

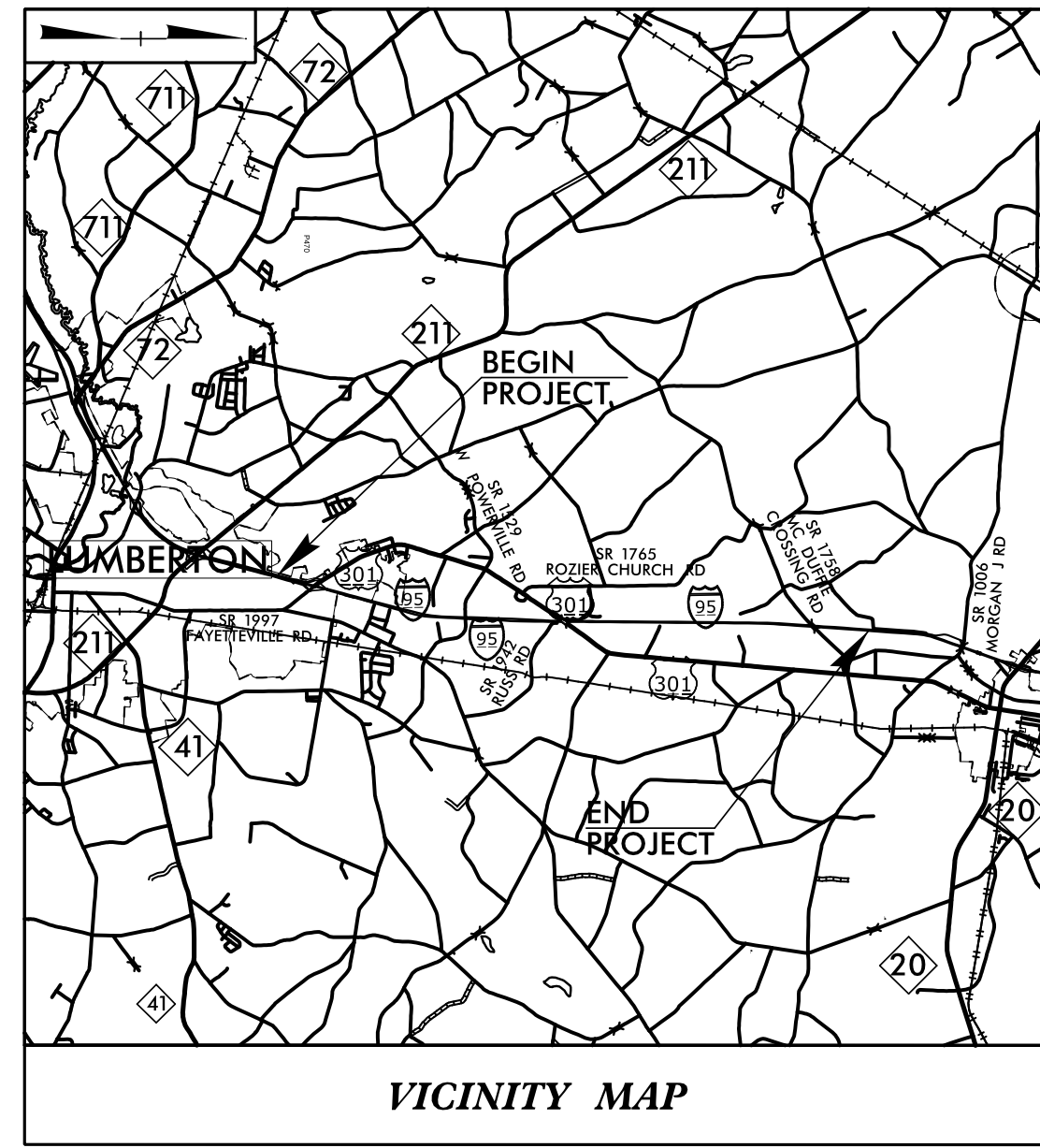
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T.I.P. NO.	SHEET NO.
I-5987A	UC-1

**TIP PROJECT: I-5987A**



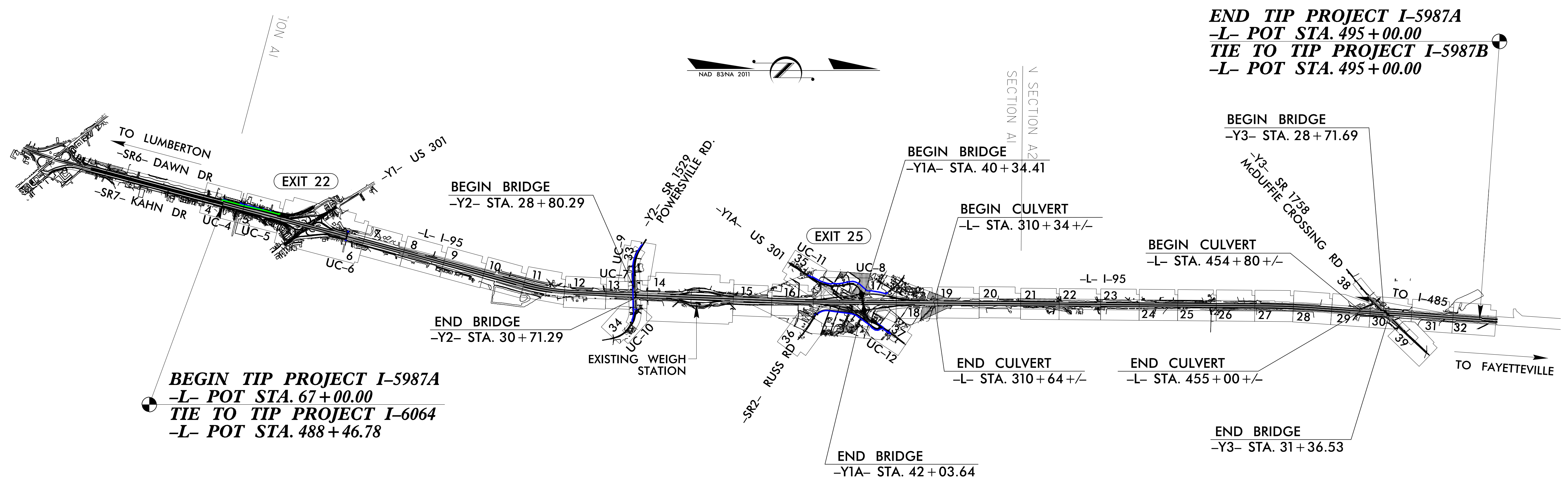
100% PLANS

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS  
ROBESON COUNTY**

**LOCATION: I-95 IMPROVEMENTS  
FROM SOUTH OF US 301 (EXIT 22)  
TO NORTH OF SR 1758 (McDUFFIE CROSSING RD.)**

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

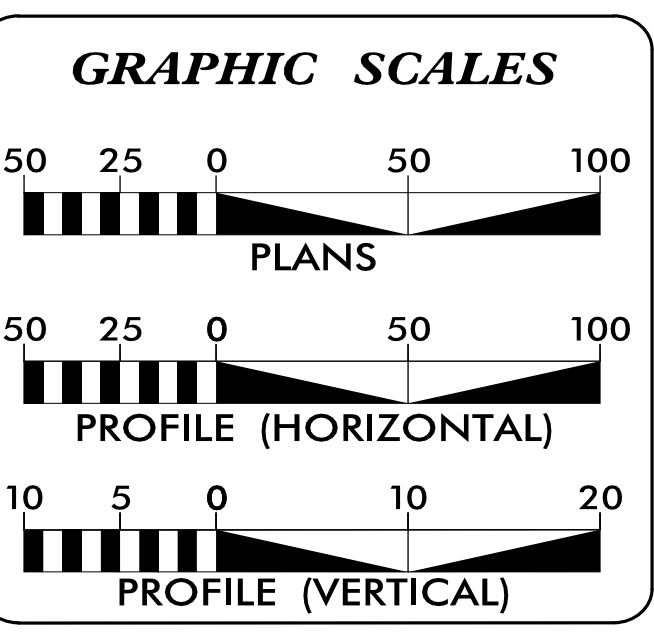


**END TIP PROJECT I-5987A  
-L- POT STA. 495+00.00  
TIE TO TIP PROJECT I-5987B  
-L- POT STA. 495+00.00**

**BEGIN TIP PROJECT I-5987A  
-L- POT STA. 67+00.00  
TIE TO TIP PROJECT I-6064  
-L- POT STA. 488+46.78**

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF LUMBERTON. 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.

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED



**INDEX OF SHEETS**

SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A	DETAILS
UC-4 THRU UC-12	UTILITY CONSTRUCTION SHEETS
UC-13 THRU UC-18	PROFILE SHEETS

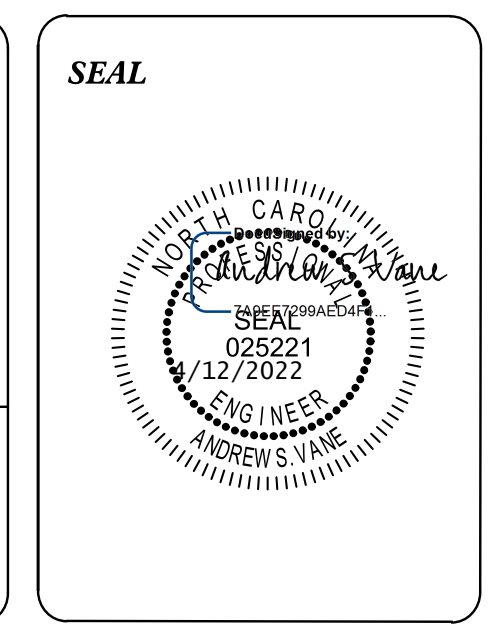
**WATER AND SEWER OWNERS ON PROJECT**

(A) WATER - CITY OF LUMBERTON AND COUNTY OF ROBESON  
(B) FORCE MAIN SEWER - CITY OF LUMBERTON

PREPARED IN THE OFFICE OF

STV Engineers, Inc.  
1600 Perimeter Park Dr.  
Suite 225  
Morrisville, NC 27560  
NC License Number F-0991  
(919) 238-6672 FAX: (919) 468-8007



ANDREW VANE, PE	CONSULTANT CONTACT #1
ABBEY NARAYAN, EI	CONSULTANT CONTACT #2
-	CONSULTANT CONTACT #3



**DIVISION OF HIGHWAYS UTILITIES UNIT**  
1555 MAIL SERVICES CENTER  
RALEIGH, NC 27699-1555  
PHONE (919) 707-6690  
FAX (919) 250-4151

BO HEMPHILL	EASTERN UTILITIES MANAGER
NABIL HAMDAN	UTILITIES REGIONAL ENGINEER
RICK HANDLIN	UTILITIES ENGINEER
RANDY D. ROGERS	UTILITIES COORDINATOR

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. <b>I-5987A</b>	SHEET NO. <b>UC-2</b>
 <b>NV5</b> ENGINEERS & CONSULTANTS, INC. 7500 E. INDEPENDENCE BLVD, STE 100 CHARLOTTE, NC 28227 P: 704.537.7300 www.NV5.com NC License # F-1333	
 <b>STV</b> 100 Years <b>STV Engineers, Inc.</b> 1600 Perimeter Park Drive Suite 225 Morrisville, NC 27560 NC License Number F-0991	

## UTILITIES PLAN SHEET SYMBOLS

### PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	12" WL
11¼ Degree Bend	++
22½ Degree Bend	+X
45 Degree Bend	+X
90 Degree Bend	+
Plug	■
Tee	+
Cross	+
Reducer	▶
Gate Valve	GV
Butterfly Valve	BV
Tapping Valve	TGV
Line Stop	LS
Line Stop with Bypass	LS/BP
Blow Off	BO
Fire Hydrant	PFH
Relocate Fire Hydrant	RFH
Remove Fire Hydrant	REM FH
Water Meter	PWM
Relocate Water Meter	RWM
Remove Water Meter	REM WM
Water Pump Station	PST(W)
RPZ Backflow Preventer	PRPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RRPZ
Relocate DCV Backflow Preventer	RBFP

### PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	12" SS
Force Main Sewer Line (Sized as Shown)	12" FSS
Manhole (Sized per Note)	●
Sewer Pump Station	PST(SS)

### PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	○
Telephone Pole	○
Joint Use Pole	○
Telephone Pedestal	TEL PED
Utility Line by Others (Type as Shown)	PROP O/H POW LINES
Trenchless Installation	12" TL INSTALL
Encasement by Open Cut	24" ENCAS BY OC
Encasement	24" ENCASUREMENT

Thrust Block	■
Air Release Valve	AR
Utility Vault	UV
Concrete Pier	CP
Steel Pier	SP
Plan Note	NOTE
Pay Item 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	A/G Gas
Power Manhole	⊗	*Underground Water Line	_____
Telephone Manhole	⊗	Aboveground Water Line	A/G Water
Sanitary Sewer Manhole	⊗	*Underground Gravity Sanitary Sewer Line	ss
Hand Hole for Cable	⊠	Aboveground Gravity Sanitary Sewer Line	A/G Sanitary Sewer
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) \_\_\_\_\_  
 Designated Utility Line (Type as Shown) \_\_\_\_\_

# UTILITY CONSTRUCTION

**NV5**  
 NV5 ENGINEERS & CONSULTANTS, INC.  
 7500 E. INDEPENDENCE BLVD, STE 100  
 CHARLOTTE, NC 28227  
 P: 704.537.7300 www.NV5.com  
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**STV** 100 Years  
 STV Engineers, Inc.  
 1600 Perimeter Park Drive  
 Suite 225  
 Morrisville, NC 27560  
 NC License Number F-0991

PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-3
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

## 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.
2. THE EXISTING UTILITIES BELONG TO THE CITY OF LUMBERTON AND ROBESON COUNTY.
3. ALL WATER 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 ENVIRONMENT 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.

## PROJECT SPECIFIC NOTES:

1. PROPOSED WATER LINES SHALL BE PVC SDR21 UNLESS INDICATED OTHERWISE. PROPOSED FORCE MAIN SHALL BE C900 PVC DR18 UNLESS INDICATED OTHERWISE.
2. PIPE INSTALLED BY DIRECTIONAL DRILL SHALL BE HDPE DR9 OR C900 FPVC DR18, AS SHOWN ON THE PLANS.
3. 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 IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
4. IF HDPE PIPE IS INSTALLED BY DIRECTIONAL DRILL, IT SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTINGS FOR ONE WEEK FROM THE TIME OF INSTALLATION. ENDS OF HDPE PIPE SHALL BE SEALED AFTER INSTALLATION AND PRIOR TO BEING CONNECTED TO OTHER PIPE OR FITTINGS.
5. THERE IS AN ABANDONED 3" FORCE MAIN ALONG DAWN DRIVE IN THE VICINITY OF THE EXISTING 6" FORCE MAIN THAT IS TO BE RELOCATED. CONTRACTOR SHALL PERFORM TEST HOLES AT PROPOSED 6" FORCE MAIN TIE-IN LOCATIONS ALONG DAWN DRIVE PRIOR TO INSTALLING 6" RELOCATION PIPING AND APPURTENANCES.
6. CONTRACTOR TO BACKFILL TO 30" MIN COVER OVER PROPOSED WATER LINES AND FORCE MAINS, WHERE APPLICABLE, PRIOR TO TESTING AND PLACING INTO SERVICE.
7. ROBESON COUNTY WILL COLLECT ALL BACTERIOLOGICAL SAMPLES FOR RELOCATION PROJECTS. A ROBESON COUNTY REPRESENTATIVE SHALL BE PRESENT FOR THE PRESSURE TEST, CHLORINATION, AND FLUSHING OF ALL NEW WATER LINES AND SERVICES.
8. NO CONNECTION SHALL BE MADE BY THE CONTRACTOR TO ANY SECTION OF ROBESON COUNTY'S EXISTING WATER SYSTEM UNLESS THE RESIDENT INSPECTOR, FIELD ENGINEER, OR WATER PLANT SUPERINTENDENT IS PRESENT AT THE SITE. NO VALVE OR HYDRANT SHALL BE OPENED OR CLOSED UNLESS ONE OF THE ABOVE-LISTED PERSONS IS PRESENT AT THE SITE.

## UTILITY CONSTRUCTION

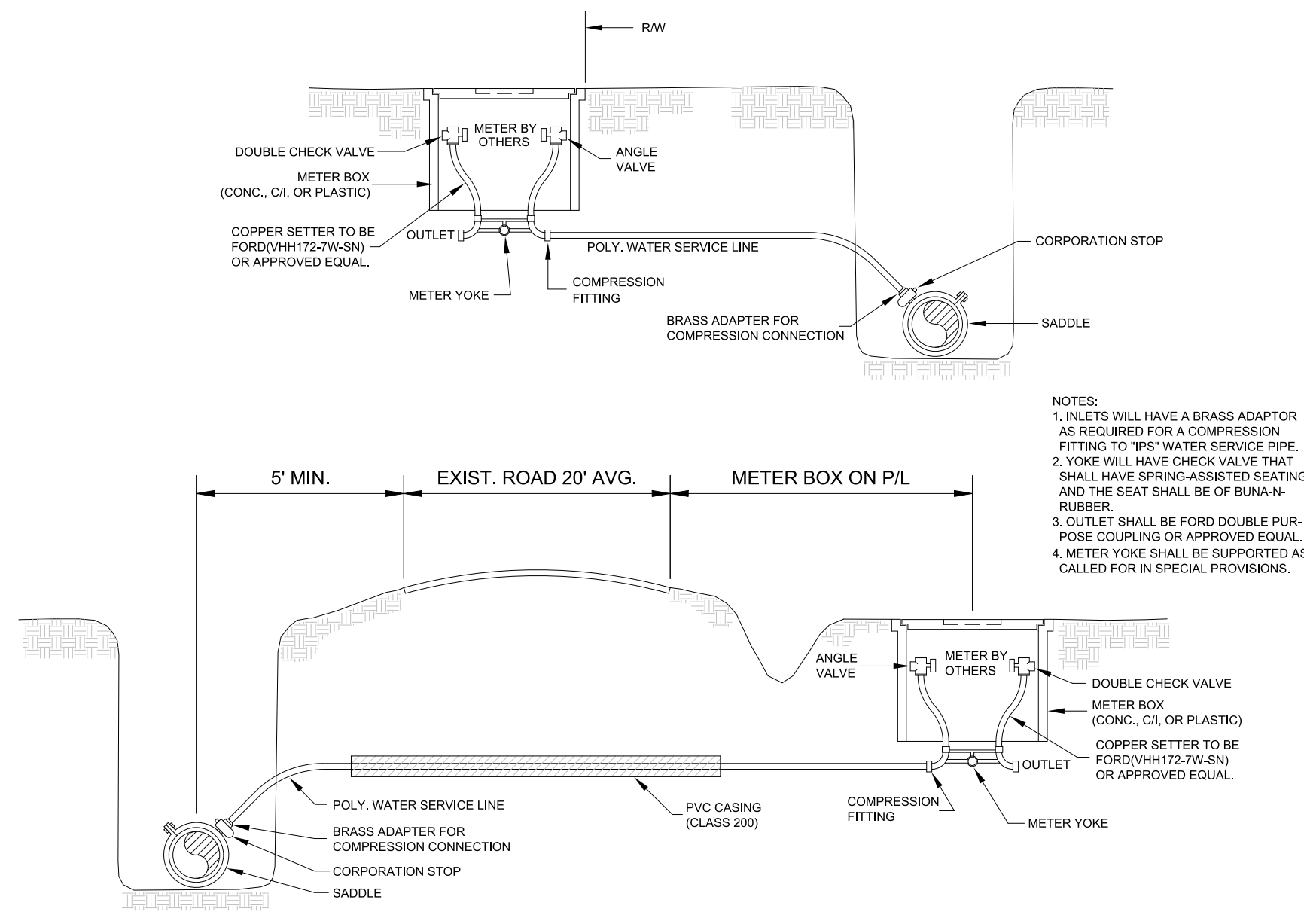
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**UTILITY CONSTRUCTION**

