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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-4900A	UC-01	14

STATE OF NORTH CAROLINA  
NCDOT RAIL DIVISION

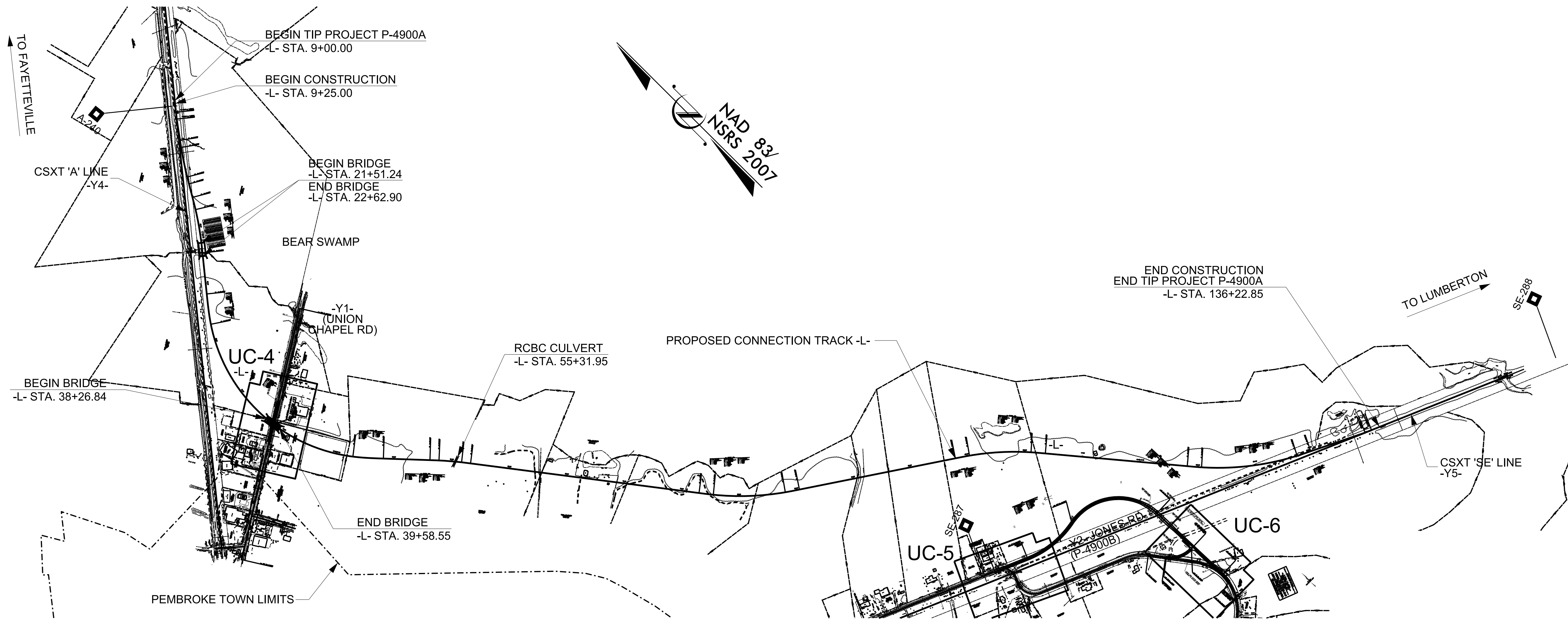
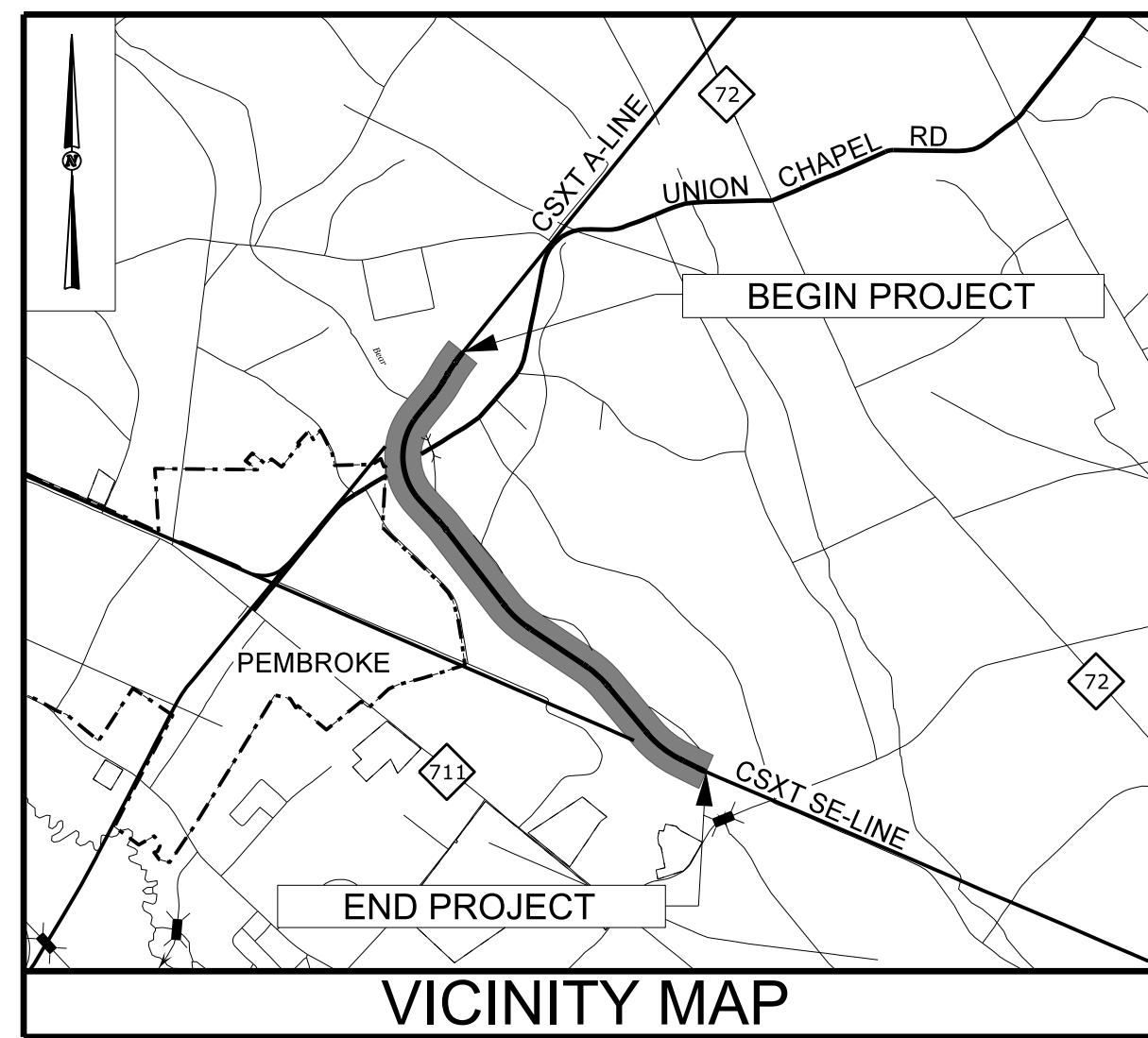
# ROBESON COUNTY

**LOCATION: RAIL GRADE SEPARATION OVER SR 1563 (UNION CHAPEL RD)  
& GRADE CROSSING RELOCATION ON SR 1571 (JONES RD).**

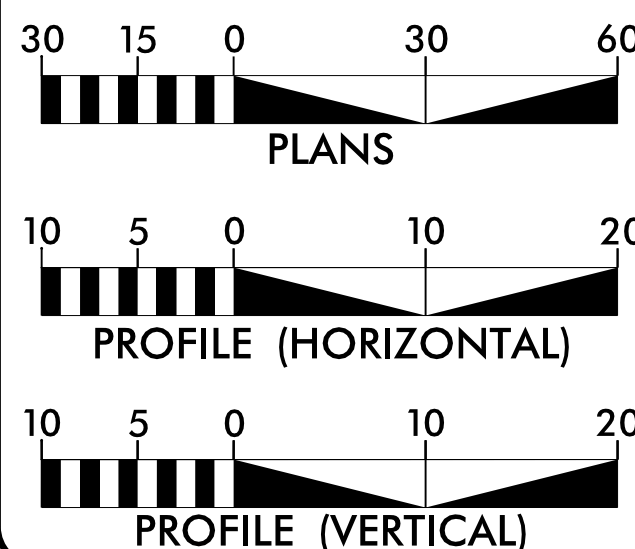
**TYPE OF WORK: UTILITIES CONSTRUCTION**

**TIP PROJECT: P-4900A**

**CONTRACT: C203632**



**GRAPHIC SCALES**



**INDEX OF SHEETS**

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	SYMBOLGY SHEET
UC-3	GENERAL NOTES SHEET
UC-3A TO UC-3D	DETAIL SHEETS
UC-4 TO UC-6	PLAN SHEETS
UC-7 TO UC-10	PROFILE SHEETS

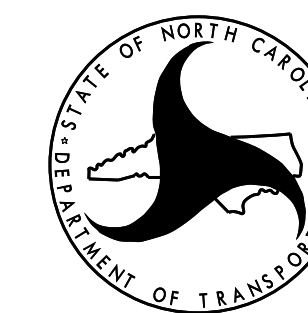
**UTILITY OWNERS ON THIS PROJECT:**

- WATER - ROBESON COUNTY  
TOWN OF PEMBERKE
- SEWER - TOWN OF PEMBERKE

**UTILITY DESIGN ENGINEER**



DocuSigned by:  
**Kevin Zoeb** 1/21/2015



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

# RAIL DIVISION

UTILITY DESIGN BY:  
**M A Engineering Consultants, Inc.**  
598 East Chatham Street Suite 137 Cary, NC 27511  
Phone: 919.297.0220

Prepared for:  
**ENGINEERING & SAFETY BRANCH**  
MAIL: 1556 MAIL SERVICE CENTER RALEIGH, NC 27699-1556  
DELIVERY: 860 CAPITAL BOULEVARD RALEIGH, NC 27603  
PHONE: (919) 715-8803  
FAX: (919) 715-8804













*Note: Not to Scale*













\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA  
RAIL DIVISION







# UTILITIES PLAN SHEET SYMBOLS

## Water





Proposed Back Flow Preventor	
Relocate Back Flow Preventor	
Existing Water Valve	
Proposed Valve	
Proposed Tapping Valve	
Existing Water Meter	
Proposed Water Meter	
Proposed Water Meter / Vault	
Relocate Water Meter	
Remove Water Meter	REM WM
Existing Hydrant	
Prop Hydrant	
Relocate Hydrant	
Remove Hydrant	REM FH







Proposed RPZ Back Flow Preventor	
Relocate RPZ Back Flow Preventor	
Water Cross	
Water Plug	
Water Reducer	
Water Tee	
Water Pump Station	
Water Thrust Block	
Blow Off Valve	
Air Release Valve	
Water Line Stop	
Water Line Stop w Bypass	

## Utility By Other Symbols

Proposed Tel Pole	
Proposed Power Pole	
Proposed Joint Use Power, Tel Pole	
Proposed Joint Use Power, CATV Pole	
Proposed Joint Use Power, Tel, CATV Pole	
Proposed Joint Use Tel, CATV Pole	

## Sewer

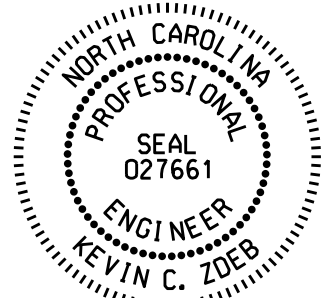
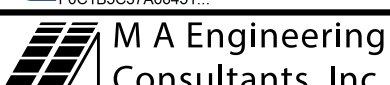
Existing Manhole	
Proposed UT Manhole	
Remove UT Manhole	REM UT MH
Abandon Utility Manhole	ABAND MH
Sewer Line Stop	
Sewer Line Stop w Bypass	

Sewer Cross	
Sewer Plug	
Sewer Reducer	
Sewer Tee	
Sewer Pump Station	
Sewer Thrust Block	

PUE Monument	
Concrete Pier	
Steel Pile Pier	
Test Hole (SUE)	
Prop Utility Vault	

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# UTILITY CONSTRUCTION NOTES

PROJECT REFERENCE NO.	SHEET NO.
P-4900A	UC-3
UTILITY DESIGN ENGINEER	
	
DocuSigned by: <i>Kevin Zidek</i>	1/21/2015
	
388 East Chatham Street - Suite 137 Cary, NC 27513 Phone: 919.297.0220 Fax: 919.297.0221 NC License: E-0160	

## 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 2012.
2. THE EXISTING UTILITIES BELONG TO:
 

ROBESON COUNTY  
CONTACT: AL GRIMSLEY  
PHONE: 910-671-3485

TOWN OF PEMBROKE  
CONTACT: GARRY HARRIS  
PHONE: 910-521-2458
3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF ENVIRONMENTAL HEALTH. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF WATER QUALITY. 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.

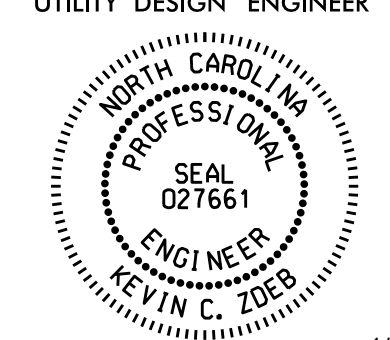

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING 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.

