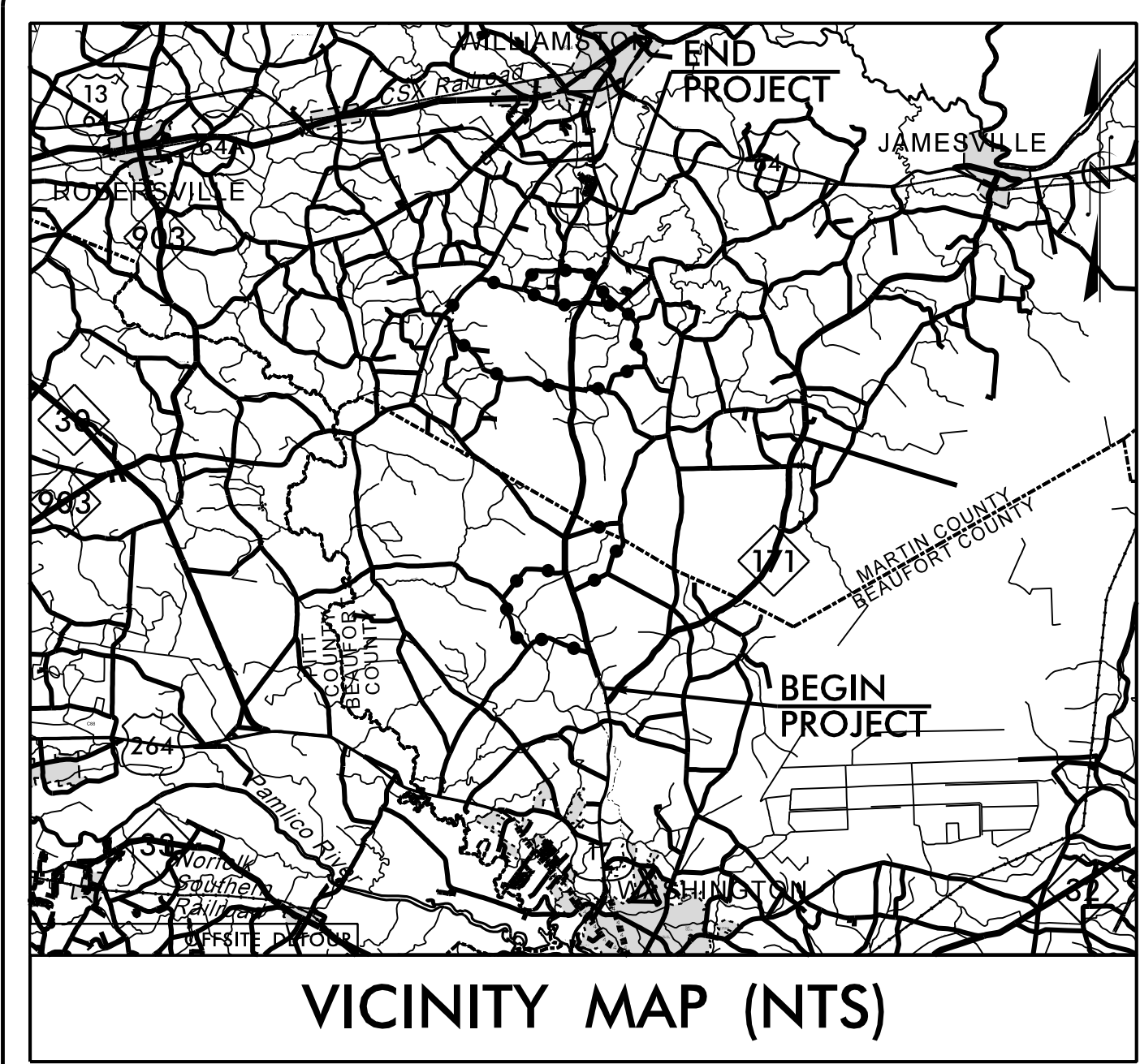


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**TIP PROJECT: R-2511**

T.I.P. NO.	SHEET NO.
R-2511	UC-1



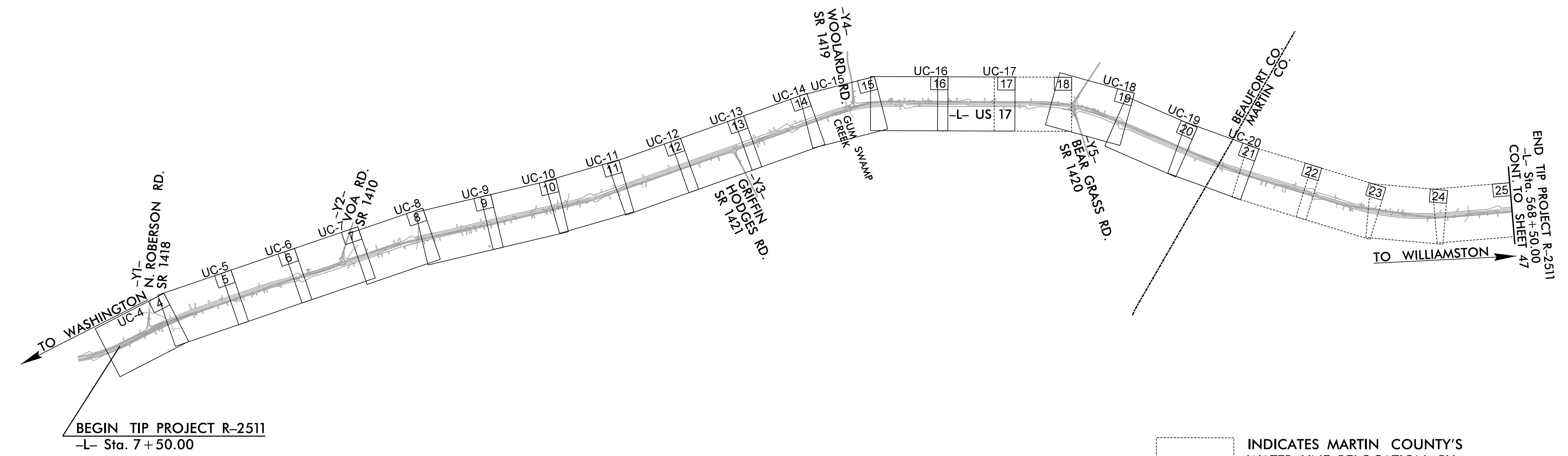
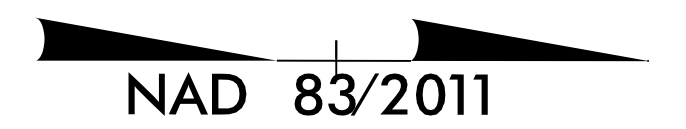
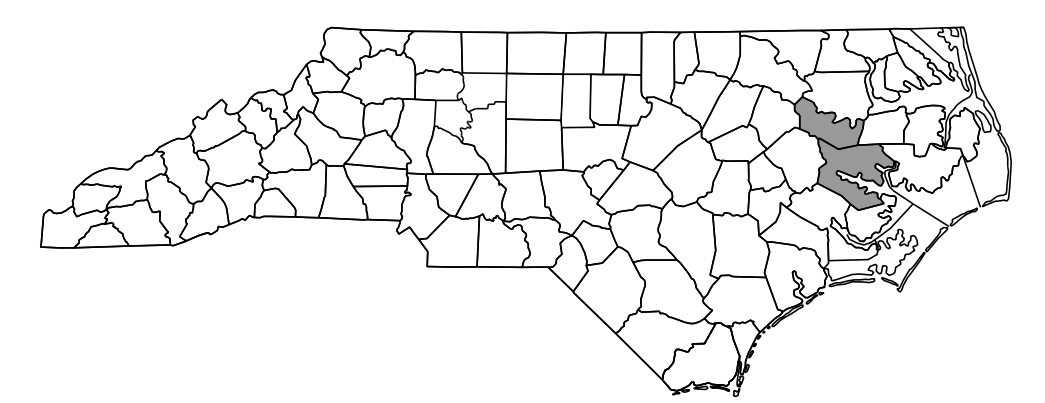
VICINITY MAP (NTS)

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITY CONSTRUCTION PLANS BEAUFORT COUNTY

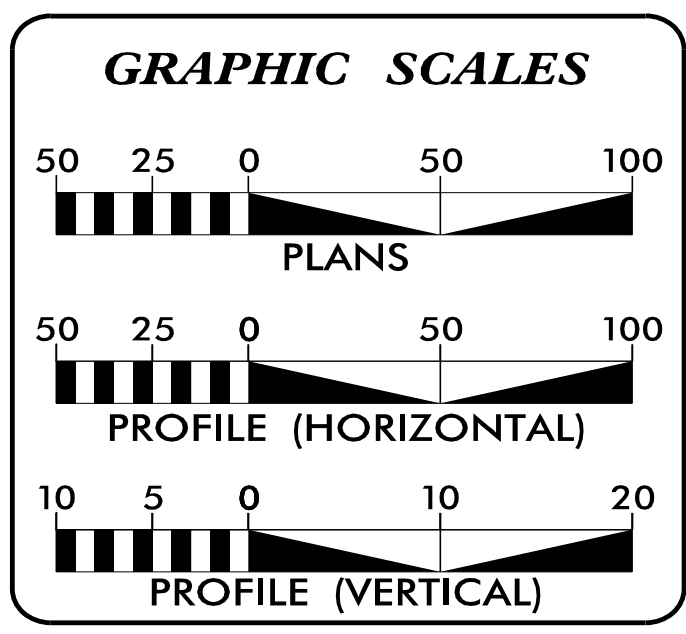
**LOCATION: US 17 FROM NORTH OF NC 171 TO  
EXISTING MULTI-LANES SOUTH OF WILLIAMSTON**

**TYPE OF WORK: WATER LINE RELOCATION**



INDICATES MARTIN COUNTY'S  
WATER LINE RELOCATION BY  
OTHERS NOT INCLUDED IN SET.

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 THRU UC-3D	DETAILS
UC-4 THRU UC-20	UTILITY CONSTRUCTION SHEETS
UC-21 THRU UC-32	PROFILE SHEETS

**WATER AND SEWER OWNERS ON PROJECT**

(A) BEAUFORT COUNTY - WATER

PREPARED IN THE OFFICE OF

**RK&K**  
RUMMEL, KLEPPER & KAHL, LLP  
8601 Six Forks Road, Forum 1, Suite 700  
Raleigh, North Carolina 27615-3960  
NC License No. F-0112  
1-888-521-4455 OR 919-878-9560

FOR  
**DIVISION OF HIGHWAYS**

HOWARD WOODALL, P.E. CONSULTANT CONTACT #1  
BRYAN BADEY, P.E. CONSULTANT CONTACT #2

UTILITY ENGINEER

Bryan M. Badey, P.E.

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

BO HEMPHILL UTILITIES REGIONAL ENGINEER  
JOHN ABEL UTILITIES ENGINEER  
CHRIS SUTTON UTILITIES COORDINATOR

2/8/2022  
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mpydt

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	

## EXISTING UTILITIES SYMBOLS

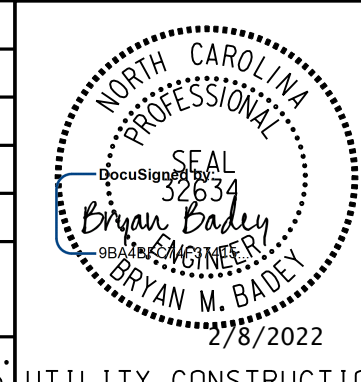
Power Pole		*Underground Power Line	
Telephone Pole		*Underground Telephone Cable	
Joint Use Pole		*Underground Telephone Conduit	
Utility Pole		*Underground Fiber Optics Telephone Cable	
Utility Pole with Base		*Underground TV Cable	
H-Frame Pole		*Underground Fiber Optics TV Cable	
Power Transmission 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		Sanitary Sewer Cleanout	
End of Information			

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

5/14/99  
2/8/2002  
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REV: 2/1/2012

5/14/99  
2/8/02  
es\Engineer\2/8/02\Proj\Sheets\R2511.ut.notes\_UC03.psh.dgn

# UTILITY CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-3
DESIGNED BY: MSS	
DRAWN BY: MSS	
CHECKED BY: BMB	
APPROVED BY: BMB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
UTILITY CONSTRUCTION PLANS ONLY	

## 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 BEAUFORT COUNTY WATER. THE MAIN CONTACT FOR BEAUFORT COUNTY WATER IS ERICK JENNINGS AT 252-975-0720.
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.
10. PROVIDE SURVEY AS-BUILTS OF THE INSTALLED UTILITY. THE AS-BUILTS SHALL INCLUDE NOTATIONS OF THE SIZE AND TYPE MATERIAL INSTALLED; GPS COORDINATES OF ALL: FITTINGS, UTILITY CONTROLS, AND THE HORIZONTAL AND VERTICAL LOCATIONS OF THE PIPING. PROVIDE BORING LOGS FROM TRENCHLESS INSTALLATIONS. PROVIDE 2 COPIES TO BEAUFORT COUNTY.
11. TRACER WIRE MUST BE ATTACHED TO ALL NEWLY INSTALLED PIPE AS REQUIRED BY NC GENERAL STATUTES CHAPTER 87-121G. DO NOT USE STRANDED WIRE. BEAUFORT COUNTY WILL CONDUCT A CONTINUITY TEST ON ALL TRACER WIRE AFTER INSTALLATION.


12. A BEAUFORT COUNTY REPRESENTATIVE SHALL BE PRESENT TO WITNESS THE PRESSURE TEST, CHLORINATION, AND FLUSHING OF ALL NEW WATER LINES.
13. 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.
14. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE NCDOT STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO HAVE DIRECTIONAL DRILL DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.

## UTILITY CONSTRUCTION

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

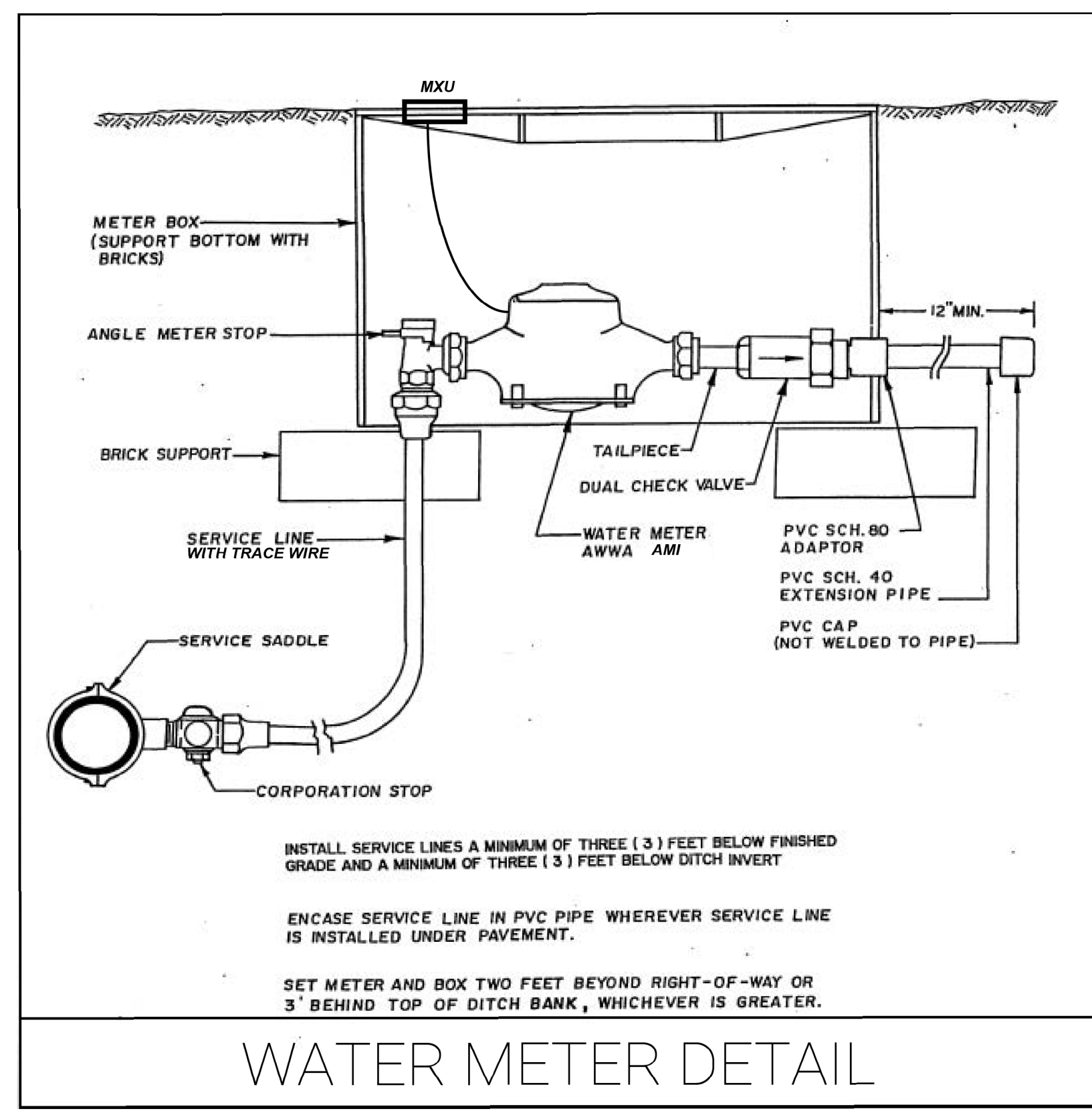
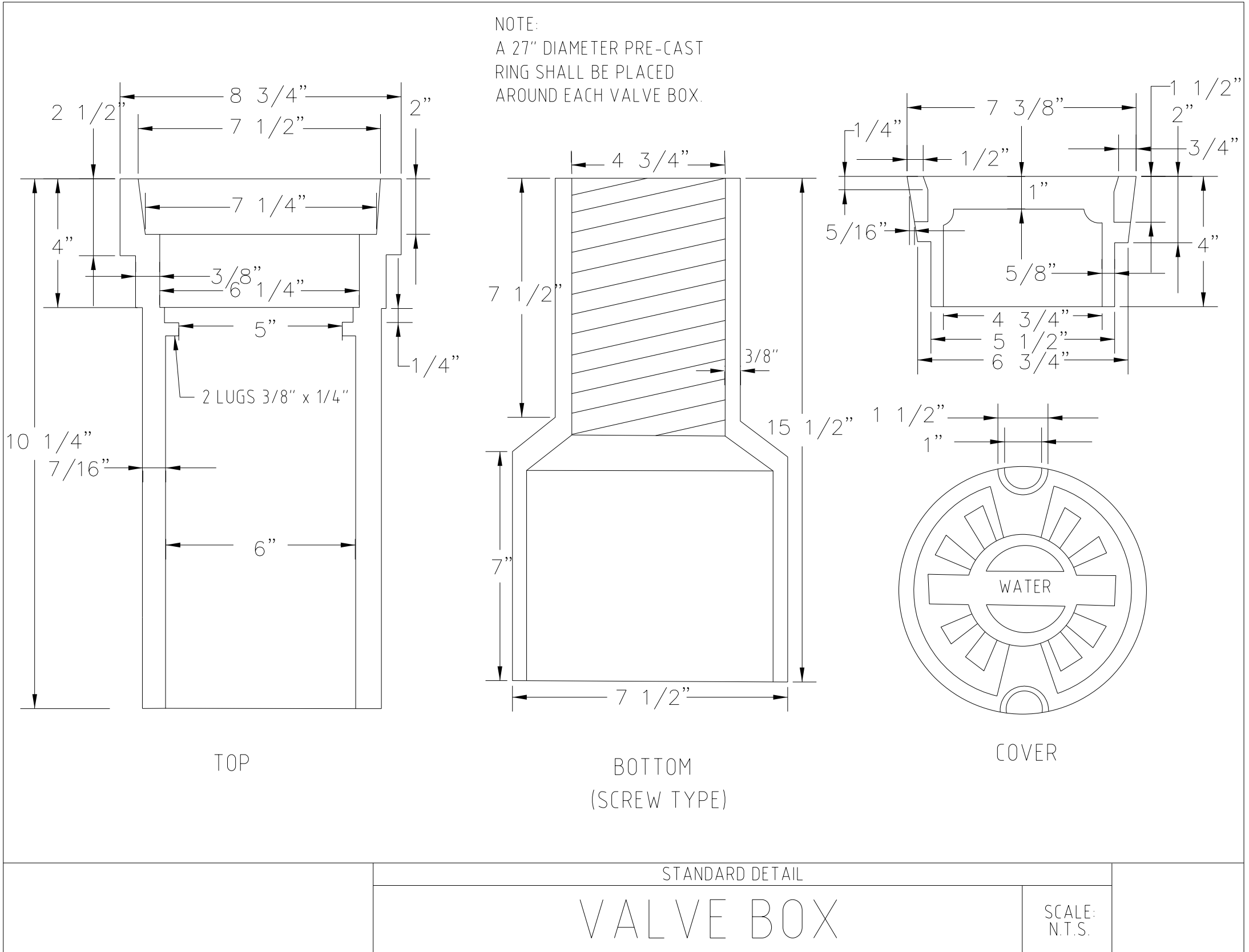
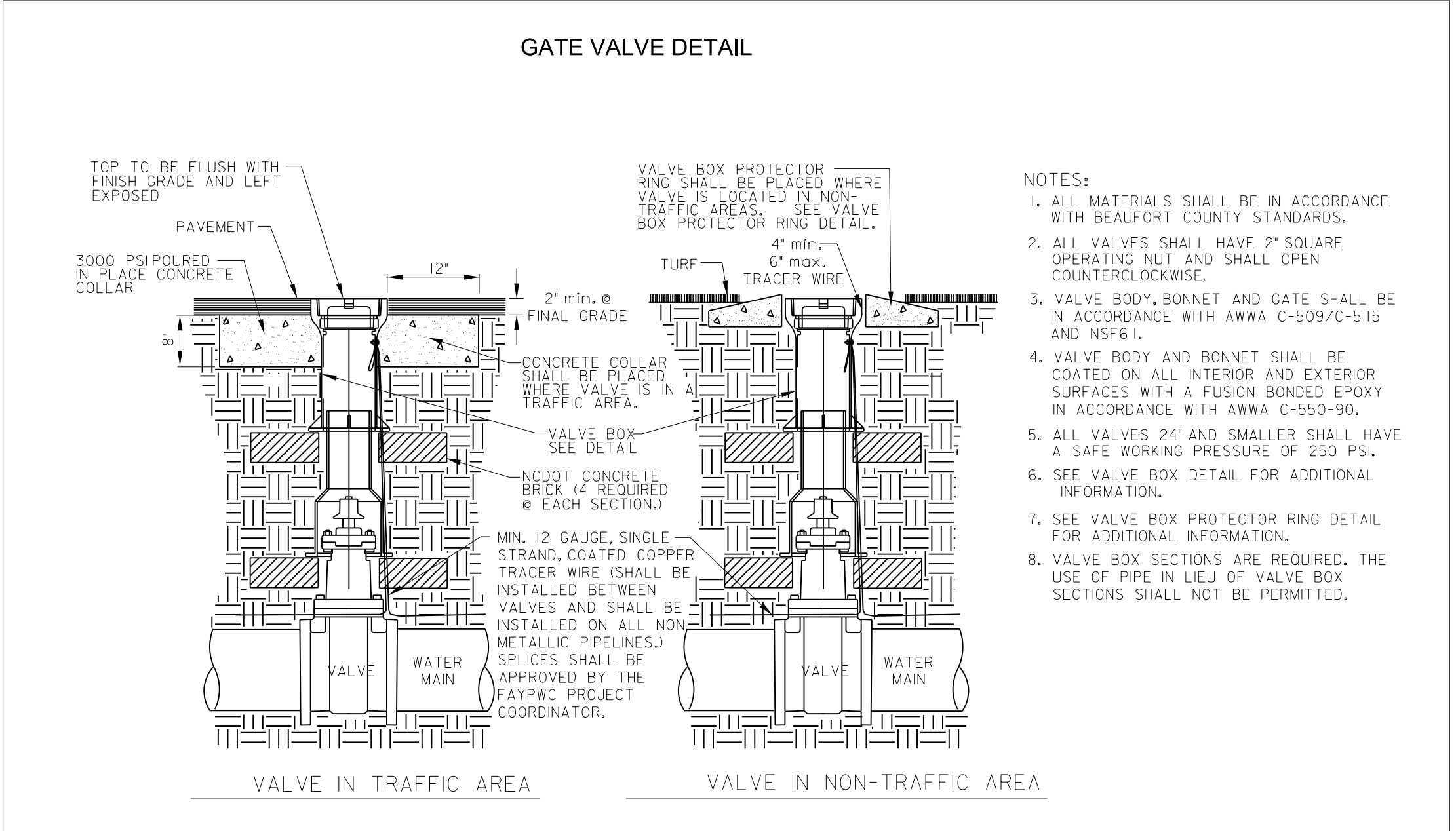
5/14/99

