



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,

A handwritten signature in black ink, appearing to be 'R. Hancock', written over a horizontal red line.

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!1sDPHidrpGjQsuxbfxILrS3A!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

I was going to save this for the cover letter in our forthcoming revised mod request, but decided that the answers were

As for why the change in design now:

The original NCDOT design from 2 or 3 years ago was Alternative 1, described below, without deck drains. At the time it

1) Are you capturing and discharging stormwater water from the roadway prior to it reaching the bridge and

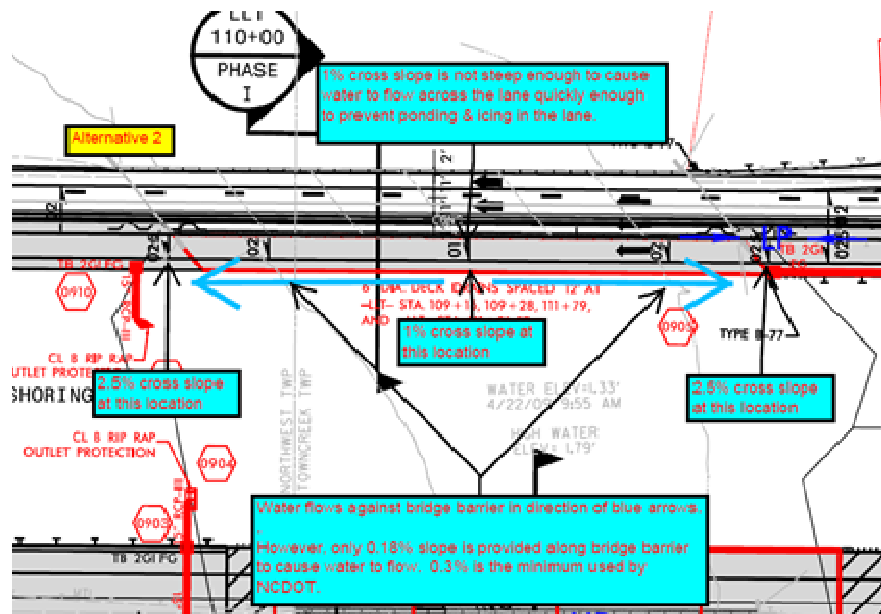
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- Alternative 1: Provide no deck drains on the widened section. This alternative would have water draining from

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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North Carolina Public Records Law and may be disclosed to third parties.

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
North Carolina Public Records Law and may be disclosed to third parties.

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

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.



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

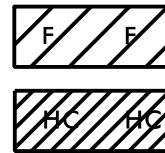
Project Length (lin. Miles or feet):	1.67 Mi.	Surrounding Land Use:	rural, tidally influenced coastal		
	Proposed Project		Existing Site		
Project Built-Upon Area (ac.)	ac.		ac.		
Typical Cross Section Description:	6 lane divided highway, 10 ft paved shoulders lt/rt, 6 ft paved shoulders median; grassed 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

 **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





DENOTES FILL IN WETLAND

DENOTES HAND CLEARING

NAD 83/95

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

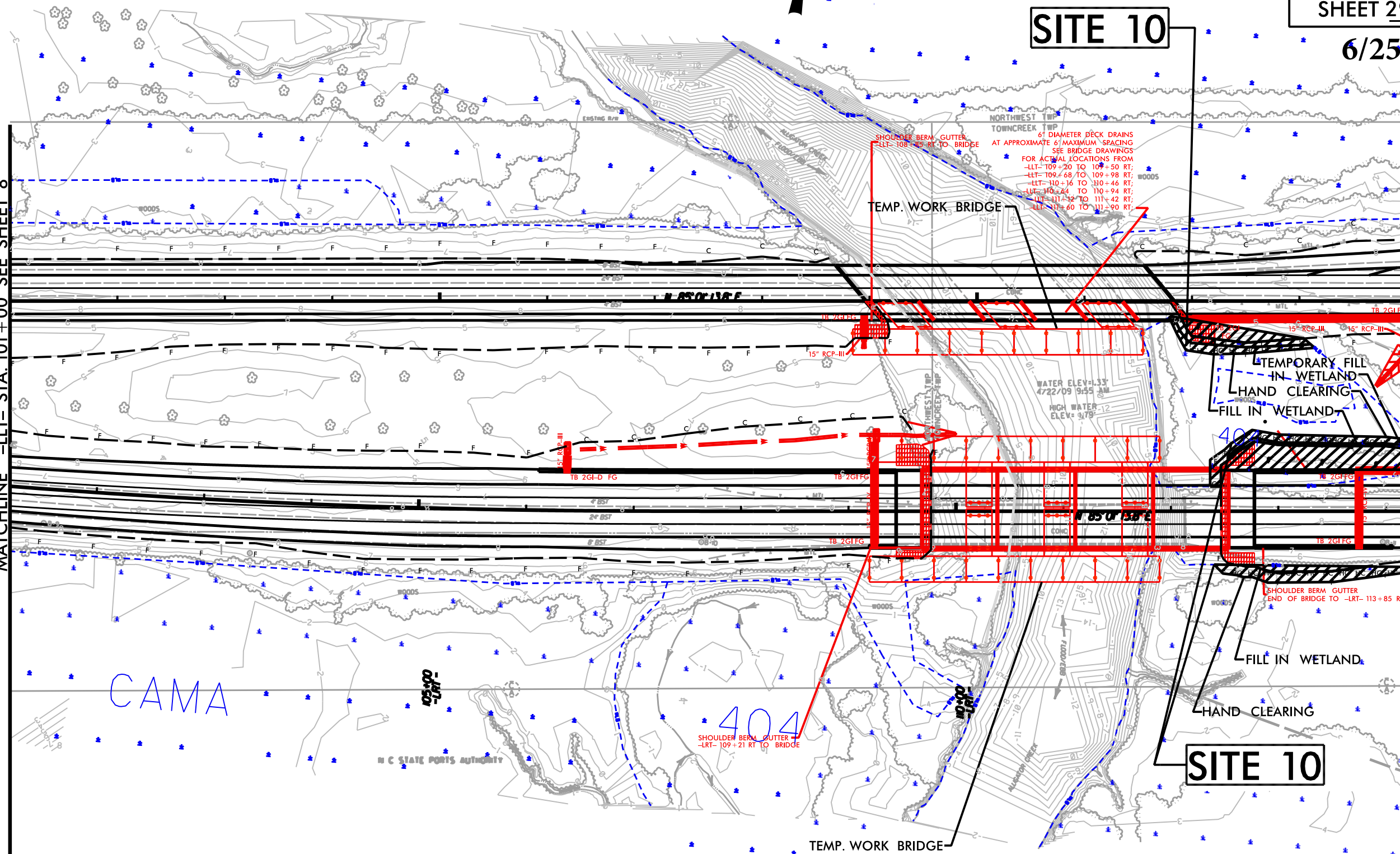
PROJECT REFERENCE NO.	SHEET NO.
R-3601	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/V ACQUISITION	

