STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

October 3, 2013

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

ATTN: Mr. Andrew Williams
NCDOT Coordinator

Subject: **Response to NCDWR Hold Letter and Revised Application for Section 404 Nationwide Permit 14 and Section 401 Water Quality Certification** for the proposed US 21 Improvements from SR 1100 (Old Gap Rd) in Roaring Gap to SR 1121 (Pine Swamp Rd) in Sparta, Alleghany County, Federal Aid Project No. STP-21(11); Division 11; TIP No. R-3101; $570.00 debit WBS No. 37044.1.1

Reference: NCDOT Nationwide 14 Permit Application dated July 24, 2013
NC Division of Water Resources "On Hold" Letter dated August 6, 2013

Dear Sir:

The North Carolina Department of Transportation (NCDOT) is responding to the NCDWR's Hold Letter (dated August 6, 2013) and is submitting a revised permit application for the proposed improvements (12-foot lanes with 2-foot paved shoulders) to US 21 from SR 1100 (Old Gap Rd) in Roaring Gap to SR 1121 (Pine Swamp Rd) in Sparta, Alleghany County. This application will replace the previous referenced application dated July 24, 2013 There will be 2,152 linear feet of permanent impacts, 309 linear feet of which are from bank stabilization, and 0.07 acre of temporary impacts to jurisdictional streams. There will be 0.38 acre of permanent impacts to wetlands associated with the project. In addition, there will be 0.05 acre of hand-clearing. Impacts to wetlands due to utility relocation include <0.01 acre of temporary impact and 0.22 acre of hand clearing.

There will be thirty-two (32) crossings for the project (see 'NWP 14 Crossings and Impact Values' table - attached). The cumulative impacts at each of the crossings will not exceed the Nationwide thresholds.

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

TELEPHONE: 919-707-6000
FAX: 919-212-5785
WEBSITE:NCDOT.GOV

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

NCDOT provides the following responses to NCDWR's August 6, 2013 Hold Letter:

1. Please discuss the need for temporary fill in the wetlands that run parallel to the road.
   NCDOT Response: There are no longer any 'temporary wetland fill' associated with wetlands. Impacts have been revised to the appropriate "hand clearing" or "mechanized clearing".

2. It is rare that DOT projects propose in stream rip rap pads at pipe outlets. Typically, we only see bank stabilization around the culvert outlet (but not in the bed). The plans show rip rap pads at most if not all of the crossings. Please remove the rip rap from the stream bed and change the impacts from fill to bank stabilization. If rip rap is warranted in the stream bed, please provide a justification for each of the crossings.
   NCDOT Response: all riprap pads in jurisdictional streams have been removed and bank stabilization along channels has been included, along with a Detail (Detail 22).

3. The stormwater management plan is not complete. All BMPs that are providing treatment need to be listed. The SMPs that I usually see include a sheet with a check box stating that its minimum design criteria has been met and verified. I will need this sheet of the SMP. Also, I will need to know what's being done with bridge stormwater at each of the bridge crossings Are there deck drains, and is stormwater being treated to the MEP?
   NCDOT Response: A revised SMP has been included as part of this permit application.

4. There's no mention of a trout moratorium. Is DOT committed to the moratorium if required by WRC?
   NCDOT Response: Yes – adherence to the trout moratorium is addressed in the PCN, Section D.1.1b.

5. Will the erosion control plan be designed for sensitive waters?
   NCDOT Response: Yes – adherence to Designed Standards in Sensitive Watersheds is addressed in the PCN, Section D.1.1b.

6. Have all temporary stream impacts associated with dewatering been accounted for?
   NCDOT Response: Yes.

7. Site 4 and 49: Bridges are replacing culverts. I'll need channel details for the restoration.
   NCDOT Response: Details have been provided on the revised permit drawings.

8. Site 5: No impacts are listed for the pond impacts.
   NCDOT Response: The <0.01 acre of Temporary surface water impact is listed on the Wetland Permit Impact Summary Sheet for Site 5 in the "Temp. SW Impacts (ac)" column and listed in the PCN, page 9.

9. There are blue lines on the plans that aren't listed as JS. These are adjacent to sites 14, 19, adjacent to station 153 (sheet 15), and both sides of site 43.
   NCDOT Response: These sites have been assessed and determined not jurisdictional. Supporting information was provided to the Agencies on September 5, 2013.

10. Are there impacts to the js line adjacent to site 46? Its shown to be under the new fill slope line.
    NCDOT Response: Yes. The impacts have been captured under Site 46A.

11. Site 18: The impact table shows bank stabilization, however, the detail for the channel (detail 4) doesn't show any rock. If you are sloping the banks back, its typically not considered a permanent bank stabilization impact.
    NCDOT Response: Site 18 has been revised on the permit drawings to depict the bank stabilization at the pipe outfall. The stream work beyond the bank stabilization is captured in Detail 4.

12. Are there any bank stabilization impacts (or temporary impacts) associated with the bridge on Camp Butler Road?
    NCDOT Response: No. The bridge on Camp Butler Road has already been replaced.

13. Site 21: Need channel detail for the relocated portion of the stream.
    NCDOT Response: "Channel Detail Section A-A" has been included for Site 21 on Sheet 18.

14. Site 24: The current design shows the stream bisecting the pipe, but no inlet is provided. Please explain.
    NCDOT Response: The stream is being directed to a roadside ditch and then into 2GI (Structure #22-2).

15. Site 27: What type of impact is listed for the upstream side of site 27? An impact is hatched out, but it's not listed in the impact table.
    NCDOT Response: That is Site 26 on the upstream side of Site 27. Impacts have been depicted and calculated.

16. Are there impacts to the pond adjacent to site 36? It looks like there's a ditch clipping it.
    NCDOT Response: The ditch has been revised to not impact the pond.

17. Site 46: Please provide a detail for the channel relocation.
    NCDOT Response: The stream will flow in to the "Cut Ditch" (that is referenced – Detail 3) to flow into the 30" CCFRPM.

18. Detail 20 needs to show coir fiber liner since its going on a stream bank.
    NCDOT Response: Detail 20 has been revised to show coir fiber lining.

19. Site 50: Please provide floodplain benches at the inlet and outlet of site 50. Please also include a detail on the plans.
    NCDOT Response: The culvert has been sized to "match" the stream. As such, floodplain benches are not warranted.

Please see enclosed revisions of the following: Pre-Construction Notification (PCN), revised EEP request form, Stormwater Management Plan, permit drawings, Utility permit drawings, and design plans. A Notification of Jurisdictional Determination was received from the USACE, dated July 17, 2013. A Categorical Exclusion (CE) was completed in June 2008 and Right of Way Consultations were completed in December 2009 and September 2011 and a Construction Consutlation was completed in December 2012. Copies are available upon request.

Comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachments, NCDOT hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

This project calls for a letting date of January 20, 2014 and a review date of December 2, 2013.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: http://connect.ncdot.gov/resources/Environmental. If you have any questions or need additional information, please contact Bill Barrett at (919) 707-6103.

Sincerely,

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

cc:
NCDOT Permit Application Standard Distribution List

TIP No. R-3101 NWP 14 Crossings and Impact Values

NWP 14 Crossings	Impact Site #s	Features Impacted	Stream Impacts Permanent		Stream Impacts Temporary		Wetland Impact [1]	Pond Impact	TOTAL IMPACT Permanent		TOTAL IMPACT Temporary	
			LF	Acreage	LF	Acreage	Acreage	Acreage	**LF**	**Acreage [2]**	**LF**	**Acreage [2]**
#1	1, 2	UT-39, P-2	26	0.01	^	^		0.11	**26**	**0.12**	^	^
#2	3, 4	W-19, Laurel Branch	135	0.04	^	^	0.01	^	**135**	**0.05**	^	^
#3	5, 6, 7, 8	P-4, W-26, W-27, UT-33	15	0.01	17	0.01	<0.01	<0.01 (temp)	**15**	**0.01**	**17**	**0.01**
#4	9, 10	UT-32 (both sites)	172	0.01	^	^	^	^	**172**	**0.01**	^	^
#5	11	UT-31	60	0.01	13	<0.01	^	^	**60**	**0.01**	**13**	**<0.01**
#6	12, 13, 14	W-29, UT-30, W-30	17	<0.01	^	^	0.01	^	**17**	**0.01**	^	^
#7	18	UT-29	41	0.01	42	0.01	^	^	**41**	**0.01**	**42**	**0.01**
#8	19, 20	W-32, W-33	^	^	^	^	0.04	^	^	**0.04**	^	^
#9	21	UT-28	47	0.01	21	<0.01	^	^	**47**	**0.01**	**21**	**<0.01**
#10	22	UT-40	22	<0.01	^	^	^	^	**22**	**<0.01**	^	^
#11	23	UT-26	31	<0.01	10	<0.01	^	^	**31**	**<0.01**	**10**	**<0.01**
#12	24, 25	UT-25 (both sites)	159	0.3	^	^	^	^	**159**	**0.3**	^	^
#13	26, 27	W-22, UT-25	13	<0.01	^	^	0.2	^	**13**	**0.2**	^	^
#14	28	UT-21	14	<0.01	^	^	^	^	**14**	**<0.01**	^	^
#15	29, 30	W-16, UT-19	23	<0.01	12	<0.01	<0.01	^	**23**	**<0.01**	**12**	**<0.01**
#16	31, 32 ,33, 34	W-15, UT-36, UT-18, W-35	132	0.03	14	<0.01	0.10	^	**132**	**0.13**	**14**	**<0.01**
#17	36, 37, 38 39	W-14, W-13, UT-17	83	0.02	19	<0.01	0.13	^	**83**	**0.15**	**19**	**<0.01**
#18	40	UT-16	20	<0.01	12	<0.01	^	^	**20**	**<0.01**	**12**	**<0.01**
#19	41	UT-15	48	0.01	^	^	^	^	**48**	**0.01**	^	^
#20	42	UT-14	34	0.01	11	<0.01	^	^	**34**	**0.01**	**11**	**<0.01**
#21	42A, 43, 45	W-25, W-11, UT-13	38	0.01	^	^	0.03	^	**38**	**0.03**	^	^
#22	46, 46A	UT-12, UT-11	46	0.01	12	<0.01	^	^	**46**	**0.01**	**12**	**<0.01**
#23	47	UT-10	125	0.02	^	^	^	^	**125**	**0.02**	^	^
#24	48, 48A	UT-41, W-32	149	0.02	^	^	<0.01	^	**149**	**0.02**	^	^
#25	49	Glade Creek	59	0.04	^	^	^	^	**59**	**0.04**	^	^
#26	50	UT-42	256	0.09	18	<0.01	^	^	**256**	**0.09**	**18**	**<0.01**
#27	51, 52	W-38, UT-7	130	0.03	25	0.01	0.01	^	**130**	**0.04**	**25**	**0.01**
#28	53	UT-6	9	<0.01	^	^	^	^	**9**	**<0.01**	^	^
#29	54	UT-5	81	0.01	21	0.01	^	^	**81**	**0.02**	**21**	**0.01**
#30	55, 56	UT-4, W-4	143	0.01	37	0.01	<0.01	^	**115**	**0.03**	**37**	**0.01**
#31	57	UT-3, W-2	13	0.01	^	^	0.01	^	**13**	**0.02**	^	^
#32	58	UT-1, W-1, W-3	11	0.01	^	^	0.02	^	**11**	**0.02**	^	^

[1] Wetland impacts include permanent 'fill', 'excavation', and 'mechanized clearing' impacts (does not include 'hand-clearing' impacts).

[2] 'Total impacts (acreage)' = stream impact acreage (x.xxxx ac) + wetland impact acreage (x.xxxx ac) + pond impact acreage (x.xxxx), with sum then rounded to x.xx ac.

Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.3 Dec 10 2008

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 14	or General Permit (GP) number:	
1c. Has the NWP or GP number been verified by the Corps?	☐ Yes	☒ No

1d. Type(s) of approval sought from the DWQ (check all that apply):

☒ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit

☐ 401 Water Quality Certification – Express ☐ Riparian Buffer Authorization

1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: ☐ Yes ☒ No	For the record only for Corps Permit: ☐ Yes ☒ No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	☒ Yes	☐ No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	☐ Yes	☒ No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	☐ Yes	☒ No

2. Project Information

2a. Name of project:	US 21 Improvements from SR 1100 (Old Gap Rd) in Roaring Gap to SR 1121 (Pine Swamp Rd) in Sparta.
2b. County:	Alleghany
2c. Nearest municipality / town:	Sparta to west, Roaring Gap to east.
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	R-3101

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6103
3g. Fax no.:	(919) 212-5785
3h. Email address:	wabarrett@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	☐ Agent ☐ Other, specify:
4b. Name:	*not applicable*
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	*not applicable*
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History		
1. Property Identification		
1a. Property identification no. (tax PIN or parcel ID):	*not applicable*	
1b. Site coordinates (in decimal degrees): *** see Waters Upload Sheet for specific lat/long.s for each stream.**	Latitude: 36.450213 (DD.DDDDDD)	Longitude: - 81.029498 (-DD.DDDDDD)
1c. Property size:	32.87 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Laurel Branch, Brush Creek, Glade Creek, Little Glade Creek and Wolf Branch	
2b. Water Quality Classification of nearest receiving water:	C;Tr	
2c. River basin:	New	
3. Project Description		
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: The surrounding area to the project is predominately wooded and agricultural with some residential neighborhoods and businesses along US 21.		
3b. List the total estimated acreage of all existing wetlands on the property: 2.999		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 16,350		
3d. Explain the purpose of the proposed project: To improve safety along US 21.		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves upgrading the existing US 21, from SR 1100 (Old Gap Rd) in Roaring Gap to SR 1121 (Pine Swamp Rd) in Sparta, a distance of 12 miles. The existing two-lane road will be widened from the existing 9-foot and 11-foot lanes to 12-foot lanes with 2-foot paved shoulders.		
4. Jurisdictional Determinations		
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	☒ Yes ☐ No ☐ Unknown	
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☒ Preliminary ☐ Final	
4c. If yes, who delineated the jurisdictional areas? Name (if known): Kris Dramby / Bill Barrett	Agency/Consultant Company: NCDOT Other:	
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. USACE Notification of Jurisdictional Determination (SAW-2012-01963) dated July 17, 2013.		
5. Project History		
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☒ Yes ☐ No ☐ Unknown	
5b. If yes, explain in detail according to “help file” instructions. This is a revised application, and supersedes the original Permit Application dated July 24, 2013.		
6. Future Project Plans		
6a. Is this a phased project?	☐ Yes ☒ No	
6b. If yes, explain.		

C. Proposed Impacts Inventory

1. Impacts Summary

1a. Which sections were completed below for your project (check all that apply):

☒ Wetlands ☒ Streams - tributaries ☐ Buffers

☒ Open Waters ☐ Pond Construction

2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site 3 ☒ P ☐ T	fill	PFO1/PSS1 (W-19)	☒ Yes ☐ No	☒ Corps ☐ DWQ	0.01
Site 6 ☒ P ☐ T	fill	PSS1 (W-26)	☐ Yes ☒ No	☒ Corps ☐ DWQ	<0.01
Site 7 ☒ P ☐ T	fill	PSS1 (W-27)	☐ Yes ☒ No	☒ Corps ☐ DWQ	<0.01
Site 12 ☒ P ☐ T	fill	PFO1 (W-29)	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 12 ☒ P ☐ T	Mechanized clearing	PFO1 (W-29)	☒ Yes ☐ No	☒ Corps ☐ DWQ	0.01
Site 14 ☒ P ☐ T	fill	PFO1 (W-30)	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 14 ☒ P ☐ T	Mechanized clearing	PFO1 (W-30)	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 19 ☒ P ☐ T	fill	PSS1 (W-31)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.01
Site 19 ☒ P ☐ T	Mechanized clearing	PSS1 (W-31)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.02
Site 20 ☒ P ☐ T	fill	PSS1 (W-33)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.01
Site 26 ☒ P ☐ T	fill	PEM1 (W-22)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.01
Site 26 ☒ P ☐ T	excavation	PEM1 (W-22)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.01
Site 29 ☒ P ☐ T	fill / bank stabilization	PEM1 (W-16)	☐ Yes ☒ No	☒ Corps ☐ DWQ	<0.01
Site 31 ☒ P ☐ T	fill	PFO1 (W-15)	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 32 ☒ P ☐ T	fill	PFO1 (W-15)	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 34 ☒ P ☐ T	fill/construction area	PEM1 (W-35)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.03
Site 34 ☒ P ☐ T	Mechanized clearing	PEM1 (W-35)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.06
Site 37 ☒ P ☐ T	fill/construction area	PSS1 / PEM1 (W-13)	☐ Yes ☒ No	☒ Corps ☐ DWQ	<0.01
Site 38 ☒ P ☐ T	fill/construction area	PSS1 / PEM1 (W-13)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.07
Site 38 ☒ P ☐ T	Mechanized clearing	PSS1 / PEM1 (W-13)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.06

Site 42A ☒ P ☐ T	24" RCP excavation	PF01 (W-25)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.02
Site 43 ☒ P ☐ T	18" RCP	PFO1 (W-11)	☒ Yes ☐ No	☒ Corps ☐ DWQ	0.01
Site 43 ☒ P ☐ T	18" RCP / inlet excavation	PSS1 (W-25)	☐ Yes ☒ No	☒ Corps ☐ DWQ	<0.01
Site 48A ☒ P ☐ T	fill	PEM1 (W-37)	☐ Yes ☒ No	☒ Corps ☐ DWQ	<0.01
Site 51 ☒ P ☐ T	fill for channel relocation	PEM1 (W-38)	☐ Yes ☐ No	☒ Corps ☐ DWQ	0.01
Site 55 ☒ P ☐ T	fill	PFO1 (W-5)	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 56 ☒ P ☐ T	excavation	PSS1 (W-4)	☐ Yes ☒ No	☒ Corps ☐ DWQ	<0.01
Site 57 ☒ P ☐ T	30" RCP & junction box	PEM1 (W-1)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.01
Site 57 ☒ P ☐ T	headwall fill	PEM1 (W-2)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.01
Site 58 ☒ P ☐ T	fill for 30"CSP	PEM1 (W-1)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.01
Site 58 ☒ P ☐ T	30" CSP Excavation, headwall/ditch	PEM1 (W-3)	☐ Yes ☒ No	☒ Corps ☐ DWQ	0.01
Site U10 ☐ P ☒ T	Utility relocation	PEM1 (W-2)	☐ Yes ☒ No	☒ Corps ☐ DWQ	<0.01
				2g. **Total wetland impacts**	0.38 Permanent 0.0 Temporary

2h. Comments:

-"Total" values derived using actual impact values for each site calculated to one ten-thousandth of an acre (x.xxxx), all site impact values summed, and then rounded to the one hundredth of an acre (x.xx).

-There are a total of 0.05 acre of handclearing impacts - Site 6: <0.01 ac., Site 7: <0.01 ac., Site 31: <0.01 ac., Site 34: 0.02 ac., Site 36: <0.01 ac., and Site 37: 0.01 ac.

-UTILITY IMPACTS: There are ten sites (Sites U1 – U10) where utility impacts occur outside of the footprint of project impacts (Sites 1 – 58). Sites U1 - U9 have only hand-clearing wetland impacts, and are therefore not included in the table above. Site 10 has temporary excavation impacts in wetlands and is therefore included in table above. Utility impacts U1 – U10 are depicted on the Utility Impact Permit Drawings and are included in the Utility Wetland Permit Impact Summary Sheet.

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☒ P ☐ T	fill for culvert extention	UT to Laurel Branch (UT-39)	☒ PER ☐ INT	☒ Corps ☐ DWQ	1	16
Site 1 ☒ P ☐ T	Bank stabilization	UT to Laurel Branch (UT-39)	☒ PER ☐ INT	☒ Corps ☐ DWQ	1	10*
Site 4 ☒ P ☐ T	Channel relocation	Laurel Branch	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	20
Site 4 ☒ P ☐ T	Bank stabilization/ stream alignment	Laurel Branch	☒ PER ☐ INT	☒ Corps ☐ DWQ	15	115 (non-mitigable)
Site 8 ☒ P ☐ T	54" CCFRPM	UT to Laurel Branch (UT-33)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	15
Site 8 ☐ P ☒ T	54" CCFRPM	UT to Laurel Branch (UT-33)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	17 (0.01 ac)
Site 9 ☒ P ☐ T	channel relocation	UT to Laurel Branch (UT-32)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	160
Site 10 ☒ P ☐ T	Bank stabilization	UT to Laurel Branch (UT-32)	☒ PER ☐ INT	☐ Corps ☐ DWQ	2	12*
Site 11 ☒ P ☐ T	24" RCP	UT to Laurel Branch (UT-31)	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	49
Site 11 ☒ P ☐ T	Bank stabilization	UT to Laurel Branch (UT-31)	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	11*
Site 11 ☐ P ☒ T	24" RCP	UT to Laurel Branch (UT-31)	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	13 (<0.01 ac)
Site 13 ☒ P ☐ T	30" RCP	UT to Laurel Branch (UT-30)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	6
Site 13 ☒ P ☐ T	Bank stabilization	UT to Laurel Branch (UT-30)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	11*
Site 18 ☒ P ☐ T	42" RCP	UT to Laurel Branch (UT-29)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	29
Site 18 ☒ P ☐ T	Bank stabilization	UT to Laurel Branch (UT-29)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	12*
Site 18 ☐ P ☒ T	Base ditch	UT to Laurel Branch (UT-29)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	42 (0.01 ac)
Site 21 ☒ P ☐ T	Channel relocation	UT to Laurel Branch (UT-28)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	17
Site 21 ☐ P ☒ T	Channel relocation	UT to Laurel Branch (UT-28)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	21 (<0.01 ac)
Site 21 ☒ P ☐ T	Bank stabilization	UT to Laurel Branch (UT-28)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	30*
Site 22 ☒ P ☐ T	24" RCP	UT to Brush Creek (UT-40)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	11
Site 22 ☒ P ☐ T	Bank stabilization	UT to Brush Creek (UT-40)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	11*
Site 23 ☒ P ☐ T	24" RCP	UT to Little Glade Creek (UT-26)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	9
Site 23 ☒ P ☐ T	Channel relocation	UT to Little Glade Creek (UT-26)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	22

Site 23 ☐ P ☒ T	Dewatering	UT to Little Glade Creek (UT-26)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	10 (<0.01 ac)
Site 24 ☒ P ☐ T	Fill / Const. area	UT to Little Glade Creek (UT-25)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	147
Site 25 ☒ P ☐ T	Bank stabilization	UT to Little Glade Creek (UT-25)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	12*
Site 27 ☒ P ☐ T	Bank stabilization	UT to Little Glade Creek (UT-25)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	13*
Site 28 ☒ P ☐ T	36" RCP	UT to Little Glade Creek (UT-21)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	7
Site 28 ☒ P ☐ T	Bank stabilization	UT to Little Glade Creek (UT-21)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	7*
Site 29 ☒ P ☐ T	Bank stabilization	UT to Little Glade Creek (UT-19)	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	8*
Site 30 ☒ P ☐ T	24" RCP	UT to Little Glade Creek (UT-19)	☐ PER ☒ INT	☒ Corps ☐ DWQ	1	15 (non-mitigable)
Site 30 ☐ P ☒ T	24" RCP	UT to Little Glade Creek (UT-19)	☐ PER ☒ INT	☒ Corps ☐ DWQ	1	12 (<0.01 ac)
Site 32 ☒ P ☐ T	fill	UT to Little Glade Creek (UT-36)	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	17
Site 33 ☒ P ☐ T	Endwall / 30" RCP	UT to Little Glade Creek (UT-18)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	92
Site 33 ☐ P ☒ T	Endwall	UT to Little Glade Creek (UT-18)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	14 (<0.01 ac)
Site 34 ☒ P ☐ T	30" RCP	UT to Little Glade Creek (UT-18)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	15
Site 34 ☒ P ☐ T	Bank stabilization	UT to Little Glade Creek (UT-18)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	8*
Site 39 ☐ P ☒ T	24" RCP (retaining wall)	UT to Glade Creek (UT-17)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	19 (<0.01 ac)
Site 39 ☒ P ☐ T	24" RCP	UT to Glade Creek (UT-17)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	72
Site 39 ☒ P ☐ T	Bank stabilization	UT to Glade Creek (UT-17)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	11*
Site 40 ☒ P ☐ T	30" RCP	UT to Glade Creek (UT-16)	☒ PER ☐ INT	☒ Corps ☐ DWQ	1	10
Site 40 ☒ P ☐ T	Bank stabilization	UT to Glade Creek (UT-16)	☒ PER ☐ INT	☒ Corps ☐ DWQ	1	10*
Site 40 ☐ P ☒ T	endwall	UT to Glade Creek (UT-16)	☒ PER ☐ INT	☒ Corps ☐ DWQ	1	12 (<0.01 ac)
Site 41 ☒ P ☐ T	Cut / 30" RCP	UT to Glade Creek (UT-15)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	28
Site 41 ☒ P ☐ T	Bank stabilization	UT to Glade Creek (UT-15)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	20*
Site 42 ☒ P ☐ T	Bank stabilization	UT to Glade Creek (UT-14)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	9*
Site 42 ☒ P ☐ T	30" CCFRPM	UT to Glade Creek (UT-14)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	25
Site 42 ☐ P ☒ T	retaining wall	UT to Glade Creek (UT-14)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	11 (<0.01 ac)
Site 45 ☒ P ☐ T	36" RCP	UT to Glade Creek (UT-13)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	27
Site 45 ☒ P ☐ T	Bank stabilization	UT to Glade Creek (UT-13)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	11*

Site 46 ☒ P ☐ T	30” CCFRPM	UT to Glade Creek (UT-12)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	25
Site 46 ☐ P ☒ T	Earthen ditch / retaining wall	UT to Glade Creek (UT-12)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	12 (<0.01 ac)
Site 46 ☒ P ☐ T	Bank stabilization	UT to Glade Creek (UT-12)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	17*****
Site 46A ☒ P ☐ T	fill	UT to Glade Creek (UT-11)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	4
Site 47 ☒ P ☐ T	42” CCFRPM	UT to Glade Creek (UT-10)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	29
Site 47 ☒ P ☐ T	Bank stabilization	UT to Glade Creek (UT-10)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	12*****
Site 47 ☒ P ☐ T	channel relocation	UT to Glade Creek (UT-10)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	84
Site 48 ☒ P ☐ T	channel relocation	UT to Glade Creek (UT-41)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	80
Site 48 ☒ P ☐ T	Riprap erosion stone (ditch lining)	UT to Glade Creek (UT-41)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	69
Site 49 ☒ P ☐ T	Bank stabilization/ stream alignment	Glade Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	20	59 (non-mitigable)
Site 50 ☒ P ☐ T	channel relocation	UT to Glade Creek (UT-42)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	184
Site 50 ☒ P ☐ T	earthen ditch	UT to Glade Creek (UT-42)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	72
Site 50 ☐ P ☒ T	channel relocation	UT to Glade Creek (UT-42)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	18 (<0.01 ac)
Site 51 ☒ P ☐ T	channel relocation (base ditch)	UT to Glade Creek (UT-7)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	111
Site 52 ☒ P ☐ T	42” RCP	UT to Glade Creek (UT-7)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	19
Site 52 ☐ P ☒ T	endwalls	UT to Glade Creek (UT-7)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	25 (0.01 ac)
Site 53 ☒ P ☐ T	Bank stabilization	UT to Glade Creek (UT-6)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	9*****
Site 54 ☒ P ☐ T	6’ X 7’ RCBC	UT to Glade Creek (UT-5)	☒ PER ☐ INT	☒ Corps ☐ DWQ	5	17
Site 54 ☐ P ☒ T	6’ X 7’ RCBC	UT to Glade Creek (UT-5)	☒ PER ☐ INT	☒ Corps ☐ DWQ	5	21 (0.01 ac)
Site 54 ☒ P ☐ T	Bank stabilization	UT to Glade Creek (UT-5)	☒ PER ☐ INT	☒ Corps ☐ DWQ	5	64*****
Site 55 ☒ P ☐ T	72” RCP	UT to Glade Creek (UT-4)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	28
Site 55 ☐ P ☒ T	endwall	UT to Glade Creek (UT-4)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	10 (<0.01 ac)
Site 56 ☒ P ☐ T	72” RCP	UT to Glade Creek (UT-4)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	31
Site 56 ☒ P ☐ T	channel relocation	UT to Glade Creek (UT-4)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	84
Site 56 ☐ P ☒ T	tying in 3” ditch	UT to Glade Creek (UT-4)	☒ PER ☐ INT	☒ Corps ☐ DWQ	4	27 (0.01 ac)
Site 57 ☒ P ☐ T	30” RCP & junction box	UT to Wolf Branch (UT-3)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2	13

Site 58 ☒ P ☐ T	30" CSP	UT to Wolf Branch (UT-1)	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	11
				3h. **Total stream and tributary impacts**		2152 Perm 284 Temp (0.07 ac)

3i. Comments:
- "Total" acreage value for temporary impacts derived using individual impact values for each site calculated to one ten-thousandth of an acre (x.xxxx), all site impact values summed, and then rounded to the one hundredth of an acre (x.xx).
- 309 LF of the permanent stream impact is due to bank stabilization; not requiring mitigation (impact values include * in Table 3).
- Impacts at Site 30 that were determined by the USACE to not require mitigation.
- Impacts at Site 4 and Site 49 (culvert-to-bridge sites) do not require mitigation, per USACE and DWR.

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
Site 2 ☒ P ☐ T	Pond-2	fill	JD pond	0.11
Site 5 ☐ P ☒ T	Pond-4	fill	JD pond	<0.01
		4f. Total open water impacts		0.11 Permanent <0.01 ac, Temporary

4g. Comments:

5. Pond or Lake Construction

If pond or lake construction proposed, then complete the chart below.

5a. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavated	Flooded	Filled	Excavated	Flooded
P1								
P2								
	5f. Total							

5g. Comments:

5h. Is a dam high hazard permit required?	☐ Yes ☐ No If yes, permit ID no:
5i. Expected pond surface area (acres):	
5j. Size of pond watershed (acres):	
5k. Method of construction:	

6. Buffer Impacts (for DWQ)

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

6a. Project is in which protected basin?			☐ Neuse ☐ Catawba	☐ Tar-Pamlico ☐ Randleman	☐ Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 ☐ P ☐ T			☐ Yes ☐ No		
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
		6h. **Total buffer impacts**			
6i. Comments:					

D. Impact Justification and Mitigation

1. Avoidance and Minimization

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project.

- All storm drainage will be diffused and designed for non-erosive velocities before entering wetland areas to the maximum extent practicable.
- Throughout the project, grass-lined ditches with non-erosive velocities are designed to convey the runoff to the existing drainage structures that are being replaced.
- Stormwater has been discharged as far away from streams as practicable, with no direct discharge of stormwater into stream channels from the bridges.
- In several cases, headwalls were used to minimize impacts to jurisdictional streams.
- Additional measures used to reduce potential erosion impacts include the use of in-channel stream structures, specifically, cross-vanes, as well as targeted bank stabilization at the culverts, the placement of sills in the culverts (as noted on the permit drawings), and the use of rock fill in the pond around –L- Station 55-00 RT.
- Stormwater is being treated to the Maximum Extent Practicable (MEP).
- 2:1 fill slopes are used throughout the project.
- At Laurel Branch and Glade Creek crossings, existing concrete box culverts will be replaced with bridges that will span the streams.
- A retaining wall is being used at –L- Station 183+50 RT to reduce stream impacts.
- Headwalls were used at several sites to reduce impacts to jurisdictional features. The locations are listed on the SMP.
- Retaining walls were used to minimize impacts to Roaring Gap Historical District (Sta 27+90 – 31+00 and Sta 36+95 – 38+25).
- Expressway gutters were used to minimize impacts to the Roaring Gap Historical District (Sta 32+00 – Sta 36+13).
- Shifted the proposed edges of pavement along the project to minimize linear stream impacts (Sta 97+50 – Sta 101+00, Sta 147+00 – 164+00, Sta 231+00 – Sta 240+00, Sta 383+00 – Sta 407+00, and Sta 415+00 – 428+00).

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques.

- *Design Standards in Sensitive Watersheds* will be implemented.
- NCDOT will abide by a Trout Moratorium from October 15th – April 15th on all streams.

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	☒ Yes ☐ No **-Per JD site visit, it was determined that impacts to UT-19 (Site 30) do not require mitigation (15 LF).** **-Bank stabilization impacts (impact values include an * in Table 3) do not require mitigation, as there is no loss of waters.** **-Impacts from the two culvert-to-bridge sites (Site 4 and Site 49) (115 LF and 59 LF, respectively) do not require mitigation, per USACE and DWR, as there is no loss of waters.** **-A CUMULATIVE TOTAL of 498 LF of permanent stream impact do not require mitigation.** **-A TOTAL of 1,654 LF of stream impacts and 0.38 acre of wetland impacts require mitigation.**
2b. If yes, mitigation is required by (check all that apply):	☒ DWQ ☒ Corps
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☒ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

3b. Credits Purchased (attach receipt and letter)	Type	Quantity

3c. Comments:	
4. Complete if Making a Payment to In-lieu Fee Program	
4a. Approval letter from in-lieu fee program is attached.	☒ Yes
4b. Stream impacts for which mitigation requested:	1,654 linear feet
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☒ cold
4d. Buffer mitigation requested (DWQ only):	square feet
4e. Riparian wetland impacts for which mitigation requested:	0.38 acres
4f. Non-riparian wetland mitigation requested:	acres
4g. Coastal (tidal) wetland mitigation requested:	acres
4h. Comments:	
5. Complete if Using a Permittee Responsible Mitigation Plan	
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.	
6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ	
6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?	☐ Yes ☐ No
6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.	

Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
	6f. **Total buffer mitigation required:**			

6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).
6h. Comments:

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☐ Yes ☒ No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments: If required from 1a, see attached buffer permit drawings.	☐ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☒ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No N/A
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☒ Yes ☐ No N/A
5b. Have all of the 401 Unit submittal requirements been met?	☒ Yes ☐ No N/A

F. Supplementary Information		
1. Environmental Documentation (DWQ Requirement)		
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes	☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes	☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	☒ Yes	☐ No
2. Violations (DWQ Requirement)		
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	☐ Yes	☒ No
2b. Is this an after-the-fact permit application?	☐ Yes	☒ No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):		
3. Cumulative Impacts (DWQ Requirement)		
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	☐ Yes ☒ No	
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. This project is for the widening of existing lanes (no new lanes) and the creation of paved roadway shoulders for safety. As such, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.		
4. Sewage Disposal (DWQ Requirement)		
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☐ Yes	☒ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☐ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? NHP, USFWS, NCDOT field surveys. The bog turtle is the only species listed (for similarity of appearance) – it does not require a Biological Conclusion.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)-		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☐ Yes	☒ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☐ Yes	☒ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		

Richard W. Hancock, P.E. Applicant/Agent's Printed Name	E. P. Lusk Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	10.3.13 Date

Ecosystem Enhancement PROGRAM

October 4, 2013

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

Dear Mr. Hancock:

Subject: EEP Mitigation Acceptance Letter:

R-3101, Improvements to US 21 from Roaring Gap to Sparta, Alleghany County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream and riparian wetland mitigation for the subject project. Based on the information supplied by you on October 3, 2013, the impacts are located in CU 05050001 of the New River basin in the Northern Mountains (NM) Eco-Region, and are as follows:

New 05050001 NM	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	1,654.0	0	0.38	0	0	0	0

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

This mitigation acceptance letter replaces the mitigation acceptance letters issued on July 23 and October 3, 2013. This impact and associated mitigation need were under projected by the NCDOT in the 2013 impact data. EEP will commit to implement sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

James B. Stanfill

James B. Stanfill
EEP Asset Management Supervisor

cc: Mr. Andy Williams, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, Division of Water Quality, Wetlands/401 Unit
Ms. Amy Euliss, Division of Water Quality – Winston-Salem Office
File: R-3101 Revised

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ALLEGHANY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–3101	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
37044.1.1	STP – 21(11)	PE
37044.2.1	STP–0021(11)	R/W

Revised Permit Sheet 1 of 93

LOCATION: US 21 FROM SR 1100 (OKLAHOMA RD.) TO SR 1121 (PINE SWAMP RD.)

TYPE OF WORK: GRADING, DRAINAGE, WIDENING, PAVING, RESURFACING AND STRUCTURES

See Sheet 1-A For Index of Sheets

VICINITY MAP
(NO SCALE)

METHOD OF CLEARING: TYPE III

WETLAND AND SURFACE WATER IMPACTS PERMIT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TIP PROJECT: R-3101

CONTRACT:

GRAPHIC SCALES

DESIGN DATA
REGIONAL TIER DESIGN

ADT 2004 = 8300
ADT 2030 = 17000
DHV = 11 %
D = 60 %
T = 10 % *
V = 55 MPH
* TTST 5% DUAL 5%
FUNC CLASS =

PROJECT LENGTH

ROADWAY LENGTH TIP PROJECT R-3101 = 9.656 MI
STRUCTURE LENGTH TIP PROJECT R-3101 = 0.028 MI
TOTAL LENGTH TIP PROJECT R-3101 = 9.684 MI

Prepared In the Office of:
DIVISION OF HIGHWAYS
801 Statesville Road, North Wilkesboro, NC 28659

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 20, 2011

LETTING DATE:
JANUARY 21, 2014

DIVISION ENGINEER
M. A. PETTYJOHN, P.E.

SIGNATURE P.E.

DATE

HYDRAULICS ENGINEER
VAUGHN & MELTON CONSULTANTS

SIGNATURE: P.E.

DIVISION OPERATIONS ENGINEER
W.O. ATKINS, P.E.

SIGNATURE: P.E.

DIVISION PROJECT MANAGER
JOSEPH L. LAWS, PE

09/08/99

$$$$$$SYSTIME$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 48
FOR -Y4- PROFILE SEE SHEET 69
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

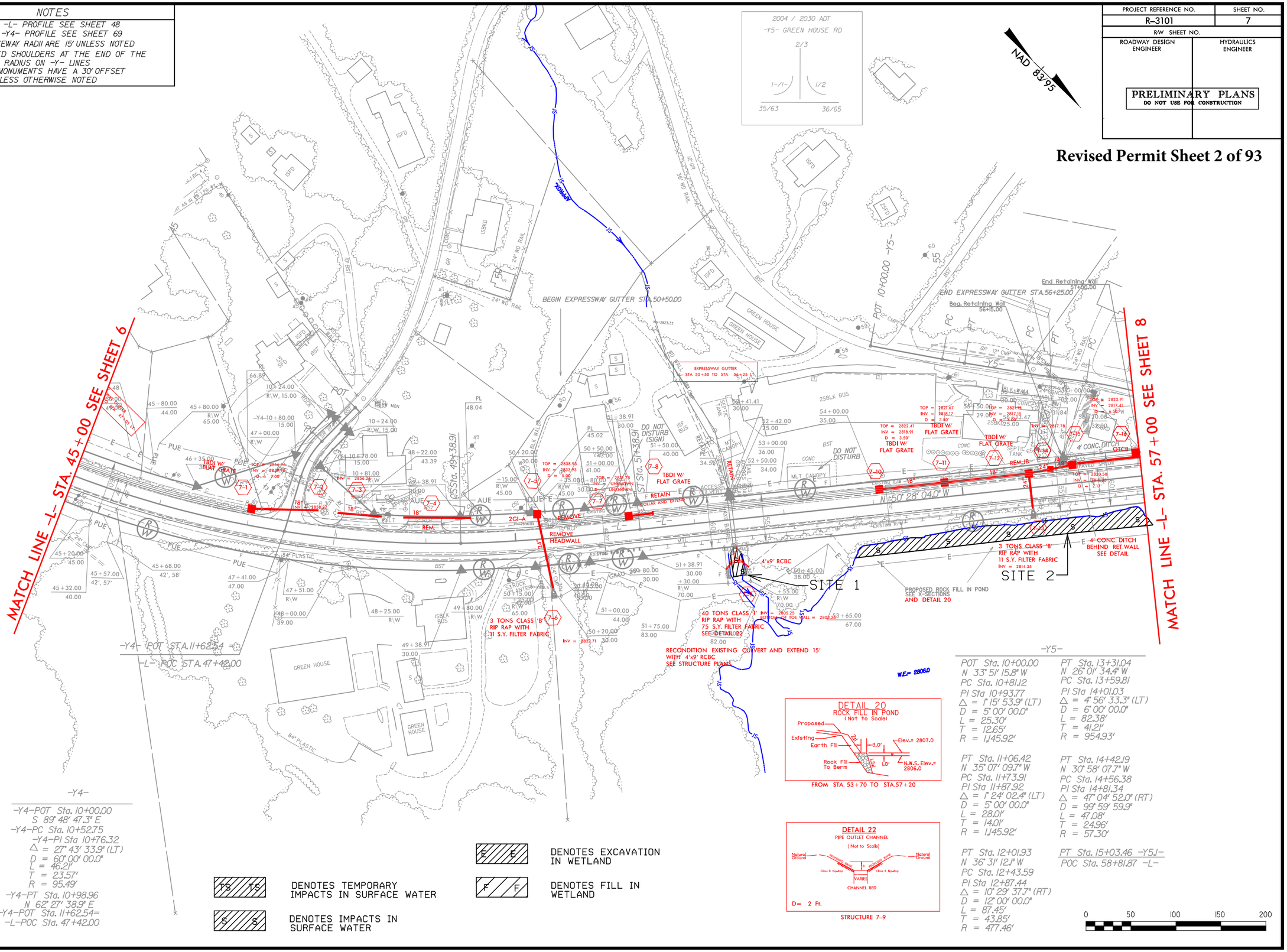
PROJECT REFERENCE NO.	SHEET NO.
R-3101	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 2 of 93

2004 / 2030 ADT
-Y5- GREEN HOUSE RD
2/3
1-/1- 1/2
35/63 36/65

NAD 83/95



DETAIL 20
ROCK FILL IN POND
(Not to Scale)

FROM STA. 53+70 TO STA. 57+20

DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)

STRUCTURE 7-9

-Y4-

-Y4-POT Sta. 10+00.00
S 89° 48' 47.3" E
-Y4-PC Sta. 10+52.75
-Y4-PI Sta 10+76.32
△ = 27° 43' 33.9" (LT)
D = 60° 00' 00.0"
L = 46.21'
T = 23.57'
R = 95.49'
-Y4-PT Sta. 10+98.96
N 62° 27' 38.9" E
-Y4-POT Sta. 11+62.54=
-L-POC Sta. 47+42.00

-Y5-

POT Sta. 10+00.00
N 33° 51' 15.8" W
PC Sta. 10+81.12
PI Sta 10+93.77
△ = 1° 15' 53.9" (LT)
D = 5° 00' 00.0"
L = 25.30'
T = 12.65'
R = 1,145.92'

PT Sta. 11+06.42
N 35° 07' 09.7" W
PC Sta. 11+73.91
PI Sta 11+87.92
△ = 1° 24' 02.4" (LT)
D = 5° 00' 00.0"
L = 28.01'
T = 14.01'
R = 1,145.92'

PT Sta. 12+01.93
N 36° 31' 12.1" W
PC Sta. 12+43.59
PI Sta 12+87.44
△ = 10° 29' 37.7" (RT)
D = 12° 00' 00.0"
L = 87.45'
T = 43.85'
R = 477.46'

PT Sta. 13+31.04
N 26° 01' 34.4" W
PC Sta. 13+59.81
PI Sta 14+01.03
△ = 4° 56' 33.3" (LT)
D = 6° 00' 00.0"
L = 82.38'
T = 41.21'
R = 954.93'

PT Sta. 14+42.19
N 30° 58' 07.7" W
PC Sta. 14+56.38
PI Sta 14+81.34
△ = 47° 04' 52.0" (RT)
D = 99° 59' 59.9"
L = 47.08'
T = 24.96'
R = 57.30'

PT Sta. 15+03.46 -Y5J-
POC Sta. 58+81.87 -L-

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

0 50 100 150 200

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3101	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

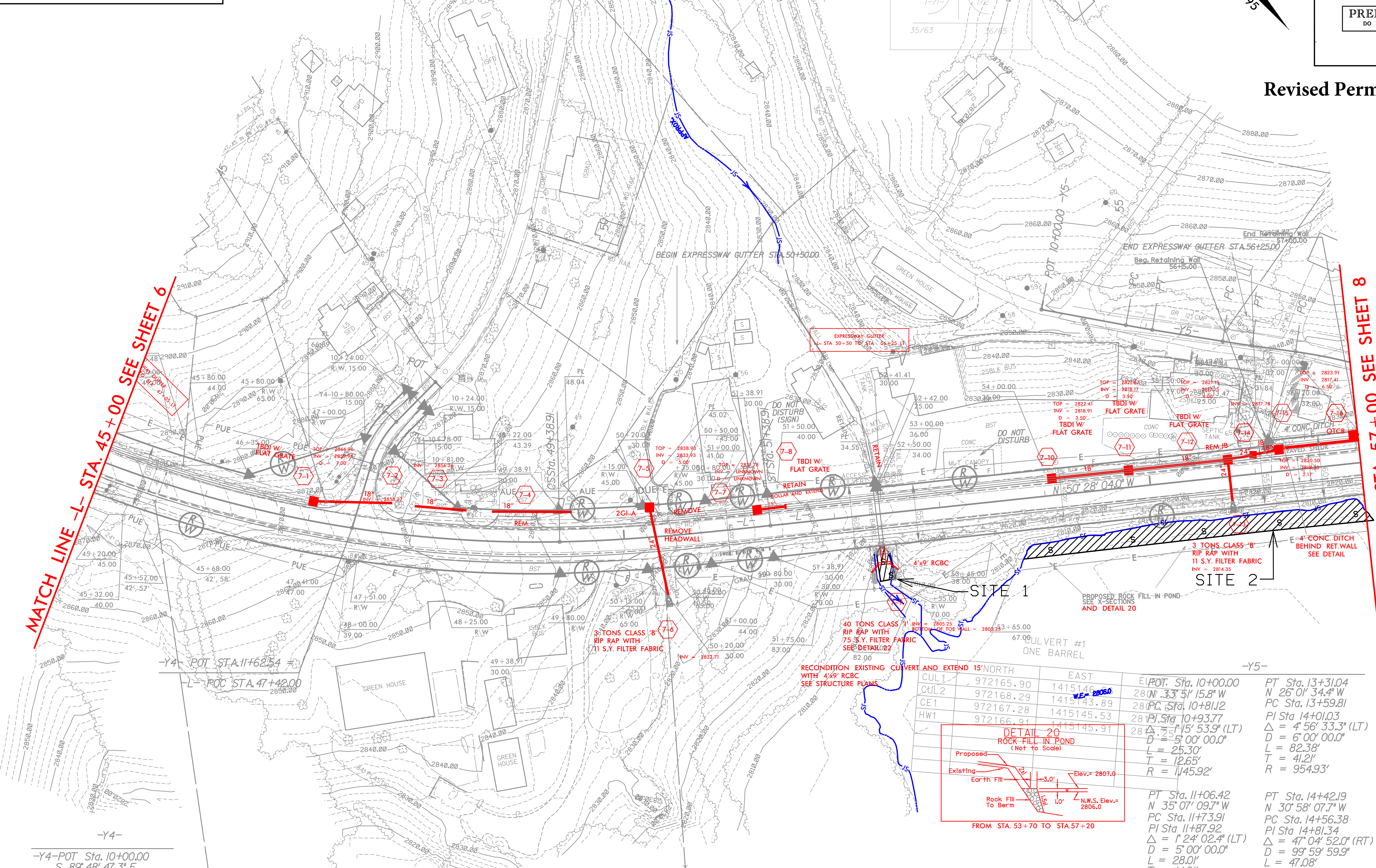
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 3 of 93

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 48
FOR -Y4- PROFILE SEE SHEET 69
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED



	NORTH	EAST
CUL1	972165.90	1415146
CUL2	972168.29	1415143.89
CE1	972167.28	1415145.53
HW1	972166.91	1415145.91

-Y4-

-Y4-POT Sta. 10+00.00
S 89° 48' 47.3" E
-Y4-PC Sta. 10+52.75
-Y4-PI Sta 10+76.32
Δ = 27° 43' 33.9" (LT)
D = 60° 00' 00.0"
L = 46.21'
T = 23.57'
R = 95.49'
-Y4-PT Sta. 10+98.96
N 62° 27' 38.9" E
-Y4-POT Sta. 11+62.54=
-L-POC Sta. 47+42.00

-Y5-

POT Sta. 10+00.00
N 33° 51' 15.8" W
PC Sta. 10+81.12
PI Sta 10+93.77
Δ = 1° 15' 53.9" (LT)
D = 5° 00' 00.0"
L = 25.30'
T = 12.65'
R = 1,145.92'

PT Sta. 11+06.42
N 35° 07' 09.7" W
PC Sta. 11+73.91
PI Sta 11+87.92
Δ = 1° 24' 02.4" (LT)
D = 5° 00' 00.0"
L = 28.01'
T = 14.01'
R = 1,145.92'

PT Sta. 12+01.93
N 36° 31' 12.1" W
PC Sta. 12+43.59
PI Sta 12+87.44
Δ = 10° 29' 37.7" (RT)
D = 12° 00' 00.0"
L = 87.45'
T = 43.85'
R = 477.46'

PT Sta. 13+31.04
N 26° 01' 34.4" W
PC Sta. 13+59.81
PI Sta 14+01.03
Δ = 4° 56' 33.3" (LT)
D = 6° 00' 00.0"
L = 82.38'
T = 41.21'
R = 954.93'

PT Sta. 14+42.19
N 30° 58' 07.7" W
PC Sta. 14+56.38
PI Sta 14+81.34
Δ = 47° 04' 52.0" (RT)
D = 99° 59' 59.9"
L = 47.08'
T = 24.96'
R = 57.30'

PT Sta. 15+03.46 -Y5-
POC Sta. 58+81.87 -L-

TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

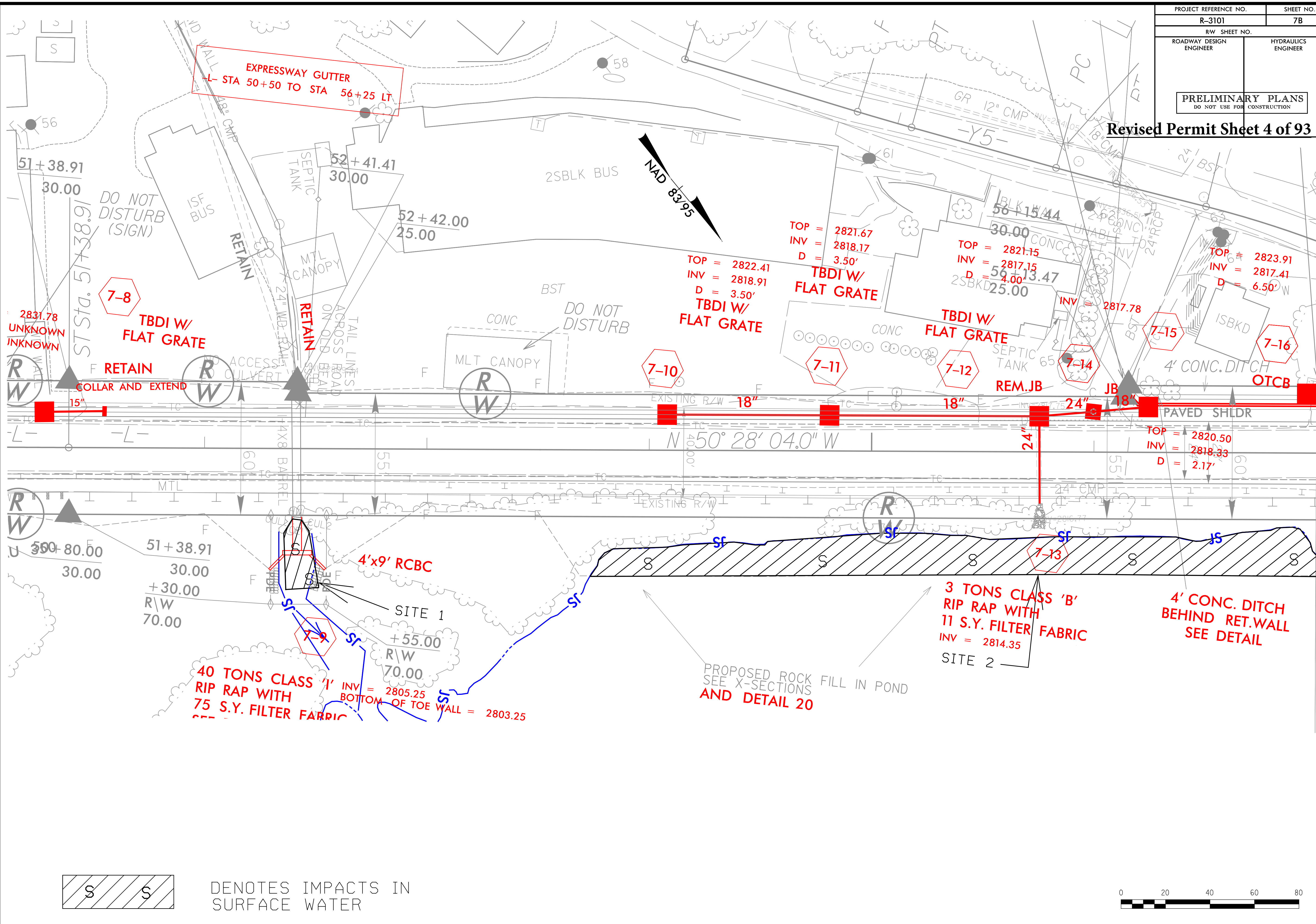
S — DENOTES IMPACTS IN SURFACE WATER

E — DENOTES EXCAVATION IN WETLAND

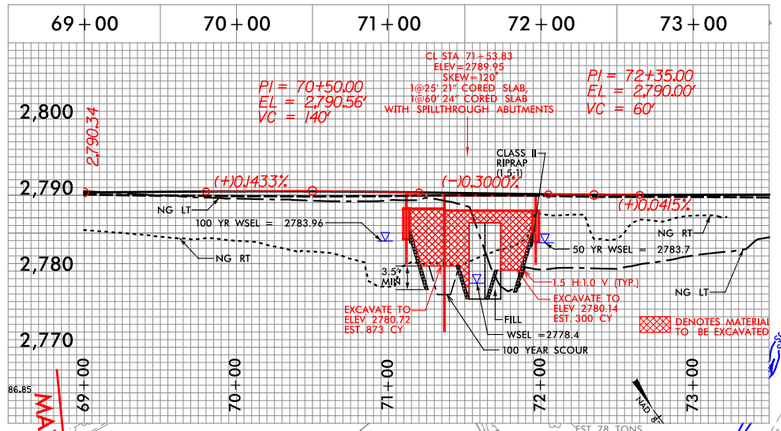
F — DENOTES FILL IN WETLAND

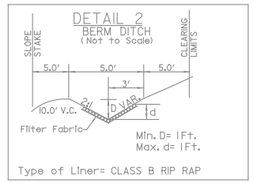
PROJECT REFERENCE NO.	SHEET NO.
R-3101	7B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

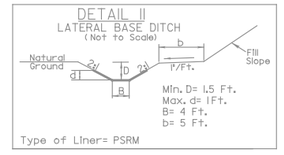
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

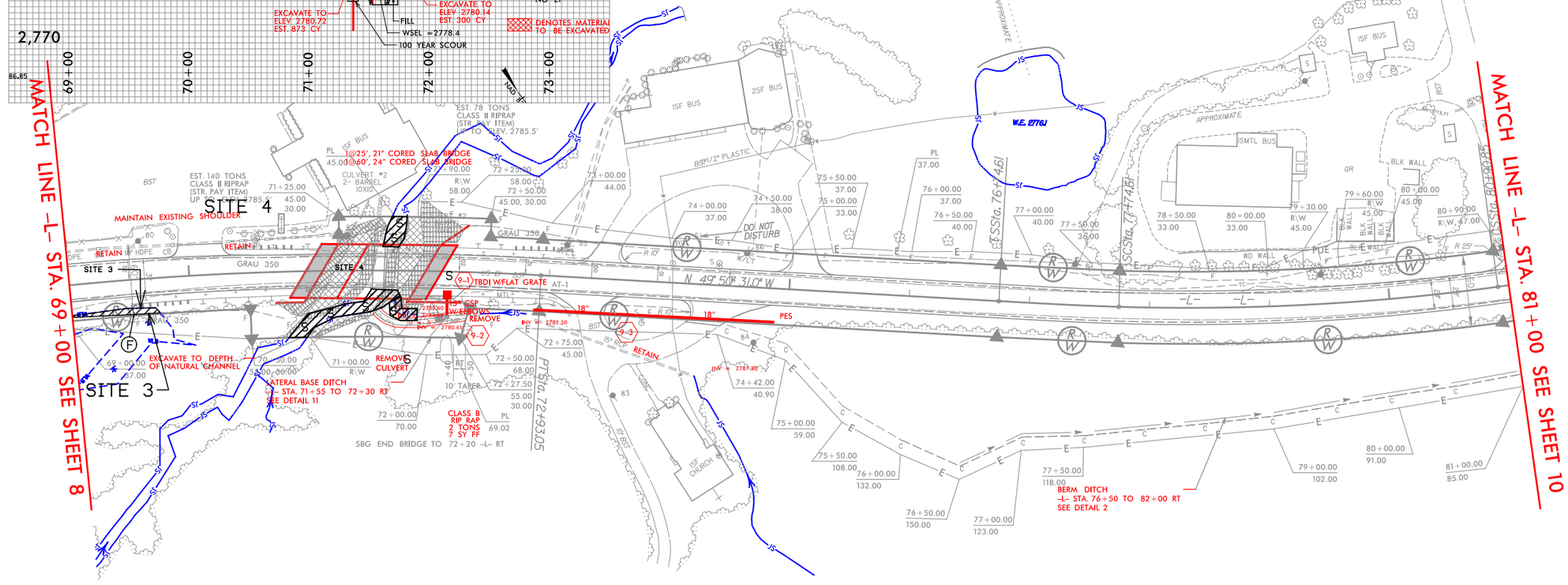


EXPRESSWAY GUTTER
-L- STA 50+50 TO STA 56+25 LT
NAD 83/95
51+38.91
30.00
DO NOT DISTURB (SIGN)
ISF BUS
RETAIN
52+41.41
30.00
52+42.00
25.00
SEPTIC TANK
MTL CANOPY
2SBLK BUS
DO NOT DISTURB
MLT CANOPY
7-8
TBDI W/ FLAT GRATE
2831.78
UNKNOWN
UNKNOWN
RETAIN
COLLAR AND EXTEND
15"
7-10
TOP = 2822.41
INV = 2818.91
D = 3.50'
TBDI W/ FLAT GRATE
7-11
TOP = 2821.67
INV = 2818.17
D = 3.50'
TBDI W/ FLAT GRATE
7-12
TOP = 2821.15
INV = 2817.15
D = 4.00'
TBDI W/ FLAT GRATE
56+15.44
30.00
56+13.47
25.00
INV = 2817.78
7-14
REM.JB
JB
7-15
TOP = 2823.91
INV = 2817.41
D = 6.50'
7-16
ISBKD
4' CONC. DITCH
OTCB
18"
18"
24"
18"
24"
PAVED SHLDR
TOP = 2820.50
INV = 2818.33
D = 2.17'
N 50° 28' 04.0" W
-L-
-Y5-
12" CMP
EXISTING R/W
50+80.00
30.00
51+38.91
30.00
+30.00
R/W
70.00
4'x9' RCBC
SITE 1
+55.00
R/W
70.00
7-9
40 TONS CLASS 'I' RIP RAP WITH 75 S.Y. FILTER FABRIC
INV = 2805.25
BOTTOM OF TOE WALL = 2803.25
PROPOSED ROCK FILL IN POND SEE X-SECTIONS AND DETAIL 20
7-13
3 TONS CLASS 'B' RIP RAP WITH 11 S.Y. FILTER FABRIC
INV = 2814.35
SITE 2
4' CONC. DITCH BEHIND RET.WALL SEE DETAIL
DENOTES IMPACTS IN SURFACE WATER
0 20 40 60 80









PROJECT REFERENCE NO.	SHEET NO.
R–3101	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 5 of 93

E / E	DENOTES EXCAVATION IN WETLAND
F / F	DENOTES FILL IN WETLAND
TS / TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S / S	DENOTES IMPACTS IN SURFACE WATER

CULVERT #2
TWO BARRELS

	NORTH	EAST	ELEV.
CUL1	973241.07	1413542.93	2776.59
CUL2	973234.72	1413550.66	2776.54
CUL3	973233.82	1413551.71	2776.58
CUL4	973227.72	1413558.85	2777.56
CE1	973234.49	1413550.84	2786.71
HW1	973234.30	1413550.64	2788.84
CUL5			
CUL6	973205.38	1413528.30	2776.56
CUL7	973206.65	1413526.89	2776.25
CUL8	973212.79	1413519.43	2776.23
CE2	973205.98	1413527.89	2786.34
HW2	973206.41	1413527.70	2788.00

NOTES

FOR –L– PROFILE SEE SHEET 49
ALL DRIVEWAY RADII ARE 15′ UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON –Y– LINES
ALL R/W MONUMENTS HAVE A 30′ OFFSET UNLESS NOTED OTHERWISE

–L–

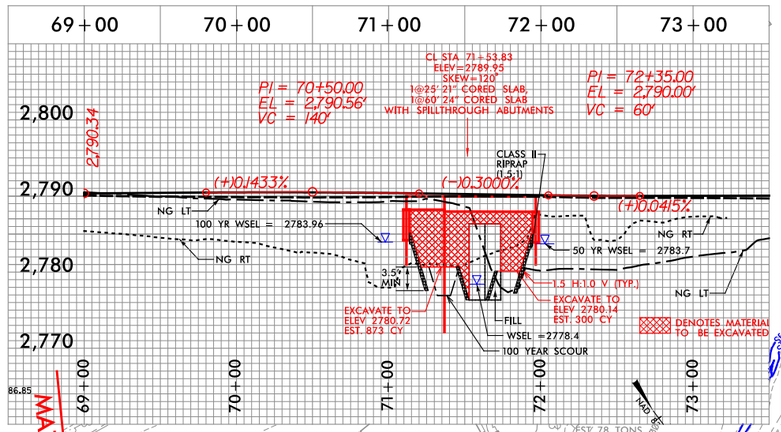
PI Sta 70+66.44
$\triangle$ = 10° 13′ 27.3″ (RT)
D = 2° 15′ 00.0″
L = 454.41′
T = 227.81′
R = 2,546.48′
SE = 0.02
RUNOFF = 59′

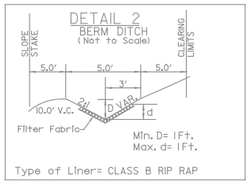
PIs Sta 77+41.28
θs = 1° 30′ 00.0″
Ls = 100.00′
LT = 66.67′
ST = 33.34′

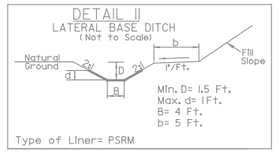
PI Sta 79+33.09
$\triangle$ = 9° 29′ 13.7″ (LT)
D = 3° 00′ 00.0″
L = 316.24′
T = 158.48′
R = 1,909.86′

PIs Sta 81+24.19
θs = 1° 30′ 00.0″
Ls = 100.00′
LT = 66.67′
ST = 33.34′

0 50 100 150 200







8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R–3101	9

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 6 of 93

▨ E	DENOTES EXCAVATION IN WETLAND
▨ F	DENOTES FILL IN WETLAND
▨ TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
▨ S	DENOTES IMPACTS IN SURFACE WATER

CULVERT #2
TWO BARRELS

	NORTH	EAST	ELEV.
CUL1	973241.07	1413542.93	2776.59
CUL2	973234.72	1413550.66	2776.54
CUL3	973233.82	1413551.71	2776.58
CUL4	973227.72	1413558.85	2777.56
CE1	973234.49	1413550.84	2786.71
HW1	973234.30	1413550.64	2788.84
CUL5			
CUL6	973205.38	1413528.30	2776.56
CUL7	973206.65	1413526.89	2776.25
CUL8	973212.79	1413519.43	2776.23
CE2	973205.98	1413527.89	2786.34
HW2	973206.41	1413527.70	2788.00

–L–

PI Sta 70+66.44	PIs Sta 77+41.28	PI Sta 79+33.09	PIs Sta 81+24.19
Δ = 10° 13' 27.3" (RT)	Θs = 1° 30' 00.0"	Δ = 9° 29' 13.7" (LT)	Θs = 1° 30' 00.0"
D = 2° 15' 00.0"	Ls = 100.00'	D = 3° 00' 00.0"	Ls = 100.00'
L = 454.41'	LT = 66.67'	L = 316.24'	LT = 66.67'
T = 227.81'	ST = 33.34'	T = 158.48'	ST = 33.34'
R = 2,546.48'		R = 1,909.86'	
SE = 0.02			
RUNOFF = 59'			

0 50 100 150 200

NOTES

FOR –L– PROFILE SEE SHEET 49
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON –Y– LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R–3101	9B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 7 of 93

NAD 83/95

EST. 140 TONS
CLASS II RIPRAP
(STR. PAY ITEM)
UP TO ELEV. 2785.5'

71+25.00
45.00
30.00

MAINTAIN EXISTING SHOULDER

RETAIN

SITE 3

GRAU 350

F

WLB

EXCAVATE TO DEPTH OF NATURAL CHANNEL

69+00.00
37.00

PL
45.00

1@25', 21" CORED SLAB BRIDGE
1@60', 24" CORED SLAB BRIDGE

CULVERT #2
2- BARREL
10X10

71+90.00
R\W
58.00

SITE 4

A–A

B–B

EST. 70 TONS
CLASS II RIPRAP
(STR. PAY ITEM)
UP TO ELEV. 2785.5'

72+25.00
58.00
72+50.00
45.00, 30.00

GRAU 350

9–1 TBDI W/FLAT GRATE

15" CSP W/ELBOWS REMOVE

TOP = 2789.60
INV = 2784.60
D = 5'
INV = 2780.61

9–2

AT–1

18"

INV = 2782.50

9–3

15" RCP

RETAIN

72+75.00
45.00

72+50.00
68.00

72+27.50
55.00
30.00

10' TAPER

+40 RT +50

PT Sta. 72+93.05

73+00.00
44.00

74+00.00
37.00

R 10'

N 49° 50' 31.0"

INV = 2787.20

74+42.
40.

70+50.00
55.00, 30.00

LATERAL BASE DITCH
–L– STA. 71+55 TO 72+30 RT
SEE DETAIL 11

71+00.00
R\W

REMOVE CULVERT

72+00.00
70.00

CLASS B
RIP RAP
2 TONS
7 SY FF

PL
69.02

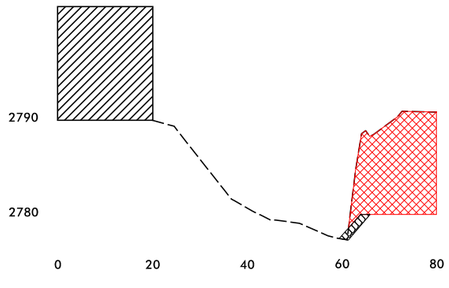
SBG END BRIDGE TO 72+20 –L– RT

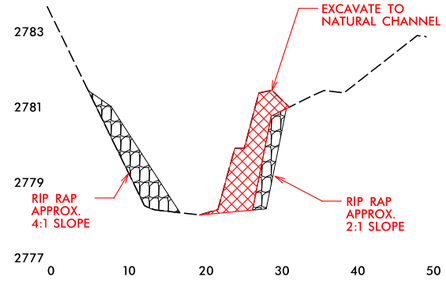
SECTION A–A

SECTION B–B
TYPICAL CHANNEL CHANGE

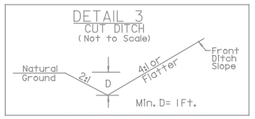
S S DENOTES IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND





$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$FILENAME$$$$



PROJECT REFERENCE NO.	SHEET NO.
R–3101	11

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 8 of 93

NOTES

FOR –L– PROFILE SEE SHEET 50

ALL DRIVEWAY RADII ARE 15' UNLESS NOTED

TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON –Y– LINES

ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

CULVERT #3
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	975258.69	1411532.70	2750.75
CUL2	975262.36	1411529.83	2750.75
CE1	975260.86	1411530.97	2755.74
HW1	975259.92	1411531.05	2757.45
CUL3	975232.72	1411499.95	2750.04
CUL4	975229.77	1411503.02	2750.09
CE2	975231.55	1411501.49	2755.11
HW2	975231.62	1411501.67	2756.78

–L–

PI Sta 98+40.09
Δ = 17° 43' 29.8" (LT)
D = 3° 45' 00.0"
L = 472.67'
T = 238.24'
R = 1,527.89'

▨ TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
▨ S	DENOTES IMPACTS IN SURFACE WATER
▨ E	DENOTES EXCAVATION IN WETLAND
▨ F	DENOTES FILL IN WETLAND

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 50

ALL DRIVEWAY RADII ARE 15' UNLESS NOTED

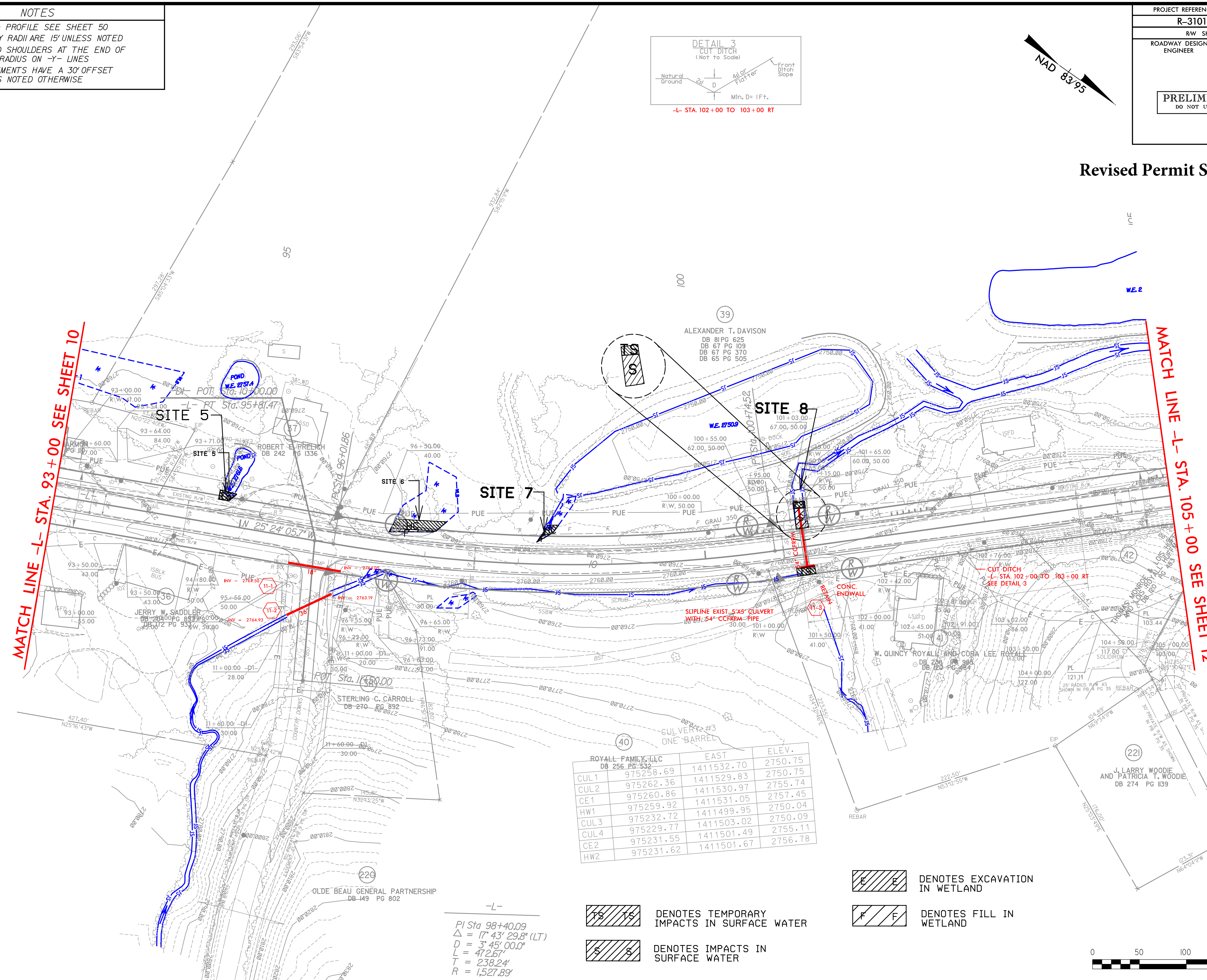
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES

ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 9 of 93



DETAIL 3
CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
4:1 or Flatter
Min. D= 1 Ft.
-L- STA. 102+00 TO 103+00 RT
NAD 83/95
MATCH LINE -L- STA. 93+00 SEE SHEET 10
MATCH LINE -L- STA. 105+00 SEE SHEET 12
SITE 5
SITE 6
SITE 7
SITE 8
ALEXANDER T. DAVISON
DB 81 PG 625
DB 67 PG 109
DB 67 PG 370
DB 65 PG 505
ROBERT E. PRELICH
DB 242 PG 1336
JERRY W. SADDLER
STERLING C. CARROLL
DB 270 PG 892
W. QUINCY ROYALL AND CORA LEE ROYALL
J. LARRY WOODIE AND PATRICIA T. WOODIE
DB 274 PG 1139
OLDE BEAU GENERAL PARTNERSHIP
DB 149 PG 802
CULVERT #3
ONE BARREL
ROYALL FAMILY, LLC
DB 256 PG 532
SLIPLINE EXIST. 5'X5' CULVERT WITH 54" CCFRPM PIPE
CONC. ENDWALL
CUT DITCH
-L- STA. 102+00 TO 103+00 RT
SEE DETAIL 3
POT Sta. 11+60.00
-L-
PI Sta 98+40.09
Δ = 17° 43' 29.8" (LT)
D = 3° 45' 00.0"
L = 472.67'
T = 238.24'
R = 1,527.89'

	NORTH	EAST	ELEV.
CUL1	975258.69	1411532.70	2750.75
CUL2	975262.36	1411529.83	2750.75
CE1	975260.86	1411530.97	2755.74
HW1	975259.92	1411531.05	2757.45
CUL3	975232.72	1411499.95	2750.04
CUL4	975229.77	1411503.02	2750.09
CE2	975231.55	1411501.49	2755.11
HW2	975231.62	1411501.67	2756.78

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S DENOTES IMPACTS IN SURFACE WATER

E DENOTES EXCAVATION IN WETLAND

F DENOTES FILL IN WETLAND

0 50 100 150 200

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	11C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 10 of 93

DB 81 PG 625
DB 67 PG 109
DB 67 PG 370
DB 65 PG 505

NAD 83/95

SITE 8

PI Sta. 100+74.52

W.E. 2750.9

101+03.00
67.00, 50.00

100+55.00
62.00, 50.00

100+00.00
R\W, 50.00

+95.00
R\W
50.00

+15.00
R\W
50.00
65.00

+15.00
R\W
50.00

101+65.00
60.00, 50.00

WD DOCK

SOIL

ISFD

PUE

GRAU 350

SCRUB

BST

REBAR

EXISTING R/W

46.00

102+76.00
R\W

CUT DITCH
–L– STA. 102+00 TO 103+00 RT
SEE DETAIL 3

54" CCFRPM

CONC. ENDWALL

RETAIN

11–3

SLIPLINE EXIST. 5'X5' CULVERT
WITH 54" CCFRPM PIPE

102+42.00
R\W

102+81.00
75.00

102+00.00
41.00

102+45.00
51.00

102+91.00
90.00

103+02.00
86.00

103+50.00
113.00

101+00.00
R\W
30.00

101+50.00
41.00

1.5SFD

5SBW

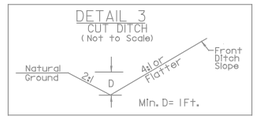
W. QUINCY ROYALL AND CORA LEE ROYALL
DB 238 PG 985
DB 120 PG 484

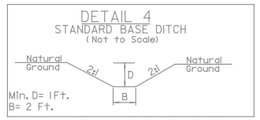
194.43'
N11°01'10"E

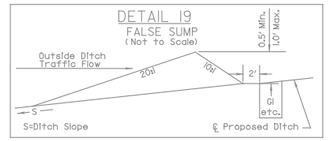
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

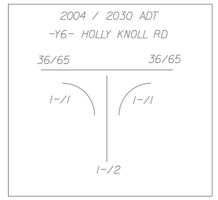
S S DENOTES IMPACTS IN SURFACE WATER

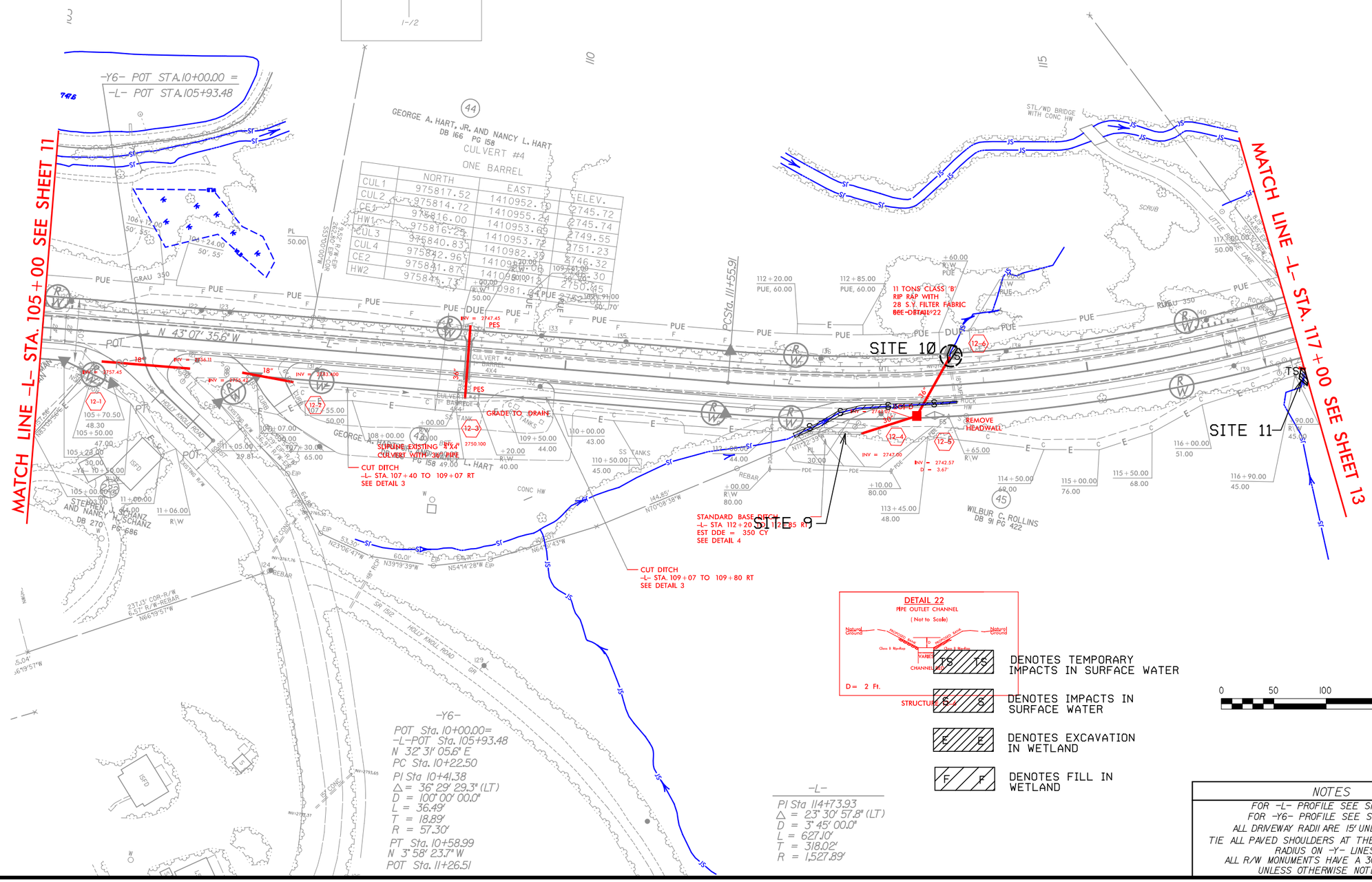
0 20 40 60 80











PROJECT REFERENCE NO.	SHEET NO.
R–3101	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 11 of 93

	NORTH	EAST	ELEV.
CUL1	975817.52	1410952.10	2745.72
CUL2	975814.72	1410955.24	2745.74
CE1	975816.00	1410953.69	2749.55
HW1	975816.25	1410953.72	2751.23
CUL3	975840.83	1410982.35	2746.32
CUL4	975842.96	1410980.06	2746.30
CE2	975841.87	1410981.12	2750.45
HW2	975841.73	1410981.04	2752.06

DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)
Natural Ground
PROPOSED BANK
Class B Rip-Rap
D
VARIES
CHANNEL BED
D = 2 Ft.
STRUCTURE 12-6

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

-Y6-
POT Sta. 10+00.00=
-L-POT Sta. 105+93.48
N 32° 31' 05.6" E
PC Sta. 10+22.50
PI Sta 10+41.38
Δ = 36° 29' 29.3" (LT)
D = 100° 00' 00.0"
L = 36.49'
T = 18.89'
R = 57.30'
PT Sta. 10+58.99
N 3° 58' 23.7" W
POT Sta. 11+26.51

-L-
PI Sta 114+73.93
Δ = 23° 30' 57.8" (LT)
D = 3° 45' 00.0"
L = 627.10'
T = 318.02'
R = 1,527.89'

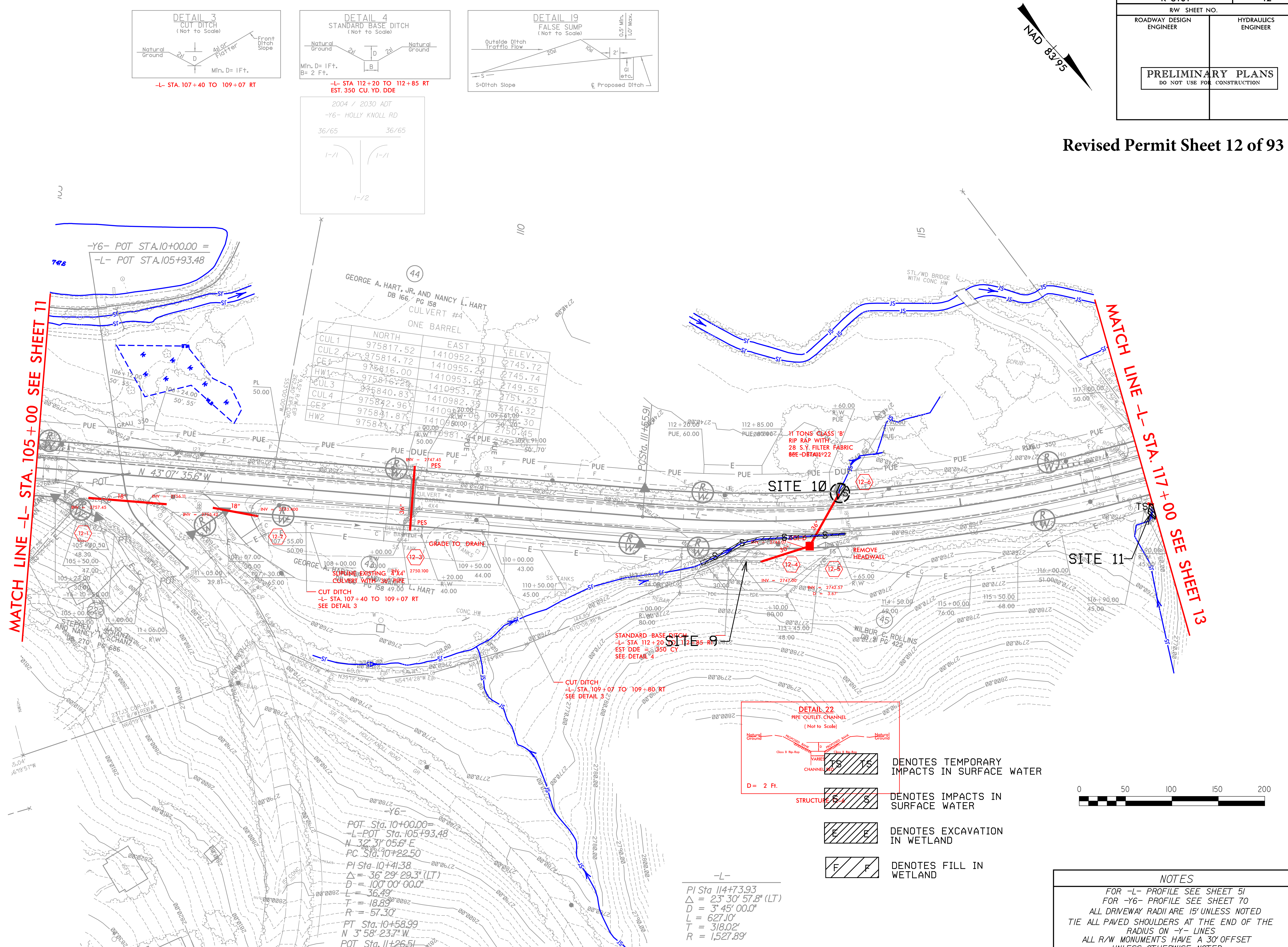
NOTES
FOR -L- PROFILE SEE SHEET 51
FOR -Y6- PROFILE SEE SHEET 70
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 12 of 93



DETAIL 3
CUT DITCH
(Not to Scale)
-L- STA. 107+40 TO 109+07 RT
DETAIL 4
STANDARD BASE DITCH
(Not to Scale)
-L- STA. 112+20 TO 112+85 RT
EST. 350 CU. YD. DDE
DETAIL 19
FALSE SUMP
(Not to Scale)
2004 / 2030 ADT
-Y6- HOLLY KNOLL RD
NAD 83/95
-Y6- POT STA.10+00.00 =
-L- POT STA.105+93.48
GEORGE A. HART, JR. AND NANCY L. HART
DB 166 / PG 158
CULVERT #4
ONE BARREL
MATCH LINE -L- STA. 105+00 SEE SHEET 11
MATCH LINE -L- STA. 117+00 SEE SHEET 13
N 43° 07' 35.6" W
SITE 9
SITE 10
SITE 11
11 TONS CLASS 'B' RIP RAP WITH 28 S.Y. FILTER FABRIC SEE DETAIL 22
REMOVE HEADWALL
GRADE TO DRAIN
SLIPLINE EXISTING 4'X4' CULVERT WITH 36" PIPE
CUT DITCH
-L- STA. 107+40 TO 109+07 RT
SEE DETAIL 3
STANDARD BASE DITCH
-L- STA 112+20 TO 112+85 RT
EST DDE = 350 CY
SEE DETAIL 4
CUT DITCH
-L- STA. 109+07 TO 109+80 RT
SEE DETAIL 3
WILBUR C. ROLLINS
DB 421 PG 422
STEPHEN AND NANCY M. SCHANZ
DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)
D= 2 Ft.
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
-Y6-
POT Sta. 10+00.00=
-L-POT Sta. 105+93.48
N 32° 31' 05.6" E
PC Sta. 10+22.50
PI Sta 10+41.38
Δ = 36° 29' 29.3" (LT)
D = 100° 00' 00.0"
L = 36.49'
T = 18.89'
R = 57.30'
PT Sta. 10+58.99
N 3° 58' 23.7" W
POT Sta. 11+26.51
-L-
PI Sta 114+73.93
Δ = 23° 30' 57.8" (LT)
D = 3° 45' 00.0"
L = 627.10'
T = 318.02'
R = 1,527.89'
0 50 100 150 200

NOTES

FOR -L- PROFILE SEE SHEET 51
FOR -Y6- PROFILE SEE SHEET 70
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

PROJECT REFERENCE NO.	SHEET NO.
R-3101	12B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 13 of 93

▨ DENOTES IMPACTS IN SURFACE WATER

0 20 40 60 80

8/17/99

NOTES

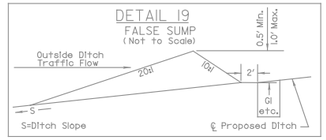
FOR -L- PROFILE SEE SHEET 5I
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)

D = 2 Ft.

STRUCTURE 13-3

DETAIL 19
FALSE SUMP
(Not to Scale)



NAD 83/95

PROJECT REFERENCE NO.	SHEET NO.
R-3101	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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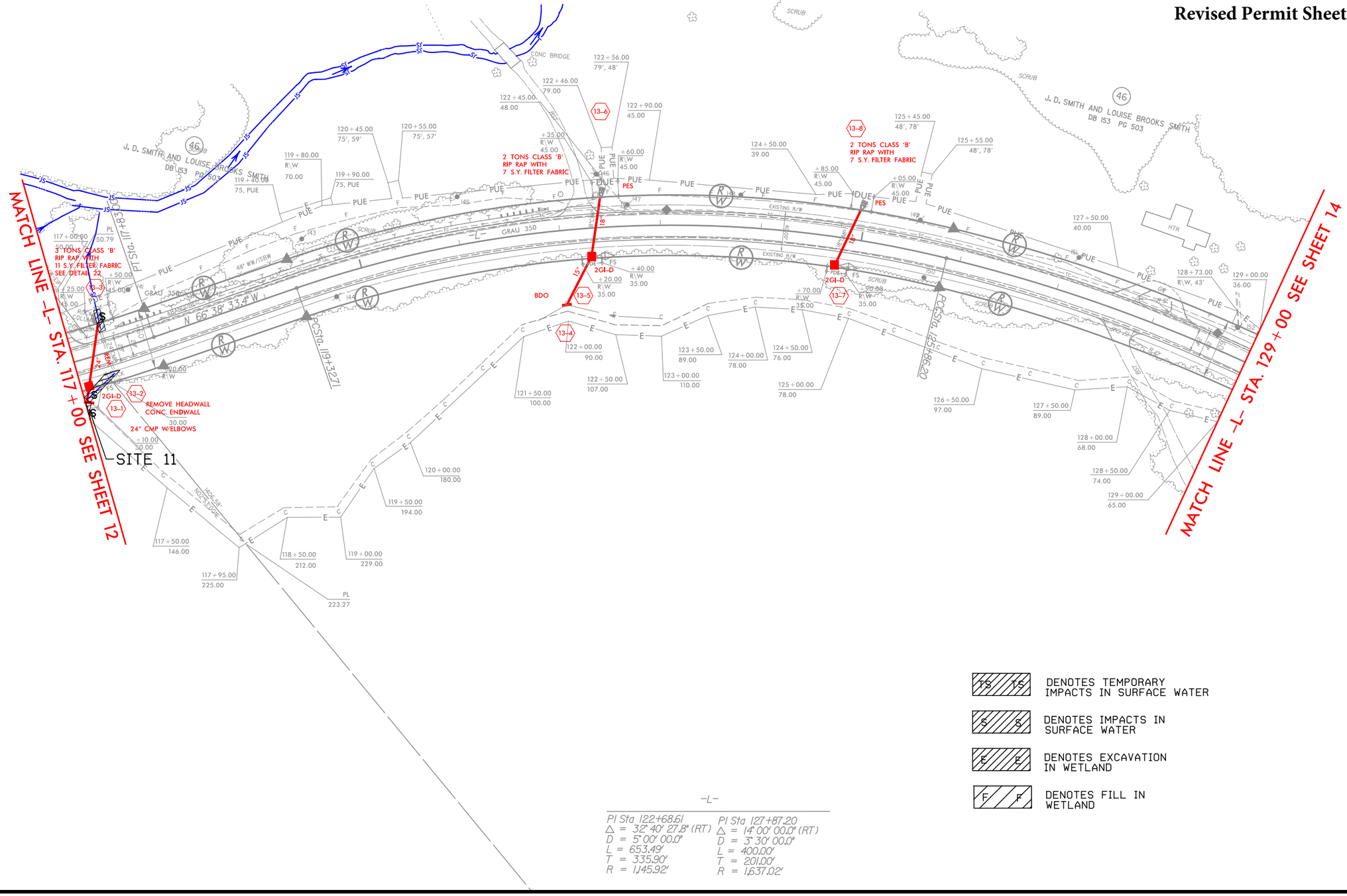


-L-

PI Sta 122+68.61
△ = 32° 40' 27.8" (RT)
D = 5° 00' 00.0"
L = 653.49'
T = 335.90'
R = 1,145.92'

PI Sta 127+87.20
△ = 14° 00' 00.0" (RT)
D = 3° 30' 00.0"
L = 400.00'
T = 201.00'
R = 1,637.02'

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

$$$$$$SYSTIME$$$$$
$$$$$$USERNAME$$$$$
$$$$$$DGN$$$$$$$$$$

8/17/99

NOTES

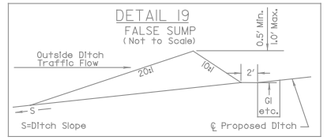
FOR -L- PROFILE SEE SHEET 5I
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)

D = 2 Ft.

STRUCTURE 13-3

DETAIL 19
FALSE SUMP
(Not to Scale)

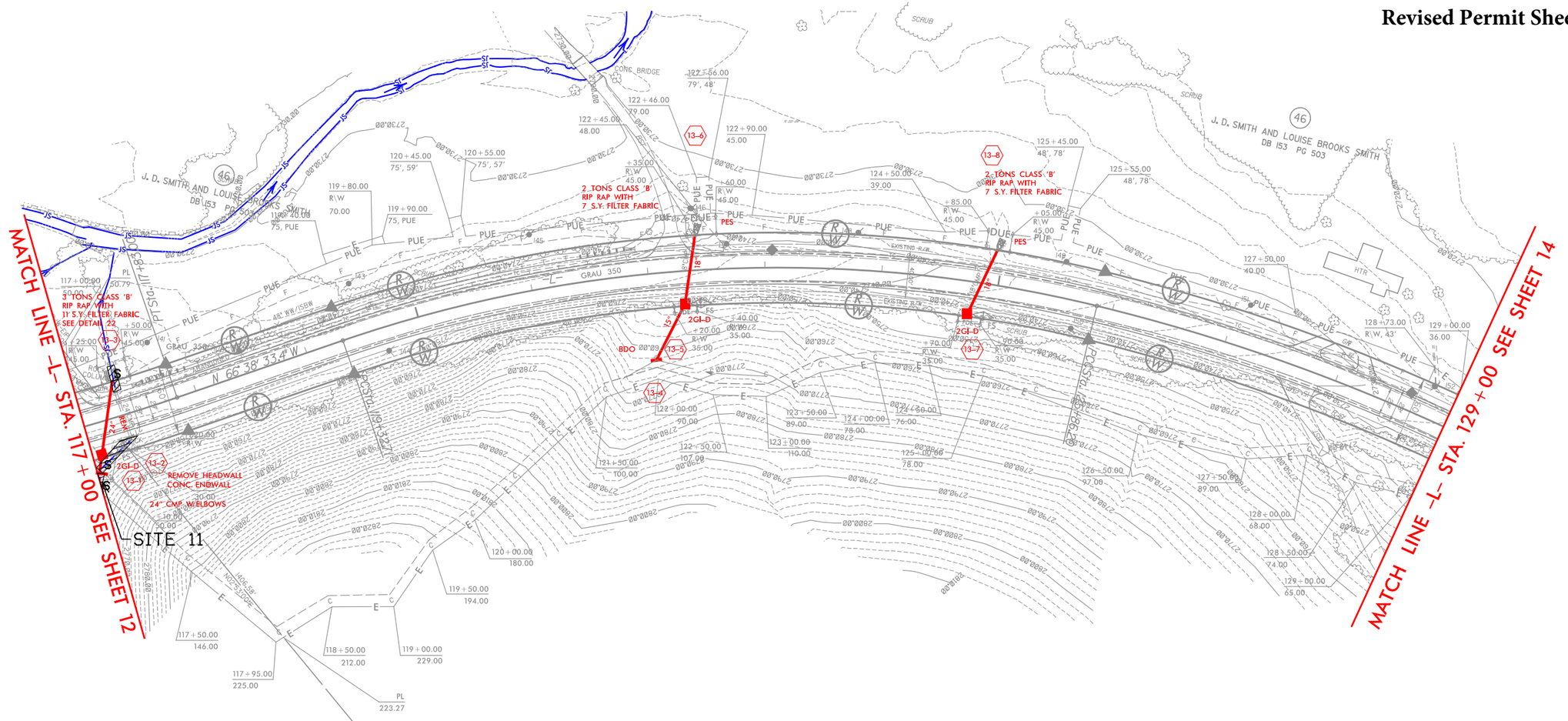


NAD 83/95

PROJECT REFERENCE NO.	SHEET NO.
R-3101	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 15 of 93



TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

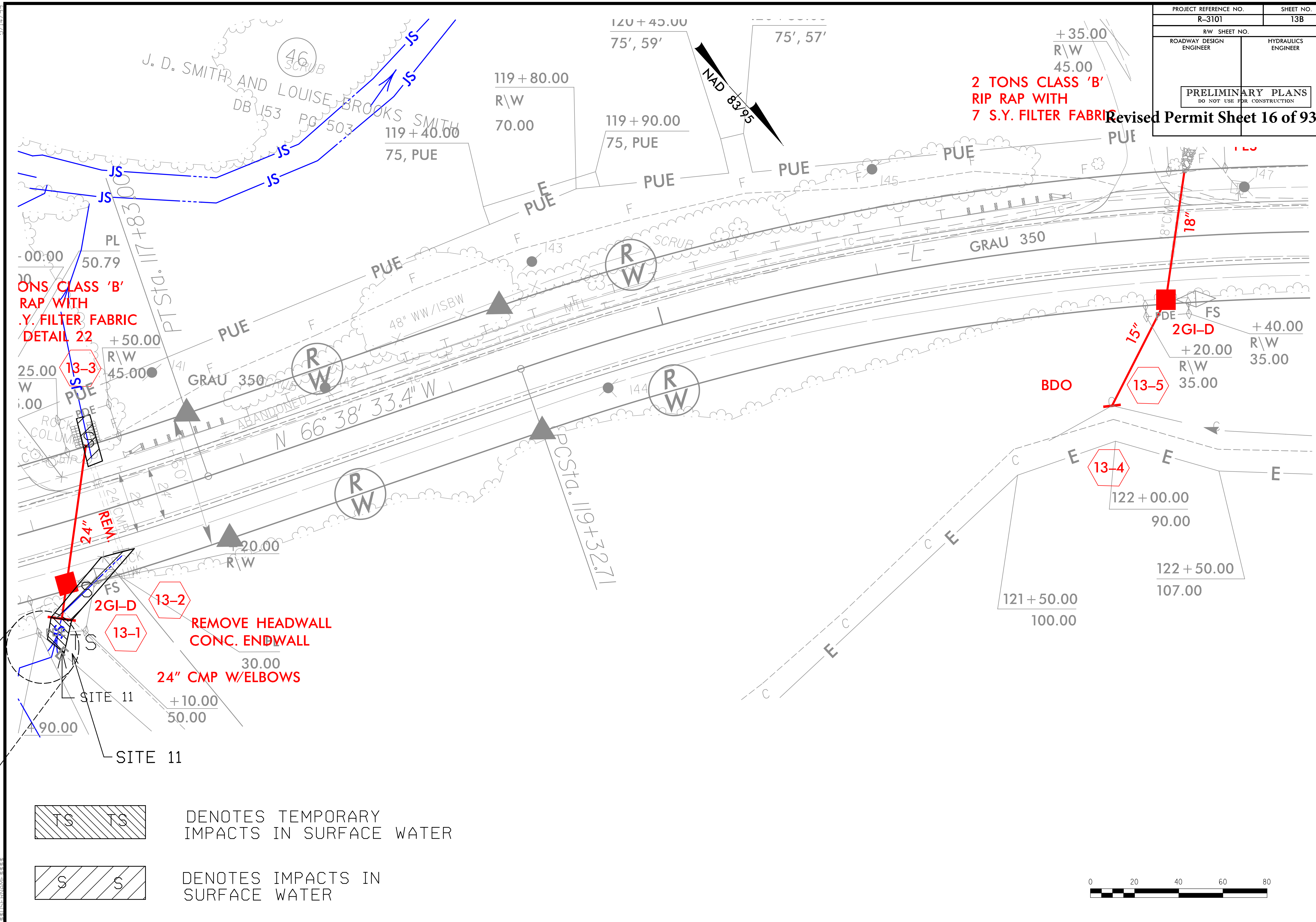
F F DENOTES FILL IN WETLAND

$$$$$$$$SYSTIME$$$$$
$$$$$$$$USERNAME$$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3101	13B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 16 of 93



8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R–3101	14

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 17 of 93

✱✱	DENOTES MECHANIZED CLEARING IN WETLAND
HC	DENOTES HAND CLEARING IN WETLAND
TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S	DENOTES IMPACTS IN SURFACE WATER
E	DENOTES EXCAVATION IN WETLAND
F	DENOTES FILL IN WETLAND

NOTES
FOR –L– PROFILE SEE SHEET 52
FOR –Y7– & –Y8– PROFILES SEE SHEET 70
ALL DRIVEWAY RADII ARE 15′ UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON –Y– LINES
ALL R/W MONUMENTS HAVE A 30′ OFFSET UNLESS OTHERWISE NOTED

–Y7–
–Y7–POT Sta. 10+00.00=
–L–POC Sta. 138+39.69
N 70° 27′ 37.4" E
PC Sta. 12+00.58
PI Sta 13+64.17
Δ = 7° 21′ 04.4" (LT)
D = 2° 15′ 00.0"
L = 326.72′
T = 163.59′
R = 2,546.48′
PT Sta. 15+27.30

–Y8–
–Y8–PC Sta. 10+00.00
PI Sta 11+82.34
Δ = 16° 18′ 00.1" (LT)
D = 4° 30′ 00.0"
L = 362.22′
T = 182.34′
R = 1,273.24′
–Y8–PT Sta. 13+62.22
N 70° 54′ 54.7" E
–Y8–POT Sta. 15+24.41=
–L–POC Sta. 138+43.13

–L–
PI Sta 133+58.91
Δ = 20° 47′ 57.5" (RT)
D = 5° 45′ 00.0"
L = 361.73′
T = 182.88′
R = 996.45′

PI Sta 138+86.19
Δ = 27° 22′ 22.8" (LT)
D = 7° 30′ 00.0"
L = 364.97′
T = 186.04′
R = 763.94′

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	14

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 18 of 93

▦ DENOTES MECHANIZED CLEARING IN WETLAND

▨ HC DENOTES HAND CLEARING IN WETLAND

▨ TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

▨ S DENOTES IMPACTS IN SURFACE WATER

▨ E DENOTES EXCAVATION IN WETLAND

▨ F DENOTES FILL IN WETLAND

0 50 100 150 200

-Y7-
-Y7-POT Sta. 10+00.00=
-L-POC Sta. 138+39.69
N 70° 27' 37.4" E
PC Sta. 12+00.58
PI Sta 13+64.17
△ = 7° 21' 04.4" (LT)
D = 2° 15' 00.0"
L = 326.72'
T = 163.59'
R = 2,546.48'
PT Sta. 15+27.30

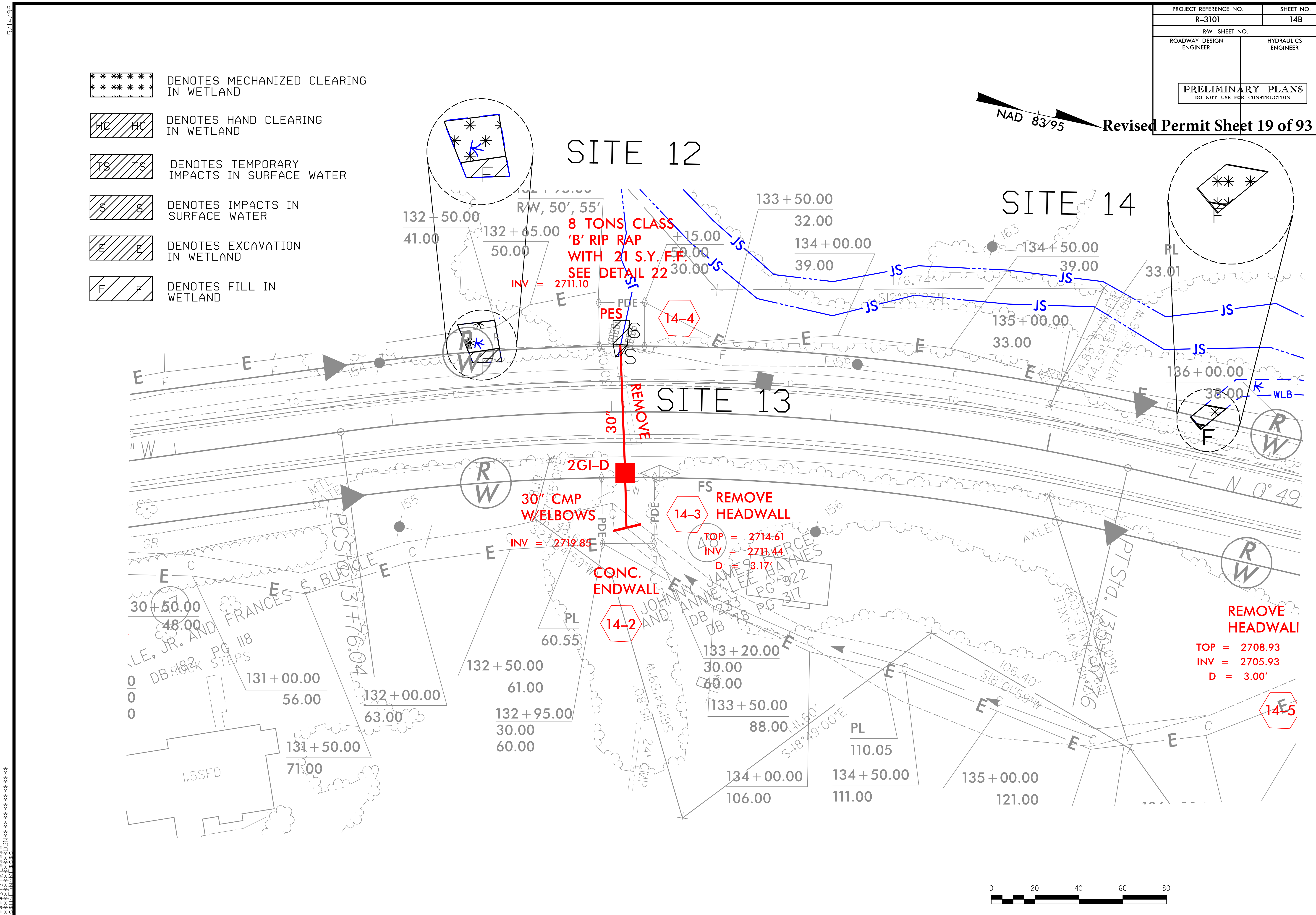
-Y8-
-Y8-PC Sta. 10+00.00
PI Sta 11+82.34
△ = 16° 18' 00.1" (LT)
D = 4° 30' 00.0"
L = 362.22'
T = 182.34'
R = 1,273.24'
-Y8-PT Sta. 13+62.22
N 70° 54' 54.7" E
-Y8-POT Sta. 15+24.41=
-L-POC Sta. 138+43.13

-L-
PI Sta 133+58.91
△ = 20° 47' 57.5" (RT)
D = 5° 45' 00.0"
L = 361.73'
T = 182.88'
R = 996.45'

PI Sta 138+86.19
△ = 27° 22' 22.8" (LT)
D = 7° 30' 00.0"
L = 364.97'
T = 186.04'
R = 763.94'

NOTES
FOR -L- PROFILE SEE SHEET 52
FOR -Y7- & -Y8- PROFILES SEE SHEET 70
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

$$$$SYSTIME$$$$ $$$$DGN$$$$ $$$$USERNAME$$$$


PROJECT REFERENCE NO. R-3101
SHEET NO. 14B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Revised Permit Sheet 19 of 93
NAD 83/95
DENOTES MECHANIZED CLEARING IN WETLAND
DENOTES HAND CLEARING IN WETLAND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
SITE 12
SITE 13
SITE 14
8 TONS CLASS 'B' RIP RAP WITH 21 S.Y. F.F.
SEE DETAIL 22
INV = 2711.10
PES
14-4
REMOVE
30"
2GI-D
30" CMP W/ELBOWS
INV = 2719.85
CONC. ENDWALL
14-2
14-3
REMOVE HEADWALL
TOP = 2714.61
INV = 2711.44
D = 3.17'
REMOVE HEADWALL
TOP = 2708.93
INV = 2705.93
D = 3.00'
14-5
JS
WLB
0 20 40 60 80

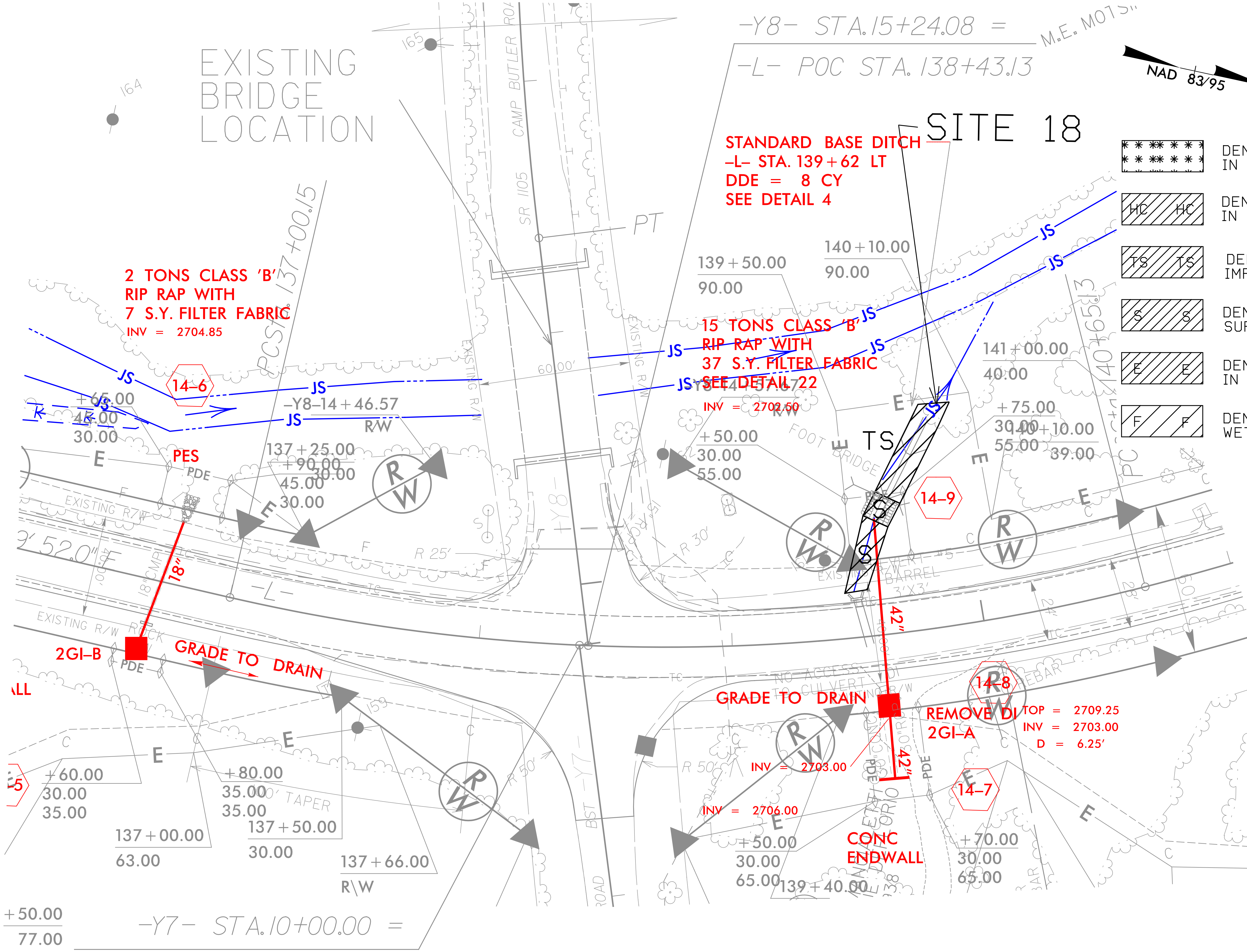
PROJECT REFERENCE NO.	SHEET NO.
R-3101	14C

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 20 of 93



EXISTING BRIDGE LOCATION
-Y8- STA.15+24.08 =
-L- POC STA. 138+43.13
M.E. MOTS
NAD 83/95
SITE 18
STANDARD BASE DITCH
-L- STA. 139+62 LT
DDE = 8 CY
SEE DETAIL 4
2 TONS CLASS 'B'
RIP RAP WITH
7 S.Y. FILTER FABRIC
INV = 2704.85
15 TONS CLASS 'B'
RIP RAP WITH
37 S.Y. FILTER FABRIC
SEE DETAIL 22
INV = 2702.50
-Y8-14+46.57
14-6
14-9
14-8
14-7
PES
PDE
TS
2GI-B
GRADE TO DRAIN
GRADE TO DRAIN
REMOVE DI
2GI-A
TOP = 2709.25
INV = 2703.00
D = 6.25'
INV = 2703.00
INV = 2706.00
CONC ENDWALL
18"
42"
42"
CAMP BUTLER ROAD
SR 1105
EXISTING R/W
-L-
-Y7- STA.10+00.00 =
139+50.00
90.00
140+10.00
90.00
141+00.00
40.00
+75.00
30.00
55.00
140+10.00
39.00
+65.00
45.00
30.00
137+25.00
+90.00
30.00
45.00
30.00
+50.00
30.00
55.00
+60.00
30.00
35.00
+80.00
35.00
35.00
137+00.00
63.00
137+50.00
30.00
137+66.00
R/W
+50.00
77.00
+50.00
30.00
65.00
139+40.00
+70.00
30.00
65.00

DENOTES MECHANIZED CLEARING IN WETLAND

DENOTES HAND CLEARING IN WETLAND

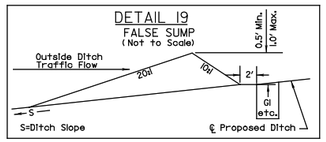
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

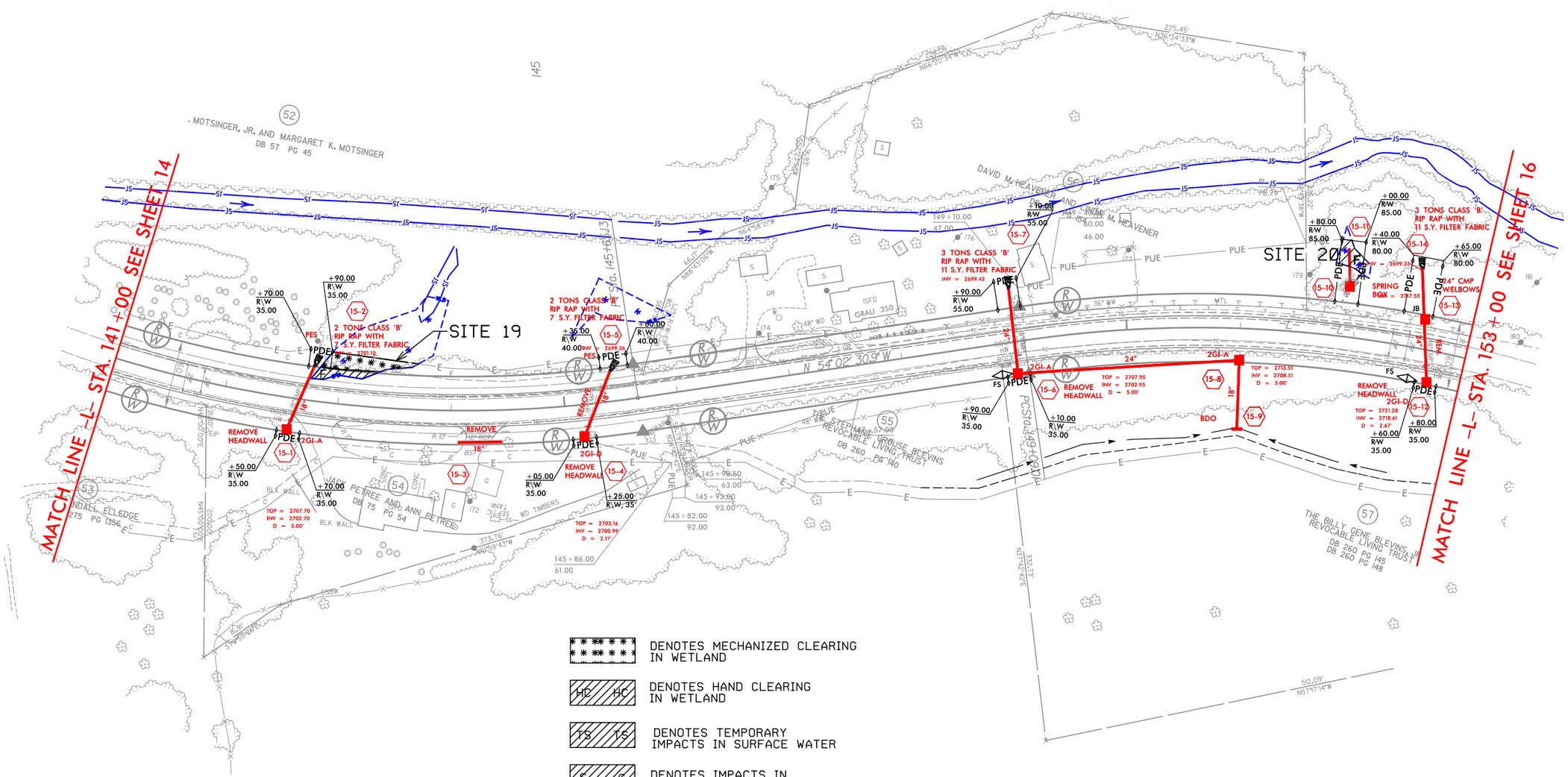
DENOTES IMPACTS IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

0 20 40 60 80





8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	15
R/W SHEET NO.	

