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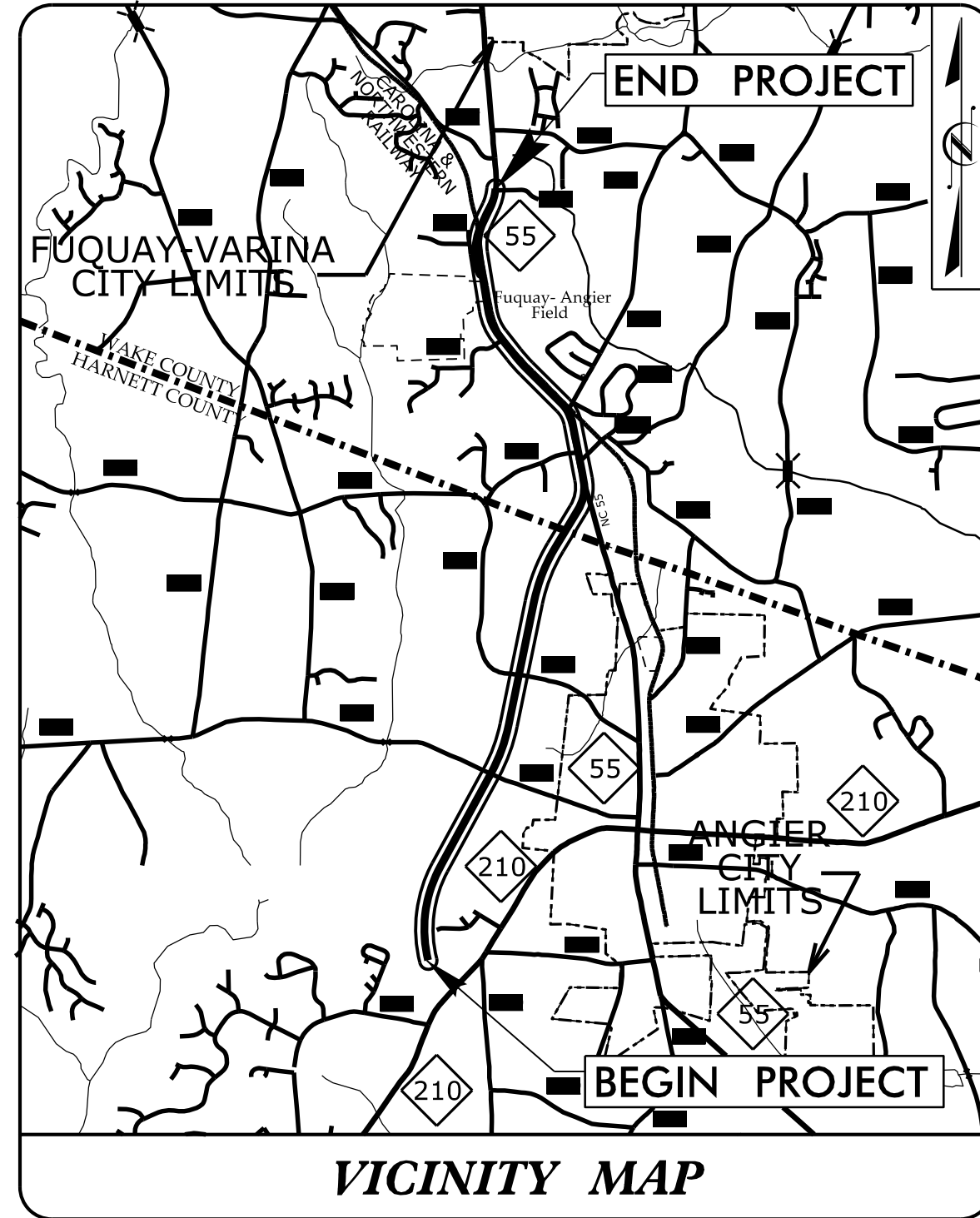
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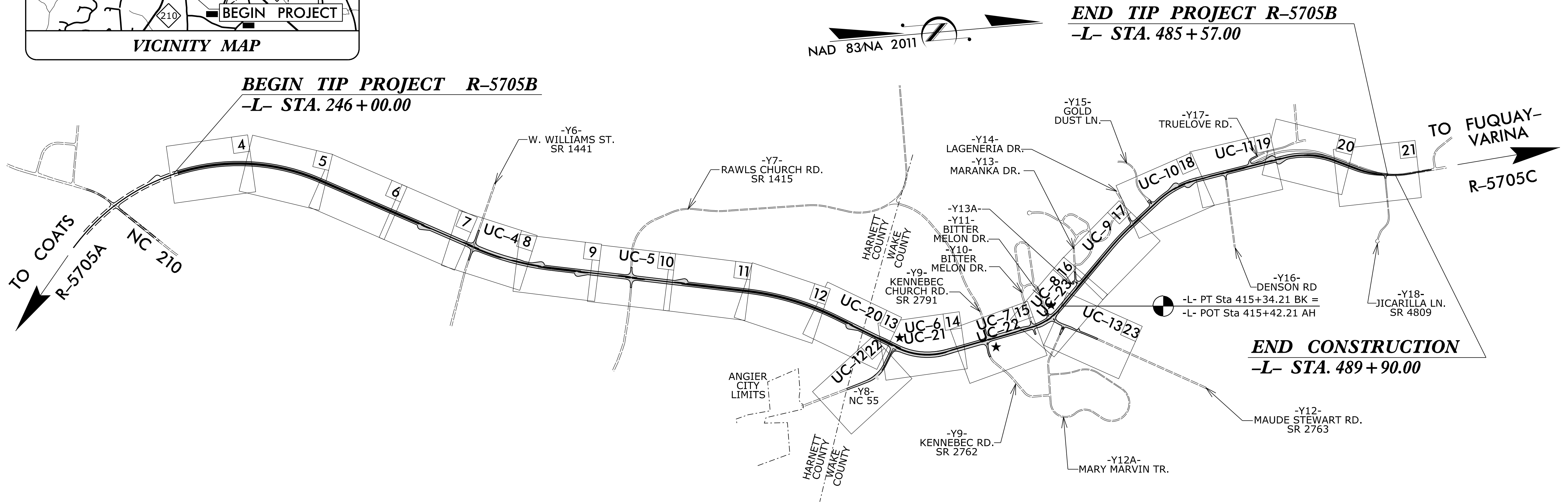
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITY CONSTRUCTION PLANS HARNETT & WAKE COUNTY

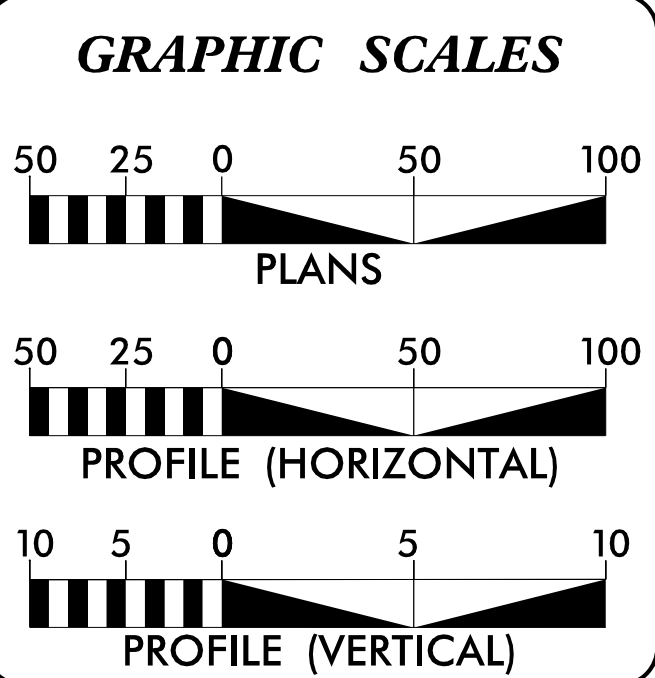
LOCATION: NC 55 FROM NC 210 TO SR 4809 (JICARILLA LANE)  
TYPE OF WORK: UTILITY RELOCATION WATER AND SEWER



**TIP PROJECT: R-5705B**



**CONTRACT:**



SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A TO UC-3H	DETAILS
UC-4 TO UC-13	WATER LINE PLAN SHEETS
UC-14 TO UC-19	WATER LINE PROFILE SHEETS
UC-20 TO UC-23	SEWER LINE PLAN SHEETS
UC-24 TO UC-25	SEWER LINE PROFILE SHEETS

WATER AND SEWER OWNERS ON PROJECT	
TOWN OF ANGIER	-WATER LINE, SANITARY GRAVITY SEWER AND FORCE MAIN SEWER RELOCATIONS
TOWN OF FUQUAY-VARINA	-WATER LINE RELOCATION
HARNETT REGIONAL WATER	-WATER LINE RELOCATION

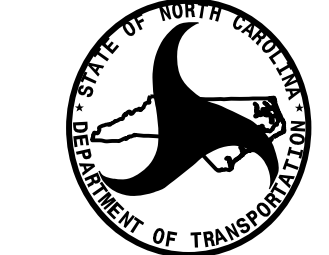
PREPARED IN THE OFFICE OF:



Engineers • Planners • Scientists • Construction Managers  
4505 Falls of Neuse Road, Suite 400  
Raleigh, NC 27609  
Phone (919) 783-9214 • Fax (919) 783-9266  
License No. C-764

MARCO MENENDEZ, PE PROJECT MANAGER  
TUCKER MARTIN, PE PROJECT ENGINEER  
CHARLES SHEARON, EI PROJECT DESIGNER

SEAL



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

NABIL HAMDAN UTILITIES REGIONAL ENGINEER  
KELVIN MARTIN, EI UTILITIES ENGINEER  
TANGA SAMPSON UTILITIES AREA COORDINATOR  
KELVIN MARTIN, EI UTILITIES COORDINATOR

DOCUMENT NOT CONSIDERED FINAL  
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STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITIES PLAN SHEET SYMBOLS

## PROPOSED WATER SYMBOLS

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

## PROPOSED 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) \_\_\_\_\_

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 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 WATER AND SEWER UTILITIES BELONG TO THE TOWN OF ANGIER, TOWN OF FUQUAY-VARINA, AND HARNETT REGIONAL WATER.
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:

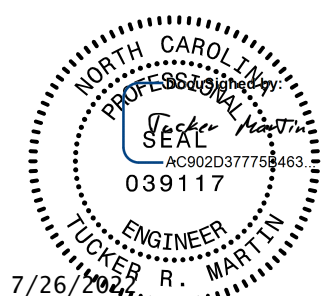
1. CONTRACTOR SHALL HAVE A PRECONSTRUCTION MEETING WITH THE TOWN OF ANGIER, HARNETT REGIONAL WATER, AND THE TOWN OF FUQUAY-VARINA. TO PLAN AND COORDINATE ANY WATER AND SEWER SHUTDOWNS NECESSARY FOR CONSTRUCTION. CONTACT FOR EACH UTILITY OWNER IS LISTED IN THE PROJECT SPECIAL PROVISIONS. EACH UC SHEET HAS THE UTILITY OWNER LISTED AT THE TOP.
2. CONTRACTOR SHALL MAINTAIN CONTINUOUS WATER AND SEWER SERVICE DURING CONSTRUCTION UNLESS APPROVED BY THE UTILITY OWNERS.
3. ALL PROPOSED 20-INCH WATER MAINS WILL BE DUCTILE IRON PC 250 WITH RESTRAINED JOINTS.
4. ALL PROPOSED 12-INCH AND SMALLER WATER MAIN AND SEWER FORCE MAIN SHALL BE DR 18 C900 PVC UNLESS OTHERWISE NOTED IN THE PLANS AND DETAILS.
5. ALL SANITARY GRAVITY SEWER SHALL BE CLASS 50 DUCTILE IRON PIPE.
6. ALL WATER LINE AND SEWER FORCE MAIN PIPE JOINTS AT FITTINGS AND VALVES SHALL BE RESTRAINED WITH RESTRAINED JOINTS AND THRUST BLOCKING AS SHOWN IN THE STANDARD DETAILS.
7. WHERE CONNECTING TO EXISTING PIPELINES, CONTRACTOR SHALL REMOVE EXISTING PIPELINE AS NECESSARY TO CONNECT THE PROPOSED PIPELINE.
8. FOR HARNETT REGIONAL WATER OWNED WATER MAINS CONTRACTOR SHALL SUBMIT FIELD REPORTS TO HARNETT REGIONAL WATER AFTER EACH INSPECTION IS MADE.
9. FOR HARNETT REGIONAL WATER OWNED WATER MAINS ANY FIELD CHANGE ORDERS DURING CONSTRUCTION SHALL BE PROPERLY DOCUMENTED IN THE AS-BUILT DRAWINGS. AS-BUILT DRAWINGS SHALL INCLUDE ALL LOT NUMBERS, WATER VALVES, VALVE MARKERS, WATER METER SETTERS, AND FIRE HYDRANTS AS INSTALLED BY THE CONTRACTOR.

10. 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 ALL TRENCHLESS CROSSINGS DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVERS, WETLANDS, OR BUFFER ZONES.

PROJECT REFERENCE NO. <i>R-5705B</i>	SHEET NO. <i>UC-3</i>
DESIGNED BY: <i>CS</i>	
DRAWN BY: <i>CS</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	
KCI <small>Engineers • Planners • Scientists • Construction Managers</small> 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

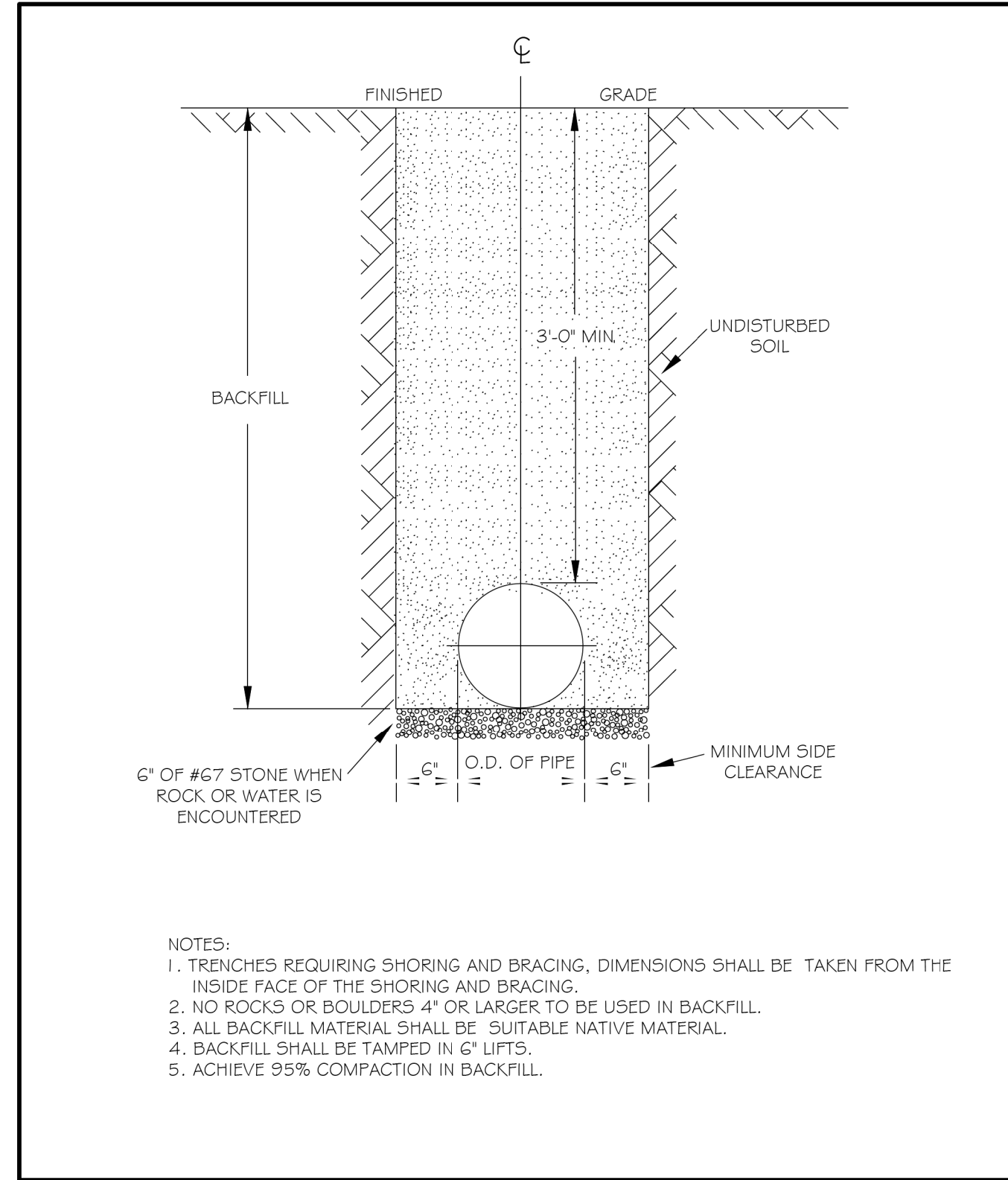
**UTILITY CONSTRUCTION**  
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

# WATER DETAILS (TOWN OF ANGIER)

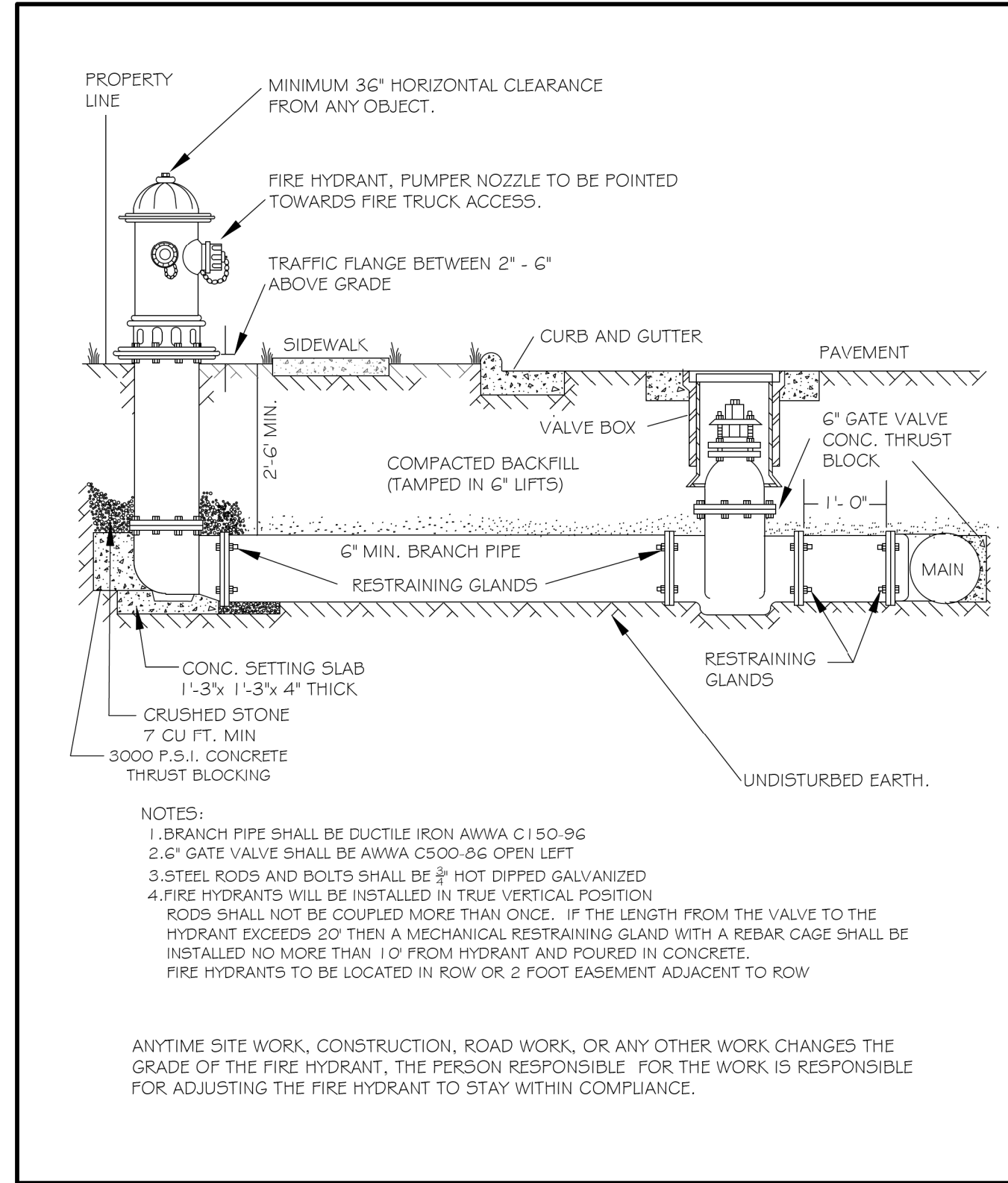
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DESIGNED BY: <i>CS</i>	
DRAWN BY: <i>CS</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	
	
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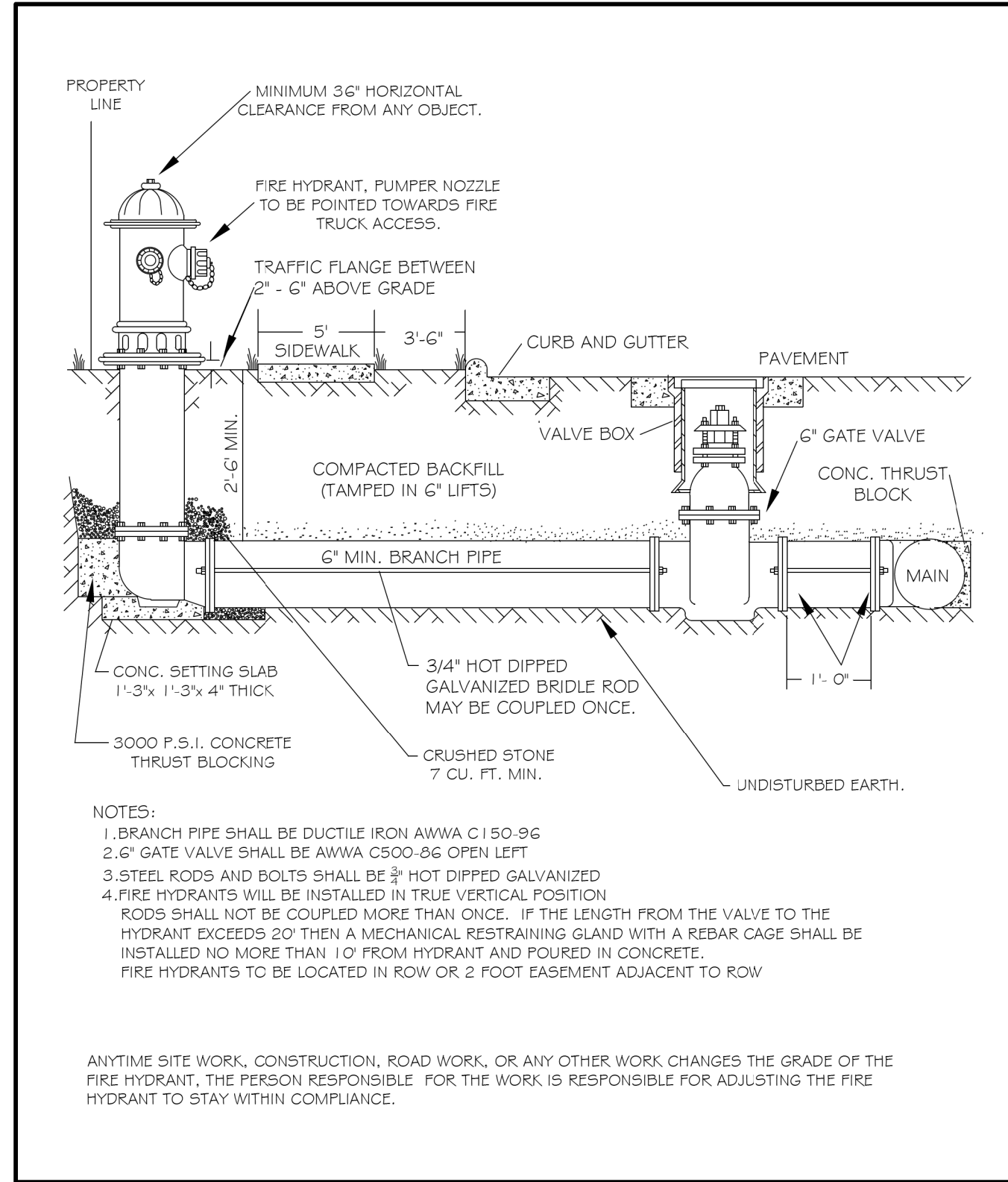
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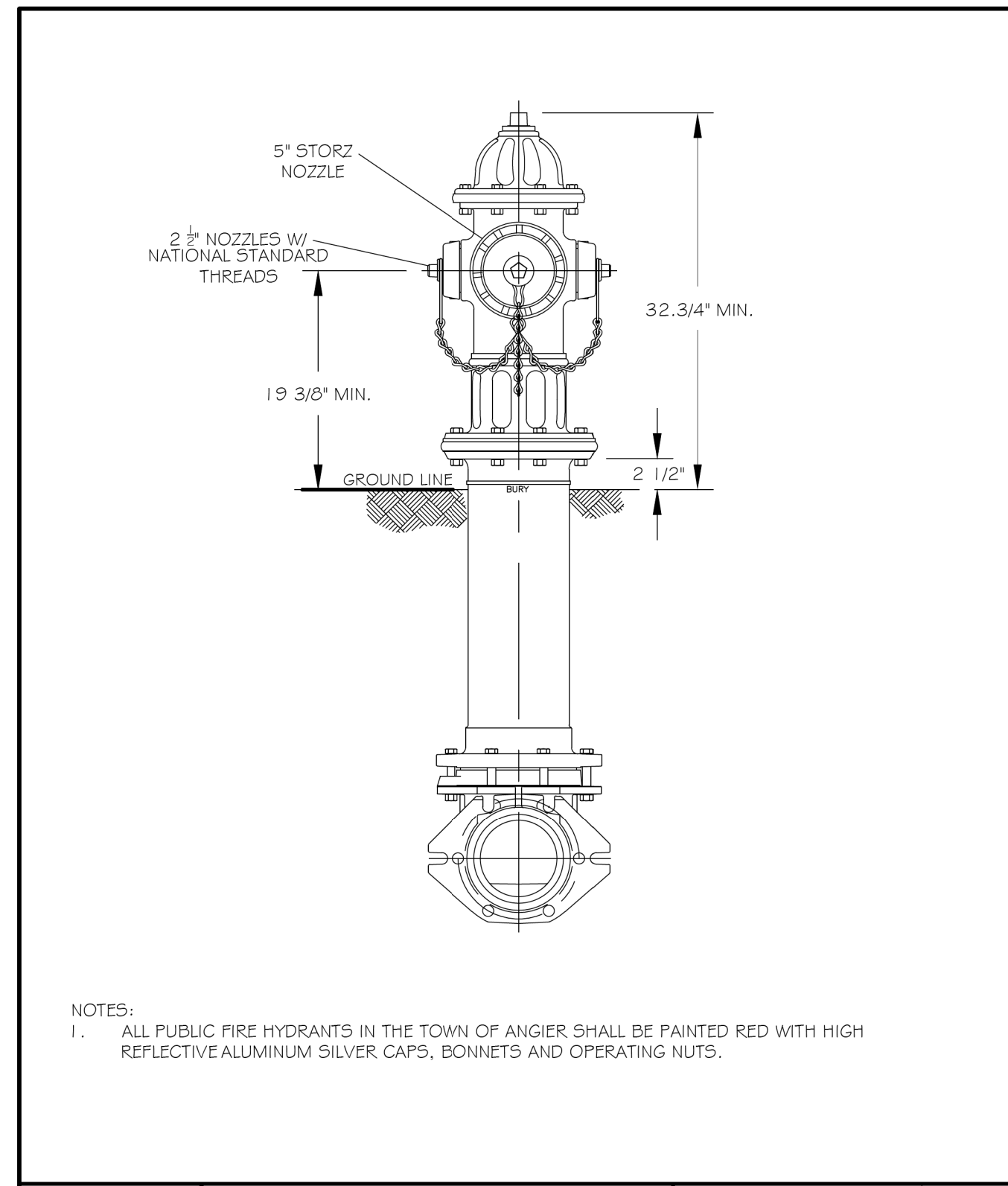
	<b>TRENCH BOTTOM DIMENSIONS &amp; BACKFILL (DUCTILE IRON)</b>	NOT TO SCALE	DATE: 5/20/21	REVISIONS
	<b>W-3</b>			




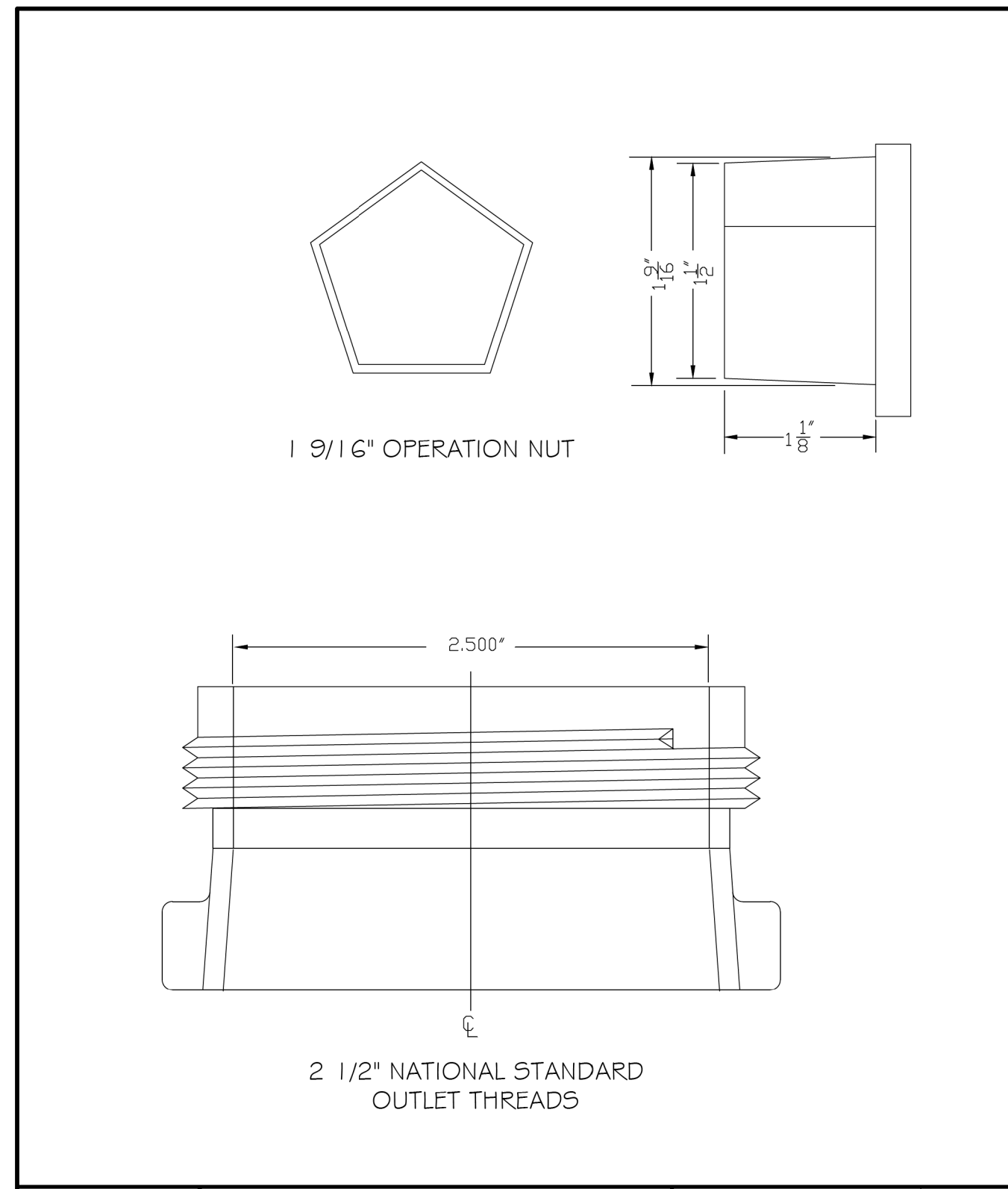
	<b>STANDARD FIRE HYDRANT INSTALLATION (RESTRAINED JOINT)</b>	NOT TO SCALE	DATE: 5/20/21	REVISIONS
	<b>W-4</b>			



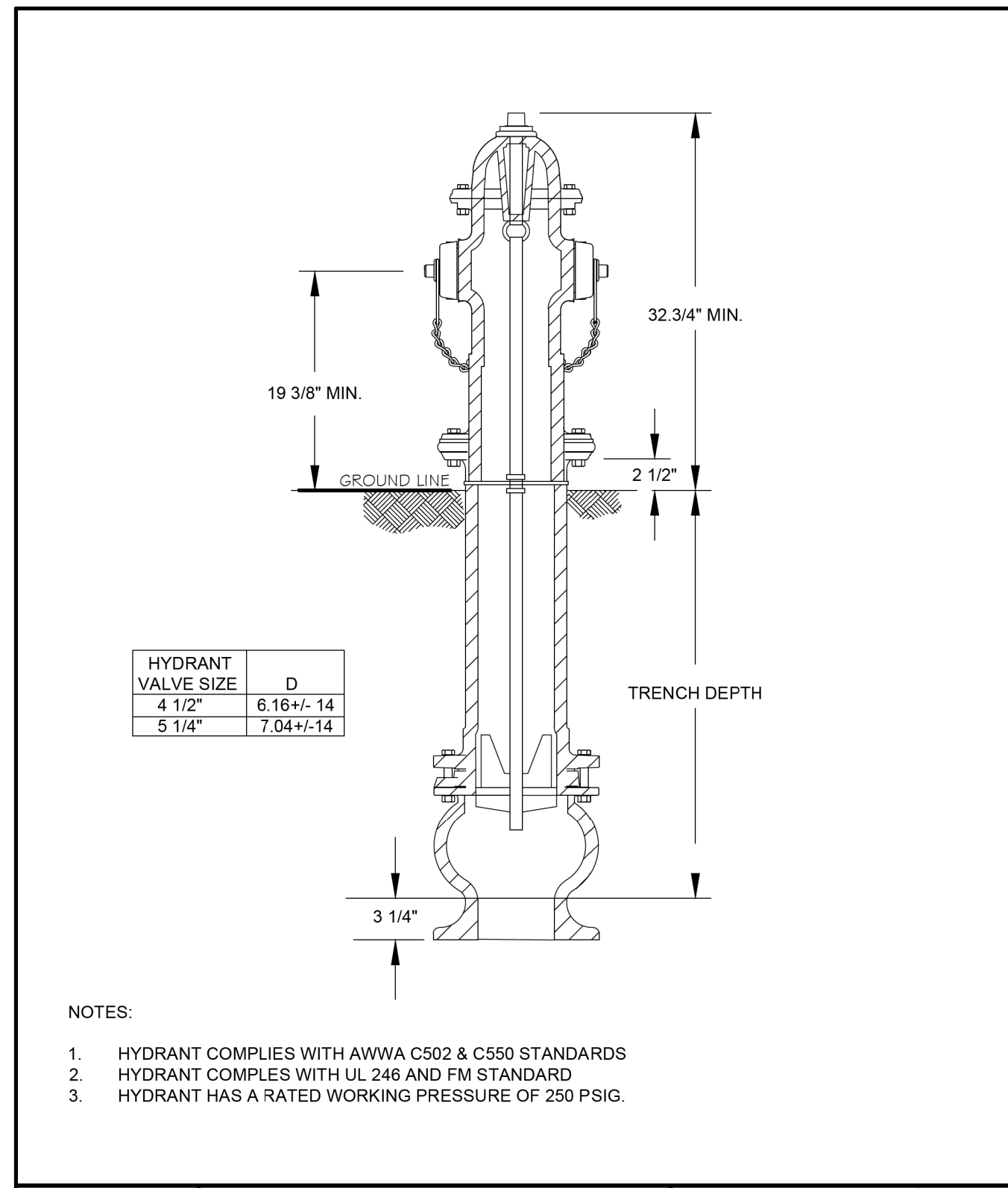
	<b>STANDARD FIRE HYDRANT INSTALLATION (RODDING)</b>	NOT TO SCALE	DATE: 5/20/21	REVISIONS
	<b>W-4A</b>			