PERMIT DRAWING
SHEET 29 OF 44

6/25/2014

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

8/17/99

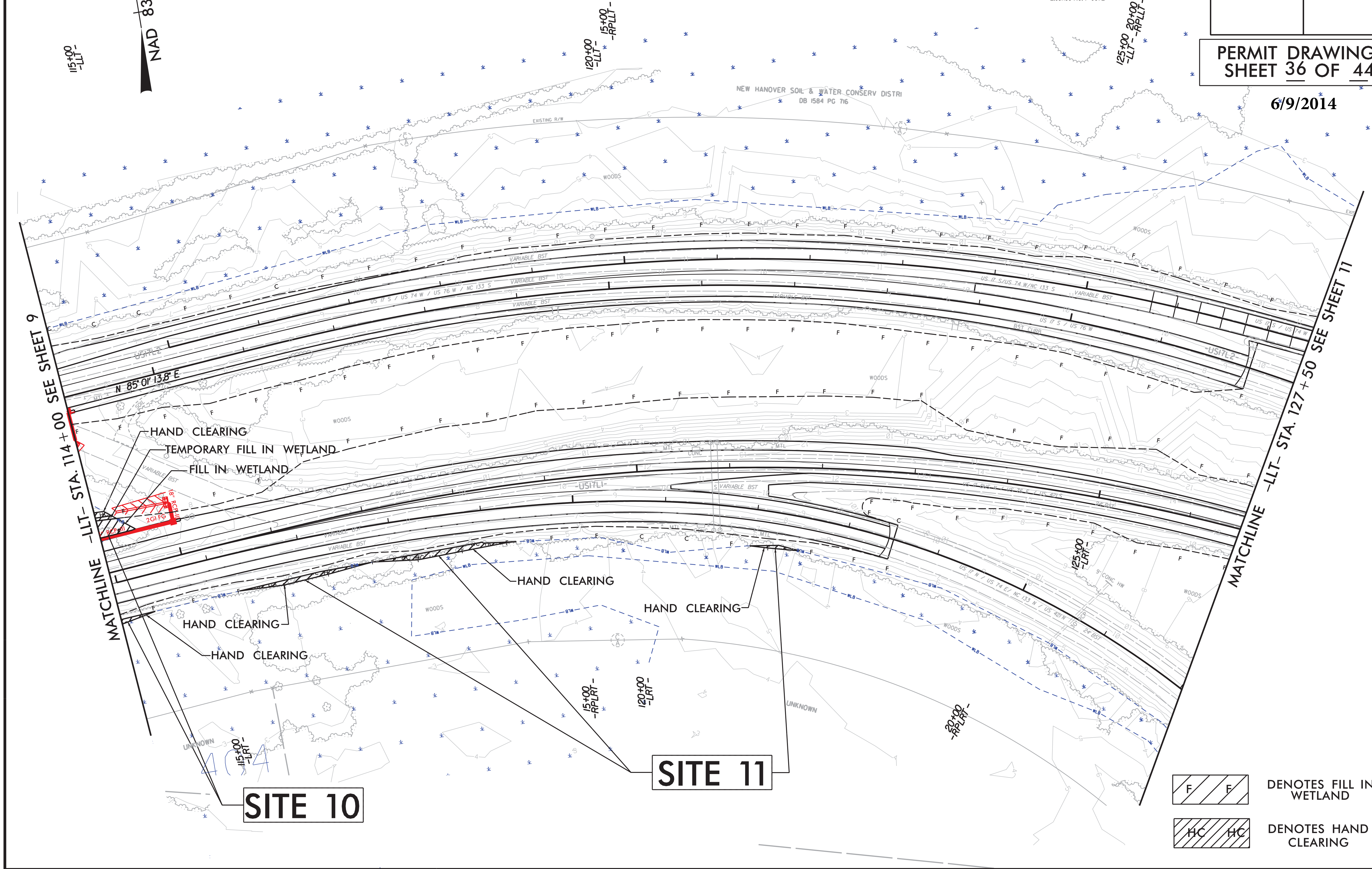
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R-3601_PMT PERMIT PACKAGE_20140508.PDF

Stantec
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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-3601		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

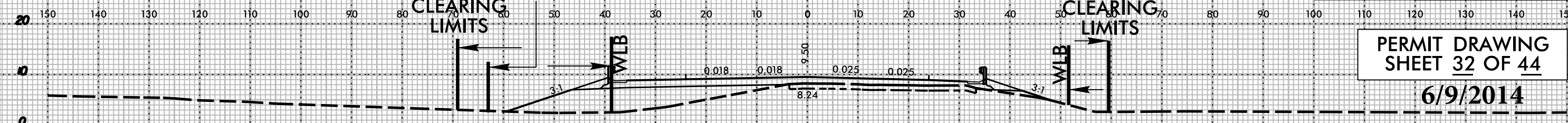


LEGEND

FILL IN WETLAND
F F

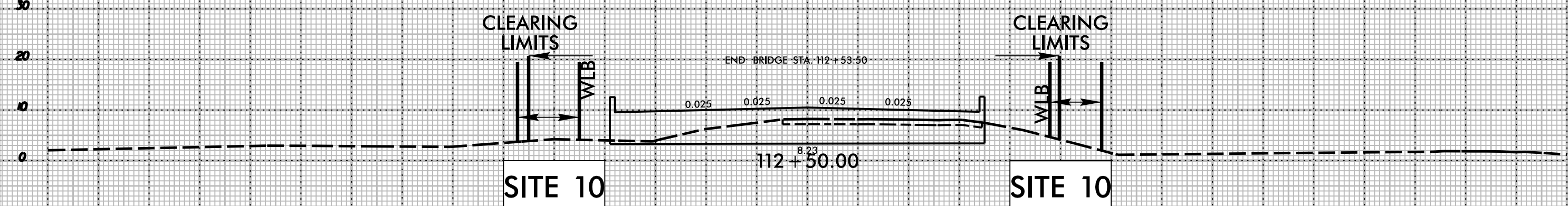
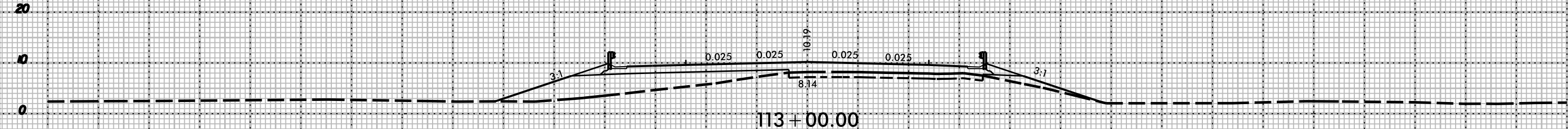
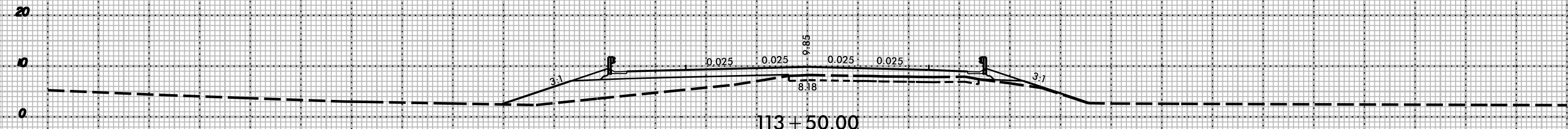
HAND CLEARING
HC HC

8/23/99



PERMIT DRAWING
SHEET 32 OF 44

6/9/2014



-LRT-

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

112 + 50.00

SITE 10

TEMPORARY FILL
LIMITS

CLEARING
LIMITS

WLB

112 + 00.00

SITE 10

END BRIDGE -LLT- STA. 111 + 83.31

111 + 50.00

111 + 00.00

-LLT-

WETLAND PERMIT IMPACT SUMMARY														
			WETLAND IMPACTS							SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	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

