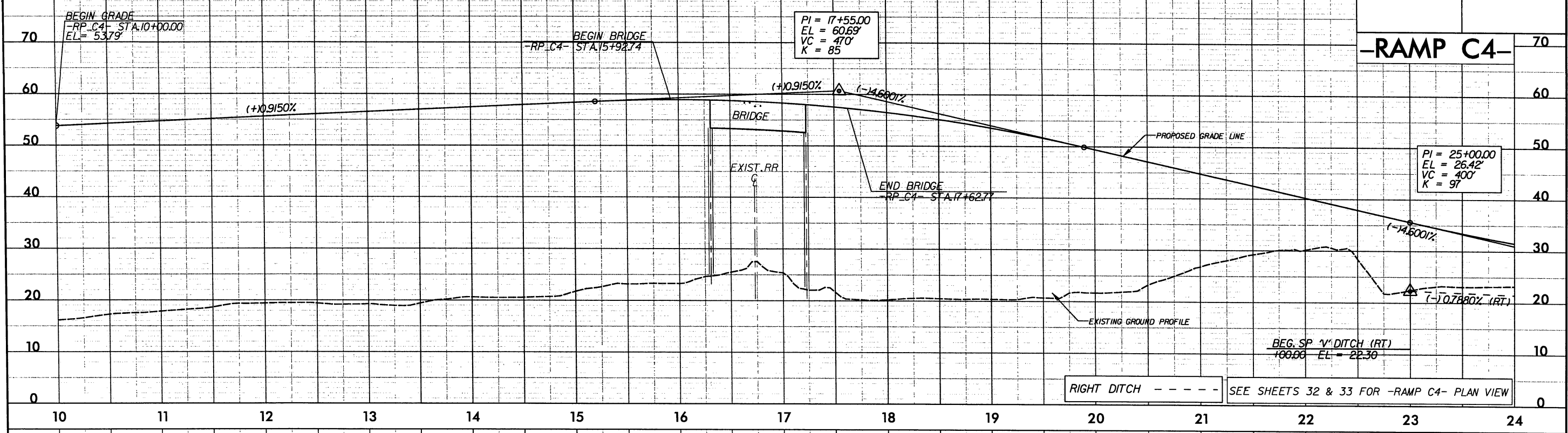
PROJECT REFERENCE NO.	SHEET NO.
R-2633B	77
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



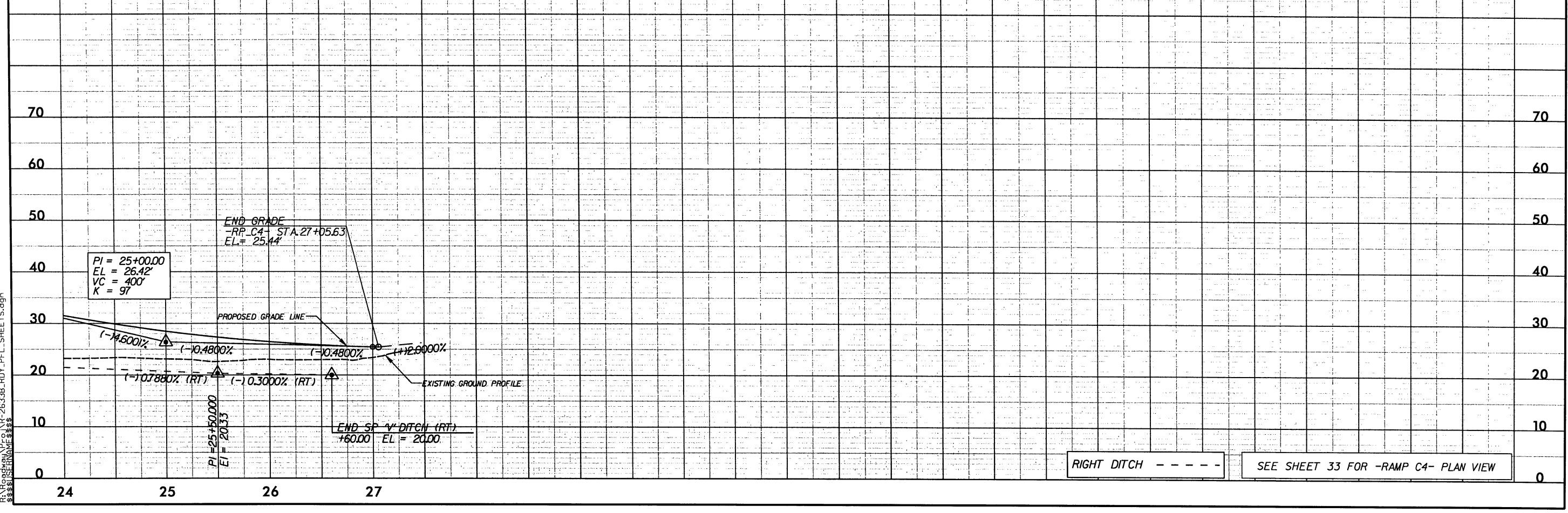
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PROJECT REFERENCE NO. R-2633B		SHEET NO. 78	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			

-RAMP C4-



-RAMP C4-



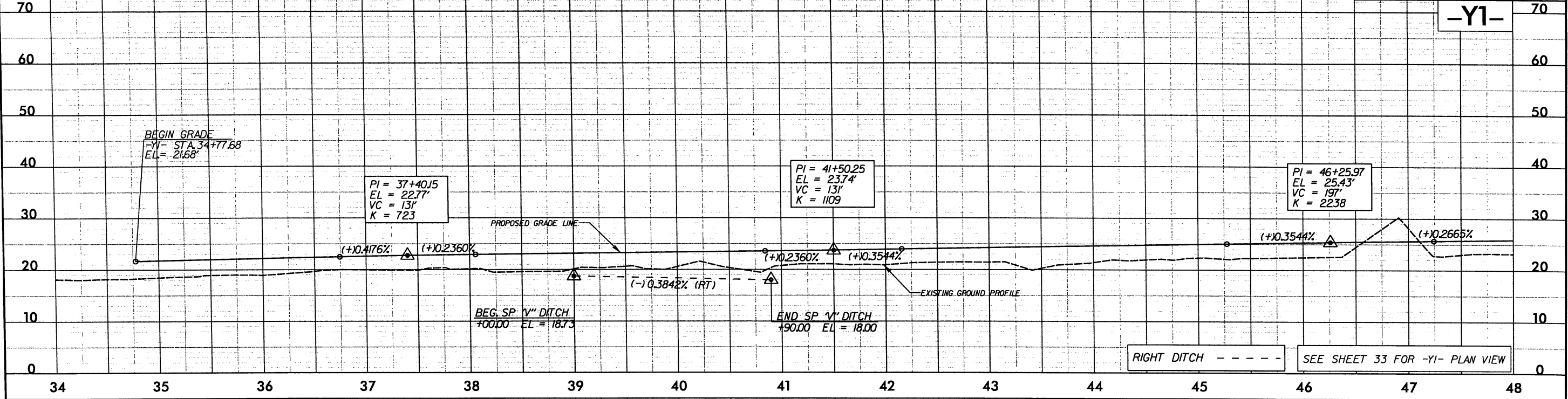
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5/28/99

SYTIME
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PROJECT REFERENCE NO. R-2633B		SHEET NO. 79
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

-Y1-



-Y1-

