

09\_08/99

28-AUG-2020 08:49 MA\_V2016\_V2161889\_NCDOT\_R-5020B\_US 701 Widening\Water\_Sanitary\R-5020B sew.tsh\_UC01.dgn \$\$\$USERNAME\$\$\$

TIP PROJECT: R-5020B

T.I.P. NO.	SHEET NO.
R-5020B	UC-1
DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED	

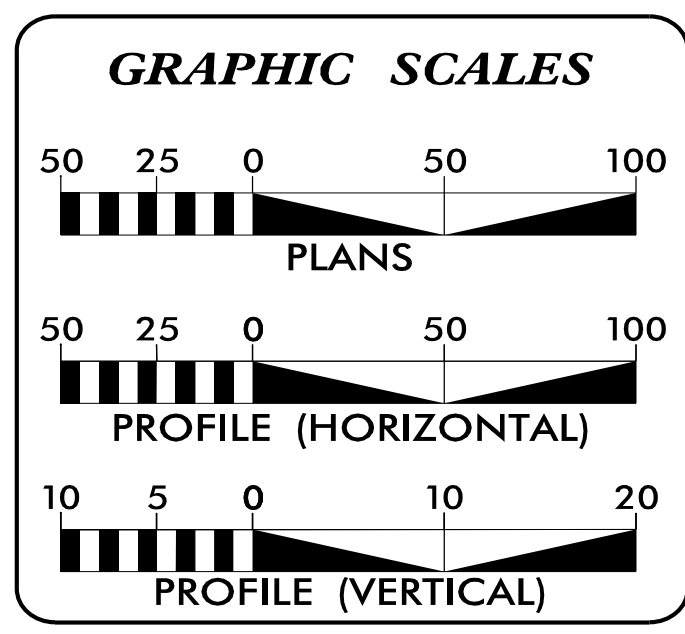
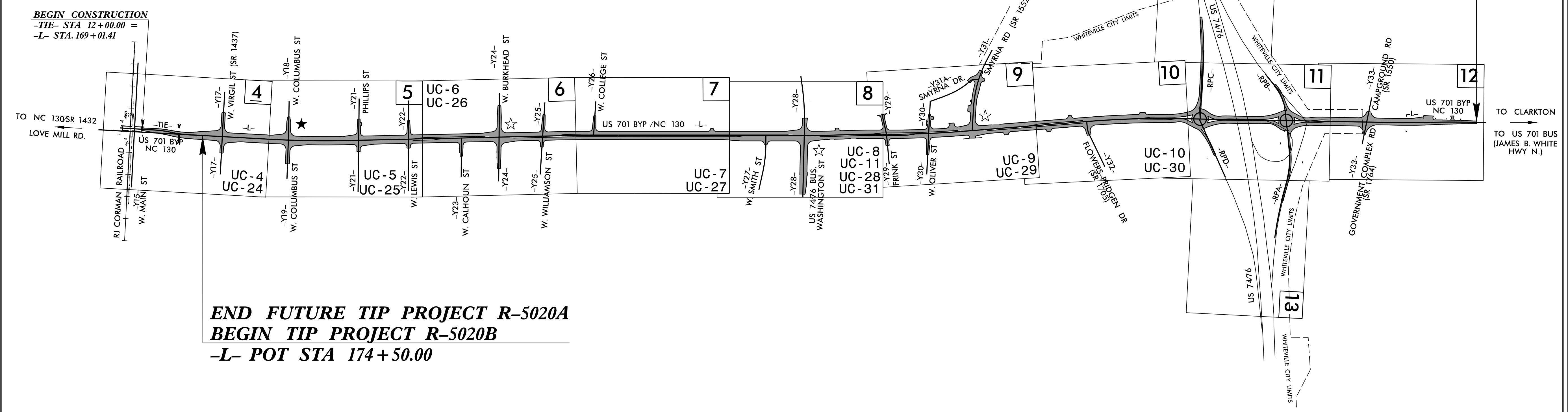
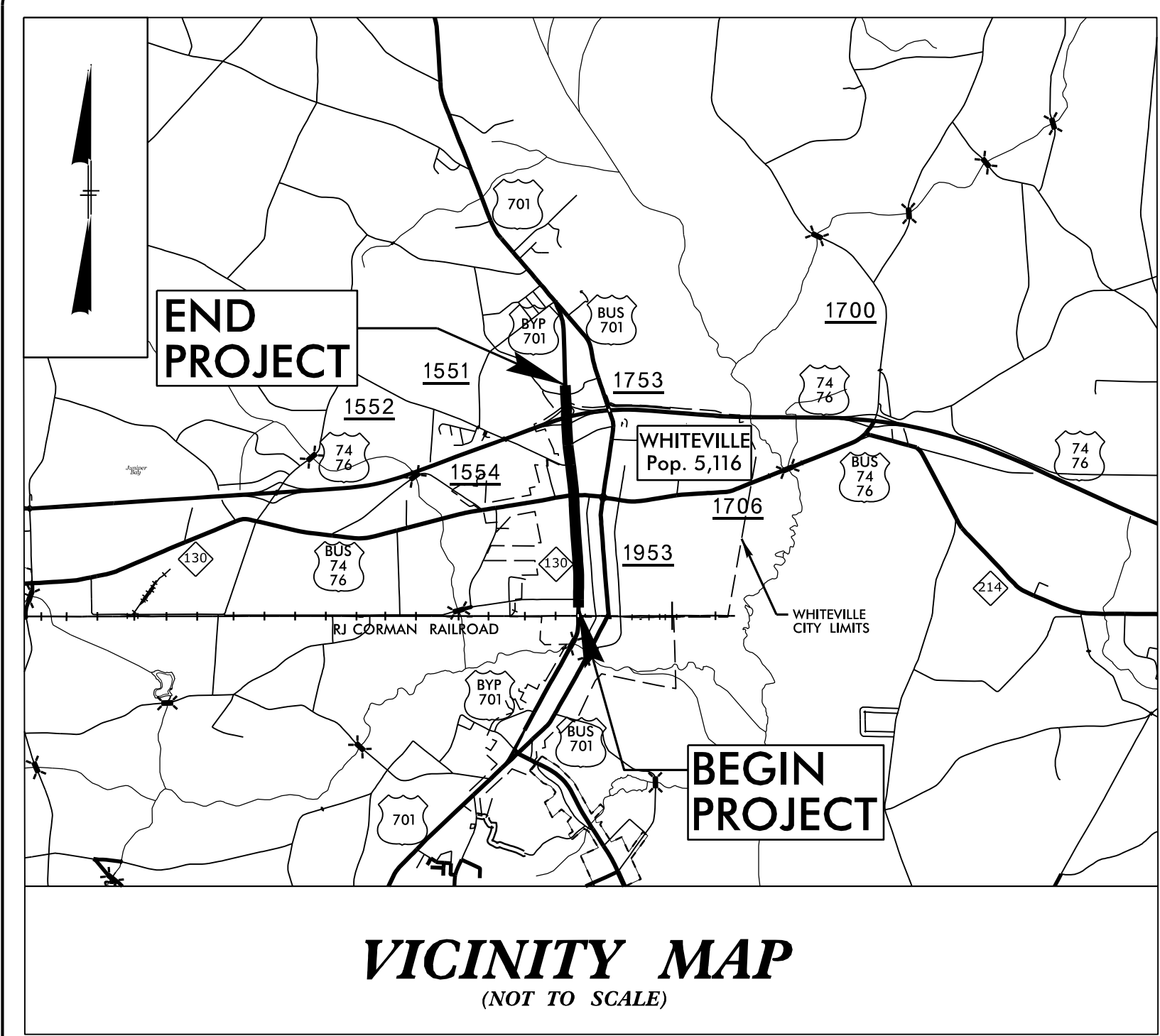
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITY CONSTRUCTION PLANS COLUMBUS COUNTY

LOCATION: US 701 BYPASS (MADISON STREET-JK  
POWELL BLVD.) FROM SR 1437  
(VIRGIL AVENUE) TO US 74/76

TYPE OF WORK: WATER AND SEWER  
REPLACEMENT AND RELOCATION

END TIP PROJECT R-5020B  
-L- POT STA 289+75.00



INDEX OF SHEETS	
SHEET NO.:	DESCRIPTION:
UC-1	UC TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A THRU UC-3K	DETAILS
UC-4 THRU UC-11	WATER LINE PLAN SHEETS
UC-12 THRU UC-23	WATER LINE PROFILE SHEETS
UC-24 THRU UC-31	SEWER LINE PLAN SHEETS
UC-32 THRU UC-39	SEWER LINE PROFILE SHEETS

**WATER AND SEWER OWNERS ON PROJECT**

CITY OF WHITEVILLE  
317 S. MADISON STREET  
WHITEVILLE, NC 24872

PREPARED IN THE OFFICE OF

Engineers • Planners • Scientists • Construction Managers  
4505 Falls of Neuse Road, Suite 400  
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License No. C-764

DINKISSA KEREYU, P.E. PROJECT ENGINEER  
MARCO MENEDEZ, P.E. PROJECT MANAGER  
ANGELICA PURA PROJECT DESIGNER

SEAL

DIVISION OF HIGHWAYS  
DIVISION 6

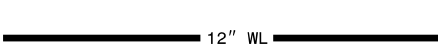























558 GILLESPIE ST.  
FAYETTEVILLE, NC 28301  
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RICK HANDLIN UTILITIES AREA COORDINATOR  
RANDY ROGERS UTILITIES AREA COORDINATOR  
RICK BOUNDS UTILITIES COORDINATOR





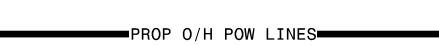
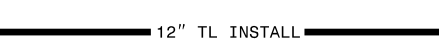
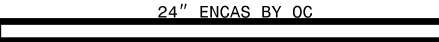
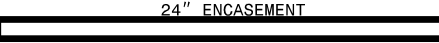
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# UTILITIES PLAN SHEET SYMBOLS

## PROPOSED WATER SYMBOLS


Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ 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	REM FH
Water Meter	
Relocate Water Meter	
Remove Water Meter	REM WM
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	AATUR	Sanitary Sewer Cleanout	
End of Information	E.O.I.		

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

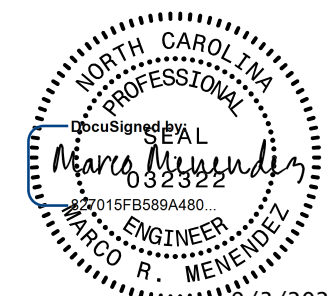

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REV: 2/1/2012



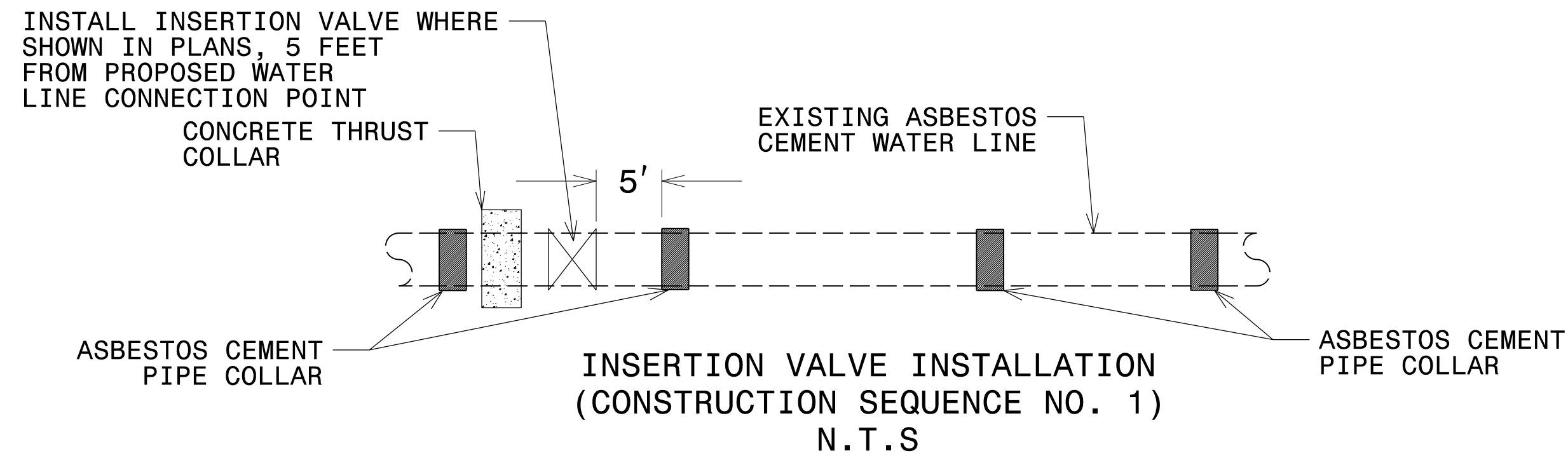




# WATER MAIN CONNECTION DETAIL AND CONSTRUCTION SEQUENCE

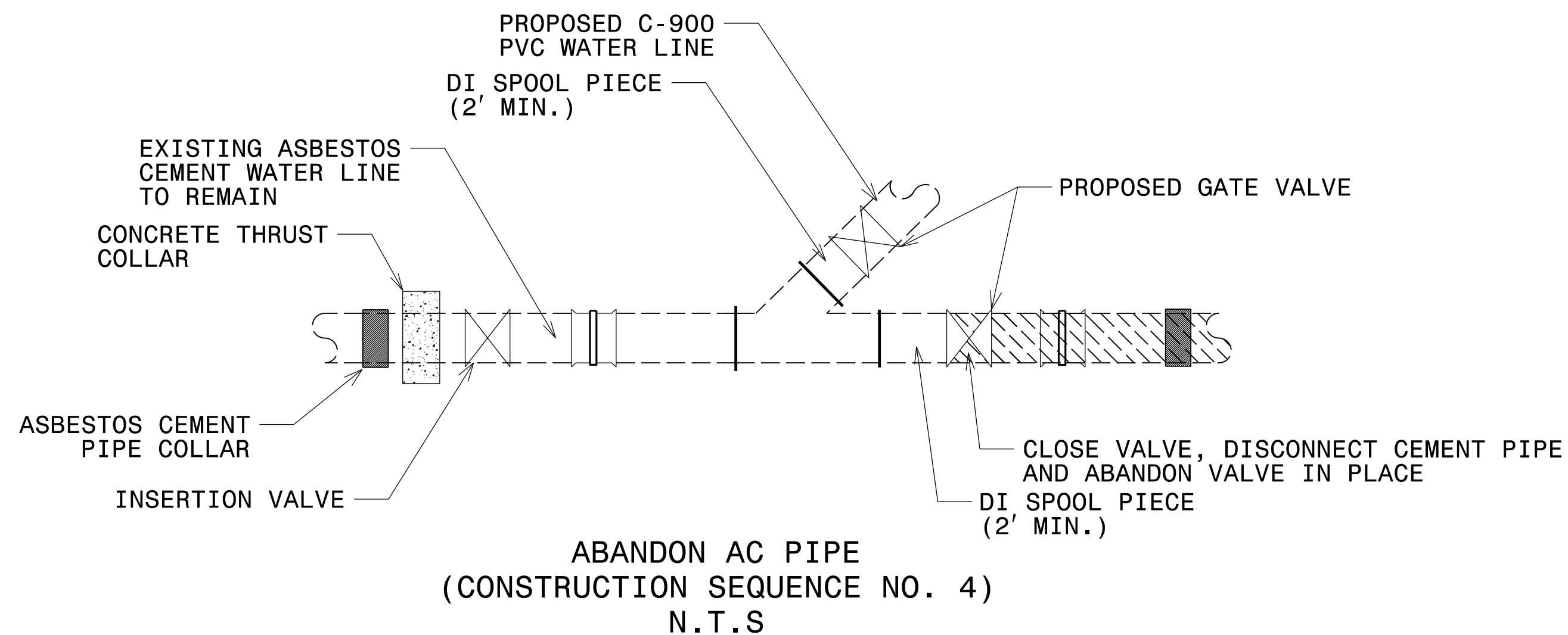
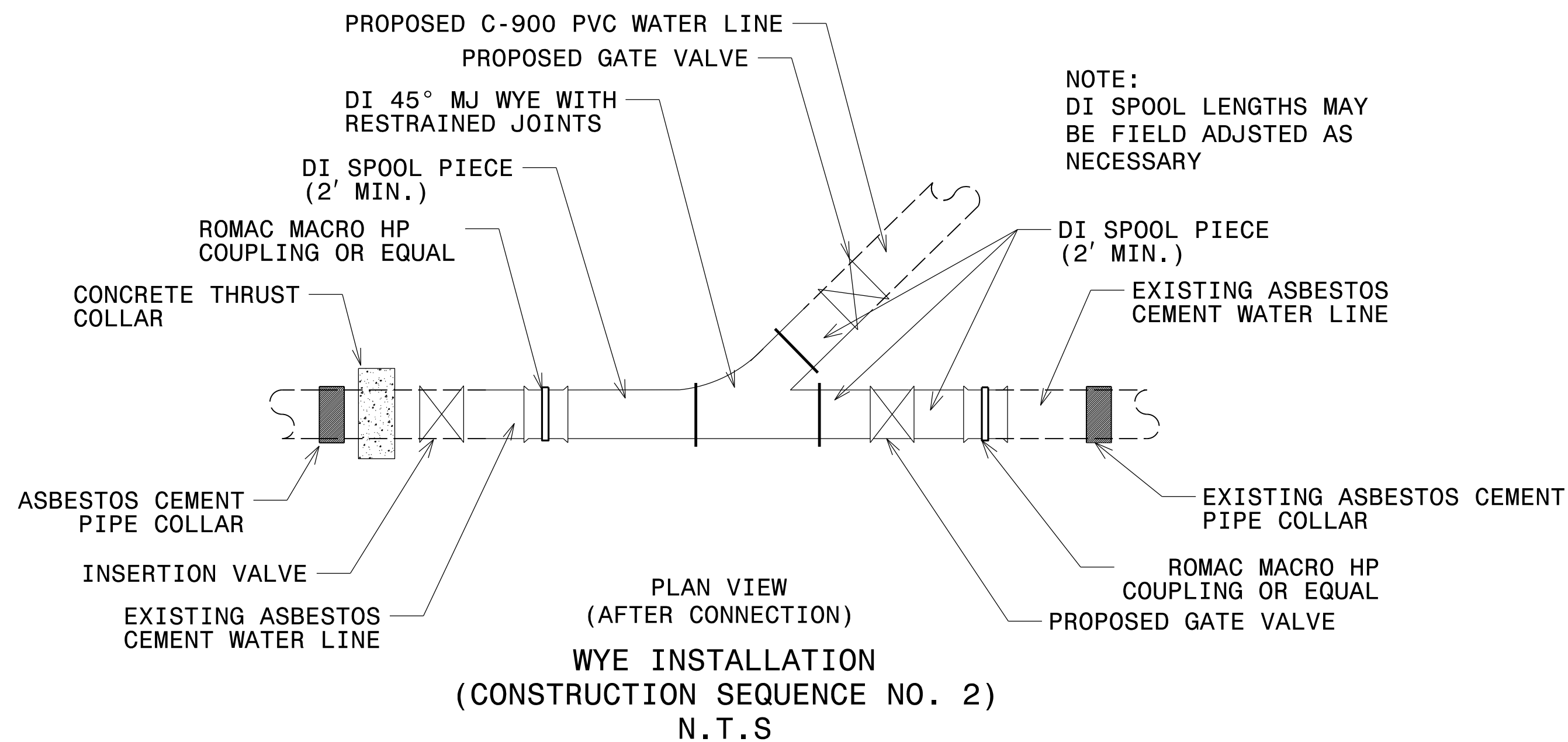
PROJECT REFERENCE NO. <i>R-5020B</i>	SHEET NO. <i>UC-3A</i>
DESIGNED BY: <i>DK</i>	
DRAWN BY: <i>AP</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
 Engineers • Planners • Scientists • Construction Managers 4509 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**  
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## WATER MAIN CONNECTION SUGGESTED CONSTRUCTION SEQUENCE

1. INSTALL INSERTION VALVES WHERE SHOWN ON THE PLANS (SEE DETAIL). INSTALL CONCRETE THRUST COLLAR ON EXISTING WATERLINE. FOR CONCRETE BLOCK SIZING AND REINFORCING, SEE DETAIL ON SHEET UC-3B.
2. INSTALL ALL WYE ASSEMBLIES AS DETAILED ON SHEET UC-3A. DO NOT SCHEDULE MORE INSTALLATIONS PER DAY THAN CAN BE COMPLETED IN AN 8 HOUR PERIOD. SWAB CHLORINATE THE NEW WYE ASSEMBLIES, INCLUDING VALVES, COUPLING AND PIPE, THOROUGHLY WITH A CONCENTRATED CHLORINE SOLUTION PRIOR TO INSTALLATION. COORDINATE WITH THE CITY OF WHITEVILLE TO CLOSE ALL INSERTION VALVES NECESSARY, TO STOP WATER FLOW DURING THIS WORK. THE CITY OF WHITEVILLE SHOULD BE GIVEN SUFFICIENT NOTICE (NO LESS THAN 72 HOURS) SO THAT AFFECTED WATER CUSTOMERS CAN BE ADVISED OF THE EXPECTED DISRUPTION OF SERVICE. THIS WORK MAY BE COMPLETED AT NIGHT IF COORDINATED WITH THE CITY OF WHITEVILLE AND NCDOT. SEE SPECIAL PROVISIONS FOR HANDLING AND DISPOSAL OF CEMENT PIPE REMOVED FROM THE EXISTING WATER LINE. FILL MATERIAL UNDER THE NEW WYE ASSEMBLIES WILL BE ADEQUATELY COMPACTED TO ENSURE NO SETTLING OCCURS. SOME AREAS MAY REQUIRE SELECT FILL DEPENDING ON THE EXISTING GROUND WATER CONDITION.
3. CONNECT TO THE NEW WYE ASSEMBLIES AND INSTALL PROPOSED WATER MAINS, GATE VALVES AND APPURTENANCES. CONNECTION VALVES WILL REMAIN CLOSED UNTIL PRESSURE TESTING, CHLORINATING AND FLUSHING OF THE NEW WATER LINE SYSTEM IS REQUIRED. THE CONTRACTOR WILL INSTALL TAPS ON EACH END OF EACH NEW WATER LINE TO FEED CHLORINE AND RELEASE AIR. NEW FIRE HYDRANTS CAN BE UTILIZED FOR AIR RELEASE AS WELL. COORDINATE WITH THE CITY OF WHITEVILLE TO ENSURE THERE IS AN ADEQUATE WATER SUPPLY FOR FILLING AND FLUSHING OF NEW WATER LINES. PERFORMING THIS WORK DURING OFF PEAK HOURS WILL BE REQUIRED. AS SOON AS EACH NEW SEGMENT OF WATER LINE IS TESTED AND CHLORINATED, INSTALL NEW SERVICE TAPS, RELOCATE EXISTING METERS AND RECONNECT SERVICES ON THAT PORTION OF NEW LINE THAT IS APPROVED FOR SERVICE. THE EXISTING WATER SYSTEM WILL REMAIN IN SERVICE DURING THE INSTALLATION OF THE NEW WATER LINES. THE CITY OF WHITEVILLE WILL BE ONSITE TO CONFIRM ALL NECESSARY VALVES ARE OPENED AFTER THE WYE ASSEMBLIES HAVE BEEN INSTALLED.
4. ONCE ALL THE NEW WATER LINE IS INSTALLED AND IN SERVICE, REVISIT EACH WYE LOCATION AND DISCONNECT THE EXISTING CEMENT PIPE FROM THE NEW GATE VALVE ON THE WYE ASSEMBLY. ENSURE THE GATE VALVE CONNECTION IS CLOSED AND NOT LEAKING, THEN ABANDON THE GATE VALVE IN PLACE. DISPOSE OF THE REMOVED CEMENT PIPE ACCORDING TO THE REQUIREMENTS IDENTIFIED IN THE SPECIAL PROVISIONS.



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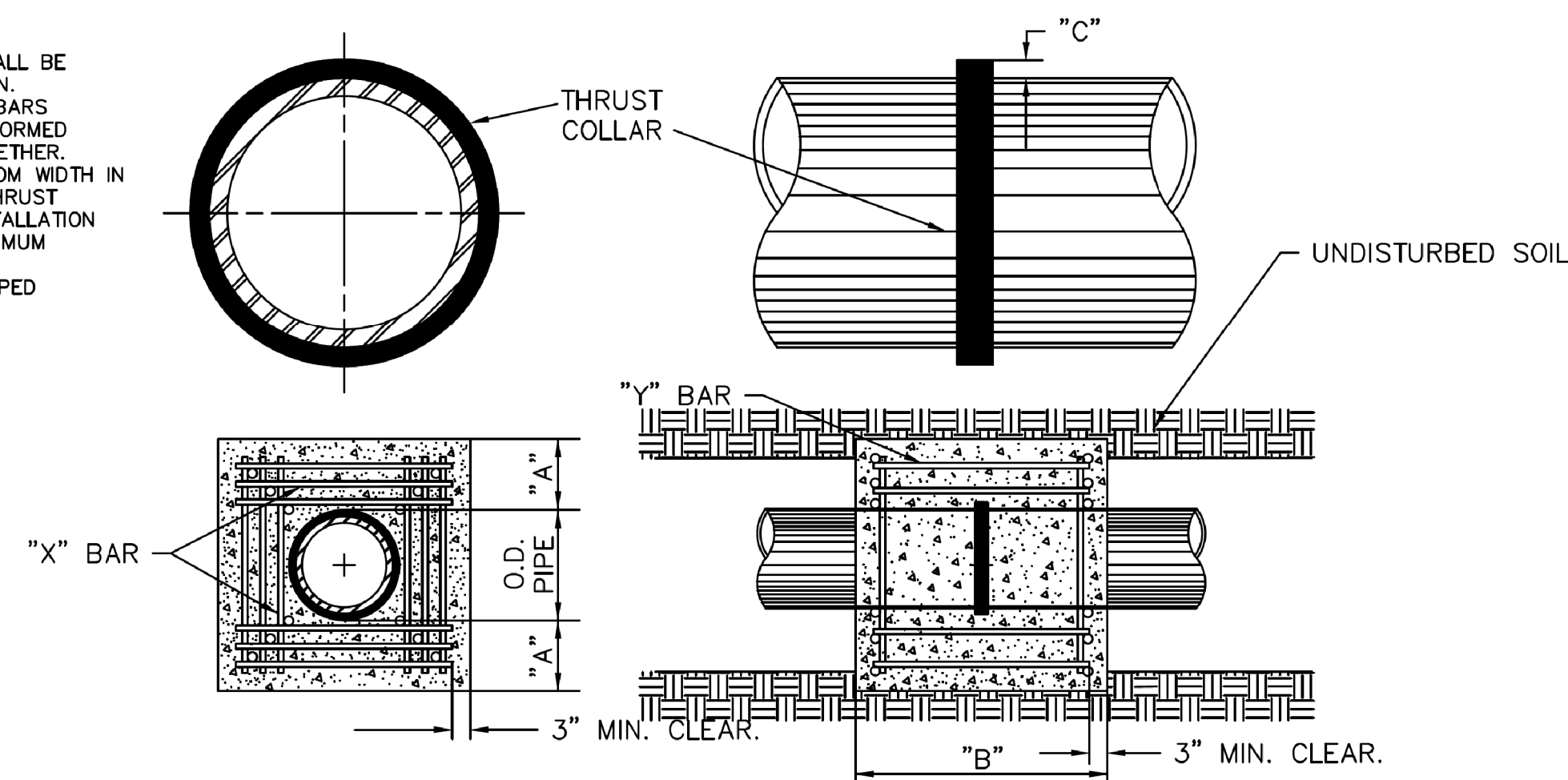
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# GENERAL WATER DETAILS

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-3B
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	9/3/2020
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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- NOTES:
1. CONCRETE SHALL BE 2500 P.S.I. MIN.
  2. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
  3. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK(S) INSTALLATION SHALL BE MINIMUM WIDTH.
  4. BACKFILL TAMPED IN 6" LAYERS.



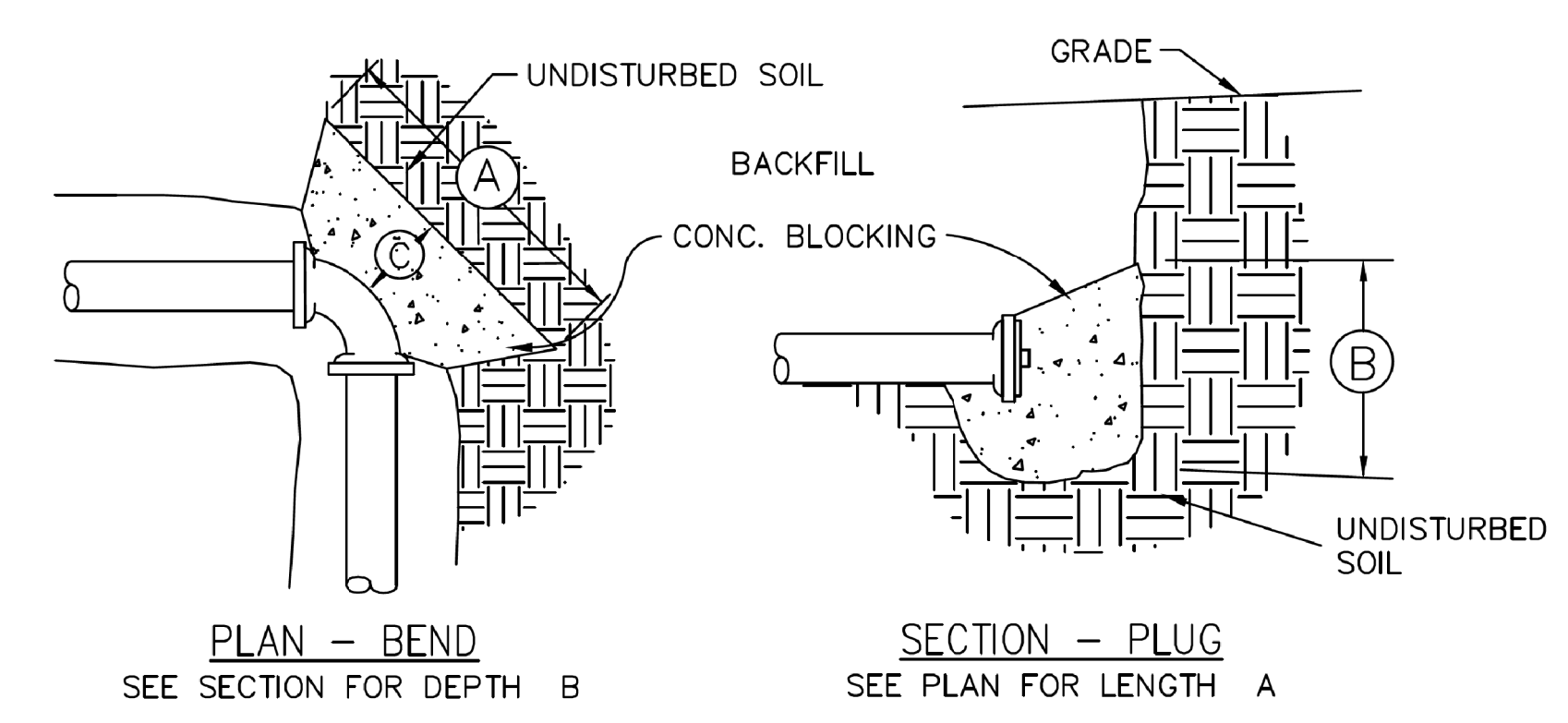
**REINFORCING REQUIREMENTS**

REINFORCING BAR SCHEDULE						
I.D. PIPE	REBAR SIZE	"X" BAR LENGTH	"X" BAR WGT.	"Y" BAR LENGTH	Y" BAR WGT.	NO. REQD.
6"-36"	#5	2'-2"+O.D. PIPE	1.043 LBS./FT	1'-1"	1.1 LBS. EA.	X-24,Y-12
48"	#6	3'-0"+O.D. PIPE	1.502 LBS./FT	1'-3"	1.9 LBS. EA.	X-24,Y-12

REINFORCING BAR SCHEDULE			
I.D. PIPE	"A"	"B"	"C" - 6"-16", 20"-24", 30"-36", 48"
6"-36"	1'-4"	1'-7"	2" 3" 4"
48"	1'-8"	1'-9"	6"

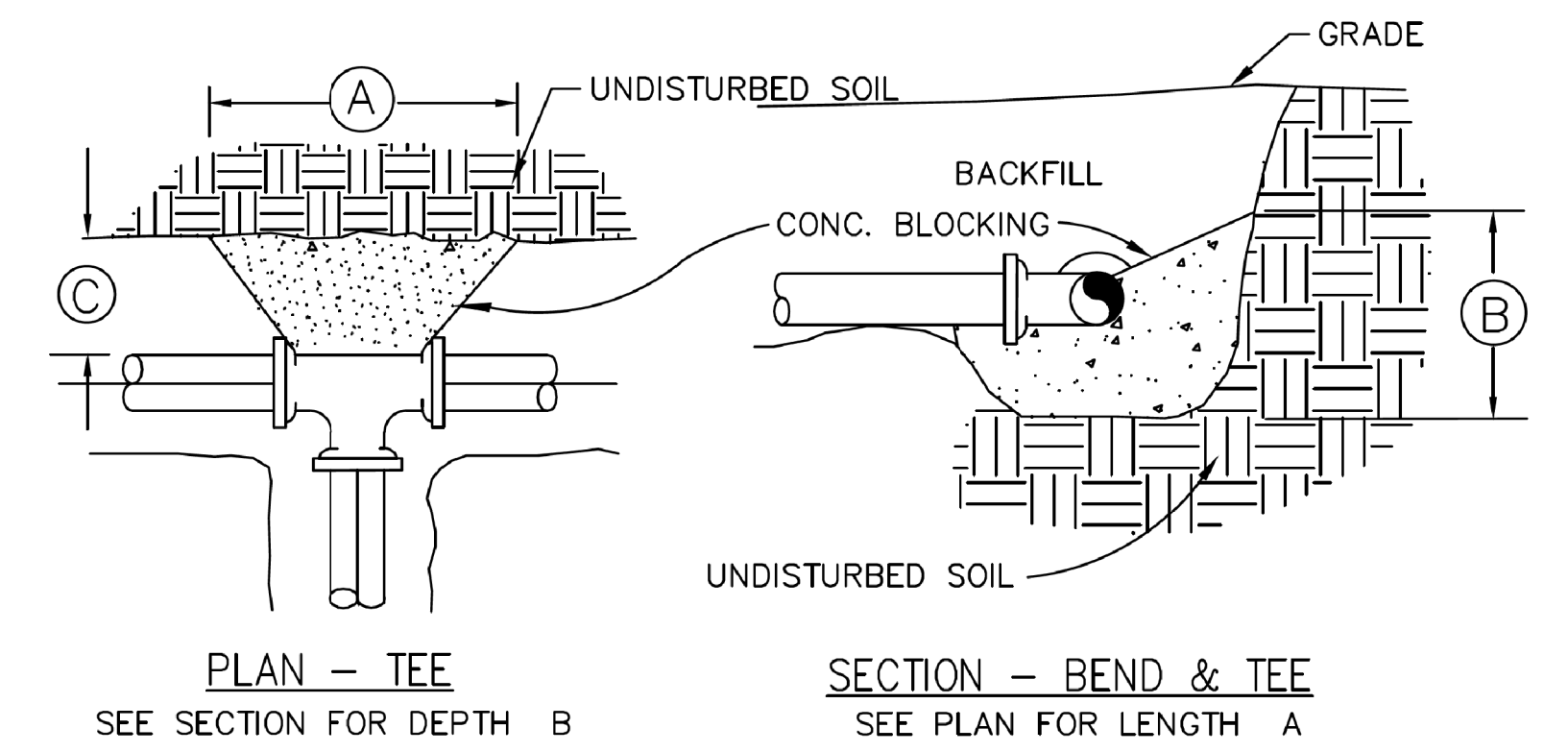
**THRUST COLLAR FOR WATER MAINS**  
**DETAIL W-13**

BLOCKING DIMENSIONS			
PIPE SIZE	(A)	(B)	(C)
UP TO 10"	4' - 0"	2' - 6"	1' - 6"
12" TO 16"	5' - 0"	4' - 0"	2' - 0"
18" TO 24"	8' - 0"	6' - 0"	3' - 0"



**NOTES:**

1. 2500 P.S.I. CONC.
2. REMOVE LOOSE EARTH AND POUR AGAINST UNDISTURBED SOIL.
3. BACKFILL TO EXISTING/FINISH GRADE AFTER CONCRETE HAS CURED FOR 24 HOURS.
4. CONCRETE SHALL NOT COVER FLANGES, BOLTS, MEGA-LUGS, RODS, ETC.

