

PROJECT COMMITMENTS

U-2519 and X-0002 B & C Green Sheet
FAYETTEVILLE OUTER LOOP
Cumberland, Hoke, and Robeson Counties
Federal Aid No.: DPR-0100(001) and DPR-0100(002)
State Project No. 8.2441301

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

All commitments developed during the project development and design phase have been incorporated into the design and were standard commitments. Current status, changes, or additions to the project commitments as shown in the Draft Environmental Impact Statement for the project are printed in *italic* font.

PDEA/Roadway Design/Hydraulics

Impacts to watershed areas and the water quality of all receiving waters will be minimized by strict adherence to NCDOT's "Best Management Practices for Protection of Surface Waters," March 1997. Additionally, every effort will be made to minimize natural water body impacts during final design. The proposed Fayetteville Outer Loop would cross Little Cross Creek and Cross Creek above Bonnie Doone Lake and Rose Lake. Although these waters are part of the Fayetteville public drinking water supply, the proposed outer loop would not be located within the critical watershed area of either creek. The proposed outer loop would be located approximately 3.5 miles upstream of the critical watershed areas. During the design phase of the study, hazardous spill basins will be considered to prevent stream contamination from spill runoff.

This commitment was implemented during design.

PDEA/Roadway Design

Areas containing protected species will be avoided if possible during the design phase of the project. Section 7 consultation with the US Fish and Wildlife Service will be completed prior to signing the Final Environmental Impact Statement for circulation. Additionally, habitat fragmentation mitigation will be further evaluated during the design phase of the study. Field surveys for all federally listed endangered species known to inhabit Cumberland, Hoke, and Robeson counties were performed. Measures to minimize impacts to the protected species were incorporated into the preliminary designs and coordinated with the Merger Team.

A Biological Assessment (BA) was prepared to assess impacts to federally listed plant species and a butterfly. In addition, a separate BA was prepared for impacts to the redcockaded woodpecker. The Section 7 consultation was completed April 28, 2005.

PDEA/Right of Way

NCDOT will work with the members of the North Carolina Sandhills Conservation Partnership (NCSCP), with a reasonable effort, to acquire one piece of property in accordance with NCDOT and FHWA policies and procedures for property acquisition, the area identified as the Northern Corridor (see Figure 3 on page 31 of the Biological Opinion [April 28, 2005]). The identified property will contain approximately 75 acres of habitat that does or can support a southern yellow pine-dominated overstory and can be reasonably managed to create/maintain foraging habitat for the red-cockaded woodpecker.

This commitment was implemented prior to permitting.

PDEA

NCDOT will coordinate with Fort Bragg and the US Fish and Wildlife Service to establish and implement the best strategy for minimizing direct impacts of tree clearing and highway construction to red-cockaded woodpecker (RCW) Cluster FB 65, its resident RCW group and residual foraging and nesting habitat.

This commitment was coordinated with Fort Bragg..

PDEA/Structure Design/Roadway Design/Division 6

Wetland avoidance is considered during all phases of the project. If wetlands cannot be avoided, every effort will be made to minimize the impacts through the location and design of the roadway facility within the selected corridor. Mitigation of unavoidable wetland impacts will be coordinated through the appropriate state and federal agencies.

This commitment was implemented during design.

PDEA/Roadway Design

Sound barriers corresponding to the preferred alternative will be investigated in more detail in the design study phase of the project.

This commitment was implemented during design.

Hydraulics

For floodway encroachments, the North Carolina Department of Transportation will coordinate with the community and with the Federal Emergency Management Agency during the design phase of the project. Adherence to the North Carolina Department of Transportation's "Stream Crossing Guidelines for Anadromous Fish Passage" would allow movement of anadromous fish.

North Carolina Department of Transportation will comply with a moratorium for anadromous fish of "no in-water work" from February 15 to June 30 on Rockfish Creek. This commitment will be implemented during construction.

Geotechnical Design

When the final proposed centerline is established and right of way determined, a hazardous materials site assessment will be performed to the degree necessary to determine levels of contamination at any potential hazardous materials sites along the preferred alternate. The assessment will be made prior to right of way acquisition. Resolution of problems associated with contamination will be coordinated with appropriate agencies.

This commitment was implemented prior to Right of Way.

Roadside Environmental/Roadway Design

Measures to minimize visual impacts will be taken into consideration during design of the roadway. Overall, visual impacts may be mitigated through a variety of actions such as alignment modifications during design, landscaping, screening, embankments, and selective clearing of natural materials.

The commitment was implemented during design.

PDEA

If a build alternate is selected as the Preferred Alternative, a detailed archaeological survey of the preferred corridor will be conducted. This survey will be coordinated with the State Historic Preservation Office.

*In coordination with the State Historic Preservation Office (HPO), detailed archaeological studies of the preferred corridor were conducted from 2001 to 2004. The specific findings of the initial survey are documented in “Dimensions of Fall Line Site Function: Surveying and Testing the West Fayetteville North Carolina Outer Loop,” Technical Report #992 by New South Associates (2002). In coordination with the HPO and the Fort Bragg Cultural Resources Program (FBCRP), three additional intensive archaeological surveys were prepared for expanded coverage of the Preferred Alternative. The specific findings of these surveys are documented in three separate addenda: 1) “Cultural Resources Survey of 284 Acres South of Cliffdale Road, West Fayetteville Outer Loop, Cumberland and Hoke Counties, North Carolina,” 2) “Cultural Resources Survey of 534 Acres North of Cliffdale Road, West Fayetteville Outer Loop, Cumberland County, North Carolina,” and 3) “Cultural Resources Survey of 31 Additional Land Parcels of the Proposed West Fayetteville Outer Loop, Cumberland and Robeson Counties, North Carolina,” all of which will be integrated into one appendix to be attached to the original 2002 survey report by New South Associates. A summary of the findings and impacts can be found in Section 6 of this document. These reports conclude that the Preferred Alternative will impact ten archaeological sites within the area of potential effects, eight of which are considered eligible for the National Register of Historic Places (31CD64, 31CD65, 31CD871, 31CD874, 31CD882, 31CD962, 31CD965, and 31RB485). The remaining two sites are cemeteries (31CD967/967** and 31CD976**). Therefore, the NCDOT will prepare a Memorandum of Agreement for the recovery or relocation efforts on these ten sites and will implement a satisfactory data recovery program. A Memorandum of Agreement regarding the implementation of mitigation efforts for all ten archaeological sites was signed in March 2005. One cemetery (31CD976**) will need to be relocated per applicable State statutes (i.e. NC GS 65 or NC GS 70.3) after consultation with the Office of State Archaeology. The prehistoric archaeological component of 31CD967/967** will not be impacted by the proposed project, but its historic cemetery component requires a GPR survey in order to determine the locations of unmarked burials that may or may not be impacted by the proposed project. If burials associated with 31CD967/967** are to be impacted by the proposed project, then such burials will be relocated per applicable State statutes (i.e. NC GS 65 or NC GS 70.3) after consultation with the Office of State Archaeology. Since Sites 31CD64, 31CD65, and 31CD871, all of which will be affected by the subject project, are located within the Fort Bragg Military Reservation, the NCDOT will develop mitigation plans in consultation with both the HPO and the Fort Bragg Cultural Resources Program.*

Roadside Environmental/Division 6

Borrow and solid waste operations would be managed through the North Carolina Department of Transportation's, “Best Management Practices for Protection of Surface Waters,” March 1997. Additionally, any solid waste generated during construction would be temporary and would either be hauled away to landfills or disposed of on-site by controlled burning, in compliance with all local, state, and federal regulations.

This commitment will be implemented during construction of the project.

PDEA/Roadway Design/Roadside Environmental

A retaining wall and vegetative screening will be provided adjacent to the Keithville Rental Units to avoid right-of-way acquisition and minimize visual impacts. These will be located at the northwest corner of the property adjacent to the Bragg Boulevard/Fayetteville Outer Loop interchange (quadrant D).

This commitment was implemented during design.

PDEA/Roadway Design

To minimize harm to the Shaw-Gillis Historic District, Raeford Road will be closed and landscaping will be provided adjacent to the roadway. In addition, access to the property from US 401 will be maintained, and the exterior of the Shaw-Gillis house will be painted following construction.

This commitment was negotiated during design and will be implemented during construction.

PDEA/Roadway Design/Right of Way

NCDOT will provide funds or construct and replace Fort Bragg's perimeter fence impacted by the proposed project. NCDOT will coordinate with Fort Bragg to provide perimeter roads and tank trails along the proposed project. The criteria and construction of visual screening to eliminate the line of sight to facilities located along the project will be coordinated with Fort Bragg. NCDOT will provide resources and/or construct new Access Check Point facilities in coordination with Fort Bragg at Reilly Road, Canopy Road, and Bragg Boulevard. The design of the Yadkin Road overpass will be coordinated with Fort Bragg to incorporate the new roadway grade into the Access Check Point facilities. Smith Lake Access Road off Murchison Road will be closed and relocated off Honeycutt Road in coordination with Fort Bragg. The new access will incorporate the current facilities and minimize harm to existing pine trees.

These commitments were addressed during design and will be negotiated as part of the Right of Way settlement with Fort Bragg.

PDEA/Roadway Design/Hydraulics

NCDOT will provide a bridge or box culvert at the existing wetland at the rear of Pine Forest High School to allow for a pedestrian crossing in coordination with a proposed Cumberland County greenway.

The commitment was implemented during design.

PDEA

Several systematic surveys of all potentially-suitable habitats for American chaffseed, Michaux's sumac, pondberry, rough-leaved loosestrife, and the Saint Francis' Satyr butterfly were conducted by biologists from May 2001 through August 2004. No individuals of any of the species were observed during the surveys. A re-survey will be conducted one year prior to construction, during the appropriate survey window, within the project limits to determine if any members of these species are present.

This commitment was implemented within the year prior to awarding to the contract of the final design projects. Surveys will continue to be conducted within the year prior to construction of the remaining preliminary design sections.

Roadway Design

A capacity analysis for an updated design year using 2030 traffic volumes will be prepared and utilized in the design of the Final Plans.

This commitment will be implemented prior to the completion of Final Plans.

COMMITMENTS FROM PERMITTING

PDEA & Division 6 Construction

The permittee shall abide by the conservation measures identified in the Biological Assessment prepared for the Red-cockaded Woodpecker, *Piocooides borealis*, dated 9 September 2004 and the conservation measures identified by the US Fish and Wildlife Service in the Biological Opinion dated 28 April 2005.

The commitment was implemented during design and will continue to be followed during construction.

PDEA

The 404 permit does not authorize you to take an endangered species, in particular the Red Cockaded Woodpecker. In order to legally take a listed species, you must have separate authorization under the ESA. (e.g., an ESA Section 10 permit, or a BO under the ESA Section 7, with “incidental take” provisions with which you must comply). The USFWS Biological Opinion, dated 28 April 2005, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with “incidental take” that is also specified in the BO. Your authorization under this Corps permit is conditional upon your compliance with all the mandatory terms and conditions associated with incidental take of the BO, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute non-compliance with your Corps permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its BO, and the ESA.

The commitment was implemented during design and will continue to be followed during construction.

PDEA

TERMS AND CONDITIONS FROM BO

In order to be exempt from prohibitions of section 9 of the Act, the NCDOT must comply with the following terms and conditions, which implement the reasonable and prudent measures, described above and outline required reporting/monitoring requirements. These terms and conditions are non-discretionary.

(1) [RPM (1)] Upon acquisition of the conservation property, NCDOT will identify the entity or entities responsible for owning and managing the property and secure an agreement from the entity (or entities) that the property will be managed in accordance with a RCW conservation plan approved by the Service and the NCSCP. (NCDOT’s obligations will not extend beyond the acquisition of the property, NCDOT’s receipt of assurances from the responsible third party that the property will be managed in accordance with standards set by the NCSCP for RCW conservation, and subsequent transferal to the third party; it is not anticipated that the cost of NCDOT’s obligation would exceed \$ 1.0 million).

The NCDOT purchased the 113 acre Marshbanks Property to help establish the Northern Connector to encourage movement of existing RCW populations.

(2) [RPM (1)] If the property is not acquired and transferred to a responsible third party at least six months prior to initiation of construction, then NCDOT, NCSCP and the Service will meet to determine an appropriate alternative that reasonably supports the objective of establishing the Northern Corridor as a demographic linkage between RCW subpopulations in the Sandhills East primary core population (Overhills HMU) and NEA. In any case, conservation actions to fulfill this reasonable and prudent measure must occur prior to construction.

The NCDOT purchased the 113 acre Marshbanks Property to help establish the Northern Connector to encourage movement of existing RCW populations.

(3) [RPM (2)] Where NCDOT is able to program the timing of tree clearing and highway construction within the project area, NCDOT will, in the early stages of the planning process, schedule meetings with Fort Bragg's Directorate of Public Works and the Service to determine:

A. The best time to conduct tree clearing and/or construction activities in a manner that minimizes impacts to cluster 65 and its associated RCW group.

B. Determine the time and location where artificial cavities will be created to minimize the loss of RCWs associated with project activities.

C. Establish protective measures for trees selected and/or used to provision cavities for conserving RCWs associated with the Fayetteville Outer Loop project.

NCDOT Coordinated with Fort Bragg on tree clearing plans prior to construction

Upon locating a dead, injured, or sick individual of an endangered or threatened species, initial notification must be made to the Clemson Field Office. Additional notification must be made to the Raleigh, North Carolina Fish and Wildlife Ecological Services Field Office. Care should be taken in handling sick or injured individuals and in the preservation of specimens in the best possible state for later analysis of cause of death or injury. All procedural and reporting requirements as outlined in the Service's region-wide biological opinion on monitoring and management (Service 2003b) will be followed.

These reasonable and prudent measures, together with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. The Service believes that no more than one RCW group will be incidentally taken. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking, and review with the Service the need for possible modification of the reasonable and prudent measures.

PDEA

The permittee shall continue coordination of design for U-2519 Sections AA, AB, BA, BB, CA and CB through the NEPA/Section 404 Merger 01 Process – Concurrence points 2A, 4B and 4C. The final design shall incorporate appropriate avoidance, minimization and mitigation of aquatic resource impacts to the fullest extent practicable. The applicant shall not commence any work within waters of the United States within U-2519 Sections AA, AB, BA, BB, CA and CB until after the submittal of a modified

All section of the project (U-2519 AA, AB, BA, BB, CA, CB, DA, X-0002 B and X-0002 C) have been through the NEPA/Section 404 Merger 01 Process as follows:

- *Concurrence Point 1* *Signed – July 13, 2000*
- *Concurrence Point 2* *Signed – July 31, 2000*
- *Concurrence Point 3* *Signed – October 5, 2000*
- *Concurrence Point 2A and 4A* *Signed – March 16, 2004*

The following sections have been through the NEPA/Section 404 Merger 01 Process for Concurrence points 4B and 4C as follows:

X-0002C	Concurrence Point 4B and 4C	February 22, 2006 & June 13, 2007
X-0002B	Concurrence Point 4B and 4C	December 14, 2005 & June 13, 2007
U-2519E	Concurrence Point 4B and 4C	N/A* & June 13, 2007
U-2519DA	Concurrence Point 4B and 4C	December 14, 2005 & June 13, 2007
U-2519CB	Concurrence Point 4B and 4C	March 16, 2005 & January 23, 2013
U-2519CA	Concurrence Point 4B	April 12, 2006

** received Concurrence Point 4B as U-2519DA*

PDEA

Compensatory mitigation for the unavoidable impacts to 34.84 acres of riparian wetlands and 13.59 acres of non-riparian wetlands associated with the proposed project shall be provided by debiting 104.52 acres of riparian wetlands and 40.77 acres of non-riparian wetlands from the Privateer Farms Mitigation Site. Compensatory mitigation for the unavoidable impacts to 12,346 linear feet of important stream reach associated with the proposed project shall be provided by debiting 18,519 linear feet of stream reach from the Privateer Farms Mitigation Site. The permittee shall maintain the Privateer Farms Mitigation Site in its natural condition, as altered by the mitigation plan, in perpetuity. Except as authorized or required by the mitigation plan, prohibited activities on the mitigation property include, but are not limited to, filling; grading; excavating; earth moving of any kind; construction of roads, walkways, buildings signs, or any other structure; any activity that may alter the drainage patterns on the property; destruction, mowing, or other alteration of vegetation on the property; disposal or storage of any garbage trash, or other waste material. In addition, the permittee shall take no action, whether on or off the mitigation property, which will adversely impact the wetlands on the mitigation property. This condition above runs with the land. The permittee shall not sell, lease, or otherwise convey any interest in the mitigation property without subjecting the property to legally enforceable restrictions on the use of the property, to ensure its preservation, approved in writing by the Wilmington District Corps of Engineers.

Approved modifications have brought the total project wetland impacts to 51.26 acres (33.74 riparian, 17.52 non-riparian) and total stream impacts to 13,173 feet.

Division 6 Construction

At locations where ponds will be drained, proper measures will be taken to drain the pond with limited impact to upstream and downstream channel stability as well as to native aquatic species. Proper measures will be taken to avoid sediment release and/or sediment accumulation downstream as a result of pond draining. If typical pond draining techniques will create significant disturbance to native aquatic species, additional measures such as collection and relocation may be necessary to prevent a significant fish kill. NCDOT shall consult with NC Wildlife Resources staff to determine if there are any sensitive species, and the most appropriate measures to limit impacts to these species. The permittee shall observe any natural channel re-establishment, or utilize natural channel construction techniques, to ensure that the jurisdictional stream channel above and below the drained pond remain stable, and that no additional impacts occur within the natural stream channel as a result of draining the pond.



DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

January 9, 2019

Regulatory Division

Action ID. SAW-2008-01413

SUBJECT: NC DOT TIP No. U-2519 Corps Modification # 6

Mr. Philip S. Harris, III, P.E., CPM
Natural Environment Section Head-PDEA
N.C. Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Reference the Department of the Army (DA) permit issued on October 23, 2008, and subsequent modifications dated December 21, 2010, June 24, 2014, April 25, 2017, March 12, 2018, and July 26, 2018 for the discharge of fill material into waters and wetlands adjacent to various creeks, and their tributaries in order to construct TIP# U-2519 (Fayetteville Outer Loop TIP Nos. X-0002 B&C, and U-2519 AA, AB, BA, BB, CA, CB, DA, & E), in Cumberland County, North Carolina. This was a phased permit, which only authorized work on selected sections. Other sections were not authorized to commence until final designs were completed, impacts to waters and wetlands were minimized to the extent practicable, and all modified plans including, but not limited to, a compensatory mitigation plan were submitted and approved by the US Army Corps of Engineers (Corps).

Also reference your permit modification request dated September 18, 2018, for construction authorization on Sections AA and AB. This modification request includes: 1) 9.23 acres of permanent fill, excavation, and mechanized land clearing in wetlands; 2) 0.41 acre temporary wetland fill; 3) 0.96 acre hand clearing in wetlands; 4) 4,719 linear feet of permanent stream channel impact; and 5) 1,049 linear feet of temporary stream channel impact associated with the road project. This modification presents the final design impacts and a proposed compensatory mitigation plan for these specific sections (AA and AB) of the Fayetteville Outer Loop.

After review of the information you submitted and the inclusion of the following special conditions, we have determined that the proposed project modifications described above are not contrary to the public interest and are consistent with the 404(b)(1) Guidelines. Therefore, the

DA permit is hereby modified for U-2519 section AA and AB with following additional special conditions. Please be aware that all other conditions of the original permit and previous modifications remain applicable. Per your request, the permit expiration date is hereby extended to December 31, 2022.

Additional Special Conditions:

January 9, 2019 Mod. SC1 - In order to compensate for additional impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit modification authorization.

January 9, 2019 Mod. SC2 - All work authorized by this permit must be performed in strict compliance with the originally approved application and plans, and/or any plans previously approved through the subsequent permit modifications. This includes those received on September 18, 2018, and authorized through this permit modification.

This approved modification should be attached to the original permit and will be utilized for future compliance reviews of the project. If you have questions, please contact Liz Hair of the Wilmington Regulatory Field Office, at telephone (910) 251-4049.

FOR THE COMMANDER


for/ Robert J. Clark
Colonel, U.S. Army
District Commander

Enclosures

- 1) 401 Water Quality Certification Modification dated October 18, 2018
- 2) Wetland and Stream Impact Drawings revisions dated September 5, 2018
- 3) Compensatory Mitigation Responsibility Transfer Form

Copies Furnished (electronic):

Ms. Joanne Steenhuis, NCDEQ-DWR

Mr. Chris Rivenbark, NCDOT

Mr. Jim Rerko, NCDOT

Mr. Chris Militscher, EPA

Mr. Gary Jordan, USFWS

Mr. Travis Wilson, NC WRC



NORTH CAROLINA
Environmental Quality

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

LINDA CULPEPPER
Interim Director

October 18, 2018

Mr. Philip S. Harris, III, P.E., CPM
Natural Environment Section Head
Project Development and Environmental Analysis
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina, 27699-1598

Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with
ADDITIONAL CONDITIONS for Proposed improvements to the Fayetteville outer Loop (FaOL) from I-
95 South of Fayetteville to NC 24-87 in Cumberland, Hoke, and Robeson Counties. Federal Aid Project
No. NHP-0620(031), State Project NO. 34817.3.13, TIP Nos. X-0002 B&C, and U-2519 AA, AB, BA,
BB, CA, CB, DA, & E.
NCDWR Project No. 20080737 V10

Dear Mr. Harris:

Attached hereto is a copy of the modification of Certification No. 3758 issued to The North Carolina Department of Transportation (NCDOT) dated October 6, 2008, and modifications dated June 3, 2010, December 16, 2010, May 22, 2014, January 19, 2017, March 29, 2017, April 28, 2017, May 5, 2017, January 29, 2018 and June 21, 2018. This modification of U-2519 AA and AB is an approximately 5.73 mile section of the Fayetteville Outer Loop that begins south of SR 1003 (Camden Road) and extends to Interstate 95.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

A handwritten signature in blue ink, appearing to read "Linda Culpepper".

Linda Culpepper, Interim Director
Division of Water Resources

Attachments

Electronic copy only distribution:

Liz Hair, US Army Corps of Engineers, Wilmington Field Office
Jim Rerko, Division 6 Environmental Officer
Chris Rivenbark, NC Department of Transportation-Environmental Analysis Unit



Tyler Stanton, NC Department of Transportation-Environmental Analysis Unit
Chris Militscher, US Environmental Protection Agency
Gary Jordan, US Fish and Wildlife Service
Travis Wilson, NC Wildlife Resources Commission
Joanne Steenhuis, NC Division of Water Resources Wilmington Regional Office
EPU@ncdot.gov

This is a Modification 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS

THIS CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Resources (NCDWR) Regulations in 15 NCAC 2H .0500. This certification authorizes the NCDOT to impact 9.645 acres of jurisdictional wetlands (permanently impacting 9.235 acres) and 5768 linear feet of jurisdictional streams (4,719 linear feet of permanent impacts) in Cumberland County. The project shall be constructed pursuant to the application dated received September 18, 2018. The authorized impacts are as described below:

Stream Impacts in the Cape Fear River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
3 (L 30+88 to 31+69)	300	43			343	N/A
4 (L 36+56 to 37+03)	78	35			113	N/A
5 (L 38+17 to 38+93)				31	31	N/A
8(L 75+02 to 79+96)			518	85	603	518
8* Bank Stabilization			35		35	N/A
9 (L 85+99 to 89+87)	525	101			626	N/A
10 (L 97+22 to 99+80)	445	110			555	N/A
12 (L 115+50 to 123+12)			522	232	754	522
13 (L 123+72 to 123+74)			121	9	130	N/A
13* Bank Stabilization			44		44	N/A
13 (L 123+72 to 123+74)	442				442	N/A
13 (L 123+72 to 123+74)	173	10			183	N/A
14 (L 168+35 to 173+74)			515	42	557	515
14* Bank Stabilization			125		125	N/A

15 (L 248+32 to 248+51)			35		35	N/A
15 Work bridge				30	30	N/A
23 (Y2 15+90 to 19+16)			49	6	55	N/A
24 (Y4 36+27 to 41+34)			48	114	162	N/A
24* Bank Stabilization			79		79	N/A
27 (Y7 66+35 to 66+64)			90	87	177	N/A
27* Bank Stabilization			69		69	N/A
28 (Y7 84+38 to 87+88)			416		416	416
29 Y10 58+94 to 61+31 Bridge				83	83	N/A
29 Work bridge				31	31	N/A
30 (Y10 87+68 to 88+37)			90		90	N/A
Total	1963	299	2756	750	5768	1971

Total Stream Impact for Project: 5768 linear feet Total Permanent stream impacts 4719 linear feet.

Wetland Impacts in the Cape Fear River Basin

Site	Fill (ac)	Fill (temporary) (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Area under Bridge (ac)	Total Wetland Impact (ac)
1 (FLYBD- 20+10 to 23+24)	0.573			0.036			0.609
2 (Y4-24+18 to 26+65)	0.035			0.060			0.095
3 (L 30+88 to 31+69)	0.006				0.023		0.006
5 (L 38+17 to 38+93)					0.014		0
6(L 37+55 to 44+55)	2.201			0.285			2.486
8(L 75+02 to 79+96)	1.933		0.027	0.114	0.106		2.074
15 (L 248+32 to 248+51)	0.002				0.002		0.002
Bridge					0.051		0

16 (L 256+22 to 256+64 LT)	0.062		0.013	0.014			0.089
17 (L 257+79 to 258+87)	0.148			0.023			0.171
18 (L 261+09 to 262+60)	0.495			0.088			0.583
19 (L 263+85 to 267+61)	1.551		0.144	0.171			1.866
20 (Y1 31+39 to 31+80)	0.063			0.034			0.097
21 (Y1 65+90 to 67+57)	0.200			0.067			0.267
22 (Y 95+78 to 99+57)	0.139				0.110		0.139
23 (Y2 15+90 to 19+16)	0.145			0.126			0.271
24 (Y4 36+27 to 41+34)	0.332	0.410			0.190		0.742
25 (Y5 93+83 to 94+10)					0.010		0
26 (Y5 88+85 to 89+44)	0.013			0.020			0.033
29 (Y10 58+94 to 61+31)			0.024		0.340		0.024
Work bridge					0.110		0
30 (Y10 87+68 to 88+37)	0.061			0.030			0.091
Total	7.959	0.410	0.208	1.068	0.956	0	9.645

Total Wetland Impact for Project: 9.645 acres. Total permanent impacts 9.235 acres

- No utility impacts were included due to proposed directional bore for jurisdictional areas

Open Water Impacts in the Cape Fear River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
3 (L 30+88 to 31+69)	0.031	0.004	0.035
4 (L 36+56 to 37+03)	0.003	0.001	0.004
5 (L 38+17 to 38+93)		0.009	0.009
8(L 75+02 to 79+96)	0.076	0.012	0.088
Bank Stabilization	0.007		0.007
9 (L 85+99 to 89+87)	0.082	0.015	0.097
10 (L 97+22 to 99+80)	0.048	0.012	0.060
12 (L 115+50 to 123+12)	0.103	0.045	0.148

13 (L 123+72 to 123+74)	0.055	0.002	0.057
Bank Stabilization	0.007		.007
14 (L 168+35 to 173+74)	0.105	0.009	0.114
Bank Stabilization	0.028		0.028
15 (L 248+32 to 248+51)	0.002	0.004	0.006
Workbridge		0.010	0.010
23 (Y2 15+90 to 19+16)	0.015	0.002	0.017
24 (Y4 36+27 to 41+34)	0.008	0.033	0.041
Bank Stabilization	0.025		0.025
27 (Y7 66+35 to 66+64)	0.017	0.017	0.034
Bank Stabilization	0.015		0.015
28 (Y7 84+38 to 87+88)	0.073		0.073
29 (Y10 58+94 to 61+31)		0.021	0.021
Workbridge		0.008	0.008
30 (Y10 87+68 to 88+37)	0.004		0.004
Total	0.704	0.204	0.908

Total Open Water Impact for Project: 0.908 acres. Permanent impacts 0.704 acres.

The application provides adequate assurance that the discharge of fill material into the waters of the Cape Fear River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your application dated received September 19, 2018. Should your project change, you are required to notify the NCDWR and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

Condition(s) of Certification:

1. This modification is applicable only to the additional proposed activities listed in this certification. All of the authorized activities and conditions of certification associated with the original Water Quality Certification dated October 6, 2008 and subsequent modifications dated June 3, 2010, December 16, 2010, May 22, 2014, January 19, 2017, May 5, 2017 and June 21, 2018 still apply except where superseded by this certification.

2. The NCDOT Division Environmental Officer or Environmental Assistant will conduct a pre-construction meeting with all appropriate staff to ensure that the project supervisor and essential staff understand the potential issues with stream and pipe alignment at the permitted site. NCDWR staff shall be invited to the pre-construction meeting. [15A NCAC 02H.0506(b)(2) and (b)(3)]
3. For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.
The sediment and erosion control measures for the borrow sites will need to be recorded on the NPDES forms and maintain as such.
4. **Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards [15A NCAC 02H.0506(b)(3) and (c)(3):**
 - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
 - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
 - d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission.

The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919) 431-3000, Facsimile: (919) 431-3100

A copy of the petition must also be served on DEQ as follows:

Mr. Bill F. Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, NC 27699-1601

This the 18th day of October 2018

DIVISION OF WATER RESOURCES



Linda Culpepper, Interim Director

WQC No. 3758



NORTH CAROLINA
Environmental Quality

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

LINDA CULPEPPER
Interim Director

NCDWR Project No.: 20080737 V10 County: Cumberland

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Transportation Permitting Unit, North Carolina Division of Water Resources, 1617 Mail Service Center, Raleigh, NC, 27699-1617. This form may be returned to NCDWR by the applicant, the applicant's authorized agent, or the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Engineer's Certification

_____ Partial _____ Final

I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

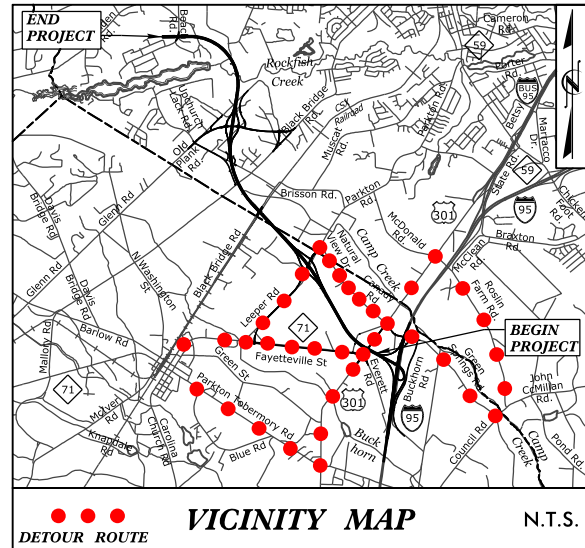
Signature _____ Registration No. _____
Date _____



9/5/2018
r:\hydraulics\permits_environmental\drawings\PRM_SHT\U2519AA-AB_Hyd_prm_psn001.dgn
pughms

CONTRACT: C204043

TIP PROJECT: U-2519AA&AB



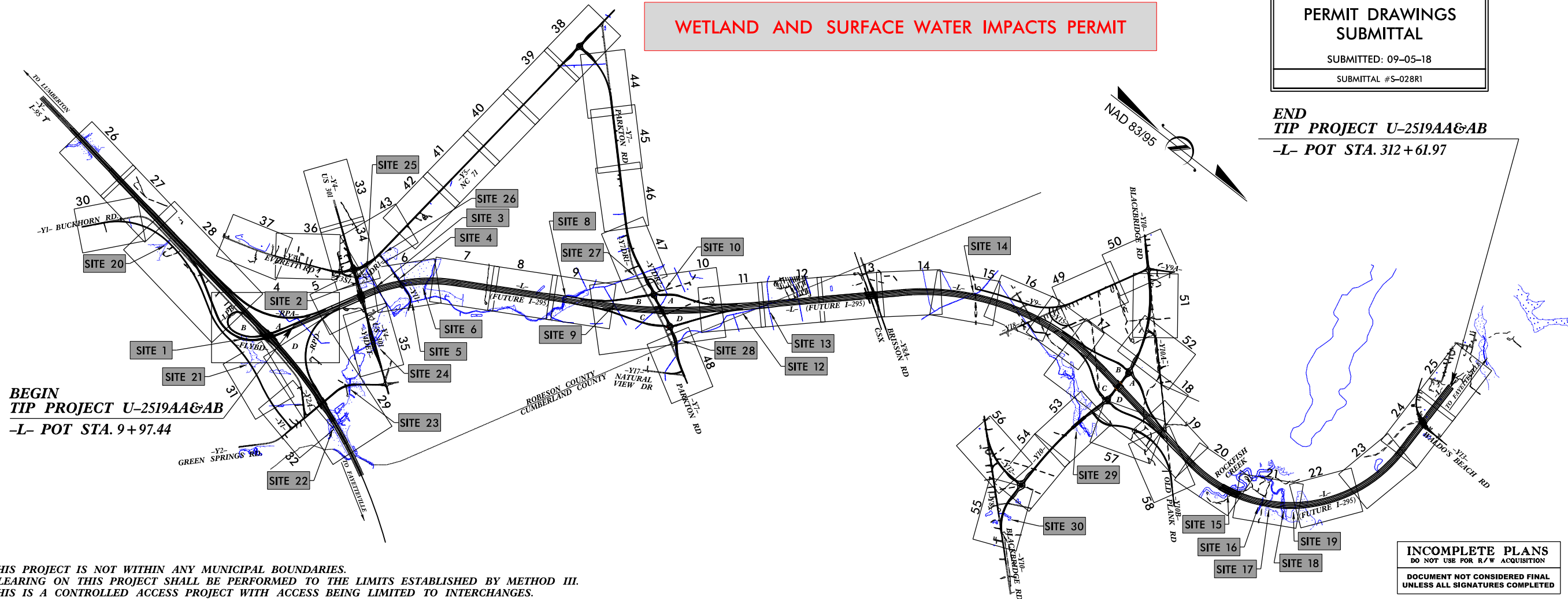
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CUMBERLAND COUNTY /ROBESON COUNTY

LOCATION: FUTURE I-295 - FAYETTEVILLE OUTER LOOP FROM I-95 IN
ROBESON COUNTY TO SOUTH OF SR 1003 (CAMDEN ROAD)
IN CUMBERLAND COUNTY

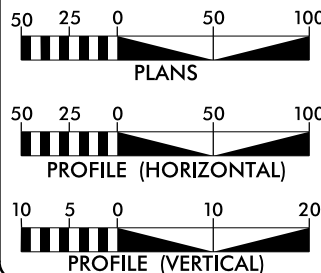
TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING AND STRUCTURES

WETLAND AND SURFACE WATER IMPACTS PERMIT



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

GRAPHIC SCALES



DESIGN DATA

ADT 2015 = 25,000
ADT 2040 = 33,100
K = 8%
D = 55%
T = 12%*
V = 70 MPH
* (TTST = 4% + DUAL 8%)
FUNC. CLASSIFICATION =
INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2519AA & AB = 5.582 MILES
LENGTH STRUCTURE TIP PROJECT U-2519AA & AB = 0.150 MILES *
TOTAL LENGTH OF TIP PROJECT U-2519AA & AB = 5.732 MILES
* LENGTH BASED OFF NB BRIDGES

NCDOT CONTACT: K. ZAK HAMIDI, PE
PROJECT ENGINEER - DESIGN BUILD UNIT

PLANS PREPARED FOR THE NCDOT BY:
Balfour Beatty Infrastructure Inc. **BRANCH** CIVIL
STV 100 Years
A Joint Venture
2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 21, 2017

LETTING DATE:
NOVEMBER 21, 2017

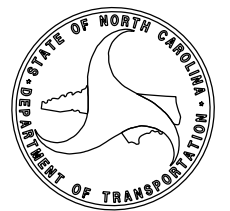
JOSEPH A. FREEMAN, PE
DESIGN PROJECT MANAGER

ETHAN P. WRIGHT, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.
ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

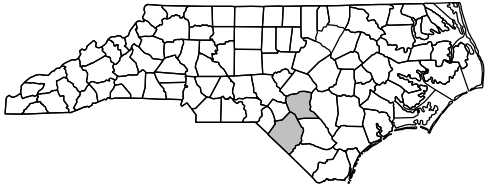


PERMIT DRAWINGS
SUBMITTAL

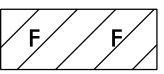
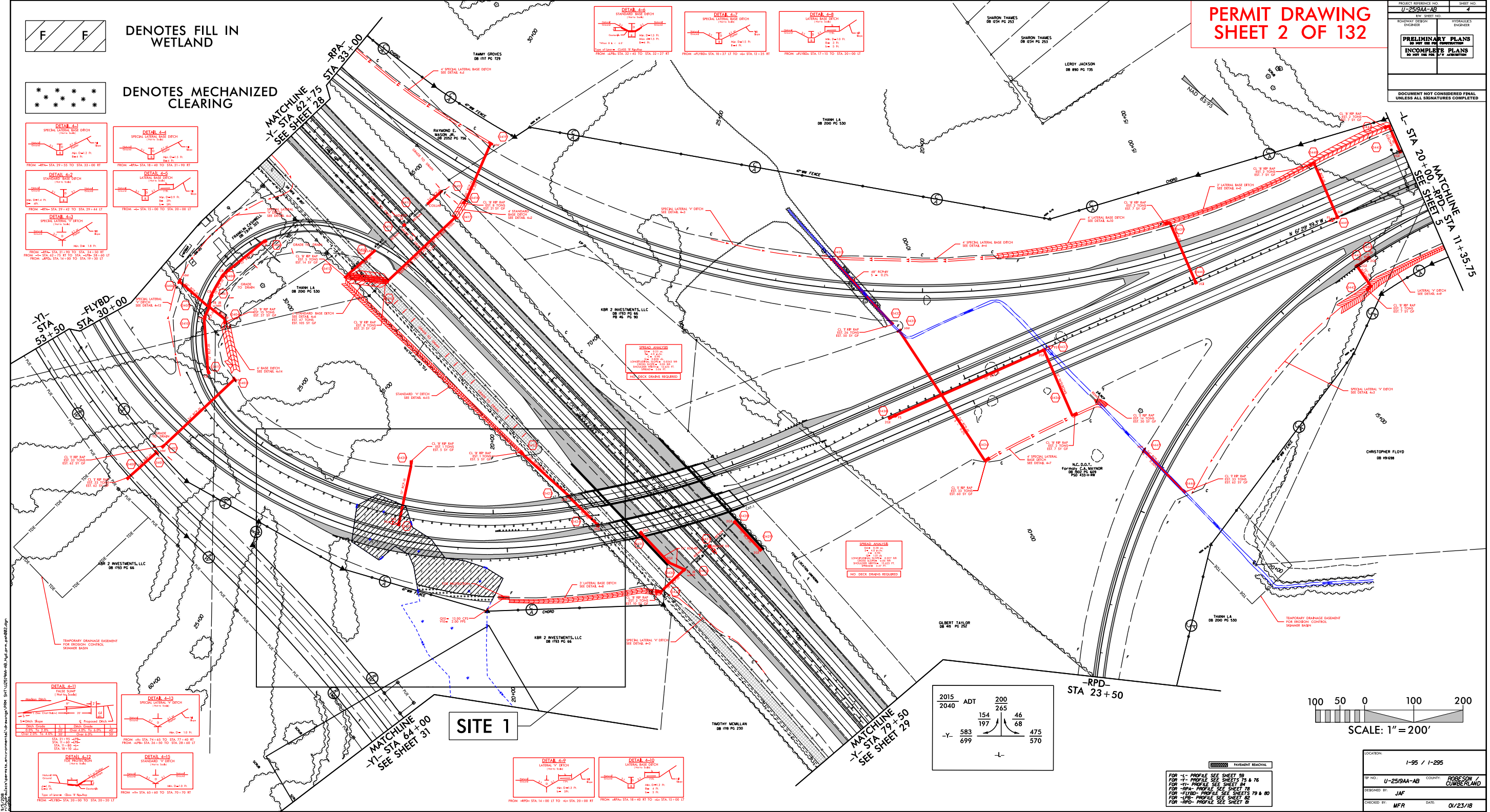
SUBMITTED: 09-05-18
SUBMITTAL #S-028R1

END
TIP PROJECT U-2519AA&AB
-L- POT STA. 312 + 61.97

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



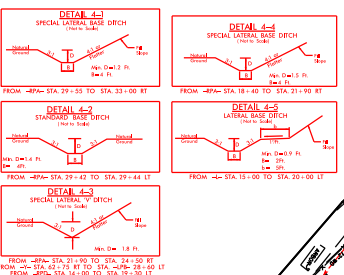
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2519AA&AB	1	132
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34817.3.4	NHP-1118(11)	P.E., ROW, UTILITIES & CONSTRUCTION	



DENOTES FILL IN WETLAND

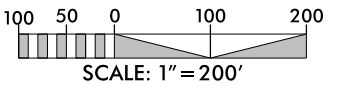
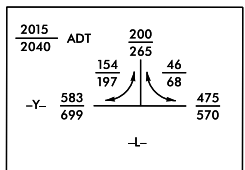


DENOTES MECHANIZED CLEARING



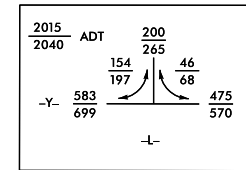
PERMIT DRAWING
SHEET 2 OF 132

PROJECT REFERENCE NO.	SHEET NO.
U-25/9AA-AB	2
RDW SHEET NO.	
ROADWAY DESIGN	HYDRAULICS
ENGINEER	ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



LOCATION:	1-95 / I-295
TP NO.:	U-25/9AA-AB
COUNTY:	ROBESON / CUMBERLAND
DESIGNED BY:	JAF
CHECKED BY:	MFR
DATE:	01/23/18

FOR -L- PROFILE SEE SHEET 59
FOR -Y- PROFILE SEE SHEETS 75 & 76
FOR -I- PROFILE SEE SHEET 84
FOR -RPA- PROFILE SEE SHEET 78
FOR -FLRD- PROFILE SEE SHEETS 79 & 80
FOR -RFD- PROFILE SEE SHEET 81



PERMIT DRAWING
SHEET 3 OF 132

PROJECT REFERENCE NO.	SHEET NO.
U-259AA-AB	4A
B/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION INCOMPLETE PLANS DO NOT USE FOR B/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL FOR SIGNATURE	

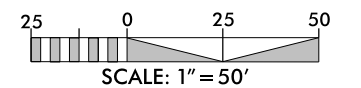
FOR -L- PROFILE SEE SHEET 59
FOR -Y- PROFILE SEE SHEETS 75 & 76
FOR -YI- PROFILE SEE SHEET 84
FOR -RPA- PROFILE SEE SHEET 78
FOR -FLYBD- PROFILE SEE SHEETS 79 & 80
FOR -LPB- PROFILE SEE SHEET 82
FOR -DND- PROFILE SEE SHEET 81

LOCATION:	
1-95 / 1-295	
TRIP NO.:	COUNTY:
U-2519AA-AB	ROBESON / CUMBERLAND
DESIGNED BY:	
JAF	
CHECKED BY:	DATE:
MFR	01/23/18

PROJECT REFERENCE NO.	SHEET NO.
<i>U-2519AA-AB</i>	<i>4B</i>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PERMIT DRAWING
SHEET 4 OF 132



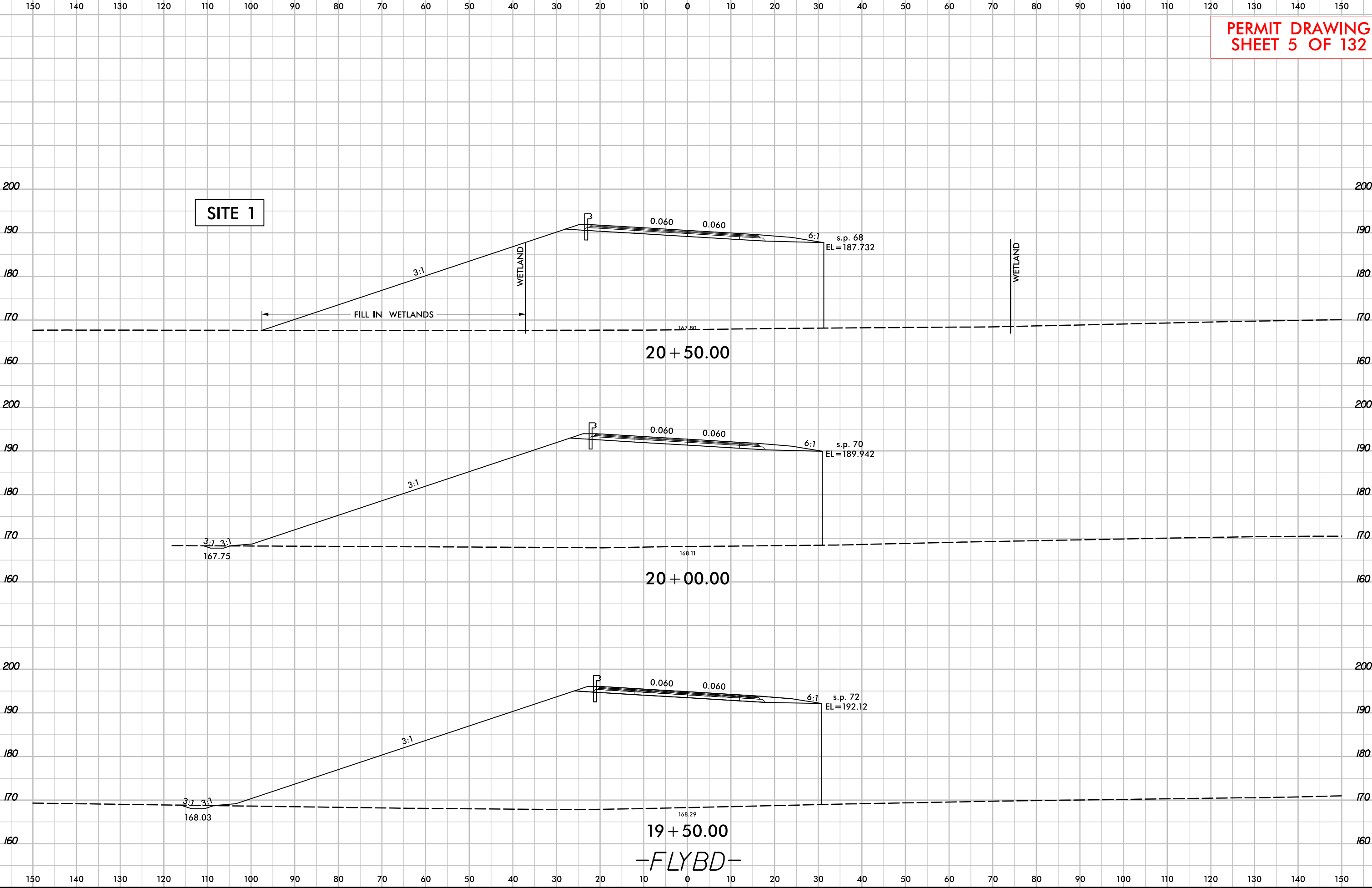
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ouchins

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-267

PERMIT DRAWING
SHEET 5 OF 132

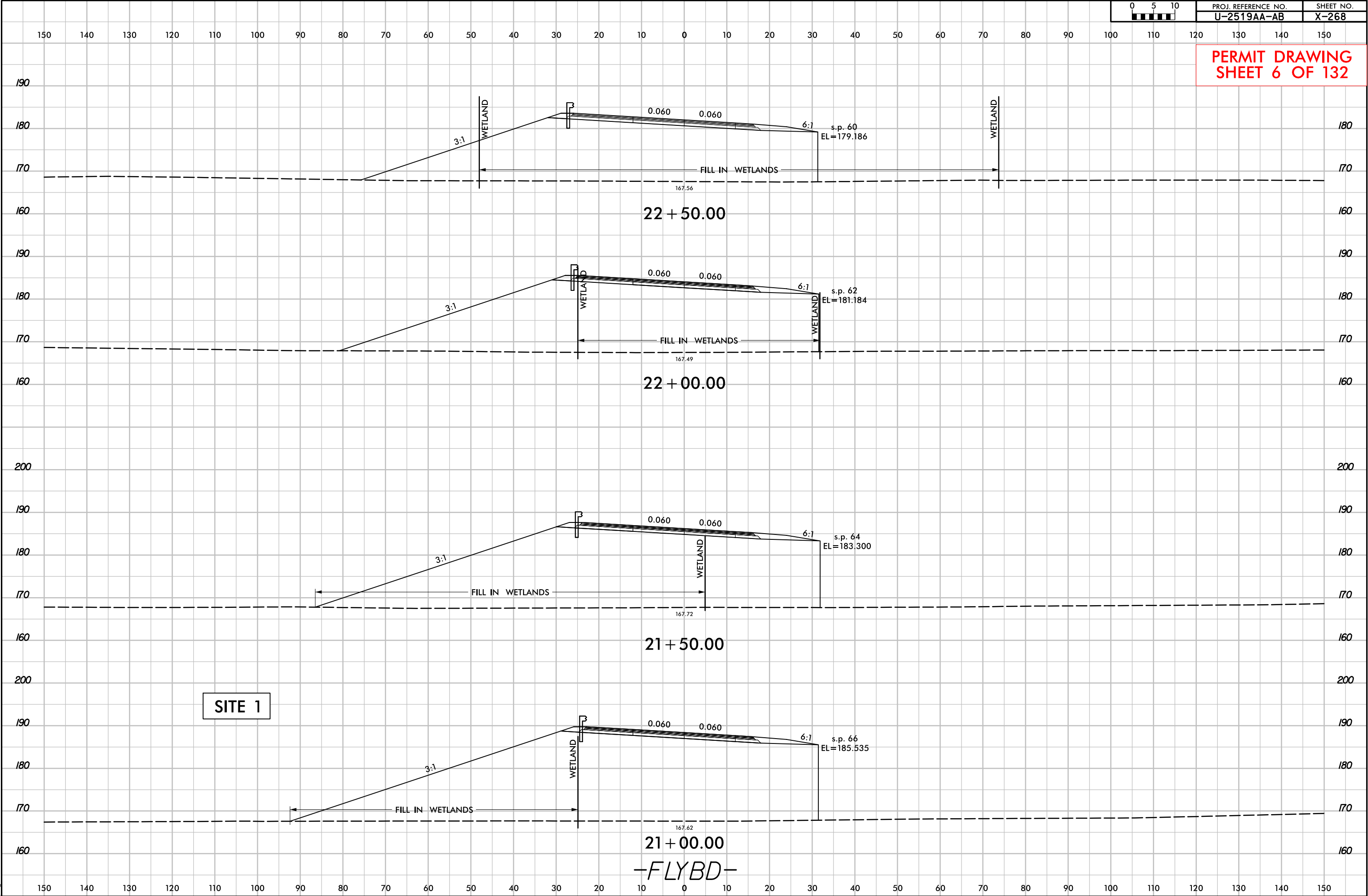


-FLYBD-

6/23/16

9/5/2018
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	U-2519AA-AB	X-268

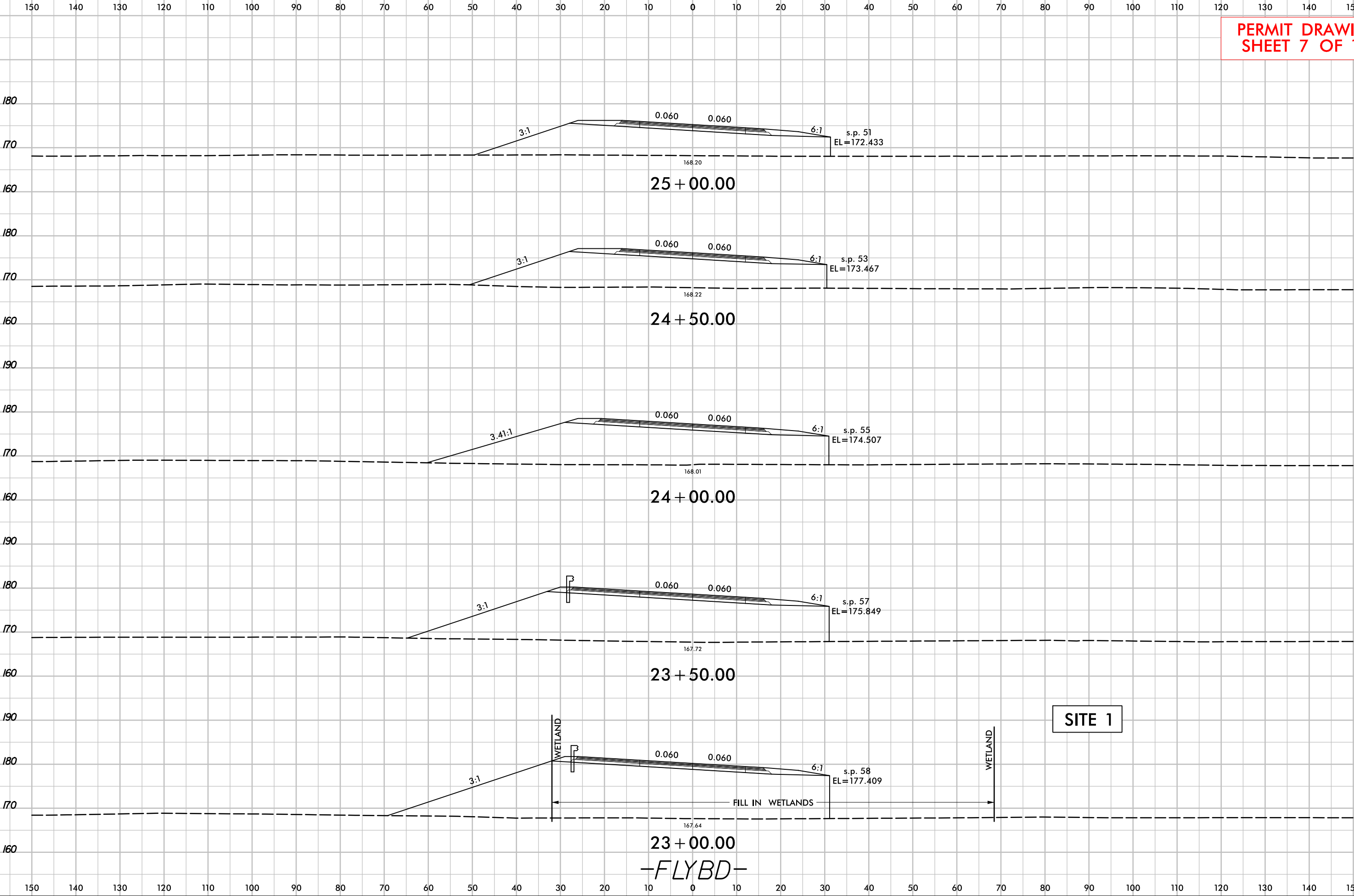


6/23/16

9/5/2018
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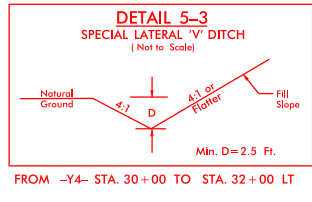
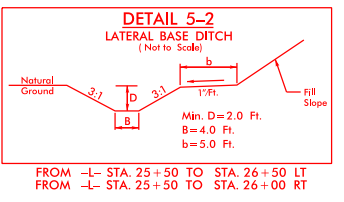
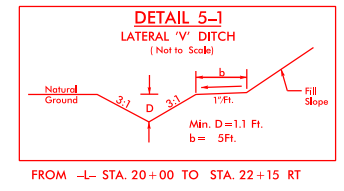
0 5 10 [Scale Bar]	PROJ. REFERENCE NO.	SHEET NO.
	U-2519AA-AB	X-269

PERMIT DRAWING
SHEET 7 OF 132



PERMIT DRAWING
SHEET 8 OF 132

PROJECT REFERENCE NO. U2519AA-AB		SHEET NO. 5
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		



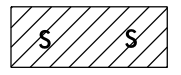
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



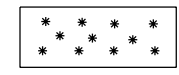
DENOTES HAND
CLEARING



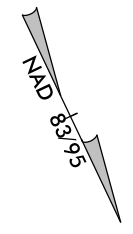
DENOTES FILL IN
WETLAND



DENOTES IMPACTS IN
SURFACE WATER



DENOTES MECHANIZED
CLEARING



MATCHLINE
-L- STA 20+00, -RPD- STA 11+35.75
SEE SHEET 4

MATCHLINE
-Y4- STA 25+00 SEE SHEET 34

MATCHLINE
-L- STA 31+00 SEE SHEET 6

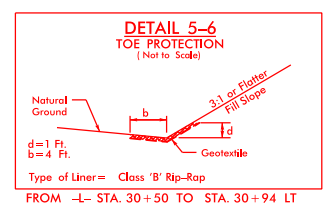
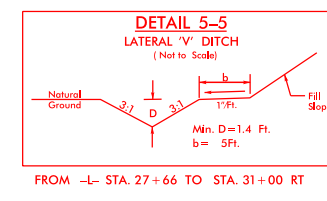
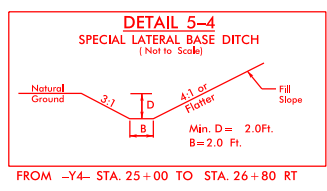
MATCHLINE
-Y4- STA 32+00 SEE SHEET 35

SPREAD ANALYSIS
DA = 0.161 ac.
I = 4.00 in./hr.
C = 0.90
Q = 0.589 cfs
LONGITUDINAL SLOPE = 0.0063 ft/ft
CROSS SLOPE = 0.025 ft/ft
SHOULDER WIDTH = 12 FT.
SPREAD = 5.59 FT.