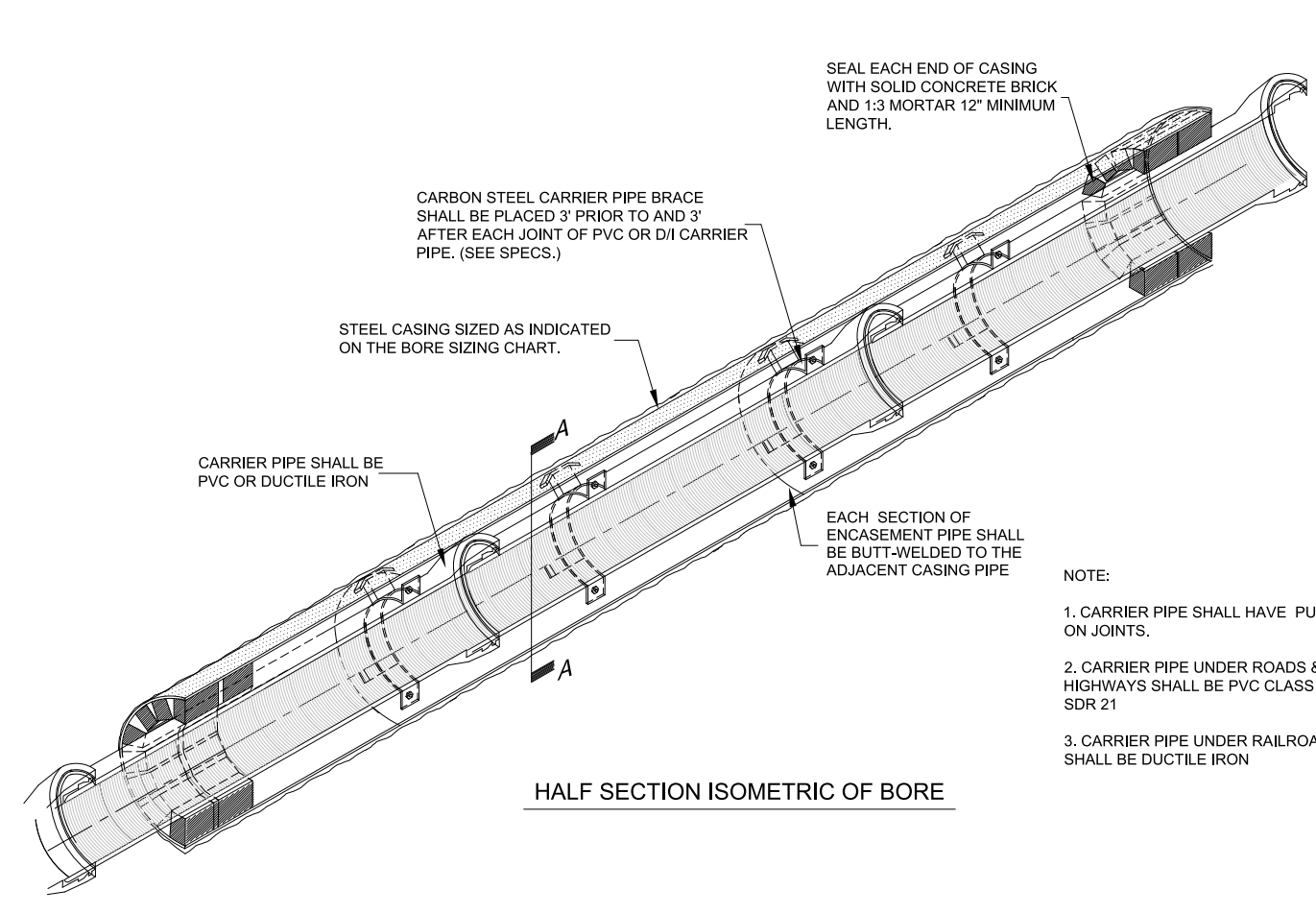
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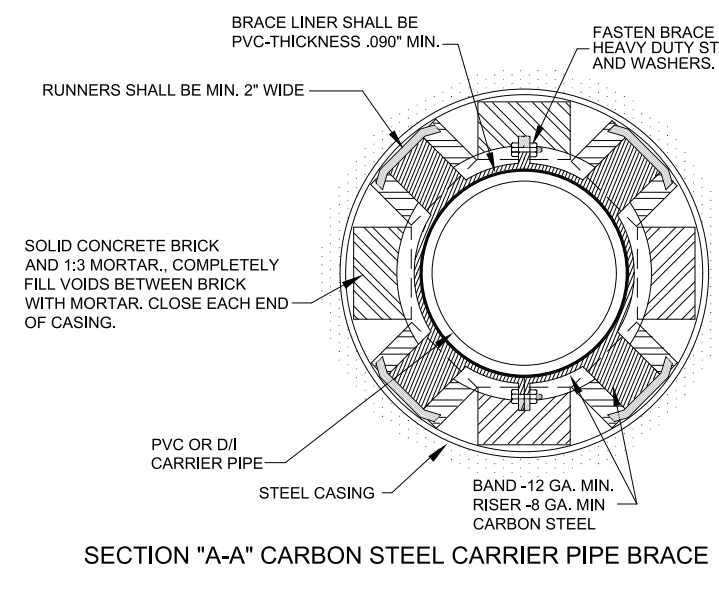
Typical House Service Detail  
NTS



HALF SECTION ISOMETRIC OF BORE

CARRIER PIPE SIZE	BORE SIZING CHART *		RAILROADS	
	MIN. CASING SIZE	MIN. WALL THICKNESS	MIN. WALL THICKNESS	MIN. WALL THICKNESS
8"	12"	0.188"	0.188"	0.188"
8"	16"	0.250"	0.250"	0.188"
12"	24"	0.250"	0.250"	0.250"
16"	24"	0.250"	0.250"	0.250"
18"	30"	0.250"	0.250"	0.312"
24"	36"	0.250"	0.250"	0.375"
30"	42"	0.312"	0.312"	0.469"
36"	48"	0.375"	0.375"	0.532"

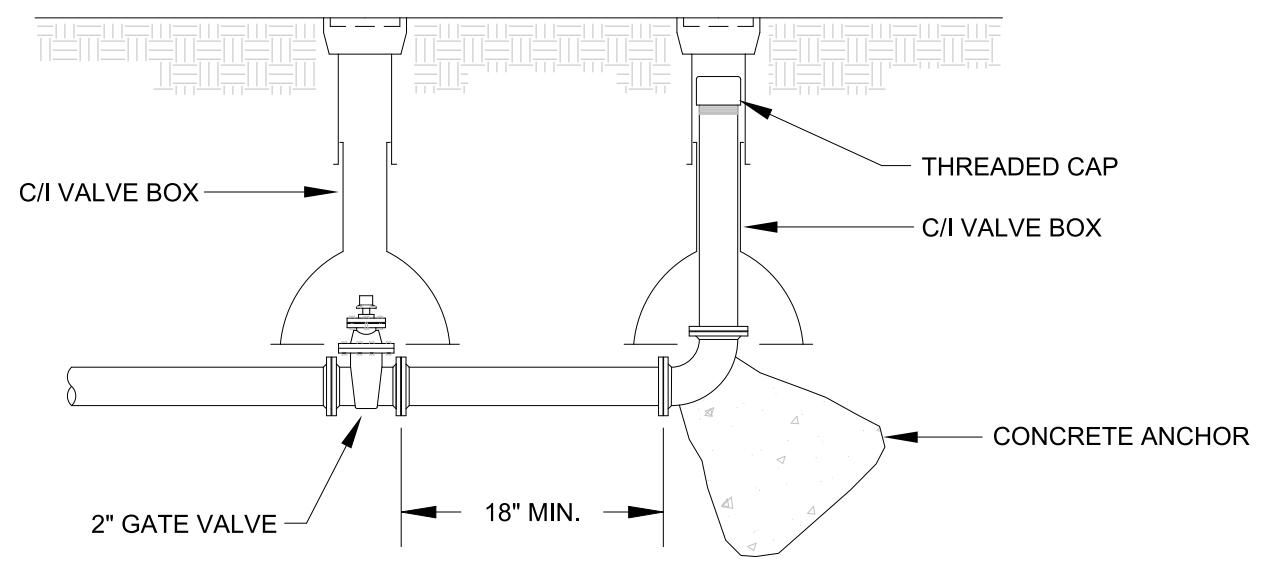
\* CONTRACTOR MAY SUBSTITUTE A LARGER SIZE CASING PIPE HAVING THE MIN. WALL THICKNESS SHOWN FOR SEWER MAINS. ALL ADDITIONAL COSTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR BORING AND JACKING.



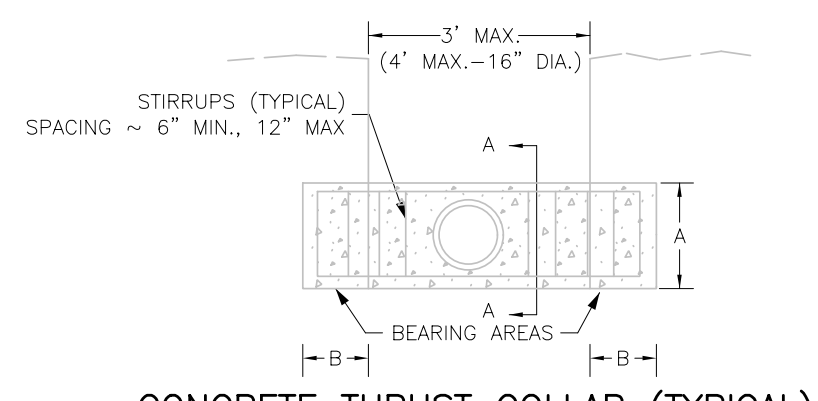
SECTION "A-A" CARBON STEEL CARRIER PIPE BRACE

Boring Detail for Highways and Railroads

NTS



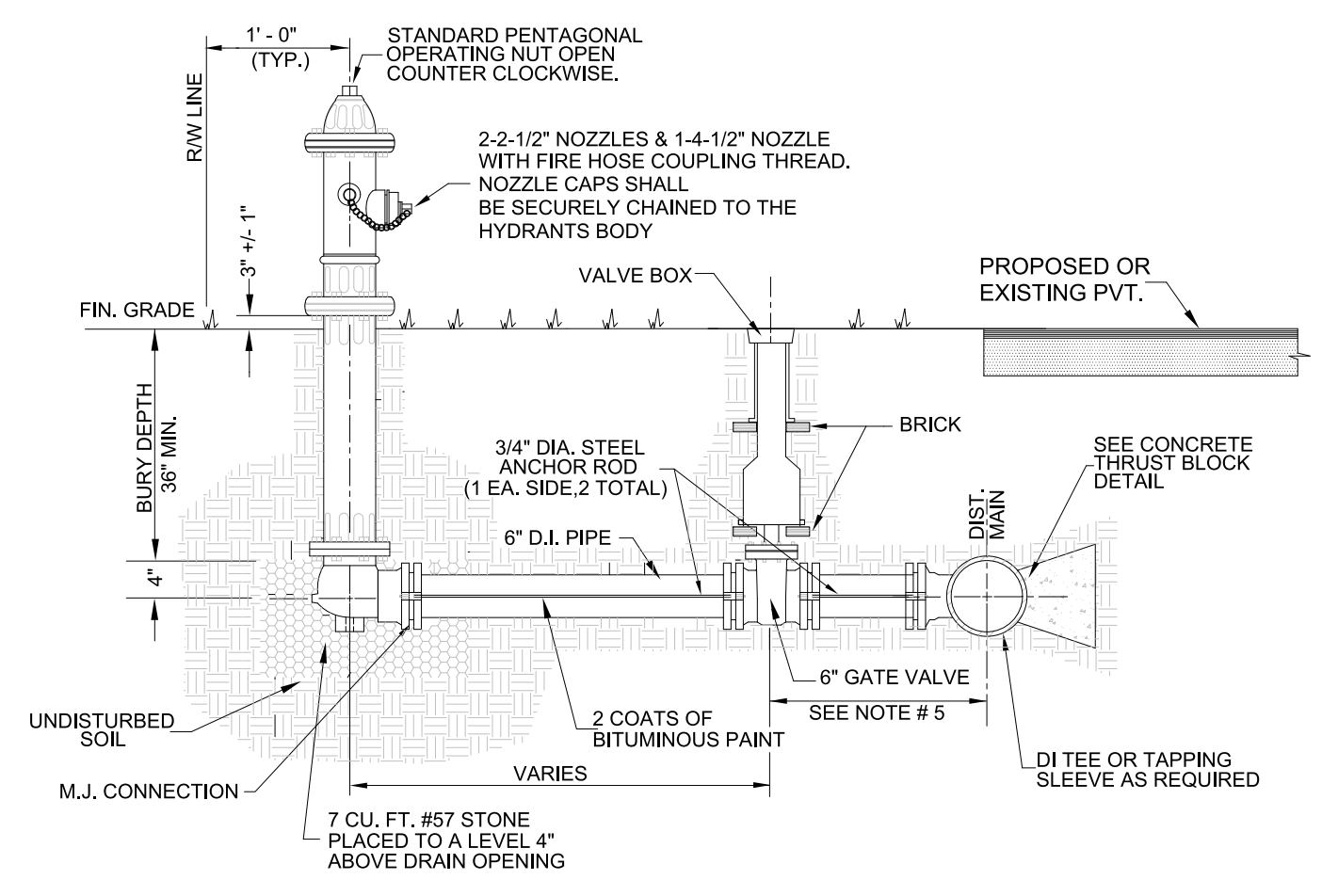
Typical Blowoff Assembly  
NTS



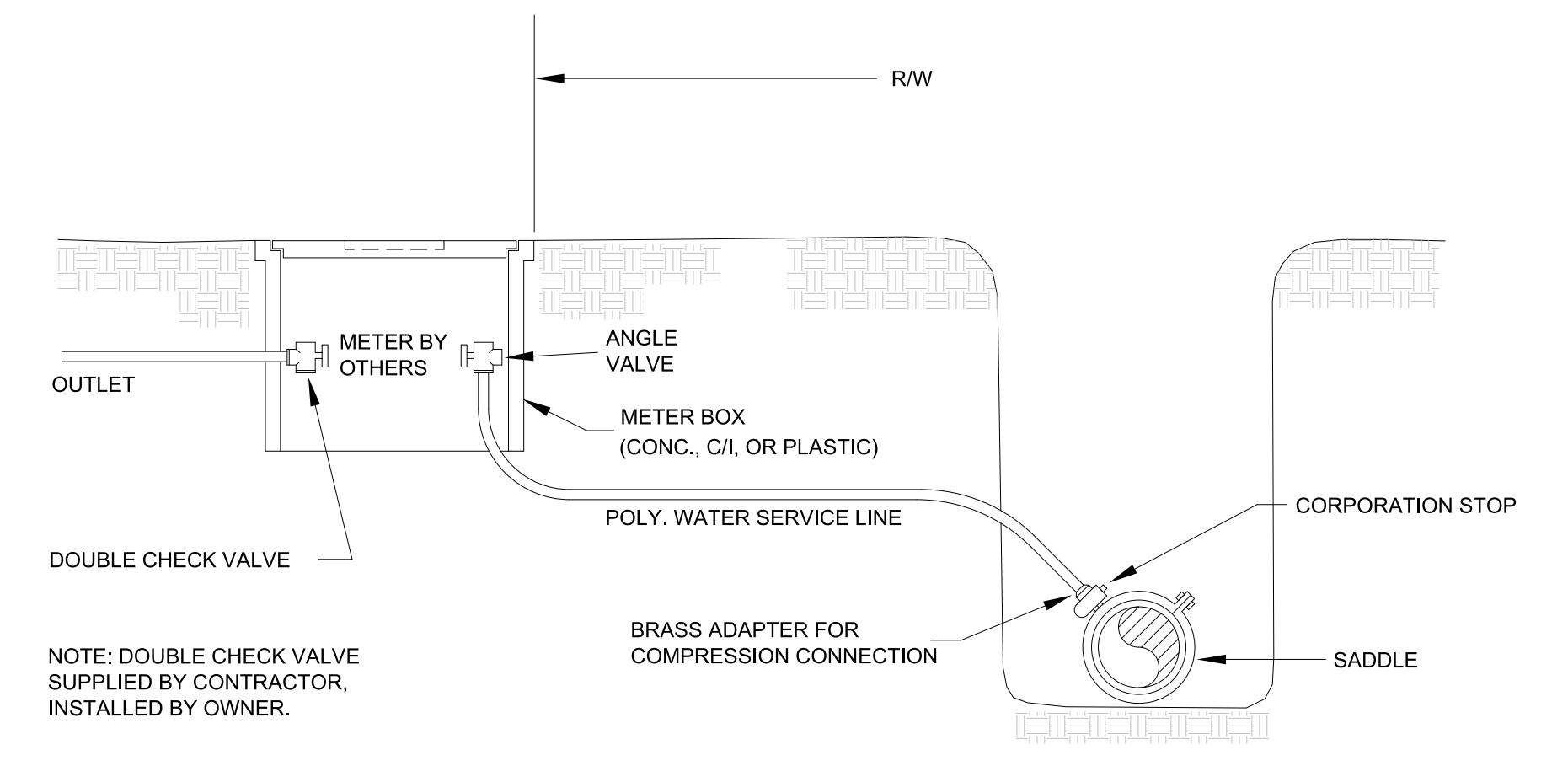
CONCRETE THRUST COLLAR (TYPICAL)  
NOT TO SCALE

SIZE	"A"	"B"
4"	36"	24"
6"	36"	24"
8"	36"	30"
10"	36"	48"
12"	48"	48"
16"	36"	60"

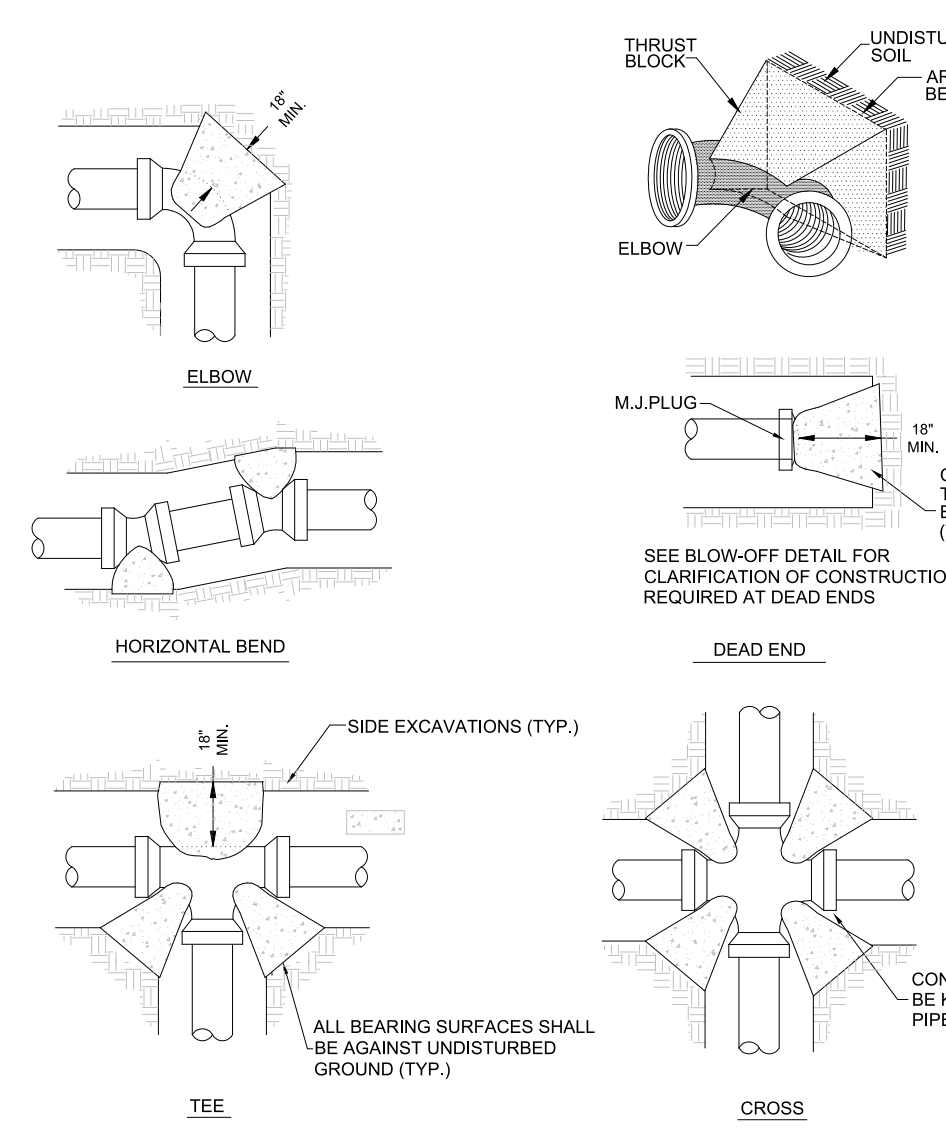
- NOTES:
1. ALL VALVES AND HYDRANTS SHALL HAVE M.J. CONNECTIONS WITH IRON RETAINING GLAND M.J. RESTRAINT OR ANCHOR LUGS AND 3/4" DIA. STEEL ANCHOR RODS.
  2. 3/4" DIA. STEEL RODS AND ALL BURIED SURFACES SHALL BE PAINTED WITH 2 COATS OF BITUMINOUS PAINT. MARRED OR SCRATCHED SURFACES SHALL BE REPAINTED. PAINT SHALL CURE PRIOR TO BACK FILLING TRENCH.
  3. FIRE HYDRANTS SHALL BE PLACED AS DIRECTED BY THE ENGINEER.
  4. HYDRANT BRANCH SHALL NOT BE BACK FILLED UNTIL INSPECTED AND APPROVED BY ENGINEER.
  5. HYDRANT EXTENSIONS SHALL BE APPROVED BY ENGINEER.