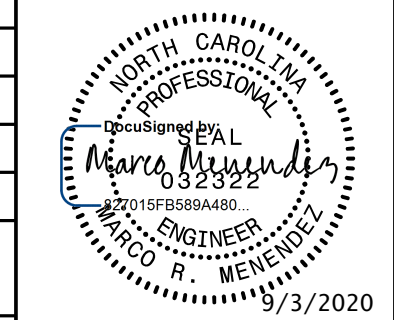



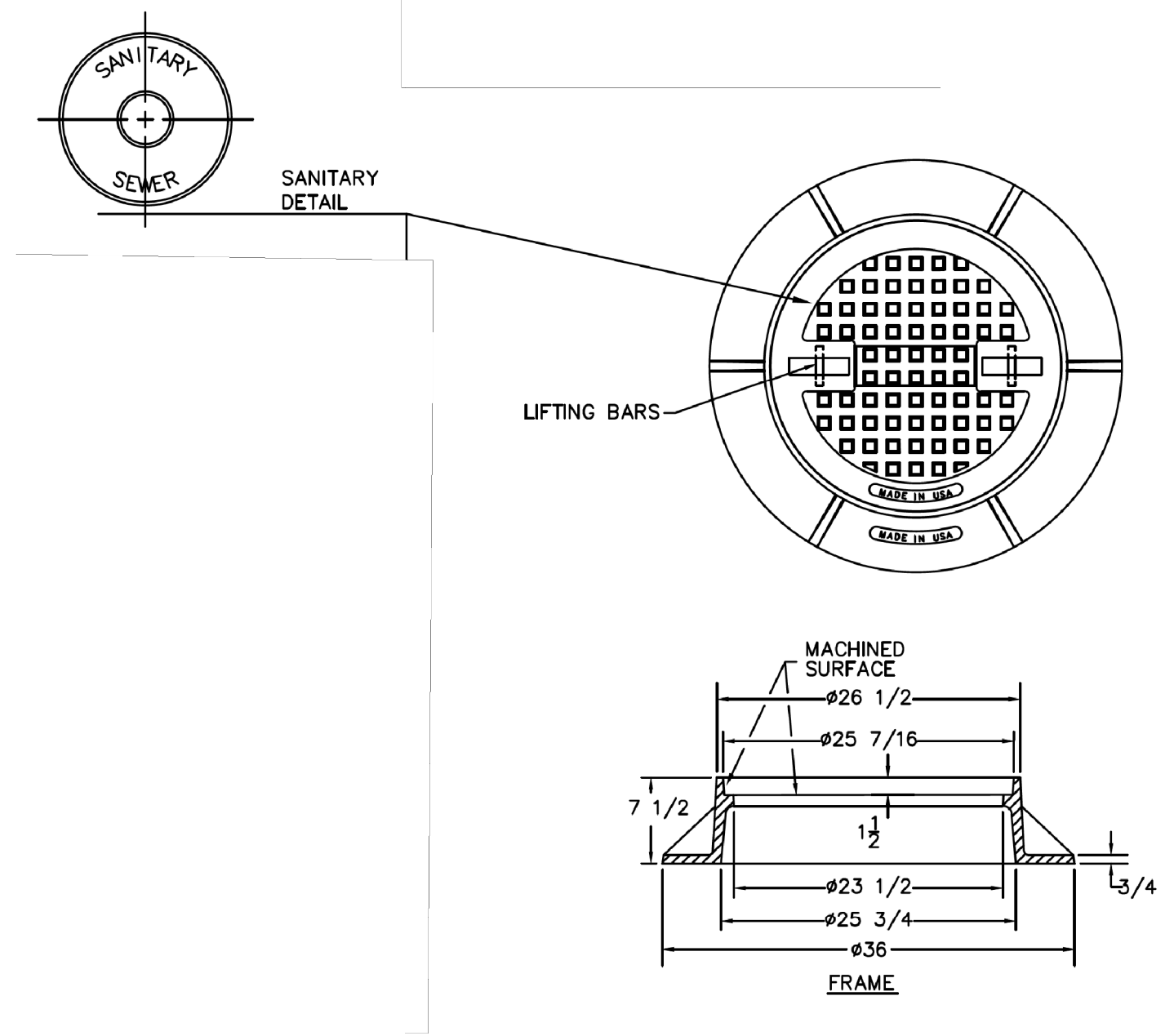
**THRUST BLOCKS**  
**DETAIL W-12**

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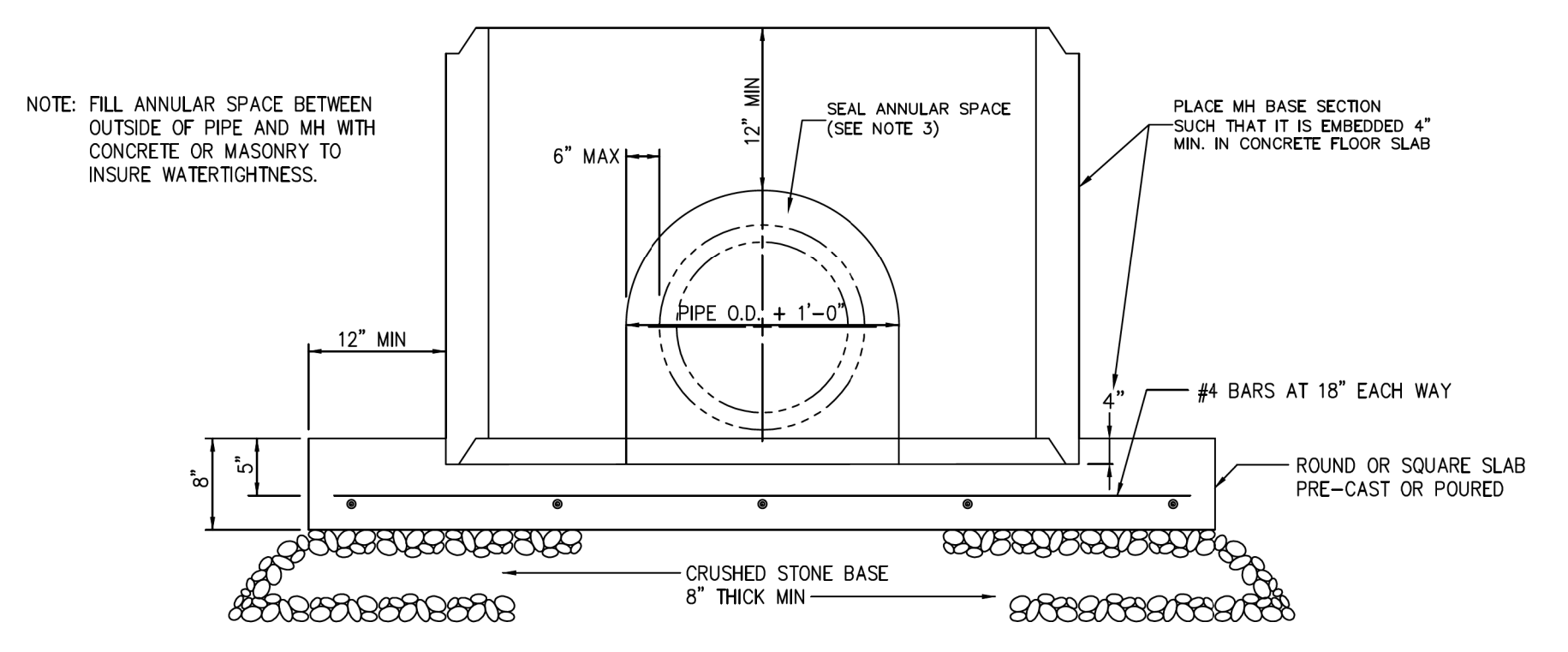
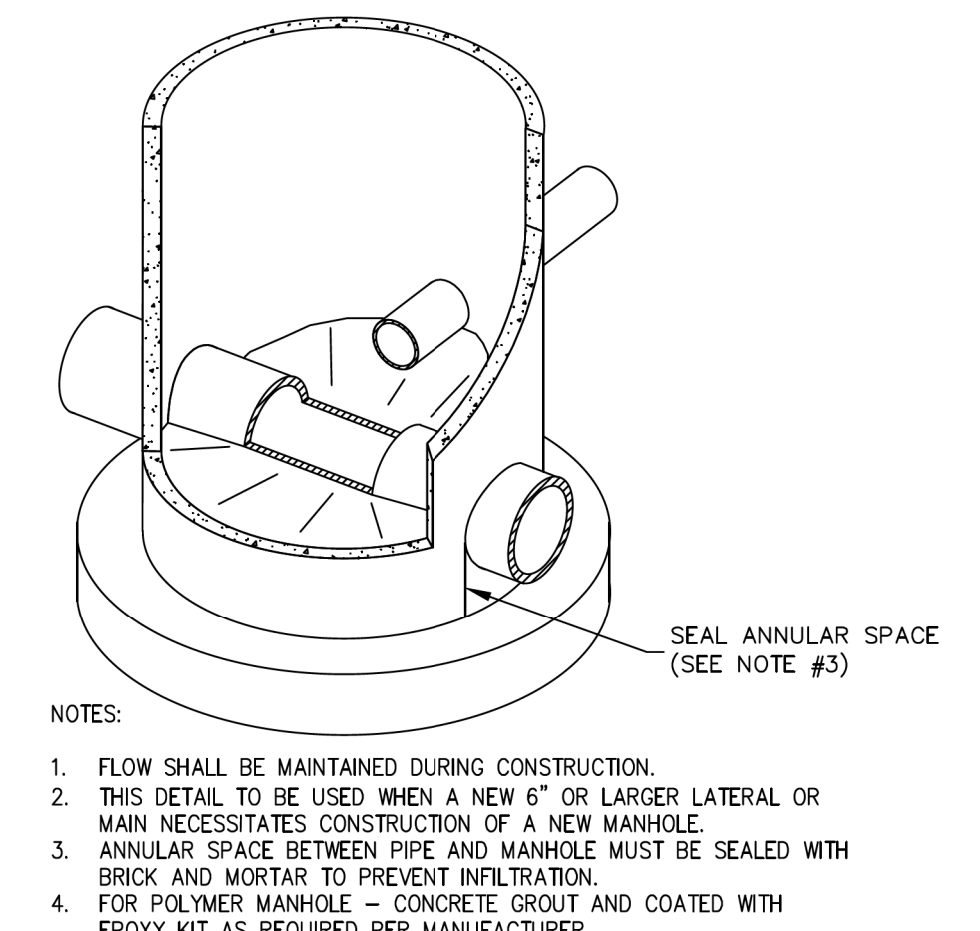
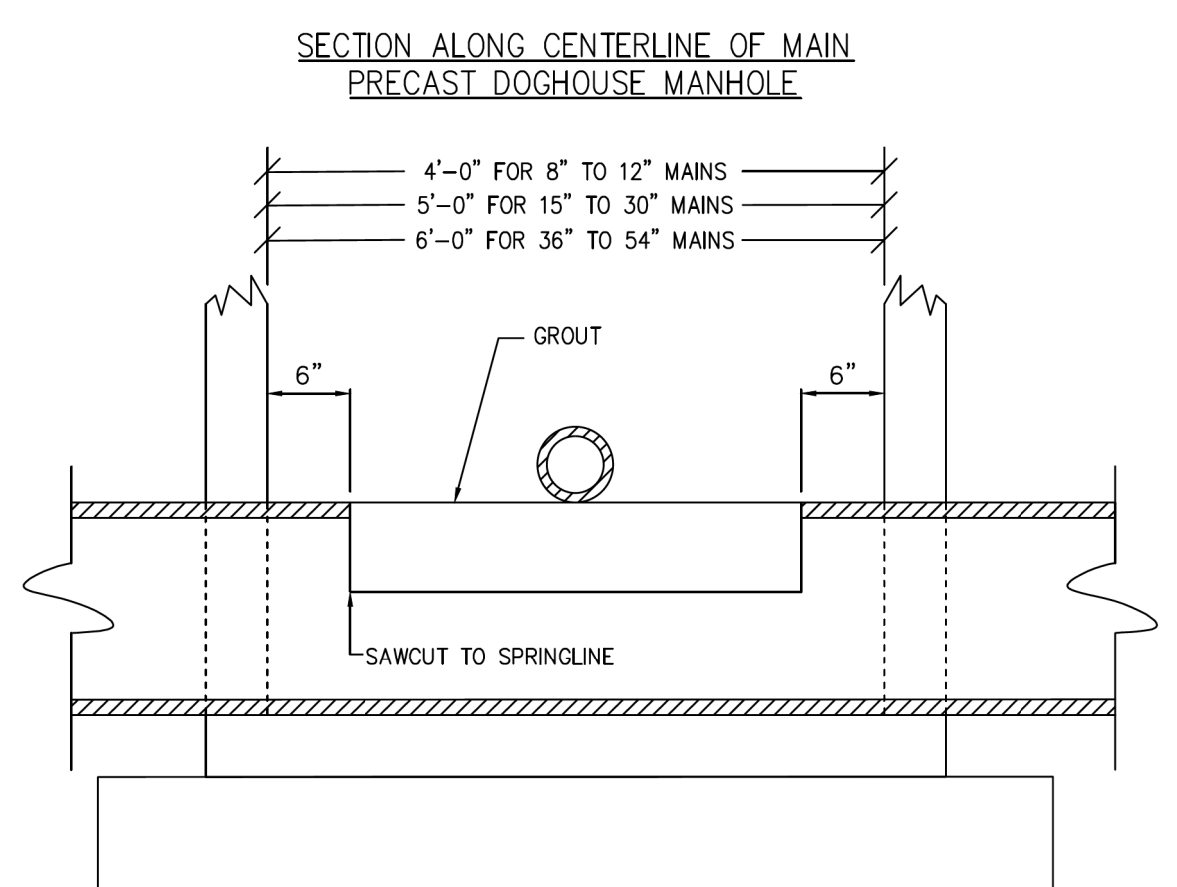
# GENERAL SEWER DETAILS

PROJECT REFERENCE NO.	SHEET NO.
R-5020B	UC-3C
DESIGNED BY: DK	
DRAWN BY: AP	
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	 Engineers • Planners • Scientists • Construction Managers 4509 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764

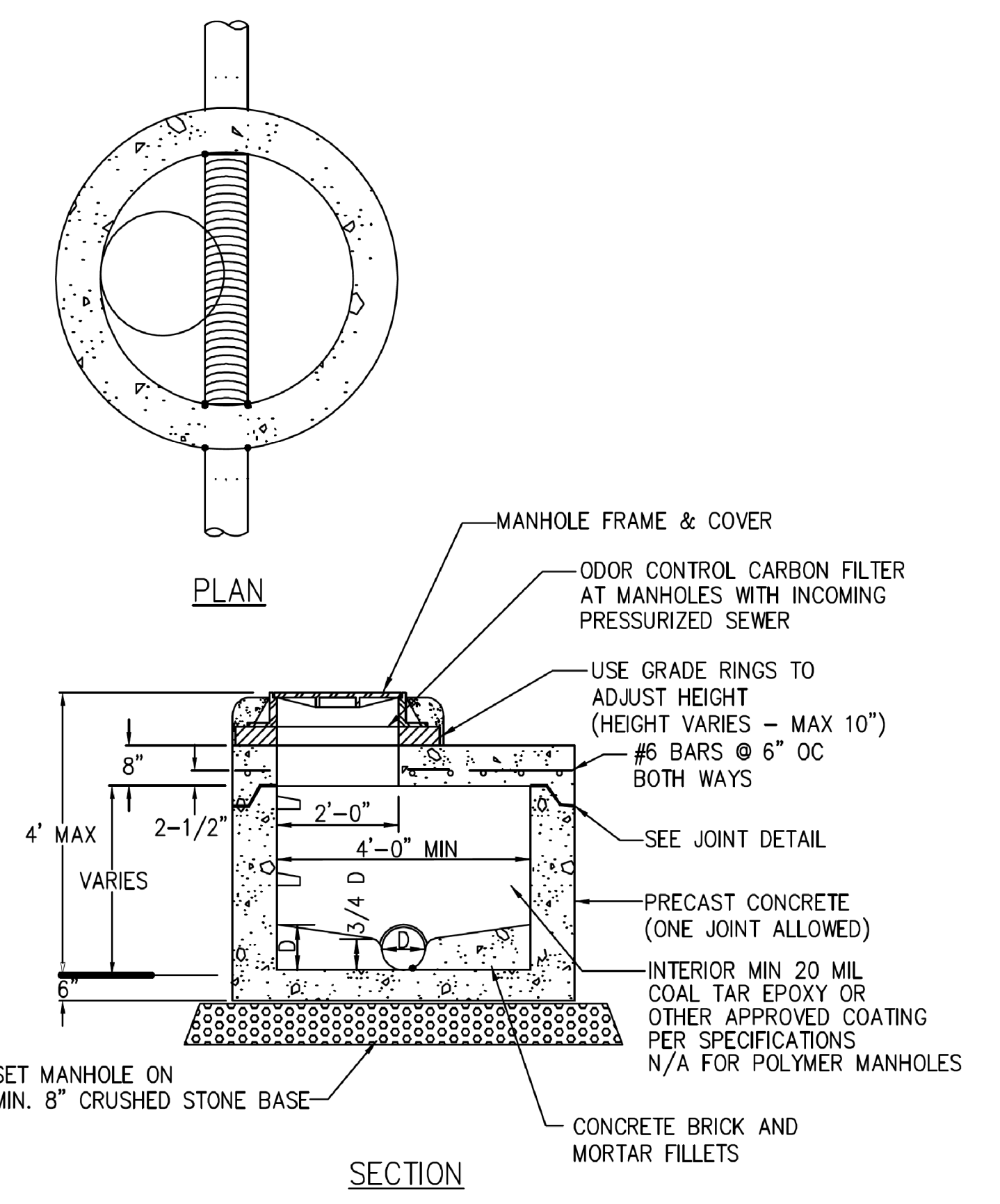


MANUFACTURER	MODEL NUMBER
US FOUNDRY	725 RING / DP-SSG COVER
US FOUNDRY	710 RING / DP-SSG COVER
CAPITAL FOUNDRY	MH-3000
EAST JORDAN IRON WORKS	202711 RING / 202746 COVER
GENERAL FOUNDRIES	GFI-7126 / GFI-41261

STANDARD MANHOLE RING AND COVER  
DETAIL S-2



PRECAST CONCRETE DOGHOUSE MANHOLE  
DETAIL S-4



SHALLOW PRECAST CONCRETE  
MANHOLE WITH FLAT TOP  
DETAIL S-5

5/14/99 R-5020B 02/20/18/00 15:45P 2020 18:00 Cleaning Water Sanitary\R-5020B.ut.UC03A.dtl.dgn



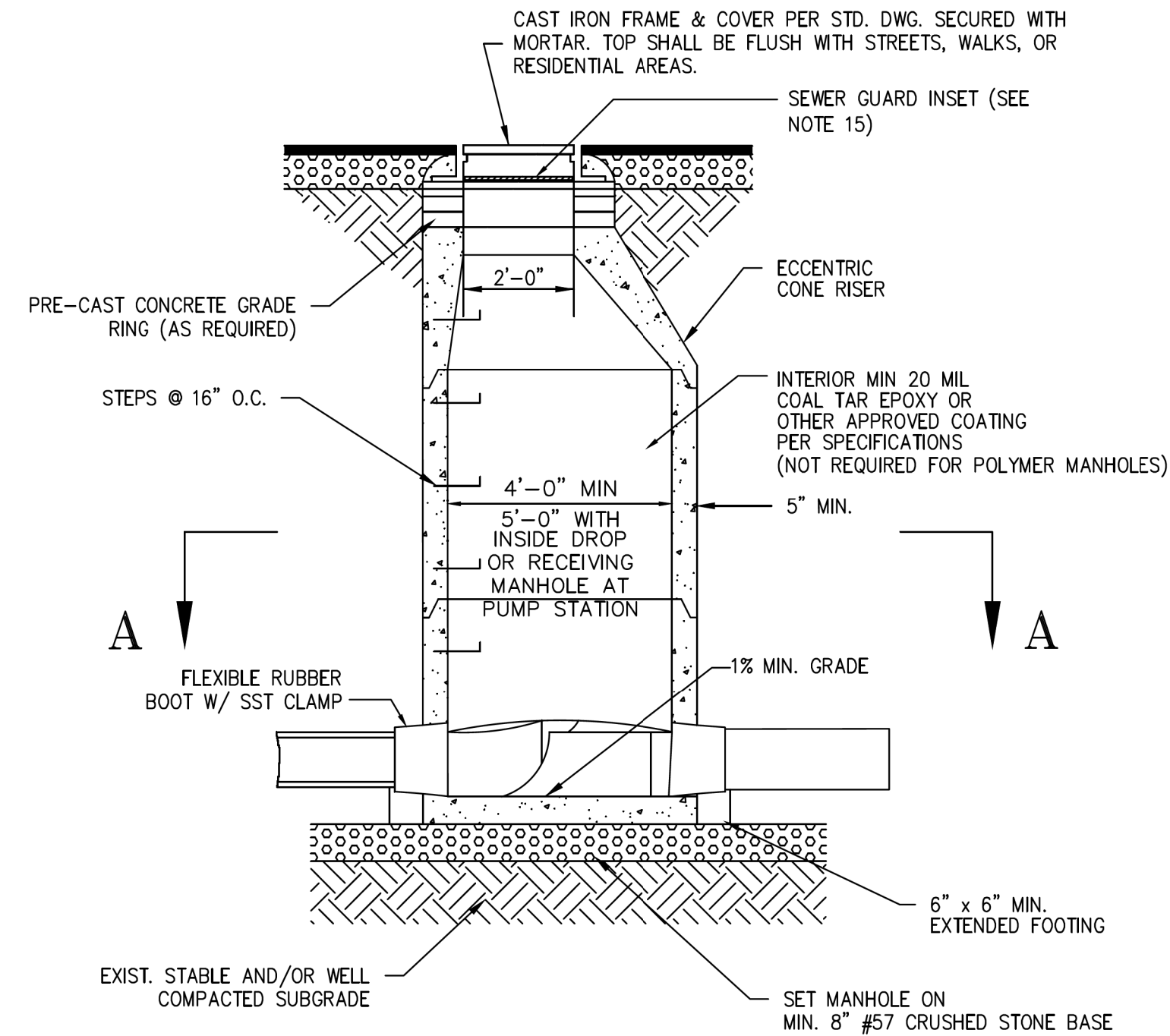
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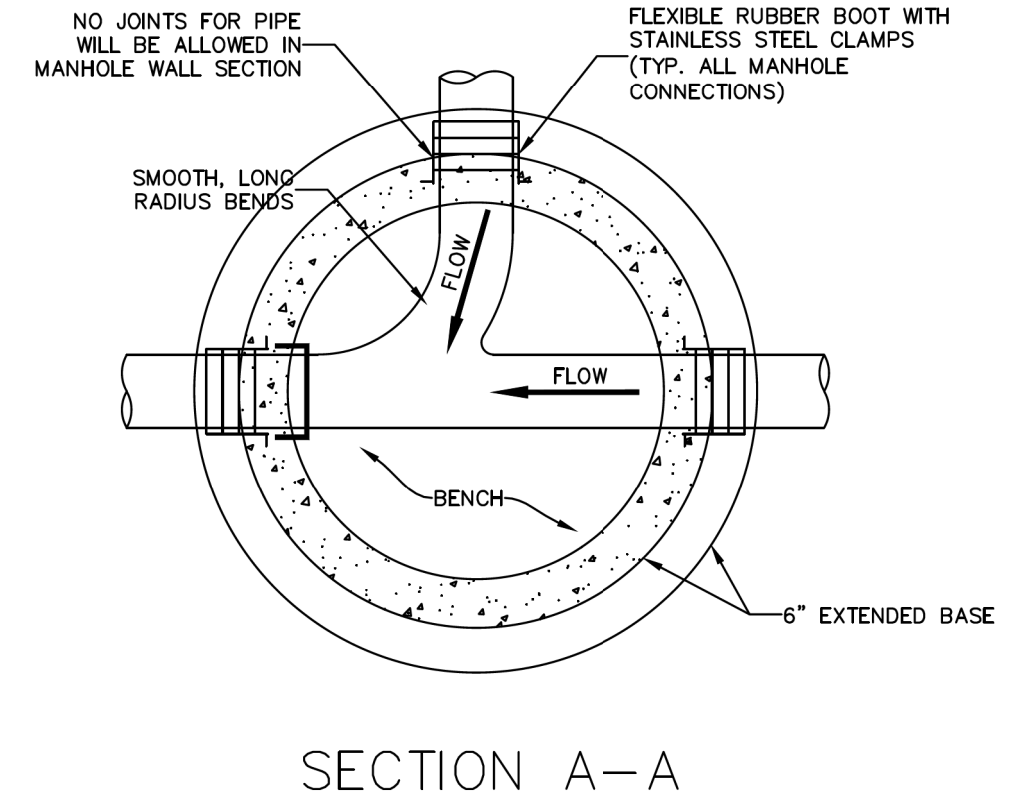
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DRAWN BY: <i>AP</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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### NOTES:

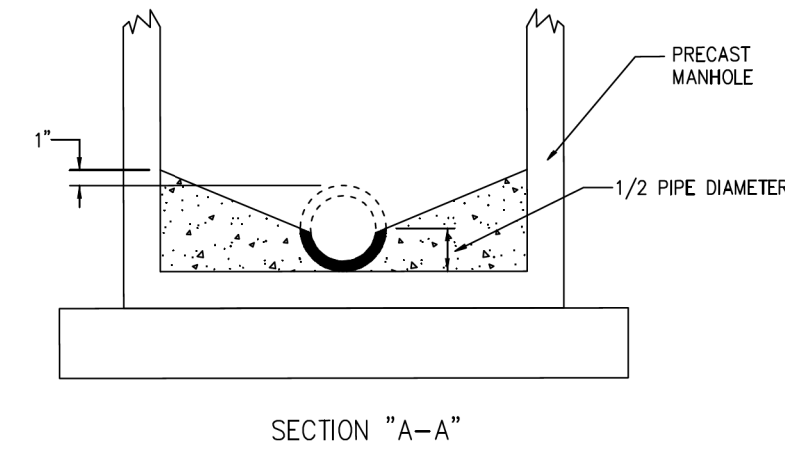
1. PRECAST CONCRETE MANHOLES SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM C 478. ALL SURFACES SHALL BE SMOOTH AND EVEN TEXTURED WITH A MINIMUM OF HONEYCOMB, FIN, AND OTHER IMPERFECTIONS.
2. JOINTS BETWEEN MANHOLE SECTIONS SHALL BE SEALED WATER-TIGHT USING EITHER O-RING GASKETS CONFORMING WITH ASTM C 443 OR BUTYL RESIN CONFORMING WITH AASHTO M-198.
3. EXTERIOR JOINTS SHALL BE SEALED WITH A 4" WIDE BUTYL RUBBER WRAP.
4. NOT USED
5. HOLES FOR CONNECTION OF PIPE TO MANHOLE SHALL BE PRECAST OR CORED. DIAMETER OF HOLE SHALL NOT EXCEED OUTSIDE DIAMETER OF PIPE BY MORE THAN 3 INCHES.
6. CONNECTIONS OF PIPE TO MANHOLE SHALL BE MADE WATER-TIGHT USING RESILIENT CONNECTORS CONFORMING TO ASTM C 923 OR NEOPRENE BOOTS EMBEDDED IN PRECAST BASE WITH STAINLESS STEEL COMPRESSION BANDS.
7. MANHOLE INVERTS SHALL BE INSTALLED USING BRICK AND MORTAR, OR MANHOLES MAY BE PRECAST, MONOLITHIC SECTIONS WITH FORMED INVERTS.
8. LIFT HOLES SHALL BE PLUGGED AND FILLED FLUSH WITH MORTAR.
9. ALL BRICK AND MORTAR SHALL RECEIVE A 1/2" MORTAR PARGE COAT ON INSIDE AND OUTSIDE.
10. ALL SPACE BETWEEN PIPE AND OPENING INSIDE OF MANHOLE TO BE GROUTED WITH TYPE S MORTAR.
11. SEWER MAIN PENETRATIONS AND/OR SERVICE LATERAL PENETRATIONS ENTERING AT 30" OR LESS ABOVE THE MANHOLE BENCH SHALL HAVE A SLIDE CONSTRUCTED OF BRICK AND MORTAR (SEE DETAIL).
12. ALL PENETRATIONS ENTERING MANHOLE AT GREATER THAN 30" SHALL BE AN INSIDE DROP MANHOLE (SEE DETAIL).
13. INSIDE DROP MANHOLES, AND PUMP STATION RECEIVING MANHOLES SHALL BE MINIMUM 5' DIAMETER MANHOLES.
14. SANITARY SEWER MANHOLES SHALL BE COATED WITH COAL TAR EPOXY 20 MILS THROUGHOUT THE INSIDE OF THE MANHOLE.
15. ALL MANHOLES SHALL HAVE A SEWER GUARD INSERT INSTALLED - PLASTIC IS ALLOWED IN NON-TRAFFIC AREAS - STAINLESS STEEL INSERT PANS ARE REQUIRED IN TRAFFIC AREAS
16. MANHOLES SHALL BE TRAFFIC BEARING WITH A MINIMUM HS-20 LOAD ALLOWANCE.



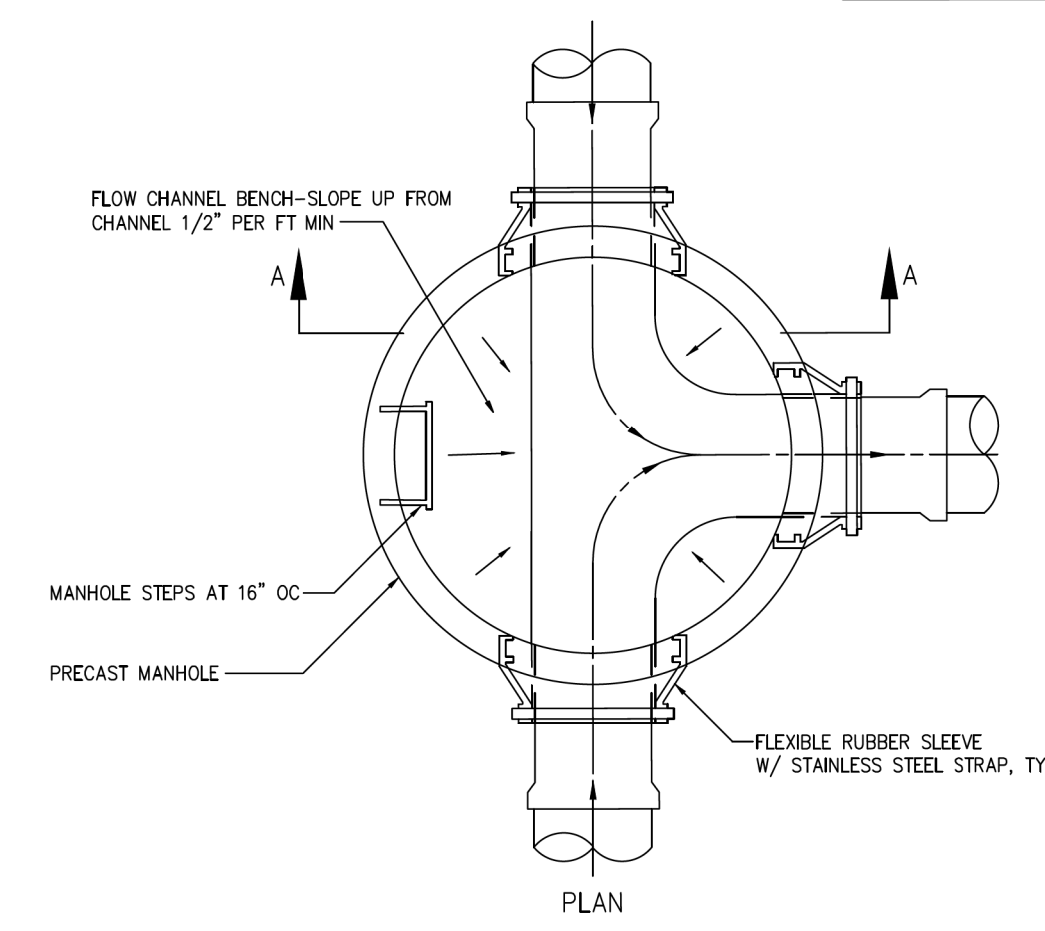
PRECAST CONCRETE MANHOLE  
DETAIL S-1



SECTION A-A



SECTION "A-A"



TYPICAL MANHOLE INVERTS  
DETAIL S-9

UTILITY CONSTRUCTION  
 DOCUMENT NOT CONSIDERED FINAL  
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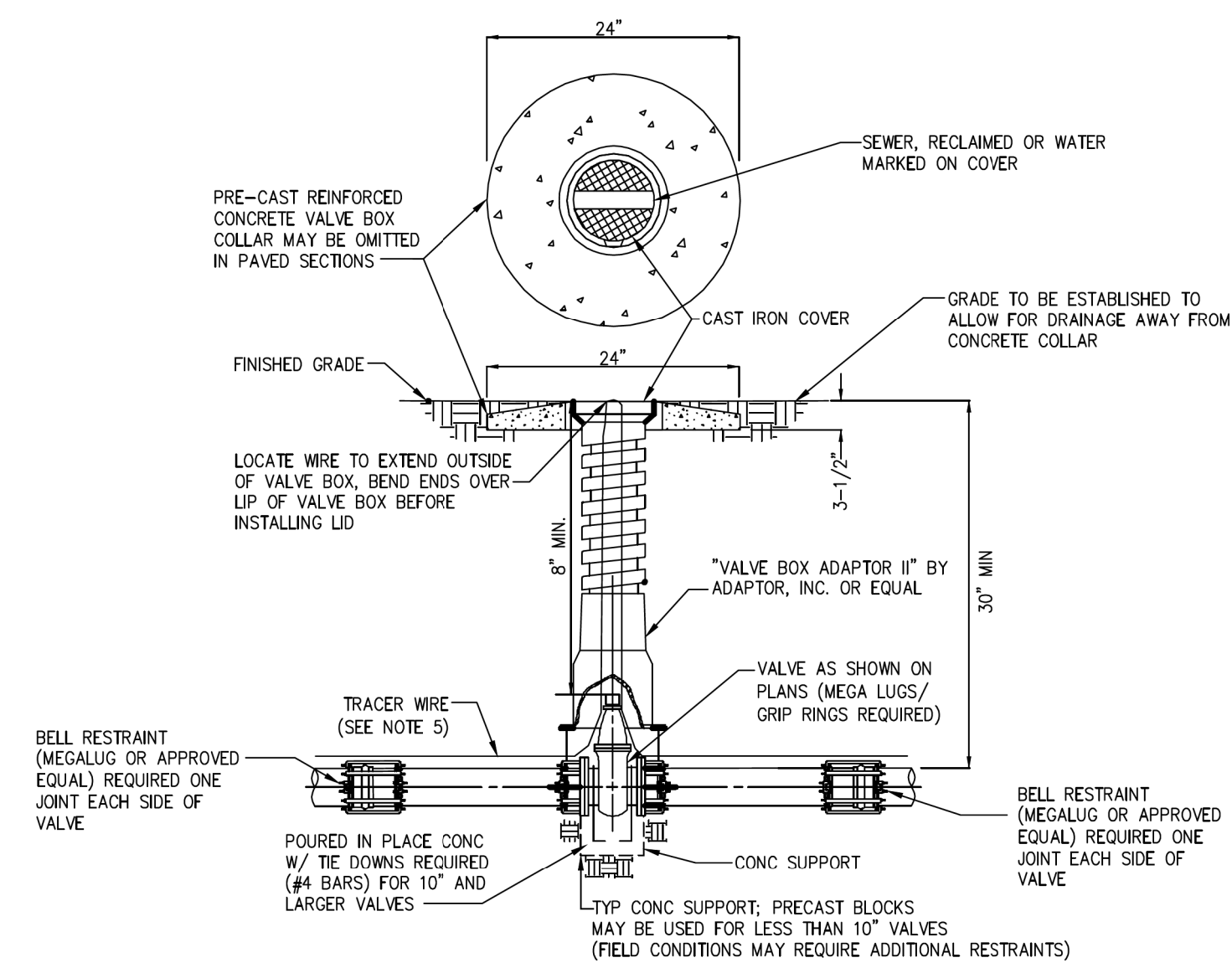
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5/14/99

# GENERAL WATER & SEWER DETAILS

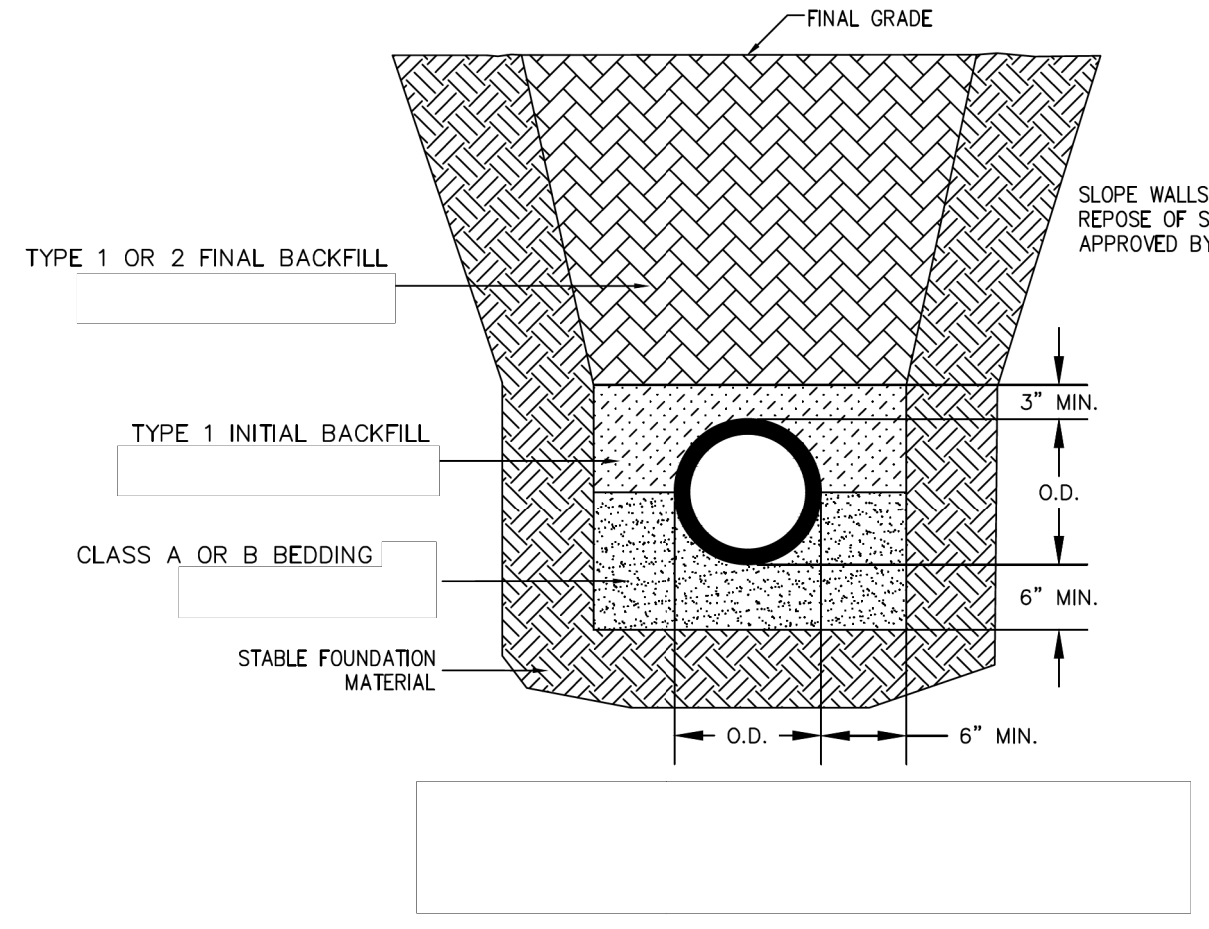
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DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISID:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	



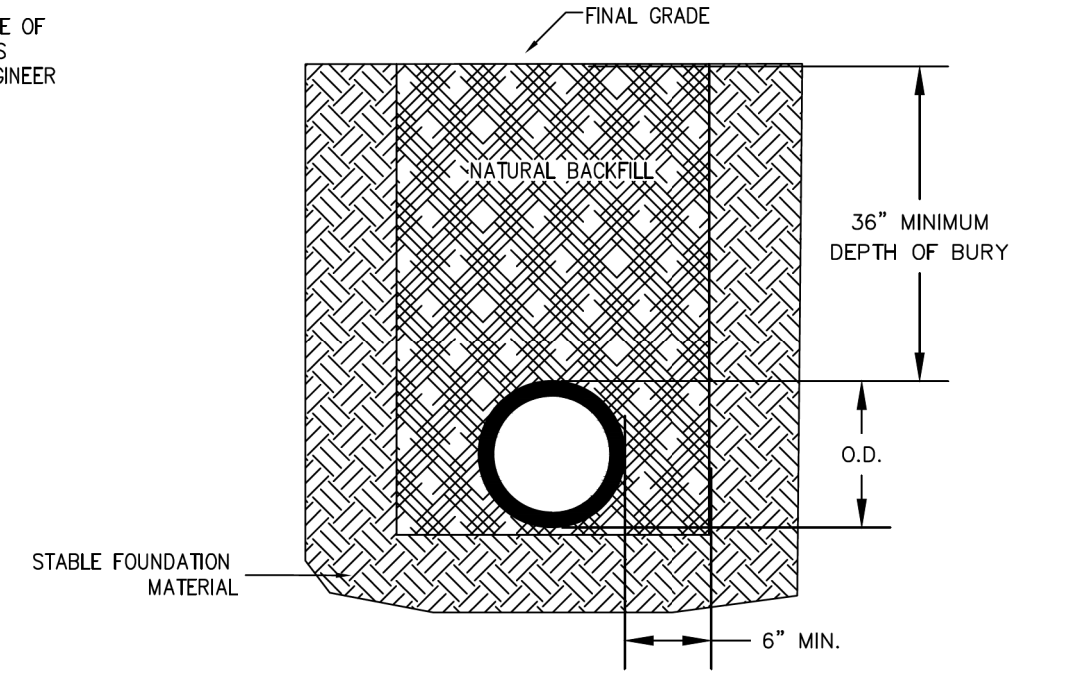
- NOTES:**
- TOP OF VALVE BOX AND COLLAR SHALL BE PAINTED GREEN FOR SEWER FM, PURPLE FOR RECLAIMED WATER, AND BLUE FOR WATER.
  - EXTENSION STEM WILL BE REQUIRED TO BE WITHIN 2 FEET OF THE SURFACE IF OPERATING NUT WOULD OTHERWISE BE OVER 5 FEET BELOW GRADE. EXTENSIONS SHALL BE PERMANENTLY ATTACHED TO VALVE NUT AND SHALL BE PROVIDED WITH HORIZONTAL SPACERS FOR VERTICAL ALIGNMENT WITHIN THE VALVE BOX.
  - MINIMUM CLEARANCE TO EXTENSION IS 8".
  - WIRE COLORS REQUIRED: SEWER-GREEN/WATER-BLUE/RECLAIMED WATER-PURPLE OR GREEN WITH PURPLE STRIPE
  - 12 GA. COPPERHEAD SUPER FLEX TRACER WIRE OR APPROVED EQUAL.