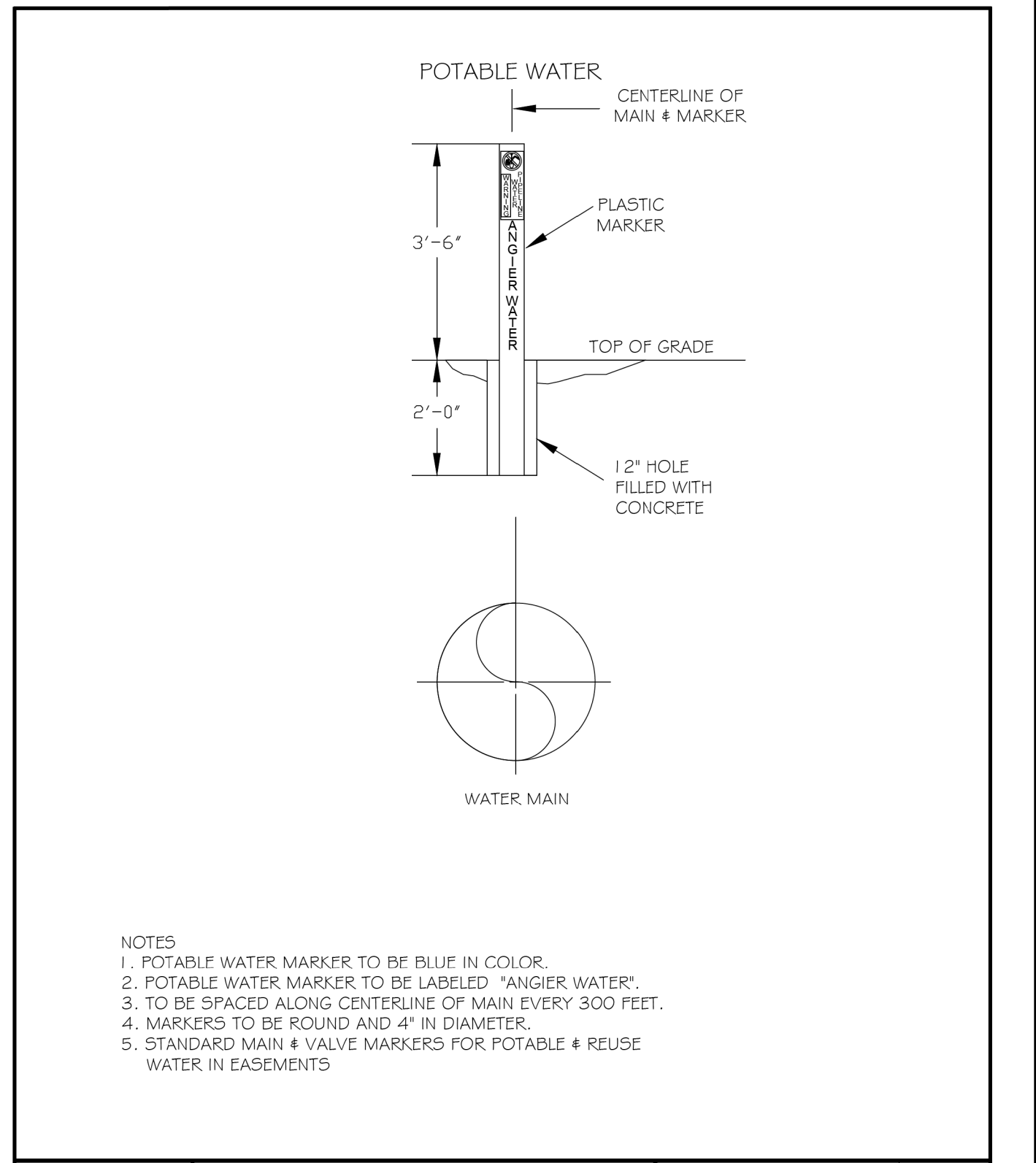
	<b>STANDARD FIRE HYDRANT 5" STORZ PUMPER NOZZLE</b>	NOT TO SCALE	DATE: 5/20/21	REVISIONS
	<b>W-5</b>			



	<b>STANDARD FIRE HYDRANT OPERATING NUT &amp; 2.5" OUTLET THREADS</b>	NOT TO SCALE	DATE: 5/20/21	REVISIONS
	<b>W-6</b>			



	<b>VERTICAL SHOE HYDRANT</b>	NOT TO SCALE	DATE: 5/20/21	REVISIONS
	<b>W-7</b>			



	<b>POTABLE WATER MARKER</b>	NOT TO SCALE	DATE: 5/20/21	REVISIONS
	<b>W-8</b>			

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# WATER DETAILS (TOWN OF ANGIER)

PROJECT REFERENCE NO. <i>R-5705B</i>	SHEET NO. <i>UC-3B</i>
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UTILITY CONSTRUCTION

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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	MODERATELY DRY CLAY - 400 LB/SF <sup>2</sup>	SOFT CLAY - 2000 LB/SF <sup>2</sup>	GRAVEL / COARSE SAND - 1600 LB/SF <sup>2</sup>	DRY CLAY - ALWAYS DRY - 800 LB/SF <sup>2</sup>	SAND - ALWAYS DRY - 800 LB/SF <sup>2</sup>	SAND - CLEAN DRY - 4000 LB/SF <sup>2</sup>	30% QUICKSAND - VERY POOR	ROCK - FLOOR - 10,000 LB/SF <sup>2</sup>
<b>6"</b>									
11 1/4°	1,108	1	1	1	1	1	2	1	
22 1/2°	2,207	1	2	2	1	1	3	1	
45°	4,326	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	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	10,053	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.

<b>ANGIER</b>	<b>THRUST BLOCKING QUANTITY TABLE 1</b>	<b>W-12</b>

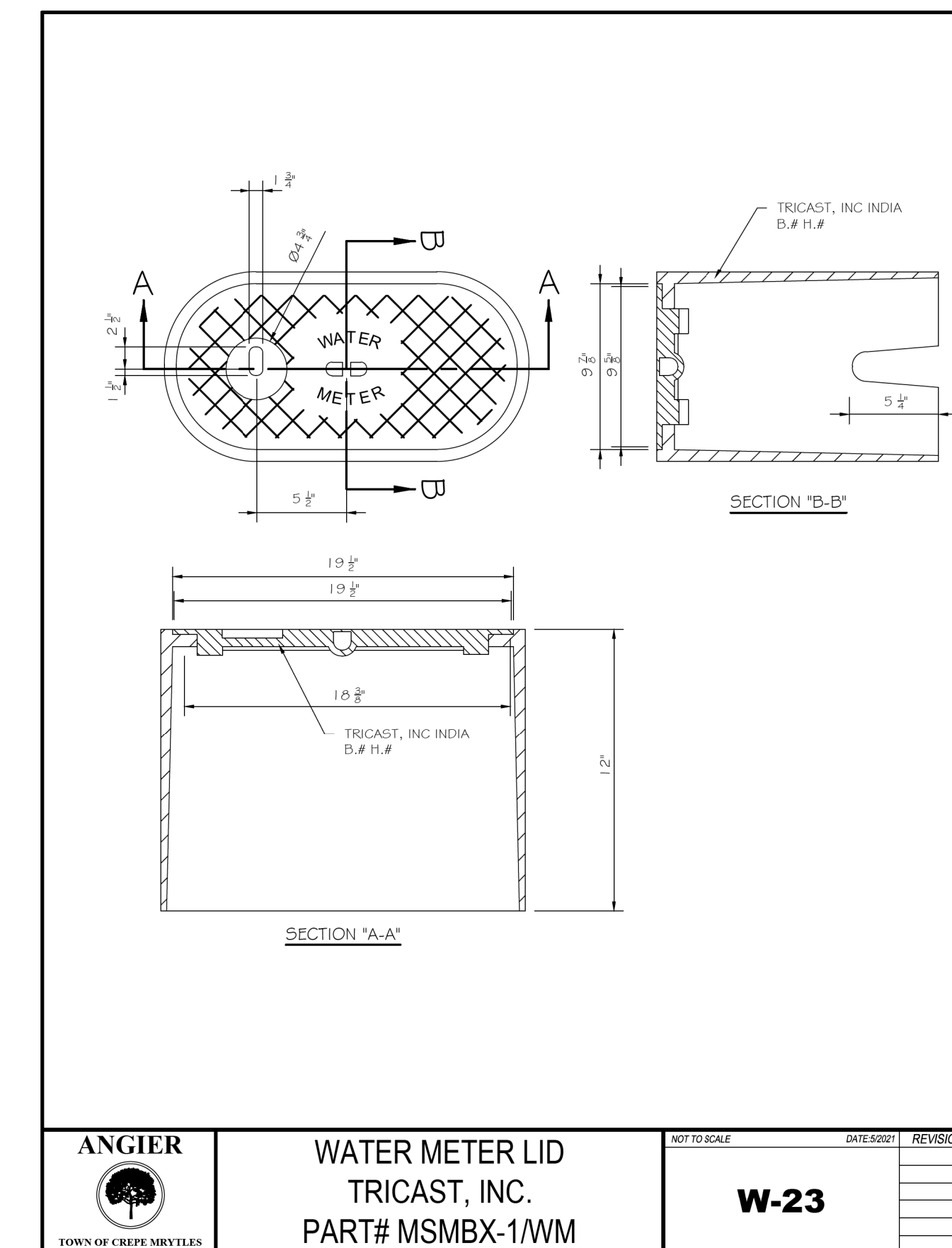
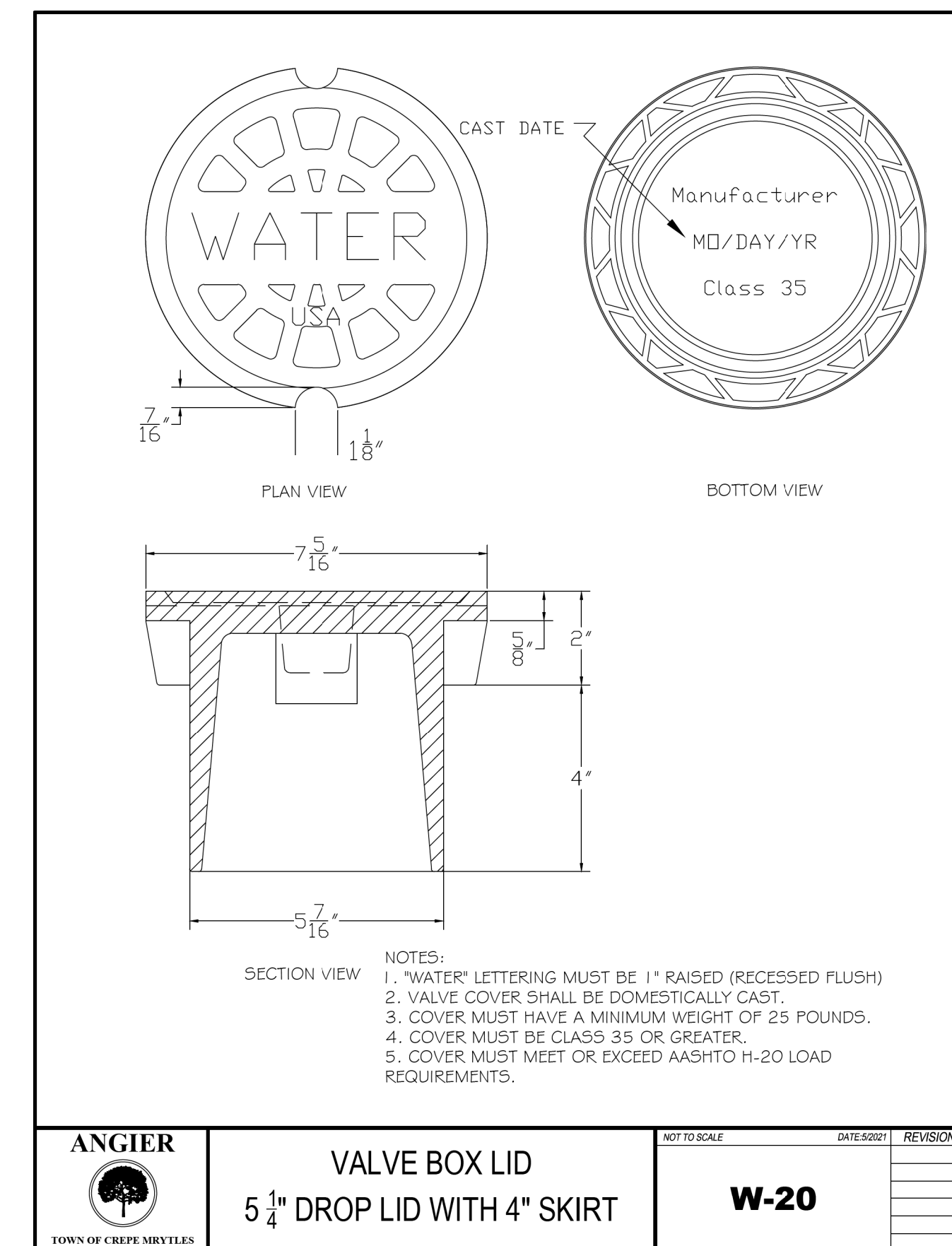
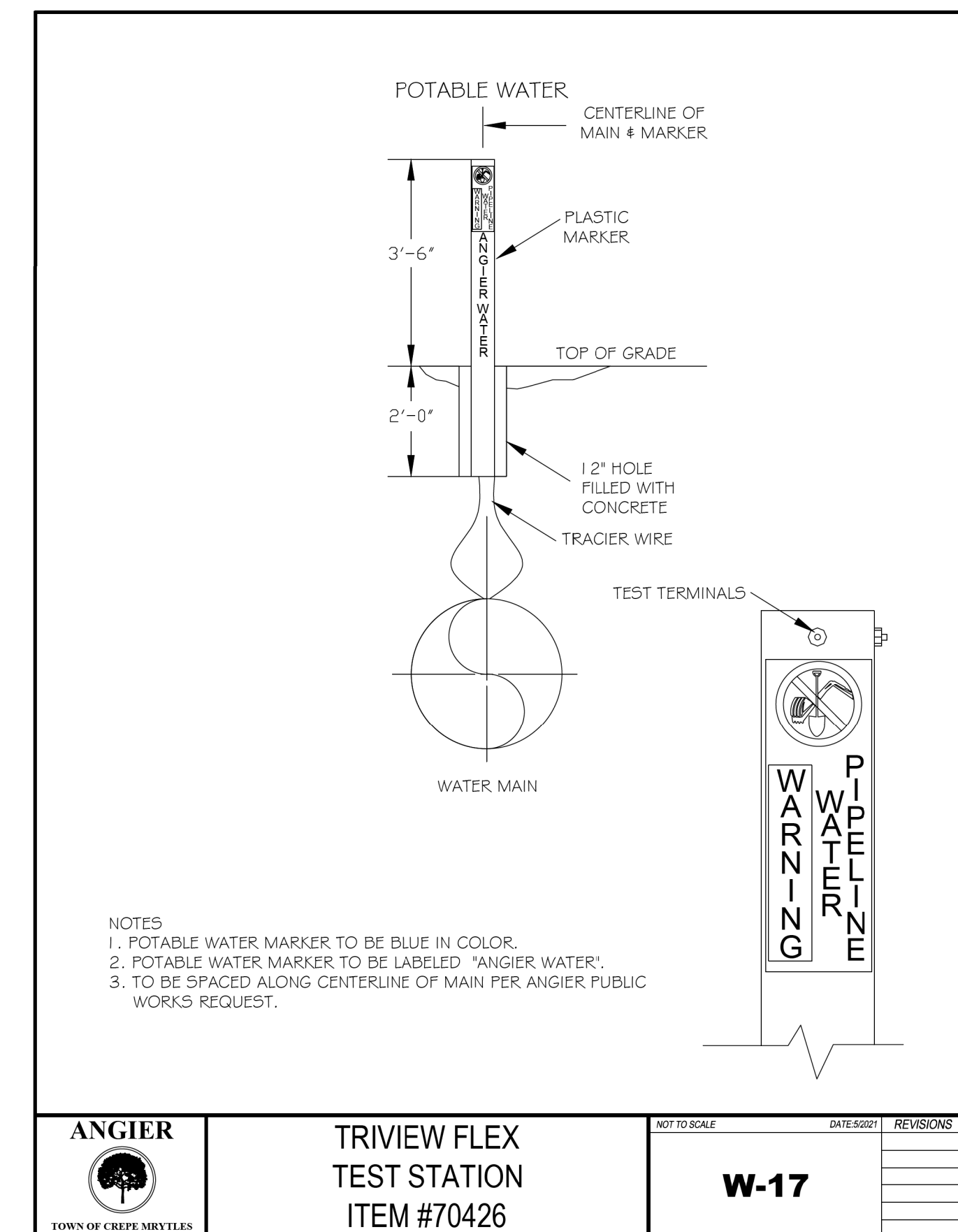
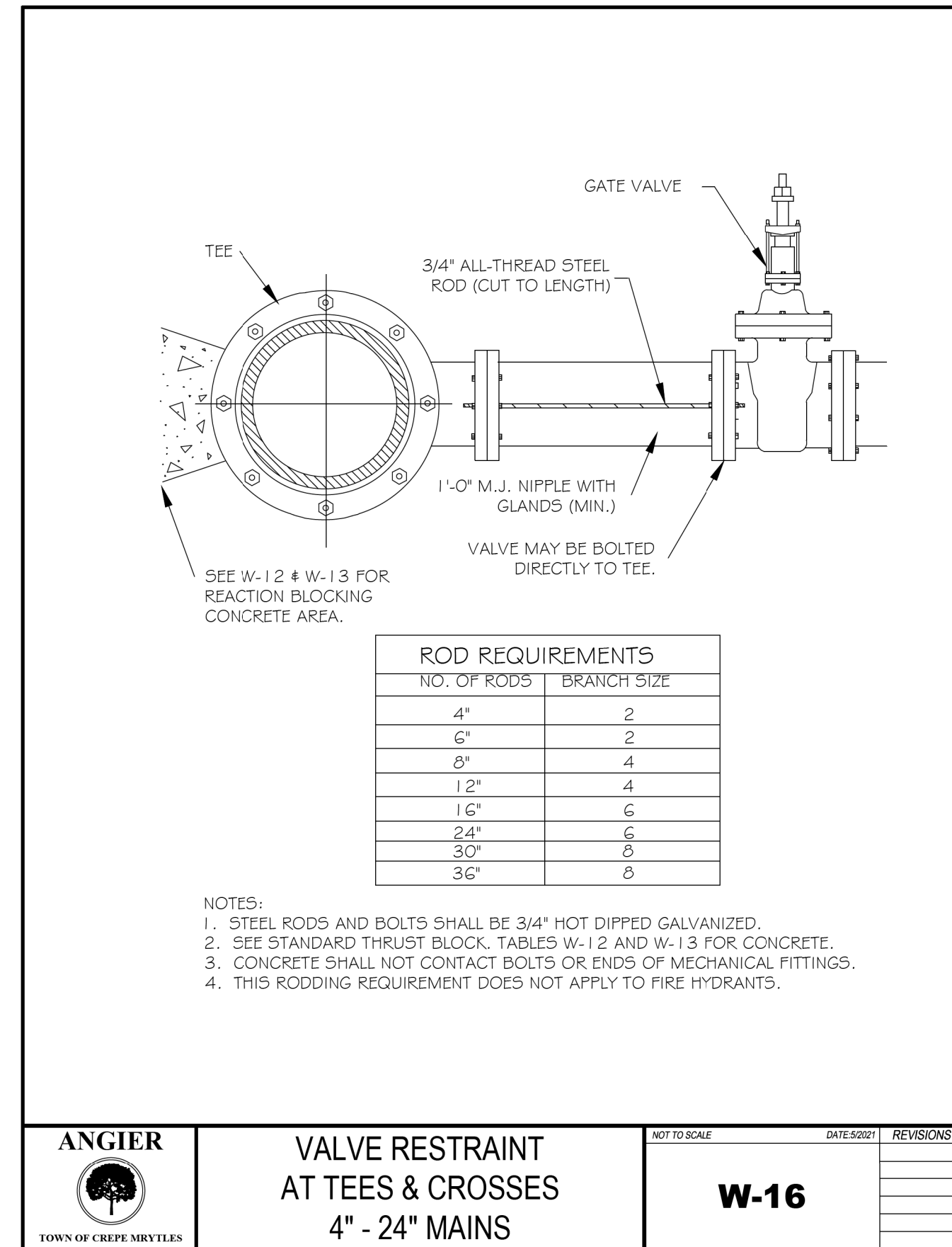
REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS  
BASED ON TEST PRESSURE OF 200 P.S.I.

ALL AREAS GIVEN IN SQUARE FEET.

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY - 400 LB/SF <sup>2</sup>	SOFT CLAY - 2000 LB/SF <sup>2</sup>	GRAVEL / COARSE SAND - 1600 LB/SF <sup>2</sup>	DRY CLAY - ALWAYS DRY - 800 LB/SF <sup>2</sup>	SAND - ALWAYS DRY - 800 LB/SF <sup>2</sup>	SAND - CLEAN DRY - 4000 LB/SF <sup>2</sup>	30% QUICKSAND - VERY POOR	ROCK - FLOOR - 10,000 LB/SF <sup>2</sup>
<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°	199,900	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°	287,855	72	144	172	36	36	72	288	29
PLUG	203,575	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

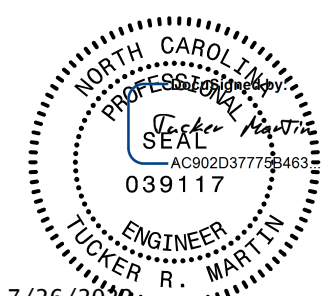
REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.  
 USE 6" - 90° BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.


<b>ANGIER</b>	<b>THRUST BLOCKING QUANTITY TABLE 2</b>	<b>W-13</b>



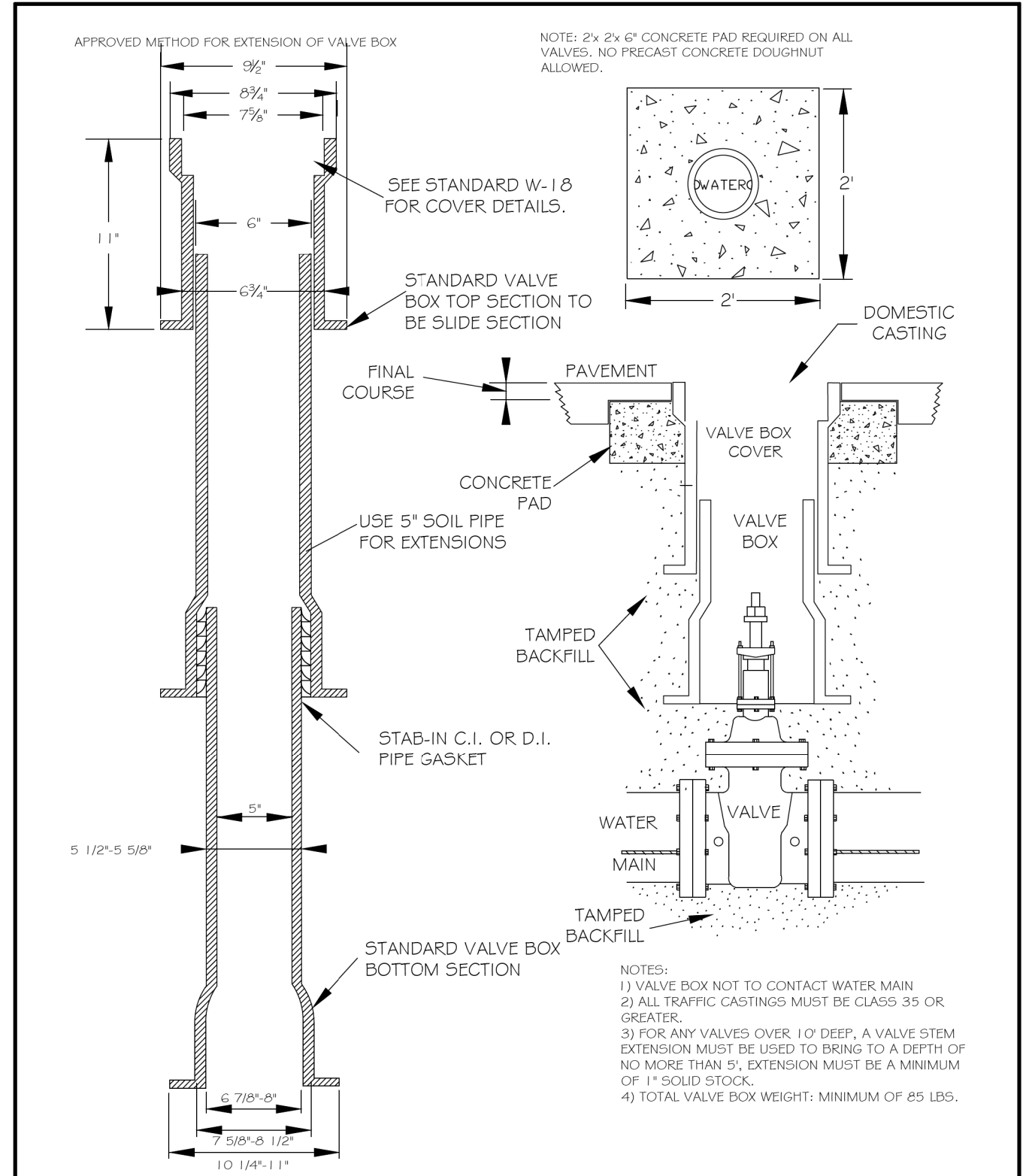
8/17/99  
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# WATER DETAILS (TOWN OF ANGIER)

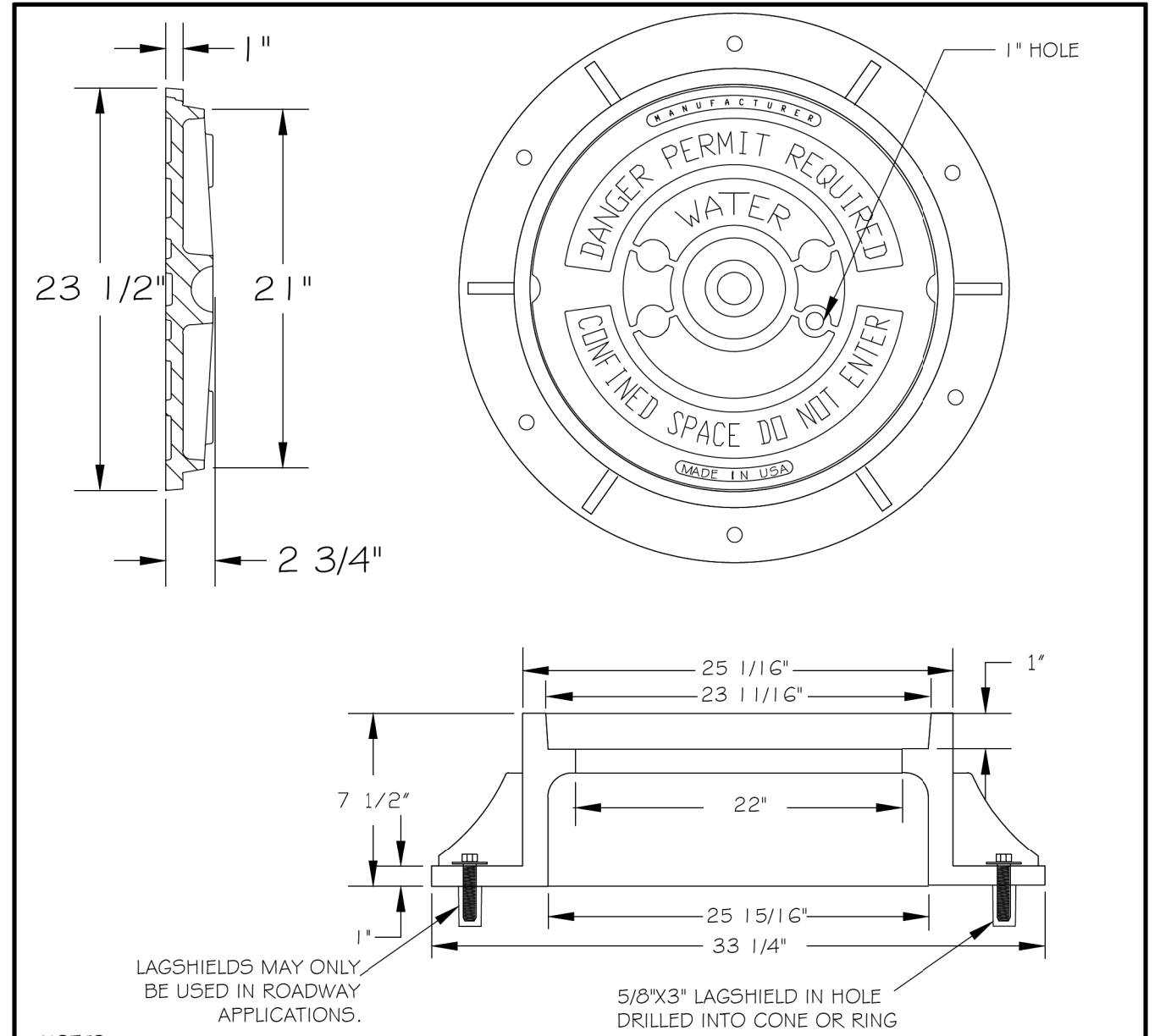
PROJECT REFERENCE NO. <i>R-5705B</i>	SHEET NO. <i>UC-3C</i>
DRAWN BY: <i>CS</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	
	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 7/26/2022	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY


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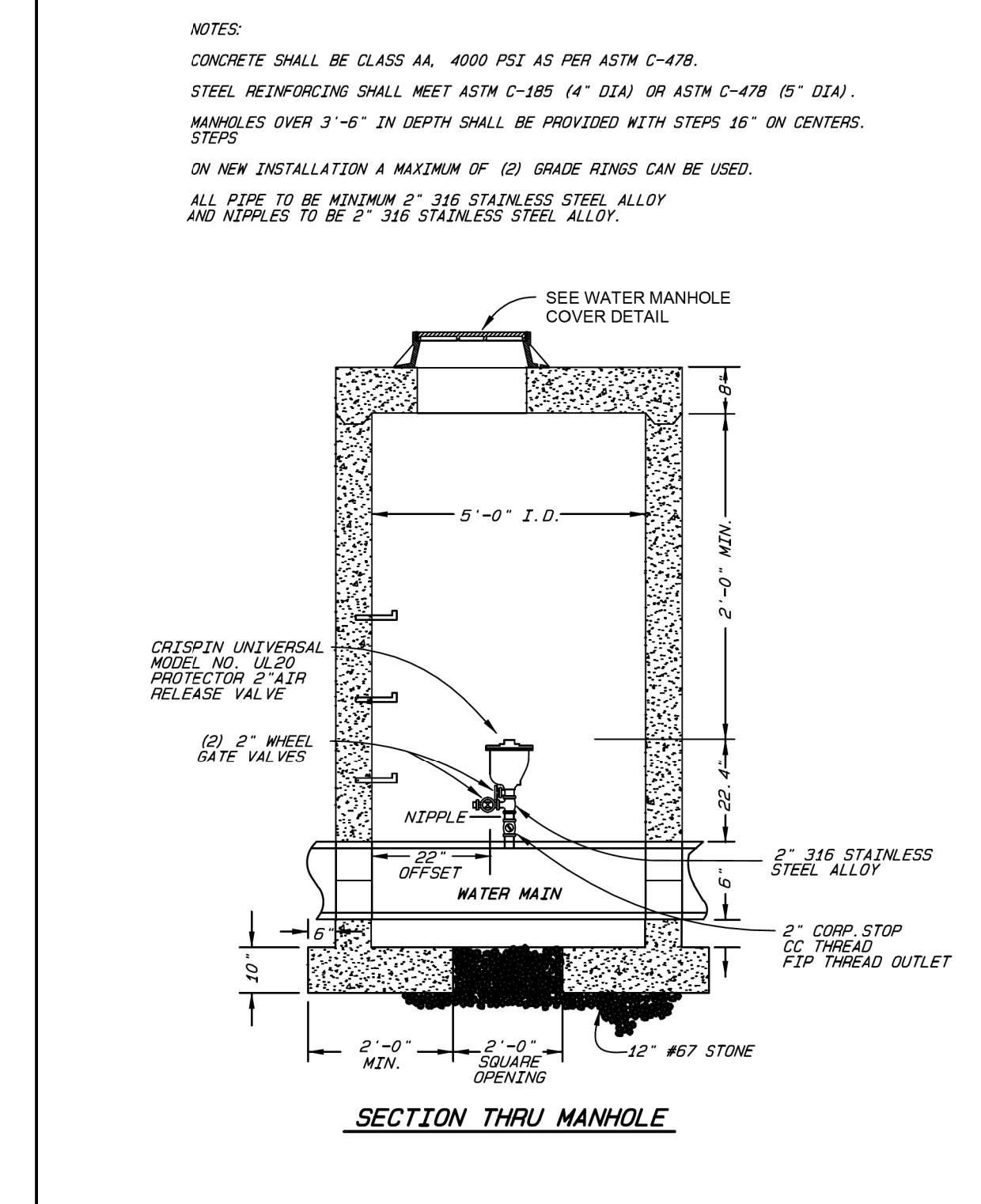
UTILITY CONSTRUCTION  
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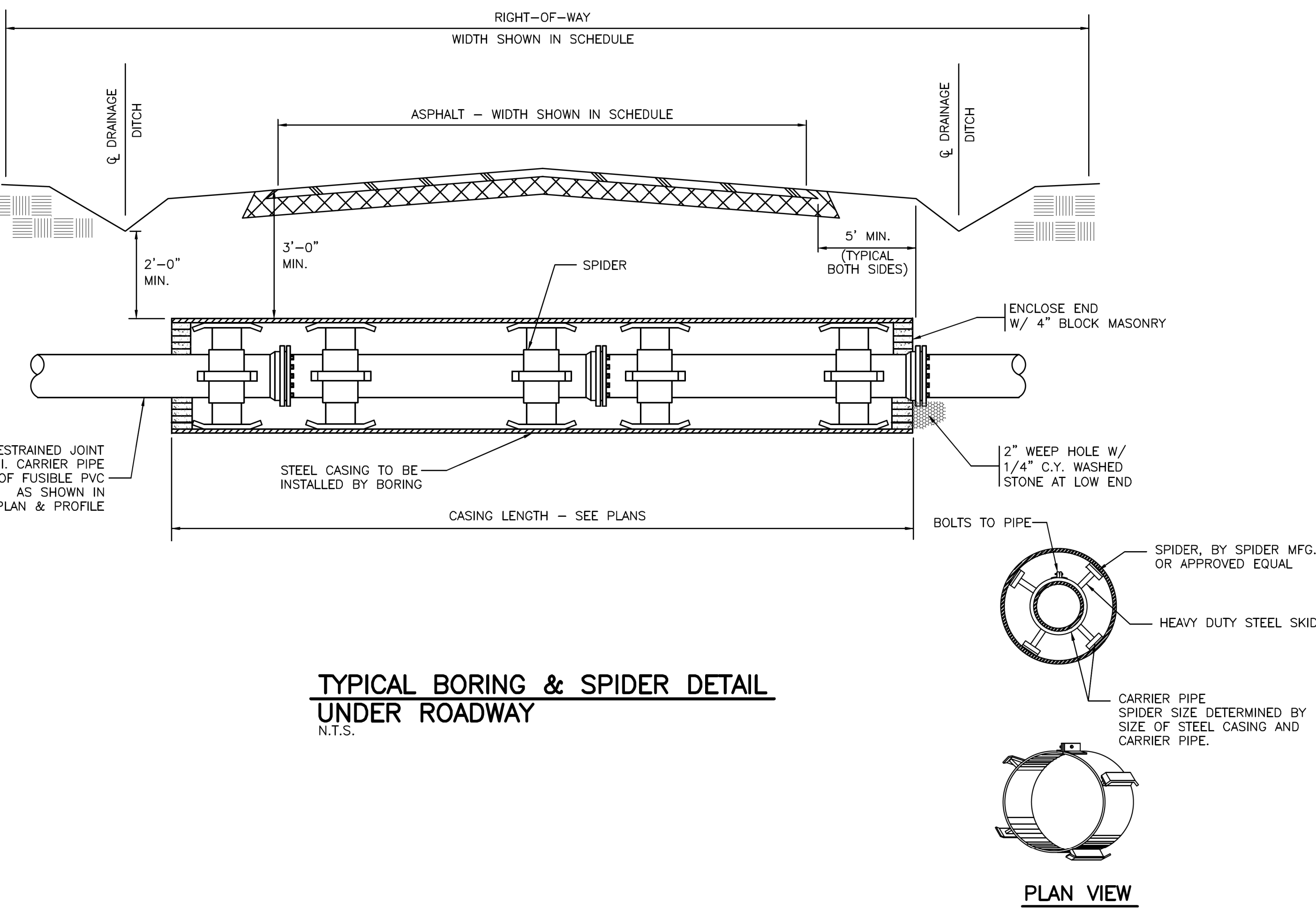
<b>ANGIER</b> <small>TOWN OF CREPE MYRTLES</small>	<b>VALVE BOX INSTALLATION &amp; EXTENSION</b>	NOT TO SCALE	DATE: 5/20/21	REVISIONS
	<b>W-35</b>			



