



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

June 27, 2019

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

ATTN: Ms. Liz Hair, NCDOT Coordinator

Subject: **Request for Modification to Individual Section 404 and Section 401 Water Quality Certification** for Fayetteville Outer Loop from I-95 South of Fayetteville to NC 24-87, Cumberland, Hoke, and Robeson Counties. Federal Aid Project No. NHP-0620(031), State Project No. 34817.3.13, TIP Nos. X-0002 B & C, and U-2519 AA, AB, BA, BB, CA, CB, DA, & E.
Debit \$570 from WBS 34817.3.13

Reference: Section 404 and 401 Individual Permit Application requested April 25, 2008
Section 404 Individual Permit issued October 23, 2008 (SAW-2008-01413)
Section 401 Water Quality Certification issued October 6, 2008 (20080737)
Section 404 and 401 Modification requested May 21, 2010
Section 401 Modification issued June 3, 2010 (20080737 v.2)
Section 404 and 401 Modification requested October 7, 2010
Section 401 Modification issued December 16, 2010 (20080737 v.3)
Section 404 Modification issued December 21, 2010 (SAW-2008-01413)
Section 401 Modification issued May 22, 2014 (20080737 v.4)
Section 404 Modification issued June 24, 2014 (SAW-2008-01413)
Section 401 Modification issued January 19, 2017 (20080737 v.5)
Section 401 Modification issued April 28, 2017 (20080737 v.6)
Section 404 Modification issued April 25, 2017 (SAW-2008-01413)
Section 401 Modification issued May 5, 2017 (20080737 v.7)
Section 401 Modification issued January 29, 2018 (20080737 v.8)
Section 404 Modification issued March 12, 2018 (SAW-2008-01413)
Section 401 Modification issued June 21, 2018 (20080737 v.9)
Section 404 Modification issued July 26, 2018 (SAW-2008-01413)
Section 401 Modification issued October 18, 2018 (20080737 v.10)
Section 404 Modification issued January 9, 2019 (SAW-2008-01413)

Dear Madam:

This modification request is for additional impacts necessary at three previously permitted sites for U-2519 AA & AB. Additional impacts at Permit Site 22 are for the installation of an additional pipe under Interstate 95 which would help to prevent water from backing up west of the roadway. Additional

impacts at Permit Site 23 and Permit Site 24 are due to a change in the proposed culvert skew which will better match the natural drainage of the feature.

Additional permanent impacts to wetlands total 0.12 acre due to fill and excavation and additional temporary wetland fill impacts of 0.06 acre are anticipated with construction of the U-2519 AA & AB project modifications (Table 1). There will be an additional 19 linear feet of permanent stream impact and an additional 47 linear feet of temporary stream impact associated with construction of the U-2519 AA & AB project modifications (Table 2). These additional impacts are described in more detail:

Permit Site 22 – In addition to the previously permitted impacts to wetlands at this site resulting from roadway fill, there are proposed impacts associated with the installation of a supplemental 42” steel pipe to accommodate the 100 Year Storm Event. Currently there is a 4’x 8’ culvert at this location which is not sufficiently sized to accommodate the 100 Year Storm Event. The 42” steel pipe would be installed adjacent to the existing culvert by means of trenchless installation methods. Additional permanent impacts to wetlands of 0.03 acre are due to the placement of riprap protection and headwalls at the inlet and outlet. Installation will necessitate additional temporary wetland impacts of 0.06 acre as well as 0.03 acre of hand clearing and 51 lf (0.02 acre) of temporary surface water impacts. A bore pit will be necessary for installation of the pipe and a pump will be utilized to work in dry conditions within the pit. The placement of sheet piles within the temporary impact area will also be necessary to give the equipment something rigid to push off of while installing the pipe. Timber mats will be used to support equipment within the wetland areas not being excavated for the bore pit. Temporary wetland impact areas will be restored to pre-construction contours and revegetated with an approved vegetation mix following completion of the pipe installation.

Permit Site 23 – Modifications are proposed to adjust the previously permitted two 8’ x 6’ RCBCs from a 104 degree crossing angle to a 90 degree crossing angle to better match the natural drainage of Horsepen Branch under SR 1718 (Green Springs Road). The proposed change in the skew of the culvert will increase permanent wetland fill impacts 0.02 acre and permanent mechanized clearing will increase 0.04 acre. Permanent surface water impacts due to armoring of the channel will increase by 29 lf and temporary surface water impacts will increase by 12 lf.

Permit Site 24 – Modifications are proposed to adjust the previously permitted two 9’ x 6’ RCBCs from a 90 degree crossing angle to an 83 degree crossing angle to better match the natural drainage of Horsepen Branch under US 301. The proposed change in the skew of the culvert will increase permanent wetland fill impacts 0.01 acre, permanent wetland excavation impacts will increase 0.01 acre, and 0.01 acre of hand clearing will be required. Permanent surface water impacts due to bank stabilization will increase by 14 lf and temporary surface water impacts will decrease by 16 lf. Permanent surface water impacts due to the culvert will decrease by 24 lf due to one of the previously permitted culvert wingwalls being moved out of Horsepen Branch.

Table 1. U-2519 AA & AB Wetlands Impacts

Permit Site Number	FEIS Site ID	Riverine or Non-Riverine	Permanent Impacts (ac.) **	Temporary Impacts (ac.)	Mitigation Required***
22	Z 24	Riverine	0.03	0.06	Yes
23	Z 24	Riverine	0.06	0	Yes
24	Z 23	Riverine	0.02	0	Yes
Total:			0.12*	0.06	

Notes: * Rounded totals are sum of actual impacts to 1/1000th acre; Impact totals are in addition to previously permitted impacts.

** Includes fill, excavation, and mechanized clearing.

***For permanent impacts.

Hand clearing: Site 22 - 0.03 ac. and Site 24 – 0.01 ac.

Table 2. U-2519 AA & AB Surface Water Impacts and Descriptions

Permit Site Number	Waterbody	Permanent		Temporary		Type of Stream	Mitigation Required**
		lf	ac.	lf	ac.		
22	Horsepen Branch (Z 24)	0	0	51	0.02	Perennial	Yes
23	Horsepen Branch (Z 24)	29	0.01	12	<0.01	Perennial	Yes
24 ⁺	Horsepen Branch (Z 23)	-24	<0.01	-16	< 0.01	Perennial	Yes
24*	Horsepen Branch (Z 23)	14	<0.01	0	0	Perennial	Yes
Total:		19	0.01	47	0.02		

Notes: * Denotes bank stabilization; when necessary, mitigation required by the USACE exceeds the amount required by NCDWR; Impact totals are in addition to previously permitted impacts.

** For permanent impacts

⁺ Reduction in impacts from the previously permitted design.

Compensatory Mitigation

Compensatory mitigation for the additional 0.12 acre of permanent wetland impacts will be debited from the Privateer Wetland and Stream Mitigation Site. This brings total project wetland impacts to 60.27 acres. An additional 5 linear feet in permanent stream impacts will be debited from the Privateer Wetland and Stream Mitigation Site, bringing the total project stream impacts to 15,864 linear feet. A revised debit ledger for the Privateer Wetland and Stream Mitigation Site is forthcoming.

Utility Impacts

The previous permit modification for U-2519AA & AB authorized on January 9, 2019, had indicated that underground utility relocations would be accomplished by directional bore in jurisdictional areas. This current modification is made to advise of changes in utility construction methods. In certain instances, utility relocations have been modified to include open cuts when the utility is being placed within permitted fill impacts. These proposed changes in construction methods will not result in any additional permanent or temporary impacts. A set of utility plans is attached to show the locations of utilities within the project. Utility sheets UC-5, UC-5A, UC-34 and UC-34A all depict a section of 6" water line being placed within previously permitted fill limits; Utility sheets UC-28 and UC-28A depict a 6" water line placed within previously permitted fill limits. Utility sheets UC-29, UC-29B, and UC-35 depict an 8" water line being placed within previously permitted impacts; 285' of this installation will be installed by means of directional bore to get under the channelized area within the wetland at permit site 23. At permit site 24 there will be a 440' section of 8" pipe installed by directional bore, depicted on utility sheet UC-35, which will run under the stream and wetland on the northwest side of US 301.

Additional overhead utilities will be installed throughout the project area. Hand clearing of 0.56 acre of wetlands will be necessary for the installation and maintenance of these utility lines. These areas of hand clearing have been added to the permit drawings included in this permit modification and the updated impacts summary table is attached which identifies the hand clearing locations and acreages.

Regulatory Approvals

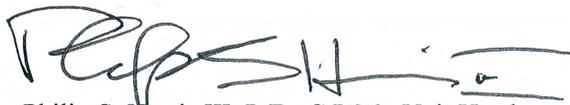
The design-build let date for U-2519 AA was November 21, 2017 and the design-build let date for U-2519 AB was December 19, 2017. Final completion is anticipated in July 2022.

Section 404: We are hereby requesting the modifications described above for the USACE Individual 404 Permit signed October 23, 2008 (SAW-2008-01413), for the above-described activities.

Section 401: We are hereby requesting a modification to the 401 Water Quality Certification from the NCDWR issued October 6, 2008 (DWQ No. 003278). In compliance with Section 143-215.3D(e) of the NCAC, please debit \$570.00 from WBS 34817.3.13 for processing the Section 401 certification modification. A copy of this modification request and its distribution list will be posted on the NCDOT website at: <https://connect.ncdot.gov/resources/Environmental>.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Tyler Stanton at 919-707-6156 or tstanton@ncdot.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Philip S. Harris III", written over a horizontal line.

Philip S. Harris III, P.E., C.P.M., Unit Head
Environmental Analysis Unit

cc:
NCDOT Permit Application Standard Distribution List

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

**PERMIT DRAWING
SHEET 1 OF 132
REVISED 06-13-2019**

**CUMBERLAND COUNTY
/ROBESON COUNTY**

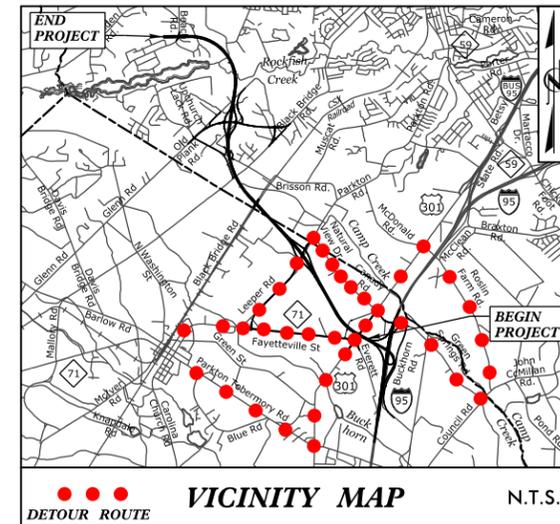
LOCATION: FUTURE I-295 - FAYETTEVILLE OUTER LOOP FROM I-95 IN ROBESON COUNTY TO SOUTH OF SR 1003 (CAMDEN ROAD) IN CUMBERLAND COUNTY

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

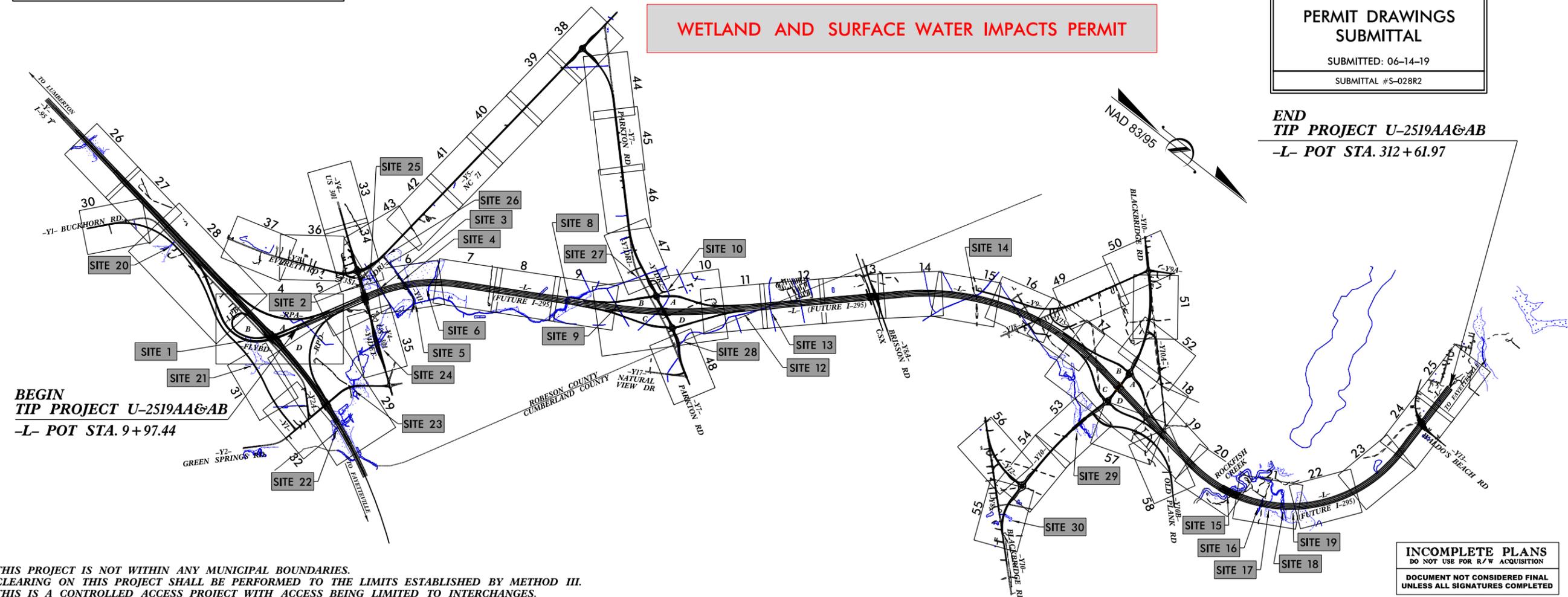


**PERMIT DRAWINGS
SUBMITTAL**
SUBMITTED: 06-14-19
SUBMITTAL #S-028R2

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



WETLAND AND SURFACE WATER IMPACTS PERMIT

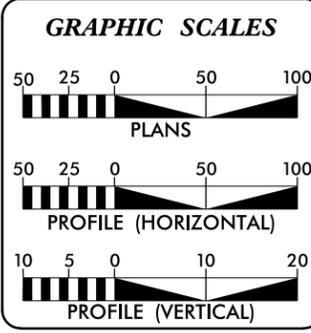


**BEGIN
TIP PROJECT U-2519AA&AB
-L- POT STA. 9 + 97.44**

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

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

CONTRACT: C204043 **TIP PROJECT: U-2519AA&AB**



DESIGN DATA

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

PROJECT LENGTH

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

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

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

RIGHT OF WAY DATE: NOVEMBER 21, 2017
LETTING DATE: NOVEMBER 21, 2017

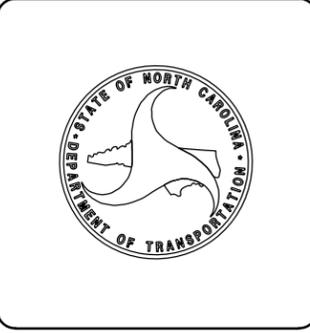
JOSEPH A. FREEMAN, PE
DESIGN PROJECT MANAGER

ETHAN P. WRIGHT, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.
ROADWAY DESIGN ENGINEER

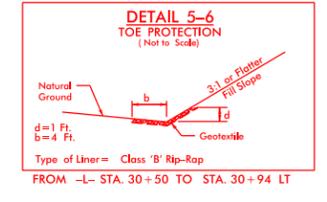
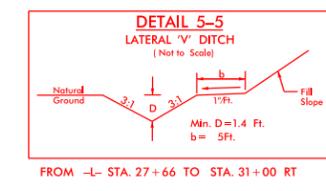
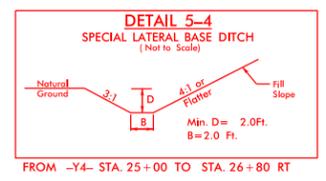
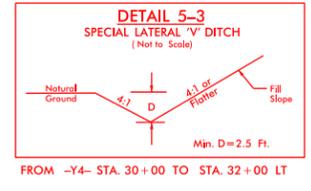
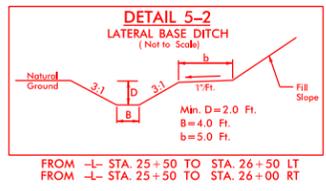
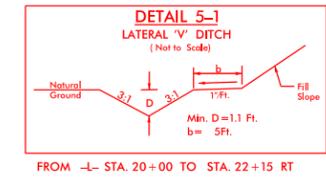
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PERMIT DRAWING
SHEET 8 OF 132
REVISED 06-13-2019

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



DETAIL 5-7 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'

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

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HC HC DENOTES HAND CLEARING

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

********* DENOTES MECHANIZED CLEARING

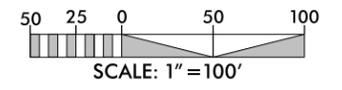
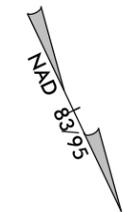
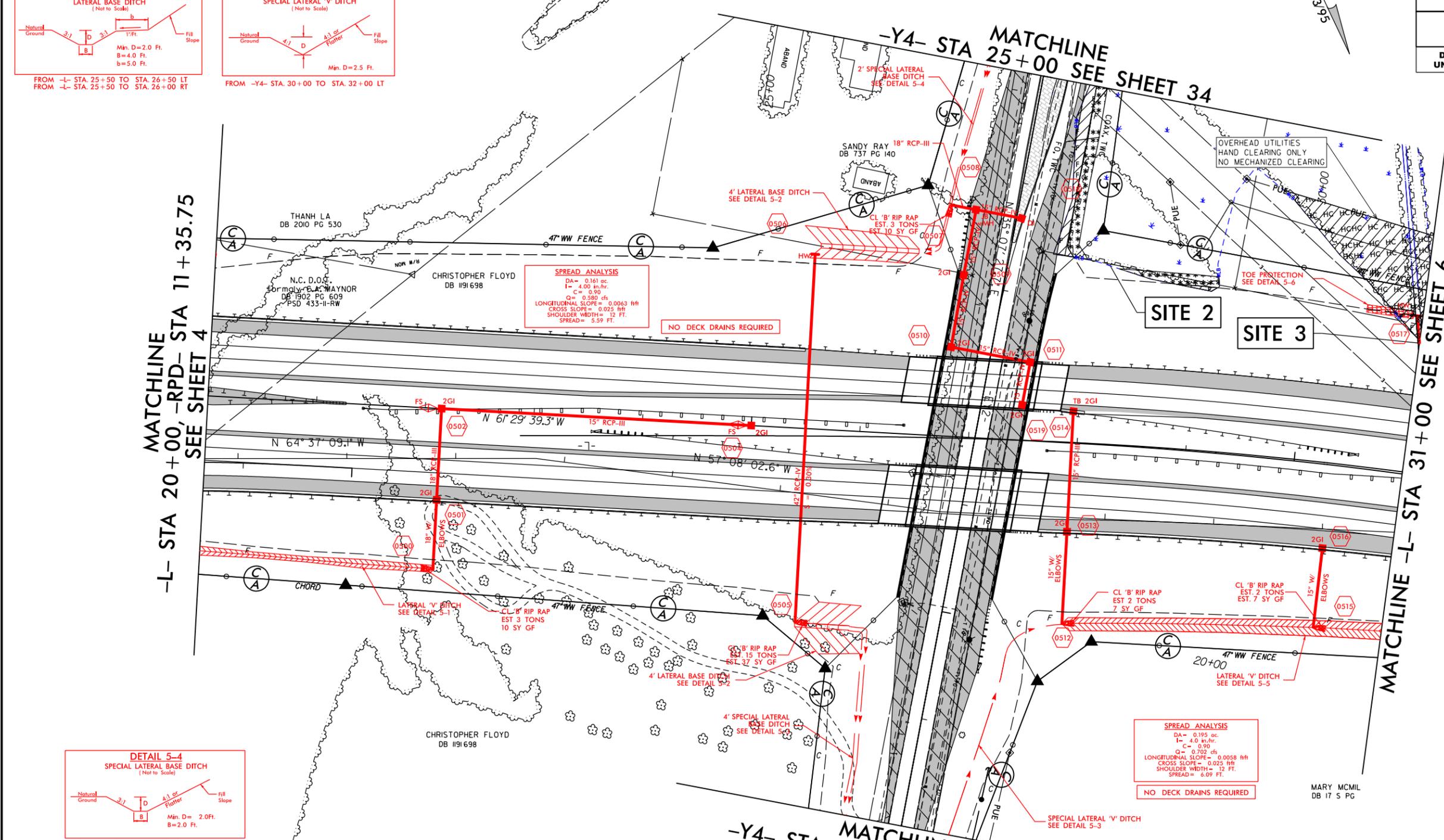
MATCHLINE -L- STA 20+00, -RPD- STA 11+35.75 SEE SHEET 4

MATCHLINE -L- STA 31+00 SEE SHEET 6

-Y4- STA 32+00 SEE SHEET 35

-Y4- STA 25+00 SEE SHEET 34

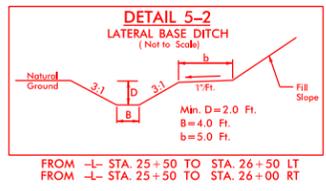
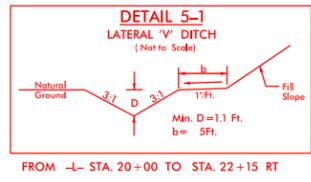
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FOR -L- PROFILE SEE SHEET 59
 FOR -Y4- PROFILE SEE SHEETS 87 & 88
 FOR -RPD- PROFILE SEE SHEET 81

PERMIT DRAWING
SHEET 9 OF 132
REVISED 06-13-2019

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



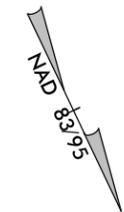
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HC HC DENOTES HAND CLEARING

F F DENOTES FILL IN WETLAND

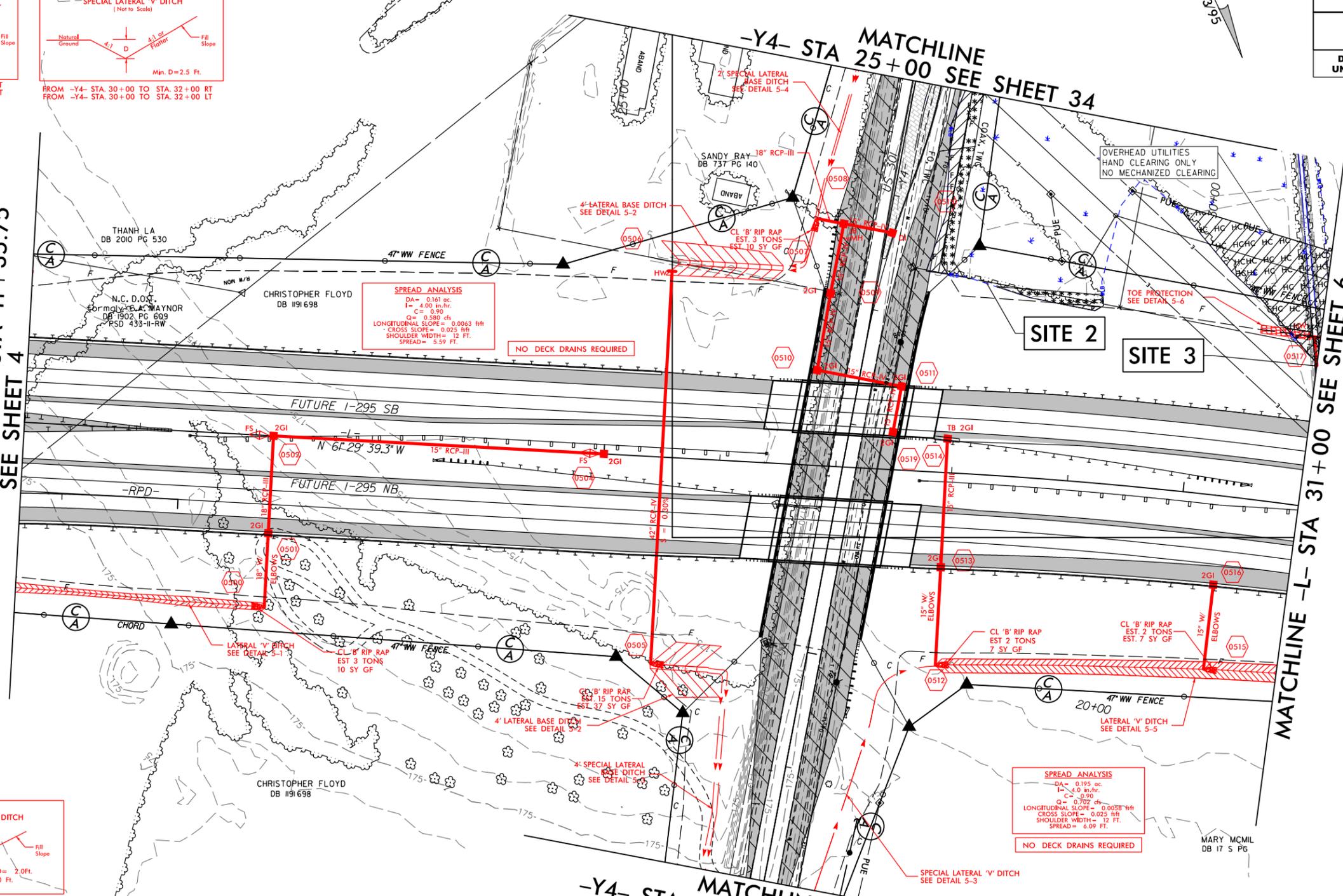
S S DENOTES IMPACTS IN SURFACE WATER

********* DENOTES MECHANIZED CLEARING



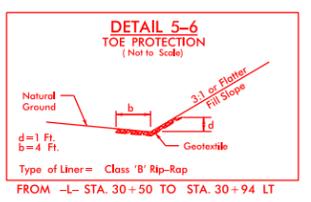
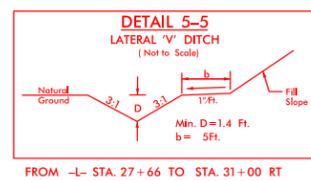
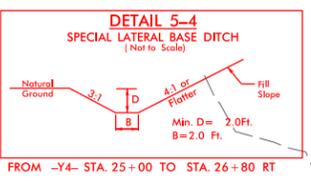
MATCHLINE -L- STA 20+00, -RPD- STA 11+35.75
SEE SHEET 4

MATCHLINE -L- STA 31+00 SEE SHEET 6



SPREAD ANALYSIS
 DA = 0.161 ac.
 I = 4.00 in./hr.
 C = 0.90
 Q = 0.580 cfs
 LONGITUDINAL SLOPE = 0.0063 ft/ft
 CROSS SLOPE = 0.025 ft/ft
 SHOULDER WIDTH = 12 FT.
 SPREAD = 5.59 FT.

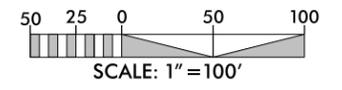
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 I = 4.0 in./hr.
 C = 0.90
 Q = 0.702 cfs
 LONGITUDINAL SLOPE = 0.0038 ft/ft
 CROSS SLOPE = 0.025 ft/ft
 SHOULDER WIDTH = 12 FT.
 SPREAD = 6.09 FT.



DETAIL 5-7 FALSE SUMP
(Not to Scale)

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

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



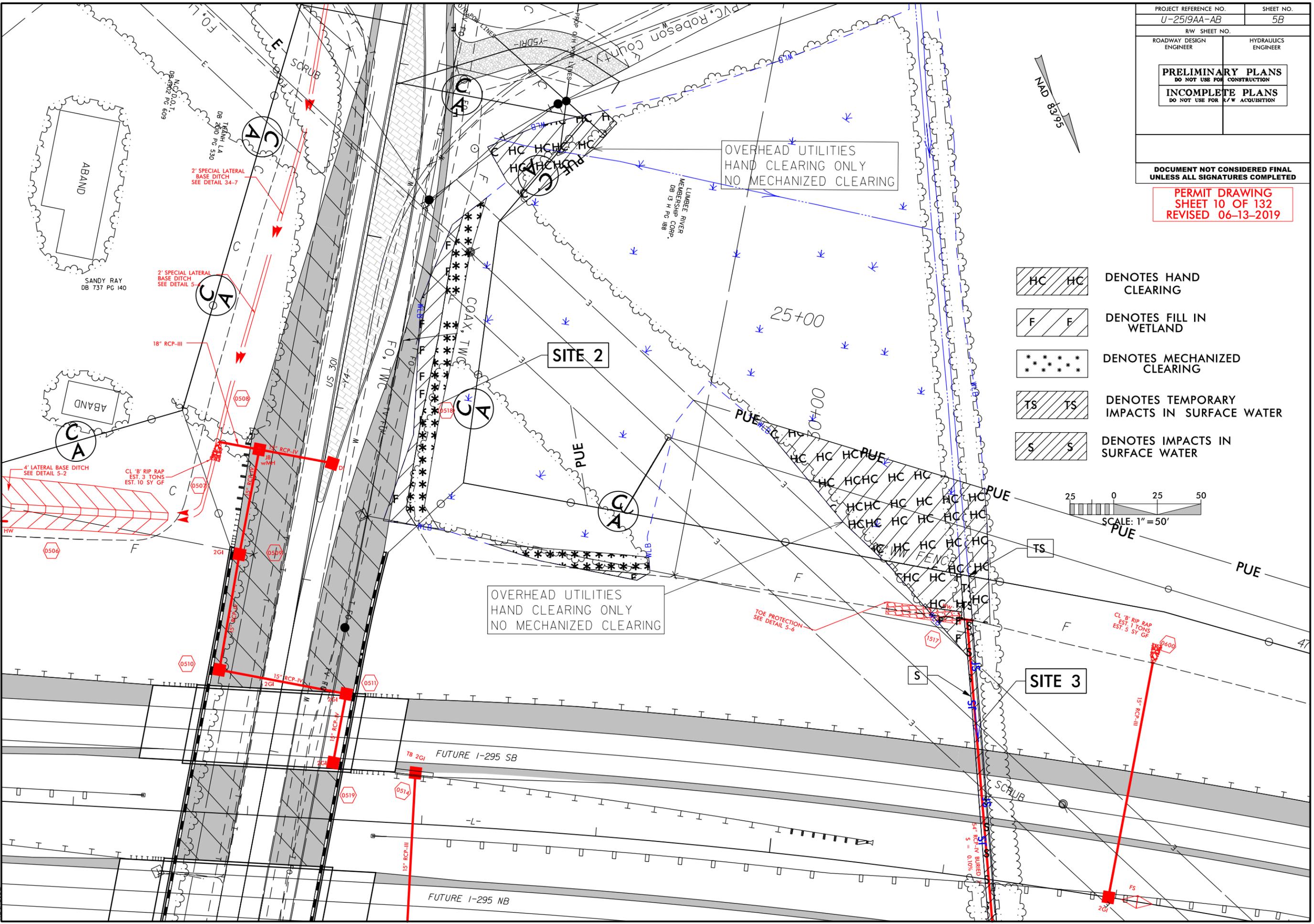
FOR -L- PROFILE SEE SHEET 59
 FOR -Y4- PROFILE SEE SHEETS 87 & 88
 FOR -RPD- PROFILE SEE SHEET 81

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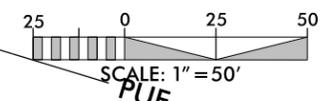
PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 5B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

PERMIT DRAWING
SHEET 10 OF 132
REVISED 06-13-2019

5/14/2019 I:\Projects\4019135\4019135_0001\50_Deliverables & Submittals\U2519AA-AB\Hydraulics\PERMITS_Environmental\Drawings\PRM_SHT\Permit\Modifications\U2519AA-AB_Hyd_prm_psh010.dgn



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



OVERHEAD UTILITIES
HAND CLEARING ONLY
NO MECHANIZED CLEARING

OVERHEAD UTILITIES
HAND CLEARING ONLY
NO MECHANIZED CLEARING



2\"/>

2\"/>

4\"/>

CL 'B' RIP RAP
EST. 3 TONS
EST. 10 SY GF

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

FUTURE I-295 SB

FUTURE I-295 NB

SITE 2

SITE 3

ABAND

SANDY RAY
DB 737 PG 140

ABAND

C A

C A

C A

C A

C A

C A

C A

C A

TS

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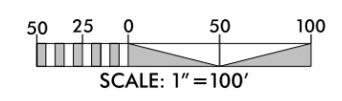
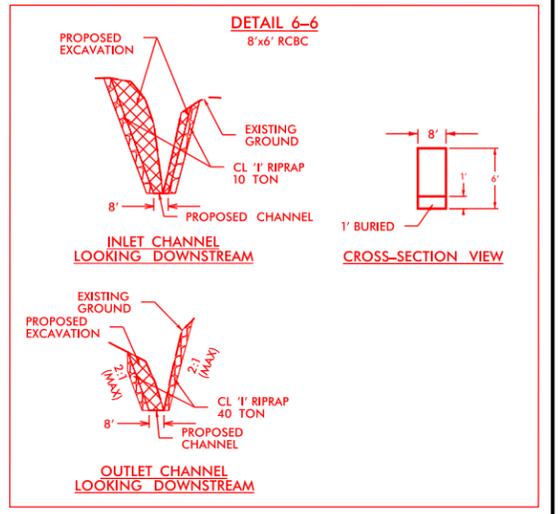
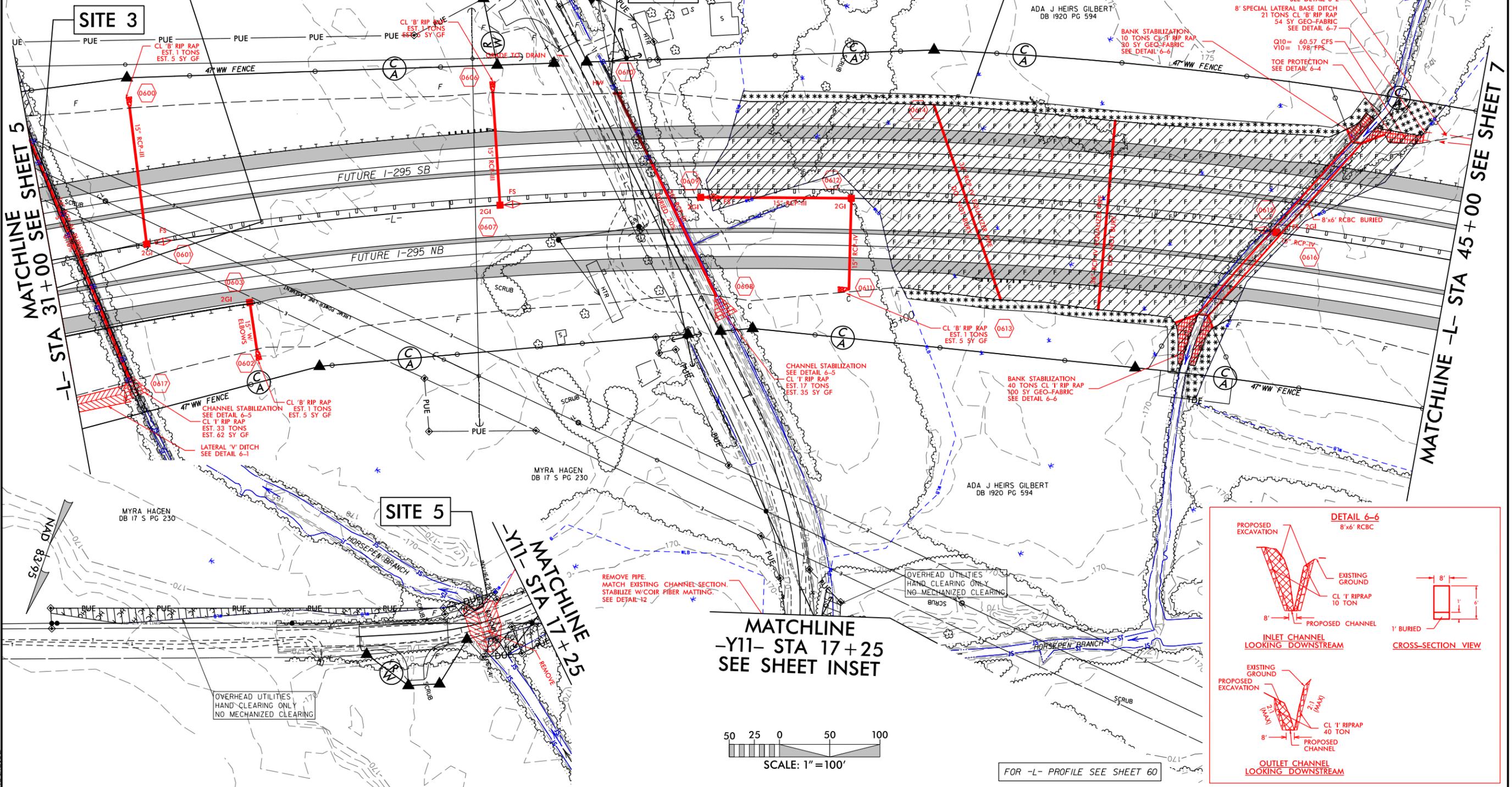
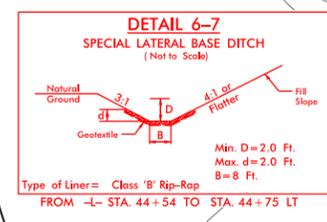
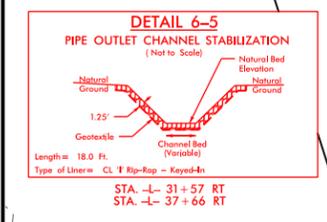
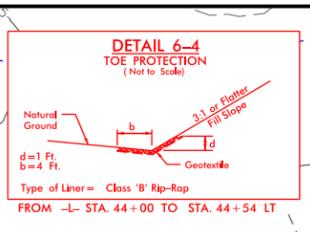
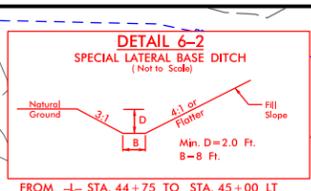
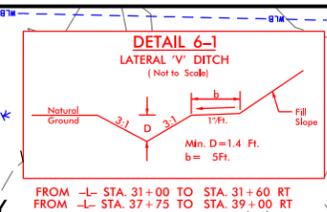
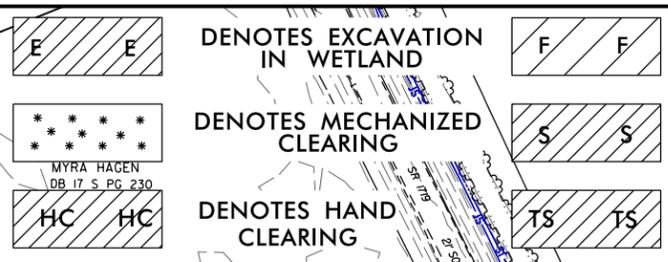
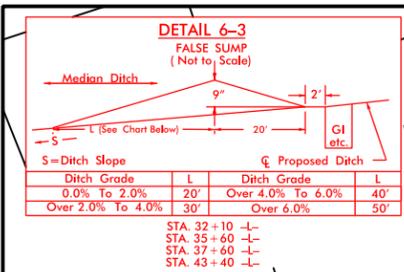
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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 6A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 13 OF 132
REVISED 06-13-2019



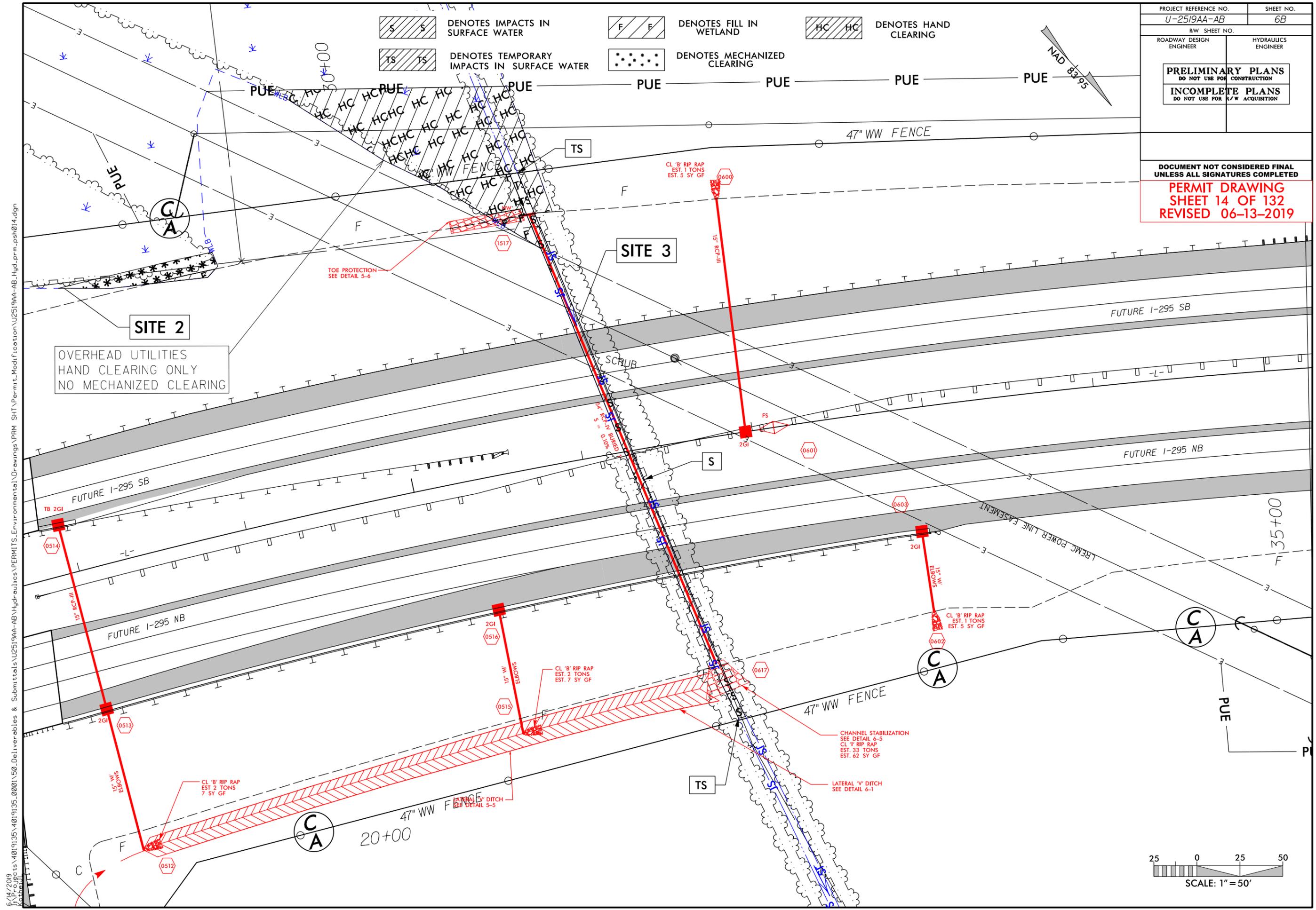
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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 6B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 14 OF 132
REVISED 06-13-2019



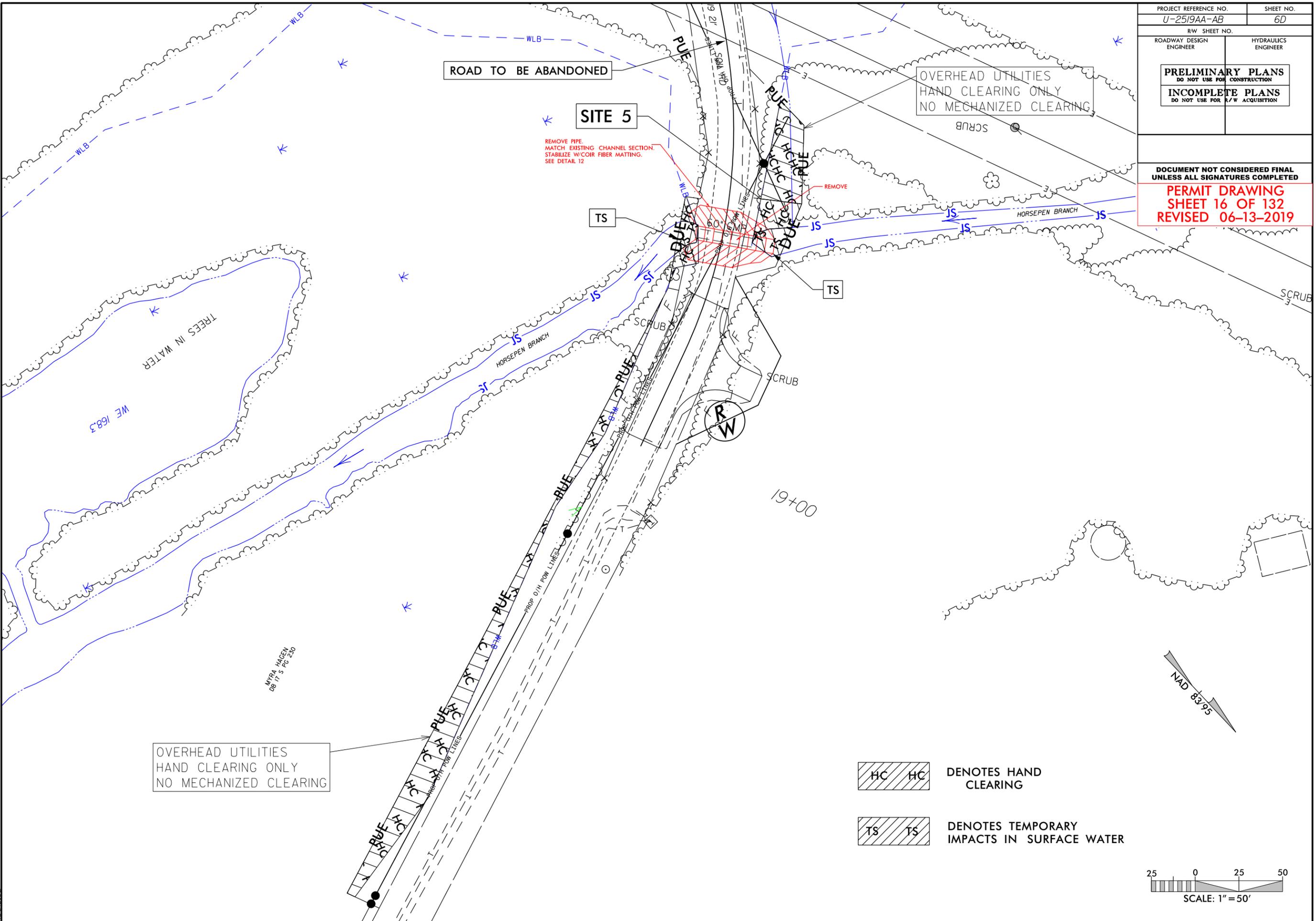
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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 60
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

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

**PERMIT DRAWING
SHEET 16 OF 132
REVISED 06-13-2019**

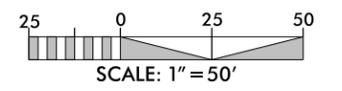
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OVERHEAD UTILITIES
HAND CLEARING ONLY
NO MECHANIZED CLEARING

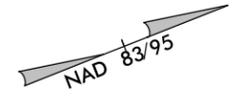
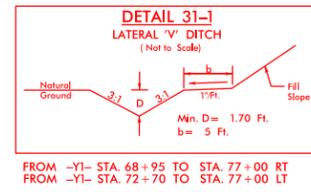
HC HC DENOTES HAND CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER



**PERMIT DRAWING
SHEET 80 OF 132
REVISED 06-13-2019**

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 31
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES HAND CLEARING

TIMOTHY MCMILLAN
DB 1719 PG 230

KENNETH MCMILLAN
DB 1719 PG 230

KBR 2 INVESTMENTS, LLC
DB 1793 PG 66

KBR 2 INVESTMENTS, LLC
DB 1793 PG 66

KENNETH MCMILLAN
DB 1719 PG 230

MATCHLINE
-Y1- STA 64+00
SEE SHEET 4

MATCHLINE
-Y1- STA 77+00
SEE SHEET 32

SITE 21

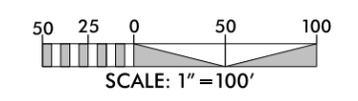
OVERHEAD UTILITIES
HAND CLEARING ONLY
NO MECHANIZED CLEARING

NOTE:
CHANNEL INVERT 163.7'
FROM FIELD MEASUREMENTS

NOTE:
CHANNEL INVERT 164.7'
FROM FIELD MEASUREMENTS

CL '8' RIP RAP
EST. 11 TONS
EST. 28 SY GF

TEMPORARY DRAINAGE EASEMENT
FOR EROSION CONTROL
SKIMMER BASIN

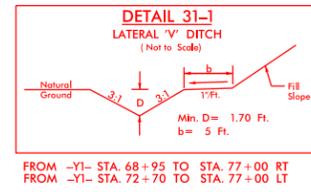


FOR -Y1- PROFILE SEE SHEETS 84 & 85

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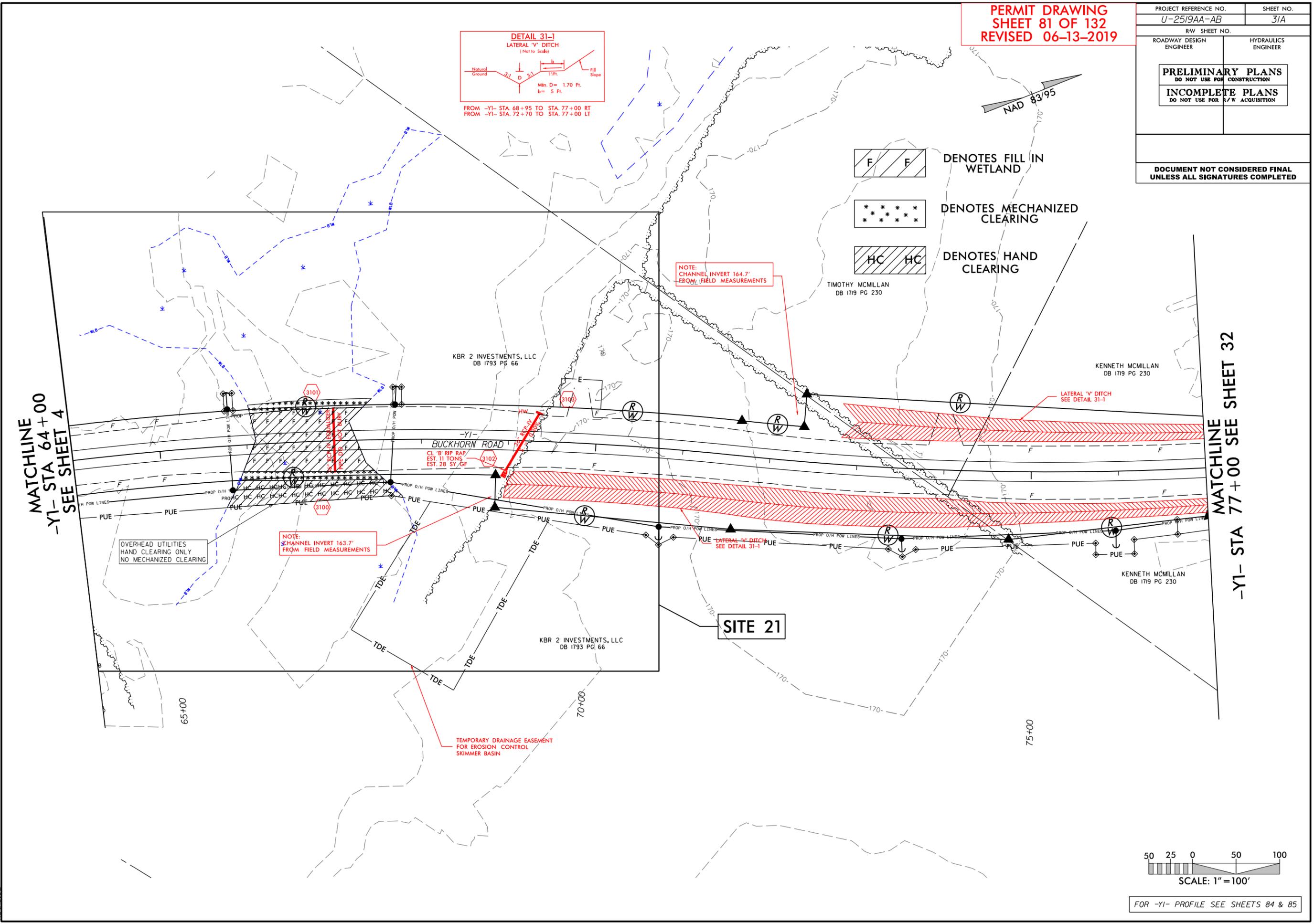
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SHEET 81 OF 132
REVISED 06-13-2019**