NO DECK DRAINS REQUIRED

SPREAD ANALYSIS
DA = 0.195 ac.
I = 4.0 in./hr.
C = 0.90
Q = 0.702 cfs
LONGITUDINAL SLOPE = 0.0058 ft/ft
CROSS SLOPE = 0.025 ft/ft
SHOULDER WIDTH = 12 FT.
SPREAD = 6.09 FT.

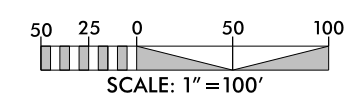
NO DECK DRAINS REQUIRED



DETAIL 5-7
FALSE SUMP
(Not to Scale)

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

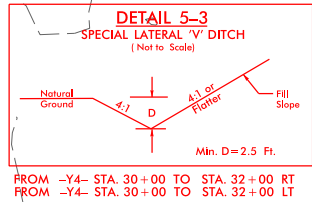
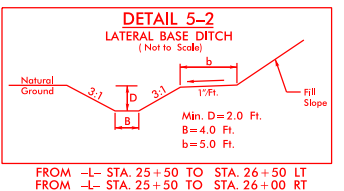
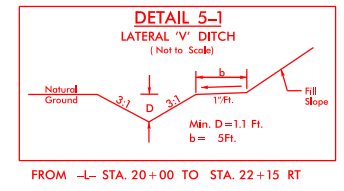
STA. 22+00 -L-
STA. 24+90 -L-



FOR -L- PROFILE SEE SHEET 59
FOR -Y4- PROFILE SEE SHEETS 87 & 88
FOR -RPD- PROFILE SEE SHEET 81

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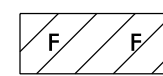
PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	5A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



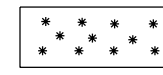
DENOTES HAND
CLEARING



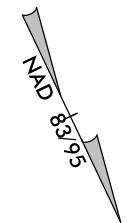
DENOTES FILL IN
WETLAND



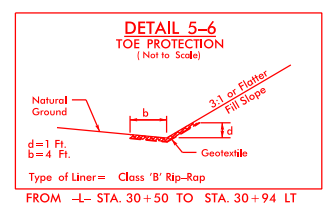
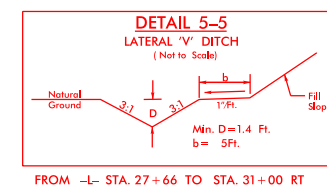
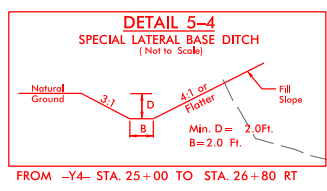
DENOTES IMPACTS IN
SURFACE WATER



DENOTES MECHANIZED
CLEARING



MATCHLINE
-L- STA 20+00, -RPD- STA 11+35.75
SEE SHEET 4



DETAIL 5-7
FALSE SUMP
(Not to Scale)

S=Ditch Slope
Q=Proposed Ditch

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

STA. 22+00 -L-
STA. 24+90 -L-

SPREAD ANALYSIS
DA= 0.161 ac.
L= 4.00 in./hr.
C= 0.90
Q= 0.589 cfs
LONGITUDINAL SLOPE= 0.0063 ft/ft
CROSS SLOPE= 0.025 ft/ft
SHOULDER WIDTH= 12 FT.
SPREAD= 5.59 FT.

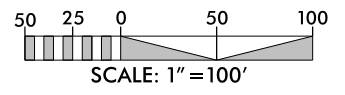
NO DECK DRAINS REQUIRED

SITE 2

SITE 3

SPREAD ANALYSIS
DA= 0.195 ac.
L= 4.0 in./hr.
C= 0.90
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LONGITUDINAL SLOPE= 0.0038 ft/ft
CROSS SLOPE= 0.025 ft/ft
SHOULDER WIDTH= 12 FT.
SPREAD= 6.09 FT.

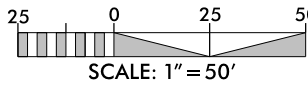
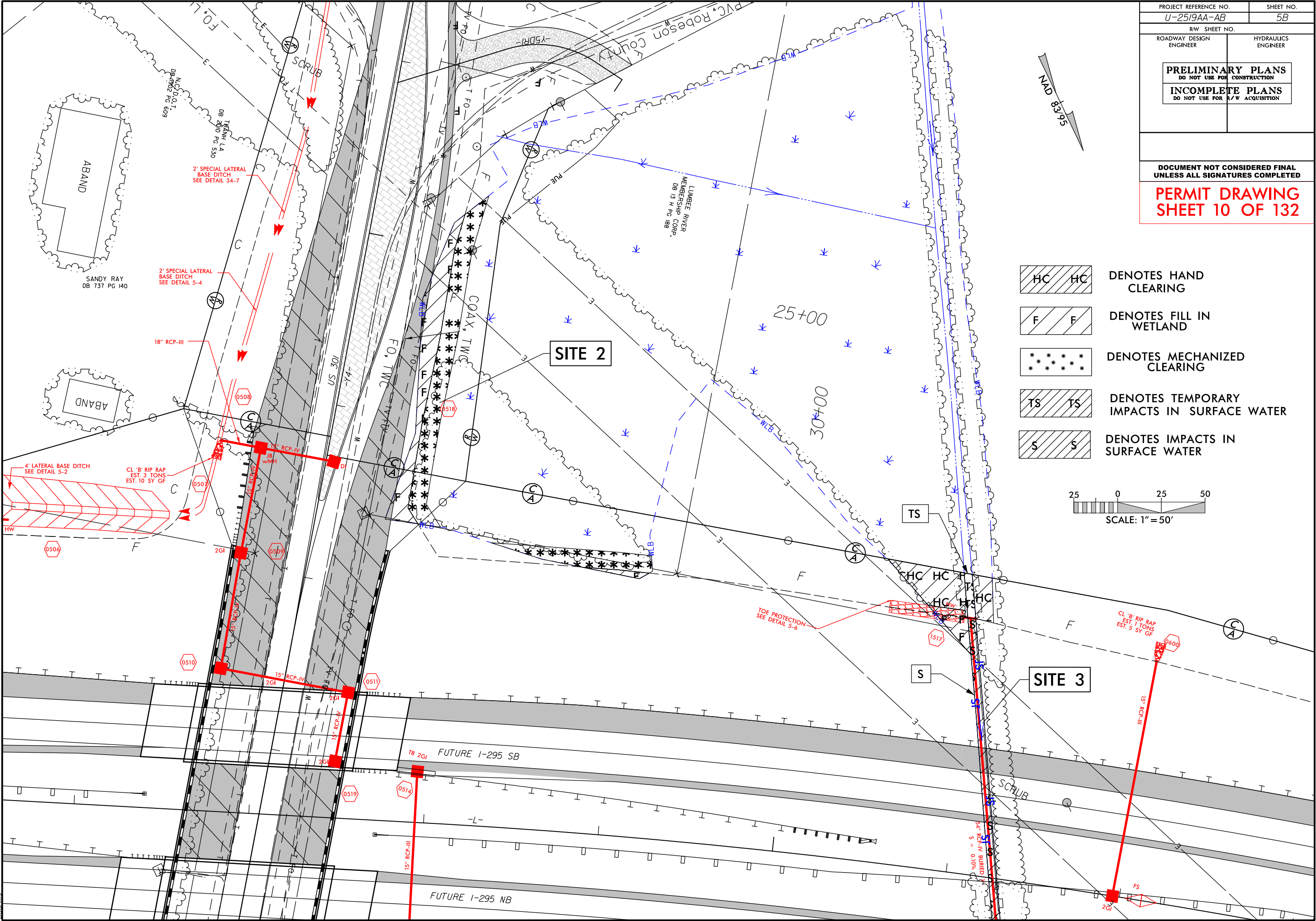
NO DECK DRAINS REQUIRED



FOR -L- PROFILE SEE SHEET 59
FOR -Y4- PROFILE SEE SHEETS 87 & 88
FOR -RPD- PROFILE SEE SHEET 81

9/5/2018 bulitics\permits-environmental\drawings\PRM_SHT\U2519AA-AB_Hyd_Hyd.prm_psh009.dgn

PROJECT REFERENCE NO.		SHEET NO.	
U-2519AA-AB		5B	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
PERMIT DRAWING SHEET 10 OF 132			



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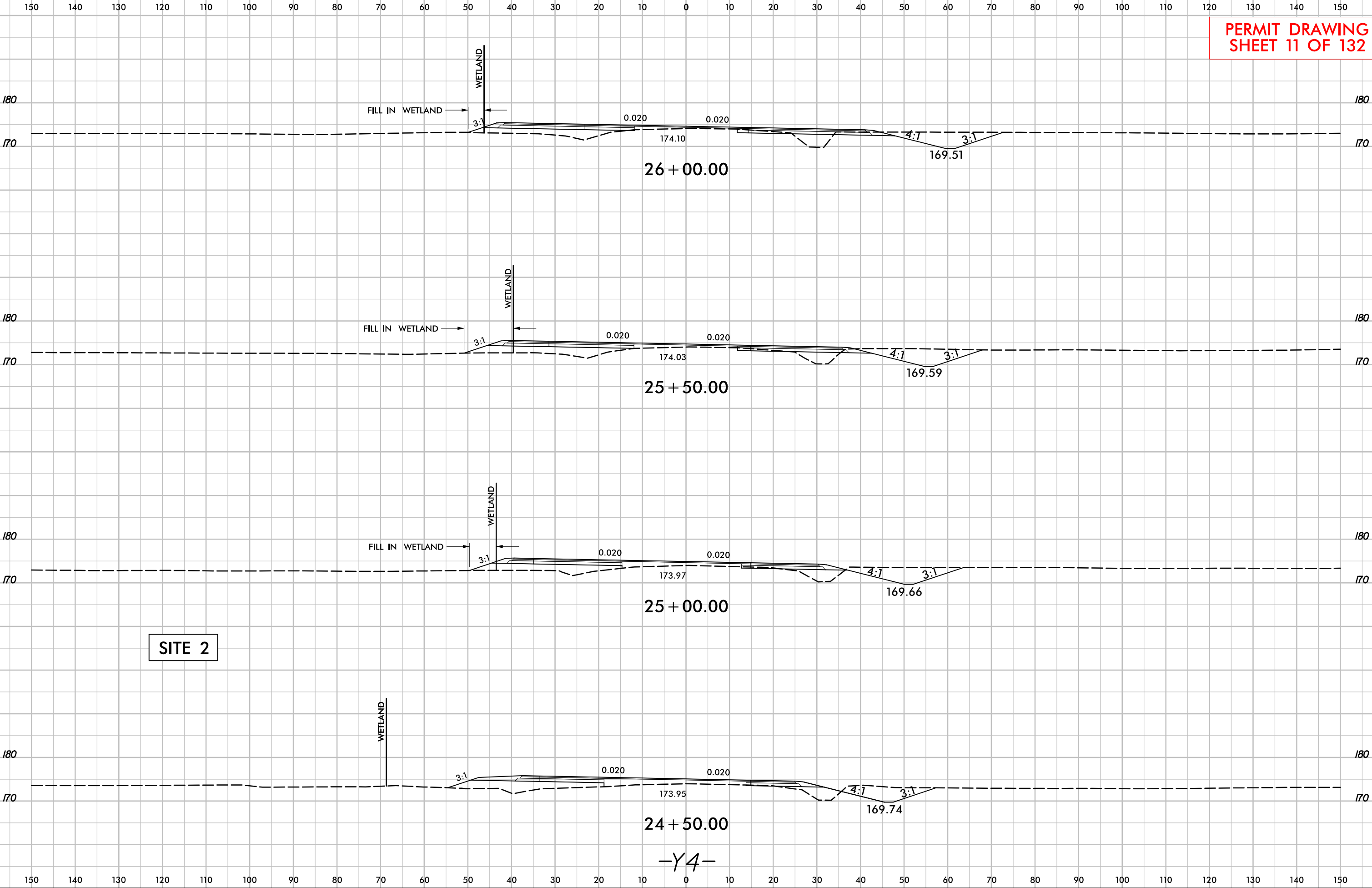
6/23/16

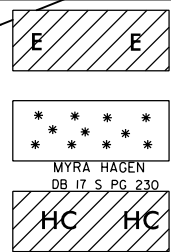
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p.dgn



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-408

PERMIT DRAWING
SHEET 11 OF 132





DENOTES MECHANIZED
CLEARING

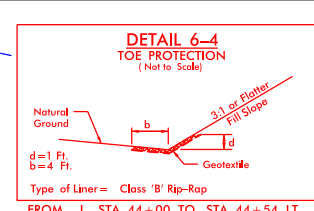
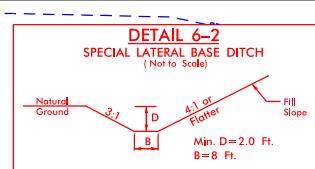
DENOTES HAND
CLEARING

A rectangular block with diagonal hatching (lines from top-left to bottom-right). Inside the block, there are two 'S' symbols, one on the left and one on the right.

DENOTES FILL IN
WETLAND

DENOTES IMPACTS IN SURFACE WATER

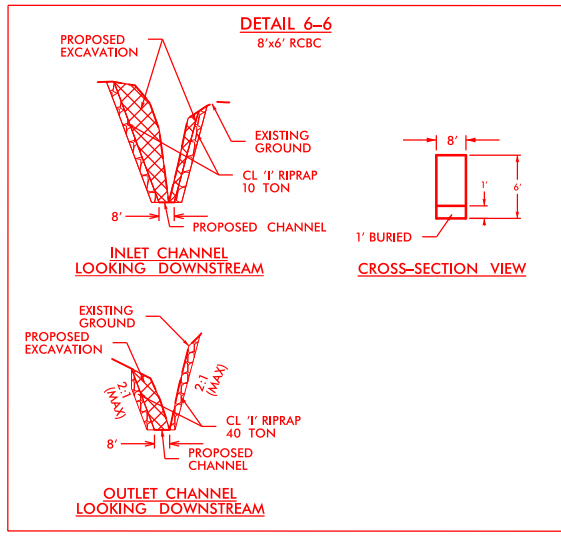
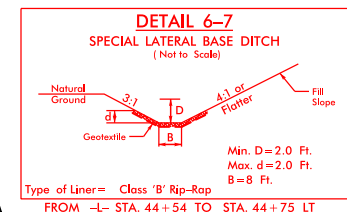
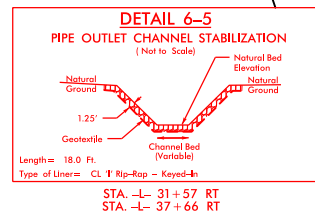
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



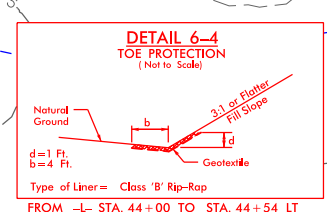
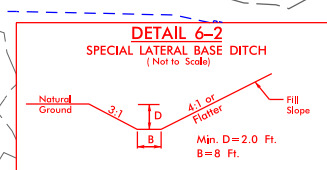
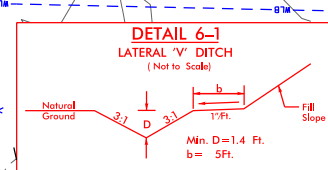
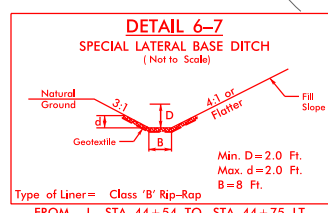
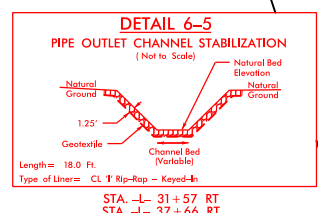
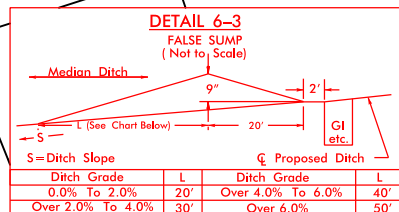
PROJECT REFERENCE NO.	SHEET NO.
U-25/9AA-AB	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PERMIT DRAWING
SHEET 12 OF 132



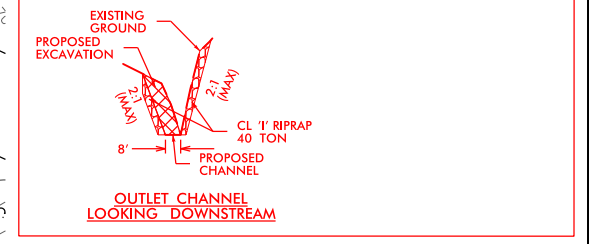
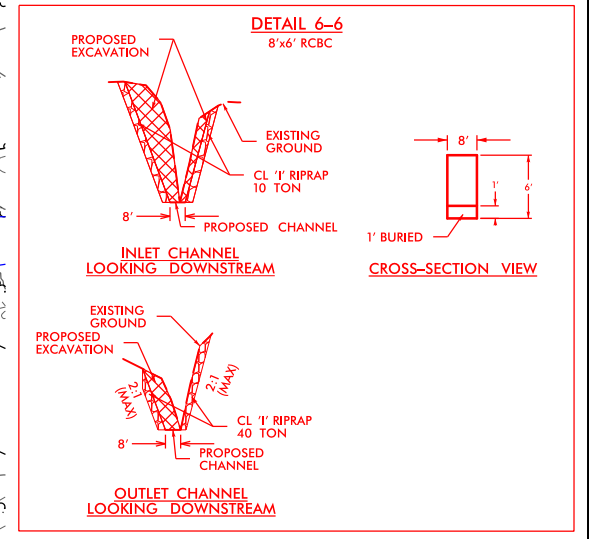
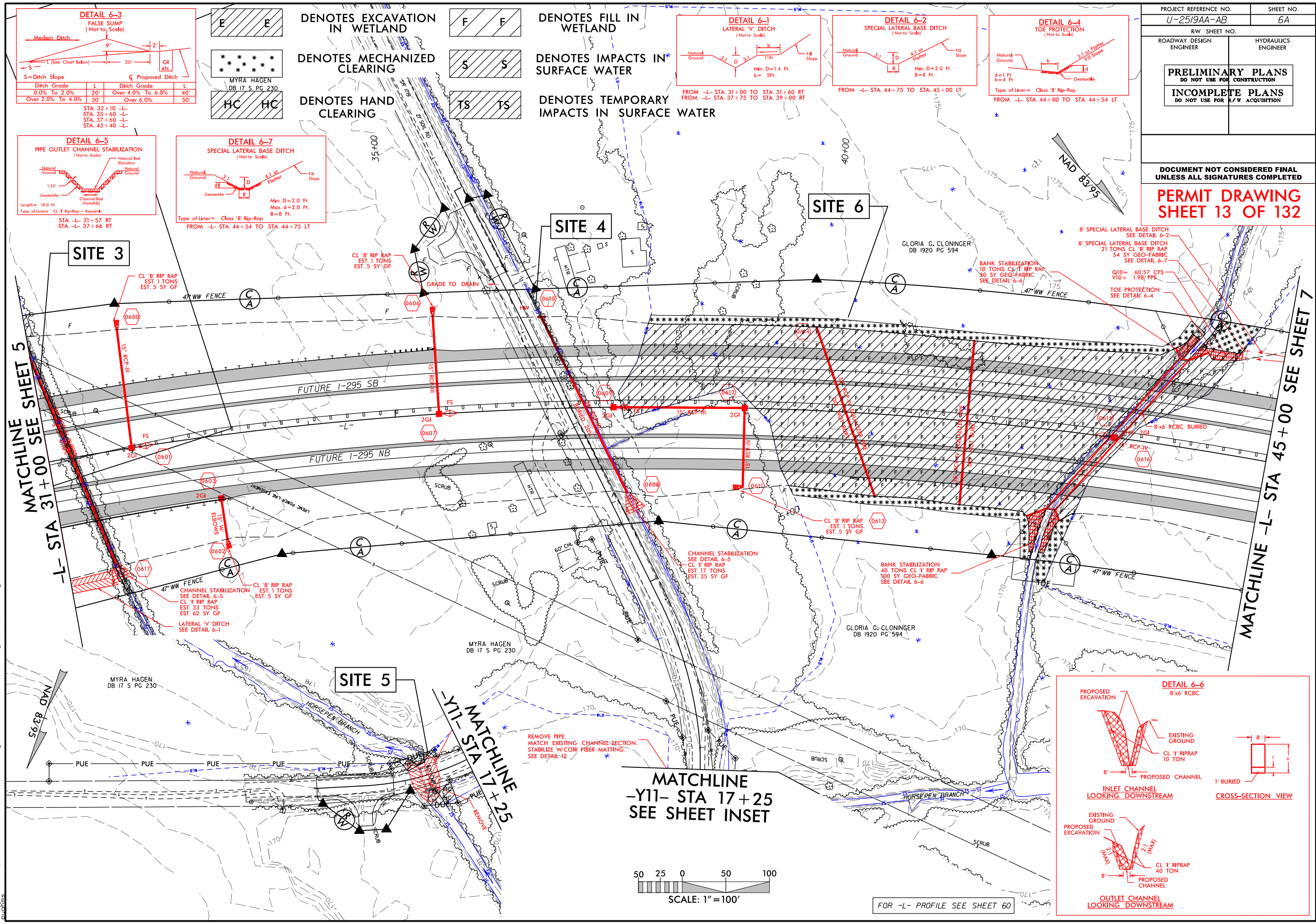
FOR -L- PROFILE SEE SHEET 60

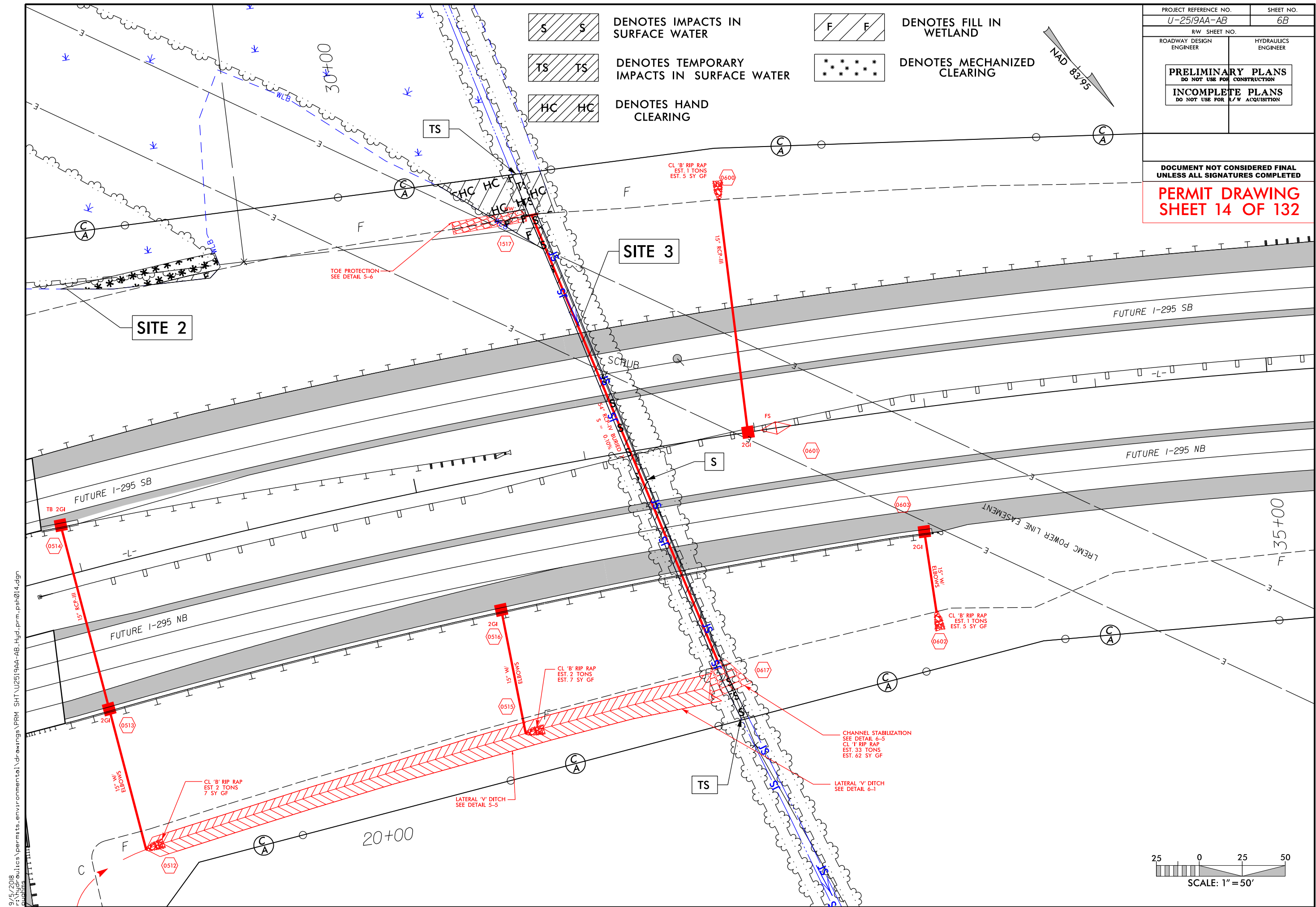


PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 6A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

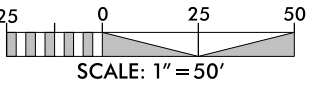
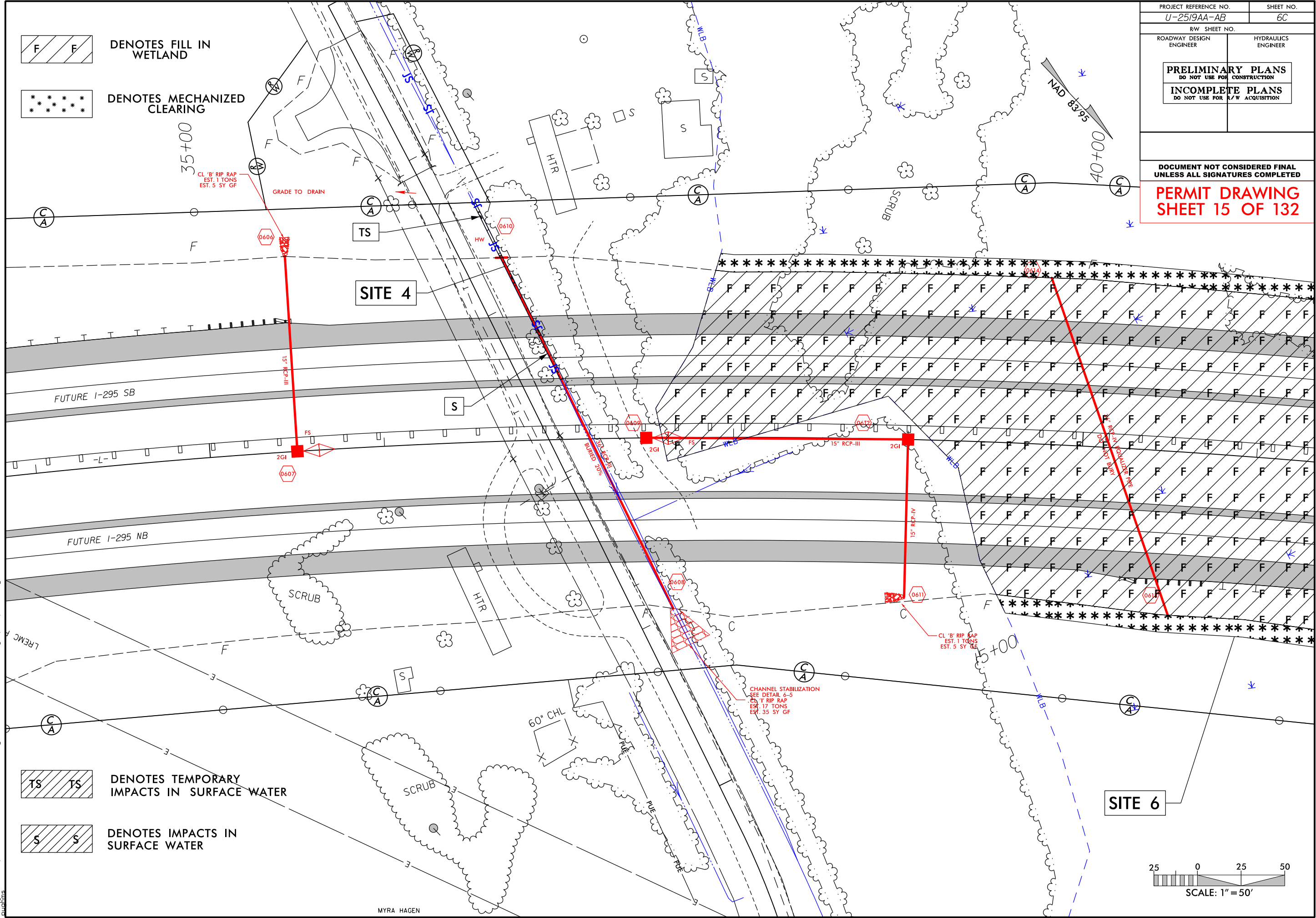
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 13 OF 132





PROJECT REFERENCE NO.		SHEET NO.	
U-2519AA-AB		6C	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
PERMIT DRAWING SHEET 15 OF 132			



9/5/2018
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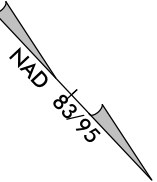
PROJECT REFERENCE NO.		SHEET NO.	
U-2519AA-AB		6E	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
PERMIT DRAWING SHEET 17 OF 132			



DENOTES FILL IN
WETLAND



DENOTES MECHANIZED
CLEARING



GLORIA G. CLONINGER
DB 1920 PG 594

SITE 6

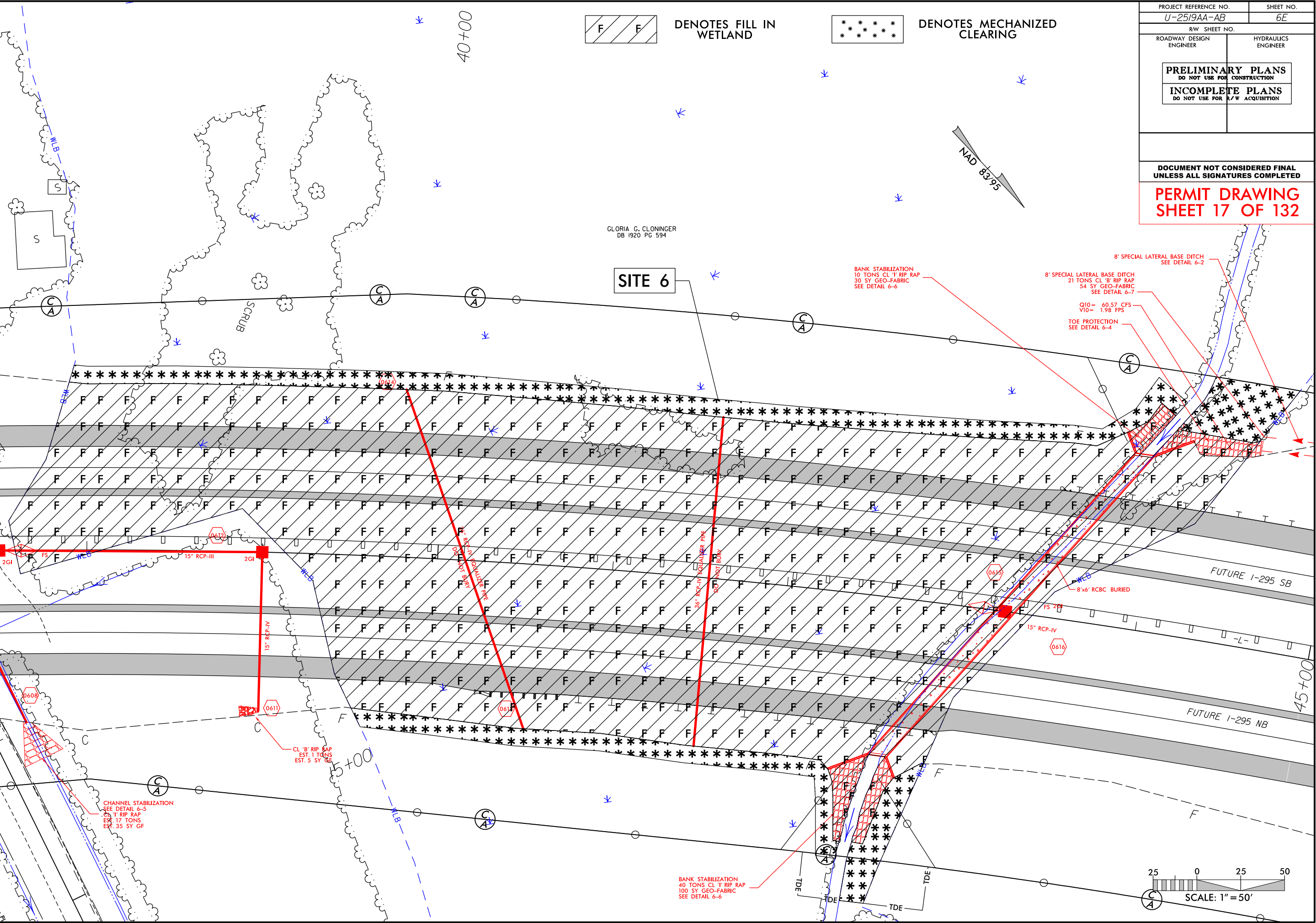
BANK STABILIZATION
10 TONS CL 'I' RIP RAP
30 SY GEO-FABRIC
SEE DETAIL 6-6

8' SPECIAL LATERAL BASE DITCH
21 TONS CL 'B' RIP RAP
54 SY GEO-FABRIC
SEE DETAIL 6-7

Q10 = 60.57 CFS
V10 = 1.98 FPS
TOE PROTECTION
SEE DETAIL 6-4

8' SPECIAL LATERAL BASE DITCH
SEE DETAIL 6-2

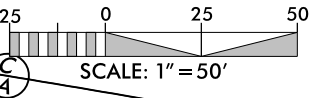
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CHANNEL STABILIZATION
SEE DETAIL 6-5
21 TONS CL 'I' RIP RAP
EST. 17 TONS
EST. 35 SY GF

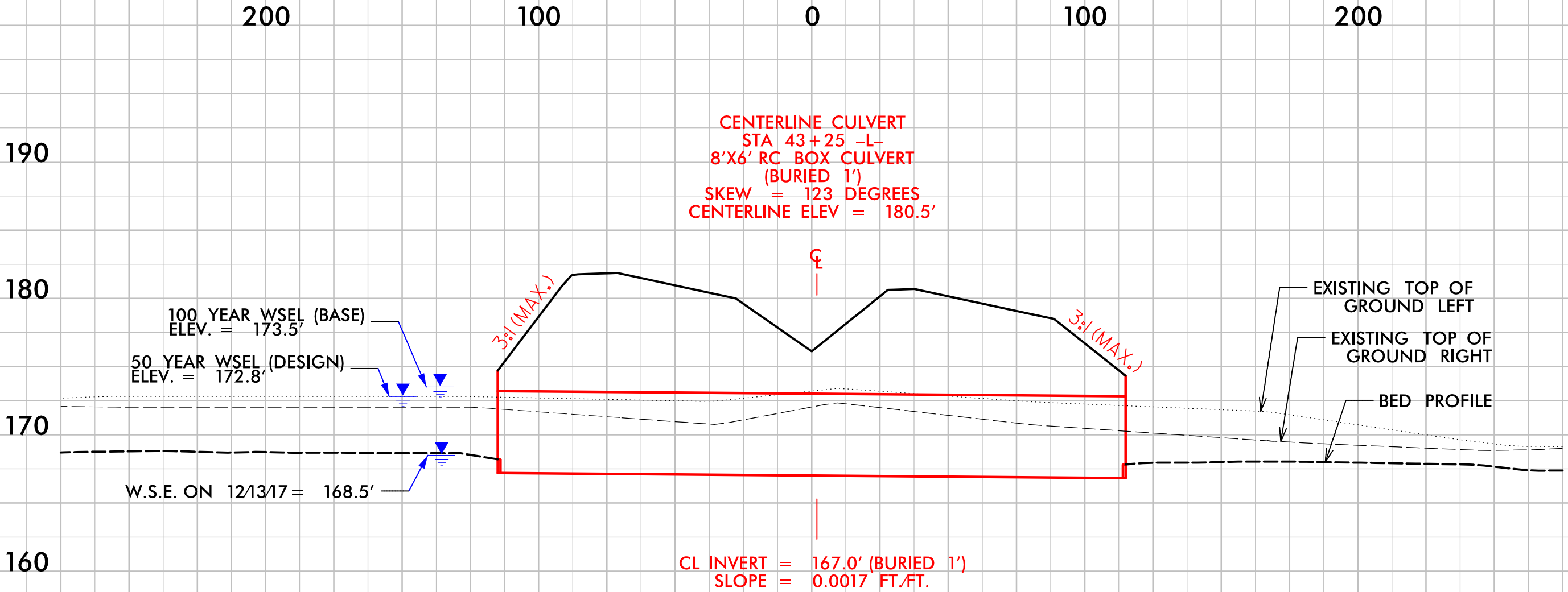
CL 'B' RIP RAP
EST. 1 TONS
EST. 5 SY GF

BANK STABILIZATION
40 TONS CL 'I' RIP RAP
100 SY GEO-FABRIC
SEE DETAIL 6-6



PERMIT DRAWING
SHEET 18 OF 132

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 6F
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



PERMIT DRAWING
SHEET 19 OF 132

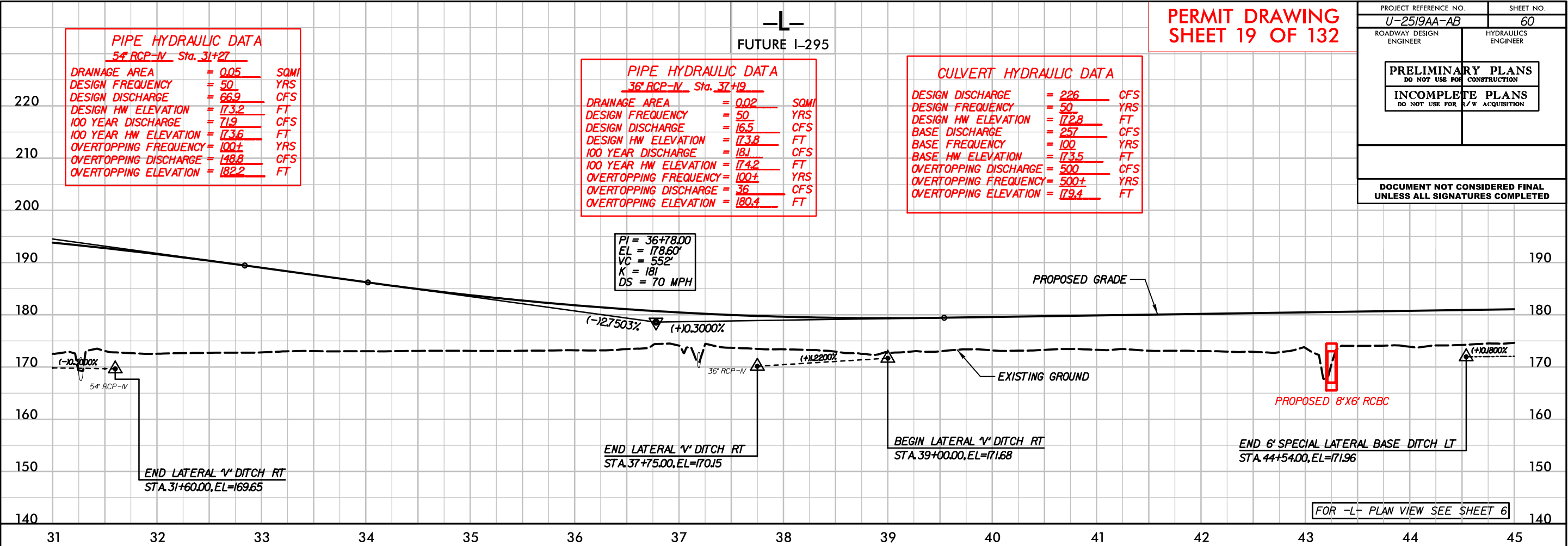
PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	60
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PIPE HYDRAULIC DATA		
54" RCP-IV Sta. 31+27		
DRAINAGE AREA	= 0.05	SQMI
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 66.9	CFS
DESIGN HW ELEVATION	= 173.2	FT
100 YEAR DISCHARGE	= 71.9	CFS
100 YEAR HW ELEVATION	= 173.6	FT
OVERTOPPING FREQUENCY	= 100±	YRS
OVERTOPPING DISCHARGE	= 148.8	CFS
OVERTOPPING ELEVATION	= 182.2	FT

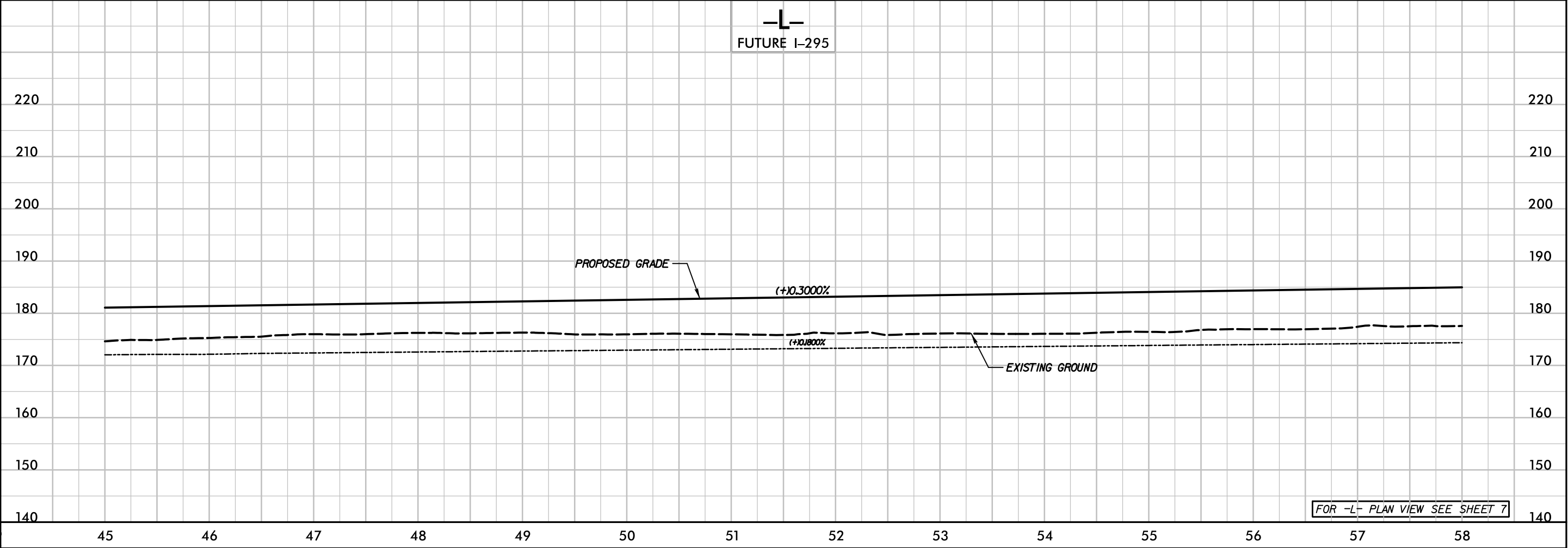
PIPE HYDRAULIC DATA		
36" RCP-IV Sta. 37+19		
DRAINAGE AREA	= 0.02	SQMI
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 16.5	CFS
DESIGN HW ELEVATION	= 173.8	FT
100 YEAR DISCHARGE	= 18.1	CFS
100 YEAR HW ELEVATION	= 174.2	FT
OVERTOPPING FREQUENCY	= 100±	YRS
OVERTOPPING DISCHARGE	= 36	CFS
OVERTOPPING ELEVATION	= 180.4	FT

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 226	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 172.8	FT
BASE DISCHARGE	= 257	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 173.5	FT
OVERTOPPING DISCHARGE	= 500	CFS
OVERTOPPING FREQUENCY	= 500±	YRS
OVERTOPPING ELEVATION	= 179.4	FT

PI = 36+78.00
EL = 178.60'
VC = 552'
K = 181
DS = 70 MPH



FUTURE I-295



9/5/2018
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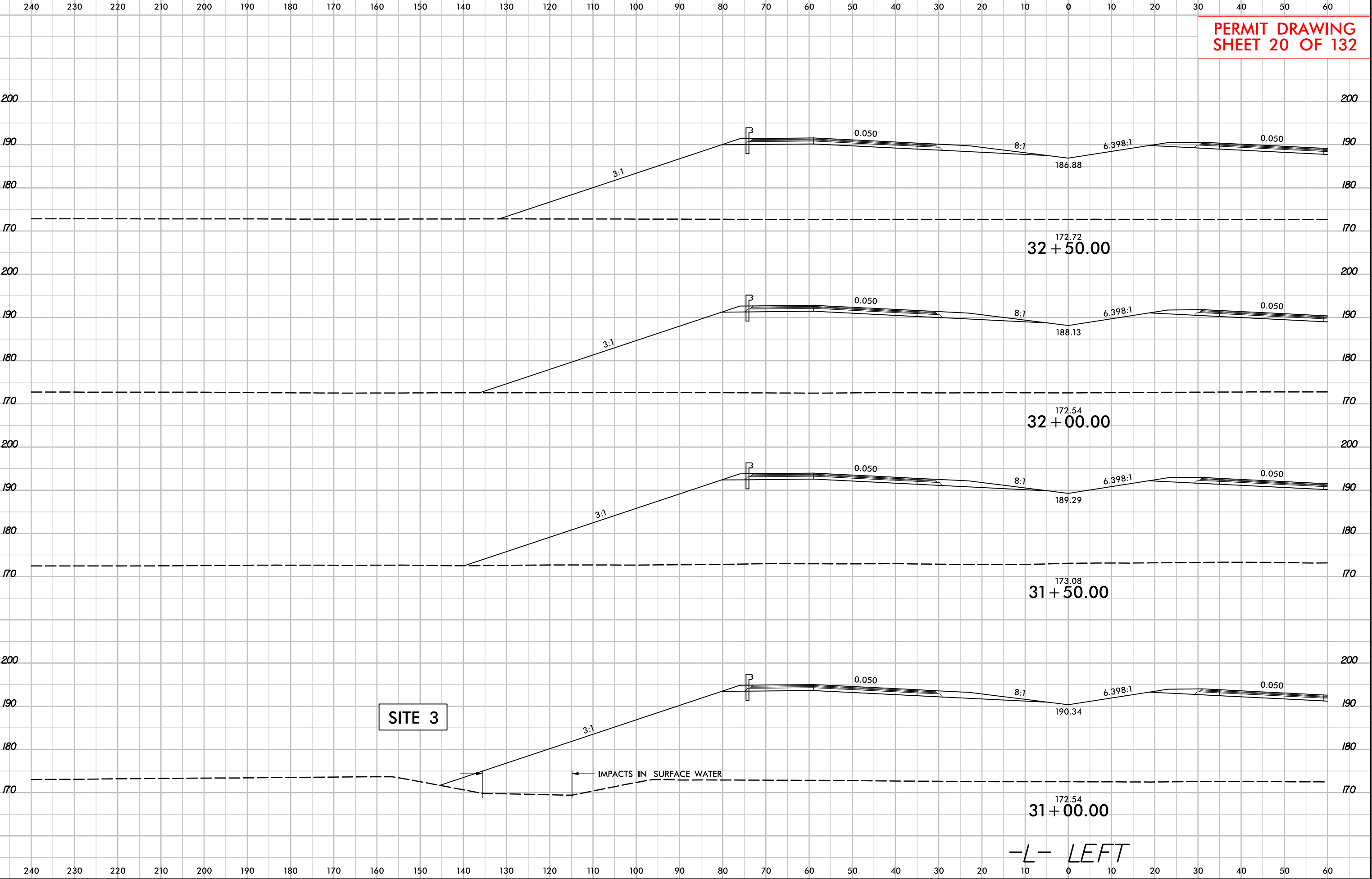
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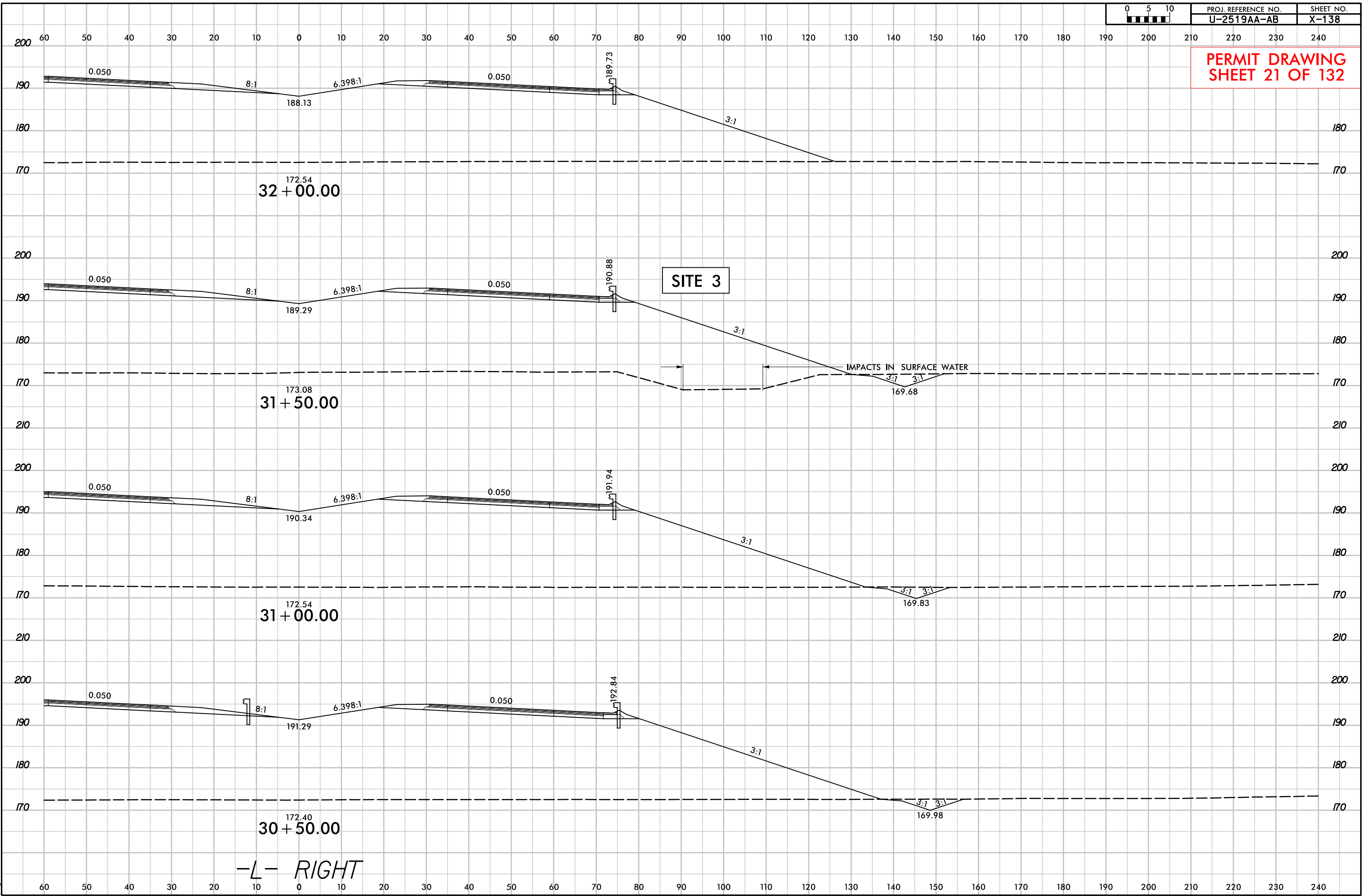
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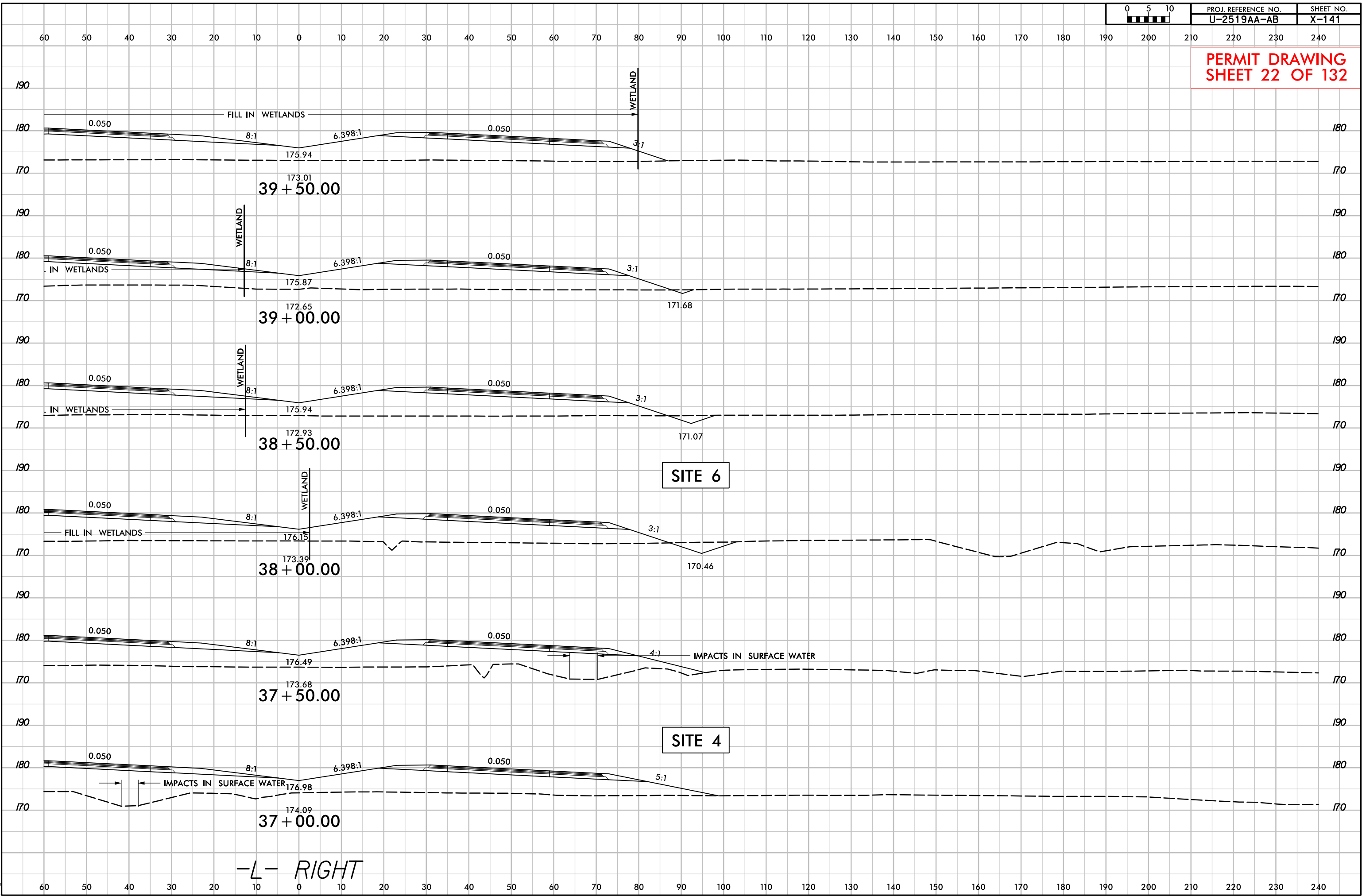


PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-12

PERMIT DRAWING
SHEET 20 OF 132

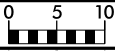


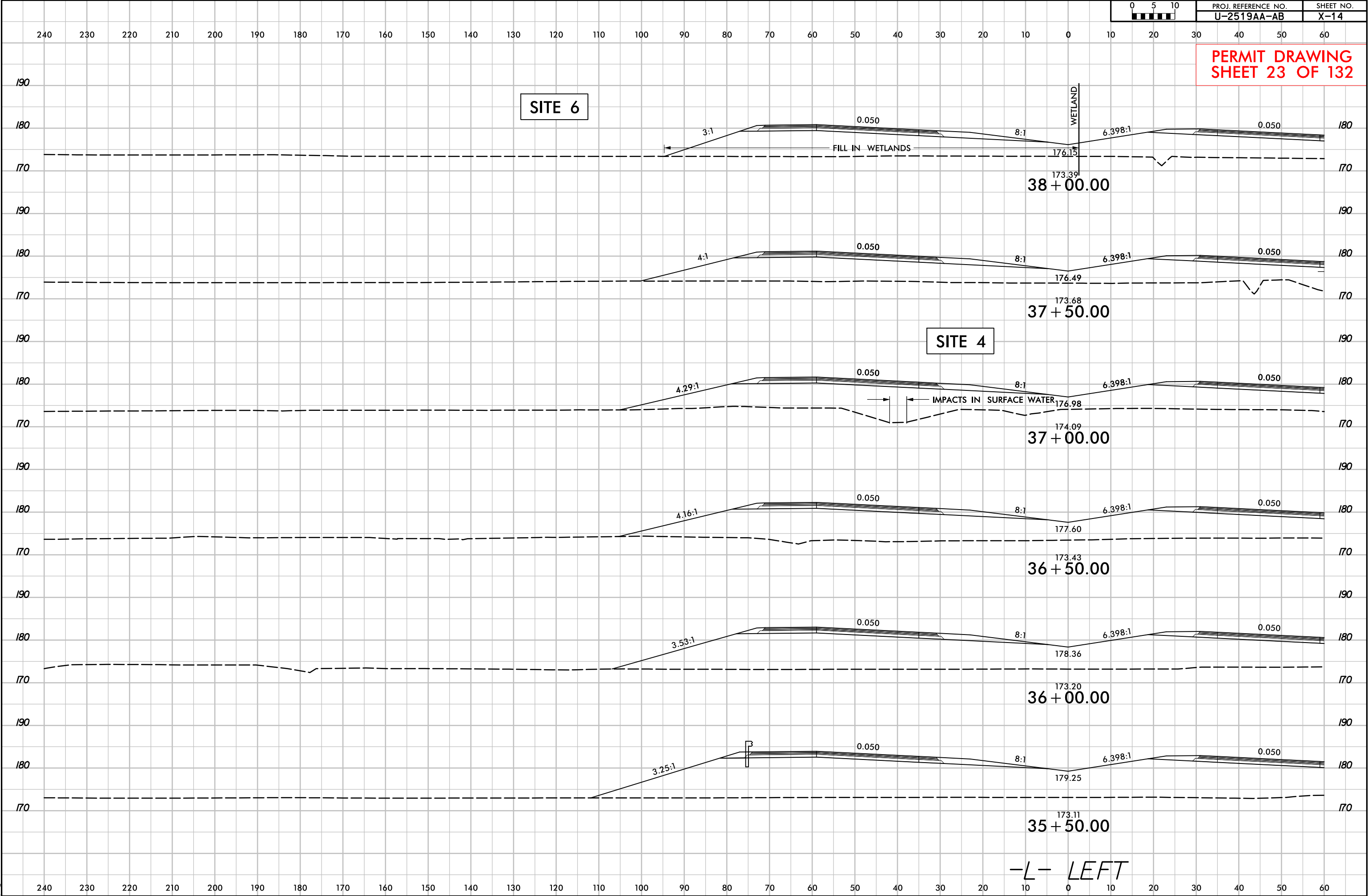




6/23/16

9/5/2018
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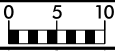
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	U-2519AA-AB	X-14