<b>ANGIER</b> <small>TOWN OF CREPE MYRTLES</small>	<b>WATER MANHOLE COVER</b>	NOT TO SCALE	DATE: 5/20/21	REVISIONS
	<b>W-21</b>			



<b>ANGIER</b> <small>TOWN OF CREPE MYRTLES</small>	<b>AIR RELEASE VALVE AND ASSEMBLY WITH MANHOLE</b>	NOT TO SCALE	DATE: 5/20/21	REVISIONS



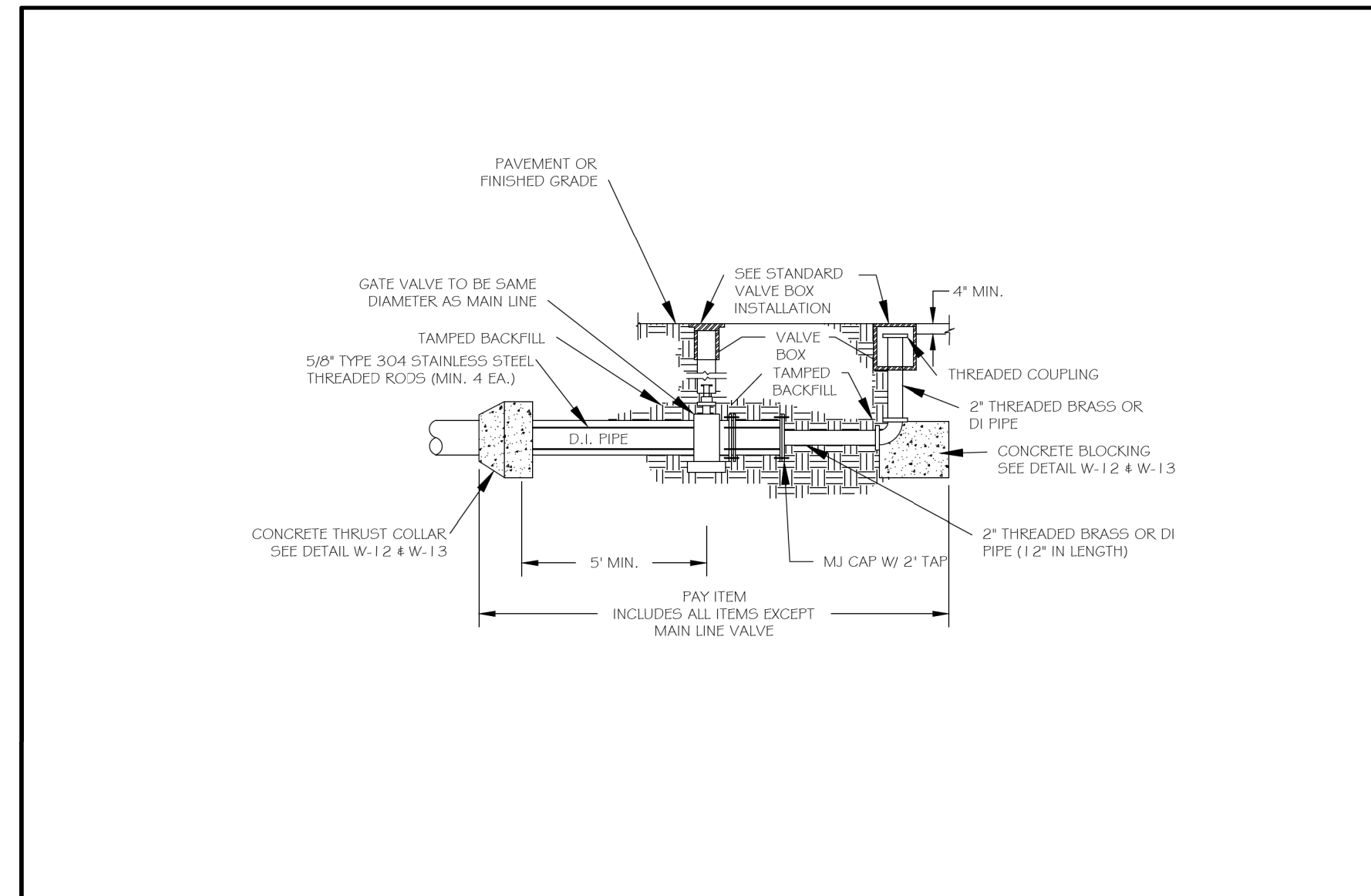
8/17/99  
 25 JUL 2022 10:26 AM R-5705 AB&C\R-5705B\Water and Wastewater\R-5705B\_ut\_dtl\_UC03A\_psh.dgn  
 \$\$\$\$ USER NAME

# WATER DETAILS (TOWN OF ANGIER)

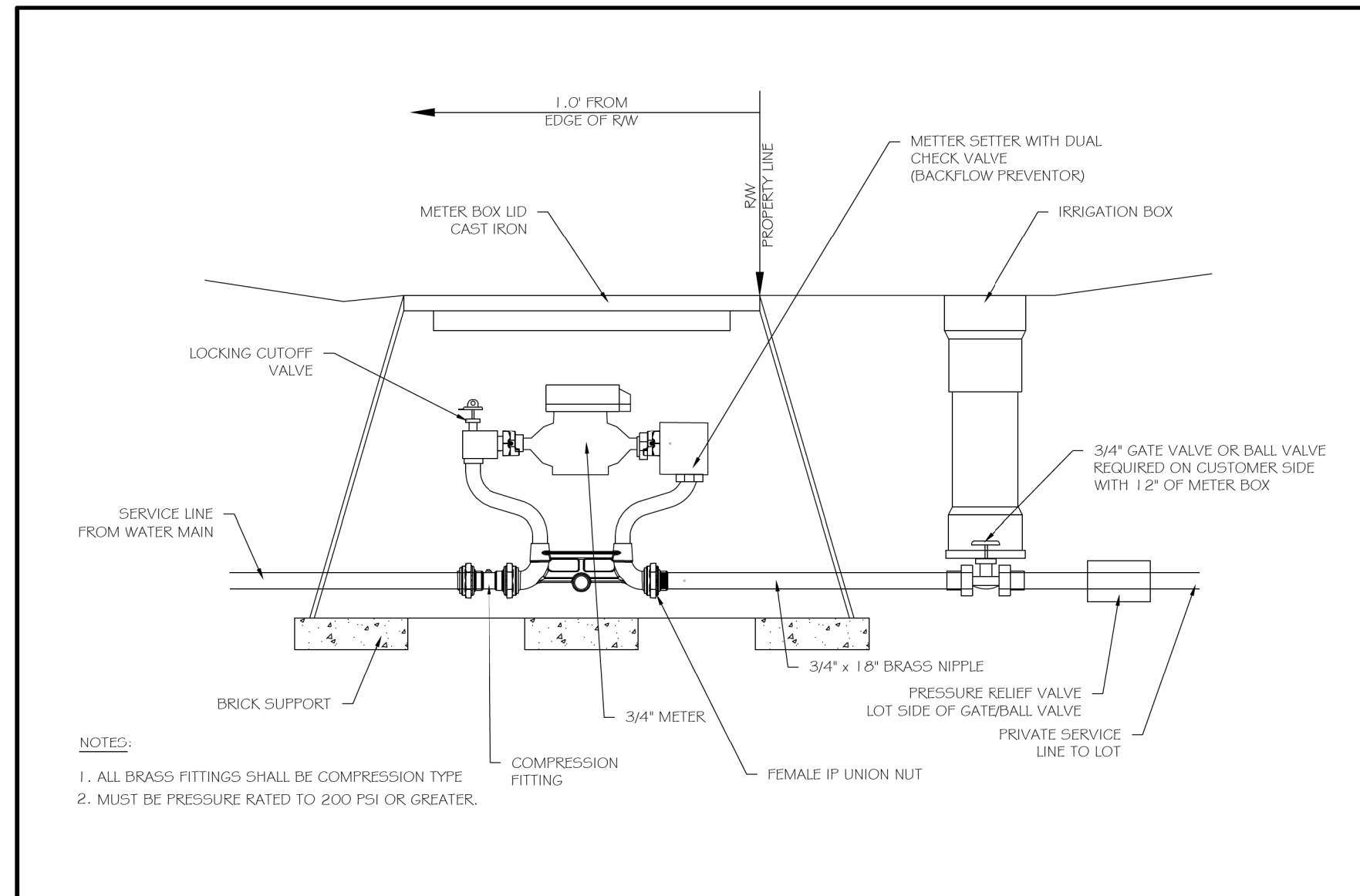
PROJECT REFERENCE NO. <i>R-5705B</i>	SHEET NO. <i>UC-3D</i>
DESIGNED BY: <i>CS</i>	
DRAWN BY: <i>CS</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 7/26/2022	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

**KCI** Engineers • Planners • Scientists • Construction Managers  
4505 Falls of Neuse Road, Suite 400  
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<b>ANGIER</b> <small>TOWN OF CREPE MYRTLES</small>	<b>TEMPORARY 2" BLOW-OFF ASSEMBLY</b>	NOT TO SCALE	DATE: 5/20/11	REVISIONS
	<b>W-19</b>			



<b>ANGIER</b> <small>TOWN OF CREPE MYRTLES</small>	<b>3/4" WATER METER SETTER INSTALLATION</b>	NOT TO SCALE	DATE: 5/20/11	REVISIONS
	<b>W-22</b>			

L=MINIMUM LENGTH TO BE RESTRAINED ON EACH SIDE OF FITTING (FEET)

NOMINAL PIPE SIZE (INCHES)	11	1 1/4"	HORIZONTAL ELBOW	22	1/2"	HORIZONTAL ELBOW	45"	HORIZONTAL ELBOW	90"	HORIZONTAL ELBOW	HORIZONTAL TEES	HORIZONTAL PLUGS & VALVES	45° VERTICAL OFFSET UPPER LENGTH	45° VERTICAL OFFSET LOWER LENGTH	22 1/2" VERTICAL OFFSET UPPER LENGTH	22 1/2" VERTICAL OFFSET LOWER LENGTH
4	5	11	21	51	20 - RUN	27 - BRANCH	117	49	8	24	4					
6	7	15	30	71	20 - RUN	64 - BRANCH	164	68	11	33	6					
8	10	19	39	93	20 - RUN	103 - BRANCH	215	89	15	43	7					
12	13	26	54	129	20 - RUN	171 - BRANCH	303	126	21	61	10					
16	17	33	68	164	20 - RUN	236 - BRANCH	388	161	27	78	13					
20	20	39	82	196	20 - RUN	300 - BRANCH	469	195	33	94	16					

NOMINAL PIPE SIZE (INCHES)	REDUCED PIPE SIZE (INCHES)				
	4	6	8	12	16
6	85				
8	154	90			
12	263	220	161		
16	359	327	283	165	
20	446	421	387	294	165

NOTES

- TABLE ASSUMPTIONS: PVC PIPE, SAFETY FACTOR = 2.0, TEST PRESSURE = 250 PSI, SOIL = MH OR ML, 3 FT. BURY DEPTH TO TOP OF PIPE, TRENCH TYPE 3, BRANCH ON TEE IS THE SAME SIZE OF RUN OF TEE SIZE AND 20 FEET OF PIPE IS INSTALLED PAST THE TEE ON THE RUN SIDE, VERTICAL OFFSETS ARE 3 FEET DEEP ON TOP AND 8 FEET DEEP ON BOTTOM, REDUCERS ARE CALCULATED FOR ONE SIZE REDUCTION. OTHER CONDITIONS WILL REQUIRE ADDITIONAL CALCULATIONS.
- ALL FITTINGS MUST BE RESTRAINED. ONE OF THE FOLLOWING METHODS MAY BE USED:
  - MECHANICAL RESTRAINTS AT FITTING AND AT ADJACENT JOINTS TO A LENGTH AS SPECIFIED IN CHART.
  - TIE RODS AT FITTING AND THROUGH JOINTS TO A LENGTH AS SPECIFIED IN CHART.
- VALVE RESTRAINTS SHALL BE RESTRAINED THE SAME DISTANCE AS HORIZONTAL PLUGS.

**MECHANICAL RESTRAINT LENGTHS**

22-JUL-2022 10:14:53 AM R-5705 AB&C\R-5705B\Water and Wastewater\R-5705B\_ut\_dt\_LUC03A\_psh.dgn  
 8/17/99  
 \$\$\$\$USERNAME\$\$\$\$

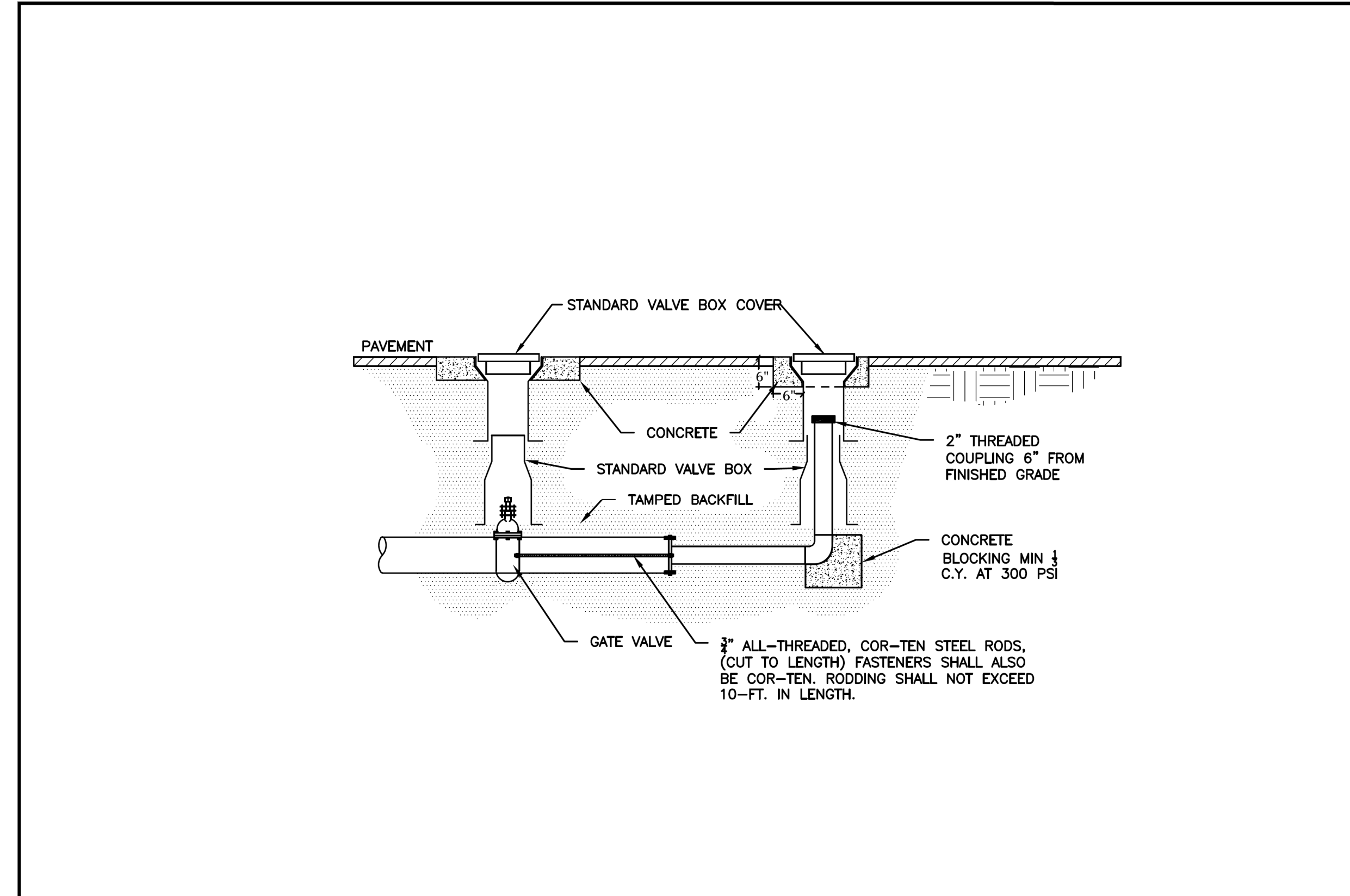


# WATER DETAILS (TOWN OF FUQUAY VARINA)

PROJECT REFERENCE NO. <i>R-5705B</i>	SHEET NO. <i>UC-3E</i>
DESIGNED BY: <i>CS</i>	
DRAWN BY: <i>CS</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	7/26/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

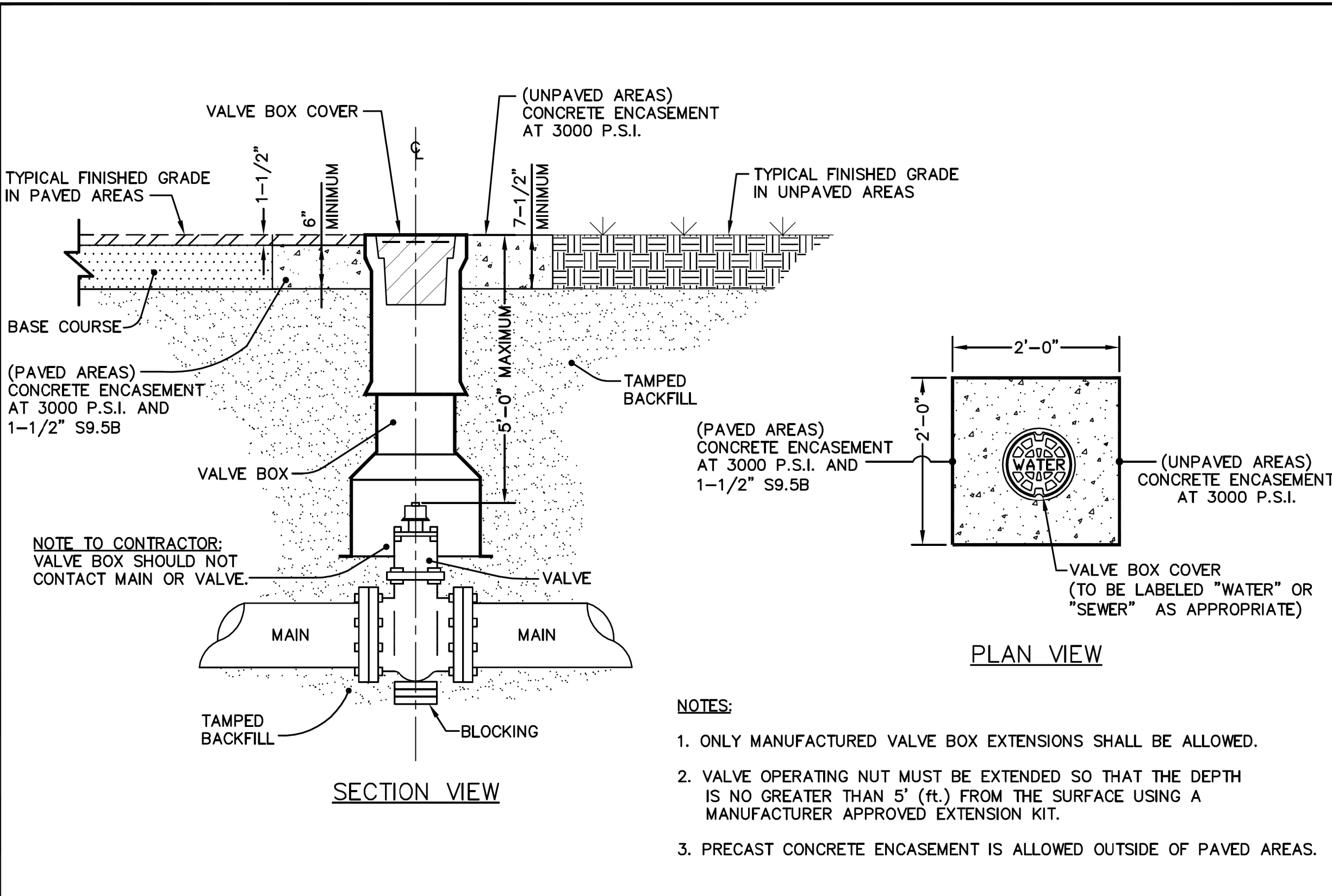
**KCI** Engineers • Planners • Scientists • Construction Managers  
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 Raleigh, NC 27609  
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**UTILITY CONSTRUCTION**  
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 UNLESS ALL SIGNATURES COMPLETED



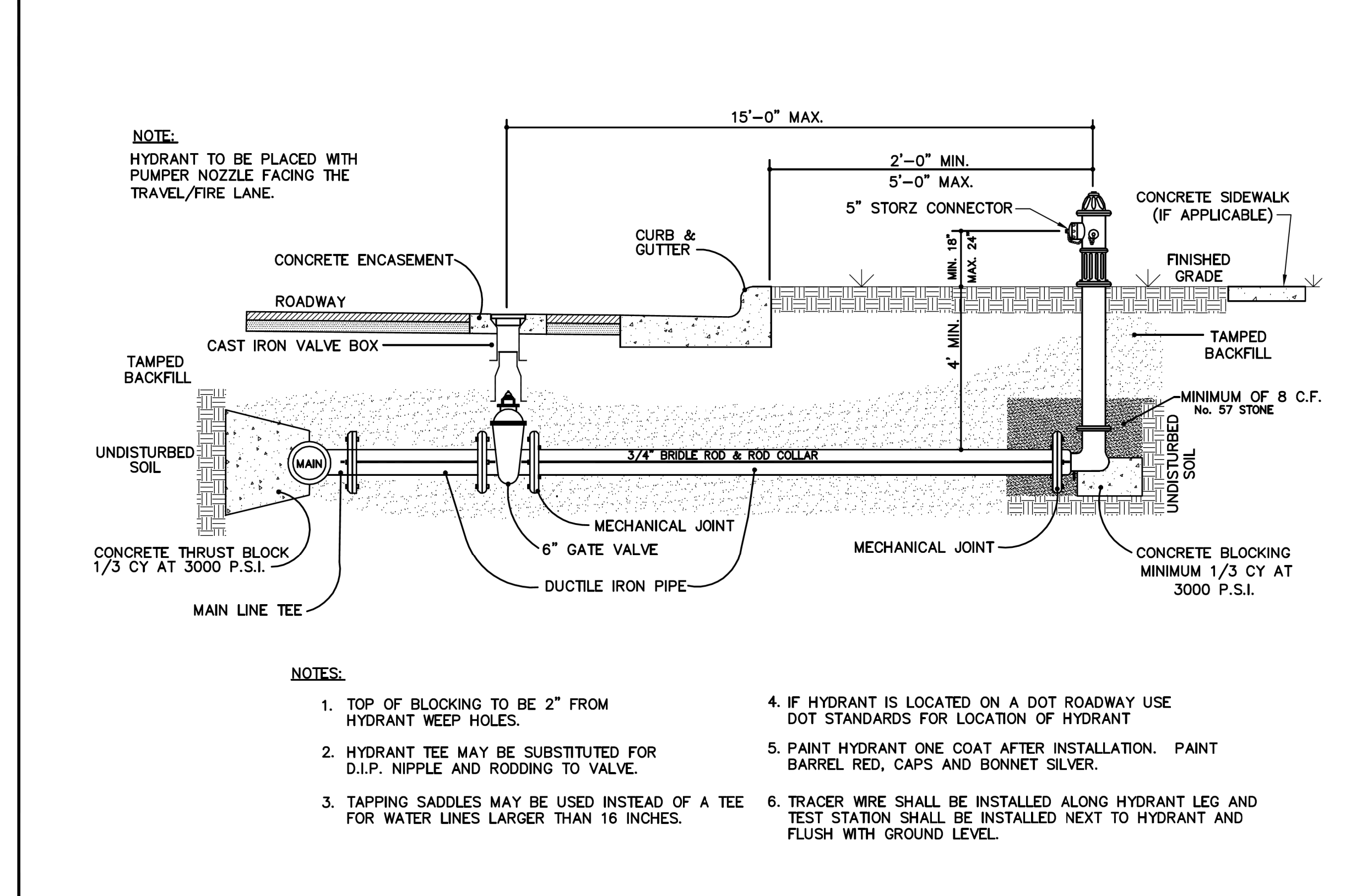
EFFECTIVE: DECEMBER 30, 2016

<b>FUQUAY-VARINA</b> <small>north carolina</small>	TOWN OF FUQUAY-VARINA STANDARD DETAILS	<b>2 INCH BLOW-OFF ASSEMBLY</b>	DETAIL No. 120.06 SHEET 01 of 01
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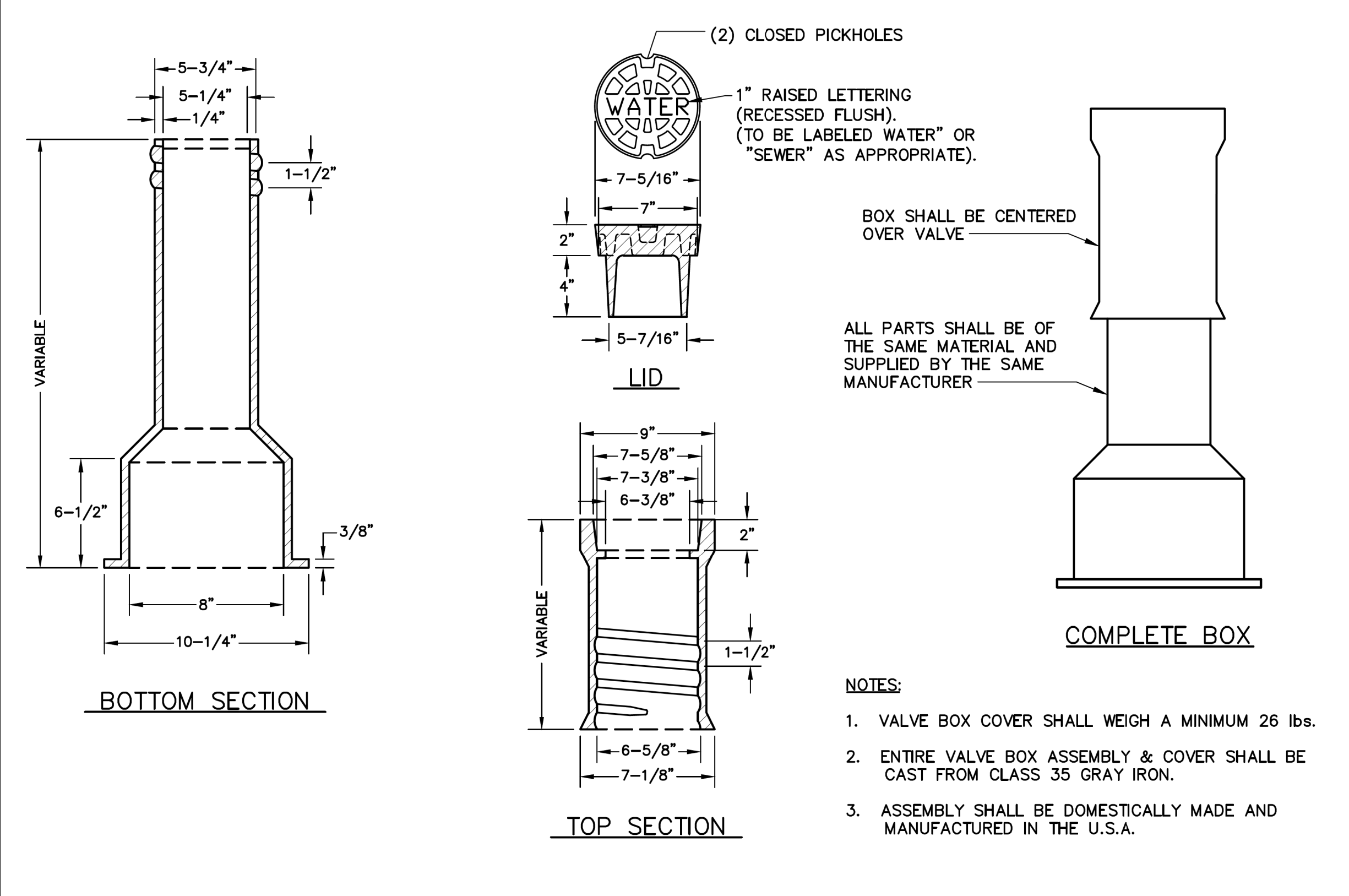
EFFECTIVE: MAY 1, 2017

<b>FUQUAY-VARINA</b> <small>north carolina</small>	TOWN OF FUQUAY-VARINA STANDARD DETAILS	<b>VALVE BOX INSTALLATION</b>	DETAIL No. 120.11 SHEET 01 of 02
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EFFECTIVE: MAY 1, 2017

<b>FUQUAY-VARINA</b> <small>north carolina</small>	TOWN OF FUQUAY-VARINA STANDARD DETAILS	<b>HYDRANT INSTALLATION</b>	DETAIL No. 120.07 SHEET 01 of 01
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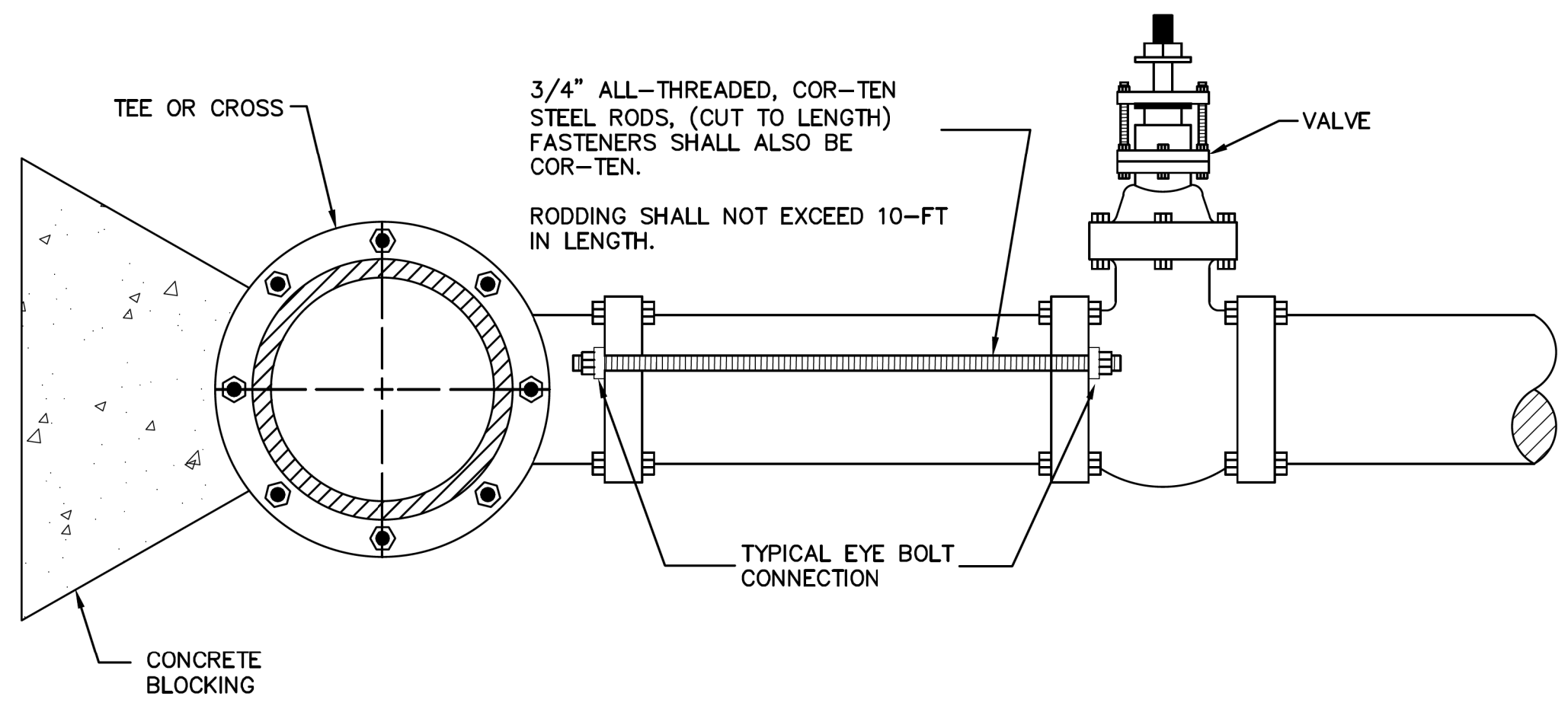
EFFECTIVE: DECEMBER 30, 2016

<b>FUQUAY-VARINA</b> <small>north carolina</small>	TOWN OF FUQUAY-VARINA STANDARD DETAILS	<b>VALVE BOX INSTALLATION</b>	DETAIL No. 120.11 SHEET 02 of 02
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8/17/99  
 22-Jul-2022 10:58:33AM R-5705B AB&C\R-5705B\Water and Wastewater\R-5705B\_ut\_dtl\_UC03A\_psh.dgn  
 \$\$\$\$\$\$  
 \$\$\$\$\$\$

# WATER DETAILS (TOWN OF FUQUAY VARINA AND HARNETT REGIONAL WATER)

PROJECT REFERENCE NO. <i>R-5705B</i>	SHEET NO. <i>UC-3F</i>
DESIGNED BY: <i>CS</i>	
DRAWN BY: <i>CS</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	7/26/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	



COR-TEN ROD REQUIREMENTS	
BRANCH SIZE	NO. OF RODS
4"	2
6"	2
8"	4
12"	6
16"	8
24"	10

- GENERAL NOTES:**
- SEE STANDARD THRUST BLOCK.
  - CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.