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 31A
RW SHEET NO.	
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PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



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-Y1- STA 64+00
SEE SHEET 4

MATCHLINE
-Y1- STA 77+00
SEE SHEET 32

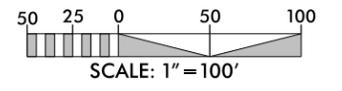


NOTE:
CHANNEL INVERT 164.7'
FROM FIELD MEASUREMENTS

NOTE:
CHANNEL INVERT 163.7'
FROM FIELD MEASUREMENTS

OVERHEAD UTILITIES
HAND CLEARING ONLY
NO MECHANIZED CLEARING

SITE 21



FOR -Y1- PROFILE SEE SHEETS 84 & 85

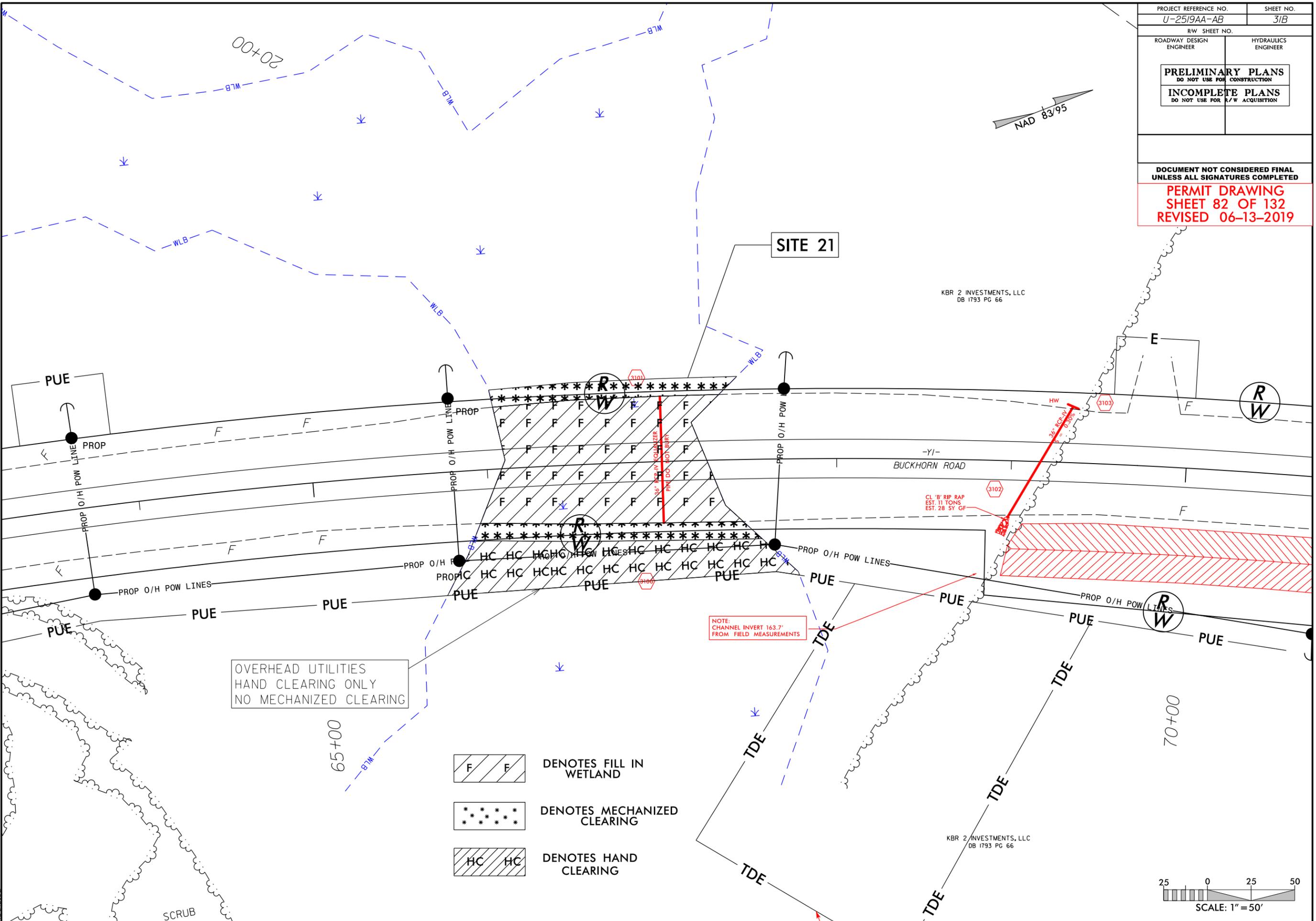
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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 31B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

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

**PERMIT DRAWING
SHEET 82 OF 132
REVISED 06-13-2019**

6/4/2019
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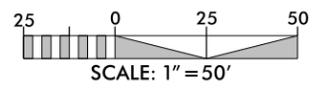


OVERHEAD UTILITIES
HAND CLEARING ONLY
NO MECHANIZED CLEARING

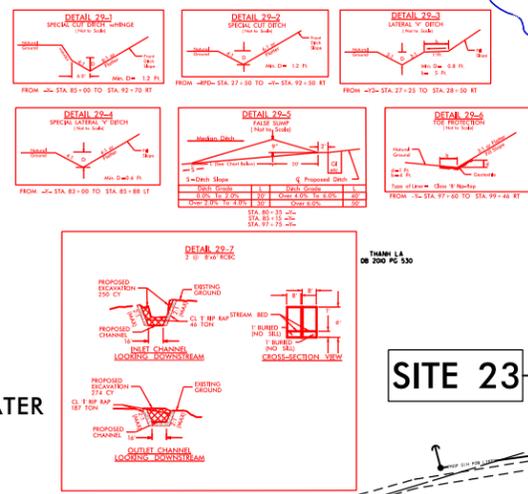
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES HAND CLEARING

NOTE:
CHANNEL INVERT 163.7'
FROM FIELD MEASUREMENTS

KBR 2 INVESTMENTS, LLC
DB 1793 PG 66



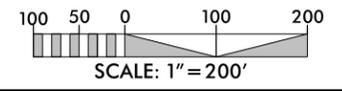
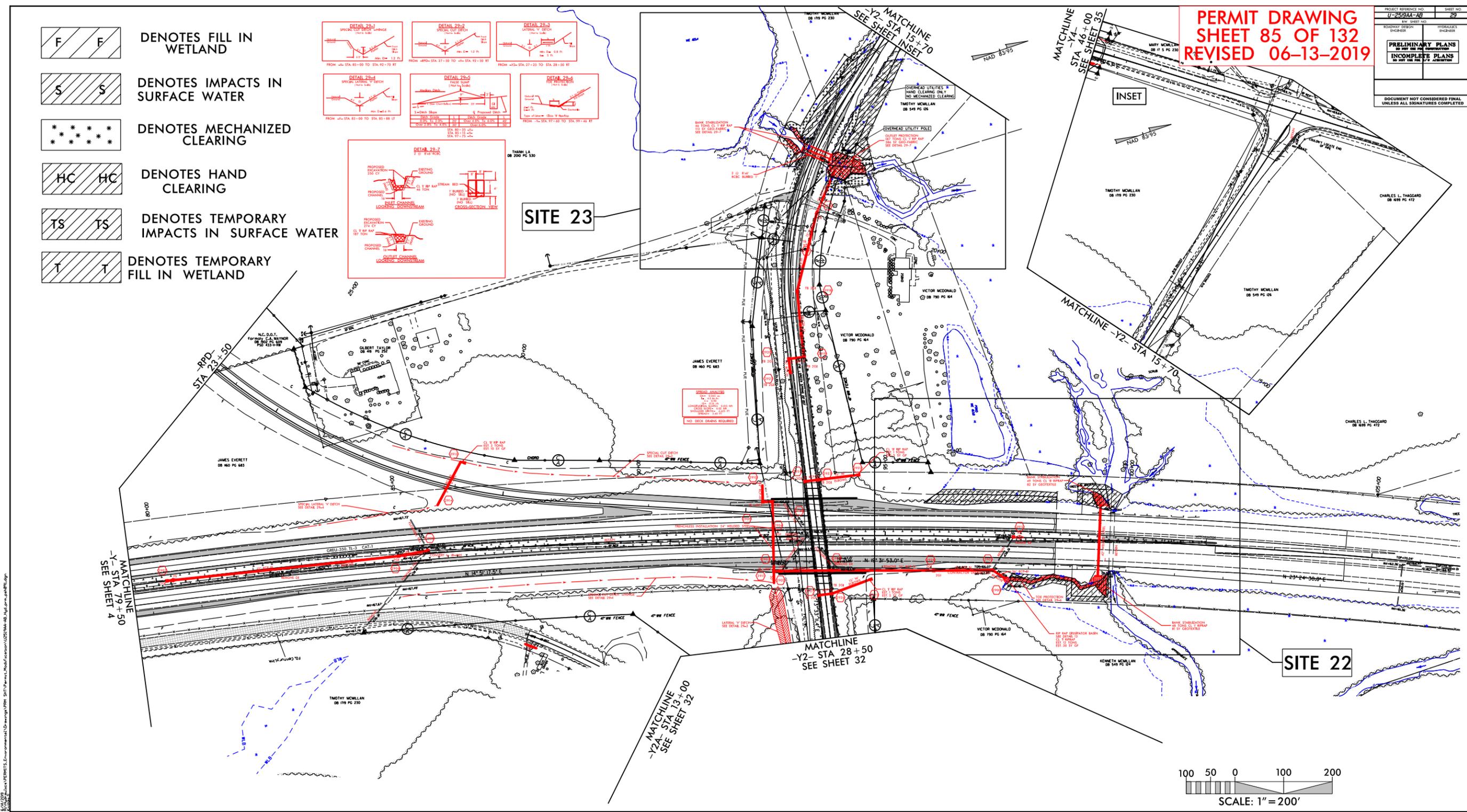
-  DENOTES FILL IN WETLAND
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES MECHANIZED CLEARING
-  DENOTES HAND CLEARING
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY FILL IN WETLAND



SITE 23

**PERMIT DRAWING
 SHEET 85 OF 132
 REVISED 06-13-2019**

PROJECT REFERENCE NO. U-2554A-28	SHEET NO. 85
ROADWAY DESIGN ENGINEER TIMOTHY MCMILLAN	PROBABLES ENGINEER TIMOTHY MCMILLAN
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

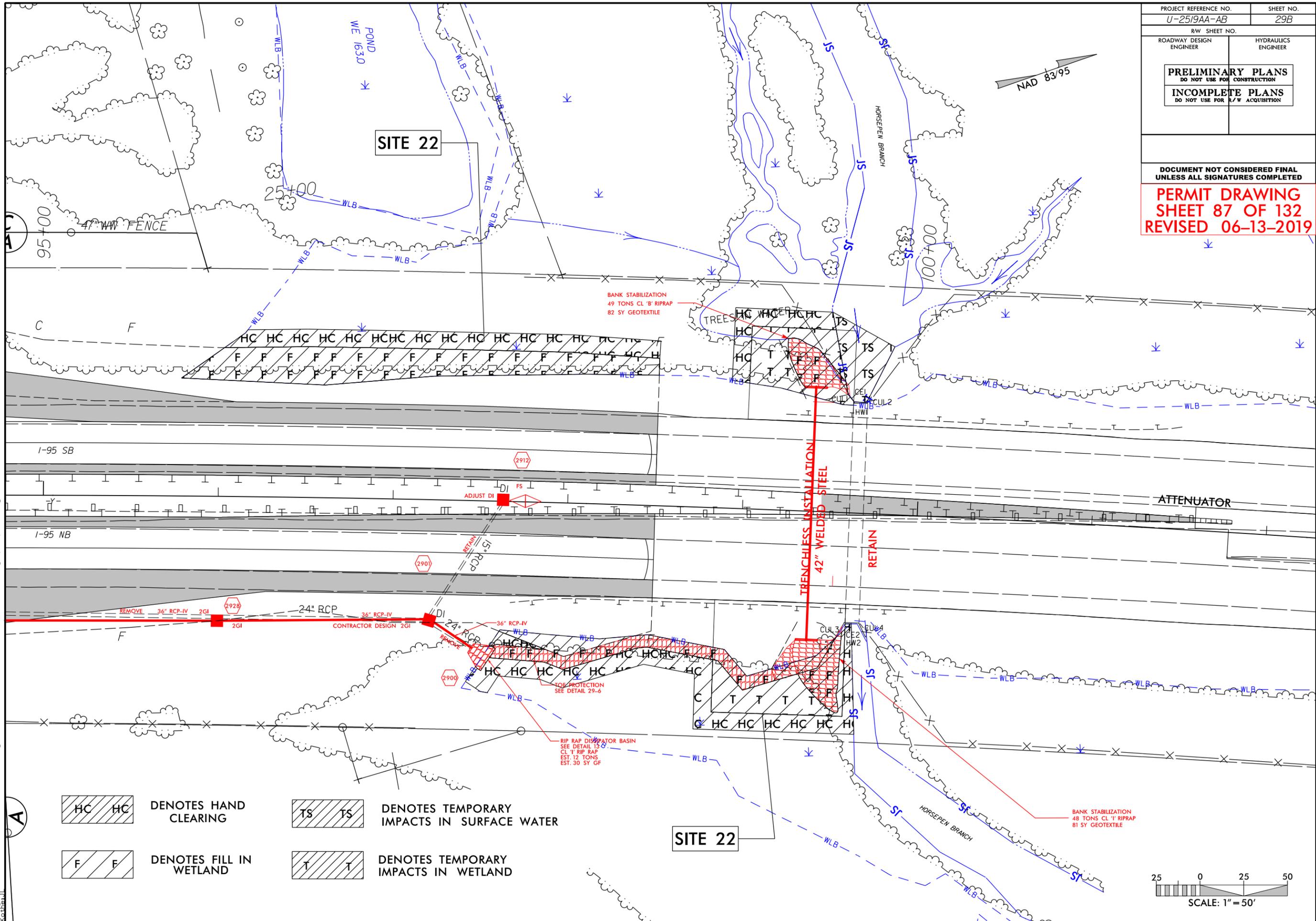


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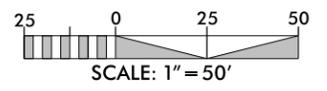
PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 29B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 87 OF 132
REVISED 06-13-2019

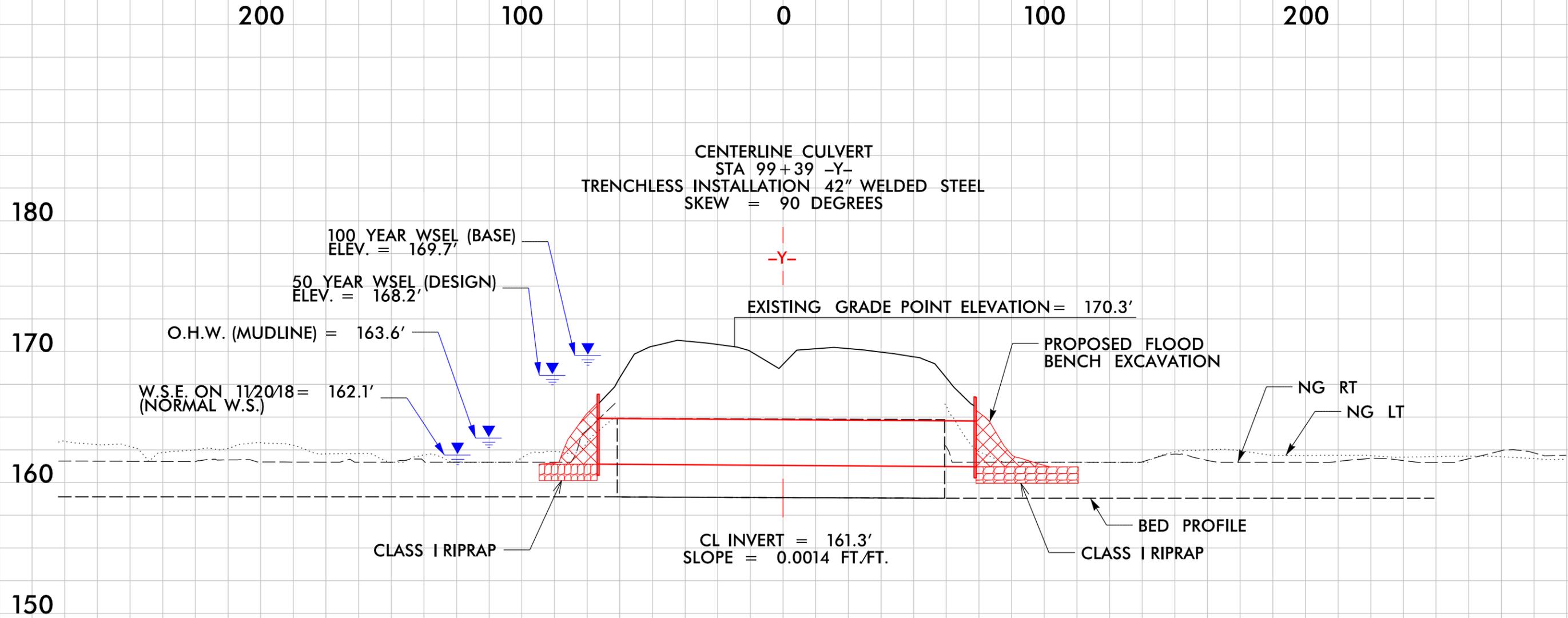


- | | | | |
|--|-------------------------|--|--|
| | DENOTES HAND CLEARING | | DENOTES TEMPORARY IMPACTS IN SURFACE WATER |
| | DENOTES FILL IN WETLAND | | DENOTES TEMPORARY IMPACTS IN WETLAND |



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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 35C
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INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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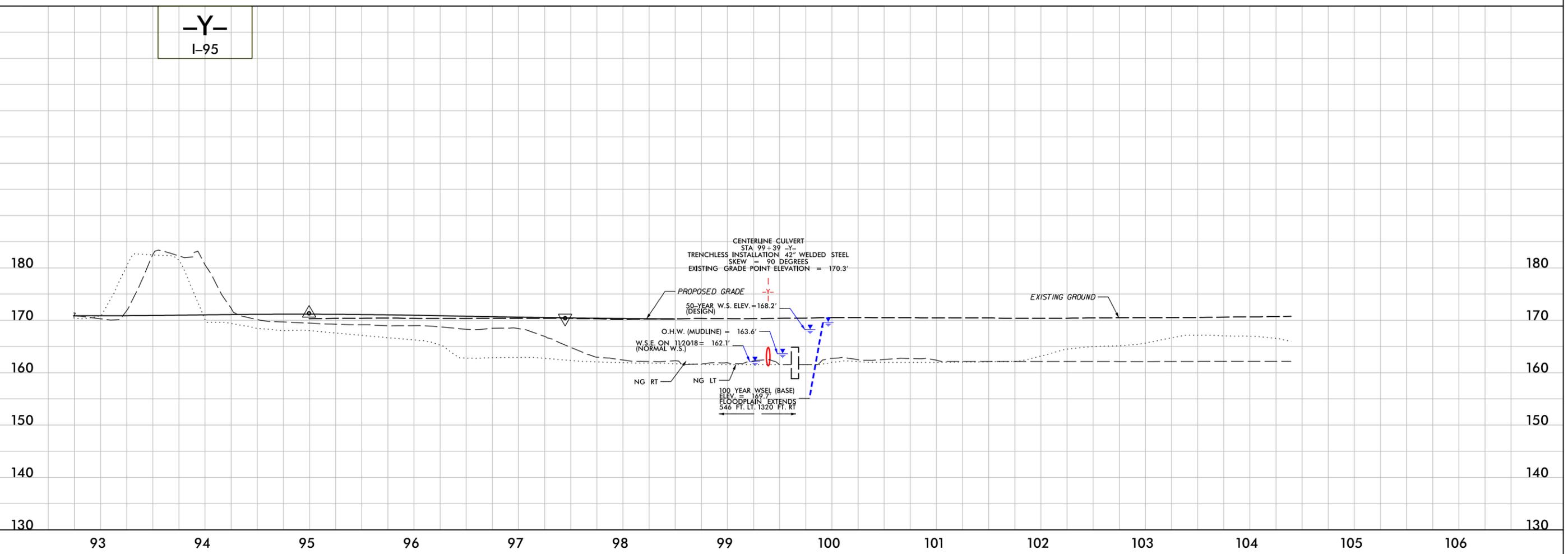
**PERMIT DRAWING
SHEET 87B OF 132**

PROJECT REFERENCE NO. <i>U-2519AA-AB</i>	SHEET NO. <i>88</i>
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PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

180
170
160
150
140

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 K. K. K.



180
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150
140
130

93 94 95 96 97 98 99 100 101 102 103 104 105 106

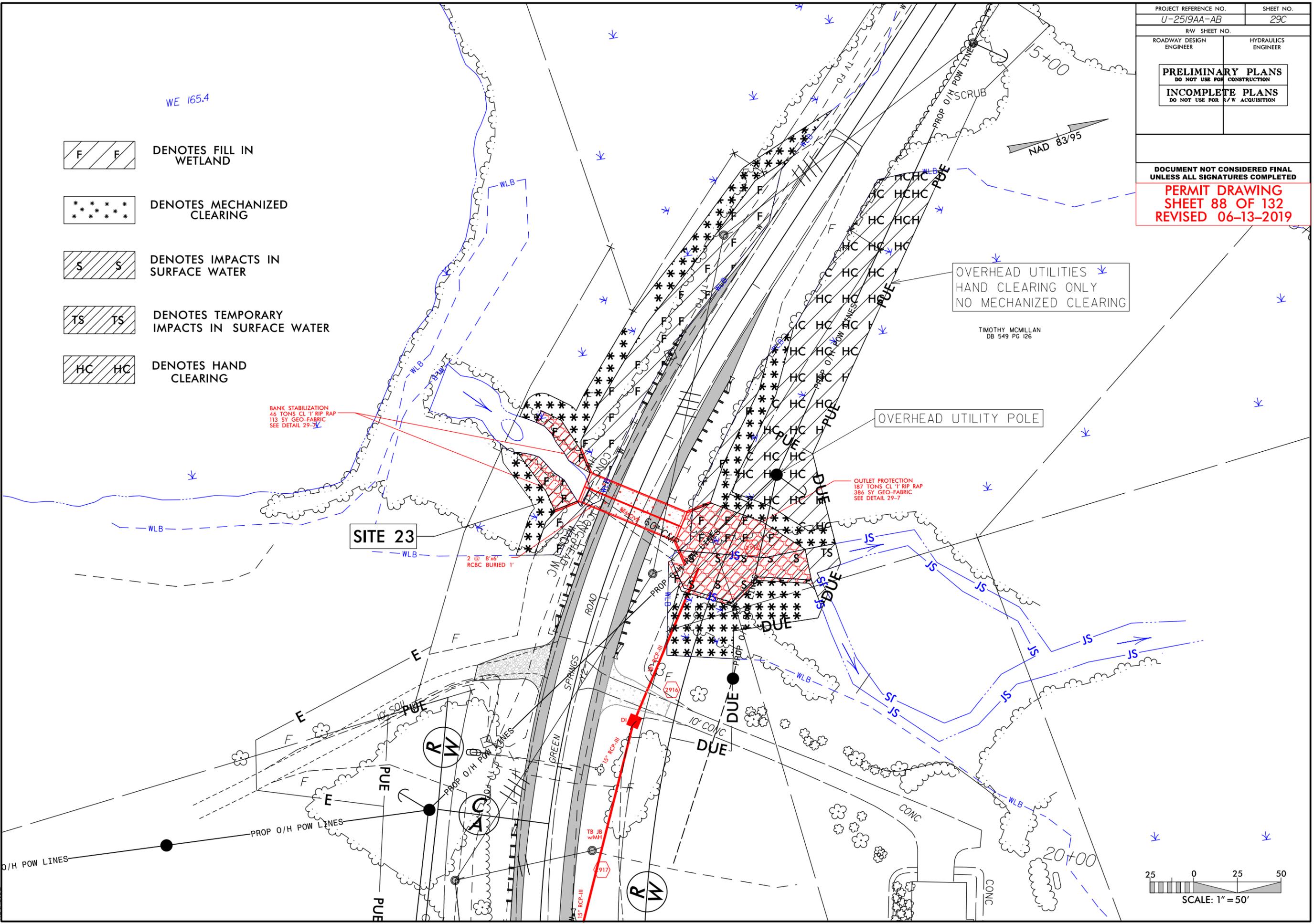
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 88 OF 132
REVISED 06-13-2019

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

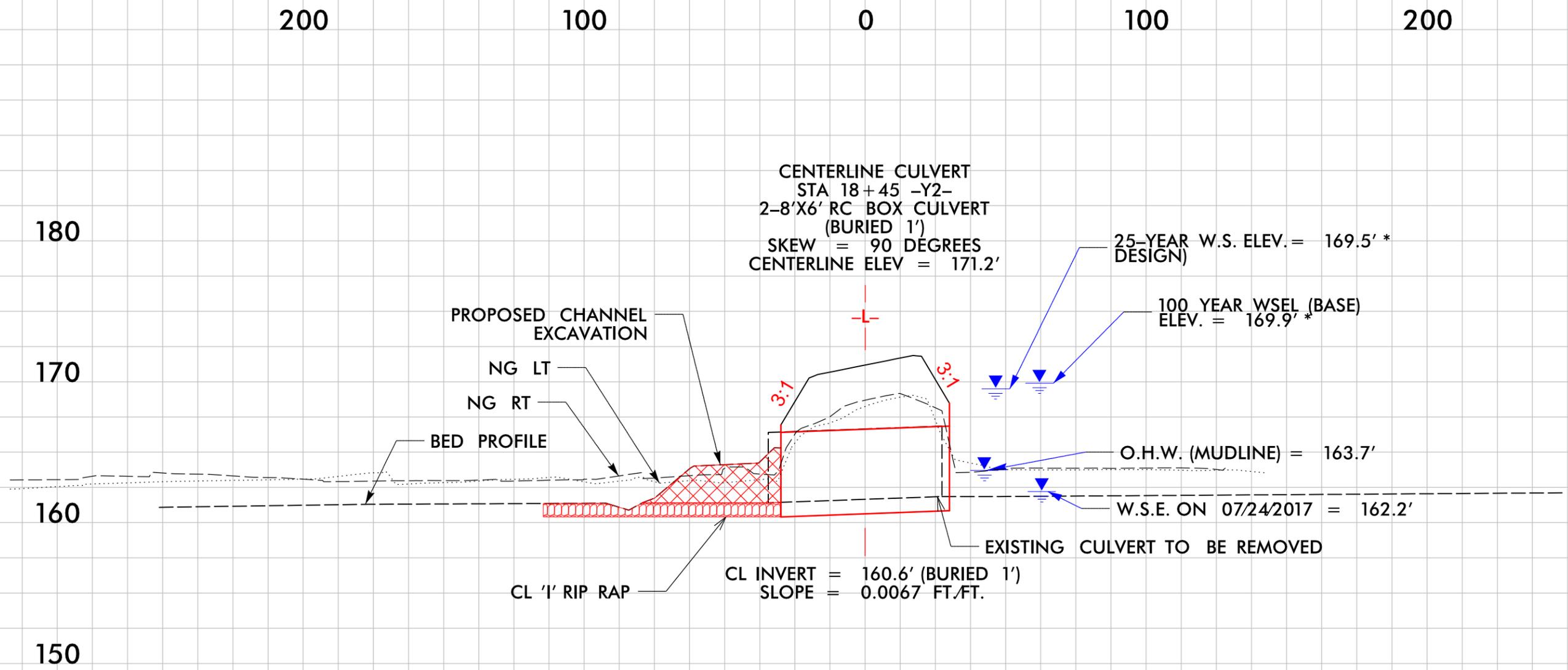
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6/14/2018
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PERMIT DRAWING
SHEET 89 OF 132
REVISED 06-13-2019

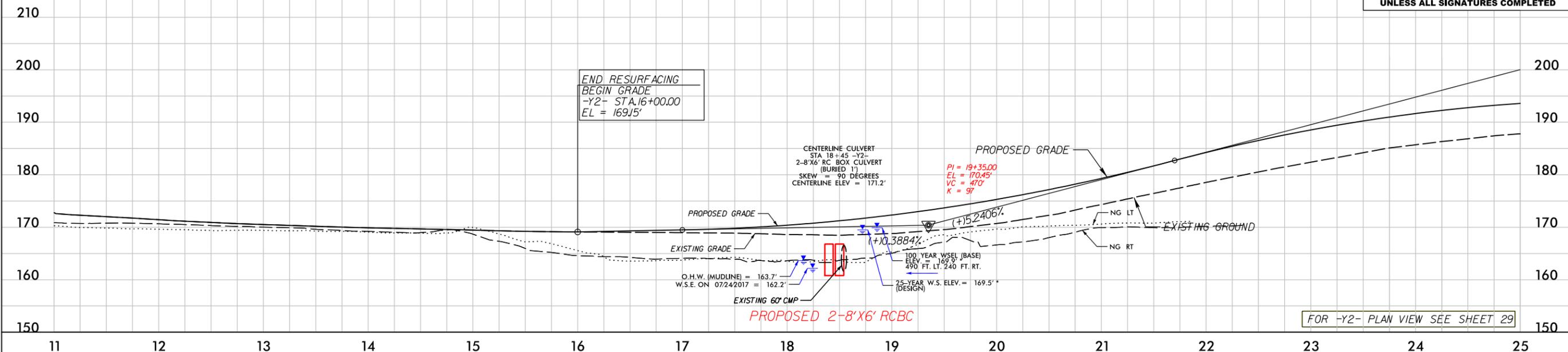
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ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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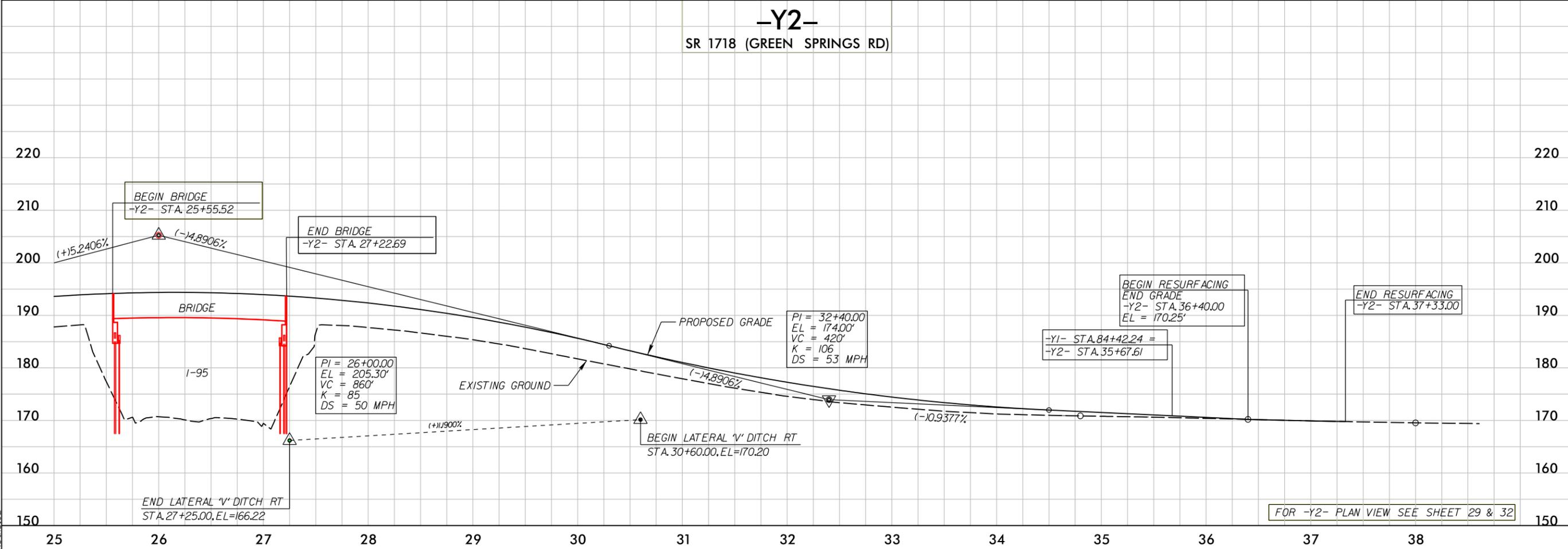
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SR 1718 (GREEN SPRINGS RD)

PERMIT DRAWING
SHEET 90 OF 132
REVISED 06-13-2019

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



-Y2-
SR 1718 (GREEN SPRINGS RD)



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6/23/16



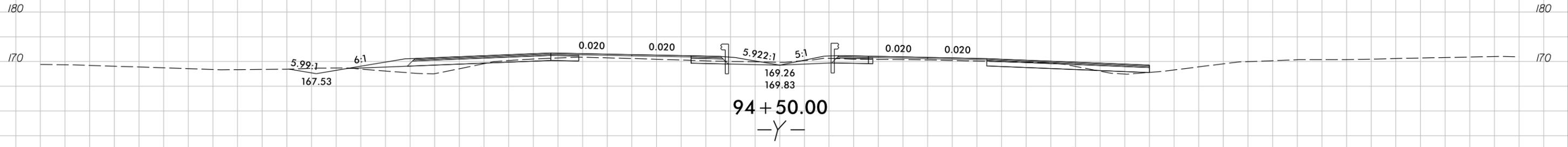
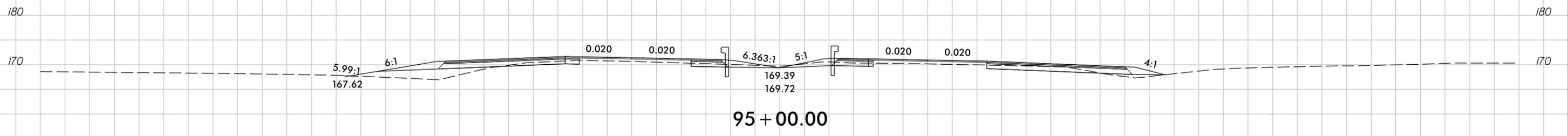
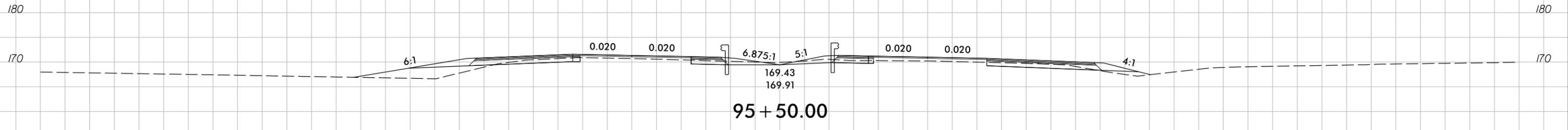
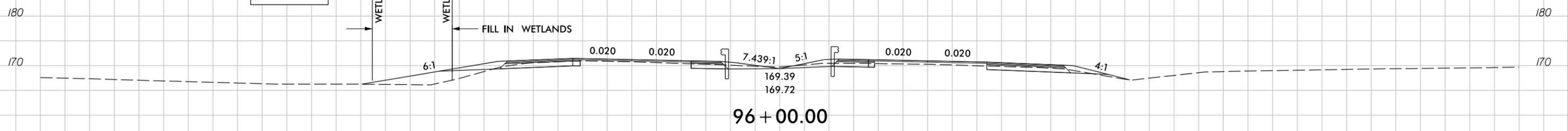
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**PERMIT DRAWING
SHEET 91 OF 132**

SITE 22

WETLAND
WETLAND
FILL IN 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

6/14/2019
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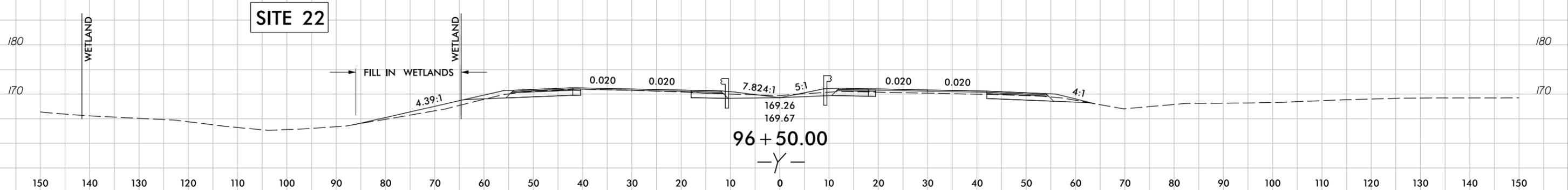
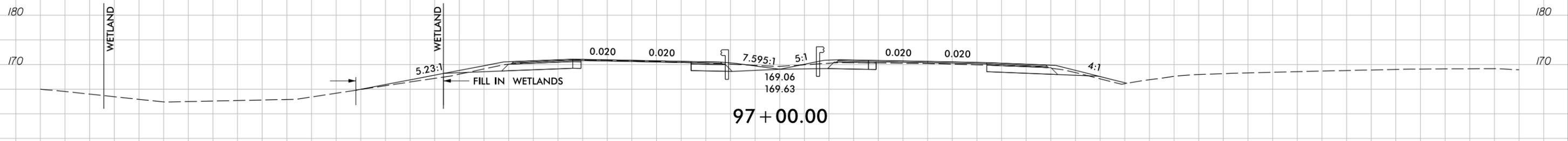
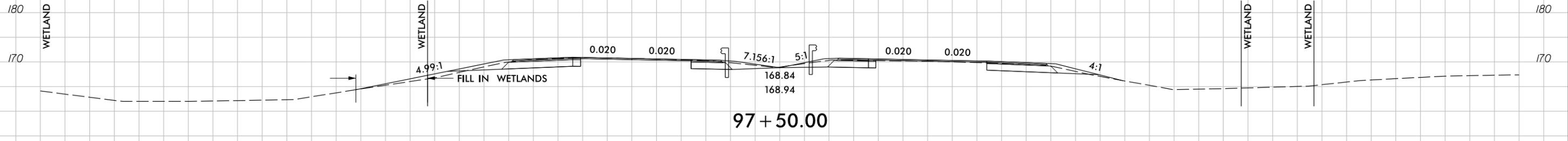
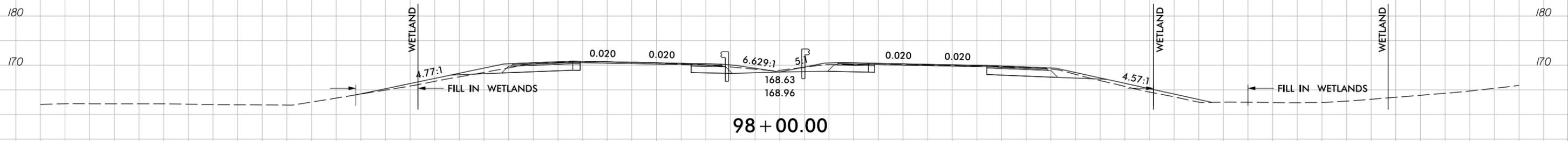
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PERMIT DRAWING
SHEET 92 OF 132



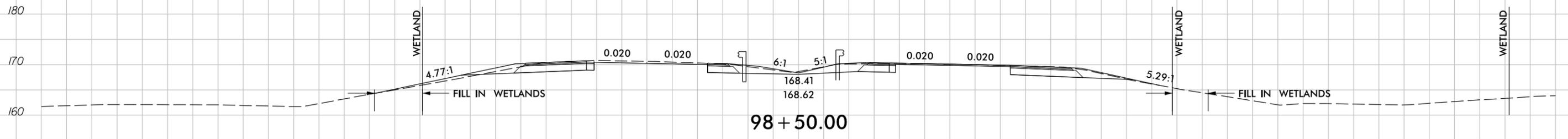
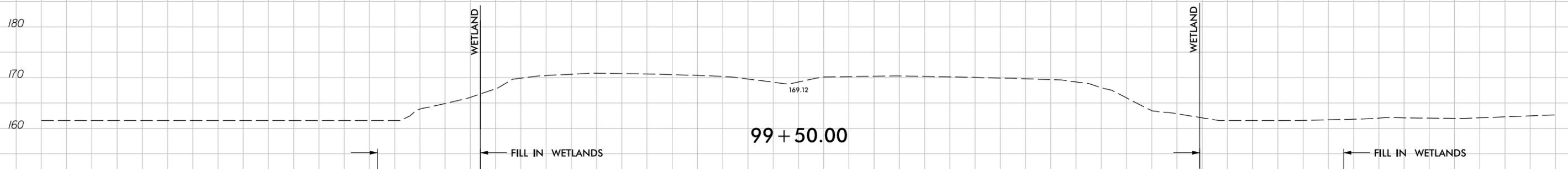
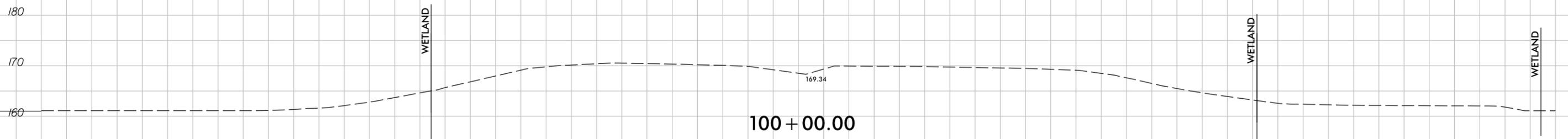
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SITE 22

PERMIT DRAWING
SHEET 93 OF 132
REVISED 06-13-2019



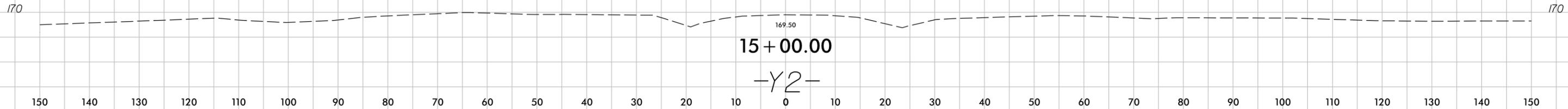
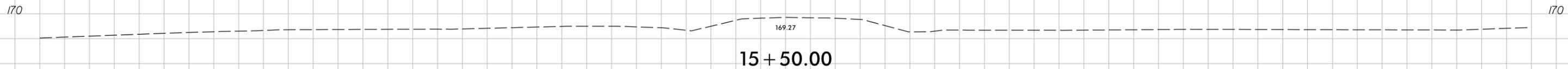
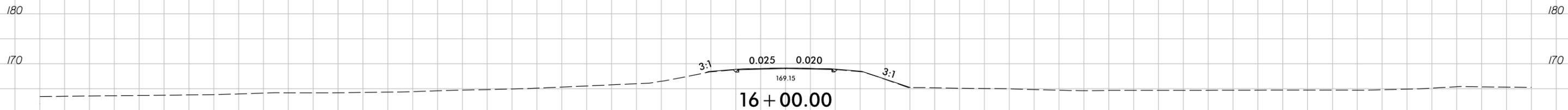
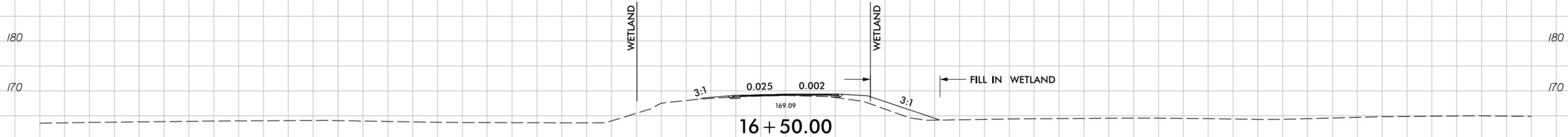
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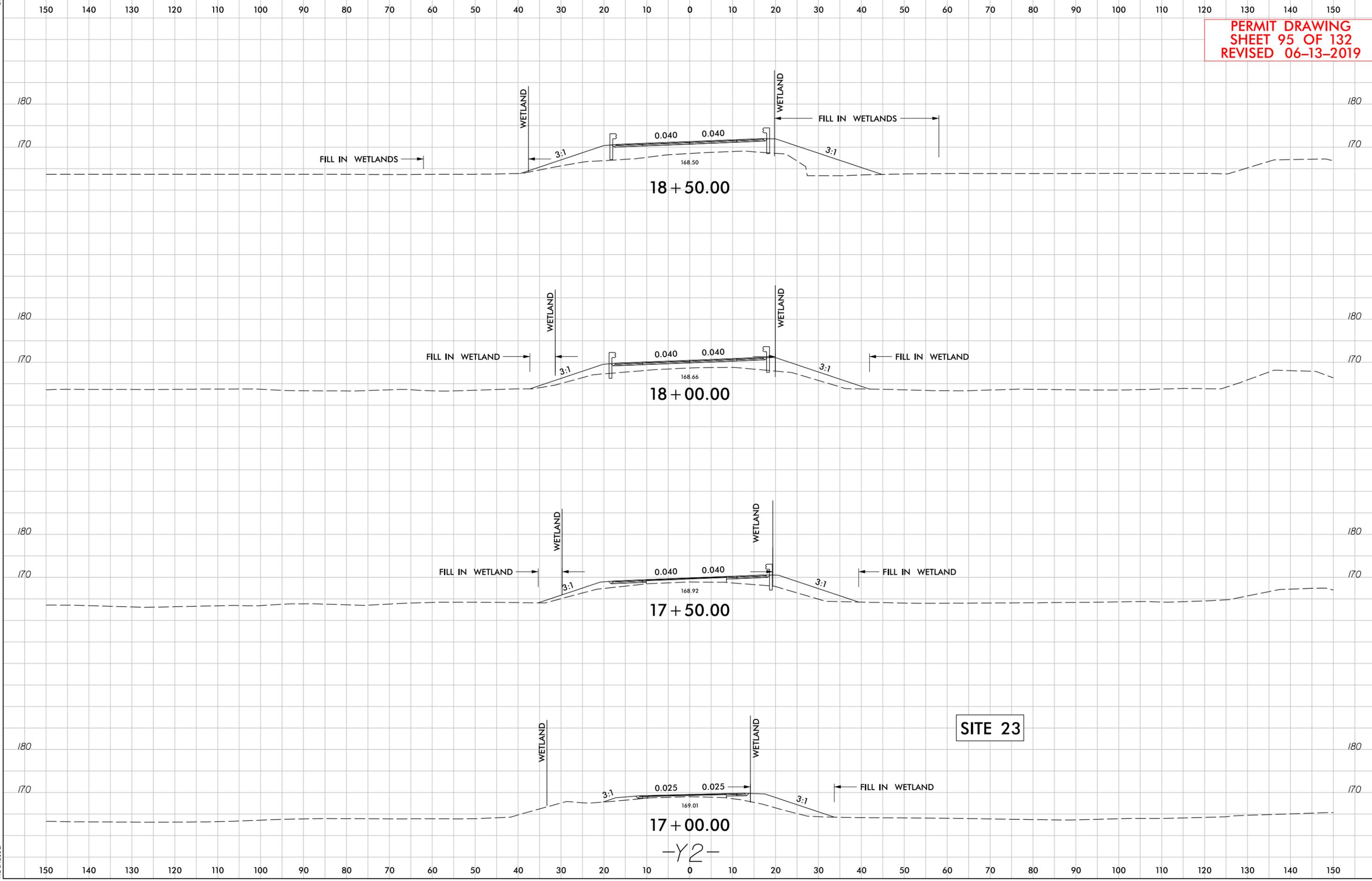
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SHEET 94 OF 132
REVISED 06-13-2019

SITE 23





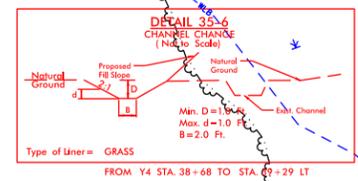
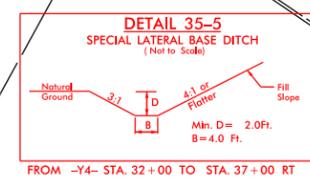
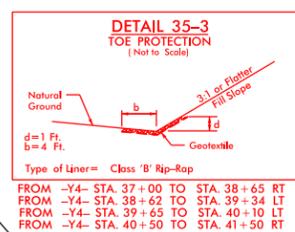
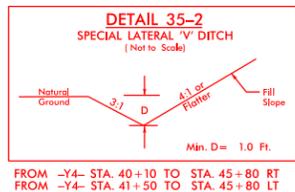
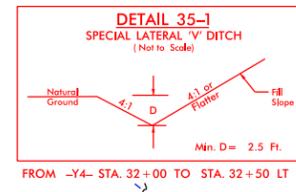
PERMIT DRAWING
SHEET 95 OF 132
REVISED 06-13-2019



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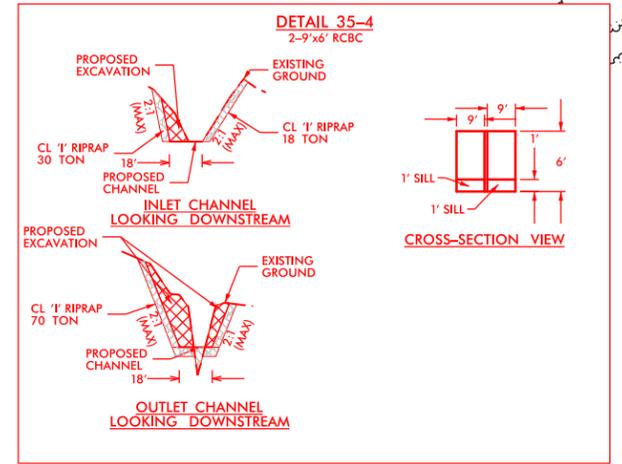
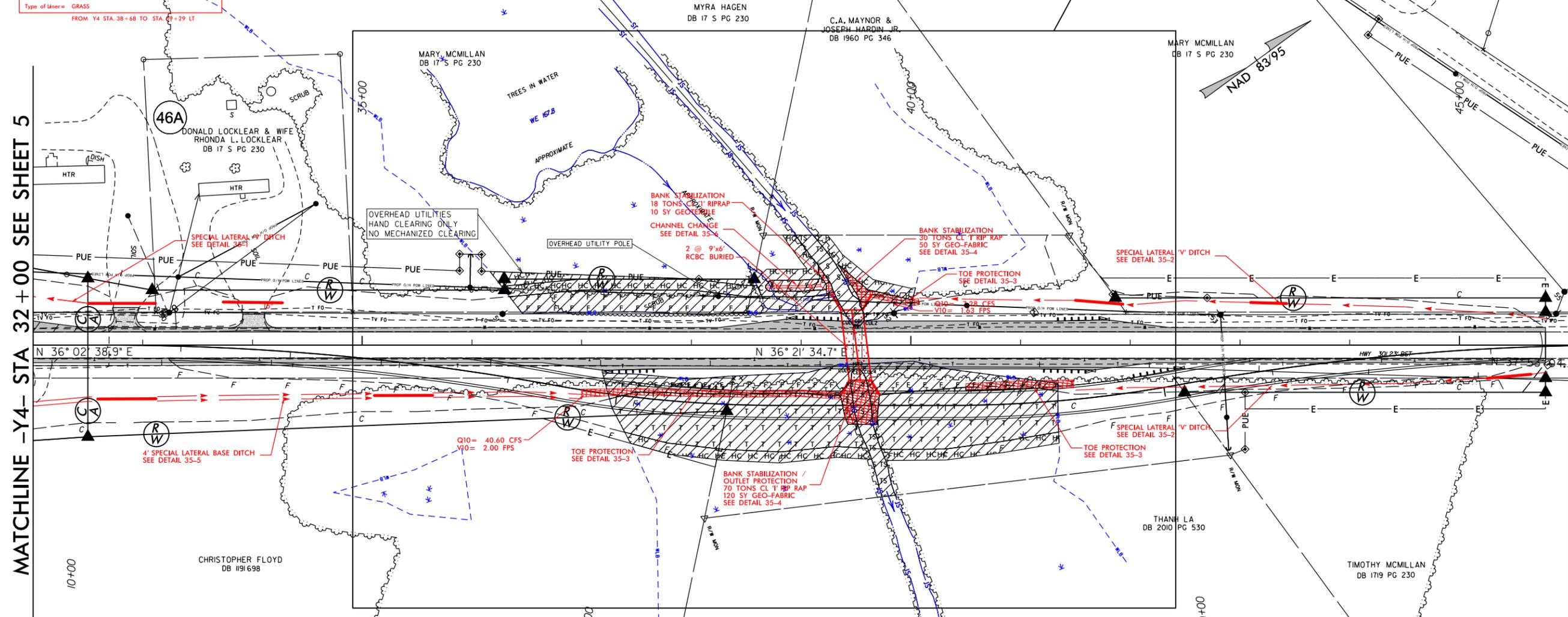
**PERMIT DRAWING
SHEET 96 OF 132
REVISED 06-13-2019**