VALVE BOX  
DETAIL WS-9

- DEPTH < 20 FEET - CLASS "A" BEDDING**
- UNDERCUT TRENCH BOTTOM 6 INCHES MINIMUM BELOW PIPE
  - FILL PIPE TO SPRING LINE WITH NO. 57 STONE
- DEPTH > 20 FEET - CLASS "B" BEDDING**
- UNDERCUT TRENCH BOTTOM 6 INCHES MINIMUM BELOW PIPE
  - FILL TO 6 INCHES ABOVE PIPE WITH NO. 57 STONE
- INSTALLATIONS THAT EXCEED 20 FEET DEPTH SHALL BE DR-18 C900 MINIMUM OR PER MANUFACTURERS RECOMMENDATIONS

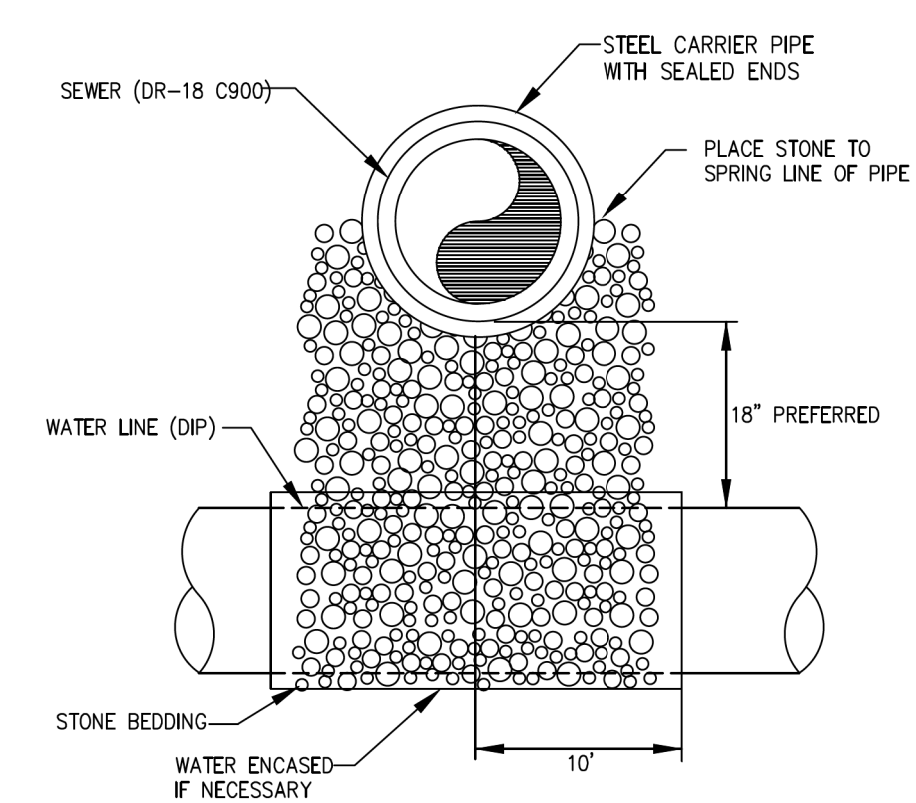


GRAVITY SEWER  
PIPE TRENCH/BEDDING DETAIL  
DETAIL WS-22



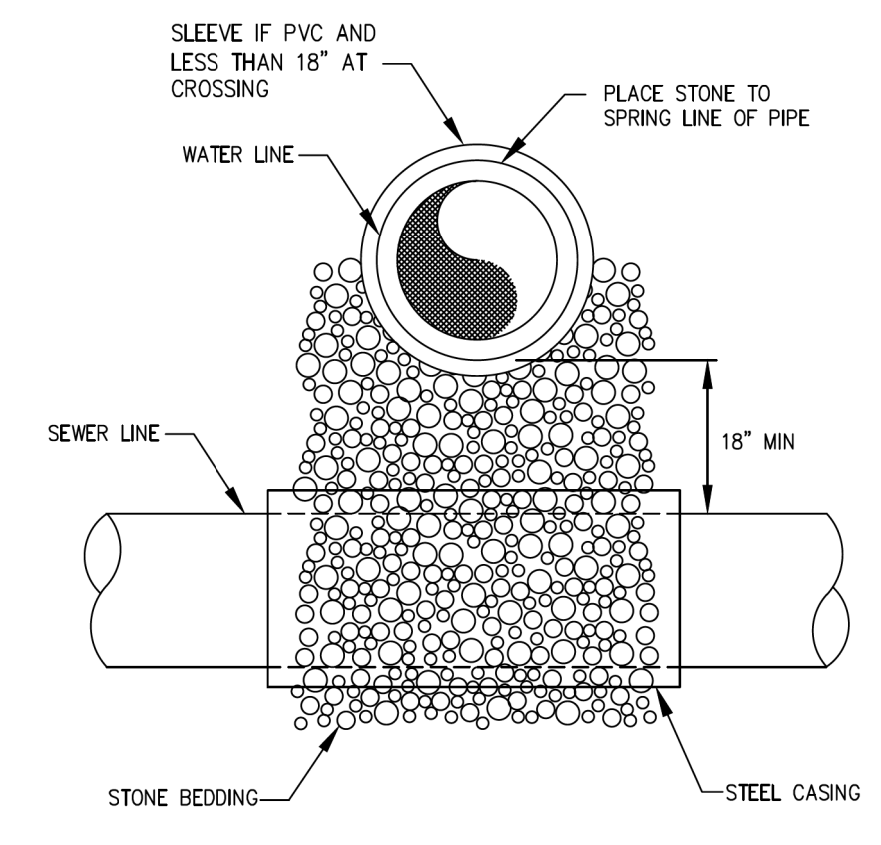
WATERMAIN AND/OR SEWER FORCEMAIN (PRESSURE PIPE)  
PIPE TRENCH/BEDDING DETAIL  
DETAIL WS-22A

UTILITY CONSTRUCTION  
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



- NOTES:**
- BOTH THE WATER MAIN AND THE SEWER MAIN SHALL BE FERROUS MATERIALS WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A MINIMUM DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING.
  - ALTERNATIVELY, PIPES MAY BE SLEEVED WITH FERROUS MATERIALS FOR A MINIMUM DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING

SEWER CROSSING ABOVE WATER LINE



- NOTES:**
- SOIL REPLACED UNDER THE WATER MAIN SHALL BE COMPACTED.
  - IF THE WATER MAIN CROSSES AT LESS THAN 18 INCHES ABOVE THE SEWER MAIN BOTH THE WATER MAIN AND THE SEWER MAIN SHALL BE FERROUS MATERIALS WITH JOINTS EQUIVALENT TO WATER MAIN STANDARDS FOR A MINIMUM DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING, OR THEY MAY HAVE FERROUS SLEEVES PUT AROUND THEM.

SEWER CROSSING BELOW WATER LINE

SEWER OFFSETS ABOVE  
AND BELOW WATER MAINS  
DETAIL WS-21

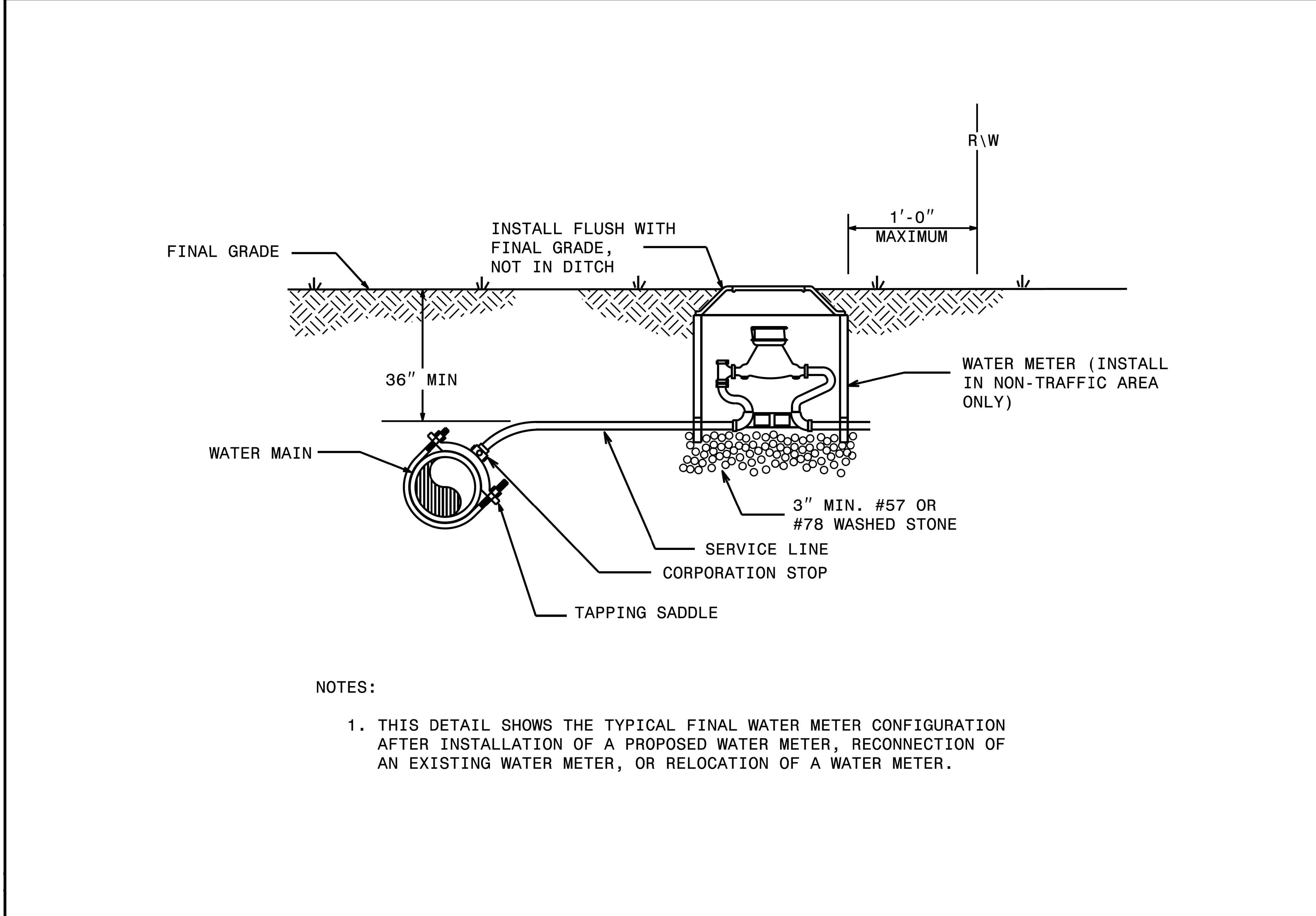
13:45R 2020 10:07 opening Water Sanitary\R-5020B-ut\_UC03A.dtl.dgn

5/14/99

# WATER METER STANDARD DRAWING DETAIL

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-3F
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
KCI <small>Engineers • Planners • Scientists • Construction Managers</small> 4509 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  
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NOTES:

1. THIS DETAIL SHOWS THE TYPICAL FINAL WATER METER CONFIGURATION AFTER INSTALLATION OF A PROPOSED WATER METER, RECONNECTION OF AN EXISTING WATER METER, OR RELOCATION OF A WATER METER.

1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
 ROADWAY STANDARD DRAWING FOR WATER METER  
 SHEET 1 OF 1  
 1515.01

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 R-5020B-ut\_UC03A.dwg  
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5/14/99

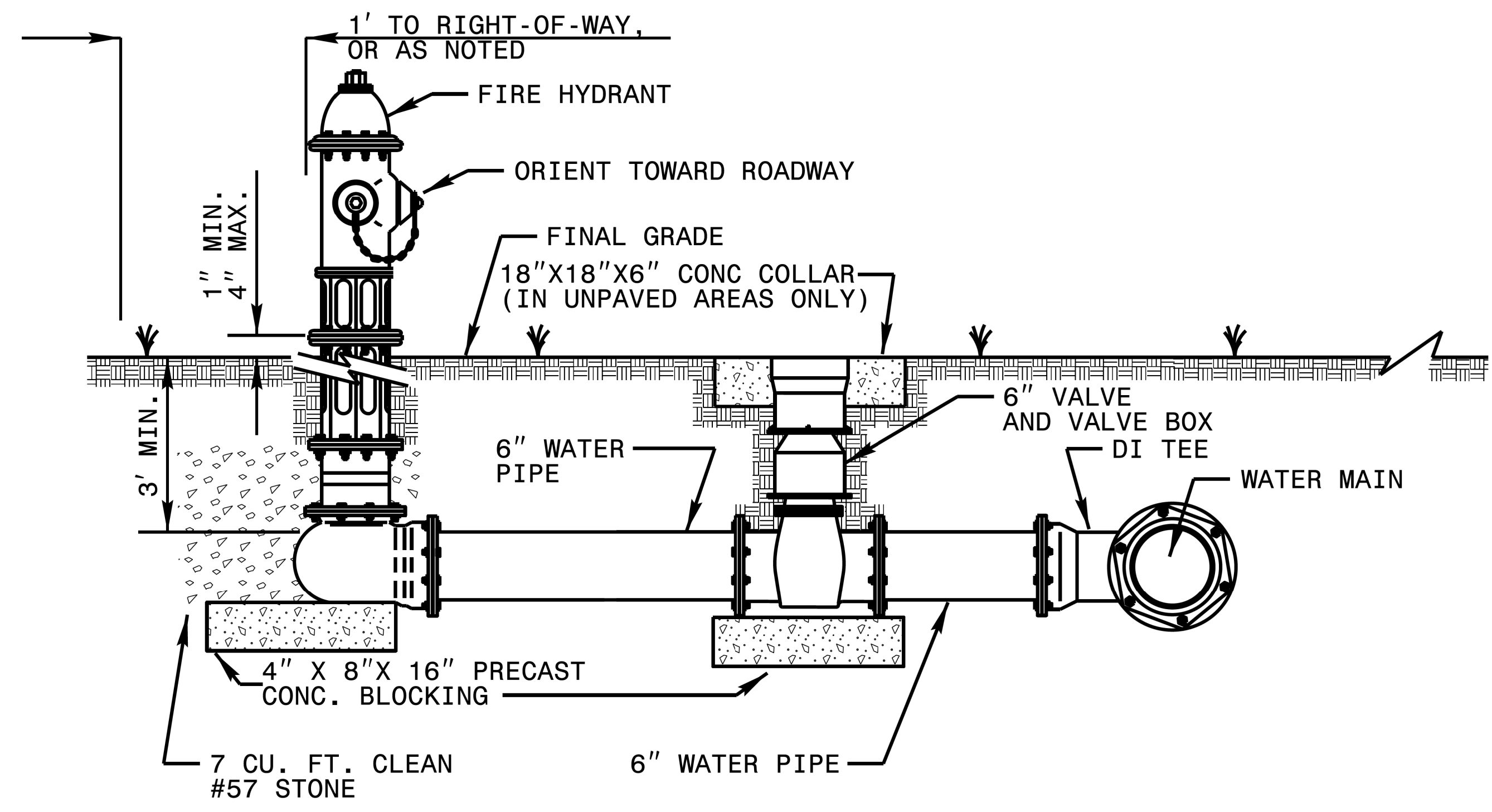
# FIRE HYDRANT STANDARD DRAWING DETAIL

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-36
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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**UTILITY CONSTRUCTION**  
**DOCUMENT NOT CONSIDERED FINAL**  
**UNLESS ALL SIGNATURES COMPLETED**

### NOTES:

1. 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.
2. KEEP DRAIN PORTS FREE FROM OBSTRUCTION.
3. 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.
4. FOR RELOCATED OR RECONNECTED FIRE HYDRANTS, VERIFY THE VALVE IS RESTRAINED TO THE MAIN. PROVIDE APPROPRIATE RESTRAINT.
5. HYDRANT LOCATION APPLIES TO PROPOSED AND RELOCATED FIRE HYDRANTS.
6. LOCATE FIRE HYDRANT WITH 3' HORIZONTAL CLEARANCE FROM ABOVE GROUND OBJECTS.
7. PROVIDE A MINIMUM OF 3' COVER OVER ALL SECTIONS OF HORIZONTAL PIPE. USE FITTINGS AS NECESSARY.
8. TAPPING SLEEVES MAY BE USED ON EXISTING MAINS IN LIEU OF DI TEES.
9. LOCATE FIRE HYDRANT OUTSIDE OF THE VEHICLE RECOVERY AREA, ADJACENT TO THE R/W LINE, OR IN A PROTECTED AREA.



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

ROADWAY STANDARD DRAWING FOR  
**FIRE HYDRANT**

SHEET 1 OF 1  
**1515.02**

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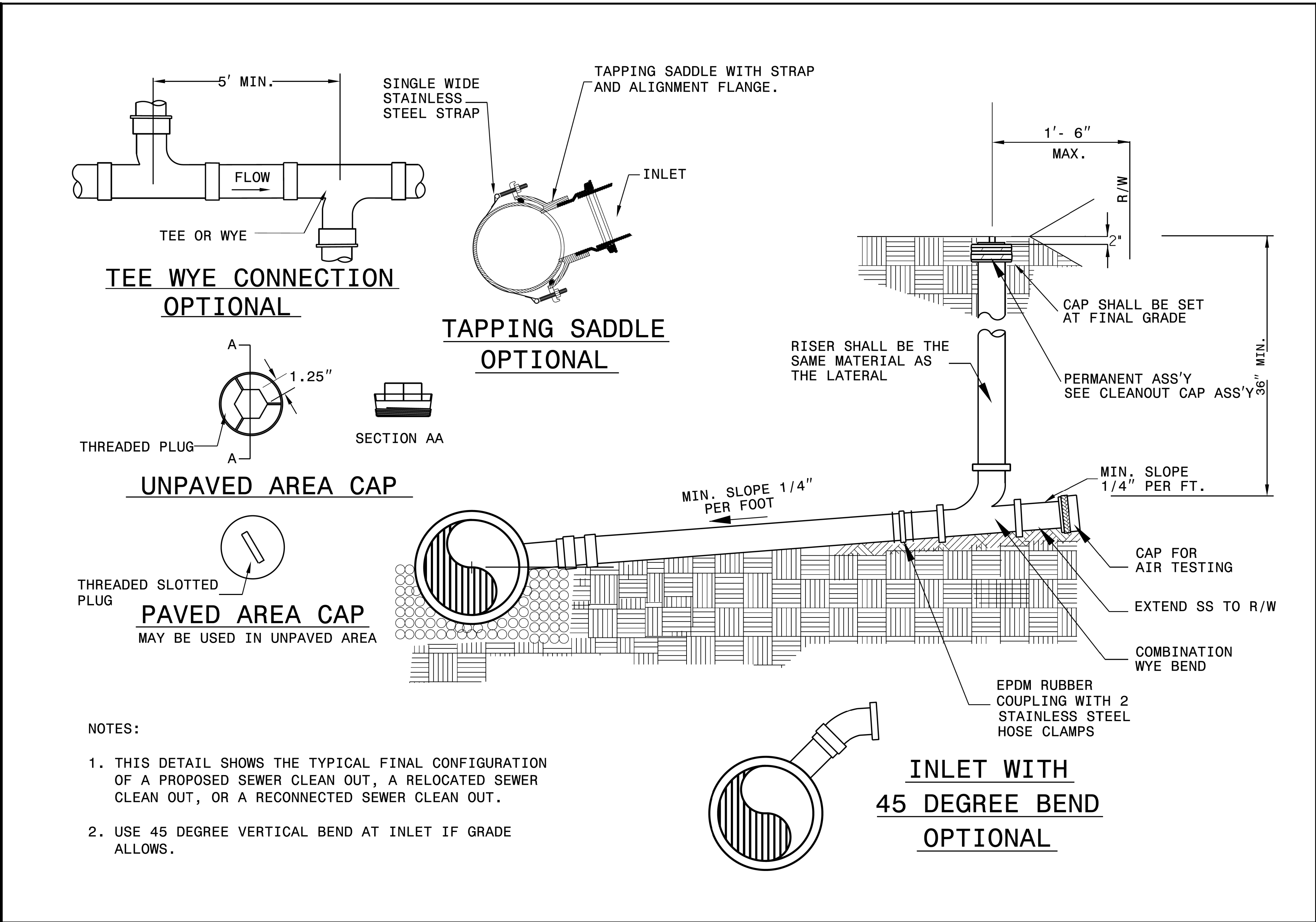
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 R-5020B\_18107.dwg  
 15:45:58

# SEWER CLEAN OUT STANDARD DRAWING DETAIL

PROJECT REFERENCE NO. <i>R-5020B</i>	SHEET NO. <i>UC-3H</i>
DESIGNED BY: <i>DK</i>	
DRAWN BY: <i>AP</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	9/3/2020
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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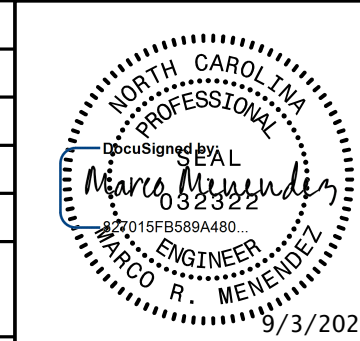
- NOTES:**
1. THIS DETAIL SHOWS THE TYPICAL FINAL CONFIGURATION OF A PROPOSED SEWER CLEAN OUT, A RELOCATED SEWER CLEAN OUT, OR A RECONNECTED SEWER CLEAN OUT.
  2. USE 45 DEGREE VERTICAL BEND AT INLET IF GRADE ALLOWS.

1-18  
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 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.  
 ROADWAY STANDARD DRAWING FOR  
**SEWER CLEAN OUT**  
 SHEET 1 OF 1  
**1520.01**



5/14/99

## RESTRAINED JOINT LENGTHS DETAIL

PROJECT REFERENCE NO. <i>R-5020B</i>	SHEET NO. <i>UC-3I</i>
DESIGNED BY: <i>DK</i>	
DRAWN BY: <i>AP</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 <small>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</small>	

DUCTILE IRON BEND FITTING	Restrained Joint Distance on Both Sides of Fitting (ft.) for Various Pressure Pipe Diameter Sizes			
	6"	8"	10"	12"
11.25 DEGREE BEND (HORIZONTAL)	6	8	9	11
22.50 DEGREE BEND (HORIZONTAL)	12	15	18	21
45 DEGREE BEND (HORIZONTAL)	24	31	37	43
45 DEGREE BEND (VERTICAL UP BEND)	15	19	23	27
45 DEGREE BEND (VERTICAL DOWN BEND)	43	56	67	79
90 DEGREE BEND (HORIZONTAL)	57	74	88	103

DUCTILE IRON FITTING	RESTRAINED JOINT DISTANCE (FT.)	MEASURED ALONG
6"x6" tee	97	branch
6"x8" tee	95	branch
6"x10" tee	92	branch
6"x12" tee	90	branch
8"x8" tee or wye	129	branch
8"x10" tee	127	branch
8"x12" tee	125	branch
10"x10" tee	155	branch
10"x12" tee	154	branch
12"x12" tee	184	branch
6"x8" reducer	57	larger pipe
6"x10" reducer	100	larger pipe
6"x12" reducer	139	larger pipe
8"x10" reducer	55	larger pipe
8"x12" reducer	101	larger pipe
10"x12" reducer	56	larger pipe

- NOTES:
- This contractor shall use the two tables above to determine the restrained joint lengths for all proposed pressure piping.

**UTILITY CONSTRUCTION**  
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**UNLESS ALL SIGNATURES COMPLETED**

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# UTILITY MANHOLE SCHEDULE

NOTE ALL MANHOLES ARE 4' DIAMETER

MANHOLE ID	MANHOLE TYPE	RIM ELEV. FT	OUTFLOW PIPE (DIAMETER AND DEPTH)		INFLOW PIPES (DIAMETER, DEPTH, ANGLE FROM OUTFLOW PIPE)										
			DIAMETER IN.	DEPTH TO INV. FT	PIPE 1			PIPE 2			PIPE 3				
					DIAMETER IN.	DEPTH TO INV. FT	ANGLE	DIAMETER IN.	DEPTH TO INV. FT	ANGLE	DIAMETER IN.	DEPTH TO INV. FT	ANGLE		
A1	STANDARD	63.49	8	8.13	8	8.09	270								
A2	STANDARD	68.28	8	10.20	8	10.00	180								
A3	STANDARD	70.55	8	8.09	8	7.89	180								
A4	STANDARD	75.89	8	8.23	8	8.03	175								
A5	STANDARD	77.41	8	8.18											
B1	DOGHOUSE	59.55	8	5.18	8	5.18	180	8	5.14	230					
B2	STANDARD	59.41	8	4.99	8	4.83	130								
C1	STANDARD	61.00	8	6.78											
C2	STANDARD	60.03	8	6.21	8	6.01	222								
C3	DOGHOUSE	59.85	8	6.24	8	6.04	137	8	6.23	180					
D1	STANDARD	69.20	8	7.68											
D2	STANDARD	67.74	8	6.90	8	6.70	141								
D3	DOGHOUSE	67.62	8	6.99	8	6.79	141	8	6.98	180					
E1	DOGHOUSE	76.84	8	5.57	8	5.35	133	8	5.56	180					
E2	STANDARD	75.62	8	3.99	8	3.79	226								
E3	STANDARD	78.22	8	5.59	8	5.51	225								
F1	STANDARD	80.43	8	7.00	8	6.80	226								
F2	STANDARD	80.43	8	4.93											
G1	DOGHOUSE	76.58	8	6.78	8	6.58	180	8	6.57	226					
G2	STANDARD	76.61	8	6.60	8	6.40	134								
G3	STANDARD	81.77	8	10.19	8	9.99	137								
G4	DOGHOUSE	81.72	8	9.92	8	9.72	136	8	9.72	180					
H1	STANDARD	81.41	8	6.86											
H2	STANDARD	77.84	8	4.61	8	4.61	180								
H3	STANDARD	78.31	8	7.97	8	6.52	89	8	6.44	269					
H4	STANDARD	84.26	8	11.21											
I1	DOGHOUSE	73.15	8	4.36	8	4.16	136	8	4.16	180					
I2	STANDARD	73.34	8	4.34	8	4.14	223								
I3	DOGHOUSE	73.88	6	2.23											
J1	DOGHOUSE	83.65	8	5.57	8	5.55	180	8	5.57	220					
J2	STANDARD	83.44	8	5.34	8	5.24	140								
J3	STANDARD	83.98	8	4.72	8	4.59	137								
J4	DOGHOUSE	84.13	8	4.73	8	4.73	43	8	4.73	223					
K1	STANDARD	83.21	10	9.01											
K2	STANDARD	75.91	10	9.55	10	9.35	180								
K3	STANDARD	73.80	10	8.49	10	8.29	248								
K4	STANDARD	73.80	12	8.63	12	8.63	154	12	8.62	180	10	8.63	200		
K5	STANDARD	71.93	12	6.62	12	6.49	113	10	6.34	216					
K6	STANDARD	74.57	12	8.42	12	8.29	180								
K7	STANDARD	74.06	12	6.95	12	6.82	180	8	6.78	271					
K8	STANDARD	74.93	12	6.93	8	6.10	95	12	6.61	152	8	6.93	272		
K9	DOGHOUSE	76.45	12	7.94	8	7.94	15	8	7.94	165					
M1	STANDARD	72.00	8	4.35	8	67.82	216								
M2	DOGHOUSE	72.04	8	4.22	8	6.82	135	8	4.21	315					
N1	STANDARD	74.65	8	6.13	8	6.13	167	8	6.13	347					
N2	STANDARD	76.00	8	5.71	8	5.51	180								
N3	STANDARD	75.69	8	4.66	8	4.46	137								
N4	DOGHOUSE	75.60	8	4.27	8	4.26	44	8	4.07	224					
P1	STANDARD	88.69	8	4.15											
P2	STANDARD	90.42	8	6.56	8	6.36	132								
P3	DOGHOUSE	90.55	8	6.91	8	6.90	48	8	6.71	227					
Q2	DOGHOUSE	91.88	8	9.24	8	9.04	99	8	9.23	180					

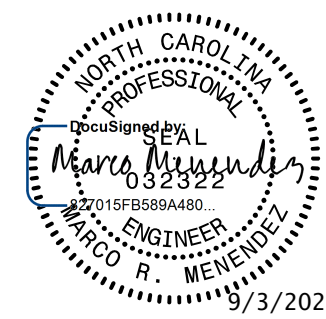

PROJECT REFERENCE NO. <i>R-5020B</i>	SHEET NO. <i>UC-3J</i>
DESIGNED BY: <i>DK</i>	
DRAWN BY: <i>AP</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY 9/3/2020	
KCI Engineers • Planners • Scientists • Construction Managers 4509 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

**UTILITY CONSTRUCTION**  
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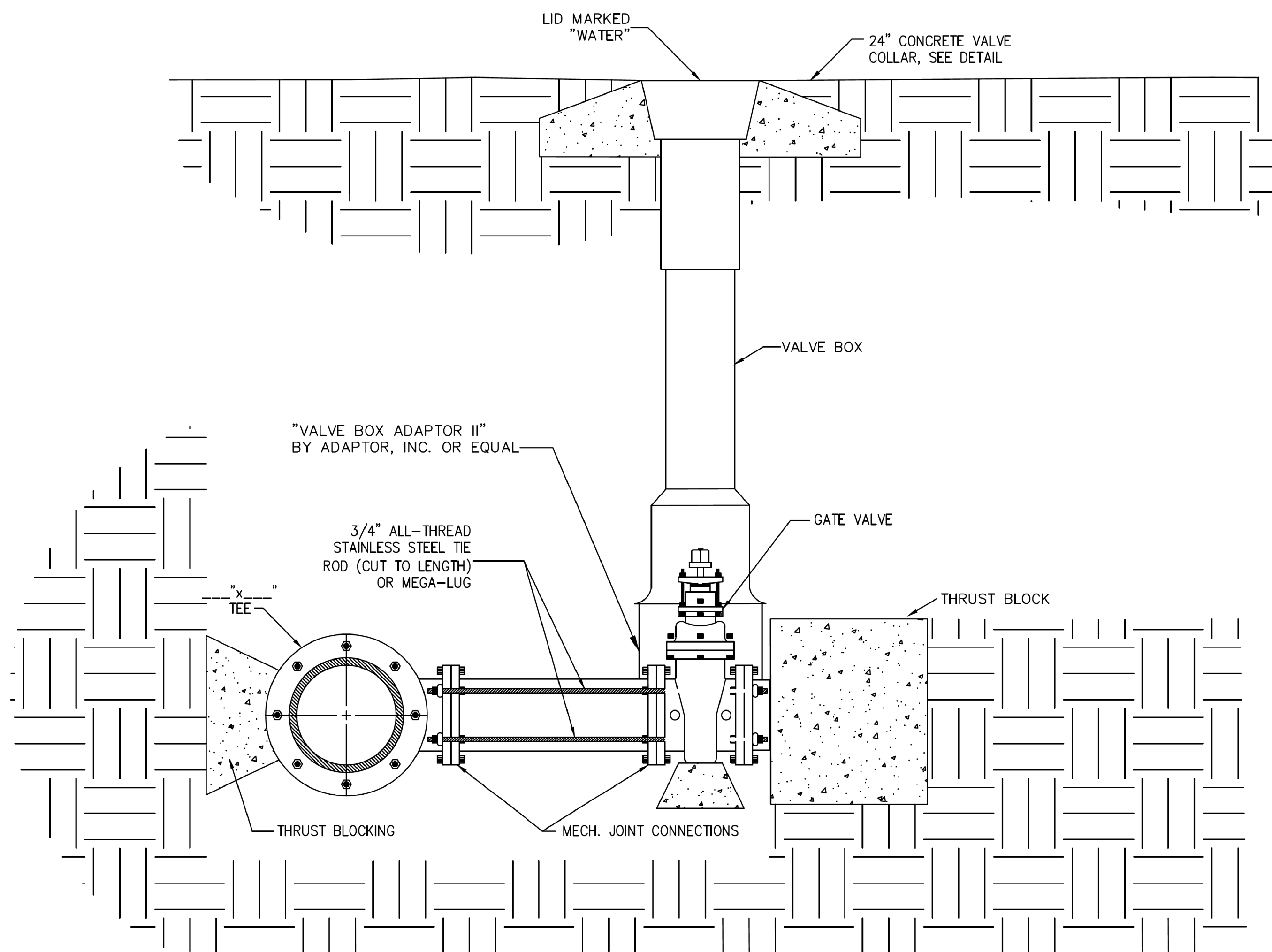


5/14/99

## BRANCH STUB-OUT FOR FUTURE CONNECTION (6-INCH DIA AND LARGER MAIN)

PROJECT REFERENCE NO. <i>R-5020B</i>	SHEET NO. <i>UC-3K</i>
DESIGNED BY: <i>DK</i>	
DRAWN BY: <i>AP</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 9/3/2020	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
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**NOTES:**

1. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL FITTINGS.
2. ALL TIE RODS AND NUTS TO BE STAINLESS STEEL.
3. LENGTH OF PIPE SHALL BE MINIMUM NEEDED TO INSTALL FITTINGS. VALVE SHALL BE BOLTED DIRECTLY TO TEE WHENEVER POSSIBLE.