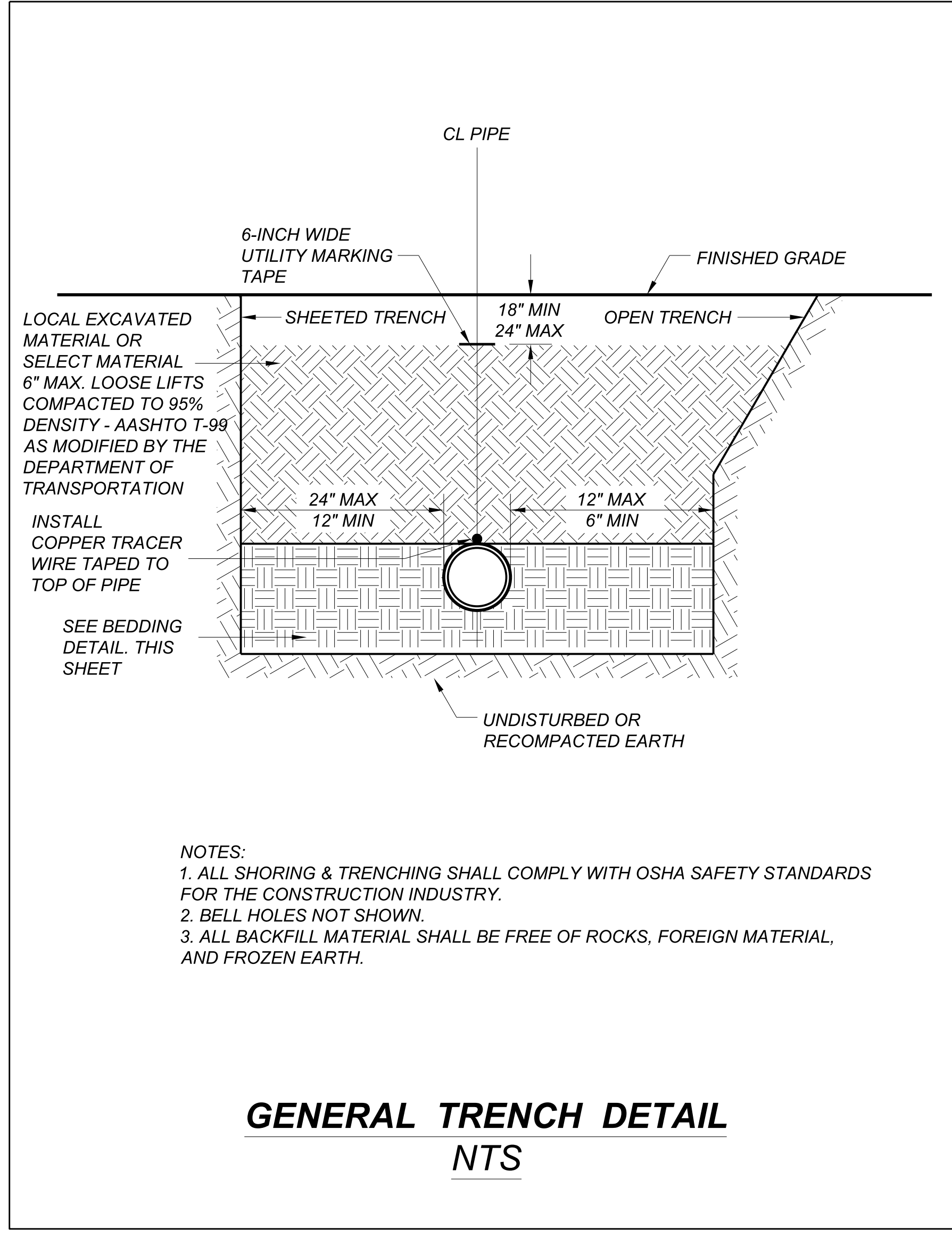
## PROJECT SPECIFIC NOTES:

1. PROPOSED WATER LINE SHALL BE PVC C900 DR 18.
2. PROPOSED FORCE MAIN SHALL BE PVC C900 DR 18.
3. PROPOSED WATER LINE AND FORCE MAIN FITTINGS SHALL BE DUCTILE IRON PRESSURE CLASS 350.
4. ALL FITTINGS (BENDS, TEES, CROSSES, REDUCERS, PLUGS, ETC.) SHALL BE ADEQUATELY RESTRAINED BY THE USE OF RESTRAINED JOINT CONSTRUCTION.
5. THE EXISTING WATER AND SEWER LINES SHALL BE RESTRAINED AT ALL TIE-IN LOCATIONS AS DETAILED ON SHEET UC-3C OR AS DIRECTED BY THE RESIDENT ENGINEER.
6. AS PER AS-BUILT RECORDS RECEIVED, THE EXISTING 4-INCH PVC SDR-21 FORCE MAIN TRANSITIONS TO HDPE PIPE MATERIAL IN THE VICINITY OF THE PROPOSED TIE-IN LOCATION. CONTRACTOR SHALL FIELD LOCATE THE ACTUAL TRANSITION POINT, WHICH RESIDES WITHIN A 12-INCH THICK CONCRETE COLLAR. CONTRACTOR SHALL ONLY CONDUCT TIE-IN OF NEW FORCE MAIN TO THE EXISTING PVC SDR-21 AND SHALL ALTER THE TIE-IN LOCATIONS AS NEEDED TO FIT ACTUAL FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
7. CONTRACTOR SHALL PERFORM A PUMP AND HAUL BYPASS OPERATION FOR THE DURATION OF THE WORK PERFORMED ON THE SANITARY FORCE MAIN. ACCORDING TO THE AS-BUILT PLANS, THE WASTEWATER ORIGINATES FROM THE PUMP STATION LOCATED AT OLIVE CHAPEL ELEMENTARY SCHOOL AND ENTERS THE SANITARY GRAVITY SYSTEM A FEW HUNDRED FEET WEST OF THE PROPOSED WORK INTO A MANHOLE ON THE NORTH SIDE OF UNION CHAPEL ROAD. CONTRACTOR SHALL COORDINATE WITH SCHOOL OFFICIALS, AND THE TOWN OF PEMBROKE TO DETERMINE WHEN IT IS BEST SUITED TO SCHEDULE THE PROPOSED WORK. CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE PUMP AND HAUL PERMIT AND CONFORMING TO ALL OTHER LOCAL, STATE AND FEDERAL REGULATIONS ASSOCIATED WITH SAID OPERATIONS.