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

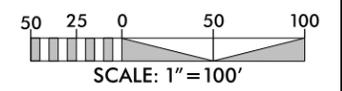


MATCHLINE -Y4- STA 32+00 SEE SHEET 5

MATCHLINE -Y4- STA 46+00 SEE SHEET 29



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

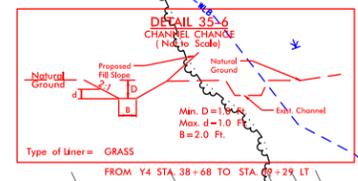
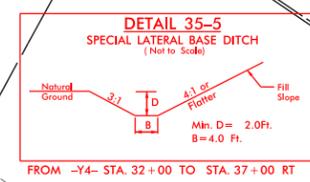
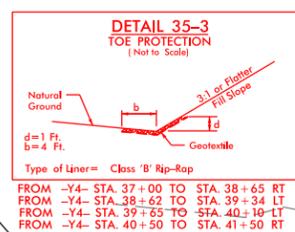
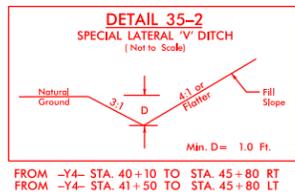
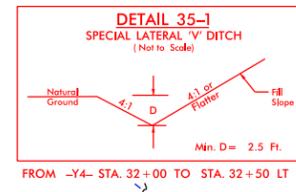


FOR -Y4- PROFILE SEE SHEET 88

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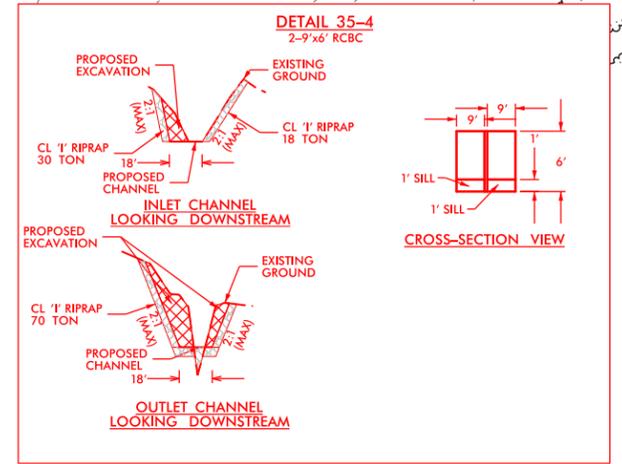
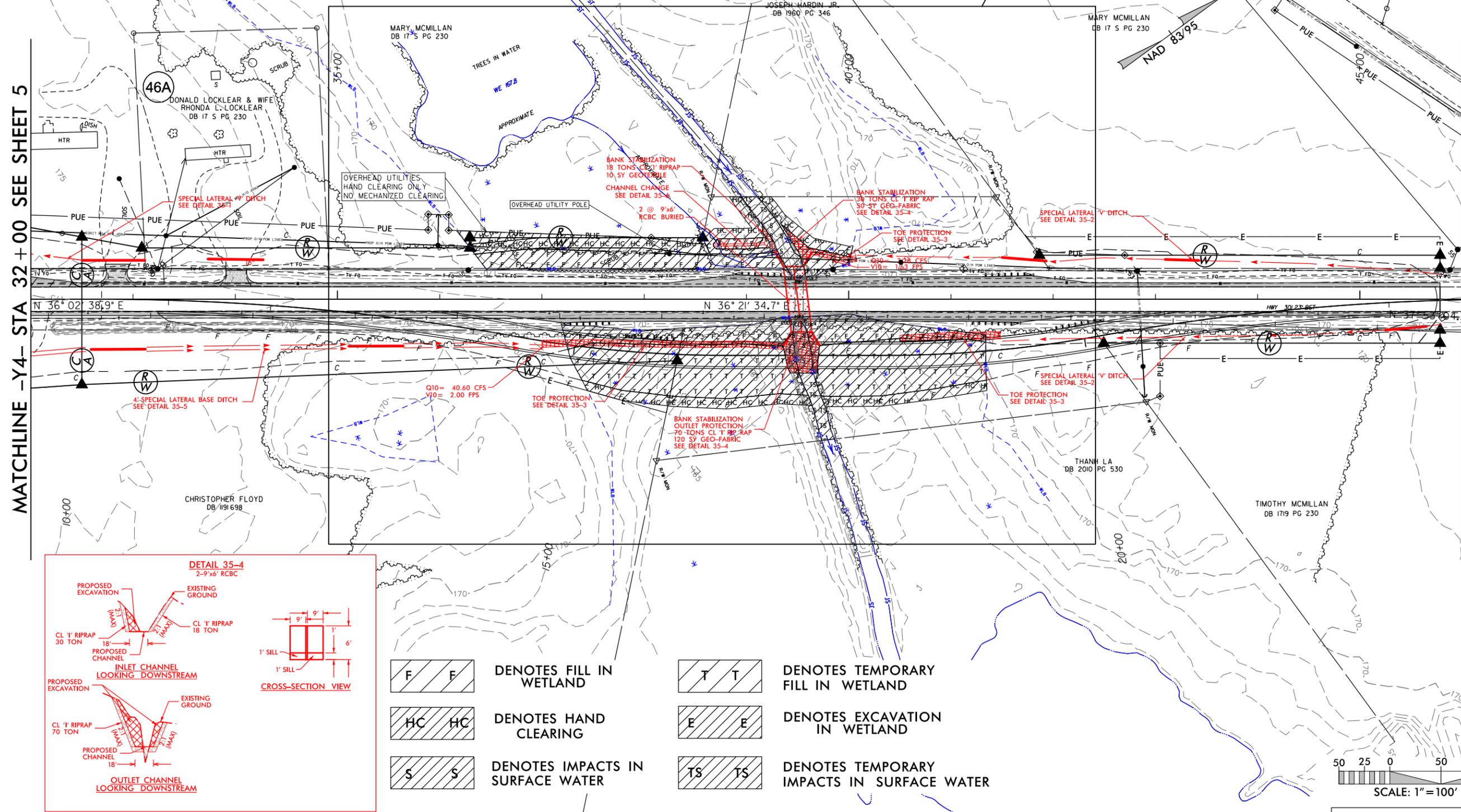
**PERMIT DRAWING
SHEET 97 OF 132
REVISED 06-13-2019**

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

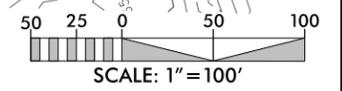


MATCHLINE -Y4- STA 32+00 SEE SHEET 5

MATCHLINE -Y4- STA 46+00 SEE SHEET 29



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

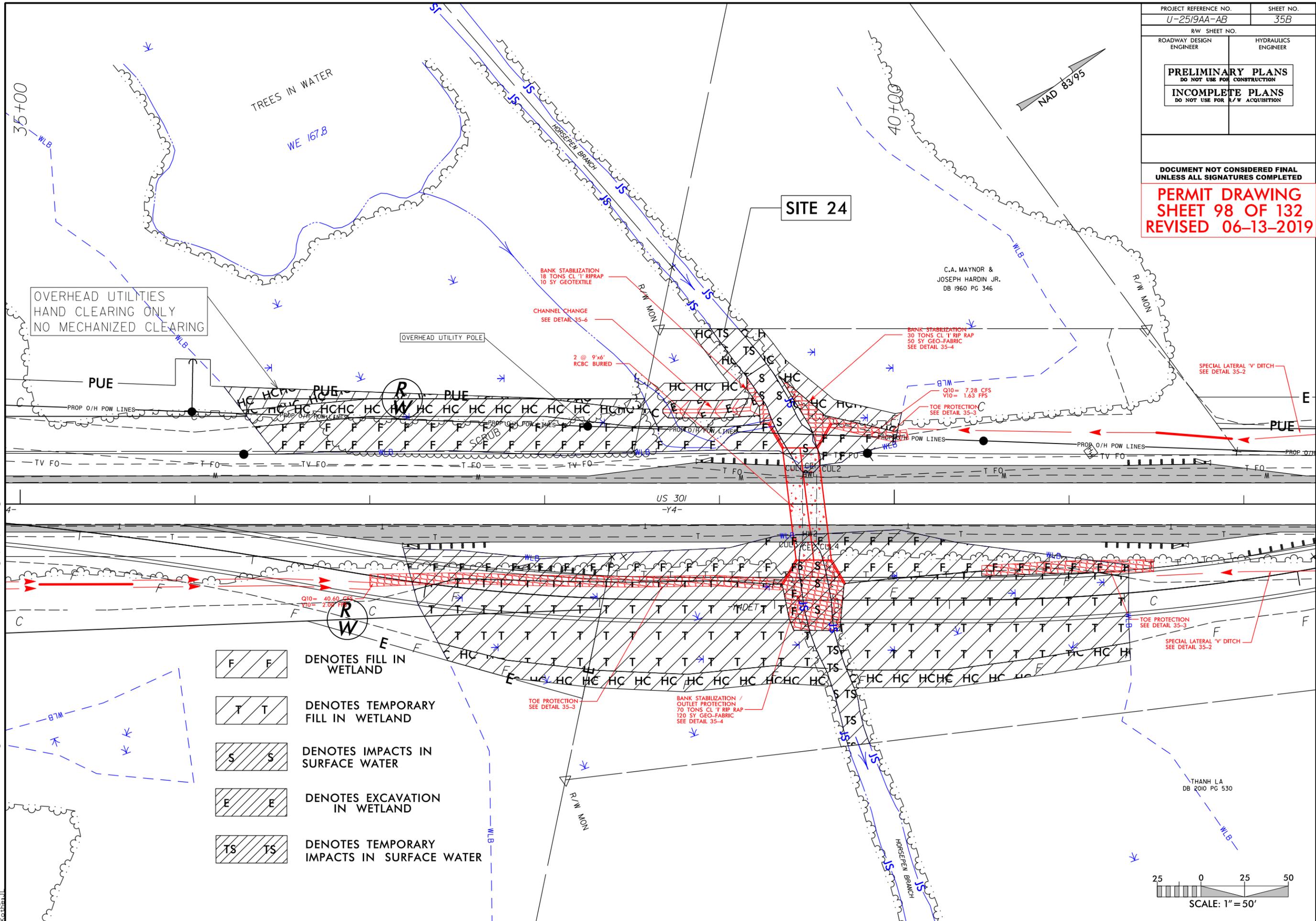


FOR -Y4- PROFILE SEE SHEET 88

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

**PERMIT DRAWING
SHEET 98 OF 132
REVISED 06-13-2019**



OVERHEAD UTILITIES
HAND CLEARING ONLY
NO MECHANIZED CLEARING

SITE 24

C.A. MAYNOR &
JOSEPH HARDIN JR.
DB 1960 PG 346

PUE

BANK STABILIZATION
18 TONS CL 1 RIPRAP
10 SY GEO-TEXTILE

CHANNEL CHANGE
SEE DETAIL 35-6

2 @ 9'x6'
RCBC BURIED

BANK STABILIZATION
30 TONS CL 1 RIP RAP
50 SY GEO-FABRIC
SEE DETAIL 35-4

Q10 = 7.28 CFS
V10 = 1.63 FPS

TOE PROTECTION
SEE DETAIL 35-3

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 35-2

Q10 = 40.60 CFS
V10 = 2.09 FPS

TOE PROTECTION
SEE DETAIL 35-3

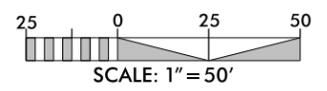
BANK STABILIZATION /
OUTLET PROTECTION
70 TONS CL 1 RIP RAP
120 SY GEO-FABRIC
SEE DETAIL 35-4

TOE PROTECTION
SEE DETAIL 35-3

SPECIAL LATERAL 'V' DITCH
SEE DETAIL 35-2

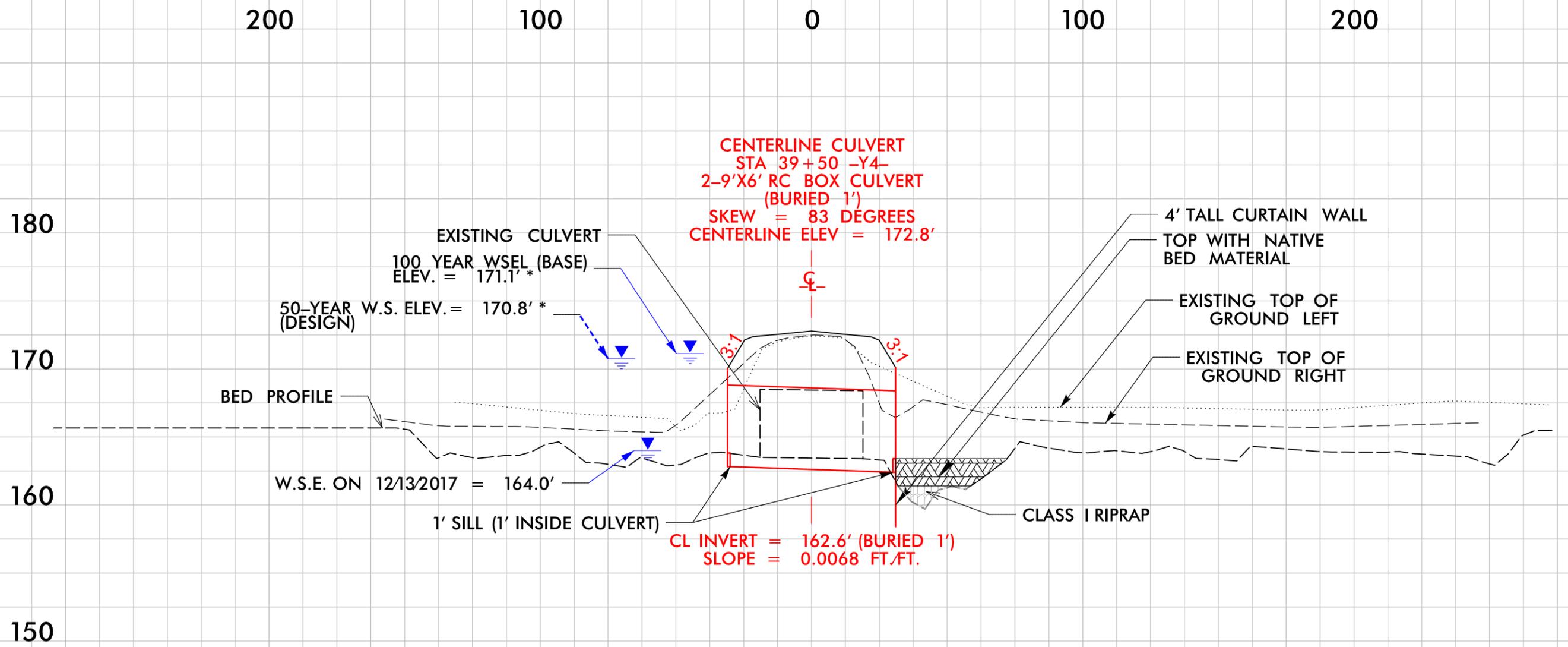
THANH LA
DB 2010 PG 530

- DENOTES FILL IN WETLAND
- DENOTES TEMPORARY FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES EXCAVATION IN WETLAND
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER



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

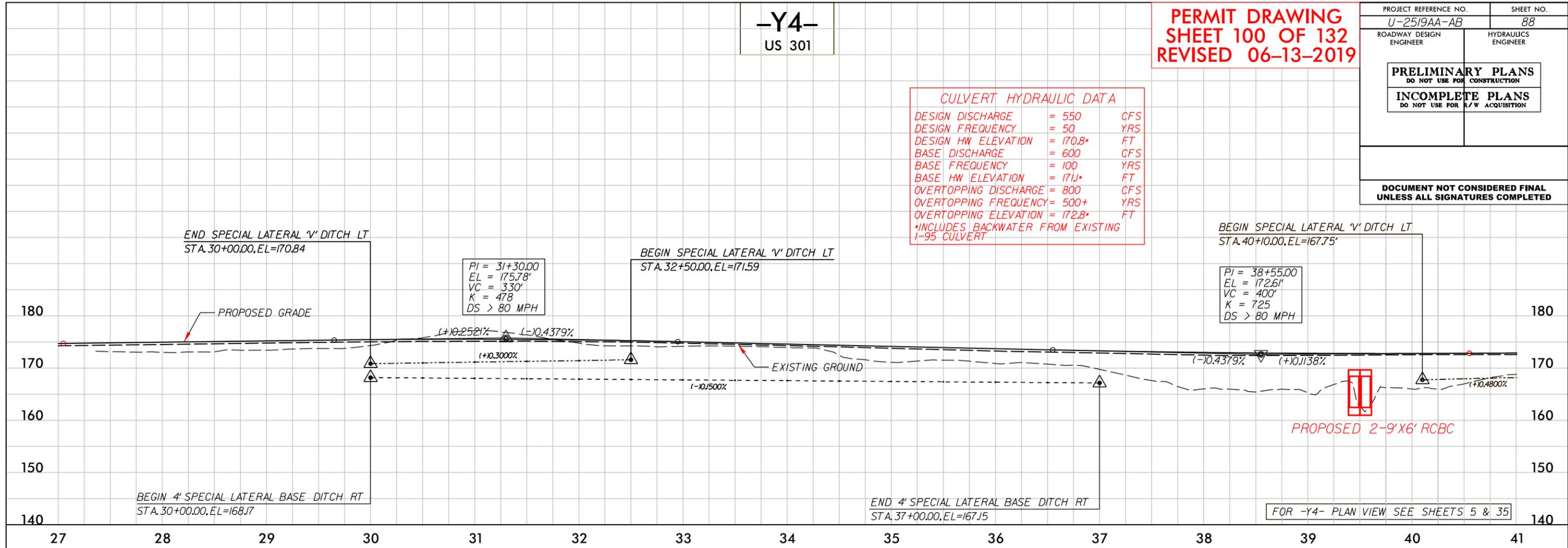


-Y4-
US 301

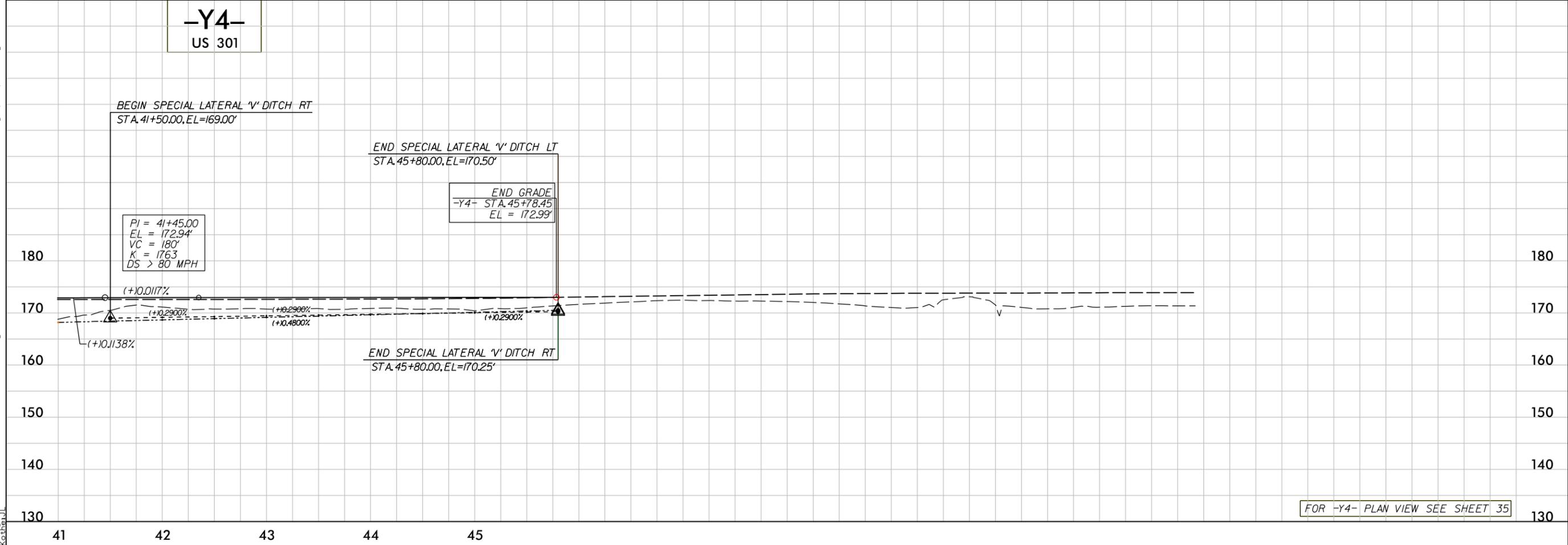
PERMIT DRAWING
SHEET 100 OF 132
REVISED 06-13-2019

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

CULVERT HYDRAULIC DATA	
DESIGN DISCHARGE	= 550 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 170.8* FT
BASE DISCHARGE	= 600 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 171J* FT
OVERTOPPING DISCHARGE	= 800 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 172.8* FT
*INCLUDES BACKWATER FROM EXISTING I-95 CULVERT	



-Y4-
US 301



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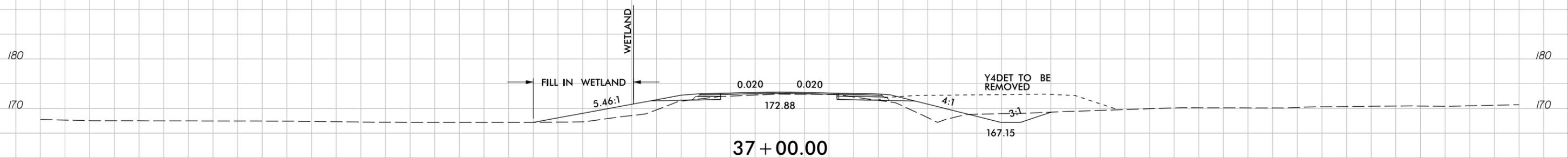
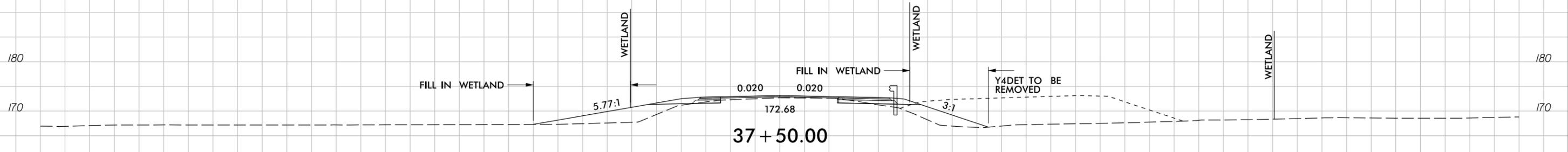
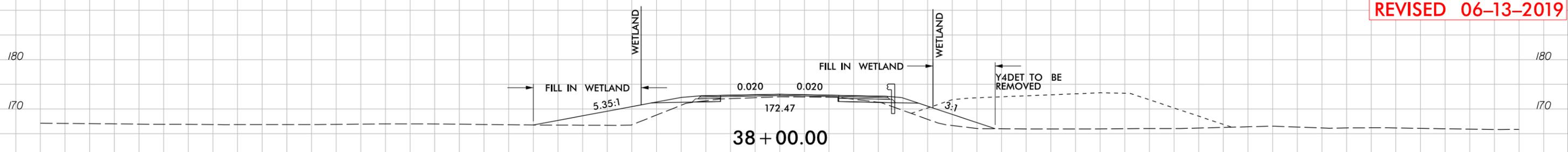
6/23/16



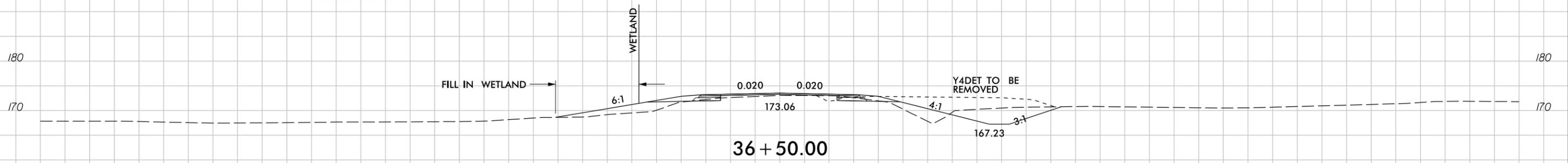
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PERMIT DRAWING
SHEET 101 OF 132
REVISED 06-13-2019



SITE 24



36+50.00
-Y4-

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

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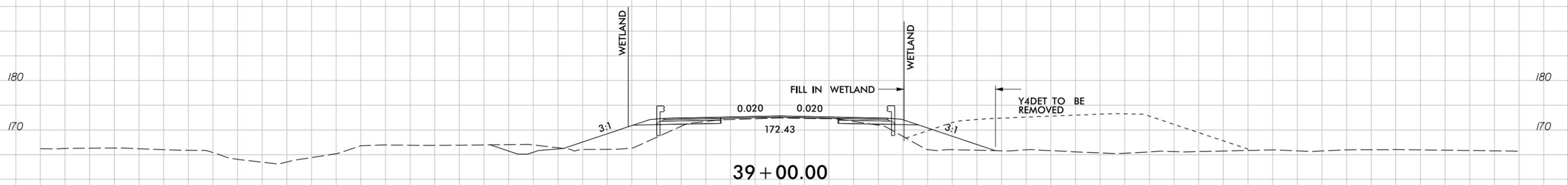
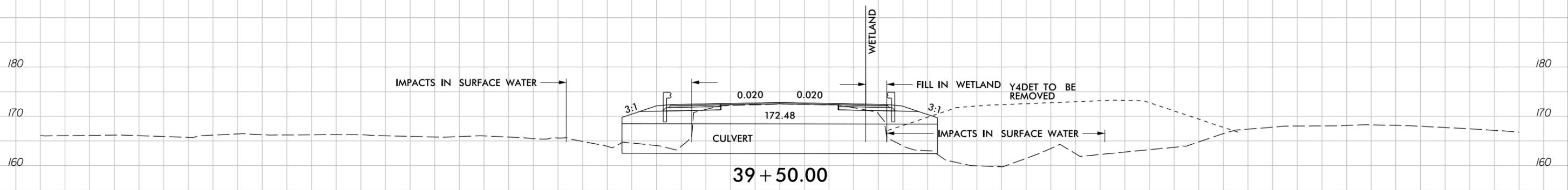
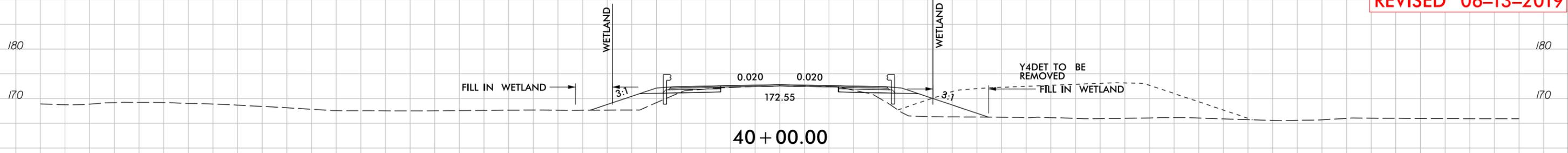
6/23/16



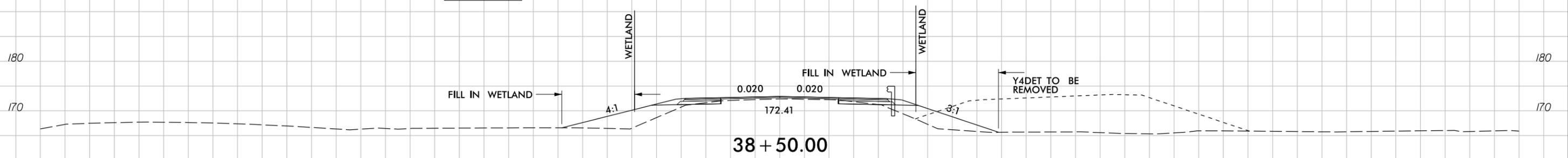
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**PERMIT DRAWING
SHEET 102 OF 132
REVISED 06-13-2019**



SITE 24



-Y4-

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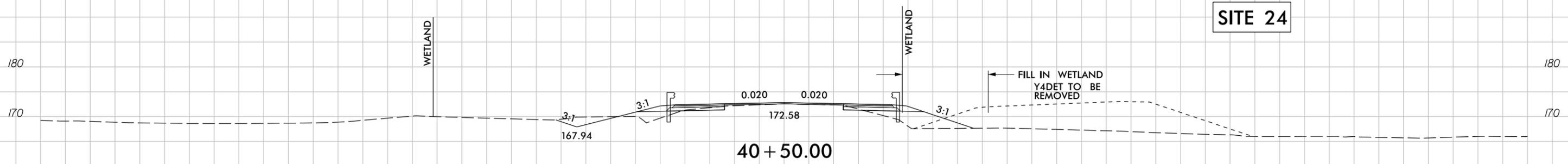
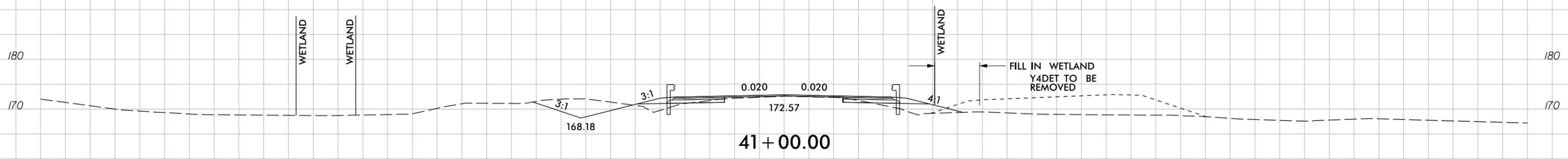
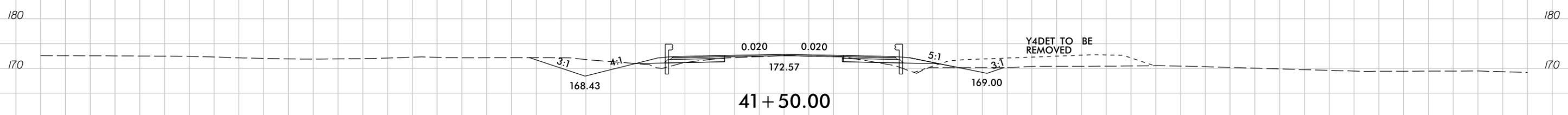
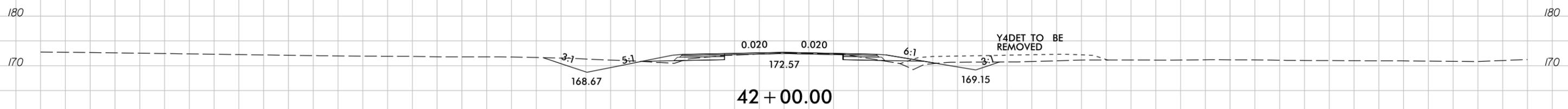
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PERMIT DRAWING
SHEET 103 OF 132
REVISED 06-13-2019



SITE 24

-Y4-

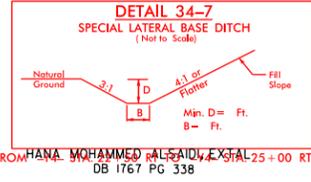
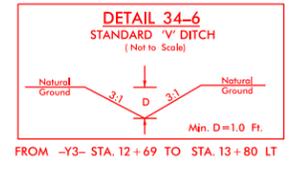
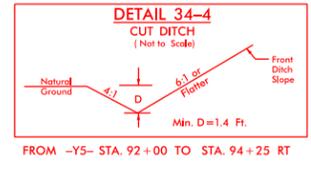
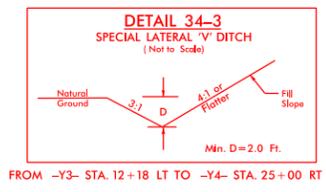
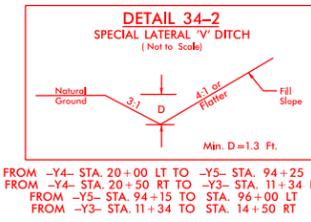
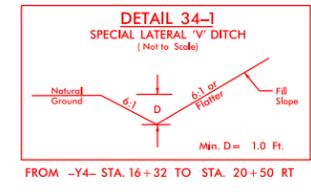
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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 34
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

PERMIT DRAWING
SHEET 104 OF 132
REVISED 06-13-2019

MATCHLINE
-Y5- STA. 92+00
SEE SHEET 43

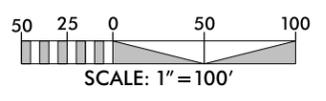


NOTE:
CHANNEL IS NOT CONNECTED
TO ROADSIDE DITCH

MATCHLINE
-Y4- STA 11+00 SEE SHEET 33

MATCHLINE
-Y4- STA 25+00 SEE SHEET 5

- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES HAND CLEARING



MATCHLINE
-Y3- STA. 14+50
SEE SHEET 36

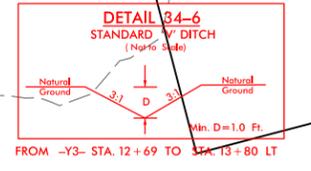
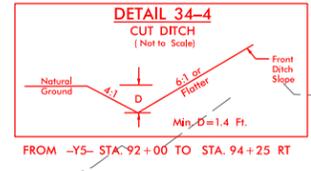
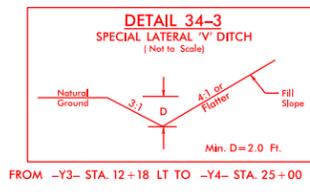
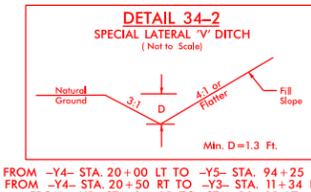
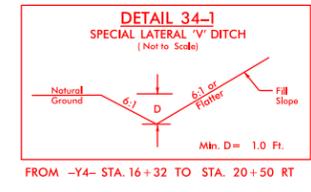
FOR -Y3- PROFILE SEE SHEET 87
FOR -Y3SI- PROFILE SEE SHEET 88
FOR -Y4- PROFILE SEE SHEET 87
FOR -Y5- PROFILE SEE SHEET 91
FOR -Y5DRI- PROFILE SEE SHEET 92

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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 34A
RW SHEET NO.	
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PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

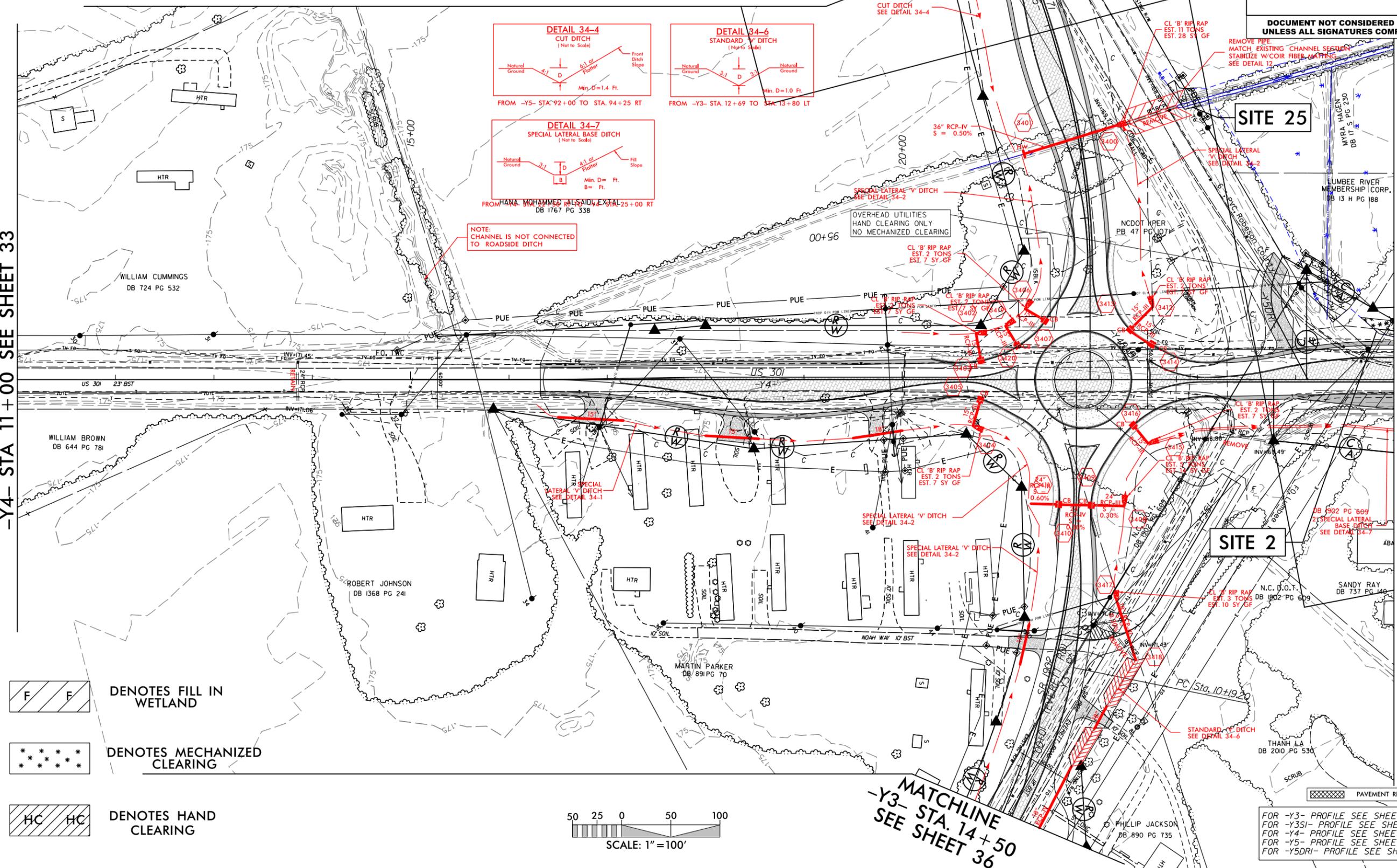
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UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 105 OF 132
REVISED 06-13-2019

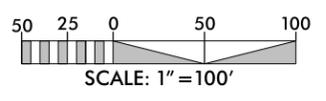


MATCHLINE -Y4- STA 11+00 SEE SHEET 33

MATCHLINE -Y4- STA 25+00 SEE SHEET 5



- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING
- DENOTES HAND CLEARING



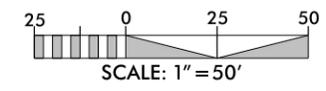
MATCHLINE
-Y3- STA. 14+50
SEE SHEET 36

FOR -Y3- PROFILE SEE SHEET 87
FOR -Y3SI- PROFILE SEE SHEET 88
FOR -Y4- PROFILE SEE SHEET 87
FOR -Y5- PROFILE SEE SHEET 91
FOR -Y5DRI- PROFILE SEE SHEET 92

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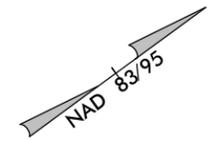
PERMIT DRAWING
SHEET 106 OF 132
REVISED 06-13-2019

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. 34B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

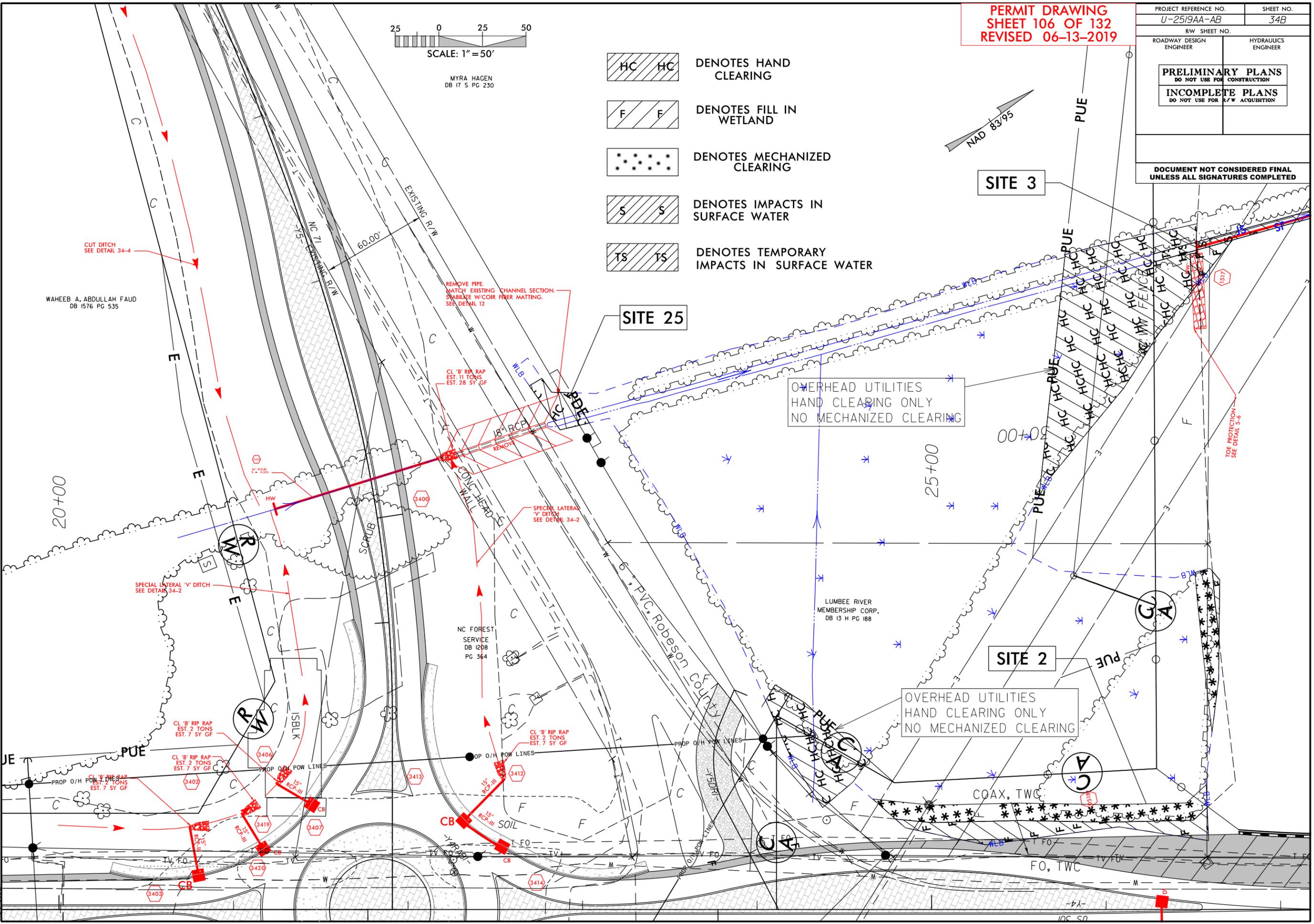


MYRA HAGEN
 DB 17 S PG 230

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



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WAHEEB A. ABDULLAH FAUD
 DB 1576 PG 535

REMOVE PIPE.
 MATCH EXISTING CHANNEL SECTION.
 STABILIZE W/COIR FIBER MATTING.
 SEE DETAIL 12

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

SPECIAL LATERAL
 'V' DITCH
 SEE DETAIL 34-2

NC FOREST
 SERVICE
 DB 1208
 PG 364

CL 'B' RIP RAP
 EST. 2 TONS
 EST. 7 SY GF

CL 'B' RIP RAP
 EST. 2 TONS
 EST. 7 SY GF

CL 'B' RIP RAP
 EST. 2 TONS
 EST. 7 SY GF

OVERHEAD UTILITIES
 HAND CLEARING ONLY
 NO MECHANIZED CLEARING

OVERHEAD UTILITIES
 HAND CLEARING ONLY
 NO MECHANIZED CLEARING

TOE PROTECTION
 SEE DETAIL 5-6

20+00

25+00

SITE 2

SITE 25

SITE 3

LUMBEE RIVER
 MEMBERSHIP CORP.
 DB 13 H PG 188

PVC, ROBESON COUNTY

COAX, TWC

FO, TWC

JE

IV, F.O.

WETLAND AND SURFACE WATER IMPACTS SUMMARY

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

*Rounded totals are sum of actual impacts

NOTES:

- Bank stabilization impacts not included in totals (Site 8, Site 13, Site 14)
- Site 7: Eliminated; No Impacts
- Site 11: Eliminated; No Impacts
- Site 16: Wetlands will be total take of .0891 AC
- Site 19: Wetlands in this area will add an additional area of .5189 AC (as noted on plans)

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 06/12/2019
 CUMBERLAND & ROBESON COUNTIES
 U-2519AA & AB
 34817.3.4
 SHEET 131 OF 132

TIP PROJECT: U-2519AA&AB

CONTRACT: C204043

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

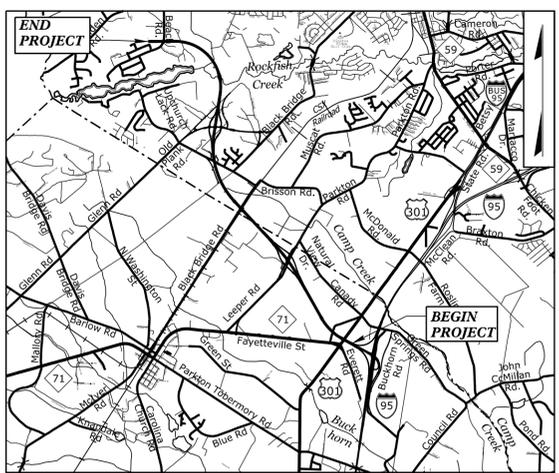
T.I.P. NO.	SHEET NO.
U-2519AA&AB	UC-1

SUBMITTAL: S-083R1
FINAL RFC UC PLANS
DATE: FEBRUARY 19, 2019

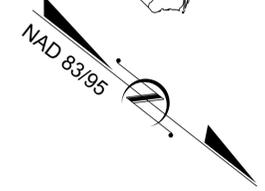
UTILITY CONSTRUCTION PLANS CUMBERLAND/ROBESON COUNTY

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

TYPE OF WORK: WATER AND SEWER LINE CONSTRUCTION



VICINITY MAP N.T.S.

