STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

NICHOLAS J. TENNYSON
SECRETARY

October 13, 2015

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

ATTN: Mr. John Thomas
NCDOT Division 9 Project Coordinator

Subject: **Application for Section 404 Nationwide Permit 14 and Section 401 Water Quality Certification** for improvements to SR 1221 (Old Beatty Ford Road) from SR 1337 (Lentz Road) to SR 2335 (Lower Stone Church Road), Rowan County, North Carolina, Federal Aid Project No. STP-1221(15), TIP No. W-5313.

Debit $240.00 from WBS Element No. 46136.1.1

Please find enclosed the Pre-Construction Notification (PCN) form, Jurisdictional Determination (JD), North Carolina Division of Mitigation Services (NCDMS) Acceptance Letter, stormwater management plan, permit drawings, and roadway design plans for the above referenced project. A Categorical Exclusion (CE) was completed for this project on May 15, 2014.

The proposed let date for the project is August 16, 2016 with a review date of June 28, 2016. However, the let date may advance as additional funds become available.

A copy of this permit application and its distribution list will be posted on the NCDOT website at https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx. A copy of the Categorical Exclusion (CE) is also available at the above website address. Thank you for your time and assistance with this project. Please contact Deanna Riffey at either driffey@ncdot.gov or (919) 707-6151 if you have any questions or need additional information.

Sincerely,

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

Cc: NCDOT Permit Application Standard Distribution List

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
NATURAL ENVIRONMENT SECTION
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-707-6100

FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

PHYSICAL ADDRESS:
Century Center - Building B
1020 Birch Ridge Dr
Raleigh, NC 27610-4328

Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.4 January 2009

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:	Improvements to SR 1221 (Old Beatty Ford Road) from SR 1337 (Lentz Road) to SR 2335 (Lower Stone Church Road)
2b. County:	Rowan
2c. Nearest municipality / town:	China Grove
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	W-5313

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) 707-6151
3g. Fax no.:	(919) 212-5785
3h. Email address:	driffey@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):	Latitude: 35.52007 (DD.DDDDDD) Longitude: - 80.487687 (-DD.DDDDDD)
1c. Property size:	24 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Dutch Buffalo Creek
2b. Water Quality Classification of nearest receiving water:	WSII HQW
2c. River basin:	Yadkin-Pee Dee
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: Land use within the vicinity is primarily of agriculture, interspersed with residential development along roadways and forested areas.	
3b. List the total estimated acreage of all existing wetlands on the property: 0.015 acres	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 1779 linear feet	
3d. Explain the purpose of the proposed project: To improve vehicular safety and traffic operation along Old Beatty Ford Road (SR 1221) by widening the exsiting facility, constructing paved and earthen shoulder, drainage ditches, and purchasing right of way along roadway for highway maintenace and operations.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves improving Old Beatty Ford Road (SR1221) from Lentz Road (SR 1337) to Lower Stone Church Road (SR 1001). The proposed project is approximately 7.3 miles long. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
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: SAW-2012-00693	☒ 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): Deanna Riffey	Agency/Consultant Company: NCDOT Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. April 21, 2012	
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.	
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	2f. Area of impact (acres)
Site 1 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	0.00
Site 2 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	0.00
Site 3 ☒ P ☐ T	Fill & Mechanized Clearing	Headwater Wetland	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 4 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 5 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 6 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	<0.01 Permanent 0 Temporary

2h. Comments:

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	UT Dutch Buffalo-SB	☒ PER ☐ INT	☒ Corps ☐ DWQ	3	13
Site 1 ☐ P ☒ T	Fill	UT Dutch Buffalo-SB	☒ PER ☐ INT	☒ Corps ☐ DWQ	3	19
Site 1 ☒ P ☐ T	Bank Stabilization	UT Dutch Buffalo-SB	☒ PER ☐ INT	☒ Corps ☐ DWQ	3	18
Site 2 ☒ P ☐ T	Fill	UT Dutch Buffalo - SD	☒ PER ☐ INT	☒ Corps ☐ DWQ	7	6
Site 2 ☐ P ☒ T	Fill	UT Dutch Buffalo-SD	☒ PER ☐ INT	☒ Corps ☐ DWQ	7	19
Site 2 ☒ P ☐ T	Bank Stabilization	UT Dutch Buffalo-SD	☒ PER ☐ INT	☒ Corps ☐ DWQ	7	36
Site 3 ☒ P ☐ T	Fill	UT Dutch Buffalo- SE	☒ PER ☐ INT	☒ **Corps** ☐ **DWQ**	6	15

Site 3 ☐ P ☒ T	Fill	UT Dutch Buffalo-SE	☒ PER ☐ INT	☒ Corps ☐ DWQ	6	15
Site 3 ☒ P ☐ T	Bank Stabilization	UT Dutch Buffalo-SE	☒ PER ☐ INT	☒ Corps ☐ DWQ	6	22
Site 4 ☒ P ☐ T	Fill	UT Dutch Buffalo-SC	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	11
Site 4 ☐ P ☒ T	Fill	UT Dutch Buffalo-SC	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	20
Site 4 ☒ P ☐ T	Bank Stabilization	UT Dutch Buffalo-SC	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	21
Site 5 ☒ P ☐ T	Fill	UT Dutch Buffalo-SF	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	5
Site 5 ☐ P ☒ T	Fill	UT Dutch Buffalo-SF	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	20
Site 5 ☒ P ☐ T	Bank Stabilization	UT Dutch Buffalo-SF	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	18
Site 6 ☒ P ☐ T	Fill	UT Second Creek-SI	☒ PER ☐ INT	☒ Corps ☐ DWQ	15	13
Site 6 ☐ P ☒ T	Fill	UT Second Creek-SI	☒ PER ☐ INT	☒ Corps ☐ DWQ	15	21
Site 6 ☒ P ☐ T	Bank Stabilization	UT Second Creek-SI	☒ PER ☐ INT	☒ Corps ☐ DWQ	15	44
Site 7 ☒ P ☐ T	Fill	UT Second Creek-SJ	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	9
Site 7 ☐ P ☒ T	Fill	UT Second Creek-SJ	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	22
Site 7 ☒ P ☐ T	Bank Stabilization	UT Second Creek-SJ	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	80
3h. **Total stream and tributary impacts**						311 ft Perm 136 ft Temp

3i. Comments: USACE mitigation ratio for SC & SF is 1:1.

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)
O1 ☐ P ☐ T				
O2 ☐ P ☐ T				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
4f. Total open water impacts				X Permanent X 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 ☐ Tar-Pamlico ☐ Other: ☐ Catawba ☐ Randleman

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: Buffer impacts for this project are less than 40 linear feet for the road crossings and are exempt.

D. Impact Justification and Mitigation		
1. Avoidance and Minimization		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. Where possible shifting the alignment was incorporated to avoid water resources, crossing streams perpendicularly, or crossing the narrowest areas of wetland systems. The project involves widening an existing road. Other than no build the minimal effects to one wetland on this project is unavoidable.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. NCDOT Best Management Practices for Construction and Maintenance Activities and Best Management Practices for the Protection of Surface Waters will be employed.		
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 If no, explain:	
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 mitigation requested:	72 feet (56 @2:1 & 16 @ 1:1)	
4c. If using stream mitigation, stream temperature:	☒ warm ☐ cool ☐cold	
4d. Buffer mitigation requested (DWQ only):	square feet	
4e. Riparian wetland mitigation requested:	0 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:	☐ 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
5b. Have all of the 401 Unit submittal requirements been met?	☒ Yes ☐ No

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. Due to the minimal transportation impact resulting from the improvements, 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? USFWS county list and NCNHP database along with field surveys. Surveys last conducted for Schweinitz's sunflower was October 2015. Habitat is present, but no Schweinitz's found. Biological conclusion is No Effect. The USFWS listed the Northern long-eared bat (Myotis septentrionalis; NLEB) as a Threatened species on April 2, 2015. Construction activities for this project will not take place until Endangered Species Act compliance is satisfied for the NLEB. NCDOT has requested Section 7 concurrence as of October 13,2015 from the U.S. Fish and Wildlife Service (USFWS).	
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	

for Richard W. Hancock, P.E. Applicant/Agent's Printed Name	Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	10-14-15 Date

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

RECEIVED
MAY 2 2012
DIVISION OF HIGHWAYS
PDEA-OFFICE OF ENVIRONMENT

Action Id. **201200693** County: **Rowan** U.S.G.S. Quad:

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner/Agent: **Dr. Greg Thorpe / Deanna Riffey**
Address: **NC DOT**
1598 Mail Service Center
Raleigh, NC 27699-1598
Telephone No.: **919 707-6148**

Property description:
Size (acres) ____ Nearest Town **Landis**
Nearest Waterway **Dutch Buffalo Creek** River Basin **Catawba**
USGS HUC **03050101** Coordinates N W
Location description **SR 1221/ Old Betty Ford Road from SR 1337 (Lentz Road) to SR 2335 (Lower Stone Church Road) in Rowan County adjacent to Dutch Buffalo Creek, Landis, North Carolina. TIP W-5313**

Indicate Which of the Following Apply:

A. Preliminary Determination

_ Based on preliminary information, there may be wetlands on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).

B. Approved Determination

_ There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

X There are waters of the U.S. including wetlands on the above described project area subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

_ We strongly suggest you have the wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.

X The waters of the U.S. including wetland on your project area have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.

_ The wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

_ There are no waters of the U.S., to include wetlands, present on the above described property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

_ The property is located in one of the 20 Coastal Counties subject to regulation under the Coastal Area Management Act (CAMA). You should contact the Division of Coastal Management in Washington, NC, at (252) 946-6481 to determine their requirements.

Action ID: _____

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **John Thomas** at **919 554-4884 ext. 25**.

C. Basis For Determination

There are stream channels within your project site which are tributaries of Dutch Buffalo Creek which flows into the Catawba River and the Atlantic Ocean.

D. Remarks

E. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

District Engineer, Wilmington Regulatory Division
Attn:Jean Gibby, Project Manager,
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the District Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **June 30, 2012**.

It is not necessary to submit an RFA form to the District Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: _____

Date **04/30/2012** Expiration Date **04/30/2017**

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at our website at http://regulatory.usacesurvey.com/ to complete the survey online.

Copy furnished:

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Division of Mitigation Services

Donald R. van der Vaart
Secretary

September 3, 2015

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

Dear Mr. Hancock:

Subject: Mitigation Acceptance Letter:

W-5313, SR 1221 (Old Beaty Ford Road) Improvements from SR 2335 (Lower Stone Church Road) to SR 1337 (Lentz Road), Rowan County

Reference: USACE Action ID 2012-00693

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on August 27, 2015, the impacts are located in CU 03040105 of the Yadkin River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Yadkin 03040105 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	72.0	0	0	0	0	0

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

This impact and associated mitigation need were under projected by the NCDOT in the 2015 impact data. DMS 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 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 DMS.

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

Sincerely,

James B. Stanfill
Asset Management Supervisor

cc: Mr. John Thomas, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: W-5313

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.01; Released December 2014)

WBS Element:	46136.1.1	**TIP No.:**	W-5313	**County(ies):**	Rowan	**Page**	1	**of**	4

General Project Information

WBS Element:	46136.1.1	**TIP Number:**	W-5313	**Project Type:**	Roadway Widening	**Date:**	6/23/2015
NCDOT Contact:	Linda Johns			**Contractor / Designer:**	NCDOT Hydraulics Unit		
Address:	NCDOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699-1590			**Address:**	1590 Mail Service Center Raleigh, NC 27699-1590		
Phone:	919-707-6728			**Phone:**	919-707-6728		
Email:	lmjohns@ncdot.gov			**Email:**	lmjohns@ncdot.gov		
City/Town:	southeast of China Grove, Southwest of Rockwell			**County(ies):**	Rowan		
River Basin(s):	Yadkin-Pee Dee			**CAMA County?**	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	7.33 miles	**Surrounding Land Use:**	agriculture, forests, rural residential		
	Proposed Project			**Existing Site**	
Project Built-Upon Area (ac.)	23.6	ac.		20.2	ac.
Typical Cross Section Description:	Proposed project includes upgrading to standardized 11 ft wide travel lanes, construct 2 ft wide paved shoulders and 2 ft wide earthen shoulders and construct drainage ditches.			SR 1221 (Old Beatty Ford Rd) is a two-lane, two-way facility , with varying widths of 9 to 11 feet, no paved shoulders, little to no existing earthen shoulders and no sidewalks.	
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 5,800	Year: 2035		Existing: 4333	Year: 2015

General Project Narrative: (Description of Minimization of Water Quality Impacts)

The purpose of the proposed project is to improve vehicular safety and traffic operations along SR 1221 (Old Beatty Ford Rd) from SR 1337 (Lentz Rd) to SR 2335 (Lower Stone Church Rd). W-5313 was identified as a Hazard Elimination project by NCDOT Triad Regional Traffic Safety engineers, in conjuction with the NCDOT Highway Division 9 engineering staff. The Build Alternative proposes standardizing the existing 9 ft to 11 ft lane widths to 11 ft each, constructing 2 ft paved shoulders and 2 ft earthen shoulders, construct drainage ditches and purchase right-of-way along this section of SR 1221 (Old Beatty Ford Rd) for highway maintenance and operations. Turn lanes will be designed at project intersections as warranted, however no renovation of Bridge 126, across Dutch Buffalo Creek, is proposed in W-5313. The length of the proposed hazard elimination improvements along SR 1221 (Old Beatty Ford Rd) is 7.33 miles.

Minimization of total build area was reduced after project was presented to local citizens during a Citizens Informational Workshop (CIW), held in Bostian School, on April 12, 2011. NCDOT initially proposed 12 ft wide travel lanes and 4 ft wide paved shoulders. After reviewing the CIW comments and concerns, the proposed design alternative cross section was decreased in width to minimize environmental impacts to both the natural and human environments.

Best Management Practices include utilization of an open shoulder typical section, minimization of increased impervious area for the proposed roadway width and paved shoulder, as well as providing part of the shoulder as earthen shoulder, including gentle fill slopes and, when feasible, toe protection and bank stabilization.

Stormwater Controls used on this project include grass swales and allowance of overland flow, where appropriate.

Note: Although the existing bridge at Dutch Buffalo Creek will not be replaced with this project, some roadway runoff will drain to it. Dutch Buffalo Creek is noted as Surface Water Body (1), below.

Waterbody Information

Surface Water Body (1):	UT to Dutch Buffalo Creek	**NCDWR Stream Index No.:**	13-17-11-(1)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply II (WS-II)		
		Supplemental Classification:	High Quality Waters (HQW)		
Other Stream Classification:					
Impairments:	None				
Threatened/Endangered Species?	No	Comments:			
NRTR Stream ID:	SB			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.01; Released December 2014)

WBS Element:	46136.1.1	TIP No.:	W-5313	County(ies):	Rowan	Page	2	of	4

Additional Waterbody Information

Surface Water Body (2):	UT to Dutch Buffalo Creek		**NCDWR Stream Index No.:**	13-17-11-(1)	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply II (WS-II)		
		Supplemental Classification:	High Quality Waters (HQW)		
Other Stream Classification:					
Impairments:	None				
Threatened/Endangered Species?	No	Comments:			
NRTR Stream ID:	SD			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (3):	UT to Dutch Buffalo Creek		**NCDWR Stream Index No.:**	13-17-11-(1)	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply II (WS-II)		
		Supplemental Classification:	High Quality Waters (HQW)		
Other Stream Classification:					
Impairments:	None				
Threatened/Endangered Species?	No	Comments:			
NRTR Stream ID:	SE			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (4):	UT to Dutch Buffalo Creek		**NCDWR Stream Index No.:**	13-17-11-(1)	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply II (WS-II)		
		Supplemental Classification:	High Quality Waters (HQW)		
Other Stream Classification:					
Impairments:	None				
Threatened/Endangered Species?	No	Comments:			
NRTR Stream ID:				**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (5):	UT to Second Creek		**NCDWR Stream Index No.:**	12-117-2	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:			
Other Stream Classification:					
Impairments:	None				
Threatened/Endangered Species?	No	Comments:			
NRTR Stream ID:				**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.01; Released December 2014)

WBS Element:	46136.1.1	**TIP No.:**	W-5313	**County(ies):**	Rowan	**Page**	**3**	**of**	**4**

Additional Waterbody Information

Surface Water Body (6):	UT to Second Creek		**NCDWR Stream Index No.:**	12-117-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:	None					
Threatened/Endangered Species?	No	Comments:				
NRTR Stream ID:	SI			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (7):	UT to Second Creek		**NCDWR Stream Index No.:**	12-117-2		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:	None					
Threatened/Endangered Species?	No	Comments:				
NRTR Stream ID:	SJ			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.01; Released December 2014)

WBS Element: 46136.1.1 **TIP No.:** W-5313 **County(ies):** Rowan

Swales

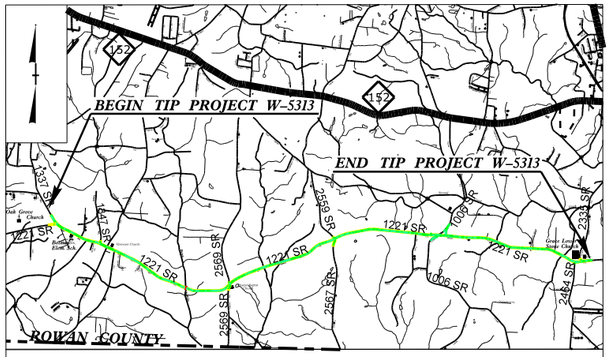
Sheet No.	Stations (Road Projects) or Coordinates (Non-Road)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
12	-L- 127+00 LT -L- 127+75 LT	(2)UT to Dutch Buffalo	0.0	4.0	2.0	0.4	39	75	1.70%	1.0	1.9	1.1	1.9	No	No
17	-L- 190+50 LT -L- 191+15 LT	(4)UT to Dutch Buffalo	3.0	4.0	2.0	0.4	39	65	1.50%	2.6	1.9	3.3	2.0	No	No
18	-L- 207+69 LT -L- 208+50 LT	(5)UT to Dutch Buffalo	0.0	4.0	2.0	0.4	38	81	0.5 - 2.0%	7.5	2.0	9.6	2.1	No	No
18	-L- 210+00 LT -L- 209+20 LT	(5)UT to Dutch Buffalo	0.0	4.0	2.0	0.5	46	80	1.0 - 4.0%	3.9	1.9	5.0	2.1	No	No

Additional Comments

TIP PROJECT: W-5313

CONTRACT: C203672

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



VICINITY MAP SHOWING LOCATION OF PROJECT W-5313

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROWAN COUNTY

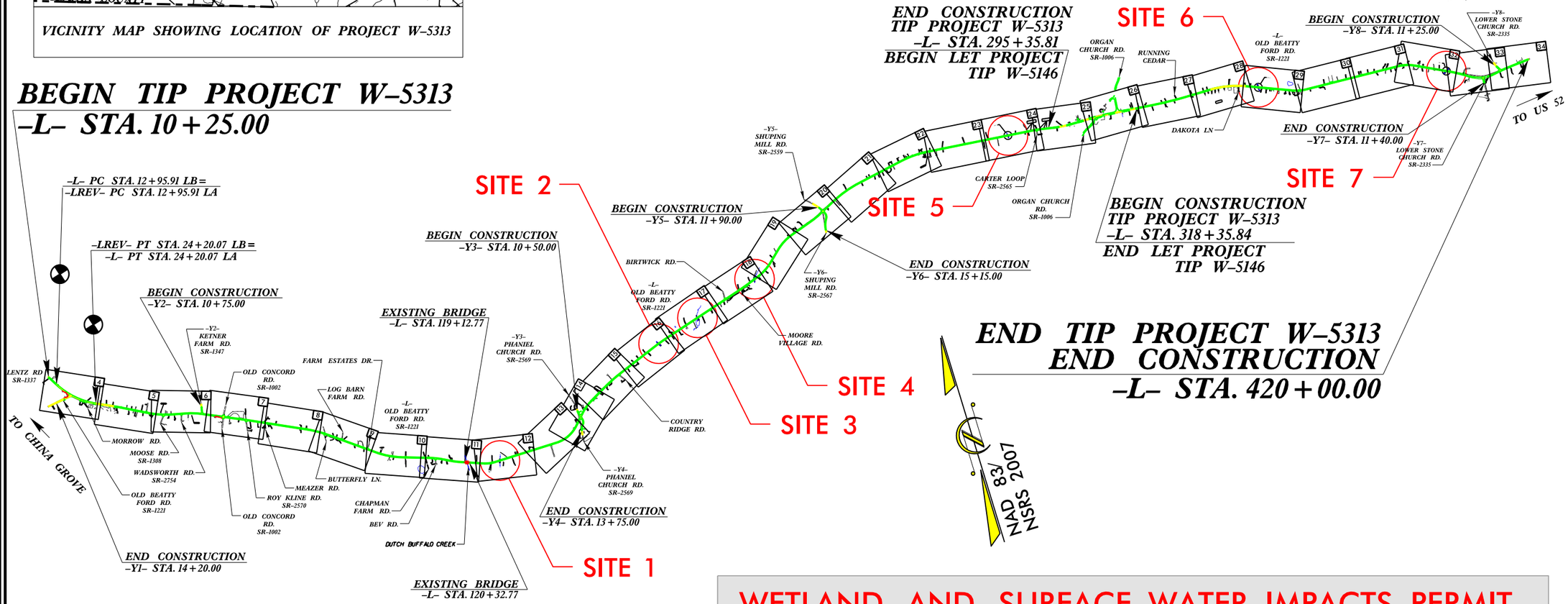
PERMIT DRAWING
SHEET 1 OF 29

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5313	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46136.1.1	STP-1221(15)	P.E.
46136.1.FD1	STP-1221(15)	R/W
46136.1.FDU1	STP-1221(15)	UTIL

LOCATION: SR 1221 (OLD BEATTY FORD ROAD)
FROM SR 1337 (LENTZ ROAD) TO
SR 2335 (LOWER STONE CHURCH ROAD)

TYPE OF WORK: WIDENING, RESURFACING, DRAINAGE, SIGNING AND CULVERTS



WETLAND AND SURFACE WATER IMPACTS PERMIT

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2015 = 4333
ADT 2035 = 5800
DHV = 10 %
D = 65 %
T = 8 % *
V = 50 MPH
* TTST = 3 DUAL = 5
FUNC CLASS =
RUAL COLLECTOR
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT W-5313	=	7.33 MILES
LENGTH OF STRUCTURE TIP PROJECT W-5313	=	0.00 MILES
TOTAL LENGTH OF TIP PROJECT W-5313	=	7.33 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 29, 2014

LETTING DATE:
FEBRUARY 16, 2016

TONY HOUSER, PE.
PROJECT ENGINEER

LEE ANN MOORE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

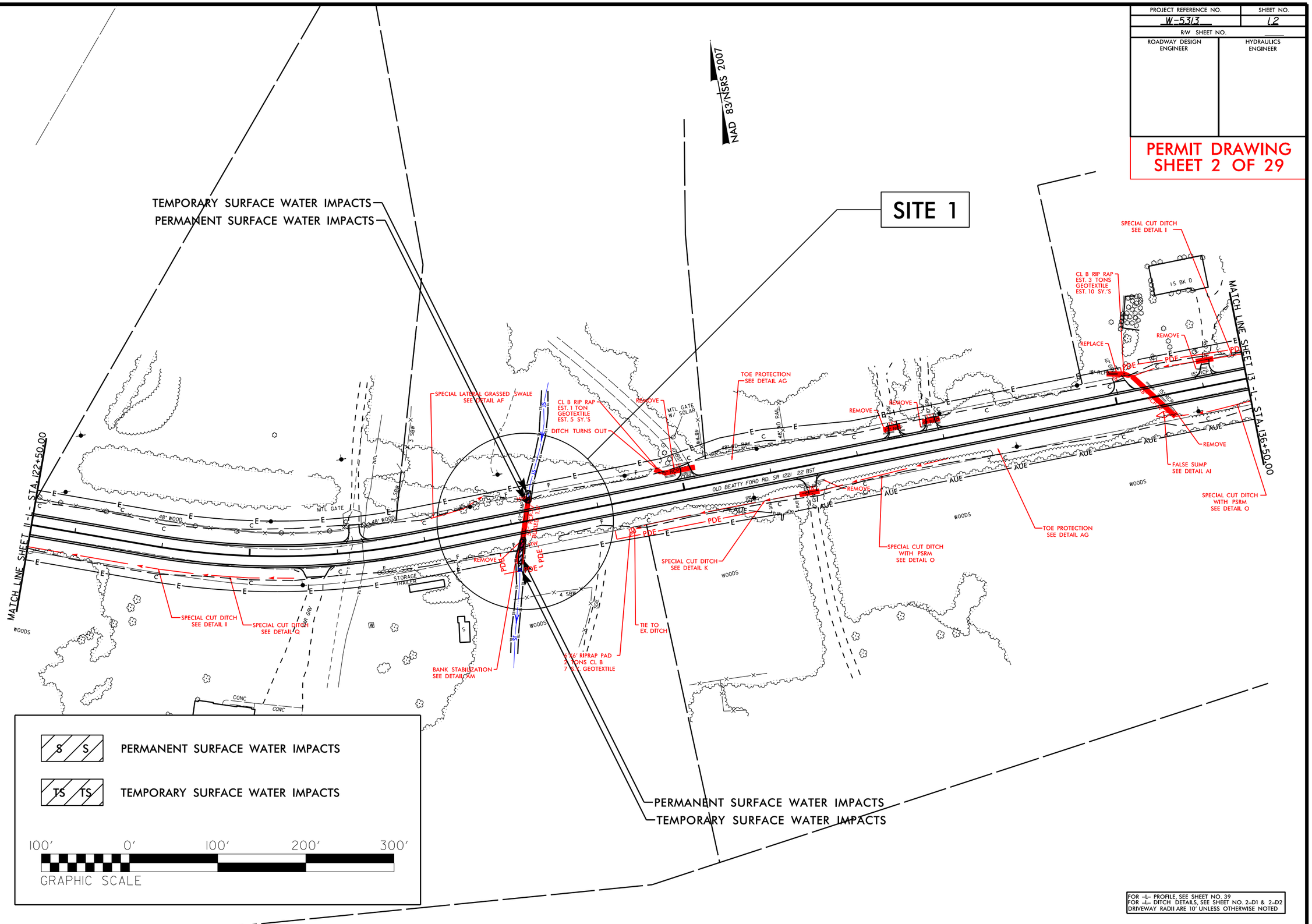
ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

6/23/2015
9:10:00
R:\Hydraulics\PERMITS_Environmental\Drawings\W5313_Permit Package_20150623\W-5313_Hyd_prm_01_TSH.dgn
$$$$$$$$$$USERNAME$$$$$$$$$$DGN$$$$$$$$$$SYSTIME$$$$$$$$$$
09/08/99

PROJECT REFERENCE NO.	SHEET NO.
W-5313	L2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 2 OF 29



FOR –L– PROFILE, SEE SHEET NO. 39
FOR –L– DITCH DETAILS, SEE SHEET NO. 2–D1 & 2–D2
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

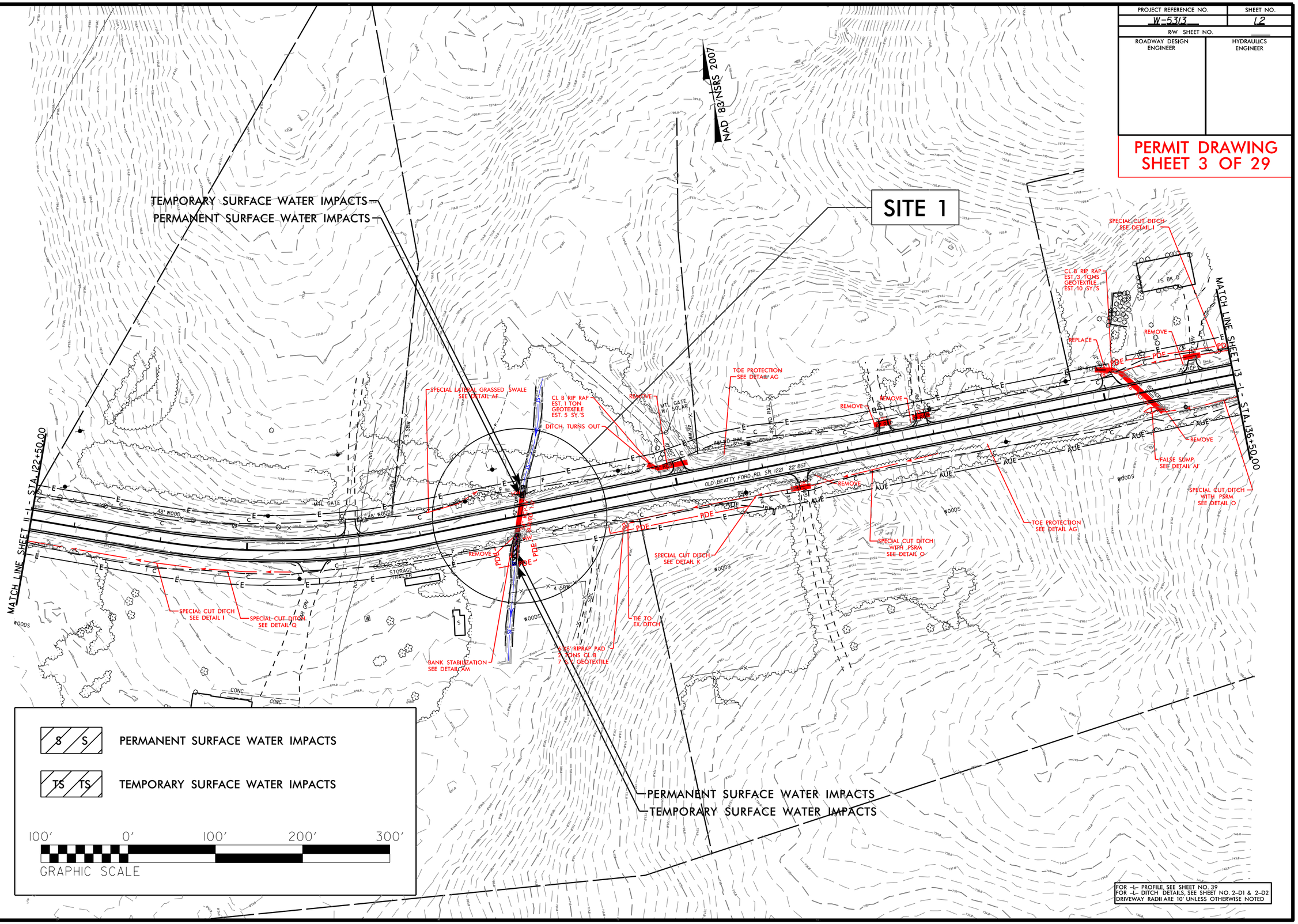
REVISIONS

8/17/99

6/23/2015
ejhahn
R:\Hydraulics\PERMITS\Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_02_PSH12.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	L2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 3 OF 29



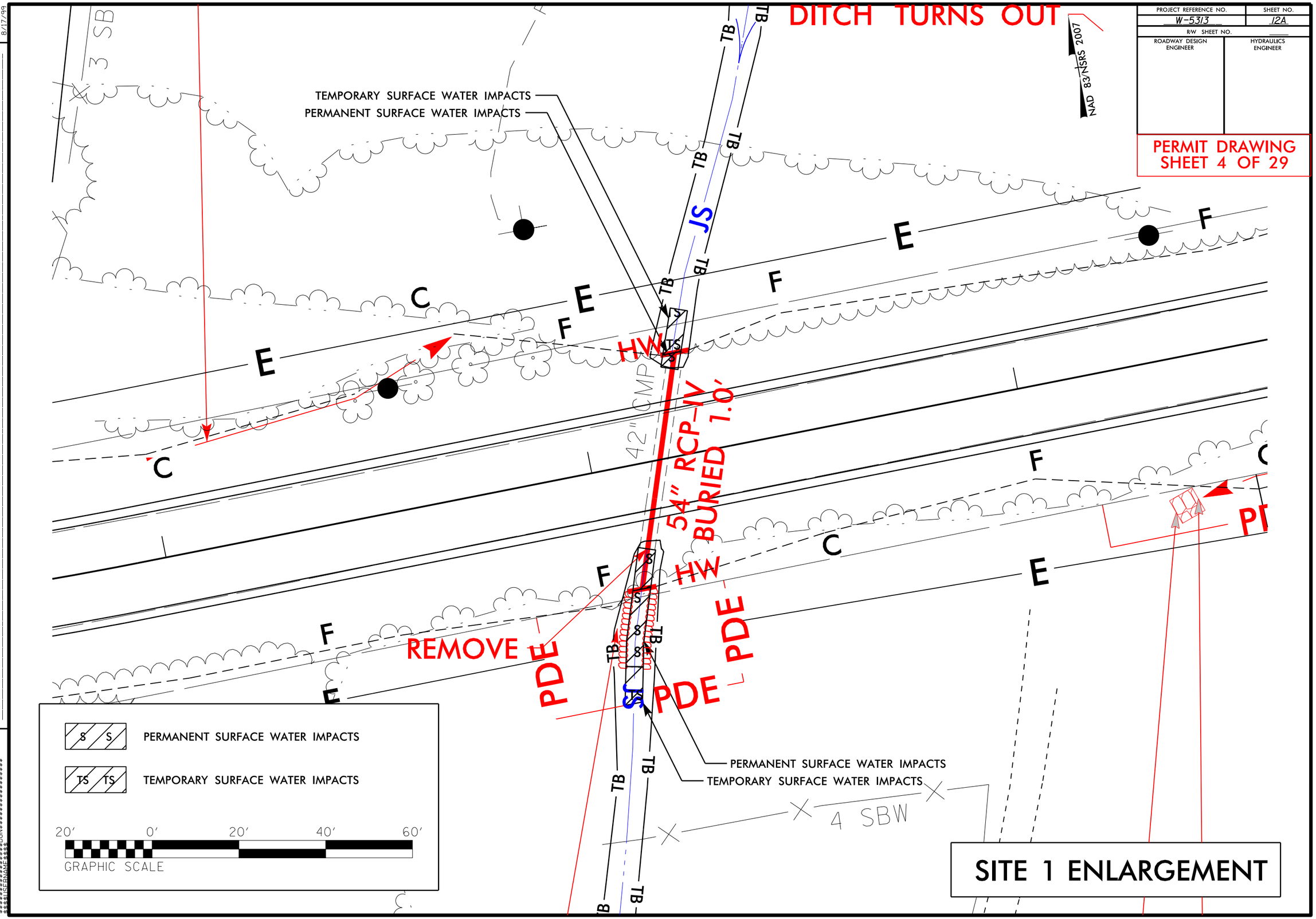
REVISIONS

8/17/99

6232015
ejhahn
R:\Hydraulics\PERMITS\Environmental\Drawings\W5313_Permit Package 20150623\W-5313_Hyd_prm_02_PSH12.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	12A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 4 OF 29