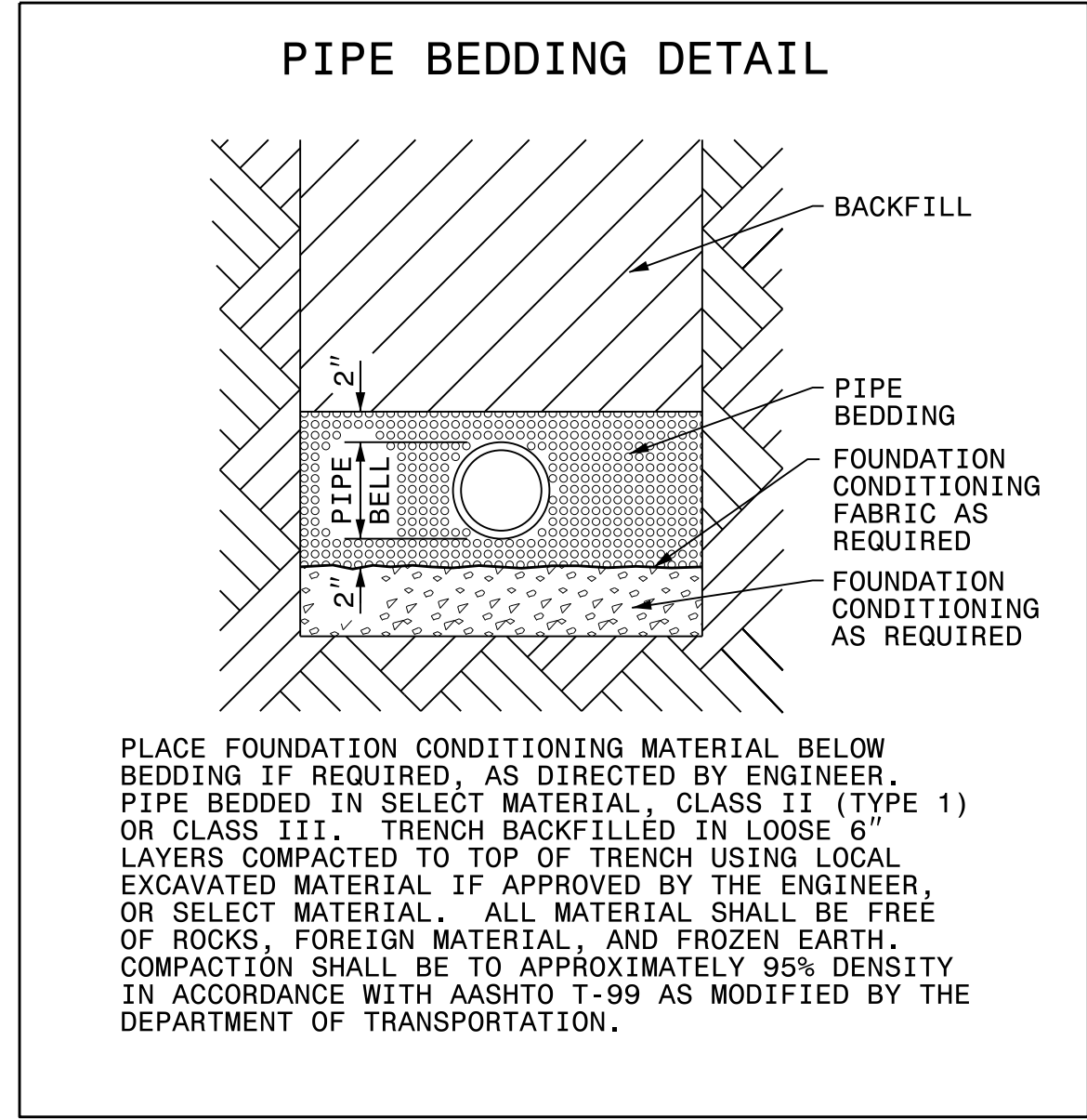
## LIST OF STANDARD DRAWINGS

- 1515.01 WATER METER  
1515.02 FIRE HYDRANT

PROJECT REFERENCE NO. <b>P-4900A</b>	SHEET NO. <b>UC-3A</b>
UTILITY DESIGN ENGINEER	
	
DocuSigned by: <b>Kevin Zdeb</b> FOC185C37A85451	1/21/2015
	



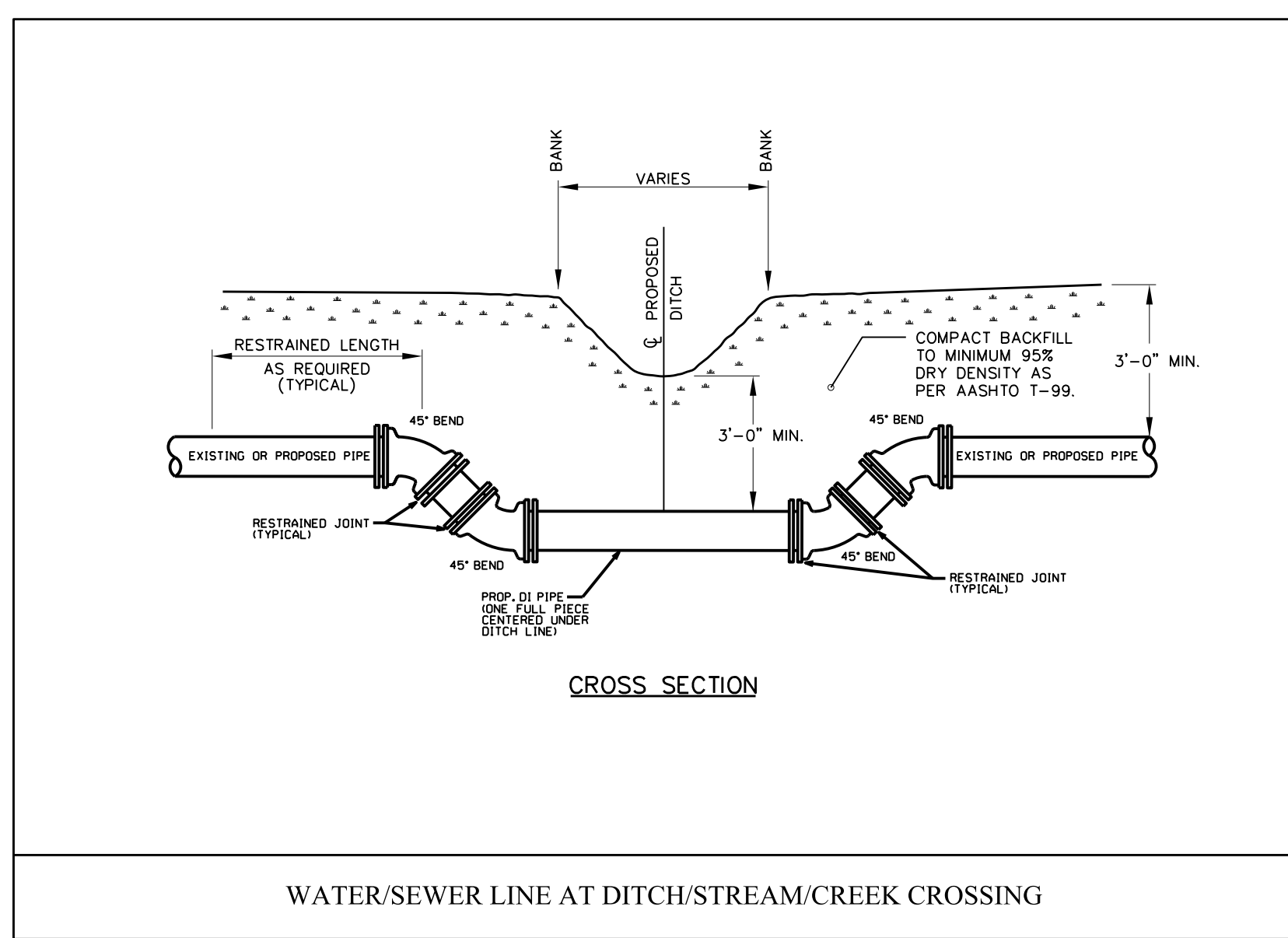
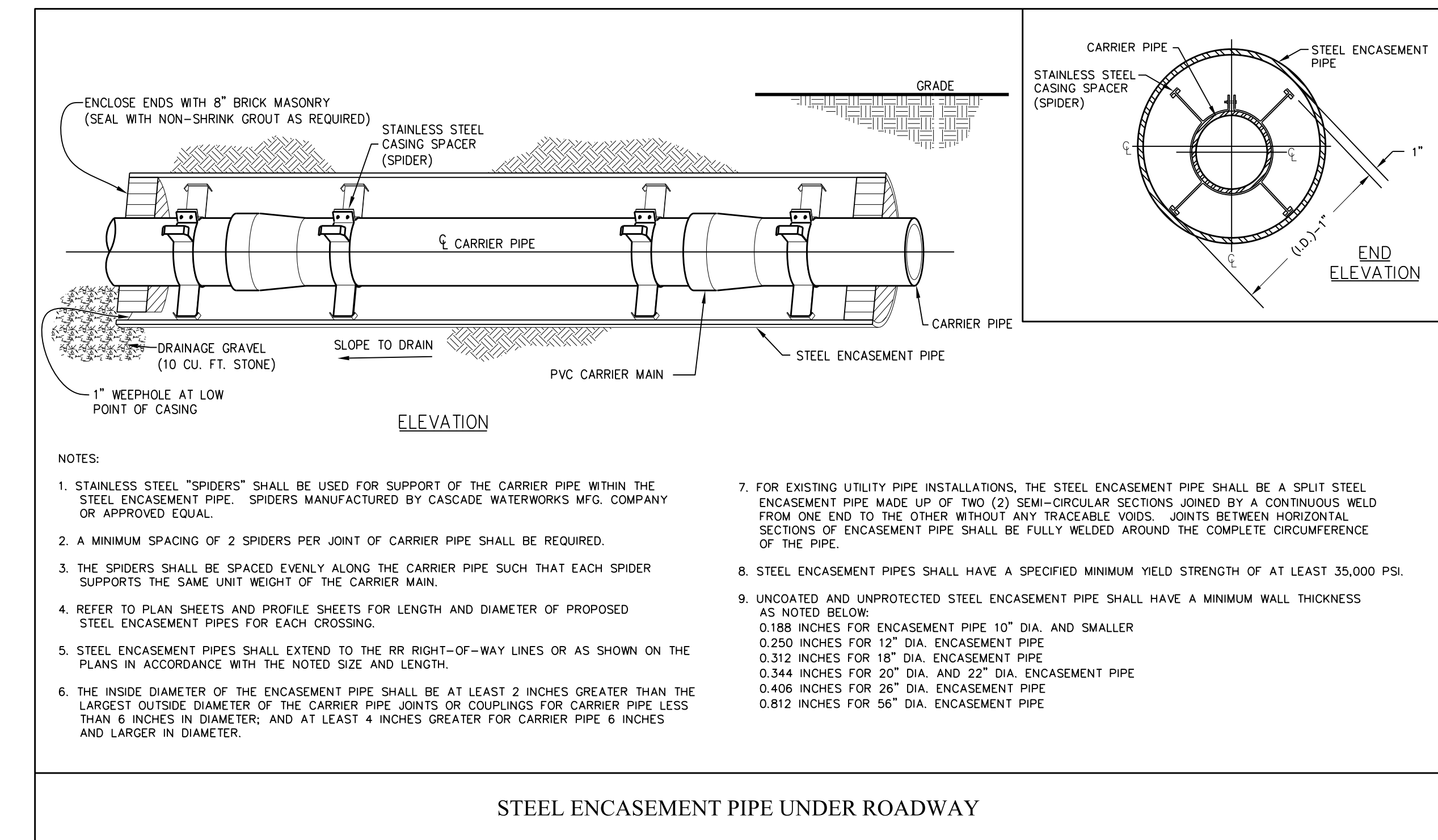
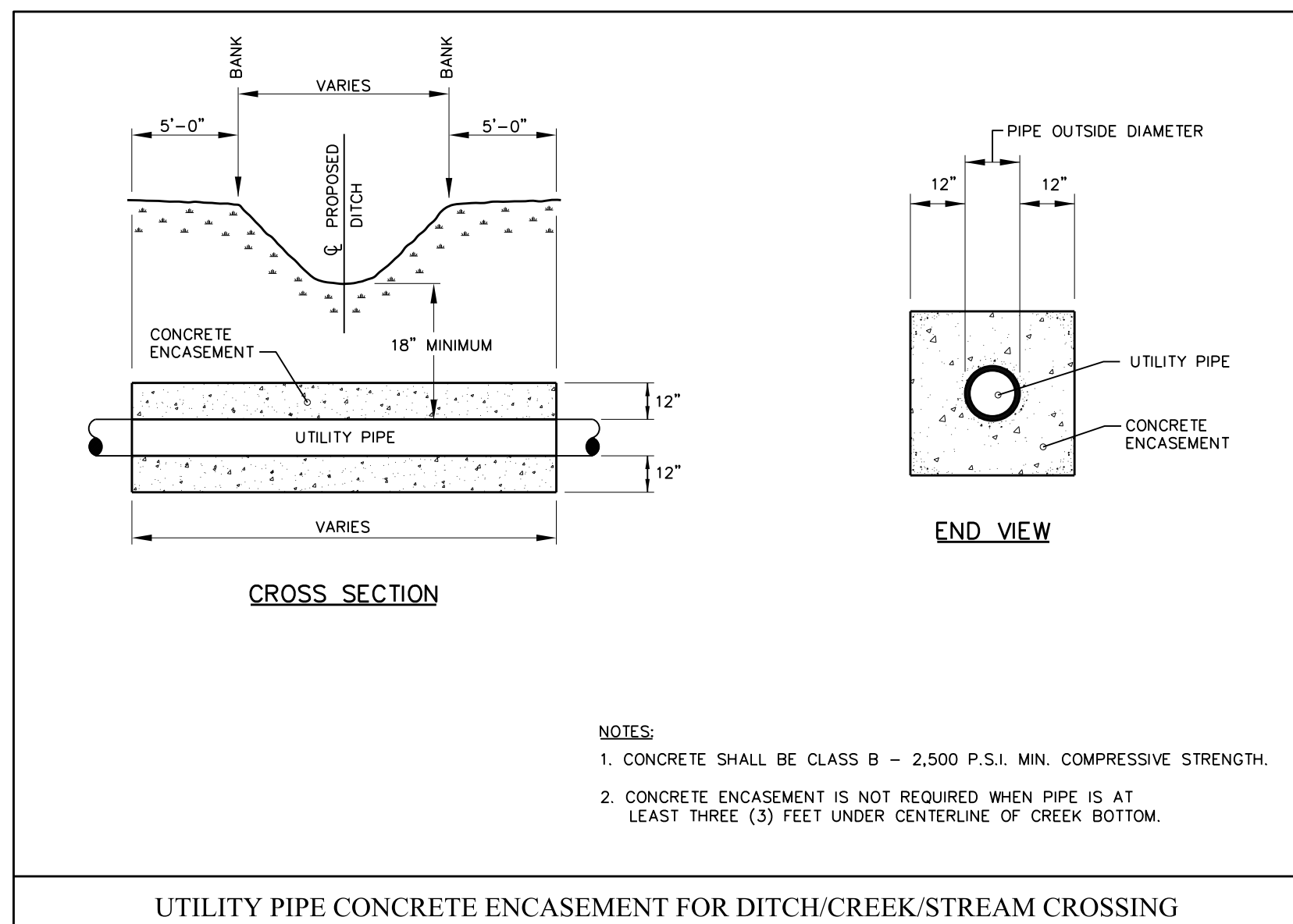
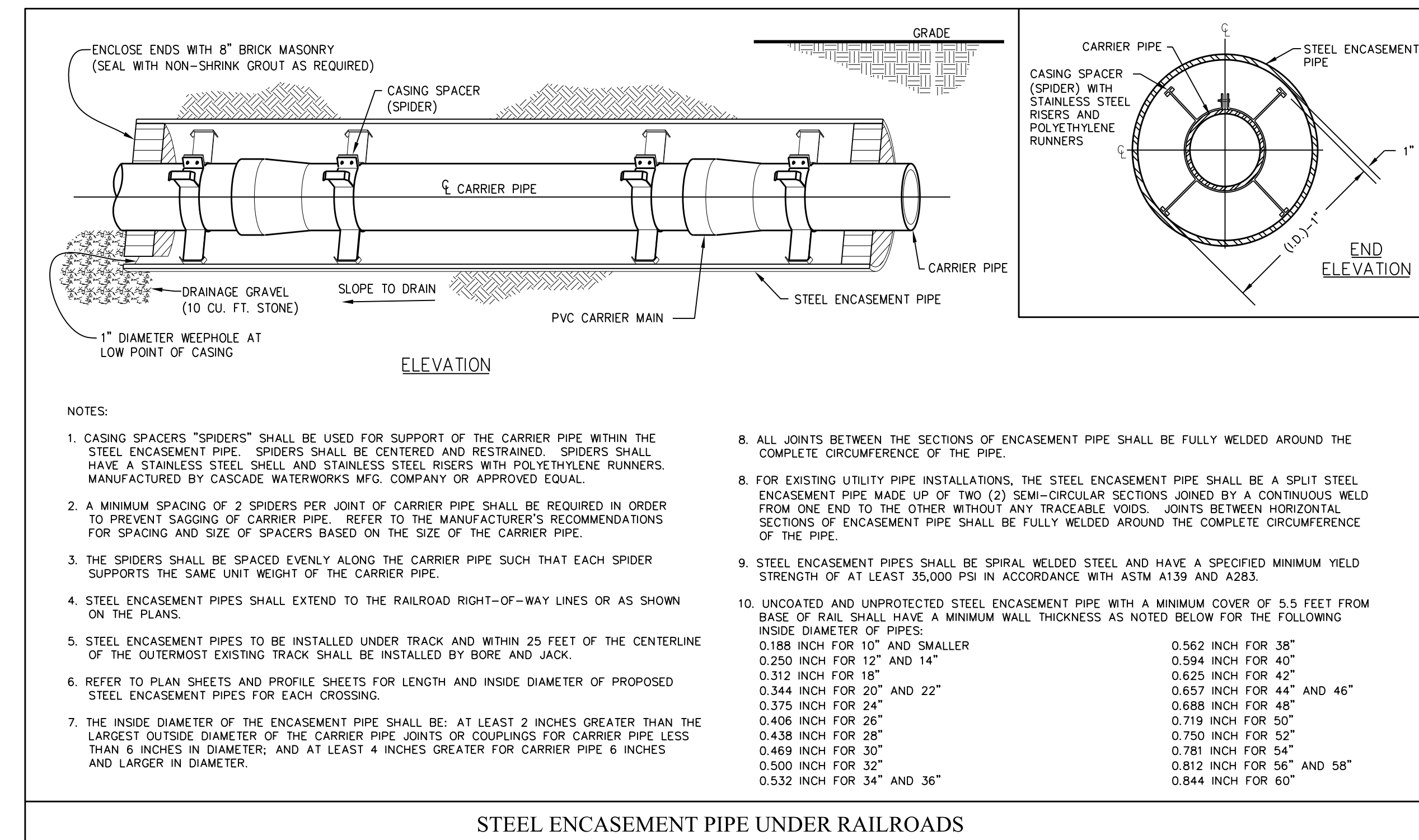
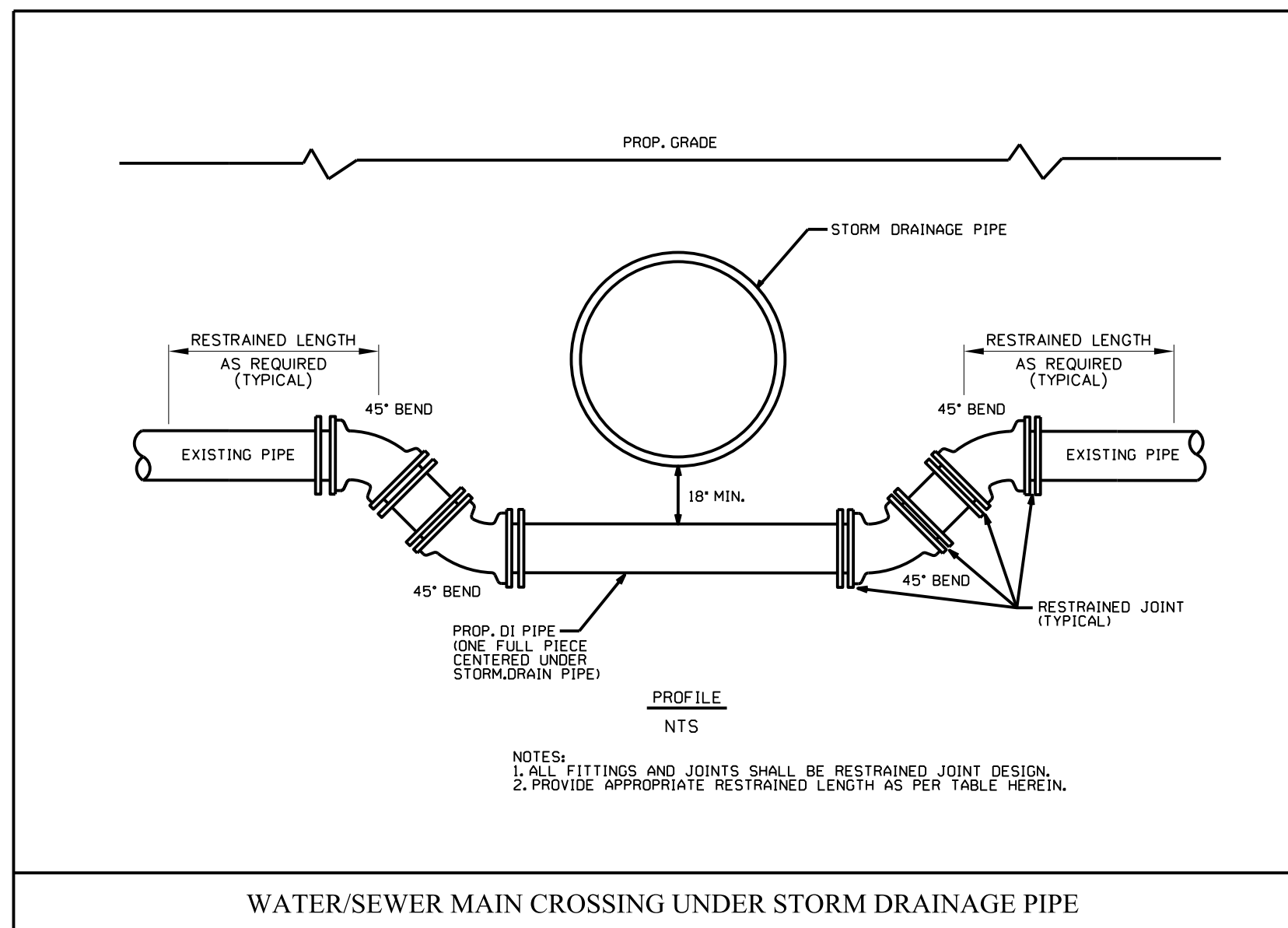
- NOTES:**
1. ALL SHORING & TRENCHING SHALL COMPLY WITH OSHA SAFETY STANDARDS FOR THE CONSTRUCTION INDUSTRY.
  2. BELL HOLES NOT SHOWN.
  3. ALL BACKFILL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.



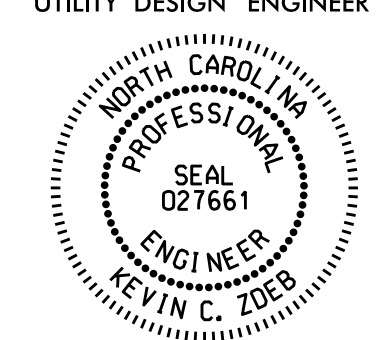

**MAXIMUM TRENCH WIDTH AT TOP OF PIPE**

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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PROJECT REFERENCE NO.	SHEET NO.
P-4900A	UC-3C
UTILITY DESIGN ENGINEER	
	
DocuSigned by: <b>Kevin Zdeb</b>	1/21/2015
	

**BASED ON TEST PRESSURE OF 200 P.S.I.**

HORIZONTAL RESTRAINT (ALL AREAS GIVEN ARE IN SQUARE FEET)									VERTICAL RESTRAINT (ALL VOLUMES GIVEN ARE IN CUBIC YARDS)**								
PIPE SIZE	DEGREE OF BEND	LBS. STATIC THRUST *	ALLOWABLE SOIL BEARING (PSF)								PIPE SIZE	RESTRAINING RODS		DEGREE OF BEND			
			1000	2000	3000	4000	5000	6000	7000	8000		NO. REQ'D	DIA.	11/4"	22 1/2"	45°	
4"	11/2"	816	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	45°	2,405	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	90°	4,810	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	TEE/PLUG	3,614	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1
6"	11/2"	1,485	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1
	45°	4,455	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	90°	8,910	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2
	TEE/PLUG	6,682	4	3	2	2	2	2	2	2	2	2	2	2	2	2	2
8"	11/2"	2,970	3	3	2	2	2	2	2	2	2	2	2	2	2	2	2
	45°	8,910	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	90°	17,820	5	4	3	3	3	3	3	3	3	3	3	3	3	3	3
	TEE/PLUG	13,868	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
10"	11/2"	4,455	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3
	45°	13,365	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
	90°	26,730	6	5	4	4	4	4	4	4	4	4	4	4	4	4	4
	TEE/PLUG	20,048	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4
12"	11/2"	5,940	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
	45°	17,820	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	90°	35,640	7	6	5	5	5	5	5	5	5	5	5	5	5	5	5
	TEE/PLUG	26,730	6	5	5	5	5	5	5	5	5	5	5	5	5	5	5
14"	11/2"	7,425	6	6	5	5	5	5	5	5	5	5	5	5	5	5	5
	45°	22,275	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	90°	44,550	8	7	6	6	6	6	6	6	6	6	6	6	6	6	6
	TEE/PLUG	33,413	7	6	6	6	6	6	6	6	6	6	6	6	6	6	6
16"	11/2"	8,910	7	7	6	6	6	6	6	6	6	6	6	6	6	6	6
	45°	26,730	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	90°	53,460	9	8	7	7	7	7	7	7	7	7	7	7	7	7	7
	TEE/PLUG	40,283	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7
24"	11/2"	17,820	10	10	9	9	9	9	9	9	9	9	9	9	9	9	9
	45°	53,460	12	11	10	10	10	10	10	10	10	10	10	10	10	10	10
	90°	106,920	14	13	12	12	12	12	12	12	12	12	12	12	12	12	12
	TEE/PLUG	80,197	13	12	12	12	12	12	12	12	12	12	12	12	12	12	12

\* INCLUDES 1.25 SAFETY FACTOR AND CALCULATED USING THE NOMINAL DIAMETER OF PIPE.

\*\* INCLUDES 1.50 SAFETY FACTOR AND CALCULATED USING THE NOMINAL DIAMETER OF PIPE.