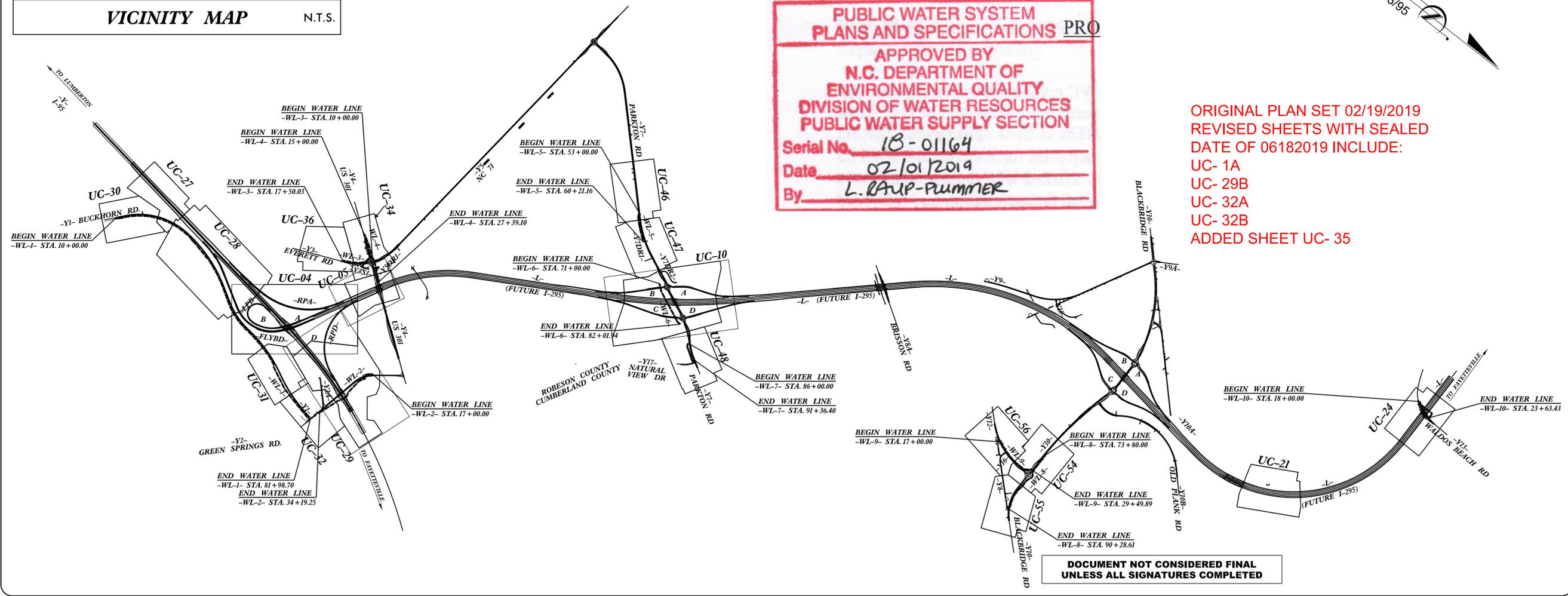


**PUBLIC WATER SYSTEM
PLANS AND SPECIFICATIONS** PRO

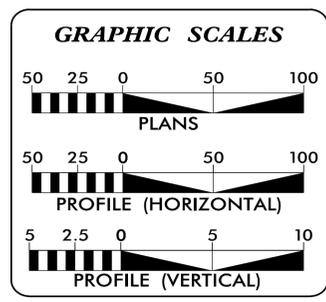
APPROVED BY
**N.C. DEPARTMENT OF
ENVIRONMENTAL QUALITY
DIVISION OF WATER RESOURCES
PUBLIC WATER SUPPLY SECTION**

Serial No. 18-01164
Date 02/01/2019
By L. RAUP-PUMMER

ORIGINAL PLAN SET 02/19/2019
REVISED SHEETS WITH SEALED
DATE OF 06/18/2019 INCLUDE:
UC- 1A
UC- 29B
UC- 32A
UC- 32B
ADDED SHEET UC- 35



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



SEE SHEET UC-1A FOR
INDEX OF SHEETS

UTILITY OWNERS ON PROJECT

- (1) WATER - ROBESON COUNTY WATER DEPARTMENT
- (2) WATER & SEWER - FAYETTEVILLE - PUBLIC WORKS COMMISSION (PWC)

PREPARED IN THE OFFICE OF:



Dean Helstrom, P.E. UTILITY PROJECT ENGINEER
Mark Price PROJECT UTILITY COORDINATOR
Daniel Foster PROJECT UTILITY DESIGNER



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

1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

Donna Jackson P.E. UTILITIES DESIGN-BUILD ENGINEER
Todd Lapham UTILITIES DESIGN-BUILD COORDINATOR

6-18-19

CUMBERLAND COUNTY ROBESON COUNTY

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. UC-1A
DESIGNED BY: DRF	
DRAWN BY: DRF	
CHECKED BY: DWH	
APPROVED BY: DWH	
REVISED: 06-18-19	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

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UNTIL ALL SIGNATURES ARE COMPLETED**

UTILITY CONSTRUCTION

INDEX OF SHEETS

SHEET NUMBER	SHEET
UC-1	TITLE SHEET
UC-1A	INDEX OF SHEETS - R1 SEALED DATE 06182019
UC-2	UTILITY SYMBOLOLOGY
UC-3	NOTES
UC-3A THRU UC-3G	DETAILS
UC-4	UTILITY PLAN SHEET
UC-4A	UTILITY PLAN AND PROFILE SHEET
UC-4B	UTILITY PLAN SHEET
UC-5	UTILITY PLAN SHEET
UC-5A	UTILITY PLAN AND PROFILE SHEET
UC-10	UTILITY PLAN SHEET
UC-10A	UTILITY PLAN AND PROFILE SHEET
UC-21	UTILITY PLAN SHEET
UC-21F	UTILITY PLAN SHEET
UC-24	UTILITY PLAN SHEET
UC-24A	UTILITY PLAN AND PROFILE SHEET
UC-27	UTILITY PLAN AND PROFILE SHEET
UC-28	UTILITY PLAN SHEET
UC-28A	UTILITY PLAN AND PROFILE SHEET
UC-28B	UTILITY PLAN AND PROFILE SHEET
UC-29	UTILITY PLAN SHEET
UC-29A	UTILITY PLAN SHEET
UC-29B	UTILITY PLAN AND PROFILE SHEET - R1 SEALED DATE 06182019
UC-30	UTILITY PLAN AND PROFILE SHEET
UC-31	UTILITY PLAN AND PROFILE SHEET
UC-32	UTILITY PLAN SHEET
UC-32A	UTILITY PLAN AND PROFILE SHEET - R1 SEALED DATE 06182019
UC-32B	UTILITY PLAN AND PROFILE SHEET - R1 SEALED DATE 06182019
UC-34	UTILITY PLAN SHEET
UC-34A	UTILITY PLAN AND PROFILE SHEET
UC-34B	UTILITY PLAN AND PROFILE SHEET
ADDED UC-35	UTILITY PLAN AND PROFILE SHEET - SEALED DATE 06182019
UC-36	UTILITY PLAN AND PROFILE SHEET
UC-46	UTILITY PLAN AND PROFILE SHEET
UC-47	UTILITY PLAN AND PROFILE SHEET
UC-48	UTILITY PLAN AND PROFILE SHEET
UC-54	UTILITY PLAN AND PROFILE SHEET
UC-55	UTILITY PLAN AND PROFILE SHEET
UC-56	UTILITY PLAN AND PROFILE SHEET

V:\charlotte\RDMA\31720-07_U2519\Utilities\Drawings\U2519AA-AB-UC-01A.dgn



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 Knoxville, TN 865-546-5800
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 Charleston, SC 843-974-5650
 Milledgeboro, KY 606-248-6600
 Asheville, NC 828-253-2796
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 Atlanta, GA 770-627-3509

Charlotte, North Carolina
704-357-0488

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STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11 1/4 Degree Bend	
22 1/2 Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

NOTE
PAY ITEM

EXISTING UTILITIES SYMBOLS

Power Pole		*Underground Power Line	
Telephone Pole		*Underground Telephone Cable	
Joint Use Pole		*Underground Telephone Conduit	
Utility Pole		*Underground Fiber Optics Telephone Cable	
Utility Pole with Base		*Underground TV Cable	
H-Frame Pole		*Underground Fiber Optics TV Cable	
Power Transmission Line Tower		*Underground Gas Pipeline	
Water Manhole		Aboveground Gas Pipeline	
Power Manhole		*Underground Water Line	
Telephone Manhole		Aboveground Water Line	
Sanitary Sewer Manhole		*Underground Gravity Sanitary Sewer Line	
Hand Hole for Cable		Aboveground Gravity Sanitary Sewer Line	
Power Transformer		*Underground SS Forced Main Line	
Telephone Pedestal		Underground Unknown Utility Line	
CATV Pedestal		SUE Test Hole	
Gas Valve		Water Meter	
Gas Meter		Water Valve	
Located Miscellaneous Utility Object		Fire Hydrant	
Abandoned According to Utility Records	AATUR	Sanitary Sewer Cleanout	
End of Information	E.O.I.		

*For Existing Utilities
Utility Line Drawn from Record (Type as Shown) W
Designated Utility Line (Type as Shown) W

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. UC-3
DESIGNED BY: DRF	
DRAWN BY: DRF	
CHECKED BY: DWH	
APPROVED BY: DWH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

**DOCUMENT NOT CONSIDERED FINAL
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UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018 AND THE CONTRACT UTILITY SPECIAL PROVISIONS.
2. THE EXISTING UTILITIES BELONG TO ROBESON COUNTY WATER DEPARTMENT. PLEASE CONTACT MR. MYRON NEVILLE, (910) 671-3485 AND FAYETTEVILLE PUBLIC WORKS COMMISSION. PLEASE CONTACT MR. JOSEPH GLASS, P.E. (910) 223-4740
3. ALL WATER AND SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.
4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.
5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPORTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS AND THE CONTRACT SPECIAL PROVISIONS.

PROJECT SPECIFIC NOTES:

1. ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT USING GRIP RINGS AND MEGA-LUGS. NO GLUE OR PUSH-ON FITTINGS ARE ALLOWED.
2. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107 AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE SHALL BE ALLOWED TO RIVER, WETLANDS OR BUFFER ZONES.

3. NEW WATER LINES MUST BE PRESSURE TESTED AT 200 PSI FOR 2 HOURS. TEST TO BE OBSERVED BY WATER DEPARTMENT REPRESENTATIVE FOR ROBESON COUNTY OR FAYETTEVILLE PWC.
4. SERVICE INTERRUPTIONS SHALL BE SCHEDULED WITH ROBESON COUNTY WATER DEPARTMENT OR FAYETTEVILLE PWC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY POTABLE WATER SUPPLIES TO ANY CUSTOMER UPON REQUEST BY THE ROBESON COUNTY WATER DEPARTMENT OR FAYETTEVILLE PWC WHEN DURATION OF THE WATER SERVICE LOSS OR DISRUPTION EXCEEDS 4 HOURS.
5. ALL NC DEQ-DWR-PWS AND LOCAL TESTING MUST BE COMPLETED AND APPROVED PRIOR TO CONNECTING THE NEW CONSTRUCTION TO THE EXISTING WATER LINES.
6. ANY NECESSARY CONNECTIONS FOR TESTING AND FILLING THE INSTALLED WATER MAIN WILL BE REQUIRED AND CONSIDERED INCIDENTAL TO THE WATER MAIN CONSTRUCTION.
7. THRUST COLLARS ARE REQUIRED AT CONNECTIONS TO EXISTING WATER LINES.
8. SPECIAL PROVISIONS HAVE BEEN DEVELOPED FOR EACH COUNTY. CUMBERLAND COUNTY APPLIES TO FAYETTEVILLE PUBLIC WORKS COMMISSION AND ROBESON COUNTY APPLIES TO ROBESON COUNTY PUBLIC WORKS. IT HAS BEEN NOTED, ON APPLICABLE SHEETS, WHICH UTILITY OWNER SPECIFICATIONS PERTAIN TO EACH SHEET BY PLACING A STAR BESIDE AND UNDERLINING THE COUNTY NAME.
9. CONTRACTOR SHALL REMOVE ANY EXISTING WATER METERS THAT MAY NOT BE INDICATED ON THE PLANS WHERE RECONNECTION FOR NEW SERVICE IS NOT REQUIRED.

10. TO PREVENT ANY DISTURBANCE WITHIN THE IDENTIFIED WETLAND BOUNDARY ON THE PLANS, THE CONTRACTOR SHALL INSTALL THE WATERLINES VIA DIRECTIONAL DRILLING (TRENCHLESS CONSTRUCTION) METHOD AT THE FOLLOWING LOCATIONS:
 UC 29B STA. 17+50 TO STA. 18+95
 REQUIRES 8" HDPE DR9
 FOR HDPE PIPE, CONTRACTOR IS REQUIRED TO UPSIZE FROM 6-INCH WATER LINE TO 8-INCH HDPE PIPE IN ORDER TO MAINTAIN 6" INSIDE PIPE DIAMETER.



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 Charleston, SC 843-274-5650
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 Asheville, NC 828-253-2786
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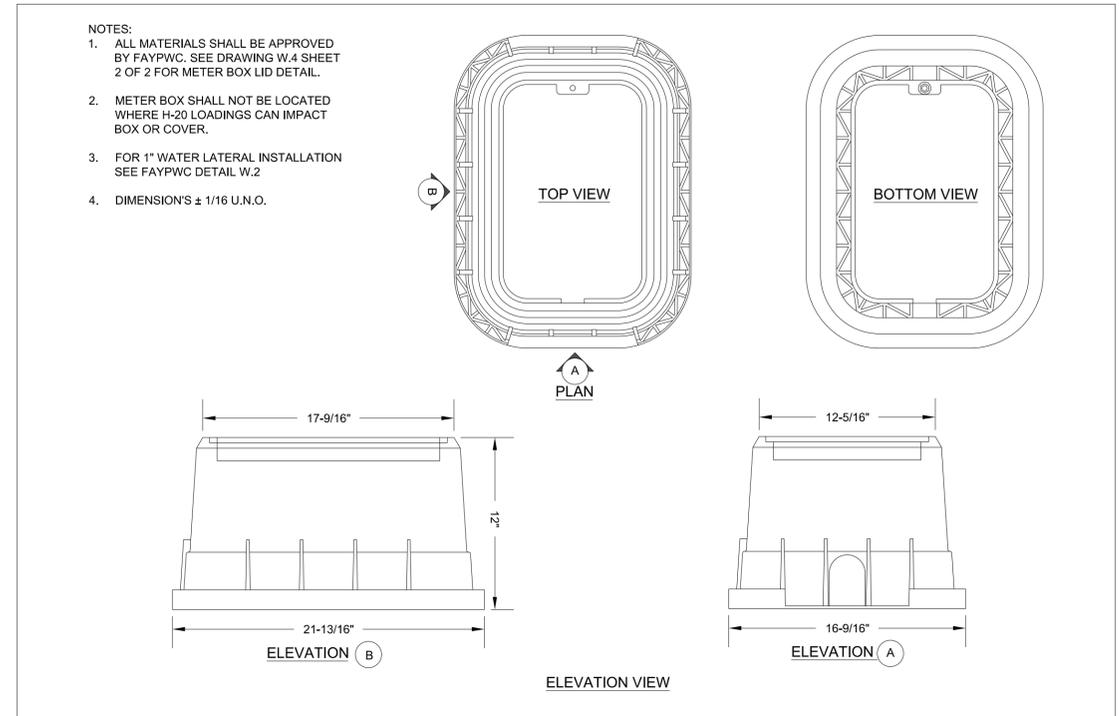
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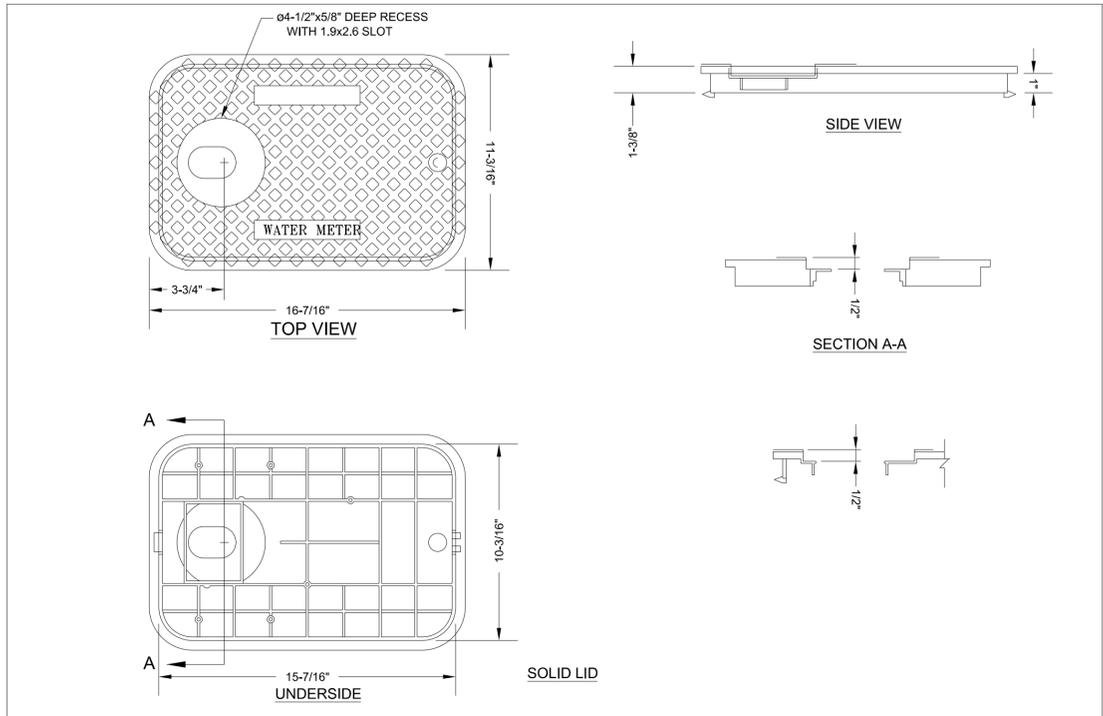
FAYETTEVILLE - PWC PROJECT SPECIFIC DETAILS

**CUMBERLAND COUNTY
ROBESON COUNTY**

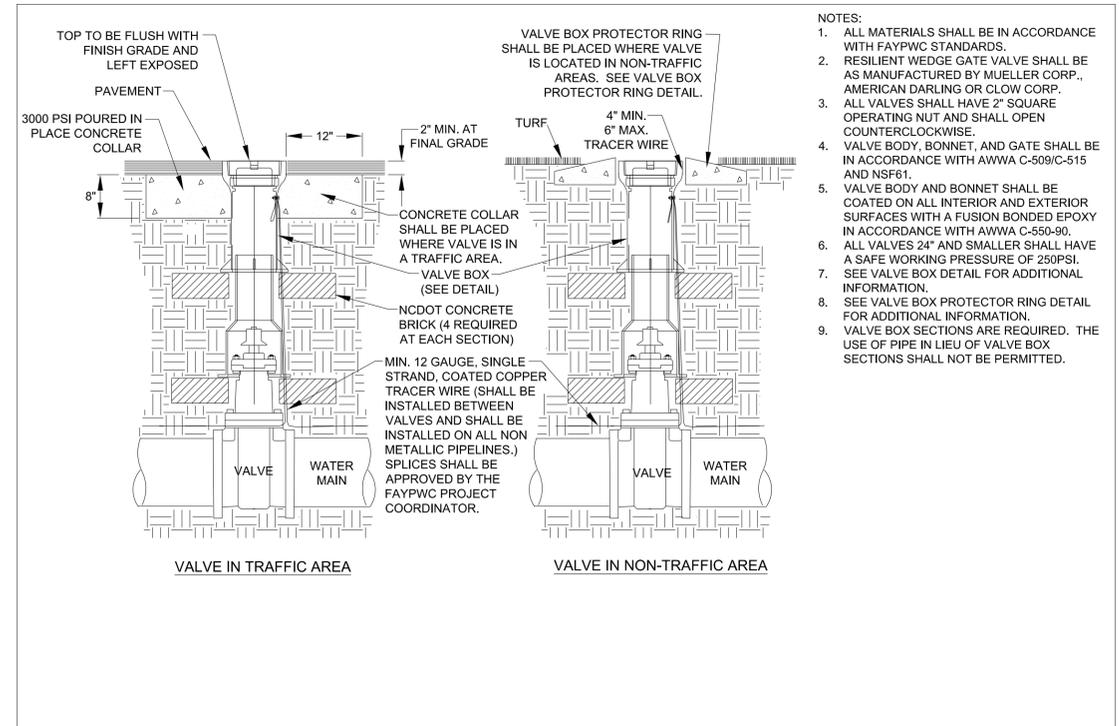
PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	UC-3A
DESIGNED BY: DRF	
DRAWN BY: DRD	
CHECKED BY: DWH	
APPROVED BY: DWH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY UTILITY CONSTRUCTION DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



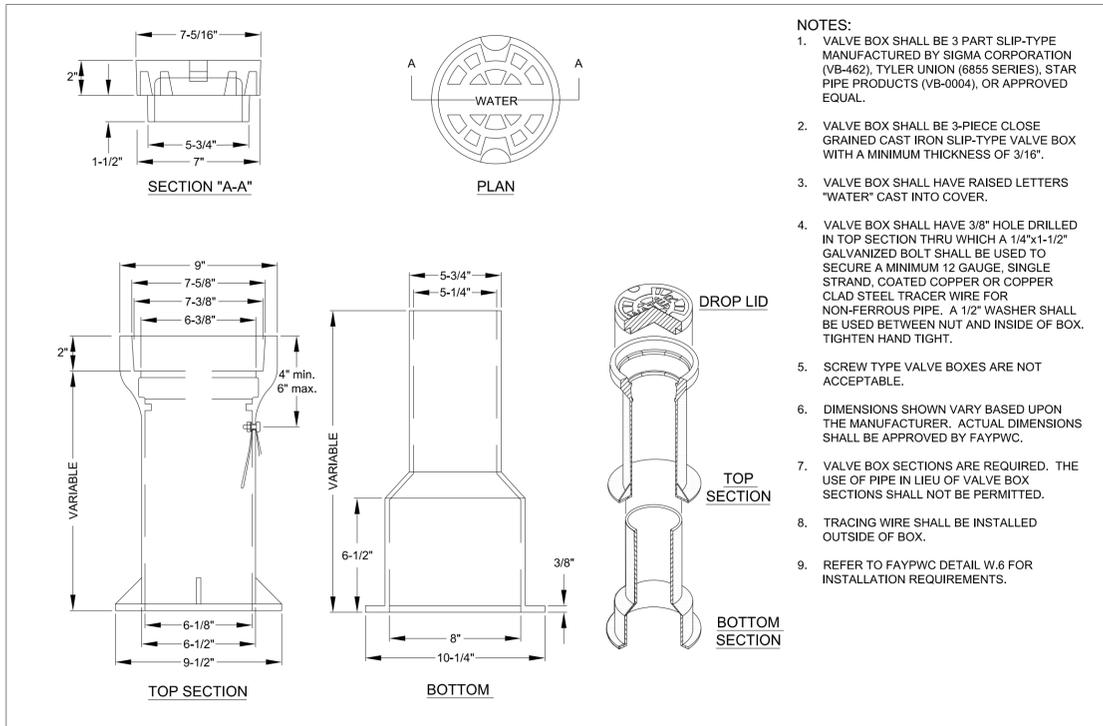
1-INCH METER BOX DETAILS N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 2	DWG. NO. W.4 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	03/10	CHANGED BOX DIMENSIONS



1-INCH METER BOX LID N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 2 OF 2	DWG. NO. W.4 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	07/07	REVISED LID
					1	03/10	CHANGED BOX AND LID DIMENSIONS
					2	01/15	REVISED LID



GATE VALVE N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.6 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	6/06	ADDED NOTE NO. 9
					2	7/09	CLARIFIED NOTES



VALVE BOX N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.7 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	07/09	ADDED NOTES 7, 8, AND CLARIFIED NOTES
					2	01/14	REVISED NOTES 1, 4, 6

- NOTES:**
- VALVE BOX SHALL BE 3 PART SLIP-TYPE MANUFACTURED BY SIGMA CORPORATION (VB-462), TYLER UNION (6855 SERIES), STAR PIPE PRODUCTS (VB-0004), OR APPROVED EQUAL.
 - VALVE BOX SHALL BE 3-PIECE CLOSE GRAINED CAST IRON SLIP-TYPE VALVE BOX WITH A MINIMUM THICKNESS OF 3/16".
 - VALVE BOX SHALL HAVE RAISED LETTERS "WATER" CAST INTO COVER.
 - VALVE BOX SHALL HAVE 3/8" HOLE DRILLED IN TOP SECTION THRU WHICH A 1/4"x1-1/2" GALVANIZED BOLT SHALL BE USED TO SECURE A MINIMUM #2 GAUGE, SINGLE STRAND, COATED COPPER OR COPPER CLAD STEEL TRACER WIRE FOR NON-FERROUS PIPE. A 1/2" WASHER SHALL BE USED BETWEEN NUT AND INSIDE OF BOX. TIGHTEN HAND TIGHT.
 - SCREW TYPE VALVE BOXES ARE NOT ACCEPTABLE.
 - DIMENSIONS SHOWN VARY BASED UPON THE MANUFACTURER. ACTUAL DIMENSIONS SHALL BE APPROVED BY FAYPWC.
 - VALVE BOX SECTIONS ARE REQUIRED. THE USE OF PIPE IN LIEU OF VALVE BOX SECTIONS SHALL NOT BE PERMITTED.
 - TRACING WIRE SHALL BE INSTALLED OUTSIDE OF BOX.
 - REFER TO FAYPWC DETAIL W.6 FOR INSTALLATION REQUIREMENTS.

V&M
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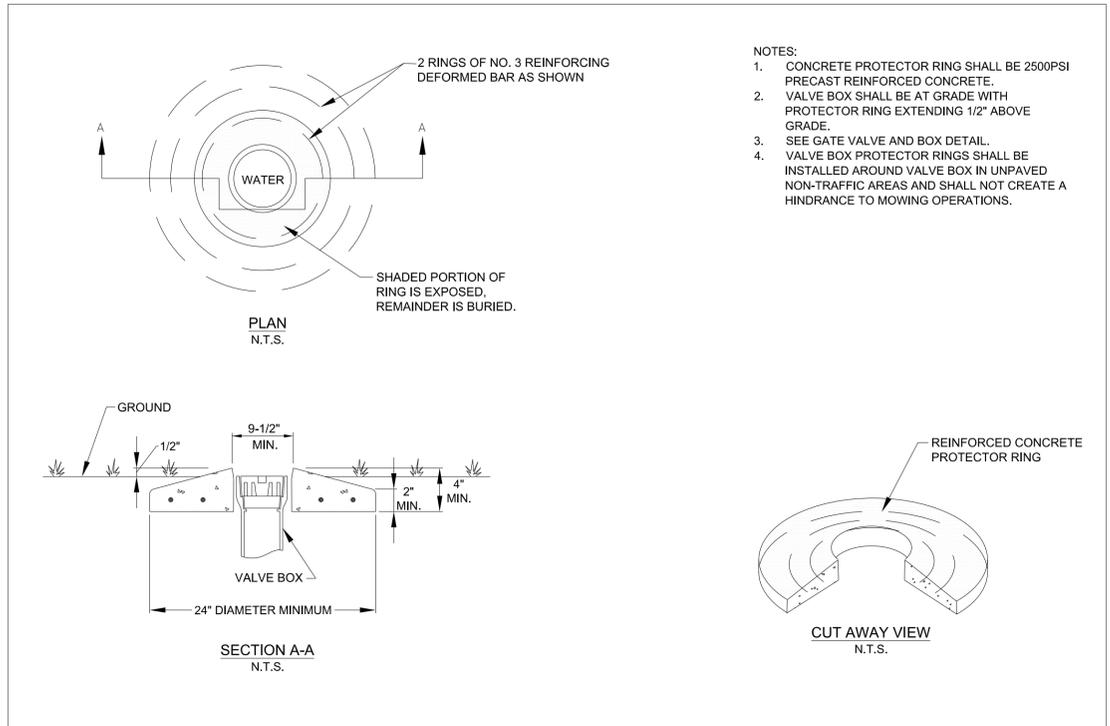
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FAYETTEVILLE - PWC PROJECT SPECIFIC DETAILS

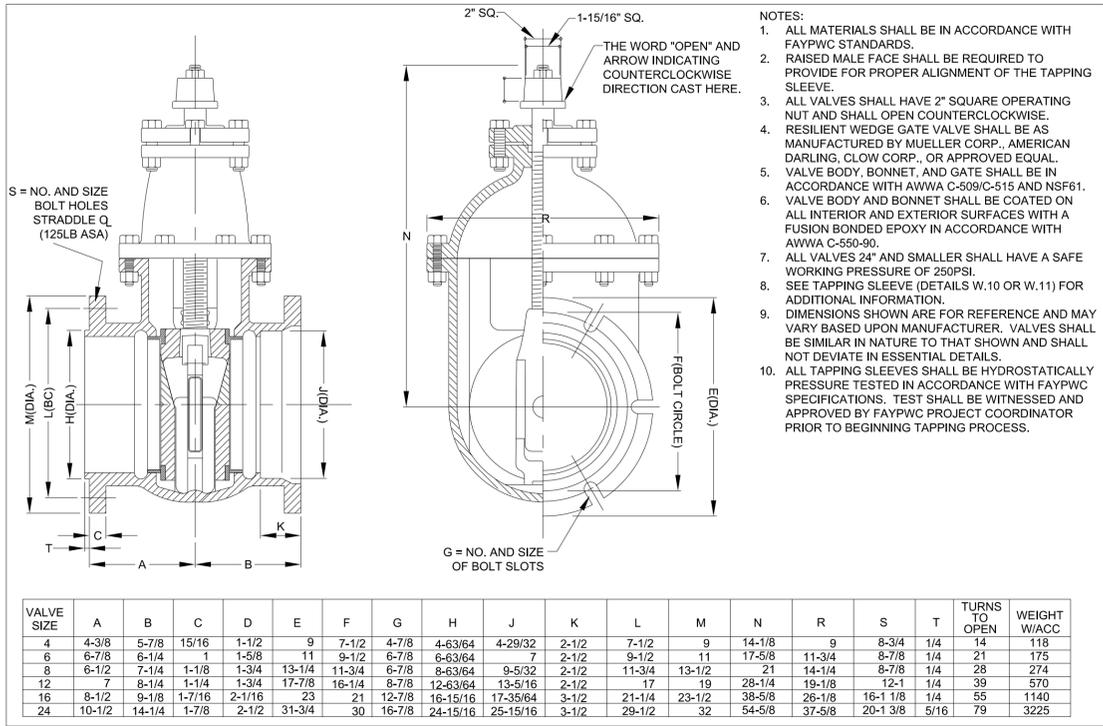
**CUMBERLAND COUNTY
ROBESON COUNTY**

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DESIGNED BY: DRF	
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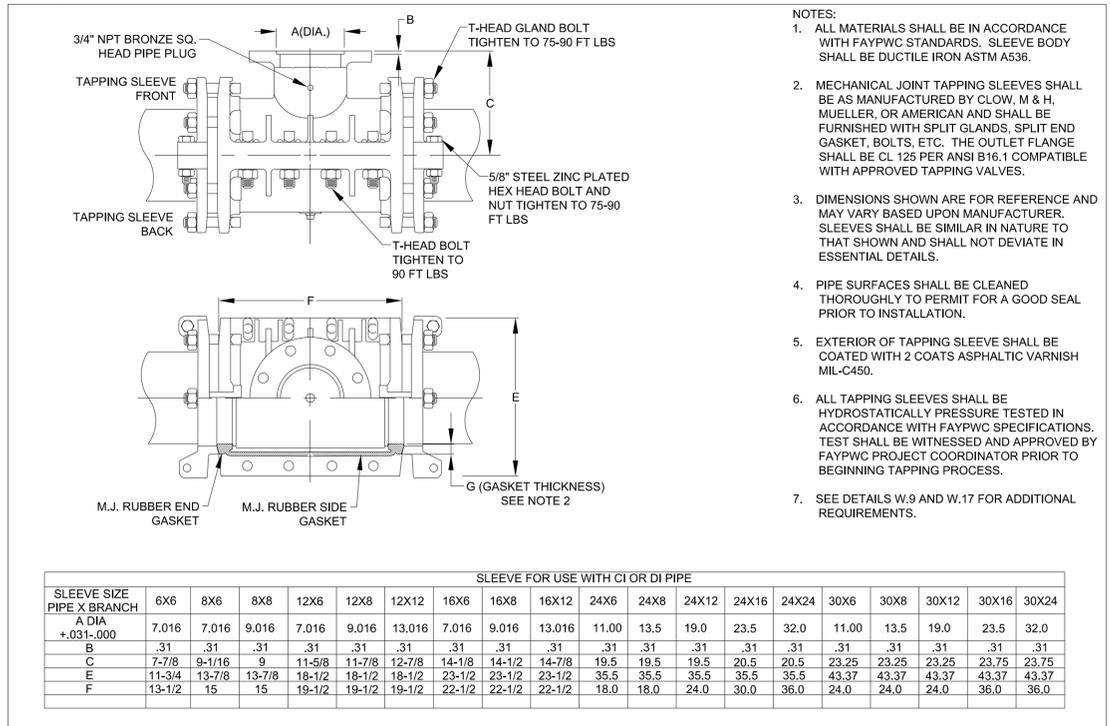
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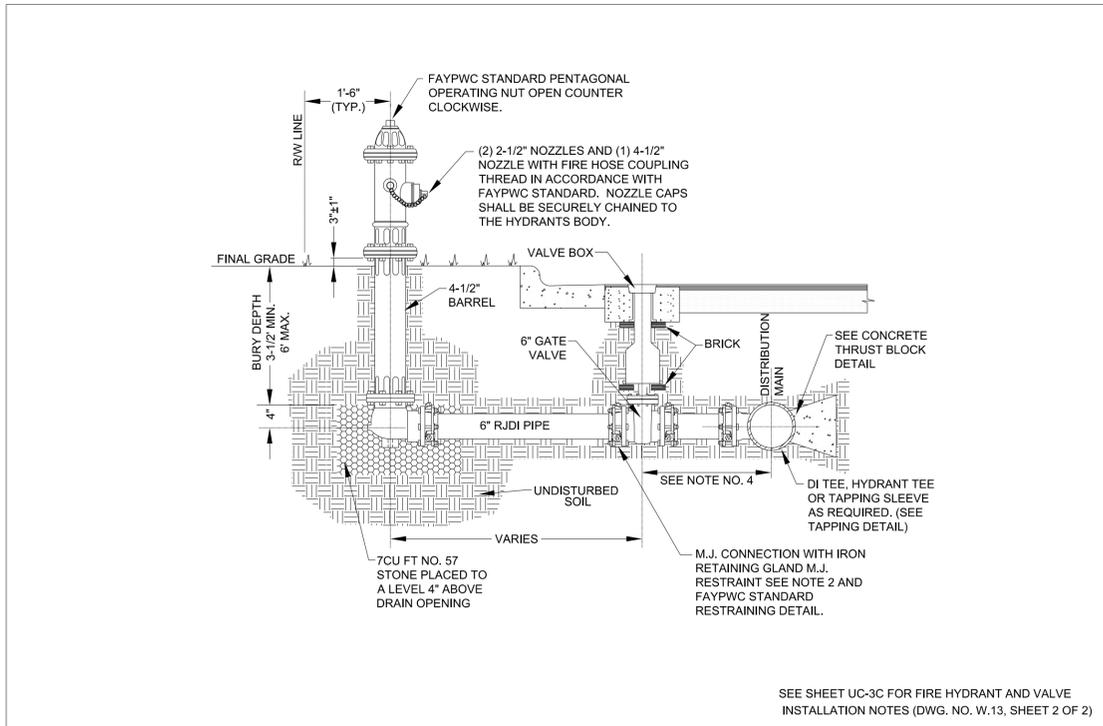
VALVE BOX PROTECTOR RING N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.8	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	07/09	ADDED NOTE 10, REVISED 4 AND 5
DATE: JULY 01, 2018	APPROVED BY: J.E.G.			2	07/13	REVISED NOTES 4, 8, 10	



TAPPING VALVE N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.9	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	07/09	ADDED NOTE 10, REVISED 4 AND 5
DATE: JULY 01, 2018	APPROVED BY: J.E.G.			2	07/13	REVISED NOTES 4, 8, 10	



DUCTILE IRON TAPPING SLEEVE N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.10	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	07/09	REVISED NOTE 6/REMOVED NOTE 8
DATE: JULY 01, 2018	APPROVED BY: J.E.G.			2	07/13	REVISED NOTES 6, 7	



FIRE HYDRANT AND VALVE INSTALLATION N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 2	DWG. NO. W.13	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	10/23/03	REVISED NOTE NO. 4
DATE: JULY 01, 2018	APPROVED BY: J.E.G.			2	07/01/09	REVISED NOTE NO. 2, REMOVED NOTE NO. 3 AND ALTERED RESTRAINT DETAIL	
				3	07/01/16	REVISED NOTES	

SEE SHEET UC-3C FOR FIRE HYDRANT AND VALVE INSTALLATION NOTES (DWG. NO. W.13, SHEET 2 OF 2)

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FAYETTEVILLE - PWC PROJECT SPECIFIC DETAILS

**CUMBERLAND COUNTY
ROBESON COUNTY**

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. UC-3C
DESIGNED BY: DRF	
DRAWN BY: DRD	
CHECKED BY: DWH	
APPROVED BY: DWH	
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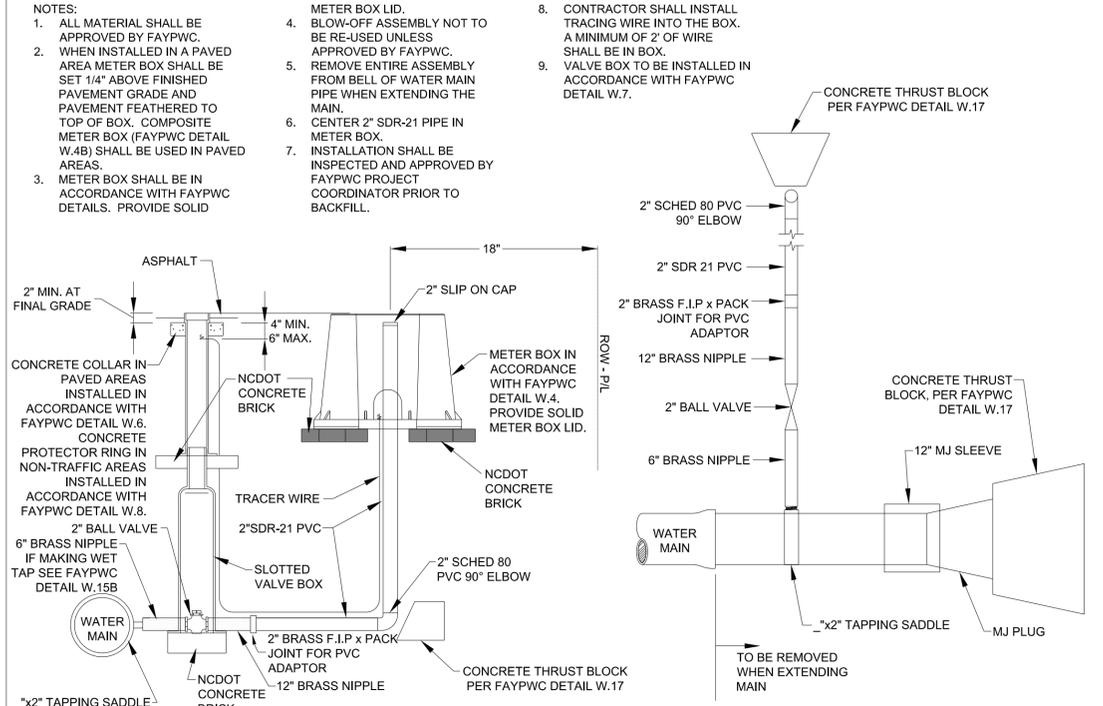
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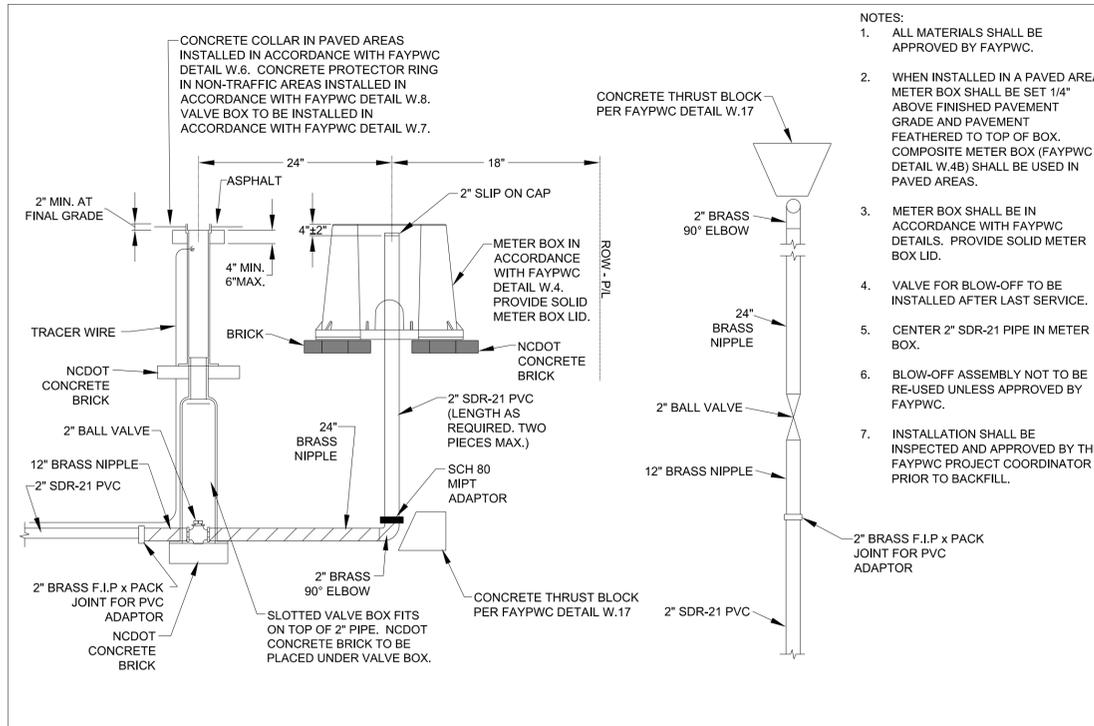
- NOTES:**
- FIRE HYDRANT SHALL BE MODELS MANUFACTURED BY MUELLER CO. (CENTURIAN), AMERICAN VALVE AND HYDRANT CO. (MODEL MARK 73), CLOW MEDALLION OR APPROVED EQUAL.
 - ALL VALVES AND HYDRANTS SHALL HAVE M.J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT.
 - HYDRANT VALVE SHALL BE PLACED AS CLOSE AS POSSIBLE TO THE MAIN, BUT DO NOT PLACE VALVE IN PROPOSED OR EXISTING CURB AND GUTTER. IF THE STREET IS SOIL AND NO PAVING IS TO BE DONE AT THIS TIME, THE LOCATION OF THE VALVE IS TO BE DETERMINED BY THE FAYPWC PROJECT COORDINATOR.
 - HYDRANT BRANCH SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY FAYPWC PROJECT COORDINATOR.
 - GATE VALVE AND BOX SHALL BE IN ACCORDANCE WITH FAYPWC STANDARD DETAIL.
 - HYDRANT EXTENSIONS AND/OR OFFSETS SHALL BE APPROVED BY FAYPWC PROJECT COORDINATOR.
 - FIRE HYDRANT CONNECTIONS TO EXISTING WATER MAINS SHALL BE MADE USING A TAPPING SLEEVE AND VALVE BY WET TAP CONNECTION. THE TAPPING SLEEVE AND VALVE SHALL BE HYDROSTATICALLY TESTED PRIOR TO STARTING THE TAP IN THE PRESENCE OF THE FAYPWC PROJECT COORDINATOR.
 - THE PROPOSED LOCATION MAY BE RELOCATED BY THE FAYPWC PROJECT COORDINATOR IF CONFLICTS EXIST (IE: GAS SERVICES, UGE, TELEPHONE, ETC.).
 - THE CONTRACTOR SHALL FIELD VERIFY THE EXISTING WATER MAIN MATERIAL, SIZE, AND DEPTH FOR EACH FIRE HYDRANT LOCATION PRIOR TO ORDERING MATERIALS. THE CONTRACTOR WILL BE REQUIRED TO SUPPLY VARIOUS LENGTHS OF BARRELS AND HYDRANT EXTENSIONS (NO MORE THAN ONE HYDRANT EXTENSION MAY BE USED PER HYDRANT). ADDITIONAL FITTINGS AND/OR HYDRANT EXTENSIONS OR OFFSET CONNECTORS MAY BE REQUIRED TO MAINTAIN PROPER COVER AS APPROVED BY THE FAYPWC PROJECT COORDINATOR.
 - CONTRACTOR SHALL NOTIFY THE APPROPRIATE FIRE DEPARTMENT OF OUT OF SERVICE FIRE HYDRANTS PRIOR TO CONSTRUCTION.
 - FIRE HYDRANT SHALL BE FIELD PAINTED IN ACCORDANCE WITH FAYPWC STANDARDS, BEFORE PROJECT IS ACCEPTED. HYDRANTS SHALL BE PAINTED WITH A GREEN BONNET AND YELLOW BODY. PAINT SHALL BE IN ACCORDANCE WITH FAYPWC REQUIREMENTS. THE CONTRACTOR SHALL PAINT ALL EXPOSED EXTERIOR FIRE HYDRANT SURFACES PRIOR TO FINAL ACCEPTANCE BY FAYPWC. ALL PAINTING SHALL BE DONE IN STRICT ACCORDANCE WITH THE PAINT MANUFACTURER'S RECOMMENDATIONS AND SHALL BE SATISFACTORY TO THE FAYPWC.
 - PROTECTIVE COVERING SHALL BE UTILIZED, AS NECESSARY FOR PROTECTION OF ADJACENT AREAS, EQUIPMENT, SHRUBBERY, OR OTHER ITEMS. AFTER PAINTING IS COMPLETE, THE ENTIRE AREA SHALL BE THOROUGHLY CLEANED UP.
 - ALL PAINT MATERIALS SHALL BE IN THE ORIGINAL SEALED CONTAINERS BEARING THE MANUFACTURER'S NAME.
 - WHERE NECESSARY, THINKING SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS, AND AS APPROVED BY FAYPWC.
 - ALL SURFACES TO BE PAINTED SHALL BE CLEAN AND DRY.
 - THE BONNET OF THE FIRE HYDRANT SHALL BE PAINTED A DARK GREEN, UTILIZING AN ALKYD OR POLYURETHANE ENAMEL, WITH A FINAL DRY MIL THICKNESS OF 4 TO 6 MILS. MULTIPLE COATS MAY BE NECESSARY TO ACHIEVE THE FINAL REQUIRED DRY MIL THICKNESS. THE PAINT SHALL BE FOREST GREEN, AS MANUFACTURED BY THE SHERWIN-WILLIAMS COMPANY, PART NUMBER 822918, OR APPROVED EQUAL. SAMPLES SHALL BE SUBMITTED IN ORDER FOR FAYPWC TO CONSIDER ALTERNATIVE PAINT MANUFACTURERS.
 - THE REMAINDER OF THE FIRE HYDRANT SHALL BE PAINTED SAFETY YELLOW, UTILIZING AN ALKYD OR POLYURETHANE ENAMEL, WITH A FINAL DRY MIL THICKNESS OF 4 TO 6 MILS. MULTIPLE COATS MAY BE NECESSARY TO ACHIEVE THE FINAL REQUIRED DRY MIL THICKNESS. THE PAINT SHALL BE YELLOW, AS MANUFACTURED BY THE SHERWIN-WILLIAMS COMPANY, PART NUMBER 3186, OR APPROVED EQUAL. SAMPLES SHALL BE SUBMITTED IN ORDER FOR FAYPWC TO CONSIDER ALTERNATE PAINT MANUFACTURERS.

SEE SHEET UC-3B FOR FIRE HYDRANT AND VALVE INSTALLATION (DWG. NO. W.13, SHEET 1 OF 2)

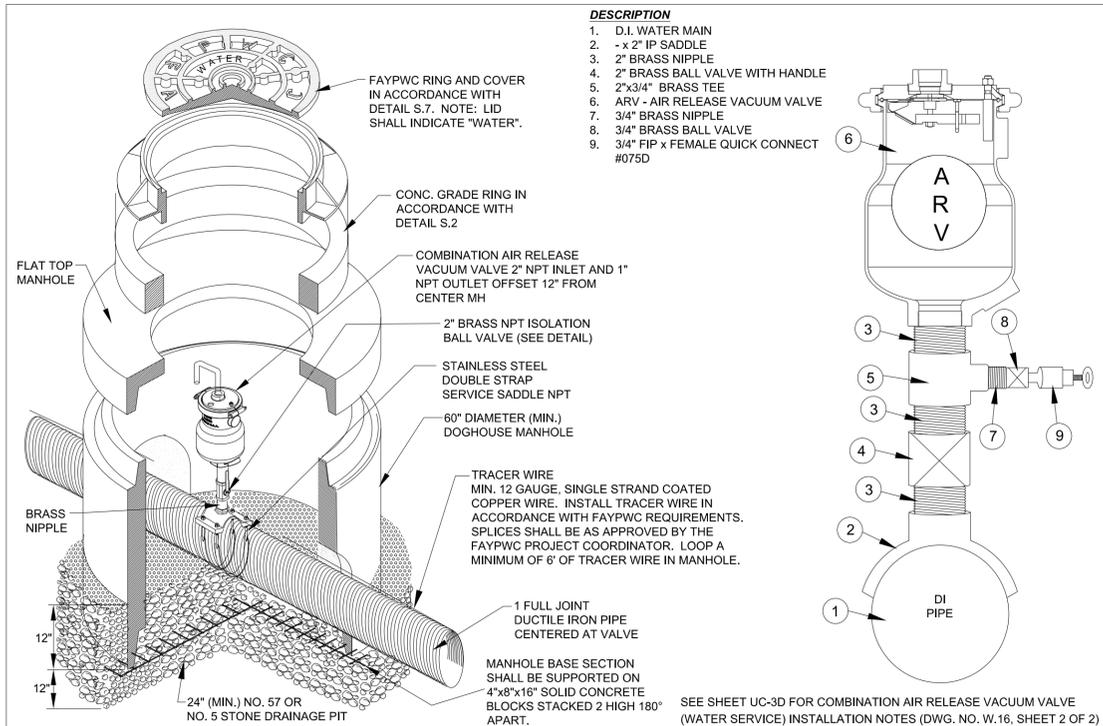
FIRE HYDRANT AND VALVE INSTALLATION N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 2 OF 2	DWG. NO. W.13 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	10/23/03	REVISED NOTE NO. 4
					2	07/01/09	REVISED NOTE NO. 2, REMOVED NOTE NO. 3 AND ALTERED RESTRAINT DETAIL
					3	07/01/16	REVISED NOTES



2" BLOW OFF N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.15 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	08/06	CHANGED FITTINGS TO SCHED 80
					2	11/06	REVISED CONFIGURATION
					3	07/17	REVISED NOTES



2" BLOW OFF ON 2" WATER MAIN N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.15C DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	07/17	REVISED NOTES



COMBINATION AIR RELEASE VACUUM VALVE (WATER SERVICE) N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 2	DWG. NO. W.16 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	07/09	REVISED NOTES 3 AND 5, ADD NOTE 7
					2	01/13	UPDATED NOTES, ADDED TRACER WIRE

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PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	UC-3D
DESIGNED BY: DRF	
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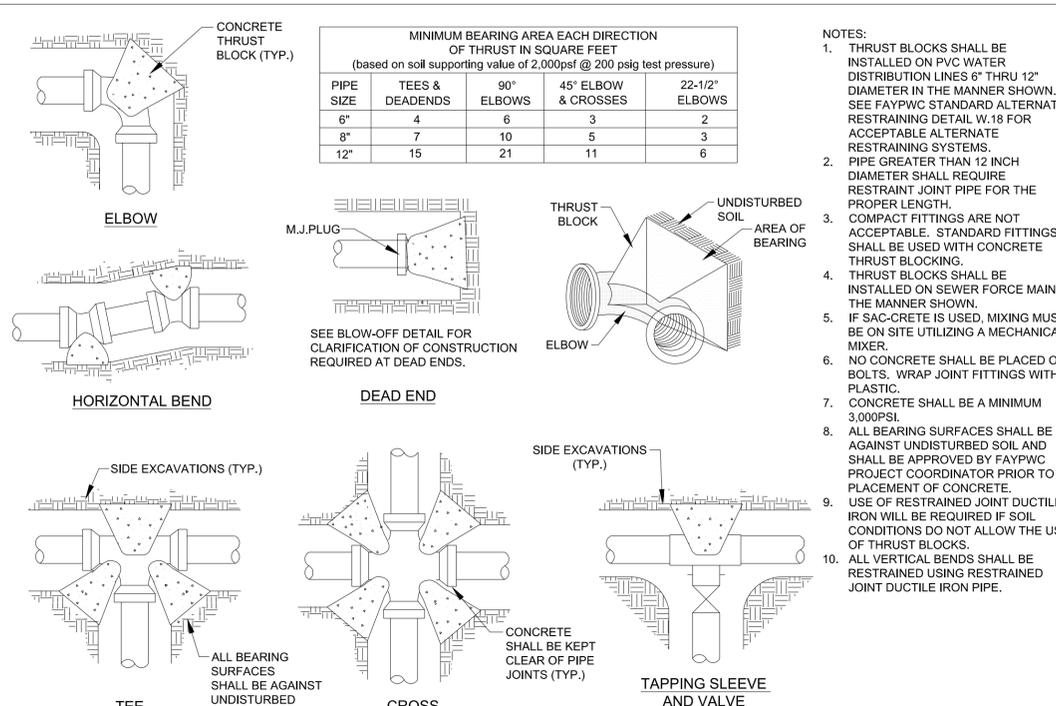
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NOTES:

- COMBINATION AIR RELEASE VALVES SHALL BE OF THE SINGLE HOUSING STYLE THAT COMBINES THE OPERATING FEATURES OF BOTH AN AIR VACUUM AND AIR RELEASE VALVE.
- THE COMBINATION AIR RELEASE VALVE SHALL HAVE 2" NPT INLET AND 1" NPT OUTLET CONNECTIONS AND A 3/16 INCH DIAMETER ORIFICE (OR ORIFICE SHALL BE DETERMINED BY THE ENGINEER) FOR A MAXIMUM 200PSI WORKING PRESSURE.
- ALL MATERIALS SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE FAYETTEVILLE PUBLIC WORKS COMMISSION.
- MANHOLE, FRAME, AND COVER SHALL BE IN ACCORDANCE WITH FAYPWC STANDARD DETAILS.
- 2" TAPPING SADDLE SHALL BE DUCTILE IRON WITH STAINLESS STEEL STRAPS, BOLTS, NUTS, AND WASHERS.
- SADDLES FOR PIPE SIZES 8" THRU 24" SHALL BE DOUBLE STRAP.
- ALL INTERNAL PARTS SHALL BE 316 STAINLESS STEEL.
- THE COMBINATION AIR RELEASE VALVE SHALL HAVE A SINGLE FLOAT DESIGN.
- ALL COMBINATION AIR RELEASE VALVES SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
- ALL COMBINATION AIR RELEASE VALVES SHALL BE CRISPIN MODEL UX20, ARI D-020, OR APPROVED EQUAL.
- COMBINATION AIR RELEASE VALVE SHALL BE CENTERED IN MANHOLE. OFFSET THE RING AND COVER TO ALLOW ACCESS.
- TOP OF FORCE MAIN SHALL BE A MINIMUM 4' DEEP AT AIR RELEASE VALVE. UNLESS OTHERWISE REQUIRED DUE TO FORCE MAIN AND/OR COMBINATION AIR RELEASE VALVE SIZE.
- COMBINATION AIR RELEASE VALVE BODIES SHALL BE MADE OF STAINLESS STEEL OR REINFORCED NYLON
- THE MANHOLE SHALL BE CAST WITH AN ANTI-MICROBIAL ADDITIVE (CON-SHIELD OR APPROVED EQUAL.)