PERMIT DRAWING

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▦ DENOTES MECHANIZED CLEARING IN WETLAND

HC DENOTES HAND CLEARING IN WETLAND

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S DENOTES IMPACTS IN SURFACE WATER

E DENOTES EXCAVATION IN WETLAND

F DENOTES FILL IN WETLAND

-L-

PI Sta 143+20.04	PI Sta 152+73.49
Δ = 27° 30' 00.0" (LT)	Δ = 38° 34' 01.7" (RT)
D = 5° 30' 00.0"	D = 5° 30' 00.0"
L = 500.00'	L = 701.22'
T = 254.91'	T = 364.48'
R = 1,041.74'	R = 1,041.74'

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	15
R/W SHEET NO.	

PERMIT DRAWING

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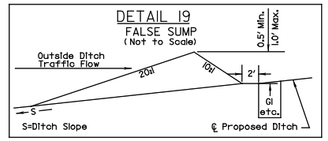
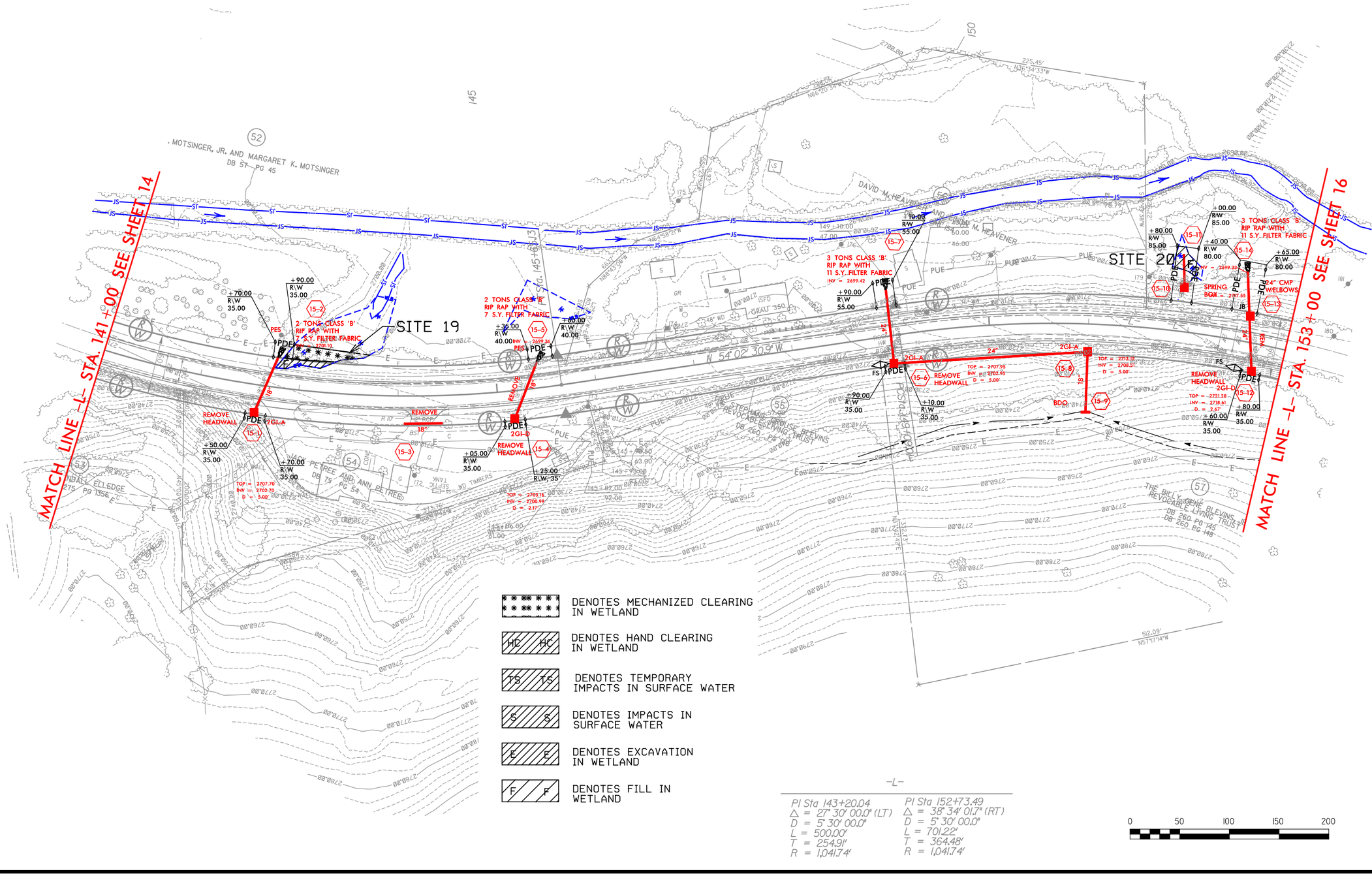
NAD 83/95

DETAIL 19
FALSE SUMP
(Not to Scale)





DENOTES MECHANIZED CLEARING IN WETLAND

HC HC DENOTES HAND CLEARING IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

-L-

PI Sta 143+20.04
Δ = 27° 30' 00.0" (LT)
D = 5° 30' 00.0"
L = 500.00'
T = 254.91'
R = 1,041.74'

PI Sta 152+73.49
Δ = 38° 34' 01.7" (RT)
D = 5° 30' 00.0"
L = 701.22'
T = 364.48'
R = 1,041.74'

0 50 100 150 200

$$$$$$$SYSTIME$$$$$
$$$$$$$USERNAME$$$$$
$$$$$$$DGN$$$$$$$$$$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	15B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 23 of 93

✱	DENOTES MECHANIZED CLEARING IN WETLAND
HC	DENOTES HAND CLEARING IN WETLAND
TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S	DENOTES IMPACTS IN SURFACE WATER
E	DENOTES EXCAVATION IN WETLAND
F	DENOTES FILL IN WETLAND

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	18

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 24 of 93

NOTES

FOR -L- PROFILE SEE SHEET 54
FOR -Y9- & -Y10- PROFILES SEE SHEET 70
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

-Y9-

-Y9-POT Sta. 10+00.00
N 22° 41' 21.7" W
-Y9-PC Sta. 10+74.92
PI Sta 11+35.56
Δ = 64° 50' 10.4" (RT)
D = 60° 00' 00.0"
L = 108.06'
T = 60.64'
R = 95.49'
-Y9-PT Sta. 11+82.98
N 42° 08' 48.7" E
-Y9-PC Sta. 11+92.09
PI Sta 12+16.82
Δ = 19° 35' 23.8" (RT)
D = 40° 00' 00.0"
L = 48.97'
T = 24.73'
R = 143.24'
-Y9-PT Sta. 12+41.06
N 61° 44' 12.4" E
-Y9-POT Sta. 12+67.5=
-L-POC Sta. 182+93.02

TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S	DENOTES IMPACTS IN SURFACE WATER
E E	DENOTES EXCAVATION IN WETLAND
F F	DENOTES FILL IN WETLAND

-L-

PI Sta 178+35.30	PIs Sta 181+98.34	PI Sta 188+50.39
Δ = 24° 04' 03.0" (LT)	θ_s = 4° 00' 00.0"	Δ = 9° 19' 37.3" (LT)
D = 4° 00' 00.0"	Ls = 200.00'	D = 2° 00' 00.0"
L = 601.69'	LT = 133.37'	L = 466.35'
T = 305.35'	ST = 66.70'	T = 233.69'
R = 1,432.39'		R = 2,864.79'

-Y10-

-Y10-POT Sta. 10+00.00=
-L-POC Sta. 182+95.24
N 72° 07' 15.3" E
-Y10-PC Sta. 10+34.73
PI Sta 10+95.41
Δ = 36° 21' 15.5" (RT)
D = 31° 00' 00.0"
L = 117.27'
T = 60.69'
R = 184.83'
-10-PT Sta. 11+52.00
S 71° 31' 29.2" E
-Y10-POT Sta. 12+03.83

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3101	18

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 25 of 93

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 54
FOR -Y9- & -Y10- PROFILES SEE SHEET 70
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

-Y9-

-Y9-POT Sta. 10+00.00
N 22° 41' 21.7" W
-Y9-PC Sta. 10+74.92
PI Sta 11+35.56
Δ = 64° 50' 10.4" (RT)
D = 60° 00' 00.0"
L = 108.06'
T = 60.64'
R = 95.49'
-Y9-PT Sta. 11+82.98
N 42° 08' 48.7" E
-Y9-PC Sta. 11+92.09
PI Sta 12+16.82
Δ = 19° 35' 23.8" (RT)
D = 40° 00' 00.0"
L = 48.97'
T = 24.73'
R = 143.24'
-Y9-PT Sta. 12+41.06
N 61° 44' 12.4" E
-Y9-POT Sta. 12+67.5=
-L-POC Sta. 182+93.02

TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S	DENOTES IMPACTS IN SURFACE WATER
E E	DENOTES EXCAVATION IN WETLAND
F F	DENOTES FILL IN WETLAND

-L-

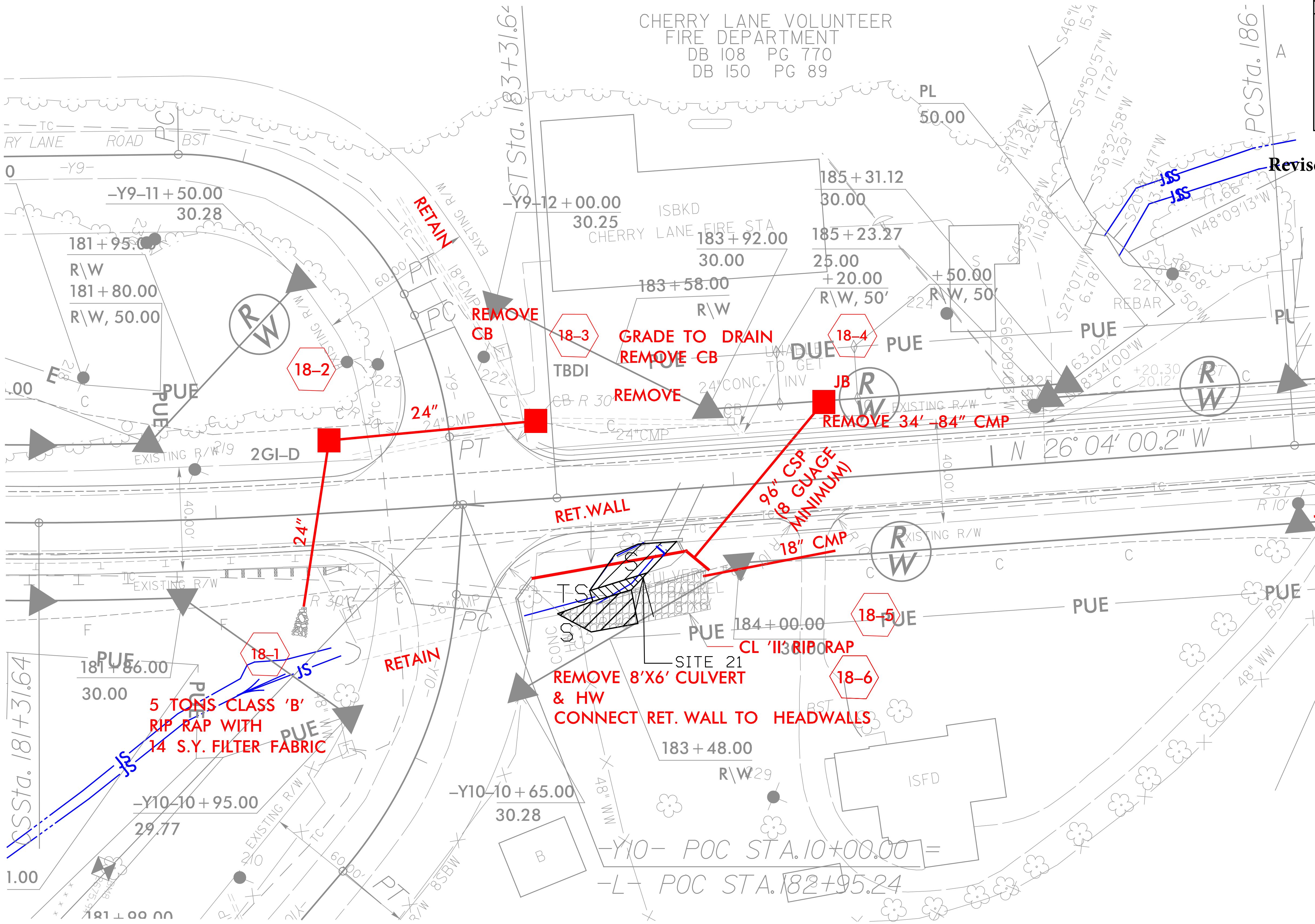
PI Sta 178+35.30	PIs Sta 181+98.34	PI Sta 188+50.39
Δ = 24° 04' 03.0" (LT)	Θs = 4° 00' 00.0"	Δ = 9° 19' 37.3" (LT)
D = 4° 00' 00.0"	Ls = 200.00'	D = 2° 00' 00.0"
L = 601.69'	LT = 133.37'	L = 466.35'
T = 305.35'	ST = 66.70'	T = 233.69'
R = 1,432.39'		R = 2,864.79'

-Y10-

-Y10-POT Sta. 10+00.00=
-L-POC Sta. 182+95.24
N 72° 07' 15.3" E
-Y10-PC Sta. 10+34.73
PI Sta 10+95.41
Δ = 36° 21' 15.5" (RT)
D = 31° 00' 00.0"
L = 117.27'
T = 60.69'
R = 184.83'
-10-PT Sta. 11+52.00
S 71° 31' 29.2" E
-Y10-POT Sta. 12+03.83

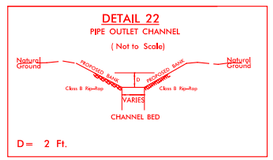
PROJECT REFERENCE NO.	SHEET NO.
R-3101	18B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

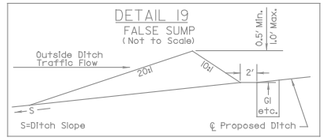
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

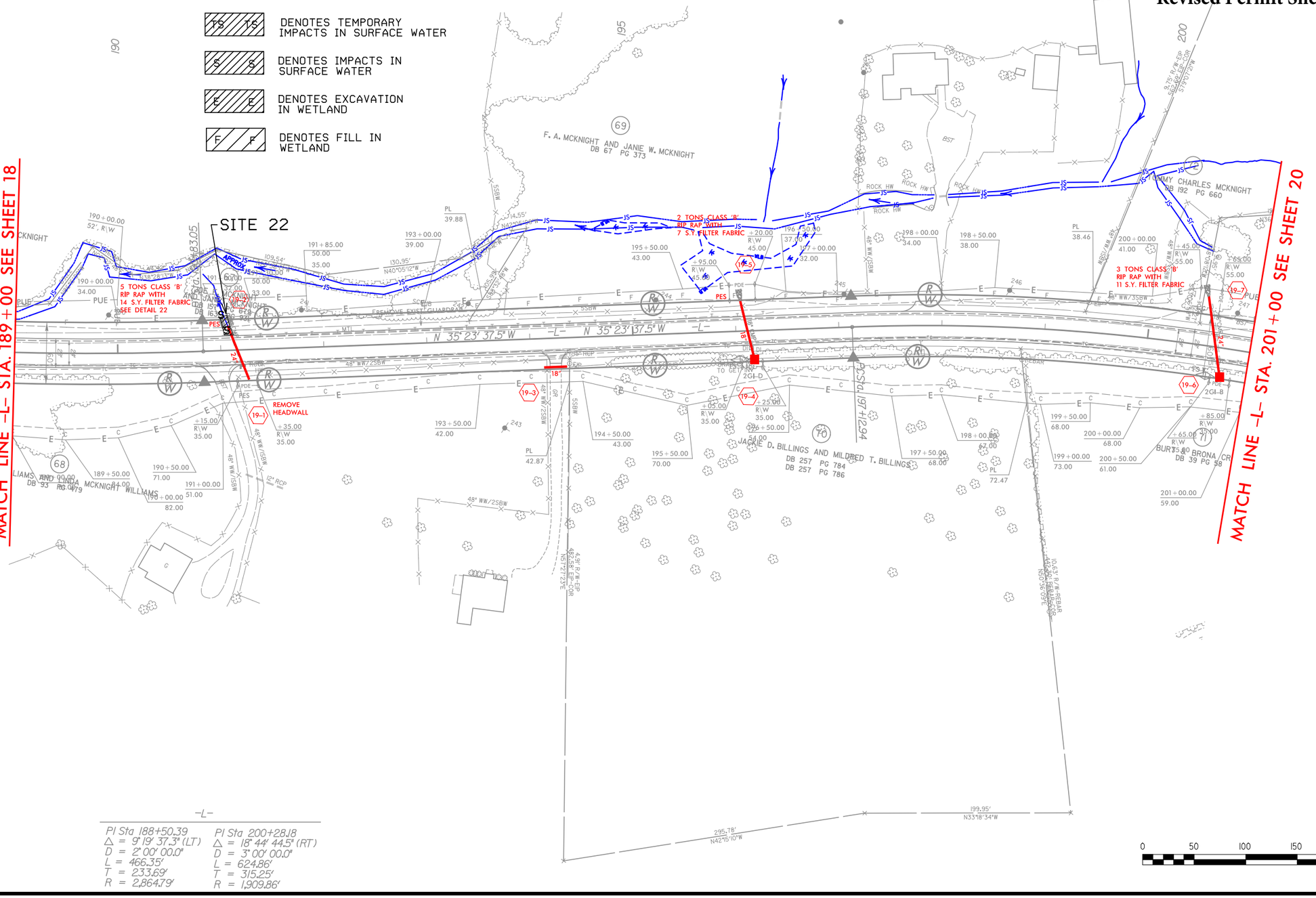

CHERRY LANE VOLUNTEER
FIRE DEPARTMENT
DB 108 PG 770
DB 150 PG 89
REMOVE CB
GRADE TO DRAIN
REMOVE CB
REMOVE
JB
REMOVE 34' -84" CMP
96" CSP (8 GUAGE MINIMUM)
18" CMP
RET. WALL
RETAIN
24"
SITE 21
CL 'II' RIP RAP
REMOVE 8'X6' CULVERT
& HW
CONNECT RET. WALL TO HEADWALLS
5 TONS CLASS 'B'
RIP RAP WITH
14 S.Y. FILTER FABRIC
18-1
18-2
18-3
18-4
18-5
18-6
N 26° 04' 00.2" W
-Y10- POC STA.10+00.00 =
-L- POC STA.182+95.24
NAD 83/95
ISFD
TBDI

TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S	DENOTES IMPACTS IN SURFACE WATER

0 20 40 60 80







8/17/99

NOTES
FOR -L- PROFILE SEE SHEET 54
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 27 of 93

STRUCTURE 19-2

▨ TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

▨ S DENOTES IMPACTS IN SURFACE WATER

▨ E DENOTES EXCAVATION IN WETLAND

▨ F DENOTES FILL IN WETLAND

-L-	
PI Sta 188+50.39	PI Sta 200+28.18
Δ = 9°19'37.3" (LT)	Δ = 18°44'44.5" (RT)
D = 2°00'00.0"	D = 3°00'00.0"
L = 466.35'	L = 624.86'
T = 233.69'	T = 315.25'
R = 2,864.79'	R = 1,909.86'

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 54
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

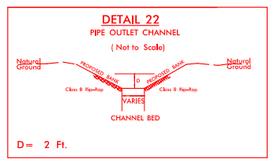
PROJECT REFERENCE NO.	SHEET NO.
R-3101	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 28 of 93

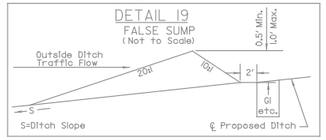
NAD 83/95

DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)



STRUCTURE 19-2

DETAIL 19
FALSE SUMP
(Not to Scale)

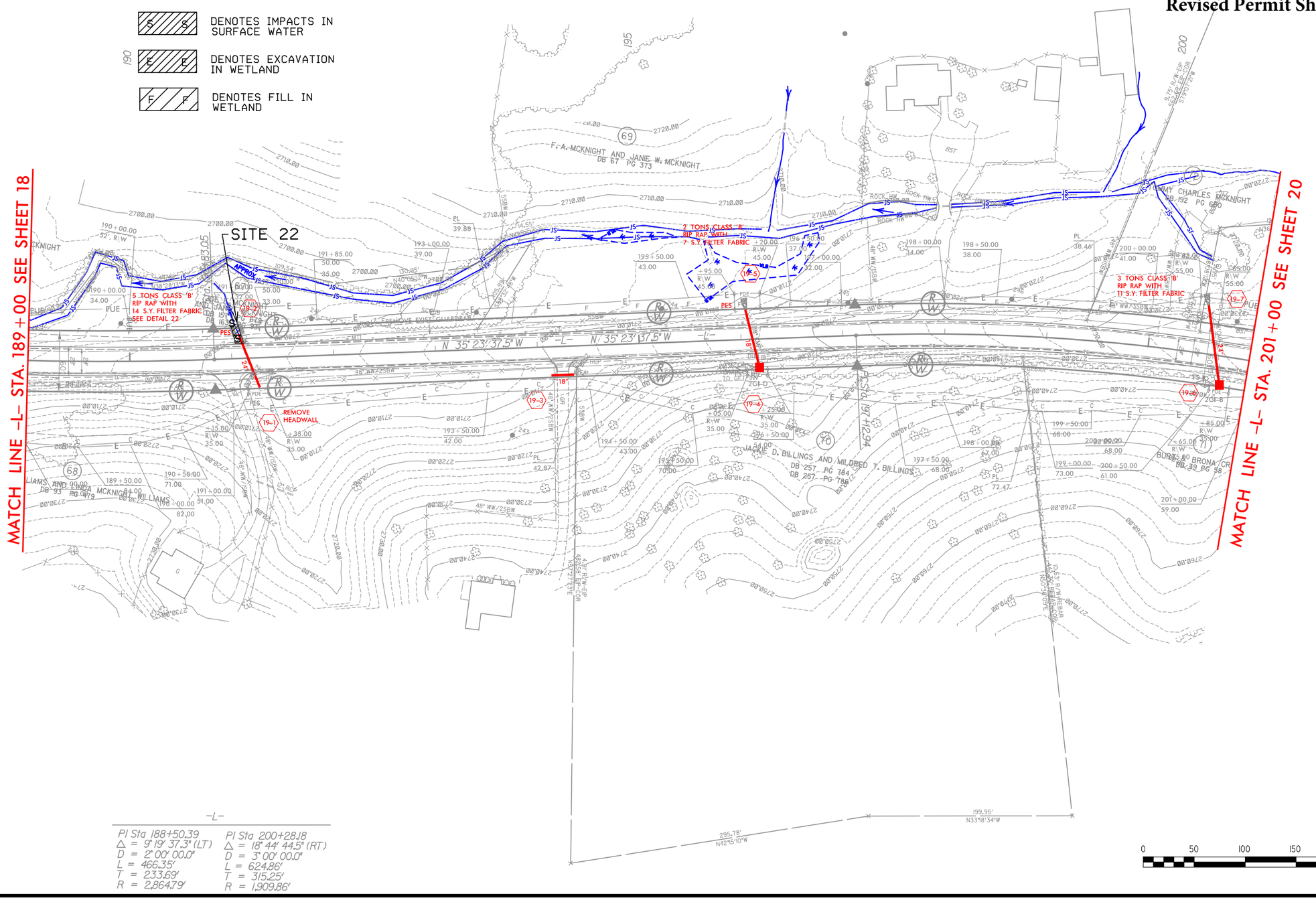


TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND



-L-

PI Sta 188+50.39	PI Sta 200+28.18
△ = 9° 19' 37.3" (LT)	△ = 18° 44' 44.5" (RT)
D = 2° 00' 00.0"	D = 3° 00' 00.0"
L = 466.35'	L = 624.86'
T = 233.69'	T = 315.25'
R = 2,864.79'	R = 1,909.86'

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

5/14/99

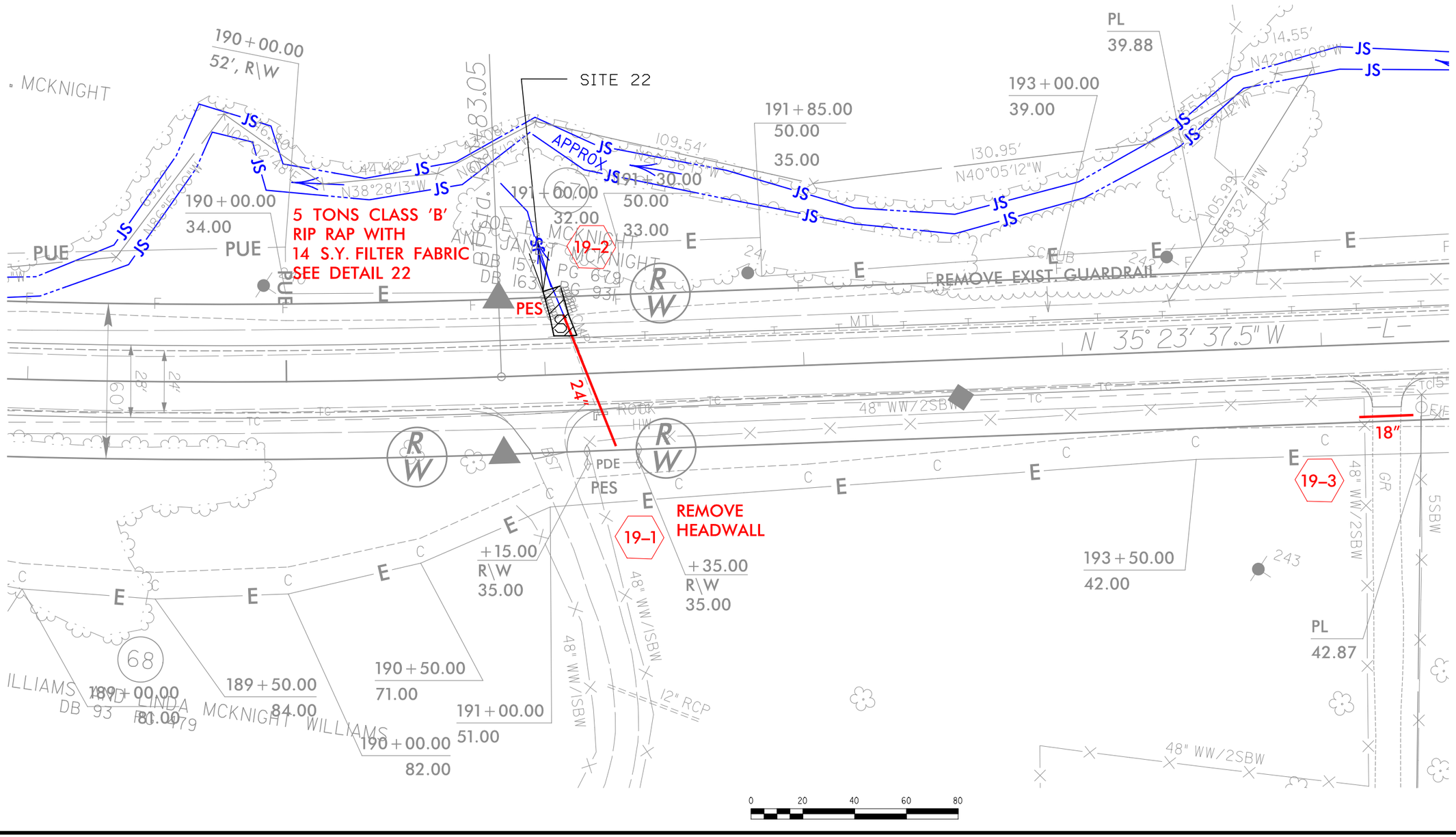
PROJECT REFERENCE NO.	SHEET NO.
R-3101	19B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/95

Revised Permit Sheet 29 of 93



8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 30 of 93

NAD 83/95

-Y12REV-
PI Sta 11+86.24
Δ = 69° 30' 27.9" (RT)
D = 51° 00' 00.0"
L = 136.29'
T = 77.95'
R = 112.34'

PI Sta 13+56.60
Δ = 33° 20' 39.9" (RT)
D = 27° 15' 00.0"
L = 122.36'
T = 62.97'
R = 210.26'

-Y12REV- POT Sta. 10+00.00

WE 2807.0
BEGIN CONSTRUCTION
-Y12REV- POT Sta. 12+00.00

-Y12REV- POT STA. 15+07.01 = -L- POT STA. 222+75.00

MATCH LINE -L- STA. 213+00 SEE SHEET 20

MATCH LINE -L- STA. 225+00 SEE SHEET 22

SITE 23

STANDARD BASE DITCH
-L- STA. 223+10 TO 223+60 LT
DDE = 180 CY
SEE DETAIL 4

5 TONS CLASS 'B' RIP RAP WITH 14 S.Y. FILTER FABRIC SEE DETAIL 22

REMOVE 24" CMP & HW'S

3 TONS CLASS 'B' RIP RAP WITH 11 S.Y. FILTER FABRIC

5 TONS CLASS 'B' RIP RAP WITH 16 S.Y. FILTER FABRIC

REMOVE HEADWALL

REMOVE CONC ENDWALL

REMOVE HEADWALL

BORE AND JACK

LATERAL BASE DITCH
-L- STA. 214+00 TO 214+50 RT
SEE DETAIL 17

LATERAL BASE DITCH
-L- STA. 214+50 TO 215+50 RT
SEE DETAIL 1

LATERAL BASE DITCH
-L- STA. 215+50 TO 216+25 LT
SEE DETAIL 17

CUT DITCH
-L- STA. 219+00 TO 220+00 RT
SEE DETAIL 3

CONC. ENDWALL

SOUTHERN REPAIR SERVICE, INCORPORATED
DB 115 PG 691
PB 4 PG 80

SANDRA VARELA
DB 261 PG 809
PB 4 PG 80

SMITH TAYLOR
DB 18 PG 534

THE BILLY GENE BLEVINS REVOCABLE LIVING TRUST
DB 249 PG 1477
DB 249 PG 1480
DB 249 PG 1493

BILLY GENE BLEVINS SR. AND BILLY GENE BLEVINS JR.
DB 236 PG 379
DB 253 PG 136

STEVIE MOXLEY
DB 266 PG 887

SOUTHERN REPAIR SERVICE, INCORPORATED
DB 115 PG 691
PB 4 PG 80

BARRY R. EDWARDS
DB 191 PG 201
PB 6 PG 58

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S DENOTES IMPACTS IN SURFACE WATER

E DENOTES EXCAVATION IN WETLAND

F DENOTES FILL IN WETLAND

-L-
PI Sta 211+67.63
Δ = 7° 08' 29.5" (LT)
D = 1° 00' 00.0"
L = 714.15'
T = 357.54'
R = 5,729.58'

DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)

STRUCTURE 21-5

DETAIL 3
CUT DITCH
(Not to Scale)

-L- STA. 219+00 TO 220+00 RT

DETAIL 4
STANDARD BASE DITCH
(Not to Scale)

-L- STA. 223+10 TO 223+60 LT
EST. 180 CU. YD. DDE

DETAIL 17
LATERAL BASE DITCH
(Not to Scale)

-L- STA. 214+00 TO 214+50 RT
-L- STA. 215+50 TO 216+25 LT
EST. 41 CU. YD. DDE

DETAIL 19
FALSE SUMP
(Not to Scale)

2004 / 2030 ADT
-Y12REV- FOXFIRE ROAD
40/69 40/720

NOTES
FOR -L- PROFILE SEE SHEET 55
FOR -Y12REV- PROFILES SEE SHEET 71
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

$$$$SYSTIME$$$$
$$$$USERNAME$$$$ $$$$DGN$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3101	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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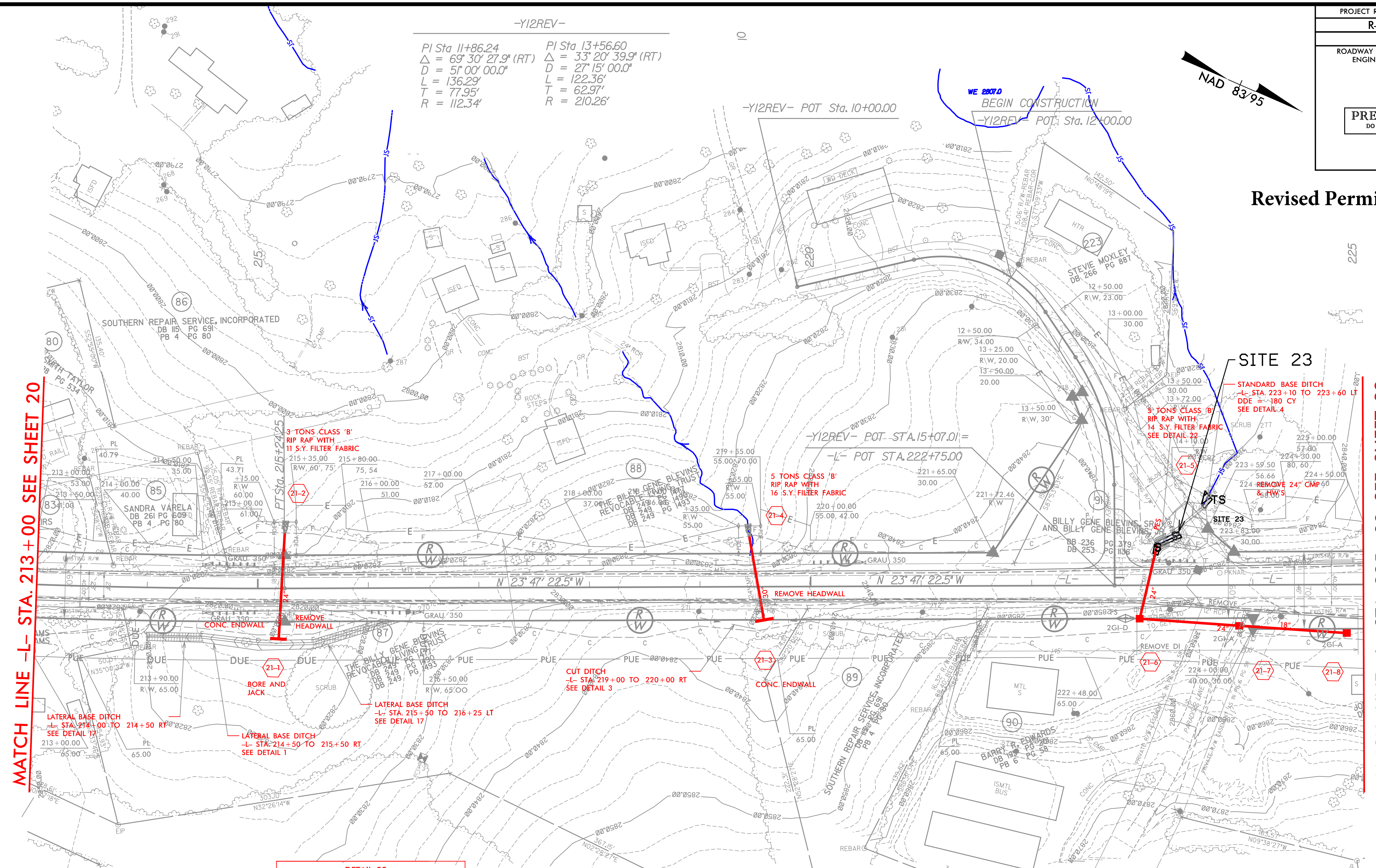
-Y12REV-

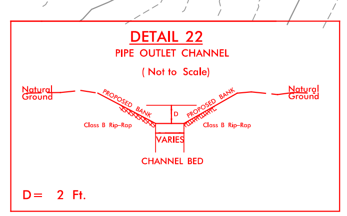
PI Sta 11+86.24
Δ = 69° 30′ 27.9″ (RT)
D = 51° 00′ 00.0″
L = 136.29′
T = 77.95′
R = 112.34′

PI Sta 13+56.60
Δ = 33° 20′ 39.9″ (RT)
D = 27° 15′ 00.0″
L = 122.36′
T = 62.97′
R = 210.26′

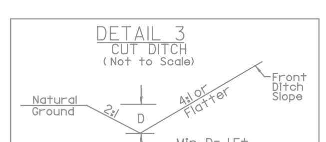


NAD 83/95
-Y12REV- POT Sta. 10+00.00
BEGIN CONSTRUCTION
-Y12REV- POT Sta. 12+00.00
-Y12REV- POT STA.15+07.01 =
-L- POT STA.222+75.00
SITE 23
STANDARD BASE DITCH
-L- STA. 223+10 TO 223+60 LT
DDE = ~180 CY
SEE DETAIL 4
5 TONS CLASS 'B' RIP RAP WITH
14 S.Y. FILTER FABRIC
SEE DETAIL 22
REMOVE 24" CMP & HW'S
3 TONS CLASS 'B' RIP RAP WITH
11 S.Y. FILTER FABRIC
5 TONS CLASS 'B' RIP RAP WITH
16 S.Y. FILTER FABRIC
REMOVE HEADWALL
CONC. ENDWALL
BORE AND JACK
CUT DITCH
-L- STA. 219+00 TO 220+00 RT
SEE DETAIL 3
LATERAL BASE DITCH
-L- STA. 215+50 TO 216+25 LT
SEE DETAIL 17
LATERAL BASE DITCH
-L- STA. 214+00 TO 214+50 RT
SEE DETAIL 17
LATERAL BASE DITCH
-L- STA. 214+50 TO 215+50 RT
SEE DETAIL 1
N 23° 47′ 22.5″ W
SOUTHERN REPAIR SERVICE, INCORPORATED
SANDRA VARELA
STEVIE MOXLEY
BILLY GENE BLEVINS SR. AND BILLY GENE BLEVINS
BARRY R. EDWARDS
MATCH LINE -L- STA. 213+00 SEE SHEET 20
MATCH LINE -L- STA. 225+00 SEE SHEET 22

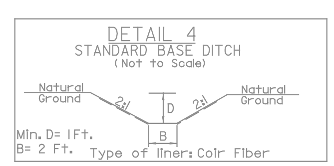
TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S	DENOTES IMPACTS IN SURFACE WATER
E	DENOTES EXCAVATION IN WETLAND
F	DENOTES FILL IN WETLAND



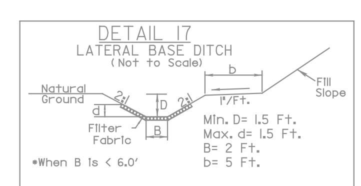
STRUCTURE 21-5



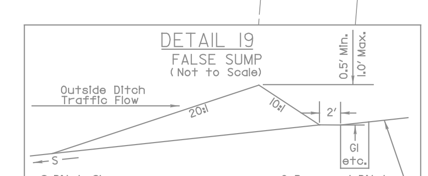
-L- STA. 219+00 TO 220+00 RT



-L- STA. 223+10 TO 223+60 LT
EST. 180 CU. YD. DDE



-L- STA. 214+00 TO 214+50 RT
-L- STA. 215+50 TO 216+25 LT
EST. 41 CU. YD. DDE



2004 / 2030 ADT
-Y12REV- FOXFIRE ROAD

-L-

PI Sta 211+67.63
Δ = 7° 08′ 29.5″ (LT)
D = 1° 00′ 00.0″
L = 714.15′
T = 357.54′
R = 5,729.58′

NOTES

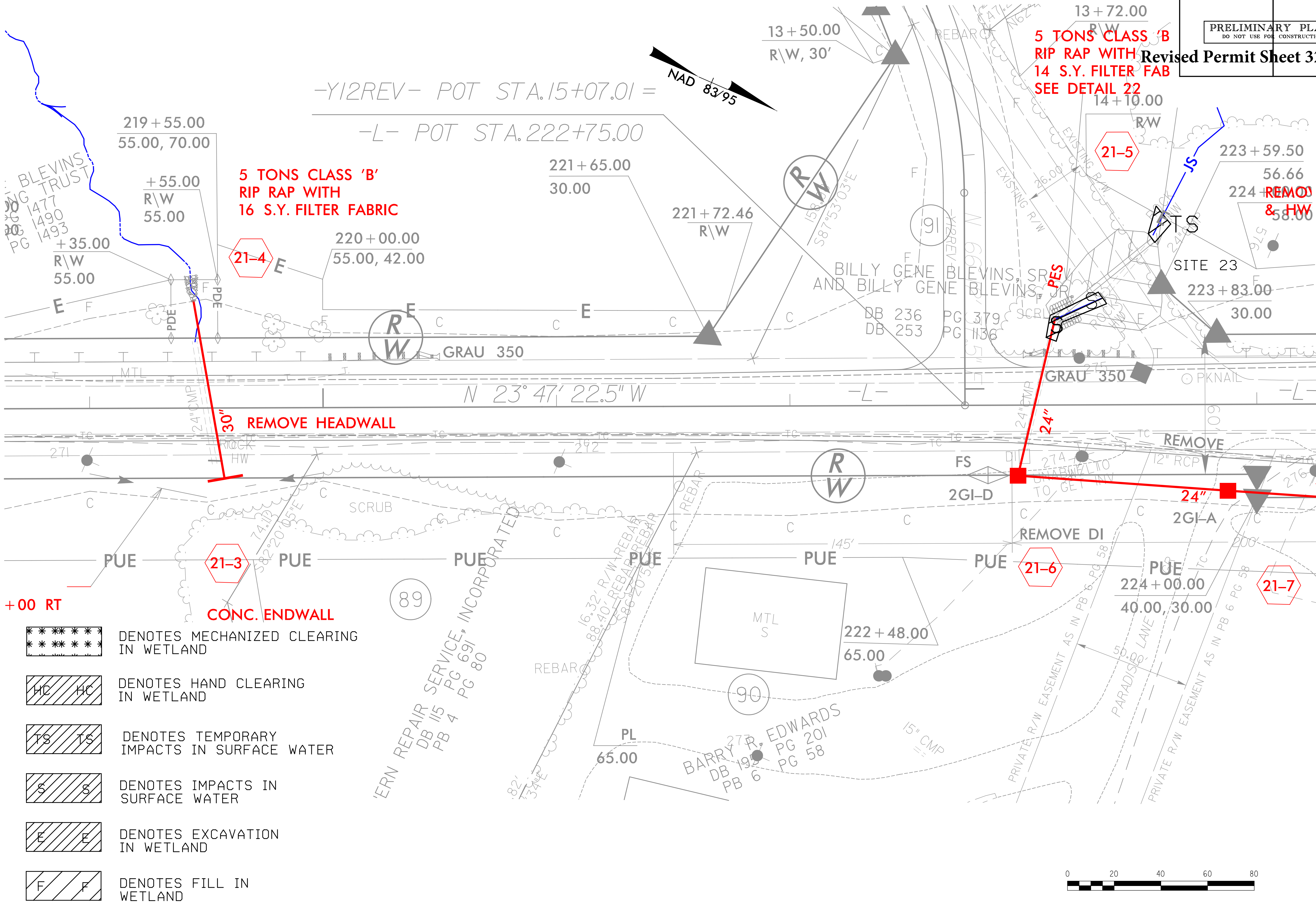
FOR -L- PROFILE SEE SHEET 55
FOR -Y12REV- PROFILES SEE SHEET 71
ALL DRIVEWAY RADII ARE 15′ UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30′ OFFSET UNLESS OTHERWISE NOTED

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	21B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 32 of 93


-Y12REV- POT STA.15+07.01 =
-L- POT STA.222+75.00
NAD 83/95
219+55.00
55.00, 70.00
+55.00
R\W
55.00
+35.00
R\W
55.00
5 TONS CLASS 'B'
RIP RAP WITH
16 S.Y. FILTER FABRIC
21-4
220+00.00
55.00, 42.00
221+65.00
30.00
221+72.46
R\W
13+50.00
R\W, 30'
13+72.00
R\W
5 TONS CLASS 'B
RIP RAP WITH
14 S.Y. FILTER FAB
SEE DETAIL 22
14+10.00
R/W
21-5
223+59.50
56.66
224+
REMO
& HW
58.00
SITE 23
223+83.00
30.00
BILLY GENE BLEVINS, SR.
AND BILLY GENE BLEVINS, JR.
DB 236 PG 379
DB 253 PG 1136
GRAU 350
N 23° 47' 22.5" W
-L-
30"
REMOVE HEADWALL
24"
FS
2GI-D
24"
2GI-A
REMOVE
REMOVE DI
PUE
21-3
21-6
21-7
+00 RT
CONC. ENDWALL
89
90
91
222+48.00
65.00
224+00.00
40.00, 30.00
PL
65.00
BARRY R. EDWARDS
DB 195 PG 201
PB 6 PG 58
PARADISE LANE
PRIVATE R/W EASEMENT AS IN PB 6 PG 58
DENOTES MECHANIZED CLEARING IN WETLAND
DENOTES HAND CLEARING IN WETLAND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
0 20 40 60 80

PROJECT REFERENCE NO.	SHEET NO.
R-3101	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 33 of 93

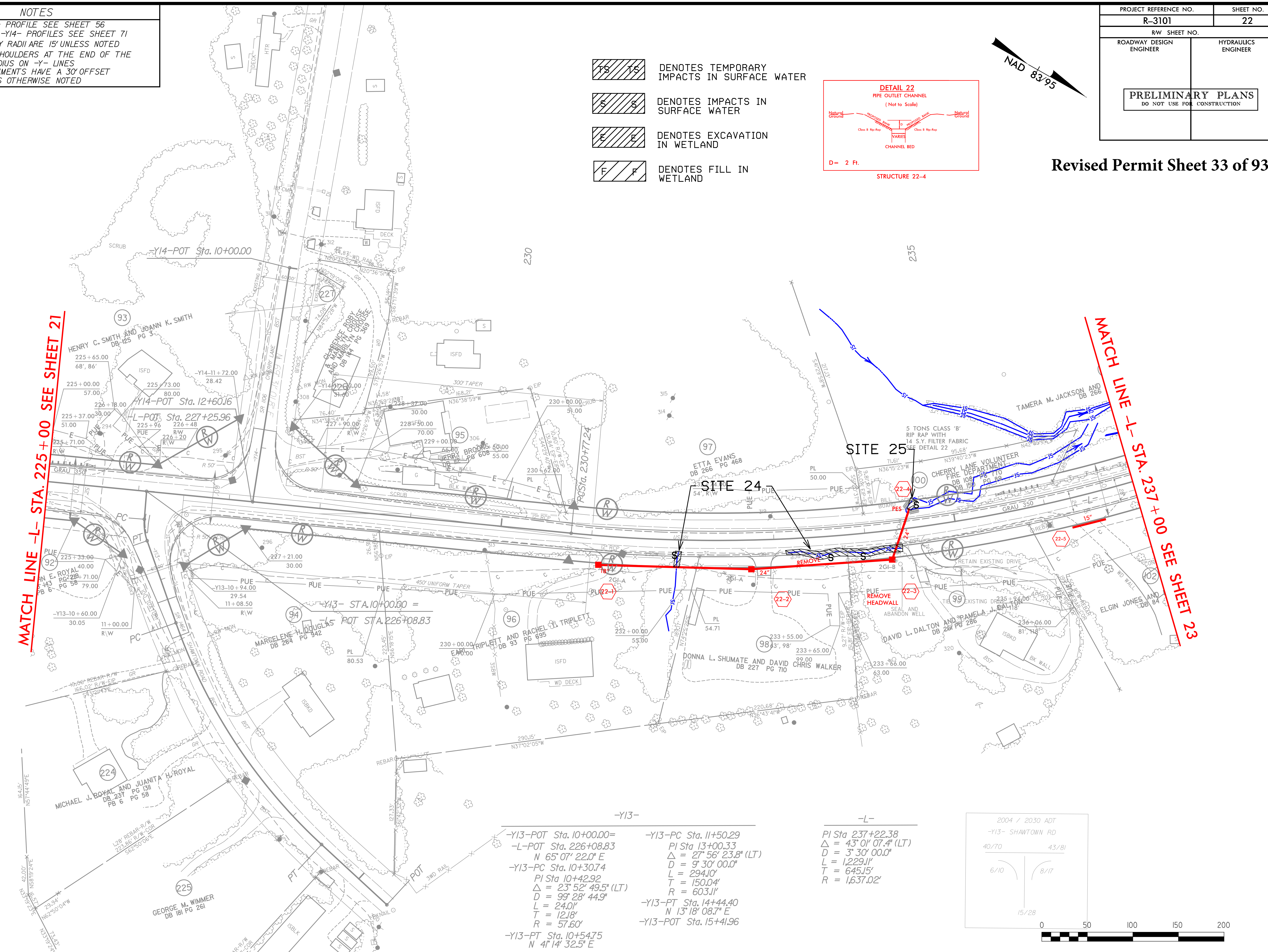
REVISIONS

12/19/2011 ADDED NOTE TO PARCEL 99 FOR DRIVEWAY TIE; ADDED NOTED TO SEAL AND ABANDON WELL ON PARCEL 099 STA.234+35 RT

8/17/99

NOTES
FOR -L- PROFILE SEE SHEET 56
FOR -Y13- & -Y14- PROFILES SEE SHEET 71
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S DENOTES IMPACTS IN SURFACE WATER
E DENOTES EXCAVATION IN WETLAND
F DENOTES FILL IN WETLAND



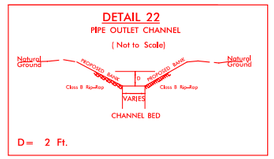
-Y13-
-Y13-POT Sta. 10+00.00=
-L-POT Sta. 226+08.83
N 65° 07' 22.0" E
-Y13-PC Sta. 10+30.74
PI Sta 10+42.92
Δ = 23° 52' 49.5" (LT)
D = 99° 28' 44.9"
L = 24.01'
T = 12.18'
R = 57.60'
-Y13-PT Sta. 10+54.75
N 41° 14' 32.5" E

-Y13-PC Sta. 11+50.29
PI Sta 13+00.33
Δ = 27° 56' 23.8" (LT)
D = 9° 30' 00.0"
L = 294.10'
T = 150.04'
R = 603.11'
-Y13-PT Sta. 14+44.40
N 13° 18' 08.7" E
-Y13-POT Sta. 15+41.96

-L-
PI Sta 237+22.38
Δ = 43° 01' 07.4" (LT)
D = 3° 30' 00.0"
L = 1,229.11'
T = 645.15'
R = 1,637.02'

2004 / 2030 ADT
-Y13- SHAWTOWN RD

0 50 100 150 200



PROJECT REFERENCE NO.	SHEET NO.
R-3101	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 34 of 93

REVISIONS

12/19/2011 ADDED NOTE TO PARCEL 99 FOR DRIVEWAY TIE; ADDED NOTED TO SEAL AND ABANDON WELL ON PARCEL 099 STA.234+35 RT

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 56
FOR -Y13- & -Y14- PROFILES SEE SHEET 71
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

▨ TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
▨ S	DENOTES IMPACTS IN SURFACE WATER
▨ E	DENOTES EXCAVATION IN WETLAND
▨ F	DENOTES FILL IN WETLAND

-Y13-

-Y13-POT Sta. 10+00.00=
-L-POT Sta. 226+08.83
N 65° 07' 22.0" E
-Y13-PC Sta. 10+30.74
PI Sta 10+42.92
△ = 23° 52' 49.5" (LT)
D = 99° 28' 44.9"
L = 24.01'
T = 12.18'
R = 57.60'
-Y13-PT Sta. 10+54.75
N 41° 14' 32.5" E

-Y13-PC Sta. 11+50.29
PI Sta 13+00.33
△ = 27° 56' 23.8" (LT)
D = 9° 30' 00.0"
L = 294.10'
T = 150.04'
R = 603.11'
-Y13-PT Sta. 14+44.40
N 13° 18' 08.7" E
-Y13-POT Sta. 15+41.96

-L-

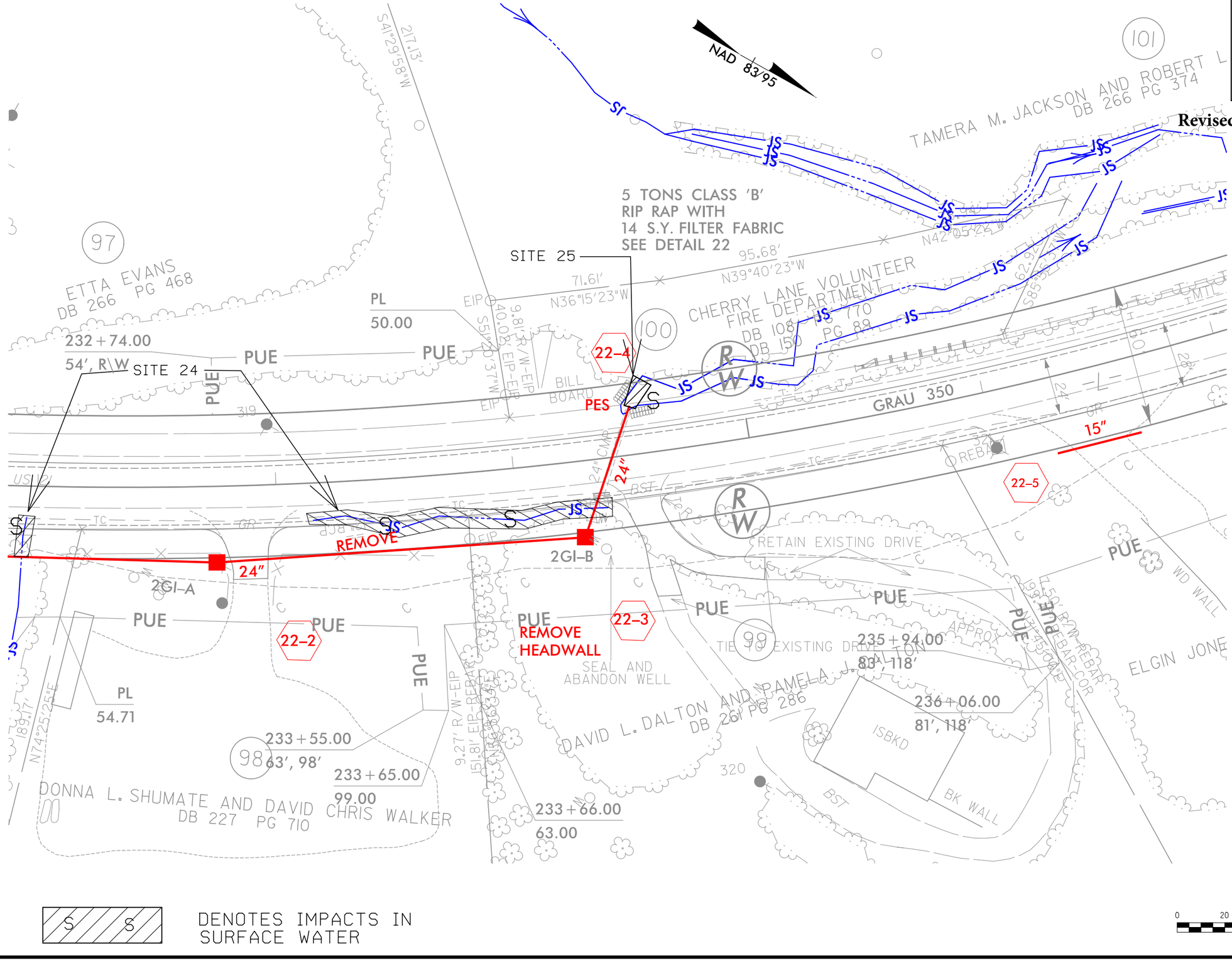
PI Sta 237+22.38
△ = 43° 01' 07.4" (LT)
D = 3° 30' 00.0"
L = 1,229.11'
T = 645.15'
R = 1,637.02'

5/14/99

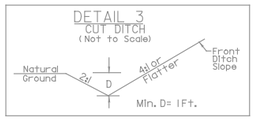
PROJECT REFERENCE NO.	SHEET NO.
R-3101	22B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

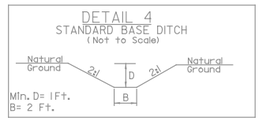
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

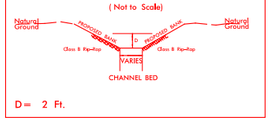
Revised Permit Sheet 35 of 93



S S DENOTES IMPACTS IN SURFACE WATER







8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R–3101	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 36 of 93

NOTES

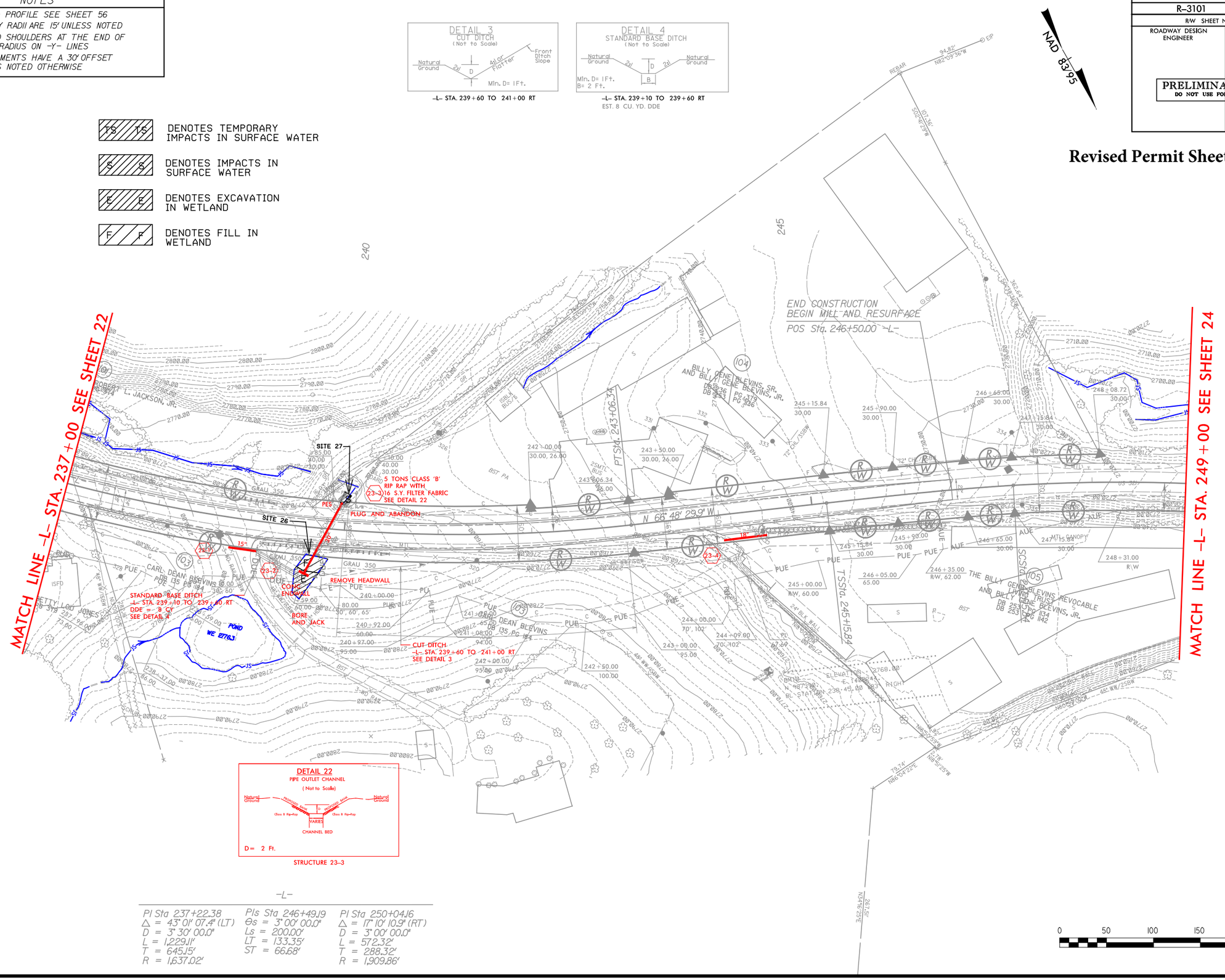
FOR –L– PROFILE SEE SHEET 56
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON –Y– LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

–L–

PI Sta 237+22.38
Δ = 43° 01' 07.4" (LT)
D = 3° 30' 00.0"
L = 1,229.11'
T = 645.15'
R = 1,637.02'

PIs Sta 246+49.19
Θs = 3° 00' 00.0"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

PI Sta 250+04.16
Δ = 17° 10' 10.9" (RT)
D = 3° 00' 00.0"
L = 572.32'
T = 288.32'
R = 1,909.86'



8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 37 of 93

NOTES

FOR -L- PROFILE SEE SHEET 56
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

▨ TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
▨ S	DENOTES IMPACTS IN SURFACE WATER
▨ E	DENOTES EXCAVATION IN WETLAND
▨ F	DENOTES FILL IN WETLAND

-L-

PI Sta 237+22.38
△ = 43° 01' 07.4" (LT)
D = 3° 30' 00.0"
L = 1,229.11'
T = 645.15'
R = 1,637.02'

PIs Sta 246+49.19
θs = 3° 00' 00.0"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

PI Sta 250+04.16
△ = 17° 10' 10.9" (RT)
D = 3° 00' 00.0"
L = 572.32'
T = 288.32'
R = 1,909.86'

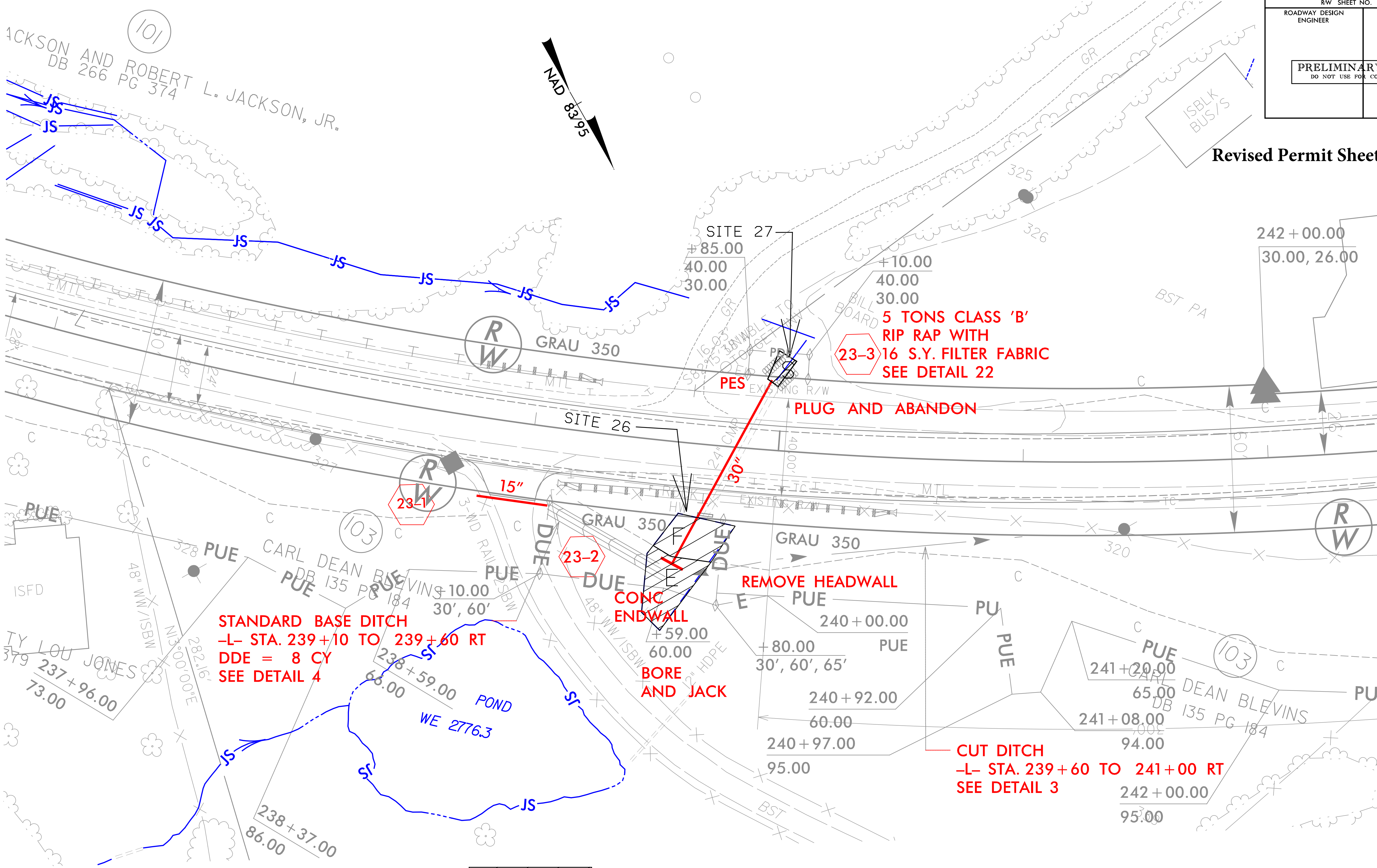
PROJECT REFERENCE NO.	SHEET NO.
R-3101	23B

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 38 of 93



NAD 83/95
JACKSON AND ROBERT L. JACKSON, JR.
DB 266 PG 374
SITE 27
+85.00
40.00
30.00
+10.00
40.00
30.00
5 TONS CLASS 'B'
RIP RAP WITH
16 S.Y. FILTER FABRIC
SEE DETAIL 22
23-3
PES
PLUG AND ABANDON
SITE 26
GRAU 350
30"
15"
23-1
23-2
REMOVE HEADWALL
CONC
ENDWALL
+59.00
60.00
BORE
AND JACK
CARL DEAN BLEVINS
DB 135 PG 184
+10.00
30', 60'
STANDARD BASE DITCH
-L- STA. 239+10 TO 239+60 RT
DDE = 8 CY
SEE DETAIL 4
238+59.00
63.00
237+96.00
73.00
238+37.00
86.00
POND
WE 2776.3
240+00.00
+80.00
30', 60', 65'
240+92.00
60.00
240+97.00
95.00
CUT DITCH
-L- STA. 239+60 TO 241+00 RT
SEE DETAIL 3
241+20.00
65.00
241+08.00
94.00
242+00.00
95.00
242+00.00
30.00, 26.00
PUE
DUE

DENOTES IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 39 of 93

NOTES
FOR -L- PROFILE SEE SHEET 58
FOR -Y15- PROFILES SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S DENOTES IMPACTS IN SURFACE WATER

E DENOTES EXCAVATION IN WETLAND

F DENOTES FILL IN WETLAND

0 50 100 150 200

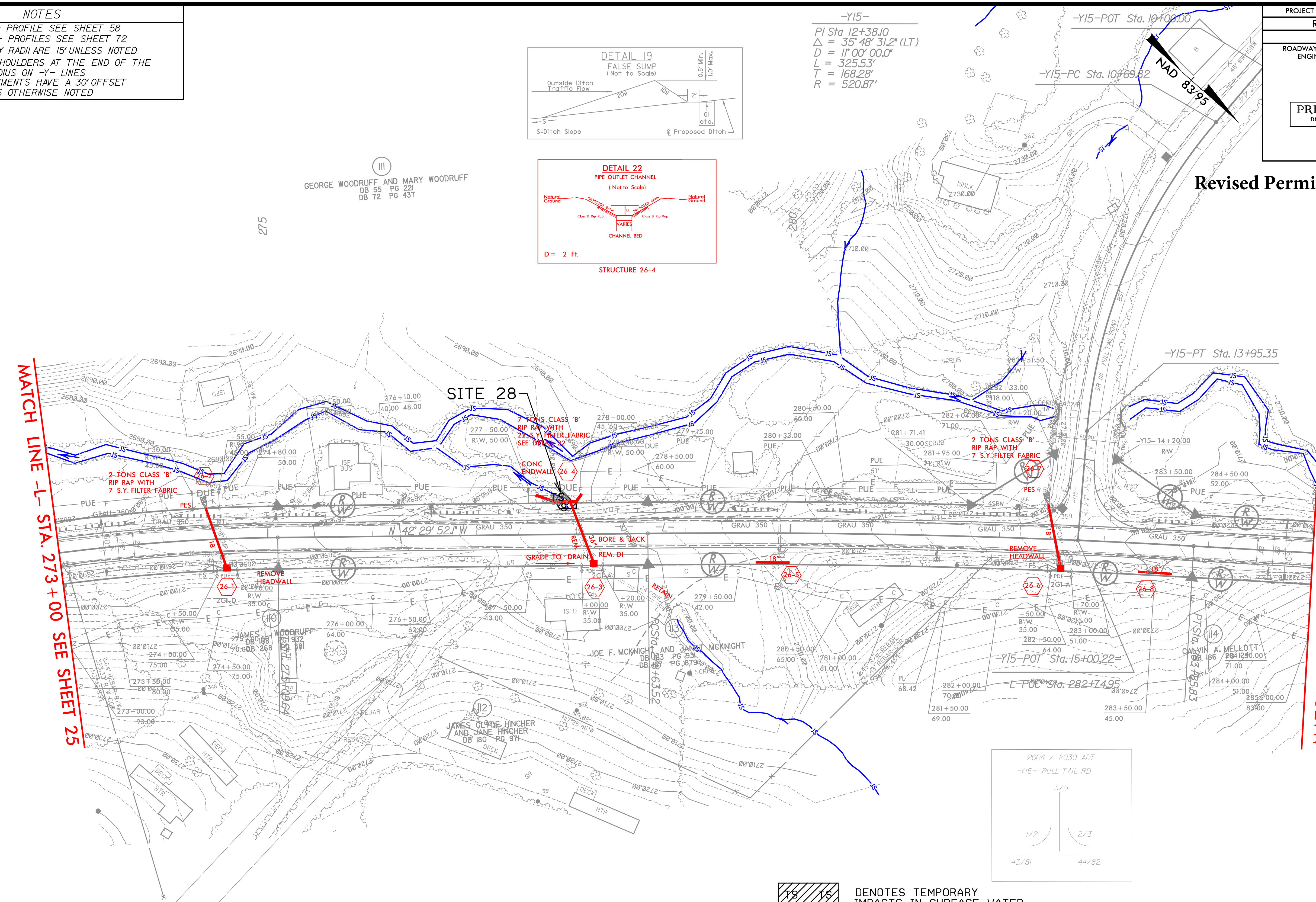
-L-
PI Sta 281+24.78
Δ = 3° 55' 02.3" (RT)
D = 0° 45' 00.0"
L = 522.31'
T = 261.26'
R = 7,639.44'

PROJECT REFERENCE NO.	SHEET NO.
R-3101	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTES

FOR -L- PROFILE SEE SHEET 58
FOR -Y15- PROFILES SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED



DETAIL 19
FALSE SUMP
(Not to Scale)
DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)
D = 2 Ft.
STRUCTURE 26-4
-Y15-
PI Sta 12+38.10
Δ = 35° 48' 31.2" (LT)
D = 11° 00' 00.0"
L = 325.53'
T = 168.28'
R = 520.87'
-Y15-POT Sta. 10+00.00
-Y15-PC Sta. 10+69.82
-Y15-PT Sta. 13+95.35
-Y15-POT Sta. 15+00.22=
-L-POC Sta. 282+74.95
NAD 83/95
SITE 28
GEORGE WOODRUFF AND MARY WOODRUFF
DB 55 PG 221
DB 72 PG 437
JAMES L. WOODRUFF
JOE F. MCKNIGHT
JAMES CLYDE HINCHER AND JANE HINCHER
DB 180 PG 971
CALVIN A. MELLOTT
7 TONS CLASS 'B' RIP RAP WITH 22 S.Y. FILTER FABRIC SEE DETAIL 22
2 TONS CLASS 'B' RIP RAP WITH 7 S.Y. FILTER FABRIC
CONC ENDWALL
REMOVE HEADWALL
BORE & JACK
GRADE TO DRAIN
N 42° 29' 52.1" W
MATCH LINE -L- STA. 273+00 SEE SHEET 25
MATCH LINE -L- STA. 285+00 SEE SHEET 27
2004 / 2030 ADT
-Y15- PULL TAIL RD

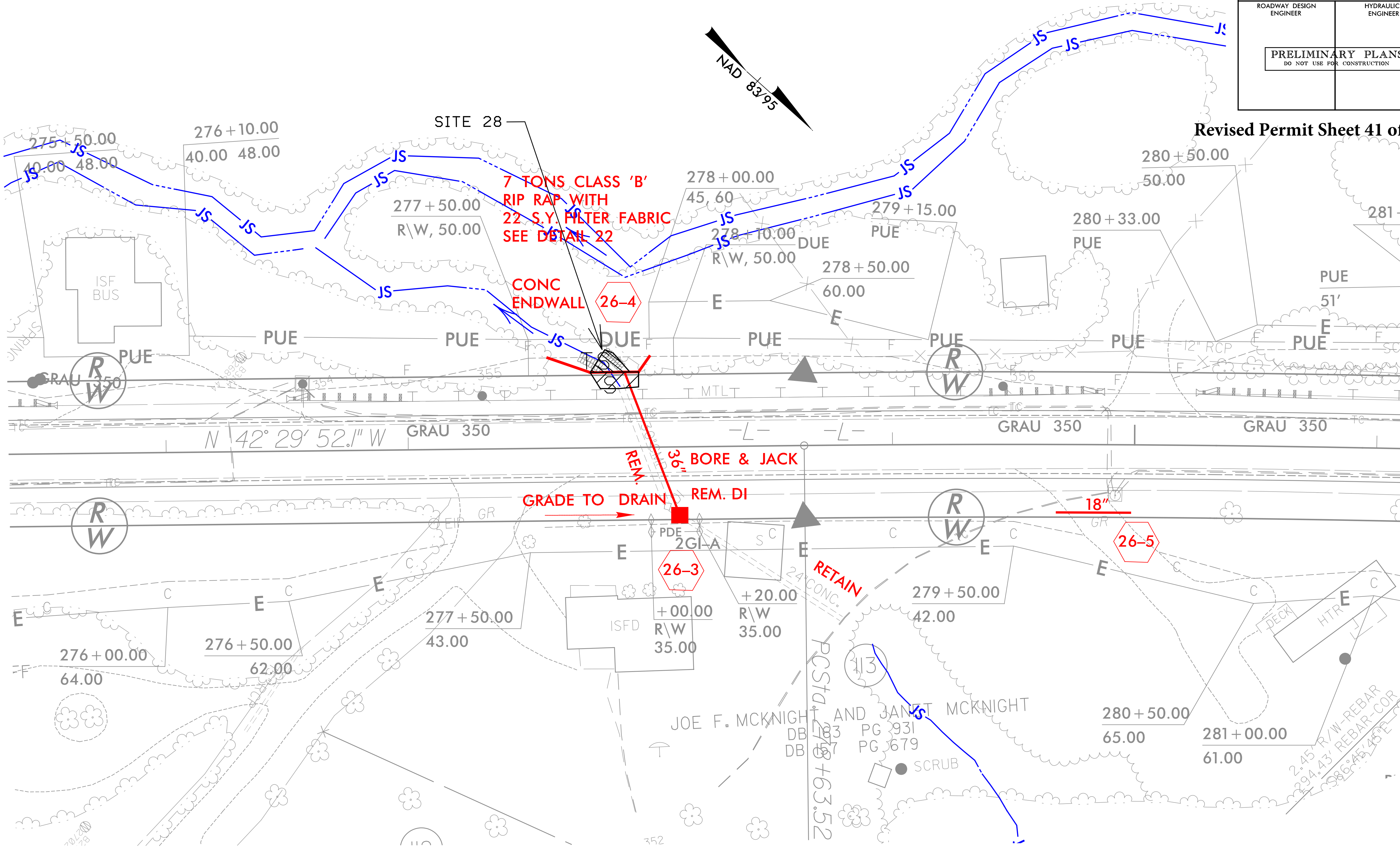
TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S	DENOTES IMPACTS IN SURFACE WATER
E	DENOTES EXCAVATION IN WETLAND
F	DENOTES FILL IN WETLAND

0 50 100 150 200

-L-
PI Sta 281+24.78
Δ = 3° 55' 02.3" (RT)
D = 0° 45' 00.0"
L = 522.31'
T = 261.26'
R = 7,639.44'

PROJECT REFERENCE NO.	SHEET NO.
R-3101	26B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

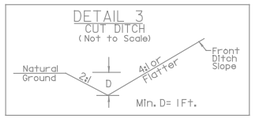
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83/95
SITE 28
7 TONS CLASS 'B' RIP RAP WITH 22 S.Y. FILTER FABRIC SEE DETAIL 22
CONC ENDWALL
26-4
36" BORE & JACK
REM.
REM. DI
GRADE TO DRAIN
18"
26-5
26-3
RETAIN
2GI-A
PDE
DUE
PUE
GRAU 350
N 42° 29' 52.1" W
275+50.00
40.00 48.00
276+10.00
40.00 48.00
277+50.00
R\W, 50.00
278+00.00
45, 60
278+10.00
R\W, 50.00
278+50.00
60.00
279+15.00
PUE
280+33.00
PUE
280+50.00
50.00
276+00.00
64.00
276+50.00
62.00
277+50.00
43.00
+00.00
R\W
35.00
+20.00
R\W
35.00
279+50.00
42.00
280+50.00
65.00
281+00.00
61.00
JOE F. MCKNIGHT AND JANET MCKNIGHT
DB 183 PG 931
DB 657 PG 679
PCSta 278+63.52
ISF BUS
ISFD
SCRUB
12" RCP

S S DENOTES IMPACTS IN SURFACE WATER

0 20 40 60 80



PROJECT REFERENCE NO.	SHEET NO.
R-3101	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 42 of 93

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 58
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

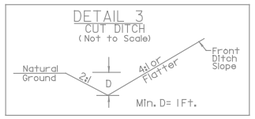
S DENOTES IMPACTS IN SURFACE WATER

E DENOTES EXCAVATION IN WETLAND

F DENOTES FILL IN WETLAND

-L-

PI Sta 291+20.61	PI Sta 296+95.41
Δ = 20° 03' 43.2" (LT)	Δ = 4° 11' 08.1" (LT)
D = 3° 30' 00.0"	D = 1° 00' 00.0"
L = 573.20'	L = 418.56'
T = 289.56'	T = 209.37'
R = 1,637.02'	R = 5,729.58'



8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 58
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

-L- STA. 291+35 TO 292+00 RT

Project Reference No.	Sheet No.
R-3101	27

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 43 of 93

▨ TS ▨ TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

▨ S ▨ S DENOTES IMPACTS IN SURFACE WATER

▨ E ▨ E DENOTES EXCAVATION IN WETLAND

▨ F ▨ F DENOTES FILL IN WETLAND

-L-

PI Sta 291+20.61
Δ = 20° 03' 43.2" (LT)
D = 3° 30' 00.0"
L = 573.20'
T = 289.56'
R = 1,637.02'

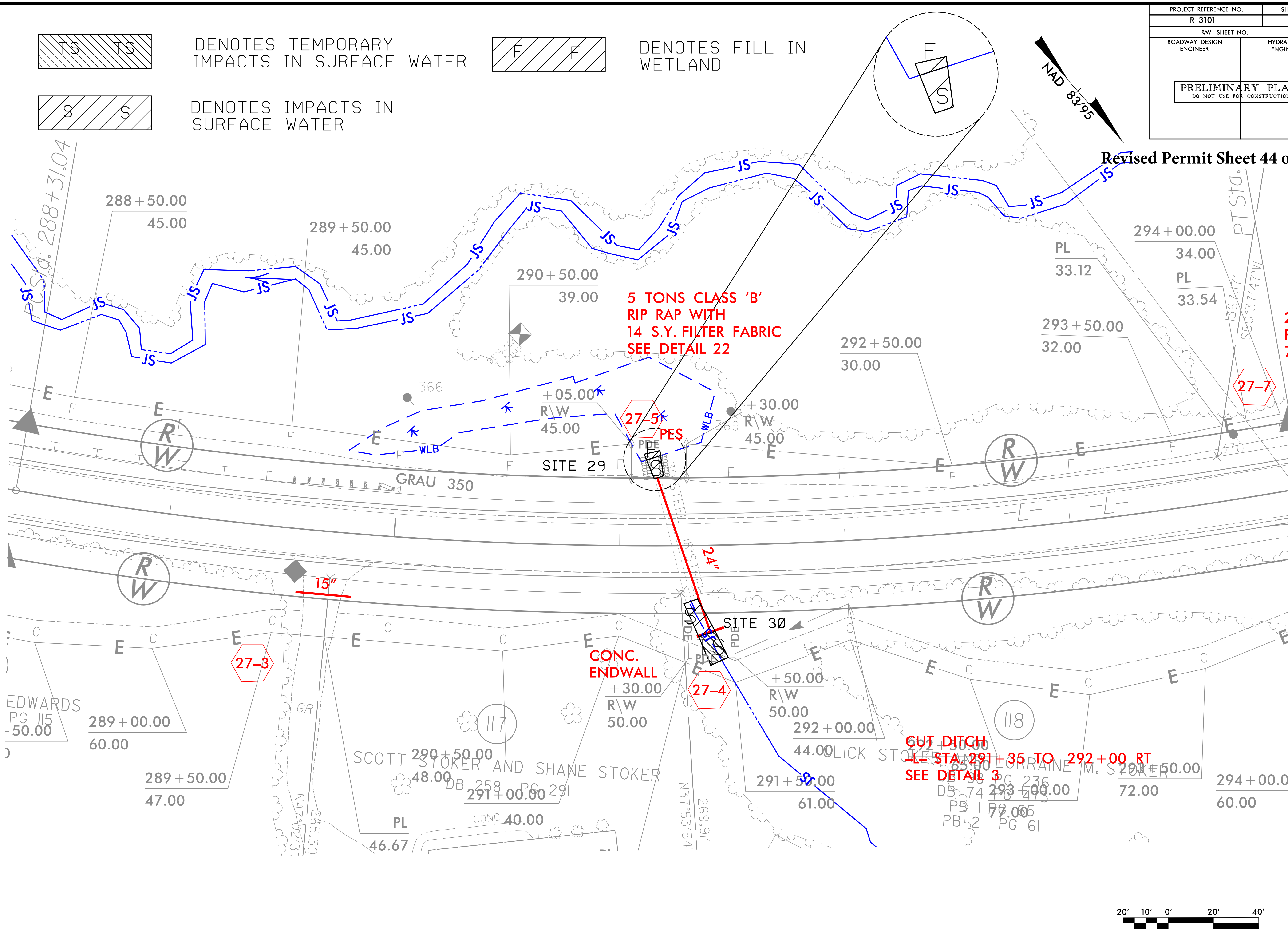
PI Sta 296+95.41
Δ = 4° 11' 08.1" (LT)
D = 1° 00' 00.0"
L = 418.56'
T = 209.37'
R = 5,729.58'

PROJECT REFERENCE NO.	SHEET NO.
R-3101	27B

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
NAD 83/95
5 TONS CLASS 'B' RIP RAP WITH 14 S.Y. FILTER FABRIC SEE DETAIL 22
SITE 29
SITE 30
PES
24"
15"
27-5
27-3
27-4
27-7
CONC. ENDWALL
CUT DITCH -L- STA. 291+35 TO 292+00 RT SEE DETAIL 3
GRAU 350
288+50.00
45.00
289+50.00
45.00
290+50.00
39.00
292+50.00
30.00
293+50.00
32.00
294+00.00
34.00
PL
33.12
PL
33.54
+05.00
R/W
45.00
+30.00
R/W
45.00
+30.00
R/W
50.00
+50.00
R/W
50.00
289+00.00
60.00
289+50.00
47.00
290+50.00
48.00
291+00.00
40.00
PL
46.67
292+00.00
44.00
291+50.00
61.00
294+00.00
60.00
EDWARDS
SCOTT STOKER AND SHANE STOKER
117
118

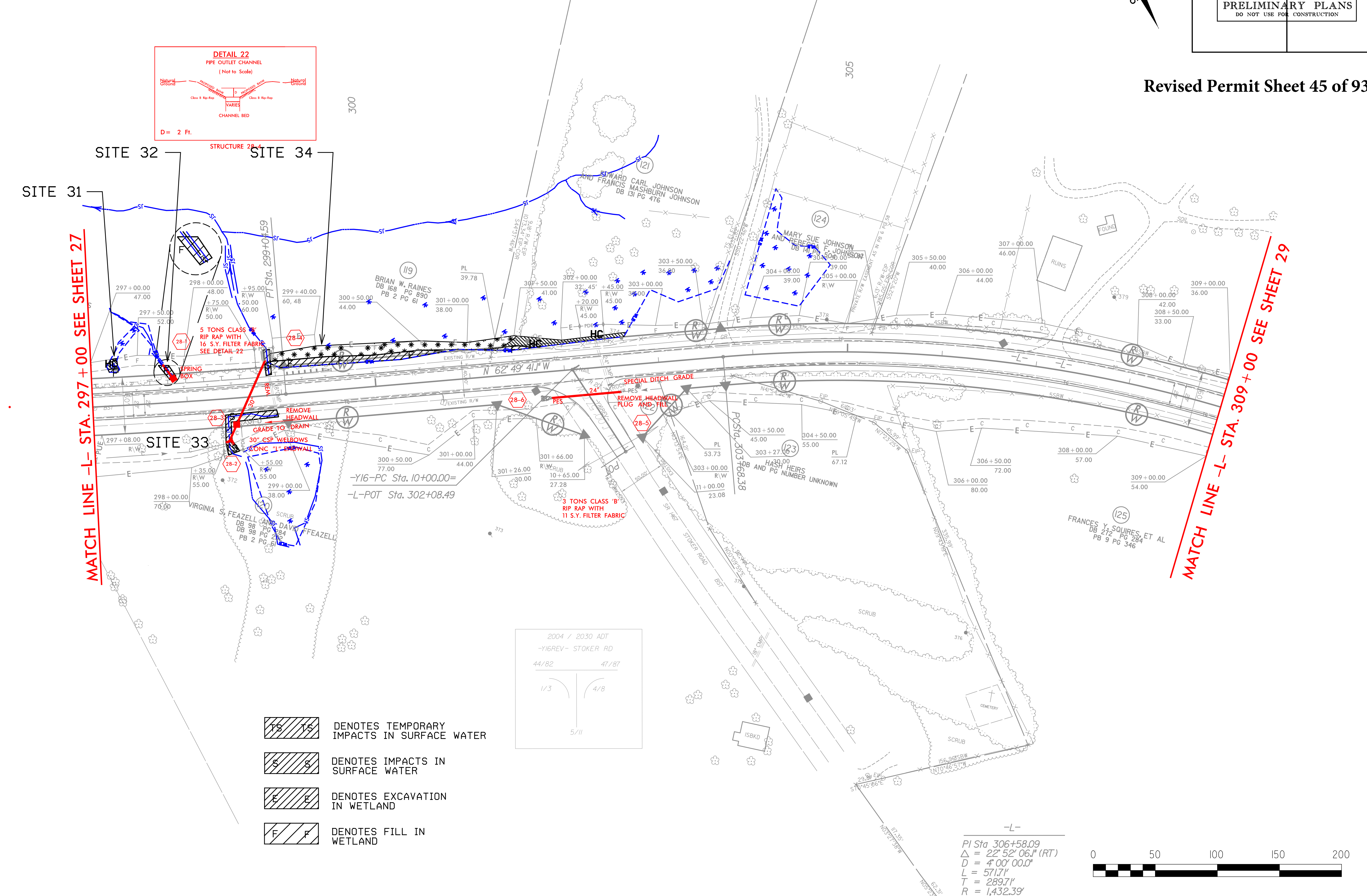
PROJECT REFERENCE NO.	SHEET NO.
R-3101	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 45 of 93

NOTES

FOR -L- PROFILE SEE SHEET 59
FOR -Y16REV- PROFILES SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED



NAD 83/95
DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)
D= 2 Ft.
STRUCTURE 28-4
SITE 31
SITE 32
SITE 33
SITE 34
MATCH LINE -L- STA. 297+00 SEE SHEET 27
MATCH LINE -L- STA. 309+00 SEE SHEET 29
5 TONS CLASS 'B' RIP RAP WITH 16 S.Y. FILTER FABRIC SEE DETAIL 22
SPRING BOX
REMOVE HEADWALL
GRADE TO DRAIN
30" CSP W/ELBOWS
SPECIAL DITCH GRADE
REMOVE HEADWALL PLUG AND FILL
3 TONS CLASS 'B' RIP RAP WITH 11 S.Y. FILTER FABRIC
N 62°49' 41.1" W
-Y16-PC Sta. 10+00.00=
-L-POT Sta. 302+08.49
PI Sta. 299+01.59
PO Sta. 303+68.38
BRIAN W. RAINES DB 168 PG 890 PB 2 PG 61
EDWARD CARL JOHNSON AND FRANCIS MASHBURN JOHNSON DB 131 PG 476
MARY SUE JOHNSON AND REBECCA E. JOHNSON
HASH HEIRS DB AND PG NUMBER UNKNOWN
VIRGINIA S. FEAZELL AND DAVID FEAZELL DB 98 PG 284 PB 2 PG 61
FRANCES Y. SQUIRES, ET AL DB 272 PG 284 PB 9 PG 346
STOKER ROAD
2004 / 2030 ADT -Y16REV- STOKER RD
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
-L-
PI Sta 306+58.09
Δ = 22°52' 06.1" (RT)
D = 4°00' 00.0"
L = 571.71'
T = 289.71'
R = 1,432.39'
0 50 100 150 200

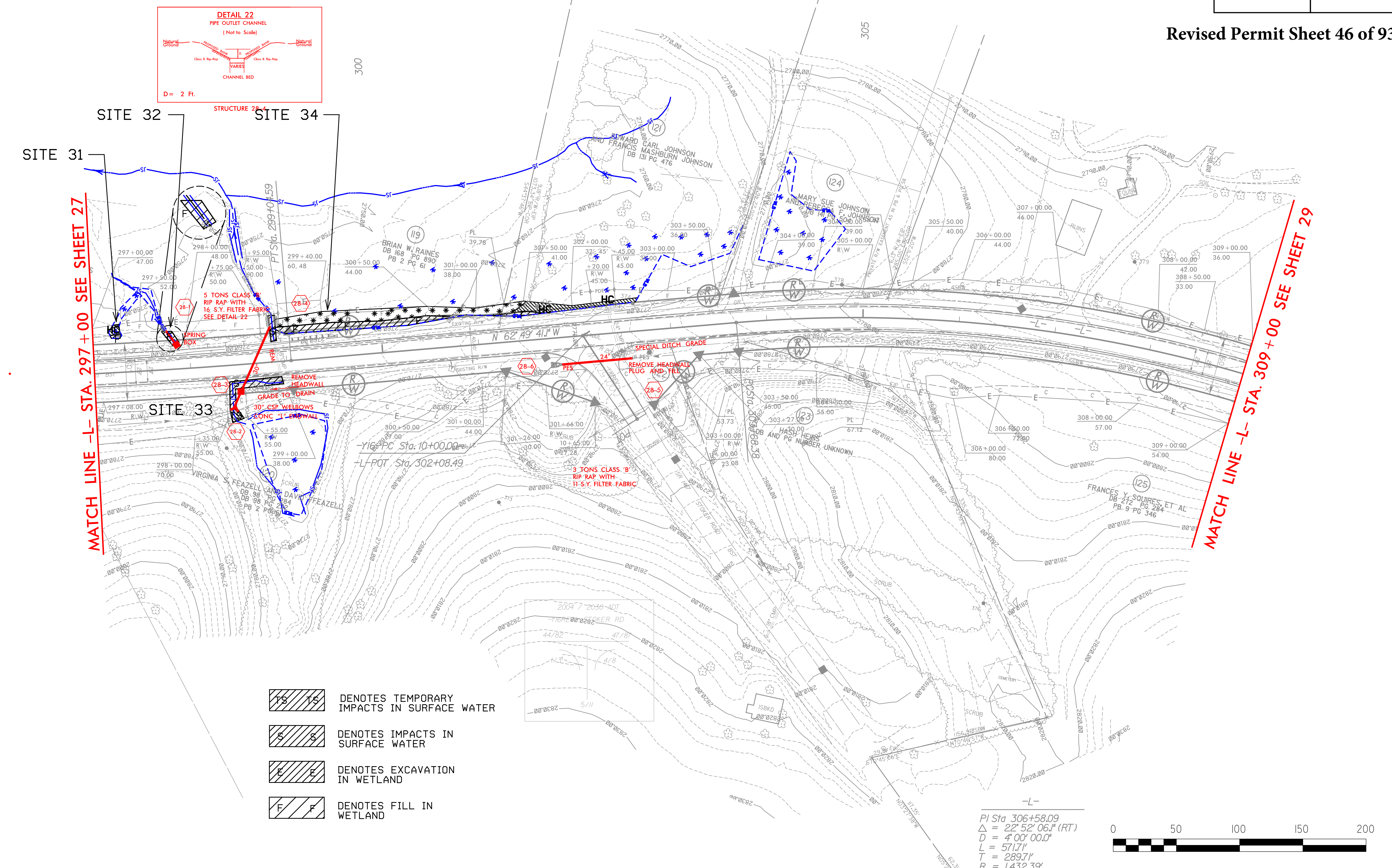
PROJECT REFERENCE NO.	SHEET NO.
R-3101	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 46 of 93

NOTES

FOR -L- PROFILE SEE SHEET 59
FOR -Y16REV- PROFILES SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

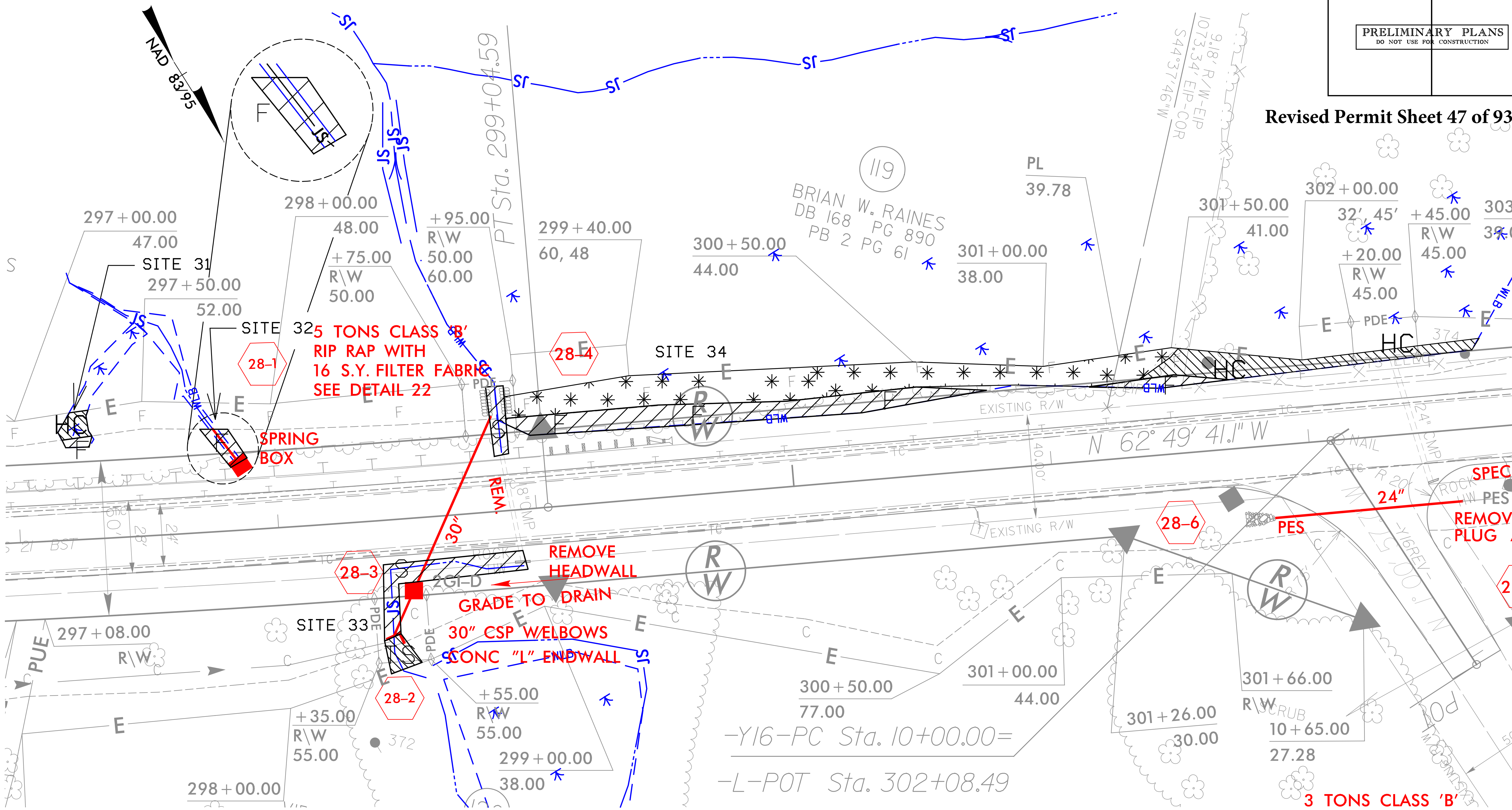


NAD 83/95
DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)
Natural Ground
CHANNEL BED
D= 2 Ft.
STRUCTURE 28-4
SITE 31
SITE 32
SITE 33
SITE 34
MATCH LINE -L- STA. 297+00 SEE SHEET 27
MATCH LINE -L- STA. 309+00 SEE SHEET 29
5 TONS CLASS 'B' RIP RAP WITH 16 S.Y. FILTER FABRIC SEE DETAIL 22
SPRING BOX
REMOVE HEADWALL
GRADE TO DRAIN
30" CSP W/ELBOWS
CONC 'T' ENDWALL
SPECIAL DITCH GRADE
REMOVE HEADWALL PLUG AND FILL
3 TONS CLASS 'B' RIP RAP WITH 11 S.Y. FILTER FABRIC
N 62° 49' 41.1" W
-Y16PC Sta. 10+00.00
-L-POT Sta. 302+08.49
BRIAN W. RAINES DB 168 PG 890 PB 2 PG 61
EDWARD CARL JOHNSON AND FRANCIS MASHBURN JOHNSON DB 131 PG 476
MARY SUE JOHNSON AND REBECCA JOHNSON
HASH HEIRS DB AND PG NUMBER UNKNOWN
FRANCES Y. SQUIRES, ET AL DB 272 PG 284 PB 9 PG 346
VIRGINIA S. FEAZELL
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
-L-
PI Sta 306+58.09
Δ = 22° 52' 06.1" (RT)
D = 4° 00' 00.0"
L = 571.71'
T = 289.71'
R = 1,432.39'
0 50 100 150 200

PROJECT REFERENCE NO.	SHEET NO.
R-3101	28B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

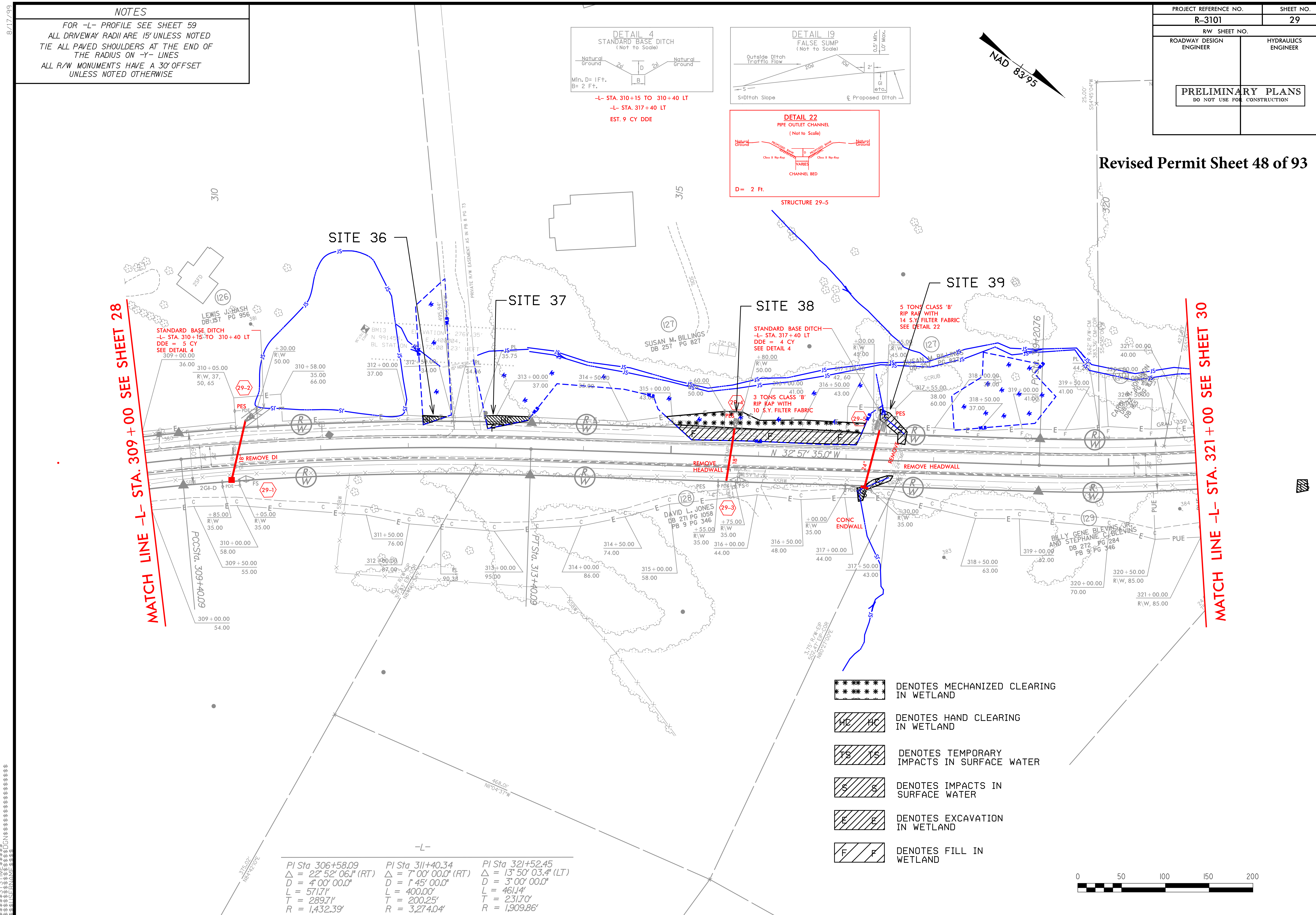
Revised Permit Sheet 47 of 93



NAD 83/95
SITE 31
SITE 32
SITE 33
SITE 34
5 TONS CLASS 'B' RIP RAP WITH 16 S.Y. FILTER FABRIC SEE DETAIL 22
SPRING BOX
REMOVE HEADWALL
GRADE TO DRAIN
30" CSP W/ELBOWS
CONC "L" ENDWALL
2GI-D
REM.
30"
28-1
28-2
28-3
28-4
28-6
BRIAN W. RAINES DB 168 PG 890 PB 2 PG 61
119
N 62° 49' 41.1" W
EXISTING R/W
-Y16-PC Sta. 10+00.00=
-L-POT Sta. 302+08.49
PT Sta. 299+04.59
297+00.00 47.00
297+50.00 52.00
298+00.00 48.00
+95.00 R/W 50.00 60.00
+75.00 R/W 50.00
299+40.00 60, 48
300+50.00 44.00
301+00.00 38.00
PL 39.78
301+50.00 41.00
302+00.00
+20.00 R/W 45.00
+45.00 R/W 45.00
297+08.00 R/W
+35.00 R/W 55.00
+55.00 R/W 55.00
299+00.00 38.00
298+00.00
300+50.00 77.00
301+00.00 44.00
301+26.00 30.00
301+66.00 R/W
10+65.00 27.28
PES
24"
REMOVE PLUG
3 TONS CLASS 'B'
SPECIA
HC
PUE
PDE

Symbol	Description
TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S	DENOTES IMPACTS IN SURFACE WATER
F F	DENOTES FILL IN WETLAND

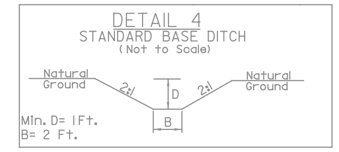
0 20 40 60 80


NOTES
FOR -L- PROFILE SEE SHEET 59
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE
PROJECT REFERENCE NO. R-3101
SHEET NO. 29
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Revised Permit Sheet 48 of 93
DETAIL 4
STANDARD BASE DITCH
(Not to Scale)
-L- STA. 310+15 TO 310+40 LT
-L- STA. 317+40 LT
EST. 9 CY DDE
DETAIL 19
FALSE SUMP
(Not to Scale)
DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)
D= 2 Ft.
STRUCTURE 29-5
NAD 83/95
SITE 36
SITE 37
SITE 38
SITE 39
STANDARD BASE DITCH
-L- STA. 310+15 TO 310+40 LT
DDE = 5 CY
SEE DETAIL 4
STANDARD BASE DITCH
-L- STA. 317+40 LT
DDE = 4 CY
SEE DETAIL 4
3 TONS CLASS 'B' RIP RAP WITH 10 S.Y. FILTER FABRIC
5 TONS CLASS 'B' RIP RAP WITH 14 S.Y. FILTER FABRIC SEE DETAIL 22
REMOVE DI
REMOVE HEADWALL
REMOVE HEADWALL
CONC ENDWALL
N 32° 57' 35.0" W
LEWIS J. NASH DB 157 PG 956
SUSAN M. BILLINGS DB 257 PG 827
DAVID L. JONES DB 271 PG 1058 PB 9 PG 346
BILLY GENE BLEVINS, JR. AND STEPHANIE C. BLEVINS DB 272 PG 284 PB 9 PG 346
MATCH LINE -L- STA. 309+00 SEE SHEET 28
MATCH LINE -L- STA. 321+00 SEE SHEET 30
DENOTES MECHANIZED CLEARING IN WETLAND
DENOTES HAND CLEARING IN WETLAND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
-L-
PI Sta 306+58.09
Δ = 22° 52' 06.1" (RT)
D = 4° 00' 00.0"
L = 571.71'
T = 289.71'
R = 1,432.39'
PI Sta 311+40.34
Δ = 7° 00' 00.0" (RT)
D = 1° 45' 00.0"
L = 400.00'
T = 200.25'
R = 3,274.04'
PI Sta 321+52.45
Δ = 13° 50' 03.4" (LT)
D = 3° 00' 00.0"
L = 461.14'
T = 231.70'
R = 1,909.86'
0 50 100 150 200

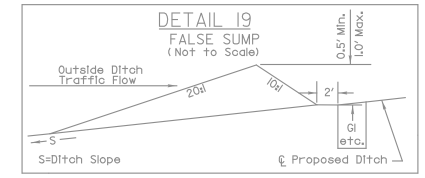
8/17/99

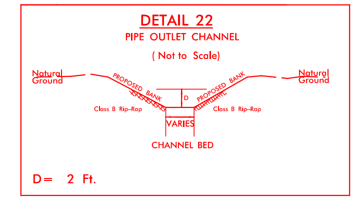
NOTES

FOR -L- PROFILE SEE SHEET 59
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

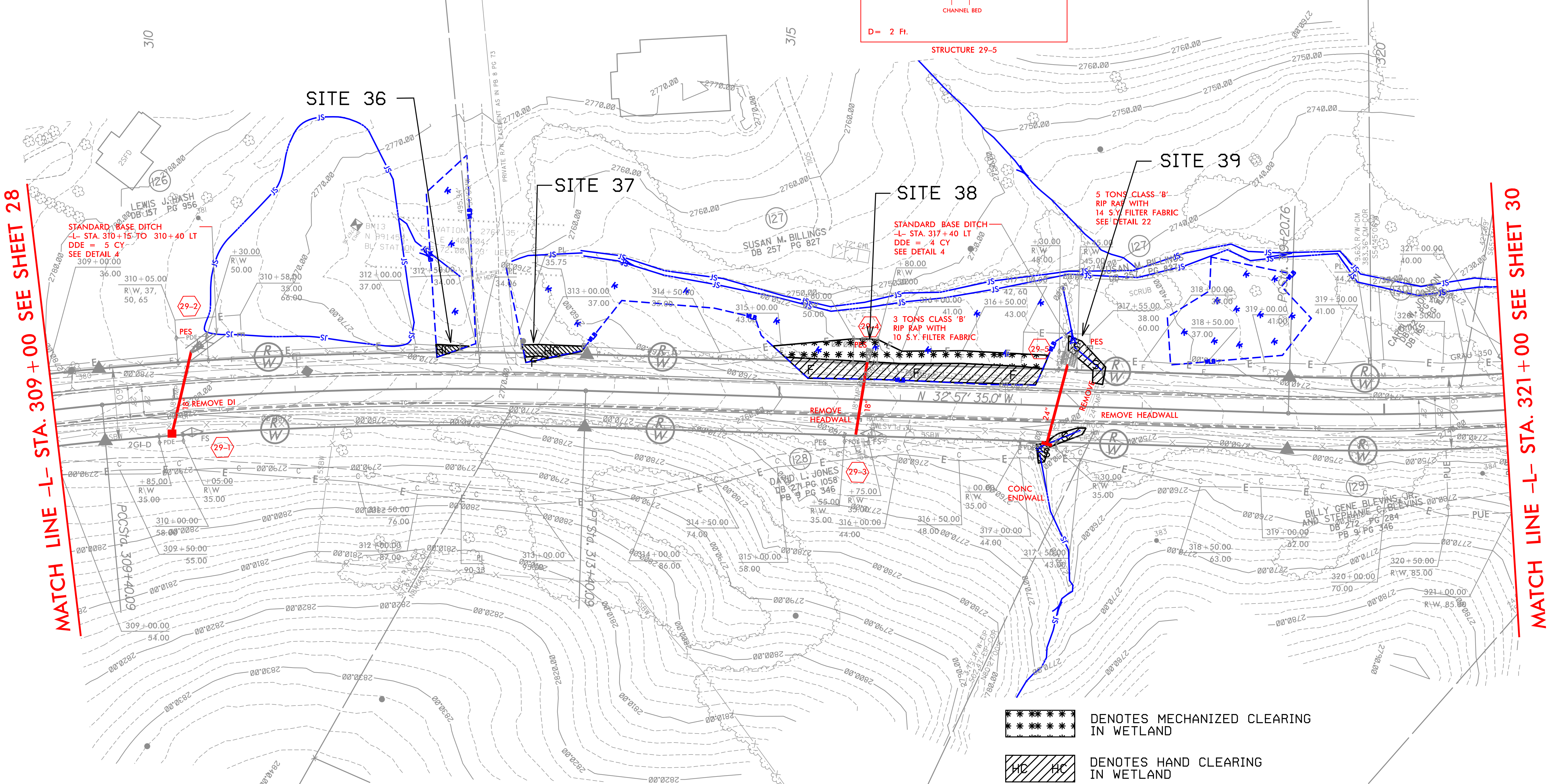


-L- STA. 310+15 TO 310+40 LT
-L- STA. 317+40 LT
EST. 9 CY DDE





STRUCTURE 29-5



Legend	
	DENOTES MECHANIZED CLEARING IN WETLAND
HC	DENOTES HAND CLEARING IN WETLAND
TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S	DENOTES IMPACTS IN SURFACE WATER
E	DENOTES EXCAVATION IN WETLAND
F	DENOTES FILL IN WETLAND

-L-

PI Sta 306+58.09	PI Sta 311+40.34	PI Sta 321+52.45
Δ = 22° 52' 06.1" (RT)	Δ = 7° 00' 00.0" (RT)	Δ = 13° 50' 03.4" (LT)
D = 4° 00' 00.0"	D = 1° 45' 00.0"	D = 3° 00' 00.0"
L = 571.71'	L = 400.00'	L = 461.14'
T = 289.71'	T = 200.25'	T = 231.70'
R = 1,432.39'	R = 3,274.04'	R = 1,909.86'

0 50 100 150 200

PROJECT REFERENCE NO.	SHEET NO.
R-3101	29B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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DENOTES MECHANIZED CLEARING IN WETLAND

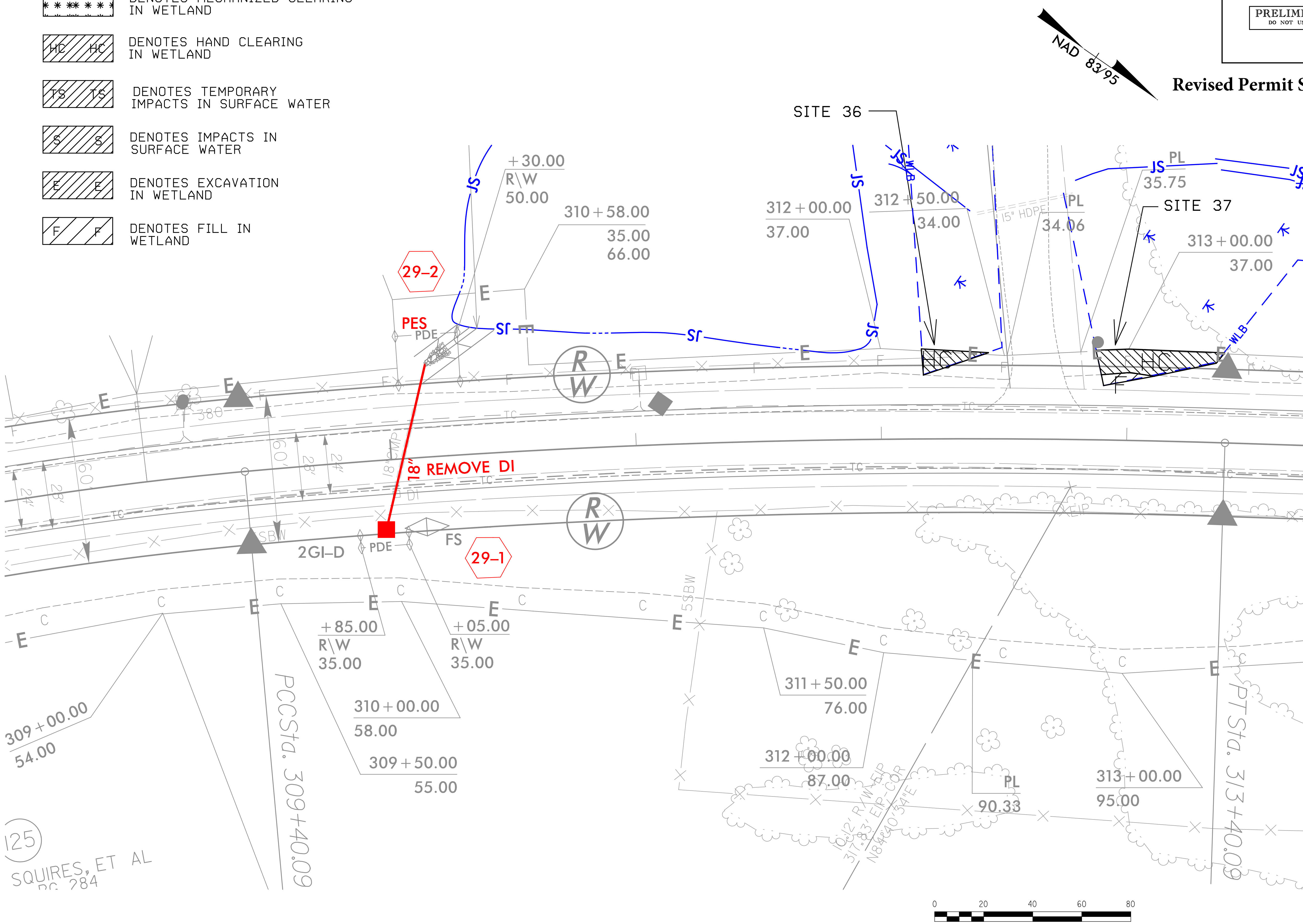
HC HC DENOTES HAND CLEARING IN WETLAND

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

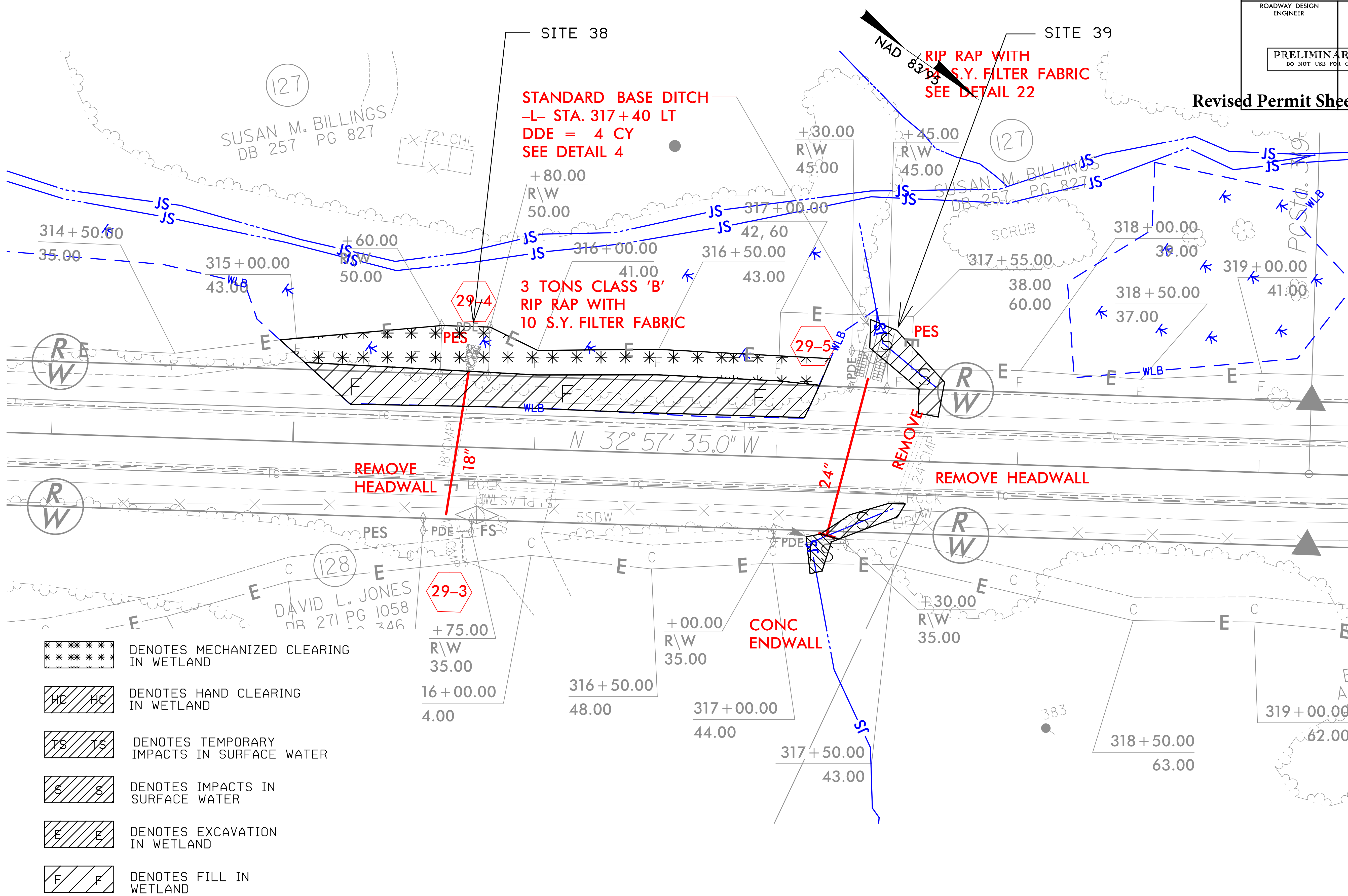
E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND



PROJECT REFERENCE NO.	SHEET NO.
R-3101	29C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SITE 38
SITE 39
NAD 83/93
RIP RAP WITH
15 S.Y. FILTER FABRIC
SEE DETAIL 22
STANDARD BASE DITCH
-L- STA. 317+40 LT
DDE = 4 CY
SEE DETAIL 4
3 TONS CLASS 'B'
RIP RAP WITH
10 S.Y. FILTER FABRIC
SUSAN M. BILLINGS
DB 257 PG 827
DAVID L. JONES
DB 271 PG 1058
29-4
29-5
29-3
PES
PDE
REMOVE HEADWALL
REMOVE HEADWALL
REMOVE
CONC ENDWALL
18"
24"
N 32° 57' 35.0" W
SCRUB
DENOTES MECHANIZED CLEARING IN WETLAND
DENOTES HAND CLEARING IN WETLAND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 60
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

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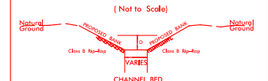
DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)



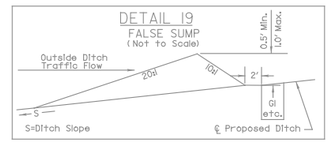
D= 2 Ft.