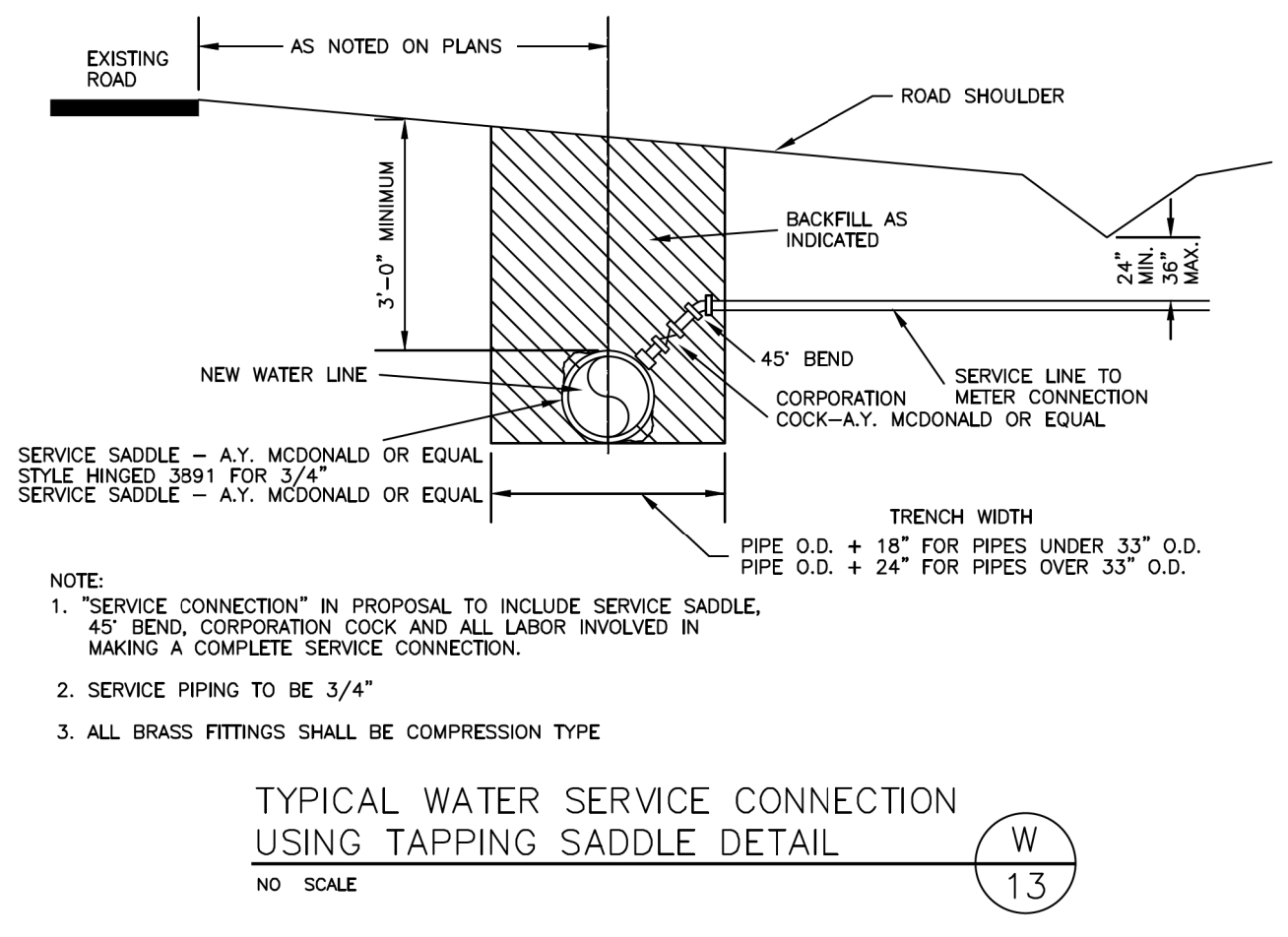
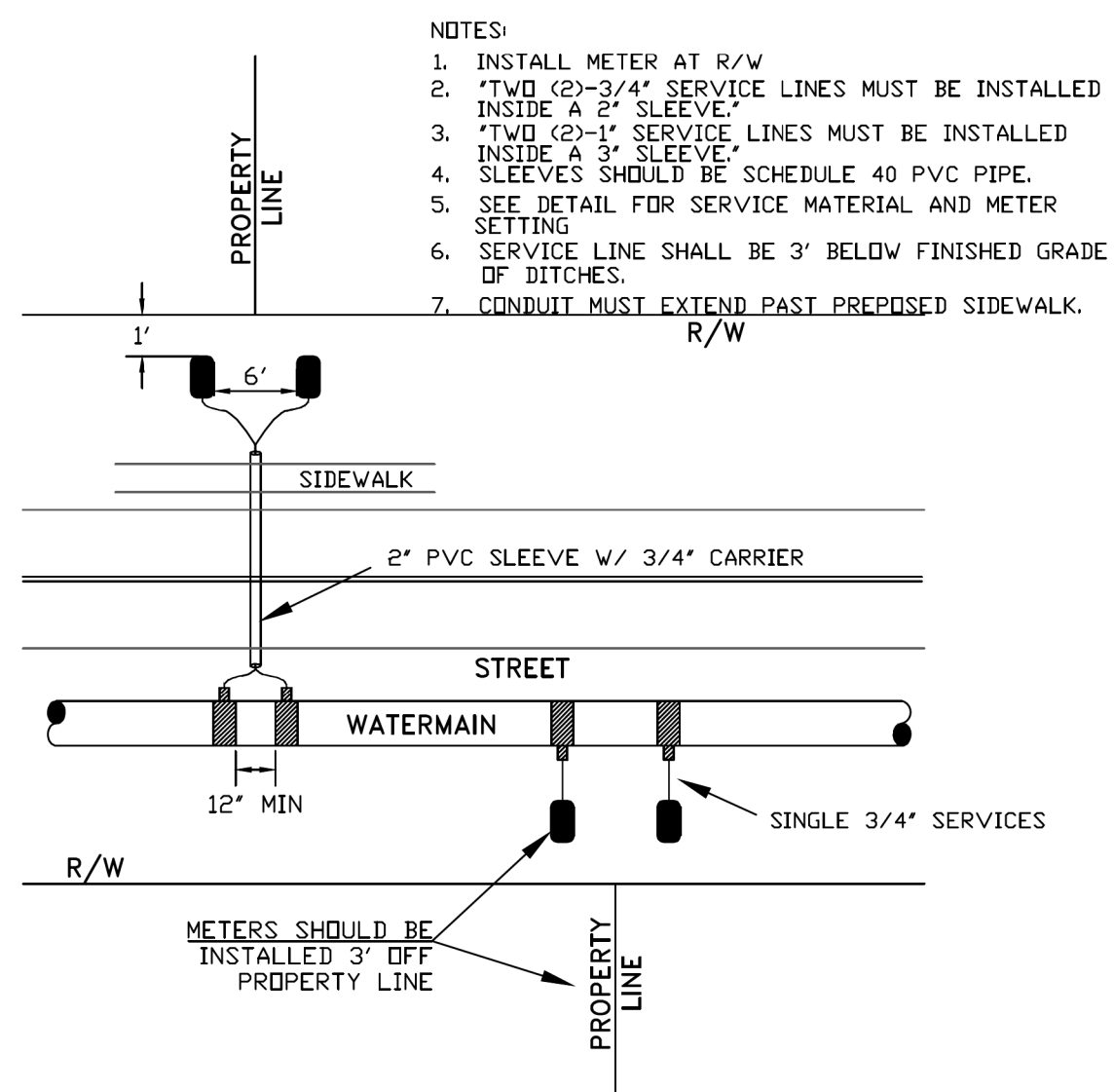
L=MINIMUM LENGTH TO BE RESTRAINED ON EACH SIDE OF FITTING (FEET)

NOMINAL PIPE SIZE (INCHES)	11 1/4" HORIZONTAL ELBOW	22 1/2" HORIZONTAL ELBOW	45" HORIZONTAL ELBOW	90" HORIZONTAL ELBOW	HORIZONTAL TEES	HORIZONTAL PLUGS & VALVES	45° VERTICAL OFFSET UPPER LENGTH	45° VERTICAL OFFSET LOWER LENGTH	22 1/2" VERTICAL OFFSET UPPER LENGTH	22 1/2" VERTICAL OFFSET LOWER LENGTH
4	5	11	21	51	20 - RUN 27 - BRANCH	117	49 / 8	24 / 4		
6	7	15	30	71	20 - RUN 64 - BRANCH	164	68 / 11	33 / 6		
8	10	19	39	93	20 - RUN 103 - BRANCH	215	89 / 15	43 / 7		
12	13	26	54	129	20 - RUN 171 - BRANCH	303	126 / 21	61 / 10		
16	17	33	68	164	20 - RUN 236 - BRANCH	388	161 / 27	78 / 13		
20	20	39	82	196	20 - RUN 300 - BRANCH	469	195 / 33	94 / 16		

NOMINAL PIPE SIZE (INCHES)	REDUCED PIPE SIZE (INCHES)				
	4	6	8	12	16
6	85				
8	154	90			
12	263	220	161		
16	359	327	283	165	
20	446	421	387	294	165

- NOTES:**
- TABLE ASSUMPTIONS: PVC PIPE, SAFETY FACTOR = 2.0, TEST PRESSURE = 250 PSI, SOIL = MH OR ML, 3 FT. BURY DEPTH TO TOP OF PIPE, TRENCH TYPE 3, BRANCH ON TEE IS THE SAME SIZE OF RUN OF TEE SIZE AND 20 FEET OF PIPE IS INSTALLED PAST THE TEE ON THE RUN SIDE. VERTICAL OFFSETS ARE 3 FEET DEEP ON TOP AND 8 FEET DEEP ON BOTTOM. REDUCERS ARE CALCULATED FOR ONE SIZE REDUCTION. OTHER CONDITIONS WILL REQUIRE ADDITIONAL CALCULATIONS.
  - ALL FITTINGS MUST BE RESTRAINED. ONE OF THE FOLLOWING METHODS MAY BE USED:
    - MECHANICAL RESTRAINTS AT FITTING AND AT ADJACENT JOINTS TO A LENGTH AS SPECIFIED IN CHART.
    - TIE RODS AT FITTING AND THROUGH JOINTS TO A LENGTH AS SPECIFIED IN CHART.
  - VALVE RESTRAINTS SHALL BE RESTRAINED THE SAME DISTANCE AS HORIZONTAL PLUGS.

### MECHANICAL RESTRAINT LENGTHS



	TOWN OF FUQUAY-VARINA STANDARD DETAILS	<b>VALVE RODDING</b>	DETAIL No. <b>120.16</b> SHEET 01 of 01
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REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I.									
SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	ALL AREAS GIVEN IN SQUARE FEET:							
		MODERATELY DRY CLAY 4000 LBS/FT <sup>2</sup>	SOFT CLAY 2000 LBS/FT <sup>2</sup>	GRAVEL / COARSE SAND 1600 LBS/FT <sup>2</sup>	DRY CLAY - ALWAYS DRY 2000 LBS/FT <sup>2</sup>	SAND, COMPACT FIRM 2000 LBS/FT <sup>2</sup>	SAND, CLEAN DRY 1000 LBS/FT <sup>2</sup>	SOIL, QUICKSAND - VERY POOR 1000 LBS/FT <sup>2</sup>	ROCK, POOR 10,000 LBS/FT <sup>2</sup>
6"									
11 1/4°	1,108	1	1	1	1	1	2	1	
22 1/2°	2,207	1	2	2	1	1	3	1	
45°	4,328	2	3	3	1	1	5	1	
90°	7,996	2	4	5	1	1	8	1	
PLUG	5,655	2	3	4	1	1	2	6	1
8"									
11 1/4°	1,970	1	1	2	1	1	2	1	
22 1/2°	3,922	1	2	3	1	1	4	1	
45°	7,694	2	4	5	1	1	8	1	
90°	14,215	4	8	9	2	2	4	15	2
PLUG	10,053	3	5	6	2	2	3	10	1
12"									
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
16"									
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 FOR HORIZONTAL WATER PIPE BENDS BASED ON TEST PRESSURE OF 200 P.S.I.									
SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	ALL AREAS GIVEN IN SQUARE FEET:							
		MODERATELY DRY CLAY 4000 LBS/FT <sup>2</sup>	SOFT CLAY 2000 LBS/FT <sup>2</sup>	GRAVEL / COARSE SAND 1600 LBS/FT <sup>2</sup>	DRY CLAY - ALWAYS DRY 2000 LBS/FT <sup>2</sup>	SAND, COMPACT FIRM 2000 LBS/FT <sup>2</sup>	SAND, CLEAN DRY 1000 LBS/FT <sup>2</sup>	SOIL, QUICKSAND - VERY POOR 1000 LBS/FT <sup>2</sup>	ROCK, POOR 10,000 LBS/FT <sup>2</sup>
24"									
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
30"									
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°	199,900	50	100	120	25	25	50	200	20
PLUG	141,372	36	71	85	18	18	36	142	15
36"									
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°	287,855	72	144	172	36	36	72	288	29
PLUG	203,575	51	102	122	26	26	51	204	21
48"									
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

	THRUST BLOCKING QUANTITY TABLE 1	NOT TO SCALE	DATE: 02/01/2021 REVISIONS:
<b>W-12</b>			

	THRUST BLOCKING QUANTITY TABLE 2	NOT TO SCALE	DATE: 02/01/2021 REVISIONS:
<b>W-13</b>			

TYPICAL DOMESTIC WATER SERVICE INSTALLATION DETAIL	NO SCALE	<b>W</b> 12	
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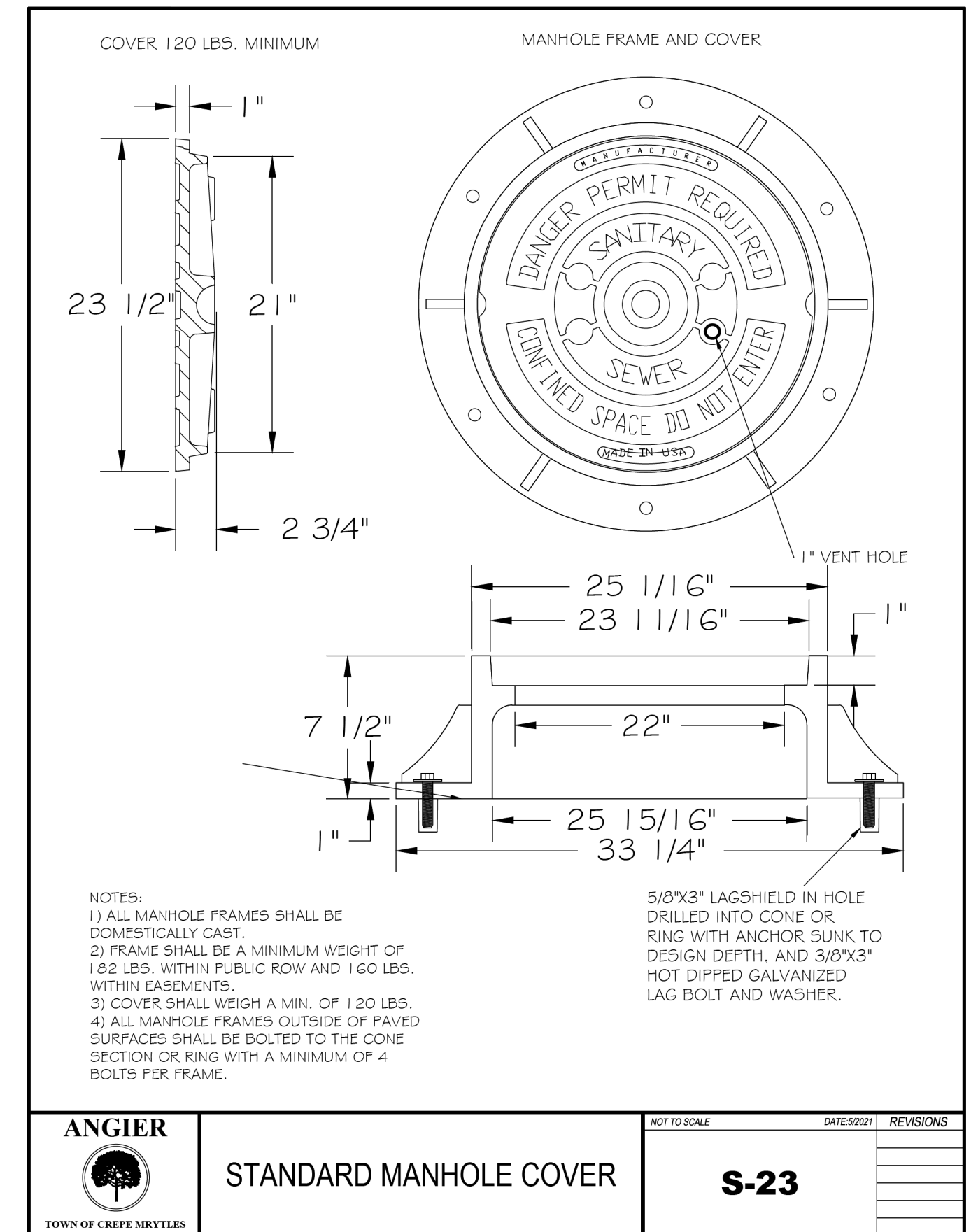
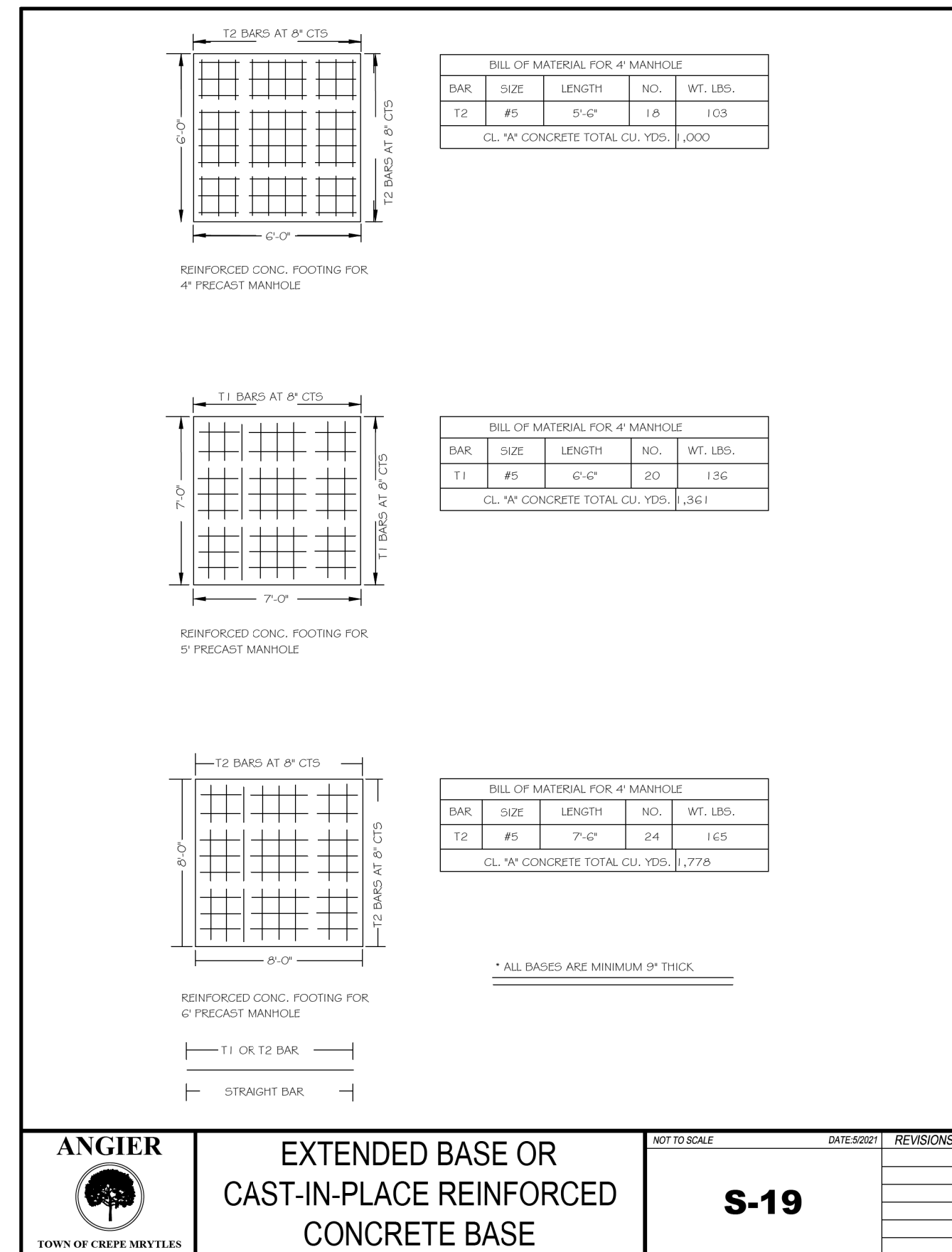
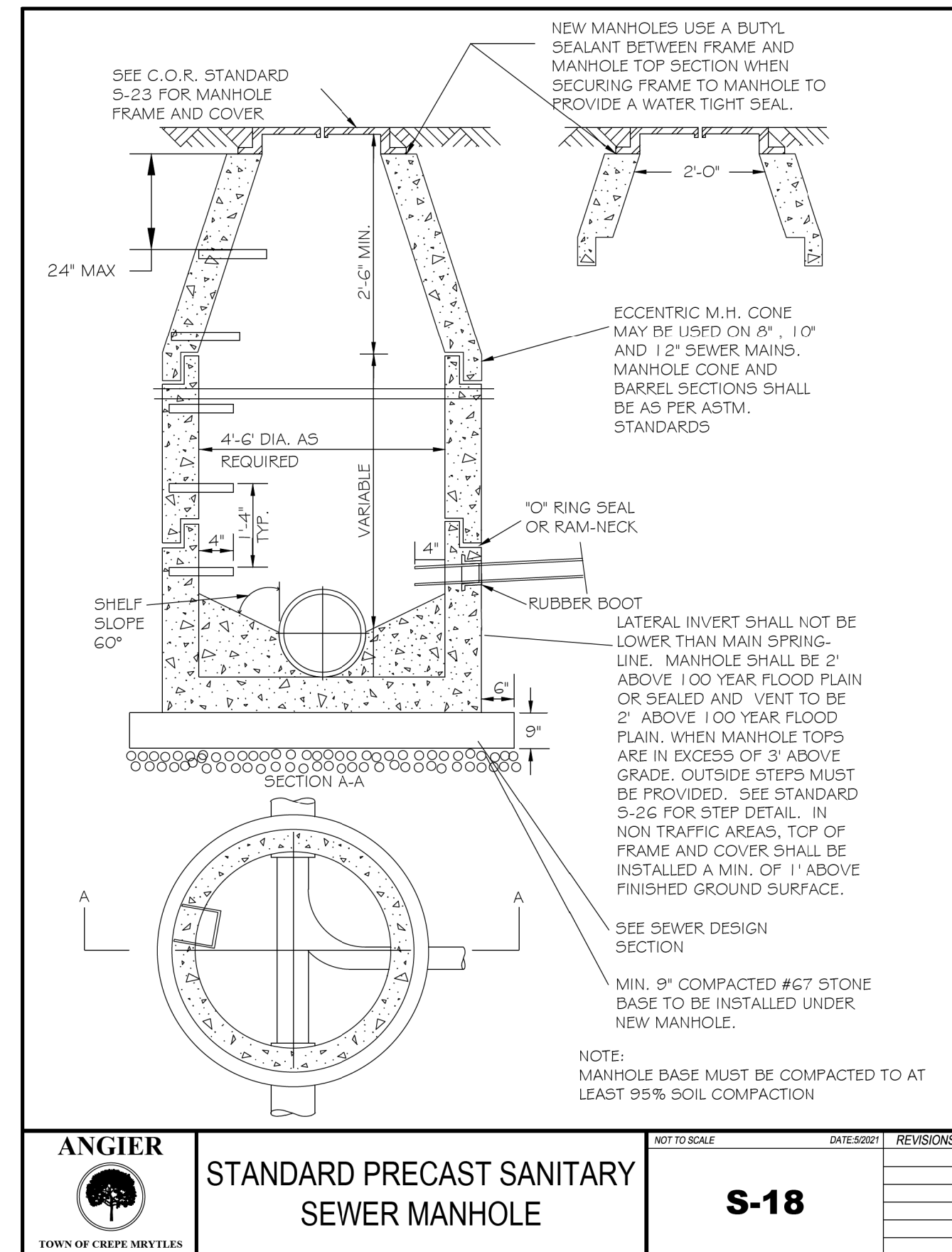
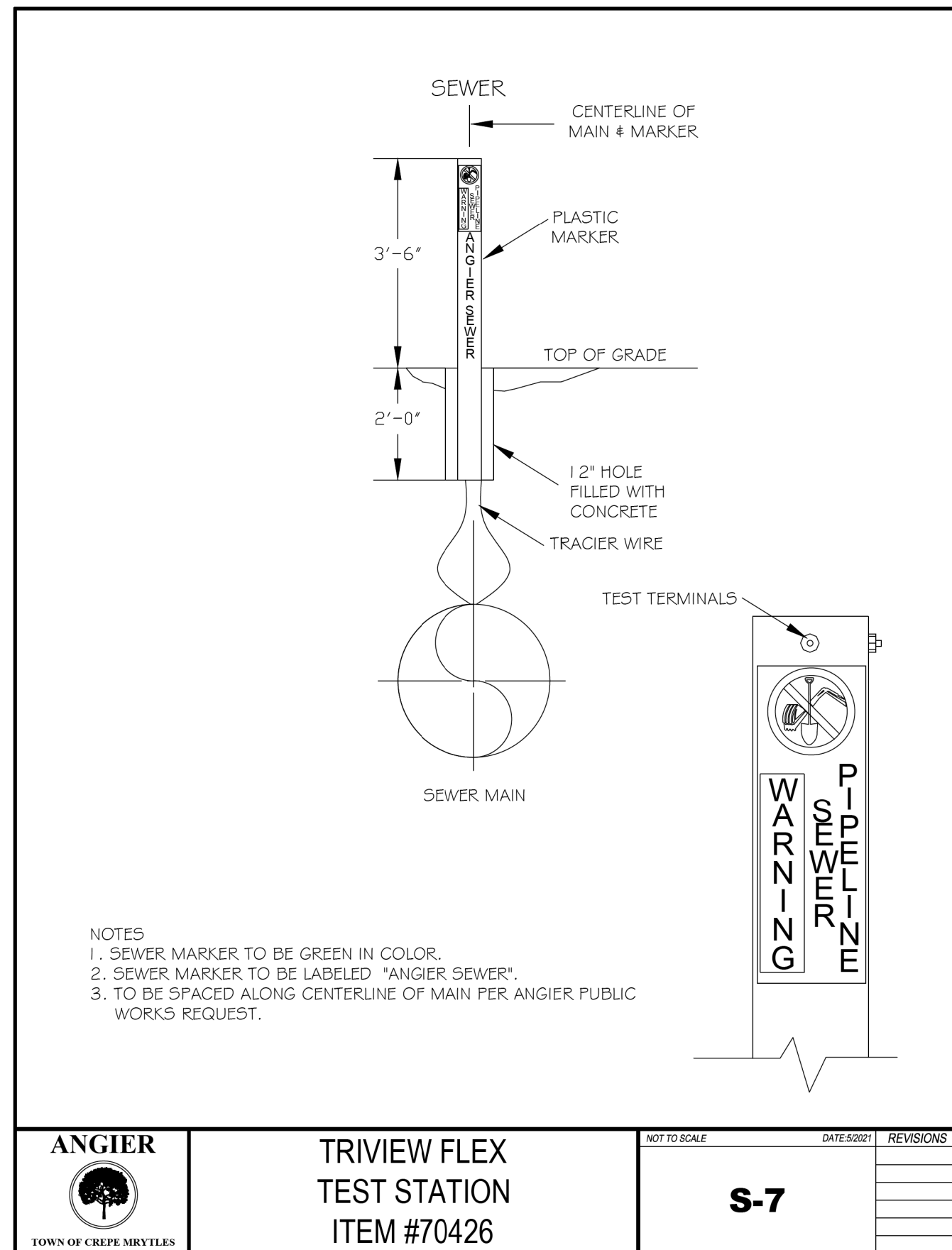
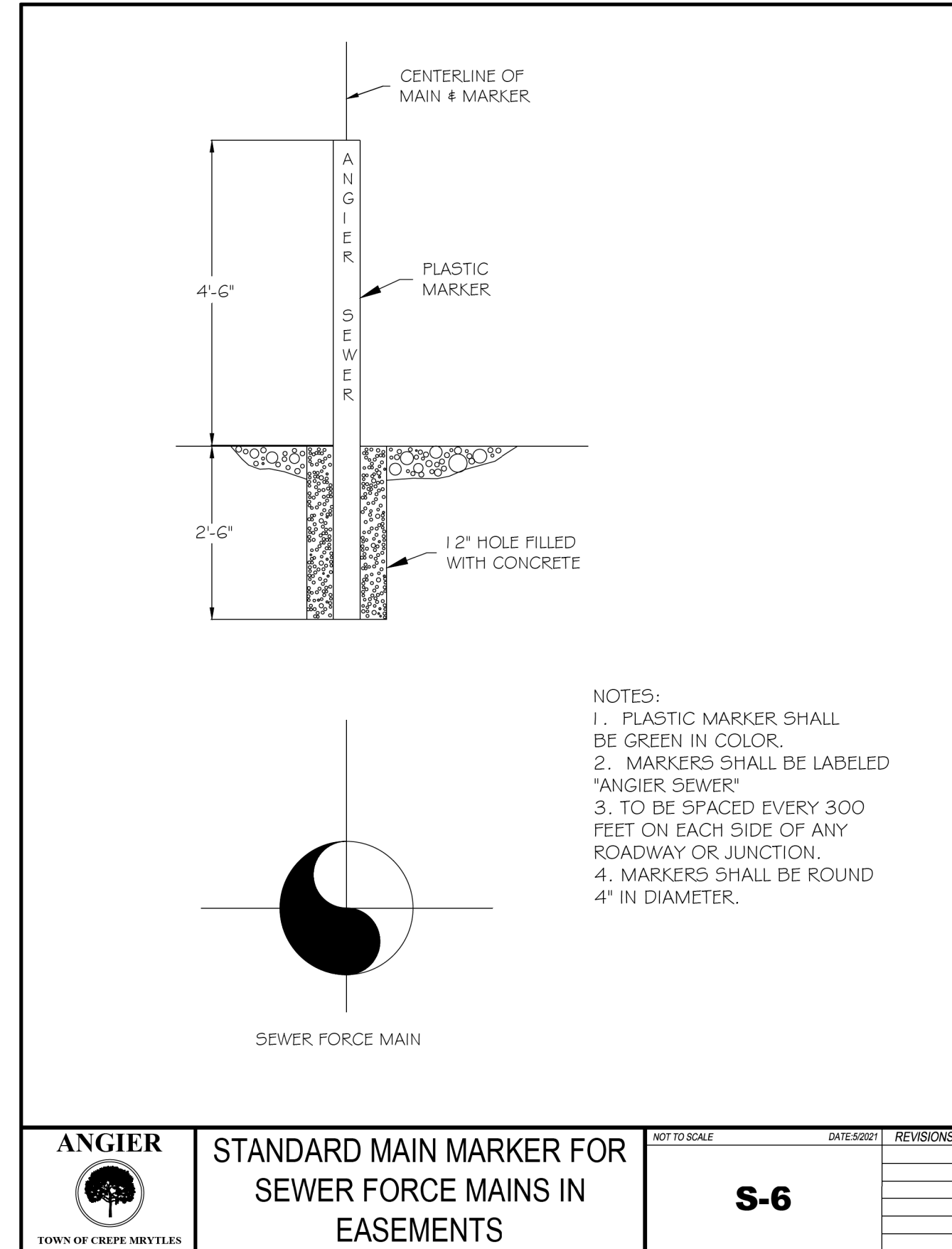
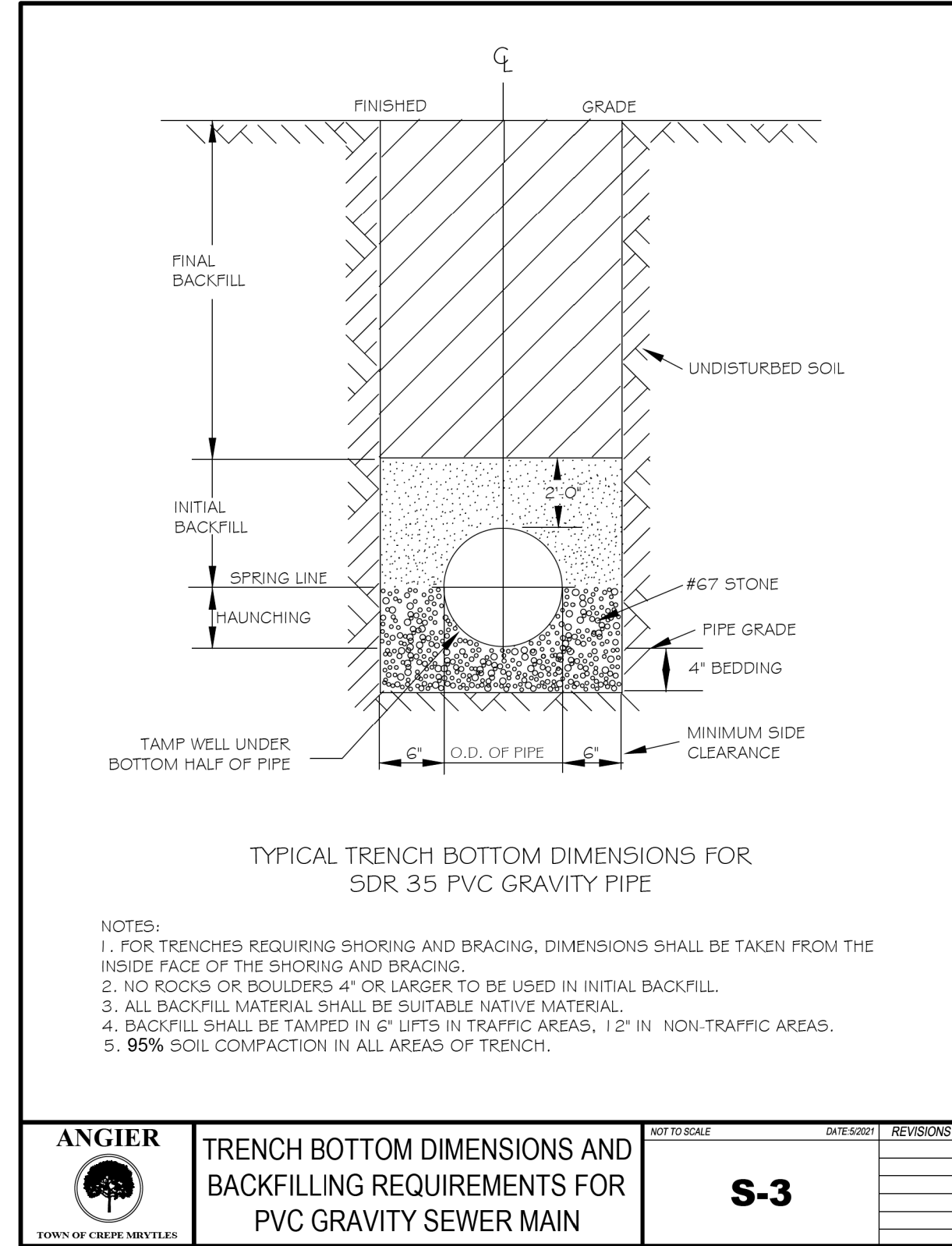
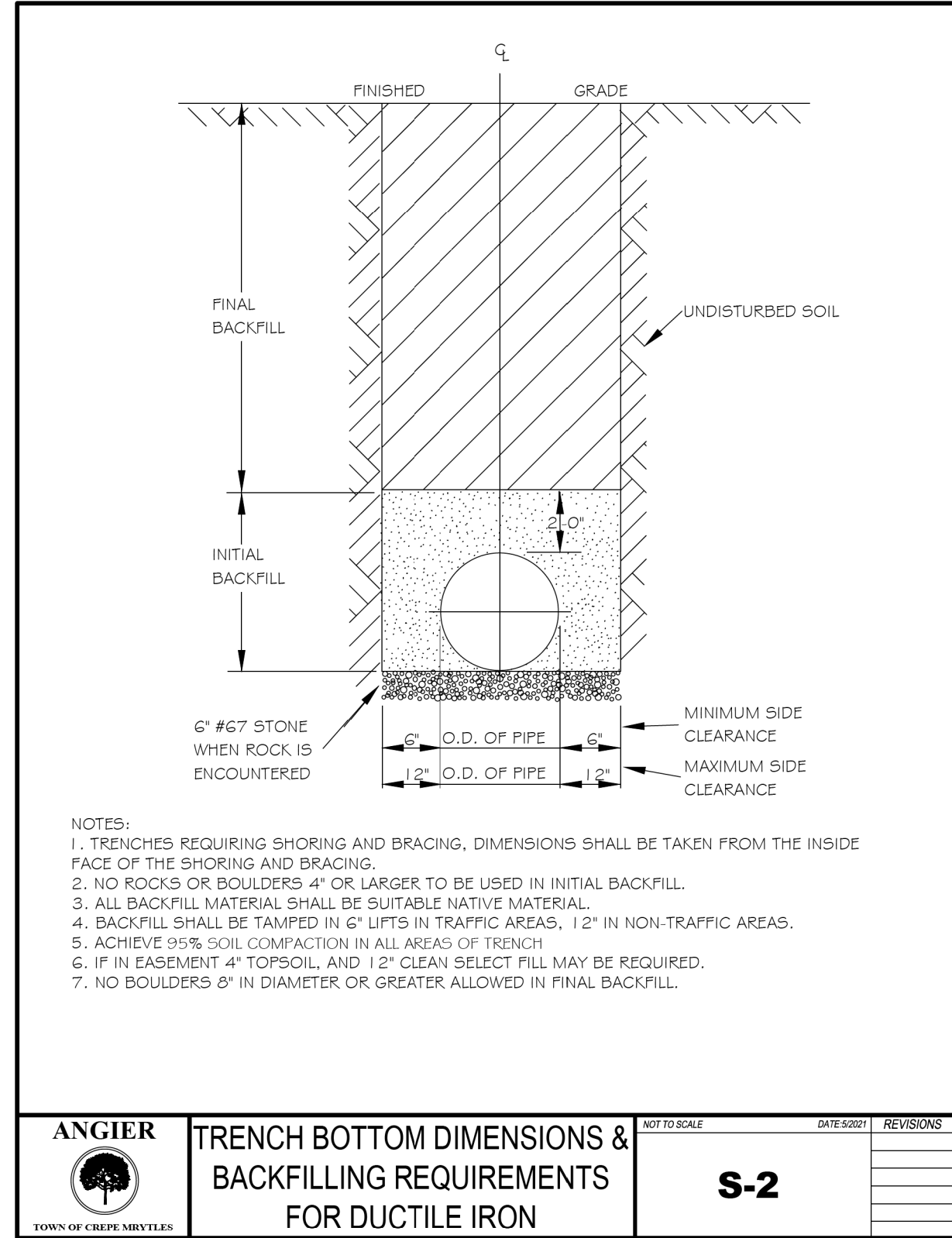
TYPICAL WATER SERVICE CONNECTION USING TAPPING SADDLE DETAIL	NO SCALE	<b>W</b> 13	
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8/17/99  
 R-5705B AB&C\R-5705B\Water and Wastewater\R-5705B\_ut\_dt\_LUC03A\_psh.dgn  
 05/20/2021 10:25:35 AM  
 \$\$\$\$\$\$