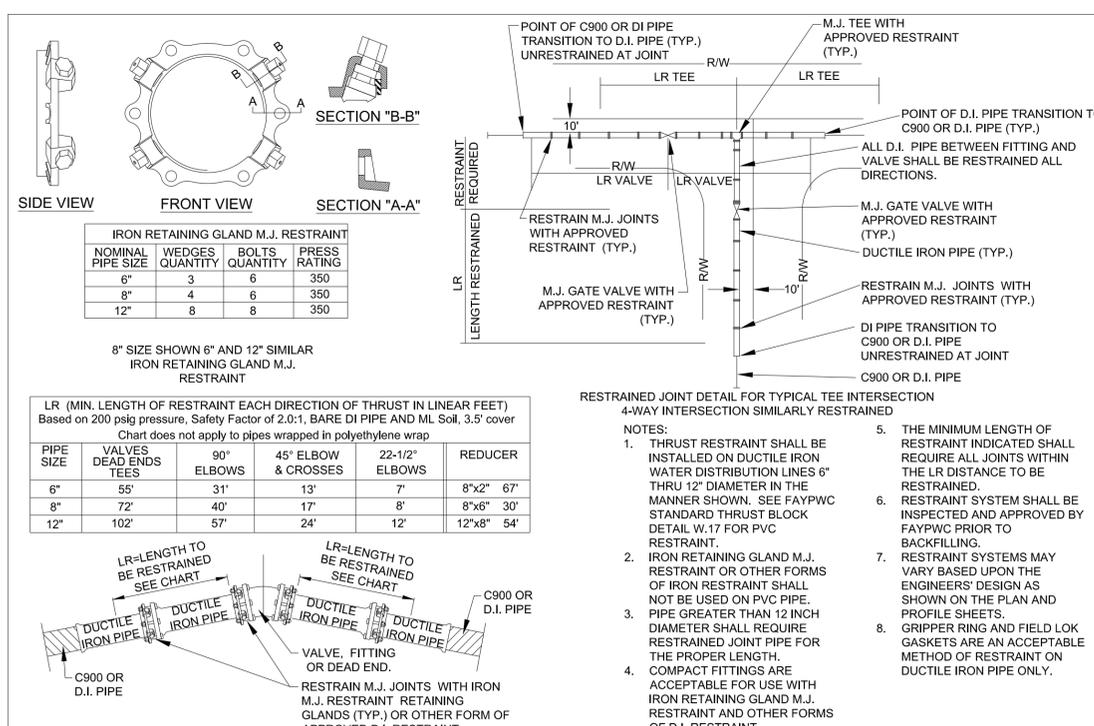
SEE SHEET UC-3C FOR COMBINATION AIR RELEASE VACUUM VALVE (WATER SERVICE) DETAIL (DWG. NO. W.16, SHEET 1 OF 2)

COMBINATION AIR RELEASE VACUUM VALVE (WATER SERVICE)		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 2 OF 2	DWG. NO. W.16	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	01/13	ADDED NOTE 16, REVISED NOTES
DATE: JULY 01, 2018	APPROVED BY: J.E.G.			2	07/16	DELETED NOTES 3, 16	

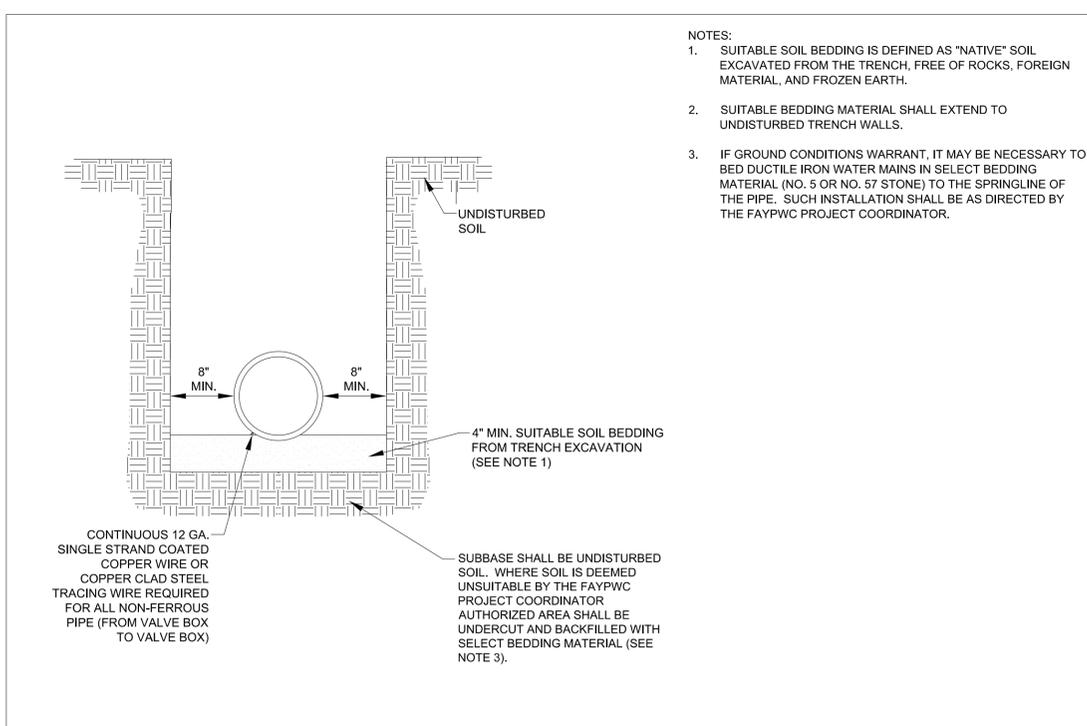


- NOTES:**
- THRUST BLOCKS SHALL BE INSTALLED ON PVC WATER DISTRIBUTION LINES 6" THRU 12" DIAMETER IN THE MANNER SHOWN. SEE FAYPWC STANDARD ALTERNATE RESTRAINING DETAIL W.18 FOR ACCEPTABLE ALTERNATE RESTRAINING SYSTEMS.
 - PIPE GREATER THAN 12 INCH DIAMETER SHALL REQUIRE RESTRAINT JOINT PIPE FOR THE PROPER LENGTH.
 - COMPACT FITTINGS ARE NOT ACCEPTABLE. STANDARD FITTINGS SHALL BE USED WITH CONCRETE THRUST BLOCKING.
 - THRUST BLOCKS SHALL BE INSTALLED ON SEWER FORCE MAIN IN THE MANNER SHOWN.
 - IF SAC-CRETE IS USED, MIXING MUST BE ON SITE UTILIZING A MECHANICAL MIXER.
 - NO CONCRETE SHALL BE PLACED ON BOLTS. WRAP JOINT FITTINGS WITH PLASTIC.
 - CONCRETE SHALL BE A MINIMUM 3,000PSI.
 - ALL BEARING SURFACES SHALL BE AGAINST UNDISTURBED SOIL AND SHALL BE APPROVED BY FAYPWC PROJECT COORDINATOR PRIOR TO PLACEMENT OF CONCRETE.
 - USE OF RESTRAINED JOINT DUCTILE IRON WILL BE REQUIRED IF SOIL CONDITIONS DO NOT ALLOW THE USE OF THRUST BLOCKS.
 - ALL VERTICAL BENDS SHALL BE RESTRAINED USING RESTRAINED JOINT DUCTILE IRON PIPE.

CONCRETE THRUST BLOCK DETAIL N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.17	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	09/05	REVISED TABLE
DATE: JULY 01, 2018	APPROVED BY: J.E.G.			2	02/07	ADDED NOTES 9 AND 10	
				3	07/13	ADDED TAPPING SLEEVE AND VALVE DETAIL	



ALTERNATE RESTRAINT DETAIL (DUCTILE IRON PIPE ONLY) N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.18	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	11/16/07	REVISED TABLE, ADDED NOTE 8
DATE: JULY 01, 2018	APPROVED BY: J.E.G.						



WATER MAIN BEDDING DETAIL N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.19	DWG. BY: FAYPWC	WATER RESOURCES ENGINEERING DEPARTMENT		1	01/01/17	REVISED NOTES
DATE: JULY 01, 2018	APPROVED BY: J.E.G.			2	07/01/13	REVISED NOTE RE: TRACER WIRE	

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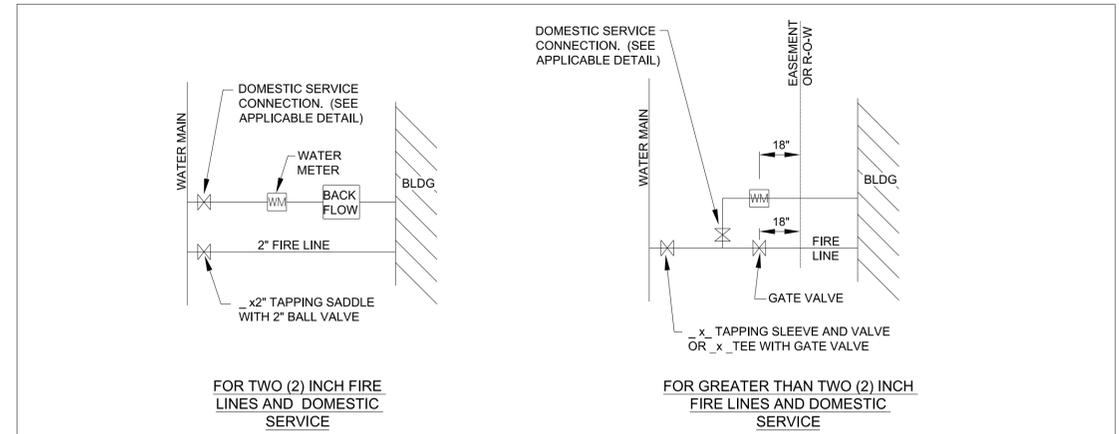
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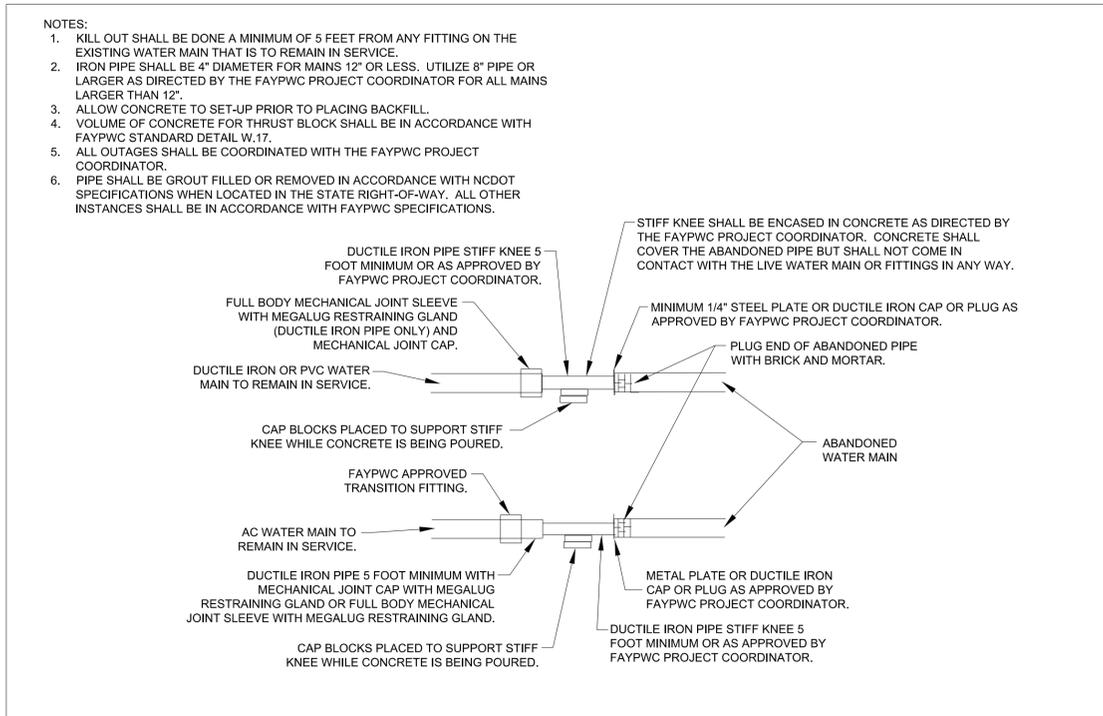
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PROJECT REFERENCE NO.	SHEET NO.
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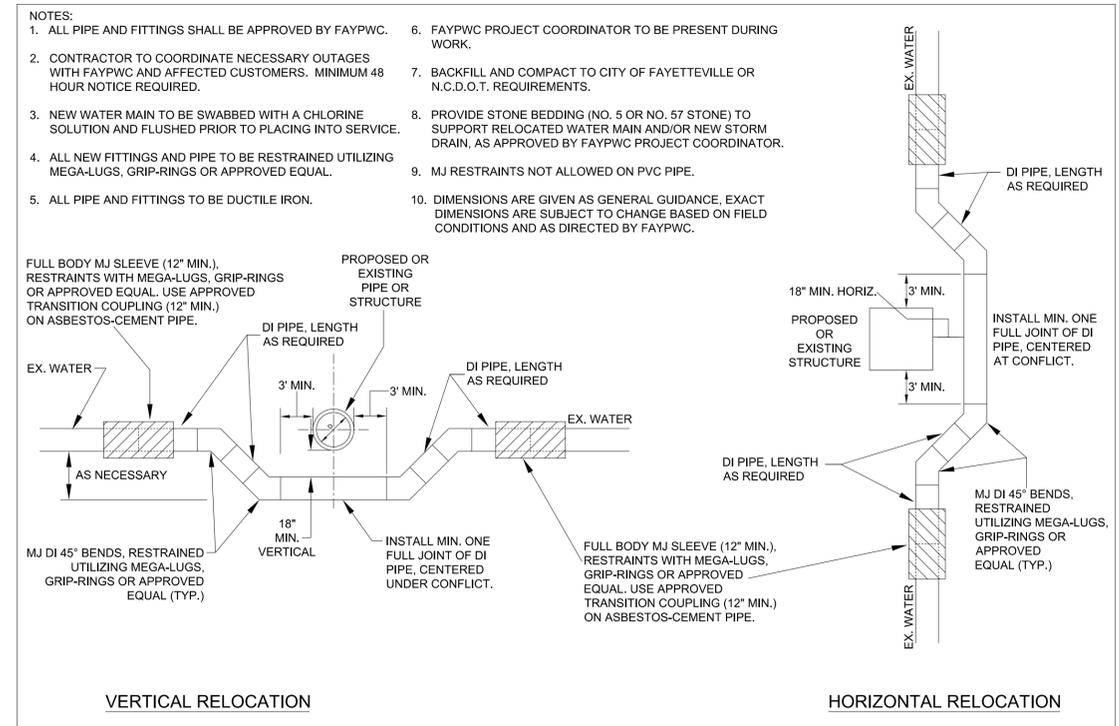


- NOTES:**
- DOMESTIC BACKFLOW MAY BE LOCATED INSIDE THE BUILDING.
 - THE FIRE LINE SHALL HAVE A BACKFLOW DEVICE WITHIN 100 FEET OF THE MAIN.
 - REFER TO THE CROSS CONNECTION CONTROL ORDINANCE FOR ADDITIONAL INFORMATION ON BACKFLOW REQUIREMENTS.
 - REFER TO APPROPRIATE METER BOX DETAIL FOR ADDITIONAL INFORMATION.
 - IF THE FIRE LINE HAS A DOMESTIC OR IRRIGATION SERVICE, BOTH THE FIRE LINE AND SERVICE SHALL BE TESTED AND DISINFECTED, REGARDLESS OF THE LENGTH.
 - IF THE FIRE LINE DOES NOT HAVE ANY SERVICES CONNECTED TO IT, DISINFECTATION IS ONLY REQUIRED IF THE TOTAL LENGTH OF THE FIRE LINE IS GREATER THAN 20 LINEAR FEET (i.e., ONE (1) FULL JOINT OF PIPE.)
 - IF THE FIRE LINE IS GREATER THAN 20 LINEAR FEET, THEN IT SHALL BE PRESSURE TESTED.
 - ALL TESTING AND DISINFECTATION SHALL BE DONE IN ACCORDANCE WITH FAYPWC REQUIREMENTS.

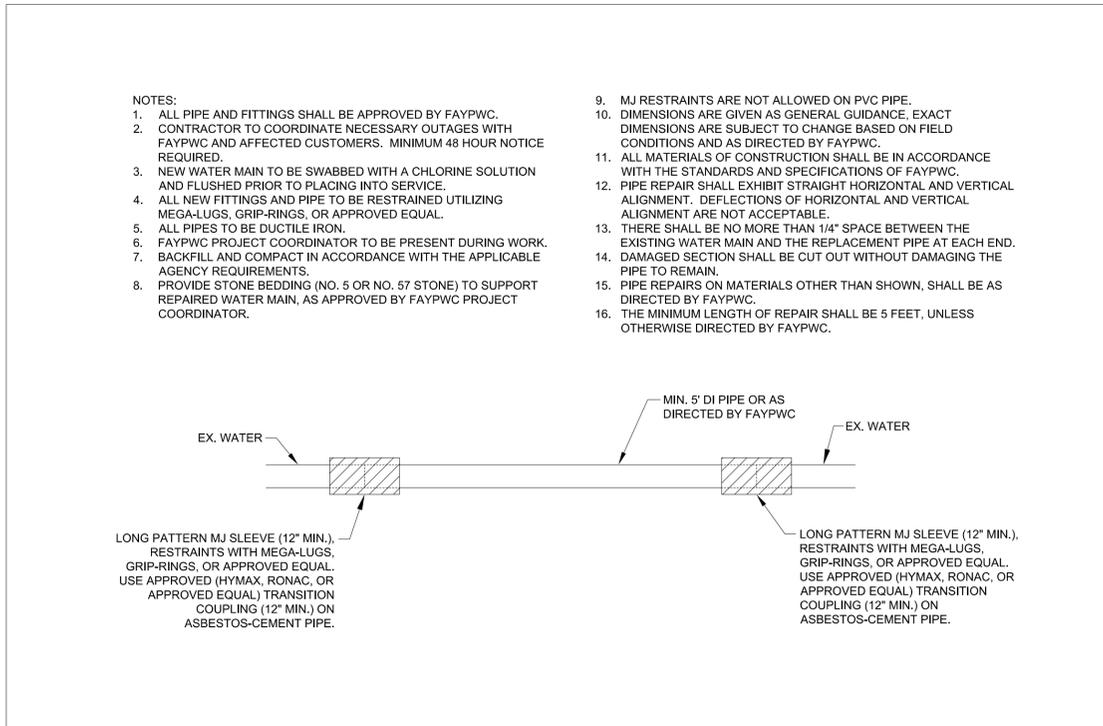
STANDARD TAPS N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.21 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	10/17	ADDED NOTES 4, 5, 6, 7, 8.



WATER MAIN KILL-OUT N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO. W.22 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT				



PIPE RELOCATION DETAIL N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO.: W.26 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT		1	01/12	REVISED NOTES, ADDED HORIZONTAL RELOCATION



PIPE REPAIR DETAIL N.T.S.		FAYETTEVILLE PUBLIC WORKS COMMISSION FAYETTEVILLE, N.C.			NO.	DATE	REVISION
SHEET NO. 1 OF 1	DWG. NO.: W.31 DATE: JULY 01, 2018	DWG. BY: FAYPWC APPROVED BY: J.E.G.	WATER RESOURCES ENGINEERING DEPARTMENT				

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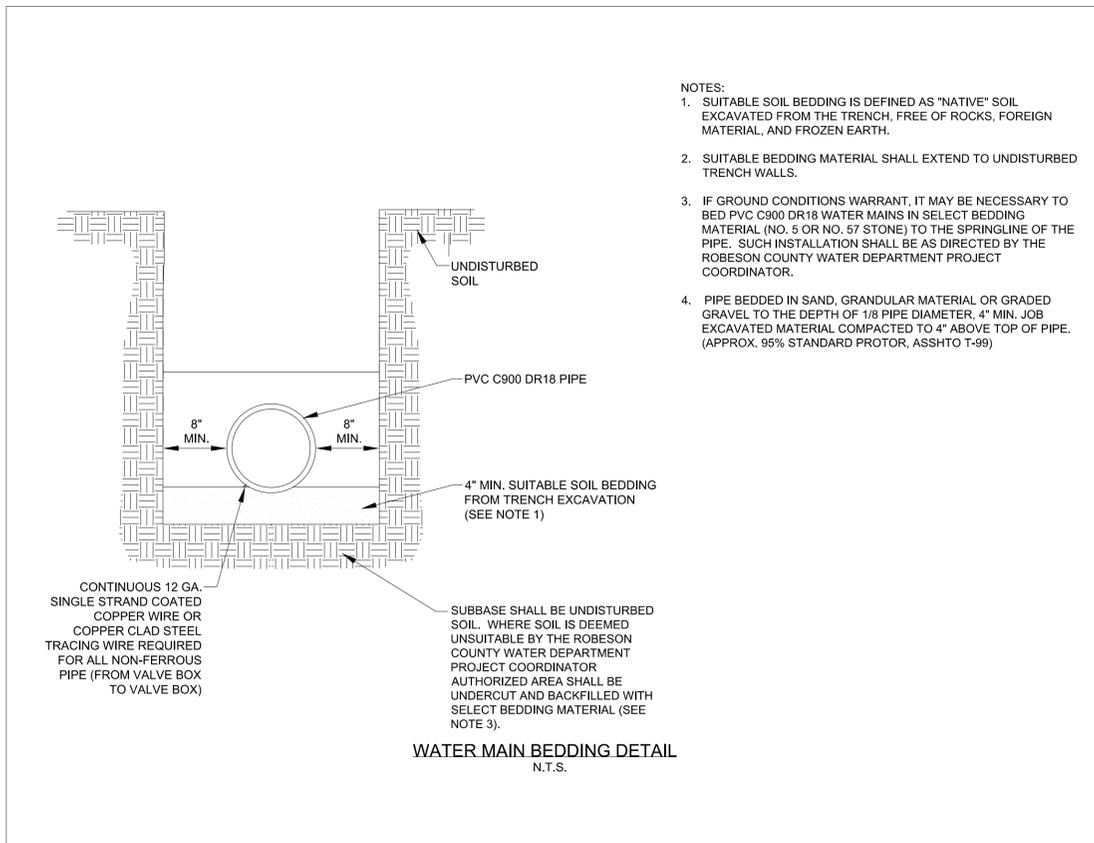
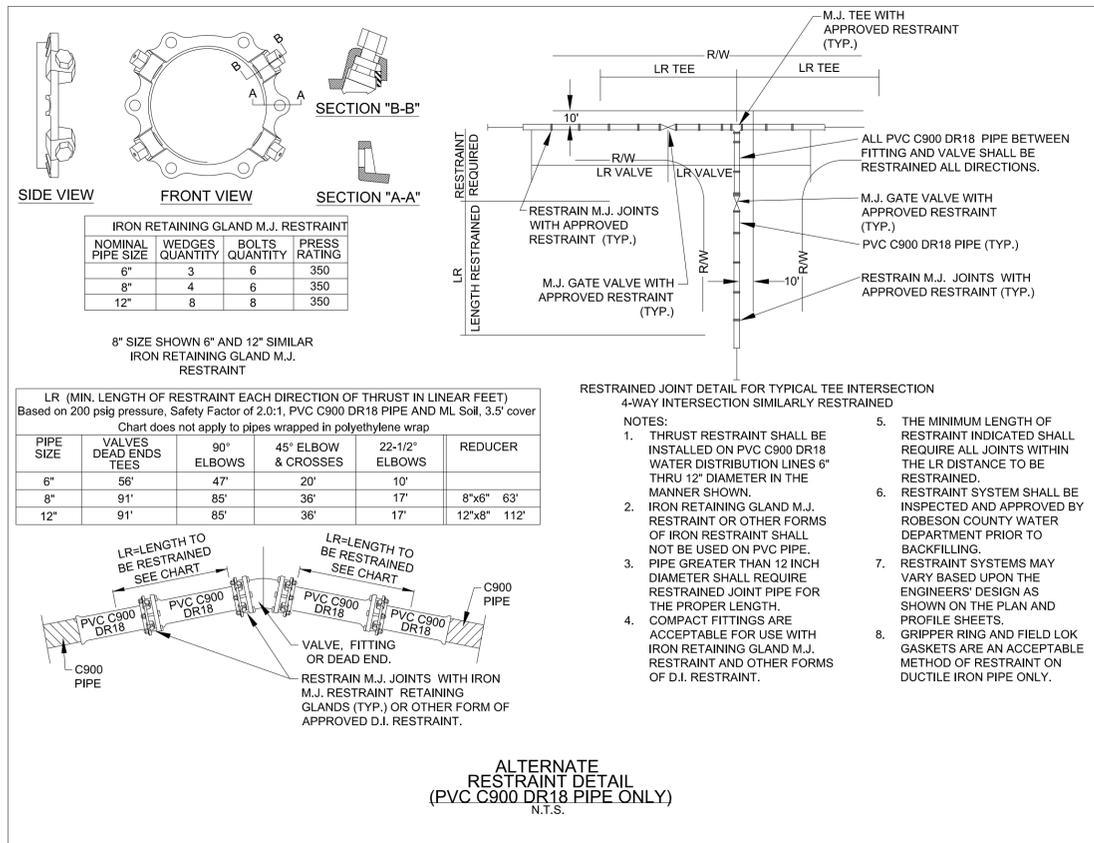
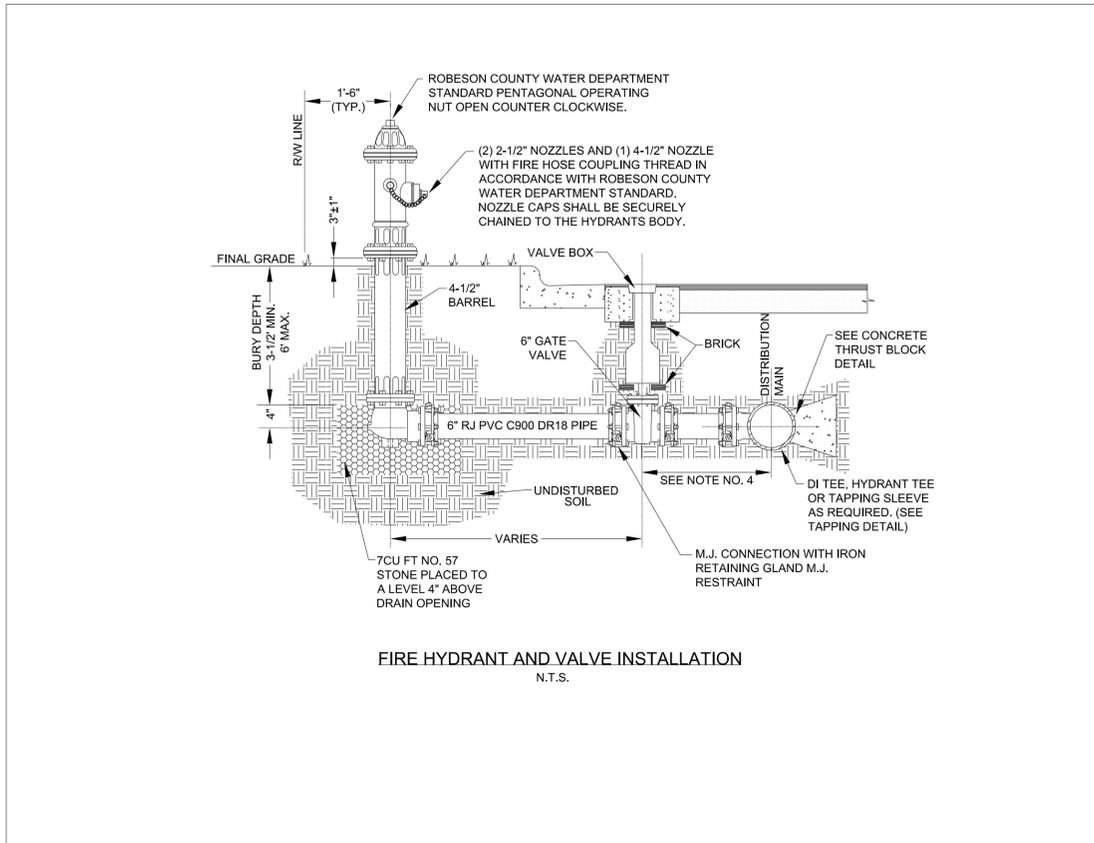
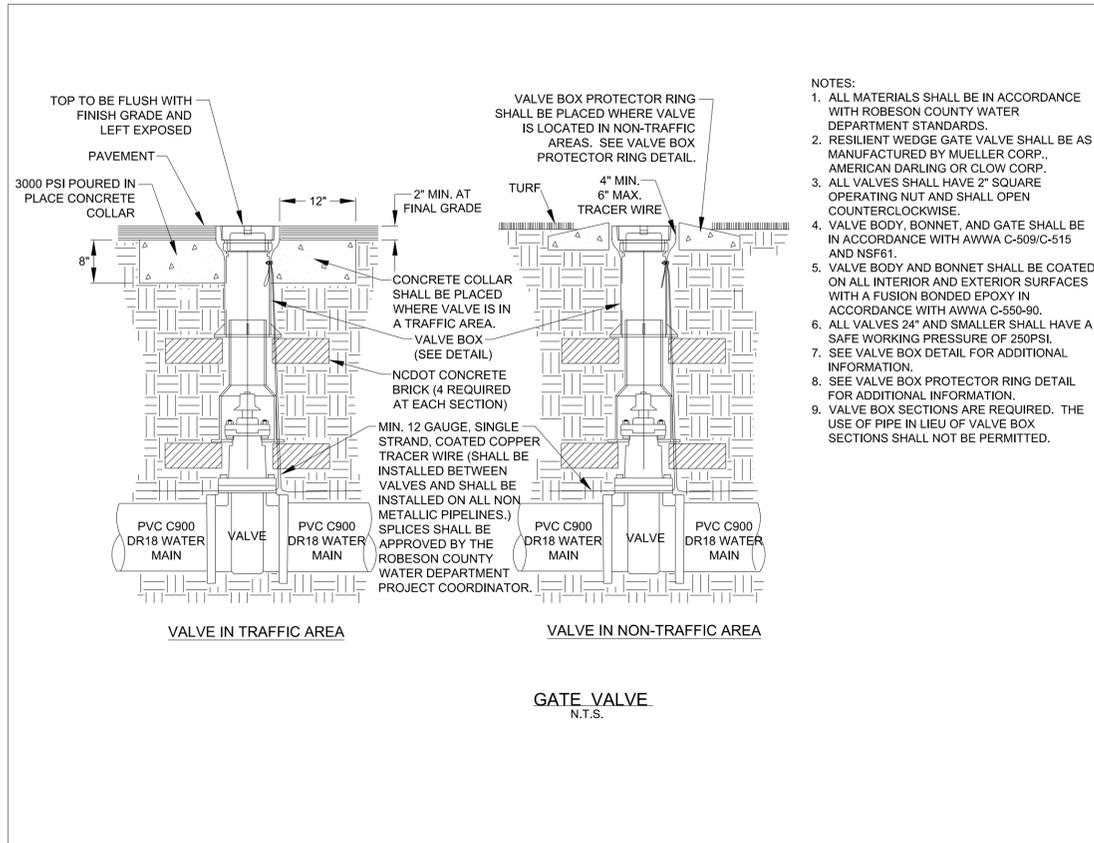
ROBESON COUNTY WATER DEPARTMENT PROJECT SPECIFIC DETAILS

CUMBERLAND COUNTY
ROBESON COUNTY

PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	UC-3G
DESIGNED BY: DRF	
DRAWN BY: DRD	
CHECKED BY: DWH	
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- NOTES:**
- SUITABLE SOIL BEDDING IS DEFINED AS "NATIVE" SOIL EXCAVATED FROM THE TRENCH, FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.
 - SUITABLE BEDDING MATERIAL SHALL EXTEND TO UNDISTURBED TRENCH WALLS.
 - IF GROUND CONDITIONS WARRANT, IT MAY BE NECESSARY TO BED PVC C900 DR18 WATER MAINS IN SELECT BEDDING MATERIAL (NO. 5 OR NO. 57 STONE) TO THE SPRINGLINE OF THE PIPE. SUCH INSTALLATION SHALL BE AS DIRECTED BY THE ROBESON COUNTY WATER DEPARTMENT PROJECT COORDINATOR.
 - PIPE BEDDED IN SAND, GRANULAR MATERIAL OR GRADED GRAVEL TO THE DEPTH OF 1/8 PIPE DIAMETER, 4" MIN. JOB EXCAVATED MATERIAL COMPACTED TO 4" ABOVE TOP OF PIPE. (APPROX. 95% STANDARD PROTOR, ASSHTO T-99)

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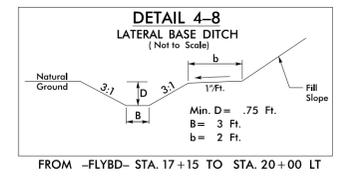
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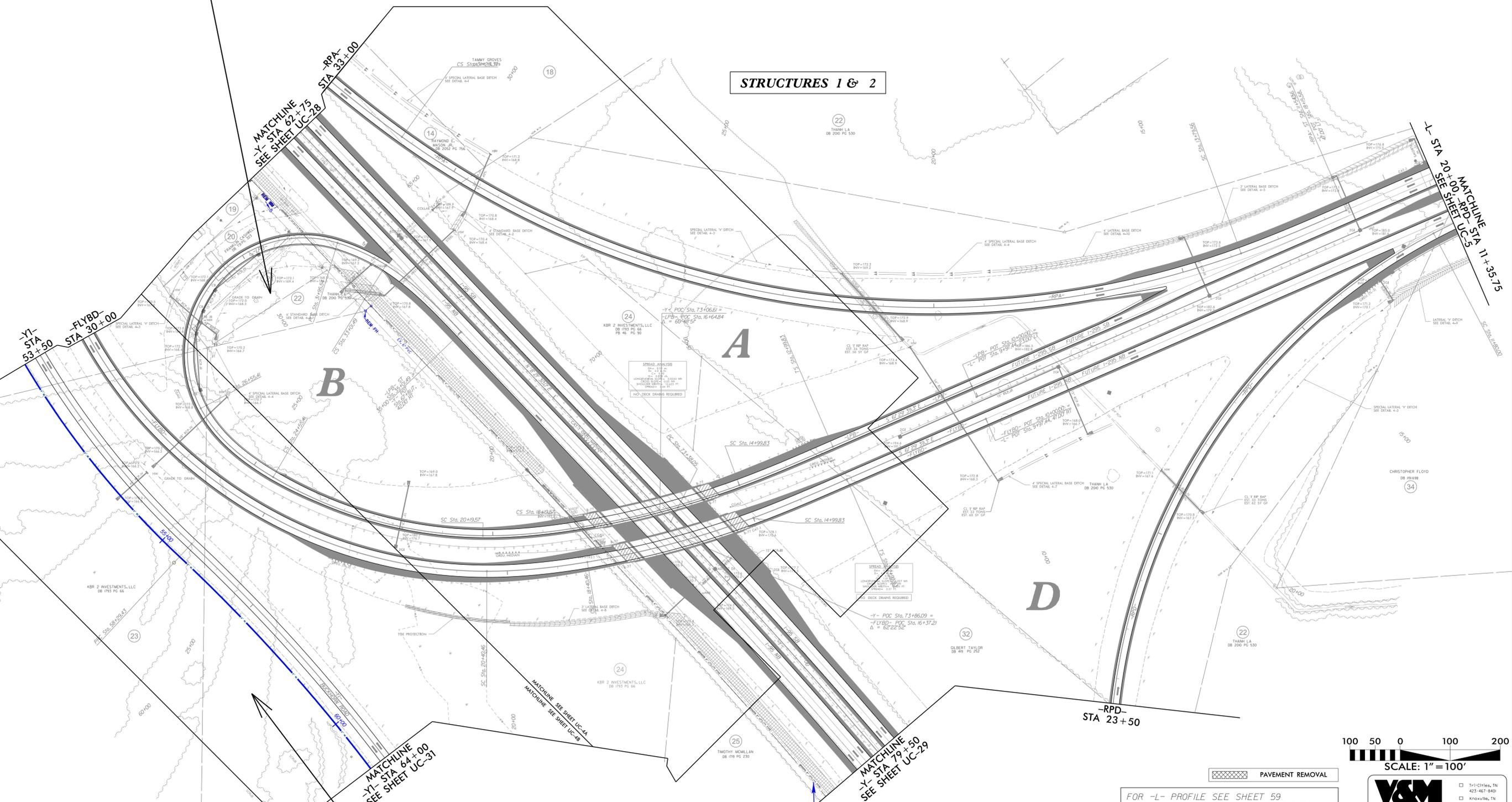
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* ROBESON COUNTY

PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. UC-4
DESIGNED BY: DRF	
DRAWN BY: DRF	
CHECKED BY: DWH	
APPROVED BY: DWH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED	
UTILITY CONSTRUCTION	



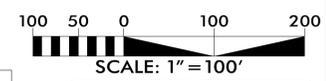
SEE UC-4B
FOR WATER LINE CONSTRUCTION

STRUCTURES 1 & 2



SEE UC-4A
FOR WATER LINE CONSTRUCTION

ABANDON 231 LF 6" UTILITY PIPE
(6540 LF TOTAL)



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

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843-374-1600
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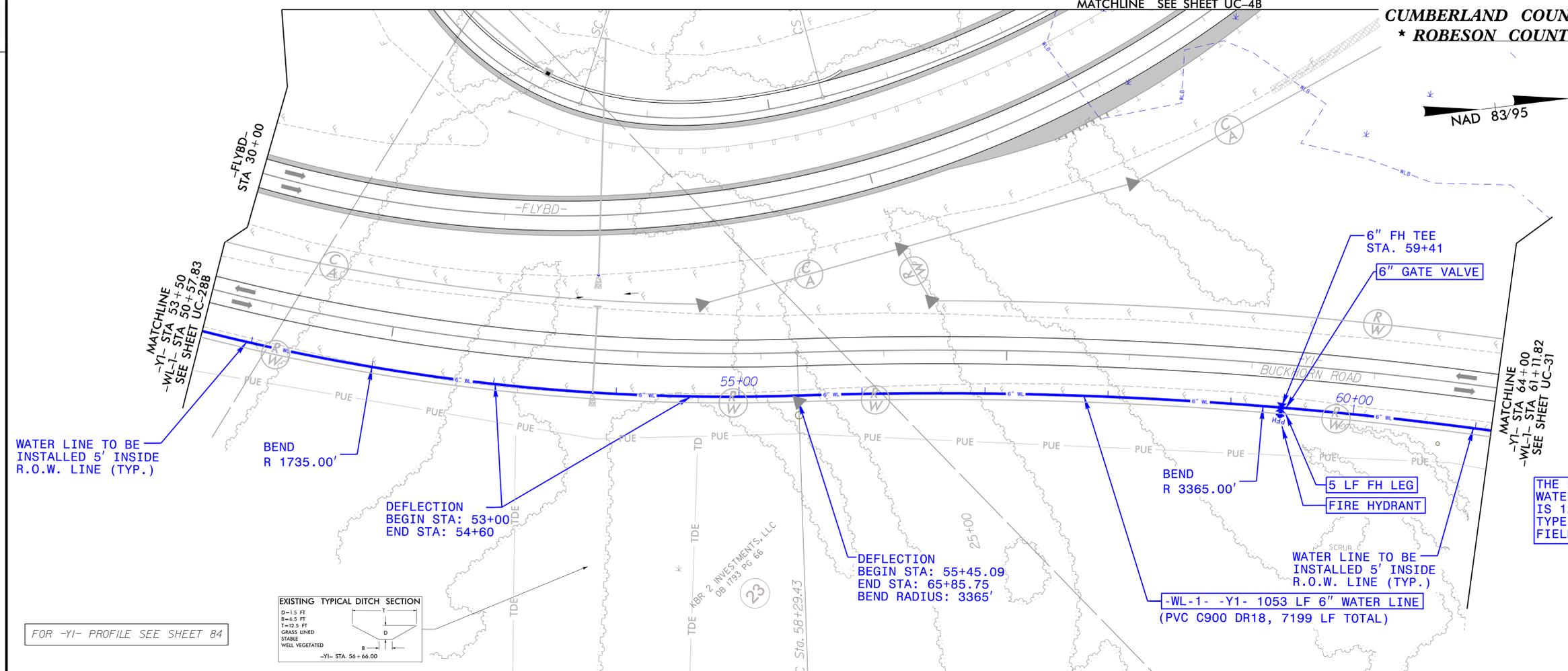
828-253-2796
828-355-9933

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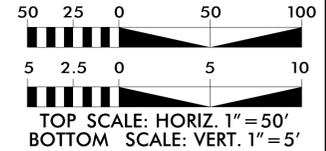
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10-15-18

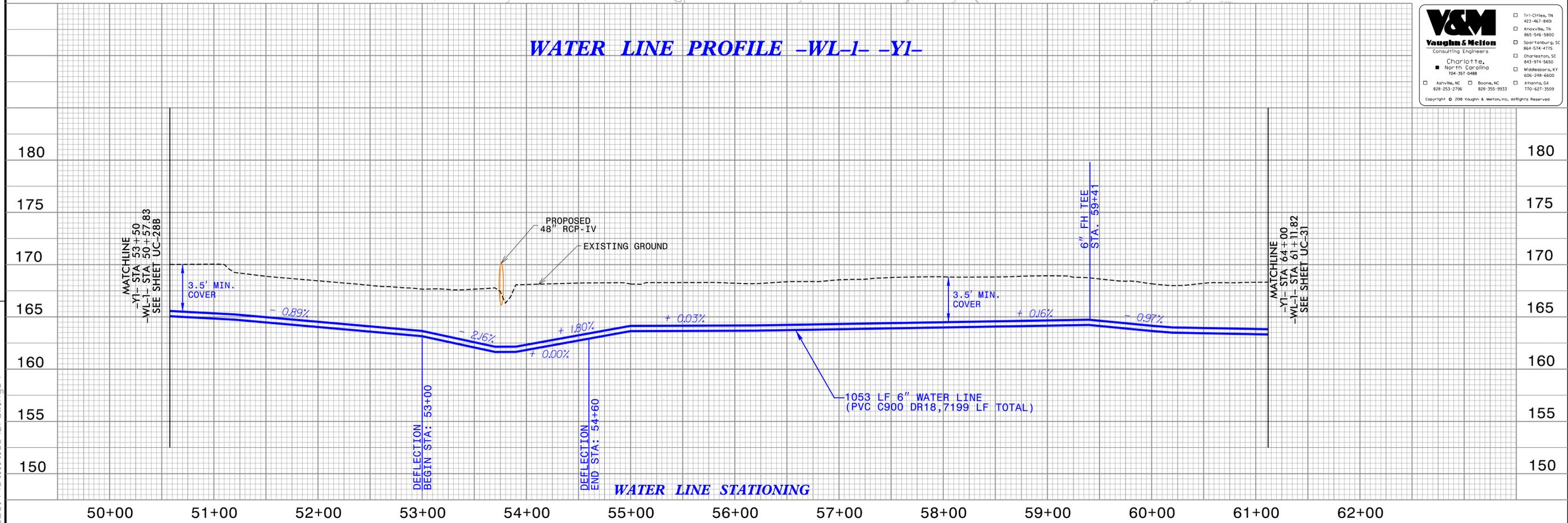
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 125 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



WATER LINE PROFILE -WL-1- -Y1-



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- Charleston, SC 843-974-5650
- Midwestport, KY 606-248-6600
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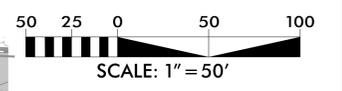
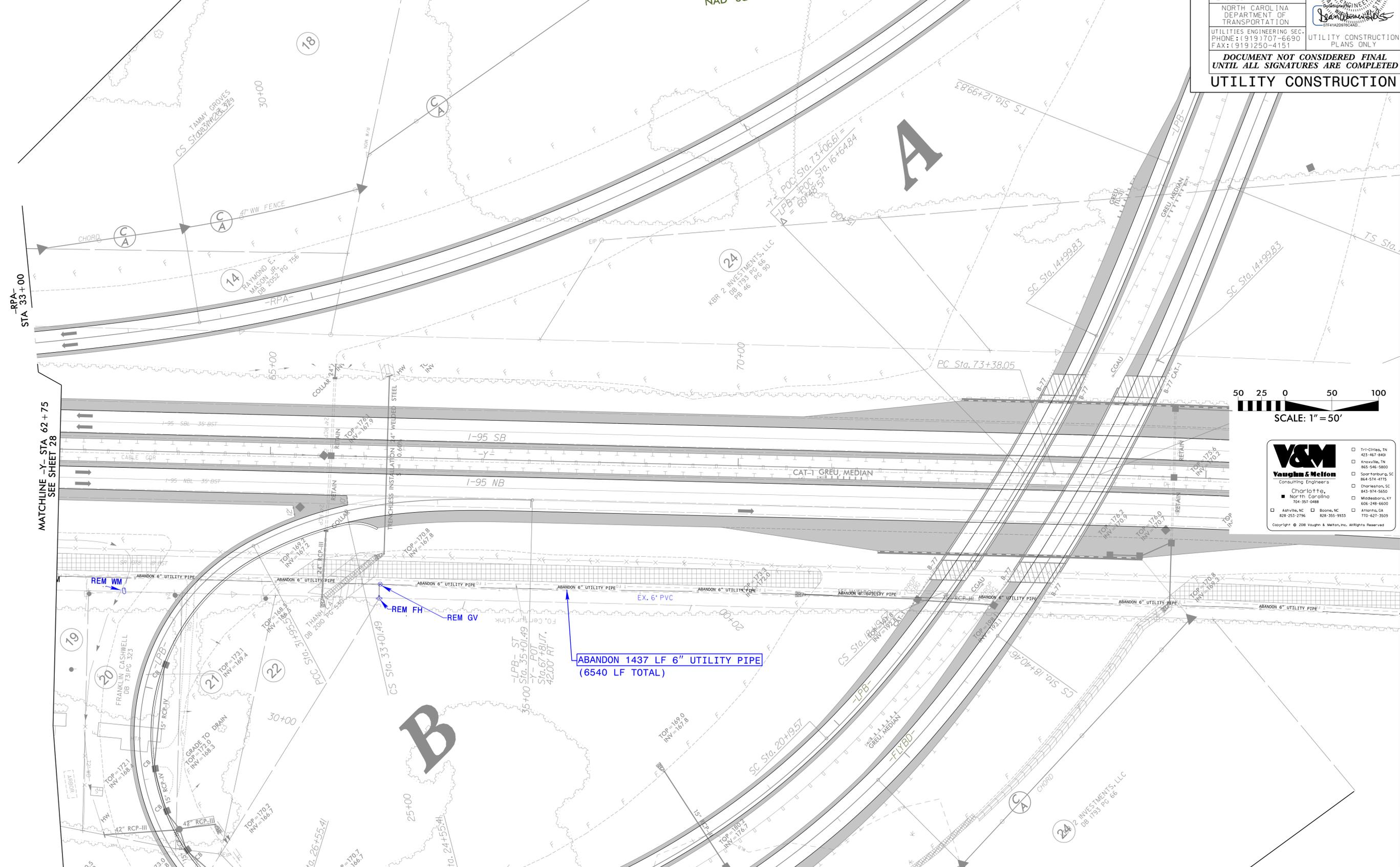
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FOR -Y- PROFILE SEE SHEETS 75 & 76
FOR -FLYBD- PROFILE SEE SHEETS 79 & 80
FOR -LPB- PROFILE SEE SHEET 82

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PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	UC-4B
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PAVEMENT REMOVAL



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MATCHLINE -Y- STA 62 + 75
SEE SHEET 28

MATCHLINE SEE SHEET UC-4A

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PROJECT REFERENCE NO.	SHEET NO.
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UTILITY CONSTRUCTION	



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

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 240 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

ABANDON 200 LF 6" UTILITY PIPE
(1201 LF TOTAL)

45° BEND (HORIZONTAL)
-WL-4- STA. 26+85

-WL-4- 163 LF 6" WATER LINE
(PVC C900 DR18, 1,239 LF TOTAL)

-WL-4- 54 LF 6" WATER LINE
(PVC C900 DR18, 1,239 LF TOTAL)

-WL-4- STA. 27+39.10
-Y4- STA. 26+99.86 LT 15.28
TIE-IN TO EXISTING 6" WATER LINE
W/LONG PATTERN SLEEVE & GATE VALVE

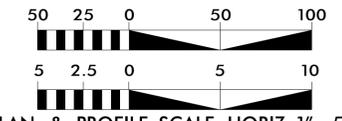
MATCHLINE
-Y4- STA. 25+00
-WL-4- STA. 25+21.86
SEE SHEET UC-34A

PLUG EXIST.
6" WL

45° BEND (HORIZONTAL)
-WL-4- STA. 27+29.10

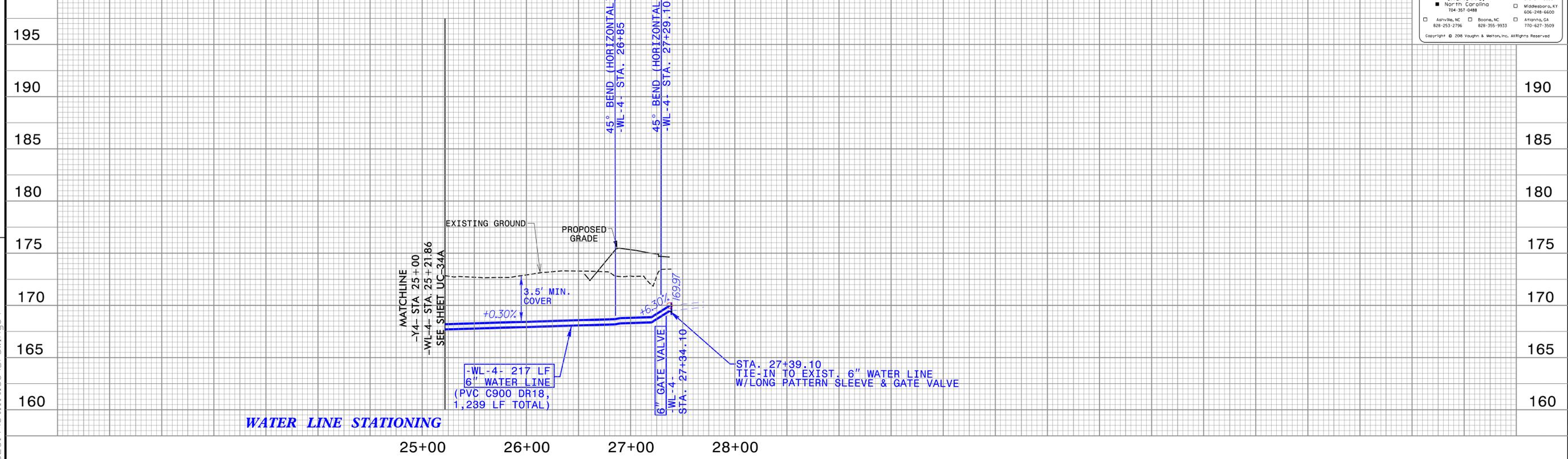
6" GATE VALVE
-WL-4- STA. 27+34.10

-WL-4- STA. 27+39.10
-Y4- STA. 26+99.86
OFFSET 15.28' LT



PLAN & PROFILE SCALE: HORIZ. 1" = 50'
PROFILE SCALE: VERT. 1" = 5'

WATER LINE PROFILE -WL-4- -Y4-



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APPROVED BY: DWH	
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UTILITY CONSTRUCTION	

