



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

June 26, 2014

Wilmington Regulatory Field Office
US Army Corp. of Engineers
69 Darlington Avenue
Wilmington, NC 28403

N.C. Dept. of Environment & Natural Resources
Division of Coastal Management
400 Commerce Avenue
Morehead City, NC 28557

ATTN: Brad Shaver
NCDOT Coordinator

ATTN: Stephen Lane
NCDOT Coordinator

Dear Sirs':

Subject: **Revised Modification Request for Section 404 Nationwide Permit 23, Section 10 Permit, CAMA Major Development Permit, and Section 401 Water Quality Certification** for proposed widening of the US 17-74-76/NC 133 from the NC 133/SR 1472 Interchange to the US 421/NC 133 Interchange, Brunswick County. Federal Aid Project No. NHS-0017(68); TIP No. R-3601.

References: R-3601 404/401/CAMA permit application dated April 26, 2013
R-3601 Nationwide Permit 23 and 5, issued August 19, 2013 (SAW-2007-03461-010)
R-3601 Major CAMA permit, issued August 2, 2013 (#89-13)
R-3601 401 Water Quality Certification, issued May 16, 2013 (DWR# 13-0472)
R-3601 404/401/CAMA permit modification request dated May 21, 2014

As you are aware, the North Carolina Department of Transportation (NCDOT) proposes to widen US 17-74-76/NC 133 from the NC 133/SR 1472 Interchange to the US 421/NC 133 Interchange by adding one auxiliary lane in each direction. The purpose of this letter is to update the recent modification request of the issued permits for this project to account for design changes and geotechnical conditions. Please find enclosed revised permit drawings (sheets 28, 29, 32, 34, 35, and 36), revised utility drawings, stormwater management plan, and wetland permit impact summary from the modification submittal with this revision request.

Bridge 108 on southbound US 17 over Alligator Creek will be widened to provide a new traffic lane on the south side of the current alignment. Flat roadway grade line profiles required to meet existing bridge deck elevations on bridge 108 have led to concerns about

potential ponding and accumulation of ice on the bridge deck along the south side barrier. To remedy this situation and improve safety, deck drains will be installed on the south side of the bridge at 6' intervals over a distance of 276 feet. While stormwater from new deck surfaces will be discharged directly to the waterway at Bridge 108, all of the surface drainage at Bridge 107 is to be removed and treated prior to discharge into Alligator Creek, for a net reduction of 3,860 sq. ft. of stormwater draining directly into the creek. Additional justification for deck drains can be found in the attached email exchange with Mason Herndon at NCDWR.

As you are aware, there has been utility activity in jurisdictional areas that was not included in our permit. Therefore, NCDOT is requesting an additional <0.01 of permanent wetland fill for the relocation of an Earthlink line and addition of utility boxes. There has also been a change in the profile of a directional bore of an AT&T underground phone line (no additional impacts), which is reflected on the permit drawings.

Lastly, geotechnical studies have revealed the need for a surcharge on the east bank of the Alligator Creek for the roadway approach to Bridges 107 and 108. The surcharge involves placement of temporary fill for an interval of time to a specified height in order to consolidate existing underlying soils. The necessary height of the surcharge will lead to an increase in temporary fill in the wetlands between the east and west bound lanes until the surcharge soil is removed. The temporary impact area will replace an area originally designated for hand clearing. The result is an increase of temporary fill in wetland (from 0.01 acre to 0.04 acre total) and a reduction of hand clearing in wetland (from 0.41 acre to total of 0.38 acre).

Regulatory Approvals

CAMA: NCDOT is revising the recently submitted Coastal Area Management Act (CAMA) Major Development permit modification request to account for the change in impacts as noted above.

Section 404: NCDOT is revising the recently submitted Nationwide 23 modification request to account for the change in impacts as noted above.

Section 401: NCDOT is revising the recently submitted Water Quality Certification modification request to account for the change in impacts noted above. All general conditions of the Water Quality Certification will continue to be met. NCDOT is providing this revision letter to the NCDWR for their review and approval.

A copy of the revised sheets will be posted on the NCDOT Website at: <https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx> under Quick Links > Permit Applications

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Amy James at aejames2@ncdot.gov or (919) 707-6129.

Sincerely,



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

cc: NCDOT Permit Application Standard Distribution List

James, Amy E

From: Herndon, Mason
Sent: Tuesday, June 24, 2014 5:07 PM
To: James, Amy E
Cc: Rivenbark, Chris
Subject: RE: R-3601 bridge 108

Thanks Amy! At this point I would say that you have adequately justified the need for deck drains on the south side of 108 and we can proceed accordingly.

MH

Mason Herndon
NCDENR, Division of Water Resources
Water Quality Programs
mason.herndon@ncdenr.gov
Phone: (910) 308-4021

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From: James, Amy E
Sent: Tuesday, June 24, 2014 1:51 PM
To: Herndon, Mason
Cc: Rivenbark, Chris
Subject: R-3601 bridge 108

Hi Mason,

In follow-up to your conversation with Chris yesterday, I checked with hydraulics concerning the location of deck drains on the existing bridge 108 and the possible use of sonar to determine low spots. Here is what I got from hydro:

Deck drains currently exist against the north barrier only on bridge 108. You can see them on Google street view: <https://www.google.com/maps/@34.234521,-77.969746,3a,90y,34.29h,35.49t/data=!3m4!1e1!3m2!1sDPHidrpGjQsuxbfxlLrS3A!2e0>

There is a constant 2% cross slope from the existing south barrier to the north barrier that slopes toward the existing deck drains. The existing south barrier and shoulder will be cut off and replaced with the lane addition. The proposed lane addition to bridge 108 would have a 2.5% cross slope in the opposite direction (toward the south barrier), which is where we would like to put deck drains.

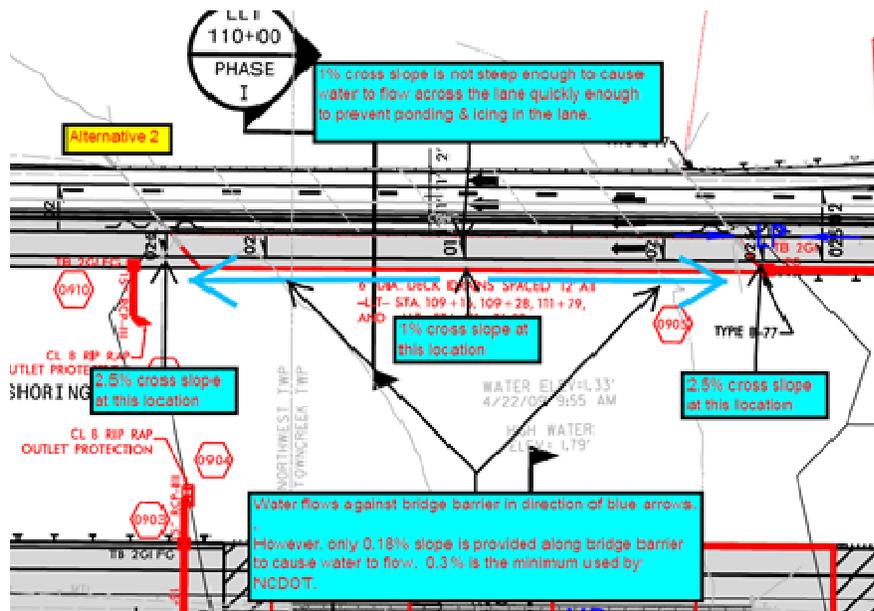
The thing about surveying the bridge for low spots that makes it impractical, is that we wouldn't be able to do so until the lane addition to the bridge was finished and deck drains are formed in during construction.

I also asked about moving the easternmost bent on bridge 107 10 feet in either direction, but have not yet received a response (it would have to come from our design-build team). When I get one I will forward it on!

Thanks,
Amy

three reasons. 1) A bridge such as 108 that is nominally “flat” has imperfections in the deck that result in low areas where water will pond against the barrier, across the shoulder, and into the lane. 2) It is common for bridges to collect debris such as sand and clumps of grass as high as 6 inches against the bridge barrier that will act as miniature dams that will also trap water and cause ponding. 3) Historically, NCDOT has not constructed bridges without an affirmative means of providing deck drainage; whether it is through deck drains or a prevailing slope to cause water to flow off the ends. Our responsibility to the public requires we provide a well thought out drainage solution with built in redundancy that will function in spite of deck imperfections, debris accumulation, or other unforeseen problems. Providing no deck drains is a solution that requires conditions that are too delicate to be reliable over the long term.

Alternative 2: Provide a variable cross slope on the new lane. This option was proposed by the design build team. This design would create a “false crest” in the middle of the bridge at the 1% cross slope location which would cause water to flow east and west toward the ends of the bridge, where cross slope was gradually increased to 2.5%. The false crest would cause a slope along the bridge barrier of 0.18% falling toward each end of the bridge, which is below NCDOT’s minimum gutter slope of 0.3%, considered constructable and adequate to induce water to flow reliably. Like Alternative 1, Alternative 2 could be an academic solution that worked on paper. However, in practice Alternative 2 is not feasible for reasons 1 and 2 cited for Alternative 1. Ultimately, this solution requires conditions that are too delicate to be reliable over the long term. Furthermore, the area of 1% cross slope in the middle of the bridge is not steep enough to cause water to move across the lane toward the bridge barrier quickly enough to prevent ponding. Said another way, the water depth as it sheet flowed across the 1% section would be deep enough to cause hydroplaning. Additionally, we cannot steepen the cross slope enough to create adequate slope along the barrier rail due to constraints preventing lowering the low chord, bridge structural design constraints, and roadway design criteria governing maximum cross slope on a straight section of road.



Alternative 3: Closed drainage system. This bridge is very close to the water surface. Notice the dark high tide line on the piling cap in the picture below. A closed drainage system would be submerged during high tide, and would be subject to damage from the tidal flow. It would also decrease clearance under the bridge.



Alternative 4: Provide additional width on the shoulder to accommodate ponding. The new widened section could be made slightly wider before it was limited by the constraint of not lowering the low chord. The additional width would provide additional ponding area. However, spread on a nominally “flat” bridge is unpredictable for the reasons cited in Alternative 1 (deck imperfections and debris). If we could reliably predict the spread (as on a non-flat bridge) this would be a viable alternative. (Non-flat bridges are also somewhat “self cleaning” of debris and tend not to accumulate sand and grass clumps as readily as flat bridges.) Since deck imperfections and debris make spread width unpredictable, we would not know whether a widened shoulder would be adequate to contain the spread.

- 3) Is it possible just to have deck drains over the rip rap end bent protection in combination with a little additional widening?: *If the bridge were not flat, this could be a viable alternative. However, with debris and deck imperfections as noted above, we cannot predict where spread will occur. If by chance, the spread occurred over the banks where the drains were located, this would work. If it occurred in a pocket in the middle of the bridge due to a low spot in the deck or debris accumulation, there would be no means to convey the water to the deck drains on the ends of the bridge.*

Please let me know if you still have questions and/or if this is still not sufficient justification for deck drains on bridge 108.

Thanks,
Amy

From: Herndon, Mason
Sent: Thursday, June 12, 2014 3:19 PM
To: James, Amy E; brad.e.shaver@usace.army.mil; Lane, Stephen; Sollod, Steve
Cc: Rivenbark, Chris
Subject: RE: R-3601 revised mod request

Amy,

I’m still a little confused on why this change is just coming this late in the process. I understand working with existing grades makes stormwater management more challenging and that safety is a top priority. However, I would like to have the following additional information?

- Are you capturing and discharging stormwater water from the roadway prior to it reaching the bridge and discharging through the deck drains?
- What other options did DOT consider before adding open deck drains and why were they not determined to be adequate options? For example closed drainage system, widening the bridge a little more to accommodate the spread and ponding concerns and etc.
- Is it possible just to have deck drains over the rip rap end bent protection in combination with a little additional widening?

I just feel like there is some way that DOT can abide by their prior commitment of not adding additional direct stormwater discharge into surface waters.

Thanks!
MH

Mason Herndon
NCDENR, Division of Water Resources
Water Quality Programs
mason.herndon@ncdenr.gov
Phone: (910) 308-4021

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From: James, Amy E
Sent: Thursday, June 12, 2014 2:32 PM
To: Herndon, Mason; brad.e.shaver@usace.army.mil; Lane, Stephen; Sollod, Steve
Cc: Rivenbark, Chris
Subject: RE: R-3601 revised mod request

Mason,

This is what we have in the draft revised mod request about the justification for new deck drains on bridge 108:

“Flat roadway grade line profiles required to meet existing bridge deck elevations have led to concerns about potential ponding and accumulation of ice on the bridge deck along the south side barrier. To remedy this situation and improve safety, deck drains will be installed on the south side of the bridge at 12’ intervals over a distance of 276 feet.”

Is that enough justification, or would we need more?
Thanks,
Amy

From: Herndon, Mason
Sent: Thursday, June 12, 2014 2:04 PM
To: James, Amy E; brad.e.shaver@usace.army.mil; Lane, Stephen; Sollod, Steve
Cc: Rivenbark, Chris
Subject: RE: R-3601 revised mod request

Amy,

The SMP that was presented at 4C and submitted in the original application stated that there would be “no additional surface water discharged to the deck drains on existing Bridge No. 108 over Alligator Creek.” The 4B meeting minutes state that water will be intercepted and no additional water will added to the existing deck drains on the north side of the bridge that will be retained. It also states that there will be no deck drains on the new portion of the bridge to the south. Are you advising us that the revised application will be adding decks drains on the new portion of the bridge? If this is correct, will they discharge directly into the surface waters of Alligator Creek?

If my assumptions are correct, we will need a very strong explanation of why this change in commitment is required before we can approve the modification request. It is not DWR’s policy to approve direct stormwater discharge into surface waters. It would be very helpful if you could provide some additional information regarding this change.

Thanks!
MH

Mason Herndon
NCDENR, Division of Water Resources
Water Quality Programs
mason.herndon@ncdenr.gov
Phone: (910) 308-4021

E-mail correspondence to and from this address may be subject to the
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From: James, Amy E
Sent: Thursday, June 12, 2014 1:02 PM
To: brad.e.shaver@usace.army.mil; Herndon, Mason; Lane, Stephen; Sollod, Steve
Cc: Rivenbark, Chris
Subject: R-3601 revised mod request

Hello everyone,

You should be seeing a revised mod request for R-3601 in the next week or so (with revised utility drawings, to account for the unauthorized Earthlink work) and the design-build team wanted me to just give you a heads up that this revision will include adding deck drains to bridge 108 to rectify safety concerns our hydraulic unit is having with the proposed system. We are still removing deck drains from bridge 107 (the bridge being totally replaced) and in fact there will still be a net loss of direct drainage into Alligator Creek even with the deck drains on bridge 108.

If you have any concerns about this change that you feel will possibly result in the non-issuance of the mod, please let me know as soon as possible.