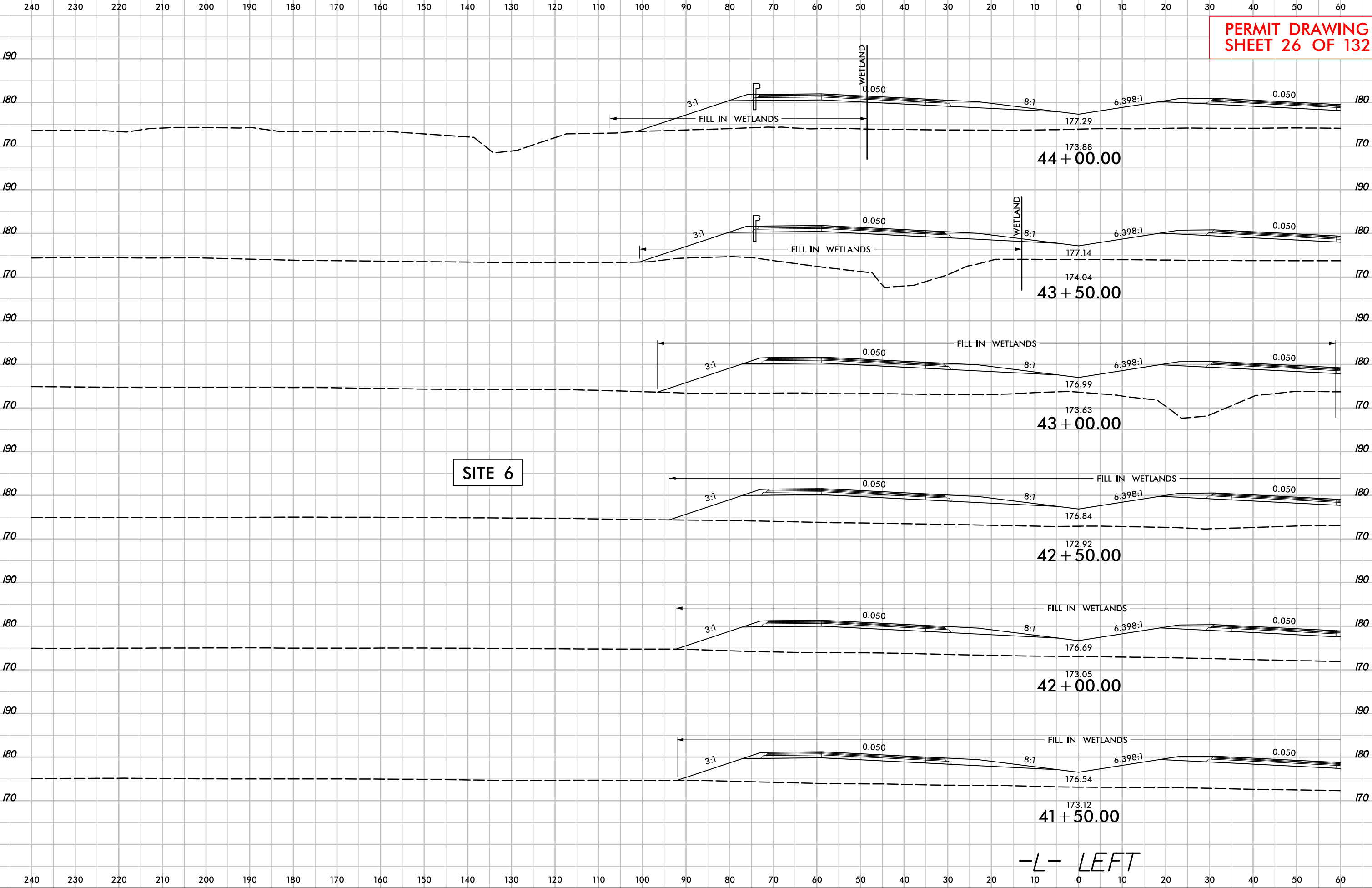


6/23/16

9/5/2018
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	PROJ. REFERENCE NO.	SHEET NO.
	U-2519AA-AB	X-16

PERMIT DRAWING
SHEET 26 OF 132



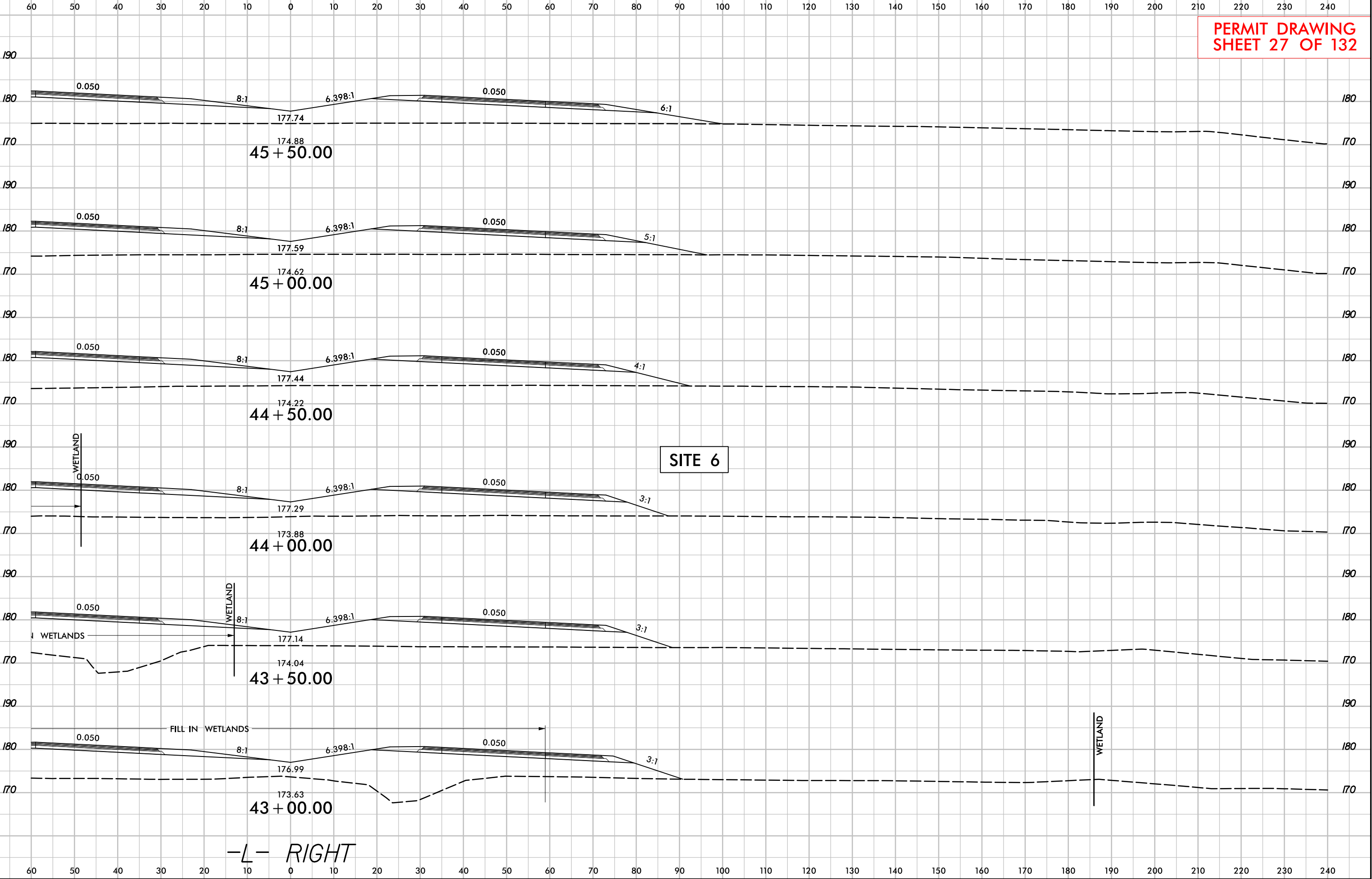
6/23/16

9/5/2018
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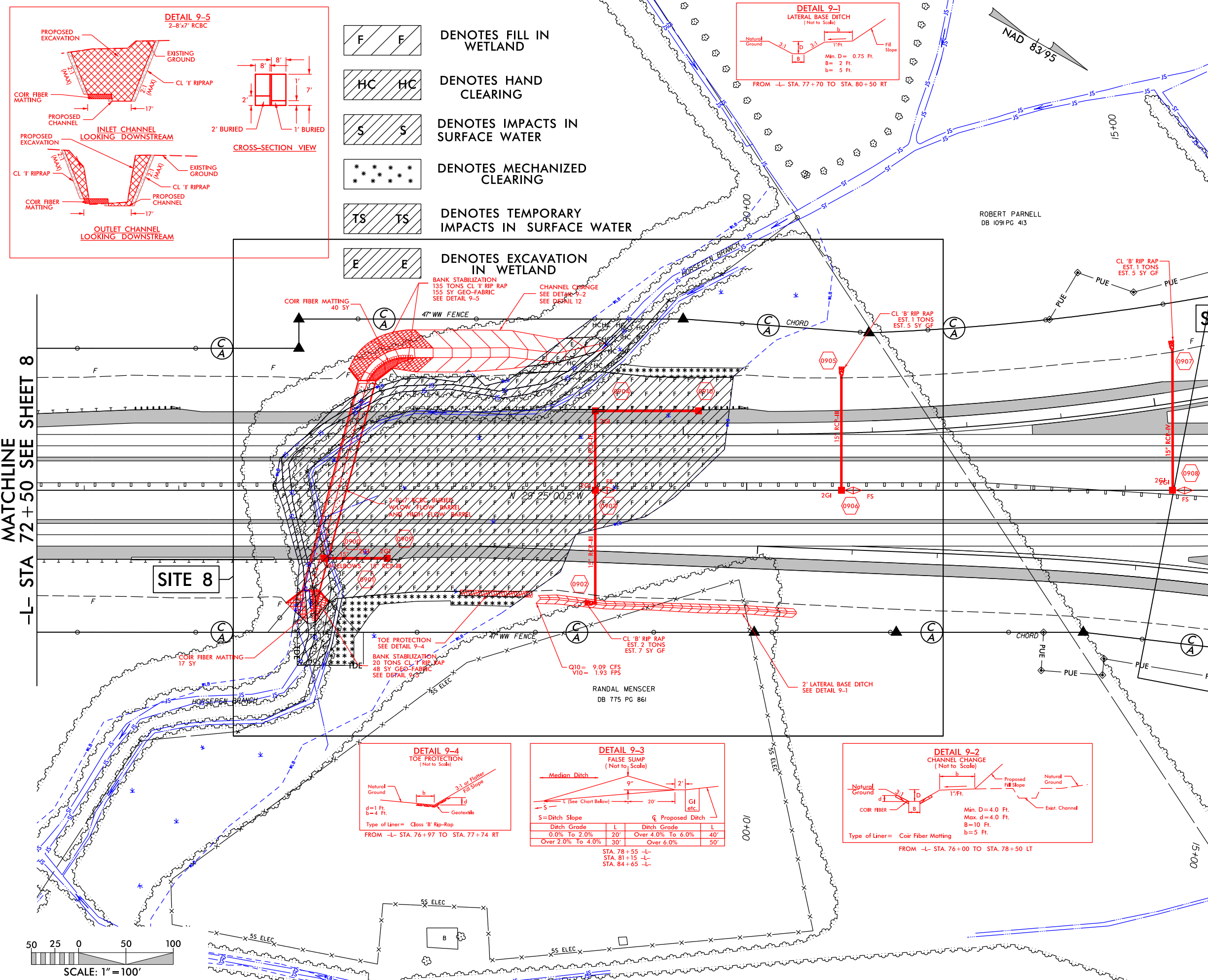


PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-143

PERMIT DRAWING
SHEET 27 OF 132

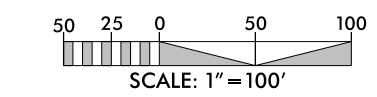


-L- RIGHT



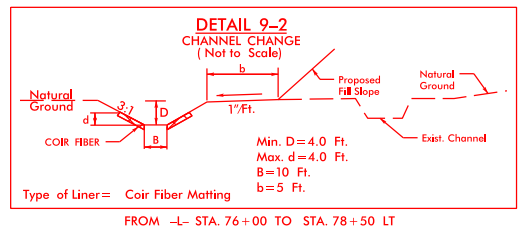
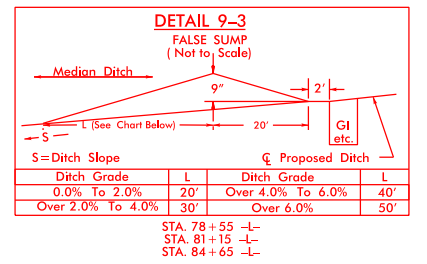
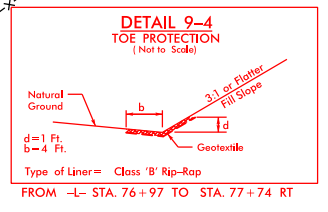
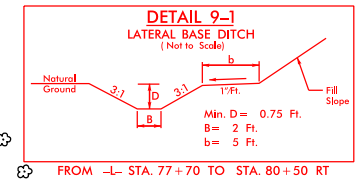
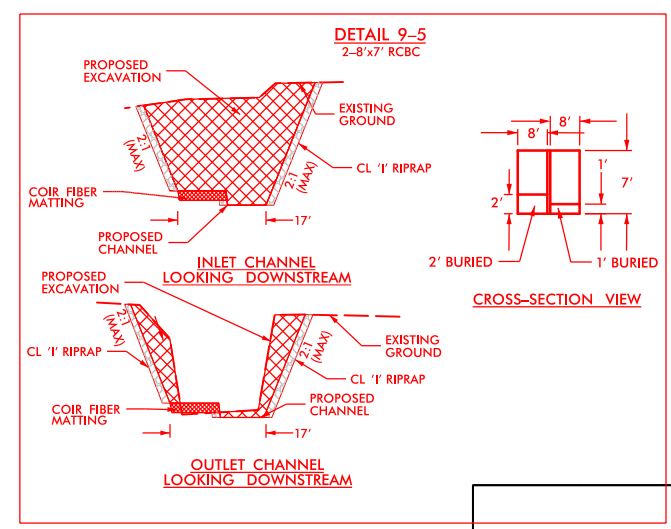
MATCHLINE -L- STA 72+50 SEE SHEET 8

MATCHLINE -L- STA 86+50 SEE SHEET 10
-YTRPB- STA 17+00
-YTRPC- STA 16+50

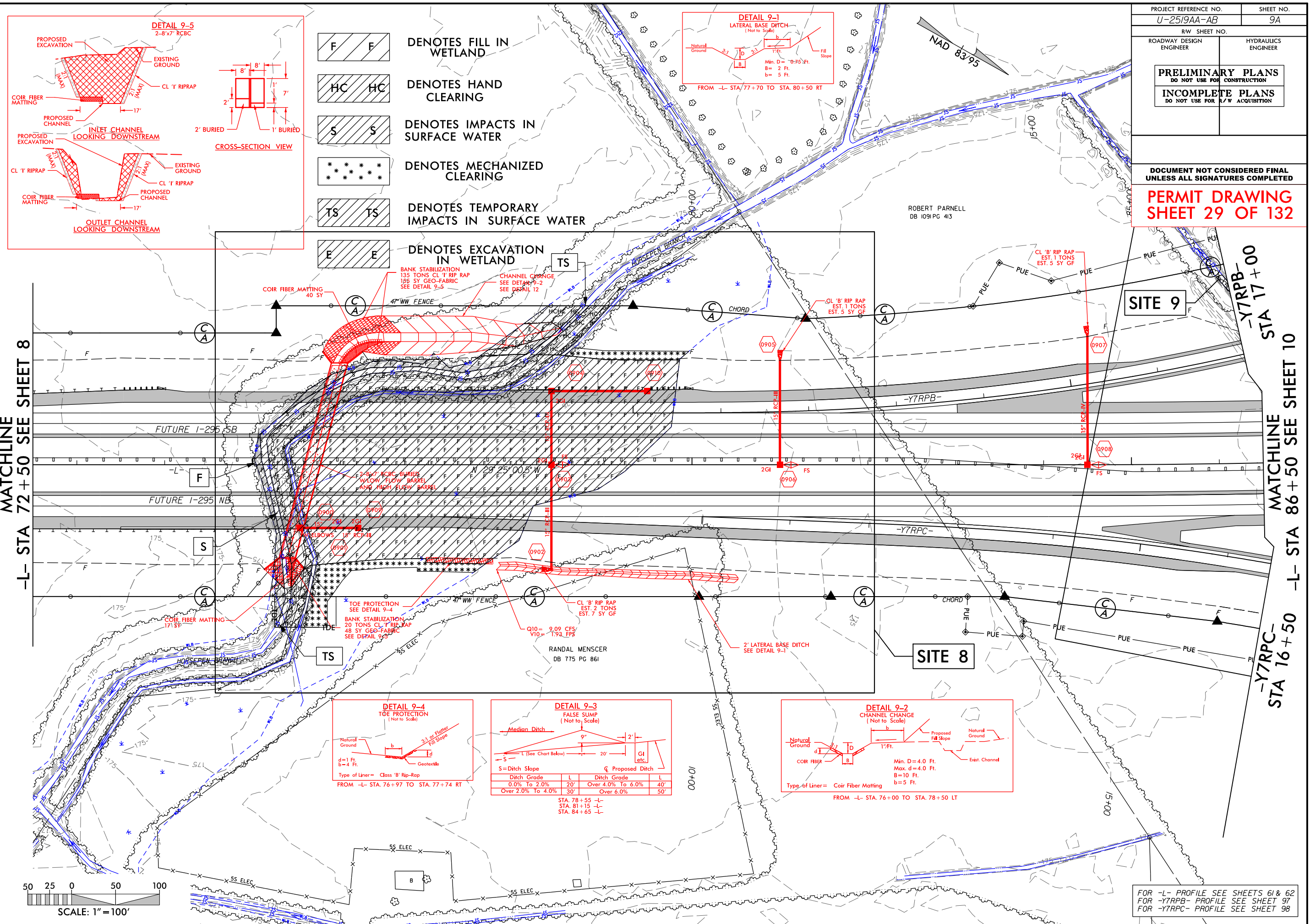


FOR -L- PROFILE SEE SHEETS 61 & 62
FOR -YTRPB- PROFILE SEE SHEET 97
FOR -YTRPC- PROFILE SEE SHEET 98

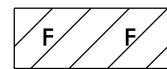
- F F DENOTES FILL IN WETLAND
- HC HC DENOTES HAND CLEARING
- S S DENOTES IMPACTS IN SURFACE WATER
- * * * * * DENOTES MECHANIZED CLEARING
- TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- E E DENOTES EXCAVATION IN WETLAND



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9/5/2018
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DENOTES FILL IN
WETLAND



DENOTES MECHANIZED
CLEARING



DENOTES EXCAVATION
IN WETLAND



DENOTES HAND
CLEARING



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



DENOTES IMPACTS IN
SURFACE WATER

BANK STABILIZATION
135 TONS CL '1' RIP RAP
155 SY GEO-FABRIC
SEE DETAIL 9-5

CHANNEL CHANGE
SEE DETAIL 9-2
SEE DETAIL 12

SITE 8

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 9B
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 30 OF 132

CL '8" RIP RAP
EST. 1 TONS
EST. 5 SY GF

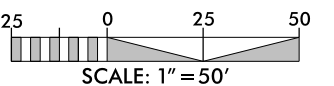
15" RCP-III

2GI

0906

FS

RANDAL MENSCHER
DB 775 PG 861



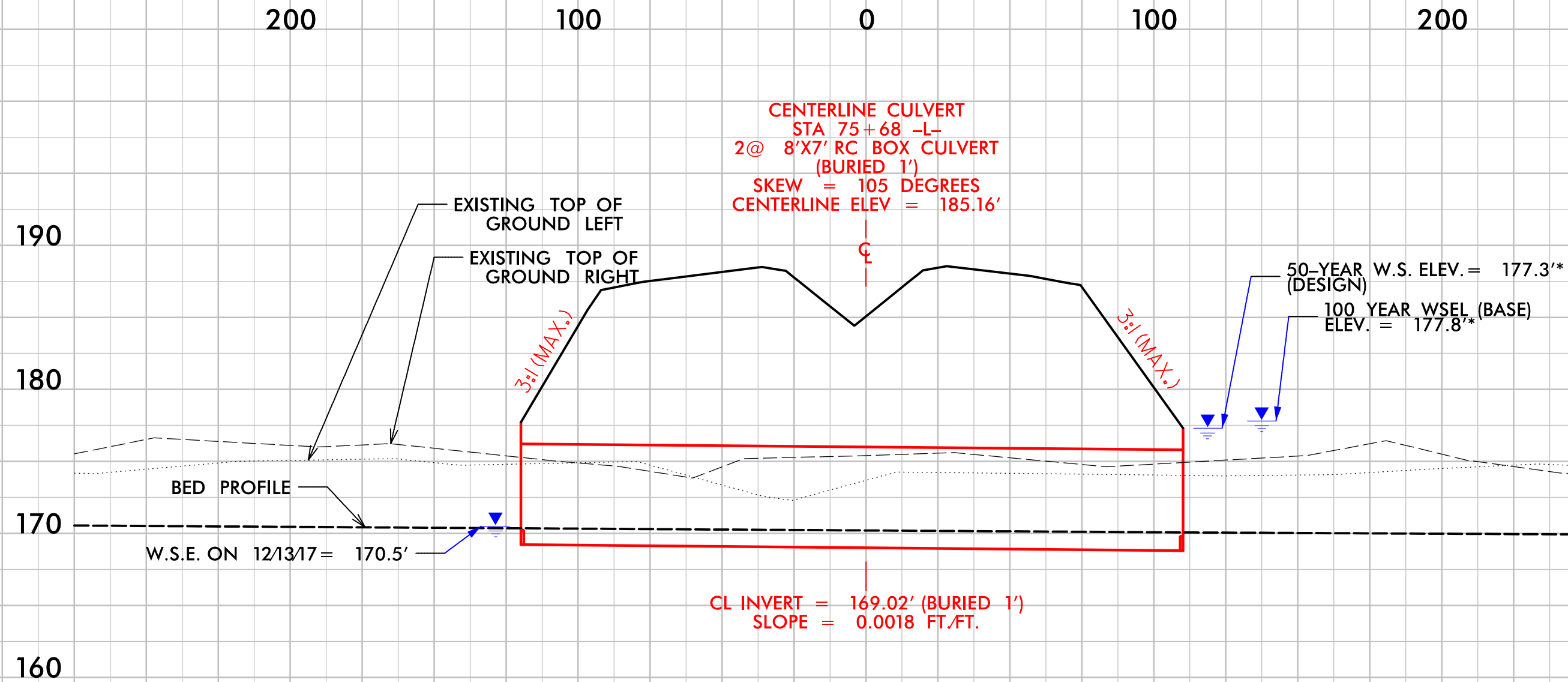
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6/23/16

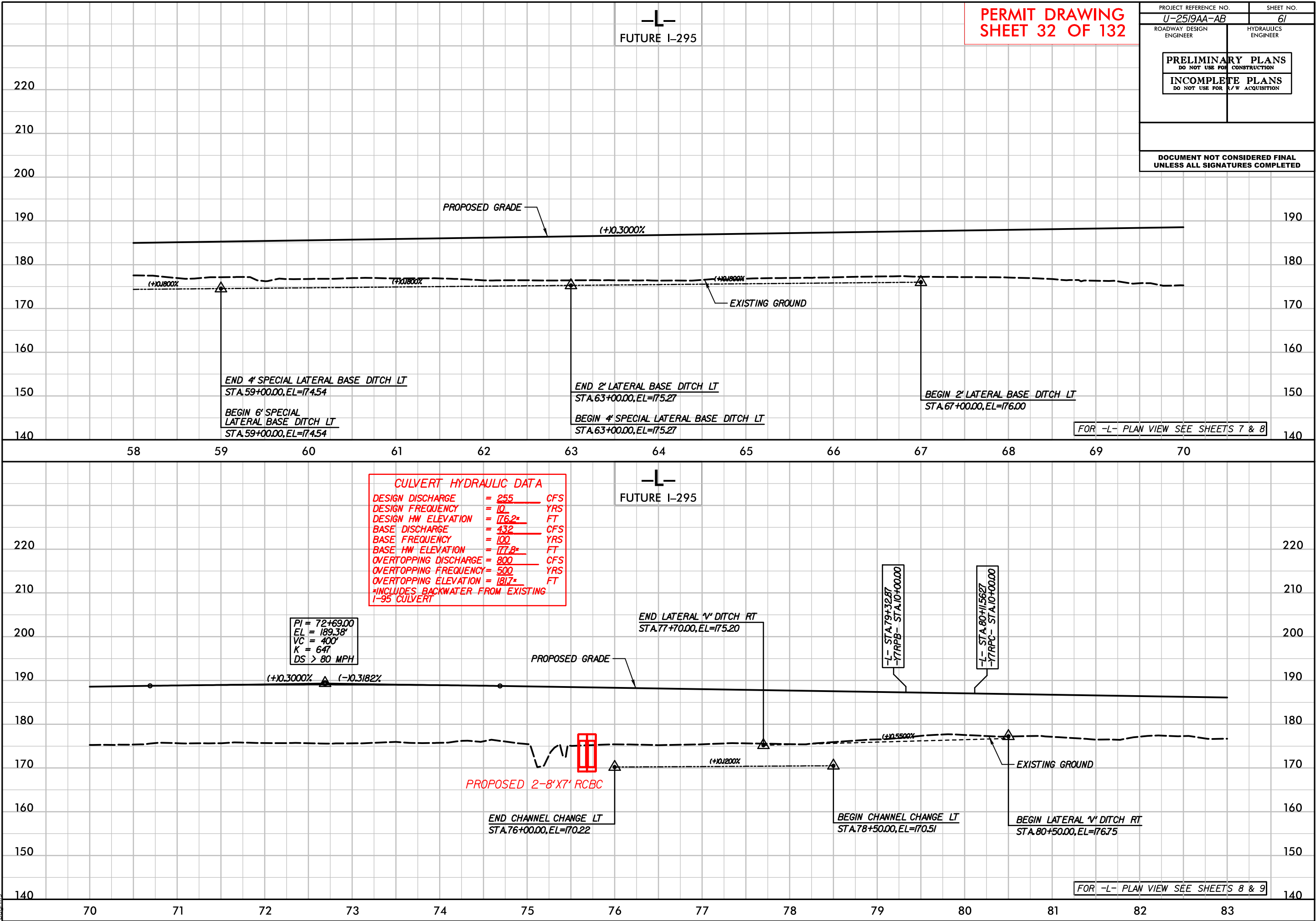
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PERMIT DRAWING
SHEET 31 OF 132

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 9C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



9/5/2018
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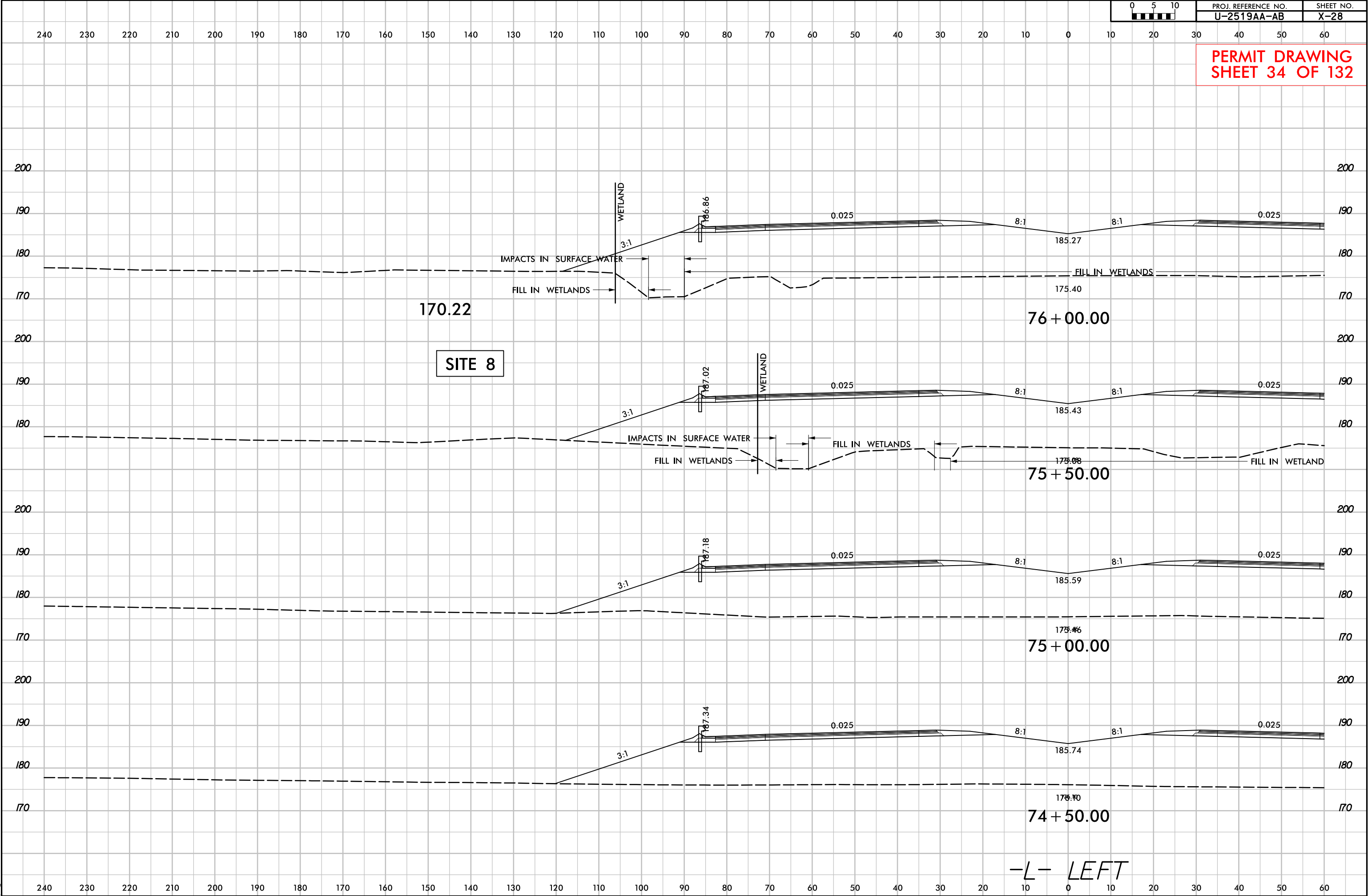
6/23/16

9/5/2018
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PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-28

PERMIT DRAWING
SHEET 34 OF 132



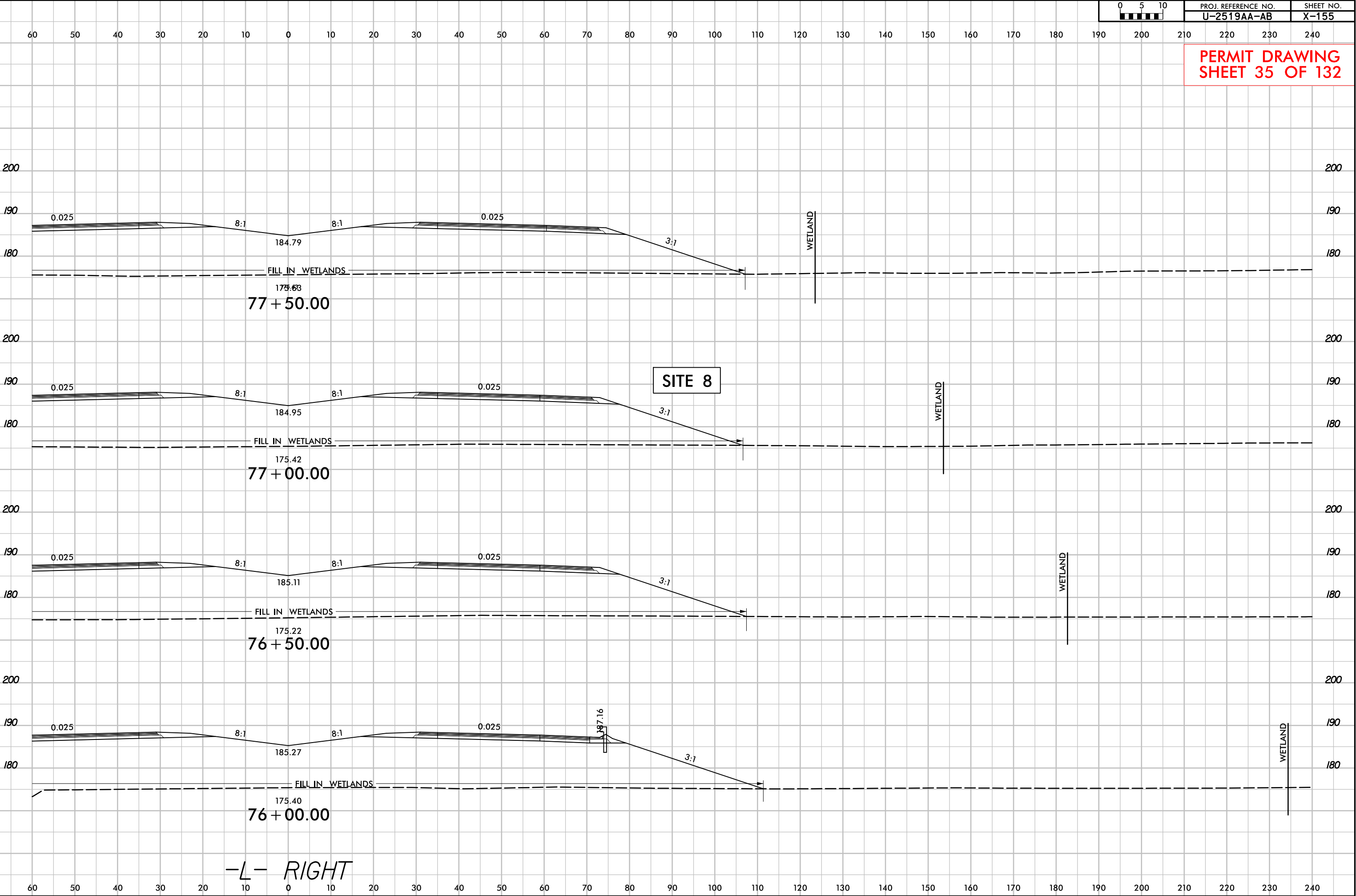
6/23/16

9/5/2018
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pugin



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-155

PERMIT DRAWING
SHEET 35 OF 132



-L- RIGHT

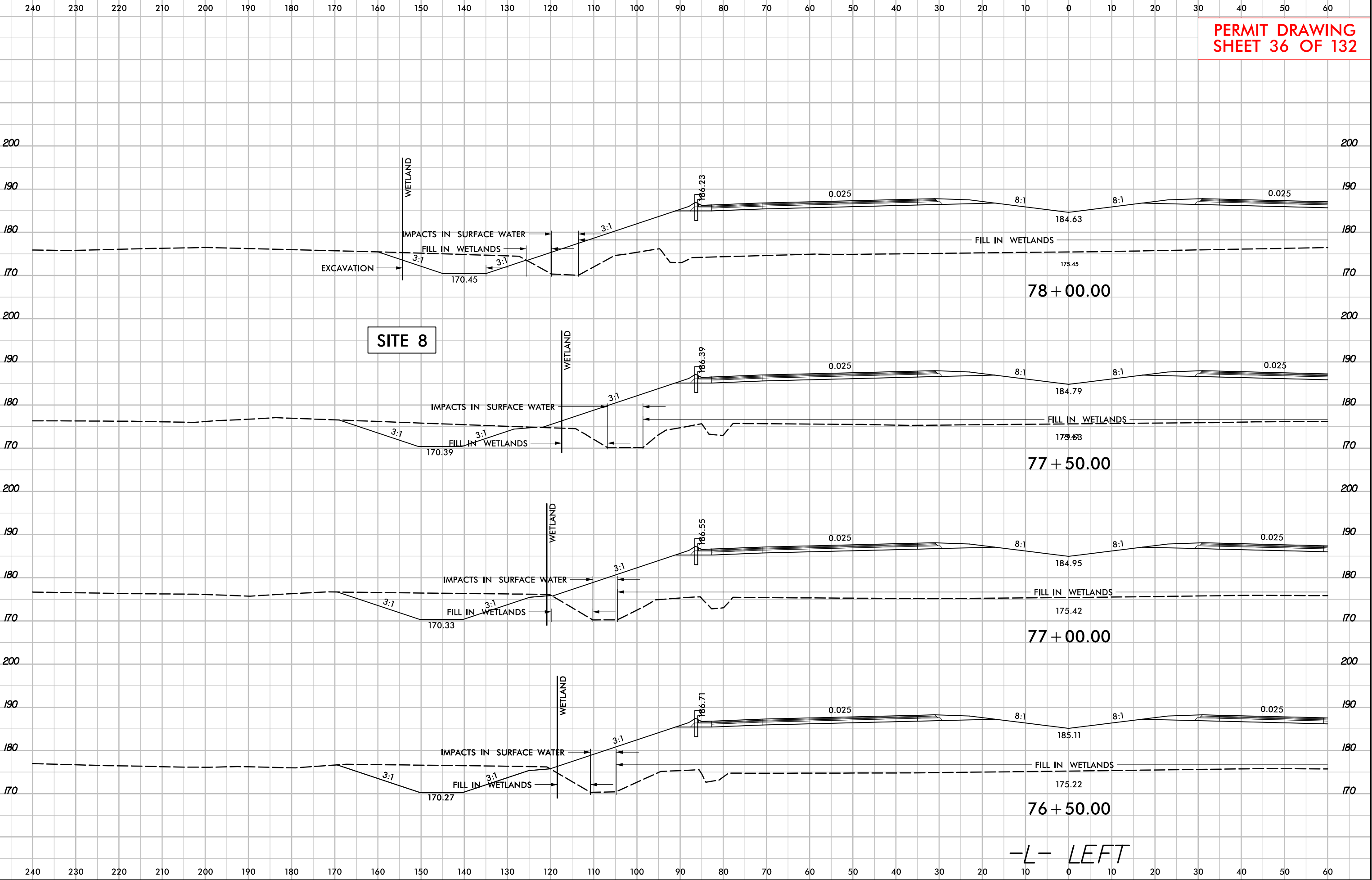
6/23/16

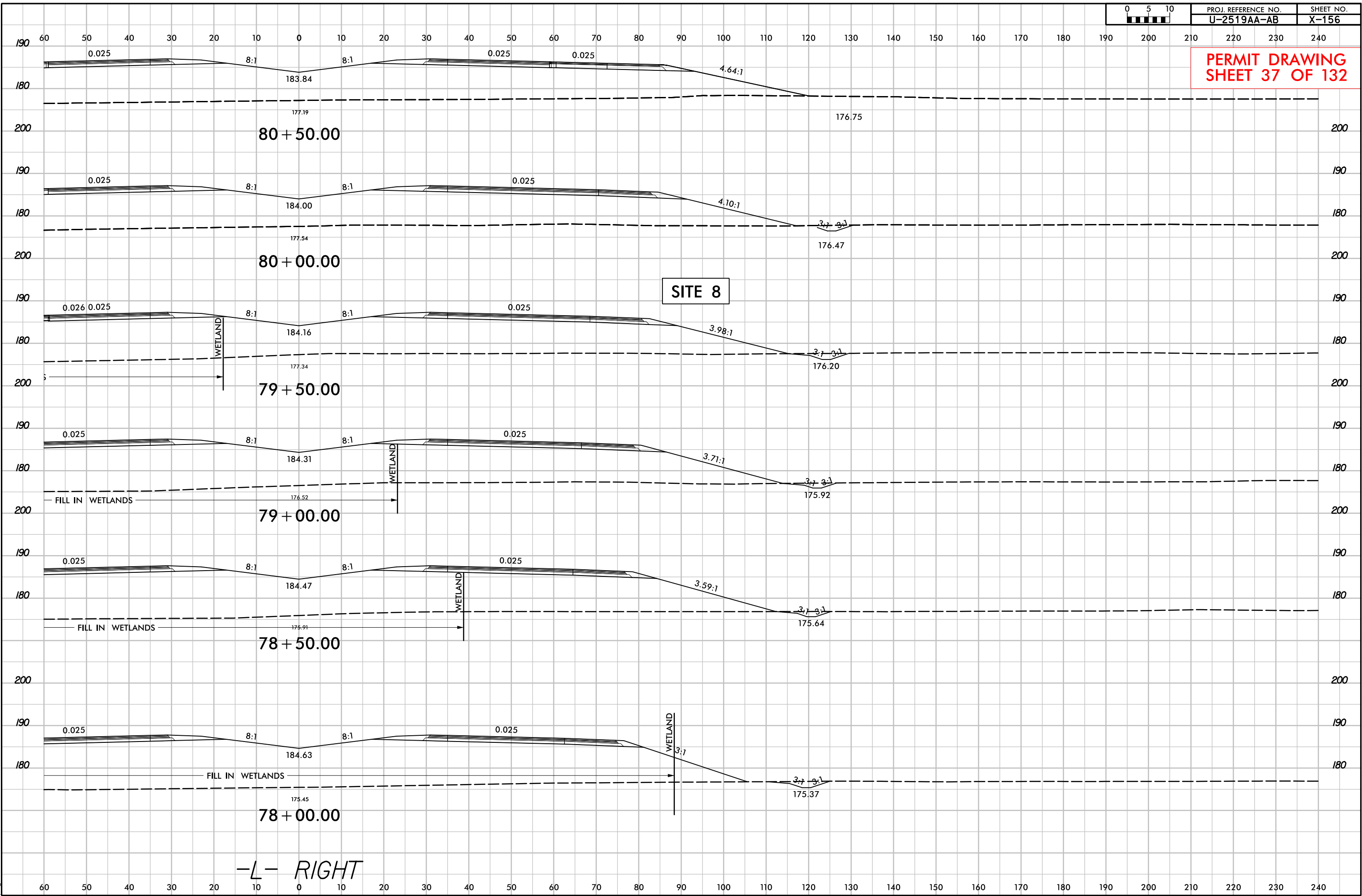
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PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-29

PERMIT DRAWING
SHEET 36 OF 132



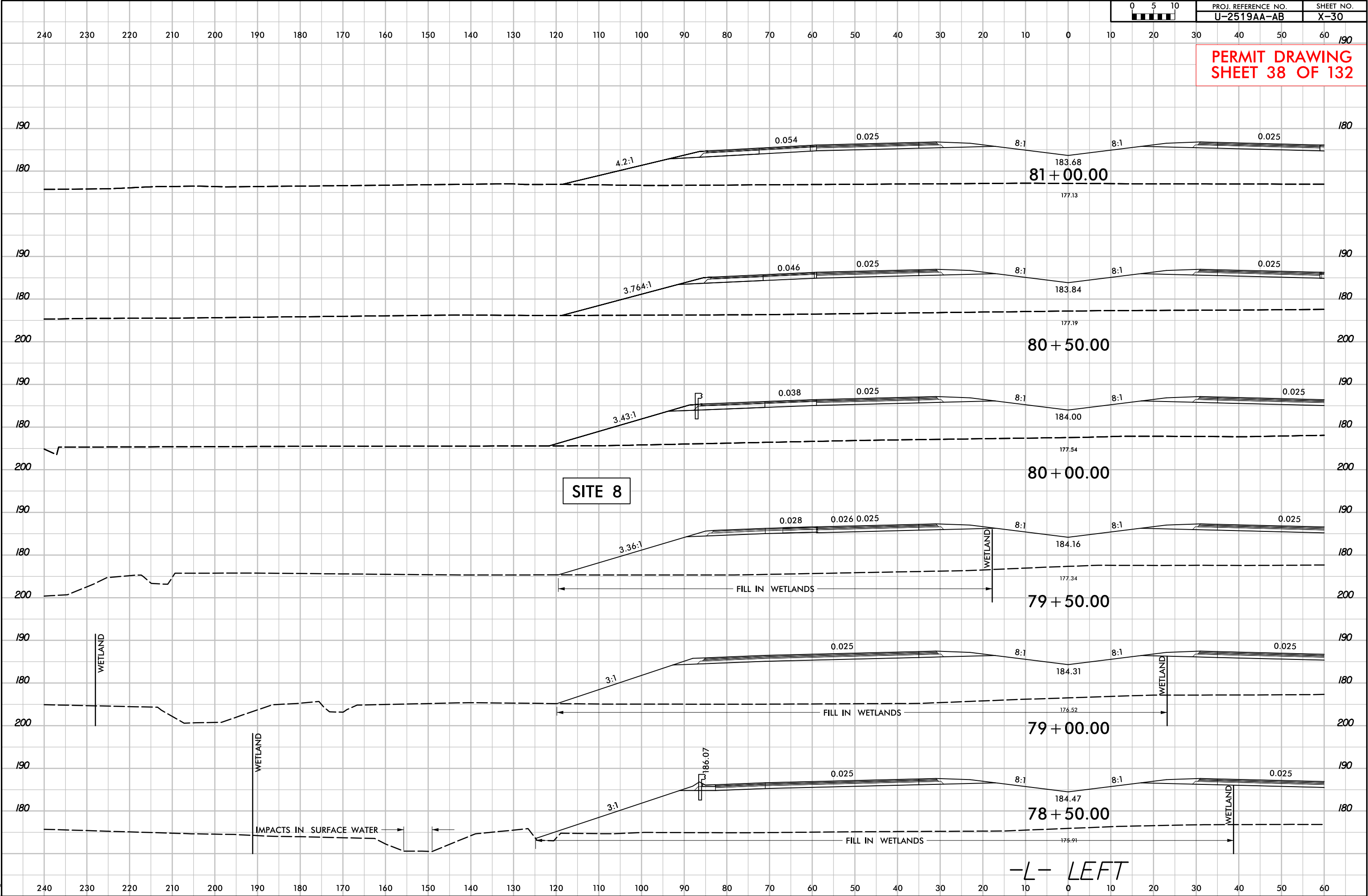


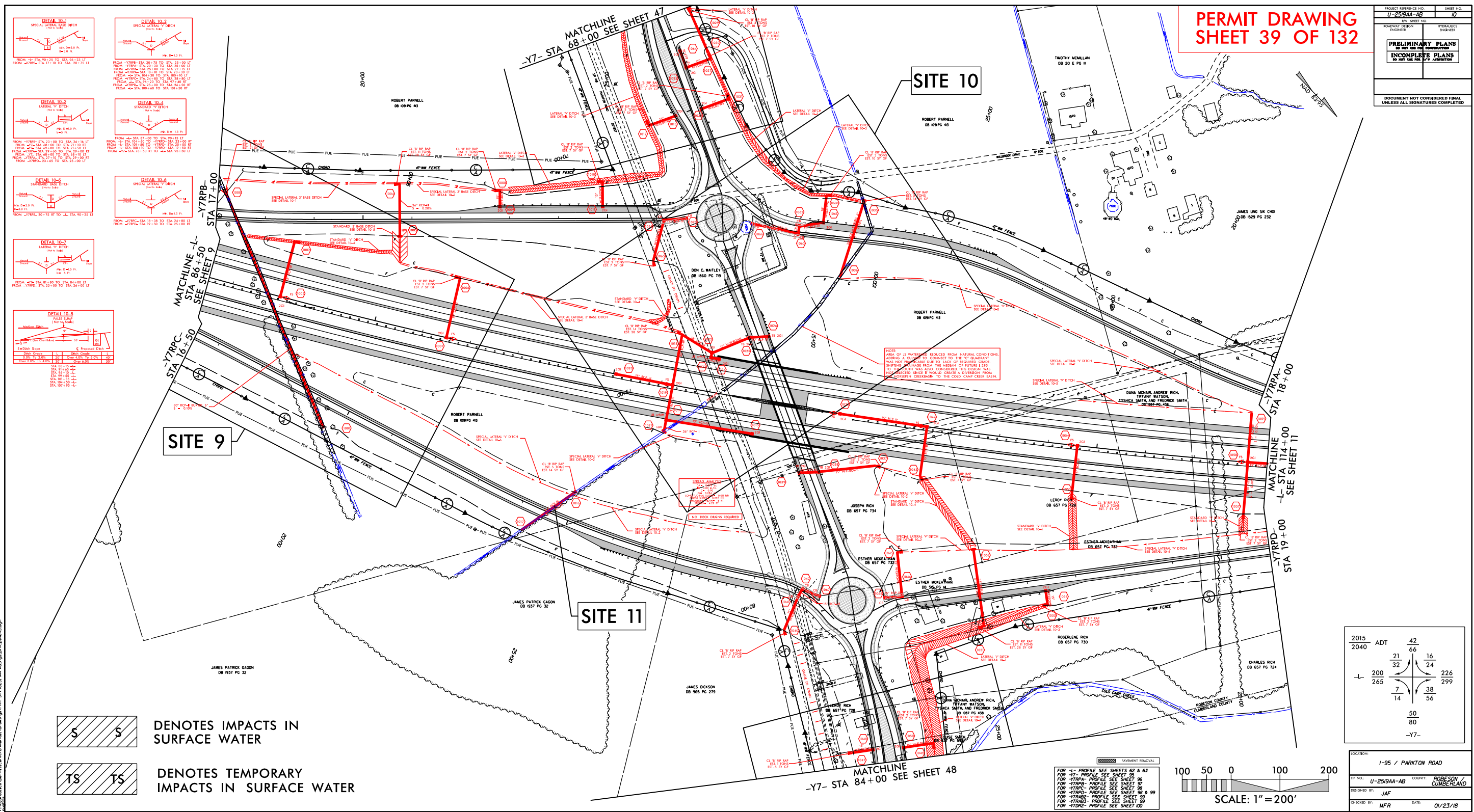
6/23/16

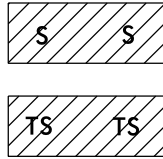
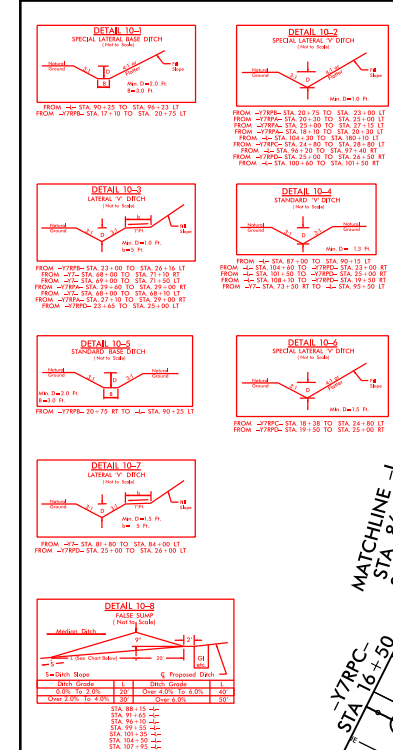
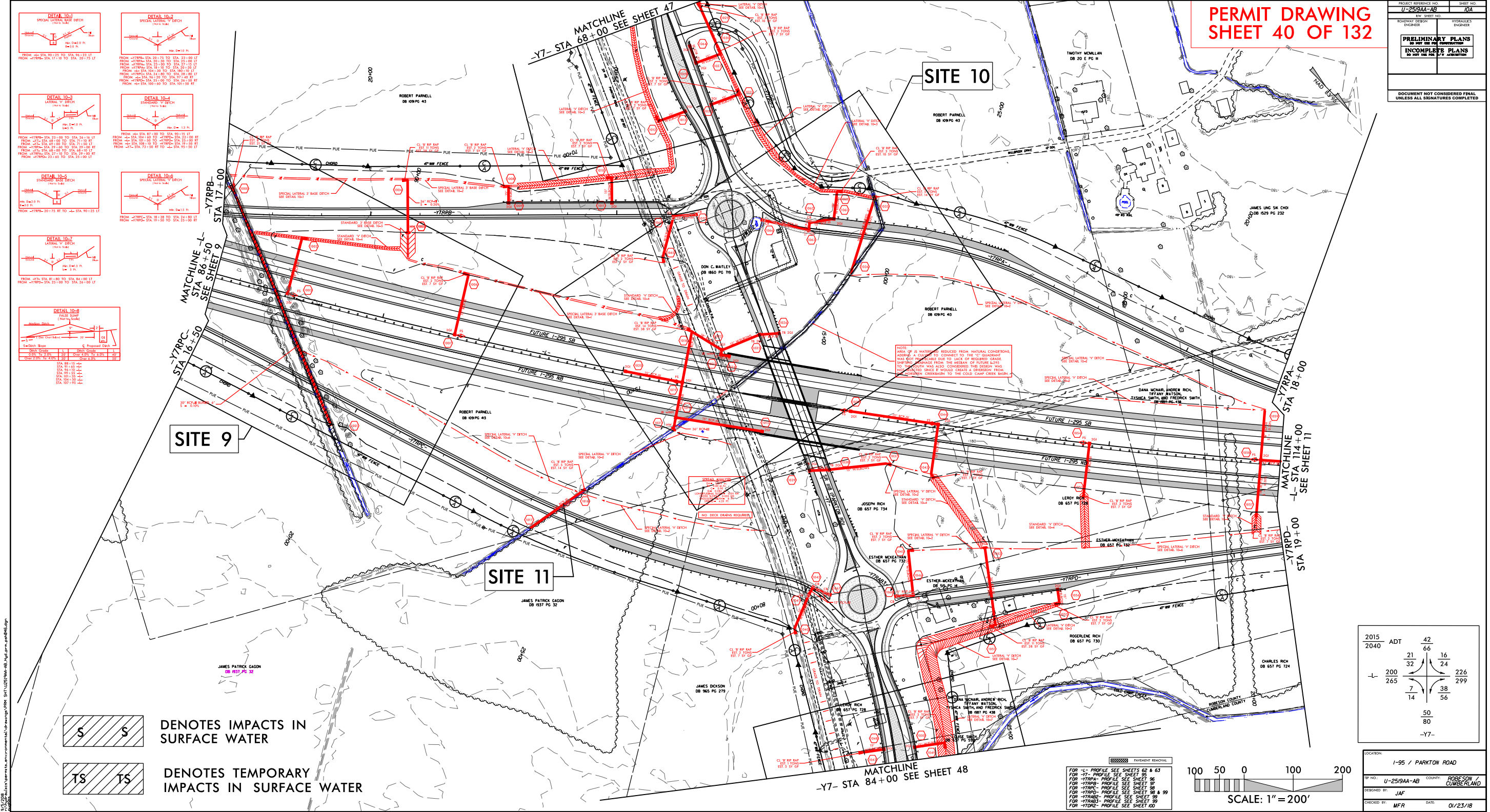
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pugmms

	PROJ. REFERENCE NO.	SHEET NO.
	U-2519AA-AB	X-30

PERMIT DRAWING
SHEET 38 OF 132







S DENOTES IMPACTS IN SURFACE WATER

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

**PERMIT DRAWING
SHEET 40 OF 132**

PROJECT REFERENCE NO.	SHEET NO.
U-25/9AA-AB	04
RD. SHEET NO.	
ROADWAY DESIGN	HYDRAULICS
ENGINEER	ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

2015	ADT	42
2040		66
	21	16
	32	24
200		226
265	7	38
	14	56
	50	
	80	
	-Y7-	

FOR "L" PROFILE SEE SHEETS 62 & 63
FOR "Y7" PROFILE SEE SHEET 95
FOR "Y7RA" PROFILE SEE SHEET 96
FOR "Y7RB" PROFILE SEE SHEET 97
FOR "Y7RC" PROFILE SEE SHEET 98
FOR "Y7RD" PROFILE SEE SHEET 99
FOR "Y7RE" PROFILE SEE SHEET 100