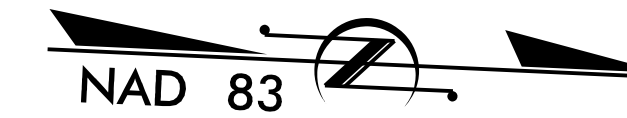
ROD REQUIREMENTS	
BRANCH SIZE	NO. OF RODS
4"	2 EA.
6"	2 EA.
8"	4 EA.
12"	4 EA.
16"	6 EA.
20"	6 EA.
24"	6 EA.

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**NOTES:**

1. SEE SHEET UC-3A FOR CONNECTION TO EXISTING AC WATER LINE DETAIL.
2. FOLLOWING CONSTRUCTION OF PROPOSED WATER LINE, ABANDON VALVE IN PLACE.
3. EXISTING PIPE TO BE ABANDONED SHALL BE REMOVED AS NECESSARY BY CONTRACTOR FOR THE PROPOSED PIPE INSTALLATION

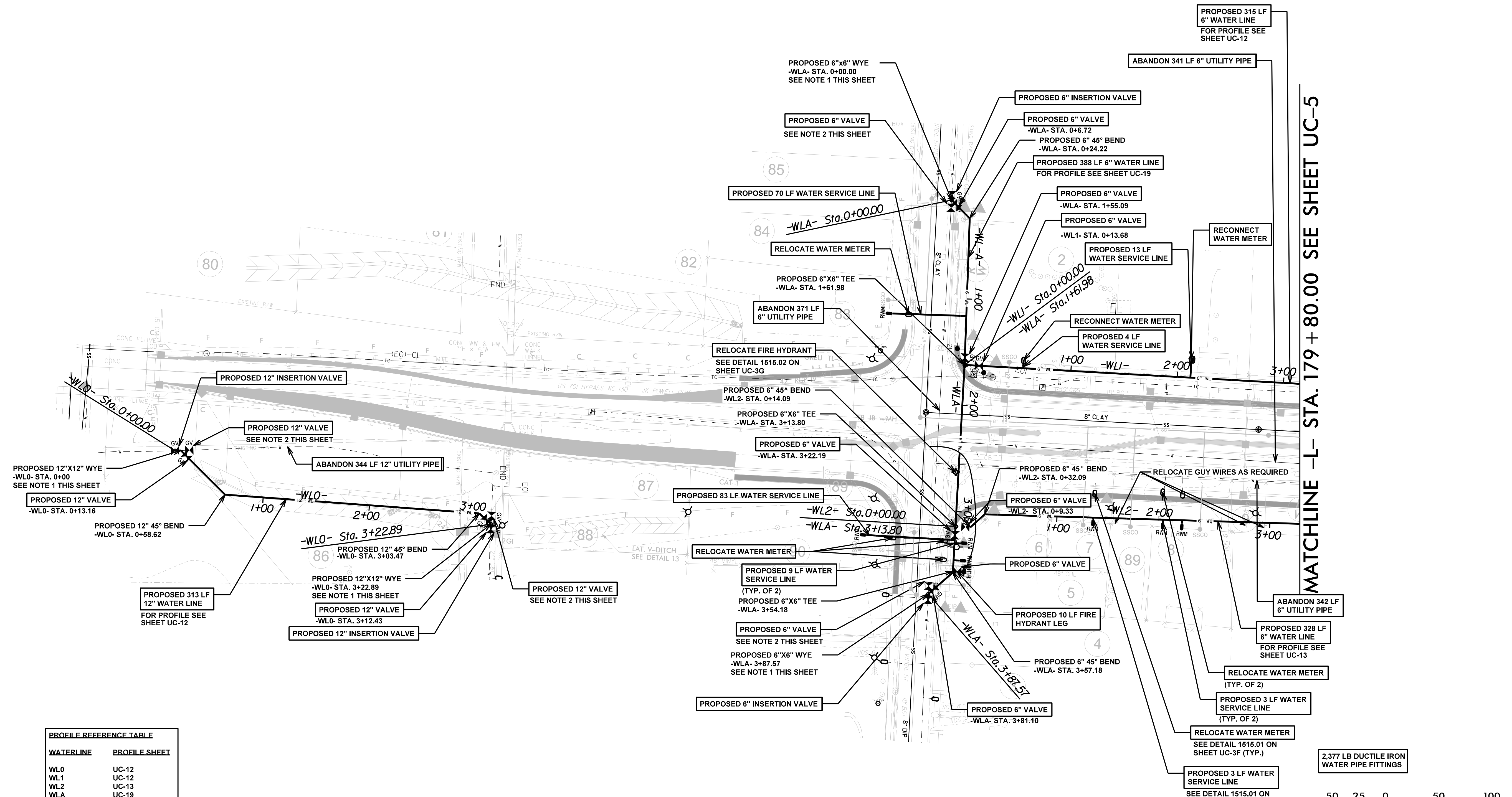


**WATER LINE**

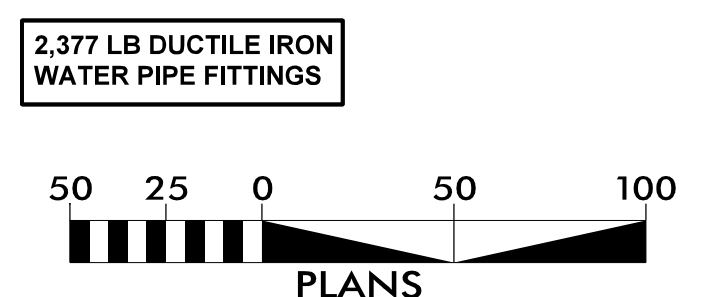
PROJECT REFERENCE NO. <b>R-5020B</b>	SHEET NO. <b>UC-4</b>
DESIGNED BY: <b>DK</b>	
DRAWN BY: <b>AP</b>	
CHECKED BY: <b>MM</b>	
APPROVED BY:	
REVISED:	9/3/2020
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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PROFILE REFERENCE TABLE	
WATERLINE	PROFILE SHEET
WL0	UC-12
WL1	UC-12
WL2	UC-13
WLA	UC-19



25-AUG-2020 15:16:59 NCDOT R-5020B US 701 Widening\Water\_Sanitary\R-5020B\_ut\_rdy4\_UC04\_psh.dgn  
 8/17/99



8.17.799  
R:\A-5020B\09333\NCDDT-R-5020B\Water\_Seminary\R-5020B\_ut\_rdy5\_UC05\_psh.dgn  
25-AUG-2020 09:33  
R:\A-5020B\09333\NCDDT-R-5020B\Water\_Seminary\R-5020B\_ut\_rdy5\_UC05\_psh.dgn

**NOTES:**

1. SEE SHEET UC-3A FOR CONNECTION TO EXISTING AC WATER LINE DETAIL.
2. PROPOSED WATER METER BOX FOR FUTURE METER BY OTHERS.
3. FOLLOWING CONSTRUCTION OF PROPOSED WATER LINE, ABANDON VALVE IN PLACE.
4. EXISTING PIPE TO BE ABANDONED SHALL BE REMOVED AS NECESSARY BY CONTRACTOR FOR THE PROPOSED PIPE INSTALLATION.

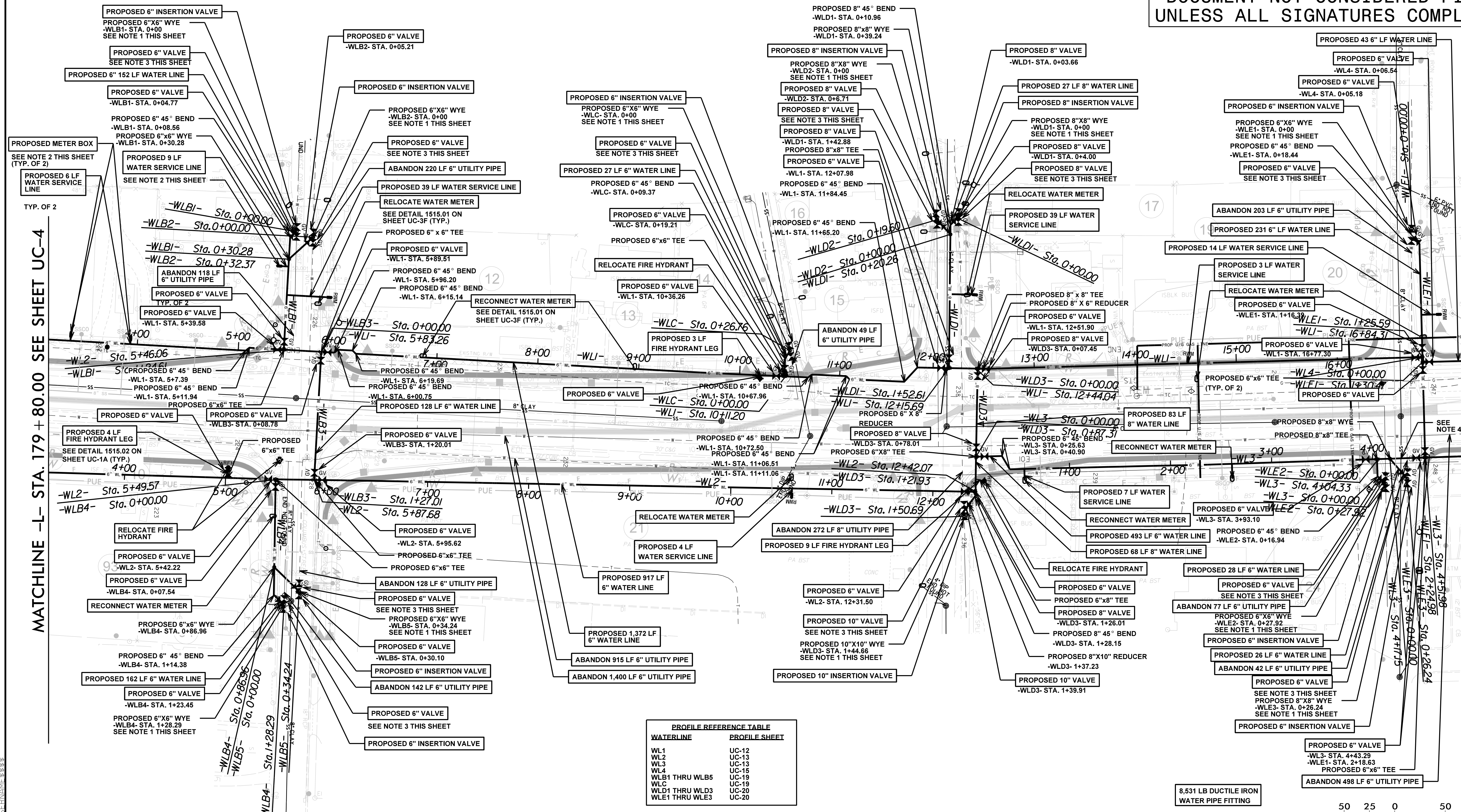
**WATER LINE**



PROJECT REFERENCE NO.	SHEET NO.
R-5020B	UC-5
DESIGNED BY: DK	
DRAWN BY: AP	
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

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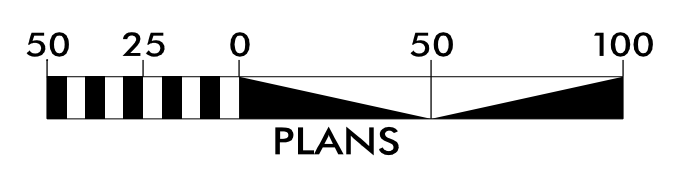


MATCHLINE -L- STA. 179 + 80.00 SEE SHEET UC-4

MATCHLINE -L- STA. 193 + 79.92 SEE SHEET UC-6

WATERLINE	PROFILE SHEET
WL1	UC-12
WL2	UC-13
WL3	UC-13
WL4	UC-15
WLB1 THRU WLB5	UC-19
WLC	UC-19
WLD1 THRU WLD3	UC-20
WLE1 THRU WLE3	UC-20

8,531 LB DUCTILE IRON WATER PIPE FITTING



PLANS



PROJECT REFERENCE NO.	SHEET NO.
R-5020B	UC-6
DESIGNED BY: DK	
DRAWN BY: AP	
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 License No. C-764	

NOTES:

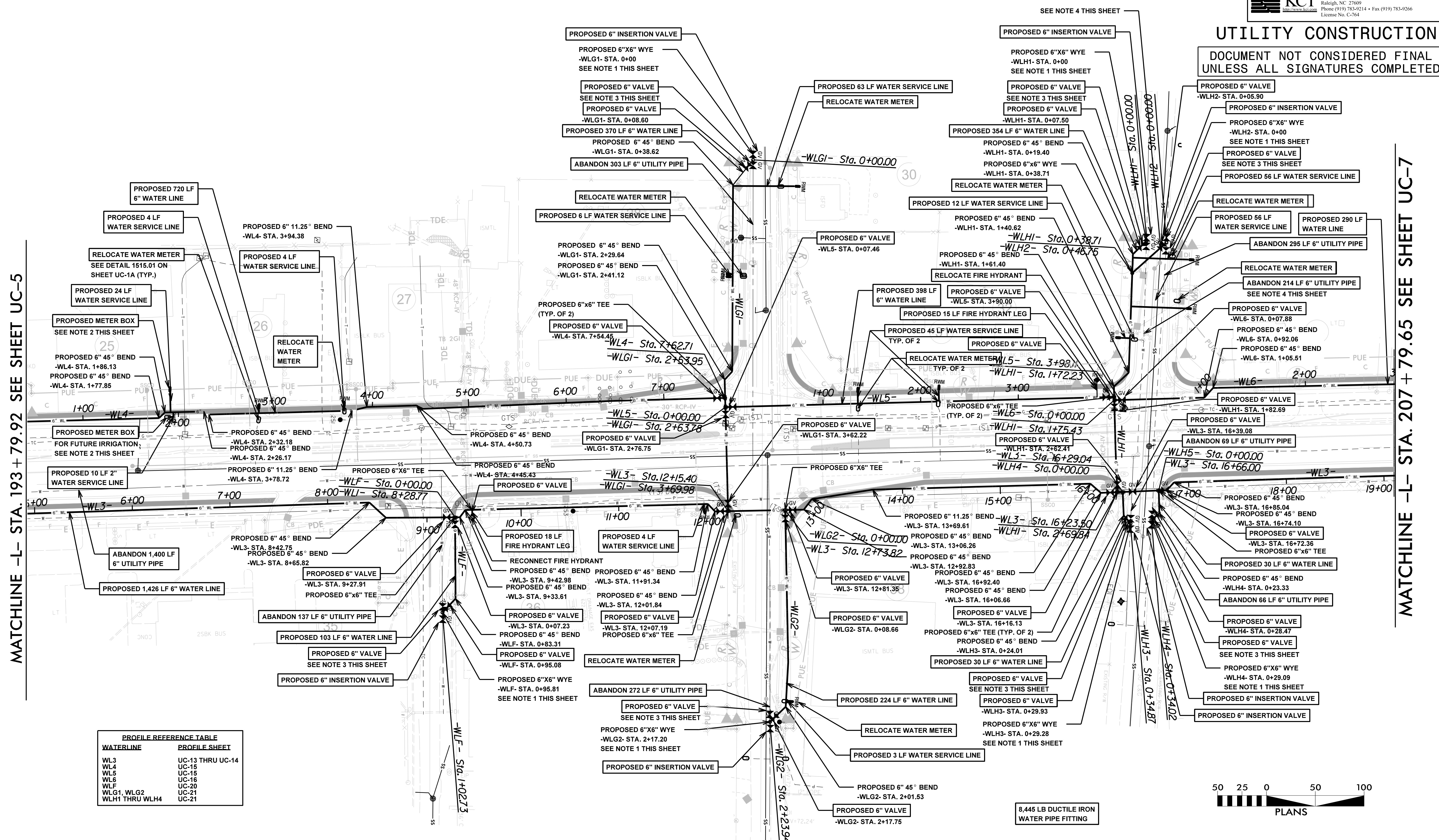
1. SEE SHEET UC-3A FOR CONNECTION TO EXISTING AC WATER LINE DETAIL.
2. PROPOSED WATER METER BOX FOR FUTURE METER BY CITY OF WHITEVILLE.
3. FOLLOWING CONSTRUCTION OF THE PROPOSED WATER LINE, ABANDON VALVE IN PLACE.
4. EXISTING PIPE TO BE ABANDONED SHALL BE REMOVED AS NECESSARY BY CONTRACTOR FOR THE PROPOSED PIPE INSTALLATION.

WATER LINE



UTILITY CONSTRUCTION

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MATCHLINE -L- STA. 193 + 79.92 SEE SHEET UC-5

MATCHLINE -L- STA. 207 + 79.65 SEE SHEET UC-7

PROFILE REFERENCE TABLE	
WATERLINE	PROFILE SHEET
WL3	UC-13 THRU UC-14
WL4	UC-15
WL5	UC-15
WL6	UC-16
WL7	UC-20
WL8	UC-21
WL9	UC-21
WL10	UC-21
WL11	UC-21
WL12	UC-21
WL13	UC-21
WL14	UC-21
WL15	UC-21
WL16	UC-21
WL17	UC-21
WL18	UC-21
WL19	UC-21
WL20	UC-21
WL21	UC-21
WL22	UC-21
WL23	UC-21
WL24	UC-21
WL25	UC-21
WL26	UC-21
WL27	UC-21
WL28	UC-21
WL29	UC-21
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WL94	UC-21
WL95	UC-21
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WL98	UC-21
WL99	UC-21
WL100	UC-21



8,445 LB DUCTILE IRON WATER PIPE FITTING



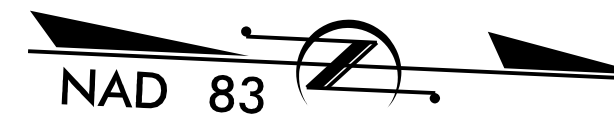
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5020B	UC-7
DESIGNED BY: DK	
DRAWN BY: AP	
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 Engineers • Planners • Scientists • Construction Managers 4595 Falls of Noe Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-794	

NOTES:

- SEE SHEET UC-3A FOR CONNECTION TO EXISTING AC WATER LINE DETAIL.
- FOLLOWING CONSTRUCTION OF THE PROPOSED WATER LINE, ABANDON VALVE IN PLACE.
- EXISTING PIPE TO BE ABANDONED SHALL BE REMOVED AS NECESSARY BY CONTRACTOR FOR THE PROPOSED PIPE INSTALLATION.
- PROPOSED WATER METER BOX FOR FUTURE METER BY OTHERS.

WATER LINE

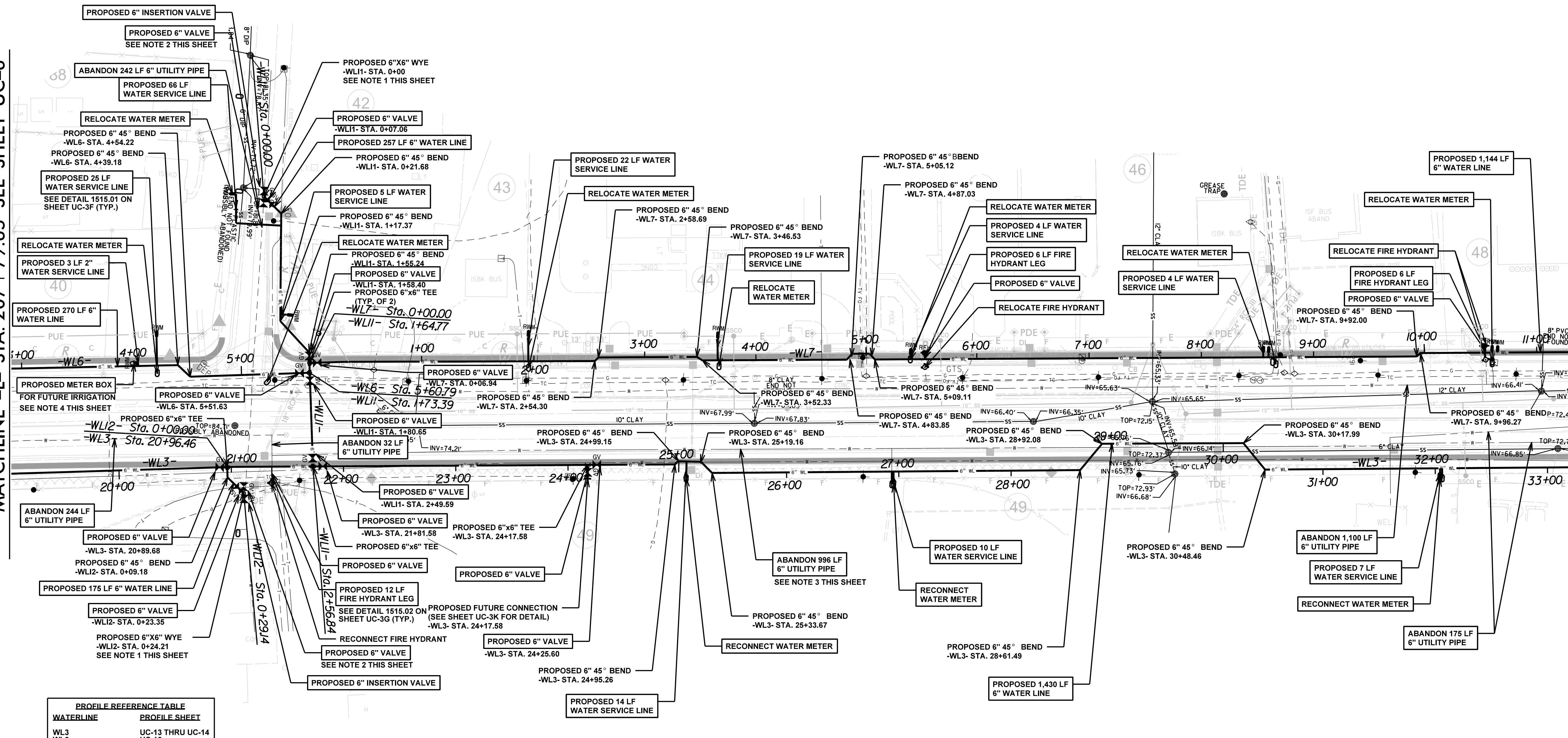


UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

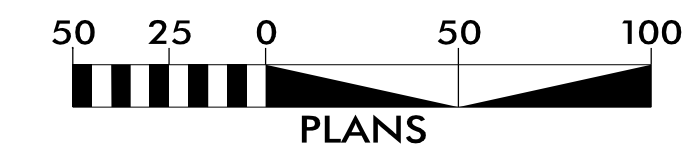
MATCHLINE -L- STA. 207 + 79.65 SEE SHEET UC-6

MATCHLINE -L- STA. 221 + 83.11 SEE SHEET UC-8



PROFILE REFERENCE TABLE	
WATERLINE	PROFILE SHEET
WL3	UC-13 THRU UC-14
WL6	UC-16
WL7	UC-16
WL11, WL12	UC-22

5,597 LB DUCTILE IRON WATER PIPE FITTING



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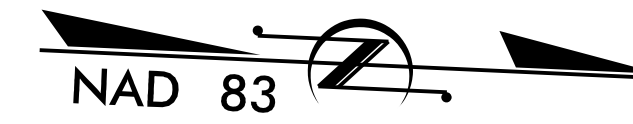
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5020B	UC-8
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
KCI Engineers • Planners • Scientists • Construction Managers 4595 Falls of Noe Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

NOTES:

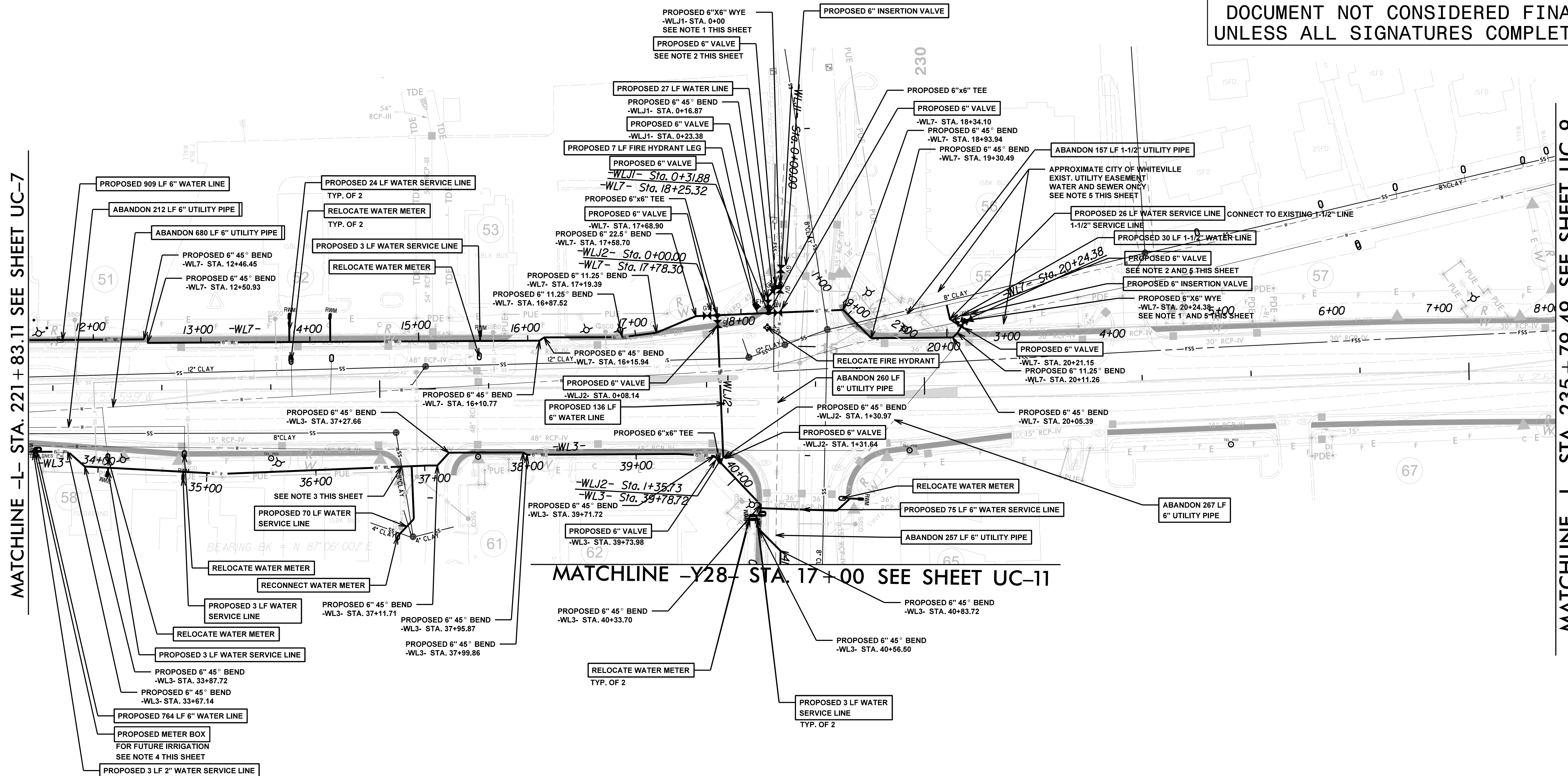
1. SEE SHEET UC-3A FOR CONNECTION TO EXISTING AC WATER LINE DETAIL.
2. FOLLOWING CONSTRUCTION OF PROPOSED WATER LINE, ABANDON VALVE IN PLACE.
3. EXISTING PIPE TO BE ABANDONED SHALL BE REMOVED AS NECESSARY BY CONTRACTOR FOR THE PROPOSED PIPE INSTALLATION.
4. PROPOSED WATER METER BOX FOR FUTURE METER BY OTHERS.
5. CONTRACTOR SHALL RESTORE PAVEMENT AND ANY OTHER ITEMS TO ORIGINAL CONDITION FOLLOWING CONSTRUCTION OF THE WATER LINE WITHIN THE CITY OF WHITEVILLE UTILITY EASEMENT.

WATER LINE



UTILITY CONSTRUCTION

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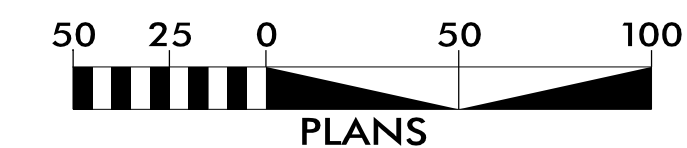
MATCHLINE -L- STA. 221 + 83.11 SEE SHEET UC-7

MATCHLINE -Y28- STA. 17 + 00 SEE SHEET UC-11

MATCHLINE -L- STA. 235 + 79.49 SEE SHEET UC-9

PROFILE REFERENCE TABLE	
WATERLINE	PROFILE SHEET
WL3	UC-14 THRU UC-15
WL7	UC-16, UC-17
WLJ1, WLJ2	UC-22

4,972 LB DUCTILE IRON WATER PIPE FITTING



17-FEB-2021 09:42 M:\2016\201601899\NCDOT\_R-5020B\Water\_Sanitary\R-5020B-ut\_rdu8\_UC08\_psh.dgn



**NOTES:**

1. SEE SHEET UC-3A FOR CONNECTION TO EXISTING AC WATER LINE DETAIL.
2. FOLLOWING CONSTRUCTION OF THE PROPOSED WATER LINE, ABANDON VALVE IN PLACE.
3. EXISTING PIPE TO BE ABANDONED SHALL BE REMOVED AS NECESSARY BY CONTRACTOR FOR THE PROPOSED PIPE INSTALLATION.
4. CONTRACTOR SHALL ENSURE THAT THE PROPOSED WATER MAIN IS INSTALLED AT LEAST 10 FEET Laterally FROM PROPOSED OR EXISTING (NOT TO BE ABANDONED) SANITARY FORCE MAIN PIPING.
5. PROPOSED WATER METER BOX FOR FUTURE METER BY OTHERS.



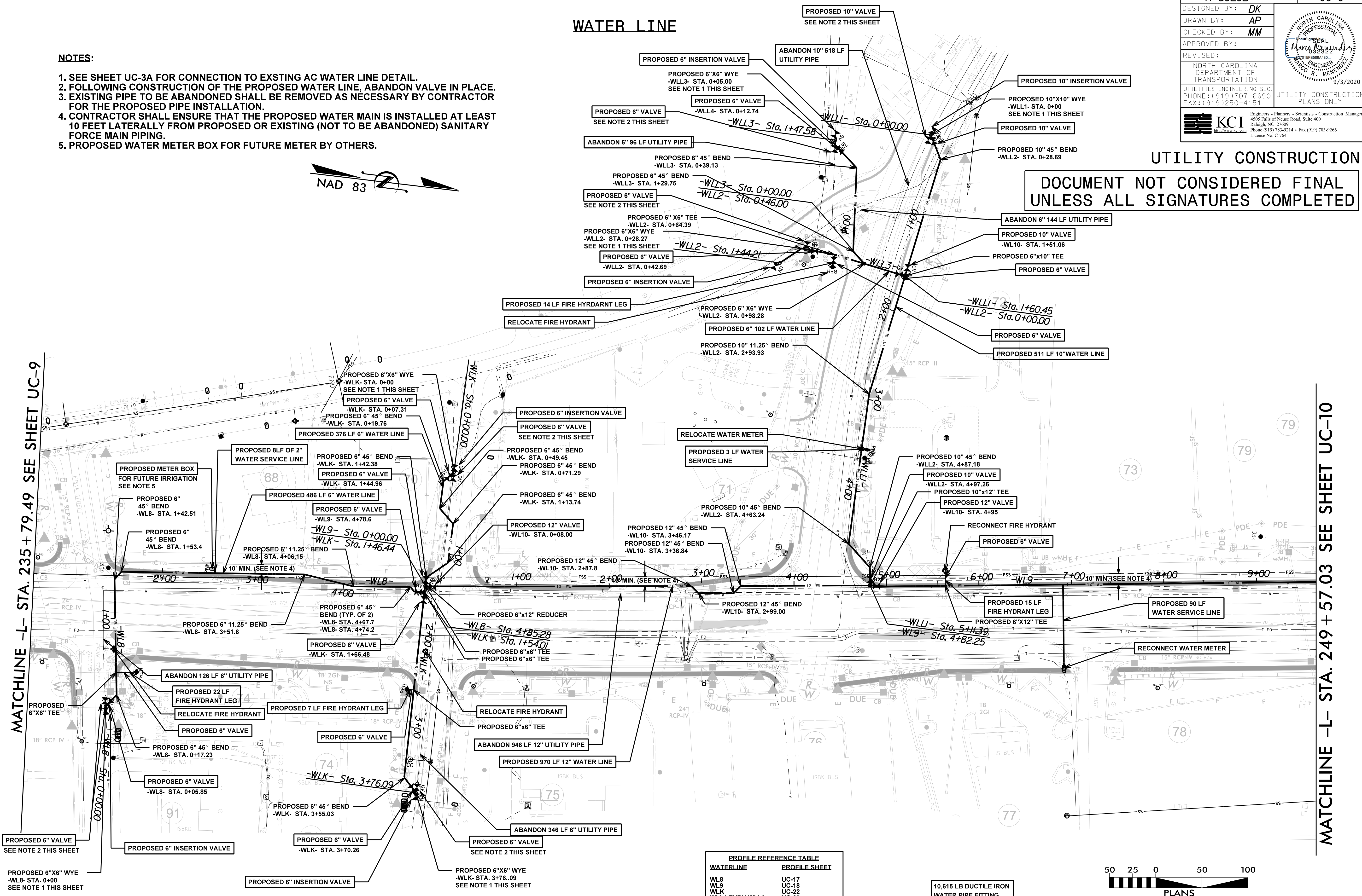
**WATER LINE**

**UTILITY CONSTRUCTION**

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

MATCHLINE -L- STA. 235 + 79.49 SEE SHEET UC-9

MATCHLINE -L- STA. 249 + 57.03 SEE SHEET UC-10



PROFILE REFERENCE TABLE	
WATERLINE	PROFILE SHEET
WL8	UC-17
WL9	UC-18
WLK	UC-22
WLL1 THRU WLL3	UC-23

10,615 LB DUCTILE IRON  
WATER PIPE FITTING



PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-5020B	UC-10
DESIGNED BY: DK	
DRAWN BY: AP	
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 4519 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

# WATER LINE



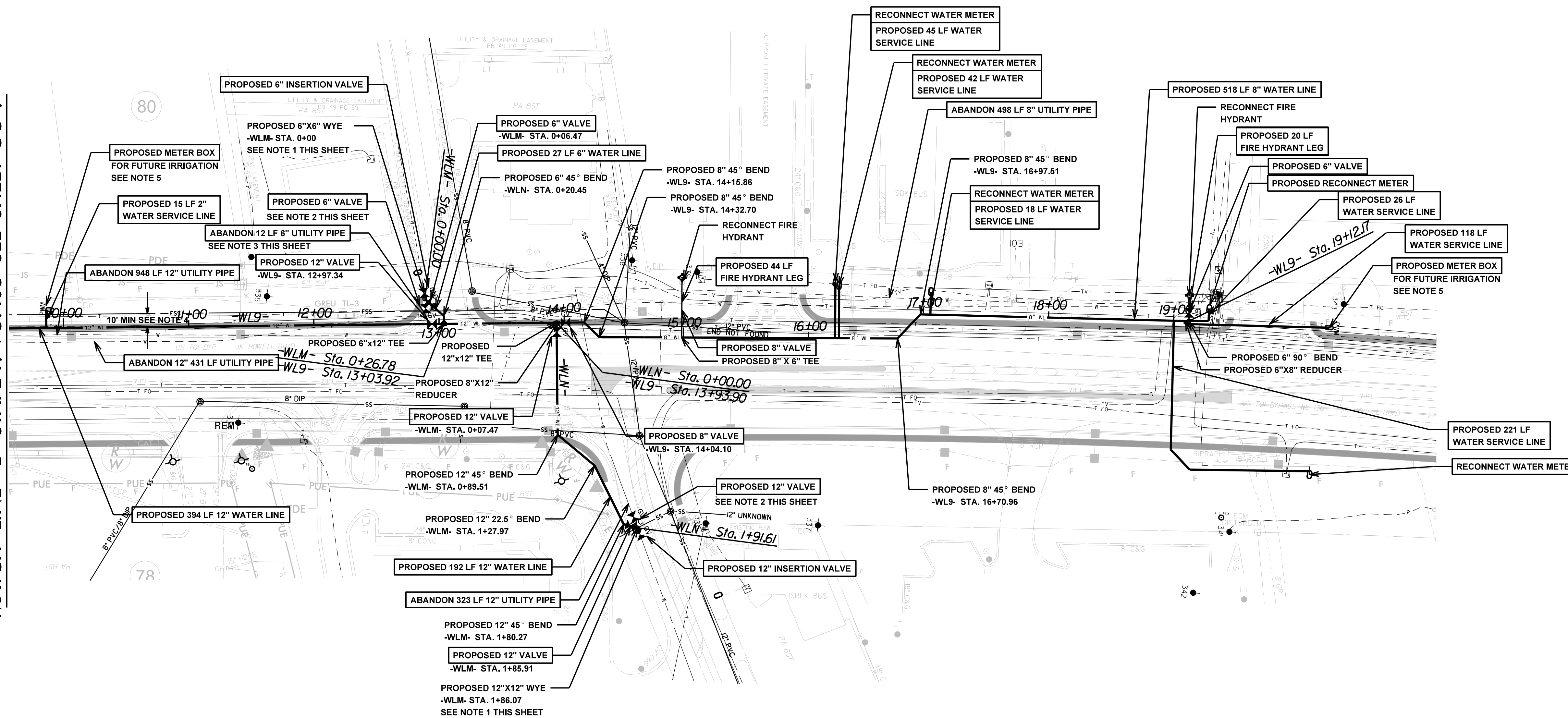
### NOTES:

1. SEE SHEET UC-3A FOR CONNECTION TO EXISTING AC WATER LINE DETAIL.
2. FOLLOWING CONSTRUCTION OF THE PROPOSED WATER LINE, ABANDON VALVE IN PLACE.
3. EXISTING PIPE TO BE ABANDONED SHALL BE REMOVED AS NECESSARY BY CONTRACTOR FOR THE PROPOSED PIPE INSTALLATION.
4. CONTRACTOR SHALL ENSURE THAT THE PROPOSED WATER MAIN IS INSTALLED AT LEAST 10 FEET LATERALLY FROM PROPOSED OR EXISTING (NOT TO BE ABANDONED) SANITARY FORCE MAIN PIPING.
5. PROPOSED WATER METER BOX FOR FUTURE METER BY OTHERS.