SEE UC-10A
FOR WATER LINE CONSTRUCTION

MATCHLINE
-Y7- STA 68+00 SEE SHEET UC-47

MATCHLINE -L-
STA 86+50 SEE SHEET 9

-Y7RPC-
STA 16+50

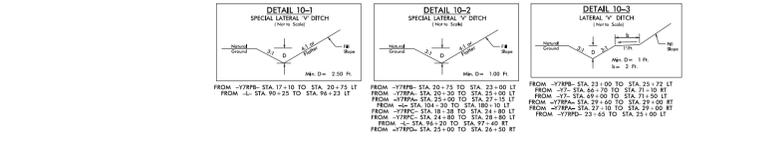
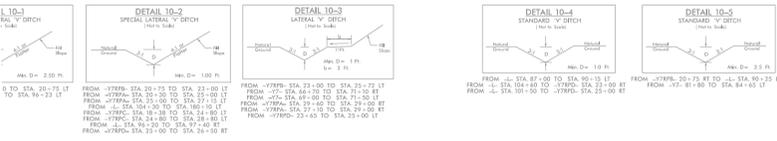
-Y7RPB-
STA 17+00

-Y7RPA-
STA 18+00

MATCHLINE -L-
STA 114+00 SEE SHEET 11

-Y7RPD-
STA 19+00

MATCHLINE
-Y7- STA 84+00 SEE SHEET UC-48



PAVEMENT REMOVAL

FOR -L- PROFILE SEE SHEETS 62 & 63
 FOR -Y7- PROFILE SEE SHEET 95
 FOR -Y7RPA- PROFILE SEE SHEET 96
 FOR -Y7RPB- PROFILE SEE SHEET 97
 FOR -Y7RPC- PROFILE SEE SHEET 98
 FOR -Y7RPD- PROFILE SEE SHEET 99
 FOR -Y7RAB2- PROFILE SEE SHEET 100
 FOR -Y7RAB3- PROFILE SEE SHEET 100



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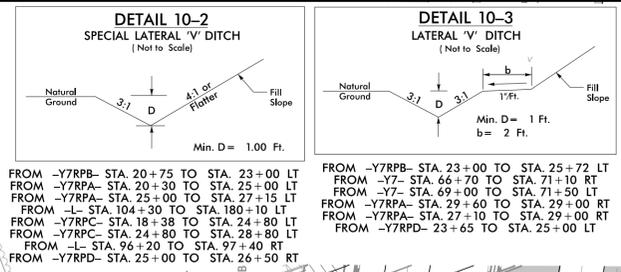


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PROJECT REFERENCE NO.	U-2519AA-AB	SHEET NO.	UC-10A
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APPROVED BY:	DWH		
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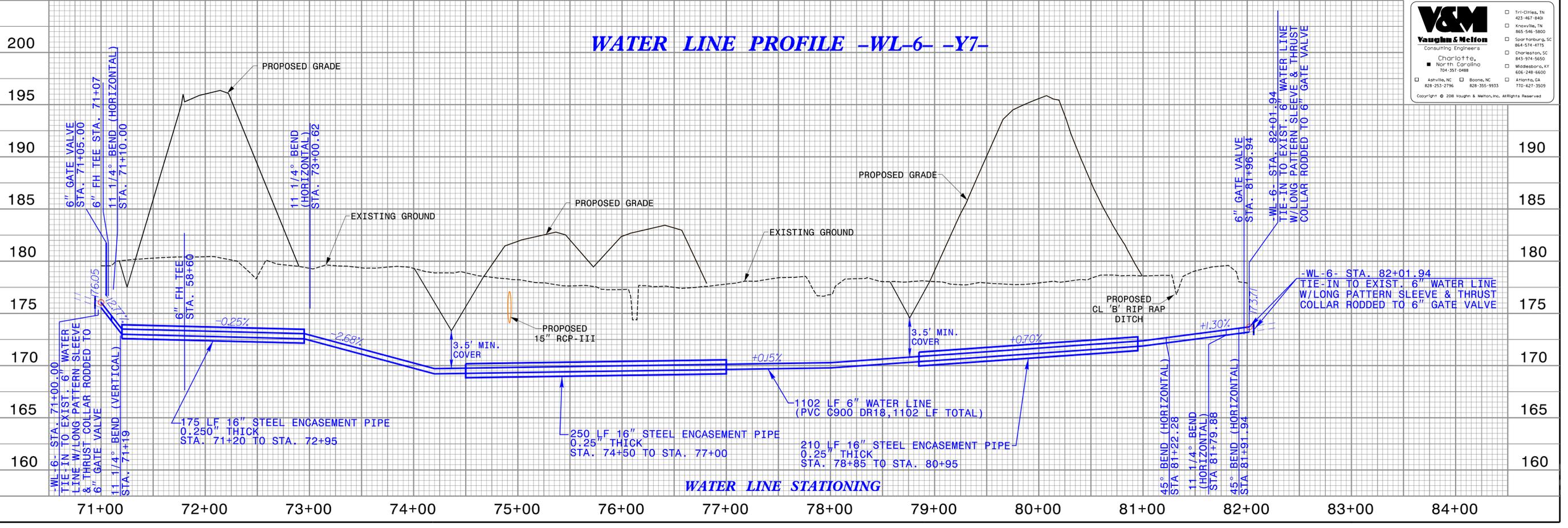
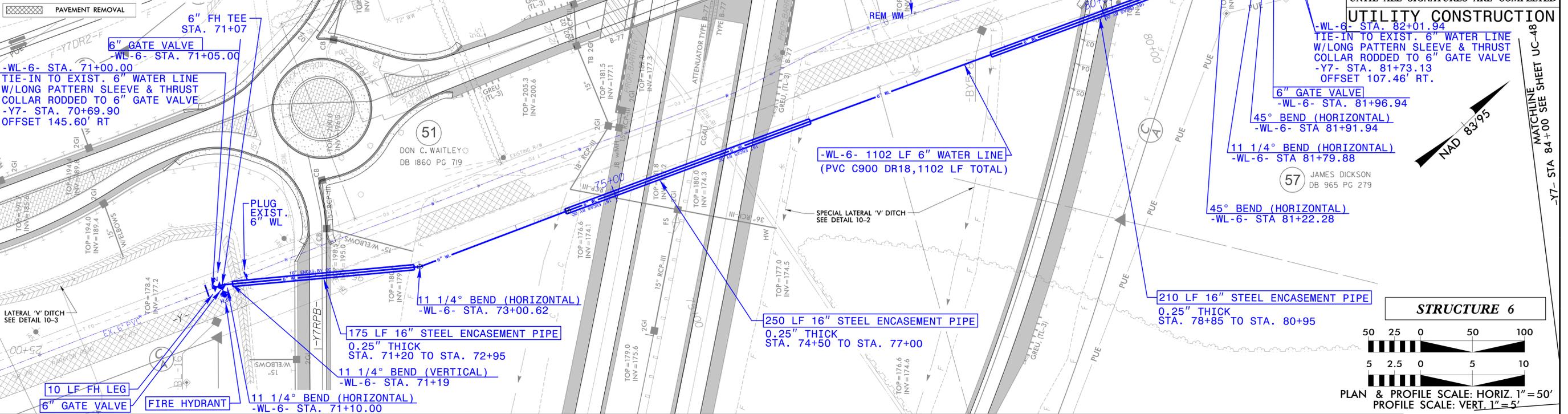
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 630 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

FOR -L- PROFILE SEE SHEETS 62 & 63
 FOR -Y7- PROFILE SEE SHEET 95
 FOR -Y7RPA- PROFILE SEE SHEET 96
 FOR -Y7RPB- PROFILE SEE SHEET 97
 FOR -Y7RPC- PROFILE SEE SHEET 98
 FOR -Y7RPD- PROFILE SEE SHEET 99
 FOR -Y7RAB2- PROFILE SEE SHEET 100
 FOR -Y7RAB3- PROFILE SEE SHEET 100



FROM -Y7RPB- STA. 20+75 TO STA. 23+00 LT
 FROM -Y7RPA- STA. 20+30 TO STA. 25+00 LT
 FROM -Y7RPA- STA. 25+00 TO STA. 27+15 LT
 FROM -L- STA. 104+30 TO STA. 180+10 LT
 FROM -Y7RPC- STA. 18+38 TO STA. 24+80 LT
 FROM -Y7RPC- STA. 24+80 TO STA. 28+80 LT
 FROM -L- STA. 96+20 TO STA. 97+40 RT
 FROM -Y7RPD- STA. 25+00 TO STA. 26+50 RT

FROM -Y7RPB- STA. 23+00 TO STA. 25+72 LT
 FROM -Y7- STA. 66+70 TO STA. 71+10 RT
 FROM -Y7- STA. 69+00 TO STA. 71+50 LT
 FROM -Y7RPA- STA. 29+60 TO STA. 29+00 RT
 FROM -Y7RPA- STA. 27+10 TO STA. 29+00 RT
 FROM -Y7RPD- STA. 23+65 TO STA. 25+00 LT



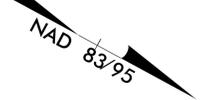
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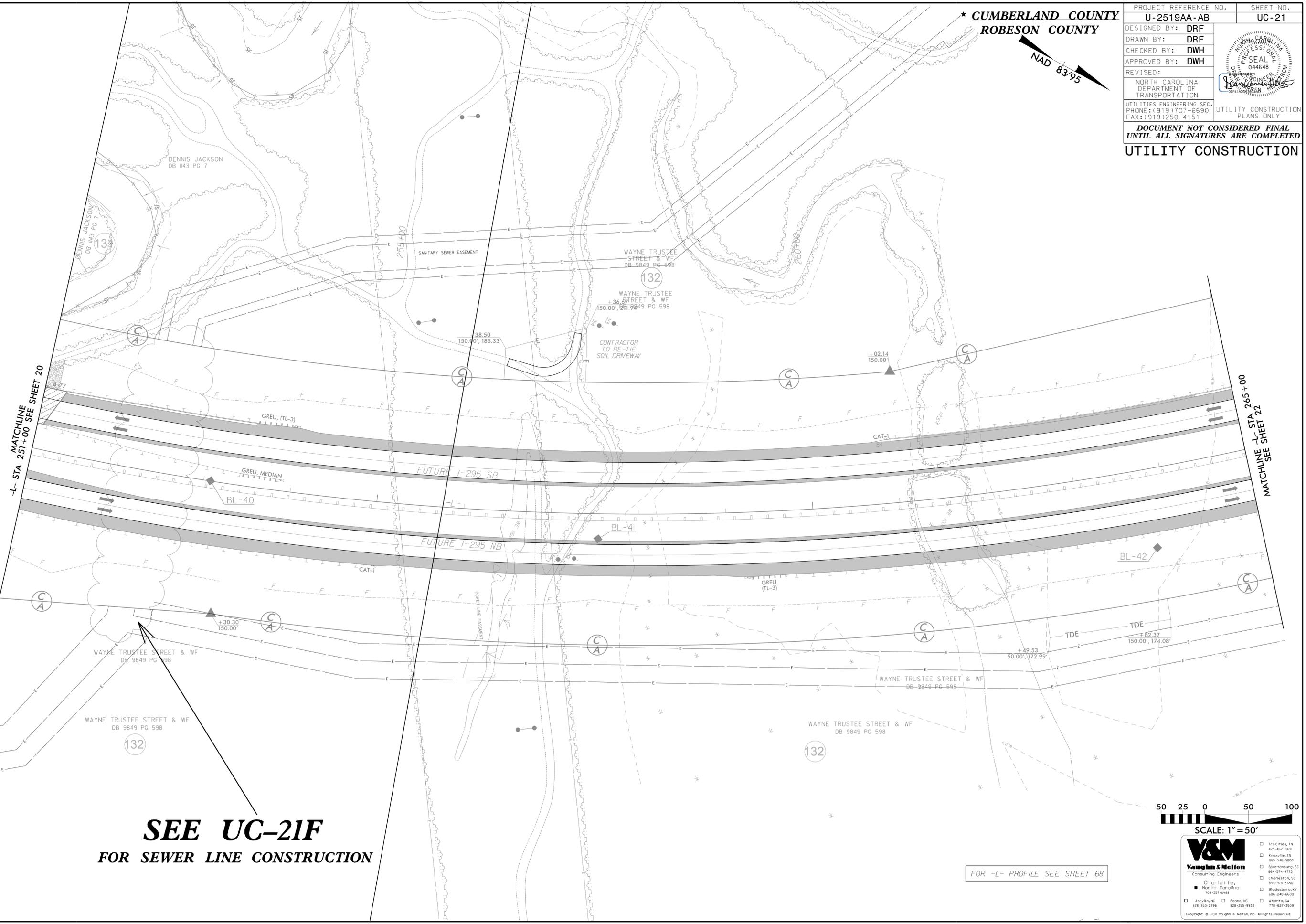
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PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	UC-21
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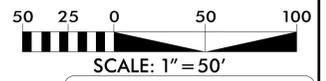


-L- STA 251+00 MATCHLINE SEE SHEET 20

MATCHLINE -L- STA 265+00 SEE SHEET 22

**SEE UC-21F
FOR SEWER LINE CONSTRUCTION**

FOR -L- PROFILE SEE SHEET 68



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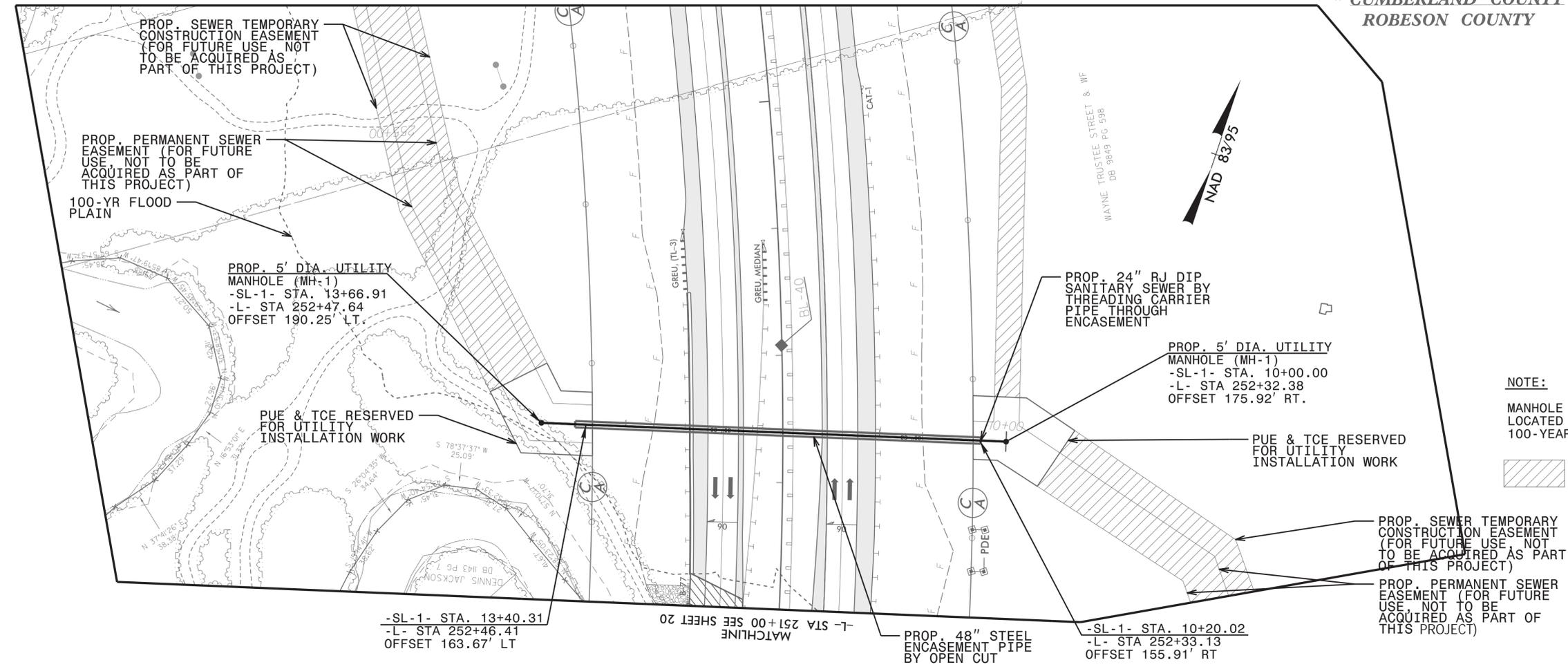
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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. UC-21F
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APPROVED BY: CS	
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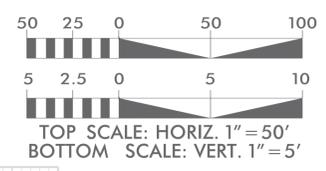
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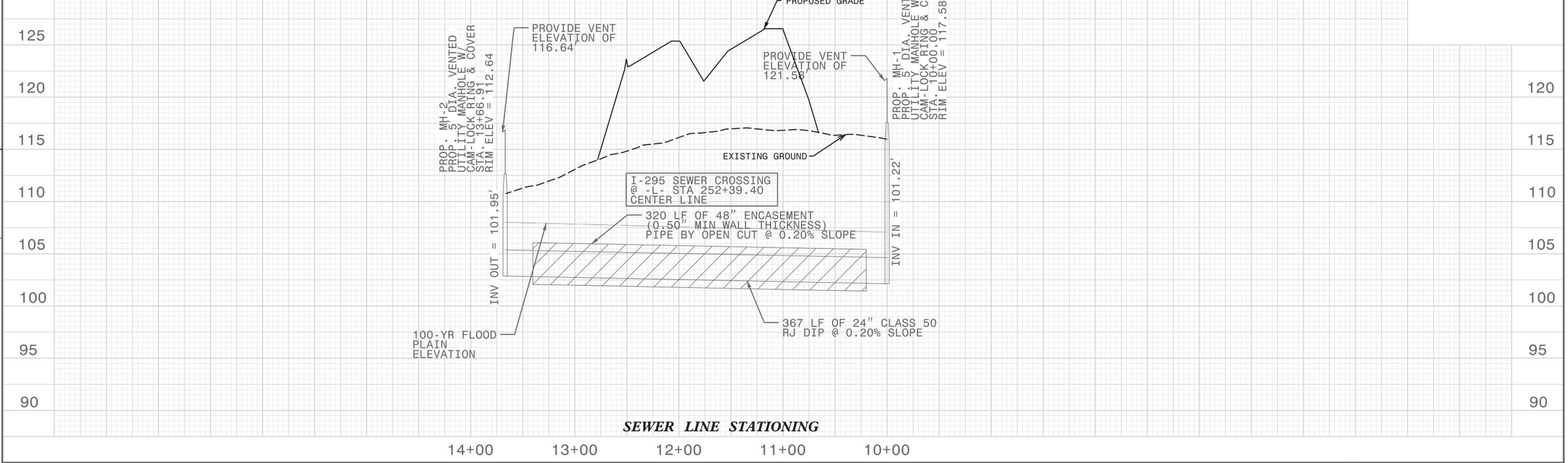


NOTE:
MANHOLE 1 & MANHOLE 2 ARE LOCATED WITHIN THE 100-YEAR FLOOD PLAIN.

TO BE ACQUIRED BY OTHERS



SEWER LINE PROFILE

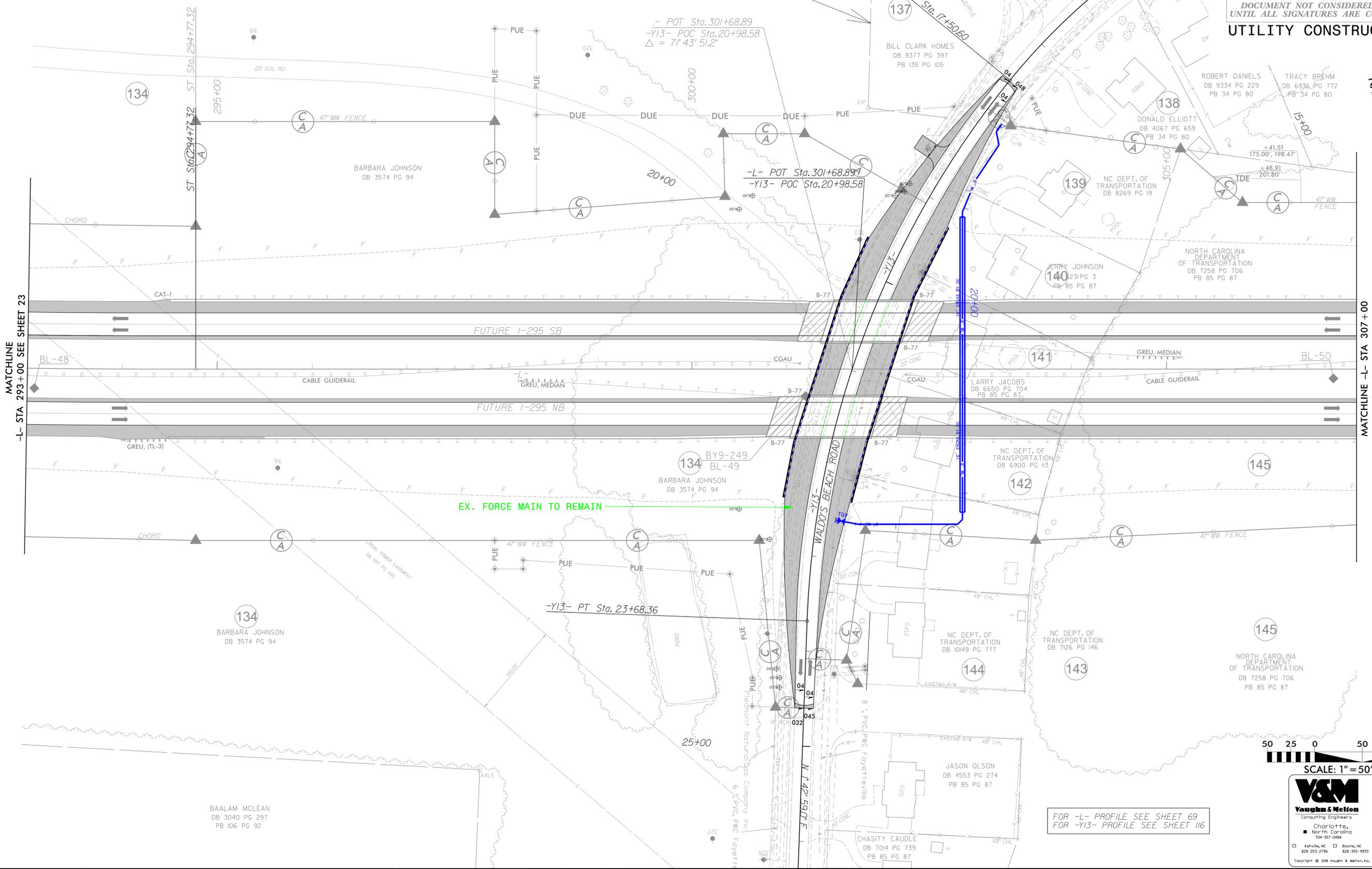


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SEE UC-24A WATER



MATCHLINE
-L- STA 293+00 SEE SHEET 23

MATCHLINE -L- STA 307+00
SEE SHEET 25

NAD
86/95



SCALE: 1" = 50'

FOR -L- PROFILE SEE SHEET 69
FOR -Y13- PROFILE SEE SHEET 116

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BAALAM MCLEAN
DB 3040 PG 297
PB 106 PG 92

134
BARBARA JOHNSON
DB 3574 PG 94

134
BY9-249
BL-49
BARBARA JOHNSON
DB 3574 PG 94

JASON OLSON
DB 4553 PG 274
PB 85 PG 87

CHASITY CAUDLE
DB 7014 PG 739
PB 85 PG 87

143
NC DEPT. OF
TRANSPORTATION
DB 7258 PG 706
PB 85 PG 87

142
NC DEPT. OF
TRANSPORTATION
DB 6900 PG 113

141
LARRY JACOBS
DB 6650 PG 704
PB 85 PG 87

140
JERRY JOHNSON
DB 231 PG 3
PB 85 PG 87

140
NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION
DB 7258 PG 706
PB 85 PG 87

139
DONALD ELLIOTT
DB 4067 PG 659
PB 34 PG 80

138
ROBERT DANIELS
DB 9334 PG 229
PB 34 PG 80

138
TRACY BREHM
DB 6936 PG 772
PB 34 PG 80

137
BILL CLARK HOMES
DB 9377 PG 397
PB 135 PG 105

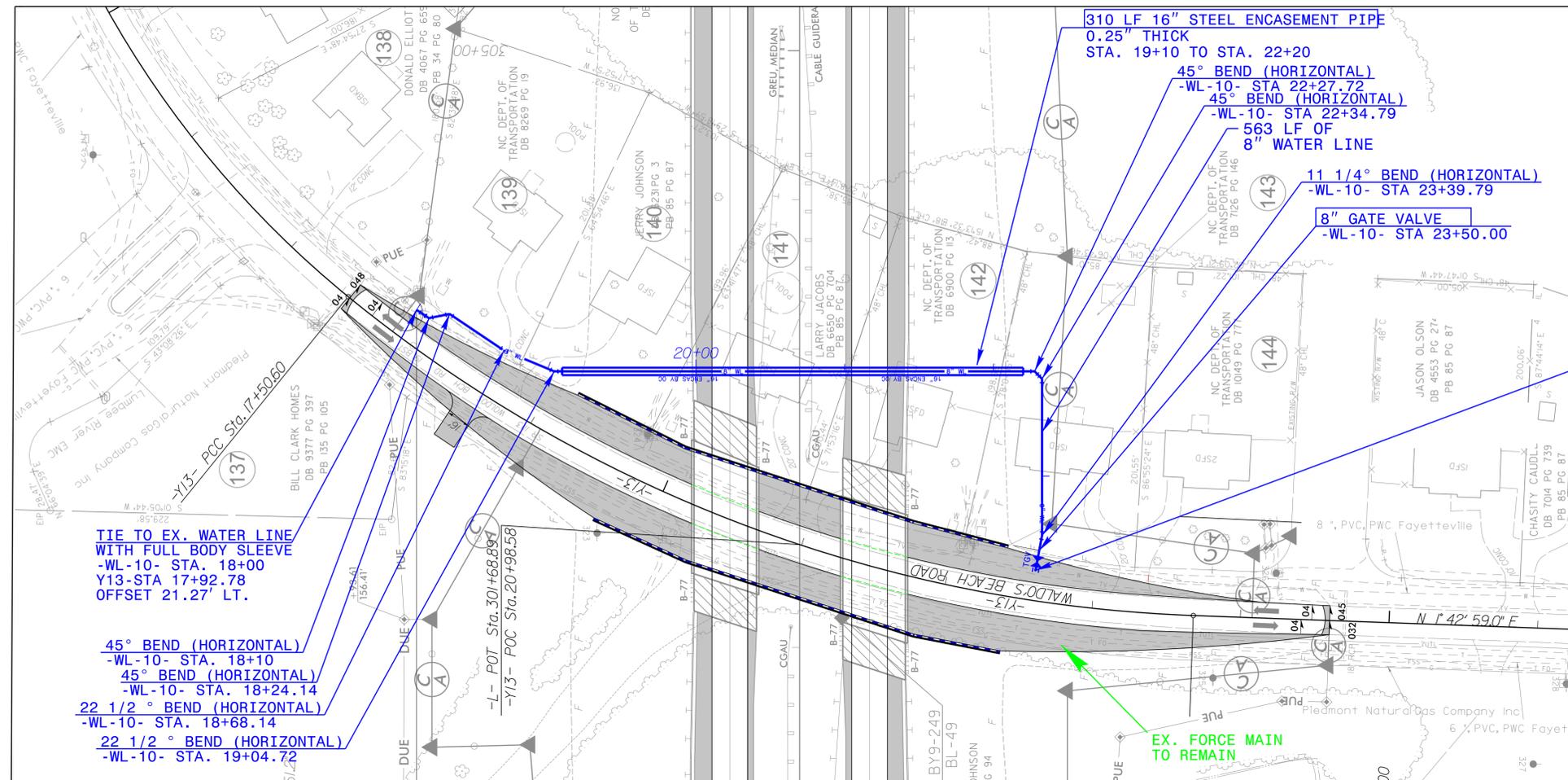
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TIE TO EX. WATER LINE
8" TAPPING SLEEVE AND VALVE
-WL-10- STA. 23+63.43
-Y13- STA 22+58.71
OFFSET 20.36' LT.

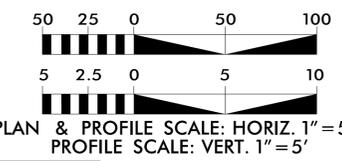
TIE TO EX. WATER LINE
WITH FULL BODY SLEEVE
-WL-10- STA. 18+00
Y13-STA 17+92.78
OFFSET 21.27' LT.

45° BEND (HORIZONTAL)
-WL-10- STA. 18+10
45° BEND (HORIZONTAL)
-WL-10- STA. 18+24.14
22 1/2 ° BEND (HORIZONTAL)
-WL-10- STA. 18+68.14
22 1/2 ° BEND (HORIZONTAL)
-WL-10- STA. 19+04.72

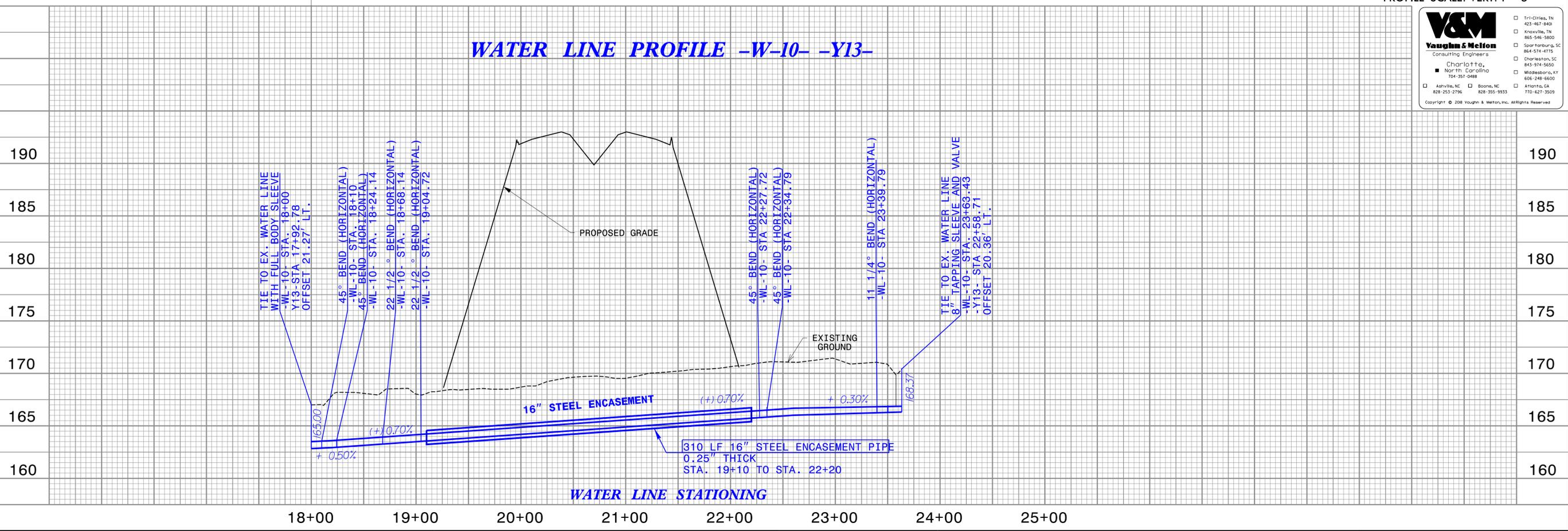
THE ESTIMATED QUANTITY OF DUCTILE IRON
WATER PIPE FITTINGS ON THIS PLAN SHEET
IS 1030 POUNDS. THE ACTUAL QUANTITY AND
TYPE OF FITTINGS WILL VARY BASED ON
FIELD CONDITIONS.

STRUCTURES 13 & 14

FOR -L- PROFILE SEE SHEET 69
FOR -Y13- PROFILE SEE SHEET 116



WATER LINE PROFILE -W-10- -Y13-



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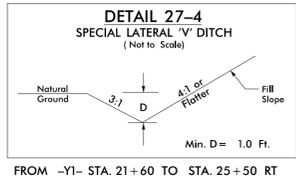
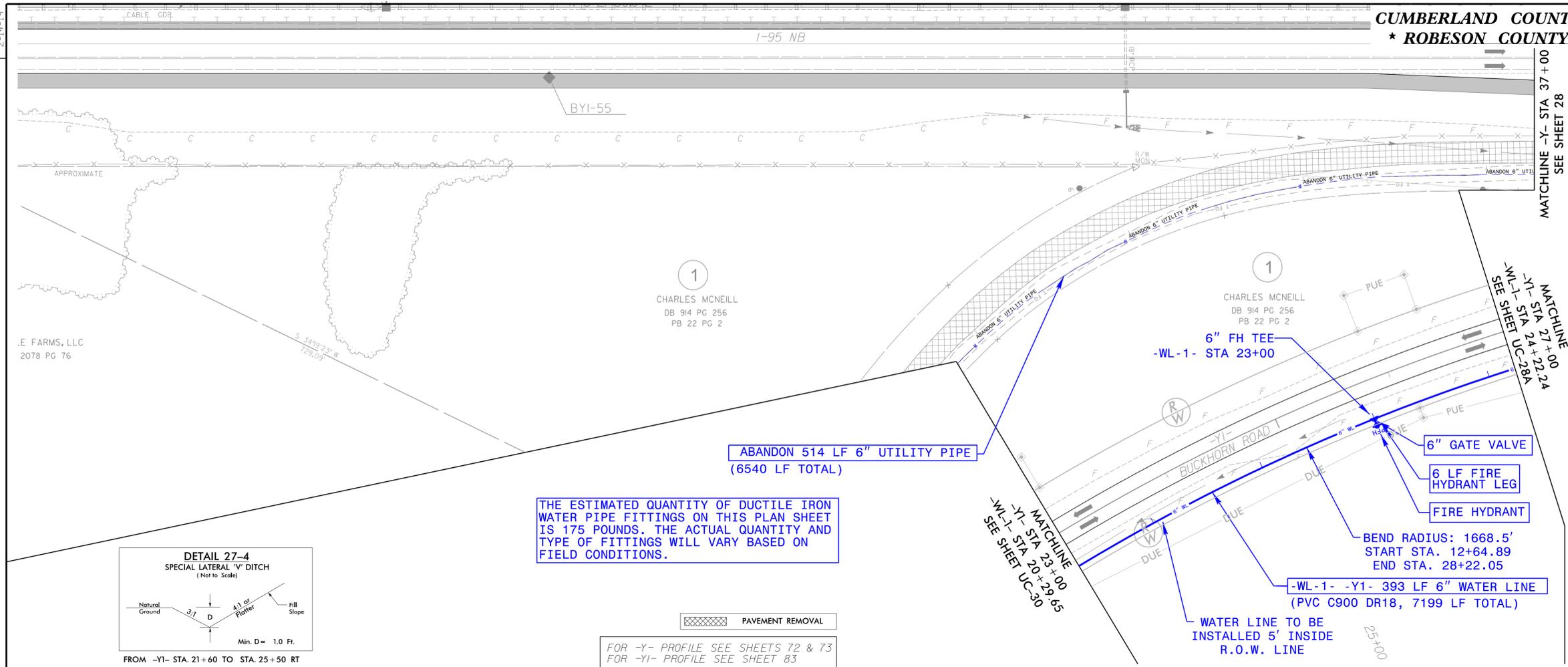
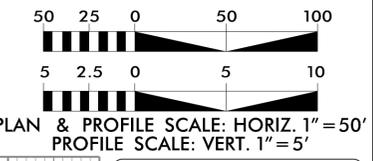
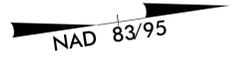
828-253-2796 828-355-9933
770-627-3509

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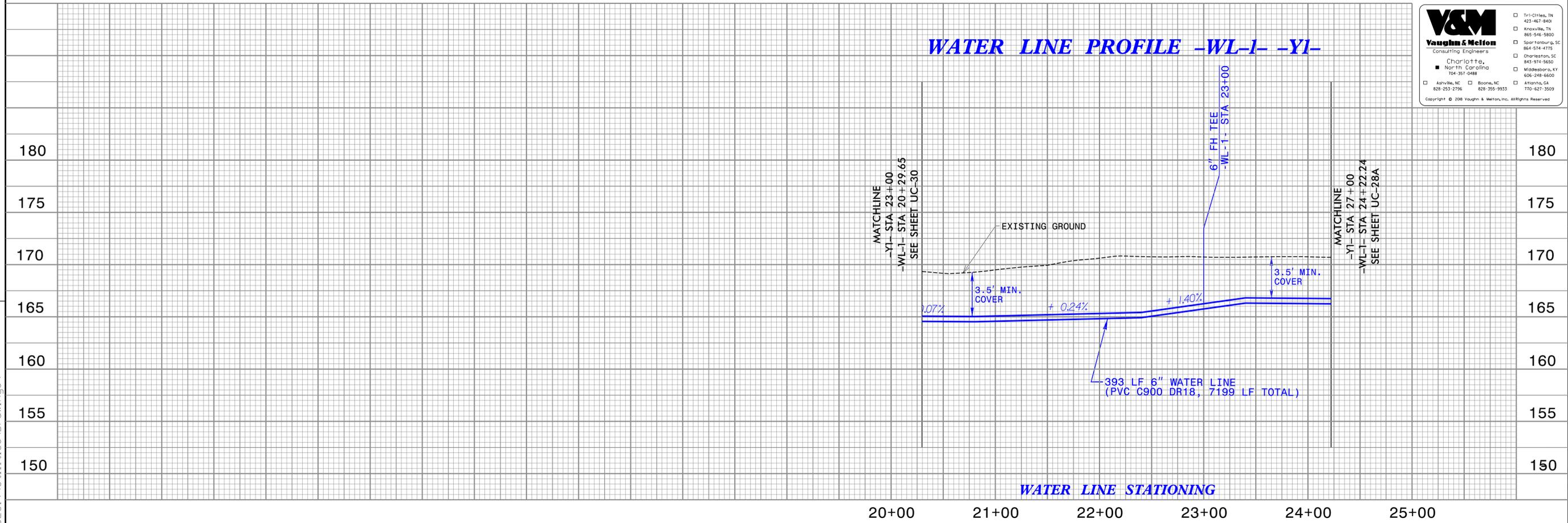
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PROJECT REFERENCE NO.	SHEET NO.
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APPROVED BY: DWH	
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WATER LINE PROFILE -WL-1- -Y1-



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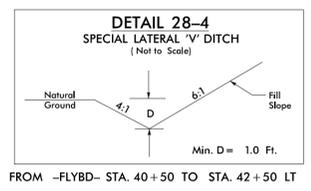
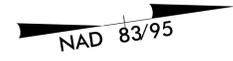
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Knoxville, TN 865-546-5800
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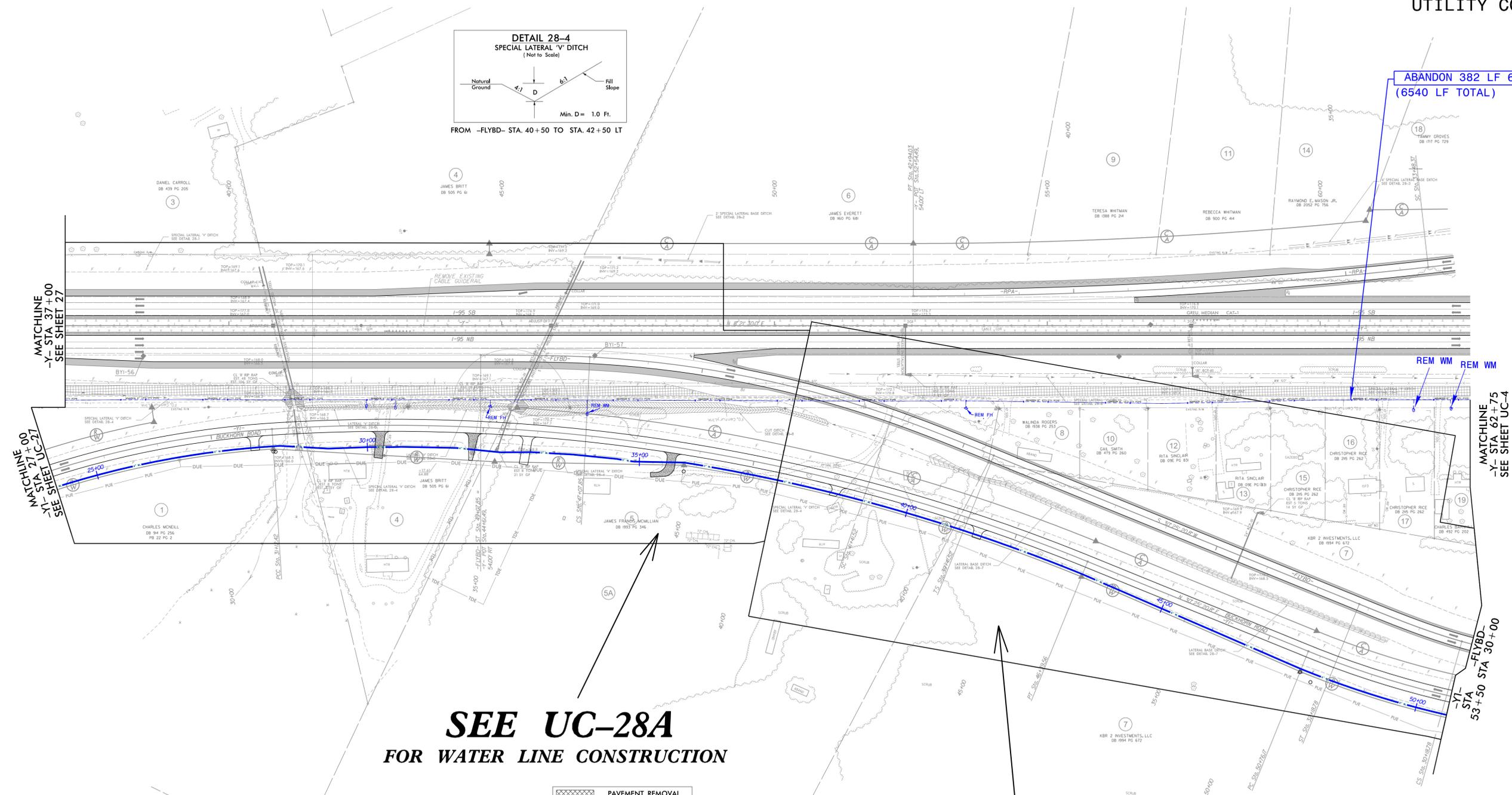
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UTILITY CONSTRUCTION	



**ABANDON 382 LF 6" UTILITY PIPE
(6540 LF TOTAL)**

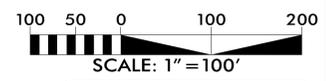


**SEE UC-28A
FOR WATER LINE CONSTRUCTION**

**SEE UC-28B
FOR WATER LINE CONSTRUCTION**

PAVEMENT REMOVAL

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



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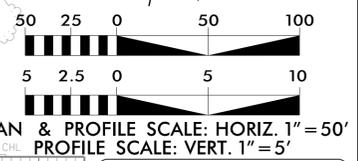
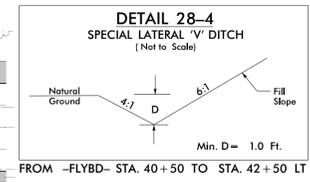
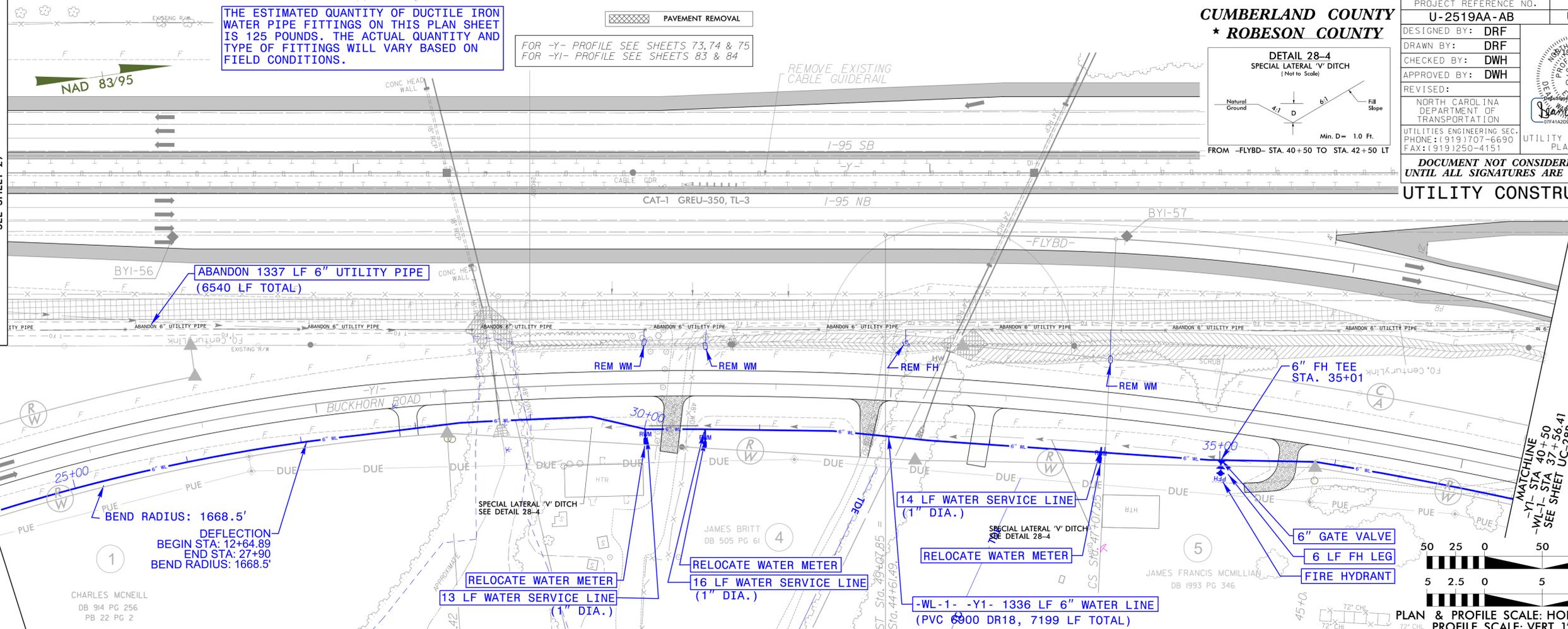
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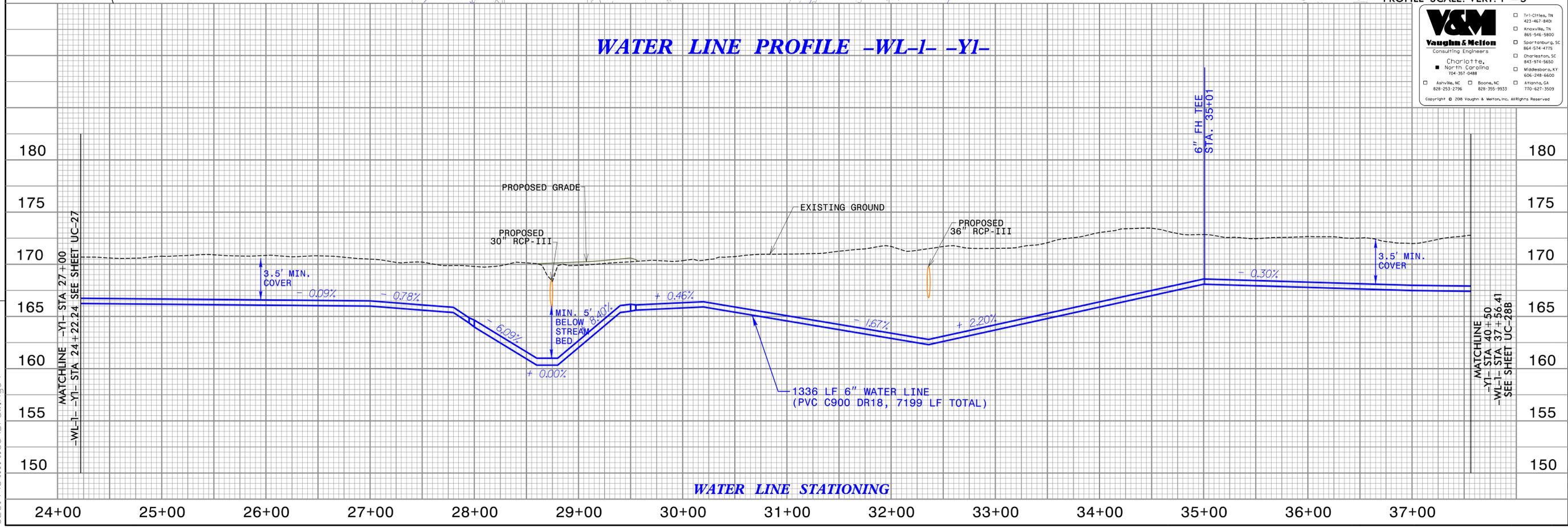
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WATER LINE PROFILE -WL-1- -YI-



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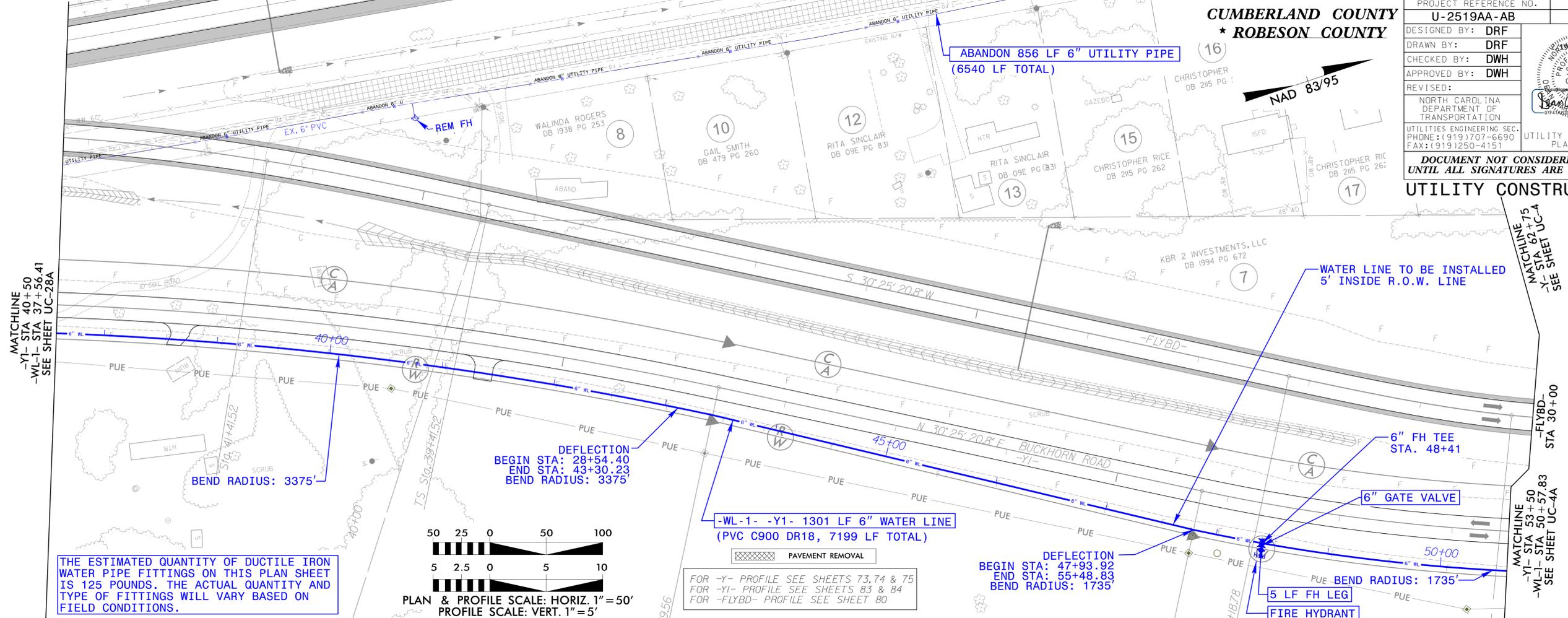
Charlotte, NC
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Boone, NC 828-355-9933