# BEAUFORT COUNTY PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO. <b>R-2511</b>	SHEET NO. <b>UC-3A</b>
DESIGNED BY: MSS	
DRAWN BY: MSS	
CHECKED BY: BMB	
APPROVED BY: BMB	
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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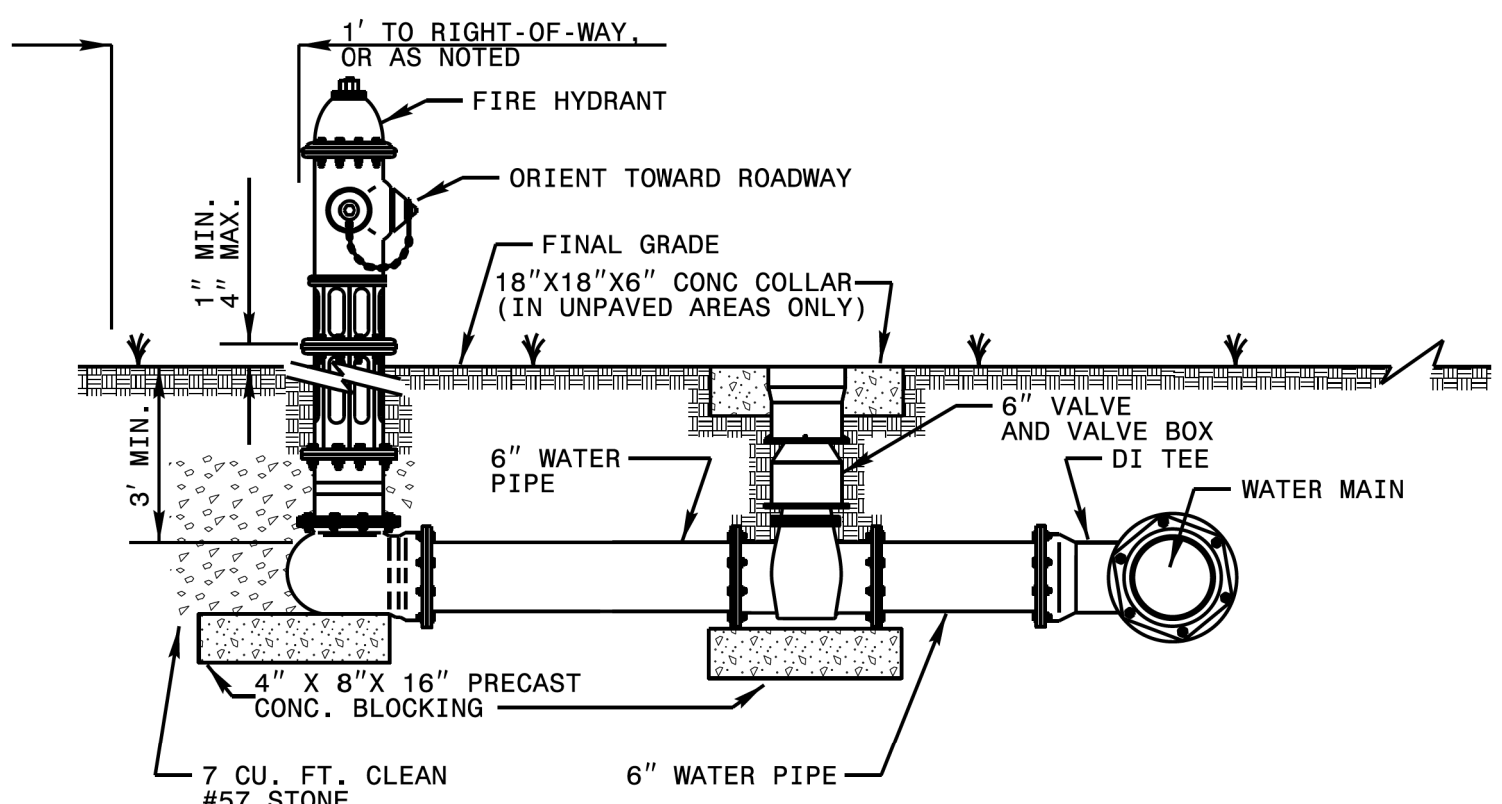
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 2/8/2022 10:00 AM  
 10:00 AM

# BEAUFORT COUNTY PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO. <b>R-2511</b>	SHEET NO. <b>UC-3B</b>
DESIGNED BY: MSS	
DRAWN BY: MSS	
CHECKED BY: BMB	
APPROVED BY: BMB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

**NOTES:**

- THIS DETAIL SHOWS THE TYPICAL FINAL FIRE HYDRANT CONFIGURATION AFTER INSTALLATION OF A PROPOSED FIRE HYDRANT, RECONNECTION OF AN EXISTING FIRE HYDRANT, OR RELOCATION OF A FIRE HYDRANT.
- KEEP DRAIN PORTS FREE FROM OBSTRUCTION.
- RESTRAIN ALL PIPE JOINTS AND FITTINGS. ACCEPTABLE TYPES OF RESTRAINT INCLUDE RESTRAINING GLANDS; RESTRAINED, PUSH-ON JOINTS; AND 3/4" BITUMINOUS COATED, ALL-THREAD RESTRAINING RODS. THRUST BLOCKS ARE NOT AN ACCEPTABLE TYPE OF RESTRAINT.
- FOR RELOCATED OR RECONNECTED FIRE HYDRANTS, VERIFY THE VALVE IS RESTRAINED TO THE MAIN. PROVIDE APPROPRIATE RESTRAINT.
- HYDRANT LOCATION APPLIES TO PROPOSED AND RELOCATED FIRE HYDRANTS.
- LOCATE FIRE HYDRANT WITH 3' HORIZONTAL CLEARANCE FROM ABOVE GROUND OBJECTS.
- PROVIDE A MINIMUM OF 3' COVER OVER ALL SECTIONS OF HORIZONTAL PIPE. USE FITTINGS AS NECESSARY.
- LOCATE FIRE HYDRANT OUTSIDE OF THE VEHICLE RECOVERY AREA, ADJACENT TO THE R/W LINE, OR IN A PROTECTED AREA.
- FIRE HYDRANT TO BE PAINTED SHERWIN-WILLIAMS "LASER BLUE".

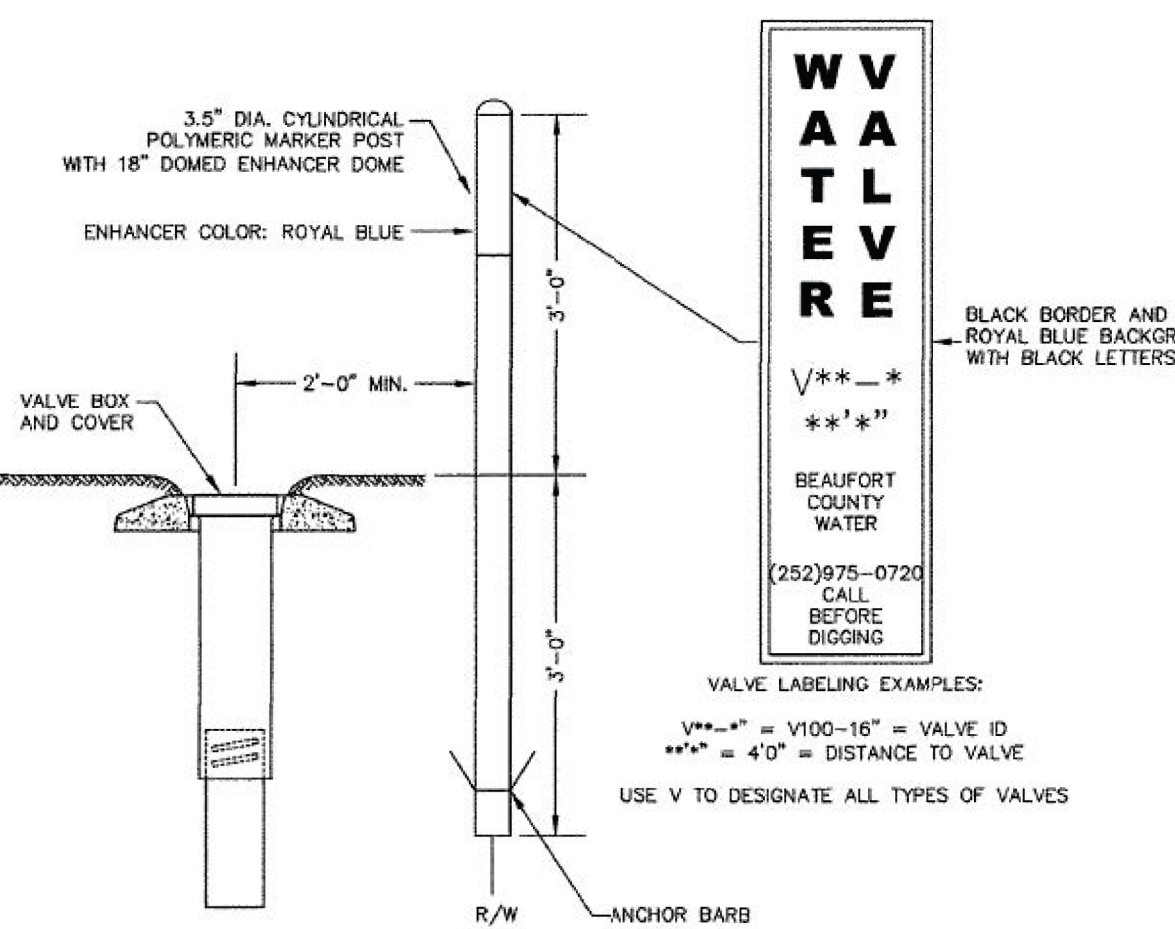


**ROADWAY STANDARD DRAWING FOR  
FIRE HYDRANT**

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

1-1B

SHEET 1 OF 1  
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BEAUFORT COUNTY WATER  
(252)975-0720  
CALL BEFORE DIGGING

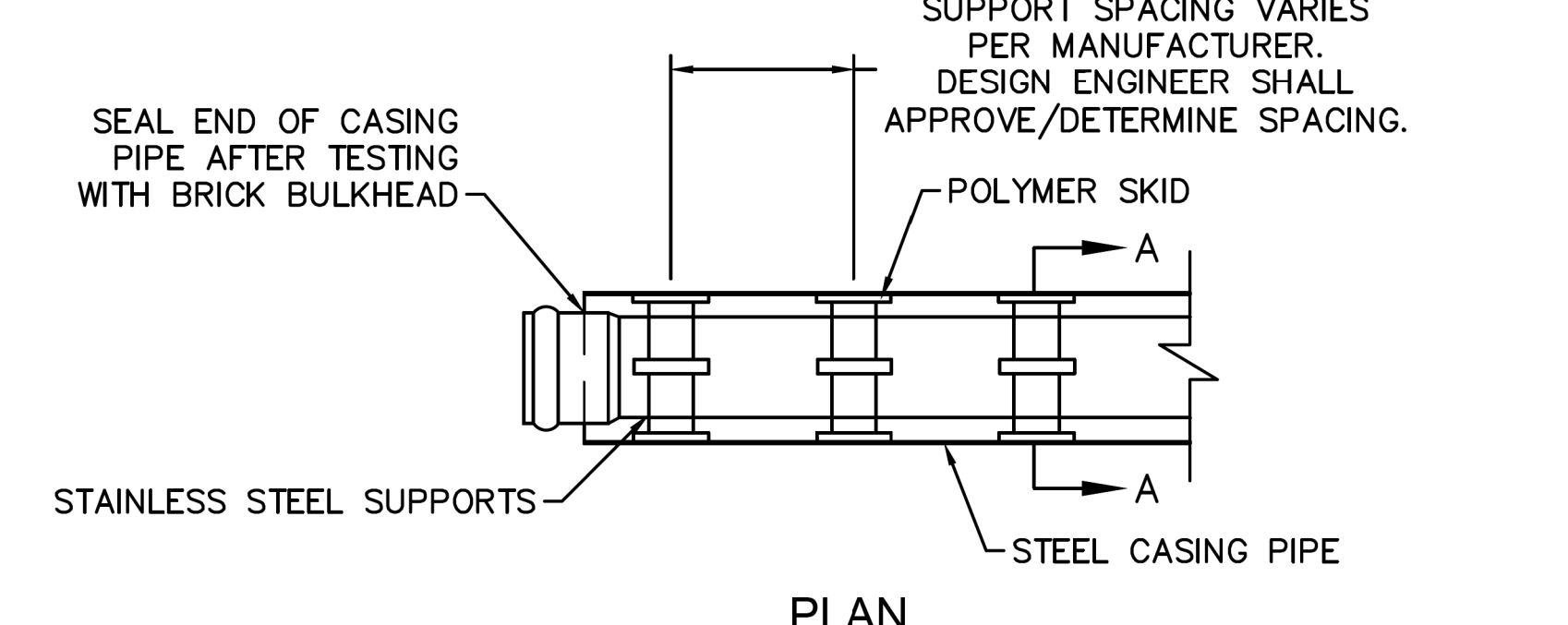
VALVE LABELING EXAMPLES:  
V\*\*-\* = V100-16" = VALVE ID  
\*\*-\* = 40" = DISTANCE TO VALVE  
USE V TO DESIGNATE ALL TYPES OF VALVES

**NOTES:**

- ONE VALVE MARKER POST SHALL BE INSTALLED FOR EACH VALVE.
- VALVE MARKER POST SHALL BE INSTALLED AT THE RIGHT OF WAY.
- VALVE MARKER POST SHALL BE MADE OF A HIGH DENSITY THERMOPLASTIC POLYMER WITH A MINIMUM TENSILE STRENGTH OF 2,700 POUNDS PER SQUARE INCH. THE TENSILE STRENGTH SHALL NOT DEVIATE MORE THAN 10% OVER TEMPERATURE RANGE OF -20° FAHRENHEIT TO 140° FAHRENHEIT.
- VALVE MARKER POST SHALL INCLUDE AN ENHANCER DOME WHICH WILL CONTAIN ALL MESSAGE INFORMATION. MESSAGE INFORMATION SHALL BE EMBEDDED WITHIN THE POLYMER. ADHESIVE STICK-ON NOT ACCEPTABLE.
- VALVE MARKER POST SHALL BE CAPABLE OF WITHSTANDING AT LEAST ONE VEHICLE IMPACT OF 35 MPH AND SHALL RETURN UPRIGHT WITHIN 15' OF VERTICAL POSITION WITHIN A MAXIMUM OF 30 SECONDS FROM TIME OF IMPACT.
- VALVE MARKER SHALL BE EQUIPPED WITH AN ANCHOR BARB TO PREVENT ROTATION AND MARKER REMOVAL.
- TO INSURE ACCURACY OF MESSAGE INFORMATION, VALVE MARKER POSTS SHALL BE ORDERED AFTER VALVE INSTALLATION.
- MESSAGE INFORMATION ON VALVE MARKER POST SHALL BE TURNED TO FACE (POINT TO) VALVE IT IS DESIGNATED FOR.
- VALVE MARKER POST AND ENHANCER DOME SHALL BE UV RESISTANT.

**UTILITY CONSTRUCTION**

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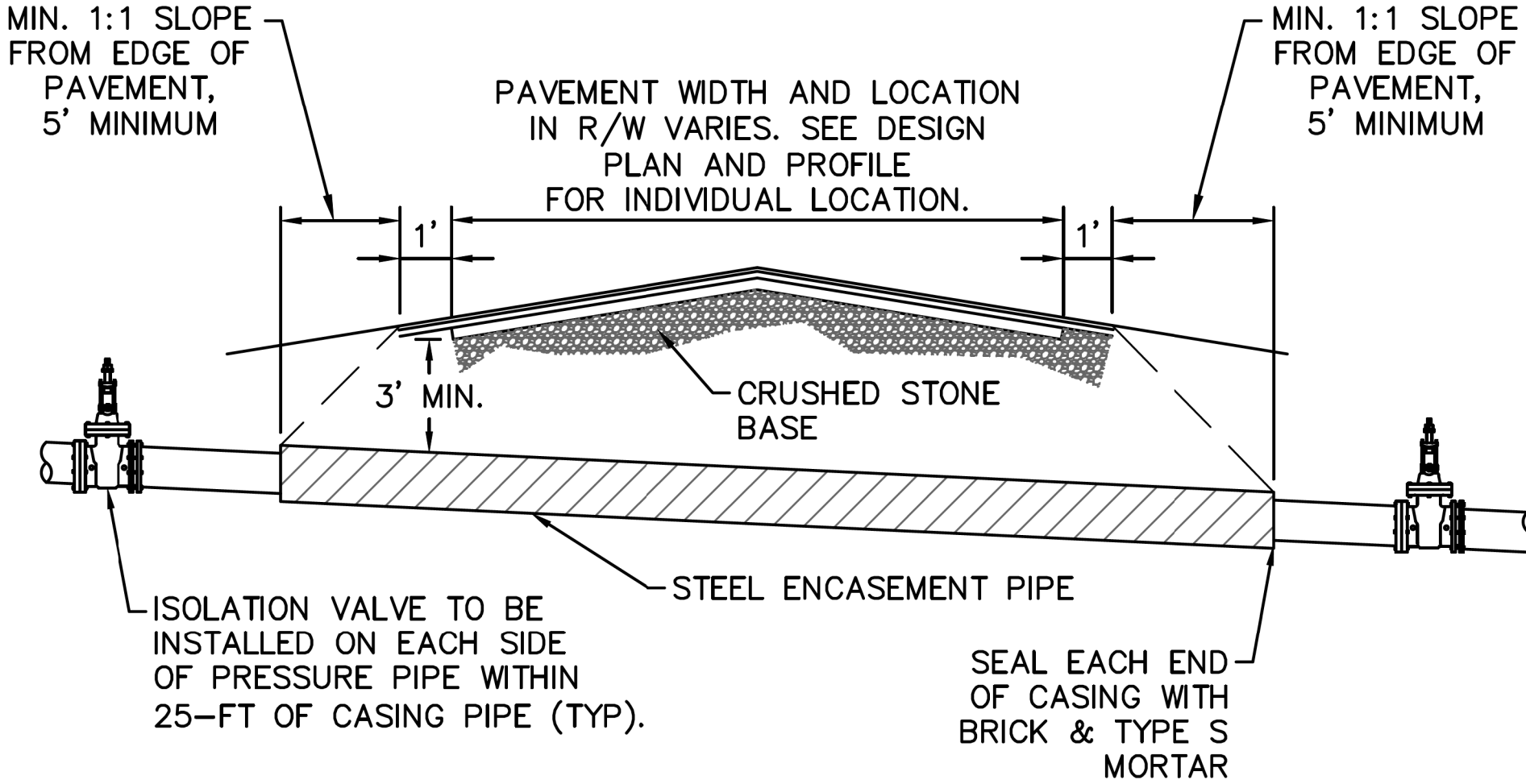


**PLAN**

**NOTE:** PIPE SUPPORT TO BE PLACED TO PROVIDE PROPER SUPPORT, ALIGNMENT, AND GRADE AS SPECIFIED. CONTINUOUS SUPPORTS MAY BE USED AS ALTERNATIVE. OIL, GREASE, OR PETROLEUM PRODUCT MAY NOT BE USED AS LUBRICANT.

SKID SPACING AND LEG SIZE VARIES BY PIPE SIZE AND PER MANUFACTURER. DESIGN ENGINEER SHALL APPROVE/DETERMINE SPACING.

STEEL CASING PIPE		
CARRIER PIPE, DIP DIAMETER (IN.)	CASING PIPE, STEEL DIAMETER (IN.)	MINIMUM CASING PIPE WALL THICKNESS (IN.)
3	8	0.250
6	14	0.3750
8	16	0.3750
10	18	0.3750
12	20	0.3750
14	24	0.3750
16	26	0.3750
18	30	0.3750
20	32	0.3750
24	36	0.4375
30	42	0.4375
36	48	0.500



**NOTES:**

- CASING WILL BE INSTALLED AT LINE AND GRADE SHOWN ON INDIVIDUAL PROFILE FOR EACH CROSSING. BORING/JACKING TO LINE AND GRADE IS REQUIRED.
- TRACER WIRE SHALL BE TAPED AT 12' INTERVALS THROUGHOUT THE CASING.
- PRESSURE AND NON-PRESSURE PIPING THROUGH CASING SHALL BE RESTRAINED JOINT.