## UTILITY CONSTRUCTION

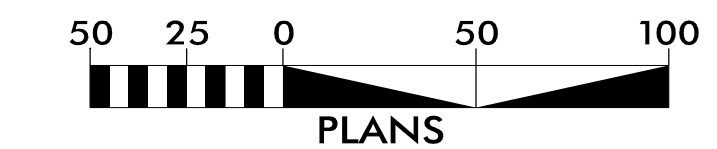
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

MATCH LINE -L- STA. 249 + 57.03 SEE SHEET UC-9



PROFILE REFERENCE TABLE	
WATERLINE	PROFILE SHEET
WLN	UC-18
WLM	UC-23
WLN	UC-23

3,841 LB DUCTILE IRON  
WATER PIPE FITTING





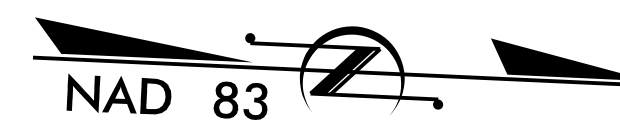
8/17/99

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**NOTES:**

1. SEE SHEET UC-3A FOR CONNECTION TO EXISTING AC WATER LINE DETAIL.
2. FOLLOWING CONSTRUCTION OF THE PROPOSED WATER LINE, ABANDON VALVE IN PLACE.
3. EXISTING PIPE TO BE ABANDONED SHALL BE REMOVED AS NECESSARY BY CONTRACTOR FOR THE PROPOSED PIPE INSALLATION.

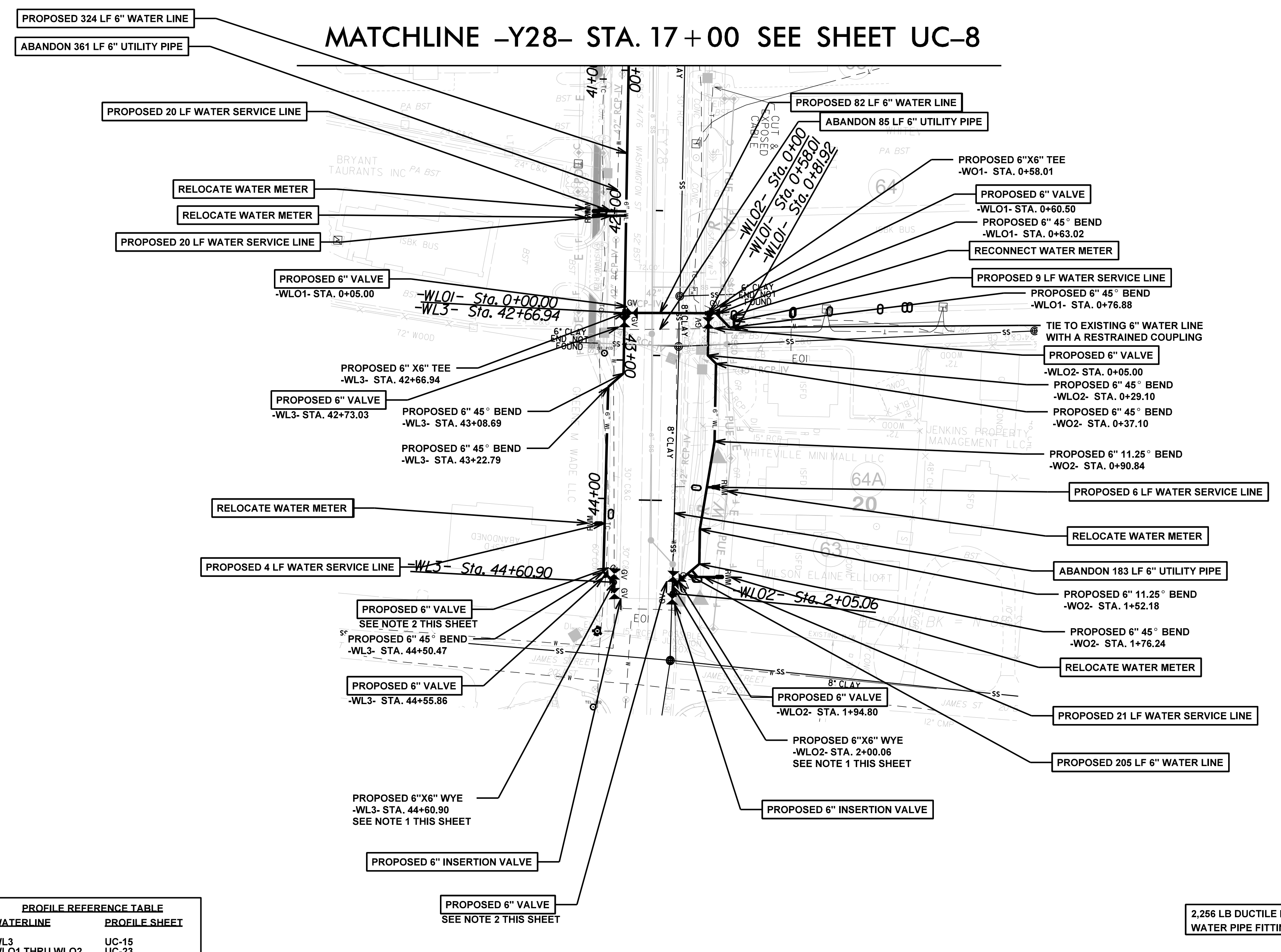
**WATER LINE**



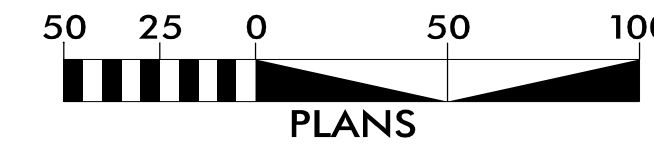
PROJECT REFERENCE NO. <b>R-5020B</b>		SHEET NO. <b>UC-11</b>	
DESIGNED BY:	<b>DK</b>		
DRAWN BY:	<b>AP</b>		
CHECKED BY:	<b>MM</b>		
APPROVED BY:			
REVISED:			
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION			UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151
		UTILITY CONSTRUCTION PLANS ONLY 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	

UTILITY CONSTRUCTION

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UNLESS ALL SIGNATURES COMPLETED



2,256 LB DUCTILE IRON  
WATER PIPE FITTING



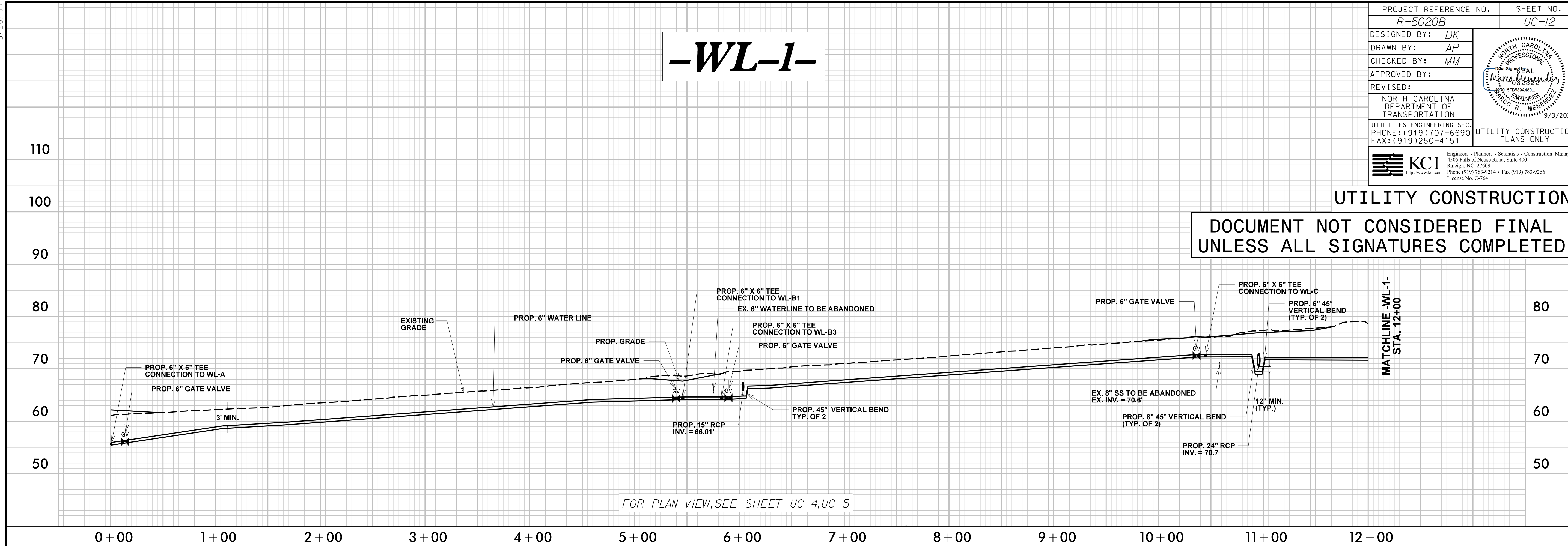
5/28/99

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-12
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISD BY:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

# -WL-1-

UTILITY CONSTRUCTION

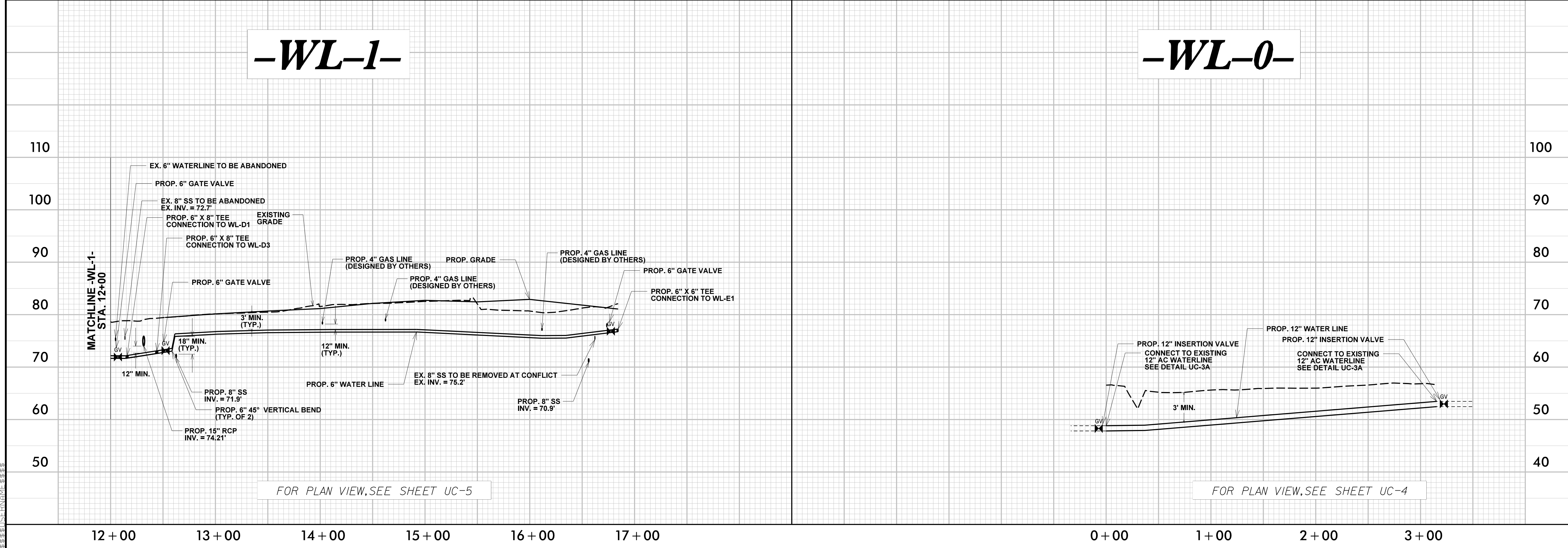
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



FOR PLAN VIEW, SEE SHEET UC-4, UC-5

# -WL-1-

# -WL-0-



FOR PLAN VIEW, SEE SHEET UC-5

FOR PLAN VIEW, SEE SHEET UC-4

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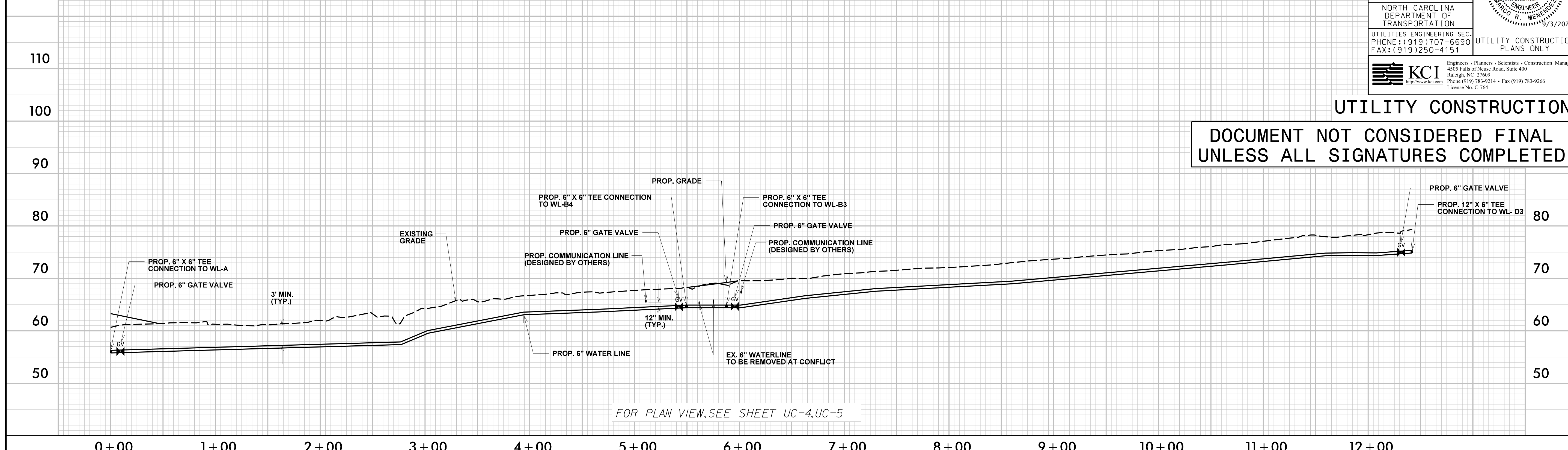


5/28/99

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DESIGNED BY: <i>DK</i>	
DRAWN BY: <i>AP</i>	
CHECKED BY: <i>MM</i>	
APPROVED BY:	
REVISD BY:	
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 4508 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

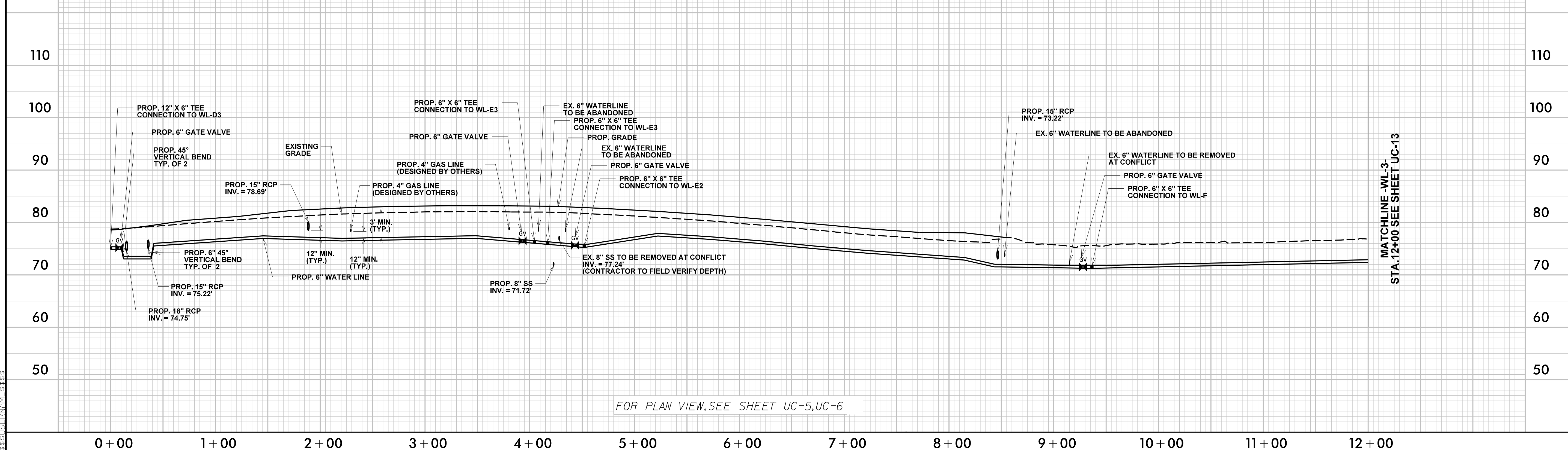
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**UTILITY CONSTRUCTION**  
**DOCUMENT NOT CONSIDERED FINAL**  
**UNLESS ALL SIGNATURES COMPLETED**

FOR PLAN VIEW, SEE SHEET UC-4, UC-5

# -WL-3-



MATCHLINE WL-3-  
STA. 12+00 SEE SHEET UC-13

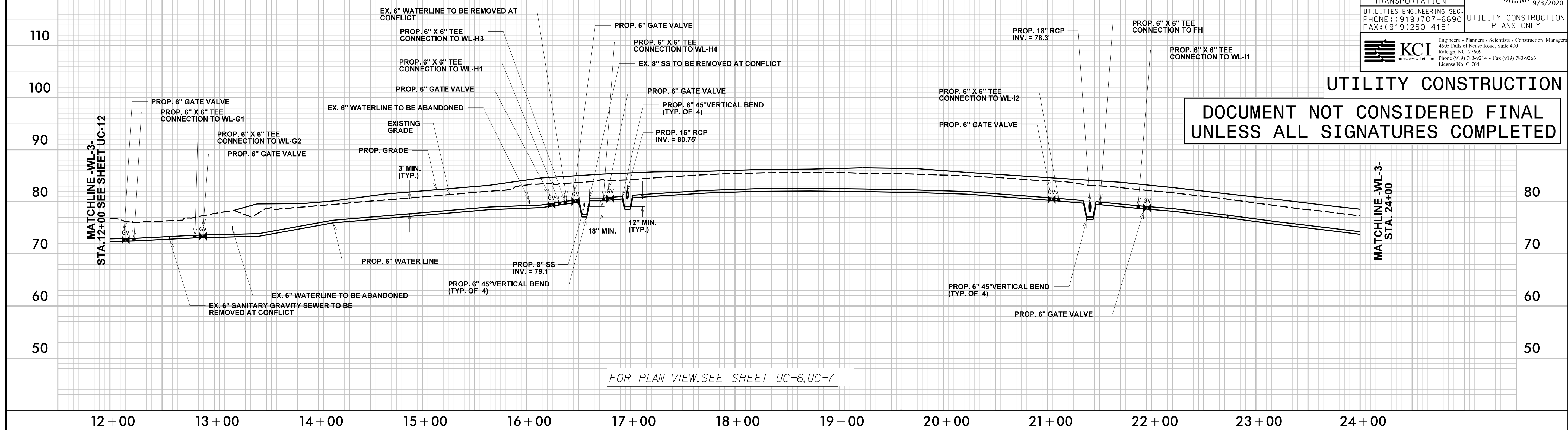
FOR PLAN VIEW, SEE SHEET UC-5, UC-6



5/28/99

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-14
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISD:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 UTILITY CONSTRUCTION PLANS ONLY	
Engineers • Planners • Scientists • Construction Managers 4508 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

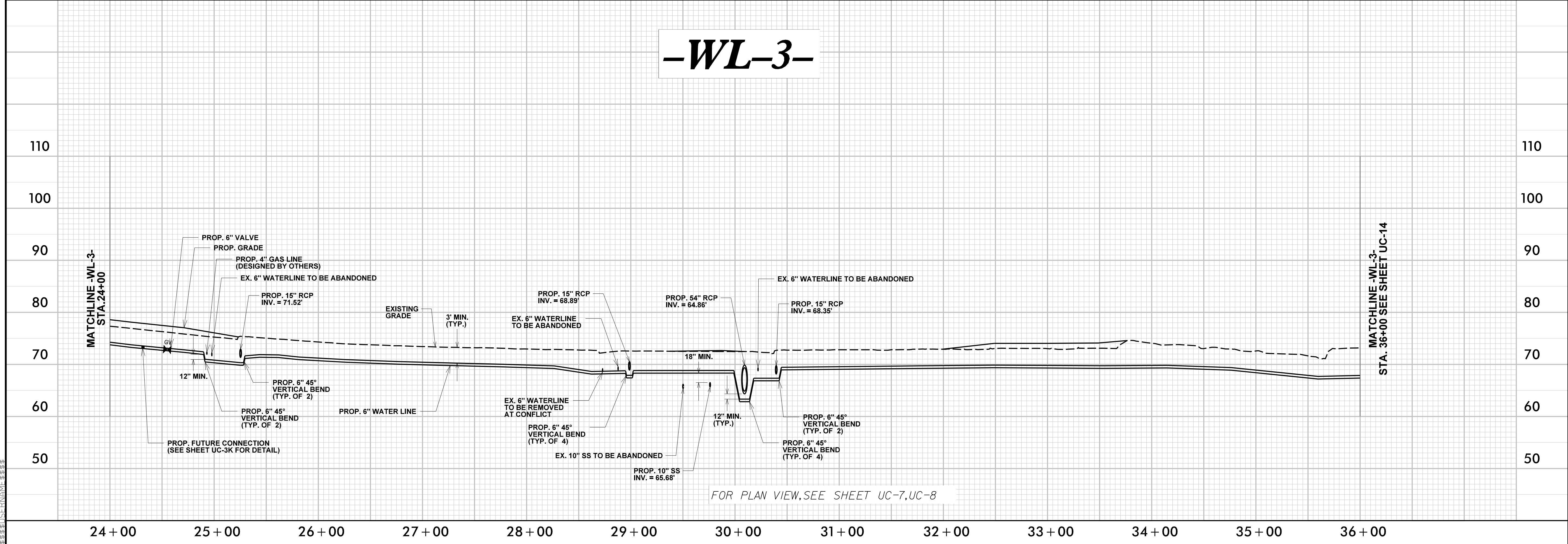
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**UTILITY CONSTRUCTION**

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

# -WL-3-



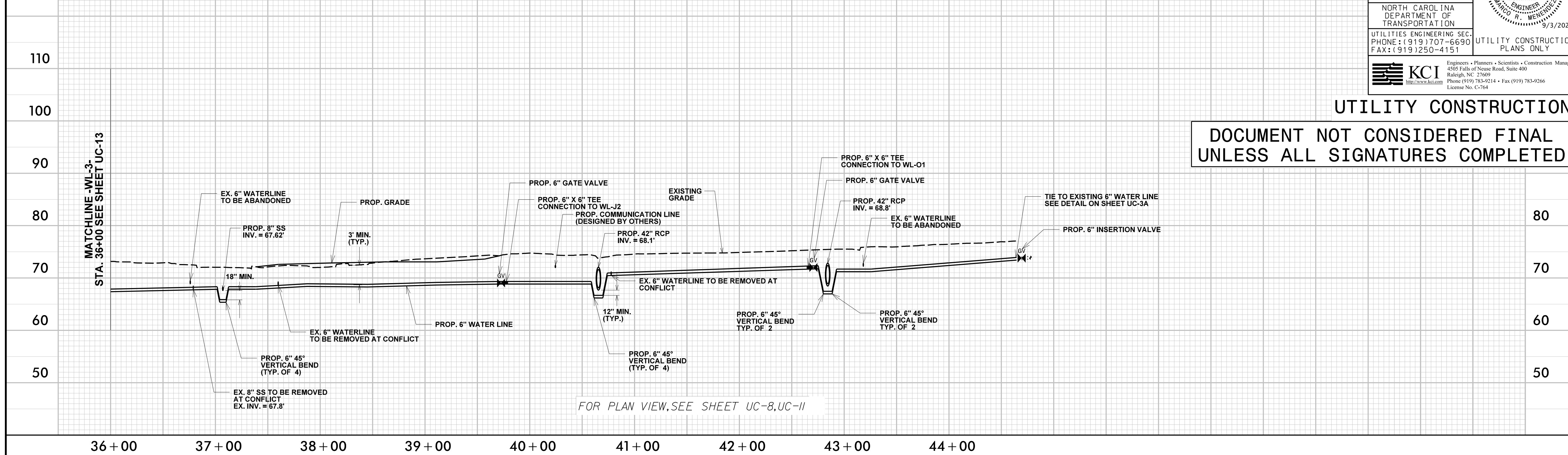
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5/28/99

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-15
DESIGNED BY: DK	
DRAWN BY: AP	
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	
Engineers • Planners • Scientists • Construction Managers 4504 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

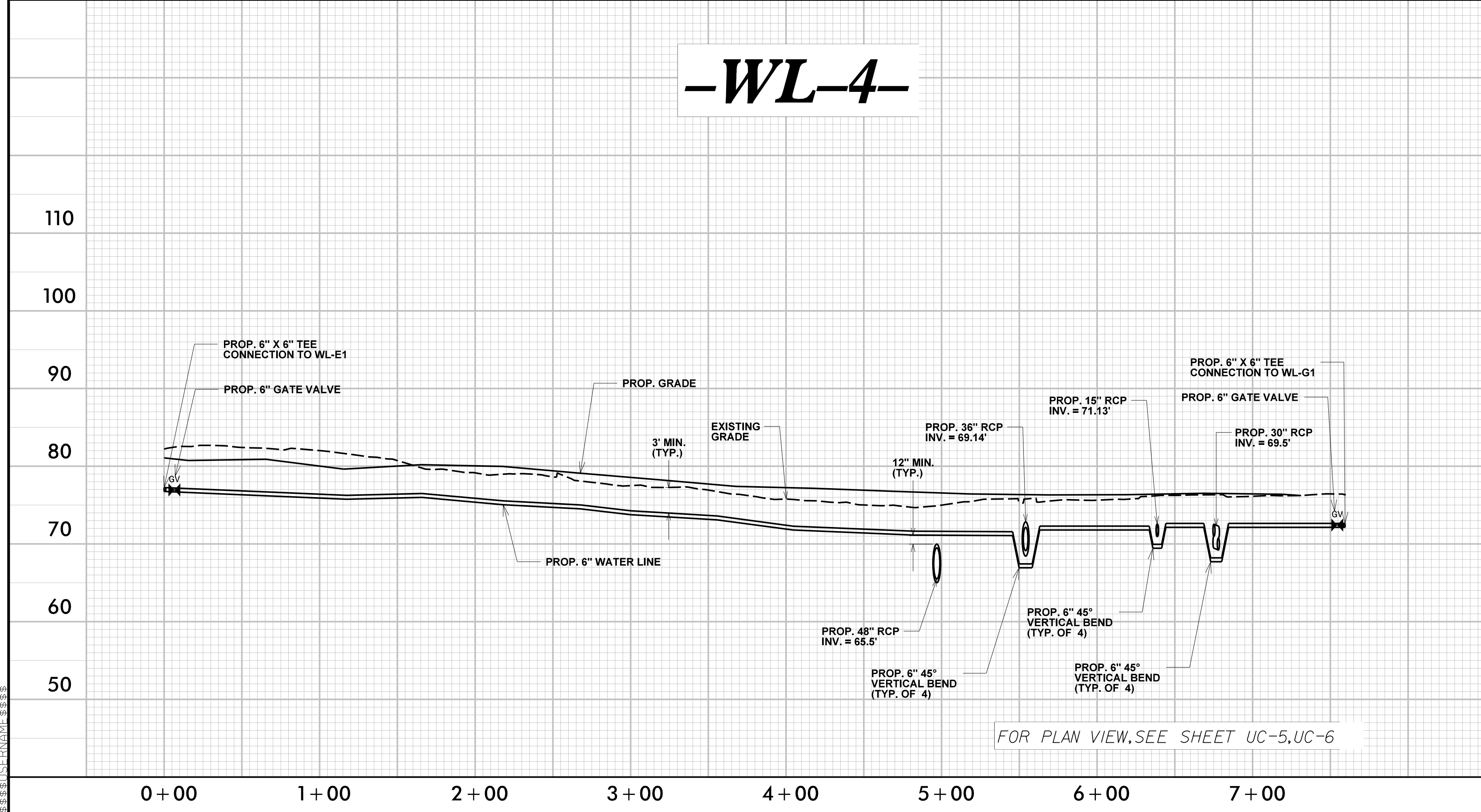
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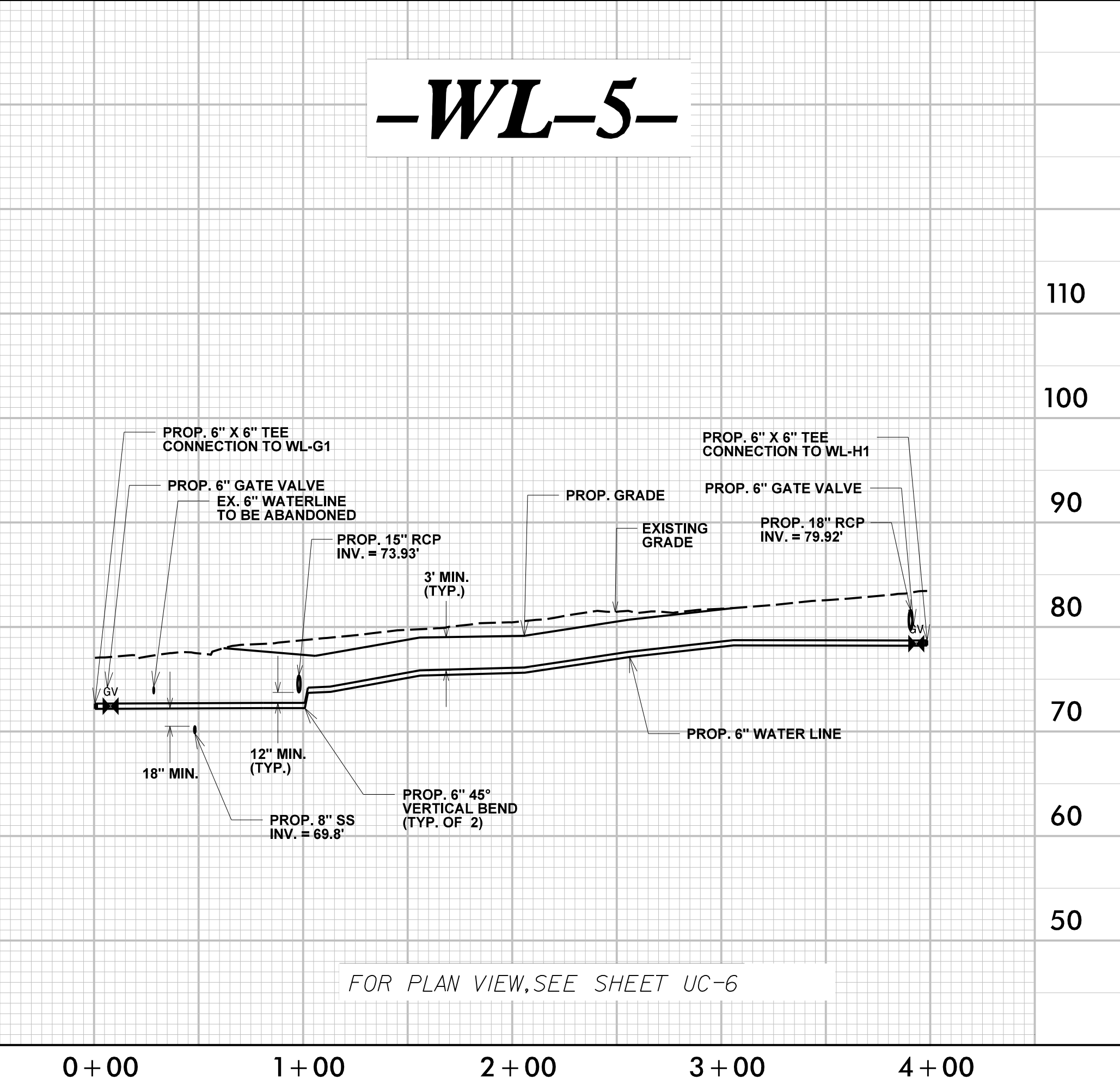
**UTILITY CONSTRUCTION**

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

# -WL-4-



# -WL-5-



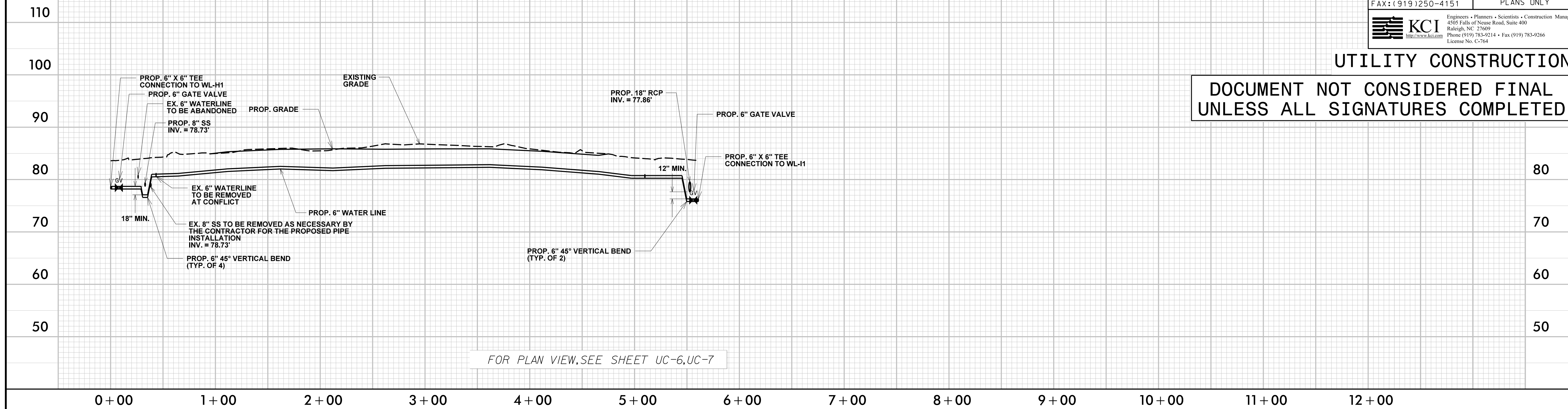
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5/28/99

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-16
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 9/3/2020	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
KCI Engineers • Planners • Scientists • Construction Managers 4508 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