STRUCTURE 29-5

DETAIL 3
CUT DITCH
(Not to Scale)

-L- STA. 321+50 TO 322+50 RT
-L- STA. 331+50 TO 333+50 RT

DETAIL 19
FALSE SUMP
(Not to Scale)



MATCH LINE -L- STA. 321+00 SEE SHEET 29

MATCH LINE -L- STA. 333+00 SEE SHEET 31

SITE 40

SITE 41

SITE 42

5 TONS CLASS 'B' RIP RAP WITH 16 S.Y. FILTER FABRIC SEE DETAIL 22

2 TONS CLASS 'B' RIP RAP WITH 7 S.Y. FILTER FABRIC

8 TONS CLASS 'B' RIP RAP WITH 32 S.Y. FILTER FABRIC SEE DETAIL 22

PLUG AND ABANDON

CONC ENDWALL

BORE AND JACK

REMOVE HEADWALL

GRADE TO DRAIN

CONC. ENDWALL

N 46° 47' 38.4" W
REMOVE HEADWALL

2GI-D
18" CMP W/ELBOWS

CONC ENDWALL

BORE & JACK

SLIPLINE EXISTING 3'X5' CULVERT WITH 30" CCFRPM PIPE

CUT DITCH
-L- STA. 321+50 TO 322+50 RT
SEE DETAIL 3

CUT DITCH
-L- STA. 331+50 TO 333+50 RT
SEE DETAIL 3

CLARICE THOMPSON EMLEY
DB 68 PG 131

MILTON W. SCOTT
DB 150 PG 880

MILTON WORTON KIRK AND NOVELLA M. KIRK
DB 223 PG 204
DB 69 PG 524
PG 73

DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)

D= 2 Ft.

STRUCTURE 30-2, 30-9

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

0 50 100 150 200

-L-
PI Sta 321+52.45
△ = 13° 50' 03.4" (LT)
D = 3° 00' 00.0"
L = 461.14'
T = 231.70'
R = 1,909.86'

$$$$$SYSTIME$$$$$
$$$$$USERNAME$$$$$DGN$$$$$$$$$$$$$$$$$$$$$

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 60
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

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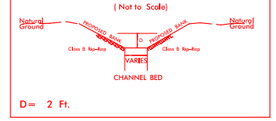
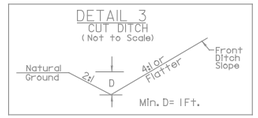
DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)



D= 2 Ft.

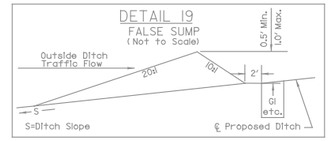
STRUCTURE 29-5

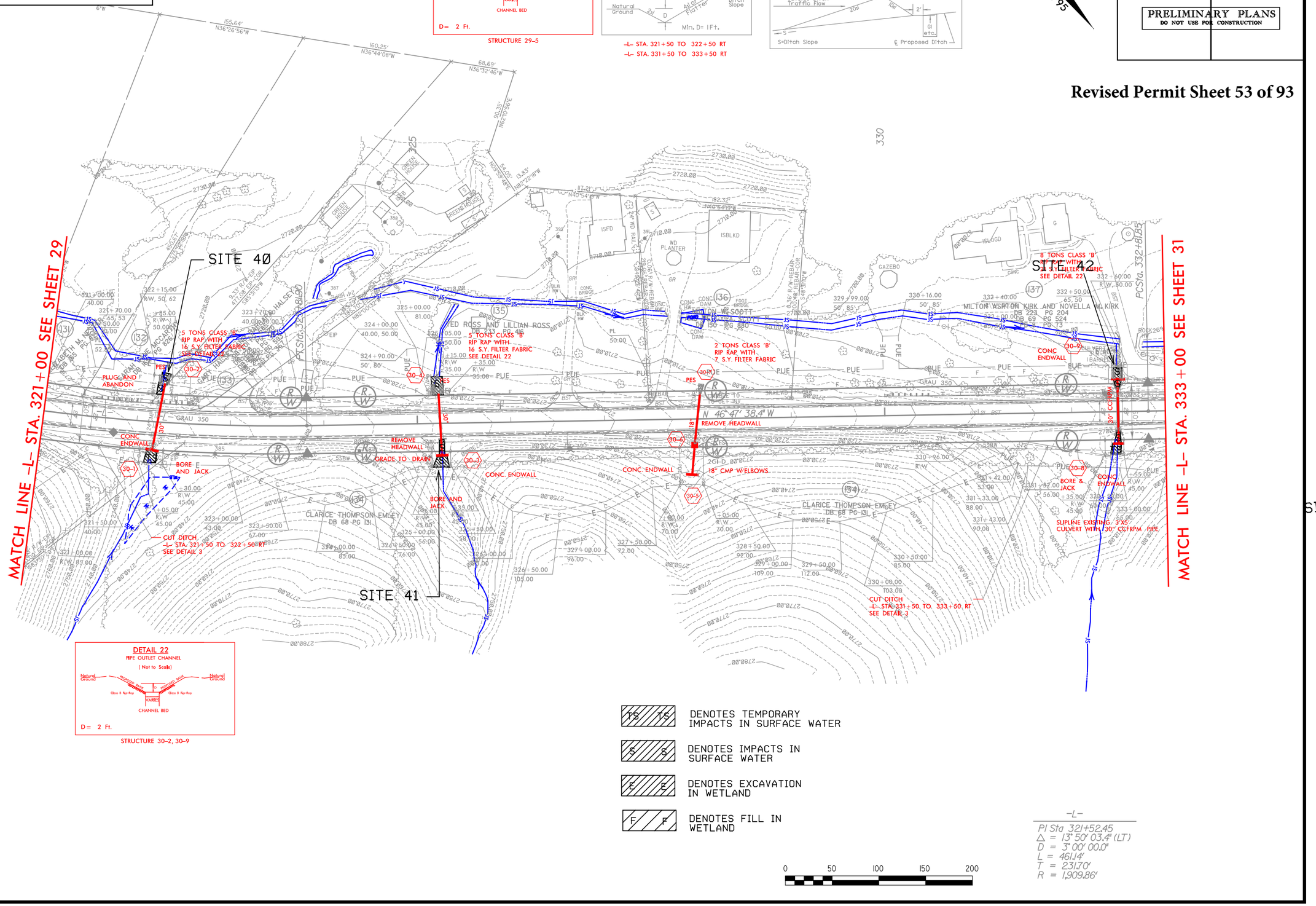
DETAIL 3
CUT DITCH
(Not to Scale)



-L- STA. 321+50 TO 322+50 RT
-L- STA. 331+50 TO 333+50 RT

DETAIL 19
FALSE SUMP
(Not to Scale)





DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)

D= 2 Ft.

STRUCTURE 30-2, 30-9

$$$$USERNAME$$$$ $$$$SYSTIME$$$$ $$$$DGN$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3101	30B

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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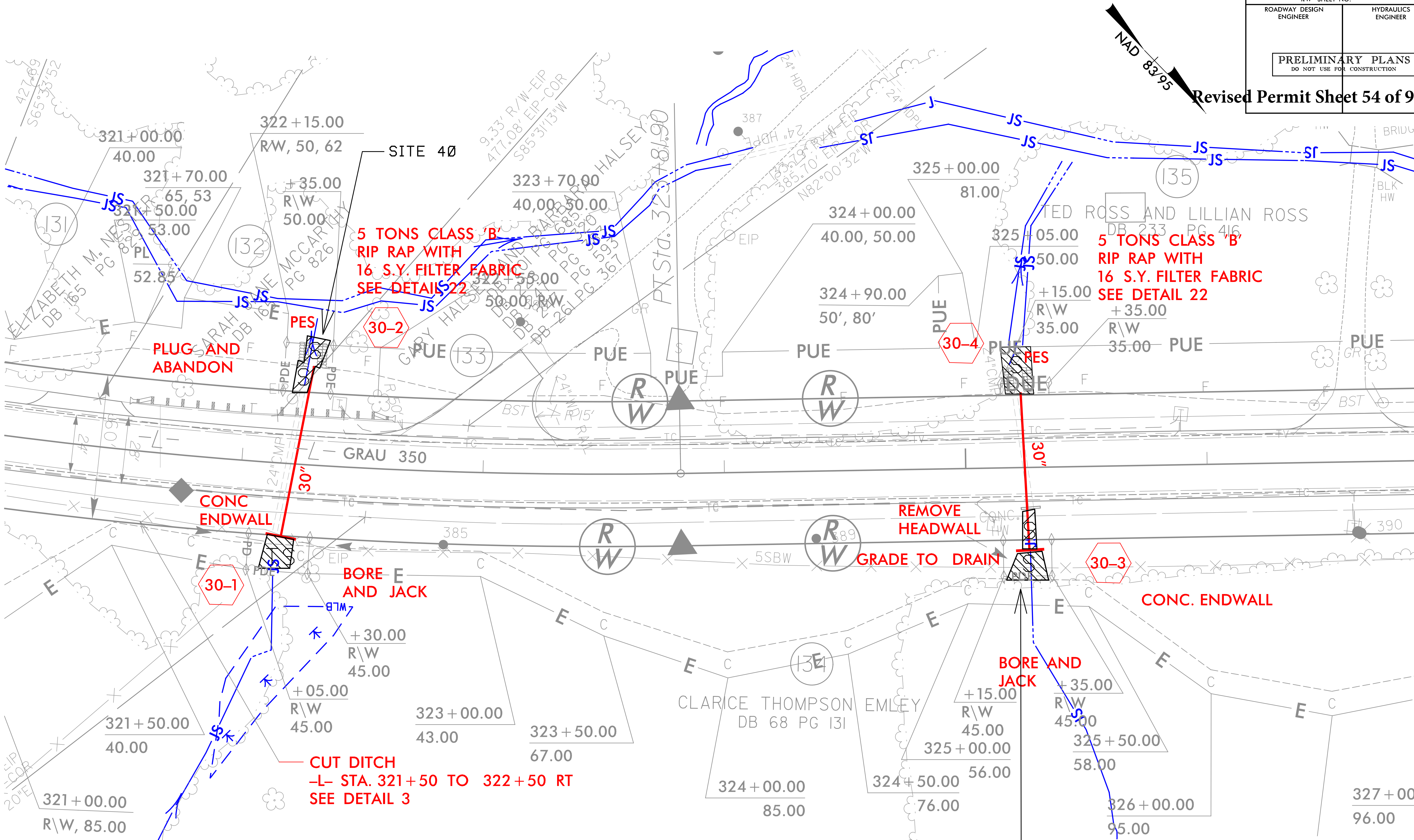
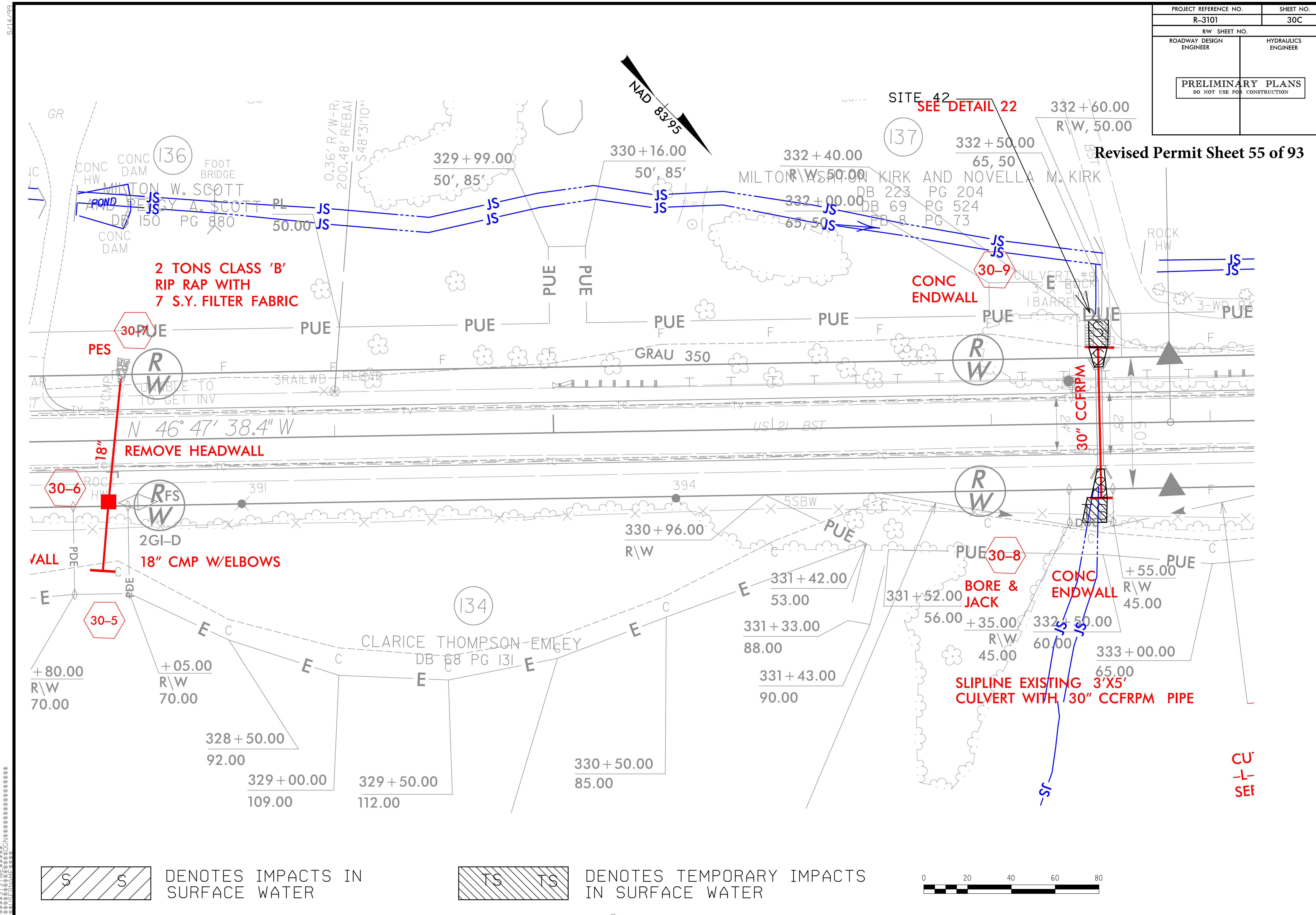


NAD 83/95
SITE 40
SITE 41
5 TONS CLASS 'B'
RIP RAP WITH
16 S.Y. FILTER FABRIC
SEE DETAIL 22
PLUG AND
ABANDON
PES
30-1
30-2
30-3
30-4
CONC
ENDWALL
BORE
AND JACK
CUT DITCH
-L- STA. 321+50 TO 322+50 RT
SEE DETAIL 3
REMOVE
HEADWALL
GRADE TO DRAIN
CONC. ENDWALL
BORE AND
JACK
30"
-L- GRAU 350
TED ROSS AND LILLIAN ROSS
DB 233 PG 416
CLARICE THOMPSON EMLEY
DB 68 PG 131
ELIZABETH M. NEWBER
SARAH JANE MCCARTHY
GARY HALSEY AND BARBARA HALSEY
PT Sta. 320+81.90
PUE
PDE
JS
321+00.00
40.00
321+70.00
65, 53
321+50.00
53.00
322+15.00
R/W, 50, 62
+35.00
R\W
50.00
323+70.00
40.00, 50.00
322+55.00
50.00 R/W
324+00.00
40.00, 50.00
324+90.00
50', 80'
325+00.00
81.00
325+05.00
50.00
+15.00
R\W
35.00
+35.00
R\W
35.00
+30.00
R\W
45.00
+05.00
R\W
45.00
321+50.00
40.00
323+00.00
43.00
323+50.00
67.00
321+00.00
R\W, 85.00
324+00.00
85.00
324+50.00
76.00
+15.00
R\W
45.00
325+00.00
56.00
+35.00
R\W
45.00
325+50.00
58.00
326+00.00
95.00
327+00.
96.00

TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S S	DENOTES IMPACTS IN SURFACE WATER

0 20 40 60 80


PROJECT REFERENCE NO. R-3101
SHEET NO. 30C
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
NAD 83/95
SITE 42
SEE DETAIL 22
2 TONS CLASS 'B' RIP RAP WITH 7 S.Y. FILTER FABRIC
REMOVE HEADWALL
18" CMP W/ELBOWS
CONC ENDWALL
BORE & JACK
SLIPLINE EXISTING 3'X5' CULVERT WITH 30" CCFRPM PIPE
30" CCFRPM
PES
MILTON W. SCOTT AND PEGGY A. SCOTT DB 150 PG 880
MILTON W. ASHTON KIRK AND NOVELLA M. KIRK DB 223 PG 204 DB 69 PG 524 PB 8 PG 73
CLARICE THOMPSON EMLEY DB 68 PG 131
N 46° 47' 38.4" W
US 21 BST
30-5
30-6
30-7
30-8
30-9
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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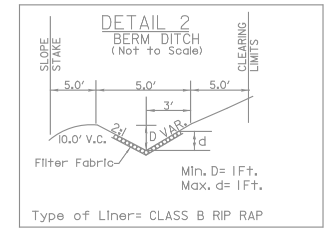
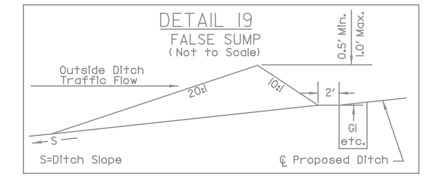
NAD 83/95

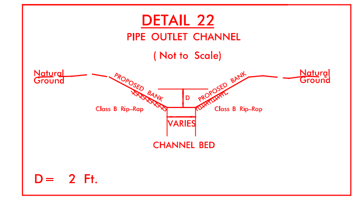
NOTES

FOR -L- PROFILE SEE SHEET 60
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

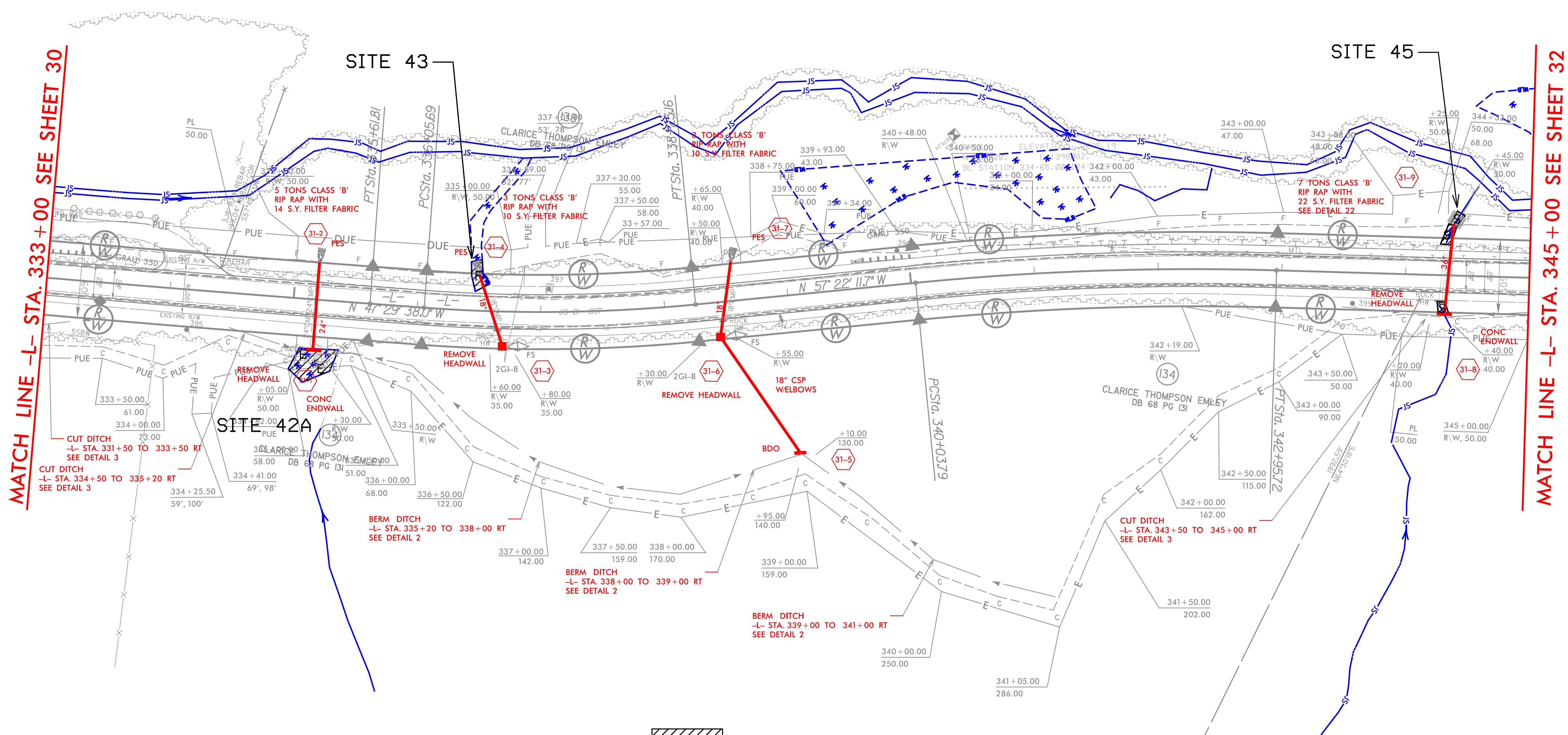


-L- STA. 335+20 TO 338+00 RT
-L- STA. 338+00 TO 339+00 RT
-L- STA. 339+00 TO 341+00 RT





STRUCTURE 31-9



-L-

PI Sta 334+21.83	PI Sta 337+15.70	PI Sta 341+49.95
Δ = 0° 41' 59.6" (LT)	Δ = 9° 52' 33.7" (LT)	Δ = 7° 17' 53.7" (RT)
D = 0° 15' 00.0"	D = 4° 30' 00.0"	D = 2° 30' 00.0"
L = 279.96'	L = 219.47'	L = 291.93'
T = 139.98'	T = 110.01'	T = 146.16'
R = 22,918.31'	R = 1,273.24'	R = 2,291.83'

TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S	DENOTES IMPACTS IN SURFACE WATER
E	DENOTES EXCAVATION IN WETLAND
F	DENOTES FILL IN WETLAND

0 50 100 150 200

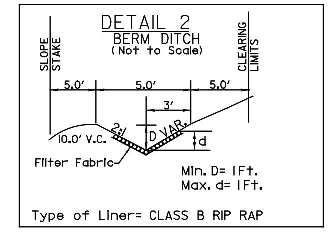
8/17/99

NOTES

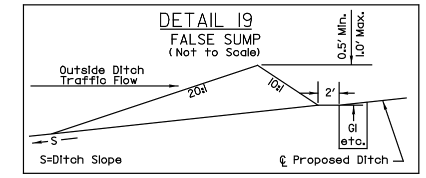
FOR -L- PROFILE SEE SHEET 60
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

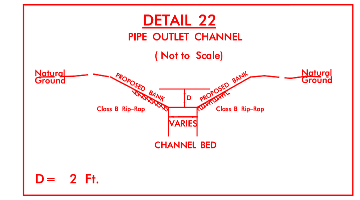
PROJECT REFERENCE NO.	SHEET NO.
R-3101	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



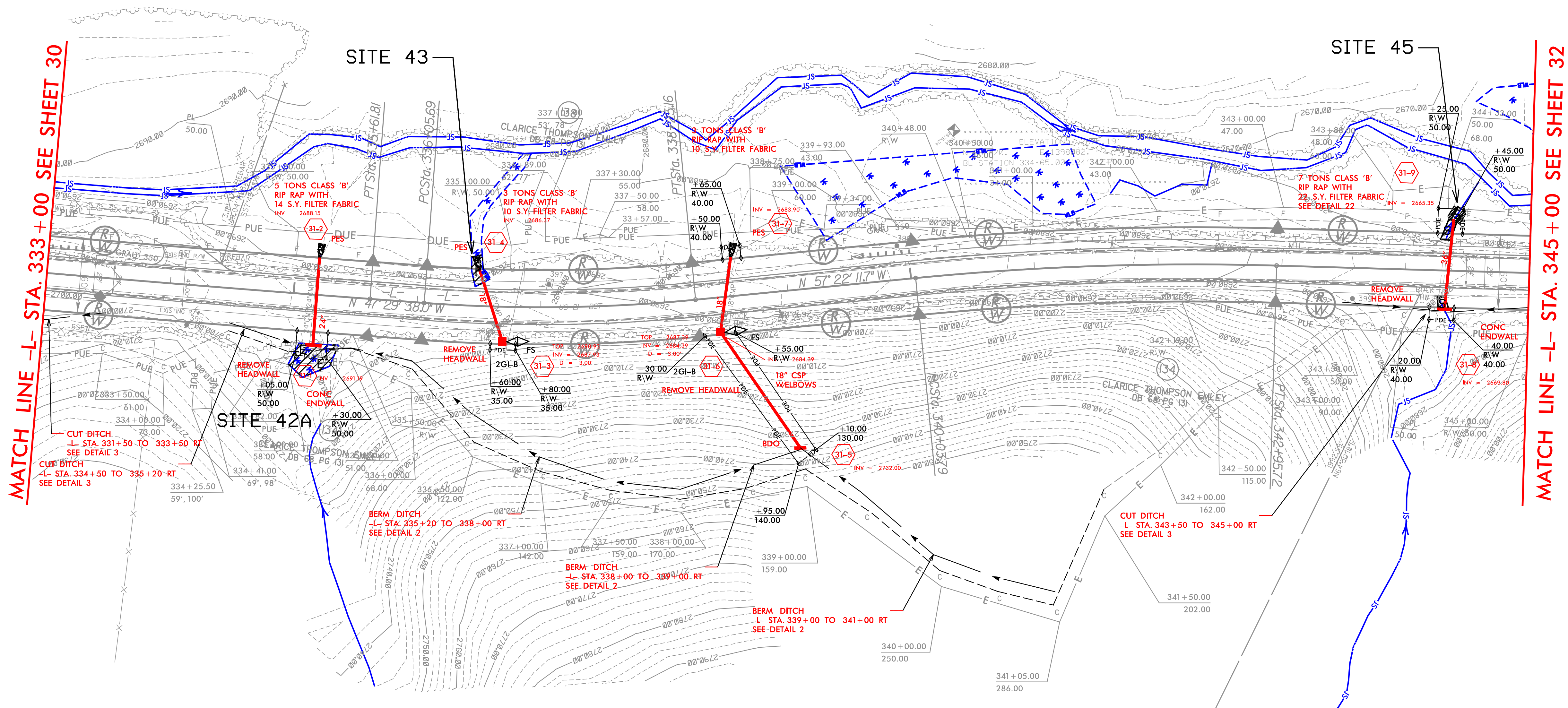
-L- STA. 335+20 TO 338+00 RT
-L- STA. 338+00 TO 339+00 RT
-L- STA. 339+00 TO 341+00 RT





STRUCTURE 31-9

NAD 83/95

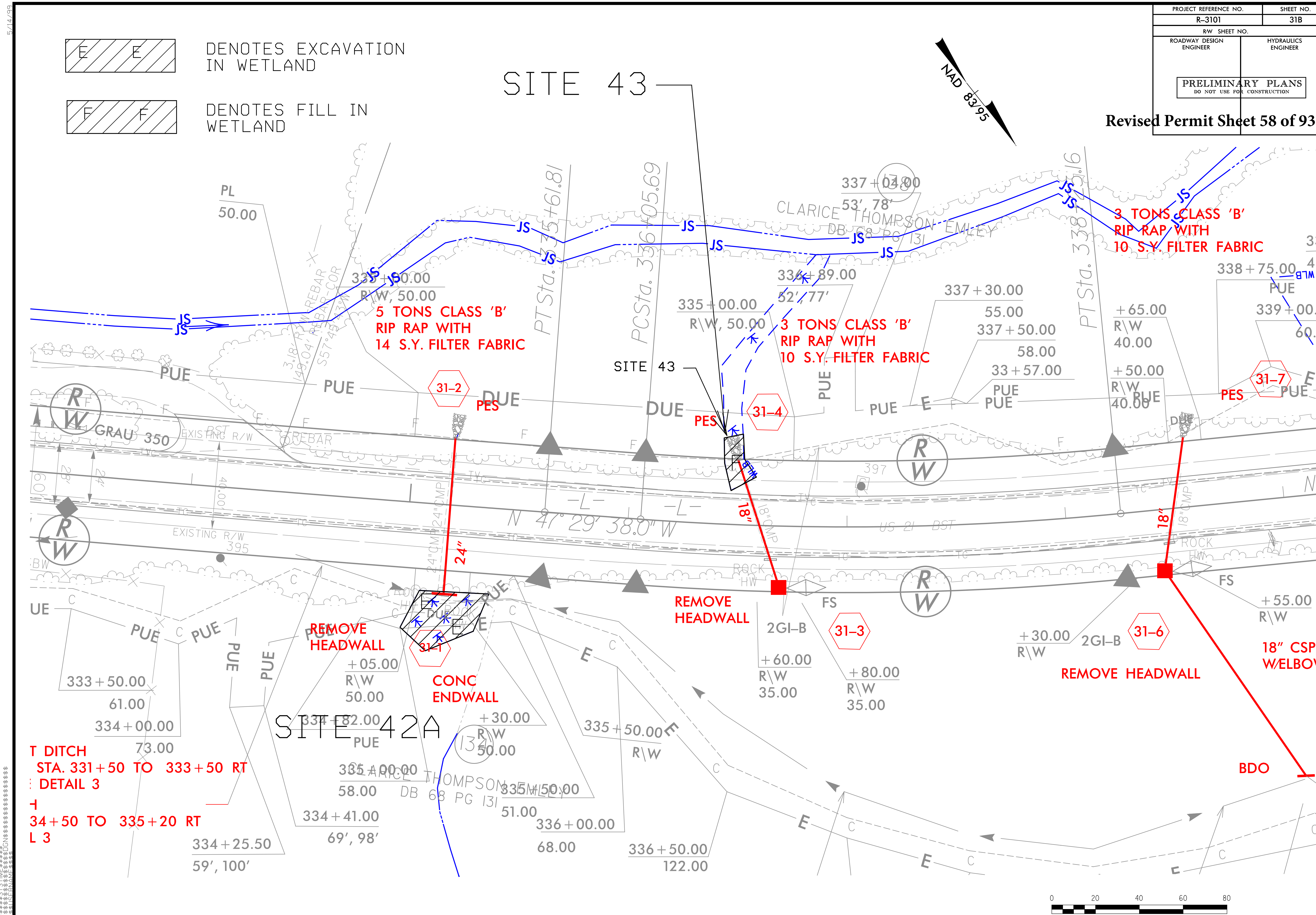

SITE 43
SITE 42A
SITE 45
MATCH LINE -L- STA. 333+00 SEE SHEET 30
MATCH LINE -L- STA. 345+00 SEE SHEET 32
N 47°29'38.0" W
N 57°22'11.7" W
CUT DITCH -L- STA. 331+50 TO 333+50 RT SEE DETAIL 3
CUT DITCH -L- STA. 334+50 TO 335+20 RT SEE DETAIL 3
BERM DITCH -L- STA. 335+20 TO 338+00 RT SEE DETAIL 2
BERM DITCH -L- STA. 338+00 TO 339+00 RT SEE DETAIL 2
BERM DITCH -L- STA. 339+00 TO 341+00 RT SEE DETAIL 2
CUT DITCH -L- STA. 343+50 TO 345+00 RT SEE DETAIL 3
5 TONS CLASS 'B' RIP RAP WITH 14 S.Y. FILTER FABRIC
3 TONS CLASS 'B' RIP RAP WITH 10 S.Y. FILTER FABRIC
7 TONS CLASS 'B' RIP RAP WITH 22 S.Y. FILTER FABRIC SEE DETAIL 22
REMOVE HEADWALL
CONC ENDWALL
18" CSP W/ELBOWS
CLARICE THOMPSON EMLEY DB 68 PG 131

-L-

PI Sta 334+21.83	PI Sta 337+15.70	PI Sta 341+49.95
Δ = 0°41'59.6" (LT)	Δ = 9°52'33.7" (LT)	Δ = 7°17'53.7" (RT)
D = 0°15'00.0"	D = 4°30'00.0"	D = 2°30'00.0"
L = 279.96'	L = 219.47'	L = 291.93'
T = 139.98'	T = 110.01'	T = 146.16'
R = 22,918.31'	R = 1,273.24'	R = 2,291.83'

Symbol	Legend
TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S	DENOTES IMPACTS IN SURFACE WATER
E	DENOTES EXCAVATION IN WETLAND
F	DENOTES FILL IN WETLAND

0 50 100 150 200


PROJECT REFERENCE NO.
R-3101
SHEET NO.
31B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Revised Permit Sheet 58 of 93
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
SITE 43
NAD 83/95
CLARICE THOMPSON EMLEY
DB 68 PG 131
5 TONS CLASS 'B' RIP RAP WITH 14 S.Y. FILTER FABRIC
3 TONS CLASS 'B' RIP RAP WITH 10 S.Y. FILTER FABRIC
3 TONS CLASS 'B' RIP RAP WITH 10 S.Y. FILTER FABRIC
31-2
31-4
31-7
31-3
31-6
31-1
PES
REMOVE HEADWALL
REMOVE HEADWALL
REMOVE HEADWALL
CONC ENDWALL
SITE 42A
N 47° 29' 38.0" W
US 21
-L-
24"
18"
18"
2GI-B
2GI-B
18" CSP W/ELBOW
BDO
T DITCH
STA. 331+50 TO 333+50 RT
DETAIL 3
34+50 TO 335+20 RT
L 3
333+50.00
334+00.00
334+41.00
334+25.50
335+00.00
335+50.00
336+00.00
336+50.00
336+89.00
337+04.00
337+30.00
337+50.00
338+75.00
PT Sta. 335+61.81
PC Sta. 336+05.69
0 20 40 60 80

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	31C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

Revised Permit Sheet 59 of 93

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

340 + 50.00
86.00

341 + 00.00
34.00

342 + 00.00
43.00

343 + 00.00
47.00

343 + 88.00
48.00
63.00

SITE 45
+ 25.00
R\W
50.00

344 + 33.00
50.00
68.00

+ 45.00
R\W
50.00

7 TONS CLASS 'B'
RIP RAP WITH
22 S.Y. FILTER FABRIC
SEE DETAIL 22

31–9

36"

REMOVE
HEADWALL

CONC
ENDWALL

+ 40.00
R\W
40.00

31–8

342 + 19.00
R\W

134

CLARICE THOMPSON EMLEY
DB 68 PG 131

343 + 50.00
50.00

343 + 00.00
90.00

342 + 50.00
115.00

PTSta. 342+95.72

1992.59'
N64°30'18"E

+ 20.00
R\W
40.00

PL
50.00

345 + 00.00
R\W, 50.00

0 20 40 60 80

8/17/99

NOTES

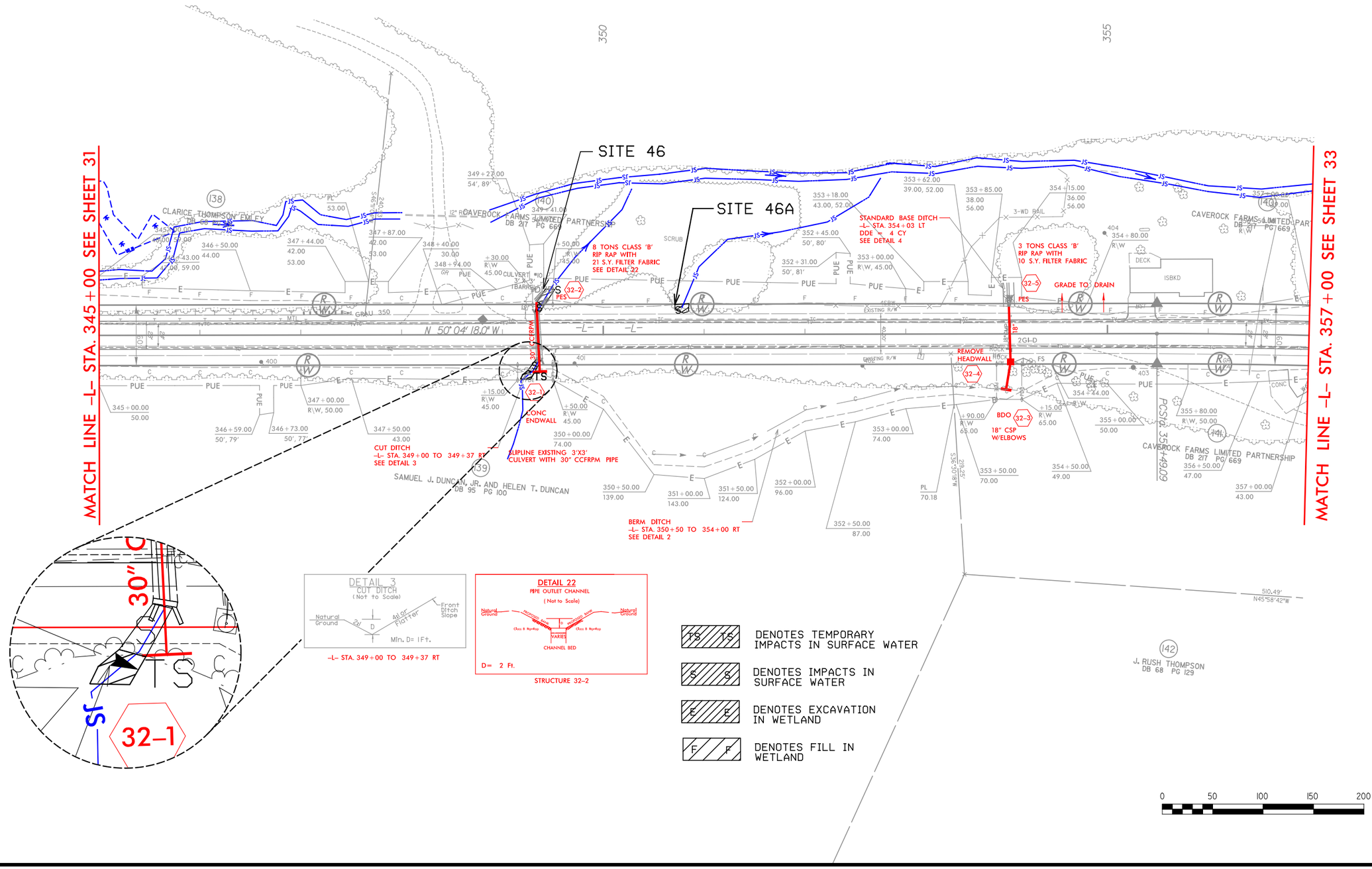
FOR -L- PROFILE SEE SHEET 61
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

Revised Permit Sheet 60 of 93



8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 61
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

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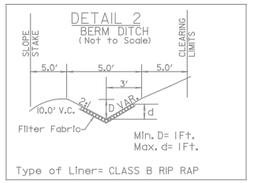
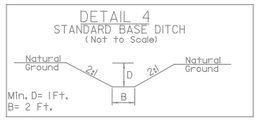
DETAIL 2
BERM DITCH
(Not to Scale)



Type of Liner= CLASS B RIP RAP

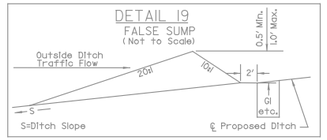
-L- STA. 350+50 TO 354+00 RT

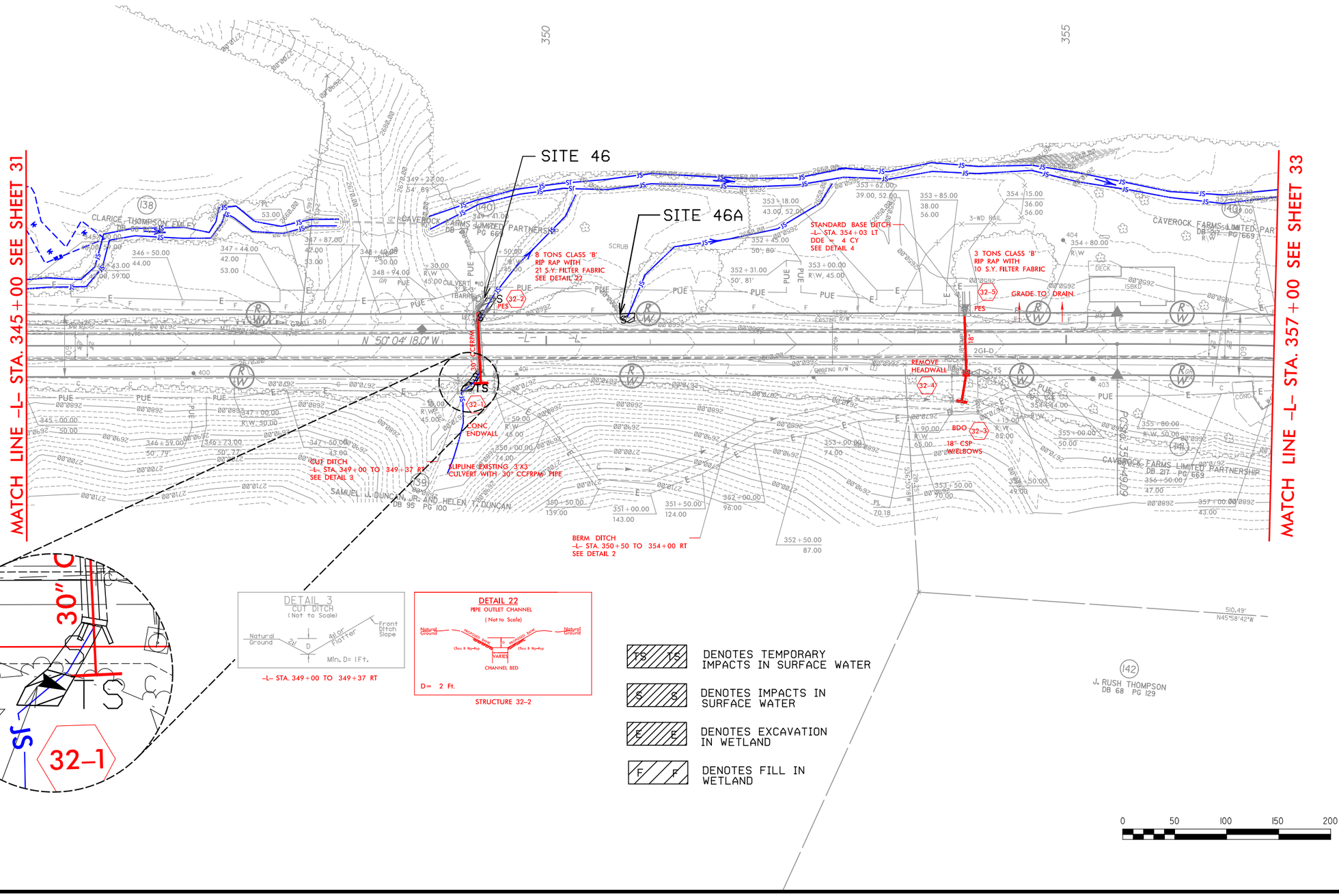
DETAIL 4
STANDARD BASE DITCH
(Not to Scale)

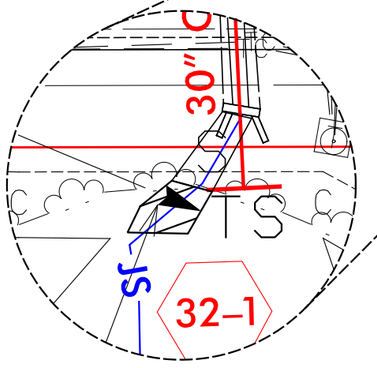


-L- STA. 354+03 LT
EST. 4 CU. YD. DDE

DETAIL 19
FALSE SUMP
(Not to Scale)







DETAIL 3
CUT DITCH
(Not to Scale)

-L- STA. 349+00 TO 349+37 RT

DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)

D= 2 Ft.

STRUCTURE 32-2

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

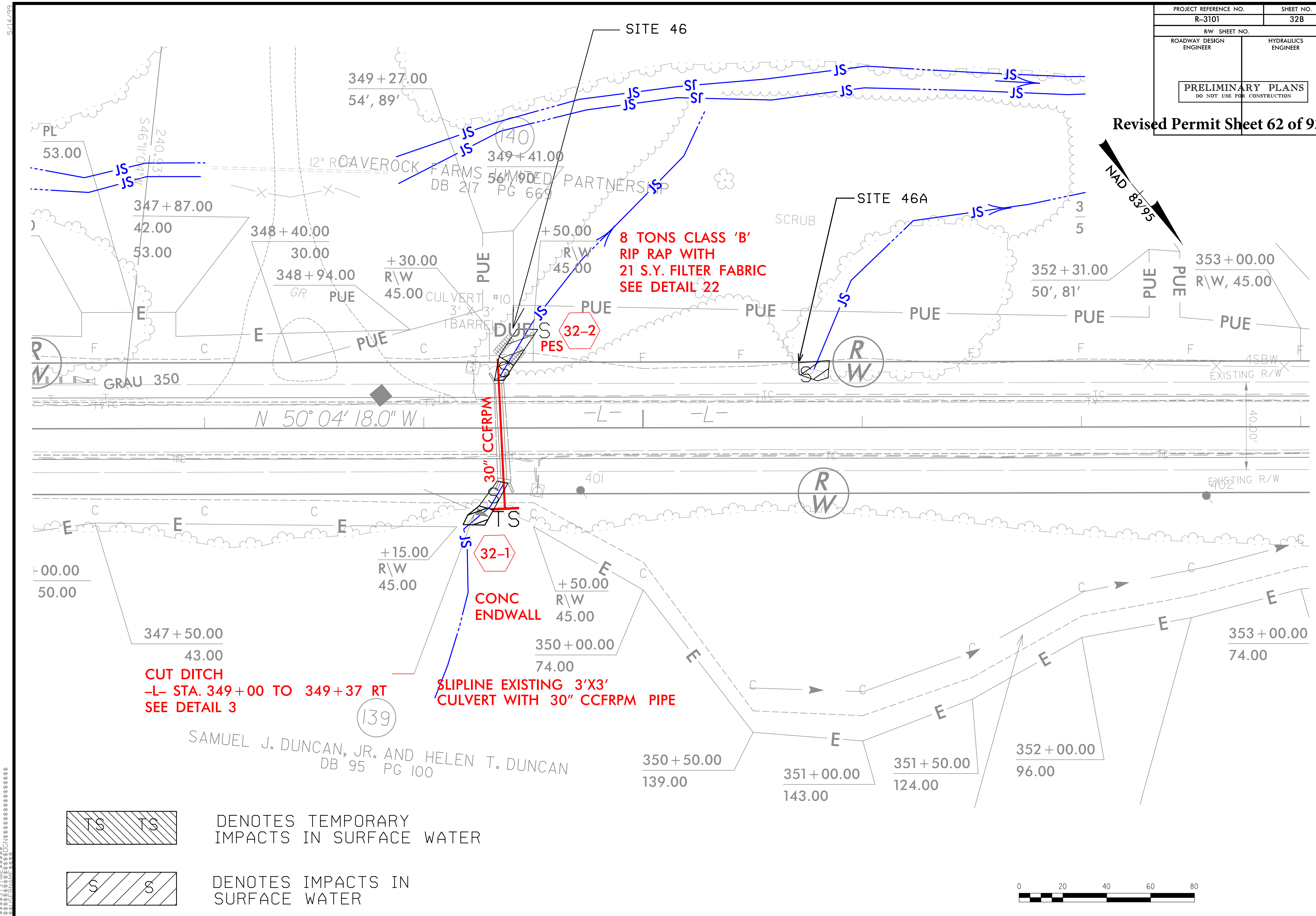
S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

0 50 100 150 200

$$$$$SYSTIME$$$$$
$$$$$FILENAME$$$$$


PROJECT REFERENCE NO. R-3101
SHEET NO. 32B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Revised Permit Sheet 62 of 93
SITE 46
SITE 46A
NAD 83/95
CAVEROCK FARMS LIMITED PARTNERSHIP
DB 217 PG 669
8 TONS CLASS 'B' RIP RAP WITH 21 S.Y. FILTER FABRIC SEE DETAIL 22
32-2
32-1
PES
30" CCFRPM
CONC ENDWALL
N 50° 04' 18.0" W
-L-
CUT DITCH -L- STA. 349+00 TO 349+37 RT SEE DETAIL 3
SLIPLINE EXISTING 3'X3' CULVERT WITH 30" CCFRPM PIPE
CULVERT #10 3' X 3' 1BARREL
SAMUEL J. DUNCAN, JR. AND HELEN T. DUNCAN
DB 95 PG 100
139
140
SCRUB
EXISTING R/W
349+27.00 54', 89'
349+41.00 56', 90'
347+87.00 42.00 53.00
348+40.00 30.00
348+94.00
+30.00 R\W 45.00
+50.00 R\W 45.00
352+31.00 50', 81'
353+00.00 R\W, 45.00
+15.00 R\W 45.00
+50.00 R\W 45.00
347+50.00 43.00
350+00.00 74.00
350+50.00 139.00
351+00.00 143.00
351+50.00 124.00
352+00.00 96.00
353+00.00 74.00
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
0 20 40 60 80

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 61
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

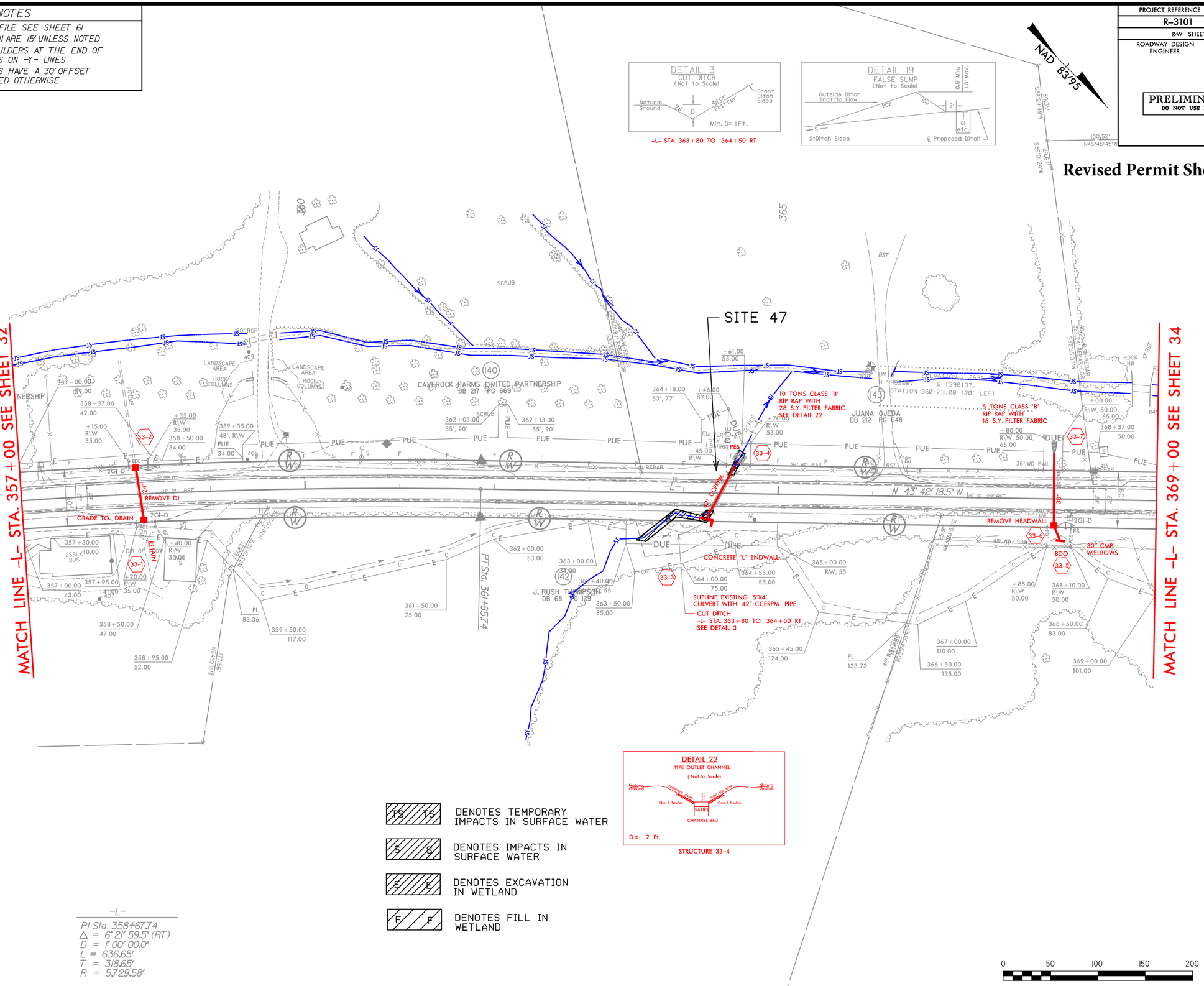
PROJECT REFERENCE NO.	SHEET NO.
R-3101	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

Revised Permit Sheet 63 of 93

SEE



-L- STA. 363+80 TO 364+50 RT

STRUCTURE 33-4

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

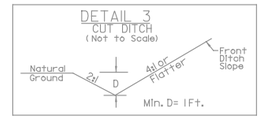
S S DENOTES IMPACTS IN SURFACE WATER

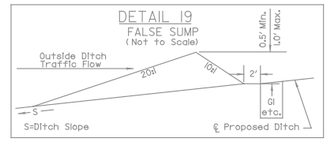
E E DENOTES EXCAVATION IN WETLAND

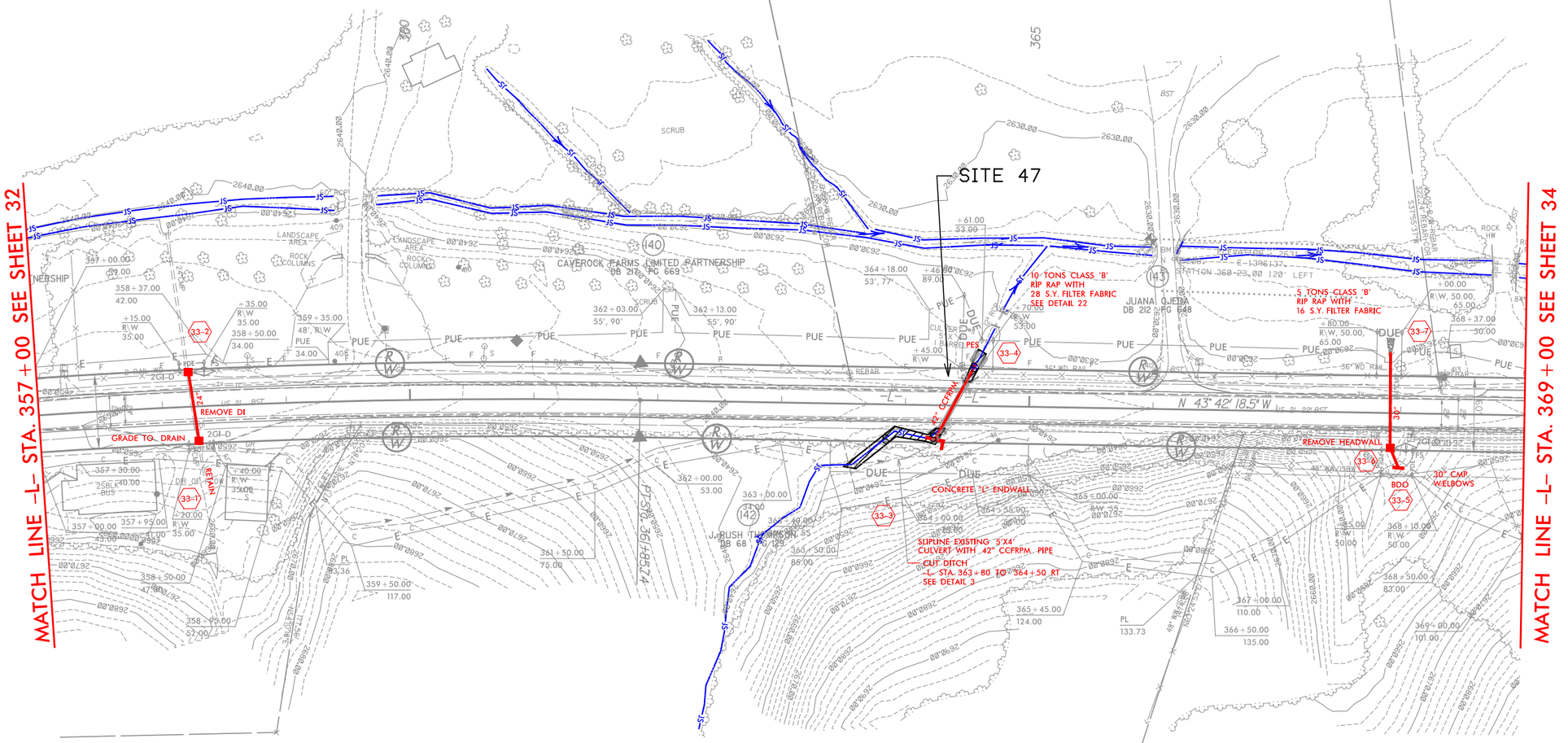
F F DENOTES FILL IN WETLAND

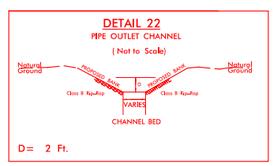
0 50 100 150 200

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$DGN$$$$









8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 61
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 64 of 93

DETAIL 3
CUT DITCH
(Not to Scale)

-L- STA. 363+80 TO 364+50 RT

DETAIL 19
FALSE SUMP
(Not to Scale)

DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)

STRUCTURE 33-4

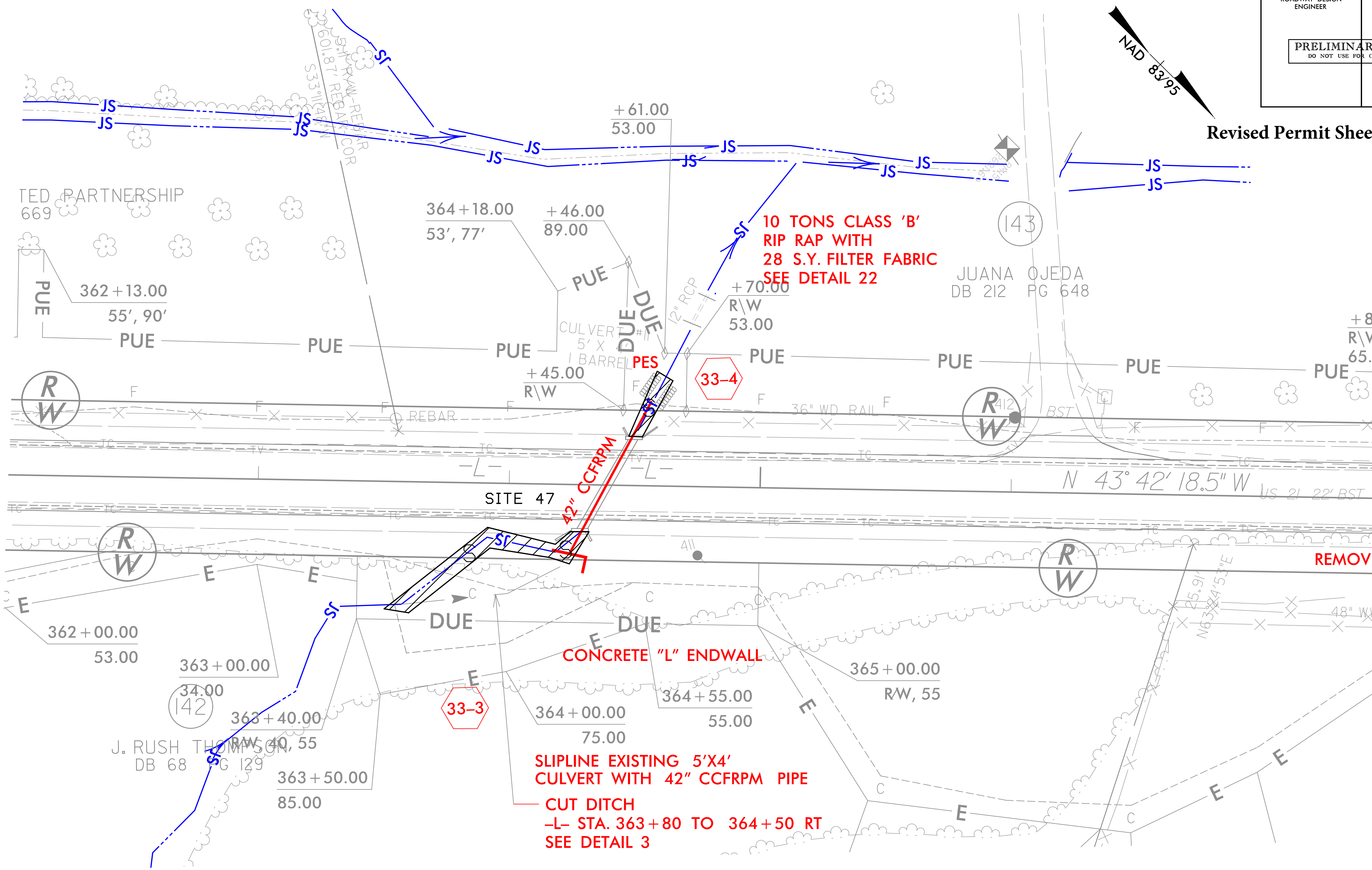
- ▨ TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- ▨ S S — DENOTES IMPACTS IN SURFACE WATER
- ▨ E E — DENOTES EXCAVATION IN WETLAND
- ▨ F F — DENOTES FILL IN WETLAND

-L-
PI Sta 358+67.74
△ = 6° 21' 59.5" (RT)
D = 1° 00' 00.0"
L = 636.65'
T = 318.65'
R = 5,729.58'

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3101	33B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DENOTES IMPACTS IN SURFACE WATER

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	34
R/W SHEET NO.	

PERMIT DRAWING

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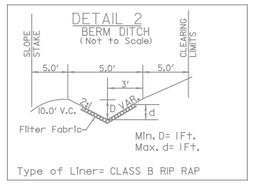
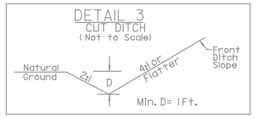
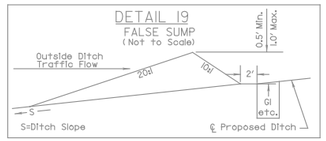
NAD 83/95

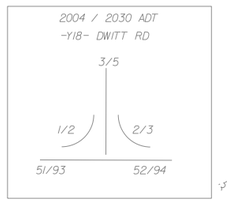


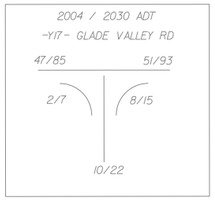
-L- STA. 376+13 TO 380+50 RT
-L- STA. 380+50 TO 384+90 RT

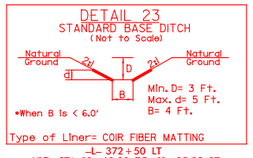


-L- STA. 372+00 TO 372+50 RT









-L- 372+50 LT
-Y17- STA. 10+63.80 TO 11+35.85 RT
EST. DDE = 300 CY

MATCH LINE -L- STA. 369+00 SEE SHEET 33

MATCH LINE -L- STA. 381+00 SEE SHEET 35

SITE 48
SEE DETAIL 23

SITE 48A

-Y17- PT STA. 10+00.00 =
-L- POC STA. 373+04.69

-Y18- POC STA. 13+06.84 =
-L- POC STA. 378+26.30

5+00.00 POT
-BY24- 134

6+25.67 -BY23- 132

9+90.98 POT
-BY23- 133

END CONSTRUCTION
-Y17- POT STA. 12+50.00

CUT DITCH
-L- STA. 372+00 TO 372+50 RT
SEE DETAIL 3

STANDARD BASE DITCH
-Y17- STA. 10+63.80 TO 11+35.85 RT
SEE DETAIL 23

BERM DITCH
-L- STA. 376+13 TO 380+50 RT
SEE DETAIL 2

BERM DITCH
-L- STA. 380+50 TO 384+90 RT
SEE DETAIL 2

5 TONS CLASS 'B' RIP RAP WITH 15 S.Y. FILTER FABRIC
INV = 2615.05

CONC. ENDWALL
INV = 2615.78

CONC. ENDWALL
INV = 2624.26

REMOVE DI
TOP = 2625.77
INV1 = 2620.77
d = 5.0'

PLUG AND ABANDON

GRADE TO DRAIN

BORE AND JACK

GRADE TO DRAIN

DB 168 PG 9
DB 269 PG 83

DB 255 PG 734

DB 253 PG 1342

DB 32 PG 590

DB 281 PG 1005

371+85.00 R/W, 70

372+85.00 R/W, 58, 70

375+00.00 R/W, 65.00

376+50.00 R/W, 65.00

371+00.00 R/W

372+00.00 R/W 90.00

372+50.00 R/W 90.00

+25.00 R/W 65.00

+05.00 R/W 65.00 PL 65.00

+25.00 R/W 35.00

+05.00 R/W 35.00

+90.00 R/W 35.00

369+39.00 R/W

PI Sta 371+77.91

PI Sta 375+54.26

PI Sta 373+52.08

PI Sta 373+31.99

PI Sta 378+19.77

PI Sta 10+79.23
Δ = 14° 37' 23.1" (LT)
D = 13° 00' 00.0"
L = 112.49'
T = 56.55'
R = 440.74'

PI Sta 11+63.85
Δ = 10° 56' 21.4" (LT)
D = 4° 15' 00.0"
L = 257.39'
T = 129.09'
R = 1,348.14'

PI Sta 373+66.36
Δ = 7° 31' 37.0" (LT)
D = 2° 00' 00.0"
L = 376.35'
T = 188.45'
R = 2,864.79'

PI Sta 380+48.45
Δ = 6° 51' 08.1" (RT)
D = 1° 30' 00.0"
L = 456.82'
T = 228.68'
R = 3,819.72'

-Y17-
-Y17-POT Sta. 10+00.00=
-L-POC Sta. 373+04.69
N 52° 03' 41.4" E
-Y17-PC Sta. 10+22.68
PI Sta 10+79.23
Δ = 14° 37' 23.1" (LT)
D = 13° 00' 00.0"
L = 112.49'
T = 56.55'
R = 440.74'
-Y17-PT Sta. 11+35.17
N 37° 26' 18.3" E
-Y17-POT Sta. 12+79.68

-Y18-
-Y18-POT Sta. 10+00.00
N 64° 01' 52.6" E
-Y18-PC Sta. 10+34.76
PI Sta 11+63.85
Δ = 10° 56' 21.4" (LT)
D = 4° 15' 00.0"
L = 257.39'
T = 129.09'
R = 1,348.14'
-Y18-PT Sta. 12+92.16
N 53° 05' 31.2" E
-Y18-POT Sta. 13+06.84=
-L-POC Sta. 378+26.30

-L-
PI Sta 373+66.36
Δ = 7° 31' 37.0" (LT)
D = 2° 00' 00.0"
L = 376.35'
T = 188.45'
R = 2,864.79'

PI Sta 380+48.45
Δ = 6° 51' 08.1" (RT)
D = 1° 30' 00.0"
L = 456.82'
T = 228.68'
R = 3,819.72'

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

0 50 100 150 200

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

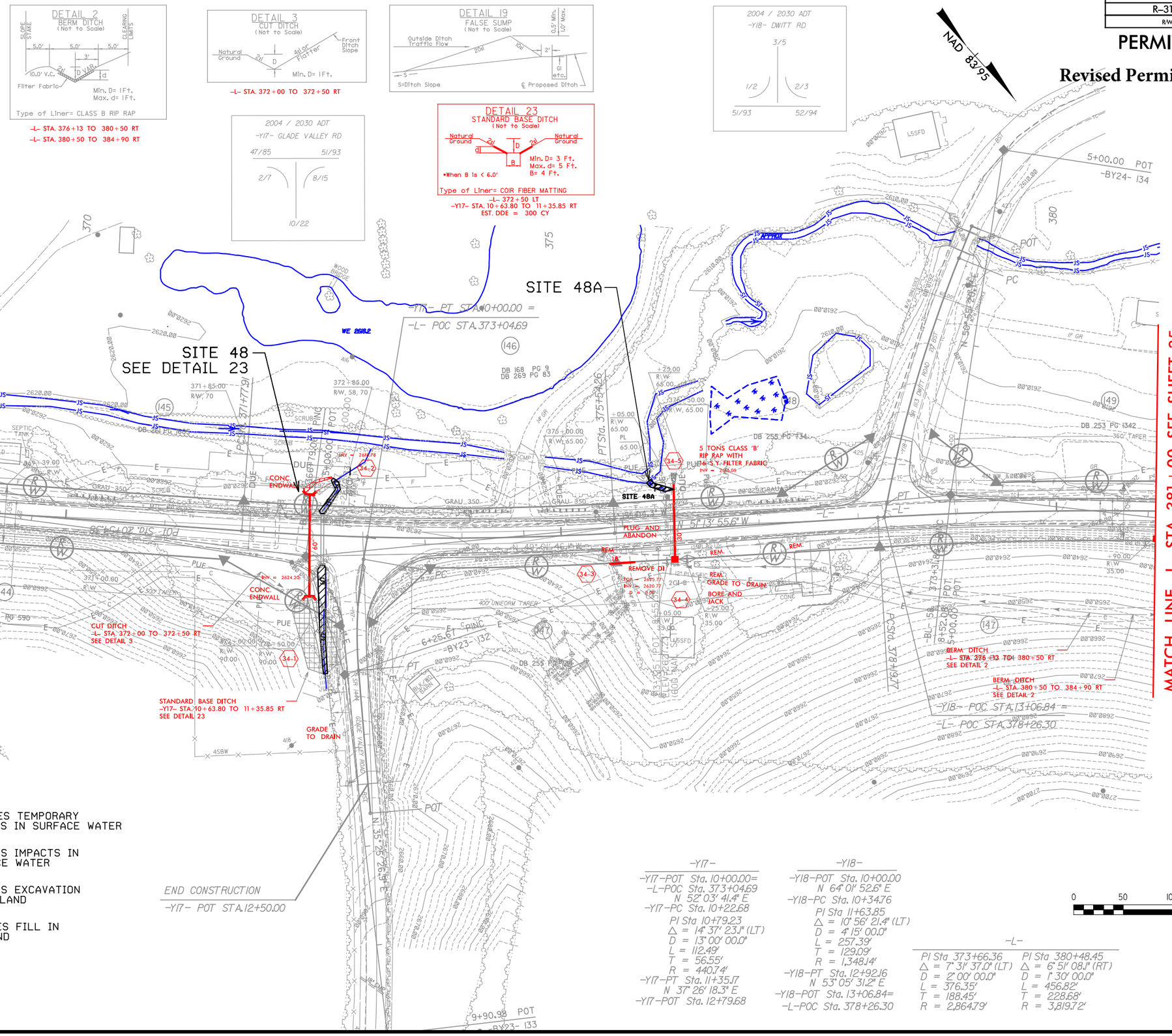
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	34
R/W SHEET NO.	

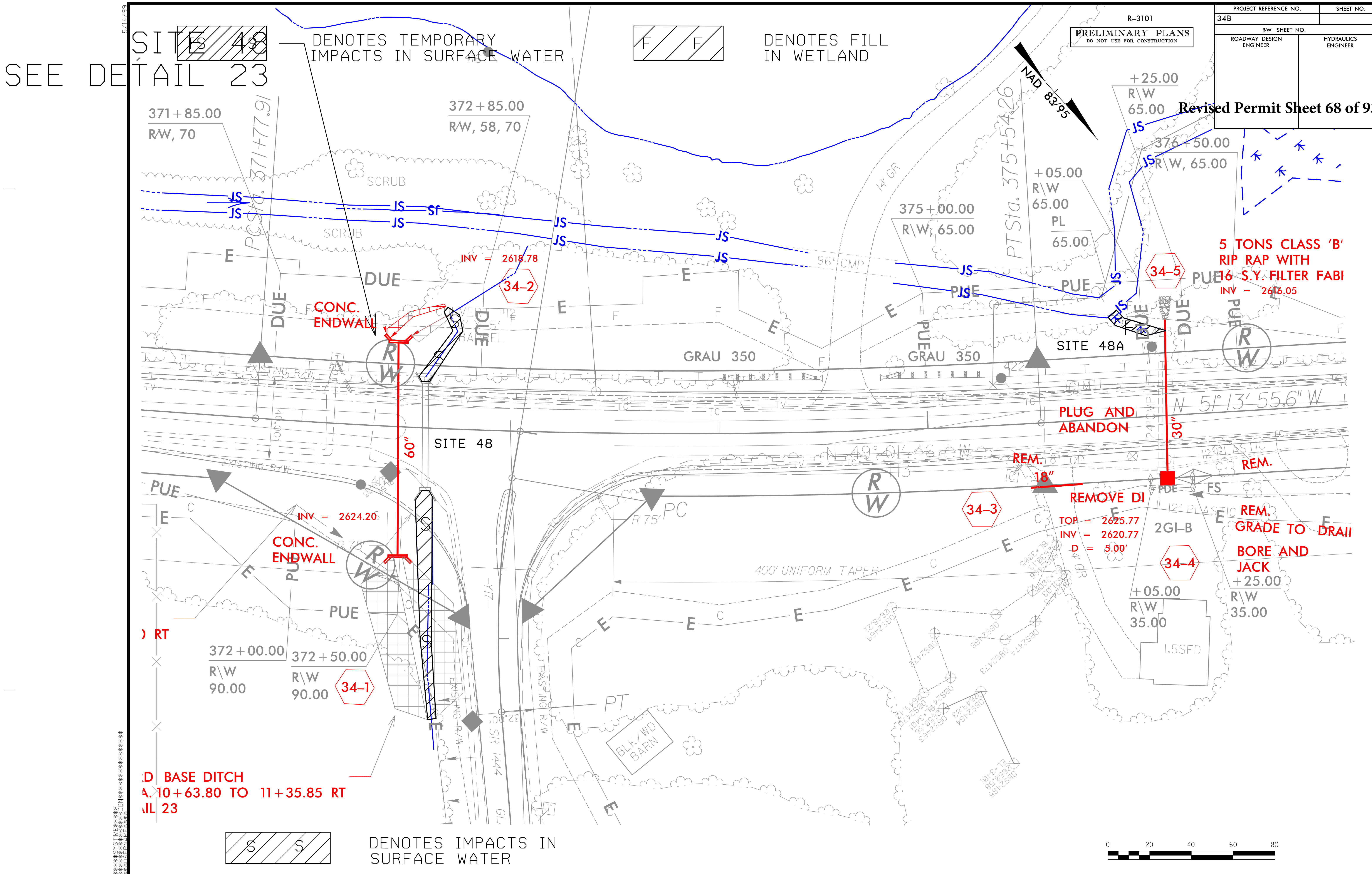
PERMIT DRAWING

Revised Permit Sheet 67 of 93

NAD 83/95



$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$$$



SITE 48
SEE DETAIL 23
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
R-3101
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PROJECT REFERENCE NO.
SHEET NO.
34B
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
Revised Permit Sheet 68 of 93
NAD 83/95
371+85.00
R/W, 70
372+85.00
R/W, 58, 70
+25.00
R\W
65.00
376+50.00
R\W, 65.00
+05.00
R\W
65.00
PL
65.00
375+00.00
R\W, 65.00
PT Sta. 375+54.26
PC Sta. 371+77.91
SCRUB
INV = 2618.78
34-2
CONC. ENDWALL
DUE
PUE
GRAU 350
96" CMP
SITE 48A
34-5
5 TONS CLASS 'B' RIP RAP WITH 16 S.Y. FILTER FABI
INV = 2616.05
EXISTING R/W
SITE 48
60"
30"
N 51° 13' 55.6" W
N 49° 01' 46.1" W
PLUG AND ABANDON
REM. 18"
REM.
34-3
REMOVE DI
TOP = 2625.77
INV = 2620.77
D = 5.00'
2GI-B
REM. GRADE TO DRAI
BORE AND JACK
34-4
+25.00
R\W
35.00
+05.00
R\W
35.00
1.5SFD
INV = 2624.20
CONC. ENDWALL
PUE
400' UNIFORM TAPER
R 75'
PC
PT
-Y17-
SR 1444
BLK/WD BARN
372+00.00
R\W
90.00
372+50.00
R\W
90.00
34-1
) RT
.D BASE DITCH
A. 10+63.80 TO 11+35.85 RT
IL 23
0 20 40 60 80

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 69 of 93

NOTES
FOR -L- PROFILE SEE SHEET 62
FOR -Y20- PROFILE SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

Revised 10/11/13

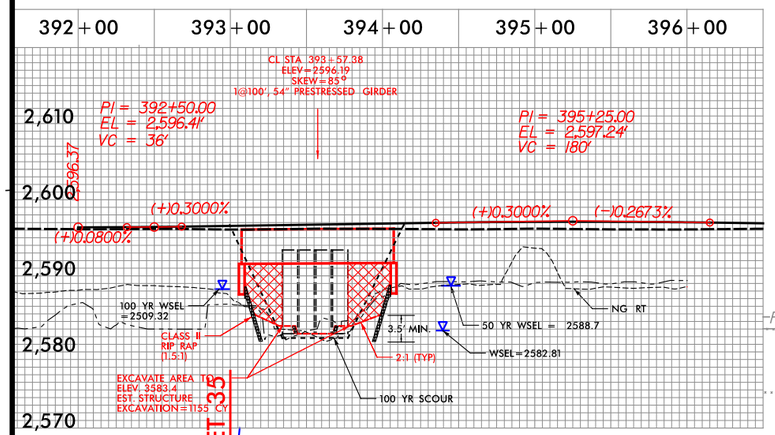
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

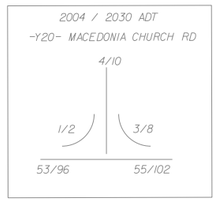
S S DENOTES IMPACTS IN SURFACE WATER

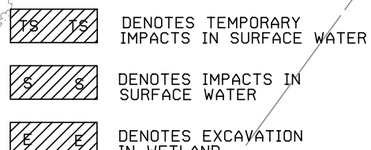
E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

NAD 83/95







$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$USERNAME$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3101	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 70 of 93

Revised 10/11/13

TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

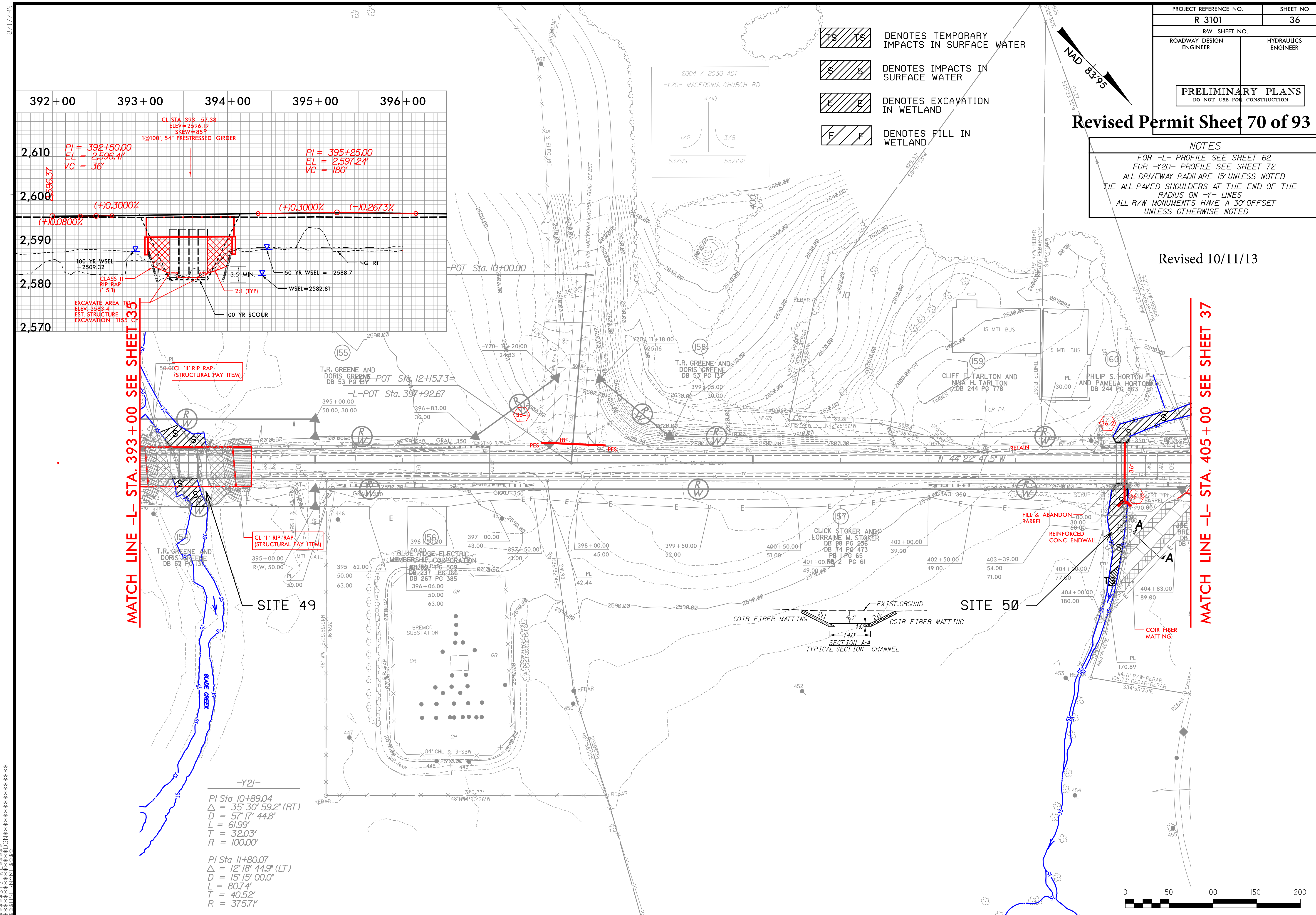
S — DENOTES IMPACTS IN SURFACE WATER

E — DENOTES EXCAVATION IN WETLAND

F — DENOTES FILL IN WETLAND

NOTES

FOR -L- PROFILE SEE SHEET 62
FOR -Y20- PROFILE SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

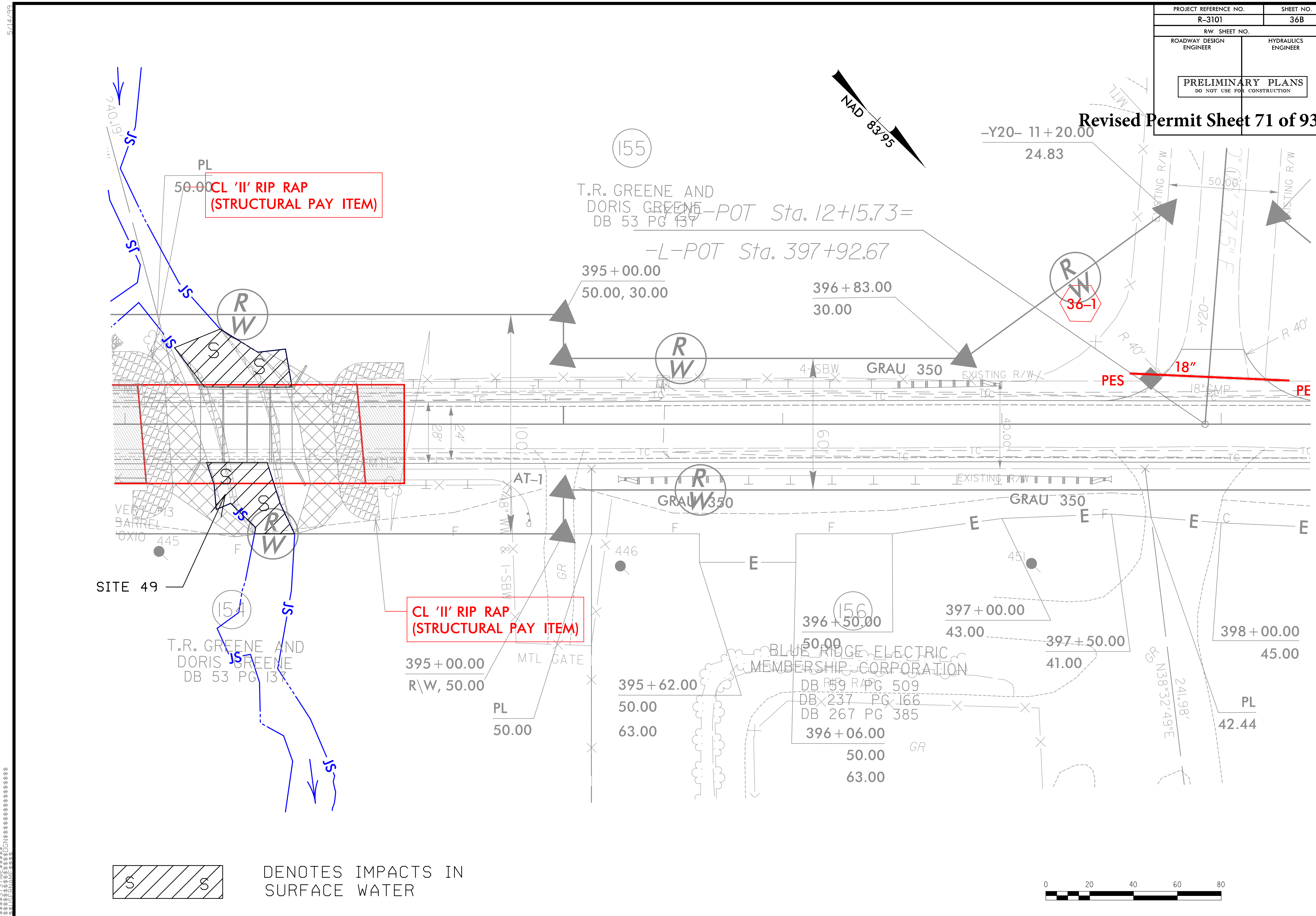


NAD 83/95
392+00
393+00
394+00
395+00
396+00
2,610
2,600
2,590
2,580
2,570
CL STA 393+57.38
ELEV=2596.19
SKEW=85°
1@100', 54" PRESTRESSED GIRDER
PI = 392+50.00
EL = 2,596.41'
VC = 36'
PI = 395+25.00
EL = 2,597.24'
VC = 180'
(+)0.3000%
(+)0.0800%
(+)0.3000%
(-)0.2673%
100 YR WSEL = 2509.32
CLASS II RIP RAP (1.5:1)
EXCAVATE AREA TO ELEV. 3583.4 EST. STRUCTURE EXCAVATION=1155 CY
3.5' MIN.
50 YR WSEL = 2588.7
WSEL=2582.81
2:1 (TYP)
100 YR SCOUR
NG RT
MATCH LINE -L- STA. 393+00 SEE SHEET 35
MATCH LINE -L- STA. 405+00 SEE SHEET 37
-POT Sta. 10+00.00
-Y20- POT Sta. 12+15.73= -L-POT Sta. 397+92.67
CL 'II' RIP RAP (STRUCTURAL PAY ITEM)
T.R. GREENE AND DORIS GREENE DB 53 PG 137
CLIFF E. TARLTON AND NINA H. TARLTON DB 244 PG 778
PHILIP S. HORTON AND PAMELA HORTON DB 244 PG 863
CLICK STOKER AND LORRAINE M. STOKER DB 98 PG 236 DB 74 PG 473 PB 1 PG 65 DB 2 PG 61
BLUE RIDGE ELECTRIC MEMBERSHIP CORPORATION DB 267 PG 385
BREMCO SUBSTATION
N 44°22'47.5" W
SITE 49
SITE 50
FILL & ABANDON BARREL
REINFORCED CONC. ENDWALL
COIR FIBER MATTING
RETAIN
EXIST. GROUND
COIR FIBER MATTING
SECTION A-A
TYPICAL SECTION - CHANNEL
BLADE CREEK
2004 / 2030 ADT
-Y20- MACEDONIA CHURCH RD
-Y21-
PI Sta 10+89.04
Δ = 35° 30' 59.2" (RT)
D = 57° 17' 44.8"
L = 61.99'
T = 32.03'
R = 100.00'
PI Sta 11+80.07
Δ = 12° 18' 44.9" (LT)
D = 15° 15' 00.0"
L = 80.74'
T = 40.52'
R = 375.71'
0 50 100 150 200

PROJECT REFERENCE NO.	SHEET NO.
R-3101	36B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 71 of 93



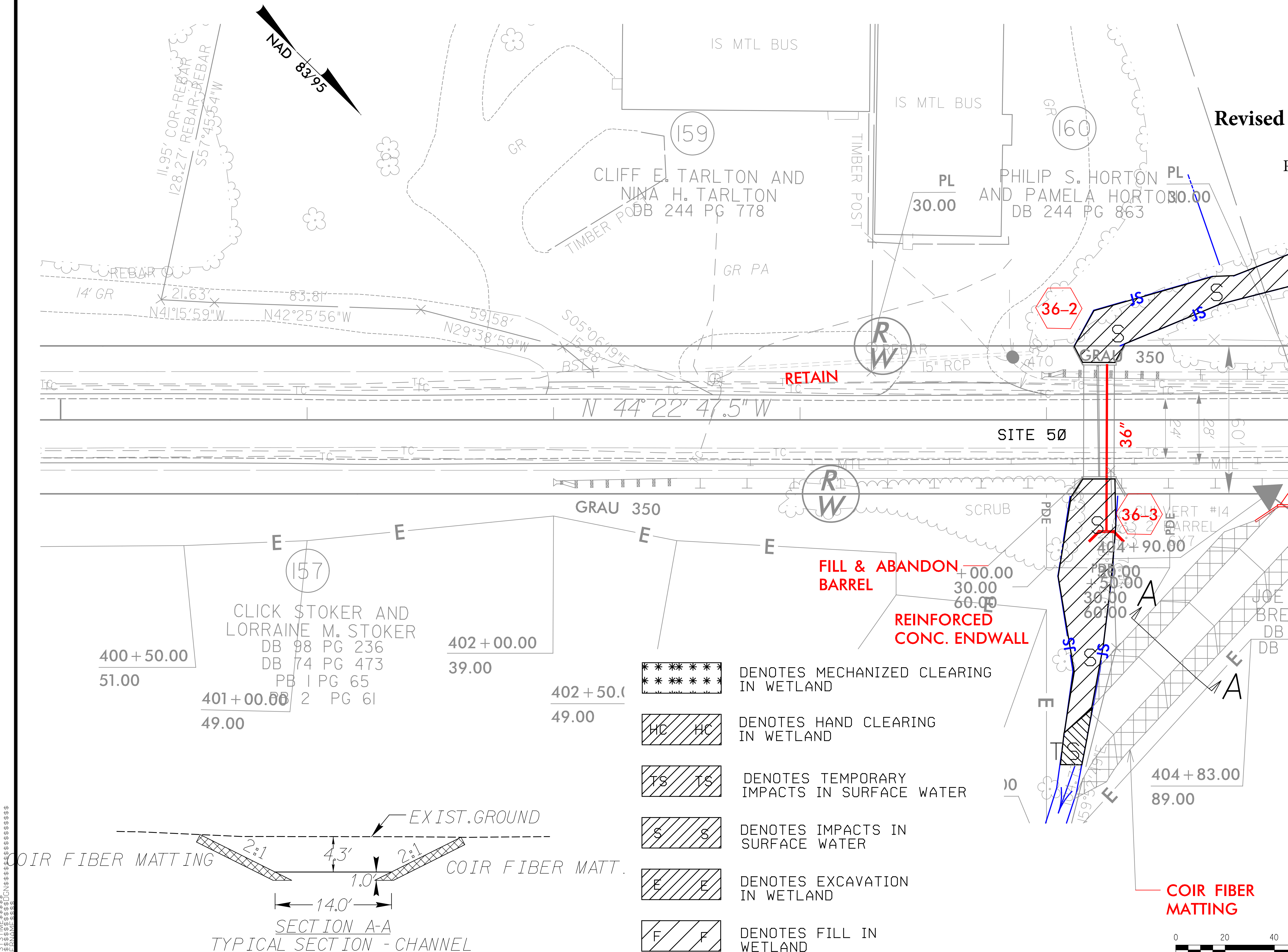
NAD 83/95
155
T.R. GREENE AND
DORIS GREENE
DB 53 PG 137
-Y20- POT Sta. 12+15.73=
-L- POT Sta. 397+92.67
-Y20- 11+20.00
24.83
PL
50.00
CL 'II' RIP RAP
(STRUCTURAL PAY ITEM)
395+00.00
50.00, 30.00
396+83.00
30.00
36-1
GRAU 350
EXISTING R/W
PES
18"
PE
18" CMP
50.00
R 40'
-Y20-
AT-1
SITE 49
154
T.R. GREENE AND
DORIS GREENE
DB 53 PG 137
CL 'II' RIP RAP
(STRUCTURAL PAY ITEM)
395+00.00
R\W, 50.00
PL
50.00
MTL GATE
395+62.00
50.00
63.00
156
396+50.00
50.00
BLUE RIDGE ELECTRIC
MEMBERSHIP CORPORATION
DB 59 PG 509
DB 237 PG 166
DB 267 PG 385
396+06.00
50.00
63.00
397+00.00
43.00
397+50.00
41.00
398+00.00
45.00
PL
42.44
N38°32'49"E
241.98'
445
446
451
DENOTES IMPACTS IN
SURFACE WATER
0 20 40 60 80

PROJECT REFERENCE NO.	SHEET NO.
R-3101	36C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 72 of 93

Revised 10/11/13



NAD 83/95
IS MTL BUS
159
CLIFF E. TARLTON AND
NINA H. TARLTON
DB 244 PG 778
160
PHILIP S. HORTON
AND PAMELA HORTON
DB 244 PG 863
PL
30.00
TIMBER POST
GR PA
36-2
RETAIN
15" RCP
GRAU 350
N 44° 22' 47.5" W
SITE 50
36"
36-3
SCRUB
PDE
FILL & ABANDON
BARREL
REINFORCED
CONC. ENDWALL
157
CLICK STOKER AND
LORRAINE M. STOKER
DB 98 PG 236
DB 74 PG 473
PB 1 PG 65
400+50.00
51.00
401+00.00
49.00
402+00.00
39.00
402+50.0
49.00
404+90.00
404+83.00
89.00
A
DENOTES MECHANIZED CLEARING IN WETLAND
DENOTES HAND CLEARING IN WETLAND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
COIR FIBER MATTING
EXIST. GROUND
COIR FIBER MATTING
2:1
4.3'
1.0'
14.0'
SECTION A-A
TYPICAL SECTION - CHANNEL
0
20
40
60
80

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

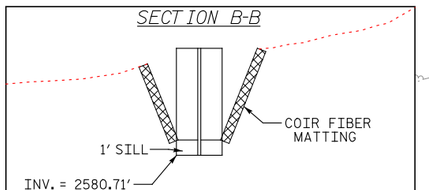
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 73 of 93

Revised 10/11/13

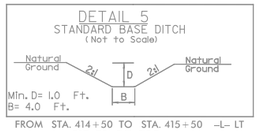
NAD 83/95

SECTION B-B



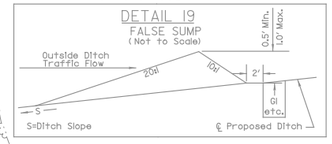
CULVERT INLET DETAIL

DETAIL 5
STANDARD BASE DITCH
(Not to Scale)



FROM STA. 414+50 TO STA. 415+50 -L- LT
EST. 75 C.Y. DDE

DETAIL 19
FALSE SUMP
(Not to Scale)



-Y22-
-Y22-POT Sta. 10+00.00
N 42° 13' 09.7" E
-Y22-PC Sta. 10+19.76
PI Sta 11+26.62
△ = 56° 24' 05.8" (RT)
D = 28° 45' 00.0"
L = 196.18'
T = 106.86'
R = 199.29'
-Y22-PT Sta. 12+15.94
S 81° 22' 44.5" E
-Y22-PC Sta. 12+48.00
PI Sta 12+76.60
△ = 38° 31' 25.5" (LT)
D = 70° 00' 00.0"
L = 55.03'
T = 28.60'
R = 81.85'
-Y22-PT Sta. 13+03.03 =
-L-POT Sta. 413+47.86

-Y22- POT STA.10+00.00

SITE 50

SITE 51

SITE 52

MATCH LINE -L- STA. 405+00 SEE SHEET 36

MATCH LINE -L- STA. 417+00 SEE SHEET 38

PROP. 2 BARREL 7'x7' RCBC BURY INVERT 1.0' W/ LOW FLOW SILLS

-Y21-POT Sta. 10+00.00=
-L-POT Sta. 406+00.00

DONNIE WAYNE WARDNER
DB 12 PG 573

-Y21-POT Sta. 10+00.00=
-L-POT Sta. 409+60.00

3 TONS CLASS 'B' RIP RAP WITH 11 S.Y. FILTER FABRIC

REMOVE HEADWALL

GRADE TO DRAIN

CUT DITCH
-L- STA. 406+50 TO 407+50 RT.
SEE DETAIL 3

CUT DITCH
-Y21- STA. 10+32 TO 11+00 LT.
SEE DETAIL 3

CUT DITCH
-L- STA. 416+20 TO 417+00 LT.
SEE DETAIL 3

CONC. ENDWALL

REMOVE HEADWALL

EARL C. FOGLEMAN AND RUBY L. FOGLEMAN
DB 165 PG 810

ELMER RICHARD EDWARDS AND LEXA RAE CREED EDWARDS
DB 75 PG 302

CLICK STOKER AND LORRAINE M. STOKER
DB 98 PG 236
DB 74 PG 473
PB 1 PG 65
PB 2 PG 61

ERIC PAGE BLEVINS
DB 166 PG 744

BM1
N 998658.
E 1392641.
ELEVATION = 2613.46'
STATION 7+33.00 35' LEFT

END CONSTRUCTION
-D2-POT Sta. 11+70.25

-Y22- POC STA.13+03.03 =
-L- POT STA.413+47.86

PAVEMENT TO BE REMOVED

-Y21-
-Y21-POT Sta. 10+00.00=
-L-POT Sta. 407+10.15
N 45° 37' 12.5" E
S 83° 33' 09.6" E
-Y21-PC Sta. 10+93.13
PI Sta 11+85.49
△ = 27° 37' 23.6" (LT)
D = 15° 15' 00.0"
L = 181.14'
T = 92.36'
R = 375.71'
-Y21-PT Sta. 12+74.27

-D2-
-D1-POT Sta. 10+00.00=
-L-POT Sta. 409+60.00
N 45° 37' 12.5" E
PI Sta 11+16.07
△ = 70° 21' 59.0" (LT)
D = 229° 15' 00.2"
L = 30.69'
T = 17.62'
R = 24.99'
-D1-PT Sta. 11+29.14
N 24° 44' 46.5" W
-D1-POT Sta. 11+70.25

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

0 50 100 150 200

NOTES

FOR -L- PROFILE SEE SHEET 63
FOR -Y22- & -Y23- PROFILES SEE SHEET 73
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

$$$$$$$SYSTIME$$$$$$$
$$$$$$$USERNAME$$$$$$$

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

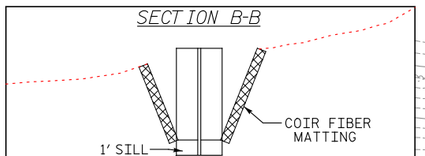
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 74 of 93

Revised 10/11/13

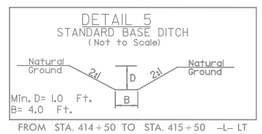
NAD 83/95

SECTION B-B



CULVERT INLET DETAIL

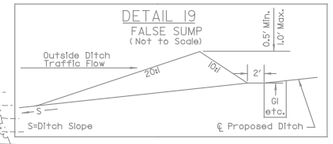
DETAIL 5
STANDARD BASE DITCH
(Not to Scale)



Min. D= 1.0 Ft.
B= 4.0 Ft.