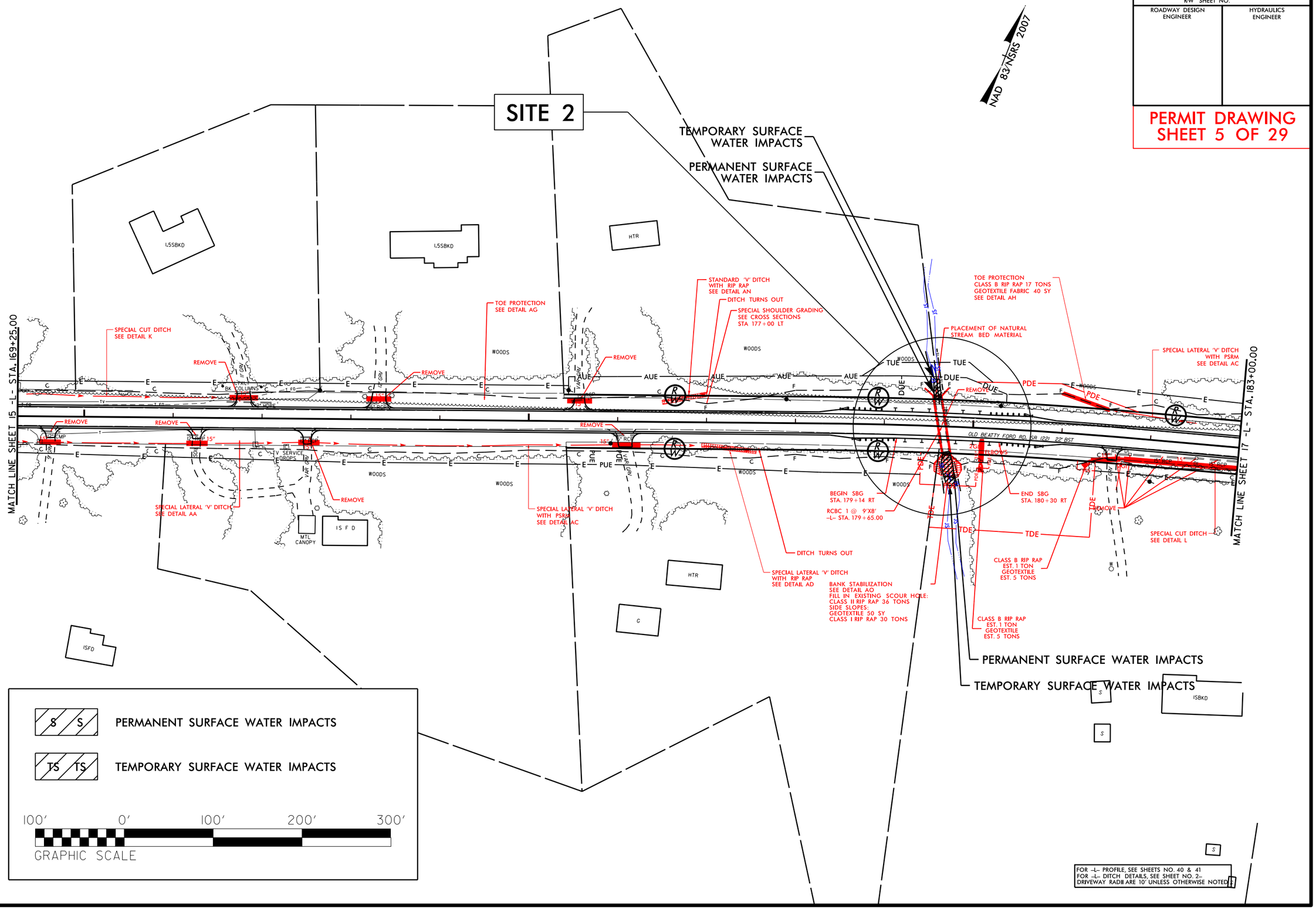
REVISIONS

8/17/99

6/23/2015
ghutin
R:\Hydraulics\PERMITS_Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_04_PSH12A.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 5 OF 29



FOR -L- PROFILE, SEE SHEETS NO. 40 & 41
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

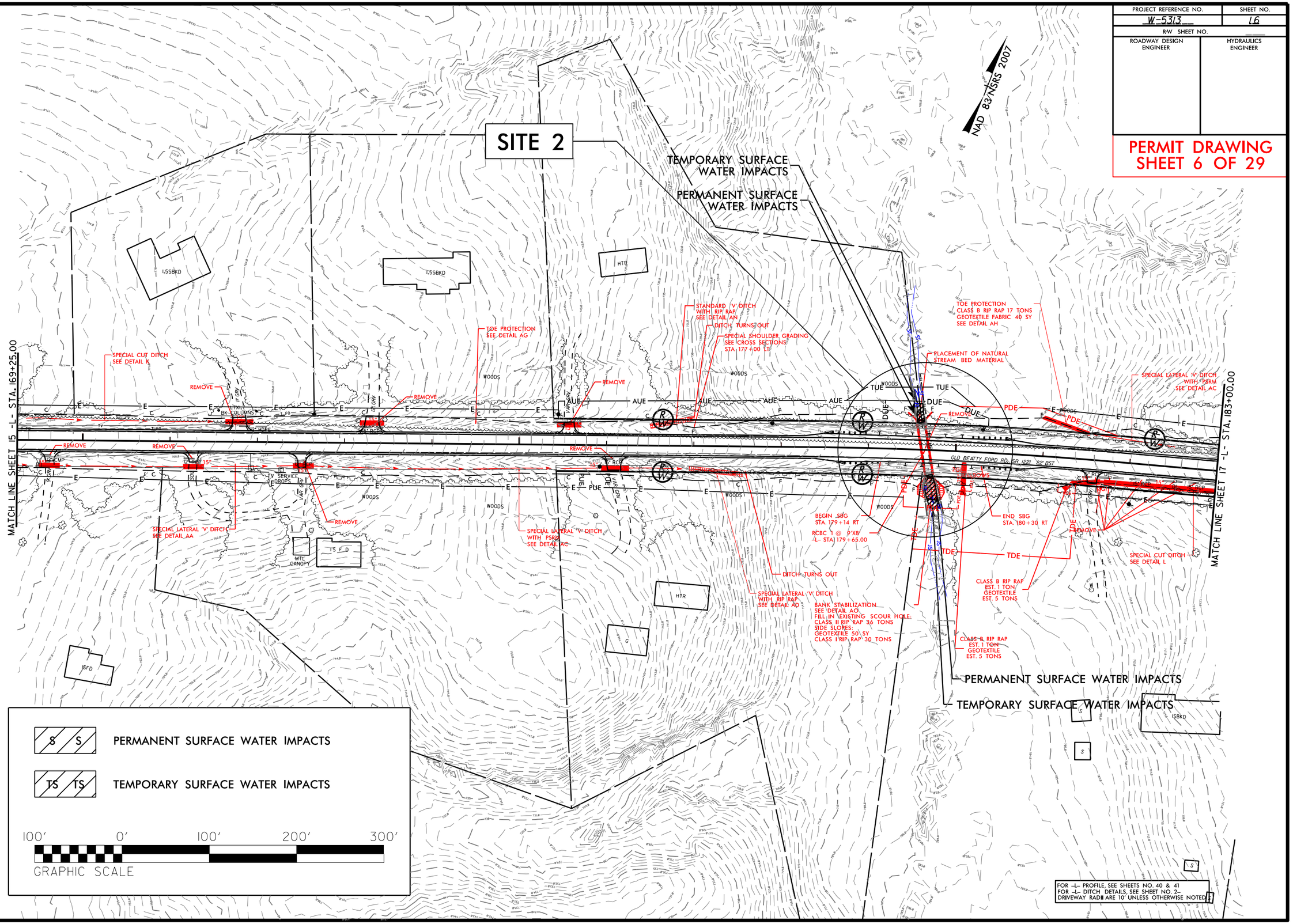
REVISIONS

8/17/99

10/30/2015
Irrighns
h:\hydraulics\PERMITS Environmental\Drawings\W5313 Permit Package 20151030\W-5313_Hyd_prm_05_PSH16.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	1.6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 6 OF 29



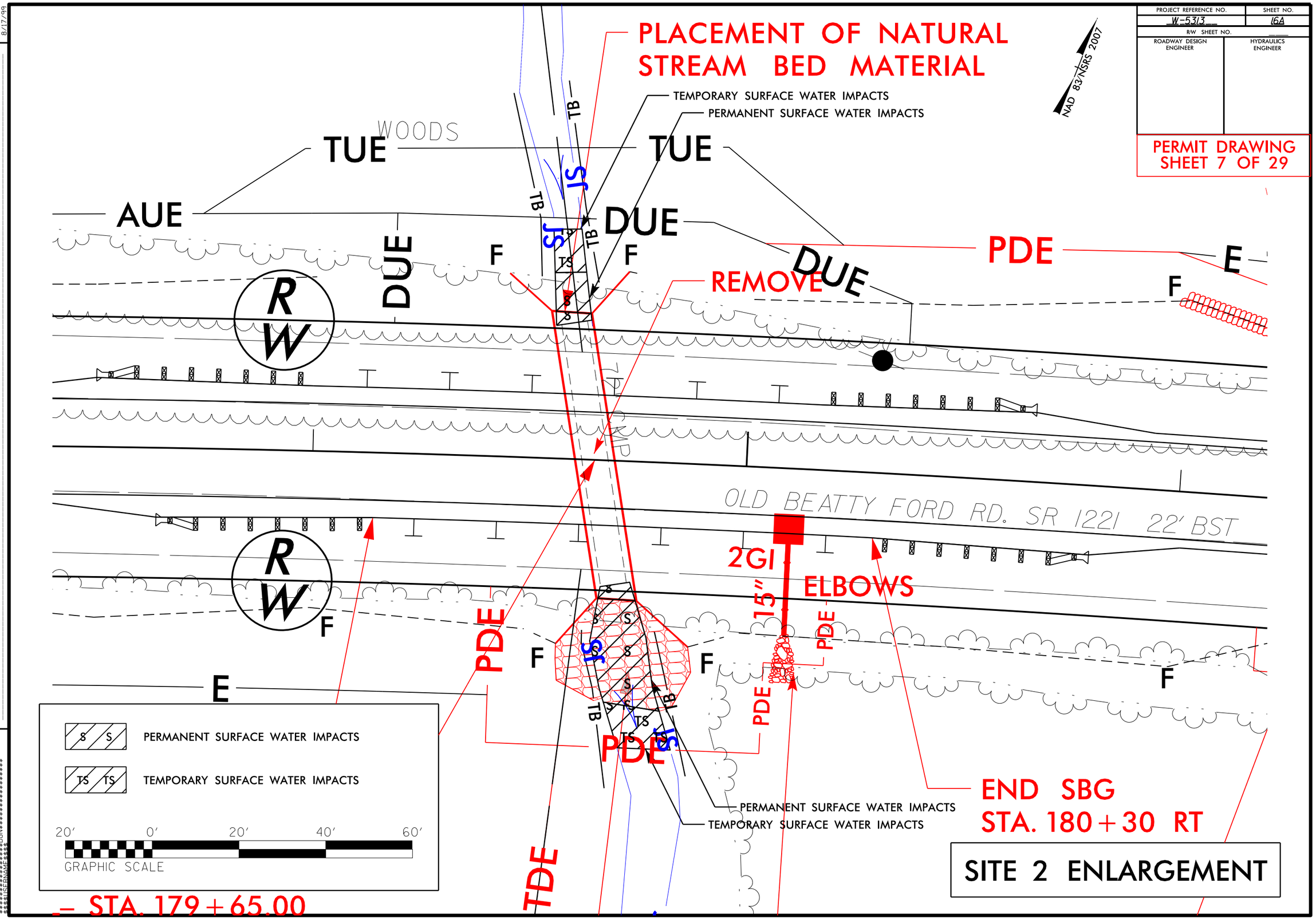
REVISIONS

8/17/99

10/30/2015
Rnjohns
R:\Hydraulics\PERMITS Environmental Drawings\W5313 Permit Package 20151030\W-5313_Hyd_prm_06_PSH16.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	16A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 7 OF 29



SITE 2 ENLARGEMENT

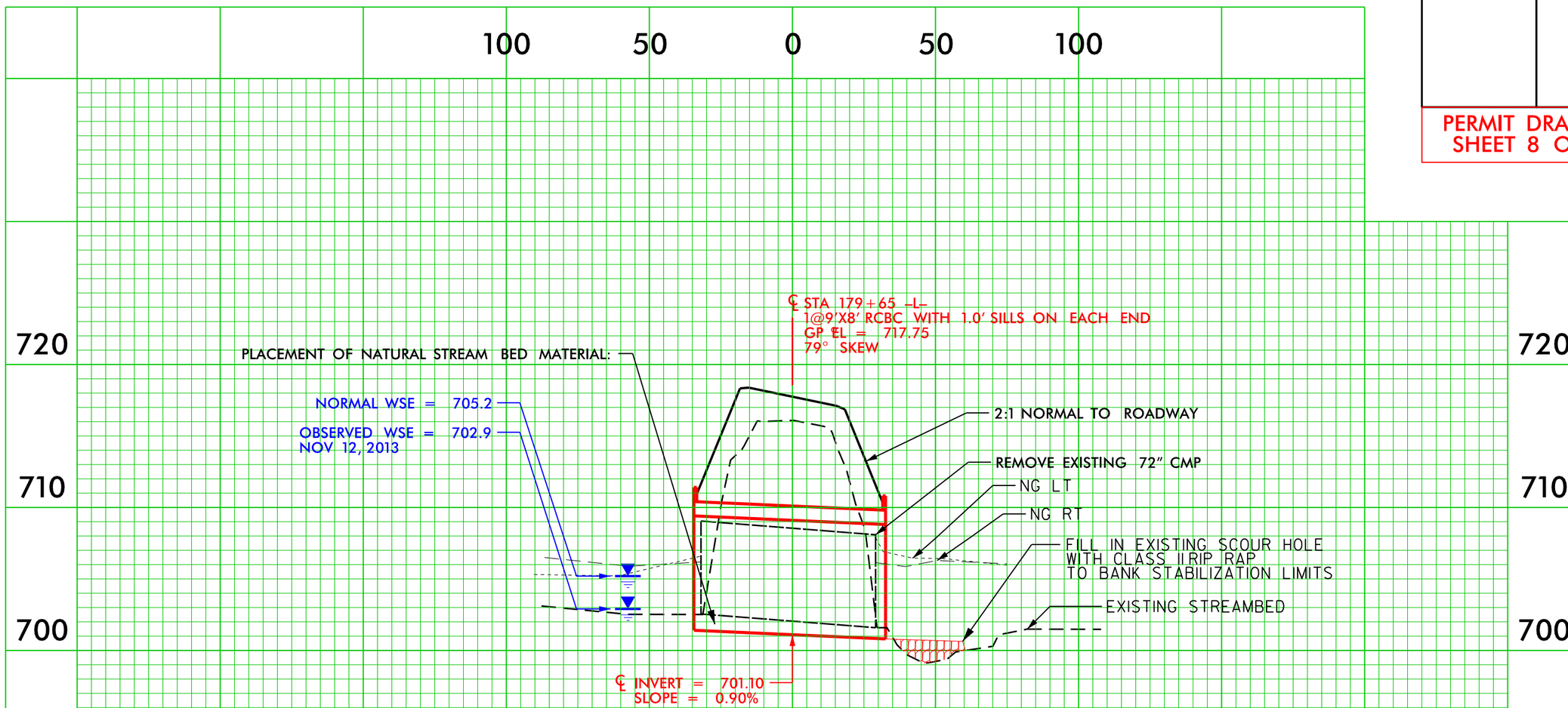
REVISIONS

8/17/99

10/30/2015
Implins
R:\Hydraulics\PERMITS Environmental Drawings\W5313 Permit Package 20151030\W-5313_Hyd_prm_07_PSH16A.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	16B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 8 OF 29



PLACEMENT OF NATURAL STREAM BED MATERIAL:
NATIVE BED MATERIAL SUPPLEMENTED WITH RIP RAP SHALL BE PLACED BETWEEN THE SILLS IN THE CULVERT TO PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIALS CONSIST OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. RIP RAP SHALL BE USED TO SUPPLEMENT THE NATIVE MATERIAL IN THE BACKFILL OF THE CULVERT. THE TOP SURFACE OF THE NATURAL STREAM BED MATERIAL SHALL BE PLACED AND LEVELED TO A FLAT SURFACE TO ALLOW FOR ANIMAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

CULVERT AND STREAM PROFILE
SITE 2

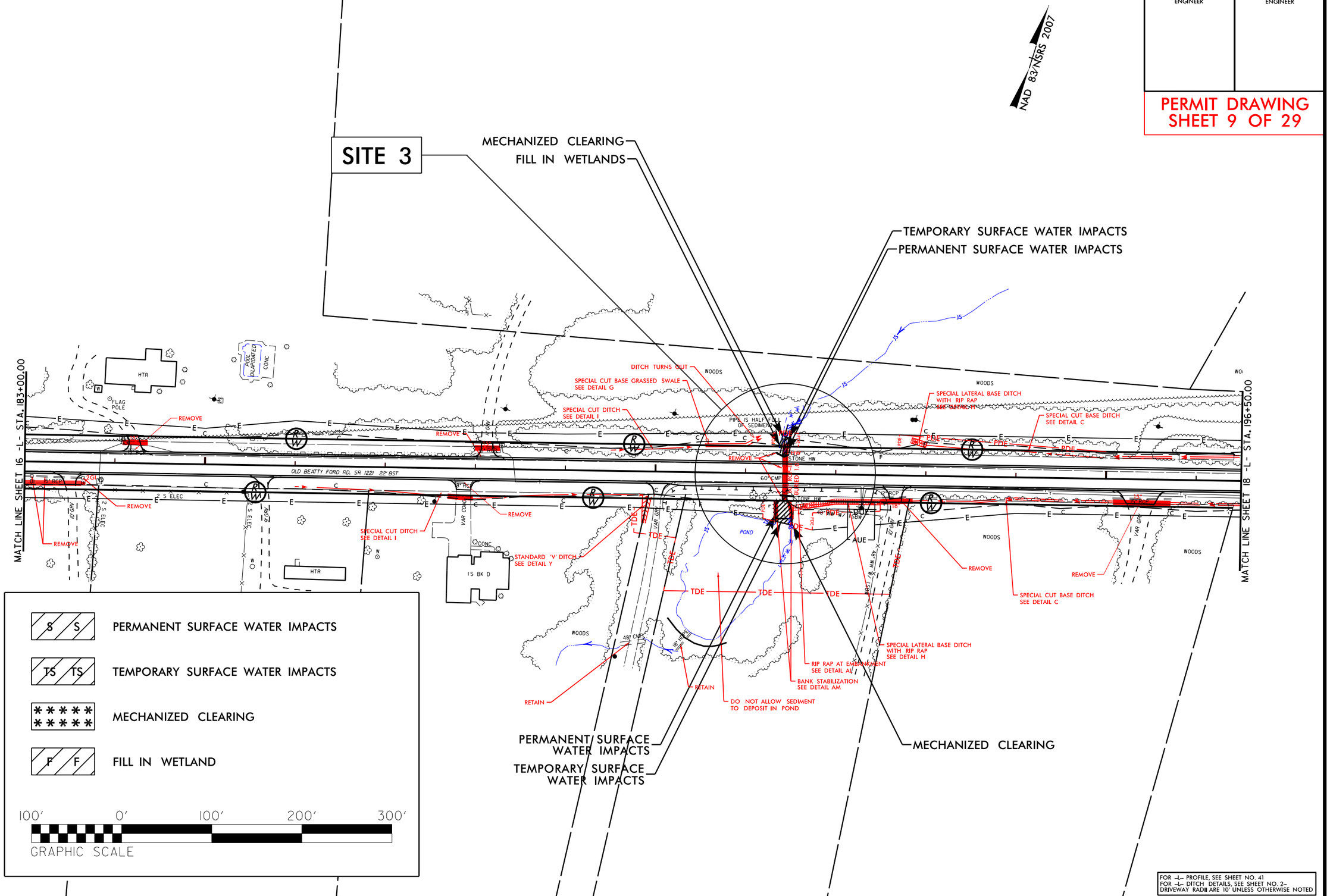
REVISIONS

8/17/99

10/30/2015
lmjohns
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	L7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 9 OF 29



FOR -L- PROFILE, SEE SHEET NO. 41
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

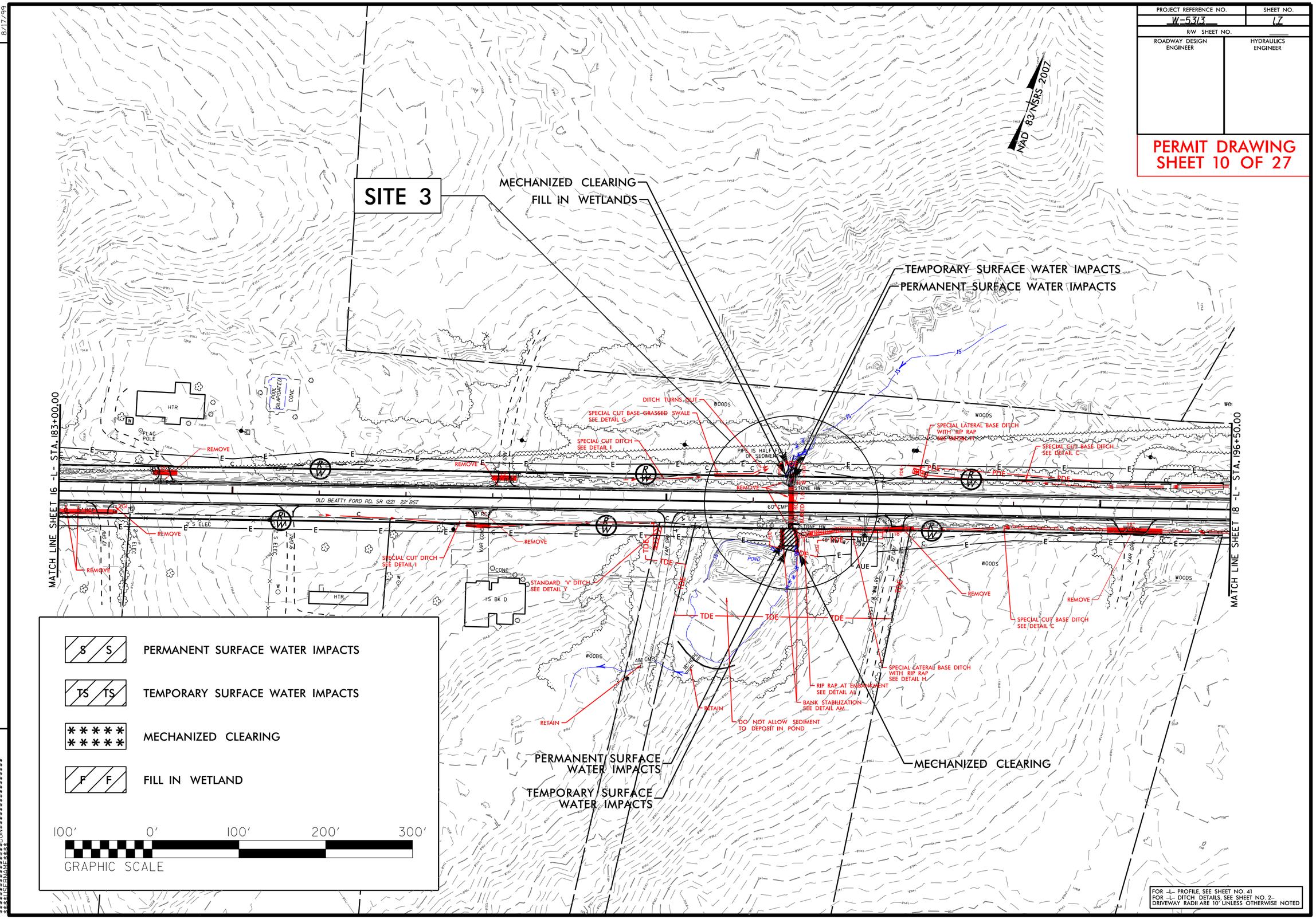
REVISIONS

8/17/99

6/23/2015
ethahn
R:\Hydraulics\PERMITS_Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_09_PSH17.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	L7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 10 OF 27



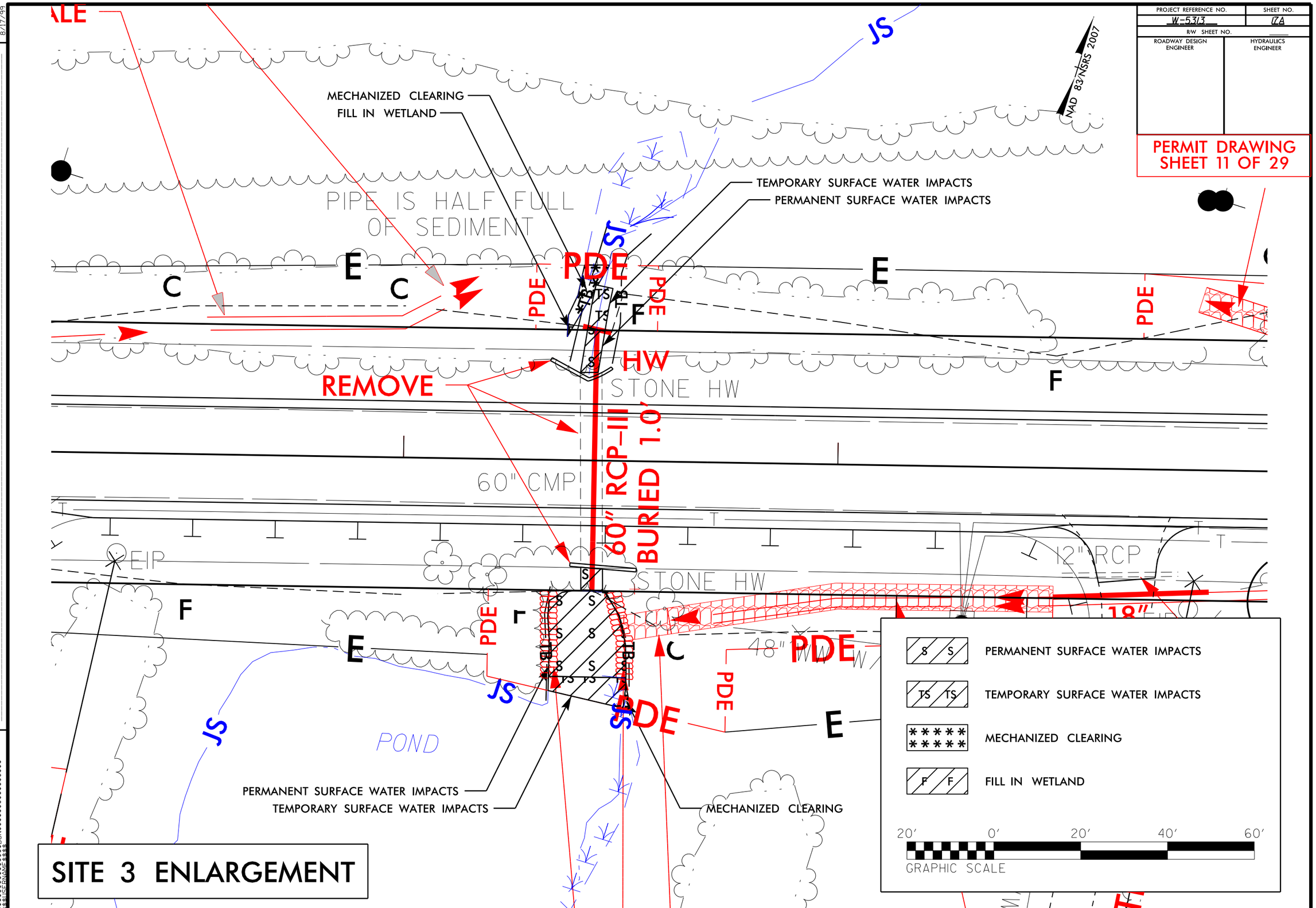
REVISIONS

8/17/99

6/23/2015
ethahn
R:\Hydraulics\PERMITS_Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_10_PSH17.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	17A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 11 OF 29



SITE 3 ENLARGEMENT

REVISIONS

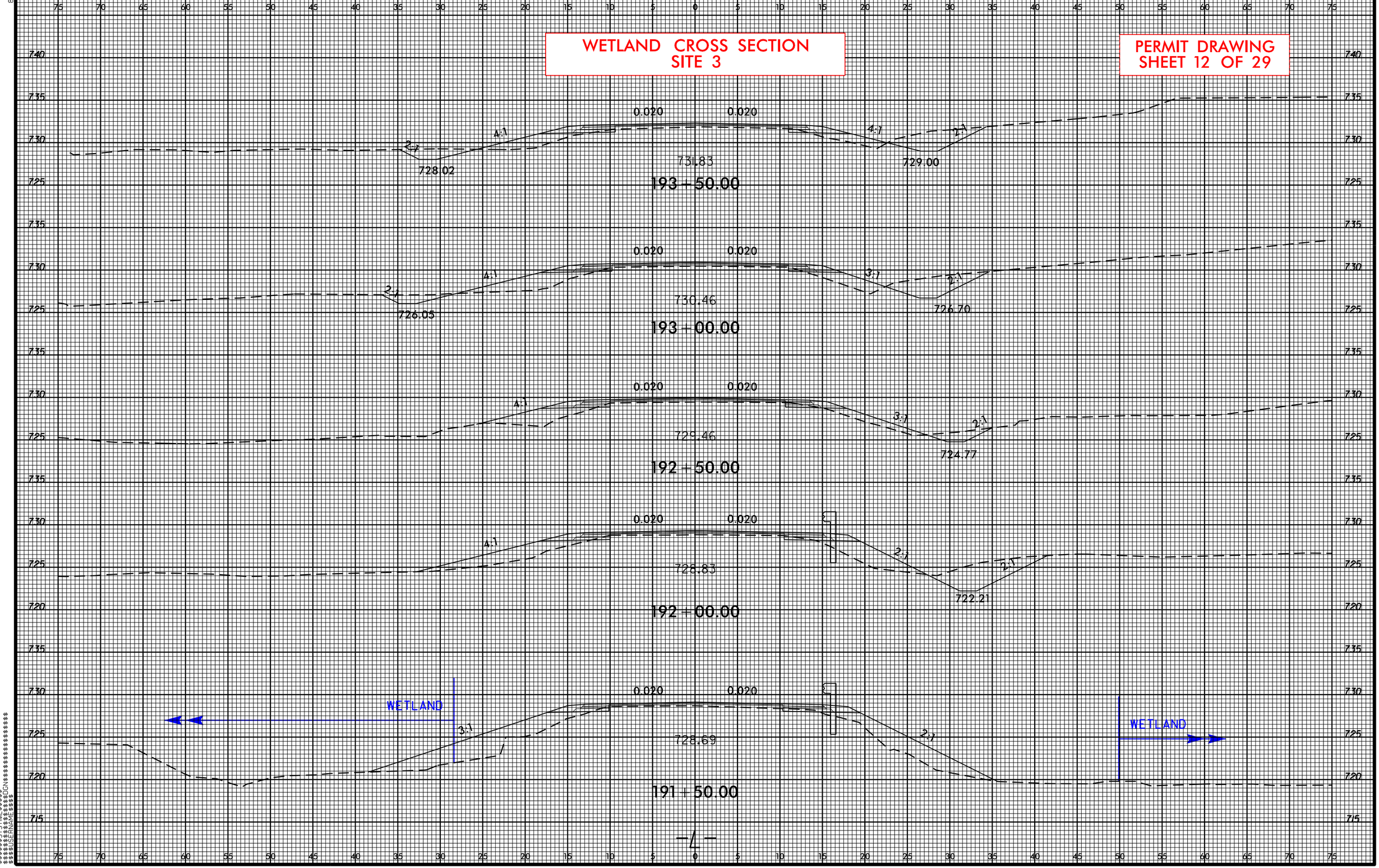
8/17/99

6/23/2015
ejhahn
R:\Hydraulics\PERMITS Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_11_PSH17A.dgn
$$$$$$$$$$USERNAME$$$$$$$$$$

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5313	X-68

WETLAND CROSS SECTION
SITE 3

PERMIT DRAWING
SHEET 12 OF 29

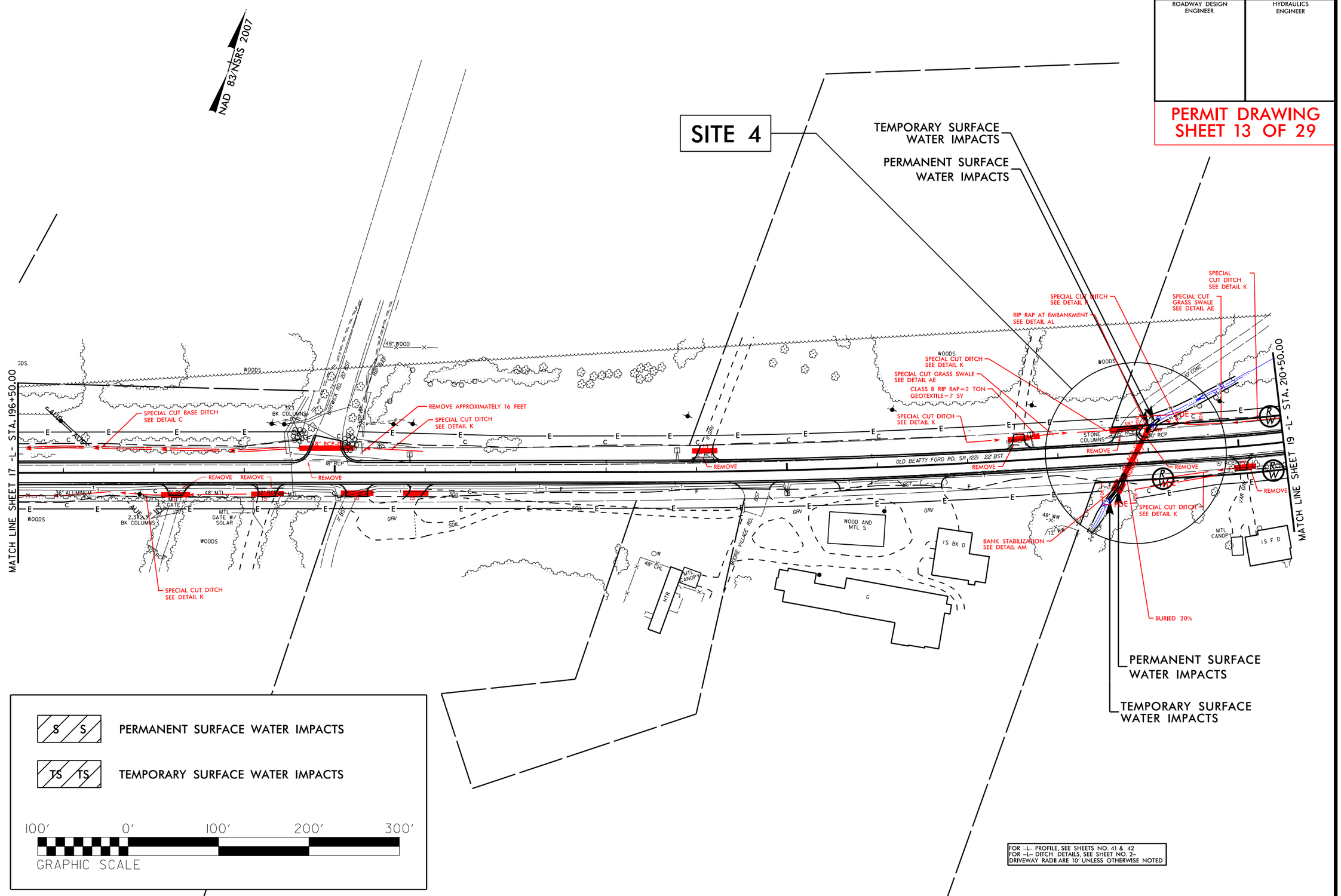


8/23/99

6232015
ejhahn
R:\Hydraulics\PERMITS_Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_12_XSC.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 13 OF 29