HYDRANT DETAIL  
NTS



2" SERVICE CONNECTION DETAIL  
NTS

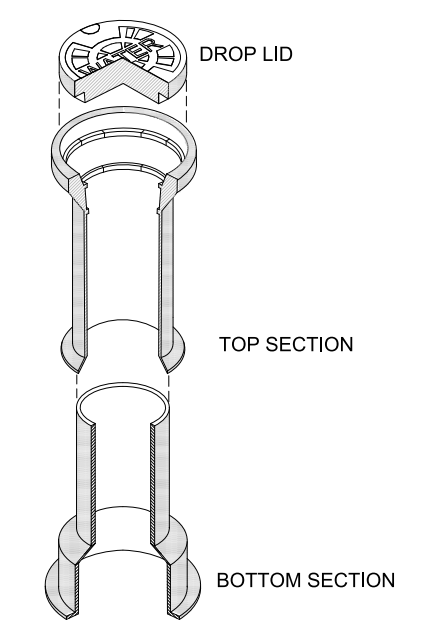
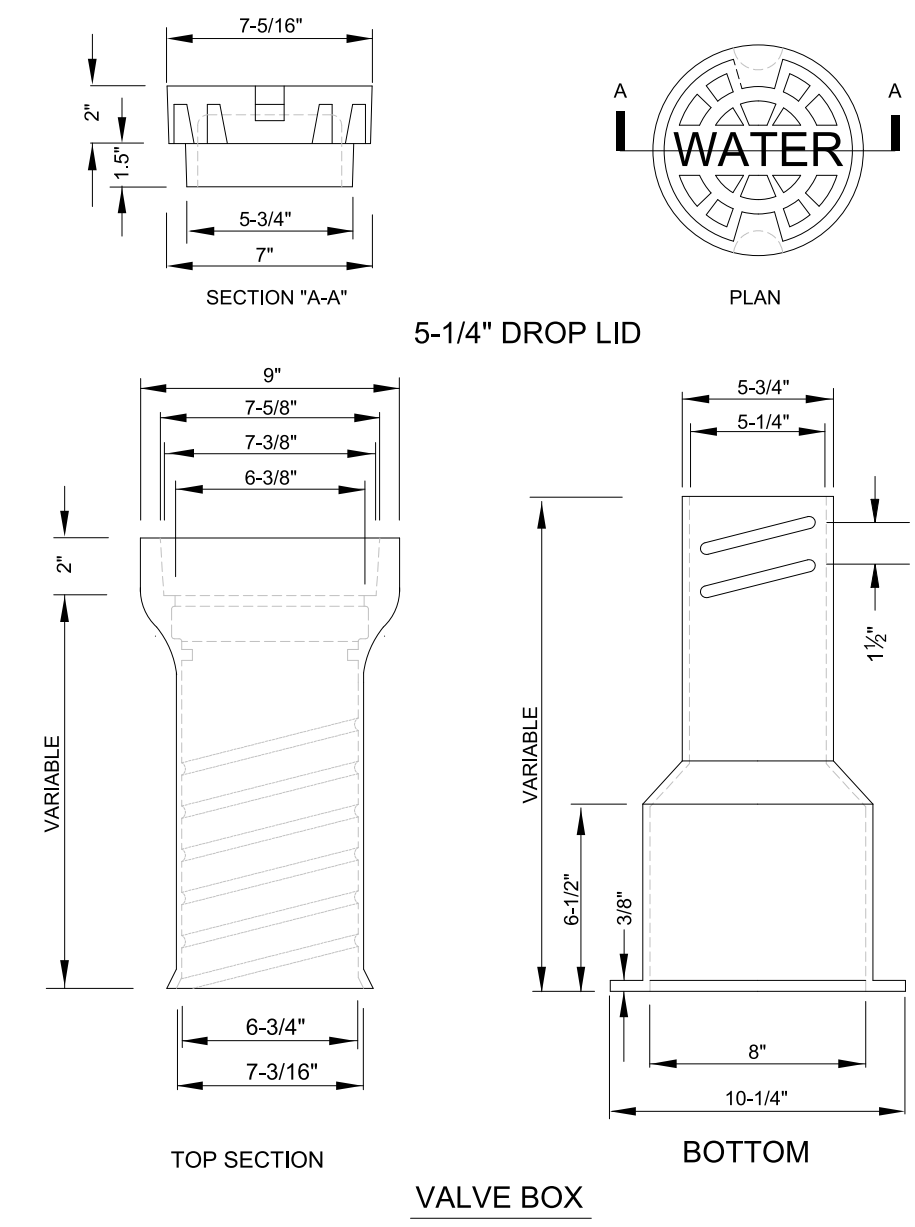


CONCRETE THRUST BLOCK DETAIL  
NTS

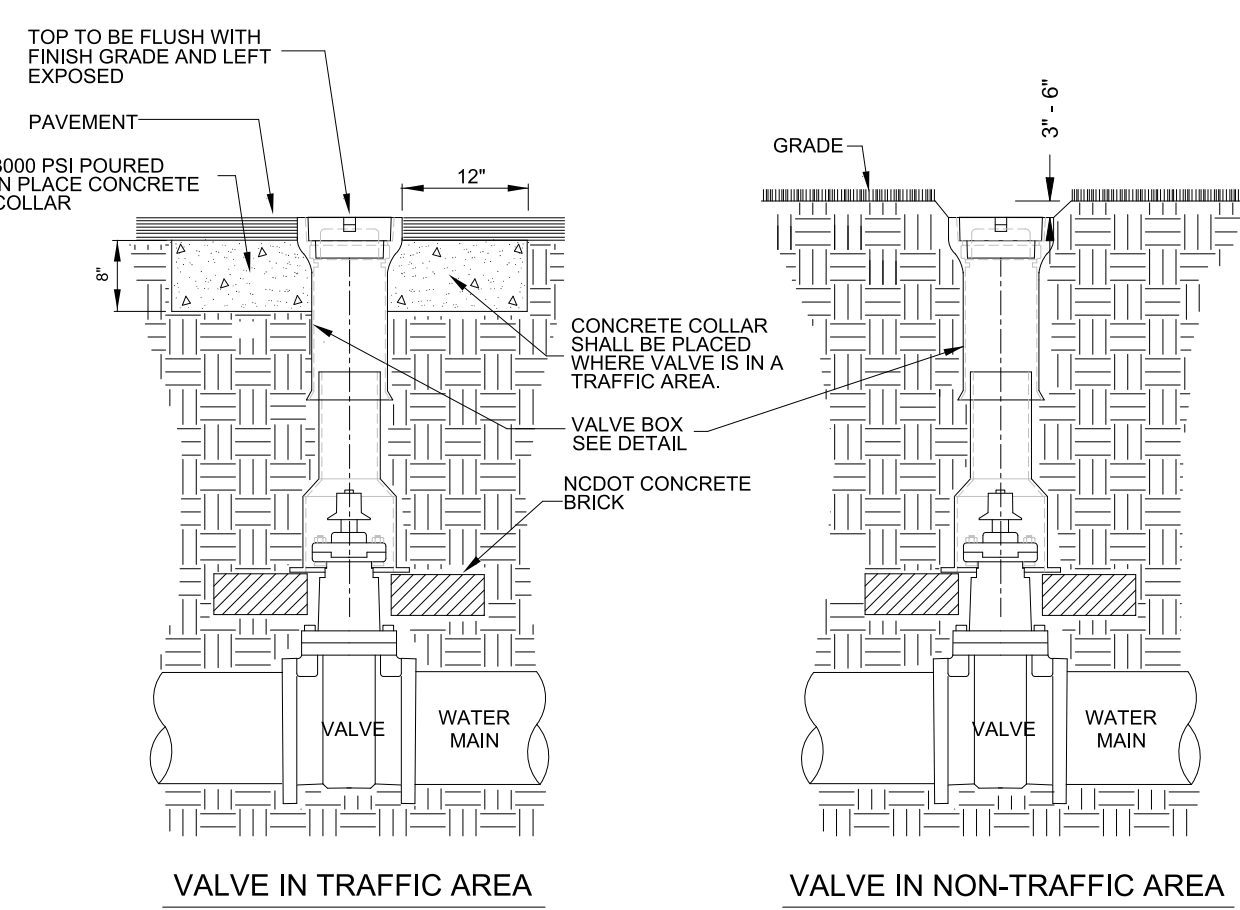
FITTING SIZE (IN.)	THRUST BLOCKING SCHEDULE					
	11 1/4"	22 1/2"	45"	90"	TEE	PLUG
2		0.23 (0.11)	0.38 (0.11)	0.30 (0.11)	0.30 (0.11)	0.30 (0.11)
4		0.83 (0.18)	1.35 (0.18)	0.98 (0.18)	0.98 (0.18)	0.98 (0.18)
6	0.40 (0.01)	0.80 (0.02)	1.73 (0.20)	3.00 (0.33)	2.17 (0.25)	2.17 (0.25)
8	0.80 (0.02)	1.50 (0.04)	3.08 (0.34)	5.40 (0.60)	3.83 (0.42)	3.83 (0.42)
10	1.20 (0.03)	2.30 (0.07)	4.72 (0.52)	8.40 (0.94)	5.92 (0.66)	5.92 (0.66)
12	1.70 (0.05)	3.30 (0.12)	6.82 (0.75)	12.00 (1.33)	8.48 (0.94)	8.48 (0.94)
16	3.00 (0.33)	5.90 (0.65)	11.60 (0.86)	21.30 (1.57)	15.00 (0.97)	15.00 (0.97)
20	4.60 (0.52)	9.20 (0.78)	18.00 (1.32)	33.30 (3.60)	23.30 (1.87)	23.30 (1.87)
24	6.70 (0.75)	13.20 (0.97)	26.00 (2.28)	48.00 (5.29)	33.60 (3.24)	33.60 (3.24)
30	10.40 (0.77)	20.70 (1.80)	40.80 (4.45)	75.00 (10.30)	52.50 (6.32)	52.50 (6.32)
36	15.00 (1.28)	29.80 (3.11)	58.40 (7.87)	108.00 (17.90)	75.60 (10.90)	75.60 (10.90)

NOTE: Values given are based on 150 psi water pressure and 2000 lb/cf soil bearing capacity. Soils with less bearing capacity such as muck, peat or soft clay will require greater blocking areas and volumes.  
The thrust blocking shown above is based on the use of mechanical joint as shown on plans.

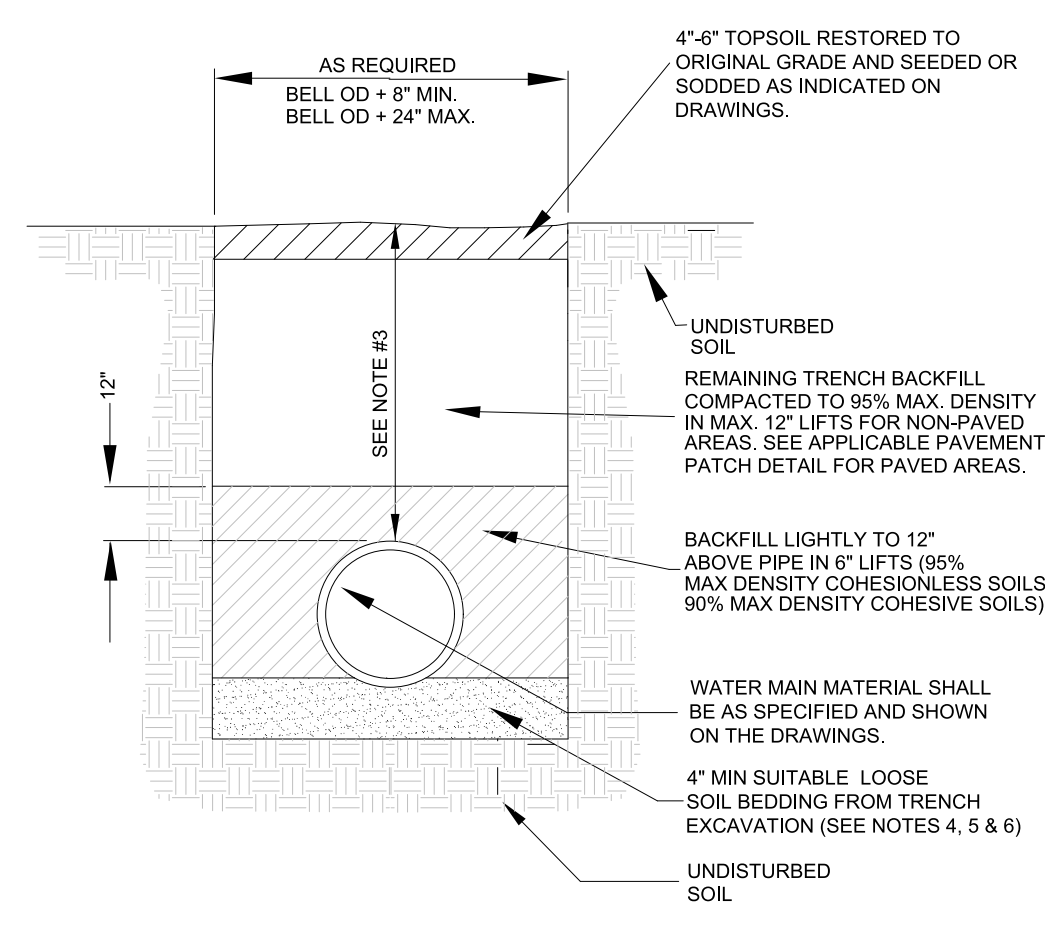
5/14/99



Valve Box Detail  
NTS



VALVE IN TRAFFIC AREA  
VALVE IN NON-TRAFFIC AREA



WATER MAIN BEDDING DETAIL  
NTS

- NOTES:
1. ALL EXCAVATIONS SHALL COMPLY WITH THE TERMS AND CONDITIONS OF THE CONSTRUCTION STANDARDS FOR EXCAVATIONS IN OSHA SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION, CHAPTER XV11 OF TITLE 29, CFR, PART 1926. THE CONTRACTOR SHALL HAVE A COMPETENT PERSON ON SITE AT ALL TIMES DURING EXCAVATION AND BACKFILLING.
  2. CONTRACTOR SHALL USE TRENCH BOX SHORING IN ALL OPEN CUTS IN PAVED AREAS. TRENCH WIDTH SHALL BE MAINTAINED AT THE MINIMUM PRACTICAL WIDTH.
  3. SEE PLANS FOR MINIMUM COVER.
  4. LOOSE SOIL OR SELECT MATERIAL IS DEFINED AS "NATIVE" SOIL EXCAVATED FROM THE TRENCH, FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.
  5. BEDDING MATERIAL SHALL EXTEND TO UNDISTURBED TRENCH WALLS AND TRENCH BOTTOM. BEDDING MATERIAL WILL NOT BE PAID FOR UNLESS SPECIFICALLY APPROVED BY THE PROJECT REPRESENTATIVE AND ONLY FOR THE AUTHORIZED QUANTITY.
  6. WHERE NATIVE SOIL IS DETERMINED TO BE ADEQUATE FOR THE ENGINEER, NO EXCAVATION BELOW THE BOTTOM OF PIPE IS REQUIRED.
  7. BEDDING MATERIAL SHALL BE PROPERLY RODDED AND COMPACTED AROUND THE PIPE HAUNCHES.
  8. TEST FOR DENSITY OF COMPACTION MAY BE MADE AT THE OPTION OF THE ENGINEER AND DEFICIENCIES SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THE ENGINEER MAY HAVE COMPACTION TEST PERFORMED AFTER THE BACKFILL IS COMPLETE. CONTRACTOR SHALL BE REQUIRED TO EXCAVATE TO VARIOUS ELEVATIONS FOR DENSITY TESTING EXCAVATION, BACKFILL AND RECOMPACTION SHALL BE PERFORMED AT NO ADDITIONAL COSTS TO THE OWNER.