Thanks,
Amy

Amy James
Biologist, Project Management
NCDOT, Natural Environment Section
Direct 919.707-6129
aejames@ncdot.gov

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North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
 FOR LINEAR ROADWAY PROJECTS



(Version 1.2; Released September 2011)

Project/TIP No.: R-3601 **County(ies):** Brunswick New Hanover **Page** 1 **of** 1

General Project Information

Project No.:	R-3601	Project Type:	Roadway Widening	Date:	6/9/2014
NCDOT Contact:	Karen McCauley, PE	Contractor / Designer:	Joseph Kelvington, PE		
Address:	Transportation Program - Mngt Unit, NCDOT 1020 Birch Ridge Drive Raleigh, NC 27610	Address:	R-3601 Project Design Manager 801 Jones Franklin Rd. Suite 300 Raleigh, NC 27606		
	Phone: 919-707-6611		Phone:	919-865-7390	
	Email: kmccauley@ncdot.gov		Email:	joseph.kelvington@stantec.com	
City/Town:	Belville and Leland	County(ies):	Brunswick	New Hanover	
River Basin(s):	Cape Fear	CAMA County?	Yes	Yes	
Primary Receiving Water:	Brunswick River	NCDWQ Stream Index No.:	18-77		
NCDWQ Surface Water Classification for Primary Receiving Water	Primary:	Class SC			
	Supplemental:	None			
Other Stream Classification:	None				
303(d) Impairments:	dissolved oxygen (DO)	pH			
Buffer Rules in Effect	N/A				

Project Description

Project Length (lin. Miles or feet):	1.67 Mi.	Surrounding Land Use:	rural, tidally influenced coastal		
	Proposed Project		Existing Site		
Project Built-Upon Area (ac.)	ac.		ac.		
Typical Cross Section Description:	6 lane divided highway, 10 ft paved shoulders lt/rt, 6 ft paved shoulders median; grassed median, varying width		4 lane divided highway, approximately 10 ft paved shoulders rt/lt, 3 ft paved shoulders median; grassed median varying width		
Average Daily Traffic (veh/hr/day):	Design/Future:	ADT 2035=107,000	Existing:	ADT 2009=63,000	

General Project Narrative: Minimizing use of shoulder berm gutter and maintaining grass shoulder sheet flow along the causeway to the maximum extent practical. Eliminating deck drains on Bridge 103 over the Brunswick River and Bridge 107 over Alligator Creek. At Bridge 108 existing deck drains will be retained on the left side and new deck drains will be added to the widened lane on the right side. Bridge 108 and 107 existing deck area with deck drains = 18,230 sq ft. Proposed bridge 108 and 107 deck area with deck drains = 14,740 sq ft.

References

8/17/99

PROJECT REFERENCE NO. R-3601	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/CQUISITION	

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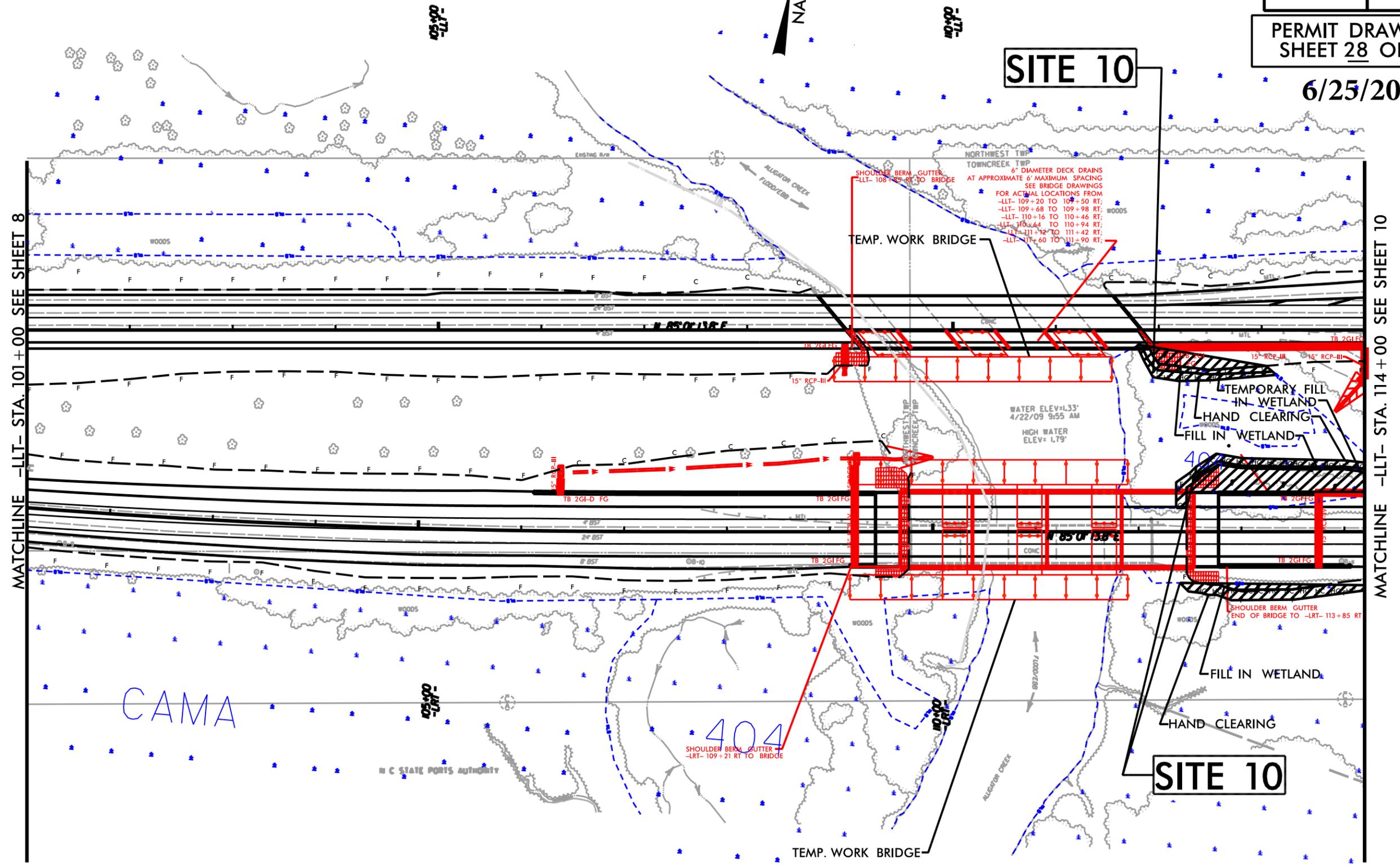
PERMIT DRAWING
SHEET 28 OF 44

6/25/2014

F DENOTES FILL IN WETLAND
HC DENOTES HAND CLEARING



SITE 10



MATCHLINE -LLT- STA. 101+00 SEE SHEET 8

MATCHLINE -LLT- STA. 114+00 SEE SHEET 10

REFERENCE:
 FOR -LLT- & -LRT- PROFILE VIEW, SEE SHEETS 19-20

5/8/2014 STANTEC R-3601 PERMIT PACKAGE 20140508.PDF

8/17/99

PROJECT REFERENCE NO. R-3601	SHEET NO. 9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/CQUISITION	

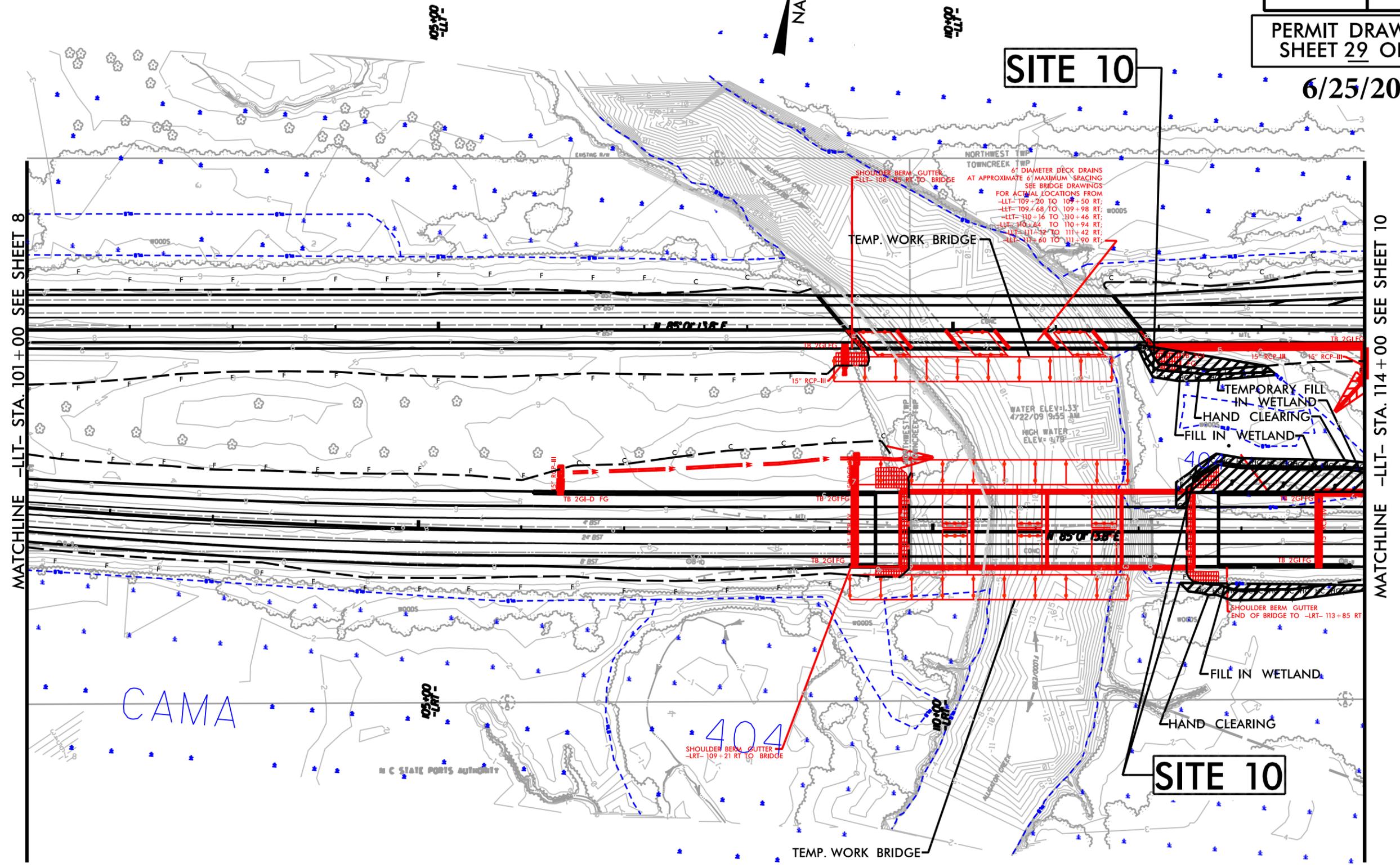
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PERMIT DRAWING
SHEET 29 OF 44
6/25/2014

 DENOTES FILL IN WETLAND
 DENOTES HAND CLEARING

NAD 83/95

SITE 10



MATCHLINE -LRT- STA. 101+00 SEE SHEET 8

MATCHLINE -LRT- STA. 114+00 SEE SHEET 10

SITE 10

REFERENCE:
 FOR -LRT- & -LRT- PROFILE VIEW, SEE SHEETS 19-20

5/8/2014
 STANTEC
 R-3601 PERMIT PACKAGE 20140508.PDF

8/17/99

115+00
-LLT-



120+00
-LLT-
15+00
-RPLT-

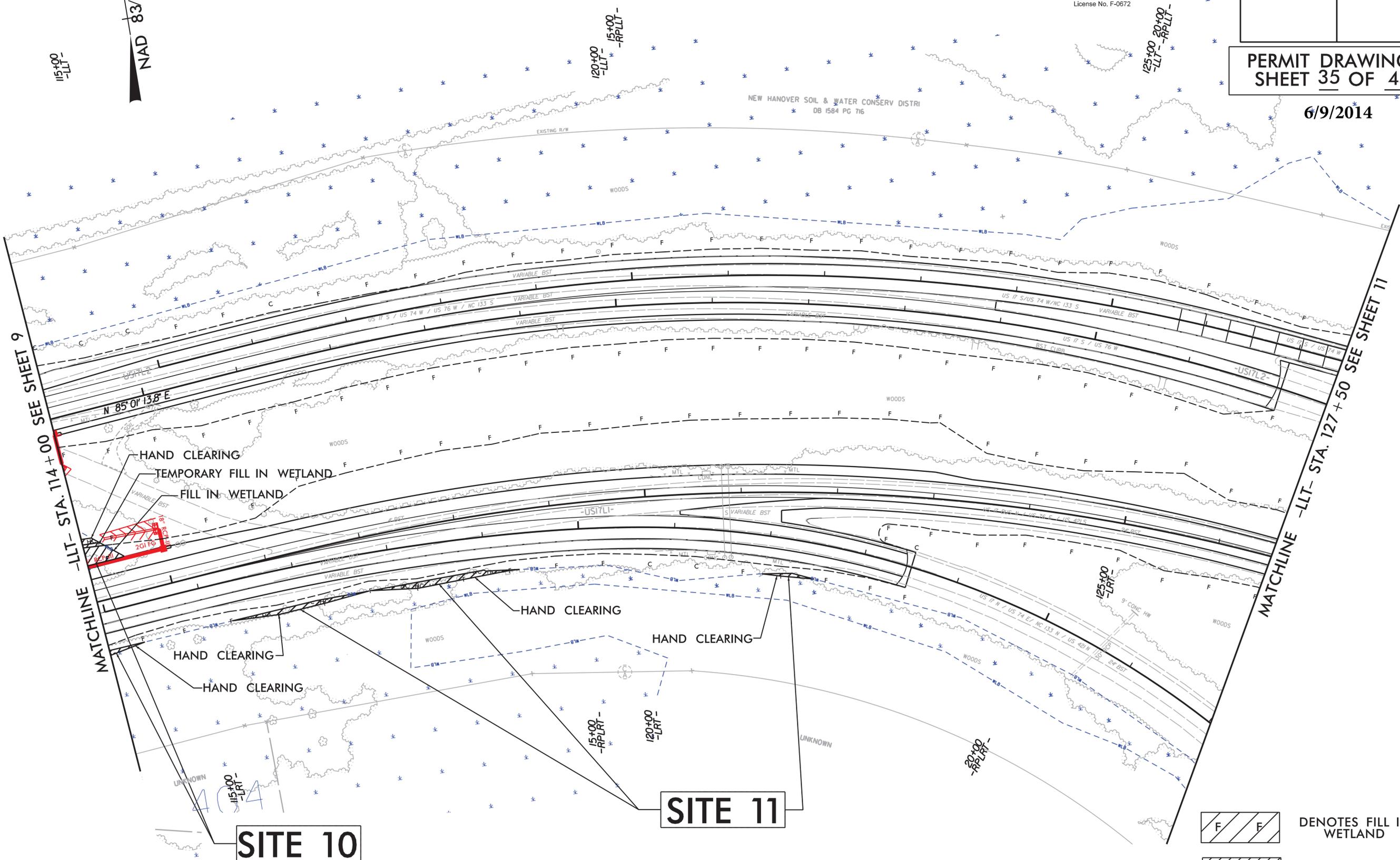
125+00
-LLT-
20+00
-RPLT-

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PROJECT REFERENCE NO. R-3601	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

