STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JOEY R HOPKINS
SECRETARY

November 20, 2024

Tom Steffans
NCDOT Coordinator
Wilmington Regulatory Field Office
US Army Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403

ATTN: Tom Steffans, NCDOT Coordinator

Dear Sir:

Subject: **Request for Modification to Individual Section 404 and Section 401 Water Quality Certification** for the proposed Hampstead Bypass in Pender County. State Project No. 40237.1.3, TIP No. R-3300A. Debit $767.00 from WBS 40237.1.3.

References: Section 404 Individual Permit signed August 10, 2017 (SAW-2007-1386) for U-4751 & R-3300
Section 401 Water Quality Certification issued June 5, 2017 (20161268) for U-4751 & R-3300

The purpose of this letter is to submit the final design and revised impact calculations for modification of the Clean Water Act (CWA) Section 404 Individual Permit (IP) and Section 401 Water Quality Certification for R-3300A. Included in this application package are the following: revised permit drawings, revised roadway plans and utility drawings. A revised NC Division of Mitigation Services Acceptance Letter will be forthcoming.

Permit History

In addition to R-3300A, there are two other sections associated with this project. A phased permit was issued in August 2017 where U-4751 Military Cutoff Extension was permitted with final design and Hampstead Bypass Section A & B were permitted with only preliminary design. This modification request only updates the final impacts to the R-3300A section of this project. Final design for R-3300B was permitted in 2021 and construction began in 2022.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
5501 BARBADOS BOULEVARD
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Website: ncdot.gov

Location:
5501 BARBADOS BOULEVARD
CASTLE HAYNE, NC 28429-5647

The revised design does not compromise NCDOT's compliance with the existing permit conditions. The revision has been evaluated for compliance with the avoidance/minimization criteria and complies with all previous issues, including the following:

- Aquatic life passage
- Protected species
- FEMA compliance
- Cultural Resources
- Indirect and Cumulative Effects

Table 1. Project Schedule for R-3300A & B

Section	Letting Type	Let Date
R-3300A	Traditional	2025

Impacts to Jurisdictional Resources

For the purposes of comparison, the detailed impacts outlined in the 2017 CP4A meeting are used here as estimated impacts since they were developed at approximately the same time as the original permit. Both final stream impacts and final wetland impacts decreased in the A section from the 4A projected impact numbers. Decreases are associated with design refinement with an eye toward avoidance and minimization measures. Final design for section A has been updated. Utility impacts have also been added. Impacts to jurisdictional wetlands and surface waters for R-3300A are summarized below in Tables 2 - 4.

Table 2. R-3300B Wetland Impacts

Permit Drawing Site Number	Map Label in FEIS	Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)	Mitigation Required [a]	HUC[e]
1	CWE	Non-Riparian	5.174	0	Yes	CPF-07
2	CWE	Non-Riparian	0.724	0	Yes	CPF-07
4	FWY	Non-Riparian	0.125	0	Yes	CPF-07
7	FWB	Riparian	1.830	0.017	Yes	CPF-07
8	FWB	Riparian	2.442	0	Yes	CPF-07
9	FWC	Riparian	0.605	0.097	Yes	CPF-07
11	FWC	Riparian	0.309	0	Yes	CPF-07
12	FWI	Non-Riparian	0.256	0	Yes	CPF-07
13	FWF	Non-Riparian	3.762	0.405	Yes	CPF-07
14	FWF	Riparian	0.975	0.04	Yes	CPF-07
15	HBAA	Riparian	0.375	0.005	Yes	CPF-07
16	FWHB	Non-Riparian	0.018	0.018	Yes	CPF-07
17	HBAA	Riparian	0.071	0.010	Yes	CPF-07
18	HBAB	Non-Riparian	0.083	0.013	Yes	CPF-07
19	FWL	Non-Riparian	0.015	0.008	Yes	CPF-07
20	HBAB	Non-Riparian	0.800	0	Yes	CPF-07
20[d]	HBAB	Non-Riparian	0.035	0	Yes	CPF-07
21	HBWK	Riparian	0.941	0.075	Yes	CPF-07
22	HBWK	Riparian	0.248	0	Yes	CPF-07
23	HBWK	Riparian	0.214	0	Yes	CPF-07
24	HBWT	Non-Riparian	0.393	0	Yes	CPF-07
25	HWBD	Riparian	0.401	0	Yes	CPF-07
26	HBWD	Riparian	0.003	0	Yes	CPF-07

Permit Drawing Site Number	Map Label in FEIS	Type	Permanent Impacts (ac.)	Temporary Impacts (ac.)	Mitigation Required [a]	HUC[e]
27	HBWD	Riparian	0.348	0.415	Yes	CPF-07
28	HBWD	Riparian	0.153	0.008	Yes	CPF-07
29	HBWF	Riparian	0.592	0.019	Yes	CPF-07
30	HBHH	Non-Riparian	0.656	0	Yes	CPF-07
31	HWAA	Riparian	0.082	0	Yes	CPF-07
32	HWAA	Riparian	0.119	0	Yes	CPF-07
33	HWAA	Riparian	0.876	0	Yes	CPF-07
34	HWAA	Riparian	0.212	0	Yes	CPF-07
35	HWAA	Non-Riparian	6.035	0	Yes	CPF-07
36	HWAA	Non-Riparian	0.113	0	Yes	CPF-07
37	HWG	Riparian	0.886	0	Yes	CPF-07
38	HWH5	Non-Riparian	0.209	0	Yes	CPF-07
39	HWH4	Non-Riparian	0.023	0	Yes	CPF-07
40	HWH3	Non-Riparian	0.067	0	Yes	CPF-07
41	HWH	Non-Riparian	0.151	0	Yes	CPF-07
42	HWI	Non-Riparian	0.018	0	Yes	CPF-07
43	HWH1	Non-Riparian	0.026	0	Yes	CPF-07
44	HWD	Non-Riparian	0.295	0	Yes	CPF-07
45	HWB	Riparian	0.002	0	Yes	CPF-07
46	HWB	Riparian	2.146	0.026	Yes	CPF-07
47	HWMX	Non-Riparian	0.023	0.056	Yes	CPF-07
48	HWE	Non-Riparian	0.007	0	Yes	CPF-07
50	FWF	Non-Riparian	0.005	0.022	Yes	CPF-07
51	HBAB	Non-Riparian	0.001	0.011	No	CPF-07
52	FWA	Non-Riparian	0.017	0	Yes	CPF-07
PNG 1	FWHB	Non-Riparian	0.017	0.310	Yes	CPF-07
PNG 2	FWF	Riparian	0.064	0.211	Yes	CPF-07
PNG 3	FWF	Non-Riparian	0.221	1.020	Yes	CPF-07
		Total: [c]	**33.163** [b]	**2.786**		

[a] For permanent impacts
[b] A decrease of 3.614 from CP4A.
[c] Sum of actual listed impacts.
[d] Indirect Impacts – Total Take.
[e] All impacts within CPF-07 = Cape Fear 8-digit HUC 03030007.

Table 3. R-3300A Surface Water Impacts

Permit Drawing Site Number	Waterbody	Permanent (ft)	Temporary (ft)	Permanent (ac.)	Temporary (ac.)	Mitigation Required [a]	HUC[e]
2	stream	0	0	0.002	0.002	Yes	CPF-07
3	stream	89	27	0.049	0.021	Yes	CPF-07
5	stream	0	0	0.440	0	Yes	CPF-07
6	stream	1,240	36	0.700	0.021	Yes	CPF-07
7	stream	378	42	0.153	0.016	Yes	CPF-07
8	stream	20	10	0.003	0.002	Yes	CPF-07
9	stream	375	93	0.088	0.016	Yes	CPF-07
10	stream	95	25	0.089	0.007	Yes	CPF-07

11	stream	129	56	0.035	0.028	Yes	CPF-07
11	tributary	0	0	0.122	0.013	No	CPF-07
15	stream	256	10	0.090	0.003	Yes	CPF-07
21	stream	322	63	0.047	0.010	Yes	CPF-07
28	stream	266	33	0.064	0.005	Yes	CPF-07
29	stream	353	8	0.091	0.001	Yes	CPF-07
37	stream	226	30	0.168	0.007	Yes	CPF-07
46	stream	434	12	0.180	0.014	Yes	CPF-07
49	stream	14	15	0.004	0.007	Yes	CPF-07
Total: [b]		**4,868 [cd]**	**460**	**2.325**	**0.173**		

[a] For permanent impacts
[b] A decrease of 568 lf from CP4A.
[c] Includes 1,108 lf of permanent bank stabilization at fifteen sites.
[d] Includes 916 lf. of channel relocation at Site 6.
[e] CPF-07 = Cape Fear 8-digit HUC 03030007.

Permanent Impacts: Proposed permanent impacts for R-3300A include fill, excavation, and mechanized clearing in wetlands. This includes impacts to *13.894* acres of riparian wetlands and *19.269* acres of non-riparian wetlands. Proposed permanent impacts to streams are *4,868* linear feet.

Temporary Impacts: Proposed temporary impacts include temporary fill and hand-clearing in wetlands. This includes *0.9230* acres of riparian wetlands and *1.863* acre of non-riparian wetlands. Proposed temporary impacts to surface waters is *460* linear feet.

Utility Impacts: Within R-3300A there will be power, telecommunications, natural gas, sanitary sewer and water relocations. Impacts from underground utilities have been minimized by using bore pits and directional drilling. Beyond impacts already accounted for as part of the road construction and the PNG impacts included in the table above, there are no additional impacts for utility relocation.

Hand Clearing: The hand clearing totals due to the project construction are *1.163* acres.

Table 4. Summary of Wetland and Stream Impacts for R-3300A

Section	Permanent Wetland (ac.)		Temporary Wetland (ac.)		Permanent Stream (lf.)	Temporary Stream (lf.)
	Riparian	Non-riparian	Riparian	Non-riparian		
A	13.894	19.269	0.923	1.863	4,868	460

Avoidance and Minimization

All jurisdictional features were delineated, field verified and surveyed within the corridor for R-3300A. Using these surveyed features, final designs were adjusted to avoid and/or minimize impacts to jurisdictional areas. NCDOT employs many strategies to avoid and minimize impacts to jurisdictional areas in all its designs. Many of these strategies have been incorporated into BMP documents that have been reviewed and approved by the resource agencies and which will be followed throughout construction. All wetland areas not affected by the project will be protected from unnecessary encroachment. Individual avoidance and minimization items are as follows:

- No staging of construction equipment or storage of construction supplies will be allowed in wetlands or near surface waters.

- To ensure that all borrow and waste activities occur on high ground, except as authorized by permit, the NCDOT shall require its contractors to identify all areas to be used to borrow material, or to dispose of dredged, fill or waste material. Documentation of the location and characteristics of all borrow and disposal sites associated with the project will be available to the USACE on request.
- Offsite and roadway drainage has been separated to the maximum extent practical. Roadway drainage systems were extended so outfalls discharge outside of wetland areas and into uplands, wherever possible.
- Toe protection was added to the toe of fill slopes, in lieu of lateral ditches, in wetland areas to minimize impacts to wetlands, where possible.
- Culverts in jurisdictional streams will be buried to promote fish passage. RCBC's will be backfilled with native material excavated from the stream channel to provide natural substrate. Where multiple barrel culverts are proposed, sills and floodplain benches will be constructed to natural stream dimensions and profiles.
- Perpendicular stream crossings have been used where possible.
- 3:1 side slopes were designed throughout the project within jurisdictional areas with the exception of 4:1 slopes within an interchange (as a driver safety measure).
- Equalizer pipes have been added to wetland crossings to maintain hydraulic connectivity to the maximum extent practicable.
- Other Avoidance and Minimization measures incorporated into this project can be found in the 4A meeting minutes dated July 12, 2017.

Summary of Mitigation

The proposed construction of R-3300A will impact *13.894* acres of riparian and *19.269* acres of non-riparian wetlands that will require mitigation. in Cape Fear Basin, HUC 03030007, that will require mitigation. See Table 1 for a breakdown of impacts. NCDOT is proposing to offset both riparian and non-riparian wetland impacts with the projected credits to be generated by the Beane Mitigation Site (Table 2) which was planned and constructed to address the mitigation needs for the R-3300 project. Since there are minimal riparian credits associated with the Beane Mitigation site, NCDOT would like to offer 27.79 of non-riparian wetland enhancement credits along with 13.894 of non-riparian restoration wetland credits to offset the 13.894 acres of riparian wetland impacts associated with R-3300A project.

With the absence of existing DMS & Mitigation Bank sites within Cape Fear HUC 03030007 with riparian credit available, the Department believes that this wetland mitigation plan is the best proposal the Department can offer for impacts associated with this project. The Department also believes that this proposal provides the best overall ecological benefit by mitigating for all impacts with the closest mitigation site to the project that has available credits.

Mitigable permanent stream impacts (loss of waters) for the R-3300A total *2844* linear feet (4,840 linear feet of permanent impact minus 1,108 linear feet of bank stabilization and 916 linear feet of channel realignment). The existing channel is incised and heavily manipulated by human activity. The new relocated channel will match the existing dimension and profile of the existing channel but also include floodplain benches and streambank reforestation. The 2844 linear feet of permanent stream impacts (loss) will be offset by compensatory mitigation provided by the DMS.

Table 5. Summary of Mitigation Required for R-3300A

HUC[a]	Permanent Wetland (ac.)		Temporary Wetland (ac.)		Permanent Stream (lf.)	Temporary Stream (lf.)
	Riparian	Non-riparian	Riparian	Non-riparian		
CPF-07	13.894	19.269	0.923	1.863	2,844	460

[a] CPF-07 = Cape Fear 8-digit HUC 03030007

[b] Permanent stream impacts in CPF-07 are 4,868 lf minus 1,108 lf bank stabilization and 916 of channel realignment.

Table 6. Summary of Beane Mitigation Site Credits.

HUC	TYPE	STARTING AMOUNT	NOTES
03030007	NRW Restoration	78.67 credits	1:1 ratio
03030007	RW Restoration	0.44 credits	1:1 ratio
03030007	NRW Enhancement	39.26 credits	Already has mitigation ratio added in 2:1
03030007	NRW Preservation	2.94 credits	Already has mitigation ratio added in 10:1. The remaining acreage for the future interchange and gas line removed.

NRW – non-riparian wetlands RW – riparian wetlands

Protected Species

The United States Fish and Wildlife Service (USFWS) list 14 federally protected species for the project area (October 30, 2024) (Table 7).

Table 7. USFWS IPaC - Federally Protected Species (R-3300A)

Scientific Name	Common Name	Federal Status	Habitat	Biological Conclusion
Myotis septentrionalis	Northern long-eared bat	E	Yes	MALAA
Perimyotis subflavus	Tricolored bat	PE	Yes	MALAA
Charadrius melodus	Piping plover	T	No	No Effect
Calidris canutus rufa	Red knot	T	No	No Effect
Picoides borealis	Red-cockaded woodpecker	E	Yes	MALAA
Alligator mississippiensis	American alligator	T(S/A)	Yes	N/A
Chelonia mydas	Green sea turtle	T	No	No Effect
Lepidochelys kempii	Kemp's Ridley sea turtle	E	No	No Effect
Dermochelys coriacea	Leatherback sea turtle	E	No	No Effect
Planorbella magnifica	Magnificent ramshorn	E	No	No Effect
Danaus Plexippus	Monarch butterfly	C	Yes	N/A
Thalictrum cooleyi	Cooley's meadowrue	E	Yes	No Effect
Carex lutea	Golden sedge	E	Yes	No Effect
Lysimachia asperulaefolia	Rough-leaved loosestrife	E	Yes	MANLAA

Key: T(S/A) = Threatened (Similarity of Appearance), T = Threatened, E = Endangered, PE = Proposed Endangered, C = Candidate, MALAA = May Affect, Likely to Adversely Affect, MANLAA = May Affect, Not Likely to Adversely Affect

Northern Long-eared Bat

The US Fish and Wildlife Service has issued a programmatic biological opinion (PBO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. Although this programmatic covers Divisions 1-8, The USFWS only considers NLEBs to be known or potentially found in 30 counties within Divisions 1-8.

NCDOT, FHWA, and USACE have agreed to two conservation measures which will avoid/minimize mortality of NLEBs. These conservation measures only apply to the 30 currently known/potential counties shown on Figure 2 of the PBO at this time. The programmatic determination for NLEB for the NCDOT program is **May Affect, Likely to Adversely Affect**. The PBO will ensure compliance with Section 7 of the Endangered Species Act for ten years (effective through December 31, 2030) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Pender and New Hanover Counties, where R-3300A is located.

Tricolored Bat

The US Fish and Wildlife Service has issued a programmatic conference opinion (PCO) in conjunction with the Federal Highway Administration (FHWA), the US Army Corps of Engineers (USACE), and NCDOT for the tricolored bat (TCB) (*Perimyotis subflavus*) in eastern North Carolina. The PCO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. NCDOT, FHWA, and USACE have agreed to three conservation measures (listed in the PCO) which will avoid/minimize take to TCBs. These conservation measures apply to all counties in Divisions 1-8. The programmatic determination for TCB for the NCDOT program is **May Affect, Likely to Adversely Affect**. Once the TCB is officially listed, the PCO will become the programmatic biological opinion (PBO) by formal request from FHWA and USACE. The PBO will ensure compliance with Section 7 of the Endangered Species Act for approximately five years (effective through December 31, 2028) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Pender and New Hanover Counties, where R-3300A is located.

Red-Cockaded Woodpecker

A Biological Opinion for the entire U-4751 and R-3300 project area was completed by USFWS in 2016 with a conclusion that the project is not likely to jeopardize the continued existence of the RCW but there may be an incidental take of one RCW group due to foraging habitat removal. The BO states that the "potential effects to RCWs only occur within an approximately 2.5-mile portion of the project at its northeastern terminus in Pender County." The incidental take and potential effects are only within R-3300B and not considered an issue for the R-3300A project. However, the BO applies to the entire project area and outlines a biological conclusion of **May Affect, Likely to Adversely Affect**.

Cooley's Meadowrue & Golden Sedge

One population of Cooley's meadowrue was found off Sidbury Road in New Hanover County near the overall project study area in 2008. In 2009, biologists found species of *Carex* near the Sidbury Road site with the meadowrue individuals that could not be ruled out as golden sedge. Updated plant surveys were completed in June 2024 and no individuals of Cooley's meadowrue or golden sedge were found.

Rough-leaved loosestrife

As part of the 2016 RCW Biological Opinion, USFWS stated that rough-leaved loosestrife would be considered May Affect, Not Likely to Adversely Affect. Additionally, no individuals were found during updated plant surveys during the June 2024 survey window.

Bald and Golden Eagle Protection Act (BGPA)

In the July 9, 2007 Federal Register (72:37346-37372), the bald eagle was declared recovered, and removed (de-listed) from the Federal List of Threatened and Endangered wildlife. This delisting took effect August 8, 2007. After delisting, the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668-668d) became the primary law protecting bald eagles. The 2014 FEIS outlines potential foraging habitat and two bald eagle sitings in 2008 within wetland GWA approximately 3000 feet east of the current R-3300A project area near Sidbury Road. That area was evaluated in 2008 as one of the alternatives for the project but was not included as the preferred alternative. No bald eagles were observed during June 2024 surveys of the current project area.

Regulatory Approvals

Section 404: We are, therefore, requesting the modification of the USACE Individual 404 Permit signed August 10, 2017 (SAW-2007-1386), for the above-described activities.

Section 401: We are hereby requesting a modification to the 401 Water Quality Certification from the NCDWQ issued June 5, 2017 (20161268). In compliance with Section 143-215.3D(e) of the NCAC, we will provide $767.00 to act as payment for processing the Section 401 permit modification.

CAMA: Under separate cover, NCDOT is submitting a request for a CAMA Federal Consistency Review from the N.C. Division of Coastal Management for R-3300A.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Mason Herndon at 910-341-2036 or tmherndon@ncdot.gov.

Sincerely,

Mason Herndon

For Trevor Carroll, PE, Division 3 Engineer
North Carolina Department of Transportation

ec:

Holley Snider, Division of Water Resources
Kristi Lynn Carpenter, Division of Water Resources

Enclosures

ROY COOPER
Governor
MARY PENNY KELLEY
Secretary
MARC RECKTENWALD
Director

NORTH CAROLINA
Environmental Quality

November 14, 2024

Mr. Mason Herndon
Division 3 PDEA Engineer
North Carolina Department of Transportation
5501 Barbados Boulevard
Castle Hayne, North Carolina 28429

Dear Mr. Herndon:

Subject: Mitigation Acceptance Letter:

TIP Project U-3300A – Hampstead Bypass from I-140 to NC 210, Pender County

The purpose of this letter is to notify you that the North Carolina Division of Mitigation Services (NCDMS) will provide the mitigation for the subject project. Based on the information received from you on November 14, 2024, the impacts are located in CU 03030007 of the Cape Fear River basin in the Southern Outer Coastal Plain (SOCP) Eco-Region, and are as follows:

Cape Fear 03030007	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	2,844.000	0	0	0	0	0

NCDMS commits to implementing sufficient mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from NCDEQ – DMS.

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

Sincerely,

Elizabeth Harmon

Elizabeth A. Harmon
DMS NCDOT ILF Coordinator

cc: Mr. Tom Steffens, USACE
Mr. John Hennessy, NCDWR
Mr. Brad Chilton, NCDOT – EAU
File: R-3300A – Division 3

11/20/2024

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 40237.1.1 **TIP No.:** R-3300A **County(ies):** New Hanover, Pender

General Project Information

WBS Element:	40237.1.1	**TIP Number:**	R-3300A	**Project Type:** New Location	**Date:** 7/31/2024
NCDOT Contact:	Trace Howell, P.E.		**Contractor / Designer:**	Andrea Hayden, PE	
	Address: 5501 Barbados Blvd Castle Hayne, NC 28429			**Address:** Dewberry-9300 Harris Corners Pkwy, Ste 220, Charlotte, NC 28269 Linda Johns PE MI-Engineering - 1011 Schaub Drive Suite 100 Raleigh NC 27606	
	Phone: (910) 341-2000			**Phone:** Hayden - (704) 672-5264 Johns - (919) 851-6606 Ext 115	
	Email: trhowell1@ncdot.gov			**Email:** ahayden@Dewberry.com / ljohns@mi-engineers.com	
City/Town:	Kirkland, Hampstead		**County(ies):**	New Hanover	Pender
River Basin(s):	Cape Fear		**CAMA County?**	Yes	Yes
Wetlands within Project Limits?	Yes				

Project Description

Project Length (lin. miles or feet):	7.05	**Surrounding Land Use:**	Rural, wooded, wetlands, light residential and hunting grounds

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	76.0 ac.	11.0 ac.
Typical Cross Section Description:	Four lane divided highway with two 12' lanes in each direction, 10' full depth paved outside shoulders and 4' paved inside shoulders. Grass median ditches are 34' wide. Y33 has approximately 2570'+/- of added paved shoulder. Y35 (Harrison Creek Road) has two 10' lanes with 5' full depth paved shoulders and grass ditches.	The Hampstead bypass is a new location, that begins at the ending of U-4751. Y33 (I-140) is a 4-lane divided highway with (2) 12' travel lanes in each direction with grass shoulders and median. Y35 Harrison Creek Rd (SR 1573): is two 10' lanes in each direction with no paved shoulder and grass ditches.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 54800 Year: 2040	Existing: N/A Year:

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

The project begins at the ending of U-4751. Best Management Practices include utilization of an open shoulder typical section to promote roadway runoff to grass ditches, as well as steepening fill slopes (and providing guardrail) to minimize impacts to jurisdictional features. Rip rap pads are proposed upstream of wetlands if needed to reduce the 10 year velocities to less than 2fps and diffuse flow of proposed ditches. Due to seasonal high water table and poor drainage conditions, special ditches were added along the corridor to reduce the water and minimize shoulder failure. Major structures include: CSR #1 (psh 5) at an Unnamed Tributary to Island Creek (Island Creek) is a 12'X8' RCBC buried 1' with native material. Culvert has a top edge beveled and wingwalls. This culvert is downstream of 12'X8" RCBC from the U-4751 project. CSR#2 (psh 6) at an Unnamed Tributary to Island Creek (Island Creek) is a 2@ 9'X7' RCBC buried 1' with native material. Culvert has a top edge beleved and wingwalls with a 2' sill in the right box. CSR#3 (psh 9) at an Unnamed Tributary to Island Creek (Island Creek) is a 3@ 12'X7' RCBC buried 1' with native material. Culvert has a top edge beveled and wingwalls. CSR#4 (psh 10) at an Unnamed Tributary to Island Creek (Island Creek) is a 7'X5' RCBC buried 1' with native material. Culvert has a top edge beveled and wingwalls. Dual bridges (2@115 72" MBT Girder) over Waynes Branch (Island Creek) (psh 16) which requires deck drains along the south bound bridge deck only, due to 4' shoulders. These deck drains will not outlet over surface water or within 10' of surface waters. The excess bridge runoff will collect on the shoulders and routed via shoulder berm gutter to a storm drain system that outlets to obtain overland treatment prior to entrance to the stream. Dual bridges (1@125, 1@117', 72" MBT Girder) over Island Creek Trib (psh 20), (aka Old House Branch) do not require deck drains. The bridge runoff will collect on the shoulders and routed via shoulder berm gutter to storm drain systems that outlet and obtain overland treatment prior to entrance to wetland areas. CSR #5 (psh 21) at UT to Island Creek Trib (Island Creek) is 2@6'X7' RCBC buried 1.0', with 2.5' sills in south barrel to create a flood plain bench and 1.0' sills and baffles in the north barrel to maintain the low flow channel. Native material will be provided between sills and baffles in the culvert. CSR #6 (psh 27) at Seeley's Branch (Harrison Creek) is 2@7'X8' RCBC buried 1.0' with 2.0' sills in west barrel to create a flood plain bench and 1.0' sills in the east barrel to maintain the low flow channel. Native bed material is required in the low flow channel, while rip rap may be used to supplement the native material in the flood plain bench barrel. Native material should be placed on top to fill voids and provide a flat surface for animal passage. CSR #7 (psh 31) at Harrison Creek Tributary (Harrison Creek) is 3@12'X8' RCBC buried 1.0' with 2.5' sills in west barrel and 1.0' sills in the center and east barrels. Native bed material is required in the low flow channels, while rip rap may be used to supplement the native material in the flood plain bench barrel. Native material should be placed on top to fill voids and provide a flat surface for animal passage. Rip Rap bank stabilization is included at the upstream and downstream ends of all major stream crossings, and downstream of all minor jurisdictional stream crossings. Equalizer pipes (typically 36" RCP) have been provided to maintain hydraulic connectivity between wetlands under the roadway.

Waterbody Information

Surface Water Body (1):	Island Creek		**NCDWR Stream Index No.:**	18-74-50	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	Swamp Waters (Sw)		
Other Stream Classification:	None				
Impairments:	mercury (Hg)				
Aquatic T&E Species?		Comments:			
NRTR Stream ID:	HBSF			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

11/20/2024

North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

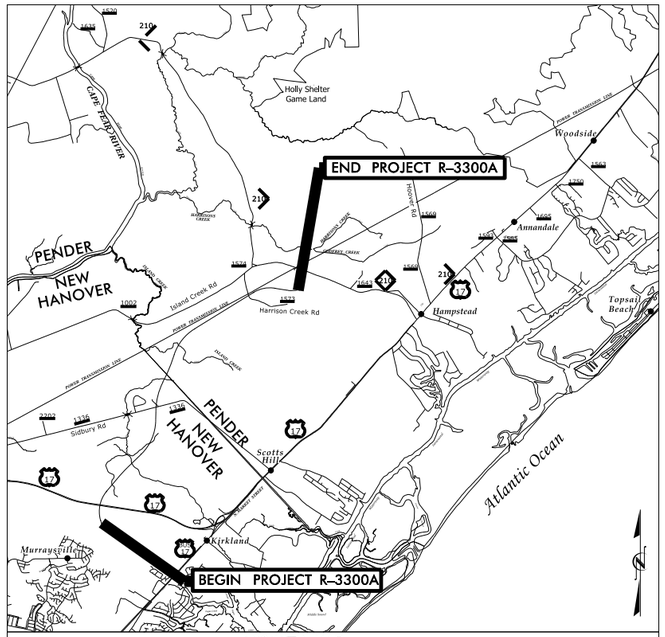
(Version 2.08; Released April 2018)

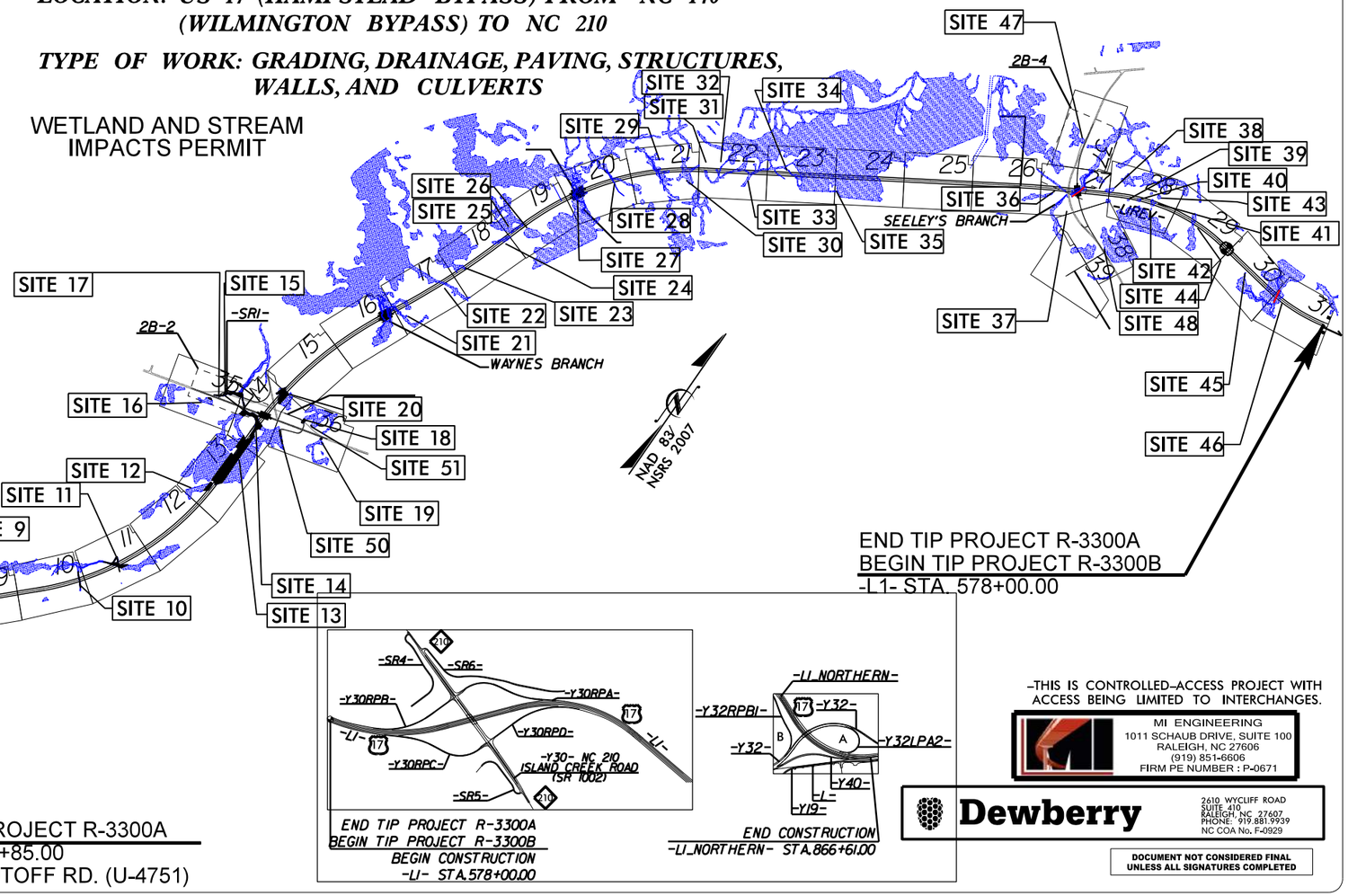
WBS Element:	40237.1.1	TIP No.:	R-3300A	County(ies):	New Hanover Pender	Page	2	of	2

Additional Waterbody Information

Surface Water Body (2):	UT to Island Creek		**NCDWR Stream Index No.:**	18-74-50		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Swamp Waters (Sw)			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	HBSG, HBSH, HBSD(1), HBSD(2), HBSA, HBSC, HBSB, HBSAA			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):	Harrisons Creek		**NCDWR Stream Index No.:**	18-74-49		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	Swamp Waters (Sw)			
Other Stream Classification:	None					
Impairments:	mercury (Hg)					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	HSC, HSCA, HSX, HSB			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?		**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						





11/20/2024

TIP PROJECT: R-3300A

CONTRACT:

09/08/99

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USER: athompson

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

VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PERMIT DRAWING
SHEET 1 OF 120

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-3300A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
40237.1.3	N/A	PE
40237.2.4	N/A	R/W
40237.2.6	N/A	UTILITIES
40237.3.2	N/A	CONST

NEW HANOVER & PENDER COUNTIES

LOCATION: US 17 (HAMPSTEAD BYPASS) FROM NC 140 (WILMINGTON BYPASS) TO NC 210

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

WETLAND AND STREAM IMPACTS PERMIT

-THIS IS CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

MI ENGINEERING
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FIRM PE NUMBER : P-0671

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PHONE: 919.881.9939
NC COA No. F-0929

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GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2016 = N/A
ADT 2040 = 54,800
K = 8 %
D = 60 %
T = 6 % *
V = 70 MPH
*(TTST 2% + DUALS 4%)
FUNC CLASS = FREEWAY
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-3300A	=	6.892 MILES
LENGTH STRUCTURE TIP PROJECT R-3300A (NORTHBOUND LANES STATIONS USED)	=	0.152 MILES
TOTAL LENGTH TIP PROJECT R-3300A	=	7.044 MILES

PREPARED IN THE OFFICE OF:
STANTEC CONSULTING
801 Jones Franklin Road |Suite 300| Raleigh, NC 27606
Tel. (919) 851-6866 | Fax. (919) 851-7024 | www.stantec.com
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FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 1, 2019

LETTING DATE:
JULY 25, 2025

KATRINA N. HAZEL, P.E.
PROJECT DESIGN ENGINEER

TRACE HOWELL, P.E.
NCDOT DIVISION 3 CONTACT

HYDRAULICS ENGINEERS

P.E.   P.E.
SIGNATURES:

ROADWAY DESIGN ENGINEER

SEAL 034404

P.E.
SIGNATURE:

11/20/2024

REVISIONS

WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
GREY HATCH DENOTES IMPACTS WERE INCLUDED ON U-4751 PERMITS

NAD 83/2007

MATCHLINE -Y33RPCA- STA 24+50.00 SEE SHEET 33

MATCHLINE -Y33RPCA- STA 24+50.00 SEE SHEET 34

MATCHLINE -Y33- STA 82+50.00 SEE SHEET 34

MATCHLINE -Y33RPA- STA 84+00.00 SEE SHEET 34

SITE 1

SITE 2

SITE 3

SITE 4

SITE 5

SITE 6

A

B

C

D

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 3A

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 3B

WETLAND AREA INCLUDED IN U-4751 PERMITS

DRAINAGE FROM PROJECT U-4751

U-4751 ROADWAY DESIGN FILES ARE DASHED LINES IN THE PROPOSED ROADWAY

DETAIL 5F
L STA 233+43 235+52 RT

DETAIL 5G
STANDARD BASE DITCH
FROM Y33RPB STA 16+92 RT

DETAIL 5H
SPECIAL LATERAL 'V' DITCH
FROM L1 STA 233+46 TO STA 233+74 LT

DETAIL 5I
OUTLET CHANNEL CHANGE WITH FLOODPLAIN BENCH
FROM Y33RPA STA 30+00.00 TO STA 33+78 RT
FROM Y33RPCA STA 54+78 TO STA 57+60 RT

DETAIL 5J
Y33 STA 77+24 RT

DETAIL 5E
Y33RPA STA 29+38 – 30+00 RT

DETAIL 5K
MEDIAN 'V' DITCH w/ RIP RAP
FROM Y33RPA STA 23+50 TO STA 24+03 LT

DETAIL 5L
LATERAL 'V' DITCH
FROM Y33RPA STA 20+80 TO STA 23+00 LT

DETAIL 5M
LATERAL 'V' DITCH
FROM Y33RPA STA 20+00.00 TO STA 23+40.00 LT

DETAIL 5N
FALSE DITCH
Outside Ditch Traffic Flow

DETAIL 5A
LATERAL BASE DITCH
FROM Y33RPC STA 18+42.00 TO STA 18+89.87
FROM Y33LPC STA 15+60 TO STA 16+00.87

DETAIL 5B
LATERAL BASE DITCH
FROM Y33RPA STA 20+90 TO STA 23+00.87

DETAIL 5C
LATERAL BASE DITCH
FROM Y33RPA STA 17+97.70 TO STA 20+76.87

DETAIL 5D
LATERAL BASE DITCH
FROM Y33RPA STA 20+00 TO STA 22+00.87
FROM -L1- STA 236+50 TO STA 239+00 RT

SEE SHEET 40 & 41 FOR -L1- PROFILE
SEE SHEET 56 FOR -Y33- PROFILE
SEE SHEET 60 FOR -Y33RPB- PROFILE
SEE SHEET 58 FOR -Y33LPC- PROFILE
SEE SHEET 58 & 59 FOR -Y33RPA- PROFILE
SEE SHEET 61 & 62 FOR -Y33RPCA- PROFILE

PIPES INSTALLED UNDER TIP PROJECT U-4751 HAVE BEEN MODIFIED TO SHOW AS EXISTING ON TIP PROJECT R-3300A
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA

GRAPHIC SCALE

Dewberry
ENGINEERING
1011 SCHAUB DRIVE, SUITE 150
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PHONE 919.881.0049
FIRM LICENSE NUMBER: C-0782

PERMIT DRAWING
SHEET 2 OF 120

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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11/20/2024

REVISIONS

PERMIT DRAWING SHEET 3 OF 120

Dewberry — 10 ENGINEERING — 1011 SCHAUB DRIVE, SUITE 150, RALEIGH, NC 27606 — PHONE (919) 881-0000 — FAX (919) 881-0350

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PROJECT REFERENCE NO. R-3300A — SHEET NO. 5 — R/W SHEET NO. — ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

MATCHLINE -Y33RPCA- STA 24+50.00 SEE SHEET 33

MATCHLINE -Y33RPC- STA 24+50.00 SEE SHEET 33

NAD 83/1985 2007

WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS

SITE 1
SITE 2
SITE 3
SITE 4
SITE 5
SITE 6

A
B
C
D

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 3A

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 3B

WETLAND AREA INCLUDED IN U-4751 PERMITS

DRAINAGE FROM PROJECT U-4751

U-4751 ROADWAY DESIGN FILES ARE DASHED LINES IN THE PROPOSED ROADWAY

DETAIL 5F
L STA 233+43 235+52 RT

DETAIL 5J
Y33 STA 77+24 RT

DETAIL 5E
Y33RPA STA 29+38 – 30+00 RT

SEE SHEET 40 & 41 FOR -L1- PROFILE
SEE SHEET 56 FOR -Y33- PROFILE
SEE SHEET 60 FOR -Y33RPB- PROFILE
SEE SHEET 58 FOR -Y33LPC- PROFILE
SEE SHEET 58 & 59 FOR -Y33RPA- PROFILE
SEE SHEET 61 & 62 FOR -Y33RPCA- PROFILE

PIPES INSTALLED UNDER TIP PROJECT U-4751 HAVE BEEN MODIFIED TO SHOW AS EXISTING ON TIP PROJECT R-3300A SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA

GRAPHIC SCALE

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REVISIONS

8/17/99

F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION
* * *	MECHANIZED CLEARING (GRUBBING)

NAD 83/NSRS 2007

PERMIT DRAWING
SHEET 3A OF 120

50′ 0′ 50′

Dewberry
2610 WYCLIFF ROAD
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PHONE: 919.881.9939
NC COA No. C-2609

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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SITE 1

MECHANIZED CLEARING

EXCAVATION IN WETLAND

LATERAL 2′ BASE DITCH
SEE DETAIL 5B
210 CY DDE

WETLAND AREA
INCLUDED IN
U-4751 PERMITS

12" HDPE SLOPE DRAIN

CABLE GUIDERAIL ANCHOR UNIT

15" RCP IV

15" RCP

15" CABLE GUIDERAIL ANCHOR UNIT

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11/20/2024

REVISIONS

8/17/99

F F FILL IN WETLAND

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

E E WETLAND EXCAVATION

MECHANIZED CLEARING (GRUBBING)

NAD 83/NSRS 2007

WETLAND AREA INCLUDED IN U-4751 PERMITS

PERMIT DRAWING SHEET 3B OF 120

50' 0' 50'

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

INCOMPLETE PLANS
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RETAIN

RIPRAP AT JURISDICTIONAL STREAM
CL II RIP RAP
50 TONS
75 S.Y. GEOTEXTILE
SEE DETAIL 5J

JB w/MH

60" RCP-IV

RETAIN

TRENCHLESS INSTALLATION 60" WELDED STEEL

REMOVE 15' OF 15" RCP
20' OF FLOWABLE FILL

TRENCHLESS INSTALLATION
24" WELDED STEEL

JB w/MH

24" RCP-IV

JB w/MH

HW

INLET CHANNEL CLEANOUT
DDE 350 CY
SEE DETAIL 5J

42" RCP-III

42" RCP

66" RCP

66" RCP

8" CONC

15"

15"

15" CONC

20' SOIL

REMOVED BY OTHERS

36" CMP

20' SOIL

JS MIT

JS MIT

JS MIT

JS MIT

JS MIT

JS MIT

WLB

WLB

BTM

BTM

BM11

NCDOT GPS MON. U4751-11

U4751-11

Y33-

20+15.56 E

TEMPORARY IMPACTS IN SURFACE WATER

IMPACTS IN SURFACE WATER

SITE 3

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5/14/99

SITE 5/6

PERMIT DRAWING
SHEET 4 OF 120

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

100 50 CL 50 100

60 50 40 30

CENTERLINE STA. –Y33RPCA– 49+88
1 @ 12' x 8' RCBC
GRADE POINT EL. = 66.9
BURIED 1'
SKEW = 68 DEG

3.29:1 SKEW
3.05:1 NORMAL

3.24:1 SKEW
3:1 NORMAL

NATURAL GROUND
ALONG C/L

PROP 100 YR = 37.8
PROP 50 YR = 37.2
NWSEL = 35.6
WSEL = 34.3 (11/27/17)

TOP OF BANK LT
TOP OF BANK RT
EXISTING STREAM BED

PROP CHANNEL

BACKFILL CULVERT WITH NATIVE MATERIAL

1 @ 12' X 8' RCBC
C/L EL. = 30.0'
SLOPE = 0.43%

PROP CHANNEL

11/20/2024

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	R-3300A	X-195

PERMIT DRAWING
SHEET 5 OF 120

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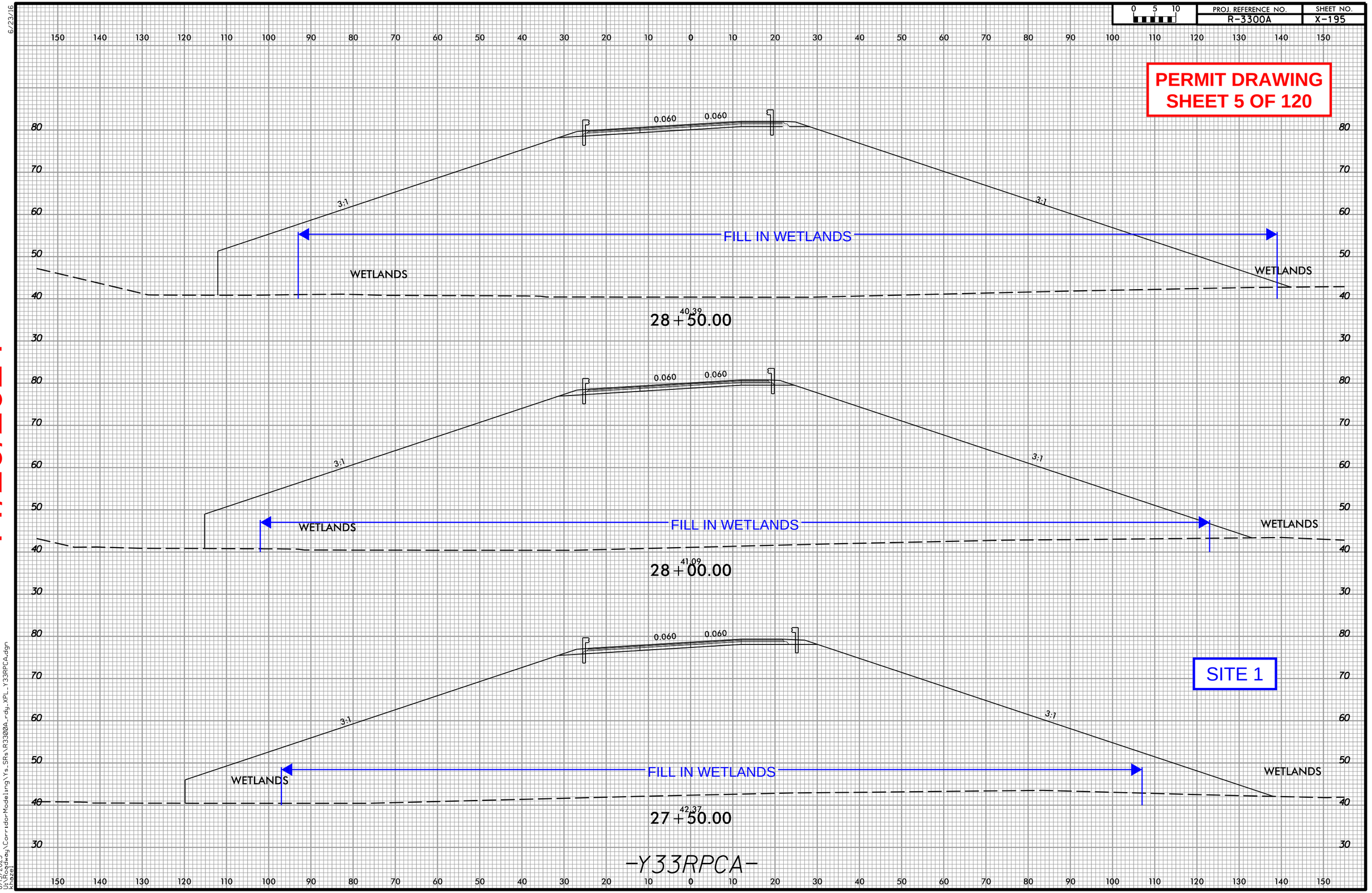

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khazel

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-197

PERMIT DRAWING
SHEET 6 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

80 70 60 50 40 30

83.48

0.060 0.060

3:1

3:1

WETLANDS

WETLANDS

41.32

30+50.00

0.060 0.060

SITE 2

3:1

3:1

FILL IN WETLANDS

WETLANDS

WETLANDS

41.14

30+00.00

-Y33RPCA-

11/20/2024

8/15/2023
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khazel

6/23/16

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	R-3300A	X-28

PERMIT DRAWING
SHEET 7 OF 120

SITE 4

–Y33RPB–
STA. 14+46.10
ELEV. 62.27
OFF. –174.55

61.59
0.026
0.026
3:1
4.16:1
3:1
0.060
6:1
58.89
50.15
40.39

FILL IN WETLANDS

WETLANDS

239+00.00

SITE 4

–Y33RPB–
STA. 15+02.07
ELEV. 62.56
OFF. –193.38

61.84
0.028
0.027
3:1
4.23:1
3:1
0.060
6:1
60.39
48.51
40.51

FILL IN WETLANDS

238+50.00

–Y33RPB–
STA. 15+58.95
ELEV. 62.51
OFF. –214.06

61.75
0.029
0.029
3:1
4.31:1
3:1
0.060
6:1
61.88
46.47
40.63

238+00.00

–L/–

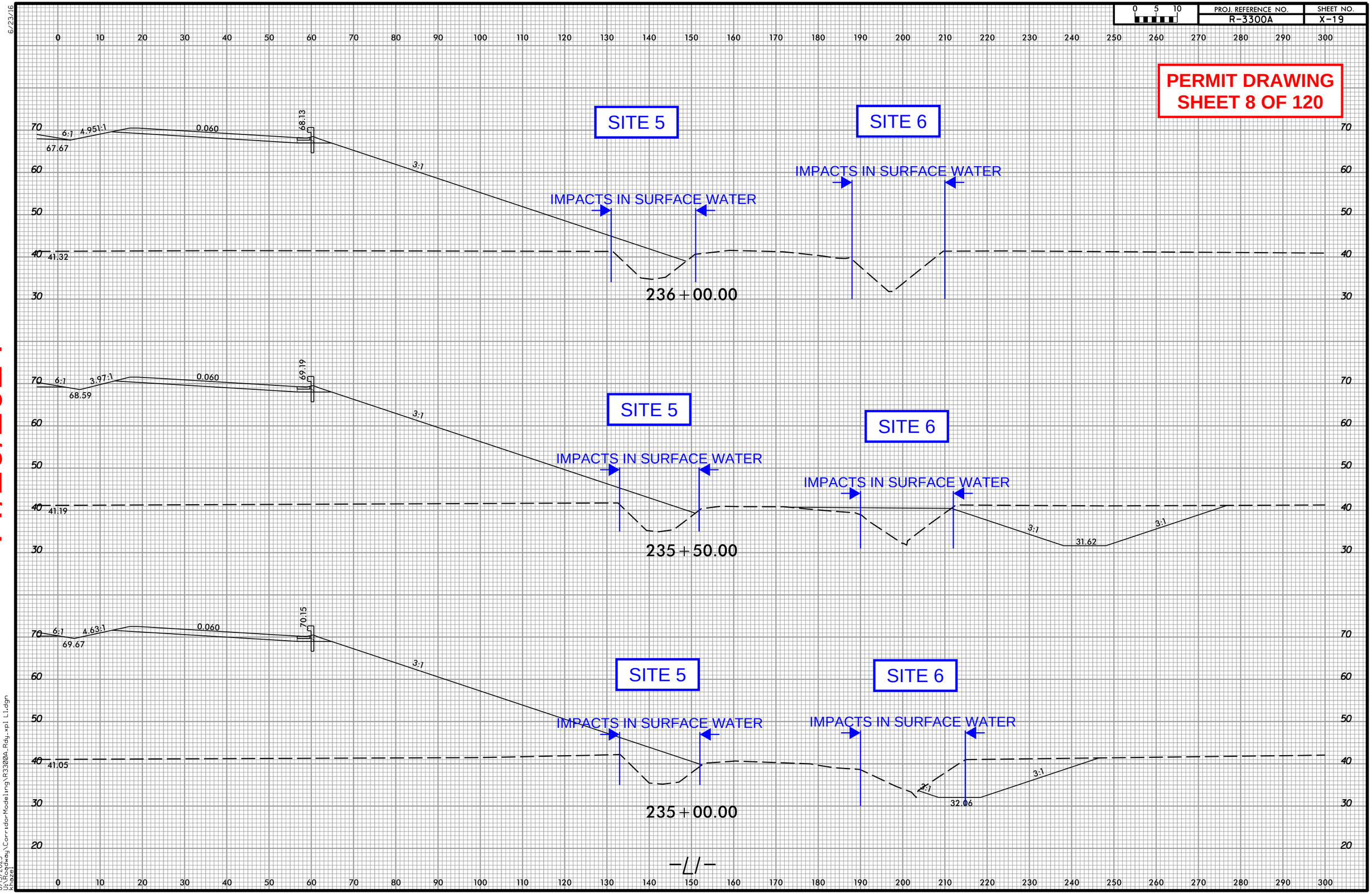
11/20/2024

8/15/2023
U:\Roadway\CorridorModeling\R3300A_Rdy_xpl L1.dgn
khazel

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-19

PERMIT DRAWING
SHEET 8 OF 120



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8/15/2023
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khazel

11/20/2024

5/14/99

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DETAIL '6E'
(NOT TO SCALE)

SKEWED MULTI– BARREL CULVERT LOW FLOW CHANNEL,SILLS AND FLOOD PLAIN BENCH

*NOTES:

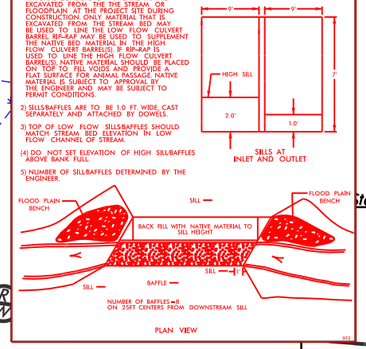
1) NATIVE MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE CONSTRUCTION MATERIAL THAT IS EXCAVATED FROM THE THE STREAM OR FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUCTION, ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP-RAP MAY BE USED TO SUPPLEMENT THE NATIVE BED MATERIAL IN THE HIGH FLOW CULVERT BARRELS. IF RIP-RAP IS USED TO LINE THE HIGH FLOW CULVERT BARRELS, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A NATURAL SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL SURFACE TO BE APPROVED BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS/BAFFLES ARE TO BE 1.0 FT WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

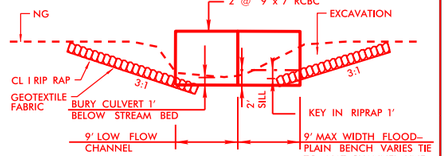
3) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM.

4) DO NOT SET ELEVATION OF HIGH SILL/BAFFLES ABOVE BANK FULL.

5) NUMBER OF SILL/BAFFLES DETERMINED BY THE ENGINEER.



DETAIL 6B
CULVERT – L1 STA 253+30 LT



OUTLET CHANNEL CHANGE DETAIL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PERMIT DRAWING SHEET 9 OF 120

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	6

RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2007

100' 0' 100'

BM2

-Y33RPB- TS Sta. 8+24.29

-Y33RPB- TS Sta. 7+24.29

02
SIDBURY LAND & TIMBER LLC

SITE 7

SITE 5

SITE 6

CHORD

-L1- POT STA 248+20.54
-Y33RPB- POT Sta. 5+00.00
47.00' LT

-Y33RPB- S 42° 48' 45.4" W

-L1-

N 39° 48' 45.4" E

-Y33RPCA-

-Y33RPCA- CS Sta. 57+82.99

-Y33RPCA- ST Sta. 59+98.99
-L1- POC Sta.246+70.28
47.00' RT

MATCHLINE -L1- STA 242+00.00 SEE SHEET 5

MATCHLINE -L1- STA 255+00.00 SEE SHEET 7

245

250

255

CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

18" CAAP W/ELBOWS

2GI

SP. LATERAL V DITCH SEE DETAIL 6D

18" RCP-IV

CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

16:1 TAPER

REMOVE

18" CMP

48" CMP

CL 1 RIP RAP OUTLET PROTECTION 20 TONS 39 S.Y. GEOTEXTILE

TIE TO EXISTING CHANNEL

OUTLET CHANNEL CHANGE DDE 11500 CY WITH FLOODPLAIN BENCH SEE DETAIL 5I

01
CORBETT INDUSTRIES INC

TOE PROTECTION SEE DETAIL 6A
CL B RIP RAP 1850 TONS
1850 SY GEOTEXTILE

18" RCP-IV

18" FLARE W/ELBOWS

SLOPE PROTECTION SEE DETAIL 6G

TEMPORARY SURFACE WATER IMPACTS

TEMPORARY EXCAVATION IN WETLAND

HAND CLEARING

03
CORBETT PACKAGE COMPANY

OUTLET CHANNEL CHANGE WITH FLOODPLAIN BENCH SEE DETAIL 6B DDE 15 CY

EXCAVATION IN WETLAND

CL I RIP RAP EST 45 TON EST 65 SY GF

CABLE GUIDERAIL ANCHOR UNIT

CABLE GUIDERAIL ANCHOR UNIT

BACKED UP TO BACK DETAIL 6E

50.00

TOE PROTECTION SEE DETAIL 6A
CL B RIP RAP
80 TONS
180 S.Y. GEOTEXTILE

SLOPE PROTECTION SEE DETAIL 6G

CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

TEMPORARY EXCAVATION IN WETLAND

INLET CHANNEL CHANGE WITH FLOODPLAIN BENCH SEE DETAIL 6C DDE 20 CY

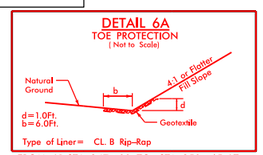
CL I RIP RAP EST 14 TON EST 20 SY GF

TEMPORARY SURFACE WATER IMPACTS

UNNAMED TRIB ISLAND CREEK

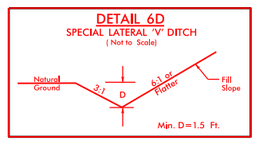
F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION
* *	MECHANIZED CLEARING (GRUBBING)
HC HC	HAND CLEARING (NON–GRUBBING)

DETAIL 6A
TOE PROTECTION
(Not to Scale)



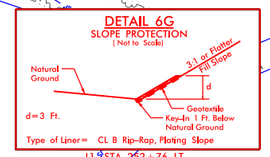
FROM L1 STA. 247+00 TO STA. 250+65 LT
FROM L1 STA. 253+33 TO STA. 254+90 RT

DETAIL 6D
SPECIAL LATERAL "V" DITCH
(Not to Scale)



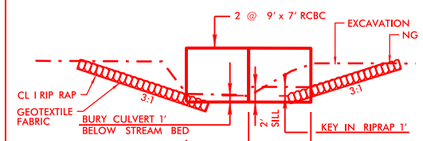
FROM Y33RPB STA. 7+00 TO STA. 8+28 RT
FROM Y33RPCA STA. 57+34 TO STA. 59+98 RT

DETAIL 6G
SLOPE PROTECTION
(Not to Scale)



–L1– STA. 252+76 LT
–L1– STA. 253+06 LT
–L1– STA. 253+66 LT

DETAIL 6C
CULVERT – L1 STA 253+30 RT



INLET CHANNEL CHANGE DETAIL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

03
CORBETT PACKAGE COMPANY

SEE SHEET 2B–1 FOR HORIZONTAL CURVE DATA

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PERMIT DRAWING SHEET 10 OF 120

Stantec
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801 Jones Franklin Road
Suite 300
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Tel. (919) 851-6866
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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	6

RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

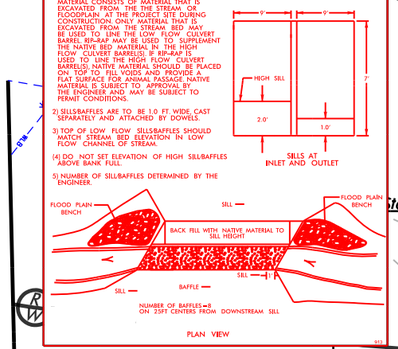
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

11/20/2024

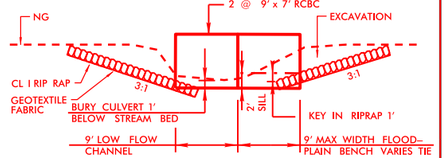
5:14:39

DETAIL '6E'
(NOT TO SCALE)
SKEWED MULTI– BARREL CULVERT LOW FLOW CHANNEL,SILLS AND FLOOD PLAIN BENCH

*NOTES:
1) NATIVE MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE CONSTRUCTION FLOW MATERIAL TO BE EXCAVATED FROM THE THE STREAM OR FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP-RAP MAY BE USED TO SUPPLEMENT THE NATIVE BED MATERIAL IN THE HIGH FLOW CULVERT BARRELS. IF RIP-RAP IS USED TO LINE THE HIGH FLOW CULVERT BARRELS, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A NATURAL SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL SURFACE TO BE APPROVED BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.
2) SILLS/BAFFLES ARE TO BE 1.0 FT WIDE CAST SEPARATELY AND ATTACHED BY DOWELS.
3) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM.
(4) DO NOT SET ELEVATION OF HIGH SILL/BAFFLES ABOVE BANK FULL.
5) NUMBER OF SILL/BAFFLES DETERMINED BY THE ENGINEER.