GENERAL NOTES:  
 1. CONCRETE SHALL BE CLASS "B".  
 2. CONCRETE SHALL NOT CONTACT BOLT ENDS OF MECHANICAL JOINT FITTINGS.  
 3. CONSULT WITH ENGINEER FOR CONCRETE REQUIREMENTS ON MAINS LARGER THAN 24 INCHES. (FOR VERTICAL & HORIZONTAL BENDS)  
 4. ALLOWABLE SOIL BEARING SHALL BE DETERMINED BY THE ENGINEER.

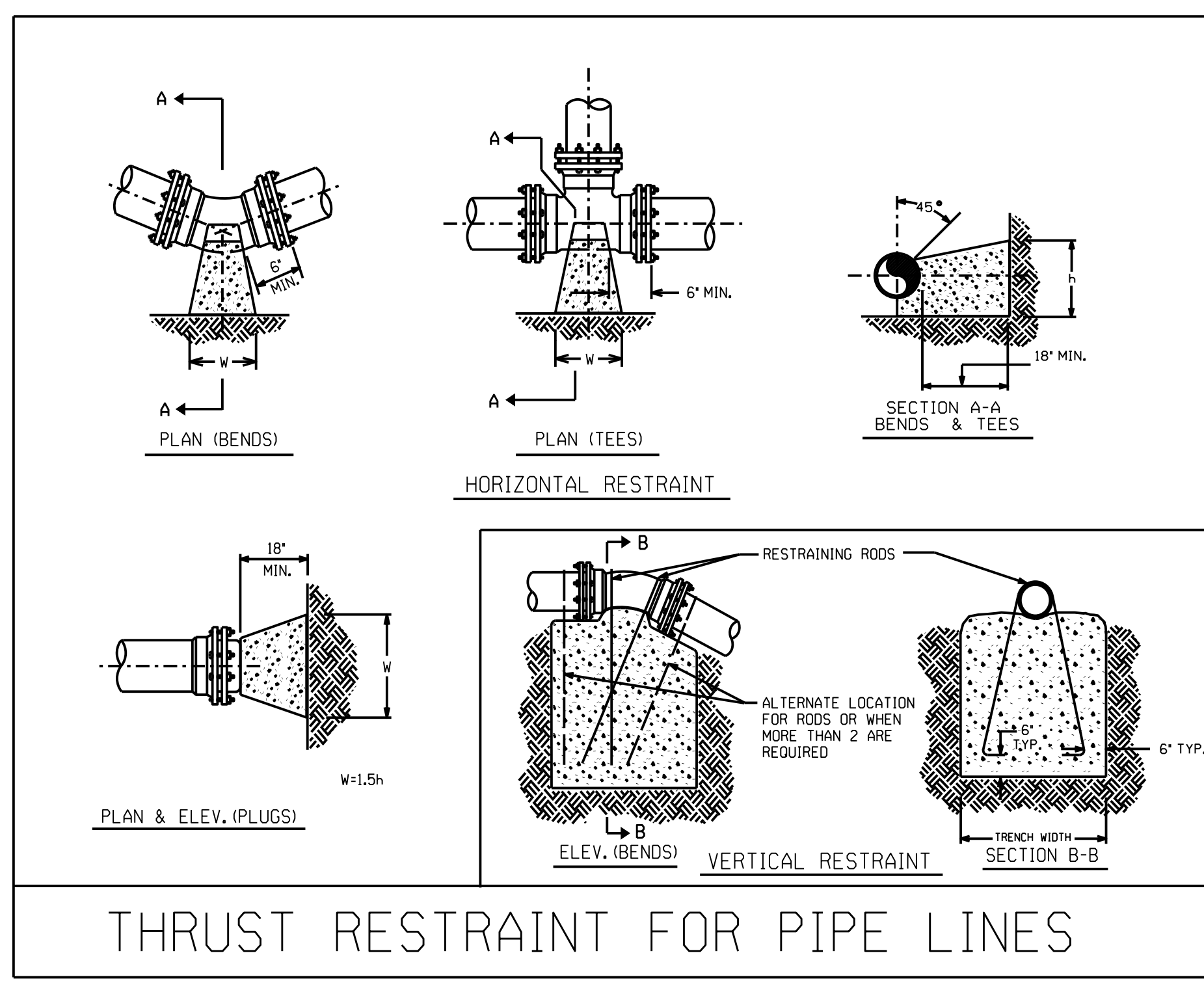
REVISIONS	
NO.	DESCRIPTION

**PVC PIPE RESTRAINED JOINT DESIGN TABLE**

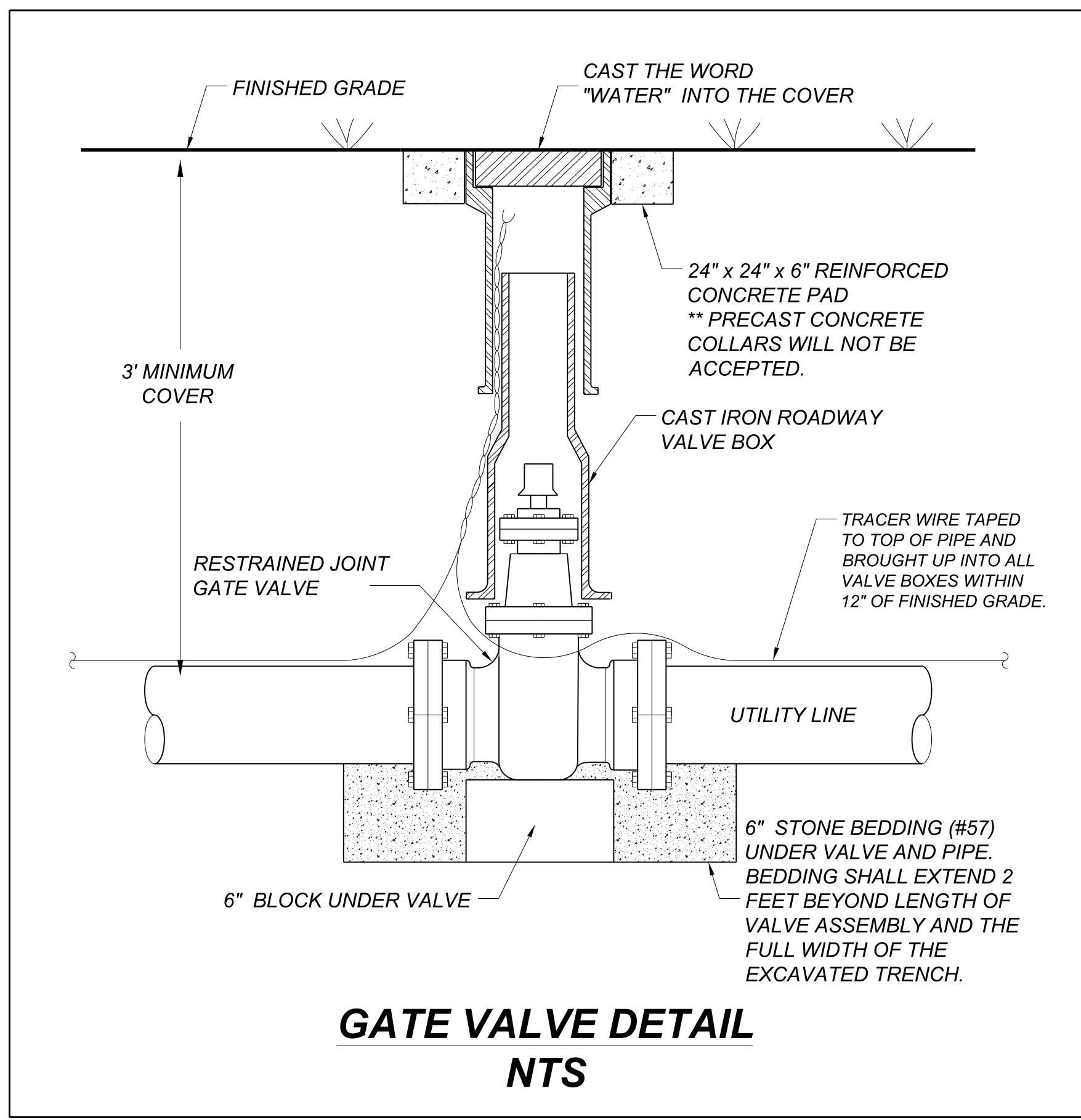
FITTING	REQUIRED RESTRAINED LENGTH (FT) OF PVC PIPE BY DEPTH OF COVER							
	3 FT	4 FT	5 FT	6 FT	7 FT	8 FT	9 FT	10 FT
<b>HORIZONTAL BENDS</b>								
4 INCH DIA - 11.25 DEG	2	2	2	1	1	1	1	1
4 INCH DIA - 22.5 DEG	4	3	3	3	2	2	2	2
4 INCH DIA - 45 DEG	7	6	5	5	4	4	4	3
4 INCH DIA - 90 DEG	16	14	12	11	10	9	8	7
6 INCH DIA - 11.25 DEG	3	2	2	2	2	2	2	1
6 INCH DIA - 22.5 DEG	5	4	4	3	3	3	3	2
6 INCH DIA - 45 DEG	10	8	7	6	6	5	5	5
6 INCH DIA - 90 DEG	22	19	17	15	13	12	11	10
12 INCH DIA - 11.25 DEG	5	4	3	3	3	3	2	2
12 INCH DIA - 22.5 DEG	9	7	7	6	5	5	4	4
12 INCH DIA - 45 DEG	17	15	13	12	10	8	9	8
12 INCH DIA - 90 DEG	41	35	31	27	25	22	20	19
<b>VERTICAL DOWN BENDS</b>								
4 INCH DIA - 11.25 DEG	6	5	4	4	3	3	3	3
4 INCH DIA - 22.5 DEG	12	10	8	7	6	6	5	5
4 INCH DIA - 45 DEG	24	20	17	15	13	12	11	10
6 INCH DIA - 11.25 DEG	8	7	6	5	5	4	4	4
6 INCH DIA - 22.5 DEG	17	14	12	10	9	8	7	7
6 INCH DIA - 45 DEG	34	28	24	21	18	16	15	14
12 INCH DIA - 11.25 DEG	15	13	11	10	8	8	7	6
12 INCH DIA - 22.5 DEG	31	25	21	19	17	15	14	12
12 INCH DIA - 45 DEG	63	52	44	38	34	31	28	25
<b>VERTICAL UP BENDS</b>								
4 INCH DIA - 11.25 DEG	2	2	2	1	1	1	1	1
4 INCH DIA - 22.5 DEG	4	3	3	3	2	2	2	2
4 INCH DIA - 45 DEG	7	6	5	5	4	4	4	3
6 INCH DIA - 11.25 DEG	3	2	2	2	2	2	2	1
6 INCH DIA - 22.5 DEG	5	4	4	3	3	3	3	2
6 INCH DIA - 45 DEG	10	8	7	6	6	5	5	5
12 INCH DIA - 11.25 DEG	5	4	3	3	3	3	2	2
12 INCH DIA - 22.5 DEG	9	7	7	6	5	5	4	4
12 INCH DIA - 45 DEG	17	15	13	12	10	10	9	8
<b>DEAD ENDS / VALVES</b>								
4 INCH DIA	45	38	33	29	27	24	22	20
6 INCH DIA	63	54	47	42	37	34	31	29
12 INCH DIA	118	101	88	79	71	64	59	54

**ASSUMPTIONS**  
 LAYING CONDITION = TYPE 4      DESIGN PRESSURE = 200 PSI (TEST PRESSURE)  
 SOIL DESIGNATION = GC = COHESIVE-GRANULAR      SAFETY FACTOR = 1.5

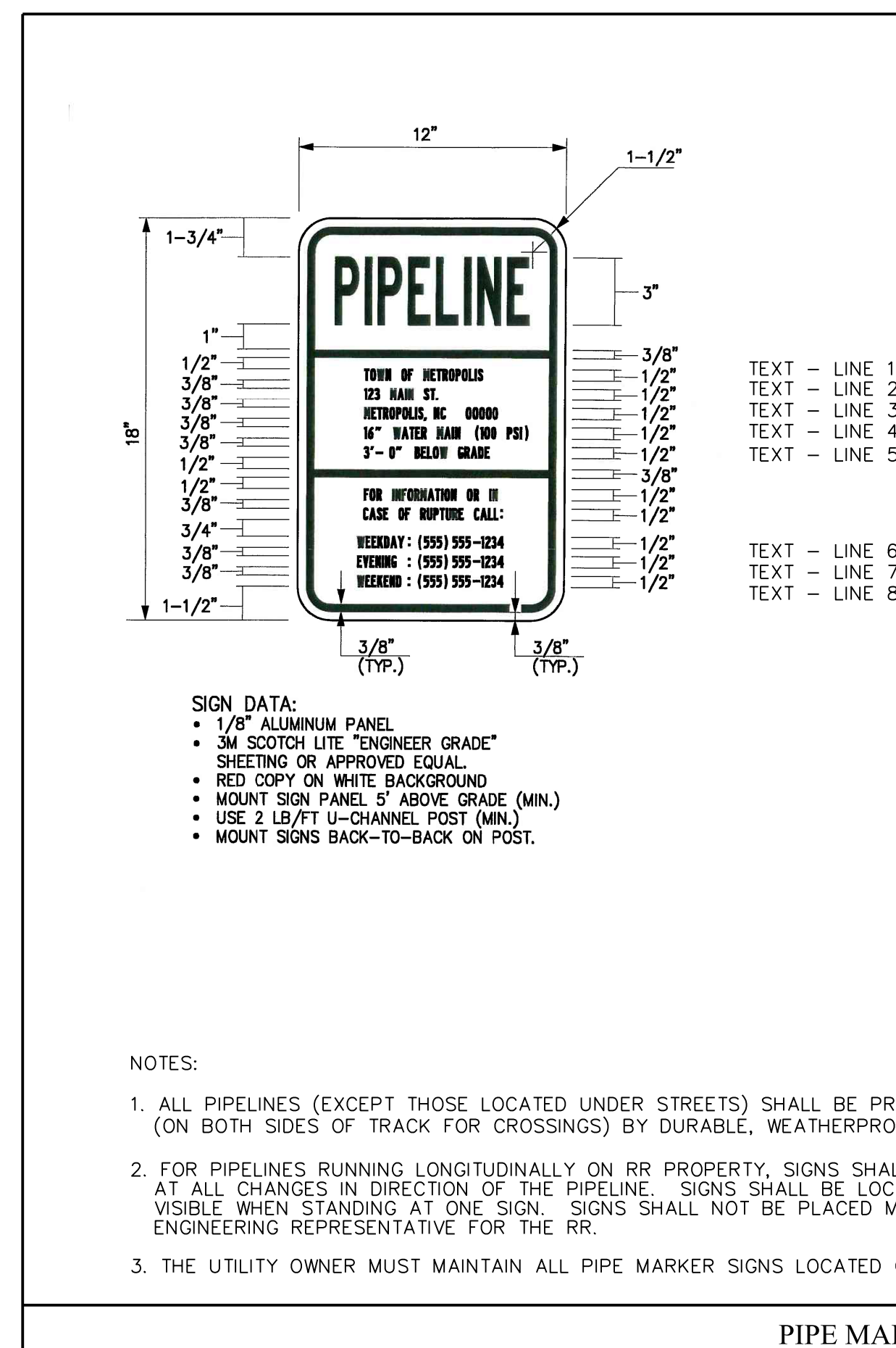
**NOTES**  
 1. RL = RUN LENGTH BETWEEN FIRST JOINTS OF PIPE ALONG THE RUN LINE OF TEE.  
 2. RESTRAINED LENGTH IS MEASURED AS FOLLOWS:



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**GATE VALVE DETAIL  
NTS**



TEXT NOTES FOR VARIOUS UTILITY OWNERS:

A. ROBESON COUNTY.  
 LINE 1: ROBESON COUNTY.  
 LINE 2: 176 LEGEND ROAD  
 LINE 3: LUMBERTON, NC 28358  
 LINE 4: 6" WATER MAIN (150 PSI)  
 LINE 5: 3'-0" BELOW GRADE  
 LINE 6: (910) 671-3485  
 LINE 7: (336) 671-3485  
 LINE 8: (336) 671-3485

NOTES:  
 1. LINE 5: CONTRACTOR SHALL NOTE THE AS-BUILT DEPTH (TO TOP OF CASING OR PIPE) AT THE SIGN LOCATION.