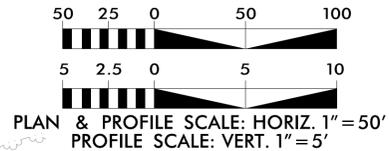
11-Cities, TN 423-462-8400
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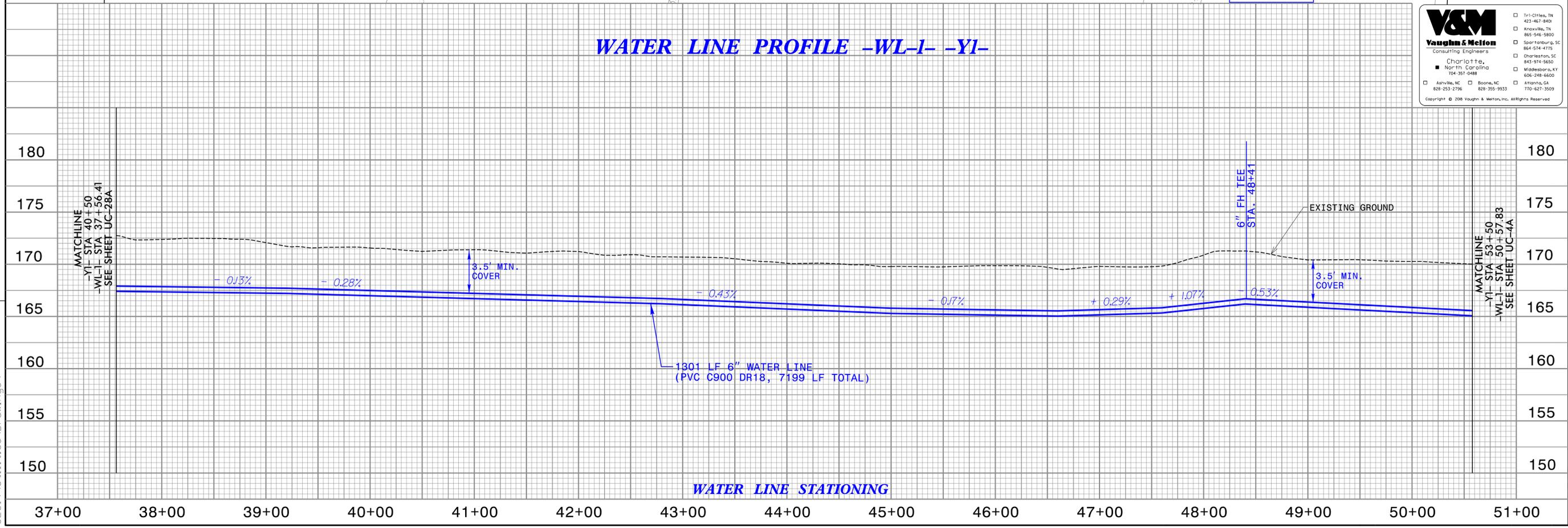


THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 125 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



FOR -Y- PROFILE SEE SHEETS 73, 74 & 75
 FOR -Y1- PROFILE SEE SHEETS 83 & 84
 FOR -FLYBD- PROFILE SEE SHEET 80

WATER LINE PROFILE -WL-1- -Y1-



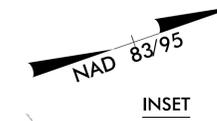
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SEE UC-29B
FOR WATER LINE CONSTRUCTION

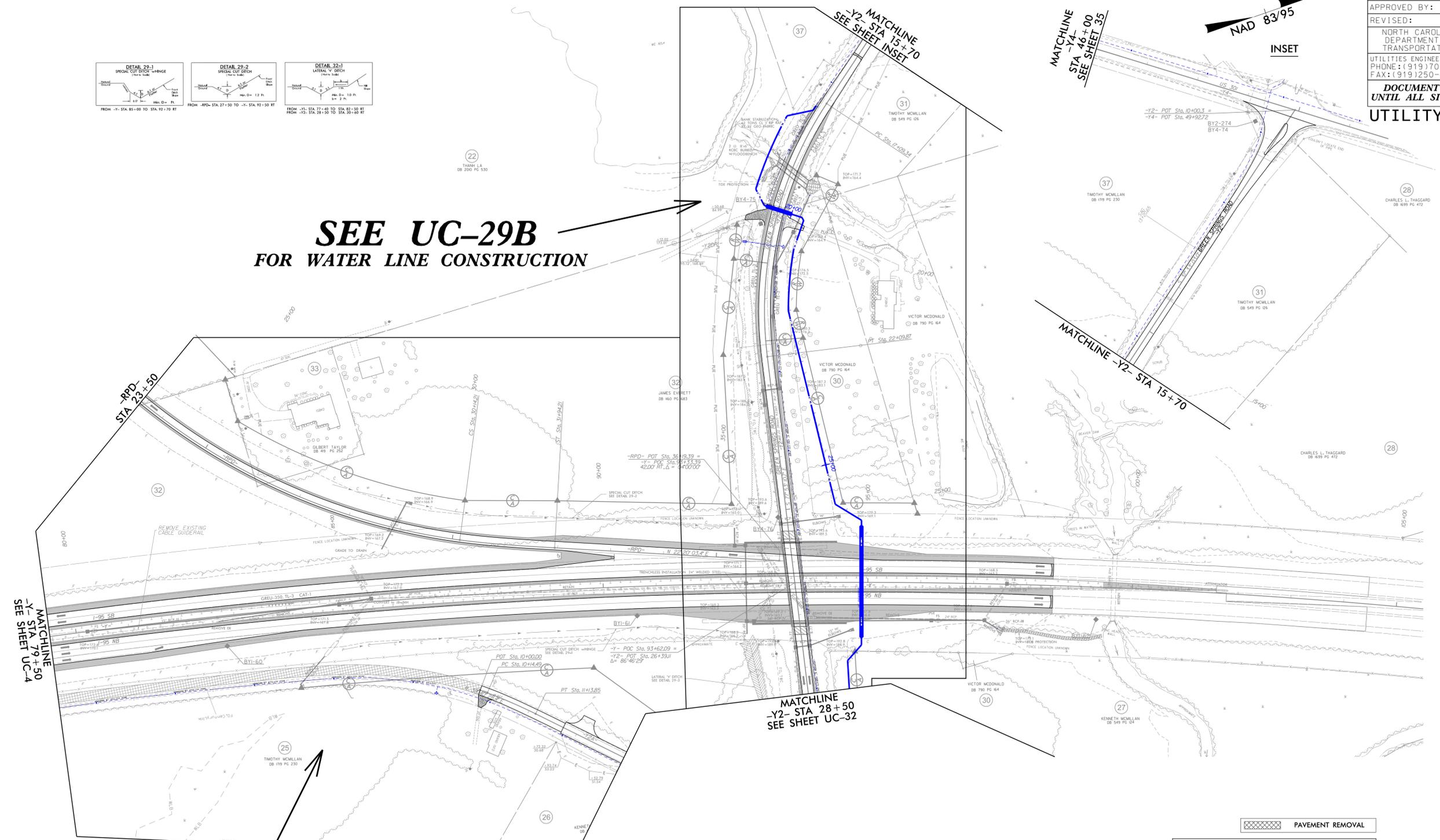
MATCHLINE
-Y- STA 79+50
SEE SHEET UC-4

MATCHLINE
-Y2- STA 28+50
SEE SHEET UC-32

MATCHLINE -Y2- STA 15+70

MATCHLINE
-Y2- STA 15+70
SEE SHEET INSET

MATCHLINE
-Y4- STA 46+00
SEE SHEET 35



PAVEMENT REMOVAL

FOR -Y- PROFILE SEE SHEETS 76 & 77
FOR -RPD- PROFILE SEE SHEET 81
FOR -Y2- PROFILE SEE SHEET 86



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SEE UC-29A
FOR WATER LINE CONSTRUCTION

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10-15-18

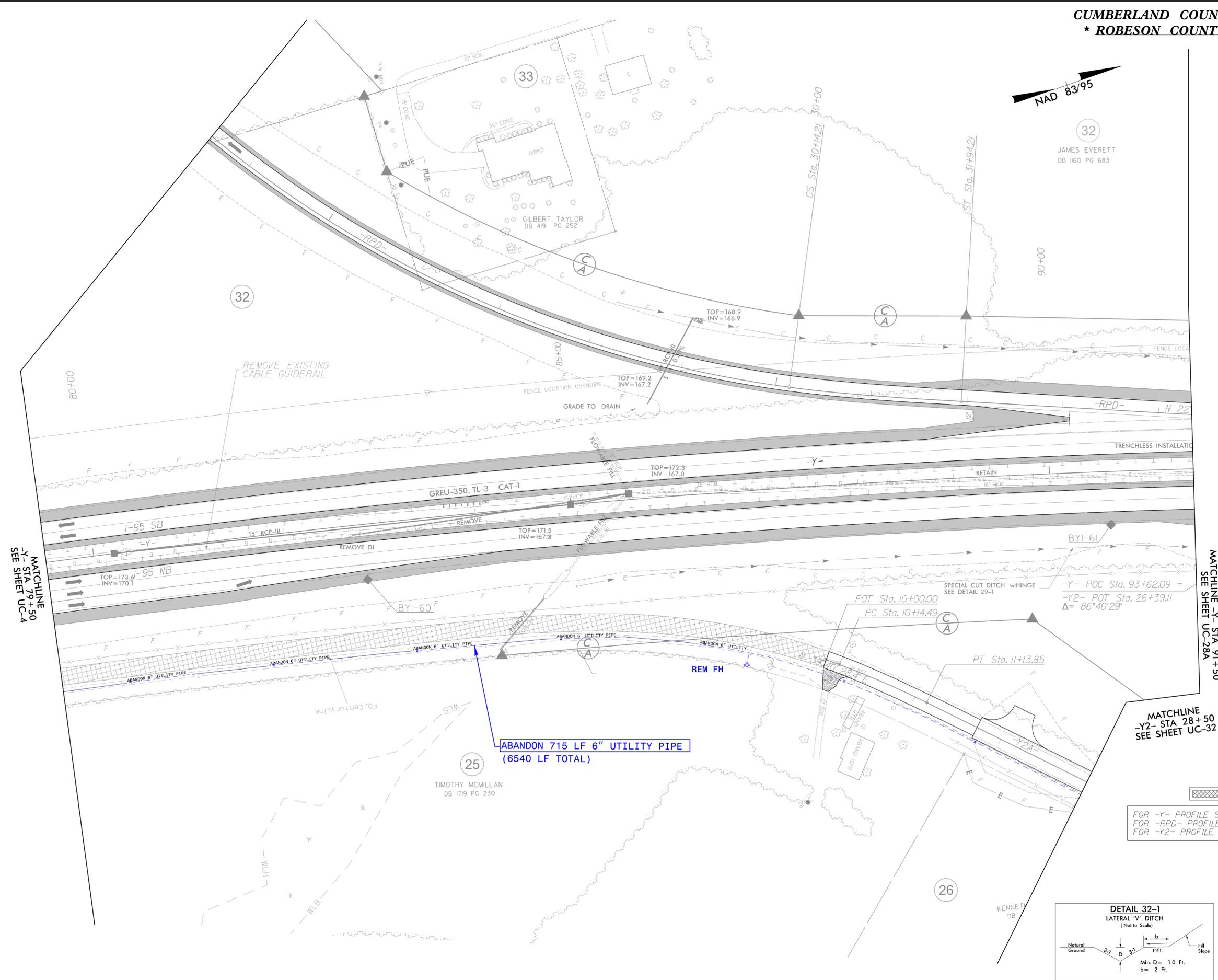
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U-2519AA-AB	UC-29A
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UTILITY CONSTRUCTION



32
JAMES EVERETT
DB 1160 PG 683



MATCHLINE
-Y- STA. 79+50
SEE SHEET UC-4

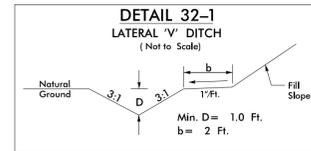
MATCHLINE -Y- STA. 91+50
SEE SHEET UC-28A

MATCHLINE
-Y2- STA. 28+50
SEE SHEET UC-32

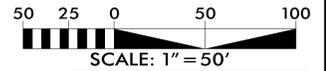
**ABANDON 715 LF 6" UTILITY PIPE
(6540 LF TOTAL)**

PAVEMENT REMOVAL

FOR -Y- PROFILE SEE SHEETS 76 & 77
FOR -RPD- PROFILE SEE SHEET 81
FOR -Y2- PROFILE SEE SHEET 86



FROM -Y1- STA. 77+40 TO STA. 82+50 RT
FROM -Y2- STA. 28+50 TO STA. 30+60 RT



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U2519\Utilities Drawings\

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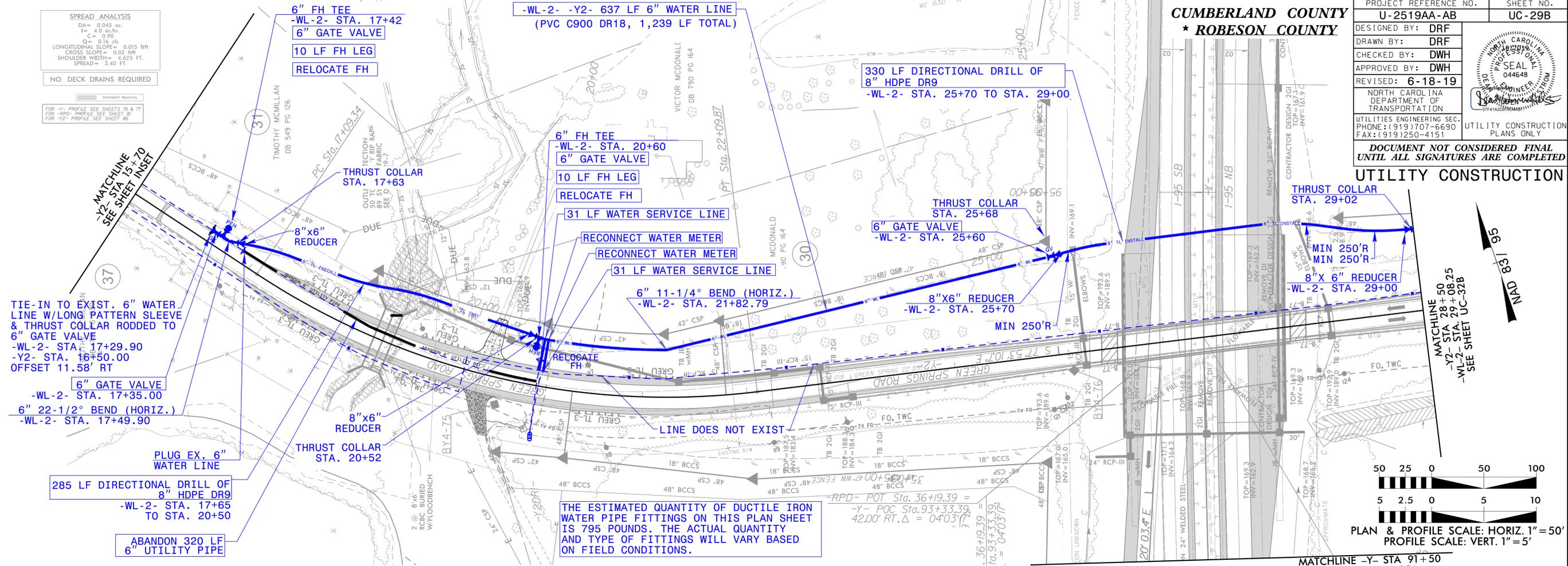
6-18-19

SPREAD ANALYSIS
 DA = 0.045 ac
 L = 4.0 m/hr.
 Q_c = 0.99
 LONGITUDINAL SLOPE = 0.015 HH
 CROSS SLOPE = 0.02 HH
 SHOULDER WIDTH = 4.625 FT.
 SPREAD = 3.40 FT.
 NO DECK DRAINS REQUIRED

PAYMENT REMOVAL
 FOR -11- PROFILE SEE SHEETS 76 & 77
 FOR -RPD- PROFILE SEE SHEET 81
 FOR -12- PROFILE SEE SHEET 86

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PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	UC-29B
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APPROVED BY: DWH	
REVISED: 6-18-19	
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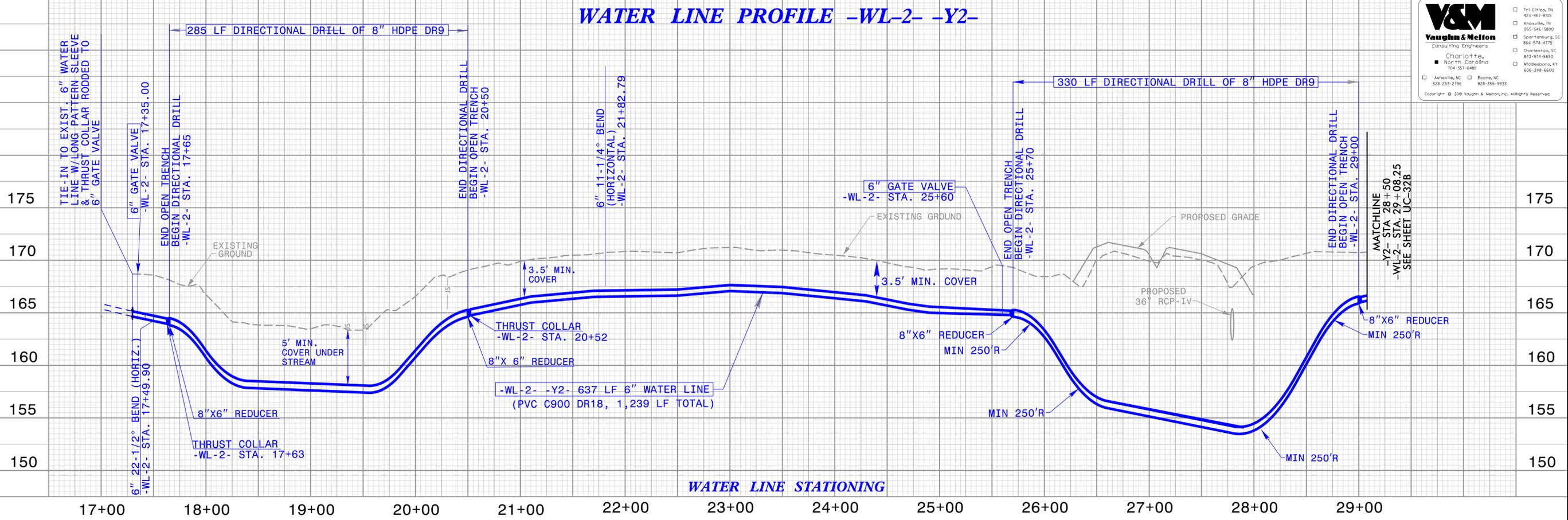


THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 795 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



MATCHLINE -Y- STA 91+50
 SEE SHEET UC-28A

WATER LINE PROFILE -WL-2- -Y2-



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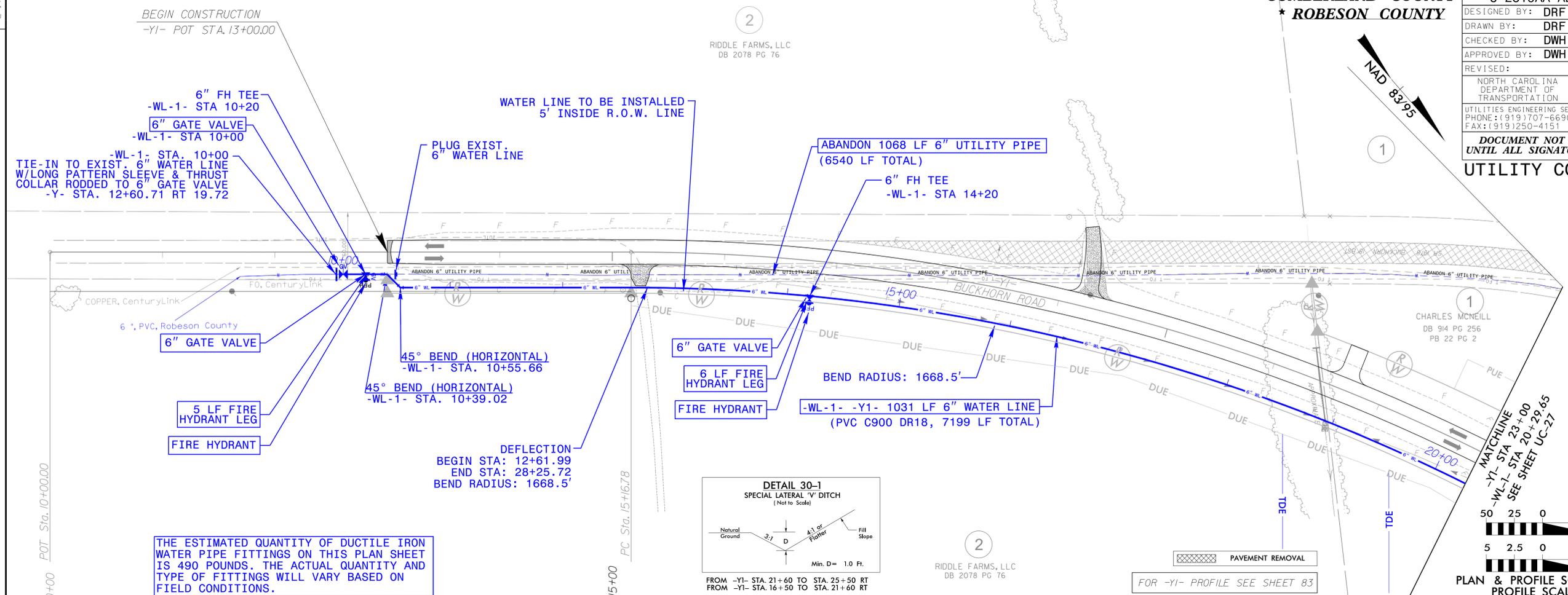
11-Cities, TN
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 864-574-4775
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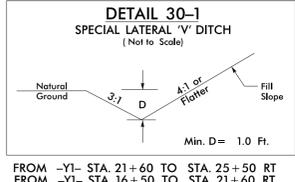
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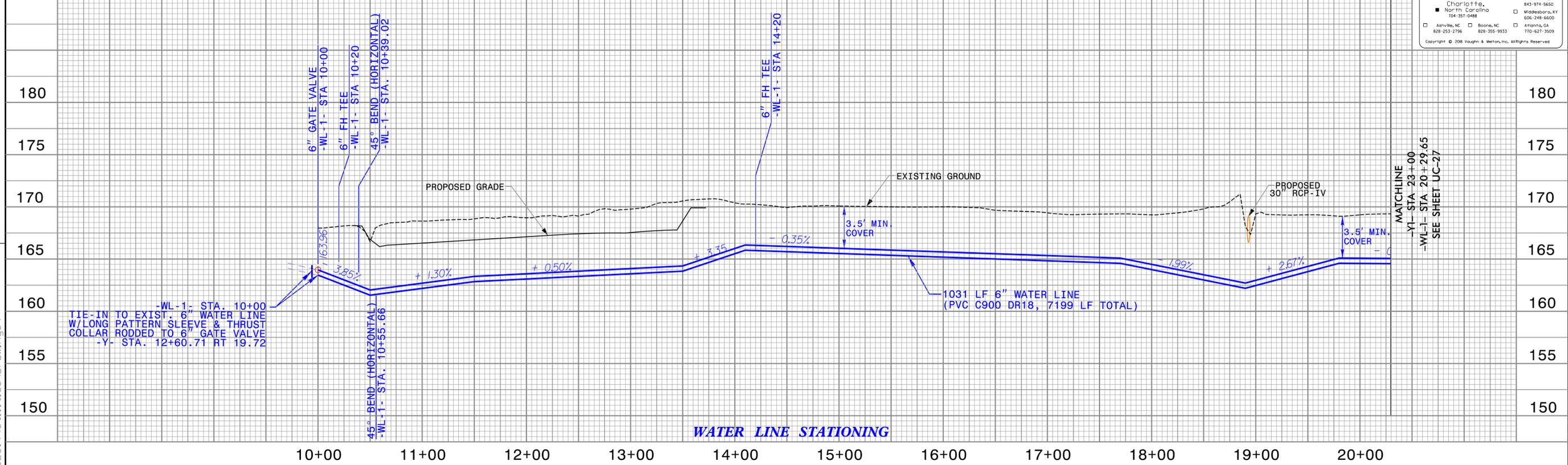
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APPROVED BY:	DWH		
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 490 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



WATER LINE PROFILE -WL-1- -Y1-



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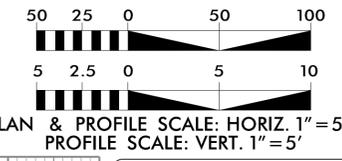
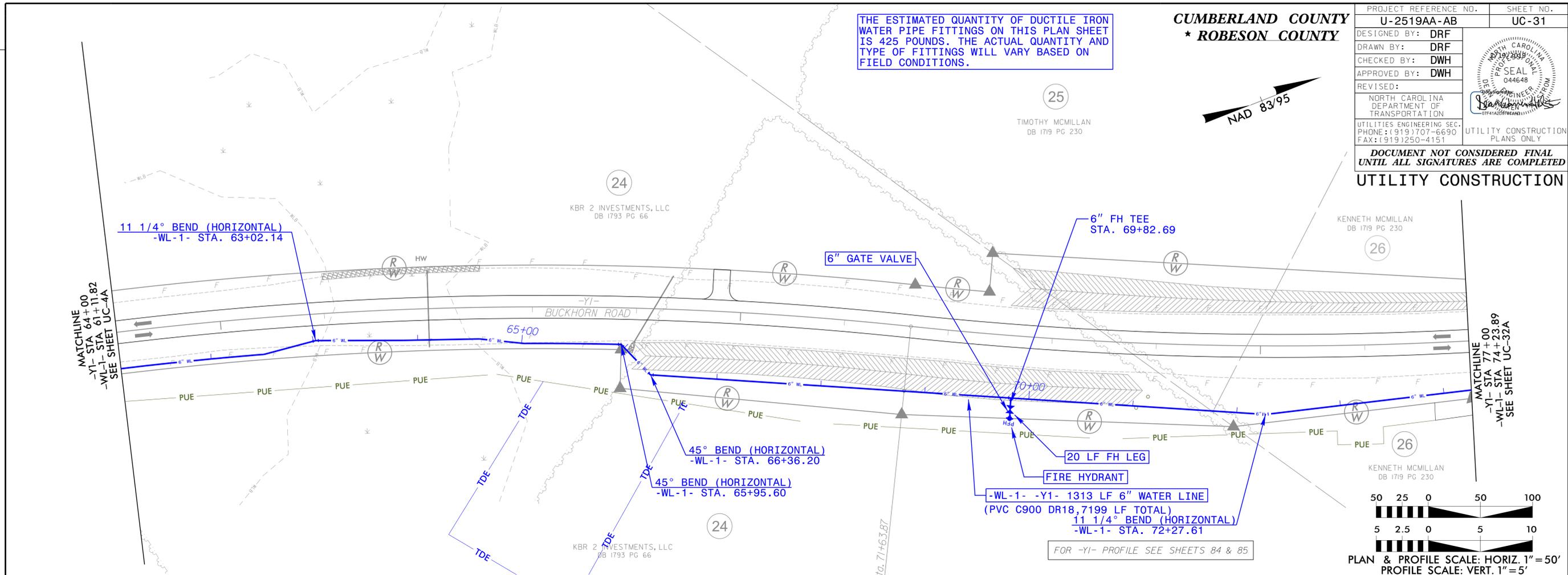
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 425 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

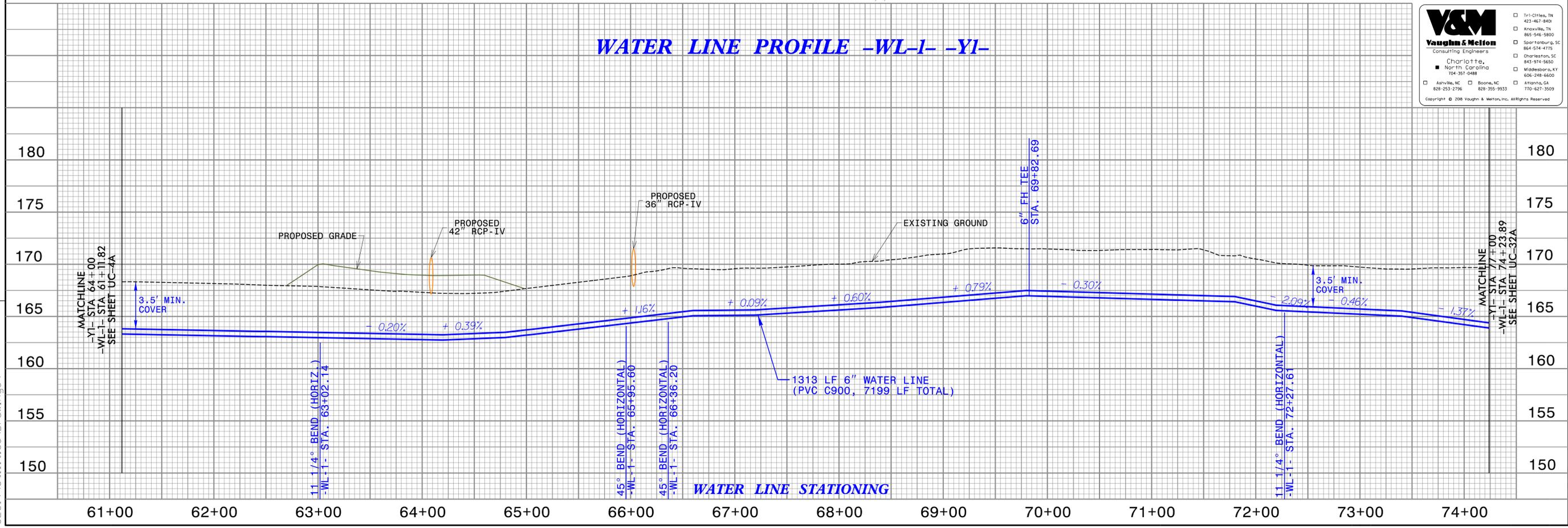
25
TIMOTHY MCMILLAN
DB 1719 PG 230



26
KENNETH MCMILLAN
DB 1719 PG 230



WATER LINE PROFILE -WL-1- -Y1-



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UC319\Utilities Drawings

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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. UC-32
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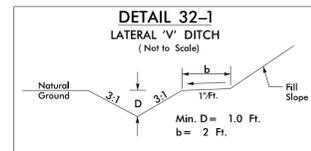
MATCHLINE -Y2- STA 28+50 SEE SHEET UC-29

MATCHLINE
-Y1- STA 77+00
-WL-1- STA 61+12.03
SEE SHEET UC-31

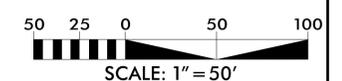
**SEE UC-32A
FOR WATER LINE
CONSTRUCTION**

**SEE UC-32B
FOR WATER LINE CONSTRUCTION**

FOR -Y1- PROFILE SEE SHEET 85
FOR -Y2- PROFILE SEE SHEET 86
FOR -Y2A- PROFILE SEE SHEET 87



FROM -Y1- STA. 77+40 TO STA. 82+50 RT
FROM -Y2- STA. 28+50 TO STA. 30+60 RT



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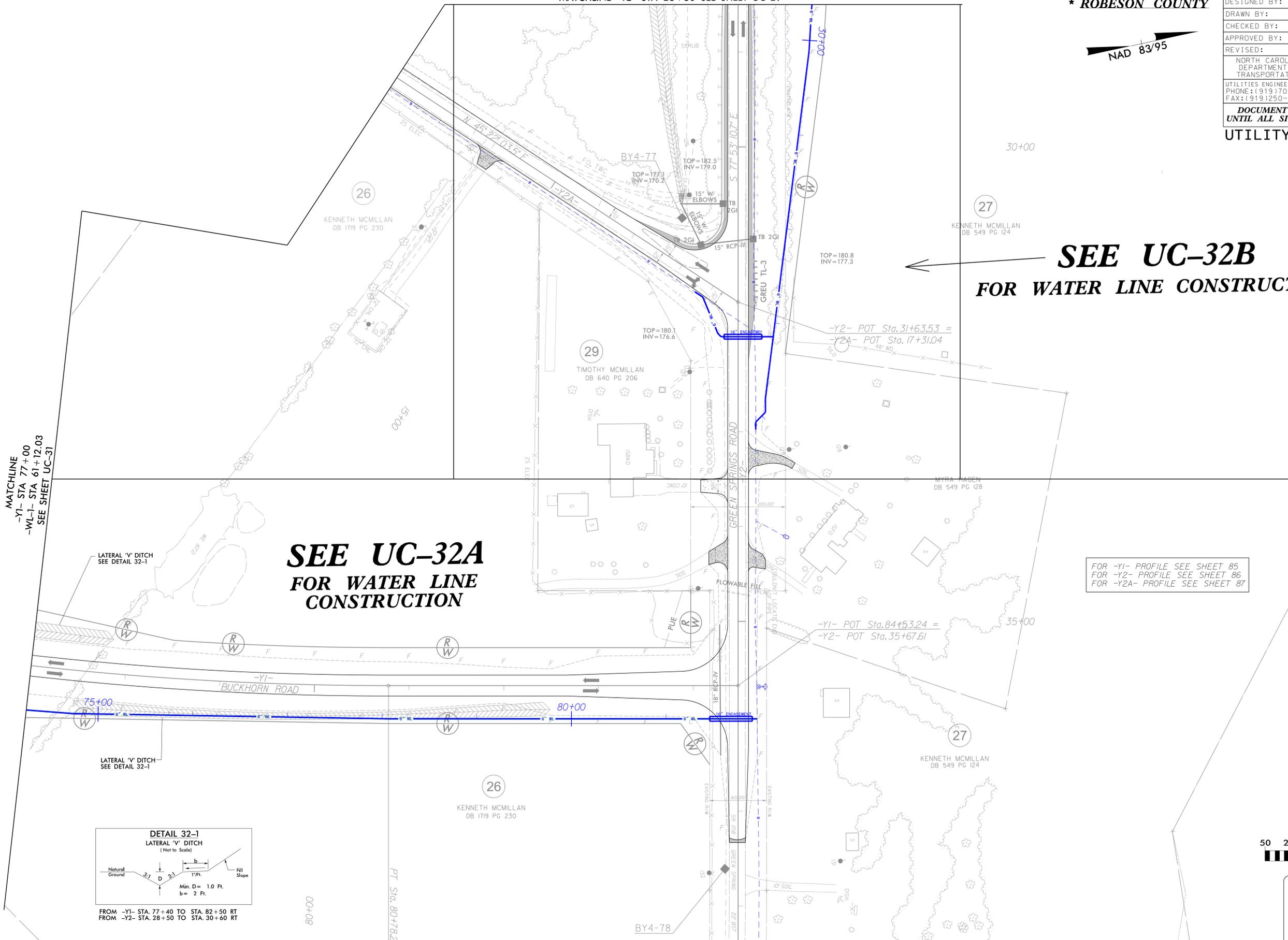
Ashville, NC 828-253-2196
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U2519\Utilities\Drawings

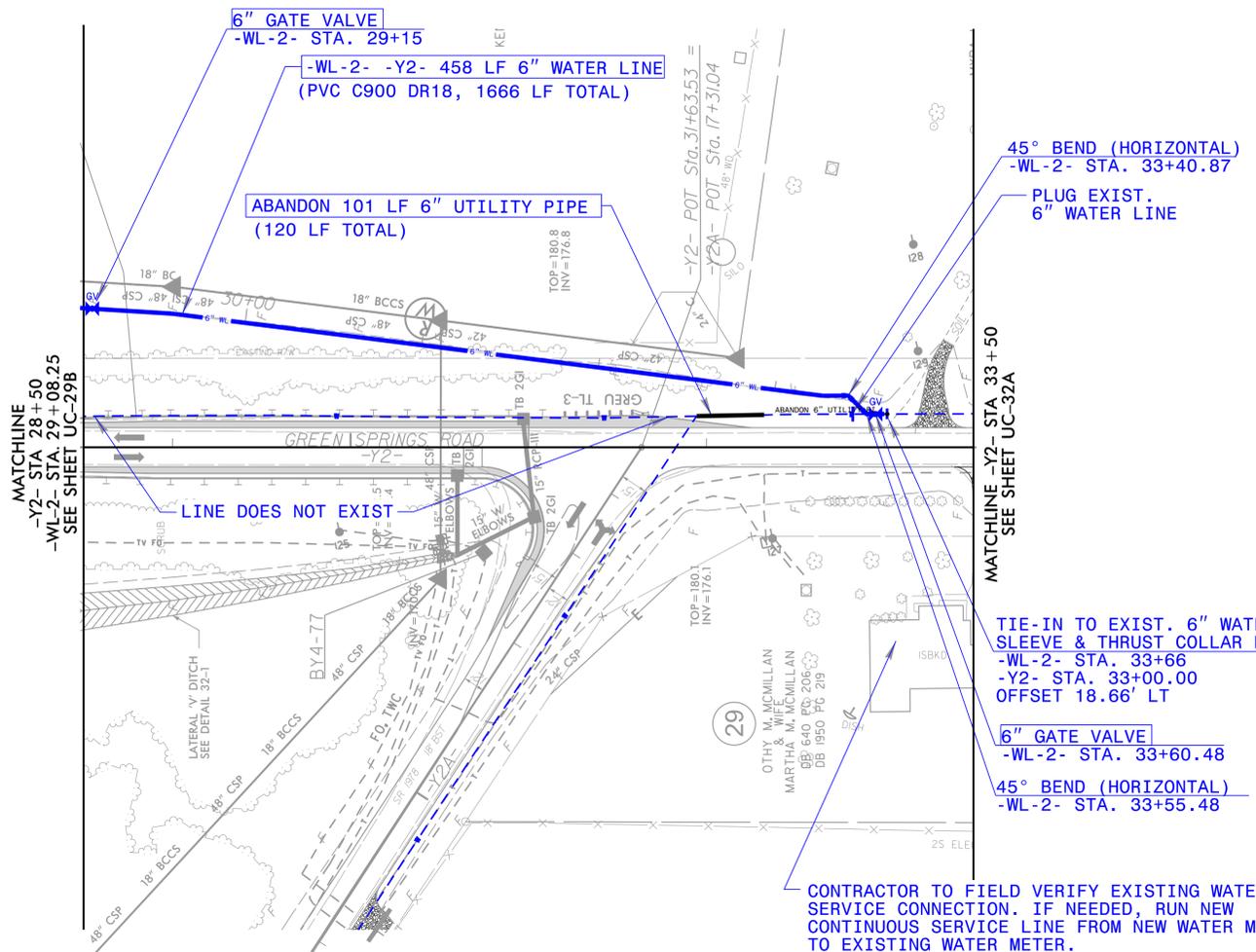
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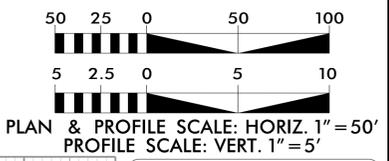
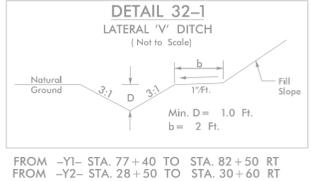
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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. UC-32B
DESIGNED BY: DRF	
DRAWN BY: DRF	
CHECKED BY: DWH	
APPROVED BY: DWH	
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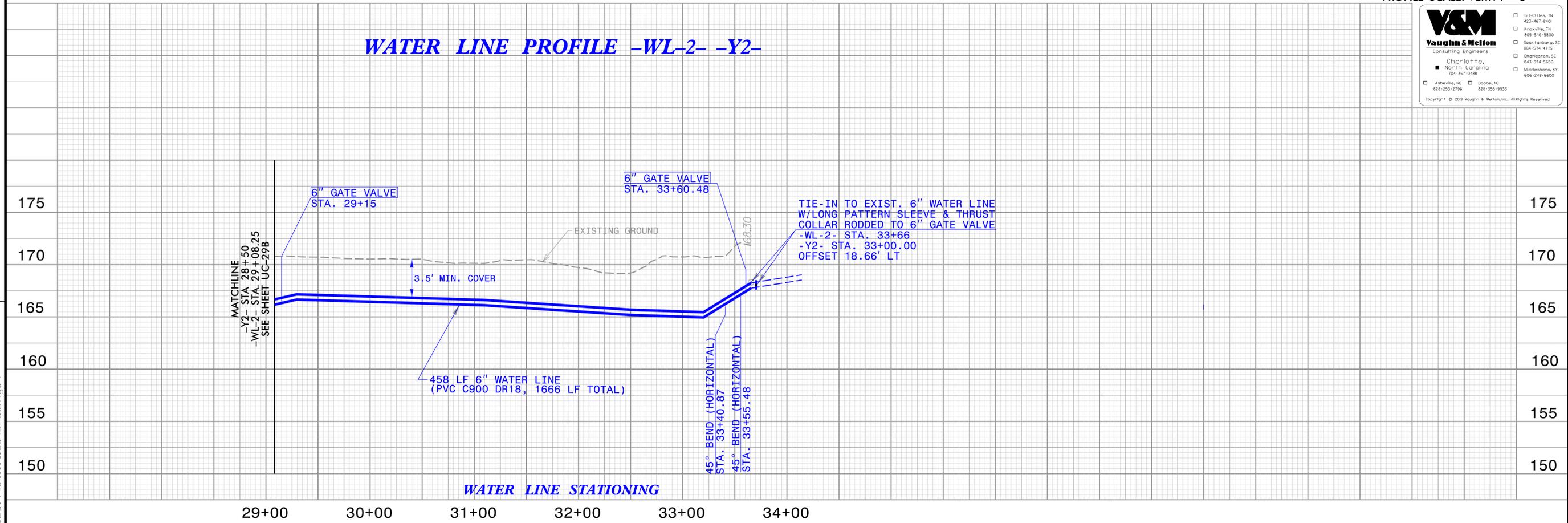


THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 240 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

FOR -Y2- PROFILE SEE SHEET 86
FOR -Y2A- PROFILE SEE SHEET 87



WATER LINE PROFILE -WL-2- -Y2-



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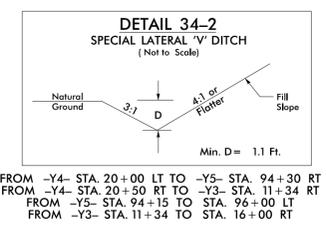
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PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. UC-34
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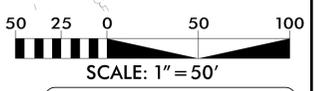
**SEE UC-34A
FOR WATER LINE CONSTRUCTION**

**SEE UC-34B
FOR WATER LINE CONSTRUCTION**

PAVEMENT REMOVAL

FOR -Y3- PROFILE SEE SHEET 87
 FOR -Y3S1- PROFILE SEE SHEET 88
 FOR -Y4- PROFILE SEE SHEET 87
 FOR -Y5- PROFILE SEE SHEET 91
 FOR -Y5DRI- PROFILE SEE SHEET 92

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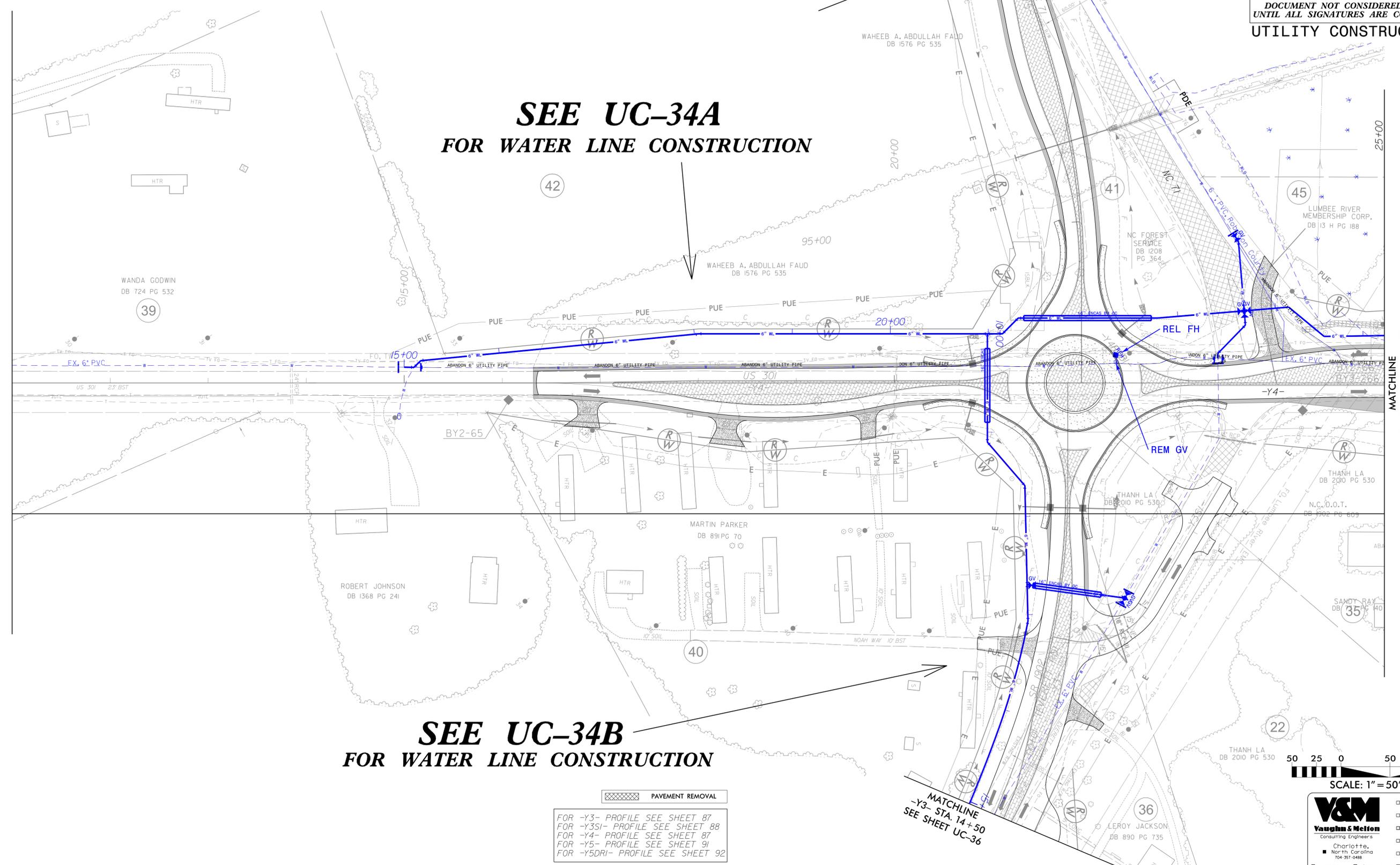


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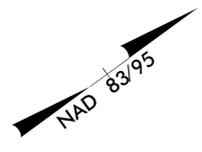
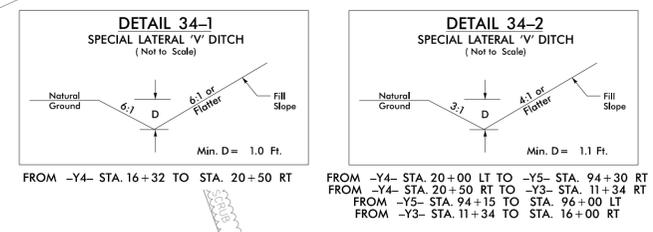


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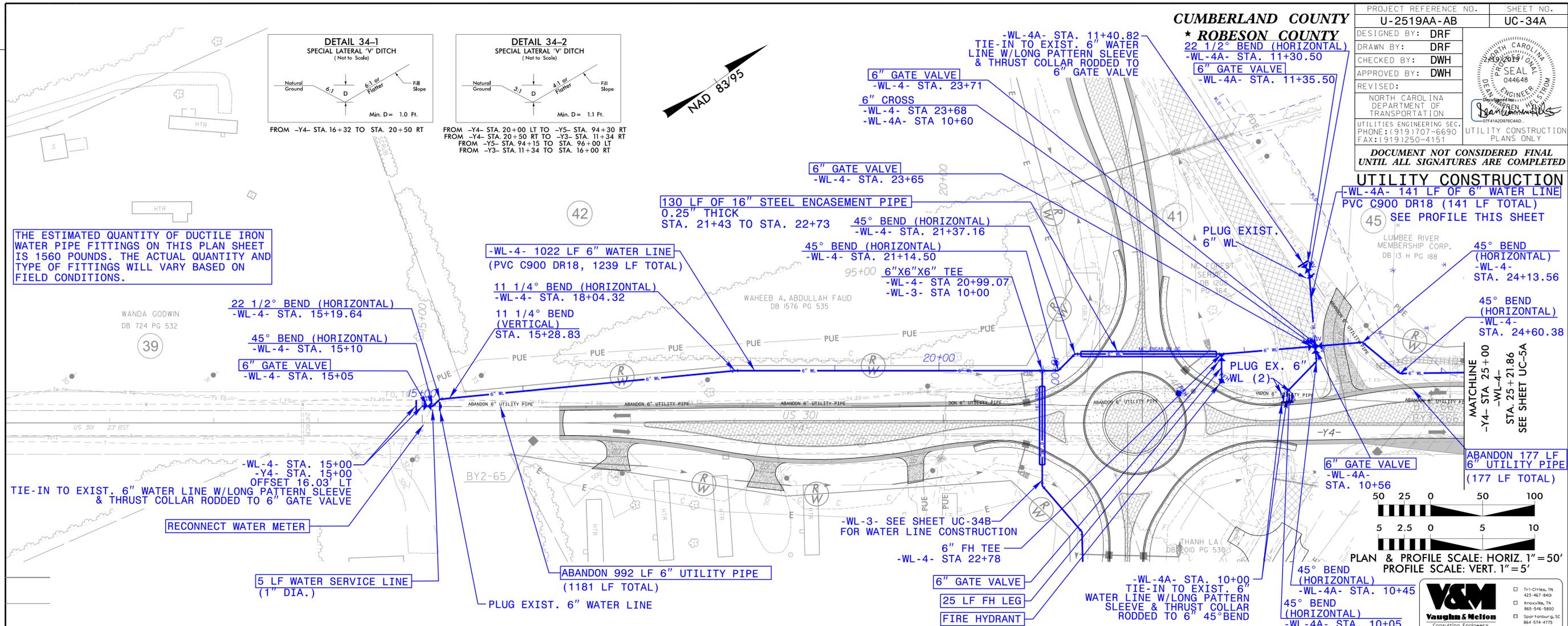
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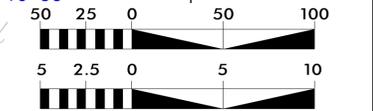
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1560 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



UTILITY CONSTRUCTION
 -WL-4A- 141 LF OF 6" WATER LINE
 PVC C900 DR18 (141 LF TOTAL)
 SEE PROFILE THIS SHEET

45° BEND (HORIZONTAL) -WL-4- STA. 24+13.56
 45° BEND (HORIZONTAL) -WL-4- STA. 24+60.38
 MATCHLINE -Y4- STA 25+00 -WL-4- STA 25+21.86 SEE SHEET UC-5A

ABANDON 177 LF 6" UTILITY PIPE (177 LF TOTAL)
 6" GATE VALVE -WL-4A- STA. 10+56



PLAN & PROFILE SCALE: HORIZ. 1" = 50'
 PROFILE SCALE: VERT. 1" = 5'