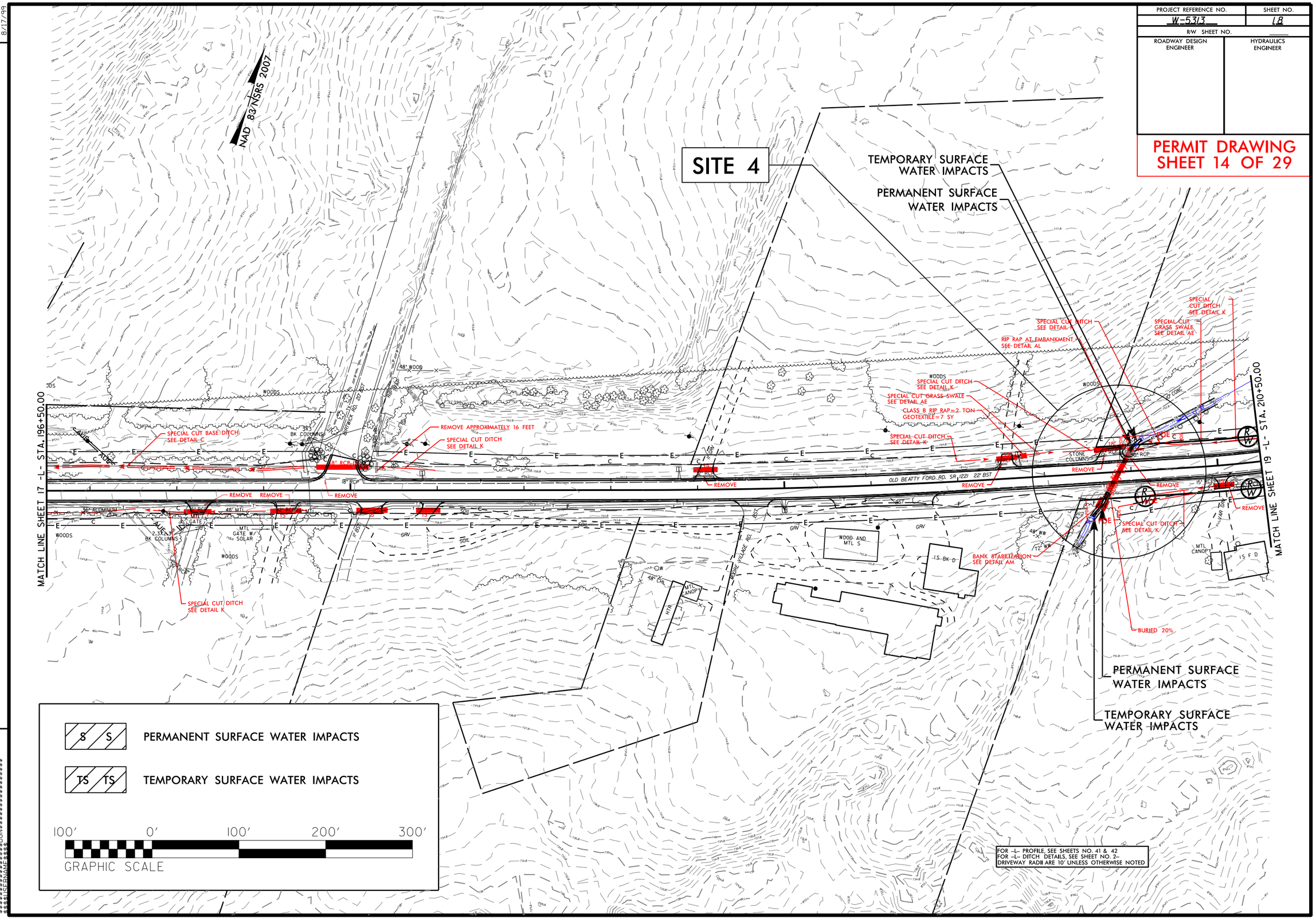
REVISIONS

8/17/99

6/23/2015
elhahn
R:\Hydraulics\PERMITS_Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_13_PSH18.dgn
$$$$$$USER$$$$$$
$$$$$$VER$$$$$$
$$$$$$CONS$$$$$$$$$$$$$$$$$$$$
$$$$$$FILENAME$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 14 OF 29



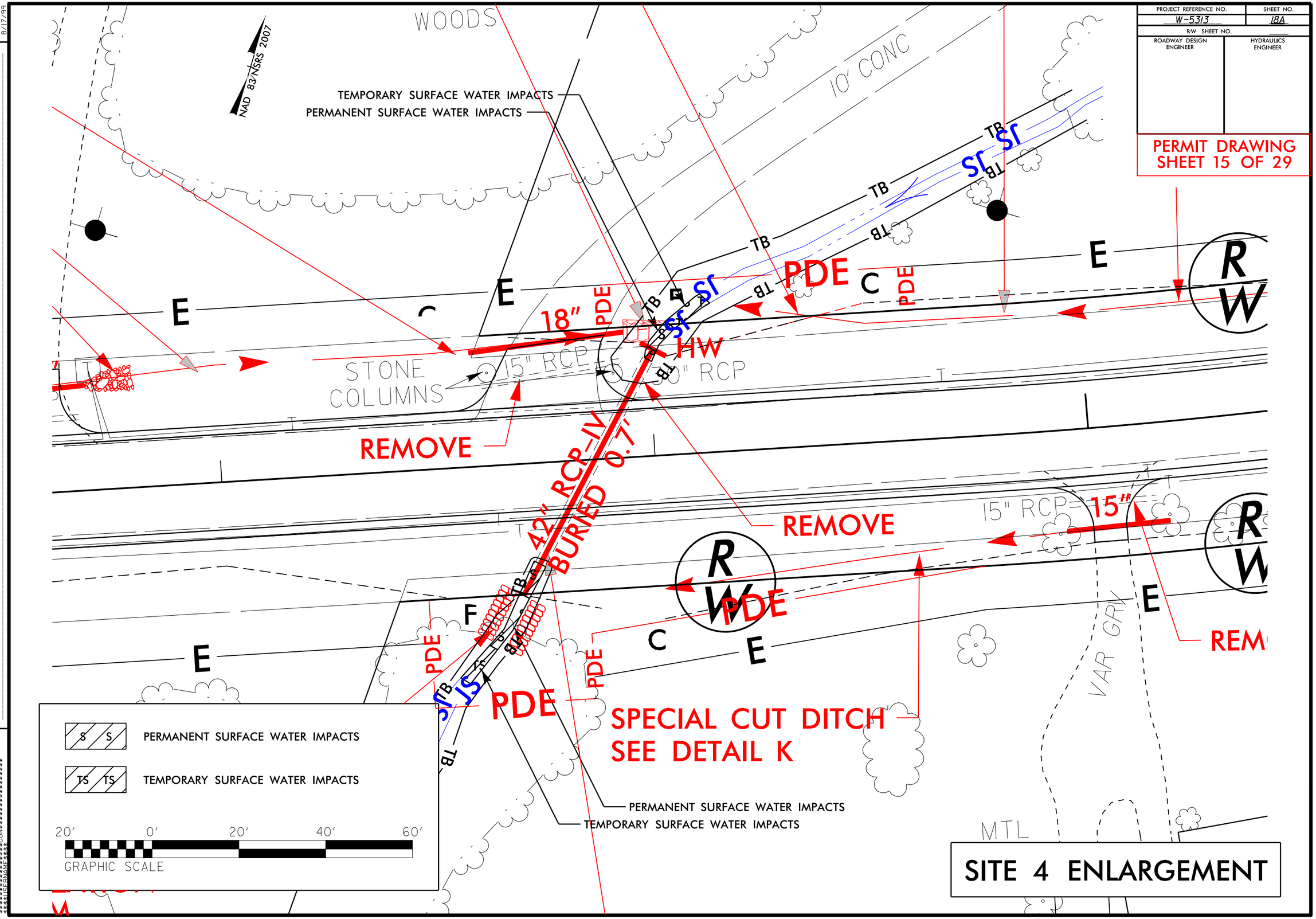
REVISIONS

8/17/99

6/23/2015
ejhalin
R:\Hydraulics\PERMITS_Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_14_PSH18.dgn
$$$$$USER NAME$$$$$
$$$$$SCALE$$$$$
$$$$$FILE NAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	18A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 15 OF 29



SITE 4 ENLARGEMENT

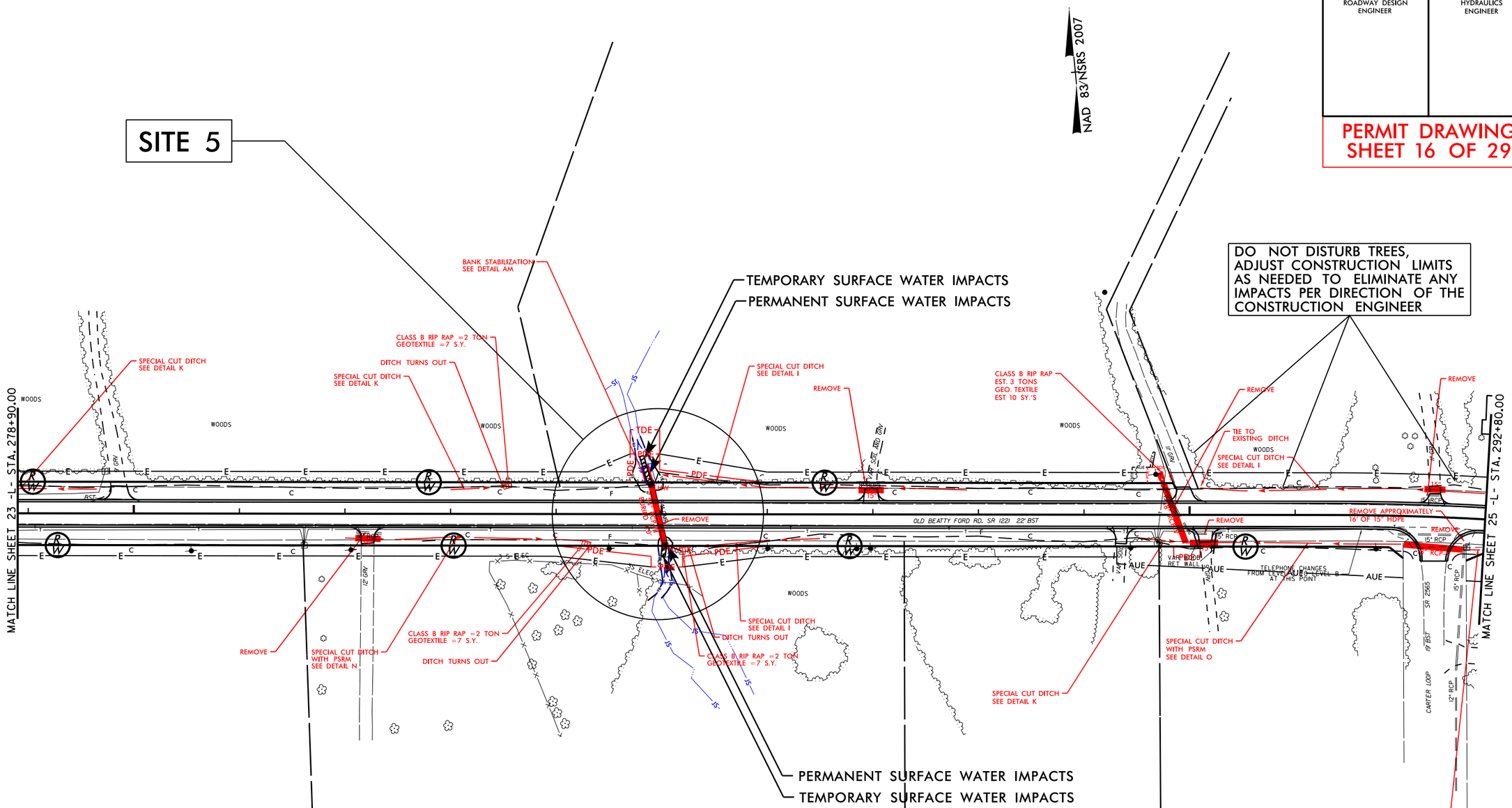
REVISIONS

8/17/99

4/23/2015
ethan
R:\Hydraulics\PERMITS Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_15_PSH18A.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 16 OF 29



S/S PERMANENT SURFACE WATER IMPACTS

TS/TS TEMPORARY SURFACE WATER IMPACTS

FOR -L- PROFILE, SEE SHEETS NO. 44 & 45
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

TRAFFIC DIAGRAM

2010 ADT
2035* ADT

DHV = 10%
DIR = 65%
TTST = 1%
DUAL = 5%

-L- 2900 / 4300 — 2900 / 4200

(OLD BEATTY FORD RD.) 100 / 200 — 100 / 100

200 / 300

DHV = 11%
DIR = 65%
TTST = 1%
DUAL = 16%

CARTER LOOP RD.

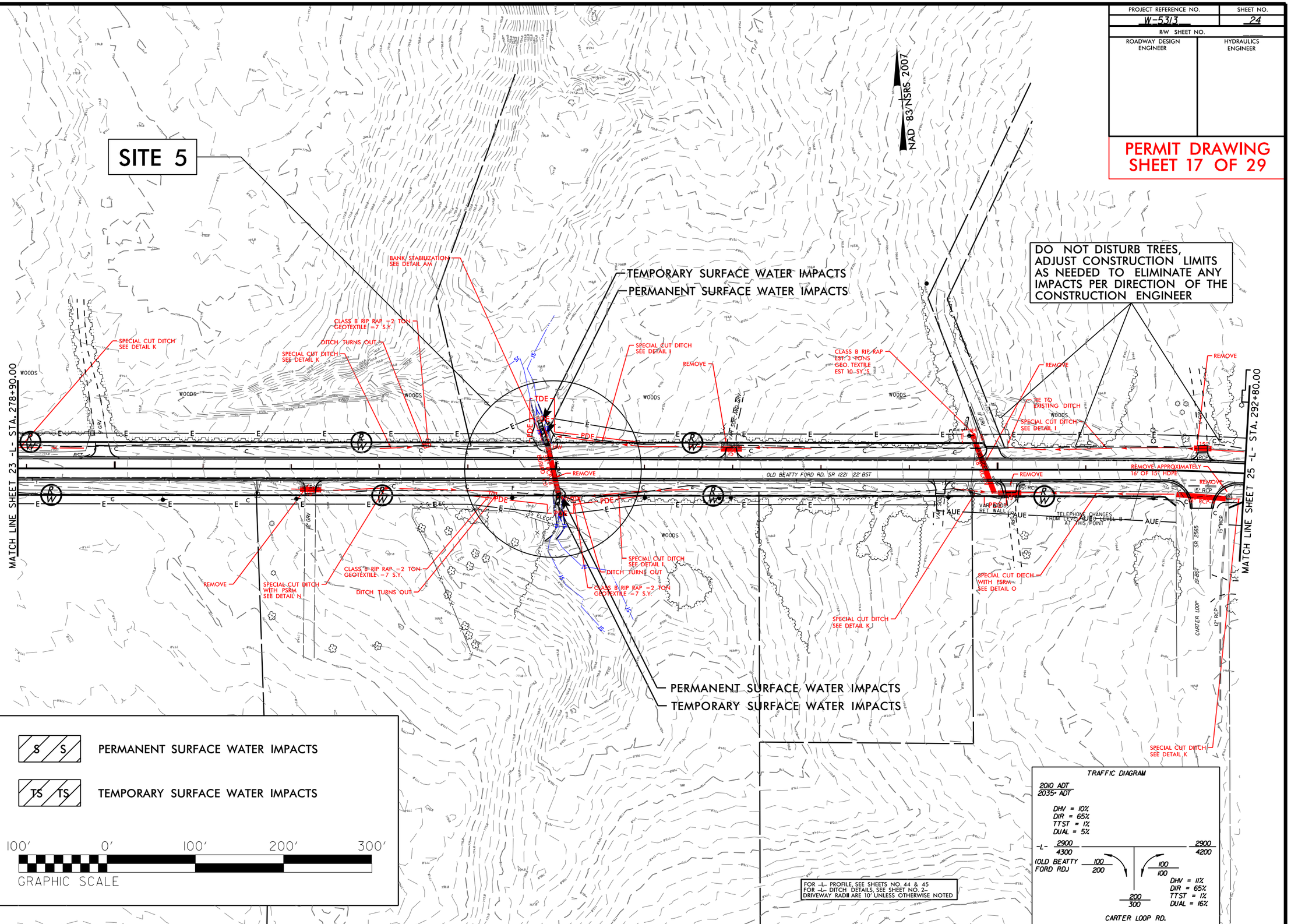
REVISIONS

8/17/99

7/24/2015
lmohns
R:\Hydraulics\PERMITS Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_16_PSH24.dgn
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$USERNAME$$$$$$
$$$$$$$$DGNSPACE$$$$$$
$$$$$$$$DGNFILE$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 17 OF 29



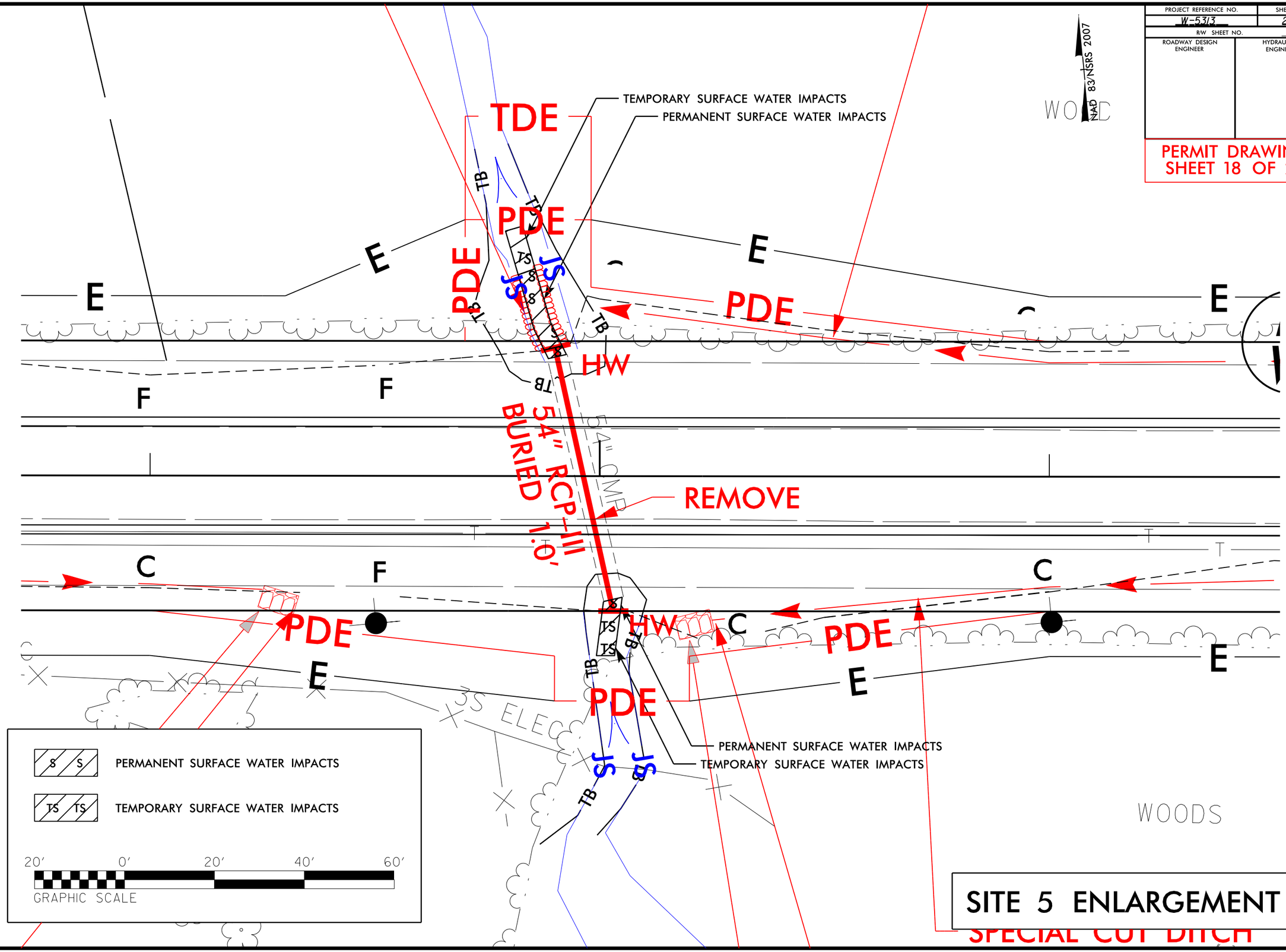
REVISIONS

8/17/99

7/24/2015
Brighons
R:\Hydraulics\PERMITS Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_17_PSH24.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	24A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 18 OF 29



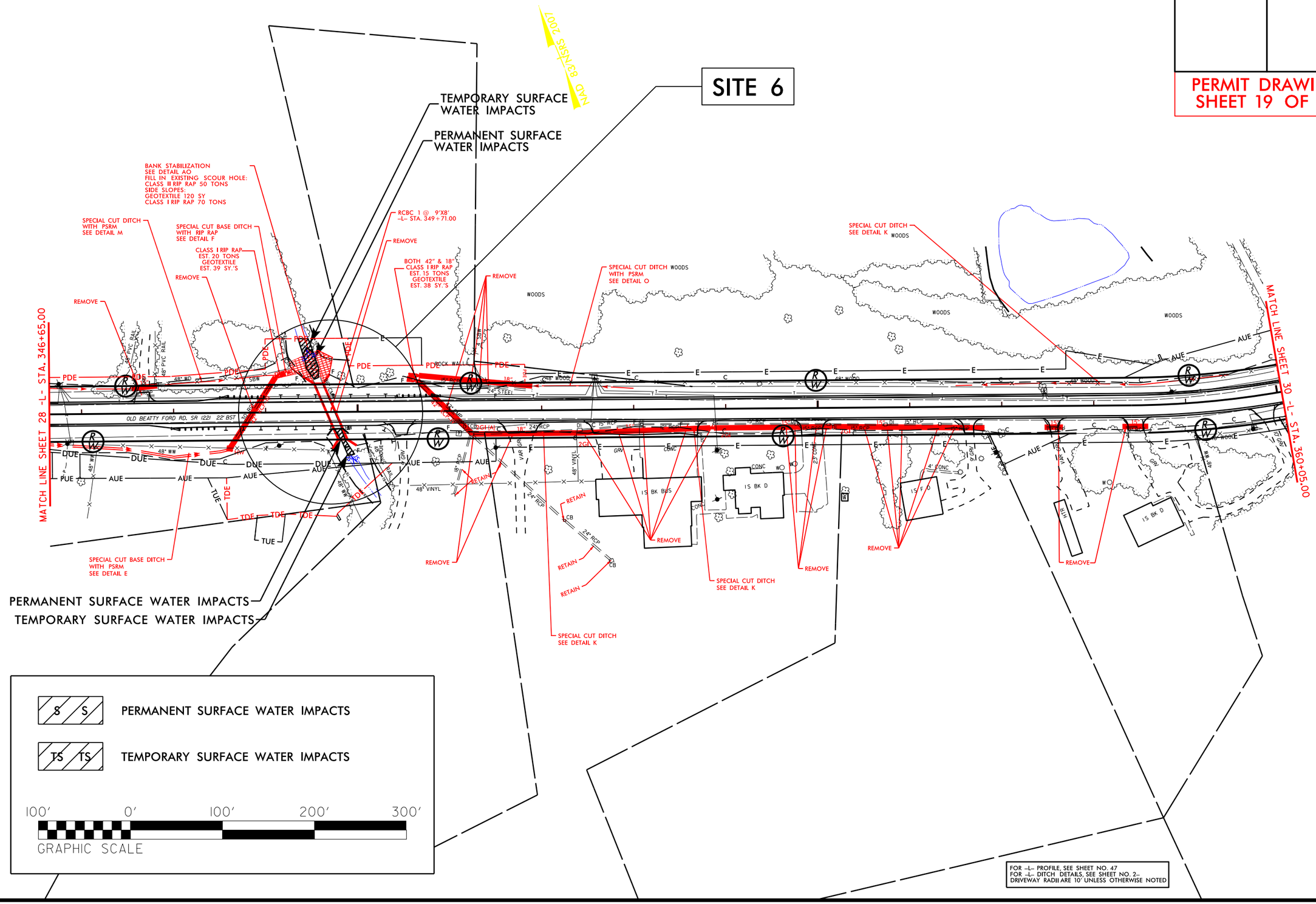
REVISIONS

8/17/99

7/24/2015
Implhns
R:\Hydraulics PERMITS Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_18_PSH24A.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 19 OF 29



FOR -L- PROFILE, SEE SHEET NO. 47
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

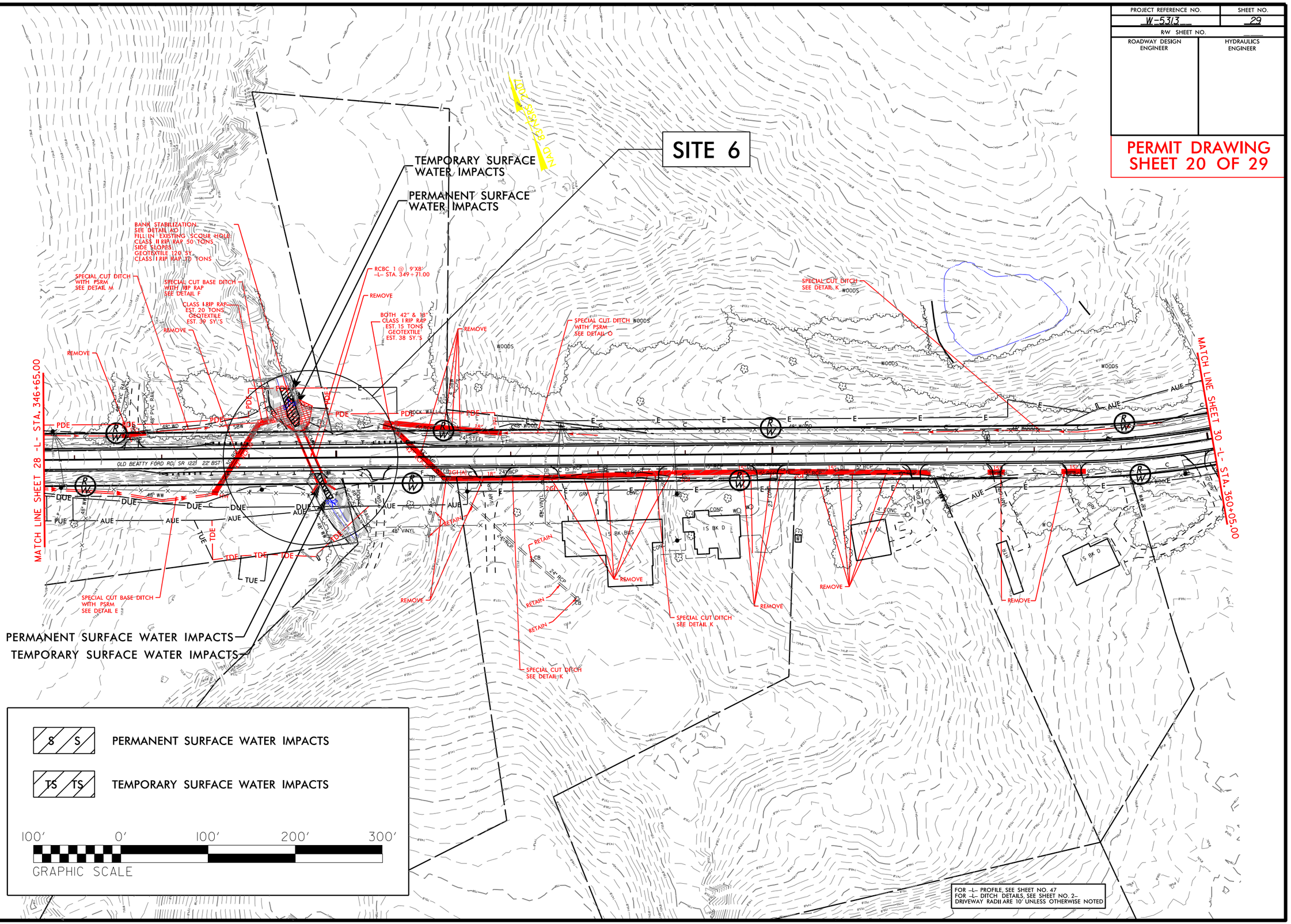
REVISIONS

8/17/99

8/13/2015
tmphins
R:\Roadways\Divisions\PERMITS_Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_19_PSH29.dgn
$$$$$$USERNAME$$$$$$
$$$$$$DGN$$$$$$
$$$$$$TIME$$$$$$
$$$$$$DATE$$$$$$
$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 20 OF 29



FOR -L- PROFILE, SEE SHEET NO. 47
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

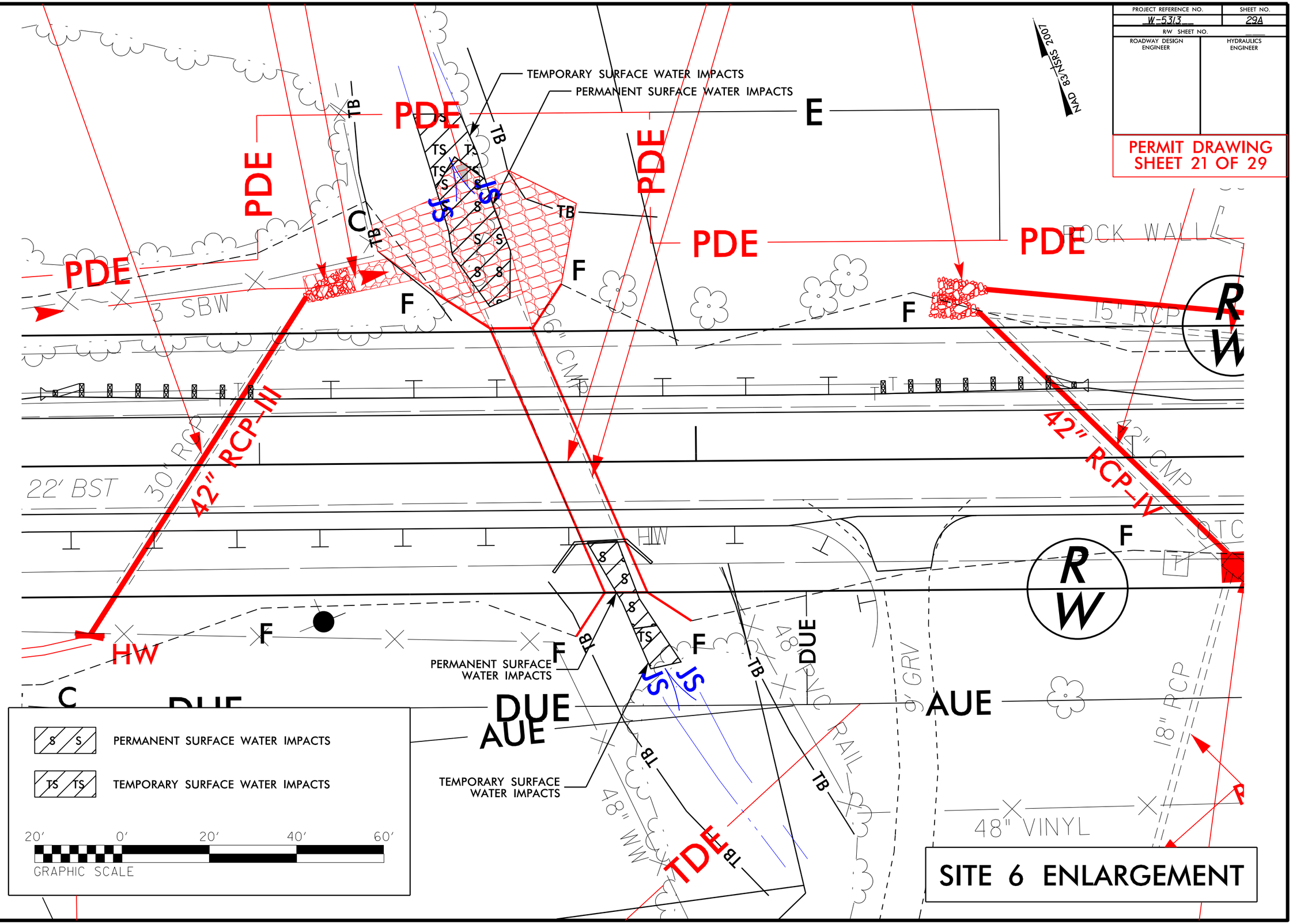
REVISIONS

8/17/99

8/13/2015
mjohns
R:\Hydraulics\PERMITS Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_20_PSH29.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	29A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 21 OF 29



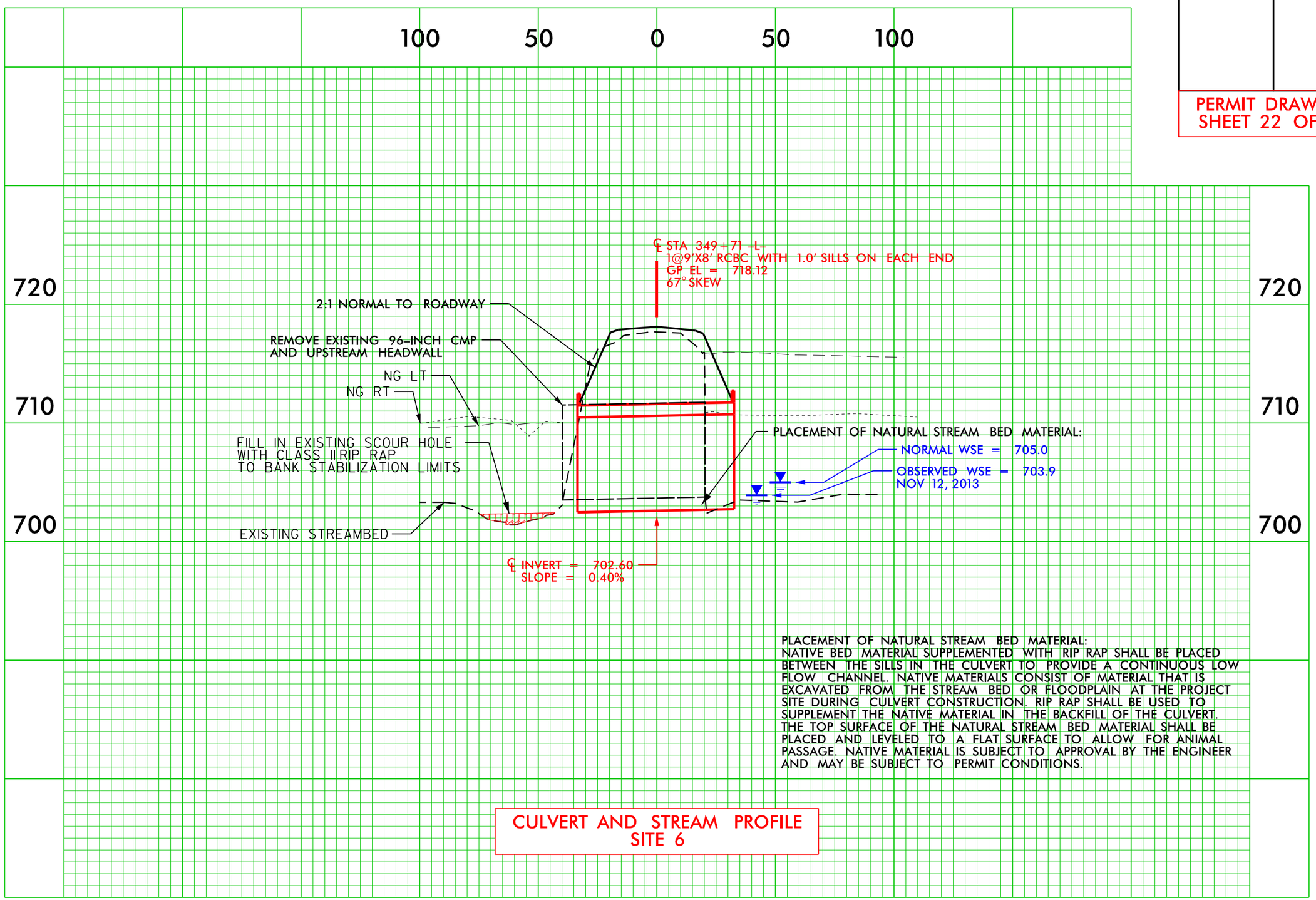
REVISIONS

8/17/99

8/13/2015
Imphins
R:\Hydraulics\PERMITS_Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_21_PSH29A.dgn
$$$$$$$$USERNAME$$$$
$$$$$$$$DGNS$$$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	29B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 22 OF 29