DETAIL 6B
CULVERT – L1 STA 253+30 LT



OUTLET CHANNEL CHANGE DETAIL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

NAD 83/NSRS 2007

100' 0' 100'

SITE 5

SITE 6

SITE 7

-Y33RPB- TS Sta. 7+24.29

-L1- POT STA 248+20.54
-Y33RPB- POT Sta. 5+00.00
47.00' LT

-Y33RPB- S 42° 48' 45.4" W

-L1- N 39° 48' 45.4" E

-Y33RPCA- CS Sta. 57+82.99

-Y33RPCA- ST Sta. 59+98.99
-L1- POC Sta.246+70.28
47.00' RT

02 SIDBURY LAND & TIMBER LLC

01 CORBETT INDUSTRIES INC

03 CORBETT PACKAGE COMPANY

CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

18" CAAP W/ELBOWS

2GI

SP. LATERAL V DITCH SEE DETAIL 6D

18" RCP-IV

CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

TOE PROTECTION SEE DETAIL 6A CL B RIP RAP 1850 TONS 54 SY GEOTEXTILE

SLOPE PROTECTION SEE DETAIL 6G

TEMPORARY SURFACE WATER IMPACTS

TEMPORARY EXCAVATION IN WETLAND

HAND CLEARING

OUTLET CHANNEL CHANGE WITH FLOODPLAIN BENCH SEE DETAIL 6B DDE 15 CY

EXCAVATION IN WETLAND

CL III RIP RAP EST 45 TON EST 65 SY GF

16:1 TAPER

REMOVE

18" CMP

48" CMP

CL 1 RIP RAP OUTLET PROTECTION 20 TONS 39 S.Y. GEOTEXTILE

TIE TO EXISTING CHANNEL

OUTLET CHANNEL CHANGE DDE 11500 CY WITH FLOODPLAIN BENCH SEE DETAIL 5I

CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

18" RCP-IV

18" CAAP W/ELBOWS

SLOPE PROTECTION SEE DETAIL 6G

TOE PROTECTION SEE DETAIL 6A CL B RIP RAP 80 TONS 180 S.Y. GEOTEXTILE

INLET CHANNEL CHANGE WITH FLOODPLAIN BENCH SEE DETAIL 6C DDE 20 CY

CL I RIP RAP EST 14 TON EST 20 SY GF

TEMPORARY EXCAVATION IN WETLAND

TEMPORARY SURFACE WATER IMPACTS

UNNAMED TRIB ISLAND CREEK

CABLE GUIDERAIL ANCHOR UNIT

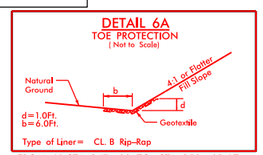
CABLE GUIDERAIL ANCHOR UNIT

F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION
* * *	MECHANIZED CLEARING (GRUBBING)
HC HC	HAND CLEARING (NON–GRUBBING)

MATCHLINE -L1- STA 242+00.00 SEE SHEET 5

MATCHLINE -L1- STA 255+00.00 SEE SHEET 7

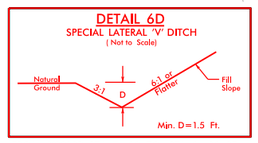
DETAIL 6A
TOE PROTECTION
(Not to Scale)



Type of Liner= CL B Rip-Rap

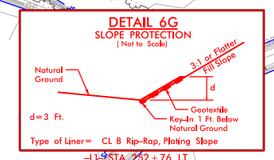
FROM L1 STA. 247+00 TO STA. 250+65 LT
FROM L1 STA. 253+33 TO STA. 254+90 RT

DETAIL 6D
SPECIAL LATERAL "V" DITCH
(Not to Scale)



FROM Y33RPB STA. 7+00 TO STA. 8+28 RT
FROM Y33RPCA STA. 57+34 TO STA. 59+98 RT

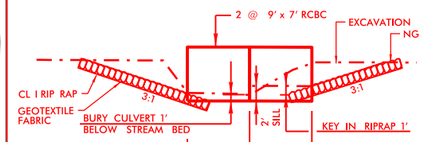
DETAIL 6G
SLOPE PROTECTION
(Not to Scale)



Type of Liner= CL B Rip-Rap, Plating Slope

-L1- STA. 252+76 LT
STA. 253+06 LT
L1- STA. 253+66 LT

DETAIL 6C
CULVERT – L1 STA 253+30 RT



INLET CHANNEL CHANGE DETAIL
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

SEE SHEET 2B–1 FOR HORIZONTAL CURVE DATA

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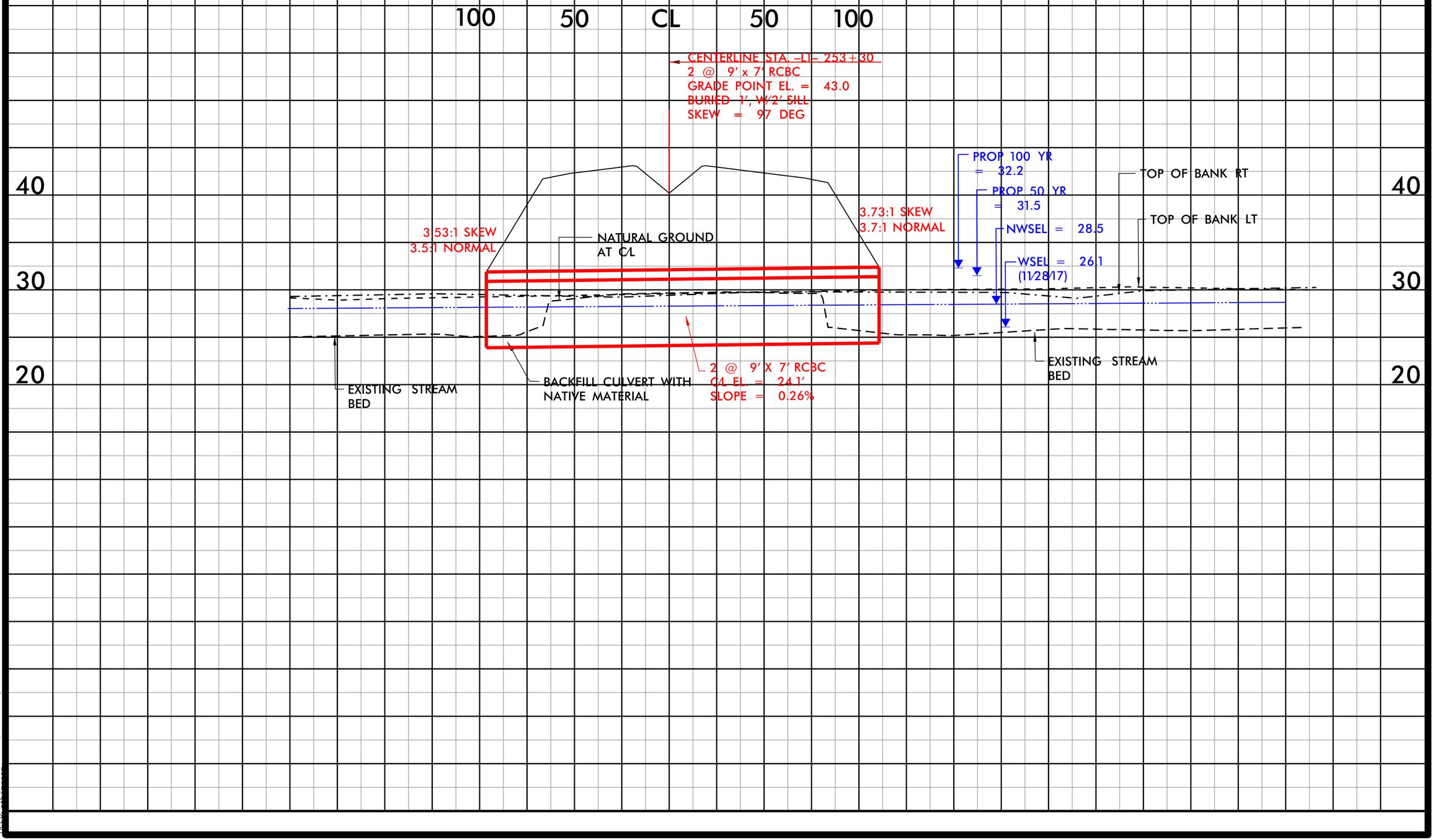
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PERMIT DRAWING
SHEET 11 OF 120

SITE 7



11/20/2024

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6/23/16

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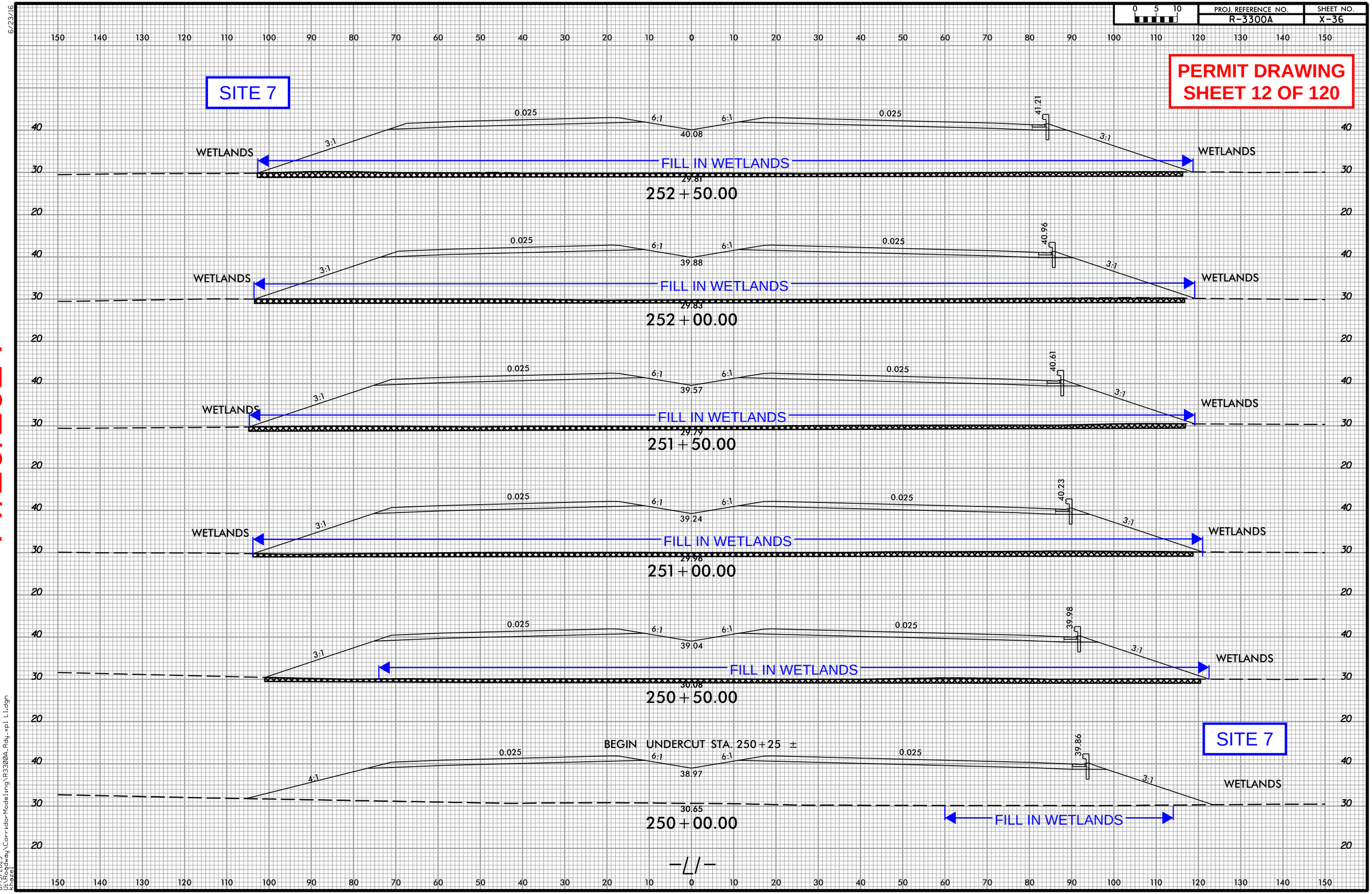
	R-3300A	X-36

PERMIT DRAWING
SHEET 12 OF 120

SITE 7



SITE 7

11/20/2024

8/15/2023
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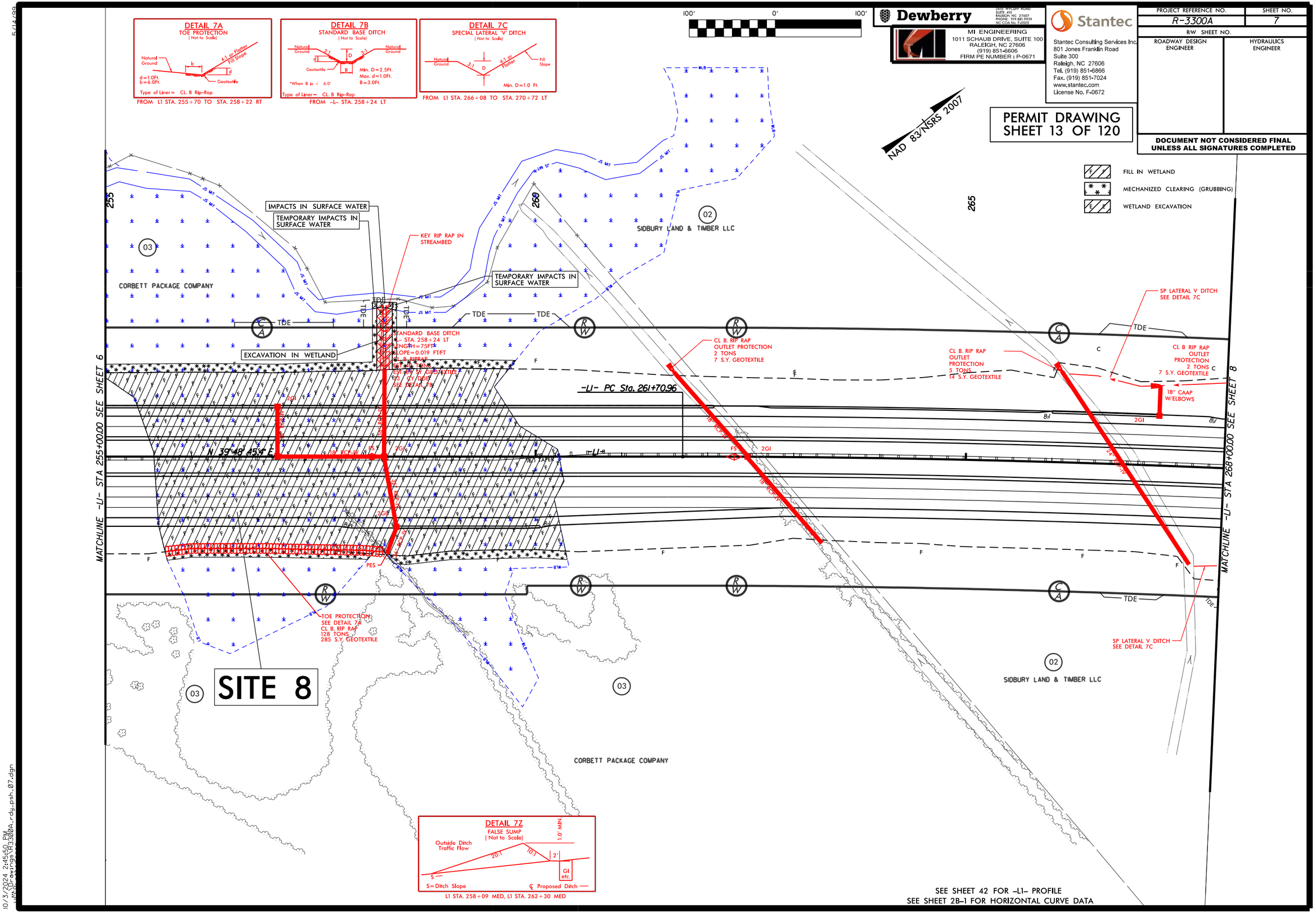
khazel

5/14/99

11/20/2024



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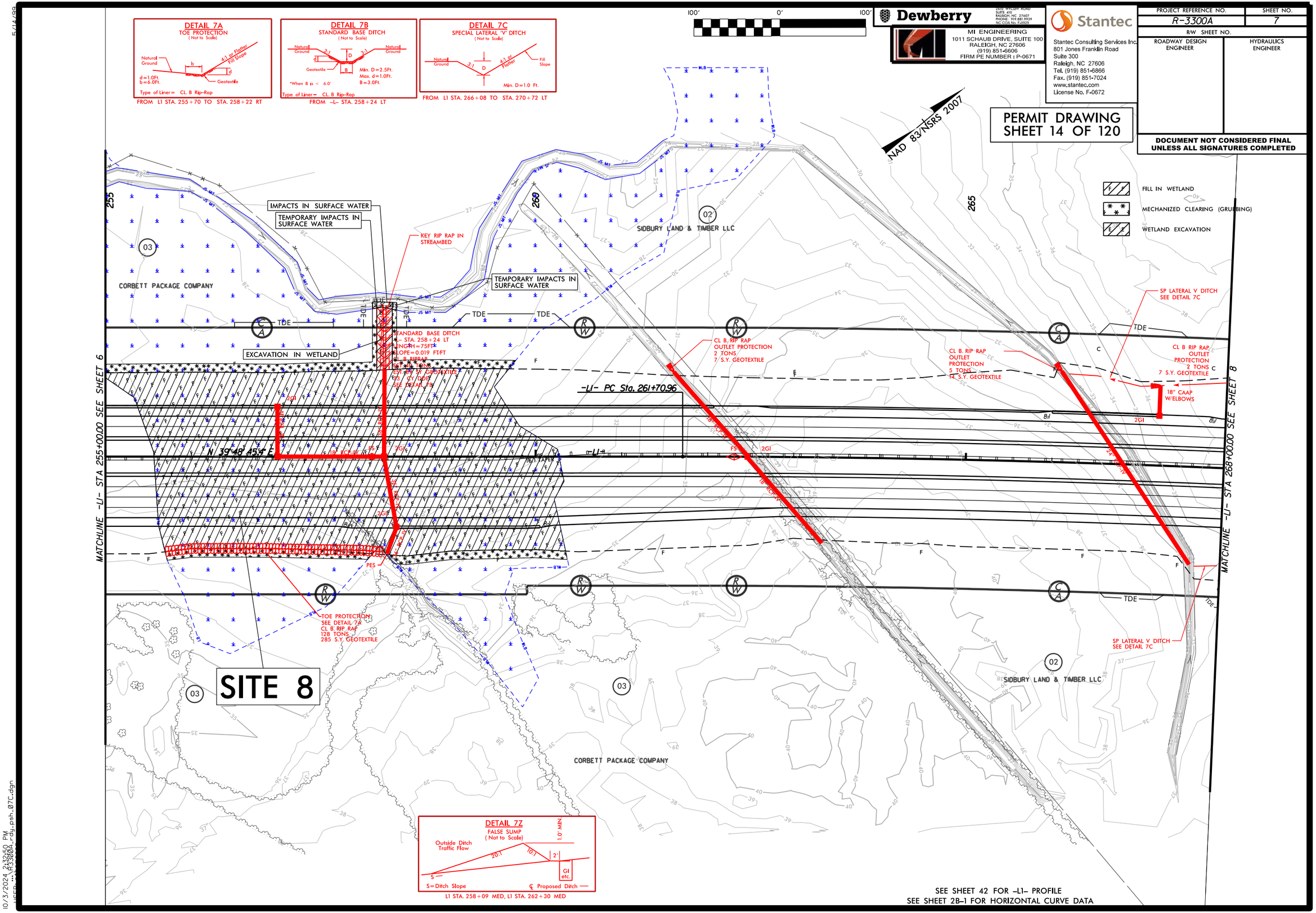

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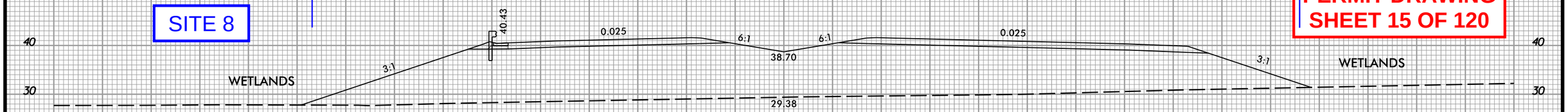
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-38

PERMIT DRAWING
SHEET 15 OF 120

SITE 8

FILL IN WETLANDS



257+50.00

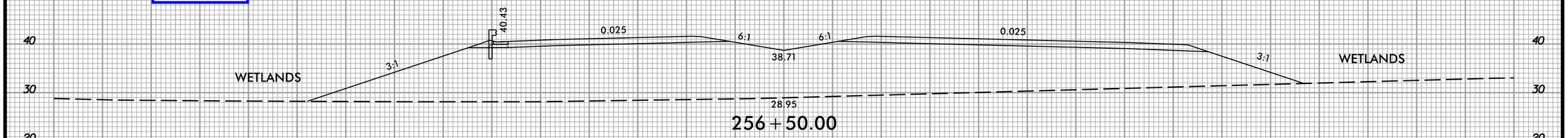
SITE 8

FILL IN WETLANDS

257+00.00

SITE 8

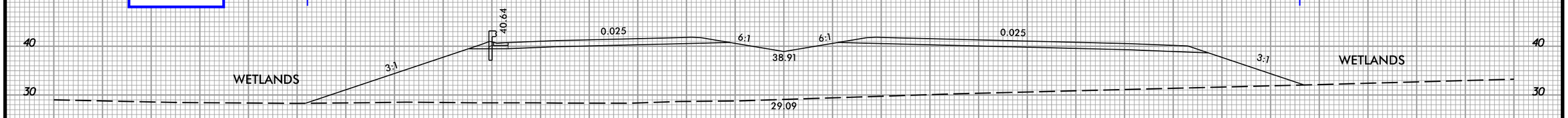
FILL IN WETLANDS



256+50.00

SITE 8

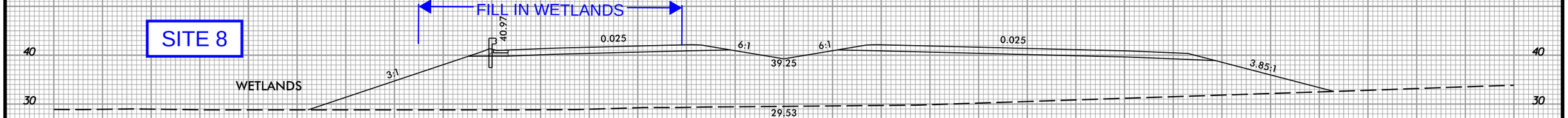
FILL IN WETLANDS



256+00.00

SITE 8

FILL IN WETLANDS



255+50.00

—L/—

11/20/2024

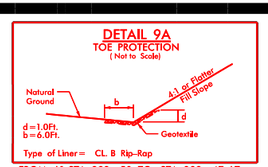
8/15/2023
U:\Roadway\CorridorModeling\R3300A_Rdy_xpl L1.dgn
khazel

5/14/99

11/20/2024

F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION
HC HC	HAND CLEARING (NON-GRUBBING)

DETAIL 9A
TOE PROTECTION
(Not to Scale)



Type of Liner = CL. B Rip-Rap
FROM L1 STA. 282+50 TO STA. 283+47 LT
FROM L1 STA. 284+04 TO STA. 285+58 LT
FROM L1 STA. 283+45 TO STA. 283+82 RT
FROM L1 STA. 280+00 TO STA. 282+87 RT

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 16 OF 120

NAD 83/NSRS 2007

100' 0' 100'
GRAPHIC SCALE

SITE 9

CULVERT 3 – L1 STA 283+45

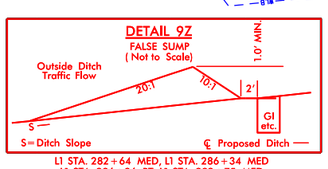
285 290

02
SIDBURY LAND & TIMBER, LLC

TEMPORARY IMPACTS IN SURFACE WATER
TEMPORARY EXCAVATION IN WETLAND
EST 10 SCY
EST 13 SY GF
IMPACTS IN SURFACE WATER
HAND CLEARING
TOE PROTECTION SEE DETAIL 9A CL B RIP RAP 49 TONS 110 SY GEOTEXTILE
TOE PROTECTION SEE DETAIL 9A CL B RIP RAP 80 TONS 175 SY GEOTEXTILE
CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE
CL B. RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE
TDE
FILL IN WETLAND
TOE PROTECTION SEE DETAIL 9A CL B. RIP RAP 120 TONS 265 S.Y. GEOTEXTILE
CL B. RIP RAP 20 TONS 42 S.Y. GEOTEXTILE
TEMPORARY IMPACTS IN SURFACE WATER
36" CMP
36" CMP
24" RCP-IV
18" RCP-IV
15" RCP-IV
2GI FG
2GI
FS
CABLE GUIDERAIL ANCHOR UNIT
N 45° 49' 13.3" E -L1-

MATCHLINE -L1- STA 281+00.00 SEE SHEET 8
MATCHLINE -L1- STA 294+00.00 SEE SHEET 10

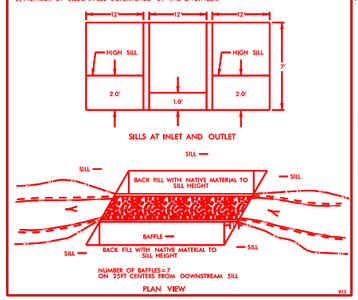
DETAIL 9Z
FALSE SUMP
(Not to Scale)



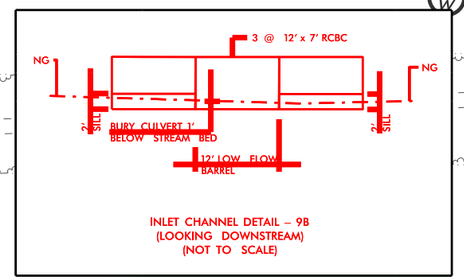
L1 STA. 282+64 MED, L1 STA. 286+34 MED
L1 STA. 286+36 RT, L1 STA. 292+75 MED

DETAIL '9D'
NOT TO SCALE
SKEWED MULTI– BARREL CULVERT LOW FLOW CHANNEL,SILLS AND FLOOD PLAIN BENCH

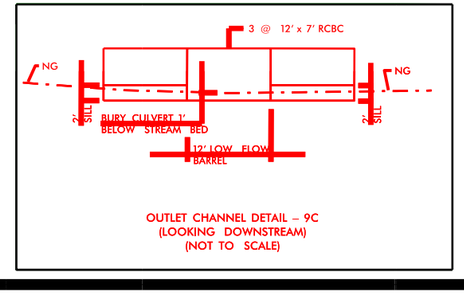
*NOTES:
1) NATIVE MATERIAL BETWEEN SILLS&BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE THE STREAM, OR FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP-RAP MAY BE USED TO SUPPLEMENT THE NATIVE BED MATERIAL IN THE HIGH FLOW CULVERT BARREL(S). RIP-RAP IS NOT TO BE USED TO LINE THE HIGH FLOW CULVERT BARREL(S). NATIVE MATERIAL SHALL BE USED TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR MATERIAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SURFACE TO PERMIT CONDITIONS.
2) SILLS/BAFFLES ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.
3) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM.
(4) DO NOT SET ELEVATION OF HIGH SILL/BAFFLES ABOVE BANK FULL.
5) NUMBER OF SILL/BAFFLES DETERMINED BY THE ENGINEER.



SIDBURY LAND & TIMBER, LLC
02



INLET CHANNEL DETAIL – 9B
(LOOKING DOWNSTREAM)
(NOT TO SCALE)



OUTLET CHANNEL DETAIL – 9C
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

SEE SHEET 43 FOR –L1– PROFILE

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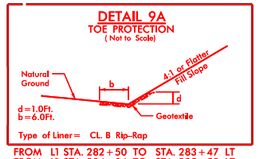
5/14/99

11/20/2024

F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION
HC HC	HAND CLEARING (NON-GRUBBING)

DETAIL 9A
TOE PROTECTION
(Not to Scale)



Type of Liner = CL B Rip-Rap

FROM L1 STA. 282+50 TO STA. 283+47 LT
FROM L1 STA. 284+04 TO STA. 285+58 LT
FROM L1 STA. 283+45 TO STA. 283+82 RT
FROM L1 STA. 280+00 TO STA. 282+87 RT

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PHONE: 919.881.9929
NC COA No. F-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PERMIT DRAWING
SHEET 17 OF 120

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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2007

100' 0' 100'

SITE 9

TEMPORARY IMPACTS IN SURFACE WATER

TEMPORARY EXCAVATION IN WETLAND
EST 13 SY GF

IMPACTS IN SURFACE WATER

HAND CLEARING

TOE PROTECTION SEE DETAIL 9A CL B RIP RAP 49 TONS 130 SY GEOTEXTILE

TOE PROTECTION SEE DETAIL 9A CL B RIP RAP 80 TONS 175 SY GEOTEXTILE

CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

CL B. RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

SIDBURY LAND & TIMBER, LLC 02

FILL IN WETLAND

CABLE GUIDERAIL ANCHOR UNIT

TOE PROTECTION SEE DETAIL 9A CL B. RIP RAP 120 TONS 265 S.Y. GEOTEXTILE

TOE PROTECTION SEE DETAIL 9A CL B. RIP RAP 20 TONS 42 S.Y. GEOTEXTILE

TEMPORARY EXCAVATION IN WETLAND EST 26 SY GF

TEMPORARY IMPACTS IN SURFACE WATER

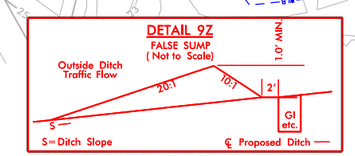
36" CMP 36" CMP

N 45° 49' 13.3" E -L1-

MATCHLINE -L1- STA 281+00.00 SEE SHEET 8

MATCHLINE -L1- STA 294+00.00 SEE SHEET 10

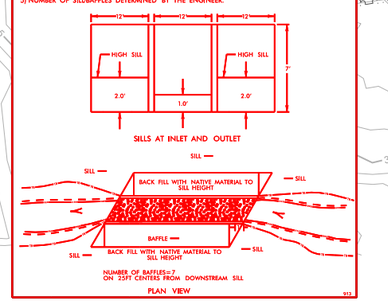
DETAIL 9Z
FALSE SUMP
(Not to Scale)

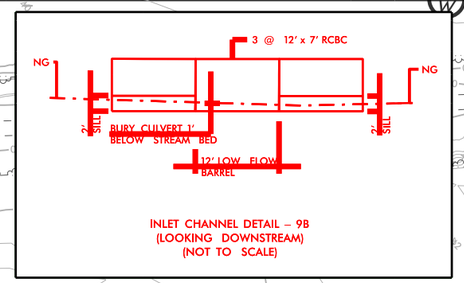


L1 STA. 282+64 MED, L1 STA. 286+34 MED
L1 STA. 286+36 RT, L1 STA. 292+75 MED

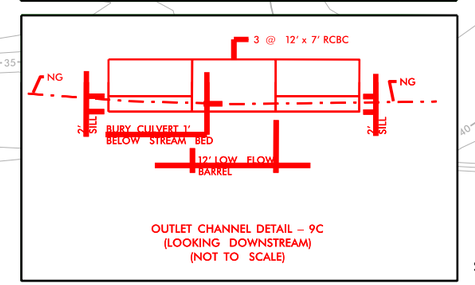
DETAIL '9D'
(NOT TO SCALE)
SKEWED MULTI- BARREL CULVERT LOW FLOW CHANNEL,SILLS AND FLOOD PLAIN BENCH

*NOTES:
1) NATIVE MATERIAL BETWEEN SILLS&BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE THE STREAM, OR FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP-RAP MAY BE USED TO SUPPLEMENT THE NATIVE BED MATERIAL IN THE HIGH FLOW CULVERT BARREL(S). IF RIP-RAP IS USED TO LINE THE HIGH FLOW CULVERT BARREL(S), NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.
2) SILLS/BAFFLES ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.
3) TOP OF LOW FLOW SILLS&BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM.
(4) DO NOT SET ELEVATION OF HIGH SILL&BAFFLES ABOVE BANK FULL.
5) NUMBER OF SILL&BAFFLES DETERMINED BY THE ENGINEER.





INLET CHANNEL DETAIL – 9B
(LOOKING DOWNSTREAM)
(NOT TO SCALE)



OUTLET CHANNEL DETAIL – 9C
(LOOKING DOWNSTREAM)
(NOT TO SCALE)

SEE SHEET 43 FOR -L1- PROFILE

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PERMIT DRAWING
SHEET 18 OF 120

SITE 9

100 50 CL 50 100

40 40

30 30

20 20

CENTERLINE STA. -L1- 283+45
3 @ 12' x 7' RCBC
GRADE POINT EL. = 36.6
BURIED 1' W/SILLS
SKEW = 105 DEG

3:1 SKEW
3:1 NORMAL

TOP OF BANK RT

TOP OF BANK LT

PROP 100 YR = 24.4

PROP 50 YR = 24.0

NWSEL = 21.0

WSEL = 20.2 (11/28/17)

EXISTING STREAM BED

3 @ 12' X 7' RCBC
C/L EL. = 17.8'
SLOPE = 0.27%

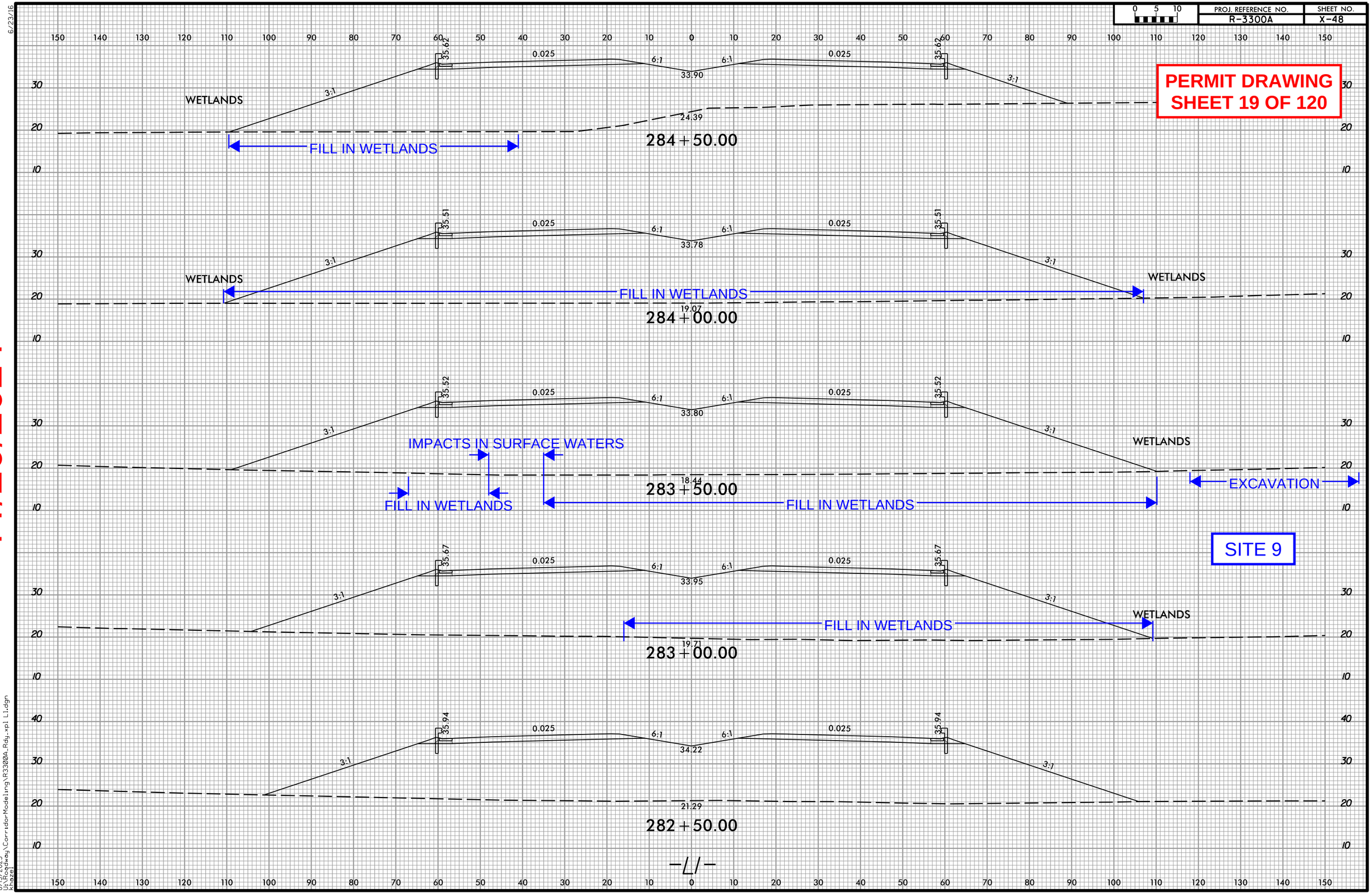
BACKFILL CULVERT WITH NATIVE MATERIAL

11/20/2024

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-48

PERMIT DRAWING
SHEET 19 OF 120



11/20/2024

8/15/2023
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khazel

11/20/2024

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE 100' 0' 100'

NAD 83/NSRS 2007

Dewberry
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PHONE: 919.881.9929
NC COA No. F-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PERMIT DRAWING SHEET 20 OF 120

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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL 10D
SLOPE PROTECTION
(Not to Scale)
Natural Ground
3:1 or Flatter Fill Slope
d
Geotextile
Key-In 1 Ft. Below Natural Ground
d = 3 Ft.
Type of Liner = CL B Rip-Rap, Plating Slope

-L1- STA. 305+56 RT
-L1- STA. 305+85 LT
-L1- STA. 306+00 RT
-L1- STA. 306+28 LT

BM5

295

SIDBURY LAND & TIMBER, LLC

02

300

-L1- TS Sta. 297+45.35

-L1- SC Sta. 299+25.35

CHORD

TDE

5' BERM TO TIE TO EXISTING DITCH

DEPARTMENT OF TRANSPORTATION

03A

305

INV. 25.06'
INV. 24.99'
42" CMP
INV. 24.59'
INV. 24.61'
INV. 21.78'
INV. 24.32'
36" HDPE

SP. LATERAL V DITCH SEE DETAIL 10C 98 CY DDE

CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

TEMPORARY IMPACTS IN SURFACE WATER

CL II RIP RAP 6'W X 20'L EST 7 TON EST 10 SY GF

OUTLET CHANNEL SEE DETAIL 10A DDE 15 CY

SITE 10

CL II RIP RAP 6'W X 40'L EST 34 TON EST 42 SY GF

SLOPE PROTECTION SEE DETAIL 10D

IMPACTS IN SURFACE WATER

1 @ 7' x 7' RCBC

18" RCP-IV

2GI

SP. LATERAL V DITCH SEE DETAIL 10C

INLET CHANNEL SEE DETAIL 10B

SLOPE PROTECTION SEE DETAIL 10D

CL II RIP RAP 6'W X 20'L EST 7 TON EST 10 SY GF

CL II RIP RAP 6'W X 35'L EST 22 TON EST 27 SY GF

TEMPORARY IMPACTS IN SURFACE WATER

US ISLAND CREEK

POND

WOODS

MATCHLINE -L1- STA 294+00.00 SEE SHEET 9

MATCHLINE -L1- STA 307+00.00 SEE SHEET 11

15" RCP-IV

CABLE GUIDERAIL ANCHOR UNIT

N 45° 49' 13.3" E

1651 TAPER

18" CAP WELDED

18" RCP-IV

2GI FG

FS

GRADE TO DRAIN

FILL EXISTING TO ELEV. 42.0'

R3300-1

DETAIL 10Z
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
20:1
10:1
2'
1.0' MIN.
GI etc.
S = Ditch Slope
℄ Proposed Ditch
L1 STA. 301+67 MED

DETAIL 10A
CULVERT – L1 STA 305+99 LT
1 @ 7' x 5' RCBC
NG
3:1
BURY CULVERT 1' BELOW STREAM BED
7'
CL II RIP RAP 6' W X 20' L
GEOTEXTILE FABRIC
OUTLET CHANNEL DETAIL (LOOKING DOWNSTREAM) (NOT TO SCALE)

DETAIL 10B
CULVERT – L1 STA 305+99 RT
1 @ 7' x 5' RCBC
NG
3:1
BURY CULVERT 1' BELOW STREAM BED
7'
CL II RIP RAP 6' W X 20' L
GEOTEXTILE FABRIC
INLET CHANNEL DETAIL (LOOKING DOWNSTREAM) (NOT TO SCALE)

DETAIL 10C
SPECIAL LATERAL "V" DITCH
(Not to Scale)
Natural Ground
3:1
D
6:1 or Flatter Fill Slope
Min. D=1.5 Ft.
FROM -L1- STA. 306+27 TO STA. 308+50 LT
FROM -L1- STA. 306+00 TO STA. 309+50 RT

SEE SHEET 43 & 44 FOR -L1- PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

11/7/2024 8:42:02 AM
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11/20/2024

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'

NAD 83/NSRS 2007

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PERMIT DRAWING
SHEET 21 OF 120

Stantec
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License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL 10D
SLOPE PROTECTION
(Not to Scale)

Natural Ground
3:1 or Flatter Fill Slope
d
Geotextile
Key-In 1 Ft. Below Natural Ground
d = 3 Ft.

Type of Liner = CL B Rip-Rap, Plating Slope
-L1- STA. 305+56 RT
-L1- STA. 305+85 LT
-L1- STA. 306+00 RT
-L1- STA. 306+28 LT

BM5

SIDBURY LAND & TIMBER, LLC
02
DEPARTMENT OF TRANSPORTATION
03A

-L1- TS Sta. 297+45.35
-L1- SC Sta. 299+25.35
CHORD
TDE
5' BERM TO TIE TO EXISTING DITCH

SITE 10

TEMPORARY IMPACTS IN SURFACE WATER

CL II RIP RAP 6'W X 20'L EST 7 TON EST 10 SY GF
OUTLET CHANNEL SEE DETAIL 10A DDE 15 CY
CL II RIP RAP 6'W X 40'L EST 34 TON EST 42 SY GF
SLOPE PROTECTION SEE DETAIL 10D
IMPACTS IN SURFACE WATER
INLET CHANNEL SEE DETAIL 10B
SLOPE PROTECTION SEE DETAIL 10D
CL II RIP RAP 6'W X 20'L EST 7 TON EST 10 SY GF
CL II RIP RAP 6'W X 35'L EST 22 TON EST 27 SY GF
TEMPORARY IMPACTS IN SURFACE WATER

CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE
SP. LATERAL V DITCH SEE DETAIL 10C 92 CY DDE
CL B RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

INV. 28.7'
INV. 24.32'
36" HDPE
42" CMP
INV. 25.06'
INV. 24.99'
INV. 24.53'
INV. 24.61'

18" CAP WELDED
2GI FG
18" RCP-IV
2GI
FS
15:1 TAPER
-L-
15" RCP-IV
CABLE GUIDERAIL ANCHOR UNIT
N 45°49'13.3" E
GRADE TO DRAIN
FILL EXISTING TO ELEV. 42.0'
R3300-1
TDE
WOODS
POND
LITTLE ISLAND CREEK

MATCHLINE -L1- STA 294+00.00 SEE SHEET 9
MATCHLINE -L1- STA 307+00.00 SEE SHEET 11

DETAIL 10Z
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
20:1
10:1
2'
1.0' MIN.
GI etc.
S
S = Ditch Slope
℄ Proposed Ditch
L1 STA. 301+67 MED

DETAIL 10A
CULVERT – L1 STA 305+99 LT
1 @ 7' x 5' RCBC
NG
3:1
BURY CULVERT 1' BELOW STREAM BED
7'
GEOTEXTILE FABRIC
CL II RIP RAP 6'W X 20'L
OUTLET CHANNEL DETAIL (LOOKING DOWNSTREAM) (NOT TO SCALE)

DETAIL 10B
CULVERT – L1 STA 305+99 RT
1 @ 7' x 5' RCBC
NG
3:1
BURY CULVERT 1' BELOW STREAM BED
7'
GEOTEXTILE FABRIC
CL II RIP RAP 6'W X 20'L
INLET CHANNEL DETAIL (LOOKING DOWNSTREAM) (NOT TO SCALE)

DETAIL 10C
SPECIAL LATERAL "V" DITCH
(Not to Scale)
Natural Ground
3:1
D
6:1 or Flatter
Fill Slope
Min. D=1.5 Ft.
FROM -L1- STA. 306+27 TO STA. 308+50 LT
FROM -L1- STA. 306+00 TO STA. 309+50 RT

SEE SHEET 43 & 44 FOR -L1- PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

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PERMIT DRAWING
SHEET 22 OF 120

PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SITE 10

100 50 CL 50 100

40

30

20

CENTERLINE STA. –L1– 305+99
1 @ 7' x 5' RCBC
GRADE POINT EL. = 40.0
BURIED 1'
SKEW = 98 DEG

3.03:1 SKEW
3:1 NORMAL

PROP 100 YR
= 32.5

PROP 50 YR
= 31.6

NWSEL = 28.0

WSEL = 26.7
(11/29/17)

TOP OF BANK RT

TOP OF BANK LT

EXISTING STREAM BED

1 @ 7' X 5' RCBC
C/L EL. = 24.9'
SLOPE = 0.29%

BACKFILL CULVERT WITH NATIVE MATERIAL

11/20/2024

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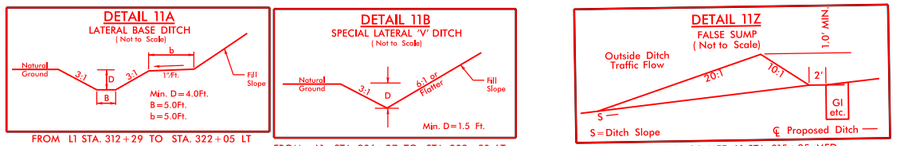
11/20/2024



FROM L1 STA. 312+29 TO STA. 322+05 LT

FROM -L1- STA. 306+27 TO STA. 308+50 LT
FROM -L1- STA. 306+00 TO STA. 309+50 RT

L1 STA. 309+36 MED, L1 STA. 315+85 MED

100' 0' 100'

NAD 83/NSRS 2007

PERMIT DRAWING
SHEET 23 OF 120

F / F — DENOTES FILL IN WETLAND
HC / HC — DENOTES HAND CLEARING
JS / JS — DENOTES IMPACTS IN SURFACE WATER
TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

Dewberry
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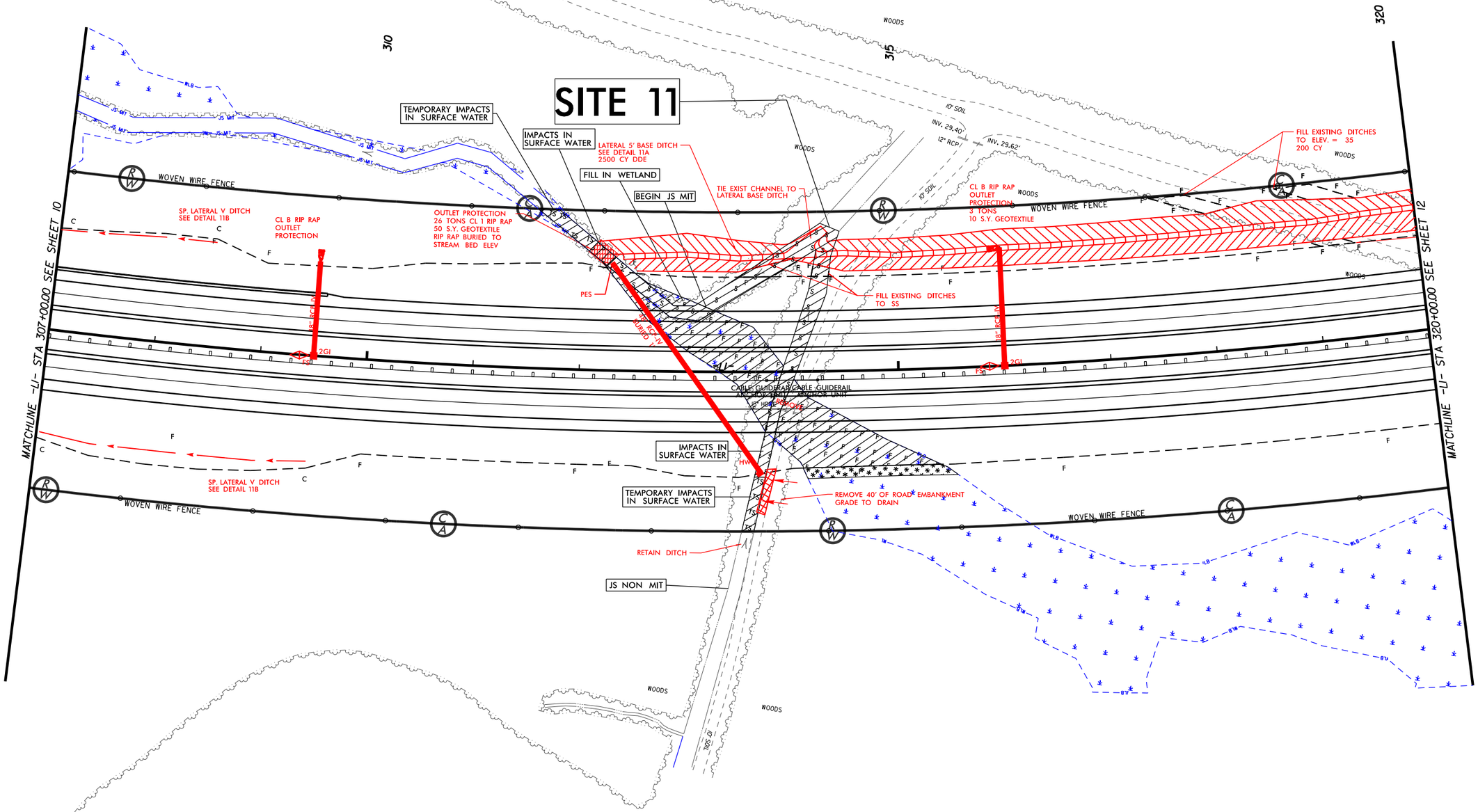
PROJECT REFERENCE NO.	SHEET NO.
R-3300A	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SEE SHEET 44 FOR -L1- PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

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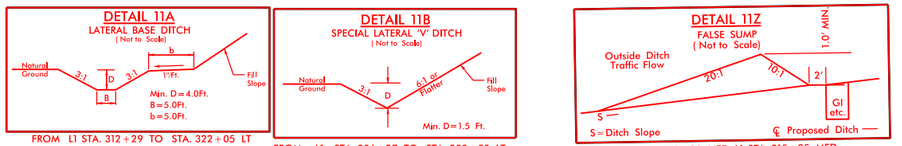
11/20/2024



100' 0' 100'

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
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FIRM PE NUMBER : P-0671

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 24 OF 120

NAD 83/NSRS 2007

F F — DENOTES FILL IN WETLAND
FH FH — DENOTES HAND CLEARING
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 11

TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
LATERAL 5' BASE DITCH SEE DETAIL 11A 2500 CY DDE
FILL IN WETLAND
BEGIN JS MIT
TIE EXIST CHANNEL TO LATERAL BASE DITCH
FILL EXISTING DITCHES TO ELEV. = 35 200 CY
CL B RIP RAP OUTLET PROTECTION 3 TONS 10 S.Y. GEOTEXTILE
WOVEN WIRE FENCE
SP. LATERAL V DITCH SEE DETAIL 11B
CL B RIP RAP OUTLET PROTECTION
OUTLET PROTECTION 26 TONS CL 1 RIP RAP 50 S.Y. GEOTEXTILE RIP RAP BURIED TO STREAM BED ELEV
PES
FILL EXISTING DITCHES TO .55
CABLE GUIDERAIL CABLE GUIDERAIL ANCHOR UNIT
IMPACTS IN SURFACE WATER
TEMPORARY IMPACTS IN SURFACE WATER
REMOVE 40' OF ROAD EMBANKMENT GRADE TO DRAIN
RETAIN DITCH
JS NON MIT
WOODS
MATCHLINE -L1- STA 307+00.00 SEE SHEET 10
MATCHLINE -L1- STA 320+00.00 SEE SHEET 12

SEE SHEET 44 FOR -L1- PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

11/7/2024 8:37:34 AM
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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-60

PERMIT DRAWING
SHEET 25 OF 120

SITE 11

WETLANDS

3:1 3:1 28.57 3:1 0.040 5.324:1 6:1 39.42 0.040 3:1

IMPACTS IN SURFACE WATER

FILL IN WETLANDS

30.56

314 + 00.00

WETLANDS

IMPACTS IN SURFACE WATER

3:1 3:1 27.95 3.18:1 0.040 5.324:1 6:1 39.25 0.040 4:1

FILL IN WETLANDS

31.04

313 + 50.00

FILL IN WETLANDS

FILL IN WETLANDS

3:1 3:1 27.32 3.43:1 0.040 5.324:1 6:1 39.08 0.040 4:1

31.12

IMPACTS IN SURFACE WATER

313 + 00.00

SITE 11

FILL IN WETLANDS

3:1 3:1 26.69 3:1 0.040 5.324:1 6:1 38.91 0.040 3.59:1

33.18

IMPACTS IN SURFACE WATER

312 + 50.00

4:1 0.040 5.324:1 6:1 38.74 0.040 3.76:1

33.88

312 + 00.00

11/20/2024

8/15/2023
U:\Roadway\CorridorModeling\R3300A_Rdy_xpl L1.dgn
khazel

11/20/2024

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

100' 0' 100'

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. C-2909

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PERMIT DRAWING
SHEET 26 OF 120

NAD 83/NSRS 2007

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

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WOODS

335

340

345

-L1- CS Sta. 338+81.64

-L1- ST Sta. 340+61.64

CHORD

WOVEN WIRE FENCE

SITE 12

CL B RIPRAP
OUTLET PROTECTION
3 TONS
10 S.Y GEOTEXTILE

18" RCP

2GI FS

CABLE GUIDERAIL ANCHOR UNIT

CABLE GUIDERAIL ANCHOR UNIT

PES

30" RCP

2GI FS

CABLE GUIDERAIL ANCHOR UNIT

CABLE GUIDERAIL ANCHOR UNIT

PES

24" RCP

FS

PES

24" RCP

FS

PES

24" RCP

FS

PES

24" RCP

FS

PES

10' SOIL

MATCHLINE -L1- STA 333+00.00 SEE SHEET 12

MATCHLINE -L1- STA 347+00.00 SEE SHEET 14

N 61° 01' E

SITE 13

* DO NOT BURY EQUALIZER PIPES

DETAIL 13Z
FALSE SUMP
(Not to Scale)

Outside Ditch Traffic Flow

20:1

10:1

2'

1.0' MIN.