09/08/99

REVISED 06/10/2014

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

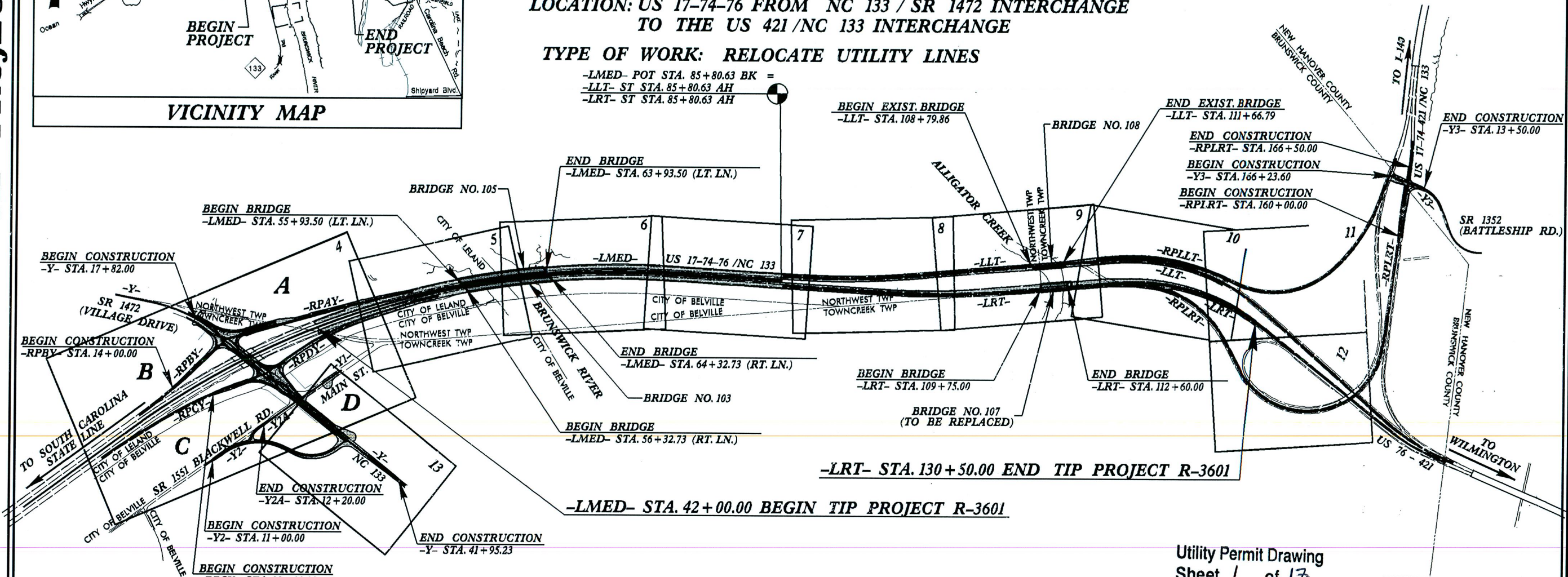
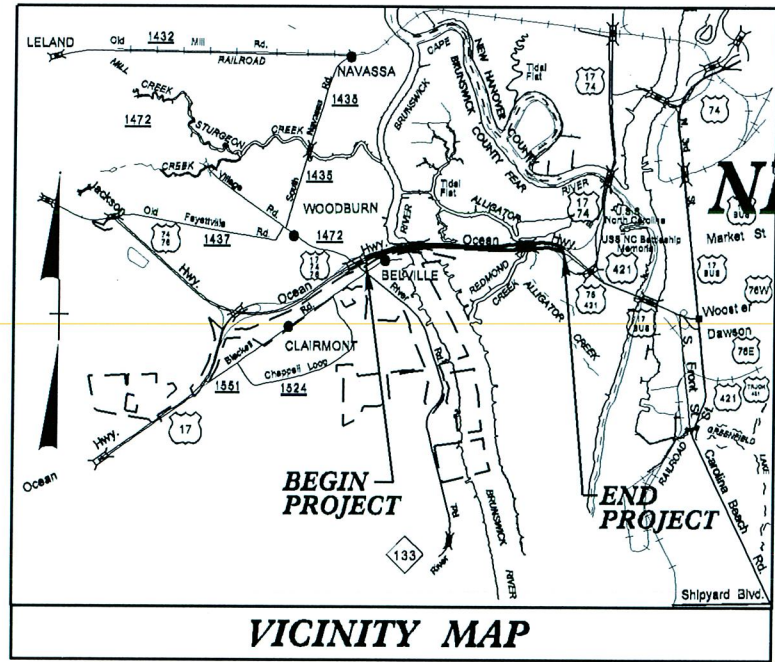
NEU UTILITY DRAWING PLANS
BRUNSWICK AND
NEW HANOVER COUNTIES

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

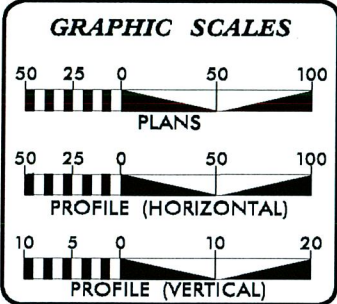
TIP PROJECT:



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

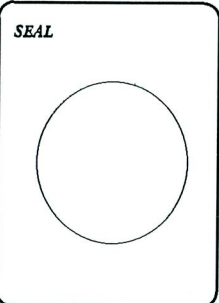
Utility Permit Drawing
Sheet 1 of 17

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



INDEX OF SHEETS	
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) 256-4151

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

REVISIONS

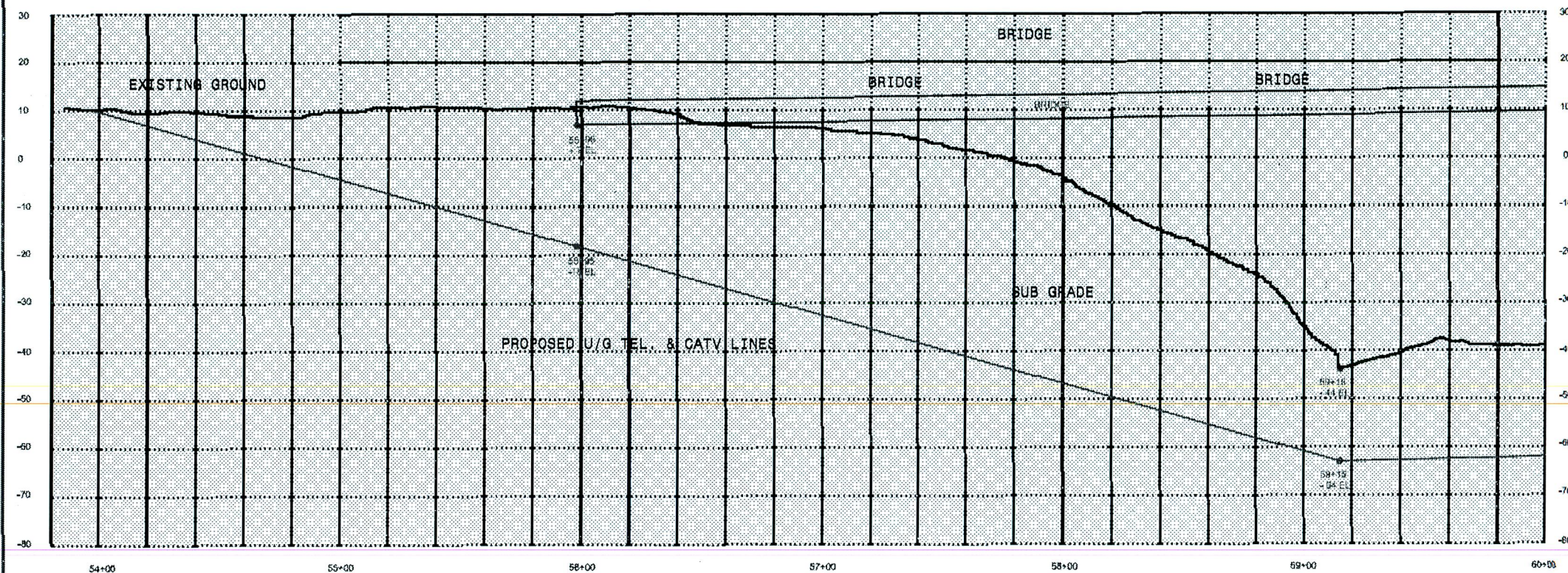
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11/11/2014 11:11 AM

PROJECT REFERENCE NO.	SHEET NO.
R-3601	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 OF 22

Utility Permit Drawing
Sheet 2 of 17

8/17/99

REVISIONS

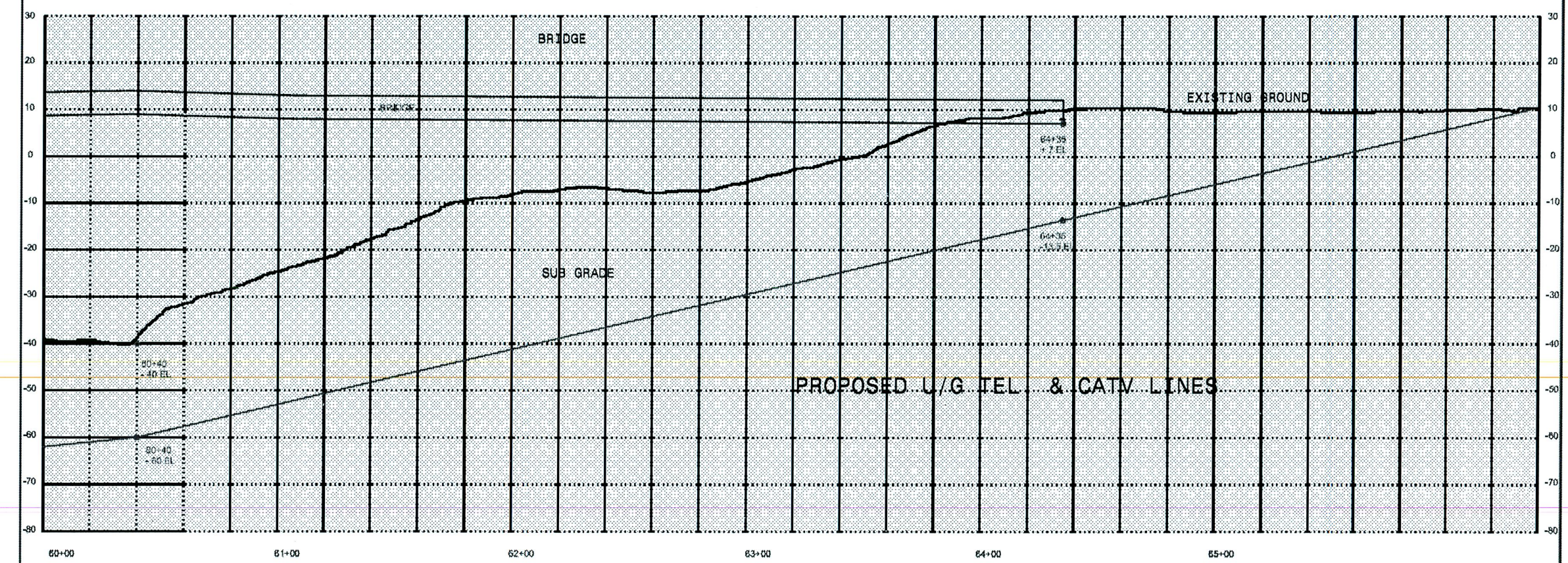
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PROJECT REFERENCE NO.	SHEET NO.
R-3601	2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