PLACEMENT OF NATURAL STREAM BED MATERIAL:
NATIVE BED MATERIAL SUPPLEMENTED WITH RIP RAP SHALL BE PLACED BETWEEN THE SILLS IN THE CULVERT TO PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIALS CONSIST OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. RIP RAP SHALL BE USED TO SUPPLEMENT THE NATIVE MATERIAL IN THE BACKFILL OF THE CULVERT. THE TOP SURFACE OF THE NATURAL STREAM BED MATERIAL SHALL BE PLACED AND LEVELED TO A FLAT SURFACE TO ALLOW FOR ANIMAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

CULVERT AND STREAM PROFILE
SITE 6

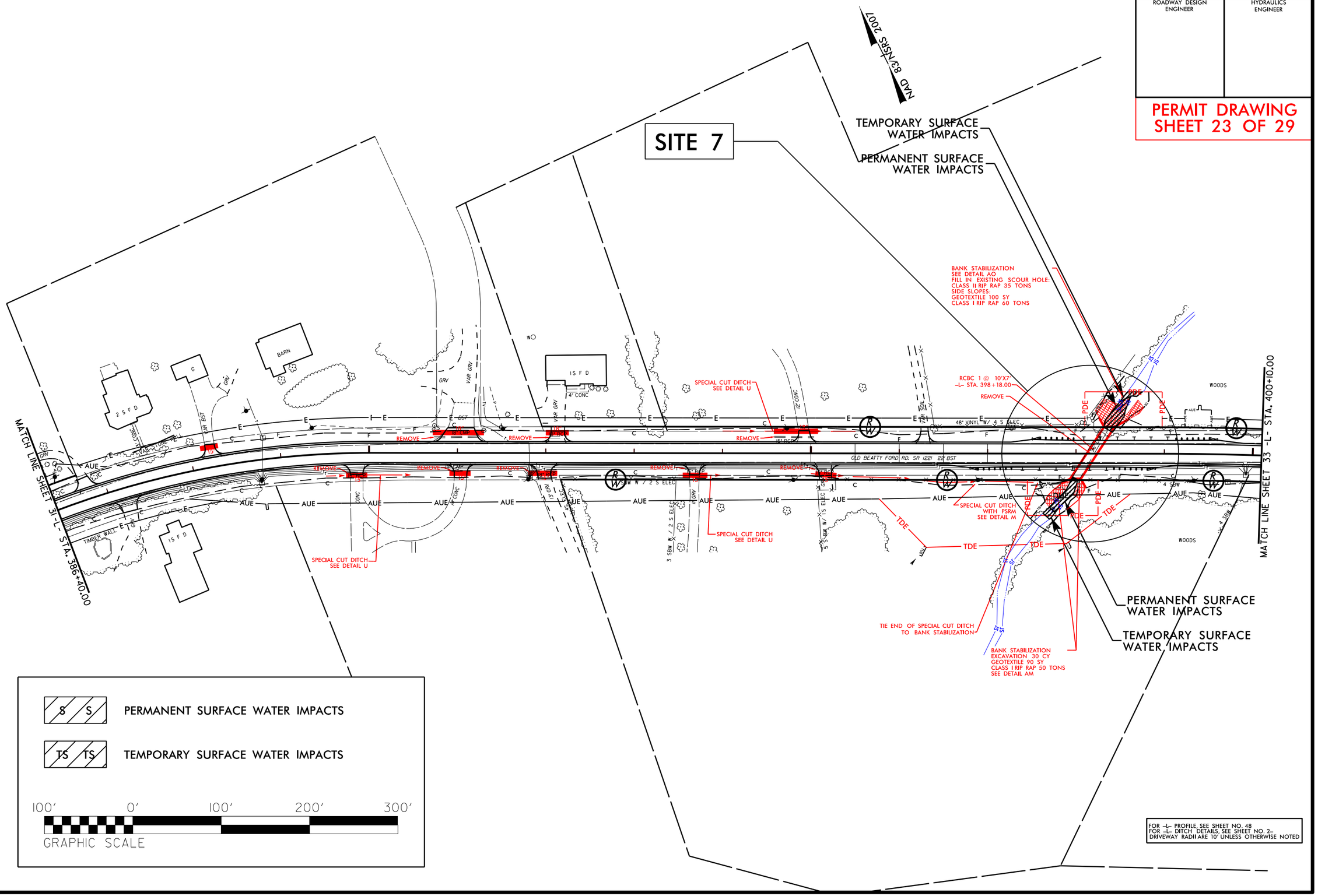
REVISIONS

8/17/99

10/30/2015
lmjohns
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 23 OF 29



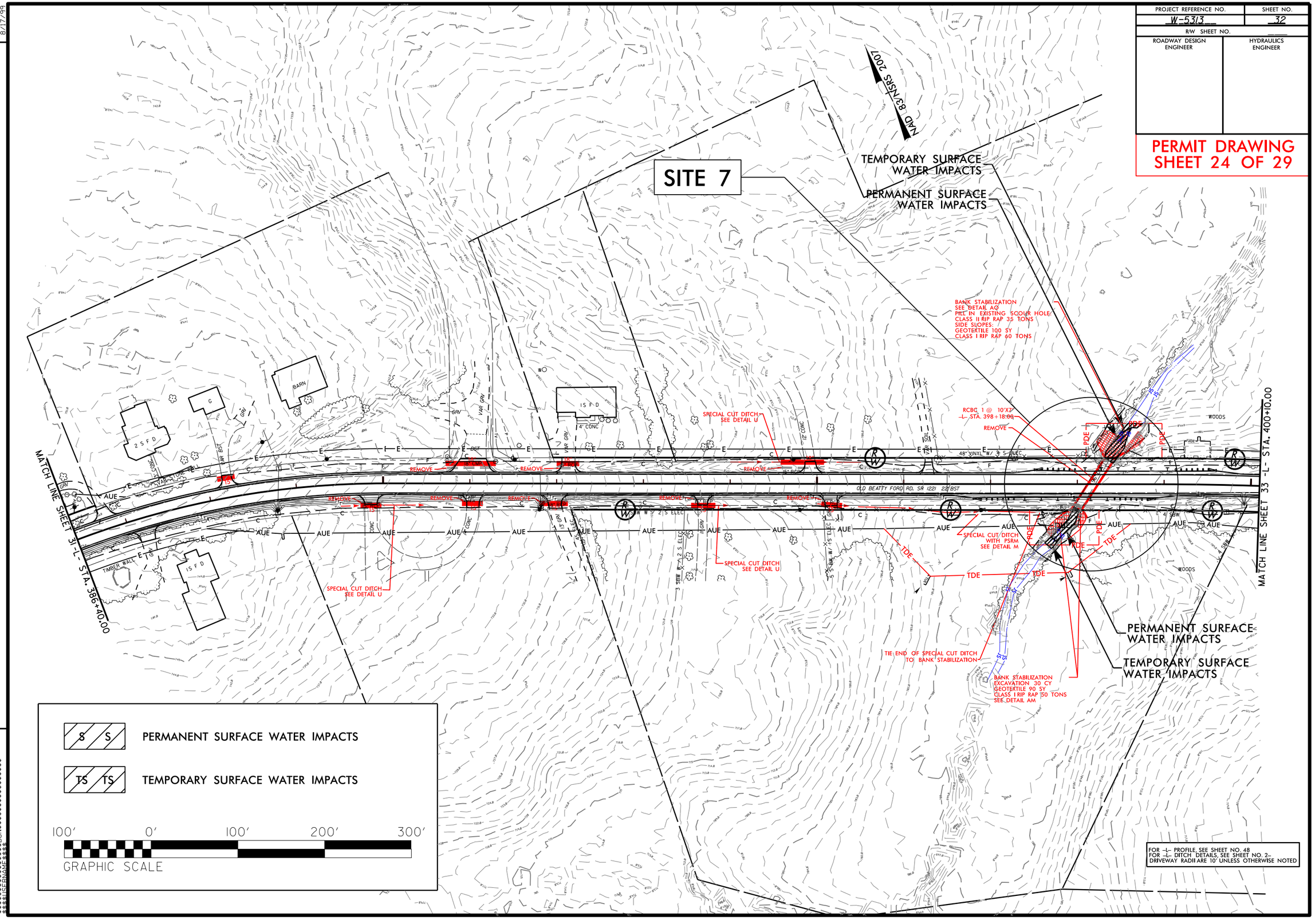
REVISIONS

8/17/99

8/3/2015
lmjohns
R:\Hydraulics\PERMITS Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_23_PSH32.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 24 OF 29



REVISIONS

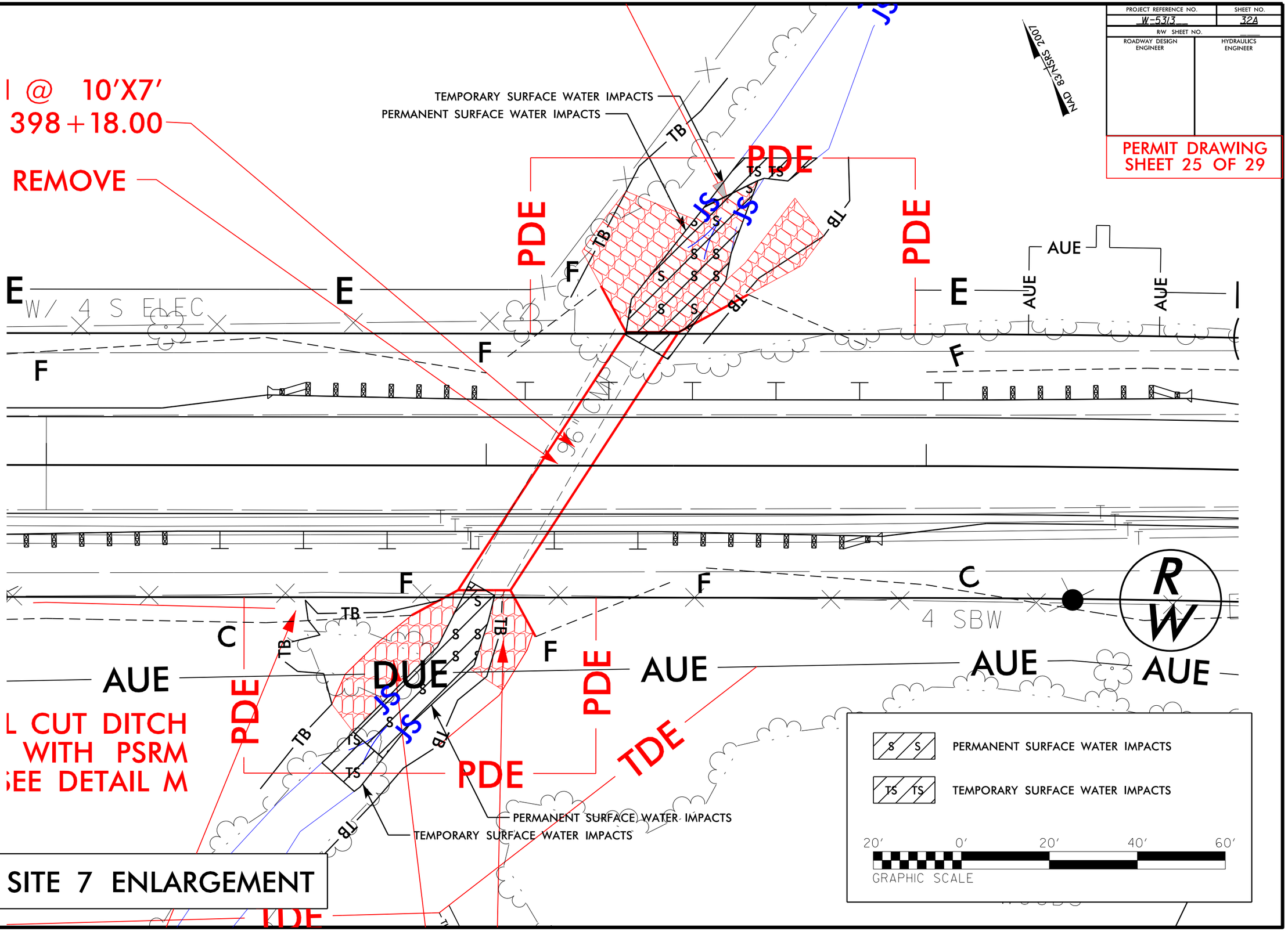
8/17/99

8/13/2015
Implicits
R:\Hydraulics\PERMITS Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_24_PSH32.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	32A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 25 OF 29

NAD 83/NSRS 2007



SITE 7 ENLARGEMENT

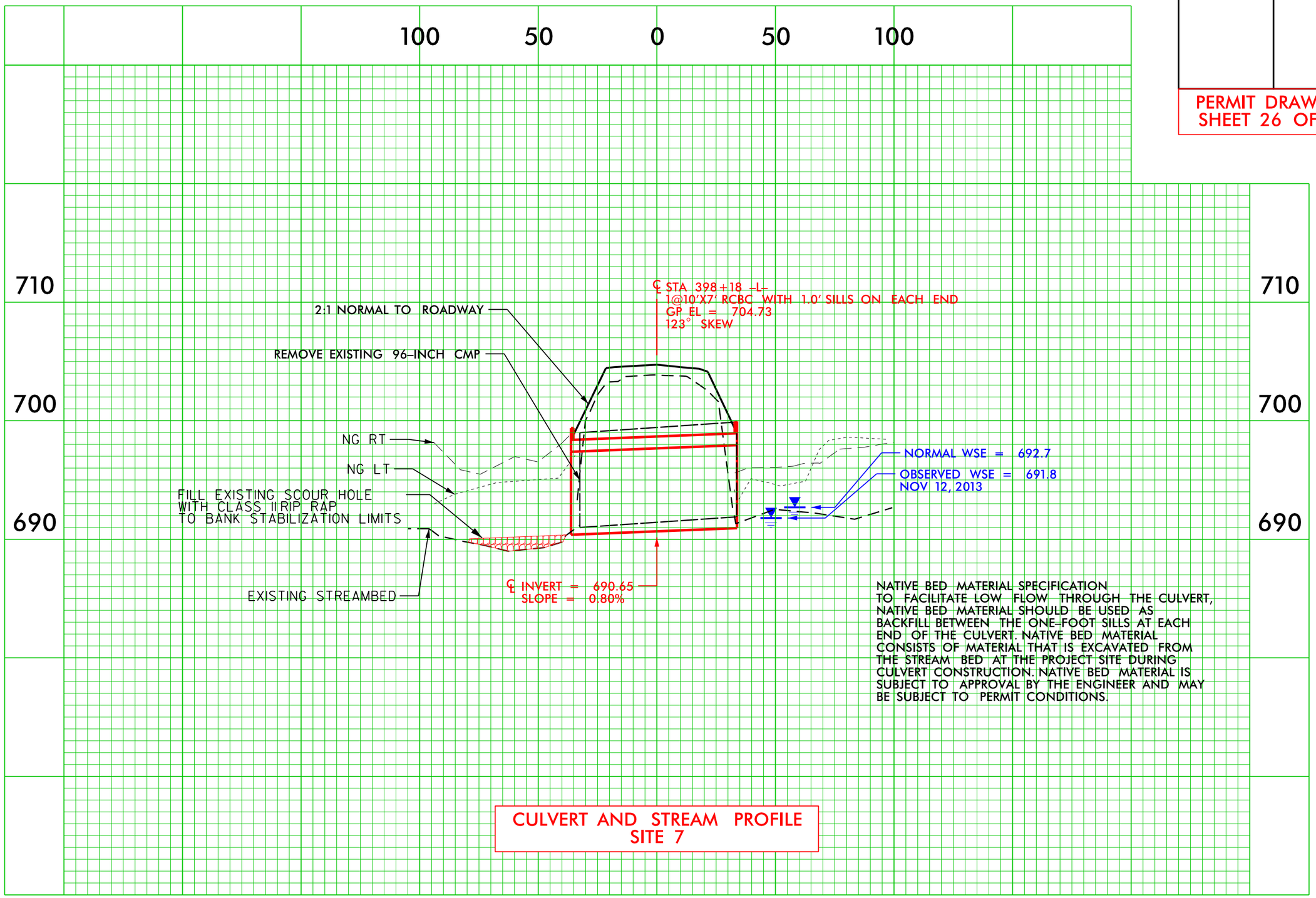
REVISIONS

8/17/99

8/3/2015
Implins
R:\Hydraulics\PERMITS\Environmental\Drawings\W5313 Permit Package 20150623\W-5313_Hyd_prm_25_PSH32A.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	32B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 26 OF 29



NATIVE BED MATERIAL SPECIFICATION
TO FACILITATE LOW FLOW THROUGH THE CULVERT, NATIVE BED MATERIAL SHOULD BE USED AS BACKFILL BETWEEN THE ONE-FOOT SILLS AT EACH END OF THE CULVERT. NATIVE BED MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. NATIVE BED MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

CULVERT AND STREAM PROFILE
SITE 7

REVISIONS

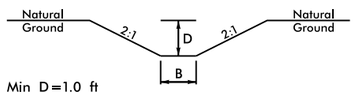
8/17/99

8/13/2015
lmjohns
$$$$$$$$$$ FFBWTE_Environmental\Drawings\W5313 Permit Package 20150623\W-5313_HydLprm_26_CUL32B.dgn
$$$$$$$$$$ SYSTIME $$$$$$$$$$ DGN $$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	2-DI
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 27 OF 29

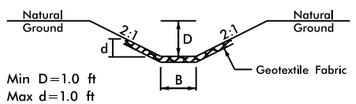
DETAIL A
STANDARD BASE DITCH
(Not to Scale)



Min D=1.0 ft
B=2.0 ft

–L– STA 149+44 LT; L=114', S=0.16%, DDE=87CY
–L– STA 162+10 RT; L=30', S=0.50%, DDE=4CY
–L– STA 218+45 RT; L=15', S=0.90%, DDE=5CY
–L– STA 236+20 RT; L=60', S=0.30%, DDE=15CY
–L– STA 243+49 LT; L=425', S=0.30%, DDE=350CY
–L– STA 260+56 LT; L=50', S=0.40%, DDE=15CY
–Y1– STA 13+50 LT; L=19', S=3.47%, DDE=6CY
–Y4– STA 10+69 LT; L=37', S=1.30%, DDE=19CY

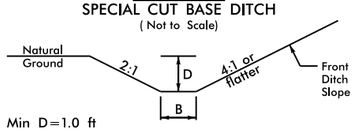
DETAIL B
STANDARD BASE DITCH WITH RIP RAP
(Not to Scale)



Min D=1.0 ft
Max d=1.0 ft
B=2.0 ft
Type of liner=Class B Rip Rap

–L– STA 362+75 RT; L=12', S=14.00%, DDE=2CY

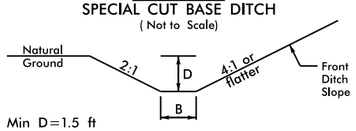
DETAIL C
SPECIAL CUT BASE DITCH
(Not to Scale)



Min D=1.0 ft
B=2.0 ft

–L– STA 192+50 TO STA 196+50 RT
–L– STA 193+00 TO STA 199+60 LT
–L– STA 218+70 TO STA 222+57 LT
–L– STA 373+50 TO STA 375+50 RT

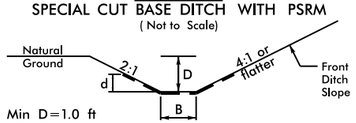
DETAIL D
SPECIAL CUT BASE DITCH
(Not to Scale)



Min D=1.5 ft
B=2.0 ft

–L– STA 104+31 TO STA 105+28 LT

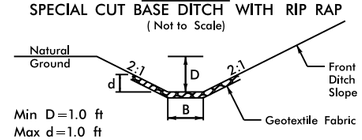
DETAIL E
SPECIAL CUT BASE DITCH WITH PSRM
(Not to Scale)



Min D=1.0 ft
Max d=1.0 ft
B=2.0 ft
Type of liner=PSRM

–L– STA 342+70 TO STA 348+60 RT
–Y1– STA 10+24 TO STA 13+49 LT

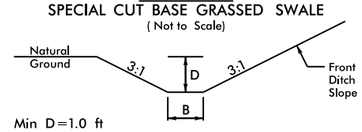
DETAIL F
SPECIAL CUT BASE DITCH WITH RIP RAP
(Not to Scale)



Min D=1.0 ft
Max d=1.0 ft
B=2.0 ft
Type of liner=Class I Rip Rap

–L– STA 349+10 TO STA 349+34 LT

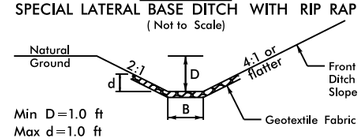
DETAIL G
SPECIAL CUT BASE GRASSED SWALE
(Not to Scale)



Min D=1.0 ft
B=3.0 ft

–L– STA 190+50 TO STA 191+15 LT

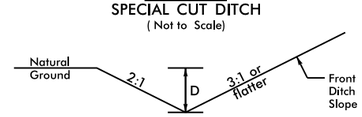
DETAIL H
SPECIAL LATERAL BASE DITCH WITH RIP RAP
(Not to Scale)



Min D=1.0 ft
Max d=1.0 ft
B=2.0 ft
Type of liner=Class B Rip Rap

–L– STA 191+60 TO STA 192+50 RT
–L– STA 192+83 TO STA 193+00 LT

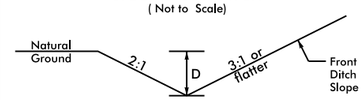
DETAIL I
SPECIAL CUT DITCH
(Not to Scale)



Min D=1.0 ft

–L– STA. 24+50 TO STA 25+10 LT
–L– STA 28+63 TO STA 29+50 LT
–L– STA 30+00 TO STA 32+00 RT
–L– STA 42+00 TO STA 42+50 RT
–L– STA 52+00 TO STA 53+41 RT
–L– STA 58+50 TO STA 60+50 RT
–L– STA 61+00 TO STA 62+21 RT
–L– STA 81+00 TO STA 82+46 LT
–L– STA 87+00 TO STA 89+49 RT
–L– STA 88+00 TO STA 89+36 LT
–L– STA 94+74 TO STA 96+00 LT
–L– STA 99+00 TO STA 104+00 RT
–L– STA 105+00 TO STA 105+41 RT
–L– STA 107+50 TO STA 108+82 LT
–L– STA 109+50 TO STA 111+00 LT
–L–STA 123+00 TO STA 124+00 RT
–L– STA 135+23 TO STA 140+50 LT
–L– STA 186+00 TO STA 189+90 RT
–L– STA 189+50 TO STA 190+50 LT
–L– STA 233+70 TO STA 246+00 LT
–L– STA 239+00 TO STA 246+00 RT
–L– STA 284+97 TO STA 288+00 LT
–L– STA 285+25 TO STA 286+50 RT
–L– STA 290+10 TO STA 294+00 LT
–L– STA 328+00 TO STA 330+00 RT
–L– STA 330+80 TO STA 334+00 RT
–L– STA 332+00 TO STA 335+00 LT
–Y2– STA 11+30 TO STA 12+25 RT
–Y6– STA 10+75 TO STA 15+00 RT
–Y6– STA 12+75 TO STA 15+00 LT

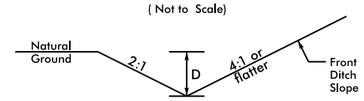
DETAIL J
SPECIAL CUT DITCH
(Not to Scale)



Min D=0.5 ft

–L– STA 35+00 TO STA 35+75 LT
–L– STA 36+50 TO STA 39+00 RT
–L– STA 39+50 TO STA 41+10 RT
–L– STA 57+31 TO STA 58+00 RT
–L– STA 69+50 TO STA 73+00 LT
–L– STA 93+00 TO STA 93+65 RT
–L– STA 104+00 TO STA 104+31 LT

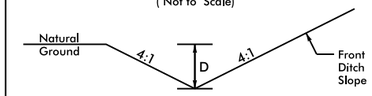
DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



Min D=1.0 ft

–L– STA 10+00 TO STA 11+00 LT
–L– STA 10+50 TO STA 12+00 RT
–LREV– STA 13+00 TO STA 14+50 RT
–LREV– STA 16+50 TO STA 18+50 LT
–L– STA 24+50 TO STA 25+30 RT
–L– STA 28+08 TO STA 28+60 RT
–L– STA 47+00 TO STA 50+97 LT
–L– STA 129+36 TO STA 131+50 RT
–L– STA 143+25 TO STA 145+00 LT
–L– STA 146+50 TO STA 148+00 RT
–L– STA 148+50 TO STA 149+44 LT
–L– STA 149+00 TO STA 151+00 RT
–L– STA 149+50 TO STA 152+00 LT
–L– STA 152+50 TO STA 154+78 RT
–L– STA 156+00 TO STA 160+00 LT
–L– STA 157+00 TO STA 157+50 RT
–L– STA 159+40 TO STA 166+50 RT
–L– STA 160+28 TO STA 161+89 LT
–L– STA 163+00 TO STA 171+50 LT
–L– STA 196+50 TO STA 199+50 RT
–L– STA 199+60 TO STA 201+00 LT
–L– STA 207+00 TO STA 207+69 LT
–L– STA 208+50 TO STA 208+95 LT
–L– STA 209+00 TO STA 210+00 RT
–L– STA 209+20 TO STA 209+50 LT
–L– STA 210+00 TO STA 218+00 LT
–L– STA 213+50 TO STA 216+00 RT
–L– STA 218+50 TO STA 224+00 RT
–L– STA 222+57 TO STA 224+00 LT
–L– STA 236+20 TO STA 237+50 RT
–L– STA 254+50 TO STA 278+50 RT
–L– STA 257+00 TO STA 270+00 LT
–L– STA 274+00 TO STA 274+25 LT
–L– STA 276+50 TO STA 279+65 LT
–L– STA 283+00 TO STA 283+50 LT
–L– STA 289+50 TO STA 289+96 RT
–L– STA 292+00 TO STA 294+00 RT
–L– STA 318+36 TO STA 327+78 RT
–L– STA 318+36 TO STA 328+45 LT
–L– STA 329+00 TO STA 330+50 LT
–L– STA 336+50 TO STA 341+92 RT
–L– STA 337+00 TO STA 342+00 LT
–L– STA 351+25 TO STA 352+43 RT
–L– STA 352+50 TO STA 356+50 RT
–L– STA 356+50 TO STA 360+00 LT
–L– STA 363+00 TO STA 366+50 RT
–L– STA 365+00 TO STA 366+50 LT
–L– STA 379+50 TO STA 383+50 LT
–L– STA 380+00 TO STA 381+50 RT
–L– STA 417+90 TO STA 418+50 RT
–Y1– STA 13+00 TO STA 14+00 RT
–Y3– STA 10+75 TO STA 11+25 RT
–Y3– STA 11+00 LT TO –L– STA 153+50 LT
–Y4– STA 10+69 TO STA 11+25 RT
–Y4– STA 10+69 LT TO –L– STA 153+25 RT
–Y5– STA 11+80 TO STA 12+60 RT
–Y8– STA 10+94 TO STA 11+75 RT

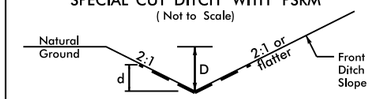
DETAIL L
SPECIAL CUT DITCH
(Not to Scale)



Min D=1.0 ft

–L– STA 181+70 TO STA 183+40 RT

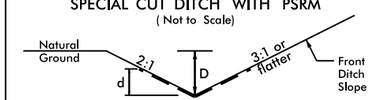
DETAIL M
SPECIAL CUT DITCH WITH PSRM
(Not to Scale)



Min D=1.0 ft
Max d=1.0 ft
Type of liner=PSRM

–L– STA 342+40 TO STA 349+10 LT
–L– STA 395+00 TO STA 397+57 RT

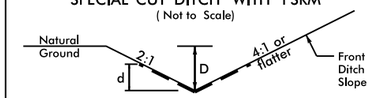
DETAIL N
SPECIAL CUT DITCH WITH PSRM
(Not to Scale)



Min D=1.0 ft
Max d=1.0 ft
Type of liner=PSRM

–L– STA 282+00 TO STA 284+25 RT

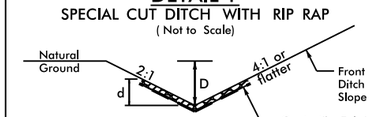
DETAIL O
SPECIAL CUT DITCH WITH PSRM
(Not to Scale)



Min D=1.0 ft
Max d=1.0 ft
Type of liner=PSRM

–L– STA 131+50 TO STA 133+00 RT
–L– STA 135+62 TO STA 137+00 RT
–L– STA 289+96 TO STA 292+00 RT
–L– STA 351+90 TO STA 353+00 LT

DETAIL P
SPECIAL CUT DITCH WITH RIP RAP
(Not to Scale)

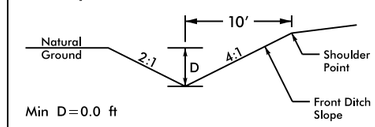


Min D=1.0 ft
Max d=1.0 ft
Type of liner=Class B Rip Rap

–L– STA 39+00 TO STA 39+50 RT

DETAIL Q
SPECIAL CUT DITCH
(Not to Scale)

No Special Profile For This Ditch

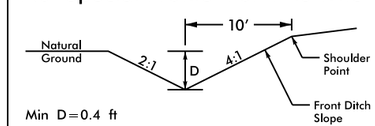


Min D=0.0 ft

–L– STA 115+50 TO STA 117+50 LT
–L– STA 121+50 TO STA 123+00 RT
–L– STA 124+00 TO STA 125+50 RT

DETAIL R
SPECIAL CUT DITCH
(Not to Scale)

No Special Profile For This Ditch

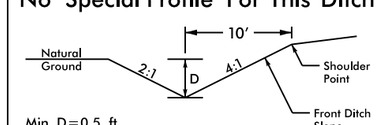


Min D=0.4 ft

–L– STA 81+50 TO STA 82+50 RT
–L– STA 92+00 TO STA 93+00 RT
–L– STA 98+00 TO STA 99+00 RT
–L– STA 104+00 TO STA 105+00 RT
–L– STA 107+00 TO STA 107+50 LT

DETAIL S
SPECIAL CUT DITCH
(Not to Scale)

No Special Profile For This Ditch



Min D=0.5 ft

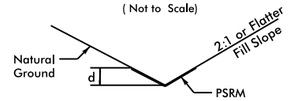
–L– STA 29+50 TO STA 31+20 LT
–L– STA 36+00 TO STA 38+00 LT
–L– STA 45+50 TO STA 47+00 RT
–L– STA 63+50 TO STA 65+00 RT
–L– STA 77+00 TO STA 79+50 LT

5/14/99
6/23/2015
dlinville
R:\Hydraulics\PERMITS Environmental Drawings\W-5313 Permit Package 20150623\W-5313_Hyd_prm_DTL.dgn
$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	2-D2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 28 OF 29

DETAIL T
TOE PROTECTION
(Not to Scale)



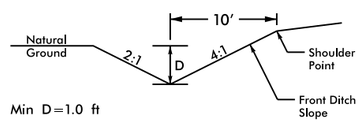
d=1.5 Ft.

Type of Liner= PSRM

–L– STA 115+00 TO STA.116+20 RT.

DETAIL U
SPECIAL CUT DITCH
(Not to Scale)

No Special Profile For This Ditch

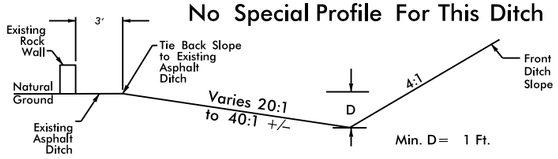


Min D=1.0 ft

–L– STA 362+00 TO STA 362+50 LT
–L– STA 389+50 TO STA 390+50 RT
–L– STA 393+50 TO STA 394+00 RT
–L– STA 394+00 TO STA 395+50 LT
–L– STA 404+50 TO STA 405+00 RT
–L– STA 413+00 TO STA 414+50 RT

DETAIL V
TYPICAL CUT DITCH WITH SPECIAL BACK SLOPE
(Not to Scale)

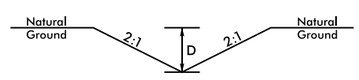
No Special Profile For This Ditch



Min. D= 1 Ft.