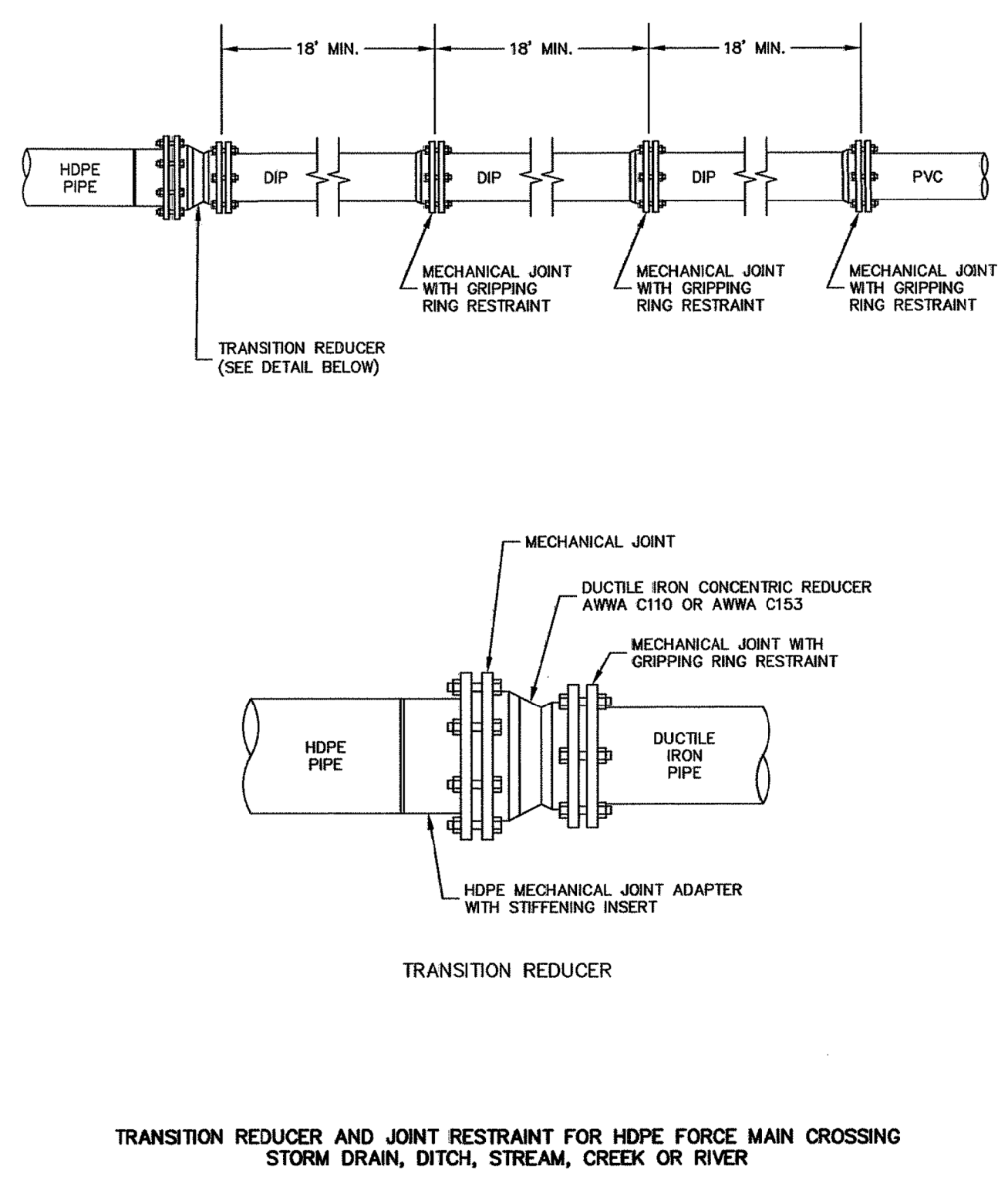
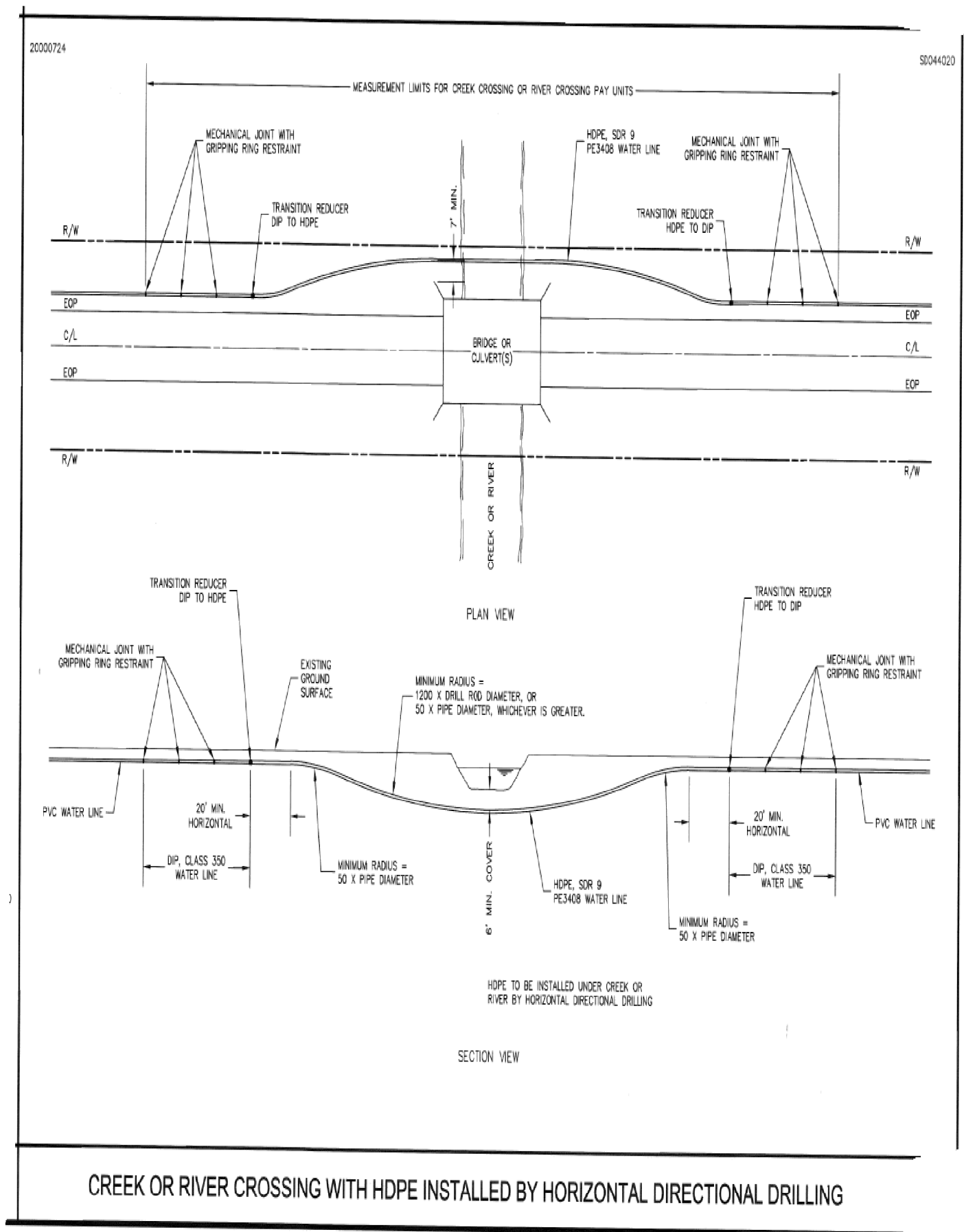
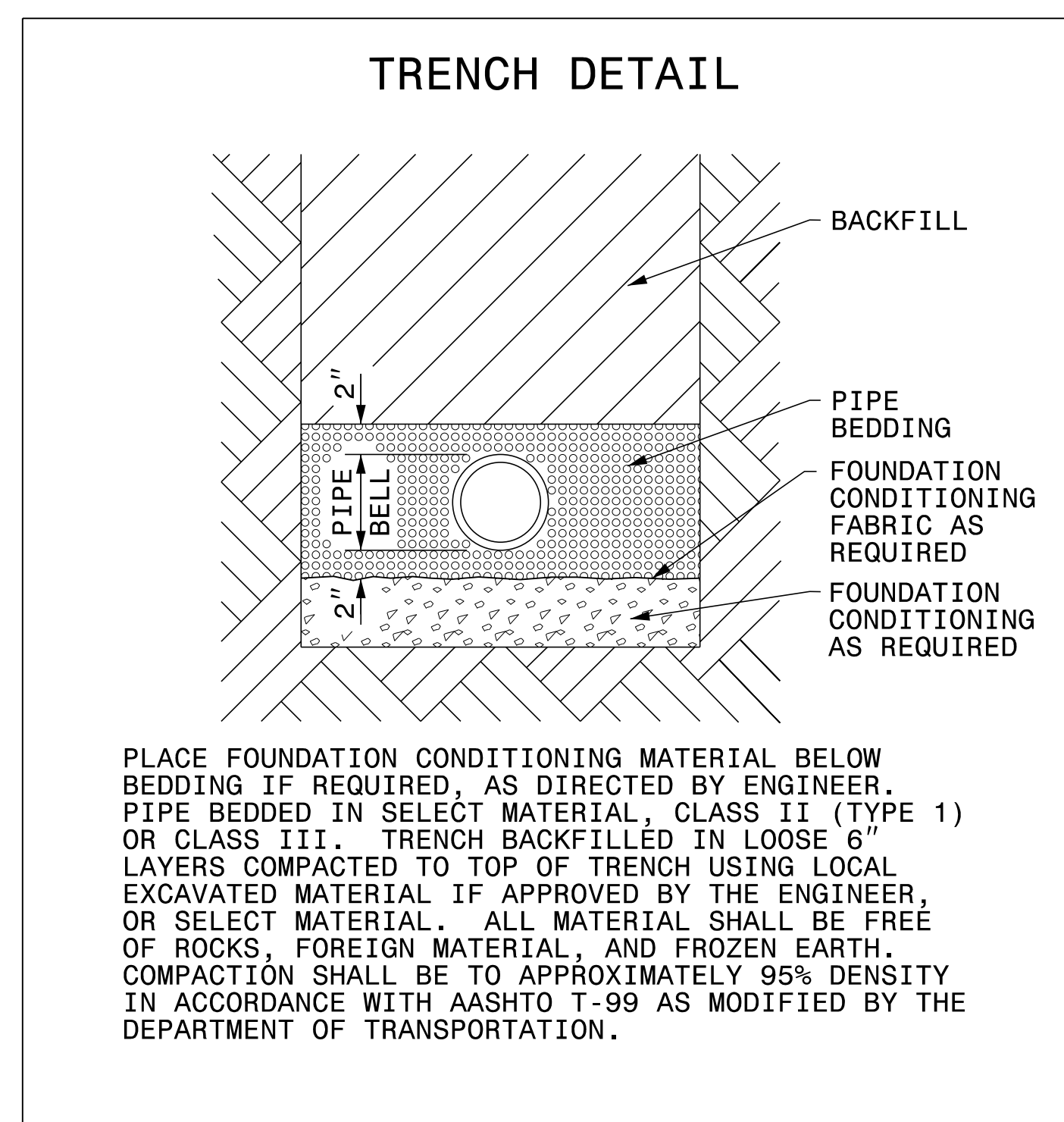
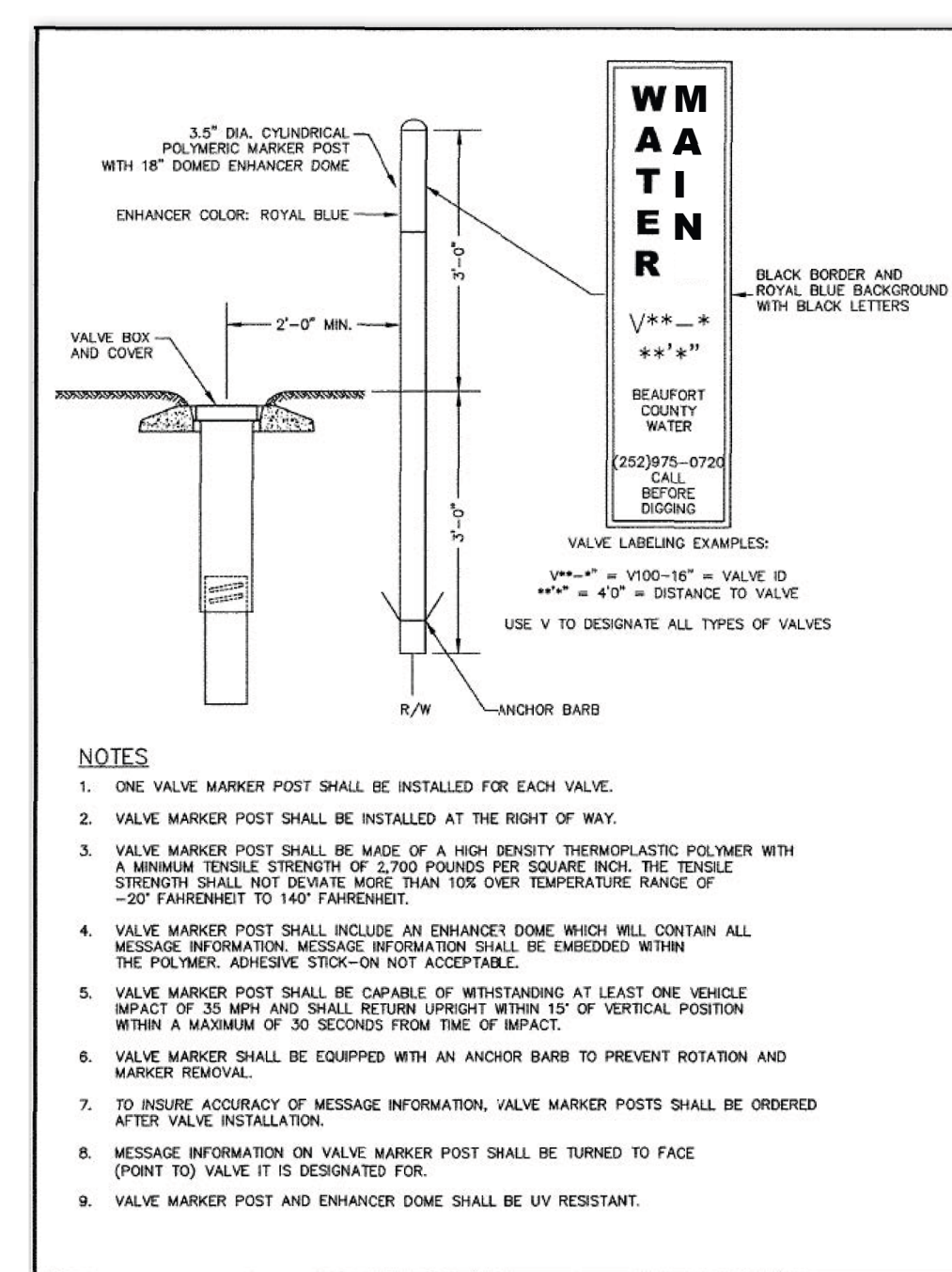
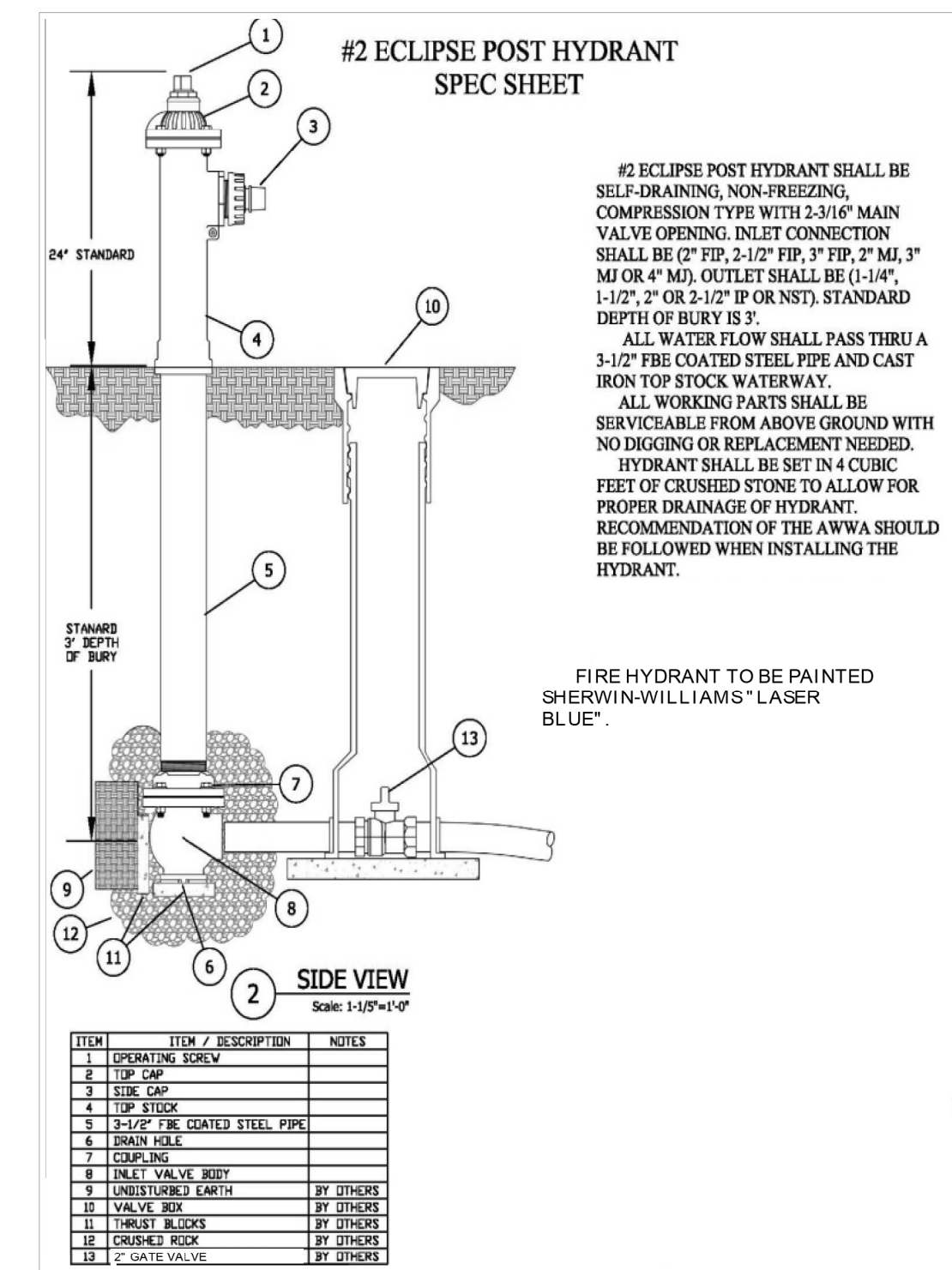
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-3C
DESIGNED BY: MSS	
DRAWN BY: MSS	
CHECKED BY: BMB	
APPROVED BY: BMB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

# BEAUFORT COUNTY PROJECT TYPICAL DETAILS

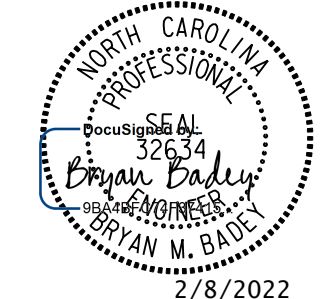
## UTILITY CONSTRUCTION

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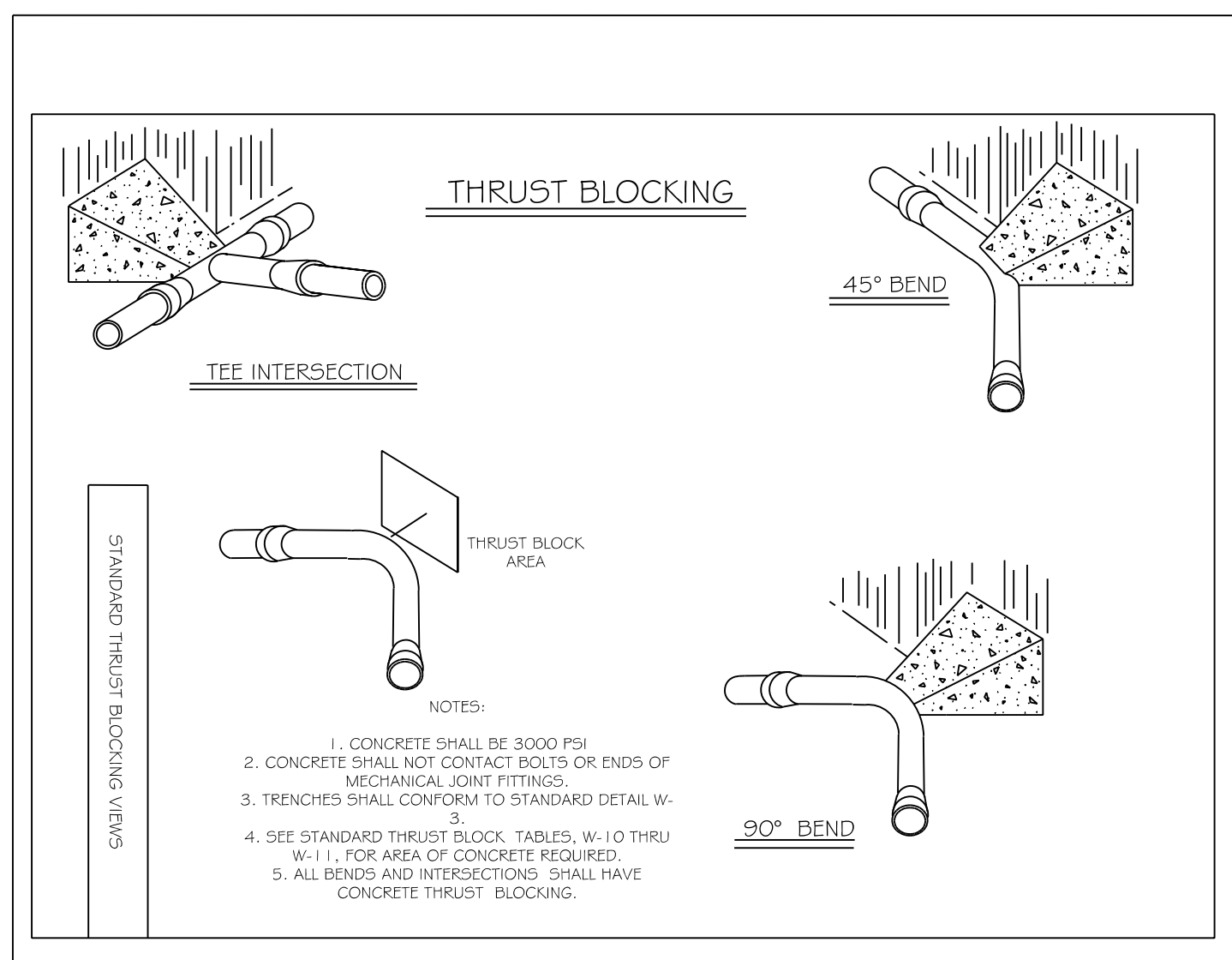
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# BEAUFORT COUNTY PROJECT TYPICAL DETAILS

PROJECT REFERENCE NO. <b>R-2511</b>	SHEET NO. <b>UC-3D</b>
DESIGNED BY: MSS	
DRAWN BY: MSS	
CHECKED BY: BMB	
APPROVED BY: BMB	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

## UTILITY CONSTRUCTION

**DOCUMENT NOT CONSIDERED FINAL  
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REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS  
BASED ON TEST PRESSURE OF 200 P.S.I.