B. TOWN OF PEMBROKE  
 LINE 1: TOWN OF PEMBROKE  
 LINE 2: 100 UNION CHAPEL ROAD  
 LINE 3: PEMBROKE, NC 28372  
 LINE 4: 12" WATER MAIN (150 PSI)  
 LINE 5: 3'-0" BELOW GRADE  
 LINE 6: (910) 521-2458  
 LINE 7: (910) 521-2458  
 LINE 8: (910) 521-2458

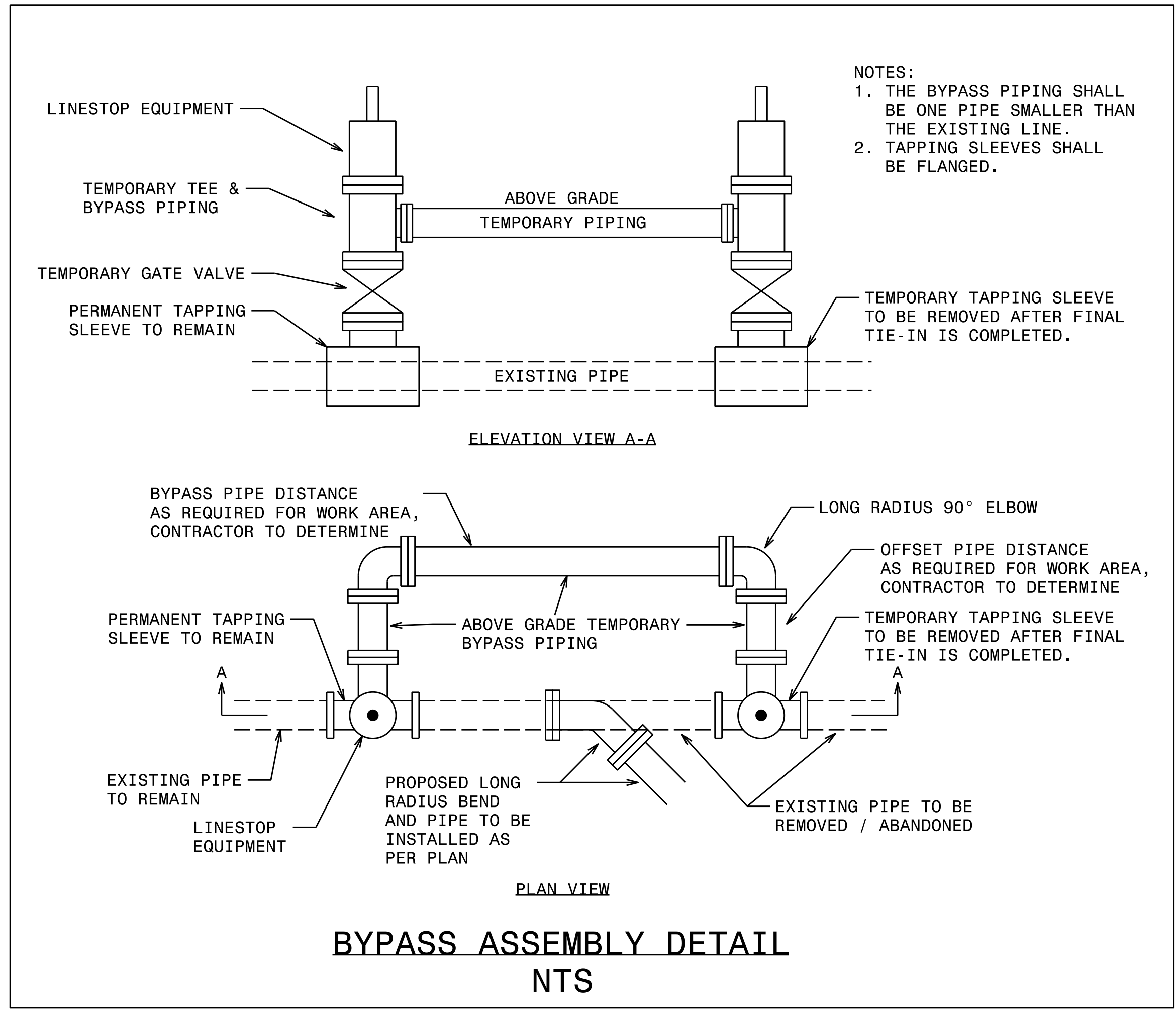
NOTES:  
 1. LINE 5: CONTRACTOR SHALL NOTE THE AS-BUILT DEPTH (TO TOP OF CASING OR PIPE) AT THE SIGN LOCATION.

C. TOWN OF PEMBROKE  
 LINE 1: TOWN OF PEMBROKE  
 LINE 2: 100 UNION CHAPEL ROAD  
 LINE 3: PEMBROKE, NC 28372  
 LINE 4: 4" FORCE MAIN (150 PSI)  
 LINE 5: 3'-0" BELOW GRADE  
 LINE 6: (910) 521-2458  
 LINE 7: (910) 521-2458  
 LINE 8: (910) 521-2458

NOTES:  
 1. LINE 5: CONTRACTOR SHALL NOTE THE AS-BUILT DEPTH (TO TOP OF CASING OR PIPE) AT THE SIGN LOCATION.

NOTES:  
 1. ALL PIPELINES (EXCEPT THOSE LOCATED UNDER STREETS) SHALL BE PROMINENTLY MARKED AT THE RIGHT-OF-WAY LINES (ON BOTH SIDES OF TRACK FOR CROSSINGS) BY DURABLE, WEATHERPROOF SIGNS LOCATED OVER THE CENTERLINE OF THE PIPE.  
 2. FOR PIPELINES RUNNING LONGITUDINALLY ON RR PROPERTY, SIGNS SHALL BE PLACED OVER THE PIPE (OR OFFSET AND APPROPRIATELY MARKED) AT ALL CHANGES IN DIRECTION OF THE PIPELINE. SIGNS SHALL BE LOCATED SO THAT THE NEXT ADJACENT MARKER IN EITHER DIRECTION IS VISIBLE WHEN STANDING AT ONE SIGN. SIGNS SHALL NOT BE PLACED MORE THAN 500 FEET APART UNLESS OTHERWISE SPECIFIED BY THE ENGINEERING REPRESENTATIVE FOR THE RR.  
 3. THE UTILITY OWNER MUST MAINTAIN ALL PIPE MARKER SIGNS LOCATED ON THE RR RIGHT-OF-WAY.

**PIPE MARKER SIGN**



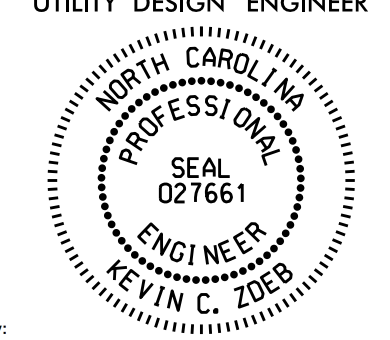

**BYPASS ASSEMBLY DETAIL  
NTS**

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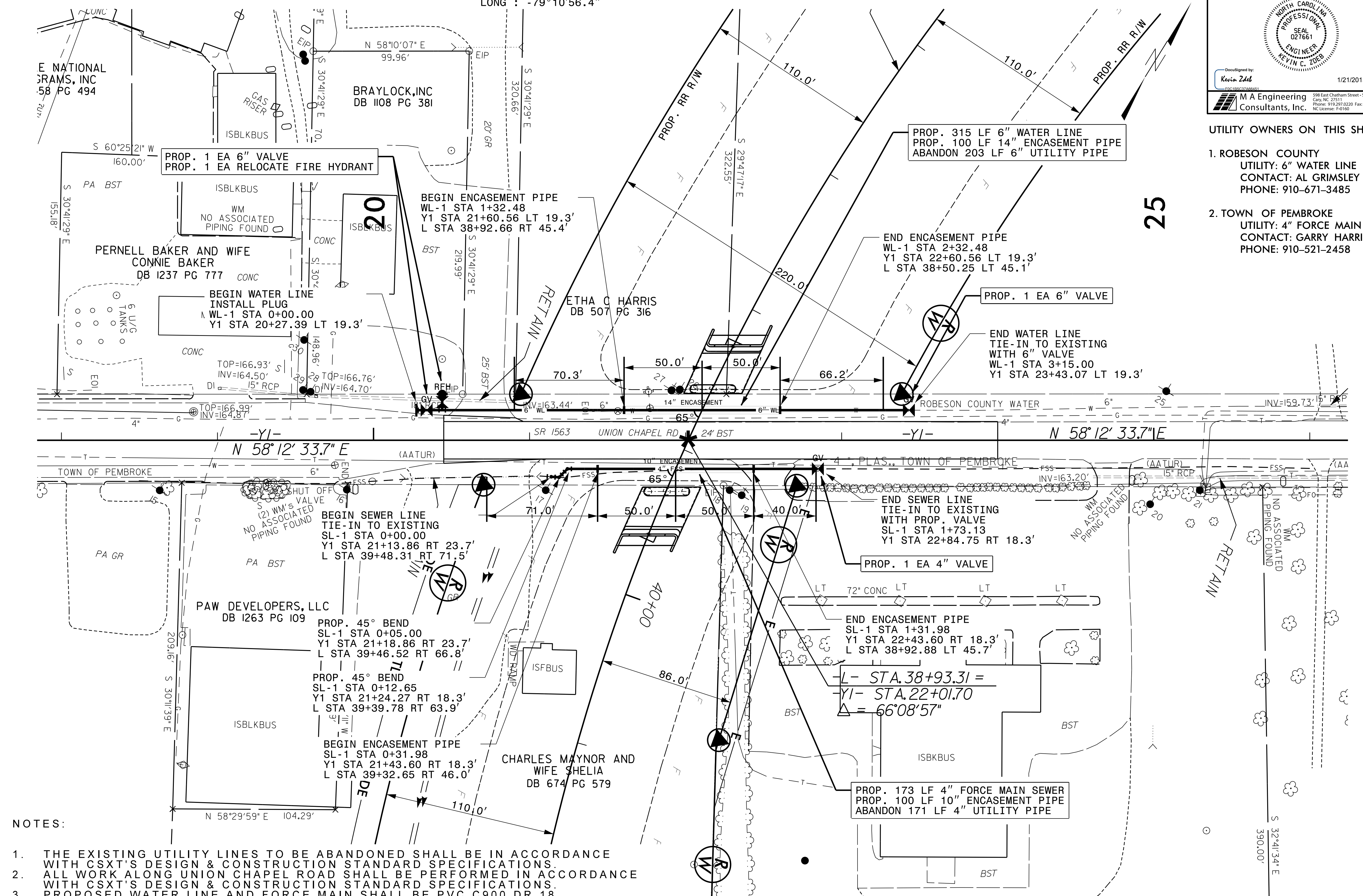
5/28/19

\* LOCATION : PEMBROKE, NC  
LAT : 34°41'18.6"  
LONG : -79°10'56.4"

PROJECT REFERENCE NO. P-4900A	SHEET NO. UC-04
UTILITY DESIGN ENGINEER	
 KEVIN C. ZEB ENGINEER SEAL 027661	
DocuSigned by: <b>Kevin Zeb</b>	1/21/2015
 M A Engineering Consultants, Inc.	

UTILITY OWNERS ON THIS SHEET:

- ROBESON COUNTY  
UTILITY: 6" WATER LINE  
CONTACT: AL GRIMSLEY  
PHONE: 910-671-3485
- TOWN OF PEMBROKE  
UTILITY: 4" FORCE MAIN  
CONTACT: GARRY HARRIS  
PHONE: 910-521-2458



NOTES:

- THE EXISTING UTILITY LINES TO BE ABANDONED SHALL BE IN ACCORDANCE WITH CSXT'S DESIGN & CONSTRUCTION STANDARD SPECIFICATIONS.
- ALL WORK ALONG UNION CHAPEL ROAD SHALL BE PERFORMED IN ACCORDANCE WITH CSXT'S DESIGN & CONSTRUCTION STANDARD SPECIFICATIONS.
- PROPOSED WATER LINE AND FORCE MAIN SHALL BE PVC C900 DR 18. PROPOSED ENCASEMENT PIPE SHALL BE GRADE B STEEL.
- FOR 4" FORCE MAIN TIE-IN AND OPERATIONS, REFER TO SHEET UC-3, PROJECT SPECIFIC NOTES NUMBER 6 & 7.

ROADWAY CONSTRUCTION IS DONE BY P-4900B AND SHOWN ONLY FOR REFERENCE

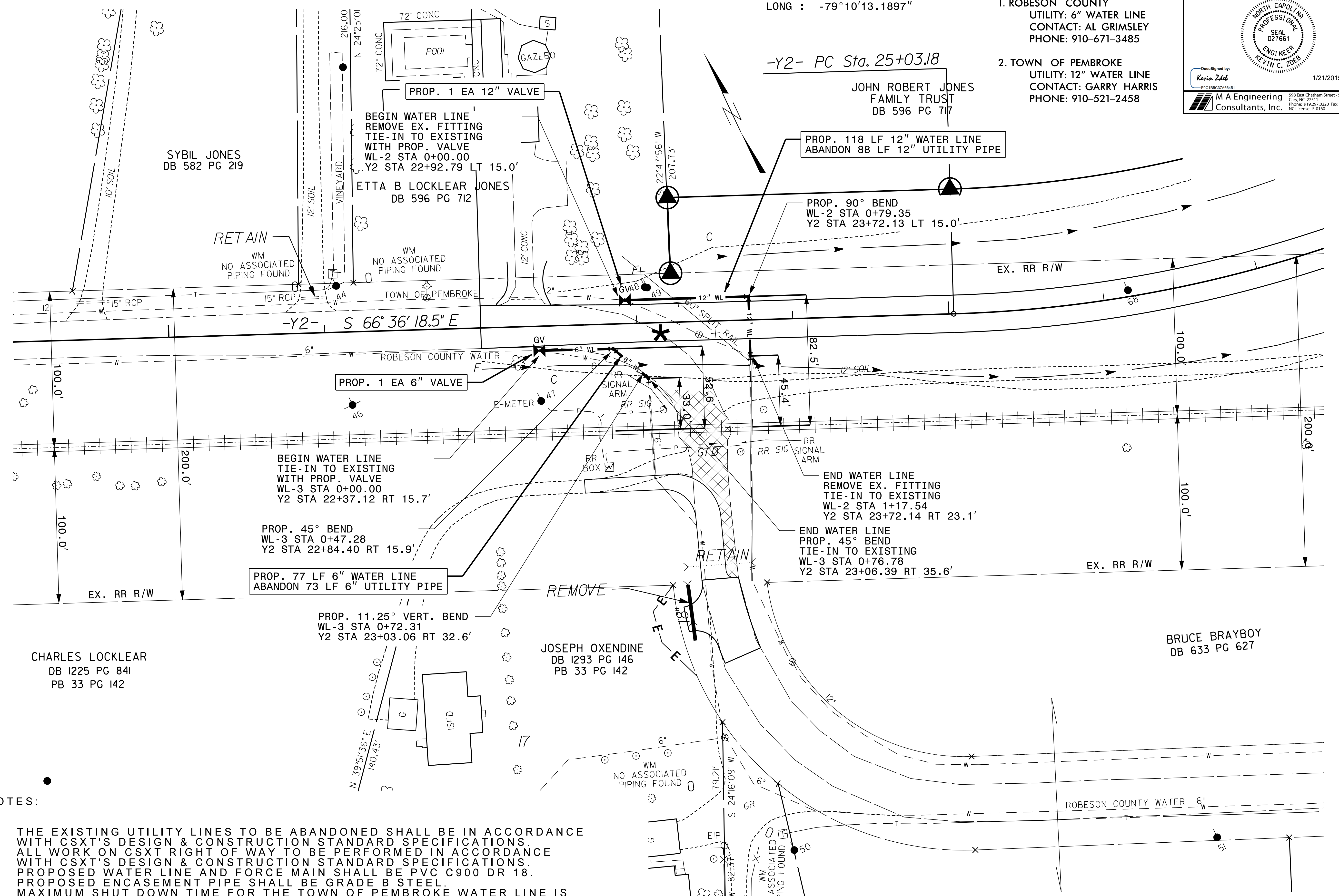
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5/28/15