–L– STA 406+75 TO STA 409+15 LT

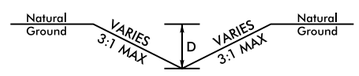
DETAIL W
STANDARD 'V' DITCH
(Not to Scale)



Min D=1.0 ft

–Y3– STA 11+25 RT; L=37', S=0.30%, DDE=74CY

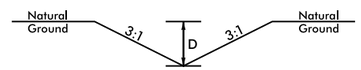
DETAIL X
STANDARD 'V' DITCH
(Not to Scale)



Min D=1.0 ft

–L– STA 31+00 LT; L=60', S=1.50%, DDE=2CY

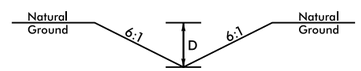
DETAIL Y
STANDARD 'V' DITCH
(Not to Scale)



Min D=1.0 ft

–L– STA 59+26 RT; L=30', S=0.30%, DDE=1CY
–L– STA 108+49 RT; L=20', S=0.30%, DDE=1CY
–L– STA 189+90 RT; L=30', S=0.60%, DDE=15CY

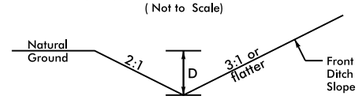
DETAIL Z
STANDARD 'V' DITCH
(Not to Scale)



Min D=1.0 ft

–L– STA 52+91 LT; L=49', S=0.50%, DDE=1CY
–L– STA 59+26 RT; L=16', S=0.30%, DDE=1CY

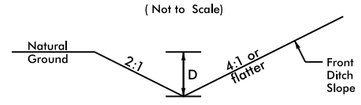
DETAIL AA
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min D=1.0 ft

–L– STA 167+50 TO STA 172+50 RT
–L– STA 360+50 TO STA 362+75 RT

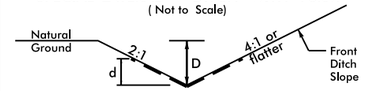
DETAIL AB
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min D=1.0 ft

–L– STA 148+00 TO STA 149+00 RT
–L– STA 161+89 TO STA 163+00 LT
–Y4– STA 10+69 TO STA 12+25 LT

DETAIL AC
SPECIAL LATERAL 'V' DITCH WITH PSRM
(Not to Scale)

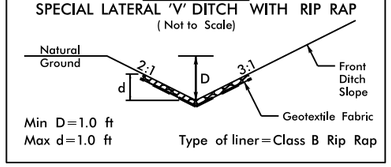


Min D=1.0 ft
Max d=1.0 ft

Type of liner=PSRM

–L– STA 172+50 TO STA 177+00 RT
–L– STA 181+50 TO STA 182+50 LT

DETAIL AD
SPECIAL LATERAL 'V' DITCH WITH RIP RAP
(Not to Scale)

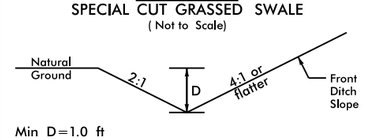


Min D=1.0 ft
Max d=1.0 ft

Type of liner=Class B Rip Rap

–L– STA 177+00 TO STA 177+58 RT

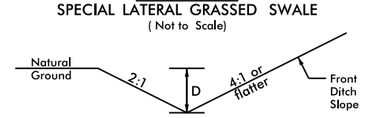
DETAIL AE
SPECIAL CUT GRASSED SWALE
(Not to Scale)



Min D=1.0 ft

–L– STA 207+69 TO STA 208+50 LT
–L– STA 209+50 TO STA 210+00 LT

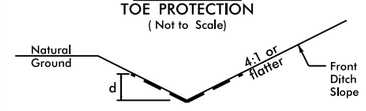
DETAIL AF
SPECIAL LATERAL GRASSED SWALE
(Not to Scale)



Min D=1.0 ft

–L– STA 127+00 TO STA 127+75 LT

DETAIL AG
TOE PROTECTION
(Not to Scale)

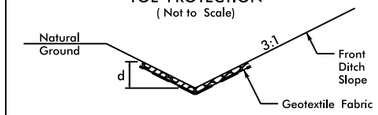


Max d=1.0 ft

Type of liner=PSRM

–L– STA 130+00 TO STA 135+00 LT
–L– STA 133+00 TO STA 135+65 RT
–L– STA 171+50 TO STA 177+00 LT

DETAIL AH
TOE PROTECTION
(Not to Scale)

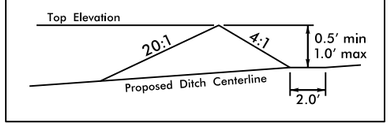


Max d=1.0 ft

Type of liner=Class B Rip Rap

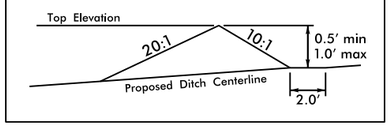
–L– STA 181+00 TO STA 181+50 LT

DETAIL AI
FALSE SUMP
(Not to Scale)



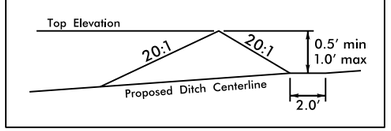
–L– STA 96+00 LT; TOP ELEVATION=762.3'
–L– STA 135+50 RT; TOP ELEVATION=741.6'

DETAIL AJ
FALSE SUMP
(Not to Scale)



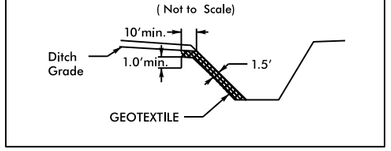
–L– STA 105+40 LT; TOP ELEVATION=741.9'

DETAIL AK
FALSE SUMP
(Not to Scale)



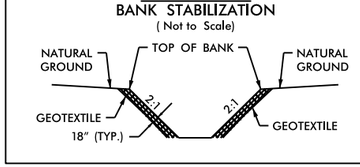
–L– STA 366+60 RT; TOP ELEVATION=753.2'

DETAIL AL
RIP RAP AT EMBANKMENT
(Not to Scale)



–L– STA 191+60 RT; CLASS I RIP RAP=7TONS, GEOTEXTILE=15SY
–L– STA 208+95 LT; CLASS I RIP RAP=4TONS, GEOTEXTILE=15SY

DETAIL AM
BANK STABILIZATION
(Not to Scale)



–L– STA 128+06 RT;
CLASS I RIP RAP=21TONS, GEOTEXTILE=40SY, DDE=21CY

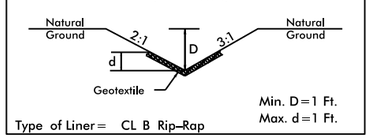
–L– STA 191+43 RT;
CLASS I RIP RAP=20TONS, GEOTEXTILE=40SY, DDE=15CY

–L– STA 208+68 RT;
CLASS I RIP RAP=13TONS, GEOTEXTILE=25SY, DDE=10CY

–L– STA 284+96 LT;
CLASS I RIP RAP=21TONS, GEOTEXTILE=40SY, DDE=21CY

–L– STA 397+91 RT;
CLASS I RIP RAP=50TONS, GEOTEXTILE=90SY, DDE=30CY

DETAIL AN
STANDARD 'V' DITCH
(Not to Scale)

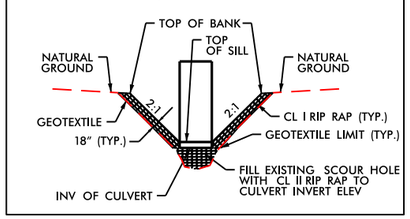


Min. D=1 Ft.
Max. d=1 Ft.

Type of Liner= CL B Rip–Rap

–L– STA 176+50 LT, L=50', S=8.82%, DDE=12 CY

DETAIL AO
BANK STABILIZATION
(Not to Scale)



–L– STA 179+73 RT;
CLASS I RIP RAP=30TONS, GEOTEXTILE=50SY, DDE=45CY
SCOUR HOLE: CLASS II RIP RAP=36 TONS

–L– STA 349+51 LT;
CLASS I RIP RAP=70TONS, GEOTEXTILE=120SY, DDE=50CY
SCOUR HOLE: CLASS II RIP RAP=50 TONS

–L– STA 398+49 LT;
CLASS I RIP RAP=60TONS, GEOTEXTILE=100SY, DDE=40CY
SCOUR HOLE: CLASS II RIP RAP=35 TONS

5/14/99
8/13/2015
lmpchns
$$$

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	128+16	54-in RCP-IV buried 1 foot						< 0.01	< 0.01	13	19	
1	128+16	bank stabilization						< 0.01		18		
2	179+65	1@9x8-ft RCBC w/1-ft sills						< 0.01	< 0.01	6	19	
2	179+65	bank stabilization						< 0.01		36		
3	191+44	60-in RCP-III buried 1 foot	< 0.01			< 0.01		< 0.01	< 0.01	15	15	
3	191+44	bank stabilization						< 0.01		22		
4	208+86	42-in RCP-IV buried 0.7-ft						< 0.01	< 0.01	11	20	
4	208+86	bank stabilization						< 0.01		21		
5	284+96	54-in RCP-III buried 1 foot						< 0.01	< 0.01	5	20	
5	284+96	bank stabilization						< 0.01		18		
6	349+71	1@9x8-ft RCBC w/1-ft sills						< 0.01	< 0.01	13	21	
6	349+71	bank stabilization						< 0.01		44		
7	398+18	1@10x7-ft RCBC w/1-ft sills						< 0.01	< 0.01	9	22	
7	398+18	bank stabilization						0.02		80		
TOTALS*:			< 0.01			< 0.01		0.05	0.02	311	136	

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
June 23, 2015
Rowan County
W-5313
46136.1.1

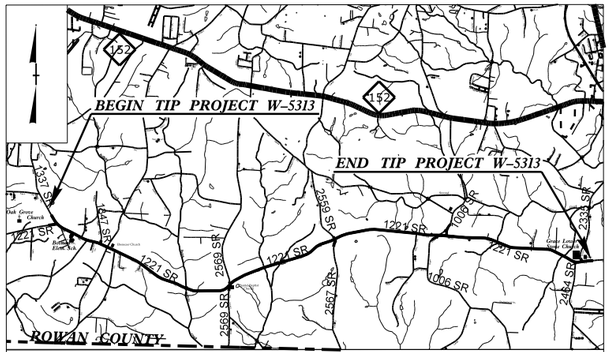
Revised 2013 10 24

09/08/99

TIP PROJECT: W-5313

CONTRACT: C203672

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



VICINITY MAP SHOWING LOCATION OF PROJECT W-5313

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

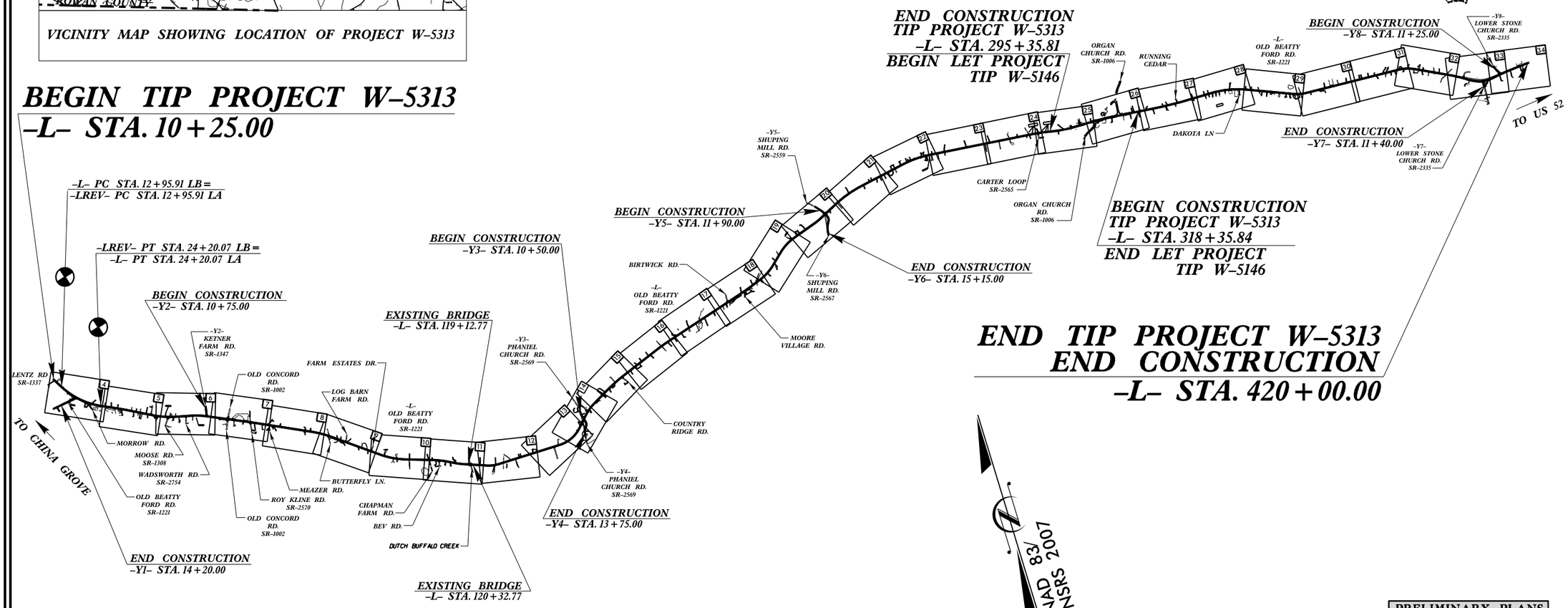
ROWAN COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5313	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46136.1.1	STP-1221(15)	P.E.
46136.1.FD1	STP-1221(15)	R/W
46136.1.FDU1	STP-1221(15)	UTIL

LOCATION: SR 1221 (OLD BEATTY FORD ROAD)
FROM SR 1337 (LENTZ ROAD) TO
SR 2335 (LOWER STONE CHURCH ROAD)

TYPE OF WORK: WIDENING, RESURFACING, DRAINAGE, SIGNING AND CULVERTS



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2015 = 4333
ADT 2035 = 5800
DHV = 10 %
D = 65 %
T = 8 % *
V = 50 MPH
* TTST = 3 DUAL = 5
FUNC CLASS =
RUAL COLLECTOR
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT W-5313	=	7.33 MILES
LENGTH OF STRUCTURE TIP PROJECT W-5313	=	0.00 MILES
TOTAL LENGTH OF TIP PROJECT W-5313	=	7.33 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 29, 2014

LETTING DATE:
FEBRUARY 16, 2016

TONY HOUSER, PE.
PROJECT ENGINEER

LEE ANN MOORE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

31-JUL-2015 09:13
R:\Roadway\Proj\W-5313_Rdy_tsh_.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-LREV-	~~-L-~~
PI Sta 18+75.16	~~PI Sta 18+75.16~~
Δ = 34° 04' 45.1" (LT)	~~Δ = 34° 04' 45.1" (LT)~~
D = 3° 01' 53.5"	~~D = 3° 28' 20.9"~~
L = 1,124.16'	~~L = 981.41'~~
T = 579.26'	~~T = 505.70'~~
R = 1,890.00'	~~R = 1,650.00'~~
SE = 05	~~SE = 06~~
RO = 128'	~~RO = 160'~~

NAD 83/NSRS 2007

-L- POT Sta. 10+00.00

-L- PC Sta. 12+95.91 LB=
-LREV- PC Sta.12+95.91 LA

~~-L- PC Sta. 13+69.46~~

-LREV- PT Sta. 24+20.07 LB =
-L- PT Sta.24+24.43 LA

~~-L- PT Sta. 23+50.87~~

GPS -BYI- W5313-13 =

-LREV-

-Y1- POT Sta. 9+86.86 =
-LREV- POC Sta.17+69.06

-Y1- POT Sta. 10+00.00 =
~~-L- POC Sta.17+63.00~~

-Y1- POT Sta. 16+47.86

BEGIN TIP PROJECT W-5313
BEGIN CONSTRUCTION
-L- POT Sta. 10+25.00

END CONSTRUCTION
-Y1- Sta. 14+20.00

MATCH LINE SHEET 5 -L- STA. 25+00.00

DO NOT DISTURB U/G TANKS, METAL CANOPY, SIGN, AIR COMPRESSOR, OR TELEPHONE

DO NOT DISTURB FO CONCENTRATOR SITE

LORITA SMITH PARKS AND HUSBAND BRIAN C. PARKS DB 846 PG 586 PB 9995 PG 4636 (1)

LORITA SMITH PARKS AND HUSBAND BRIAN C. PARKS DB 876 PG 833 PB 9995 PG 4636 (3)

W. JERRY LIPPARD DB 798 PG 117 (2)

A & K Ins. INC. DB 1089 PG 561 (4)

GINA RENEE BEAVER DB 762 PG 440 (5)

WILLIAM RAYMOND BAXTER AND WIFE LUANN GULLEDGE BAXTER DB 762 PG 444 (6)

CHRISTINE NEEL DB 772 PG 642 (7)

CHESTER LEMLEY AND WIFE PATRICIA LEMLEY DB 1015 PG 700 PB 9995 PG 4635 (8)

DAVID W. PAYNE AND WIFE ELLEN M. PAYNE DB 1020 PG 87 PB 9995 PG 4635 (9)

YVONNE F. COLEY DB 1107 PG 729 DB 1122 PG 953 PB 9995 PG 4506 PB 9995 PG 4635 (10)

THE ROWAN-SALISBURY BOARD OF EDUCATION DB 959 PG 874 (11)

THE ROWAN-SALISBURY BOARD OF EDUCATION DB 383 PG 489 DB 383 PG 437 (11)

BOSTIAN SCHOOL

FOR -L- PROFILE, SEE SHEET NO. 35
FOR -Y1- PROFILE, SEE SHEET NO. 50
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-D1 & 2-D2
FOR -Y1- DITCH DETAILS, SEE SHEET NO. 2-D1 & 2-D2
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

TRAFFIC DIAGRAM

-L- (LENTZ RD)
2010 ADT 2600
2035 ADT 4800
DHV = 8%
DIR = 55%
TTST = 1%
DUAL = 3%

400/1600 — 2200/3200

-Y3- (OLD BEATTY FORD RD)
1200/3600 — 3000/5200
DHV = 10%
DIR = 65%
TTST = 3%
DUAL = 5%

REVISIONS

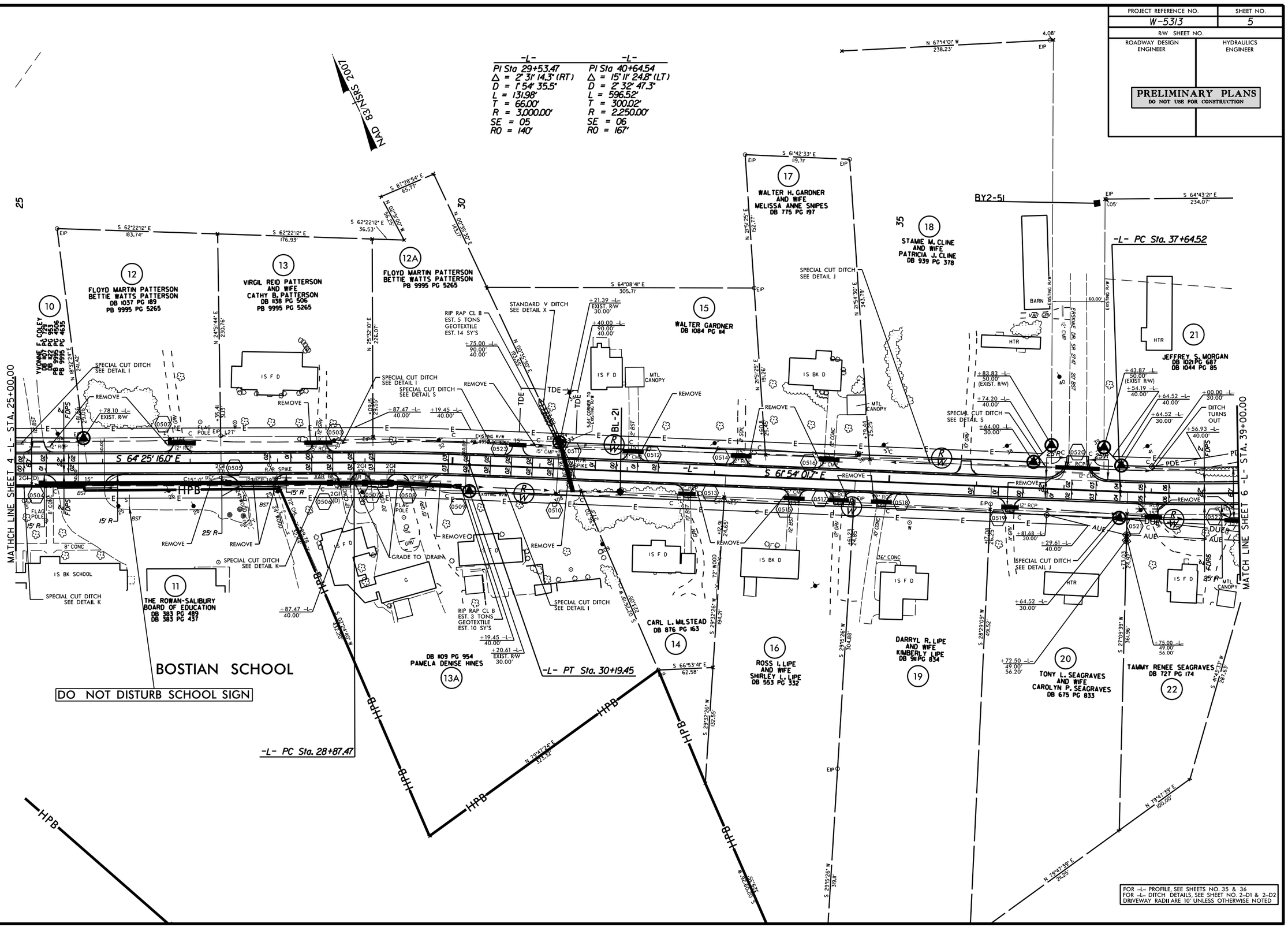
DESIGN REVISIONS 6/10/2015
(REVISION 1) PROFILE "LA PRO" ADJUSTED FOR 3" MIN. RESURFACING AT TIE TO REDUCE MILLING
(REVISION 2) PROFILE "LREV PRO" ADJUSTED FOR 3" MIN. RESURFACING TO REMOVE UNDERCUT OF EXISTING PAVEMENT.
(REVISION 3) PROFILE "Y1 PRO" ADJUSTED FOR 3" MIN. RESURFACING TO REDUCE MILLING

8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht04.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



REVISIONS

8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht05.dgn
$$$$USERNAME$$$$

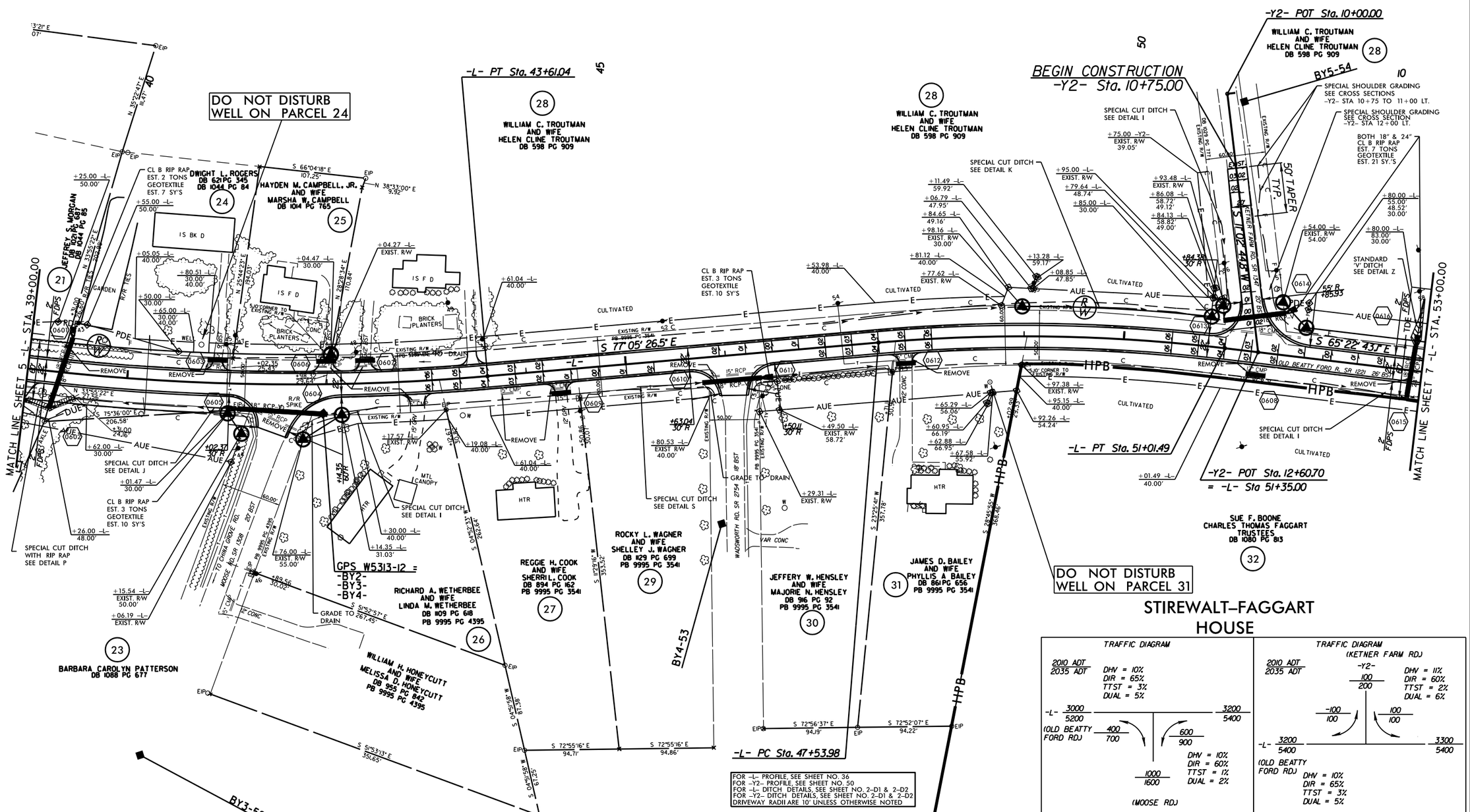
PROJECT REFERENCE NO.	SHEET NO.
W-5313	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

-L-

PI Sta 40+64.54	PI Sta 49+28.34
Δ = 15° 11' 24.8" (LT)	Δ = 11° 42' 43.4" (RT)
D = 2° 32' 47.3"	D = 3° 22' 13.2"
L = 596.52'	L = 347.50'
T = 300.02'	T = 174.36'
R = 2,250.00'	R = 1,700.00'
SE = 06	SE = 06
RO = 167'	RO = 160'



FOR -L- PROFILE, SEE SHEET NO. 36
FOR -Y2- PROFILE, SEE SHEET NO. 50
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-D1 & 2-D2
FOR -Y2- DITCH DETAILS, SEE SHEET NO. 2-D1 & 2-D2
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

TRAFFIC DIAGRAM

2010 ADT 2035 ADT
DHV = 10%
DIR = 65%
TTST = 3%
DUAL = 5%

-L- 3000 / 5200 — 3200 / 5400
(OLD BEATTY FORD RD) 400 / 700
600 / 900
1000 / 1600
(MOOSE RD)
DHV = 10%
DIR = 60%
TTST = 1%
DUAL = 2%

TRAFFIC DIAGRAM (KETNER FARM RD)

2010 ADT 2035 ADT
-Y2- 100 / 200
DHV = 11%
DIR = 60%
TTST = 2%
DUAL = 6%

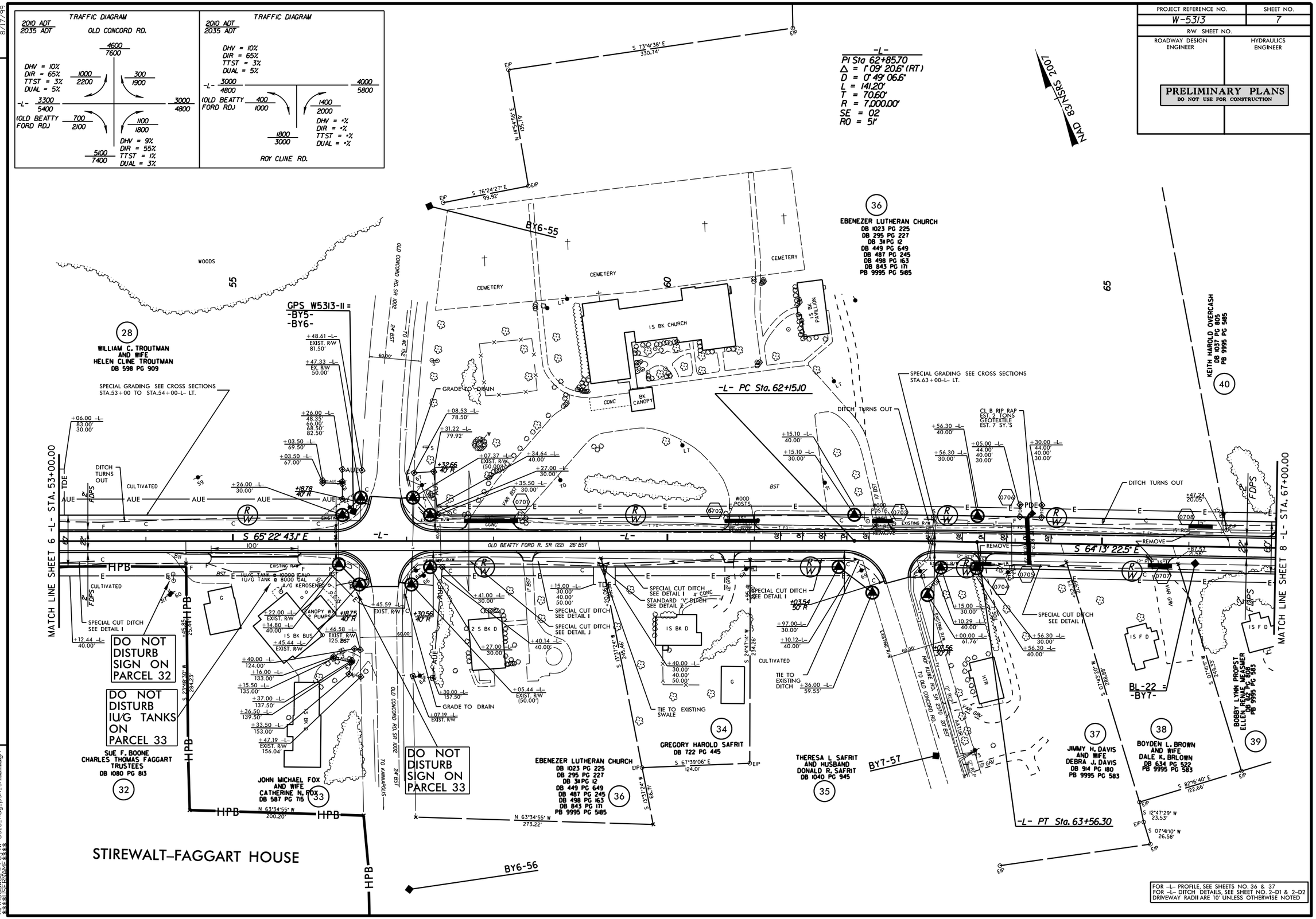
-100 / 100
100 / 100
-L- 3200 / 5400 — 3300 / 5400
(OLD BEATTY FORD RD)
DHV = 10%
DIR = 65%
TTST = 3%
DUAL = 5%

REVISIONS
8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht06.dgn
$$$$USER$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



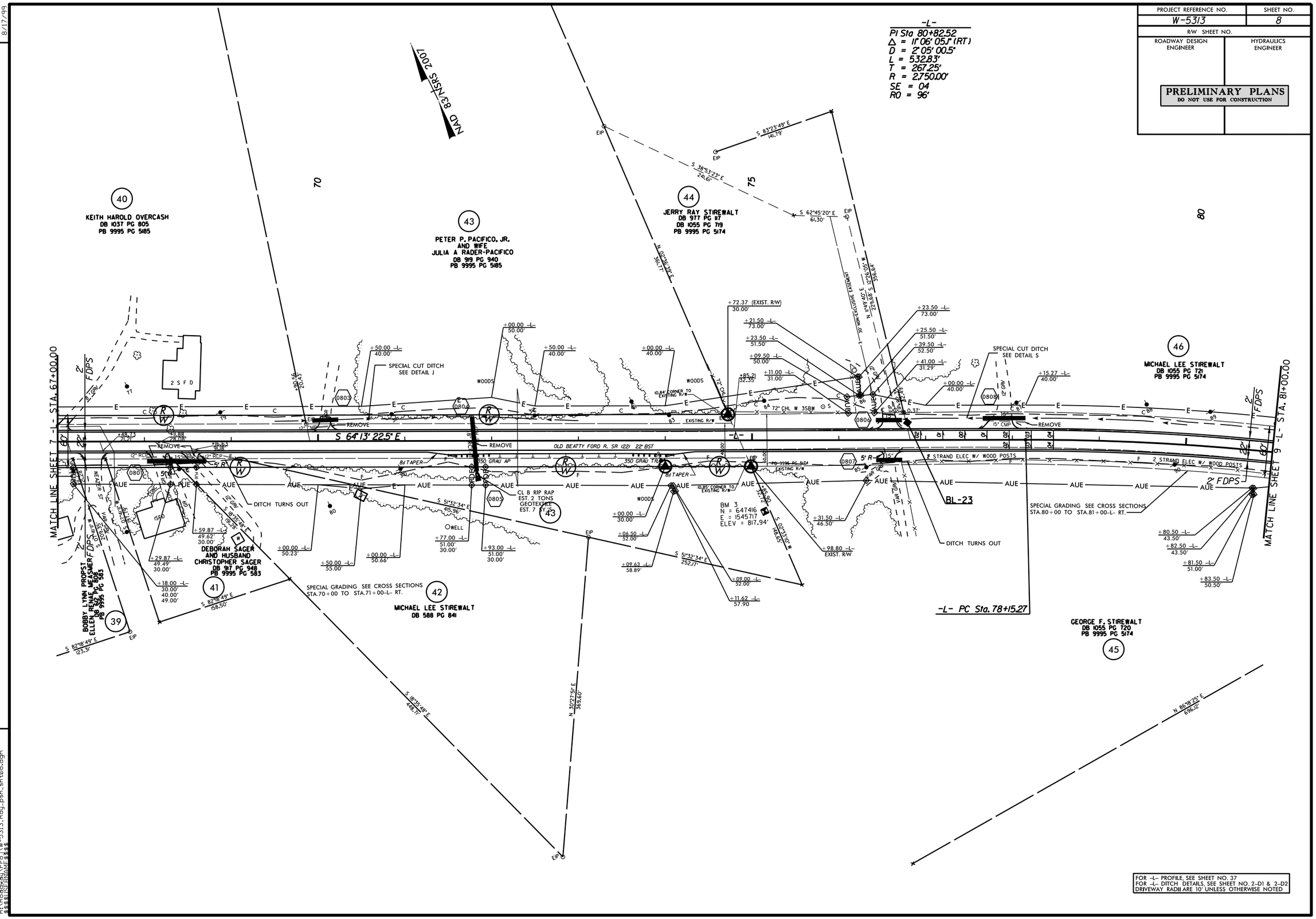
REVISIONS

8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht07.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE, SEE SHEET NO. 37
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-D1 & 2-D2
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

REVISIONS

8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht08.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

-L-
PI Sta 80+82.52
Δ = 11° 06' 05.1" (RT)
D = 2° 05' 00.5"
L = 532.83'
T = 267.25'
R = 2,750.00'
SE = 04
RO = 96'

-L- PT Sta. 83+48.10

MATCH LINE SHEET 8 -L- STA. 81+00.00

MATCH LINE SHEET 10 -L- STA. 95+00.00

S 57°14' 50.3" E

S 53°07' 17.5" E

OLD BEATTY FORD R. SR 1221 22' BST

46 MICHAEL LEE STIREWALT DB 1055 PG 121 PB 9995 PG 5174

47 JACOB H. H. SLOOP DB 849 PG 72

48 CHRISTOPHER CLINE AND WIFE MONTIE STIREWALT CLINE DB 1161 PG 195

49 MARK R. OWENS AND WIFE NADINE J. OWENS DB 809 PG 780

50 REBECCA FORD THOMASON AND HUSBAND DALE LEE THOMASON DB 833 PG 887

51 JACOB H. H. SLOOP AND WIFE MARY LOU SNEAD SLOOP DB 1043 PG 911

52 THE MARY ALICE CARPENTER REVOCABLE TRUST DB 1007 PG 136

53 HASKEL BROWN TROUTMAN AND WIFE LINDA I. TROUTMAN DB 862 PG 840

54 DANNY H. SLOOP AND WIFE CARLA JEAN K. SLOOP DB 596 PG 538 DB 1043 PG 912

55 STEVEN C. SELLERS AND WIFE LYNN B. SELLERS DB 1069 PG 581

56 THE MARY ALICE CARPENTER REVOCABLE TRUST DB 1007 PG 139

57 TIMOTHY G. WOMBLE AND WIFE SONIA S. WOMBLE DB 1075 PG 802 PB 9995 PG 5186

45 GEORGE E. STIREWALT DB 1066 PG 133 PB 9995 PG 5174

JACOB H. H. SLOOP DB 830 PG 784

BL-24

SPECIAL CUT DITCH SEE DETAIL I

SPECIAL GRADING SEE CROSS SECTIONS STA. 89+50-L- LT.