S

GI etc.

S=Ditch Slope

℄ Proposed Ditch

L1 STA. 335+16 MED, L1 STA. 343+17 MED

SEE SHEET 45 FOR -L1- PROFILE
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA

7/16/2024 10:39:25 AM
W:\Projects\R-3300A_rdy_psh_13.dgn

11/20/2024

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

100' 0' 100'

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC CoA No. C-2609

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PERMIT DRAWING
SHEET 27 OF 120

NAD 83/NSRS 2007

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 12

SITE 13

-L1- CS Sta. 338+81.64

-L1- ST Sta. 340+61.64

CHORD

WOVEN WIRE FENCE

CL B RIPRAP
OUTLET PROTECTION
3 TONS
10 S.Y GEOTEXTILE

CABLE GUIDERAIL ANCHOR UNIT

18" RCP

2GI

FS

PES

WOODS

10' SOIL

MATCHLINE -L1- STA 333+00.00 SEE SHEET 12

MATCHLINE -L1- STA 347+00.00 SEE SHEET 14

* DO NOT BURY EQUALIZER PIPES

DETAIL 13Z
FALSE SUMP
(Not to Scale)

Outside Ditch Traffic Flow
20:1
10:1
2'
1.0' MIN.
S
GI etc.
S=Ditch Slope
℄ Proposed Ditch

L1 STA. 335+16 MED, L1 STA. 343+17 MED

SEE SHEET 45 FOR -L1- PROFILE
SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA

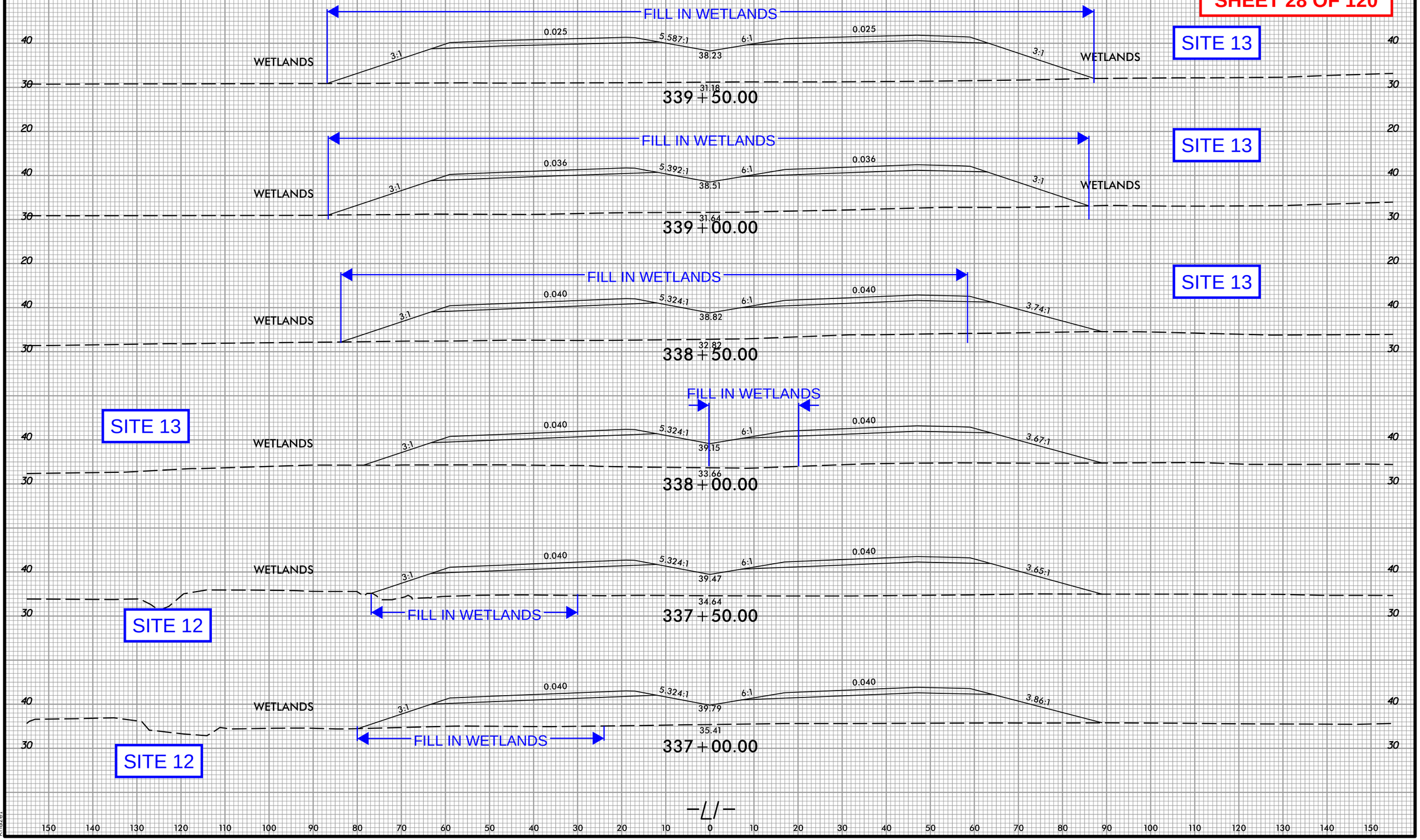
7/16/2024 10:43:02 AM
USER: ...\R-3300A_rdy_psh_13C.dgn

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-69

PERMIT DRAWING
SHEET 28 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



40 30 20

11/20/2024

8/15/2023
U:\Roadway\CorridorModeling\R3300A_Rdy_xpl L1.dgn
khazel

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-70

PERMIT DRAWING
SHEET 29 OF 120

11/20/2024

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

40 30 20

FILL IN WETLANDS

WETLANDS — 3:1 — 0.025 — 6:1 — 36.24 — 6:1 — 0.025 — 3:1 — WETLANDS

30.34

342 + 50.00

SITE 13

FILL IN WETLANDS

WETLANDS — 3:1 — 0.025 — 6:1 — 36.65 — 6:1 — 0.025 — 3:1 — WETLANDS

30.26

342 + 00.00

SITE 13

FILL IN WETLANDS

WETLANDS — 3:1 — 0.025 — 5.934:1 — 37.01 — 6:1 — 0.020 — 3:1 — WETLANDS

30.40

341 + 50.00

SITE 13

FILL IN WETLANDS

WETLANDS — 3:1 — 0.025 — 5.843:1 — 37.34 — 6:1 — 0.009 — 3:1 — WETLANDS

30.51

341 + 00.00

SITE 13

FILL IN WETLANDS

WETLANDS — 3:1 — 0.025 — 5.756:1 — 37.65 — 6:1 — 0.003 — 3:1 — WETLANDS

30.53

340 + 50.00

SITE 13

FILL IN WETLANDS

WETLANDS — 3:1 — 0.025 — 5.670:1 — 37.95 — 6:1 — 0.014 — 3:1 — WETLANDS

30.93

340 + 00.00

SITE 13

-L/-

8/15/2023
U:\Roadway\Corridor Modeling\R3300A_Rdy_xpl L1.dgn
khazel

11/20/2024

REVISIONS

RW REV. FEB 2024: REVISED PUE ON PARCEL 12. -STANTEC

11/7/2024 8:42:06 AM
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www.stantec.com
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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 30 OF 120

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2007

GRAPHIC SCALE 100' 0' 100'

SITE 13

SITE 14

SITE 15

SITE 20

DETAIL 14B
STANDARD BASE DITCH
(Not to Scale)
Min. D = 2.0Ft.
B = 3.0Ft.
FROM L1 STA. 351+14 TO STA. 352+12 LT

DETAIL 14C
LATERAL BASE DITCH
(Not to Scale)
Min. D = 2.0Ft.
B = 4.0Ft.
b = 5.0Ft.
FROM Y34 STA. 20+04 TO STA. 22+84 RT

DETAIL 14D
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 2.0Ft.
FROM Y34 19+50 STA. TO 23+63 LT

DETAIL 14E
LATERAL 'V' DITCH
(Not to Scale)
Min. D = 1.5Ft.
b = 5.0Ft.
FROM Y34 STA. 26+00 TO STA. 33+14 LT

DETAIL 14I
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D = 1.5 Ft.
FROM –SR1– STA. 19+50 TO STA. 22+51 LT

MATCHLINE -Y34- STA 19+00.00 SEE SHEET 35

MATCHLINE -L1- STA 347+00.00 SEE SHEET 13

MATCHLINE -L1- STA 360+00.00 SEE SHEET 15

MATCHLINE -Y34- STA 27+00.00 SEE SHEET 36

IMPACTS IN SURFACE WATER

EXCAVATION IN WETLAND

RIPRAP AT JURISDICTIONAL STREAM CL II RIPRAP 40 TONS SEE DETAIL 14G

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 31A

-SRI- PC Sta. 17+39.94

-SRI- PT Sta. 22+72.15

-SRI- POT Sta. 25+00.00

SP. LATERAL V DITCH SEE DETAIL 14D

SP. LAT. V DITCH SEE DETAIL 14F

CATHERINE C. FULLERTON

LETICIA A. FOUQUET

J.W. COVIL, ET UX

F.J.H., L.L.C.

WCM ENTERPRISES, LLC.

DEPARTMENT OF TRANSPORTATION

LATERAL 4' BASE DITCH SEE DETAIL 14C 230 CY DDE

3' BASE DITCH SEE DETAIL 14B 100 CY DDE

CL 1 RIP RAP OUTLET PROTECTION 15 TONS 29 S.Y. GEOTEXTILE

CL B RIP RAP OUTLET PROTECTION 5 TONS 14 S.Y. GEOTEXTILE

CL B RIPRAP OUTLET PROTECTION 3 TONS 3 S.Y. GEOTEXTILE

CL B RIPRAP OUTLET PROTECTION 5 TONS 14 S.Y. GEOTEXTILE

CL B RIPRAP OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE

TOE PROTECTION SEE DETAIL 14A CL B RIP RAP 101 TONS 225 SY GEOTEXTILE

BEGIN APPROACH SLAB -Y34- 23+07.86

BEGIN BRIDGE -Y34- 23+21.98

END BRIDGE -Y34- 25+35.48

END APPROACH SLAB -Y34- 25+49.60

-L1- TS Sta. 349+91.32

-L1- SC Sta. 351+26.32

-L1- STA. 354+03.68

-Y34- STA. 24+28.73

N 46°08'33" W

N 07°51'01" E

BEGIN FILL

END FILL

REMOVE EXIST ROADWAY EMBANKMENT AND GRADE TO DRAIN TO DITCH TO REMAIN

RETAIN EXIST DITCH

TIE TO EXISTING DITCH

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 14F

INDIRECT IMPACTS – TOTAL TAKE

HYDRAULICS ENGINEER

SEE SHEET 45 & 46 FOR –L1– PROFILE
SEE SHEET 63 FOR –Y34– PROFILE
SEE SHEET 65 FOR –SR1– PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)

DETAIL 14G
RIRPAP PAD AT JURISDICTIONAL STREAM
(Not to Scale)
Type of Liner = CL II Rip-Rap
Y34 STA. 19+50 LT – SR1 STA. 15+12 LT

DETAIL 14A
TOE PROTECTION
(Not to Scale)
d = 1.0Ft.
b = 6.0Ft.
Type of Liner = CL. B Rip-Rap
FROM L1 STA. 347+50 TO STA. 349+50 RT

DETAIL 14J
FALSE SUMP
(Not to Scale)
S = Ditch Slope
℄ Proposed Ditch

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

L1 STA. 350+42 MED

DETAIL 14F
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Min. D = 1.3 Ft.
B = 2 Ft.
FROM –L– STA. 357+91 TO STA. 359+19 LT

11/20/2024

REVISIONS

RW REV. FEB 2024: REVISED PUE ON PARCEL 12. -STANTEC

11/7/2024 8:37:38 AM
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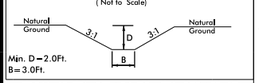
E E	WETLAND EXCAVATION
F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
* *	MECHANIZED CLEARING (GRUBBING)

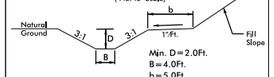
DETAIL 14B
STANDARD BASE DITCH
(Not to Scale)



Min. D = 2.0Ft.
B = 3.0Ft.

FROM L1 STA. 351+14 TO STA. 352+12 LT

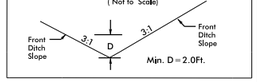
DETAIL 14C
LATERAL BASE DITCH
(Not to Scale)



Min. D = 2.0Ft.
B = 4.0Ft.
b = 5.0Ft.

FROM Y34 STA. 20+04 TO STA. 22+84 RT

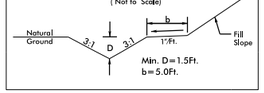
DETAIL 14D
SPECIAL CUT DITCH
(Not to Scale)



Min. D = 2.0Ft.

FROM Y34 STA. 19+50 TO STA. 23+63 LT

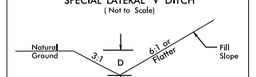
DETAIL 14E
LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5Ft.
b = 5.0Ft.

FROM Y34 STA. 26+00 TO STA. 33+14 LT

DETAIL 14I
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.

FROM –SR1– STA. 19+50 TO STA. 22+51 LT

SITE 15

NAD 83/NSRS 2007

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
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NC COA No. P-0929

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(919) 851-6606
FIRM PE NUMBER : P-0671

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SHEET 31 OF 120

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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100' 0' 100'

SITE 14

SITE 13

SITE 20

MATCHLINE –Y34– STA 19+00.00 SEE SHEET 35

MATCHLINE –L1– STA 347+00.00 SEE SHEET 13

MATCHLINE –L1– STA 360+00.00 SEE SHEET 15

MATCHLINE –Y34– STA 27+00.00 SEE SHEET 36

IMPACTS IN SURFACE WATER

EXCAVATION IN WETLAND

INDIRECT IMPACTS – TOTAL TAKE

RIPRAP AT JURISIDICTIONAL STREAM CL II RIPRAP 40 TONS SEE DETAIL 14G

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 31A

–SRI– PC Sta. 17+39.94

–SRI– PT Sta. 22+72.15

–SRI– POT Sta. 25+00.00

N 46°08'33" W

–L1– TS Sta. 349+91.32

–L1– SC Sta. 351+26.32

BEGIN APPROACH SLAB –Y34– 23+07.86

BEGIN BRIDGE –Y34– 23+21.98

END BRIDGE –Y34– 25+35.48

END APPROACH SLAB –Y34– 25+49.60

–L1– STA. 354+03.68
–Y34– STA. 24+28.73

N 75°40'14" E

N 05°40'01" E

WCM ENTERPRISES, LLC.

CATHERINE C. FULLERTON

LETICIA A. FOUQUET

J.W. COVIL, ET UX

FJH, LLC

DEPARTMENT OF TRANSPORTATION

WOVEN WIRE FENCE

SP. LATERAL V DITCH SEE DETAIL 14D

SP. LAT. V DITCH SEE DETAIL 14F

LATERAL 4' BASE DITCH SEE DETAIL 14C 230 CY DDE

3' BASE DITCH SEE DETAIL 14B 100 CY DDE

LATERAL V DITCH SEE DETAIL 14E 500 CY DDE

CL 1 RIP RAP OUTLET PROTECTION 15 TONS 29 S.Y. GEOTEXTILE

CL B RIP RAP OUTLET PROTECTION 5 TONS 14 S.Y. GEOTEXTILE

CL B RIPRAP OUTLET PROTECTION 3 TONS 10 S.Y. GEOTEXTILE

CL B RIPRAP OUTLET PROTECTION 5 TONS 14 S.Y. GEOTEXTILE

TOE PROTECTION SEE DETAIL 14A CL B RIP RAP 101 TONS 225 SY GEOTEXTILE

REMOVE EXIST ROADWAY EMBANKMENT AND GRADE TO DRAIN TO DITCH TO REMAIN

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 14F

TIE TO EXISTING DITCH

RETAIN EXIST DITCH

REMOVE

SEE SHEET 45 & 46 FOR –L1– PROFILE
SEE SHEET 63 FOR –Y34– PROFILE
SEE SHEET 65 FOR –SR1– PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

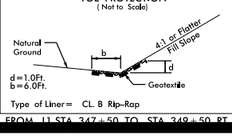
DETAIL 14G
RIPRAP PAD AT JURISDICTIONAL STREAM
(Not to Scale)

D = Pipe Dia.

Type of Liner = CL II Rip-Rap

–Y34– STA. 19+50 LT
–SR1– STA. 15+13 LT

DETAIL 14A
TOE PROTECTION
(Not to Scale)

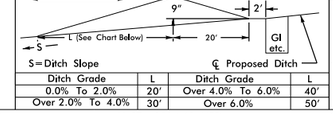


d = 1.0Ft.
b = 6.0Ft.

Type of Liner = CL. B Rip-Rap

FROM L1 STA. 347+50 TO STA. 349+50 RT

DETAIL 14J
FALSE SUMP
(Not to Scale)



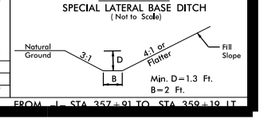
S = Ditch Slope

℄ Proposed Ditch

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

L1 STA. 350+42 MED

DETAIL 14F
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.3 Ft.
B = 2 Ft.

FROM –L– STA. 357+91 TO STA. 359+19 LT

HYDRAULICS ENGINEER

11/20/2024

8/17/99

REVISIONS

F F FILL IN WETLAND

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

E E WETLAND EXCAVATION

* * MECHANIZED CLEARING (GRUBBING)

NAD 83/NSRS 2007

HAND CLEARING

LATERAL V DITCH
SEE DETAIL 35C
1200 CY DDE

LAT 2' BASE DITCH
SEE DETAIL 35E
21 CY DDE

Q10=11.2 CFS
V10=2.0 FPS

EXCAVATION IN WETLAND

MECHANIZED CLEARING

TEMPORARY IMPACTS IN SURFACE WATER

MECHANIZED CLEARING

IMPACTS IN SURFACE WATER

18" RCP-IV

PUE

PDE

N 75° 50' 17.4" E

-SR1-

(PLACED UNDER -Y3/DET-1)

12" RCP-IV BURIED 1'

CROSS BRANCH

HW

VERT 1'

48" CMP

08

09

RW

CA

SITE 15

Dewberry
3600 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
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NC COA No. F-2629

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PERMIT DRAWING
SHEET 31A OF 120

50' 0' 50'

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-74

PERMIT DRAWING
SHEET 32 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

30
20

0.030 4.533:1 10:1 10:1 0.030 4.15:1
33.34
27.59
354+50.00

0.030 3.3:1 0.030 4.03:1
28.66
354+00.00

0.030 4.348:1 10:1 10:1 0.030 4.48:1
32.81
27.72
353+50.00

SITE 14
WETLANDS
0.030 4:1 10:1 10:1 0.030 3.84:1
32.05
28.09
353+00.00
FILL IN WETLANDS

SITE 14
0.030 4:1 10:1 10:1 0.030 5.29:1
31.60
27.35
352+50.00
FILL IN WETLANDS

FILL IN WETLANDS
0.030 4:1 6:1 5.496:1 0.030 3:1
30.30
26.09
352+00.00
WETLANDS
SITE 14

11/20/2024

8/15/2023
U:\Roadway\Corridor Modeling\R3300A_Rdy_xpl L1.dgn
khazel

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-76

PERMIT DRAWING
SHEET 33 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SITE 20

30
20

0.030
3.93:1
6:1
5.496:1
0.030
5.02:1
31.01
27.02

FILL IN WETLANDS

360+50.00

FILL IN WETLANDS

WETLANDS
3:1
0.030
6:1
5.496:1
0.030
3:1
31.19
26.69

SITE 20

WETLANDS

360+00.00

FILL IN WETLANDS

WETLANDS
3:1
0.030
6:1
5.496:1
0.030
3:1
31.37
27.07

SITE 20

WETLANDS

359+50.00

FILL IN WETLANDS

WETLANDS
3:1
3.72:1
0.030
6:1
5.496:1
0.030
3:1
31.55
27.07
25.52

SITE 20

WETLANDS

359+00.00

FILL IN WETLANDS

3:1
3.74:1
0.030
6:1
5.496:1
0.030
3:1
31.73
26.98
25.27

SITE 20

WETLANDS

358+50.00

3:1
3.87:1
0.030
6:1
5.496:1
0.030
3:1
31.90
27.34
25.02

SITE 20

WETLANDS

FILL IN WETLANDS

358+00.00

-L/-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

11/20/2024

8/15/2023
U:\Roadway\CorridorModeling\R3300A_Rdy.xpl L1.dgn
khazel

11/20/2024

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Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0929

MI ENGINEERING
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(919) 851-6606
FIRM PE NUMBER : P-0671

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 34 OF 120

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

100' 0' 100'

NAD 83/NSRS 2007

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

JOHN R. HATCHER, HEIRS

VINEYARD

ESS EASEMENT MB 52 PG 86

60' ACCESS EASEMENT MB 52 PG 86

10' GR

TV TR

EIR

WOODS

SEPTIC TANK

RODNEY KING, ET UX

CONC

25FD

365

48" CHL

50" WD

J.W. COVIL, ET UX

CAROL D. HUNT

370

R.B. HUNT, ET UX

WOVEN WIRE FENCE

SPECIAL LATERAL 'V' DITCH SEE DETAIL 15C

FS SEE DETAIL 15E

-L- STA 360+00.00 SEE SHEET 14

-L- STA 373+00.00 SEE SHEET 16

MATCHLINE -L1- STA 367+24 MED.

MATCHLINE -L1- STA 372+95 MED.

2GI

18" RCP

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 15A

RIP RAP CL B
OUTLET PROTECTION
3 TONS
10 SY GEOTEXTILE

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 15B

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 15D

±60.00
150.00'

FJH, LLC.

RONALD R. ENGEL, CO-TRUSTEE, ET AL

THOMAS L. SKINNER

ROGER G. VAN DE BERG, ET UX

SITE 20

DETAIL 15A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 4:1 or Flatter, Fill Slope

Min. D=1.3 Ft.
B=2 Ft.

FROM -L- STA. 361+75 TO STA. 367+00 RT.

DETAIL 15B
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 4:1 or Flatter, Fill Slope

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

FROM -L- STA. 367+00 TO STA. 371+00 RT.

DETAIL 15C
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Natural Ground, 3:1, D, 4:1 or Flatter, Fill Slope

Min. D=1 Ft.

FROM -L- STA. 366+50 TO STA. 372+07 LT.

DETAIL 15D
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 4:1 or Flatter, Fill Slope

Min. D=1.2 Ft.
B=4 Ft.

FROM -L- STA. 371+00 TO STA. 373+33 RT.

DETAIL 15E
FALSE SUMP
(Not to Scale)

Median Ditch, 9", 2', S, L (See Chart Below), 20', GI etc., ℄ Proposed Ditch

S=Ditch Slope

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'

L1 STA. 367+24 MED.
L1 STA. 372+95 MED.

SEE SHEET 46 FOR -L1- PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

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Dewberry
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(919) 851-6606
FIRM PE NUMBER : P-0671

PERMIT DRAWING
SHEET 35 OF 120

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

100' 0' 100'

NAD 83/NSRS 2007

FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)

JOHN R. HATCHER, HEIRS
RODNEY KING, ET UX
J.W. COVIL, ET UX
CAROL D. HUNT
R.B. HUNT, ET UX
FJH, LLC.
RONALD R. ENGEL, CO-TRUSTEE, ET AL
THOMAS L. SKINNER
ROGER G. VAN DE BERG, ET UX

WOVEN WIRE FENCE
WOODS
VINEYARD
SEPTIC TANK
60' ACCESS EASEMENT MB 52 PG 16
ESS EASEMENT B PG 16
10' GR
TV TR
CONC
25FD
45° CHL
50' WD
365
370

MATCHLINE -L1- STA 360+00.00 SEE SHEET 14

MATCHLINE -L1- STA 373+00.00 SEE SHEET 16

SPECIAL LATERAL 'V' DITCH SEE DETAIL 15C

FS SEE DETAIL 15E

24" RCP CL III

2GI

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 15A

RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 15B

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 15D

±60.00
150.00'

SITE 20

DETAIL 15A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 4:1 or Flatter, Fill Slope

Min. D=1.3 Ft.
B=2 Ft.

FROM -L- STA. 361+75 TO STA. 367+00 RT.

DETAIL 15B
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 4:1 or Flatter, Fill Slope

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

FROM -L- STA. 367+00 TO STA. 371+00 RT.

DETAIL 15C
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Natural Ground, 3:1, D, 4:1 or Flatter, Fill Slope

Min. D=1 Ft.

FROM -L- STA. 366+50 TO STA. 372+07 LT.

DETAIL 15D
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 4:1 or Flatter, Fill Slope

Min. D=1.2 Ft.
B=4 Ft.

FROM -L- STA. 371+00 TO STA. 373+33 RT.

DETAIL 15E
FALSE SUMP
(Not to Scale)

Median Ditch, 9", 2', S, L (See Chart Below), 20', GI etc., ℄ Proposed Ditch

S=Ditch Slope

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'

L1 STA. 367+24 MED.
L1 STA. 372+95 MED.

SEE SHEET 46 FOR -L1- PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 36 OF 120

NAD 83/NSRS 2007

FILL IN WETLAND

MECHANICAL CLEARING (GRUBBING)

SITE 1

DRAINAGE FROM PROJECT U-4751

U-4751 ROADWAY DESIGN FILES ARE DASHED LINES IN THE PROPOSED ROADWAY

MECHANICAL CLEARING INSIDE PROPOSED FILL AREA WAS PERMITTED UNDER U-4751. NO MITIGATION IS REQUIRED FOR THIS AREA.

WETLAND AREA INCLUDED IN U-4751 PERMITS

BEGIN CONSTRUCTION
Y33RPCA STA 22+61.33

-Y33RPCA- TS Sta 18+61.73

-Y33RPCA- SC Sta 20+05.73

-Y33RPCA- CS Sta 13+67.73

-Y33RPCA- ST Sta 14+51.73

-Y33RPCA- STA 24+50.00 SEE SHEET 5

MATCHLINE -Y33RPCA-

CLEANOUT & RETAIN EX. PIPE EST 177 LF

S 50°13'42"E

DONE BY OTHERS

REMOVE AND RESET GRAU-350 TL-3 TIE TO EXIST GUARDRAIL TIE TO EXIST PAVEMENT

GREU TL-3

KENNETH WAYNE BARROW

ETTA P WILSON, HEIRS

KAY A. LEE

MARK F. HOLLIFIELD

LENIER FURR

30' PUBLIC RIGHT OF WAY EASEMENT EACH SIDE OF PROPERTY LINE

WILD MAGNOLIA RD

16' SOIL

15' SOIL

9' SOIL

8' SOIL

30' HDPE

24" RCP

40' RCP IV

BURY INLET 1.0'

2SFD

1SFD

PIPES INSTALLED UNDER TIP PROJECT U-4751 HAVE BEEN MODIFIED TO SHOW AS EXISTING ON TIP PROJECT R-3300A
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

SEE SHEET 61 FOR -Y33RPCA- PROFILE

100' 0' 100'

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2610 WYCLIFF ROAD
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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	33
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 37 OF 120

NAD 83/NSRS 2007

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

SITE 1

DRAINAGE FROM PROJECT U-4751

U-4751 ROADWAY DESIGN FILES ARE DASHED LINES IN THE PROPOSED ROADWAY

100' 0' 100'

-Y33RPCA- TS Sta 18+61.73

-Y33RPCA- SC Sta 20+05.73

-Y33RPCA- CS Sta 13+67.73

-Y33RPCA- ST Sta 14+51.73

MECHANICAL CLEARING INSIDE PROPOSED FILL AREA WAS PERMITTED UNDER U-4751. NO MITIGATION IS REQUIRED FOR THIS AREA.

WETLAND AREA INCLUDED IN U-4751 PERMITS

BEGIN CONSTRUCTION
Y33RPCA STA 22+61.33

MATCHLINE -Y33RPCA- STA 24+50.00 SEE SHEET 5

CLEANOUT & RETAIN EX. PIPE EST 177 LF

S 50°13'42" E

DONE BY OTHERS

REMOVE AND RESET GRAU-350 TL-3 GUARDRAIL TIE TO EXIST GUARDRAIL TIE TO EXIST PAVEMENT

KENNETH WAYNE BARROW

ETTA P WILSON, HEIRS

KAY A. LEE

MARK F. HOLLIFIELD

LENIER FURR

30' PUBLIC RIGHT OF WAY EASEMENT EACH SIDE OF PROPERTY LINE

WILD MAGNOLIA RD

30" HDPE

24" RCP

BURY INLET 1.0'

PIPES INSTALLED UNDER TIP PROJECT U-4751 HAVE BEEN MODIFIED TO SHOW AS EXISTING ON TIP PROJECT R-3300A

SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

SEE SHEET 61 FOR -Y33RPCA- PROFILE

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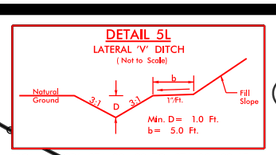
11/20/2024

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

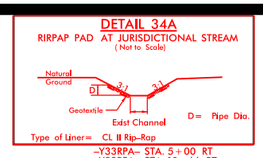
MECHANIZED CLEARING (GRUBBING)

DETAIL 5L
LATERAL 'V' DITCH
(Not to Scale)



FROM Y33RPA STA. 20+80 TO STA. 23+00 LT

DETAIL 34A
RIPRAP PAD AT JURISDICTIONAL STREAM
(Not to Scale)



Type of Liner= CL II Rip-Rap
-Y33RPA- STA. 5+00 RT
-Y33RPA- STA. 10+66 RT

NAD 83/NSRS 2007

100' 0' 100'

Dewberry
2610 WYCLIFF ROAD
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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	34
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 37A OF 120

MATCHLINE -Y33RPA- STA 21+68.00 SEE SHEET 5

WOVEN WIRE FENCE

24" RCP-IV

-Y33RPA- SC Sta.13+73.89

-Y33RPA- TS Sta.12+73.89

CL B. RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

BEGIN PROP. SBG -Y33RPA- STA 14+96 RT

2 - 45° CAP WELDS

18" RCP-IV

RIPRAP ON BANKS ONLY CL II RIPRAP 20 TONS SEE DETAIL 34A

RIPRAP AT JURISDICTIONAL STREAM CL II RIPRAP 20 TONS SEE DETAIL 34A

N 78° 50' 15.6" W

-Y33RPA-

US 17 / NC 140 W 36'BST

S 81° 20' 15.6" E

-Y33-

48" RCP

US 17 / NC 140 E 37'BST

MATCHLINE -Y33- STA 82+50.00 SEE SHEET 5

MATCHLINE -Y33- STA 96+00.00 SEE INSET

408.31'

+00.93 END CONST.

INV=37.70 HW

42" RCP-V 42" RCP-V HW

42" RCP-III 42" RCP-III

44.20' S 80°44'09" E

S 80°44'09" E 459.65'

10' DRAINAGE EASEMENT

34" RCP-III TO TIP

15" CAP 2 ELBOWS

DIANE THI MINH CHAU TA
DB 5503 PG 1237
MB 8 PG 97

S 07°53'58" W

30' PUBLIC RIGHT OF WAY EASEMENT 30' OFF OF PROPERTY LINE

EXISTING R/W

1340' R

INSET

NAD 83/NSRS 2007

MATCHLINE -Y33- STA 96+00.00 THIS SHEET

WOVEN WIRE FENCE

TEMPORARY IMPACTS IN SURFACE WATER

MECHANIZED CLEARING (GRUBBING)

END FENCE

END CONSTRUCTION -Y33- Sta.102+75.11

RIPRAP AT JURISDICTIONAL STREAM CL II RIPRAP 20 TONS SEE DETAIL 34A

REMOVE 30' OF 48" RCP

48" WW ISBW

IMPACTS IN SURFACE WATER

CAT-1

INV=38.02

GREU TL-3

N 78° 50' 15.6" W

-Y33RPA-

RETAIN

NC 140 38' BST

JOHN JAY BURNEY JR FREEWAY

INV=41.56' DI W/CONC

48" RCP

8" RCP

NC 140 37.5' BST

JOHN JAY BURNEY JR FREEWAY

INV=39.79'

INV=38.20'

48" WW ISBW

SITE 52

SITE 49

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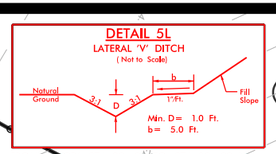
11/20/2024

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MECHANIZED CLEARING (GRUBBING)

DETAIL 5L
LATERAL 'V' DITCH
(Not to Scale)



FROM -Y33RPA STA. 20+80 TO STA. 23+00 LT

DETAIL 34A
RIPRAP PAD AT JURISDICTIONAL STREAM
(Not to Scale)

Type of Liner= CL II Rip-Rap
-Y33RPA- STA. 5+00 RT
-Y33RPA- STA. 10+66 RT

NAD 83/NSRS 2007

100' 0' 100'

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

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FIRM PE NUMBER : P-0671

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	34
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 37B OF 120

MATCHLINE -Y33RPA- STA 2+68.00 SEE SHEET 5

WOVEN WIRE FENCE

24" RCP-IV

CL B. RIP RAP OUTLET PROTECTION 2 TONS 7 S.Y. GEOTEXTILE

BEGIN PROP. SBG -Y33RPA- STA 14+96 RT

-Y33RPA- SC Sta. 13+73.89

-Y33RPA- TS Sta. 12+73.89

RIPRAP ON BANKS ONLY CL II RIPRAP 20 TONS SEE DETAIL 34A

2GI 2GI 18" RCP-IV

4" CAP W/ WELDWS

N 78° 50' 15.6" W

-Y33RPA-

US 17 / NC 140 W 36'BST

S 81° 20' 15.6" E

-Y33-

48" RCP

US 17 / NC 140 E 37'BST

MATCHLINE -Y33- STA 82+50.00 SEE SHEET 5

MATCHLINE -Y33- STA 96+00.00 SEE INSET

408.31'

+00.93 END CONST.

INV=37.70

42" RCP-V 42" RCP-V HW

42" RCP-III

42" RCP-III

HW

EXISTING R/W 1340' R

44.20'
S 80°44'09" E

10' DRAINAGE EASEMENT

S 80°44'09" E
459.65'

18" RCP III EQ PIPE

2GI

4" CAP W/ 2 ELBOWS

EXISTING R/W

S 07°35'56" W

DIANE THI MINH CHAU TA
DB 5503 PG 1237
MB 8 PG 97

30' PUBLIC RIGHT OF WAY EASEMENT FOR USE OF PROPERTY LINE

EXISTING R/W

INSET

MECHANIZED CLEARING (GRUBBING)

TEMPORARY IMPACTS IN SURFACE WATER

WOVEN WIRE FENCE

END FENCE

END CONSTRUCTION -Y33- Sta. 102+75.11

RIPRAP AT JURISDICTIONAL STREAM CL II RIPRAP 20 TONS SEE DETAIL 34A

48" WW ISBW

IMPACTS IN SURFACE WATER

CAT-1

INV=38.07

REMOVE 30' OF 48" RCP

GREU TL-3

N 78° 50' 15.6" W

-Y33RPA-

NC 140 38' BST

JOHN JAY BURNEY JR FREEWAY

RETAIN

48" RCP

INV=41.56

18" RCP

NC 140 37.5' BST

JOHN JAY BURNEY JR FREEWAY

INV=39.79

INV=38.20

48" WW ISBW

SITE 52

SITE 49

10/3/2024 2:40:06 PM
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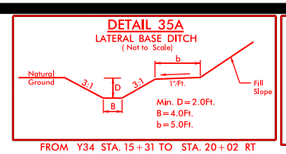
11/20/2024

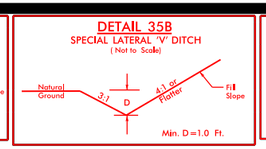
5:14:39

DETAIL 35A
LATERAL BASE DITCH
(Not to Scale)



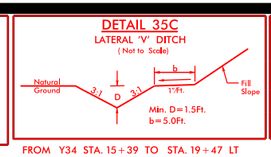
FROM Y34 STA. 15+31 TO STA. 20+02 RT

DETAIL 35B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



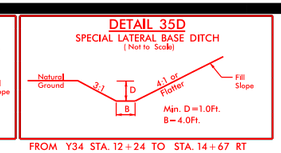
FROM Y34 STA. 12+23 TO STA. 14+50 LT

DETAIL 35C
LATERAL 'V' DITCH
(Not to Scale)



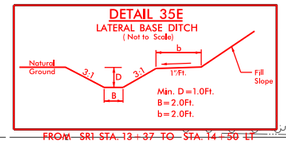
FROM Y34 STA. 15+39 TO STA. 19+47 LT

DETAIL 35D
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM Y34 STA. 12+24 TO STA. 14+67 RT

DETAIL 35E
LATERAL BASE DITCH
(Not to Scale)



FROM SR1 STA. 13+37 TO STA. 14+50 LT

HC HC HAND CLEARING (NON-GRUBBING)

F F FILL IN WETLAND

TS TS TEMPORARY SURFACE WATER IMPACTS

E E WETLAND EXCAVATION

MECHANIZED CLEARING (GRUBBING)

NAD 83/NSRS 2007

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. F-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PERMIT DRAWING SHEET 38 OF 120

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Suite 300
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Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	35
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LANWILLO DEVELOPMENT CO.

SITE 17

SITE 15

SITE 16

100' 0' 100'

-SRI- PT Sta. 12+55.27

-Y34- POT Sta. 9+50.00

-SRI- PC Sta. 10+35.36

-Y34- POT Sta. 15+00.00
-SRI- POT Sta. 10+00.00
BRG AH=N 14° 09' 42.6" W

-Y34- N 75° 50' 17.4" E

-SRI- N 75° 50' 17.4" E

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 31A

MATCHLINE -Y34- STA 19+00.00 SEE SHEET 14

MATCHLINE -SRI- STA 15+00.00 SEE SHEET 14

DEBRA R. KNOWLES

RAMSON WARD

LARRY D. CAPPS, ET UX

EWELL D. SCALES, III, ET UX

CHARLES L. BRYANT, ET UX

WCM ENTERPRISES, LLC.

MARY E. PHILLIPS, LIFE ESTATE

05 NO CLAIM

04

07

08

09

LAT 2' BASE DITCH
SEE DETAIL 35E
21 CY DDE

EXCAVATION IN WETLAND

PLACED UNDER WETLAND

LATERAL V DITCH
SEE DETAIL 35C
1200 CY DDE

SP. LAT V DITCH
SEE DETAIL 35B

SP. LAT 4' BASE DITCH
SEE DETAIL 35D

LATERAL 4' BASE DITCH
SEE DETAIL 35A
2300 CY DDE

HAND CLEARING

EXCAVATION IN WETLAND

RETAIN

REMOVE

SR 1336 SIDBURY RD 24' BST

60' UTILITY EASEMENT

60' ACCESS EASEMENT MB 47 PG 61

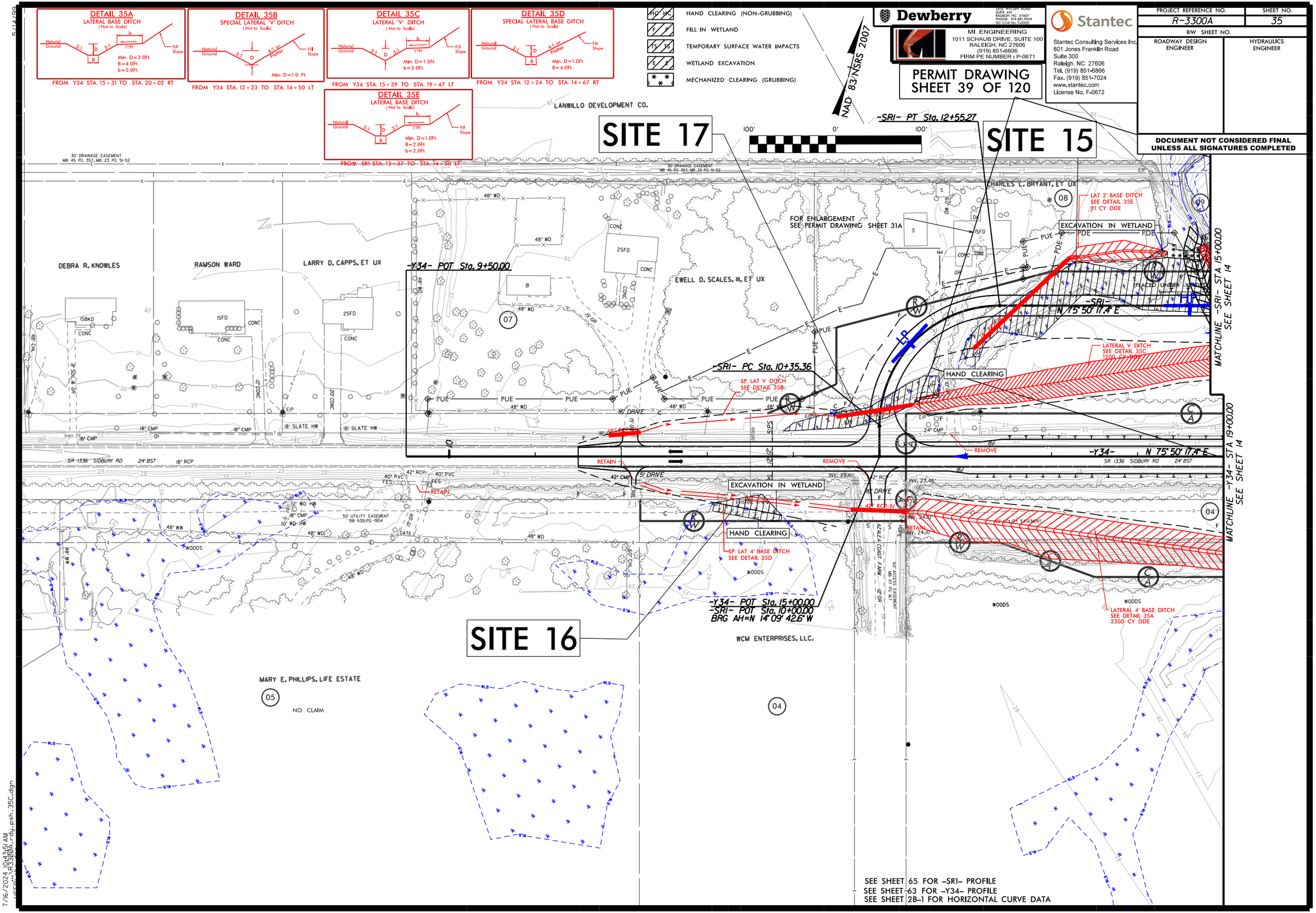
AZALEA COAST FARM

SEE SHEET 65 FOR -SR1- PROFILE
SEE SHEET 63 FOR -Y34- PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

7/16/2024 10:40:44 AM
...\Drawings\R3300A_rdy_psh_35.dgn

5/14/99

11/20/2024



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USER:...\R-3300A_rdy_psh_35C.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-264

PERMIT DRAWING
SHEET 40 OF 120

16+00.00

15+50.00

SITE 15

IMPACTS IN SURFACE WATER

WETLANDS

FILL IN WETLANDS

WETLANDS

15+00.00

WETLANDS

WETLANDS

14+50.00

FILL IN WETLANDS

FILL IN WETLANDS

WETLANDS

14+00.00

SITE 15

FILL IN WETLANDS

WETLANDS

13+50.00

-SR1-

11/20/2024

6/23/16

8/15/2023
U:\Roadway\CorridorModeling\Ys_SRs\R3300A_rdy_XPL_SR1.dgn
khazel

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-222

PERMIT DRAWING
SHEET 41 OF 120

SITE 17

EXCAVATE IN WETLANDS

WETLANDS

0.020 0.020

4:1 4:1 3:1 3:1

24.26 29.00 23.70

14+00.00

SITE 16

EXCAVATION IN WETLANDS

WETLANDS

0.020 0.020

3:1 4:1 4:1 3:1

24.58 29.10 24.02

13+50.00

WETLANDS

0.020 0.020

3:1 4:1 4:1 3:1

24.84 29.11 24.33

13+00.00

0.020 0.020

3:1 4:1 4:1 3:1

25.10 29.27 24.65

12+50.00

0.020 0.020

3:1 3:1

29.33

12+00.00

0.015 0.015

3:1 4:1

29.33

11+50.00

29.45

11+00.00

-Y34-

30 20

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

8/15/2023
U:\Roadway\CorridorModeling\Ys_SRs\R3300A_rdy_XPL_Y34.dgn
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-223

PERMIT DRAWING
SHEET 42 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

40
30
20

0.020 0.020
3:1 3:1 3:1 3:1 3:1 3:1
22.64 28.81 22.87
16+50.00

0.020 0.020
3:1 3:1 3:1 3:1 3:1 3:1
23.49 28.77 22.98
16+00.00

0.020 0.020
3:1 3:1 3:1 3:1 3:1 3:1
23.49 28.89 23.09
15+50.00

WETLANDS
0.020 0.020
3:1 3:1
28.95
15+00.00

SITE 17

EXCAVATE IN WETLANDS
WETLANDS
0.020 0.020
3:1 3:1 4:1 3:1
24.00 28.97 23.38
14+50.00

-Y34-

11/20/2024

11/20/2024

REVISIONS

R/W REV. MARCH 2023: REVISED ROW ON PARCELS 18 & 39. -STANTEC
R/W REV. FEB 2024: REVISED PUE ON PARCEL 12. -STANTEC

10/3/2024 2:46:24 PM
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DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
DENOTES TEMPORARY FILL IN WETLAND

NAD 83/NSRS 2007

SITE 18

SITE 51

SITE 50

SITE 19

-SR9- POT Sta. 10+00.00
-SR9- PC Sta. 13+07.25
-SR9- PT Sta. 14+95.75
BRG AH=S 14°09'42.6" E
-Y34- POT Sta. 32+00.00
-SR2- POT Sta. 10+00.00
-SR9- POT Sta. 15+51.11
-SR2- PC Sta. 10+11.62
BRG BK=S 14°09'42.6" E
-Y34- POT Sta. 37+00.00
-SR9- N 75°50'17.4" E
-Y34- N 75°50'17.4" E
-SR2- PT Sta. 14+81.98
-SR2- PC Sta. 15+14.06
BRG BK= S 48°04'09.6" E
-SR2- PT Sta. 16+37.66
-SR2- PT Sta. 11+38.83
-SR2- POT Sta. 17+12.29
BRG BK=S 45°32'56.5" E
-Y34- STA 27+00.00 SEE SHEET 14
MATCHLINE -Y34- STA 27+00.00 SEE SHEET 14

12 FJH, LLC.
13 RONALD R. ENGEL, CO-TRUSTEE, ET AL
14 BRANCES H. HUBIS
15 ROGER G. VAN DE BERG, ET UX
16 SHEILA C. JUSTICE — NO CLAIM
17 KEVIN HUTSON, ET UX — NO CLAIM
18 RICHARD O. PARROTT, ET UX
39 SEAGREEN LLC
03A DEPARTMENT OF TRANSPORTATION
WILLIAM W. SOUTHER
DOUGLAS H. GRANT, ET UX

FILL IN WETLAND
HAND CLEARING
EXCAVATION IN WETLAND
LATERAL V DITCH SEE DETAIL 36A 500 CY DDE
SP. LAT. V DITCH SEE DETAIL 36B
LATERAL 4' BASE DITCH SEE DETAIL 36C 240 CY DDE
SP. LATERAL 4' BASE DITCH SEE DETAIL 36D 110 CY DDE
SP. LATERAL 4' BASE DITCH SEE DETAIL 36E
CL B RIP RAP OUTLET PROTECTION 5 TONS 14 S.Y GEOTEXTILE
ISFD14 S.Y GEOTEXTILE
REMOVE 24" CMP
18" CMP
24" RCP-IV
SR 1336 SIDBURY RD 24' BST
INV. 23.10'
INV. 24.20'
INV. 24.40'
INV. 24.84'
INV. 25.36'
INV. 25.23'
INV. =25.3
INV. =25.7
INV. =26.8
INV. =26.2
INV. =26.7
INV. =25.6
INV. 26.62

DETAIL 36A
LATERAL 'V' DITCH
(Not to Scale)
FROM Y34 STA. 26+00 TO STA. 33+14 LT

DETAIL 36B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D=1.0 Ft.
FROM Y34 STA. 33+23 TO STA. 35+82 LT

DETAIL 36E
SPECIAL BASE DITCH
(Not to Scale)
Min. D= 1.0 Ft.
B= 4.0 Ft.
FROM SR2 STA. 15+00 TO STA. 15+50 LT

DETAIL 36C
LATERAL BASE DITCH
(Not to Scale)
Min. D=2.0Ft.
B=4.0Ft.
b=5.0Ft.
FROM Y34 STA. 28+23 TO STA. 31+40 RT

DETAIL 36D
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
B=4.0Ft.
FROM Y34 STA. 32+25 STA. TO STA. 36+20 RT

100' 0' 100'

SEE SHEET 63 FOR -Y34- PROFILE
SEE SHEET 65 FOR -SR2- PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA SEE SHEET 66 FOR -SR9- PROFILE

Dewberry
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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 43 OF 120

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11/20/2024

REVISIONS

R/W REV. MARCH 2023: REVISED ROW ON PARCELS 18 & 39. -STANTEC
R/W REV. FEB 2024: REVISED PUE ON PARCEL 12. -STANTEC

10/3/2024 2:33:19 PM
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DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES HAND CLEARING
DENOTES TEMPORARY FILL IN WETLAND

NAD 83/NSRS 2007

SITE 18

SITE 51

SITE 50

SITE 19

-SR9- POT Sta. 10+00.00

-SR9- PC Sta. 13+07.25

-SR9- PT Sta. 14+95.75
BRG AH=S 14°09'42.6" E
-Y34- POT Sta. 32+00.00

-SR2- POT Sta. 10+00.00
-SR9- POT Sta. 15+51.11

-SR2- PC Sta. 10+11.62
BRG BK=S 14°09'42.6" E

-Y34- POT Sta. 37+00.00

MATCHLINE -Y34- STA 27+00.00 SEE SHEET 14

-SR2- PC Sta. 14+30.21

-SR2- PT Sta. 14+81.98

-SR2- PC Sta. 15+14.06
BRG BK= S 48°04'09.6" E

-SR2- PT Sta. 16+37.66

-SR2- PT Sta. 11+38.23

-SR2- POT Sta. 17+12.29
BRG BK=S 45°32'56.5" E

-Y34- N 75°50'17.4" E

-SR9- N 75°50'17.4" E

S 70°35'20.2" W -SR2-

FILL IN WETLAND

HAND CLEARING

EXCAVATION IN WETLAND

LATERAL 'V' DITCH
SEE DETAIL 36A
500 CY DDE

SP. LATERAL 'V' DITCH
SEE DETAIL 36B

LATERAL 4' BASE DITCH
SEE DETAIL 36C
240 CY DDE

SP. LATERAL 4' BASE DITCH
SEE DETAIL 36D
110 CY DDE

SP. LATERAL 4' BASE DITCH
SEE DETAIL 36E

CL B RIP RAP
OUTLET PROTECTION
5 TONS
14 S.Y GEOTEXTILE

ROGER G. VAN DE BERG, ET UX

RONALD R. ENGEL, CO-TRUSTEE, ET AL

FJH, LLC.

BRANCES H. HUBIS

SEAGREEN LLC

RICHARD O. PARROTT, ET UX

SHEILA C. JUSTICE

NO CLAIM

KEVIN HUTSON, ET UX

WILLIAM W. SOUTHER

DOUGLAS H. GRANT, ET UX

DEPARTMENT OF TRANSPORTATION

SR 1336 SIDBURY RD 24' BST

DETAIL 36A
LATERAL 'V' DITCH
(Not to Scale)
Min. D=1.5Ft.
b=5.0Ft.
FROM Y34 STA. 26+00 TO STA. 33+14 LT

DETAIL 36B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)
Min. D=1.0 Ft.
FROM Y34 STA. 33+23 TO STA. 35+82 LT

DETAIL 36E
SPECIAL BASE DITCH
(Not to Scale)
Min. D= 1.0 Ft.
B= 4.0 Ft.
FROM SR2 STA. 15+00 TO STA. 15+50 LT

DETAIL 36C
LATERAL BASE DITCH
(Not to Scale)
Min. D=2.0Ft.
B=4.0Ft.
b=5.0Ft.
FROM Y34 STA. 28+23 TO STA. 31+40 RT

DETAIL 36D
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Min. D=1.5 Ft.
B=4.0Ft.
FROM Y34 32+25 STA. TO STA. 36+20 RT

SEE SHEET 63 FOR -Y34- PROFILE
SEE SHEET 65 FOR -SR2- PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA SEE SHEET 66 FOR -SR9- PROFILE

Dewberry
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NC COA No. P-0929

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(919) 851-6606
FIRM PE NUMBER : P-0671

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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 44 OF 120

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

100' 0' 100'

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-268

PERMIT DRAWING
SHEET 45 OF 120

30.03
17+00.00

29.65
16+50.00

29.50
16+00.00

FILL IN WETLANDS

SITE 13

3:1 0.020 0.020 3:1
29.48
15+50.00

SITE 13

FILL IN WETLANDS

3:1 0.020 0.020 3:1
29.48
15+00.00

3:1 0.020 0.020 3:1
24.59
14+50.00

3:1 0.020 0.020 3:1
28.38
14+00.00

3:1 0.020 0.020 3:1
28.65
13+50.00

-SR2-

11/20/2024

8/15/2023
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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R3300A	X-273

PERMIT DRAWING
SHEET 46 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

30 20 40 30 20 40 30 20

28.87

15 + 50.0000

0.011 0.011

3:1 3:1

28.53

15 + 00.0000

0.020 0.020

3:1 3:1

28.09

14 + 50.0000

SITE 18

0.020 0.020

WETLANDS 3:1 3:1 WETLANDS

FILL IN WETLAND

14 + 00.0000

0.020 0.020

3:1 3:1

13 + 50.0000

0.020 0.020

3:1 3:1

13 + 00.0000

-SR9-

11/20/2024

8/15/2023
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khazel

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-233

EXCAVATION IN WETLAND

SITE 19

PERMIT DRAWING
SHEET 47 OF 120

WETLANDS

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

30
20

0.020 0.020
4:1
3:1
28.29
24.37
36+00.00

0.020 0.020
3:1
4:1
25.15
28.39
24.53
35+50.00

0.020 0.020
3:1
4:1
25.15
28.48
24.69
35+00.00

0.020 0.020
3:1
4:1
25.15
28.56
24.85
34+50.00

0.020 0.020
3:1
4:1
25.15
28.63
25.02
34+00.00

0.020 0.020
3:1
4:1
25.15
28.62
25.18
33+50.00

0.020 0.020
3:1
4:1
25.87
28.68
25.35
33+00.00

-Y34-

11/20/2024

8/15/2023
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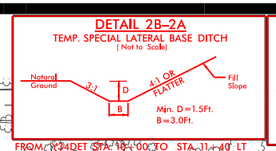
khazel

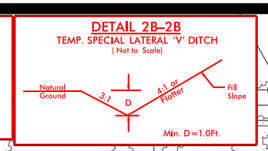
–Y34DET–

DETAIL 2B–2A
TEMP. SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM –Y34DET STA. 10+00.00 TO STA. 11+40 LT

DETAIL 2B–2B
TEMP. SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM Y34DET STA. 12+50 TO STA. 13+50 LT
FROM Y34DET STA. 34+72 TO STA. 37+55 LT

Dewberry
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License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	2B-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 47A OF 120

100' 0' 100'

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 15
SITE 17
SITE 16
SITE 14
SITE 18
SITE 51
SITE 19

NAD 83 NSRS 2007

BEGIN CONSTRUCTION
–Y34DET– PC Sta. 10+00.00
–Y34– POT Sta. 10+00.00

–Y34DET– PRC Sta. 13+85.63

–Y34DET– PT Sta. 17+71.26
V10 = 2.0 FPS

LAT 2' BASE DITCH
SEE DETAIL 35E
21 CY DDE

RIPRAP AT JURISIDICTIONAL STREAM
CL II RIPRAP
40 TONS
SEE DETAIL 14G

TEMP SP. LAT V DITCH
SEE DETAIL 2B-2B

TIE TO EXISTING DITCH

TEMP SP. LAT V DITCH
SEE DETAIL 2B-2A

TEMP 18"

REMOVE

EWELL O. SCALES, III, ET UX

CHARLES L. BRYANT, ET UX

CATHERINE C. FULLERTON

SR 1336 SIDBURY RD 24' BST

MARY E. PHILLIPS, LIFE ESTATE

FJH, LLC.