PROJECT REFERENCE NO. <b>P-4900A</b>	SHEET NO. <b>UC-05</b>
UTILITY DESIGN ENGINEER	
DocuSigned by: <i>Kevin Zdeb</i>	1/21/2015
<small>M A Engineering Consultants, Inc. 398 East Chatham Street - Suite 137 Cary, NC 27511 Phone: 919-297-0220 Fax: 919-297-0221 NC License: 54160</small>	

- UTILITY OWNERS ON THIS SHEET:
- ROBESON COUNTY  
UTILITY: 6" WATER LINE  
CONTACT: AL GRIMSLEY  
PHONE: 910-671-3485
  - TOWN OF PEMBROKE  
UTILITY: 12" WATER LINE  
CONTACT: GARRY HARRIS  
PHONE: 910-521-2458

\* LOCATION : PEMBROKE, NC  
LAT : 34°40'25.6581"  
LONG : -79°10'13.1897"

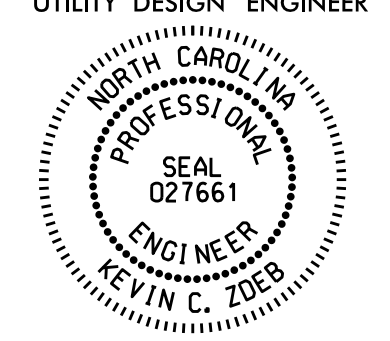
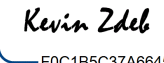



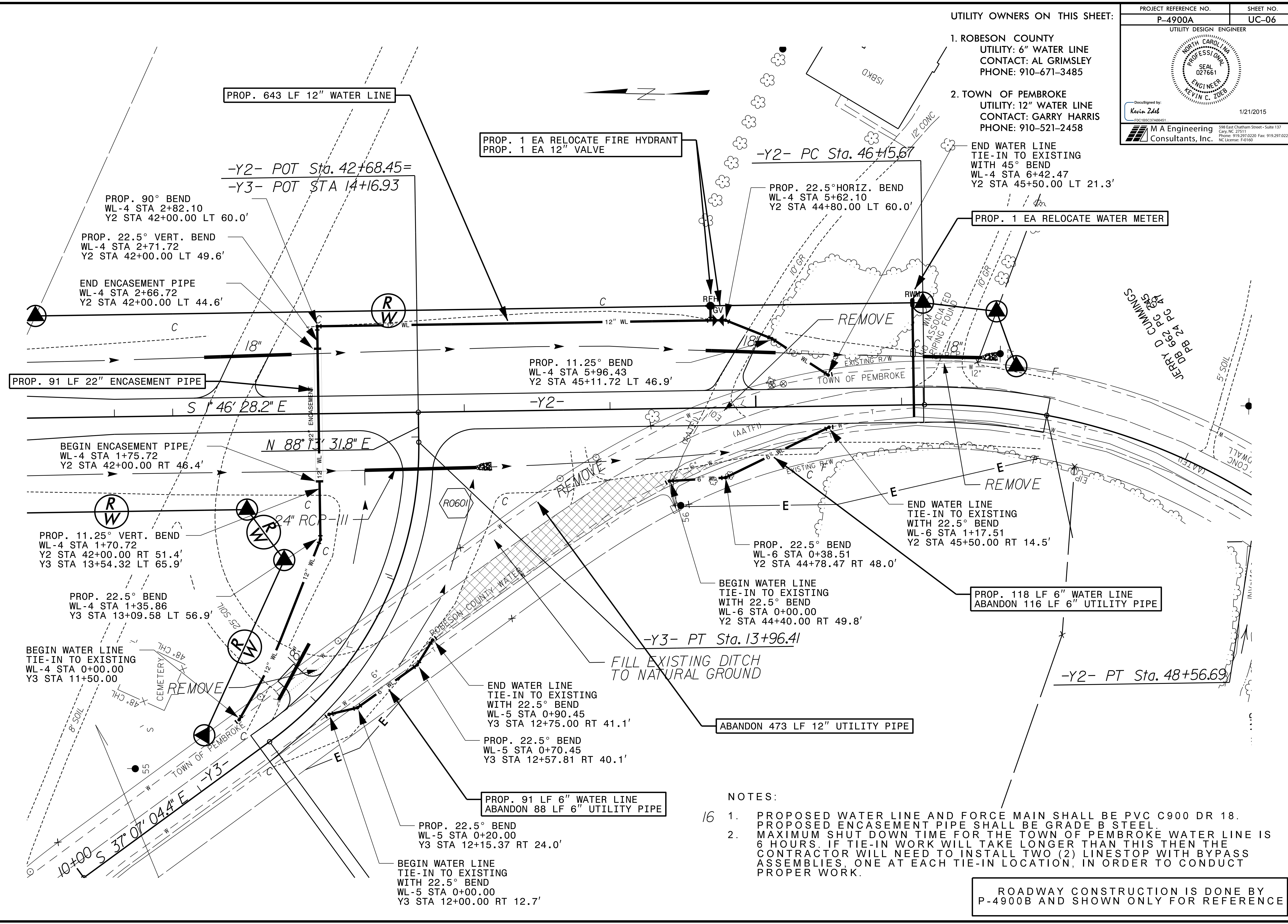
**NOTES:**

- THE EXISTING UTILITY LINES TO BE ABANDONED SHALL BE IN ACCORDANCE WITH CSXT'S DESIGN & CONSTRUCTION STANDARD SPECIFICATIONS.
- ALL WORK ON CSXT RIGHT OF WAY TO BE PERFORMED IN ACCORDANCE WITH CSXT'S DESIGN & CONSTRUCTION STANDARD SPECIFICATIONS.
- PROPOSED WATER LINE AND FORCE MAIN SHALL BE PVC C900 DR 18. PROPOSED ENCASEMENT PIPE SHALL BE GRADE B STEEL.
- MAXIMUM SHUT DOWN TIME FOR THE TOWN OF PEMBROKE WATER LINE IS 6 HOURS. IF TIE-IN WORK WILL TAKE LONGER THAN THIS THEN THE CONTRACTOR WILL NEED TO INSTALL TWO (2) LINESSTOP WITH BYPASS ASSEMBLIES, ONE AT EACH TIE-IN LOCATION, IN ORDER TO CONDUCT PROPER WORK.

ROADWAY CONSTRUCTION IS DONE BY P-4900B AND SHOWN ONLY FOR REFERENCE

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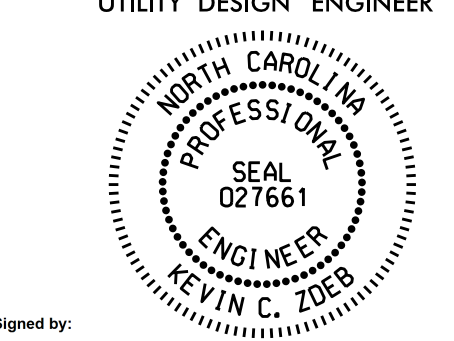

PROJECT REFERENCE NO. <b>P-4900A</b>	SHEET NO. <b>UC-06</b>
UTILITY DESIGN ENGINEER	
	
1. ROBESON COUNTY UTILITY: 6" WATER LINE CONTACT: AL GRIMSLEY PHONE: 910-671-3485	
2. TOWN OF PEMBROKE UTILITY: 12" WATER LINE CONTACT: GARRY HARRIS PHONE: 910-521-2458	
DocuSigned by:  Kevin Ziebel	1/21/2015
 M A Engineering Consultants, Inc.	

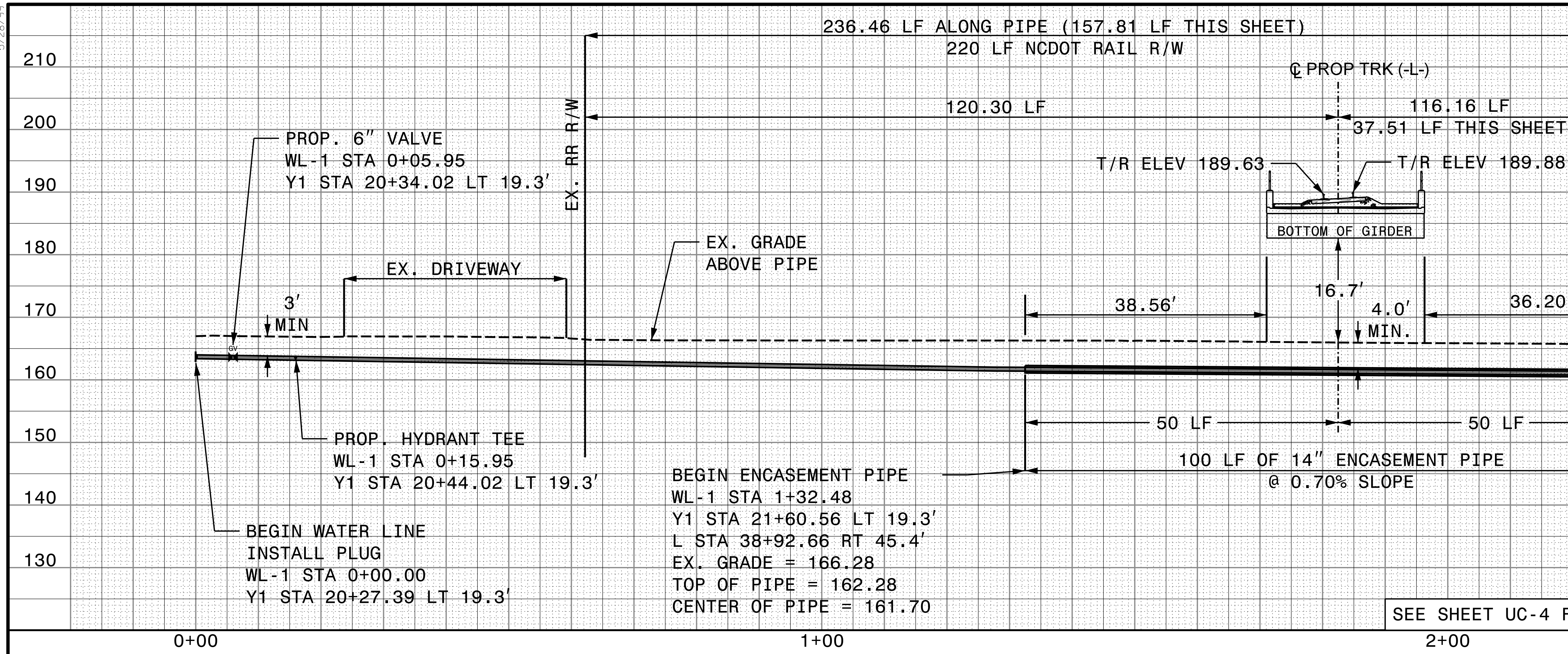


- NOTES:
1. PROPOSED WATER LINE AND FORCE MAIN SHALL BE PVC C900 DR 18. PROPOSED ENCASEMENT PIPE SHALL BE GRADE B STEEL.
  2. MAXIMUM SHUT DOWN TIME FOR THE TOWN OF PEMBROKE WATER LINE IS 6 HOURS. IF TIE-IN WORK WILL TAKE LONGER THAN THIS THEN THE CONTRACTOR WILL NEED TO INSTALL TWO (2) LINSTOP WITH BYPASS ASSEMBLIES, ONE AT EACH TIE-IN LOCATION, IN ORDER TO CONDUCT PROPER WORK.

ROADWAY CONSTRUCTION IS DONE BY P-4900B AND SHOWN ONLY FOR REFERENCE

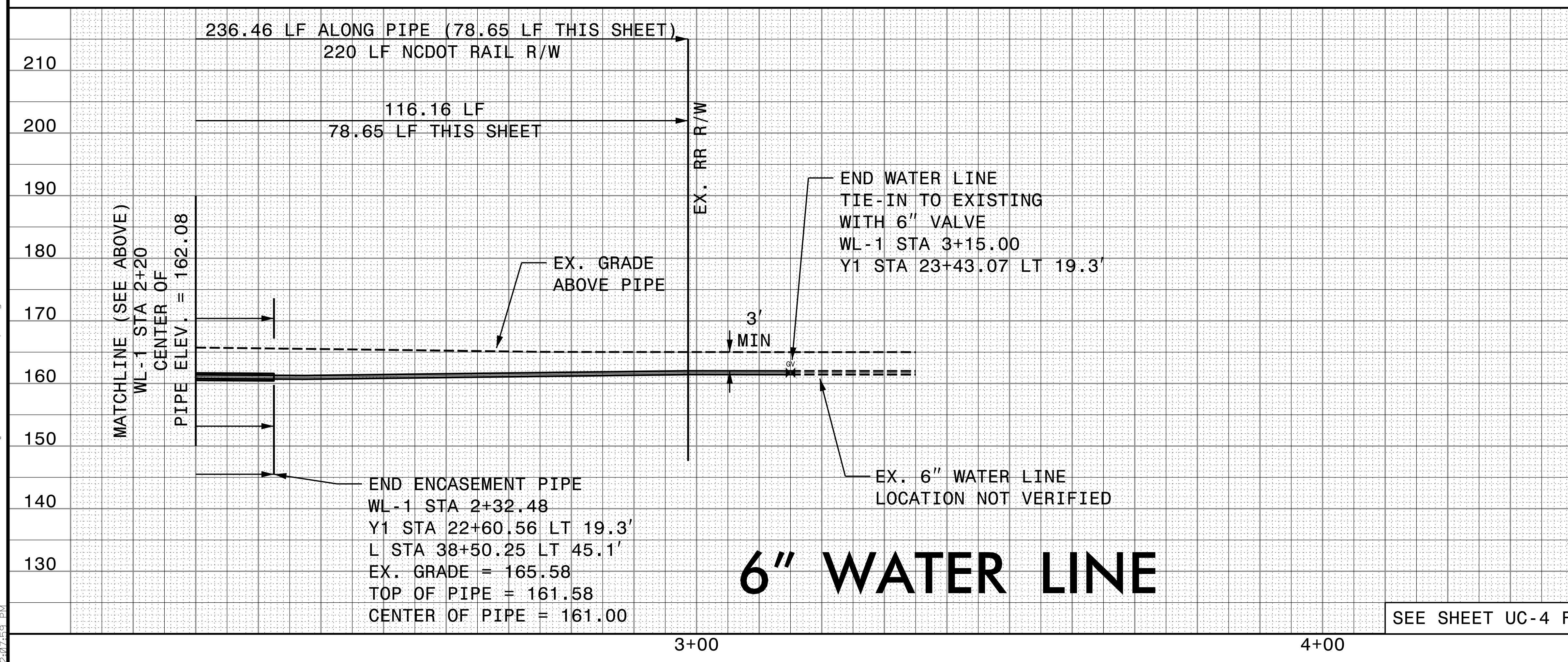
5/28/19

PROJECT REFERENCE NO. P-4900A	SHEET NO. UC-7
UTILITY DESIGN ENGINEER	
	
	1/21/2015 388 East Chatham Street - Suite 137 Cary, NC 27511 Phone: 919.297.0220 Fax: 919.297.0221 NC License: E-0160