REVISED 6/10/2014

PROPOSED U/G TEL. LINE PROFILE

PRELIMINARY BORE DETAIL - PROFILE VIEW



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.

Utility Permit Drawing
Sheet 3 of 17

DWG_02_OF_02_

8/17/99

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

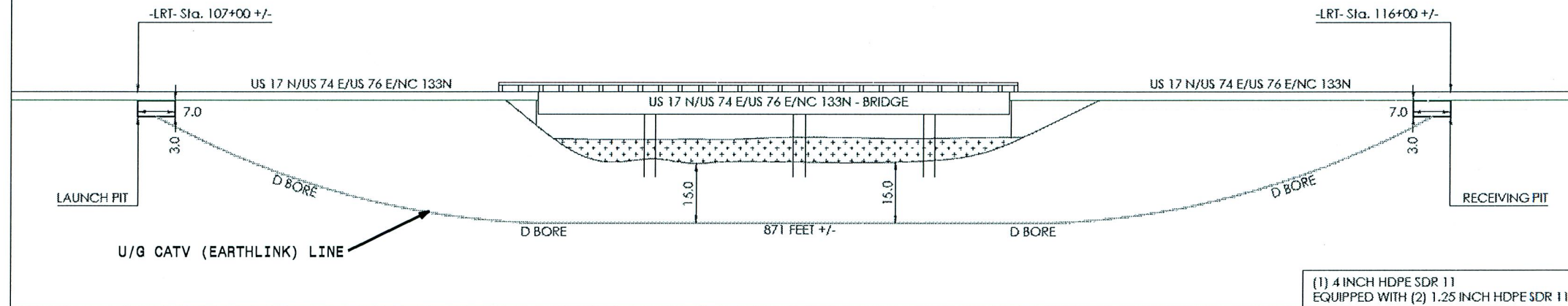
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NO CHANGE

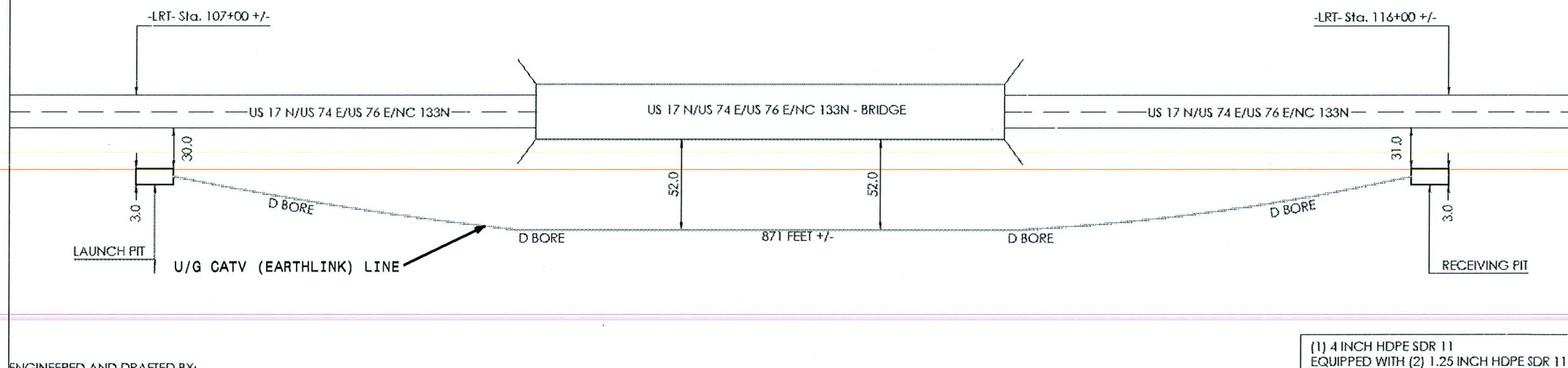
PROJECT REFERENCE NO.	SHEET NO.
R-3601	3A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

ALLIGATOR CREEK CROSSING
HORIZONTAL DIRECTIONAL DRILL

PROFILE VIEW



AERIAL VIEW



ENGINEERED AND DRAFTED BY:

TEMPLAR INC.

PAGE NOTES:

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

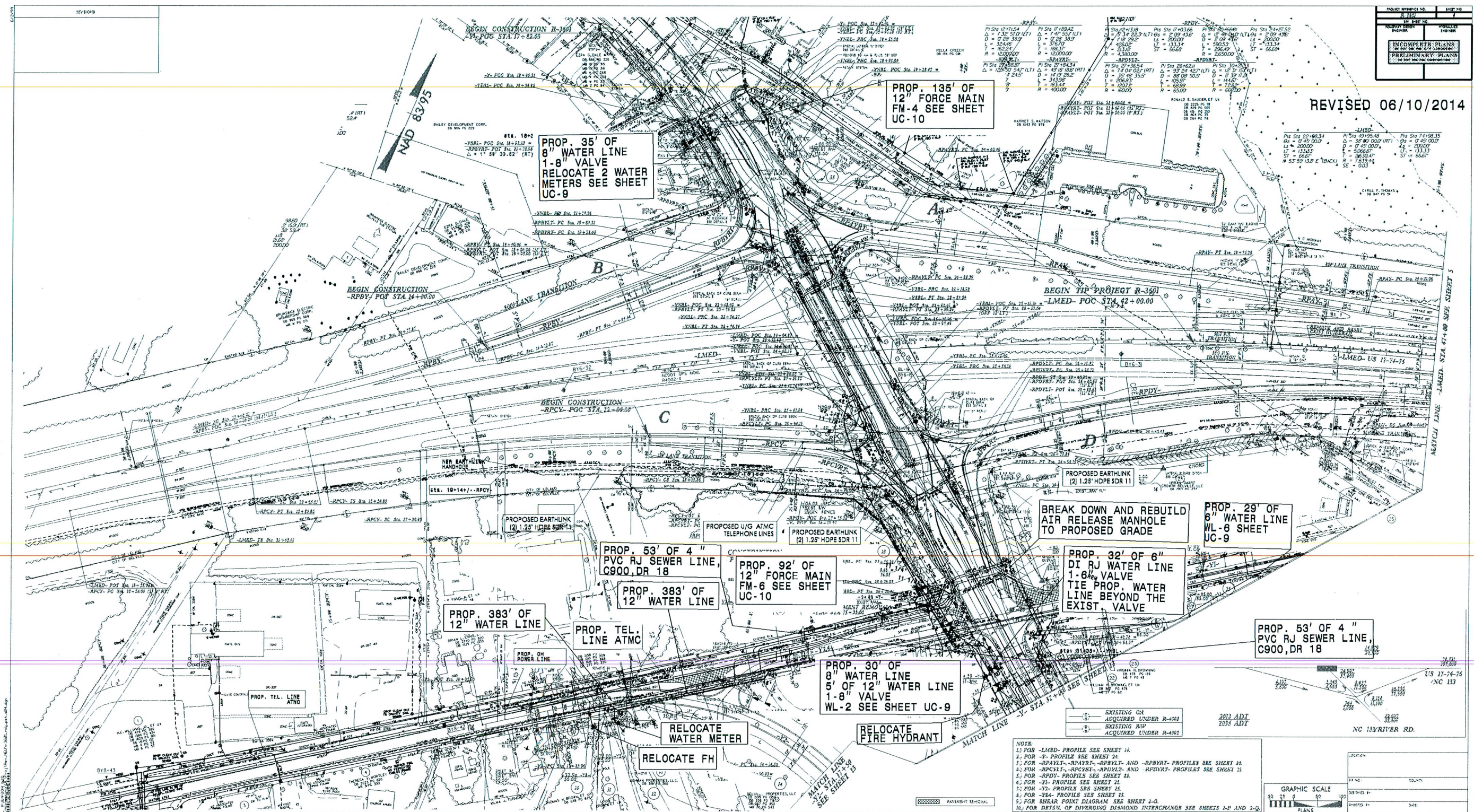
BELVILLE, NC
SCALE
NTS

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

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

DWG NO.
D1.1

Utility Permit Drawing
Sheet 5 of 17



8/17/99

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

11-JUN-2014 10:19
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\$\$\$\$\$ USERNAME \$\$\$\$