PERMIT DRAWING
SHEET 35 OF 44

6/9/2014



MATCHLINE -LLT- STA. 114+00 SEE SHEET 9

MATCHLINE -LLT- STA. 127+50 SEE SHEET 11

HAND CLEARING
TEMPORARY FILL IN WETLAND
FILL IN WETLAND

HAND CLEARING
HAND CLEARING

HAND CLEARING
HAND CLEARING

SITE 11

SITE 10

 DENOTES FILL IN WETLAND

 DENOTES HAND CLEARING

5/2/2014
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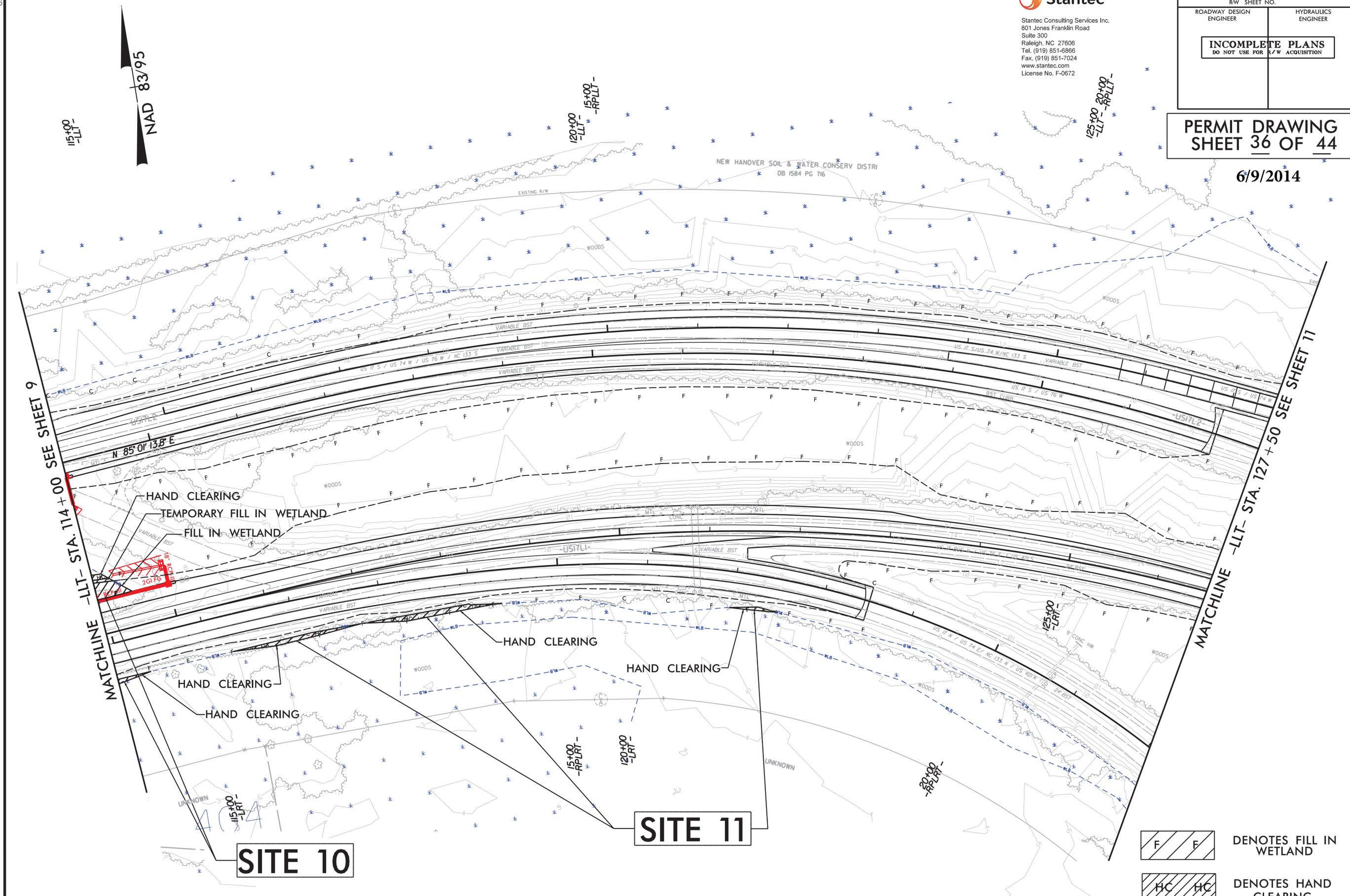


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PROJECT REFERENCE NO. R-3601	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

PERMIT DRAWING SHEET 36 OF 44

6/9/2014



MATCHLINE -LLT- STA. 114+00 SEE SHEET 9

MATCHLINE -LLT- STA. 127+50 SEE SHEET 11

HAND CLEARING
TEMPORARY FILL IN WETLAND
FILL IN WETLAND

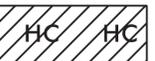
HAND CLEARING
HAND CLEARING

HAND CLEARING
HAND CLEARING

SITE 10

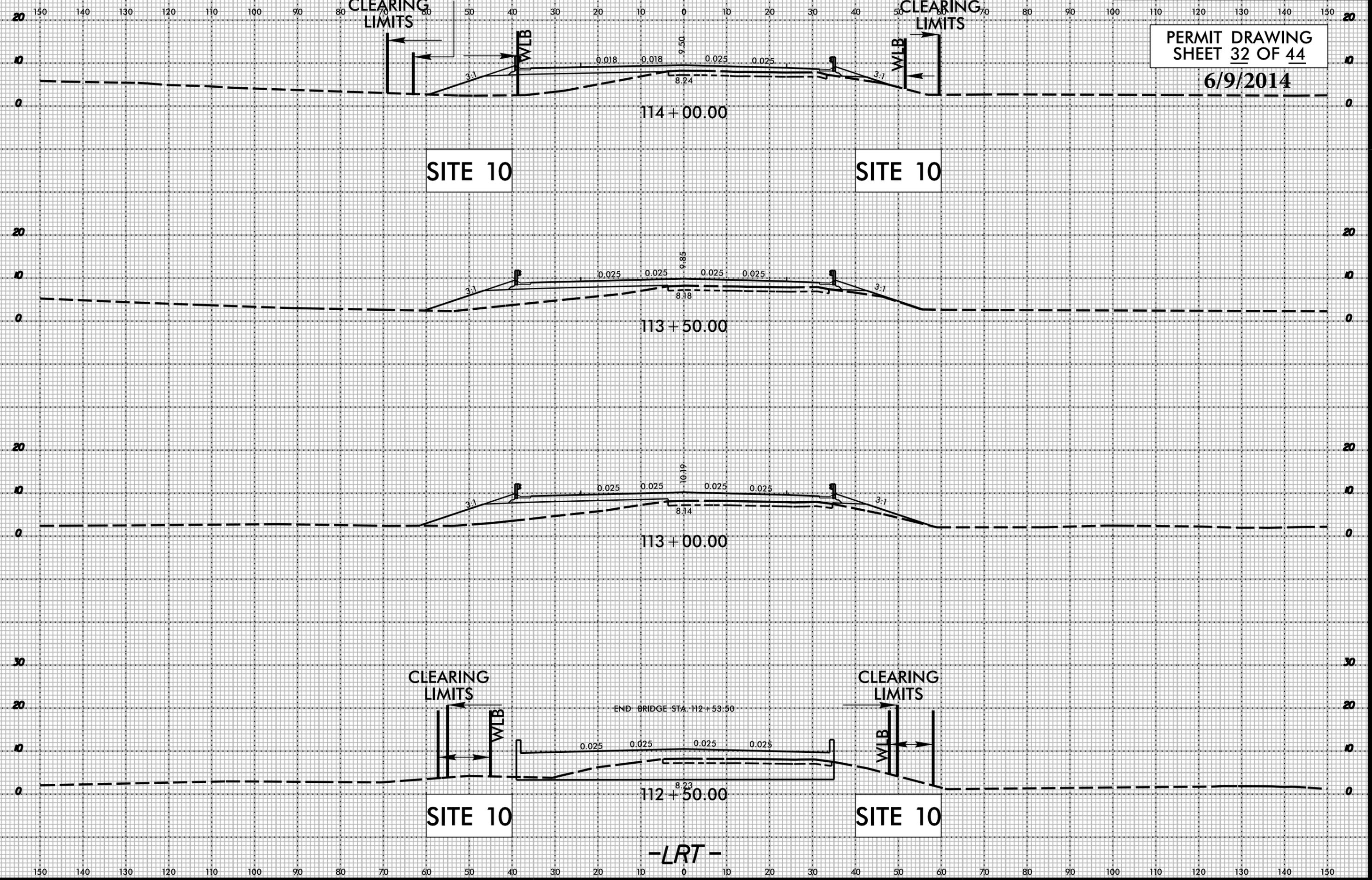
SITE 11

 DENOTES FILL IN WETLAND

 DENOTES HAND CLEARING

5/2/2014
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8/23/99



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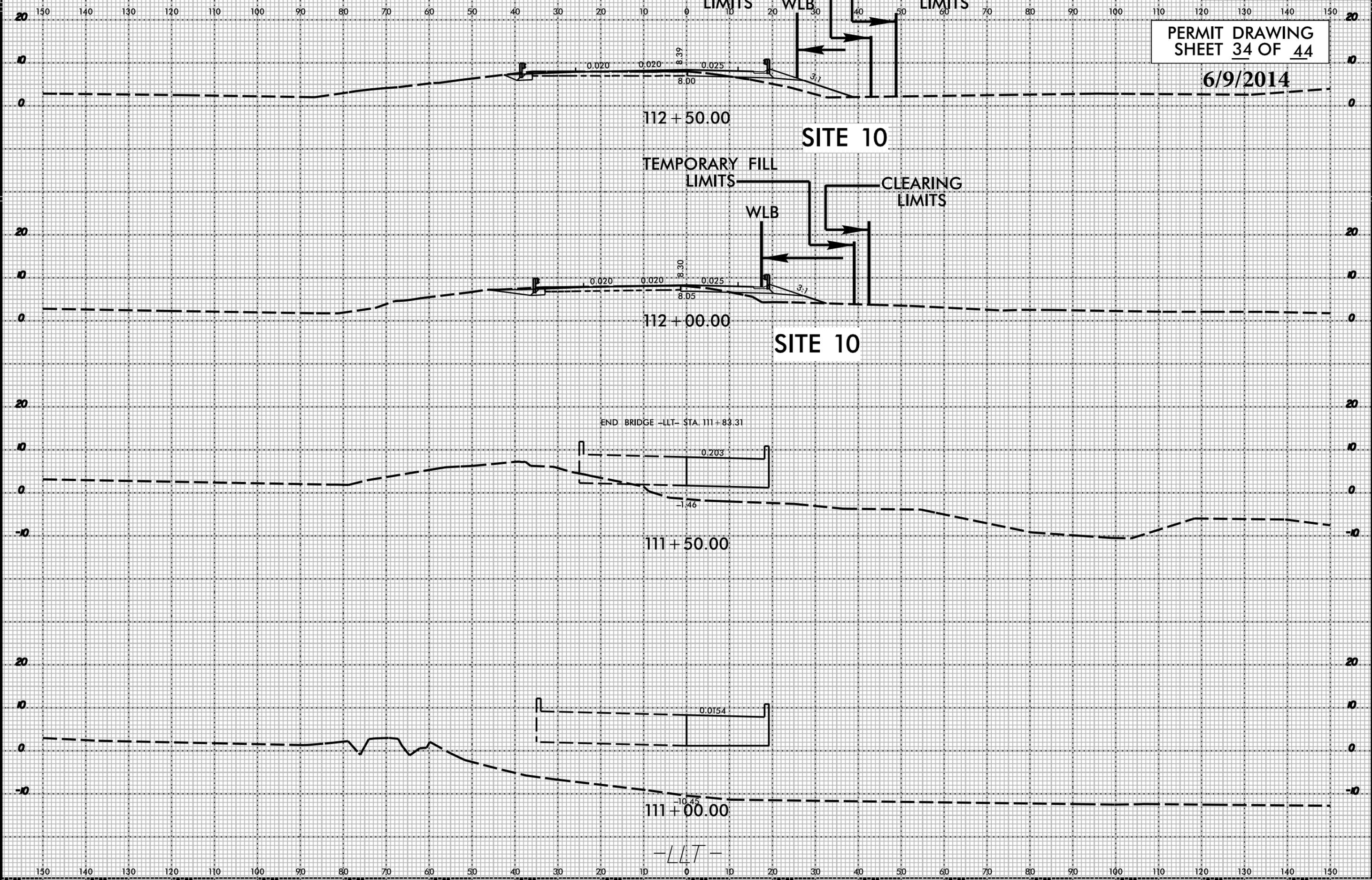
8/23/99

TEMPORARY FILL LIMITS
CLEARING LIMITS

PROJ. REFERENCE NO. R-3601 SHEET NO. X-68

PERMIT DRAWING
SHEET 34 OF 44

6/9/2014



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WETLAND PERMIT IMPACT SUMMARY															
Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS							SURFACE WATER IMPACTS					
			CAMA Permanent Fill in Wetlands (ac)	404 Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Temp Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)	
1	-Y2- 13+05	48" DRAINAGE PIPE								0.01	< 0.01	47	10		
2	-LMED- 54+37 TO 54+75 RT	24" DRAINAGE PIPE		< 0.01				< 0.01	0.02						
3	64+43 LT & 'LMED 65+92 TO 66+26 LT	BRIDGE 24" DRAINAGE PIPE	0.03	< 0.01				< 0.01	0.04						
4	76+31 LT & -LMED- 74+99 TO 75+19 RT	ROADWAY FILL/36" DRAINAGE PIPE		0.04	< 0.01			< 0.01	0.16						
5	-LMED- 83+00 TO 83+21 RT	EXISTING DRAINAGE PIPE			< 0.01			< 0.01							
6	-LRT- 85+81 TO 87+69 RT	ROADWAY							0.01						
7	-LLT- 90+25 TO 90+74 LT & -LLT- 94+00 TO 94+21 LT	ROADWAY			< 0.01			< 0.01	< 0.01						
8	-LLT- 99+60 TO 99+97 LT	30" DRAINAGE PIPE		< 0.01					0.01						
9	-LRT- 101+06 TO 101+17 RT	EXISTING DRAINAGE PIPE							< 0.01						
10	-LLT- 111+79 TO 113+14 RT & -LRT- 112+37 TO 114+59	BRIDGE 108 & BRIDGE 107		0.14	0.03				0.10						
11	-LRT- 115+52 TO 118+61 RT & -LRT- 121+21 TO 121+77 RT	ROADWAY							0.03						
12	' -Y2- 20+65	ROADWAY/36" DRAINAGE PIPE		0.16					0.04						
13	-Y- 34+98 TO 36+55 LT	42" DRAINAGE PIPE								0.02	< 0.01	44	37		
13	-Y- 36+10 LT	BANK STABILIZATION								< 0.01		14			
14	-Y- 38+30 RT	ROADWAY							< 0.01						
TOTALS*:			0.03	0.34	0.04			0.02	0.04	0.38	0.03	< 0.01	105	47	0.00

*Rounded totals are sum of actual impacts

NOTES:

1. Permanent bridge pier surface water impacts = 0.04 acres
2. Temporary bridge pier surface water impacts = 0.02 acres
3. There will be 0.38 acre of hand clearing on this project. Additionally, there will be 0.04 acre of temporary fill in wetlands for erosion control measures in hand clearing areas. There will also be a <0.01 acre (165 sq. ft.) of temporary fill in CAMA wetlands for erosion control measures in hand clearing areas.