SPECIAL GRADING SEE CROSS SECTIONS STA. 85+50-L- RT.

SPECIAL GRADING SEE CROSS SECTIONS STA. 90+00-L- RT.

SPECIAL CUT DITCH SEE DETAIL R

SPECIAL CUT DITCH SEE DETAIL J

DITCH TURNS OUT -L- STA.93+65 RT.

GRADE TO DRAIN

CL B RIP RAP EST. 2 TONS GEOTEXTILE EST 7 SY

CL B RIP RAP EST. 2 TONS GEOTEXTILE EST. 7 SY.'S

MULCH AND GRAVEL YARD

WOODS

BARN

HTR

PORCH

FOR -L- PROFILE, SEE SHEETS NO. 37 & 38
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-D1 & 2-D2
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

REVISIONS

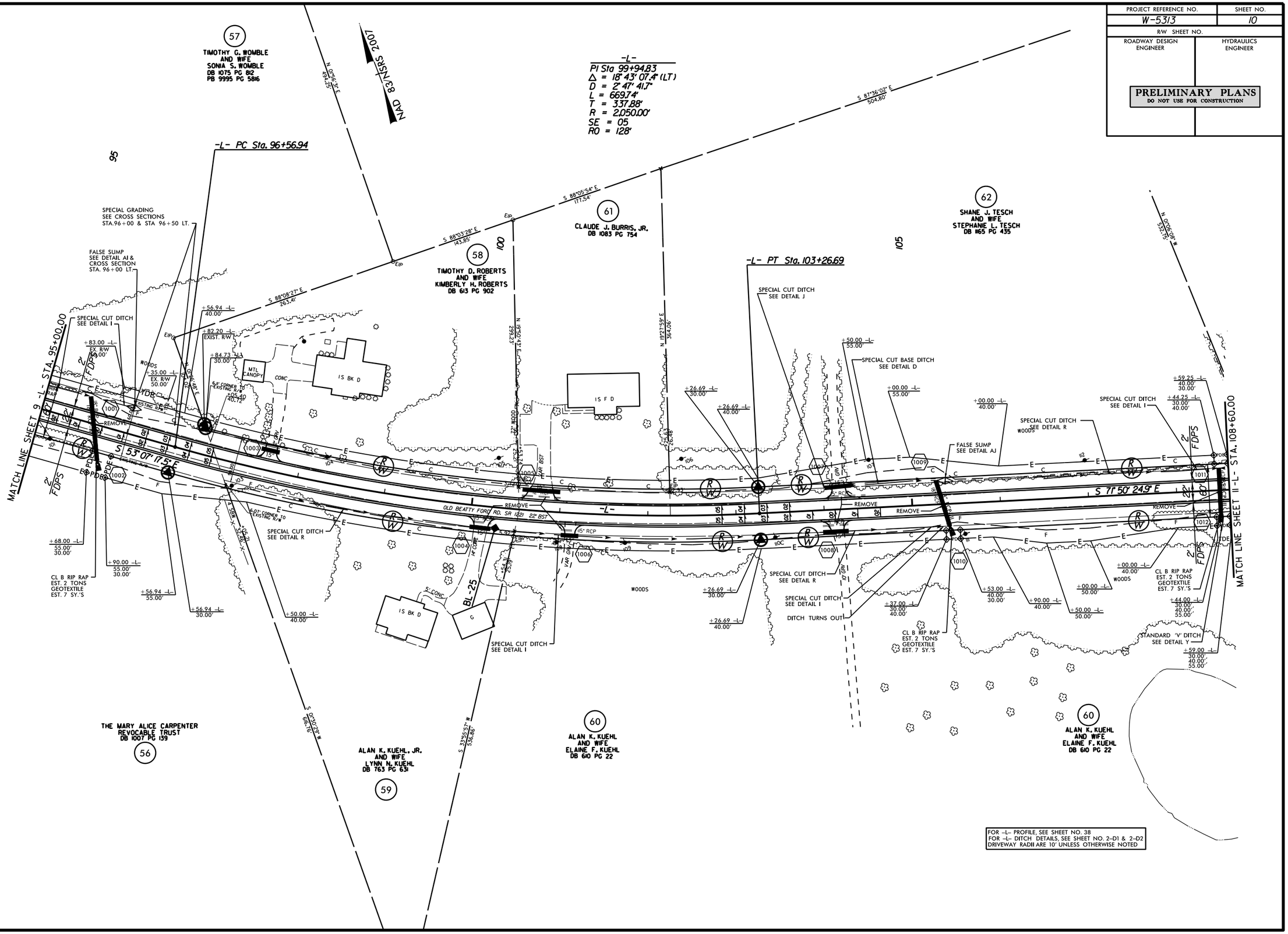
RIGHT OF WAY REVISION 6/12/2015
PROPERTY LINE ON PARCEL 50 CHANGED

8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht09.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



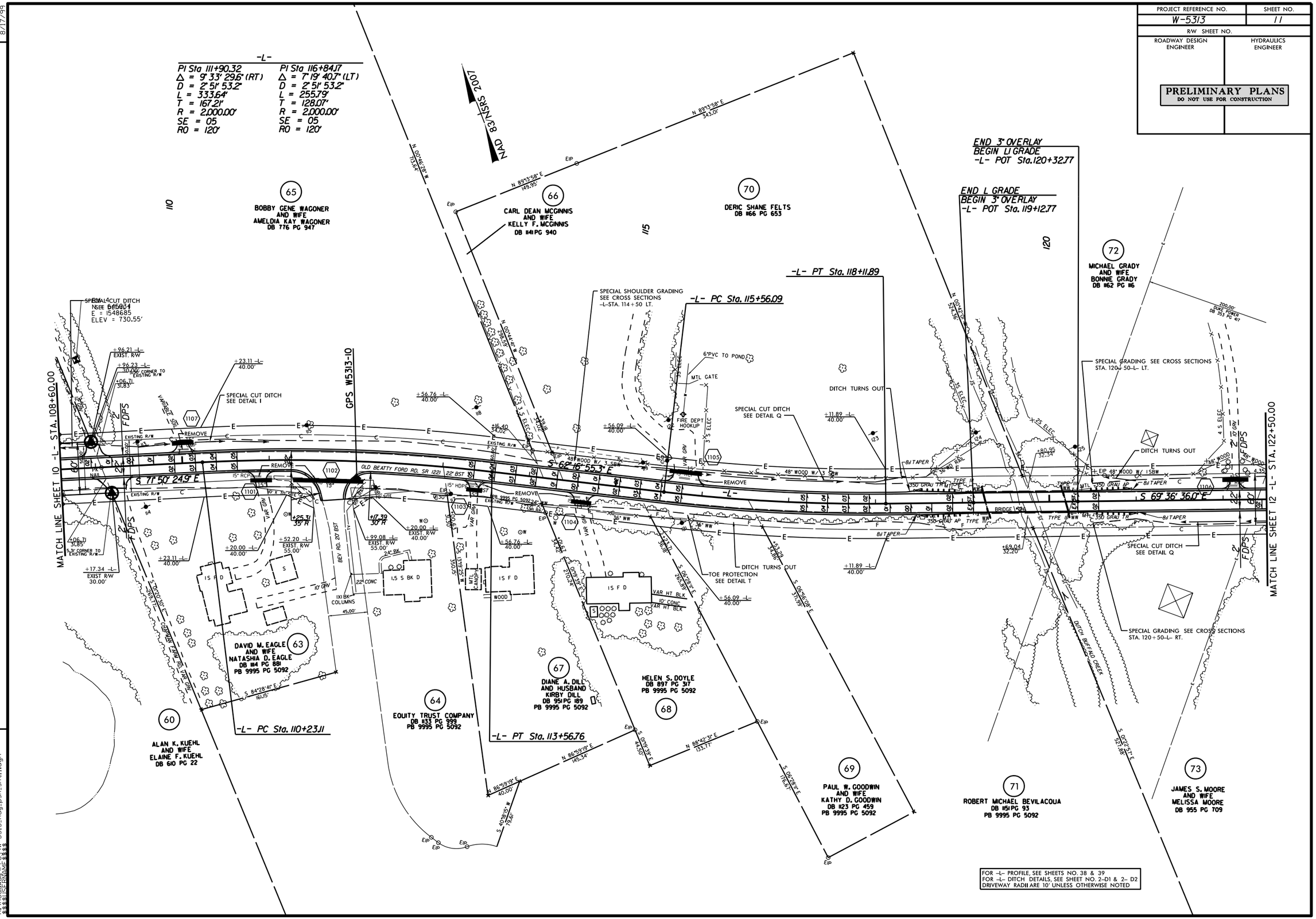
REVISIONS

8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht10.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



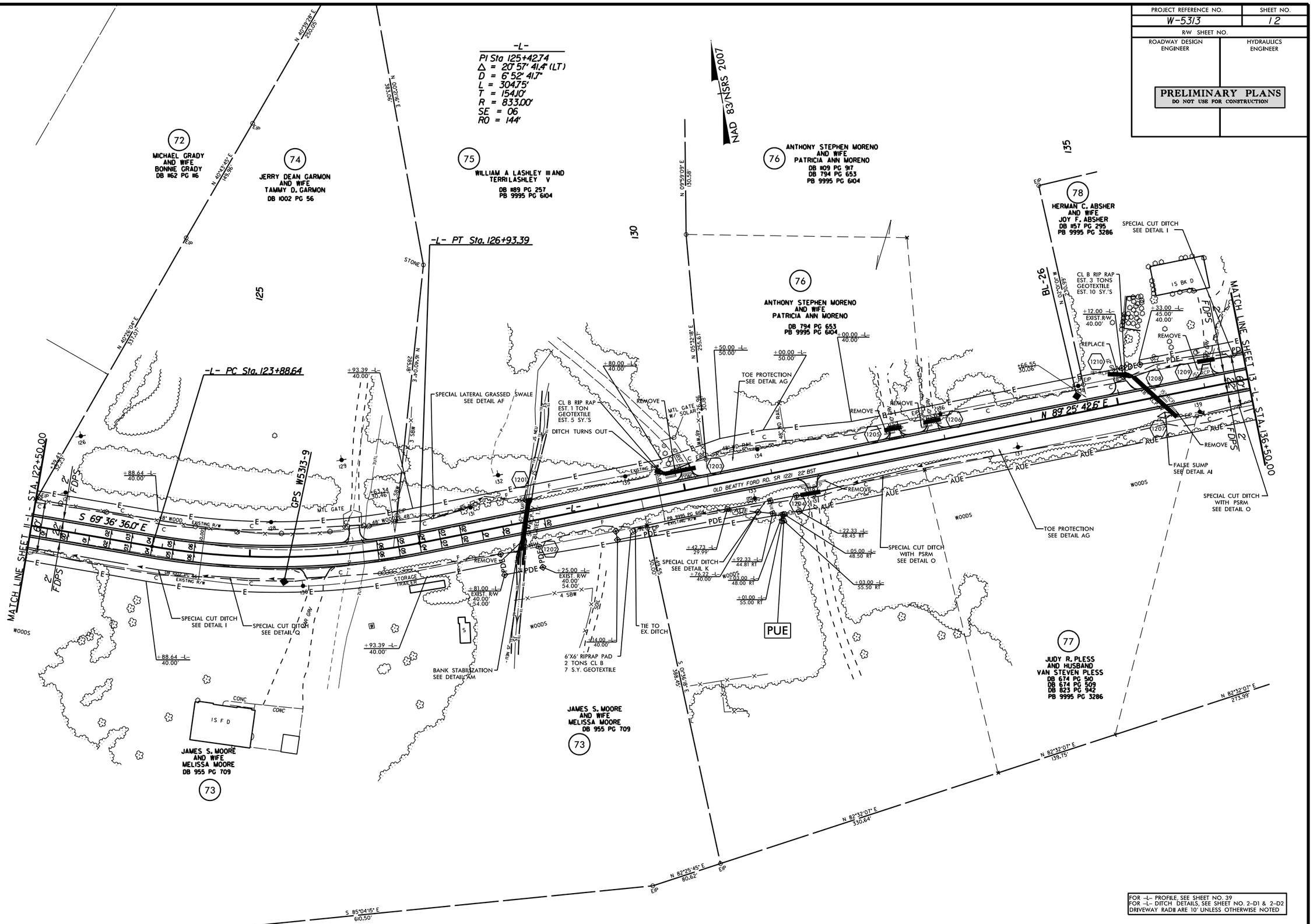
REVISIONS

8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht11.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE, SEE SHEET NO. 39
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-D1 & 2-D2
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

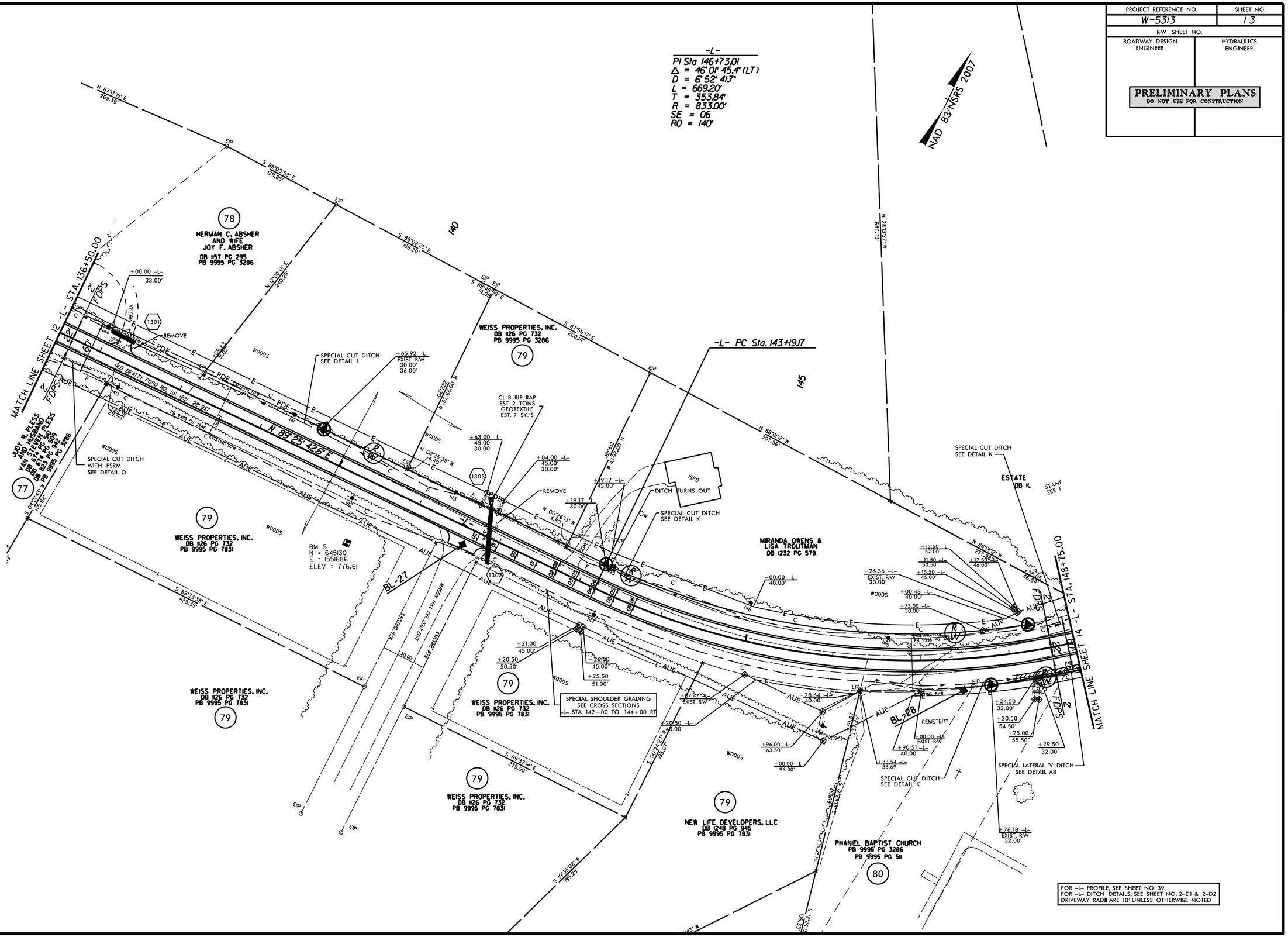
REVISIONS

8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht12.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE, SEE SHEET NO. 39
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-D1 & 2-D2
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

REVISIONS

8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sh13.dgn
$$$$USERNAME$$$$

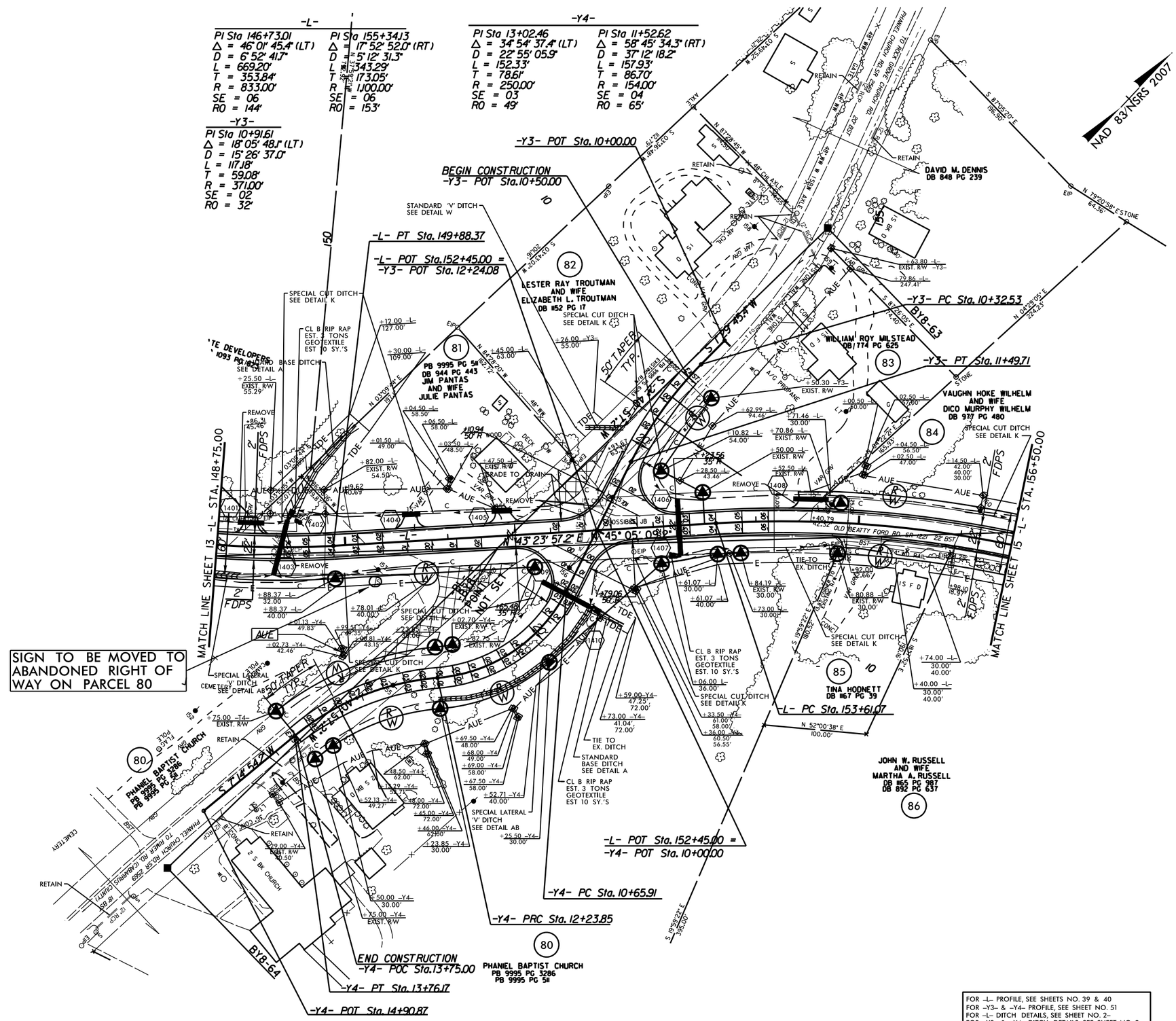
PROJECT REFERENCE NO.	SHEET NO.
W-5313	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

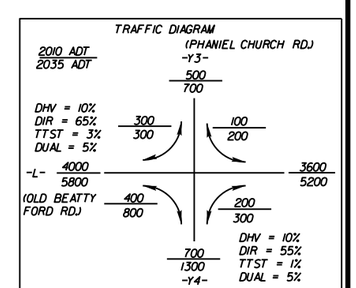
5/14/99

REVISIONS

DESIGN REVISIONS 6/10/2015
(REVISION 1) PROFILE "Y3 PRO" ADJUSTED FOR 3" MIN. RESURFACING AT TIE TO REDUCE MILLING.
(REVISION 2) PROFILE "Y4 PRO" ADJUSTED FOR 3" MIN. RESURFACING AT TIE TO REDUCE MILLING.



FOR -L- PROFILE, SEE SHEETS NO. 39 & 40
FOR -Y3- & -Y4- PROFILE, SEE SHEET NO. 51
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
FOR -Y3- & -Y4- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED
DO NOT DISTURB SINGLE FAMILY DWELLING PARCEL NUMBER 85 OWNER TINA HODNETT



31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht14.dgn
$$$$USERNAME$$$$

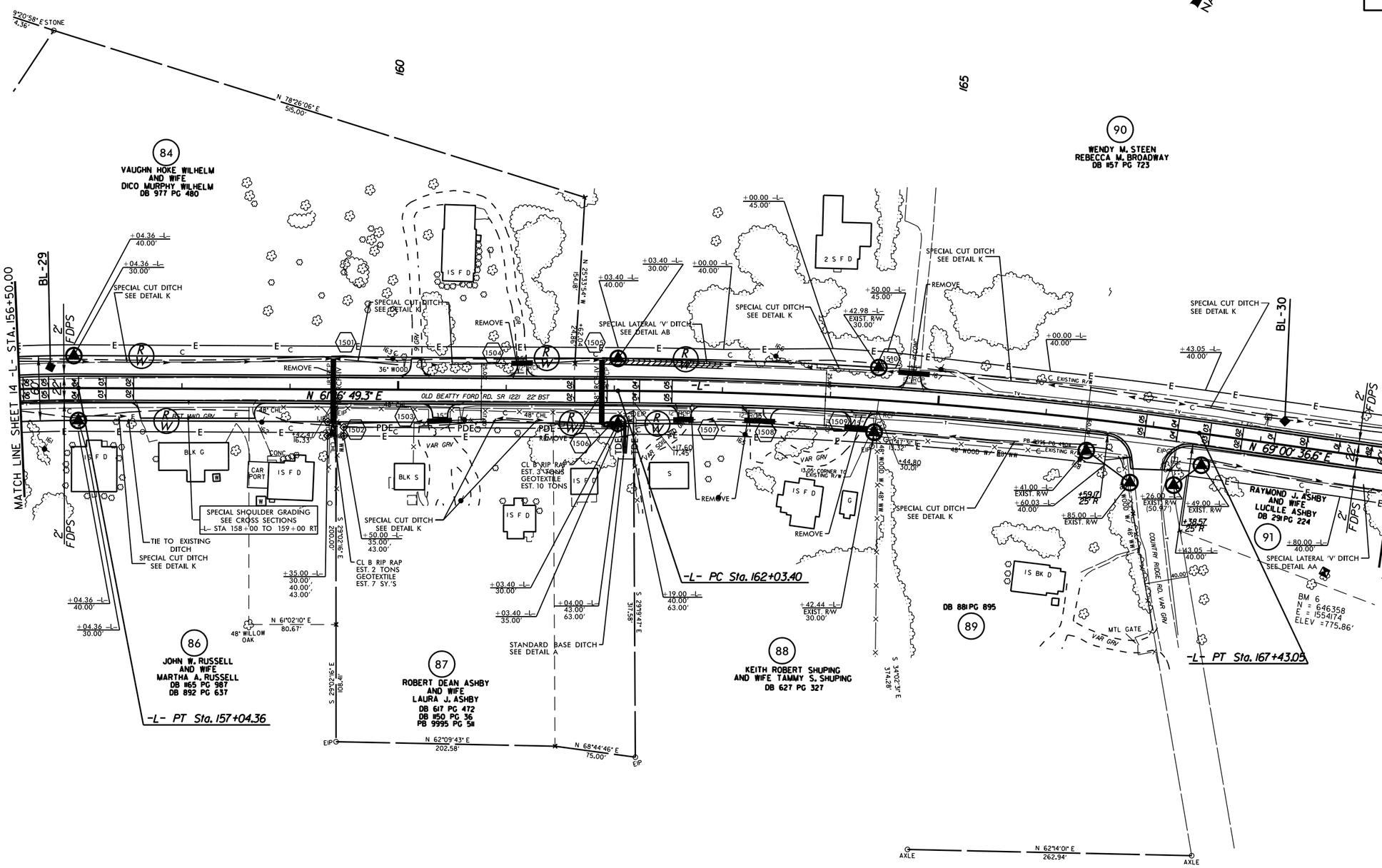
PROJECT REFERENCE NO.	SHEET NO.
W-5313	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

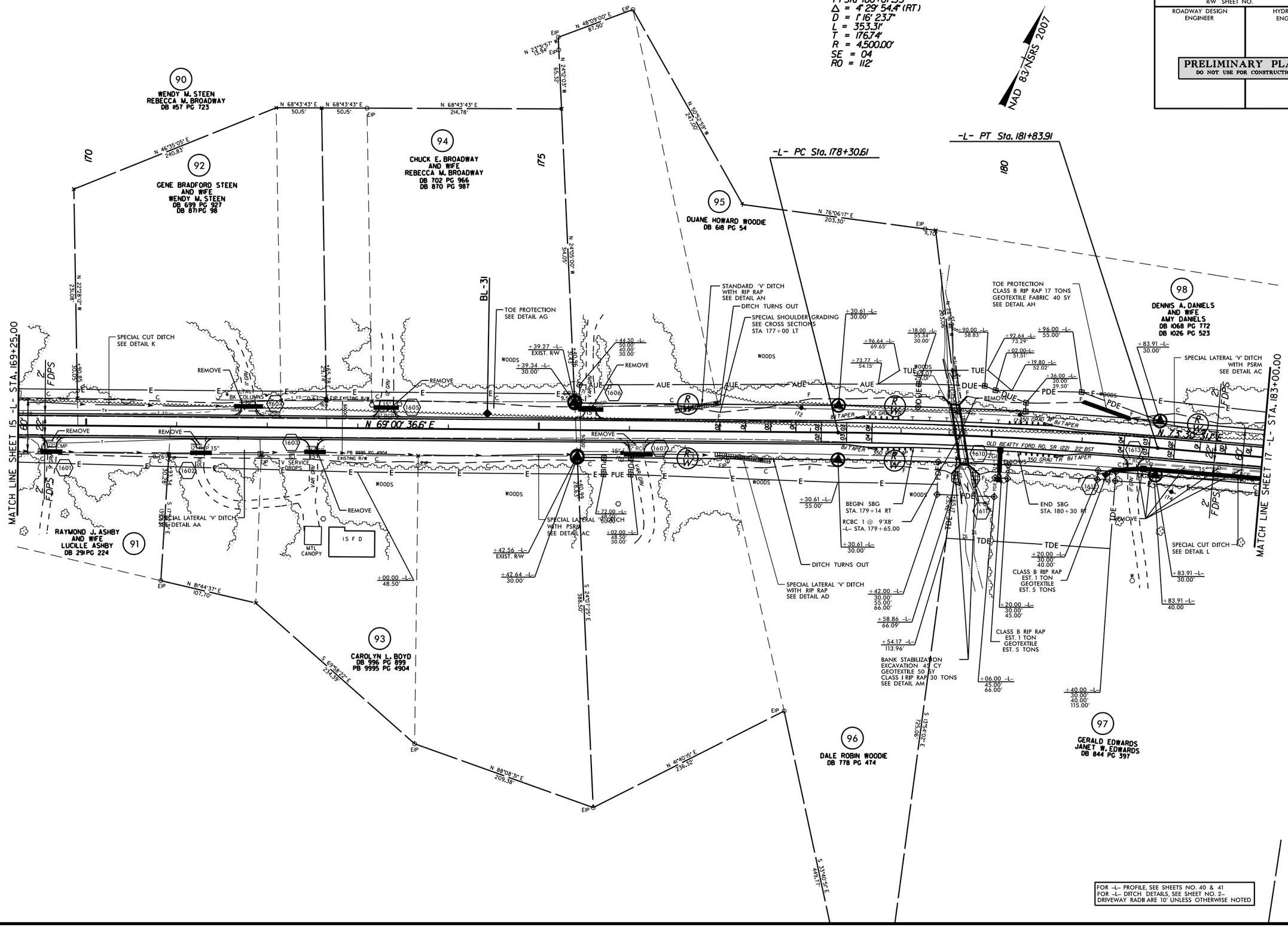
PI Sta 155+34.13	PI Sta 164+73.64
Δ = 17° 52' 52.0" (RT)	Δ = 7° 43' 47.4" (RT)
D = 5° 12' 31.3"	D = 1° 25' 56.6"
L = 343.29'	L = 539.64'
T = 173.05'	T = 270.23'
R = 1,100.00'	R = 4,000.00'
SE = 06	SE = 05
RO = 153'	RO = 150'

NAD 83/NSRS 2007


MATCH LINE SHEET 14 -L- STA. 156+50.00
MATCH LINE SHEET 16 -L- STA. 169+25.00
N 61°16' 49.3" E
N 69°00' 36.6" E
OLD BEATTY FORD RD. SR 1221 22' BST
-L- PC Sta. 162+03.40
-L- PT Sta. 157+04.36
-L- PT Sta. 167+43.05
84
VAUGHN HOKE WILHELM AND WIFE DICO MURPHY WILHELM DB 977 PG 480
86
JOHN W. RUSSELL AND WIFE MARTHA A. RUSSELL DB 1165 PG 987 DB 892 PG 637
87
ROBERT DEAN ASHBY AND WIFE LAURA J. ASHBY DB 617 PG 472 DB 1150 PG 36 PB 9995 PG 511
88
KEITH ROBERT SHUPING AND WIFE TAMMY S. SHUPING DB 627 PG 327
89
DB 881 PG 895
90
WENDY M. STEEN REBECCA M. BROADWAY DB 1157 PG 723
91
RAYMOND J. ASHBY AND WIFE LUCILLE ASHBY DB 291 PG 224
BL-29
BL-30
SPECIAL SHOULDER GRADING SEE CROSS SECTIONS -L- STA 158+00 TO 159+00 RT
SPECIAL CUT DITCH SEE DETAIL K
SPECIAL LATERAL 'V' DITCH SEE DETAIL AB
SPECIAL LATERAL 'V' DITCH SEE DETAIL AA
STANDARD BASE DITCH SEE DETAIL A
TIE TO EXISTING DITCH
CL B RIP RAP EST. 31 TONS GEOTEXTILE EST. 10 TONS
CL B RIP RAP EST. 2 TONS GEOTEXTILE EST. 7 SY.'S
BM 6 N = 646358 E = 1554174 ELEV = 775.86'
COUNTRY RIDGE RD. VAR GRV
N 62°14' 01" E 262.94'
N 62°09' 43" E 202.58'
N 68°44' 46" E 75.00'
S 29°19' 47" E 37.58'
S 29°02' 16" E 200.00'
S 29°02' 16" E 108.41'
S 34°02' 39" E 314.28'
N 25°33' 54" W 54.18'
N 78°26' 06" E 515.00'
S 29°20' 58" E STONE 4.36'
N 61°02' 10" E 80.67'
48" WILLOW OAK
MTL GATE
EXISTING R/W
EXIST. R/W 30.00'
EXIST. R/W (50.97')
EXIST. R/W 40.00'
EXIST. R/W 30.00'
EXIST. R/W 45.00'
EXIST. R/W 40.00'
EXIST. R/W 43.00'
EXIST. R/W 63.00'
EXIST. R/W 35.00'
EXIST. R/W 30.00'
EXIST. R/W 40.00'
EXIST. R/W 45.00'
EXIST. R/W 40.00'
EXIST. R/W 40.00'
EXIST. R/W 40

PROJECT REFERENCE NO.	SHEET NO.
W-5313	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE, SEE SHEETS NO. 40 & 41
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

REVISIONS

8/17/99

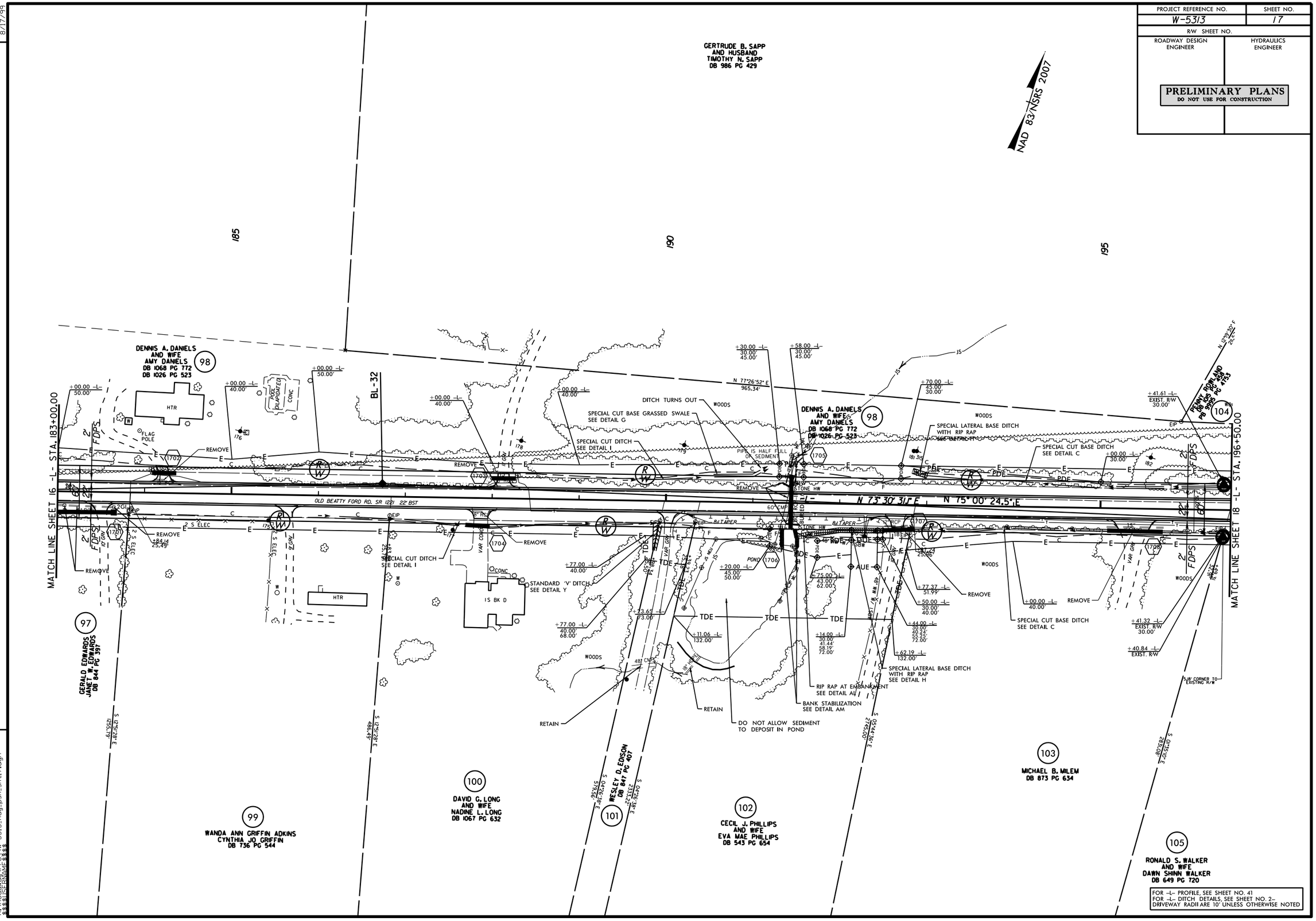
31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht16.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