-LMED-
Pls Sta 22+98.34
 $\Delta = 0^\circ 45' 00.0''$
Ls = 200.00'
LT = 133.33'
ST = 66.67'
N 53° 59' 13.8" E (BACK)
SE = 0.03

Pls Sta 49+95.48
 $\Delta = 38^\circ 00' 00.0''$ (RT)
D = 0° 45' 00.0"
L = 5,066.67'
T = 2,630.47'
R = 7,639.44'
SE = 0.03

Pls Sta 74+98.35
 $\Delta = 0^\circ 45' 00.0''$
Ls = 200.00'
LT = 133.33'
ST = 66.67'

-RPDY-
Pls Sta 12+59.51
 $\Delta = 4^\circ 07' 42.6''$ (LT)
D = 0° 47' 44.8"
L = 518.80'
T = 259.51'
R = 7,200.00'

Pls Sta 16+33.49
 $\Delta = 0^\circ 47' 44.4''$
D = 2° 02' 47.0"
Ls = 200.00'
LT = 114.69'
ST = 85.35'

Pls Sta 20+11.50
 $\Delta = 11^\circ 56' 07.9''$ (LT)
D = 2° 02' 46.6"
L = 583.28'
T = 292.70'
R = 2,800.00'
SE = 0.05

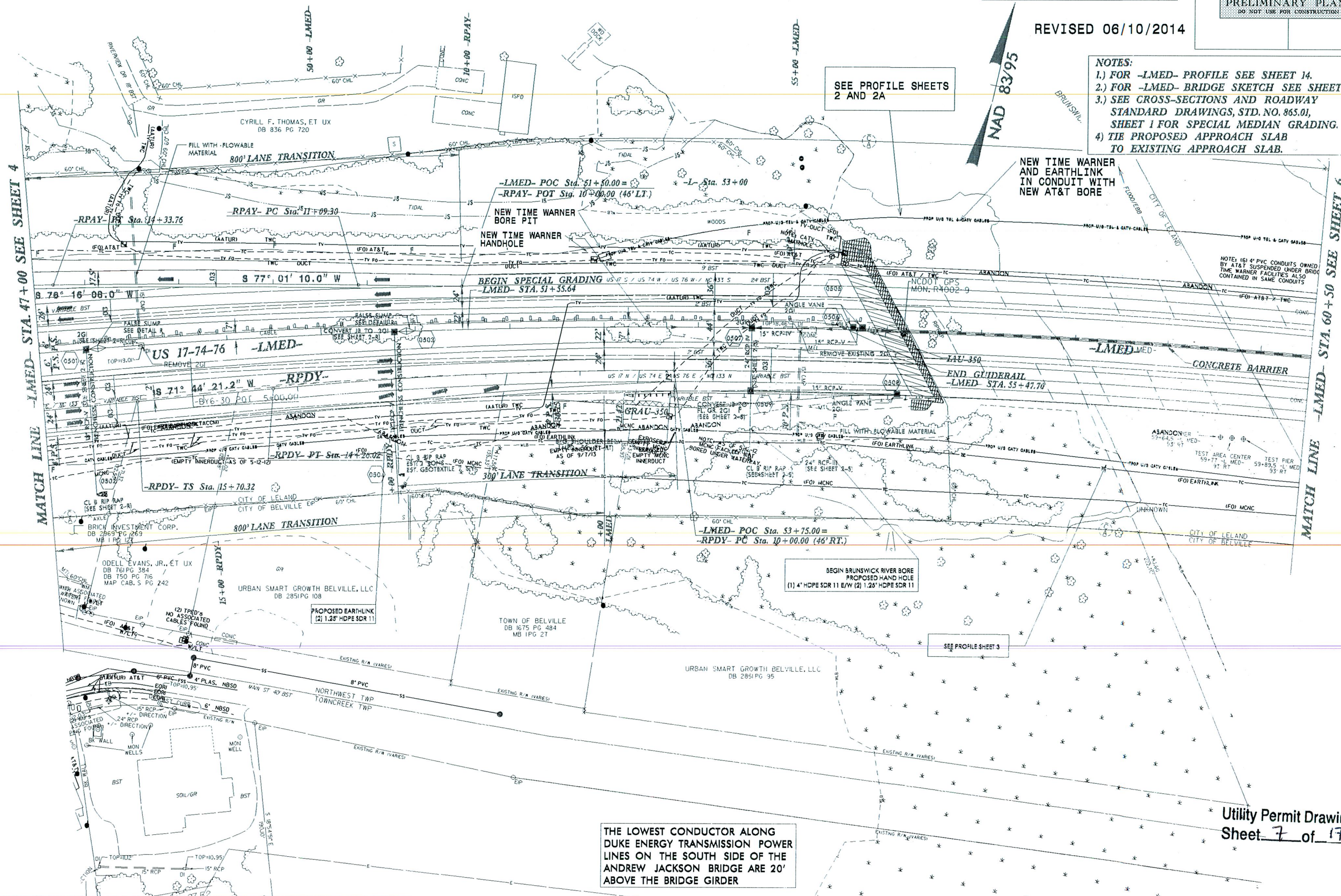
Pls Sta 23+68.76
 $\Delta = 2^\circ 02' 46.6''$
Ls = 200.00'
LT = 133.34'
ST = 66.67'

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.		SHEET NO.	
R-3601		3	
RWY 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