FRANCES H. HARRIS

ROGER G. VAN DE BERG, ET UX

SHEILA C. JUSTICE

RONALD R. ENGEL, CO-TRUSTEE, ET AL

RICHARD O. PARROTT, ET UX

KEVIN HUTSON, ET UX

NO CLAIM

SR 2259 22' BST

FLOW ROAD

50' UTILITY EASEMENT

SIZE AND MATERIAL TYPE UNKNOWN

42" RCP / 40" PVC FES

42" CMP

24" CMP

48" CMP

RETAIN

BL41

BL42

BY3

L1 – STA. 354+03.68
–Y34– STA. 24+28.73

DRIVEWAY RADII ARE 15' UNLESS NOTED OTHERWISE
FOR –Y34DET– PROFILE SEE SHEETS 2B–3

MATCHLINE –Y34DET– STA. 24+50.00

MATCHLINE –Y34DET– STA. 24+50.00

REVISIONS

11/20/2024

8/17/99

7/15/2024 10:28:25 AM
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Users\kkeeter

5/14/99

11/20/2024

Dewberry
2650 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0029

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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801 Jones Franklin Road
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Fax. (919) 851-7024
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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	16

RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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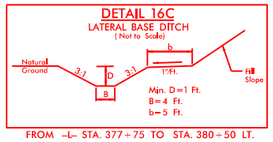
NAD 83/NSRS 2007

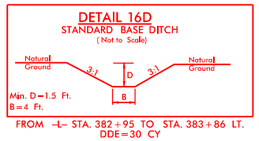
PERMIT DRAWING SHEET 48 OF 120

DETAIL 16C
LATERAL BASE DITCH
(Not to Scale)



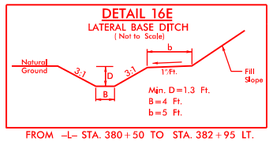
FROM –L– STA. 377+75 TO STA. 380+50 LT.

DETAIL 16D
STANDARD BASE DITCH
(Not to Scale)

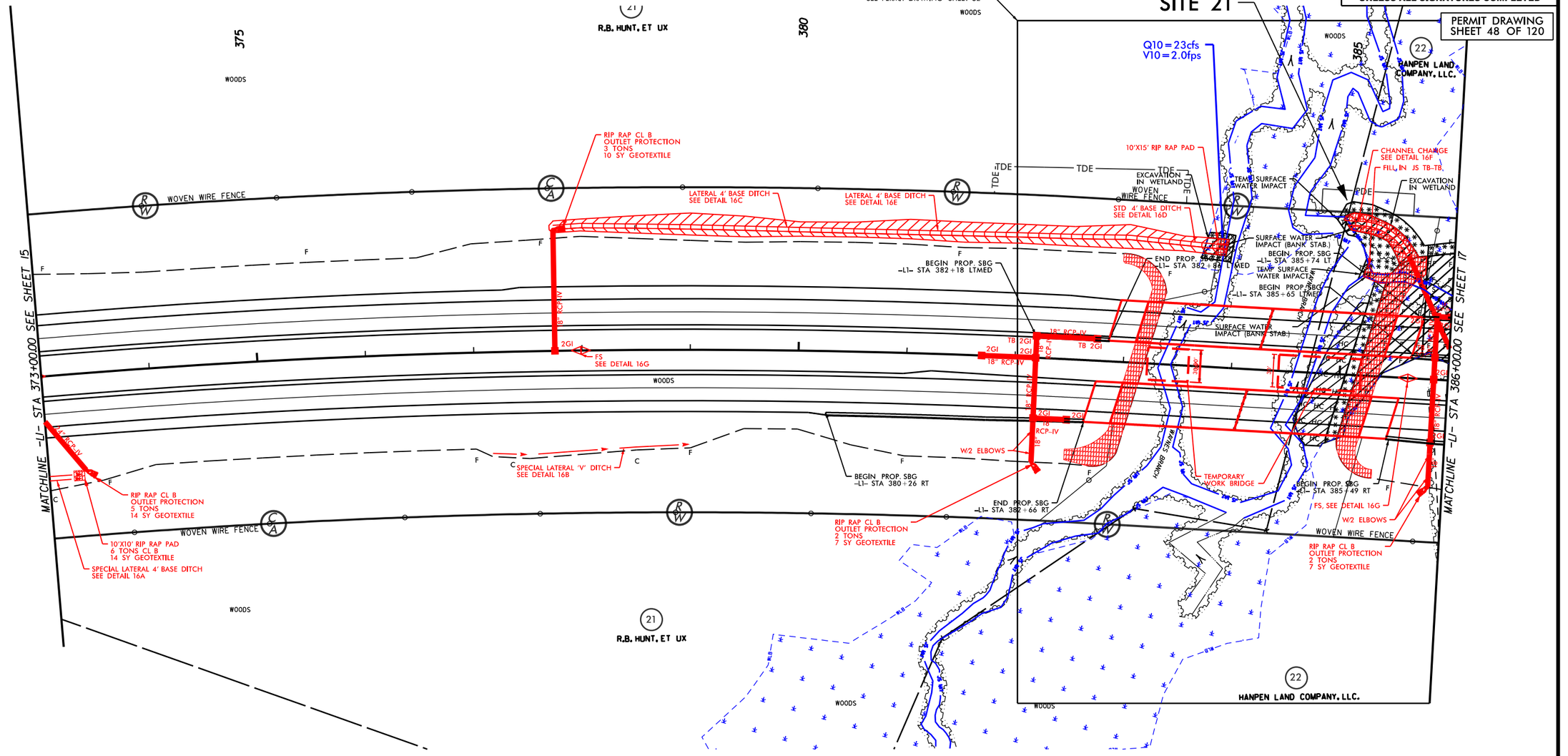


FROM –L– STA. 382+95 TO STA. 383+86 LT.
DDE=30 CY

DETAIL 16E
LATERAL BASE DITCH
(Not to Scale)



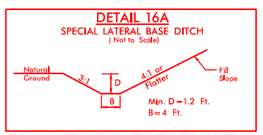
FROM –L– STA. 380+50 TO STA. 382+95 LT.



TS TS	TEMPORARY SURFACE WATER IMPACTS
S S	SURFACE WATER IMPACTS
F F	FILL IN WETLAND
E E	WETLAND EXCAVATION
* *	MECHANIZED CLEARING (GRUBBING)
HC HC	HAND CLEARING (NON-GRUBBING)

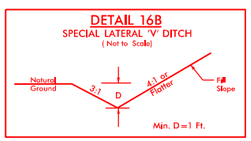
50' 0' 50' 100' 150'
GRAPHIC SCALE

DETAIL 16A
SPECIAL LATERAL BASE DITCH
(Not to Scale)



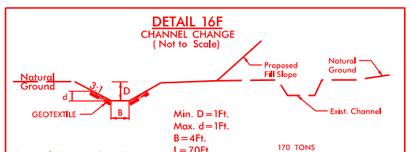
FROM –L– STA. 367+00 TO STA. 373+33 RT.

DETAIL 16B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM –L– STA. 377+15 TO STA. 379+00 RT.

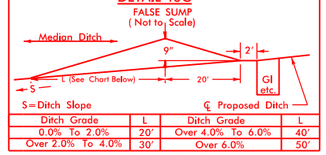
DETAIL 16F
CHANNEL CHANGE
(Not to Scale)



Type of Liner= CL I Rip-Rap
170 TONS
150 SY GEOTEXTILE

FROM STA. 384+98 TO STA. 385+58 LT, S=0.63%, DDE=129 CY

DETAIL 16G
FALSE SUMP
(Not to Scale)



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

L1 STA. 377+99 MED.
L1 STA. 385+63 MED.

SEE SHEET 46 & 47 FOR –L1– PROFILE

7/31/2024
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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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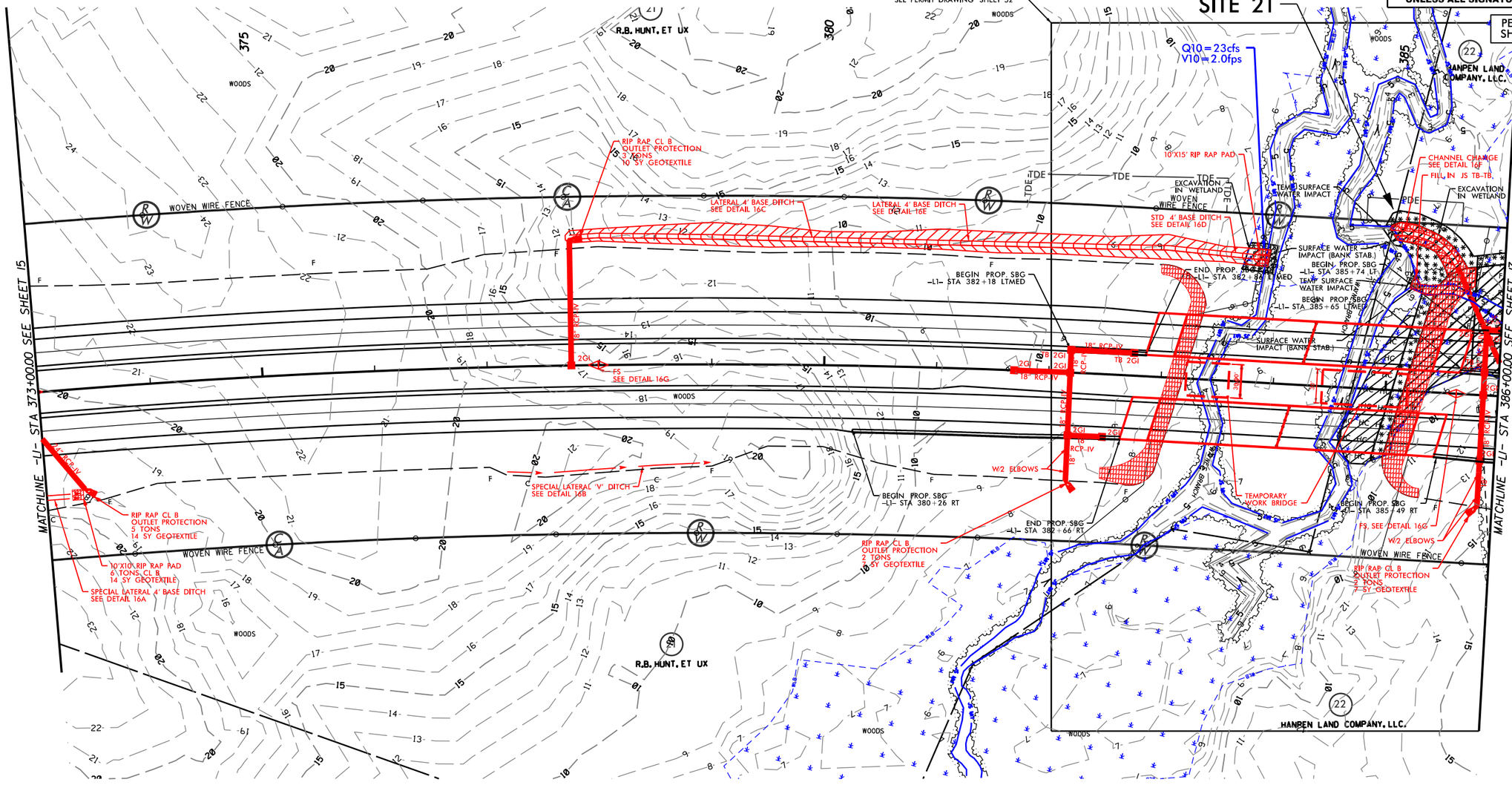
NAD 83/NSRS 2007

PERMIT DRAWING SHEET 49 OF 120

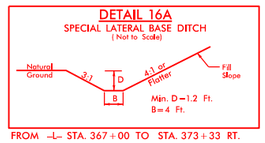
SITE 21



TS / JS TEMPORARY SURFACE WATER IMPACTS
S / S SURFACE WATER IMPACTS
F / F FILL IN WETLAND
E / E WETLAND EXCAVATION
* * * MECHANIZED CLEARING (GRUBBING)
HC / HC HAND CLEARING (NON-GRUBBING)

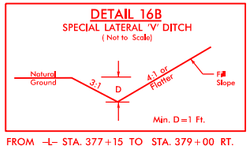
50' 0' 50' 100' 150'
GRAPHIC SCALE

DETAIL 16A
SPECIAL LATERAL BASE DITCH
(Not to Scale)



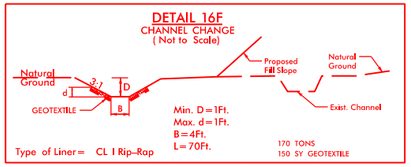
FROM -L- STA. 367+00 TO STA. 373+33 RT.

DETAIL 16B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM -L- STA. 377+15 TO STA. 379+00 RT.

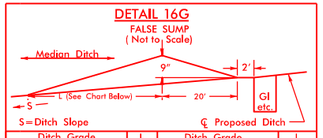
DETAIL 16F
CHANNEL CHANGE
(Not to Scale)



Type of Liner = CL I Rip-Rap

FROM STA. 384+98 TO STA. 385+58 LT, S = 0.63%, DDE = 129 CY

DETAIL 16G
FALSE SUMP
(Not to Scale)



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

L1 STA. 377+99 MED.
L1 STA. 385+63 MED.

SEE SHEET 46 & 47 FOR -L1- PROFILE

7/31/2024
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N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental Drawings\R3300A_hyd_psh_16_con.dgn

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SHEET 50 OF 120

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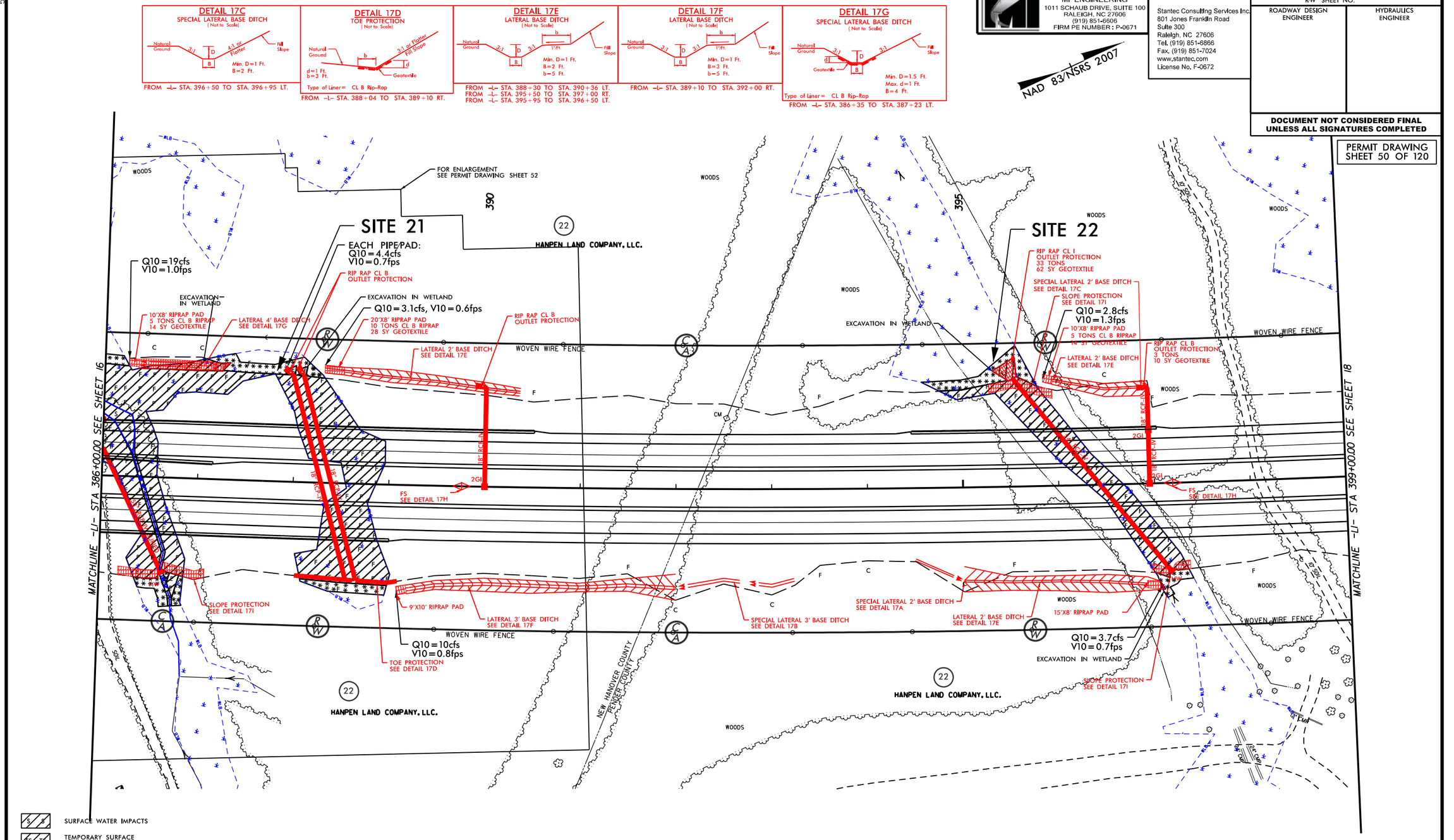

SEE SHEET 47 FOR -L1- PROFILE

7/31/2024
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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	17

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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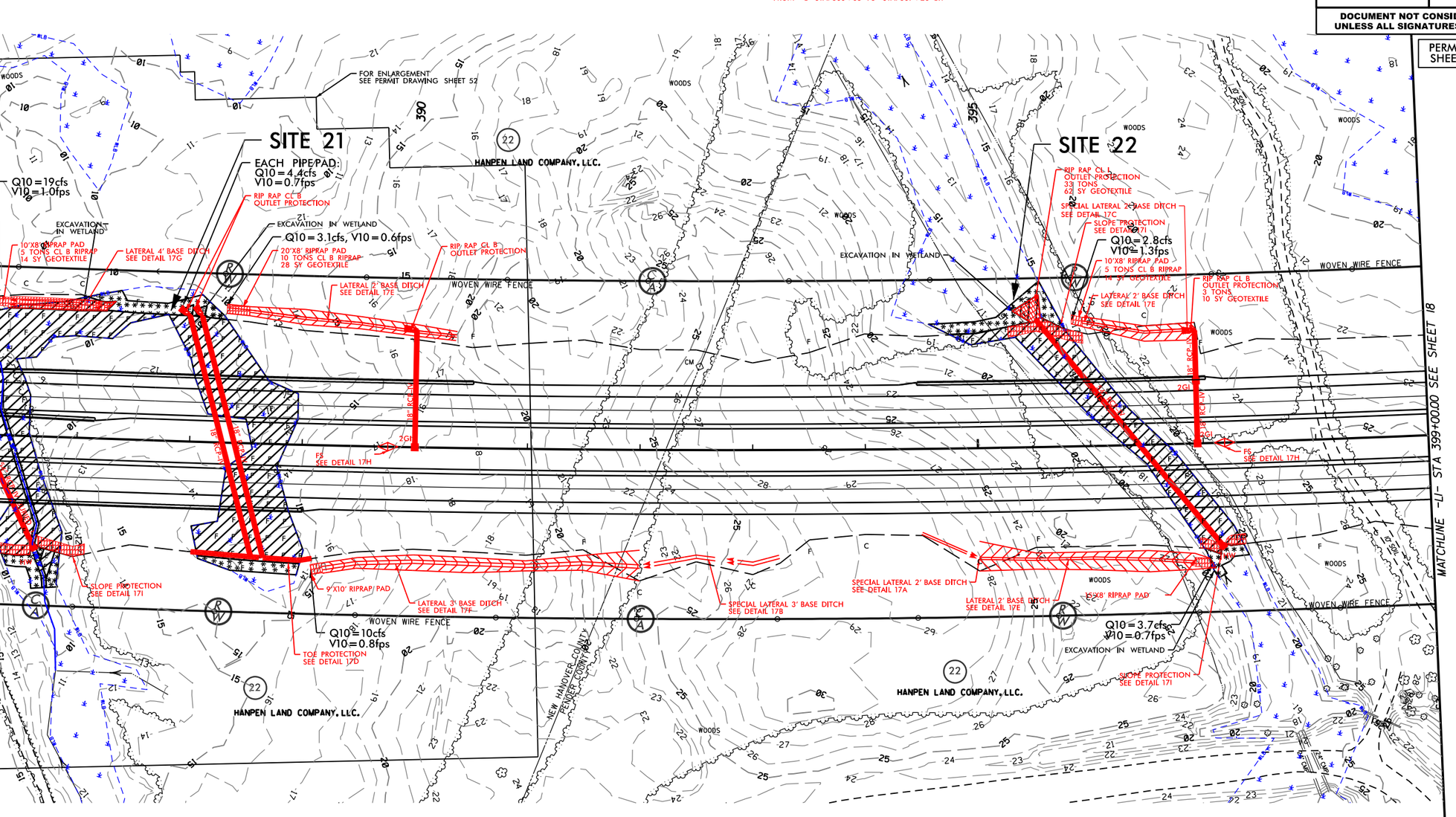
SHEET 51 OF 120

NAD 83/NSRS 2007



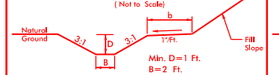
DETAIL 17C
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM –L– STA. 396+50 TO STA. 396+95 LT.

DETAIL 17D
TOE PROTECTION
(Not to Scale)

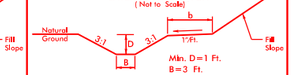
Type of Liner= CL B Rip-Rap
FROM –L– STA. 388+04 TO STA. 389+10 RT.

DETAIL 17E
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 388+30 TO STA. 390+36 LT.
FROM –L– STA. 395+50 TO STA. 397+00 RT.
FROM –L– STA. 395+95 TO STA. 396+50 LT.

DETAIL 17F
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 389+10 TO STA. 392+00 RT.

DETAIL 17G
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Type of Liner= CL B Rip-Rap
FROM –L– STA. 386+35 TO STA. 387+23 LT.

SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)

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

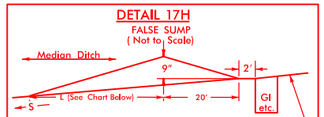
DETAIL 17A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM –L– STA. 394+50 TO STA. 395+50 RT

DETAIL 17B
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM –L– STA. 392+00 TO STA. 393+23 RT.

DETAIL 17H
FALSE SUMP
(Not to Scale)



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

L1 STA. 389+76 MED.
L1 STA. 397+19 MED.

DETAIL 17I
SLOPE PROTECTION
(Not to Scale)

Type of Liner= CL B Rip-Rap, Plating Slope
FROM –L1– STA. 386+20 TO STA. 387+10 RT.
FROM –L1– STA. 395+28 TO STA. 395+95 LT.
FROM –L1– STA. 396+90 TO STA. 397+35 RT.

SEE SHEET 47 FOR –L1– PROFILE

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SITE 21

Q10 = 23cfs
V10 = 2.0fps

WOODS

22

HANPEN LAND COMPANY, LLC.

383

10'X15' RIP RAP PAD
13 TONS CL I
26 SY GEOTEXTILE

TDE

EXCAVATION IN WETLAND

STD 4' BASE DITCH
SEE DETAIL 16D

TEMP SURFACE WATER IMPACT

SURFACE WATER IMPACT (BANK STAB.)

CHANNEL CHANGE
SEE DETAIL 16F

FILL IN JS TB–TB

EXCAVATION IN WETLAND

PDE

Q10 = 19cfs
V10 = 1.0fps

10'X8' RIPRAP PAD
5 TONS CL B RIPRAP
14 SY GEOTEXTILE

EXCAVATION IN WETLAND

LATERAL 4' BASE DITCH
SEE DETAIL 17G

EACH PIPE/PAD:
Q10 = 4.4cfs
V10 = 0.7fps

RIP RAP CL B
OUTLET PROTECTION

EXCAVATION IN WETLAND
Q10 = 3.1cfs, V10 = 0.6fps

390

20'X8' RIPRAP PAD
10 TONS CL B RIPRAP
28 SY GEOTEXTILE

RIP RAP CL B
OUTLET PROTECTION
3 TONS
10 SY GEOTEXTILE

LATERAL 2' BASE DITCH
SEE DETAIL 17E

18" RCP–IV

2GI

TB 2GI

MANES BRANCH

TEMPORARY WORK BRIDGE

FS, SEE DETAIL 16G

W/2 ELBOWS

RIP RAP CL B
OUTLET PROTECTION
2 TONS
7 SY GEOTEXTILE

SOIL

SLOPE PROTECTION
SEE DETAIL 17I

EXCAVATION IN WETLAND

FS
SEE DETAIL 17H

9'X10' RIPRAP PAD
5 TONS CL B RIPRAP
13 SY GEOTEXTILE

LATERAL 3' BASE DITCH
SEE DETAIL 17F

TOE PROTECTION
SEE DETAIL 17D

TS TEMPORARY SURFACE WATER IMPACTS

S SURFACE WATER IMPACTS

F FILL IN WETLAND

E WETLAND EXCAVATION

MECHANIZED CLEARING (GRUBBING)

HC HAND CLEARING (NON–GRUBBING)

30' 0' 30' 60' 90'
GRAPHIC SCALE

SITE 21 ENLARGEMENT

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2650 WYCLIFF ROAD SUITE 410 RALEIGH, NC 27607 PHONE: 919.881.9929 NC COA No. P-0029

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	E-16_17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SHEET 52 OF 120

5/28/99

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R-3300A	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 53 OF 120

381+00 382+00 383+00 384+00 385+00

30
20
10
0

PI = 382+00.00
EL = 19.93'
VC = 500'
K = 189
DS = 70 mph

SITE 21

WAYNE'S BRANCH

C/L BRIDGE STA. 384+26.42 -L- GP LT (SBL)
2@115' 72" MBT GIRDER WITH 4.0' BENT CAPS
C/L GP EL. = 22.72'
SKEW = 105 DEGREE

(-)1.4286%
(+)1.2236%

LOW CHORD ALONG GP
LOWEST LOW CHORD

TEMPORARY WORK BRIDGES
LOW CHORD EL=7.7'

2:1
2:1

3.5' KEY-IN (TYP.)

54" RCP

CLASS II RIP RAP (TYP.)

NORMAL WSE = 5.7'

PI = 382+00.00
EL = 19.93'
VC = 500'
K = 189
DS = 70 mph

30
20
10
0

C/L BRIDGE STA. 384+14.63 -L- GP RT (NBL)
2@115' 72" MBT GIRDER WITH 4.0' BENT CAPS
C/L GP EL. = 22.59'
SKEW = 105 DEGREE

(-)1.4286%
(+)1.2236%

LOW CHORD ALONG GP
LOWEST LOW CHORD

TEMPORARY WORK BRIDGES
LOW CHORD EL=7.7'

2:1
2:1

3.5' KEY-IN (TYP.)

54" RCP

CLASS II RIP RAP (TYP.)

NORMAL WSE = 5.7'

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

11/20/2024

7/31/2024
$USERNAME$
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PROJ. REFERENCE NO.	SHEET NO.
R-3300A	X-108

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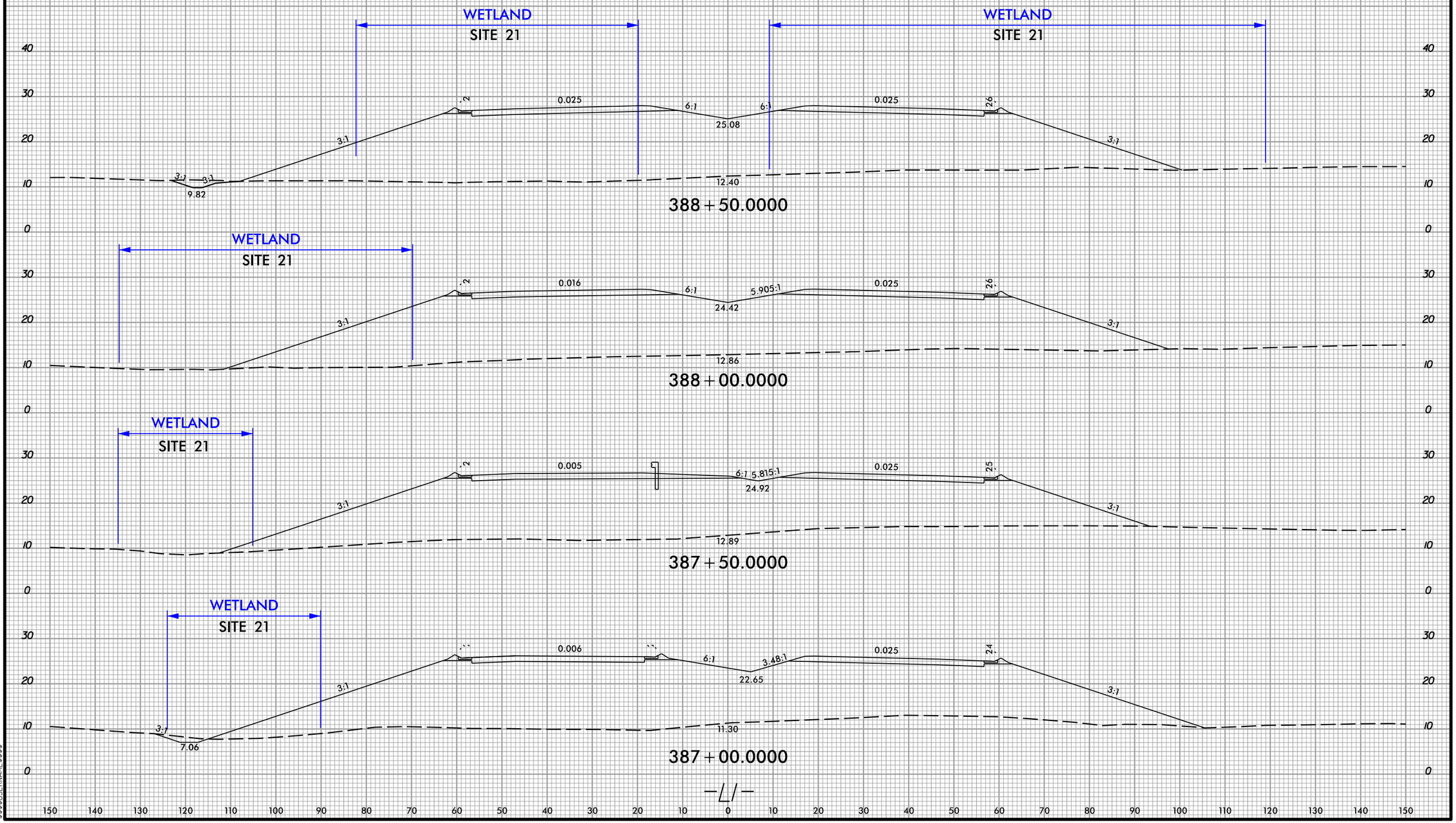
SHEET 54 OF 120



12/15/2023
MI ENGINEERING
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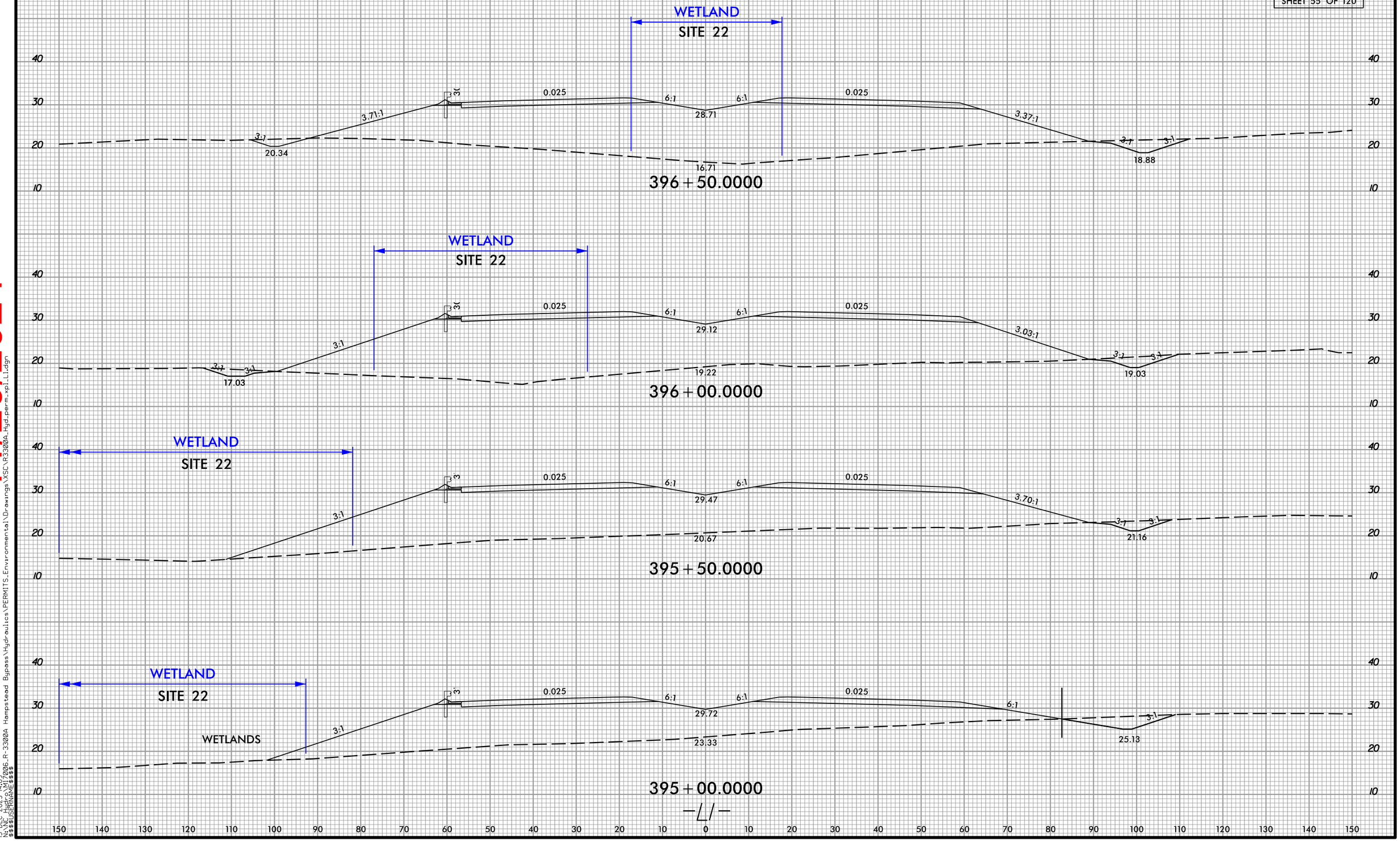
$$$$USERNAME$$$$

6/23/16

11/20/2024

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-112

PERMIT DRAWING
SHEET 55 OF 120



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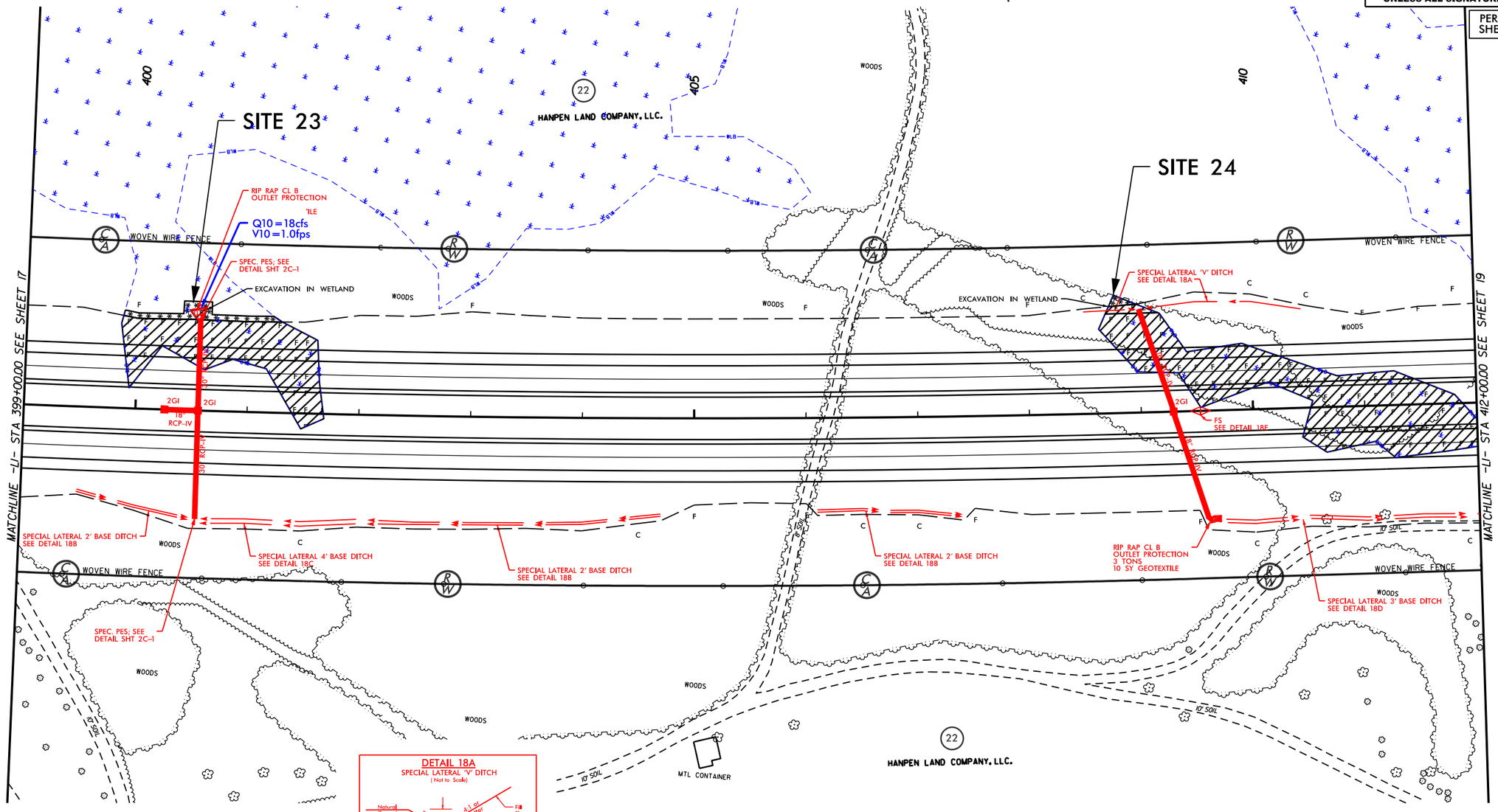
SHEET 56 OF 120

NAD 83/NSRS 2007



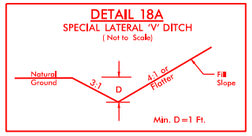
E E WETLAND EXCAVATION

F F FILL IN WETLAND

* * MECHANIZED CLEARING (GRUBBING)

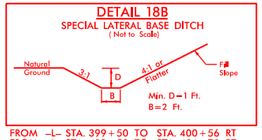
50' 0' 50' 100' 150'
GRAPHIC SCALE

DETAIL 18A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



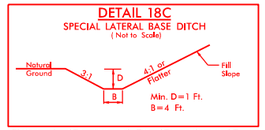
FROM -L- STA. 408+50 TO STA. 410+50 LT

DETAIL 18B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



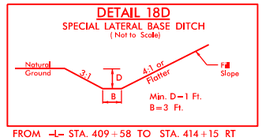
FROM -L- STA. 399+50 TO STA. 400+56 RT
FROM -L- STA. 402+50 TO STA. 404+70 RT
FROM -L- STA. 406+10 TO STA. 407+40 RT

DETAIL 18C
SPECIAL LATERAL BASE DITCH
(Not to Scale)



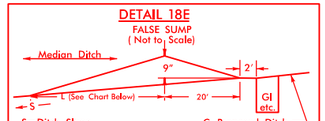
FROM -L- STA. 400+56 TO STA. 402+50 RT

DETAIL 18D
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 409+58 TO STA. 414+15 RT

DETAIL 18E
FALSE SUMP
(Not to Scale)



S=Ditch Slope ℄ Proposed Ditch

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

L1 STA. 409+53 MED.

SEE SHEET 47 & 48 FOR -L1- PROFILE

7312024
SUSER NAMES
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_18.dgn

5/14/99

11/20/2024

Dewberry
NC PE No. F-0929
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

Stantec
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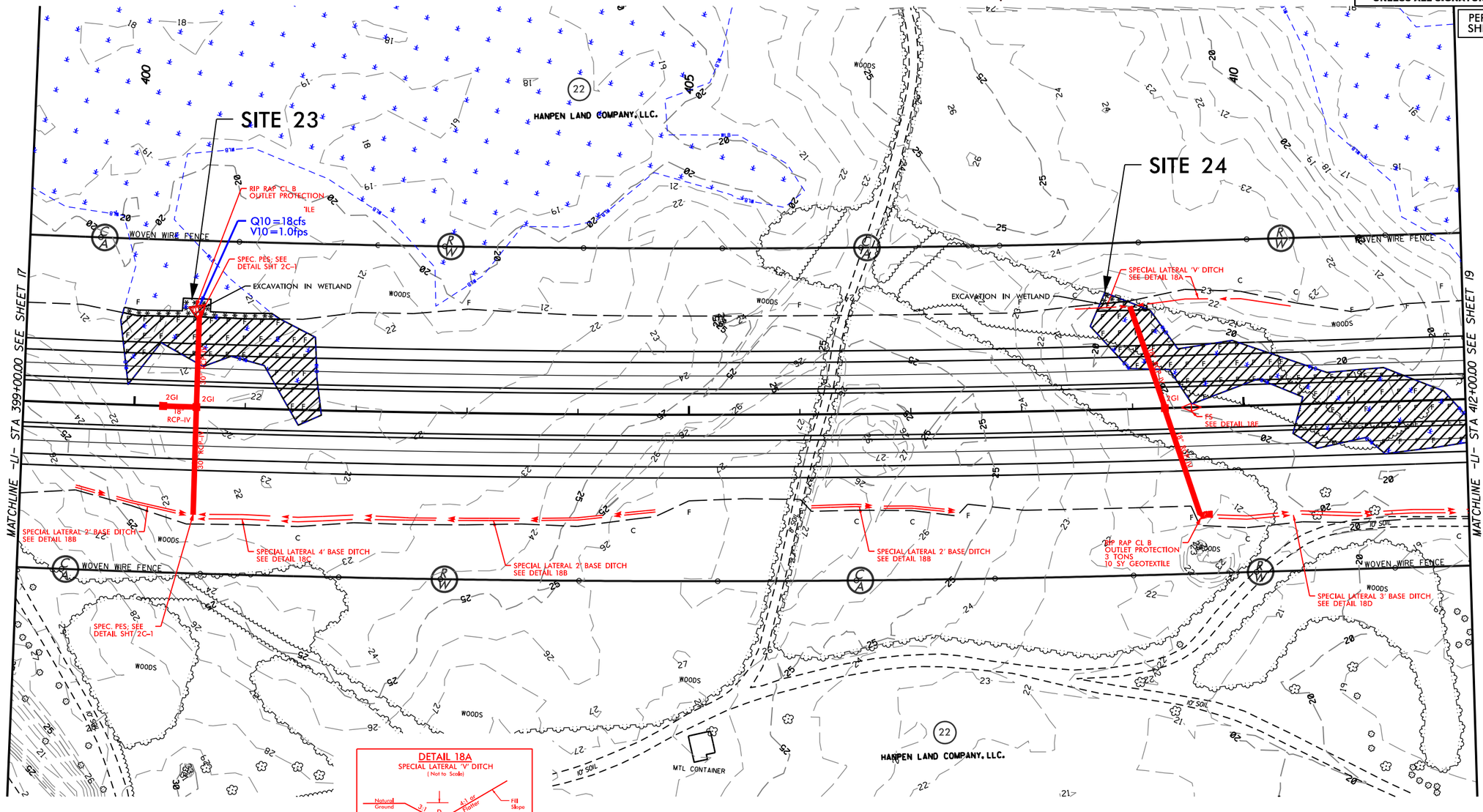
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 57 OF 120

NAD 83/NSRS 2007



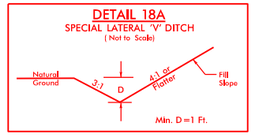
WETLAND EXCAVATION

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

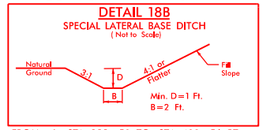
50' 0' 50' 100' 150'
GRAPHIC SCALE

DETAIL 18A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



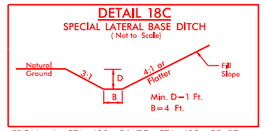
FROM -L- STA. 408+50 TO STA. 410+50 LT

DETAIL 18B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



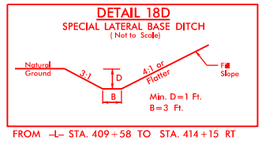
FROM -L- STA. 399+50 TO STA. 400+56 RT
FROM -L- STA. 402+50 TO STA. 404+70 RT
FROM -L- STA. 406+10 TO STA. 407+40 RT

DETAIL 18C
SPECIAL LATERAL BASE DITCH
(Not to Scale)



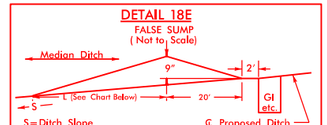
FROM -L- STA. 400+56 TO STA. 402+50 RT

DETAIL 18D
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 409+58 TO STA. 414+15 RT

DETAIL 18E
FALSE SUMP
(Not to Scale)



S = Ditch Slope
℄ Proposed Ditch

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

L1 STA. 409+53 MED.

SEE SHEET 47 & 48 FOR -L1- PROFILE

7/31/2024
SUSANJAMES
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_18_con.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-114

PERMIT DRAWING
SHEET 58 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

40 30 20

4.16:1 | 0.025 | 6:1 | 6:1 | 0.025 | 4.92:1 | 3:1

26.81 | 22.15 | 21.48

402+00.0000

WETLAND
SITE 23

WETLANDS | 3:1 | 0.025 | 6:1 | 6:1 | 0.025 | 5.42:1 | 3:1

26.59 | 21.91 | 21.32

401+50.0000

WETLAND
SITE 23

WETLANDS | 3:1 | 0.025 | 6:1 | 6:1 | 0.025 | 5.29:1 | 3:1

26.37 | 21.90 | 21.17

401+00.0000

WETLAND
SITE 23

WETLANDS | 3:1 | 0.025 | 6:1 | 6:1 | 0.025 | 5.46:1 | 3:1

26.24 | 21.67 | 21.03

400+50.0000

WETLAND
SITE 23

WETLANDS | 3:1 | 0.025 | 6:1 | 6:1 | 0.025 | 6:1 | 3:1

26.24 | 21.42 | 23.45

400+00.0000

4.13:1 | 0.025 | 6:1 | 6:1 | 0.025 | 6:1 | 6:1

26.38 | 23.26 | 25.61

399+50.0000

10

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

11/20/2024

6/23/16

12/5/2023
MI ENGINEERING
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\XSC\R3300A_Hyd_perm_xpl_L1.dgn
15-DEC-2023 14:10
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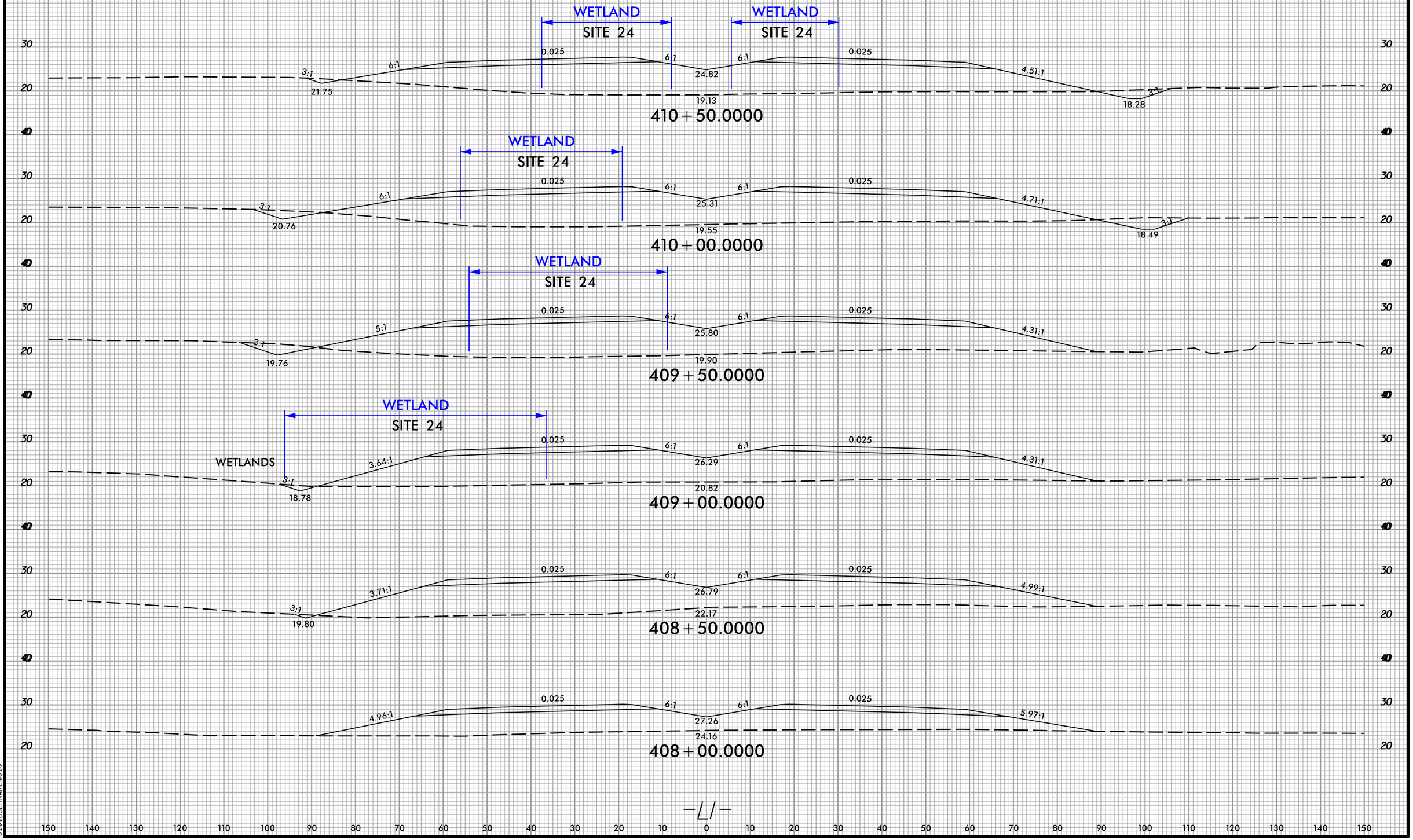
$$$$USERNAME$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-117

PERMIT DRAWING
SHEET 59 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



30 20 40

—L/—

6/23/16

11/20/2024

12/5/2023
MI ENGINEERING
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15-DEC-2023 14:11
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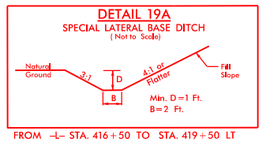
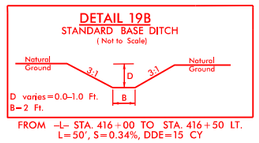
$$$$USERNAME$$$$

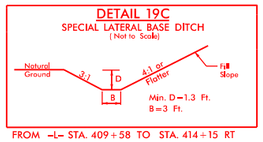
5/14/99



FROM –L– STA. 416+50 TO STA. 419+50 LT



FROM –L– STA. 416+00 TO STA. 416+50 LT.
L=50', S=0.34%, DDE=15 CY



FROM –L– STA. 409+58 TO STA. 414+15 RT

Dewberry
2650 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0029

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

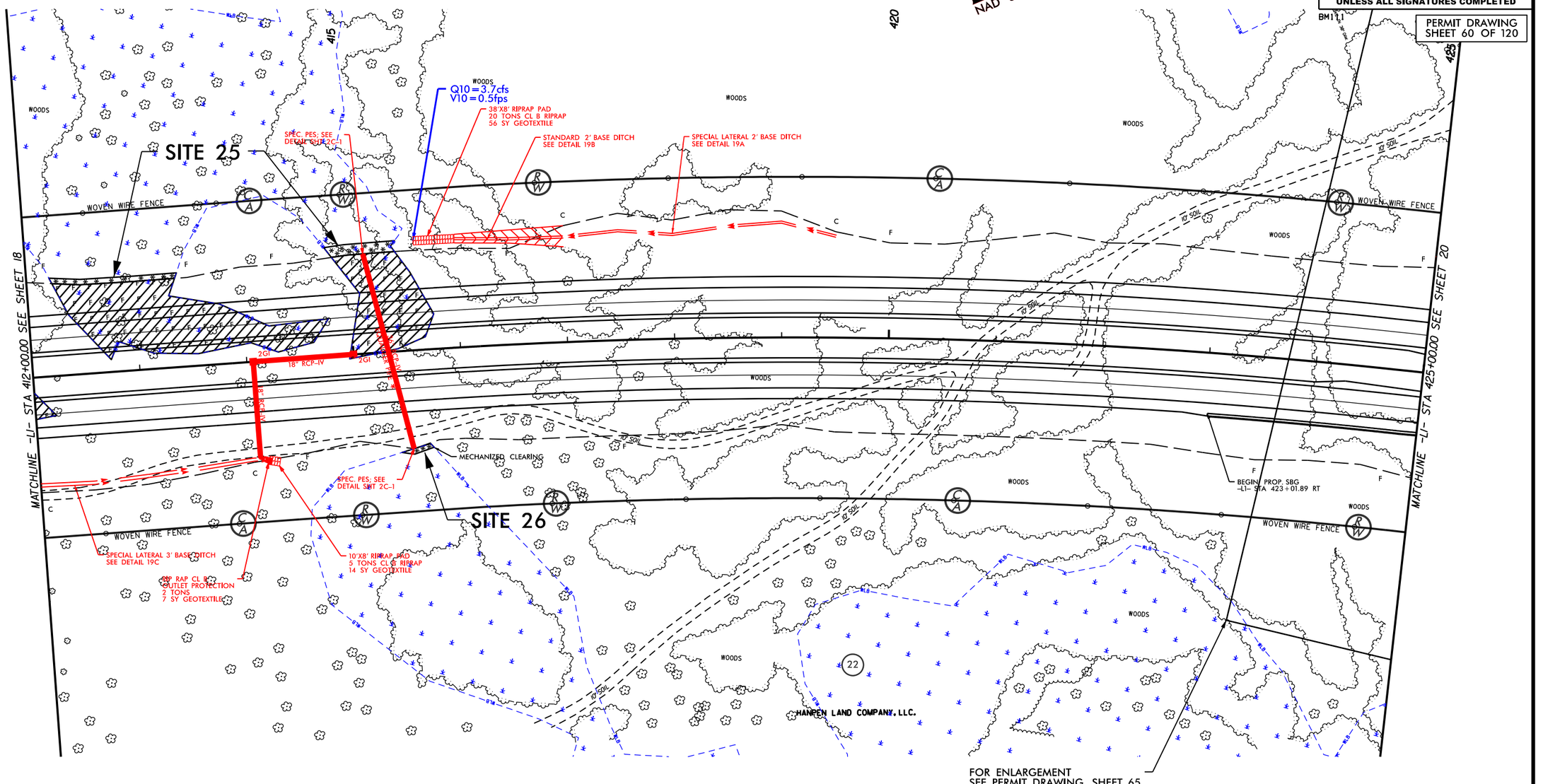
PROJECT REFERENCE NO.	SHEET NO.
R-3300A	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 60 OF 120

NAD 83/NSRS 2007

22
HANPEN LAND COMPANY, LLC.



* DO NOT BURY EQUALIZER PIPES

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

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

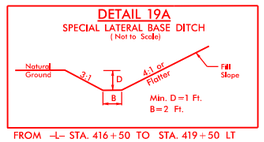
FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 65

SEE SHEET 48 FOR –L1– PROFILE

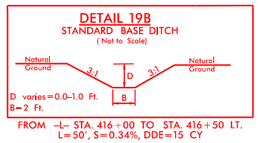
11/20/2024

7/31/2024
$USERNAME$
N:\NC Hydro\MI7006_8-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_gsh_19.dgn

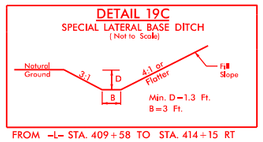
5/14/99



FROM -L- STA. 416+50 TO STA. 419+50 LT



FROM -L- STA. 416+00 TO STA. 416+50 LT.
L=50', S=0.34%, DDE=15 CY



FROM -L- STA. 409+58 TO STA. 414+15 RT

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 61 OF 120

NAD 83/NSRS 2007

HANPEN LAND COMPANY, LLC.