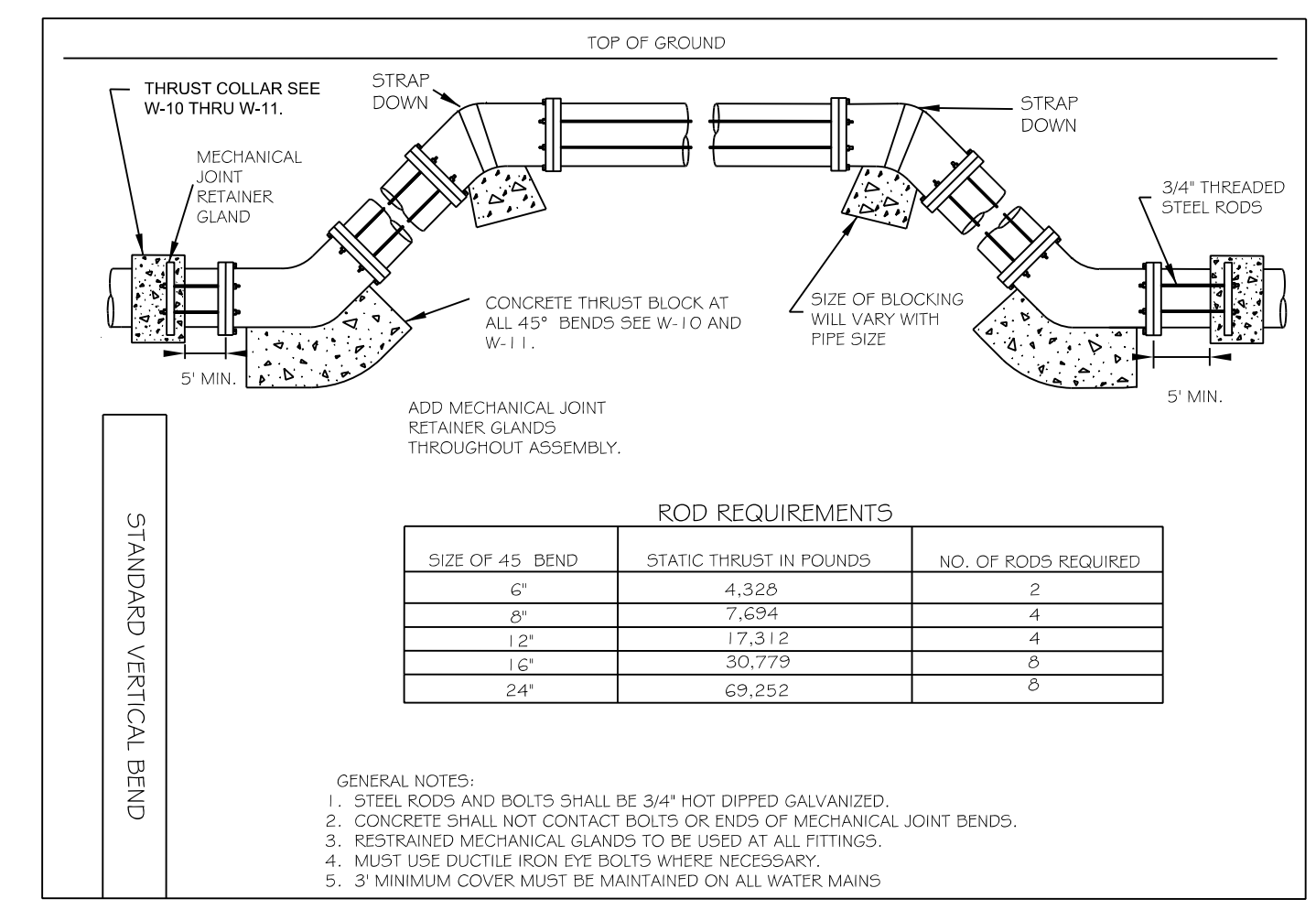
ALL AREAS GIVEN IN SQUARE FEET

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	GRAVEL/DRIE/DRY CLAY	30% SAND	GRAVEL/DRIE/DRY CLAY	30% SAND	GRAVEL/DRIE/DRY CLAY	30% SAND	GRAVEL/DRIE/DRY CLAY	30% SAND
<b>6"</b>									
11 1/4°	1,108	1	1	1	1	1	1	2	1
22 1/2°	2,207	1	2	2	1	1	1	3	1
45°	4,328	2	3	3	1	1	2	5	1
90°	7,996	2	4	5	1	1	2	8	1
PLUG	5,655	2	3	4	1	1	2	6	1
<b>8"</b>									
11 1/4°	1,970	1	1	2	1	1	1	2	1
22 1/2°	3,922	1	2	3	1	1	1	4	1
45°	7,694	2	4	5	1	1	2	8	1
90°	14,215	4	8	9	2	2	4	15	2
PLUG	10,093	3	5	6	2	2	3	10	1
<b>12"</b>									
11 1/4°	4,433	2	3	3	1	1	2	5	1
22 1/2°	8,826	3	5	6	2	2	3	9	1
45°	17,312	5	9	11	3	3	5	18	2
90°	31,983	8	16	19	4	4	8	32	4
PLUG	22,619	6	12	14	3	3	6	23	3
<b>16"</b>									
11 1/4°	7,881	2	4	5	1	1	2	8	1
22 1/2°	15,691	4	8	10	2	2	4	16	2
45°	30,779	8	16	19	4	4	8	31	4
90°	56,861	15	29	35	8	8	15	57	6
PLUG	40,213	10	21	25	5	5	10	41	5

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6" - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

**THRUST BLOCKING DESIGN QUANTITY TABLE**



REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS  
BASED ON TEST PRESSURE OF 200 P.S.I.

ALL AREAS GIVEN IN SQUARE FEET

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	GRAVEL/DRIE/DRY CLAY	30% SAND	GRAVEL/DRIE/DRY CLAY	30% SAND	GRAVEL/DRIE/DRY CLAY	30% SAND	GRAVEL/DRIE/DRY CLAY	30% SAND
<b>24"</b>									
11 1/4°	17,734	5	9	11	3	3	5	18	2
22 1/2°	35,305	9	18	22	5	5	9	36	4
45°	69,252	18	35	42	9	9	18	70	7
90°	127,936	32	64	77	16	16	32	128	13
PLUG	90,478	23	46	55	12	12	23	91	10
<b>30"</b>									
11 1/4°	27,709	7	14	17	4	4	7	2	3
22 1/2°	55,163	14	28	34	7	7	14	56	6
45°	108,206	28	55	65	14	14	28	109	11
90°	199,906	50	100	120	25	25	50	200	20
PLUG	141,372	36	71	85	18	18	36	142	15
<b>36"</b>									
11 1/4°	39,901	10	20	24	5	5	10	40	4
22 1/2°	79,439	20	40	48	10	10	20	80	8
45°	155,816	39	78	94	20	20	39	156	16
90°	287,851	72	144	172	36	36	72	288	29
PLUG	203,572	51	102	122	26	26	51	204	21
<b>48"</b>									
11 1/4°	70,935	18	36	43	9	9	18	71	8
22 1/2°	141,218	36	71	85	18	18	36	142	15
45°	277,007	70	139	166	35	35	70	277	28
90°	511,742	128	256	320	64	64	128	512	52
PLUG	361,911	91	181	217	46	46	91	362	37

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6" - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

**THRUST BLOCKING DESIGN QUANTITY TABLE**





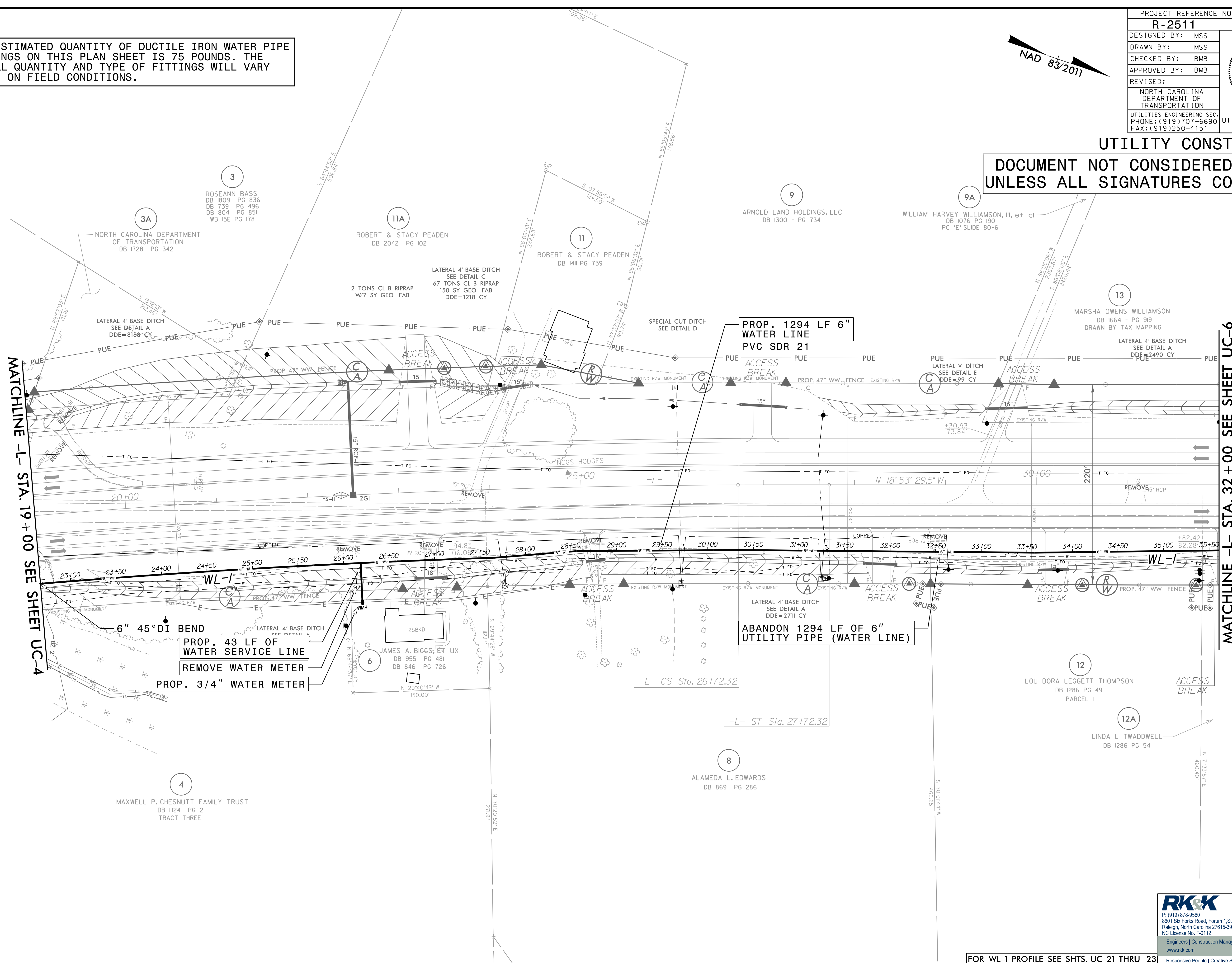
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R-2511	UC-5
DESIGNED BY: MSS	
DRAWN BY: MSS	
CHECKED BY: BMB	
APPROVED BY: BMB	
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 75 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

**UTILITY CONSTRUCTION**

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MATCHLINE -L- STA. 19+00 SEE SHEET UC-4

MATCHLINE -L- STA. 32+00 SEE SHEET UC-6

PROP. 43 LF OF WATER SERVICE LINE  
REMOVE WATER METER  
PROP. 3/4" WATER METER

PROP. 1294 LF 6" WATER LINE  
PVC SDR 21

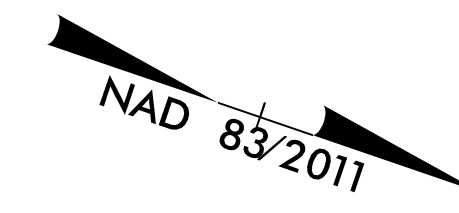
ABANDON 1294 LF OF 6" UTILITY PIPE (WATER LINE)

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FOR WL-1 PROFILE SEE SHTS. UC-21 THRU 23

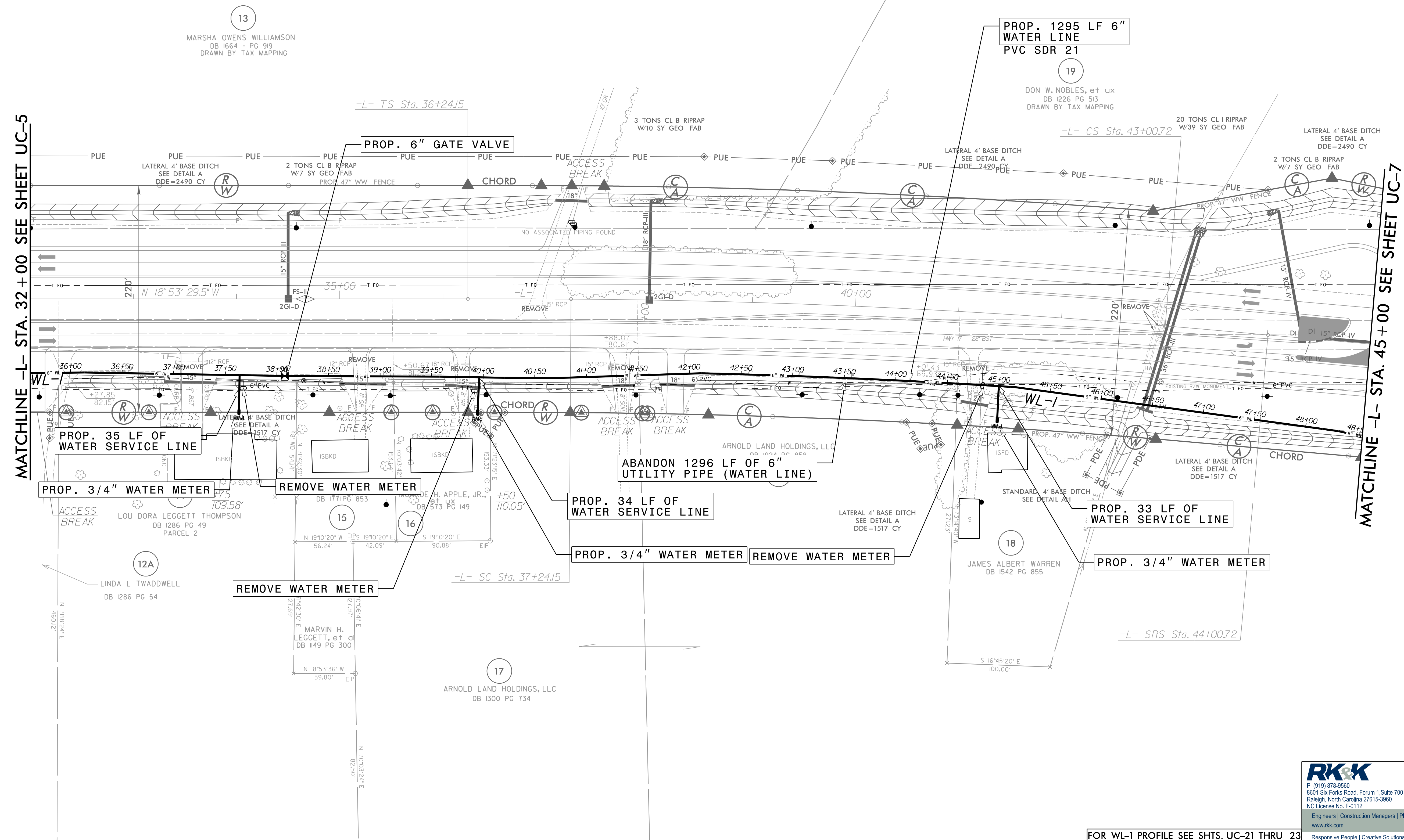
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 8/12/2022

PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-6
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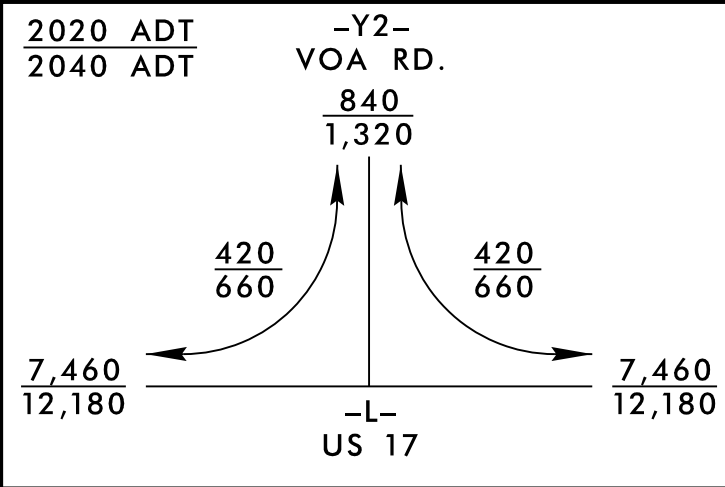


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FOR WL-1 PROFILE SEE SHTS. UC-21 THRU 23

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2/16/2022 10:00 AM  
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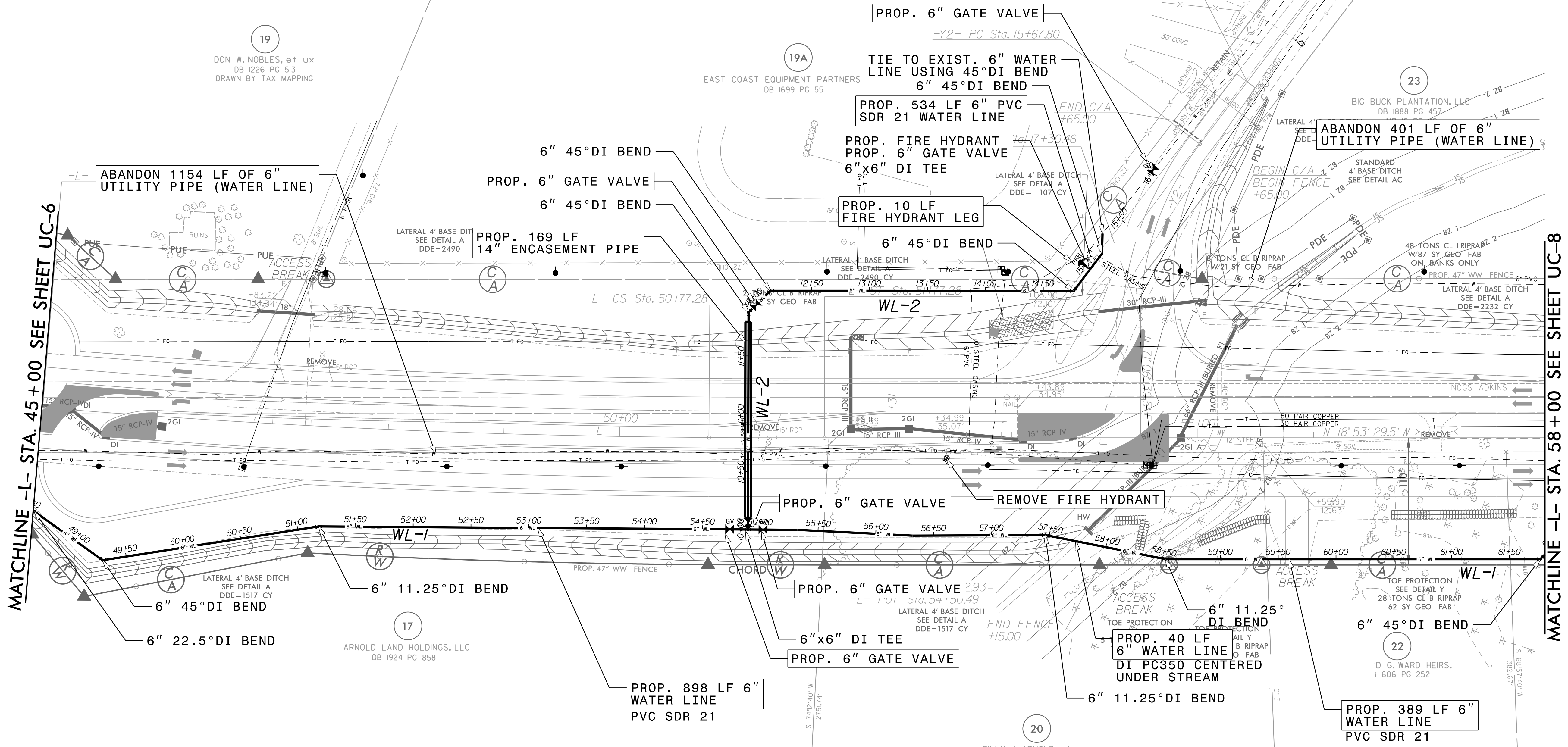
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 1075 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-7
DESIGNED BY: MSS	
DRAWN BY: MSS	
CHECKED BY: BMB	
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MATCHLINE -L- STA. 45+00 SEE SHEET UC-6

MATCHLINE -L- STA. 58+00 SEE SHEET UC-8

FOR WL-1 PROFILE SEE SHTS. UC-21 THRU 23  
FOR WL-2 PROFILE SEE SHT. UC-23

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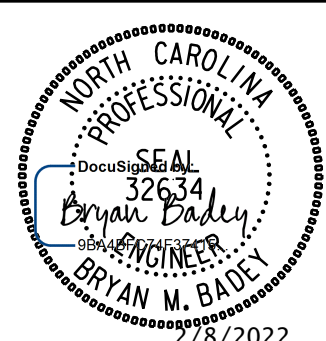
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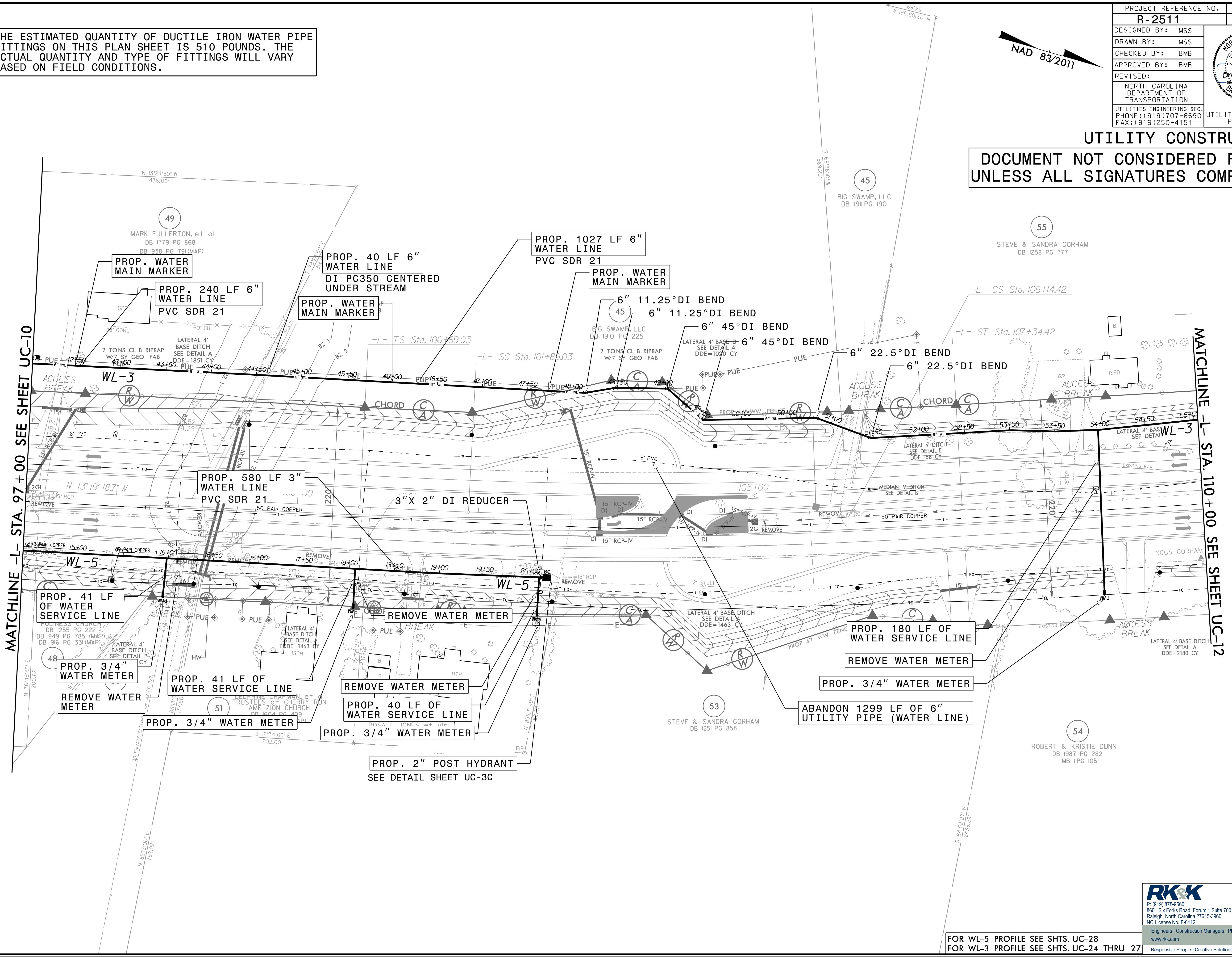




THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 510 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-11
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FOR WL-5 PROFILE SEE SHTS. UC-28  
 FOR WL-3 PROFILE SEE SHTS. UC-24 THRU 27



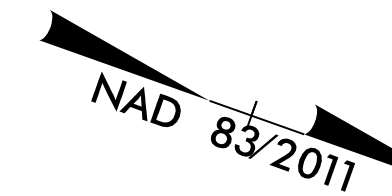
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 475 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



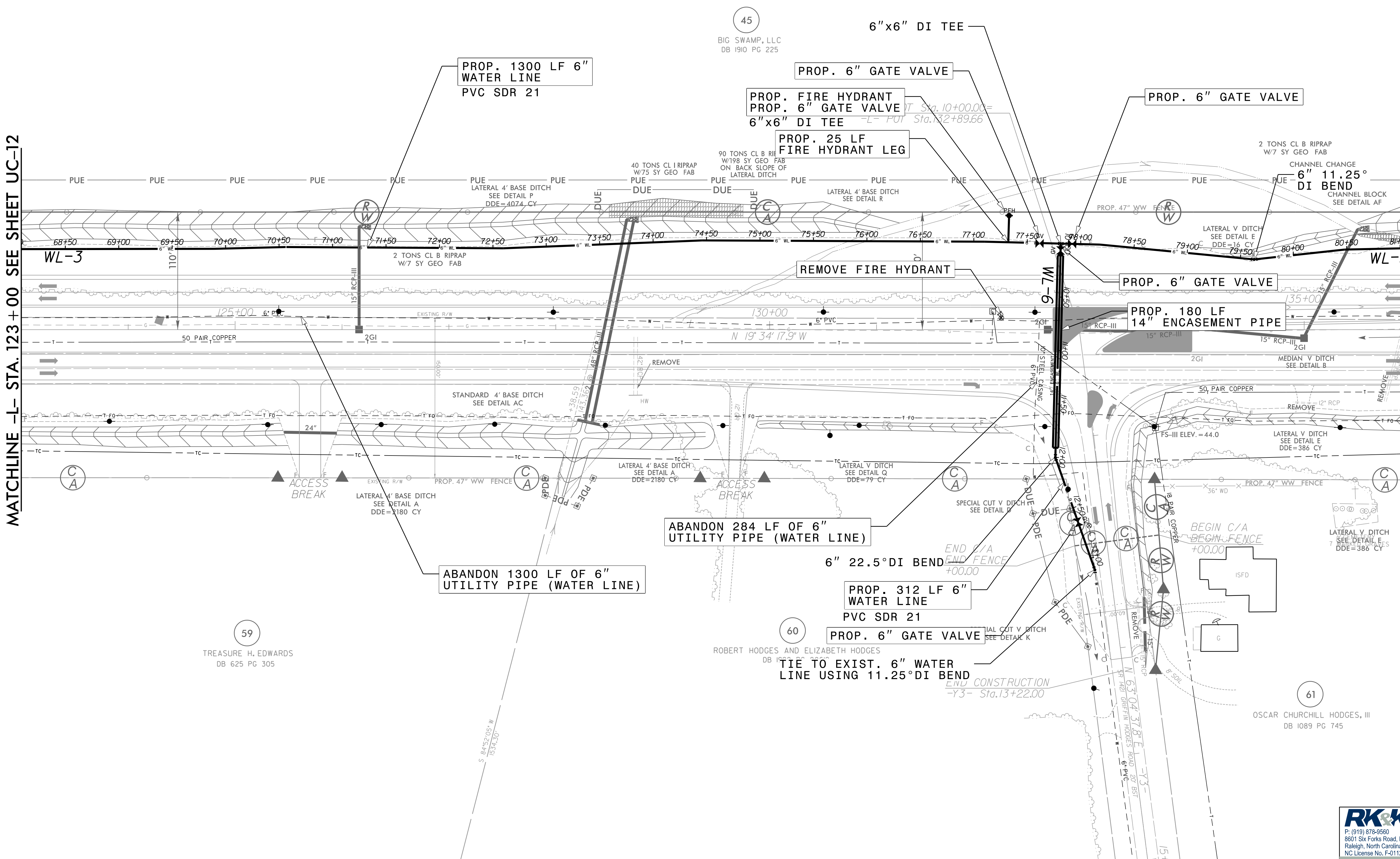
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DESIGNED BY: MSS	
DRAWN BY: MSS	
CHECKED BY: BMB	
APPROVED BY: BMB	
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MATCHLINE -L- STA. 123 + 00 SEE SHEET UC-12

MATCHLINE -L- STA. 136 + 00 SEE SHEET UC-14



2.16.2022 09:02  
C:\Users\jshred\OneDrive\Documents\Projects\2022\13-UC13.psd.dgn  
jshred

59  
TREASURE H. EDWARDS  
DB 625 PG 305

60  
ROBERT HODGES AND ELIZABETH HODGES  
DB 1089 PG 745

61  
OSCAR CHURCHILL HODGES, III  
DB 1089 PG 745

FOR WL-6 PROFILE SEE SHT. UC-29  
FOR WL-3 PROFILE SEE SHTS. UC-24 THRU 27

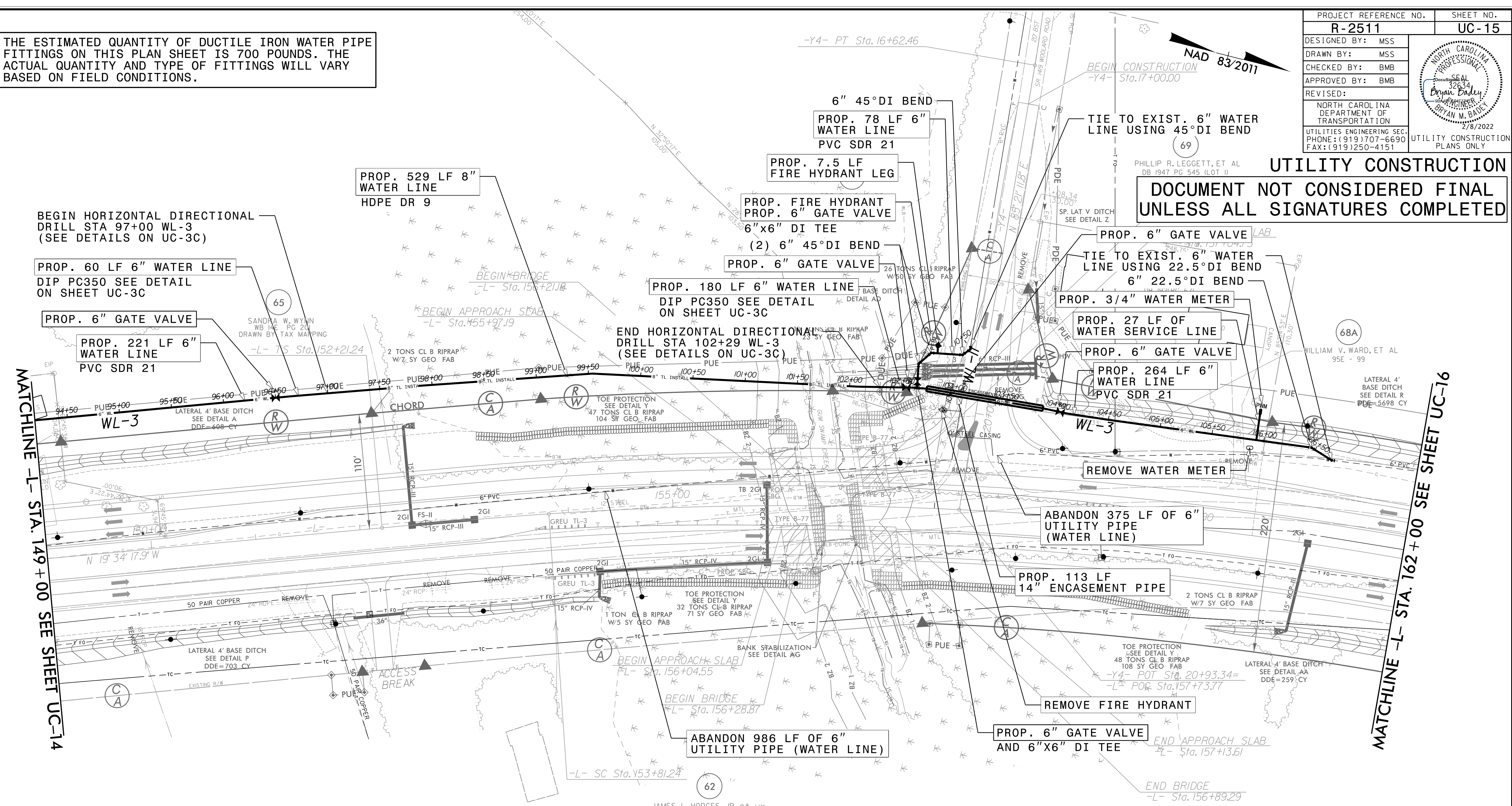
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R-2511	UC-15
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THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 700 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

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BEGIN HORIZONTAL DIRECTIONAL DRILL STA 97+00 WL-3 (SEE DETAILS ON UC-3C)

PROP. 60 LF 6" WATER LINE  
 DIP PC350 SEE DETAIL ON SHEET UC-3C

PROP. 6" GATE VALVE  
 PROP. 221 LF 6" WATER LINE  
 PVC SDR 21

PROP. 529 LF 8" WATER LINE  
 HDPE DR 9

PROP. 7.5 LF FIRE HYDRANT LEG

PROP. FIRE HYDRANT  
 PROP. 6" GATE VALVE  
 6"x6" DI TEE  
 (2) 6" 45° DI BEND  
 PROP. 6" GATE VALVE

PROP. 180 LF 6" WATER LINE  
 DIP PC350 SEE DETAIL ON SHEET UC-3C

END HORIZONTAL DIRECTIONAL DRILL STA 102+29 WL-3 (SEE DETAILS ON UC-3C)

TIE TO EXIST. 6" WATER LINE USING 45° DI BEND  
 PROP. 6" GATE VALVE  
 TIE TO EXIST. 6" WATER LINE USING 22.5° DI BEND  
 6" 22.5° DI BEND

PROP. 3/4" WATER METER  
 PROP. 27 LF OF WATER SERVICE LINE

PROP. 6" GATE VALVE  
 PROP. 264 LF 6" WATER LINE  
 PVC SDR 21

REMOVE WATER METER

ABANDON 375 LF OF 6" UTILITY PIPE (WATER LINE)

PROP. 113 LF 14" ENCASUREMENT PIPE

REMOVE FIRE HYDRANT

PROP. 6" GATE VALVE AND 6"x6" DI TEE

ABANDON 986 LF OF 6" UTILITY PIPE (WATER LINE)

JAMES L. HODGES, JR. e+ ux  
 DB 1828 PG 781  
 DRAWN BY TAX MAPPING (NOT DEED)







B:\12/99

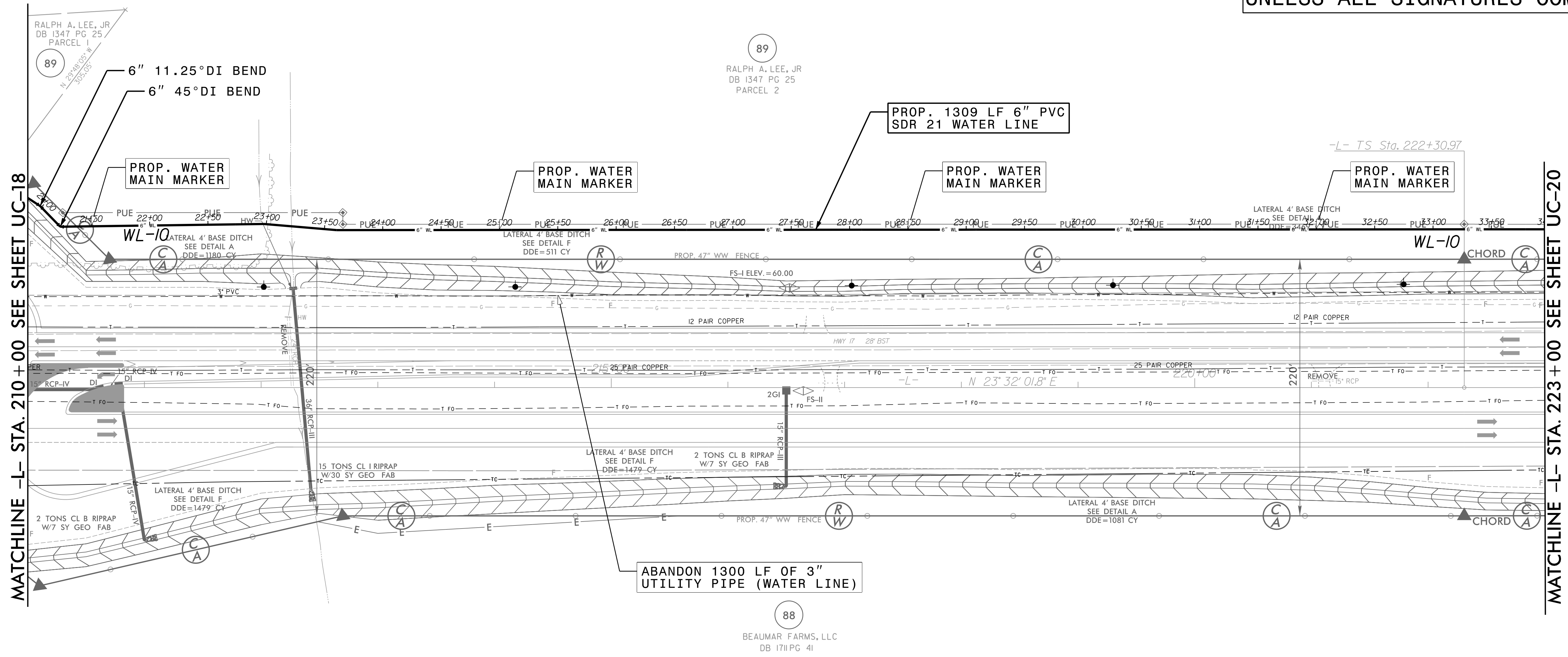
THE ESTIMATED QUANTITY OF DUCTILE IRON WATER PIPE FITTINGS ON THIS PLAN SHEET IS 150 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.



PROJECT REFERENCE NO. <b>R-2511</b>	SHEET NO. <b>UC-19</b>
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MATCHLINE -L- STA. 210+00 SEE SHEET UC-18

MATCHLINE -L- STA. 223+00 SEE SHEET UC-20

ABANDON 1300 LF OF 3" UTILITY PIPE (WATER LINE)

89  
RALPH A. LEE, JR  
DB 1347 PG 25  
PARCEL 2

88  
BEAUMAR FARMS, LLC  
DB 1711 PG 41

CEMETERY  
2 MARKED GRAVES

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mss

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FOR WL-10 PROFILE SEE SHTS. UC-31 & 32



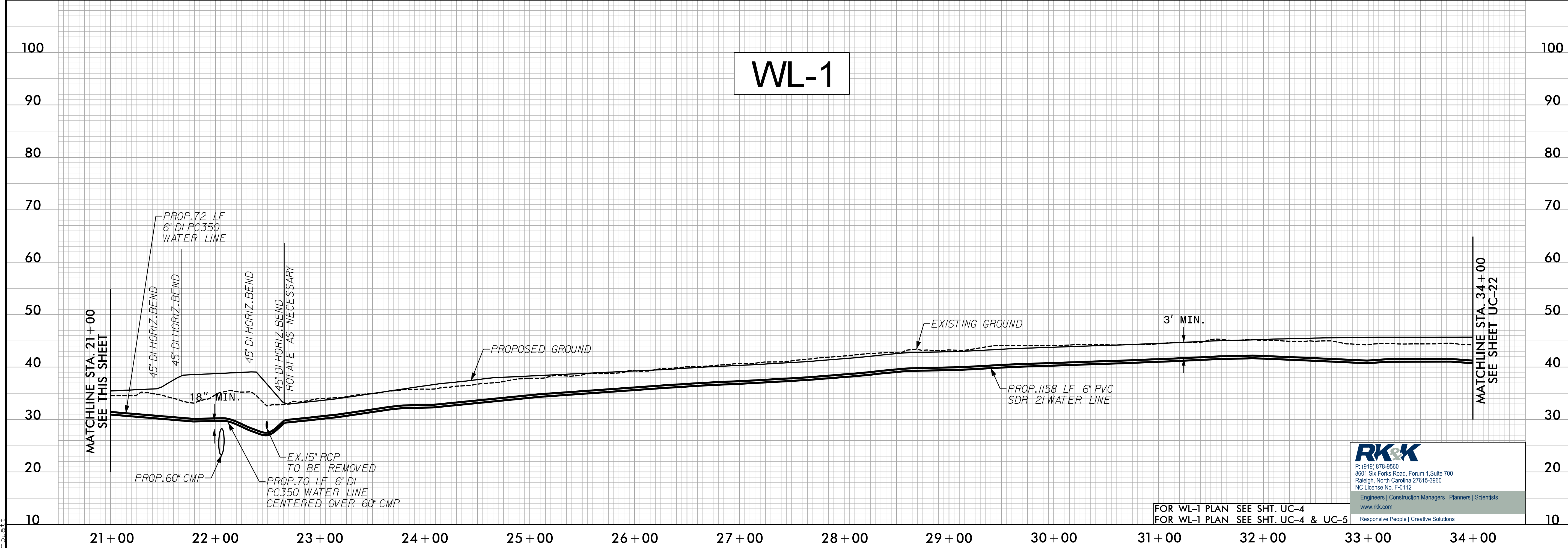
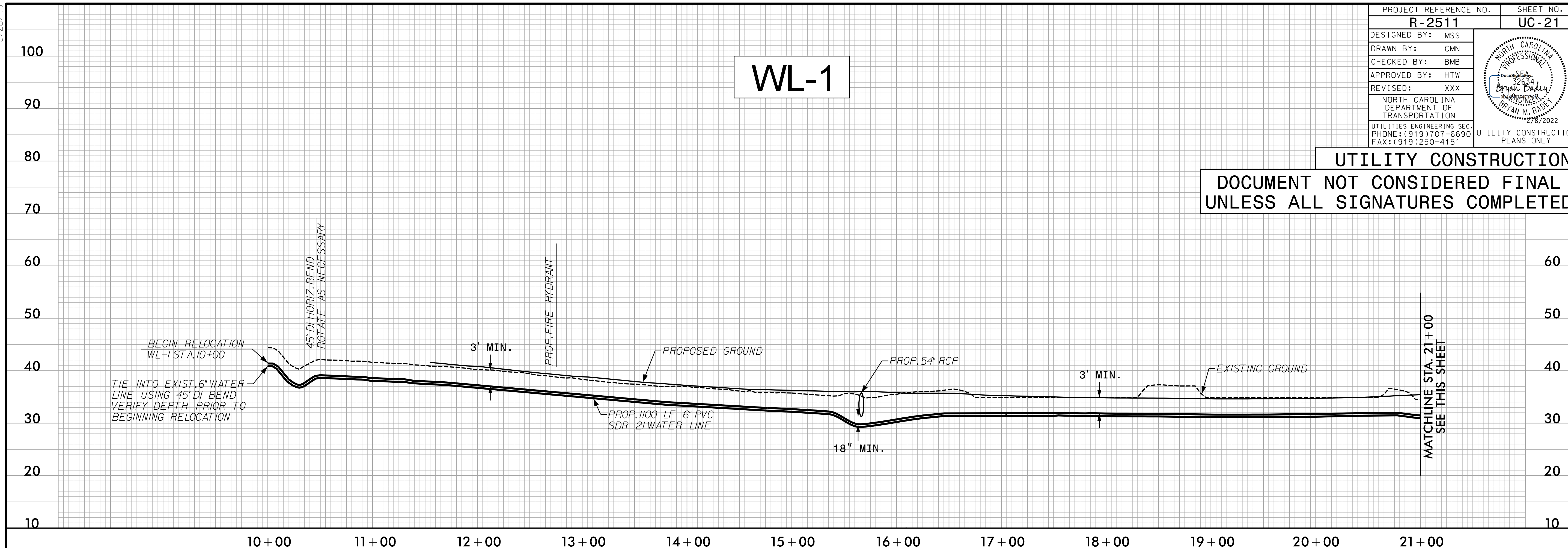


5/28/22

PROJECT REFERENCE NO.	SHEET NO.
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APPROVED BY: HTW	
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FOR WL-1 PLAN SEE SHT. UC-4  
FOR WL-1 PLAN SEE SHT. UC-4 & UC-5