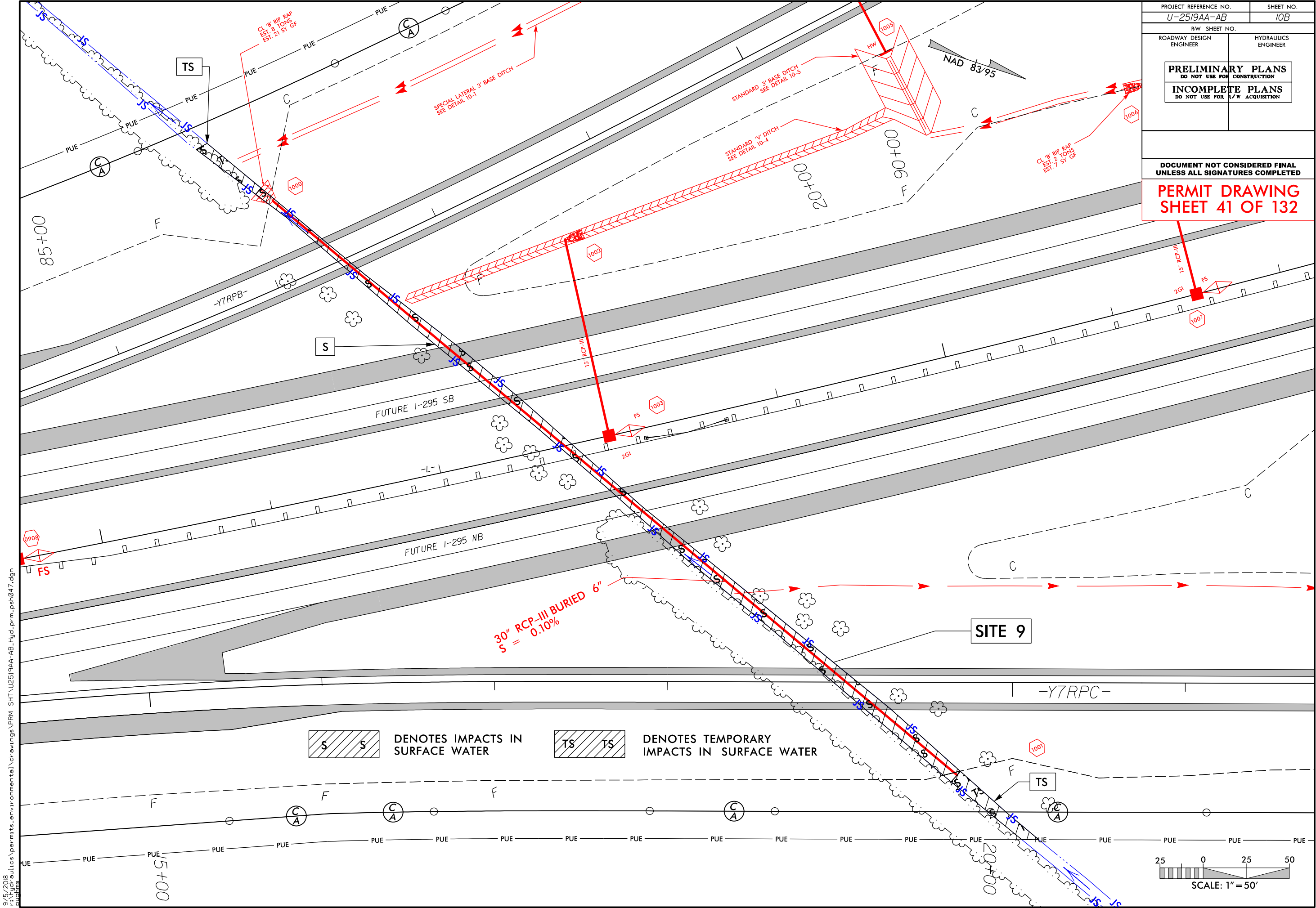


LOCATION:	I-95 / PARKTON ROAD
TP NO.:	U-25/9AA-AB
COUNTY:	ROBERTSON / CUMBERLAND
DESIGNED BY:	JAF
CHECKED BY:	MFR
DATE:	01/23/18

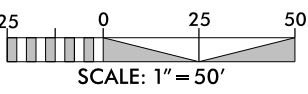
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U-25/9AA-AB	10B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

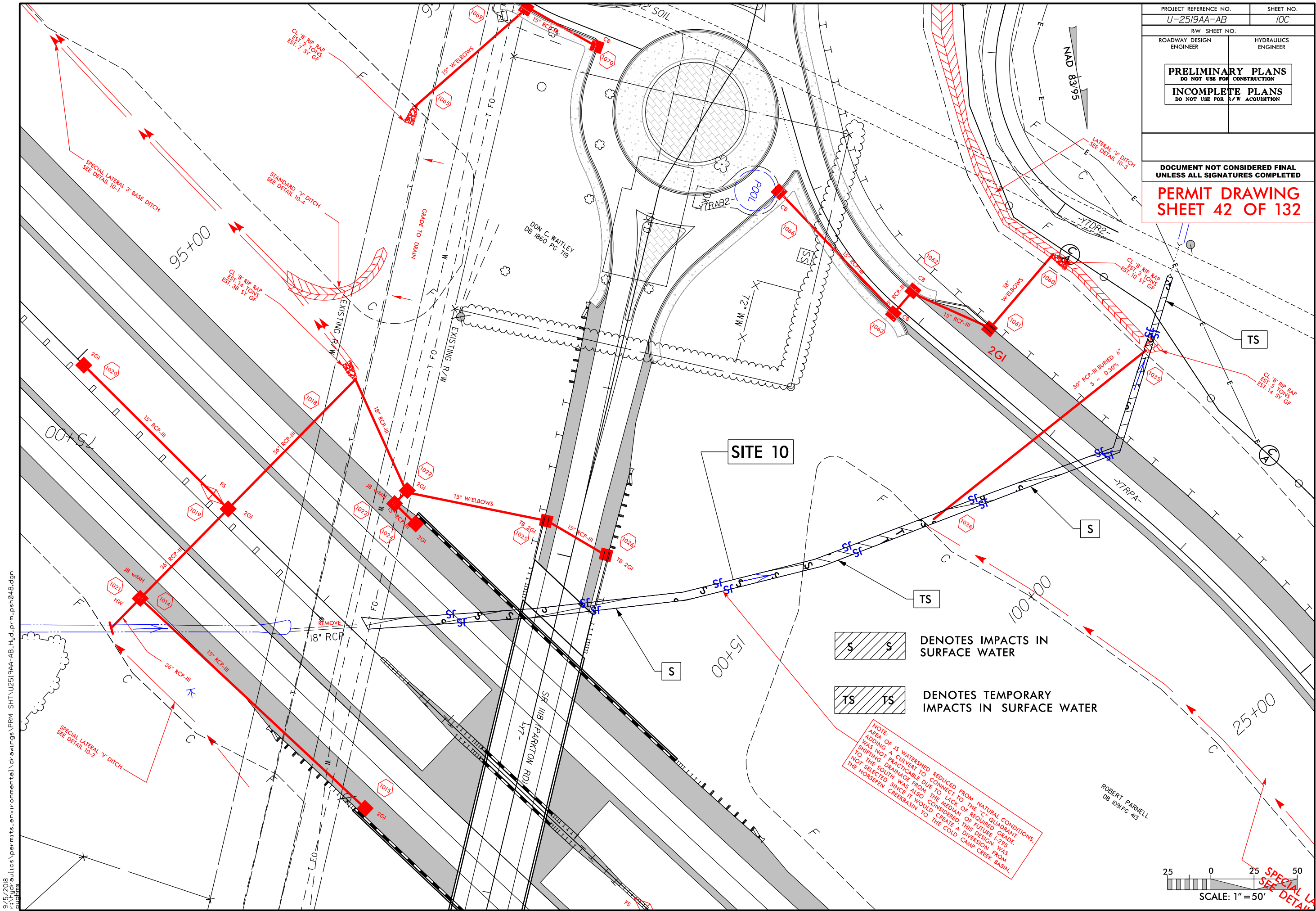
PERMIT DRAWING
SHEET 41 OF 132



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



9/5/2018
9:11:00
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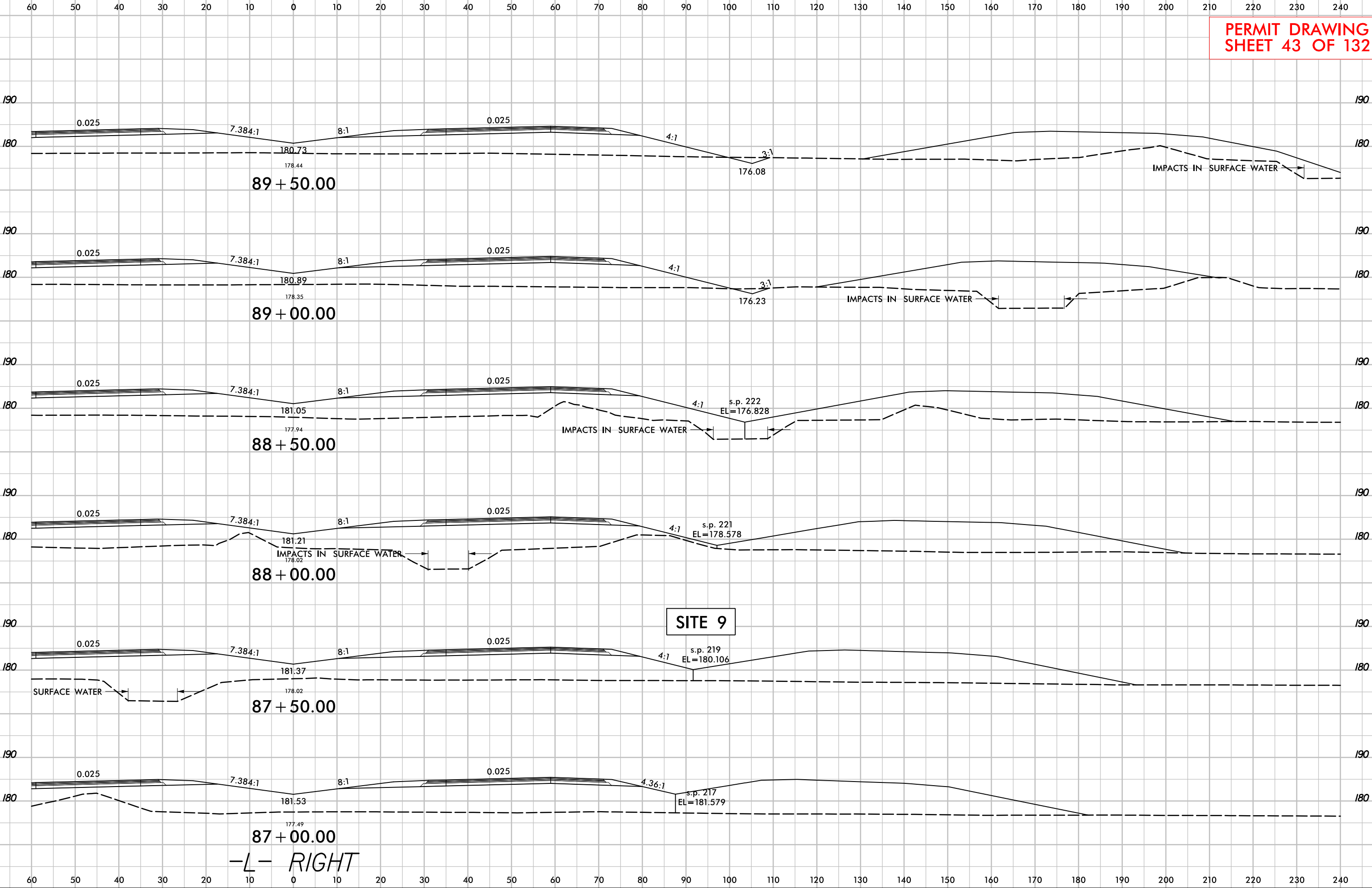


6/23/16



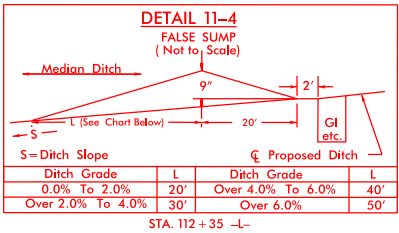
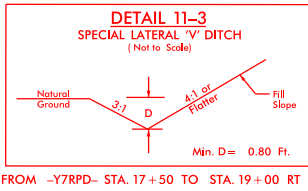
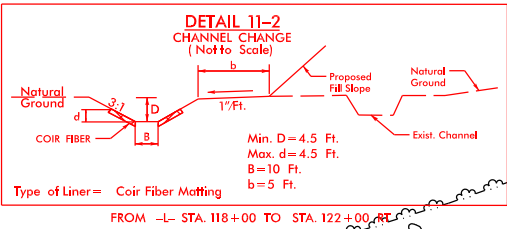
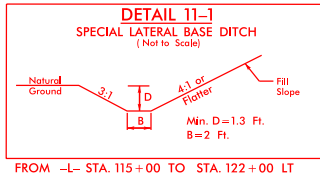
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U-2519AA-AB	X-159

PERMIT DRAWING
SHEET 43 OF 132



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9/5/2018
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pugmms



PROJECT REFERENCE NO. **U-2519AA-AB** SHEET NO. **11**

R/W SHEET NO.

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 45 OF 132

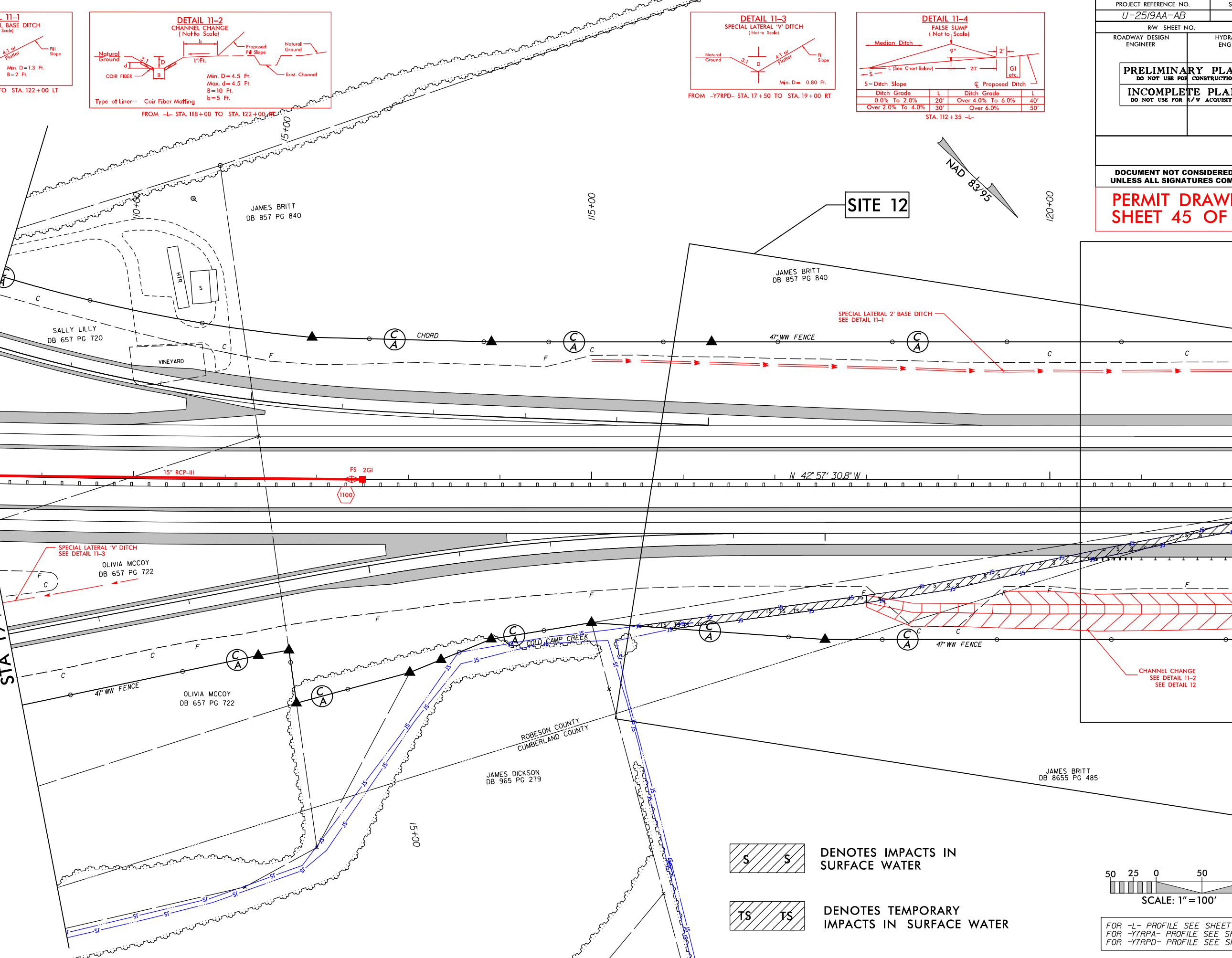
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-Y7RPA- STA 18+00

-Y7RPD- STA 19+00

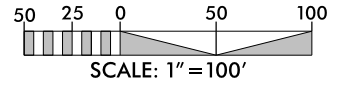
MATCHLINE -L- STA 122+00 SEE SHEET 12

9/5/2018 bulitics\permits_environmental\drawings\PRM_SHT\U2519AA-AB_Hyd_prm_psh054.dgn



DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER



FOR -L- PROFILE SEE SHEET 63
FOR -Y7RPA- PROFILE SEE SHEET 96
FOR -Y7RPD- PROFILE SEE SHEET 98

JAMES BRITT
DB 857 PG 840

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL 11-1

NAD 83/95

120+00

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL 12-3

PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	11B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING
SHEET 47 OF 132**

FUTURE I-295 SB

N 42° 57' 30.8" W

-L-

FUTURE I-295 NB

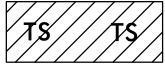
SITE 12

CHANNEL CHANGE
SEE DETAIL 12-4
SEE DETAIL 12

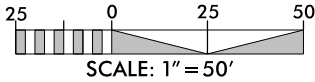
CHANNEL CHANGE
SEE DETAIL 11-2
SEE DETAIL 12



DENOTES IMPACTS IN
SURFACE WATER



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



JAMES BRITT
DB 8655 PG 485

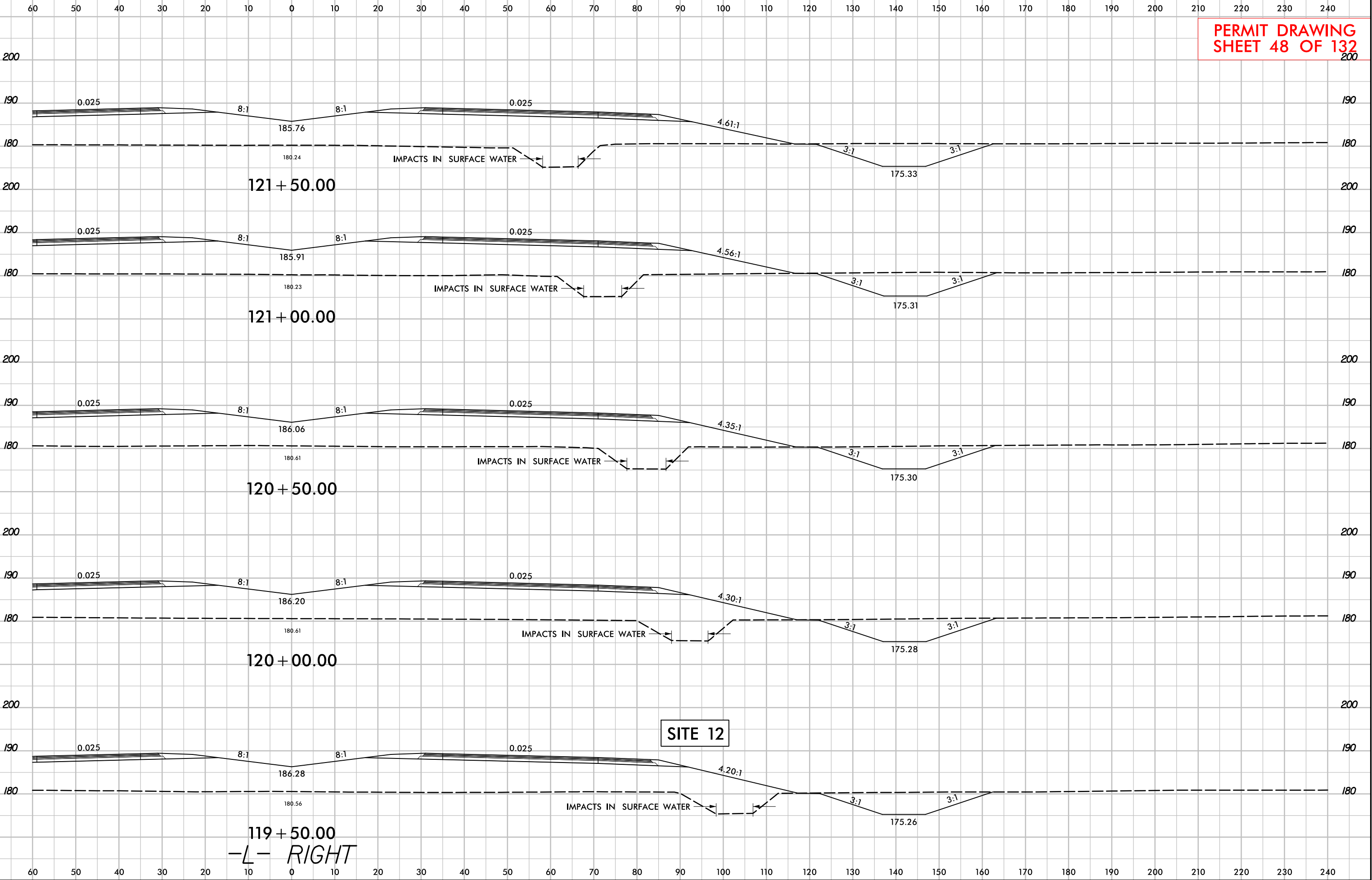
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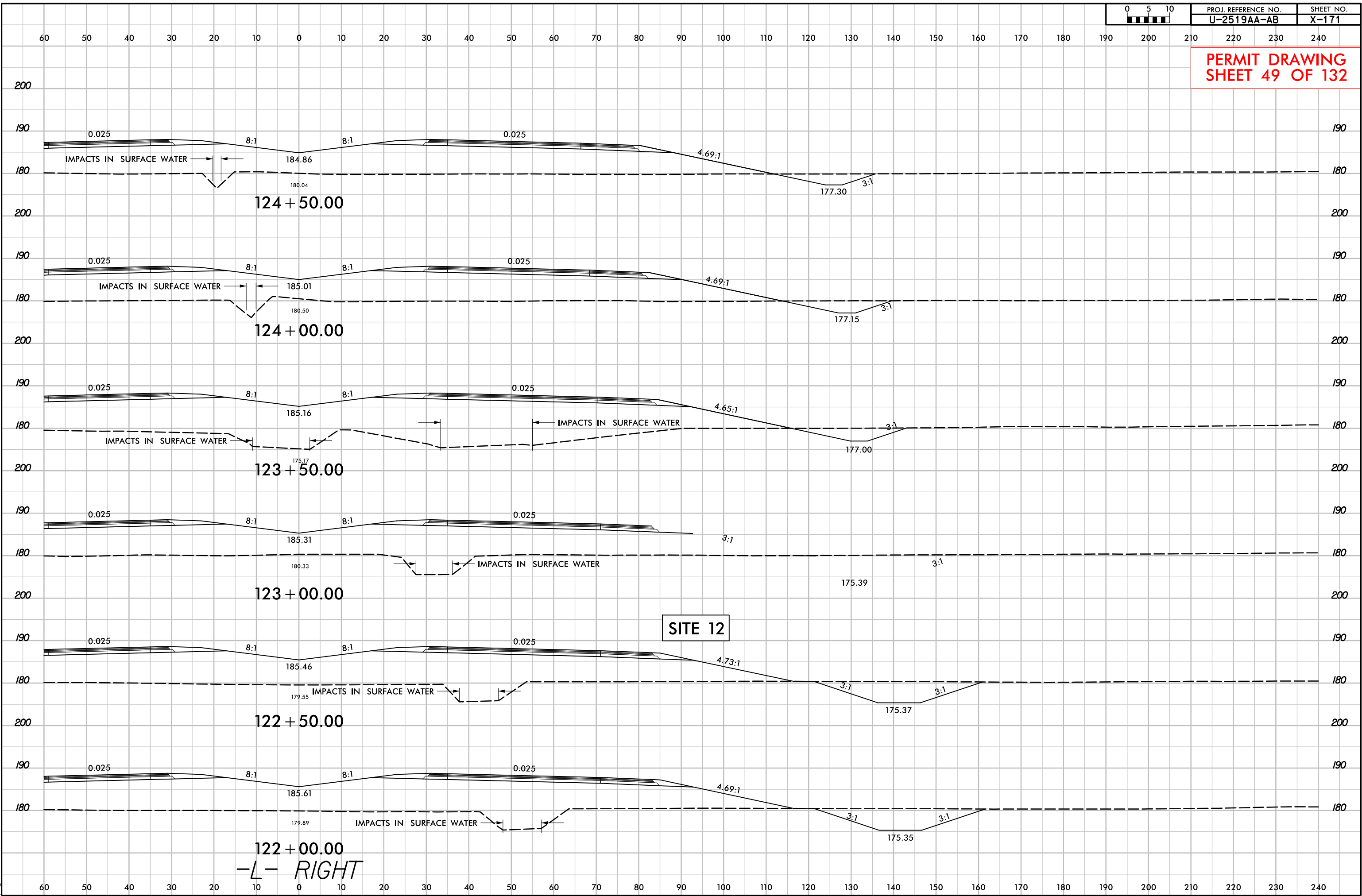
6/23/16

9/5/2018
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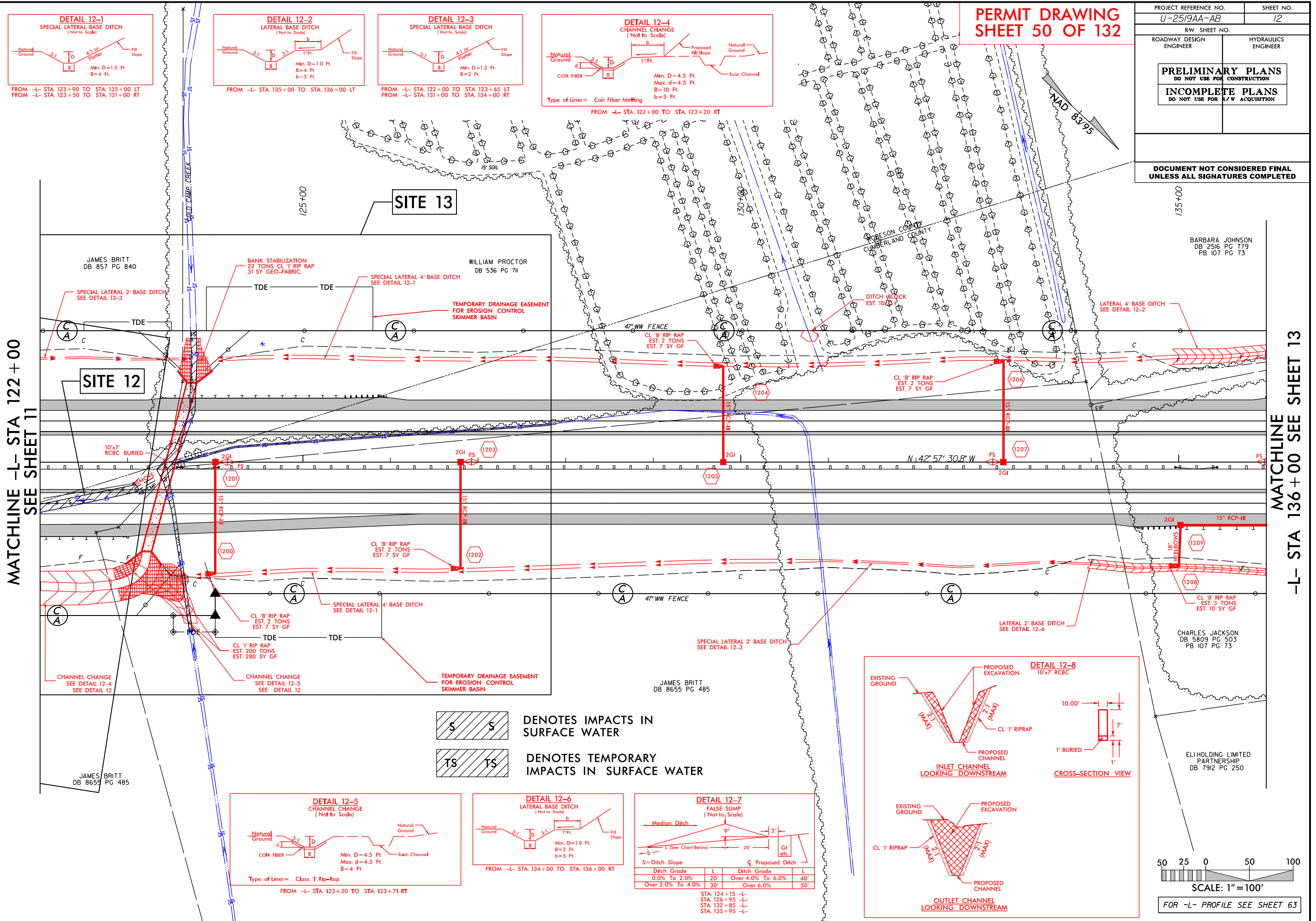
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SHEET 48 OF 132





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MATCHLINE -L- STA 122+00
SEE SHEET 11

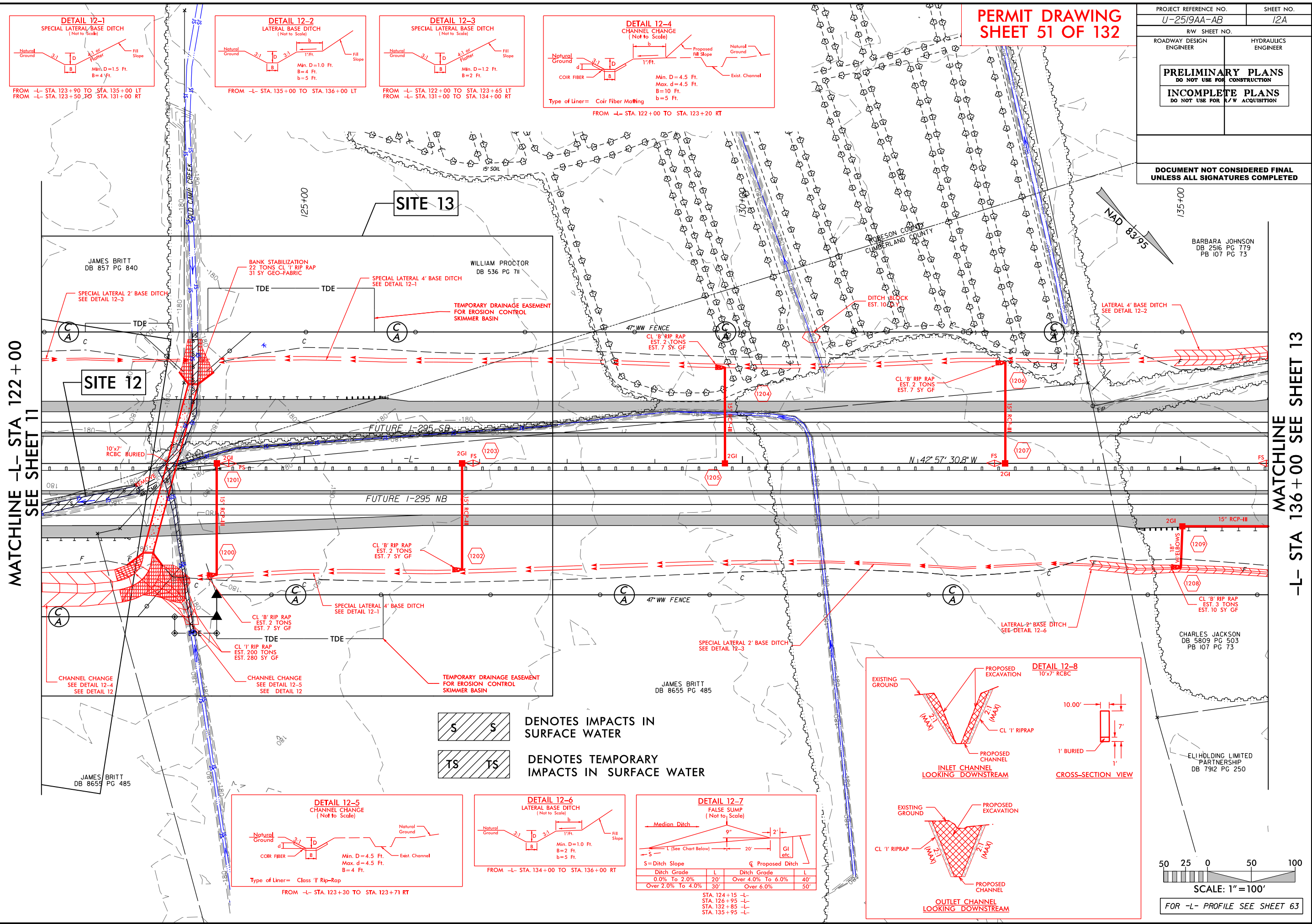


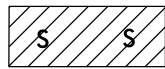
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SEE SHEET 13

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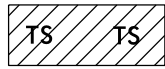
MATCHLINE -L- STA 122+00
SEE SHEET 11

MATCHLINE -L- STA 136+00
SEE SHEET 13





DENOTES IMPACTS IN
SURFACE WATER

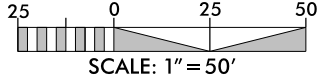
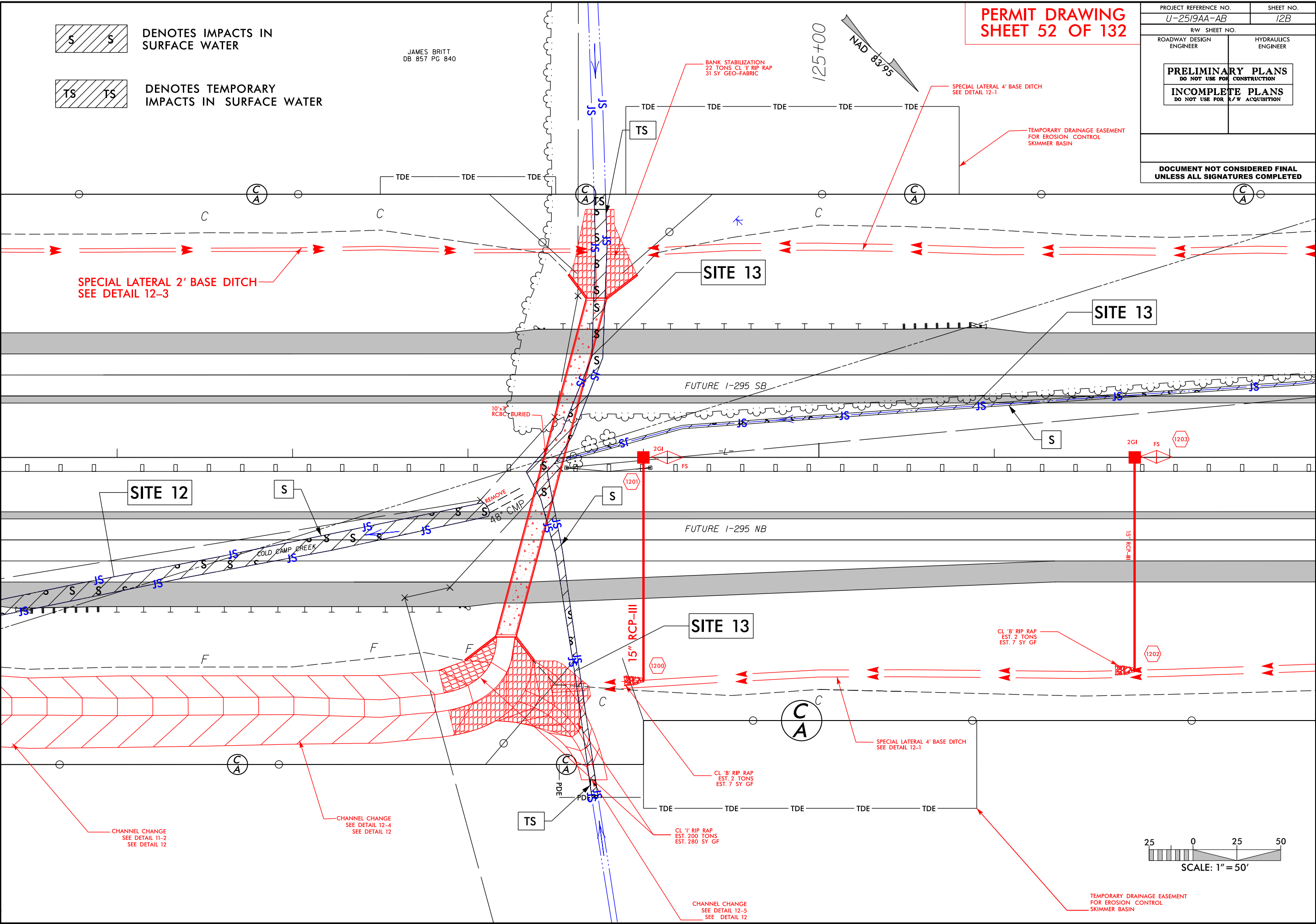


DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

JAMES BRITT
DB 857 PG 840

PERMIT DRAWING
SHEET 52 OF 132

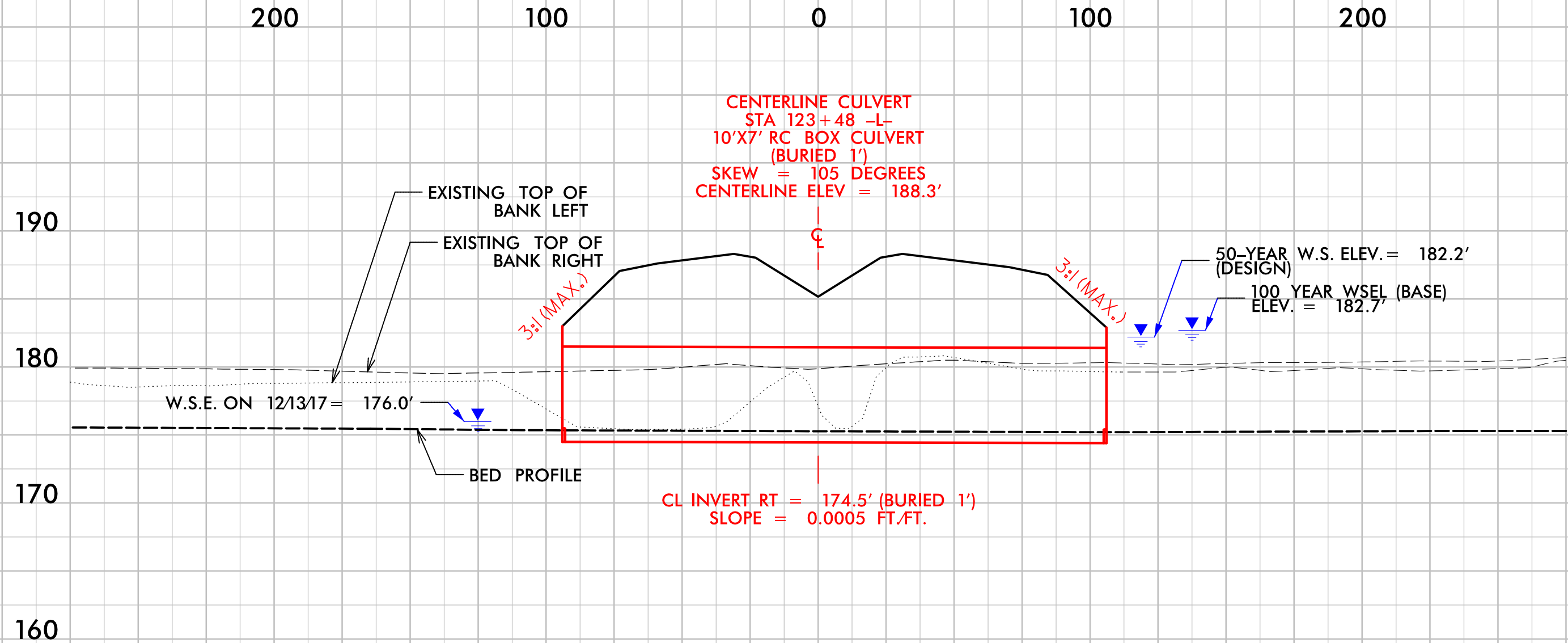
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R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



9/5/2018
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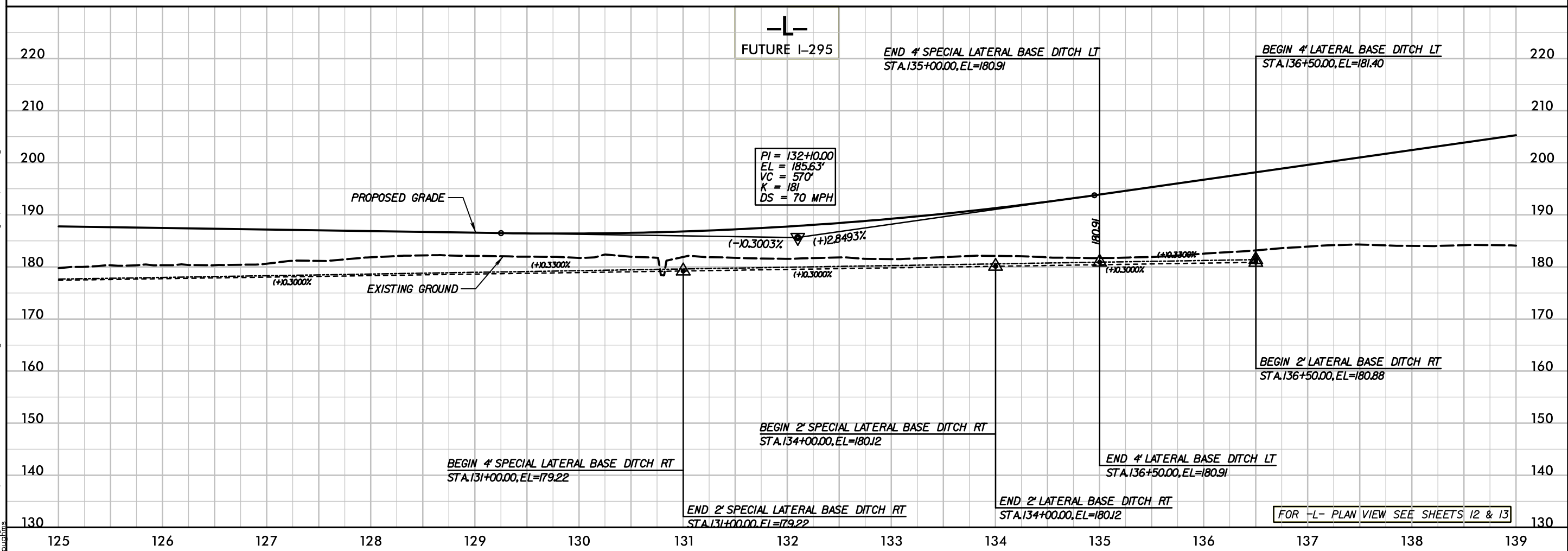
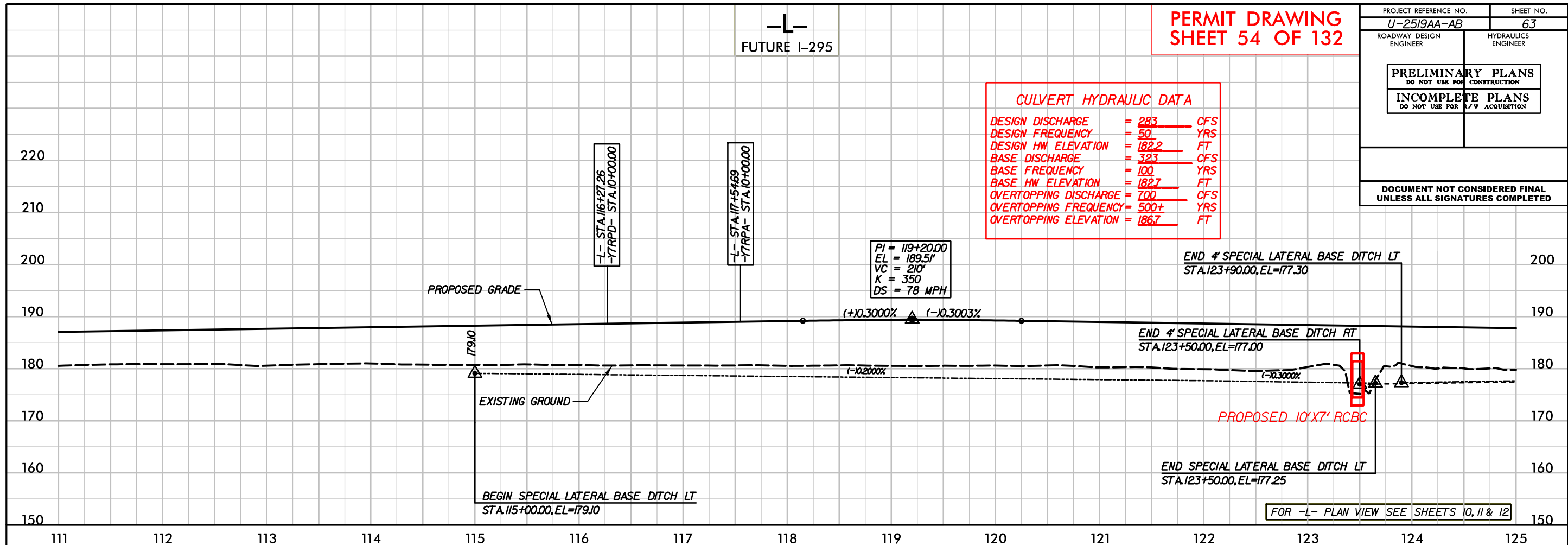
PERMIT DRAWING
SHEET 53 OF 132

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 12C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 63
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 283	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 182.2	FT
BASE DISCHARGE	= 323	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 182.7	FT
OVERTOPPING DISCHARGE	= 700	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 186.7	FT



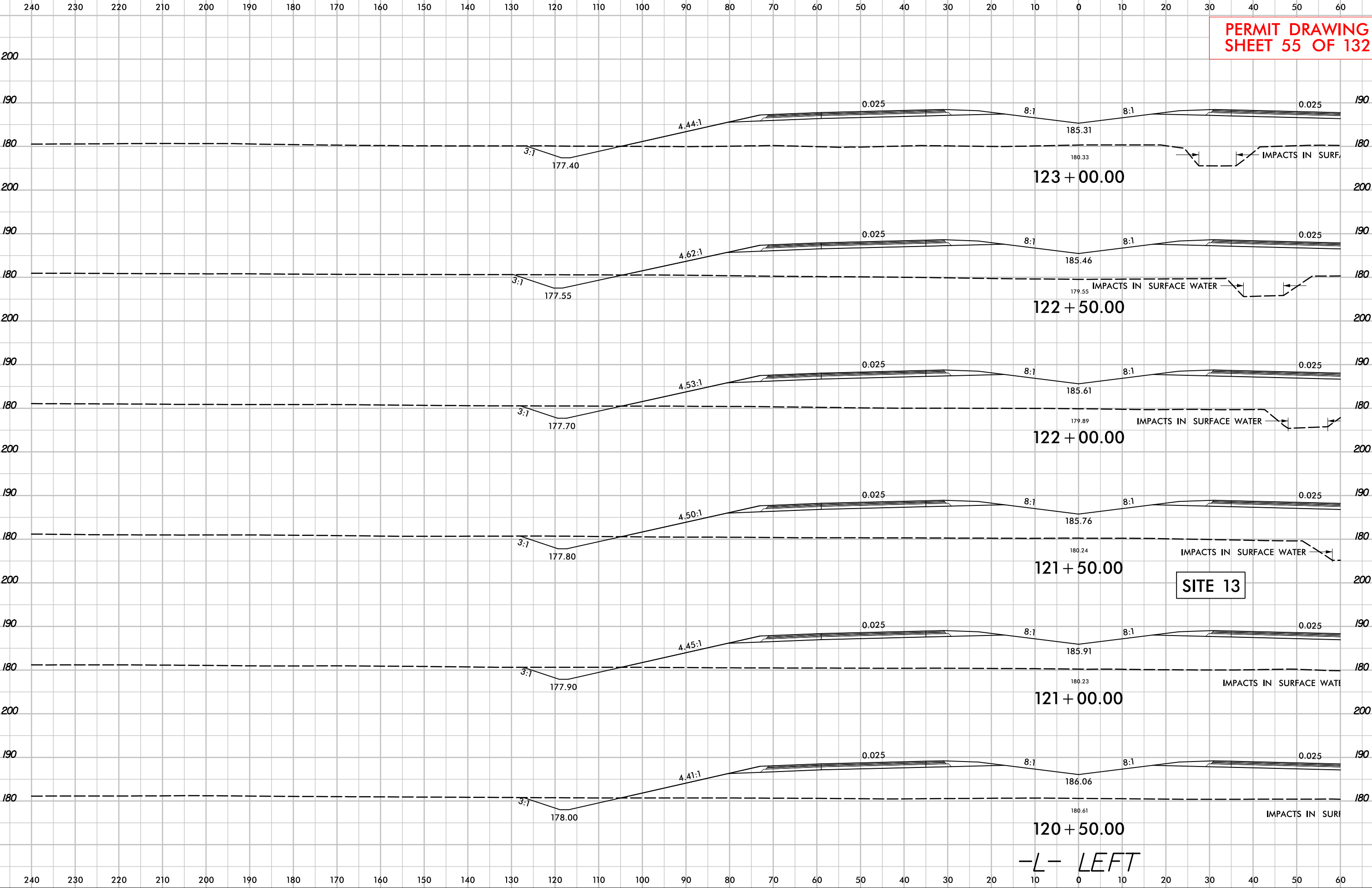
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6/23/16

9/5/2018
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	U-2519AA-AB	X-44

PERMIT DRAWING
SHEET 55 OF 132



SITE 13

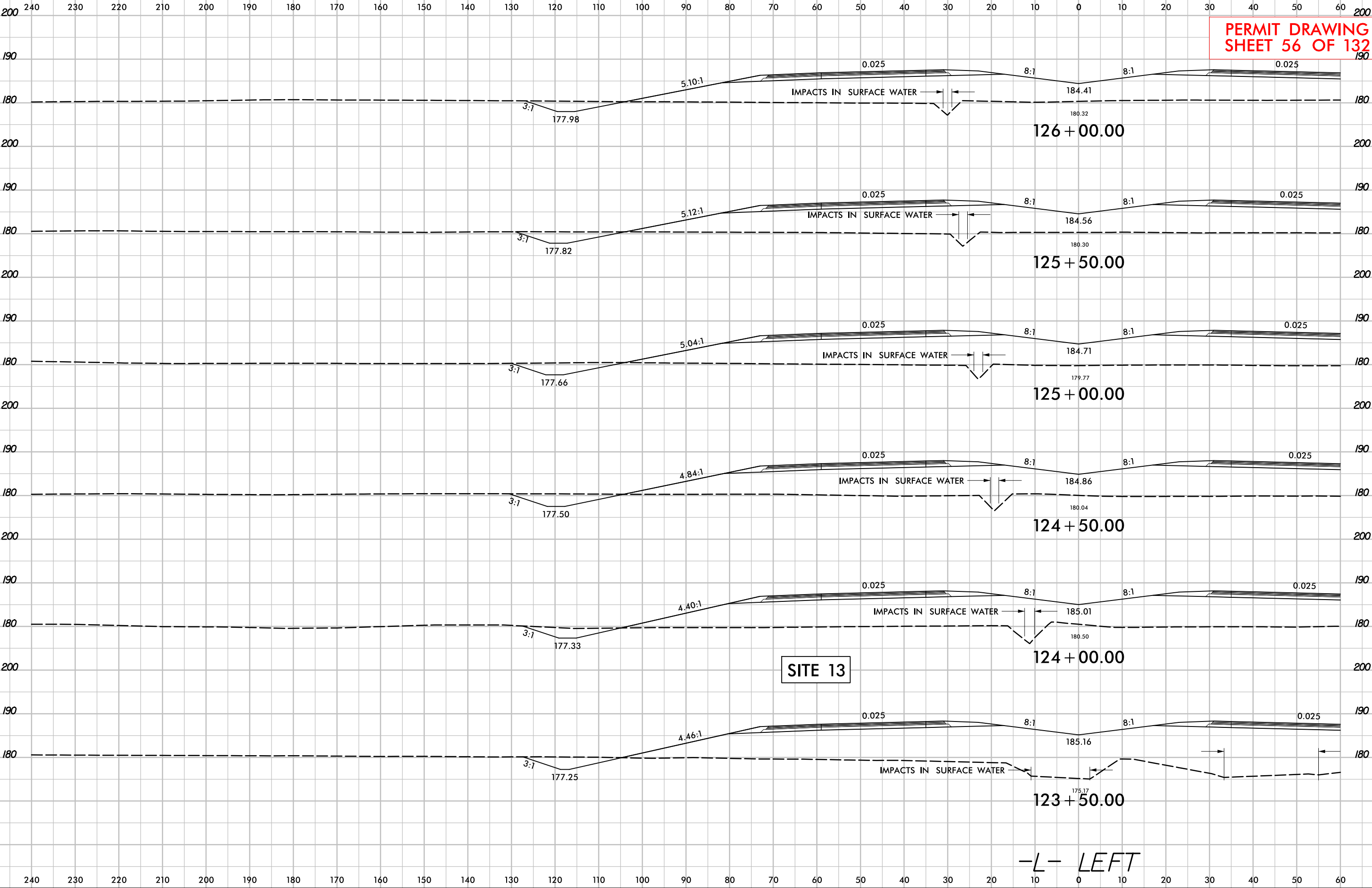
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6/23/16

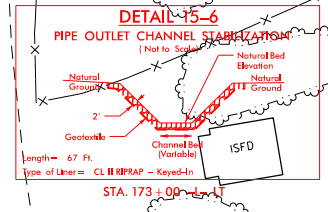
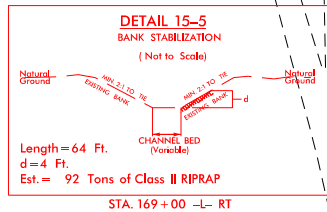
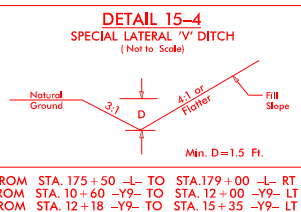
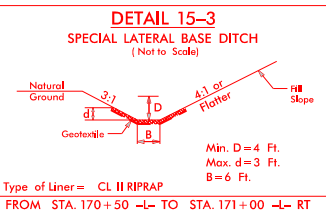
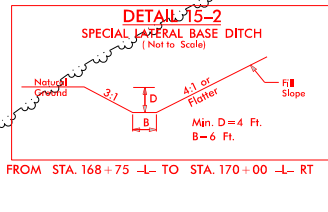
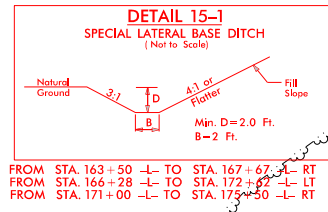
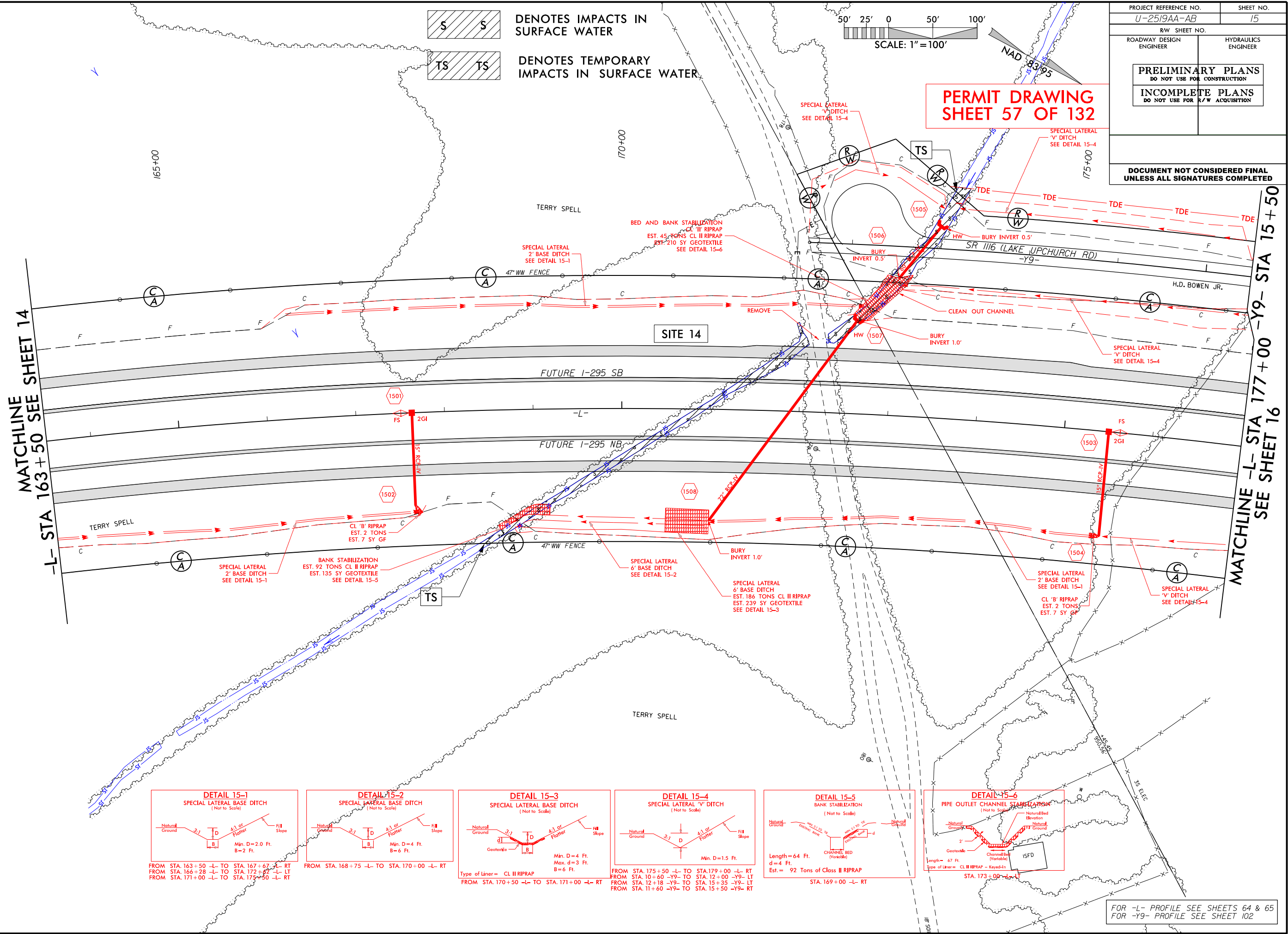
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	PROJ. REFERENCE NO.	SHEET NO.
	U-2519AA-AB	X-45