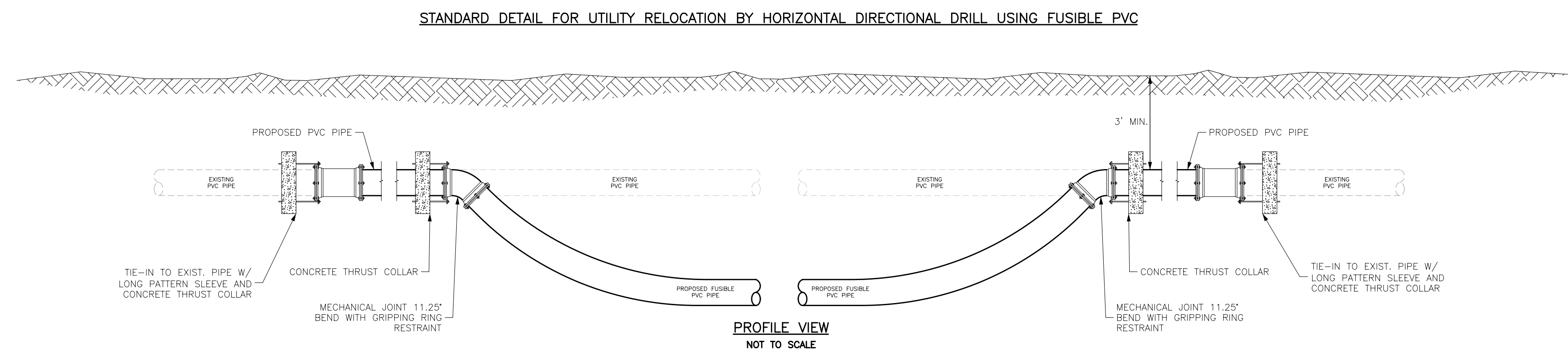
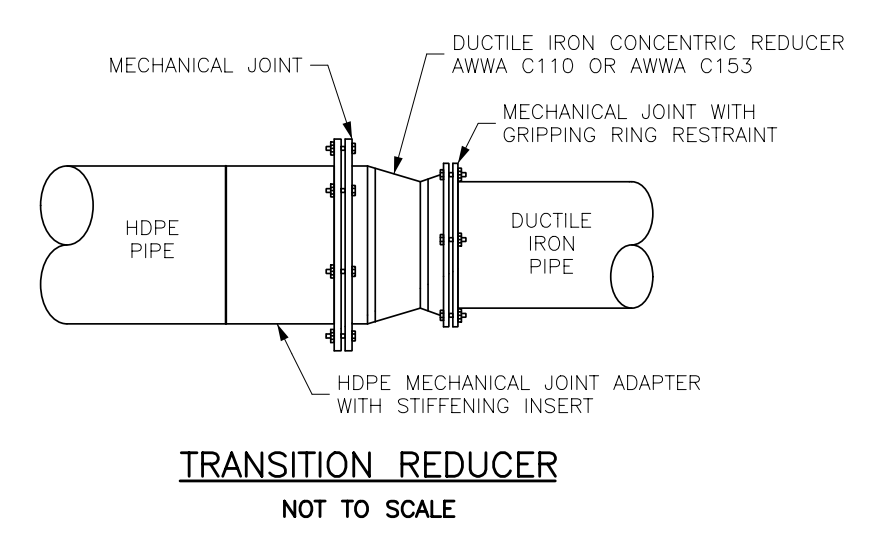
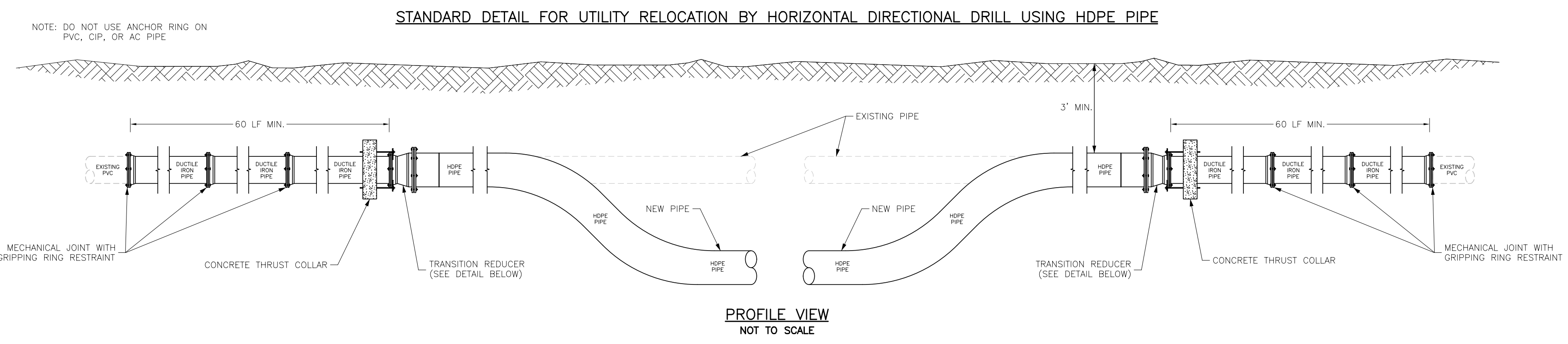
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DESIGNED BY: ABN	
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APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

**UTILITY CONSTRUCTION**

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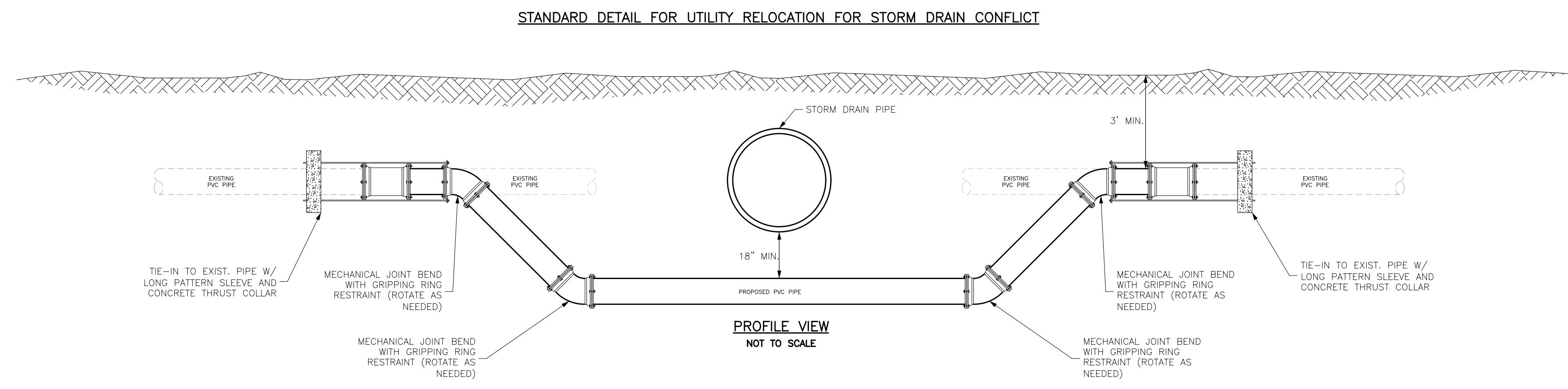
**NV5** NV5 ENGINEERS & CONSULTANTS, INC.  
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**STV 100 Years** STV Engineers, Inc.  
1600 Perimeter Park Drive  
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Morrisville, NC 27560  
NC License Number F-0991



**CLASS "C"**  
(BEDDING FOR P.V.C. PIPE)

PIPE BEDDED IN LOOSE MATERIAL, LIGHTLY TAMPED WITH A MINIMUM OF 6" UNDER PIPE. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL, IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROX. 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.



MAXIMUM TRENCH WIDTH AT TOP OF PIPE			
NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		

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5/14/2022

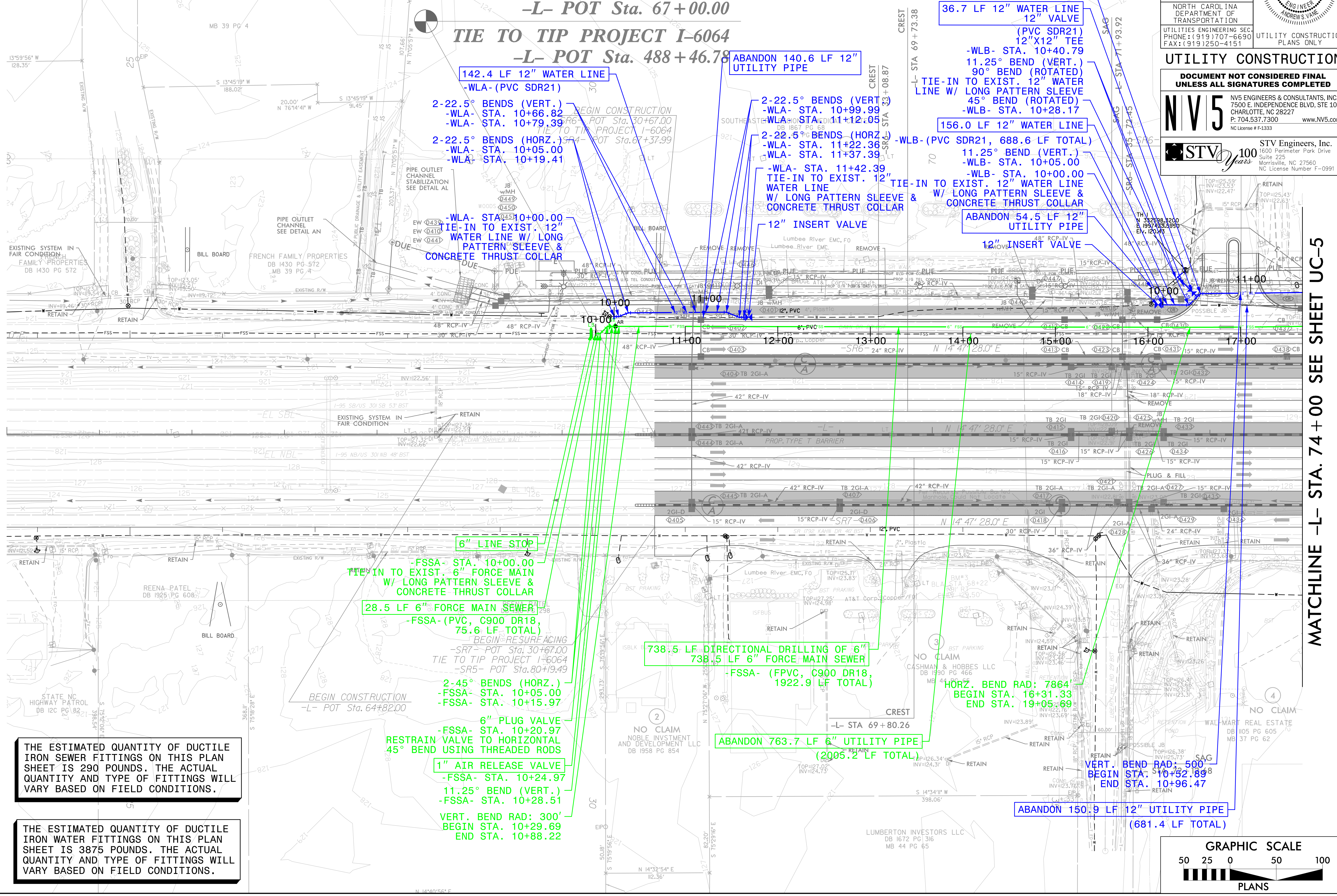
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**NOTES:**  
 1. THE 6" SEWER FORCE MAIN ALONG DAWN DRIVE MUST BE RELOCATED PRIOR TO ACTIVATING THE PROPOSED 12" WATER LINE.

**BEGIN TIP PROJECT I-5987A**  
**-L- POT Sta. 67+00.00**  
**TIE TO TIP PROJECT I-6064**  
**-L- POT Sta. 488+46.78**

NAD 83/NA 2011

PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-4
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	UTILITY CONSTRUCTION PLANS ONLY
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SECTION PHONE: (919) 707-6690 FAX: (919) 250-4151	
<b>UTILITY CONSTRUCTION</b>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
<b>NV5</b>	NV5 ENGINEERS & CONSULTANTS, INC. 7500 E. INDEPENDENCE BLVD, STE 100 CHARLOTTE, NC 28227 P: 704.537.7300 www.NV5.com NC License # F-1333
<b>STV 100 Years</b>	STV Engineers, Inc. 1600 Perimeter Park Drive Suite 225 Morrisville, NC 27560 NC License Number F-0991



THE ESTIMATED QUANTITY OF DUCTILE IRON SEWER FITTINGS ON THIS PLAN SHEET IS 290 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER FITTINGS ON THIS PLAN SHEET IS 3875 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

- 6" LINE STOP
- FSSA- STA. 10+00.00 TIE-IN TO EXIST. 6" FORCE MAIN W/ LONG PATTERN SLEEVE & CONCRETE THRUST COLLAR
- 28.5 LF 6" FORCE MAIN SEWER
- FSSA- (PVC, C900 DR18, 75.6 LF TOTAL)
- BEGIN RESURFACING
- SR7- POT Sta. 30+67.00 TIE TO TIP PROJECT I-6064
- SR5- POT Sta. 80+19.49
- 2-45° BENDS (HORZ.)
- FSSA- STA. 10+05.00
- FSSA- STA. 10+15.97
- 6" PLUG VALVE
- FSSA- STA. 10+20.97
- RESTRAIN VALVE TO HORIZONTAL
- 45° BEND USING THREADED RODS
- 1" AIR RELEASE VALVE
- FSSA- STA. 10+24.97
- 11.25° BEND (VERT.)
- FSSA- STA. 10+28.51
- VERT. BEND RAD: 300'
- BEGIN STA. 10+29.69
- END STA. 10+88.22

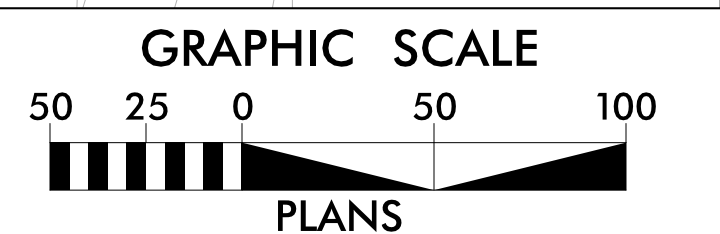
738.5 LF DIRECTIONAL DRILLING OF 6" FORCE MAIN SEWER

ABANDON 763.7 LF 6" UTILITY PIPE (2005.2 LF TOTAL)

HORZ. BEND RAD: 7864  
 BEGIN STA. 16+31.33  
 END STA. 19+05.69

VERT. BEND RAD: 500'  
 BEGIN STA. 10+52.89  
 END STA. 10+96.47

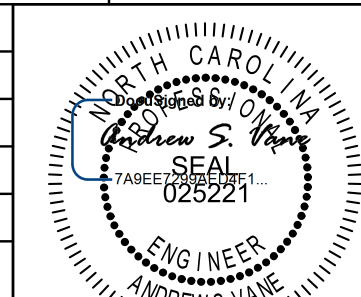
ABANDON 150.9 LF 12" UTILITY PIPE (681.4 LF TOTAL)



MATCHLINE -L- STA. 74+00 SEE SHEET UC-5





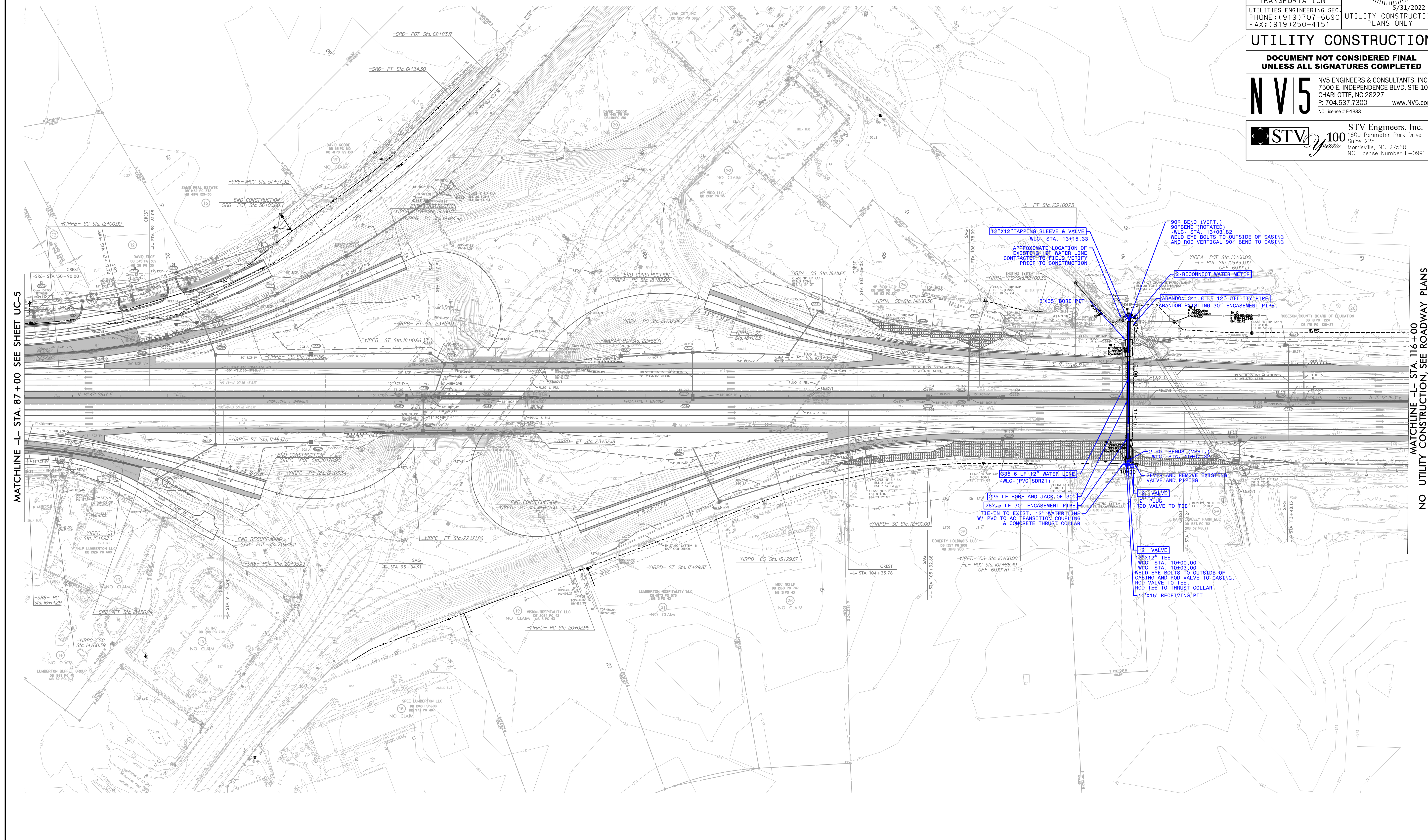
PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-6
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	5/31/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

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NC License # F-1333

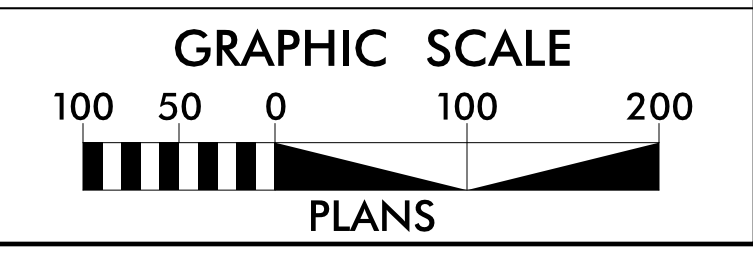
**STV 100 Years** STV Engineers, Inc.  
1600 Perimeter Park Drive  
Suite 225  
Morrisville, NC 27560  
NC License Number F-0991



MATCHLINE -L- STA. 87 + 00 SEE SHEET UC-5

MATCHLINE -L- STA. 116 + 00 NO UTILITY CONSTRUCTION, SEE ROADWAY PLANS

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER FITTINGS ON THIS PLAN SHEET IS 1600 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



5/31/2022  
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5/14/2022

PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-7
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SECTION PHONE: (919) 707-6690 FAX: (919) 250-4151	
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UTILITY CONSTRUCTION

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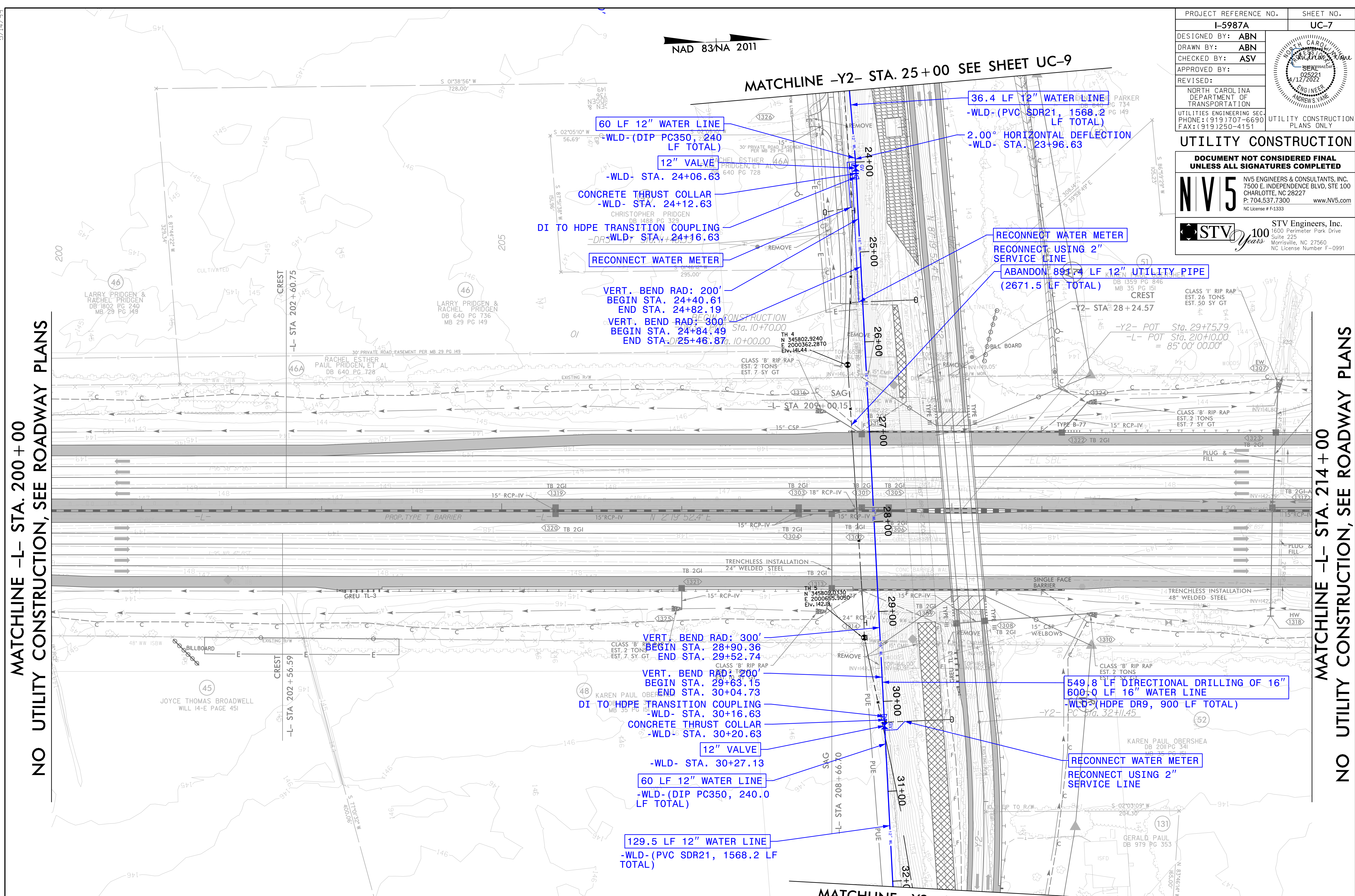
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 Suite 225  
 Morrisville, NC 27560  
 NC License Number F-0991