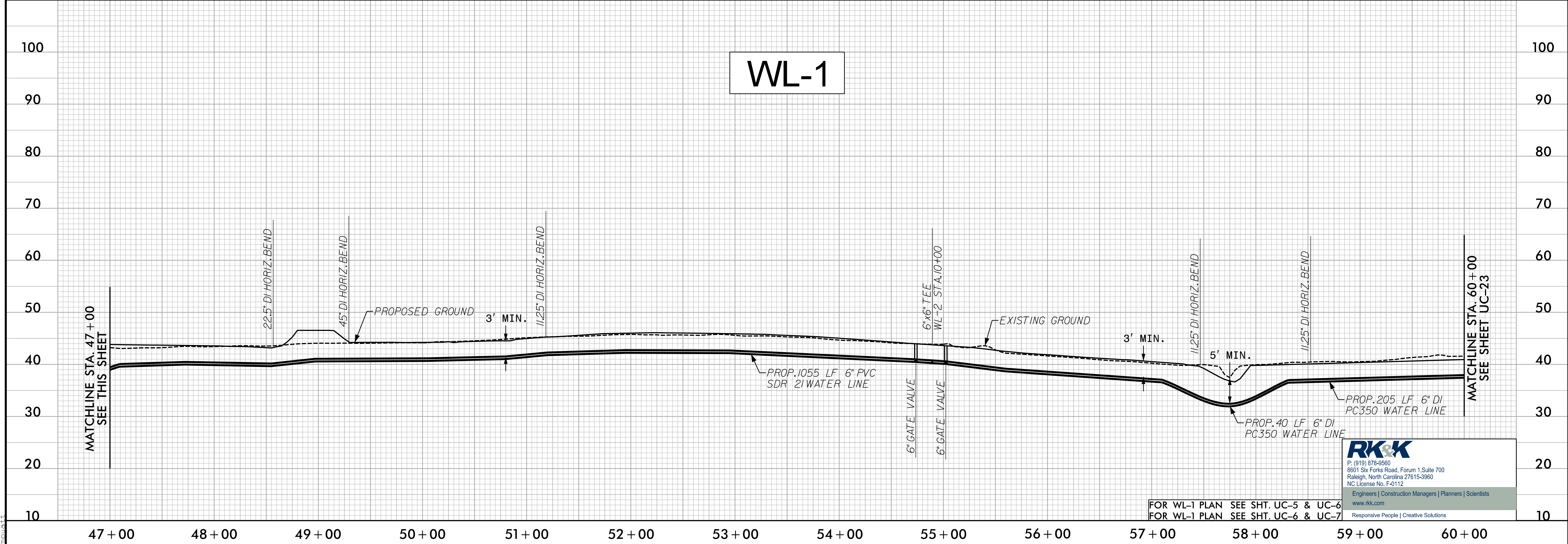
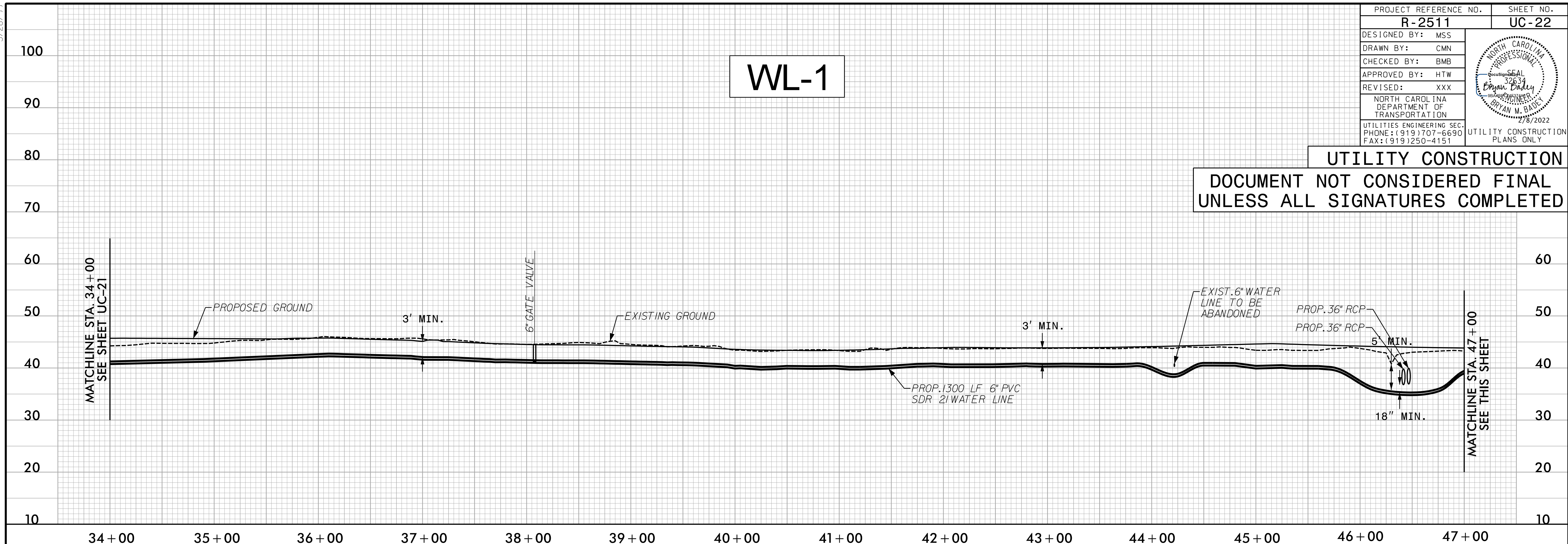
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PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-22
DESIGNED BY: MSS	
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FOR WL-1 PLAN SEE SHT. UC-5 & UC-6  
FOR WL-1 PLAN SEE SHT. UC-6 & UC-7

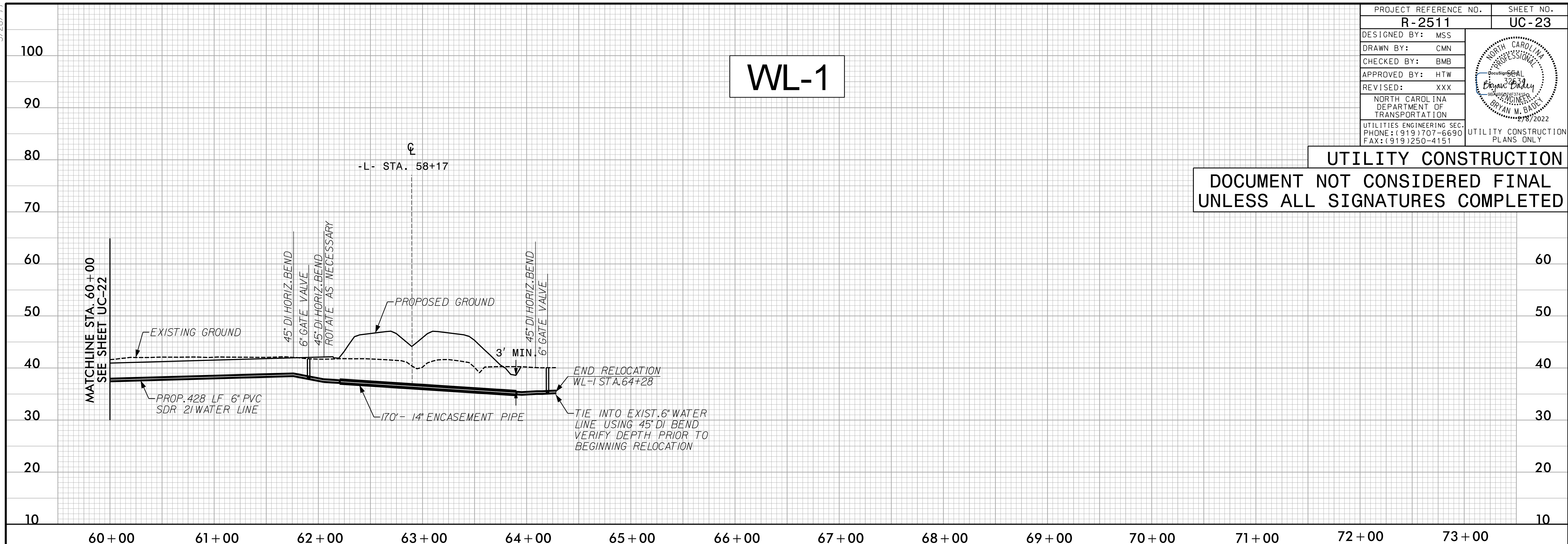
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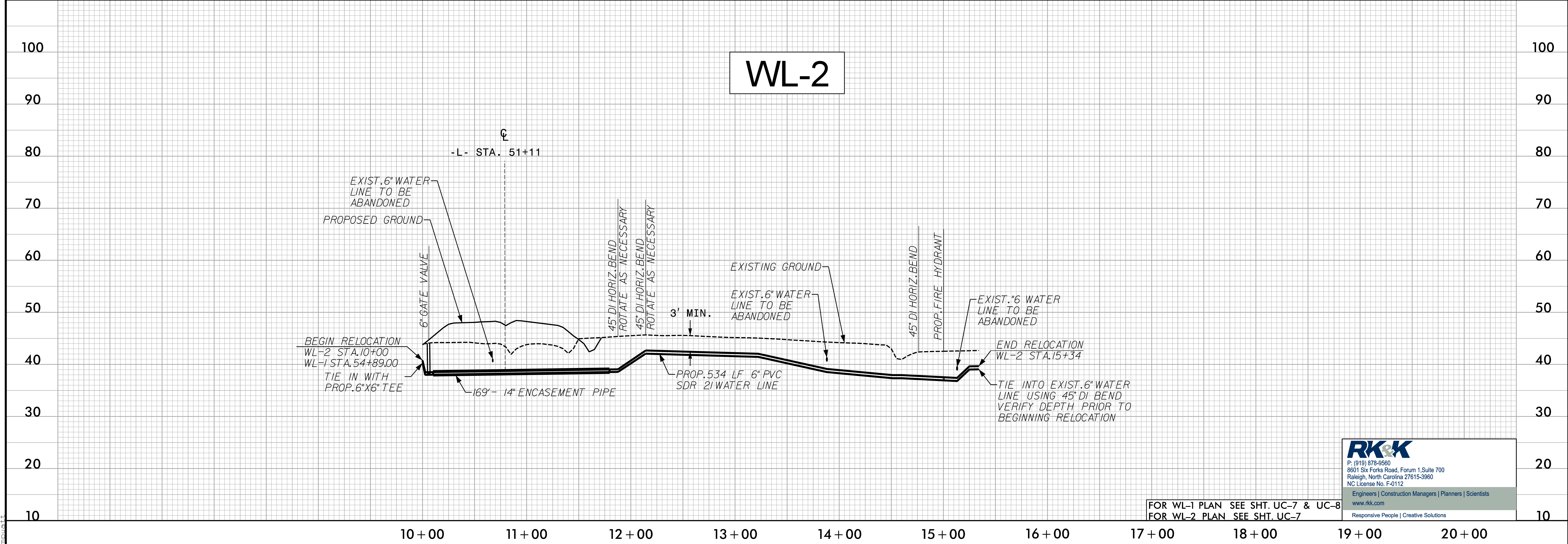
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R-2511	UC-23
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# WL-1

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# WL-2



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FOR WL-1 PLAN SEE SHT. UC-7 & UC-8  
 FOR WL-2 PLAN SEE SHT. UC-7

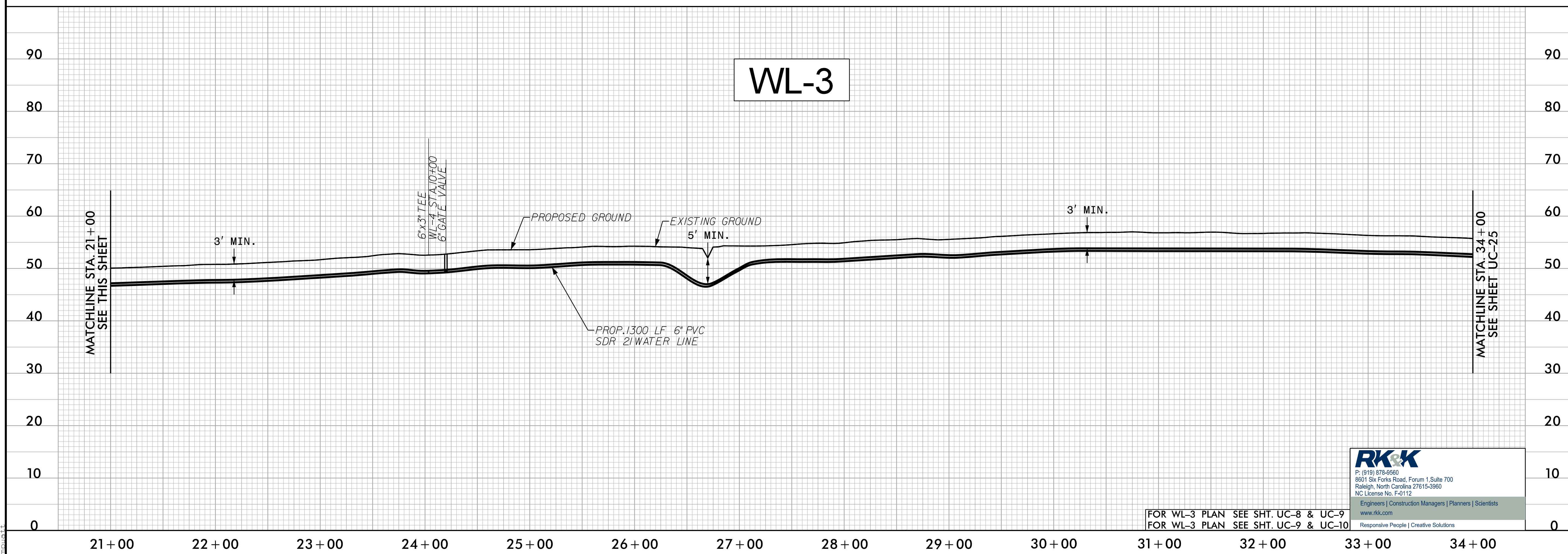
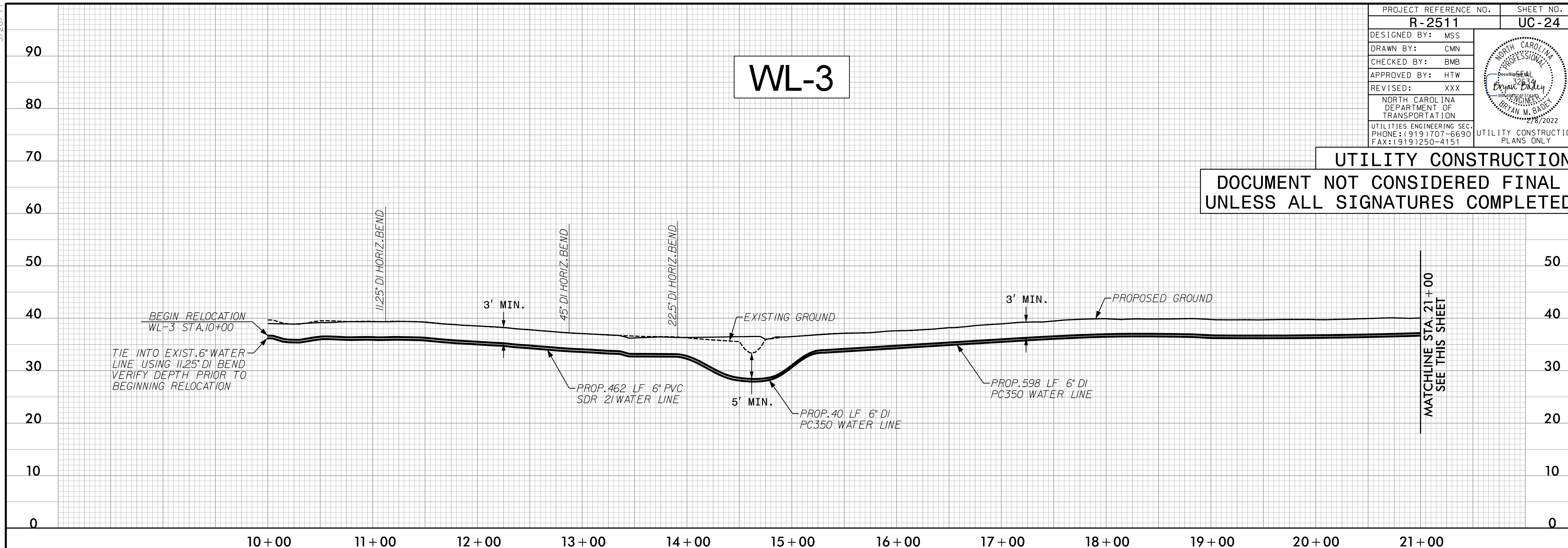
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 BRYAN M. BAILEY

5/28/22

PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-24
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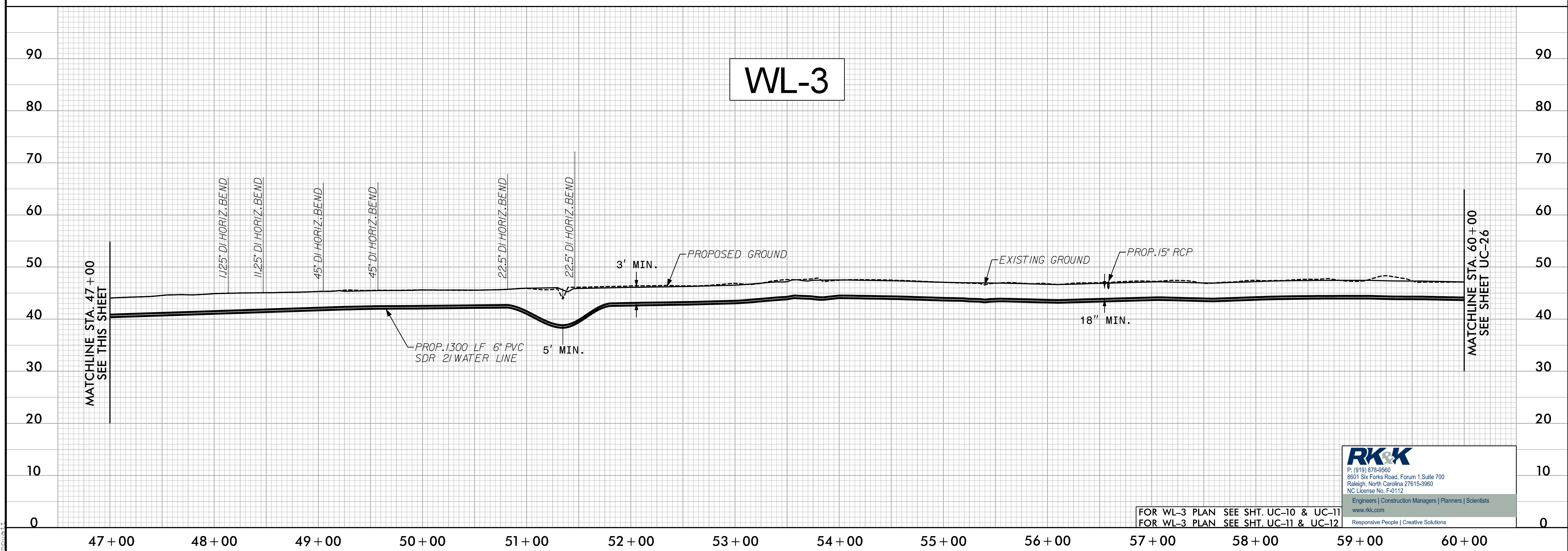
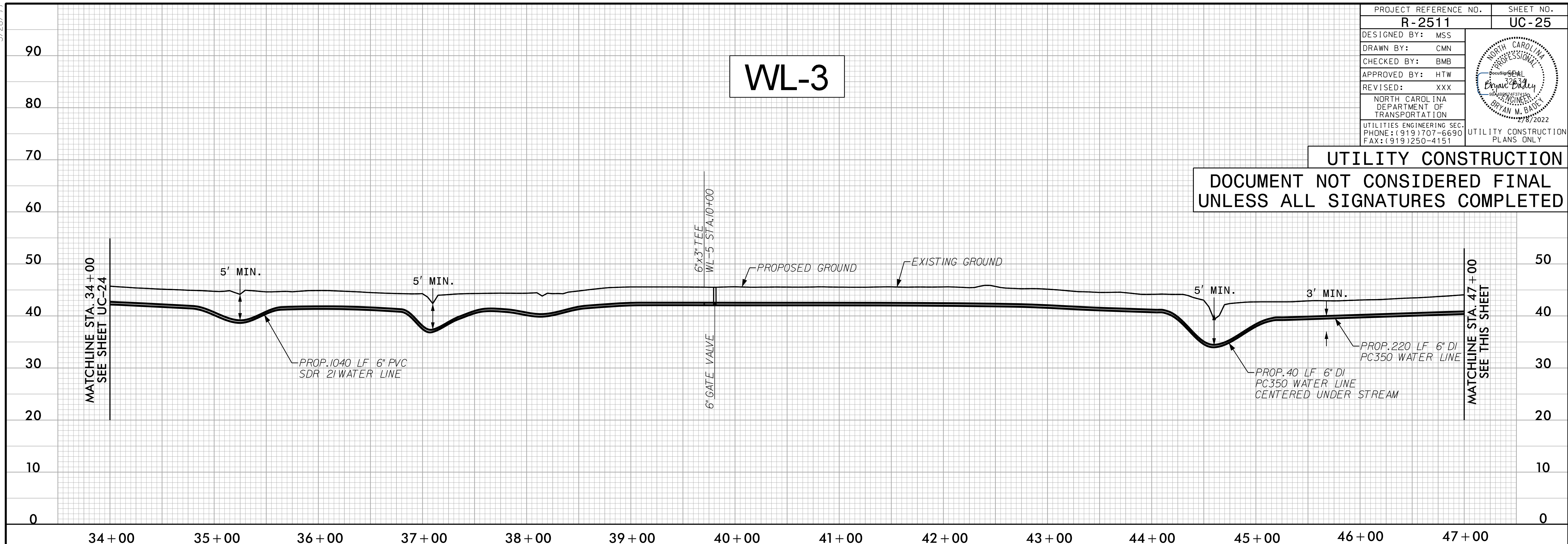
FOR WL-3 PLAN SEE SHT. UC-8 & UC-9  
FOR WL-3 PLAN SEE SHT. UC-9 & UC-10

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PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-25
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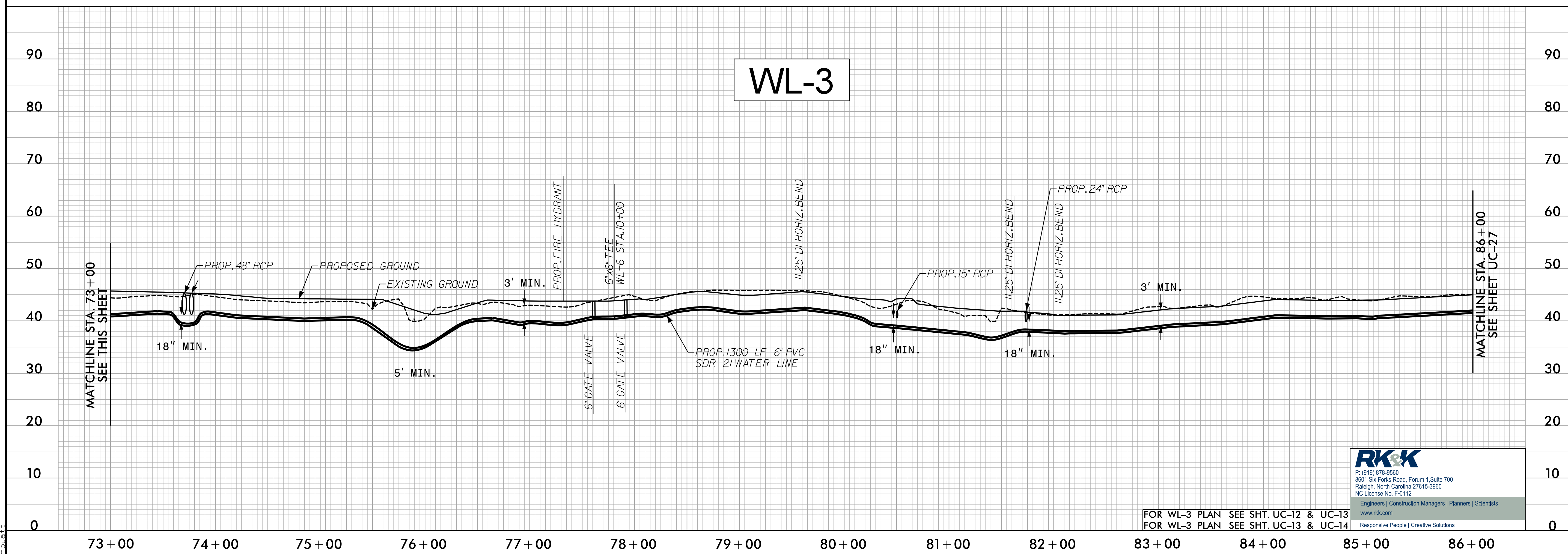
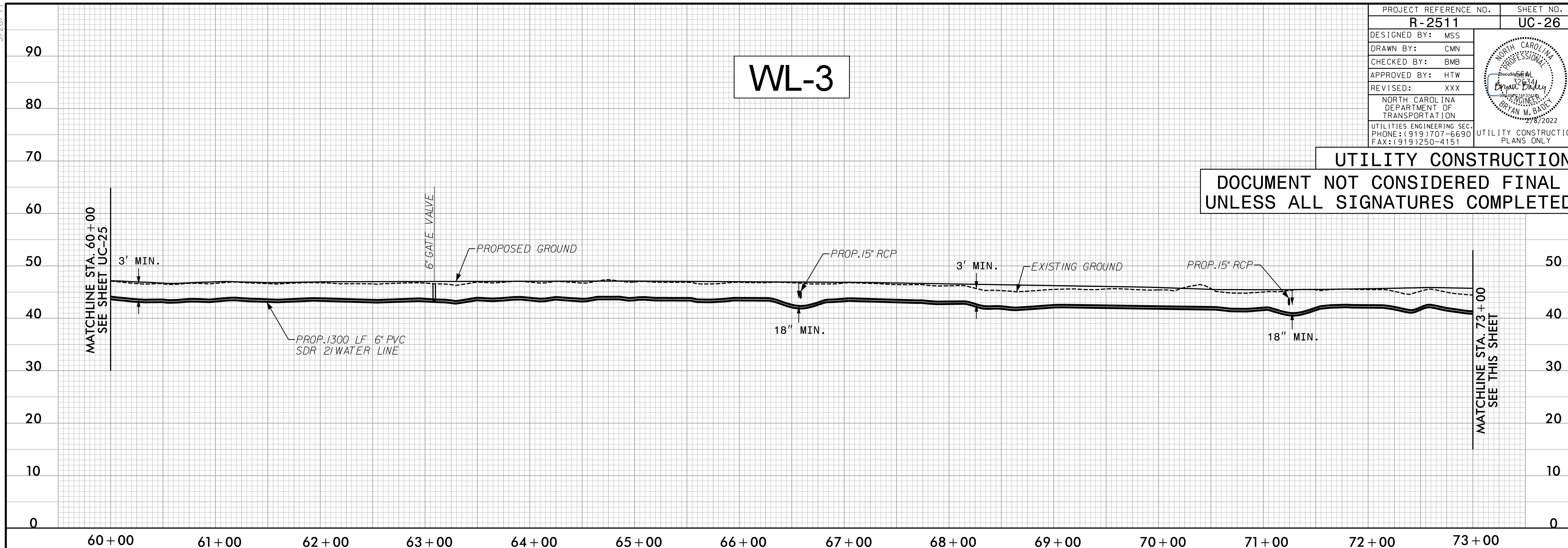
FOR WL-3 PLAN SEE SHT. UC-10 & UC-11  
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5/28/22

PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-26
DESIGNED BY: MSS	
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FOR WL-3 PLAN SEE SHT. UC-12 & UC-13  
FOR WL-3 PLAN SEE SHT. UC-13 & UC-14

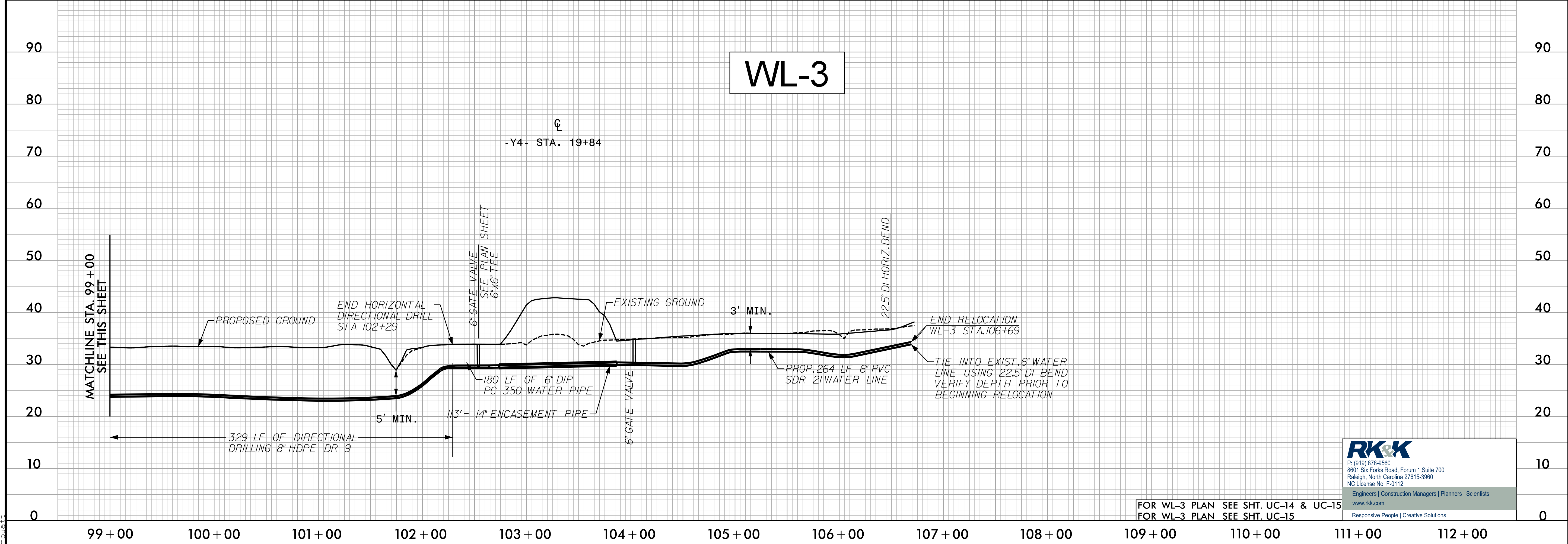
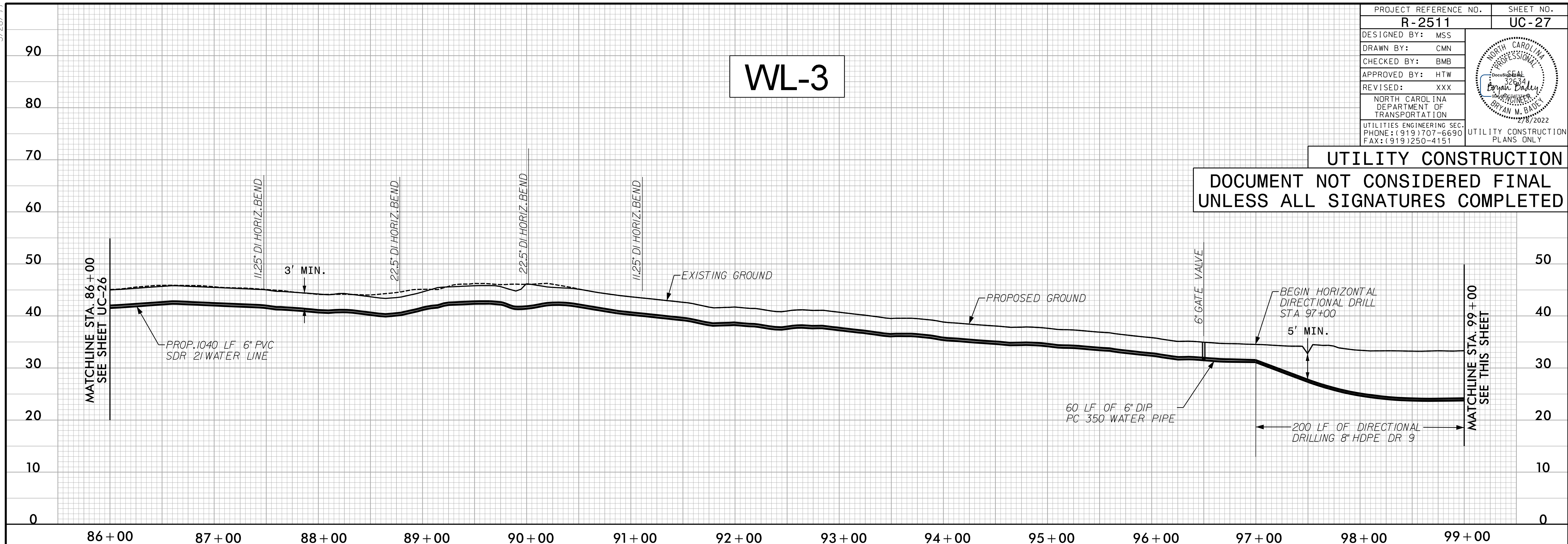
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FOR WL-3 PLAN SEE SHT. UC-14 & UC-15  
FOR WL-3 PLAN SEE SHT. UC-15

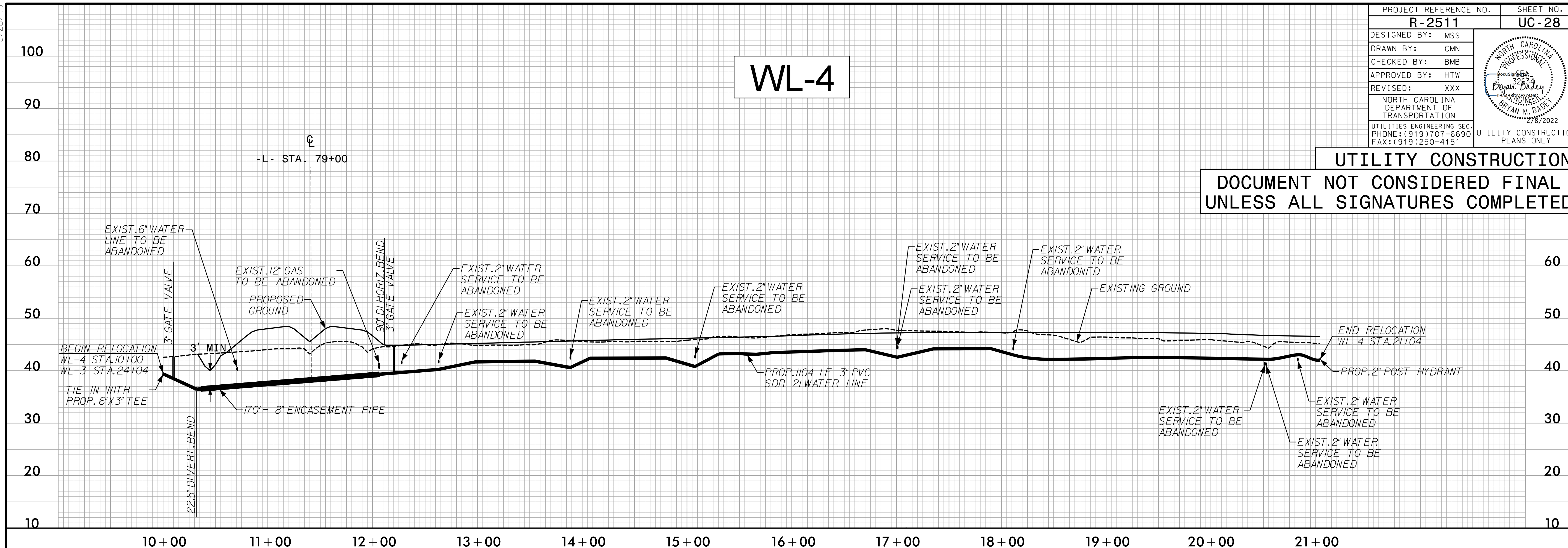
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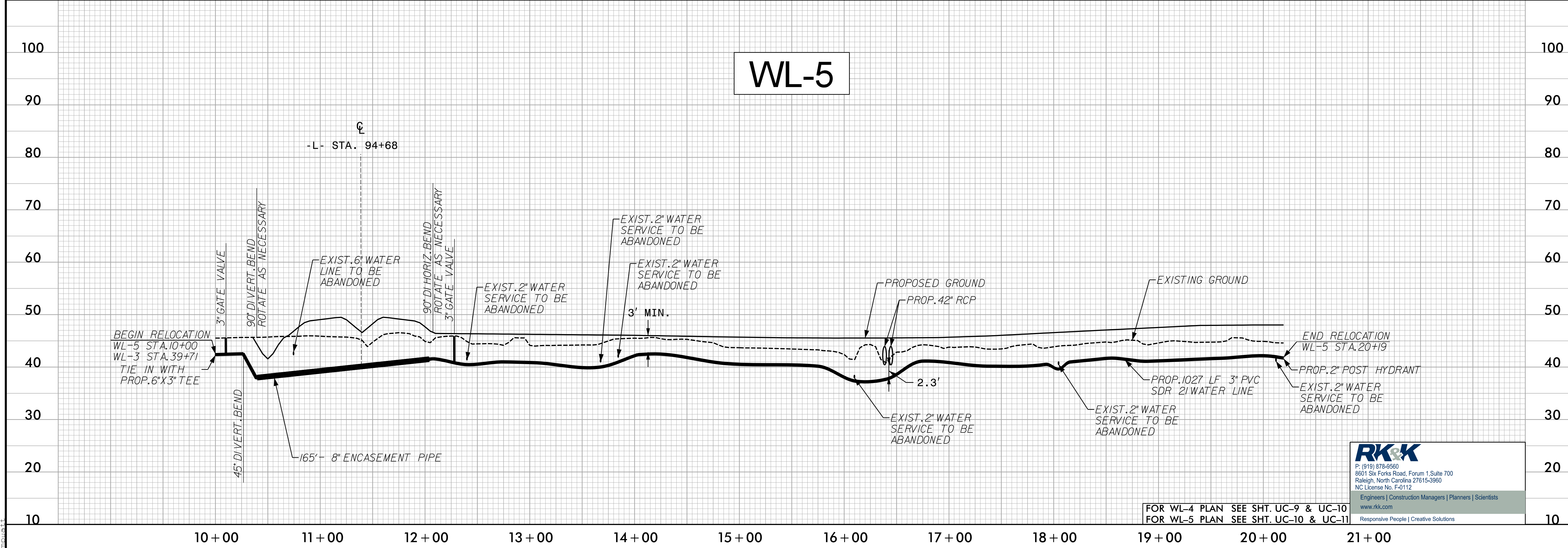
PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-28
DESIGNED BY: MSS	
DRAWN BY: CMN	
CHECKED BY: BMB	
APPROVED BY: HTW	
REVISED: XXX	
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# WL-4

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# WL-5



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FOR WL-4 PLAN SEE SHT. UC-9 & UC-10  
 FOR WL-5 PLAN SEE SHT. UC-10 & UC-11

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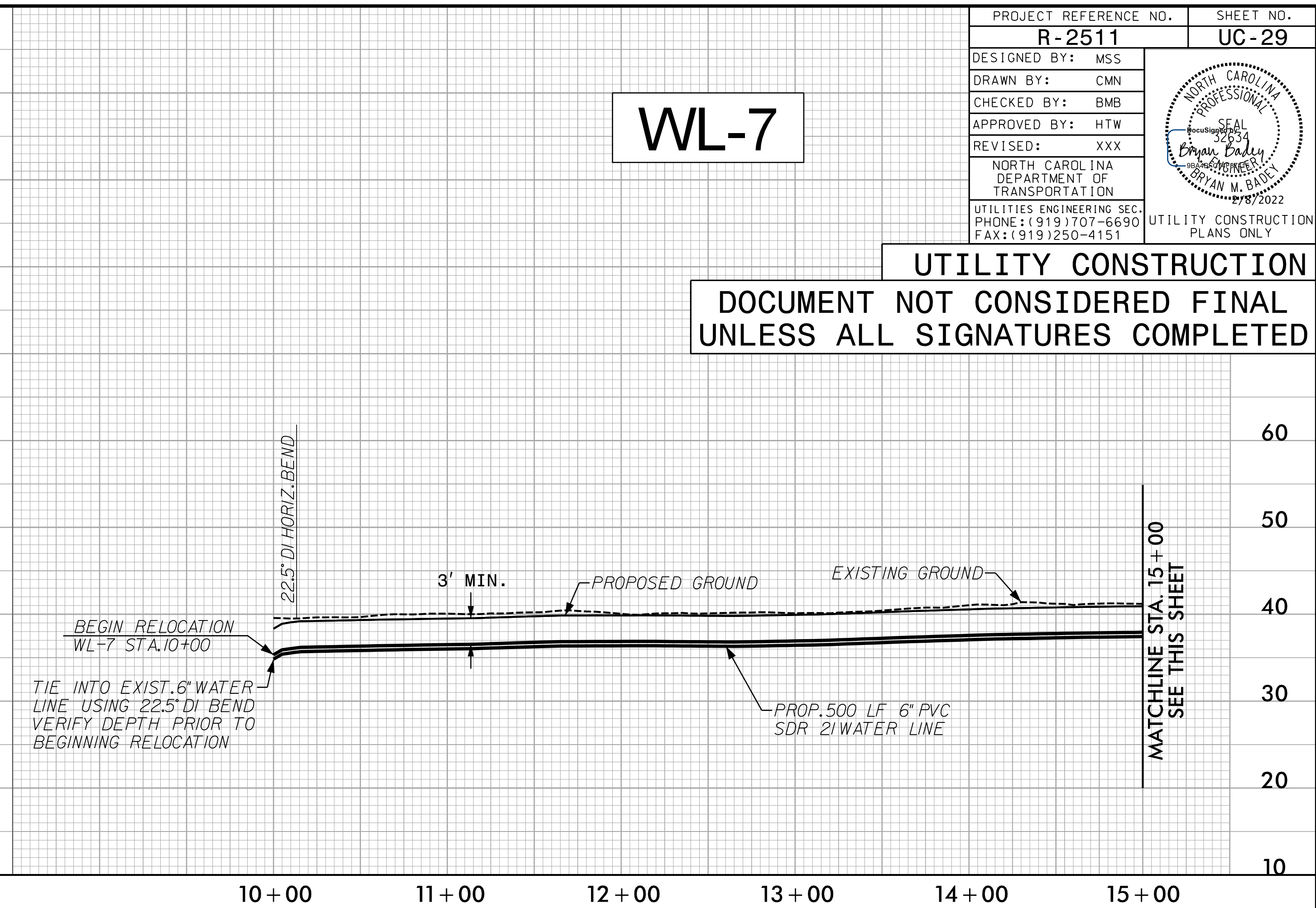
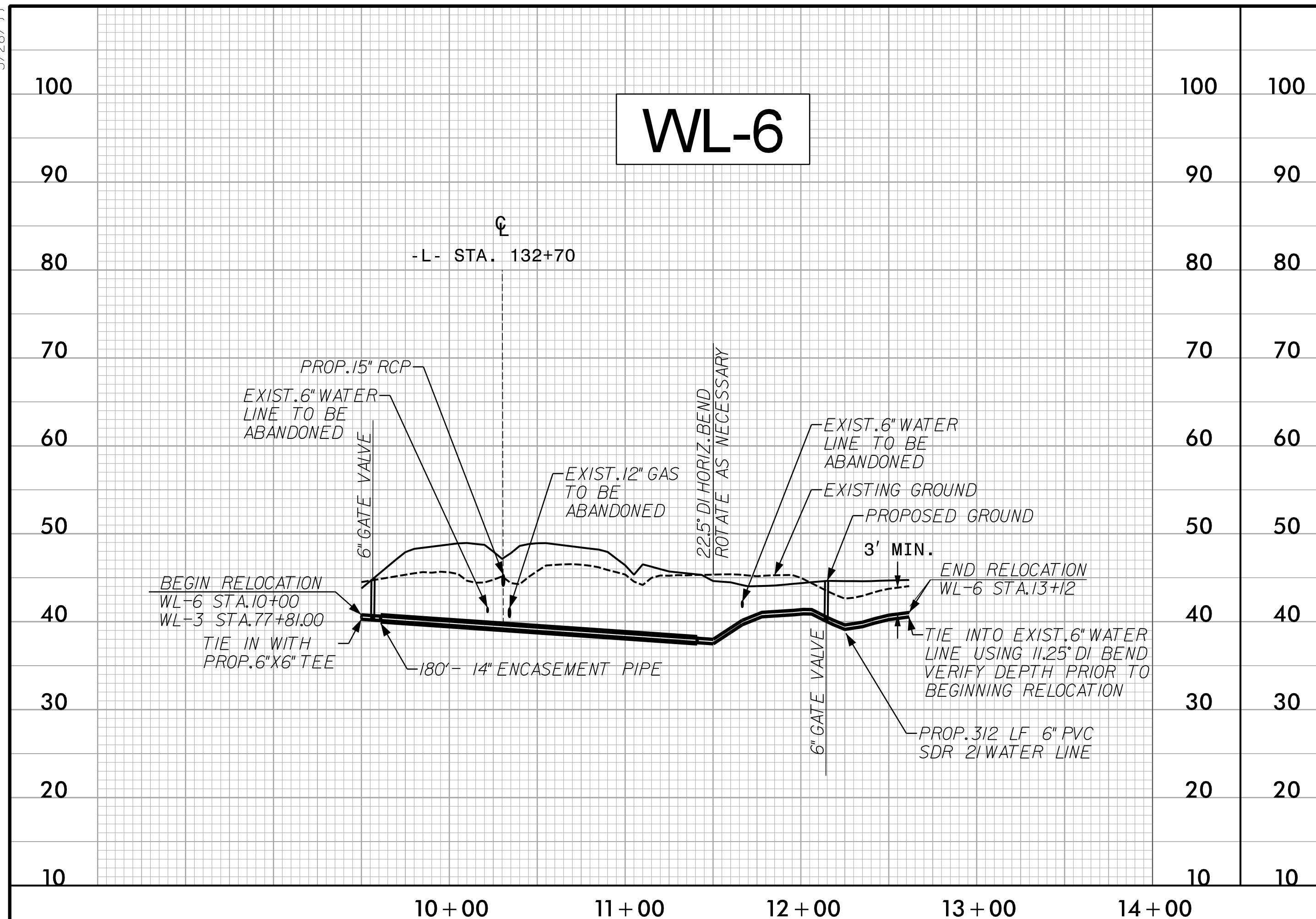
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# WL-6

# WL-7

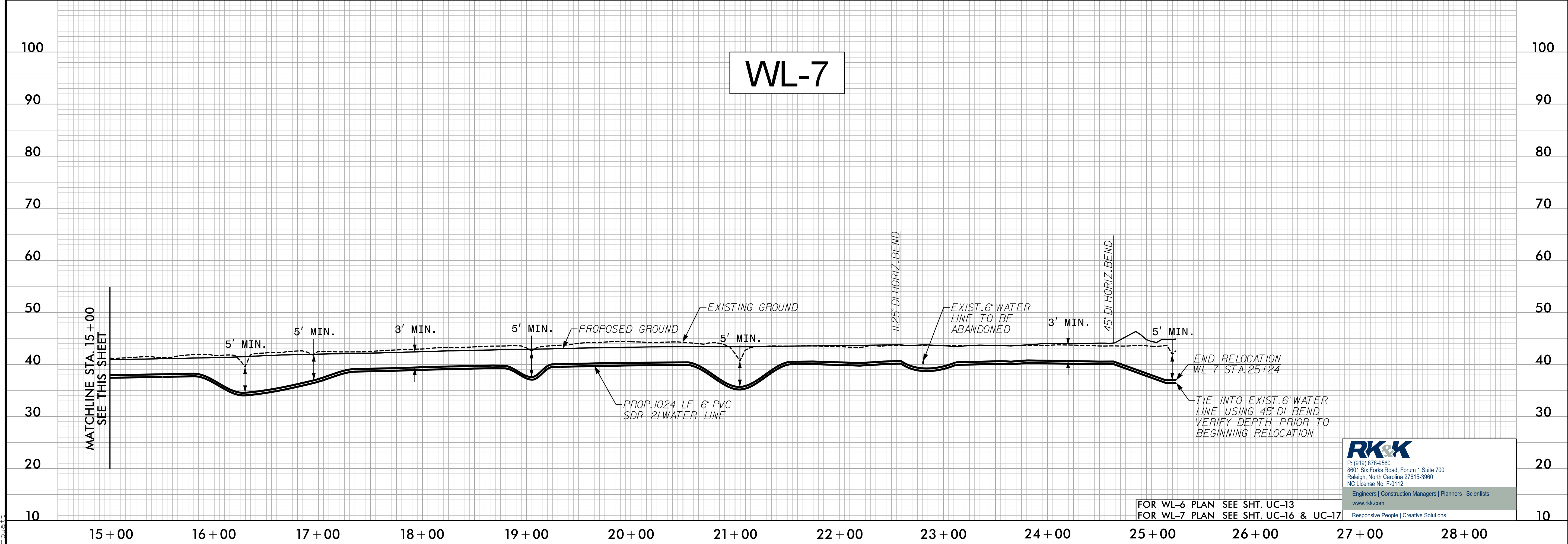
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# WL-7