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 R-3601 6/17/2014
 BRUNSWICK AND NEW HANOVER COUNTY
 US 17-74-76 FROM NC 133/SR 1472 INTERCHANGE
 TO US 421 / NC 133 INTERCHANGE
 SHEET 44 OF 44

REVISED 06/10/2014

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

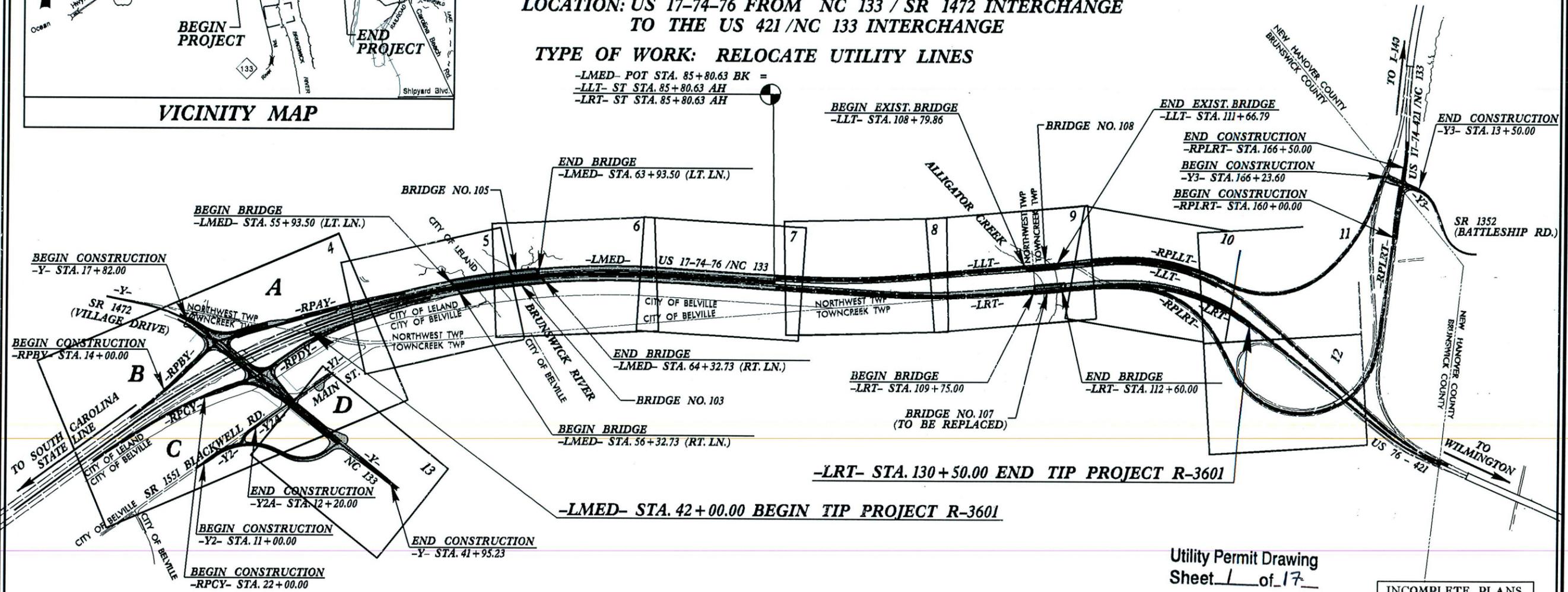
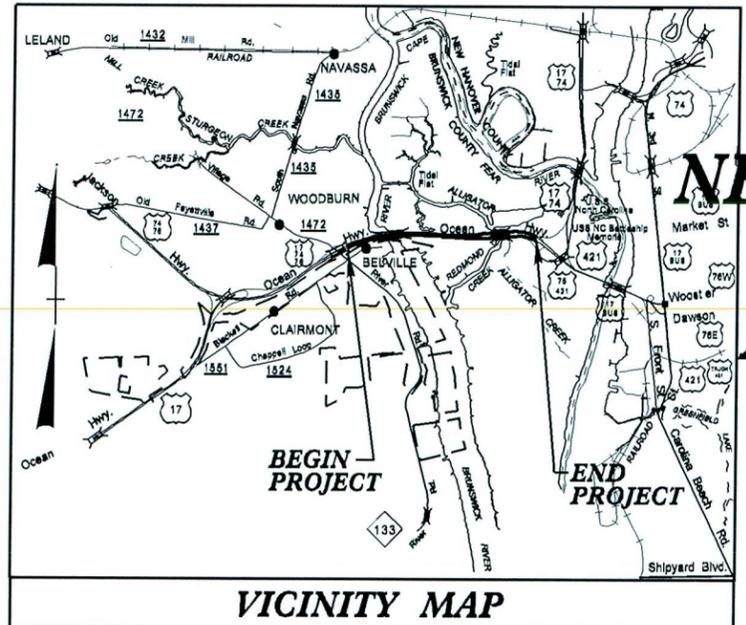
NEU UTILITY DRAWING PLANS BRUNSWICK AND NEW HANOVER COUNTIES

LOCATION: US 17-74-76 FROM NC 133 / SR 1472 INTERCHANGE
TO THE US 421 / NC 133 INTERCHANGE

TYPE OF WORK: RELOCATE UTILITY LINES

-LMED- POT STA. 85+80.63 BK =
-LLT- ST STA. 85+80.63 AH
-LRT- ST STA. 85+80.63 AH

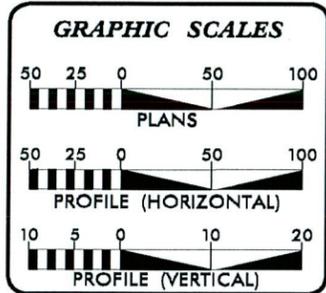
TIP PROJECT:



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF LELAND AND BELVILLE.

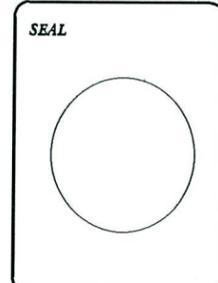
Utility Permit Drawing
Sheet 1 of 17

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



SHEET NO.	DESCRIPTION
1	TITLE SHEET
2 THRU 3A	PROFILE SHEETS
4 THRU 12	UTILITY DRAWING SHEETS

- UTILITIES OWNER**
- 1- AT&T
 - 2- TIME WARNER CABLE (TWC)
 - 3- EARTHLINK
 - 4- MCNC
 - 5- PROGRESS ENERGY (DISTRIBUTION)
 - 6- ATMC
 - 7- BRUNSWICK REGIONAL H2GO WATER AND SEWER



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

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

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
Corey Bousquet, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Kifah Kamil UTILITIES PROJECT DESIGNER

10-JUN-2014 13:55
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\$\$\$\$\$USERNAME\$\$\$\$\$

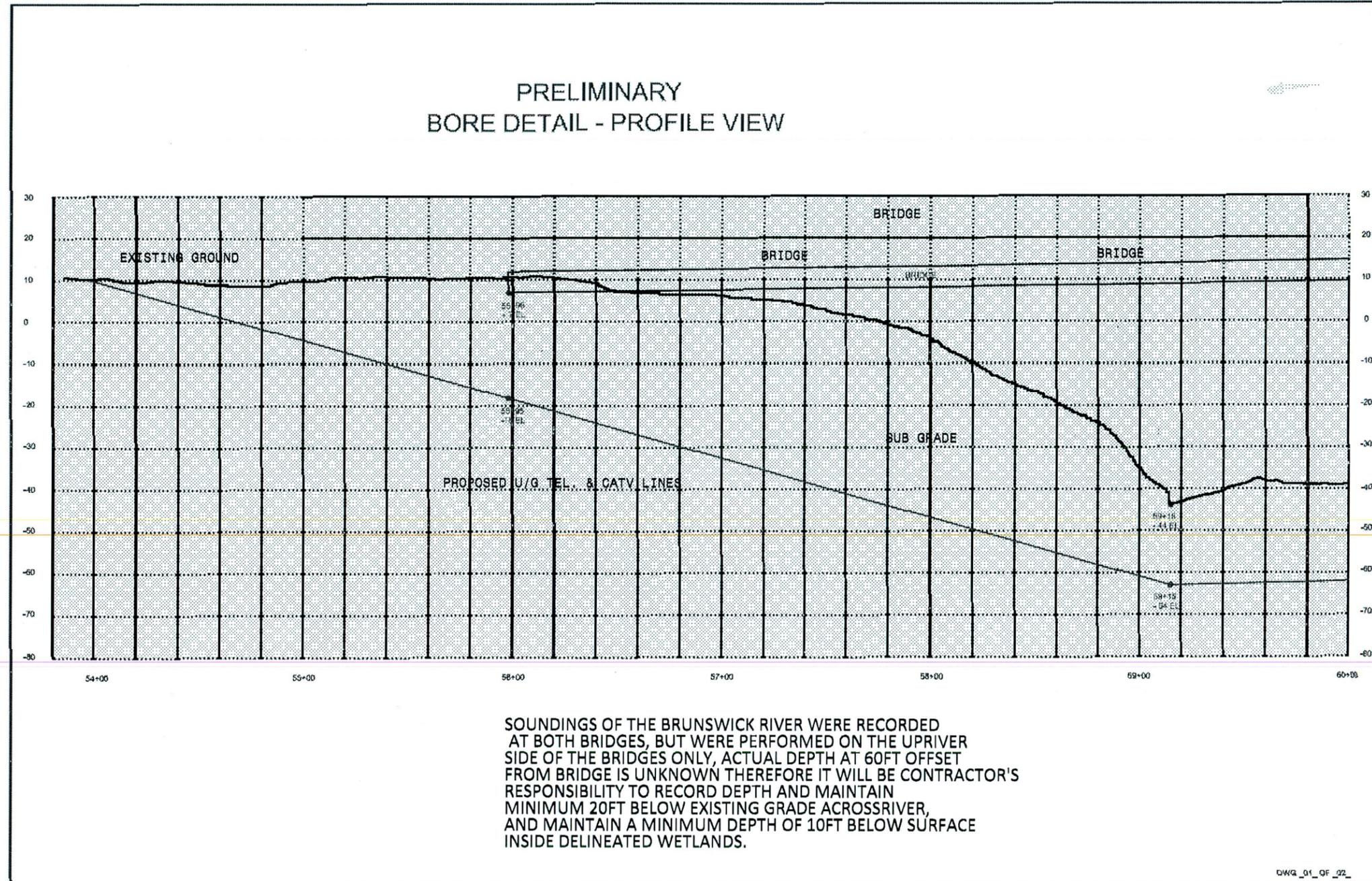
8/17/99

PROJECT REFERENCE NO. R-3601	SHEET NO. 2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

REVISED 6/10/2014

PROPOSED U/G TEL. LINE PROFILE

PRELIMINARY BORE DETAIL - PROFILE VIEW



SOUNDINGS OF THE BRUNSWICK RIVER WERE RECORDED AT BOTH BRIDGES, BUT WERE PERFORMED ON THE UPRIVER SIDE OF THE BRIDGES ONLY, ACTUAL DEPTH AT 60FT OFFSET FROM BRIDGE IS UNKNOWN THEREFORE IT WILL BE CONTRACTOR'S RESPONSIBILITY TO RECORD DEPTH AND MAINTAIN MINIMUM 20FT BELOW EXISTING GRADE ACROSSRIVER, AND MAINTAIN A MINIMUM DEPTH OF 10FT BELOW SURFACE INSIDE DELINEATED WETLANDS.

DWG_01_QF_02_

Utility Permit Drawing
Sheet 2 of 17

REVISIONS

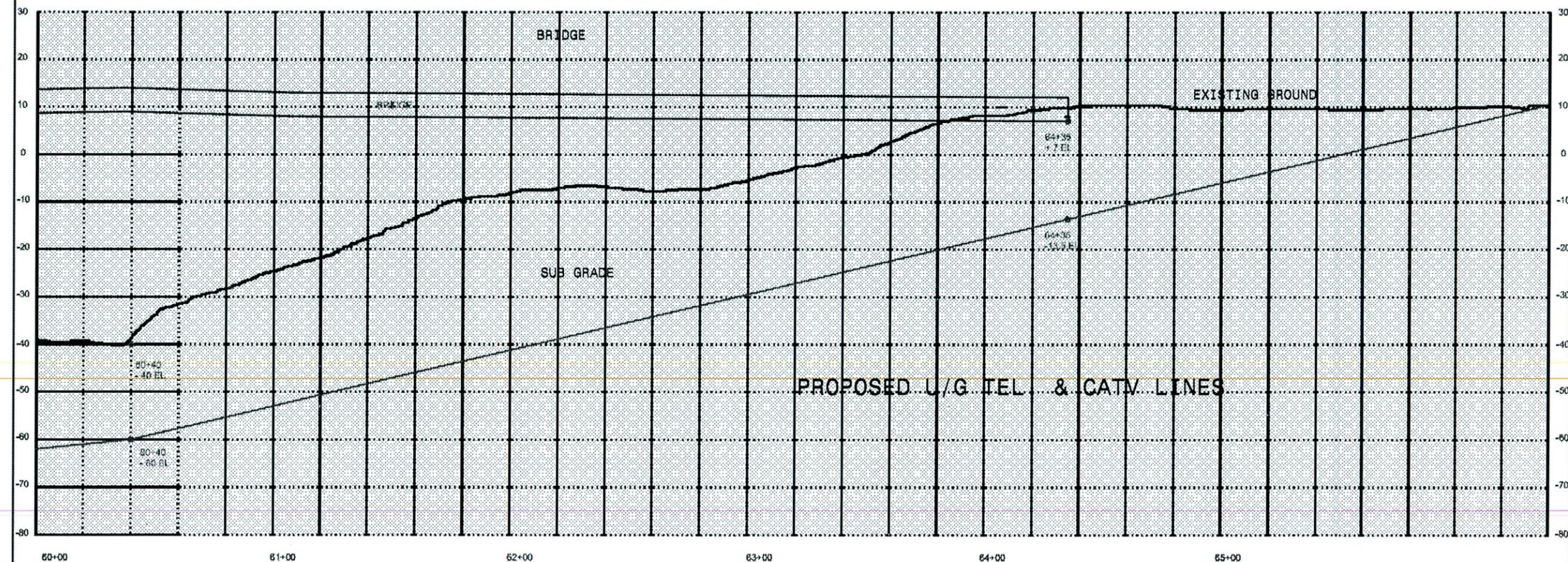
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PROJECT REFERENCE NO.	SHEET NO.
R-3601	2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

REVISED 6/10/2014

PROPOSED U/G TEL. LINE PROFILE

PRELIMINARY BORE DETAIL - PROFILE VIEW



REVISIONS

8/17/99
I:\JUN-2014\2221\44411\Engineering\UC\Proj\Rev\NEUAF-3601_U&T&I_pn2_2a.dgn

Utility Permit Drawing
Sheet 3 of 17

SOUNDINGS OF THE BRUNSWICK RIVER WERE RECORDED AT BOTH BRIDGES, BUT WERE PERFORMED ON THE UPRIVER SIDE OF THE BRIDGES ONLY, ACTUAL DEPTH AT 60FT OFFSET FROM BRIDGE IS UNKNOWN THEREFORE IT WILL BE CONTRACTOR'S RESPONSIBILITY TO RECORD DEPTH AND MAINTAIN MINIMUM 20FT BELOW EXISTING GRADE ACROSSRIVER, AND MAINTAIN A MINIMUM DEPTH OF 10FT BELOW SURFACE INSIDE DELINEATED WETLANDS.