FROM STA. 414+50 TO STA. 415+50 -L- LT
EST. 75 C.Y. DDE

DETAIL 19
FALSE SUMP
(Not to Scale)



-Y22-
-Y22-POT Sta. 10+00.00
N 42° 13' 09.7" E
-Y22-PC Sta. 10+19.76
PI Sta 11+26.62
△ = 56° 24' 05.8" (RT)
D = 28° 45' 00.0"
L = 196.18'
T = 106.86'
R = 199.29'
-Y22-PT Sta. 12+15.94
S 81° 22' 44.5" E
-Y22-PC Sta. 12+48.00
PI Sta 12+76.60
△ = 38° 31' 25.5" (LT)
D = 70° 00' 00.0"
L = 55.03'
T = 28.60'
R = 81.85'
-Y22-PT Sta. 13+03.03=
-L-POT Sta. 413+47.86

MATCH LINE -L- STA. 405+00 SEE SHEET 36

MATCH LINE -L- STA. 417+00 SEE SHEET 38

SITE 50

SITE 51

SITE 52

PROP. 2 BARREL 7'-7"x5'-6" RCBC BURY INVERT 1.0' W/ LOW FLOW SILLS

3 TONS CLASS 'B' RIP RAP WITH 11 S.Y. FILTER FABRIC

REMOVE HEADWALL

GRADE TO DRAIN

CONC. ENDWALL

CUT DITCH -L- STA. 406+50 TO 407+50 RT. SEE DETAIL 3

CUT DITCH -Y21- STA. 10+32 TO 11+00 LT. SEE DETAIL 3

CUT DITCH -L- STA. 416+20 TO 417+00 LT. SEE DETAIL 3

END CONSTRUCTION -D2-POT Sta. 11+70.25

-Y22- POT STA.10+00.00

-Y22- POC STA.13+03.03 = -L- POT STA.413+47.86

PAVEMENT TO BE REMOVED

EARL C. FOGLEMAN AND RUBY LI FOGLEMAN DB 165 PG 810

ELMER RICHARD EDWARDS AND LEXA RAE CREED EDWARDS DB 75 PG 302

CLICK STOKER AND LORRAINE M. STOKER DB 98 PG 236 DB 74 PG 473 PB 1 PG 65 W PB 2 PG 61

ERIC PAGE BLEVINS DB 166 PG 744

DONNIE TWO WARNER DB 12 PG 573

4' BASE CHANNEL ROCK CROSS VANES SEE DETAILS AND ROCK CELDER RICHARD EDWARDS AND LEXA RAE CREED EDWARDS DB 75 PG 302

1.5 SFD

-Y21-
-Y21-POT Sta. 10+00.00=
-L-POT Sta. 407+10.15
N 45° 37' 12.5" E
S 83° 33' 09.6" E
-Y21-PC Sta. 10+93.13
PI Sta 11+85.49
△ = 27° 37' 23.6" (LT)
D = 15° 15' 00.0"
L = 181.14'
T = 92.36'
R = 375.71'
-Y21-PT Sta. 12+74.27

-D2-
-D1-POT Sta. 10+00.00=
-L-POT Sta. 409+60.00
N 45° 37' 12.5" E
PI Sta 11+16.07
△ = 70° 21' 59.0" (LT)
D = 229° 15' 00.2"
L = 30.69'
T = 17.62'
R = 24.99'
-D1-PT Sta. 11+29.14
N 24° 44' 46.5" W
-D1-POT Sta. 11+70.25

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

0 50 100 150 200

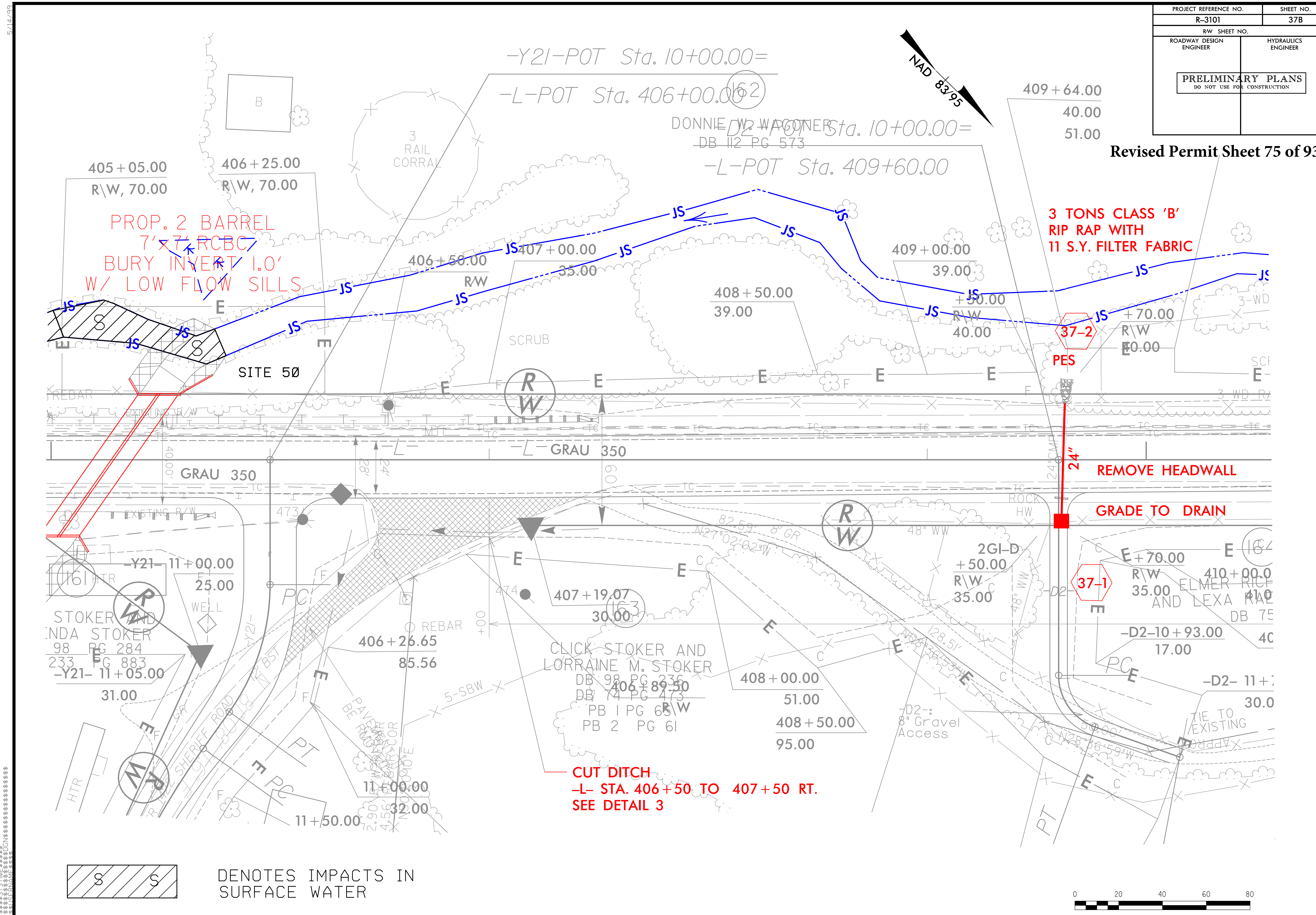
NOTES

FOR -L- PROFILE SEE SHEET 63
FOR -Y22- & -Y23- PROFILES SEE SHEET 73
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

$$$$$$$SYSTIME$$$$$$$
$$$$$$$USERNAME$$$$$$$
$$$$$$$DGN$$$$$$$$$$$$$

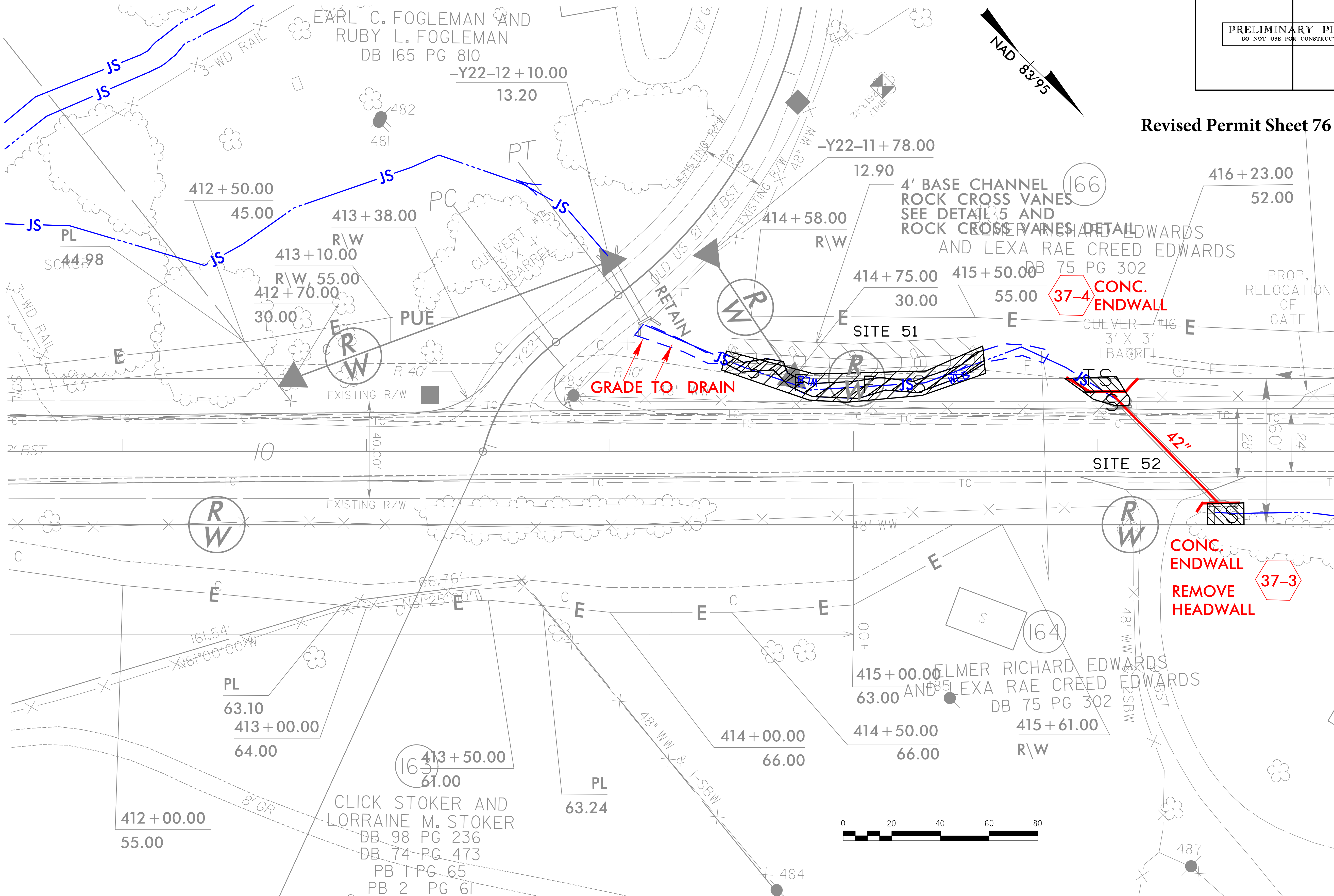
PROJECT REFERENCE NO.	SHEET NO.
R-3101	37B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PROJECT REFERENCE NO.	SHEET NO.
R-3101	37C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



EARL C. FOGLEMAN AND
RUBY L. FOGLEMAN
DB 165 PG 810
-Y22-12+10.00
13.20
NAD 83/95
-Y22-11+78.00
12.90
4' BASE CHANNEL
ROCK CROSS VANES
SEE DETAIL 5 AND
ROCK CROSS VANES DETAIL
166
ELMER RICHARD EDWARDS
AND LEXA RAE CREED EDWARDS
DB 75 PG 302
416+23.00
52.00
412+50.00
45.00
413+38.00
R\W
413+10.00
R\W, 55.00
412+70.00
30.00
414+58.00
R\W
414+75.00
30.00
415+50.00
55.00
37-4
CONC.
ENDWALL
CULVERT #16
3' X 3'
1 BARREL
PROP.
RELOCATION
OF
GATE
PL
44.98
PUE
PT
PC
CULVERT #15
3' X 4'
1 BARREL
RETAIN
GRADE TO DRAIN
SITE 51
SITE 52
42"
EXISTING R/W
40.00'
10
28
60'
24
CONC.
ENDWALL
37-3
REMOVE
HEADWALL
164
ELMER RICHARD EDWARDS
AND LEXA RAE CREED EDWARDS
DB 75 PG 302
415+00.00
63.00
415+61.00
R\W
414+50.00
66.00
414+00.00
66.00
PL
63.10
413+00.00
64.00
163
413+50.00
61.00
CLICK STOKER AND
LORRAINE M. STOKER
DB 98 PG 236
DB 74 PG 473
PB 1 PG 65
PB 2 PG 61
PL
63.24
412+00.00
55.00
0 20 40 60 80

S S DENOTES IMPACTS IN SURFACE WATER

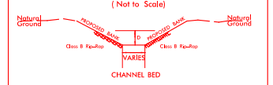
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 64
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

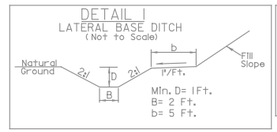
DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)



D= 2 Ft.

STRUCTURE 38-4

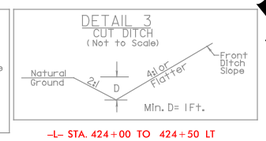
DETAIL 1
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1Ft.
B= 2 Ft.
b= 5 Ft.

-L- STA. 426+40 TO 427+50 RT
-L- STA. 427+20 TO 429+00 LT
EST. 94 CY DDE

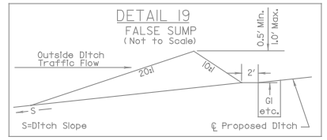
DETAIL 3
CUT DITCH
(Not to Scale)



Min. D= 1Ft.

-L- STA. 424+00 TO 424+50 LT
-L- STA. 427+00 TO 427+20 LT

DETAIL 19
FALSE SUMP
(Not to Scale)

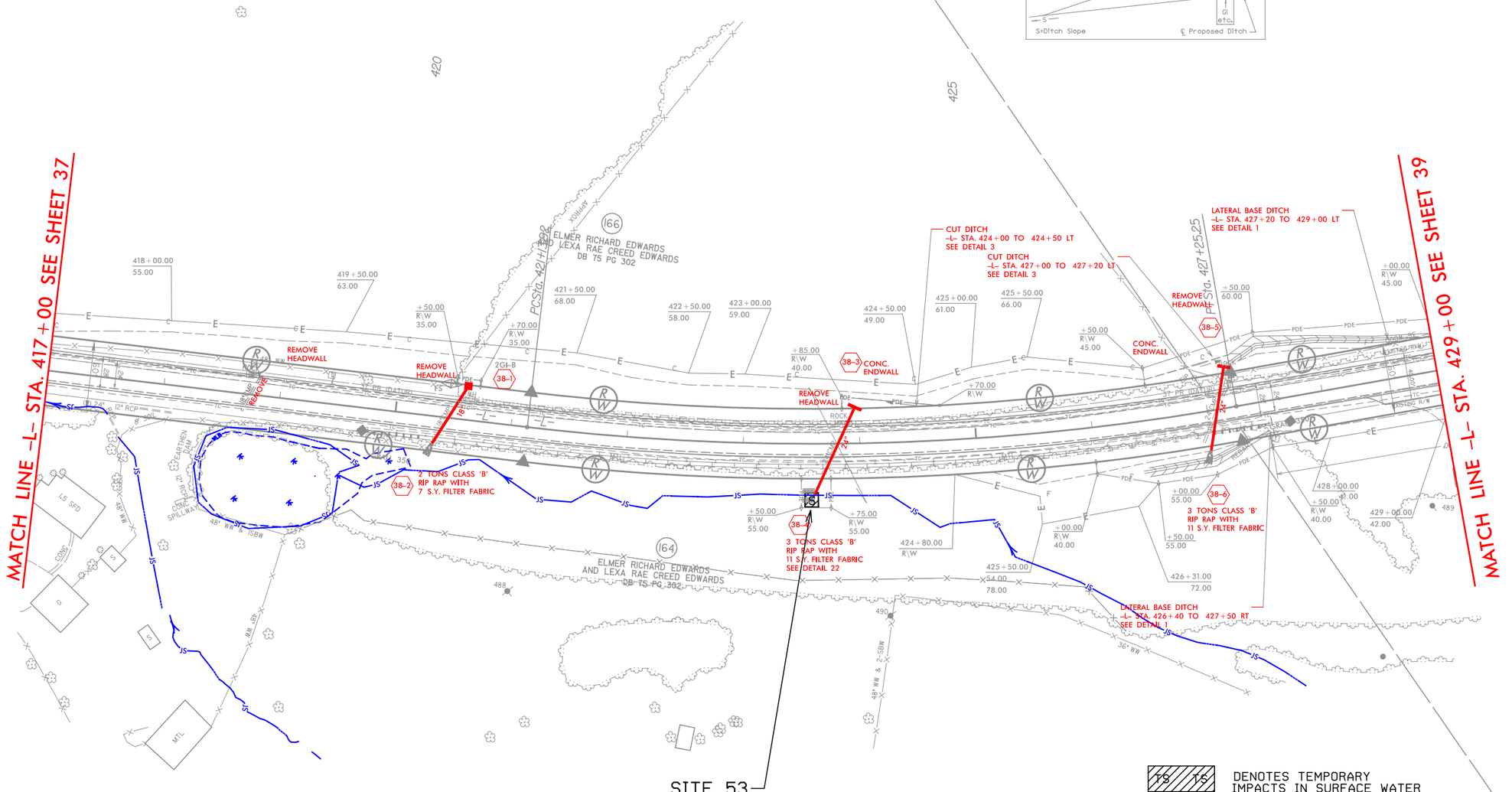


NAD 83/95

PROJECT REFERENCE NO.	SHEET NO.
R-3101	38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Revised Permit Sheet 77 of 93



-L-
PI Sta 424+21.80
△ = 16° 48' 41.4" (LT)
D = 2° 45' 00.0"
L = 611.33'
T = 307.88'
R = 2,083.48'

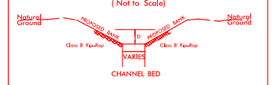
$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 64
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

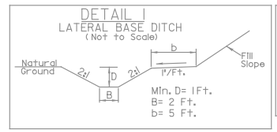
DETAIL 22
PIPE OUTLET CHANNEL
(Not to Scale)



D= 2 Ft.

STRUCTURE 38-4

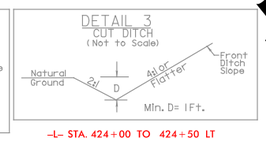
DETAIL 1
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1Ft.
B= 2 Ft.
b= 5 Ft.

-L- STA. 426+40 TO 427+50 RT
-L- STA. 427+20 TO 429+00 LT
EST. 94 CY DDE

DETAIL 3
CUT DITCH
(Not to Scale)



Min. D= 1Ft.

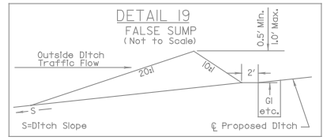
-L- STA. 424+00 TO 424+50 LT
-L- STA. 427+00 TO 427+20 LT

NAD 83/95

PROJECT REFERENCE NO.	SHEET NO.
R-3101	38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL 19
FALSE SUMP
(Not to Scale)



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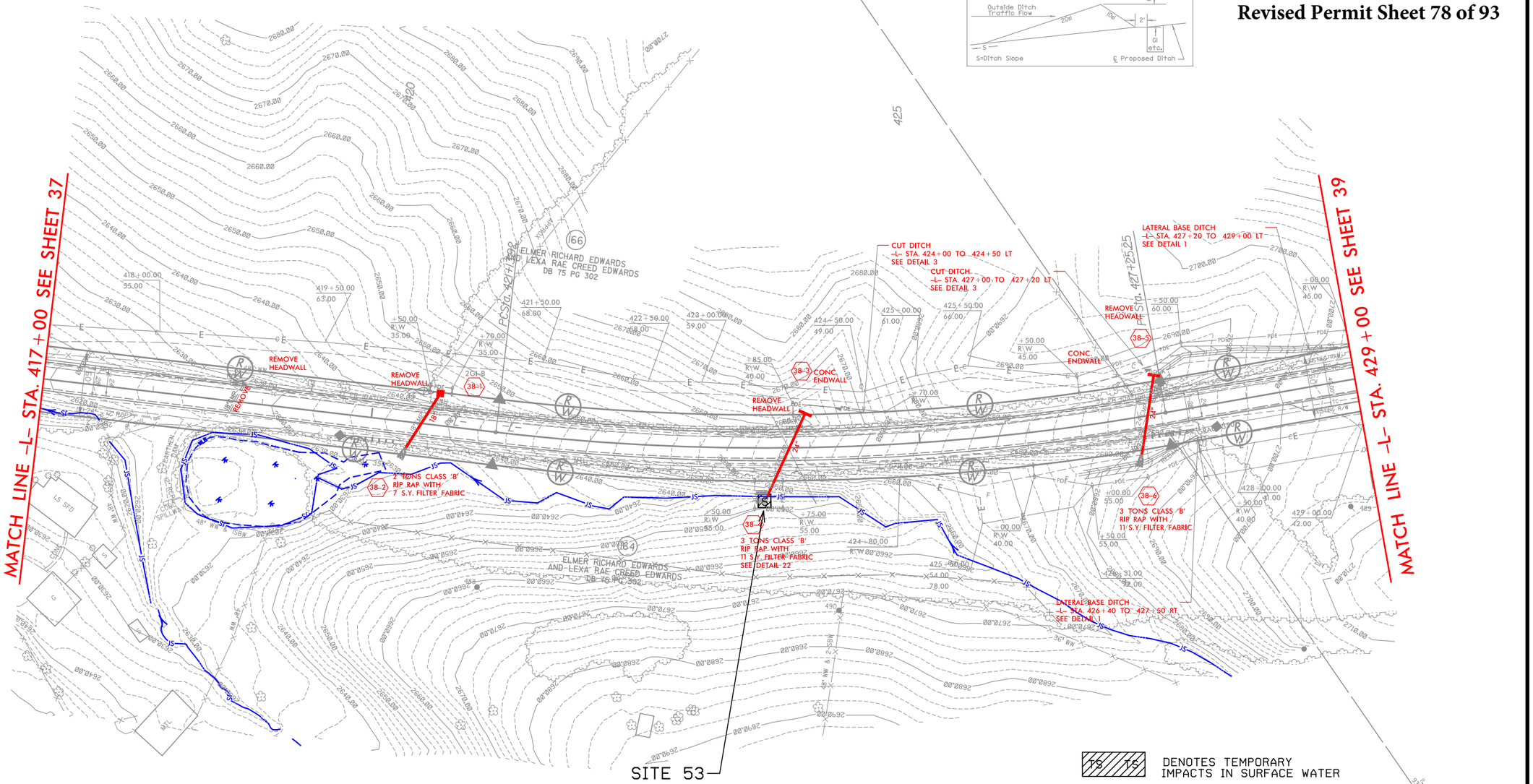
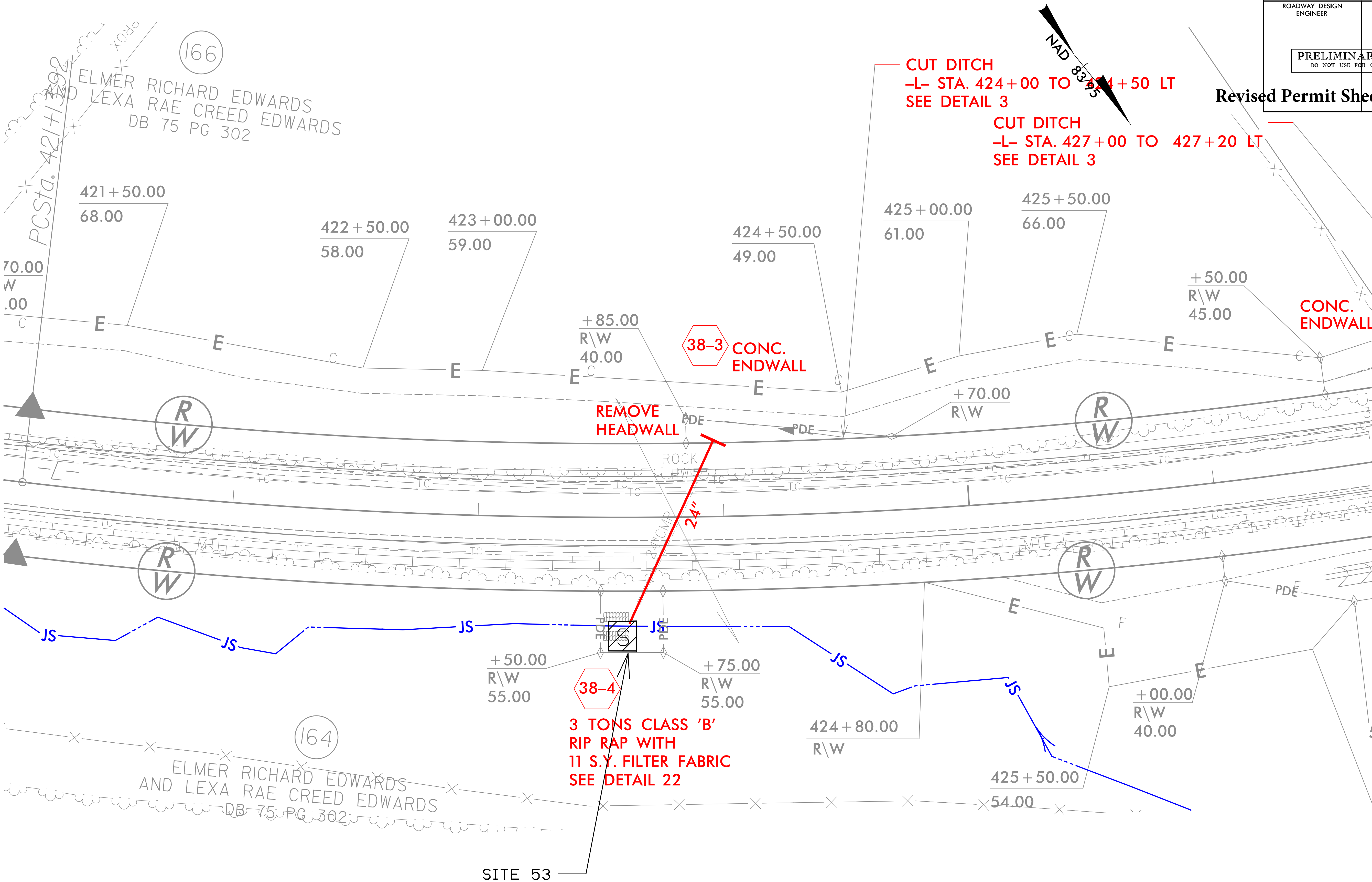


$$$$$$SYSTIME$$$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$FILENAME$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3101	38B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83/95
166
ELMER RICHARD EDWARDS
AND LEXA RAE CREED EDWARDS
DB 75 PG 302
PCSta. 421+13.92
CUT DITCH
-L- STA. 424+00 TO 424+50 LT
SEE DETAIL 3
CUT DITCH
-L- STA. 427+00 TO 427+20 LT
SEE DETAIL 3
421+50.00
68.00
422+50.00
58.00
423+00.00
59.00
424+50.00
49.00
425+00.00
61.00
425+50.00
66.00
+50.00
R\W
45.00
CONC.
ENDWALL
+85.00
R\W
40.00
38-3
CONC.
ENDWALL
+70.00
R\W
REMOVE
HEADWALL
PDE
ROCK
24"
+50.00
R\W
55.00
38-4
+75.00
R\W
55.00
3 TONS CLASS 'B'
RIP RAP WITH
11 S.Y. FILTER FABRIC
SEE DETAIL 22
424+80.00
R\W
425+50.00
54.00
+00.00
R\W
40.00
164
ELMER RICHARD EDWARDS
AND LEXA RAE CREED EDWARDS
DB 75 PG 302
SITE 53

DENOTES IMPACTS IN SURFACE WATER

0 20 40 60 80

PROJECT REFERENCE NO.	SHEET NO.
R-3101	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

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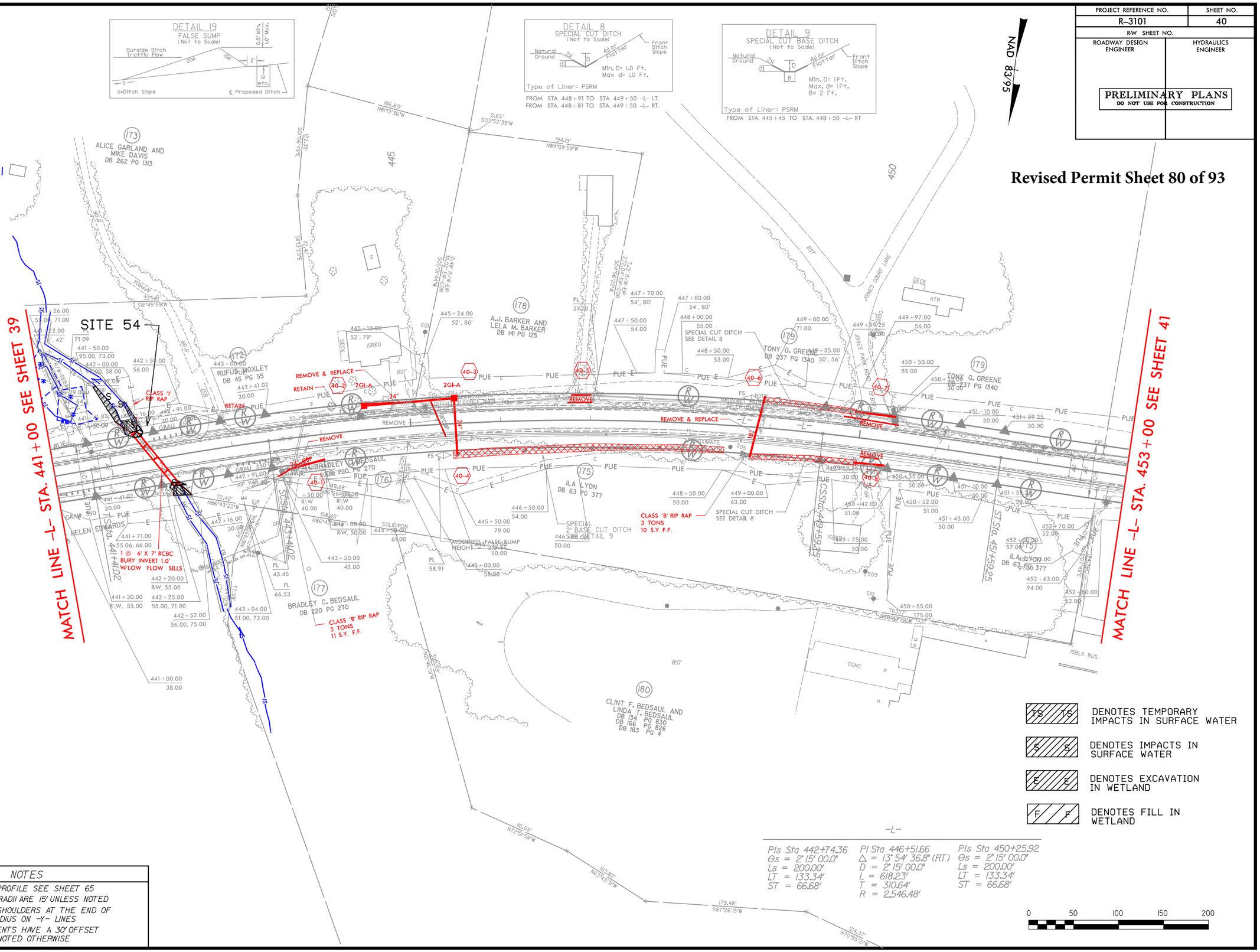

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

-L-

PIs Sta 442+74.36
θs = 2° 15' 00.0"
Ls = 200.00'
LT = 133.34'
ST = 66.68'

PI Sta 446+51.66
Δ = 13° 54' 36.8" (RT)
D = 2° 15' 00.0"
L = 618.23'
T = 310.64'
R = 2,546.48'

PIs Sta 450+25.92
θs = 2° 15' 00.0"
Ls = 200.00'
LT = 133.34'
ST = 66.68'

0 50 100 150 200

NOTES

FOR -L- PROFILE SEE SHEET 65

ALL DRIVEWAY RADII ARE 15' UNLESS NOTED

TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES

ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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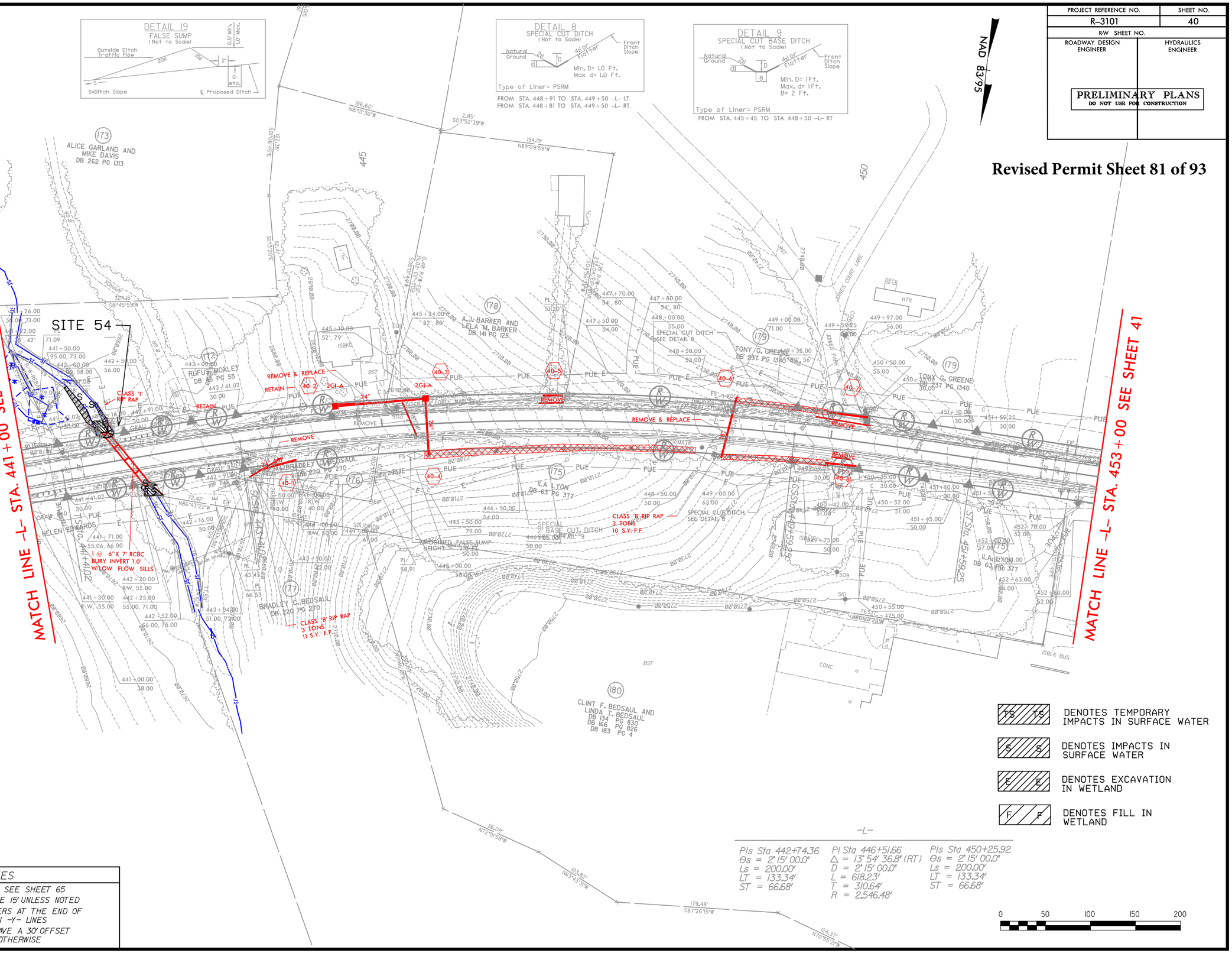
8/17/99



TS ▨ TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S ▨ S	DENOTES IMPACTS IN SURFACE WATER
E ▨ E	DENOTES EXCAVATION IN WETLAND
F ▨ F	DENOTES FILL IN WETLAND

-L-

PIs Sta 442+74.36	PI Sta 446+51.66	PIs Sta 450+25.92
Θs = 2° 15' 00.0"	Δ = 13° 54' 36.8" (RT)	Θs = 2° 15' 00.0"
Ls = 200.00'	D = 2° 15' 00.0"	Ls = 200.00'
LT = 133.34'	L = 618.23'	LT = 133.34'
ST = 66.68'	T = 310.64'	ST = 66.68'
	R = 2,546.48'	

NOTES

FOR -L- PROFILE SEE SHEET 65

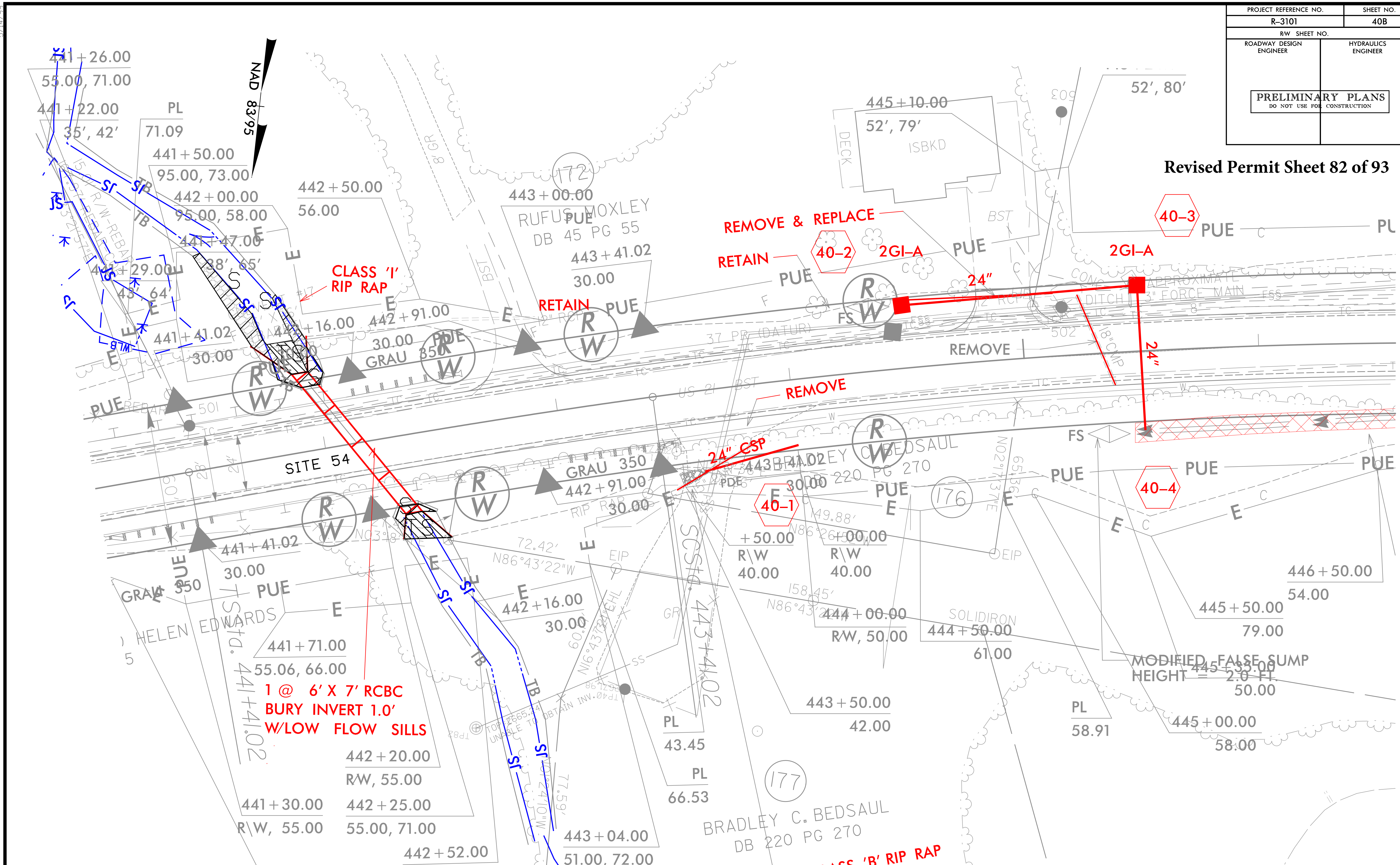
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED

TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES

ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	40B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

0 20 40 60 80

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	42
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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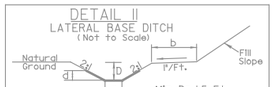
NAD 83/95

-L-
PIs Sta 461+48.70
Θs = 3° 00' 00.0"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

-L-
PI Sta 466+73.01
Δ = 26° 57' 05.9" (RT)
D = 3° 00' 00.0"
L = 898.39'
T = 457.66'
R = 1,909.86'

-L-
PIs Sta 471+80.42
Θs = 3° 00' 00.0"
Ls = 200.00'
LT = 133.35'
ST = 66.68'

DETAIL II
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
Max. d= 1Ft.
B= 4 Ft.
b= 5 Ft.

Type of Liner= PSRM

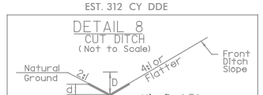
FROM STA. 476+00 TO STA. 477+00 -L- RT
EST. 312 CY DDE

DETAIL 3
CUT DITCH
(Not to Scale)

Min. D= 1.0 Ft.

FROM STA. 465+50 TO STA. 466+00 -L- RT

DETAIL 8
CUT DITCH
(Not to Scale)



Min. D= 1 Ft.
Max. d= 1 Ft.

Type of Liner= PSRM

FROM STA. 474+66 TO STA. 477+00 -L- LT

SITE 55

SITE 56

MATCH LINE -L- STA. 465+00 SEE SHEET 41

MATCH LINE -L- STA. 477+00 SEE SHEET 43

DANNY D. LYON AND BARBARA LYON
DB III PG 498
PG 405
DB 142 PG 804
DB 142 PG 804
DB 142 PG 804

GEORGE L. BRYAN AND ELIZABETH H. BRYAN
DB 228 PG 304

DELMER A. BRYAN AND JUANITA G. BRYAN
DB 179 PG 15
DB 87 PG 352
DB 228 PG 544
DB 95 PG 623
DB 63 PG 398

WETLANDS OBLITERATED BY OUTSIDE CONTRACTOR

CLASS 'I' RIP RAP
38 TONS
78 S.Y. F.F.

CLASS 'B' RIP RAP
EST 3 TONS 11 S.Y. F.F.

CLASS 'B' RIP RAP
5 TONS
14 S.Y. F.F.

RIP RAP @ EMBANKMENT
CLASS 'I' RIP RAP
SEE DETAIL 12

REMOVE

PLUG

24"

CUT DITCH
SEE DETAIL 3

3' BASE LATERAL DITCH
SEE DETAIL 15

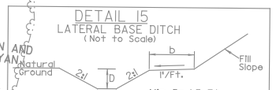
4' BASE LATERAL DITCH
PSRM
SEE DETAIL 11

BASE LATERAL DITCH
SEE DETAIL 18

BASE CUT DITCH
DETAIL 13

CUT DITCH
PSRM
SEE DETAL

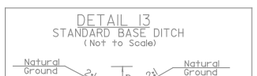
DETAIL 15
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
B= 3 Ft.
b= 5 Ft.

FROM STA. 466+00 TO STA. 468+30 -L- RT
EST. 327 CY DDE

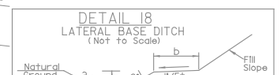
DETAIL 13
STANDARD BASE DITCH
(Not to Scale)



Min. D= 3 Ft.
B= 3 Ft.

FROM STA. 468+76 TO STA. 469+50 -L- RT
EST. 174 CY DDE

DETAIL 18
LATERAL BASE DITCH
(Not to Scale)



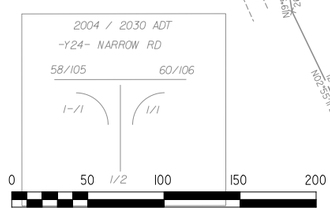
Min. D= 1.5 Ft.
B= 4 Ft.
b= 5 Ft.

FROM STA. 475+00 TO STA. 476+00 -L- RT
EST. 274 CY DDE

DETAIL 12
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 40 TONS CL I Rip-Rap
Filter Fabric= 44 sy

FROM STA. 473+15 TO STA. 473+41 -L- RT



TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

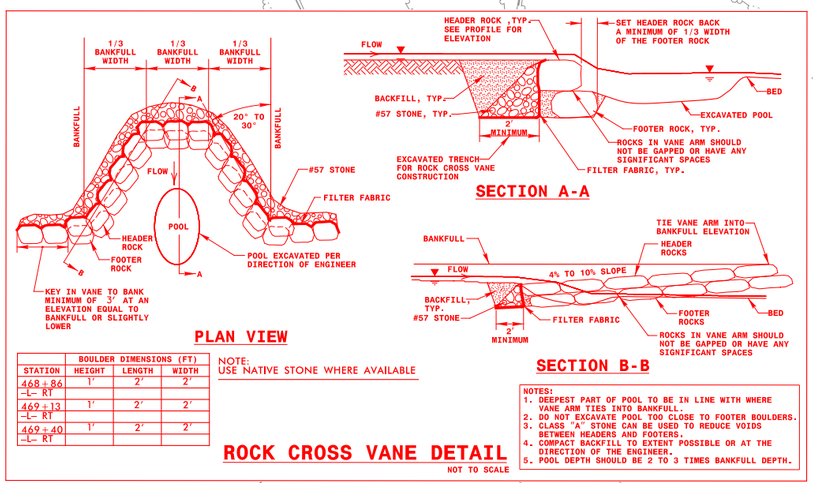
S S DENOTES IMPACTS IN SURFACE WATER

E E DENOTES EXCAVATION IN WETLAND

F F DENOTES FILL IN WETLAND

NOTES

FOR -L- PROFILE SEE SHEET 66
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE



	BOULDER DIMENSIONS (FT)		
STATION	HEIGHT	LENGTH	WIDTH
468+86 -L- RT	1'	2'	2'
469+13 -L- RT	1'	2'	2'
469+40 -L- RT	1'	2'	2'

NOTE:
USE NATIVE STONE WHERE AVAILABLE

ROCK CROSS VANE DETAIL
NOT TO SCALE

NOTES:
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4. COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

$$$$SYSTIME$$$$
$$$$USERNAME$$$$ $$$$DGN$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-3101	42

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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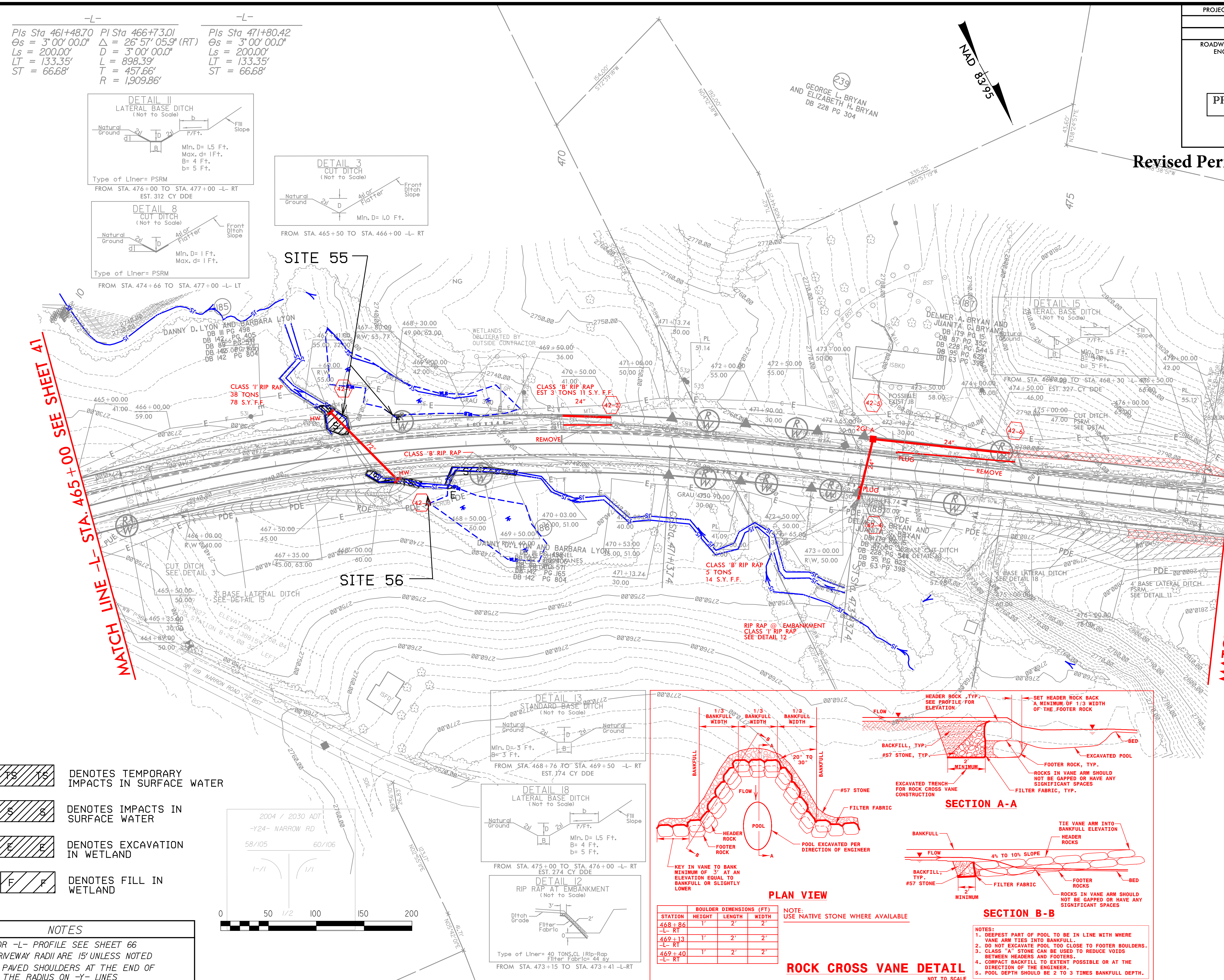


-L-
PIs Sta 461+48.70
θs = 3°00′00.0″
Ls = 200.00′
LT = 133.35′
ST = 66.68′
PI Sta 466+73.01
Δ = 26°57′05.9″ (RT)
D = 3°00′00.0″
L = 898.39′
T = 457.66′
R = 1,909.86′
-L-
PIs Sta 471+80.42
θs = 3°00′00.0″
Ls = 200.00′
LT = 133.35′
ST = 66.68′
DETAIL 11
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1 Ft.
B= 4 Ft.
b= 5 Ft.
Type of Liner= PSRM
FROM STA. 476+00 TO STA. 477+00 -L- RT
EST. 312 CY DDE
DETAIL 3
CUT DITCH
(Not to Scale)
Min. D= 1.0 Ft.
FROM STA. 465+50 TO STA. 466+00 -L- RT
DETAIL 8
CUT DITCH
(Not to Scale)
Min. D= 1 Ft.
Max. d= 1 Ft.
Type of Liner= PSRM
FROM STA. 474+66 TO STA. 477+00 -L- LT
NAD 83/95
GEORGE L. BRYAN AND ELIZABETH H. BRYAN
DB 228 PG 304
SITE 55
SITE 56
DANNY D. LYON AND BARBARA LYON
WETLANDS DELINEATED BY OUTSIDE CONTRACTOR
CLASS 'I' RIP RAP
38 TONS
78 S.Y. F.F.
CLASS 'B' RIP RAP
EST 3 TONS 11 S.Y. F.F.
CLASS 'B' RIP RAP
REMOVE
PLUG
DELMER A. BRYAN AND JUANITA G. BRYAN
DETAIL 15
LATERAL BASE DITCH
(Not to Scale)
CLASS 'B' RIP RAP
5 TONS
14 S.Y. F.F.
RIP RAP @ EMBANKMENT
CLASS 'I' RIP RAP
SEE DETAIL 12
MATCH LINE -L- STA. 465+00 SEE SHEET 41
MATCH LINE -L- STA. 477+00 SEE SHEET 43
DETAIL 13
STANDARD BASE DITCH
(Not to Scale)
Min. D= 3 Ft.
B= 3 Ft.
FROM STA. 468+76 TO STA. 469+50 -L- RT
EST. 174 CY DDE
DETAIL 18
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
B= 4 Ft.
b= 5 Ft.
FROM STA. 475+00 TO STA. 476+00 -L- RT
EST. 274 CY DDE
DETAIL 12
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner= 40 TONS CL I Rip-Rap
Filter Fabric= 44 sy
FROM STA. 473+15 TO STA. 473+41 -L- RT
ROCK CROSS VANE DETAIL
NOT TO SCALE
PLAN VIEW
SECTION A-A
SECTION B-B
NOTE:
USE NATIVE STONE WHERE AVAILABLE
NOTES:
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4. COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

STATION	BOULDER DIMENSIONS (FT) HEIGHT	LENGTH	WIDTH
468+86 -L- RT	1′	2′	2′
469+13 -L- RT	1′	2′	2′
469+40 -L- RT	1′	2′	2′

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

DENOTES FILL IN WETLAND

0 50 100 150 200

NOTES

FOR -L- PROFILE SEE SHEET 66

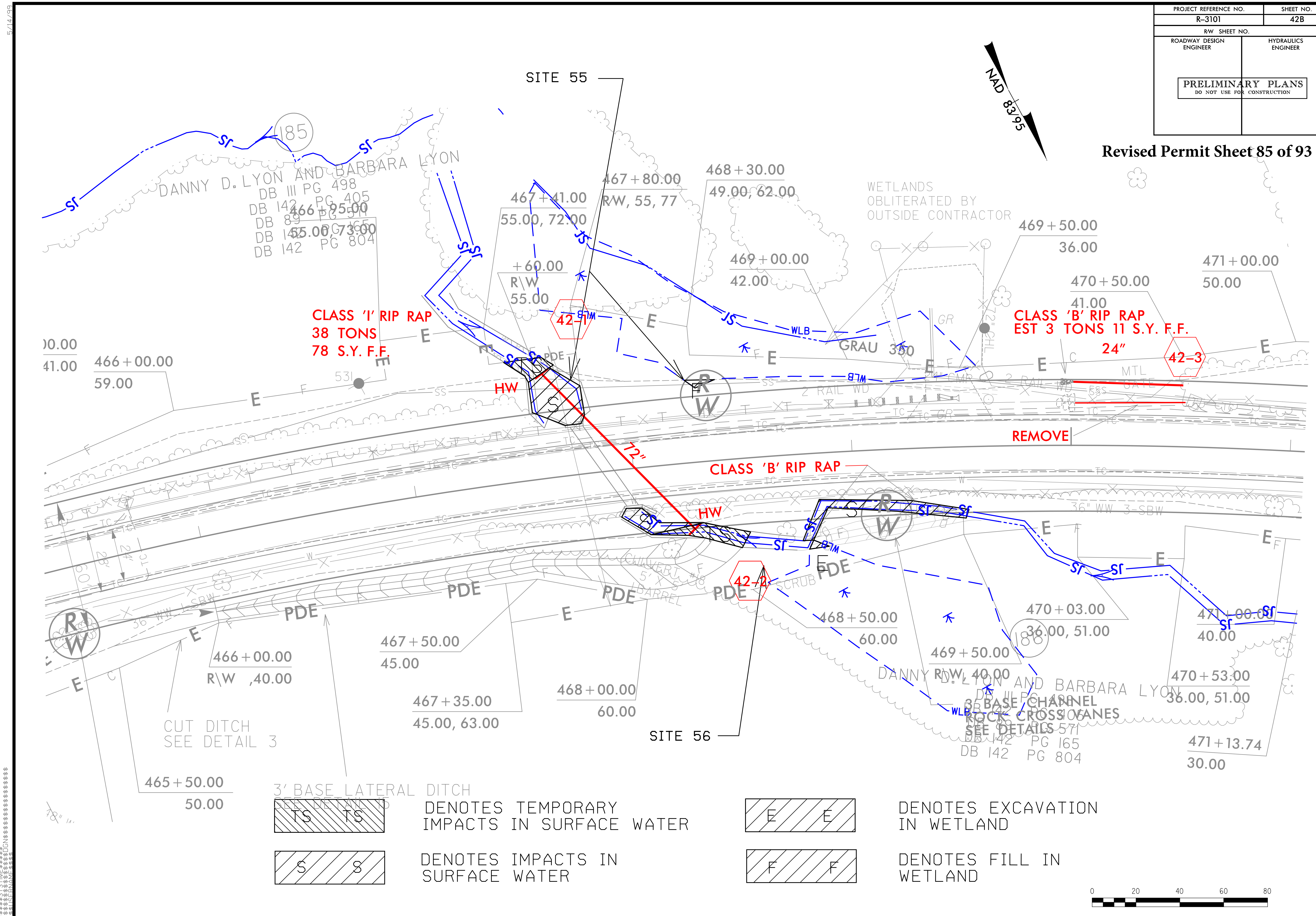
ALL DRIVEWAY RADII ARE 15′ UNLESS NOTED

TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES

ALL R/W MONUMENTS HAVE A 30′ OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	42B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SITE 55
SITE 56
NAD 83/95
DANNY D. LYON AND BARBARA LYON
DB III PG 498
DB 142 PG 405
DB 89 PG 511
DB 142 PG 165
DB 142 PG 804
466+95.00
55.00, 73.00
467+41.00
55.00, 72.00
467+80.00
R/W, 55, 77
468+30.00
49.00, 62.00
WETLANDS OBLITERATED BY OUTSIDE CONTRACTOR
469+50.00
36.00
469+00.00
42.00
+60.00
R\W
55.00
471+00.00
50.00
470+50.00
41.00
CLASS 'I' RIP RAP
38 TONS
78 S.Y. F.F.
CLASS 'B' RIP RAP
EST 3 TONS 11 S.Y. F.F.
24"
42-1
42-2
42-3
466+00.00
59.00
HW
72"
REMOVE
CLASS 'B' RIP RAP
GRAU 350
PDE
468+50.00
60.00
470+03.00
36.00, 51.00
469+50.00
R/W, 40.00
471+00.00
40.00
470+53.00
36.00, 51.00
3' BASE CHANNEL
ROCK CROSS VANES
SEE DETAILS
471+13.74
30.00
467+50.00
45.00
466+00.00
R\W, 40.00
467+35.00
45.00, 63.00
468+00.00
60.00
CUT DITCH
SEE DETAIL 3
465+50.00
50.00
3' BASE LATERAL DITCH
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
0 20 40 60 80

8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 67
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	45
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

Revised Permit Sheet 86 of 93

SITE 57

SITE 58

MATCH LINE -L- STA. 501+00 SEE SHEET 44

MATCH LINE -L- STA. 513+00 SEE SHEET 46

FOY C. HEFNER, SR. AND KATHERYN S. HEFNER DB 131 PG 833

ARTHUR GAMBILL AND JOHNNIE GAMBILL DB 74 PG 504

RICHARD L. DOUGHTON AND MARY JANE DOUGHTON DB 125 PG 742

WILLIAM A. GRAHAM III AND DENISE H. GRAHAM DB 187 PG 443, DB 219 PG 132, DB 242 PG 653, DB 576 PG 65, DB 169 PG 791, DB 80 PG 430

JERRY G. BILLINGS AND OCTAVIA BILLINGS DB 179 PG 121

CONSTRUCTION -L- STA. 510+30.00

END RESURFACING -L- POT STA. 510+00.00

CLASS 'B' RIP RAP 8 TONS 21 S.Y. F.F. SEE DETAIL 22

CLASS 'B' RIP RAP 8 TONS 21 S.Y. F.F.

CLASS 'B' RIP RAP 2 TONS 7 S.Y. F.F.

CLASS 'B' RIP RAP 3 TONS 11 S.Y. F.F.

CLASS 'B' RIP RAP 2 TONS 7 S.Y. F.F.

REMOVE & REPLACE

REMOVE & REPLACE 30" RCP BURIED 0.5'

RETAIN

2' LATERAL BASE DITCH SEE DETAIL 15

SPECIAL CUT BASE DITCH SEE DETAIL 16

MODIFIED FALSE SUMP HEIGHT = 1.5 FT

N 88° 30' 24.6" W

N 87° 41' 33.6" W

-L- GRAU 350

PI Sta 507+13.59
Δ = 0° 48' 51.0" (RT)
D = 0° 45' 00.0"
L = 108.56'
T = 54.28'
R = 7,639.44'

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F — DENOTES FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

0 50 100 150 200

22 CHANNEL Scale)

45-2

DETAIL I5
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 503+27 TO STA. 504+50 -L- RT

DETAIL I6
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 504+50 TO STA. 506+00 -L- RT

$$$$$$SYSTIME$$$$$$
$$$$$$DGN$$$$$$
$$$$$$USERNAME$$$$$$

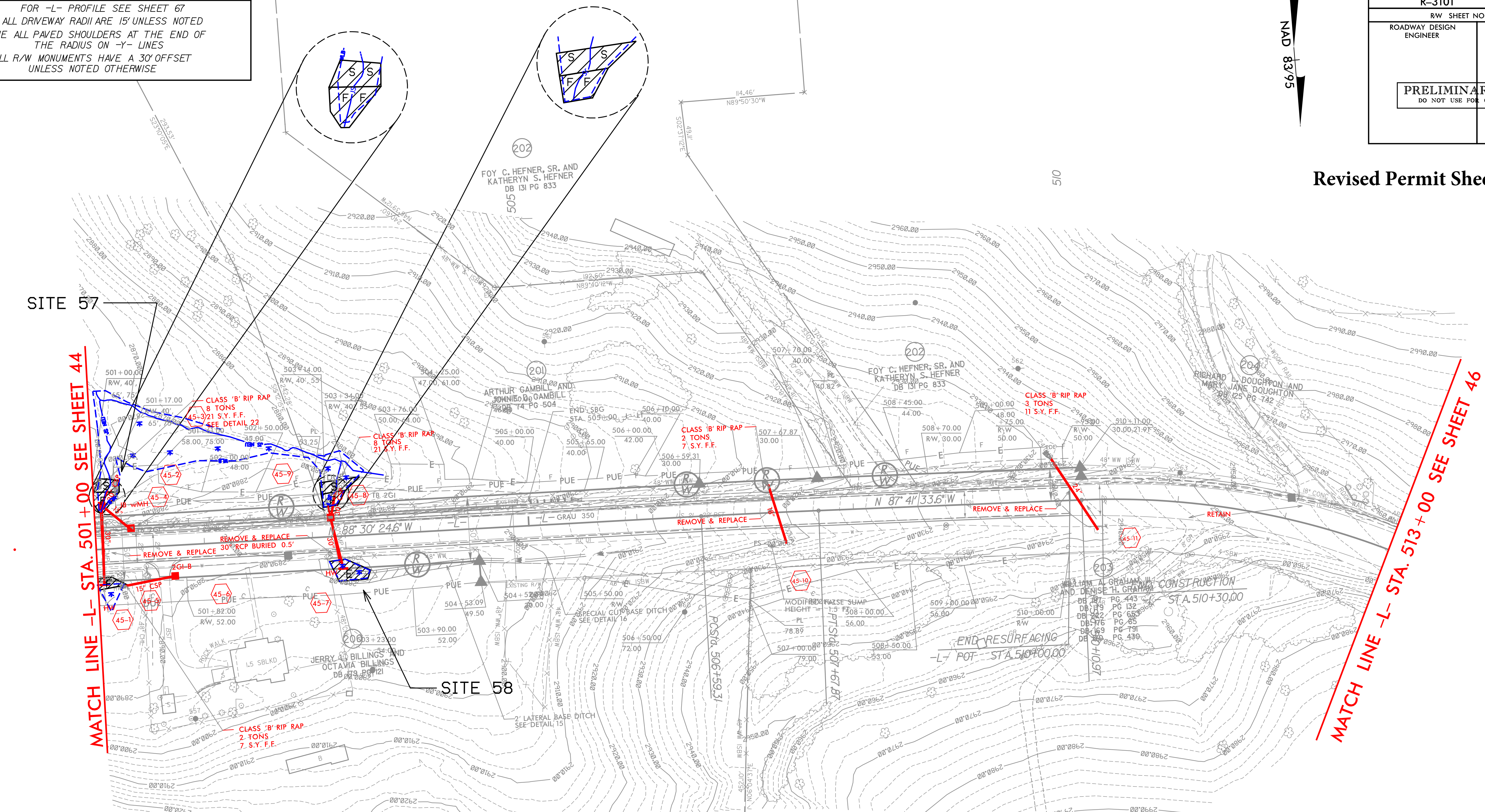
PROJECT REFERENCE NO.	SHEET NO.
R-3101	45
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

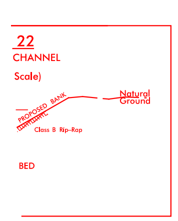
8/17/99

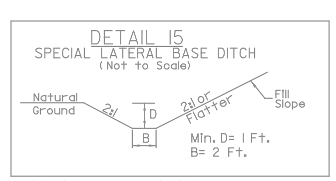
NOTES

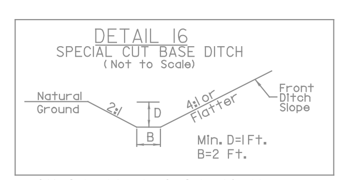
FOR -L- PROFILE SEE SHEET 67
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE



NAD 83/95
SITE 57
SITE 58
MATCH LINE -L- STA. 501+00 SEE SHEET 44
MATCH LINE -L- STA. 513+00 SEE SHEET 46
FOY C. HEFNER, SR. AND KATHERYN S. HEFNER DB 131 PG 833
ARTHUR GAMBILL JOHNIE D. GAMBILL
JERRY L. BILLINGS AND OCTAVIA BILLINGS
RICHARD L. DOUGHTON AND MARY JANE DOUGHTON
CLASS 'B' RIP RAP 8 TONS 21 S.Y. F.F. SEE DETAIL 22
CLASS 'B' RIP RAP 8 TONS 21 S.Y. F.F.
CLASS 'B' RIP RAP 2 TONS 7 S.Y. F.F.
CLASS 'B' RIP RAP 3 TONS 11 S.Y. F.F.
REMOVE & REPLACE
REMOVE & REPLACE 30" RCP BURIED 0.5'
15" CSP
N 87° 41' 33.6" W
88° 30' 24.6" W
END RESURFACING
-L- POT STA 510+00.00
END CONSTRUCTION STA 510+30.00
SPECIAL CUT BASE DITCH SEE DETAIL 16
2' LATERAL BASE DITCH SEE DETAIL 15
RETAIN
PUE



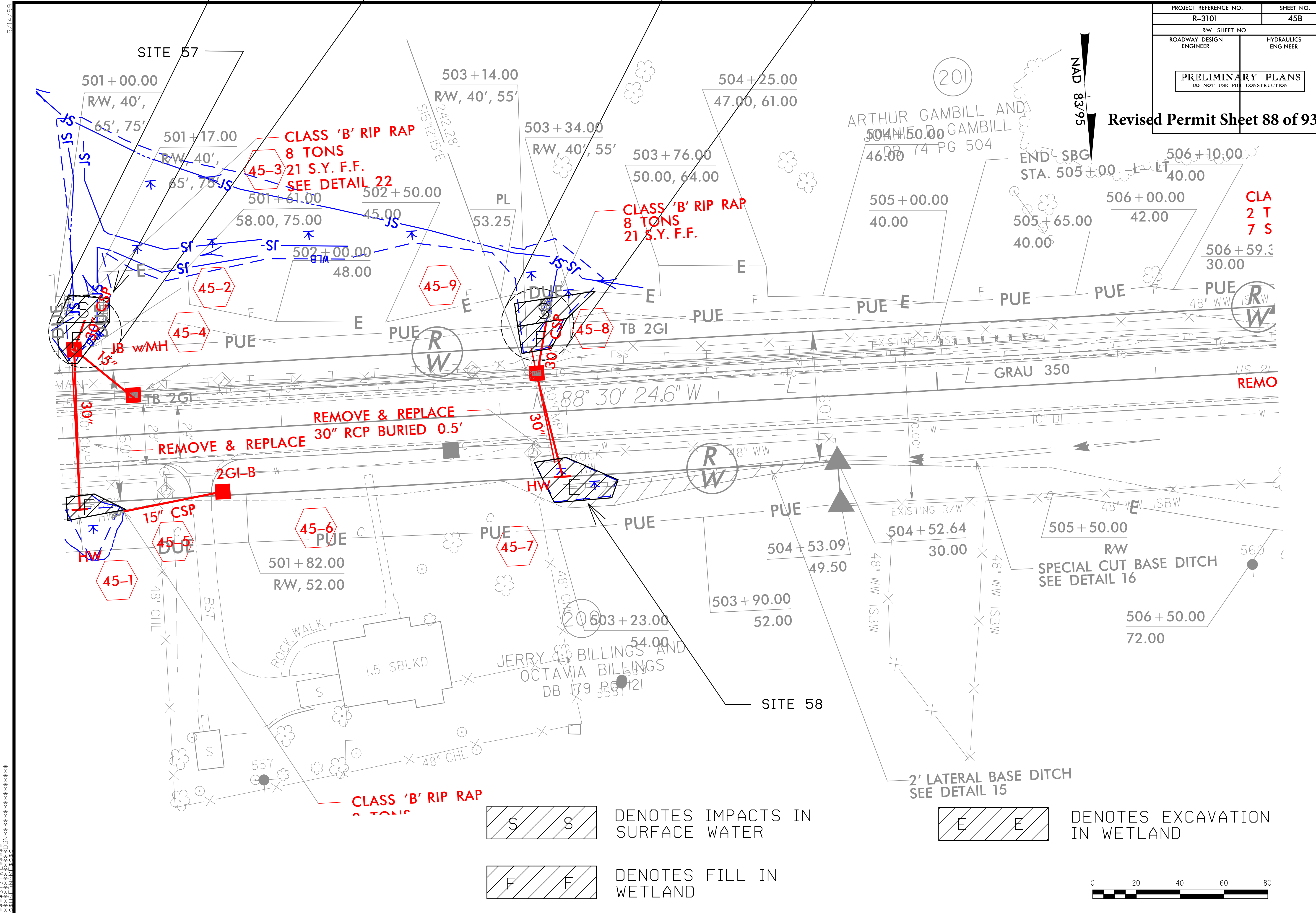




-L-
PI Sta 507+13.59
Δ = 0° 48' 51.0" (RT)
D = 0° 45' 00.0"
L = 108.56'
T = 54.28'
R = 7,639.44'

S S — DENOTES IMPACTS IN SURFACE WATER
TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER
F F — DENOTES FILL IN WETLAND
E E — DENOTES EXCAVATION IN WETLAND

0 50 100 150 200


PROJECT REFERENCE NO. R-3101
SHEET NO. 45B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
Revised Permit Sheet 88 of 93
NAD 83/95
SITE 57
SITE 58
CLASS 'B' RIP RAP
8 TONS
21 S.Y. F.F.
SEE DETAIL 22
CLASS 'B' RIP RAP
8 TONS
21 S.Y. F.F.
REMOVE & REPLACE
30" RCP BURIED 0.5'
REMOVE & REPLACE
JB w/MH
TB 2GI
2GI-B
15" CSP
HW
ARTHUR GAMBILL AND
DB 74 PG 504
JERRY L. BILLINGS AND
OCTAVIA BILLINGS
DB 179 PG 121
END SBG
STA. 505+00 -L- LT
-L- GRAU 350
N 88° 30' 24.6" W
SPECIAL CUT BASE DITCH
SEE DETAIL 16
2' LATERAL BASE DITCH
SEE DETAIL 15
45-1
45-2
45-3
45-4
45-5
45-6
45-7
45-8
45-9
DENOTES IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
0 20 40 60 80

WETLAND PERMIT IMPACT SUMMARY

				WETLAND IMPACTS					SURFACE WATER IMPACTS			
Sheet No.	Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)
7	1	52+41 38'RT	Culvert Extension						<0.01		16	
		52+41 38'RT	Bank stabilization						<0.01		10	
	2	53+80 47' RT to 57+00 44' RT	Pond						0.11			
9	3	69+40 24'RT	Fill	0.01								
	4	71+70 35' RT	Channel relocation						0.01		20	
		71+64 20' LT	Bank stabilization/ Stream alignment						0.01		25	
		71+63 16'RT	Bank stabilization/ Stream alignment						0.02		90	
11	5	94+80 27' LT	Pond							<0.01		
	6	96+85 25' LT	Fill/Handclearing	<0.01				<0.01				
	7	98+29 30' LT	Fill/Handclearing	<0.01				<0.01				
	8	101+06 26' LT	54" CCFRPM						0.01	<0.01	15	8
		101+06 21'RT	54" CCFRPM							<0.01		9
12	9	112+20 32' RT to 112+85 20' RT	Channel Relocation						0.01		160	
	10	113+70 26' LT	Bank stabilization						<0.01		12	
12&13	11	117+05 35' RT	24" RCP						0.01	<0.01	41	13
		117+35 22' LT	24" RCP						<0.01		8	
		117+35 22' LT	Bank stabilization						<0.01		11	
14	12	132+50 30' LT	Fill/Mech. Clearing	<0.01			0.01					
	13	133+05 30' LT	Bank stabilization						<0.01		11	
			30" Pipe						<0.01		6	
	14	135+66 25' LT	Fill/Mech. Clearing	<0.01			<0.01					
	15	NOT USED										
	16	NOT USED										
	17	NOT USED										
14	18	139+50 18' LT	42" RCP						0.01		29	
		139+61 46' LT	Bank stabilization						<0.01		12	
		139+69 55' LT	Base Ditch							0.01		42
15	19	143+05 25' LT	Fill/Mech. Clearing	0.01			0.02					
	20	152+80 70'LT	18" RCP	0.01								
18	21	183+60 21' RT	Channel Relocation						0.01	<0.01	17	21
			Bank stabilization						0.01		30	

WETLAND PERMIT IMPACT SUMMARY												
				WETLAND IMPACTS					SURFACE WATER IMPACTS			
Sheet No.	Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)
19	22	191+06 23' LT	24" RCP						<0.01		11	
			Bank stabilization						<0.01		11	
21	23	223+15 29' LT	24' RCP						<0.01		9	
		223+16 36' LT	Channel relocation						<0.01		22	
			Dewatering							<0.01		10
22	24	230+95 13'RT	Const. Area						<0.01		18	
		233+13 13' RT to 234+40 17' RT	Const. Area						0.02		129	
	25	234+54 19' LT	Bank stabilization						<0.01		12	
23	26	239+69 30' RT	30" pipe / const.	0.01		0.01						
	27	239+98 27' LT	Bank stabilization						<0.01		13	
26	28	277+82 33' LT	36" RCP						<0.01		7	
		277+87 25' LT	Bank stabilization						<0.01		7	
27	29	291+16 34' LT	fill/bank stabilization	<0.01					<0.01		8	
	30	291+31 24' RT	24" RCP						<0.01	<0.01	15	12
28	31	297+25 36' LT	Fill/Handclearing	<0.01				<0.01				
	32	297+83 26' LT	Fill	<0.01					<0.01		17	
	33	298+40 17' RT to 298+93 16' RT	Endwall						0.01	<0.01	14	14
			30" RCP						0.01		78	
	34	298+88 21' LT	30" RCP						<0.01		15	
		298+88 21' LT	Bank stabilization						<0.01		8	
		298+90 30' LT to 300+77 27' LT	Fill/Const. Area	0.03								
		301+18 28' LT to 301+71 27' LT	Fill/Const. Area	<0.01								
		302+30 25' LT	Fill/Const. Area	<0.01								
		298+90 30' LT to 302+28 25' LT	Mechanized clearing				0.06					
		302+45 25' LT	Hand clearing					0.02				
	35	NOT USED										

WETLAND PERMIT IMPACT SUMMARY												
				WETLAND IMPACTS					SURFACE WATER IMPACTS			
Sheet No.	Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)
29	36	312+22 27' LT	Hand clearing					<0.01				
	37	313+00 24' LT	Fill/Const. Area	<0.01								
		313+00 27' LT	Hand clearing					0.01				
	38	314+94 41 LT to 317+23 42' LT	Mechanized clearing				0.06					
		315+05 33' LT to 317+18 30' LT	Fill/Const. Area	0.07								
	39	317+17 35' RT	24" RCP(retaining wall)							<0.01		19
		317+30 32' RT	24" RCP						0.01		32	
		317+32 21' LT	24" RCP						0.01		40	
			Bank stabilization						<0.01		11	
30	40	322+23 31' LT	30" RCP						<0.01		10	
			Bank stabiliation						<0.01		10	
		322+18 31' RT	endwall							<0.1		12
	41	325+25 34' RT	Cut						<0.01		12	
			30" RCP						<0.01		16	
		325+25 34' LT	Bank stabilization / de-watering						0.01		20	
	42	332+49 16' LT	Bank stabilization						<0.01		9	
			30" CCFRPM						<0.01		12	
		332+50 21' RT	30" CCFRPM						<0.01		13	
			Ret. Wall							<0.01		11
31	42A	336+50 20' RT	Inlet/24" RCP			0.02						
	43	336+45 15' LT	fill/18" RCP	0.01								
		336+53 19' LT	18" RCP	<0.01								
		336+71 21' RT	inlet/18" RCP			<0.01						
	44	NOT USED										
	45	344+29 21' RT	36" RCP						<0.01		10	
		344+33 25' LT	36" RCP						<0.01		17	
			Bank stabilization						<0.01		11	

WETLAND PERMIT IMPACT SUMMARY												
				WETLAND IMPACTS					SURFACE WATER IMPACTS			
Sheet No.	Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)
32	46	349+36 25' RT	30" CCFRPM						<0.01		15	
			Earthen Ditch & Prop. Ret. Wall Const.							<0.01		12
		349+34 22' LT	30" CCFRPM						<0.01		10	
			Bank stabilization						<0.01		17	
	46A	349+36 25' RT	fill						<0.01		4	
33	47	364+28 19' RT	42" CCFRPM						<0.01		13	
			Relocate Channel						0.01		84	
		364+49 20' LT	42" CCFRPM						<0.01		16	
			Bank stabilization						<0.01		12	
34	48	372+61 30 RT	Channel Relocation						0.01		41	
		372+61 30' RT	Riprap Erosion Stone (Ditch Lining)						0.01		69	
		372+57 22' LT	Channel Relocation						0.01		39	
	48A	376+00 43' LT	Fill	<0.01								
36	49	393+55 LT	Bank stabilization / stream alignment						0.02		26	
		393+55 RT	Bank stabilization / stream alignment						0.02		33	
	50	404+14 100' RT	Channel Relocation						0.04	<0.01	100	18
		404+21 24' LT	Channel Relocation						0.03		84	
37	50	405+45 51' LT	Earthen Ditch						0.02		72	
	51	414+47 33' LT to 415+54 32' LT	Base Ditch	0.01					0.03		111	
	52	416+00 26' LT	Endwall							<0.01		10
		416+07 18' LT	42" RCP						<0.01		19	
		416+46 21' RT	Endwall							<0.01		15
38	53	423+60 44' RT	Bank stabilization						<0.01		9	
40	54	441+94 33' LT	6' x 7' RCBC						<0.01	<0.01	13	9
			Bank stabilization						0.01		64	
			6' x 7' RCBC						<0.01	<0.01	4	12

				WETLAND PERMIT IMPACT SUMMARY								
				WETLAND IMPACTS					SURFACE WATER IMPACTS			
Sheet No.	Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)
42	55	467+73 23' LT	Endwall							<0.01		10
			72" RCP						0.01		28	
		468+31 34' LT	Const. Area	<0.01								
	56	467+98 18' RT to 468+30 31' RT	72" RCP						<0.01		31	
		468+05 18' RT to 468+50 31' RT	From Tying in 3' Ditch							0.01		27
		468+75 40' RT to 469+54 31' RT	Channel Rel. w/ Rock Cross Vanes			<0.01			0.01		84	
45	57	501+05 31' LT	30" RCP & Junct. Box	0.01					0.01		13	
		501+05 27' RT	Headwall	0.01								
	58	503+15 27' LT	30" CSP						0.01		11	
		503+25 40' LT	30" CSP	0.01								
		503+25 21' RT	Headwall and ditch			0.01						
TOTAL:				0.19	0.00	0.04	0.15	0.05	0.60	0.07	2152	284

09/08/99

TIP PROJECT: R–3101

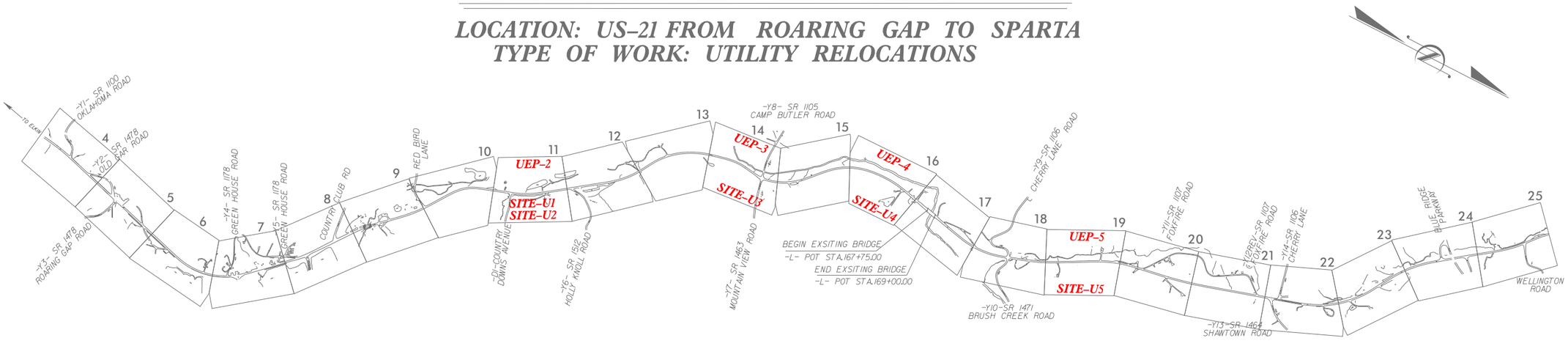
T.I.P. NO.	SHEET NO.
R–3101	UEP–1

UTILITY SHEET 1 OF 10

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

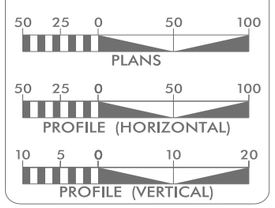
UTILITY ENVIRONMENTAL PLANS
ALLEGHANY COUNTY

LOCATION: US–21 FROM ROARING GAP TO SPARTA
TYPE OF WORK: UTILITY RELOCATIONS



PLAN DATE: 10–02–2013

GRAPHIC SCALES



INDEX OF SHEETS

SEAL

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

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

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

PROJECT REFERENCE NO.	SHEET NO.
R-3101	UEP-2

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

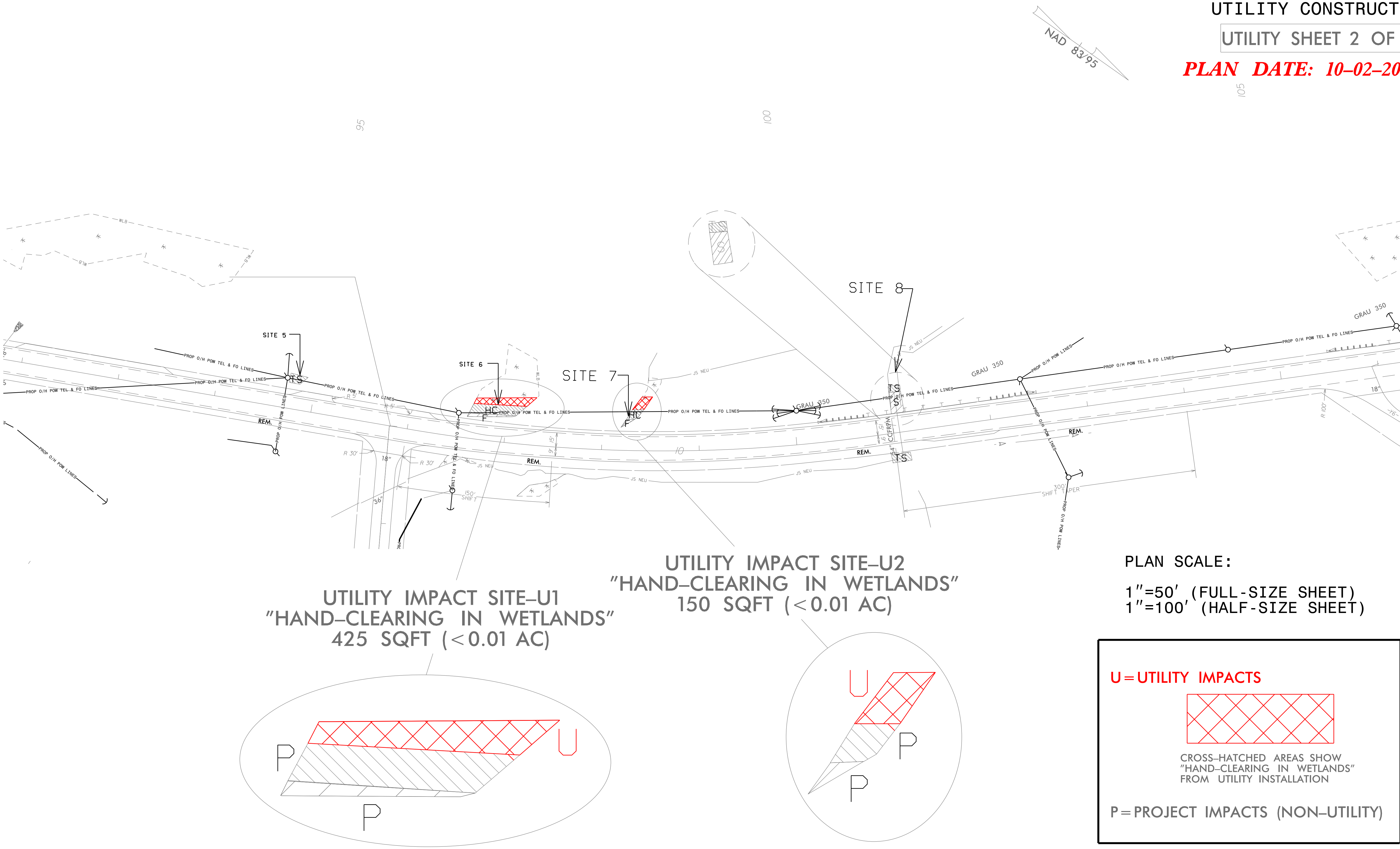
UTILITY CONSTRUCTION PLANS ONLY

NCDOT PROJECT R-3101
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U1 AND SITE-U2

UTILITY CONSTRUCTION

UTILITY SHEET 2 OF 10

PLAN DATE: 10-02-2013



UTILITY IMPACT SITE-U1
"HAND-CLEARING IN WETLANDS"
425 SQFT (<0.01 AC)

UTILITY IMPACT SITE-U2
"HAND-CLEARING IN WETLANDS"
150 SQFT (<0.01 AC)

PLAN SCALE:

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

U = UTILITY IMPACTS

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

P = PROJECT IMPACTS (NON-UTILITY)

5/14/99

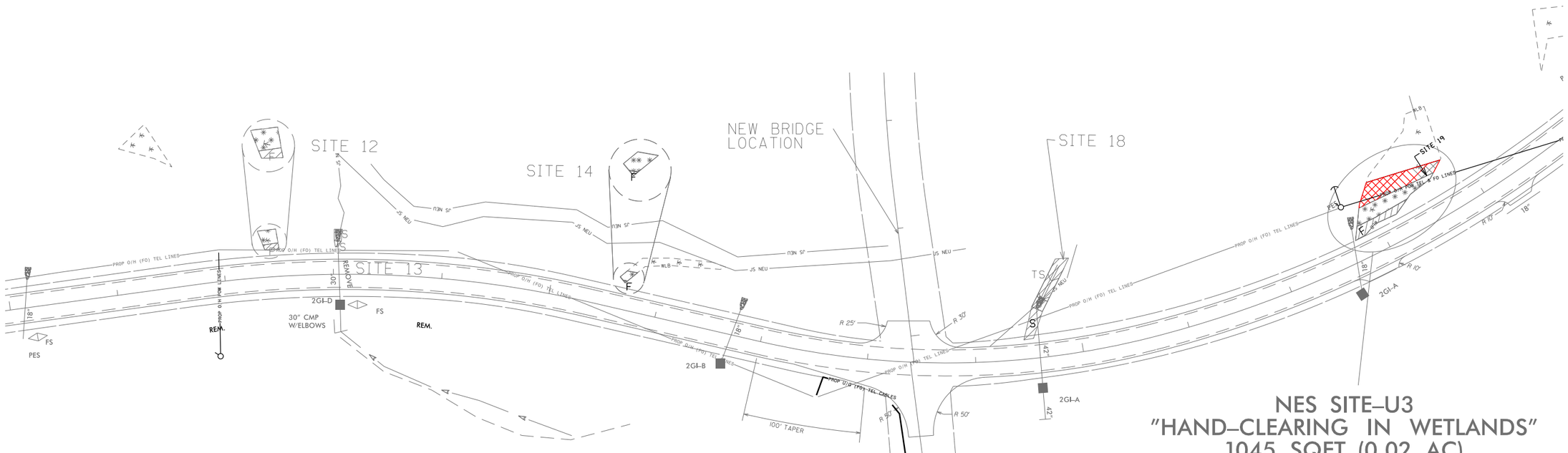
NCDOT PROJECT R–3101
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE–U3

PROJECT REFERENCE NO.	SHEET NO.
R–3101	UEP–3
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707–6690 FAX:(919)250–4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

UTILITY SHEET 3 OF 10

PLAN DATE: 10–02–2013



PLAN SCALE:

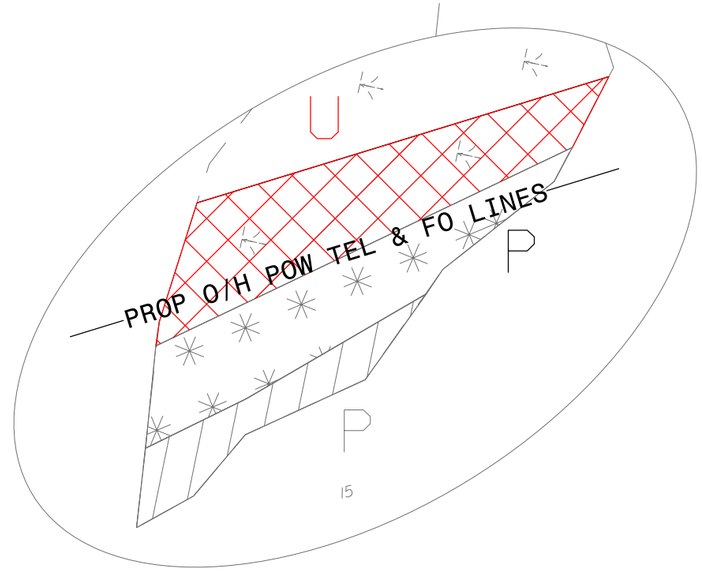
1″=50′ (FULL-SIZE SHEET)
1″=100′ (HALF-SIZE SHEET)

U = UTILITY IMPACTS

CROSS–HATCHED AREAS SHOW "HAND–CLEARING IN WETLANDS" FROM UTILITY INSTALLATION

P = PROJECT IMPACTS (NON–UTILITY)

NES SITE–U3
"HAND–CLEARING IN WETLANDS"
1045 SQFT (0.02 AC)



PROJECT REFERENCE NO.	SHEET NO.
R-3101	UEP-4

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

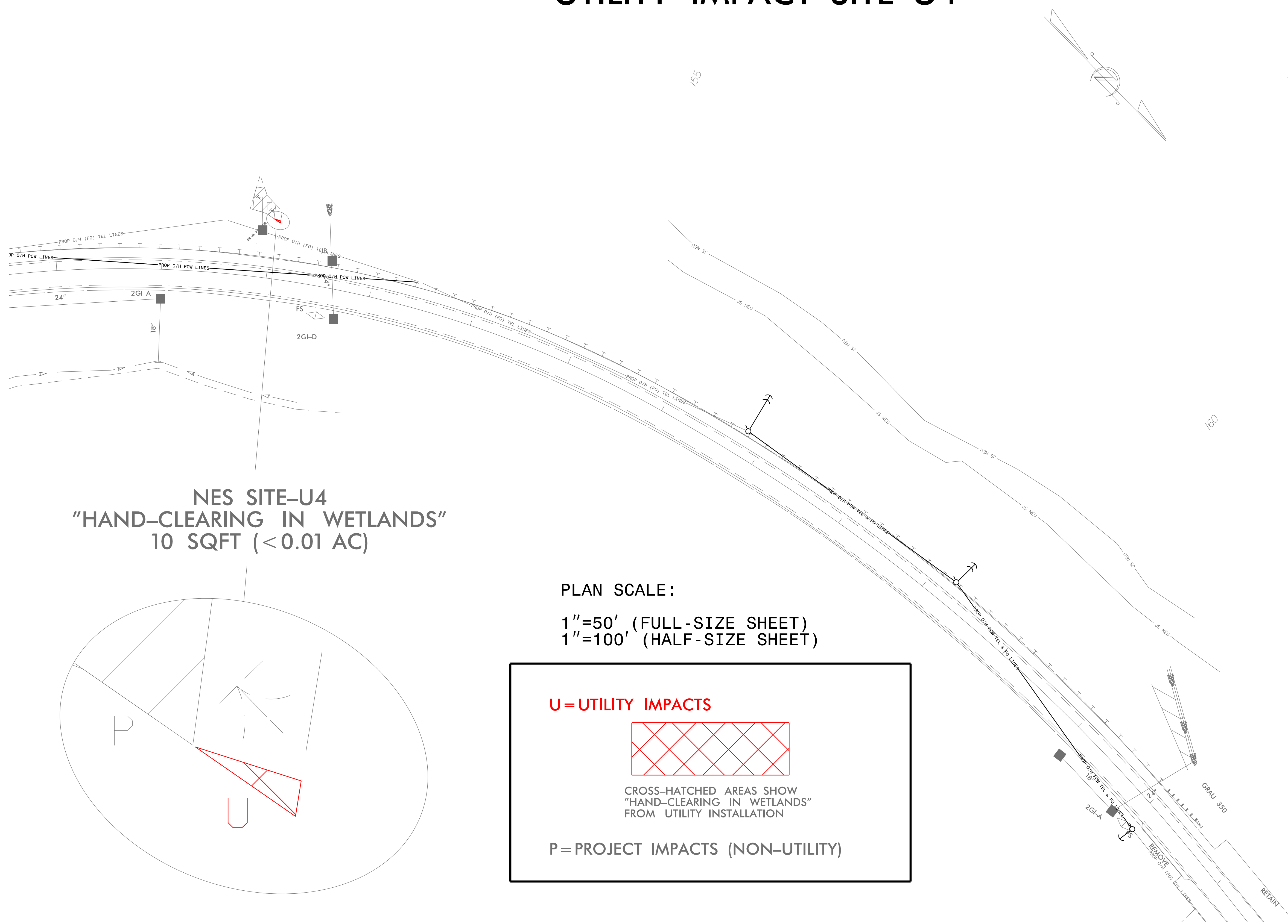
UTILITY CONSTRUCTION PLANS ONLY

NCDOT PROJECT R-3101
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U4

UTILITY CONSTRUCTION

UTILITY SHEET 4 OF 10

PLAN DATE: 10-02-2013



NES SITE-U4
"HAND-CLEARING IN WETLANDS"
10 SQFT (<0.01 AC)

PLAN SCALE:

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

U = UTILITY IMPACTS

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

P = PROJECT IMPACTS (NON-UTILITY)

5/14/99

03-OCT-2013 07:55
...NES sheet UEP-4 (10-02-13).dgn

NCDOT PROJECT R-3101
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U5

PROJECT REFERENCE NO.	SHEET NO.
R-3101	UEP-5

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

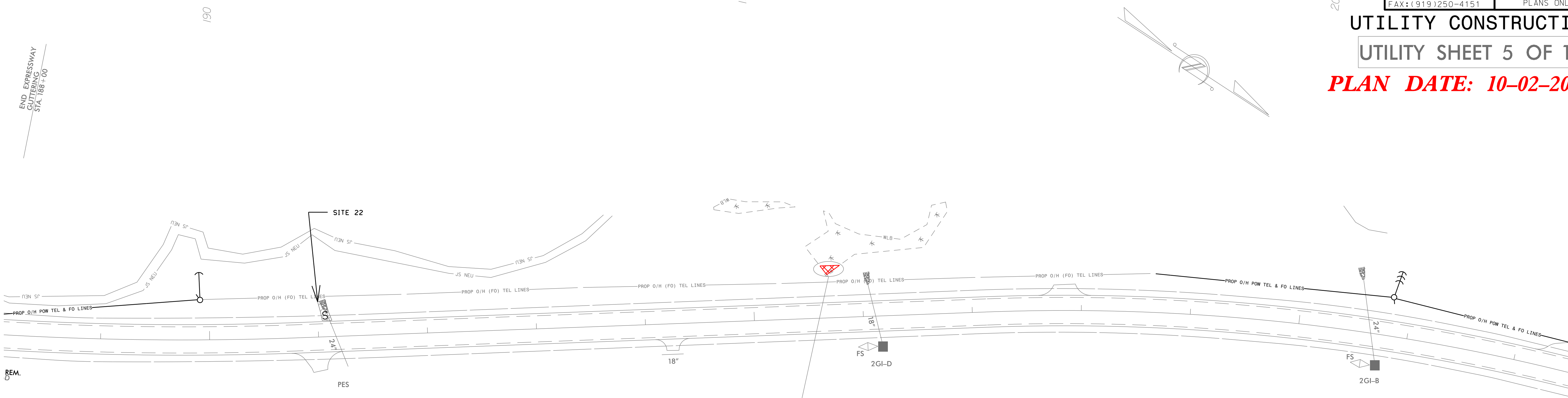
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151

UTILITY CONSTRUCTION PLANS ONLY

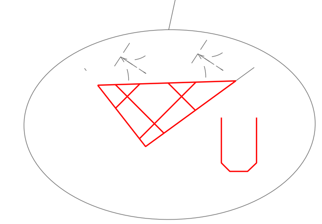
UTILITY CONSTRUCTION

UTILITY SHEET 5 OF 10

PLAN DATE: 10-02-2013



NES SITE-U5
"HAND-CLEARING IN WETLANDS"
75 SQFT (<0.01 AC)



PLAN SCALE:

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

U = UTILITY IMPACTS

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

P = PROJECT IMPACTS (NON-UTILITY)

5/14/99

03-OCT-2013 07:55 R-3101 NES sheet UEP-5 (10-02-13).dgn

PROJECT REFERENCE NO.	SHEET NO.
R-3101	UEP-6

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

UTILITY CONSTRUCTION PLANS ONLY

NCDOT PROJECT R-3101
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U6 AND SITE-U7

PLAN SCALE:

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

U = UTILITY IMPACTS

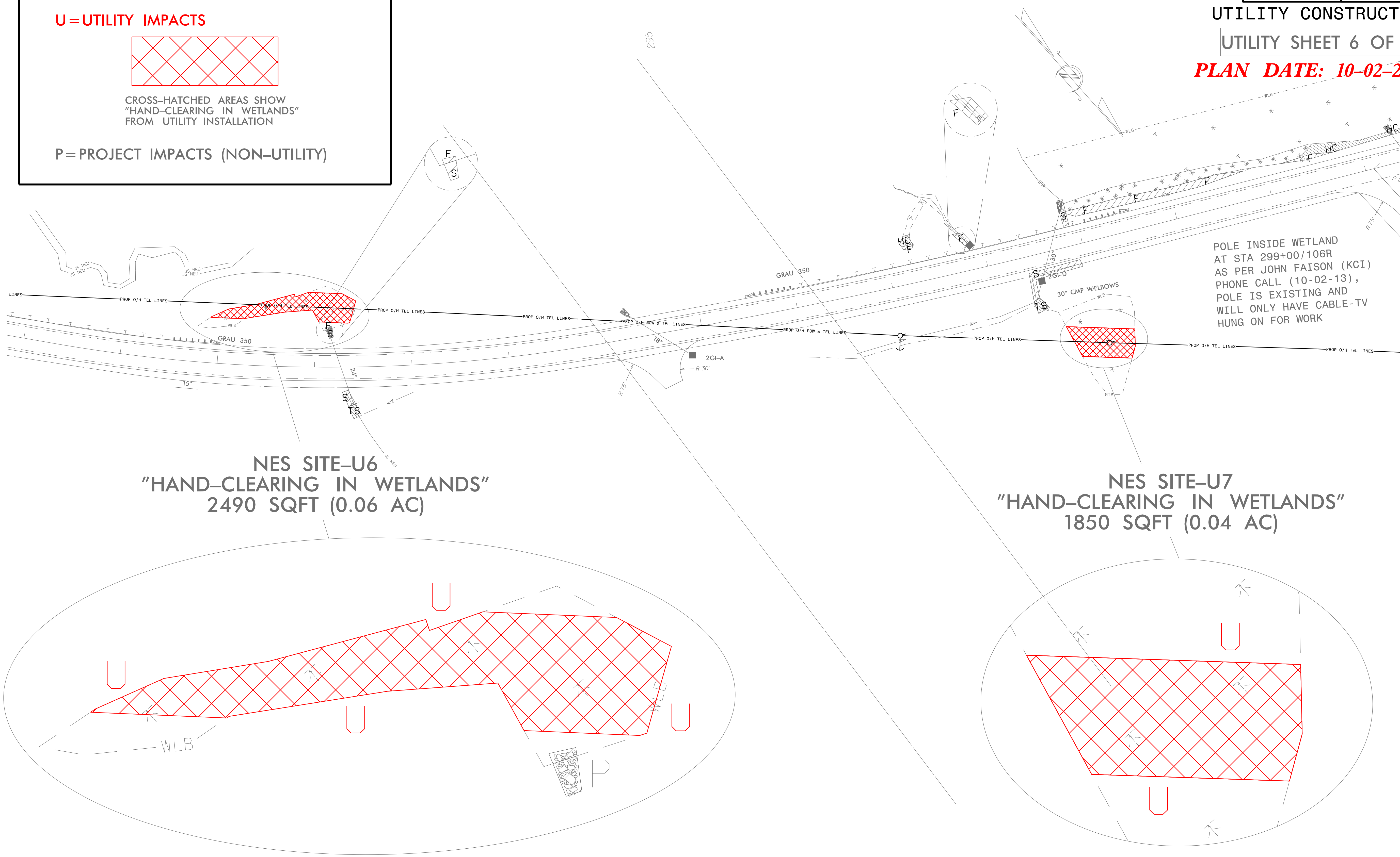
CROSS-HATCHED AREAS SHOW "HAND-CLEARING IN WETLANDS" FROM UTILITY INSTALLATION

P = PROJECT IMPACTS (NON-UTILITY)

UTILITY CONSTRUCTION

UTILITY SHEET 6 OF 10

PLAN DATE: 10-02-2013



5/14/99

NCDOT PROJECT R-3101
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U8

PROJECT REFERENCE NO.	SHEET NO.
R-3101	UEP-7
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE:(919)707-6690 FAX:(919)250-4151	UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

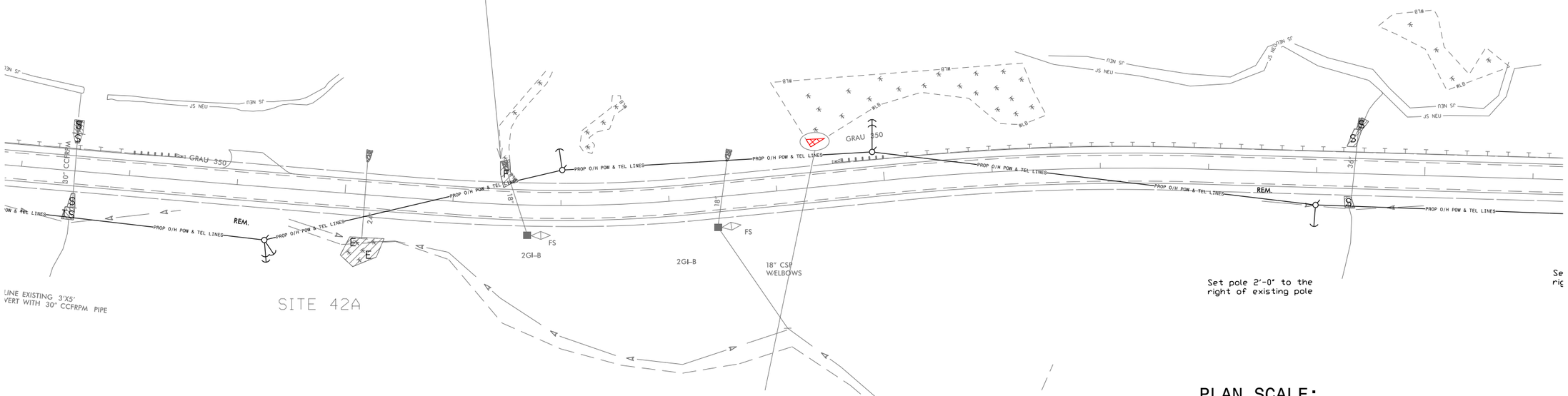
UTILITY SHEET 7 OF 10

PLAN DATE: 10-02-2013

NAD 83/95

335 340 345

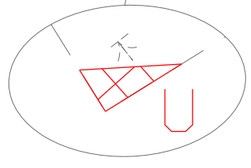
SITE 43



LINE EXISTING 3'X5' VERT WITH 30" CCFRPM PIPE

SITE 42A

NES SITE-U8
"HAND-CLEARING IN WETLANDS"
60 SQFT (<0.01 AC)



PLAN SCALE:

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

U = UTILITY IMPACTS

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

P = PROJECT IMPACTS (NON-UTILITY)

03-OCT-2013 07:55
N:\Projects\R-3101\Permit stuff\R-3101 NES sheet UEP-7 (10-02-13).dgn

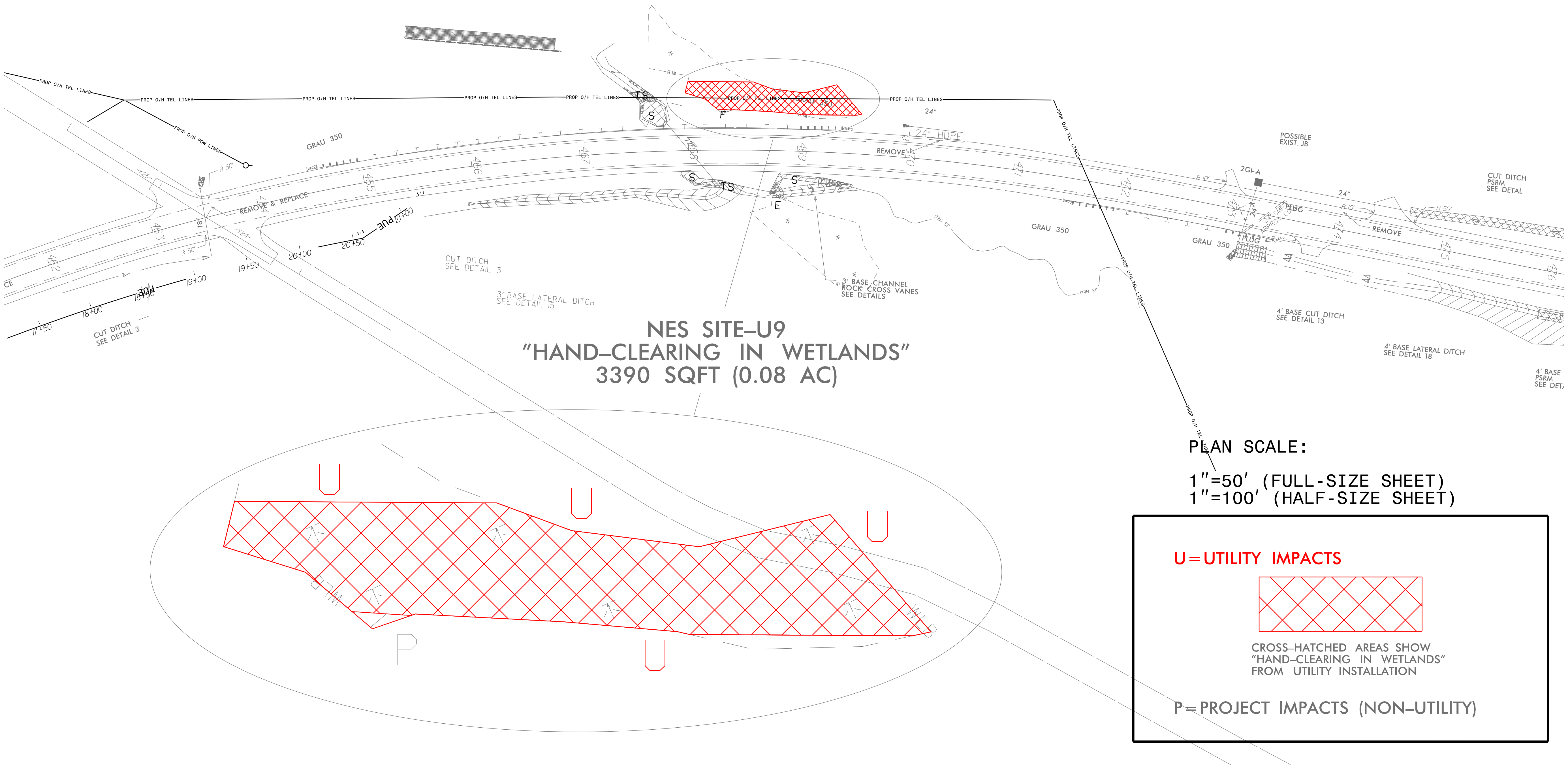
PROJECT REFERENCE NO. R-3101 | SHEET NO. UEP-8
DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC.
PHONE: (919)707-6690
FAX: (919)250-4151
UTILITY CONSTRUCTION PLANS ONLY

NCDOT PROJECT R-3101
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U9

UTILITY CONSTRUCTION

UTILITY SHEET 8 OF 10

PLAN DATE: 10-02-2013



PLAN SCALE:

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

U = UTILITY IMPACTS

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

P = PROJECT IMPACTS (NON-UTILITY)

PROJECT REFERENCE NO.	SHEET NO.
R-3101	UEP-9

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
REVISED:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

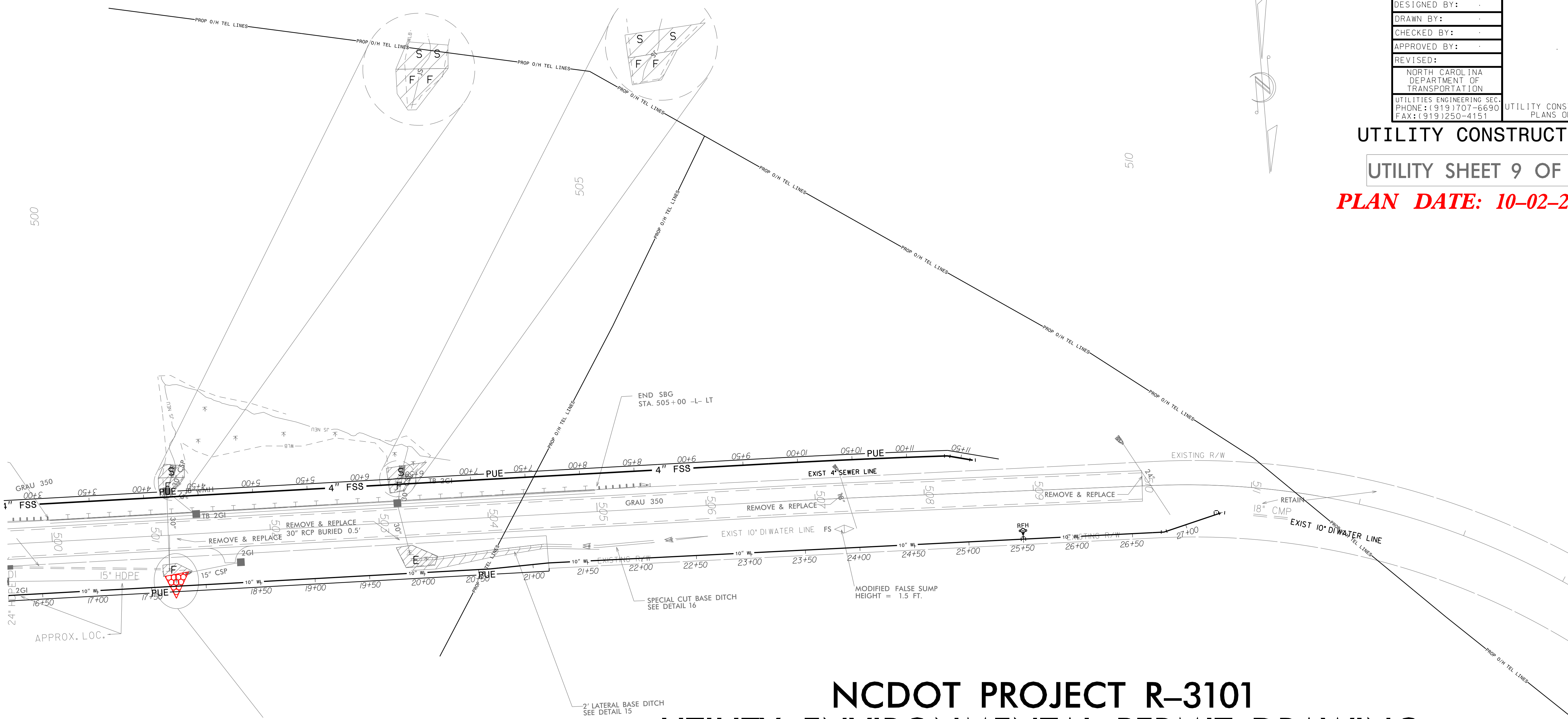
UTILITIES ENGINEERING SEC.
PHONE:(919)707-6690
FAX:(919)250-4151

UTILITY CONSTRUCTION PLANS ONLY

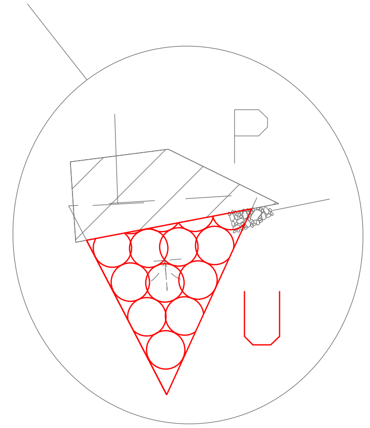
UTILITY CONSTRUCTION

UTILITY SHEET 9 OF 10

PLAN DATE: 10-02-2013



NES SITE-U10
"HAND-CLEARING IN WETLANDS"
240 SQFT (<0.01 AC)



NCDOT PROJECT R-3101
UTILITY ENVIRONMENTAL PERMIT DRAWING
UTILITY IMPACT SITE-U10

PLAN SCALE:

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

U = UTILITY IMPACTS

CIRCLE-FILLED AREAS SHOW "TEMPORARY EXCAVATION IN WETLANDS" FROM UTILITY INSTALLATION

P = PROJECT IMPACTS (NON-UTILITY)

5/14/99

03-OCT-2013 07:56

UTILITY WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS						SURFACE WATER IMPACTS				
						Temp.		Hand			Existing	Existing	
			Permanent	Temp.	Excavation	Excavation	Mechanized	Clearing	Permanent	Temp.	Channel	Channel	Natural
Site	-L- Station	Structure	Fill In	Fill In	in	in	Clearing	in	SW	SW	Impacts	Impacts	Stream
No.	(From/To)	Size / Type	Wetlands	Wetlands	Wetlands	Wetlands	in Wetlands	Wetlands	impacts	impacts	Permanent	Temp.	Design
			(ac)	(ac)	(ac)	(ac)	(ac)	(ac)	(ac)	(ac)	(ft)	(ft)	(ft)
U1	Sta 97+00L	overhead power line - clear 15' each side of line						< 0.01 (425 SQFT)					
U2	Sta 98+25L	overhead power line - clear 15' each side of line						< 0.01 (150 SQFT)					
U3	Sta 143+25L	overhead power line - clear 15' each side of line						0.02 (1045 SQFT)					
U4	Sta 151+90L	overhead power line - clear 15' each side of line						< 0.01 (10 SQFT)					
U5	Sta 196+00L	overhead power line - clear 15' each side of line						< 0.01 (75 SQFT)					
U6	Sta 291+10L	overhead power line - clear 15' each side of line						0.06 (2490 SQFT)					
U7	Sta 299+00R	overhead power line - clear 15' each side of line						0.04 (1850 SQFT)					
U8	Sta 339+35L	overhead power line - clear 15' each side of line						<0.01 (60 SQFT)					
U9	Sta 468+80L	overhead power line - clear 15' each side of line						0.08 (3390 SQFT)					
U10	Sta 501+10R	temporary excavation for water line installation - clear 5' each side of line				<0.01 (240 SQFT)							
TOTALS:						<0.01 (240 SQFT)		0.22 * (9495 SQFT)					

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

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ALLEGHANY COUNTY
WBS - 37044.1.1 (R-3101)

REVISED
10/2/2013

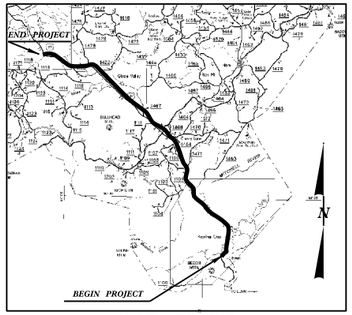
ATN Revised 3/31/05

09/08/99

TIP PROJECT: R-3101

CONTRACT: C203386

See Sheet 1-A For Index of Sheets



VICINITY MAP
(NO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

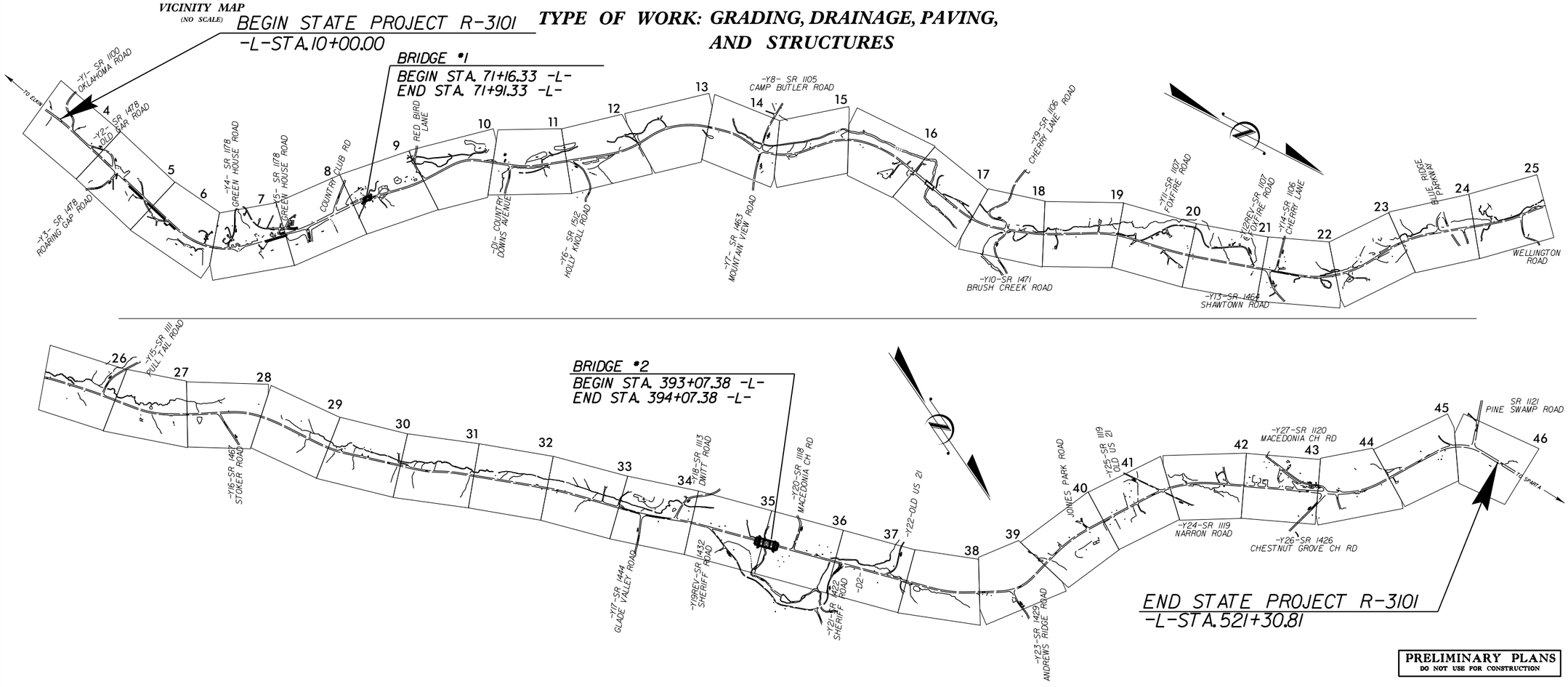
ALLEGHANY COUNTY

LOCATION: US 21 FROM SR 1100 (OKLAHOMA RD.) TO SR 1121 (PINE SWAMP RD.)