BM1 11

Q10=3.7cfs
V10=0.5fps

38'X8' RIPRAP PAD
20 TONS CL B RIPRAP
56 SY GEOTEXTILE

STANDARD 2' BASE DITCH
SEE DETAIL 19B

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL 19A

SPEC. PES, SEE DETAIL SHT 2C-1

SITE 25

SITE 26

WOVEN WIRE FENCE

MECHANIZED CLEARING

WOODS

18" RCP-IV

2GI

-L1- STA 412+00.00 SEE SHEET 18

-L1- STA 425+00.00 SEE SHEET 20

BEGIN PROP. SBG
-L1- STA 423+01.89 RT

SPECIAL LATERAL 3' BASE DITCH
SEE DETAIL 19C

APP RAP CL B
OUTLET PROTECTION
2 TONS
7 SY GEOTEXTILE

10'X8' RIPRAP PAD
5 TONS CL B RIPRAP
14 SY GEOTEXTILE

* DO NOT BURY EQUALIZER PIPES

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

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

FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 65

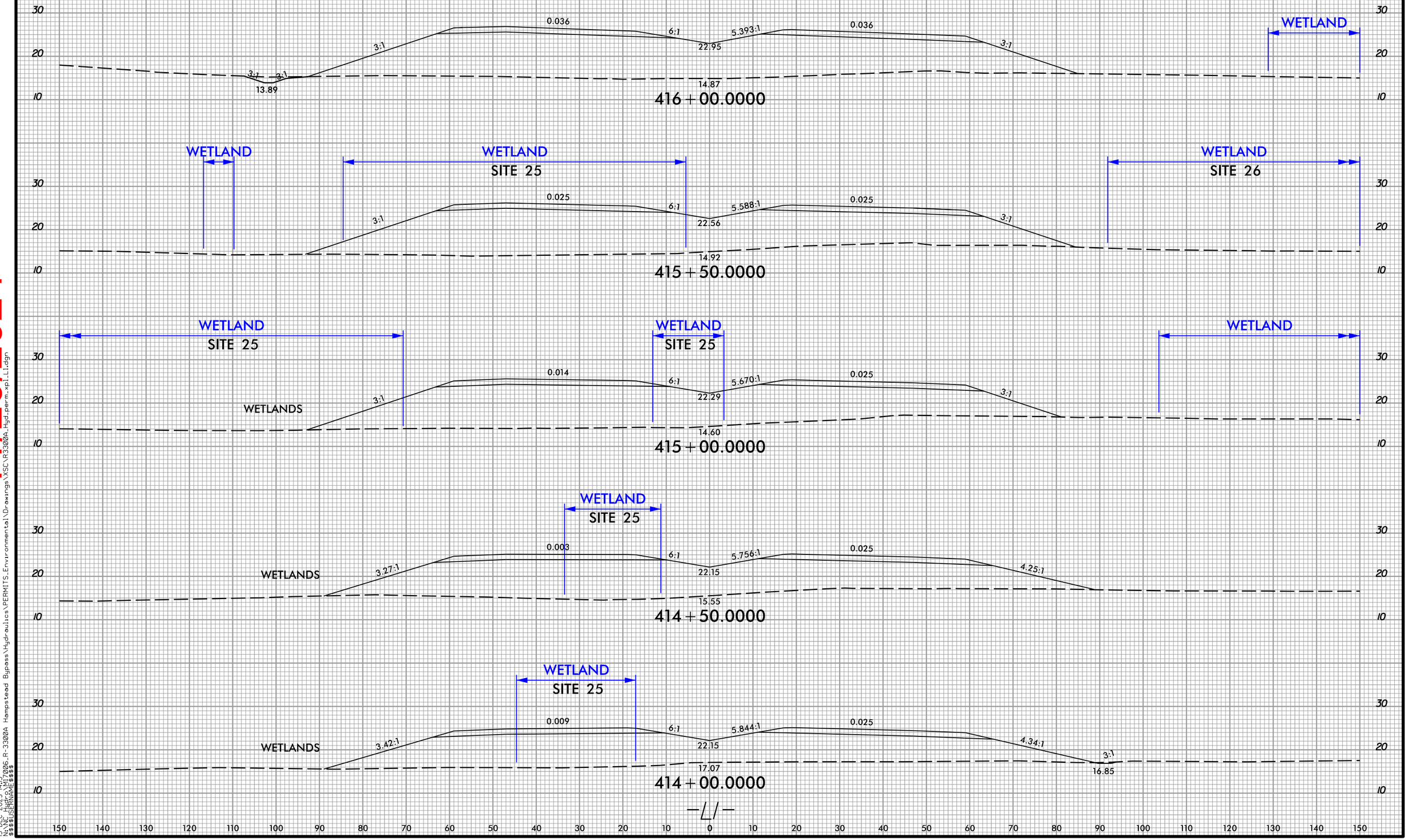
SEE SHEET 48 FOR -L1- PROFILE

11/20/2024

7/31/2024
$USERNAME$
N:\NC Hydro \MI7006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_path_19_con.dgn

PROJ. REFERENCE NO.	SHEET NO.
R-3300A	X-119

PERMIT DRAWING
SHEET 62 OF 120



6/23/16

11/20/2024

12/5/2023
MI ENGINEERING
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I5-DEC-2023 14:13
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$$$$USERNAME$$$$

5/14/99

NAD 83/NSRS 2007

Dewberry
2650 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0929

MI ENGINEERING
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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	20

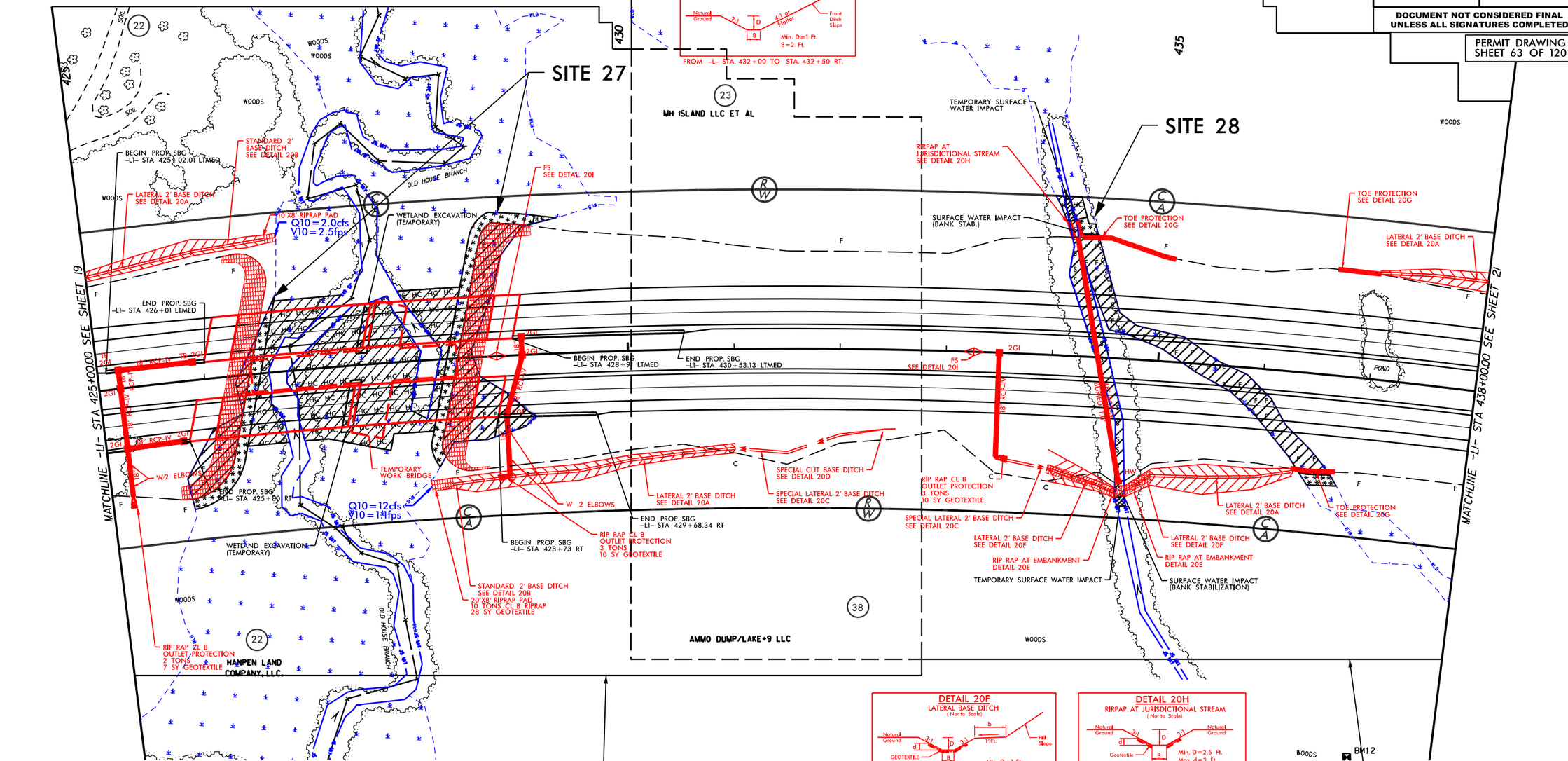
RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

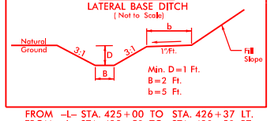
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 63 OF 120

11/20/2024

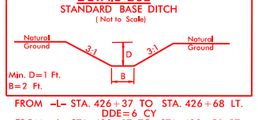


DETAIL 20A
LATERAL BASE DITCH
(Not to Scale)



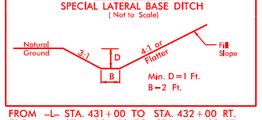
FROM -L- STA. 425+00 TO STA. 426+37 LT.
FROM -L- STA. 428+50 TO STA. 430+50 RT.
FROM -L- STA. 435+00 TO STA. 436+34 RT.
FROM -L- STA. 437+00 TO STA. 439+00 LT.

DETAIL 20B
STANDARD BASE DITCH
(Not to Scale)



FROM -L- STA. 426+37 TO STA. 426+68 LT.
DDE=6 CY
FROM -L- STA. 428+17 TO STA. 428+50 RT.
DDE=8 CY

DETAIL 20C
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 431+00 TO STA. 432+00 RT.
FROM -L- STA. 433+50 TO STA. 434+00 RT

DETAIL 20D
SPECIAL CUT BASE DITCH
(Not to Scale)

FROM -L- STA. 432+00 TO STA. 432+50 RT.

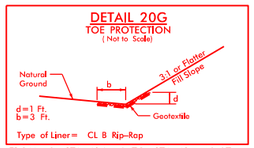
DETAIL 20E
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 5 TONS,CL B Rip-Rap
Geotextile = 14sy
FROM -L- STA. 434+55 TO STA. 434+69 RT.
FROM -L- STA. 434+71 TO STA. 434+87 RT.

DETAIL 20F
LATERAL BASE DITCH
(Not to Scale)

Type of Liner= B Rip-Rap
FROM -L1- STA. 434+00 TO STA. 434+65 RT.
FROM -L1- STA. 434+74 TO STA. 435+00 RT.

DETAIL 20G
TOE PROTECTION
(Not to Scale)

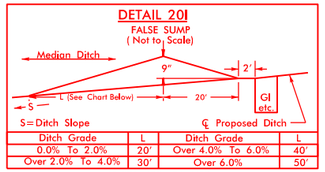


Type of Liner= CL B Rip-Rap
FROM -L- STA. 434+19 TO STA. 435+10 LT.
FROM -L- STA. 436+60 TO STA. 437+00 LT.
FROM -L- STA. 436+34 TO STA. 436+76 RT.

DETAIL 20H
RIPRAP AT JURISDICTIONAL STREAM
(Not to Scale)

Type of Liner=CL I Rip-Rap 26 TONS,50SY GEOTEXTILE
FROM L STA. 434+19 LT.

DETAIL 20I
FALSE SUMP
(Not to Scale)



S=Ditch Slope

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'

L1 STA. 428+76 MED.
L1 STA. 433+26 MED.

WETLAND EXCAVATION (TEMPORARY)
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON-GRUBBING)

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

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 65

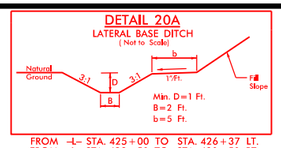
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 69

SEE SHEETS 48 & 49 FOR -L1- PROFILE

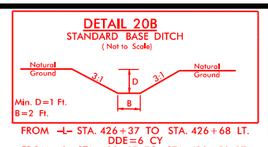
7/31/2024
$USERNAME$
N:\NC Hydro\MI7806_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_pah_20.dgn

5/14/99

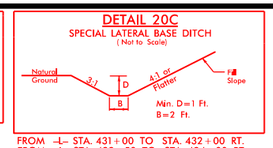
NAD 83/NSRS 2007



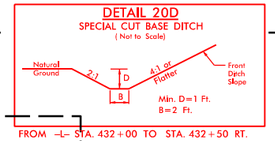
FROM –L– STA. 425+00 TO STA. 426+37 LT.
FROM –L– STA. 428+50 TO STA. 430+50 RT.
FROM –L– STA. 435+00 TO STA. 436+34 RT.
FROM –L– STA. 437+00 TO STA. 439+00 LT.



FROM –L– STA. 426+37 TO STA. 426+68 LT.
DDE=6 CY
FROM –L– STA. 428+17 TO STA. 428+50 RT.
DDE=8 CY



FROM –L– STA. 431+00 TO STA. 432+00 RT.
FROM –L– STA. 433+50 TO STA. 434+00 RT



FROM –L– STA. 432+00 TO STA. 432+50 RT.

Dewberry
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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 64 OF 120

SITE 27

SITE 28

MH ISLAND LLC ET AL

HANPEN LAND COMPANY, LLC

AMMO DUMP/LAKE+9 LLC

MATCHLINE –L1– STA 425+00.00 SEE SHEET 19

MATCHLINE –L1– STA 436+00.00 SEE SHEET 21

BEGIN PROP. SBG –L1– STA 425+02.01 LTMED

END PROP. SBG –L1– STA 426+01 LTMED

STANDARD 2' BASE DITCH SEE DETAIL 20B

LATERAL 2' BASE DITCH SEE DETAIL 20A

10'X8' RIPRAP PAD
Q10=2.0cfs
V10=2.5fps

WETLAND EXCAVATION (TEMPORARY)

OLD HOUSE BRANCH

FS SEE DETAIL 20I

TEMPORARY WORK BRIDGE

BEGIN PROP. SBG –L1– STA 425+90 RT

Q10=12cfs
V10=14fps

W 2 ELBOWS

BEGIN PROP. SBG –L1– STA 428+73 RT

END PROP. SBG –L1– STA 429+68.34 RT

RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE

STANDARD 2' BASE DITCH SEE DETAIL 20B
20'X8' RIPRAP PAD
10 TONS CL B RIPRAP
28 SY GEOTEXTILE

RIP RAP CL B OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE

BEGIN PROP. SBG –L1– STA 428+91 LTMED

END PROP. SBG –L1– STA 430+53.13 LTMED

LATERAL 2' BASE DITCH SEE DETAIL 20A

SPECIAL CUT BASE DITCH SEE DETAIL 20D

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 20E

TEMPORARY SURFACE WATER IMPACT

RIPRAP AT JURISDICTIONAL STREAM SEE DETAIL 20H

SURFACE WATER IMPACT (BANK STAB.)

TOE PROTECTION SEE DETAIL 20G

LATERAL 2' BASE DITCH SEE DETAIL 20A

POND

RIP RAP CL B OUTLET PROTECTION 8 TONS 20 SY GEOTEXTILE

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 20C

LATERAL 2' BASE DITCH SEE DETAIL 20F

RIP RAP AT EMBANKMENT DETAIL 20E

TEMPORARY SURFACE WATER IMPACT

SURFACE WATER IMPACT (BANK STABILIZATION)

TOE PROTECTION SEE DETAIL 20G

LATERAL 2' BASE DITCH SEE DETAIL 20A

RIP RAP AT EMBANKMENT DETAIL 20E

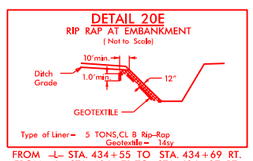
LATERAL 2' BASE DITCH SEE DETAIL 20F

TOE PROTECTION SEE DETAIL 20G

BM12

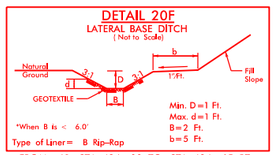
WETLAND EXCAVATION (TEMPORARY)
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON-GRUBBING)

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

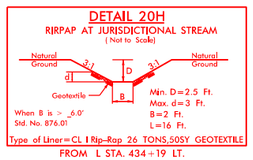


FROM –L– STA. 434+55 TO STA. 434+69 RT.
FROM –L– STA. 434+71 TO STA. 434+87 RT.

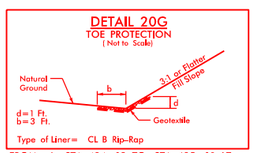
FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 65



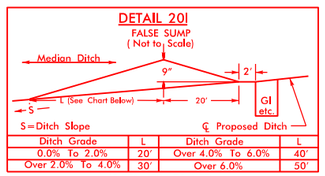
FROM –L1– STA. 434+00 TO STA. 434+65 RT.
FROM –L1– STA. 434+74 TO STA. 435+00 RT.



FROM L STA. 434+19 LT.



FROM –L– STA. 434+19 TO STA. 435+10 LT.
FROM –L– STA. 436+60 TO STA. 437+00 LT.
FROM –L– STA. 436+34 TO STA. 436+76 RT.



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

L1 STA. 428+76 MED.
L1 STA. 433+26 MED.

SEE SHEETS 48 & 49 FOR –L1– PROFILE

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 69

11/20/2024

7/31/2024
$USERNAMES
N:\NC Hydro\W17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental Drawings\R3300A_hyd_prh_20_con.dgn

11/20/2024

5/14/99

SITE 27 ENLARGEMENT (23)

MH ISLAND LLC ET AL

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2650 WYCLIFF ROAD
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RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0029

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FIRM PE NUMBER : P-0671

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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	E1-20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 65 OF 120

NAD 83/NSRS 2007

STANDARD 2' BASE DITCH SEE DETAIL 20B

LATERAL 2' BASE DITCH SEE DETAIL 20A

10'X8' RIPRAP PAD
Q10 = 2.0cfs
V10 = 2.5fps

WETLAND EXCAVATION (TEMPORARY)

FS SEE DETAIL 20I

OLD HOUSE BRANCH

TEMPORARY WORK BRIDGE

WETLAND EXCAVATION (TEMPORARY)

W/2 ELBOWS

Q10 = 12cfs
V10 = 4.1fps

W 2 ELBOWS

SPECIAL CUT BASE DITCH SEE DETAIL 20D

LATERAL 2' BASE DITCH SEE DETAIL 20A

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 20C

RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE

STANDARD 2' BASE DITCH SEE DETAIL 20B
20'X8' RIPRAP PAD
10 TONS CL B RIPRAP
28 SY GEOTEXTILE

RIP RAP CL B OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE

HANPEN LAND COMPANY LLC

AMMO DUMP/LAKE+9 LLC

FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON-GRUBBING)

30' 0' 30' 60' 90'
GRAPHIC SCALE

7/31/2024
$USERNAME$
N:\NC Hydro\MI700s_8-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental Drawings\R3300A_hyd_pth_E120.dgn

5/28/99

425+00 426+00 427+00 428+00 429+00

SITE 27

ISLAND CREEK TRIB.

PI = 425+00.00
EL = 27.53'
VC = 240'
K = 182
DS = 70 mph

PI = 430+00.00
EL = 30.29'
VC = 210'
K = 239
DS = 70 mph

C/L STATION 427+48.28 -L- GP LT (SBL)
PROP 1@125', 1@117' 72" MBT GIRDER
WITH 4.0' BENT CAPS
C/L GRADE POINT ELEV. = 28.90'
SKEW = 105 DEGREE

(-)0.7667% (+)0.5504% (+)0.5504% (+)1.4286%

LOW CHORD ALONG GP
LOWEST LOW CHORD
TEMPORARY WORK BRIDGE
LOW CHORD EL=10.5
3.5' KEY-IN (TYP.)
NORMAL WSE = 7.2'
CLASS II RIP RAP (TYP.)

30 20 10 0

PI = 425+00.00
EL = 27.53'
VC = 240'
K = 182
DS = 70 mph

C/L STATION 427+35.98 -L- GP RT (NBL)
PROP 1@125', 1@117' 72" MBT GIRDER
WITH 4.0' BENT CAPS
C/L GRADE POINT ELEV. = 28.83'
SKEW = 105 DEGREE

PI = 430+00.00
EL = 30.29'
VC = 210'
K = 239
DS = 70 mph

(-)0.7667% (+)0.5504% (+)0.5504% (+)1.4286%

LOW CHORD ALONG GP
LOWEST LOW CHORD
TEMPORARY WORK BRIDGE
LOW CHORD EL=10.5
3.5' KEY-IN (TYP.)
NORMAL WSE = 7.2'
CLASS II RIP RAP (TYP.)

40 30 20 10 0

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

Dewberry
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PHONE: 919.881.9929
NC COA No. P-0029

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FIRM PE NUMBER : P-0671

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 66 OF 120

11/20/2024

7/31/2024
$USERNAME$
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-124

PERMIT DRAWING
SHEET 67 OF 120

WETLAND
SITE 27

WETLANDS

426+00.0000

425+50.0000

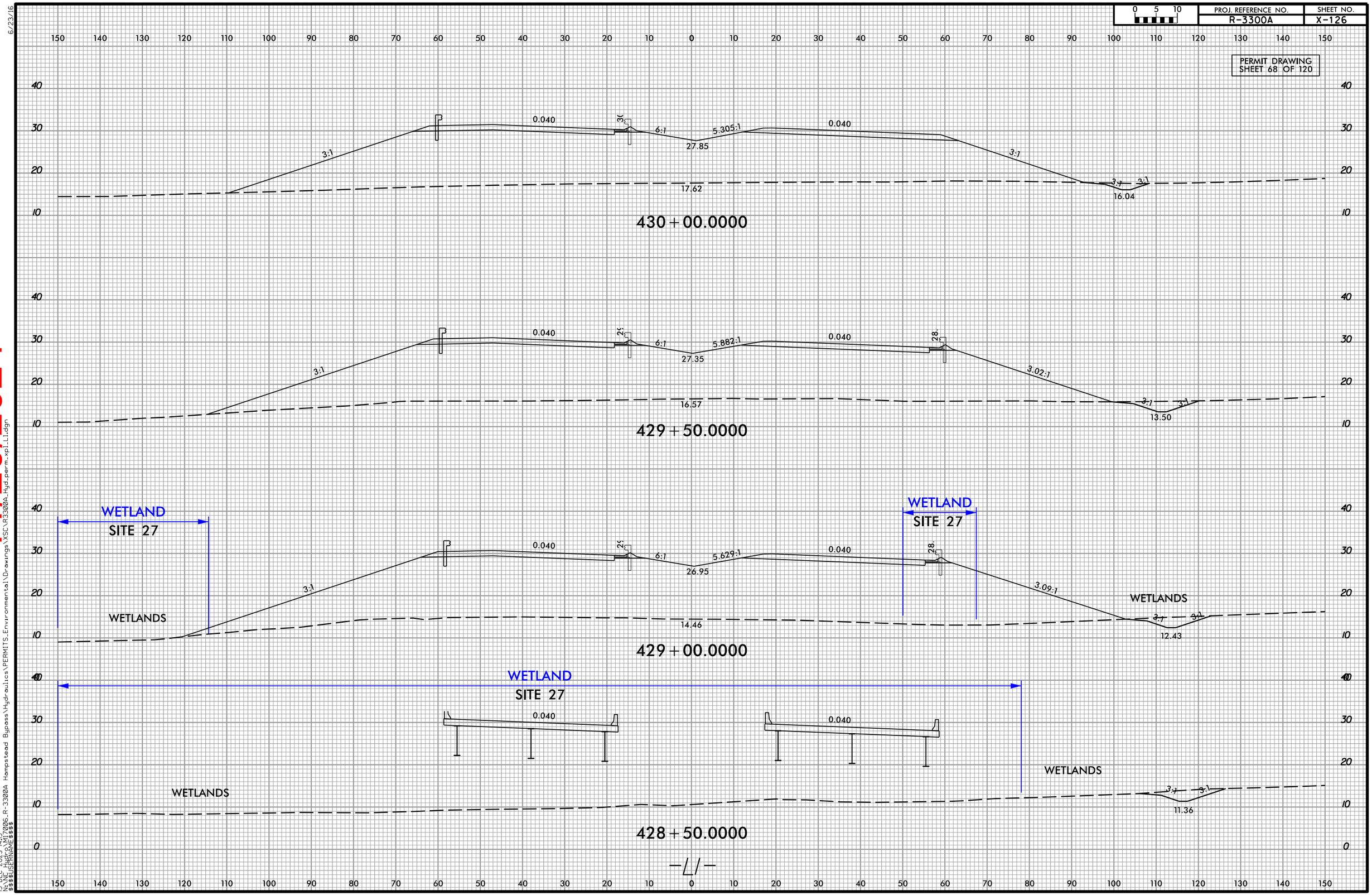
425+00.0000

424+50.0000

11/20/2024

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-126

PERMIT DRAWING
SHEET 68 OF 120



6/23/16

11/20/2024

12/5/2023
MI ENGINEERING
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$$$$USERNAME$$$$

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11/20/2024

Dewberry
2650 WYCLIFF ROAD
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RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0029

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(919) 851-6606
FIRM PE NUMBER : P-0671

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License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	E2-20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 69 OF 120

NAD 83/NSRS 2007

SITE 28 ENLARGEMENT

23
MH ISLAND LLC ET AL

431

435

438

WOODS

TEMPORARY SURFACE WATER IMPACT

RIPRAP AT JURISDICTIONAL STREAM SEE DETAIL 20H

SURFACE WATER IMPACT (BANK STAB.)

TOE PROTECTION SEE DETAIL 20G

LATERAL 2' BASE DITCH SEE DETAIL 20A

END PROP. SBG –L1– STA 430+53.13 LTMED

FS SEE DETAIL 20I

2GI –L1–

18" RCP–IV

BURIED 1.0'

SPECIAL CUT BASE DITCH SEE DETAIL 20D

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 20C

RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE

END PROP. SBG –L1– STA 429+68.34 RT

LATERAL 2' BASE DITCH SEE DETAIL 20F

RIP RAP AT EMBANKMENT DETAIL 20E

TEMPORARY SURFACE WATER IMPACT

SURFACE WATER IMPACT (BANK STABILIZATION)

SPECIAL LATERAL 'V' DITCH SEE DETAIL 21A

POND

38

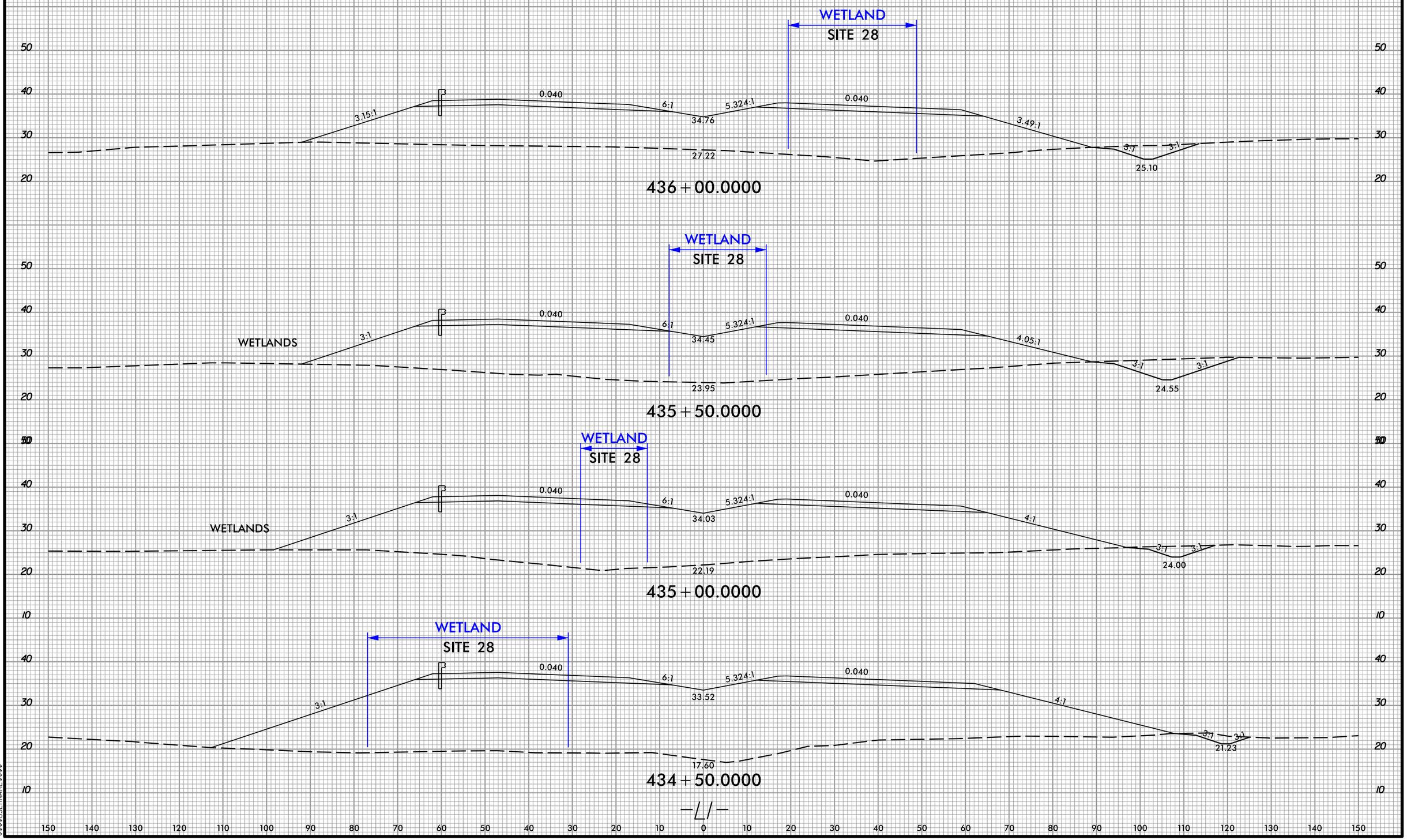
F FILL IN WETLAND
S SURFACE WATER IMPACTS
TS TEMPORARY SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
HC HAND CLEARING (NON-GRUBBING)

30' 0' 30' 60' 90'
GRAPHIC SCALE

7/31/2024
$USERNAME$
N:\NC Hydro\MI7006_8-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental Drawings\R3300A_hyd_psh_E220.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-129

PERMIT DRAWING
SHEET 70 OF 120



11/20/2024

5/14/99

11/20/2024

Dewberry
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SUITE 410
RALEIGH, NC 27607
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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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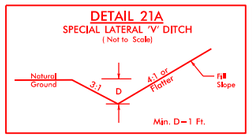
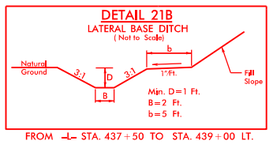
PERMIT DRAWING SHEET 71 OF 120

DETAIL 21A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



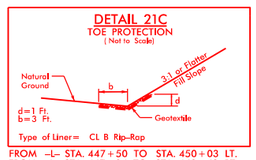
FROM -L- STA. 438+77 TO STA. 439+77 RT.
FROM -L- STA. 445+94 TO STA. 447+50 LT.
FROM -L- STA. 450+90 TO STA. 454+04 LT.
FROM -L- STA. 446+55 TO STA. 447+25 RT.

DETAIL 21B
LATERAL BASE DITCH
(Not to Scale)



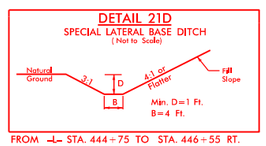
FROM -L- STA. 437+50 TO STA. 439+00 LT.

DETAIL 21C
TOE PROTECTION
(Not to Scale)



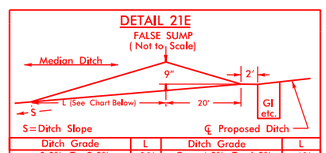
FROM -L- STA. 447+50 TO STA. 450+03 LT.
FROM -L- STA. 447+34 TO STA. 449+43 RT.

DETAIL 21D
SPECIAL LATERAL BASE DITCH
(Not to Scale)



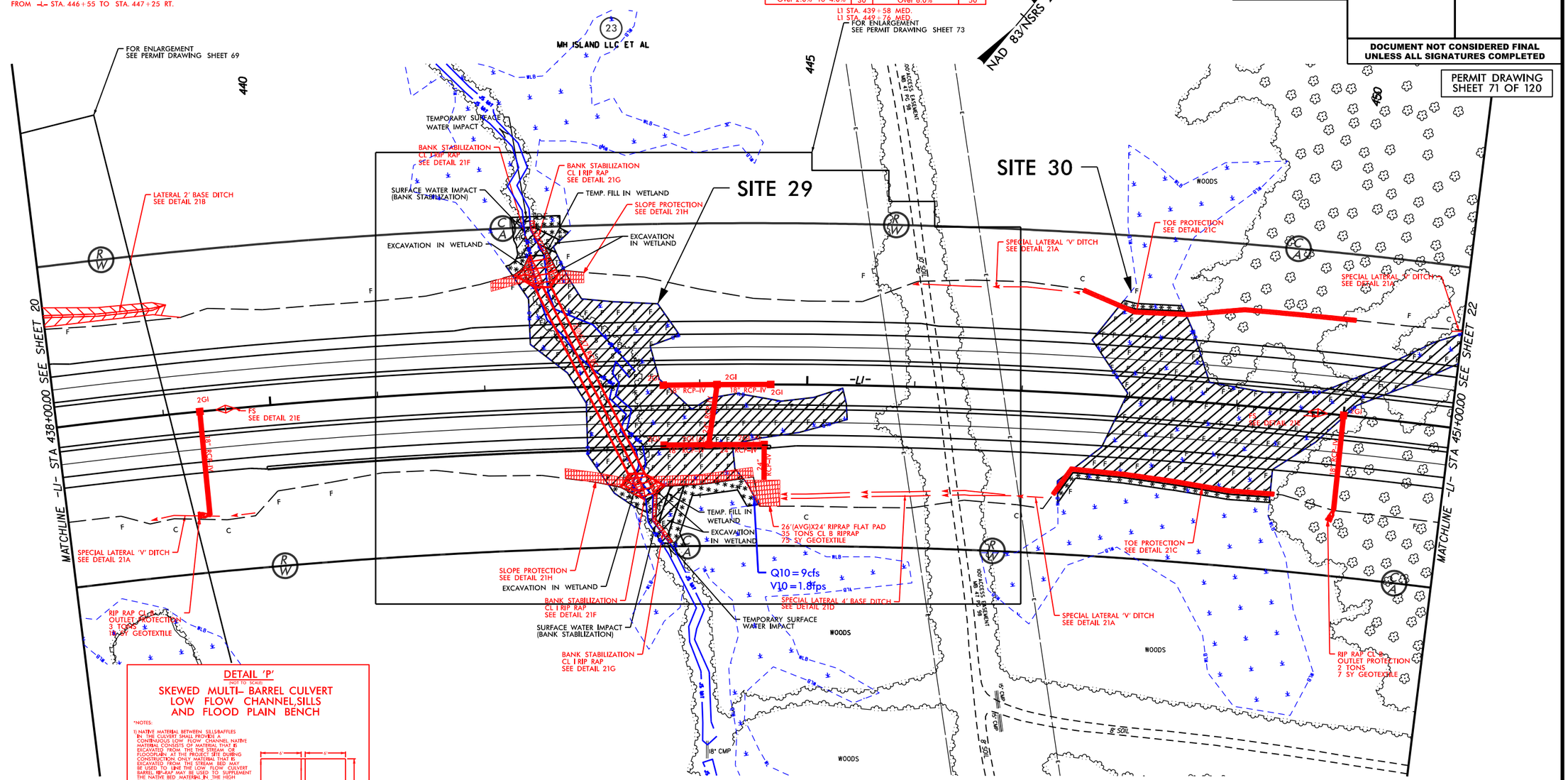
FROM -L- STA. 444+75 TO STA. 446+55 RT.

DETAIL 21E
FALSE SUMP
(Not to Scale)



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

L1 STA. 439+58 MED.
L1 STA. 449+76 MED.



DETAIL 'P'
SKEWED MULTI- BARREL CULVERT LOW FLOW CHANNEL,SILLS AND FLOOD PLAIN BENCH
NOT TO SCALE

*NOTES:

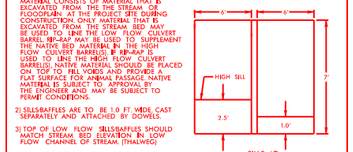
1) NATIVE MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE THE STREAM OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT INSTALLATION. NATIVE MATERIAL EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP-RAP MAY BE USED TO SUPPLEMENT THE NATIVE BED MATERIAL IN THE HIGH FLOW CULVERT BARREL(S). IF RIP-RAP IS USED TO LINE THE HIGH FLOW CULVERT BARREL(S), NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

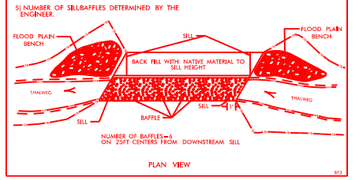
2) SILLS/BAFFLES ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (TYP.ALLWEG)

4) DO NOT SET ELEVATION OF HIGH SILL/BAFFLES ABOVE BANK FULL.

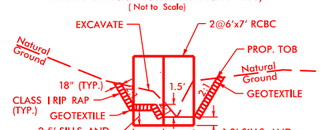
5) NUMBER OF SILL/BAFFLES DETERMINED BY THE ENGINEER.





E E WETLAND EXCAVATION
F F FILL IN WETLAND
S S SURFACE WATER IMPACTS
* * * MECHANIZED CLEARING (GRUBBING)
HC HC HAND CLEARING (NON-GRUBBING)
TS TS TEMPORARY SURFACE WATER IMPACTS
T T TEMPORARY FILL IN WETLAND

DETAIL 21F
BANK STABILIZATION LOOKING D/S
(Not to Scale)



LENGTH= 25 FT. (US)
30 FT. (DS)
EST.= 26 TONS OF CLASS I RIP RAP (US)
42 SY GEOTEXTILE (US)
52 TONS OF CLASS I RIP RAP (DS)
58 SY GEOTEXTILE (DS)

L1 STA. 442+50 LT. ±; DDE=20 CY (DS)
L1 STA. 443+50 RT. ±; DDE=17 CY (US)

DETAIL 21G
BANK STABILIZATION
(Not to Scale)

Type of Liner= CL I Rip-Rap, Keyed-In

FROM -L- STA. 443+56 TO STA. 443+70 RT.
L=50', 17 TONS CL I RIPRAP
FROM -L- STA. 442+60 TO STA. 442+48 LT.
L=35', TONS CL I RIPRAP

DETAIL 21H
SLOPE PROTECTION
(Not to Scale)

Type of Liner= CL B Rip-Rap, Plating Slope

FROM -L1- STA. 442+10 TO STA. 442+95 LT.
FROM -L1- STA. 442+75 TO STA. 444+50 RT.

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

SEE SHEET 49 FOR -L1- PROFILE

10/2/2024
KEVIN.HAMLIN
N:\NC Hydro M1\006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_21.dgn

5/14/99

11/20/2024

10/2/2024
SSOBRIANES
N:\NC Hydro M\7006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_21_con.dgn

Dewberry
2650 WYCLIFF ROAD
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PHONE: 919.881.9929
NC COA No. P-0929

MI ENGINEERING
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FIRM PE NUMBER : P-0671

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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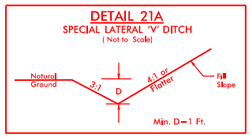
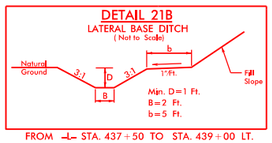
PERMIT DRAWING SHEET 72 OF 120

DETAIL 21A
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



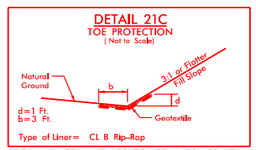
FROM –L– STA. 438+77 TO STA. 439+77 RT.
FROM –L– STA. 445+94 TO STA. 447+50 LT.
FROM –L– STA. 450+90 TO STA. 454+04 LT.
FROM –L– STA. 446+55 TO STA. 447+25 RT.

DETAIL 21B
LATERAL BASE DITCH
(Not to Scale)



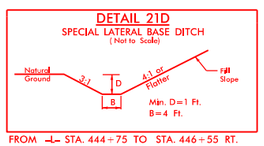
FROM –L– STA. 437+50 TO STA. 439+00 LT.

DETAIL 21C
TOE PROTECTION
(Not to Scale)



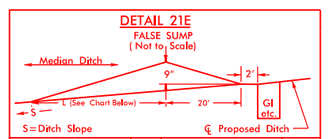
FROM –L– STA. 447+50 TO STA. 450+03 LT.
FROM –L– STA. 447+34 TO STA. 449+43 RT.

DETAIL 21D
SPECIAL LATERAL BASE DITCH
(Not to Scale)



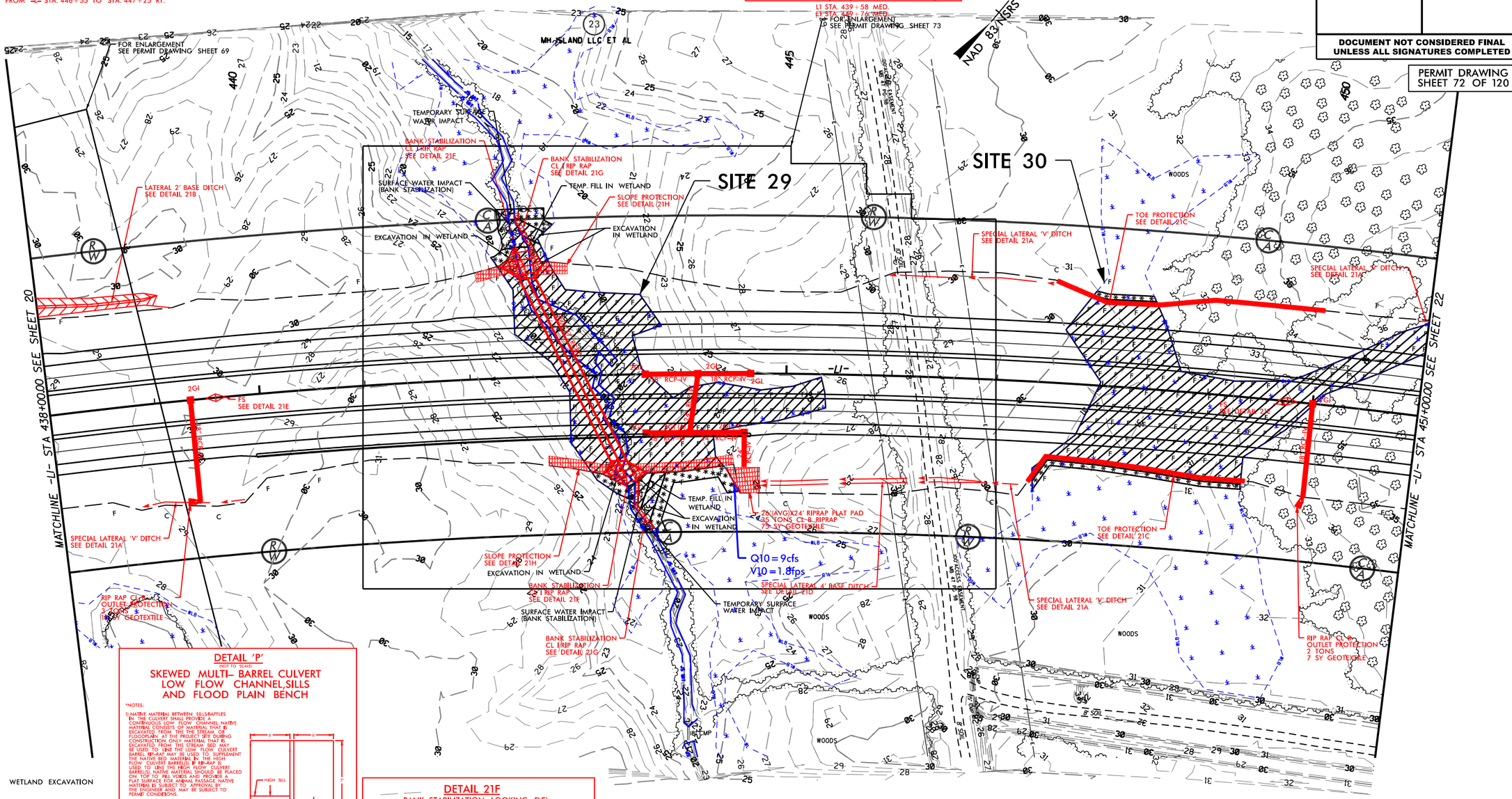
FROM –L– STA. 444+75 TO STA. 446+55 RT.

DETAIL 21E
FALSE SUMP
(Not to Scale)



S=Ditch Slope

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'



DETAIL 'P'
NOT TO SCALE
SKEWED MULTI– BARREL CULVERT
LOW FLOW CHANNEL,SILLS
AND FLOOD PLAIN BENCH

*NOTES:

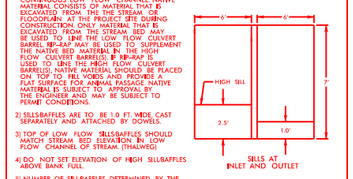
1) NATIVE MATERIAL BETWEEN SILLS/BAFFLES IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE THE STREAM OR FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUCTION ONLY. MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AND BANKS SHALL BE USED FIRST. IF CULVERT BARREL RIP-RAP MAY BE USED TO SUPPLEMENT THE NATIVE BED MATERIAL IN THE HIGH FLOW CULVERT BARRELS. IF RIP-RAP IS USED TO LINE THE HIGH FLOW CULVERT BARRELS, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

2) SILLS/BAFFLES ARE TO BE 1.0 FT WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

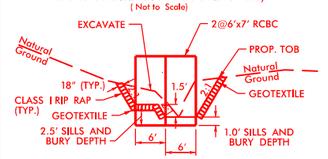
3) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

4) DO NOT SET ELEVATION OF HIGH SILL/BAFFLES ABOVE BANK FULL.

5) NUMBER OF SILL/BAFFLES DETERMINED BY THE ENGINEER.



DETAIL 21F
BANK STABILIZATION LOOKING D/S)
(Not to Scale)



LENGTH= 25 FT. (US)
30 FT. (DS)
EST.= 26 TONS OF CLASS I RIP RAP (US)
42 SY GEOTEXTILE (US)
52 TONS OF CLASS I RIP RAP (DS)
58 SY GEOTEXTILE (DS)

L1 STA. 442+50 LT. ±; DDE=20 CY (DS)
L1 STA. 443+50 RT. ±; DDE=17 CY (US)

DETAIL 21G
BANK STABILIZATION
(Not to Scale)

Type of Liner=CL I Rip-Rap, Keyed-In

FROM –L– STA. 443+56 TO STA. 443+70 RT.
L=50', 17 TONS CL I RIPRAP
FROM –L– STA. 442+60 TO STA. 442+48 LT.
L=35', TONS CL I RIPRAP

DETAIL 21H
SLOPE PROTECTION
(Not to Scale)

Type of Liner= CL B Rip–Rap, Plating Slope

FROM –L1– STA. 442+10 TO STA. 442+95 LT.
FROM –L1– STA. 442+75 TO STA. 444+50 RT.

WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON–GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
TEMPORARY FILL IN WETLAND

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

SEE SHEET 49 FOR –L1– PROFILE

5/14/99

11/20/2024

SITE 29 ENLARGEMENT

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	E-21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 73 OF 120

CL I RIP RAP
SEE DETAIL 21F

TEMPORARY SURFACE WATER IMPACT

SURFACE WATER IMPACT (BANK STABILIZATION)

BANK STABILIZATION
CL I RIP RAP
SEE DETAIL 21G

EXCAVATION IN WETLAND

TEMP. FILL IN WETLAND

SLOPE PROTECTION
SEE DETAIL 21H

EXCAVATION IN WETLAND

FILL IN WETLAND

EXCAVATION IN WETLAND

NAD 83/NSRS 2007

2GI
18" RCP–IV
2GI
24" RCP–IV
2GI (A)
18" RCP–IV
24" RCP–IV
24" RCP–IV

Q10 = 9cfs
V10 = 1.8fps

TEMP. FILL IN WETLAND

26'(AVG)X24' RIPRAP FLAT PAD
35 TONS CL B RIPRAP
75 SY GEOTEXTILE

EXCAVATION IN WETLAND

TS

SLOPE PROTECTION
SEE DETAIL 21H

EXCAVATION IN WETLAND

BANK STABILIZATION

SPECIAL LATERAL 4' BASE DITCH

100' ACCESS E
MB 47 P

442

445

WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
HAND CLEARING (NON-GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
TEMPORARY FILL IN WETLAND

20' 0' 20' 40' 60'
GRAPHIC SCALE

10/2/2024
$USERNAME$
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_E21.dgn

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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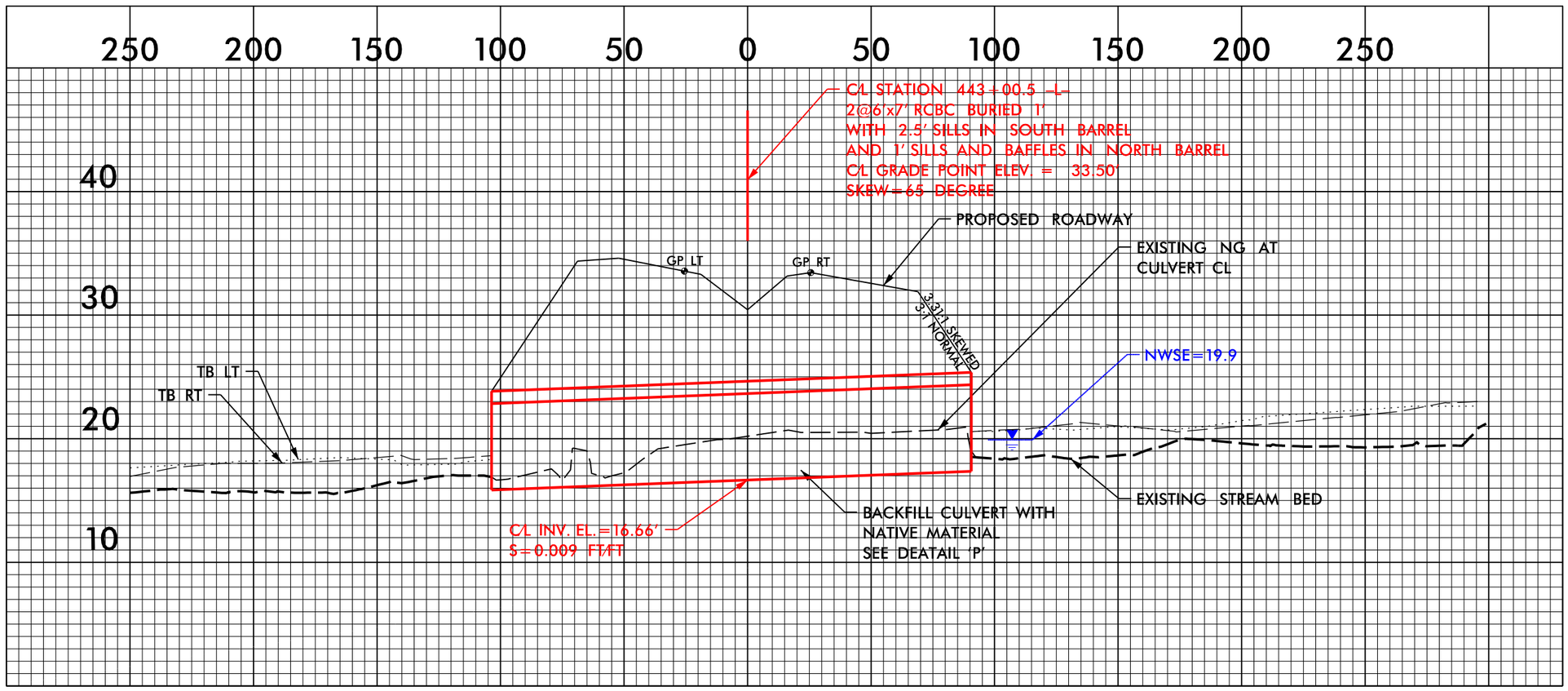
SHEET 74 OF 120

SITE 29



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

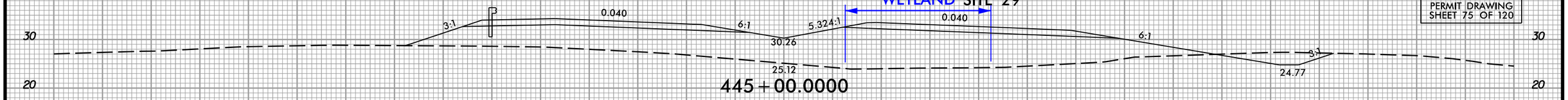
11/20/2024

7/31/2024
$(USERNAME)$
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental Drawings\R-3300A_Hyd_prm_wet_Cult.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-133

PERMIT DRAWING
SHEET 75 OF 120

WETLAND SITE 29



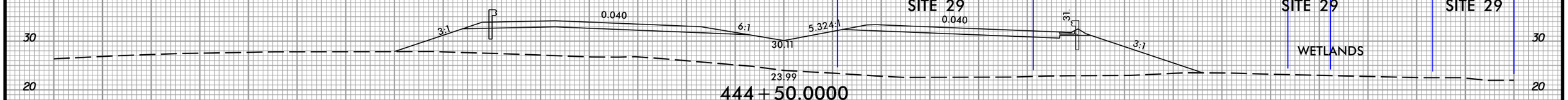
445+00.0000

WETLAND
SITE 29

WETLAND
SITE 29

WETLAND
SITE 29

WETLANDS

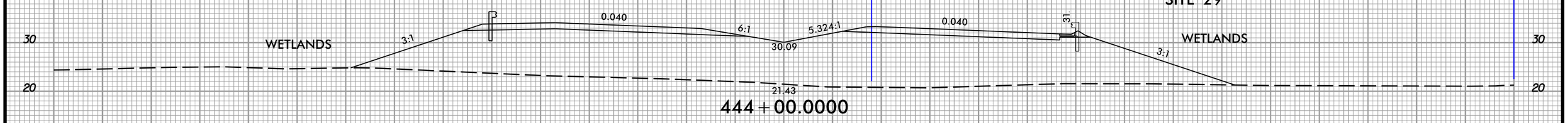


444+50.0000

WETLAND
SITE 29

WETLANDS

WETLANDS



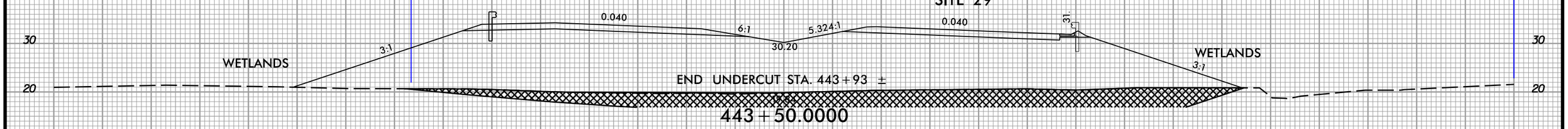
444+00.0000

WETLAND
SITE 29

WETLANDS

WETLANDS

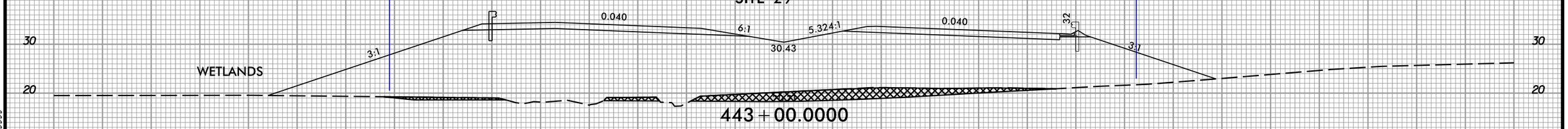
END UNDERCUT STA. 443+93 ±



443+50.0000

WETLAND
SITE 29

WETLANDS



443+00.0000

-L/-

11/20/2024

12/15/2023
MI ENGINEERING
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\XSC\R3300A_Hyd_perm_xpl_L1.dgn
15-DEC-2023 14:18
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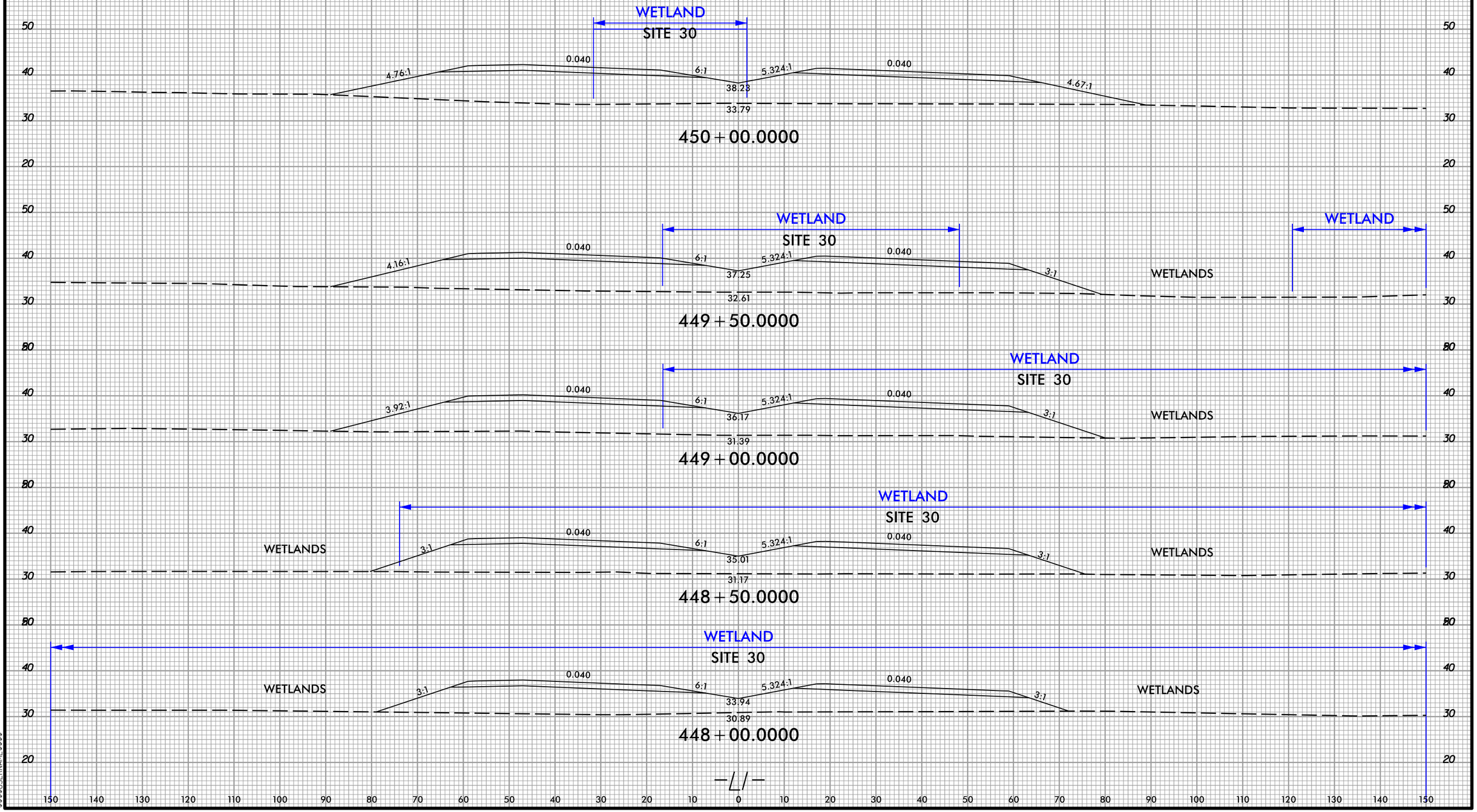
$$$$USERNAME$$$$

6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-135

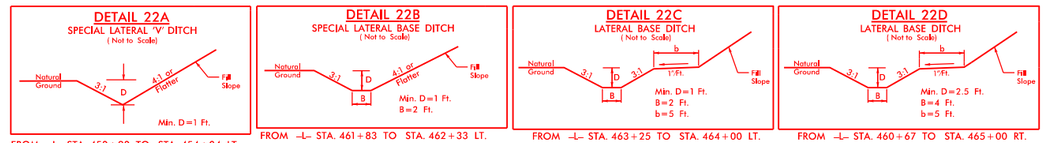
PERMIT DRAWING
SHEET 76 OF 120



11/20/2024

5/14/99

11/20/2024



FROM –L– STA. 450+90 TO STA. 454+04 LT.
FROM –L– STA. 454+40 TO STA. 455+30 LT.
FROM –L– STA. 455+37 TO STA. 456+78 LT.