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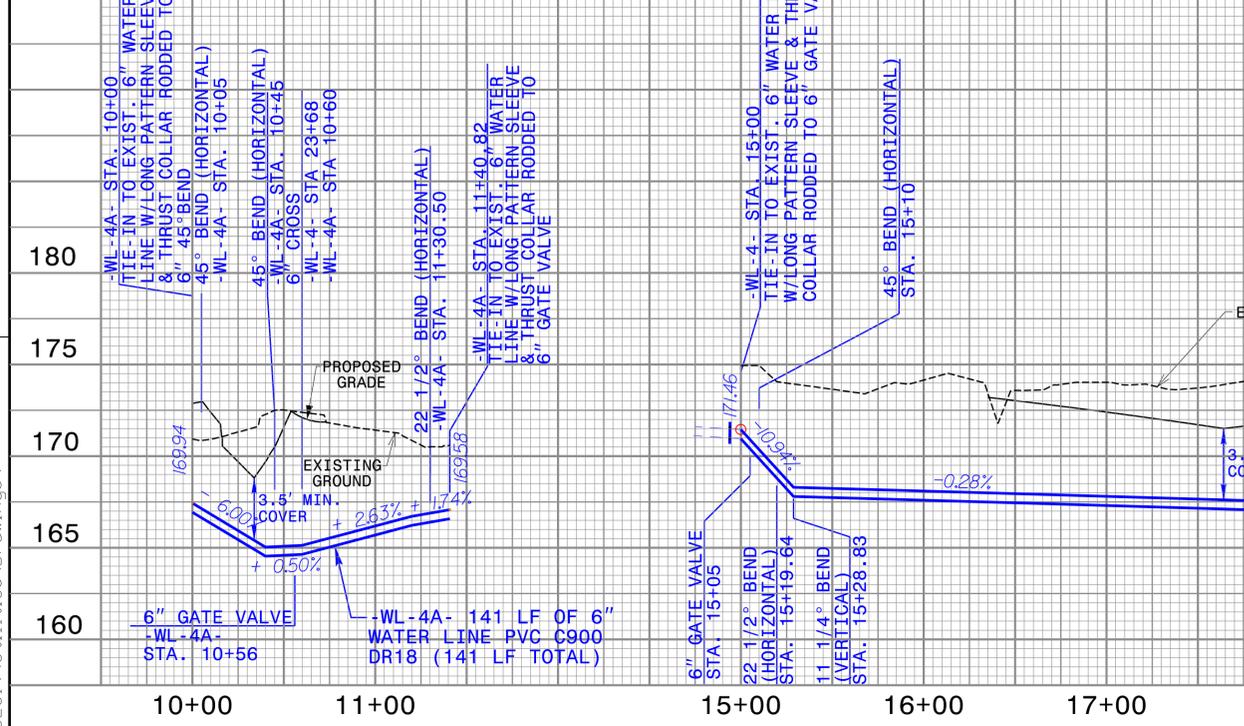
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 828-355-9933

Atlanta, GA
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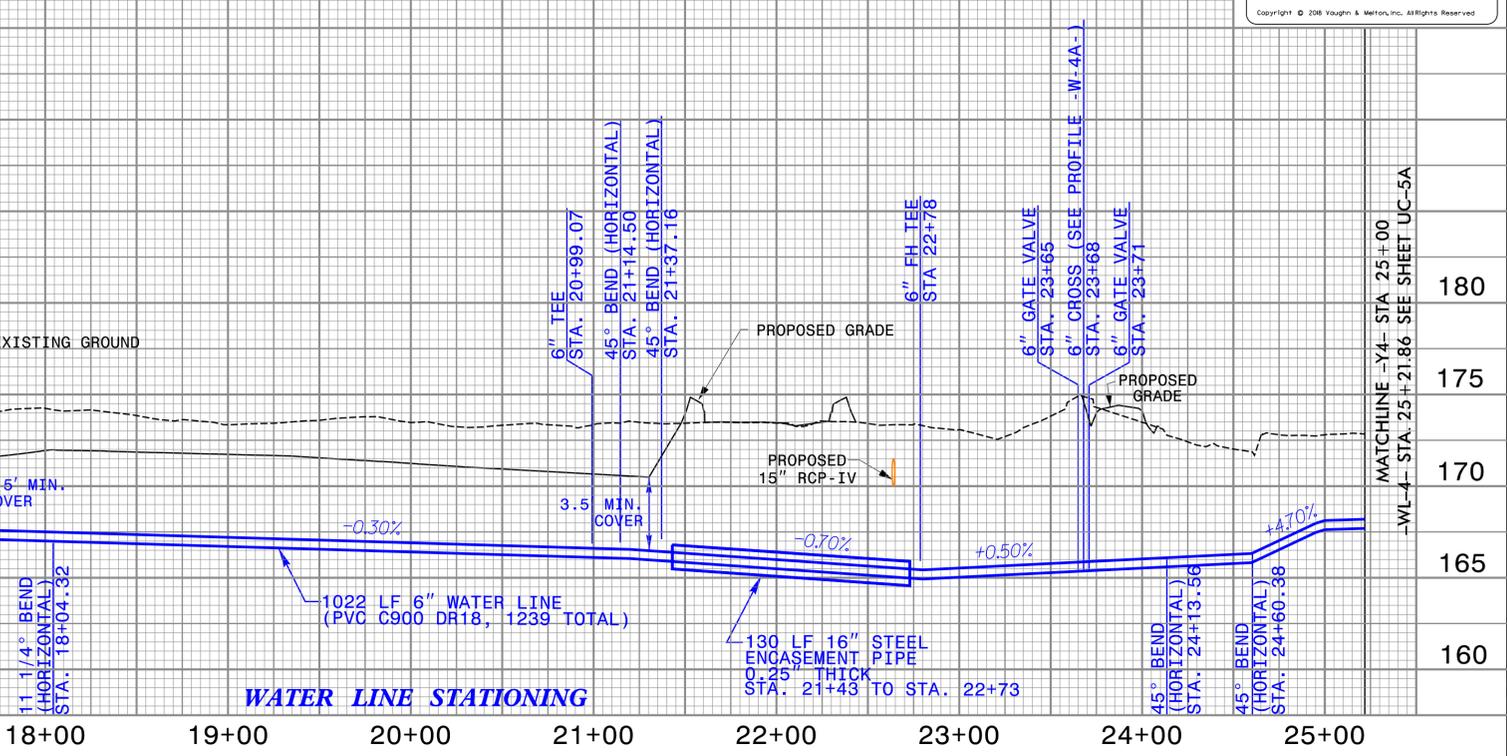
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WATER LINE PROFILE -WL-4A- -Y4-



WATER LINE PROFILE -WL-4- -Y4-



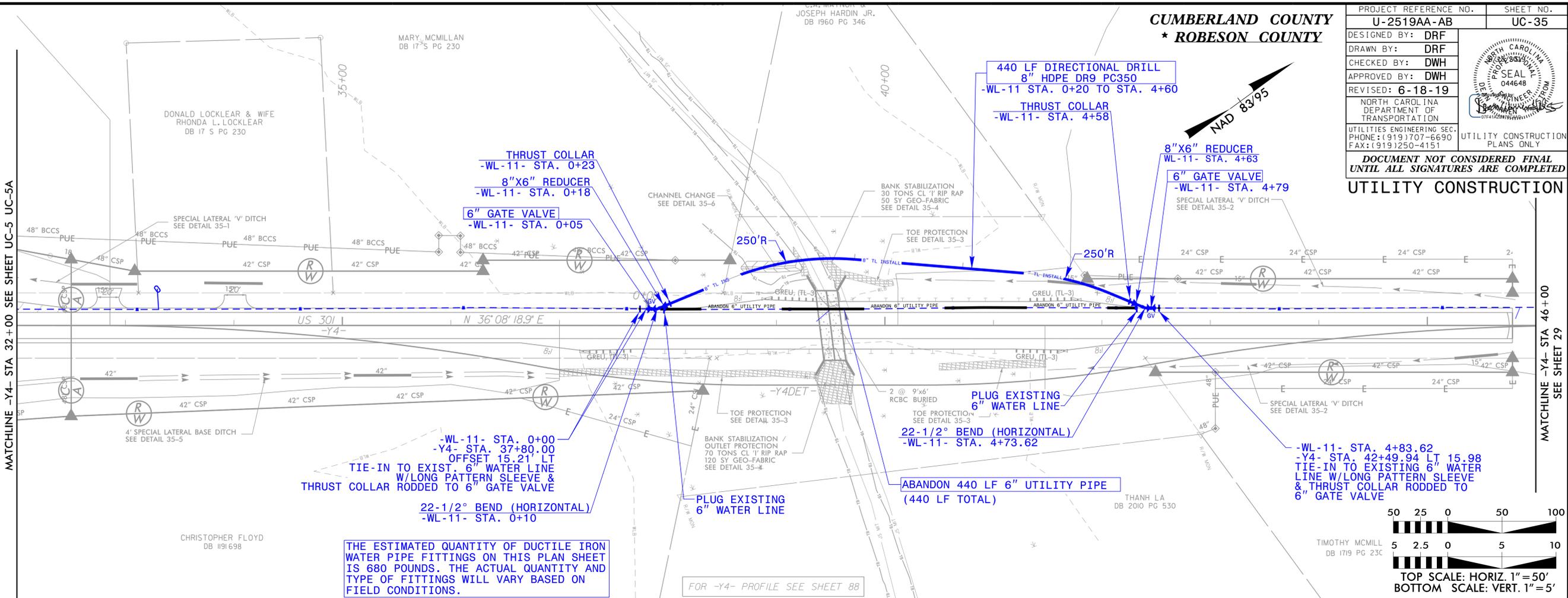
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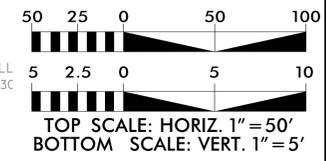
PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. UC-35
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MATCHLINE -Y4- STA. 32+00 SEE SHEET UC-5 UC-5A

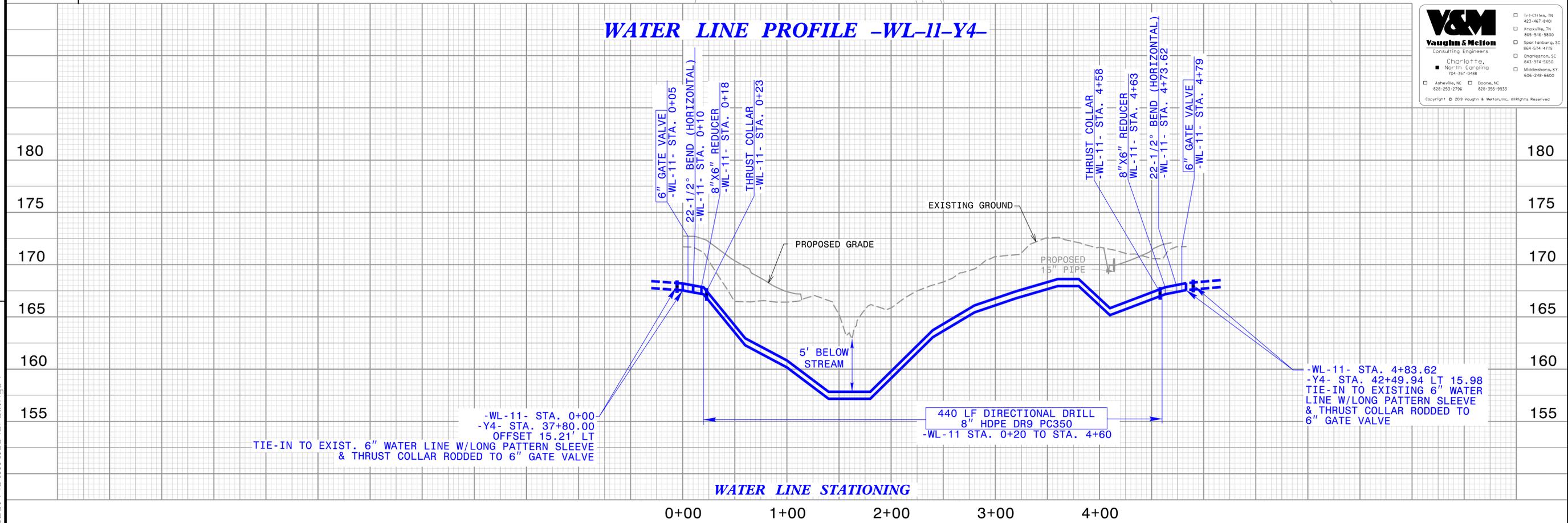
MATCHLINE -Y4- STA. 46+00 SEE SHEET 29



THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 680 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



WATER LINE PROFILE -WL-11-Y4-



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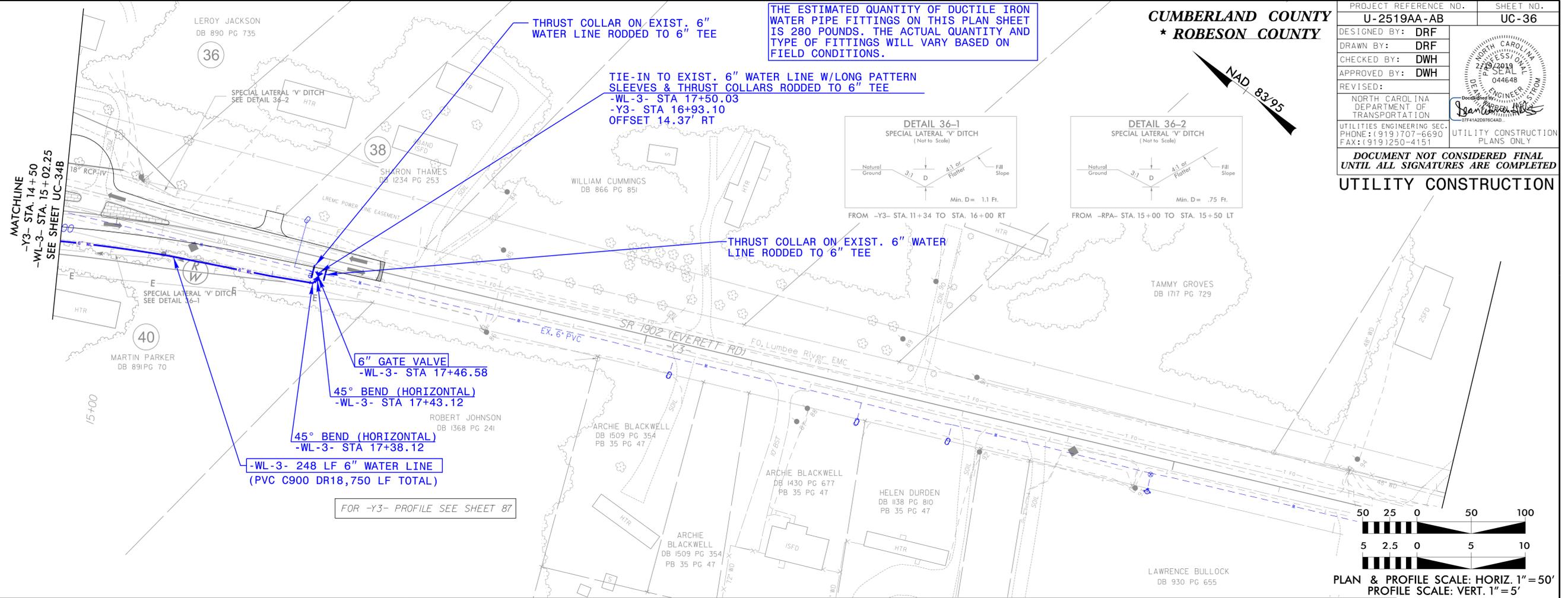
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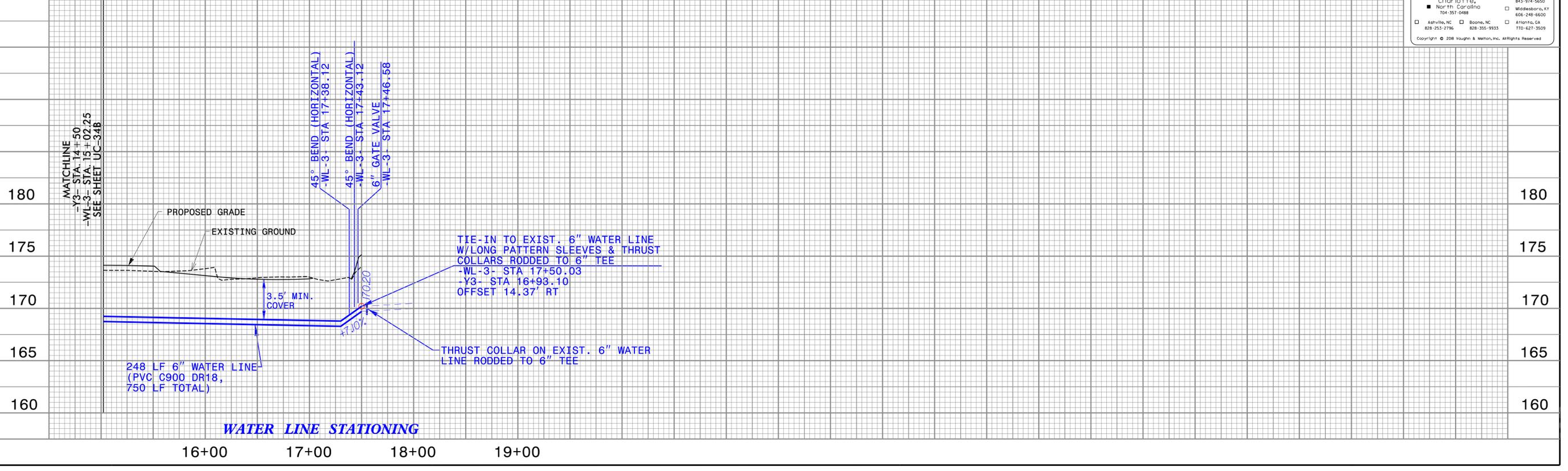
PROJECT REFERENCE NO.	SHEET NO.
U-2519AA-AB	UC-36
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UTILITY CONSTRUCTION



WATER LINE PROFILE -WL-3- -Y3-



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PROJECT REFERENCE NO.	SHEET NO.
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 390 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



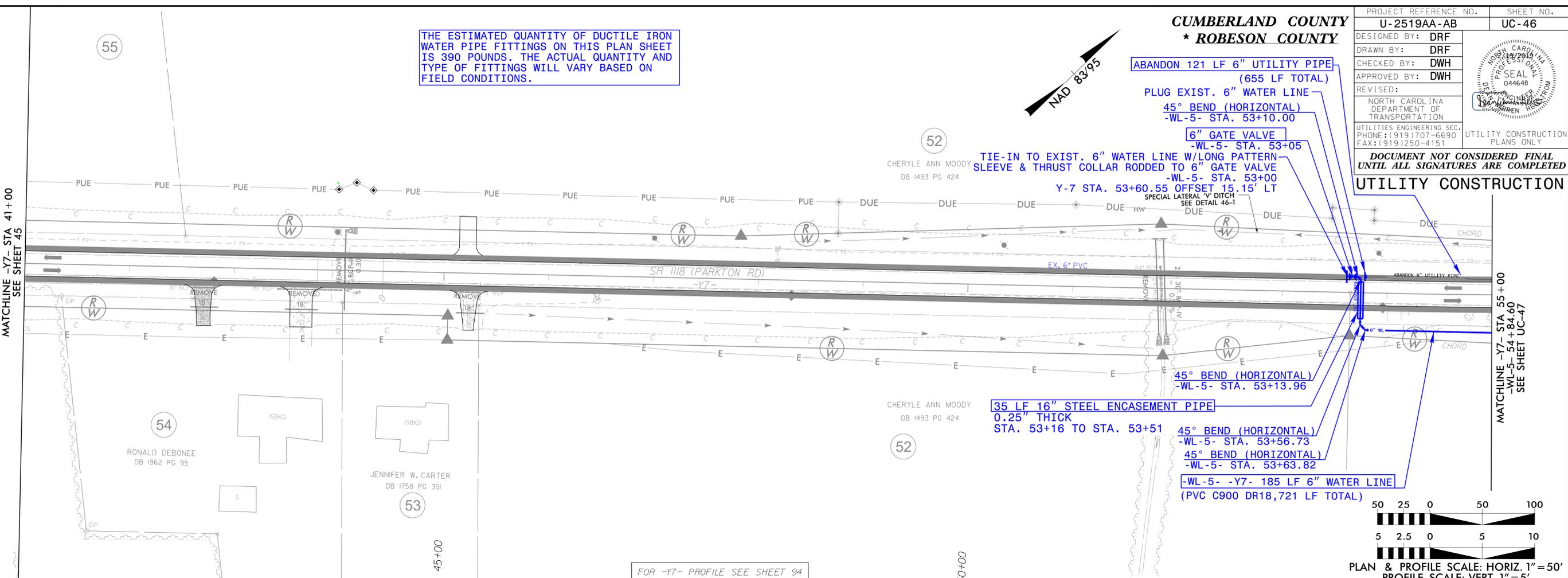
- ABANDON 121 LF 6" UTILITY PIPE (655 LF TOTAL)
- PLUG EXIST. 6" WATER LINE
- 45° BEND (HORIZONTAL) -WL-5- STA. 53+10.00
- 6" GATE VALVE -WL-5- STA. 53+05
- TIE-IN TO EXIST. 6" WATER LINE W/LONG PATTERN SLEEVE & THRUST COLLAR RODDED TO 6" GATE VALVE -WL-5- STA. 53+00
- Y-7 STA. 53+60.55 OFFSET 15.15' LT
- 45° BEND (HORIZONTAL) -WL-5- STA. 53+13.96
- 35 LF 16" STEEL ENCASUREMENT PIPE 0.25" THICK STA. 53+16 TO STA. 53+51
- 45° BEND (HORIZONTAL) -WL-5- STA. 53+56.73
- 45° BEND (HORIZONTAL) -WL-5- STA. 53+63.82
- WL-5- -Y7- 185 LF 6" WATER LINE (PVC C900 DR18,721 LF TOTAL)

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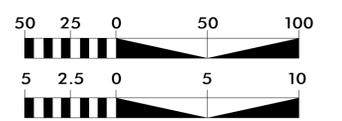
UTILITY CONSTRUCTION

MATCHLINE -Y7- STA 41+00
SEE SHEET 45

MATCHLINE -Y7- STA 55+00
-WL-5- 54+84.60
SEE SHEET UC-47



FOR -Y7- PROFILE SEE SHEET 94

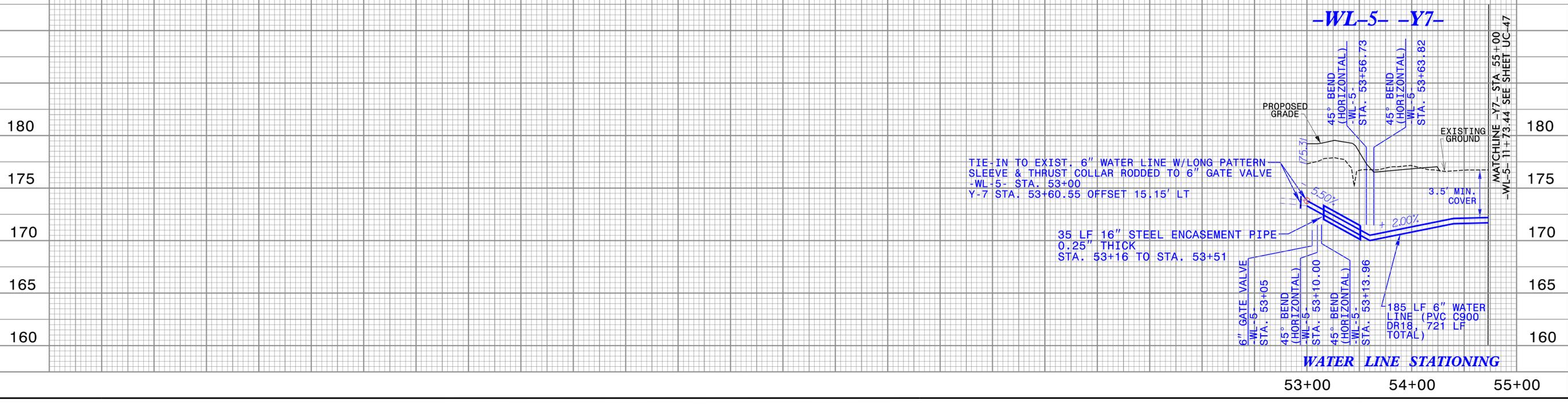


PLAN & PROFILE SCALE: HORIZ. 1" = 50'
PROFILE SCALE: VERT. 1" = 5'

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WATER LINE PROFILE

-WL-5- -Y7-



WATER LINE STATIONING

53+00 54+00 55+00

12-17-18

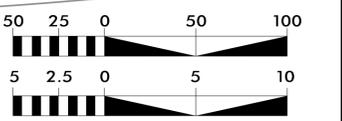
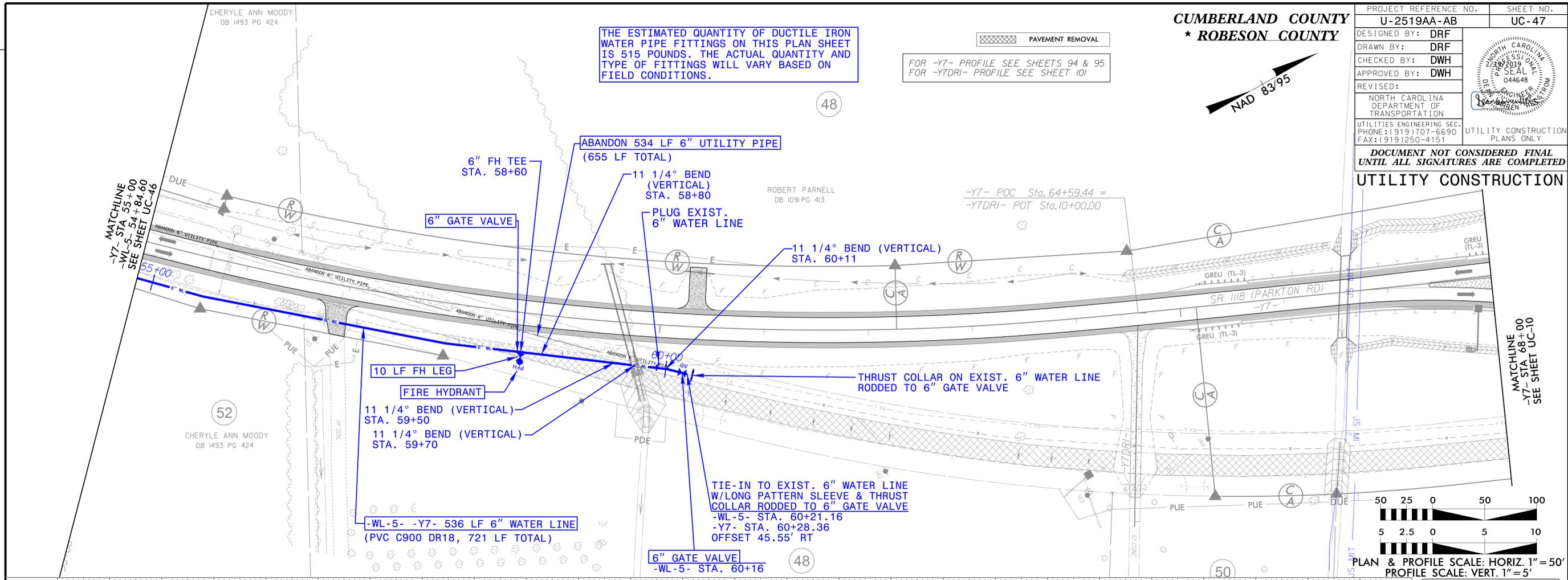
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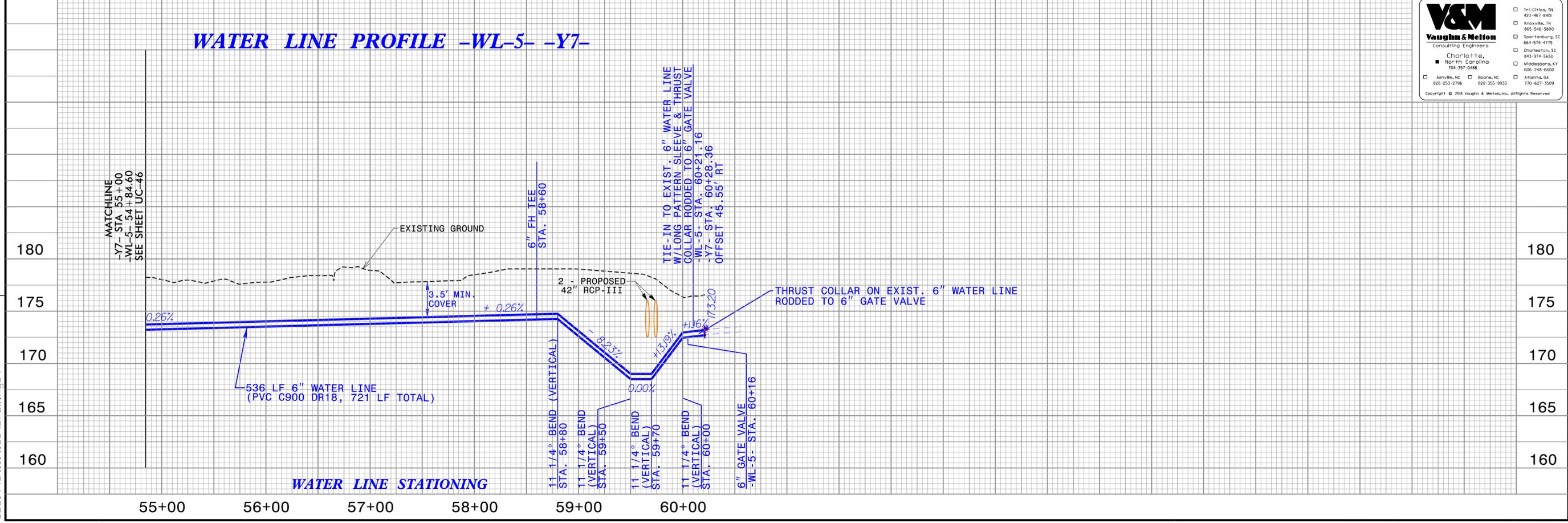
UTILITY CONSTRUCTION
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 515 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

FOR -Y7- PROFILE SEE SHEETS 94 & 95
FOR -Y7DRI- PROFILE SEE SHEET 101



WATER LINE PROFILE -WL-5- -Y7-



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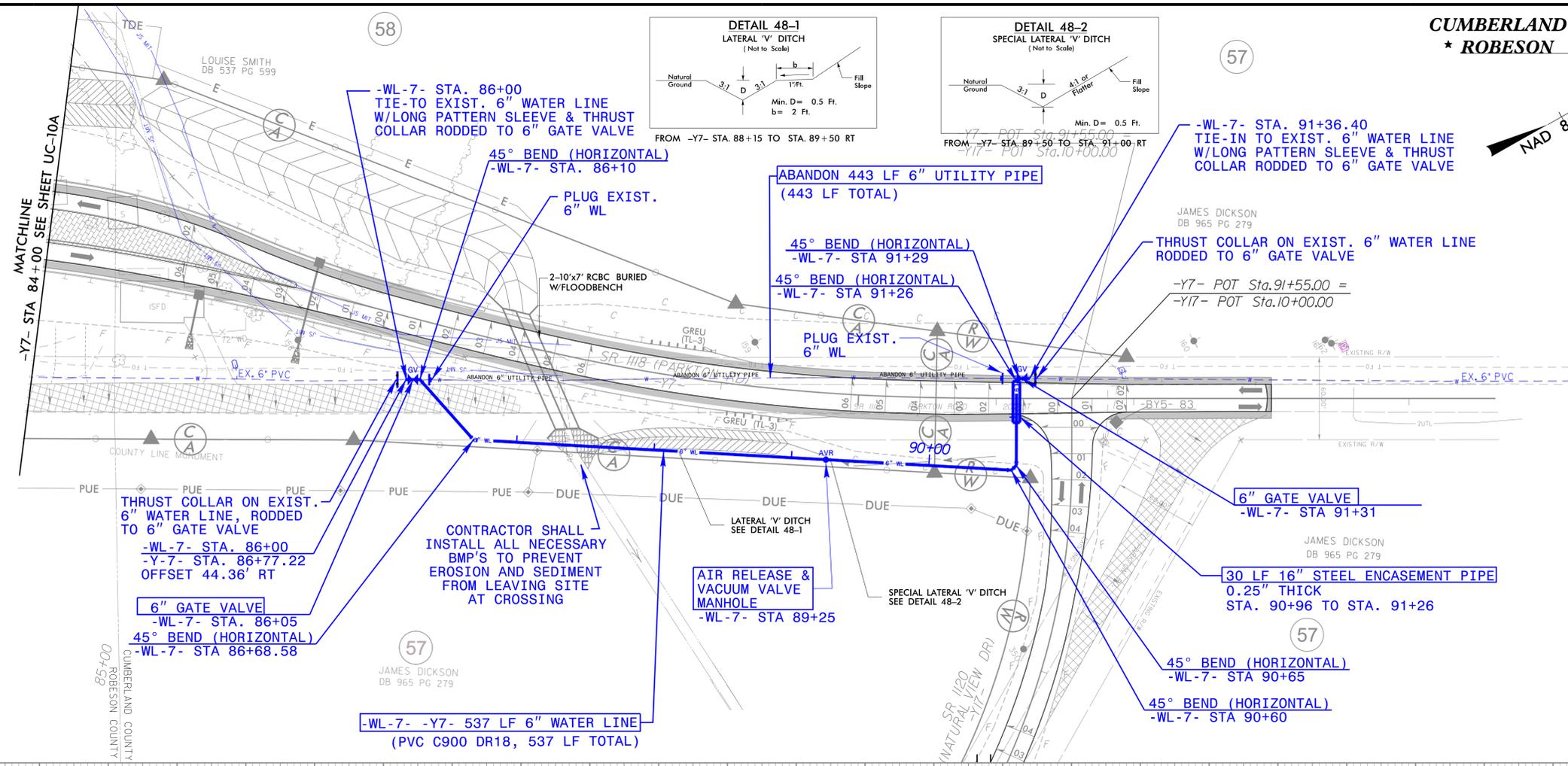
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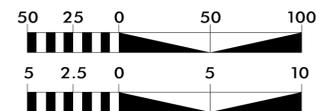
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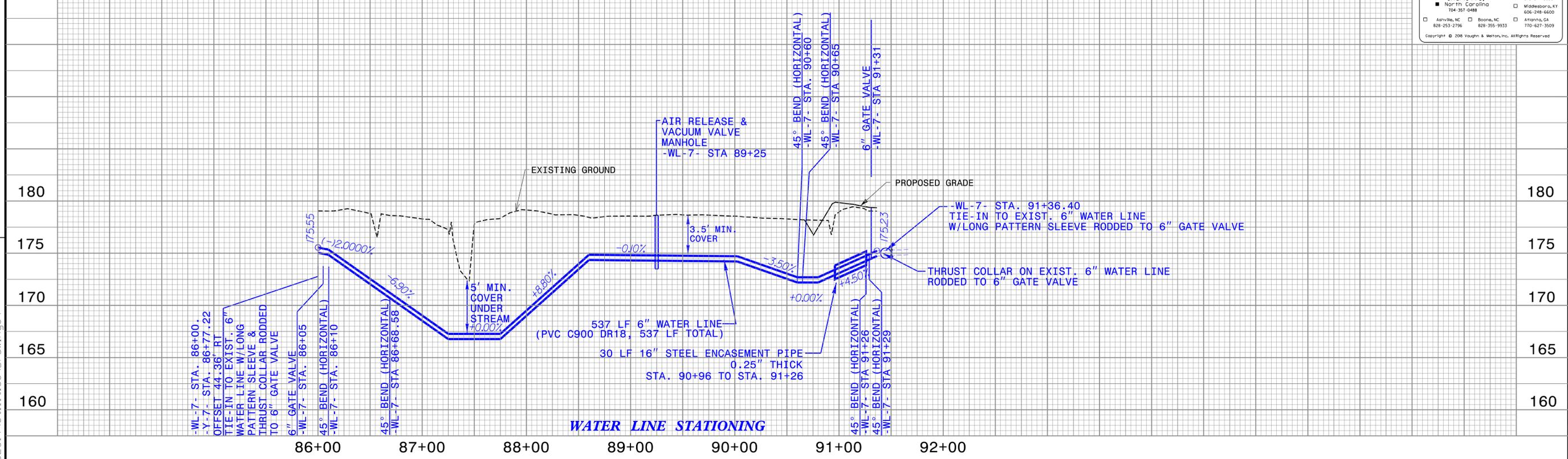
PAVEMENT REMOVAL

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

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 630 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



WATER LINE PROFILE -WL-7- -Y7-



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12-17-18

FOR -Y10- PROFILE SEE SHEET 106
FOR -Y10RAB3- PROFILE SEE SHEET III
FOR -Y12- PROFILE SEE SHEET 116

2" BLOW OFF W/METER BOX
W/AUTO FLUSHER
-WL-8- STA. 74+02.50
-Y10- STA. 74+02.50
OFFSET 43.9' LT.
(SEE UC-3C FOR DETAIL)
GRADE AREA TO DRAIN
AUTOFLUSHER

8" M.J. PLUG
-WL-8- STA 74+00.00
-Y10- STA. 74+00.00
OFFSET 21.00' LT.

-WL-8- -Y10- 936 LF 8" WATER LINE
(DIP PC350, 1631 LF TOTAL)
8" GATE VALVE
-WL-8- STA. 78+63.38

8" TEE
-WL-8- STA. 78+60.38
-Y10- STA. 78+60.00
OFFSET 30.75' LT.
-WL-9- STA. 29+38.66

11 1/4" BEND (HORIZONTAL)
-WL-8- STA. 78+48.95

45° BEND (HORIZONTAL)
-WL-8- STA. 78+89.58
22 1/2° BEND (HORIZONTAL)
-WL-8- STA. 79+62.37

45° BEND (HORIZONTAL)
-WL-8- STA. 80+22.37

8" GATE VALVE
-WL-8- STA. 74+05

6" GATE VALVE

8"x8"x6" FH TEE
-WL-8- STA. 75+20

8" GATE VALVE
-WL-9- STA. 29+35.66

65 LF 16" STEEL ENCASEMENT PIPE
0.25" THICK
STA. 28+62 TO STA. 29+27
45° BEND (HORIZONTAL)
-WL-9- STA. 28+61.91

45° BEND (HORIZONTAL)
-WL-9- STA. 28+25.52

-WL-9- -Y12- 336 LF 8" WATER LINE
(DIP PC350, 1239 LF TOTAL)
45° BEND (HORIZONTAL)
-WL-9- STA. 26+80.46

MATCHLINE -Y12- STA 26+50
-WL-9- -Y12- STA. 26+02.67 SEE SHEET UC-56

PROJECT REFERENCE NO. U-2519AA-AB SHEET NO. UC-54

DESIGNED BY: DRF
DRAWN BY: DRF
CHECKED BY: DWH
APPROVED BY: DWH

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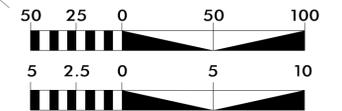
UTILITY CONSTRUCTION



MATCHLINE -Y10- STA 69+00 SEE SHEET 53

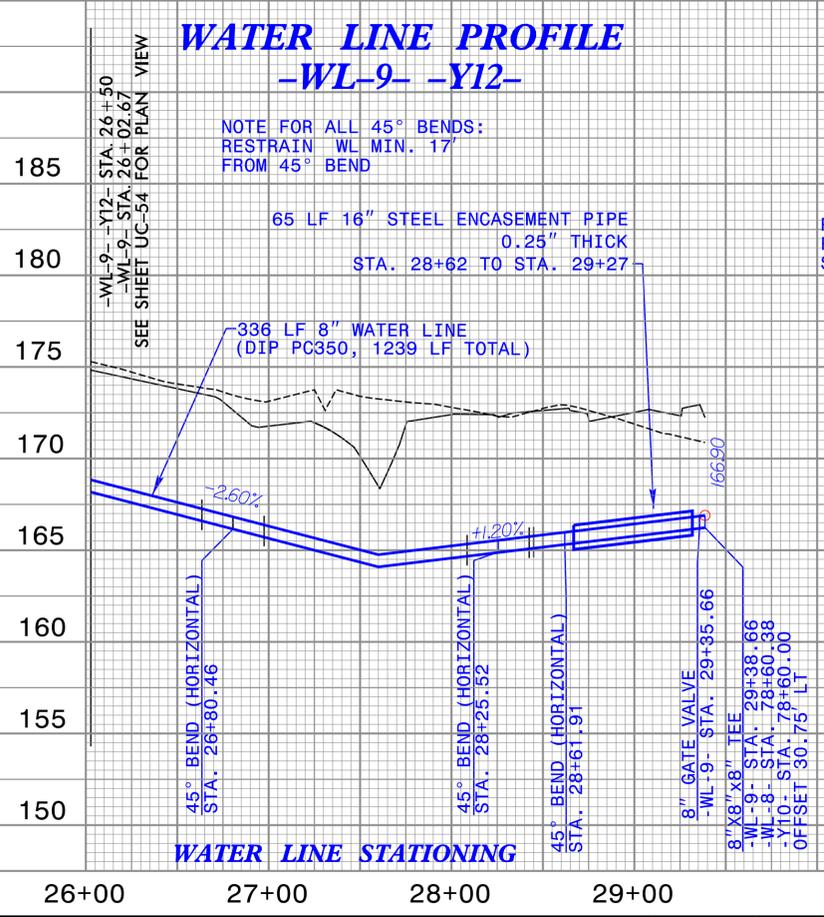
MATCHLINE -Y10- STA 83+00
-WL-8- -Y10- STA. 83+35.54
SEE SHEET UC-55

THE ESTIMATED QUANTITY OF DUCTILE IRON
WATER PIPE FITTINGS ON THIS PLAN SHEET
IS 1350 POUNDS. THE ACTUAL QUANTITY AND
TYPE OF FITTINGS WILL VARY BASED ON
FIELD CONDITIONS.

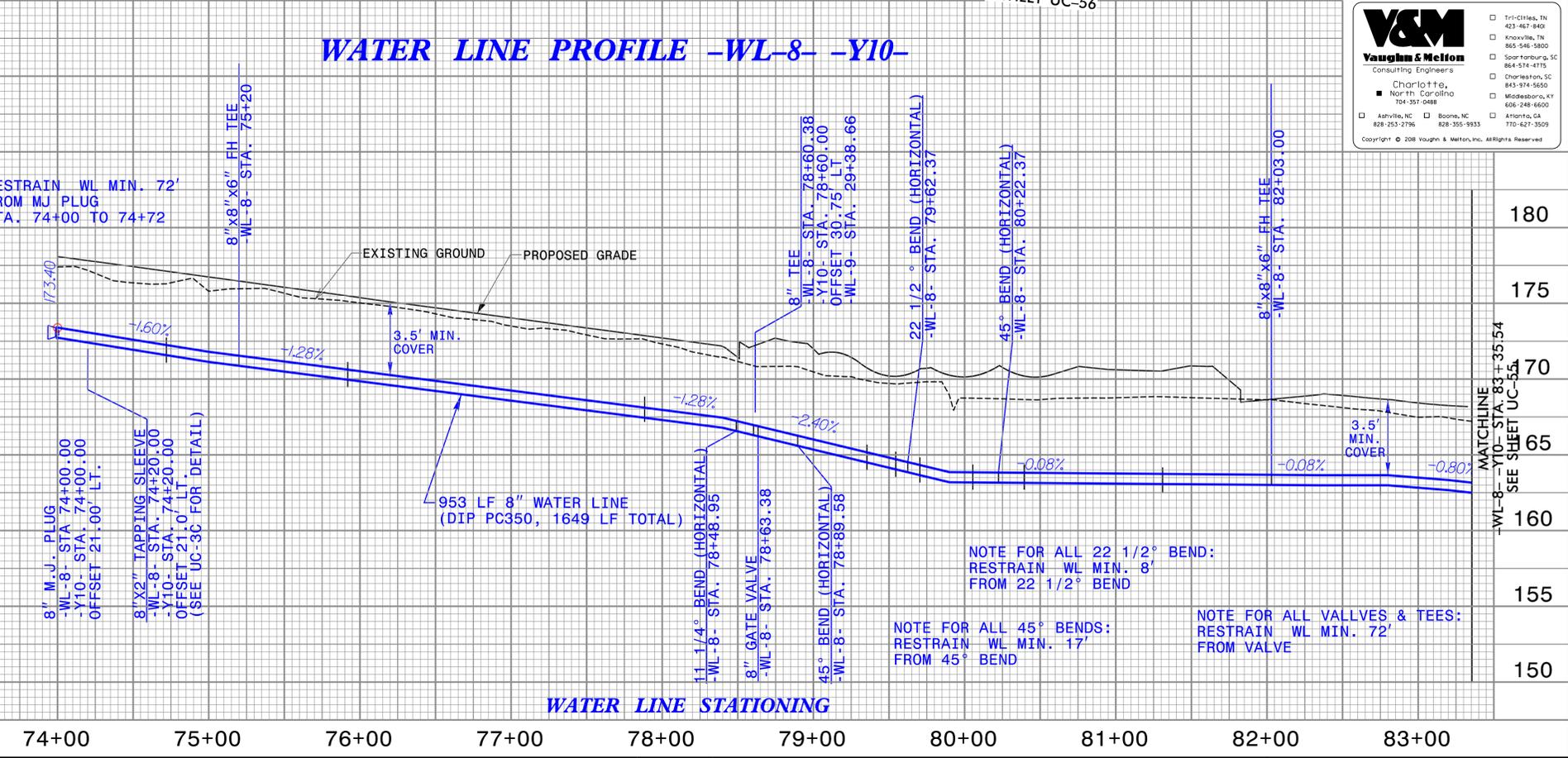


PLAN & PROFILE SCALE: HORIZ. 1"=50'
PROFILE SCALE: VERT. 1"=5'

WATER LINE PROFILE -WL-9- -Y12-



WATER LINE PROFILE -WL-8- -Y10-



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- Asheville, NC 828-253-2796
- Boone, NC 828-355-9933

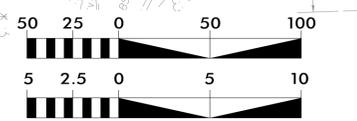
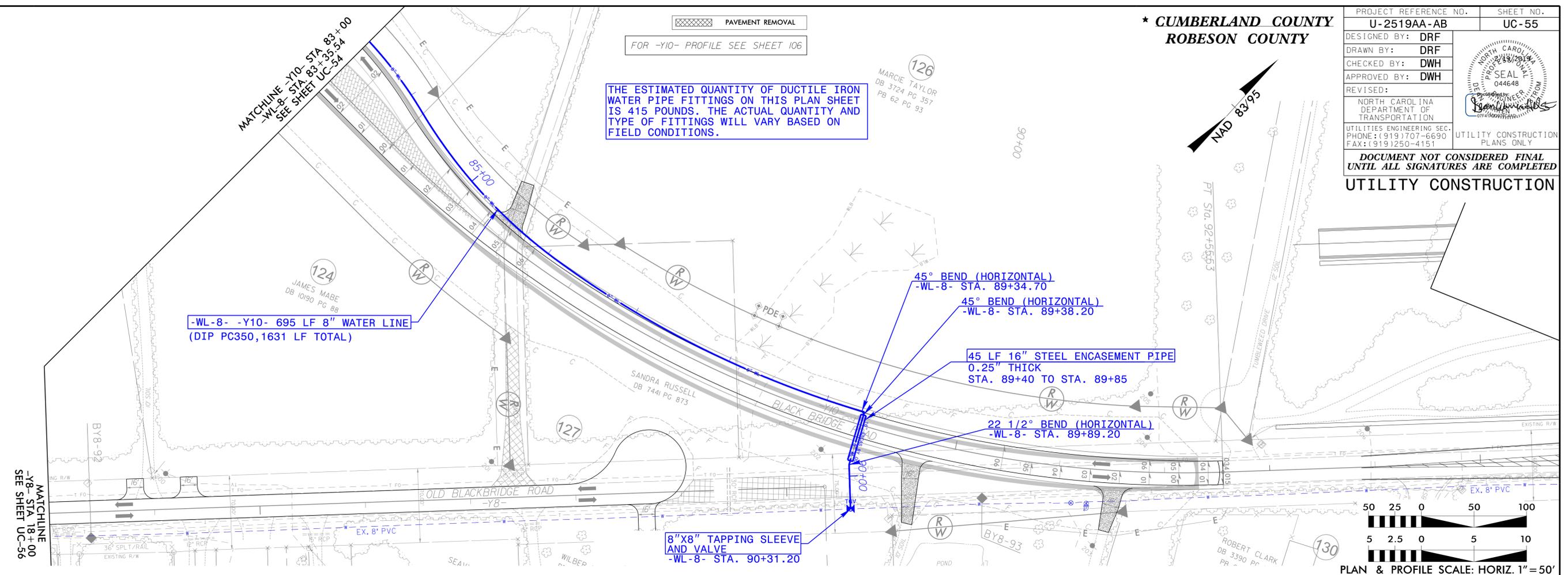
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*** CUMBERLAND COUNTY
ROBESON COUNTY**

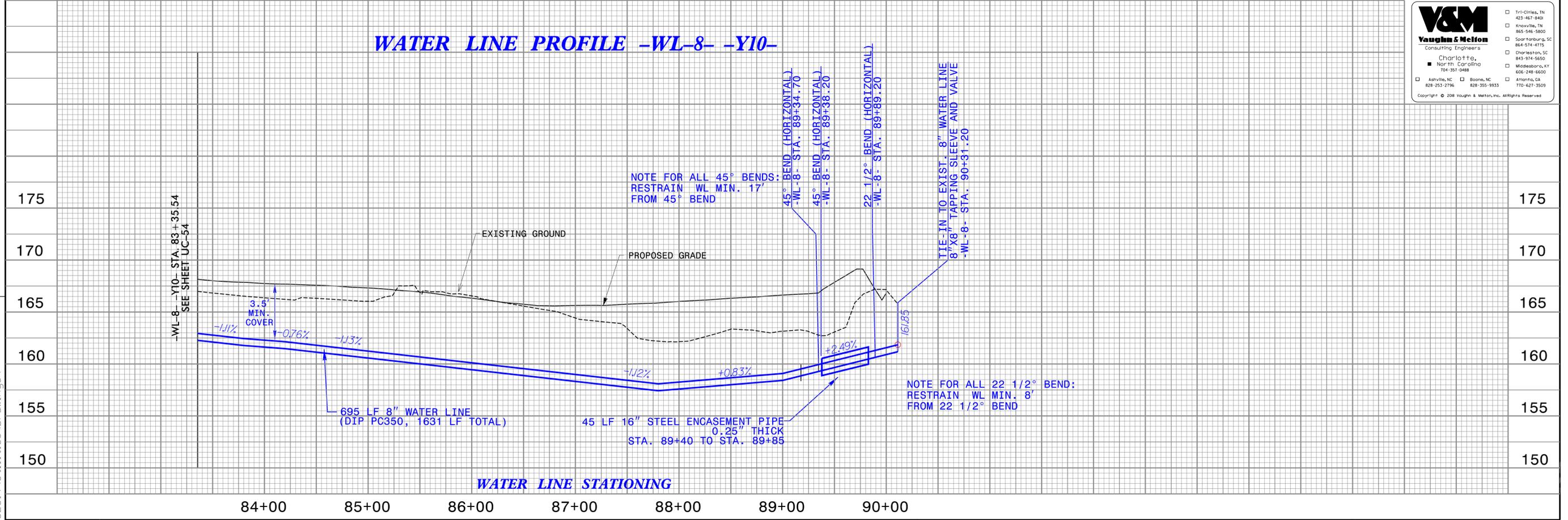
PROJECT REFERENCE NO. U-2519AA-AB	SHEET NO. UC-55
DESIGNED BY: DRF	
DRAWN BY: DRF	
CHECKED BY: DWH	
APPROVED BY: DWH	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED	
UTILITY CONSTRUCTION	

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 415 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



PLAN & PROFILE SCALE: HORIZ. 1"=50'
PROFILE SCALE: VERT. 1"=5'

WATER LINE PROFILE -WL-8- -Y10-



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