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

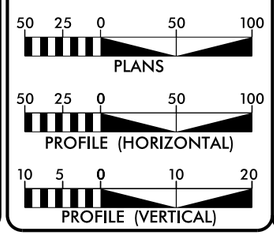
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3101	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
37044.1.1	STP – 21(11)	PE
37044.2.1	STP–0021(11)	R/W
37044.3.1	STP–0021 (14)	CONST
37044.2.UI	STP–0021(11)	UTIL



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA
REGIONAL TIER DESIGN

ADT 2004	=	8300
ADT 2030	=	17000
DHV	=	11 %
D	=	60 %
T	=	10 % *
V	=	60 MPH

* TTST 5% DUAL 5%

PROJECT LENGTH

ROADWAY LENGTH TIP PROJECT R-3101	=	*10.136 MI*
STRUCTURE LENGTH TIP PROJECT R-3101	=	*0.033 MI*
TOTAL LENGTH TIP PROJECT R-3101	=	*10.169 MI*

Prepared In the Office of:
DIVISION OF HIGHWAYS
801 Statesville Road, North Wilkesboro, NC 28659

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPTEMBER 16, 2011

LETTING DATE:
SEPTEMBER 17, 2013

DIVISION ENGINEER
M. A. PETTYJOHN, P.E.

SIGNATURE *P.E.*

DATE

HYDRAULICS ENGINEER
AARON C. CARVER, PE

SIGNATURE: *P.E.*

DIVISION PROJECT MANAGER
JOSEPH L. LAWS, PE

SIGNATURE: *P.E.*

19-JUL-2013 12:42
R:\R3101\Design\r3101_ddc_tsh_081016.dgn
$$$$USERNAME$$$$

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
R-3101	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

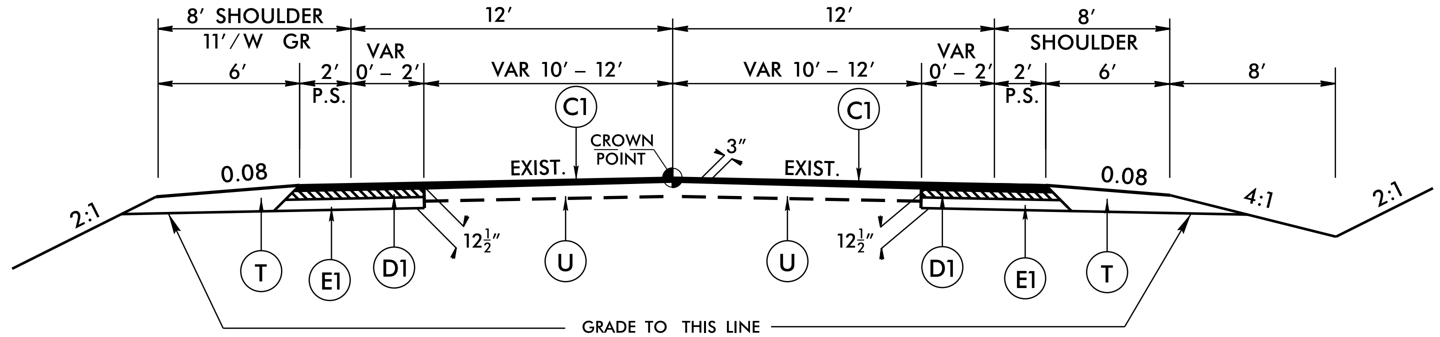
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

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

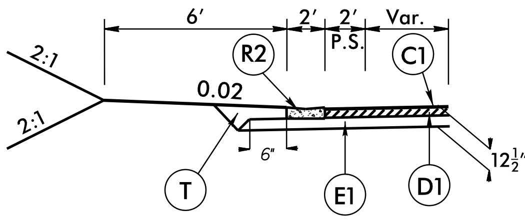
PROJECT REFERENCE NO.	SHEET NO.
R-3101	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



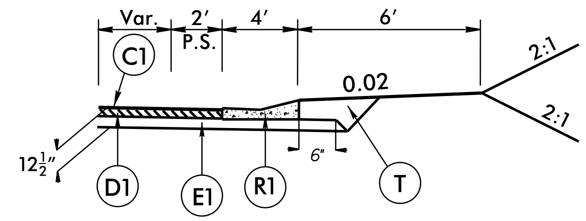
TYPICAL SECTION NO. 1

* –L– STA. 15+00.00 TO STA. 57+45.00
–L– STA. 75+00.00 TO STA. 96+00.00
–L– STA. 103+00.00 TO STA. 137+75.00
–L– STA. 138+25.00 TO STA. 148+00.00
** –L– STA. 170+50.00 TO STA. 221+50.00
–L– STA. 272+00.00 TO STA. 369+50.00
–L– STA. 377+50.00 TO STA. 382+50.00
–L– STA. 407+00.00 TO STA. 415+00.00
–L– STA. 425+50.00 TO STA. 486+00.00
–L– STA. 494+00.00 TO STA. 510+00.00



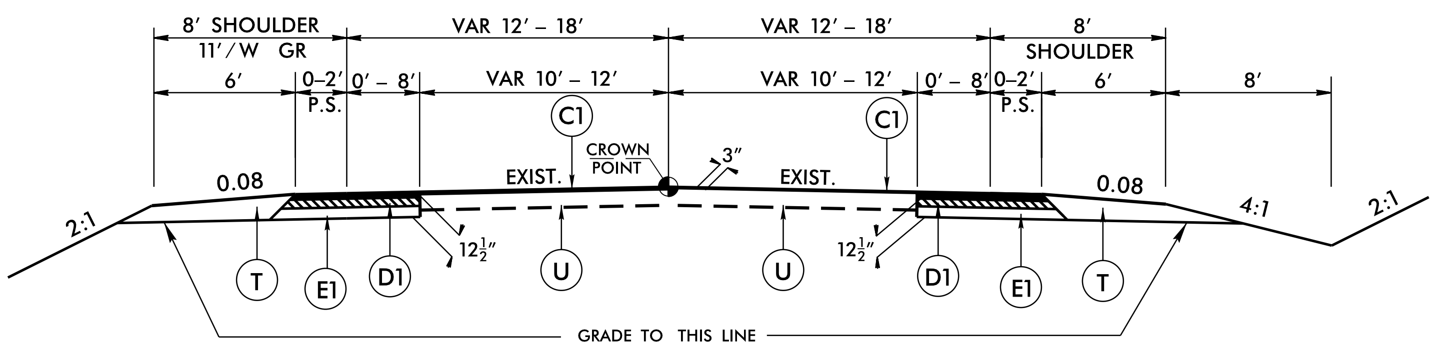
VALLEY GUTTER DETAIL

* –L– STA. 17+50.00 TO –L– STA. 18+95.00 LT



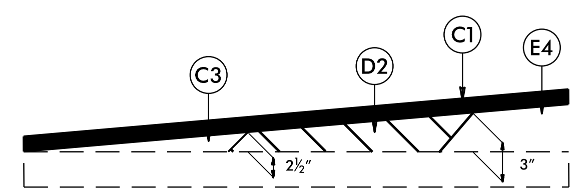
EXPRESSWAY GUTTER DETAIL

* –L– STA. 24+93.00 TO –L– STA. 26+45.00 LT
* –L– STA. 28+00.00 TO –L– STA. 31+10.00 RT
* –L– STA. 31+70.00 TO –L– STA. 36+05.00 RT
* –L– STA. 36+75.00 TO –L– STA. 38+35.00 RT
* –L– STA. 43+65.00 TO –L– STA. 47+05.00 LT
* –L– STA. 50+50.00 TO –L– STA. 56+25.00 LT
** –L– STA. 183+25.00 TO –L– STA. 188+00.00 LT

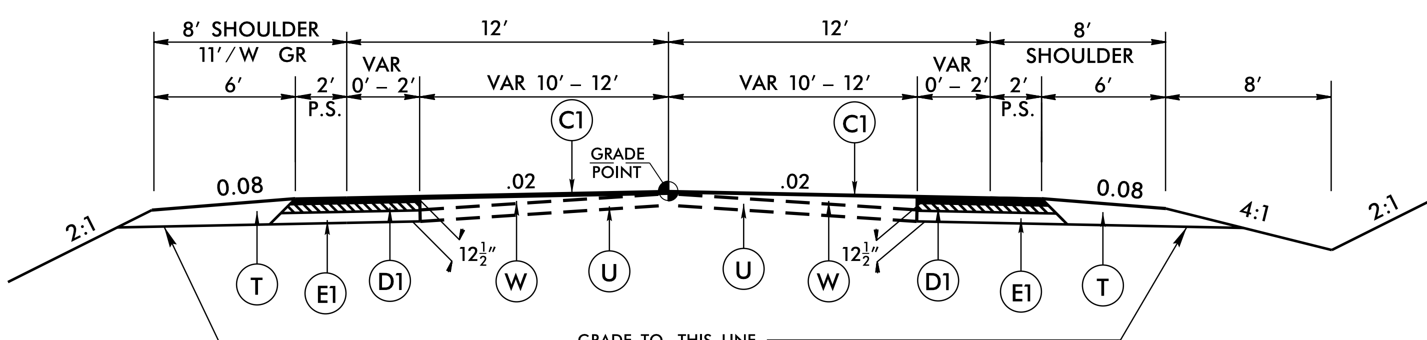


TYPICAL SECTION NO. 2

–L– STA. 13+00.00 TO STA. 15+00.00
–L– STA. 57+45.00 TO STA. 69+00.00
–L– STA. 137+75.00 TO STA. 138+25.00
–L– STA. 242+00.00 TO STA. 246+50.00
–L– STA. 269+00.00 TO STA. 272+00.00
–L– STA. 486+00.00 TO STA. 494+00.00

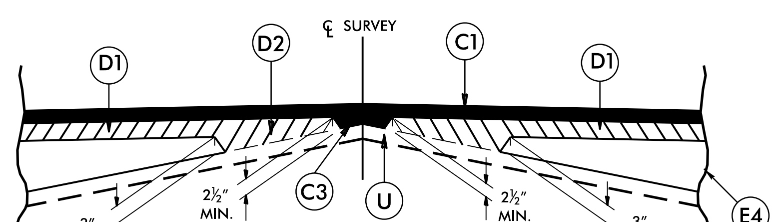


Wedging Detail For Resurfacing



TYPICAL SECTION NO. 3

–L– STA. 69+00.00 TO STA. 71+35.63
–L– STA. 71+85.63 TO STA. 75+00.00



Detail Showing Method of Wedging

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½″ IN DEPTH.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2¼″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. APPROX. 7″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
J	PROP. APPROX. 6″ AGGREGATE BASE COURSE
P	PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YD.
R1	4′ EXPRESSWAY GUTTER
R2	2′ VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	3″ MILLING BITUMINOUS PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

6/2/99

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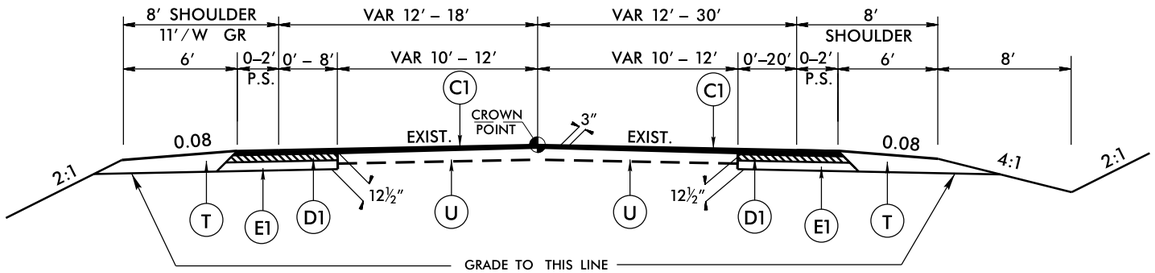
$$$$USERNAME$$$$

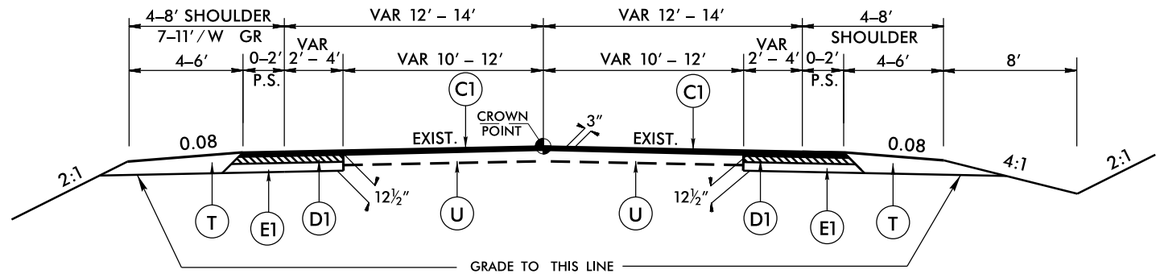
PROJECT REFERENCE NO.	SHEET NO.
R-3101	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



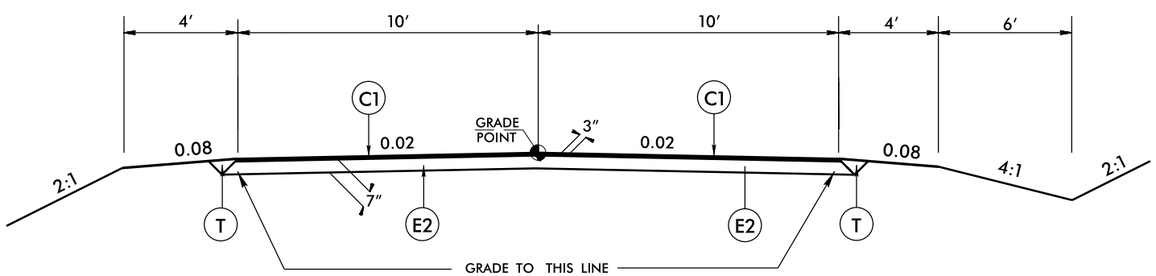
TYPICAL SECTION NO. 4

–L– STA. 221+50.00 TO STA. 230+00.00
–L– STA. 369+50.00 TO STA. 377+50.00



TYPICAL SECTION NO. 5

–L– STA. 96+00.00 TO STA. 97+50.00



TYPICAL SECTION NO. 6

–Y4– STA. 10+25.00 TO STA. 11+50.00
–Y5– STA. 13+25.00 TO STA. 14+80.00
–Y6– STA. 10+15.00 TO STA. 11+25.00
–Y11– STA. 10+50.00 TO STA. 12+15.00
–Y12REV– STA. 12+50.00 TO STA. 15+00.00
–Y17– STA. 10+50.00 TO STA. 12+00.00
–Y19REV– STA. 10+15.00 TO STA. 12+00.00

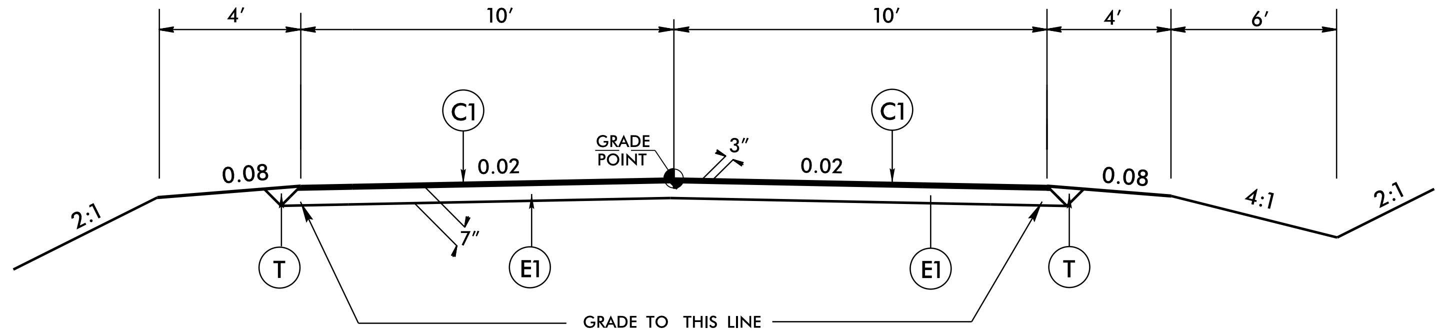
PAVEMENT SCHEDULE

C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½″ IN DEPTH.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2¼″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. APPROX. 7″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
J	PROP. APPROX. 6″ AGGREGATE BASE COURSE
P	PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YD.
R1	4′ EXPRESSWAY GUTTER
R2	2′ VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	3″ MILLING BITUMINOUS PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

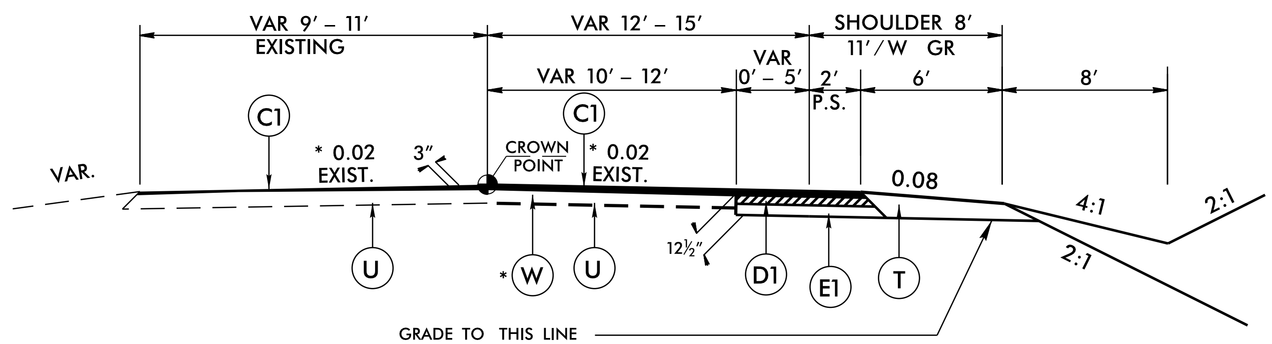
PROJECT REFERENCE NO.	SHEET NO.
R-3101	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



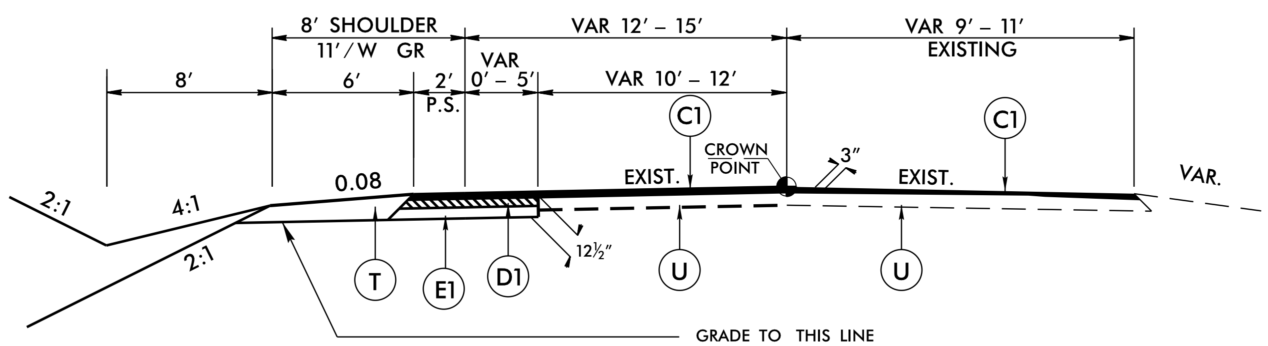
TYPICAL SECTION NO. 7

-Y13- STA. 10+30.00 TO STA. 11+50.00
-Y26- STA. 10+15.00 TO STA. 11+00.00



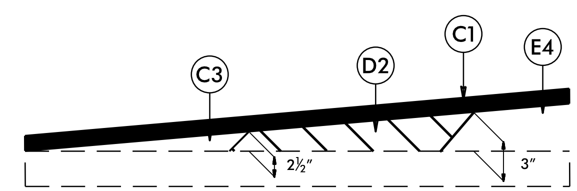
TYPICAL SECTION NO. 8

-L- STA. 148+00.00 TO STA. 164+00.00
-L- STA. 230+00.00 TO STA. 242+00.00
-L- STA. 382+50.00 TO STA. 392+00.00
* -L- STA. 392+00.00 TO STA. 393+07.38 USE PROPOSED PROFILE
* -L- STA. 394+07.38 TO STA. 398+00.00 USE PROPOSED PROFILE
-L- STA. 398+00.00 TO STA. 407+00.00

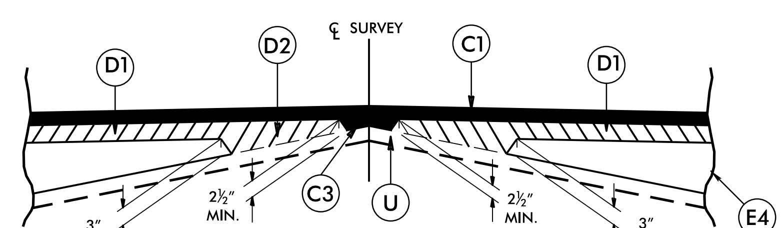


TYPICAL SECTION NO. 9

-L- STA. 97+50.00 TO STA. 103+00.00
-L- STA. 415+00.00 TO STA. 425+50.00



Wedging Detail For Resurfacing



Detail Showing Method of Wedging

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2¼" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. APPROX. 7" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J	PROP. APPROX. 6" AGGREGATE BASE COURSE
P	PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YD.
R1	4' EXPRESSWAY GUTTER
R2	2' VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	3" MILLING BITUMINOUS PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

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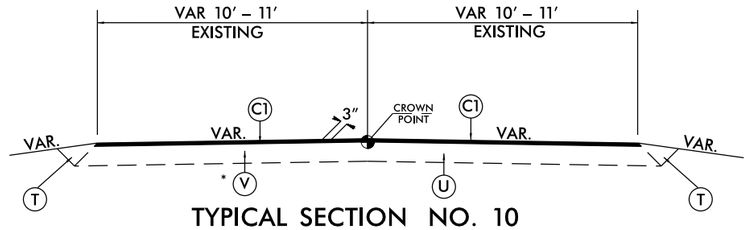
PROJECT REFERENCE NO.	SHEET NO.
R-3101	2-C

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

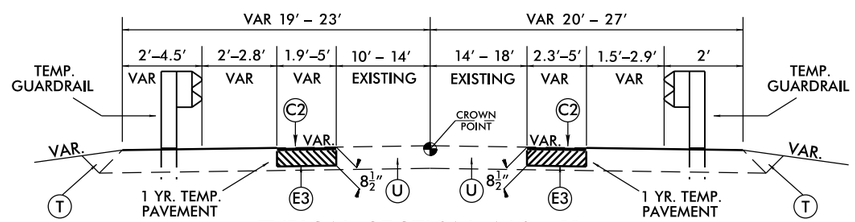


TYPICAL SECTION NO. 10

–L– STA. 12 + 00.00 TO 13 + 00.00 (RESURFACE)
–Y1– STA. 12 + 50.00 TO STA. 13 + 10.00
–Y2– STA. 10 + 15.00 TO STA. 11 + 00.00
–Y2– STA. 15 + 00.00 TO STA. 16 + 00.00
–Y3– STA. 10 + 15.00 TO STA. 11 + 25.00
–Y4– STA. 10 + 00.00 TO STA. 10 + 25.00
–D1– STA. 11 + 00.00 TO STA. 11 + 50.00 (RESURFACE)
–Y7– STA. 10 + 15.00 TO STA. 11 + 00.00
–Y8– STA. 14 + 30.00 TO STA. 15 + 10.00
–Y9– STA. 12 + 00.00 TO STA. 12 + 50.00
–Y10– STA. 10 + 15.00 TO STA. 10 + 40.00
–Y11– STA. 10 + 00.00 TO STA. 10 + 50.00
–Y12REV– STA. 11 + 00.00 TO STA. 12 + 50.00
–Y13– STA. 11 + 50.00 TO STA. 11 + 75.00
–Y14– STA. 11 + 80.00 TO STA. 12 + 40.00
–Y15– STA. 14 + 25.00 TO STA. 14 + 85.00
–Y16REV– STA. 10 + 15.00 TO STA. 11 + 00.00
–Y18– STA. 12 + 00.00 TO STA. 12 + 90.00
–Y20– STA. 11 + 50.00 TO STA. 12 + 00.00
–Y21– STA. 10 + 20.00 TO STA. 10 + 85.00
–Y22– STA. 12 + 50.00 TO STA. 12 + 90.00
–Y23– STA. 10 + 15.00 TO STA. 10 + 75.00
–Y24– STA. 10 + 15.00 TO STA. 10 + 75.00
–Y25– STA. 11 + 00.00 TO STA. 11 + 35.00
–Y26– STA. 10 + 15.00 TO STA. 11 + 00.00
–Y27– STA. 11 + 50.00 TO STA. 11 + 85.00

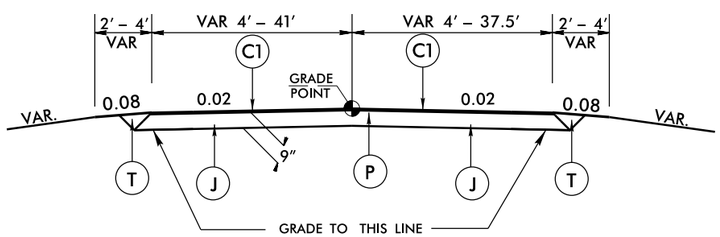
* NOTE: MILL EXISTING PAVEMENT AND REPLACE WITH S9.5C AT STATIONS:

–L– 164 + 00.00 TO 167 + 75.00
–L– 168 + 97.00 TO 170 + 50.00
–L– 246 + 50.00 TO 269 + 00.00



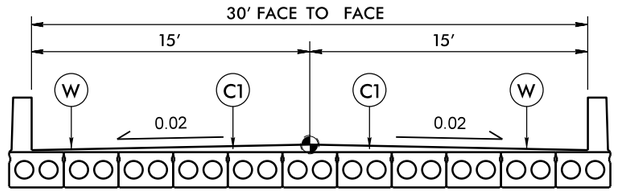
TYPICAL SECTION NO. 11

–L– STA. 69 + 56.00 TO 73 + 26.00 LT
–L– STA. 69 + 56.00 TO 73 + 26.00 RT
–L– STA. 183 + 20.00 TO 185 + 49.00 LT
–L– STA. 371 + 58.00 TO 373 + 58.00 LT
–L– STA. 391 + 37.00 TO 395 + 77.00 RT
–L– STA. .391 + 37.00 TO 392 + 87.36 LT
–L– STA. 394 + 27.37 TO 395 + 77.00 LT
–L– STA. 403 + 62.00 TO STA. 406 + 93.00 LT
–L– STA. 404 + 16.00 TO 405 + 85.00 RT
–L– STA. 406 + 20.00 TO 406 + 45.00 RT
–L– STA. 440 + 70.00 TO 443 + 54.00 RT
–L– STA. 440 + 65.00 TO 443 + 54.00 LT
–L– STA. 466 + 63.00 TO 469 + 13.00 LT
–L– STA. 466 + 63.00 TO 469 + 13.00 RT



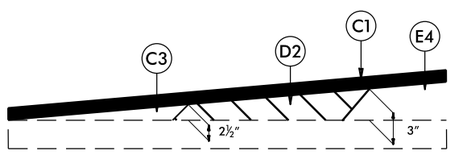
TYPICAL SECTION NO. 12

–D1– STA. 10 + 14.00 TO STA. 11 + 00.00
–D2– STA. 10 + 15.00 TO STA. 11 + 70.25

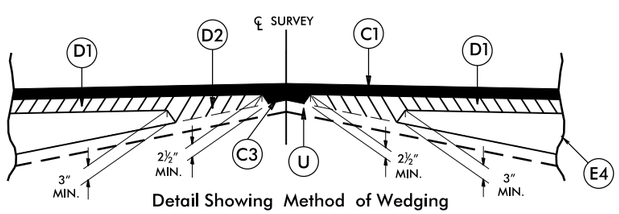


CORED SLAB BRIDGE
TYPICAL SECTION NO. 13

–L– STA. 71 + 35.63 TO –L– STA. 71 + 85.63
–L– STA. 393 + 07.38 TO –L– STA. 394 + 07.38



Wedging Detail For Resurfacing



Detail Showing Method of Wedging

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½″ IN DEPTH.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2¼″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E3	PROP. APPROX. 7″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
J	PROP. APPROX. 6″ AGGREGATE BASE COURSE
P	PRIME COAT AT THE RATE OF 0.35 GAL. PER SQ. YD.
R1	4′ EXPRESSWAY GUTTER
R2	2′ VALLEY GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	3″ MILLING BITUMINOUS PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

6/2/99

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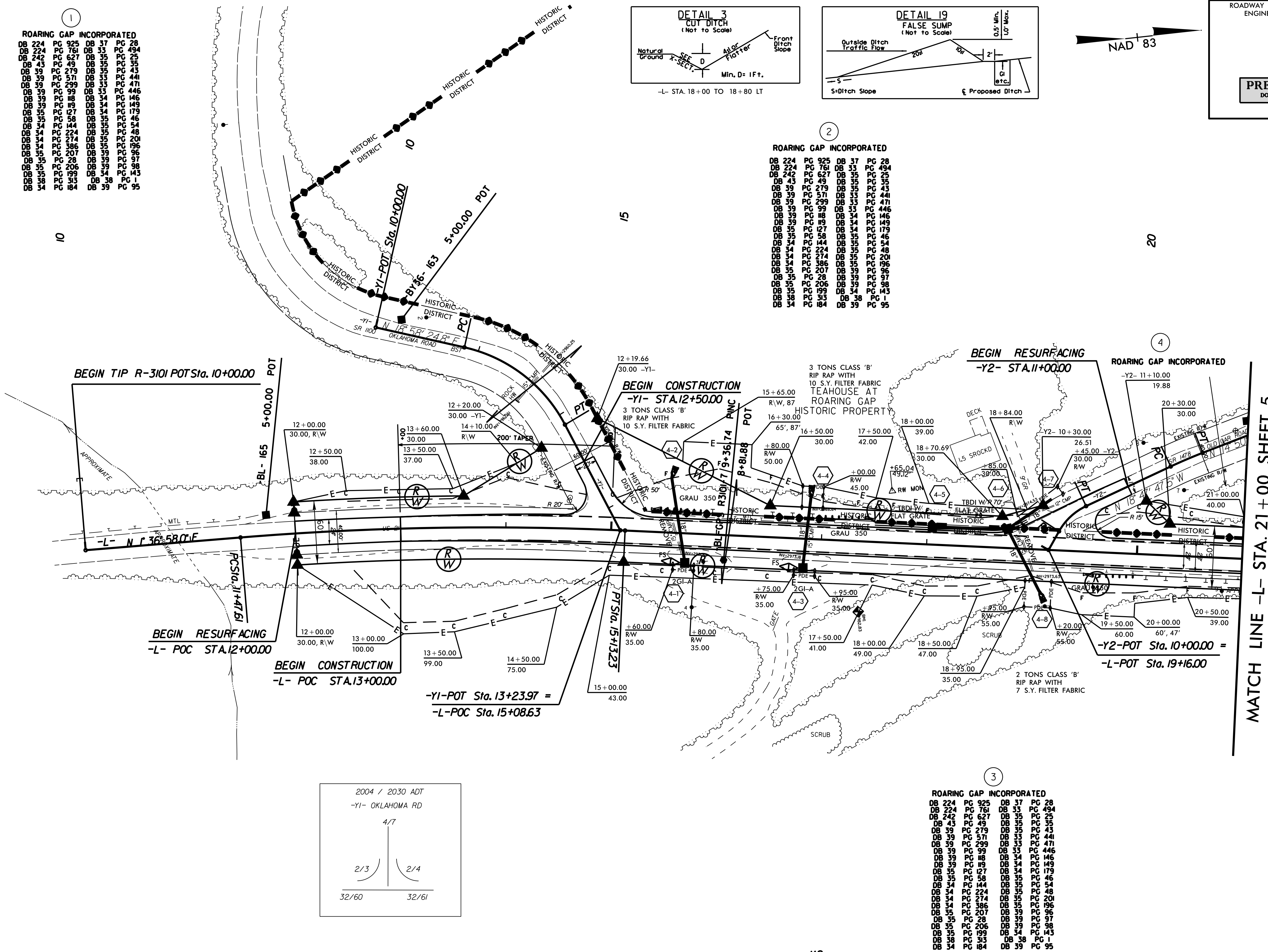
PROJECT REFERENCE NO.	SHEET NO.
R-3101	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DETAIL 3
CUT DITCH
(Not to Scale)
Natural Ground
SEE X-SECT.
4:1 or Flatter
Front Ditch Slope
Min. D= 1 Ft.
-L- STA. 18+00 TO 18+80 LT
DETAIL 19
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
S=Ditch Slope
℄ Proposed Ditch
NAD 83
ROARING GAP INCORPORATED
DB 224 PG 925 DB 37 PG 28
DB 224 PG 761 DB 33 PG 494
DB 242 PG 627 DB 35 PG 25
DB 43 PG 49 DB 35 PG 35
DB 39 PG 279 DB 35 PG 43
DB 39 PG 571 DB 33 PG 441
DB 39 PG 299 DB 33 PG 471
DB 39 PG 99 DB 33 PG 446
DB 39 PG 118 DB 34 PG 146
DB 39 PG 119 DB 34 PG 149
DB 35 PG 127 DB 34 PG 179
DB 35 PG 58 DB 35 PG 46
DB 34 PG 144 DB 35 PG 54
DB 34 PG 224 DB 35 PG 48
DB 34 PG 274 DB 35 PG 201
DB 34 PG 386 DB 35 PG 196
DB 35 PG 207 DB 39 PG 96
DB 35 PG 28 DB 39 PG 97
DB 35 PG 206 DB 39 PG 98
DB 35 PG 199 DB 34 PG 143
DB 38 PG 313 DB 38 PG 1
DB 34 PG 184 DB 39 PG 95
HISTORIC DISTRICT
OKLAHOMA ROAD
SR 1100
-Y1-POT Sta. 10+00.00
BY36-163 5+00.00 POT
BEGIN TIP R-3101 POT Sta. 10+00.00
BL-165 5+00.00 POT
BEGIN CONSTRUCTION
-Y1- STA.12+50.00
3 TONS CLASS 'B' RIP RAP WITH 10 S.Y. FILTER FABRIC
TEAHOUSE AT ROARING GAP HISTORIC PROPERTY
BEGIN RESURFACING
-Y2- STA.11+00.00
-L- N 36°58'0" E
BEGIN RESURFACING
-L- POC STA.12+00.00
BEGIN CONSTRUCTION
-L- POC STA.13+00.00
-Y1-POT Sta. 13+23.97 =
-L-POC Sta. 15+08.63
PT Sta. 15+13.23
PCSta. 11+47.61
-Y2-POT Sta. 10+00.00 =
-L-POT Sta. 19+16.00
2 TONS CLASS 'B' RIP RAP WITH 7 S.Y. FILTER FABRIC
GRAU 350
SCRUB
MATCH LINE -L- STA. 21+00 SHEET 5
2004 / 2030 ADT
-Y1- OKLAHOMA RD

NOTES

FOR -L- PROFILE SEE SHEET 47
FOR -Y1- & -Y2- PROFILES SEE SHEET 69
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

-L-

PI Sta 13+30.67
Δ = 7° 18' 45.0" (RT)
D = 2° 00' 00.0"
L = 365.63'
T = 183.06'
R = 2,864.79'

-Y1-

PI Sta 11+52.70
Δ = 49° 44' 23.5" (RT)
D = 40° 00' 00.0"
L = 124.35'
T = 66.40'
R = 143.24'
PT Sta 12+10.65
N 68° 42' 48.3" E

-Y2-

N 54° 30' 02.7" W
PI Sta 10+38.74
Δ = 35° 42' 15.2" (RT)
D = 100° 00' 00.0"
L = 35.70'
T = 18.45'
R = 57.30'

PI Sta 11+61.23
Δ = 3° 57' 13.7" (RT)
D = 12° 00' 00.0"
L = 32.95'
T = 16.48'
R = 477.46'

PI Sta 13+79.08
Δ = 62° 19' 17.3" (RT)
D = 30° 00' 00.0"
L = 207.74'
T = 115.49'
R = 190.99'

PI Sta 15+61.24
Δ = 25° 37' 39.5" (RT)
D = 30° 00' 00.0"
L = 85.43'
T = 43.44'
R = 190.99'

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PROJECT REFERENCE NO.	SHEET NO.
R-3101	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

8/17/99

DETAIL I
LATERAL BASE DITCH
(Not to Scale)

Natural Ground — 2d — D — 2d — r/Ft. — b — Fill Slope — B

Min. D= 1 Ft.
B= 2 Ft.
b= 5 Ft.

-L- STA. 22+50 TO 22+80 LT
EST. 15 CY DDE

DETAIL II
LATERAL BASE DITCH
(Not to Scale)

Natural Ground — 2d — D — 2d — r/Ft. — b — Fill Slope — B

Min. D= 1.5 Ft.
Max. d= 1 Ft.
B= 4 Ft.
b= 5 Ft.

Type of Liner= PSRM

-L- STA. 27+00 TO 29+23 LT
EST. 107 CY DDE

DETAIL 19
FALSE SUMP
(Not to Scale)

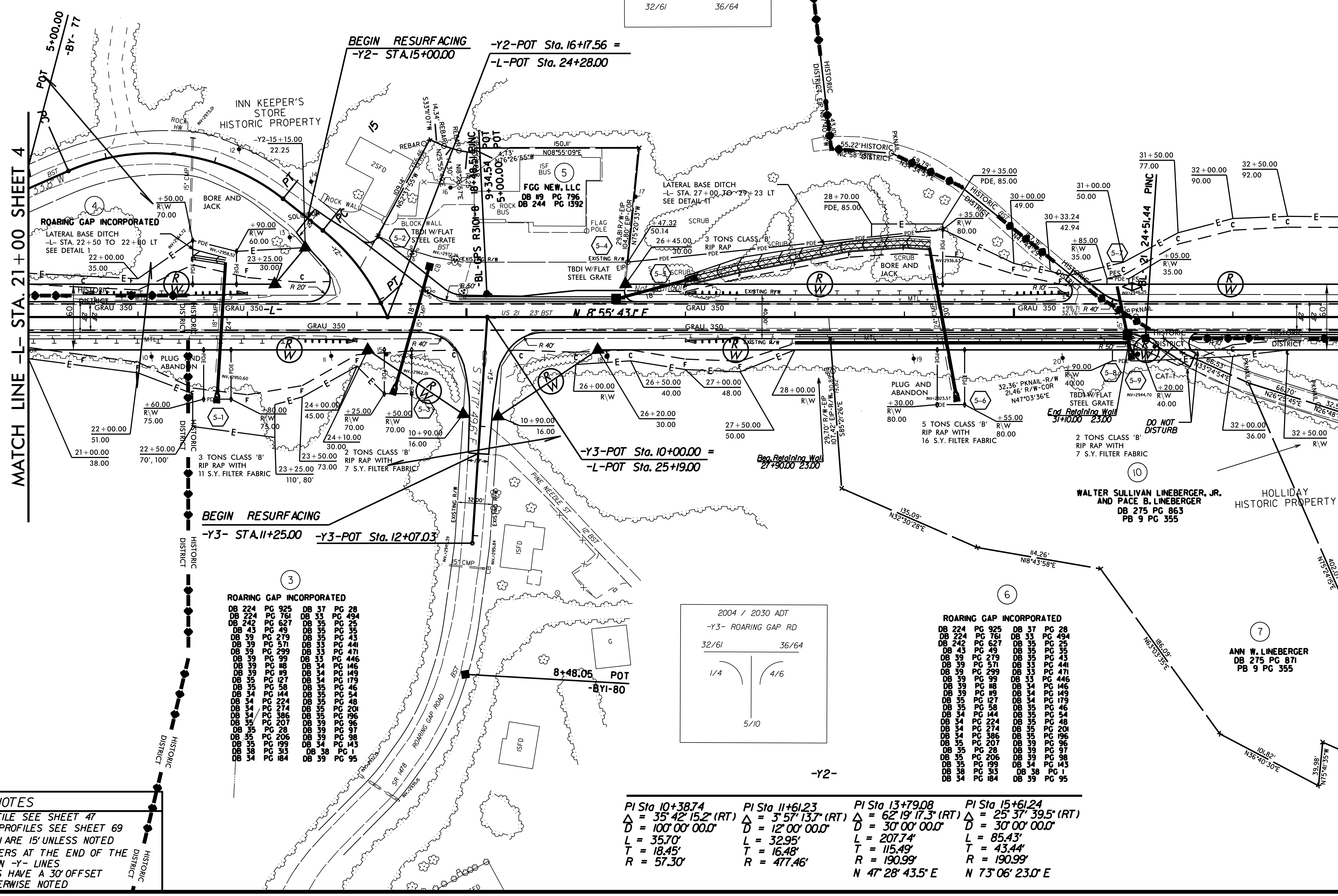
Outside Ditch Traffic Flow — 20:1 — 10:1 — 2' — 0.5' Min. 1.0' Max. — S — S=Ditch Slope — ℄ Proposed Ditch

(2) ROARING GAP INCORPORATED

DB 224	PG 925	DB 37	PG 28
DB 224	PG 761	DB 33	PG 494
DB 242	PG 627	DB 35	PG 25
DB 43	PG 49	DB 35	PG 35
DB 39	PG 279	DB 35	PG 43
DB 39	PG 571	DB 33	PG 441
DB 39	PG 299	DB 33	PG 471
DB 39	PG 99	DB 33	PG 446
DB 39	PG 118	DB 34	PG 146
DB 39	PG 119	DB 34	PG 149
DB 35	PG 127	DB 34	PG 179
DB 35	PG 58	DB 35	PG 46
DB 34	PG 144	DB 35	PG 54
DB 34	PG 224	DB 35	PG 48
DB 34	PG 274	DB 35	PG 201
DB 34	PG 386	DB 35	PG 196
DB 35	PG 207	DB 39	PG 96
DB 35	PG 28	DB 39	PG 97
DB 35	PG 206	DB 39	PG 98
DB 35	PG 199	DB 34	PG 143
DB 38	PG 313	DB 38	PG 1
DB 34	PG 184	DB 39	PG 95

2004 / 2030 ADT
-Y2- OLD GAP RD
1/1
1-/1- 1/1
32/61 36/64

(8) WILLIAM A. BURNETTE
DB 220 PG 767



(3) ROARING GAP INCORPORATED

DB 224	PG 925	DB 37	PG 28
DB 224	PG 761	DB 33	PG 494
DB 242	PG 627	DB 35	PG 25
DB 43	PG 49	DB 35	PG 35
DB 39	PG 279	DB 35	PG 43
DB 39	PG 571	DB 33	PG 441
DB 39	PG 299	DB 33	PG 471
DB 39	PG 99	DB 33	PG 446
DB 39	PG 118	DB 34	PG 146
DB 39	PG 119	DB 34	PG 149
DB 35	PG 127	DB 34	PG 179
DB 35	PG 58	DB 35	PG 46
DB 34	PG 144	DB 35	PG 54
DB 34	PG 224	DB 35	PG 48
DB 34	PG 274	DB 35	PG 201
DB 34	PG 386	DB 35	PG 196
DB 35	PG 207	DB 39	PG 96
DB 35	PG 28	DB 39	PG 97
DB 35	PG 206	DB 39	PG 98
DB 35	PG 199	DB 34	PG 143
DB 38	PG 313	DB 38	PG 1
DB 34	PG 184	DB 39	PG 95

2004 / 2030 ADT
-Y3- ROARING GAP RD
32/61 36/64
1/4 4/6
5/10

(6) ROARING GAP INCORPORATED

DB 224	PG 925	DB 37	PG 28
DB 224	PG 761	DB 33	PG 494
DB 242	PG 627	DB 35	PG 25
DB 43	PG 49	DB 35	PG 35
DB 39	PG 279	DB 35	PG 43
DB 39	PG 571	DB 33	PG 441
DB 39	PG 299	DB 33	PG 471
DB 39	PG 99	DB 33	PG 446
DB 39	PG 118	DB 34	PG 146
DB 39	PG 119	DB 34	PG 149
DB 35	PG 127	DB 34	PG 179
DB 35	PG 58	DB 35	PG 46
DB 34	PG 144	DB 35	PG 54
DB 34	PG 224	DB 35	PG 48
DB 34	PG 274	DB 35	PG 201
DB 34	PG 386	DB 35	PG 196
DB 35	PG 207	DB 39	PG 96
DB 35	PG 28	DB 39	PG 97
DB 35	PG 206	DB 39	PG 98
DB 35	PG 199	DB 34	PG 143
DB 38	PG 313	DB 38	PG 1
DB 34	PG 184	DB 39	PG 95

(7) ANN W. LINEBERGER
DB 275 PG 871
PB 9 PG 355

NOTES
FOR -L- PROFILE SEE SHEET 47
FOR -Y2- & -Y3- PROFILES SEE SHEET 69
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

-Y2-

PI Sta 10+38.74	PI Sta 11+61.23	PI Sta 13+79.08	PI Sta 15+61.24
Δ = 35° 42' 15.2" (RT)	Δ = 3° 57' 13.7" (RT)	Δ = 62° 19' 17.3" (RT)	Δ = 25° 37' 39.5" (RT)
D = 100° 00' 00.0"	D = 12° 00' 00.0"	D = 30° 00' 00.0"	D = 30° 00' 00.0"
L = 35.70'	L = 32.95'	L = 207.74'	L = 85.43'
T = 18.45'	T = 16.48'	T = 115.49'	T = 43.44'
R = 57.30'	R = 477.46'	R = 190.99'	R = 190.99'
		N 47° 28' 43.5" E	N 73° 06' 23.0" E

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NOTES

FOR -L- PROFILE SEE SHEET 48
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

DETAIL 19
FALSE SUMP
(Not to Scale)

Outside Ditch Traffic Flow
20'
10'
2'
0.5' Min.
1.0' Max.
GI etc.
S
S=Ditch Slope
℄ Proposed Ditch

(2) ROARING GAP INCORPORATED

DB 224	PG 925	DB 37	PG 28
DB 224	PG 761	DB 33	PG 494
DB 242	PG 627	DB 35	PG 25
DB 43	PG 49	DB 35	PG 35
DB 39	PG 279	DB 35	PG 43
DB 39	PG 571	DB 33	PG 441
DB 39	PG 299	DB 33	PG 471
DB 39	PG 99	DB 33	PG 446
DB 39	PG 118	DB 34	PG 146
DB 39	PG 119	DB 34	PG 149
DB 35	PG 127	DB 34	PG 179
DB 35	PG 58	DB 35	PG 46
DB 34	PG 144	DB 35	PG 54
DB 34	PG 224	DB 35	PG 48
DB 34	PG 274	DB 35	PG 201
DB 34	PG 386	DB 35	PG 196
DB 35	PG 207	DB 39	PG 96
DB 35	PG 28	DB 39	PG 97
DB 35	PG 206	DB 39	PG 98
DB 35	PG 199	DB 34	PG 143
DB 38	PG 313	DB 38	PG 1
DB 34	PG 184	DB 39	PG 95

(8) WILLIAM A. BURNETTE
DB 220 PG 767

(9) MAURICE N. JENNINGS
DB 275 PG 329
PB 9 PG 355

(10) WALTER SULLIVAN LINEBERGER, JR. AND PACE B. LINEBERGER
DB 275 PG 863
PB 9 PG 355

(11) MAURICE N. JENNINGS
DB 275 PG 329
PB 9 PG 355

(12) SAYRE LINEBERGER TRIBBLE
DB 275 PG 855
PB 9 PG 355

(13) JAN A. WHITE AND JERRY J. WHITE
DB 255 PG 1449
DB 063 PG 250
PB 1 PG 4

(14) ROARING GAP INCORPORATED

(16) WADE H. MURPHY AND PATSY B. MURPHY
DB 250 PG 670
DB 111 PG 266
PB 1 PG 4

(209) PHILLIP R. BLACKMON AND CATHY P. BLACKMON
DB 259 PG 75
PB 1 PG 4

(212) WILLIAM B. CAVINES AND ANNE S. CAVINES
DB 144 PG 881

KEVIN B. KIMREY
DB 274 PG 171
PB 1 PG 39

MATCH LINE -L- STA. 33+00 SHEET 5

MATCH LINE -L- STA. 45+00 SHEET 7

-L-

PI Sta 38+84.37	PI Sta 44+78.00	PI Sta 50+05.62
Θs = 5° 00' 00.0"	Δ = 49° 23' 47.1" (LT)	Θs = 5° 00' 00.0"
Ls = 200.00'	D = 5° 00' 00.0"	Ls = 200.00'
LT = 133.39'	L = 987.93'	LT = 133.39'
ST = 66.72'	T = 527.02'	ST = 66.72'
	R = 1,145.92'	

(6) ROARING GAP INCORPORATED

DB 224	PG 925	DB 37	PG 28
DB 224	PG 761	DB 33	PG 494
DB 242	PG 627	DB 35	PG 25
DB 43	PG 49	DB 35	PG 35
DB 39	PG 279	DB 35	PG 43
DB 39	PG 571	DB 33	PG 441
DB 39	PG 299	DB 33	PG 471
DB 39	PG 99	DB 33	PG 446
DB 39	PG 118	DB 34	PG 146
DB 39	PG 119	DB 34	PG 149
DB 35	PG 127	DB 34	PG 179
DB 35	PG 58	DB 35	PG 46
DB 34	PG 144	DB 35	PG 54
DB 34	PG 224	DB 35	PG 48
DB 34	PG 274	DB 35	PG 201
DB 34	PG 386	DB 35	PG 196
DB 35	PG 207	DB 39	PG 96
DB 35	PG 28	DB 39	PG 97
DB 35	PG 206	DB 39	PG 98
DB 35	PG 199	DB 34	PG 143
DB 38	PG 313	DB 38	PG 1
DB 34	PG 184	DB 39	PG 95

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTES

FOR -L- PROFILE SEE SHEET 48
FOR -Y4- PROFILE SEE SHEET 69
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

14

ROARING GAP INCORPORATED

-Y4-

-Y4-POT Sta. 10+00.00
S 89° 48' 47.3" E
-Y4-PC Sta. 10+52.75
-Y4-PI Sta 10+76.32
Δ = 27° 43' 33.9" (LT)
D = 60° 00' 00.0"
L = 46.21'
T = 23.57'
R = 95.49'
-Y4-PT Sta. 10+98.96
N 62° 27' 38.9" E
-Y4-POT Sta. 11+62.54=
-L-POC Sta. 47+42.00

CULVERT #1
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	972165.90	1415146.56	2807.63
CUL2	972168.29	1415143.89	2807.64
CE1	972167.28	1415145.53	2813.70
HW1	972166.91	1415145.91	2815.25
CUL3	NO ACCESS	NO ACCESS	2808.16
CUL4	NO ACCESS	NO ACCESS	2808.16
CE2	NO ACCESS	NO ACCESS	2814.16
HW2	NO ACCESS	NO ACCESS	2815.71

-Y5-

POT Sta. 10+00.00
N 33° 51' 15.8" W
PC Sta. 10+81.12
PI Sta 10+93.77
Δ = 1° 15' 53.9" (LT)
D = 5° 00' 00.0"
L = 25.30'
T = 12.65'
R = 1,145.92'

PT Sta. 11+06.42
N 35° 07' 09.7" W
PC Sta. 11+73.91
PI Sta 11+87.92
Δ = 1° 24' 02.4" (LT)
D = 5° 00' 00.0"
L = 28.01'
T = 14.01'
R = 1,145.92'

PT Sta. 12+01.93
N 36° 31' 12.1" W
PC Sta. 12+43.59
PI Sta 12+87.44
Δ = 10° 29' 37.7" (RT)
D = 12° 00' 00.0"
L = 87.45'
T = 43.85'
R = 477.46'

PT Sta. 13+31.04
N 26° 01' 34.4" W
PC Sta. 13+59.81
PI Sta 14+01.03
Δ = 4° 56' 33.3" (LT)
D = 6° 00' 00.0"
L = 82.38'
T = 41.21'
R = 954.93'

PT Sta. 14+42.19
N 30° 58' 07.7" W
PC Sta. 14+56.38
PI Sta 14+81.34
Δ = 47° 04' 52.0" (RT)
D = 99° 59' 59.9"
L = 47.08'
T = 24.96'
R = 57.30'

PT Sta. 15+03.46 -Y5J-
POC Sta. 58+81.87 -L-

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NOTES

FOR -L- PROFILE SEE SHEET 49
FOR -Y5- PROFILE SEE SHEET 69
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

PROJECT REFERENCE NO.	SHEET NO.
R-3101	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y5-

POT Sta. 10+00.00
N 33° 51' 15.8" W
PC Sta. 10+81.12
PI Sta 10+93.77
Δ = 1° 15' 53.9" (LT)
D = 5° 00' 00.0"
L = 25.30'
T = 12.65'
R = 1,145.92'

PT Sta. 11+06.42
N 35° 07' 09.7" W
PC Sta. 11+73.91
PI Sta 11+87.92
Δ = 1° 24' 02.4" (LT)
D = 5° 00' 00.0"
L = 28.01'
T = 14.01'
R = 1,145.92'

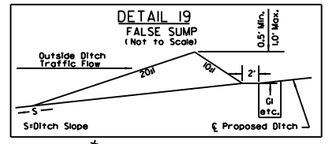
PT Sta. 12+01.93
N 36° 31' 12.1" W
PC Sta. 12+43.59
PI Sta 12+87.44
Δ = 10° 29' 37.7" (RT)
D = 12° 00' 00.0"
L = 87.45'
T = 43.85'
R = 477.46'

PT Sta. 13+31.04
N 26° 01' 34.4" W
PC Sta. 13+59.81
PI Sta 14+01.03
Δ = 4° 56' 33.3" (LT)
D = 6° 00' 00.0"
L = 82.38'
T = 41.21'
R = 954.93'

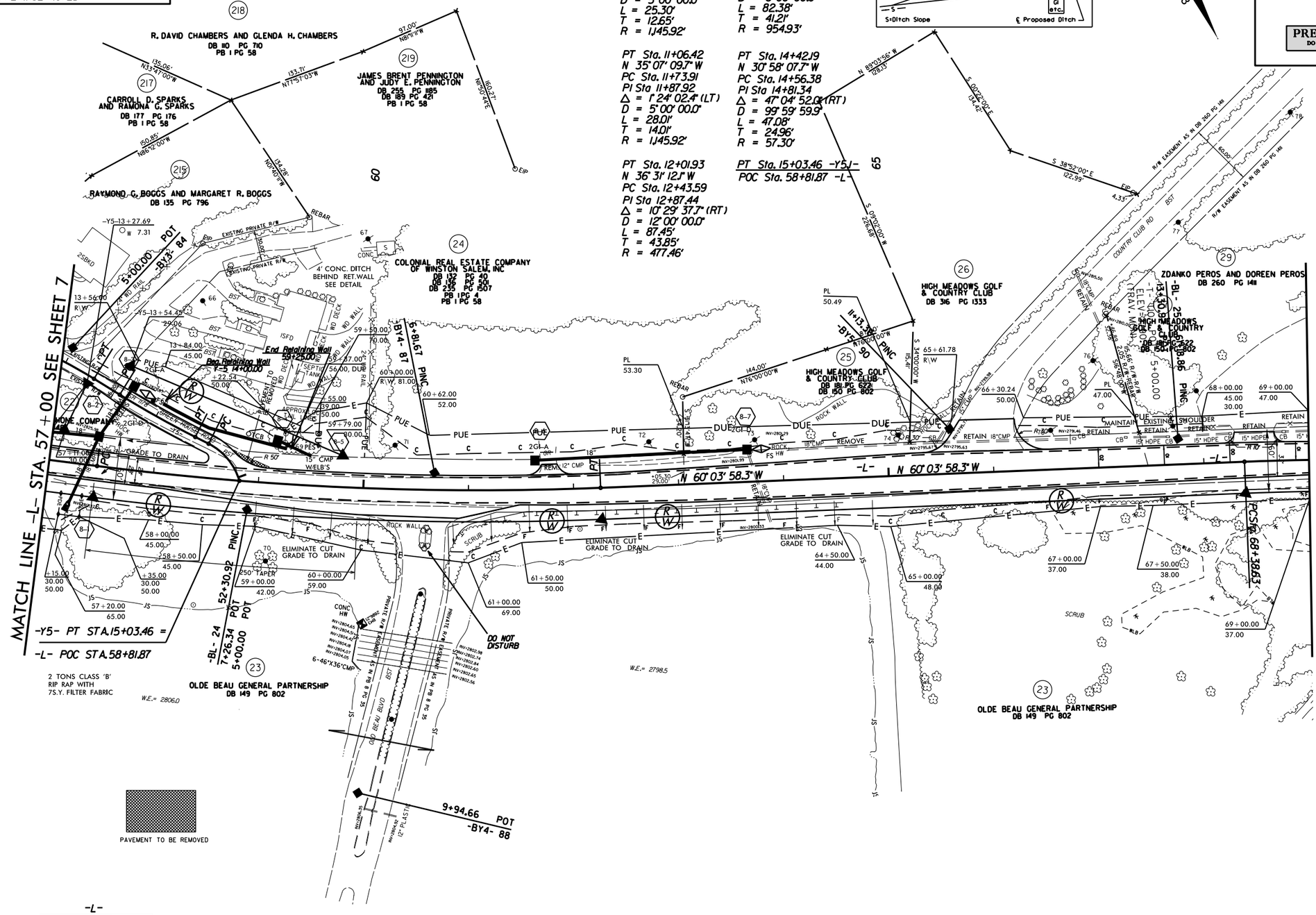
PT Sta. 14+42.19
N 30° 58' 07.7" W
PC Sta. 14+56.38
PI Sta 14+81.34
Δ = 47° 04' 52.0" (RT)
D = 99° 59' 59.9"
L = 47.08'
T = 24.96'
R = 57.30'

PT Sta. 15+03.46 -Y5-
POC Sta. 58+81.87 -L-

DETAIL 19
FALSE SUMP
(Not to Scale)



NAD 83

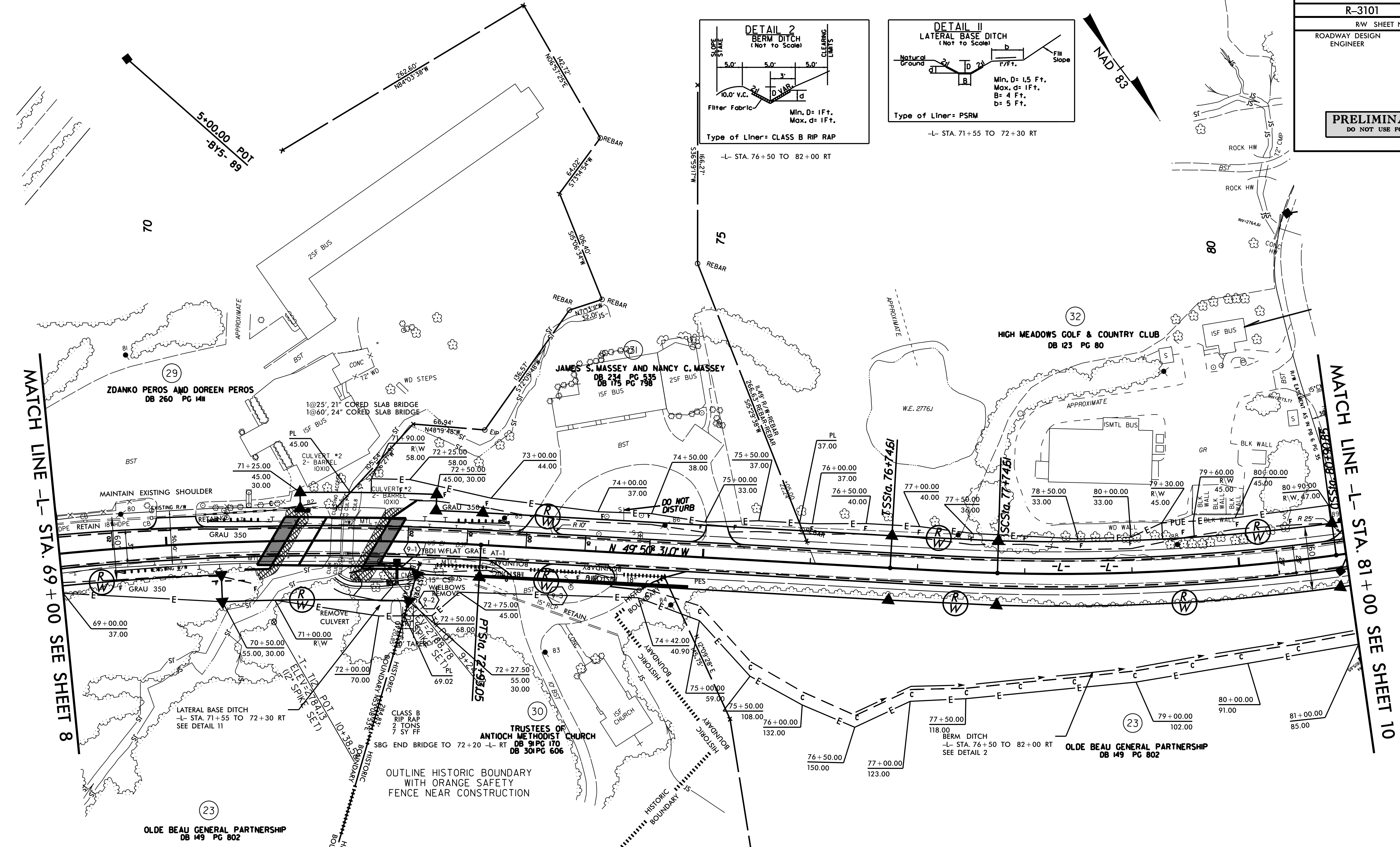


-L-
PC Sta. 57+45.81
PI Sta 59+86.33
Δ = 9° 35' 54.3" (LT)
D = 2° 00' 00.0"
L = 479.92'
T = 240.52'
R = 2,864.79'
PT Sta. 62+25.73

PROJECT REFERENCE NO.	SHEET NO.
R-3101	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99



DETAIL 2
BERM DITCH
(Not to Scale)
Type of Liner: CLASS B RIP RAP
-L- STA. 76+50 TO 82+00 RT
DETAIL 11
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1 Ft.
B= 4 Ft.
b= 5 Ft.
Type of Liner: PSRM
-L- STA. 71+55 TO 72+30 RT
NAD 83
MATCH LINE -L- STA. 69+00 SEE SHEET 8
MATCH LINE -L- STA. 81+00 SEE SHEET 10
ZDANKO PEROS AND DOREEN PEROS
DB 260 PG 1411
JAMES S. MASSEY AND NANCY C. MASSEY
DB 234 PG 535
DB 175 PG 798
HIGH MEADOWS GOLF & COUNTRY CLUB
DB 123 PG 80
TRUSTEES OF ANTIOCH METHODIST CHURCH
DB 91 PG 170
DB 301 PG 606
OLDE BEAU GENERAL PARTNERSHIP
DB 149 PG 802
1@25', 21" CORED SLAB BRIDGE
1@60', 24" CORED SLAB BRIDGE
MAINTAIN EXISTING SHOULDER
LATERAL BASE DITCH
-L- STA. 71+55 TO 72+30 RT
SEE DETAIL 11
CLASS B RIP RAP
2 TONS
7 SY FF
SBG END BRIDGE TO 72+20 -L- RT
OUTLINE HISTORIC BOUNDARY
WITH ORANGE SAFETY
FENCE NEAR CONSTRUCTION
BERM DITCH
-L- STA. 76+50 TO 82+00 RT
SEE DETAIL 2
N 49° 50' 31.0" W

CULVERT #2
TWO BARRELS

	NORTH	EAST	ELEV.
CUL1	973241.07	1413542.93	2776.59
CUL2	973234.72	1413550.66	2776.54
CUL3	973233.82	1413551.71	2776.58
CUL4	973227.72	1413558.85	2777.56
CE1	973234.49	1413550.84	2786.71
HW1	973234.30	1413550.64	2788.84
CUL5			
CUL6	973205.38	1413528.30	2776.56
CUL7	973206.65	1413526.89	2776.25
CUL8	973212.79	1413519.43	2776.23
CE2	973205.98	1413527.89	2786.34
HW2	973206.41	1413527.70	2788.00

NOTES

FOR -L- PROFILE SEE SHEET 49
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

-L-

PI Sta 70+66.44	PIs Sta 77+41.28	PI Sta 79+33.09	PIs Sta 81+24.19
Δ = 10° 13' 27.3" (RT)	Θs = 1° 30' 00.0"	Δ = 9° 29' 13.7" (LT)	Θs = 1° 30' 00.0"
D = 2° 15' 00.0"	Ls = 100.00'	D = 3° 00' 00.0"	Ls = 100.00'
L = 454.41'	LT = 66.67'	L = 316.24'	LT = 66.67'
T = 227.81'	ST = 33.34'	T = 158.48'	ST = 33.34'
R = 2,546.48'		R = 1,909.86'	
SE = 0.02			
RUNOFF = 59'			

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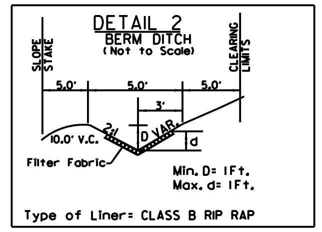
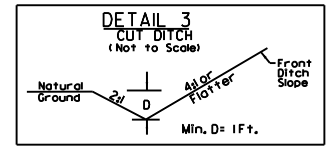
PROJECT REFERENCE NO.	SHEET NO.
R-3101	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

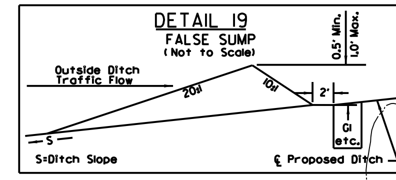
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

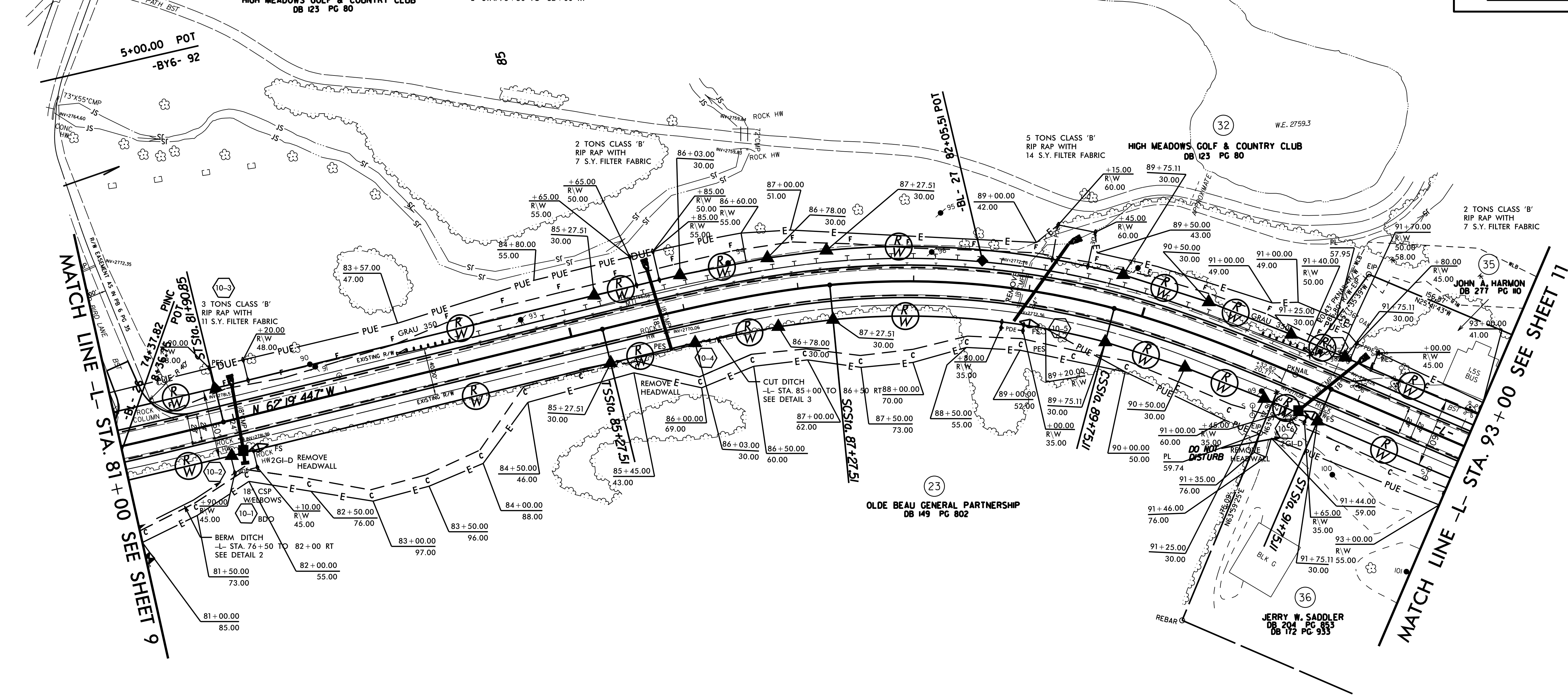


-L- STA. 76+50 TO 82+00 RT



-L- STA. 85+00 TO 86+50 RT





NOTES

FOR -L- PROFILE SEE SHEET 50
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

-L-

PIs Sta 86+60.99	PI Sta 88+52.64	PIs Sta 90+41.91
Θs = 8° 15' 00.0"	Δ = 20° 25' 39.0" (RT)	Θs = 8° 15' 00.0"
Ls = 200.00'	D = 8° 15' 00.0"	Ls = 200.00'
LT = 133.48'	L = 247.61'	LT = 133.48'
ST = 66.80'	T = 125.13'	ST = 66.80'
	R = 694.49'	

8/17/99

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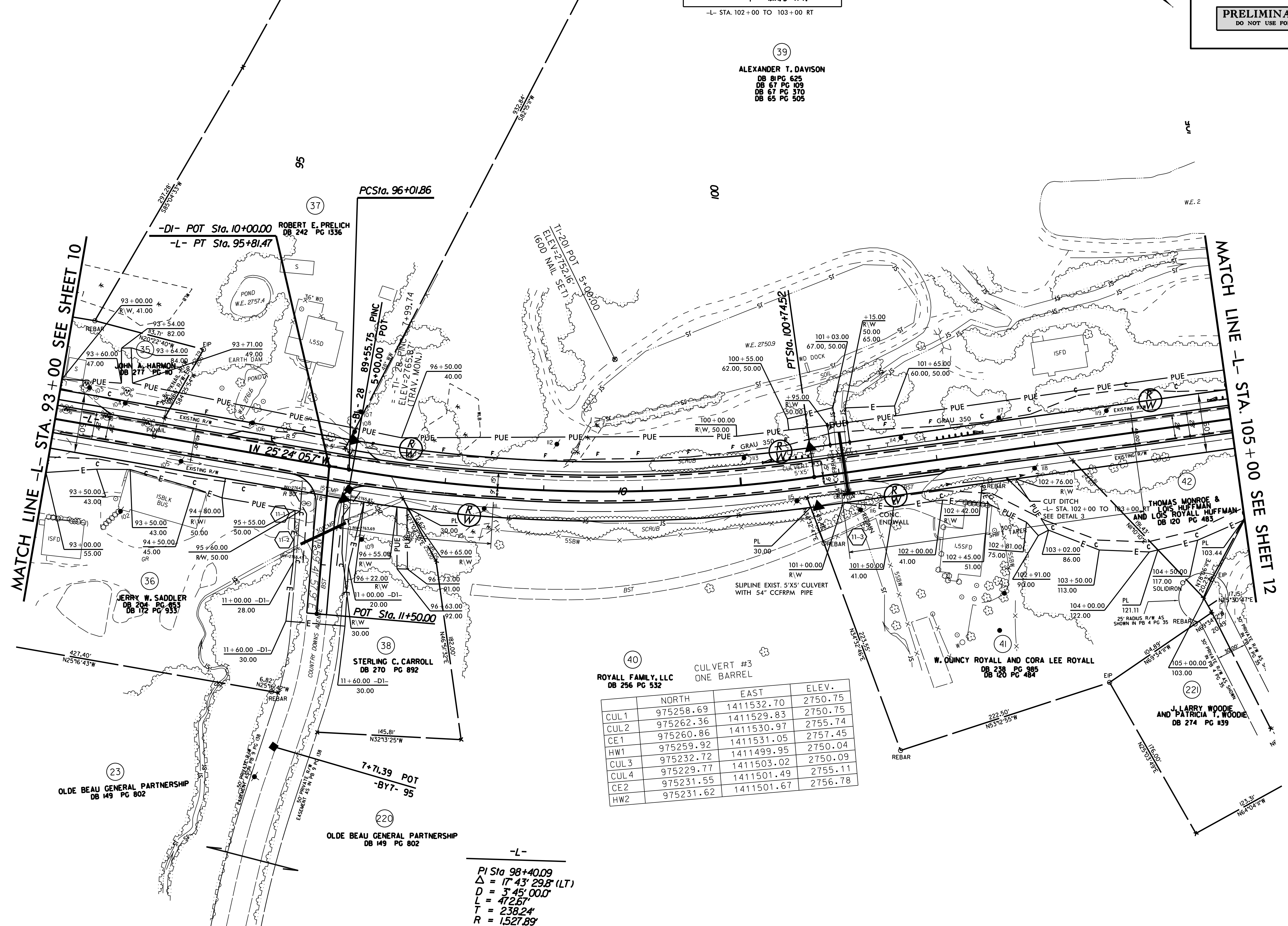
PROJECT REFERENCE NO.	SHEET NO.
R-3101	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTES

FOR -L- PROFILE SEE SHEET 50
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

DETAIL 3
CUT DITCH
(Not to Scale)
Natural Ground — 2:1 — D — 4:1 or Flatter — Front Ditch Slope
Min. D= 1 Ft.
-L- STA. 102+00 TO 103+00 RT



CULVERT #3
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	975258.69	1411532.70	2750.75
CUL2	975262.36	1411529.83	2750.75
CE1	975260.86	1411530.97	2755.74
HW1	975259.92	1411531.05	2757.45
CUL3	975232.72	1411499.95	2750.04
CUL4	975229.77	1411503.02	2750.09
CE2	975231.55	1411501.49	2755.11
HW2	975231.62	1411501.67	2756.78

-L-

PI Sta 98+40.09
Δ = 17° 43' 29.8" (LT)
D = 3° 45' 00.0"
L = 472.67'
T = 238.24'
R = 1,527.89'

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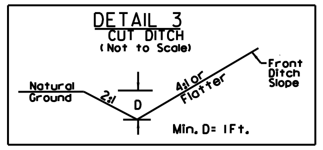
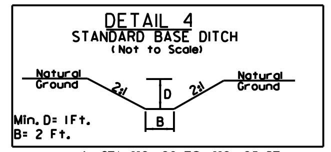
PROJECT REFERENCE NO.	SHEET NO.
R-3101	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

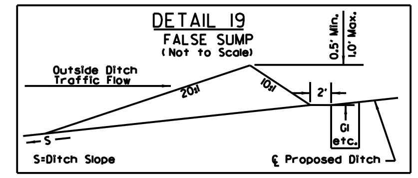
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

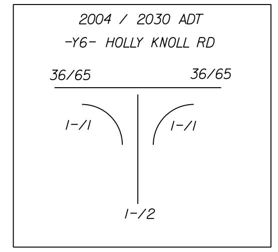


-L- STA. 107+40 TO 109+07 RT



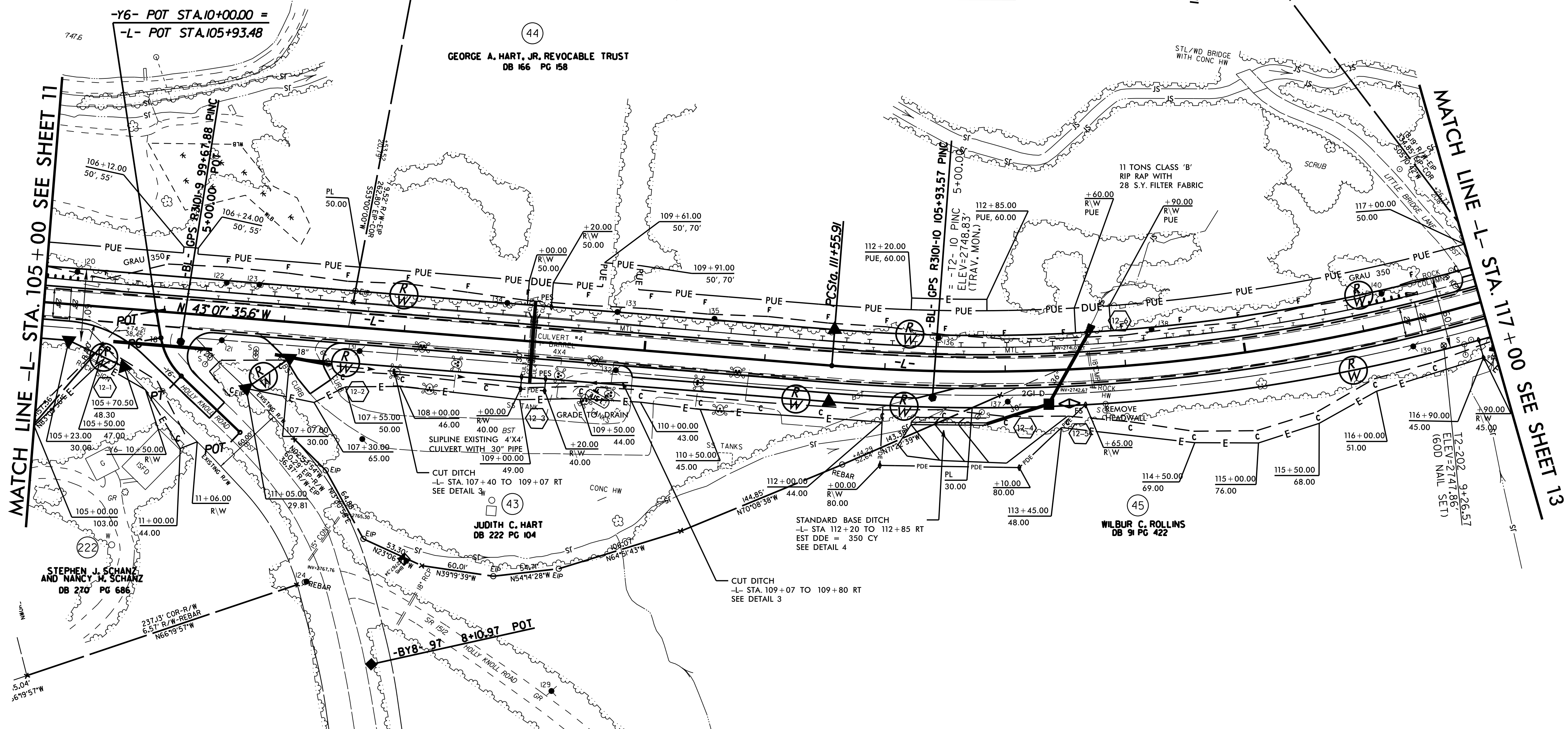
-L- STA 112+20 TO 112+85 RT
EST. 350 CU. YD. DDE





CULVERT #4
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	975817.52	1410952.10	2745.72
CUL2	975814.72	1410955.24	2745.74
CE1	975816.00	1410953.69	2749.55
HW1	975816.25	1410953.72	2751.23
CUL3	975840.83	1410982.35	2746.32
CUL4	975842.96	1410980.06	2746.30
CE2	975841.87	1410981.12	2750.45
HW2	975841.73	1410981.04	2752.06



-Y6-
POT Sta. 10+00.00=
-L-POT Sta. 105+93.48
N 32° 31' 05.6" E
PC Sta. 10+22.50
PI Sta 10+41.38
Δ = 36° 29' 29.3" (LT)
D = 100° 00' 00.0"
L = 36.49'
T = 18.89'
R = 57.30'
PT Sta. 10+58.99
N 3° 58' 23.7" W
POT Sta. 11+26.51

-L-
PI Sta 114+73.93
Δ = 23° 30' 57.8" (LT)
D = 3° 45' 00.0"
L = 627.10'
T = 318.02'
R = 1,527.89'

NOTES
FOR -L- PROFILE SEE SHEET 51
FOR -Y6- PROFILE SEE SHEET 70
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

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NOTES

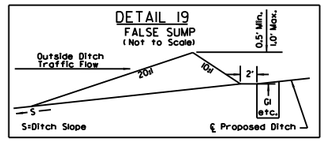
FOR -L- PROFILE SEE SHEET 5I
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

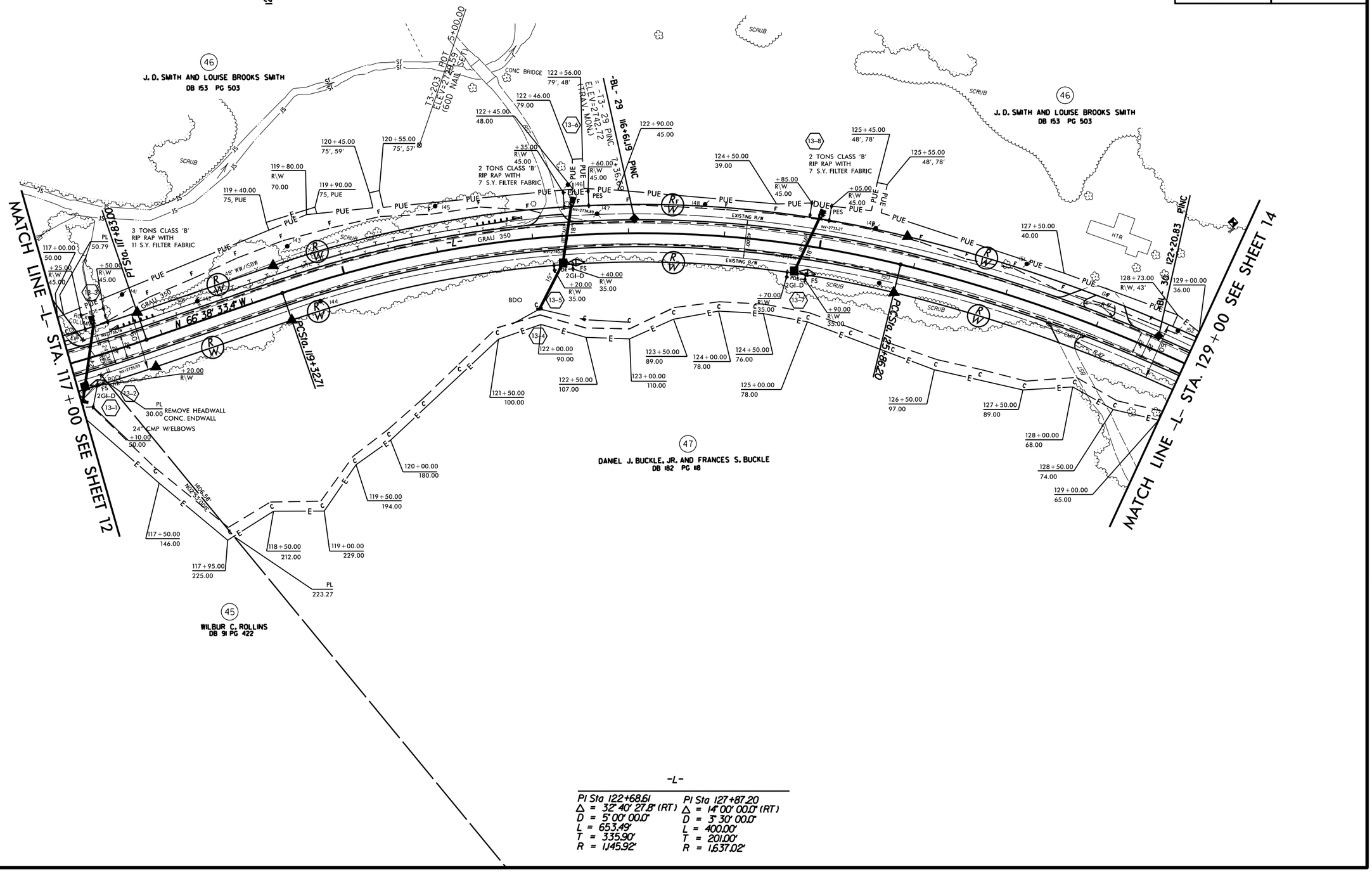
PROJECT REFERENCE NO.	SHEET NO.
R-3101	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 1983

DETAIL 19
FALSE SUMP
(Not to Scale)





-L-

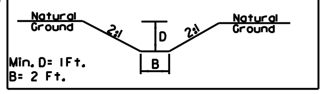
PI Sta 122+68.61	PI Sta 127+87.20
Δ = 32° 40' 27.8" (RT)	Δ = 14° 00' 00.0" (RT)
D = 5° 00' 00.0"	D = 3° 30' 00.0"
L = 653.49'	L = 400.00'
T = 335.90'	T = 201.00'
R = 1,145.92'	R = 1,637.02'

PROJECT REFERENCE NO.	SHEET NO.
R-3101	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

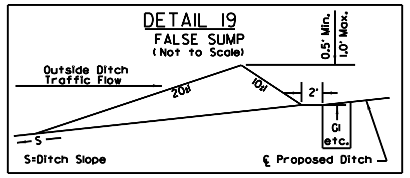
8/17/99

DETAIL 4
STANDARD BASE DITCH
(Not to Scale)



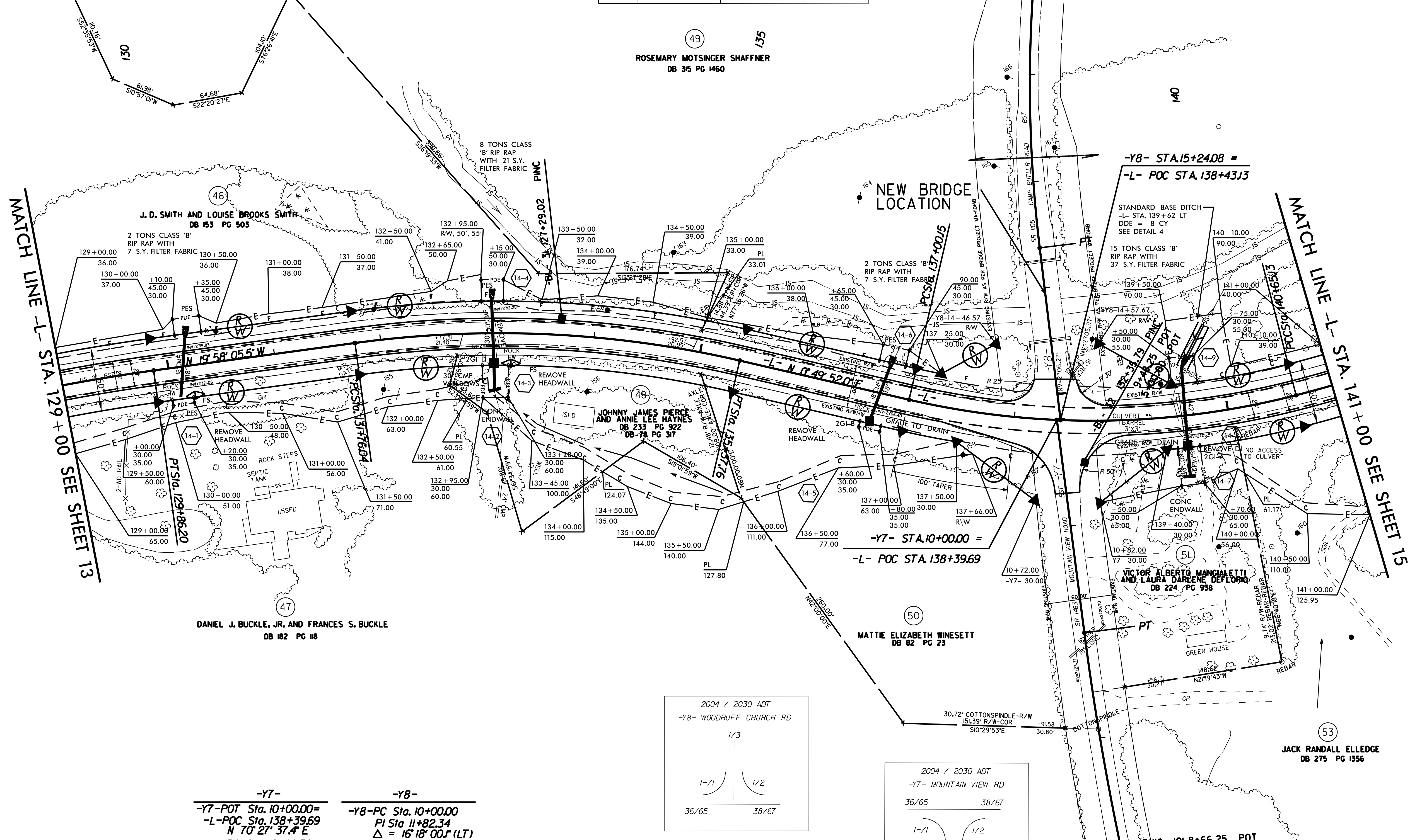
-L- STA. 139+62 LT
EST. 8 CU. YD. DDE

DETAIL 19
FALSE SUMP
(Not to Scale)



CULVERT #5
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	978132.41	1409299.99	2703.49
CUL2	978135.28	1409298.94	2703.59
CE1	978133.91	1409299.46	2706.34
HW1	978133.97	1409299.75	2707.49



2004 / 2030 ADT
-Y8- WOODRUFF CHURCH RD

2004 / 2030 ADT
-Y7- MOUNTAIN VIEW RD

15

NOTES

FOR -L- PROFILE SEE SHEET 52
FOR -Y7- & -Y8- PROFILES SEE SHEET 70
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

-Y7-

-Y7-POT Sta. 10+00.00=
-L-POC Sta. 138+39.69
N 70° 27' 37.4" E
PC Sta. 12+00.58
PI Sta 13+64.17
Δ = 7° 21' 04.4" (LT)
D = 2° 15' 00.0"
L = 326.72'
T = 163.59'
R = 2,546.48'
PT Sta. 15+27.30

-Y8-

-Y8-PC Sta. 10+00.00
PI Sta 11+82.34
Δ = 16° 18' 00.1" (LT)
D = 4° 30' 00.0"
L = 362.22'
T = 182.34'
R = 1,273.24'
-Y8-PT Sta. 13+62.22
N 70° 54' 54.7" E
-Y8-POT Sta. 15+24.41=
-L-POC Sta. 138+43.13

-L-

PI Sta 133+58.91
Δ = 20° 47' 57.5" (RT)
D = 5° 45' 00.0"
L = 361.73'
T = 182.88'
R = 996.45'

PI Sta 138+86.19
Δ = 27° 22' 22.8" (LT)
D = 7° 30' 00.0"
L = 364.97'
T = 186.04'
R = 763.94'

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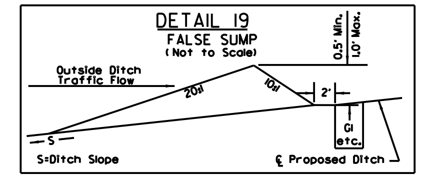
8/17/99

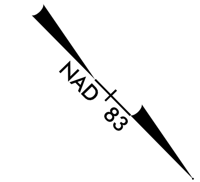
PROJECT REFERENCE NO.	SHEET NO.
R-3101	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

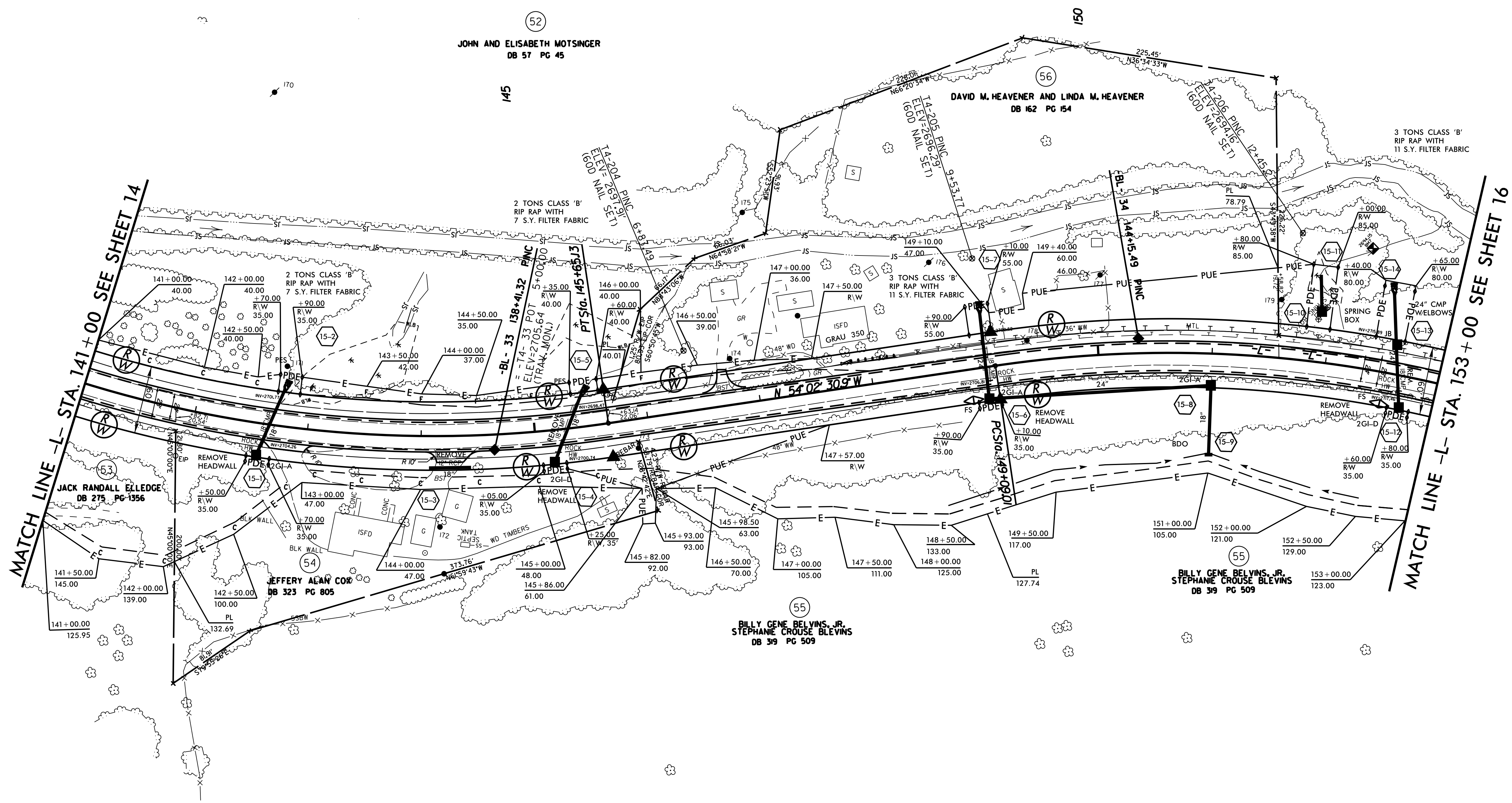
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTES

FOR -L- PROFILE SEE SHEET 52
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE







-L-

PI Sta 143+20.04	PI Sta 152+73.49
Δ = 27° 30' 00.0" (LT)	Δ = 38° 34' 01.7" (RT)
D = 5° 30' 00.0"	D = 5° 30' 00.0"
L = 500.00'	L = 701.22'
T = 254.91'	T = 364.48'
R = 1,041.74'	R = 1,041.74'

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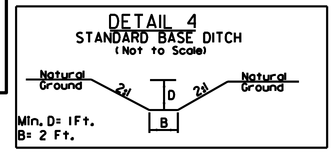
PROJECT REFERENCE NO.	SHEET NO.
R-3101	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

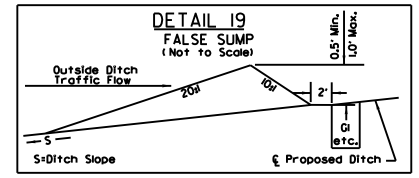
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

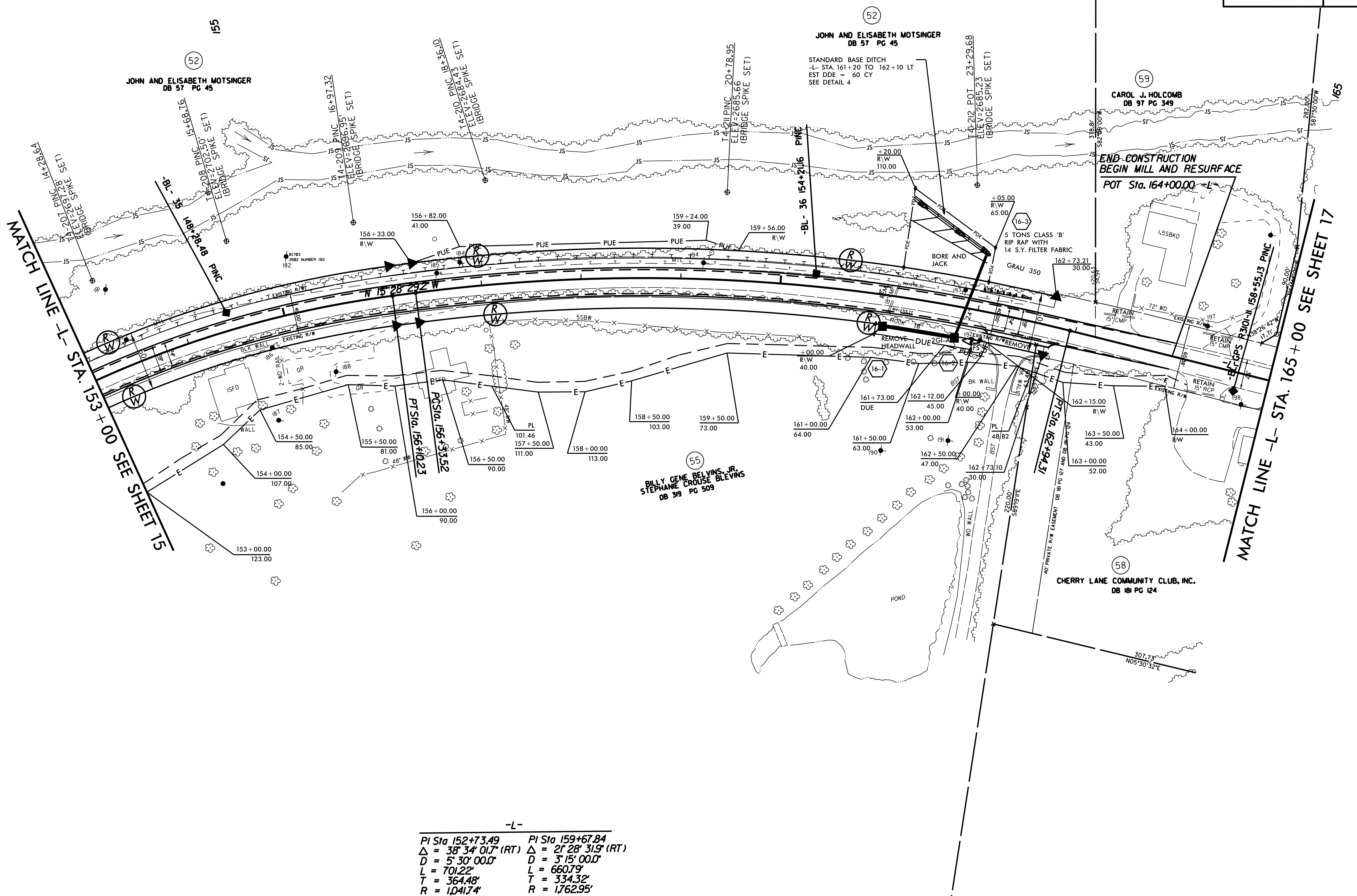
NOTES

FOR -L- PROFILE SEE SHEET 53
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE



-L- STA. 161+20 TO 162+10 LT
EST. 60 CY DDE





JOHN AND ELISABETH MOTSINGER
DB 57 PG 45
STANDARD BASE DITCH
-L- STA. 161+20 TO 162+10 LT
EST DDE = 60 CY
SEE DETAIL 4
CAROL J. HOLCOMB
DB 97 PG 349
END CONSTRUCTION
BEGIN MILL AND RESURFACE
POT Sta. 164+00.00 -L-
MATCH LINE -L- STA. 153+00 SEE SHEET 15
MATCH LINE -L- STA. 165+00 SEE SHEET 17
N 15° 28' 29.2" W
PT Sta. 156+10.23
PC Sta. 156+33.52
PT Sta. 162+94.31
BILLY GENE BELVINS, JR.
STEPHANIE CROUSE BLEVINS
DB 319 PG 509
CHERRY LANE COMMUNITY CLUB, INC.
DB 181 PG 124
5 TONS CLASS 'B' RIP RAP WITH 14 S.Y. FILTER FABRIC
BORE AND JACK
REMOVE HEADWALL
POND
NAD 83

-L-	
PI Sta 152+73.49	PI Sta 159+67.84
Δ = 38° 34' 01.7" (RT)	Δ = 21° 28' 31.9" (RT)
D = 5° 30' 00.0"	D = 3° 15' 00.0"
L = 701.22'	L = 660.79'
T = 364.48'	T = 334.32'
R = 1,041.74'	R = 1,762.95'

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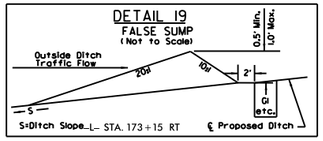
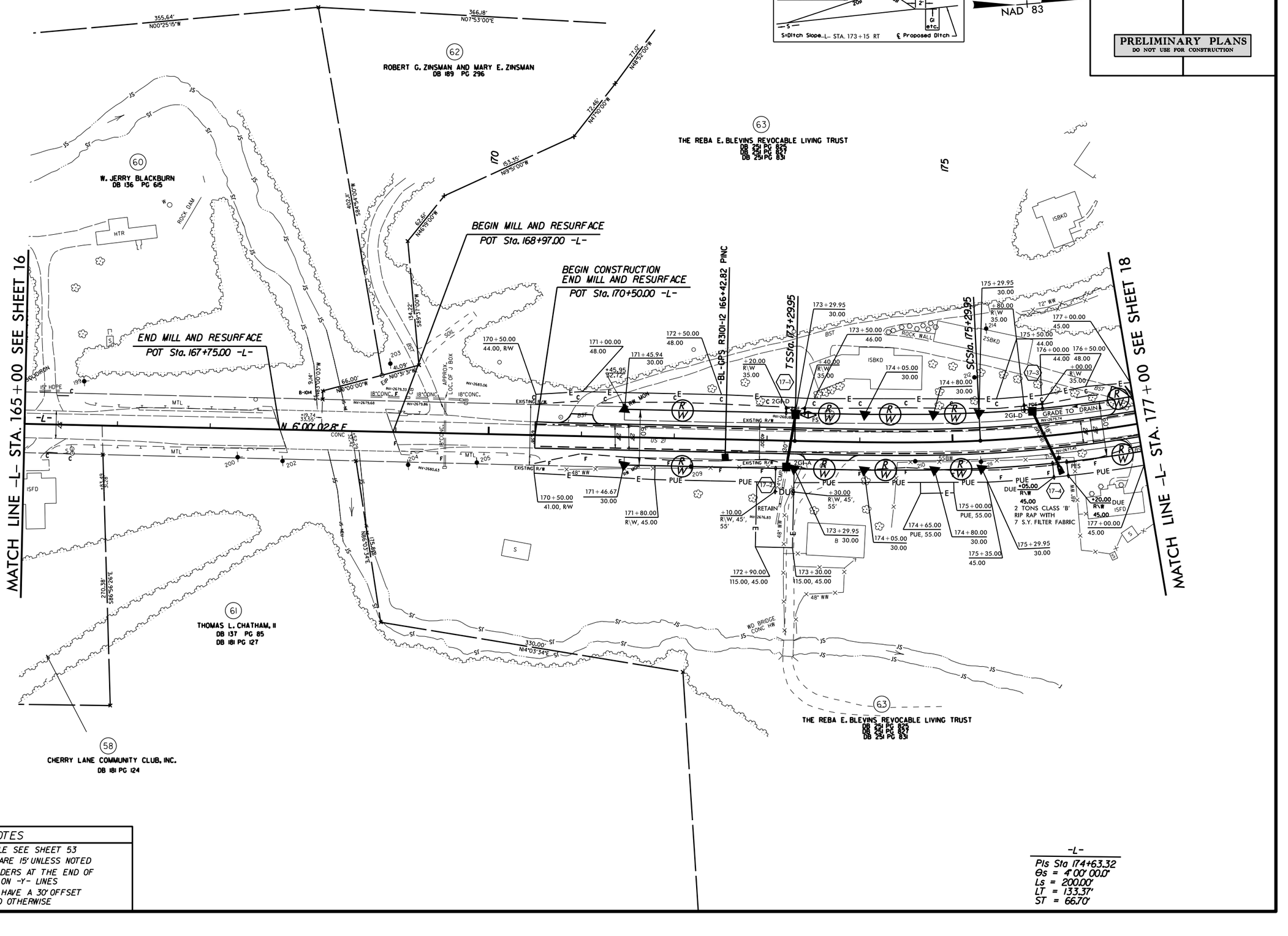
PROJECT REFERENCE NO.	SHEET NO.
R-3101	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83



NOTES

FOR -L- PROFILE SEE SHEET 53
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

-L-
PIs Sta 174+63.32
θs = 4° 00' 00.0"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3101	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTES

FOR -L- PROFILE SEE SHEET 54
FOR -Y9- & -Y10- PROFILES SEE SHEET 70
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

-Y9-

-Y9-POT Sta. 10+00.00
N 22° 41' 21.7" W
-Y9-PC Sta. 10+74.92
PI Sta 11+35.56
Δ = 64° 50' 10.4" (RT)
D = 60° 00' 00.0"
L = 108.06'
T = 60.64'
R = 95.49'
-Y9-PT Sta. 11+82.98
N 42° 08' 48.7" E
-Y9-PC Sta. 11+92.09
PI Sta 12+16.82
Δ = 19° 35' 23.8" (RT)
D = 40° 00' 00.0"
L = 48.97'
T = 24.73'
R = 143.24'
-Y9-PT Sta. 12+41.06
N 61° 44' 12.4" E
-Y9-POT Sta. 12+67.5=
-L-POC Sta. 182+93.02

CULVERT 6
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	982105.33	1408160.24	2674.11
CUL2	982114.44	1408155.72	2674.12
CE1	982109.94	1408157.65	2680.11
HW1	982110.12	1408157.51	2681.81

-L-

PI Sta 178+35.30
Δ = 24° 04' 03.0" (LT)
D = 4° 00' 00.0"
L = 601.69'
T = 305.35'
R = 1,432.39'

PIs Sta 181+98.34
Θs = 4° 00' 00.0"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

PI Sta 188+50.39
Δ = 9° 19' 37.3" (LT)
D = 2° 00' 00.0"
L = 466.35'
T = 233.69'
R = 2,864.79'

-Y10-

-Y10-POT Sta. 10+00.00=
-L-POC Sta. 182+95.24
N 72° 07' 15.3" E
-Y10-PC Sta. 10+34.73
PI Sta 10+95.41
Δ = 36° 21' 15.5" (RT)
D = 31° 00' 00.0"
L = 117.27'
T = 60.69'
R = 184.83'
-10-PT Sta. 11+52.00
S 71° 31' 29.2" E
-Y10-POT Sta. 12+03.83

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NOTES

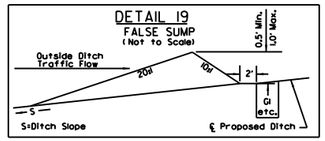
FOR -L- PROFILE SEE SHEET 54
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

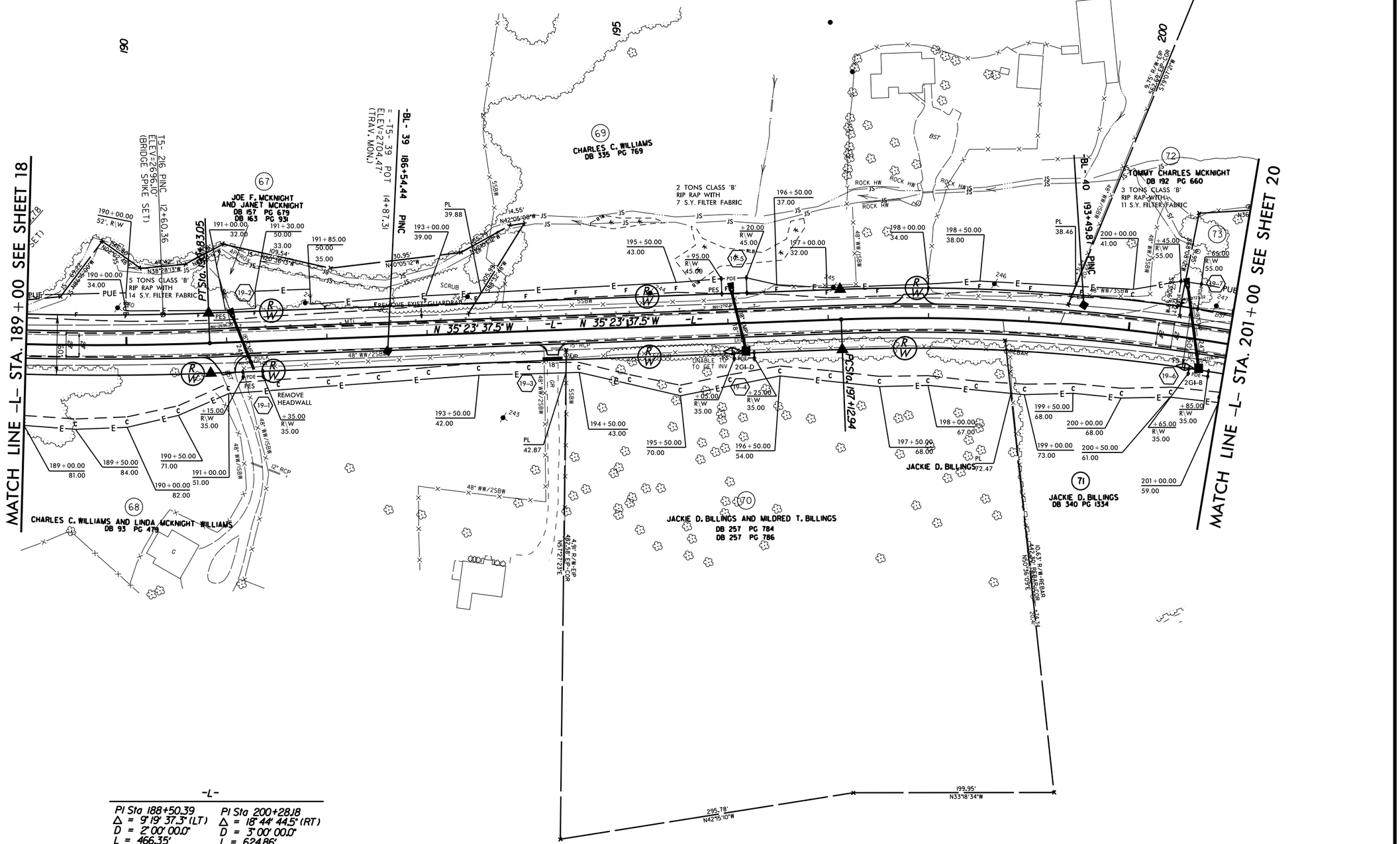
PROJECT REFERENCE NO.	SHEET NO.
R-3101	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

DETAIL 19
FALSE SUMP
(Not to Scale)





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PROJECT REFERENCE NO.	SHEET NO.
R-3101	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

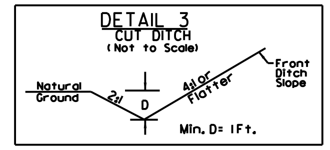
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

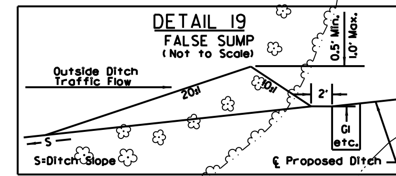
NOTES

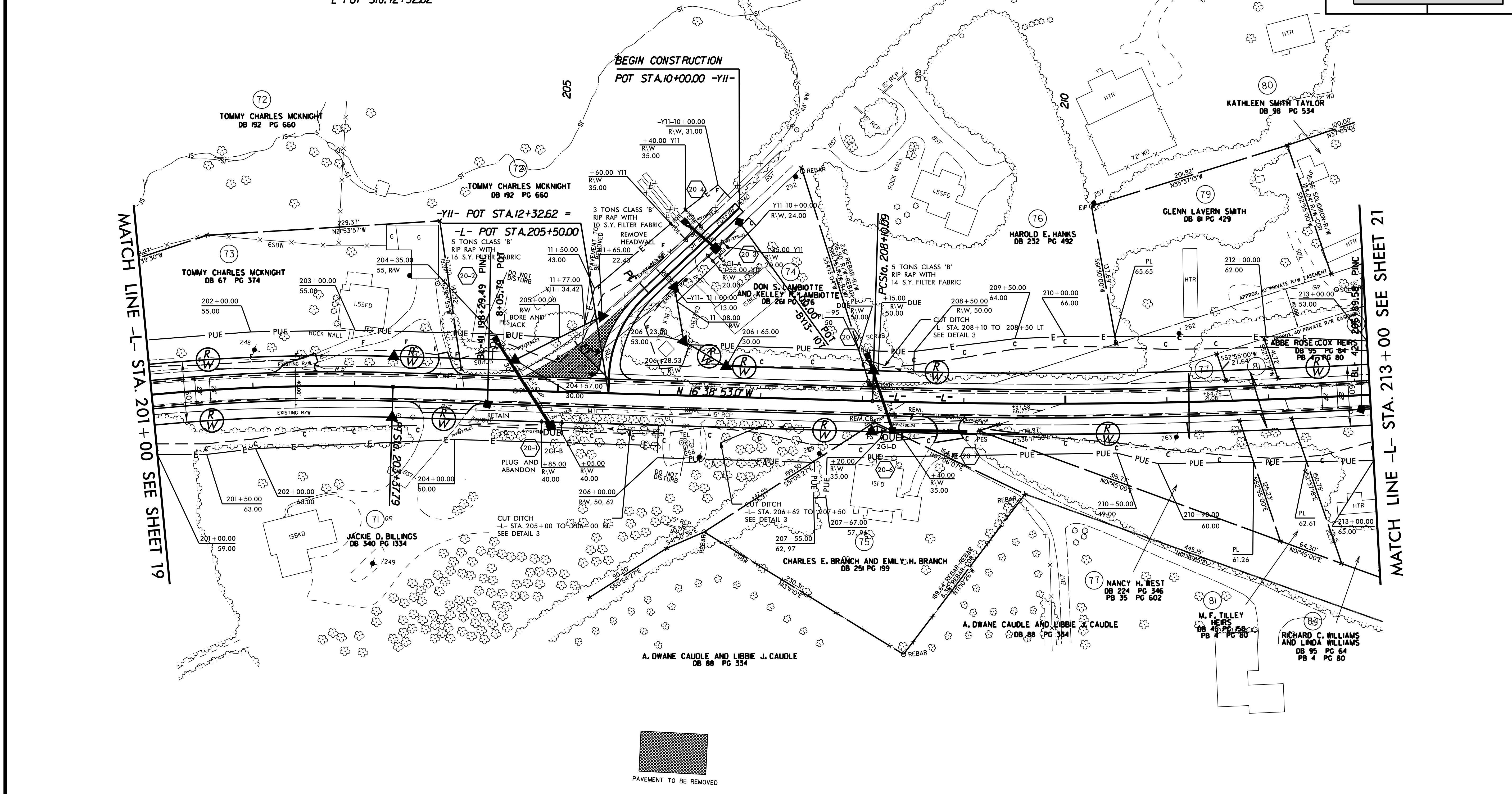
FOR -L- PROFILE SEE SHEET 55
FOR -Y11- PROFILES SEE SHEET 71
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

Y-11-

-Y11-POT Sta. 10+00.00
S 61° 33' 45.1" E
PI Sta 11+74.49
Δ = 45° 05' 07.9" (LT)
D = 50° 00' 00.0"
L = 90.17'
T = 47.57'
R = 114.59'
N 73° 21' 07.0" E
-L-POT Sta. 12+32.62







NAD 83
BEGIN CONSTRUCTION
POT STA.10+00.00 -Y11-
-Y11- POT STA.12+32.62 = -L- POT STA.205+50.00
MATCH LINE -L- STA. 201+00 SEE SHEET 19
MATCH LINE -L- STA. 213+00 SEE SHEET 21
TOMMY CHARLES MCKNIGHT DB 192 PG 660
TOMMY CHARLES MCKNIGHT DB 67 PG 374
JACKIE D. BILLINGS DB 340 PG 1334
DON S. LAMBIOTTE AND KELLEY R. LAMBIOTTE DB 261 PG 276
HAROLD E. HANKS DB 232 PG 492
GLENN LAVERN SMITH DB 81 PG 429
KATHLEEN SMITH TAYLOR DB 98 PG 534
ABBE ROSE COX HEIRS DB 95 PG 64 PB 4 PG 80
CHARLES E. BRANCH AND EMILY H. BRANCH DB 251 PG 199
A. DWANE CAUDLE AND LIBBIE J. CAUDLE DB 88 PG 334
NANCY H. WEST DB 224 PG 346 PB 35 PG 602
M. F. TILLEY HEIRS DB 45 PG 158 PB 4 PG 80
RICHARD C. WILLIAMS AND LINDA WILLIAMS DB 95 PG 64 PB 4 PG 80
N 16° 38' 53.0" W
5 TONS CLASS 'B' RIP RAP WITH 16 S.Y. FILTER FABRIC
3 TONS CLASS 'B' RIP RAP WITH 11 S.Y. FILTER FABRIC
5 TONS CLASS 'B' RIP RAP WITH 14 S.Y. FILTER FABRIC
CUT DITCH -L- STA. 205+00 TO 206+00 RT SEE DETAIL 3
CUT DITCH -L- STA. 206+62 TO 207+50 SEE DETAIL 3
CUT DITCH -L- STA. 208+10 TO 208+50 LT SEE DETAIL 3
PLUG AND ABANDON

PAVEMENT TO BE REMOVED

-L-

PI Sta 211+67.63
Δ = 7° 08' 29.5" (LT)
D = 1° 00' 00.0"
L = 714.15'
T = 357.54'
R = 5,729.58'

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PROJECT REFERENCE NO.	SHEET NO.
R-3101	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

-Y12REV-

PI Sta 11+86.24
Δ = 69° 30' 27.9" (RT)
D = 51° 00' 00.0"
L = 136.29'
T = 77.95'
R = 112.34'

PI Sta 13+56.60
Δ = 33° 20' 39.9" (RT)
D = 27° 15' 00.0"
L = 122.36'
T = 62.97'
R = 210.26'

-Y12REV- POT Sta. 10+00.00

WE 2807.D
BEGIN CONSTRUCTION
-Y12REV- POT Sta. 12+00.00

-Y12REV- POT STA.15+07.01 =
-L- POT STA.222+75.00

MATCH LINE -L- STA. 213+00 SEE SHEET 20

MATCH LINE -L- STA. 225+00 SEE SHEET 22

PT Sta. 215+24.25

SOUTHERN REPAIR SERVICE, INCORPORATED
DB 115 PG 691
PB 4 PG 80

WILLIAM W. CAUDILL SR.
DB 338 PG 1530
PB 4 PG 80

THE BILLY GENE BLEVINS REVOCABLE LIVING TRUST
DB 249 PG 1477
DB 249 PG 1490
DB 249 PG 1493

BILLY GENE BLEVINS SR. AND BILLY GENE BLEVINS, JR.
DB 236 PG 379
DB 253 PG 136

STEVIE MOXLEY
DB 266 PG 887

HENRY C. SMITH AND JOANN KELLY SMITH TR
DB 125 PG 3

SANDY & SUSAN HAMMACK
DB 657 PG 8497

SOUTHERN REPAIR SERVICE, INCORPORATED
DB 115 PG 691
PB 4 PG 80

BARRY R. EDWARDS
DB 1958 PG 201
PB 6 PG 58

JOHN E. ROYAL
DB 143 PG 219
PB 6 PG 58

5 TONS CLASS 'B' RIP RAP WITH 11 S.Y. FILTER FABRIC

5 TONS CLASS 'B' RIP RAP WITH 16 S.Y. FILTER FABRIC

STANDARD BASE DITCH -L- STA. 223+10 TO 223+60 LT
DDE = 180 CY
SEE DETAIL 4

5 TONS CLASS 'B' RIP RAP WITH 14 S.Y. FILTER FABRIC

REMOVE 24" CMP & HW'S

REMOVE HEADWALL

CONC. ENDWALL

BORE AND JACK

SCRUB

CUT DITCH -L- STA. 219+00 TO 220+00 RT
SEE DETAIL 3

LATERAL BASE DITCH -L- STA. 214+50 TO 215+50 RT
SEE DETAIL 1

LATERAL BASE DITCH -L- STA. 214+00 TO 214+50 RT
SEE DETAIL 17

LATERAL BASE DITCH -L- STA. 215+50 TO 216+25 LT
SEE DETAIL 17

DETAIL 1
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, F/Ft., Fill Slope, B
Min. D= 1Ft.
B= 2 Ft.
b= 5 Ft.