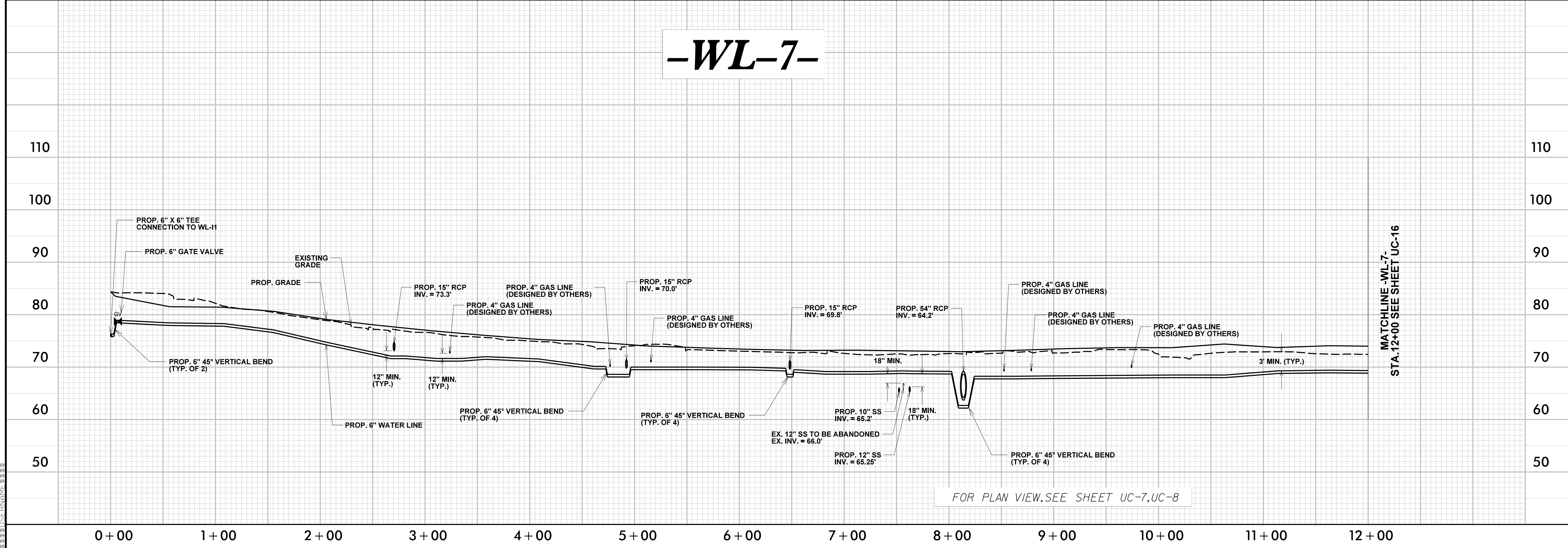
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**UTILITY CONSTRUCTION**

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

# -WL-7-



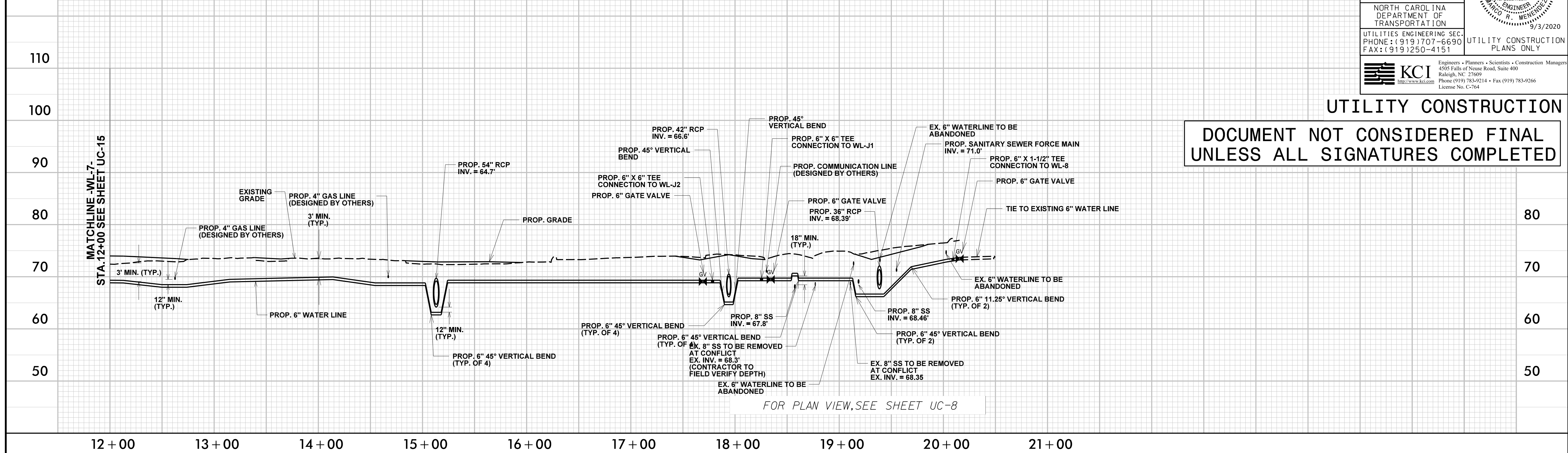
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5/28/99

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-17
DESIGNED BY: DK	
DRAWN BY: AP	
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	
Engineers • Planners • Scientists • Construction Managers 4508 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

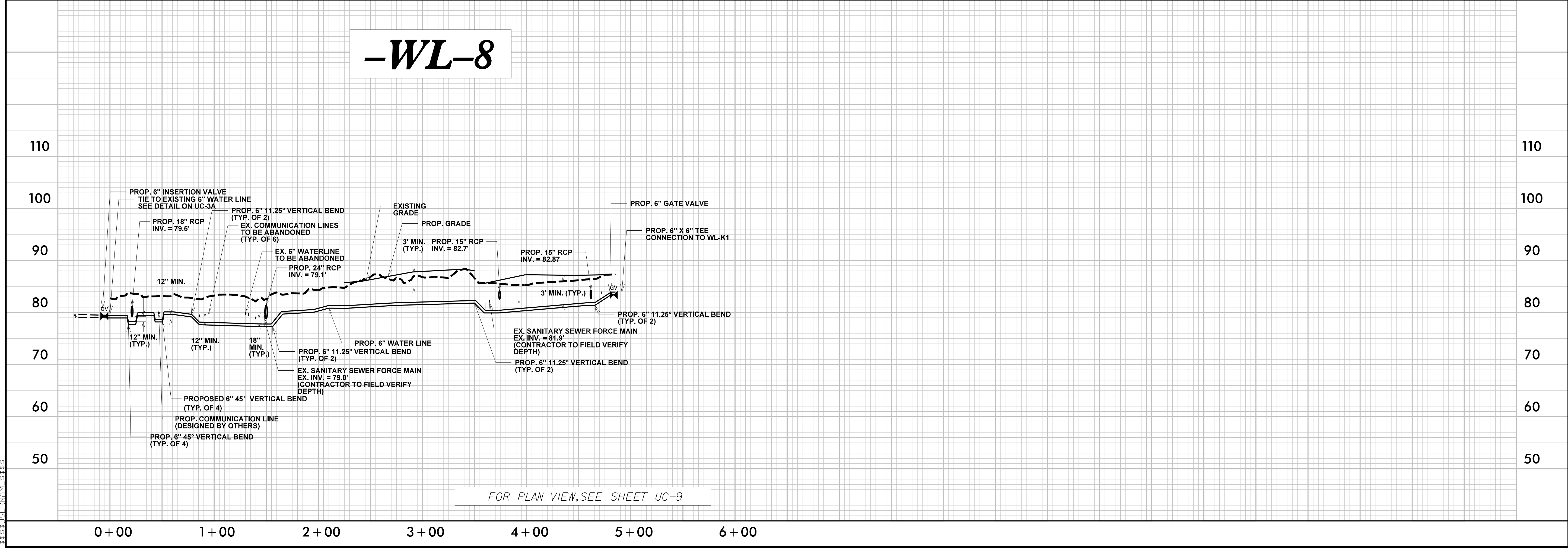
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**UTILITY CONSTRUCTION**

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

# -WL-8-



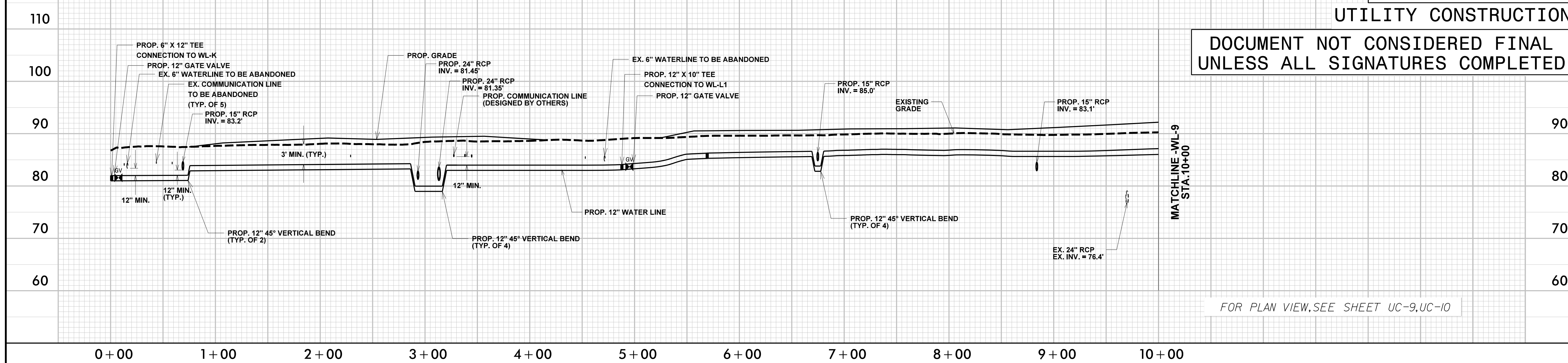
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5/28/99

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-18
DESIGNED BY: DK	
DRAWN BY: AP	
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	
Engineers • Planners • Scientists • Construction Managers 4508 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

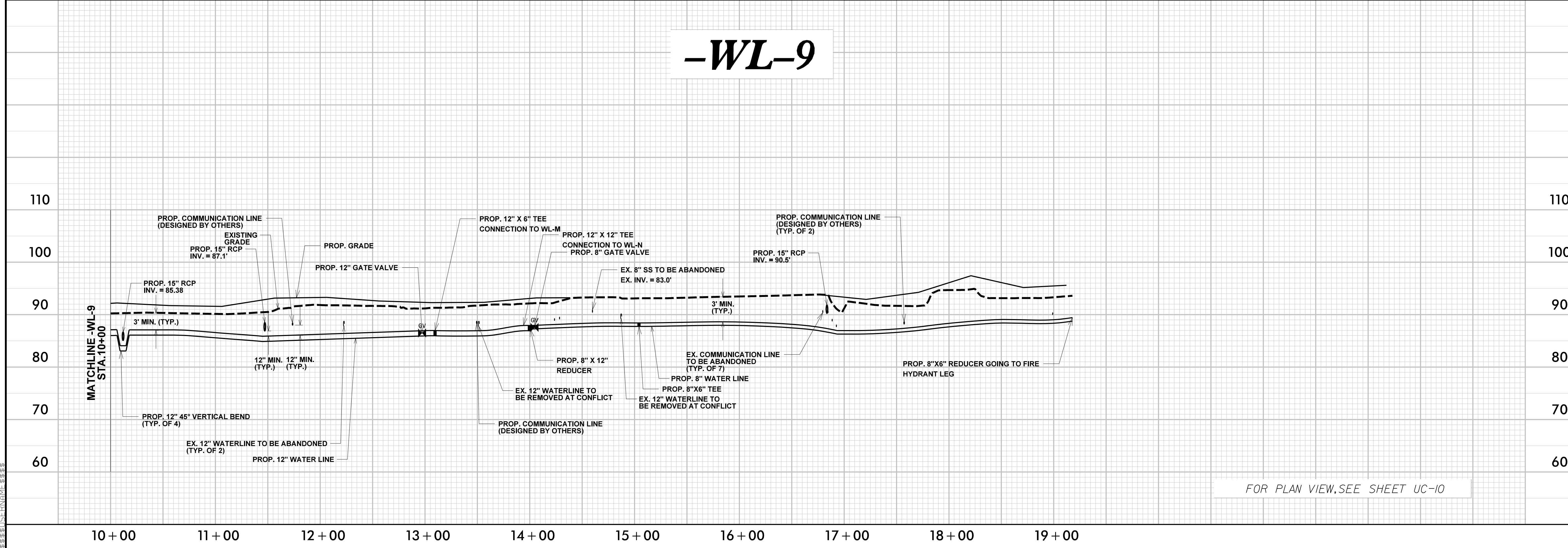
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DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

FOR PLAN VIEW, SEE SHEET UC-9, UC-10

# -WL-9



FOR PLAN VIEW, SEE SHEET UC-10

7-AUG-2020 10:53:39 NCDDOT R-5020B US 701 Widening Water Sanitary Water Line Profiles\R-5020B.ut.wtr\_UC13\_14\_15.pfl.dgn  
 10/15/2019 10:53:39 AM

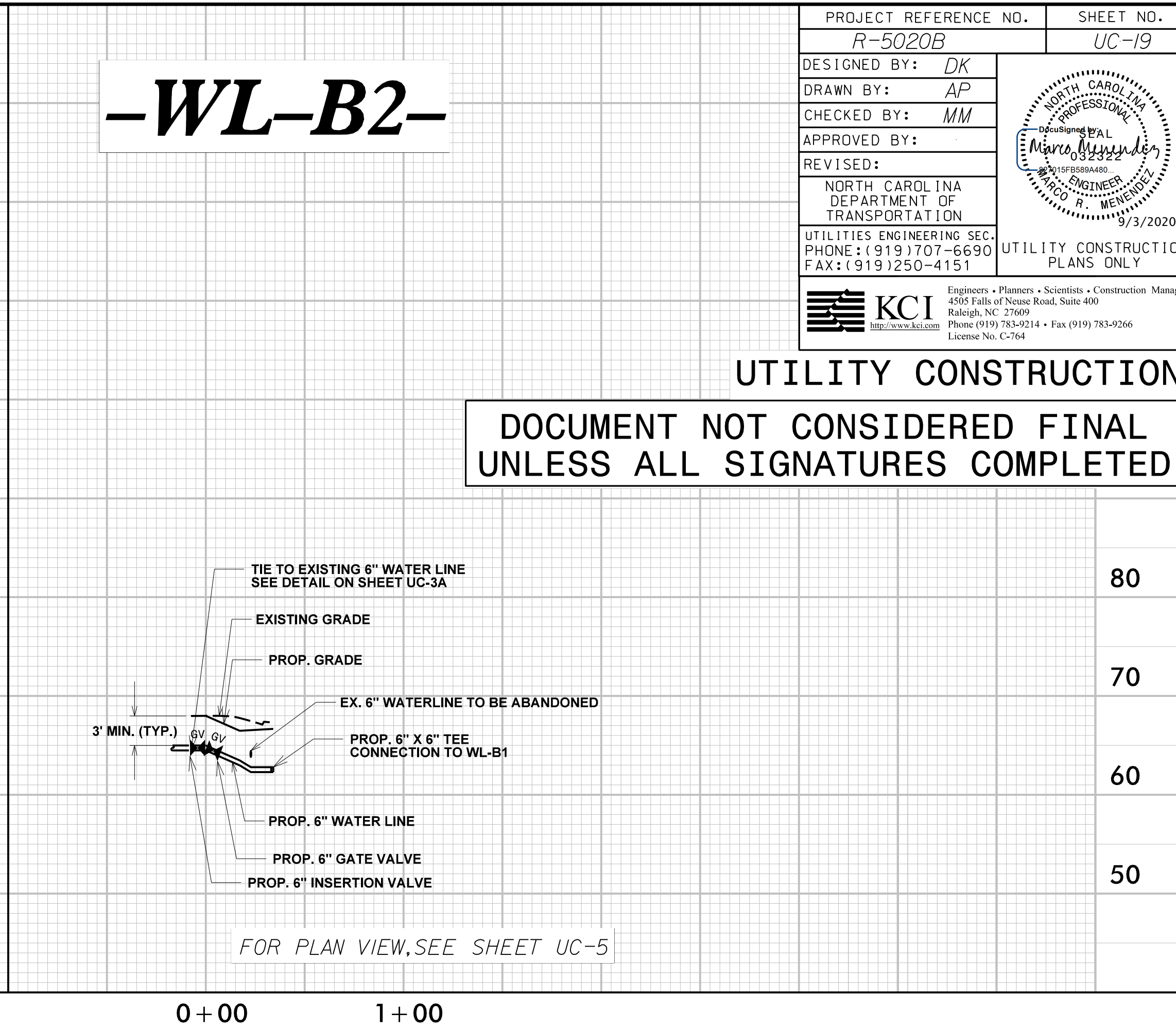
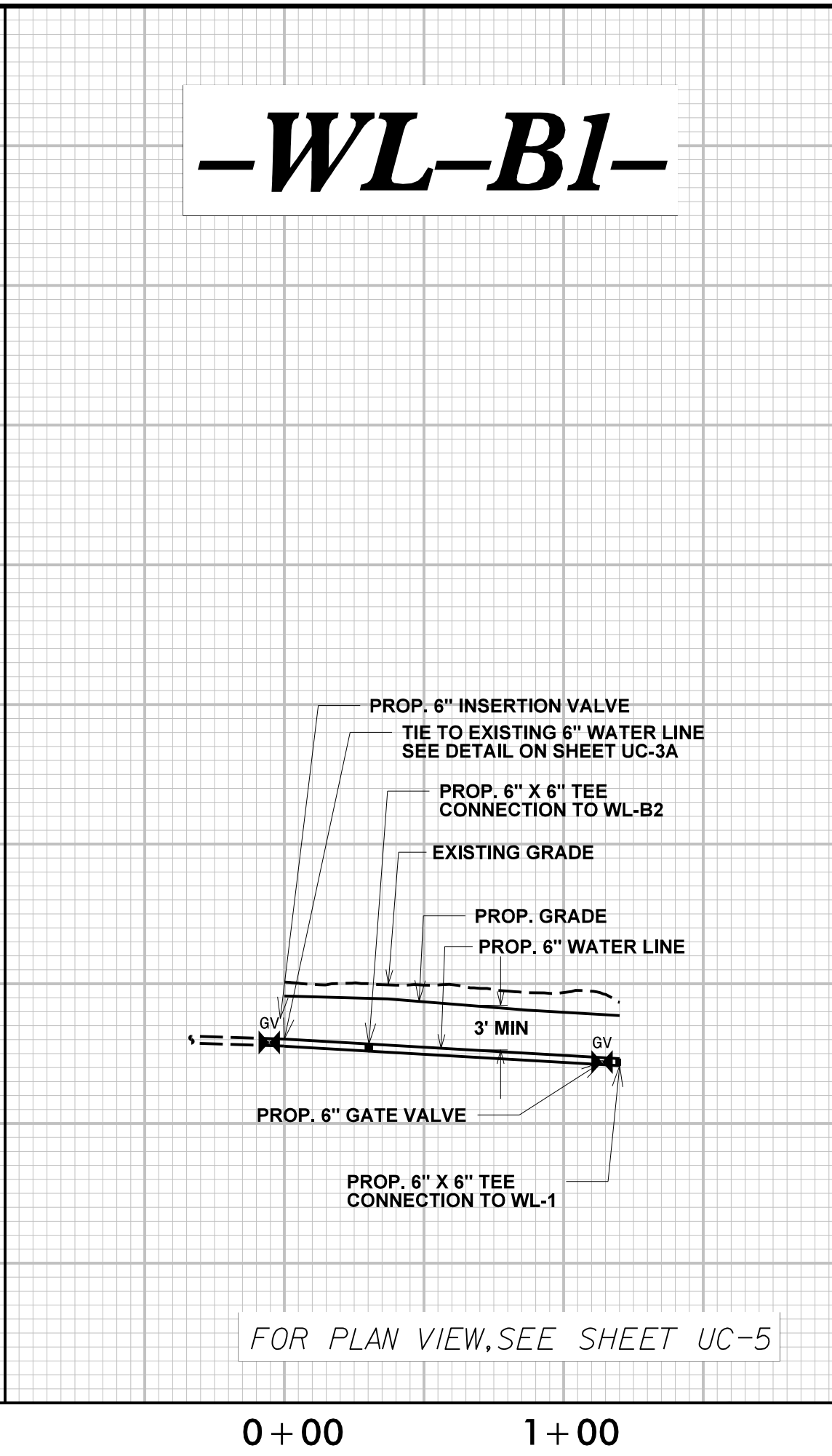
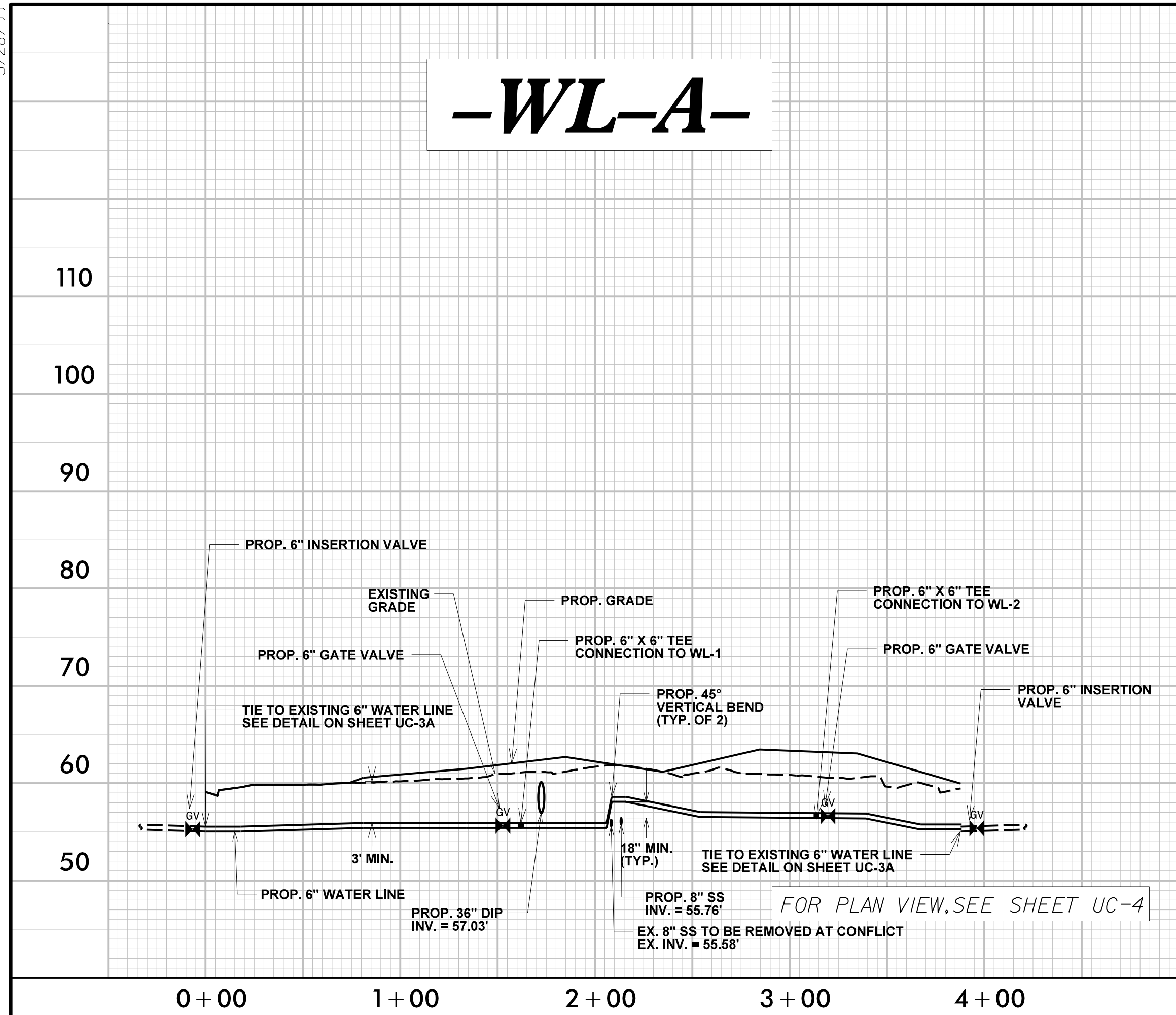


5/28/99

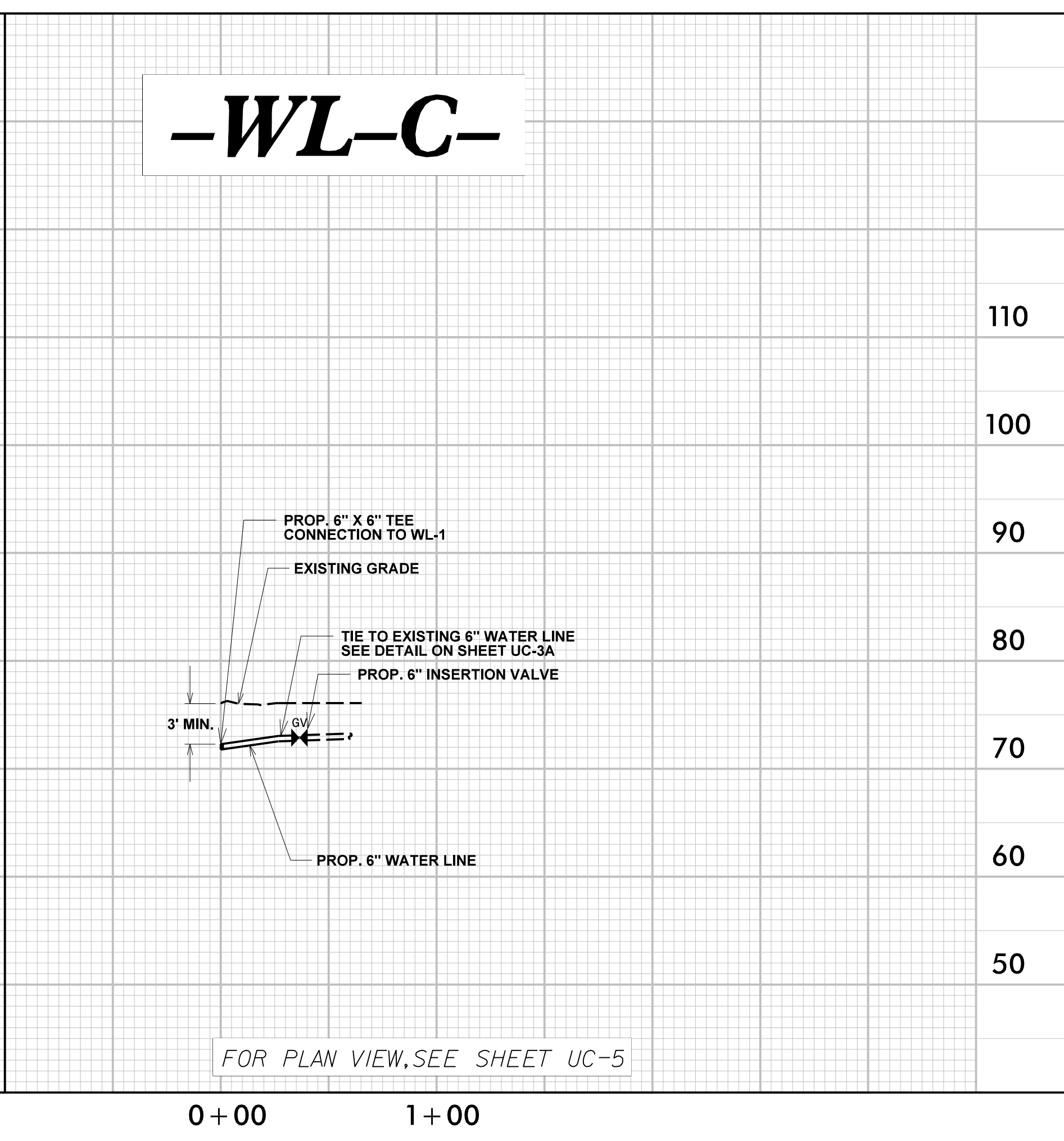
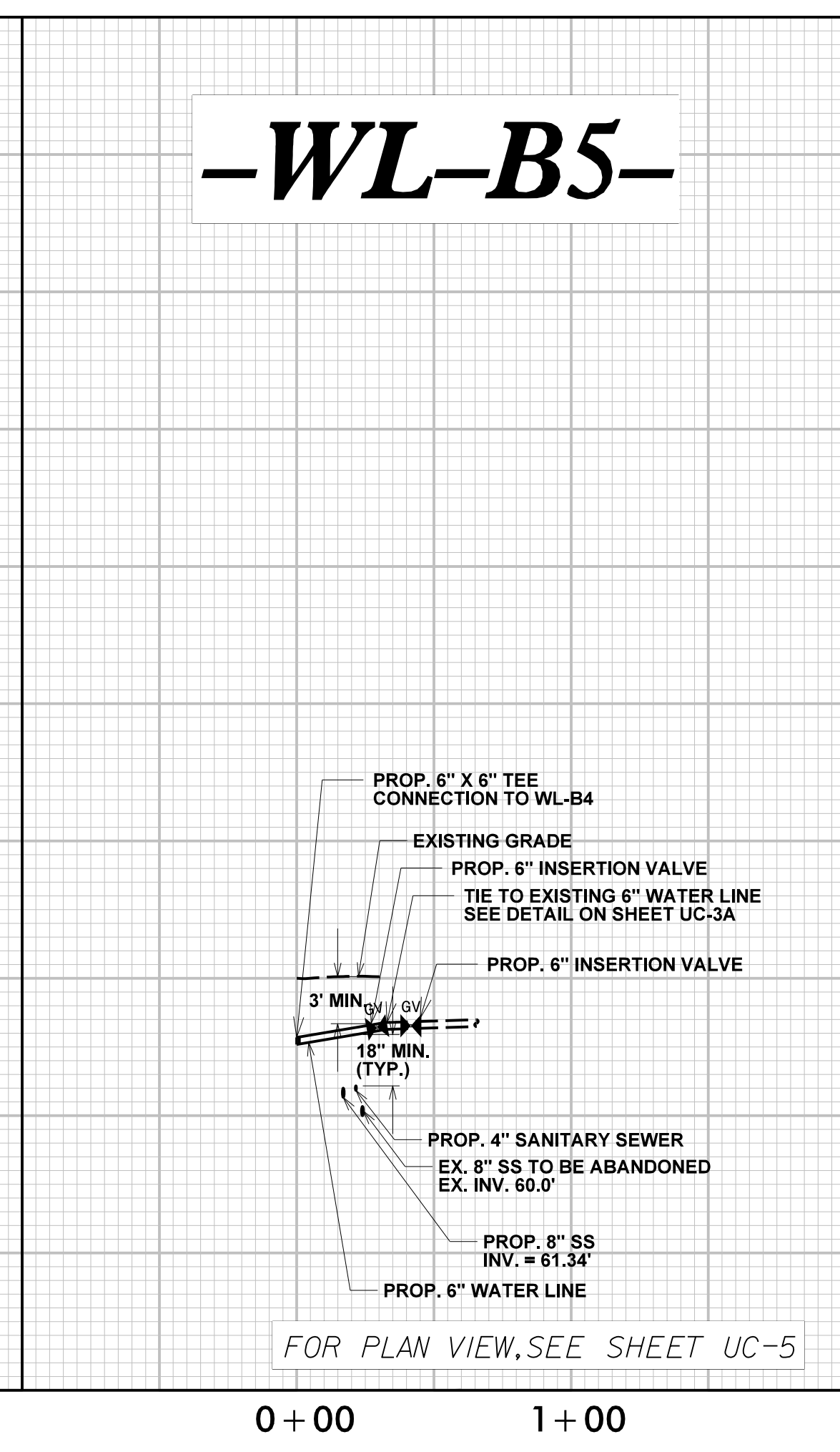
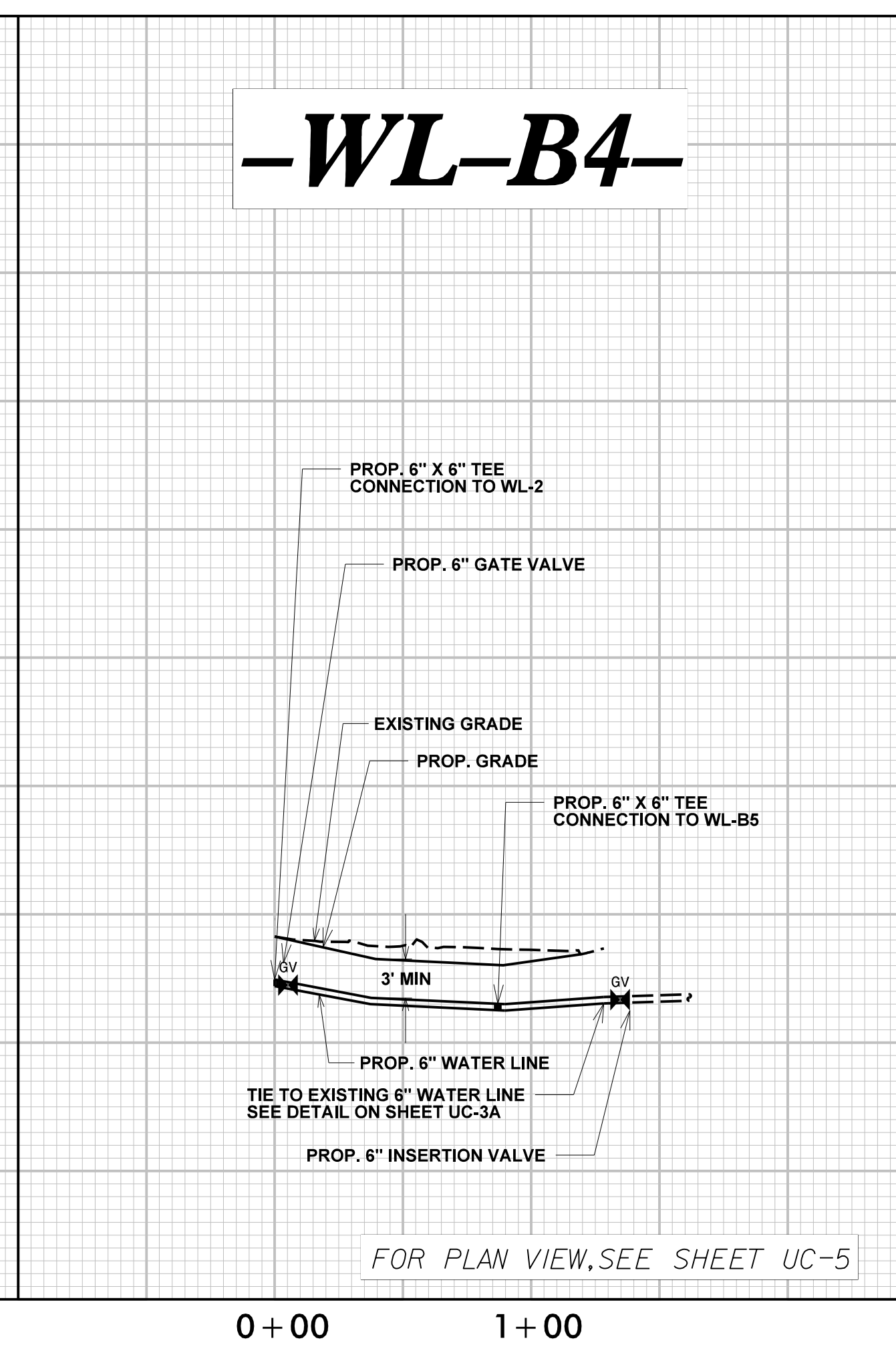
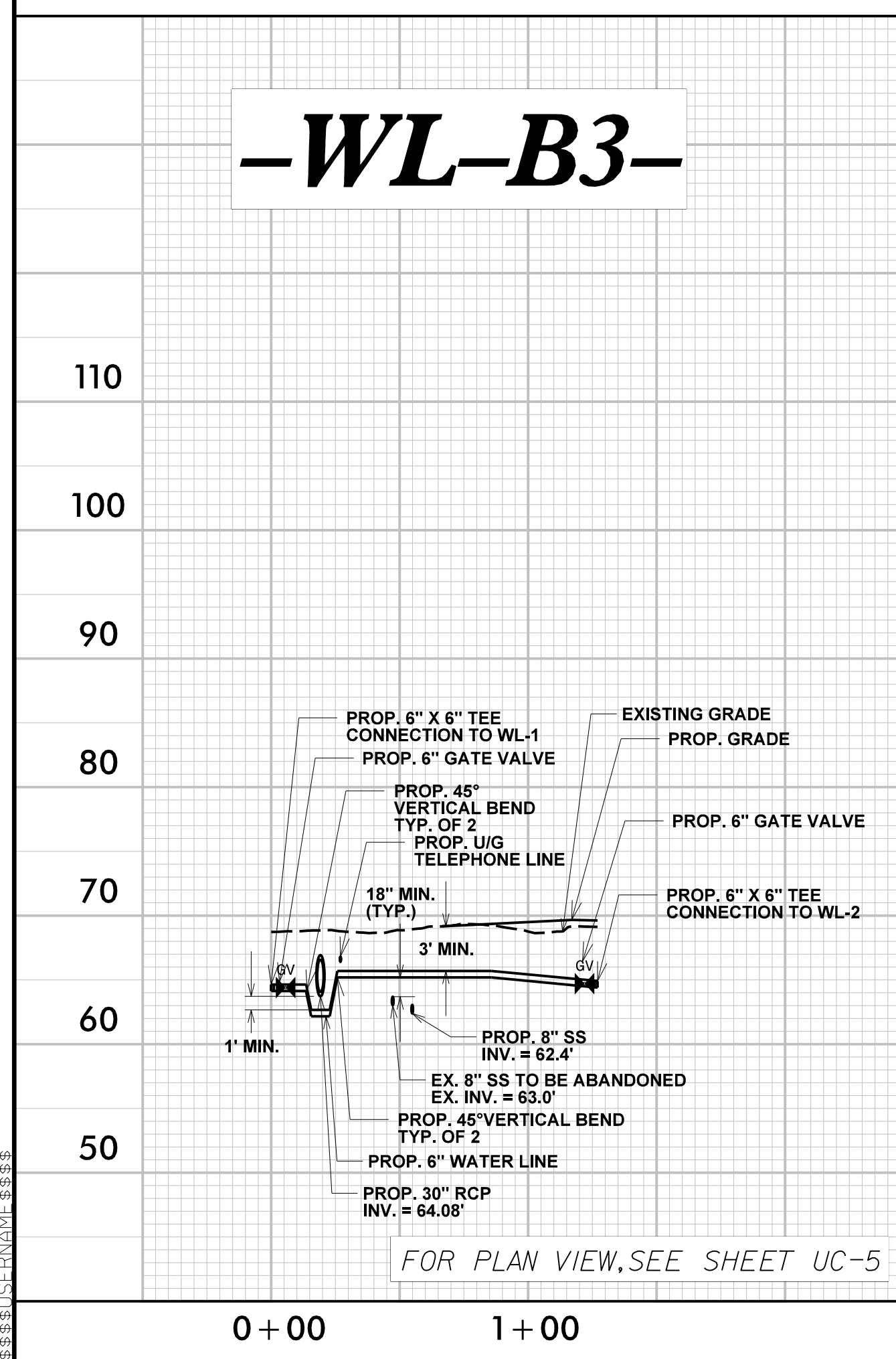
PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-19
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS <b>KCI</b> 4508 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