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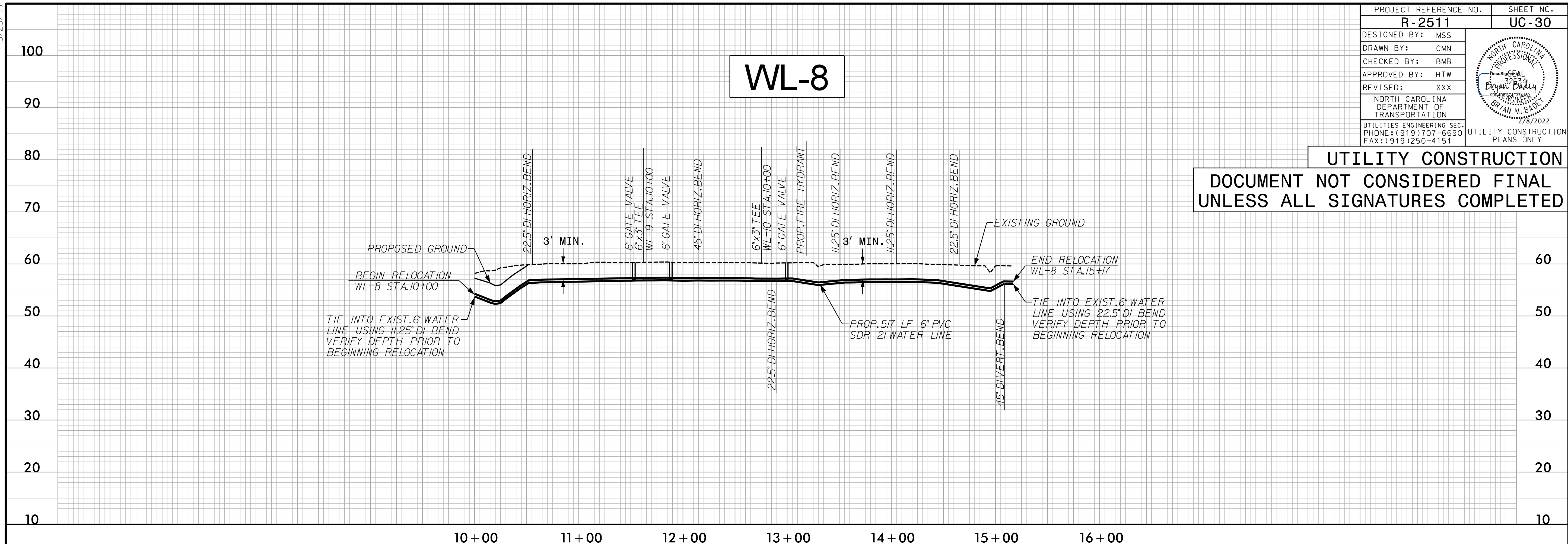
FOR WL-6 PLAN SEE SHT. UC-13  
FOR WL-7 PLAN SEE SHT. UC-16 & UC-17

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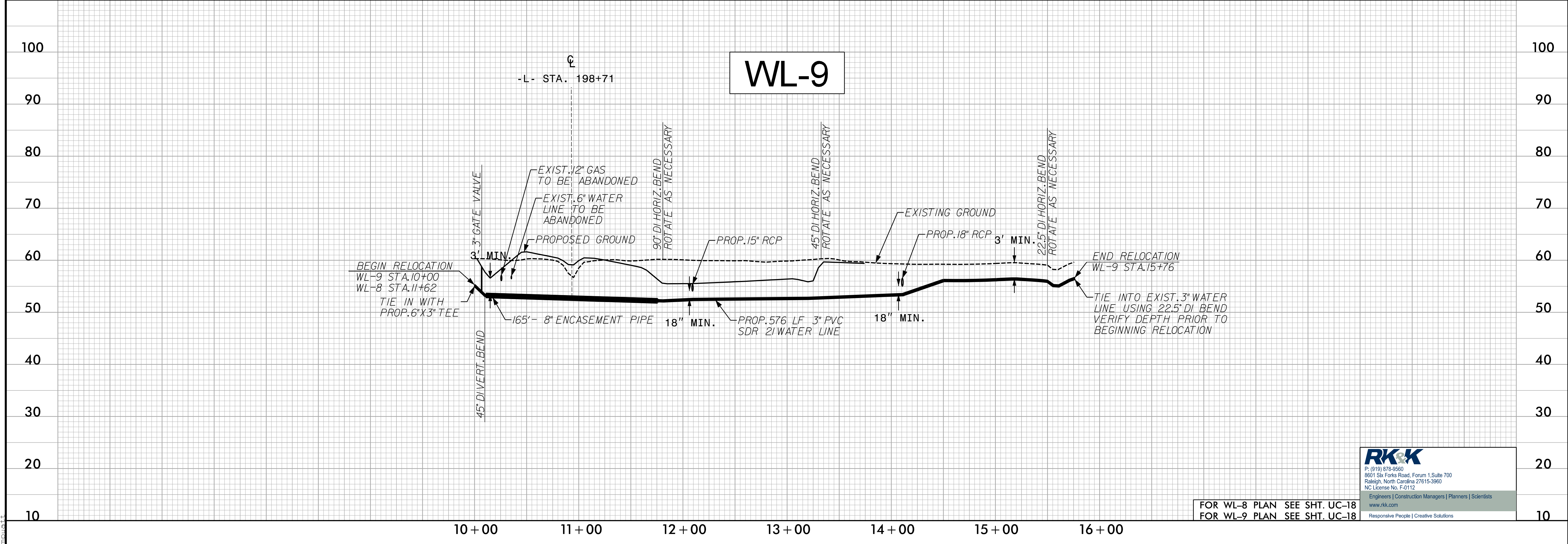
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R-2511	UC-30
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APPROVED BY: HTW	
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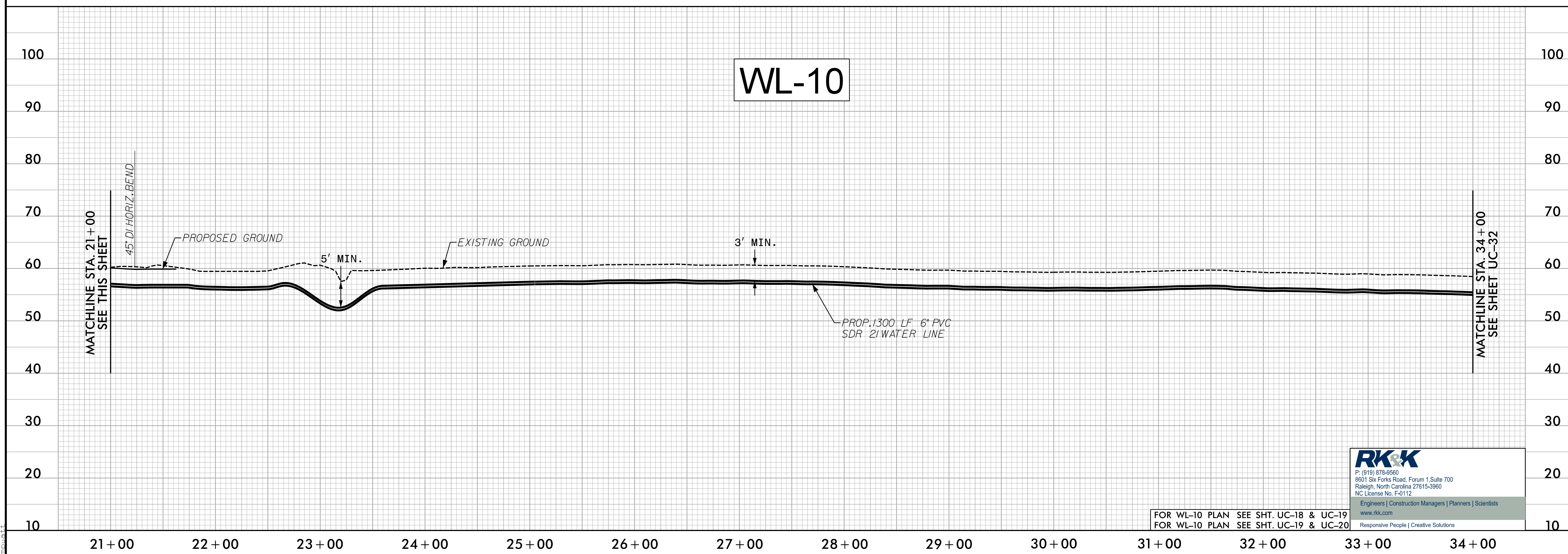
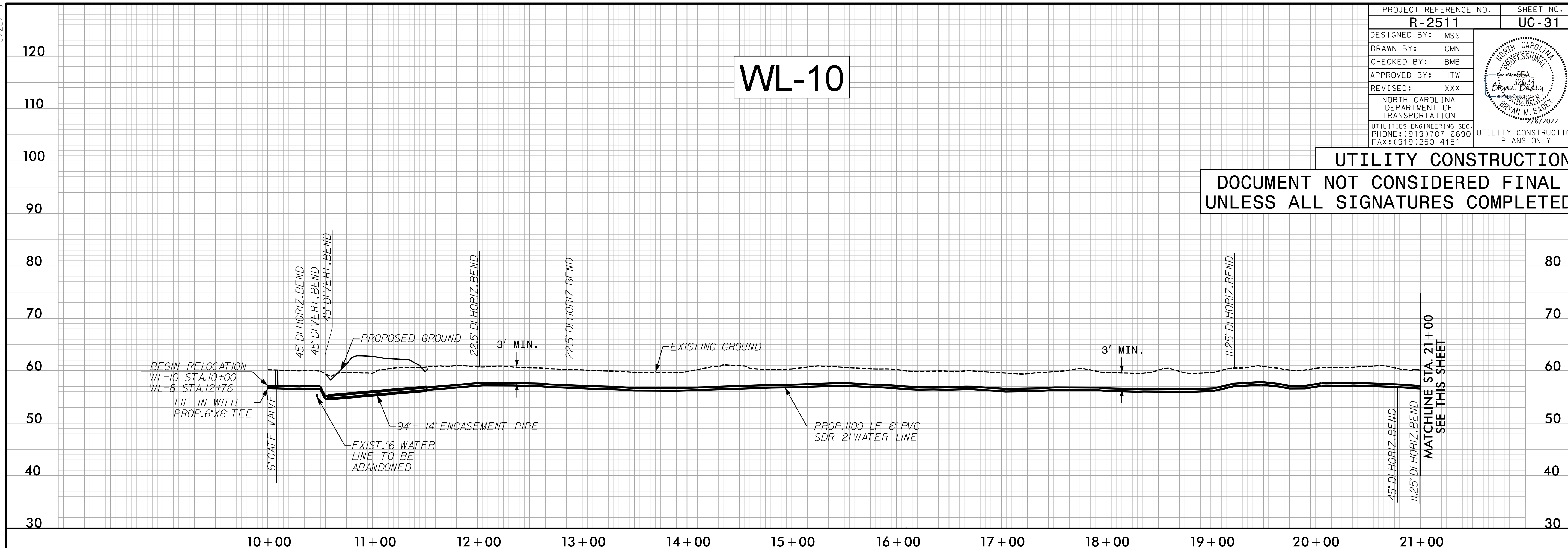
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FOR WL-9 PLAN SEE SHT. UC-18

5/28/22

PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-31
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### UTILITY CONSTRUCTION

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FOR WL-10 PLAN SEE SHT. UC-18 & UC-19  
FOR WL-10 PLAN SEE SHT. UC-19 & UC-20

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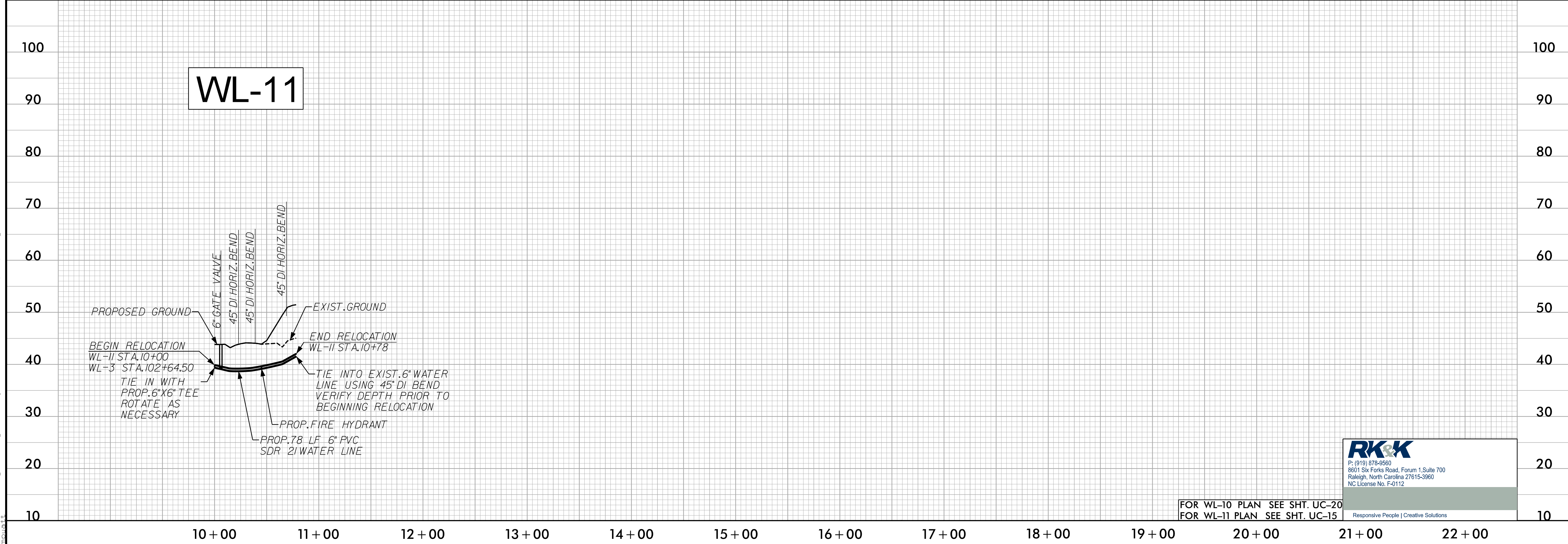
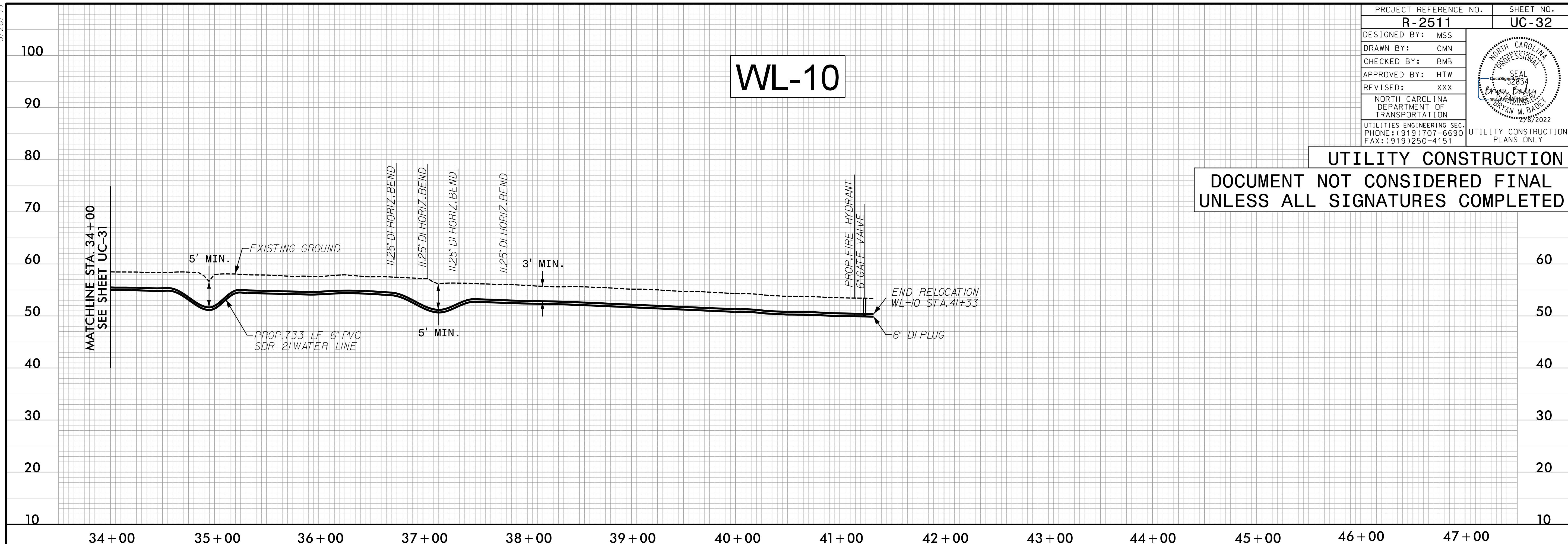
5/28/22

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PROJECT REFERENCE NO.	SHEET NO.
R-2511	UC-32
DESIGNED BY: MSS	
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APPROVED BY: HTW	
REVISER: XXX	
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UTILITY CONSTRUCTION

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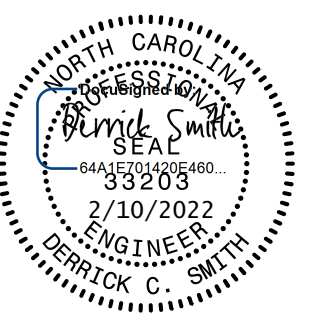


FOR WL-10 PLAN SEE SHT. UC-20  
FOR WL-11 PLAN SEE SHT. UC-15



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STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Table listing proposed water symbols including Water Line (Sized as Shown), various Degree Bends (11 1/4, 22 1/2, 45, 90), 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

Table listing proposed sewer symbols including Gravity Sewer Line (Sized as Shown), Force Main Sewer Line (Sized as Shown), Manhole (Sized per Note), Sewer Pump Station.

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Table listing proposed miscellaneous utilities symbols including Power Pole, Telephone Pole, Joint Use Pole, Telephone Pedestal, Utility Line by Others (Type as Shown), Trenchless Installation, Encasement by Open Cut, Encasement.

Table listing miscellaneous utilities symbols including Thrust Block, Air Release Valve, Utility Vault, Concrete Pier, Steel Pier, Plan Note, Pay Item Note.

EXISTING UTILITIES SYMBOLS

Table listing existing utilities symbols including Power Pole, Telephone Pole, Joint Use Pole, Utility Pole, Utility Pole with Base, H-Frame Pole, Power Transmission Line Tower, Water Manhole, Power Manhole, Telephone Manhole, Sanitary Sewer Manhole, Hand Hole for Cable, Power Transformer, Telephone Pedestal, CATV Pedestal, Gas Valve, Gas Meter, Located Miscellaneous Utility Object, Abandoned According to Utility Records (AATUR), End of Information (E.O.I.).

Table listing existing utilities symbols including Underground Power Line, Underground Telephone Cable, Underground Telephone Conduit, Underground Fiber Optics Telephone Cable, Underground TV Cable, Underground Fiber Optics TV Cable, Underground Gas Pipeline, Aboveground Gas Pipeline, Underground Water Line, Aboveground Water Line, Underground Gravity Sanitary Sewer Line, Aboveground Gravity Sanitary Sewer Line, Underground SS Forced Main Line, Underground Unknown Utility Line, SUE Test Hole, Water Meter, Water Valve, Fire Hydrant, Sanitary Sewer Cleanout.

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

5/14/99
REV: 2/1/2012

# UTILITY CONSTRUCTION


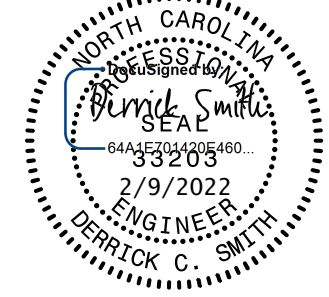
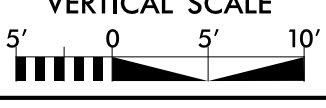
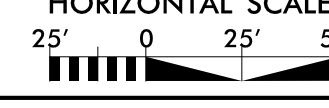
## GENERAL NOTES:

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
2. THE EXISTING UTILITIES BELONG TO MARTIN 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 LINE SHALL BE PVC C900 DR-18, CLASS 350 (RESTRAINED JOINT DUCTILE IRON), AND FUSIBLE PVC C900 FOR HORIZONTAL DIRECTION DRILL (HDD) AS INDICATED ON THE CONSTRUCT ON DRAWINGS.
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 IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
3. TRACER WIRE AND WARNING TAPES SHALL BE INSTALLED WITH ALL PLASTIC PIPE UTILITIES. WIRE, TAPE AND PIPE SHALL BE COLOR CODED ACCORDING TO UTILITY (BLUE FOR WATER) AND SHALL BE IN ACCORDANCE WITH NCDOT SPECIFICATIONS.
4. EXISTING CONDITIONS SURVEY AND PROPOSED HIGHWAY PLANS PROVIDED TO THE WOOTEN COMPANY BY NCDOT.
5. FUSED PVC LENGTHS THAT HAVE BEEN INSTALLED IN THE TRENCH SHALL NOT BE BENT OR JOCKEYED INTO POSITION WITH HEAVY EQUIPMENT IN ORDER TO CONNECT TO FITTINGS. ALL ALIGNMENT CORRECTIONS TO TAKE PLACE IN THE DIP FITTINGS.
6. ALL WATER SERVICES SHALL BE HDPE SDR 7 OR SDR 9.

PREPARED IN THE OFFICE OF:  <b>THE WOOTEN COMPANY</b> <small>120 North Roper Avenue Raleigh, NC 27603-1423          919.876.9331 Fax: 919.876.9399          License Number: F-0105</small>	PROJECT REFERENCE NO.	SHEET NO.
	R-2511	UC-35
	DESIGNED BY: JRG	
	DRAWN BY: TK	
CHECKED BY: JRG		
APPROVED BY: JRG	REVISED: <b>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION</b> UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
VERTICAL SCALE 	HORIZONTAL SCALE 	<b>WATER LINE CONSTRUCTION SHOWN ON THIS SHEET</b>

## UTILITY CONSTRUCTION

5/14/22