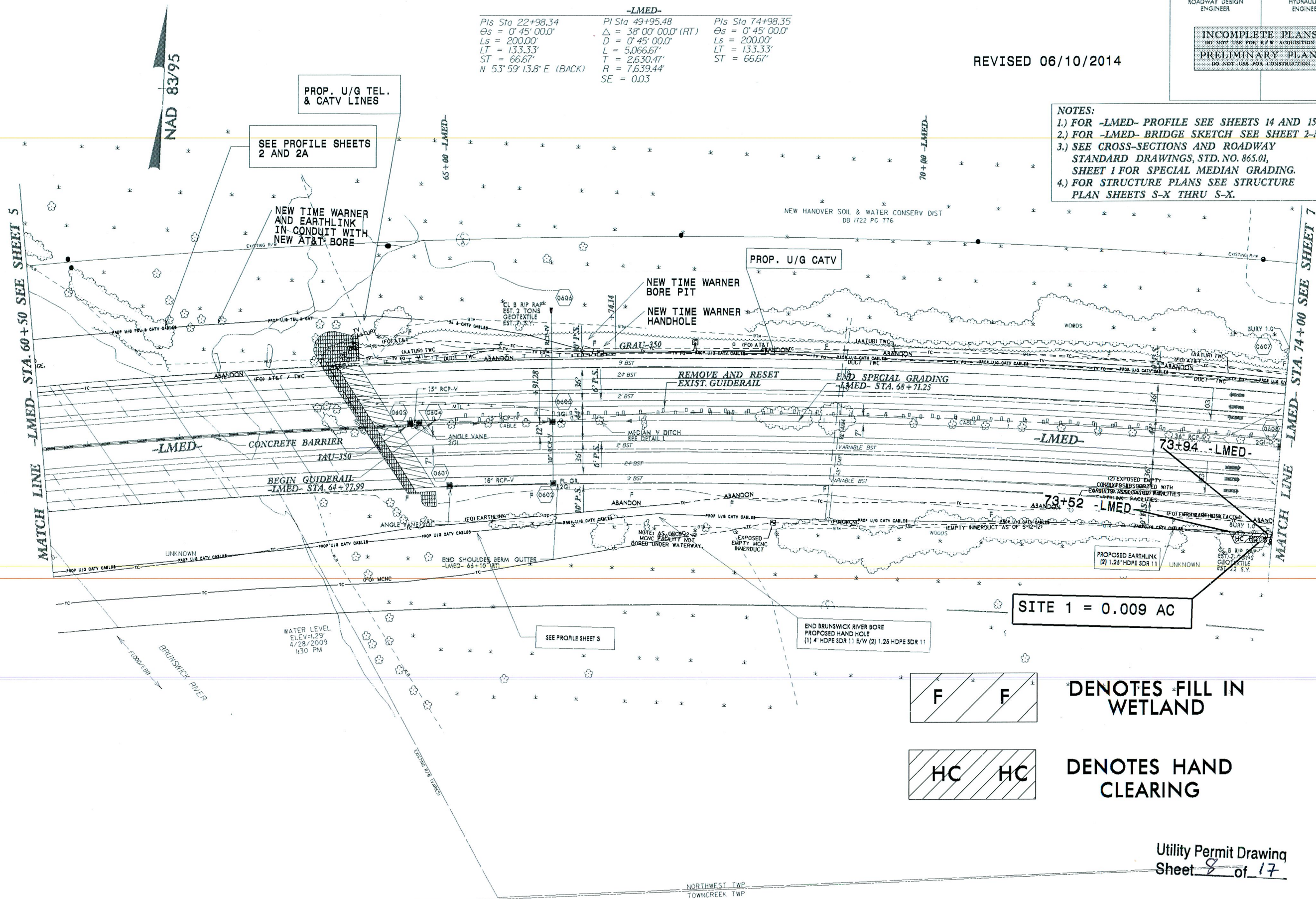
- NOTES:
- 1.) FOR -LMED- PROFILE SEE SHEET 14.
 - 2.) FOR -LMED- BRIDGE SKETCH SEE SHEET 2-M.
 - 3.) SEE CROSS-SECTIONS AND ROADWAY STANDARD DRAWINGS, STD. NO. 865.01, SHEET 1 FOR SPECIAL MEDIAN GRADING.
 - 4.) TIE PROPOSED APPROACH SLAB TO EXISTING APPROACH SLAB.



REVISÉD 06/10/2014

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.



DENOTES FILL IN WETLAND

DENOTES HAND
CLEARING

Utility Permit Drawing
Sheet 8 of 17

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

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tel:CEENAVE-67-66

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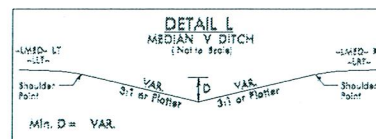
REVISED 06/10/2014

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

-LMED-
Pls Sta 22+98.34
Os = 0' 45' 00.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'
N 53° 59' 13.8" E (BACK)
SE = 0.03

Pls Sta 49+95.48
Δ = 38° 00' 00.0" (RT)
D = 0' 45' 00.0"
L = 5,066.67'
T = 2,630.44'
R = 7,639.44'
SE = 0.03

Pls Sta 74+98.35
Os = 0' 45' 00.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

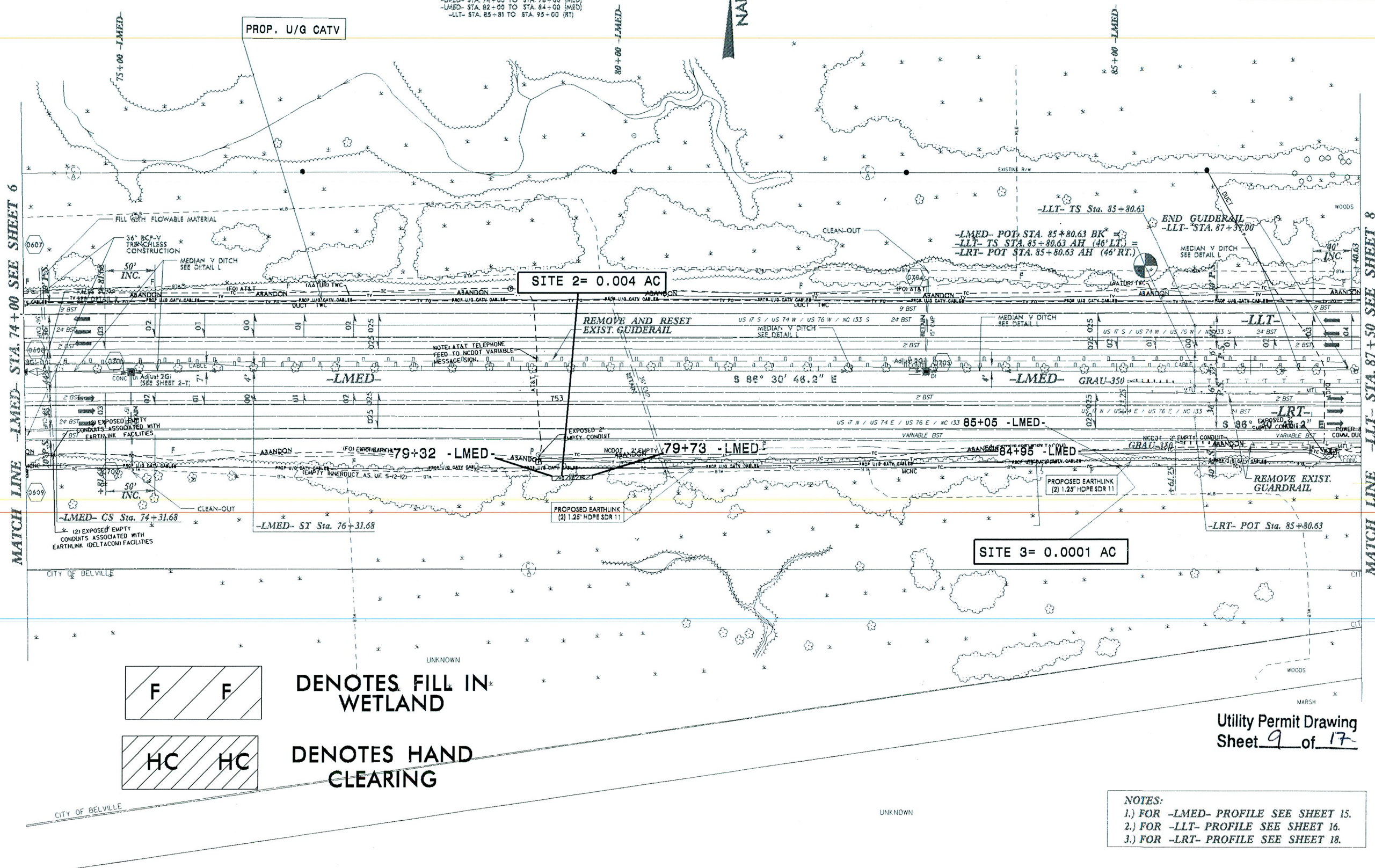


-LMED- STA. 74+00 TO STA. 76+00 (MED)
-LMED- STA. 82+00 TO STA. 84+00 (MED)
-LLT- STA. 85+00 TO STA. 95+00 (RT)

-LLT-
Pls Sta 87+13.96
Os = 0' 45' 00.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'
S 86° 30' 46.2" E (BACK)

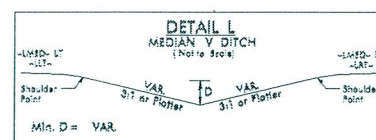
Pls Sta 92+45.65
Δ = 6° 58' 00.0" (LT)
D = 0' 45' 00.0"
L = 928.89'
T = 465.02'
R = 7,639.44'
SE = 0.05

Pls Sta 97+76.19
Os = 0' 45' 00.0"
Ls = 200.00'
LT = 133.33'
ST = 66.67'