PERMIT DRAWING
SHEET 56 OF 132

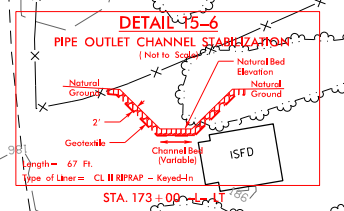
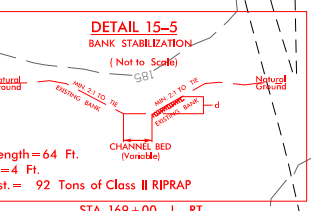
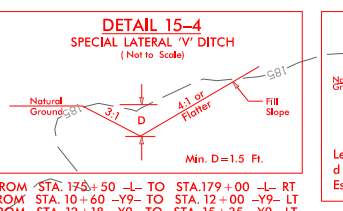
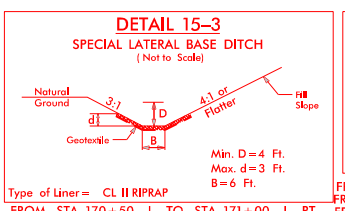
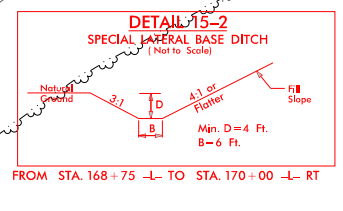
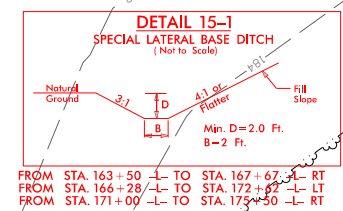
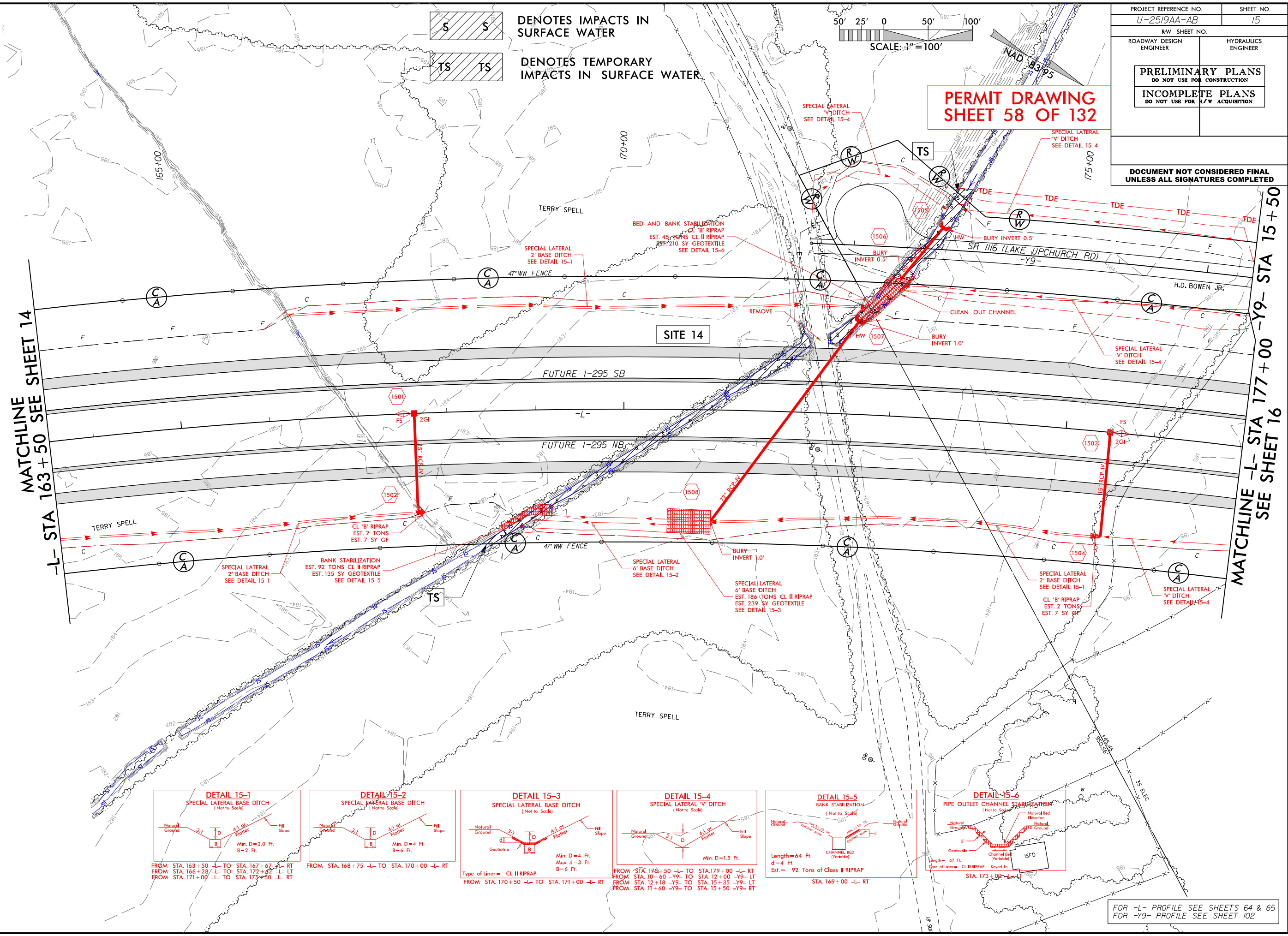


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U-2519AA-AB	15
R/W SHEET NO.	
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PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



FOR -L- PROFILE SEE SHEETS 64 & 65
FOR -Y9- PROFILE SEE SHEET 102

PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



FOR -L- PROFILE SEE SHEETS 64 & 65
FOR -Y9- PROFILE SEE SHEET 102

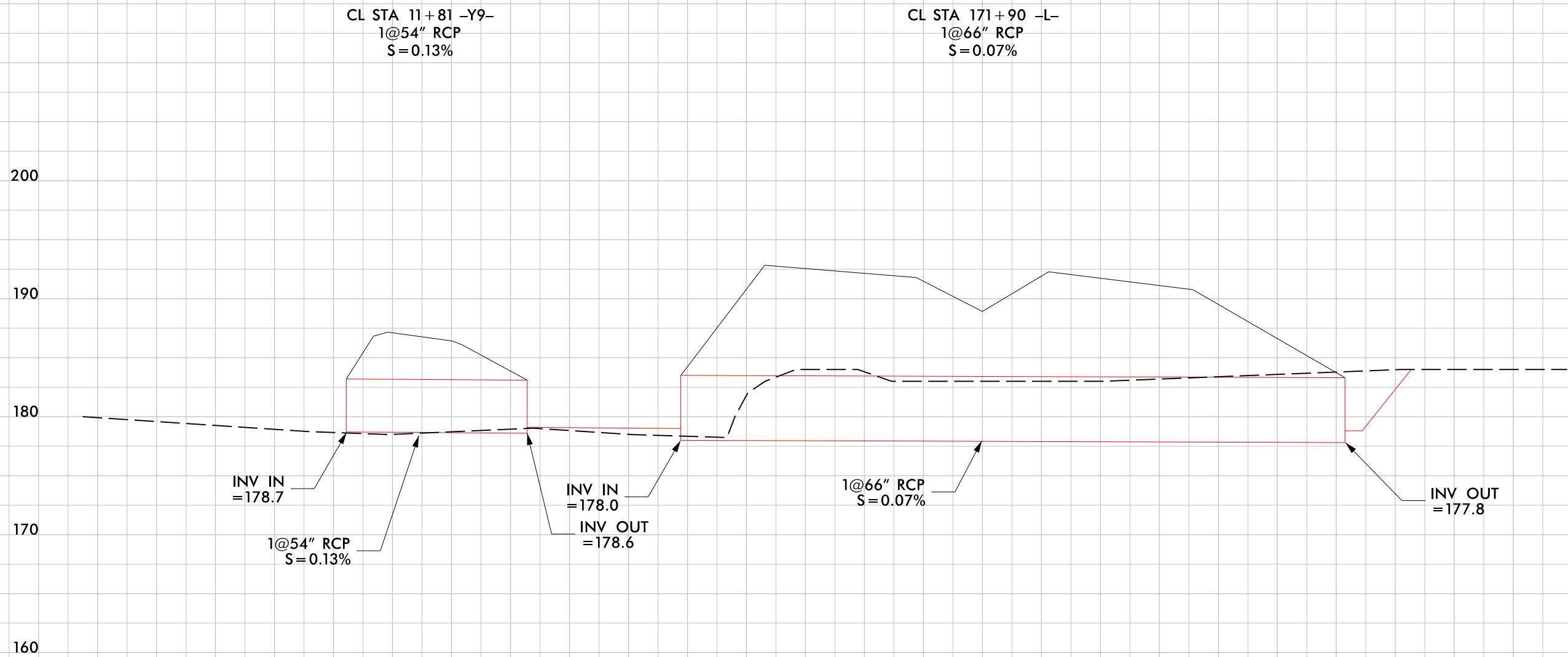
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6/23/16

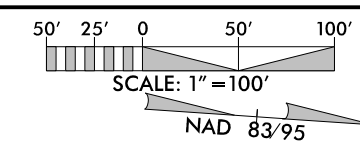


PROJ. NO.	SHEET NO.	SHEET NO.
U-2519AA-AB	15B	15B

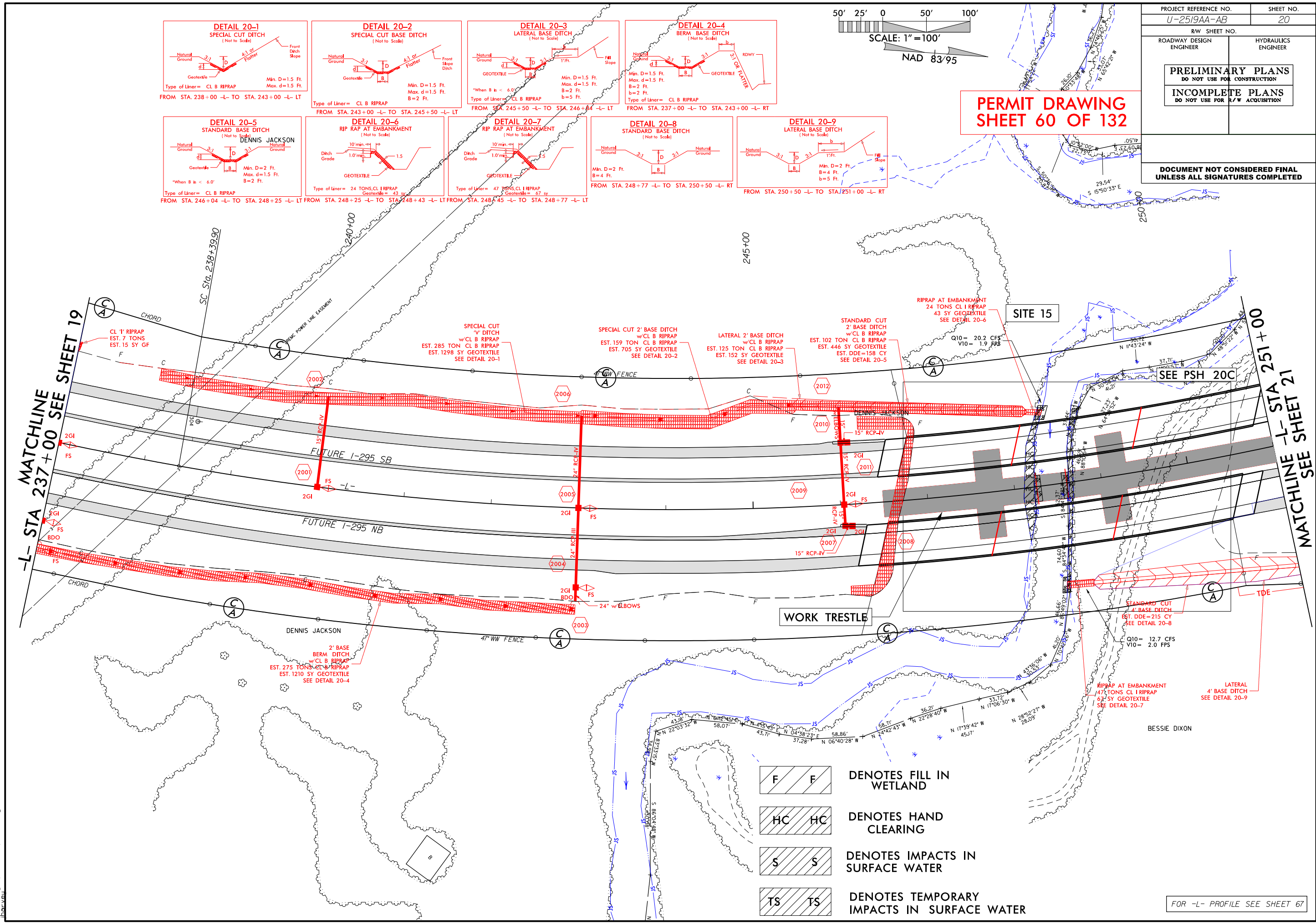
PERMIT DRAWING
SHEET 59 OF 132



PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



PERMIT DRAWING
SHEET 60 OF 132



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

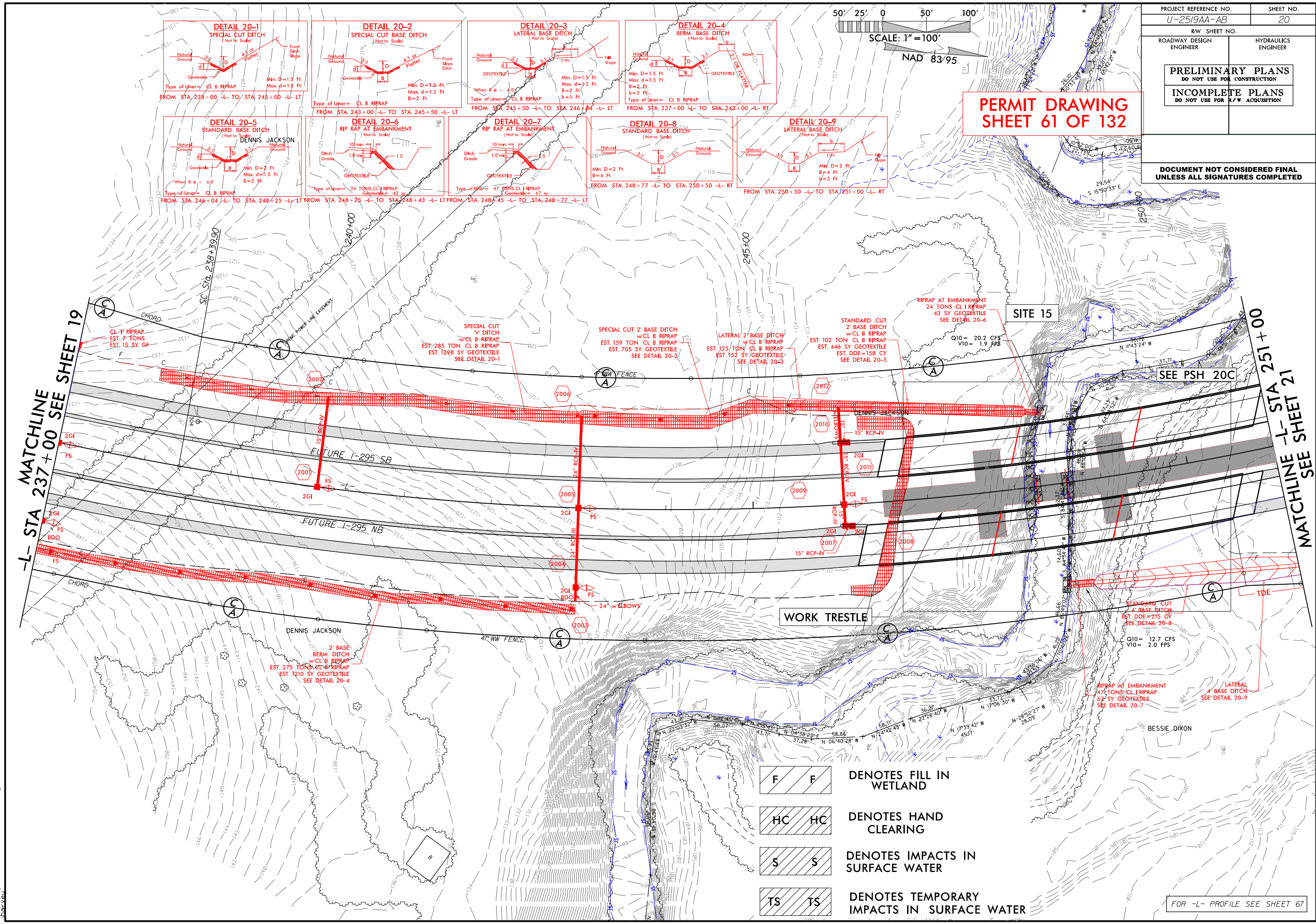
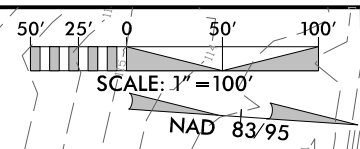
FOR -L- PROFILE SEE SHEET 67

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

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 61 OF 132

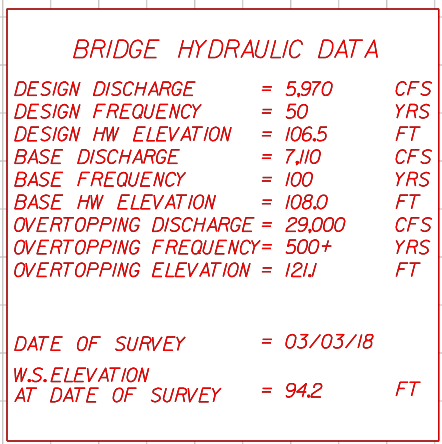


- F F DENOTES FILL IN WETLAND
- HC HC DENOTES HAND CLEARING
- S S DENOTES IMPACTS IN SURFACE WATER
- TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR -L- PROFILE SEE SHEET 67

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7/23/2018
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PROJECT REFERENCE NO.
U-2519AA-AB

SHEET NO.
21

ROADWAY DESIGN ENGINEER

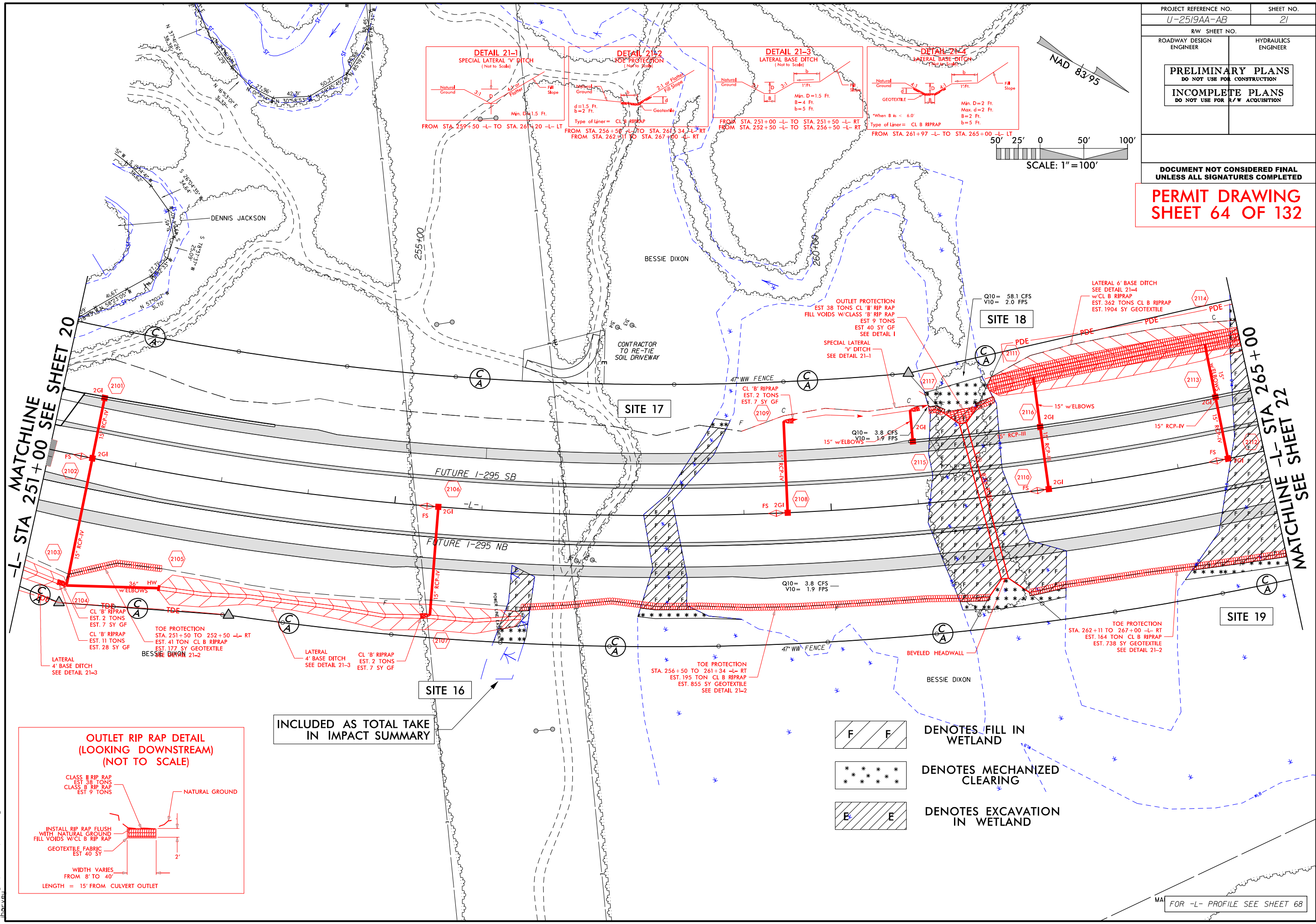
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

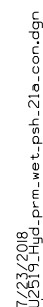
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 64 OF 132



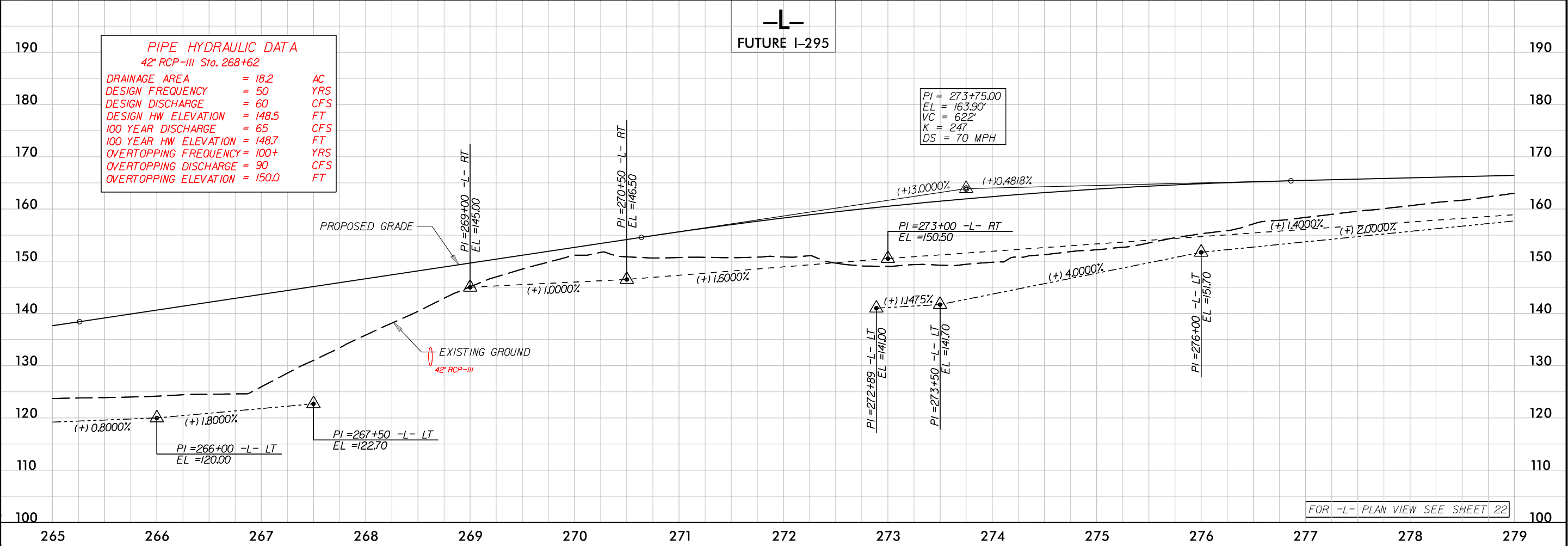
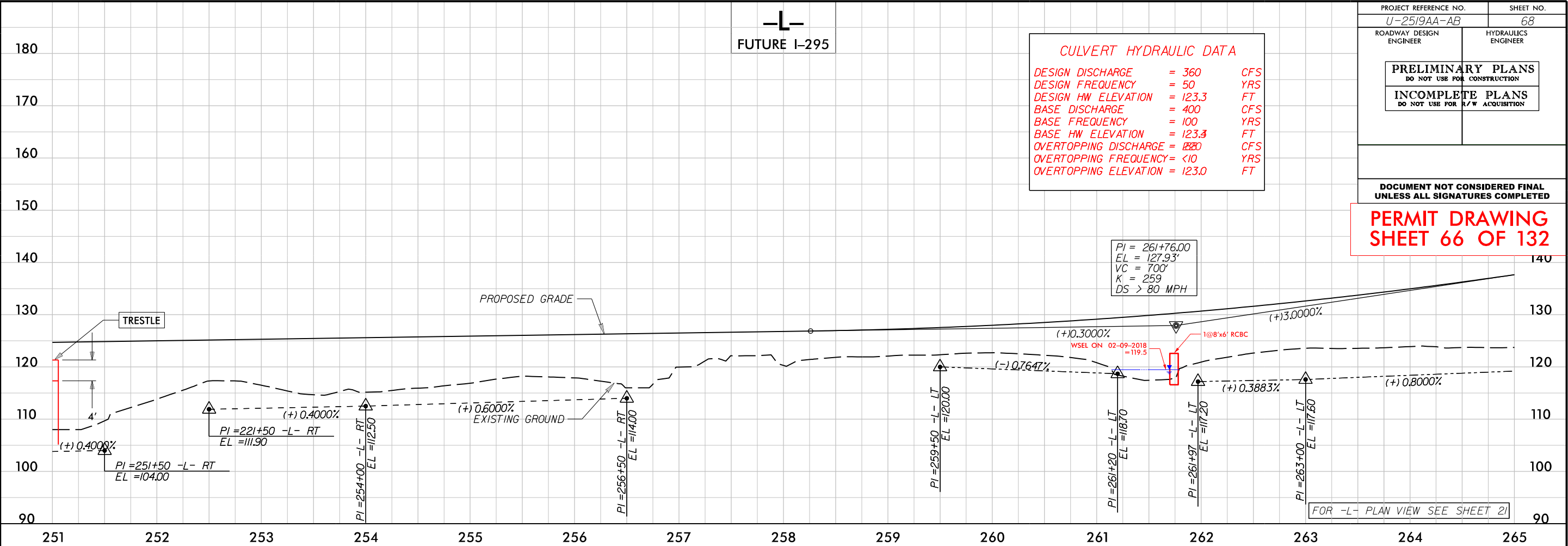
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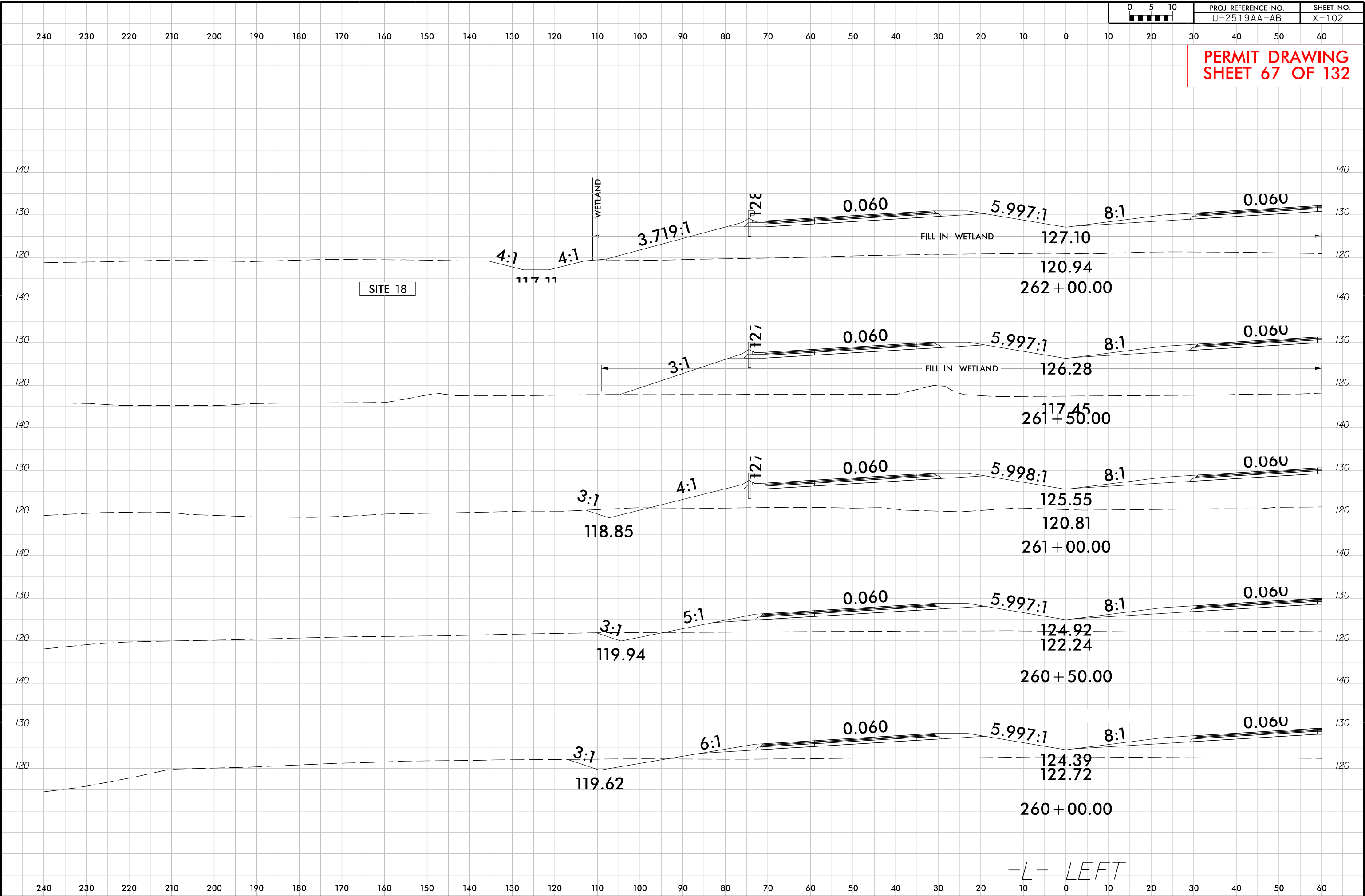
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 66 OF 132

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 360	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 123.3	FT
BASE DISCHARGE	= 400	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 123.3	FT
OVERTOPPING DISCHARGE	= 1880	CFS
OVERTOPPING FREQUENCY	= <10	YRS
OVERTOPPING ELEVATION	= 123.0	FT



PIPE HYDRAULIC DATA		
42" RCP-III Sta. 268+62		
DRAINAGE AREA	= 18.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 60	CFS
DESIGN HW ELEVATION	= 148.5	FT
100 YEAR DISCHARGE	= 65	CFS
100 YEAR HW ELEVATION	= 148.7	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 90	CFS
OVERTOPPING ELEVATION	= 150.0	FT

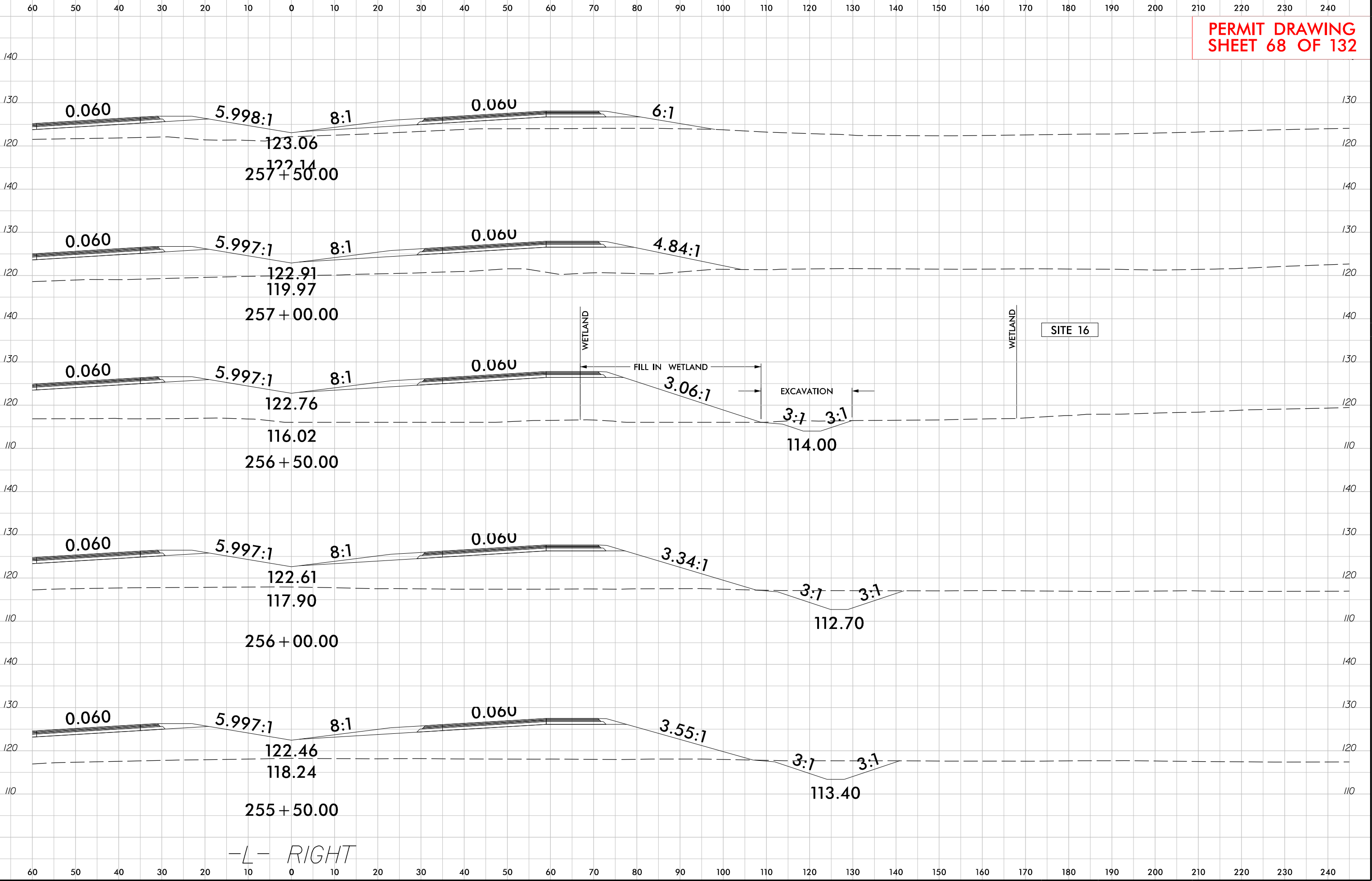


6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-227

PERMIT DRAWING
SHEET 68 OF 132



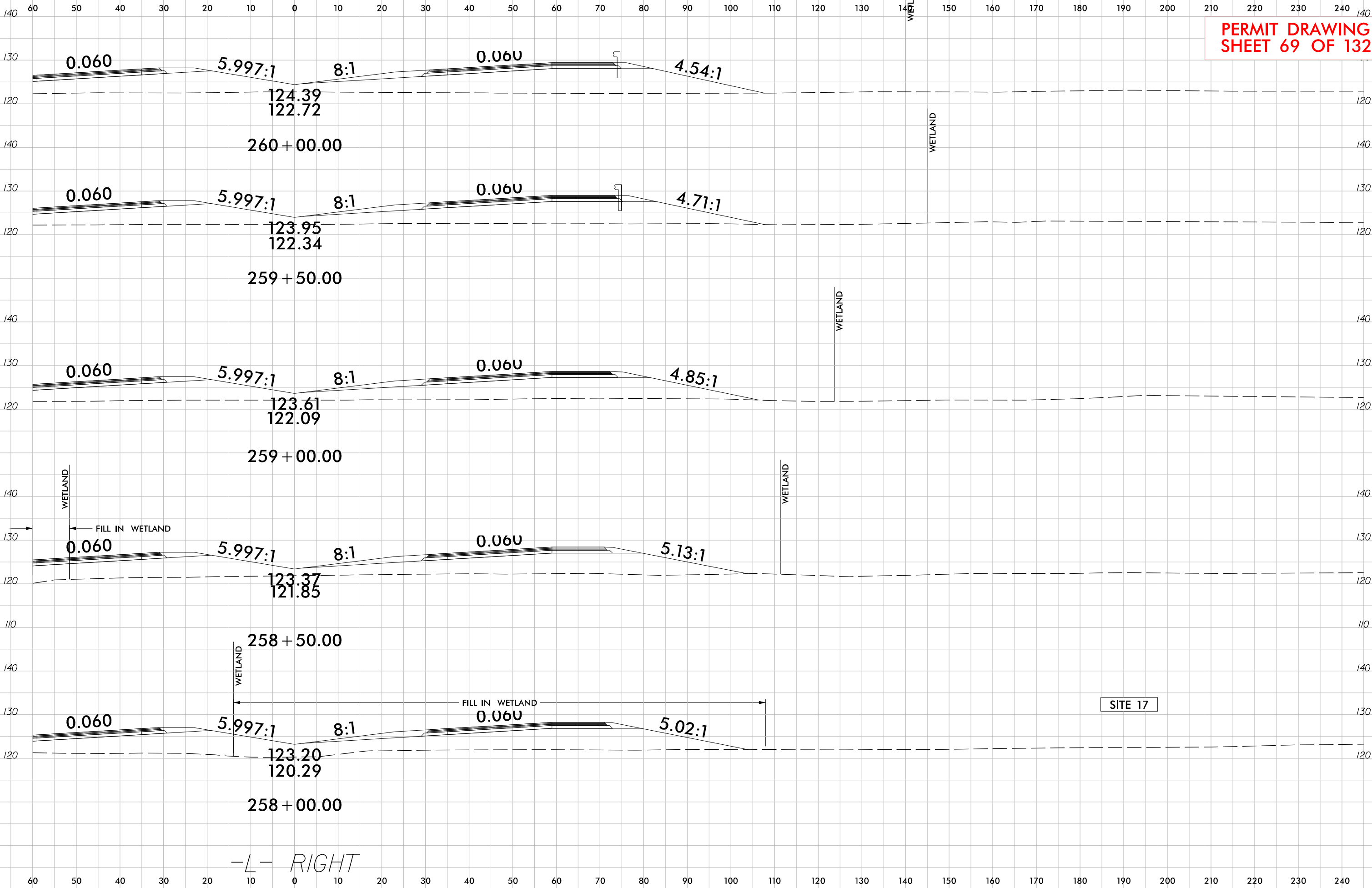
-L- RIGHT

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-228

PERMIT DRAWING
SHEET 69 OF 132



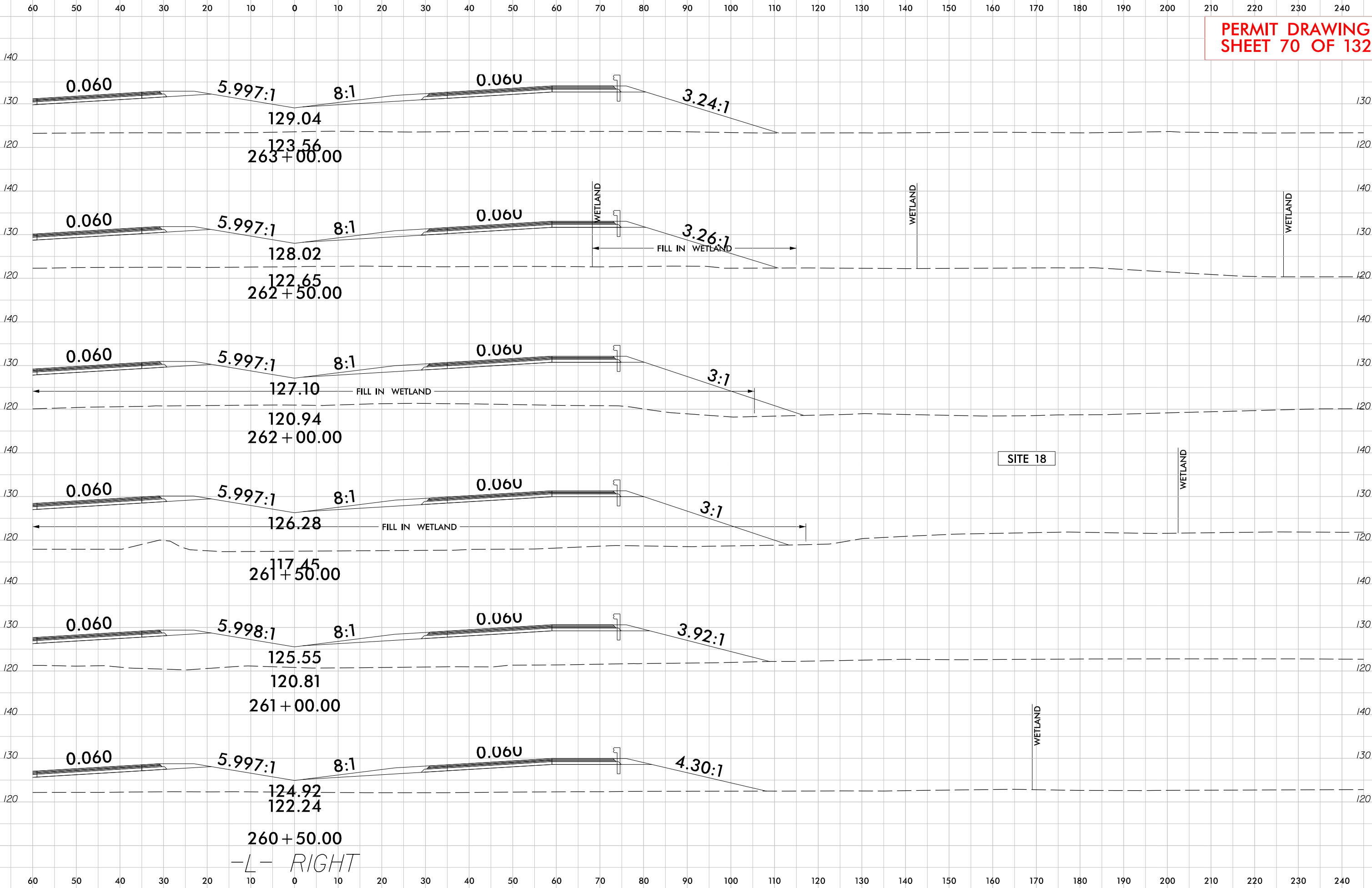
L- RIGHT

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-229

PERMIT DRAWING
SHEET 70 OF 132



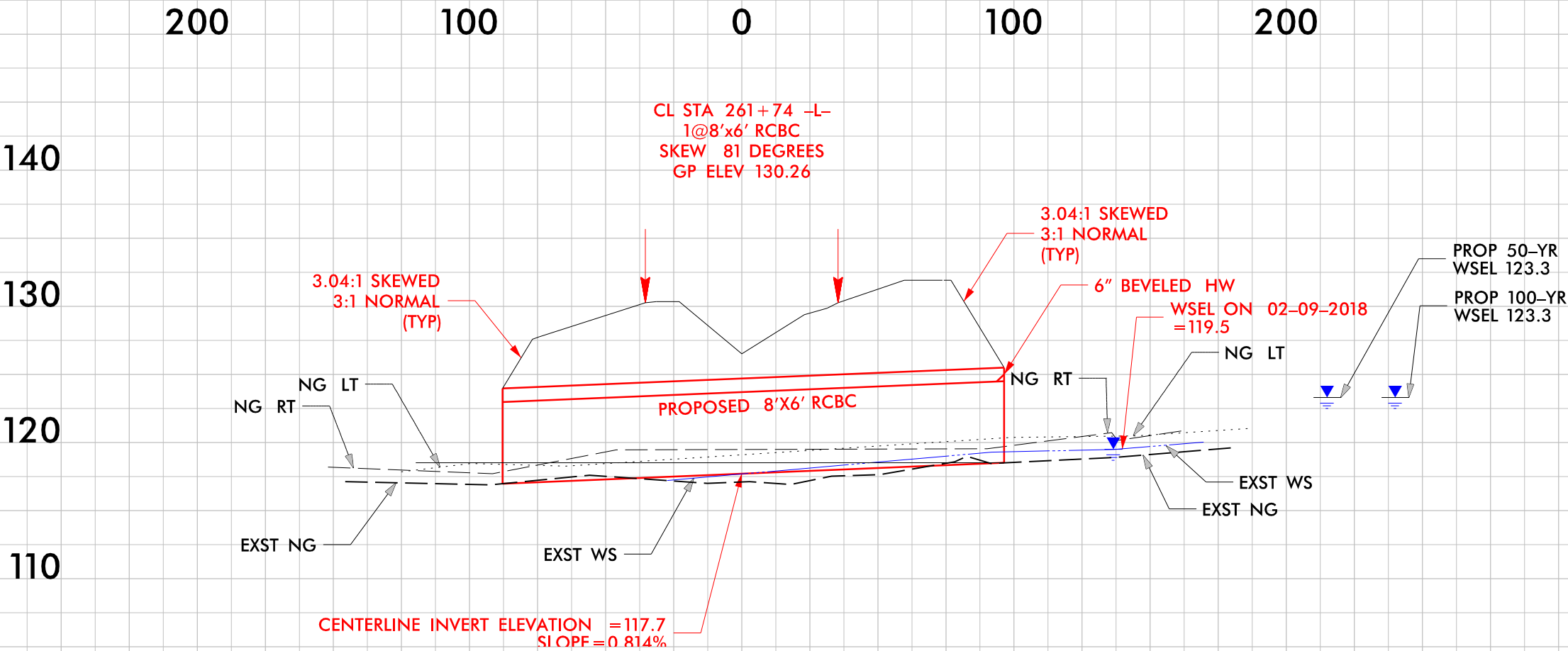
260+50.00
-L- RIGHT

7/23/2018
02519_Hyd-prm-wet.psh_21f_xpl.dgn
harvey

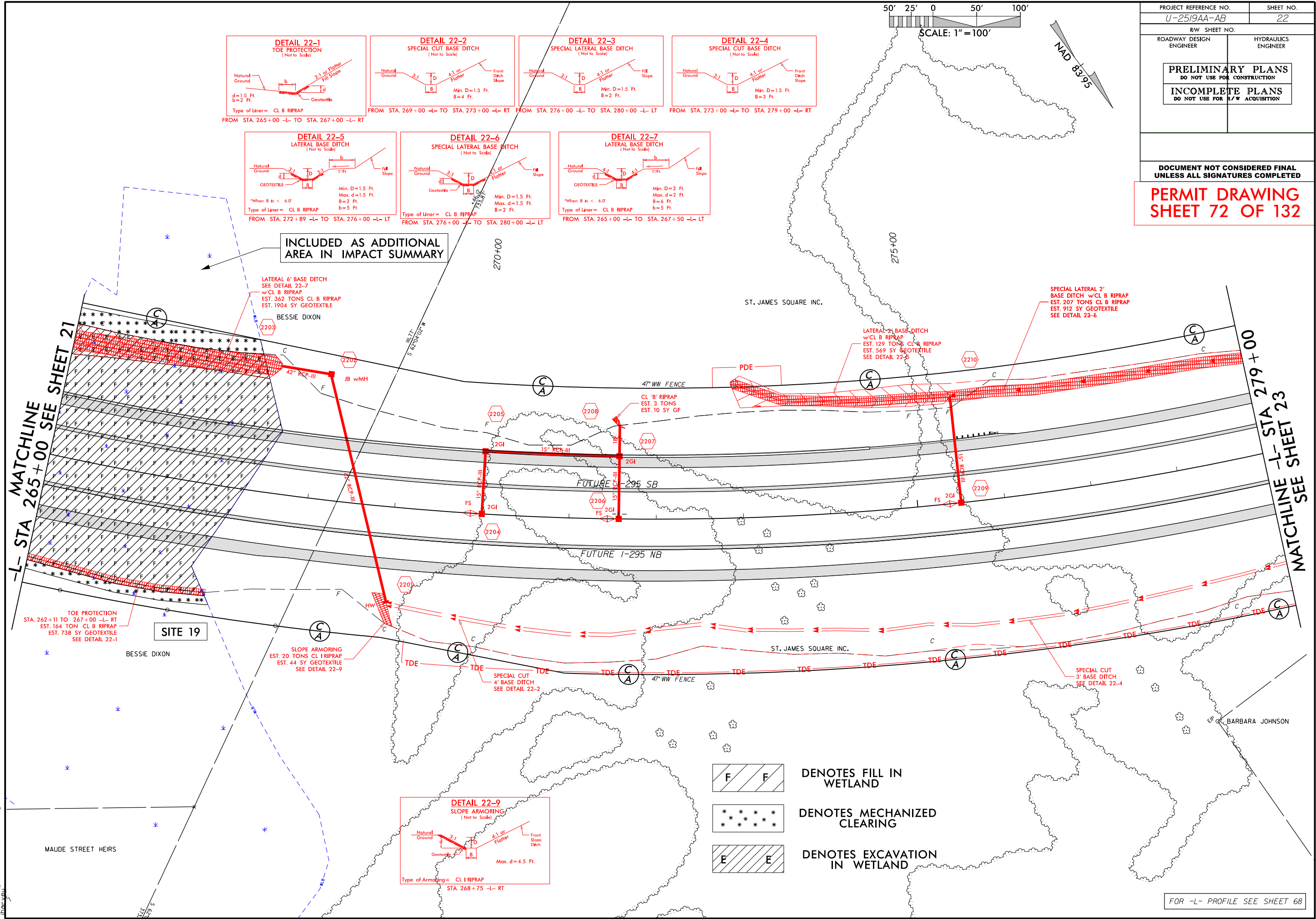
PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	216
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 71 OF 132



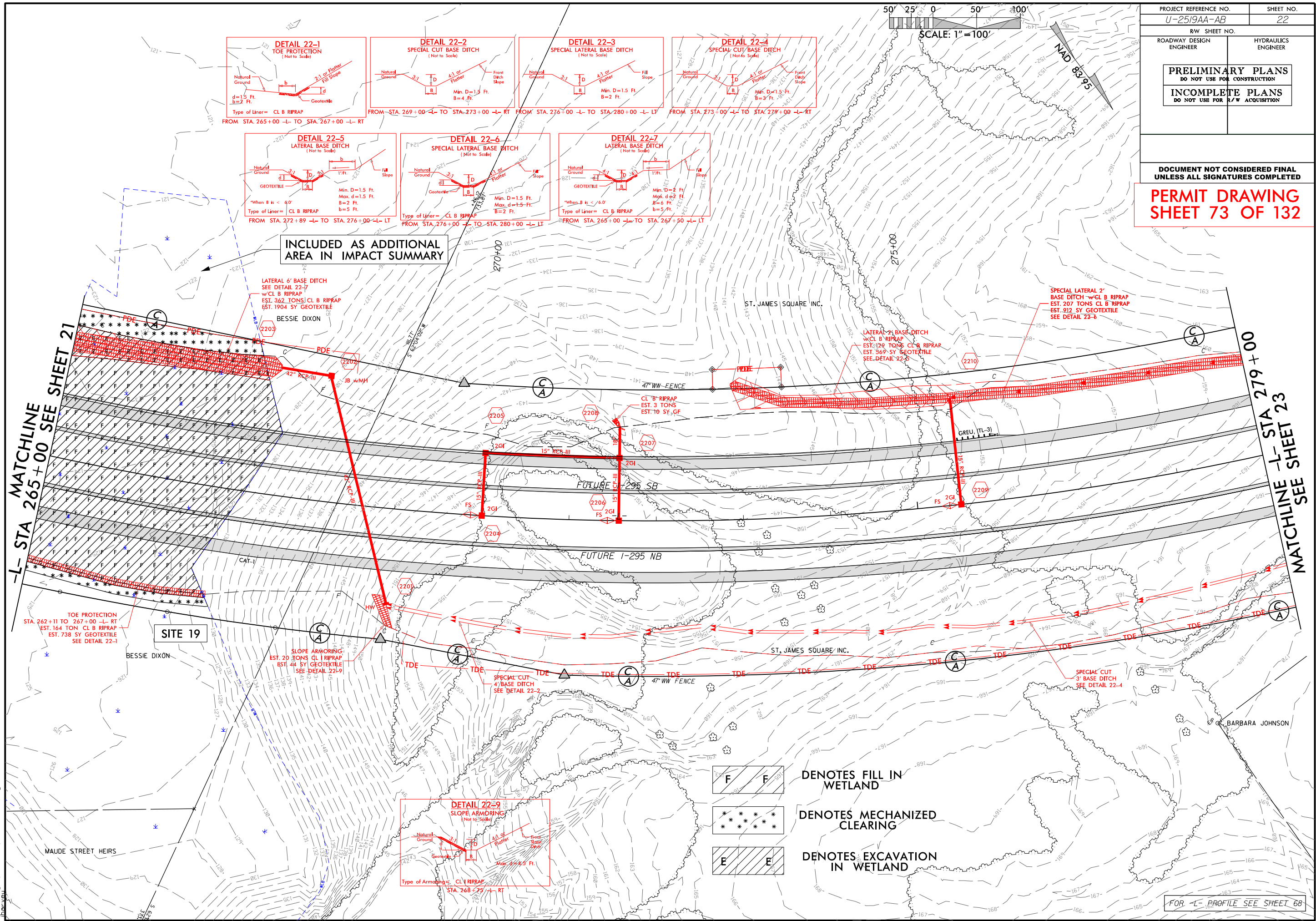
PROJECT REFERENCE NO.		SHEET NO.	
U-2519AA-AB		22	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
PERMIT DRAWING SHEET 72 OF 132			



PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING
SHEET 73 OF 132**



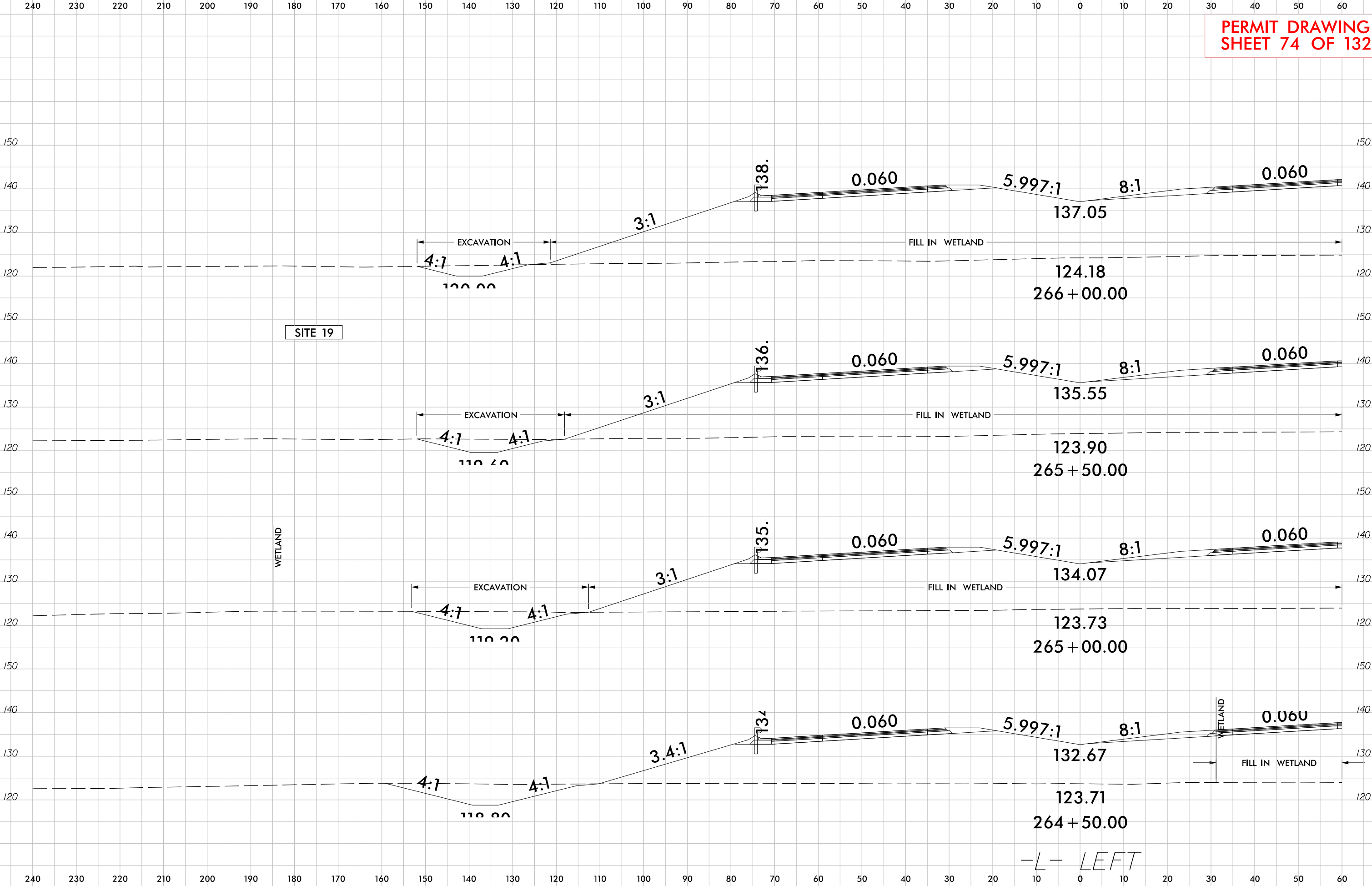
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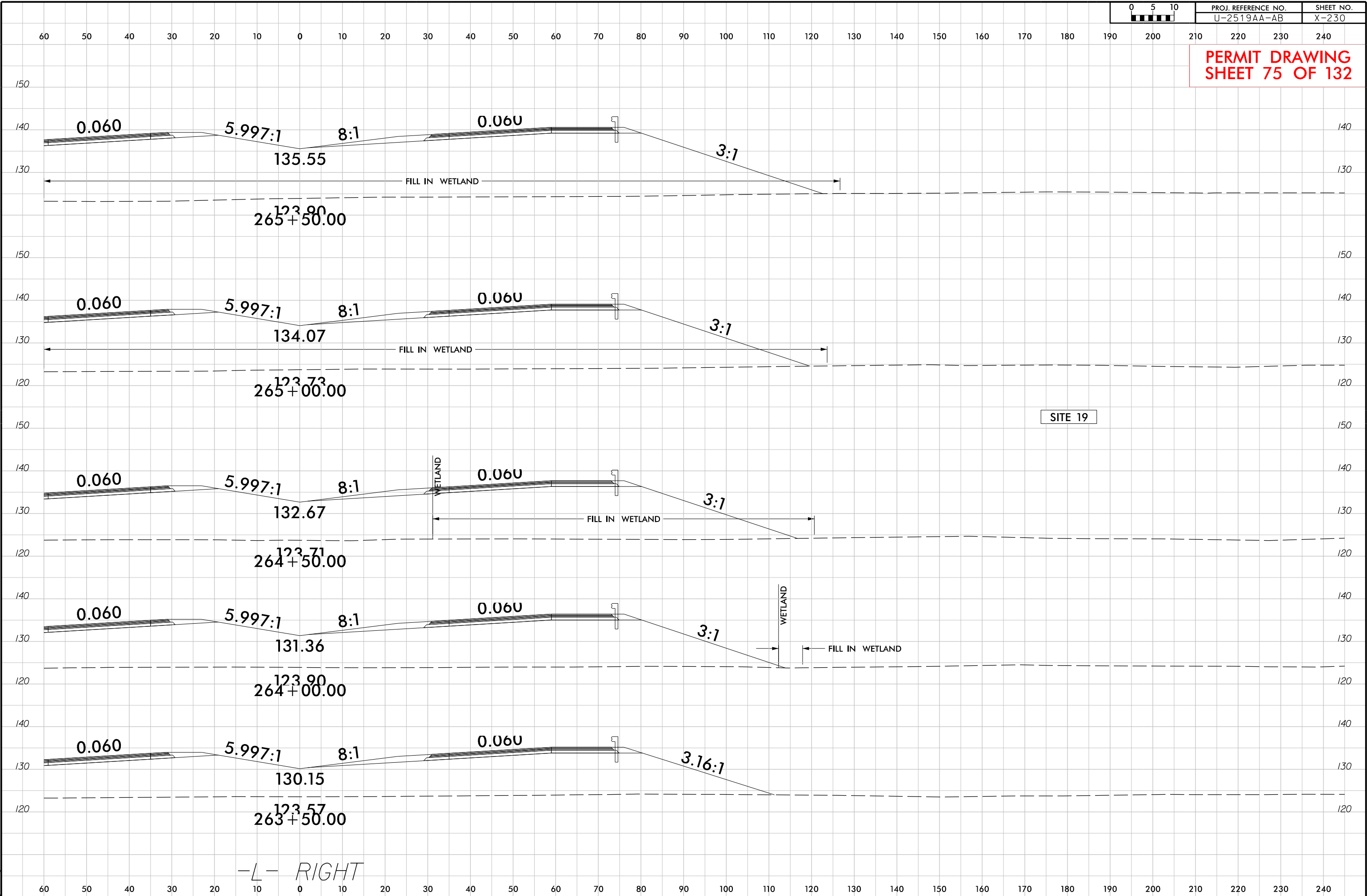
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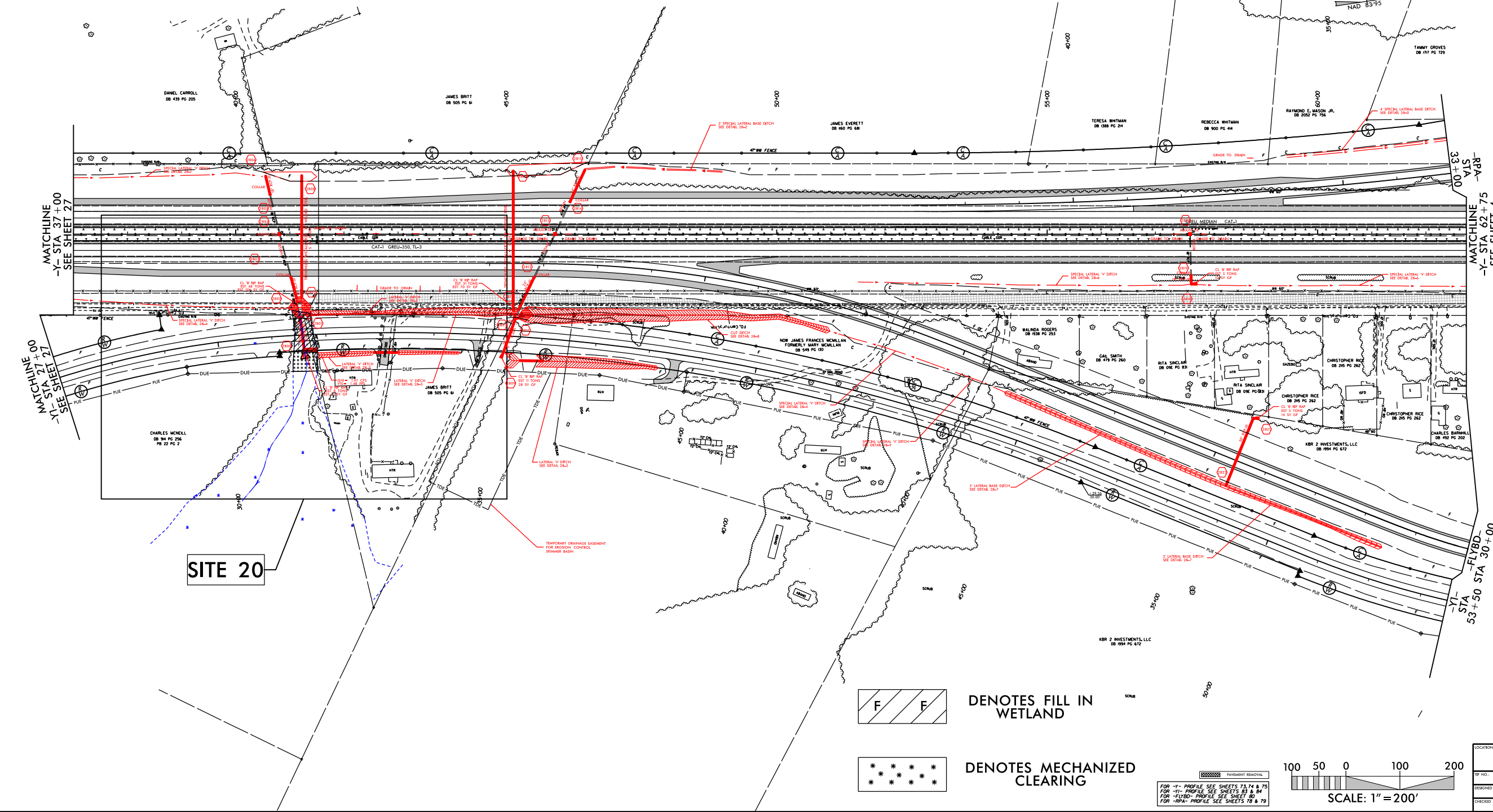


PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-104

PERMIT DRAWING
SHEET 74 OF 132

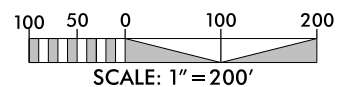






PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 28
B/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION INCOMPLETE PLANS DO NOT USE FOR B/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

DENOTES MECHANIZED
CLEARING



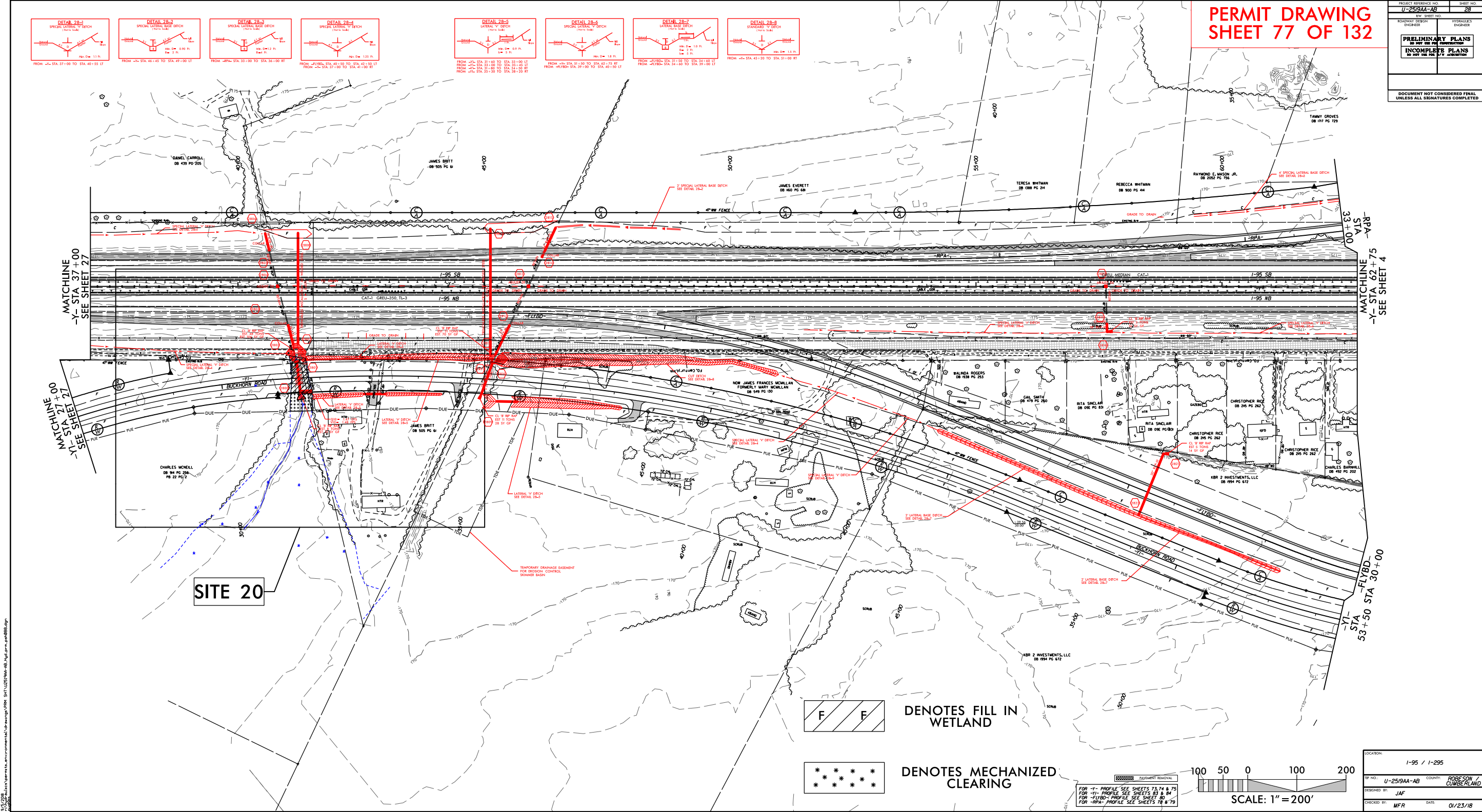
FOR -Y- PROFILE SEE SHEETS 73, 74 & 75
FOR -YI- PROFILE SEE SHEETS 83 & 84
FOR -FLYBO- PROFILE SEE SHEET 80
FOR -RPA- PROFILE SEE SHEETS 78 & 79

LOCATION:	
1-95 / 1-295	
TIP NO.: U-2519AA-AB	COUNTY: ROBERSON / CUMBERLAND
DESIGNED BY: JAF	
CHECKED BY: MFR	DATE: 01/23/18

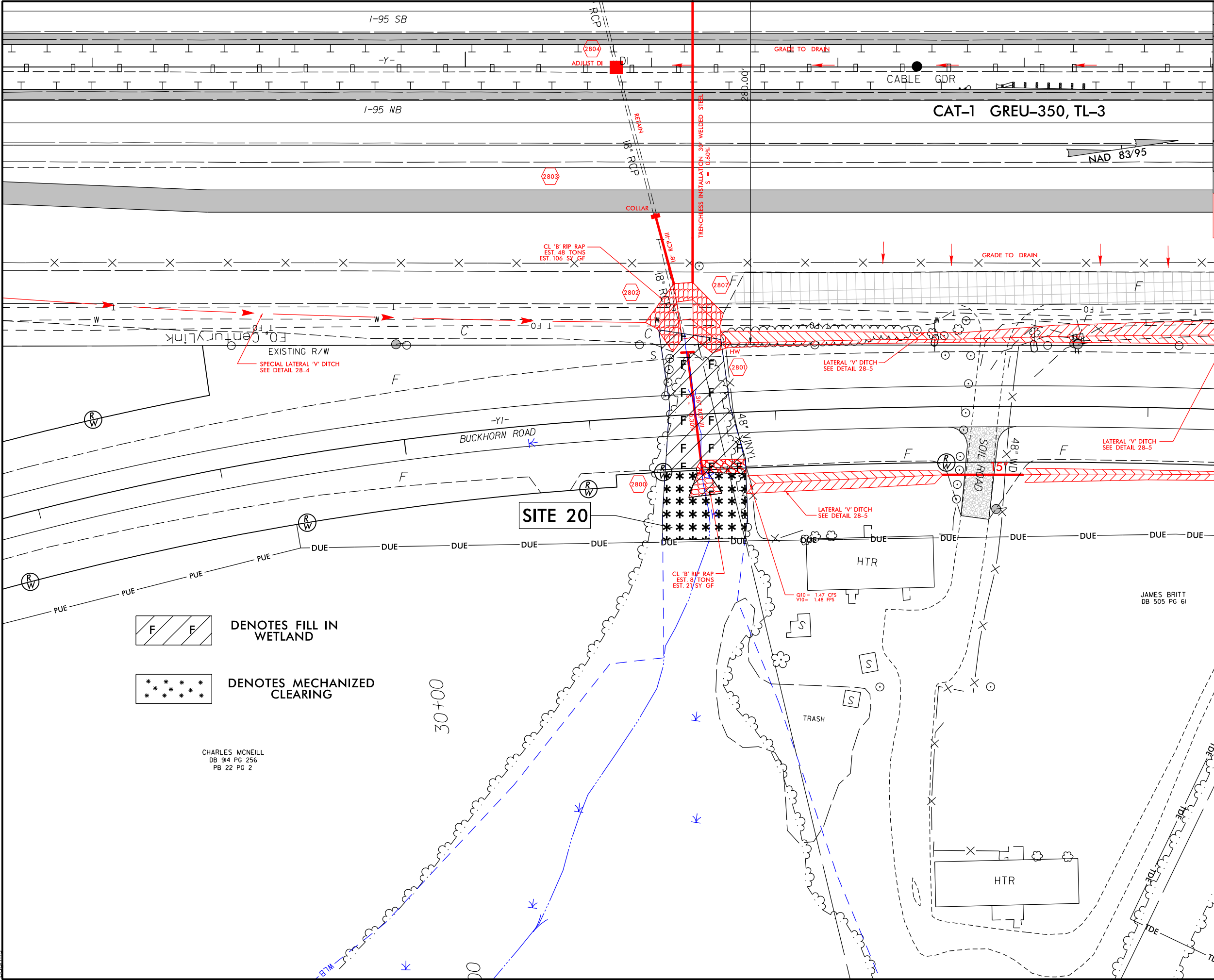


PERMIT DRAWING
SHEET 77 OF 132

PROJECT REFERENCE NO.	U-25/9AA-AB	SHEET NO.	77
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR CONSTRUCTION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



U:\25\9AA\9AA-AB\9AA-AB.dwg
DATE: 01/23/18
BY: JAF
CHECKED BY: MFR



PROJECT REFERENCE NO. U-2519AA-AB		SHEET NO. 28B
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
PERMIT DRAWING SHEET 78 OF 132		

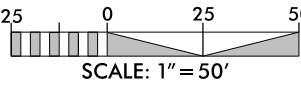


DENOTES FILL IN
WETLAND



DENOTES MECHANIZED
CLEARING

CHARLES MCNEILL
DB 914 PG 256
PB 22 PG 2

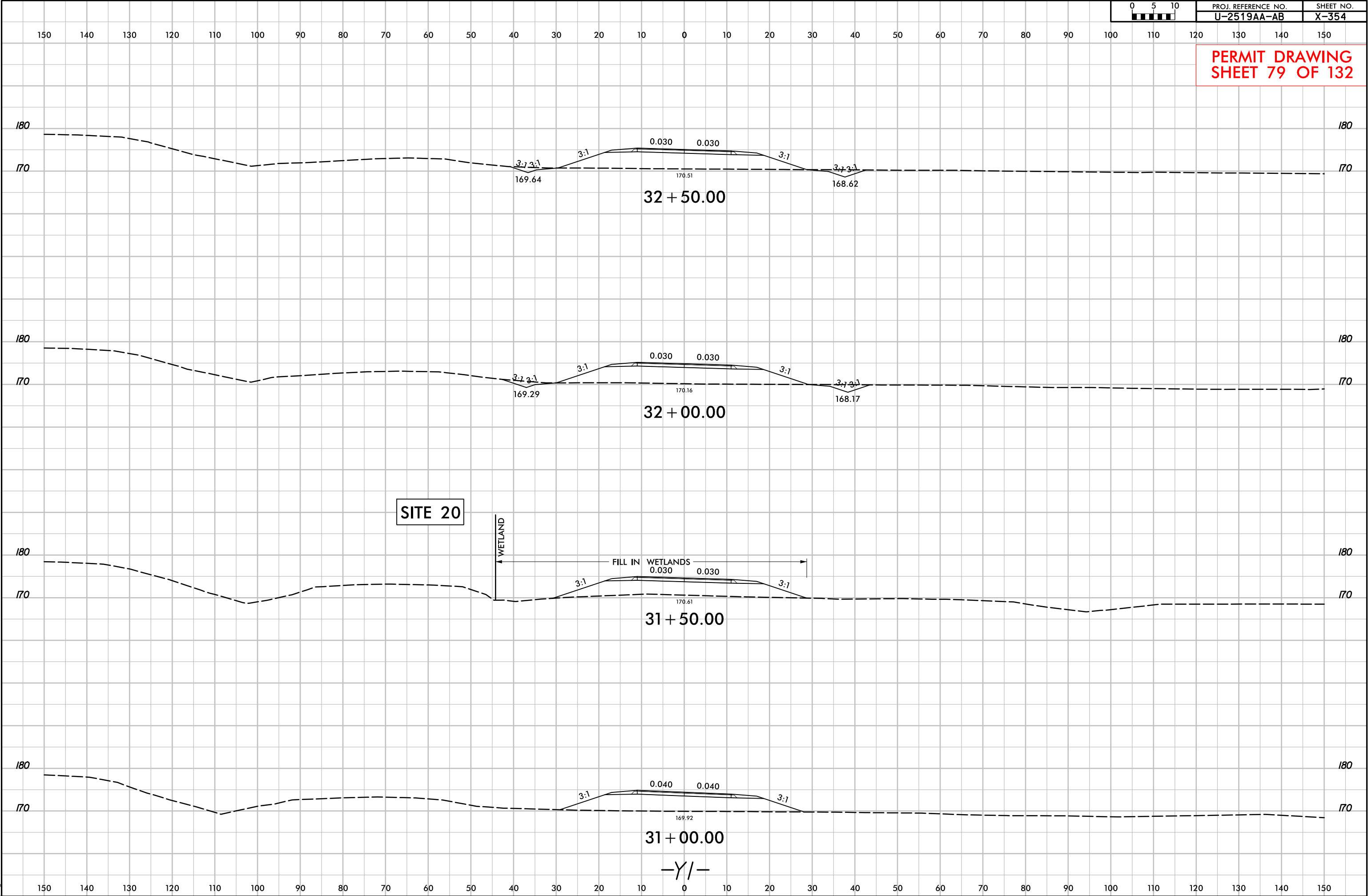


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6/23/16

9/5/2018
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p.dgn

05 0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2519AA-AB	X-354





DENOTES FILL IN
WETLAND

DENOTES MECHANIZED
CLEARING

TIMOTHY MCMILLAN
DB 1719 PG 230

KENNETH MCMILLAN
DB 1719 PG 230

-Y1- STA 77+00 SEE SHEET 32

CL 'B' RIP RAP
EST. 11 TONS -
EST. 28 SY GF

SITE 21

SITE 21

KBR 2 INVESTMENTS, LLC
DB 1793 PG 66

KENNETH MCMILLAN
DB 1719 PG 230

KBR 2 INVESTMENTS, LLC
DB 1793 PG 66

PUE

IP RAP
TIONS
SY GF

KBR 2 INVESTMENTS, LLC
DB 1793 PG 66

KENNETH MCMILLAN
DB 1719 PG 230

FOR -YI- PROFILE SEE SHEETS 84 & 85

6/23/16

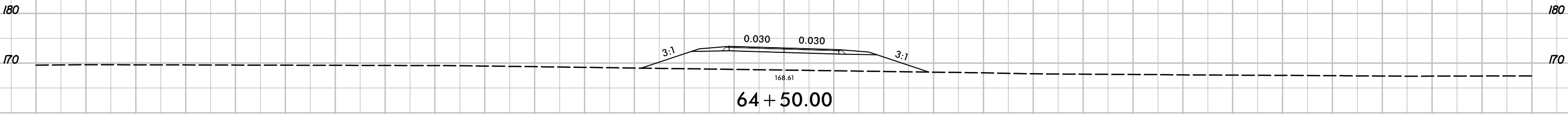
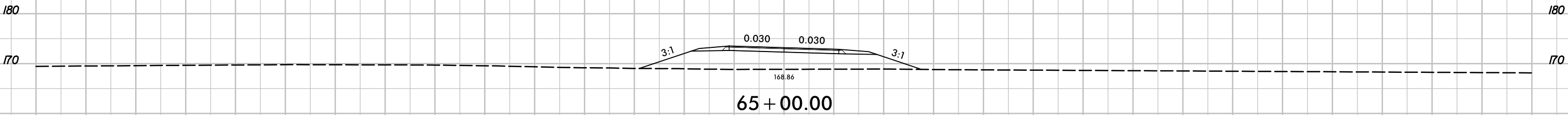
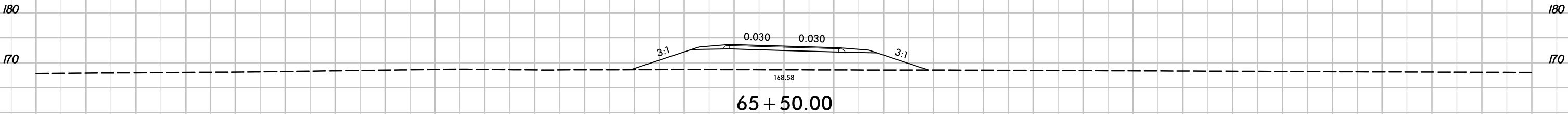
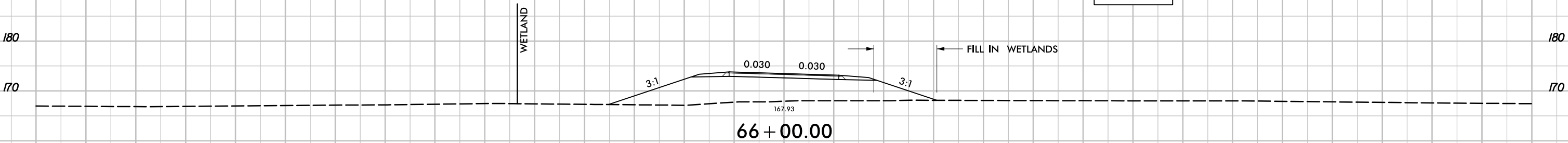
9/5/2018
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2519AA-AB	X-371

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PERMIT DRAWING
SHEET 83 OF 132

SITE 21



-Y/-

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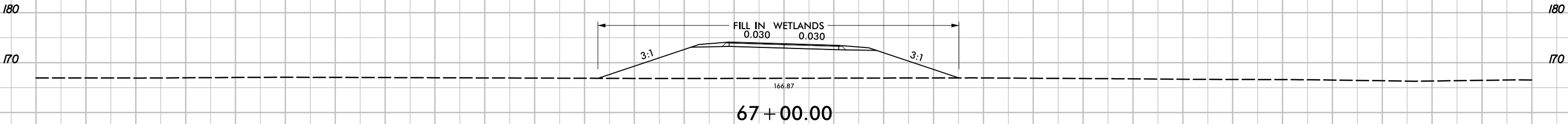
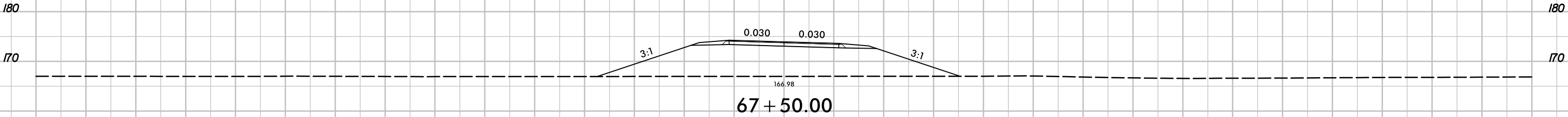
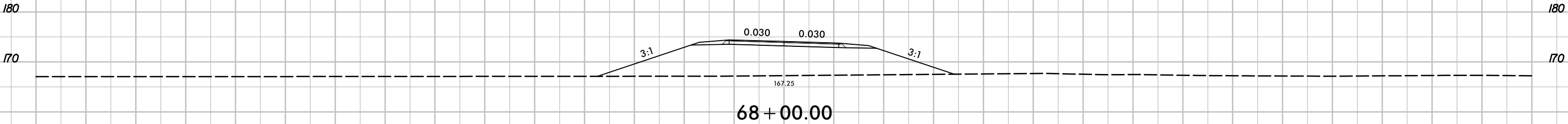
6/23/16

9/5/2018
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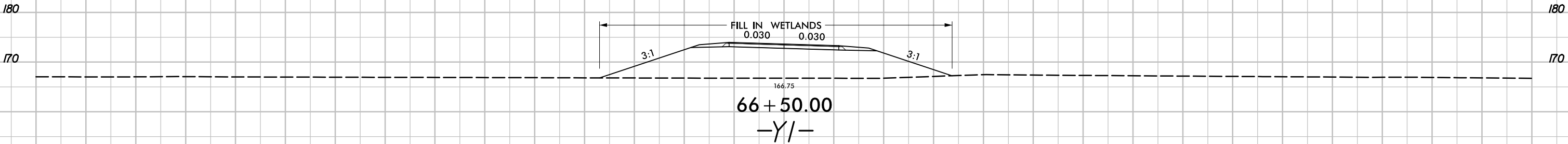
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	U-2519AA-AB	X-372

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PERMIT DRAWING
SHEET 84 OF 132



SITE 21

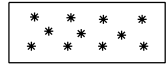




DENOTES FILL IN
WETLAND



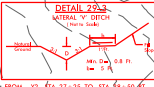
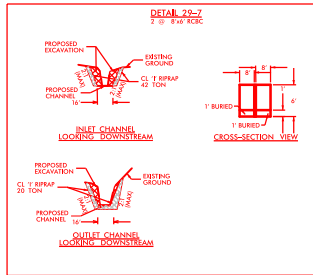
DENOTES IMPACTS IN
SURFACE WATER



DENOTES MECHANIZED
CLEARING



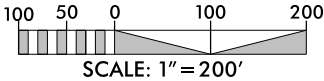
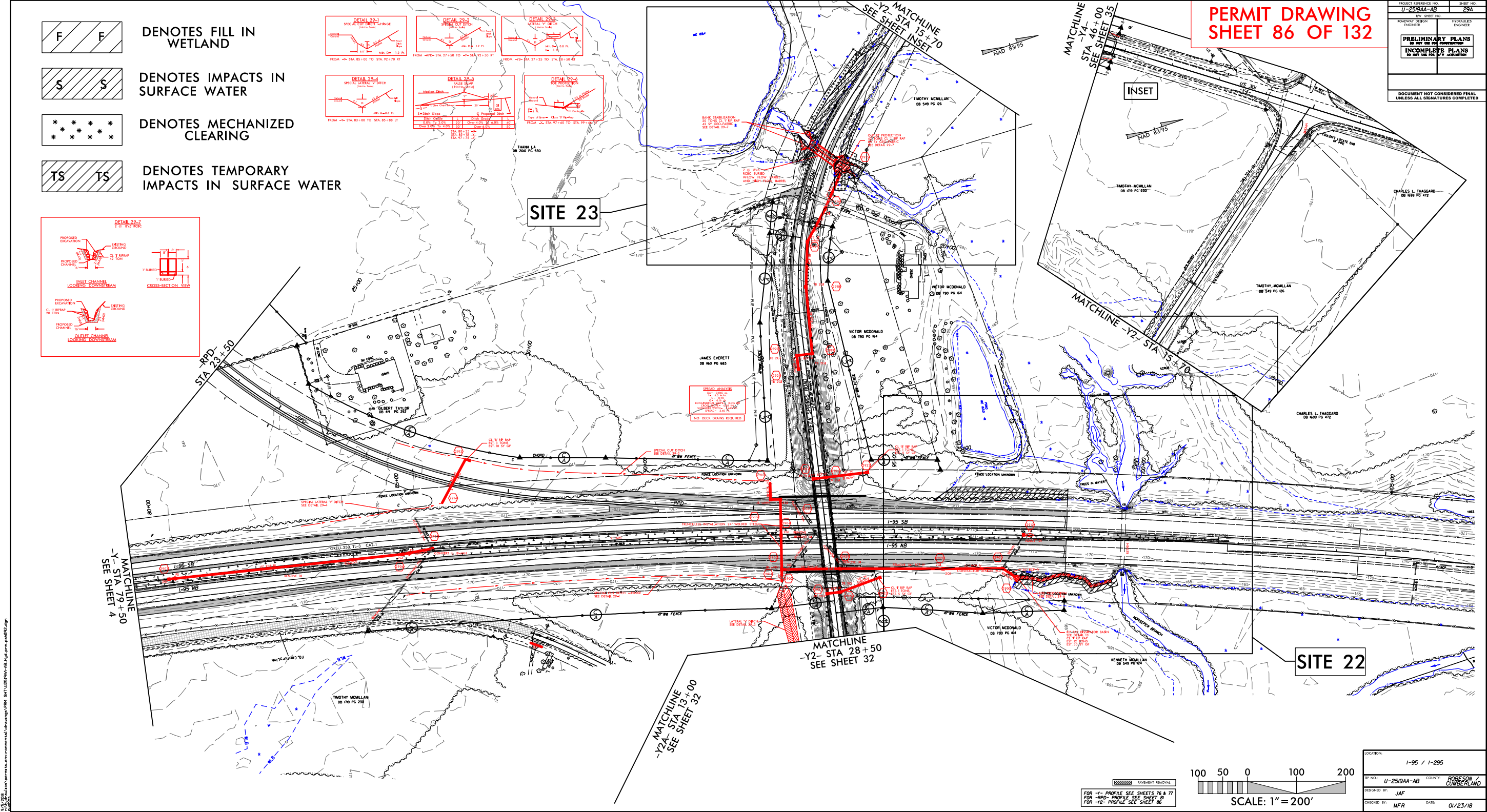
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



SITE 23

PERMIT DRAWING
SHEET 86 OF 132

PROJECT REFERENCE NO.	SHEET NO.
U-25/9AA-AB	284
ROADWAY DESIGN	HYDRAULICS
ENGINEER	ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR CONSTRUCTION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



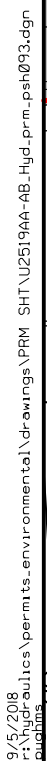
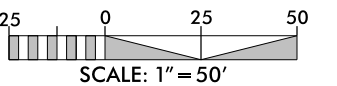
FOR -Y- PROFILE SEE SHEETS 76 & 77
FOR -RPO- PROFILE SEE SHEET 81
FOR -I2- PROFILE SEE SHEET 86

LOCATION:	I-95 / I-295
TP NO.:	U-25/9AA-AB
COUNTY:	ROBERTSON / CUMBERLAND
DESIGNED BY:	JAF
CHECKED BY:	MFR
DATE:	01/23/18

PROJECT REFERENCE NO.	SHEET NO.
<i>U-2519AA-AB</i>	<i>29B</i>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PERMIT DRAWING
SHEET 87 OF 132



6/23/16

9/5/2018
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psh05

PERMIT DRAWING
SHEET 89 OF 132

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 29D
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

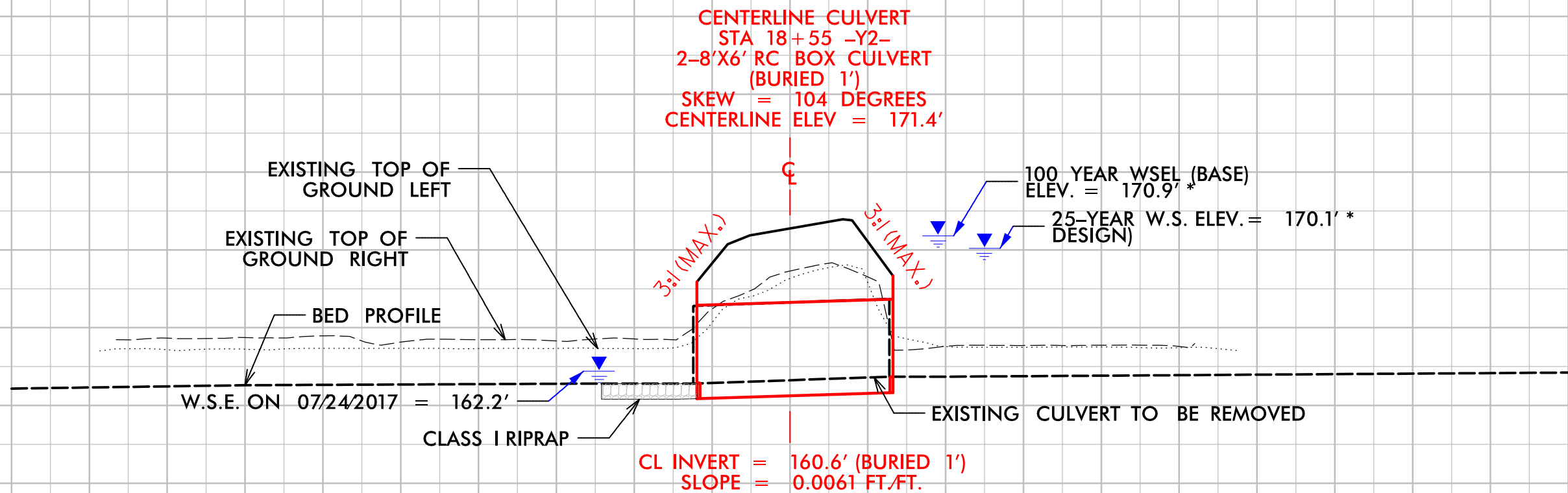
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180

170

160

150

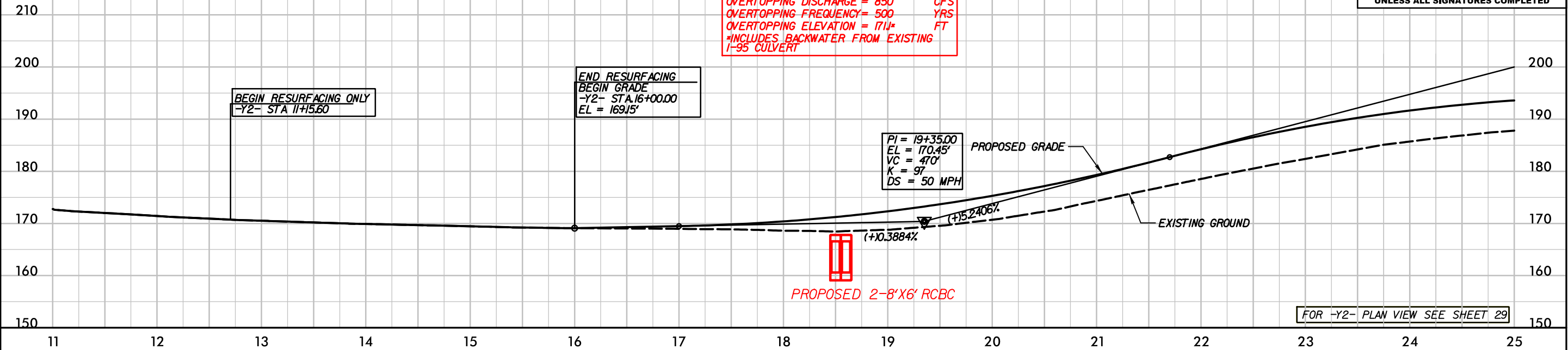


-Y2-
SR 1718 (GREEN SPRINGS RD)

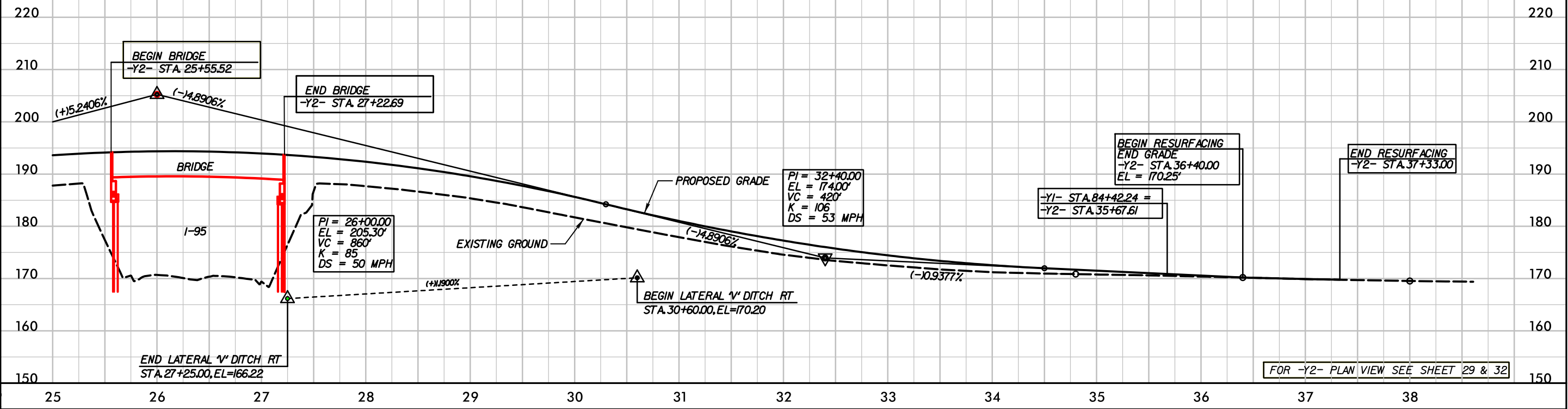
PERMIT DRAWING
SHEET 90 OF 132

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 86
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 487	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 170.1*	FT
BASE DISCHARGE	= 650	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 170.9*	FT
OVERTOPPING DISCHARGE	= 850	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 171.1*	FT
*INCLUDES BACKWATER FROM EXISTING I-95 CULVERT		



-Y2-
SR 1718 (GREEN SPRINGS RD)



9/5/2018
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6/23/16

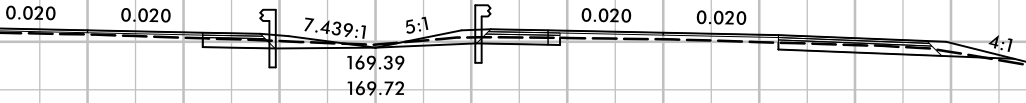
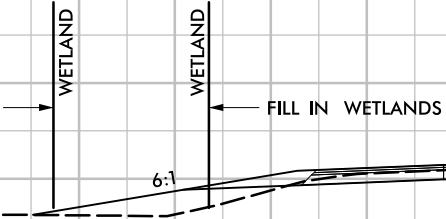


PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-342

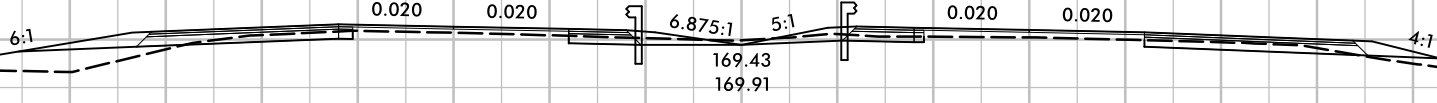
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PERMIT DRAWING
SHEET 91 OF 132

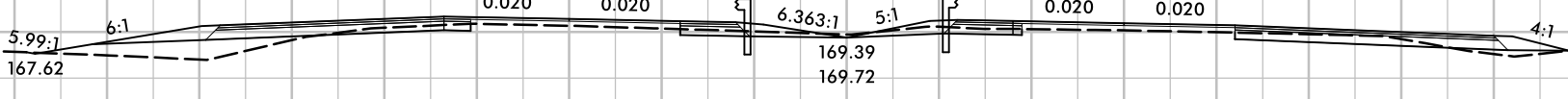
SITE 22



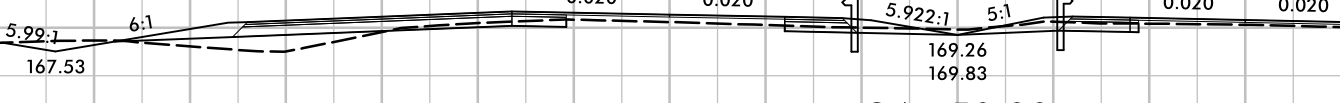
96 + 00.00



95 + 50.00



95 + 00.00



94 + 50.00

-Y-

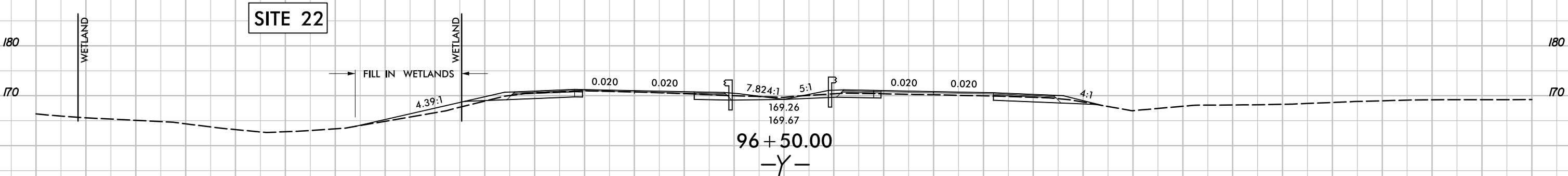
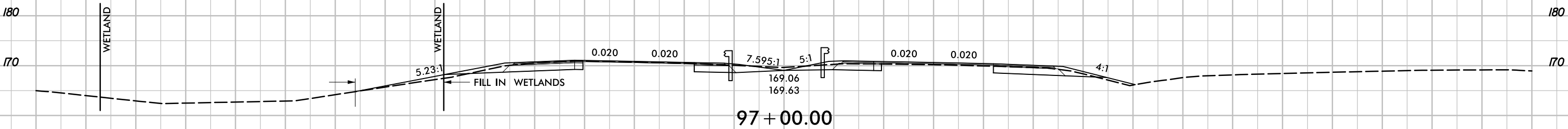
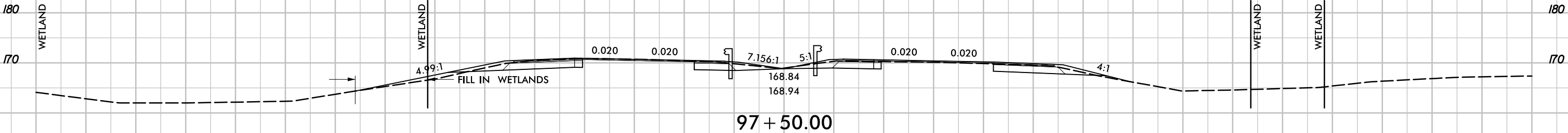
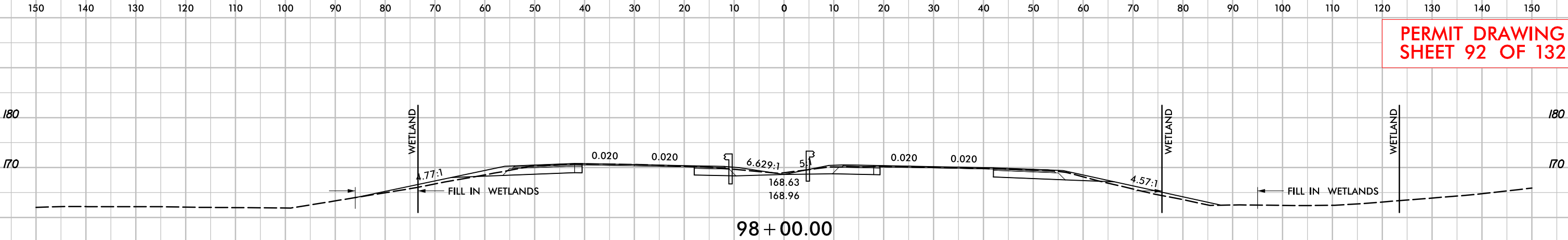
9/5/2018
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6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-343

PERMIT DRAWING
SHEET 92 OF 132



9/5/2018
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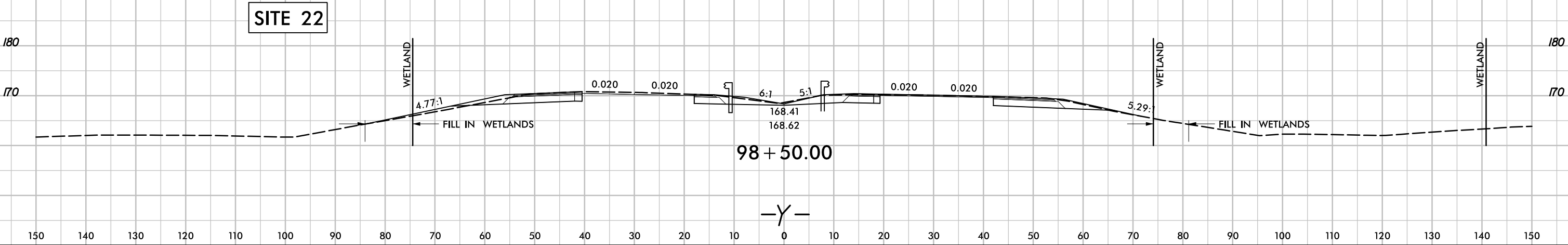
6/23/16

9/5/2018
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PROJ. REFERENCE NO.		SHEET NO.	
U-2519AA-AB		X-344	

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PERMIT DRAWING
SHEET 93 OF 132



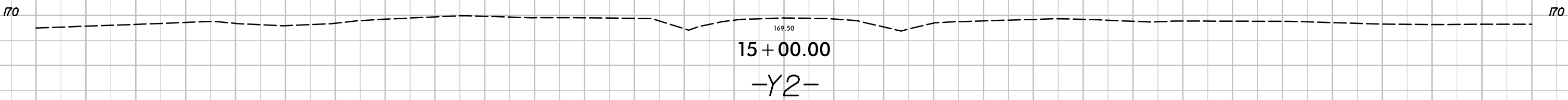
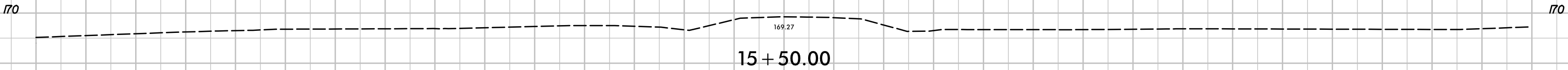
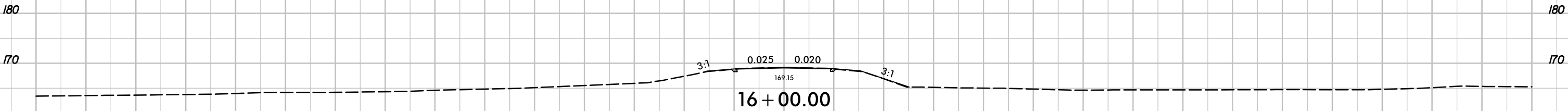
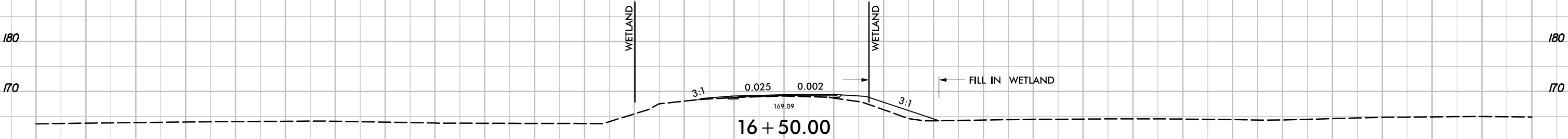
6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-381

PERMIT DRAWING
SHEET 94 OF 132

SITE 23

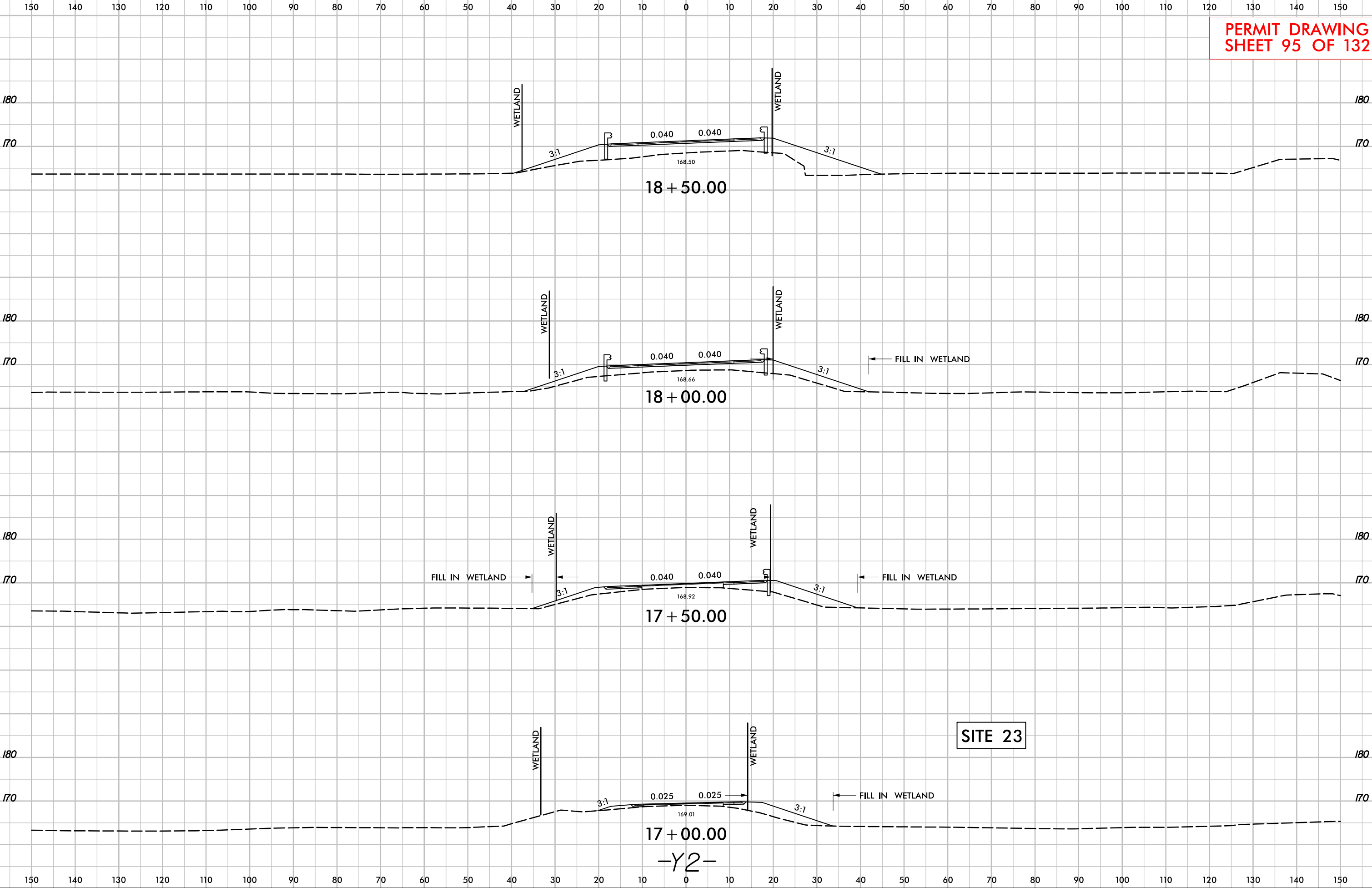


6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-382

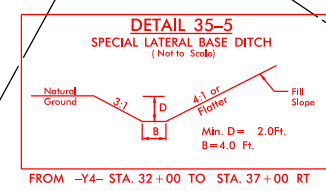
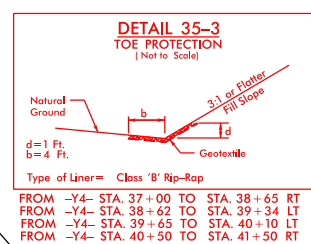
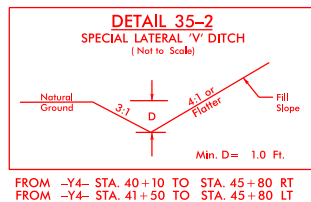
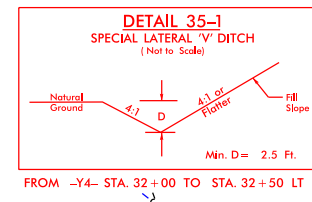
PERMIT DRAWING
SHEET 95 OF 132



PERMIT DRAWING
SHEET 96 OF 132

TIMOTHY MCMILLAN
DB 549 PG 126

PROJECT REFERENCE NO. U-2519AA-AB		SHEET NO. 35
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