MATCHLINE -Y2- STA. 25+00 SEE SHEET UC-9

MATCHLINE -L- STA. 200+00  
NO UTILITY CONSTRUCTION, SEE ROADWAY PLANS

MATCHLINE -L- STA. 214+00  
NO UTILITY CONSTRUCTION, SEE ROADWAY PLANS



60 LF 12" WATER LINE  
-WLD- (DIP PC350, 240 LF TOTAL)

12" VALVE  
-WLD- STA. 24+06.63

CONCRETE THRUST COLLAR  
-WLD- STA. 24+12.63

DI TO HDPE TRANSITION COUPLING  
-WLD- STA. 24+16.63

RECONNECT WATER METER

VERT. BEND RAD: 200'  
BEGIN STA. 24+40.61  
END STA. 24+82.19

VERT. BEND RAD: 300'  
BEGIN STA. 24+84.49  
END STA. 25+46.87

36.4 LF 12" WATER LINE  
-WLD- (PVC SDR21, 1568.2 LF TOTAL)

2.00° HORIZONTAL DEFLECTION  
-WLD- STA. 23+96.63

RECONNECT WATER METER

RECONNECT USING 2" SERVICE LINE

ABANDON 891.74 LF 12" UTILITY PIPE  
(2671.5 LF TOTAL)

VERT. BEND RAD: 300'  
BEGIN STA. 28+90.36  
END STA. 29+52.74

VERT. BEND RAD: 200'  
BEGIN STA. 29+63.15  
END STA. 30+04.73

DI TO HDPE TRANSITION COUPLING  
-WLD- STA. 30+16.63

CONCRETE THRUST COLLAR  
-WLD- STA. 30+20.63

12" VALVE  
-WLD- STA. 30+27.13

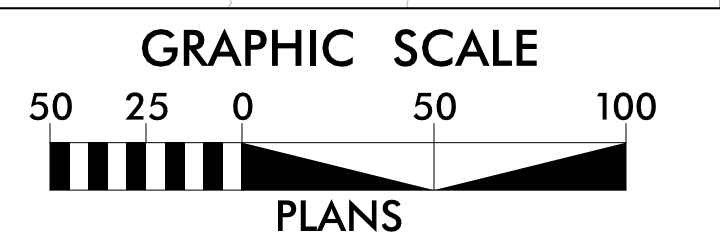
60 LF 12" WATER LINE  
-WLD- (DIP PC350, 240.0 LF TOTAL)

129.5 LF 12" WATER LINE  
-WLD- (PVC SDR21, 1568.2 LF TOTAL)

549.8 LF DIRECTIONAL DRILLING OF 16"  
600.0 LF 16" WATER LINE  
-WLD- (HDPE DR9, 900 LF TOTAL)

RECONNECT WATER METER  
RECONNECT USING 2" SERVICE LINE

MATCHLINE -Y2- STA. 34+00 SEE SHEET UC-10



4/6/2022  
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Narasah

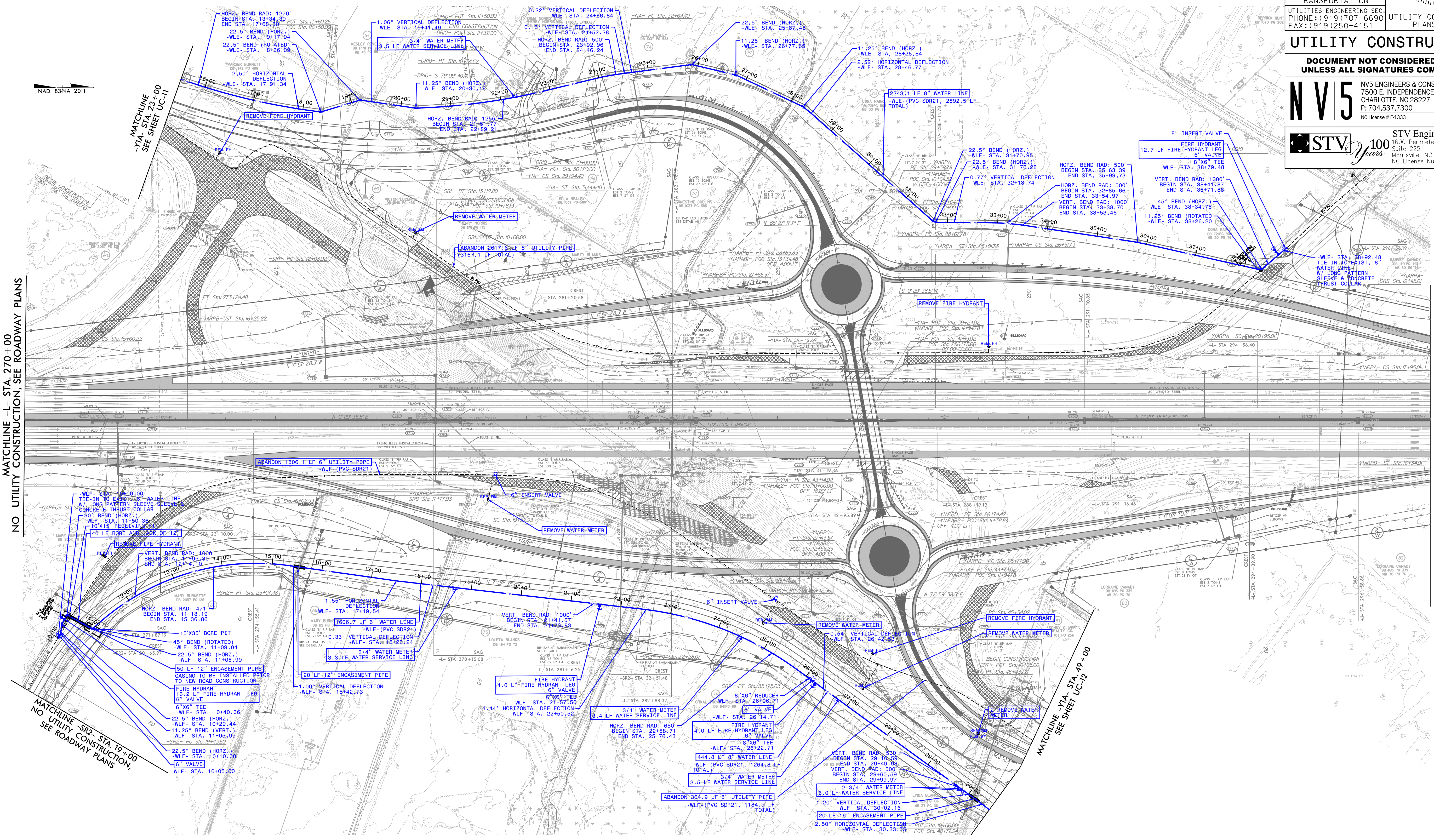
PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-8
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

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7500 E. INDEPENDENCE BLVD, STE 100  
CHARLOTTE, NC 28227  
P: 704.537.7300 www.NV5.com  
NC License # F-1333

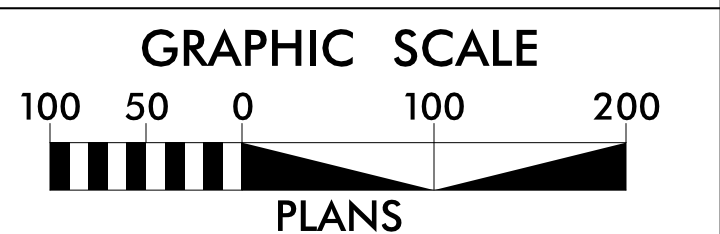
**STV 100 Years** STV Engineers, Inc.  
1600 Perimeter Park Drive  
Suite 225  
Morrisville, NC 27560  
NC License Number F-0991

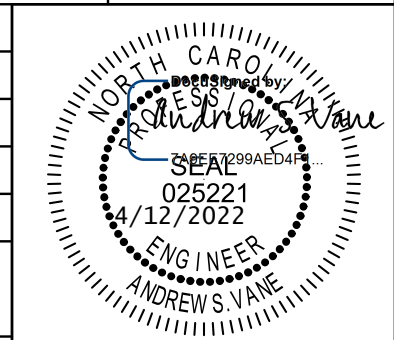


MATCHLINE -L- STA. 270+00  
NO UTILITY CONSTRUCTION, SEE ROADWAY PLANS

MATCHLINE -L- STA. 298+00  
NO UTILITY CONSTRUCTION, SEE ROADWAY PLANS

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER FITTINGS ON THIS PLAN SHEET IS 2405 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-9
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

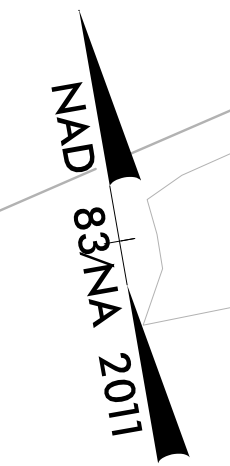
**UTILITY CONSTRUCTION**

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

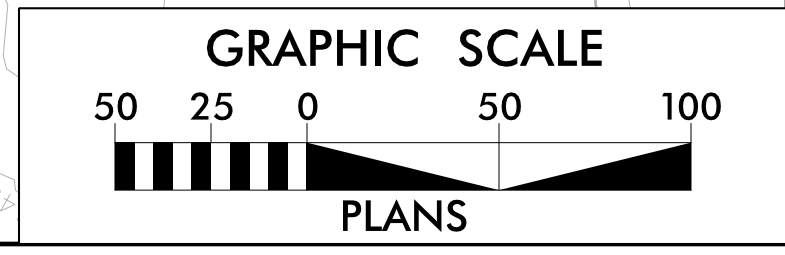
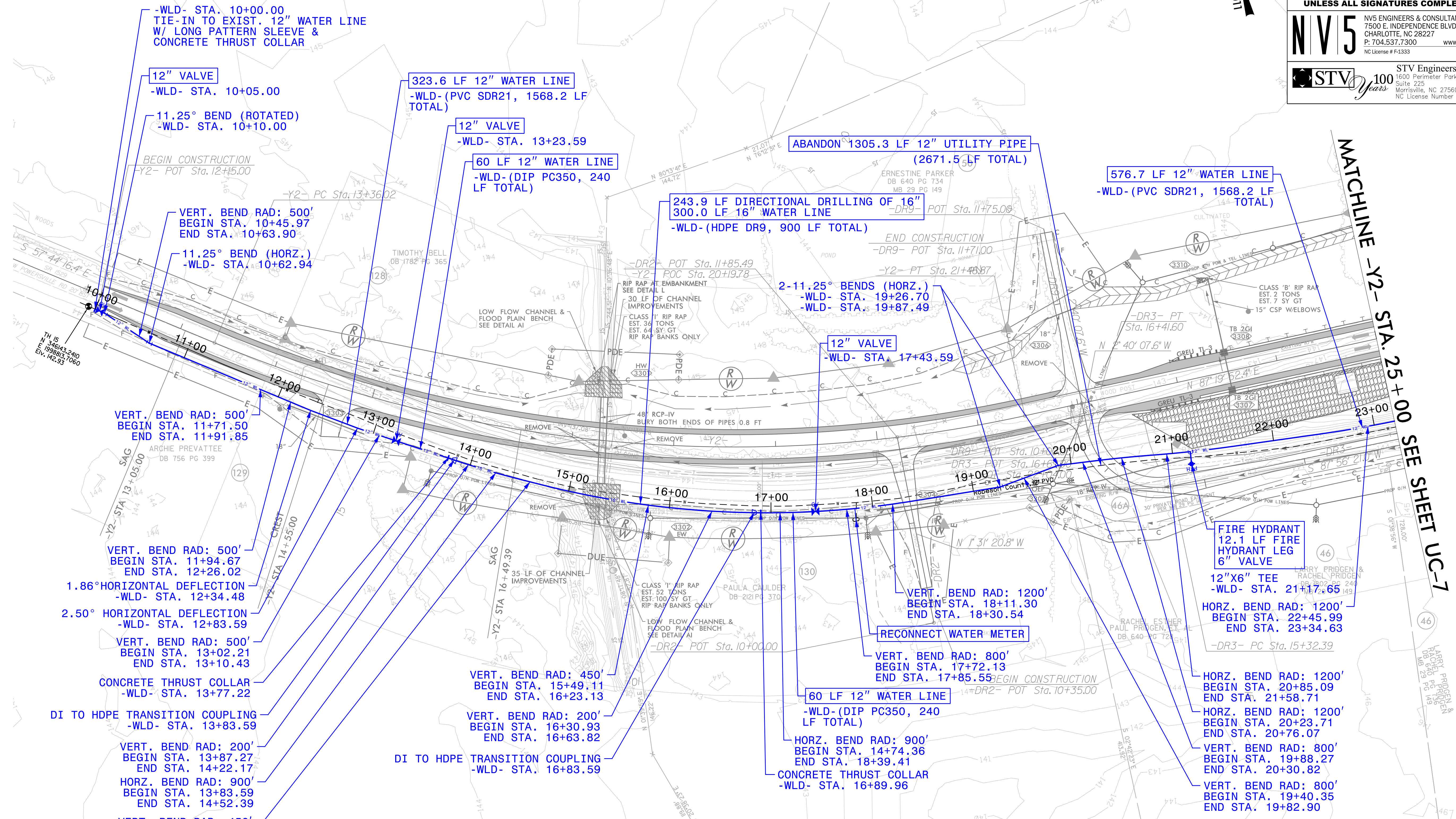
**NV5** NV5 ENGINEERS & CONSULTANTS, INC.  
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P: 704.537.7300 www.NV5.com  
NC License # F-1333

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Suite 225  
Morrisville, NC 27560  
NC License Number F-0991

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



5/14/2022  
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Narasah



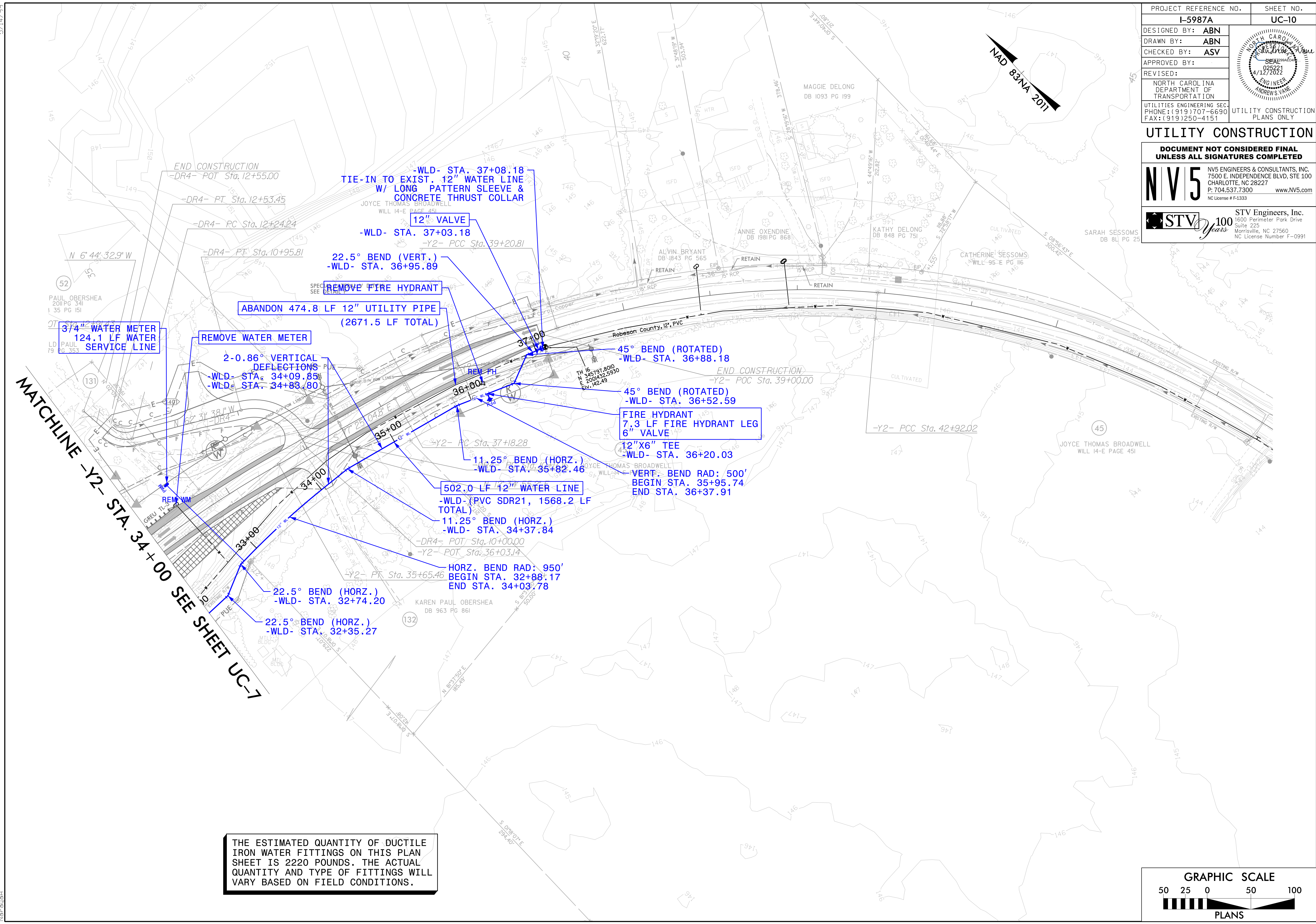
PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-10
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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**UTILITY CONSTRUCTION**

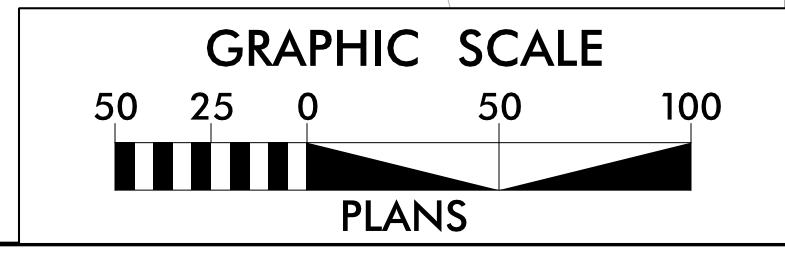
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

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CHARLOTTE, NC 28227  
P: 704.537.7300 www.NV5.com  
NC License # F-1333