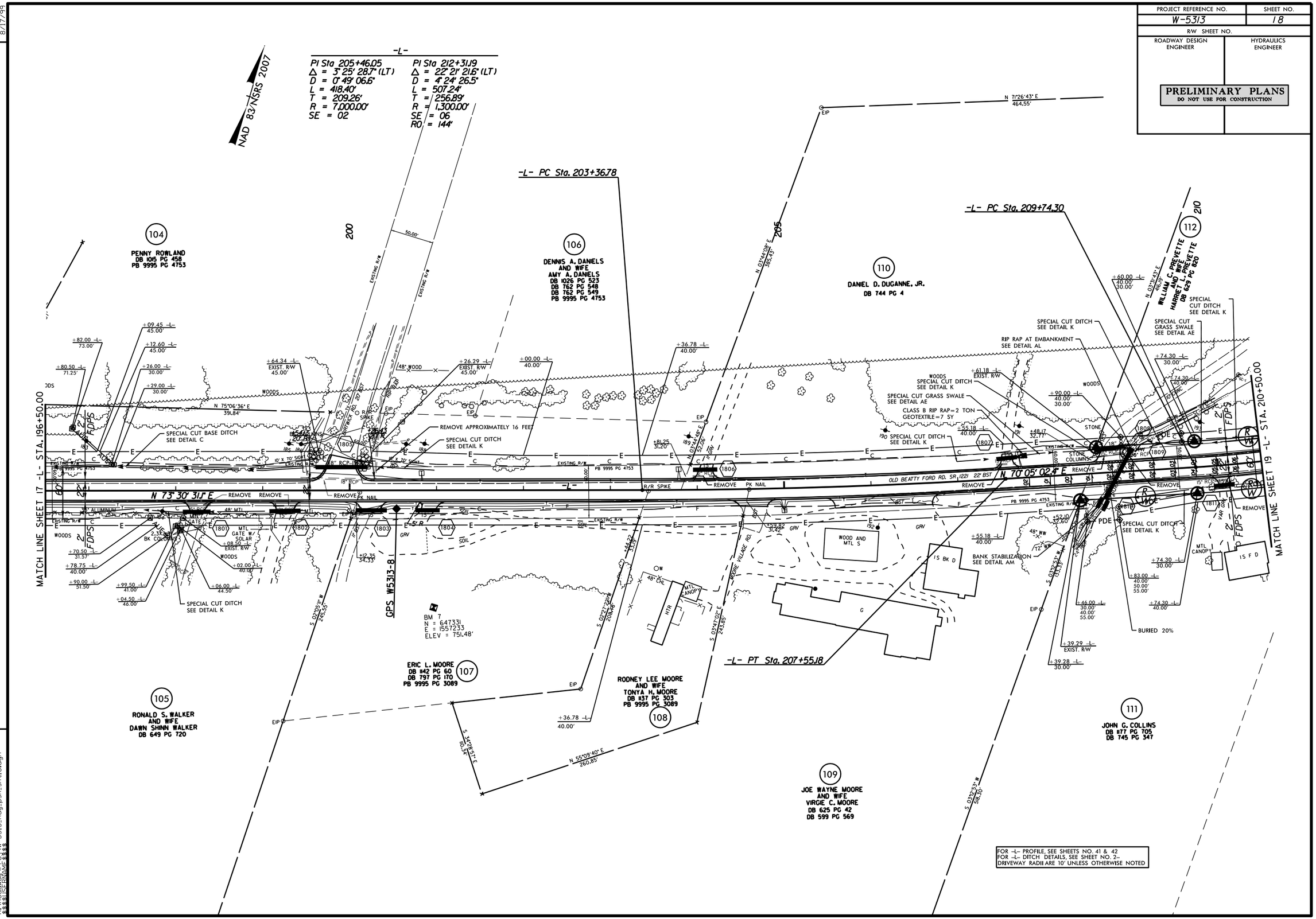


FOR -L- PROFILE, SEE SHEET NO. 41
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht17.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



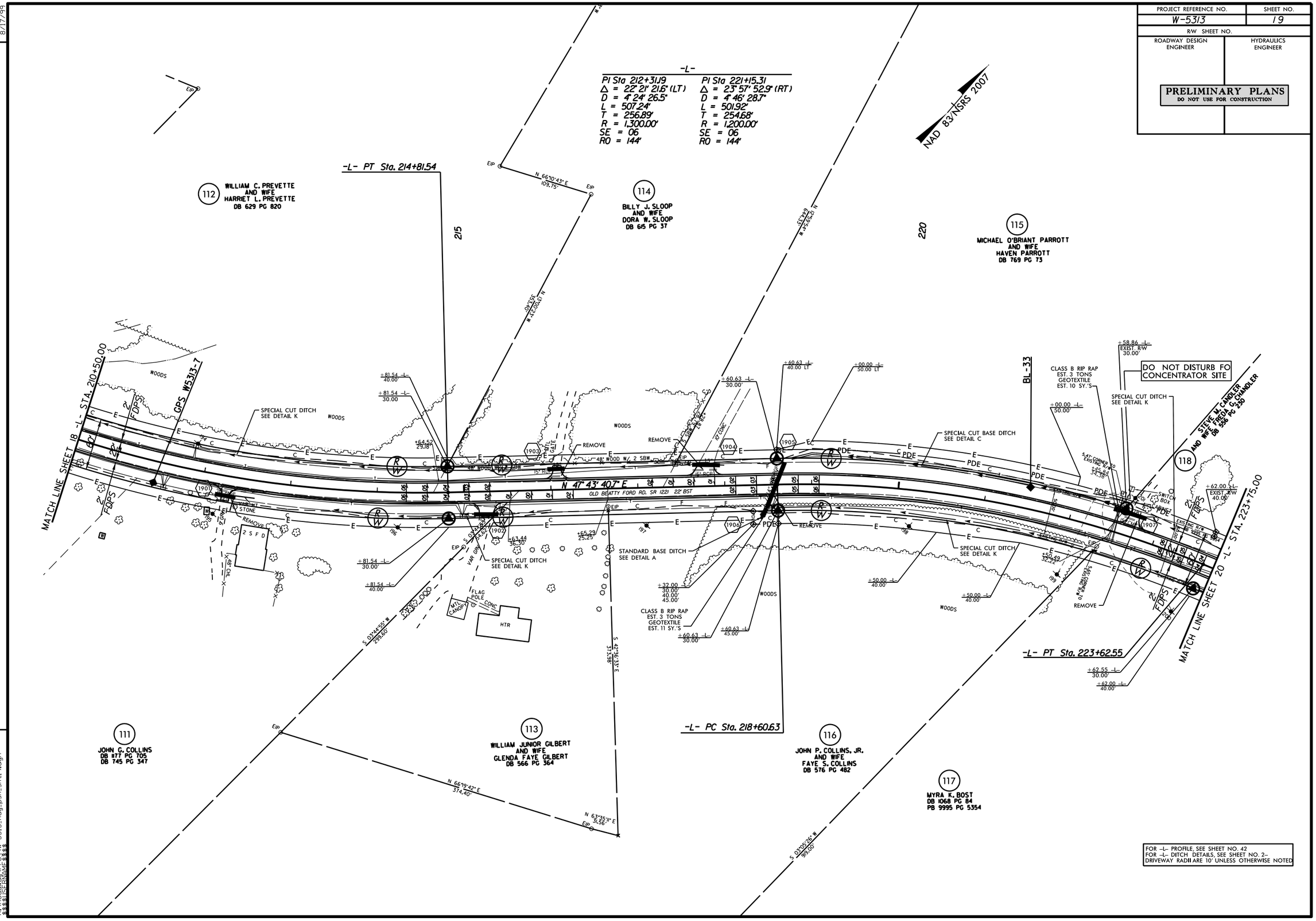
REVISIONS

8/17/99

31-JUL-2015 09:14
R:\Roadway\Proj\W-5313_Rdy_psh_sht18.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



REVISIONS

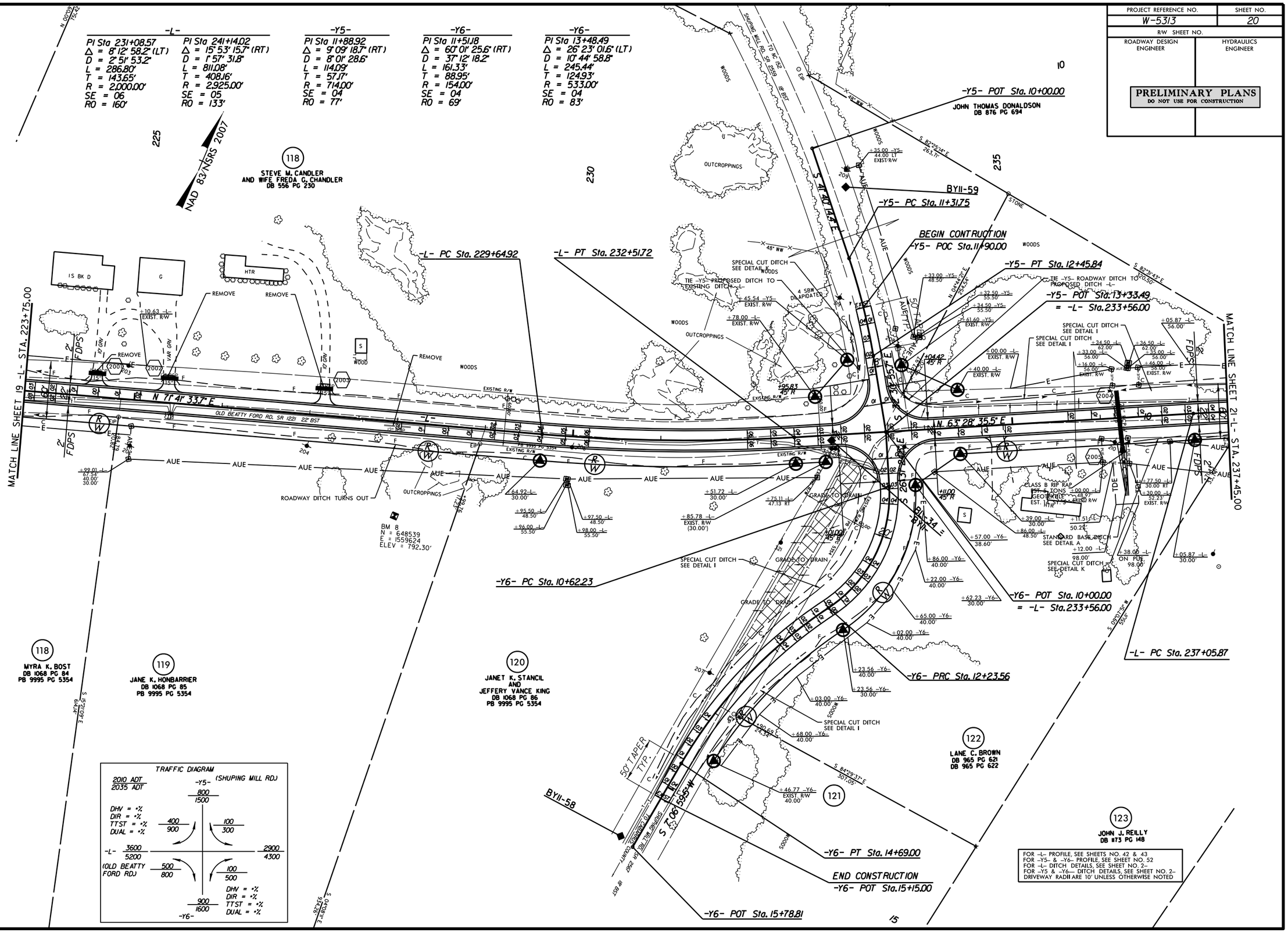
8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht19.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-	-Y5-	-Y6-	-Y6-
PI Sta 231+08.57	PI Sta 11+88.92	PI Sta 11+51.18	PI Sta 13+48.49
Δ = 8° 12' 58.2" (LT)	Δ = 9° 09' 18.7" (RT)	Δ = 60° 01' 25.6" (RT)	Δ = 26° 23' 01.6" (LT)
D = 2° 51' 53.2"	D = 8° 01' 28.6"	D = 37° 12' 18.2"	D = 10° 44' 58.8"
L = 286.80'	L = 114.09'	L = 161.33'	L = 245.44'
T = 143.65'	T = 57.17'	T = 88.95'	T = 124.93'
R = 2,000.00'	R = 714.00'	R = 154.00'	R = 533.00'
SE = 06	SE = 04	SE = 04	SE = 04
RO = 160'	RO = 77'	RO = 69'	RO = 83'
PI Sta 241+14.02			
Δ = 15° 53' 15.7" (RT)			
D = 1° 57' 31.8"			
L = 811.08'			
T = 408.16'			
R = 2,925.00'			
SE = 05			
RO = 133'			



REVISIONS

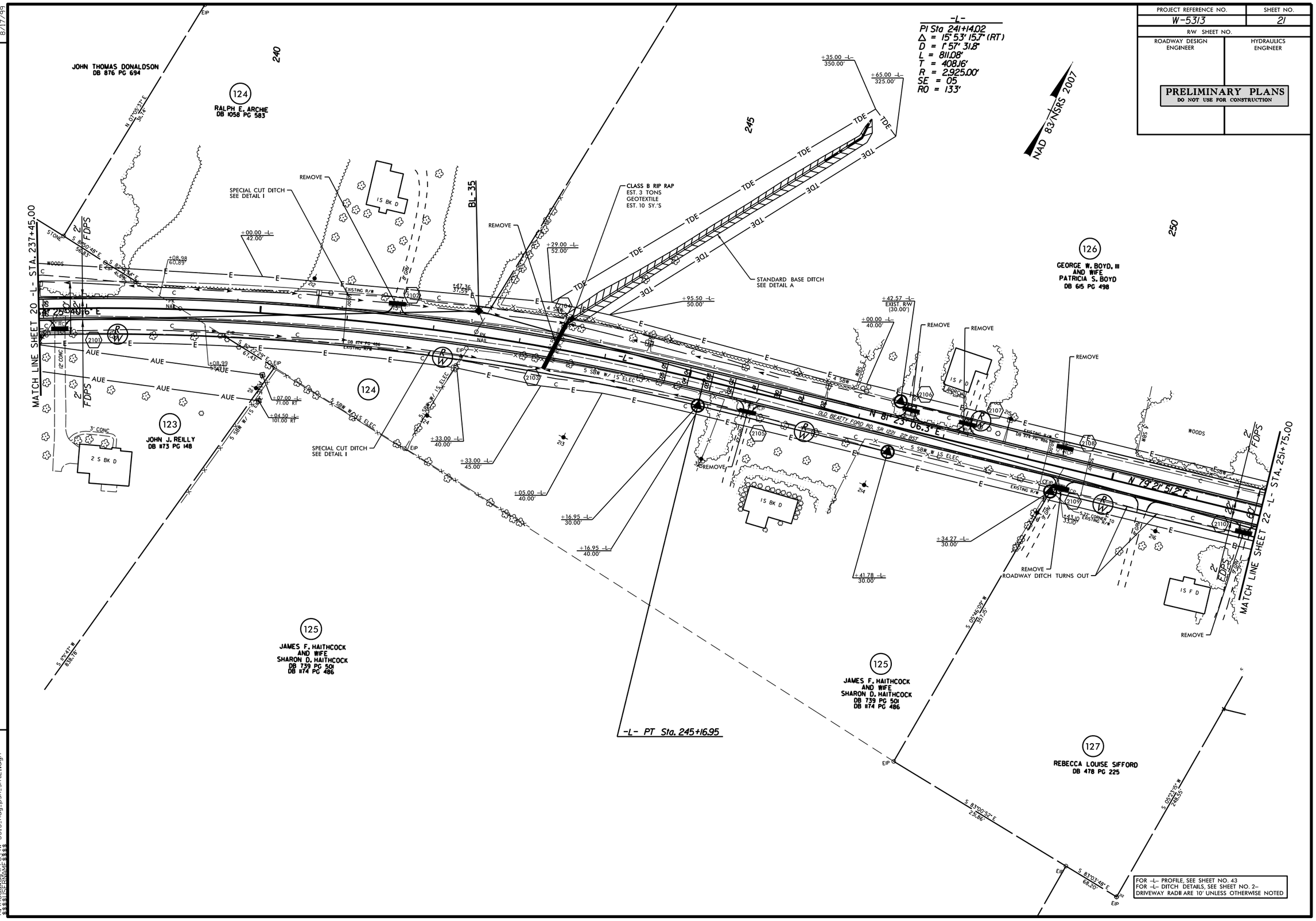
DESIGN REVISIONS 6/10/2015
(REVISION 1) PROFILE "Y5 PRO" ADJUSTED FOR 3" MIN. RESURFACING AT TIE TO REDUCE MILLING.
(REVISION 2) PROFILE "Y6 PRO" ADJUSTED FOR 3" MIN. RESURFACING AT TIE TO REDUCE MILLING.

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht20.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



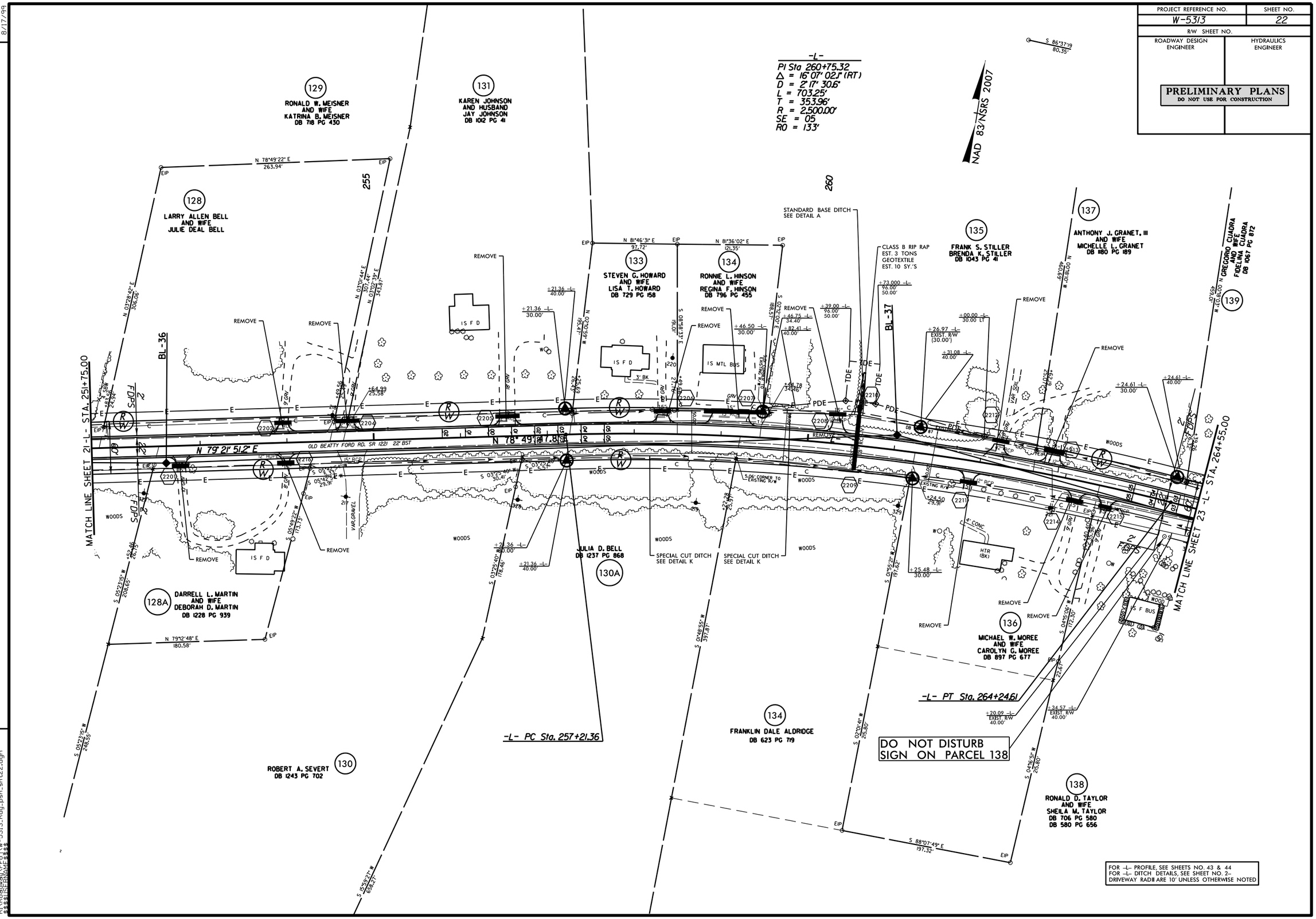
REVISIONS

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht21.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



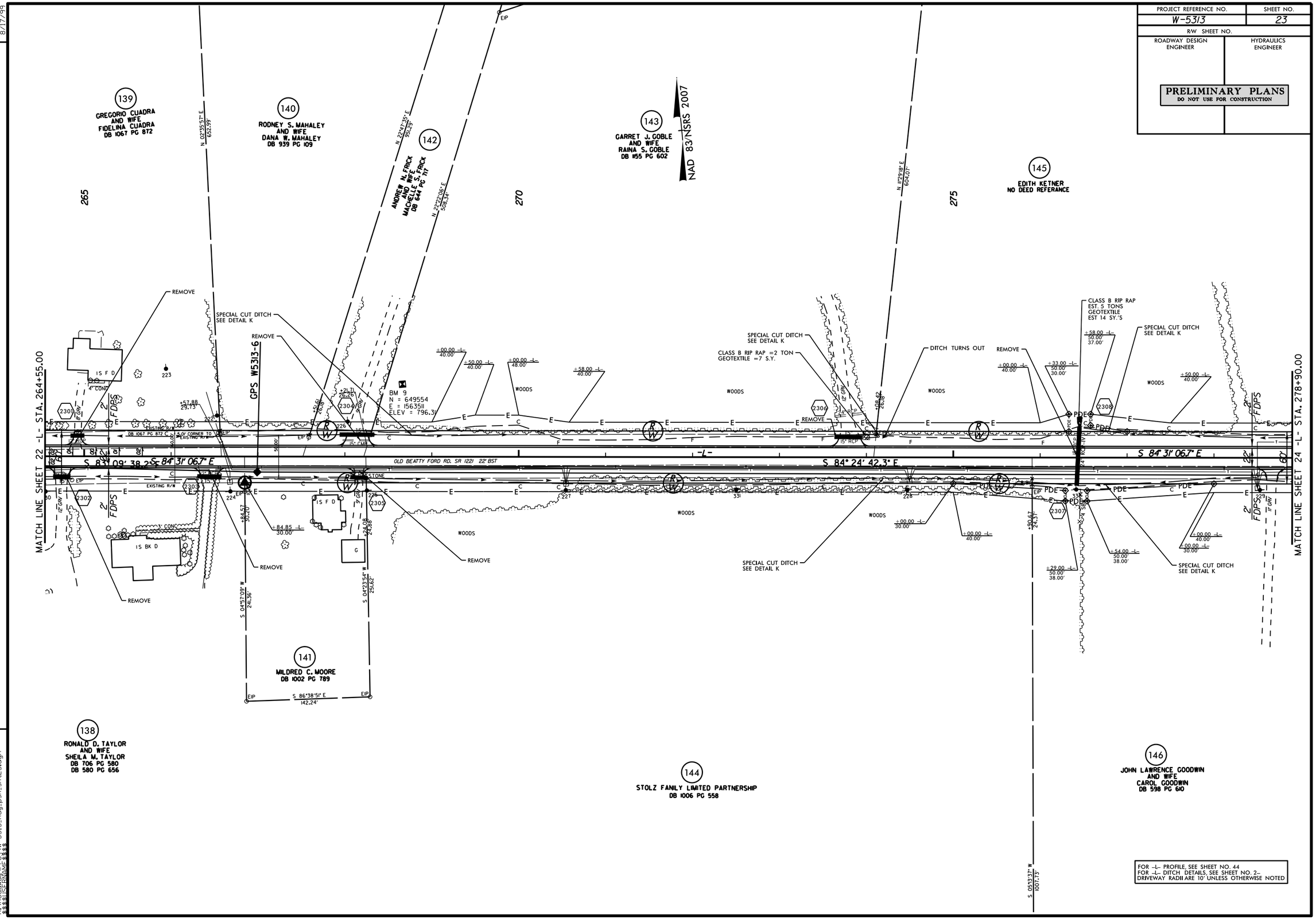
REVISIONS

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht22.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE, SEE SHEET NO. 44
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

REVISIONS

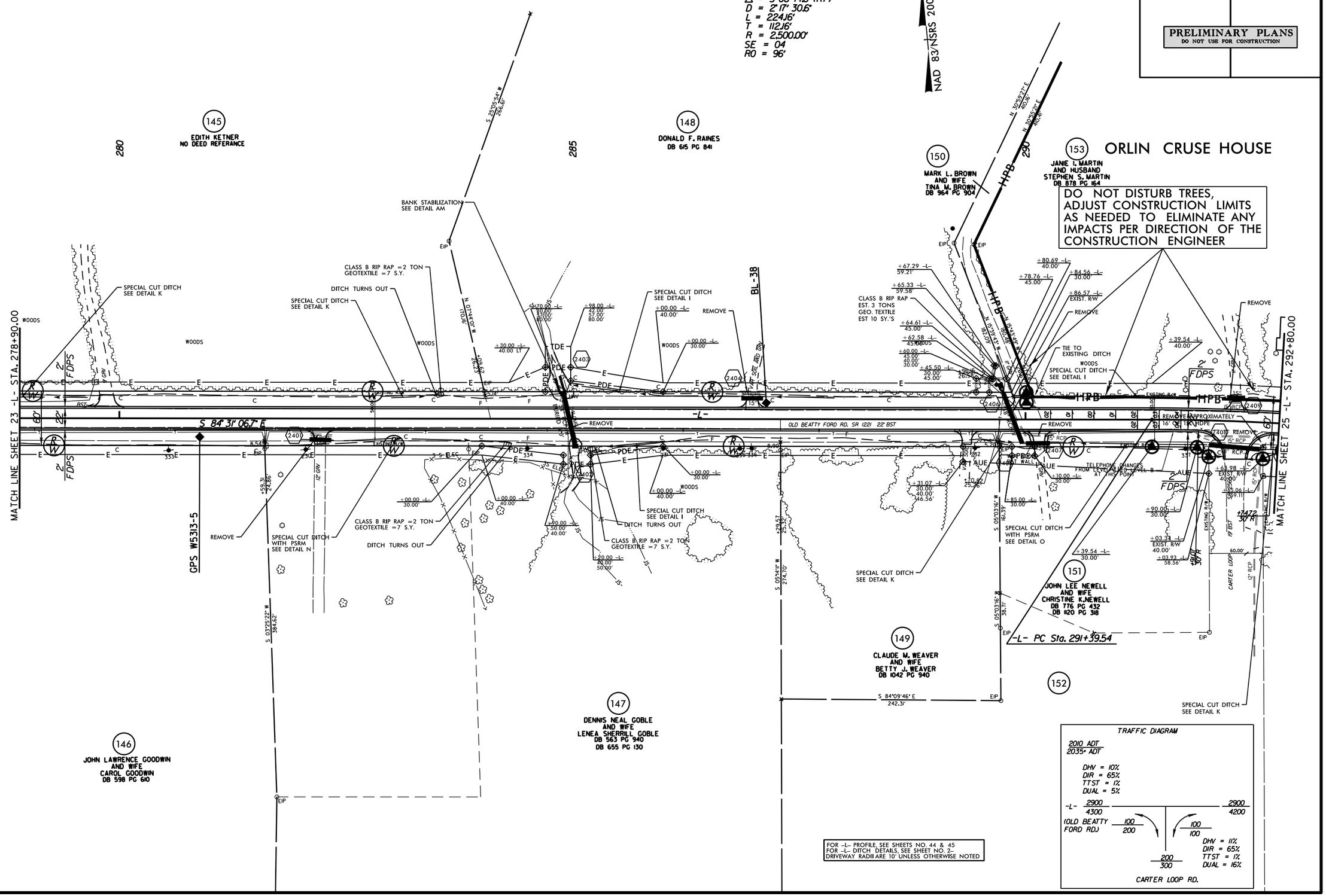
DESIGN REVISIONS 6/10/2015
(REVISION 1) PROFILE "17 PRO" ADJUSTED FOR 3" MIN.RESURFACING AT TIE TO REDUCE MILLING.

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht23.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



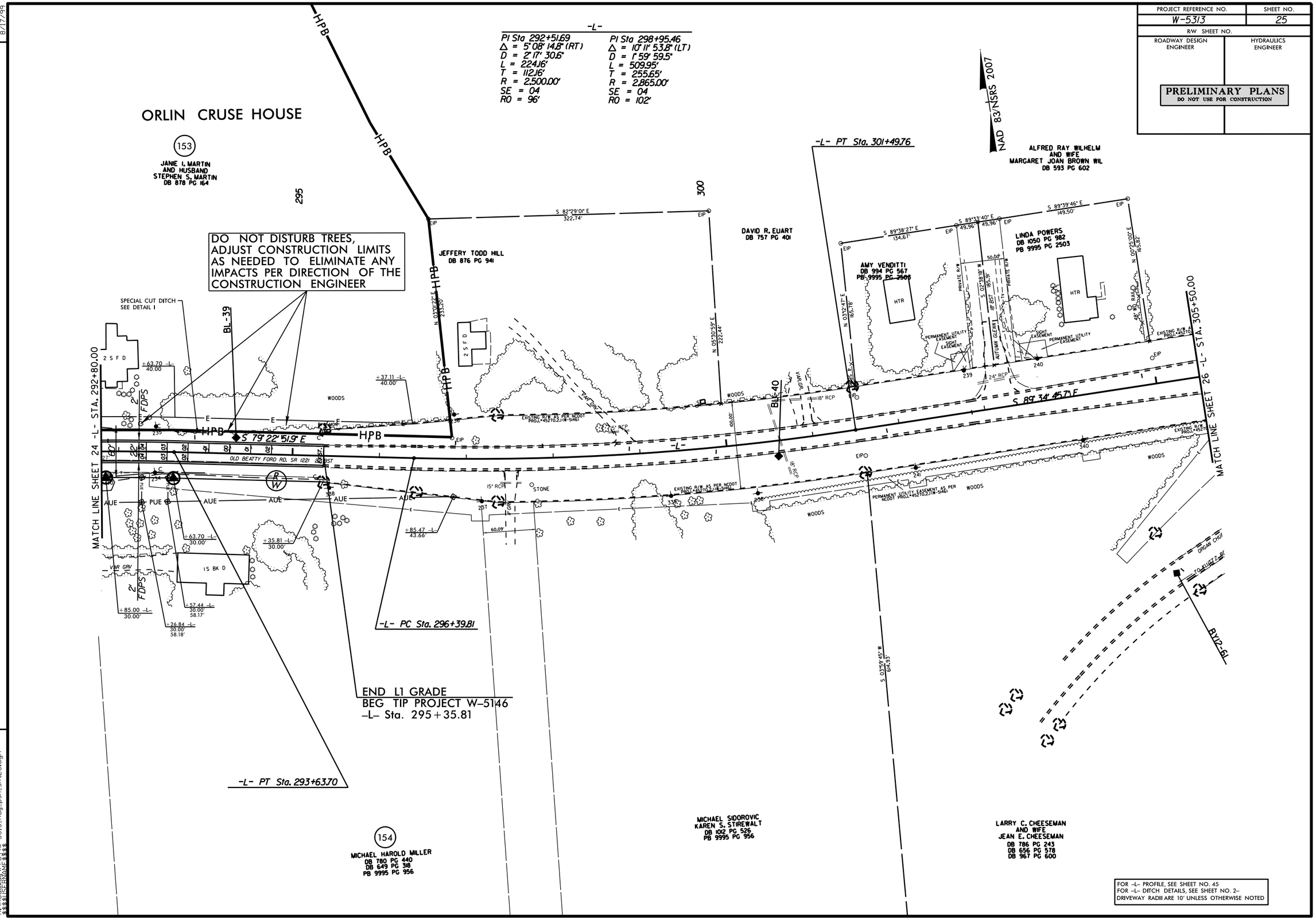
REVISIONS

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht24.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE, SEE SHEET NO. 45
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

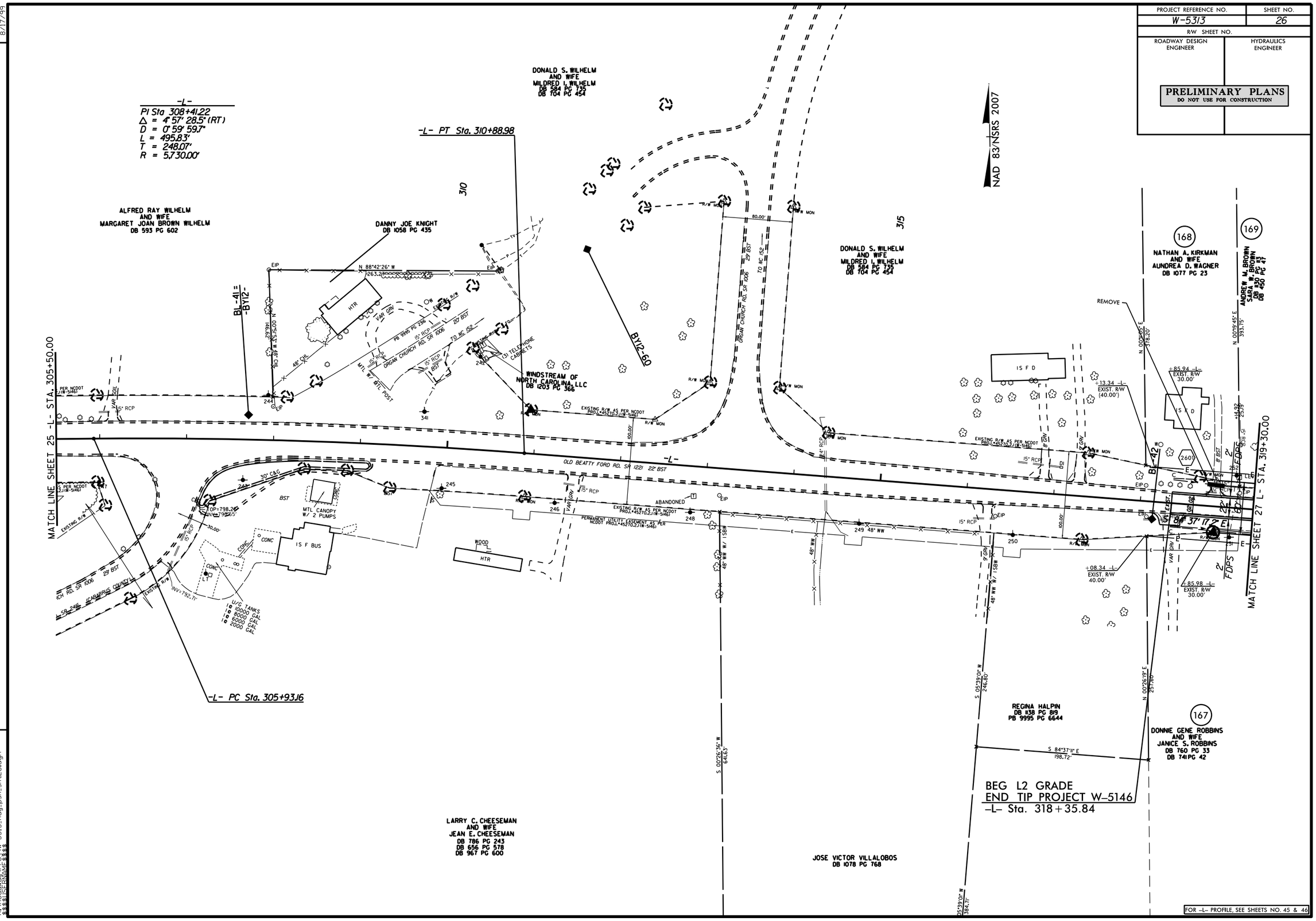
REVISIONS

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht25.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