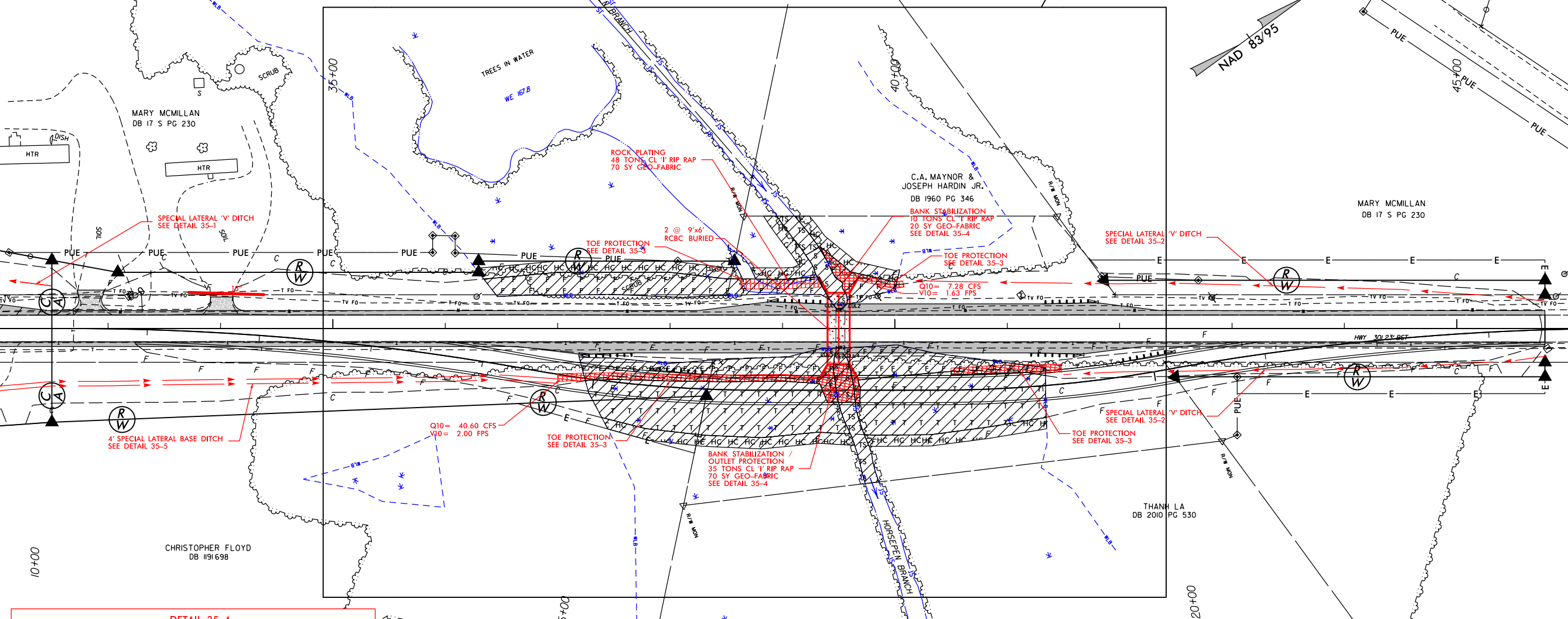


MYRA HAGEN
DB 17 S PG 230

SITE 24

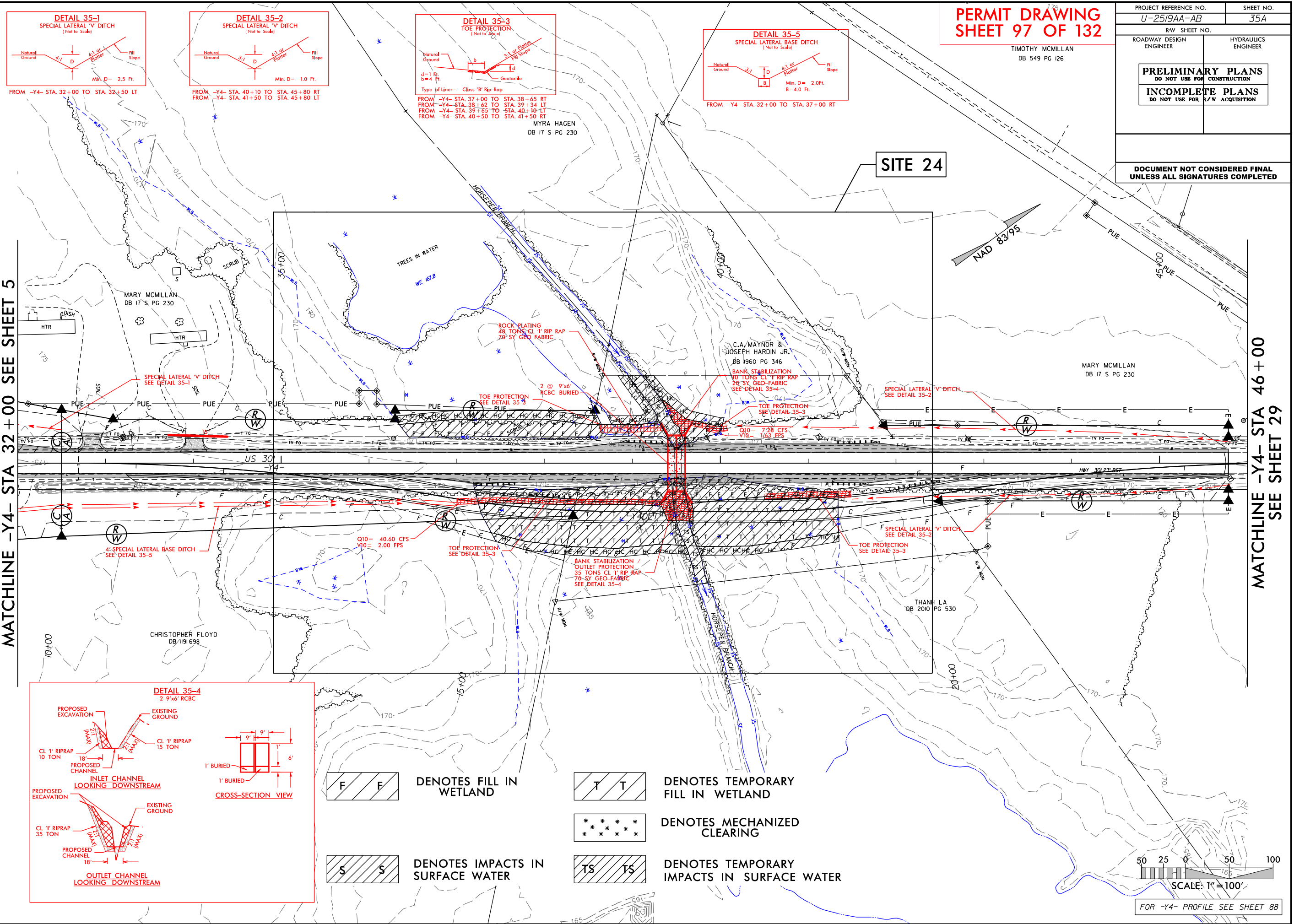
MATCHLINE -Y4- STA 32+00 SEE SHEET 5

MATCHLINE -Y4- STA 46+00
SEE SHEET 29



9/5/2018 \\bulitics\permits_environmental\drawings\PRM_SHT\U2519AA-AB_Hyd_prm_psh112.dgn

MATCHLINE -Y4- STA 32+00 SEE SHEET 5



PERMIT DRAWING
SHEET 97 OF 132

TIMOTHY MCMILLAN
DB 549 PG 126

PROJECT REFERENCE NO. U-2519AA-AB		SHEET NO. 35A	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

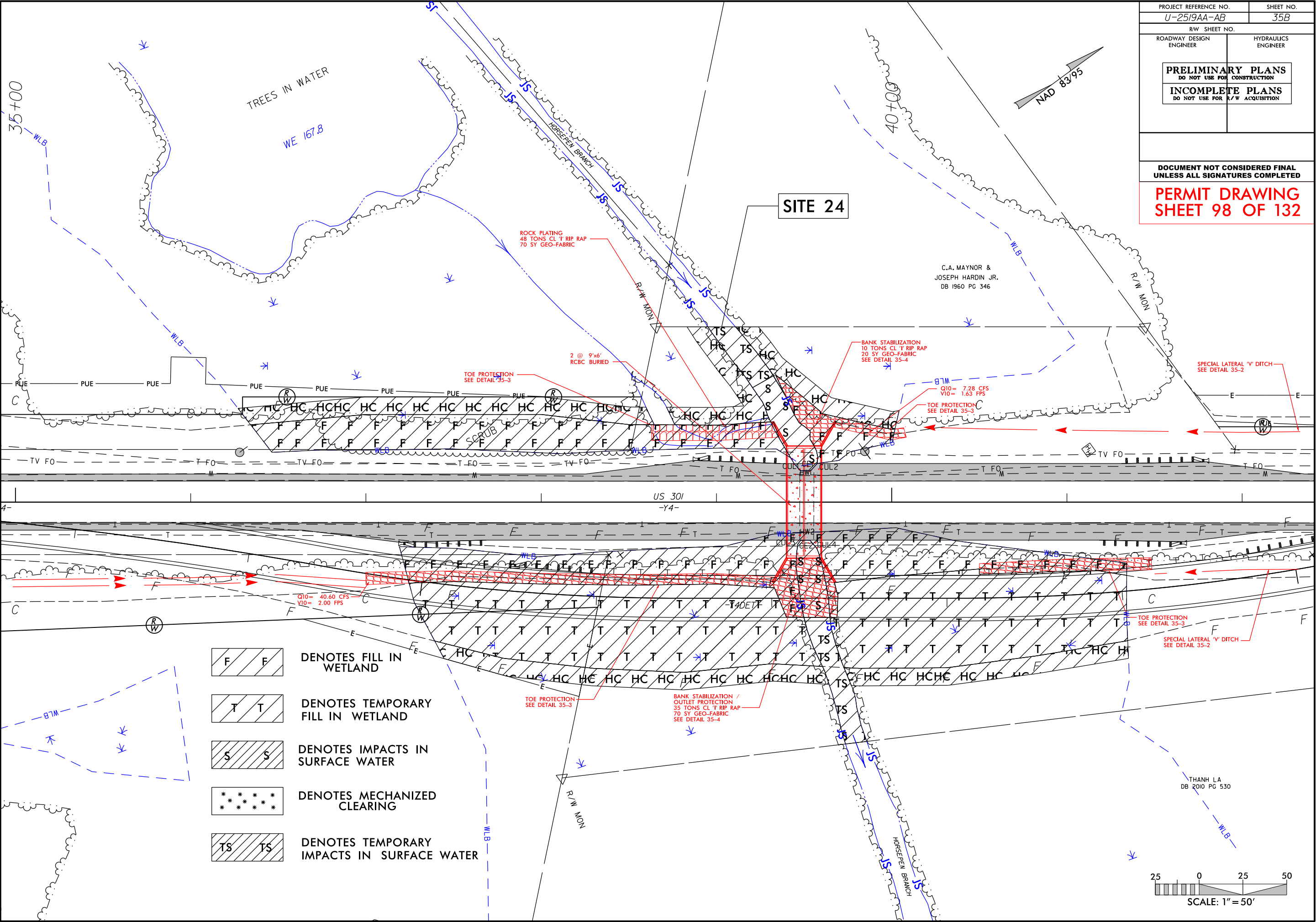
SITE 24

MATCHLINE -Y4- STA 46+00
SEE SHEET 29

PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	35B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

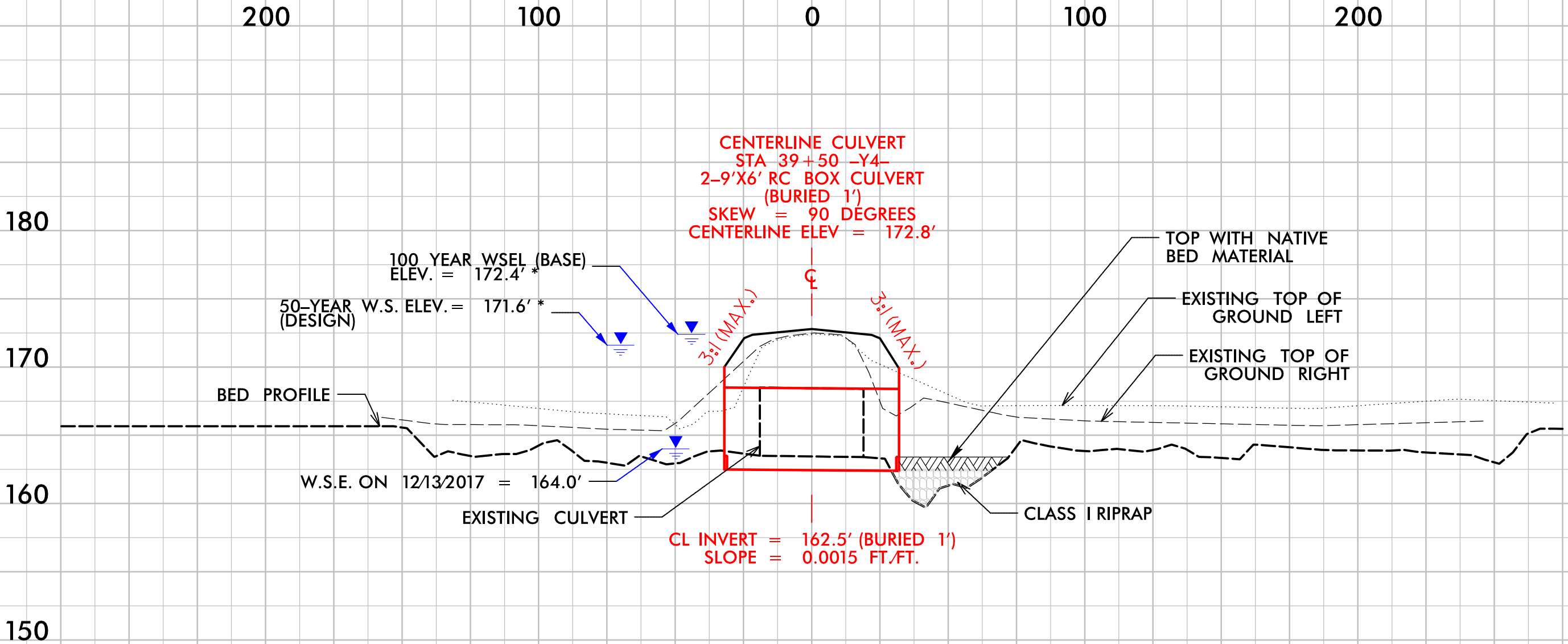
PERMIT DRAWING
SHEET 98 OF 132



9/5/2018 9:11:31 AM C:\Users\psh113\Documents\Drawings\PRM_SHT\U2519AA-AB_Hyd.prm_psh113.dgn

PERMIT DRAWING
SHEET 99 OF 132

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 35C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

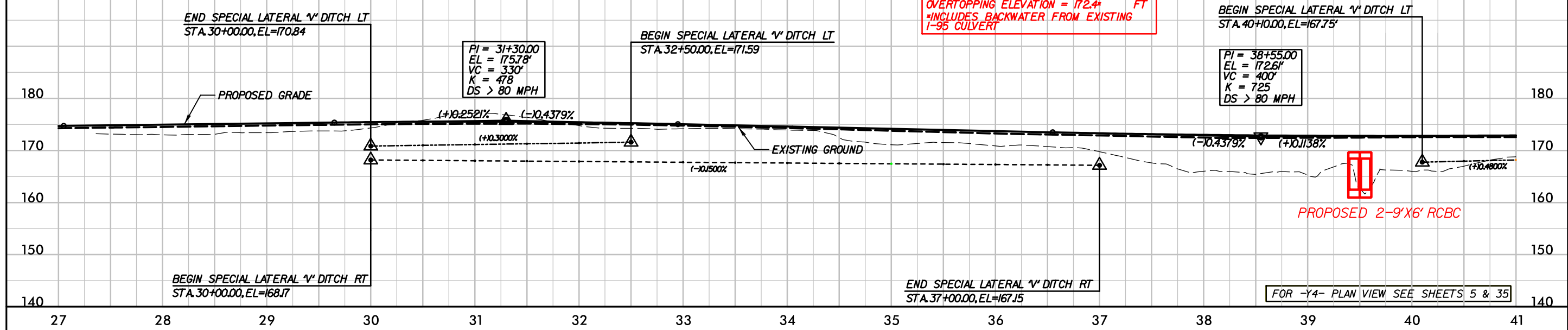


-Y4-
US 301

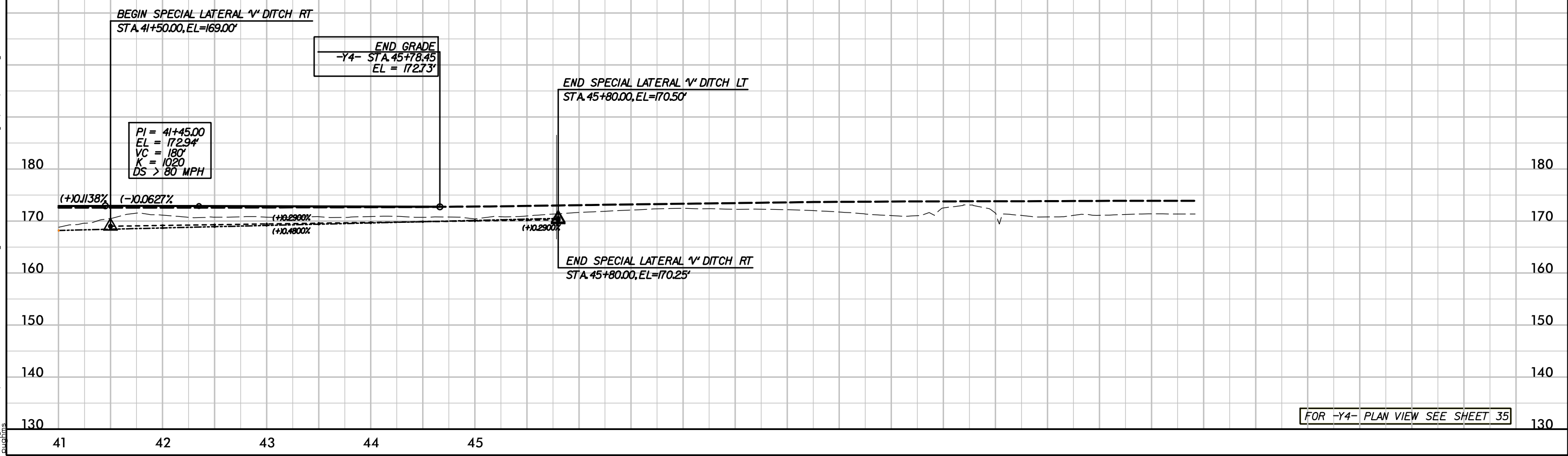
PERMIT DRAWING
SHEET 100 OF 132

PROJECT REFERENCE NO. U-2519AA-AB		SHEET NO. 88	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 544	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 171.6	FT
BASE DISCHARGE	= 624	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 172.4	FT
OVERTOPPING DISCHARGE	= 624	CFS
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING ELEVATION	= 172.4	FT
*INCLUDES BACKWATER FROM EXISTING I-95 CULVERT		



-Y4-
US 301



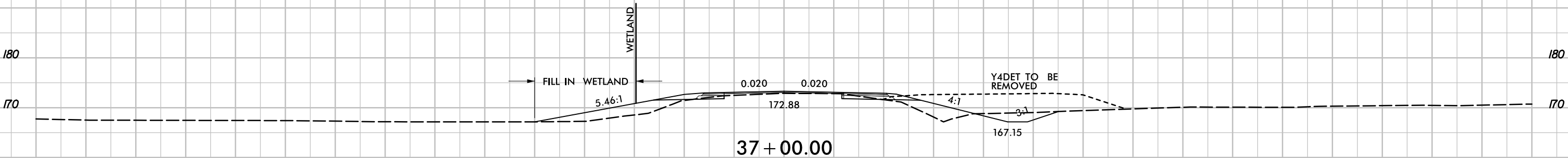
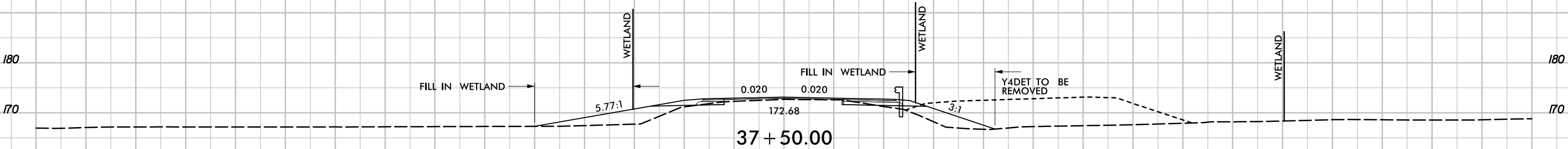
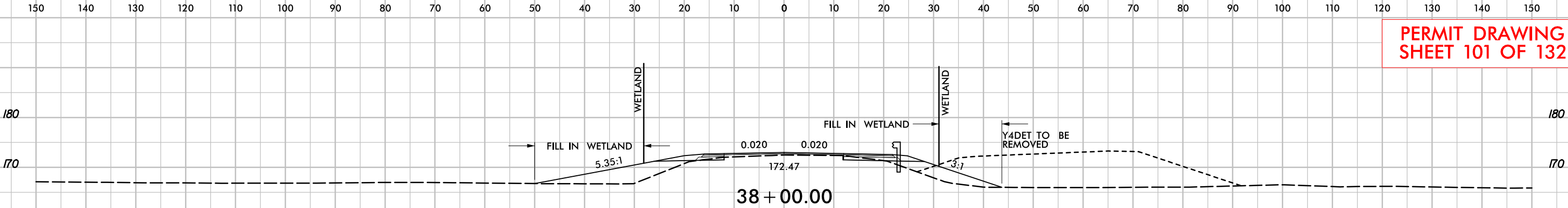
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6/23/16

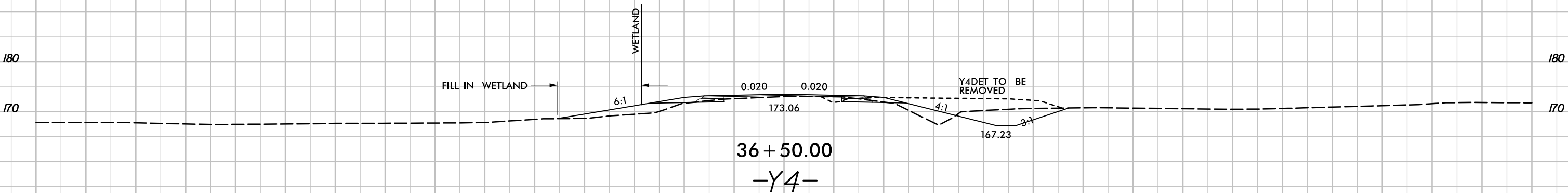


PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-414

PERMIT DRAWING
SHEET 101 OF 132



SITE 24



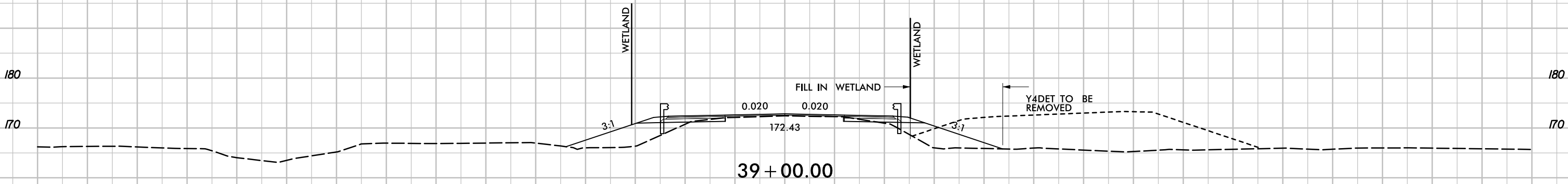
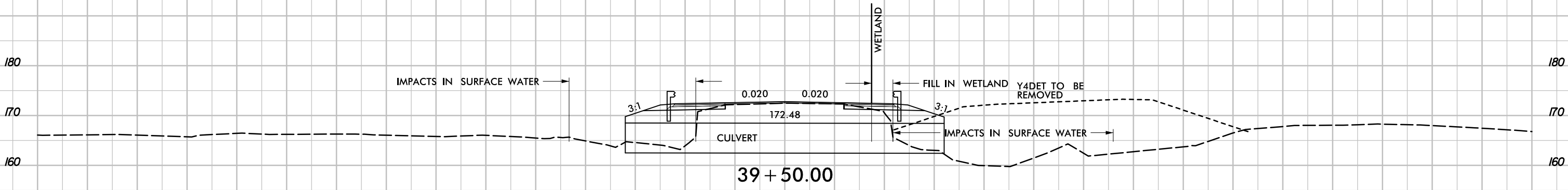
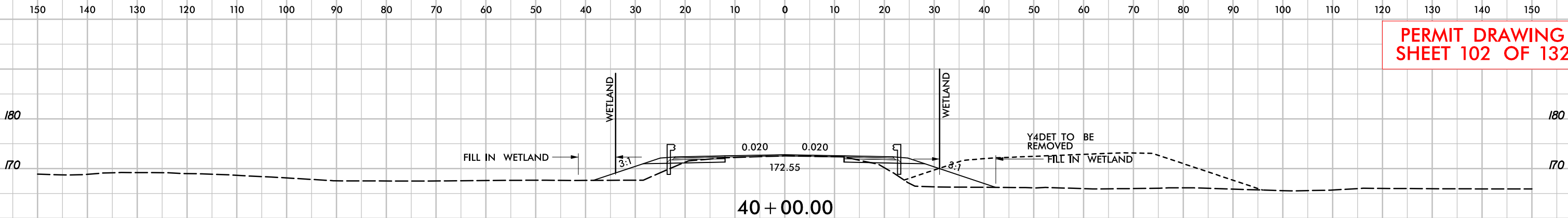
-Y4-

6/23/16

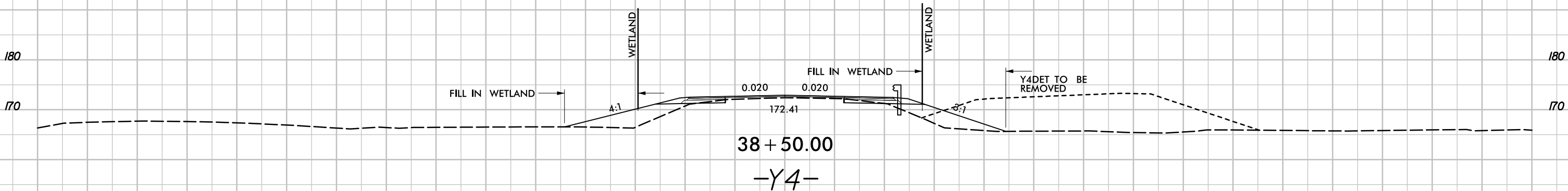


PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-415

PERMIT DRAWING
SHEET 102 OF 132



SITE 24



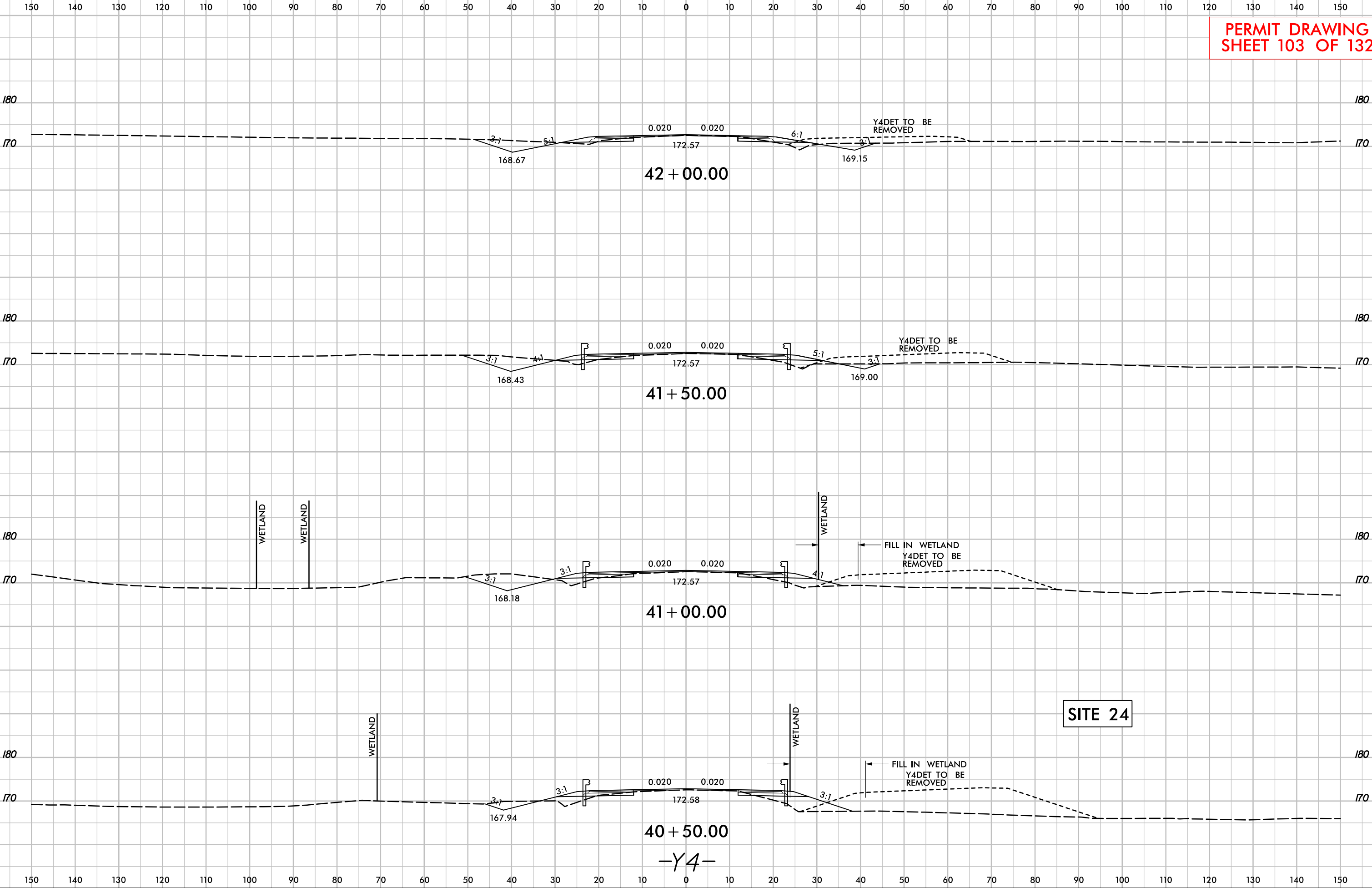
-Y4-

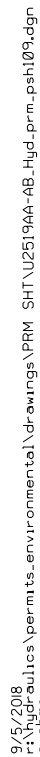
6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-416

PERMIT DRAWING
SHEET 103 OF 132





6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-447

PERMIT DRAWING
SHEET 107 OF 132

SITE 25

EXCAVATION

WETLAND

180

170

180

170

6:1

173.00

6:1

0.020

0.020

6:1

170.10

4:1

173.07

94 + 00.00

-Y5-

9/5/2018
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PROJECT REFERENCE NO.
U-2519AA-AB

SHEET NO.
43

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

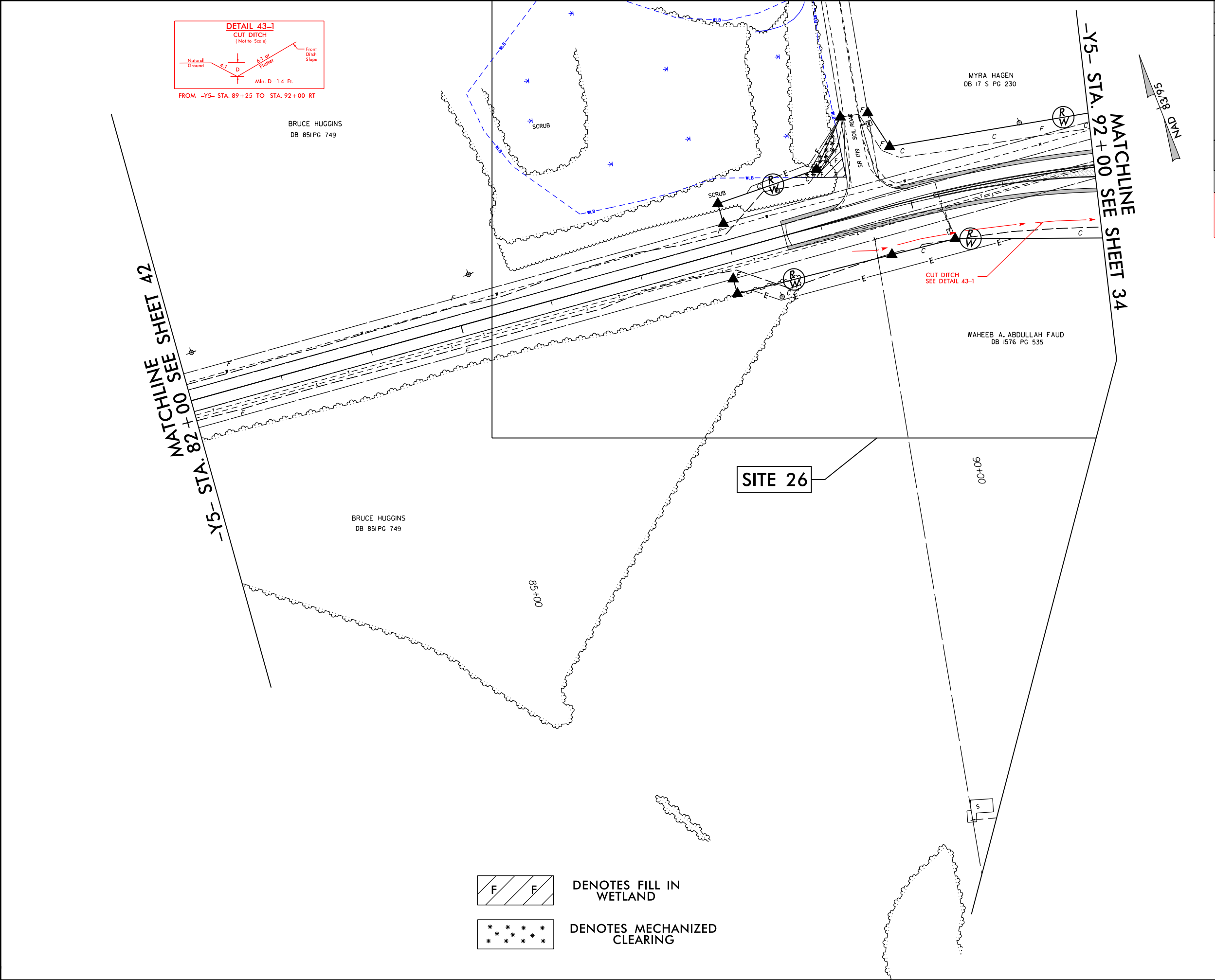
HYDRAULICS ENGINEER

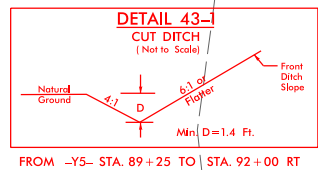
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 108 OF 132





BRUCE HUGGINS
DB 851 PG 749

MYRA HAGEN
DB 17 S PG 230

WAHEEB A. ABDULLAH FAUD
DB I576 PG 535

SITE 26

BRUCE HUGGINS
DB 85MPG 749

DENOTES FILL IN
WETLAND

DENOTES MECHANIZED
CLEARING

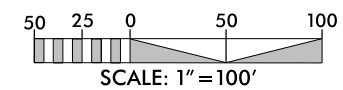
MATCHLINE
92+00 SEE SHEET 34
-Y5- STA.

89/95
NAD

PROJECT REFERENCE NO.	SHEET NO.
<u>U-25/9AA-AB</u>	<u>43A</u>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PERMIT DRAWING
SHEET 109 OF 132

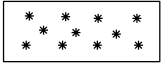


FOR -Y5- PROFILE SEE SHEET 9I

PROJECT REFERENCE NO.		SHEET NO.	
U-2519AA-AB		43B	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
PERMIT DRAWING SHEET 110 OF 132			



DENOTES FILL IN WETLAND



DENOTES MECHANIZED CLEARING



MYRA HAGEN
DB IT S PG 230

SITE 26

SCRUB

SCRUB

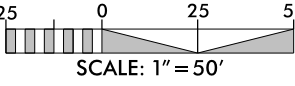
EXISTING R/W

NC 71
-Y5- EXISTING R

CUT DITCH
SEE DETAIL 43-1

WAHEEB A. ABDULLAH FAUD
DB 1576 PG 535

WAHEEB A. ABDULLAH FAUD
DB 1576 PG 535



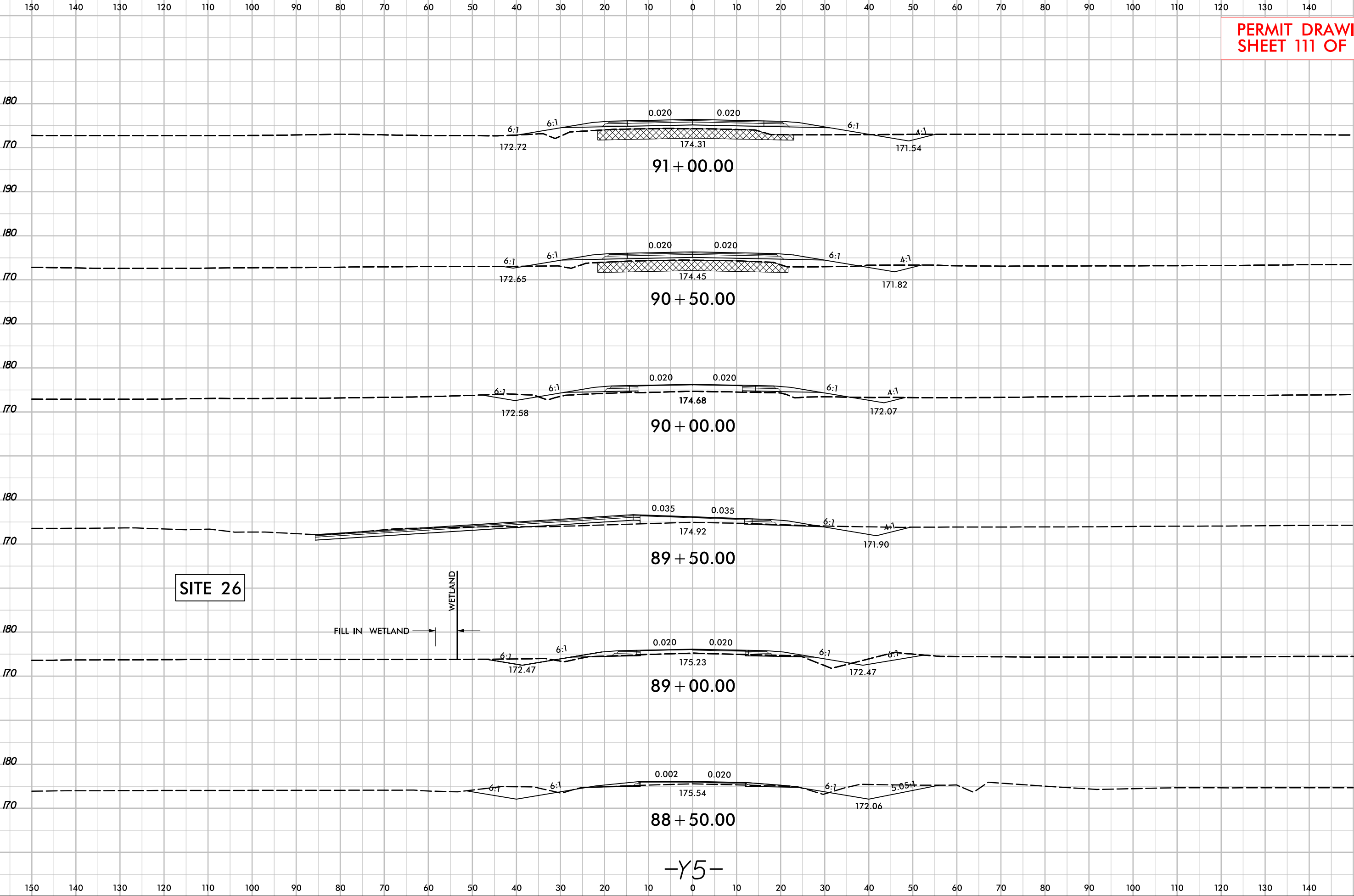
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9/5/2018
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2519AA-AB	X-446

PERMIT DRAWING
SHEET 111 OF 132



SITE 26

FILL IN WETLAND

WETLAND

91 + 00.00

90 + 50.00

90 + 00.00

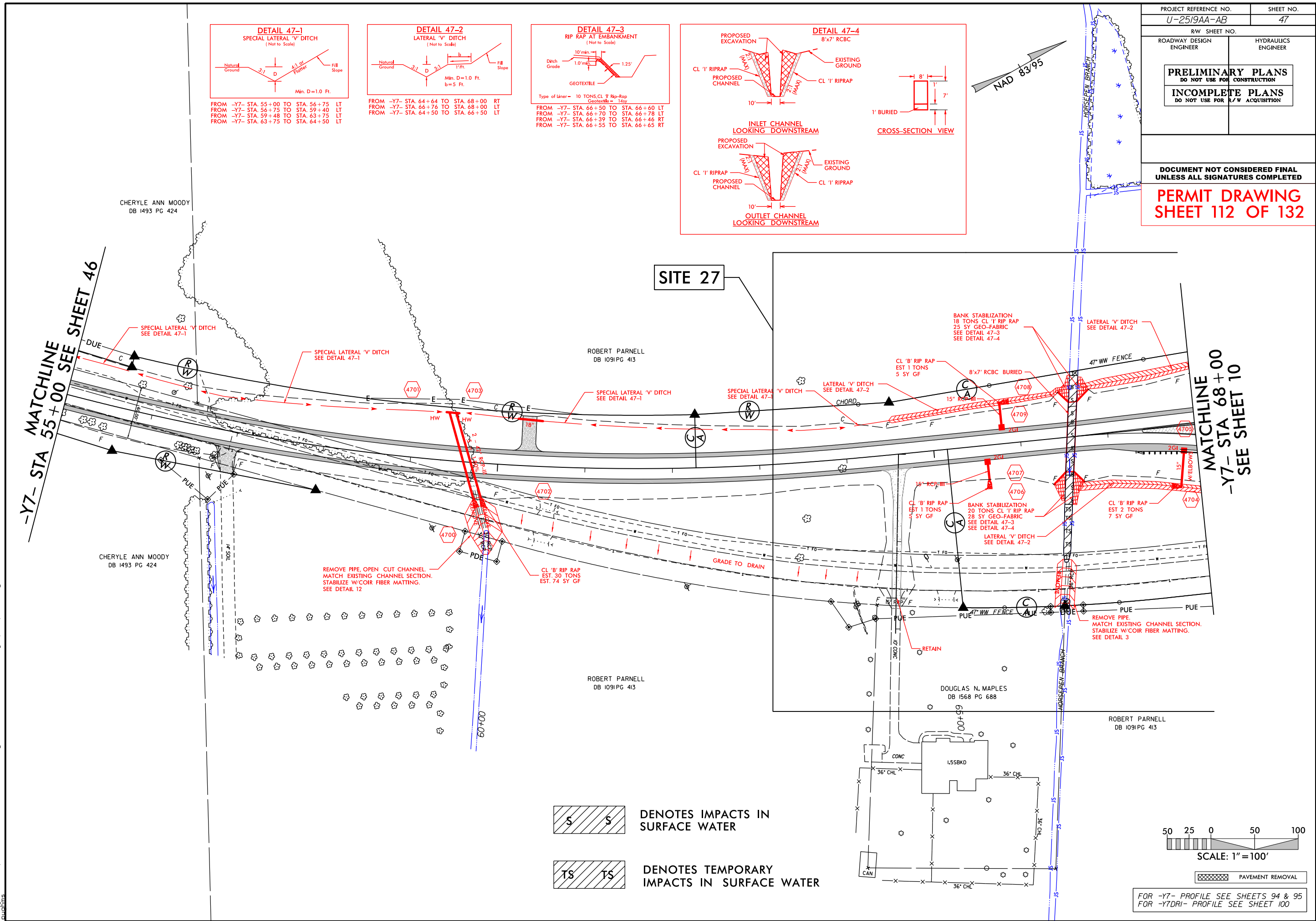
89 + 50.00

89 + 00.00

88 + 50.00

-Y5-

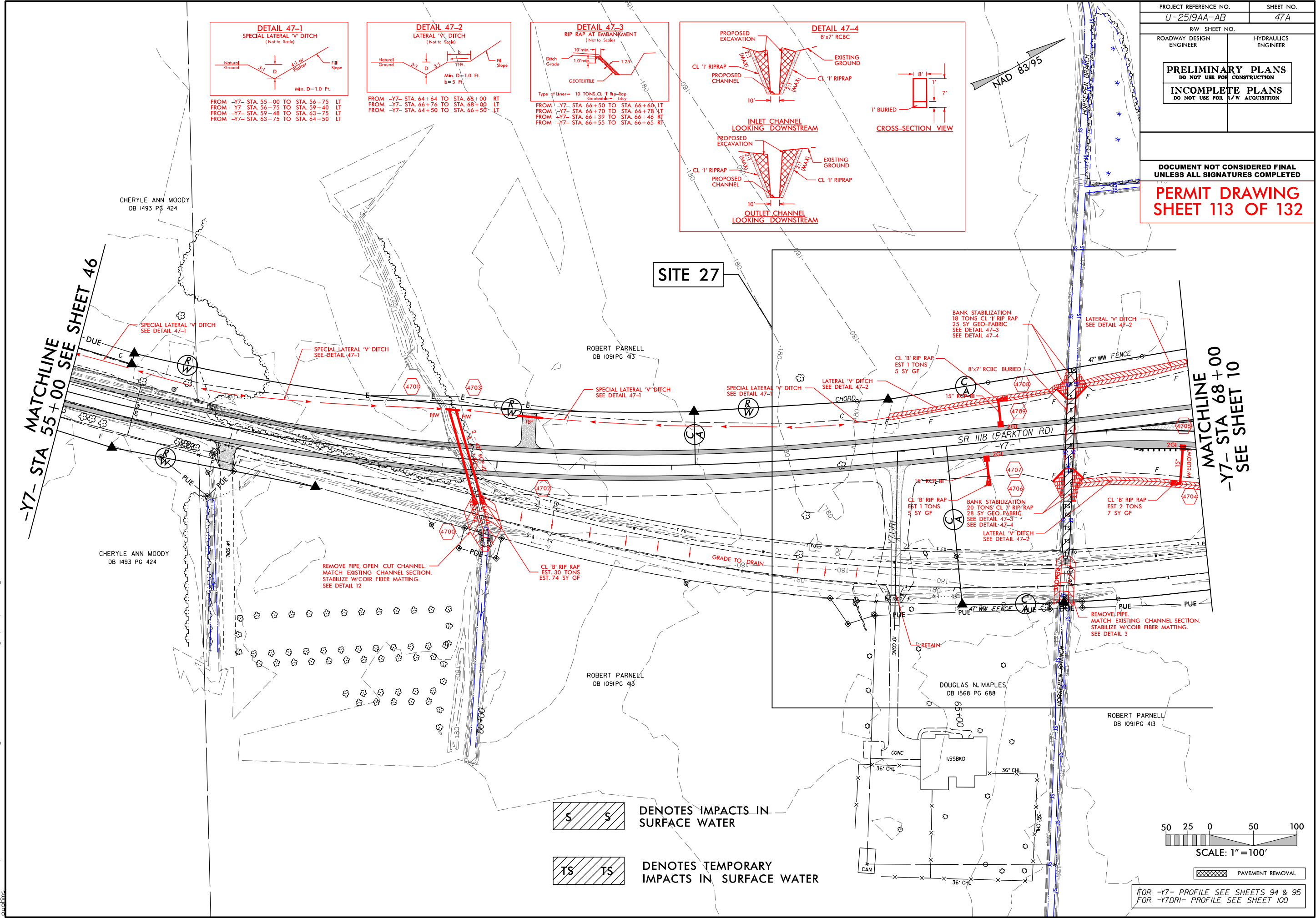
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PROJECT REFERENCE NO. U-2519AA-AB		SHEET NO. 47A	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

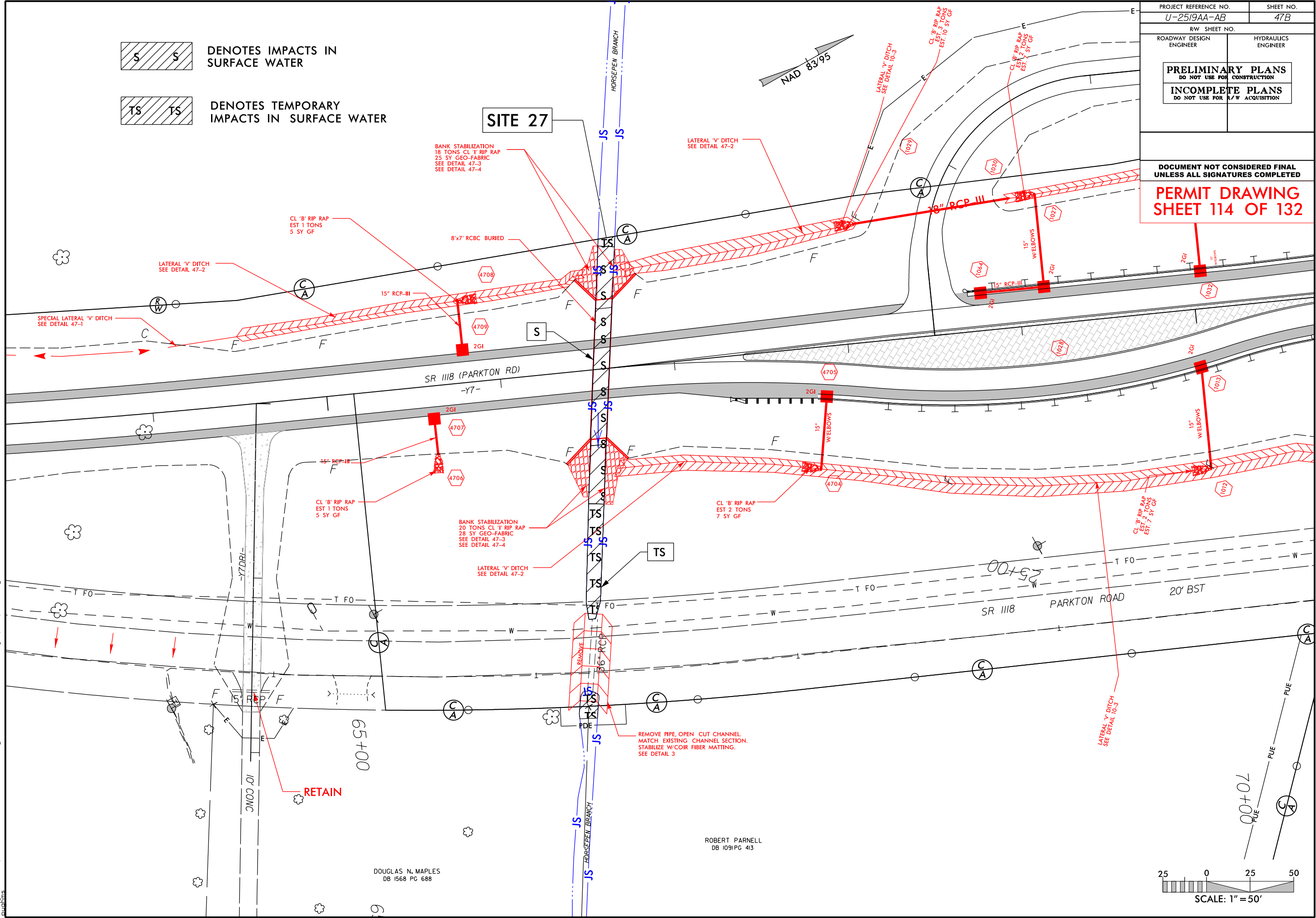
PERMIT DRAWING
SHEET 113 OF 132



PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	47B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

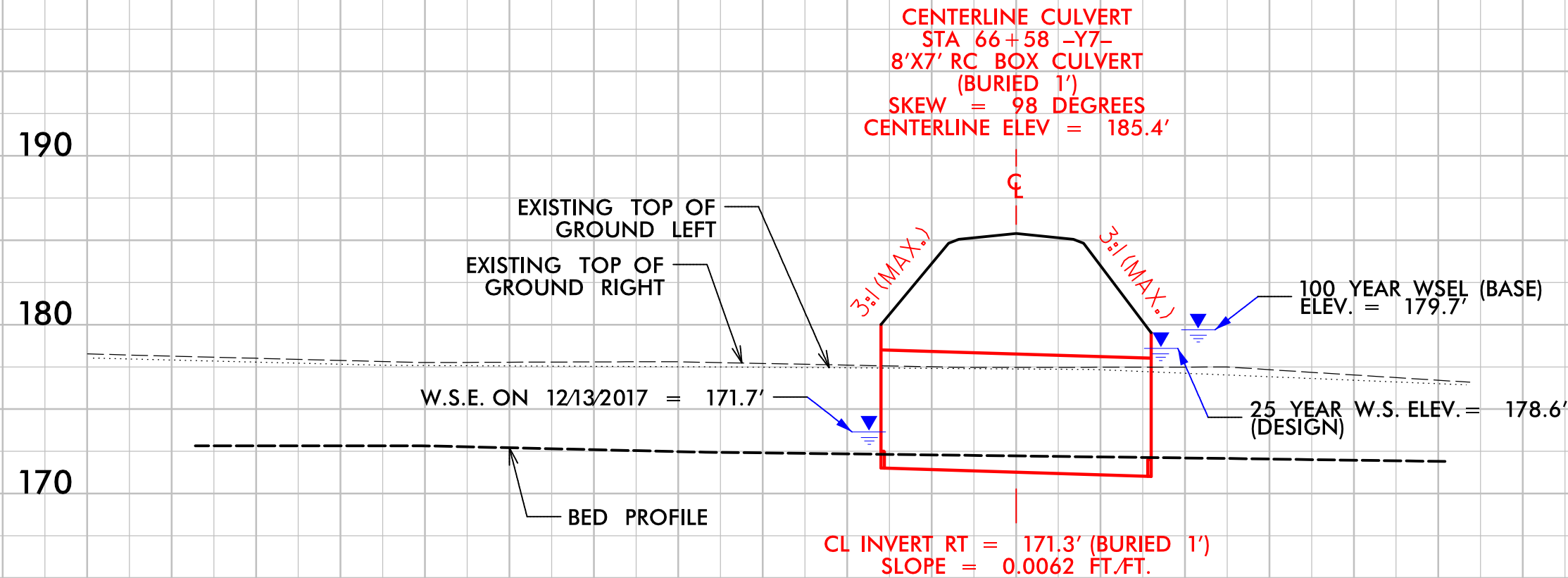
**PERMIT DRAWING
SHEET 114 OF 132**



9/5/2018
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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 47C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

200 100 0 100 200



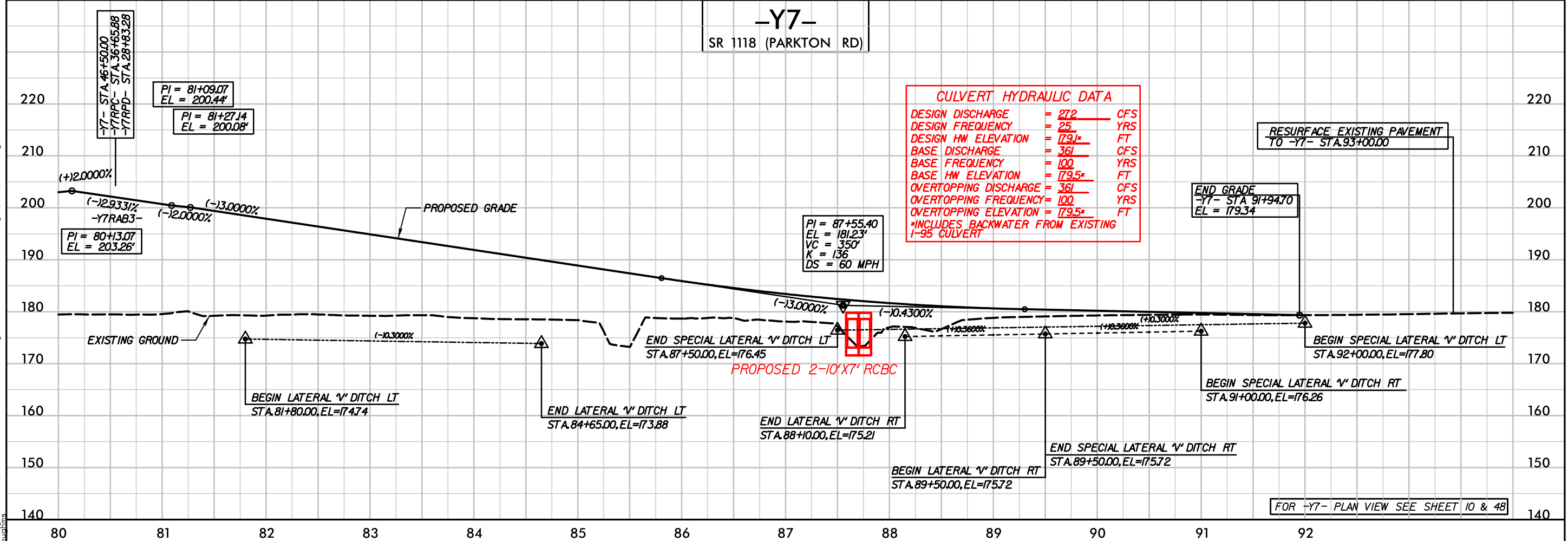
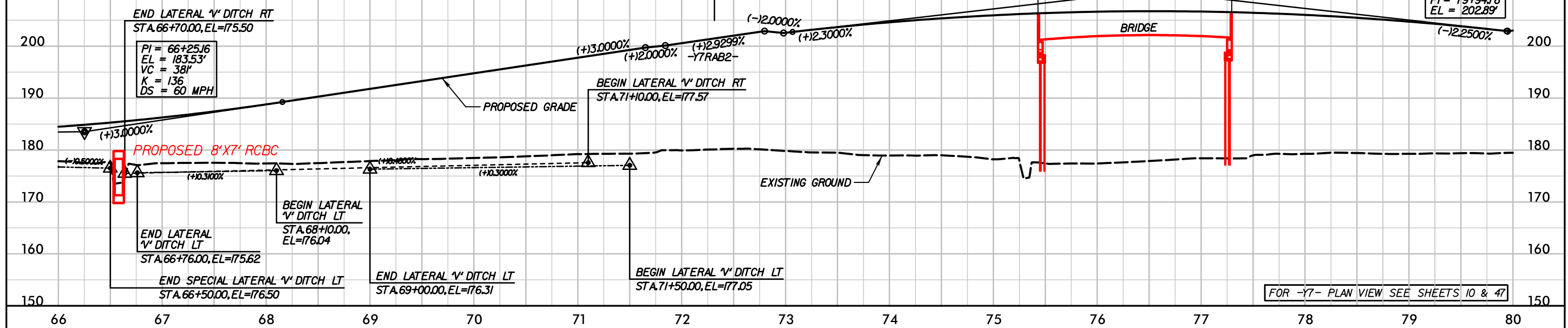
CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 229	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 178.6	FT
BASE DISCHARGE	= 303	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 179.7	FT
OVERTOPPING DISCHARGE	= 800	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 182.5	FT