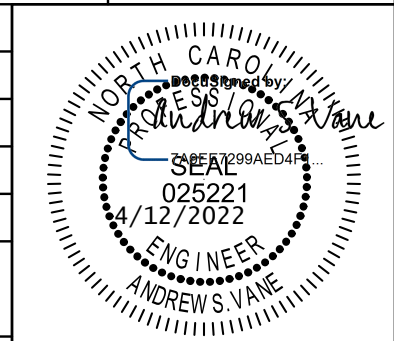
**STV 100 Years** STV Engineers, Inc.  
1600 Perimeter Park Drive  
Suite 225  
Morrisville, NC 27560  
NC License Number F-0991



THE ESTIMATED QUANTITY OF DUCTILE IRON WATER FITTINGS ON THIS PLAN SHEET IS 2220 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



5/14/2022  
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 Narsaiah

PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-11
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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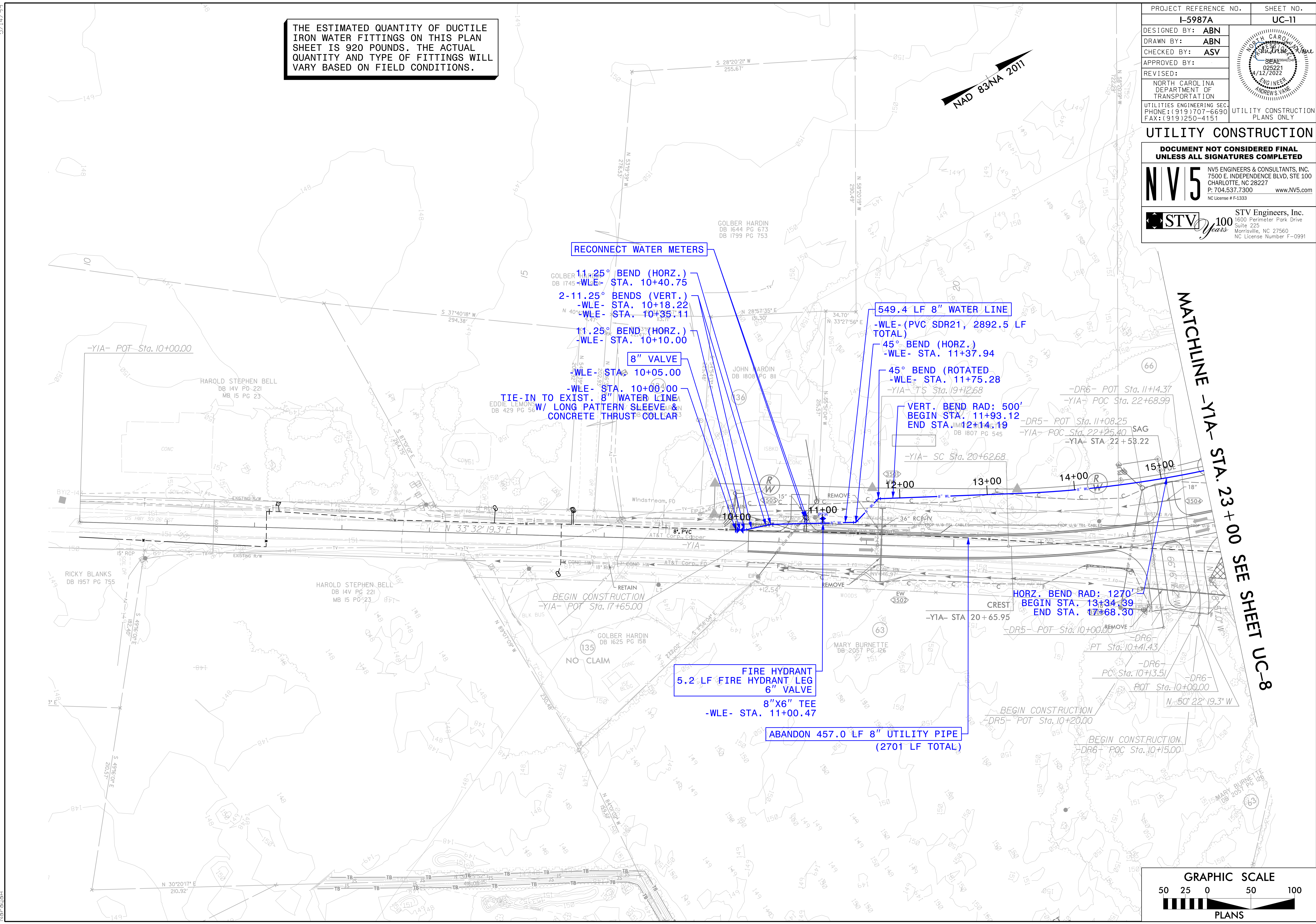
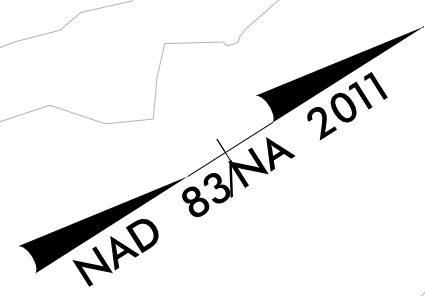
**UTILITY CONSTRUCTION**

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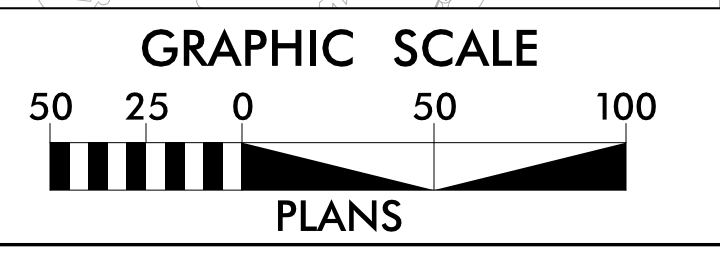
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Suite 225  
Morriseville, NC 27560  
NC License Number F-0991

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER FITTINGS ON THIS PLAN SHEET IS 920 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



MATCHLINE -YIA- STA. 23+00 SEE SHEET UC-8



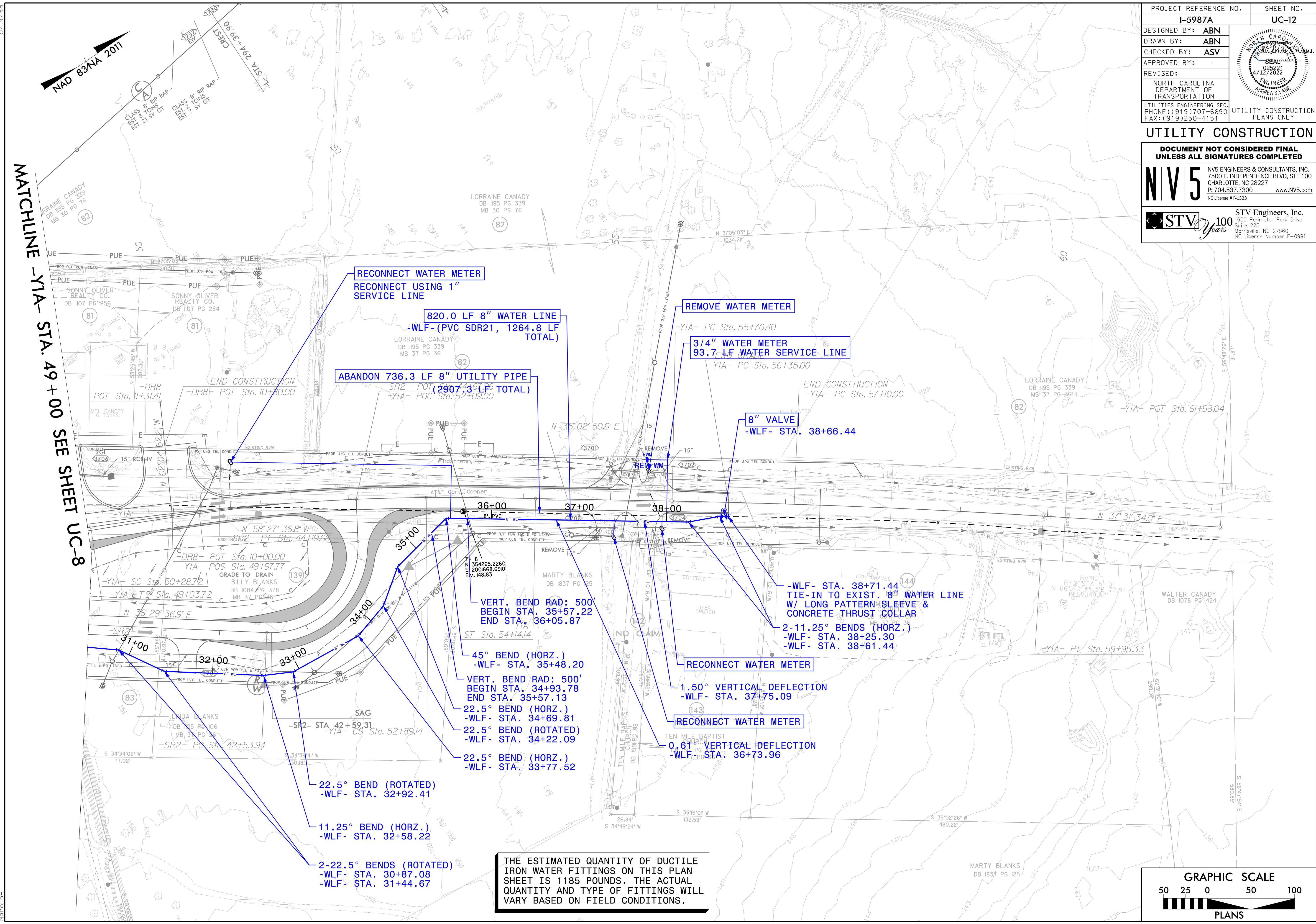
PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-12
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

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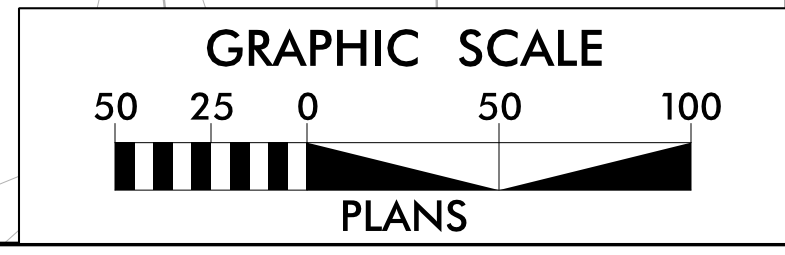
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Suite 225  
Morrisville, NC 27560  
NC License Number F-0991



MATCHLINE -YIA- STA. 49+00 SEE SHEET UC-8

THE ESTIMATED QUANTITY OF DUCTILE IRON WATER FITTINGS ON THIS PLAN SHEET IS 1185 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



4/6/2022  
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Naraiah

5/28/99

NOTES:  
 1. LOCATION AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY LOCATIONS AND DEPTHS PRIOR TO FORCE MAIN & WATER LINE CONSTRUCTION.  
 SCALE: 1" = 50' HORIZONTAL  
 1" = 10' VERTICAL

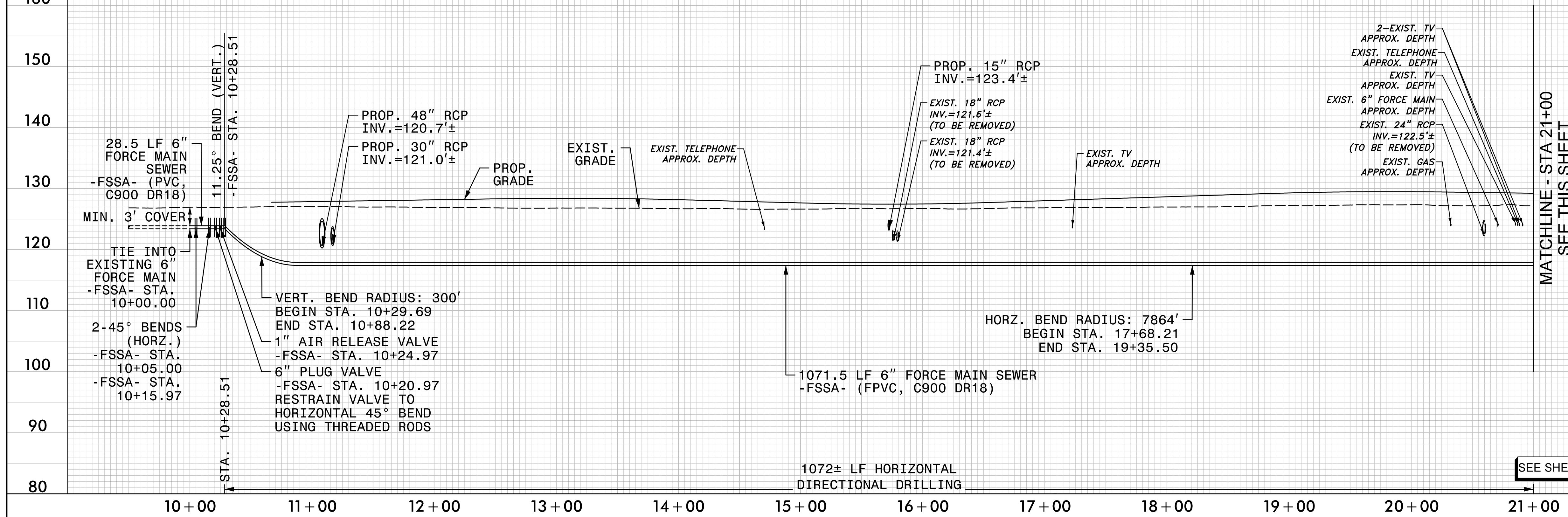
**PROP. 6" FORCE MAIN -FSSA-  
 CITY OF LUMBERTON  
 DAWN DRIVE**

PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-13
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
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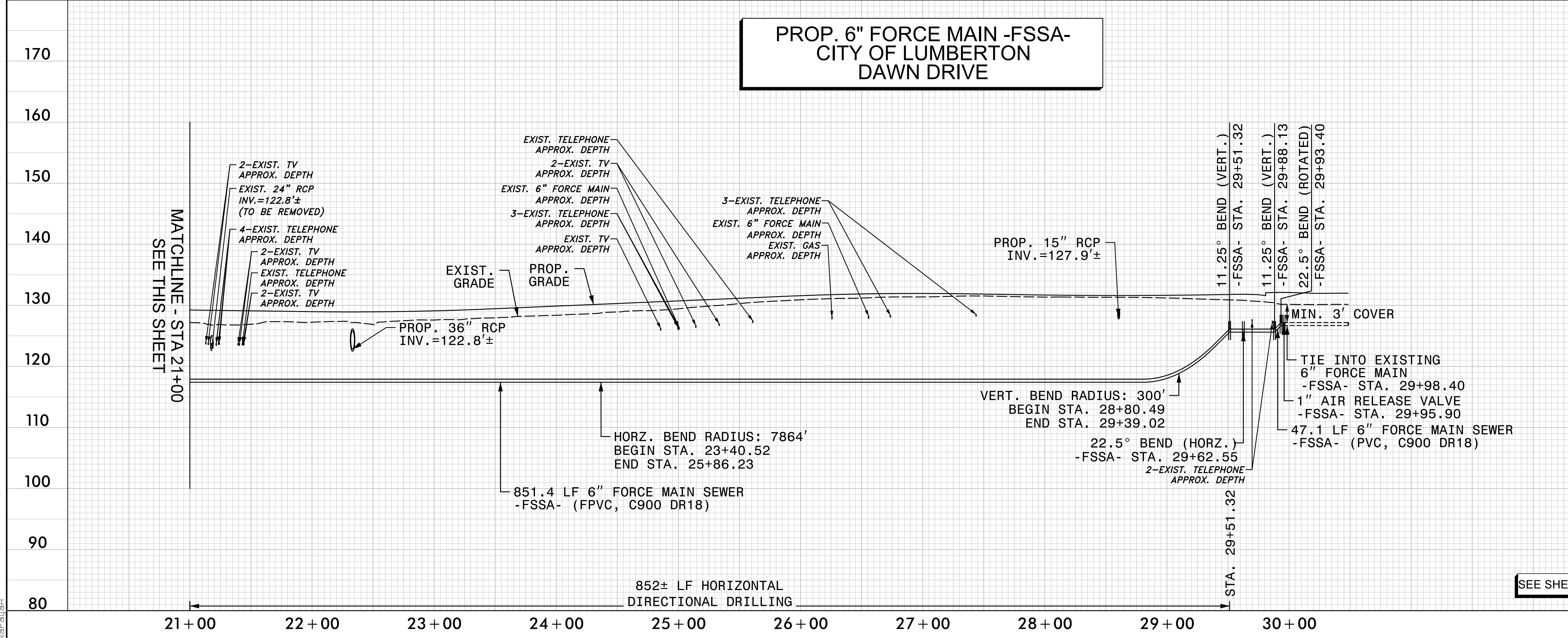
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 NC License Number F-0991



MATCHLINE - STA 21+00  
SEE THIS SHEET

SEE SHEET UC-4 & UC-5 FOR -FSSA- PLAN

**PROP. 6" FORCE MAIN -FSSA-  
 CITY OF LUMBERTON  
 DAWN DRIVE**



MATCHLINE - STA 21+00  
SEE THIS SHEET

SEE SHEET UC-4 & UC-5 FOR -FSSA- PLAN

4/6/2022  
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 Norcaugh

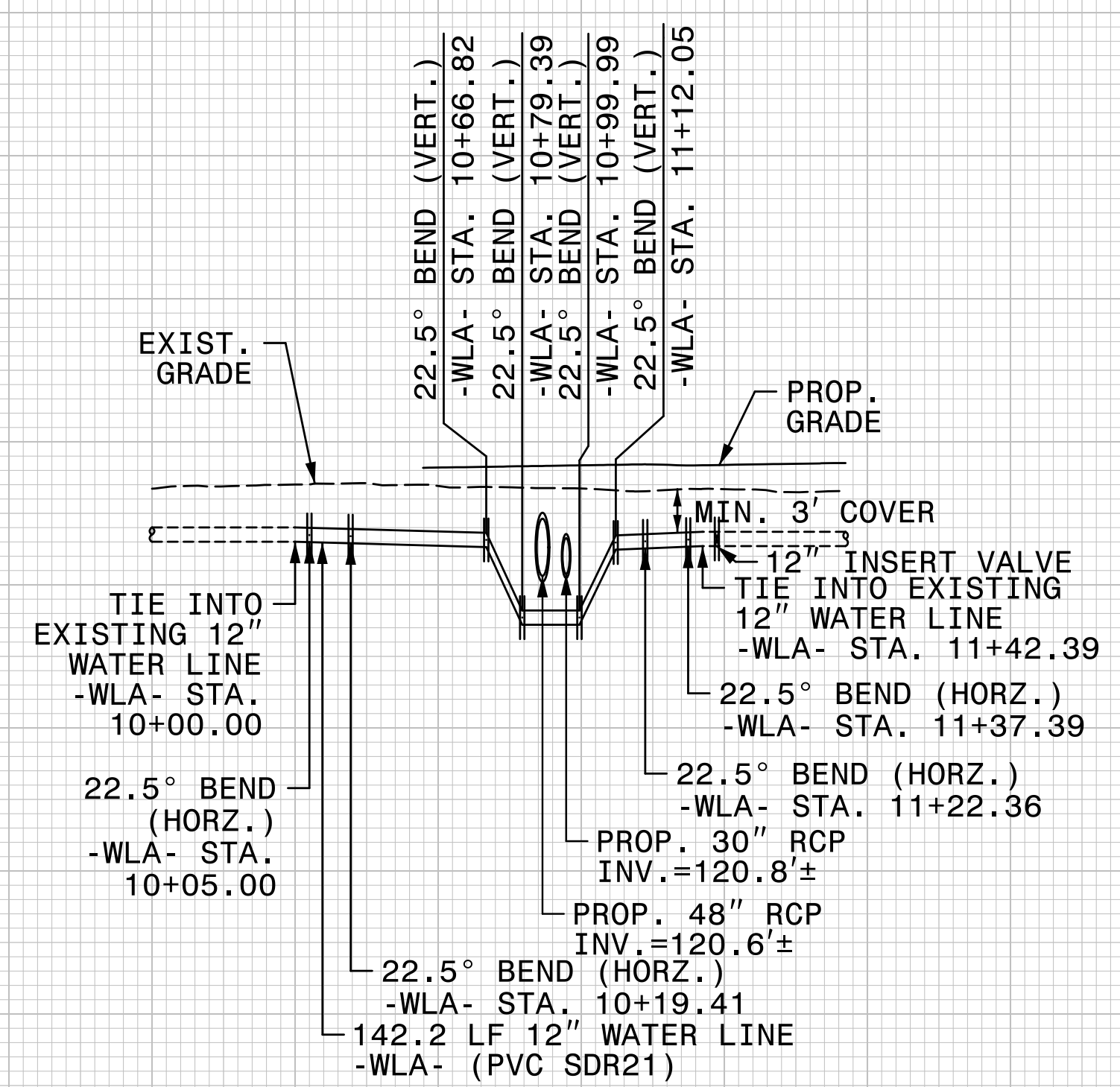


5/28/99

NOTES:  
 1. LOCATION AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY LOCATIONS AND DEPTHS PRIOR TO FORCE MAIN & WATER LINE CONSTRUCTION.  
 2. CONTRACTOR TO BACKFILL OVER WATER LINE PRIOR TO TESTING AND PLACING INTO SERVICE. MINIMUM 30" OF COVER FROM -WLB- STATION 12+10.00 TO 14+60.00.