FROM –L– STA. 461+83 TO STA. 462+33 LT.

FROM –L– STA. 463+25 TO STA. 464+00 LT.

FROM –L– STA. 460+67 TO STA. 465+00 RT.

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FIRM PE NUMBER : P-0671

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	22

RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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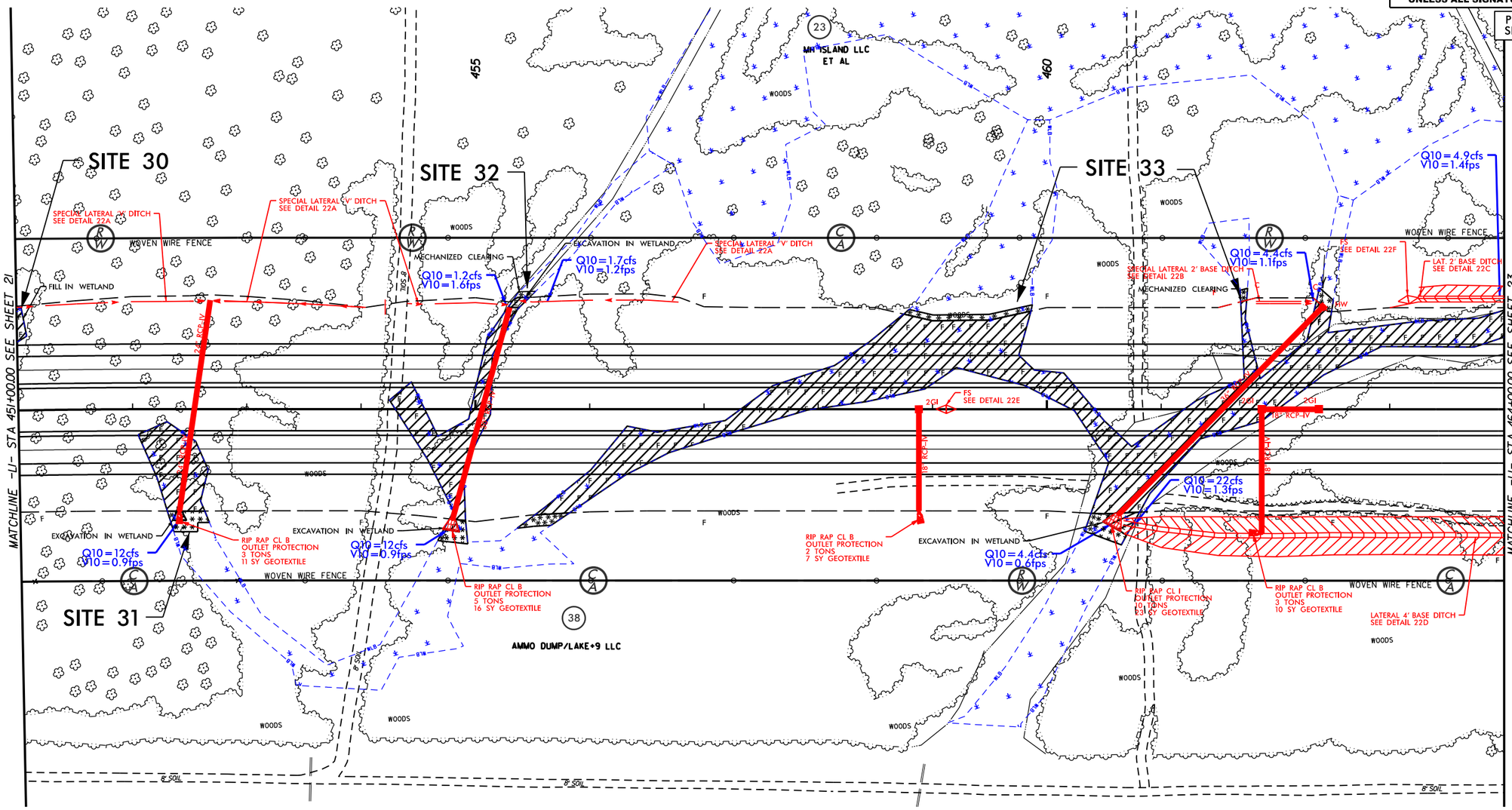
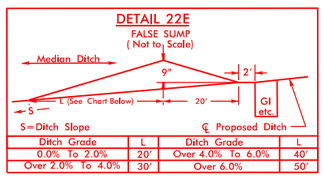
SHEET 77 OF 120

NAD 83/NSRS 2007



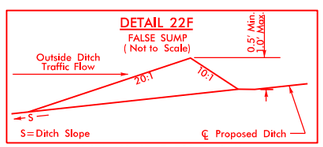
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)

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



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

L1 STA. 459+12 MED.

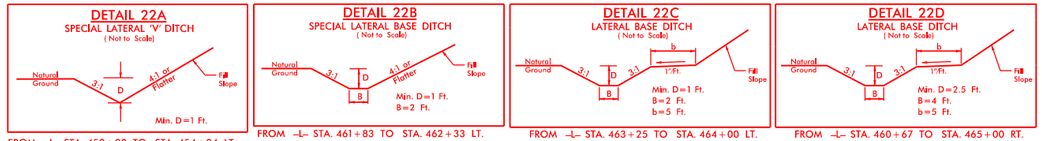


L1 STA. 463+17 LT., TOP EL=34.11

SEE SHEET 49 & 50 FOR –L1– PROFILE

7/31/2024
SS\SBRAMLEY
N:\NC Hydro\M17006 R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_22.dgn

5/14/99



FROM –L– STA. 450+90 TO STA. 454+04 LT.
FROM –L– STA. 454+40 TO STA. 455+30 LT.
FROM –L– STA. 455+37 TO STA. 456+78 LT.

FROM –L– STA. 461+83 TO STA. 462+33 LT.

FROM –L– STA. 463+25 TO STA. 464+00 LT.

FROM –L– STA. 460+67 TO STA. 465+00 RT.

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	22

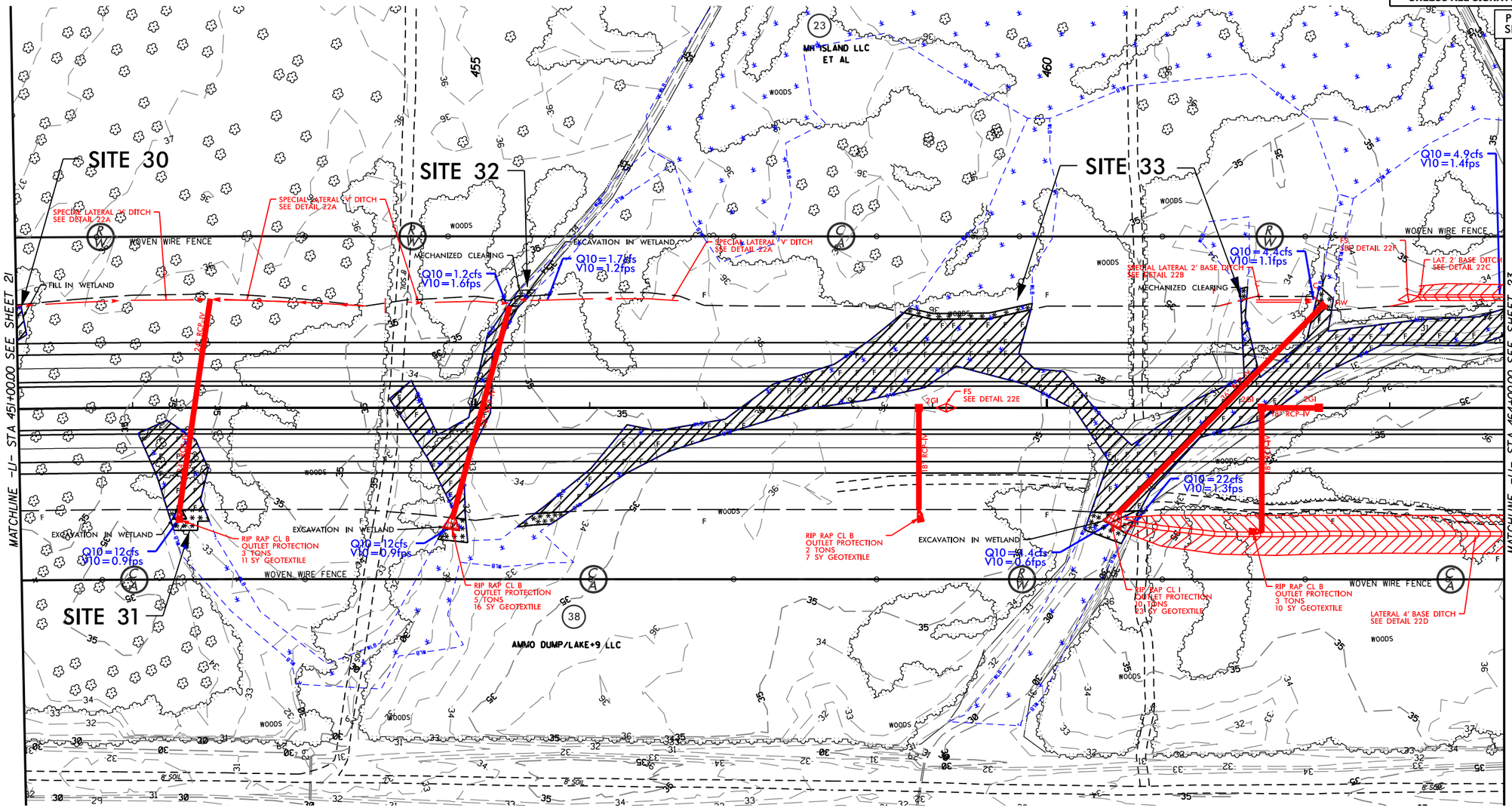
RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 78 OF 120

NAD 83/NSRS 2007



WETLAND EXCAVATION

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

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

DETAIL 22E
FALSE SUMP
(Not to Scale)
Median Ditch
9"
2'
S
L (See Chart Below)
20'
GI etc.
S=Ditch Slope
℄ Proposed Ditch

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

L1 STA. 459+12 MED.

DETAIL 22F
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
0.5' Min 1.0' Max
20:1
10:1
S
S=Ditch Slope
℄ Proposed Ditch

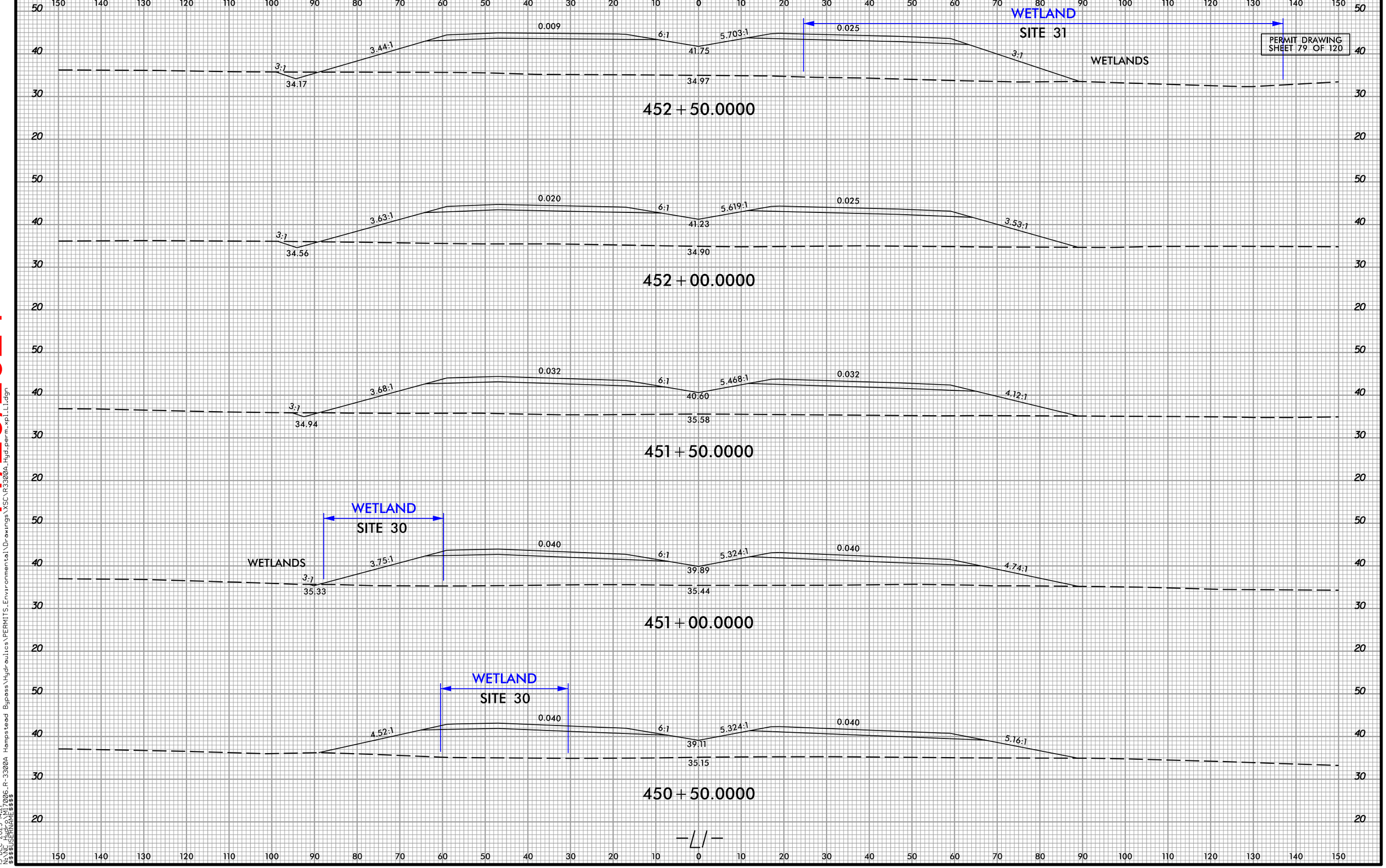
L1 STA. 463+17 LT., TOP EL=34.11

SEE SHEET 49 & 50 FOR –L1– PROFILE

11/20/2024

7/3/2024
9:15:58 AM
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_pth_22_con.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-136



6/23/16

11/20/2024

12/5/2023
MI ENGINEERING
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15-DEC-2023 14:21
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$$$$USERNAME$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-137

PERMIT DRAWING
SHEET 80 OF 120

WETLAND SITE 32

WETLAND

WETLANDS

0.025 6:1 6:1 0.025
3.12:1 3:1 3:1
42.79
33.56 32.40

455+00.0000

WETLAND

SITE 32

WETLAND

0.025 6:1 6:1 0.025
3.21:1 3:1 3:1
42.82
34.33 33.15

454+50.0000

0.024 6:1 5.987:1 0.025
3.30:1 3:1 3.15:1
42.73
35.29 35.01

454+00.0000

0.013 6:1 5.878:1 0.025
3.40:1 3:1 3.29:1
42.50
34.81 35.38

453+50.0000

0.002 6:1 5.789:1 0.025
3.43:1 3:1 3.18:1
42.17
34.34 35.54

453+00.0000

—L/—

6/23/16

11/20/2024

12/5/2023
MI ENGINEERING
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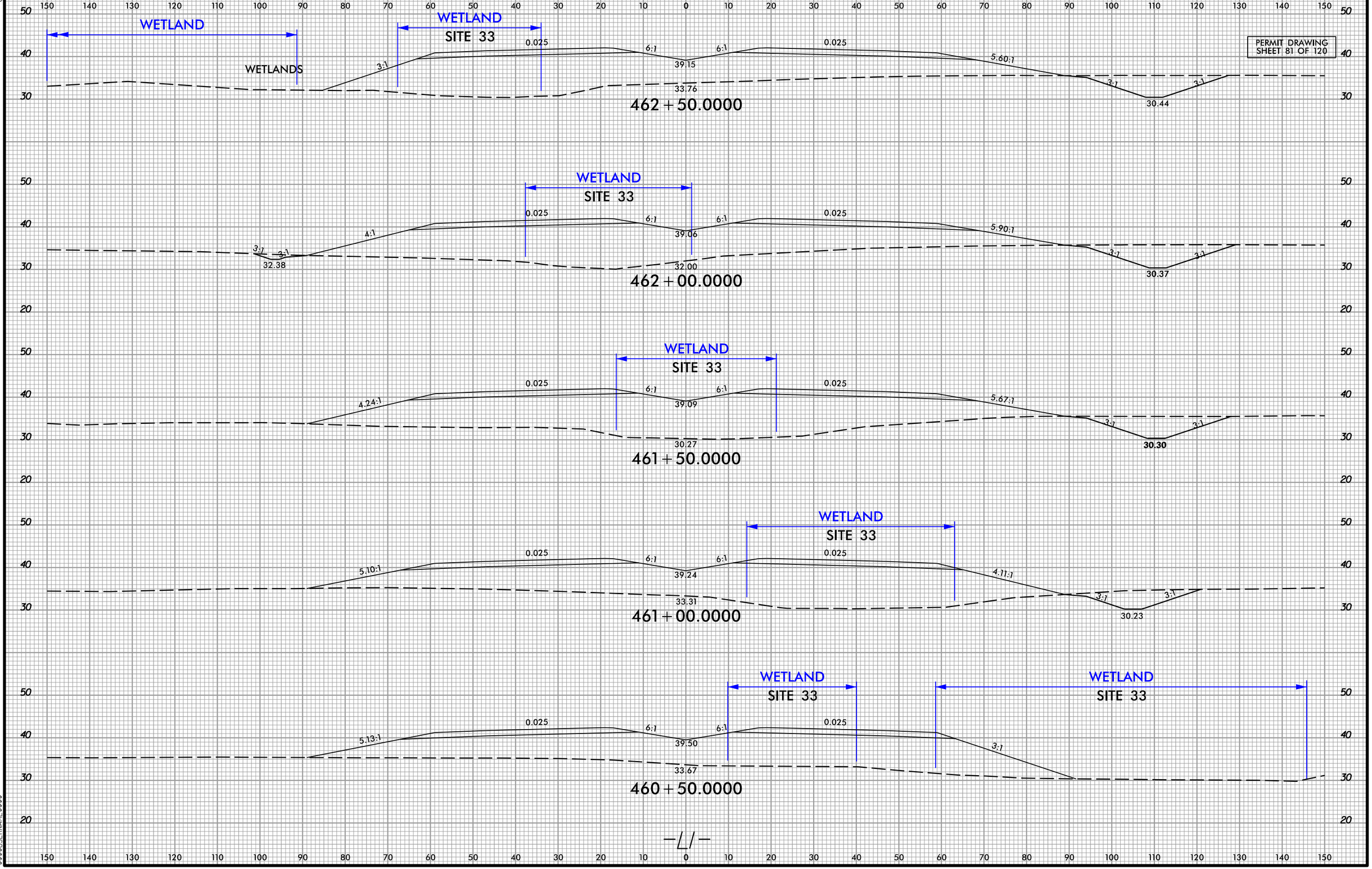
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-140

PERMIT DRAWING
SHEET 81 OF 120



11/20/2024

12/5/2023
MI ENGINEERING
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$$$$USERNAME$$$$

6/23/16

5/14/99

WETLAND EXCAVATION

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

50' 0' 50' 100' 150'

GRAPHIC SCALE

NAD 83/NSRS 2007

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 82 OF 120

11/20/2024

WOODS

23 MH ISLAND LLC ET AL

WOODS

465

470

475

Q10 = 4.9cfs
V10 = 1.4fps

SPECIAL LATERAL 4' BASE DITCH
SEE DETAIL 23B

EXCAVATION IN WETLAND

TOE PROTECTION
SEE DETAIL 23E

SITE 33

WOVEN WIRE FENCE

SITE 34
Q10 = 3.0cfs
V10 = 1.5fps

TOE PROTECTION
SEE DETAIL 23E

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 23A

RIP RAP CL B
OUTLET PROTECTION
3 TONS
10 SY GEOTEXTILE

SITE 35

SPEC. PES; SEE
DETAIL SHT 2C-1

WOVEN WIRE FENCE

SPEC. PES; SEE
DETAIL SHT 2C-1

MATCHLINE -L1- STA 464+00.00 SEE SHEET 22

MATCHLINE -L1- STA 477+00.00 SEE SHEET 24

FS
SEE DETAIL 23F

2GI

36" RCP-IN

18" RCP-IN

18" RCP-IN

FS
SEE DETAIL 23F

2GI

WOODS

MECHANIZED CLEARING

SPEC. PES; SEE
DETAIL SHT 2C-1

SITE 34

SITE 35

WOVEN WIRE FENCE

WOVEN WIRE FENCE

RIP RAP CL I
OUTLET PROTECTION
15 TONS
30 SY GEOTEXTILE

RIP RAP CL B
OUTLET PROTECTION
3 TONS
10 SY GEOTEXTILE

LATERAL 2' BASE DITCH
SEE DETAIL 23D

LATERAL 4' BASE DITCH
SEE DETAIL 23C

38

AMMO DUMP/LAKE+9 LLC

WOODS

WOODS

WOODS

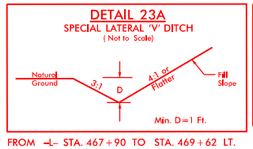
WOODS

8" SOIL

8" SOIL

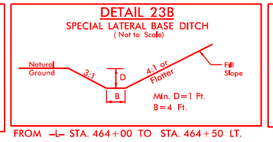
* DO NOT BURY EQUALIZER PIPES

DETAIL 23A
SPECIAL LATERAL "V" DITCH
(Not to Scale)



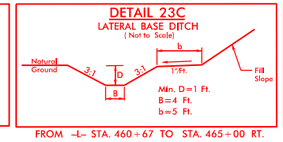
FROM -L- STA. 467+90 TO STA. 469+62 LT.

DETAIL 23B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



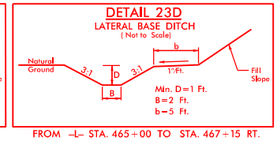
FROM -L- STA. 464+00 TO STA. 464+50 LT.

DETAIL 23C
LATERAL BASE DITCH
(Not to Scale)



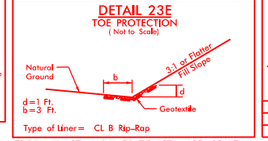
FROM -L- STA. 460+67 TO STA. 465+00 RT.

DETAIL 23D
LATERAL BASE DITCH
(Not to Scale)



FROM -L- STA. 465+00 TO STA. 467+15 RT.

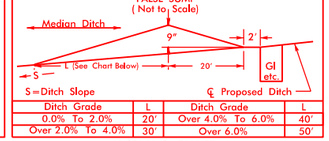
DETAIL 23E
TOE PROTECTION
(Not to Scale)



Type of Liner = CL B Rip-Rap

FROM -L- STA. 464+50 TO STA. 465+10 LT.
FROM -L- STA. 467+40 TO STA. 467+90 LT.

DETAIL 23F
FALSE SUMP
(Not to Scale)



S = Ditch Slope
℄ Proposed Ditch

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

L1 STA. 465+76 MED.
L1 STA. 469+38 MED.

SEE SHEET 50 FOR -L1- PROFILE

7/31/2024
USER NAME\S
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_23.dgn

5/14/99

11/20/2024

WETLAND EXCAVATION

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

50' 0' 50' 100' 150'

GRAPHIC SCALE

NAD 83/NSRS 2007

Dewberry
2650 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 83 OF 120

MATCHLINE –L1– STA 464+00.00 SEE SHEET 22

MATCHLINE –L1– STA 477+00.00 SEE SHEET 24

MH ISLAND LLC ET AL

AMMO DUMP/LAKE+9 LLC

SITE 33

SITE 34

SITE 35

Q10 = 4.9cfs
V10 = 1.4fps

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 23B

EXCAVATION IN WETLAND

TOE PROTECTION SEE DETAIL 23E

WOVEN WIRE FENCE

Q10 = 3.0cfs
V10 = 1.5fps

SPECIAL LATERAL 'V' DITCH SEE DETAIL 23A

RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE

SPEC. PES; SEE DETAIL SHT 2C-1

FS SEE DETAIL 23F

2GI

18" RCP-LT

18" RCP-RT

MECHANIZED CLEARING

LATERAL 2' BASE DITCH SEE DETAIL 23D

RIP RAP CL I OUTLET PROTECTION 15 TONS 30 SY GEOTEXTILE

RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE

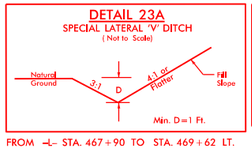
LATERAL 4' BASE DITCH SEE DETAIL 23C

8' SOIL

WOODS

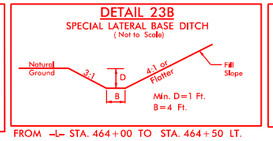
* DO NOT BURY EQUALIZER PIPES

DETAIL 23A
SPECIAL LATERAL "V" DITCH
(Not to Scale)



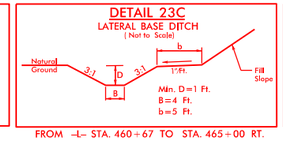
FROM –L– STA. 467+90 TO STA. 469+62 LT.

DETAIL 23B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



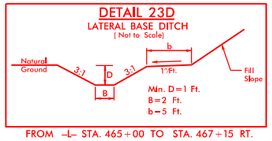
FROM –L– STA. 464+00 TO STA. 464+50 LT.

DETAIL 23C
LATERAL BASE DITCH
(Not to Scale)



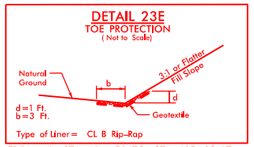
FROM –L– STA. 460+67 TO STA. 465+00 RT.

DETAIL 23D
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 465+00 TO STA. 467+15 RT.

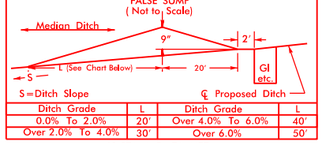
DETAIL 23E
TOE PROTECTION
(Not to Scale)



Type of Liner= CL B Rip-Rap

FROM –L– STA. 464+50 TO STA. 465+10 LT.
FROM –L– STA. 467+40 TO STA. 467+90 LT.

DETAIL 23F
FALSE SUMP
(Not to Scale)



S=Ditch Slope ℄ Proposed Ditch

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

L1 STA. 465+76 MED.
L1 STA. 469+38 MED.

SEE SHEET 50 FOR –L1– PROFILE

7/31/2024
SUSAN JAMES
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_23_con.dgn

Dewberry
2650 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	24
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 84 OF 120

5/14/99

NAD 83/NSRS 2007

SITE 35

MATCHLINE -L1- STA 477+00.00 SEE SHEET 23

MATCHLINE -L1- STA 490+00.00 SEE SHEET 25

WOVEN WIRE FENCE

SPEC. PES; SEE DETAIL SHT 2C-1

RIP RAP CL B OUTLET PROTECTION 7 TONS 22 SY GEOTEXTILE
Q10 = 2.7cfs
V10 = 0.6fps

EXCAVATION IN WETLAND

GRADE TO DRAIN

TO BARE PROPERTIES NEWSETT LLC DB 0017 PG 0125 DB 0018 PG 0145 DB 0018 PG 0148

MH ISLAND LLC ET AL

AMMO DUMP/LAKE 9 LLC

CAMERON COMPANY LIMITED PARTNER

WOODS

8" SOIL

12" SOIL

BM15

* DO NOT BURY EQUALIZER PIPES

WETLAND EXCAVATION

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

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

SEE SHEETS 50 & 51 FOR -L1- PROFILE

11/20/2024

7/31/2024
$USERNAMES
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5/14/99

11/20/2024

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RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

MI ENGINEERING
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(919) 851-6606
FIRM PE NUMBER : P-0671

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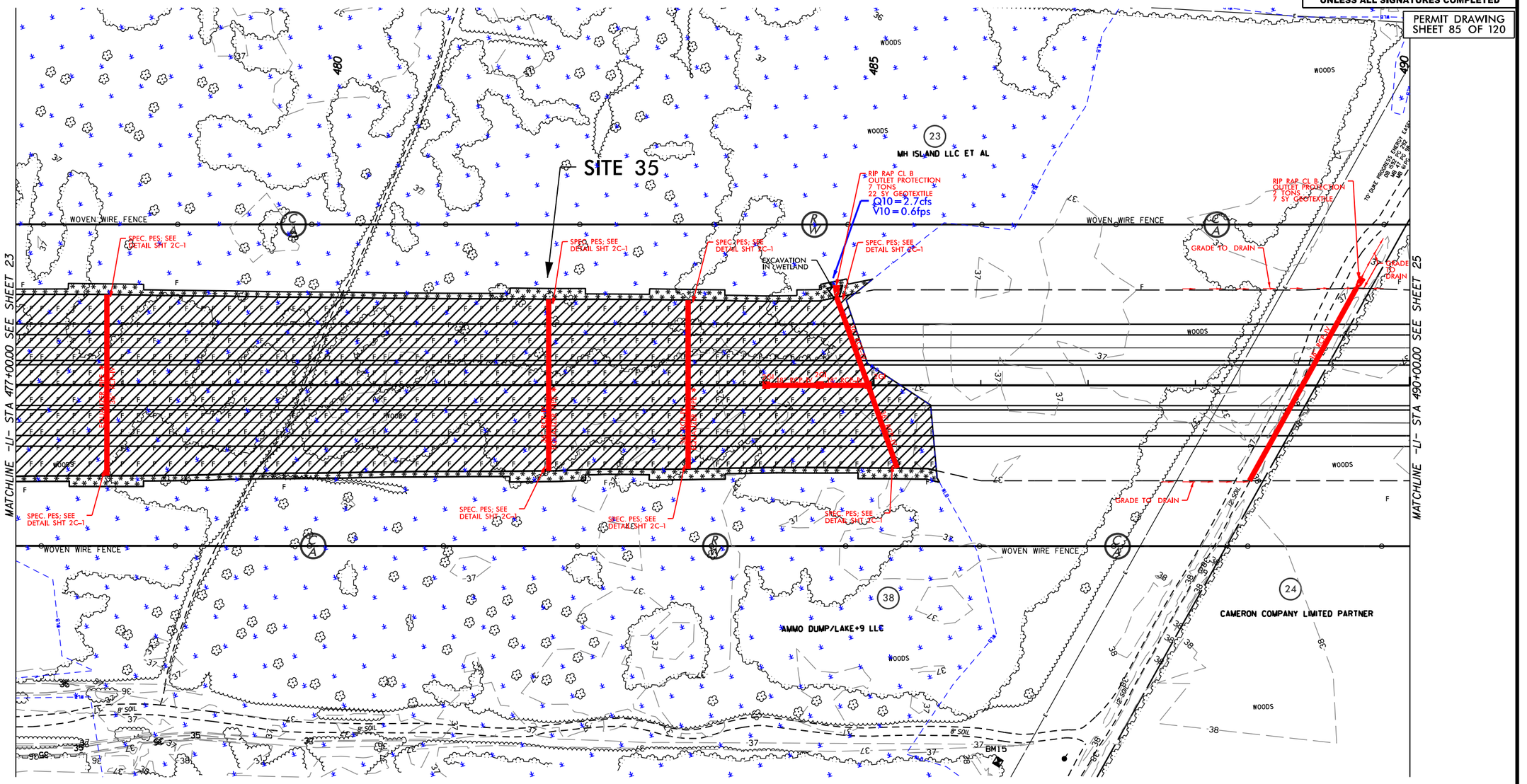
PROJECT REFERENCE NO.	SHEET NO.
R-3300A	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 85 OF 120

NAD 83/NSRS 2007



* DO NOT BURY EQUALIZER PIPES

WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)

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

SEE SHEETS 50 & 51 FOR -L1- PROFILE

7/31/2024
$USERNAMES
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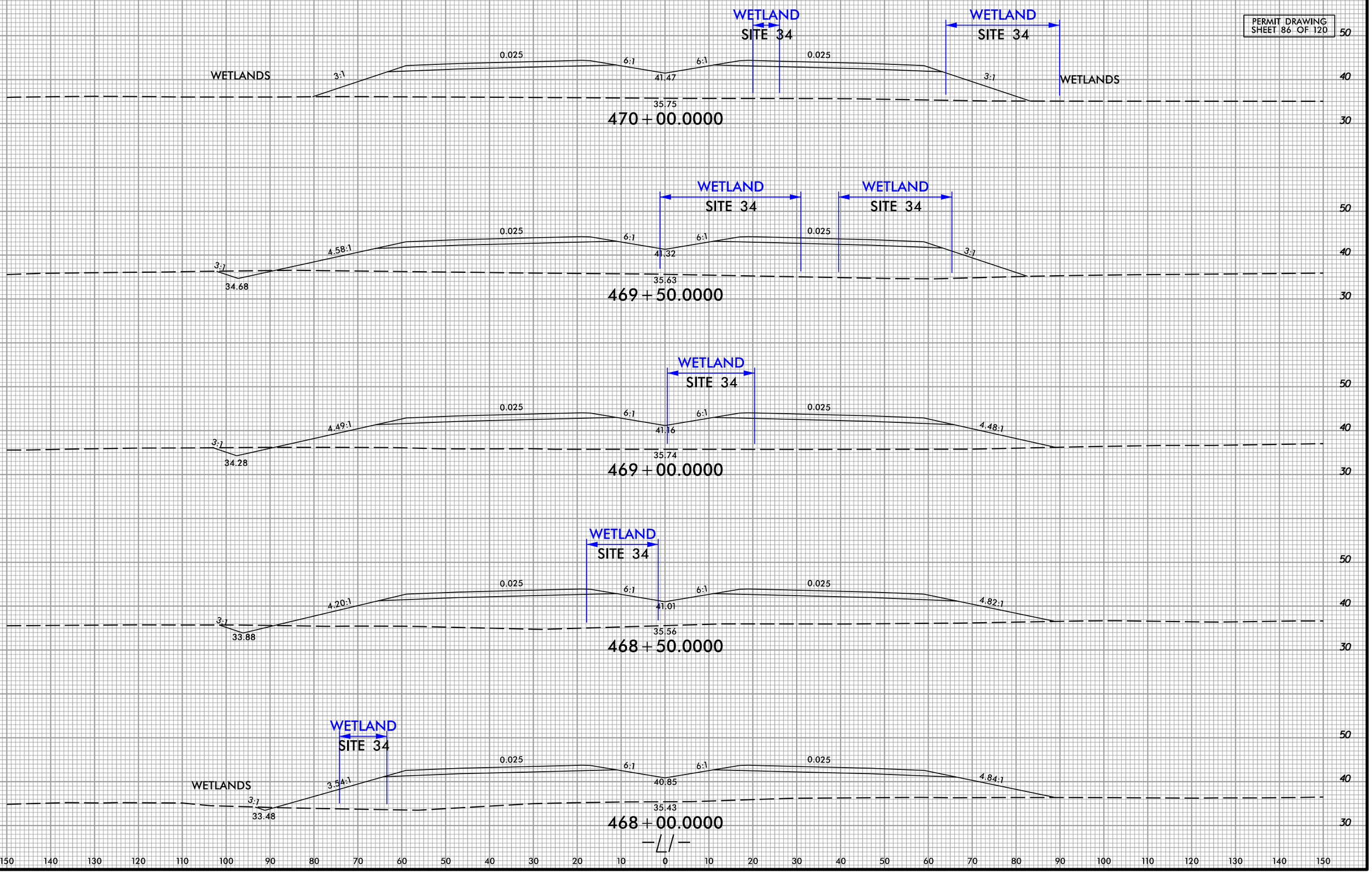
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-143

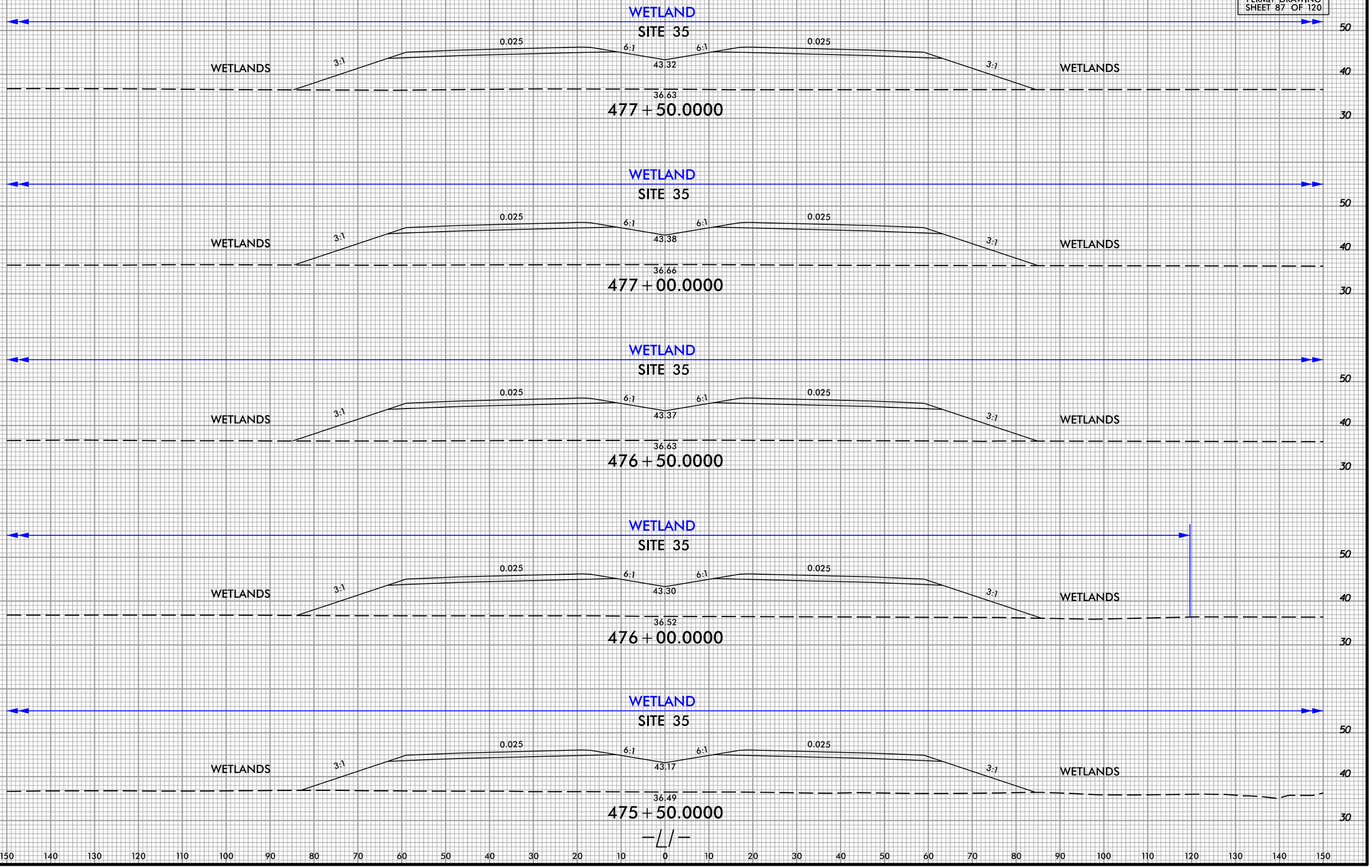
PERMIT DRAWING
SHEET 86 OF 120



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-146

PERMIT DRAWING
SHEET 87 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150



50 40 30

11/20/2024

12152023
MI ENGINEERING
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$$$$USERNAME$$$$

11/20/2024

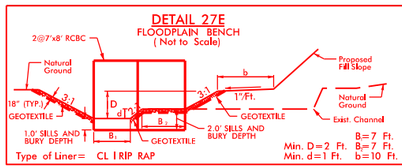
5/14/99

REVISIONS

R/W REV. MAY 2024: ADDED PARCEL NO. 252, WHICH SHOWS ADDITIONAL 1506SF OF PUE OWNED BY NCDOT. –STANTEC

7/31/2024
$USERNAME$
N:\NC_Hydro\MT7006_8-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_27.dgn

DETAIL 27E
FLOODPLAIN BENCH
(Not to Scale)

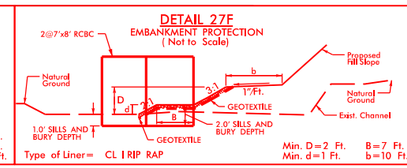


Min. D=2 Ft. B=7 Ft.
Min. d=1 Ft. b=10 Ft.

Type of Liner= CL I RIP RAP

FROM –L1REV– STA. 520+34 TO STA. 522+15 RT., L=203'
DDE=1125 CY, 621 TONS RIP RAP, 1100 SY GEOTEXTILE
FROM –Y35– STA. 20+80 TO STA. 22+71 LT., L=191'
DDE=430 CY, 400 TONS RIP RAP, 700 SY GEOTEXTILE

DETAIL 27F
EMBANKMENT PROTECTION
(Not to Scale)

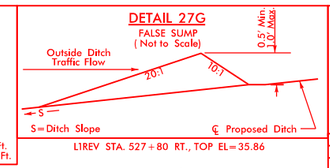


Min. D=2 Ft. B=7 Ft.
Min. d=1 Ft. b=10 Ft.

Type of Liner= CL I RIP RAP

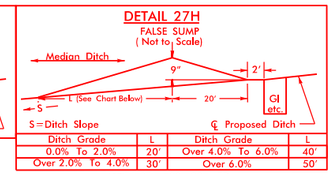
FROM –Y35– STA. 20+25 TO STA. 20+80 LT., L=55'
DDE=20 CY, 52 TONS RIP RAP, 105 SY GEOTEXTILE

DETAIL 27G
FALSE SUMP
(Not to Scale)



L1REV STA. 527+80 RT., TOP EL=35.86

DETAIL 27H
FALSE SUMP
(Not to Scale)



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

L1REV STA. 528+23 MED.

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NC COA No. P-0929

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www.stantec.com
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PERMIT DRAWING
SHEET 88 OF 120

S S	WETLAND EXCAVATION	TS TS	TEMPORARY SURFACE WATER IMPACTS
F F	FILL IN WETLAND	* *	MECHANIZED CLEARING (GRUBBING)
S S	SURFACE WATER IMPACTS		

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –L1– STA 19+00.00 SEE SHEET 37

MATCHLINE –L1– STA 516+00.00 SEE SHEET 26

MATCHLINE –L1– STA 529+00.00 SEE SHEET 28

MATCHLINE –Y35– STA 27+00.00 SEE SHEET 38

NAD 83/NSRS 2007

JTV INVESTMENTS, LLC

PARKS FAMILY FORESTRY, LLC

WILLIAM J. VANTRAVIS, ET UX

CAMERON COMPANY LIMITED PARTNER

WILLIAM VAN TRAVIS, ET UX

JULIA S. JONES

ALICE POWELL, HEIRS

SITE 36

SITE 37

SITE 38

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 90

LATERAL 2' BASE DITCH SEE DETAIL 27D

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 27A

170' CP&L UTILITY EASEMENT MB 47 PG 98 CP&L DRAWING # RW-D-1685 SHEET # 4

REMOVE

EMBANKMENT PROTECTION SEE DETAIL 27F

12" RCP

BANK STABILIZATION CL I RIP RAP SEE DETAIL 27J

TEMPORARY SURFACE WATER IMPACT

SURFACE WATER IMPACT (BANK STABILIZATION)

FLOODPLAIN BENCH SEE DETAIL 27E

STD. 4' BASE DITCH SEE DETAIL 27K

RIP RAP CL B OUTLET PROTECTION 5 TONS 14 SY GEOTEXTILE

SLOPE PROTECTION SEE DETAIL 27L

EXCAVATION IN WETLAND

MECHANIZED CLEARING IN WETLAND

TDE

FILL IN WETLAND

FLOODPLAIN BENCH SEE DETAIL 27E

SURFACE WATER IMPACT (BANK STABILIZATION) WOODS

TEMPORARY SURFACE WATER IMPACT

BANK STABILIZATION CL I RIP RAP SEE DETAIL 27J

MOSTLY CLEARCUT

LATERAL 2' BASE DITCH SEE DETAIL 27D

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 27A

RIP RAP CL B OUTLET PROTECTION 12 TONS 14 SY GEOTEXTILE

FS SEE DETAIL 27H

FS SEE DETAIL 27G

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 27B

POND

SEELEY'S BRANCH

PROP. 2@7'X8' RCBC NOTES:

CHANNEL IMPROVEMENTS, BANK STABILIZATION SEE DETAIL WITH CLASS I RIP RAP

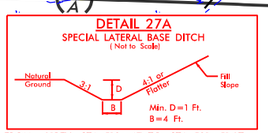
REALIGN US CHANNEL TO FLOW THRU EAST BARREL

BACKFILL NORMAL FLOW BARREL WITH 1' NATIVE MATERIAL SEE SKEWED MULTI-BARREL CULVERT LOW FLOW CHANNEL SILLS AND FLOOD PLAIN BENCH DETAIL 'PP'

SEE SHEET 2B–1 FOR HORIZONTAL CURVE DATA

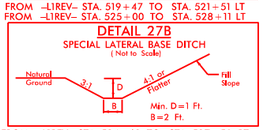
50' 0' 50' 100' 150'
GRAPHIC SCALE

DETAIL 27A
SPECIAL LATERAL BASE DITCH
(Not to Scale)



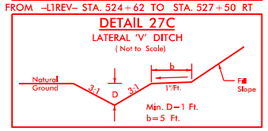
FROM –L1REV– STA. 519+47 TO STA. 521+51 LT
FROM –L1REV– STA. 525+00 TO STA. 528+11 LT

DETAIL 27B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



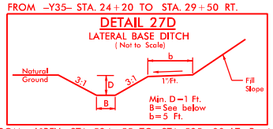
FROM –L1REV– STA. 524+62 TO STA. 527+50 RT

DETAIL 27C
LATERAL 'V' DITCH
(Not to Scale)



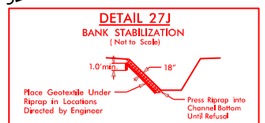
FROM –Y35– STA. 24+20 TO STA. 29+50 RT.

DETAIL 27D
LATERAL BASE DITCH
(Not to Scale)



FROM –L1REV– STA. 524+55 TO STA. 525+00 LT., B=4 Ft.
FROM –Y35– STA. 14+25 TO STA. 19+50 RT., B=2 Ft.
FROM –Y35– STA. 19+75 TO STA. 22+00 RT., B=2 Ft.
FROM –Y35– STA. 24+69 TO STA. 28+00 LT., B=2 Ft.

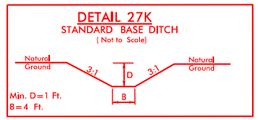
DETAIL 27J
BANK STABILIZATION
(Not to Scale)



Type of Liner=CL I Rip-Rap, Keyed-In

FROM –L– STA. 520+08 TO STA. 520+36 RT., L=43', 21 TONS
FROM –Y35– STA. 20+28 TO STA. 20+80 LT., L=58', 29 TONS

DETAIL 27K
STANDARD BASE DITCH
(Not to Scale)



FROM L1REV STA. 524+29 TO 524+55 LT.
L=27', S=0.76%, DDE=18CY

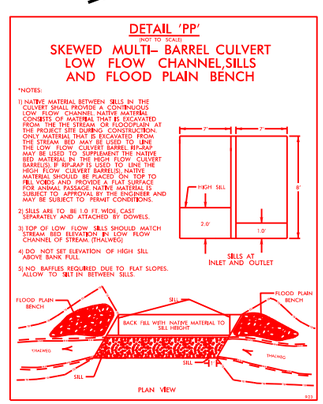
DETAIL 27L
SLOPE PROTECTION
(Not to Scale)

Type of Liner= CL B Rip-Rap, Matting Slope

FROM L1REV STA. 521+83 TO STA. 522+36 RT.
FROM L1REV STA. 523+87 TO STA. 524+76 LT.

DETAIL 'PP'
NOT TO SCALE
SKEWED MULTI– BARREL CULVERT
LOW FLOW CHANNEL,SILLS
AND FLOOD PLAIN BENCH

*NOTES:
1) NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT LOCATIONS WITHIN THE PROJECT SITE DURING CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL RIP-RAP MAY BE USED TO SUPPLEMENT THE NATIVE BED MATERIAL IF NECESSARY. CULVERT BARRELS(S) RIP-RAP IS USED TO LINE THE HIGH FLOW CULVERT BARRELS(S), NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL IS NOT REQUIRED IN ROCK CASCADES AND MAY BE SUBJECT TO PERMIT CONDITIONS.
2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.
3) TOP OF LOW FLOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (TYPALWAYS)
4) DO NOT SET ELEVATION OF HIGH SILL ABOVE BANK FULL.
5) NO BAFFLES REQUIRED DUE TO FLAT SLOPES. ALLOW TO SILT IN BETWEEN SILLS.



SEE SHEET 52 FOR –L1REV– PROFILE
SEE SHEET 64 FOR –Y35– PROFILE

5/14/99

11/20/2024

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	27

RW SHEET NO.

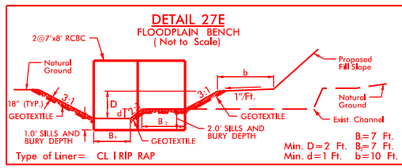
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 89 OF 120

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

E / E — WETLAND EXCAVATION
F / F — FILL IN WETLAND
S / S — SURFACE WATER IMPACTS
TS / TS — TEMPORARY SURFACE WATER IMPACTS
* * — MECHANIZED CLEARING (GRUBBING)

DETAIL 27E
FLOODPLAIN BENCH
(Not to Scale)

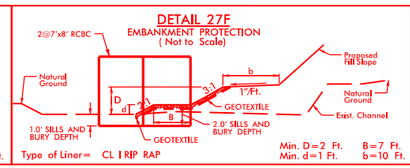


Min. D=2 Ft. B=7 Ft.
Min. d=1 Ft. b=10 Ft.

Type of Liner= CL I RIP RAP

FROM –L1REV– STA. 520+34 TO STA. 522+15 RT.,L=203'
DDE=1125 CY, 621 TONS RIP RAP, 1100 SY GEOTEXTILE
FROM –Y35– STA. 20+80 TO STA. 22+71 LT., L=191'
DDE=430 CY, 400 TONS RIP RAP, 700 SY GEOTEXTILE

DETAIL 27F
EMBANKMENT PROTECTION
(Not to Scale)

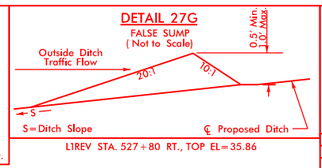


Min. D=2 Ft. B=7 Ft.
Min. d=1 Ft. b=10 Ft.

Type of Liner= CL I RIP RAP

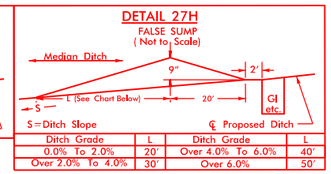
FROM –Y35– STA. 20+25 TO STA. 20+80 LT., L=55'
DDE=20 CY, 52 TONS RIP RAP, 105 SY GEOTEXTILE

DETAIL 27G
FALSE SUMP
(Not to Scale)



LIREV STA. 527+80 RT., TOP EL=35.86

DETAIL 27H
FALSE SUMP
(Not to Scale)



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

LIREV STA. 528+23 MED.

MATCHLINE –L1– STA 516+00.00 SEE SHEET 26

MATCHLINE –L1– STA 529+00.00 SEE SHEET 28

MATCHLINE –Y35– STA 19+00.00 SEE SHEET 37

MATCHLINE –Y35– STA 27+00.00 SEE SHEET 38

NAD 83/NSRS 2007

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 90

JTV INVESTMENTS, LLC

WILLIAM J. VANTRAVIS, ET UX

CAMERON COMPANY LIMITED PARTNER

WILLIAM VAN TRAVIS, ET UX

JULIA S. JONES

ALICE POWELL, HEIRS

PARKS FAMILY FORESTRY, LLC

SITE 36

SITE 37

SITE 38

170' DUKE UTILITY EASEMENT MB 47 PG 98 CP&L DRAWING # RW-D-1685 SHEET # 4

LATERAL 2' BASE DITCH SEE DETAIL 27D

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 27A

REMOVE

EXISTING R/W

CHANNEL IMPROVEMENTS, BANK STABILIZATION SEE DETAIL WITH CLASS I RIP RAP

REALIGN US CHANNEL TO FLOW THRU EAST BARREL

BACKFILL NORMAL FLOW BARREL WITH 1' NATIVE MATERIAL SEE SKEWED MULTI-BARREL CULVERT LOW FLOW CHANNEL SILLS AND FLOOD PLAIN BENCH DETAIL 'PP'

PROP. 2@7'X8' RCBC NOTES:

SLOPE PROTECTION SEE DETAIL 27J

EMBANKMENT PROTECTION SEE DETAIL 27F

BANK STABILIZATION CL I RIP RAP SEE DETAIL 27J

TEMPORARY SURFACE WATER IMPACT

SURFACE WATER IMPACT (BANK STABILIZATION)

FLOODPLAIN BENCH SEE DETAIL 27E

RIP RAP CL B OUTLET PROTECTION 5 TONS 14 SY GEOTEXTILE

EXCAVATION IN WETLAND

MECHANIZED CLEARING IN WETLAND

FILL IN WETLAND

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 27A

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 27B

LATERAL 4' BASE DITCH SEE DETAIL 27D

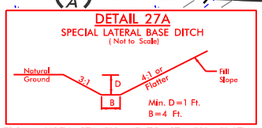
FS SEE DETAIL 27H

FS SEE DETAIL 27G

POND

MOSTLY CLEARCUT

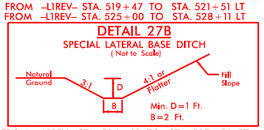
DETAIL 27A
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D=1 Ft.
B=4 Ft.

FROM –L1REV– STA. 519+47 TO STA. 521+51 LT
FROM –L1REV– STA. 525+00 TO STA. 528+11 LT

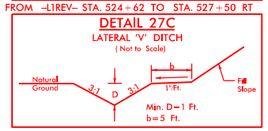
DETAIL 27B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



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

FROM –L1REV– STA. 524+62 TO STA. 527+50 RT

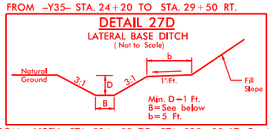
DETAIL 27C
LATERAL 'V' DITCH
(Not to Scale)



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

FROM –Y35– STA. 24+20 TO STA. 29+50 RT.

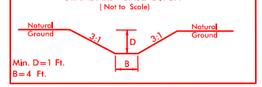
DETAIL 27D
LATERAL BASE DITCH
(Not to Scale)



Min. D=1 Ft.
B=See below
b=5 Ft.

FROM –L1REV– STA. 524+55 TO STA. 525+00 LT., B=4 Ft.
FROM –Y35– STA. 14+25 TO STA. 19+50 RT., B=2 Ft.
FROM –Y35– STA. 19+75 TO STA. 22+00 RT., B=2 Ft.
FROM –Y35– STA. 24+69 TO STA. 28+00 LT., B=2 Ft.

DETAIL 27K
STANDARD BASE DITCH
(Not to Scale)



Min. D=1 Ft.
B=4 Ft.