-L- STA. 214+50 TO 215+50 RT
EST. 40 CU. YD. DDE

DETAIL 3
CUT DITCH
(Not to Scale)

Natural Ground, 2:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D= 1Ft.

-L- STA. 219+00 TO 220+00 RT

DETAIL 4
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground, B
Min. D= 1Ft.
B= 2 Ft.
Type of liner: Coir Fiber

-L- STA. 223+10 TO 223+60 LT
EST. 180 CU. YD. DDE

DETAIL 17
LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, b, F/Ft., Fill Slope, d1, Filter Fabric, B
*When B is < 6.0'
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
b= 5 Ft.
Type of Liner= Class 'I' Rip-Rap

-L- STA. 214+00 TO 214+50 RT
-L- STA. 215+50 TO 216+25 LT
EST. 41 CU. YD. DDE

DETAIL 19
FALSE SUMP
(Not to Scale)

Outside Ditch Traffic Flow, 20', 10', 0.5' Min., 10' Max., 2', G, etc.
S=Ditch Slope
℄ Proposed Ditch

2004 / 2030 ADT
-Y12REV- FOXFIRE ROAD
1-/1
1-/1-
1-/1
40/69
40/70

-L-
PI Sta 211+67.63
Δ = 7° 08' 29.5" (LT)
D = 1° 00' 00.0"
L = 714.15'
T = 357.54'
R = 5,729.58'

NOTES
FOR -L- PROFILE SEE SHEET 55
FOR -Y12REV- PROFILES SEE SHEET 71
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

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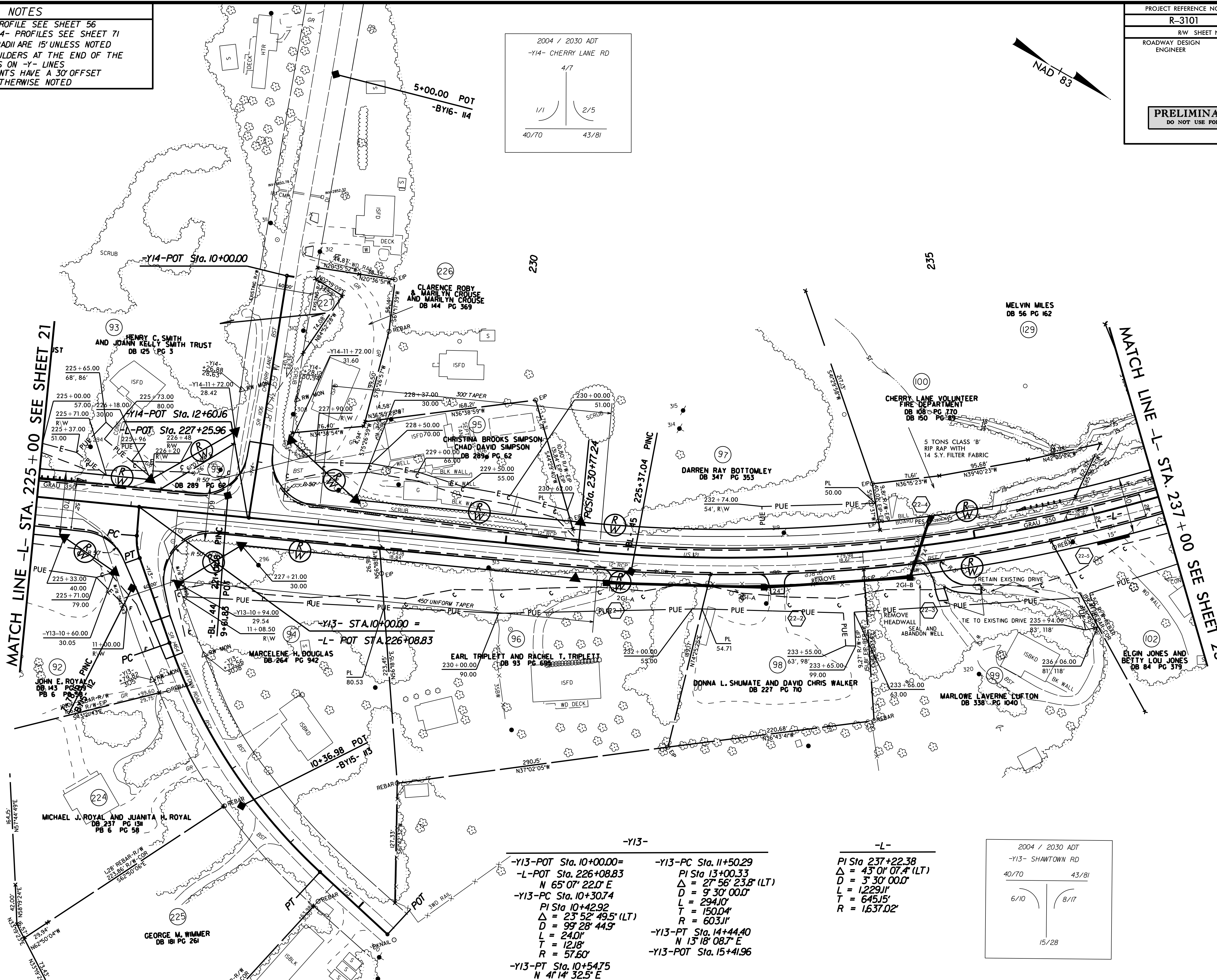
PROJECT REFERENCE NO.	SHEET NO.
R-3101	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTES

FOR -L- PROFILE SEE SHEET 56
FOR -Y13- & -Y14- PROFILES SEE SHEET 71
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

2004 / 2030 ADT
-Y14- CHERRY LANE RD
4/7
1/1 2/5
40/70 43/81



NAD 83
5+00.00 POT -BY16- 114
-Y14-POT Sta. 10+00.00
CLARENCE ROBY & MARILYN CROUSE AND MARILYN CROUSE DB 144 PG 369
HENRY C. SMITH AND JOANN KELLY SMITH TRUST DB 125 PG 3
MATCH LINE -L- STA. 225+00 SEE SHEET 21
MATCH LINE -L- STA. 237+00 SEE SHEET 23
-Y14-POT Sta. 12+60.16
-L-POT Sta. 227+25.96
CHRISTINA BROOKS SIMPSON CHAD DAVID SIMPSON DB 289 PG 62
PC Sta. 230+77.24
225+37.04 PINC
DARREN RAY BOTTOMLEY DB 347 PG 353
MELVIN MILES DB 56 PG 162
CHERRY LANE VOLUNTEER FIRE DEPARTMENT DB 108 PG 770 DB 150 PG 85
5 TONS CLASS 'B' RIP RAP WITH 14 S.Y. FILTER FABRIC
-Y13- STA.10+00.00 = -L- POT STA.226+08.83
MARCELENE H. DOUGLAS DB 264 PG 942
EARL TRIPLETT AND RACHEL T. TRIPLETT DB 93 PG 695
DONNA L. SHUMATE AND DAVID CHRIS WALKER DB 227 PG 710
MARLOWE LAVERNE CLIFTON DB 338 PG 1040
ELGIN JONES AND BETTY LOU JONES DB 84 PG 379
JOHN E. ROYAL DB 143 PG 579 PB 6 PG 58
10+36.98 POT -BY15- 113
MICHAEL J. ROYAL AND JUANITA H. ROYAL DB 237 PG 1311 PB 6 PG 58
GEORGE M. WIMMER DB 181 PG 261
RETAIN EXISTING DRIVE
TIE TO EXISTING DRIVE 235+94.00
REMOVE HEADWALL
SEAL AND ABANDON WELL
450' UNIFORM TAPER
300' TAPER
SHAWTOWN ROAD
CHERRY LANE

-Y13-

-Y13-POT Sta. 10+00.00=
-L-POT Sta. 226+08.83
N 65° 07' 22.0" E
-Y13-PC Sta. 10+30.74
PI Sta 10+42.92
Δ = 23° 52' 49.5" (LT)
D = 99° 28' 44.9"
L = 24.01'
T = 12.18'
R = 57.60'
-Y13-PT Sta. 10+54.75
N 41° 14' 32.5" E

-Y13-PC Sta. 11+50.29
PI Sta 13+00.33
Δ = 27° 56' 23.8" (LT)
D = 9° 30' 00.0"
L = 294.10'
T = 150.04'
R = 603.11'
-Y13-PT Sta. 14+44.40
N 13° 18' 08.7" E
-Y13-POT Sta. 15+41.96

-L-

PI Sta 237+22.38
Δ = 43° 01' 07.4" (LT)
D = 3° 30' 00.0"
L = 1,229.11'
T = 645.15'
R = 1,637.02'

2004 / 2030 ADT
-Y13- SHAWTOWN RD
40/70 43/81
6/10 8/17
15/28

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NOTES

FOR -L- PROFILE SEE SHEET 56
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

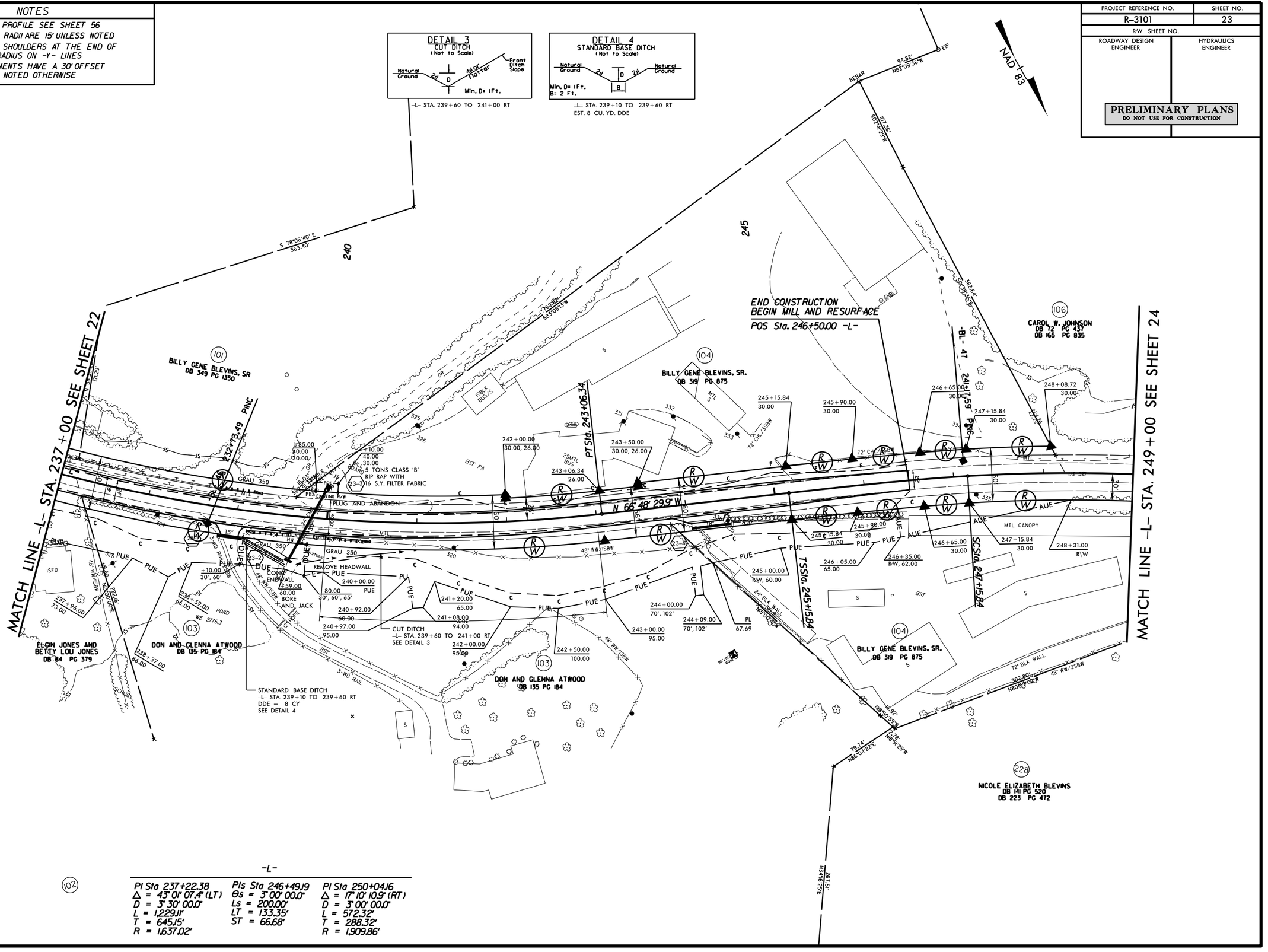
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL 3
CUT DITCH
(Not to Scale)

-L- STA. 239+60 TO 241+00 RT

DETAIL 4
STANDARD BASE DITCH
(Not to Scale)

-L- STA. 239+10 TO 239+60 RT
EST. 8 CU. YD. DDE



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PROJECT REFERENCE NO.	SHEET NO.
R-3101	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

MATCH LINE -L- STA. 249+00 SEE SHEET 23

MATCH LINE -L- STA. 261+00 SEE SHEET 25

BLUE RIDGE PARK WAY

CSSta. 252+88.96

STSta. 254+88.96

-L-

PI Sta 250+04.16	PIs Sta 253+54.85
Δ = 17° 10' 10.9" (RT)	Θs = 3° 00' 00.0"
D = 3° 00' 00.0"	Ls = 200.00'
L = 572.32'	LT = 133.35'
T = 288.32'	ST = 66.68'
R = 1,909.86'	

8/17/99

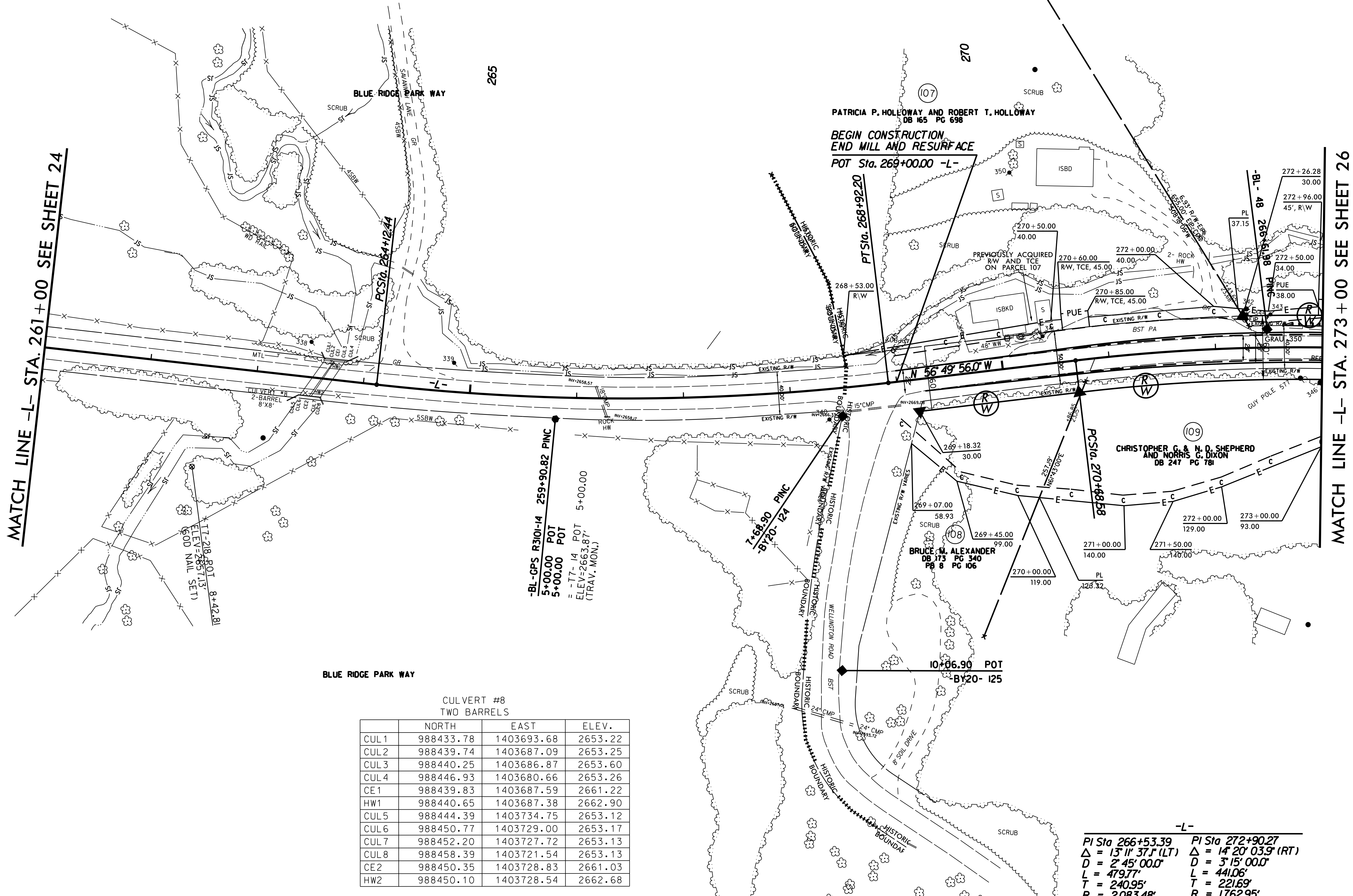
8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 57
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE
TCE HAS BEEN ACQUIRED FOR PARCEL 107 AND THE PUE FOR THIS PARCEL IS IN THE PROCESS OF ACQUISTION

PROJECT REFERENCE NO.	SHEET NO.
R-3101	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



CULVERT #8
TWO BARRELS

	NORTH	EAST	ELEV.
CUL1	988433.78	1403693.68	2653.22
CUL2	988439.74	1403687.09	2653.25
CUL3	988440.25	1403686.87	2653.60
CUL4	988446.93	1403680.66	2653.26
CE1	988439.83	1403687.59	2661.22
HW1	988440.65	1403687.38	2662.90
CUL5	988444.39	1403734.75	2653.12
CUL6	988450.77	1403729.00	2653.17
CUL7	988452.20	1403727.72	2653.13
CUL8	988458.39	1403721.54	2653.13
CE2	988450.35	1403728.83	2661.03
HW2	988450.10	1403728.54	2662.68

-L-

PI Sta 266+53.39	PI Sta 272+90.27
Δ = 13° 11' 37.1" (LT)	Δ = 14° 20' 03.9" (RT)
D = 2° 45' 00.0"	D = 3° 15' 00.0"
L = 479.77'	L = 441.06'
T = 240.95'	T = 221.69'
R = 2,083.48'	R = 1,762.95'

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NOTES

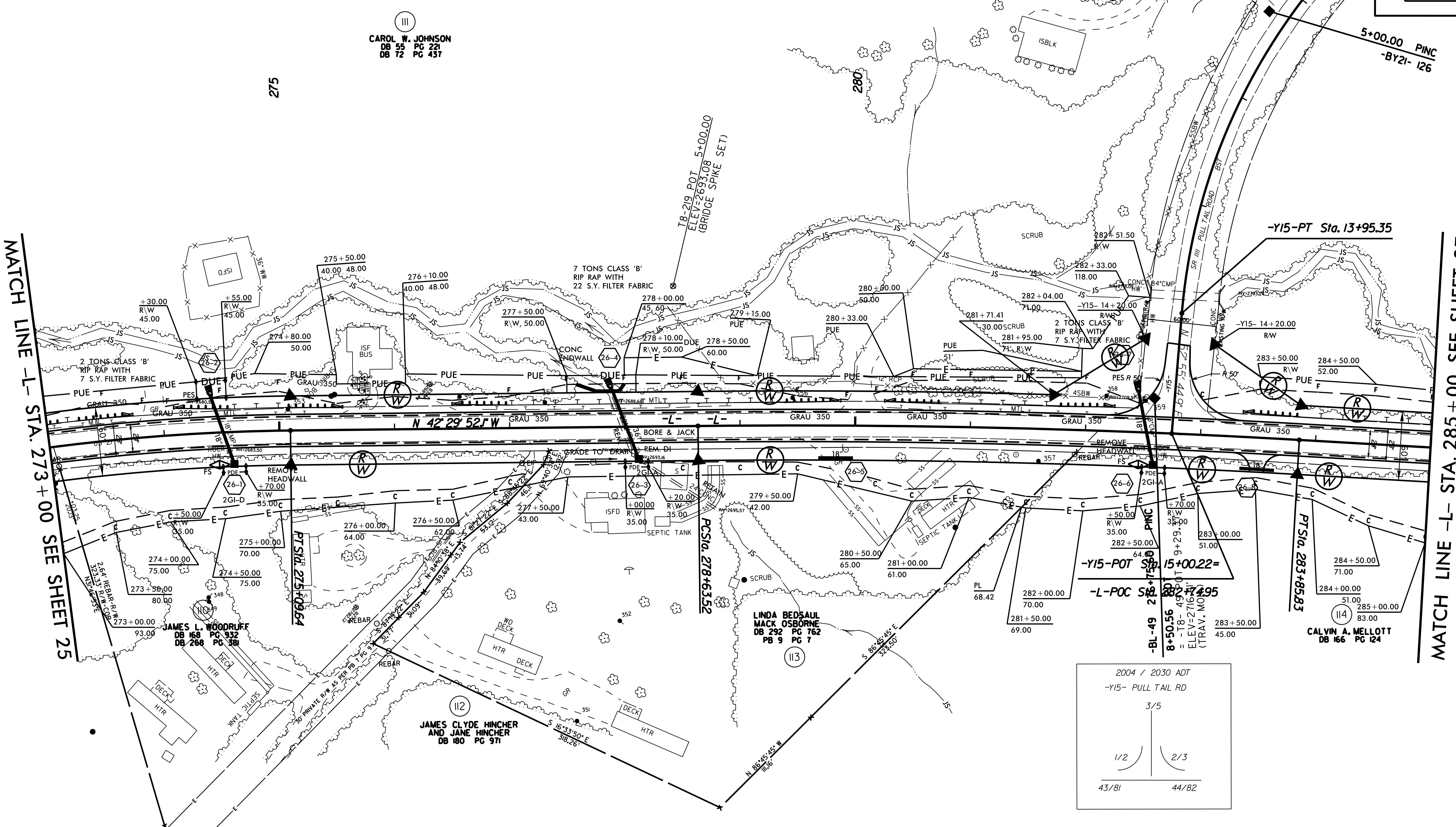
FOR -L- PROFILE SEE SHEET 58
FOR -Y15- PROFILES SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

DETAIL 19
FALSE SUMP
(Not to Scale)

PROJECT REFERENCE NO.	SHEET NO.
R-3101	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y15-
PI Sta 12+38.10
Δ = 35° 48' 31.2" (LT)
D = 11° 00' 00.0"
L = 325.53'
T = 168.28'
R = 520.87'



MATCH LINE -L- STA. 273+00 SEE SHEET 25
MATCH LINE -L- STA. 285+00 SEE SHEET 27
-Y15-POT Sta. 10+00.00
-Y15-PC Sta. 10+69.82
-Y15-PT Sta. 13+95.35
5+00.00 PINC -BY21- 126
CAROL W. JOHNSON DB 55 PG 221 DB 72 PG 437
T8-219 POT 5+00.00 ELEV=2693.08 (BRIDGE SPIKE SET)
N 42° 29' 52.1" W
PT Sta. 275+09.64
PC Sta. 278+63.52
PT Sta. 283+85.83
-Y15-POT Sta. 15+00.22= -L-POC Sta. 282+14.95
JAMES L. WOODRUFF DB 168 PG 932 DB 268 PG 381
JAMES CLYDE HINCHER AND JANE HINCHER DB 180 PG 971
LINDA BEDSAUL MACK OSBORNE DB 292 PG 762 PB 9 PG 7
CALVIN A. MELLOTT DB 166 PG 124

2004 / 2030 ADT
-Y15- PULL TAIL RD

-L-
PI Sta 281+24.78
Δ = 3° 55' 02.3" (RT)
D = 0° 45' 00.0"
L = 522.31'
T = 261.26'
R = 7,639.44'

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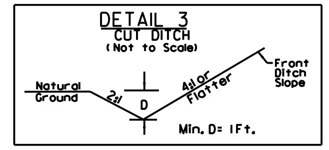
PROJECT REFERENCE NO.	SHEET NO.
R-3101	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

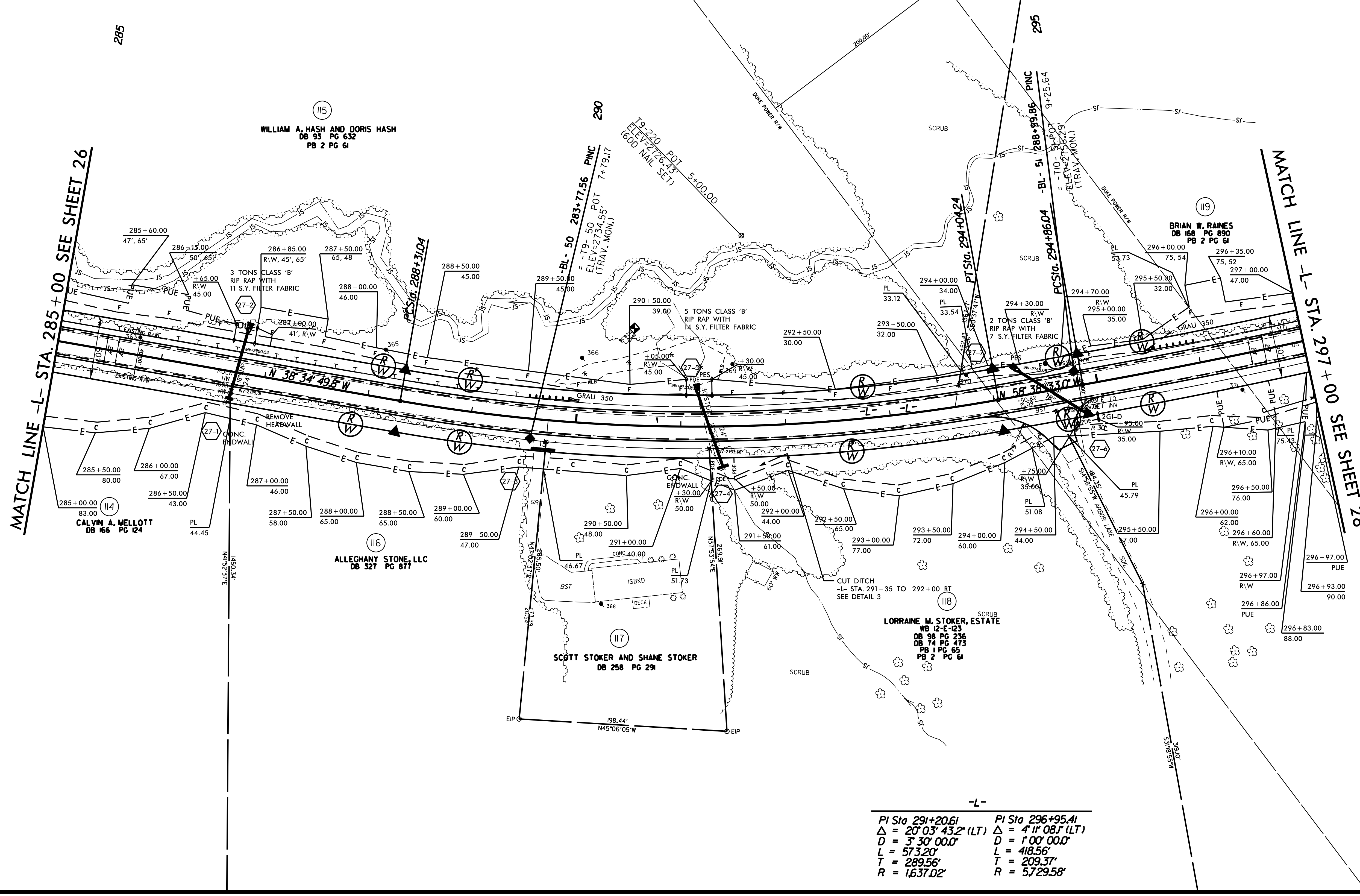
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTES

FOR -L- PROFILE SEE SHEET 58
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE



-L- STA. 291+35 TO 292+00 RT



-L-

PI Sta 291+20.61	PI Sta 296+95.41
Δ = 20° 03' 43.2" (LT)	Δ = 4° 11' 08.1" (LT)
D = 3° 30' 00.0"	D = 1° 00' 00.0"
L = 573.20'	L = 418.56'
T = 289.56'	T = 209.37'
R = 1,637.02'	R = 5,729.58'

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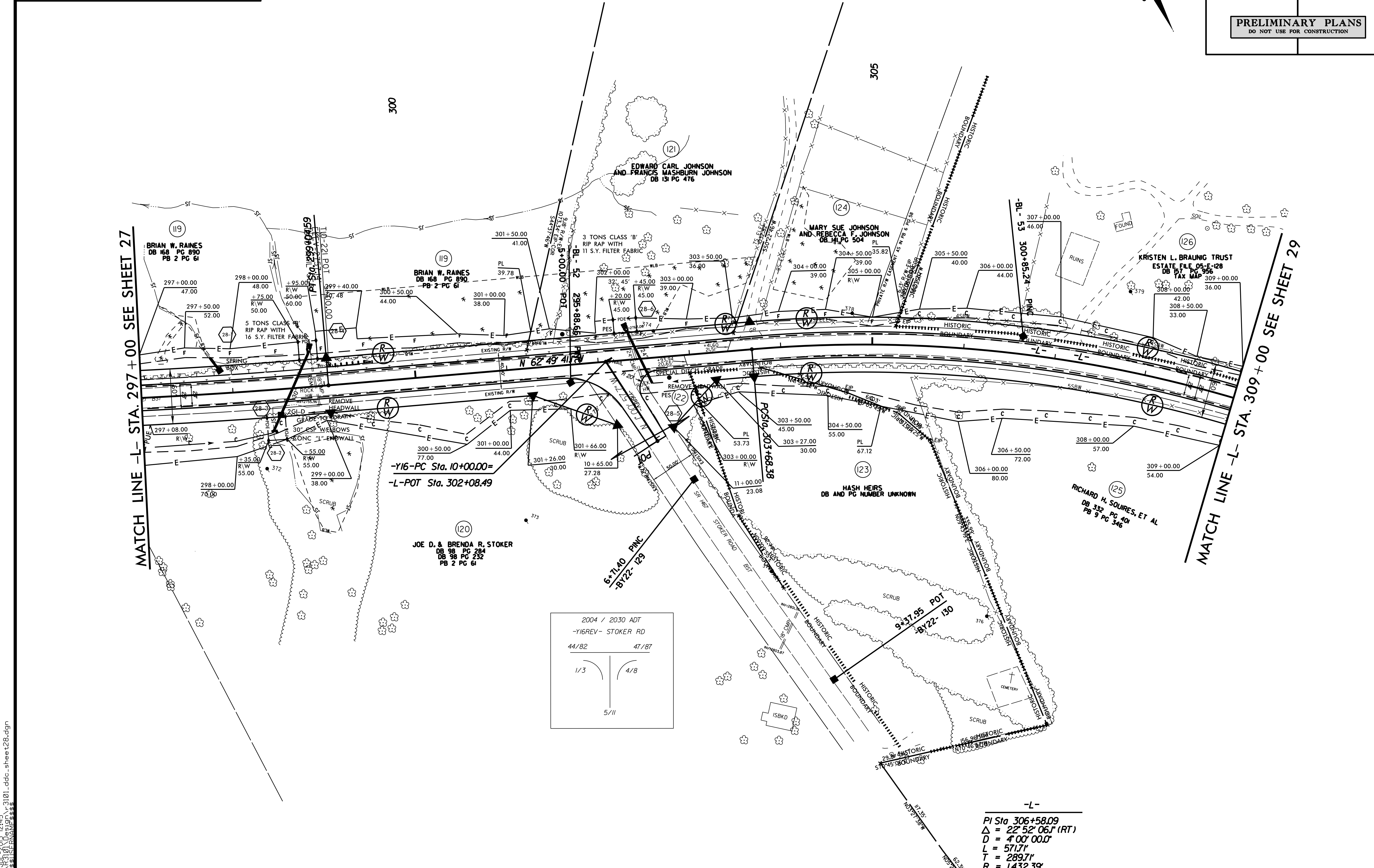
NOTES

FOR -L- PROFILE SEE SHEET 59
FOR -Y16REV- PROFILES SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

PROJECT REFERENCE NO.	SHEET NO.
R-3101	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83
300
305
MATCH LINE -L- STA. 297+00 SEE SHEET 27
MATCH LINE -L- STA. 309+00 SEE SHEET 29
119
BRIAN W. RAINES
DB 168 PG 890
PB 2 PG 61
120
JOE D. & BRENDA R. STOKER
DB 98 PG 284
DB 98 PG 232
PB 2 PG 61
121
EDWARD CARL JOHNSON
AND FRANCIS MASHBURN JOHNSON
DB 131 PG 476
123
HASH HEIRS
DB AND PG NUMBER UNKNOWN
124
MARY SUE JOHNSON
AND REBECCA F. JOHNSON
DB 141 PG 504
125
RICHARD H. SQUIRES, ET AL
DB 332 PG 401
PB 9 PG 346
126
KRISTEN L. BRAUNIG TRUST
ESTATE FILE 05-E-128
DB 157 PG 956
TAX MAP
5 TONS CLASS 'B' RIP RAP WITH 16 S.Y. FILTER FABRIC
3 TONS CLASS 'B' RIP RAP WITH 11 S.Y. FILTER FABRIC
REMOVE HEADWALL
SPECIAL DITCH GRADE
N 62°49'41"W
-Y16-PC Sta. 10+00.00=
-L-POT Sta. 302+08.49
PC Sta. 303+68.38
-BL- 52 295+88.65 POT
-BL- 53 300+85.24 PINC
6+71.40 PINC -BY22- 129
9+37.95 POT -BY22- 130
HISTORIC BOUNDARY
SCRUB
RUINS
CEMETERY
SR 1467 STOKER ROAD
2004 / 2030 ADT
-Y16REV- STOKER RD
44/82
47/87
1/3
4/8
5/11
-L-
PI Sta 306+58.09
Δ = 22°52'06.1" (RT)
D = 4°00'00.0"
L = 571.71'
T = 289.71'
R = 1,432.39'

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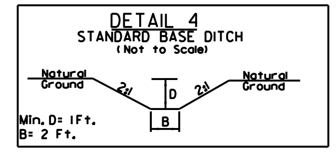
NOTES

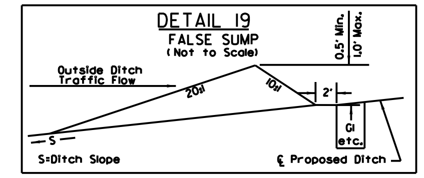
FOR -L- PROFILE SEE SHEET 59
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

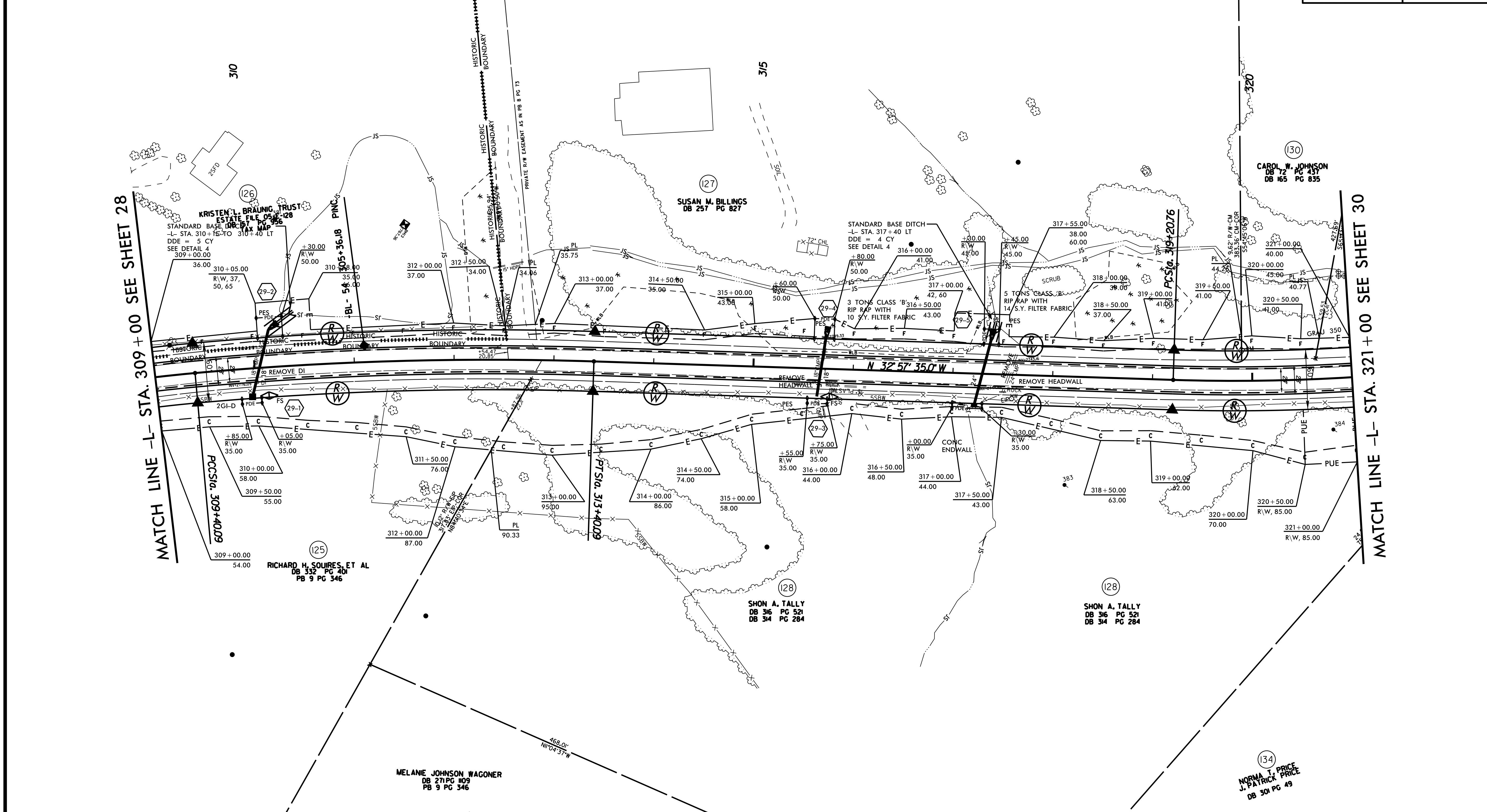
PROJECT REFERENCE NO.	SHEET NO.
R-3101	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L- STA. 310+15 TO 310+40 LT
-L- STA. 317+40 LT
EST. 9 CY DDE





NAD 83
MATCH LINE -L- STA. 309+00 SEE SHEET 28
MATCH LINE -L- STA. 321+00 SEE SHEET 30
310
315
320
KRISTEN L. BRAUNIG TRUST
ESTATE FILE 05-E-128
DB 157 PG 356
TAX MAP
STANDARD BASE DITCH
-L- STA. 310+15 TO 310+40 LT
DDE = 5 CY
SEE DETAIL 4
SUSAN M. BILLINGS
DB 257 PG 827
CAROL W. JOHNSON
DB 72 PG 437
DB 165 PG 835
STANDARD BASE DITCH
-L- STA. 317+40 LT
DDE = 4 CY
SEE DETAIL 4
3 TONS CLASS 'B' RIP RAP WITH 10 S.Y. FILTER FABRIC
5 TONS CLASS 'B' RIP RAP WITH 14 S.Y. FILTER FABRIC
HISTORIC BOUNDARY
PRIVATE R/W EASEMENT AS IN PB 8 PG 73
BL-54 305+36.18 PINC
PCCSta. 309+40.09
PTSta. 313+40.09
PCSta. 319+20.76
N 32°57' 35.0" W
REMOVE DI
REMOVE HEADWALL
CONC ENDWALL
SCRUB
PUE
RICHARD H. SQUIRES, ET AL
DB 332 PG 401
PB 9 PG 346
SHON A. TALLY
DB 316 PG 521
DB 314 PG 284
MELANIE JOHNSON WAGONER
DB 271 PG 1109
PB 9 PG 346
NORMA T. PRICE
J. PATRICK PRICE
DB 301 PG 49
468.01'
N11°04'37"W
125
126
127
128
130
134

-L-

PI Sta 306+58.09	PI Sta 311+40.34	PI Sta 321+52.45
Δ = 22°52' 06.1" (RT)	Δ = 7°00' 00.0" (RT)	Δ = 13°50' 03.4" (LT)
D = 4°00' 00.0"	D = 1°45' 00.0"	D = 3°00' 00.0"
L = 571.71'	L = 400.00'	L = 461.14'
T = 289.71'	T = 200.25'	T = 231.70'
R = 1,432.39'	R = 3,274.04'	R = 1,909.86'

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NOTES

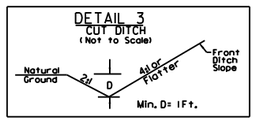
FOR -L- PROFILE SEE SHEET 60
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

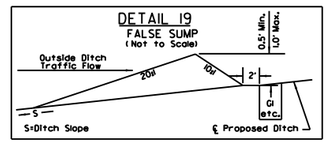
NAD 1983

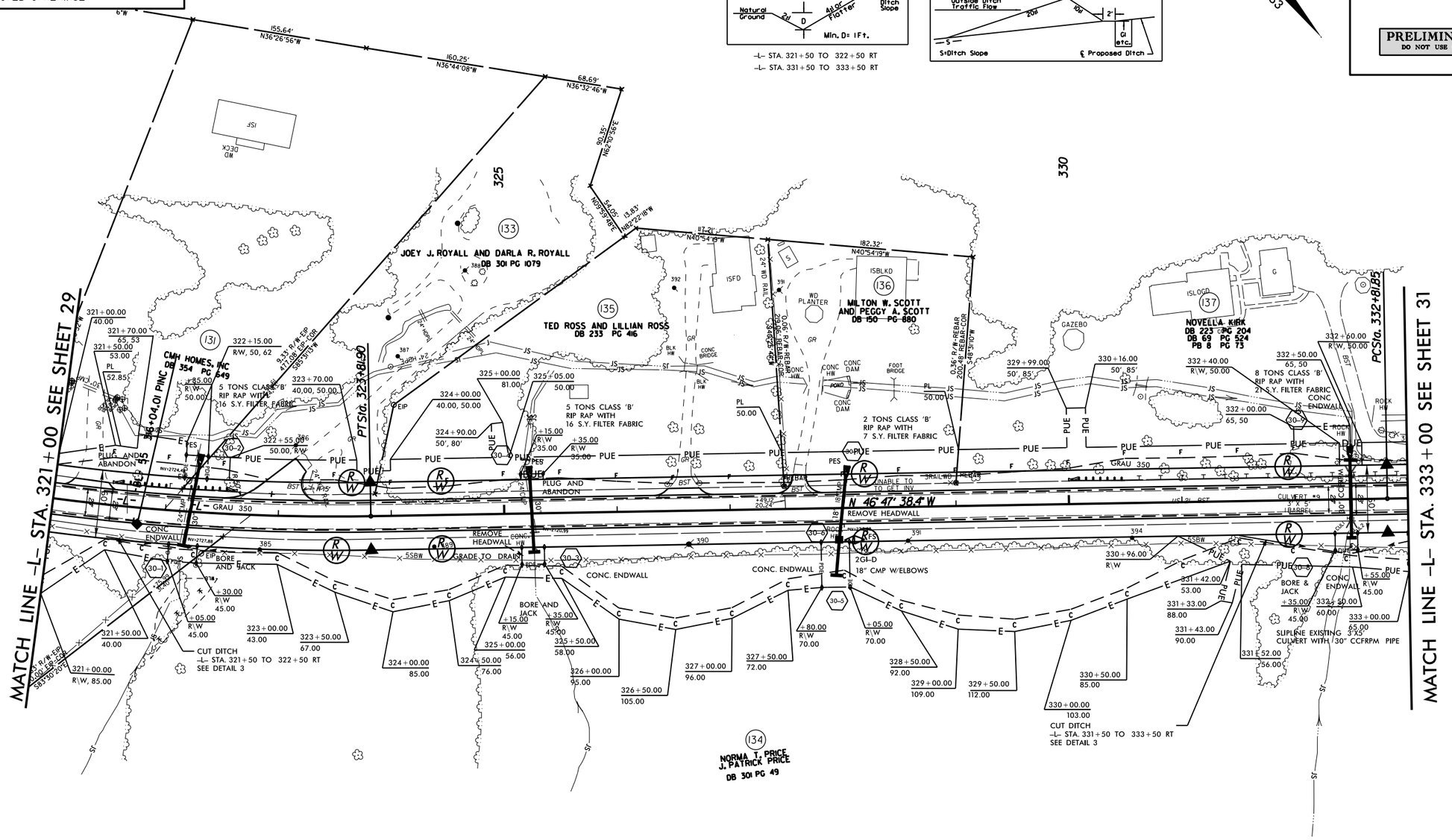
DETAIL 3
CUT DITCH
(Not to Scale)



-L- STA. 321+50 TO 322+50 RT
-L- STA. 331+50 TO 333+50 RT

DETAIL 19
FALSE SUMP
(Not to Scale)





CULVERT #9
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	993136.63	1398780.74	2693.19
CUL2	993138.60	1398778.89	2693.14
CE1	993137.59	1398779.64	2698.58
HW1	993137.60	1398779.43	2700.16
CUL3	993104.13	1398746.74	2689.87
CUL4	993102.35	1398748.92	2690.03
CE2	993103.37	1398747.88	2694.98
HW2	993103.61	1398747.90	2696.54

-L-
PI Sta 321+52.45
Δ = 13° 50' 03.4" (LT)
D = 3° 00' 00.0"
L = 461.14'
T = 231.70'
R = 1,909.86'

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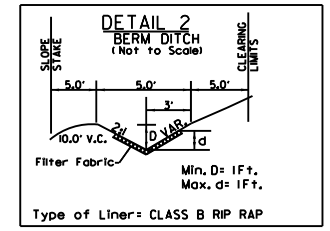
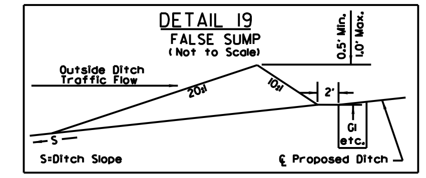
8/17/99

NOTES

FOR -L- PROFILE SEE SHEET 60
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

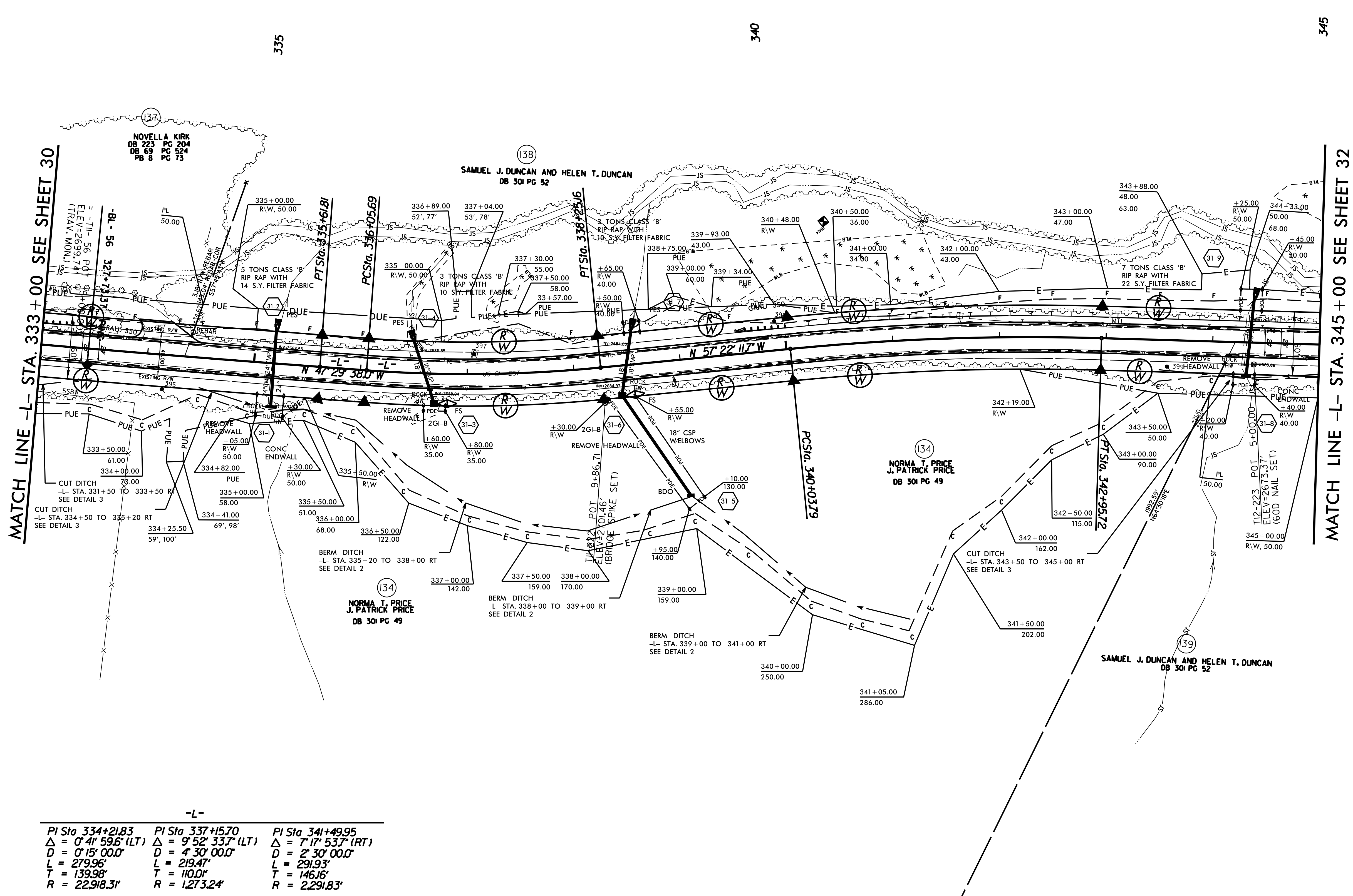


-L- STA. 335+20 TO 338+00 RT
-L- STA. 338+00 TO 339+00 RT
-L- STA. 339+00 TO 341+00 RT



PROJECT REFERENCE NO.	SHEET NO.
R-3101	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-

PI Sta 334+21.83	PI Sta 337+15.70	PI Sta 341+49.95
Δ = 0° 41' 59.6" (LT)	Δ = 9° 52' 33.7" (LT)	Δ = 7° 17' 53.7" (RT)
D = 0° 15' 00.0"	D = 4° 30' 00.0"	D = 2° 30' 00.0"
L = 279.96'	L = 219.47'	L = 291.93'
T = 139.98'	T = 110.01'	T = 146.16'
R = 22,918.31'	R = 1,273.24'	R = 2,291.83'

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8/17/99

NOTES

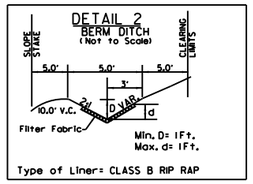
FOR -L- PROFILE SEE SHEET 6I
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 1983

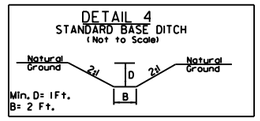
DETAIL 2
BERM DITCH
(Not to Scale)



Type of Liner: CLASS B RIP RAP

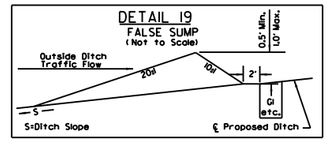
-L- STA. 350+50 TO 354+00 RT

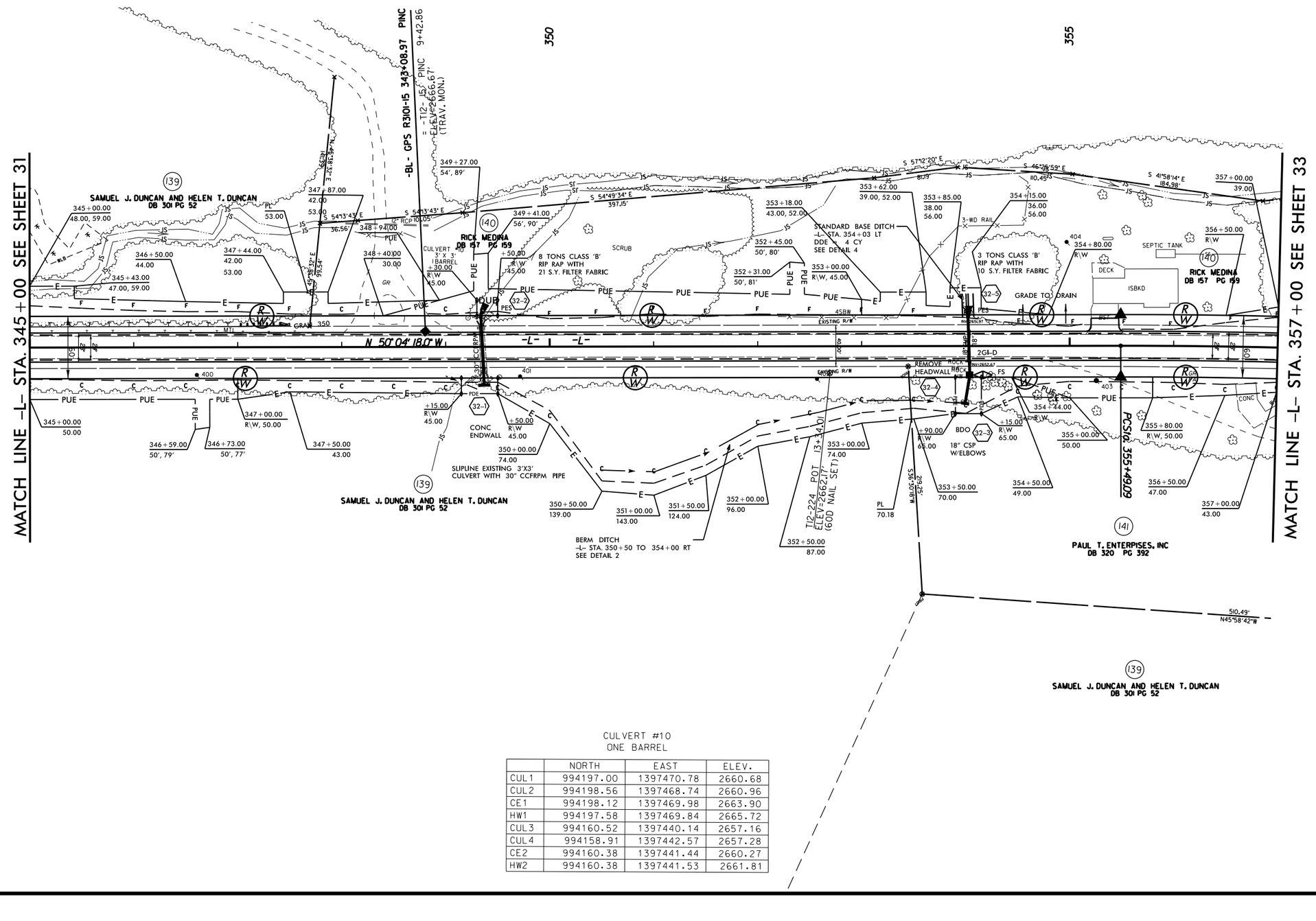
DETAIL 4
STANDARD BASE DITCH
(Not to Scale)



-L- STA. 354+03 LT
EST. 4 CU. YD. DDE

DETAIL 19
FALSE SUMP
(Not to Scale)





CULVERT #10
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	994197.00	1397470.78	2660.68
CUL2	994198.56	1397468.74	2660.96
CE1	994198.12	1397469.98	2663.90
HW1	994197.58	1397469.84	2665.72
CUL3	994160.52	1397440.14	2657.16
CUL4	994158.91	1397442.57	2657.28
CE2	994160.38	1397441.44	2660.27
HW2	994160.38	1397441.53	2661.81

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NOTES

FOR -L- PROFILE SEE SHEET 6I
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

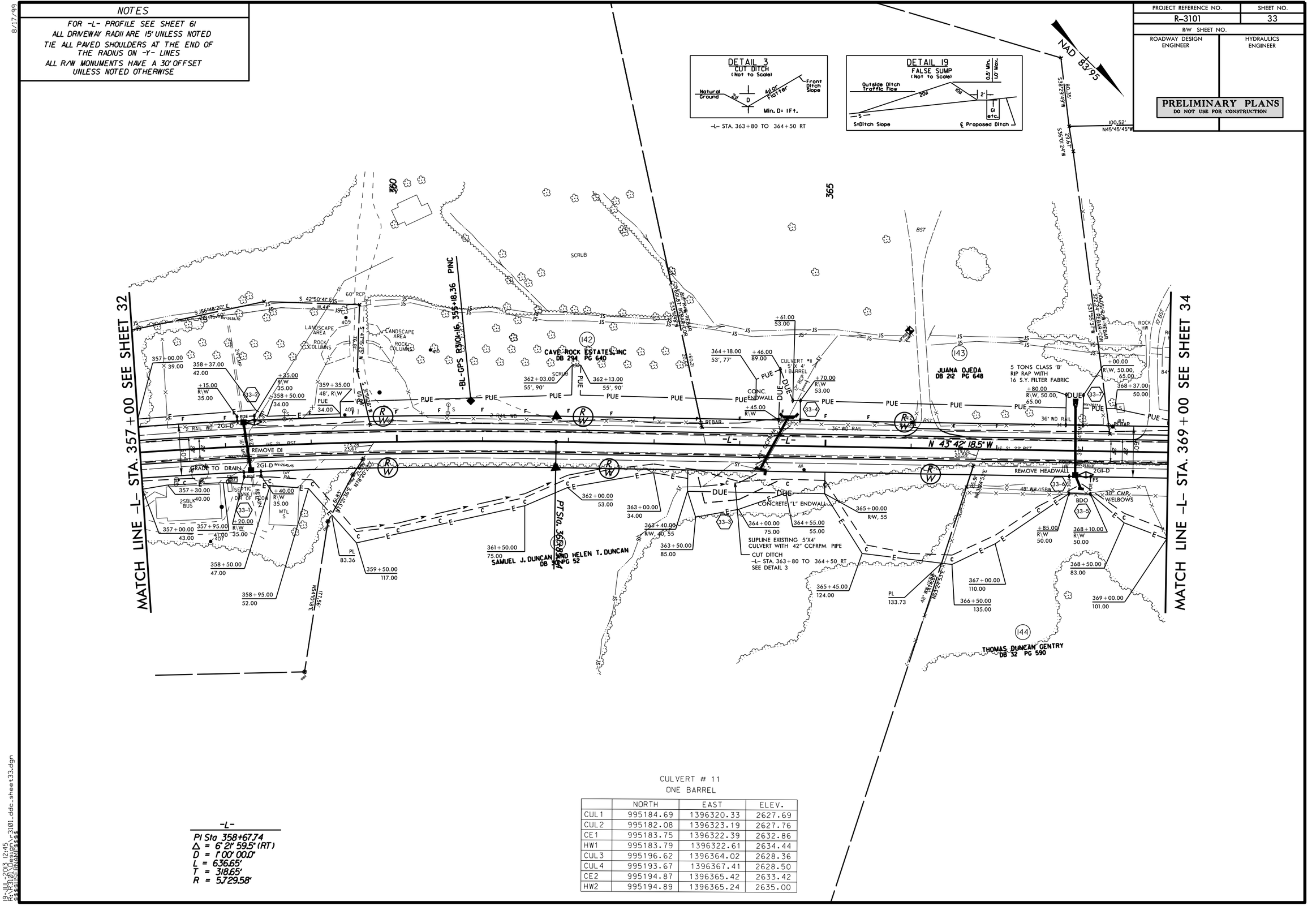
PROJECT REFERENCE NO.	SHEET NO.
R-3101	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL 3
CUT DITCH
(Not to Scale)

-L- STA. 363+80 TO 364+50 RT

DETAIL 19
FALSE SUMP
(Not to Scale)



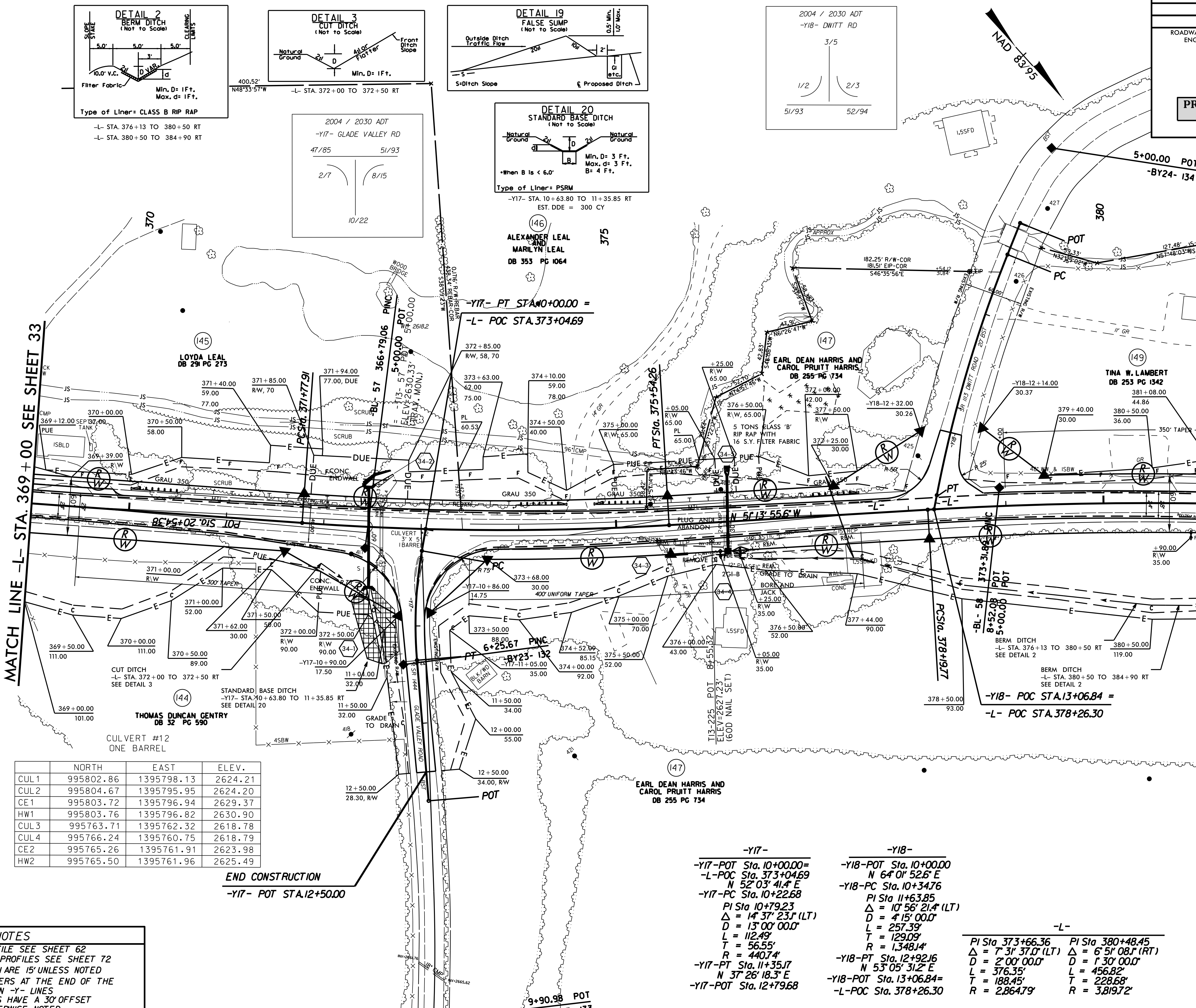
-L-
PI Sta 358+67.74
Δ = 6° 21' 59.5" (RT)
D = 1° 00' 00.0"
L = 636.65'
T = 318.65'
R = 5,729.58'

CULVERT # 11
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	995184.69	1396320.33	2627.69
CUL2	995182.08	1396323.19	2627.76
CE1	995183.75	1396322.39	2632.86
HW1	995183.79	1396322.61	2634.44
CUL3	995196.62	1396364.02	2628.36
CUL4	995193.67	1396367.41	2628.50
CE2	995194.87	1396365.42	2633.42
HW2	995194.89	1396365.24	2635.00

PROJECT REFERENCE NO.	SHEET NO.
R-3101	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



	NORTH	EAST	ELEV.
CUL1	995802.86	1395798.13	2624.21
CUL2	995804.67	1395795.95	2624.20
CE1	995803.72	1395796.94	2629.37
HW1	995803.76	1395796.82	2630.90
CUL3	995763.71	1395762.32	2618.78
CUL4	995766.24	1395760.75	2618.79
CE2	995765.26	1395761.91	2623.98
HW2	995765.50	1395761.96	2625.49

NOTES

FOR -L- PROFILE SEE SHEET 62
FOR -Y17- & -Y18- PROFILES SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

-Y17-

-Y17-POT Sta. 10+00.00=
-L-POC Sta. 373+04.69
N 52° 03' 41.4" E
-Y17-PC Sta. 10+22.68
PI Sta 10+79.23
Δ = 14° 37' 23.1" (LT)
D = 13° 00' 00.0"
L = 112.49'
T = 56.55'
R = 440.74'
-Y17-PT Sta. 11+35.17
N 37° 26' 18.3" E
-Y17-POT Sta. 12+79.68

-Y18-

-Y18-POT Sta. 10+00.00
N 64° 01' 52.6" E
-Y18-PC Sta. 10+34.76
PI Sta 11+63.85
Δ = 10° 56' 21.4" (LT)
D = 4° 15' 00.0"
L = 257.39'
T = 129.09'
R = 1,348.14'
-Y18-PT Sta. 12+92.16
N 53° 05' 31.2" E
-Y18-POT Sta. 13+06.84=
-L-POC Sta. 378+26.30

-L-

PI Sta 373+66.36	PI Sta 380+48.45
Δ = 7° 31' 37.0" (LT)	Δ = 6° 51' 08.1" (RT)
D = 2° 00' 00.0"	D = 1° 30' 00.0"
L = 376.35'	L = 456.82'
T = 188.45'	T = 228.68'
R = 2,864.79'	R = 3,819.72'

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PROJECT REFERENCE NO.	SHEET NO.
R-3101	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/95

MATCH LINE -L- STA. 381+00 SEE SHEET 34

MATCH LINE -L- STA. 393+00 SEE SHEET 36

ROGER DALE HANES
DB 164 PG 920

NELSON MURRAY AND
MAE P. MURRAY
DB 151 PG 141
DB 156 PG 534

EARL DEAN HARRIS AND
CAROL PRUITT HARRIS
DB 255 PG 734

J.B. WATSON AND
MERELE WATSON
DB 168 PG 79

BLUE RIDGE ELECTRIC
MEMBERSHIP
DB 59 PG 509
DB 237 PG 166
DB 267 PG 385

JOHN MICHAEL CAUDILL
DB 180 PG 238

KENNETH WILSON AND
BARBARA WILSON
DB 255 PG 470

DETAIL 2
BERM DITCH
(Not to Scale)

Type of Liner= CLASS B RIP RAP

-L- STA. 380+50 TO 384+90 RT

DETAIL 3
CUT DITCH
(Not to Scale)

-L- STA. 388+50 TO 389+00 RT

DETAIL 8
CUT DITCH
(Not to Scale)

Type of Liner= PSRM

-L- STA. 384+70 TO 385+07 RT

DETAIL 19
FALSE SUMP
(Not to Scale)

-L- STA. 382+00 TO 382+20 RT

-L- STA. 384+00 TO 384+55 RT

-L- STA. 386+47.98 CUT DITCH SEE DETAIL 3

-L- STA. 389+00 TO 389+50 RT

-L- STA. 391+05 TO 391+91 RT

-L- STA. 392+15 TO 392+77 SBG BEGIN BRIDGE LT & RT

-L- STA. 393+00 SEE SHEET 36

-Y19REV-POT Sta. 10+00.00=
-L-POT Sta. 385+40.00

-L-
PI Sta 380+48.45
Δ = 6° 51' 08.1" (RT)
D = 1° 30' 00.0"
L = 456.82'
T = 228.68'
R = 3,819.72'

-Y19REV-
N 45° 37' 12.5" E
PI Sta 10+91.49
Δ = 51° 56' 26.9" (LT)
D = 38° 00' 00.0"
L = 136.69'
T = 73.44'
R = 150.78'

2004 / 2030 ADT
-Y19REV- SHERIFF RD
52/94 53/96
1-/1- 1/2
1/2

NOTES
FOR -L- PROFILE SEE SHEET 62
FOR -Y19REV- PROFILES SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

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NOTES

FOR -L- PROFILE SEE SHEET 62
FOR -Y20- PROFILE SEE SHEET 72
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

PROJECT REFERENCE NO.	SHEET NO.
R-3101	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CULVERT #13
FOUR BARRELS

	NORTH	EAST	ELEV.
CUL1	997219.57	1394284.70	2582.50
CUL2	997226.77	1394277.72	2582.36
CUL3	997227.44	1394277.24	2582.37
CUL4	997234.78	1394269.91	2582.38
CUL5	997234.77	1394269.71	2582.54
CUL6	997241.99	1394262.48	2582.40
CUL7	997242.75	1394261.98	2582.45
CUL8	997249.47	1394255.27	2582.38
CE1	997235.09	1394269.95	2592.66
HW1	997234.33	1394269.44	2594.42
CUL9	997224.37	1394229.91	2582.74
CUL10	997217.44	1394236.72	2582.83
CUL11	997217.43	1394237.17	2582.83
CUL12	997210.18	1394244.04	2582.84
CUL13	997209.46	1394244.27	2582.83
CUL14	997202.19	1394251.75	2582.81
CUL15	997201.95	1394251.97	2582.83
CUL16	997194.80	1394259.10	2582.76
CE2	997210.04	1394244.42	2592.80
HW2	997210.10	1394244.44	2594.80

2004 / 2030 ADT
-Y20- MACEDONIA CHURCH RD
4/10
1/2 3/8
53/96 55/102

MATCH LINE -L- STA. 393+00 SEE SHEET 35

MATCH LINE -L- STA. 405+00 SEE SHEET 37

NAD 83

-Y20-POT Sta. 10+00.00
-Y20-POT Sta. 12+15.73=
-L-POT Sta. 397+92.67

-Y21-
PI Sta 10+89.04
Δ = 35° 30' 59.2" (RT)
D = 57° 17' 44.8"
L = 61.99'
T = 32.03'
R = 100.00'

PI Sta 11+80.07
Δ = 12° 18' 44.9" (LT)
D = 15° 15' 00.0"
L = 80.74'
T = 40.52'
R = 375.71'

154 DORIS GREENE DB 53 PG 137

159 CLIFF E. TARLTON AND NINA H. TARLTON DB 244 PG 178

160 PHILIP S. HORTON AND PAMELA HORTON DB 244 PG 863

156 BREMCO SUBSTATION
BLUE RIDGE ELECTRIC MEMBERSHIP CORPORATION
DB 59 PG 509
DB 237 PG 166
DB 267 PG 385

157 LORRAINE W. STOKER, ESTATE
WB 12-E-123
DB 98 PG 236
DB 74 PG 473
PB 1 PG 65
PB 2 PG 61

161 JOE STOKER AND BRENDA STOKER
DB 98 PG 284
DB 233 PG 883

CULVERT #14
TWO BARRELS

	NORTH	EAST	ELEV.
CUL1	998004.96	1393524.48	2581.03
CUL2	998000.83	1393528.55	2580.99
CUL3	998000.53	1393528.84	2581.01
CUL4	997996.24	1393533.24	2580.97
CE1	998000.35	1393528.72	2588.07
HW1	998000.46	1393528.42	2589.73
CUL5	997971.55	1393490.09	2581.57
CUL6	997966.83	1393494.53	2581.62
CUL7	997966.42	1393495.03	2581.55
CUL8	997962.65	1393498.80	2581.47
CE2	997967.02	1393494.64	2588.64
HW2	997967.29	1393494.63	2590.25

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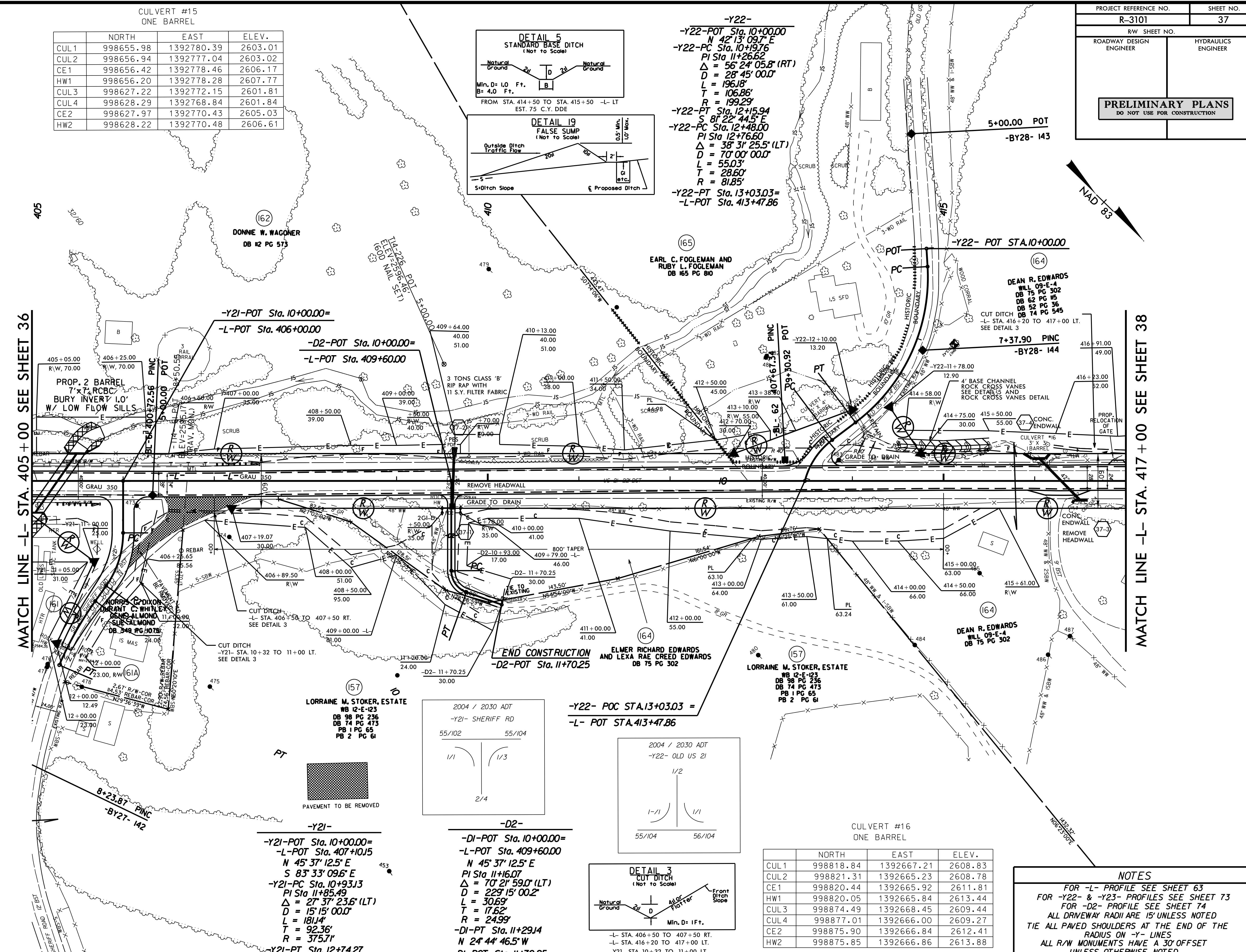
PROJECT REFERENCE NO.	SHEET NO.
R-3101	37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CULVERT #15
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	998655.98	1392780.39	2603.01
CUL2	998656.94	1392777.04	2603.02
CE1	998656.42	1392778.46	2606.17
HW1	998656.20	1392778.28	2607.77
CUL3	998627.22	1392772.15	2601.81
CUL4	998628.29	1392768.84	2601.84
CE2	998627.97	1392770.43	2605.03
HW2	998628.22	1392770.48	2606.61



DETAIL 5
STANDARD BASE DITCH
(Not to Scale)
Min. D= 1.0 Ft.
B= 4.0 Ft.
FROM STA. 414+50 TO STA. 415+50 -L- LT
EST. 75 C.Y. DDE
DETAIL 19
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
S=Ditch Slope
℄ Proposed Ditch
-Y22-
-Y22-POT Sta. 10+00.00
N 42° 13' 09.7" E
-Y22-PC Sta. 10+19.76
PI Sta 11+26.62
Δ = 56° 24' 05.8" (RT)
D = 28° 45' 00.0"
L = 196.18'
T = 106.86'
R = 199.29'
-Y22-PT Sta. 12+15.94
S 81° 22' 44.5" E
-Y22-PC Sta. 12+48.00
PI Sta 12+76.60
Δ = 38° 31' 25.5" (LT)
D = 70° 00' 00.0"
L = 55.03'
T = 28.60'
R = 81.85'
-Y22-PT Sta. 13+03.03=
-L-POT Sta. 413+47.86
5+00.00 POT
-BY28- 143
NAD 83
DONNIE W. WAGONER
DB 112 PG 573
EARL C. FOGLEMAN AND
RUBY L. FOGLEMAN
DB 165 PG 810
-Y22- POT STA.10+00.00
DEAN R. EDWARDS
WILL 09-E-4
DB 75 PG 302
DB 62 PG 115
DB 52 PG 36
DB 74 PG 545
CUT DITCH
-L- STA. 416+20 TO 417+00 LT.
SEE DETAIL 3
7+37.90 PINC
-BY28- 144
-Y21-POT Sta. 10+00.00=
-L-POT Sta. 406+00.00
-D2-POT Sta. 10+00.00=
-L-POT Sta. 409+60.00
PROP. 2 BARREL
7'x7' RCBC
BURY INVERT 1.0'
W/ LOW FLOW SILLS
3 TONS CLASS 'B'
RIP RAP WITH
11 S.Y. FILTER FABRIC
4' BASE CHANNEL
ROCK CROSS VANES
SEE DETAILS AND
ROCK CROSS VANES DETAIL
CONC. ENDWALL
PROP. RELOCATION OF GATE
MATCH LINE -L- STA. 405+00 SEE SHEET 36
MATCH LINE -L- STA. 417+00 SEE SHEET 38
REMOVE HEADWALL
GRADE TO DRAIN
800' TAPER
NORRIS G. DIXON
GRANT C. WHITLEY
OSNIE ALMOND
SUE ALMOND
DB 549 PG 1078
CUT DITCH
-L- STA. 406+50 TO 407+50 RT.
SEE DETAIL 3
CUT DITCH
-Y21- STA. 10+32 TO 11+00 LT.
SEE DETAIL 3
END CONSTRUCTION
-D2-POT Sta. 11+70.25
ELMER RICHARD EDWARDS
AND LEXA RAE CREED EDWARDS
DB 75 PG 302
LORRAINE M. STOKER, ESTATE
WB 12-E-123
DB 98 PG 236
DB 74 PG 473
PB 1 PG 65
PB 2 PG 61
-Y22- POC STA.13+03.03 =
-L- POT STA.413+47.86
2004 / 2030 ADT
-Y21- SHERIFF RD
2004 / 2030 ADT
-Y22- OLD US 21
PAVEMENT TO BE REMOVED
8+23.87 PINC
-BY27- 142
-Y21-
-Y21-POT Sta. 10+00.00=
-L-POT Sta. 407+10.15
N 45° 37' 12.5" E
S 83° 33' 09.6" E
-Y21-PC Sta. 10+93.13
PI Sta 11+85.49
Δ = 27° 37' 23.6" (LT)
D = 15° 15' 00.0"
L = 181.14'
T = 92.36'
R = 375.71'
-Y21-PT Sta. 12+74.27
-D2-
-D1-POT Sta. 10+00.00=
-L-POT Sta. 409+60.00
N 45° 37' 12.5" E
PI Sta 11+16.07
Δ = 70° 21' 59.0" (LT)
D = 229° 15' 00.2"
L = 30.69'
T = 17.62'
R = 24.99'
-D1-PT Sta. 11+29.14
N 24° 44' 46.5" W
-D1-POT Sta. 11+70.25
DETAIL 3
CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
4:1 or Flatter
Min. D= 1Ft.
-L- STA. 406+50 TO 407+50 RT.
-L- STA. 416+20 TO 417+00 LT.
-Y21- STA. 10+32 TO 11+00 LT.

CULVERT #16
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	998818.84	1392667.21	2608.83
CUL2	998821.31	1392665.23	2608.78
CE1	998820.44	1392665.92	2611.81
HW1	998820.05	1392665.84	2613.44
CUL3	998874.49	1392668.45	2609.44
CUL4	998877.01	1392666.00	2609.27
CE2	998875.90	1392666.84	2612.41
HW2	998875.85	1392666.86	2613.88

NOTES

FOR -L- PROFILE SEE SHEET 63
FOR -Y22- & -Y23- PROFILES SEE SHEET 73
FOR -D2- PROFILE SEE SHEET 74
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED

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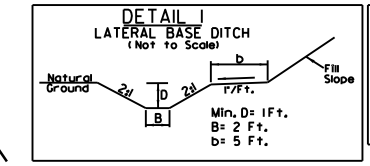
NOTES

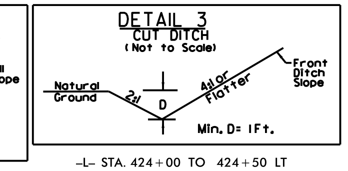
FOR -L- PROFILE SEE SHEET 64
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

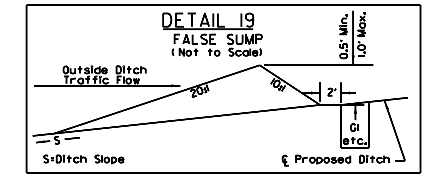
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



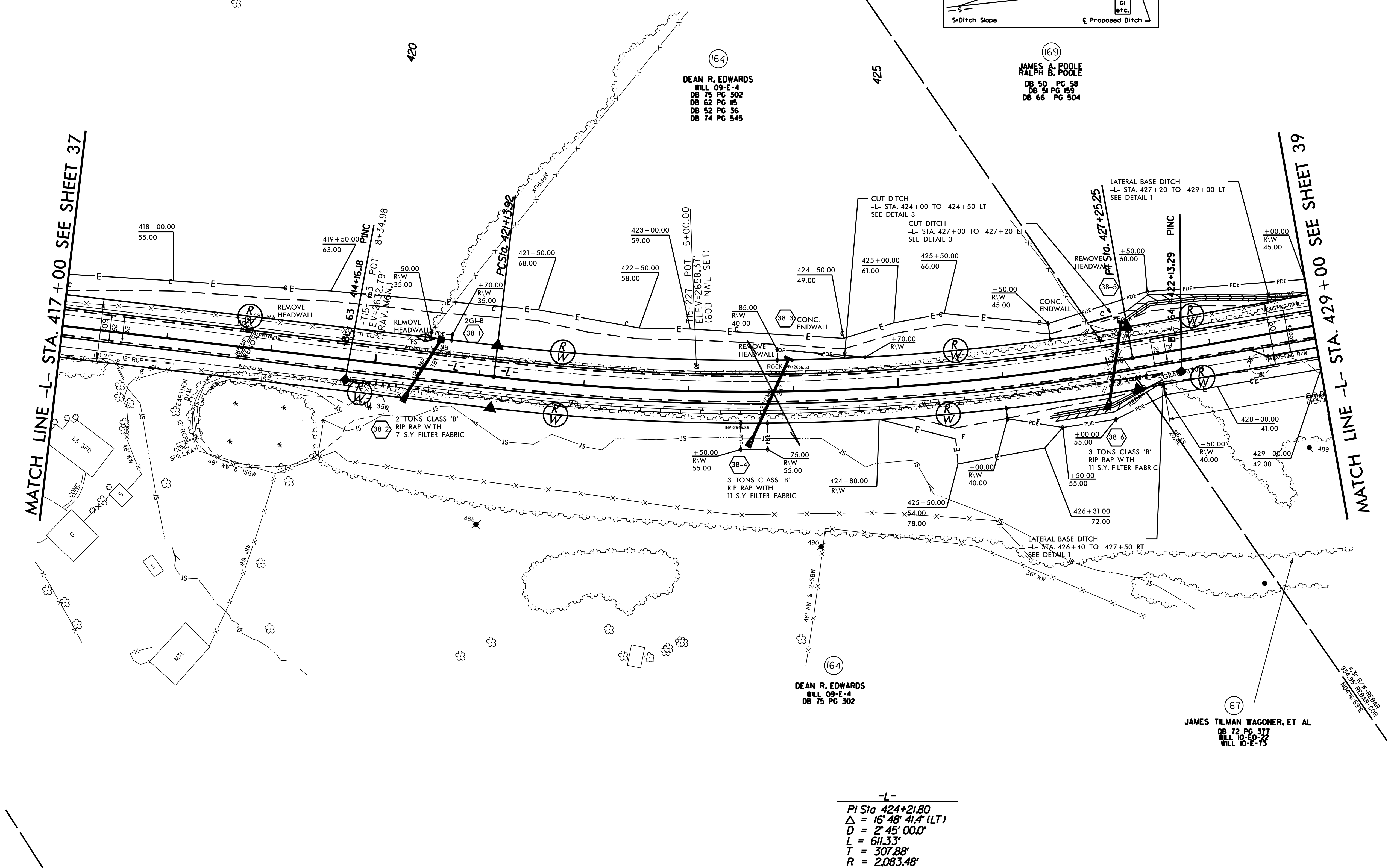
-L- STA. 426+40 TO 427+50 RT
-L- STA. 427+20 TO 429+00 LT
EST. 94 CY DDE



-L- STA. 424+00 TO 424+50 LT
-L- STA. 427+00 TO 427+20 LT



NAD 83



-L-
PI Sta 424+21.80
Δ = 16° 48' 41.4" (LT)
D = 2° 45' 00.0"
L = 611.33'
T = 307.88'
R = 2,083.48'

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PROJECT REFERENCE NO.	SHEET NO.
R-3101	39
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

NOTES

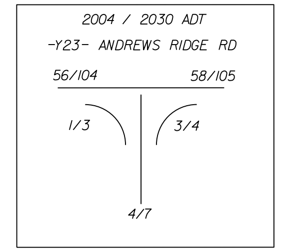
FOR -L- PROFILE SEE SHEET 64
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

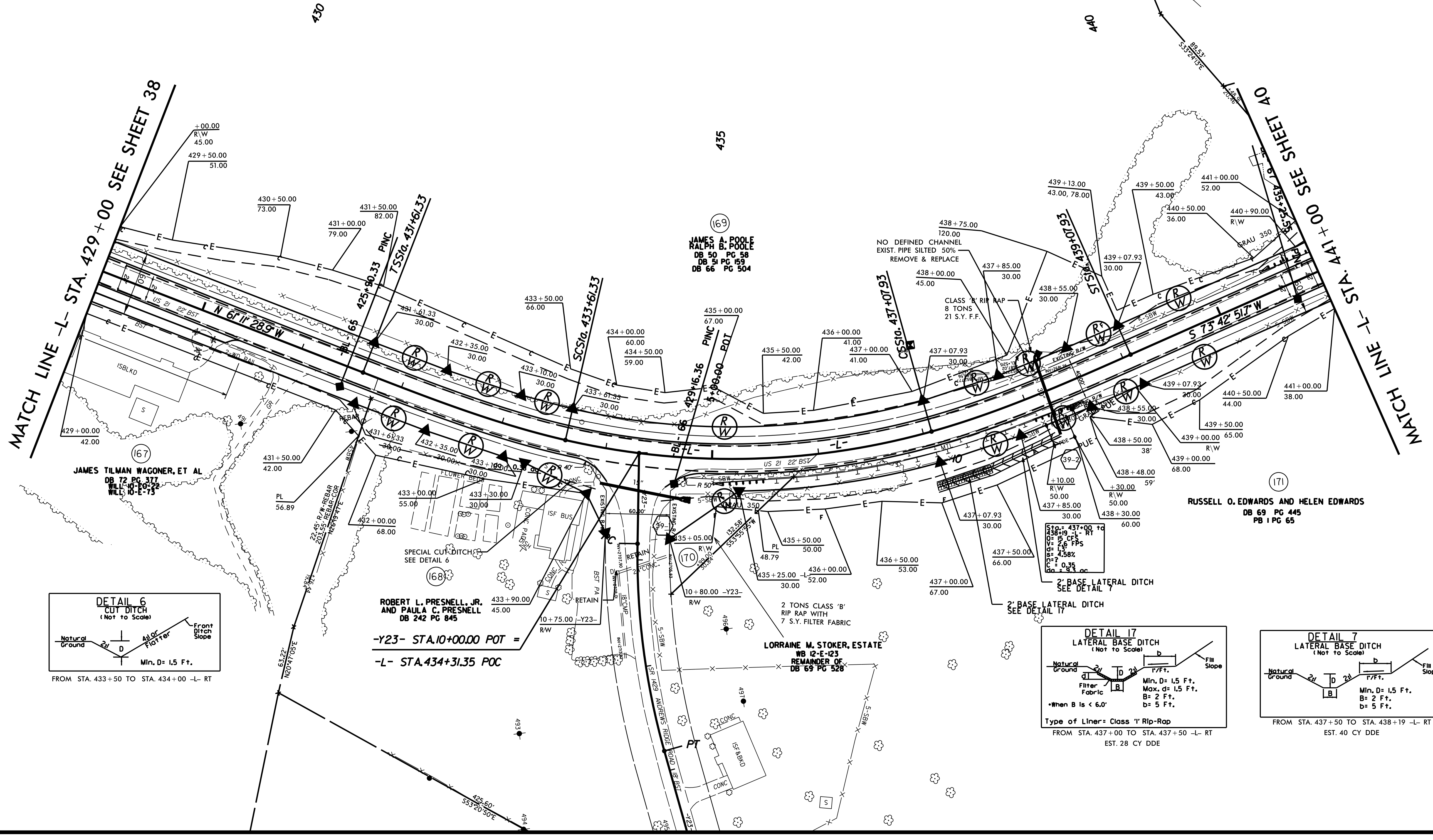
-L-

Pls Sta 432+94.81	PI Sta 435+38.32	Pls Sta 437+74.73	Pls Sta 442+74.36
Θs = 8° 15' 00.0"	Δ = 28° 35' 39.4" (LT)	Θs = 8° 15' 00.0"	Θs = 2° 15' 00.0"
Ls = 200.00'	D = 8° 15' 00.0"	Ls = 200.00'	Ls = 200.00'
LT = 133.48'	L = 346.60'	LT = 133.48'	LT = 133.34'
ST = 66.80'	T = 176.99'	ST = 66.80'	ST = 66.68'
	R = 694.49'		

-Y23-

-Y23-POT Sta. 10+00.00 =
-L-POC Sta. 434+31.45
N 8° 34' 46.2" E
-Y23-PC Sta. 10+84.79
PI Sta 11+83.67
Δ = 16° 41' 29.5" (LT)
D = 8° 30' 00.0"
L = 196.37'
T = 98.89'
R = 674.07'
-Y23-PT Sta. 12+81.16
N 8° 06' 43.3" W
-Y23-POT Sta. 13+92.53





MATCH LINE -L- STA. 429+00 SEE SHEET 38
MATCH LINE -L- STA. 441+00 SEE SHEET 40
NAD 83
N 61° 11' 28.9" W
S 73° 42' 51.7" W
JAMES TILMAN WAGONER, ET AL
DB 72 PG 377
JAMES A. POOLE
RALPH B. POOLE
DB 50 PG 58
DB 54 PG 159
DB 66 PG 504
ROBERT L. PRESNELL, JR. AND PAULA C. PRESNELL
DB 242 PG 845
LORRAINE M. STOKER, ESTATE
WB 12-E-123
REMAINDER OF
DB 69 PG 528
RUSSELL O. EDWARDS AND HELEN EDWARDS
DB 69 PG 445
PB 1 PG 65
-Y23- STA.10+00.00 POT =
-L- STA.434+31.35 POC
SPECIAL CUT DITCH
SEE DETAIL 6
NO DEFINED CHANNEL
EXIST. PIPE SILTED 50%
REMOVE & REPLACE
CLASS 'B' RIP RAP
8 TONS
21 S.Y. F.F.
2 TONS CLASS 'B'
RIP RAP WITH
7 S.Y. FILTER FABRIC
2' BASE LATERAL DITCH
SEE DETAIL 7
2' BASE LATERAL DITCH
SEE DETAIL 17
DETAIL 6
CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D= 1.5 Ft.
FROM STA. 433+50 TO STA. 434+00 -L- RT
DETAIL 17
LATERAL BASE DITCH
(Not to Scale)
Filter Fabric
Fill Slope
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class 'I' Rip-Rap
FROM STA. 437+00 TO STA. 437+50 -L- RT
EST. 28 CY DDE
DETAIL 7
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
B= 2 Ft.
b= 5 Ft.
FROM STA. 437+50 TO STA. 438+19 -L- RT
EST. 40 CY DDE

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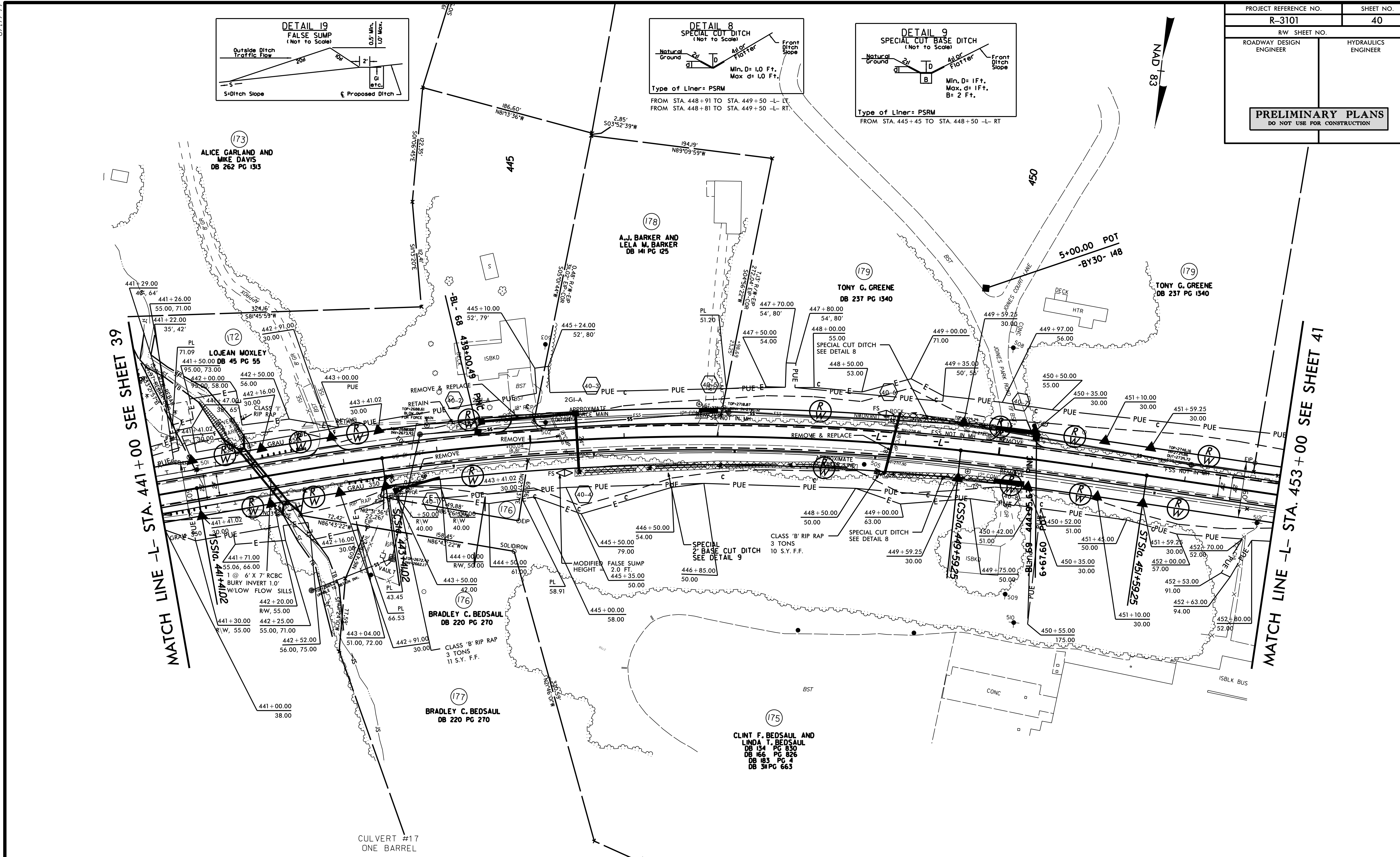
PROJECT REFERENCE NO.	SHEET NO.
R-3101	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



	NORTH	EAST	ELEV.
CUL1	999789.68	1390431.12	2659.61
CUL2	999787.66	1390424.25	2659.72
CE1	999788.64	1390427.78	2665.93
HW1	999788.60	1390427.77	2667.50
CUL3	999742.98	1390477.80	2659.33
CUL4	999741.76	1390471.29	2659.29
CE2	999742.69	1390474.68	2665.36
HW2	999742.79	1390474.47	2666.98

NOTES

FOR -L- PROFILE SEE SHEET 65
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

-L-

PIs Sta 442+74.36	PI Sta 446+51.66	PIs Sta 450+25.92
Θs = 2°15' 00.0"	Δ = 13°54' 36.8" (RT)	Θs = 2°15' 00.0"
Ls = 200.00'	D = 2°15' 00.0"	Ls = 200.00'
LT = 133.34'	L = 618.23'	LT = 133.34'
ST = 66.68'	T = 310.64'	ST = 66.68'
	R = 2,546.48'	

8/17/99

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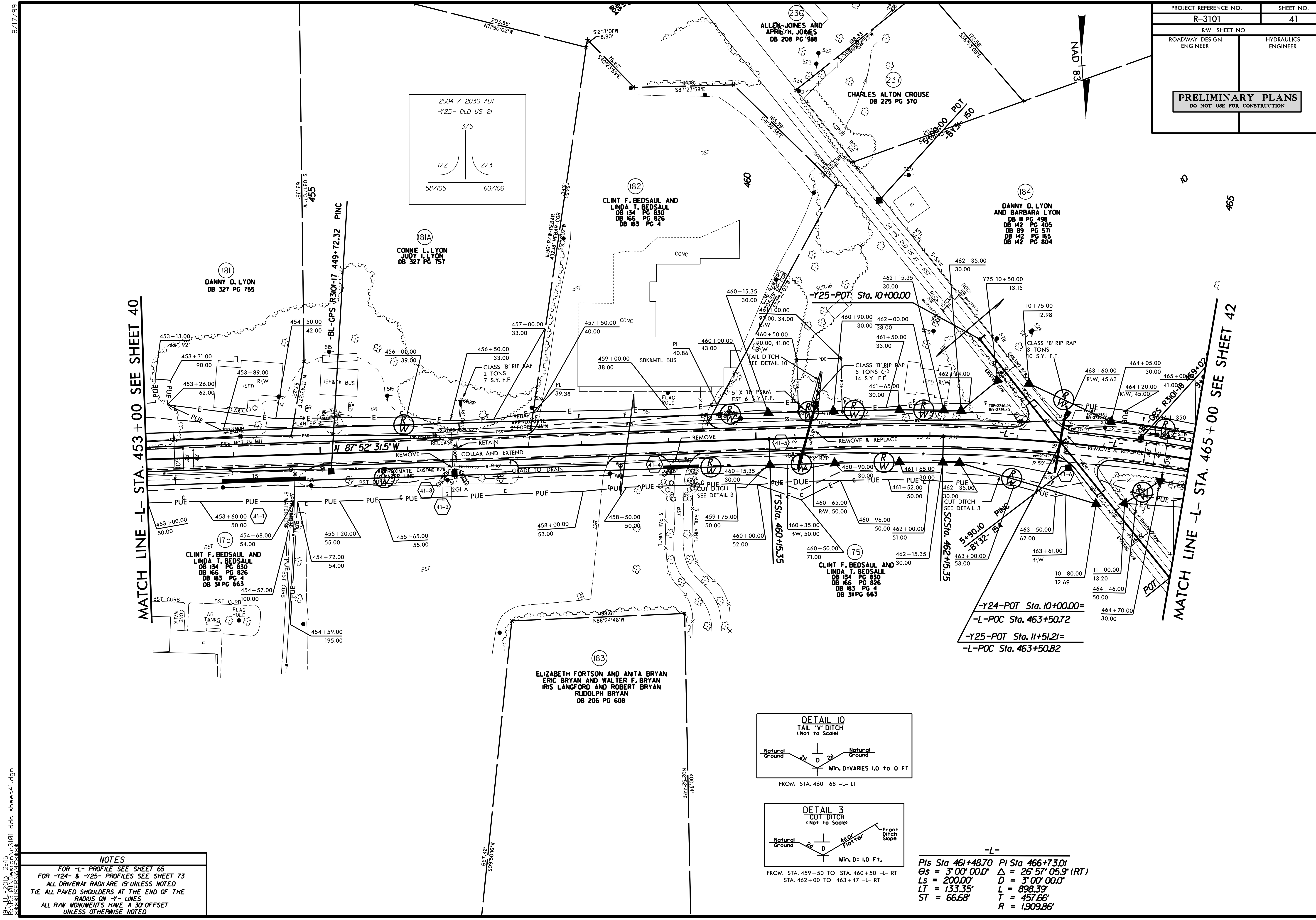

PROJECT REFERENCE NO.
R-3101
SHEET NO.
41
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
MATCH LINE -L- STA. 453+00 SEE SHEET 40
MATCH LINE -L- STA. 465+00 SEE SHEET 42
2004 / 2030 ADT
-Y25- OLD US 21
DANNY D. LYON
DB 327 PG 755
CONNIE L. LYON
JUDY L. LYON
DB 327 PG 757
CLINT F. BEDSAUL AND
LINDA T. BEDSAUL
DB 134 PG 830
DB 166 PG 826
DB 183 PG 4
ALLEN JOINES AND
APRIL H. JOINES
DB 208 PG 988
CHARLES ALTON CROUSE
DB 225 PG 370
DANNY D. LYON
AND BARBARA LYON
ELIZABETH FORTSON AND ANITA BRYAN
ERIC BRYAN AND WALTER F. BRYAN
IRIS LANGFORD AND ROBERT BRYAN
RUDOLPH BRYAN
DB 206 PG 608
N 87° 52' 31.5" W
-Y25-POT Sta. 10+00.00
-Y24-POT Sta. 10+00.00=
-L-POC Sta. 463+50.72
-Y25-POT Sta. 11+51.21=
-L-POC Sta. 463+50.82
DETAIL 10
TAIL 'V' DITCH
(Not to Scale)
Natural Ground
Min. D=VARIES 1.0 to 0 FT
FROM STA. 460+68 -L- LT
DETAIL 3
CUT DITCH
(Not to Scale)
Min. D= 1.0 Ft.
FROM STA. 459+50 TO STA. 460+50 -L- RT
STA. 462+00 TO 463+47 -L- RT
-L-
PIs Sta 461+48.70
θs = 3° 00' 00.0"
Ls = 200.00'
LT = 133.35'
ST = 66.68'
PI Sta 466+73.01
Δ = 26° 57' 05.9" (RT)
D = 3° 00' 00.0"
L = 898.39'
T = 457.66'
R = 1,909.86'
NOTES
FOR -L- PROFILE SEE SHEET 65
FOR -Y24- & -Y25- PROFILES SEE SHEET 73
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED
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PROJECT REFERENCE NO.	SHEET NO.
R-3101	42
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

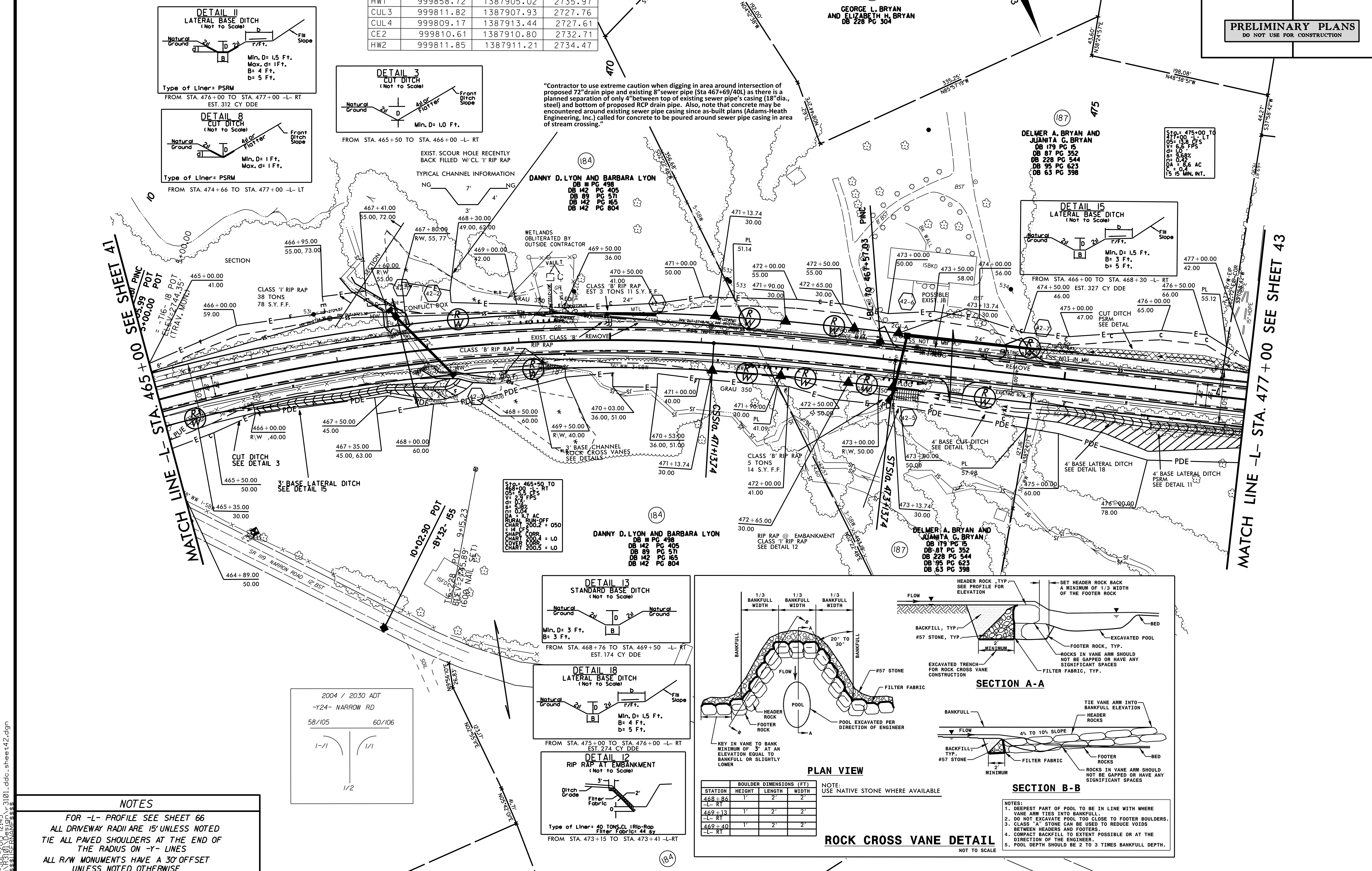
CULVERT #18
ONE BARREL

	NORTH	EAST	ELEV.
CUL1	999860.08	1387902.48	2729.30
CUL2	999857.82	1387907.32	2729.20
CE1	999858.72	1387904.94	2734.41
HW1	999858.72	1387905.02	2735.97
CUL3	999811.82	1387907.93	2727.76
CUL4	999809.17	1387913.44	2727.61
CE2	999810.61	1387910.80	2732.71
HW2	999811.85	1387911.21	2734.47

-L-
PIs Sta 461+48.70 PI Sta 466+73.01
Θs = 3°00′00.0″ Δ = 26°57′05.9″ (RT)
Ls = 200.00′ D = 3°00′00.0″
LT = 133.35′ L = 898.39′
ST = 66.68′ T = 457.66′
R = 1,909.86′

-L-
PIs Sta 471+80.42
Θs = 3°00′00.0″
Ls = 200.00′
LT = 133.35′
ST = 66.68′

"Contractor to use extreme caution when digging in area around intersection of proposed 72"drain pipe and existing 8"sewer pipe (Sta 467+69/40L) as there is a planned separation of only 4"between top of existing sewer pipe's casing (18"dia., steel) and bottom of proposed RCP drain pipe. Also, note that concrete may be encountered around existing sewer pipe casing since as-built plans (Adams-Heath Engineering, Inc.) called for concrete to be poured around sewer pipe casing in area of stream crossing."