# SEWER DETAILS (TOWN OF ANGIER)

PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-3G
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 7/26/2022 UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764

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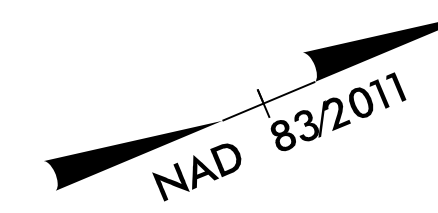
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# WATER LINE (TOWN OF ANGIER)

### NOTES

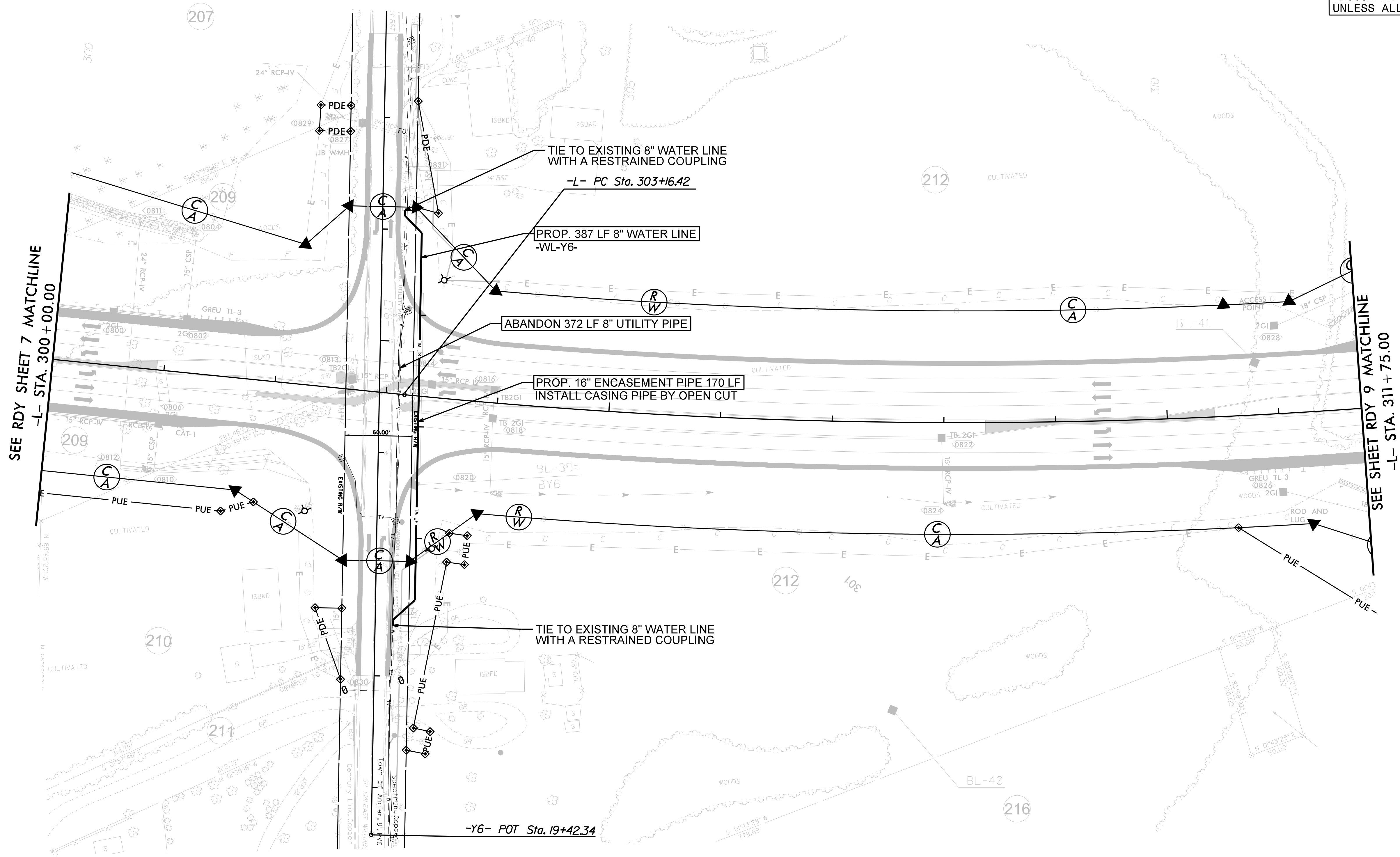
1. PROPOSED WATER LINE SHALL MAINTAIN A 7 LF SEPERATION FROM PROPOSED AND EXISTING POWER POLES, UNLESS OTHERWISE NOTED
2. SEE TOWN OF ANGIER WATER DETAILS ON UC-3A THROUGH UC-3D.
3. UC-4 CORRESPONDS TO RDY-8.



PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-4
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISD:	7/26/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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 Raleigh, NC 27609  
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 License No. C-764

**UTILITY CONSTRUCTION**  
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SEE RDY SHEET 7 MATCHLINE  
 -L- STA. 300 + 00.00

SEE SHEET RDY 9 MATCHLINE  
 -L- STA. 311 + 75.00

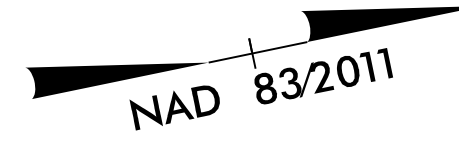


NOTES:

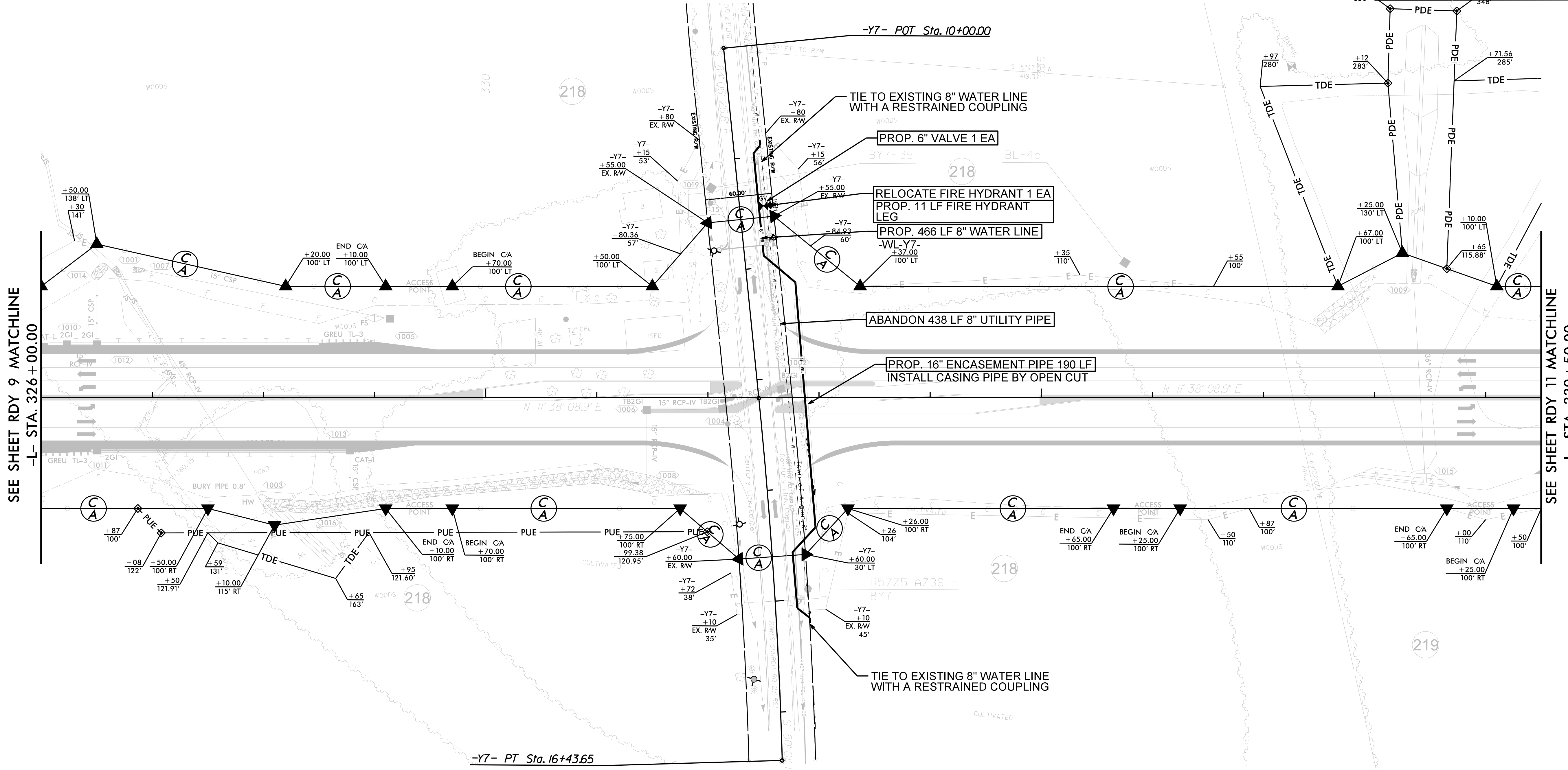
1. PROPOSED WATER LINE SHALL MAINTAIN A 7 LF SEPARATION FROM PROPOSED AND EXISTING POWER POLES, UNLESS OTHERWISE NOTED.
2. SEE TOWN OF ANGIER WATER DETAILS ON UC-3A THROUGH UC-3D.
3. UC-5 CORRESPONDS TO RDY-10.

# WATER LINE (TOWN OF ANGIER)

PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-5
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISID:	7/26/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	
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**UTILITY CONSTRUCTION**  
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SEE SHEET RDY 9 MATCHLINE  
-L- STA. 326+00.00

SEE SHEET RDY 11 MATCHLINE  
-L- STA. 339+50.00



8/17/99

R5705-2022.08.08.08.35 AM R-5705 AB&C\R-5705B\Water and Wastewater\Plan Sheets\R5705B-ut.-rdy10-UC05.psh.dgn  
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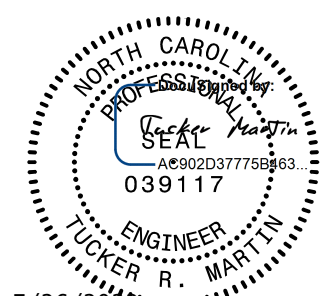
8/17/99

NOTES:  
1. SEE TOWN OF ANGIER WATER DETAILS ON UC-3A THROUGH UC-3D.

2. UC-6 CORRESPONDS TO RDY-14.

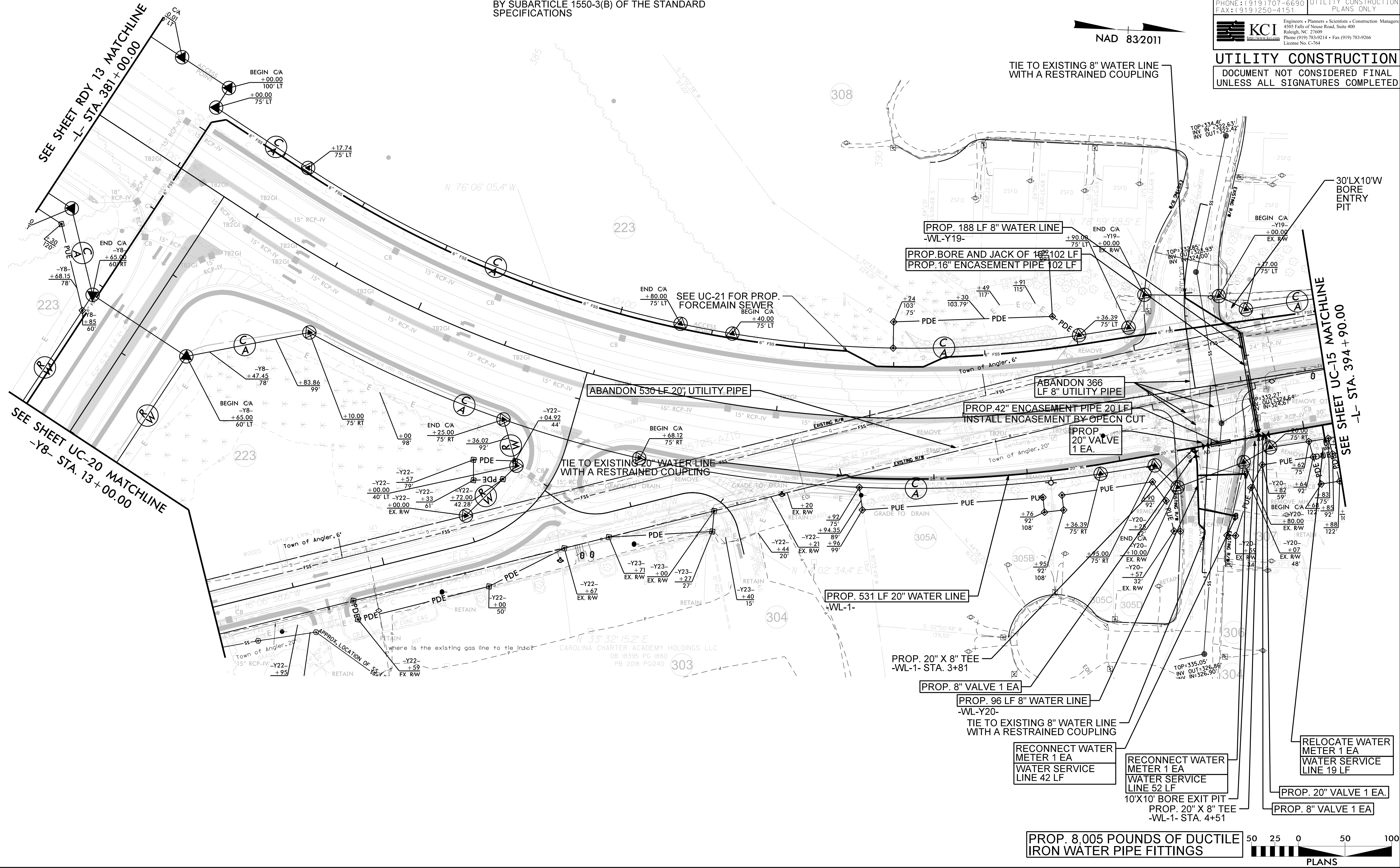
# WATER LINE (TOWN OF ANGIER)

NOTE:  
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS

PROJECT REFERENCE NO.	R-5705B	SHEET NO.	UC-6
DESIGNED BY:	CS		
DRAWN BY:	CS		
CHECKED BY:	MM		
APPROVED BY:			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		7/26/2022	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY	

**KCI**  
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4505 Falls of Neuse Road, Suite 400  
Raleigh, NC 27609  
Phone (919) 783-9214 • Fax (919) 783-9266  
License No. C-764

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



R-5705 AB&C\R-5705B\Water and Wastewater\Water Plan Sheets\R5705B-ut.-rdy\4\_UC06.psh.dgn

8/17/2022 08:42 AM R-5705 UC06.dwg



NOTES:

1. PROPOSED WATER LINE SHALL MAINTAIN A 7 LF SEPARATION FROM PROPOSED AND EXISTING POWER POLES, UNLESS OTHERWISE NOTED.
2. SEE TOWN OF ANGIER WATER DETAILS ON UC-3A THROUGH UC-3D.
3. UC-7 CORRESPONDS TO RDY-15.

# WATER LINE (TOWN OF ANGIER)

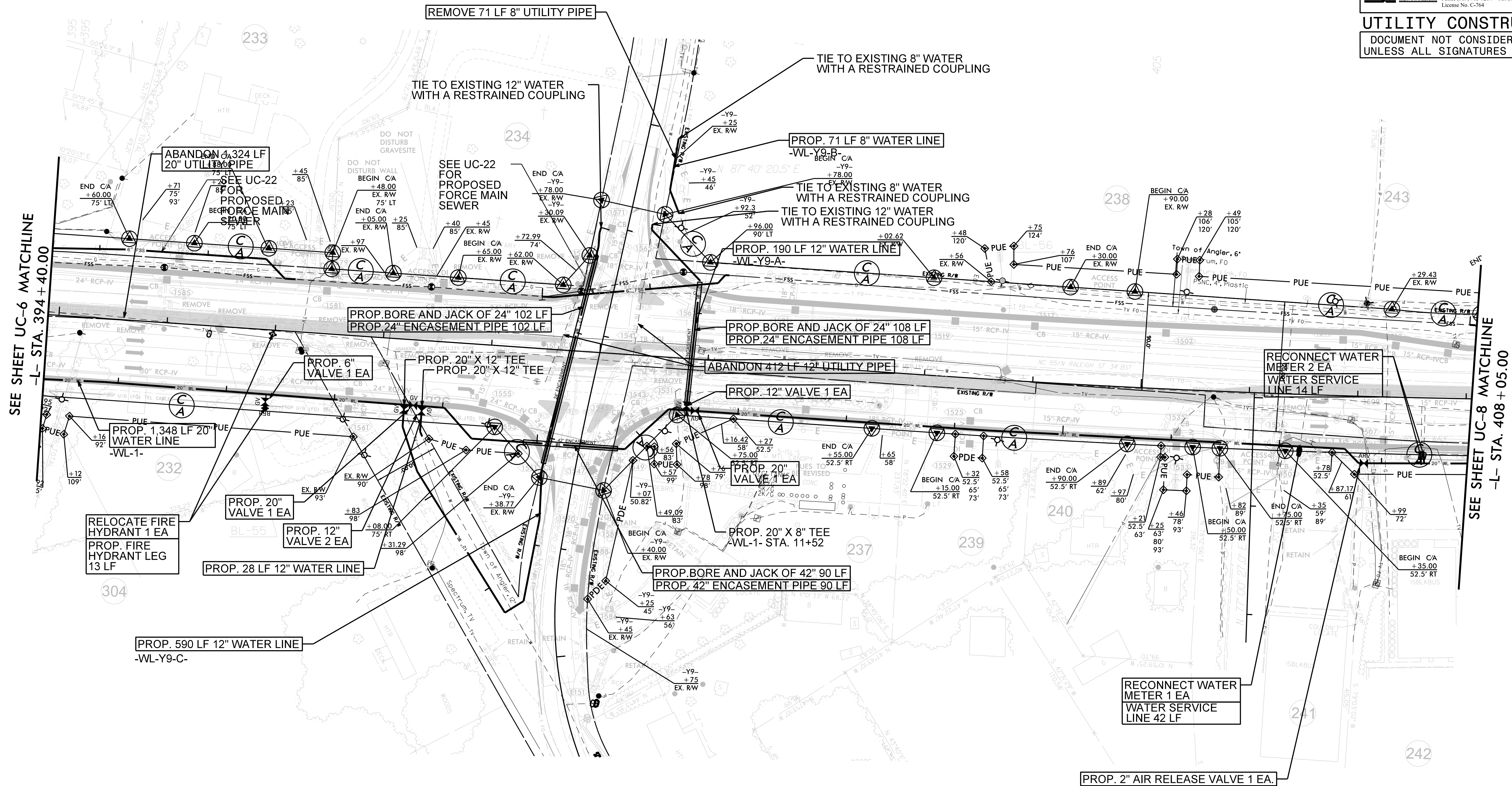
NOTE:  
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS



PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-7
DESIGNED BY: CS	
DRAWN BY: CM	
CHECKED BY: MM	
APPROVED BY:	
REVISD:	7/26/2022
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



SEE SHEET UC-6 MATCHLINE  
-L- STA. 394 + 40.00

SEE SHEET UC-8 MATCHLINE  
-L- STA. 408 + 05.00

PROP. 15,230 POUNDS OF DUCTILE IRON WATER PIPE FITTINGS



8/17/99

R:\Projects\2022\UC05\AM R-5705 AB&C\R-5705B\Water and Wastewater\Water Plan Sheets\R5705B-ut-rdy15\_UC07\_psh.dgn  
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8/17/2022



8/17/99

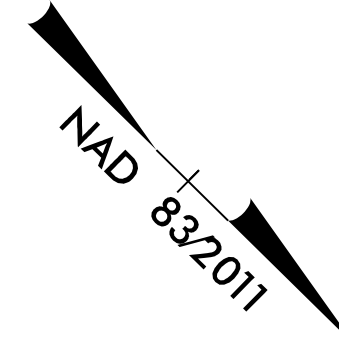
# WATER LINE (TOWN OF ANGIER)

### NOTES:

1. PROPOSED WATER LINE SHALL MAINTAIN A 7 LF SEPARATION FROM PROPOSED AND EXISTING POWER POLES, UNLESS OTHERWISE NOTED.
2. SEE TOWN OF ANGIER WATER DETAILS ON UC-3A THROUGH UC-3D.
3. UC-8 CORRESPONDS TO RDY-16.

### NOTE:

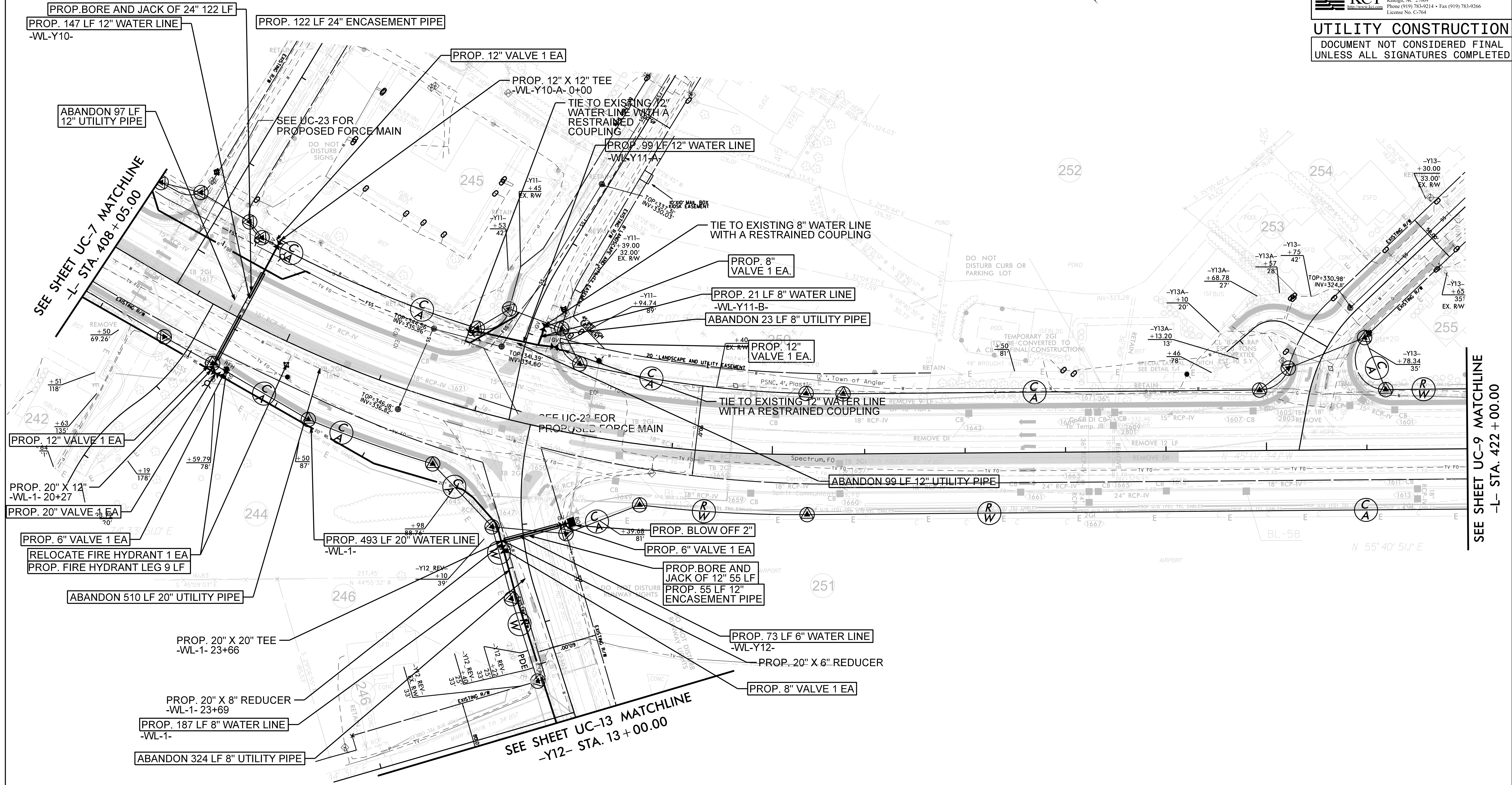
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS



PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-8
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 7/26/2022	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

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26 JUL 2022 08:57 AM R-5705 AB&C\R-5705B\Water and Wastewater\Water Plan Sheets\R5705B.ut.rdj\6.LC08.psh.dgn  
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PROP. 7,765 POUNDS OF DUCTILE IRON WATER PIPE FITTINGS

PLANS

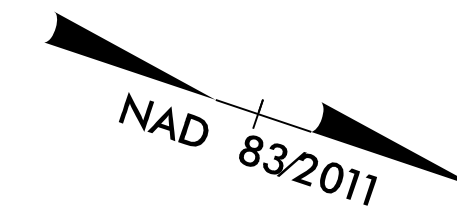


8/17/99

NOTES:

- 1. UC-10 CORRESPONDS TO RDY-18.
- 2. SEE HARNETT REGIONAL WATER DETAILS ON SHEET UC-3F

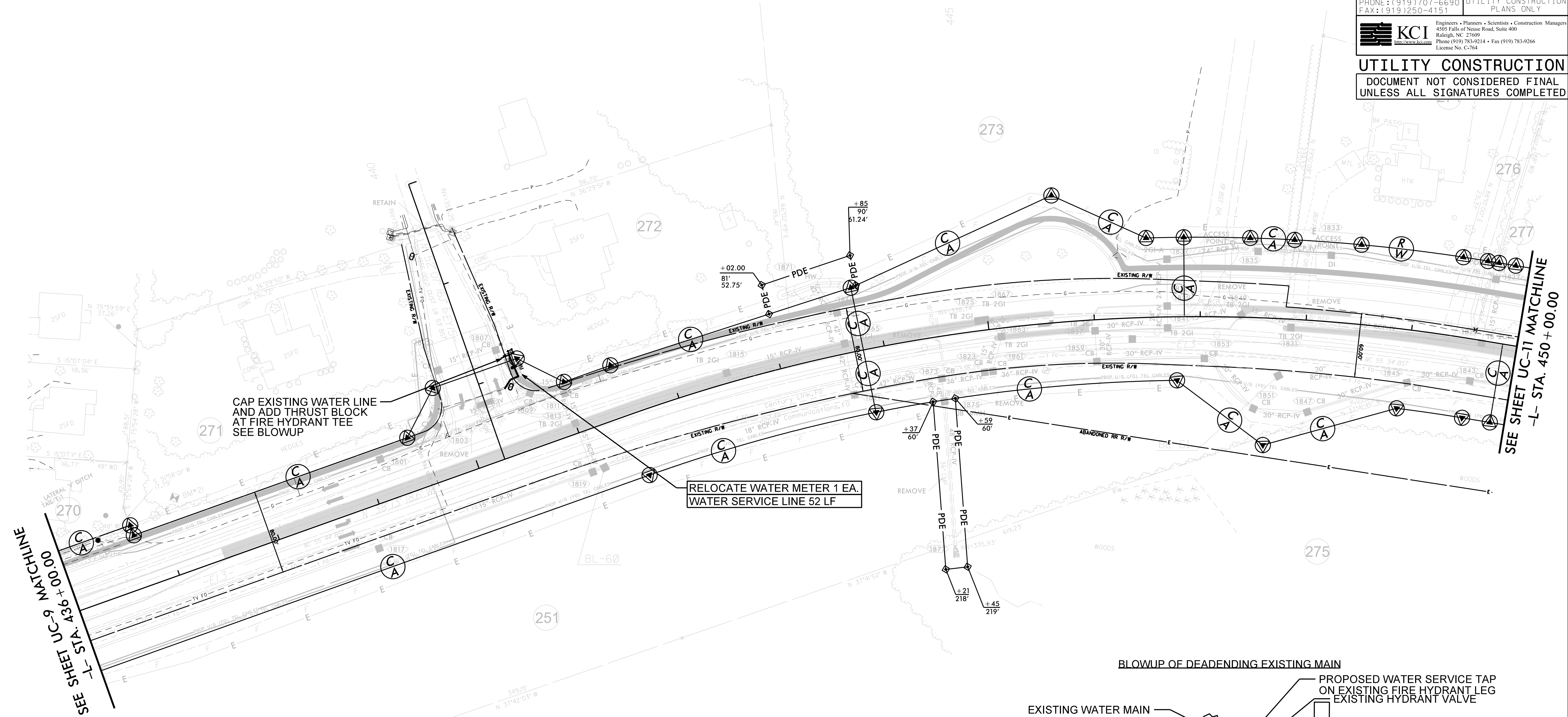
# WATER LINE (HARNETT REGIONAL WATER)



PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-10
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	7/26/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

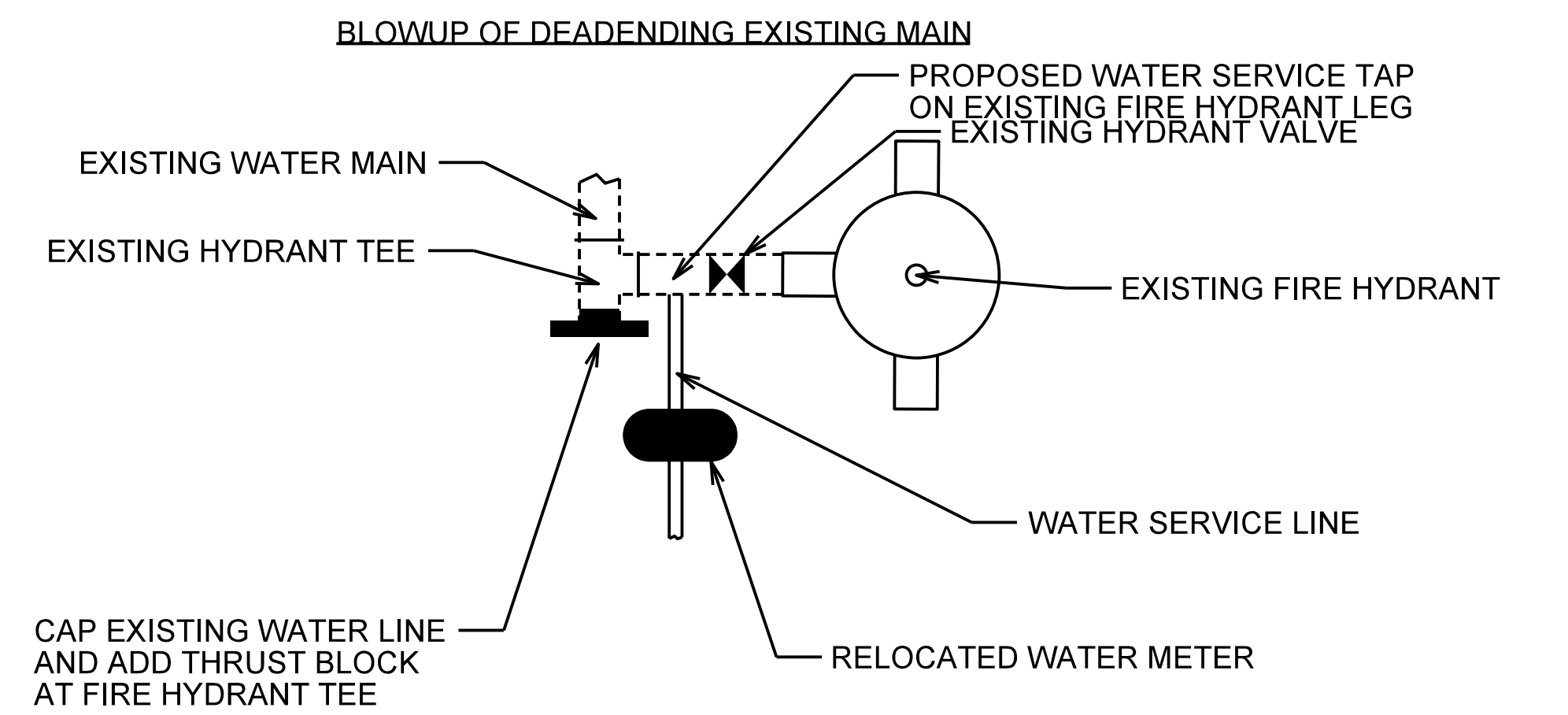
**KCI**  
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SEE SHEET UC-9 MATCHLINE  
 -L- STA. 436 + 00.00