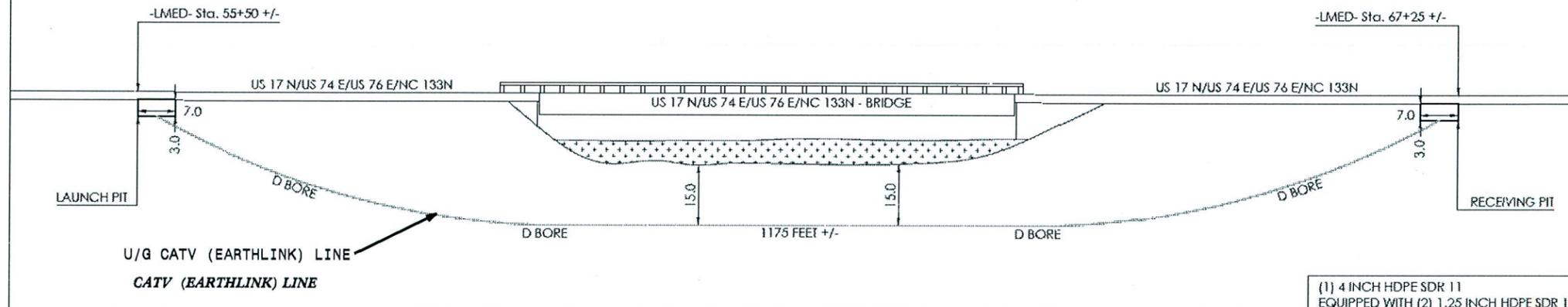
DWG_02_OF_02

PROJECT REFERENCE NO. R-3601	SHEET NO. 3
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS <small>DO NOT USE FOR R/W ACQUISITION</small> PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	

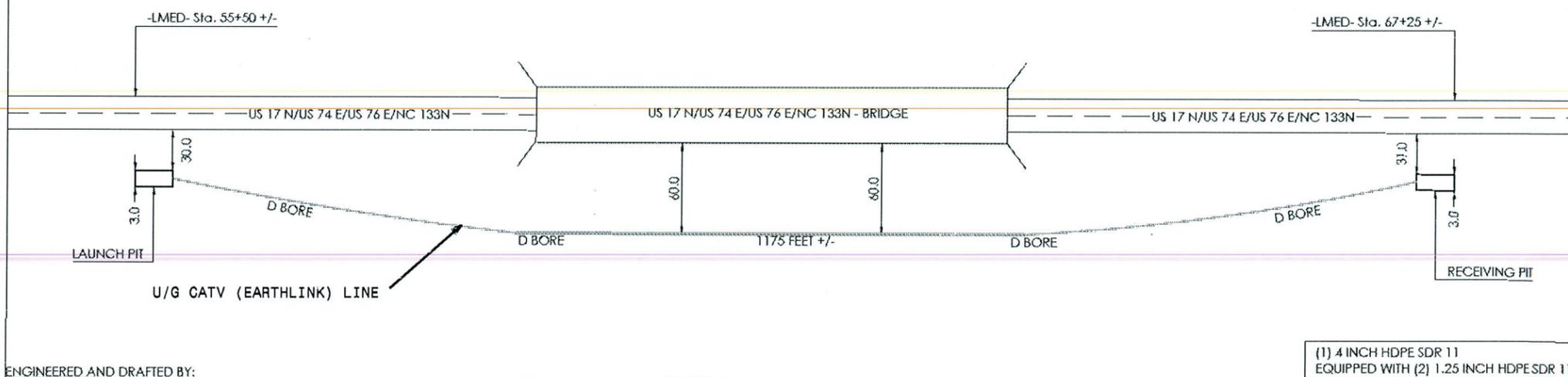
NO CHANGE

**BRUNSWICK RIVER CROSSING
HORIZONTAL DIRECTIONAL DRILL**

PROFILE VIEW



AERIAL VIEW



ENGINEERED AND DRAFTED BY:



PAGE NOTES:

ETI
3255 BURNT MILL DR
SUITE: C
WILMINGTON, NC 28403

BELVILLE, NC
SCALE
NTS

TEMPLAR, INC PROJECT NUMBER
TI-122
BTI PROJECT NUMBER
R-3601

ALL THE INFORMATION
ON THESE PLANS ARE
PROPRIETARY AND SHALL
NOT BE REPRODUCE OR
DISCLOSED WITHOUT
WRITTEN CONSENT.

DWG NO.
D1.1

Utility Permit Drawing
Sheet 4 of 17

REVISIONS
 9/24/12 Design Revision: Revised proposed structure over the Brunswick River from dual bridges to one bridge. SCL

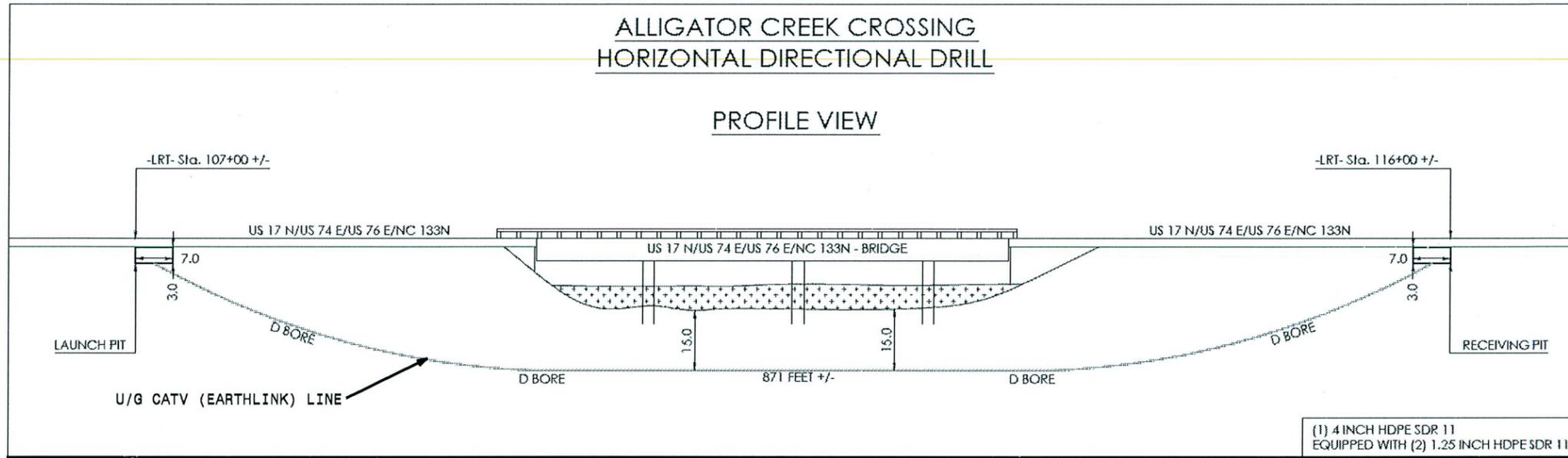
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PROJECT REFERENCE NO. R-3601	SHEET NO. 3A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS <small>DO NOT USE FOR R/W ACQUISITION</small>	
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	

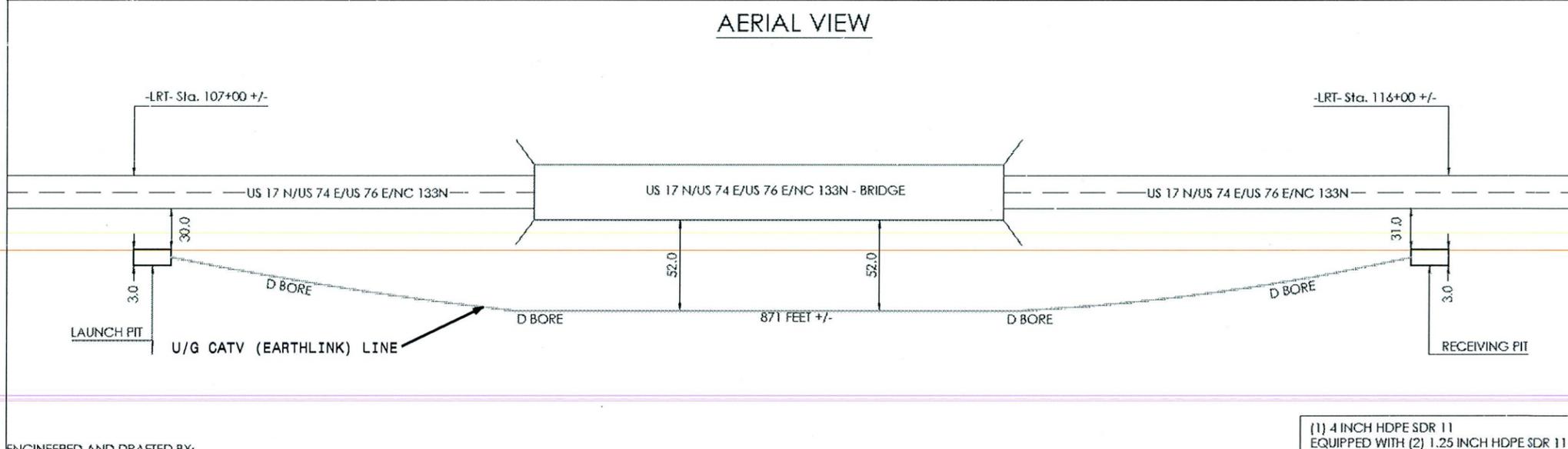
NO CHANGE

**ALLIGATOR CREEK CROSSING
HORIZONTAL DIRECTIONAL DRILL**

PROFILE VIEW



AERIAL VIEW



ENGINEERED AND DRAFTED BY:



PAGE NOTES:

BTI
3255 BURNT MILL DR
SUITE: C
WILMINGTON, NC 28403

BELVILLE, NC
SCALE
NTS

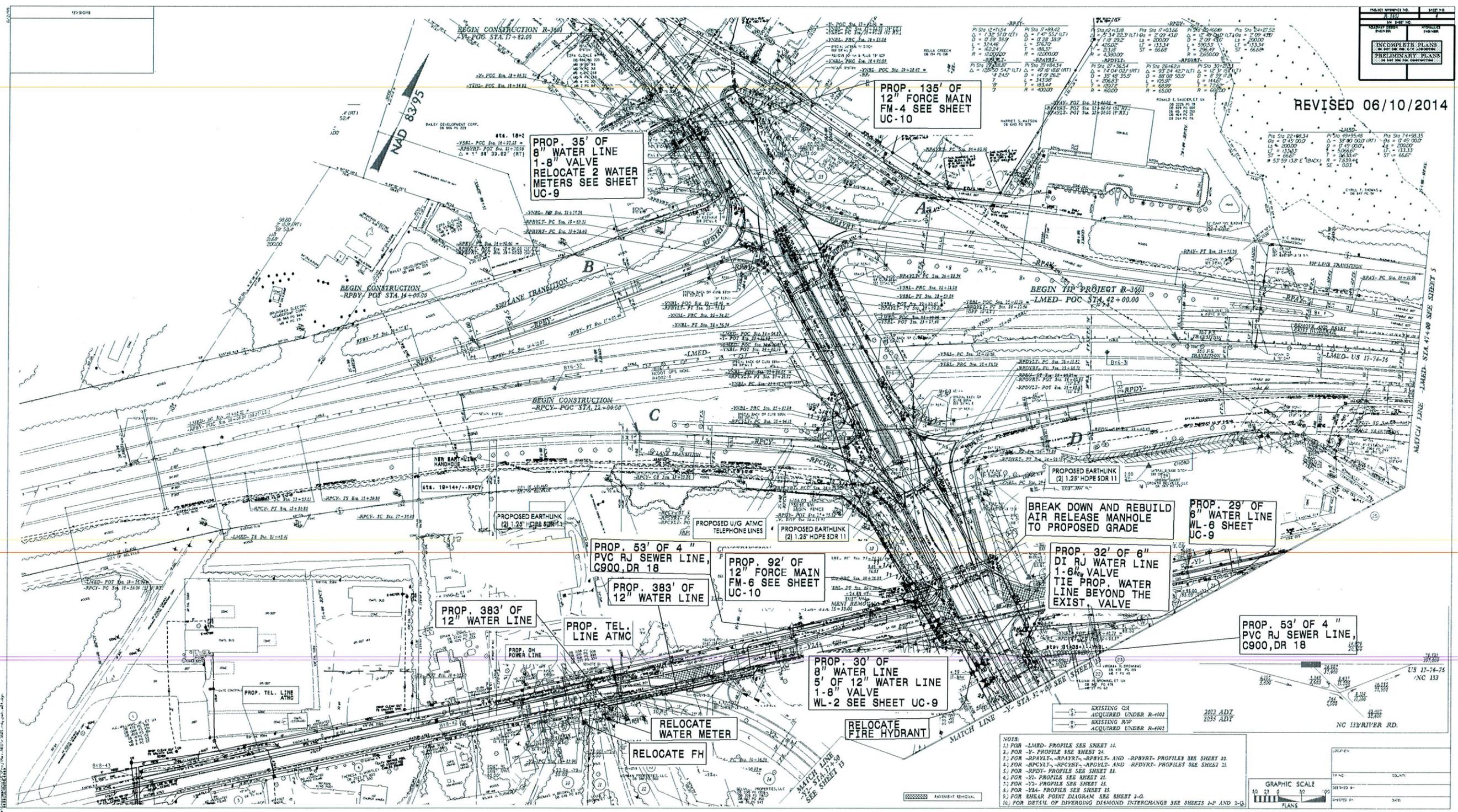
TEMPLAR, INC PROJECT NUMBER
TI-122
BTI PROJECT NUMBER
R-3601

ALL THE INFORMATION
ON THESE PLANS ARE
PROPRIETARY AND SHALL
NOT BE REPRODUCE OR
DISCLOSED WITHOUT
WRITTEN CONSENT.