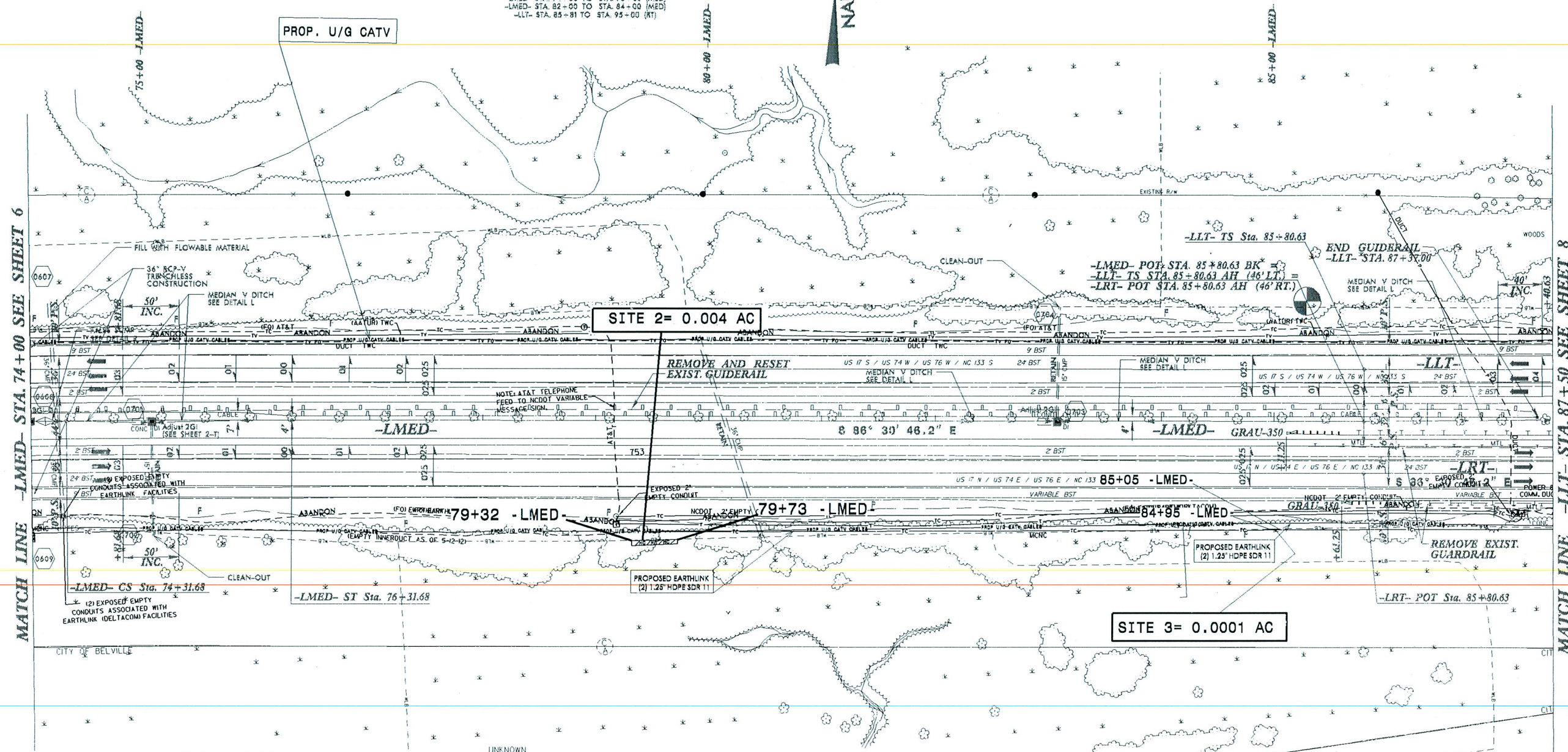


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33850
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-LMED-					
<i>Pls</i>	<i>Sta</i>	22+98.34	<i>Pl</i>	<i>Sta</i>	49+95.48
<i>Θs</i>		0° 45' 00.0"	<i>Δ</i>		38° 00' 00.0" (RT)
<i>Ls</i>		200.00'	<i>D</i>		0° 45' 00.0"
<i>LT</i>		133.33'	<i>L</i>		5,066.67'
<i>ST</i>		66.67'	<i>T</i>		2,630.47'
			<i>R</i>		7,639.44'
			<i>SE</i>		0.03



-LLT-		
<i>Pis</i> Sta 87+13.96	<i>Pi</i> Sta 92+45.65	<i>Pis</i> Sta 97+76.19
<i>Os</i> = 0° 45' 00.0"	Δ = 6° 58' 00.0" (LT)	<i>Os</i> = 0° 45' 00.0"
<i>LT</i> = 200.00'	<i>L</i> = 0° 45' 00.0"	<i>L</i> = 200.00'
<i>LT</i> = 133.33'	<i>L</i> = 928.89'	<i>LT</i> = 133.33'
<i>ST</i> = 66.67'	<i>T</i> = 465.02'	<i>ST</i> = 66.67'
<i>S</i> 86° 30' 46.2" E (BACK)	<i>R</i> = 7,639.44'	
	<i>SF</i> = .005	



DENOTES FILL IN WETLAND

HC HC

**DENOTES HAND
CLEARING**

Utility Permit Drawing
Sheet 10 of 17

NOTES:

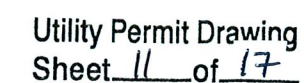
- 1.) FOR -LMED- PROFILE SEE SHEET 15.
- 2.) FOR -LLT- PROFILE SEE SHEET 16.
- 3.) FOR -LRT- PROFILE SEE SHEET 18.

-JUN-2014 11:26
\\utah\Utilities\Engineering\UC\Proj\Rev-NEU\r360\rdu-psh.s07.dgn

A rectangular block divided into three diagonal sections by two parallel lines. The leftmost section contains the letter 'F', the middle section is empty, and the rightmost section contains the letter 'F'.

NAD 83/95

1-JUN-2014 11:29
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\$\$\$\$\$USERNAME\$\$\$\$\$



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

11-JUN-2014 11:32
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\$\$\$\$\$USERNAME\$\$\$\$\$

PROJECT REFERENCE NO.	SHEET NO.
<i>R-3601</i>	<i>9</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION</p> <p>PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION</p> </div>	

REVISED 06/10/2014

NAD 83/95



DENOTES FILL IN WETLAND



**DENOTES HAND
CLEARING**

BEGIN BRIDGE

~~LLT~~ STA. 108 + 79.86

PROP U\G CATV WILL TIE INTO
EXISTING CATV CONDUITS ATTACHED
TO EXISTING BRIDGE

END BRIDGE

LLT- S

PROP. U/G CATV

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

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

SITE 6= 0.032 AC

SITE 7= 0.003 AC

WATER ELE
4/22/09 9
HIGH WA
ELEV= 1

~~END APPROACH SLAB~~

~~-LRT~~ STA. 112 + 84.17

END BRIDGE

-LRT- STA. 112 + 60.00 Utility Permit Drawing
Sheet 12 of 17

<i>Pis</i> Sta 96/147.42	<i>Pl</i> Sta 101/149.11	<i>Pis</i> Sta 106/179.65
$\Theta_s = 0^\circ 45' 00.0''$	$\Delta = 6^\circ 58' 00.0''$ (LT)	$\Theta_s = 0^\circ 45' 00.0''$
<i>Ls</i> = 200.00°	$\Delta = 0^\circ 45' 00.0''$ *	<i>Ls</i> = 200.00°
<i>LT</i> = 133.33°	<i>L</i> = 928.89°	<i>LT</i> * = 133.33° *
<i>ST</i> = 66.67°	<i>T</i> = 465.02°	<i>ST</i> = 66.67°
	<i>R</i> = 7.639.44°	
	<i>SE</i> = 0.025	

N C STATE PORTS AUTHORITY
DB 208 PG 273

BEGIN APPROACH SLAB

~~LRT~~ STA. 109+50.83

~~BEGIN BRIDGE~~
~~-LRT- STA. 109 + 75.00~~

NOTES:

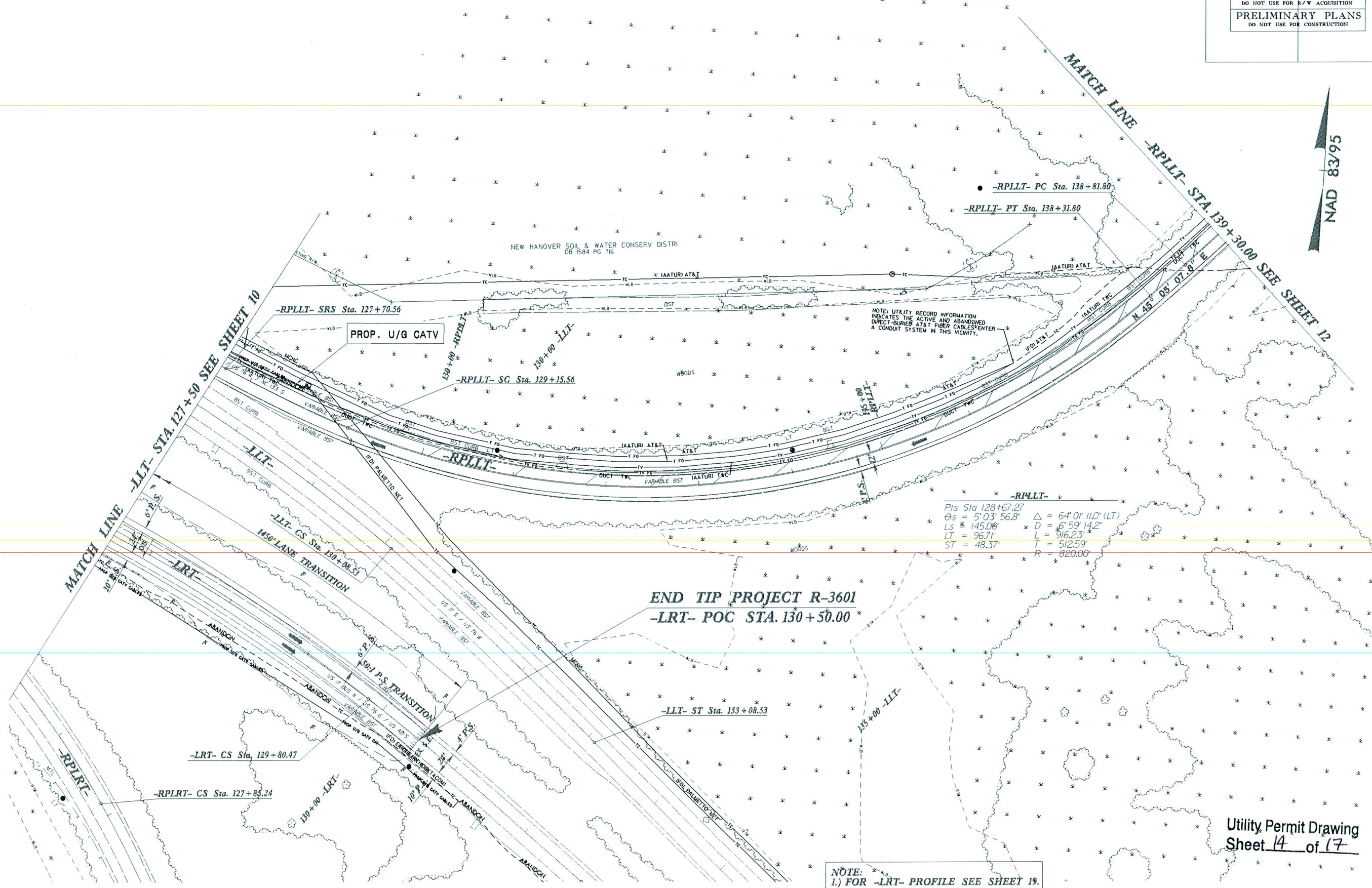
- 1.) FOR -LLT- PROFILE SEE SHEETS 16 AND 17.
- 2.) FOR -LRT- PROFILE SEE SHEETS 18 AND 19.
- 3.) FOR -LLT- BRIDGE SKETCH SEE SHEET 2-M.
- 4.) FOR -LRT- BRIDGE SKETCH SEE SHEET 2-M.

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-3601	11
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	

REVISED 06/10/2014

NAD 83/95



END TIP PROJECT R-3601
-LRT- POC STA. 130+50.00

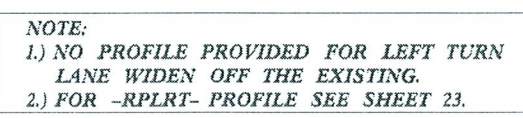
NOTE:
1.) FOR -LRT- PROFILE SEE SHEET 19.

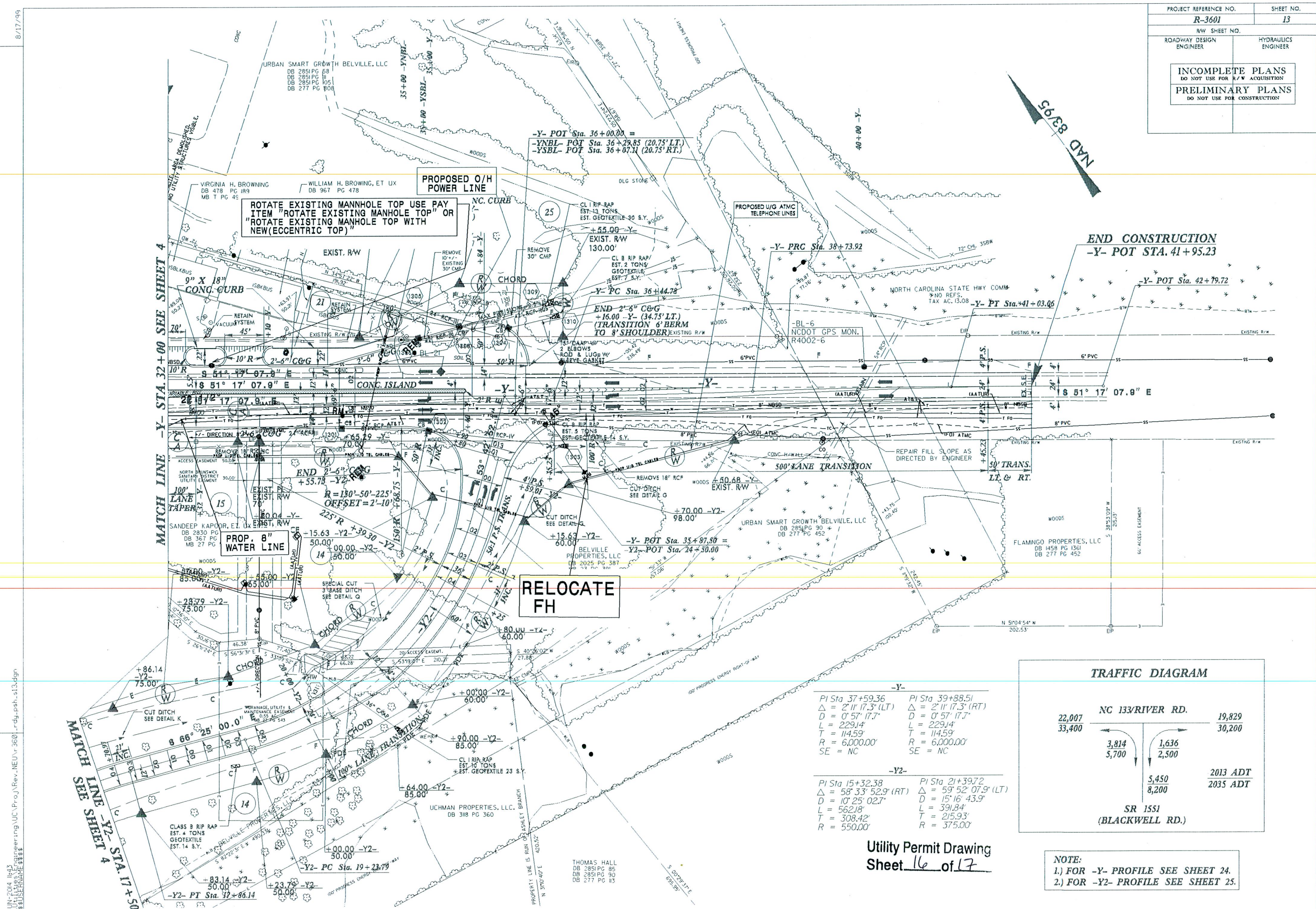
Utility Permit Drawing
Sheet 14 of 17

REVISIONS

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5/3/2014 11:29
5/3/2014 11:29

REVISÉD 06/10/2014





NOTE:
1.) FOR -Y- PROFILE SEE SHEET 24.
2.) FOR -Y2- PROFILE SEE SHEET 25.

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