R:\AUG-2000\16363 NCDDOT R-5020B US 701 Widening\Water Sanitary\Water Line Profiles\R-5020B-ut.wtr\_UC16.pfl.dgn





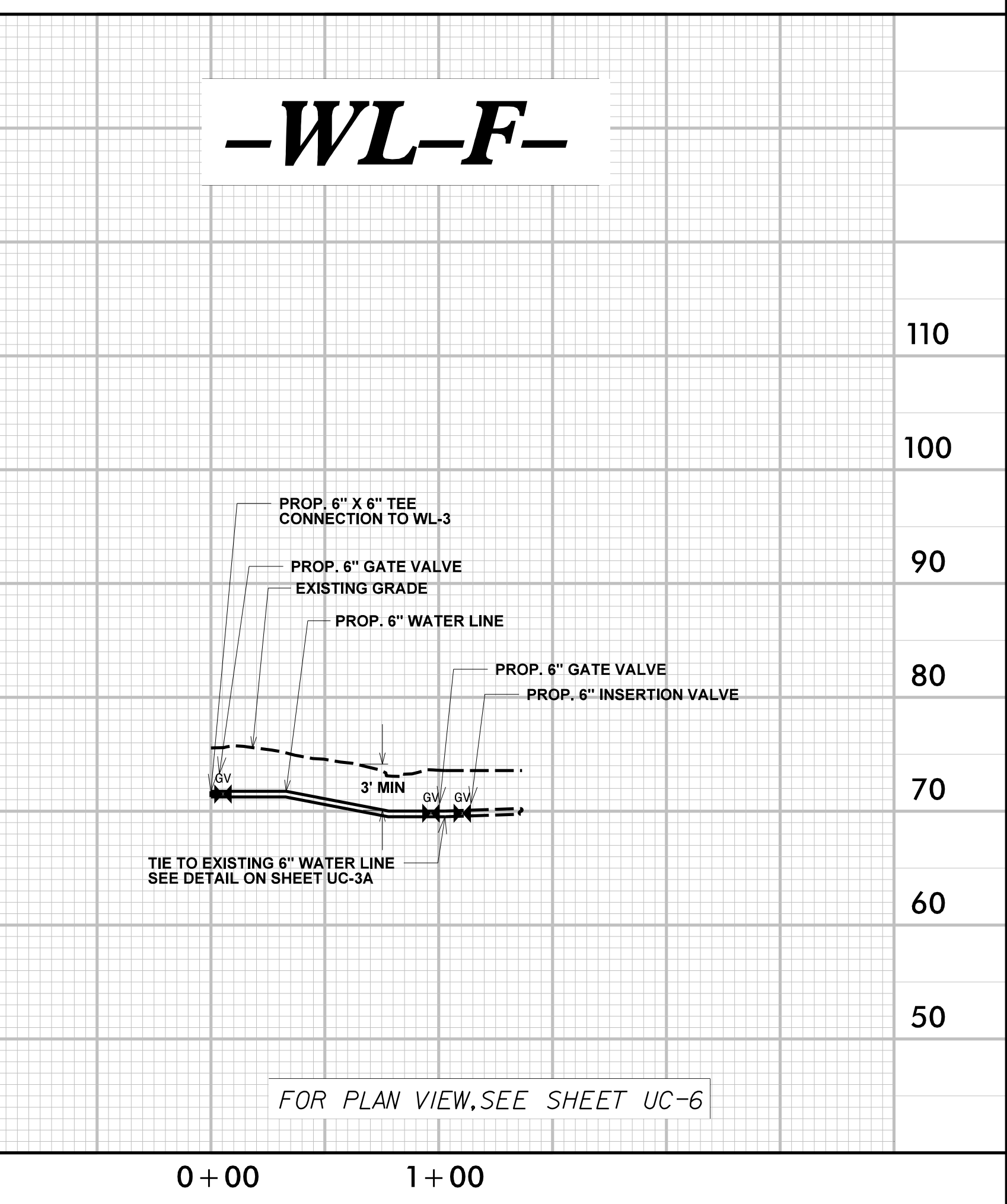
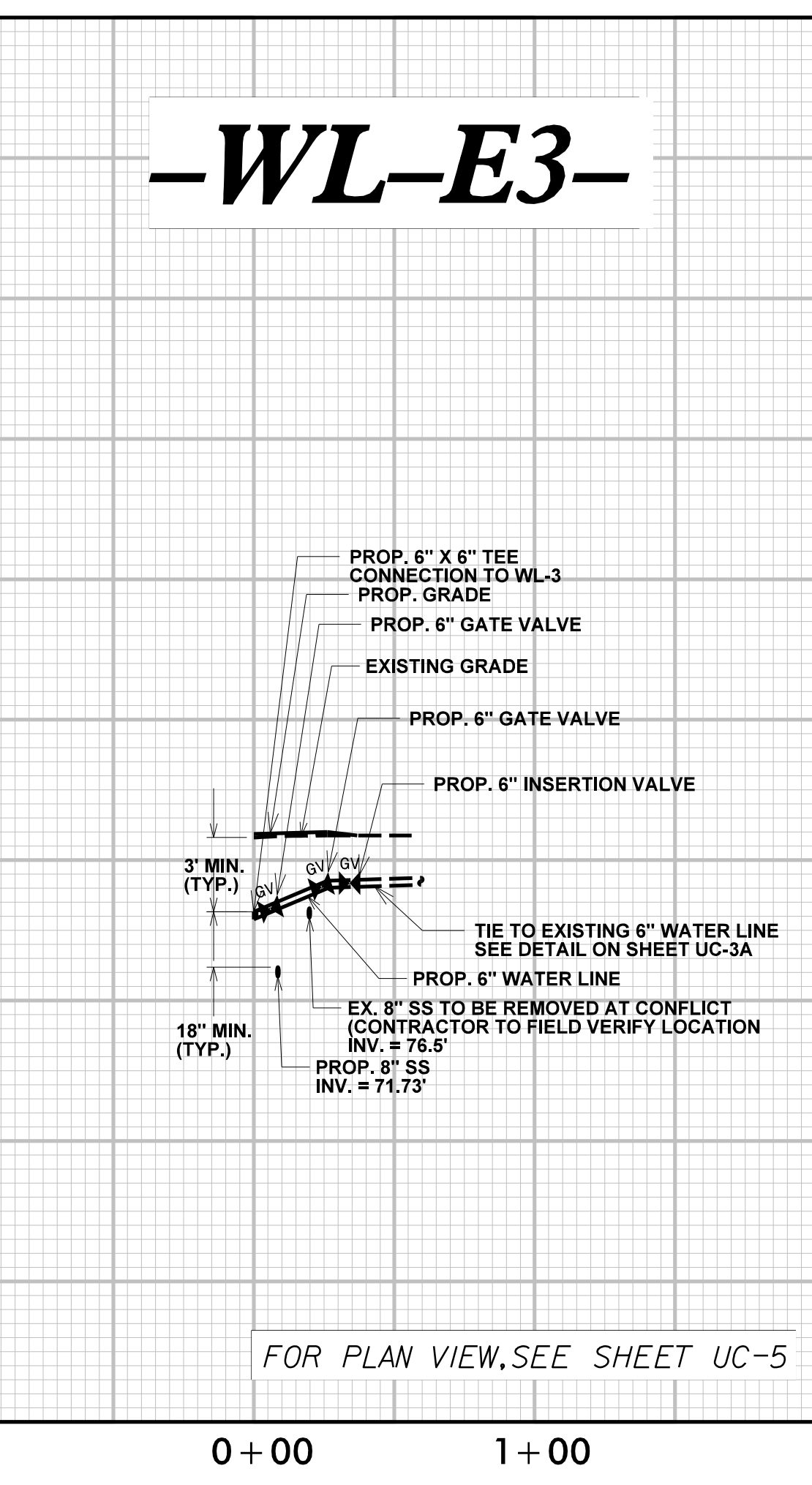
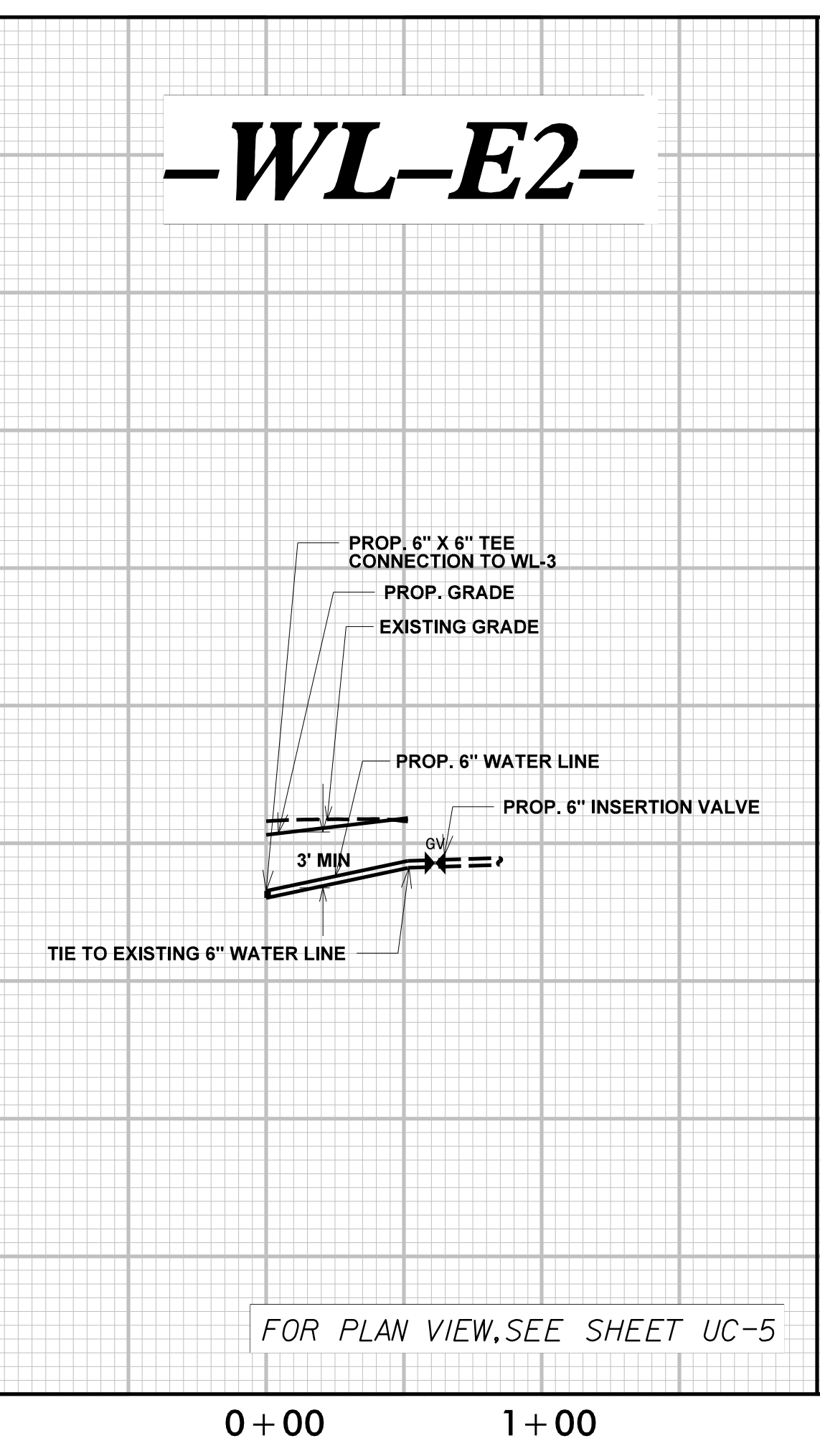
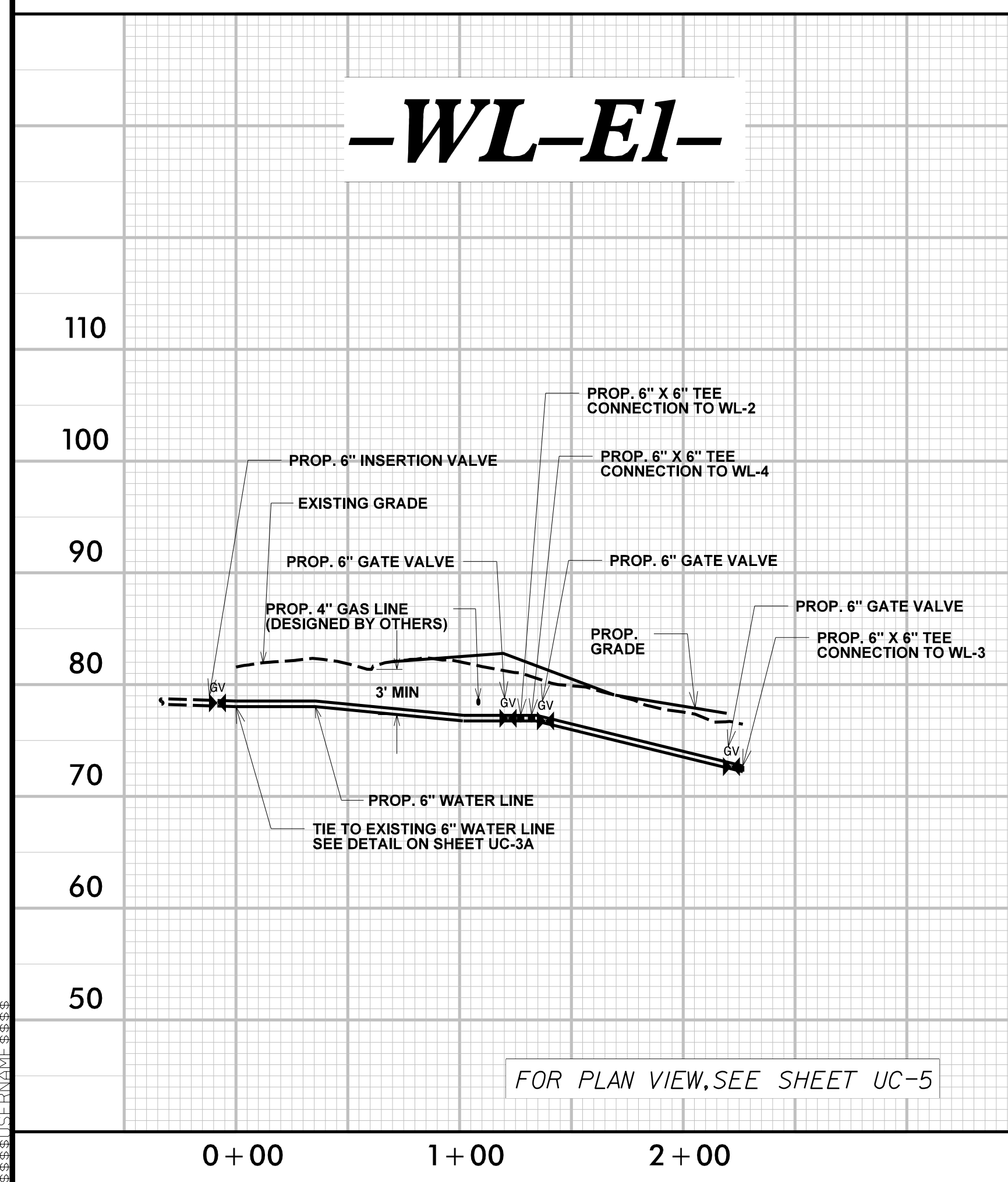
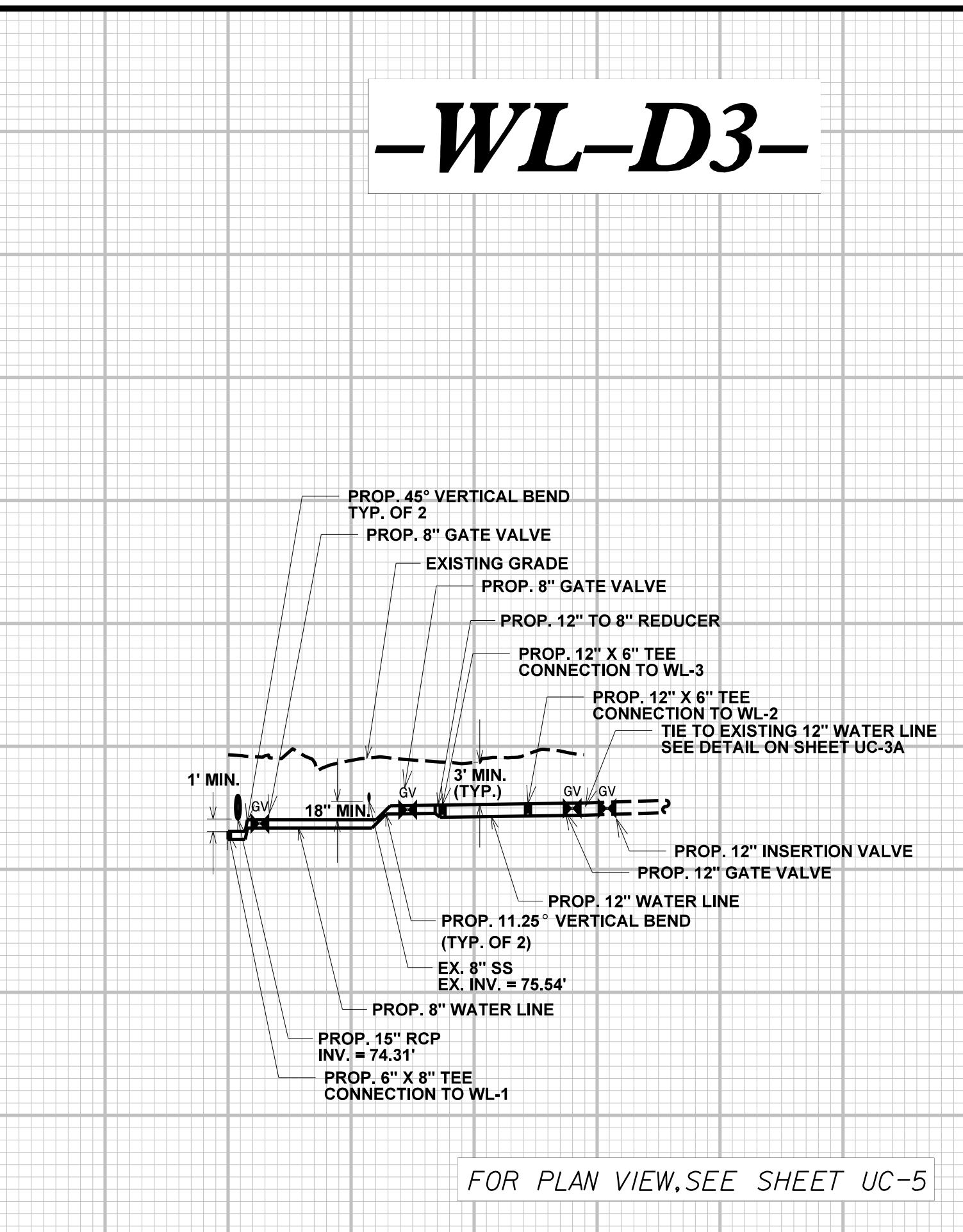
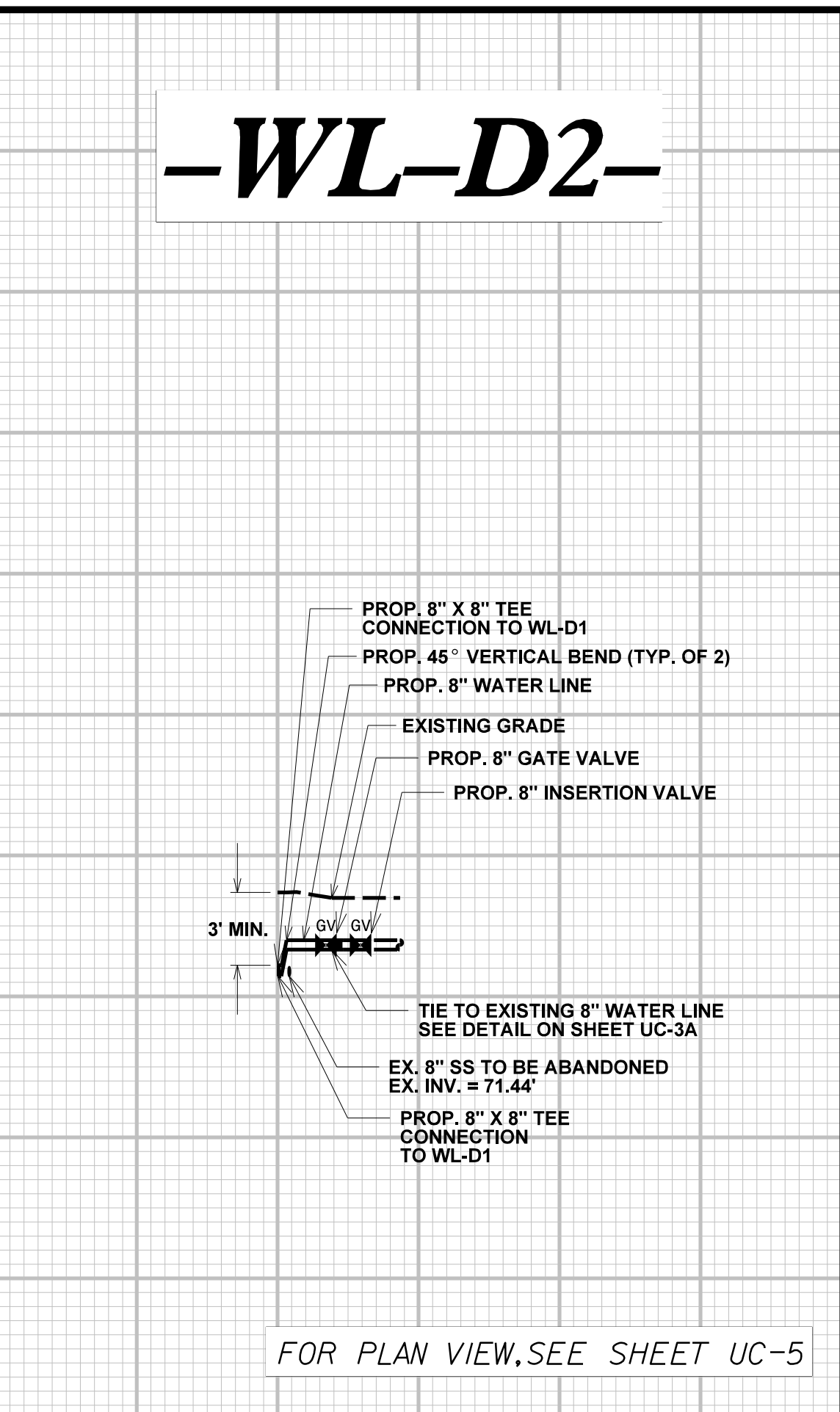
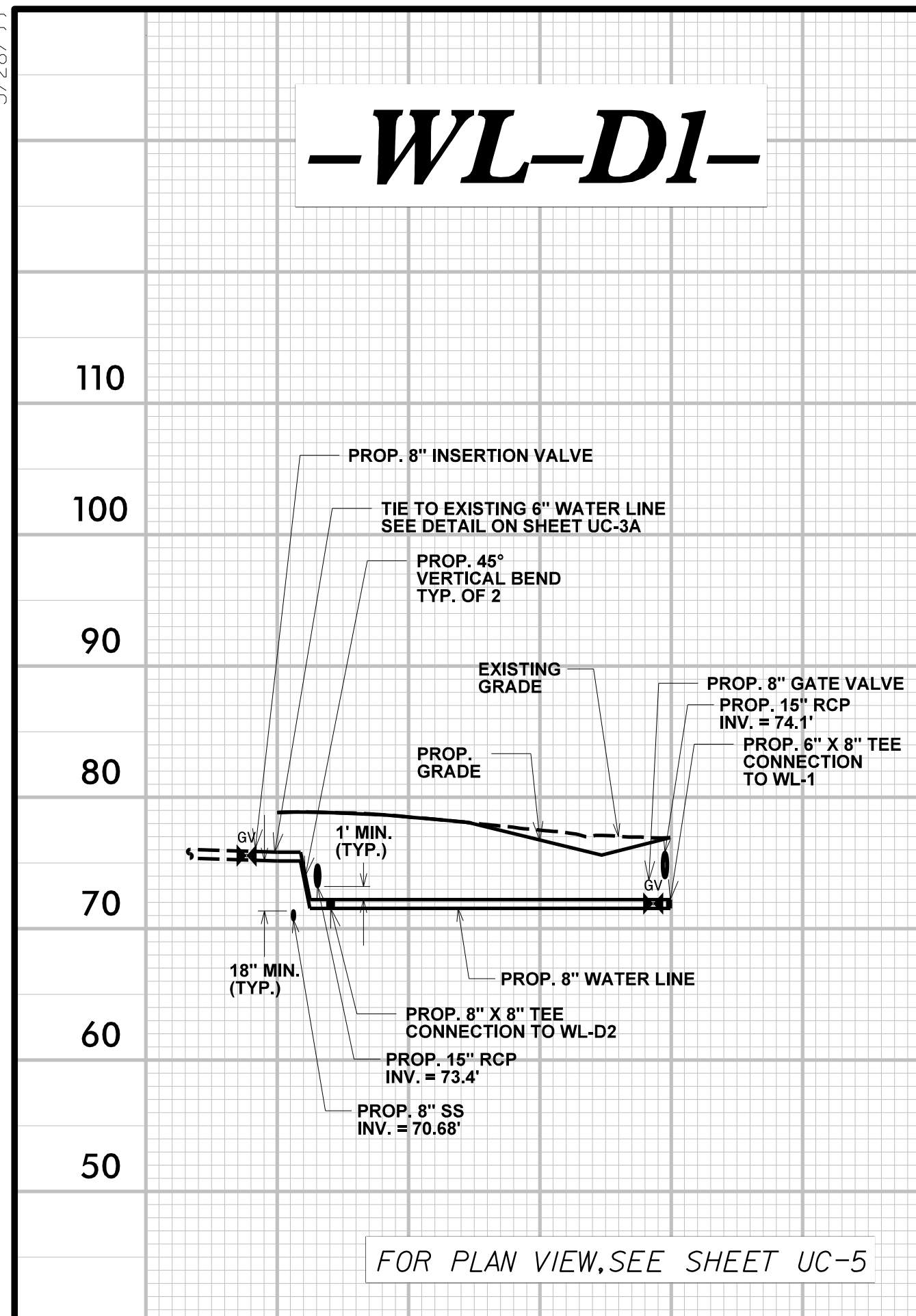
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PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-20
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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UTILITY CONSTRUCTION

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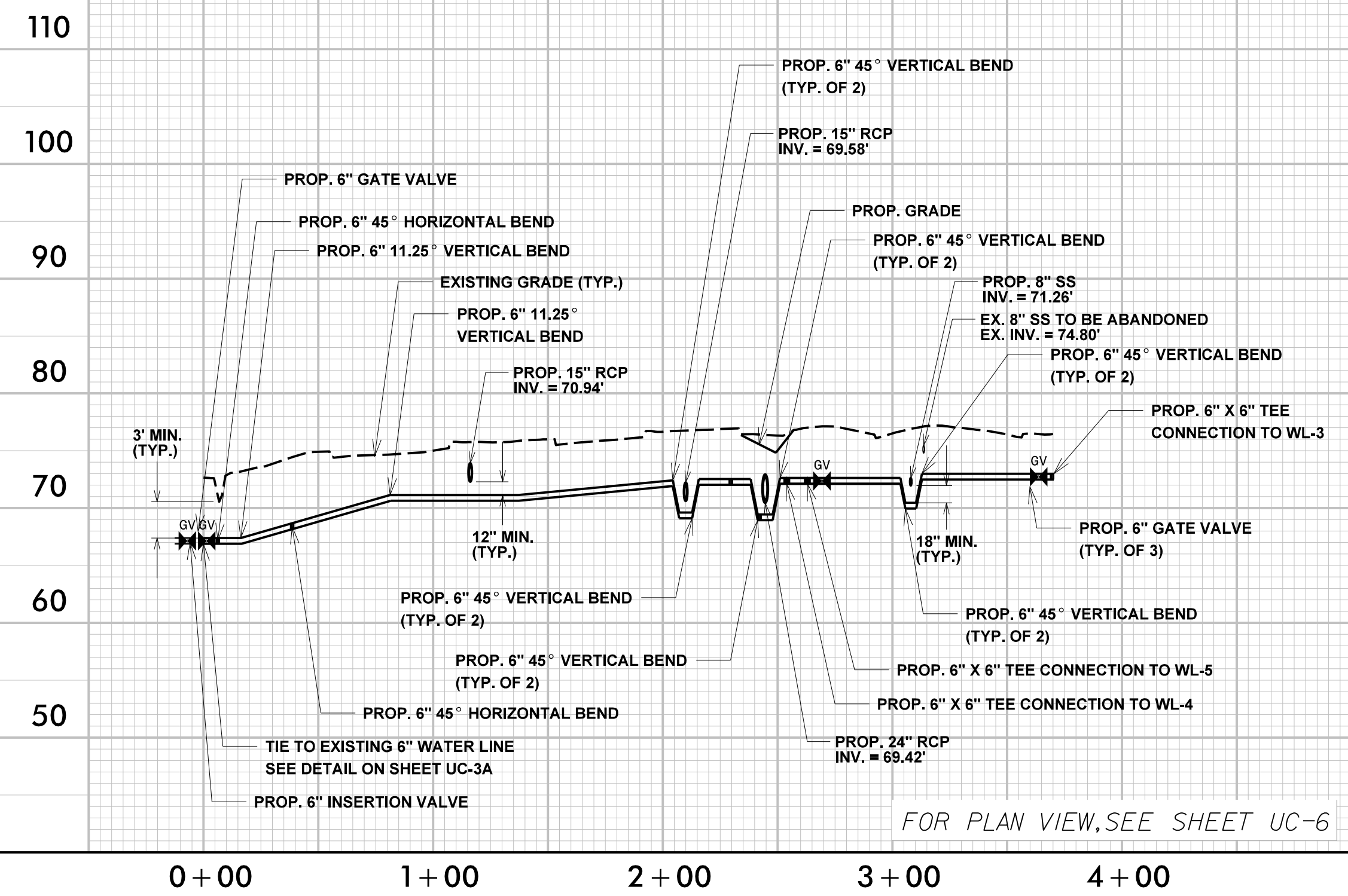




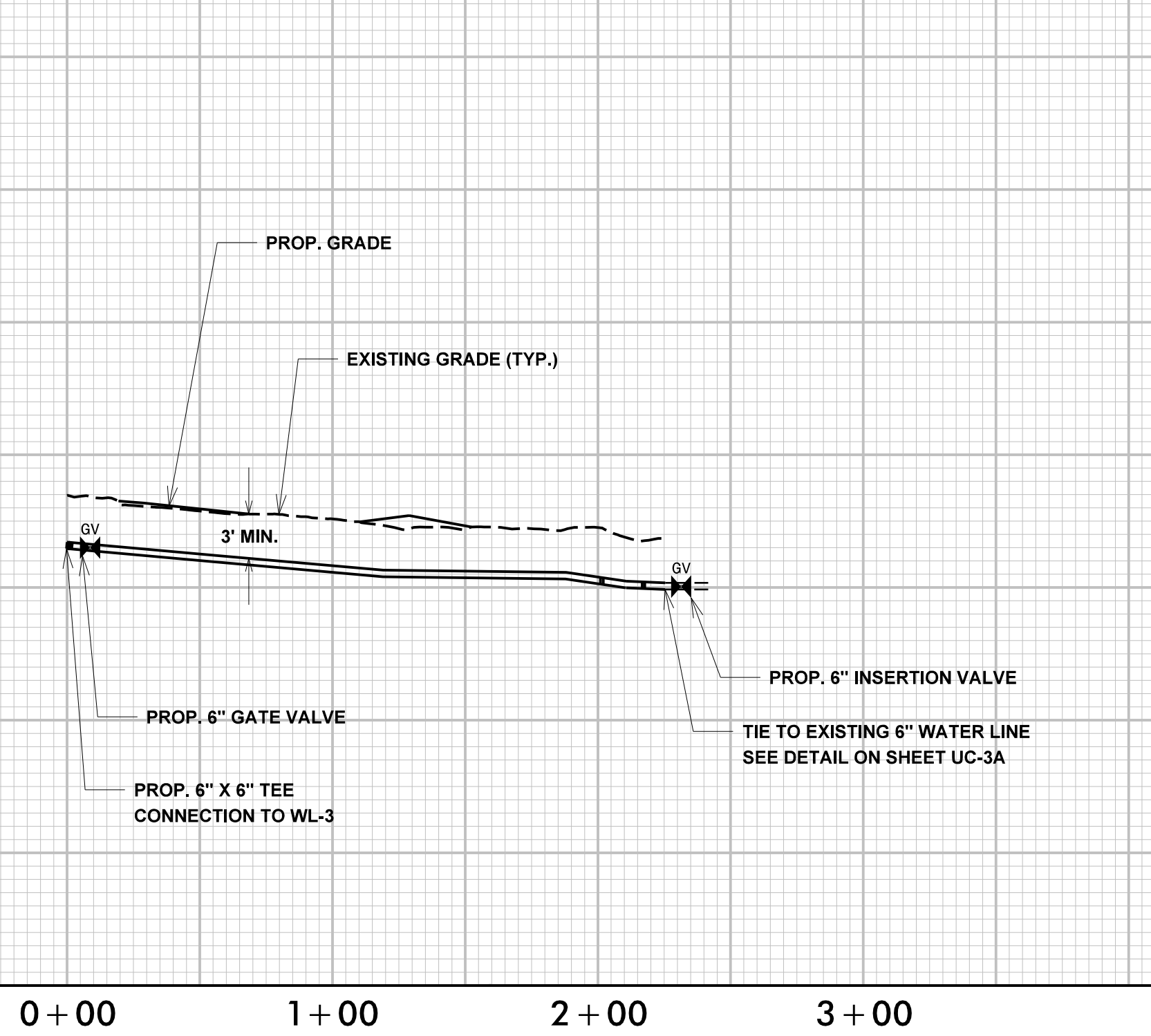
5/28/19

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-21
DESIGNED BY: MM	
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	
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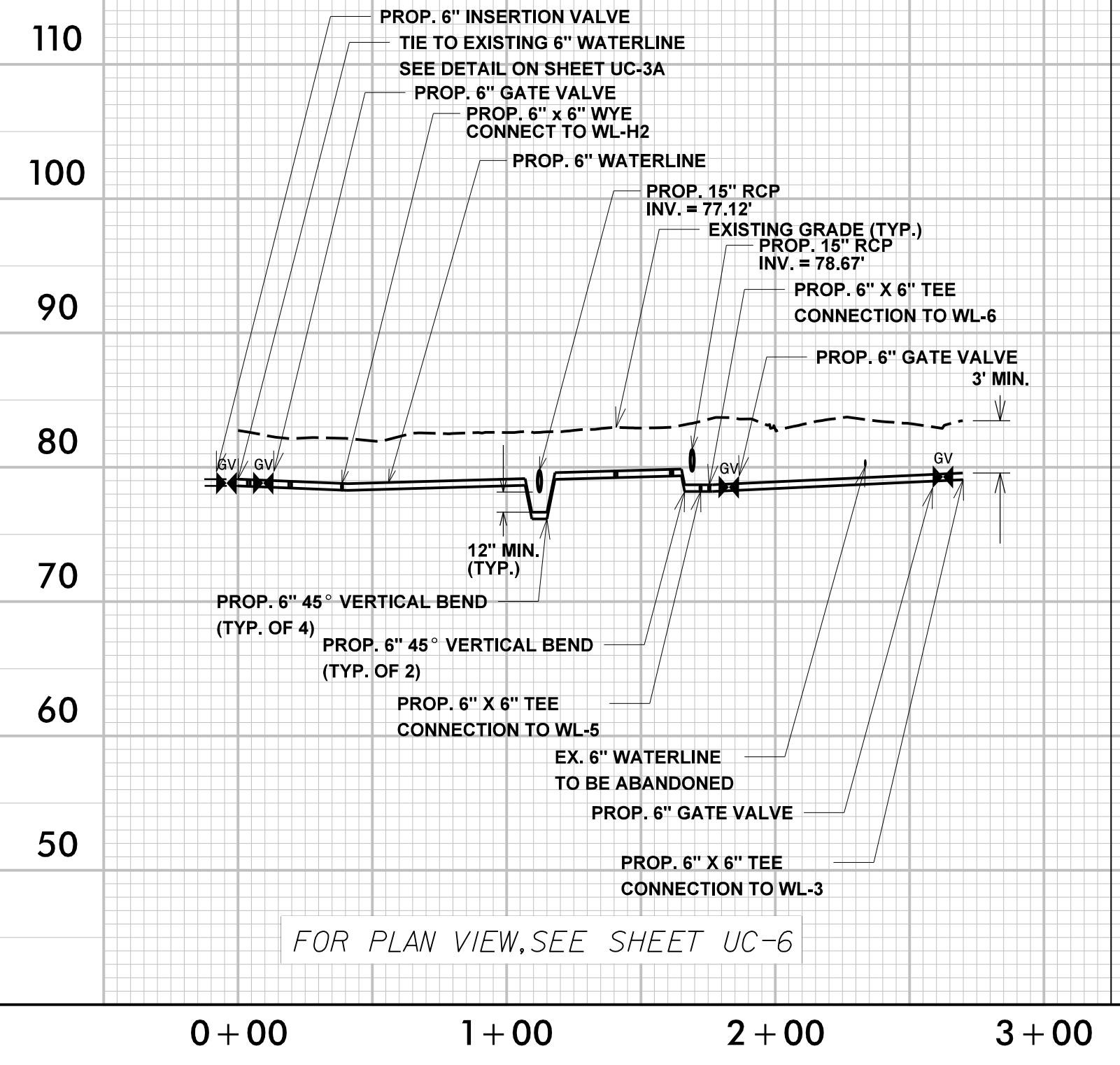
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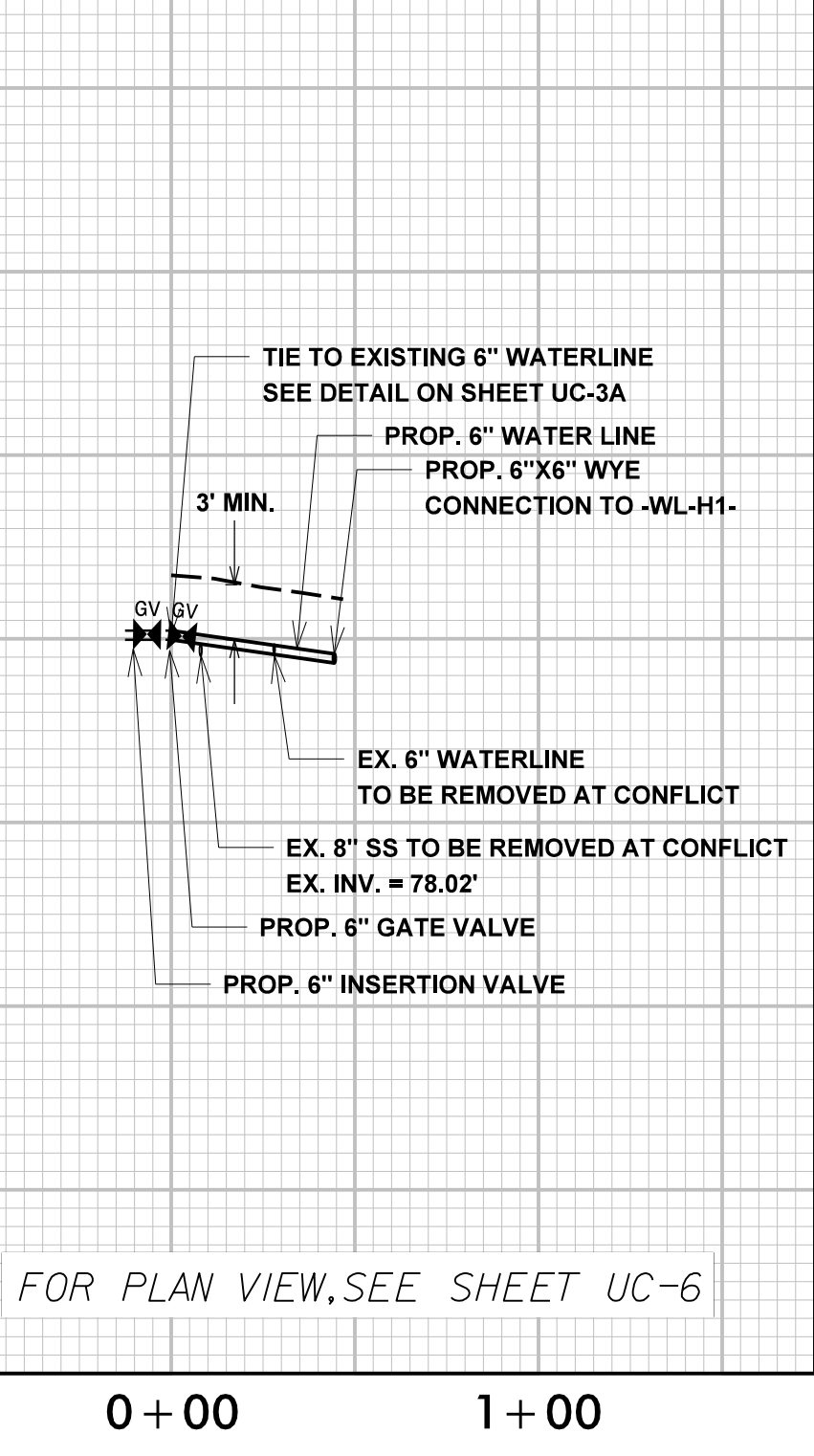
UTILITY CONSTRUCTION  
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