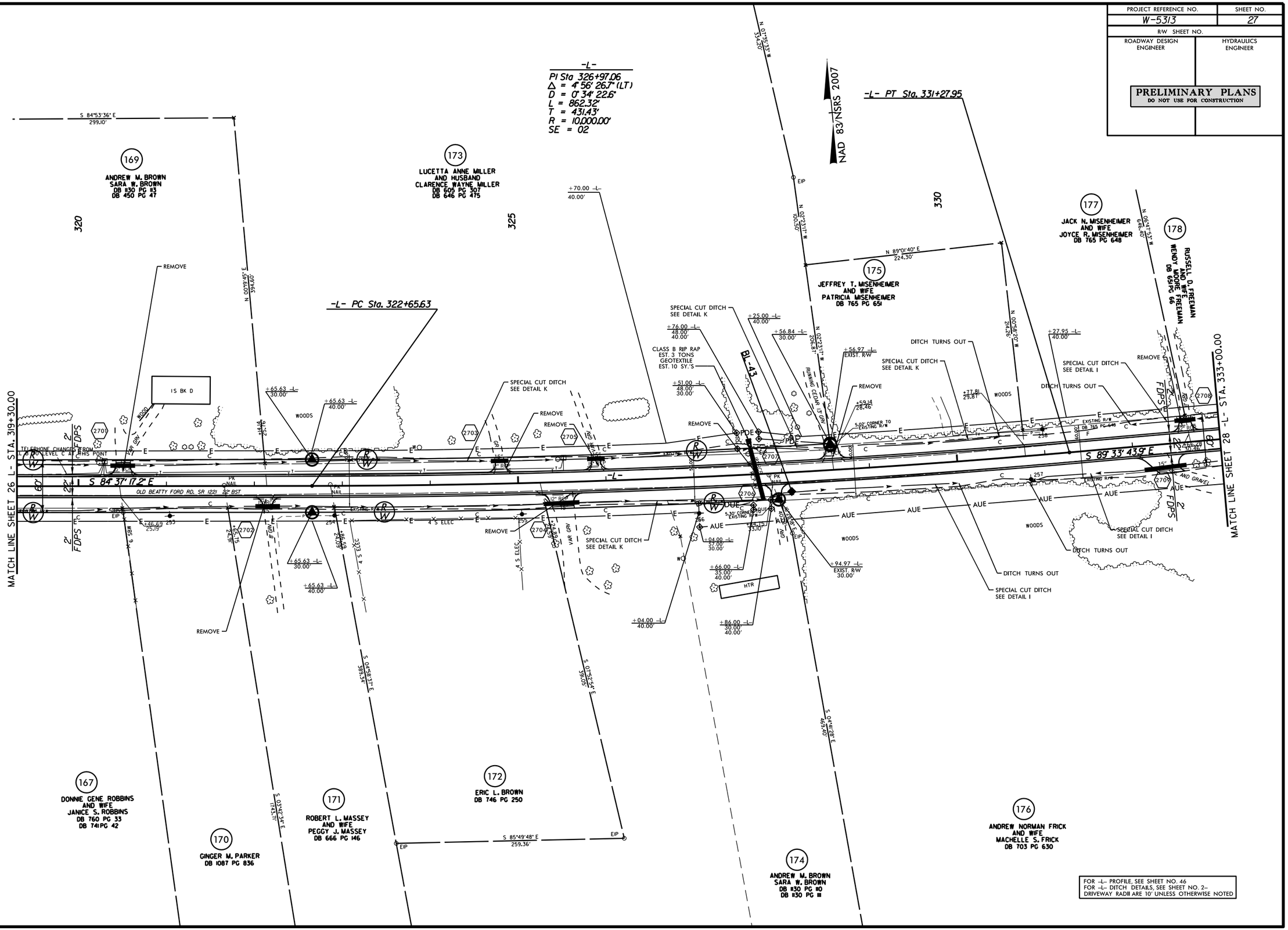
REVISIONS

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sh26.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE, SEE SHEET NO. 46
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

REVISIONS

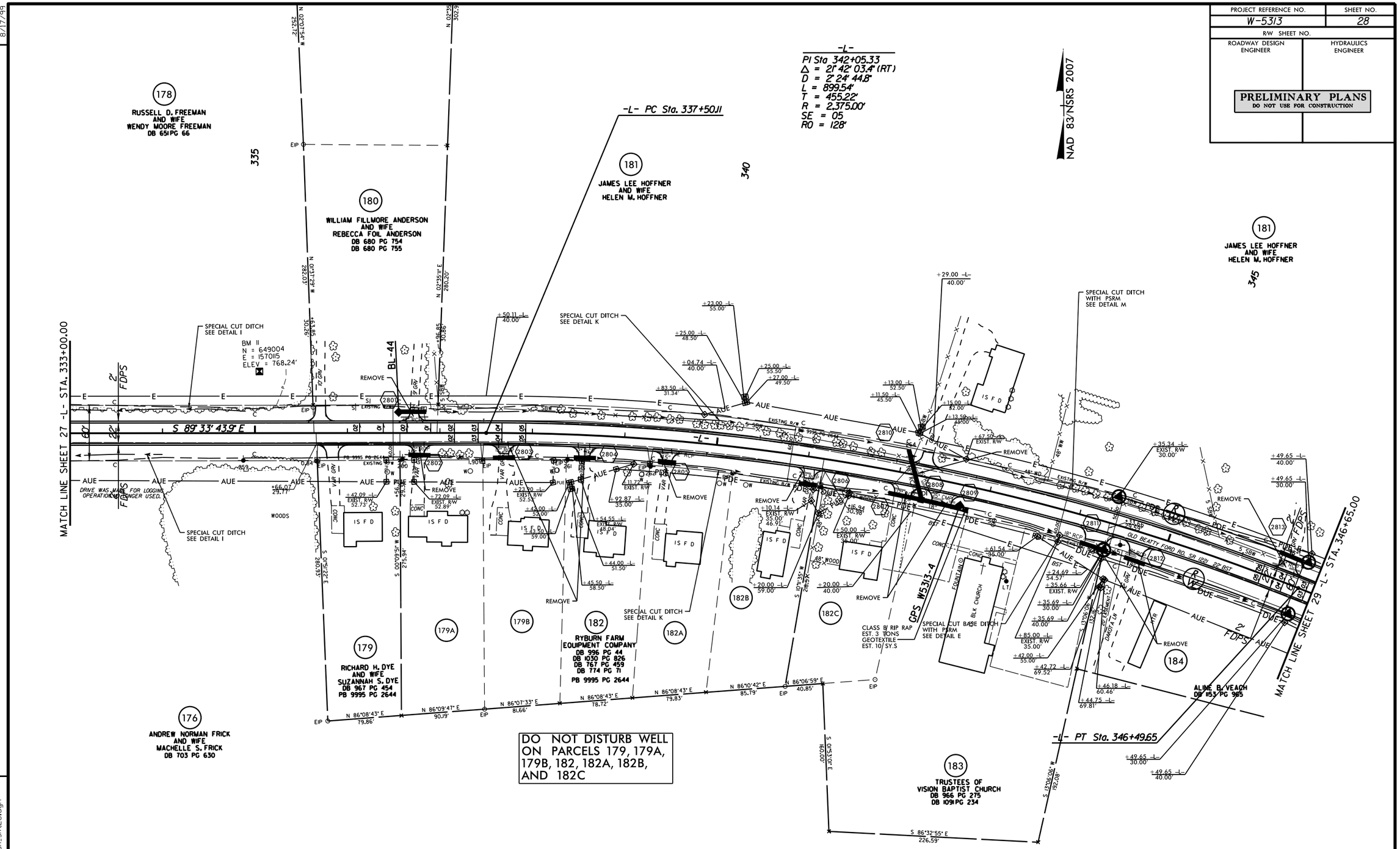
DESIGN REVISIONS 6/10/2015
(REVISION 1) -L- STA.330+00 TO 333+00 REVISED FROM NEW PAVEMENT TO RESURFACING OF EXISTING PAVEMENT.

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht27.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE, SEE SHEETS NO. 46 & 47
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

REVISIONS

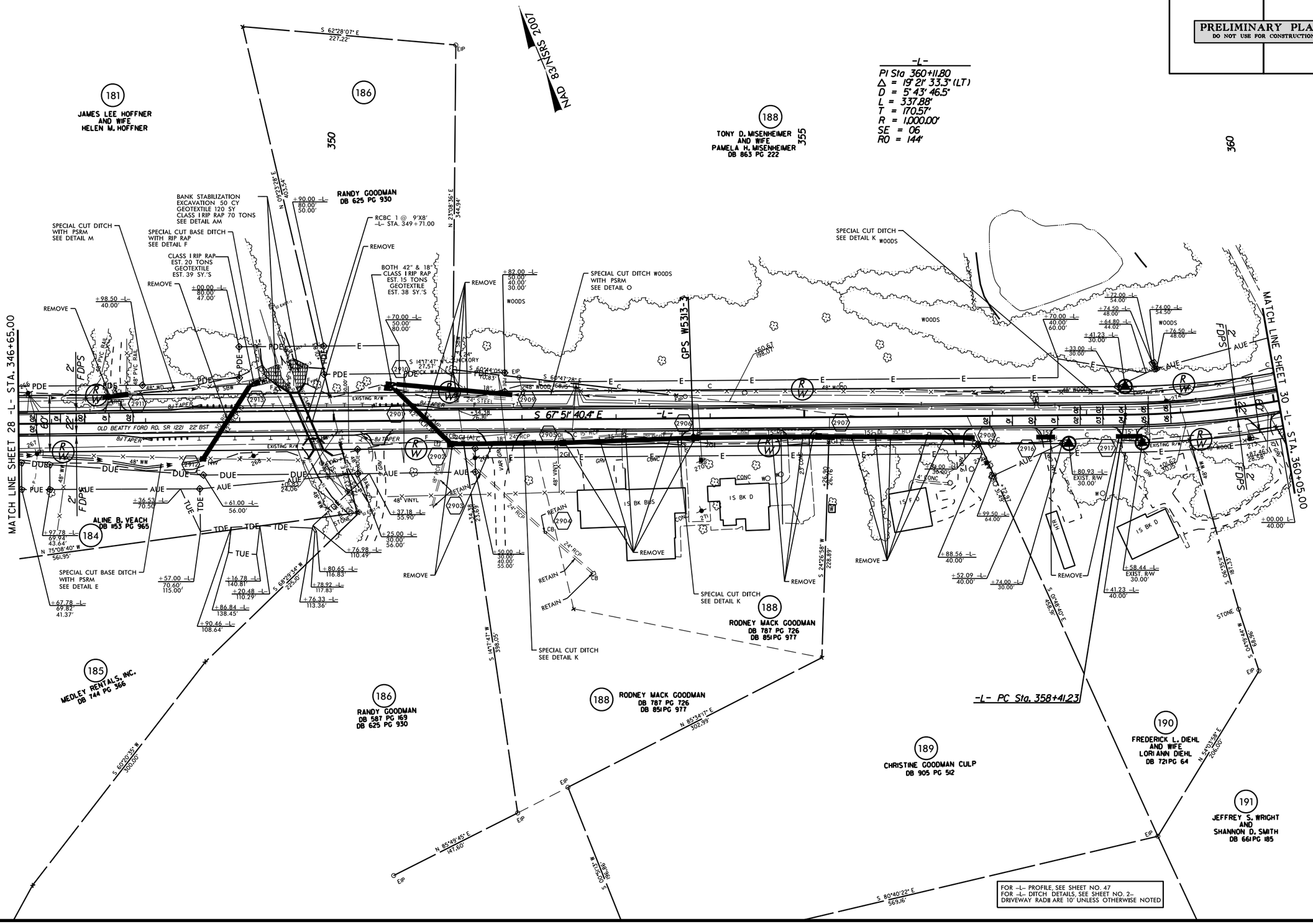
8/17/99

DESIGN REVISIONS 6/10/2015
(REVISION 1) PROFILE: "L2 PROF ADJUSTED FOR 3" MIN.RESURFACING TO KEEP ACCESS TO CHURCH OPEN (PARCEL 183).

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sh28.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



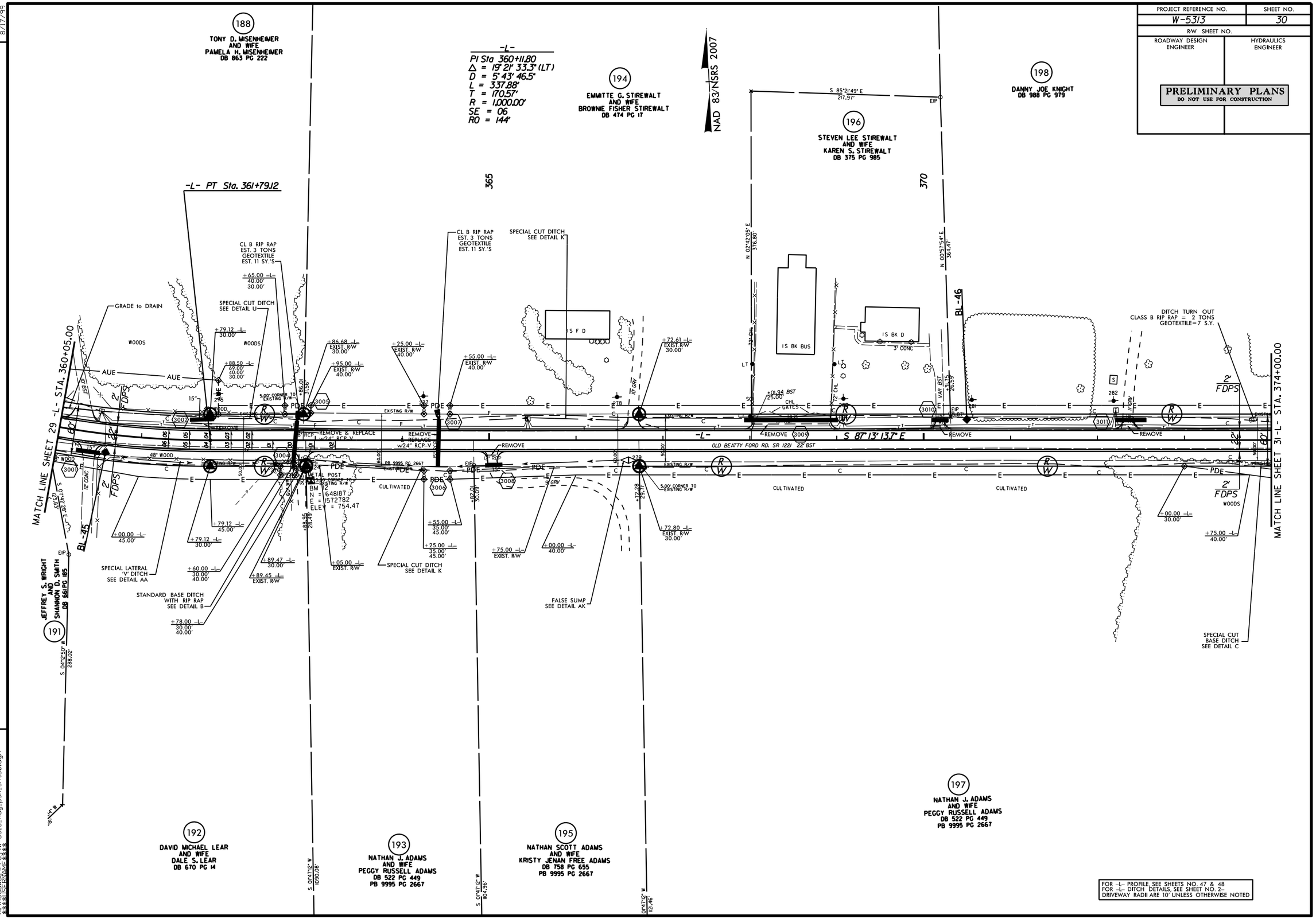
REVISIONS

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht29.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE, SEE SHEETS NO. 47 & 48
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

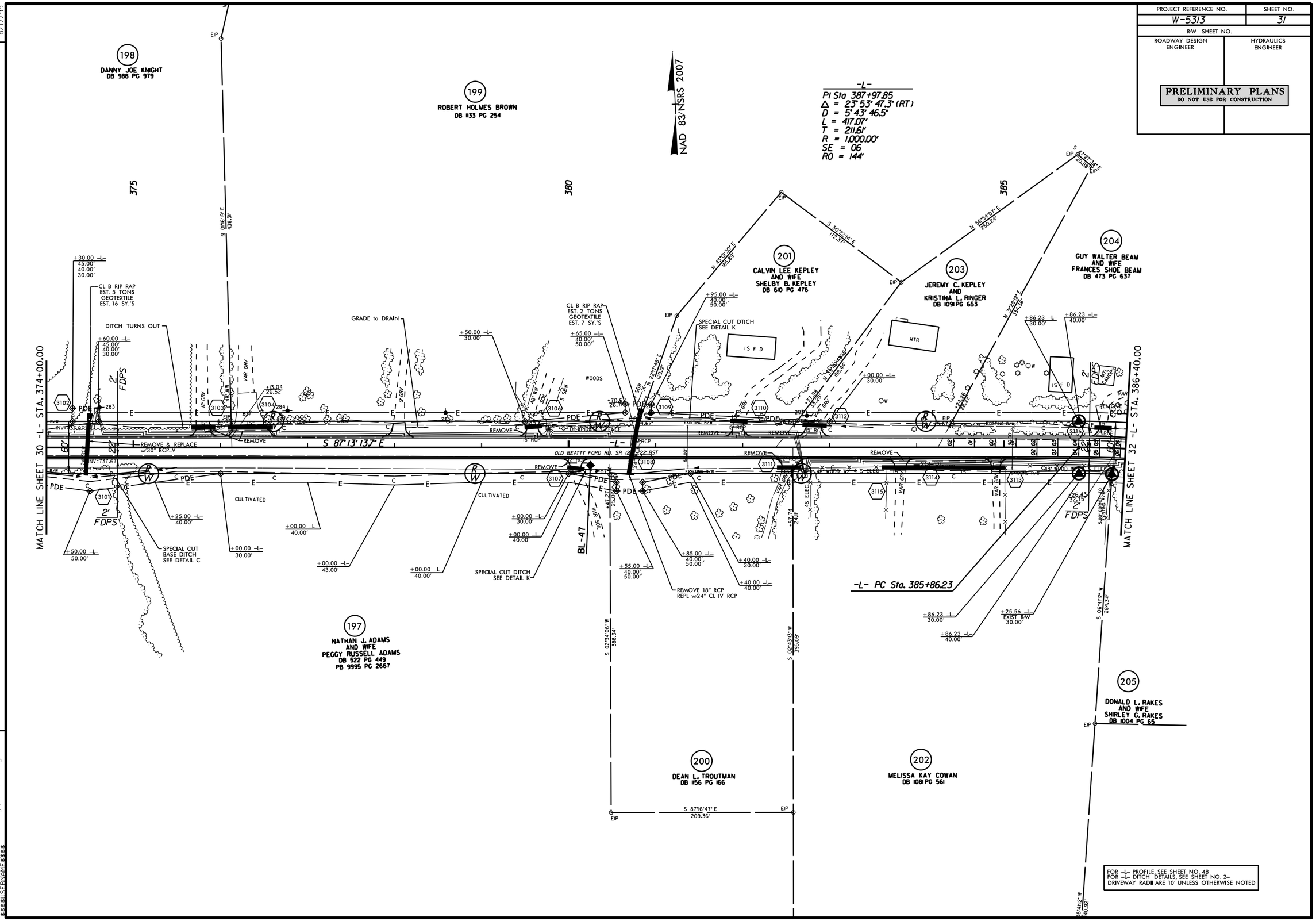
REVISIONS

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht30.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR -L- PROFILE, SEE SHEET NO. 48
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

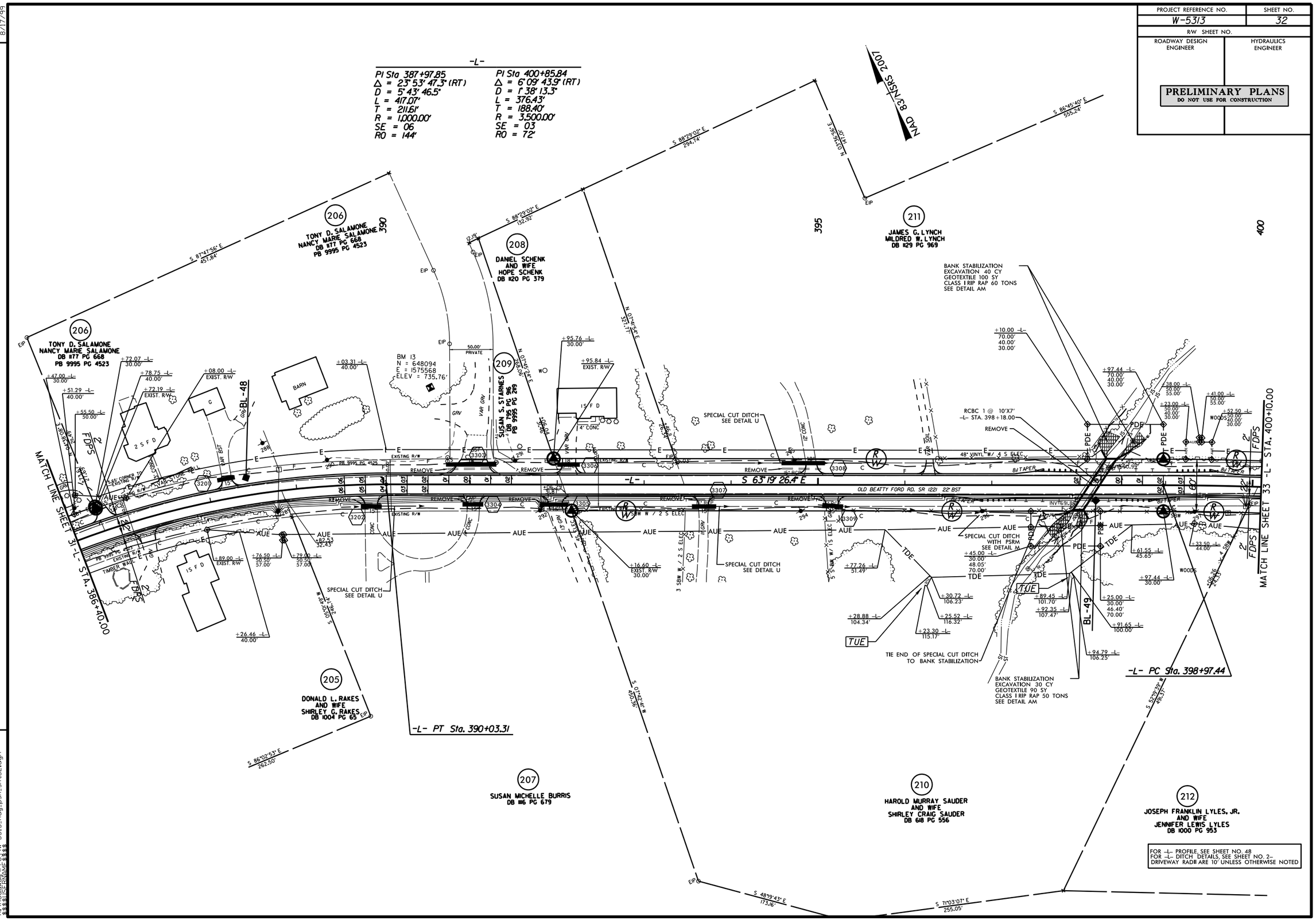
REVISIONS

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht31.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



REVISIONS

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht32.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

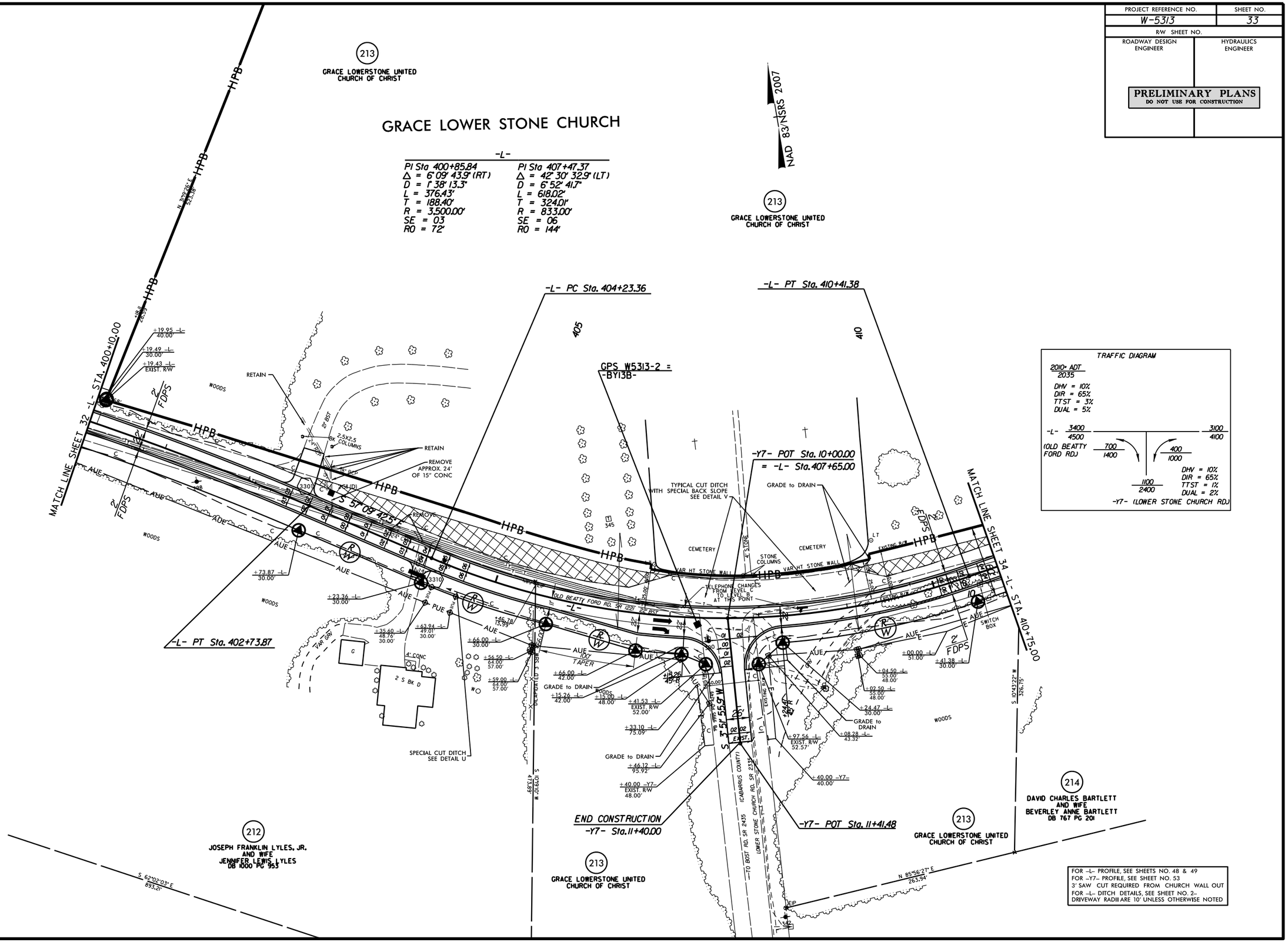
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRACE LOWER STONE CHURCH

NAD 83/NSRS 2007

-L-

PI Sta 400+85.84	PI Sta 407+47.37
Δ = 6° 09' 43.9" (RT)	Δ = 42° 30' 32.9" (LT)
D = 1° 38' 13.3"	D = 6° 52' 41.7"
L = 376.43'	L = 618.02'
T = 188.40'	T = 324.01'
R = 3,500.00'	R = 833.00'
SE = 03	SE = 06
RO = 72'	RO = 144'



TRAFFIC DIAGRAM

2010* ADT
2035

DHV = 10%
DIR = 65%
TTST = 3%
DUAL = 5%

-L- 3400 / 4500 — 3100 / 4100

(OLD BEATTY FORD RD) 700 / 1400 — 400 / 1000

1100 / 2400

DHV = 10%
DIR = 65%
TTST = 1%
DUAL = 2%

-Y7- (LOWER STONE CHURCH RD)

FOR -L- PROFILE, SEE SHEETS NO. 48 & 49
FOR -Y7- PROFILE, SEE SHEET NO. 53
3' SAW CUT REQUIRED FROM CHURCH WALL OUT
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

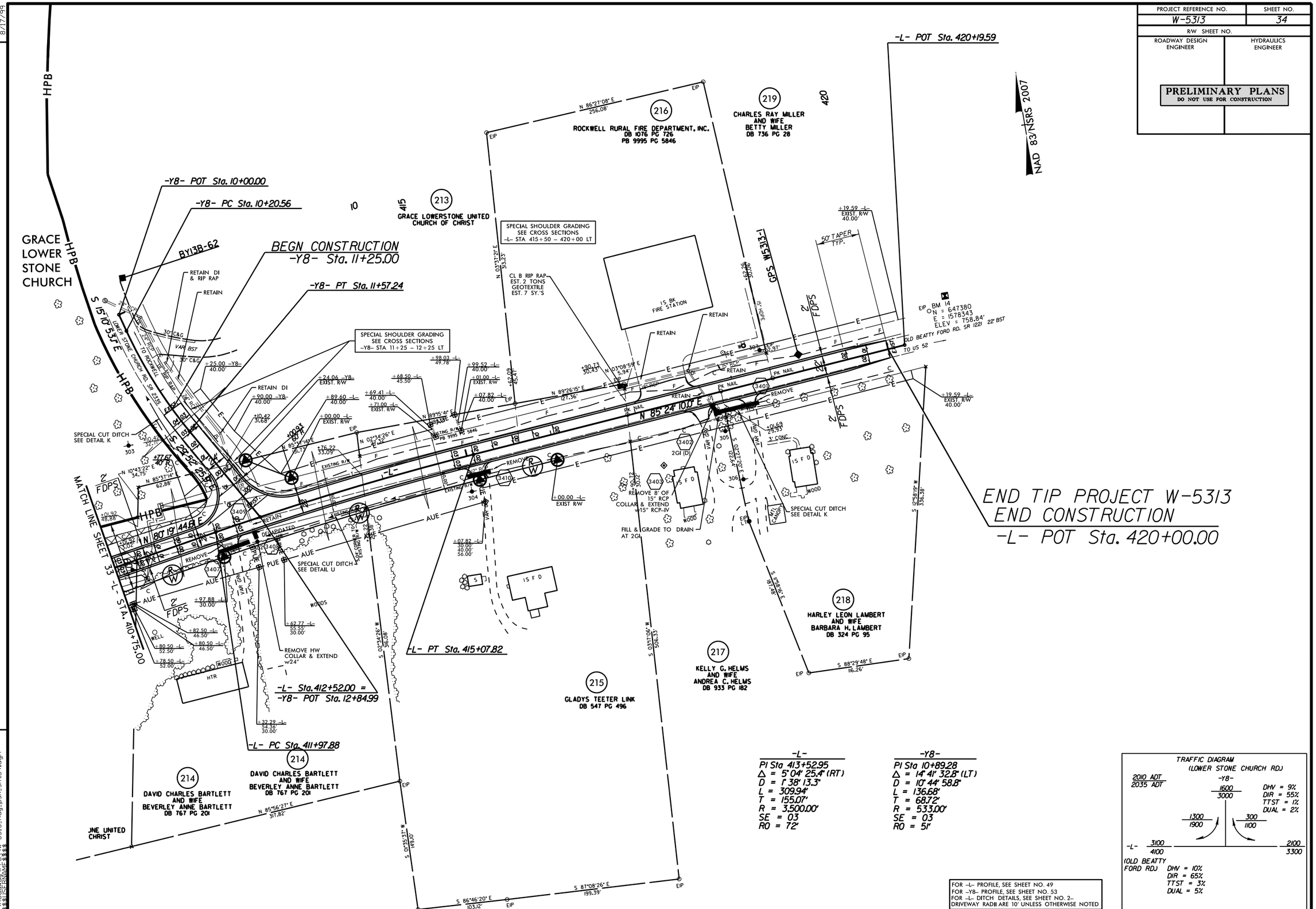
REVISIONS

8/17/99 DESIGN REVISIONS 6/10/2015
(REVISION 1) PROFILE "Y7" POT ADJUSTED FOR 3" MIN. RESURFACING AT TIE TO REDUCE MILLING.

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht33.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
W-5313	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-	-Y8-
PI Sta 413+52.95	PI Sta 10+89.28
Δ = 5°04' 25.4" (RT)	Δ = 14°41' 32.8" (LT)
D = 1°38' 13.3"	D = 10°44' 58.8"
L = 309.94'	L = 136.68'
T = 155.07'	T = 68.72'
R = 3,500.00'	R = 533.00'
SE = 03	SE = 03
RO = 72'	RO = 51'

TRAFFIC DIAGRAM
(LOWER STONE CHURCH RD.)

-Y8-
2010 ADT 1600 / 2035 ADT 3000
DHV = 9%
DIR = 55%
TTST = 1%
DUAL = 2%
1300 / 1900
300 / 1100
-L- 3100 / 4100
2100 / 3300
(OLD BEATTY FORD RD.)
DHV = 10%
DIR = 65%
TTST = 3%
DUAL = 5%

FOR -L- PROFILE, SEE SHEET NO. 49
FOR -Y8- PROFILE, SEE SHEET NO. 53
FOR -L- DITCH DETAILS, SEE SHEET NO. 2-
DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED

REVISIONS

DESIGN REVISIONS 6/10/2015
(REVISION 1) PROFILE "L2" PRO ADJUSTED FOR 3" MIN. RESURFACING AT TIE TO REDUCE MILLING.
(REVISION 2) PROFILE "Y8" PRO ADJUSTED FOR 3" MIN. RESURFACING AT TIE TO REDUCE MILLING.

8/17/99

31-JUL-2015 09:15
R:\Roadway\Proj\W-5313_Rdy_psh_sht34.dgn
$$$$USERNAME$$$$