SCALE: 1" = 50' HORIZONTAL  
 1" = 10' VERTICAL

**PROP. 12" WATER LINE -WLA-  
 CITY OF LUMBERTON  
 DAWN DRIVE**



SEE SHEET UC-4 FOR -WLA- PLAN

PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-14
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED BY:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

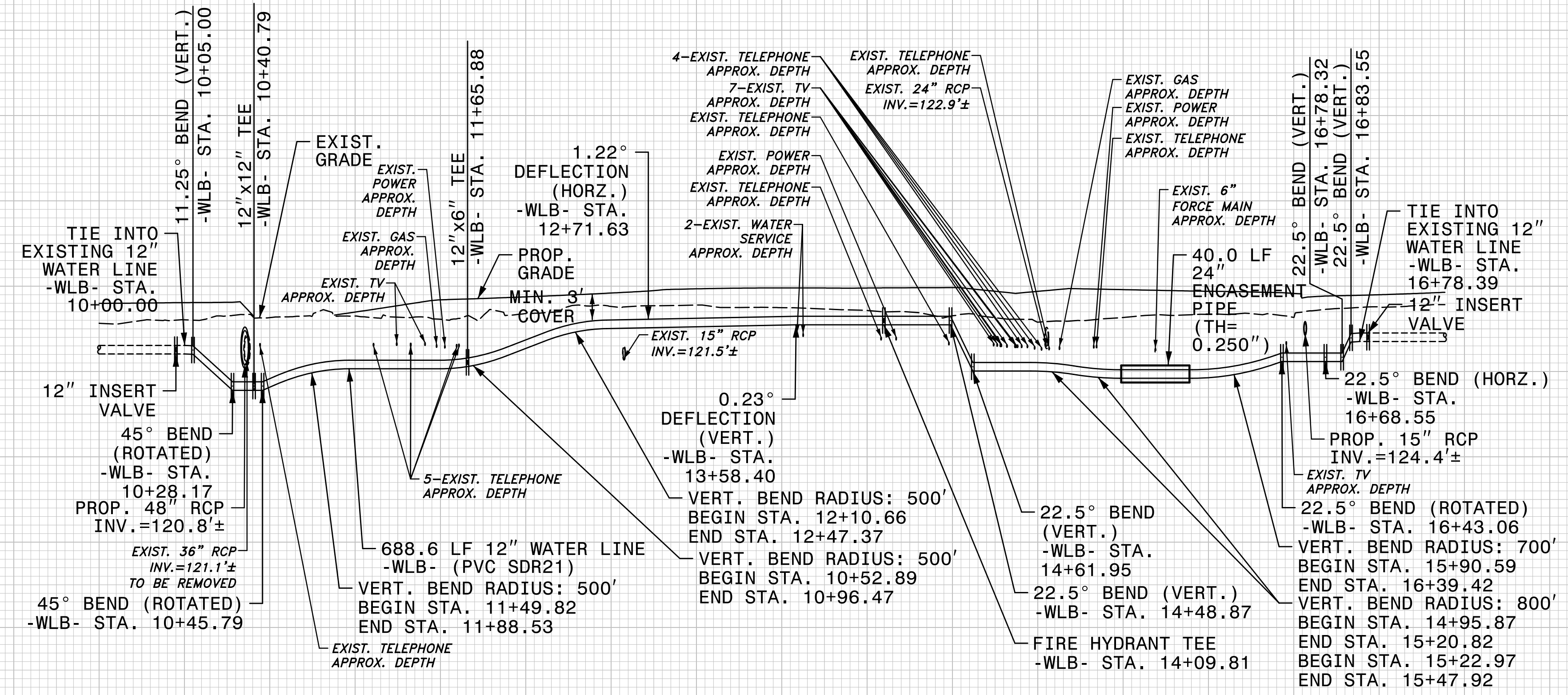
**UTILITY CONSTRUCTION**  
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 Norcaugh

**PROP. 12" WATER LINE -WLB-  
 CITY OF LUMBERTON  
 DAWN DRIVE**



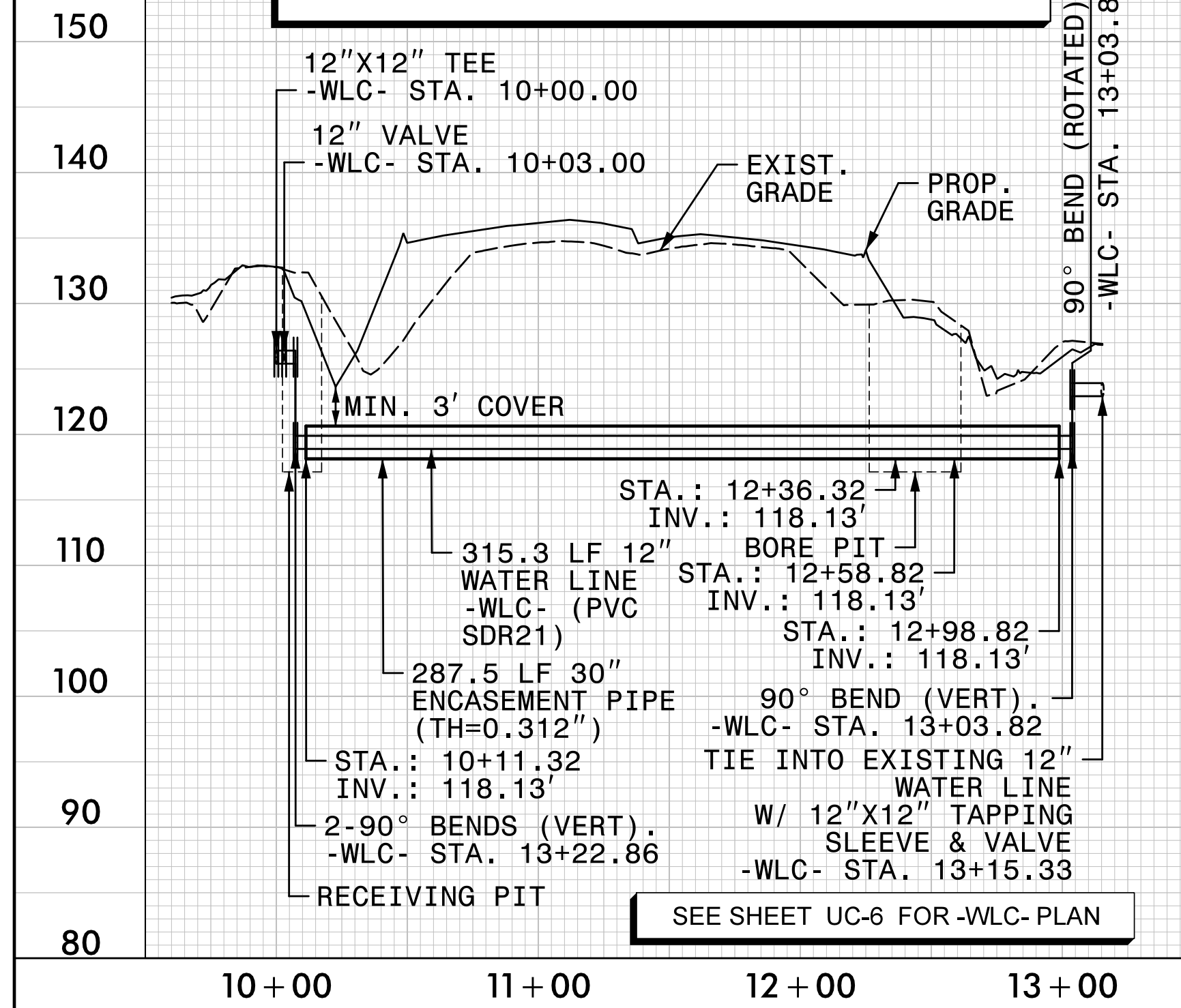
SEE SHEET UC-4 & UC-5 FOR -WLB- PLAN

5/28/2022

SCALE: 1" = 50' HORIZONTAL  
1" = 10' VERTICAL

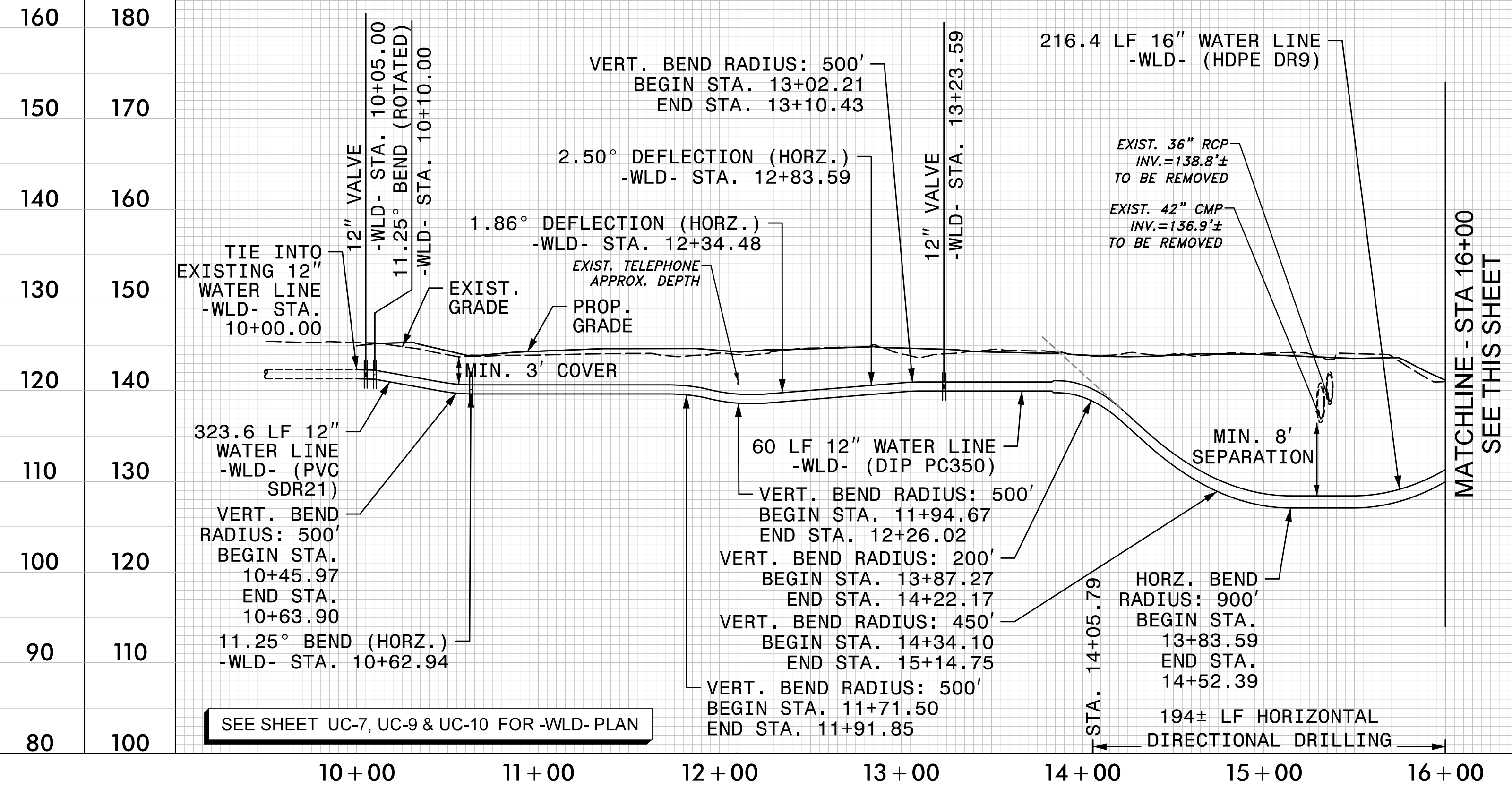
NOTES:  
1. LOCATION AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY LOCATIONS AND DEPTHS PRIOR TO WATER LINE CONSTRUCTION.

**PROP. 12" WATER LINE -WLC-  
CITY OF LUMBERTON**



SEE SHEET UC-6 FOR -WLC- PLAN

**PROP. 8" WATER LINE -WLD-  
ROBESON COUNTY  
POWERSVILLE ROAD**



SEE SHEET UC-7, UC-9 & UC-10 FOR -WLD- PLAN

PROJECT REFERENCE NO.	I-5987A	SHEET NO.	UC-15
DESIGNED BY:	ABN		
DRAWN BY:	ABN		
CHECKED BY:	ASV		
APPROVED BY:			
REVISED:		NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY	

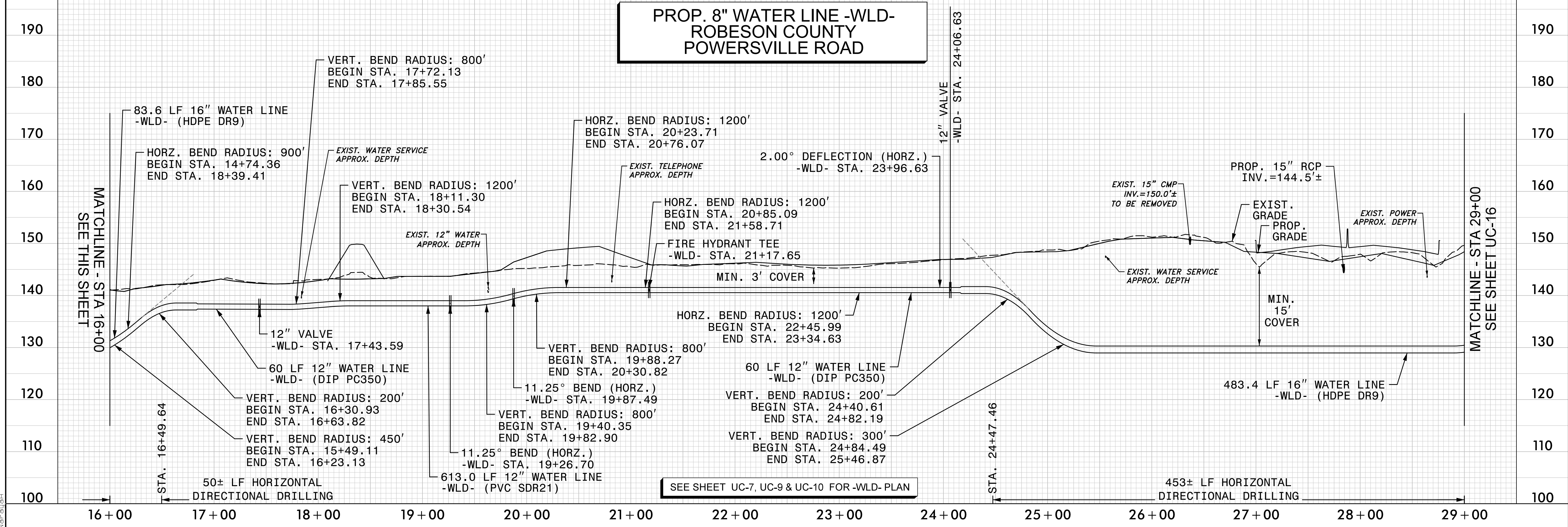
**UTILITY CONSTRUCTION**  
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NV5 ENGINEERS & CONSULTANTS, INC.  
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CHARLOTTE, NC 28227  
P: 704.537.7300 www.nv5.com  
NC License # F-1333

**STV 100 Years**  
STV Engineers, Inc.  
1600 Perimeter Park Drive  
Suite 225  
Morrisville, NC 27560  
NC License Number F-0991

MATCHLINE - STA 16+00  
SEE THIS SHEET

**PROP. 8" WATER LINE -WLD-  
ROBESON COUNTY  
POWERSVILLE ROAD**



SEE SHEET UC-7, UC-9 & UC-10 FOR -WLD- PLAN

MATCHLINE - STA 16+00  
SEE THIS SHEET

MATCHLINE - STA 29+00  
SEE SHEET UC-16

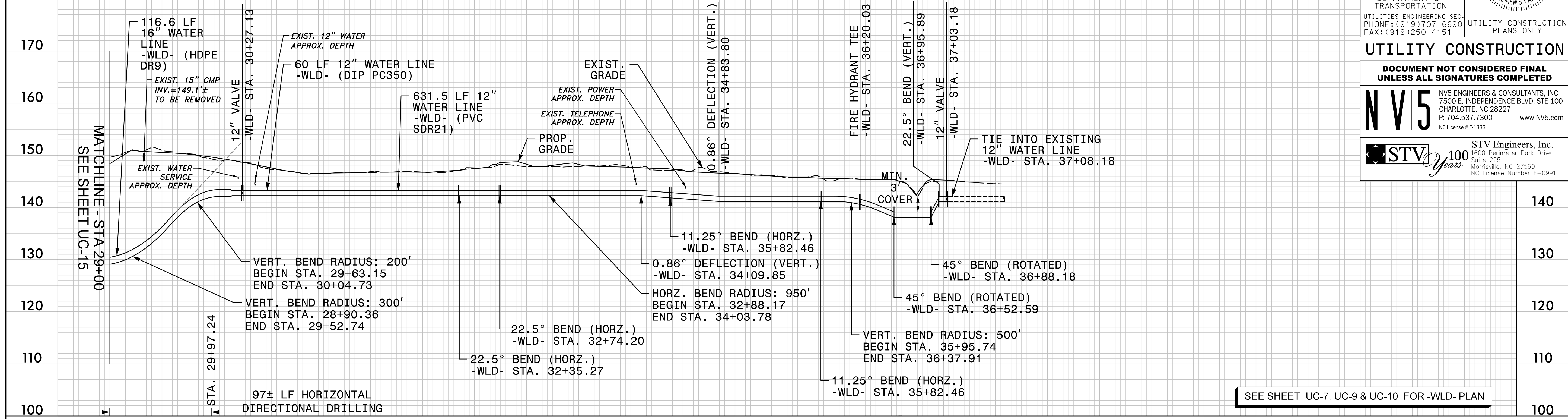
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Norcaugh

5/28/99

SCALE: 1" = 50' HORIZONTAL  
1" = 10' VERTICAL

NOTES:  
1. LOCATION AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY LOCATIONS AND DEPTHS PRIOR TO WATER LINE CONSTRUCTION.