SEE SHEET UC-11 MATCHLINE  
 -L- STA. 450 + 00.00

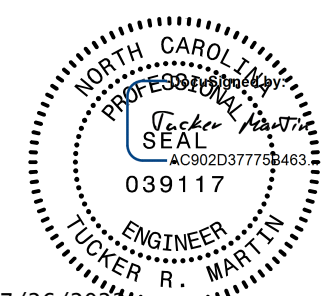



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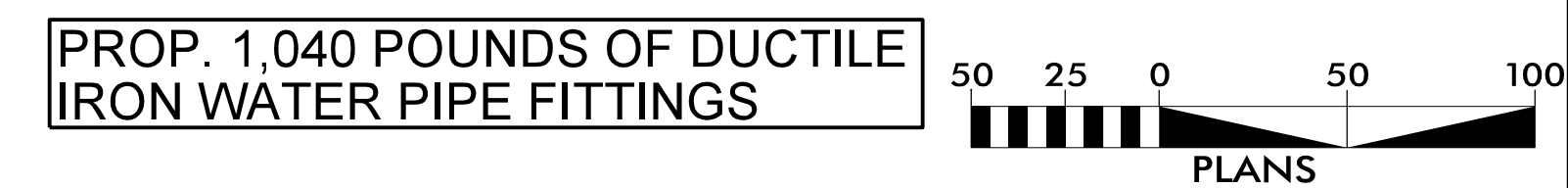
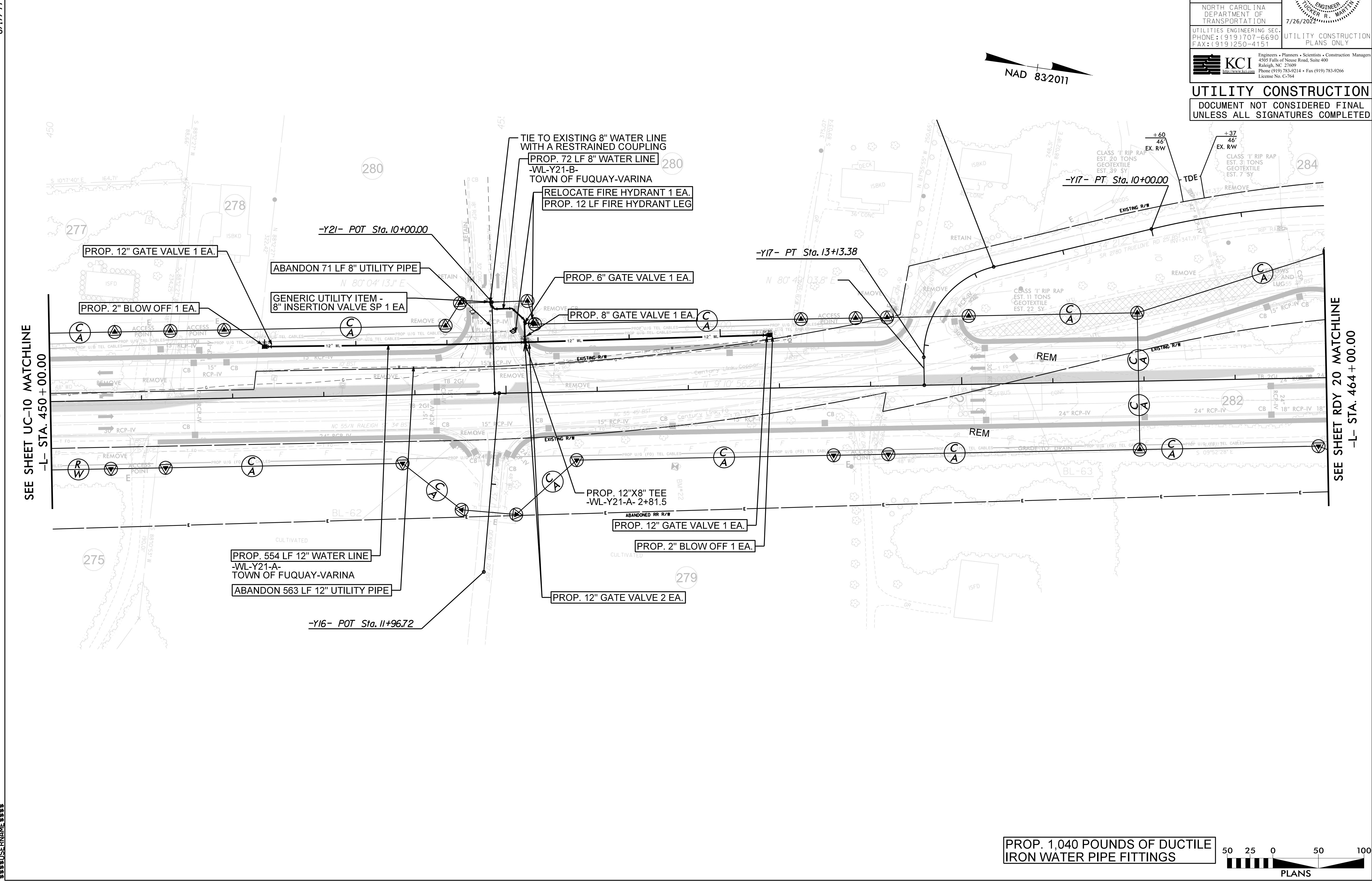
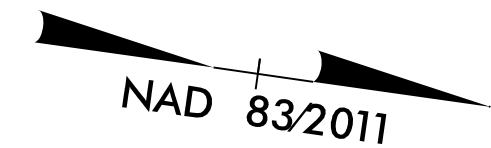
# WATER LINE (TOWN OF FUQUAY-VARINA)

**NOTES:**

1. SEE TOWN OF FUQUAY-VARINA WATER DETAILS ON UC-3E AND UC-3F.
2. UC-11 CORRESPONDS TO RDY-19.

PROJECT REFERENCE NO. <i>R-5705B</i>	SHEET NO. <i>UC-11</i>
DESIGNED BY: <i>CS</i>	
DRAWN BY: <i>CS</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED BY:	7/26/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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8/17/99  
 R-5705 AB&C\R-5705B\Water and Wastewater\Water Plan Sheets\R5705B-ut-rdy19\_UC11\_psh.dgn  
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 R-5705B-ut-rdy19\_UC11\_psh.dgn  
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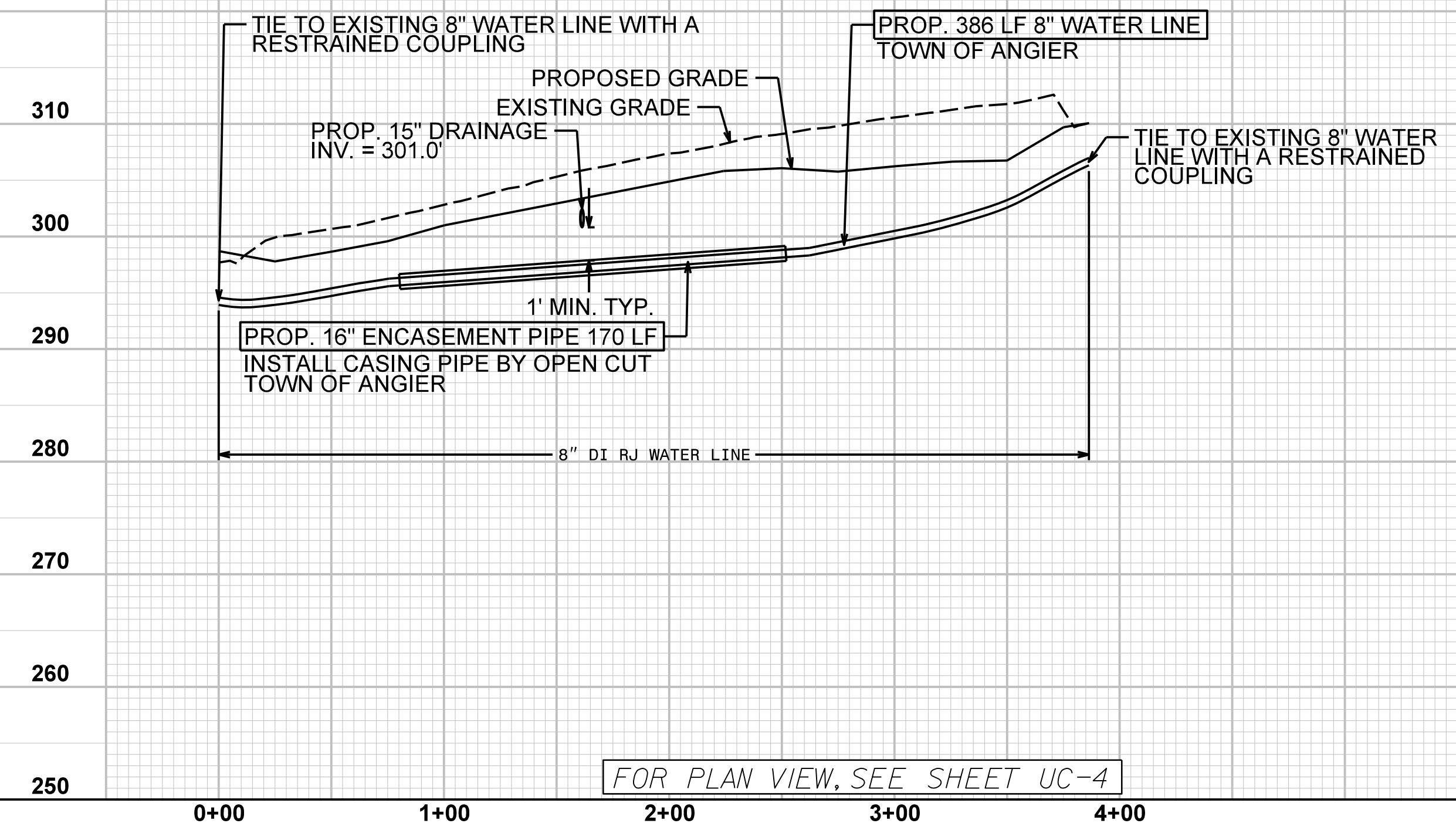




5/28/99

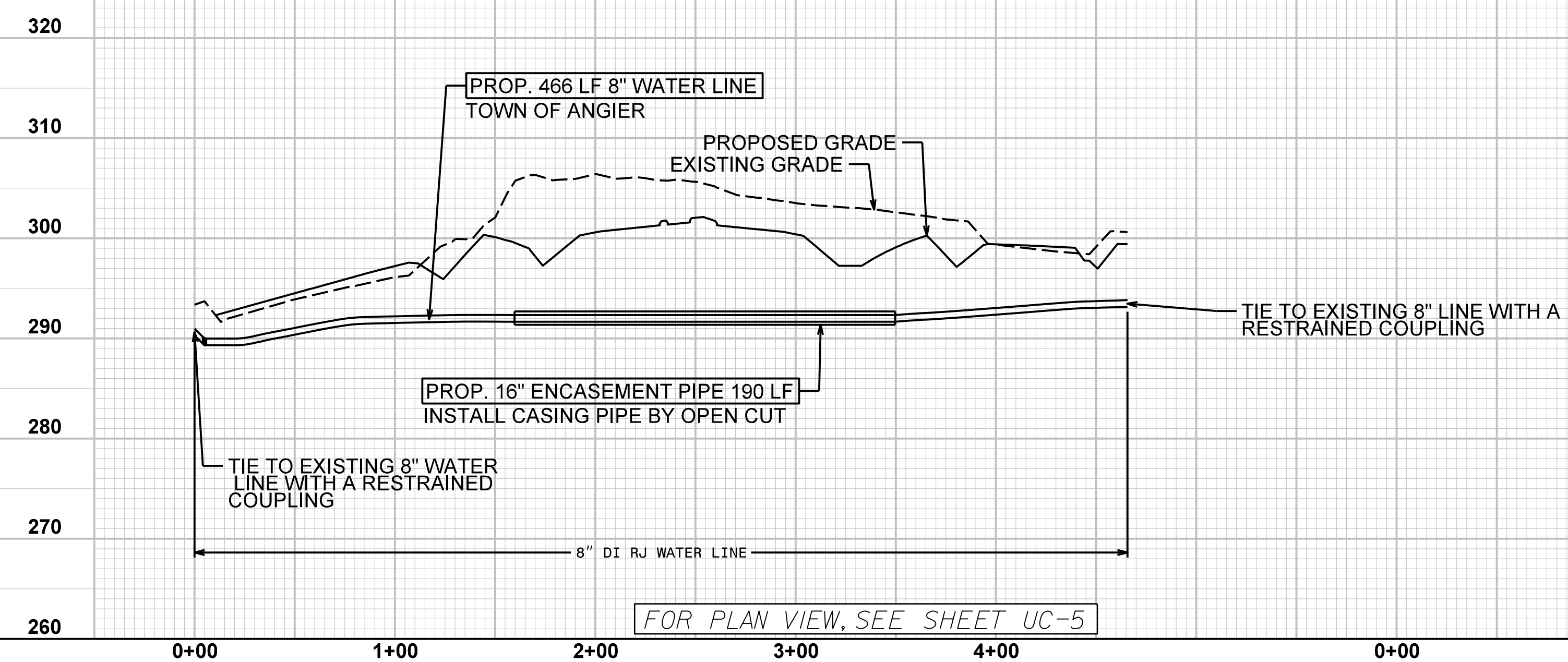
PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-16
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	7/26/2024
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITIES CONSTRUCTION PLANS ONLY Engineers • Planners • Scientists • Construction Managers 4505 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

# -WL-Y6-



UTILITY CONSTRUCTION  
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# -WL-Y7-



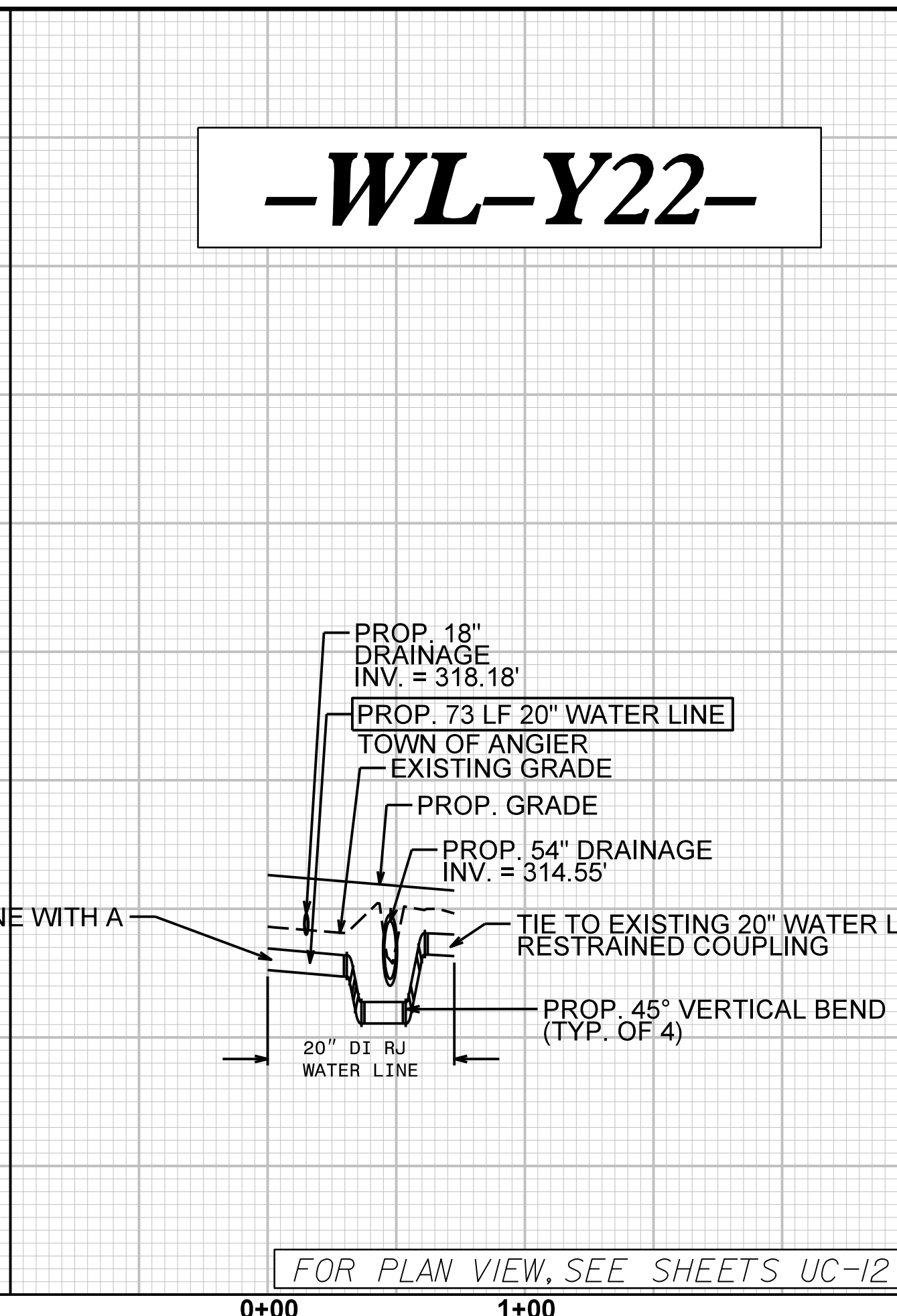
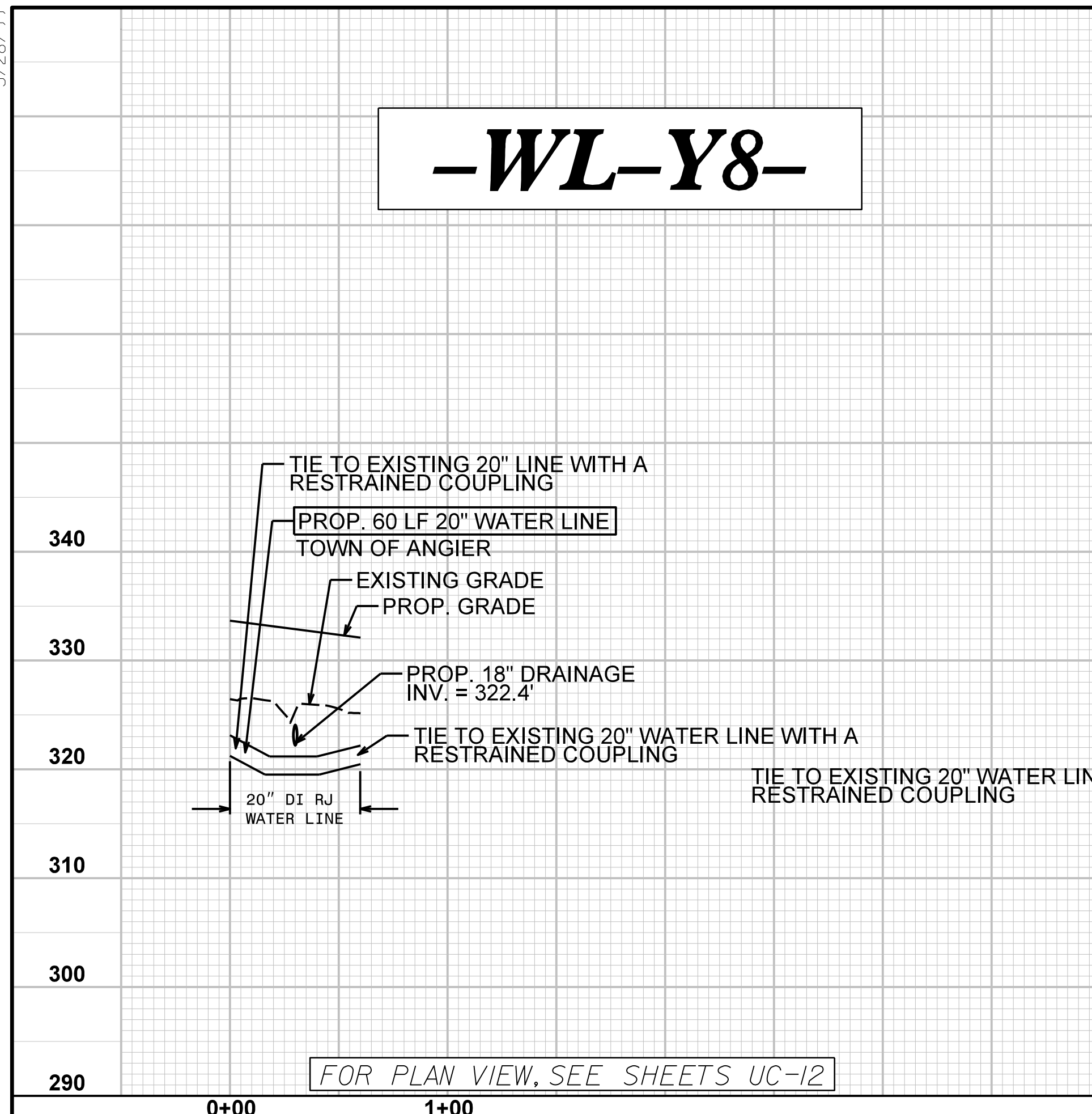
R-5705 AB&C\R-5705B\Water and Wastewater\Water Profile Sheets\R-5705b.ut...tr\_UC16.plt.dgn

5/28/99

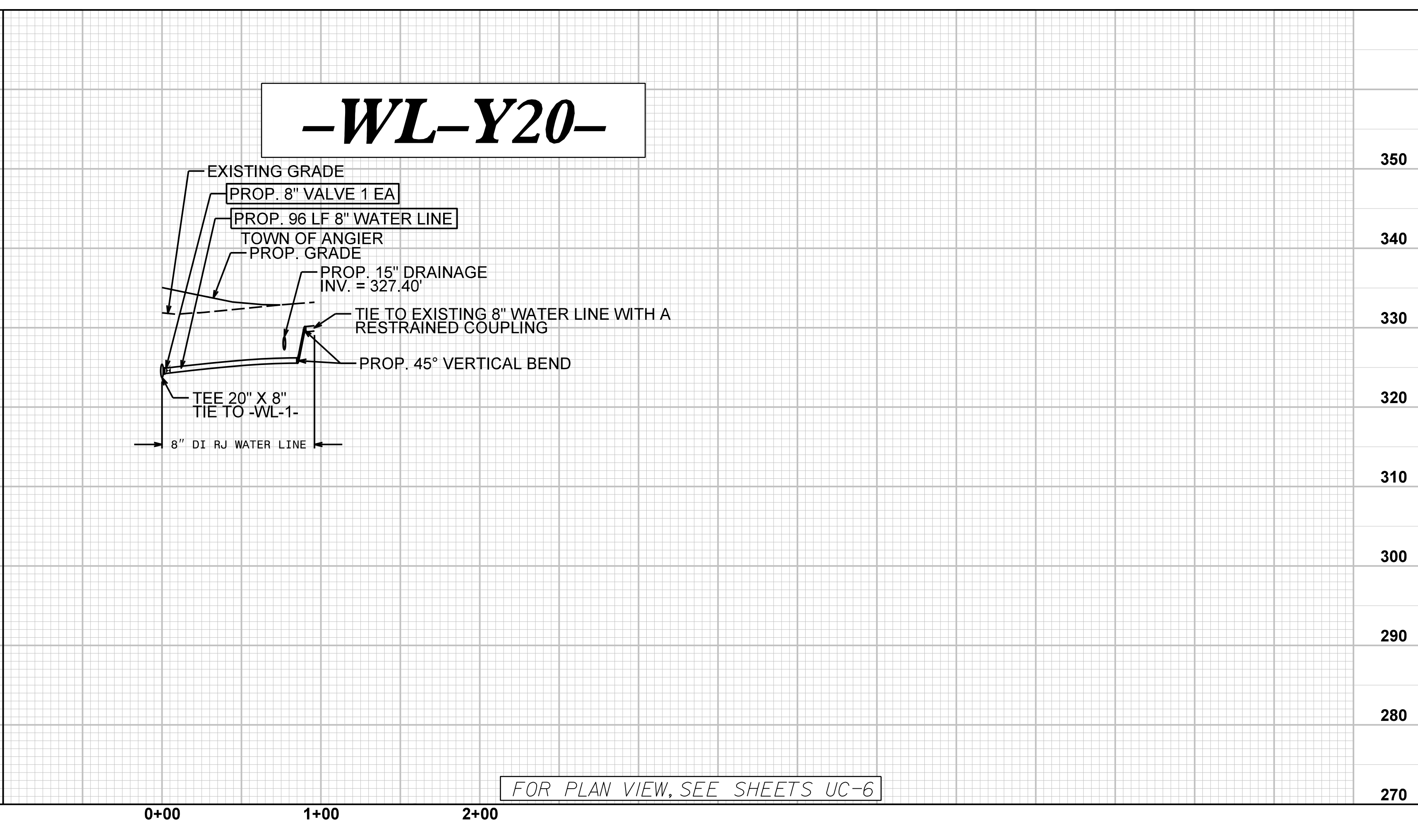
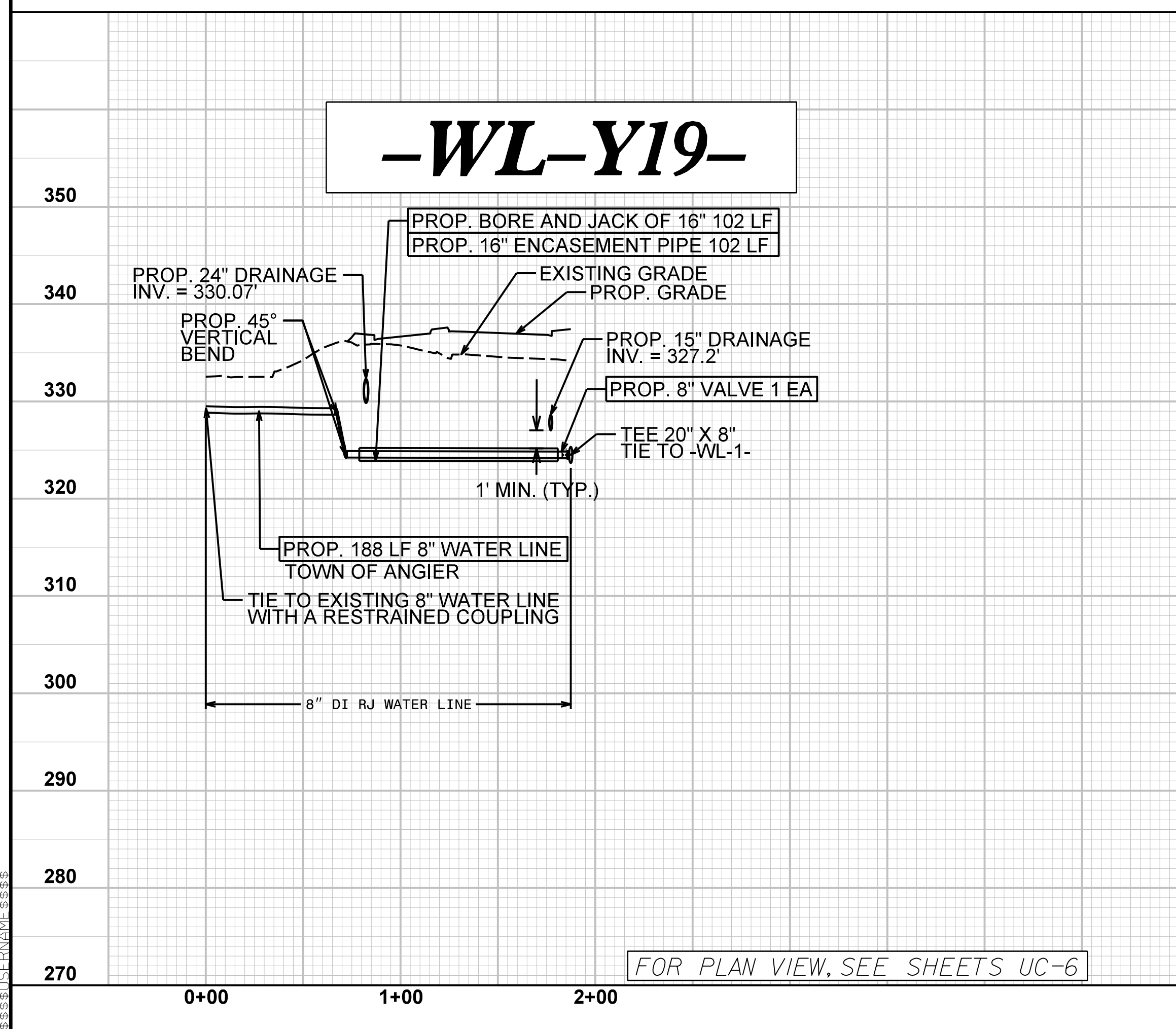
PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-17
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISER:	7/26/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

### UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



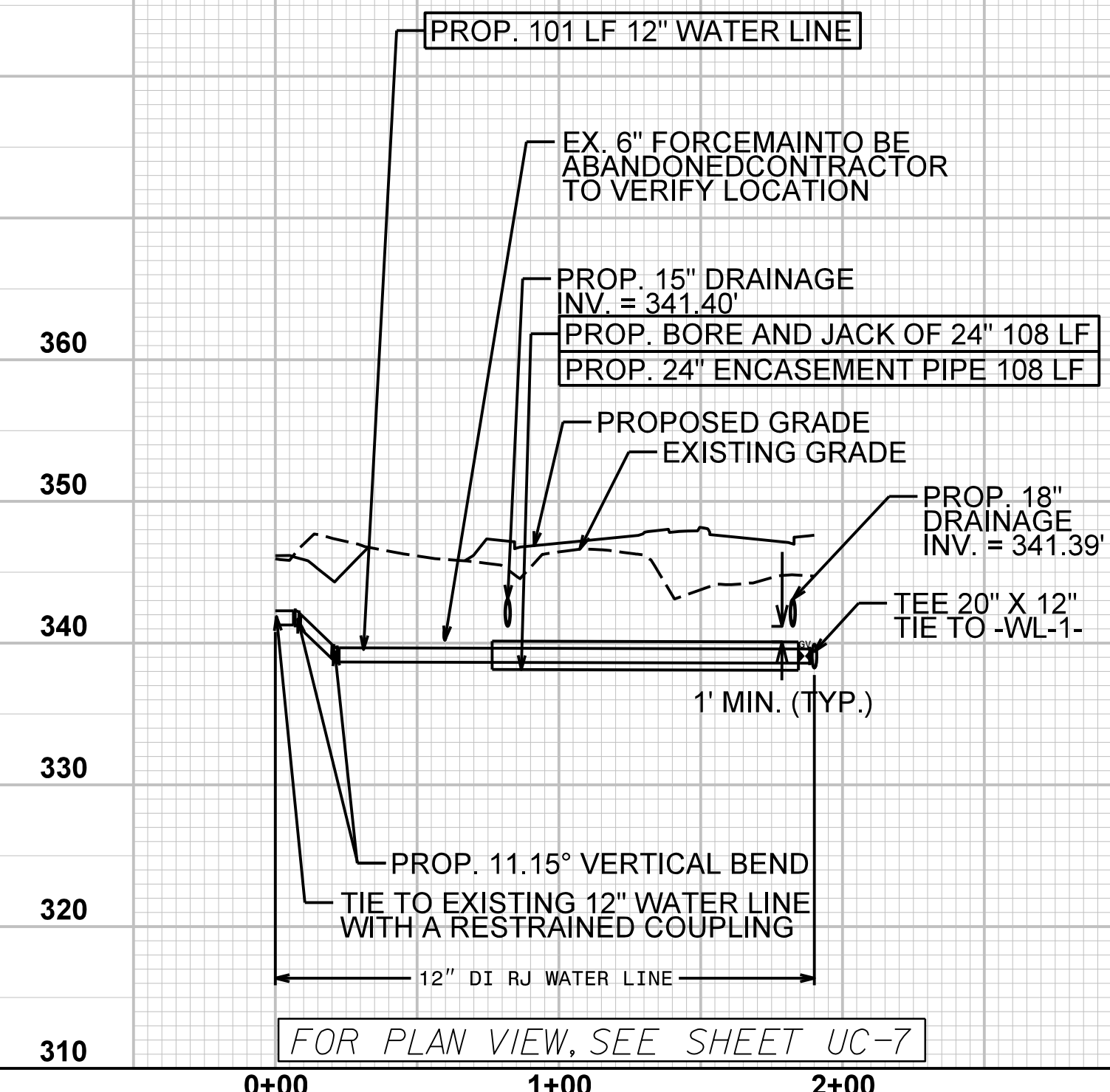
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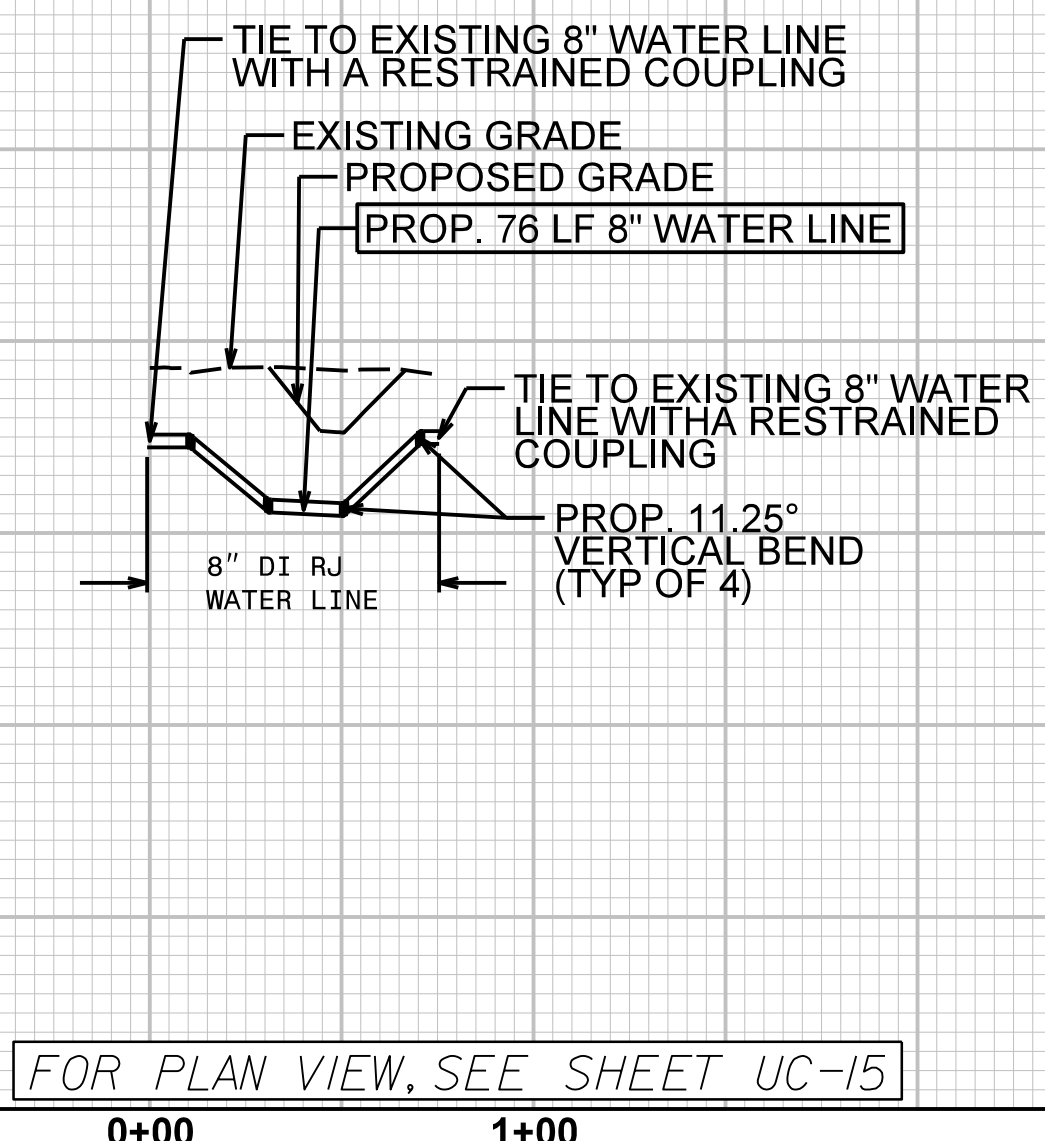
5/28/99

PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-18
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	 <small>Engineers • Planners • Scientists • Construction Managers</small> <small>4508 Falls of Neuse Road, Suite 400</small> <small>Raleigh, NC 27609</small> <small>Phone (919) 783-9214 • Fax (919) 783-9266</small> <small>License No. C-764</small>

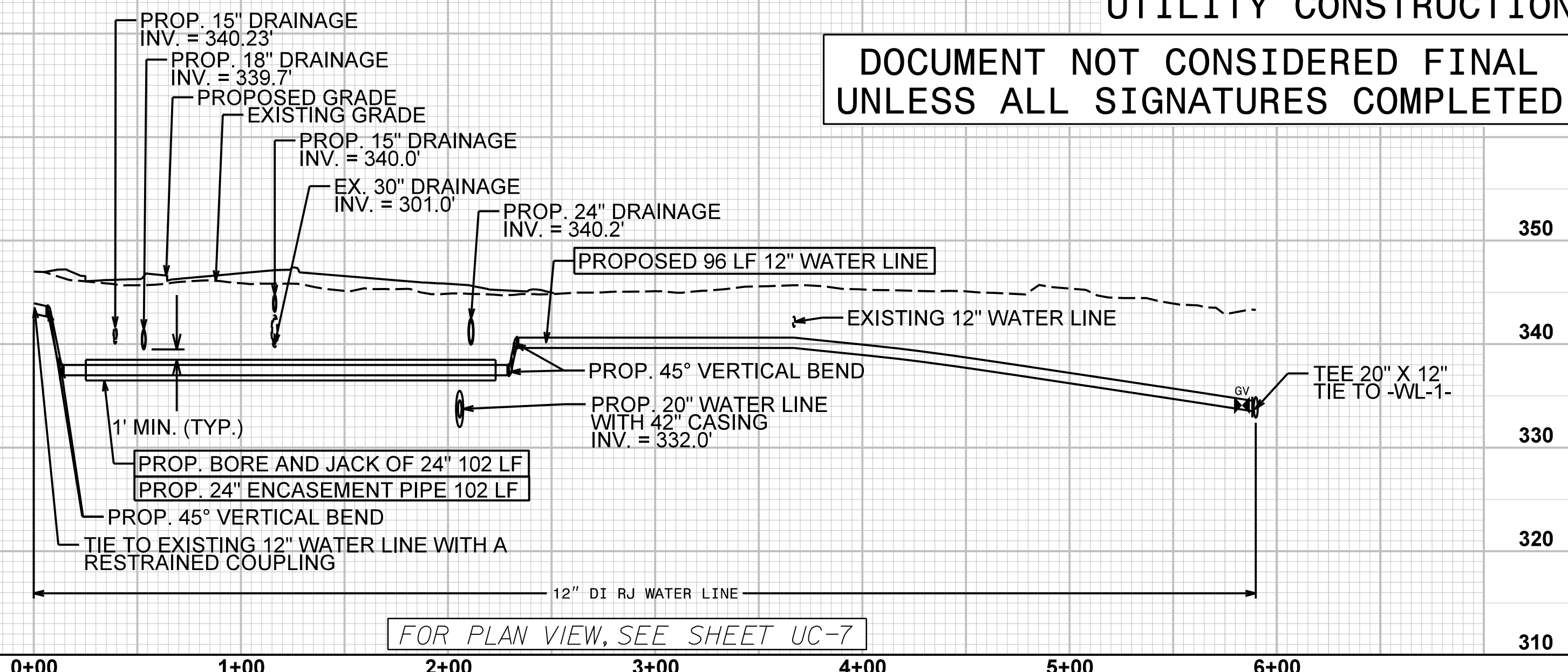
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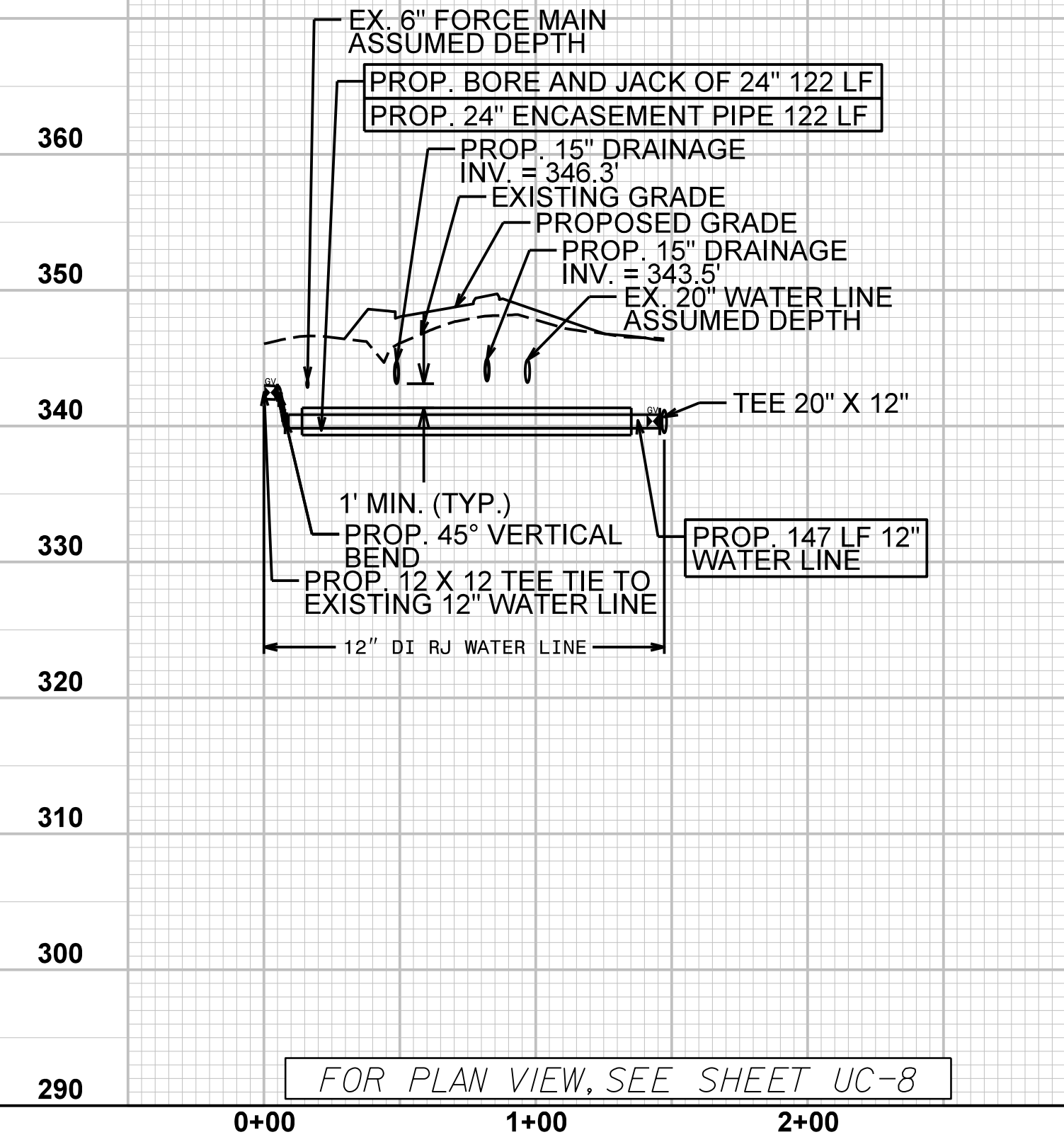


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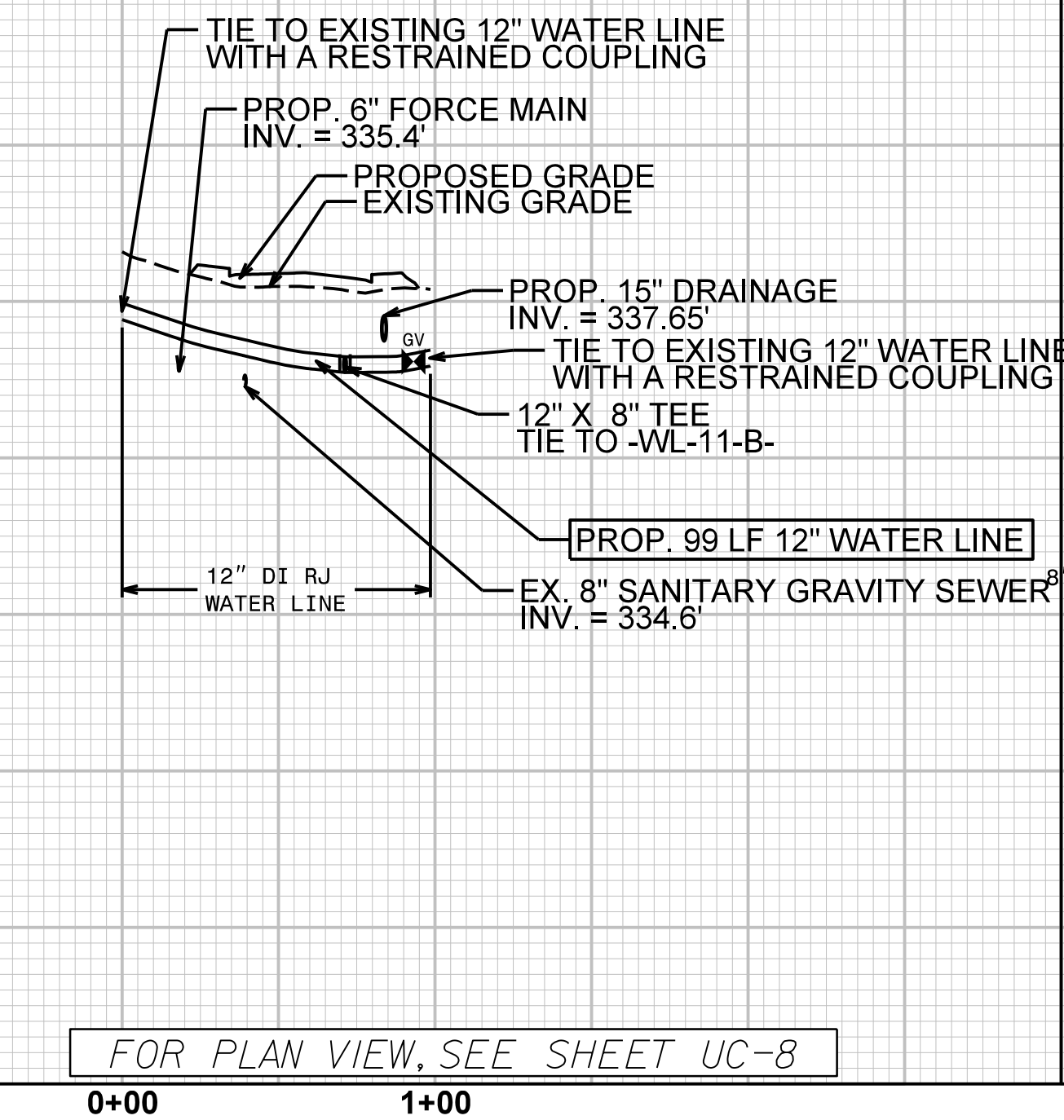


UTILITY CONSTRUCTION  
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

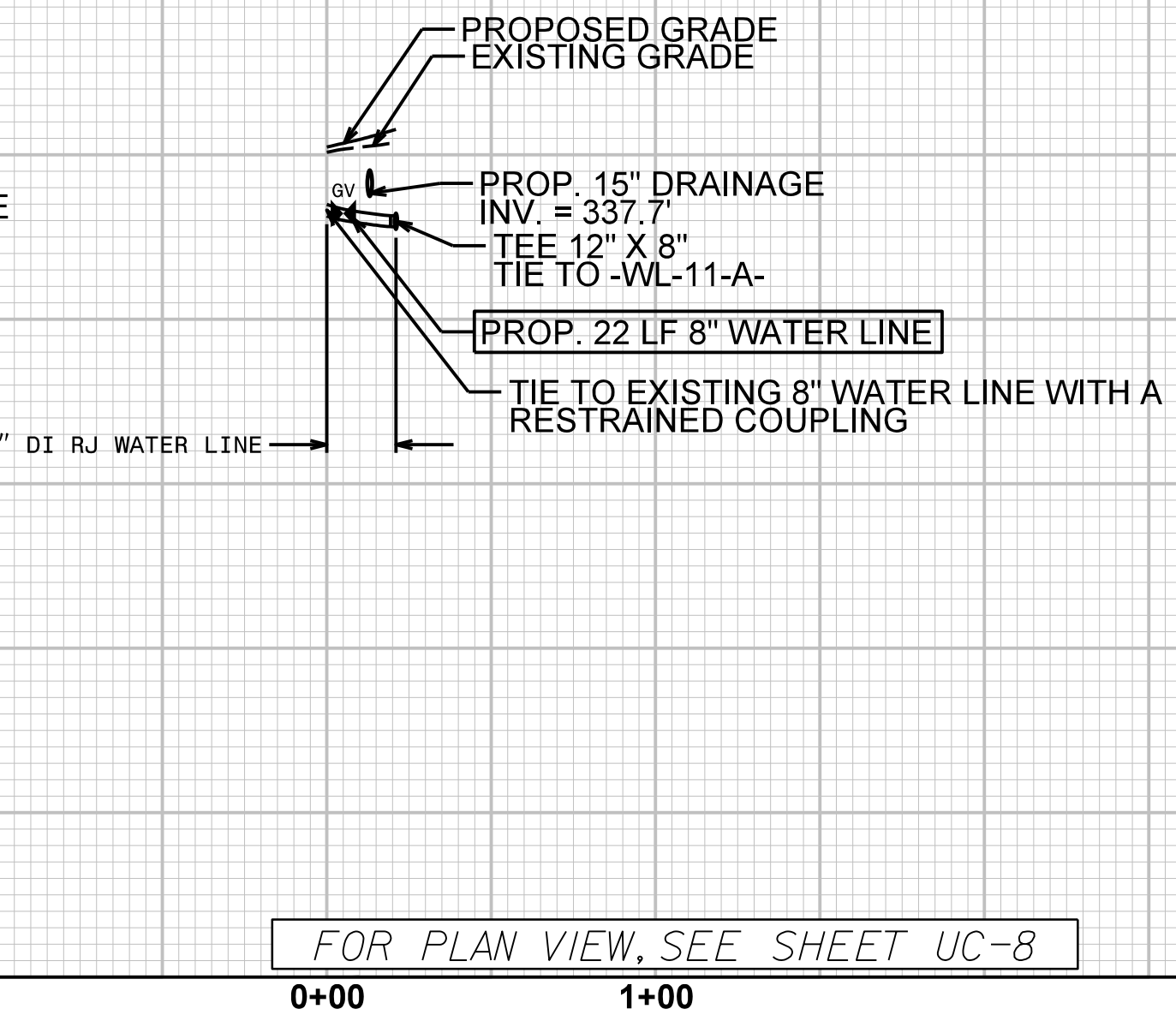
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# -WL-Y11-A-



# -WL-Y11-B-



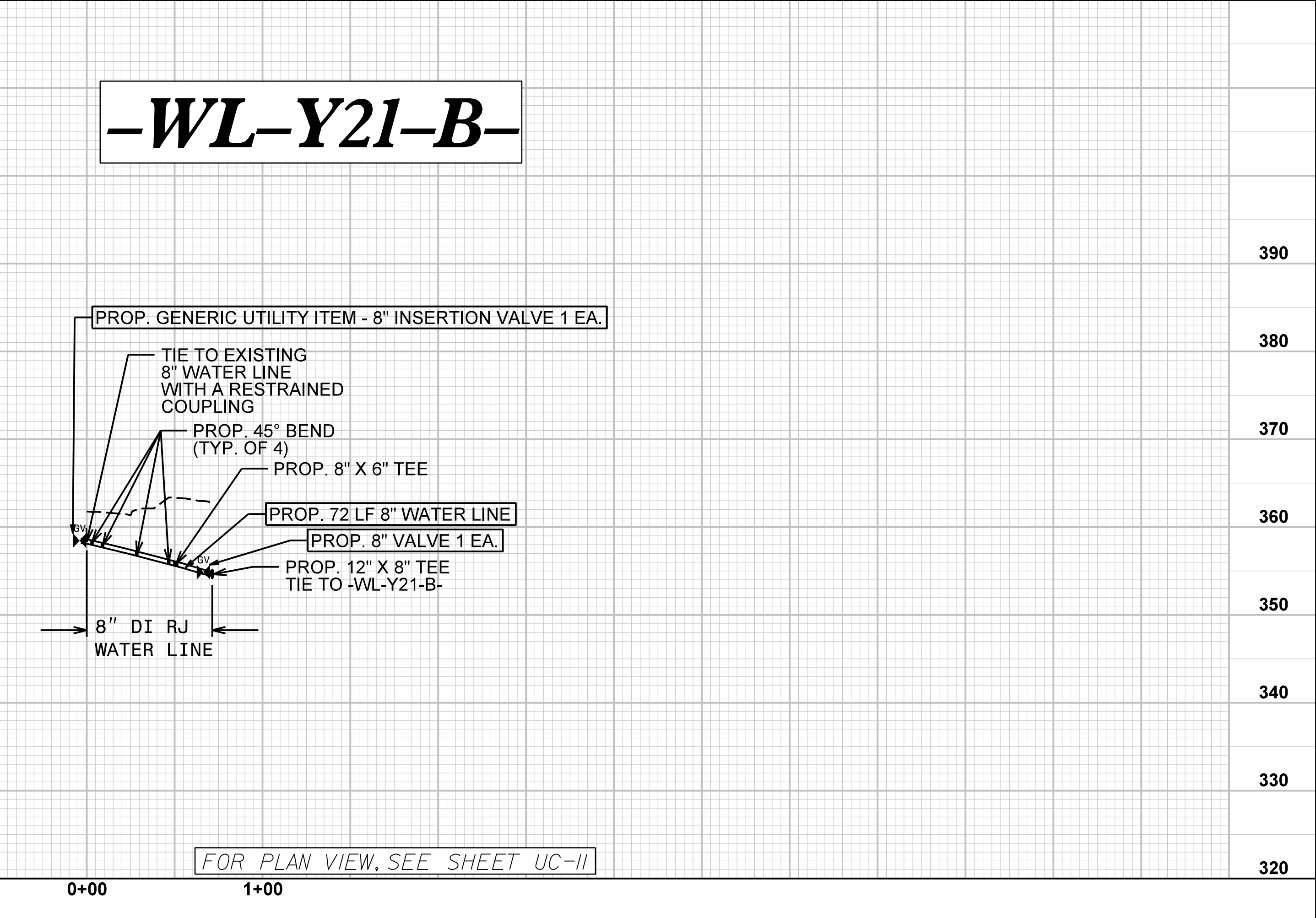
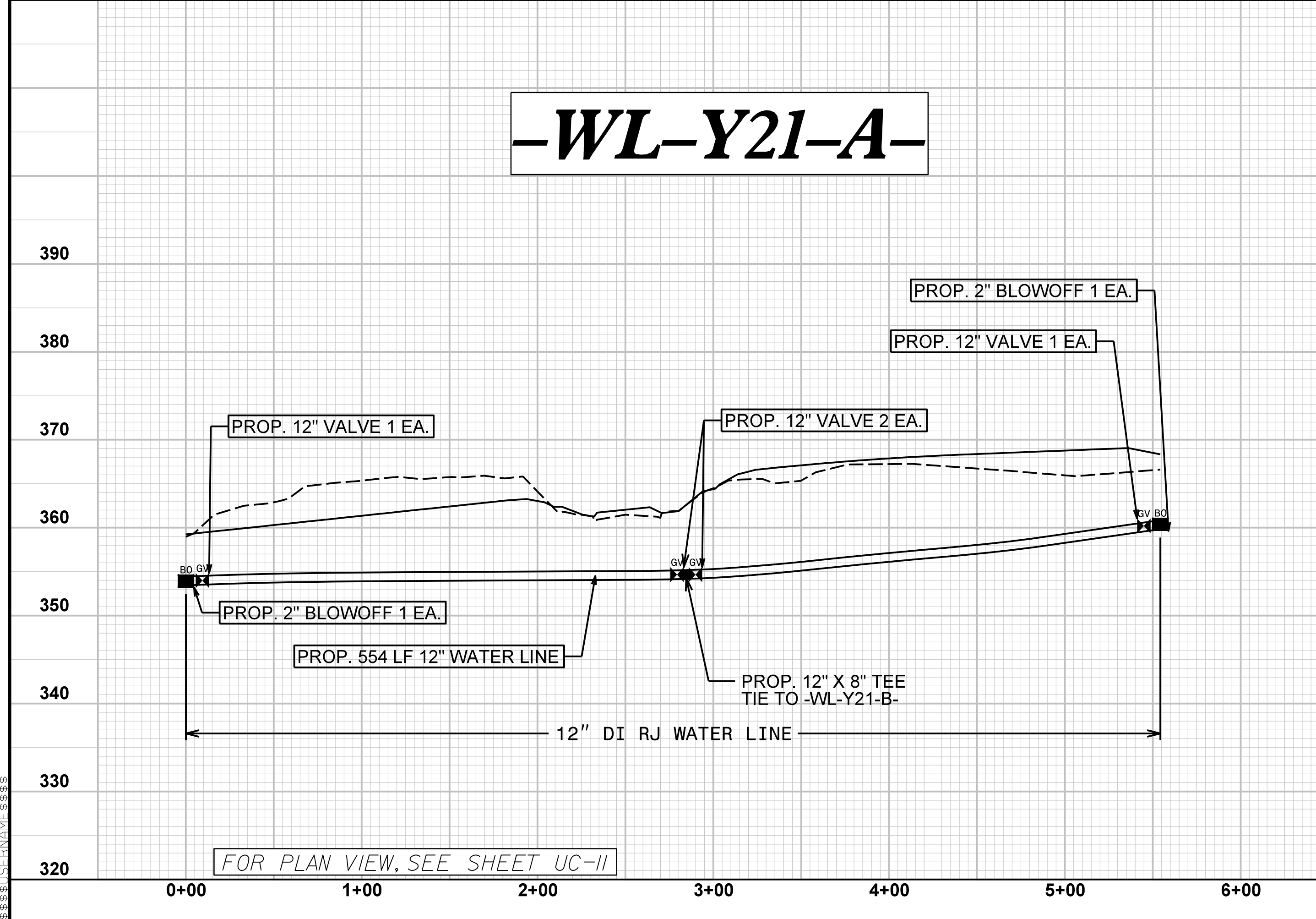
R-5705 UC-18.dgn 5/28/99

5/28/99

PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-19
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	7/26/2022
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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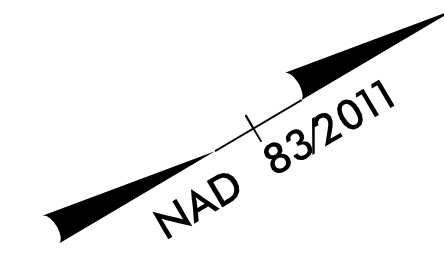
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8/17/99

NOTES:

- 1. SEE TOWN OF ANGIER SEWER DETAILS ON UC-3G AND UC-3H.
- 2. UC-20 CORRESPONDS TO RDY-13.

# SEWER LINE (TOWN OF ANGIER)

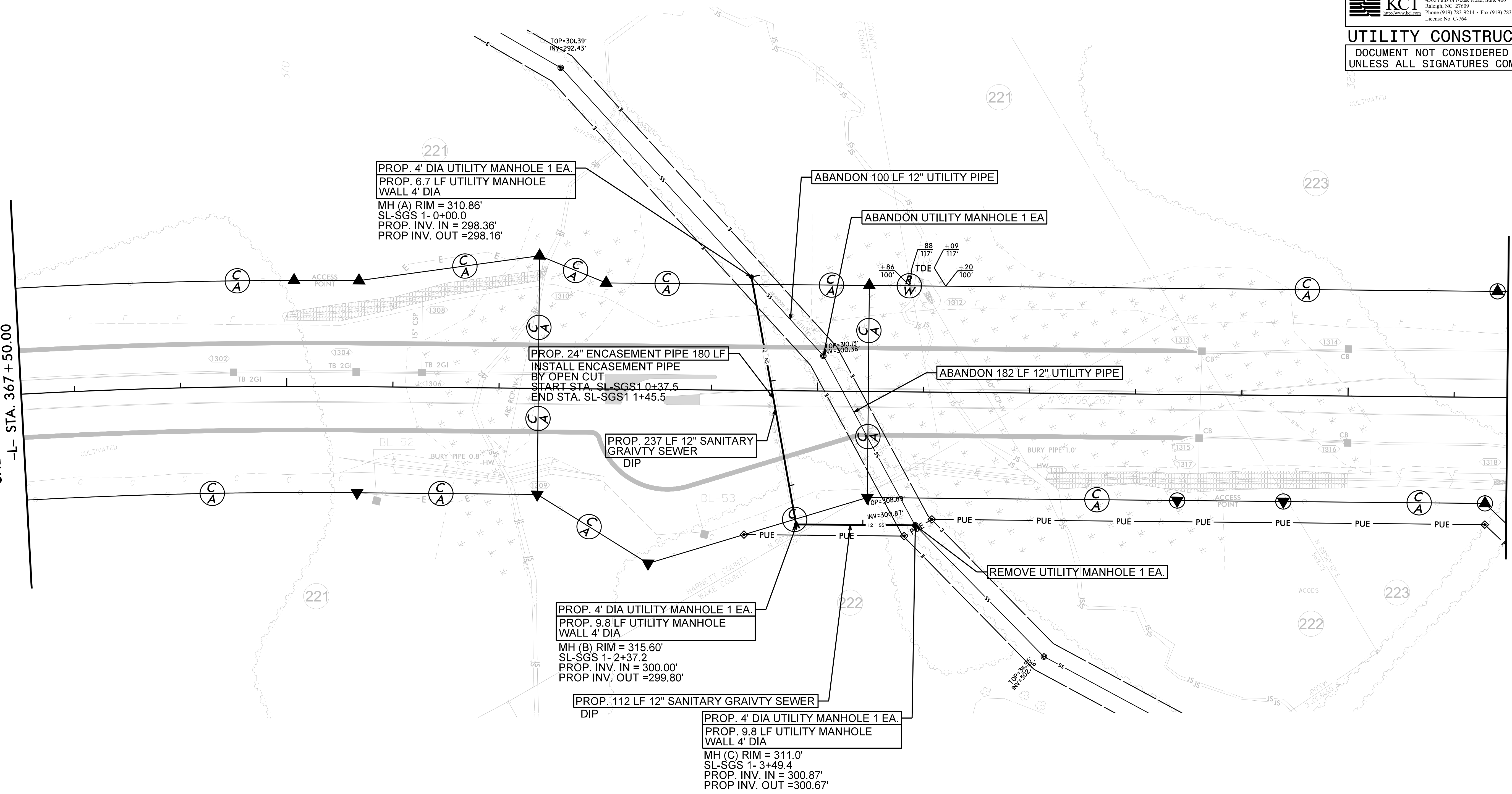


PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-20
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	7/26/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY 	

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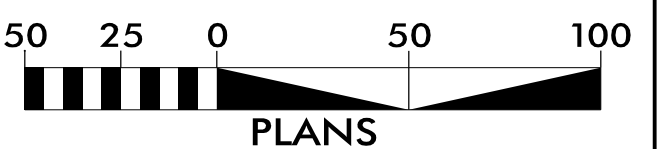
SHEET RDY 12 MATCHLINE  
 -L- STA. 367 + 50.00

SEE SHEET RDY 14 MATCHLINE  
 -L- STA. 381 + 50.00



MANHOLE STAKEOUT

MANHOLE	NORTHING	EASTING
A	648107.4	2074852.4
B	648025.0	2075074.8
C	648121.1	2075132.7



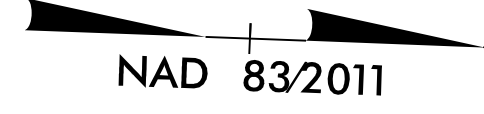
R-5705 AB&C\R-5705B\Water and Wastewater\Plan Sheets\R5705B.ut\_rdy13 UC20.psh.dgn  
 08/17/2022 09:51 AM  
 R-5705 UC20.dwg  
 TUCKER.MARTIN

# SEWER LINE (TOWN OF ANGIER)

PROJECT REFERENCE NO.	SHEET NO.
R-5705B	UC-21
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	7/26/2022
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 1250-4151	UTILITY CONSTRUCTION PLANS ONLY

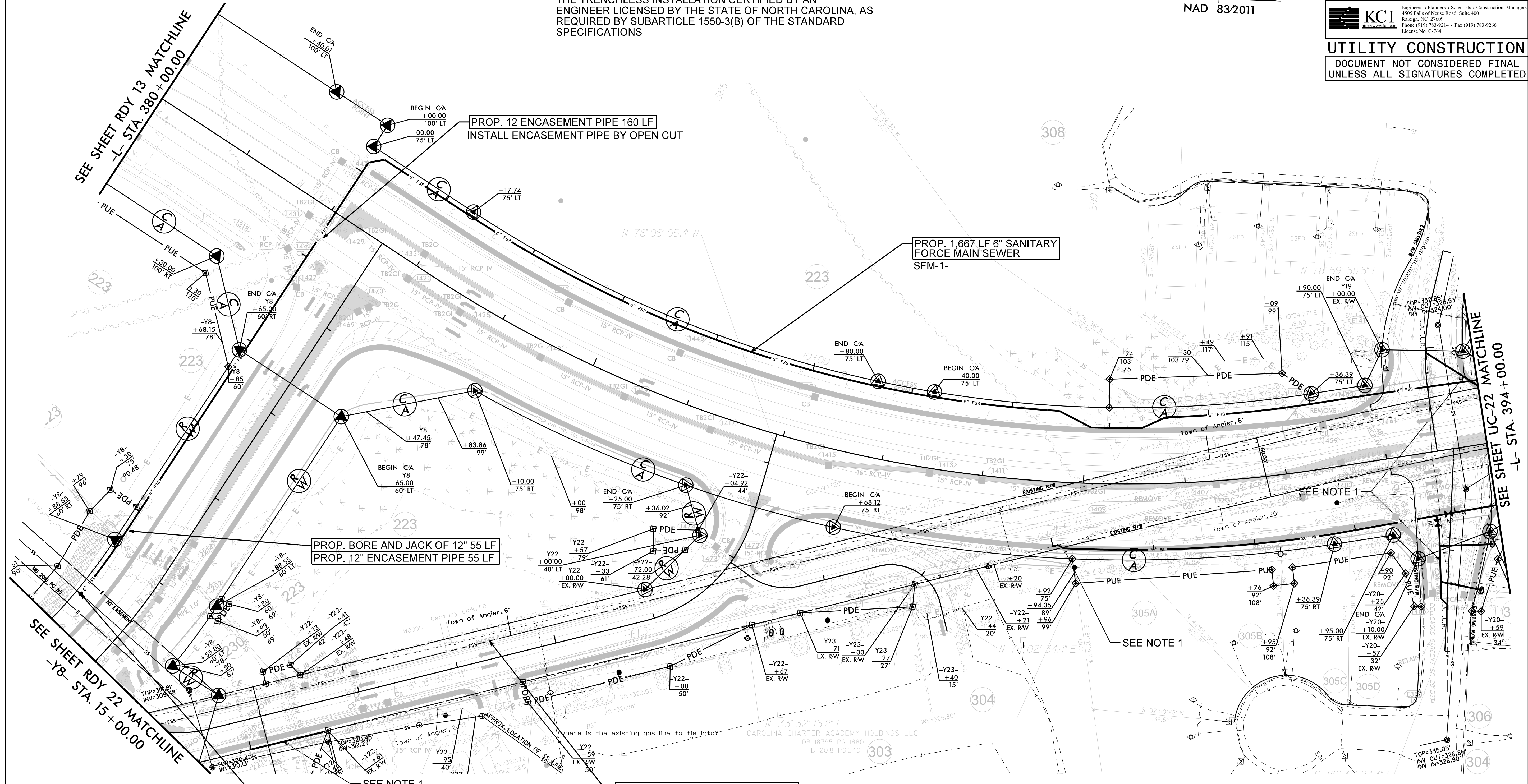
- NOTES:
- SEE UC-6 AND UC-12 FOR PROPOSED WATER LINE.
  - PROPOSED WATER LINE SHALL MAINTAIN A 7 LF SEPARATION FROM PROPOSED AND EXISTING POWER POLES, UNLESS OTHERWISE NOTED.
  - SEE TOWN OF ANGIER SEWER DETAILS ON UC-3G AND UC-3H.
  - UC-21 CORRESPONDS TO RDY-14 AND RDY-22.