DWG NO.
DI.1

REVISIONS
 92412 Design Revision: Revised proposed structure over the Brunswick River from dual bridges to one bridge. SCL

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PROJECT APPROVAL NO. _____ SHEET NO. _____

DATE: _____

BY: _____

CHECKED BY: _____

INCOMPLETE PLANS
NO SET FOR THE CONTRACTOR
PRELIMINARY PLANS
NO SET FOR THE CONTRACTOR

REVISED 06/10/2014

PROP. 135' OF
12" FORCE MAIN
FM-4 SEE SHEET
UC-10

PROP. 35' OF
8" WATER LINE
1-8" VALVE
RELOCATE 2 WATER
METERS SEE SHEET
UC-9

BREAK DOWN AND REBUILD
AIR RELEASE MANHOLE
TO PROPOSED GRADE

PROP. 29' OF
8" WATER LINE
WL-6 SHEET
UC-9

PROP. 32' OF 6"
DI RJ WATER LINE
1-6" VALVE
TIE PROP. WATER
LINE BEYOND THE
EXIST. VALVE

PROP. 53' OF 4"
PVC RJ SEWER LINE,
C900, DR 18

PROP. 53' OF 4"
PVC RJ SEWER LINE,
C900, DR 18

PROP. 92' OF
12" FORCE MAIN
FM-6 SEE SHEET
UC-10

PROP. 383' OF
12" WATER LINE

PROP. TEL.
LINE ATMC

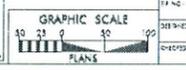
PROP. 30' OF
8" WATER LINE
5' OF 12" WATER LINE
1-8" VALVE
WL-2 SEE SHEET
UC-9

RELOCATE
WATER METER

RELOCATE
FIRE HYDRANT

RELOCATE FH

- NOTES:
- 1) FOR -LMED- PROFILE SEE SHEET 14
 - 2) FOR -Y- PROFILE SEE SHEET 24
 - 3) FOR -RPVLT-, -RPVRY-, -RPVRYL- AND -RPVRYR- PROFILES SEE SHEET 25
 - 4) FOR -RPCVLT-, -RPCVRY-, -RPCVRYL- AND -RPCVRYR- PROFILES SEE SHEET 22
 - 5) FOR -RPDY- PROFILES SEE SHEET 21
 - 6) FOR -Y2- PROFILE SEE SHEET 22
 - 7) FOR -Y3- PROFILE SEE SHEET 22
 - 8) FOR -Y4- PROFILE SEE SHEET 22
 - 9) FOR SHEAR POINT DIAGRAM SEE SHEET 3-0
 - 10) FOR DETAILS OF DIVERGING DIAMOND INTERCHANGE SEE SHEETS 3-2 AND 3-3



8/17/99

-LMED-
 Pls Sta 22+98.34 PI Sta 49+95.48 Pls Sta 74+98.35
 $\Theta_s = 0^\circ 45' 00.0''$ $\Delta = 38^\circ 00' 00.0''$ (RT) $\Theta_s = 0^\circ 45' 00.0''$
 $L_s = 200.00'$ $D = 0^\circ 45' 00.0''$ $L_s = 200.00'$
 $LT = 133.33'$ $L = 5,066.67'$ $LT = 133.33'$
 $ST = 66.67'$ $T = 2,630.47'$ $ST = 66.67'$
 $N 53^\circ 59' 13.8'' E$ (BACK) $R = 7,639.44'$ $SE = 0.03$

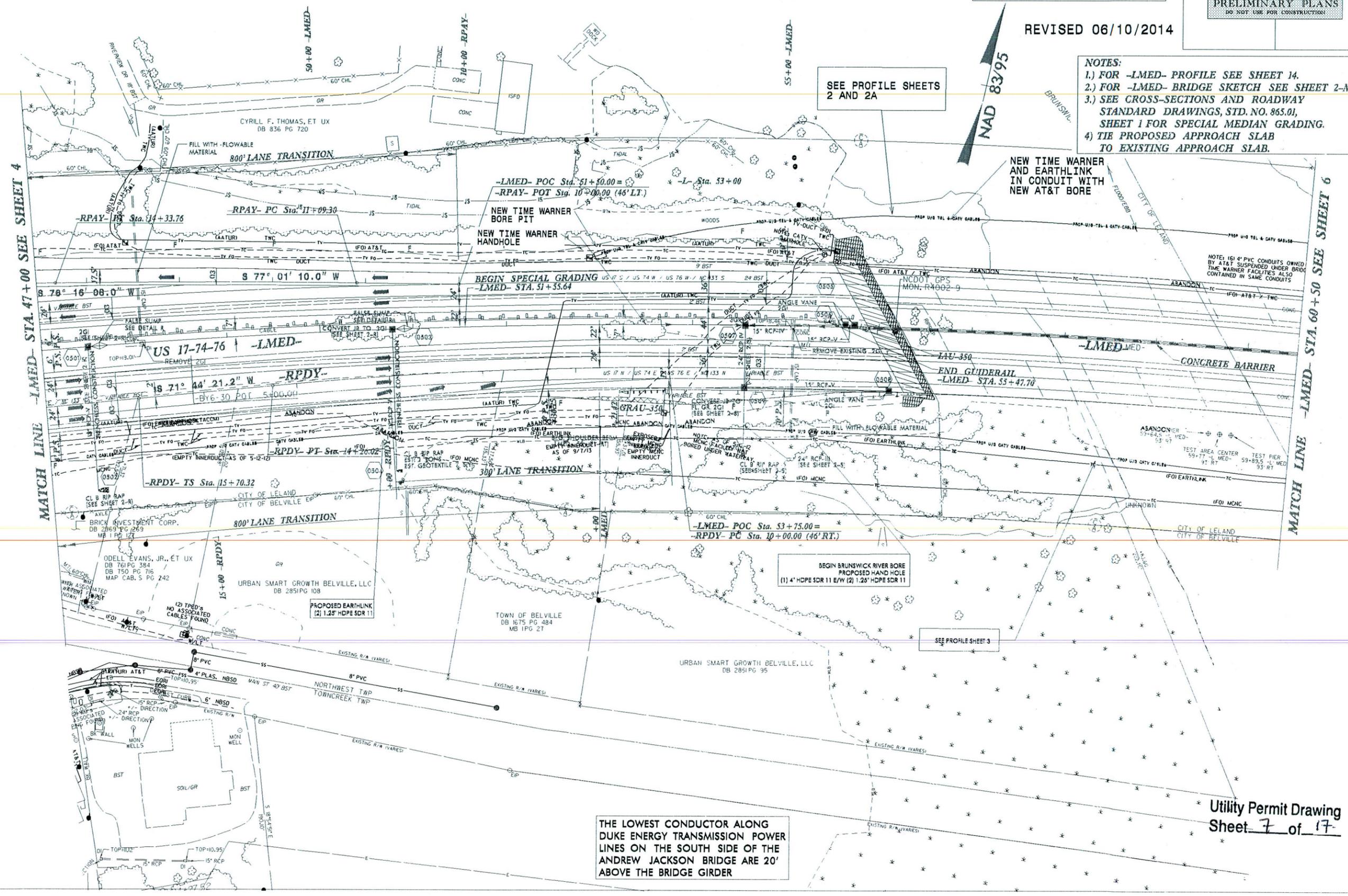
-RPDY-
 Pls Sta 12+59.51 Pls Sta 16+33.49 Pls Sta 20+11.50 Pls Sta 23+68.76
 $\Delta = 4^\circ 07' 42.6''$ (LT) $\Theta_s = 0^\circ 47' 44.4''$ $\Delta = 11^\circ 56' 07.9''$ (LT) $\Theta_s = 2^\circ 02' 46.6''$
 $D = 0^\circ 47' 44.8''$ $\Theta_s = 2^\circ 02' 47.0''$ $D = 2^\circ 02' 46.6''$ $L_s = 200.00'$
 $L = 518.80'$ $L_s = 200.00'$ $L = 583.28'$ $LT = 133.34'$
 $T = 259.51'$ $LT = 114.69'$ $T = 292.70'$ $ST = 66.67'$
 $R = 7,200.00'$ $ST = 85.35'$ $R = 2,800.00'$ $SE = 0.05$

THE DISTRIBUTION POWER LINES ON THE NORTH SIDE OF THE ANDREW JACKSON BRIDGE WILL BE RAISED BY DUKE ENERGY IF NCDOT'S CONTRACTOR DETERMINES THE LOWEST CONDUCTOR IS NOT 20' ABOVE BRIDGE GIRDER

PROJECT REFERENCE NO. R-3601	SHEET NO. 7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

REVISED 06/10/2014

- NOTES:**
- FOR -LMED- PROFILE SEE SHEET 14.
 - FOR -LMED- BRIDGE SKETCH SEE SHEET 2-M.
 - SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS, STD. NO. 865.01, SHEET 1 FOR SPECIAL MEDIAN GRADING.
 - TIE PROPOSED APPROACH SLAB TO EXISTING APPROACH SLAB.



SEE PROFILE SHEETS 2 AND 2A

NAD 83/95

NEW TIME WARNER AND EARTHINK IN CONDUIT WITH NEW AT&T BORE

NOTE: 1) 4" PVC CONDUITS OWNED BY AT&T SUSPENDED UNDER BRIDGE TIME WARNER FACILITIES ALSO CONTAINED IN SAME CONDUITS

BEGIN BRUNSWICK RIVER BORE PROPOSED HAND HOLE (1) 4" HDPE SDR 11 E/W (2) 1.25" HDPE SDR 11

SEE PROFILE SHEET 3

THE LOWEST CONDUCTOR ALONG DUKE ENERGY TRANSMISSION POWER LINES ON THE SOUTH SIDE OF THE ANDREW JACKSON BRIDGE ARE 20' ABOVE THE BRIDGE GIRDER

Utility Permit Drawing Sheet 7 of 17

REVISIONS
9/24/12 Design Revision: Revised proposed structure over the Brunswick River from dual bridges to one bridge. SCL

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8/17/99

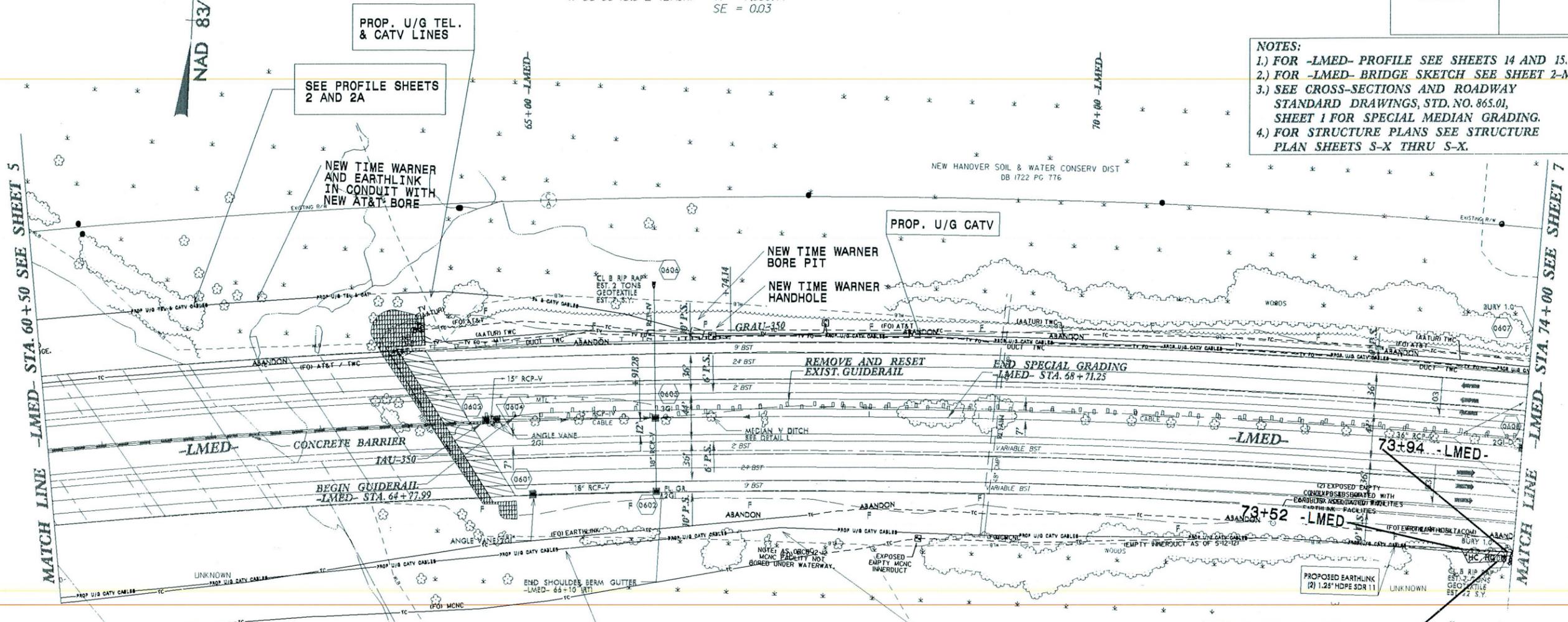
PROJECT REFERENCE NO.	SHEET NO.
R-3601	6
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS <small>DO NOT USE FOR R/W ACQUISITION</small> PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	

REVISED 06/10/2014

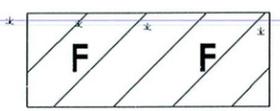
-LMED-

PIs Sta 22+98.34	PI Sta 49+95.48	PIs Sta 74+98.35
$\Theta_s = 0' 45'' 00.0''$	$\Delta = 38' 00'' 00.0''$ (RT)	$\Theta_s = 0' 45'' 00.0''$
$L_s = 200.00'$	$D = 0' 45'' 00.0''$	$L_s = 200.00'$
$LT = 133.33'$	$L = 5,066.67'$	$LT = 133.33'$
$ST = 66.67'$	$T = 2,630.47'$	$ST = 66.67'$
$N 53' 59'' 13.8'' E$ (BACK)	$R = 7,639.44'$	
	$SE = 0.03$	

- NOTES:**
- 1.) FOR -LMED- PROFILE SEE SHEETS 14 AND 15.
 - 2.) FOR -LMED- BRIDGE SKETCH SEE SHEET 2-M.
 - 3.) SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS, STD. NO. 865.01, SHEET 1 FOR SPECIAL MEDIAN GRADING.
 - 4.) FOR STRUCTURE PLANS SEE STRUCTURE PLAN SHEETS S-X THRU S-X.