### PROP. 8" WATER LINE -WLD- ROBESON COUNTY POWERSVILLE ROAD



PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-16
DESIGNED BY: ABN	
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CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
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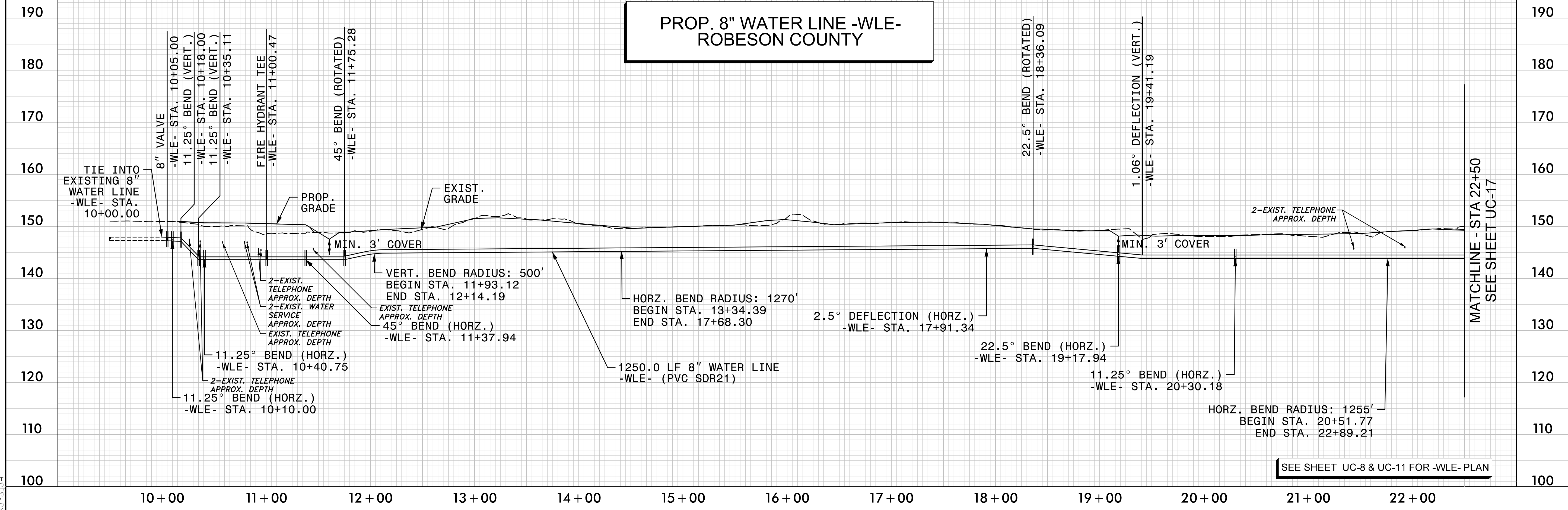
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Norcaugh

### PROP. 8" WATER LINE -WLE- ROBESON COUNTY

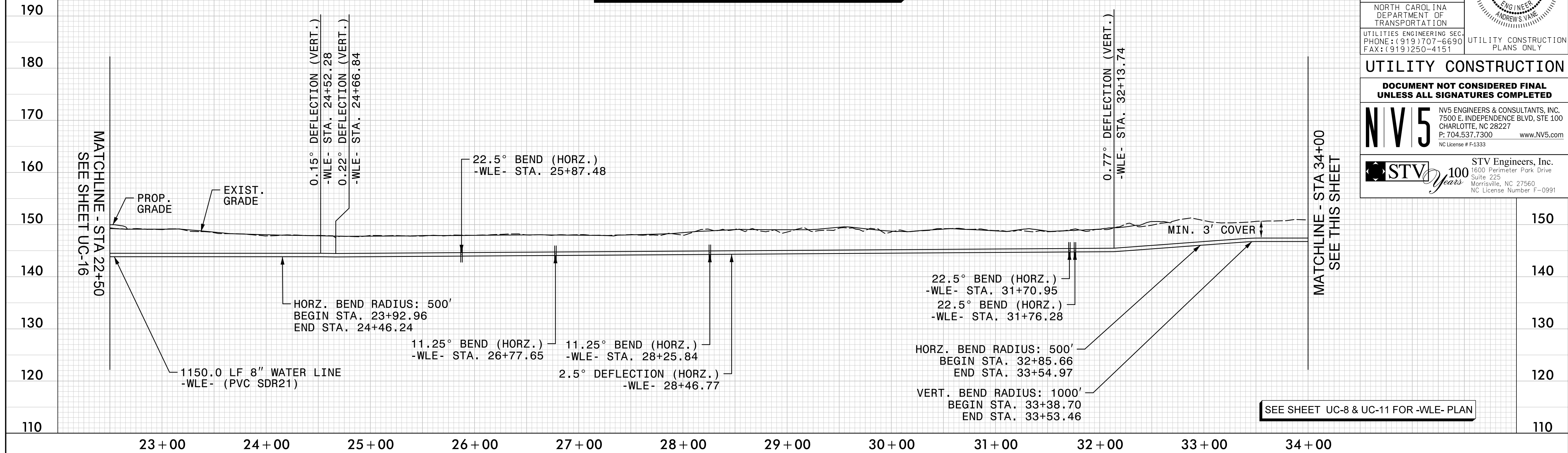


5/28/99

SCALE: 1" = 50' HORIZONTAL  
1" = 10' VERTICAL

NOTES:  
1. LOCATION AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY LOCATIONS AND DEPTHS PRIOR TO WATER LINE CONSTRUCTION.

### PROP. 8" WATER LINE -WLE- ROBESON COUNTY



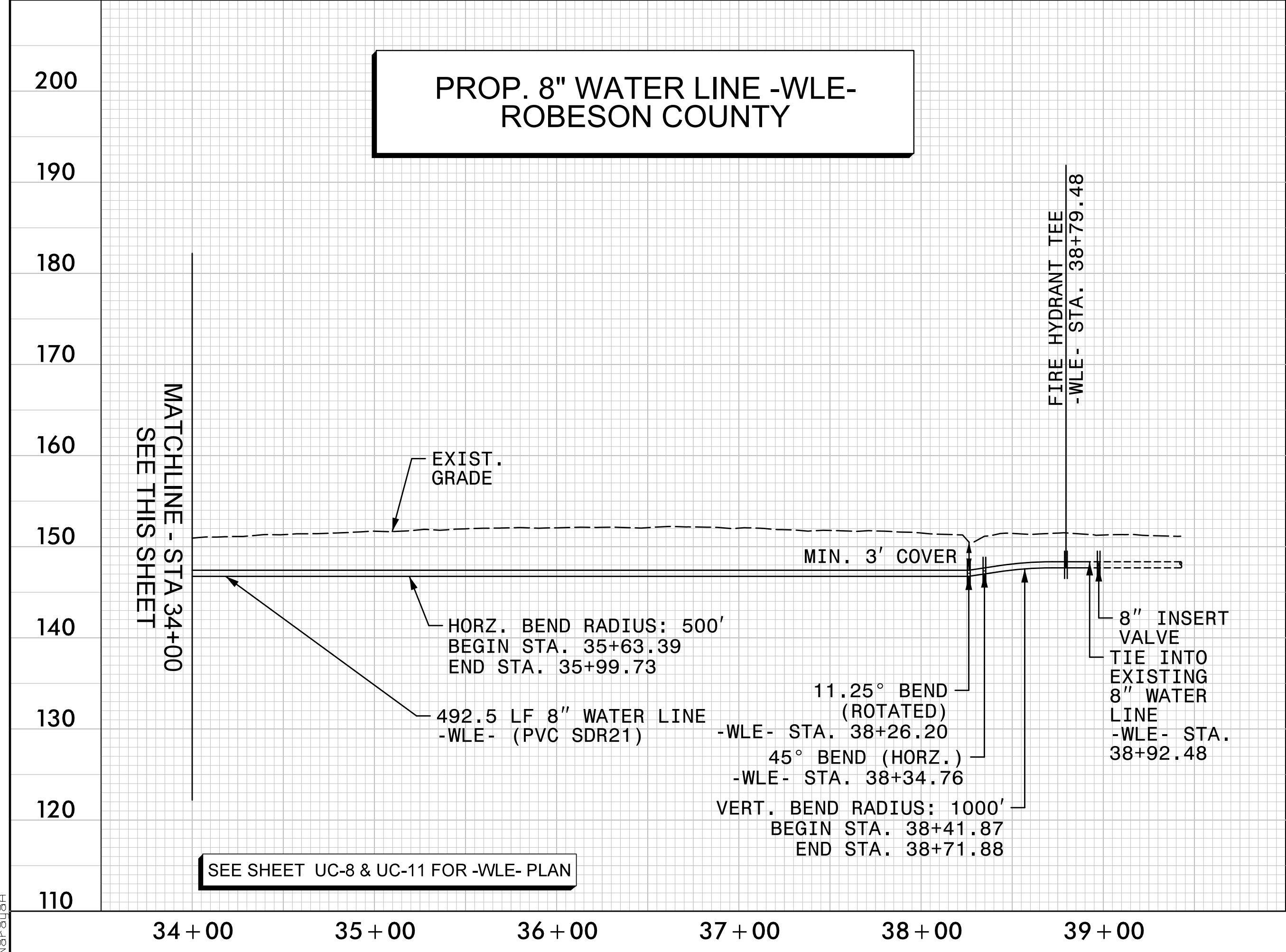
PROJECT REFERENCE NO. <b>I-5987A</b>	SHEET NO. <b>UC-17</b>
DESIGNED BY: <b>ABN</b>	
DRAWN BY: <b>ABN</b>	
CHECKED BY: <b>ASV</b>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
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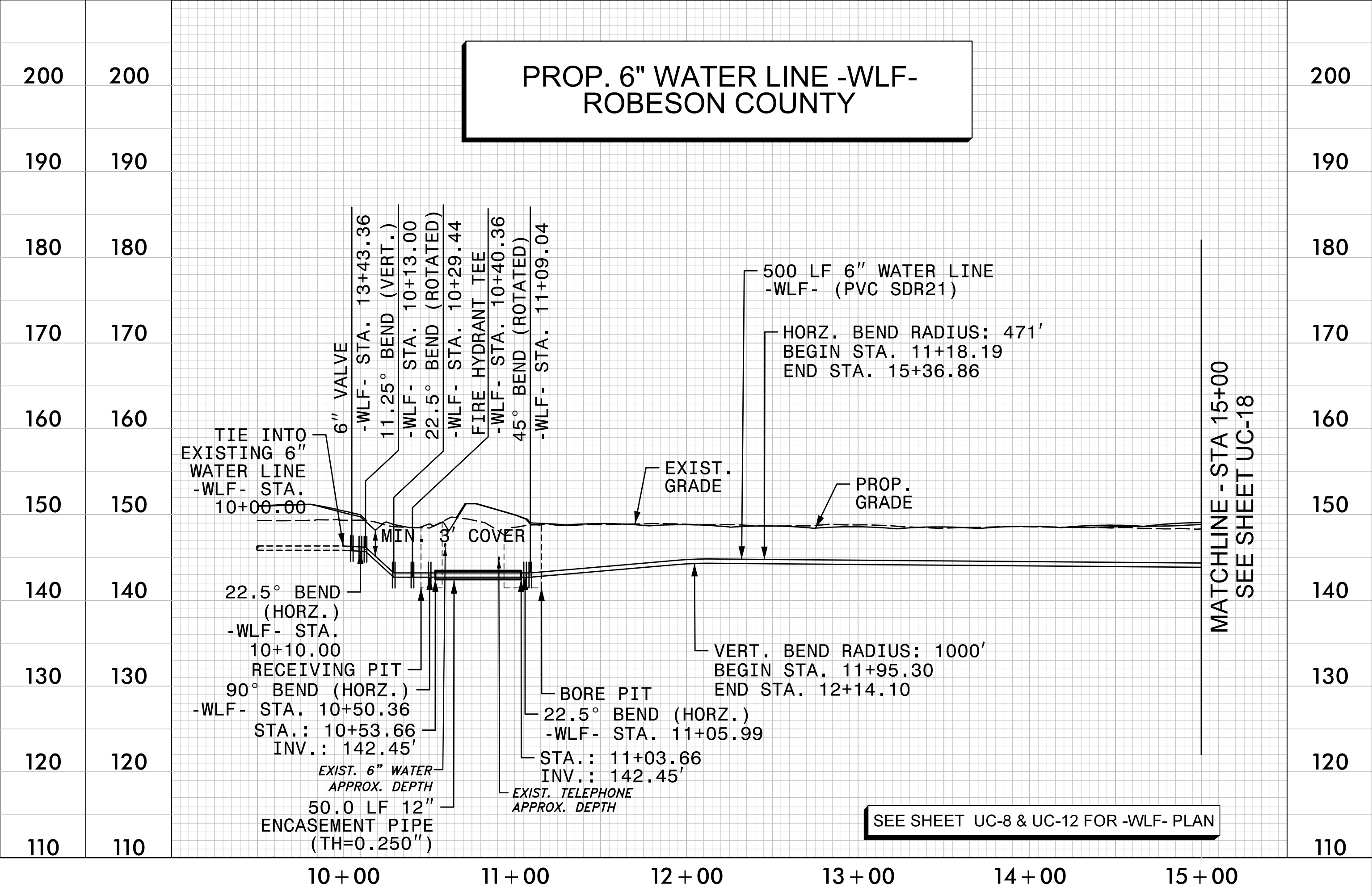
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NC License Number F-0991

SEE SHEET UC-8 & UC-11 FOR -WLE- PLAN



SEE SHEET UC-8 & UC-11 FOR -WLE- PLAN



SEE SHEET UC-8 & UC-12 FOR -WLF- PLAN

4/6/2022  
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5/28/99

NOTES:  
 1. LOCATION AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY LOCATIONS AND DEPTHS PRIOR TO WATER LINE CONSTRUCTION.  
 2. CONTRACTOR TO BACKFILL OVER WATER LINE PRIOR TO TESTING AND PLACING INTO SERVICE. MINIMUM 30" OF COVER FROM -WLF- STATION 16+50.00 TO 29+25.00.

SCALE: 1" = 50' HORIZONTAL  
 1" = 10' VERTICAL

**PROP. 6" WATER LINE -WLF- ROBESON COUNTY**

- WLF- CONSTRUCTION SEQUENCE:  
 1. INSTALL VALVES ON EXISTING WATER LINE CLOSE TO EXISTING WATER SERVICES FOR PARCELS 75 & 79, ON THE SIDE CLOSEST TO THE PROPOSED 66" RCP STORM DRAIN.  
 2. ONCE THE PROPOSED 66" RCP STORM DRAIN IS INSTALLED AND THE NEW RUSS ROAD IS ROUGH GRADED, INSTALL PROPOSED WATER LINE ALONG THE NEW RUSS ROAD.  
 3. UPON ACTIVATION OF NEW WATER LINE, TRANSFER WATER SERVICES TO NEW WATER LINE.  
 4. ABANDON EXISTING WATER LINE ALONG THE OLD RUSS ROAD.

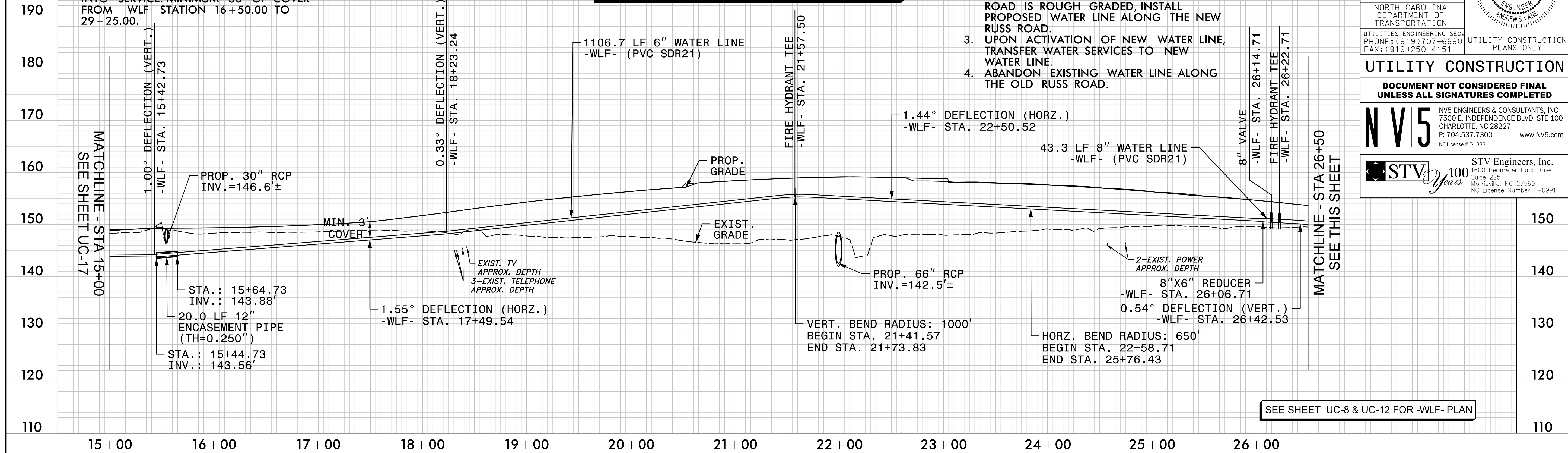
PROJECT REFERENCE NO.	SHEET NO.
I-5987A	UC-18
DESIGNED BY: ABN	
DRAWN BY: ABN	
CHECKED BY: ASV	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

**UTILITY CONSTRUCTION**

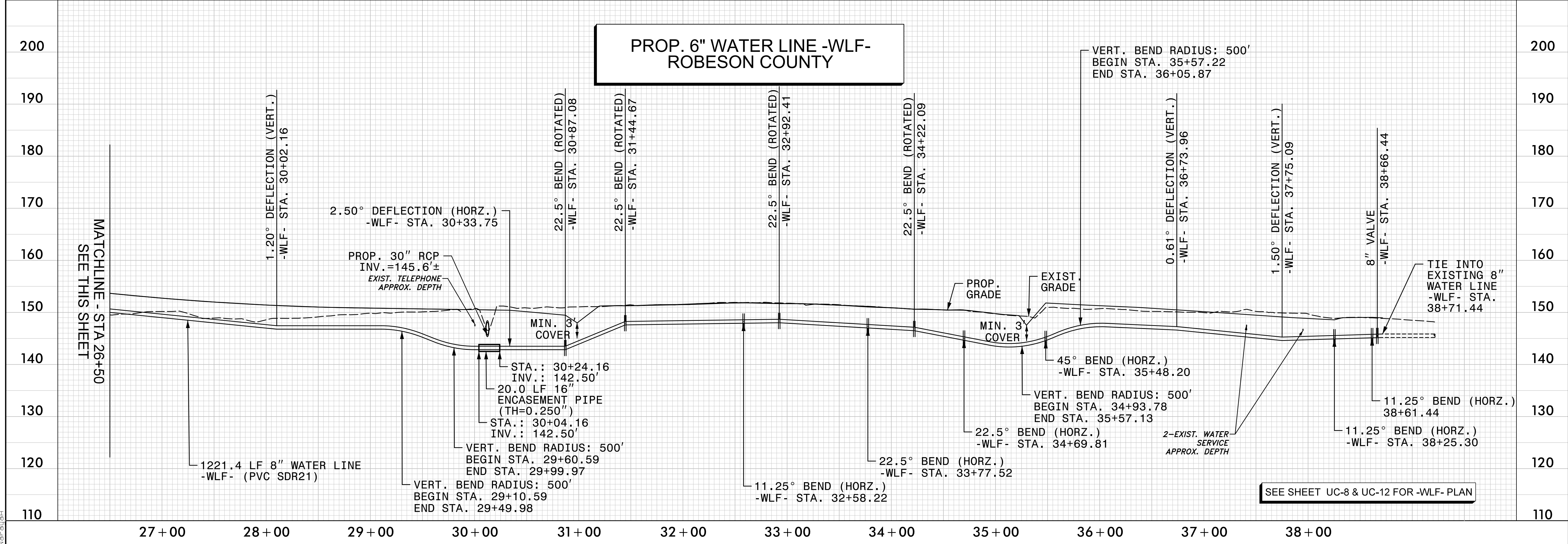
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SEE SHEET UC-8 & UC-12 FOR -WLF- PLAN



SEE SHEET UC-8 & UC-12 FOR -WLF- PLAN

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