DETAIL 11 LATERAL BASE DITCH (Not to Scale)
Min. D= 1.5 Ft. Max. d= 1 Ft. B= 4 Ft. b= 5 Ft.
Type of Liner= PSRM
FROM STA. 476+00 TO STA. 477+00 -L- RT EST. 312 CY DDE
DETAIL 8 CUT DITCH (Not to Scale)
Min. D= 1 Ft. Max. D= 1 Ft.
Type of Liner= PSRM
FROM STA. 474+66 TO STA. 477+00 -L- LT
DETAIL 3 CUT DITCH (Not to Scale)
Min. D= 1.0 Ft.
FROM STA. 465+50 TO STA. 466+00 -L- RT
EXIST. SCOUR HOLE RECENTLY BACK FILLED W/ CL. 'I' RIP RAP
TYPICAL CHANNEL INFORMATION
GEORGE L. BRYAN AND ELIZABETH H. BRYAN DB 228 PG 304
DANNY D. LYON AND BARBARA LYON DB 111 PG 498 DB 142 PG 405 DB 89 PG 571 DB 142 PG 165 DB 142 PG 804
DELMER A. BRYAN AND JUANITA G. BRYAN DB 179 PG 15 DB 87 PG 352 DB 228 PG 544 DB 95 PG 623 DB 63 PG 398
NAD 83
MATCH LINE -L- STA. 465+00 SEE SHEET 41
MATCH LINE -L- STA. 477+00 SEE SHEET 43
CLASS 'I' RIP RAP 38 TONS 78 S.Y. F.F.
CLASS 'B' RIP RAP EST 3 TONS 11 S.Y. F.F.
CLASS 'B' RIP RAP 5 TONS 14 S.Y. F.F.
WETLANDS OBLITERATED BY OUTSIDE CONTRACTOR
CUT DITCH SEE DETAIL 3
3' BASE LATERAL DITCH SEE DETAIL 15
3' BASE CHANNEL ROCK CROSS VANES SEE DETAILS
4' BASE CUT DITCH SEE DETAIL 13
4' BASE LATERAL DITCH SEE DETAIL 18
4' BASE LATERAL DITCH PSRM SEE DETAIL 11
RIP RAP @ EMBANKMENT CLASS 'I' RIP RAP SEE DETAIL 12
DETAIL 15 LATERAL BASE DITCH (Not to Scale)
Min. D= 1.5 Ft. B= 3 Ft. b= 5 Ft.
FROM STA. 466+00 TO STA. 468+30 -L- RT EST. 327 CY DDE
DETAIL 13 STANDARD BASE DITCH (Not to Scale)
Min. D= 3 Ft. B= 3 Ft.
FROM STA. 468+76 TO STA. 469+50 -L- RT EST. 174 CY DDE
DETAIL 18 LATERAL BASE DITCH (Not to Scale)
Min. D= 1.5 Ft. B= 4 Ft. b= 5 Ft.
FROM STA. 475+00 TO STA. 476+00 -L- RT EST. 274 CY DDE
DETAIL 12 RIP RAP AT EMBANKMENT (Not to Scale)
Type of Liner= 40 TONS CL 'I' Rip-Rap Filter Fabric= 44 sy
FROM STA. 473+15 TO STA. 473+41 -L- RT
2004 / 2030 ADT -Y24- NARROW RD
SR 1119 NARROW ROAD
ROCK CROSS VANE DETAIL NOT TO SCALE
PLAN VIEW
SECTION A-A
SECTION B-B
NOTE: USE NATIVE STONE WHERE AVAILABLE
NOTES:
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
4. COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.

STATION	HEIGHT	LENGTH	WIDTH
468+86 -L- RT	1′	2′	2′
469+13 -L- RT	1′	2′	2′
469+40 -L- RT	1′	2′	2′

NOTES

FOR -L- PROFILE SEE SHEET 66
ALL DRIVEWAY RADII ARE 15′ UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30′ OFFSET UNLESS NOTED OTHERWISE

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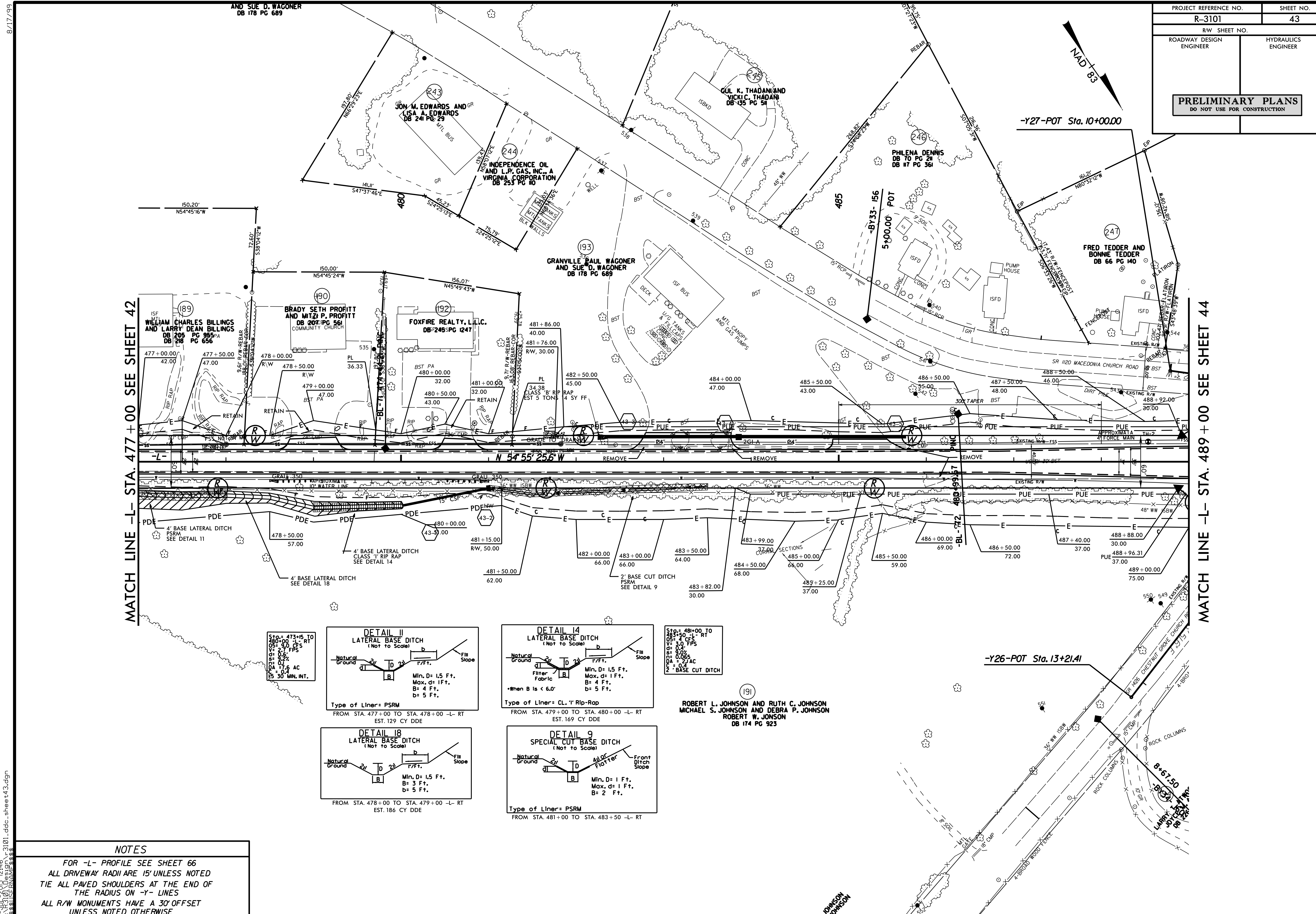
PROJECT REFERENCE NO.	SHEET NO.
R-3101	43
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



Sta.= 473+15 TO 480+00 -L- RT
QS= 9.0 CFS
V= 2.7 FPS
d= 0.6'
s= 0.2%
n= 0.1
DA = 7.6 AC
K= 0.4
I5 30 MIN. INT.

DETAIL 11
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1Ft.
B= 4 Ft.
b= 5 Ft.
Type of Liner= PSRM
FROM STA. 477+00 TO STA. 478+00 -L- RT
EST. 129 CY DDE

DETAIL 14
LATERAL BASE DITCH
(Not to Scale)
Filter Fabric
*When B is < 6.0'
Min. D= 1.5 Ft.
Max. d= 1 Ft.
B= 4 Ft.
b= 5 Ft.
Type of Liner= CL. 'I' Rip-Rap
FROM STA. 479+00 TO STA. 480+00 -L- RT
EST. 169 CY DDE

Sta.= 481+00 TO 483+50 -L- RT
QS= 4 CFS
V= 3.0 FPS
d= 0.4'
s= 0.9%
n= 0.065
DA = 2.1 AC
K= 0.4
2' BASE CUT DITCH

DETAIL 18
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
B= 3 Ft.
b= 5 Ft.
FROM STA. 478+00 TO STA. 479+00 -L- RT
EST. 186 CY DDE

DETAIL 9
SPECIAL CUT BASE DITCH
(Not to Scale)
Front Ditch Slope
Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
Type of Liner= PSRM
FROM STA. 481+00 TO STA. 483+50 -L- RT

NOTES

FOR -L- PROFILE SEE SHEET 66
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

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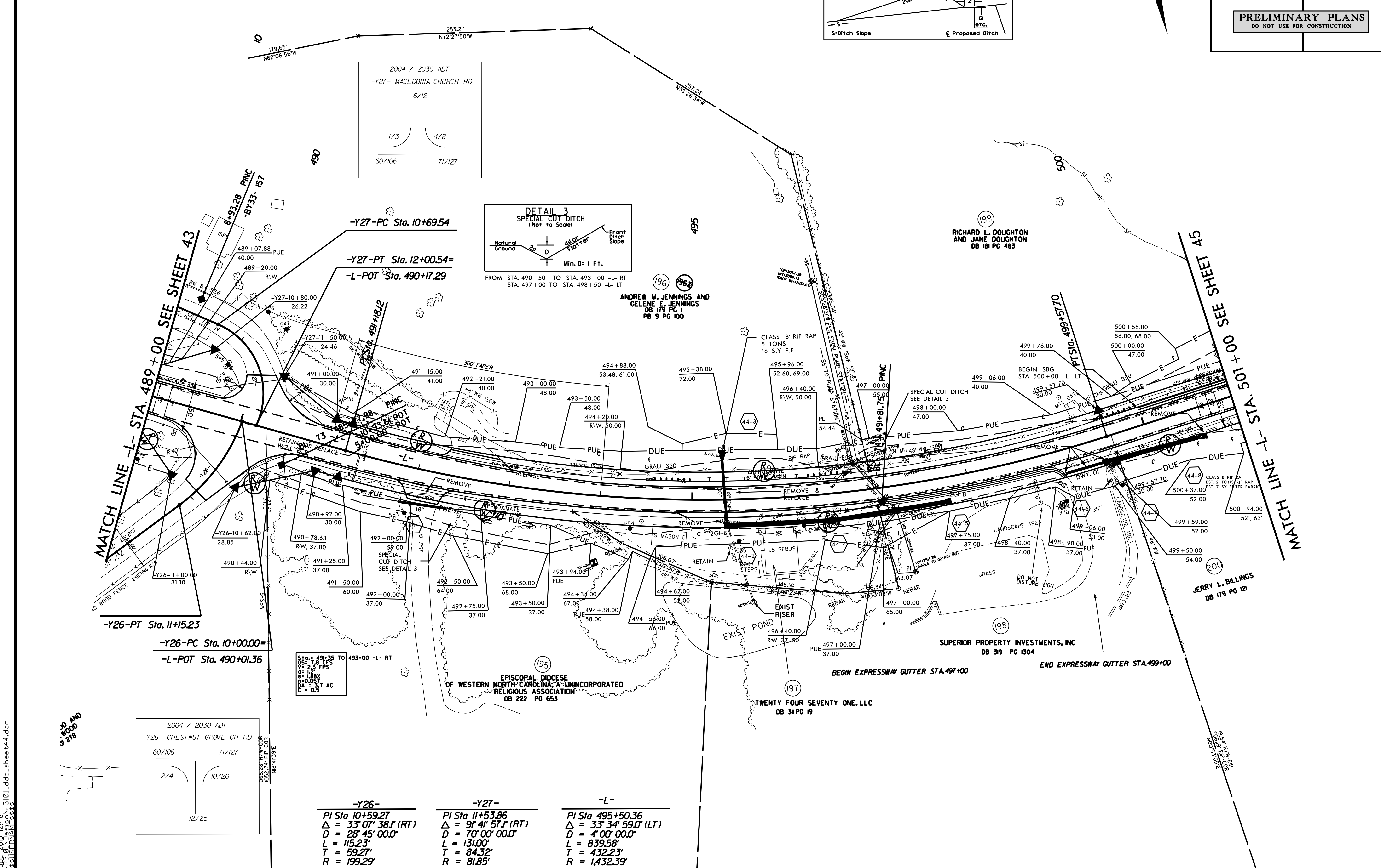
PROJECT REFERENCE NO.	SHEET NO.
R-3101	44
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NOTES

FOR -L- PROFILE SEE SHEET 67
FOR -Y26- & -Y27- PROFILES SEE SHEET 73
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS OTHERWISE NOTED



DETAIL 19
FALSE SUMP
(Not to Scale)
DETAIL 3
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1 Ft.
FROM STA. 490+50 TO STA. 493+00 -L- RT
STA. 497+00 TO STA. 498+50 -L- LT
2004 / 2030 ADT
-Y27- MACEDONIA CHURCH RD
2004 / 2030 ADT
-Y26- CHESTNUT GROVE CH RD
MATCH LINE -L- STA. 489+00 SEE SHEET 43
MATCH LINE -L- STA. 501+00 SEE SHEET 45
-Y27-PC Sta. 10+69.54
-Y27-PT Sta. 12+00.54=
-L-POT Sta. 490+17.29
-Y26-PT Sta. 11+15.23
-Y26-PC Sta. 10+00.00=
-L-POT Sta. 490+01.36
RICHARD L. DOUGHTON AND JANE DOUGHTON DB 181 PG 483
ANDREW M. JENNINGS AND GELENE E. JENNINGS DB 179 PG 1 PB 9 PG 100
EPISCOPAL DIOCESE OF WESTERN NORTH CAROLINA, A UNINCORPORATED RELIGIOUS ASSOCIATION DB 222 PG 653
TWENTY FOUR SEVENTY ONE, LLC DB 311 PG 19
SUPERIOR PROPERTY INVESTMENTS, INC DB 319 PG 1304
JERRY L. BILLINGS DB 179 PG 121
BEGIN EXPRESSWAY GUTTER STA.497+00
END EXPRESSWAY GUTTER STA.499+00
CLASS 'B' RIP RAP 5 TONS 16 S.Y. F.F.
SPECIAL CUT DITCH SEE DETAIL 3
BEGIN SBG STA. 500+00 -L- LT
EXIST POND
EXIST RISER
NAD 83

-Y26-	-Y27-	-L-
PI Sta 10+59.27	PI Sta 11+53.86	PI Sta 495+50.36
Δ = 33° 07' 38.1" (RT)	Δ = 91° 41' 57.1" (RT)	Δ = 33° 34' 59.0" (LT)
D = 28° 45' 00.0"	D = 70° 00' 00.0"	D = 4° 00' 00.0"
L = 115.23'	L = 131.00'	L = 839.58'
T = 59.27'	T = 84.32'	T = 432.23'
R = 199.29'	R = 81.85'	R = 1,432.39'

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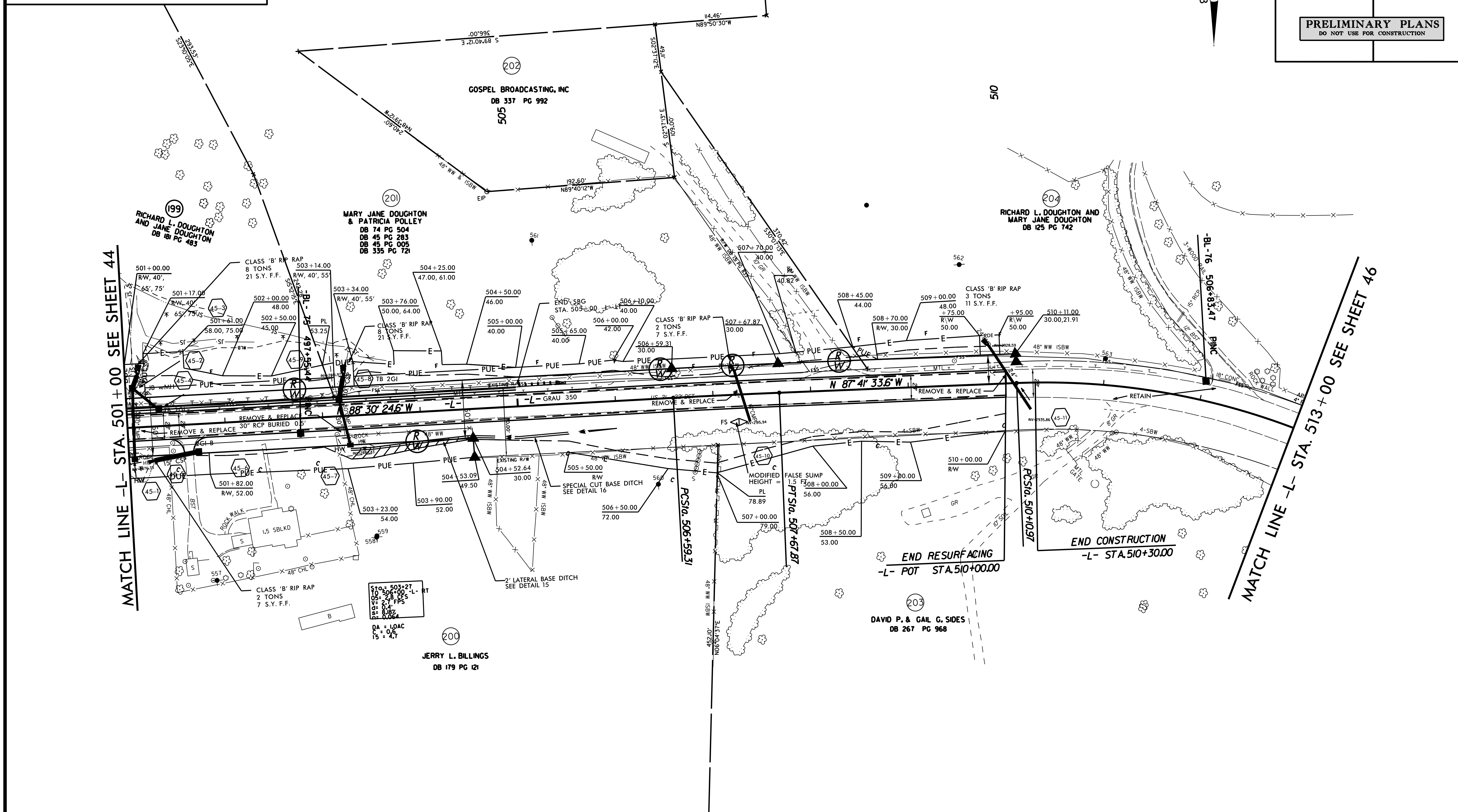
NOTES

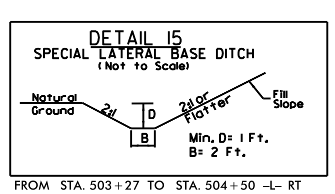
FOR -L- PROFILE SEE SHEET 67
ALL DRIVEWAY RADII ARE 15' UNLESS NOTED
TIE ALL PAVED SHOULDERS AT THE END OF THE RADIUS ON -Y- LINES
ALL R/W MONUMENTS HAVE A 30' OFFSET UNLESS NOTED OTHERWISE

PROJECT REFERENCE NO.	SHEET NO.
R-3101	45
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

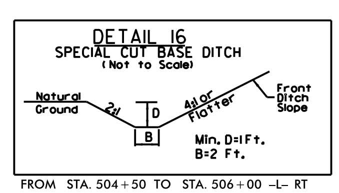
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83





FROM STA. 503+27 TO STA. 504+50 -L- RT



FROM STA. 504+50 TO STA. 506+00 -L- RT

-L-

PI Sta 507+13.59
Δ = 0° 48' 51.0" (RT)
D = 0° 45' 00.0"
L = 108.56'
T = 54.28'
R = 7,639.44'

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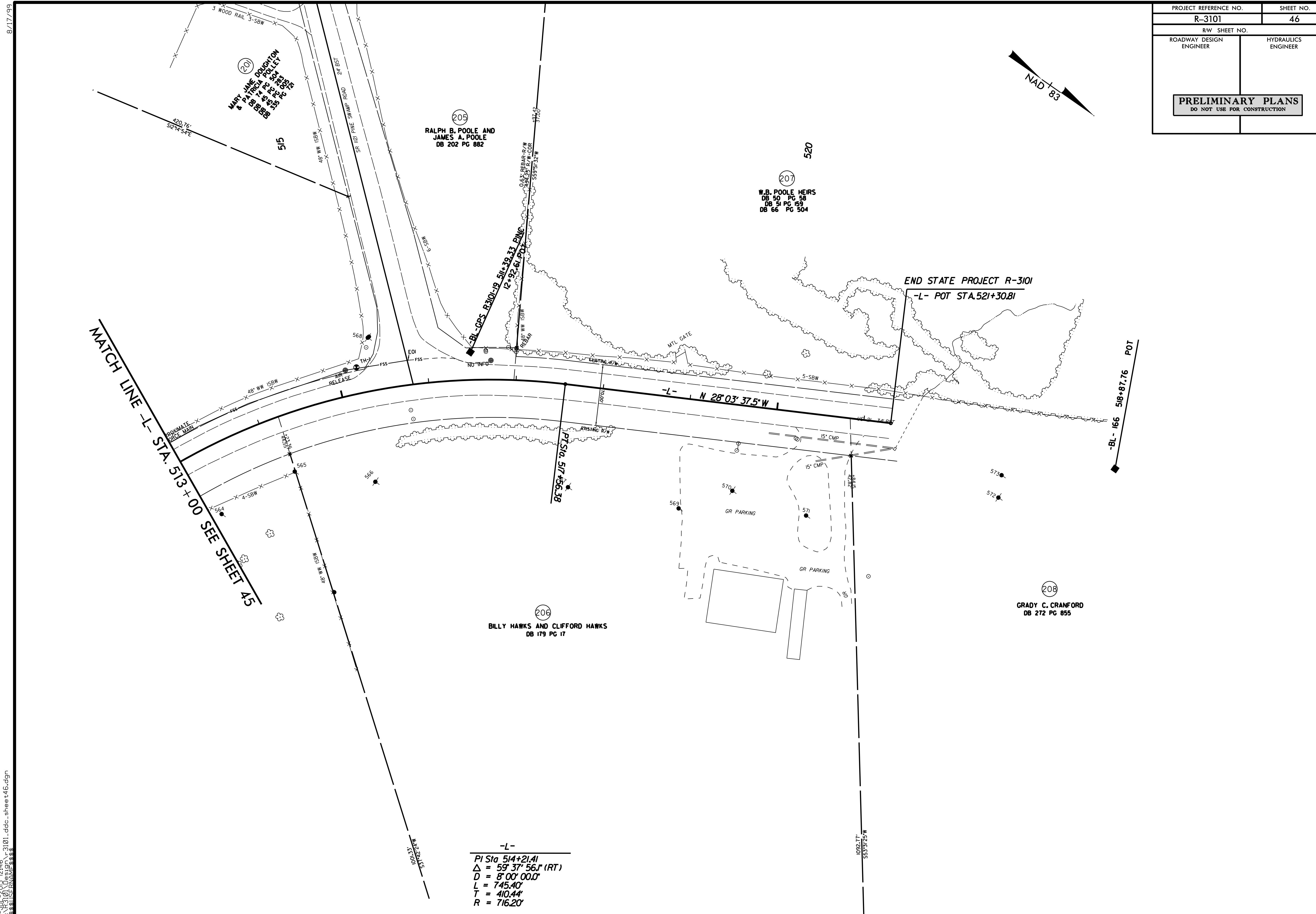
PROJECT REFERENCE NO.	SHEET NO.
R-3101	46
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83
MATCH LINE -L- STA. 513+00 SEE SHEET 45
END STATE PROJECT R-3101
-L- POT STA. 521+30.81
-L- N 28° 03' 37.5" W
BL-GPS R3101-19 511+39.33 PINC
12+92.61 POT
PT Sta. 517+56.38
-BL- 166 518+87.76 POT
201
MARY JANE DOUGHTON & PATRICIA POLLEY
DB 74 PG 504
DB 415 PG 283
DB 535 PG 121
205
RALPH B. POOLE AND JAMES A. POOLE
DB 202 PG 882
207
W.B. POOLE HEIRS
DB 50 PG 58
DB 51 PG 159
DB 66 PG 504
206
BILLY HAWKS AND CLIFFORD HAWKS
DB 179 PG 17
208
GRADY C. CRANFORD
DB 272 PG 855
515
520
SR 1121 PINE SWAMP ROAD
3 WOOD RAIL 3-SBW
48" WW ISBW
MTL GATE
GR PARKING
15" CMP
4-SBW
5-SBW
EXISTING R/W
NO INFO
REBAR
420.76'
S12°14'54"E
1092.77'
S53°51'25"W

-L-

PI Sta 514+21.41
Δ = 59° 37' 56.1" (RT)
D = 8° 00' 00.0"
L = 745.40'
T = 410.44'
R = 716.20'

8/17/99

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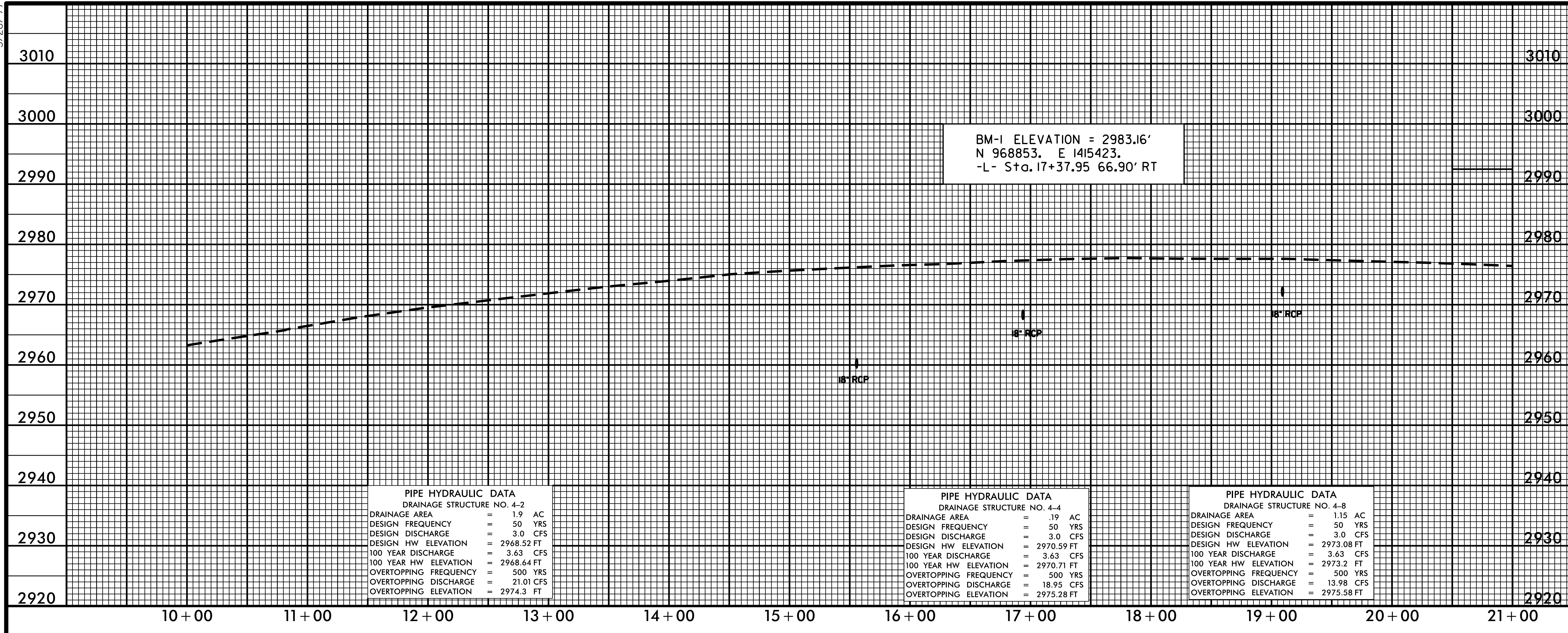
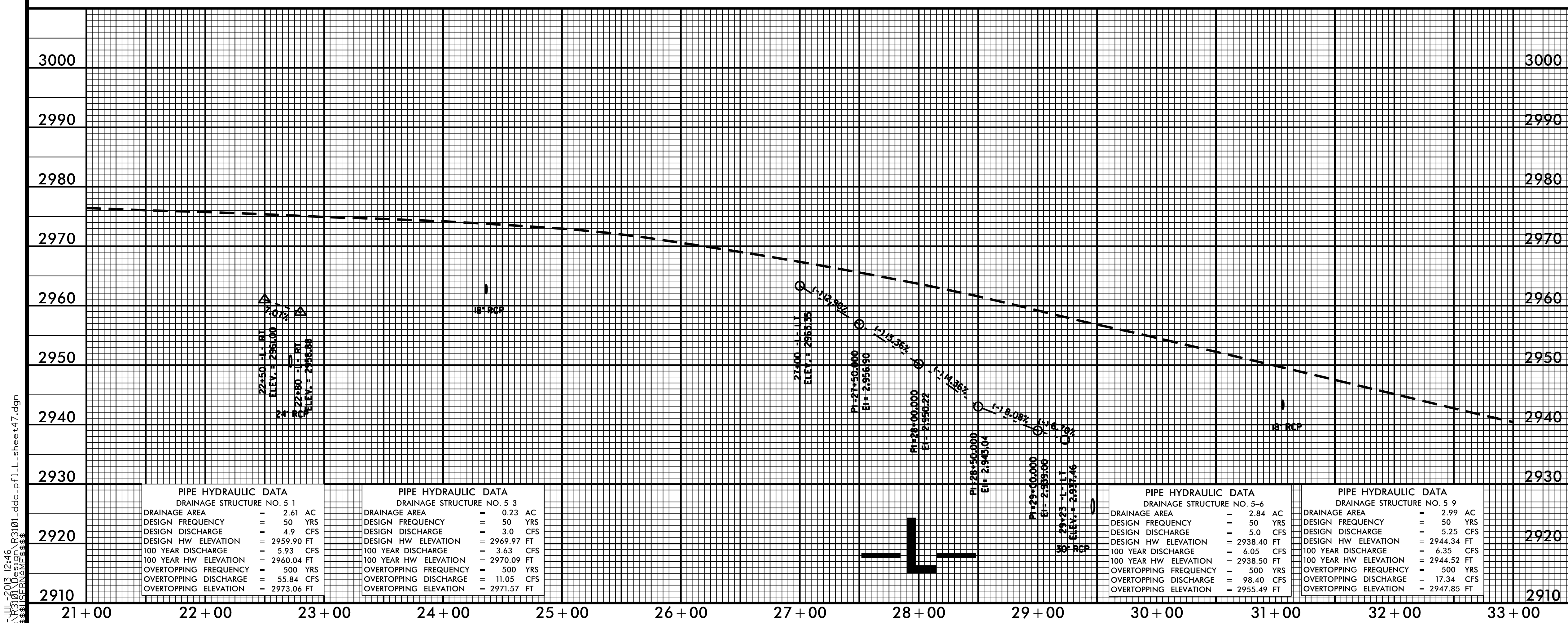
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R3101	47
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM-1 ELEVATION = 2983.16'
N 968853. E 1415423.
-L- Sta. 17+37.95 66.90' RT





PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 4–2

DRAINAGE AREA	=	1.9	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2968.52	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2968.64	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	21.01	CFS
OVERTOPPING ELEVATION	=	2974.3	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 4–4

DRAINAGE AREA	=	.19	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2970.59	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2970.71	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	18.95	CFS
OVERTOPPING ELEVATION	=	2975.28	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 4–8

DRAINAGE AREA	=	1.15	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2973.08	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2973.2	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	13.98	CFS
OVERTOPPING ELEVATION	=	2975.58	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 5–1

DRAINAGE AREA	=	2.61	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.9	CFS
DESIGN HW ELEVATION	=	2959.90	FT
100 YEAR DISCHARGE	=	5.93	CFS
100 YEAR HW ELEVATION	=	2960.04	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	55.84	CFS
OVERTOPPING ELEVATION	=	2973.06	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 5–3

DRAINAGE AREA	=	0.23	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2969.97	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2970.09	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	11.05	CFS
OVERTOPPING ELEVATION	=	2971.57	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 5–6

DRAINAGE AREA	=	2.84	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	5.0	CFS
DESIGN HW ELEVATION	=	2938.40	FT
100 YEAR DISCHARGE	=	6.05	CFS
100 YEAR HW ELEVATION	=	2938.50	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	98.40	CFS
OVERTOPPING ELEVATION	=	2955.49	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 5–9

DRAINAGE AREA	=	2.99	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	5.25	CFS
DESIGN HW ELEVATION	=	2944.34	FT
100 YEAR DISCHARGE	=	6.35	CFS
100 YEAR HW ELEVATION	=	2944.52	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	17.34	CFS
OVERTOPPING ELEVATION	=	2947.85	FT

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PROJECT REFERENCE NO.	SHEET NO.
R3101	48

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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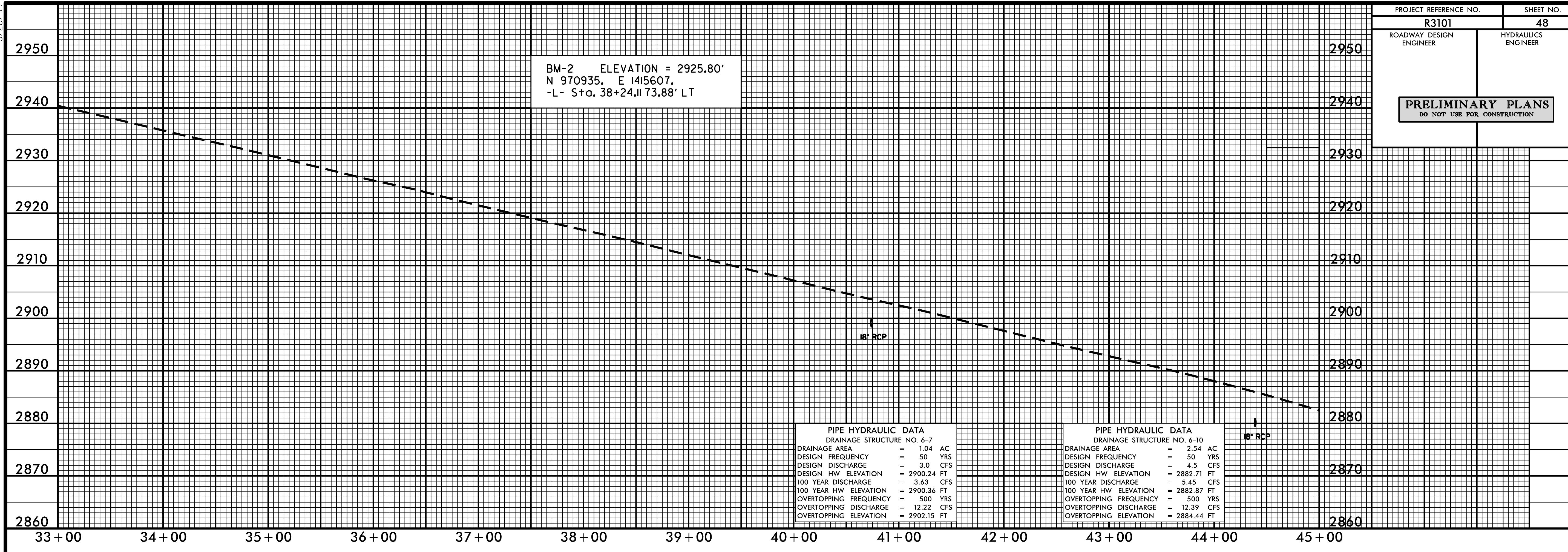
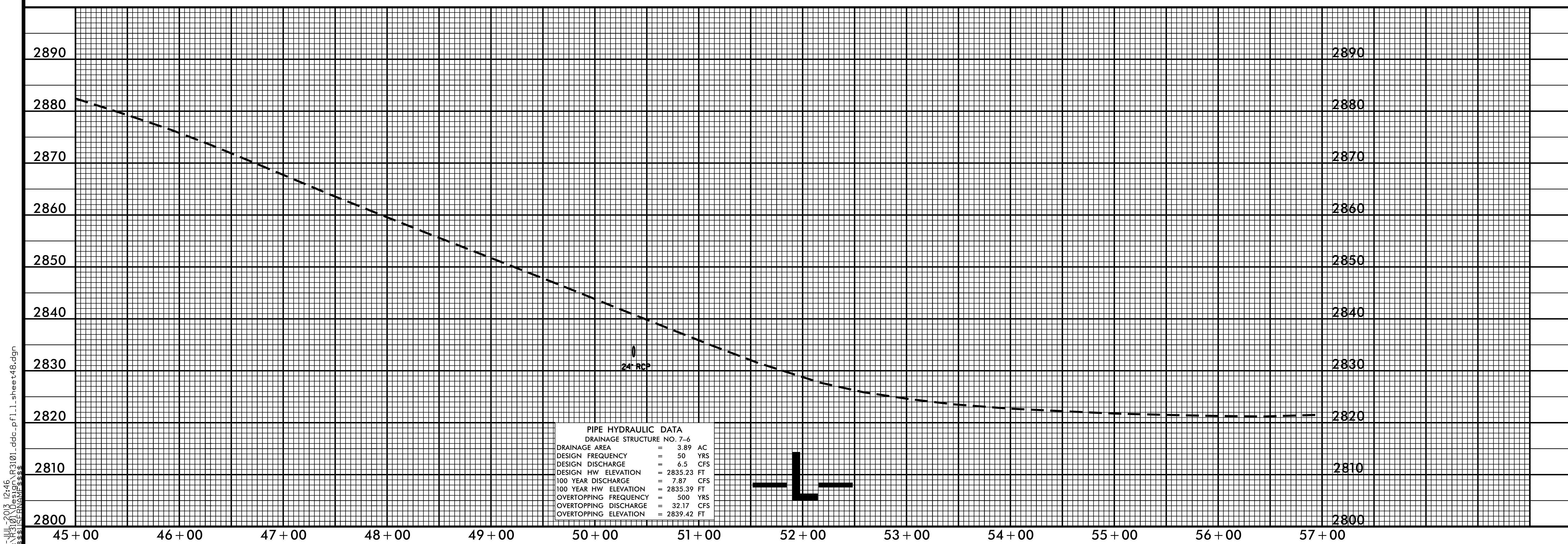


PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 6–7			
DRAINAGE AREA	=	1.04	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2900.24	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2900.36	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	12.22	CFS
OVERTOPPING ELEVATION	=	2902.15	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 6–10			
DRAINAGE AREA	=	2.54	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.5	CFS
DESIGN HW ELEVATION	=	2882.71	FT
100 YEAR DISCHARGE	=	5.45	CFS
100 YEAR HW ELEVATION	=	2882.87	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	12.39	CFS
OVERTOPPING ELEVATION	=	2884.44	FT



PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 7–6			
DRAINAGE AREA	=	3.89	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	6.5	CFS
DESIGN HW ELEVATION	=	2835.23	FT
100 YEAR DISCHARGE	=	7.87	CFS
100 YEAR HW ELEVATION	=	2835.39	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	32.17	CFS
OVERTOPPING ELEVATION	=	2839.42	FT

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PROJECT REFERENCE NO.	SHEET NO.
R3101	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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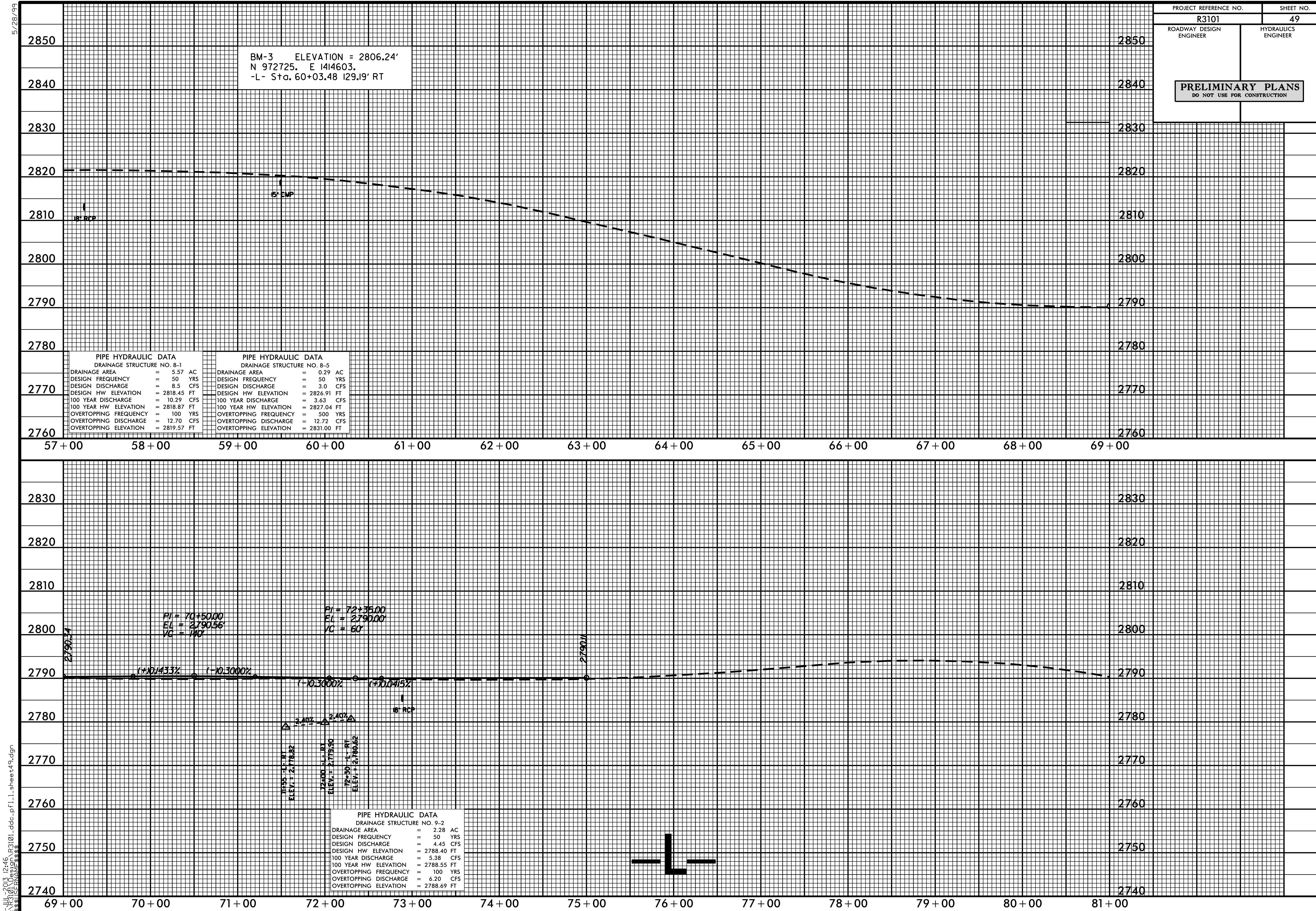

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 8-1

DRAINAGE AREA	=	5.57	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	8.5	CFS
DESIGN HW ELEVATION	=	2818.45	FT
100 YEAR DISCHARGE	=	10.29	CFS
100 YEAR HW ELEVATION	=	2818.87	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	12.70	CFS
OVERTOPPING ELEVATION	=	2819.57	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 8-5

DRAINAGE AREA	=	0.29	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2826.91	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2827.04	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	12.72	CFS
OVERTOPPING ELEVATION	=	2831.00	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 9-2

DRAINAGE AREA	=	2.28	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.45	CFS
DESIGN HW ELEVATION	=	2788.40	FT
100 YEAR DISCHARGE	=	5.38	CFS
100 YEAR HW ELEVATION	=	2788.55	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	6.20	CFS
OVERTOPPING ELEVATION	=	2788.69	FT

PROJECT REFERENCE NO.	SHEET NO.
R3101	50
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM-4 ELEVATION = 2815.78'
N 973882. E 1412847.
-L- Sta. 81+02.60 99.53' RT

24" RCP

2.28%

2.04%

0.40%

2.38%

24" RCP

18" RCP

B4:50 -L- RT
ELEV. = 2775.61

B5:00 -L- RT
ELEV. = 2772.55

B5:50 -L- RT
ELEV. = 2771.51

B6:00 -L- RT
ELEV. = 2771.39

B6:50 -L- RT
ELEV. = 2772.50

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 10-3

DRAINAGE AREA	= 6.07	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 9.0	CFS
DESIGN HW ELEVATION	= 2782.65	FT
100 YEAR DISCHARGE	= 10.89	CFS
100 YEAR HW ELEVATION	= 2782.85	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 20.15	CFS
OVERTOPPING ELEVATION	= 2874.02	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 10-4

DRAINAGE AREA	= 2.15	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 4.2	CFS
DESIGN HW ELEVATION	= 2771.99	FT
100 YEAR DISCHARGE	= 5.08	CFS
100 YEAR HW ELEVATION	= 2772.14	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 9.86	CFS
OVERTOPPING ELEVATION	= 2773.06	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 10-5

DRAINAGE AREA	= 6.78	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 9.75	CFS
DESIGN HW ELEVATION	= 2774.58	FT
100 YEAR DISCHARGE	= 11.80	CFS
100 YEAR HW ELEVATION	= 2774.8	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 25.08	CFS
OVERTOPPING ELEVATION	= 2776.76	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 10-7

DRAINAGE AREA	= 1.19	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 3.0	CFS
DESIGN HW ELEVATION	= 2771.22	FT
100 YEAR DISCHARGE	= 3.63	CFS
100 YEAR HW ELEVATION	= 2771.34	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 11.80	CFS
OVERTOPPING ELEVATION	= 2773.03	FT

0.08%

0.08%

0.08%

54" CORRUGATED

W2:00 -L- RT
ELEV. = 2758.47

W2:50 -L- RT
ELEV. = 2758.45

W3:00 -L- RT
ELEV. = 2758.39

W3:50 -L- RT
ELEV. = 2758.35

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 11-3

DRAINAGE AREA	= 118	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 99	CFS
DESIGN HW ELEVATION	= 2754.72	FT
100 YEAR DISCHARGE	= 119.79	CFS
100 YEAR HW ELEVATION	= 2755.22	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 215.26	CFS
OVERTOPPING ELEVATION	= 2757.63	FT

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PROJECT REFERENCE NO.	SHEET NO.
R3101	51

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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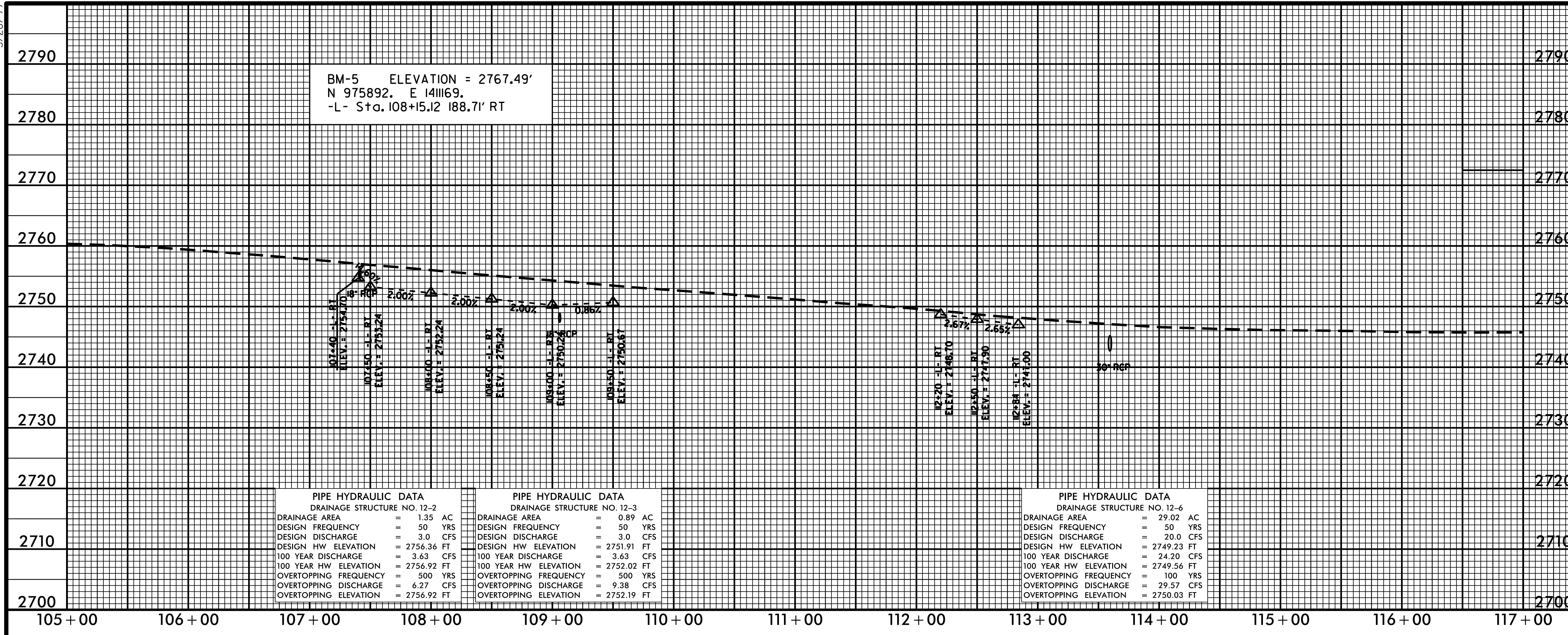
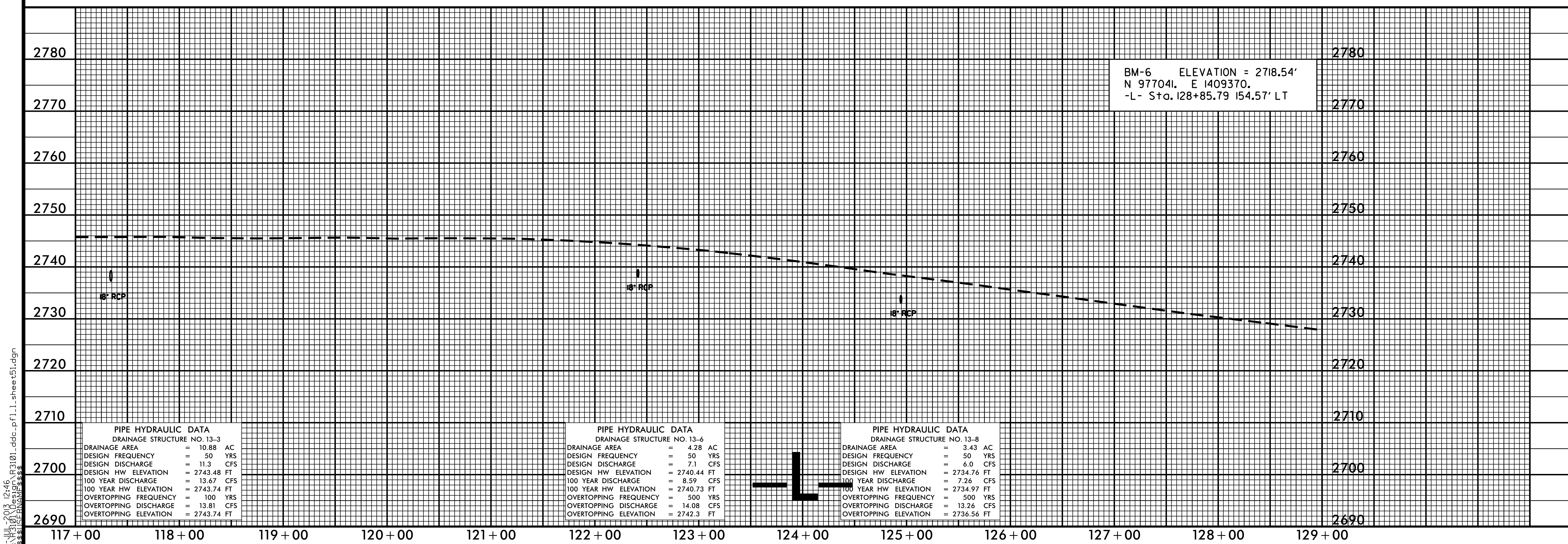


BM-5 ELEVATION = 2767.49'
N 975892. E 1411169.
-L- Sta. 108+15.12 188.71' RT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 12–2			
DRAINAGE AREA	=	1.35	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2756.36	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2756.92	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	6.27	CFS
OVERTOPPING ELEVATION	=	2756.92	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 12–3			
DRAINAGE AREA	=	0.89	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2751.91	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2752.02	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	9.38	CFS
OVERTOPPING ELEVATION	=	2752.19	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 12–6			
DRAINAGE AREA	=	29.02	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	20.0	CFS
DESIGN HW ELEVATION	=	2749.23	FT
100 YEAR DISCHARGE	=	24.20	CFS
100 YEAR HW ELEVATION	=	2749.56	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	29.57	CFS
OVERTOPPING ELEVATION	=	2750.03	FT



BM-6 ELEVATION = 2718.54'
N 977041. E 1409370.
-L- Sta. 128+85.79 154.57' LT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 13–3			
DRAINAGE AREA	=	10.88	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	11.3	CFS
DESIGN HW ELEVATION	=	2743.48	FT
100 YEAR DISCHARGE	=	13.67	CFS
100 YEAR HW ELEVATION	=	2743.74	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	13.81	CFS
OVERTOPPING ELEVATION	=	2743.74	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 13–6			
DRAINAGE AREA	=	4.28	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.1	CFS
DESIGN HW ELEVATION	=	2740.44	FT
100 YEAR DISCHARGE	=	8.59	CFS
100 YEAR HW ELEVATION	=	2740.73	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	14.08	CFS
OVERTOPPING ELEVATION	=	2742.3	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 13–8			
DRAINAGE AREA	=	3.43	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	6.0	CFS
DESIGN HW ELEVATION	=	2734.76	FT
100 YEAR DISCHARGE	=	7.26	CFS
100 YEAR HW ELEVATION	=	2734.97	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	13.26	CFS
OVERTOPPING ELEVATION	=	2736.56	FT

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PROJECT REFERENCE NO.	SHEET NO.
R3101	52

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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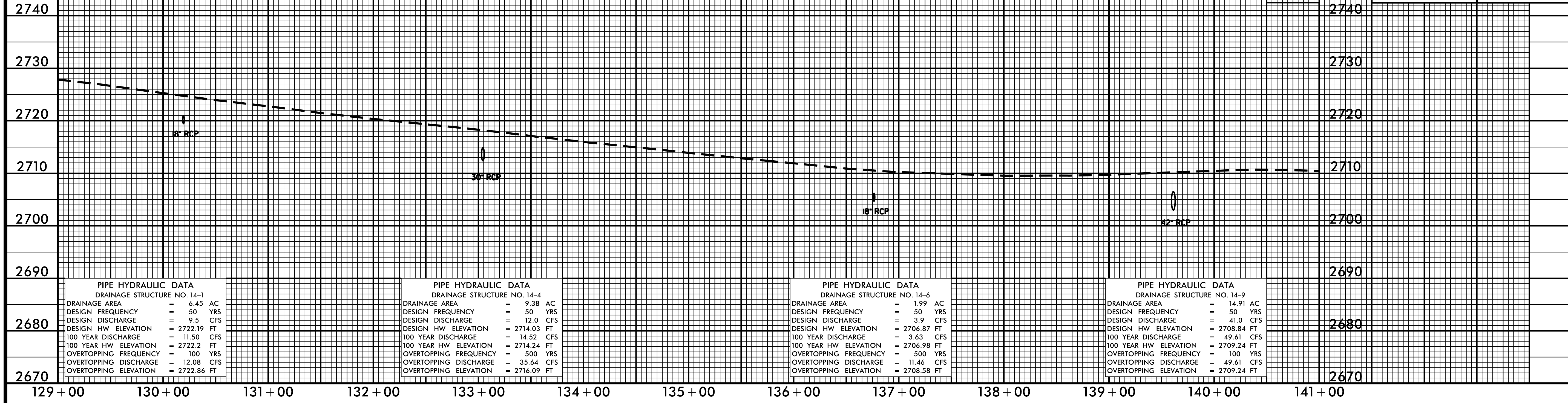


PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 14–1

DRAINAGE AREA	=	6.45	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	9.5	CFS
DESIGN HW ELEVATION	=	2722.19	FT
100 YEAR DISCHARGE	=	11.50	CFS
100 YEAR HW ELEVATION	=	2722.2	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	12.08	CFS
OVERTOPPING ELEVATION	=	2722.86	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 14–4

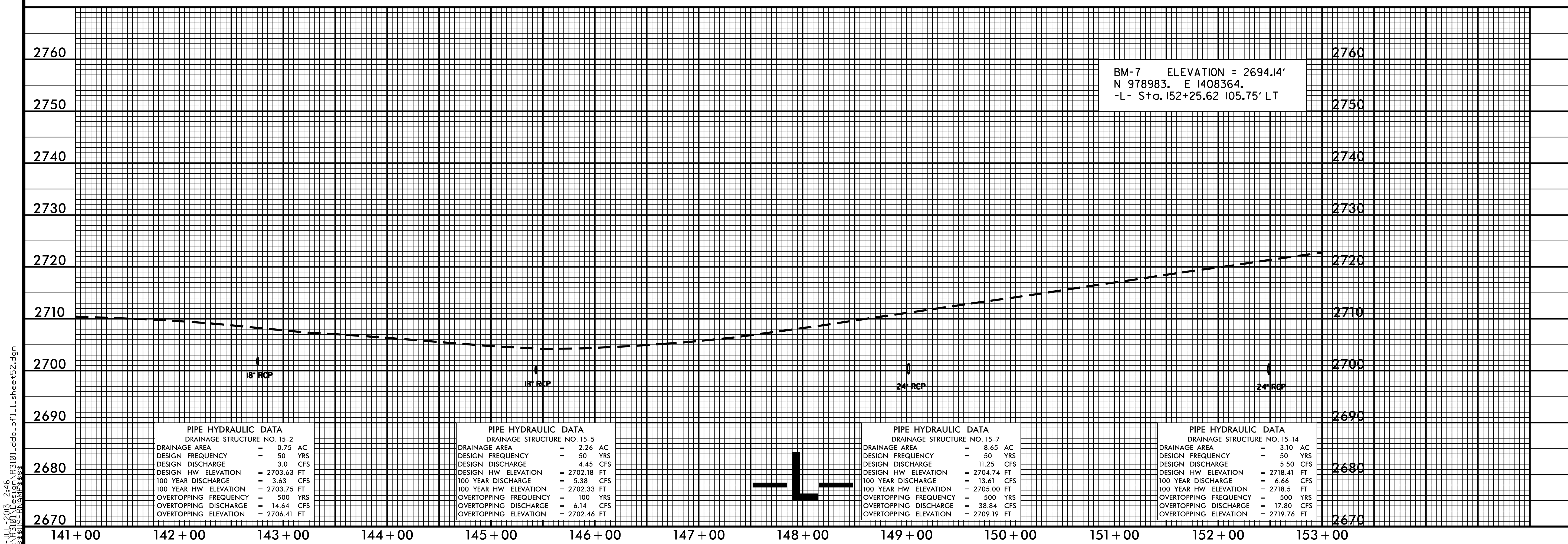
DRAINAGE AREA	=	9.38	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	12.0	CFS
DESIGN HW ELEVATION	=	2714.03	FT
100 YEAR DISCHARGE	=	14.52	CFS
100 YEAR HW ELEVATION	=	2714.24	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	35.64	CFS
OVERTOPPING ELEVATION	=	2716.09	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 14–6

DRAINAGE AREA	=	1.99	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.9	CFS
DESIGN HW ELEVATION	=	2706.87	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2706.98	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	11.46	CFS
OVERTOPPING ELEVATION	=	2708.58	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 14–9

DRAINAGE AREA	=	14.91	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	41.0	CFS
DESIGN HW ELEVATION	=	2708.84	FT
100 YEAR DISCHARGE	=	49.61	CFS
100 YEAR HW ELEVATION	=	2709.24	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	49.61	CFS
OVERTOPPING ELEVATION	=	2709.24	FT



BM-7 ELEVATION = 2694.14'
N 978983. E 1408364.
-L- Sta. 152+25.62 105.75' LT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 15–2

DRAINAGE AREA	=	0.75	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2703.63	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2703.75	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	14.64	CFS
OVERTOPPING ELEVATION	=	2706.41	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 15–5

DRAINAGE AREA	=	2.26	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.45	CFS
DESIGN HW ELEVATION	=	2702.18	FT
100 YEAR DISCHARGE	=	5.38	CFS
100 YEAR HW ELEVATION	=	2702.33	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	6.14	CFS
OVERTOPPING ELEVATION	=	2702.46	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 15–7

DRAINAGE AREA	=	8.65	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	11.25	CFS
DESIGN HW ELEVATION	=	2704.74	FT
100 YEAR DISCHARGE	=	13.61	CFS
100 YEAR HW ELEVATION	=	2705.00	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	38.84	CFS
OVERTOPPING ELEVATION	=	2709.19	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 15–14

DRAINAGE AREA	=	3.10	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	5.50	CFS
DESIGN HW ELEVATION	=	2718.41	FT
100 YEAR DISCHARGE	=	6.66	CFS
100 YEAR HW ELEVATION	=	2718.5	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	17.80	CFS
OVERTOPPING ELEVATION	=	2719.76	FT

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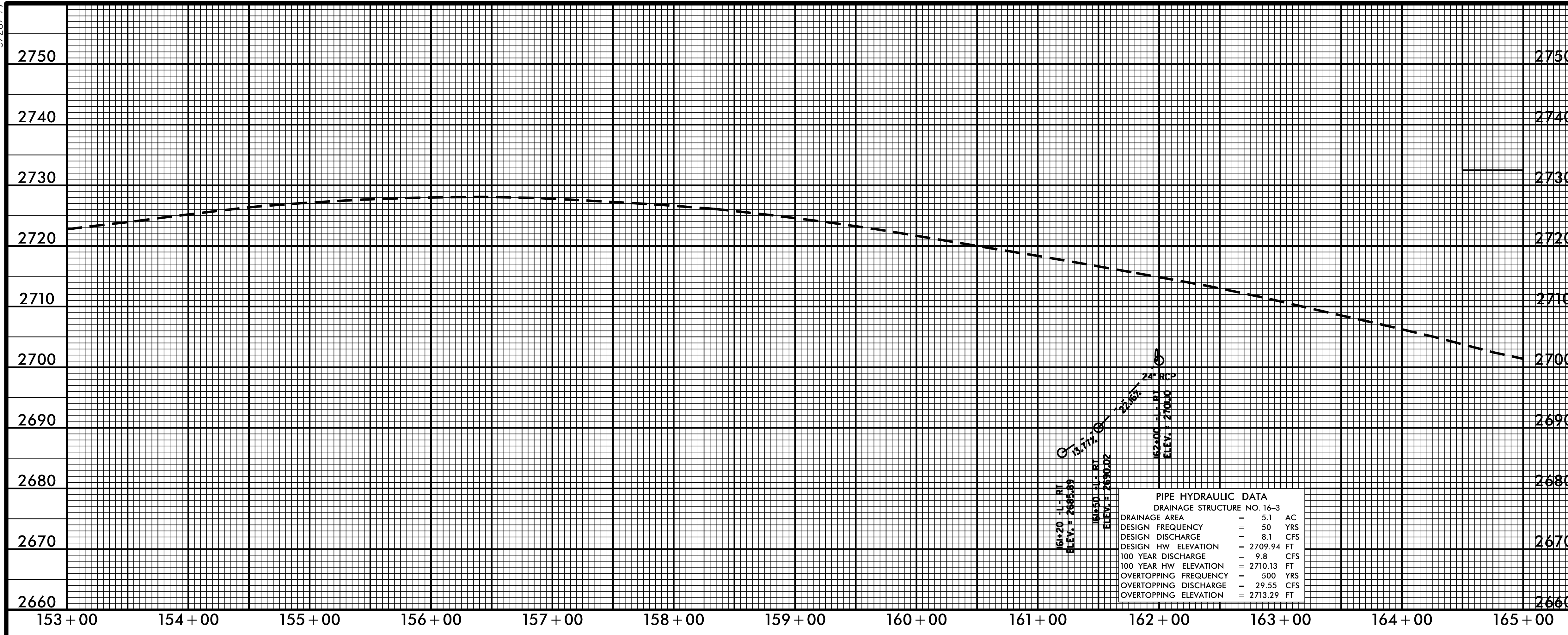
PROJECT REFERENCE NO.	SHEET NO.
R3101	53

ROADWAY DESIGN ENGINEER

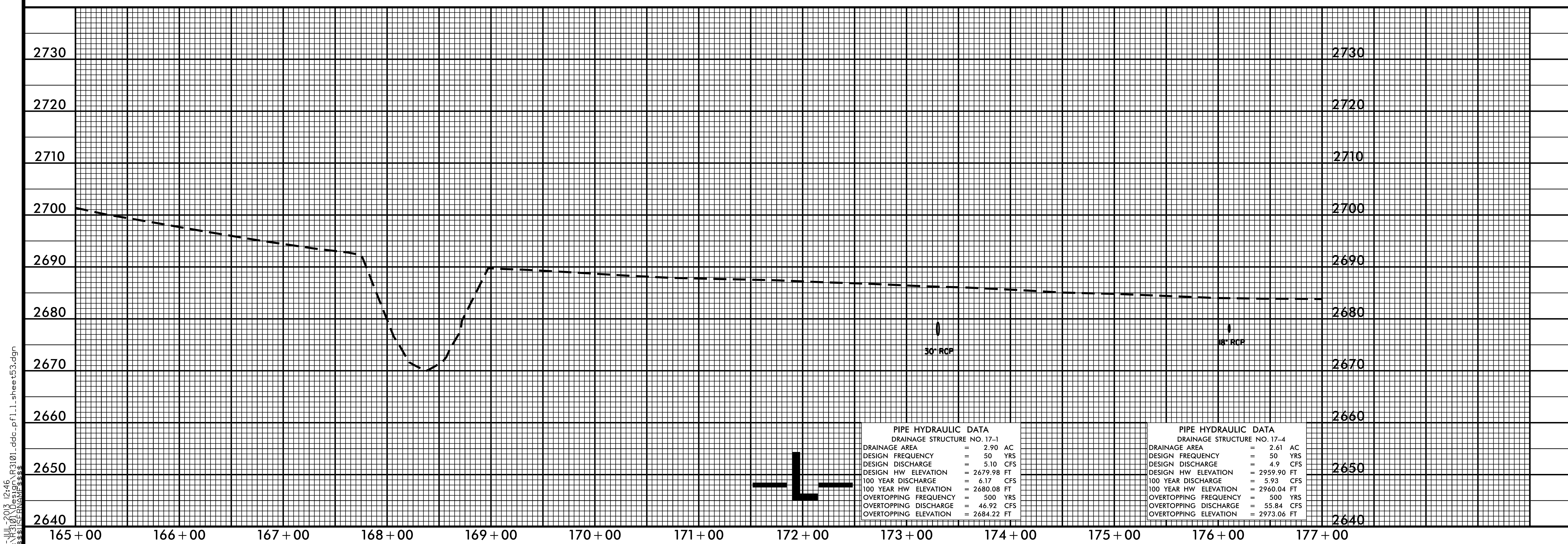
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 16–3

DRAINAGE AREA	=	5.1	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	8.1	CFS
DESIGN HW ELEVATION	=	2709.94	FT
100 YEAR DISCHARGE	=	9.8	CFS
100 YEAR HW ELEVATION	=	2710.13	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	29.55	CFS
OVERTOPPING ELEVATION	=	2713.29	FT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 17–1

DRAINAGE AREA	=	2.90	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	5.10	CFS
DESIGN HW ELEVATION	=	2679.98	FT
100 YEAR DISCHARGE	=	6.17	CFS
100 YEAR HW ELEVATION	=	2680.08	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	46.92	CFS
OVERTOPPING ELEVATION	=	2684.22	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 17–4

DRAINAGE AREA	=	2.61	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.9	CFS
DESIGN HW ELEVATION	=	2959.90	FT
100 YEAR DISCHARGE	=	5.93	CFS
100 YEAR HW ELEVATION	=	2960.04	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	55.84	CFS
OVERTOPPING ELEVATION	=	2973.06	FT

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PROJECT REFERENCE NO.	SHEET NO.
R3101	54

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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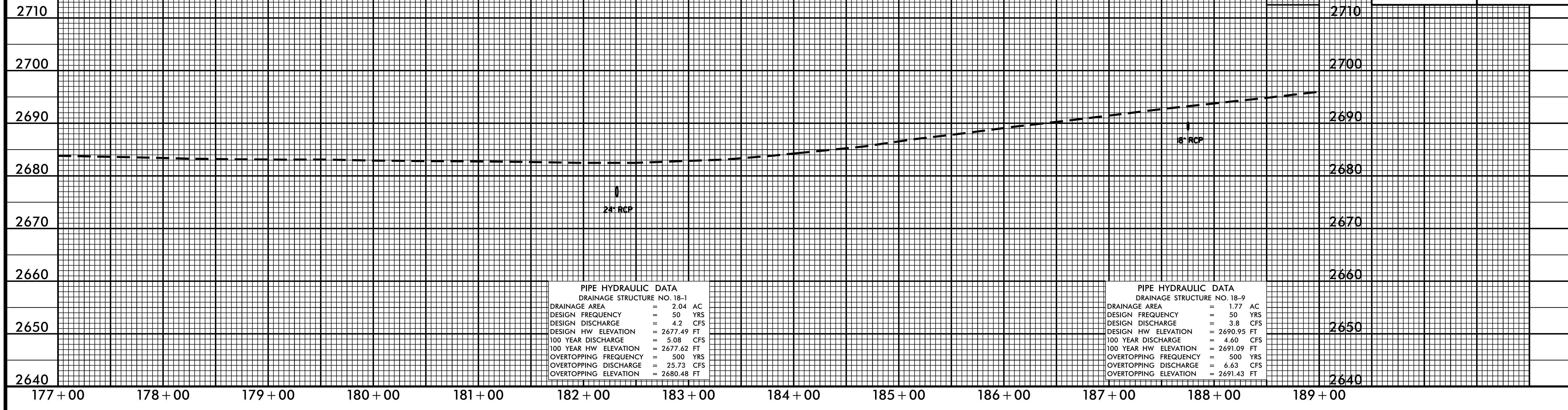
BM-8 ELEVATION = 2675.95'
N 981957. E 1408335.
-L- Sta. 181+54.36 133.53' RT

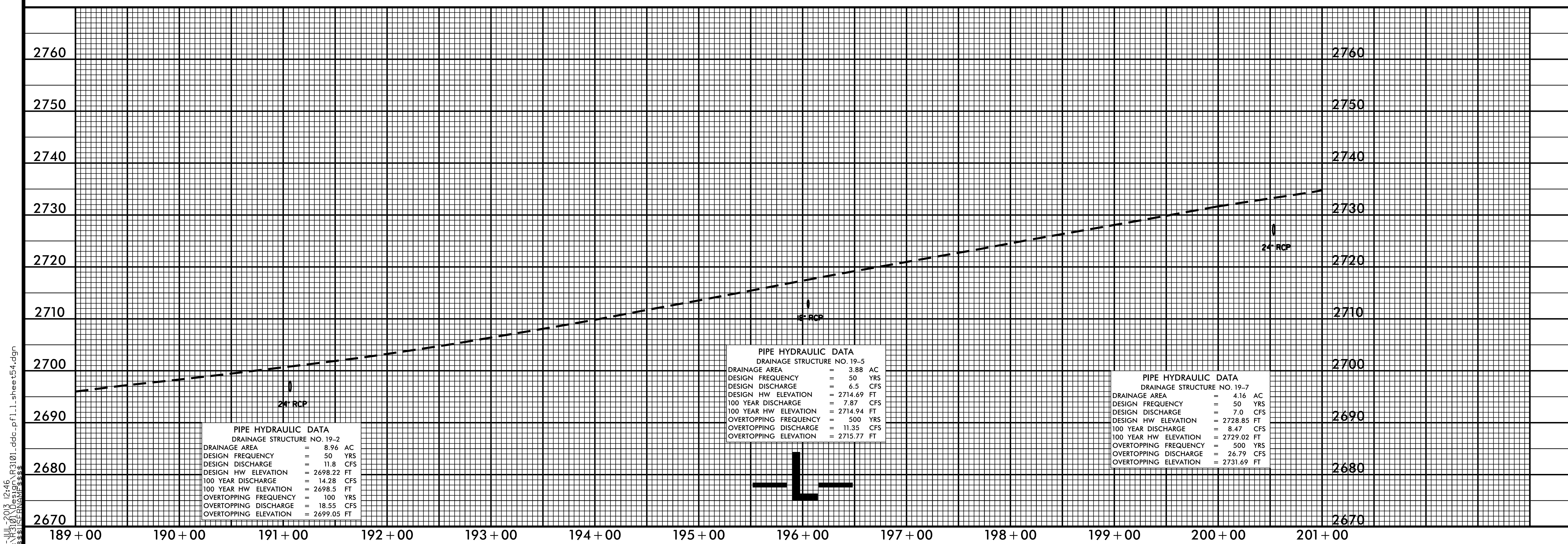


PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 18–1

DRAINAGE AREA	=	2.04	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.2	CFS
DESIGN HW ELEVATION	=	2677.49	FT
100 YEAR DISCHARGE	=	5.08	CFS
100 YEAR HW ELEVATION	=	2677.62	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	25.73	CFS
OVERTOPPING ELEVATION	=	2680.48	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 18–9

DRAINAGE AREA	=	1.77	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.8	CFS
DESIGN HW ELEVATION	=	2690.95	FT
100 YEAR DISCHARGE	=	4.60	CFS
100 YEAR HW ELEVATION	=	2691.09	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	6.63	CFS
OVERTOPPING ELEVATION	=	2691.43	FT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 19–2

DRAINAGE AREA	=	8.96	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	11.8	CFS
DESIGN HW ELEVATION	=	2698.22	FT
100 YEAR DISCHARGE	=	14.28	CFS
100 YEAR HW ELEVATION	=	2698.5	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	18.55	CFS
OVERTOPPING ELEVATION	=	2699.05	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 19–5

DRAINAGE AREA	=	3.88	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	6.5	CFS
DESIGN HW ELEVATION	=	2714.69	FT
100 YEAR DISCHARGE	=	7.87	CFS
100 YEAR HW ELEVATION	=	2714.94	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	11.35	CFS
OVERTOPPING ELEVATION	=	2715.77	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 19–7

DRAINAGE AREA	=	4.16	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.0	CFS
DESIGN HW ELEVATION	=	2728.85	FT
100 YEAR DISCHARGE	=	8.47	CFS
100 YEAR HW ELEVATION	=	2729.02	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	26.79	CFS
OVERTOPPING ELEVATION	=	2731.69	FT

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PROJECT REFERENCE NO.	SHEET NO.
R3101	55

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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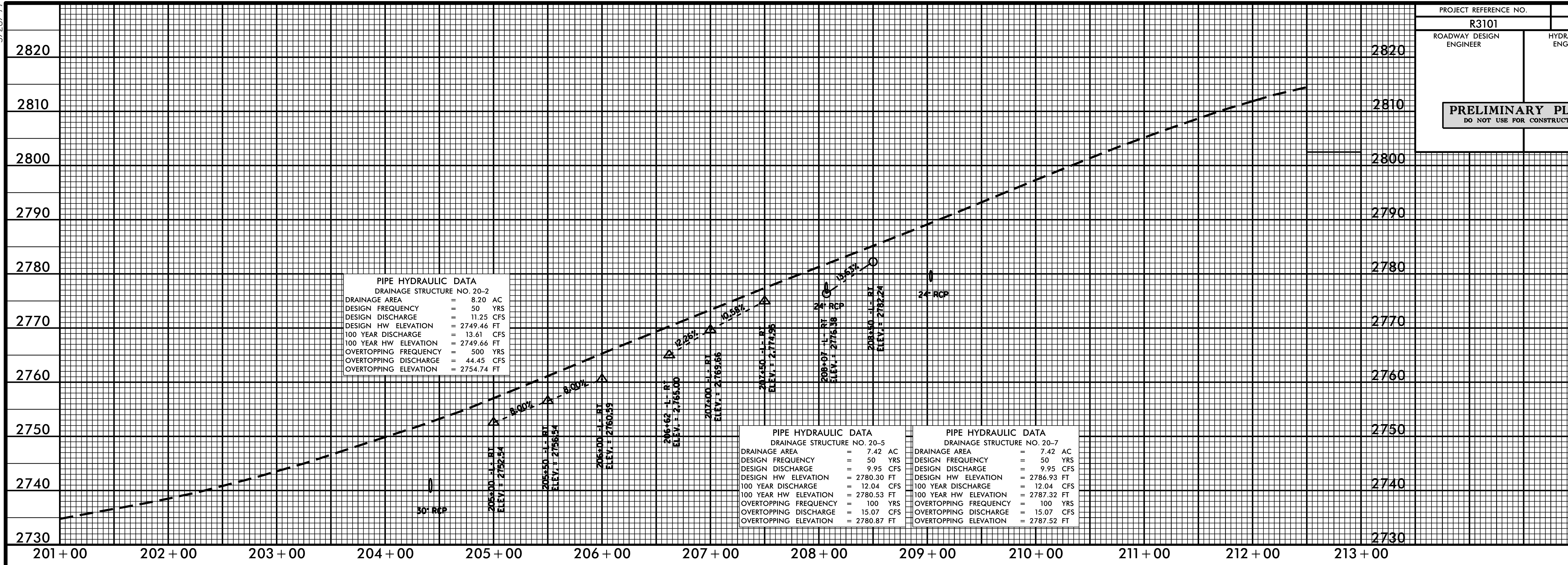


PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 20–2

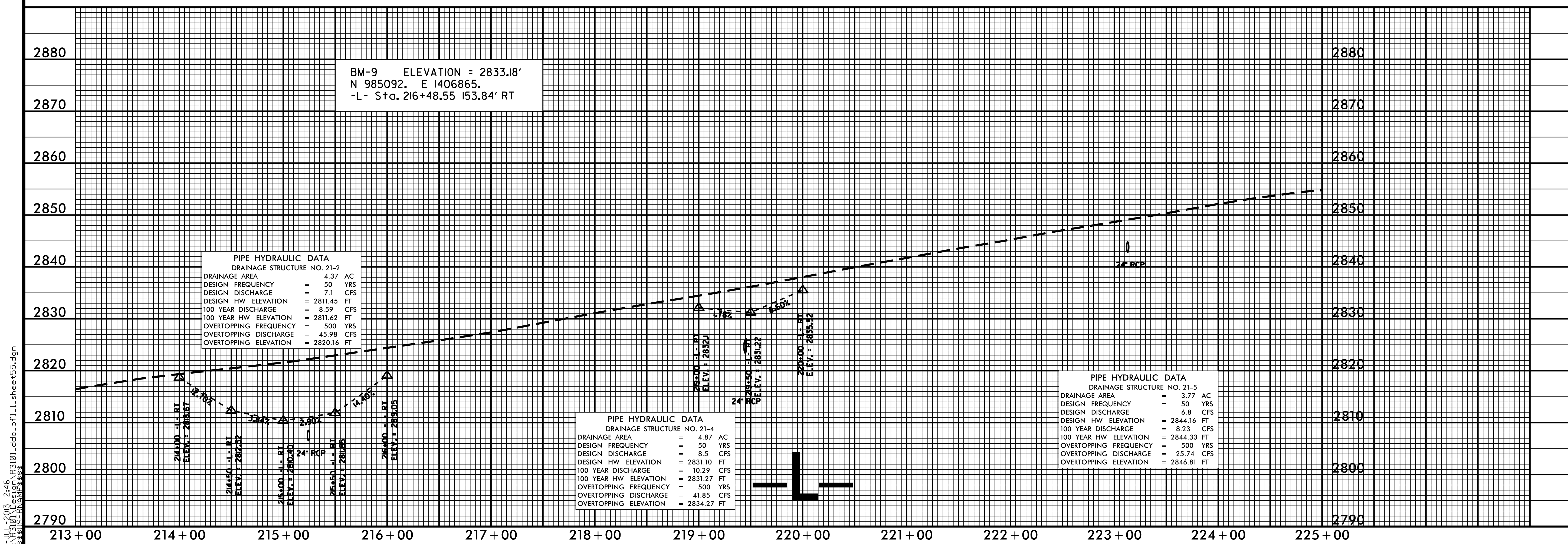
DRAINAGE AREA	=	8.20	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	11.25	CFS
DESIGN HW ELEVATION	=	2749.46	FT
100 YEAR DISCHARGE	=	13.61	CFS
100 YEAR HW ELEVATION	=	2749.66	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	44.45	CFS
OVERTOPPING ELEVATION	=	2754.74	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 20–5

DRAINAGE AREA	=	7.42	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	9.95	CFS
DESIGN HW ELEVATION	=	2780.30	FT
100 YEAR DISCHARGE	=	12.04	CFS
100 YEAR HW ELEVATION	=	2780.53	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	15.07	CFS
OVERTOPPING ELEVATION	=	2780.87	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 20–7

DRAINAGE AREA	=	7.42	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	9.95	CFS
DESIGN HW ELEVATION	=	2786.93	FT
100 YEAR DISCHARGE	=	12.04	CFS
100 YEAR HW ELEVATION	=	2787.32	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	15.07	CFS
OVERTOPPING ELEVATION	=	2787.52	FT



BM-9 ELEVATION = 2833.18'
N 985092. E 1406865.
-L- Sta. 216+48.55 153.84' RT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 21–2

DRAINAGE AREA	=	4.37	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.1	CFS
DESIGN HW ELEVATION	=	2811.45	FT
100 YEAR DISCHARGE	=	8.59	CFS
100 YEAR HW ELEVATION	=	2811.62	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	45.98	CFS
OVERTOPPING ELEVATION	=	2820.16	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 21–4

DRAINAGE AREA	=	4.87	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	8.5	CFS
DESIGN HW ELEVATION	=	2831.10	FT
100 YEAR DISCHARGE	=	10.29	CFS
100 YEAR HW ELEVATION	=	2831.27	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	41.85	CFS
OVERTOPPING ELEVATION	=	2834.27	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 21–5

DRAINAGE AREA	=	3.77	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	6.8	CFS
DESIGN HW ELEVATION	=	2844.16	FT
100 YEAR DISCHARGE	=	8.23	CFS
100 YEAR HW ELEVATION	=	2844.33	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	25.74	CFS
OVERTOPPING ELEVATION	=	2846.81	FT

PROJECT REFERENCE NO.	SHEET NO.
R3101	56

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
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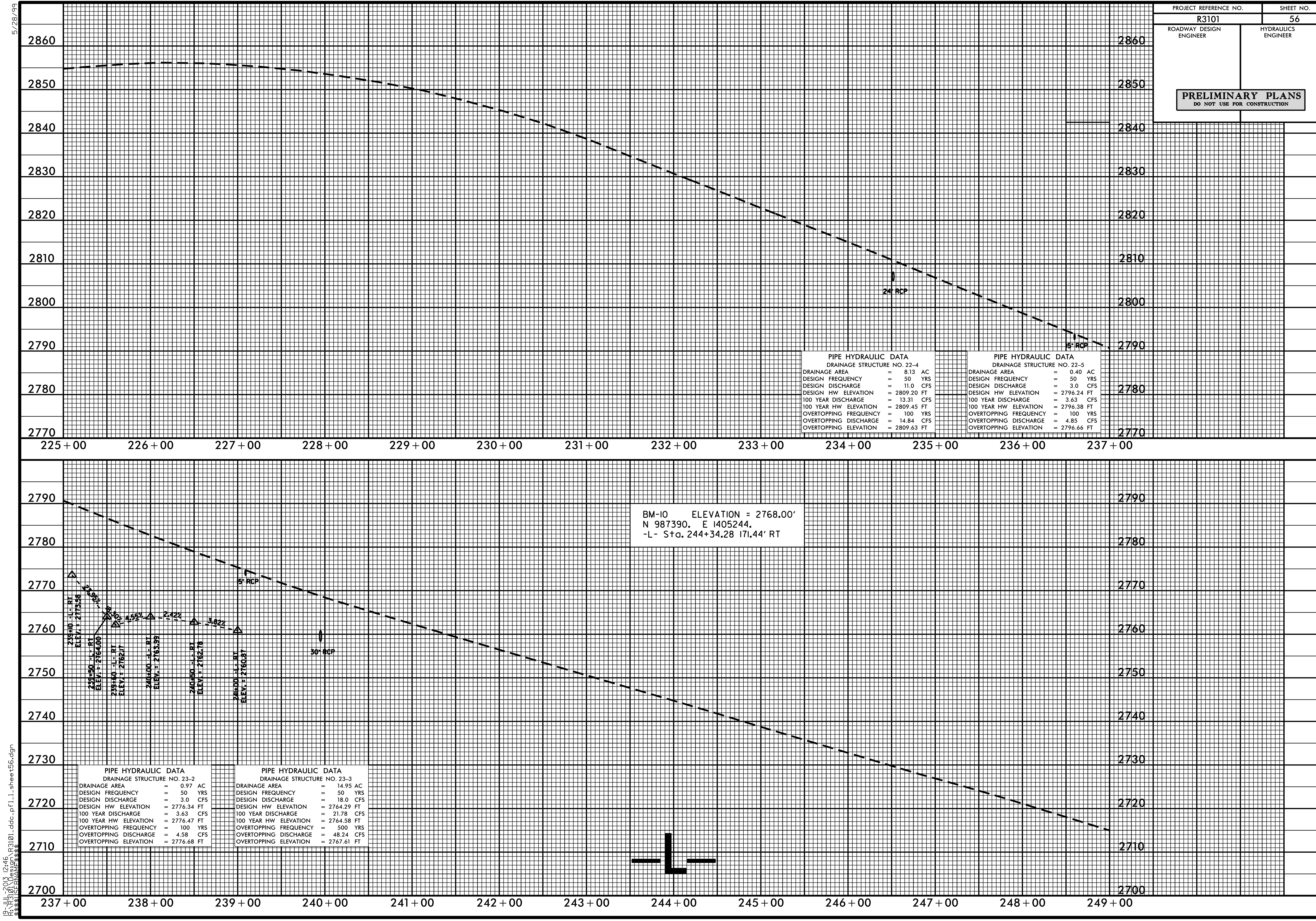

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 22-4

DRAINAGE AREA	=	8.13	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	11.0	CFS
DESIGN HW ELEVATION	=	2809.20	FT
100 YEAR DISCHARGE	=	13.31	CFS
100 YEAR HW ELEVATION	=	2809.45	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	14.84	CFS
OVERTOPPING ELEVATION	=	2809.63	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 22-5

DRAINAGE AREA	=	0.40	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2796.24	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2796.38	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	4.85	CFS
OVERTOPPING ELEVATION	=	2796.66	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 23-2

DRAINAGE AREA	=	0.97	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2776.34	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2776.47	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	4.58	CFS
OVERTOPPING ELEVATION	=	2776.68	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 23-3

DRAINAGE AREA	=	14.95	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	18.0	CFS
DESIGN HW ELEVATION	=	2764.29	FT
100 YEAR DISCHARGE	=	21.78	CFS
100 YEAR HW ELEVATION	=	2764.58	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	48.24	CFS
OVERTOPPING ELEVATION	=	2767.61	FT

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PROJECT REFERENCE NO.	SHEET NO.
R3101	57

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
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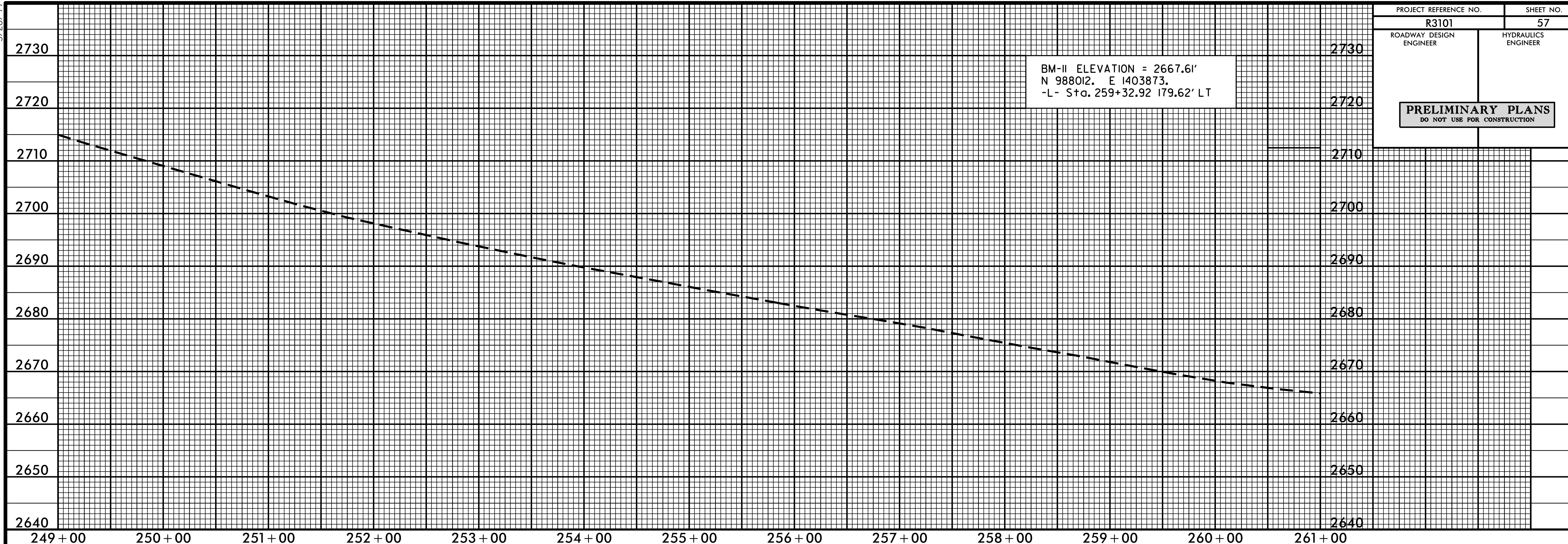
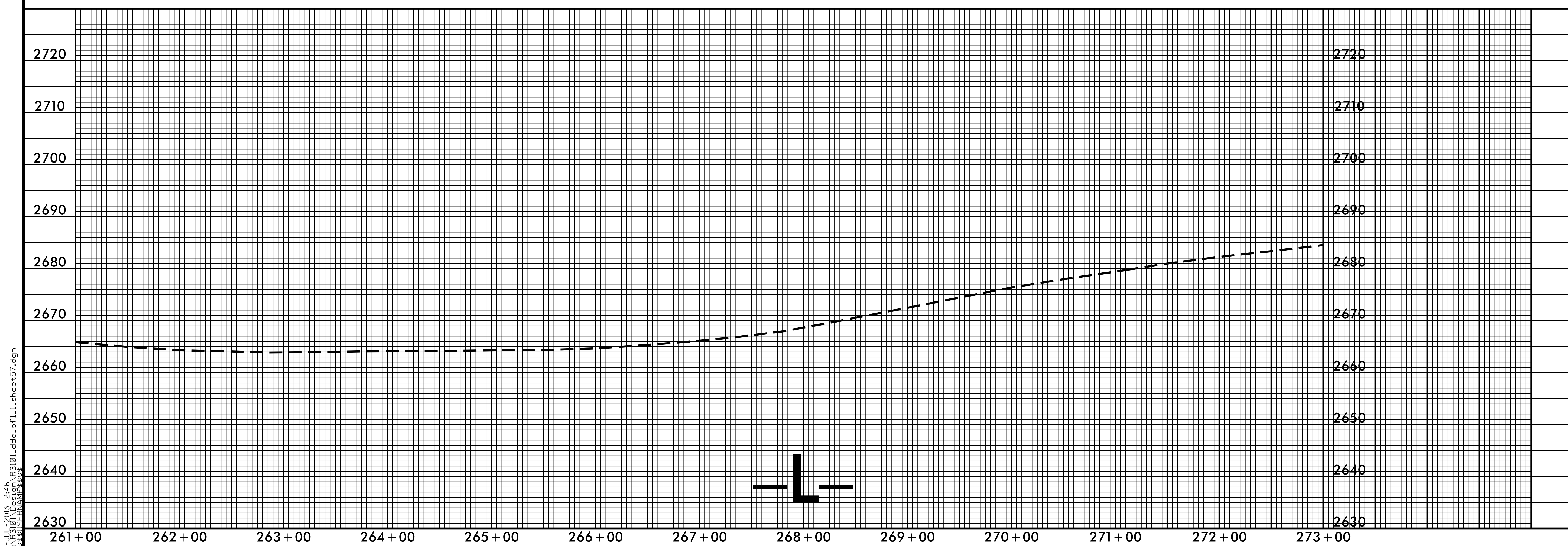
BM-11 ELEVATION = 2667.61′
N 988012. E 1403873.
-L- Sta. 259+32.92 179.62′ LT





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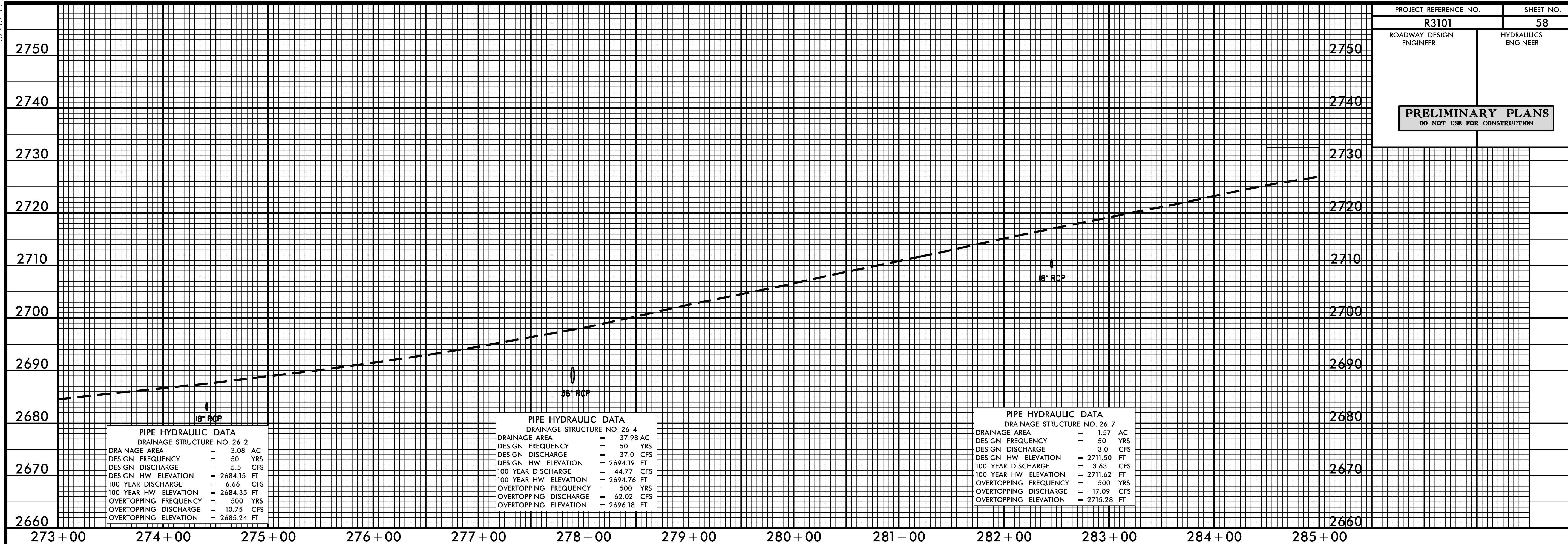
PROJECT REFERENCE NO.	SHEET NO.
R3101	58
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 26–2

DRAINAGE AREA	=	3.08	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	5.5	CFS
DESIGN HW ELEVATION	=	2684.15	FT
100 YEAR DISCHARGE	=	6.66	CFS
100 YEAR HW ELEVATION	=	2684.35	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	10.75	CFS
OVERTOPPING ELEVATION	=	2685.24	FT

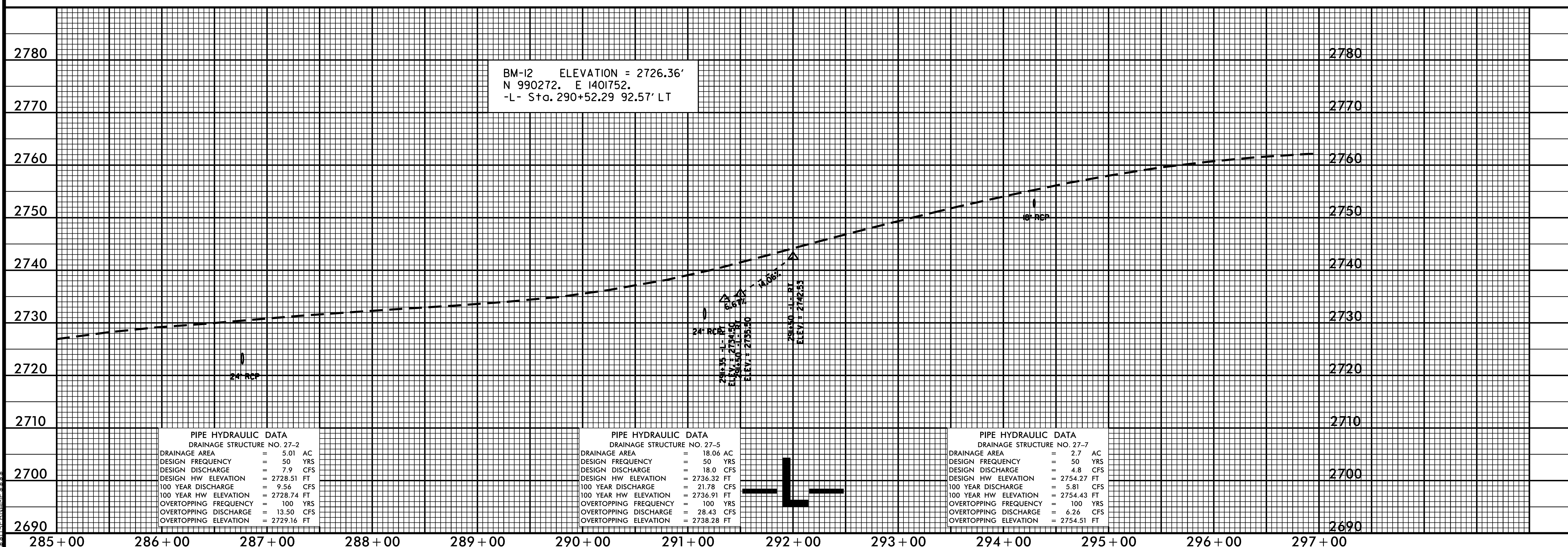
PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 26–4

DRAINAGE AREA	=	37.98	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	37.0	CFS
DESIGN HW ELEVATION	=	2694.19	FT
100 YEAR DISCHARGE	=	44.77	CFS
100 YEAR HW ELEVATION	=	2694.76	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	62.02	CFS
OVERTOPPING ELEVATION	=	2696.18	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 26–7

DRAINAGE AREA	=	1.57	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2711.50	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2711.62	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	17.09	CFS
OVERTOPPING ELEVATION	=	2715.28	FT

BM-12 ELEVATION = 2726.36′
N 990272. E 1401752.
-L- Sta. 290+52.29 92.57′ LT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 27–2

DRAINAGE AREA	=	5.01	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.9	CFS
DESIGN HW ELEVATION	=	2728.51	FT
100 YEAR DISCHARGE	=	9.56	CFS
100 YEAR HW ELEVATION	=	2728.74	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	13.50	CFS
OVERTOPPING ELEVATION	=	2729.16	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 27–5

DRAINAGE AREA	=	18.06	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	18.0	CFS
DESIGN HW ELEVATION	=	2736.32	FT
100 YEAR DISCHARGE	=	21.78	CFS
100 YEAR HW ELEVATION	=	2736.91	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	28.43	CFS
OVERTOPPING ELEVATION	=	2738.28	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 27–7

DRAINAGE AREA	=	2.7	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.8	CFS
DESIGN HW ELEVATION	=	2754.27	FT
100 YEAR DISCHARGE	=	5.81	CFS
100 YEAR HW ELEVATION	=	2754.43	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	6.26	CFS
OVERTOPPING ELEVATION	=	2754.51	FT

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PROJECT REFERENCE NO.	SHEET NO.
R3101	59

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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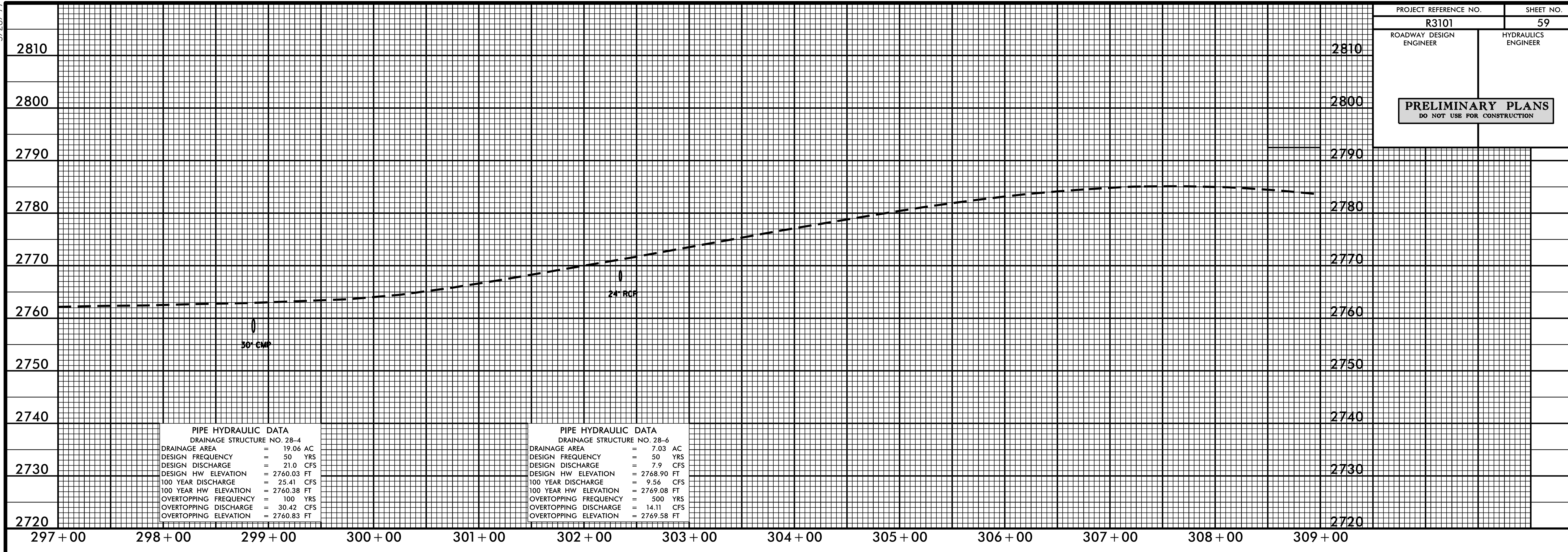
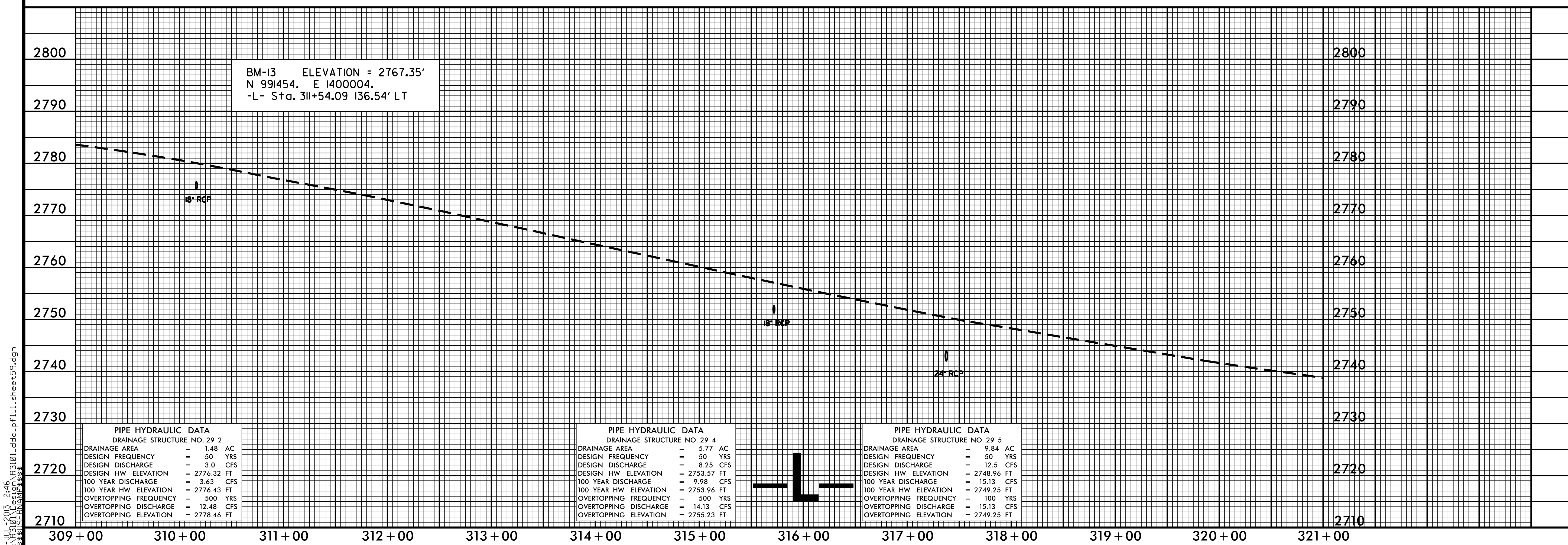


PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 28–4

DRAINAGE AREA	=	19.06	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	21.0	CFS
DESIGN HW ELEVATION	=	2760.03	FT
100 YEAR DISCHARGE	=	25.41	CFS
100 YEAR HW ELEVATION	=	2760.38	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	30.42	CFS
OVERTOPPING ELEVATION	=	2760.83	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 28–6

DRAINAGE AREA	=	7.03	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.9	CFS
DESIGN HW ELEVATION	=	2768.90	FT
100 YEAR DISCHARGE	=	9.56	CFS
100 YEAR HW ELEVATION	=	2769.08	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	14.11	CFS
OVERTOPPING ELEVATION	=	2769.58	FT



BM-13 ELEVATION = 2767.35'
N 991454. E 1400004.
-L- Sta. 311+54.09 136.54' LT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 29–2

DRAINAGE AREA	=	1.48	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2776.32	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2776.43	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	12.48	CFS
OVERTOPPING ELEVATION	=	2778.46	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 29–4

DRAINAGE AREA	=	5.77	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	8.25	CFS
DESIGN HW ELEVATION	=	2753.57	FT
100 YEAR DISCHARGE	=	9.98	CFS
100 YEAR HW ELEVATION	=	2753.96	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	14.13	CFS
OVERTOPPING ELEVATION	=	2755.23	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 29–5

DRAINAGE AREA	=	9.84	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	12.5	CFS
DESIGN HW ELEVATION	=	2748.96	FT
100 YEAR DISCHARGE	=	15.13	CFS
100 YEAR HW ELEVATION	=	2749.25	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	15.13	CFS
OVERTOPPING ELEVATION	=	2749.25	FT

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PROJECT REFERENCE NO.	SHEET NO.
R3101	60

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
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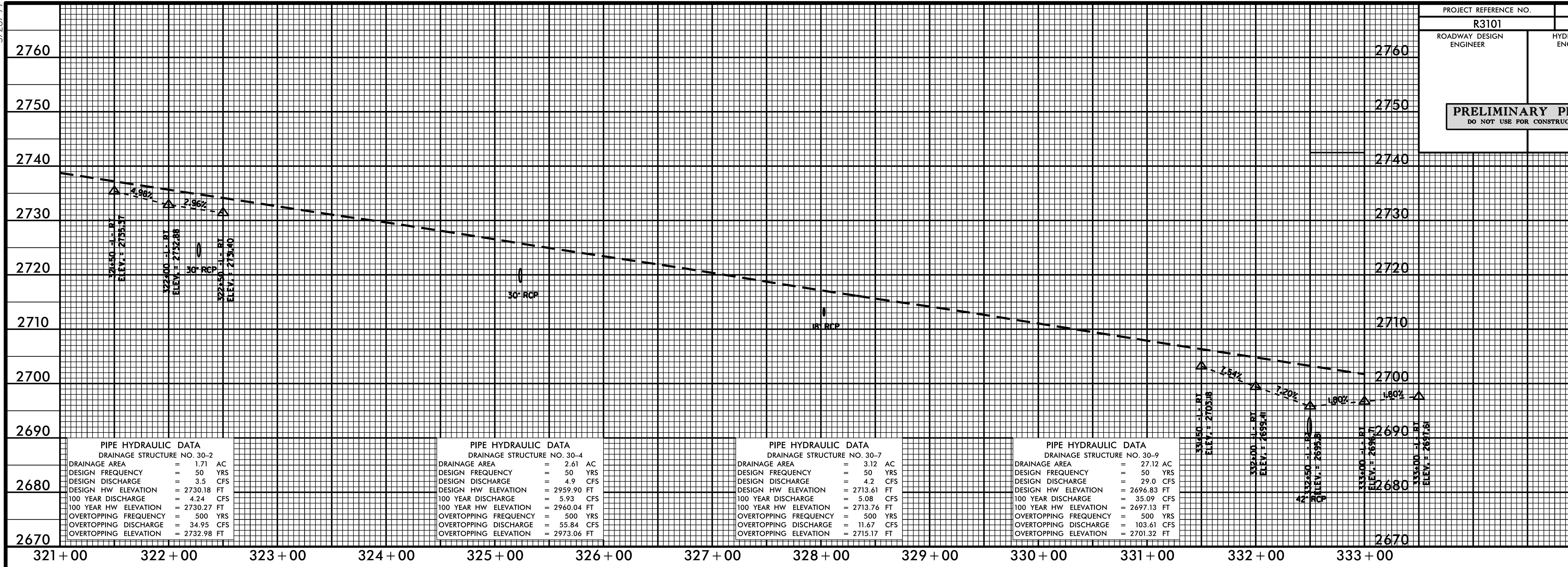
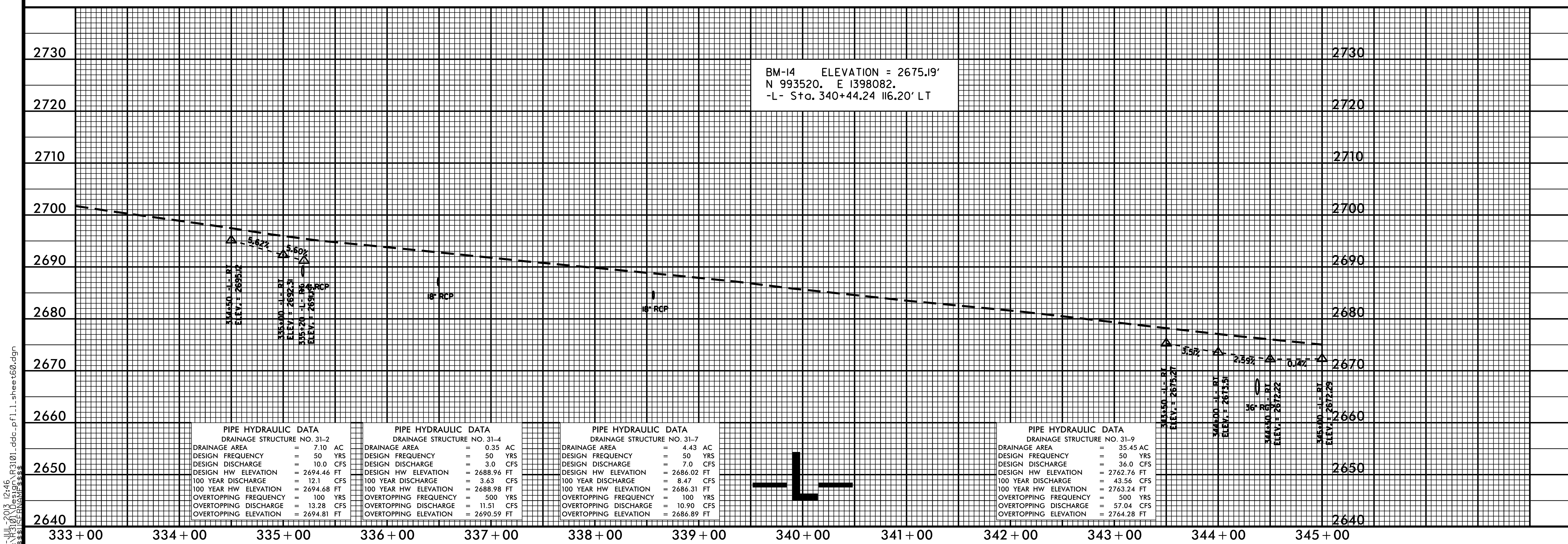


PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 30–2			
DRAINAGE AREA	=	1.71	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.5	CFS
DESIGN HW ELEVATION	=	2730.18	FT
100 YEAR DISCHARGE	=	4.24	CFS
100 YEAR HW ELEVATION	=	2730.27	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	34.95	CFS
OVERTOPPING ELEVATION	=	2732.98	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 30–4			
DRAINAGE AREA	=	2.61	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.9	CFS
DESIGN HW ELEVATION	=	2959.90	FT
100 YEAR DISCHARGE	=	5.93	CFS
100 YEAR HW ELEVATION	=	2960.04	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	55.84	CFS
OVERTOPPING ELEVATION	=	2973.06	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 30–7			
DRAINAGE AREA	=	3.12	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.2	CFS
DESIGN HW ELEVATION	=	2713.61	FT
100 YEAR DISCHARGE	=	5.08	CFS
100 YEAR HW ELEVATION	=	2713.76	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	11.67	CFS
OVERTOPPING ELEVATION	=	2715.17	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 30–9			
DRAINAGE AREA	=	27.12	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	29.0	CFS
DESIGN HW ELEVATION	=	2696.83	FT
100 YEAR DISCHARGE	=	35.09	CFS
100 YEAR HW ELEVATION	=	2697.13	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	103.61	CFS
OVERTOPPING ELEVATION	=	2701.32	FT



BM-14 ELEVATION = 2675.19'
N 993520. E 1398082.
-L- Sta. 340+44.24 116.20' LT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 31–2			
DRAINAGE AREA	=	7.10	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	10.0	CFS
DESIGN HW ELEVATION	=	2694.46	FT
100 YEAR DISCHARGE	=	12.1	CFS
100 YEAR HW ELEVATION	=	2694.68	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	13.28	CFS
OVERTOPPING ELEVATION	=	2694.81	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 31–4			
DRAINAGE AREA	=	0.35	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2688.96	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2688.98	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	11.51	CFS
OVERTOPPING ELEVATION	=	2690.59	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 31–7			
DRAINAGE AREA	=	4.43	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.0	CFS
DESIGN HW ELEVATION	=	2686.02	FT
100 YEAR DISCHARGE	=	8.47	CFS
100 YEAR HW ELEVATION	=	2686.31	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	10.90	CFS
OVERTOPPING ELEVATION	=	2686.89	FT

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 31–9			
DRAINAGE AREA	=	35.45	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	36.0	CFS
DESIGN HW ELEVATION	=	2762.76	FT
100 YEAR DISCHARGE	=	43.56	CFS
100 YEAR HW ELEVATION	=	2763.24	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	57.04	CFS
OVERTOPPING ELEVATION	=	2764.28	FT

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PROJECT REFERENCE NO.	SHEET NO.
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ROADWAY DESIGN ENGINEER

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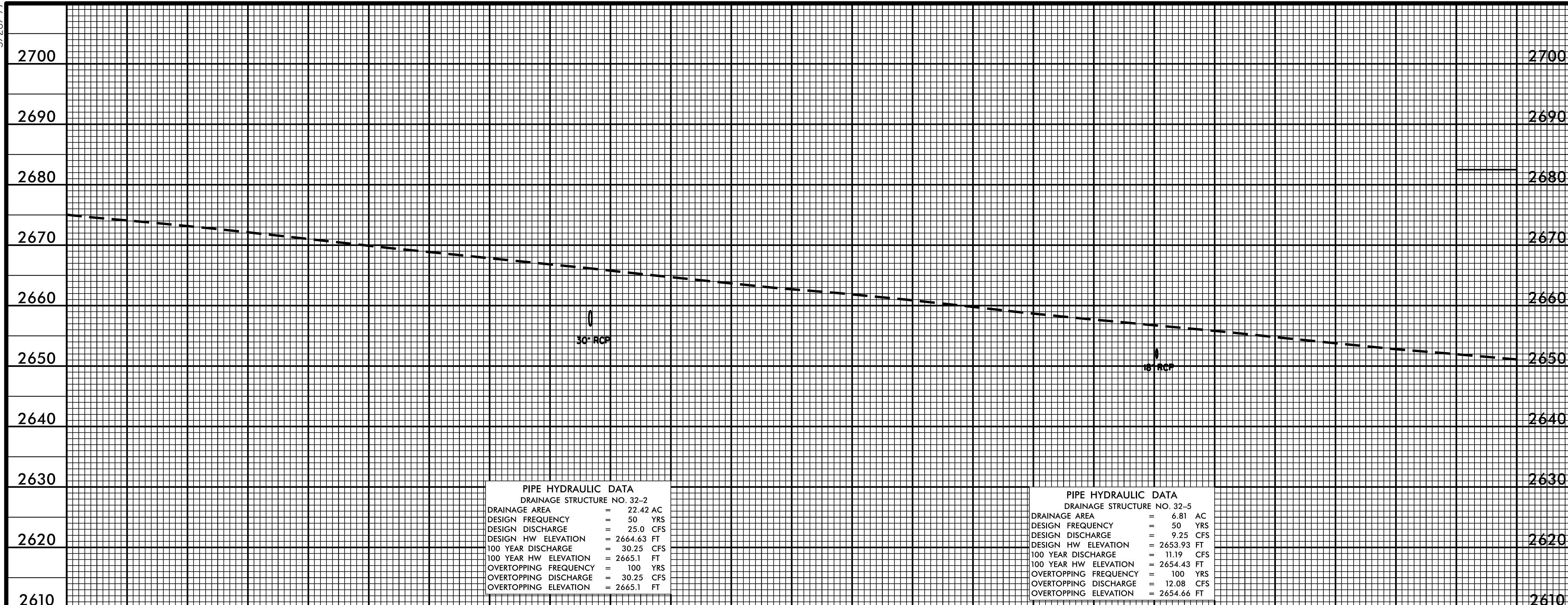
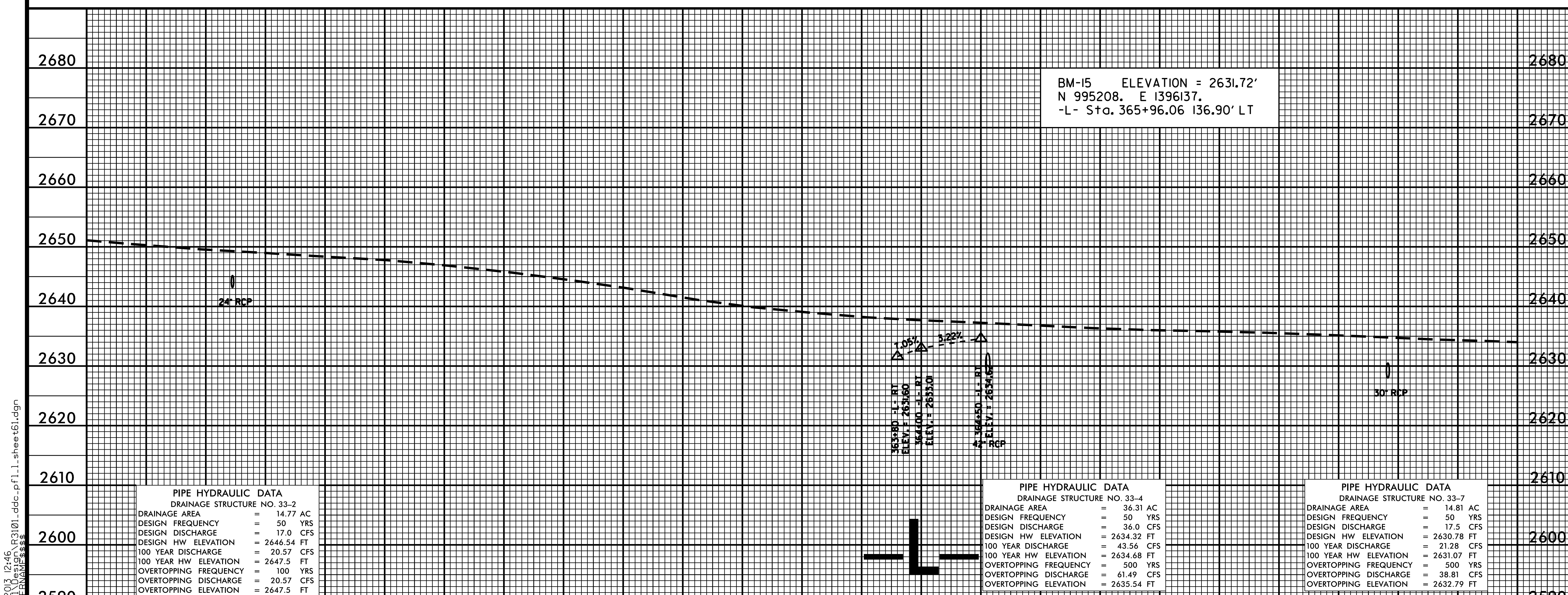


PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 32–2

DRAINAGE AREA	=	22.42	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	25.0	CFS
DESIGN HW ELEVATION	=	2664.63	FT
100 YEAR DISCHARGE	=	30.25	CFS
100 YEAR HW ELEVATION	=	2665.1	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	30.25	CFS
OVERTOPPING ELEVATION	=	2665.1	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 32–5

DRAINAGE AREA	=	6.81	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	9.25	CFS
DESIGN HW ELEVATION	=	2653.93	FT
100 YEAR DISCHARGE	=	11.19	CFS
100 YEAR HW ELEVATION	=	2654.43	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	12.08	CFS
OVERTOPPING ELEVATION	=	2654.66	FT



BM-15 ELEVATION = 2631.72'
N 995208. E 1396137.
-L- Sta. 365+96.06 136.90' LT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 33–2

DRAINAGE AREA	=	14.77	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	17.0	CFS
DESIGN HW ELEVATION	=	2646.54	FT
100 YEAR DISCHARGE	=	20.57	CFS
100 YEAR HW ELEVATION	=	2647.5	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	20.57	CFS
OVERTOPPING ELEVATION	=	2647.5	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 33–4

DRAINAGE AREA	=	36.31	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	36.0	CFS
DESIGN HW ELEVATION	=	2634.32	FT
100 YEAR DISCHARGE	=	43.56	CFS
100 YEAR HW ELEVATION	=	2634.68	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	61.49	CFS
OVERTOPPING ELEVATION	=	2635.54	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 33–7

DRAINAGE AREA	=	14.81	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	17.5	CFS
DESIGN HW ELEVATION	=	2630.78	FT
100 YEAR DISCHARGE	=	21.28	CFS
100 YEAR HW ELEVATION	=	2631.07	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	38.81	CFS
OVERTOPPING ELEVATION	=	2632.79	FT

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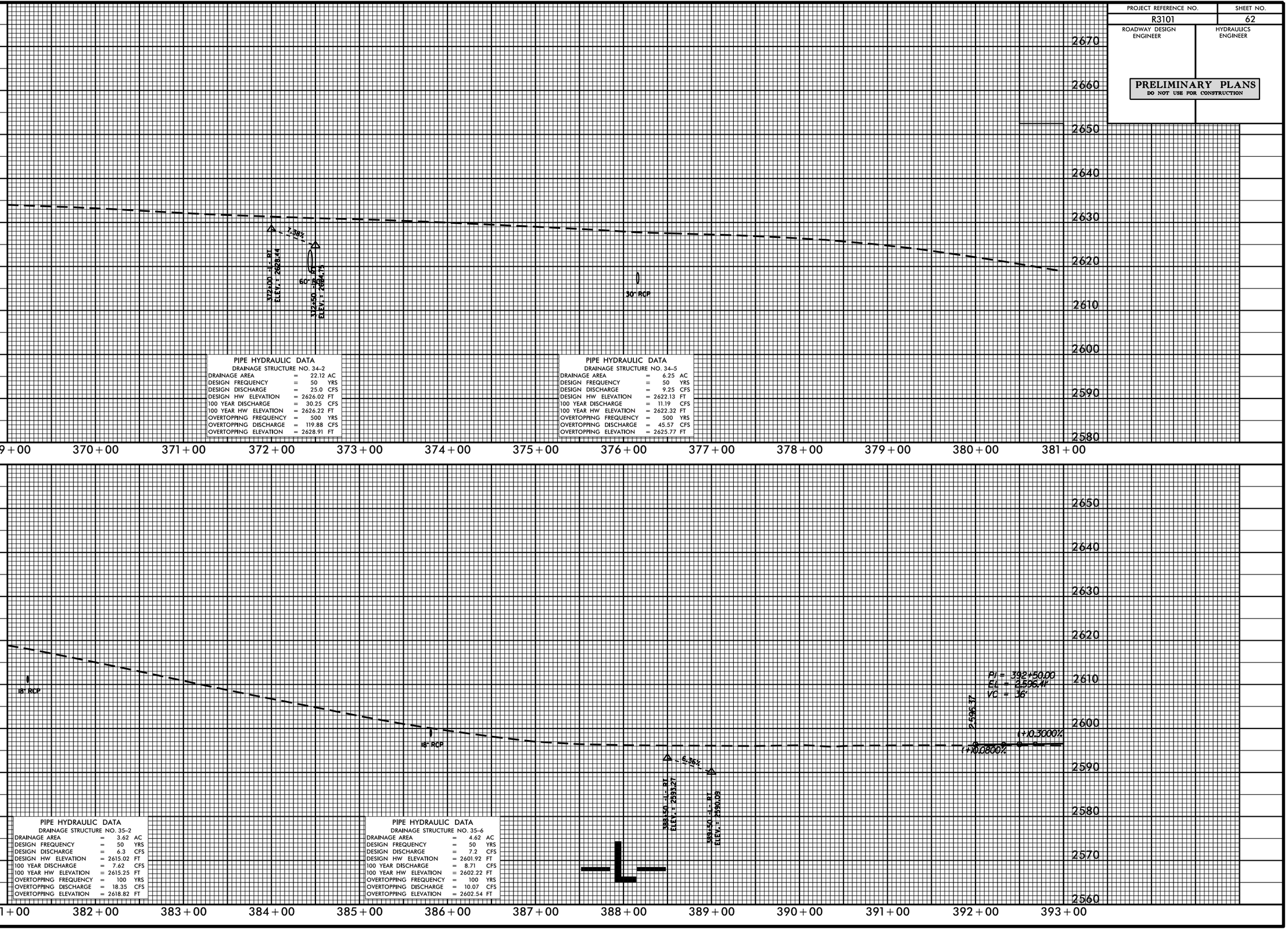

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 34–2

DRAINAGE AREA	=	22.12	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	25.0	CFS
DESIGN HW ELEVATION	=	2626.02	FT
100 YEAR DISCHARGE	=	30.25	CFS
100 YEAR HW ELEVATION	=	2626.22	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	119.88	CFS
OVERTOPPING ELEVATION	=	2628.91	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 34–5

DRAINAGE AREA	=	6.25	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	9.25	CFS
DESIGN HW ELEVATION	=	2622.13	FT
100 YEAR DISCHARGE	=	11.19	CFS
100 YEAR HW ELEVATION	=	2622.32	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	45.57	CFS
OVERTOPPING ELEVATION	=	2625.77	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 35–2

DRAINAGE AREA	=	3.62	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	6.3	CFS
DESIGN HW ELEVATION	=	2615.02	FT
100 YEAR DISCHARGE	=	7.62	CFS
100 YEAR HW ELEVATION	=	2615.25	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	18.35	CFS
OVERTOPPING ELEVATION	=	2618.82	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 35–6

DRAINAGE AREA	=	4.62	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.2	CFS
DESIGN HW ELEVATION	=	2601.92	FT
100 YEAR DISCHARGE	=	8.71	CFS
100 YEAR HW ELEVATION	=	2602.22	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	10.07	CFS
OVERTOPPING ELEVATION	=	2602.54	FT

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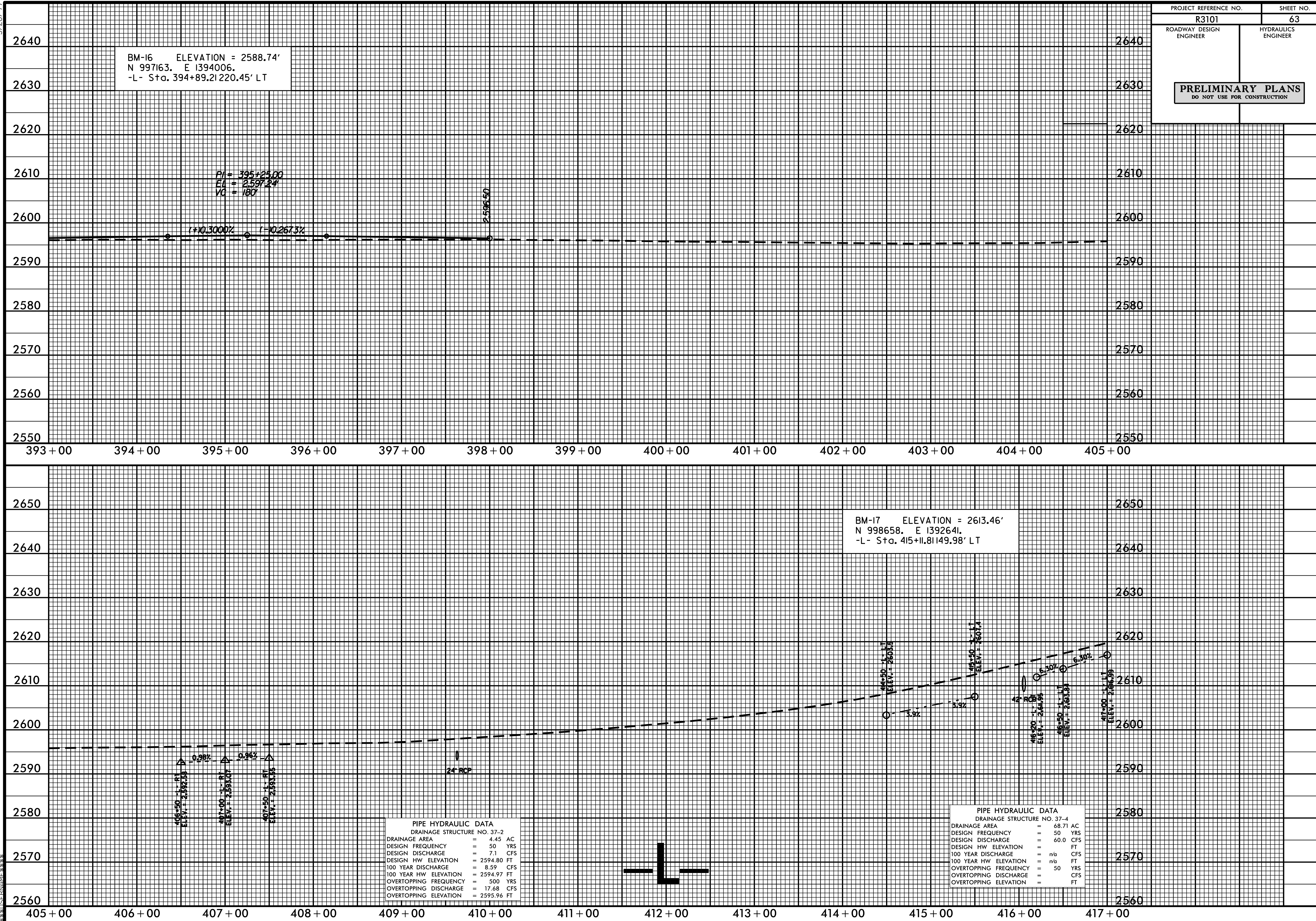

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 37–2

DRAINAGE AREA	=	4.45	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.1	CFS
DESIGN HW ELEVATION	=	2594.80	FT
100 YEAR DISCHARGE	=	8.59	CFS
100 YEAR HW ELEVATION	=	2594.97	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	17.68	CFS
OVERTOPPING ELEVATION	=	2595.96	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 37–4

DRAINAGE AREA	=	68.71	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	60.0	CFS
DESIGN HW ELEVATION	=		FT
100 YEAR DISCHARGE	=	n/a	CFS
100 YEAR HW ELEVATION	=	n/a	FT
OVERTOPPING FREQUENCY	=	50	YRS
OVERTOPPING DISCHARGE	=		CFS
OVERTOPPING ELEVATION	=		FT

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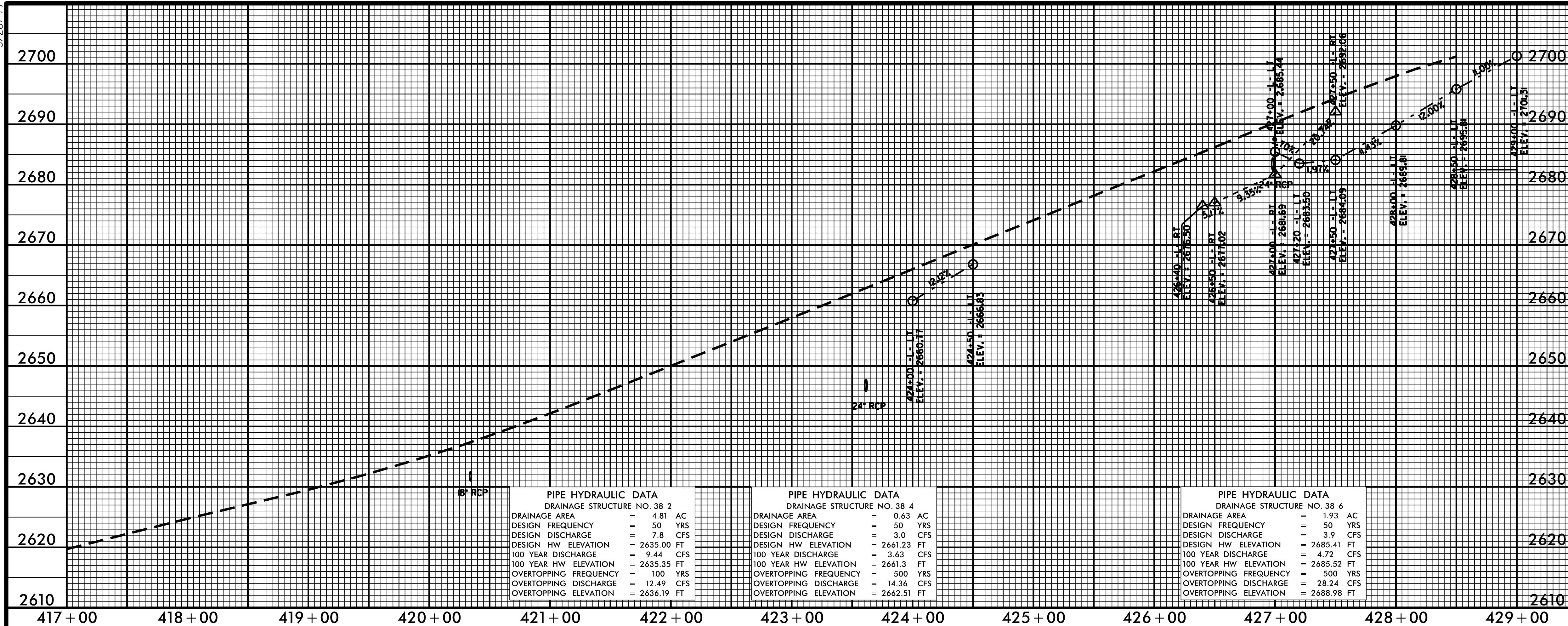


PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 38–2

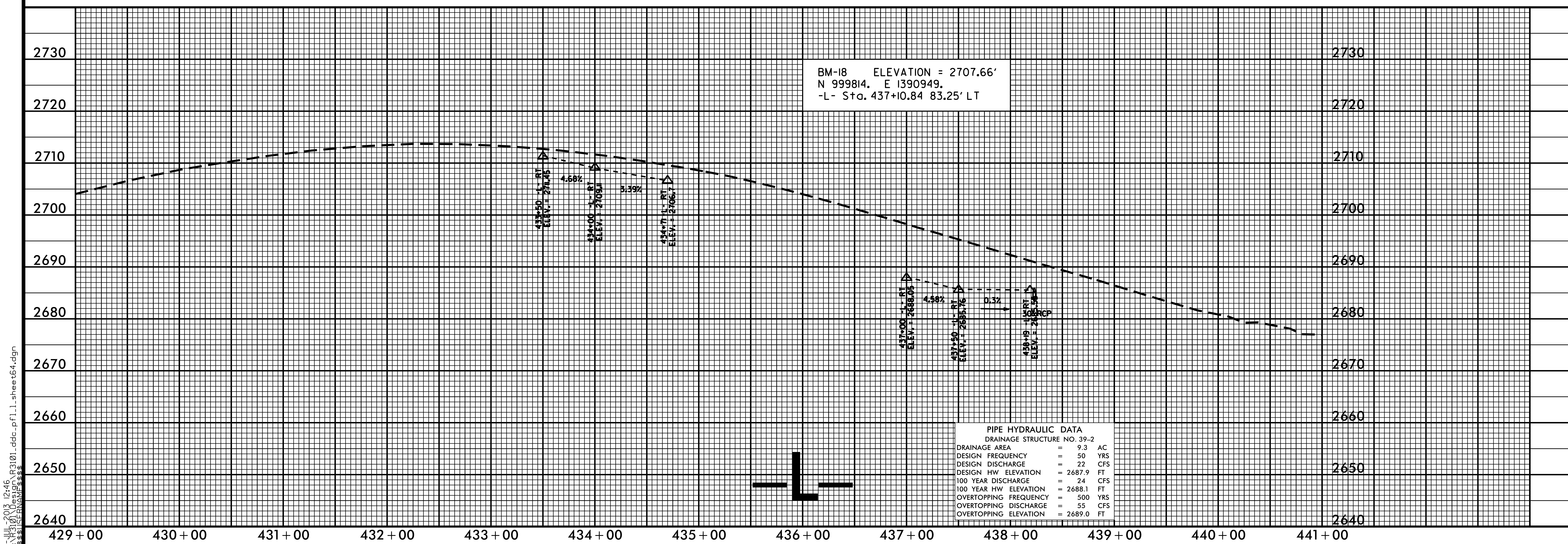
DRAINAGE AREA	=	4.81	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	7.8	CFS
DESIGN HW ELEVATION	=	2635.00	FT
100 YEAR DISCHARGE	=	9.44	CFS
100 YEAR HW ELEVATION	=	2635.35	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	12.49	CFS
OVERTOPPING ELEVATION	=	2636.19	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 38–4

DRAINAGE AREA	=	0.63	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2661.23	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2661.3	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	14.36	CFS
OVERTOPPING ELEVATION	=	2662.51	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 38–6

DRAINAGE AREA	=	1.93	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.9	CFS
DESIGN HW ELEVATION	=	2685.41	FT
100 YEAR DISCHARGE	=	4.72	CFS
100 YEAR HW ELEVATION	=	2685.52	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	28.24	CFS
OVERTOPPING ELEVATION	=	2688.98	FT



BM-18 ELEVATION = 2707.66'
N 999814. E 1390949.
-L- Sta. 437+10.84 83.25' LT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 39–2

DRAINAGE AREA	=	9.3	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	22	CFS
DESIGN HW ELEVATION	=	2687.9	FT
100 YEAR DISCHARGE	=	24	CFS
100 YEAR HW ELEVATION	=	2688.1	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	55	CFS
OVERTOPPING ELEVATION	=	2689.0	FT

PROJECT REFERENCE NO.	SHEET NO.
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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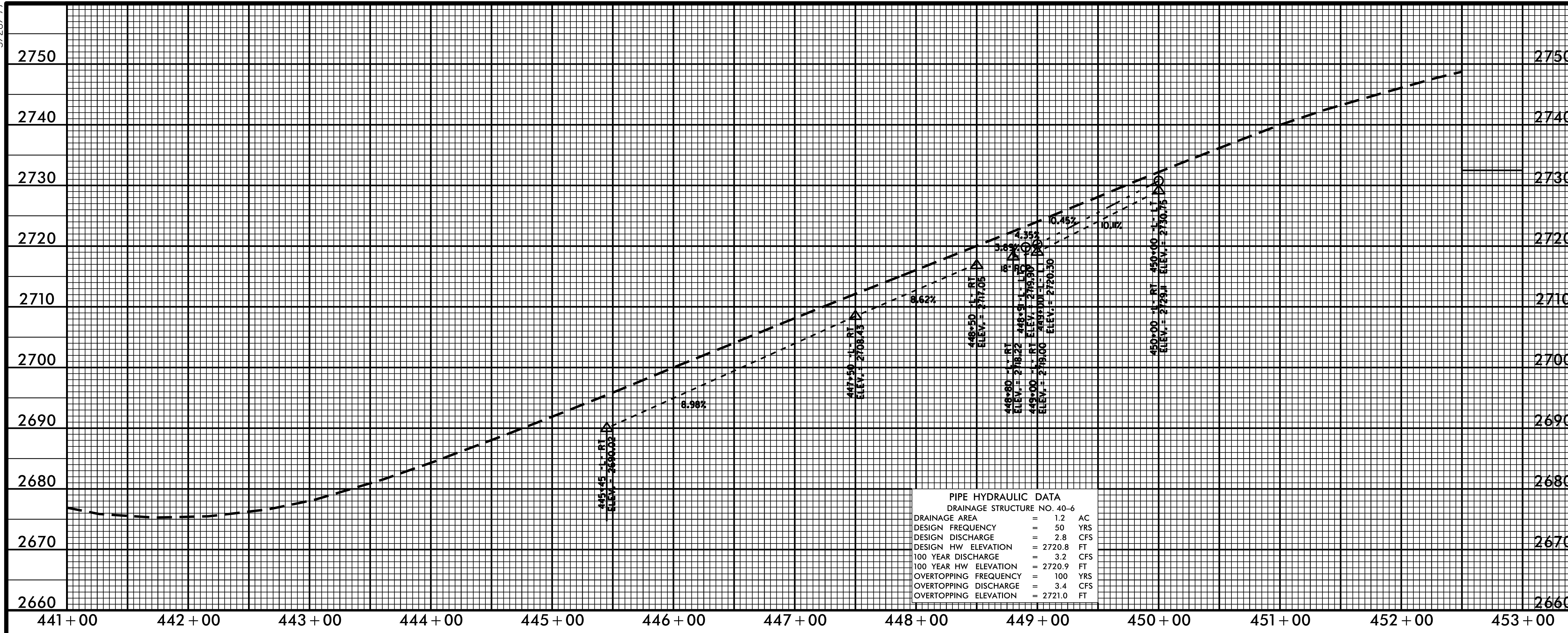
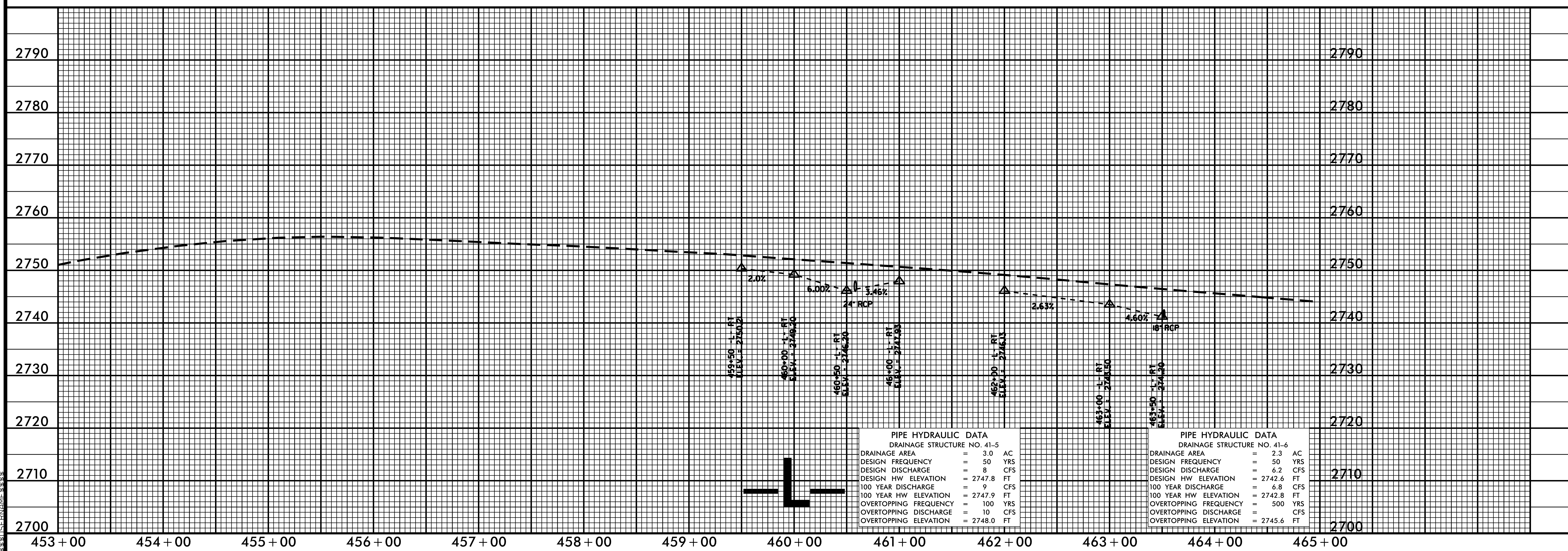


PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 40–6

DRAINAGE AREA	=	1.2	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	2.8	CFS
DESIGN HW ELEVATION	=	2720.8	FT
100 YEAR DISCHARGE	=	3.2	CFS
100 YEAR HW ELEVATION	=	2720.9	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	3.4	CFS
OVERTOPPING ELEVATION	=	2721.0	FT



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 41–5

DRAINAGE AREA	=	3.0	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	8	CFS
DESIGN HW ELEVATION	=	2747.8	FT
100 YEAR DISCHARGE	=	9	CFS
100 YEAR HW ELEVATION	=	2747.9	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	10	CFS
OVERTOPPING ELEVATION	=	2748.0	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 41–6

DRAINAGE AREA	=	2.3	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	6.2	CFS
DESIGN HW ELEVATION	=	2742.6	FT
100 YEAR DISCHARGE	=	6.8	CFS
100 YEAR HW ELEVATION	=	2742.8	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=		CFS
OVERTOPPING ELEVATION	=	2745.6	FT

PROJECT REFERENCE NO.	SHEET NO.
R3101	66

ROADWAY DESIGN ENGINEER

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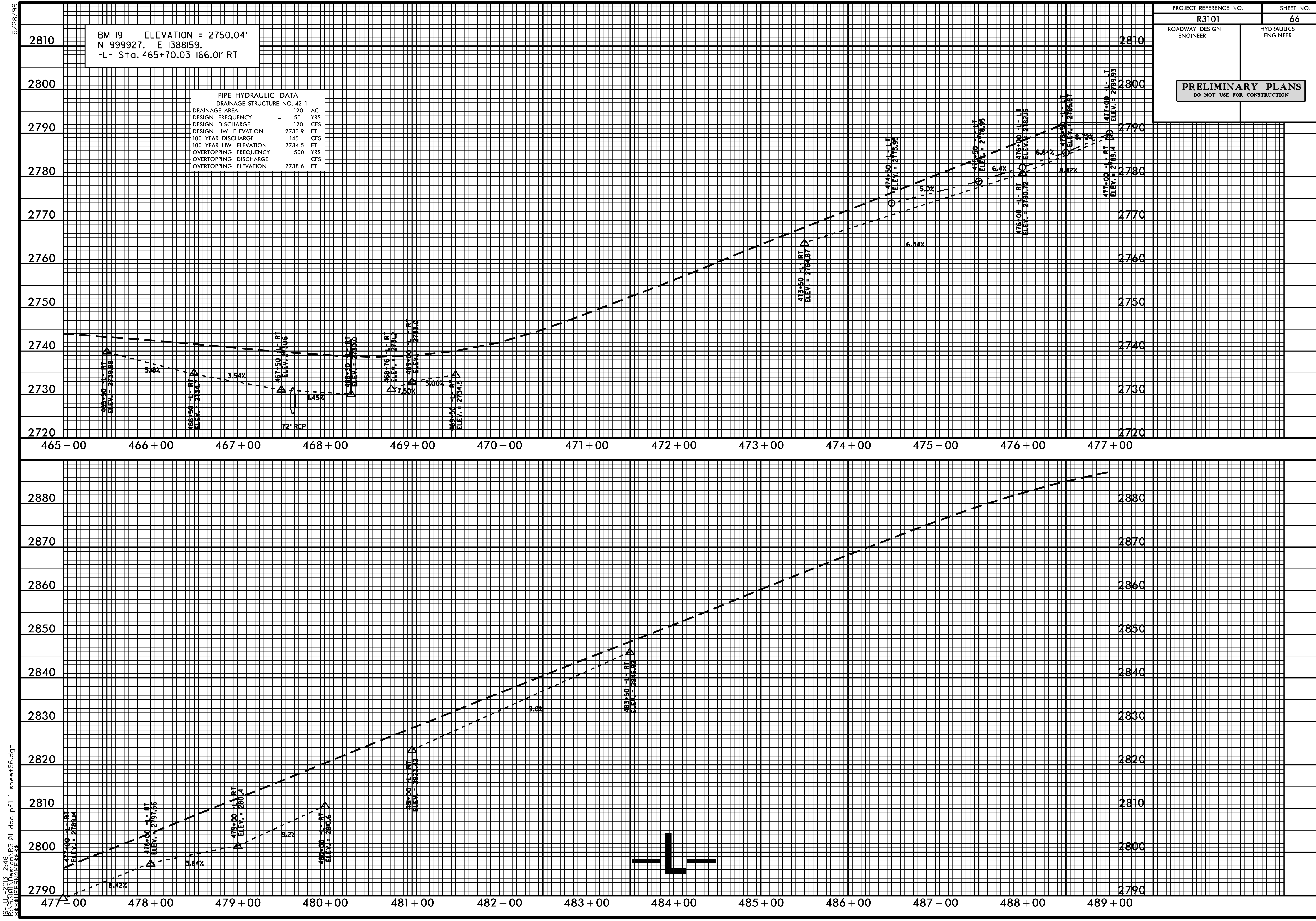
BM-19 ELEVATION = 2750.04'
N 999927. E 1388159.
-L- Sta. 465+70.03 166.01' RT

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 42-1

DRAINAGE AREA	=	120	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	120	CFS
DESIGN HW ELEVATION	=	2733.9	FT
100 YEAR DISCHARGE	=	145	CFS
100 YEAR HW ELEVATION	=	2734.5	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=		CFS
OVERTOPPING ELEVATION	=	2738.6	FT



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ROADWAY DESIGN ENGINEER

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PRELIMINARY PLANS
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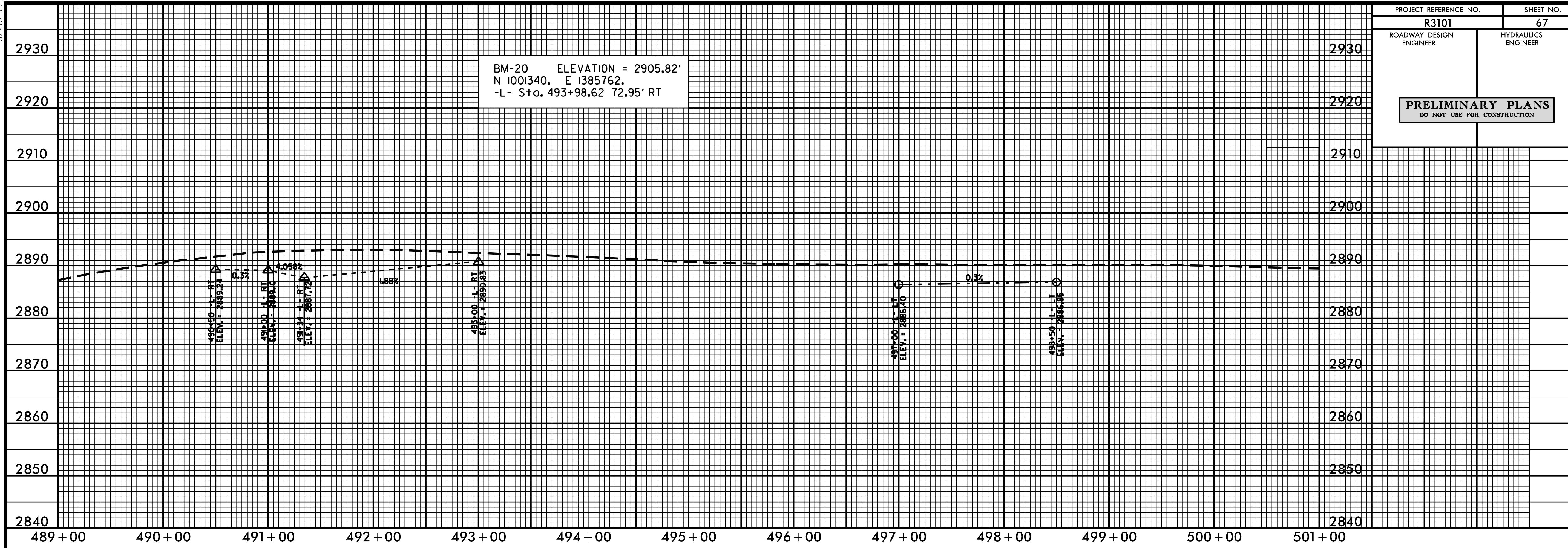
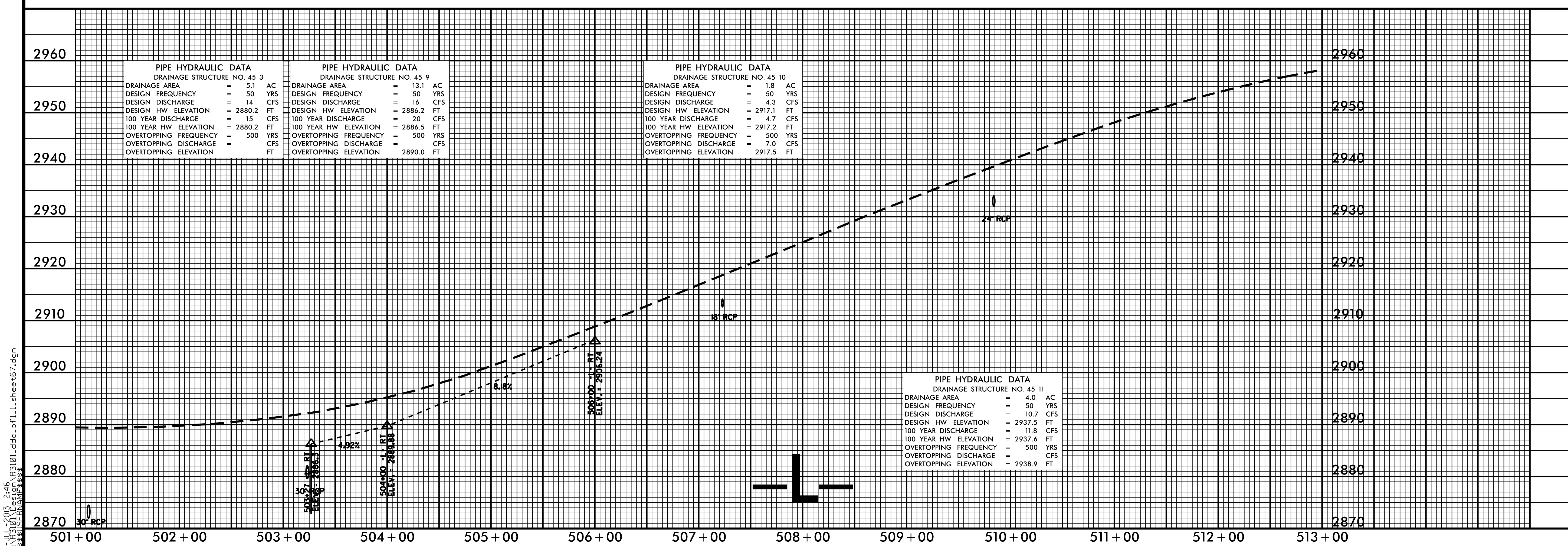
BM-20 ELEVATION = 2905.82'
N 1001340. E 1385762.
-L- Sta. 493+98.62 72.95' RT





PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 45-3

DRAINAGE AREA	=	5.1	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	14	CFS
DESIGN HW ELEVATION	=	2880.2	FT
100 YEAR DISCHARGE	=	15	CFS
100 YEAR HW ELEVATION	=	2880.2	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=		CFS
OVERTOPPING ELEVATION	=		FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 45-9

DRAINAGE AREA	=	13.1	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	16	CFS
DESIGN HW ELEVATION	=	2886.2	FT
100 YEAR DISCHARGE	=	20	CFS
100 YEAR HW ELEVATION	=	2886.5	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=		CFS
OVERTOPPING ELEVATION	=	2890.0	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 45-10

DRAINAGE AREA	=	1.8	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	4.3	CFS
DESIGN HW ELEVATION	=	2917.1	FT
100 YEAR DISCHARGE	=	4.7	CFS
100 YEAR HW ELEVATION	=	2917.2	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	7.0	CFS
OVERTOPPING ELEVATION	=	2917.5	FT

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 45-11

DRAINAGE AREA	=	4.0	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	10.7	CFS
DESIGN HW ELEVATION	=	2937.5	FT
100 YEAR DISCHARGE	=	11.8	CFS
100 YEAR HW ELEVATION	=	2937.6	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=		CFS
OVERTOPPING ELEVATION	=	2938.9	FT

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ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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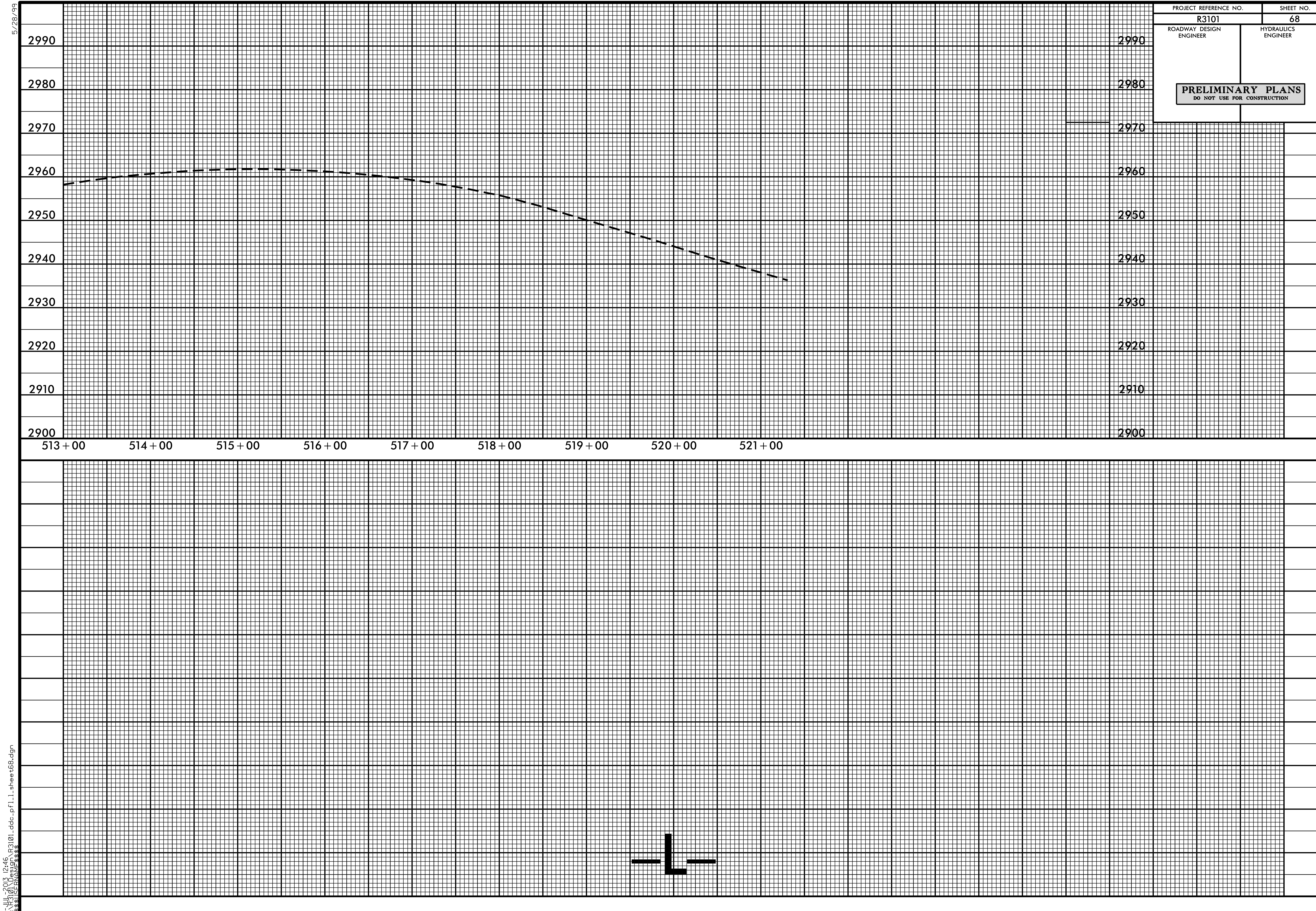

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ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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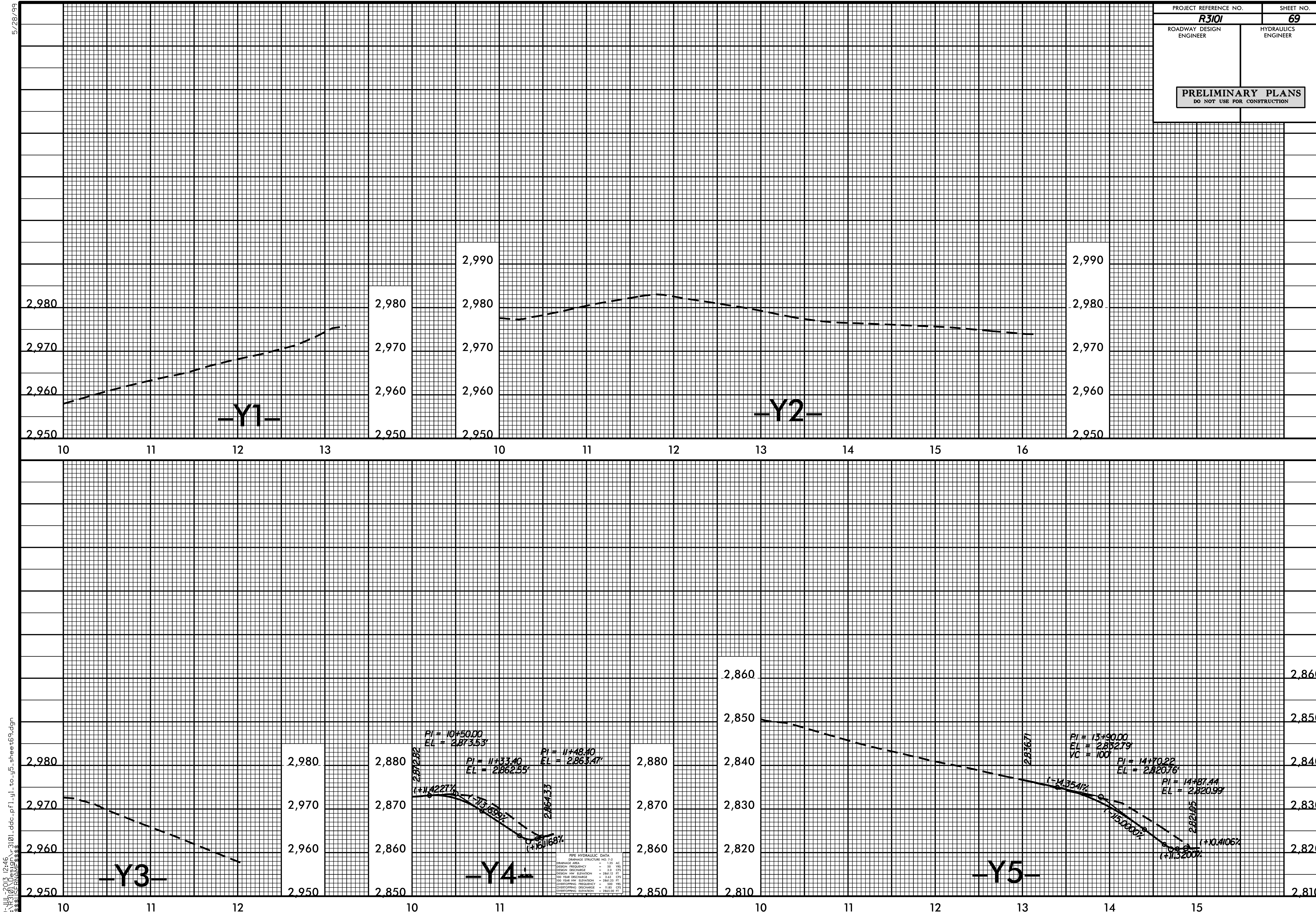

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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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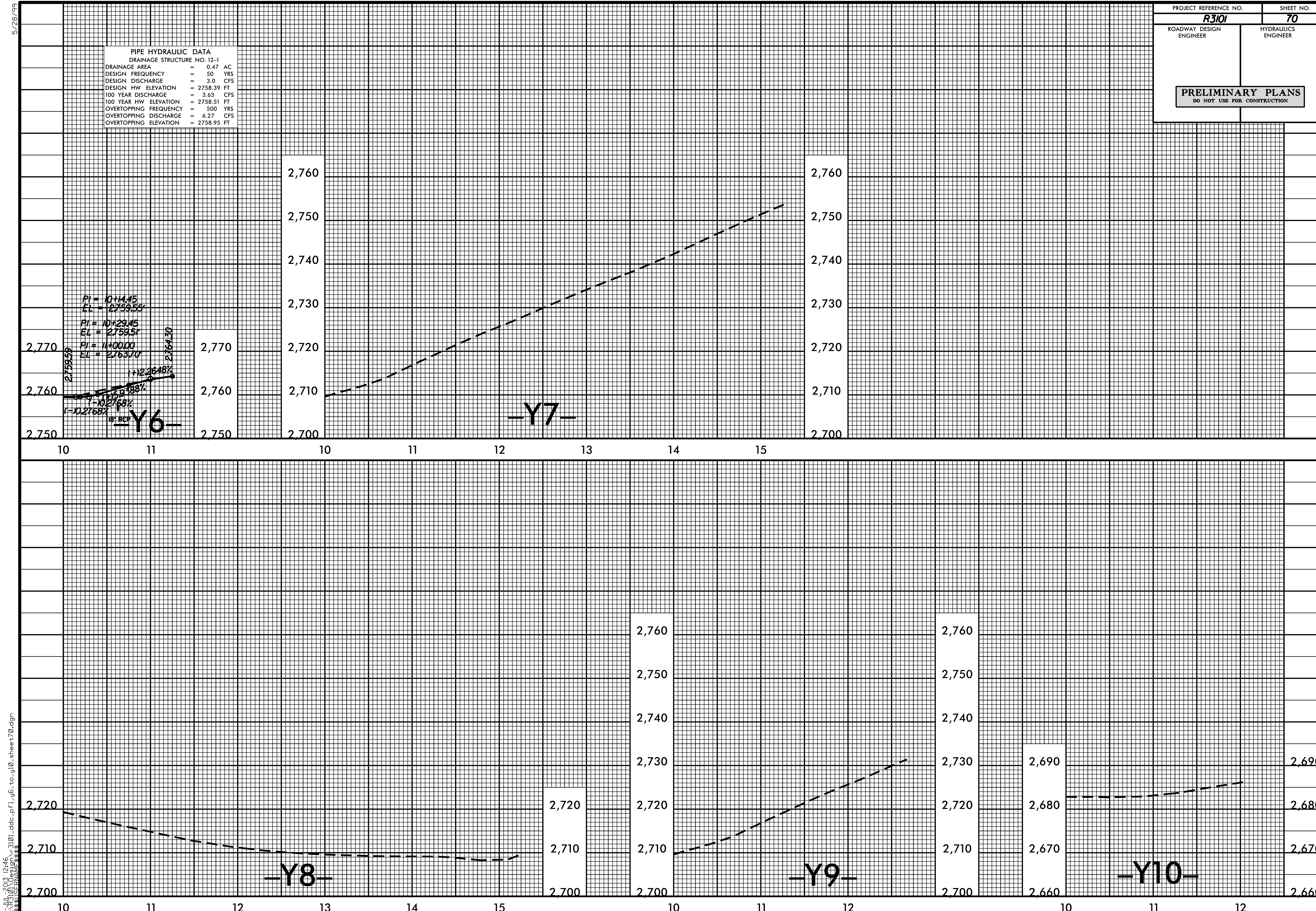

PIPE HYDRAULIC DATA			
DRAINAGE STRUCTURE NO. 12–1			
DRAINAGE AREA	=	0.47	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2758.39	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2758.51	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	6.27	CFS
OVERTOPPING ELEVATION	=	2758.95	FT

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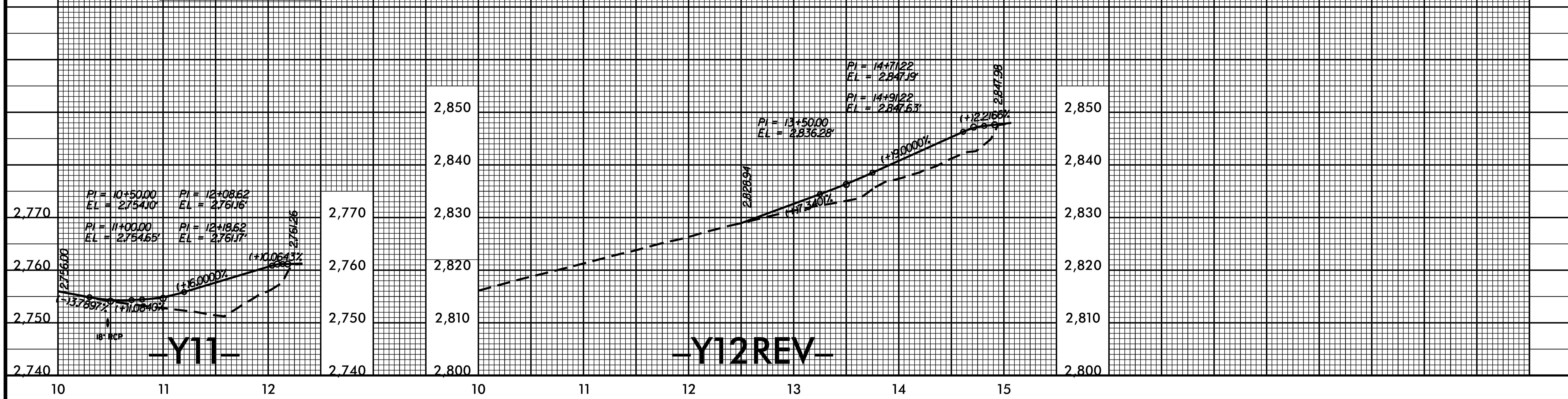
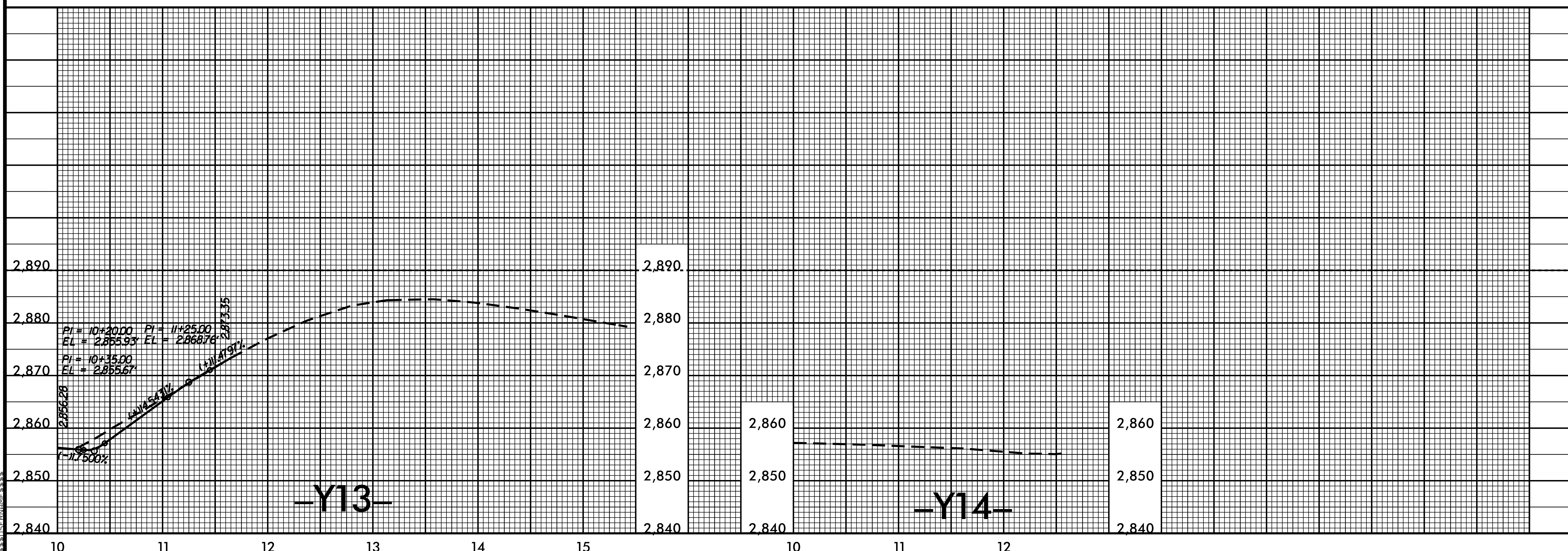
PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO. 20–4

DRAINAGE AREA	=	10.75	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	11.3	CFS
DESIGN HW ELEVATION	=	2752.80	FT
100 YEAR DISCHARGE	=	13.67	CFS
100 YEAR HW ELEVATION	=	2753.56	FT
OVERTOPPING FREQUENCY	=	100	YRS
OVERTOPPING DISCHARGE	=	13.67	CFS
OVERTOPPING ELEVATION	=	2753.56	FT





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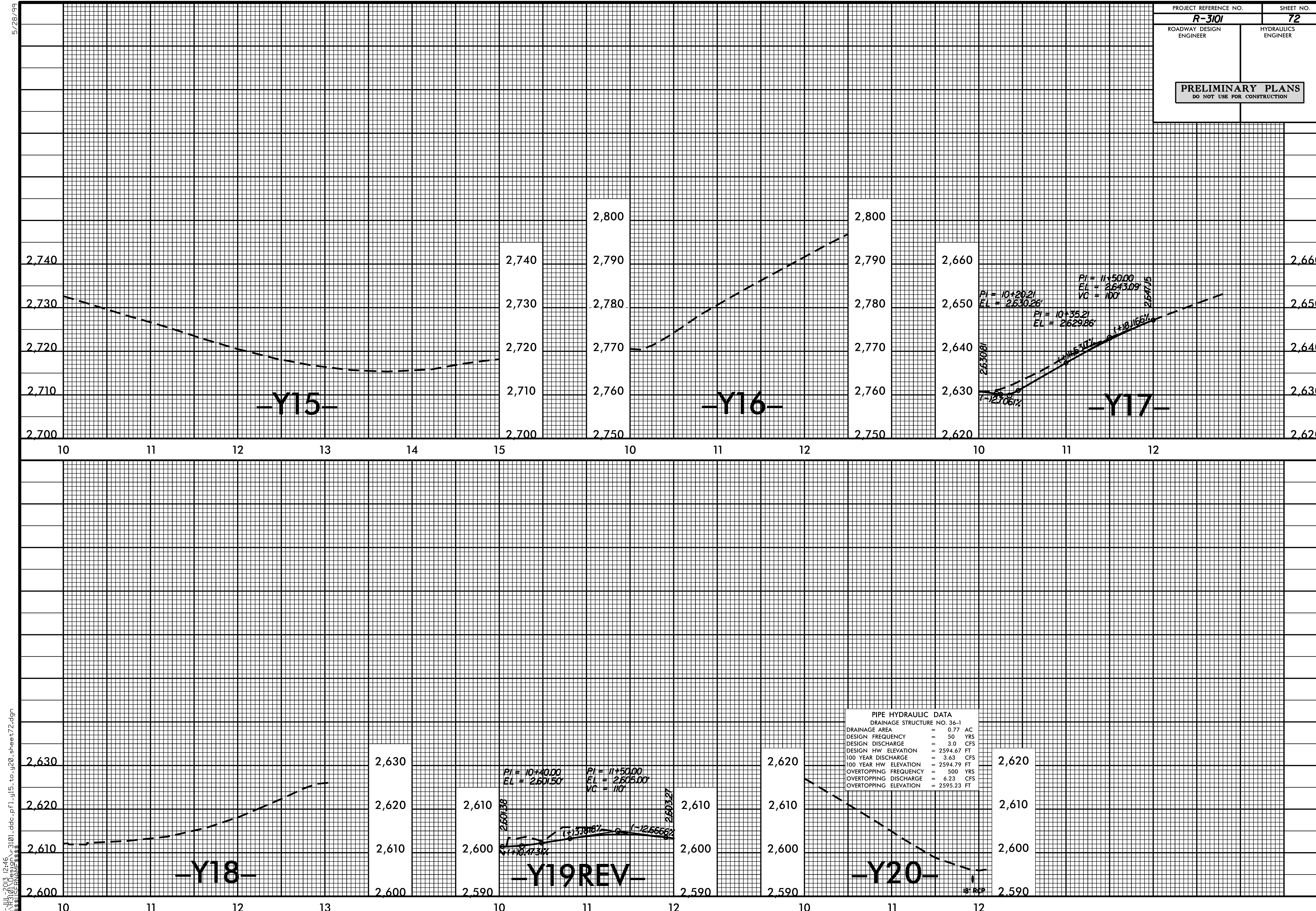
PROJECT REFERENCE NO.	SHEET NO.
R-3101	72
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO. 36-1

DRAINAGE AREA	=	0.77	AC
DESIGN FREQUENCY	=	50	YRS
DESIGN DISCHARGE	=	3.0	CFS
DESIGN HW ELEVATION	=	2594.67	FT
100 YEAR DISCHARGE	=	3.63	CFS
100 YEAR HW ELEVATION	=	2594.79	FT
OVERTOPPING FREQUENCY	=	500	YRS
OVERTOPPING DISCHARGE	=	6.23	CFS
OVERTOPPING ELEVATION	=	2595.23	FT

5/28/99

19-JUL-2013 12:46
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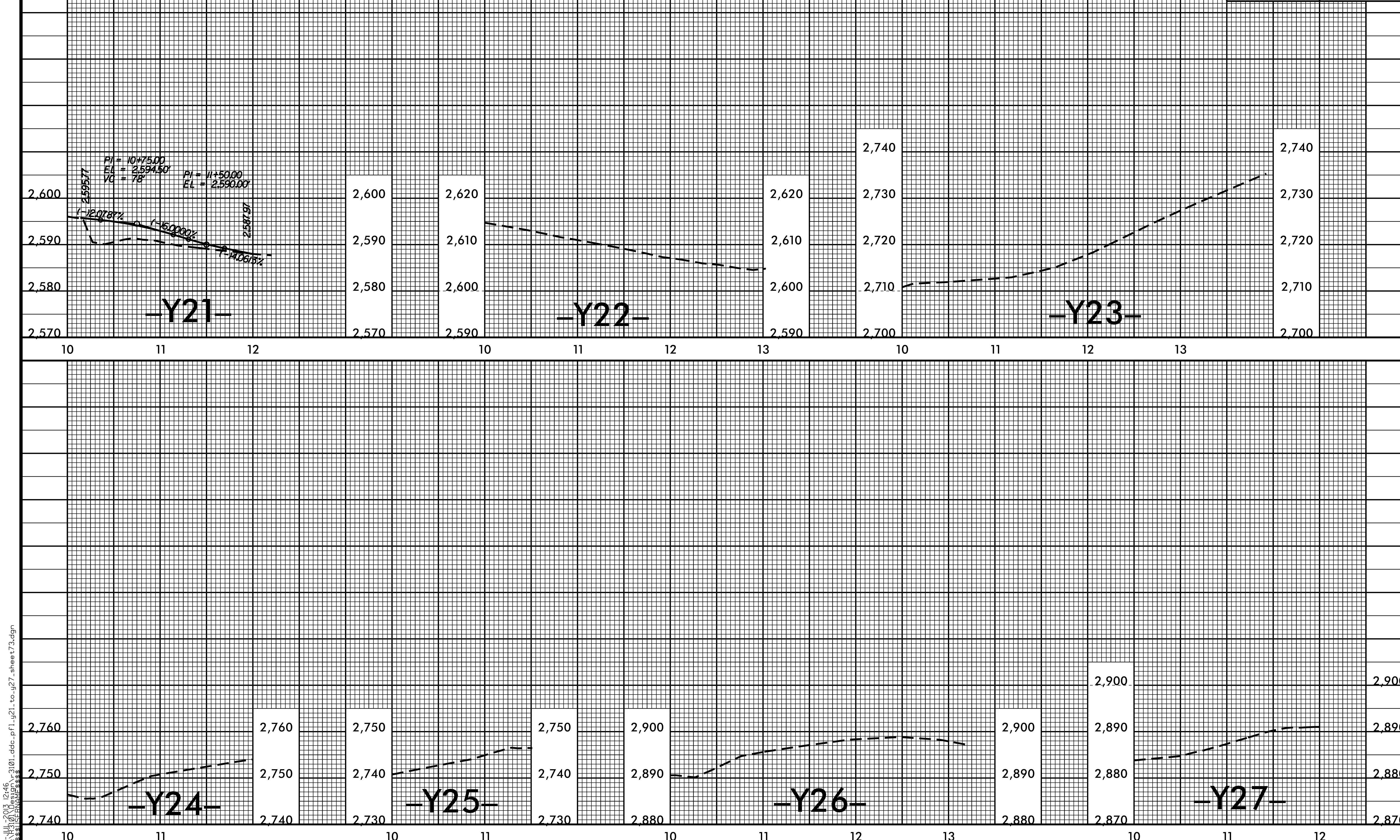
$$$$USERNAME$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R3101	73
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-49

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2820
2810
2800
2790
2780

2790.06
69+00.00

2820
2810
2800
2790
2780

2790.22
68+50.00

2850
2840
2830
2820
2810
2800
2790
2780

2790.60
68+00.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

19-JUL-2013 13:08
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-50

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2800
2790
2780
2770

4:1

2789.86

71+00.00

2:1

PROP. BRIDGE WING WALL

2800
2790
2780

2:1

2789.81

70+50.00

2810
2800
2790
2780

DRIVE TIE

2:1

2789.85

70+00.00

2820
2810
2800
2790
2780

2:1

2789.90

69+50.00

—4—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

19-JUL-2013 13:08
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-70

97+50.00

97+00.00

96+50.00

19-JUL-2013 13:08
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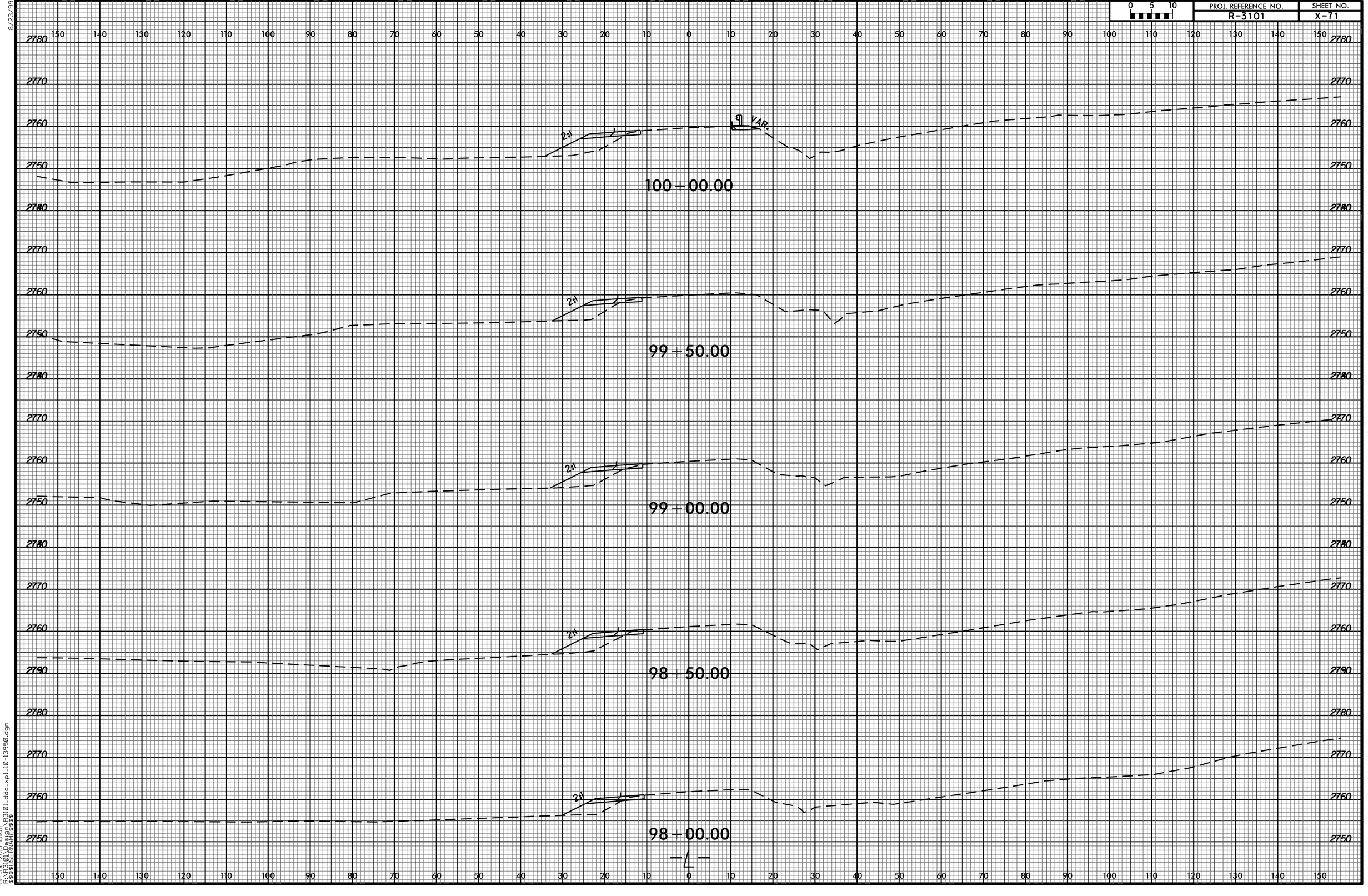
8/23/99

0 5 10

PROJ. REFERENCE NO.	SHEET NO.
R-3101	X-71



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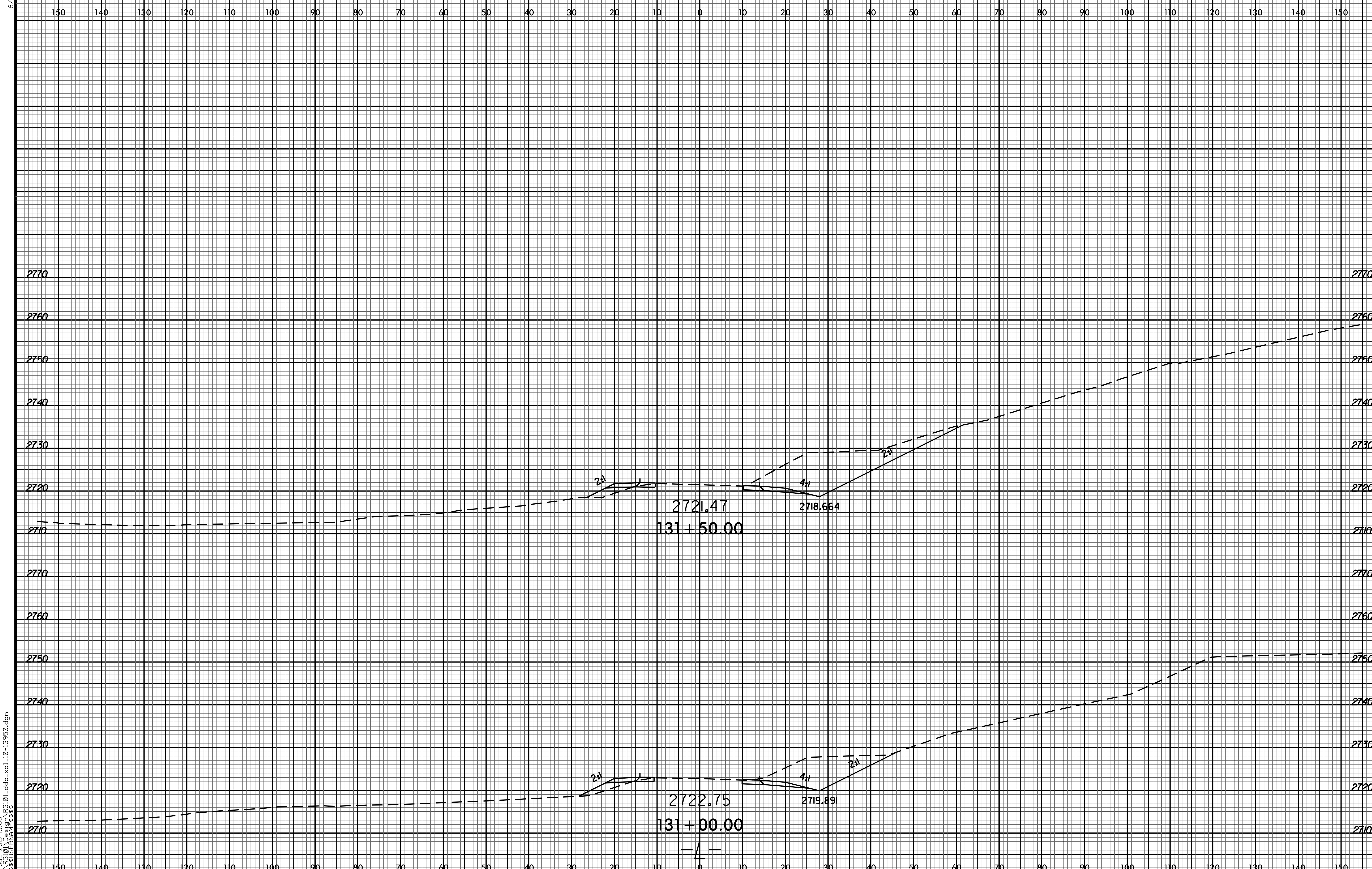
PROJ. REFERENCE NO.	SHEET NO.
R-3101	X-102



8/23/99

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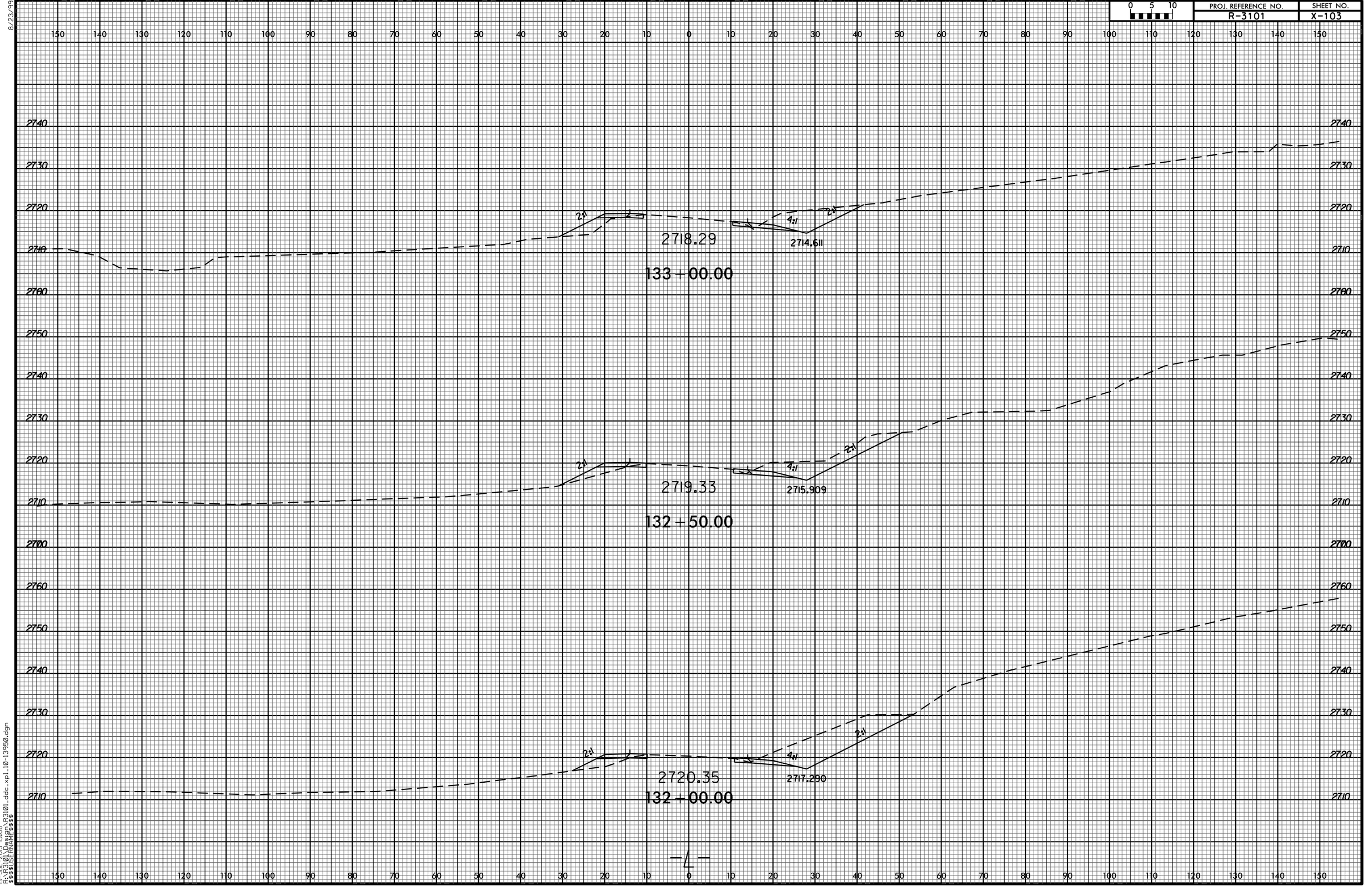
8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-103



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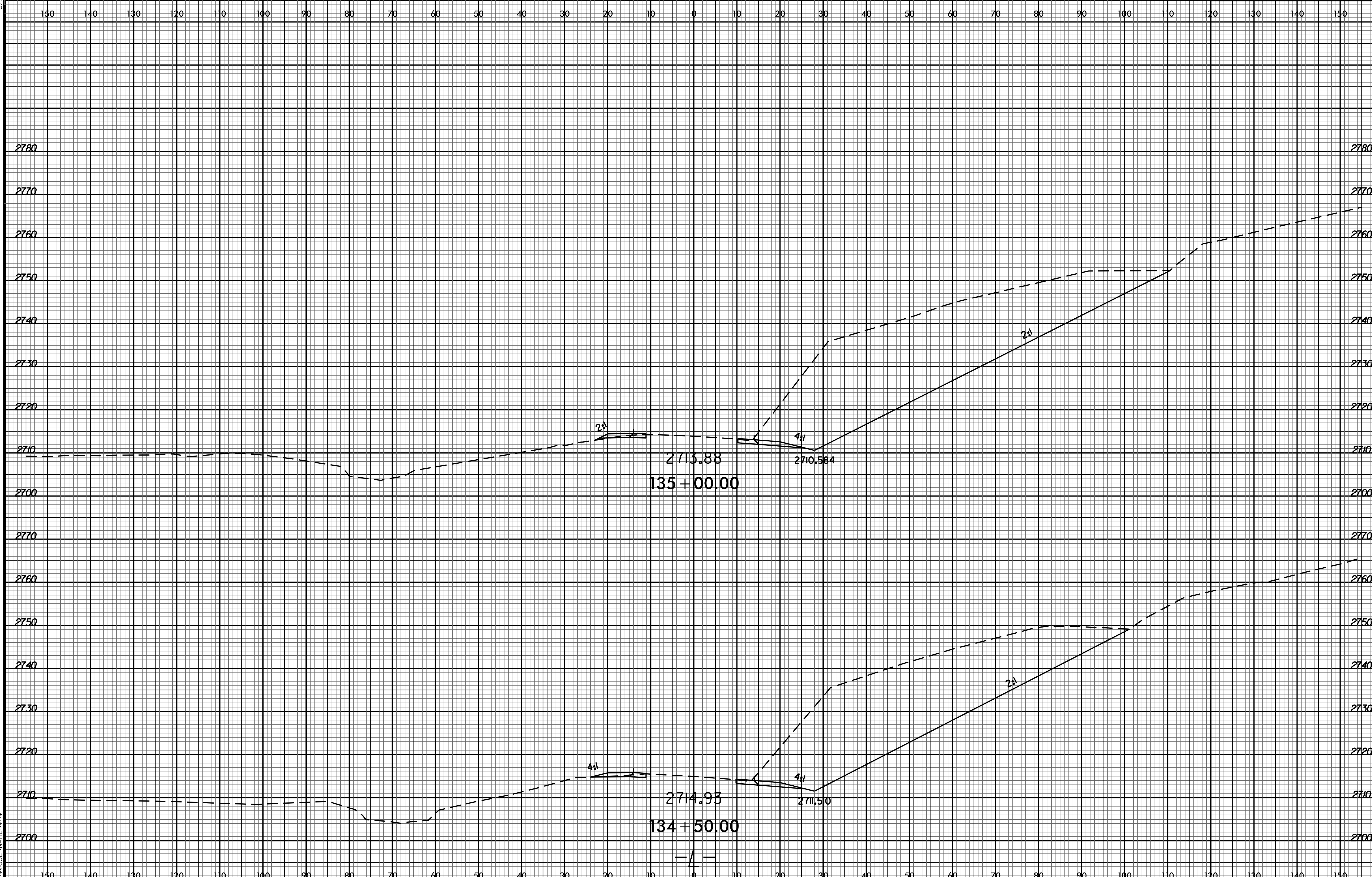
PROJ. REFERENCE NO.	SHEET NO.
R-3101	X-105



8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-106

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2780 2770 2760 2750 2740 2730 2720 2710 2700

2:1 4:1 2:1

2711.90
136+00.00
2709.278

2:1 4:1 2:1

2712.86
135+50.00
2709.606

—L—

19-JUL-2013 13:08
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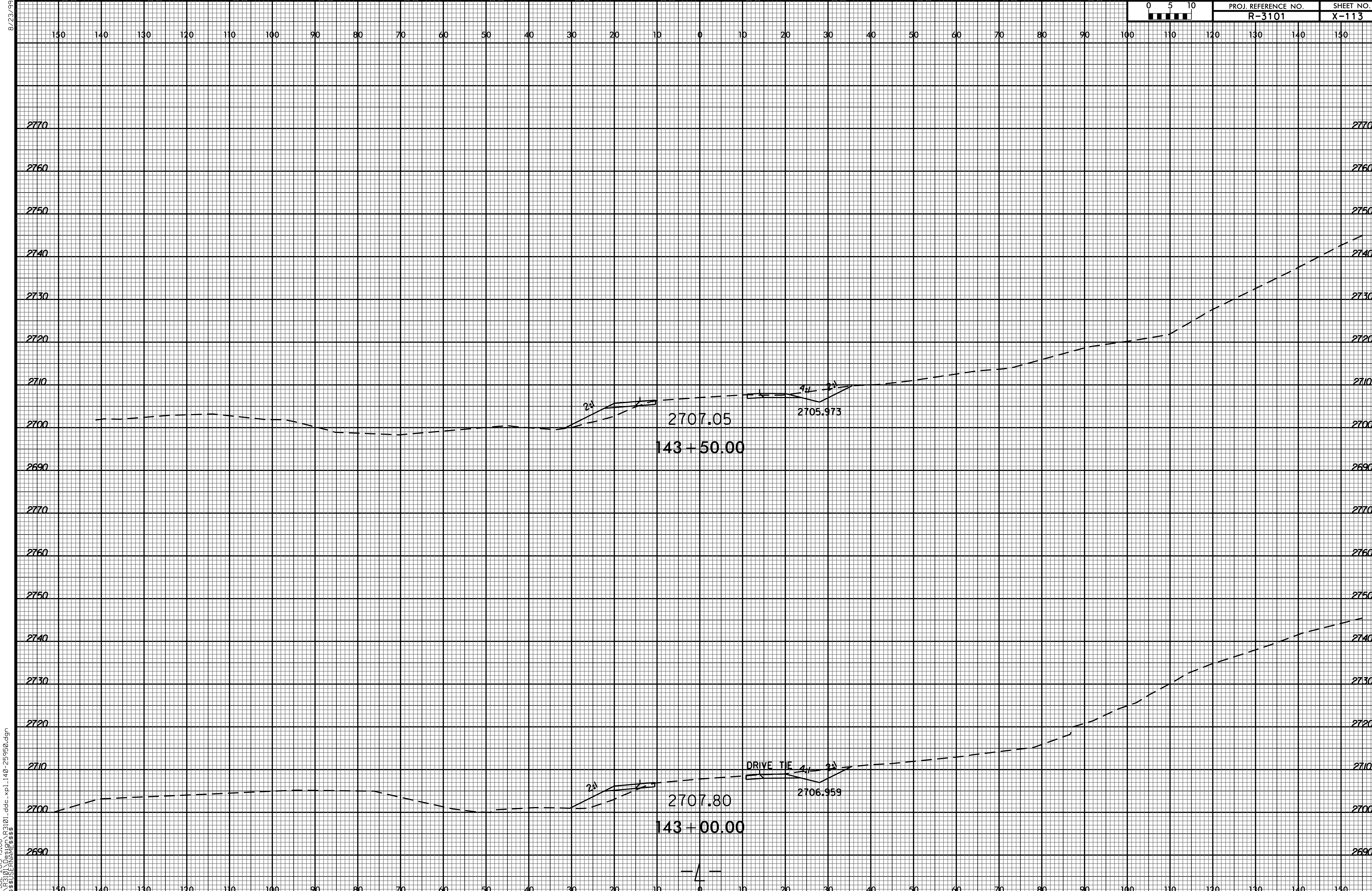
PROJ. REFERENCE NO.	SHEET NO.
R-3101	X-113



8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-114

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2770 2760 2750 2740 2730 2720 2710 2700 2690

2:1

2705.54
144+50.00

4:1 2:1

2704.213

2:1

2706.34
144+00.00

4:1 2:1

2704.908

19-JUL-2013 13:08
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-193

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2840 2830 2820 2810 2800 2850 2840 2830 2820 2810 2800

4:1 1.5:1 2805.04

235+00.00

4:1 2:1 2808.88

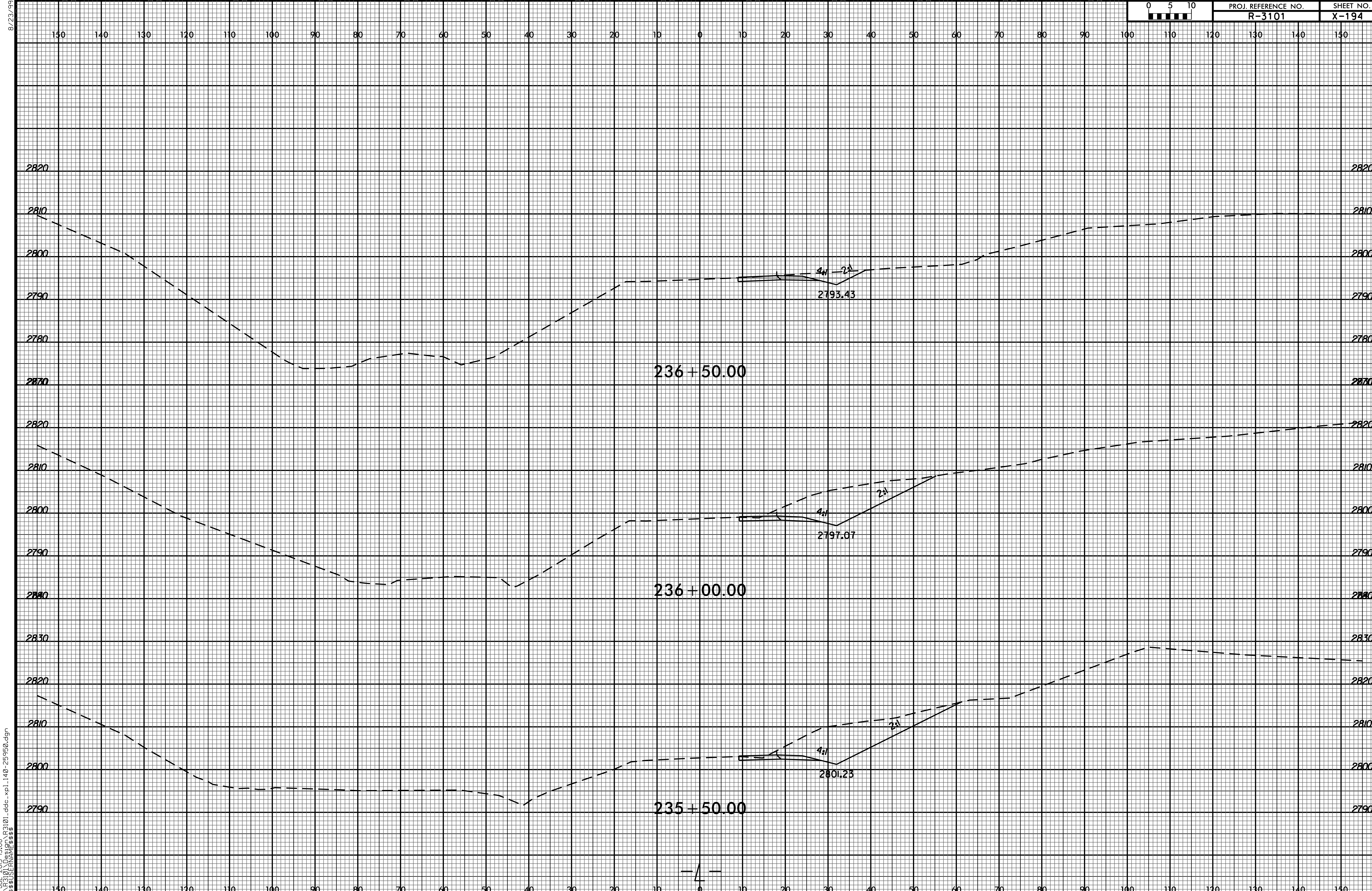
234+50.00

4:1 2:1 2813.25

234+00.00

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PROJ. REFERENCE NO.	SHEET NO.
R-3101	X-194



8/23/99

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-232

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2780 2770 2760 2750 2740 2730 2720

2739.08

291+00.00

2737.565

2737.14

290+50.00

2735.242

2735.56

290+00.00

2733.772

—/—

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-233

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2790 2780 2770 2760 2750 2740 2730 2720

2:1 4:1 2:1

2744.17

2742.533

292+00.00

2:1 4:1 2:1

2741.50

2735.50

291+50.00

—L—

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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-238

297+50.00

2762.37

2760.252

297+00.00

2762.17

2760.247

19-JUL-2013 13:08
$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-239

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2790 2780 2770 2760 2750 2740

2763.04

299+00.00

2762.78

2760.730

298+50.00

2762.53

2760.376

298+00.00

—L—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

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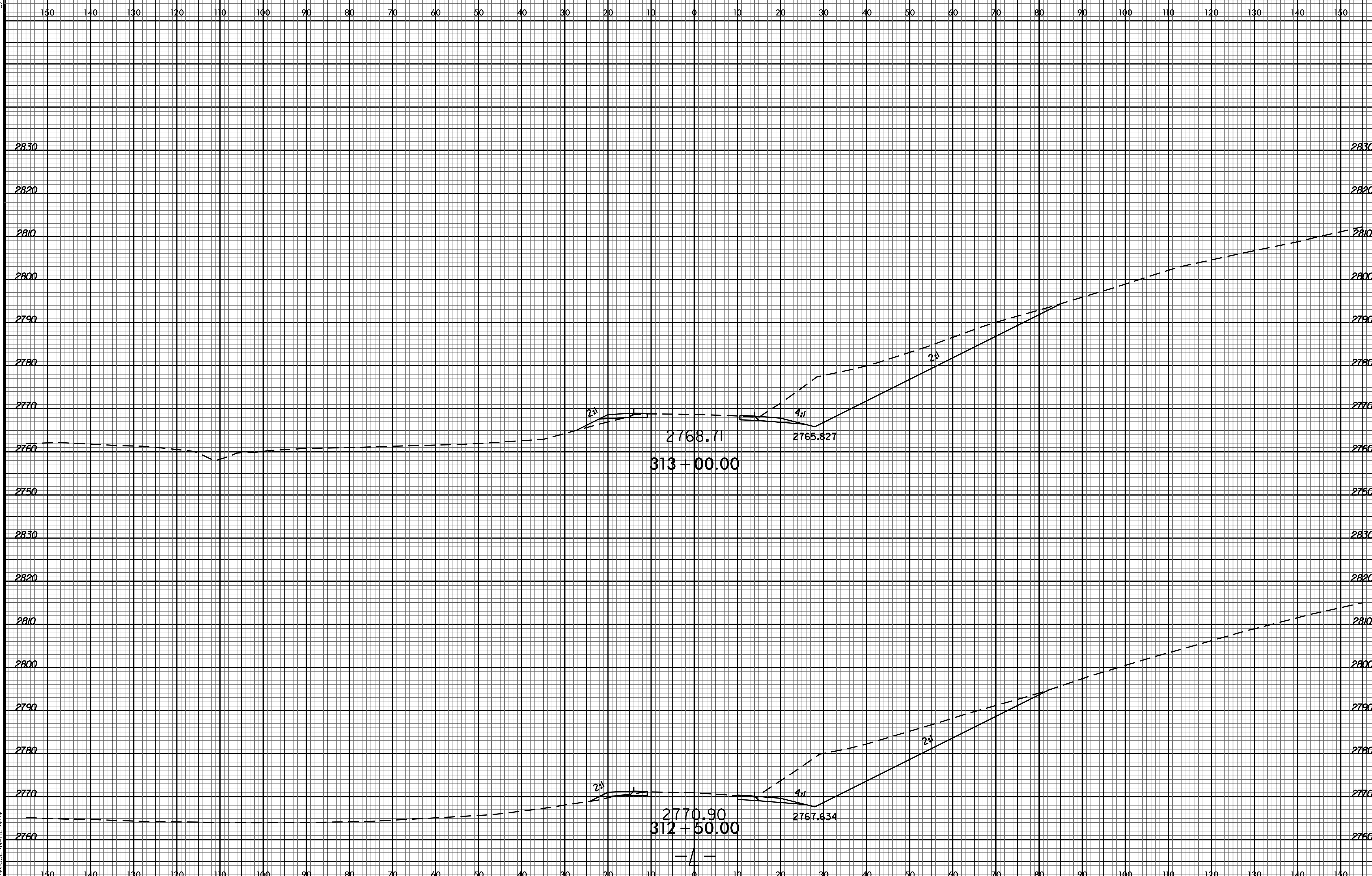
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-251



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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-252

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2820 2810 2800 2790 2780 2770 2760 2750

2%

4%

2764.39

2761.535

314+00.00

2%

2%

4%

2766.59

2763.694

313+50.00

—/—

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2820 2810 2800 2790 2780 2770 2760 2750

19-JUL-2013 13:09
R:\R3101\Design\R3101_ddc_xpl_260-39450.dgn
$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-270

2694.77

335+50.00

2692.582

2695.96

335+00.00

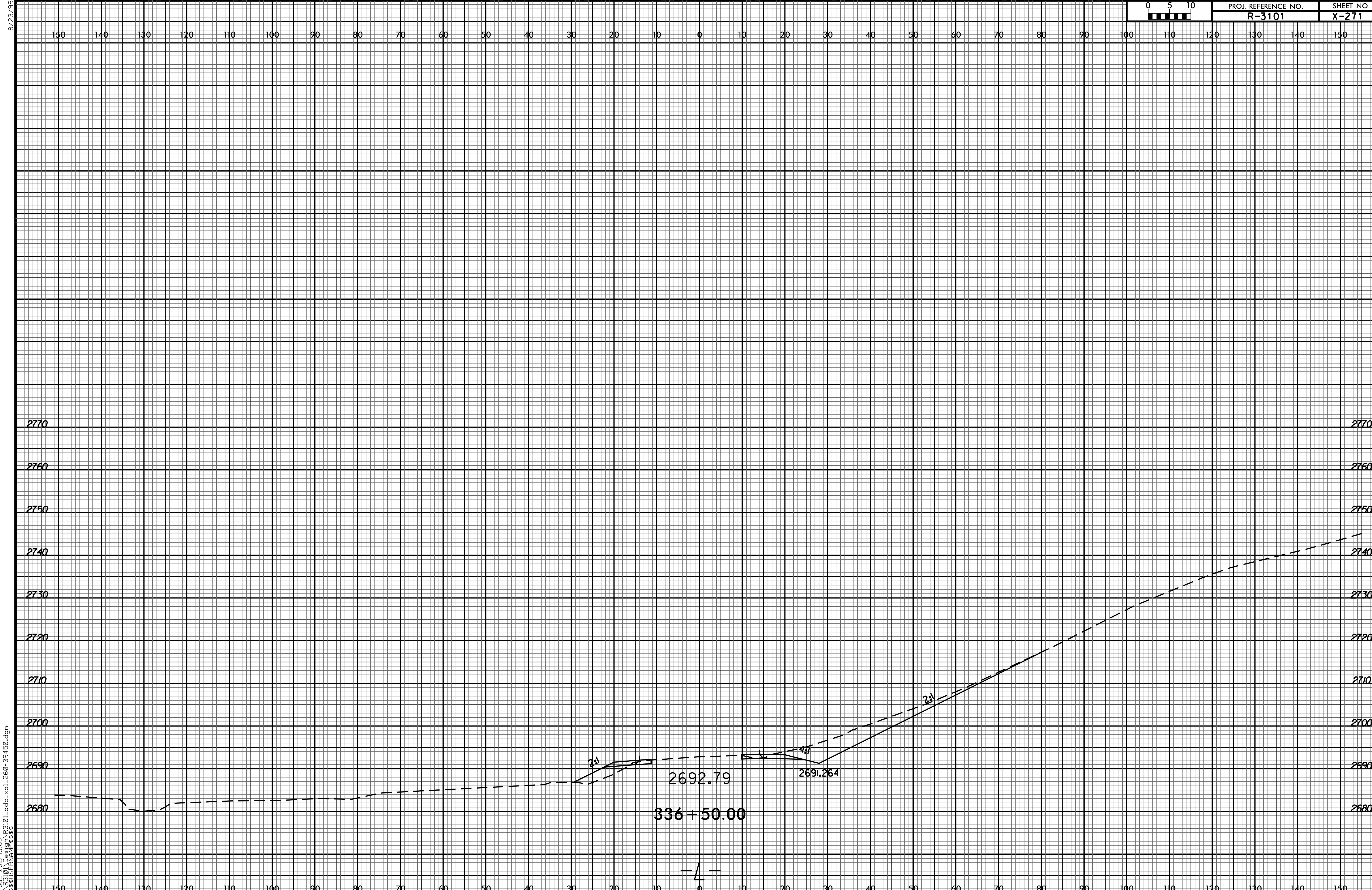
2692.308

—/—

2693.79

336+00.00

2691.806



PROJ. REFERENCE NO.
R-3101
SHEET NO.
X-271
0 5 10
2692.79
2691.264
336+50.00
2:1
4:1
2:1
2770
2760
2750
2740
2730
2720
2710
2700
2690
2680
8/23/99
19-JUL-2013 13:09
R:\R3101\Design\R3101_rdy_xpl_260-39450.dgn
$$$$USERNAME$$$$

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-394

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2930 2920 2910 2900 2890 2880 2870 2860

DRIVE TIE

4:1 2:1

2889.43

2886.664

2:1

501+50.00

2:1 2:1

2889.45

501+00.00

19-JUL-2013 13:09
R:\R3101\Design\R3101_ddc_xpl_395-521.dgn
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8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3101	X-395

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2920 2910 2900 2890 2880 2870

2% 4% 2%

2891.56

2889.000

503+00.00

2% 4% 2%

2890.47

2887.802

502+50.00

2% 4% 2%

2889.78

2887.069

502+00.00

19-JUL-2013 13:09
R:\R3101\Design\R3101_ddc_xpl_395-521.dgn
$$$$USERNAME$$$$