SITE 1 = 0.009 AC



DENOTES FILL IN WETLAND



DENOTES HAND CLEARING

Utility Permit Drawing
Sheet 8 of 17

REVISIONS
 9/24/12 Design Revision: Revised proposed structure over the Brunswick River from dual bridges to one bridge. SCL
 8/17/04 HZ
 R. V. H. L. ENGINEERING INC. (Proj. Rev. NEU-r-3601-rdy.psh.s06.dgn)

9/24/12 Design Revision: Revised proposed structure over the Brunswick River from dual bridges to one bridge. SCL
 8/17/04 HZ
 R. V. H. L. ENGINEERING INC. (Proj. Rev. NEU-r-3601-rdy.psh.s06.dgn)

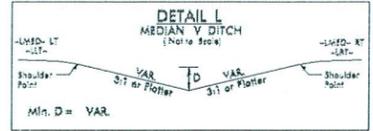
8/17/99

REVISED 06/10/2014

PROJECT REFERENCE NO. R-3601	SHEET NO. 7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

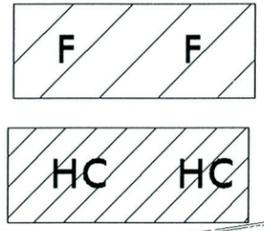
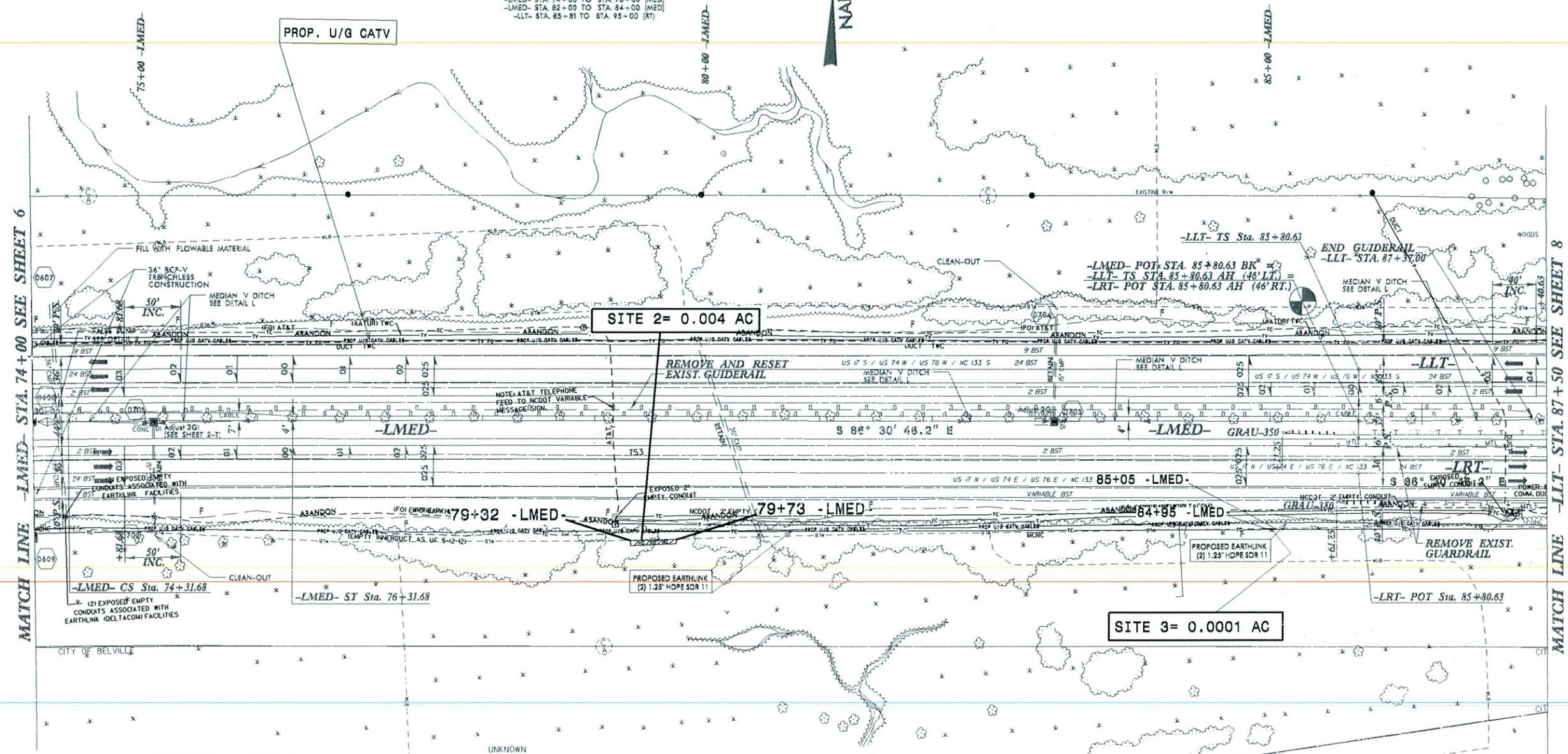
-LMED-

PIs Sta 22+98.34	PI Sta 49+95.48	PIs Sta 74+98.35
$\Theta_s = 0^\circ 45' 00.0''$	$\Delta = 38^\circ 00' 00.0''$ (RT)	$\Theta_s = 0^\circ 45' 00.0''$
$L_s = 200.00'$	$D = 0^\circ 45' 00.0''$	$L_s = 200.00'$
$LT = 133.33'$	$L = 5,066.67'$	$LT = 133.33'$
$ST = 66.67'$	$T = 2,630.47'$	$ST = 66.67'$
$N 53^\circ 59' 13.8'' E$ (BACK)	$R = 7,639.44'$	
	$SE = 0.03$	



-LLT-

PIs Sta 87+13.96	PI Sta 92+45.65	PIs Sta 97+76.19
$\Theta_s = 0^\circ 45' 00.0''$	$\Delta = 6^\circ 58' 00.0''$ (LT)	$\Theta_s = 0^\circ 45' 00.0''$
$L_s = 200.00'$	$D = 0^\circ 45' 00.0''$	$L_s = 200.00'$
$LT = 133.33'$	$L = 928.89'$	$LT = 133.33'$
$ST = 66.67'$	$T = 465.02'$	$ST = 66.67'$
$S 86^\circ 30' 46.2'' E$ (BACK)	$R = 7,639.44'$	
	$SE = 0.05$	



F F
DENOTES FILL IN WETLAND

HC HC
DENOTES HAND CLEARING

NOTES:
 1.) FOR -LMED- PROFILE SEE SHEET 15.
 2.) FOR -LLT- PROFILE SEE SHEET 16.
 3.) FOR -LRT- PROFILE SEE SHEET 18.

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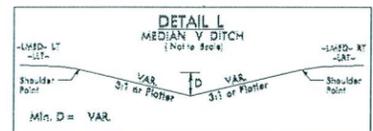
8/17/99

REVISED 06/10/2014

PROJECT REFERENCE NO. R-3601	SHEET NO. 7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

-LMED-

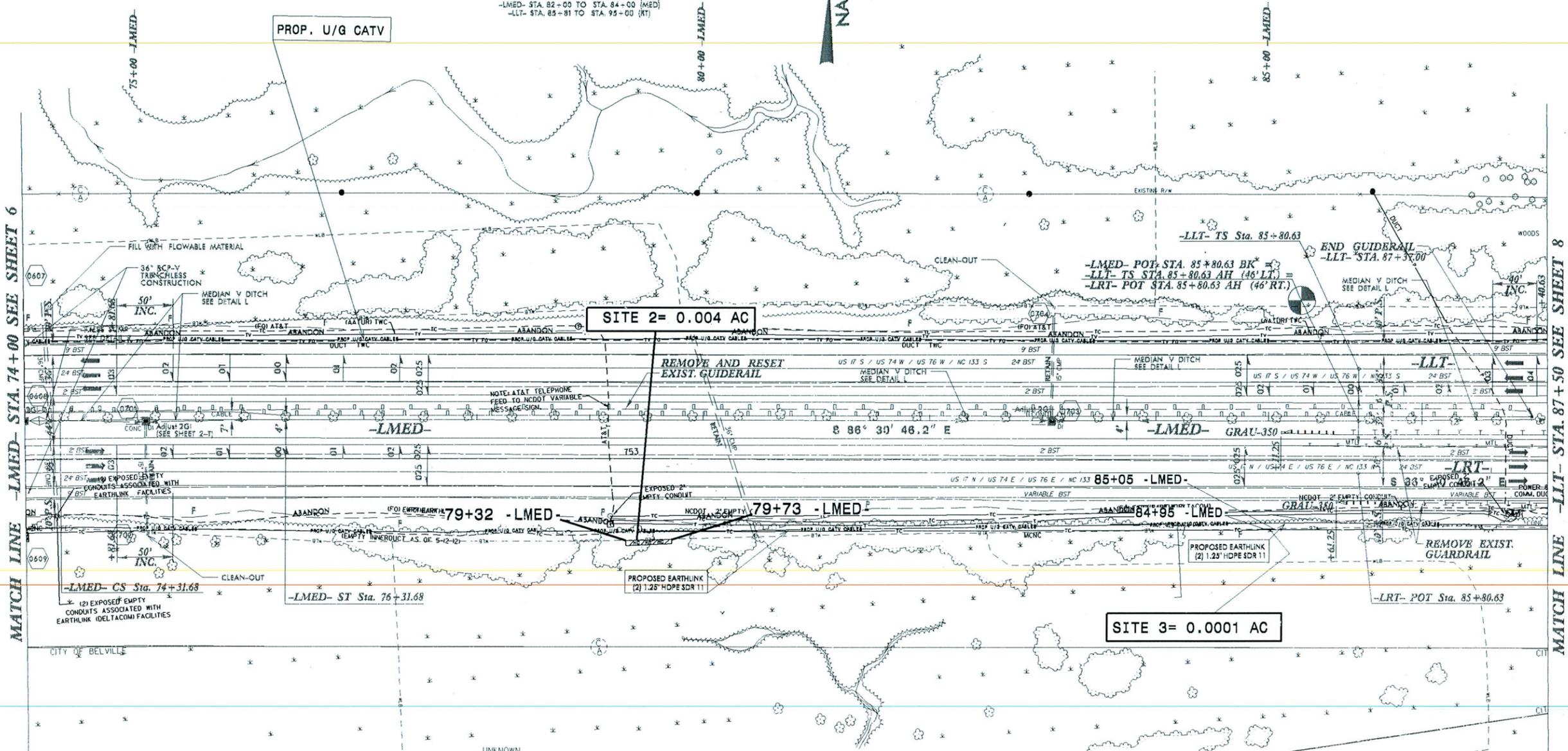
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$\Delta s = 0' 45' 00.0"$	$\Delta = 38' 00' 00.0" (RT)$	$\Delta s = 0' 45' 00.0"$
$Ls = 200.00'$	$D = 0' 45' 00.0"$	$Ls = 200.00'$
$LT = 133.33'$	$L = 5,066.67'$	$LT = 133.33'$
$ST = 66.67'$	$T = 2,630.47'$	$ST = 66.67'$
$N 53' 59' 13.8" E (BACK)$	$R = 7,639.44'$	
	$SE = 0.03$	



-LLT-

PIs Sta 87+13.96	PI Sta 92+45.65	PIs Sta 97+76.19
$\Delta s = 0' 45' 00.0"$	$\Delta = 6' 58' 00.0" (LT)$	$\Delta s = 0' 45' 00.0"$
$Ls = 200.00'$	$D = 0' 45' 00.0"$	$Ls = 200.00'$
$LT = 133.33'$	$L = 928.89'$	$LT = 133.33'$
$ST = 66.67'$	$T = 465.02'$	$ST = 66.67'$
$S 86' 30' 46.2" E (BACK)$	$R = 7,639.44'$	
	$SE = 0.05$	

NAD 83/95



DENOTES FILL IN WETLAND



DENOTES HAND CLEARING

NOTES:

- 1.) FOR -LMED- PROFILE SEE SHEET 15.
- 2.) FOR -LLT- PROFILE SEE SHEET 16.
- 3.) FOR -LRT- PROFILE SEE SHEET 18.

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Utility Permit Drawing
Sheet 10 of 17

8/17/99

REVISED 06/10/2014

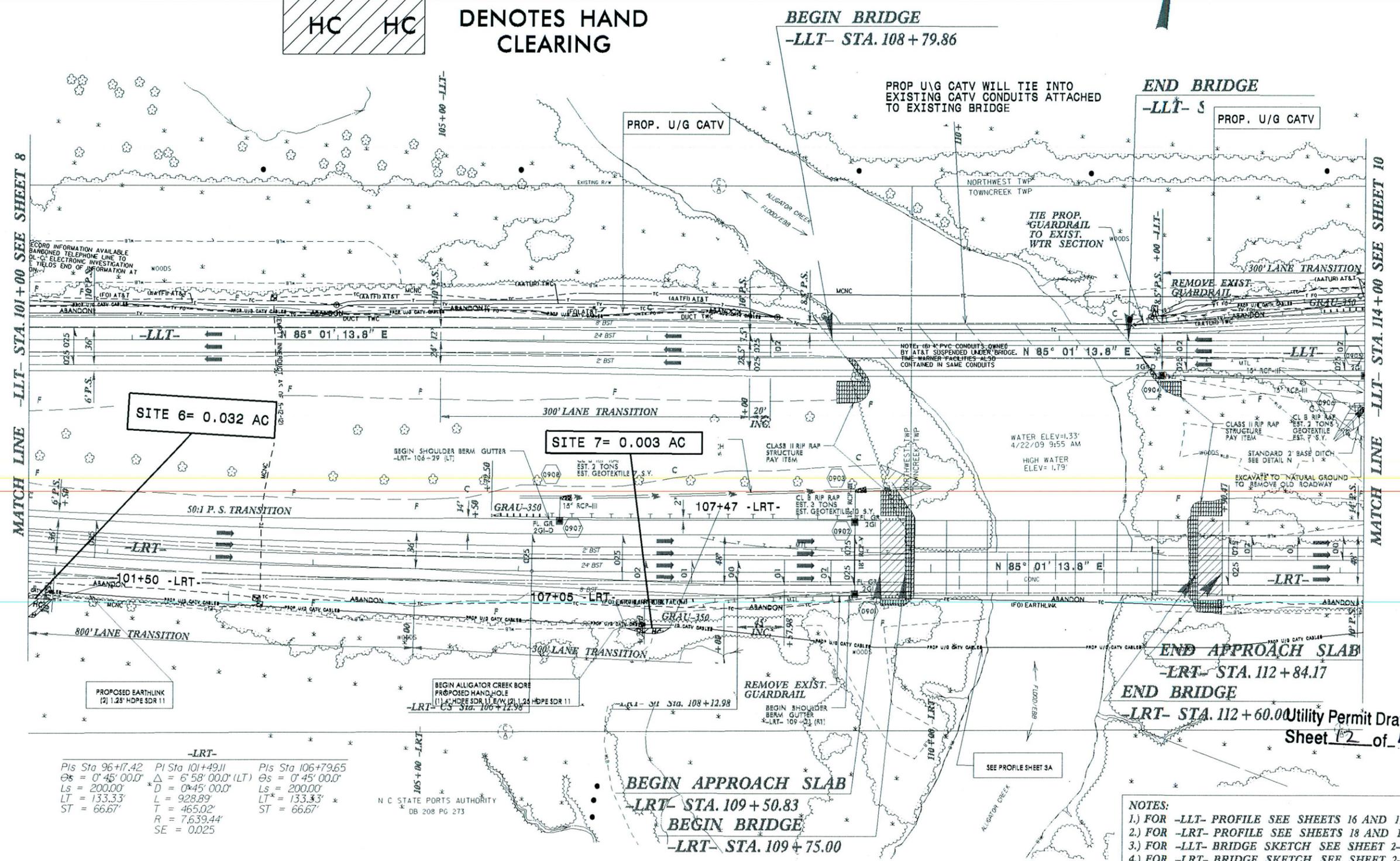
PROJECT REFERENCE NO. R-3601	SHEET NO. 9
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



DENOTES FILL IN WETLAND



DENOTES HAND CLEARING



MATCH LINE -LLT- STA. 101 + 00 SEE SHEET 8

MATCH LINE -LLT- STA. 114 + 00 SEE SHEET 10

-LRT-	-LRT-	-LRT-
Pis Sta 96+17.42	Pi Sta 101+49.11	Pis Sta 106+79.65
Os = 0° 45' 00.0"	Δ = 6° 58' 00.0" (LT)	Os = 0° 45' 00.0"
Ls = 200.00'	D = 0° 45' 00.0"	Ls = 200.00'
LT = 133.33'	L = 928.89'	LT* = 133.33'
ST = 66.67'	T = 465.02'	ST = 66.67'
	R = 7.639.44'	
	SE = 0.025	

N C STATE PORTS AUTHORITY
DB 208 PG 273

- NOTES:
- 1.) FOR -LLT- PROFILE SEE SHEETS 16 AND 17.
 - 2.) FOR -LRT- PROFILE SEE SHEETS 18 AND 19.
 - 3.) FOR -LLT- BRIDGE SKETCH SEE SHEET 2-M.
 - 4.) FOR -LRT- BRIDGE SKETCH SEE SHEET 2-M.