NOTE:  
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS



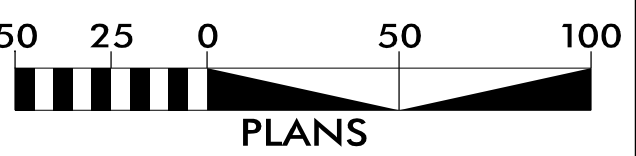
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License No. C-764



PROP. 4' DIA UTILITY MANHOLE 1 EA.  
PROP. 3.9 LF UTILITY MANHOLE WALL 4' DIA  
MH (D) RIM = 317.5'  
SFM1 STA. 0+00.0  
PROP. 6" INV. IN = 309.1'  
PROP. 12" INV. OUT = 307.6'  
PROP. 12" INV. OUT = 307.6'

PROP. 1,460 LB DUCTILE IRON SEWER PIPE FITTINGS



26-Jul-2022 08:22 AM R-5705 AB&C\A-P-5705B\Water and Wastewater\Plan Sheets\R5705B.ut\_rdy14\_UC21.psh.dgn  
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8/17/99

# SEWER LINE (TOWN OF ANGIER)

**NOTES:**

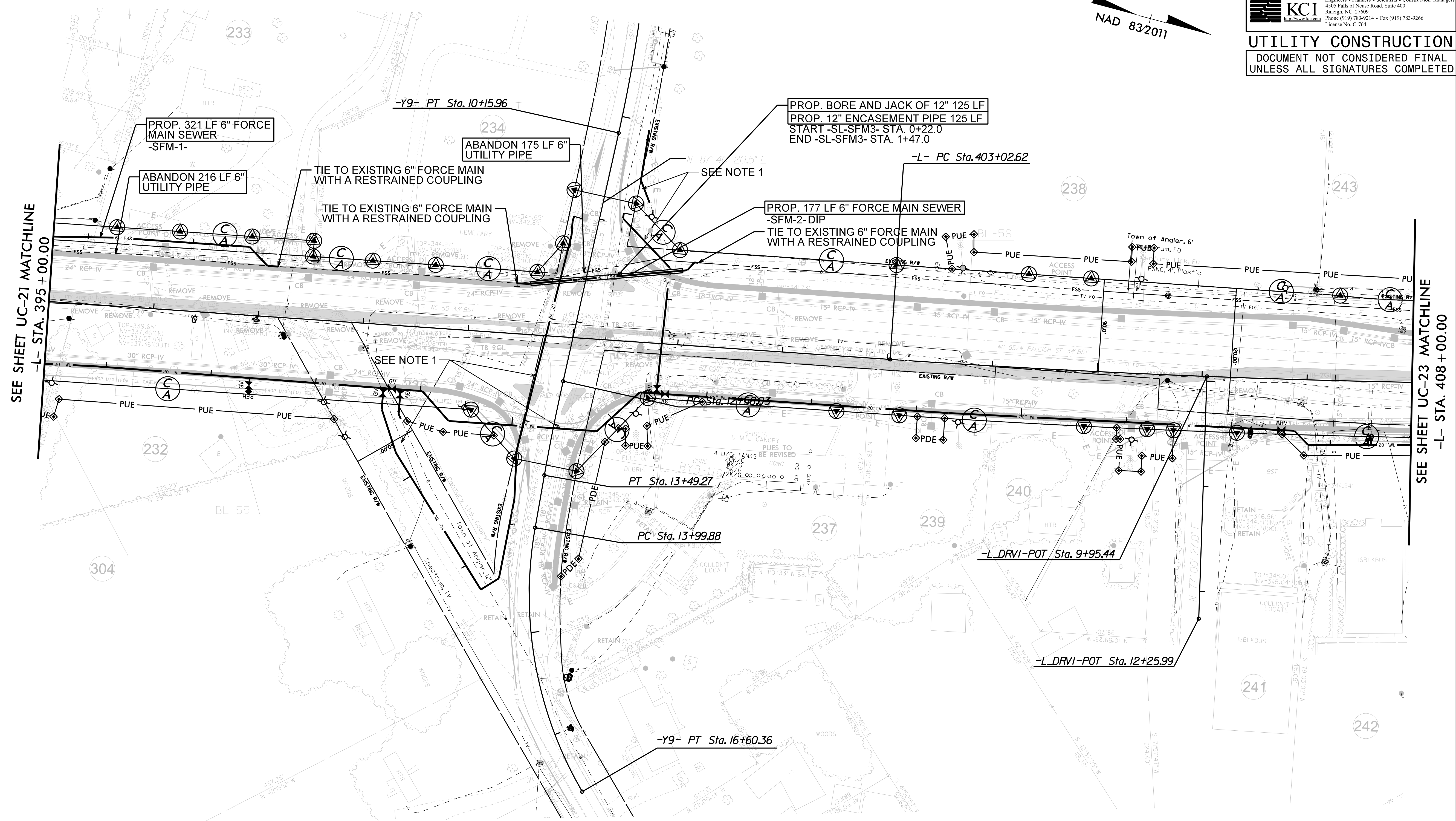
1. SEE UC-7 FOR PROPOSED WATER LINE.
2. PROPOSED WATER LINE SHALL MAINTAIN A 7 LF SEPARATION FROM PROPOSED AND EXISTING POWER POLES, UNLESS OTHERWISE NOTED.
3. SEE TOWN OF ANGIER SEWER DETAILS ON UC-3G AND UC-3H.
4. UC-22 CORRESPONDS TO RDY-15.

NOTE:  
PRIOR TO COMMENCING ANY WORK ON ANY TRENCHLESS INSTALLATION ON THIS PROJECT, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS

PROJECT REFERENCE NO. <b>R-5705B</b>	SHEET NO. <b>UC-22</b>
DESIGNED BY: <b>CS</b>	
DRAWN BY: <b>CS</b>	
CHECKED BY: <b>MM</b>	
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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**UTILITY CONSTRUCTION**  
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UNLESS ALL SIGNATURES COMPLETED



SEE SHEET UC-21 MATCHLINE  
-L- STA. 395 + 00.00

SEE SHEET UC-23 MATCHLINE  
-L- STA. 408 + 00.00



PROP. 945 LB DUCTILE IRON  
SEWER PIPE FITTINGS

8/17/99

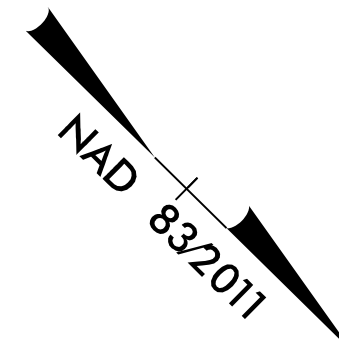
R-5705 AB&C\R-5705B\Water and Wastewater\SEwer Plan Sheets\R5705B.ut.rdj\5\_UC22.psh.dgn  
 08/17/2022 09:50 AM  
 USER:R5705B

8/17/99

NOTES:

- 1. SEE UC-8 FOR PROPOSED WATER LINE.
- 2. PROPOSED WATER LINE SHALL MAINTAIN A 7 LF SEPARATION FROM PROPOSED AND EXISTING POWER POLES, UNLESS OTHERWISE NOTED.
- 3. SEE TOWN OF ANGIER SEWER DETAILS ON UC-3G AND UC-3H.
- 4. UC-23 CORRESPONDS TO RDY-16.

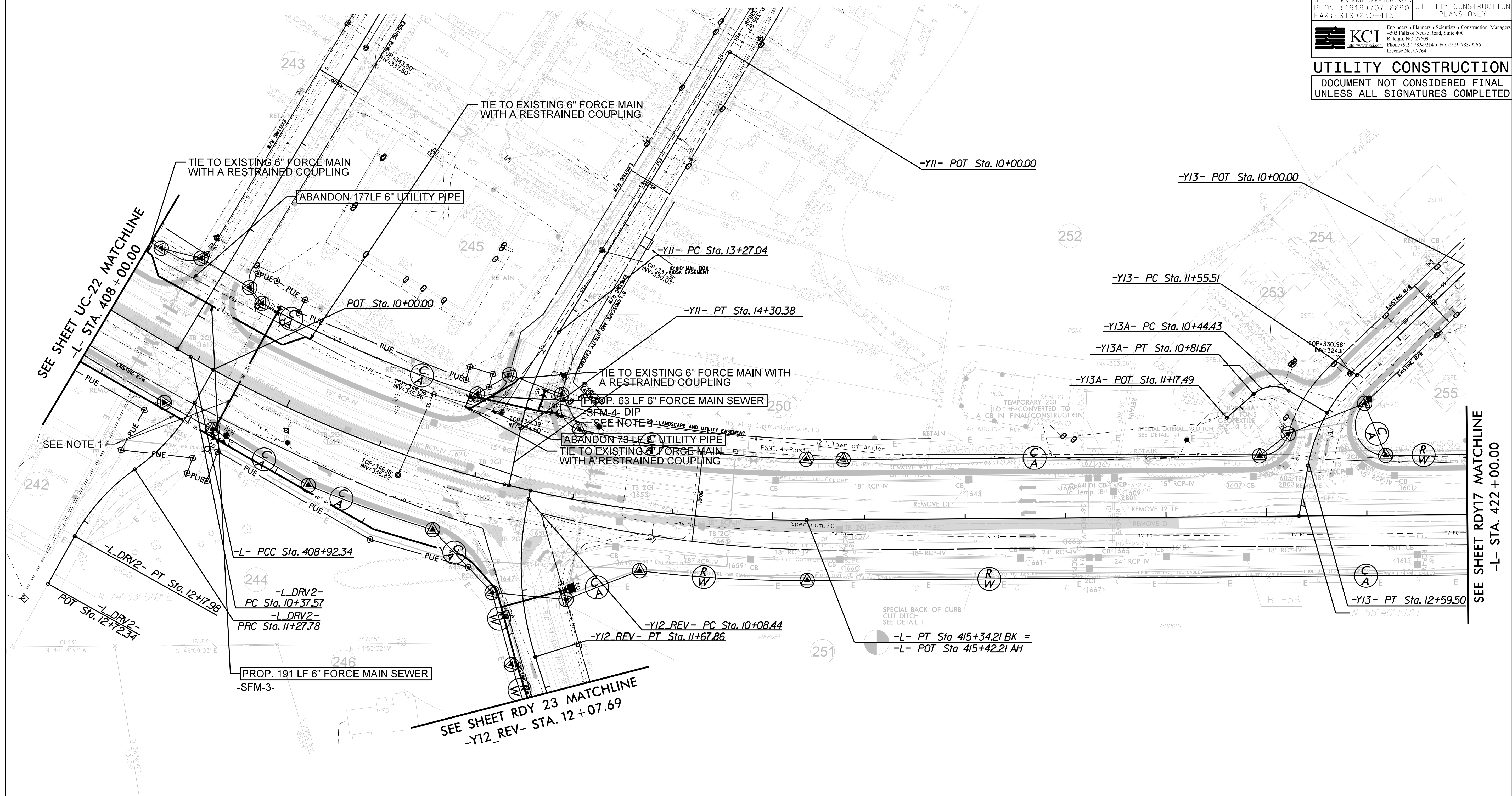
# SEWER LINE (TOWN OF ANGIER)



PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-23
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	7/26/2022
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	UTILITY CONSTRUCTION PLANS ONLY
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	

**KCI**  
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 8/17/2022 10:03:31 AM  
 USER: JRM

PROP. 1,160 LB DUCTILE IRON SEWER PIPE FITTINGS

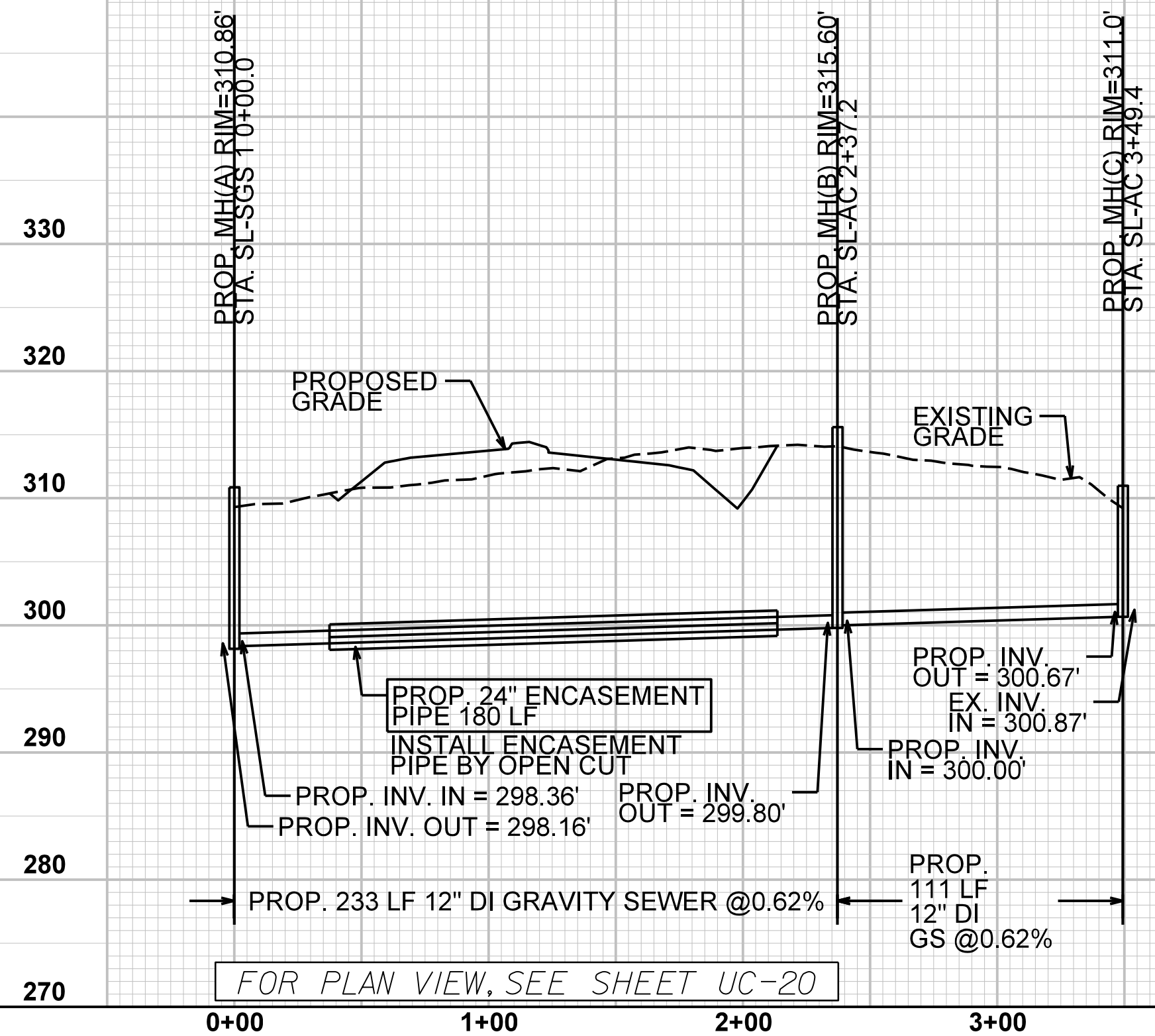


PLANS



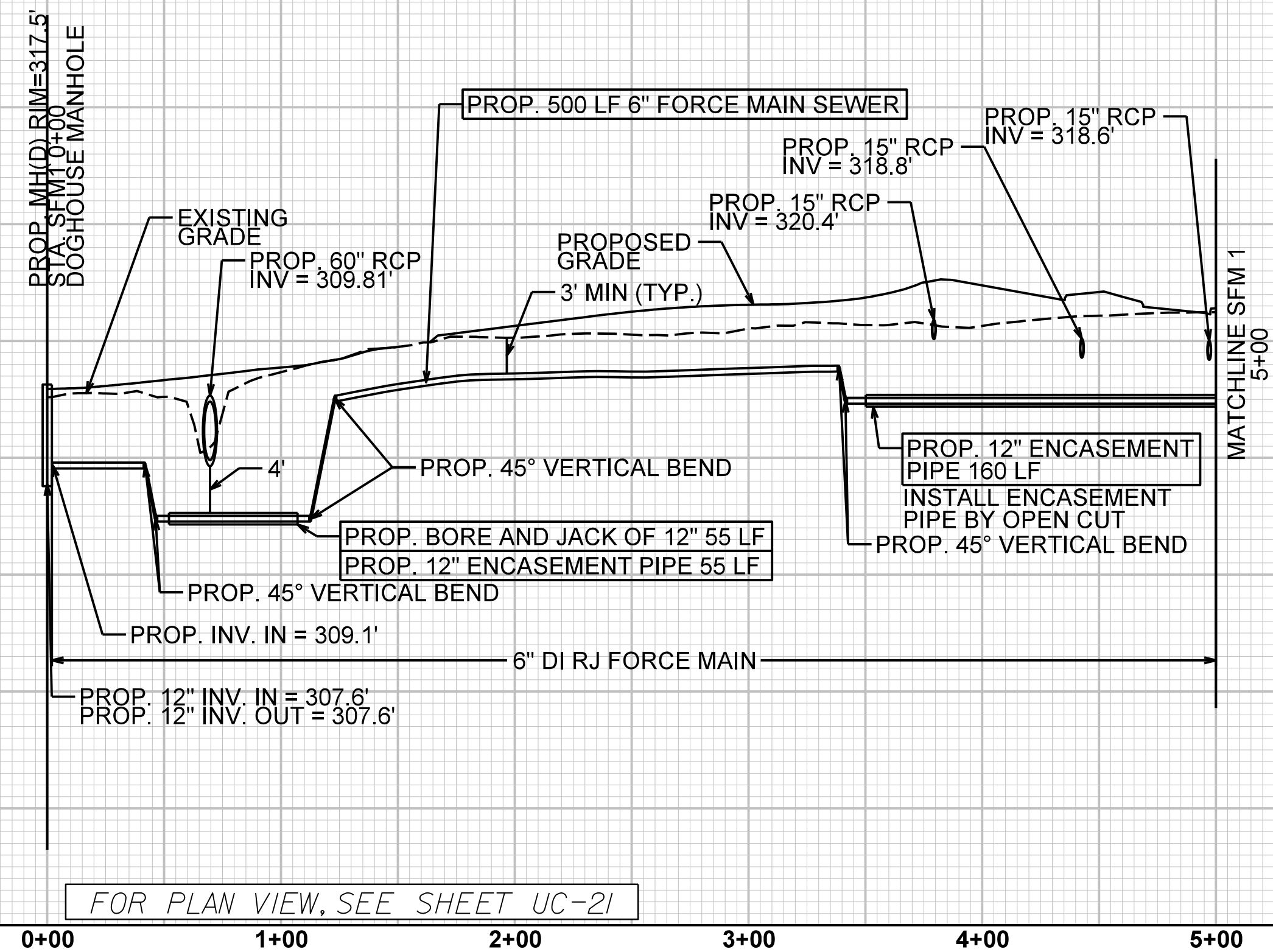
5/28/99

# -SGS 1-



FOR PLAN VIEW, SEE SHEET UC-20

# -SFM 1-



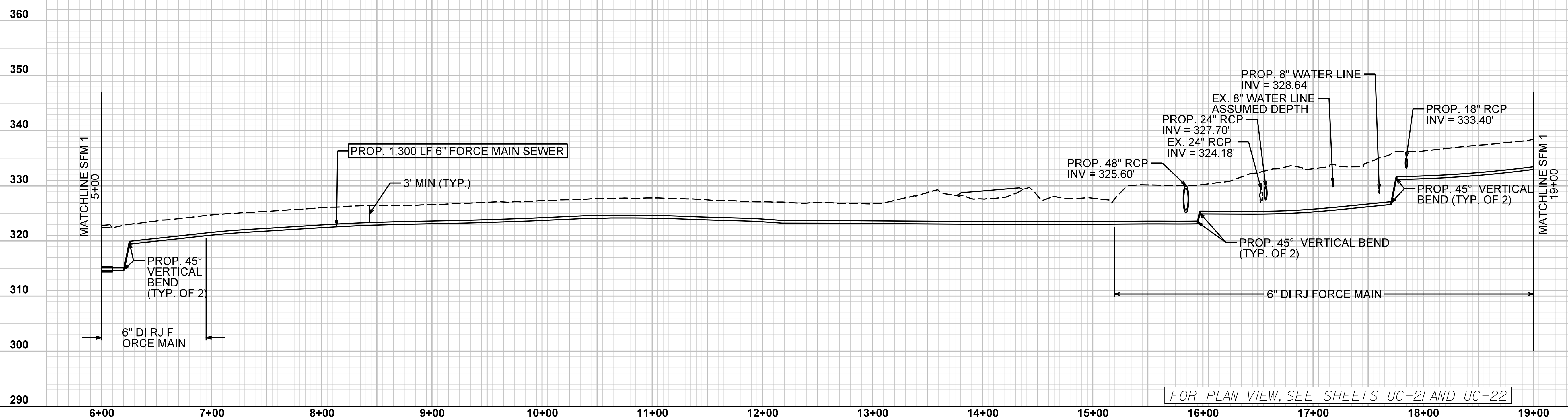
FOR PLAN VIEW, SEE SHEET UC-21

PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-24
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
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

# -SFM 1-



FOR PLAN VIEW, SEE SHEETS UC-21 AND UC-22

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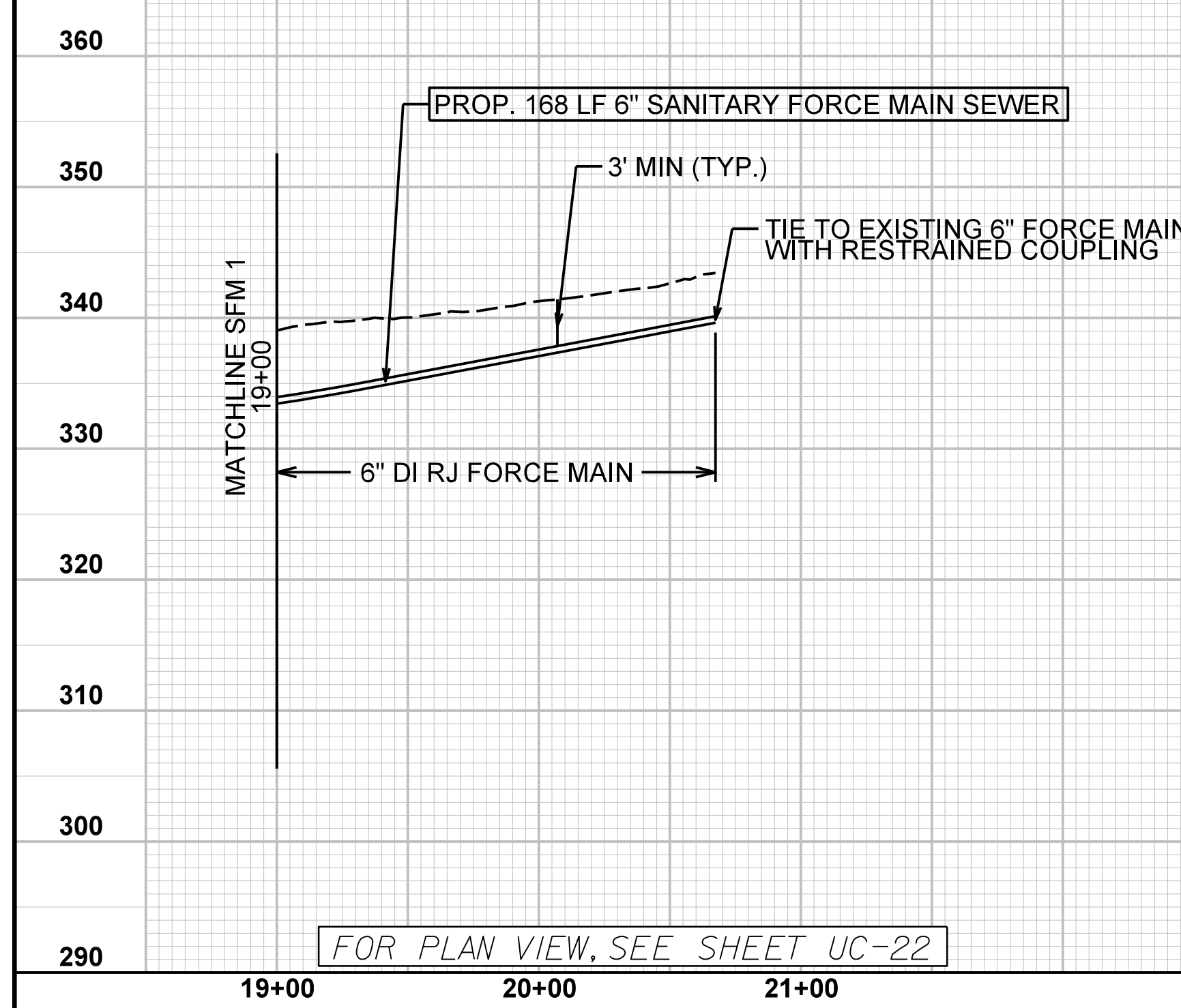
5/28/99

PROJECT REFERENCE NO. R-5705B	SHEET NO. UC-25
DESIGNED BY: CS	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS <b>KCI</b> 4508 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

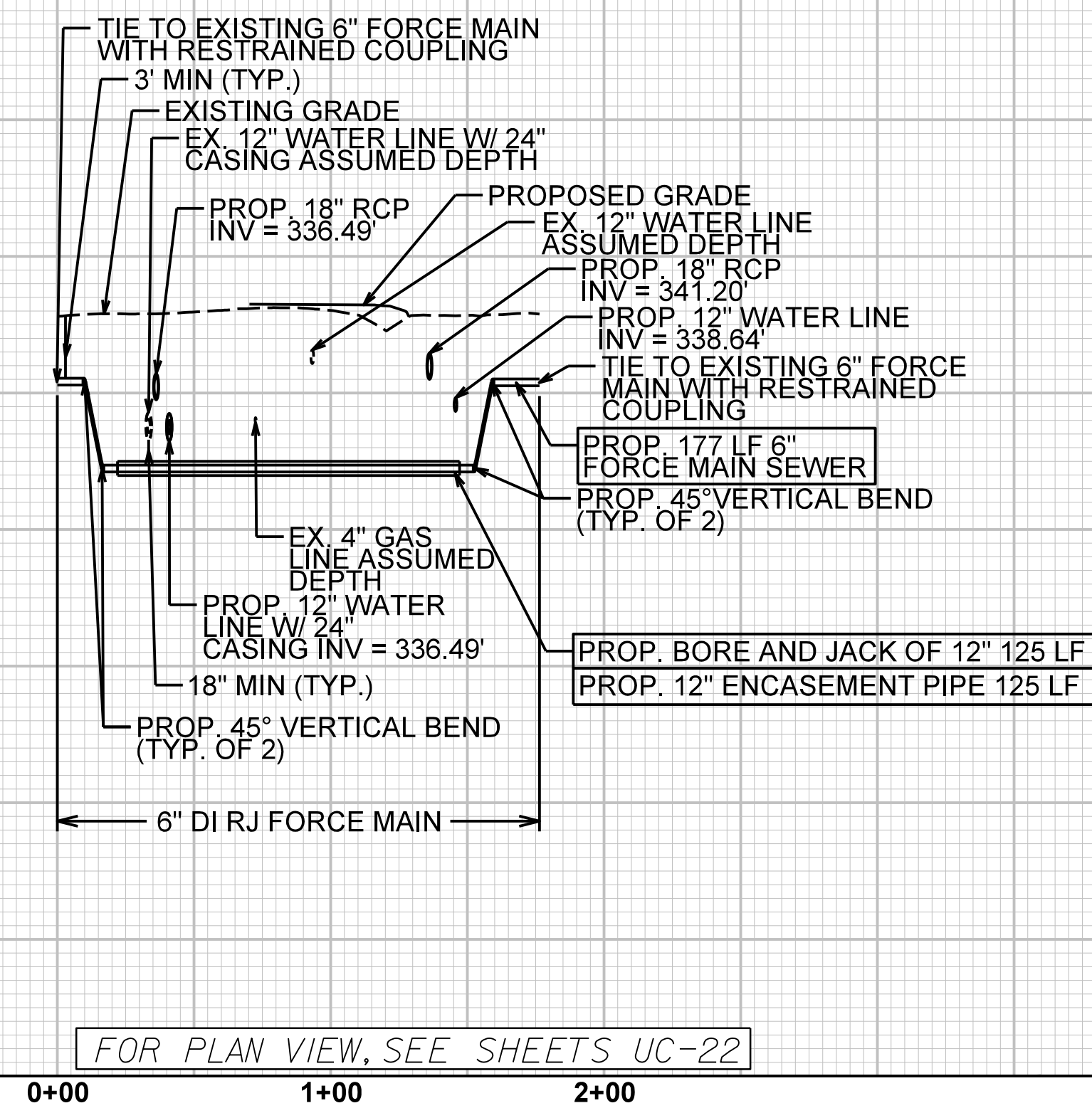
### UTILITY CONSTRUCTION

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

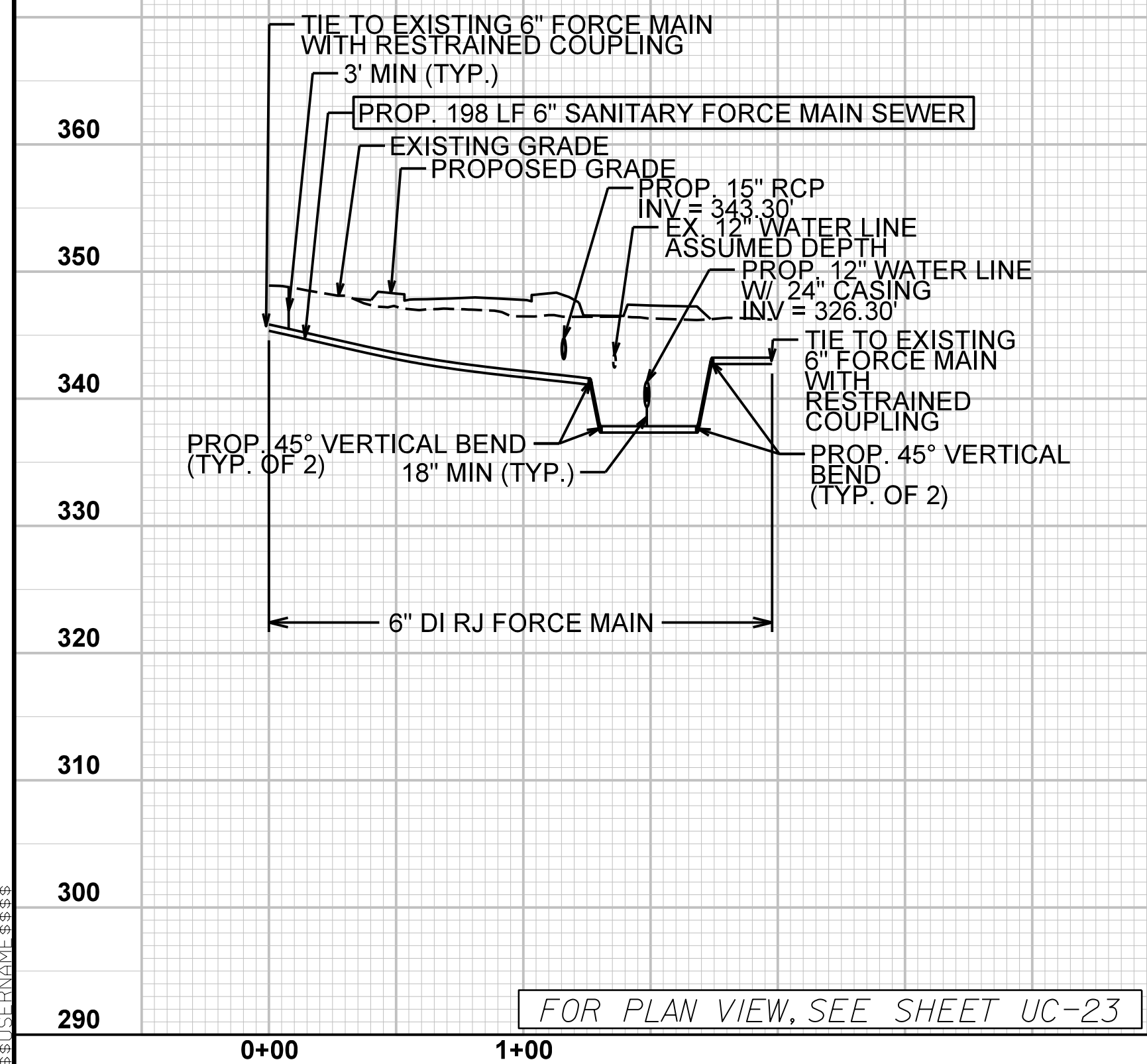
## -SFM 1-



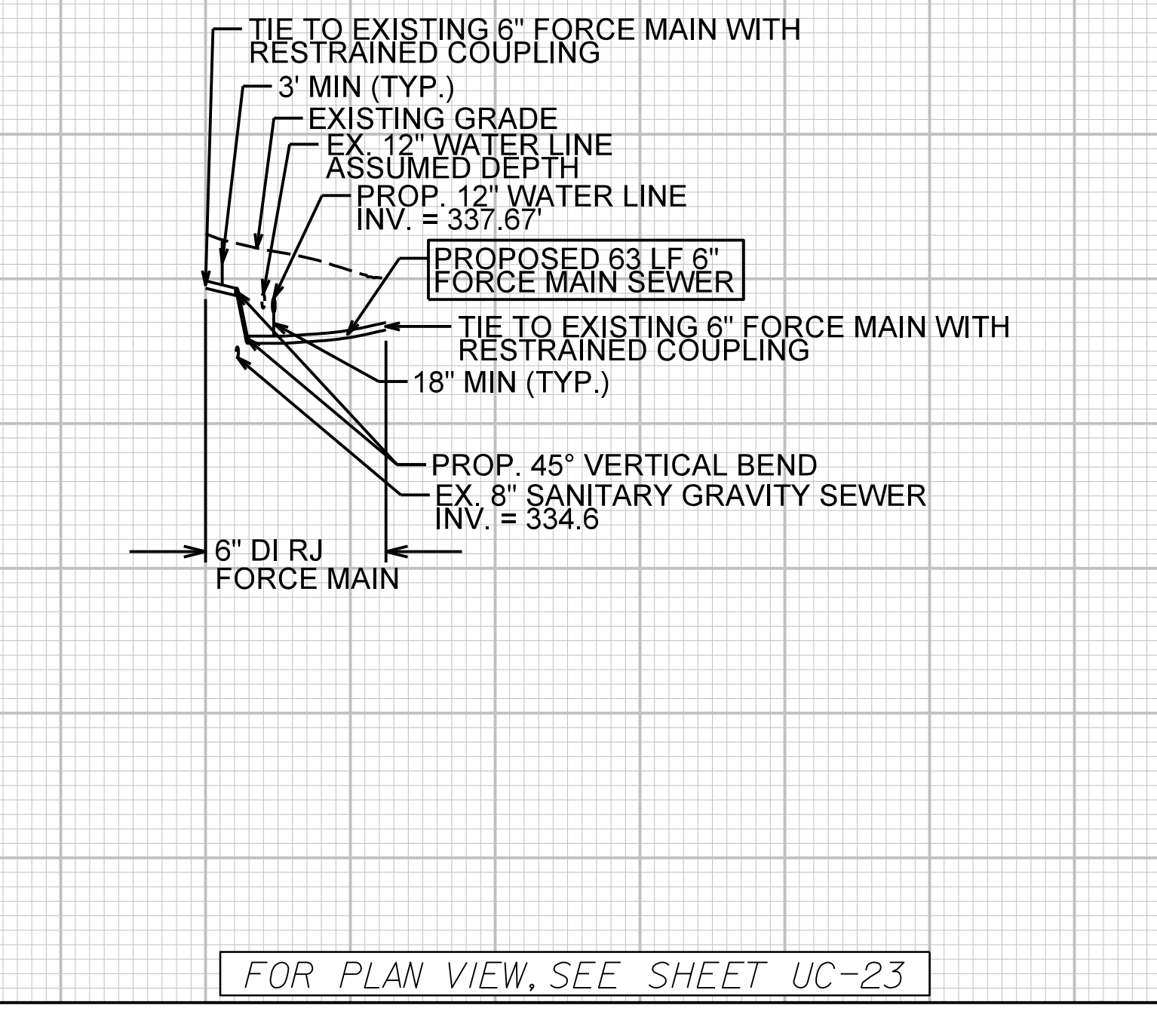
## -SFM 2-



## -SFM 3-



## -SFM 4-



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