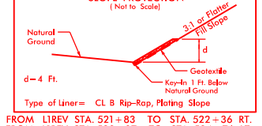
FROM L1REV STA. 524+29 TO 524+55 LT.
L=27', S=0.76%, DDE=18CY

DETAIL 27J
BANK STABILIZATION
(Not to Scale)

Type of Liner=CL I Rip-Rap, Keyed-In

FROM –L– STA. 520+08 TO STA. 520+36 RT.,
L=43', 21 TONS
FROM –Y35– STA. 20+28 TO STA. 20+80 LT.,
L=58', 29 TONS

DETAIL 27L
SLOPE PROTECTION
(Not to Scale)



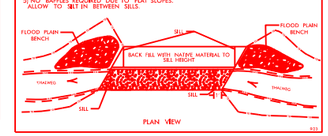
d=4 Ft.

Type of Liner= CL B Rip-Rap, Plating Slope

FROM L1REV STA. 521+83 TO STA. 522+36 RT.
FROM L1REV STA. 523+87 TO STA. 524+76 LT.

DETAIL 'PP'
SKEWED MULTI– BARREL CULVERT
LOW FLOW CHANNEL,SILLS
AND FLOOD PLAIN BENCH

*NOTES:
1) NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL PROVIDE A CONTINUOUS LOW FLOW CHANNEL NATIVE MATERIAL SHALL CONSIST OF MATERIAL TYPICALLY FOUND IN THE MATERIAL THAT IS EXCAVATED AT THE PROJECT SITE DURING CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. RIP-RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL IN THE LOW FLOW CULVERT BARREL(S). IF RIP-RAP IS USED, TOP OF THE HIGH FLOW CULVERT BARRELS; NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR THE LOW FLOW CHANNEL. ALL RIP-RAP IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.
2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.
3) TOP OF LOW FLOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)
4) DO NOT SET ELEVATION OF HIGH SILL ABOVE BANK FULL.
5) NO BAFFLES REQUIRED DUE TO FLAT SLOPES. ALLOW TO SET IN BETWEEN SILLS.



SEE SHEET 52 FOR –L1REV– PROFILE
SEE SHEET 64 FOR –Y35– PROFILE

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

SEE SHEET 2B–1 FOR HORIZONTAL CURVE DATA

7/31/2024
S:\USERNAMES
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_27_con.dgn

11/20/2024

5/14/99

DESTROYED EIR

PUE

SOIL

520

LATERAL 2' BASE DITCH
SEE DETAIL 27D

EXISTING R/W

20' BSL

HARRISON CREEK RD

SR 1513

EXISTING R/W

REMOVE

12" CMP

20

SITE 36

24

SPECIAL LATERAL 4' BASE DITCH
SEE DETAIL 27A

E PUE

PUE

R/W

WOODS

BEGIN CULVERT
-L1REV-
Sta. 523+37.73

HW

36" RCP-IV

2GI

SOIL

15" RCP

WOODS

18" RCP-IV

2GI

CAMERON COMPANY
LIMITED PARTNER

24

REMOVE

FILL IN WETLAND

PROPERTY LINE

FLOODPLAIN BENCH
SEE DETAIL 27E

SURFACE WATER IMPACT
(BANK STABILIZATION)
WOODS

SITE 37

TDE

TEMP. SURFACE
WATER IMPACT

MECH. CLEARING
IN WETLAND

EXCAVATION IN WETLAND

TDE

30

EXCAVATION IN WETLAND

EXCAVATION IN WETLAND

END PROP. SBG
-L1REV-
STA 522+78 RT

2@7'X8' RCBC

END CULVERT
-L1REV-
Sta. 523+57.68

BEGIN PROP. SBG
-Y35- STA 24+50 LT

SLOPE PROTECTION
SEE DETAIL 27L

MOSTLY CLEARCUT

06

25

PARKS FAMILY FORESTRY, LLC

29

C

A

SPECIAL L
SEE DETAI

FS
SEE D

SOIL

EXCAVATION IN WETLAND

WLB

BANK STAB
SCL / RIP RA
SEE DETAIL 27J

TEMPORARY SURFACE
WATER IMPACT

525

SURFACE WATER IMPACT
(BANK STABILIZATION)

FLOODPLAIN BENCH
SEE DETAIL 27E

SITE 37
ENLARGEMENT

NAD 83/NSRS 2007

TDE

EXCAVATION IN WETLAND

MECHANIZED CLEARING IN WETLAND

PARKS FAMILY FORESTRY, LLC

29

LATERAL 4' BASE DITCH
SEE DETAIL 27D

BEGIN PROP. SBG
-L1REV- STA 523+24 LT

18" RCP-IV

24" RCP-IV

2GI

2GI 18" 2GI
RCP-IV

24" RCP-IV

PARKS FAMILY FORESTRY, LLC

29

FS
SEE D

SPECIAL L
SEE DETAI

WETLAND EXCAVATION

FILL IN WETLAND

SURFACE WATER IMPACTS

TEMPORARY SURFACE
WATER IMPACTS

MECHANIZED CLEARING
(GRUBBING)

30' 0' 30' 60' 90'
GRAPHIC SCALE

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PHONE: 919.881.9929
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License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	E-27

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 90 OF 120

7/31/2024
$USERNAME$
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental Drawings\R3300A_hyd_psh_E27.dgn

5/14/99

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FIRM PE NUMBER : P-0671

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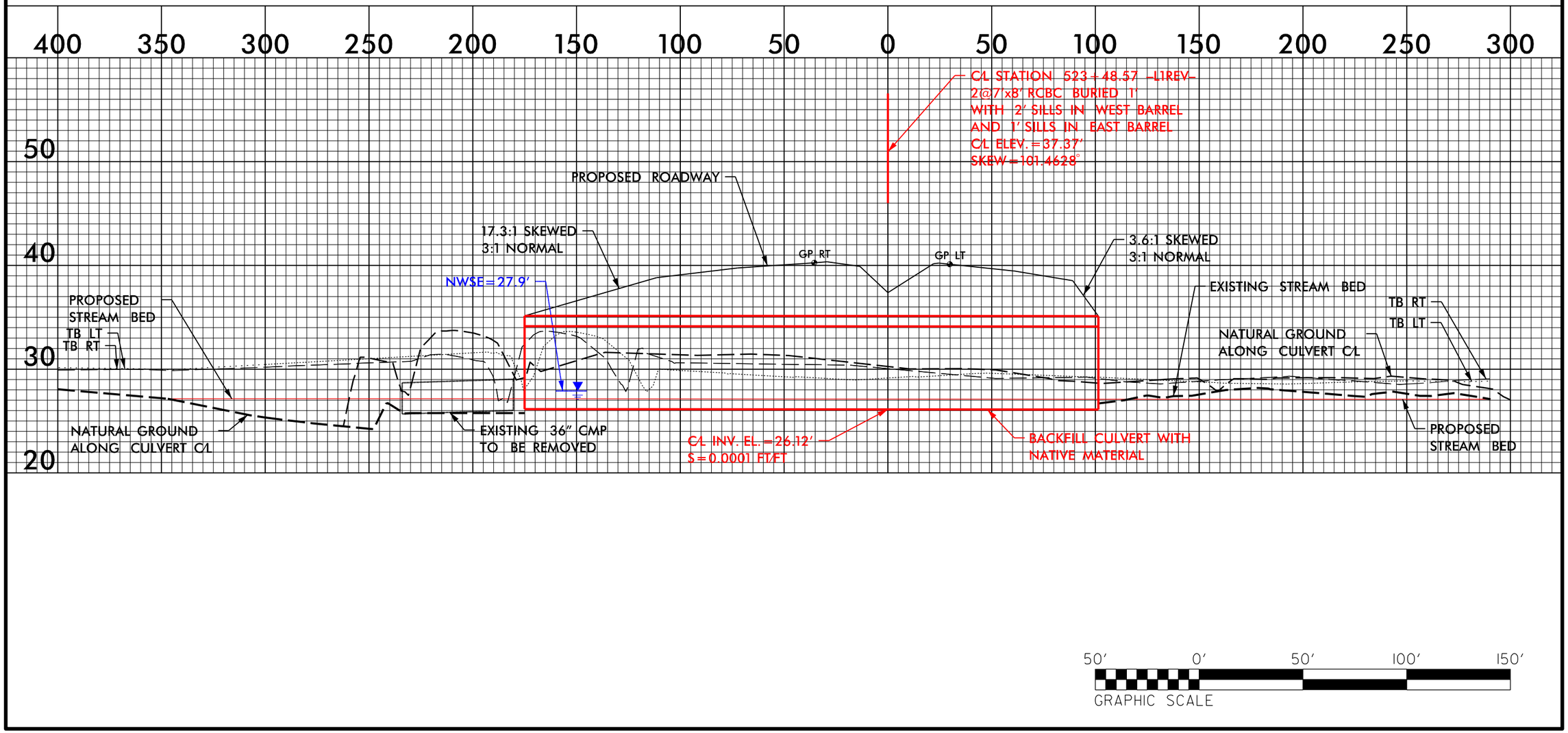
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 91 OF 120

SITE 37

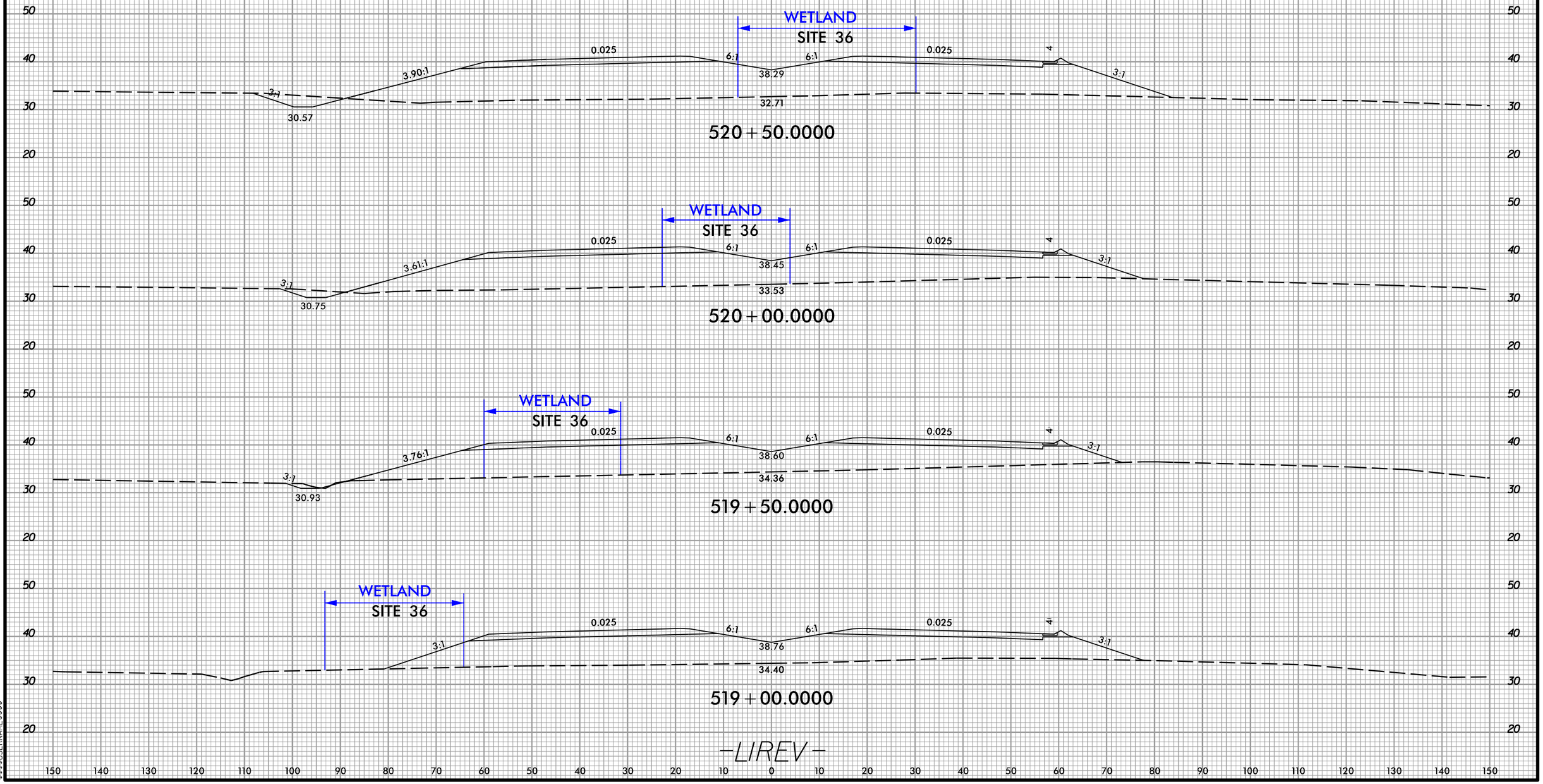


11/20/2024

7/31/2024
$USERNAME$
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R-3300A_Hyd_prm_wet_Cul2.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-164

PERMIT DRAWING
SHEET 92 OF 120



6/23/16

11/20/2024

12/15/2023
MI ENGINEERING
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15-DEC-2023 14:26
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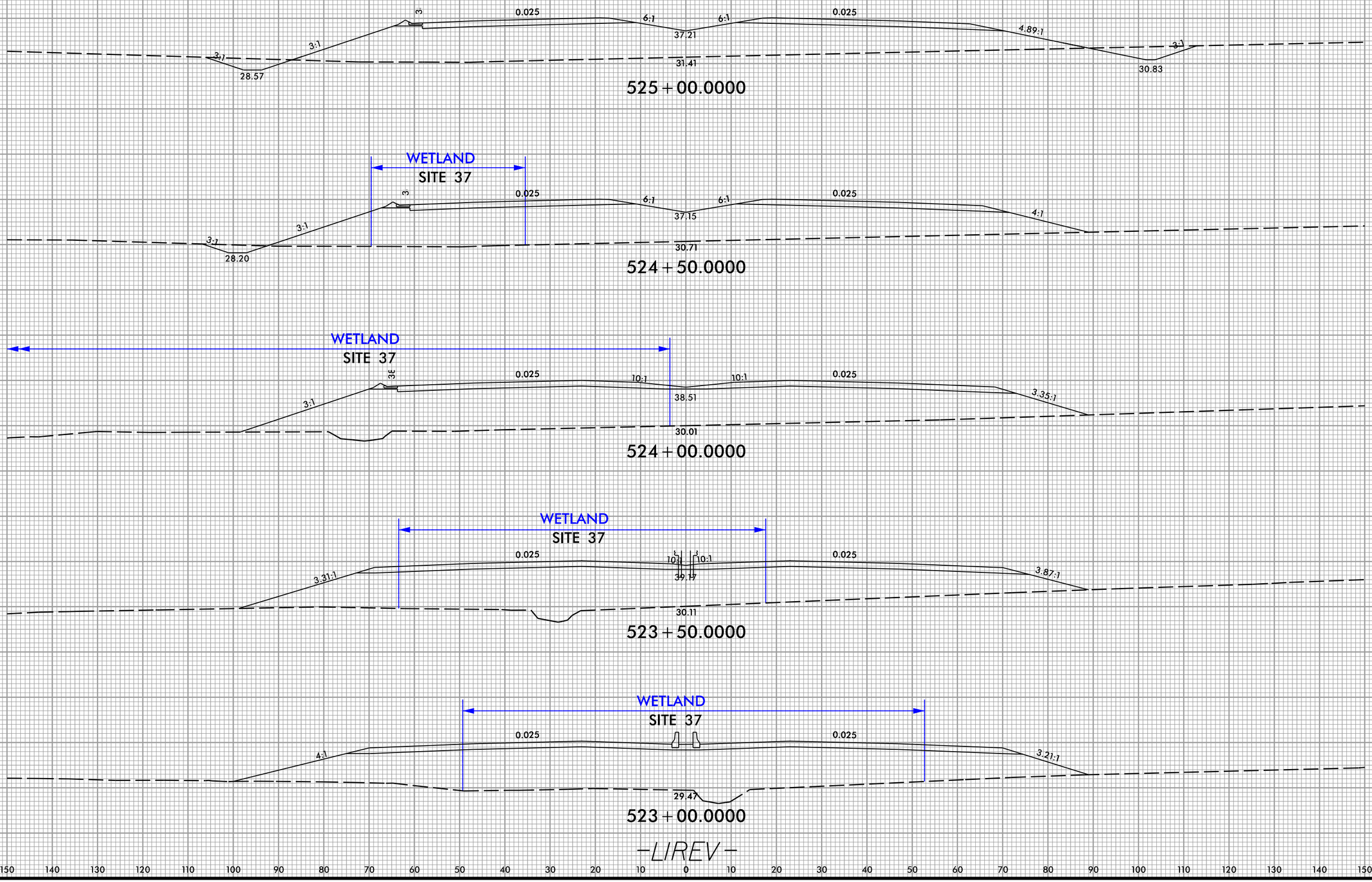
$$$$USERNAME$$$$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-166

PERMIT DRAWING
SHEET 93 OF 120



11/20/2024

12/5/2023
MI ENGINEERING
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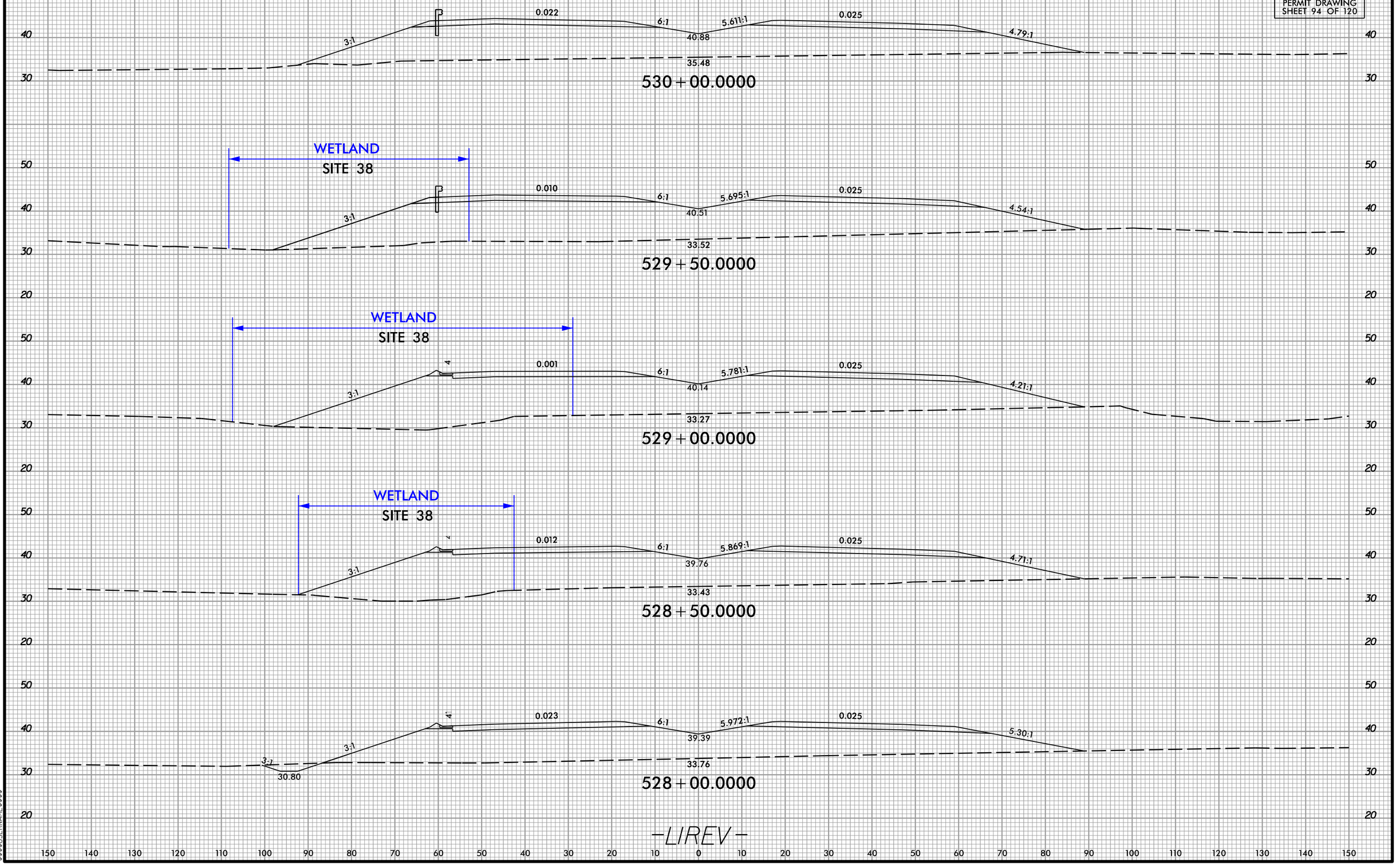
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-168

PERMIT DRAWING
SHEET 94 OF 120



11/20/2024

6/23/16

12/5/2023
MI ENGINEERING
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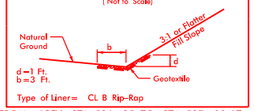
15-DEC-2023 14:27
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\XSC\R3300A_Hyd_perm_xpl_LIREV.dgn
$$$$USERNAME$$$$

5/14/99

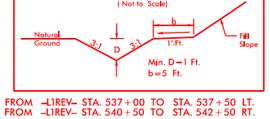
DETAIL 28A
TOE PROTECTION
(Not to Scale)



Type of Liner= CL B Rip-Rap

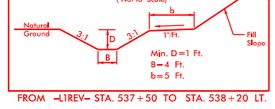
FROM –LIREV– STA. 536+25 TO STA. 537+00 LT.

DETAIL 28B
LATERAL "V" DITCH
(Not to Scale)



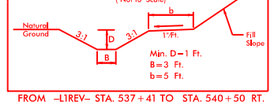
FROM –LIREV– STA. 537+00 TO STA. 537+50 LT.
FROM –LIREV– STA. 540+50 TO STA. 542+50 RT.

DETAIL 28C
LATERAL BASE DITCH
(Not to Scale)



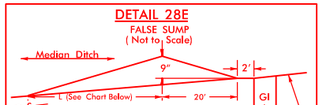
FROM –LIREV– STA. 537+50 TO STA. 538+20 LT.

DETAIL 28D
LATERAL BASE DITCH
(Not to Scale)



FROM –LIREV– STA. 537+41 TO STA. 540+50 RT.

DETAIL 28E
FALSE SUMP
(Not to Scale)



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

LIREV STA. 532+90 MED.
LIREV STA. 540+26 MED.

Dewberry
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PHONE: 919.881.9929
NC COA No. P-0929

MI ENGINEERING
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FIRM PE NUMBER : P-0671

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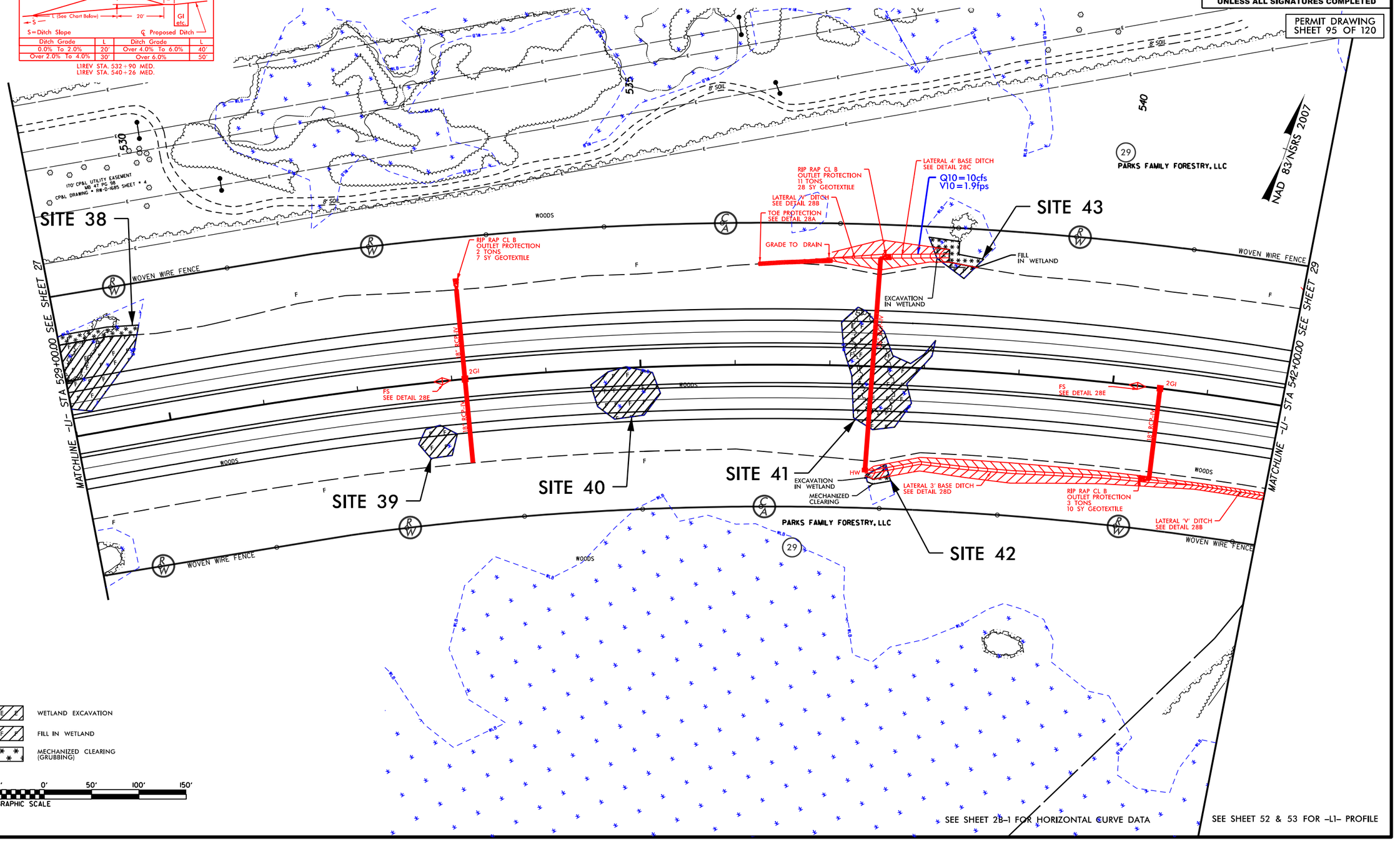
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 95 OF 120



SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA

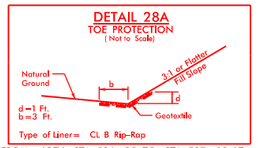
SEE SHEET 52 & 53 FOR –L1– PROFILE

11/20/2024

7/31/2024
SS:\$\$USERNAME\$\$
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_28.dgn

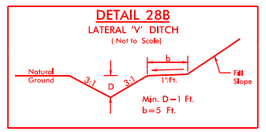
5/14/99

11/20/2024

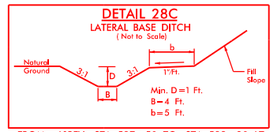


Type of Liner= CL B Rip-Rap

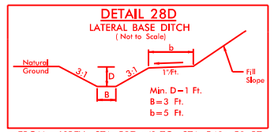
FROM –LIREV– STA. 536+25 TO STA. 537+00 LT.



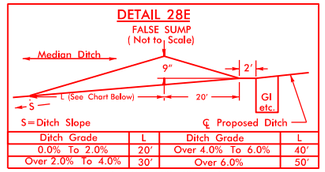
FROM –LIREV– STA. 537+00 TO STA. 537+50 LT.
FROM –LIREV– STA. 540+50 TO STA. 542+50 RT.



FROM –LIREV– STA. 537+50 TO STA. 538+20 LT.



FROM –LIREV– STA. 537+41 TO STA. 540+50 RT.



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

LIREV STA. 532+90 MED.
LIREV STA. 540+26 MED.

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NC COA No. P-0929

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FIRM PE NUMBER : P-0671

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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 96 OF 120

SITE 38
SITE 39
SITE 40
SITE 41
SITE 42
SITE 43

–L1– STA 529+00.00 SEE SHEET 27
–L1– STA 542+00.00 SEE SHEET 29
MATCHLINE –L1– STA 529+00.00 SEE SHEET 27
MATCHLINE –L1– STA 542+00.00 SEE SHEET 29

NAD 83/NSRS 2007

ITO' CP&L UTILITY EASEMENT
MB 41 PG 98
CP&L DRAWING # RW-D-1685 SHEET 4

RIP RAP CL B
OUTLET PROTECTION
2 TONS
7 SY GEOTEXTILE

RIP RAP CL B
OUTLET PROTECTION
1 TONS
2 SY GEOTEXTILE

LATERAL 'V' DITCH
SEE DETAIL 28B

TOE PROTECTION
SEE DETAIL 28A

GRADE TO DRAIN

LATERAL 4' BASE DITCH
SEE DETAIL 28C

Q10 = 10cfs
V10 = 1.9fps

FILL IN WETLAND

EXCAVATION IN WETLAND

FS
SEE DETAIL 28E

2GI

18" RCP CL III

EXCAVATION IN WETLAND

MECHANIZED CLEARING

HW

LATERAL 3' BASE DITCH
SEE DETAIL 28D

RIP RAP CL B
OUTLET PROTECTION
3 TONS
10 SY GEOTEXTILE

LATERAL 'V' DITCH
SEE DETAIL 28B

PARKS FAMILY FORESTRY, LLC

WOVEN WIRE FENCE

WOODS

29

WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)

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

SEE SHEET 28-1 FOR HORIZONTAL CURVE DATA

SEE SHEET 52 & 53 FOR –L1– PROFILE

7/31/2024
SSELMAN
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_28_con.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-170

PERMIT DRAWING
SHEET 97 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

60 50 40 30

3:1 0.060 6:1 4.951:1 0.060 4.77:1

43.15 36.79

534 + 50.0000

60 50 40 30

3:1 0.060 6:1 4.951:1 0.060 5.31:1

42.95 37.22

534 + 00.0000

50 40 30 20

3:1 0.060 6:1 4.951:1 0.060 5.46:1

42.75 37.66

533 + 50.0000

WETLAND SITE 39

50 40 30

3:1 0.060 6:1 4.951:1 0.060 5.58:1

42.55 37.31

533 + 00.0000

-LIREV-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

11/20/2024

12/5/2023
MI ENGINEERING
N:\NC Hydro\MI7006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\XSC\R3300A_Hyd_perm_xpl_LIREV.dgn
15-DEC-2023 14:27
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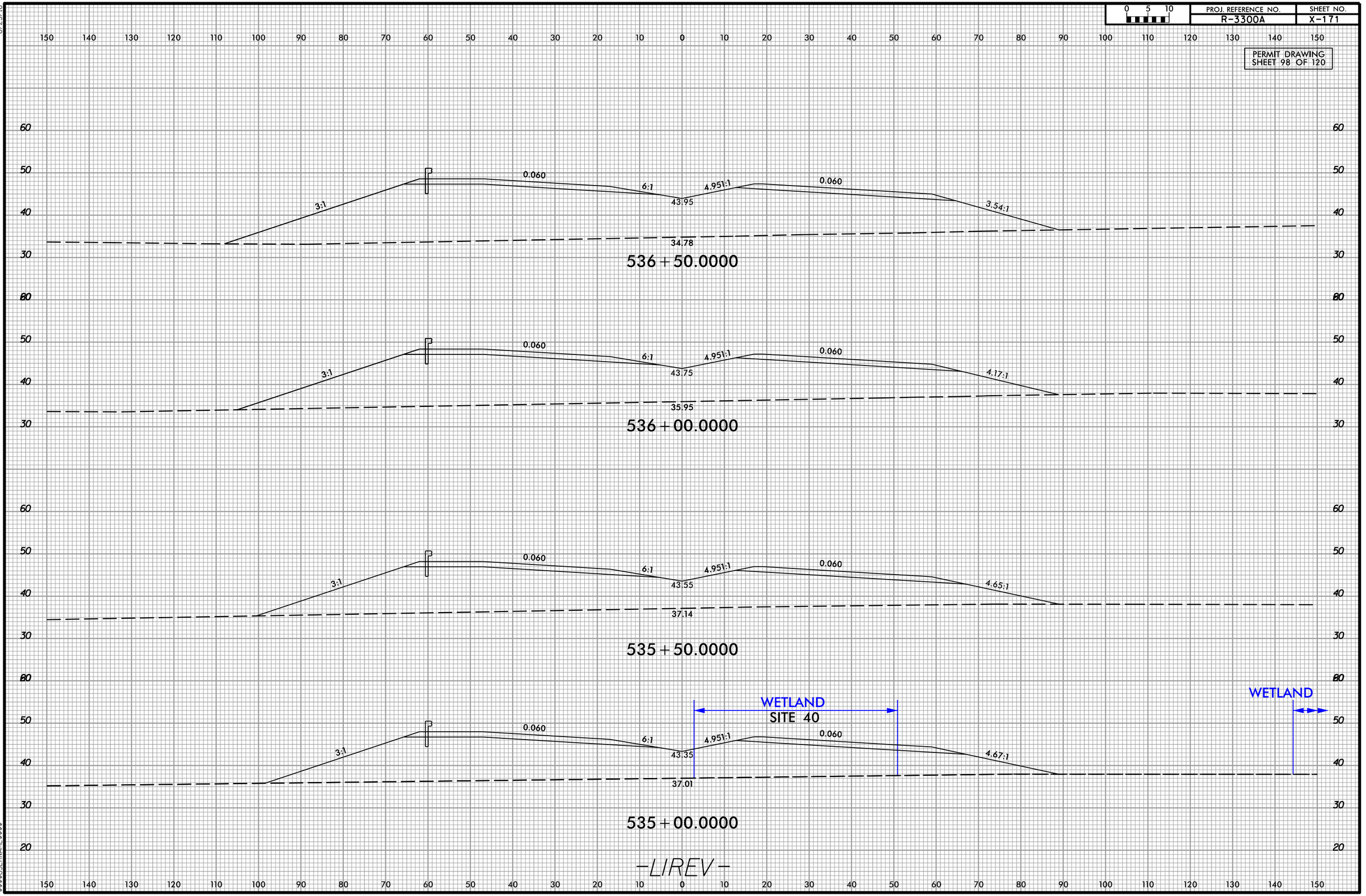
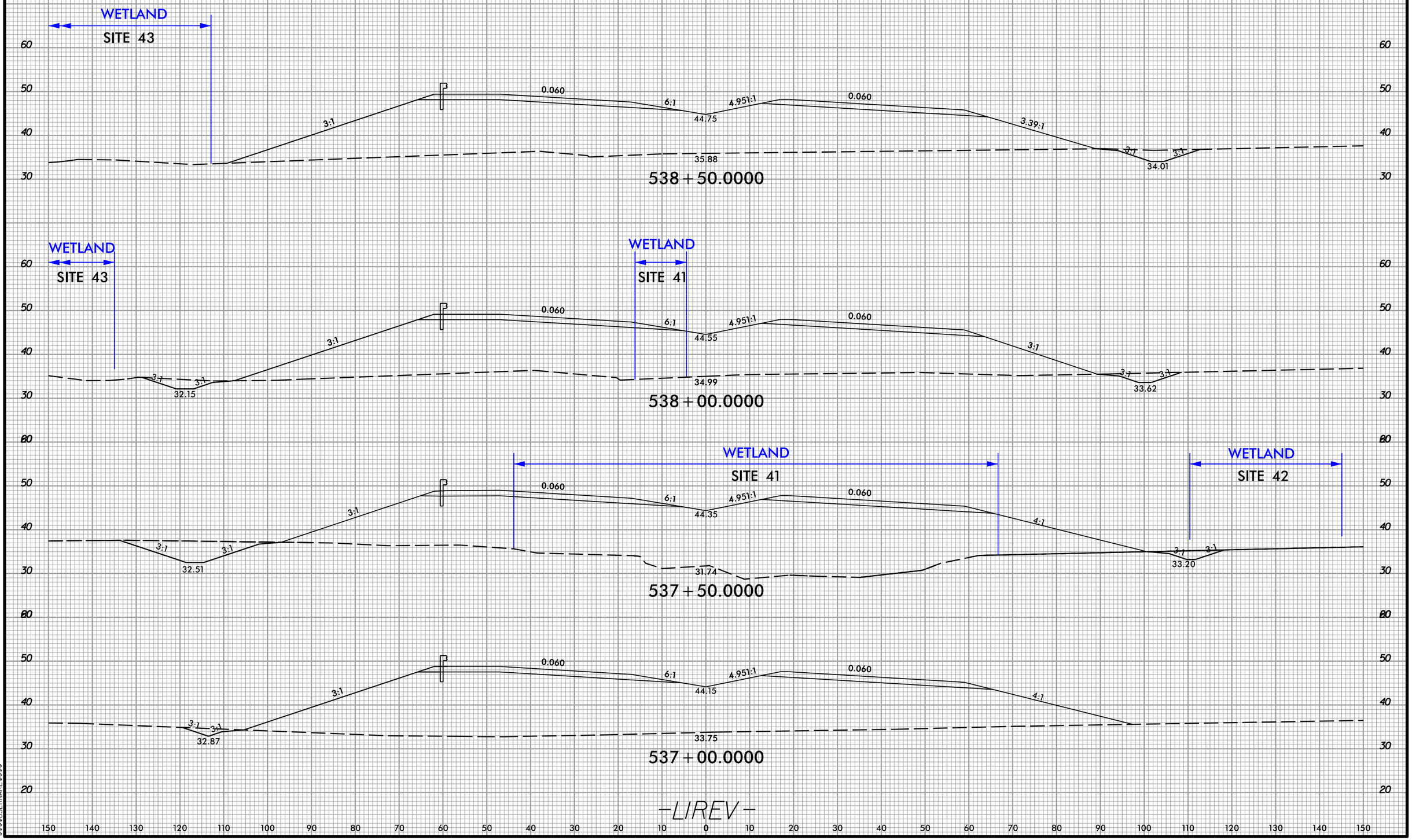
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-171

PERMIT DRAWING
SHEET 98 OF 120



11/20/2024

PERMIT DRAWING
SHEET 99 OF 120



11/20/2024

5/14/99

11/20/2024

Dewberry
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RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0929

MI ENGINEERING
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(919) 851-6606
FIRM PE NUMBER : P-0671

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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

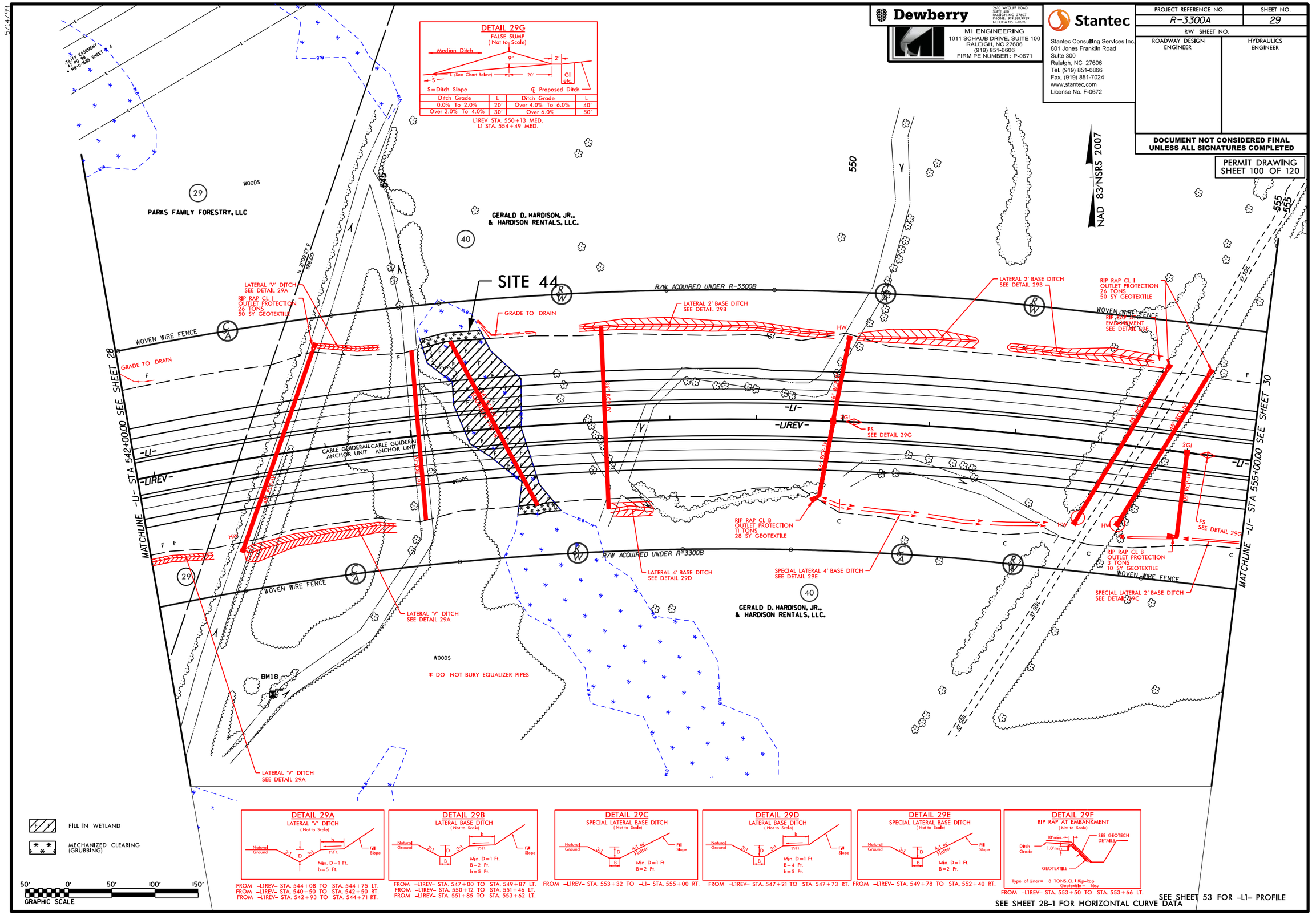
PERMIT DRAWING
SHEET 100 OF 120

NAD 83/NSRS 2007

DETAIL 29G
FALSE SUMP
(Not to Scale)

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

LIREV STA. 550+13 MED.
L1 STA. 554+49 MED.



FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

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

DETAIL 29A
LATERAL 'V' DITCH
(Not to Scale)

FROM –LIREV– STA. 544+08 TO STA. 544+75 LT.
FROM –LIREV– STA. 540+50 TO STA. 542+50 RT.
FROM –LIREV– STA. 542+93 TO STA. 544+71 RT.

DETAIL 29B
LATERAL BASE DITCH
(Not to Scale)

FROM –LIREV– STA. 547+00 TO STA. 549+87 LT.
FROM –LIREV– STA. 550+12 TO STA. 551+46 LT.
FROM –LIREV– STA. 551+85 TO STA. 553+62 LT.

DETAIL 29C
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM –LIREV– STA. 553+32 TO –L1– STA. 555+00 RT.

DETAIL 29D
LATERAL BASE DITCH
(Not to Scale)

FROM –L1REV– STA. 547+21 TO STA. 547+73 RT.

DETAIL 29E
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM –L1REV– STA. 549+78 TO STA. 552+40 RT.

DETAIL 29F
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 8 TONS,CL I Rip-Rap
Geotextile = 16sy

FROM –L1REV– STA. 553+50 TO STA. 553+66 LT.

SEE SHEET 53 FOR –L1– PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

7/31/2024
SCHAUBJAMES
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_29.dgn

11/20/2024

5/14/99

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2610 WYCLIFF ROAD
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PHONE: 919.881.9939
NC COA No. P-0929

MI ENGINEERING
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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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www.stantec.com
License No. F-0672

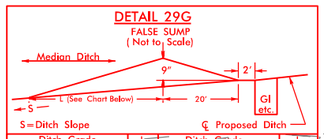
PROJECT REFERENCE NO.	SHEET NO.
R-3300A	29
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 101 OF 120

NAD 83/NSRS 2007

DETAIL 29G
FALSE SUMP
(Not to Scale)



S=Ditch Slope

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'

–LIREV– STA. 550+13 MEET
–L1– STA. 554+49 MEET.

PARKS FAMILY FORESTRY, LLC

GERALD D. HARDISON, JR., & HARDISON RENTALS, LLC.

SITE 44

WOODS

WOVEN WIRE FENCE

LATERAL 'V' DITCH SEE DETAIL 29A

RIP RAP CL I OUTLET PROTECTION 26 TONS 50 SY GEOTEXTILE

GRADE TO DRAIN

RW ACQUIRED UNDER R-3300B

LATERAL 2' BASE DITCH SEE DETAIL 29B

RIP RAP CL B OUTLET PROTECTION 4 TONS 28 SY GEOTEXTILE

RIP RAP CL B OUTLET PROTECTION 2 TONS 10 SY GEOTEXTILE

RIP RAP AT EMBANKMENT SEE DETAIL 29F

FS SEE DETAIL 29G

HW

SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 29E

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 29C

GERALD D. HARDISON, JR., & HARDISON RENTALS, LLC.

* DO NOT BURY EQUALIZER PIPES

CABLE GUIDERAIL ANCHOR UNIT

MATCHLINE –L1– STA 542+00.00 SEE SHEET 28

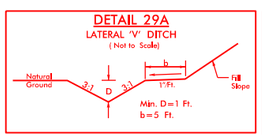
MATCHLINE –L1– STA 555+00.00 SEE SHEET 30

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

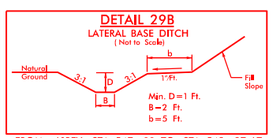
50' 0' 50' 100' 150'
GRAPHIC SCALE

DETAIL 29A
LATERAL 'V' DITCH
(Not to Scale)



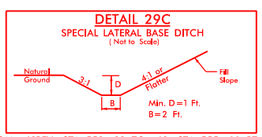
FROM –L1REV– STA. 544+08 TO STA. 544+75 LT.
FROM –L1REV– STA. 540+50 TO STA. 542+50 RT.
FROM –L1REV– STA. 542+93 TO STA. 544+71 RT.

DETAIL 29B
LATERAL BASE DITCH
(Not to Scale)



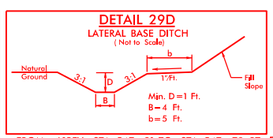
FROM –L1REV– STA. 547+00 TO STA. 549+87 LT.
FROM –L1REV– STA. 550+12 TO STA. 551+46 LT.
FROM –L1REV– STA. 551+85 TO STA. 553+62 LT.

DETAIL 29C
SPECIAL LATERAL BASE DITCH
(Not to Scale)



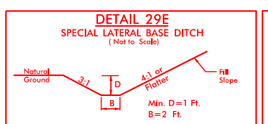
FROM –L1REV– STA. 553+32 TO –L1– STA. 555+00 RT.

DETAIL 29D
LATERAL BASE DITCH
(Not to Scale)



FROM –L1REV– STA. 547+21 TO STA. 547+73 RT.

DETAIL 29E
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM –L1REV– STA. 549+78 TO STA. 552+40 RT.

DETAIL 29F
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= 8 TONS,CL I Rip-Rap
Geotextile = 16sy

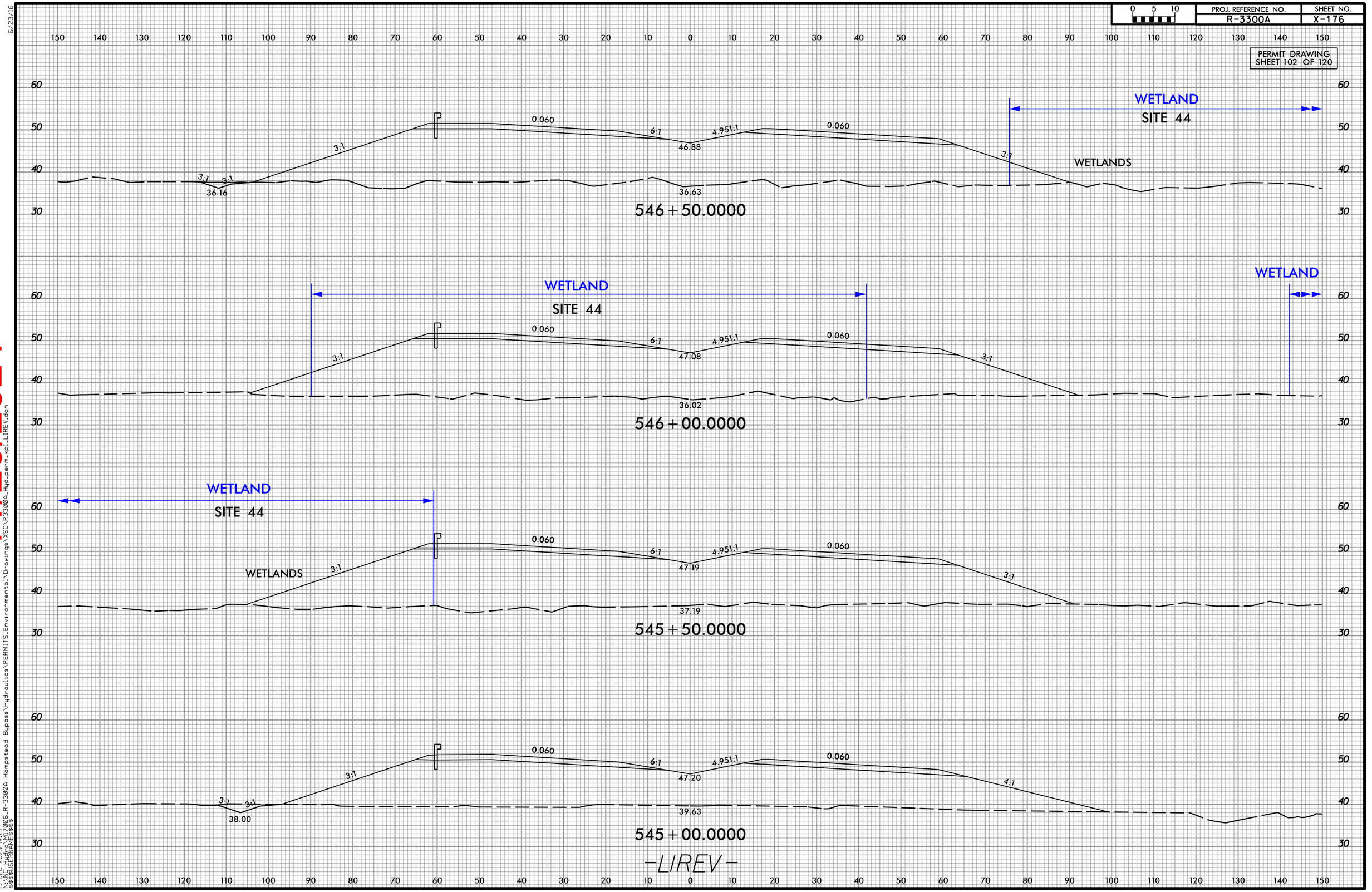
FROM –L1REV– STA. 553+50 TO STA. 553+66 LT.

SEE SHEET 53 FOR –L1– PROFILE
SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

7/31/2024
SSELLERS4MIES
N:\NC Hydro\MI7006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_29_con.dgn

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-176

PERMIT DRAWING
SHEET 102 OF 120



-LIREV-

11/20/2024

5/14/99

11/20/2024

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

Stantec
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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 103 OF 120

NAD 83/NSRS 2007

GERALD D. HARDISON, JR., & HARDISON RENTALS, LLC.

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 107

SITE 46

SITE 45

SITE 45 ENLARGEMENT

-L1- STA 555+00.00 SEE SHEET 29

-L1- STA 567+00.00 SEE SHEET 31

MATCHLINE -L1- STA 555+00.00 SEE SHEET 29

MATCHLINE -L1- STA 567+00.00 SEE SHEET 31

-L1- S 80° 47' 56.6" E

R/W ACQUIRED UNDER R-3300B

WOVEN WIRE FENCE

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 30A

RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE

RIP RAP CL B OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE

MECHANIZED CLEARING

FILL IN WETLAND

EXCAVATION IN WETLAND

TEMPORARY FILL IN WETLAND

SLOPE PROTECTION SEE DETAIL 30E

BANK STABILIZATION CL I RIP RAP SEE DETAIL 30D

BANK STABILIZATION CL I RIP RAP SEE DETAIL 31A ON SHEET 31

CABLE GUIDERAIL ANCHOR UNIT

2GI

FS SEE DETAIL 30C

18" RCP-IV

W2 ELBOWS

WOODS

565

560

555

SURFACE WATER IMPACTS

WETLAND EXCAVATION

FILL IN WETLAND

TEMPORARY SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)

TEMPORARY FILL IN WETLAND

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

20' 0' 20' 40' 60'
GRAPHIC SCALE

DETAIL 30A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 4:1 or Flatter, Fill Slope

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

FROM -L- STA. 555+26 TO STA. 559+68 RT.
FROM -L- STA. 555+85 TO STA. 559+88 LT.

DETAIL 30C
FALSE SUMP
(Not to Scale)

Median Ditch, 9", 2', L (See Chart Below), 20', GI etc., S

S=Ditch Slope ℄ Proposed Ditch

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

L1 STA. 559+24 MED.

DETAIL 30D
BANK STABILIZATION
(Not to Scale)

1.0' min., 18", Place Geotextile Under Riprap in Locations Directed by Engineer, Press Riprap Into Channel Bottom Until Refusal

Type of Liner=12 TONS,CL I Rip-Rap, Keyed-In

FROM -L- STA. 566+37 TO STA. 566+97 LT.

SEE SHEET 53 & 54 FOR -L1- PROFILE

7/31/2024
SUSAN MILES
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_30.dgn

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11/20/2024

NAD 83/NSRS 2007

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 104 OF 120

40
GERALD D. HARDISON, JR.,
& HARDISON RENTALS, LLC.

FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 107

SITE 46

SITE 45

SITE 45
ENLARGEMENT

MATCHLINE -L1- STA 555+00.00 SEE SHEET 29

MATCHLINE -L1- STA 567+00.00 SEE SHEET 31

R/W ACQUIRED UNDER R-3300B

WOVEN WIRE FENCE

WOODS

FILL IN WETLAND

EXCAVATION IN WETLAND

TEMPORARY FILL IN WETLAND

MECHANIZED CLEARING

CABLE GUIDERAIL ANCHOR UNIT

SLOPE PROTECTION
SEE DETAIL 30C

BANK STABILIZATION
CL I RIP RAP
SEE DETAIL 30D

BANK STABILIZATION
CL I RIP RAP
SEE DETAIL 31A
ON SHEET 31

SPECIAL LATERAL 2' BASE DITCH
SEE DETAIL 30A

FS
FS
SEE DETAIL 30C

2GI

18" RCP-IV

W/2 ELBOWS

RIP RAP CL B
OUTLET PROTECTION
2 TONS
7 SY GEOTEXTILE

RIP RAP CL B
OUTLET PROTECTION
3 TONS
20 SY GEOTEXTILE

L1 STA. 555+80.47 566.46

SURFACE WATER IMPACTS

WETLAND EXCAVATION

FILL IN WETLAND

TEMPORARY SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)

TEMPORARY FILL IN WETLAND

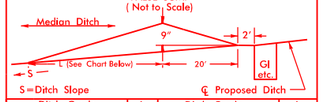
50' 0' 50' 100' 150'
GRAPHIC SCALE

DETAIL 30A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

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

FROM -L- STA. 555+26 TO STA. 559+68 RT.
FROM -L- STA. 555+85 TO STA. 559+88 LT.

DETAIL 30C
FALSE SUMP
(Not to Scale)

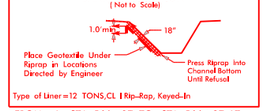


S=Ditch Slope ℄ Proposed Ditch

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

L1 STA. 559+24 MED.

DETAIL 30D
BANK STABILIZATION
(Not to Scale)



Type of Liner=12 TONS,CL I Rip-Rap, Keyed-In

FROM -L- STA. 566+37 TO STA. 566+97 LT.

20' 0' 20' 40' 60'
GRAPHIC SCALE

SEE SHEET 53 & 54 FOR -L1- PROFILE

7/31/2024
SUSAN JAMES
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_pth_30_con.dgn

5/14/99

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

E E — WETLAND EXCAVATION
F F — FILL IN WETLAND
S S — SURFACE WATER IMPACTS
* * * — MECHANIZED CLEARING (GRUBBING)
TS TS — TEMPORARY SURFACE WATER IMPACTS
TF TF — TEMPORARY FILL IN WETLAND

NAD 83/NSRS 2007

END PROJECT R-3300A -LI- STA. 578+00.00
BEGIN PROJECT R-3300B -LI- STA. 578+00.00

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 107

SITE 46

BANK STABILIZATION CL I RIP RAP SEE DETAIL 31A
SLOPE PROTECTION SEE DETAIL 31J
EXCAVATION IN WETLAND
RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE
LATERAL 4' BASE DITCH SEE DETAIL 31E
LATERAL 3' BASE DITCH SEE DETAIL 31F
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 31D
RIP RAP CL B OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE
18" RCP
2GI
FS SEE DETAIL 31G
CABLE GUIDE ANCHOR 1
CABLE GUIDERAIL ANCHOR UNIT
W2 ELBOWS
B SOIL
R/W ACQUIRED UNDER R-3300B
WOODS
570
575
40 GERALD D. HARDISON, JR., & HARDISON RENTALS, LLC.
-LI- STA. 567+00.00 SEE SHEET 30
MATCHLINE -LI- STA. 567+00.00 SEE SHEET 30
TOE
TDE
TOE PROTECTION SEE DETAIL 31C
LATERAL 2' BASE DITCH SEE DETAIL 31B
TEMPORARY FILL IN WETLAND
EXCAVATION IN WETLAND
BANK STABILIZATION CL I RIP RAP SEE DETAIL 31A
BANK STABILIZATION CL I RIP RAP SEE DETAIL 31H
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 31D
R/W ACQUIRED UNDER R-3300B
40 GERALD D. HARDISON, JR., & HARDISON RENTALS, LLC.