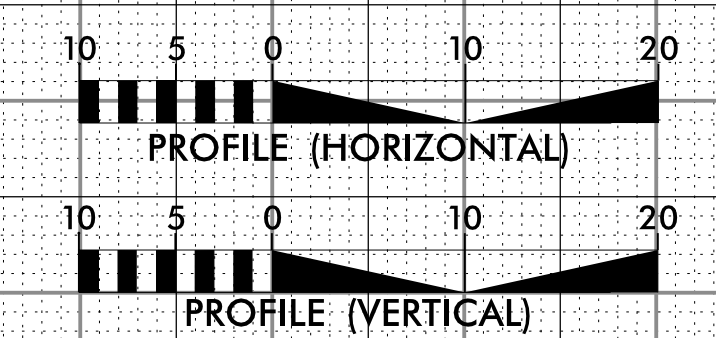


MATCHLINE (SEE BELOW)  
 WL-1 STA 2+20  
 CENTER OF PIPE ELEV. = 162.08

SEE SHEET UC-4 FOR 6" WATER PLAN VIEW



# 6" WATER LINE

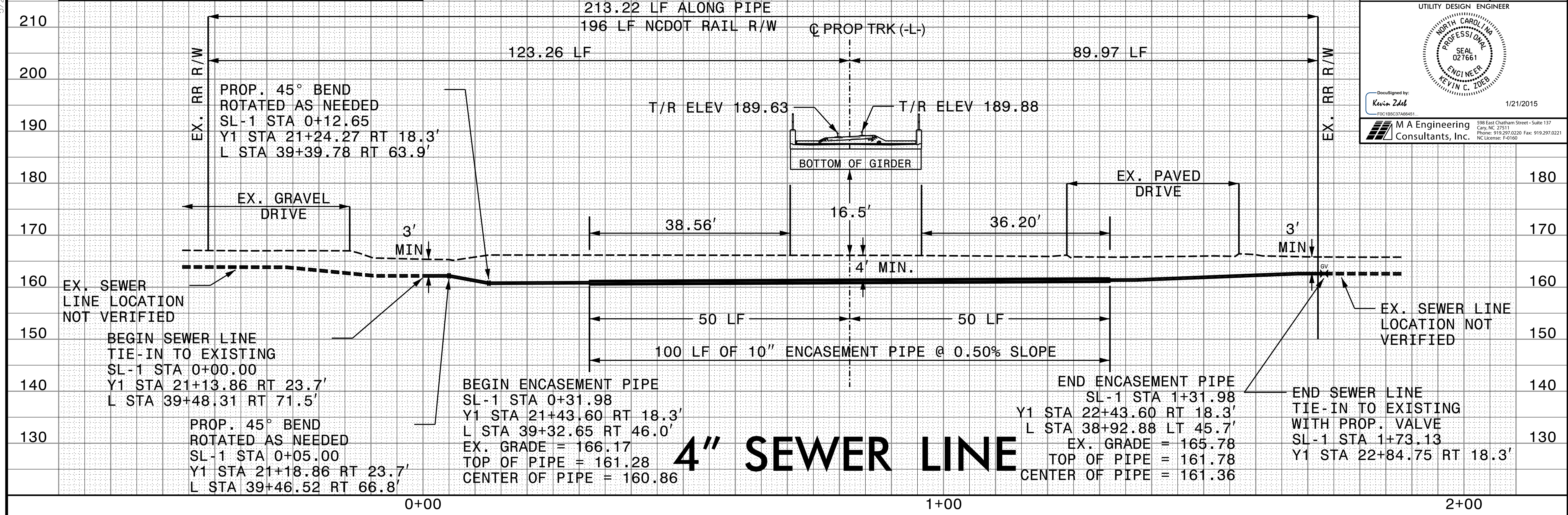


SEE SHEET UC-4 FOR 6" WATER PLAN VIEW

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5/28/15

SEE SHEET UC-4 FOR 4" SEWER PLAN VIEW



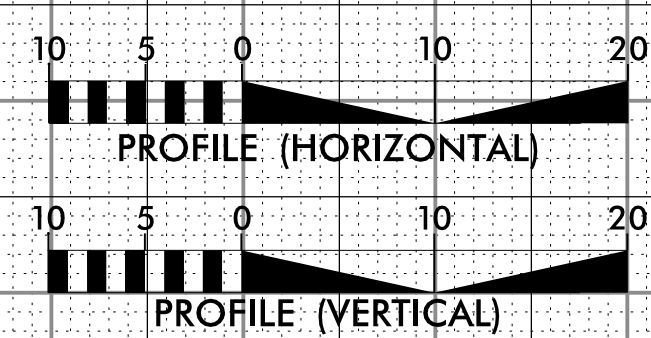
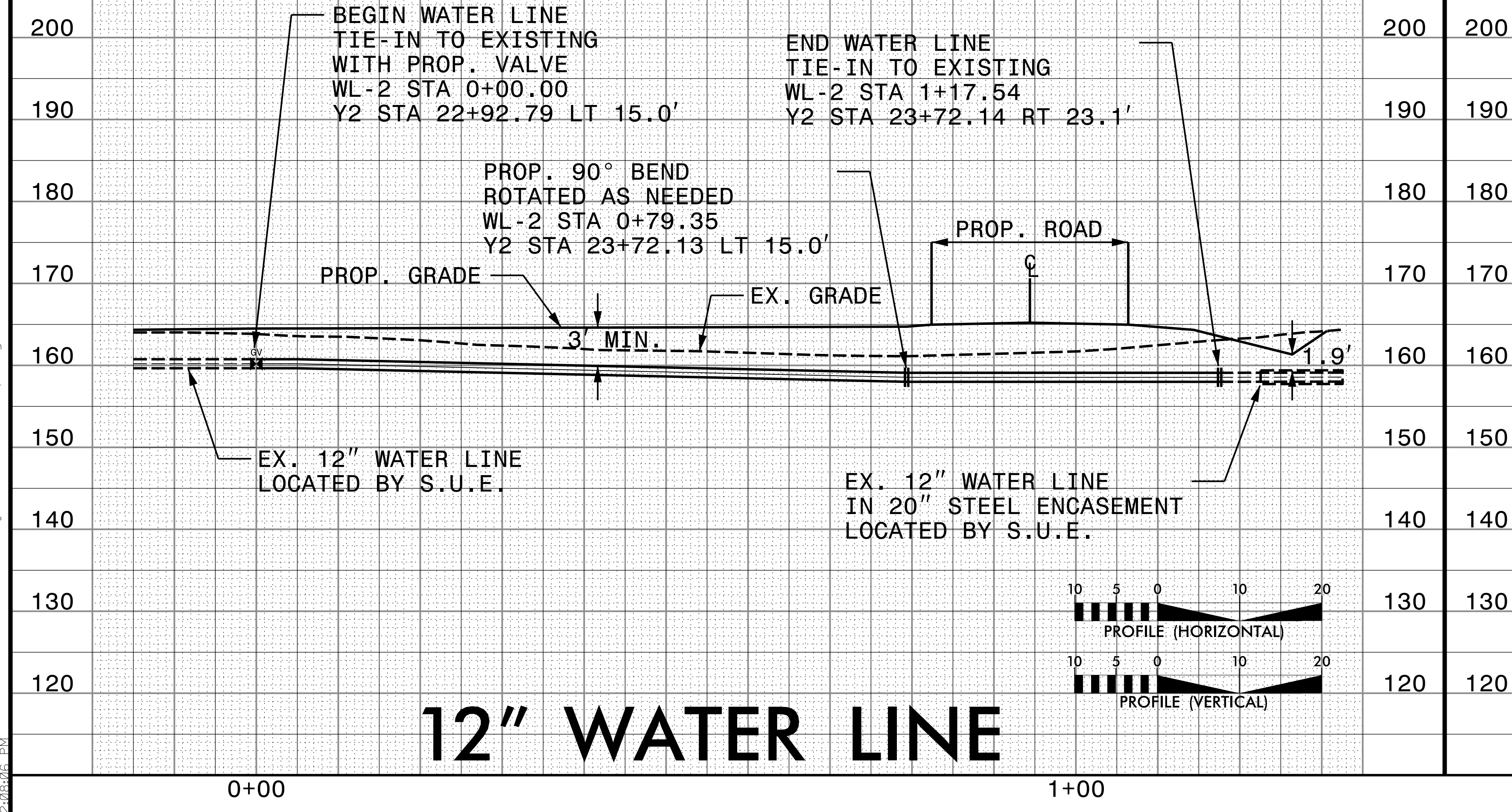
PROJECT REFERENCE NO. P-4900A SHEET NO. UC-8  
UTILITY DESIGN ENGINEER

DocuSigned by: Kevin Zdeb 1/21/2015

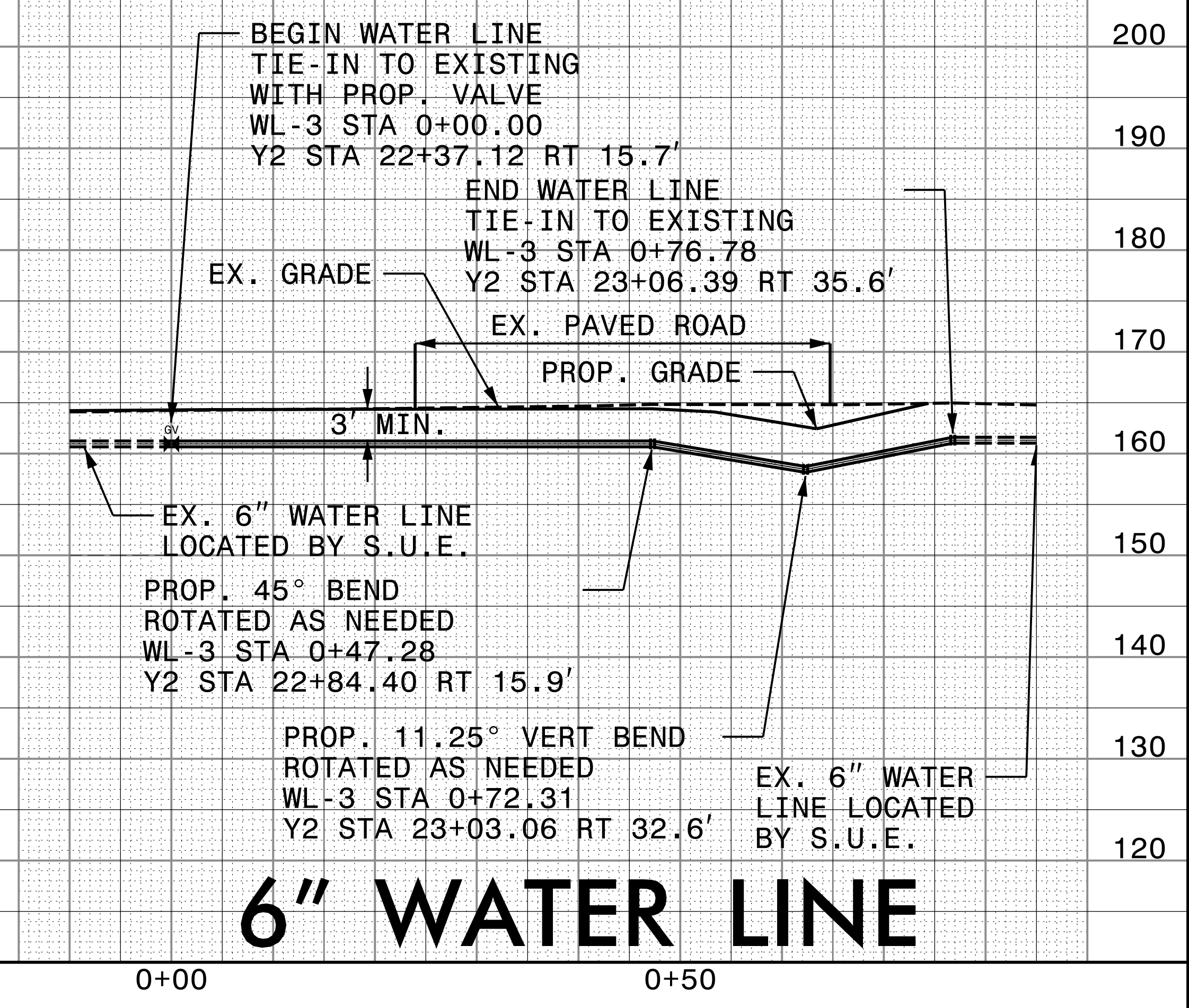
M A Engineering Consultants, Inc.