SEE PROFILE SHEET SA

Utility Permit Drawing
Sheet 12 of 17

REVISIONS
8/17/99
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8/17/99

PROJECT REFERENCE NO. R-3601	SHEET NO. 10
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

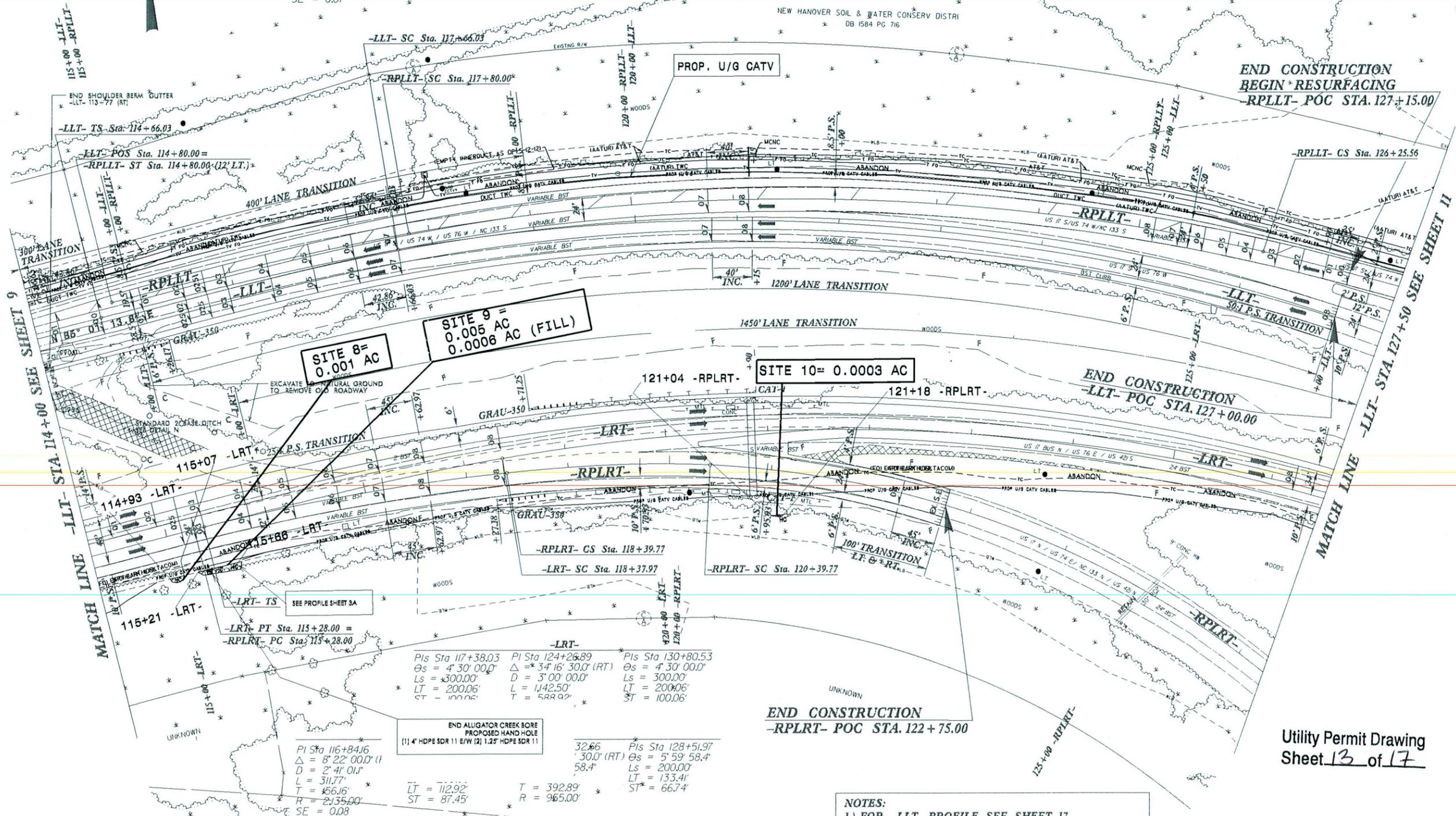
REVISED 06/10/2014
DENOTES FILL IN WETLAND



DENOTES HAND CLEARING



-LLT-		
Pls Sta 116+66.09 θs = 4° 30' 00.0" Ls = 300.00' LT = 200.06' ST = 100.06'	Pls Sta 124+10.16 Δ = 37° 16' 30.0" (RT) D = 3° 00' 00.0" L = 1,242.50' T = 644.13' R = 1,909.86' SE = 0.07	Pls Sta 131+08.59 θs = 4° 30' 00.0" Ls = 300.00' LT = 200.06' ST = 100.06'
-RPLLT-		
Pls Sta 116+80.05 θs = 4° 05' 33.2" Ls = 300.00' LT = 200.05' ST = 100.05'	Pls Sta 122+08.59 Δ = 23° 04' 12.5" (RT) D = 2° 43' 42.1" L = 845.56' T = 428.59' R = 2,100.00' SE = 0.07	Pls Sta 126+73.90 θs = 1° 58' 41.0" Ls = 145.00' LT = 96.67' ST = 48.34'



SITE 8 = 0.001 AC

**SITE 9 = 0.005 AC
0.0006 AC (FILL)**

SITE 10 = 0.0003 AC

-LRT-		
Pls Sta 117+38.03 θs = 4° 30' 00.0" Ls = 300.00' LT = 200.06' ST = 100.06'	Pls Sta 124+26.89 Δ = 34° 16' 30.0" (RT) D = 3° 00' 00.0" L = 1,142.50' T = 588.92'	Pls Sta 130+80.53 θs = 4° 30' 00.0" Ls = 300.00' LT = 200.06' ST = 100.06'

Pls Sta 116+84.16 Δ = 8° 22' 00.0" (L) D = 2° 41' 01.1" L = 311.77' T = 456.16' R = 2,135.00' SE = 0.08	Pls Sta 128+51.97 θs = 5° 59' 58.4" Ls = 200.00' LT = 133.41' ST = 66.74'
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END ALLIGATOR CREEK BORE
PROPOSED HAND HOLE
(1) 4" HDPE SDR 11 E/W (2) 1.25" HDPE SDR 11

END CONSTRUCTION
-RPLRT- POC STA. 122 + 75.00

END CONSTRUCTION
BEGIN RESURFACING
RPLLT- POC STA. 127 + 15.00

END CONSTRUCTION
-LLT- POC STA. 127 + 00.00

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- NOTES:**
- 1.) FOR -LLT- PROFILE SEE SHEET 17.
 - 2.) FOR -LRT- PROFILE SEE SHEET 19.
 - 3.) FOR -RPLRT- PROFILE SEE SHEETS 22 AND 23.
 - 4.) FOR -RPLLT- PROFILE SEE SHEET 23.

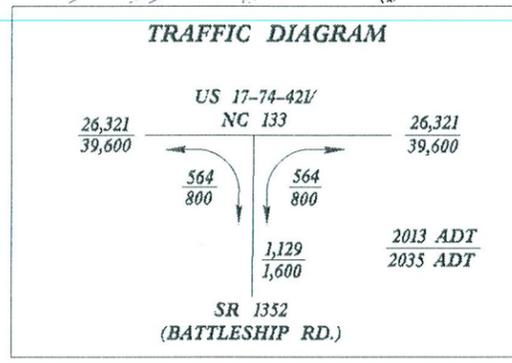
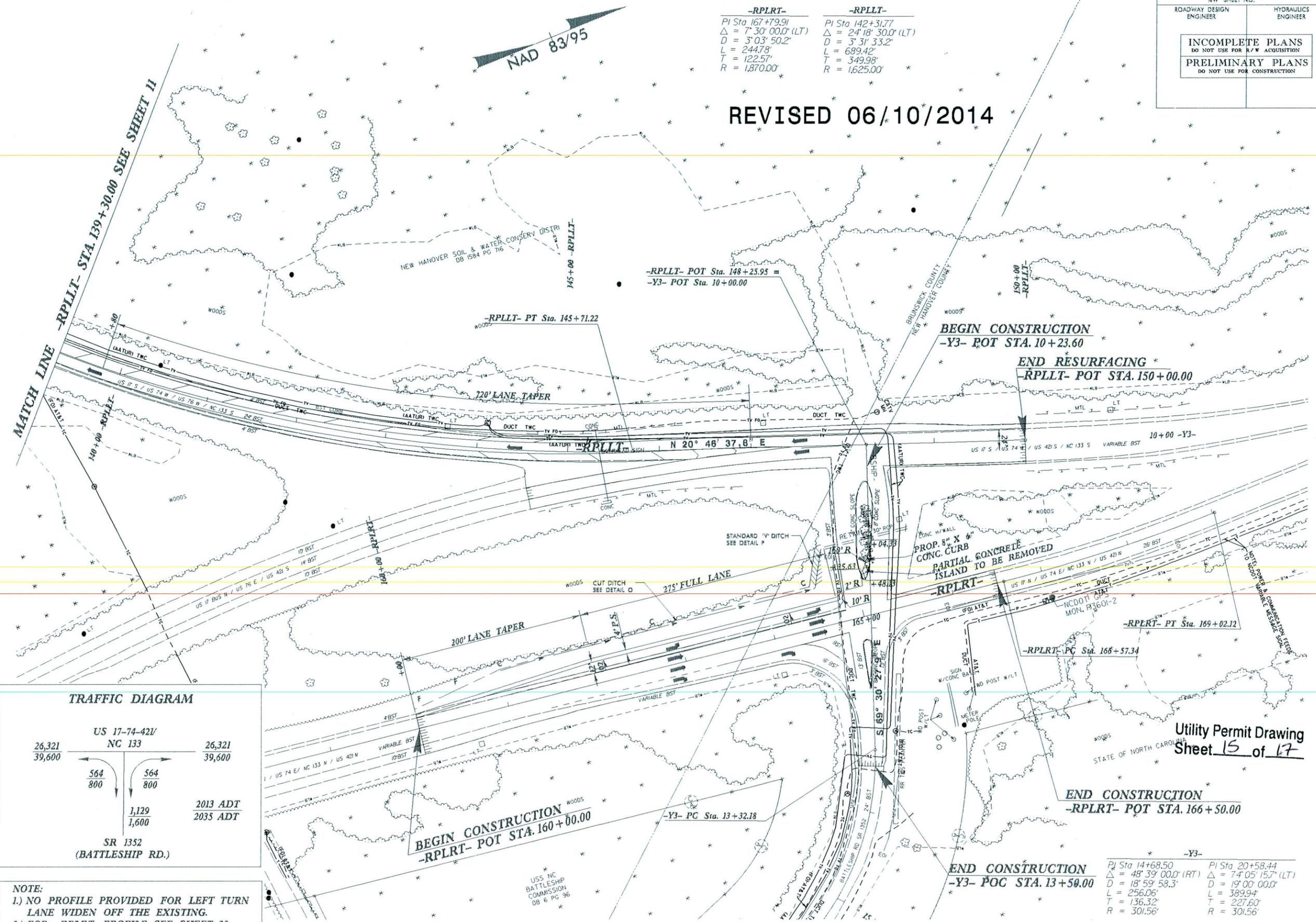


Utility Permit Drawing
Sheet 13 of 17

-RPLRT-
 PI Sta 167+79.91
 $\Delta = 7' 30'' 00.0''$ (LT)
 $D = 3' 03'' 50.2''$
 $L = 244.78'$
 $T = 122.57'$
 $R = 1,870.00'$

-RPLLT-
 PI Sta 142+31.77
 $\Delta = 2' 18'' 30.0''$ (LT)
 $D = 3' 31'' 33.2''$
 $L = 689.42'$
 $T = 349.98'$
 $R = 1,625.00'$

REVISED 06/10/2014



NOTE:
 1.) NO PROFILE PROVIDED FOR LEFT TURN LANE WIDEN OFF THE EXISTING.
 2.) FOR -RPLRT- PROFILE SEE SHEET 23.

Utility Permit Drawing
 Sheet 15 of 17

-Y3-
 PI Sta 14+68.50
 $\Delta = 48' 39'' 00.0''$ (RT)
 $D = 18' 59'' 58.3''$
 $L = 256.06'$
 $T = 136.32'$
 $R = 301.56'$

-Y3-
 PI Sta 20+58.44
 $\Delta = 7' 05'' 15.7''$ (LT)
 $D = 19' 00'' 00.0''$
 $L = 389.94'$
 $T = 227.60'$
 $R = 301.56'$

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 REVISIONS
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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	73+52 TO 73+94	U/G Tel & CATV lines					0.01					
2	79+32 TO 79+73	U/G Tel & CATV lines					<0.01					
3	84+95 TO 85+05	U/G Tel & CATV lines					<0.01					
4	93+31 TO 90+64	U/G Tel & CATV lines	<.01				<0.01					
5	95+69 TO 95+94	U/G Tel & CATV lines					<0.01					
6	100+59 TO 101+50	U/G Tel & CATV lines					<0.01					
7	107+05 to 107+47	U/G Tel & CATV lines					<0.01					
8	114+93 to 115+07	U/G Tel & CATV lines					<0.01					
9	115+21 TO 115+66	U/G Tel & CATV lines	<0.01									
10	121+04 to 121+18	U/G Tel & CATV lines					<0.01					
TOTALS:			<0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 BRUNSWICK AND NEW HANOVER COUNTIES
 TIP PROJECT (R-3601)

ATN Revised 3/31/05

6/10/2014

Utility Permit Drawing
 Sheet 17 of 17