PROP. 3@12'X8' RCBC NOTES:

CHANNEL IMPROVEMENTS, BANK STABILIZATION SEE DETAIL WITH CLASS I RIP RAP

REALIGN DS CHANNEL TO FLOW THRU EAST BARRELS

BACKFILL NORMAL FLOW BARREL WITH 1' NATIVE MATERIAL SEE SKEWED MULTI-BARREL CULVERT LOW FLOW CHANNEL SILLS AND FLOOD PLAIN BENCH DETAIL 'PPP'

DETAIL 31A
BANK STABILIZATION
(Not to Scale)

PROP. 3@12'X8' RCBC
CLASS I RIP RAP (TYP.)
EXCAVATE
PROP. TOB
Natural Ground
18" (TYP.)
1.5
2.5' SILL
12' MAX
24'
1.0' SILL
GEOTEXTILE (TYP.)
CHANNEL BED

LENGTH = 29 FT. (US), 36 FT. (DS)
EST. = 53 TONS OF CLASS I RIP RAP (US)
55 SY GEOTEXTILE (US)
100 TONS OF CLASS I RIP RAP (DS)
105 SY GEOTEXTILE (DS)

LI STA. 567+35 LT. ±; DDE=38 CY (DS)
LI STA. 568+00 RT. ±; DDE=31 CY (US)

DETAIL 'PPP'
(NOT TO SCALE)
SKEWED MULTI- BARREL CULVERT LOW FLOW CHANNEL,SILLS AND FLOOD PLAIN BENCH

*NOTES:
1) NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL BE CONSIDERED NATIVE MATERIAL. NATIVE MATERIAL SHALL CONSIST OF MATERIAL THAT IS EXCAVATED FROM THE THE STREAM OR FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL. IMPORTED MATERIAL USED TO SUPPLEMENT NATIVE BED MATERIAL BY THE HIGH FLOW CULVERT BARREL(S). IF RIP-RAP IS USED TO LINE THE HIGH FLOW CULVERT BARREL(S), NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FILL VOIDS. IF NATIVE MATERIAL IS USED FOR AQUATIC PASSAGE, NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.
2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.
3) TOP OF LOW FLOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM (THALWEG).
4) DO NOT SET ELEVATION OF HIGH SILL ABOVE BANK FULL.
5) NO BAFFLES REQUIRED DUE TO FLAT SLOPES. ALLOW TO SILT IN BETWEEN SILLS.

HIGH SILL
2.5'
1.0'
SILLS AT INLET AND OUTLET
FLOOD PLAIN BENCH
BACK FILL WITH NATIVE MATERIAL TO SILL HEIGHT
SILL
SLOPE
PLAN VIEW

DETAIL 31B
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
3:1
D
B
3:1
1'/Ft.
b
Fill Slope
Min. D=1 Ft.
B=2 Ft.
b=5 Ft.
FROM -L- STA. 568+12 TO STA. 569+50 RT.

DETAIL 31C
TOE PROTECTION
(Not to Scale)
Natural Ground
b
3:1 or Flatter Fill Slope
d
Geotextile
d=1 Ft.
b=3 Ft.
Type of Liner= CL B Rip-Rap
FROM -L- STA. 569+50 TO STA. 570+50 RT.

DETAIL 31D
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground
3:1
D
B
3:1 or Flatter
Fill Slope
Min. D=1 Ft.
B=2 Ft.
FROM -L- STA. 575+50 TO STA. 578+00 RT.
FROM -L- STA. 572+00 TO STA. 574+68 LT.

DETAIL 31E
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
3:1
D
B
3:1
1'/Ft.
b
Fill Slope
Min. D=1 Ft.
B=4 Ft.
b=5 Ft.
FROM -L- STA. 567+39 TO STA. 570+50 LT.

DETAIL 31F
SPECIAL LATERAL BASE DITCH
(Not to Scale)
Natural Ground
3:1
D
B
4:1 or Flatter
Fill Slope
Min. D=1 Ft.
B=3 Ft.
FROM -L- STA. 570+50 TO STA. 572+00 LT.

DETAIL 31G
FALSE SUMP
(Not to Scale)
Median Ditch
9"
2'
20'
GI etc.
S
L (See Chart Below)
℄ Proposed Ditch
S=Ditch Slope

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'

LI STA. 567+76 MED.
LI STA. 571+76 MED.
LI STA. 577+24 MED.

DETAIL 31H
BANK STABILIZATION
(Not to Scale)
1.0' min.
18"
Place Geotextile Under Riprap in Locations Directed by Engineer
Press Riprap into Channel Bottom Until Refused
Type of Liner=14 TONS,CL I Rip-Rap, Keyed-In
FROM -L- STA. 567+69 TO STA. 567+87 RT.

DETAIL 31J
SLOPE PROTECTION
(Not to Scale)
Natural Ground
3:1 or Flatter Fill Slope
d
Geotextile
Key-In 1 Ft. Below Natural Ground
d=4 Ft.
Type of Liner= CL B Rip-Rap, Plating Slope
FROM -LI- STA. 566+50 TO STA. 568+00 LT.
FROM -LI- STA. 567+00 TO STA. 568+50 RT.

SEE SHEET 54 FOR -L1- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 105 OF 120

11/20/2024

7/20/2024
SJUSERRAMEES
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5/14/99

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

E E — WETLAND EXCAVATION
F F — FILL IN WETLAND
S S — SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TS TS — TEMPORARY SURFACE WATER IMPACTS
TF TF — TEMPORARY FILL IN WETLAND

Dewberry
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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 106 OF 120

NAD 83/NSRS 2007

END PROJECT R-3300A -L1- STA. 578+00.00
BEGIN PROJECT R-3300B -L1- STA. 578+00.00

FOR ENLARGEMENT SEE PERMIT DRAWING SHEET 107

SITE 46

-L1- STA 567+00.00 SEE SHEET 30

MATCHLINE -L1- STA 575+00.00 SEE SHEET 32

GERALD D. HARDISON, JR., & HARDISON RENTALS, LLC.

R/W ACQUIRED UNDER R-3300B

BANK STABILIZATION CL I RIP RAP SEE DETAIL 31H
SLOPE PROTECTION SEE DETAIL 31J
EXCAVATION IN WETLAND
RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE
LATERAL 4' BASE DITCH SEE DETAIL 31E
LATERAL 3' BASE DITCH SEE DETAIL 31F
W12 ELBOWS
FE SEE DETAIL 31G
2GI
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 31D
RIP RAP CL B OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE
CABLE GUIDE ANCHOR
CABLE GUIDERAIL ANCHOR UNIT
TOE PROTECTION SEE DETAIL 31C
TEMPORARY FILL IN WETLAND
BANK STABILIZATION CL I RIP RAP SEE DETAIL 31A
LATERAL 2' BASE DITCH SEE DETAIL 31E
WOODS
TDE

PROP. 3@12'X8' RCBC NOTES:

CHANNEL IMPROVEMENTS, BANK STABILIZATION SEE DETAIL WITH CLASS I RIP RAP

REALIGN DS CHANNEL TO FLOW THRU EAST BARRELS

BACKFILL NORMAL FLOW BARREL WITH 1' NATIVE MATERIAL SEE SKEWED MULTI-BARREL CULVERT LOW FLOW CHANNEL SILLS AND FLOOD PLAIN BENCH DETAIL 'PPP'

DETAIL 31A
BANK STABILIZATION
(Not to Scale)

PROP. 3@12'X8' RCBC
CLASS I RIP RAP (TYP.)
EXCAVATE
PROP. TOB
Natural Ground
18" (TYP.)
2:1
1.5
GEOTEXTILE (TYP.)
2.5' SILL
12' MAX
24'
1.0' SILL
CHANNEL BED

LENGTH = 29 FT. (US), 36 FT. (DS)
EST. = 53 TONS OF CLASS I RIP RAP (US)
55 SY GEOTEXTILE (US)
100 TONS OF CLASS I RIP RAP (DS)
105 SY GEOTEXTILE (DS)

L1 STA. 567+35 LT. ±; DDE=38 CY (DS)
L1 STA. 568+00 RT. ±; DDE=31 CY (US)

DETAIL 'PPP'
(NOT TO SCALE)
SKEWED MULTI- BARREL CULVERT LOW FLOW CHANNEL,SILLS AND FLOOD PLAIN BENCH

*NOTES:
1) NATIVE MATERIAL BETWEEN SILLS IN THE CULVERT SHALL BE CONSIDERED AS NATIVE MATERIAL. NATIVE MATERIAL IS NATURAL MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE THE STREAM OR FLOODPLAIN AT THE PROJECT SITE DURING CONSTRUCTION. ONLY MATERIAL THAT IS EXCAVATED FROM THE STREAM BED MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL (ENGINEER MAY BE USED TO LINE THE LOW FLOW CULVERT BARREL (ENGINEER MAY BE USED TO LINE THE LOW FLOW CULVERT BARRELS). IF RIP-RAP IS USED TO LINE THE HIGH FLOW CULVERT BARRELS, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FORM A NATURAL BOTTOM. IF DESIGNED FOR ANIMAL PASSAGE, NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.
2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.
3) TOP OF LOW FLOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (TYP.&WEIR)
4) DO NOT SET ELEVATION OF HIGH SILL ABOVE BANK FULL.
5) NO BAFFLES REQUIRED DUE TO FLAT SLOPES. ALLOW TO SILT IN BETWEEN SILLS.

HIGH SILL
2.5'
1.0'
1.0'
SILLS AT INLET AND OUTLET

FLOOD PLAIN BENCH
SILL
BACK FILL WITH NATIVE MATERIAL TO SILL HEIGHT
SLOPE
SLOPE
SILL
FLOOD PLAIN BENCH
PLAN VIEW

DETAIL 31B
LATERAL BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1
1'/Ft.
b
Fill Slope
B
Min. D=1 Ft.
B=2 Ft.
b=5 Ft.

FROM -L- STA. 568+12 TO STA. 569+50 RT.

DETAIL 31C
TOE PROTECTION
(Not to Scale)

Natural Ground
b
3:1 or Flatter
Fill Slope
d
Geotextile
d=1 Ft.
b=3 Ft.
Type of Liner= CL B Rip-Rap

FROM -L- STA. 569+50 TO STA. 570+50 RT.

DETAIL 31D
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
4:1 or Flatter
Fill Slope
B
Min. D=1 Ft.
B=2 Ft.

FROM -L- STA. 575+50 TO STA. 578+00 RT.
FROM -L- STA. 572+00 TO STA. 574+68 LT.

DETAIL 31E
LATERAL BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
3:1
1'/Ft.
b
Fill Slope
B
Min. D=1 Ft.
B=4 Ft.
b=5 Ft.

FROM -L- STA. 567+39 TO STA. 570+50 LT.

DETAIL 31F
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground
3:1
D
4:1 or Flatter
Fill Slope
B
Min. D=1 Ft.
B=3 Ft.

FROM -L- STA. 570+50 TO STA. 572+00 LT.

DETAIL 31G
FALSE SUMP
(Not to Scale)

Median Ditch
9"
2'
S
L (See Chart Below)
20'
GI etc.
S=Ditch Slope
℄ Proposed Ditch

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

L1 STA. 567+76 MED.
L1 STA. 571+76 MED.
L1 STA. 577+24 MED.

DETAIL 31H
BANK STABILIZATION
(Not to Scale)

1.0' min.
18"
Place Geotextile Under Riprap in Locations Directed by Engineer
Press Riprap into Channel Bottom Until Refused

Type of Liner=14 TONS,CL I Rip-Rap, Keyed-In

FROM -L- STA. 567+69 TO STA. 567+87 RT.

DETAIL 31J
SLOPE PROTECTION
(Not to Scale)

Natural Ground
3:1 or Flatter
Fill Slope
d
Geotextile
Key-In 1 Ft. Below Natural Ground
d=4 Ft.
Type of Liner= CL B Rip-Rap, Plating Slope

FROM -L1- STA. 566+50 TO STA. 568+00 LT.
FROM -L1- STA. 567+00 TO STA. 568+50 RT.

SEE SHEET 54 FOR -L1- PROFILE

11/20/2024

7/2/2024
SUSERNAMES
N:\NC Hydro\M17006_R-3300A Hampstead Bypass\Hydraulics\PERMITS_Environmental\Drawings\R3300A_hyd_psh_31_con.dgn

5/14/99

11/20/2024

NAD 83/NSRS 2007

SITE 46

SITE 46 ENLARGEMENT

TEMPORARY FILL IN WETLAND

SURFACE WATER IMPACT (BANK STABILIZATION)

EXCAVATION IN WETLAND

TEMPORARY SURFACE WATER IMPACTS

EXCAVATION IN WETLAND

WOODS

565

570

CABLE GUIDERAIL ANCHOR UNIT

CABLE GUIDERAIL ANCHOR UNIT

18" RCP–IV

2GI

W/2 ELBOWS

8' SOIL

LATERAL 2' BASE DITCH SEE DETAIL 31B

BANK STABILIZATION CL I RIP RAP SEE DETAIL 31A

TDE

WLB

JS MT

WETLAND EXCAVATION

FILL IN WETLAND

SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)

TEMPORARY FILL IN WETLAND

TEMPORARY SURFACE WATER IMPACTS

HAND CLEARING (NON–GRUBBING)

30' 0' 30' 60' 90'

GRAPHIC SCALE

Dewberry
2650 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	E-30_31

RW SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 107 OF 120

7/31/2024
$USERNAME$
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5/14/99

MI ENGINEERING
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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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Fax. (919) 851-7024
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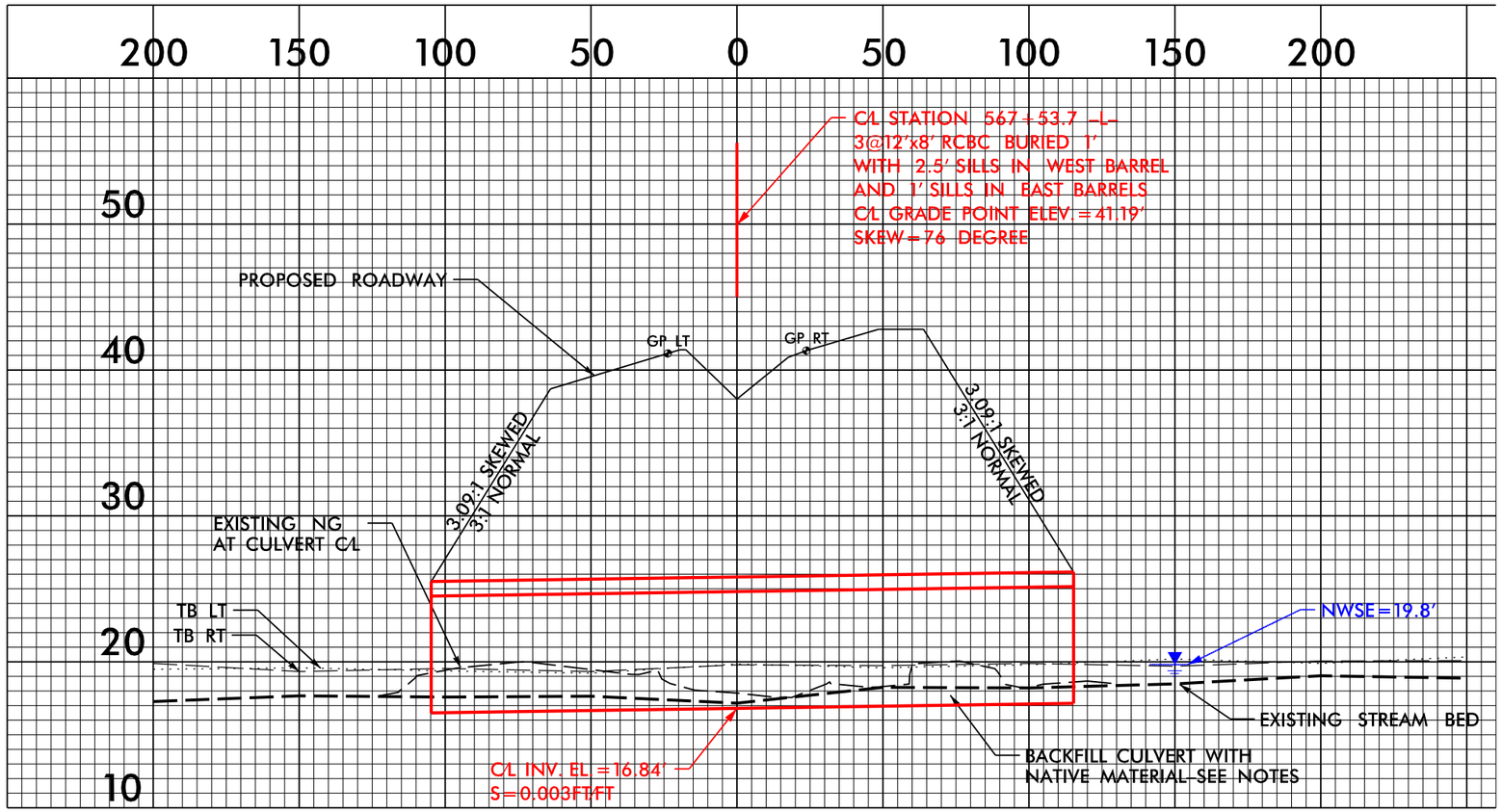
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 108 OF 120

SITE 46



11/20/2024

7/31/2024
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-165

PERMIT DRAWING
SHEET 109 OF 120

WETLAND
SITE 46

38.36 | 0.060 | 4.952:1 | 6.001:1 | 0.060 | 4:1 | 37.28 | 3:1 | 3:1 | WETLANDS | WETLANDS | 19.87

566+50.0000

WETLAND
SITE 46

38.5 | 0.050 | 5.133:1 | 5.998:1 | 0.050 | 4:1 | 37.20 | 3:1 | 3:1 | WETLANDS | WETLANDS | 19.98

566+00.0000

WETLAND
SITE 46

38.5 | 0.039 | 5.344:1 | 6:1 | 0.039 | 4:1 | 37.26 | 3:1 | 3:1 | WETLANDS | WETLANDS | 20.08

565+50.0000

WETLAND
SITE 46

39. | 0.030 | 5.514:1 | 6.001:1 | 0.028 | 4:1 | 37.43 | 3:1 | 3:1 | WETLANDS | WETLANDS | 20.71

WETLAND
SITE 46

565+00.0000

—L/—

11/20/2024

6/23/16

12/5/2023
MI ENGINEERING
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$$$$USERNAME$$$$

Dewberry
2650 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0929

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FIRM PE NUMBER : P-0671

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www.stantec.com
License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 110 OF 120

5/14/99

11/20/2024

NAD 83/NSRS 2007

30' DRAINAGE EASEMENT MB 52 PG 67

EXISTING R/W

SR 1573 HARRISON CREEK RD 20' BST

PENDER COUNTY UTILITIES, 6" PVC

S 11° 30' 41.5" E HARRISON CREEK RD -Y35-

AT&T GSRCP

60" CHL

GATE

DNG PROPERTIES, INC.

26

27B

LAURIE G. PEREGOY

72" WOOD

GARRETT BUTLER, ET AL

CLIFTON GAITHER ET AL

27A

27

2 SFD

LANDSCAPE AREA

BEGIN CONSTRUCTION -Y35- Sta.12+00.00

RETAIN IRRIGATION VALVE

18" CONC DRIVE

18"RCP

-Y35DET- PC Sta. 12+10.00
-Y35- PC Sta. 12+10.00

ISMT&BUS

POND

15' SOIL

12' SOIL

CONC

SOIL

RIP RAP CL I OUTLET PROTECTION 11 TONS 28 SY GEOTEXTILE

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 37A

TH 1 N 230339.4' E 2370010.0'

REMOVE

BERM/ROAD FILL IN WETLAND

SR 1573 EXCAVATION IN WETLAND

15" RCP

24" RCP

30" RCP IN

6" PVC

TEMP. FILL IN WETLAND

HAND CLEARING

MECHANIZED CLEARING

Q10=7cfs
V10=1.6fps

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 37A

Q10=5cfs
V10=1.6fps

ISLAND CREEK MISSIONARY BAPTIST CHURCH

ISBK CHURCH

29

PARKS FAMILY FORESTRY, LLC

SPECIAL LATERAL 'V' DITCH SEE DETAIL 37B

28

ISLAND CREEK BAPTIST CHURCH

END PROP. SBG -Y35- STA 17+10.03 LT

RIP RAP CL B OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE

W2 ARROWS

2GI

187

ICV

SEE SHEET 27

-Y35- STA 19+00.00 SEE SHEET 27

MATCHLINE -Y35- STA 19+00.00

PUE

24Z

24

CAMERON COMPANY LIMITED PARTNER

LATERAL 2' BASE DITCH SEE DETAIL 37C

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 37A

-Y35DET-
SLOPE STAKE

-Y35DET-
SEE PERMIT DRAWING SHEET 113

SITE 47

HC HC HAND CLEARING (NON-GRUBBING)

T T TEMPORARY FILL IN WETLAND

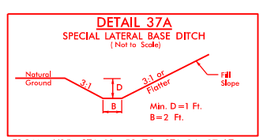
MECHANIZED CLEARING (GRUBBING)

F F FILL IN WETLAND

E E WETLAND EXCAVATION

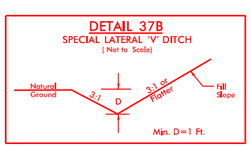
50' 0' 50' 100' 150'
GRAPHIC SCALE

DETAIL 37A
SPECIAL LATERAL BASE DITCH
(Not to Scale)



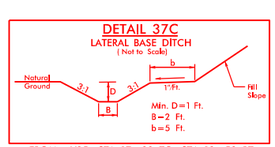
FROM -Y35- STA. 12+50 TO STA. 14+17 LT.
FROM -Y35- STA. 12+75 TO STA. 13+50 RT.
FROM -Y35- STA. 14+24 TO STA. 17+00 RT.

DETAIL 37B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



FROM -Y35- STA. 14+33 TO STA. 16+50 LT.

DETAIL 37C
LATERAL BASE DITCH
(Not to Scale)



FROM -Y35- STA. 17+00 TO STA. 19+50 RT.

SEE SHEET 64 FOR -Y35- PROFILE

7/31/2024
11:51:39 AM
USER NAME\ES
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5/14/99

11/20/2024

Dewberry
2650 WYCLIFF ROAD
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RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
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(919) 851-6606
FIRM PE NUMBER : P-0671

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License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 111 OF 120

NAD 83/NSRS 2007

30' DRAINAGE EASEMENT MB 52 PG 67

27B LAURIE G. PEREGOY

GARRETT BUTLER, ET AL

CLIFTON GAITHER ET AL

27A

27

CLIFTON GAITHER ET AL

ISLAND CREEK MISSIONARY BAPTIST CHURCH

ISBK CHURCH

29 PARKS FAMILY FORESTRY, LLC

28 ISLAND CREEK BAPTIST CHURCH

26 DNG PROPERTIES, INC.

24 CAMERON COMPANY LIMITED PARTNER

242

SR 1573 HARRISON CREEK RD 20' BST

EXISTING R/W

GRENDER COUNTY UTILITIES, 6" PVC

AT&T 60" RCP

–Y35– S 11° 30' 41.5" E HARRISON CREEK RD

–Y35DET– PC Sta. 12+10.00
–Y35– PC Sta. 12+10.00

BEGIN CONSTRUCTION –Y35– Sta. 12+00.00

END PROP. SBG –Y35– STA 17+10.03 LT

–Y35– STA 19+00.00 SEE SHEET 27

MATCHLINE –Y35– STA 19+00.00 SEE SHEET 27

2 SFD

LANDSCAPE AREA

RETAIN IRRIGATION VALVE

REMOVE

RETAIN

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 37A

SPECIAL LATERAL 'V' DITCH SEE DETAIL 37B

RIP RAP CL I OUTLET PROTECTION 11 TONS 28 SY GEOTEXTILE

RIP RAP CL B OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE W2 FARROWS 2GI

LATERAL 2' BASE DITCH SEE DETAIL 37C

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 37A

–Y35DET– SLOPE STAKE

–Y35DET– SEE PERMIT DRAWING SHEET 113

TH 1 N 230339.4' E 2360117.0' INV. 25.0' THW PVC

TEMP. FILL IN WETLAND

HAND CLEARING

MECHANIZED CLEARING

SR 1573 EXCAVATION IN WETLAND

Q10=7cfs
V10=1.6fps

Q10=5cfs
V10=1.6fps

SITE 47

HC HC HAND CLEARING (NON-GRUBBING)

T T TEMPORARY FILL IN WETLAND

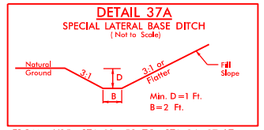
MECHANIZED CLEARING (GRUBBING)

F F FILL IN WETLAND

E E WETLAND EXCAVATION

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

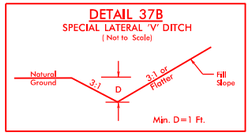
DETAIL 37A
SPECIAL LATERAL BASE DITCH
(Not to Scale)



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

FROM –Y35– STA. 12+50 TO STA. 14+17 LT.
FROM –Y35– STA. 12+75 TO STA. 13+50 RT.
FROM –Y35– STA. 14+24 TO STA. 17+00 RT.

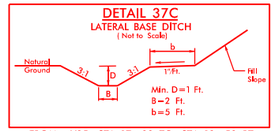
DETAIL 37B
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=1 Ft.

FROM –Y35– STA. 14+33 TO STA. 16+50 LT.

DETAIL 37C
LATERAL BASE DITCH
(Not to Scale)



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

FROM –Y35– STA. 17+00 TO STA. 19+50 RT.

SEE SHEET 64 FOR –Y35– PROFILE

7/31/2024
SCHEMMEL
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PERMIT DRAWING
SHEET 112 OF 120

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

30
20

3:1 0.020 0.020 3:1 3:1
34.62 30.51
16+00.00

3:1 0.020 0.020 3:1 3:1
33.17 30.32
15+50.00

WETLAND

3:1 0.024 0.024 3:1 3:1
32.89
15+00.00

WETLAND

3:1 0.040 0.040 3:1
31.82
14+50.00

WETLAND
SITE 47

3:1 0.028 0.028 3:1
28.50
14+00.00

3:1 3:1 0.001 0.001 3:1
30.60 30.76
13+50.00

0.017 0.017 3:1 3:1
33.01 30.55
13+00.00

0.020
33.51
12+50.00

0.020
33.59
12+10.00

-Y35DET-

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

6/23/16

11/20/2024

30-JUL-2024 13:07
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$$$$USERNAME$$$$

11/20/2024

5/14/99

Dewberry	2610 WYCLIFF ROAD SUITE 410 RALEIGH, NC 27607 PHONE: 919.881.9939 NC COA No. F-0929
MI ENGINEERING	1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER : P-0671

Stantec	
Stantec Consulting Services Inc.	801 Jones Franklin Road Suite 300 Raleigh, NC 27606 Tel. (919) 851-6866 Fax. (919) 851-7024 www.stantec.com License No. F-0672

PROJECT REFERENCE NO.	SHEET NO.
R-3300A	2B-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 113 OF 120

NAD 83/NSRS 2007

CLIFTON GAITHER ET AL

LAURIE G. PEREGOY

GARRETT BUTLER, ET AL

CLIFTON GAITHER ET AL

ISLAND CREEK MISSIONARY BAPTIST CHURCH

ISBK CHURCH

ISLAND CREEK BAPTIST CHURCH

PARKS FAMILY FORESTRY, LLC

PARKS FAMILY FORESTRY, LLC

-Y35- POT Sta. 10+00.00

-Y35- PC Sta. 14+08.43

-L1- POT Sta. 522+94.58

-Y35- POC Sta. 22+90.50

-Y35DET- PT Sta. 21+10.55

BEGIN CONSTRUCTION -Y35DET- Sta. 12+00.00

RIP RAP CL B OUTLET PROTECTION 5 TONS 14 SY GEOTEXTILE

SPECIAL V DITCH SEE DETAIL 2B-C

-Y35-

S 11° 30' 41.5" E 1573'

HARRISON CREEK RD

SR 1573 HARRISON CREEK RD

-Y35DET- PC Sta. 12+10.00

-Y35- PC Sta. 12+10.00

REMOVE 5 LF 24" RCP

GRADE TO DRAIN

FILL IN WETLAND

MECH CLEARING

TEMP. FILL IN WETLAND

TEMP 15'

HAND CLEARING

RIP RAP CL B OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 2B-A ISMTLBUS

STD 2' BASE DITCH SEE DETAIL 2B-B

Q10 = 7cfs V10 = 1.5fps

-Y35DET- PRC Sta. 13+41.13

-Y35DET- PCC Sta. 14+86.65

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 2B-A

Q10 = 4.1cfs V10 = 1.3fps

RIP RAP CL B OUTLET PROTECTION 2 TONS 7 SY GEOTEXTILE

SPECIAL LATERAL 2' BASE DITCH SEE DETAIL 2B-A

-Y35DET- PRC Sta. 17+40.12

-Y35DET- PRC Sta. 19+39.88

END CONSTRUCTION

CONC R/W DESTROYED

SITE 47

DNG PROPERTIES, INC.

CAMERON COMPANY LIMITED PARTNER

WILLIAM J. VANTRAVIS, ET UX

WOODS

POND

GATE

EXISTING R/W

HC HC HAND CLEARING (NON-GRUBBING)

T T TEMPORARY FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

F F FILL IN WETLAND

E E WETLAND EXCAVATION

50' 0' 50' 100' 150'

GRAPHIC SCALE

DETAIL 2B-A
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 3:1 or Flatter, Fill Slope

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

FROM -Y35- STA. 12+86 TO STA. 13+00 RT.
FROM -Y35- STA. 14+35 TO STA. 19+27 RT.

DETAIL 2B-B
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 3:1, D, B, 3:1, Natural Ground

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

FROM Y35 STA. 13+00 TO 13+32 RT
L=48', S=0.44%, DDE=27CY

DETAIL 2B-C
SPECIAL 'V' DITCH
(Not to Scale)

Natural Ground, 2:1, D, 4:1 or Flatter, Front Ditch Slope

Min. D=1 Ft.

FROM -Y35- STA. 13+02 TO STA. 14+20 LT.

7/31/2024
$USERNAME$
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5/14/99

11/20/2024

Dewberry
2650 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9929
NC COA No. P-0929

MI ENGINEERING
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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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Fax. (919) 851-7024
www.stantec.com
License No. F-0672

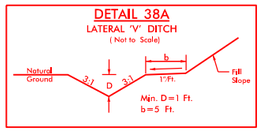
PROJECT REFERENCE NO.	SHEET NO.
R-3300A	38
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 114 OF 120

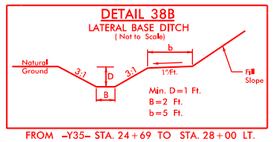
NAD 83/NSRS 2007

DETAIL 38A
LATERAL 'V' DITCH
(Not to Scale)



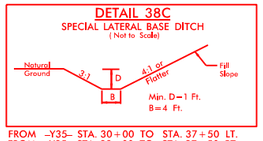
FROM –Y35– STA. 24+20 TO STA. 29+50 RT.

DETAIL 38B
LATERAL BASE DITCH
(Not to Scale)



FROM –Y35– STA. 24+69 TO STA. 28+00 LT.

DETAIL 38C
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM –Y35– STA. 30+00 TO STA. 37+50 LT.
FROM –Y35– STA. 33+00 TO STA. 37+50 RT.

JESSIE G. HAMPTON
ASHLEY GRAHAM, ET ALS
GERALD D. HARDISON, JR., & HARDISON RENTALS, LLC.
RAYMOND H. SIDBURY
LESTER SHUFORD
PETER A. LAWRENCE
LAURA L. GRADY, ET AL
MARIE P. MILLER, ET AL
JULIA S. JONES
SHIRLEY W. HERMAN
GERALD D. HARDISON, ET UX
MICHAEL A. BOOTH, ET UX
ELIZABETH GRAHAM, ET AL

BMBY17 ELEVATION = 38.98
N 228597 E 2371967
BY1 STATION 48+51.69
N 73°30'45" E DIST 89'
R/R SPIKE SET IN 18" PINE

SITE 48

MATCHLINE -Y35- STA 27+00.00 SEE SHEET 27

MATCHLINE -SR3- STA 14+00.00 SEE SHEET 39

BRG BK= S 27°43'42.9"W

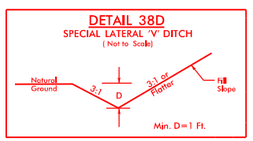
S 24°00'185"W

-Y35-

SR 1573 HARRISON CREEK DR

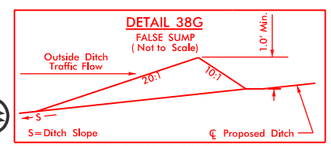
LATERAL 2' BASE DITCH SEE DETAIL 38E
RIP RAP CL B OUTLET PROTECTION 3 TONS 10 SY GEOTEXTILE
W/2 ELBOWS
END PROP. SBG -Y35- STA 28+01.10 LT
SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 38C
LATERAL 'V' DITCH SEE DETAIL 38A
TOE PROTECTION SEE DETAIL 38F
STANDARD 4' BASE DITCH SEE DETAIL 38E
SPECIAL LATERAL 'V' DITCH SEE DETAIL 38D
END CONSTRUCTION -Y35- Sta.37+50.00
MECHANIZED CLEARING
EXCAVATION IN WETLAND
SPECIAL LATERAL 4' BASE DITCH SEE DETAIL 38C
R/W ACQUIRED UNDER R-3300B
RENDER COUNTY UTILITIES 6" PVC
36" CMP
16" BK COLUMNS
ISBKD
FS SEE DETAIL 38G
WOODS
GRAPEVINE
RUINS
ISFD
HTR
CONC
EIP
RETAIN
REMOVE
ABAND

DETAIL 38D
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



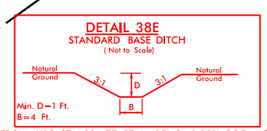
FROM –SR3– STA. 10+30 TO STA. 12+30 RT.
FROM –SR3– STA. 13+40 TO STA. 18+10 RT.
FROM –SR3– STA. 10+30 TO STA. 18+14 LT.

DETAIL 38G
FALSE SUMP
(Not to Scale)



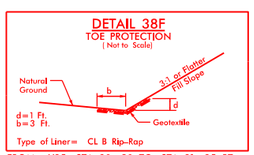
SR3 STA. 11+00 LT., TOP EL=38.00

DETAIL 38E
STANDARD BASE DITCH
(Not to Scale)



FROM Y35 STA. 33+77 RT. L=25', S=0.28%, DDE=4CY

DETAIL 38F
TOE PROTECTION
(Not to Scale)



FROM –Y35– STA. 30+90 TO STA. 31+25 RT.

MECHANIZED CLEARING (GRUBBING)
WETLAND EXCAVATION

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

SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

SEE SHEET 64 FOR –Y35– PROFILE
SEE SHEET 65 FOR –SR3– PROFILE

7/31/2024
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5/14/99

11/20/2024

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	38
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 115 OF 120

NAD 83/NSRS 2007

DETAIL 38A
LATERAL 'V' DITCH
(Not to Scale)

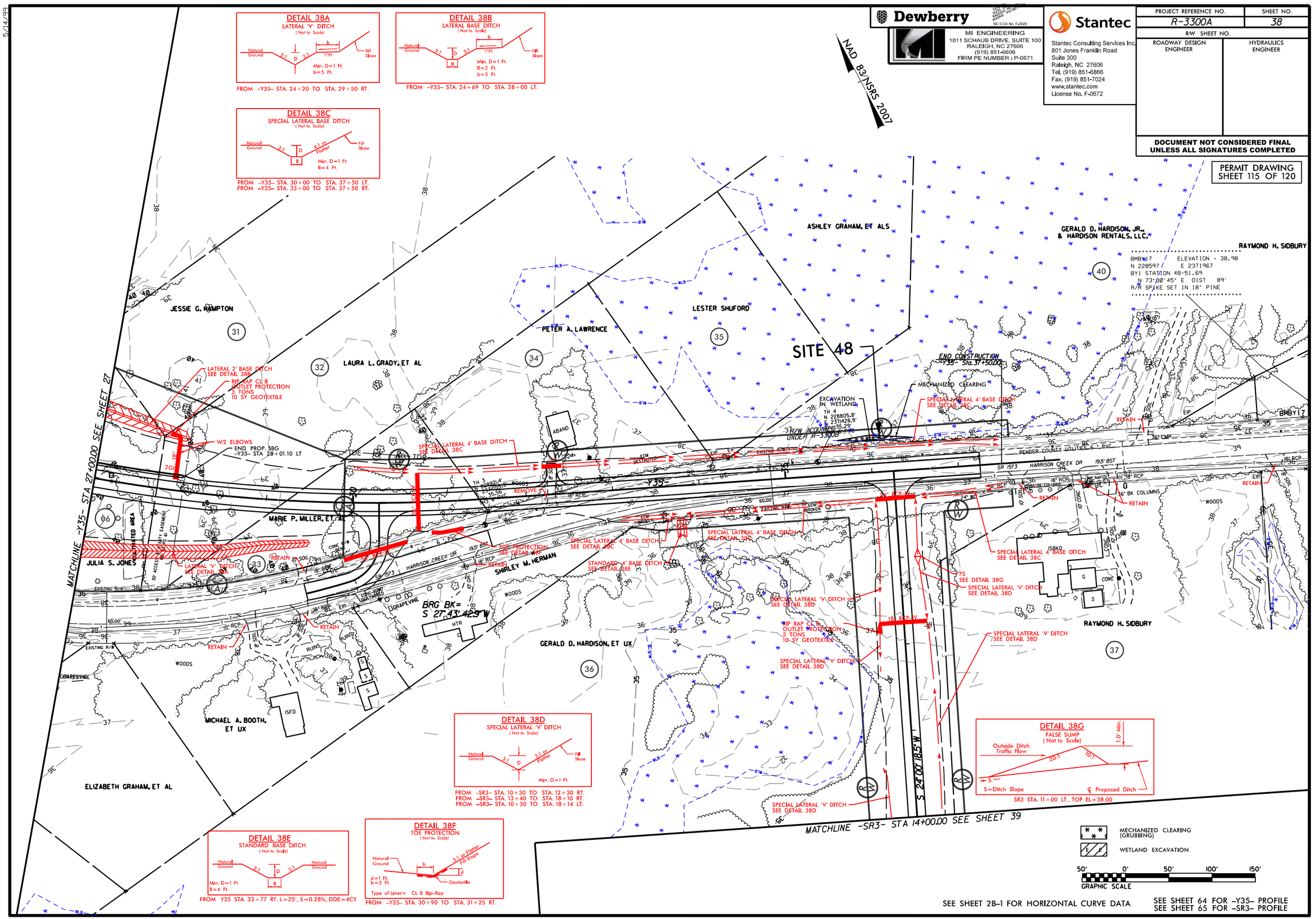
FROM –Y35– STA. 24+20 TO STA. 29+50 RT.

DETAIL 38B
LATERAL BASE DITCH
(Not to Scale)

FROM –Y35– STA. 24+69 TO STA. 28+00 LT.

DETAIL 38C
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM –Y35– STA. 30+00 TO STA. 37+50 LT.
FROM –Y35– STA. 33+00 TO STA. 37+50 RT.



DETAIL 38D
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

FROM –SR3– STA. 10+30 TO STA. 12+30 RT.
FROM –SR3– STA. 13+40 TO STA. 18+10 RT.
FROM –SR3– STA. 10+30 TO STA. 18+14 LT.

DETAIL 38G
FALSE SUMP
(Not to Scale)

SR3 STA. 11+00 LT., TOP EL=38.00

DETAIL 38E
STANDARD BASE DITCH
(Not to Scale)

FROM Y35 STA. 33+77 RT. L=25', S=0.28%, DDE=4CY

DETAIL 38F
TOE PROTECTION
(Not to Scale)

FROM –Y35– STA. 30+90 TO STA. 31+25 RT.

MECHANIZED CLEARING (GRUBBING)

WETLAND EXCAVATION

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

SEE SHEET 2B-1 FOR HORIZONTAL CURVE DATA

SEE SHEET 64 FOR –Y35– PROFILE
SEE SHEET 65 FOR –SR3– PROFILE

7/31/2024
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-3300A	X-255

PERMIT DRAWING
SHEET 116 OF 120

WETLAND
SITE 48

36+00.00
0.020 0.020 3:1 3:1 35.86 38.62 35.27 3:1 3:1

WETLAND

35+50.00
0.020 0.020 3:1 3:1 35.86 38.43 35.18 3:1 3:1

35+00.00
0.020 0.020 3:1 3:1 35.86 38.27 35.09 3:1 3:1

34+50.00
0.020 0.020 3:1 3:1 35.19 38.14 35.00 3:1 3:1

34+00.00
0.020 0.020 3:1 3:1 35.95 38.00 34.90 3:1 3:1

33+50.00
0.020 0.020 3:1 3:1 36.00 37.87 35.10 3:1 3:1

33+00.00
0.020 0.020 3:1 3:1 36.04 37.37 35.55 3:1 3:1

32+50.00
0.020 0.020 3:1 3:1 36.09 35.93 3:1

-Y35-

11/20/2024

6/23/16

30-JUL-2024 13:07
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WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND 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)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
Site 1	Y33RPCA 23+50 TO Y33LPC 21+45 IMPACTS LOCATED AT Y33RPCA FILL, Y33LPC FILL, AND DITCH INSIDE Y33LPC	Roadway Fill	4.493		0.205	0.476						
Site 2	Y33RPCA 29+35 RT TO 30+87 LT, Y33LPC 5+47 TO 8+09 RT	Roadway Fill	0.672		0.016	0.036						
Site 2	L1 216+22 LT	Bank Stabilization						0.002	0.002			
Site 3	Y33 77+38 LT	Bank Stabilization						0.049	0.021	89	27	
Site 49	Y33 100+10 LT	Bank Stabilization						0.004	0.007	14	15	
Site 52	Y33 101+22 TO 101+65 LT	Roadway Fill				0.017						
Site 4	Y33RPB 15+70 TO 14+00 RT	Roadway Fill	0.103			0.022						
Site 5	L 234+23 TO 243+02 RT	Roadway Fill						0.440				
Site 6	Y33RPCA 47+84 LT TO 49+50 LT	Bank Stabilization						0.108		300		
Site 6	Y33RPCA 49+50 LT TO 58+15 RT	Roadway Fill**						0.592	0.021	940	36	
Site 7	L1 249+91 TO 254+73	Roadway Fill	1.655		0.009	0.126						
Site 7	L1 253+29 LT	Bank Stabilization						0.030	0.013	77	30	
Site 7	L1 253+29	2-9'X7' RCBC						0.096		226		
Site 7		Temp. Diversion Channel***			0.040		0.017					
Site 7	L1 252+86 RT	Bank Stabilization						0.027	0.003	75	12	
Site 8	L1 254+84 TO 260+33	36" Pipe/Roadway Fill	2.188		0.030	0.224						
Site 8	L1 258+25 LT	Bank Stabilization						0.003	0.002	20	10	
Site 9	L1 282+72 TO 285+60	Roadway Fill	0.605				0.097					
Site 9	L1 283+46	3-12'X7' RCBC						0.088	0.016	375	93	
Site 10	L1 306+20 LT	Bank Stabilization						0.013	0.005	50	17	
Site 10	L1 306+00	7'X5' RCBC						0.059		182		
Sub Totals*:			9.716		0.300	0.901	0.114	1.511	0.090	2348	240	

NOTES:

** Site 6 - 916 LF of stream channel will be relocated to partially offset the 940 lf of permanent stream impacts at this site. The remaining 24 LF of stream loss willed require mitigation at 1:1 per email correspondence from DWR and USACE on 4/30/21.

*** Temporary Excavation Impact for the Diversion Channel

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40237.1.1

WETLAND AND SURACE 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)
Site 10	L1 305+81 RT	Bank Stabilization						0.017	0.002	53	8	
Site 11	L1 312+06 TO 312+33 LT	Outlet Protection (keyed in)						0.006	0.028	22	56	
Site 11	L1 313+03	48" Pipe (JS mit)						0.029		107		
Site 11	L1 313+03	48" Pipe (JS non-mit)						0.122	0.013			
Site 11	L1 312+20 LT TO 315+52 RT	Roadway Fill	0.278			0.031						
Site 12	L1 335+64 to 337+84 LT	Roadway Fill	0.211			0.045						
Site 13	L1 337+91 TO 350+22RT	Roadway Fill	3.762				0.405					
Site 50	SR2 14+30	24" Pipe	0.005				0.022					
Site 14	L1 350+22 RT to 353+09 LT	Roadway Fill	0.918		0.057		0.040					
Site 15	SR1 14+86 LT	Bank Stabilization						0.017	0.003	53	10	
Site 15	SR1 15+38	72" Pipe						0.073		231		
Site 15		Temp. Diversion Channel**			0.015	0.006						
Site 15	SR1 11+87 to 15+36 RT	Roadway Fill	0.332		0.004	0.018	0.005					
Site 16	Y34 12+86 to 13+92 RT	Lateral 4' Base Ditch			0.018		0.018					
Site 17	Y34 13+88 to 15+70 LT	24" Pipe	0.046		0.025		0.010					
Site 18	SR9 13+67 to 14+16	18" Pipe	0.083				0.013					
Site 19	Y34 35+75 to 36+11 RT	Special Lateral 4' Base Ditch			0.015		0.008					
Site 20	L1 357+54 to 360+80	2 @ 18" Pipe	0.758		0.005	0.037						
Site 20***	L1 358+61 to 360+03 LT	Indirect Impacts - Total Take	0.035									
Site 51	Y34DET 33+42 to 34+04 LT	Roadway Fill	0.001				0.011					
Sub Totals*:			6.429		0.139	0.137	0.532	0.264	0.046	466	74	

NOTES:

** Temporary Excavation Impact for the Diversion Channel

*** Site 20: Total Site Impact of 0.79 acres includes 0.76 acres of direct impacts and 0.03 acres of indirect impacts. Total Take impacts 1:1 mitigation.

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WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
Site 21 **	L1 383+67 LT - 385+75 LT	Dual 2@115', 72" MBT	0.110		0.025	0.079	0.075	0.009		61		
Site 21	L1 383+85 LT - 385+20 LT	Bank Stabilization			0.006	0.004		0.003	0.007	42	26	
Site 21	L1 385+75 LT - 389+03 RT	54" RCP & 2@18" RCP	0.620		0.021	0.076		0.035	0.003	219	37	
Site 22	L1 394+75 LT - 397+33 RT	54" RCP	0.196		0.008	0.044						
Site 23	L1 399+85 LT - 401+69 RT	30" RCP	0.192		0.002	0.020						
Site 24	L1 408+64 LT - 412+19 RT	18" RCP	0.384		0.006	0.003						
Site 25	L1 412+20 LT - 414+78 LT	Roadway fill	0.240			0.013						
Site 25	L1 414+86 LT - 415+77 LT	36" RCP	0.134			0.014						
Site 26	L1 415+39 RT - 415+69 RT	36" RCP				0.003						
Site 27 ***	L1 425+74 RT - 429+10 LT	Dual 1@125',1@117', 72" MBT	0.192		0.023	0.111	0.415					
Site 27	L1 428+70 RT - 429+37 LT	Roadway fill	0.020			0.002						
Site 28	L1 434+12 LT - 436+70 RT	48" RCP	0.141			0.012	0.008	0.059		235		
Site 28	L1 434+12 LT - 436+70 RT	Bank Stabilization						0.005	0.005	31	33	
Site 29	L1 442+28 LT - 445+38 RT	2@6'x7' RCBC	0.498	0.009	0.020	0.052	0.010	0.079		273		
Site 29 ****	L1 442+28 LT - 445+38 RT	Bank Stabilization			0.022			0.012	0.001	80	8	
Site 30	L1 447+37 RT - 451+09 LT	Roadway fill	0.625			0.031						
Site 31	L1 452+05 RT - 452+66 RT	24" RCP	0.070		0.002	0.010						
Site 32	L1 454+25 LT - 455+48 LT	30" RCP	0.106		0.004	0.009						
Site 33	L1 455+52 RT - 467+46 RT	Roadway fill & 2@36" RCP	0.798		0.017	0.061						
Site 34	L1 467+39 LT - 470+68 RT	Roadway fill & 36" RCP	0.197			0.015						
Site 35	L1 469+64 LT - 485+61 RT	5@36" RCP	5.599		0.002	0.434						
Site 36	L1REV 518+59 LT - 520+73 RT	Roadway fill	0.108			0.005						
Sub Totals*:			10.230	0.009	0.158	0.998	0.508	0.202	0.016	941	104	

NOTES:

** Site 21: Temp. work brg, "Temp Fill in Wetlands" (14HP piles): 40 sf total. (not included in quantities above)

*** Site 27: Temp. work brg, "Temp Fill in Wetlands": (14HP piles) 244sf total. (not included in quantities above)

*** Site 27: Temp. work brg, "Temp Fill in SW": (14HP piles) 20 sf total. (not included in quantities above)

*** Site 27: Interior Bent "Fill in Wetlands" (15@ 2'x2' sq. piles): 60 sf total. (not included in quantities above)

*** Site 27: Within the footprint of the interior bents, a 10 ft wide swath of Temp "Excavation in Wetlands" is shown for stump removal for pile installation.

**** Site 29: Temp Excavation impacts acreage includes temp fill impacts for bank stabilization shown on diversion channel.

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WETLAND AND SURACE 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)
Site 37	L1REV 519+89 RT - Y35 20+28 LT	2@7'x8' RCBC	0.489					0.076		285		
Site 37	L1REV 519+89 RT - Y35 20+28 LT	Channel Relocation	0.242		0.081	0.054		0.068	0.007	294	30	
Site 37 **	L1REV 519+89 RT - Y35 20+28 LT	Bank Stabilization			0.020			0.024		100		
Site 38	L1REV 528+18 LT - 529+81 LT	Roadway fill	0.185			0.024						
Site 39	L1REV 532+78 RT	Roadway fill	0.023									
Site 40	L1REV 534+46 - 535+20 RT	Roadway fill	0.067									
Site 41	L1REV 537+11 - 538+10 LT	36" RCP	0.151									
Site 42	L1REV 537+60 RT	Lateral ditch			0.005	0.003						
Site 42 ***	L1REV 537+60 RT **	Indirect Impacts - Total Take			0.010							
Site 43	L1REV 538+02 - 538+47 LT	Lateral ditch	0.006		0.005	0.015						
Site 44	L1REV 545+23 LT - 546+61 RT	36" RCP	0.268			0.027						
Site 45	L1 560+15 RT	Roadway fill	0.001			0.001						
Site 46	L1 562+69 LT - 563+66 LT	Roadway fill	0.015			0.025						
Site 46	L1 564+45 LT - 568+65 RT	1@36" RCP,3@12'X8' RCBC	1.827	0.026	0.049	0.172		0.130	0.014	332	12	
Site 46 ****	L1 564+45 LT - 568+65 RT	Bank Stabilization			0.058			0.050		102		
Site 47	Y35 13+45 RT - 14+17 RT	36" RCP	0.014		0.001	0.008						
Site 47	Y35DET	Temp Detour		0.047			0.009					
Site 48	Y35 36+00 LT	Lateral ditch			0.001	0.006						
Sub Totals	THIS SHEET		3.288	0.073	0.230	0.335	0.009	0.348	0.021	1113	42	
Sub Totals	SHEETS 117-119		26.375	0.009	0.597	2.036	1.154	1.977	0.152	3755	418	
TOTALS*:			29.663	0.082	0.827	2.371	1.163	2.325	0.173	4868	460	

NOTES:

** Site 37: Temp Excavation impacts acreage includes temp fill impacts for bank stabilization shown on diversion channel.

*** Site 42: Total Take - total site impact of 0.018 acres includes includes 0.008 acres of direct impacts and 0.010 acres of indirect impacts.

**** Site 46: Temp Excavation impacts acreage includes temp fill impacts for bank stabilization shown on diversion channel.

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R-3300A PNG Utility Permit Drawings

R-3300A Impacts

- WETLAND EXCAVATION
- FILL IN WETLAND
- SURFACE WATER IMPACTS
- MECHANIZED CLEARING (GRUBBING)
- HAND CLEARING (NON-GRUBBING)
- TEMPORARY SURFACE WATER IMPACTS
- TEMPORARY FILL IN WETLAND
- MECHANIZED CLEARING (GRUBBING)
- DENOTES TEMPORARY FILL IN WETLAND

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PROJECT REFERENCE NO.	SHEET NO.
R-3300A	PNG
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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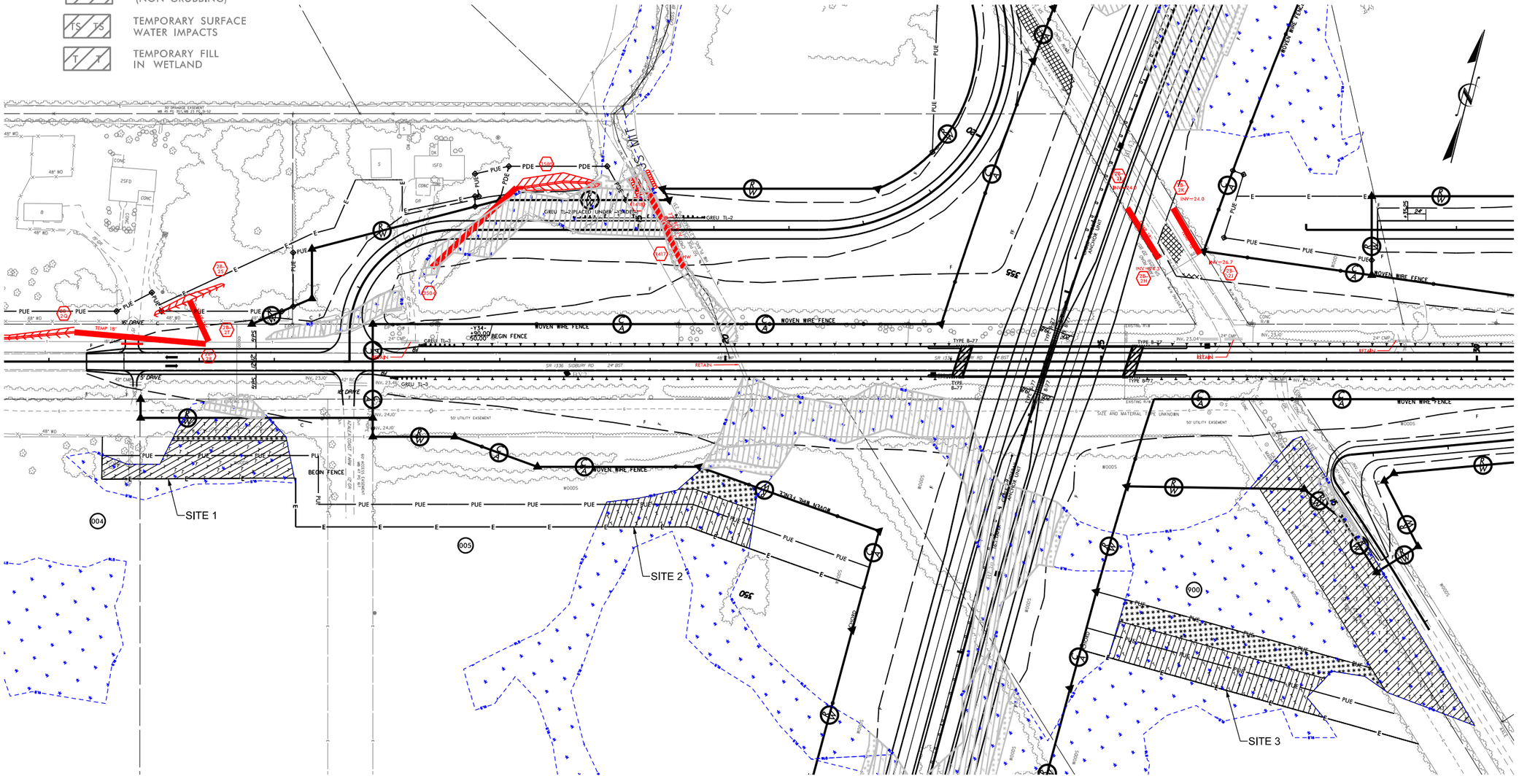
PNG PERMIT DRAWING SHEET 1 OF 2



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WETLAND AND SURACE 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)
Site 1 **	Y34 11+71 RT TO Y34 14+26 RT	PNG GAS LINE		0.310		0.017						
Site 2 **	Y34 18+28 RT TO Y34 20+39 RT	PNG GAS LINE		0.211		0.064						
Site 3 **	Y34 25+10 RT TO Y34 29+97 RT	PNG GAS LINE		1.020		0.221						
Sub Totals*:				1.541		0.302						

*Rounded totals are sum of actual impacts

NOTES:
**Impacts are based on information and routing provided by PNG
PNG = Piedmont Natural Gas (Duke Energy)

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