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 220	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 149.3	FT
BASE DISCHARGE	= 260	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 149.5	FT
OVERTOPPING DISCHARGE	= 75200	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 175.3	FT
DATE OF SURVEY	= 02/28/18	
W.S.ELEVATION AT DATE OF SURVEY	= 146.4	FT

-Y7-
SR 1118 (PARKTON RD)

PERMIT DRAWING
SHEET 116 OF 132

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 95
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



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psh128



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-471

PERMIT DRAWING
SHEET 117 OF 132

SITE 27

IMPACTS IN SURFACE WATER

66 + 50.00

66 + 00.00

65 + 50.00

65 + 00.00

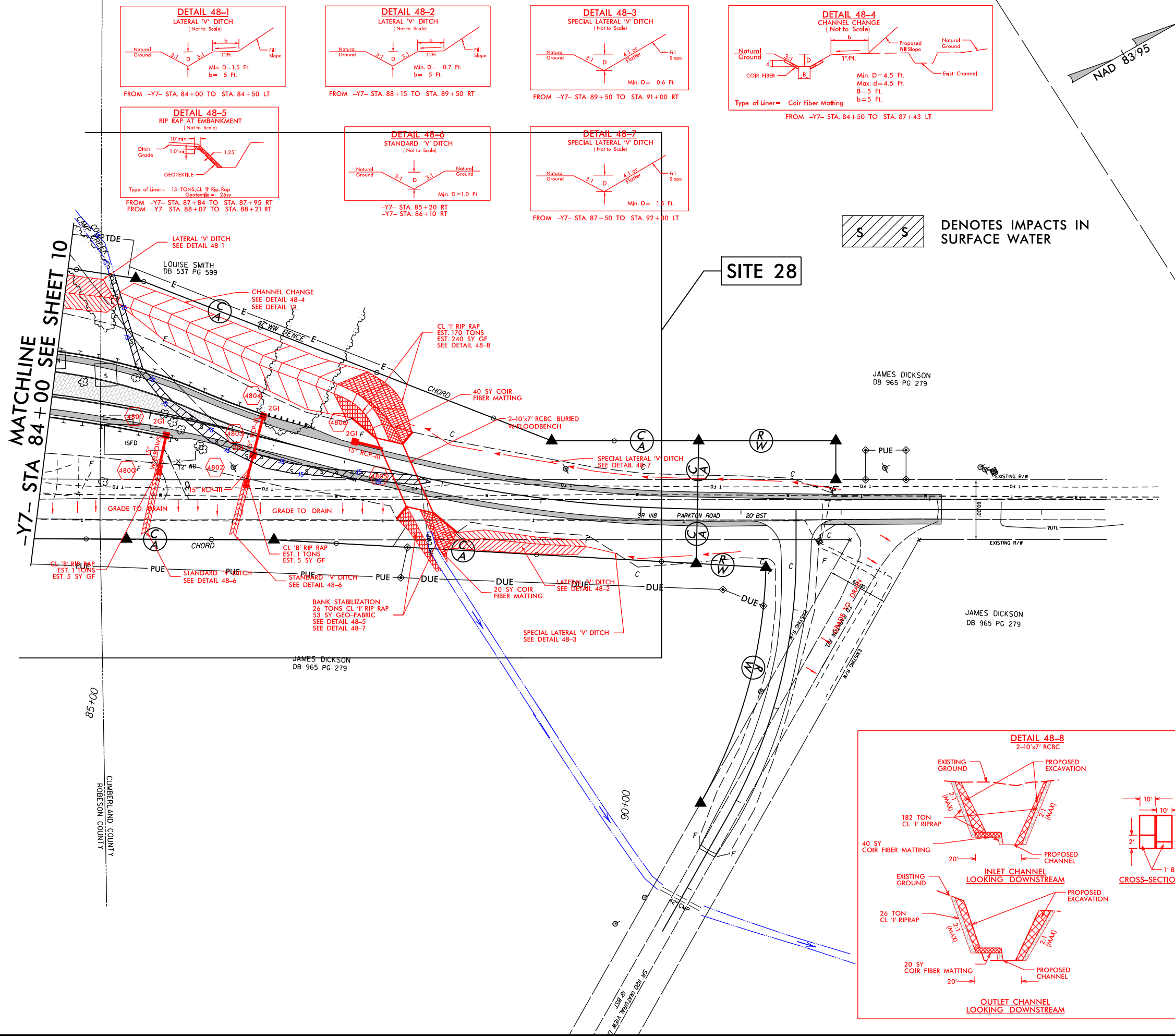
64 + 50.00

-Y7-

PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	48
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 118 OF 132

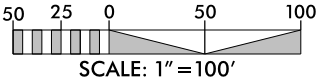
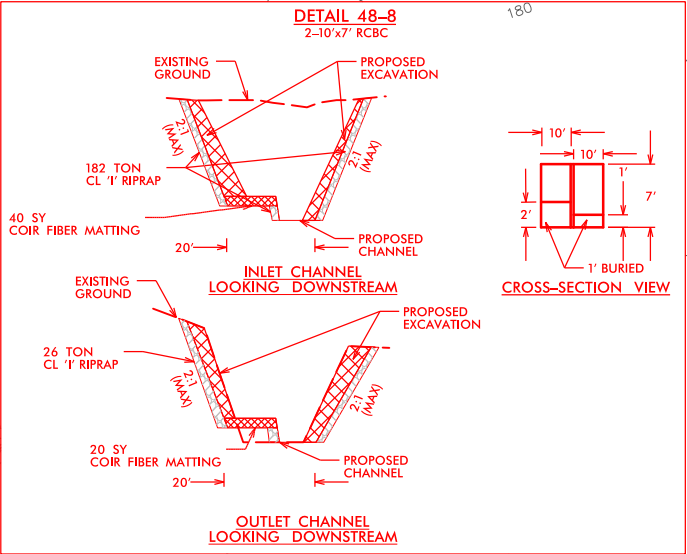
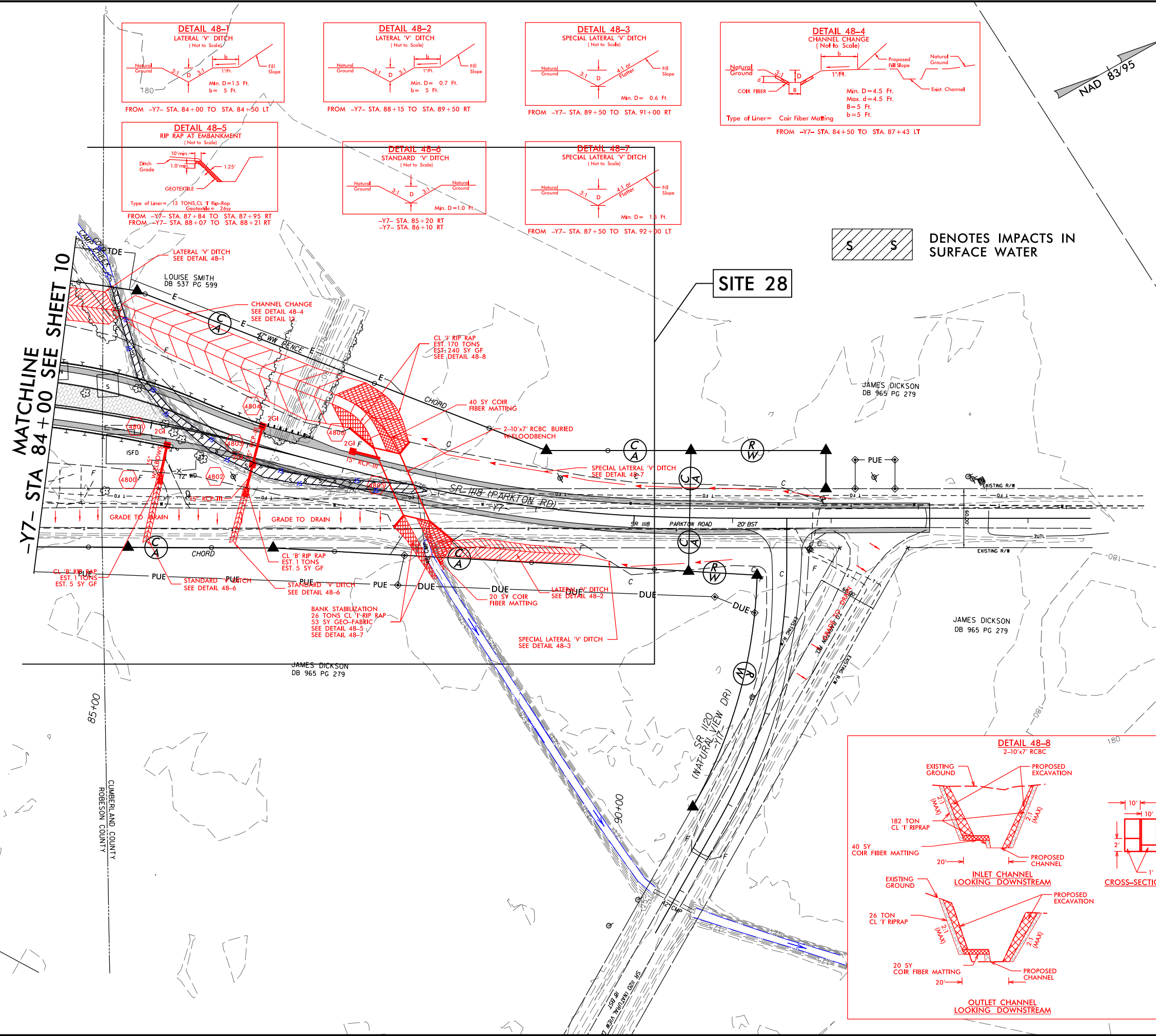


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PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	48A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 119 OF 132



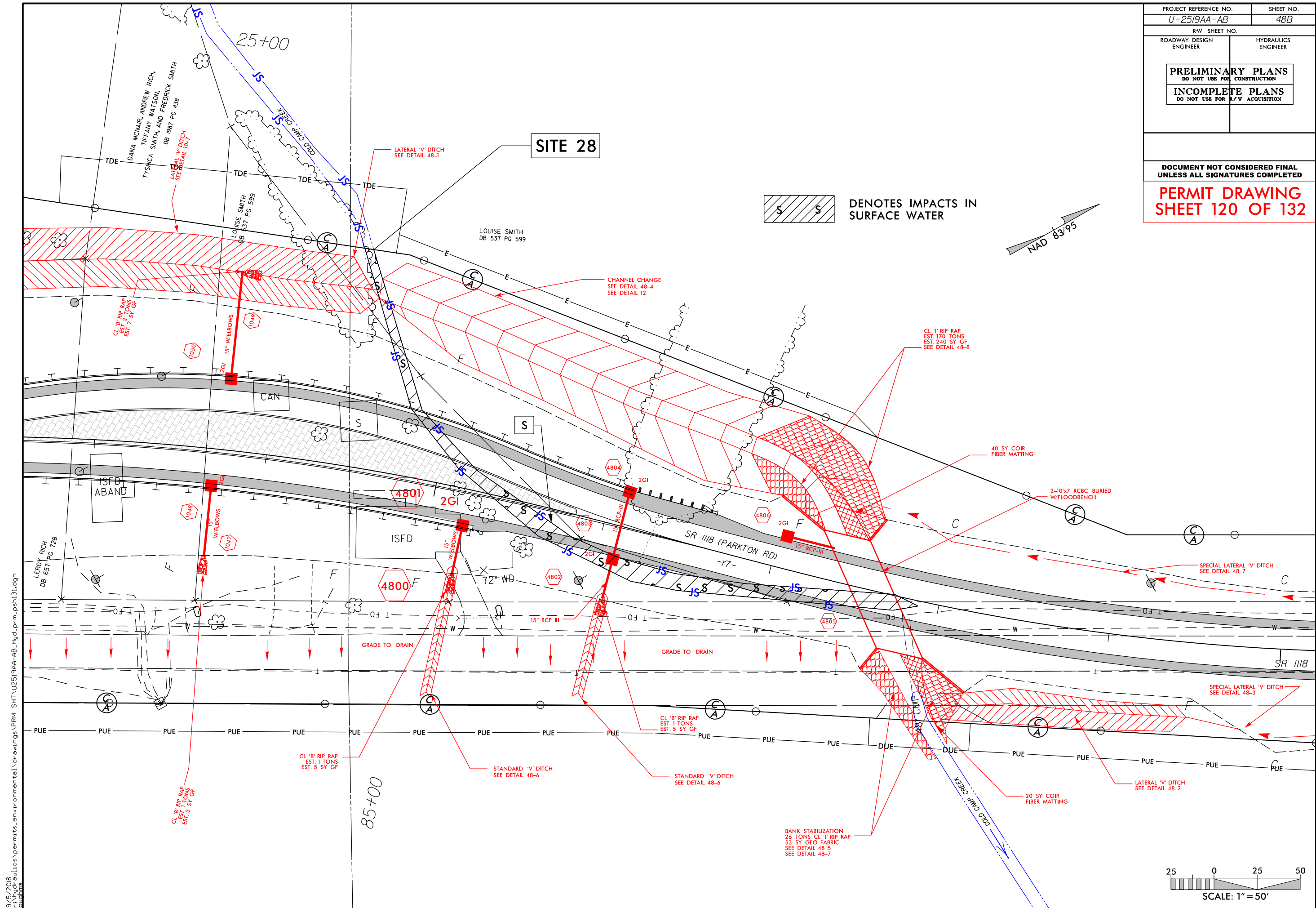
PAVEMENT REMOVAL

FOR -Y7- PROFILE SEE SHEET 95
FOR -Y17- PROFILE SEE SHEET 117

PROJECT REFERENCE NO.	SHEET NO.
<i>U-2519AA-AB</i>	<i>48B</i>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

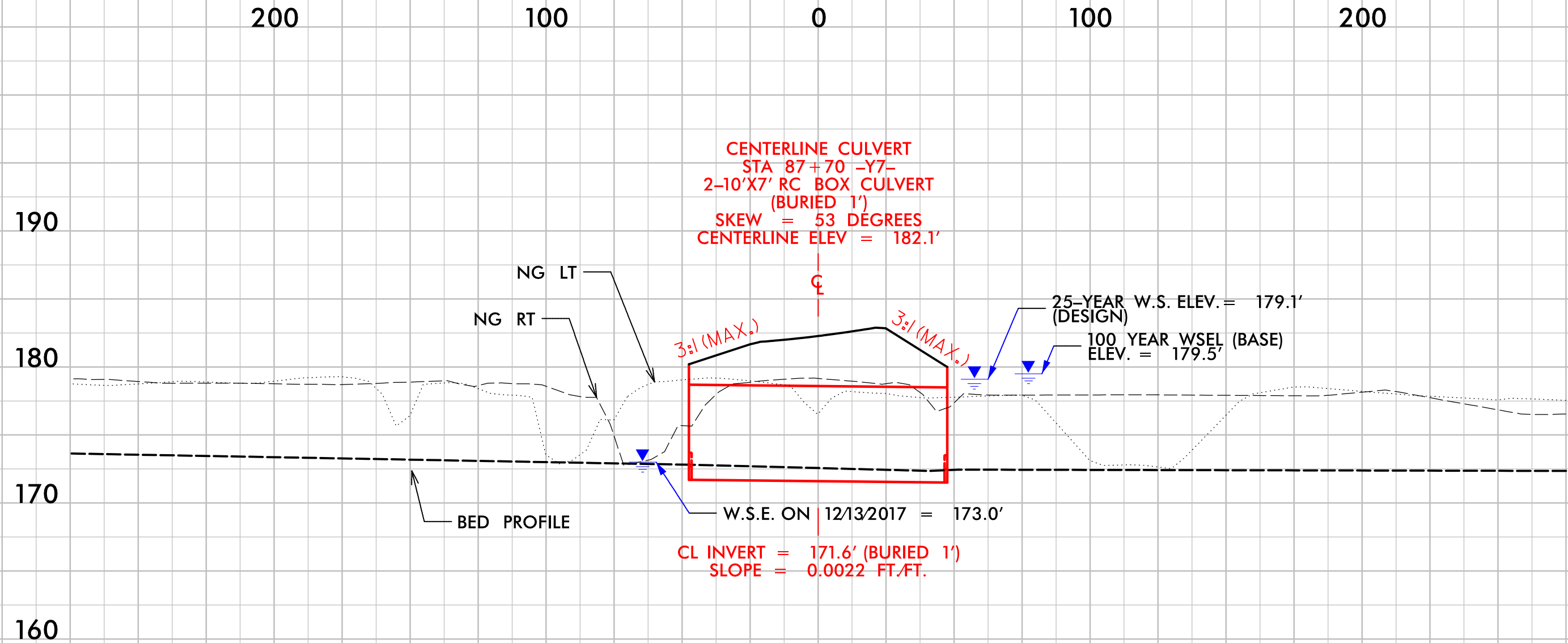
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PERMIT DRAWING
SHEET 120 OF 132



PERMIT DRAWING
SHEET 121 OF 132

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 48C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

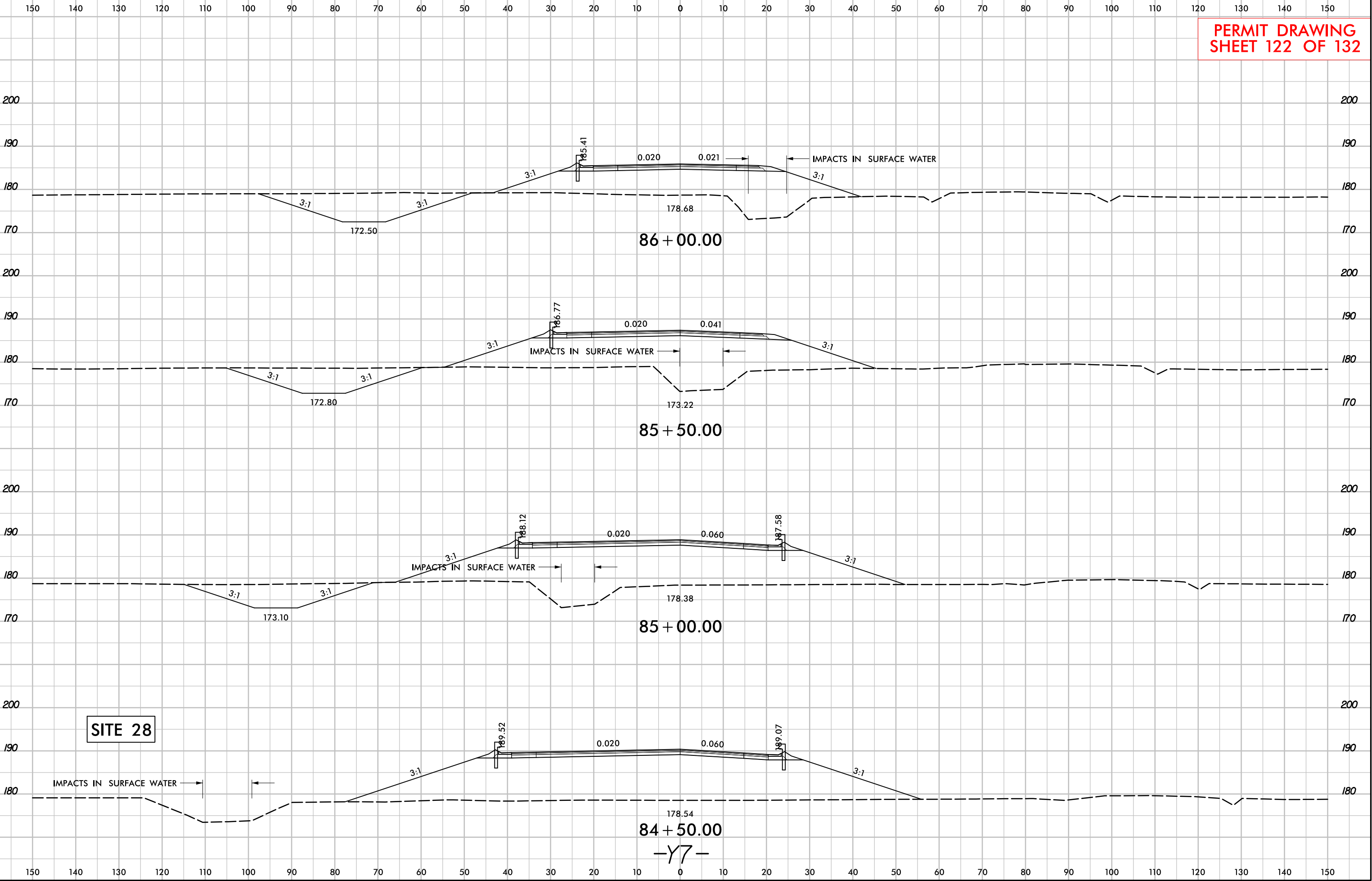


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PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-483

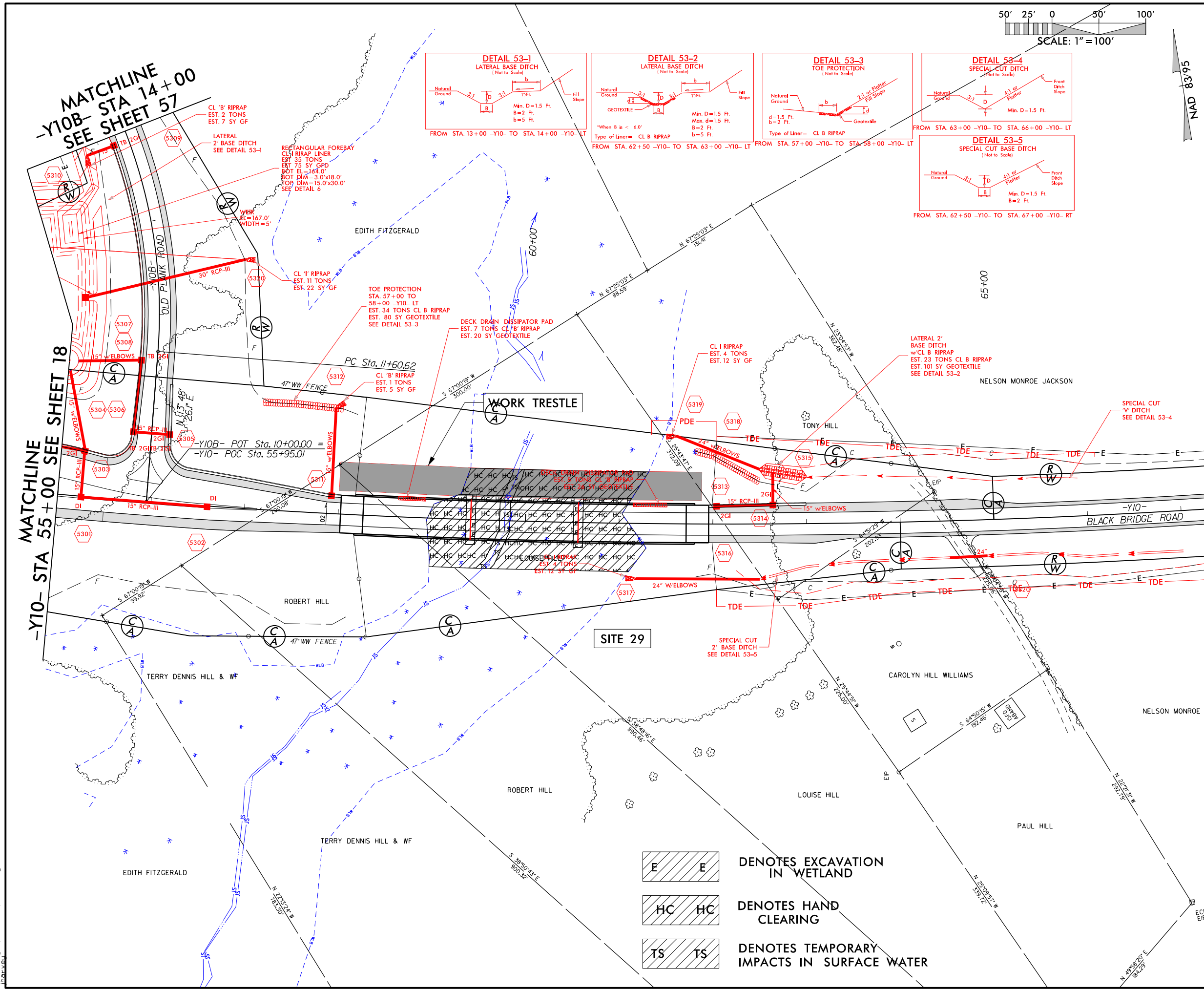
PERMIT DRAWING
SHEET 122 OF 132



SITE 28

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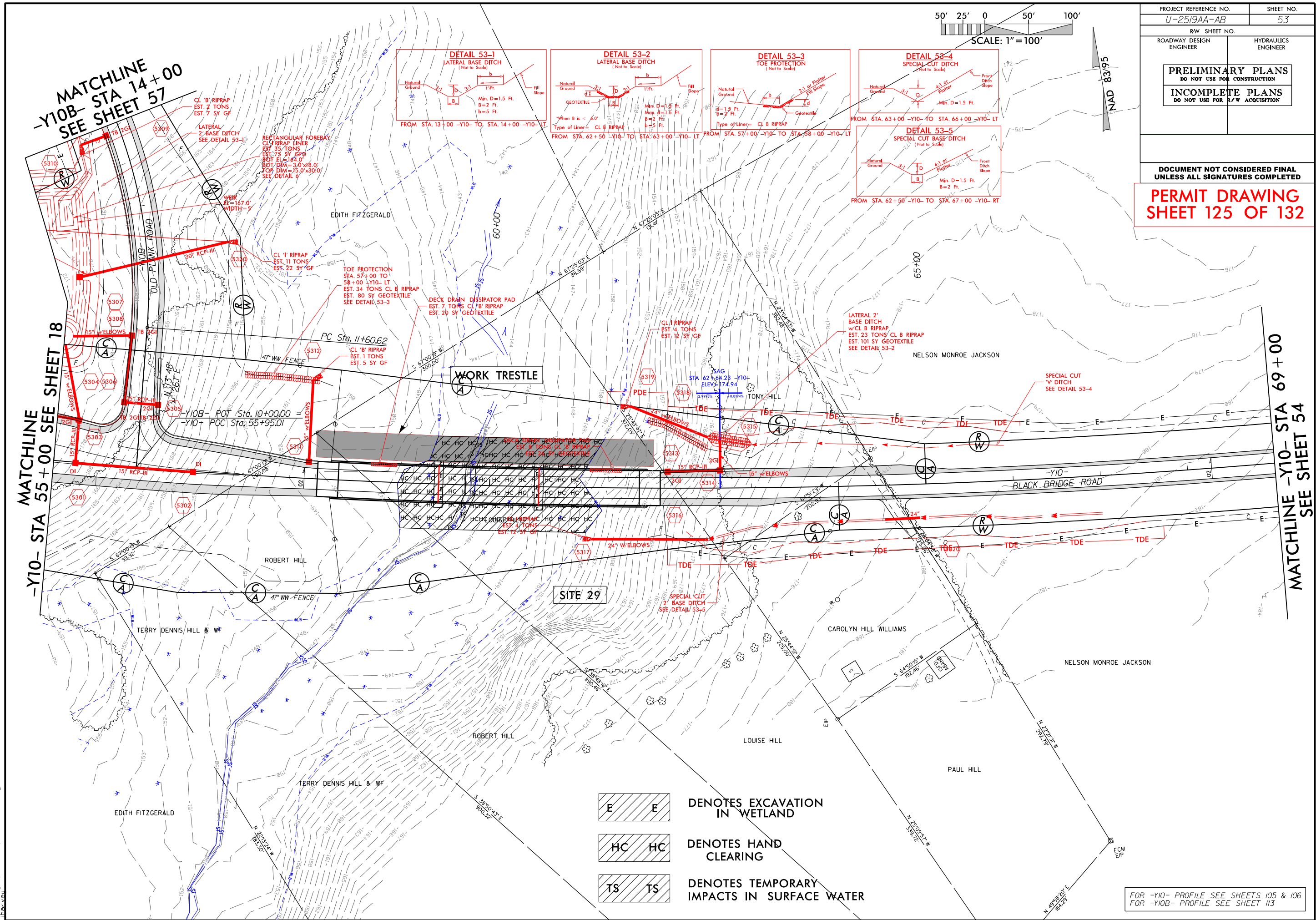
PROJECT REFERENCE NO.		SHEET NO.	
U-2519AA-AB		53	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
PERMIT DRAWING SHEET 124 OF 132			



FOR -Y10- PROFILE SEE SHEETS 105 & 106
FOR -Y10B- PROFILE SEE SHEET 113

7/23/2018
12519AA-AB-prm-wet-psh-53.dgn
10:40:41 AM

1/23/2018 12:51:41 pm wet.psh.53a.con.dgn
100' view



PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	53
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
PERMIT DRAWING SHEET 125 OF 132	

FOR -Y10- PROFILE SEE SHEETS 105 & 106
FOR -Y10B- PROFILE SEE SHEET 113

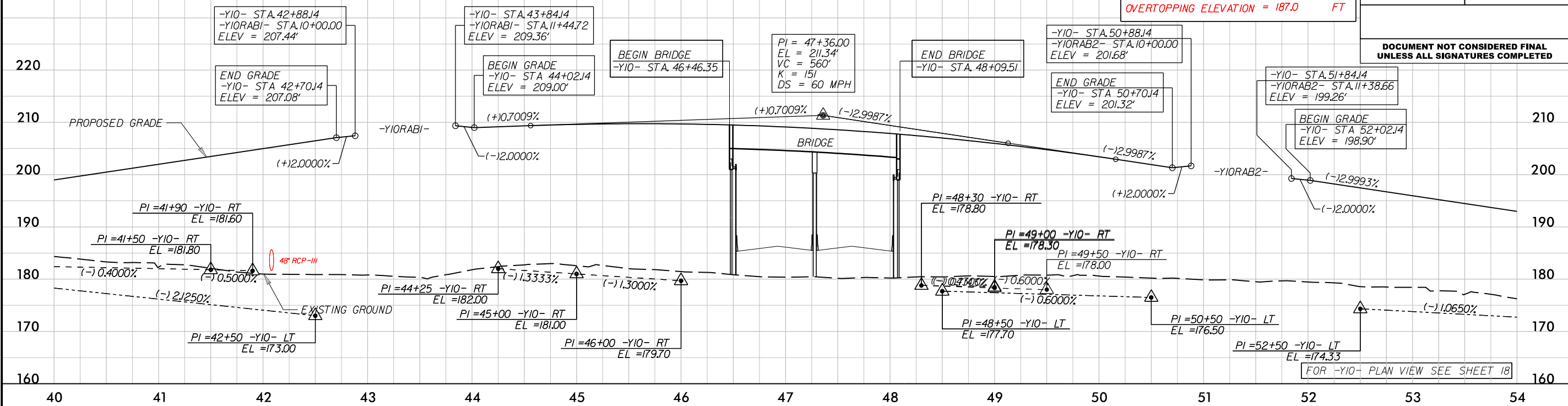
-Y10-
SR 1115 (BLACK BRIDGE RD)

PERMIT DRAWING
SHEET 126 OF 132

PIPE HYDRAULIC DATA			
48" RCP-III Sta. 42+08			
DRAINAGE AREA	= 33.4	AC	
DESIGN FREQUENCY	= 25	YRS	
DESIGN DISCHARGE	= 65	CFS	
DESIGN HW ELEVATION	= 185.4	FT	
100 YEAR DISCHARGE	= 90	CFS	
100 YEAR HW ELEVATION	= 185.8	FT	
OVERTOPPING FREQUENCY	= 100+	YRS	
OVERTOPPING DISCHARGE	= 116	CFS	
OVERTOPPING ELEVATION	= 187.0	FT	

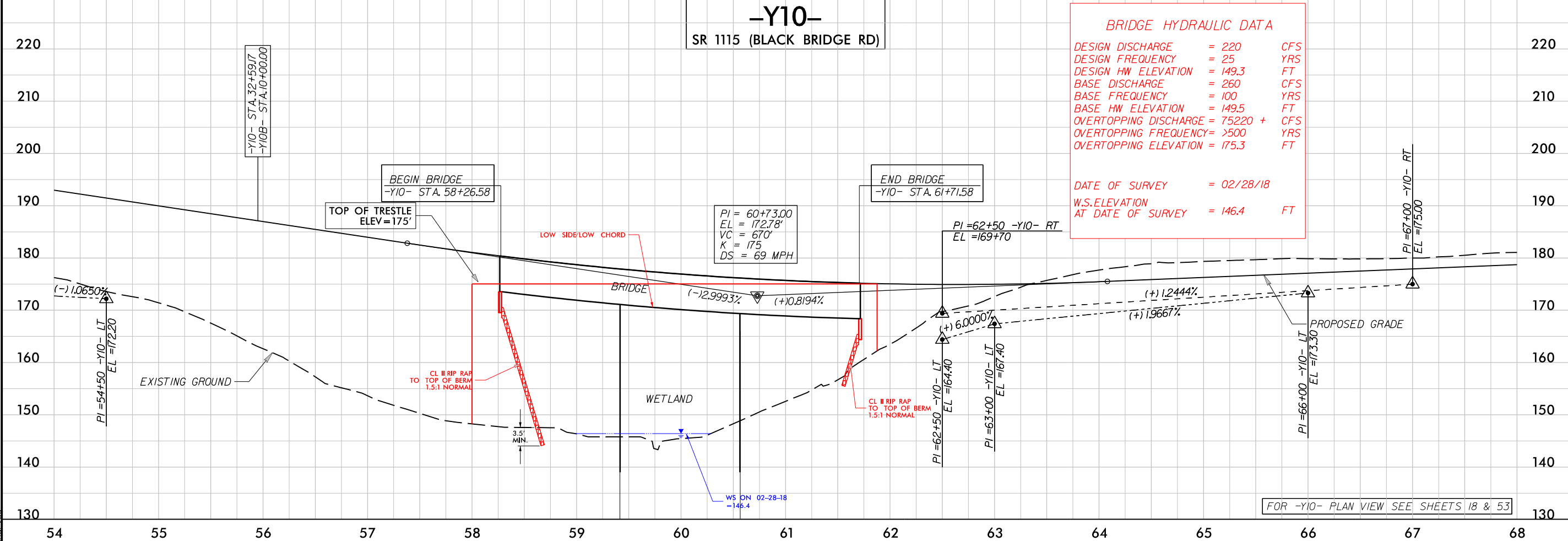
PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	105
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



-Y10-
SR 1115 (BLACK BRIDGE RD)

BRIDGE HYDRAULIC DATA			
DESIGN DISCHARGE	= 220	CFS	
DESIGN FREQUENCY	= 25	YRS	
DESIGN HW ELEVATION	= 149.3	FT	
BASE DISCHARGE	= 260	CFS	
BASE FREQUENCY	= 100	YRS	
BASE HW ELEVATION	= 149.5	FT	
OVERTOPPING DISCHARGE	= 75220 +	CFS	
OVERTOPPING FREQUENCY	= >500	YRS	
OVERTOPPING ELEVATION	= 175.3	FT	
DATE OF SURVEY = 02/28/18			
W.S.ELEVATION AT DATE OF SURVEY = 146.4 FT			

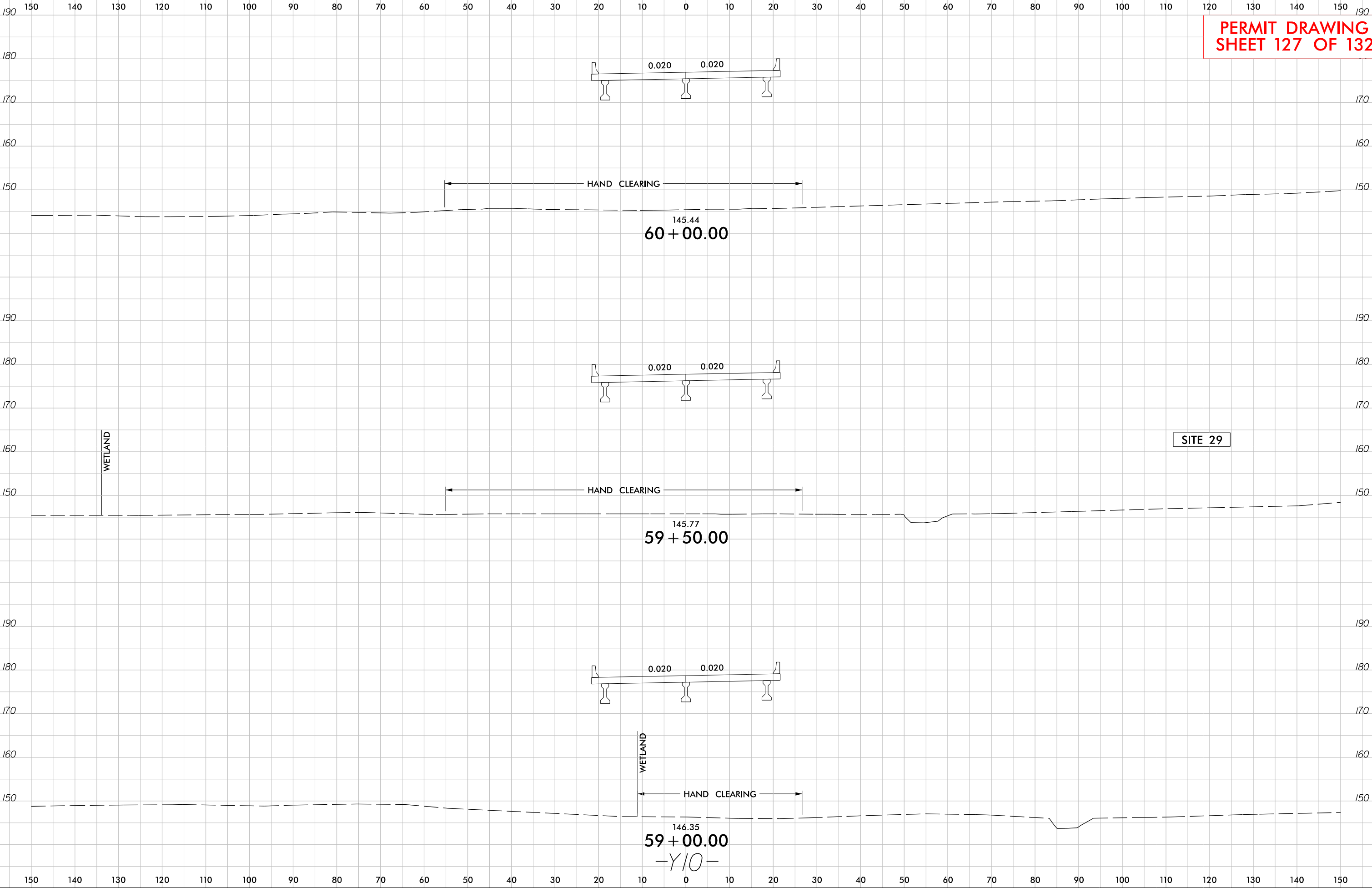


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6/23/16

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	U-2519AA-AB	X-564

PERMIT DRAWING
SHEET 127 OF 132



PROJECT REFERENCE NO.
U-2519AA-AB

SHEET NO.
55

RW SHEET NO.

ROADWAY DESIGN ENGINEER

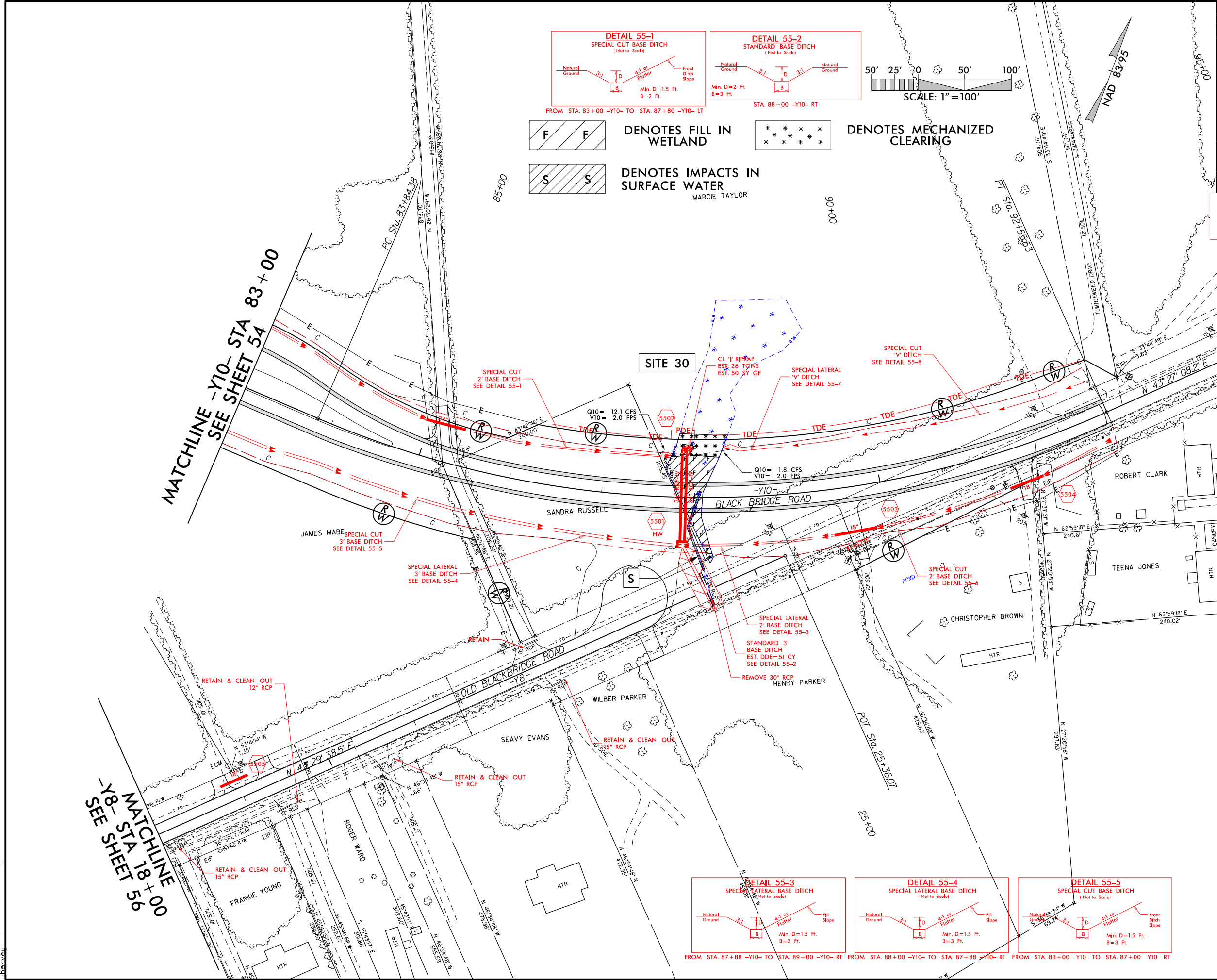
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 128 OF 132



DETAIL 55-8
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 90+00 -Y10- TO STA. 92+50 -Y10- LT

DETAIL 55-7
SPECIAL LATERAL V DITCH
(Not to Scale)

FROM STA. 88+30 -Y10- TO STA. 90+00 -Y10-

DETAIL 55-6
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 89+00 -Y10- TO STA. 92+50 -Y10- RT

DETAIL 55-3
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 87+88 -Y10- TO STA. 89+00 -Y10- RT

DETAIL 55-4
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 88+00 -Y10- TO STA. 87+88 -Y10- RT

DETAIL 55-5
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM STA. 83+00 -Y10- TO STA. 87+00 -Y10- RT

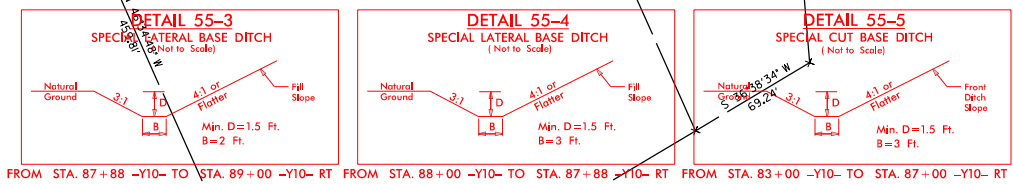
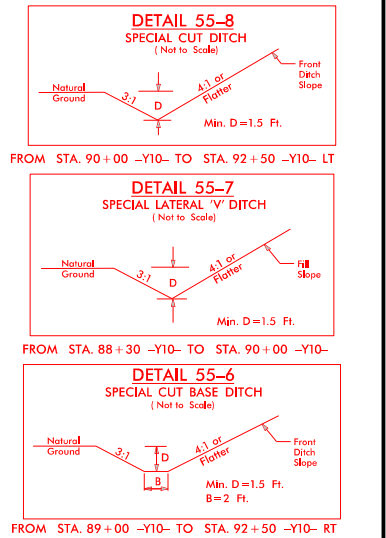
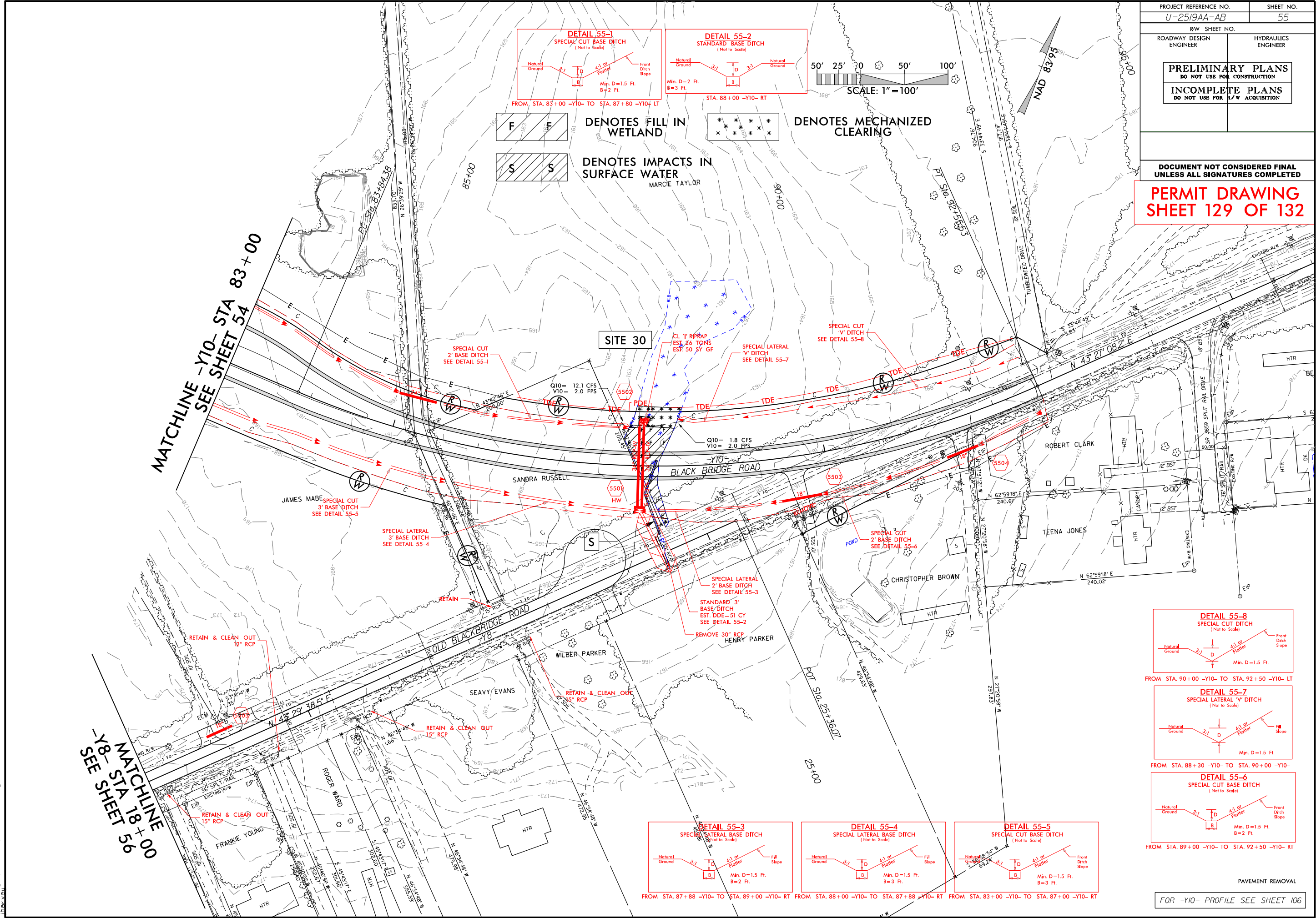
FOR -Y10- PROFILE SEE SHEET 106

7/23/2018
12519AA-AB-prm-wet-psh-55.dgn
12519AA-AB-prm-wet-psh-55.dgn

PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	55
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING
SHEET 129 OF 132**



PAVEMENT REMOVAL

FOR -Y10- PROFILE SEE SHEET 106

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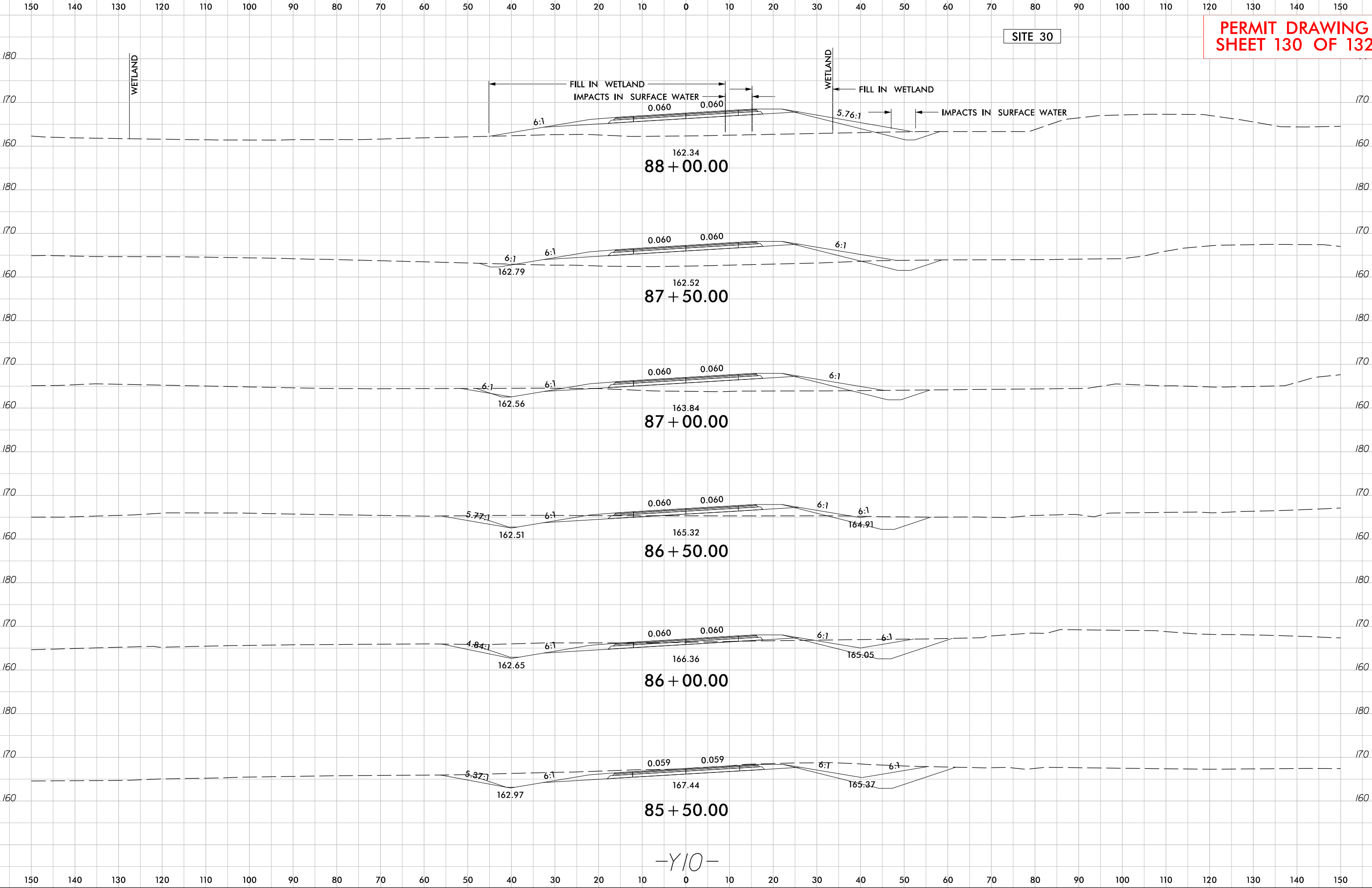
6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2519AA-AB	X-575

PERMIT DRAWING
SHEET 130 OF 132

SITE 30



-Y10-

WETLAND AND SURFACE WATER IMPACTS SUMMARY												
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			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	-FLYBD- 20+10 to 23+24	ROADWAY FILL	0.57			0.04						
2	-Y4- 24+18 to 26+65	ROADWAY FILL	0.03			0.06						
3	-L- 30+88 to 31+69	54" RCP - IV	< 0.01				0.02	0.03	< 0.01	300	43	
4	-L- 36+56 to 37+03	36" RCP - III						< 0.01	< 0.01	78	35	
5	-L- 38+17 to 38+93	60" CMP PIPE REMOVAL					0.01		< 0.01		31	
6	-L- 37+55 to 44+55	ROADWAY FILL	2.20			0.28						
8	-L- 75+02 to 79+96	2 @ 8' x 7' RCBC	1.93		0.03	0.11	0.11	0.08	0.01	518	85	
		BANK STABILIZATION						< 0.01		35		
9	-L- 85+99 to 89+87	30" RCP - III						0.08	0.02	525	101	
10	-L- 97+22 to 99+80	ROADWAY FILL						0.05	0.01	445	110	
12	-L- 115+50 to 123+12	ROADWAY FILL						0.10	0.04	522	232	
13	-L- 123+72 to 123+74	ROADWAY FILL						0.06	< 0.01	736	19	
		BANK STABILIZATION						< 0.01		44		
14	-L- 168+35 to 173+74	72" RCP						0.11	< 0.01	515	42	
		BANK STABILIZATION						0.03		125		
15	-L- 248+32 to 248+51	DITCH RIP RAP	< 0.01				< 0.01	< 0.01		35		
		BRIDGE					0.05					
		WORKBRIDGE							0.01		30	
16	-L- 256+22 to 256+64 LT	ROADWAY FILL	0.06		0.01	0.01						
17	-L- 257+79 to 258+87	ROADWAY FILL	0.15			0.02						
18	-L- 261+09 to 262+60	8'x6' RCBC	0.50			0.09						
19	-L- 263+85 to 267+61	ROADWAY FILL	1.55		0.14	0.17						
20	-Y1- 31+39 to 31+80	ROADWAY FILL	0.06			0.03						
21	-Y1- 65+90 to 67+57	ROADWAY FILL	0.20			0.07						
TOTALS*:			7.27	0	0.18	0.89	0.20	0.51	0.12	3674	728	0

*Rounded totals are sum of actual impacts

NOTES:

Bank stabilization impacts not included in totals (Site 8, Site 13, Site 14)

Site 7: Eliminated; No Impacts

Site 11: Eliminated; No Impacts

Site 16: Wetlands will be total take of .0891 AC

Site 19: Wetlands in this area will add an additional area of .5189 AC (as noted on plans)

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
08/07/2018
CUMBERLAND & ROBESON COUNTIES
U-2519AA & AB
34817.3.4

WETLAND AND SURFACE WATER IMPACTS 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)
22	-Y- 95+78 to 99+57	ROADWAY FILL	0.14				0.11					
23	-Y2- 15+90 to 19+16	2 @ 8' x 6' RCBC	0.15			0.13		0.01	< 0.01	49	6	
24	-Y4- 36+27 to 41+34	2 @ 9' X 6' RCBC	0.33	0.41			0.19	< 0.01	0.03	48	114	
		BANK STABILIZATION						0.03		79		
25	-Y5- 93+83 to 94+10	RCP					0.01					
26	-Y5- 88+85 to 89+44	ROADWAY FILL	0.01			0.02						
27	-Y7- 66+35 to 66+64	8' x 7' RCBC						0.02	0.02	90	87	
		BANK STABILIZATION						0.01		69		
28	-Y7- 84+38 to 87+88	2 @ 10' x 7'						0.07		416		
29	-Y10- 58+94 to 61+31	BRIDGE			0.02		0.34		0.02		83	
		WORKBRIDGE					0.11		< 0.01		31	
30	-Y10- 87+68 to 88+37	2@36" RCP	0.06			0.03		< 0.01		90		
TOTALS*:			0.69	0.41	0.02	0.18	0.76	0.12	0.08	693	321	0
PROJECT TOTALS*:			7.96	0.41	0.20	1.07	0.96	0.63	0.20	4367	1049	0

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
08/07/2018
CUMBERLAND & ROBESON COUNTIES
U-2519AA & AB
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