388 East Chatham Street - Suite 137  
Cary, NC 27511  
Phone: 919.297.0220 Fax: 919.297.0221  
NC License: E-0160

SEE SHEET UC-5 FOR 12" WATER PLAN VIEW



SEE SHEET UC-5 FOR 6" WATER PLAN VIEW

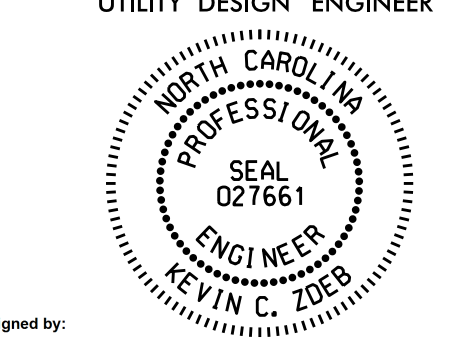



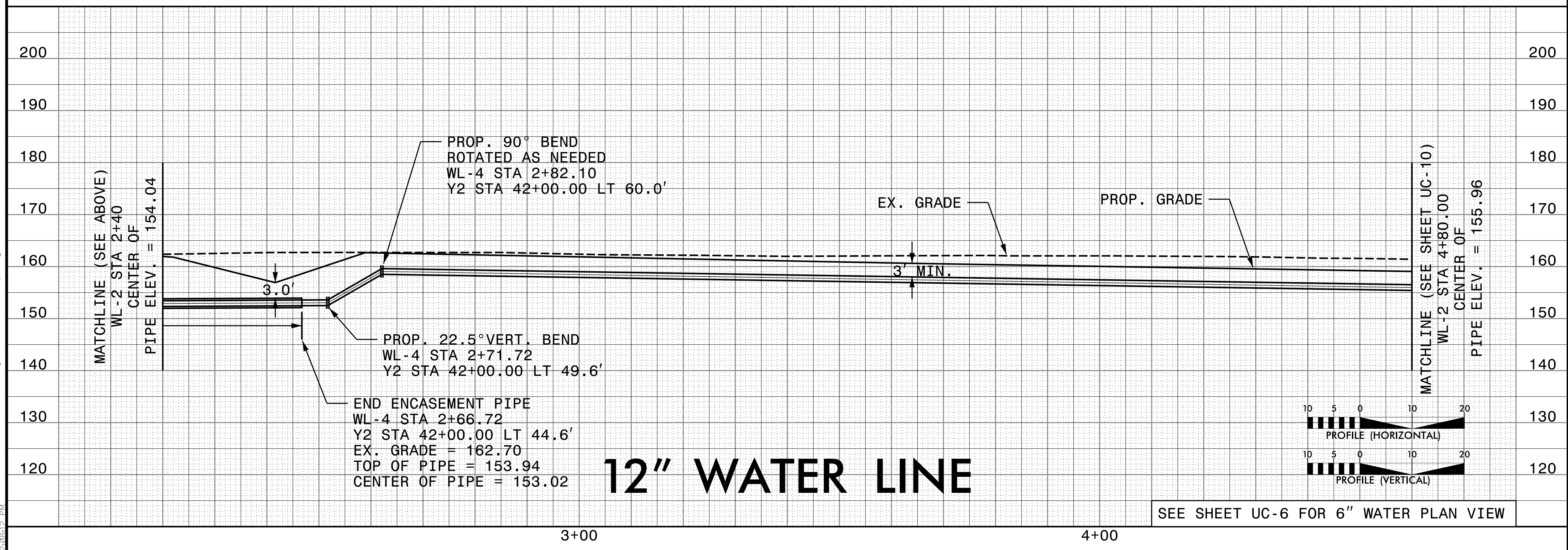
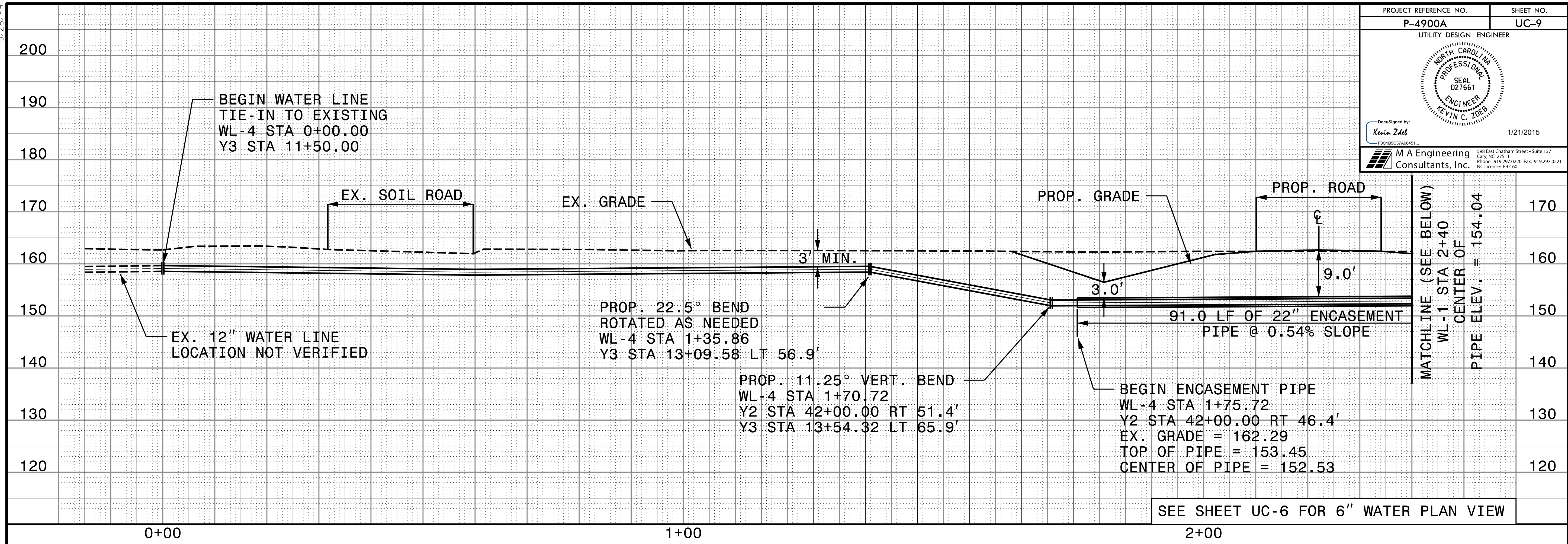
12" WATER LINE

6" WATER LINE

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5/28/99

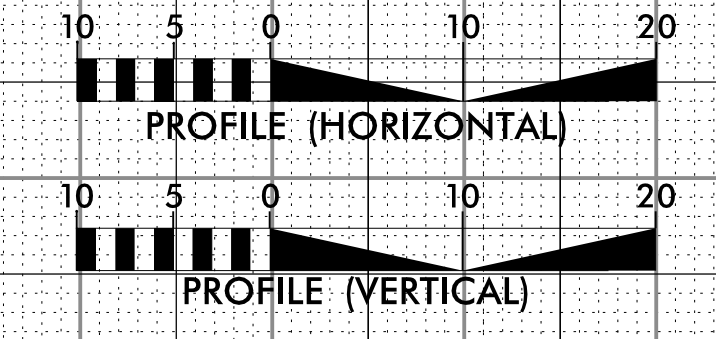
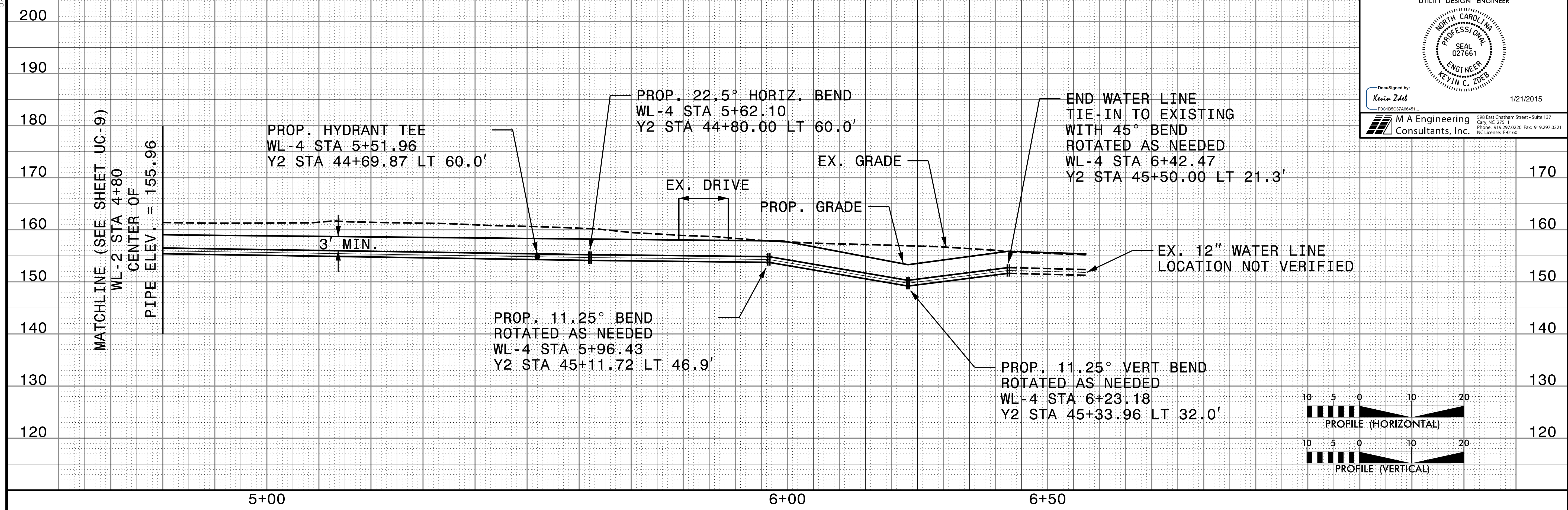
PROJECT REFERENCE NO. P-4900A	SHEET NO. UC-9
UTILITY DESIGN ENGINEER	
	
DocuSigned by: Kevin Zdeb	1/21/2015
	



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SEE SHEET UC-6 FOR 12" WATER PLAN VIEW

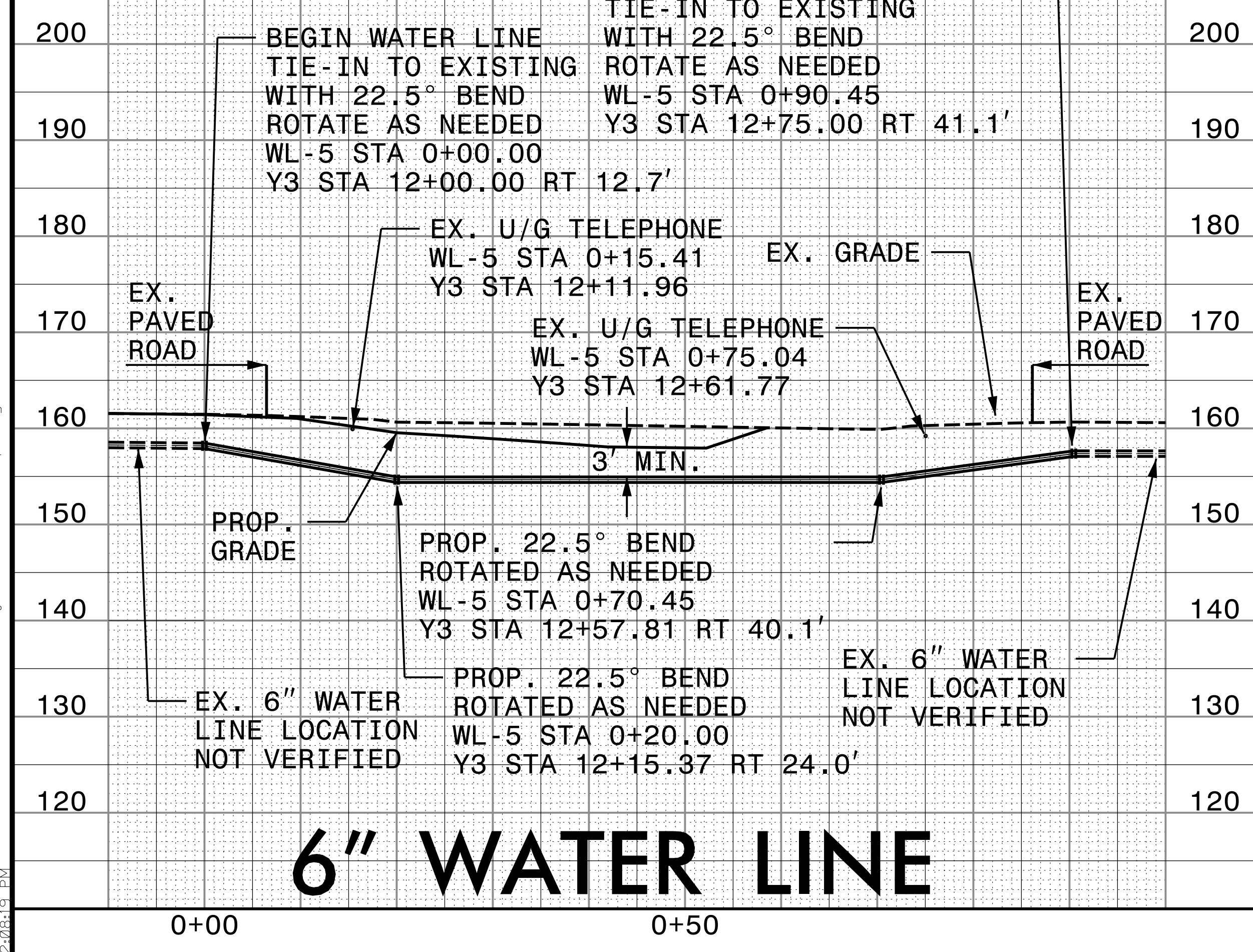


PROJECT REFERENCE NO. P-4900A SHEET NO. UC-10  
UTILITY DESIGN ENGINEER

DocuSigned by:  
Kevin Zdeb  
1/21/2015

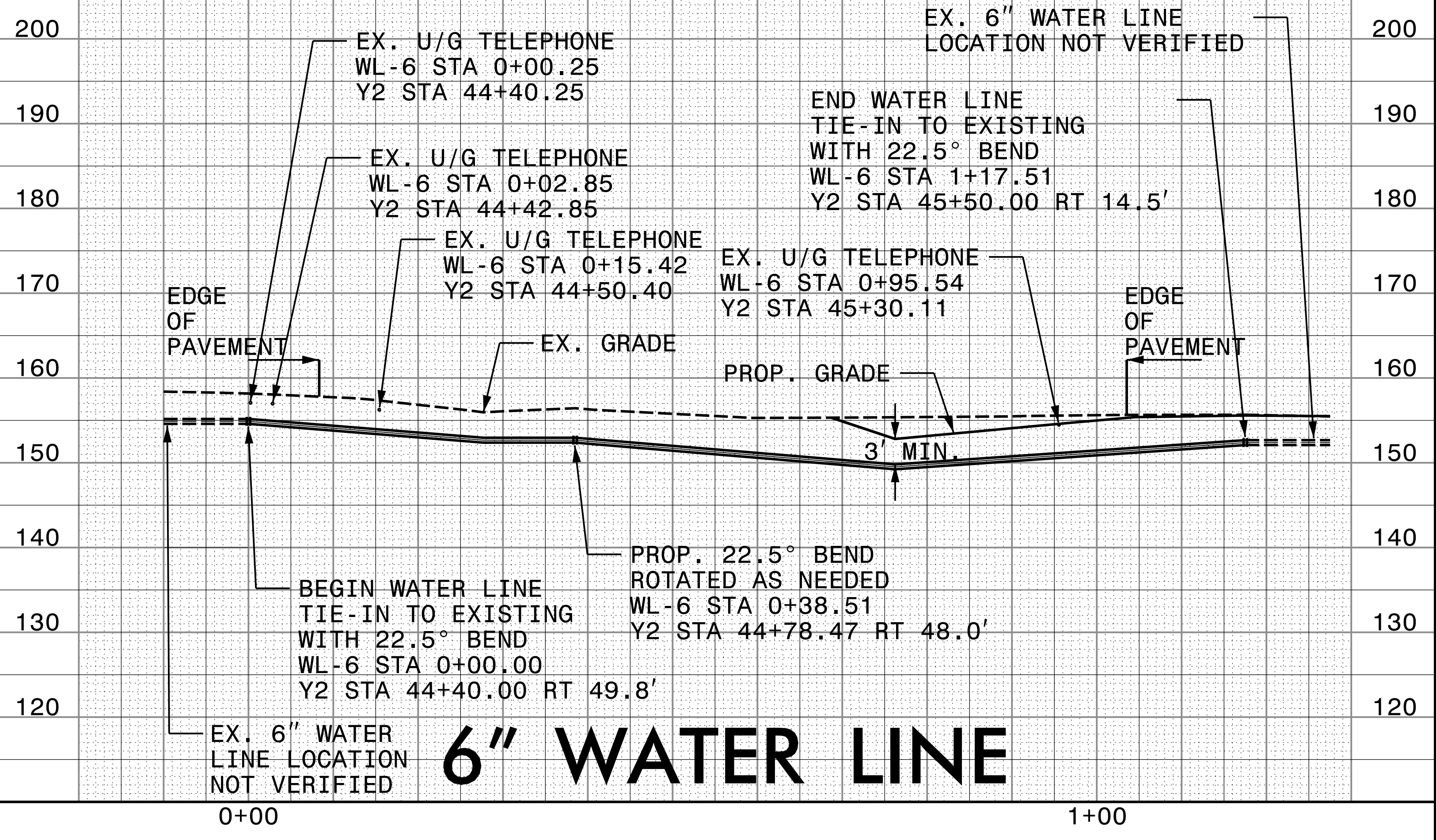
M A Engineering Consultants, Inc.  
388 East Chatham Street - Suite 137  
Cary, NC 27511  
Phone: 919.297.0220 Fax: 919.297.0221  
NC License: 4-0160

SEE SHEET UC-6 FOR 6" WATER PLAN VIEW



# 6" WATER LINE

SEE SHEET UC-6 FOR 6" WATER PLAN VIEW



# 6" WATER LINE

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