FOR PLAN VIEW, SEE SHEET UC-6

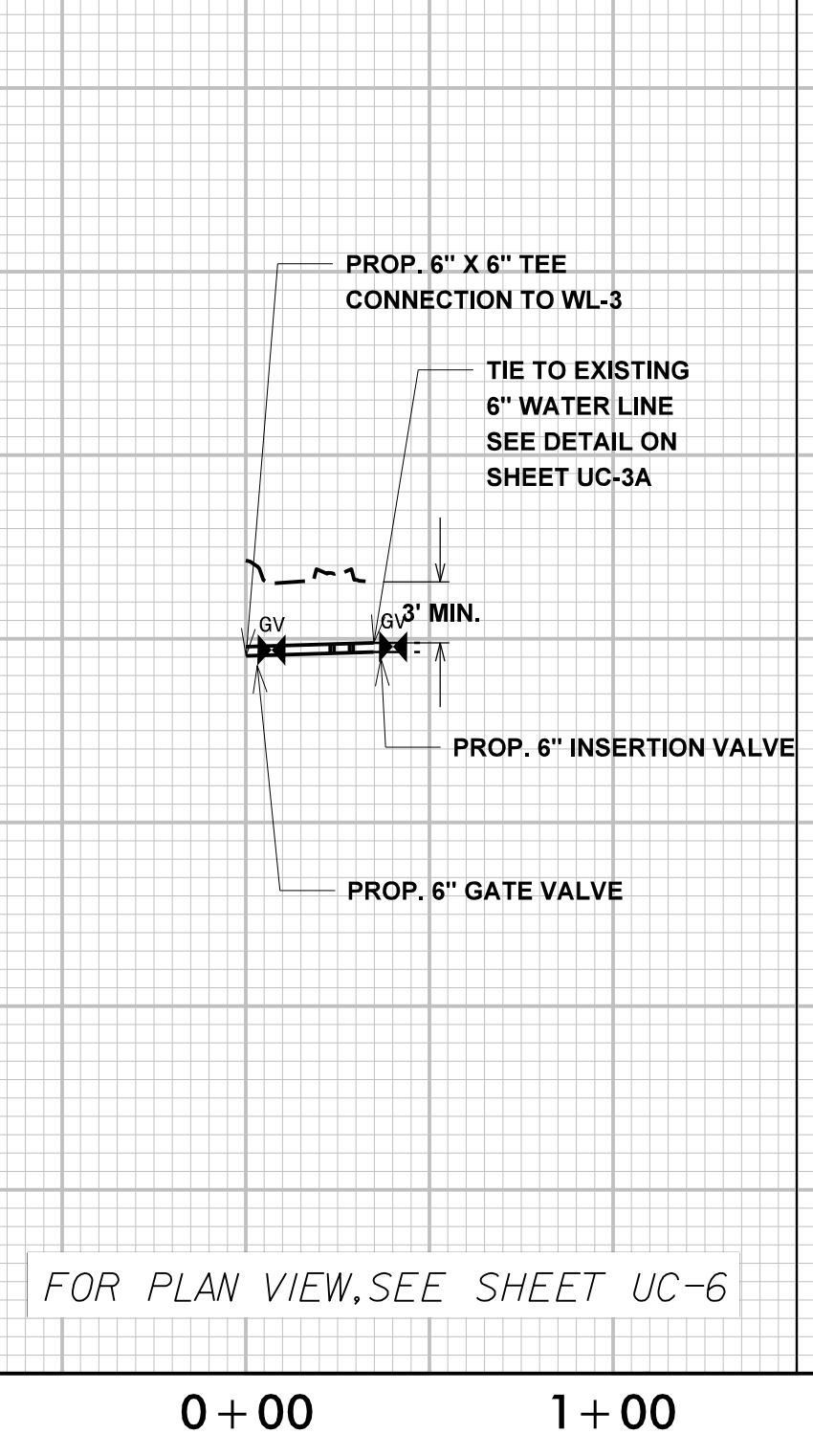
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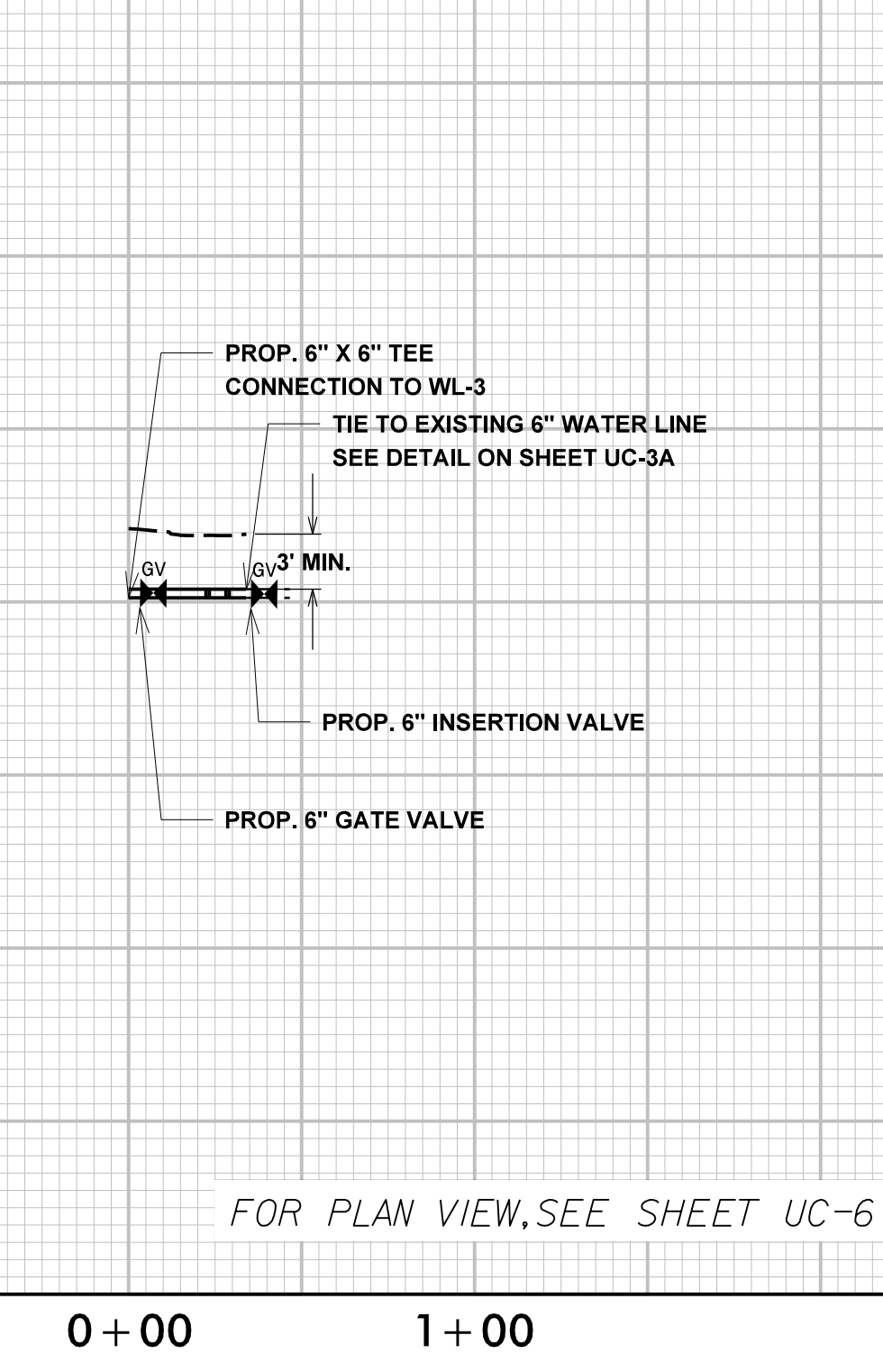
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# -WL-H3-



# -WL-H4-



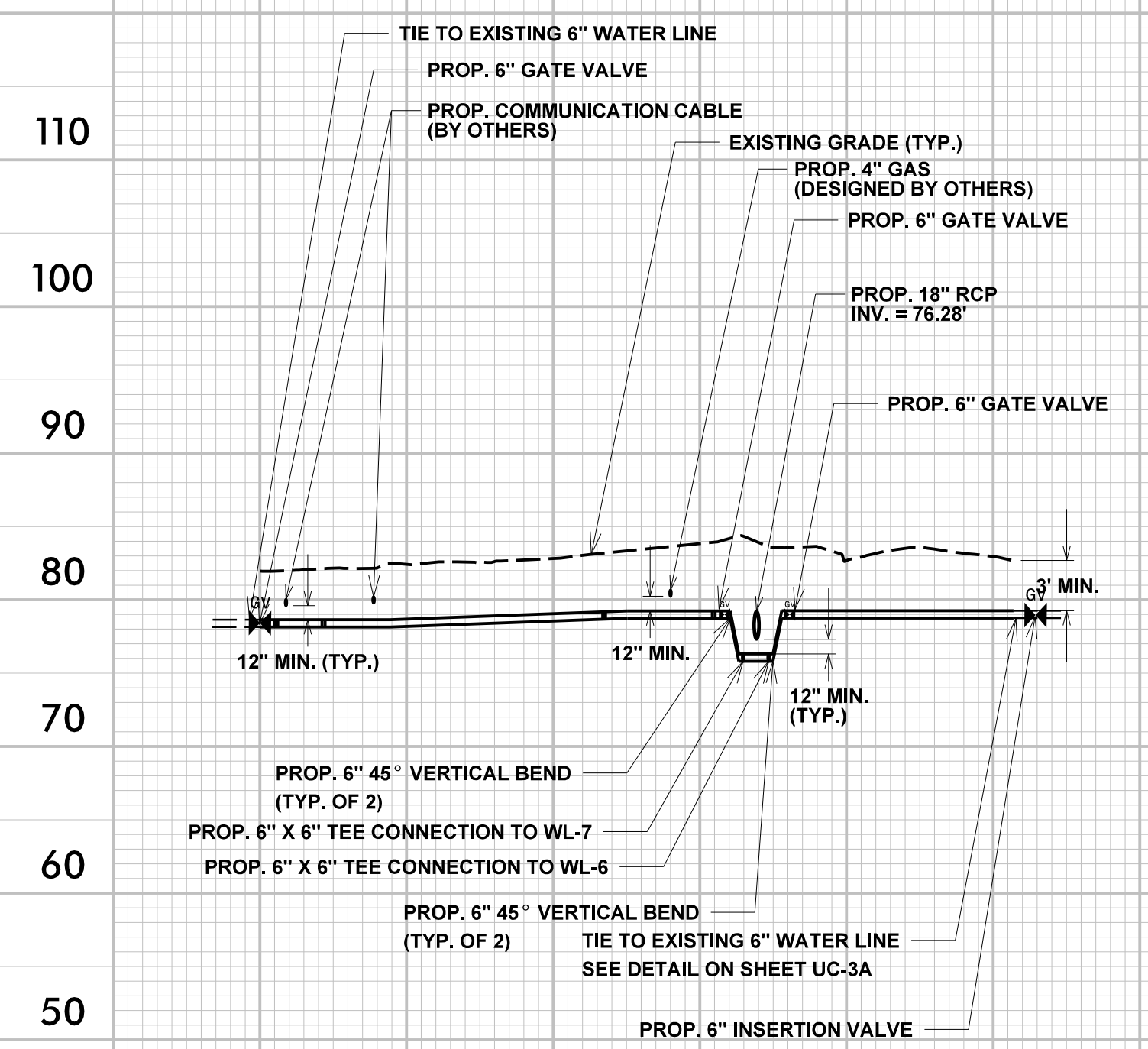
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5/28/99

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-22
DESIGNED BY: MM	
DRAWN BY: CS	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 9/3/2020	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
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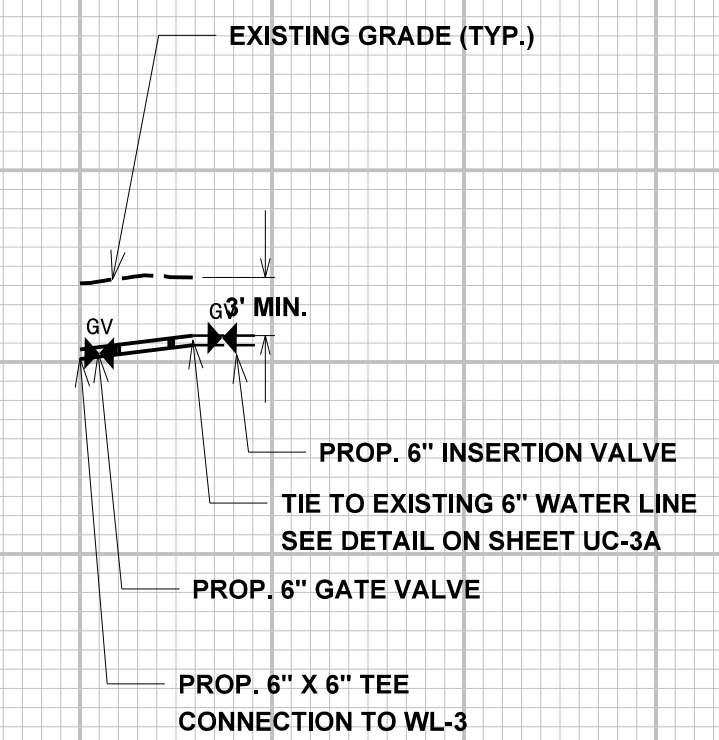
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FOR PLAN VIEW, SEE SHEET UC-7

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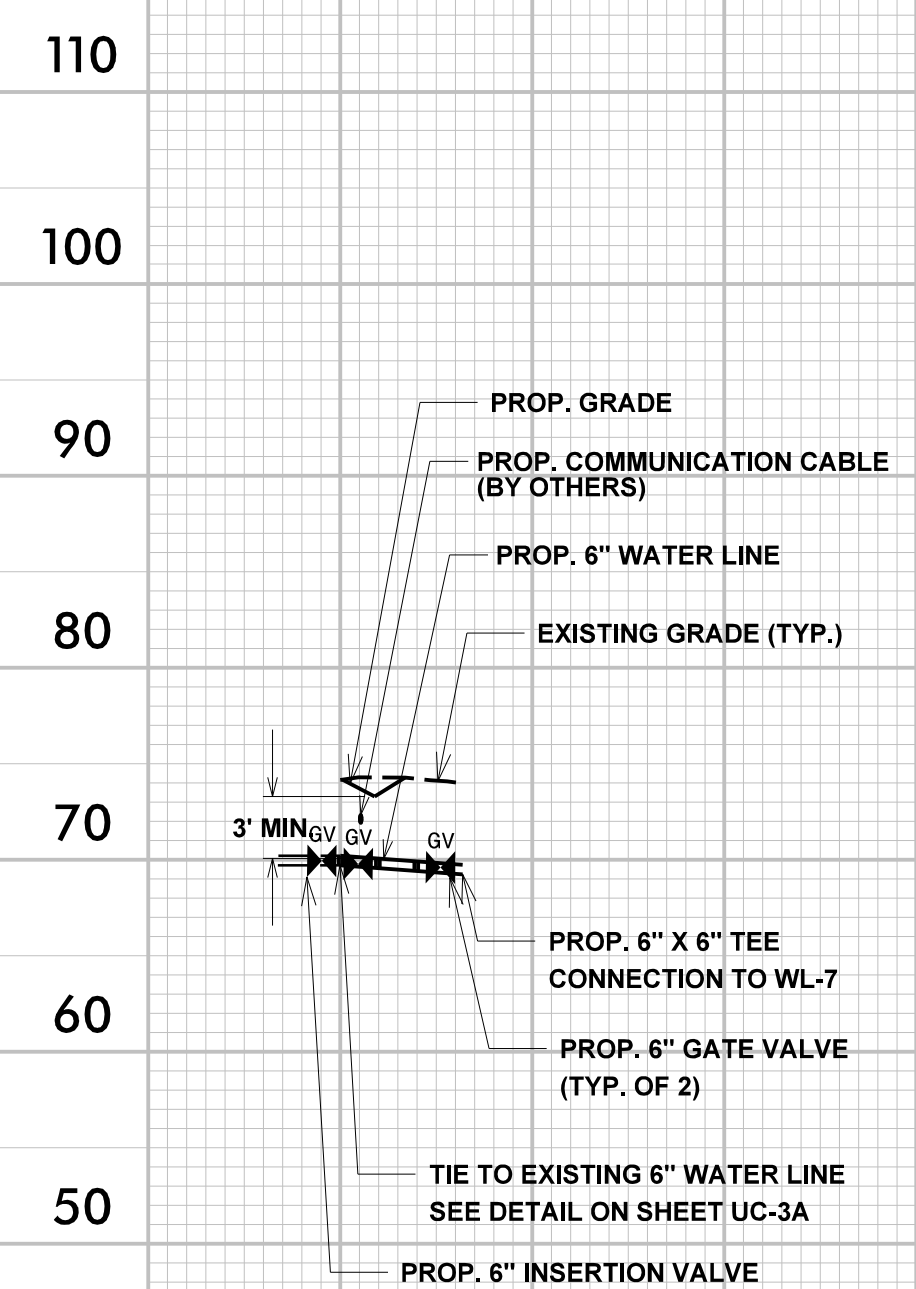


FOR PLAN VIEW, SEE SHEET UC-7

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UTILITY CONSTRUCTION  
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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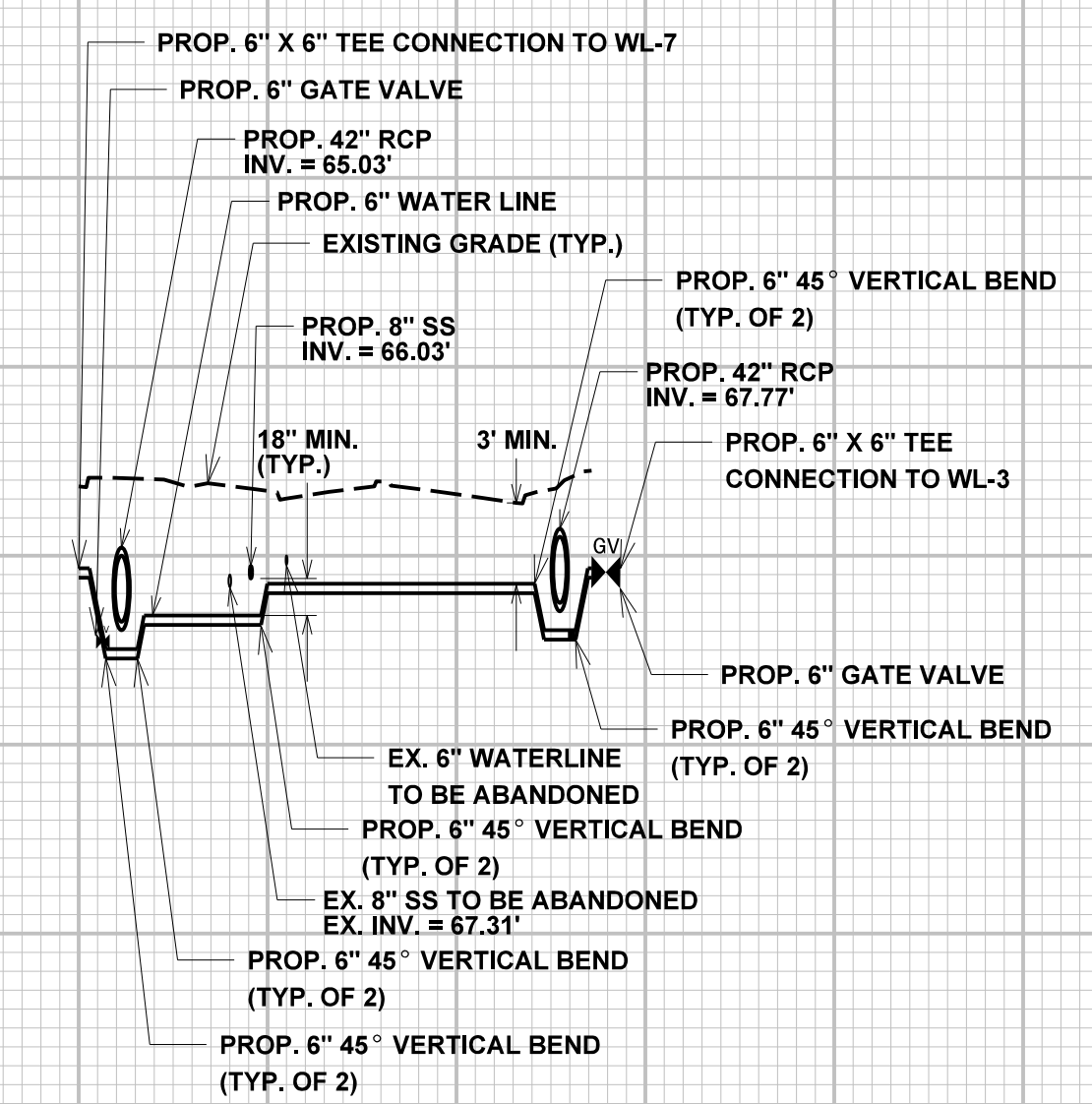


FOR PLAN VIEW, SEE SHEET UC-8

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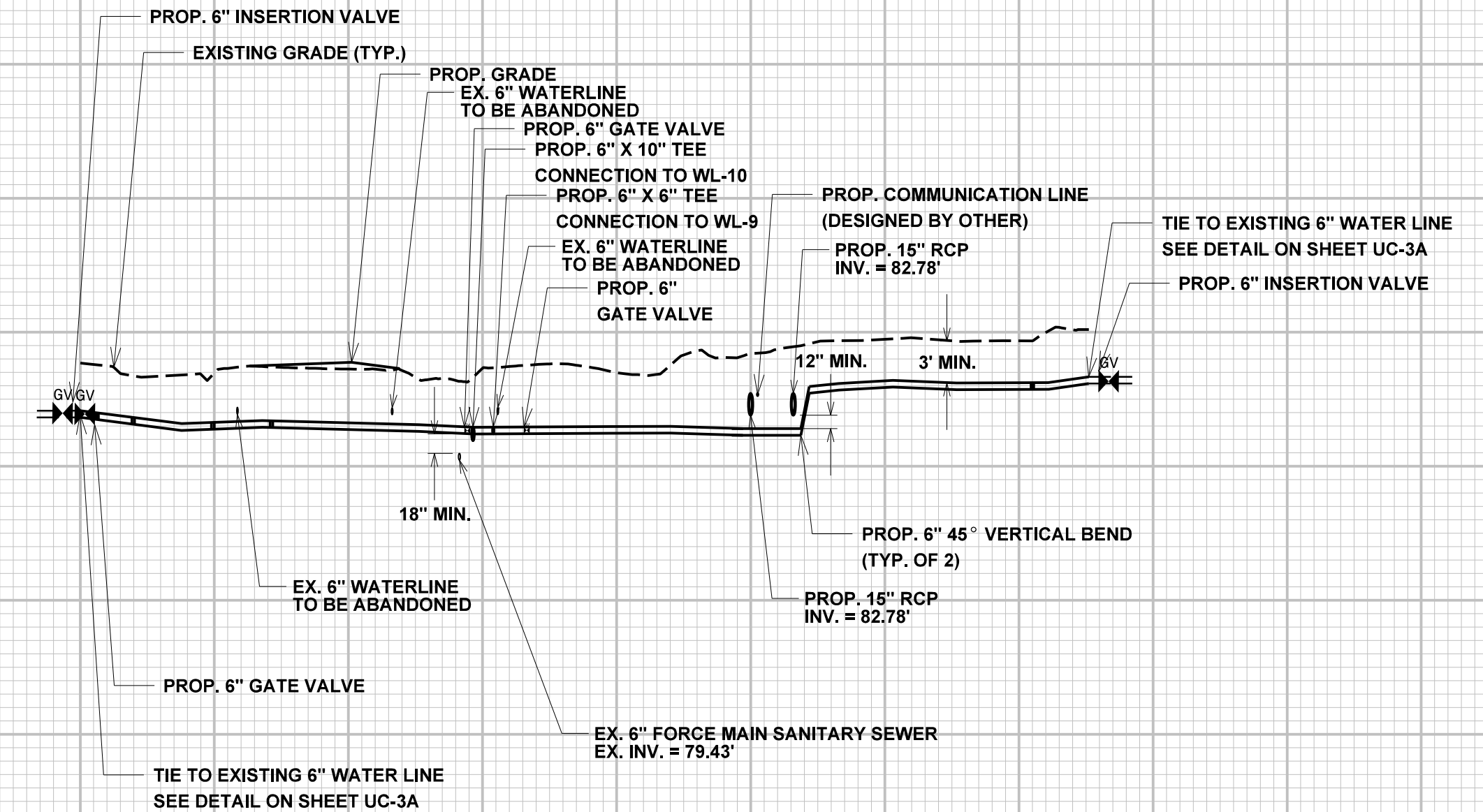
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FOR PLAN VIEW, SEE SHEET UC-8



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# -WL-K-



FOR PLAN VIEW, SEE SHEET UC-9

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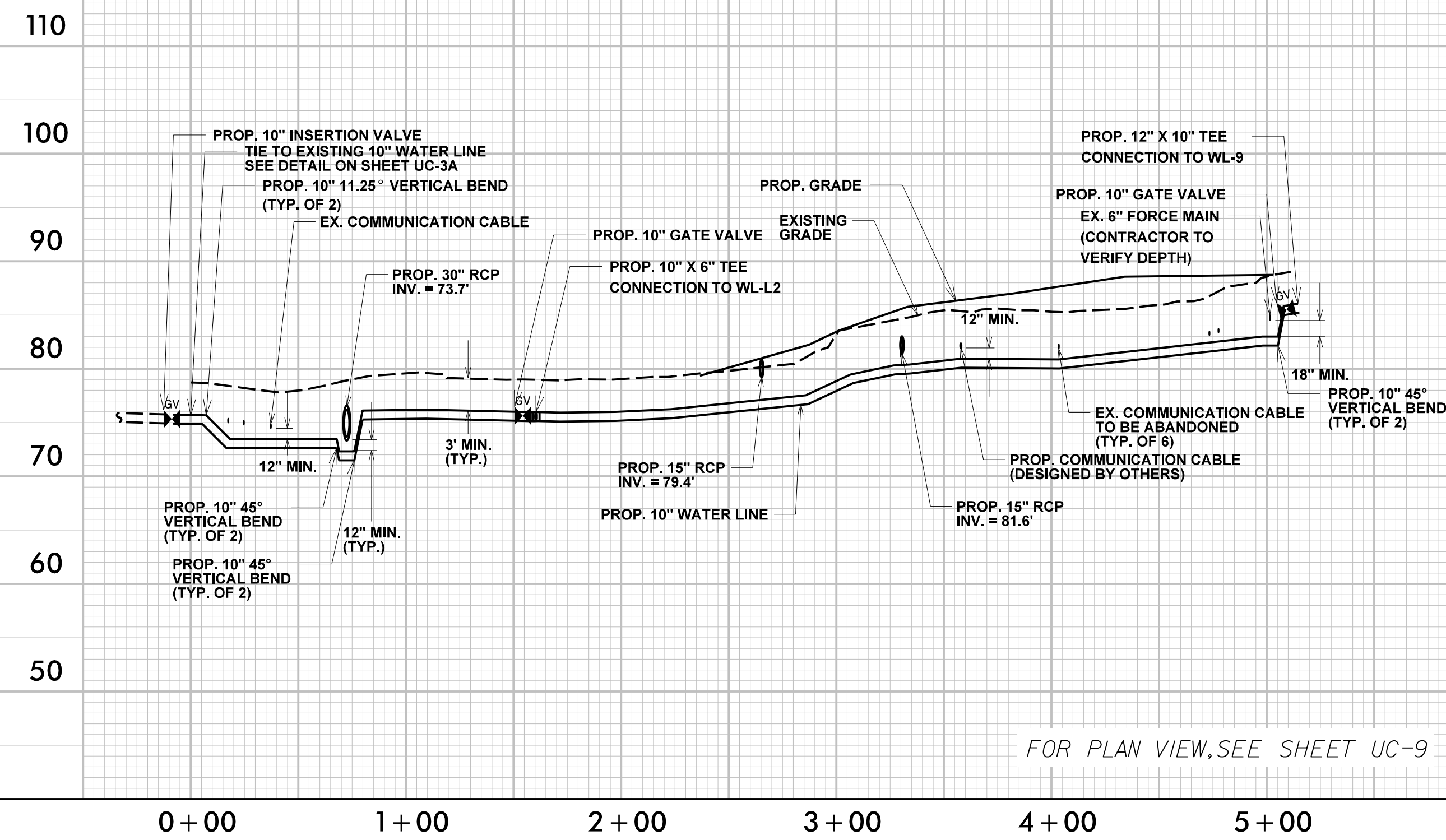
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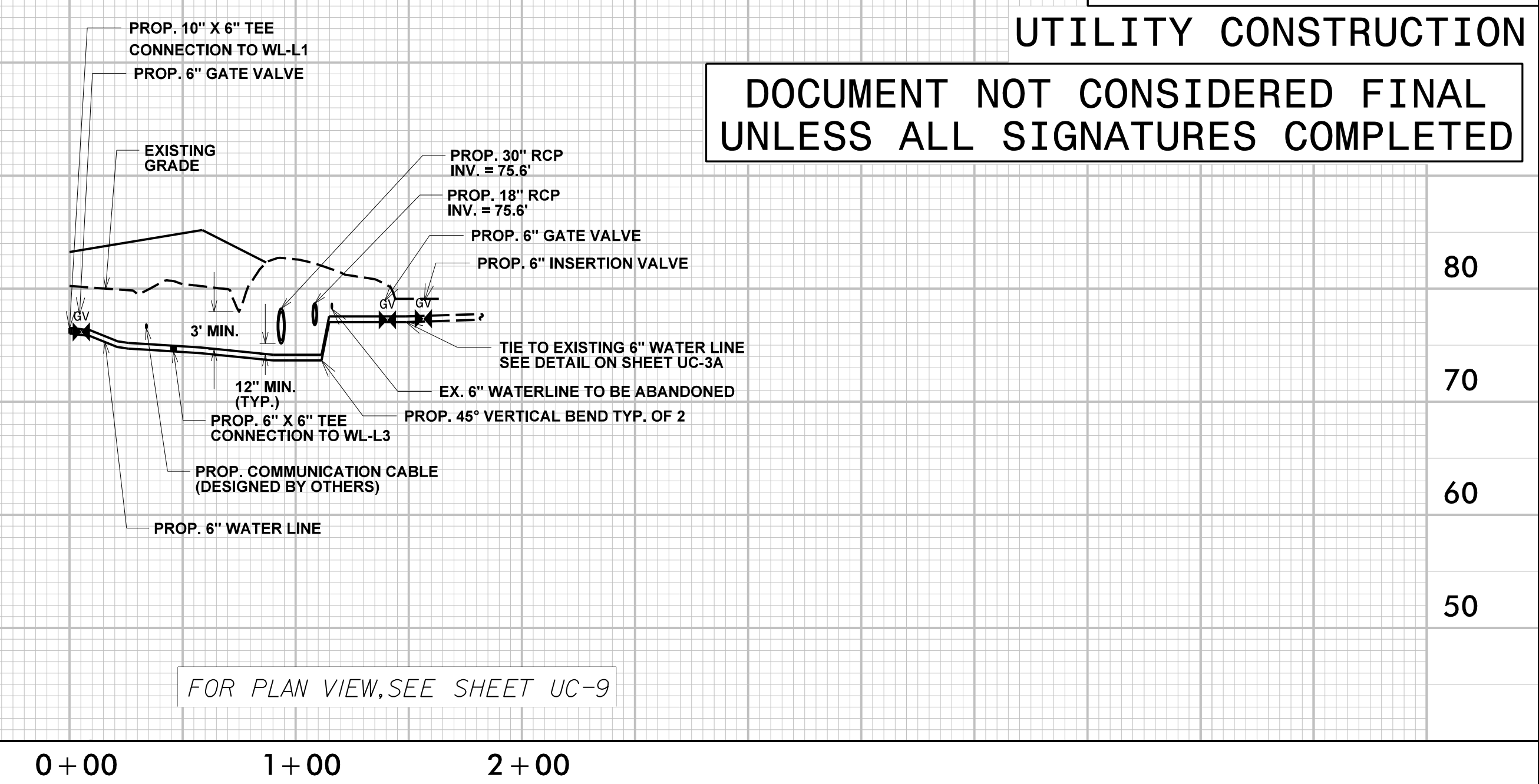
5/28/99

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-23
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
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# -WL-L1-



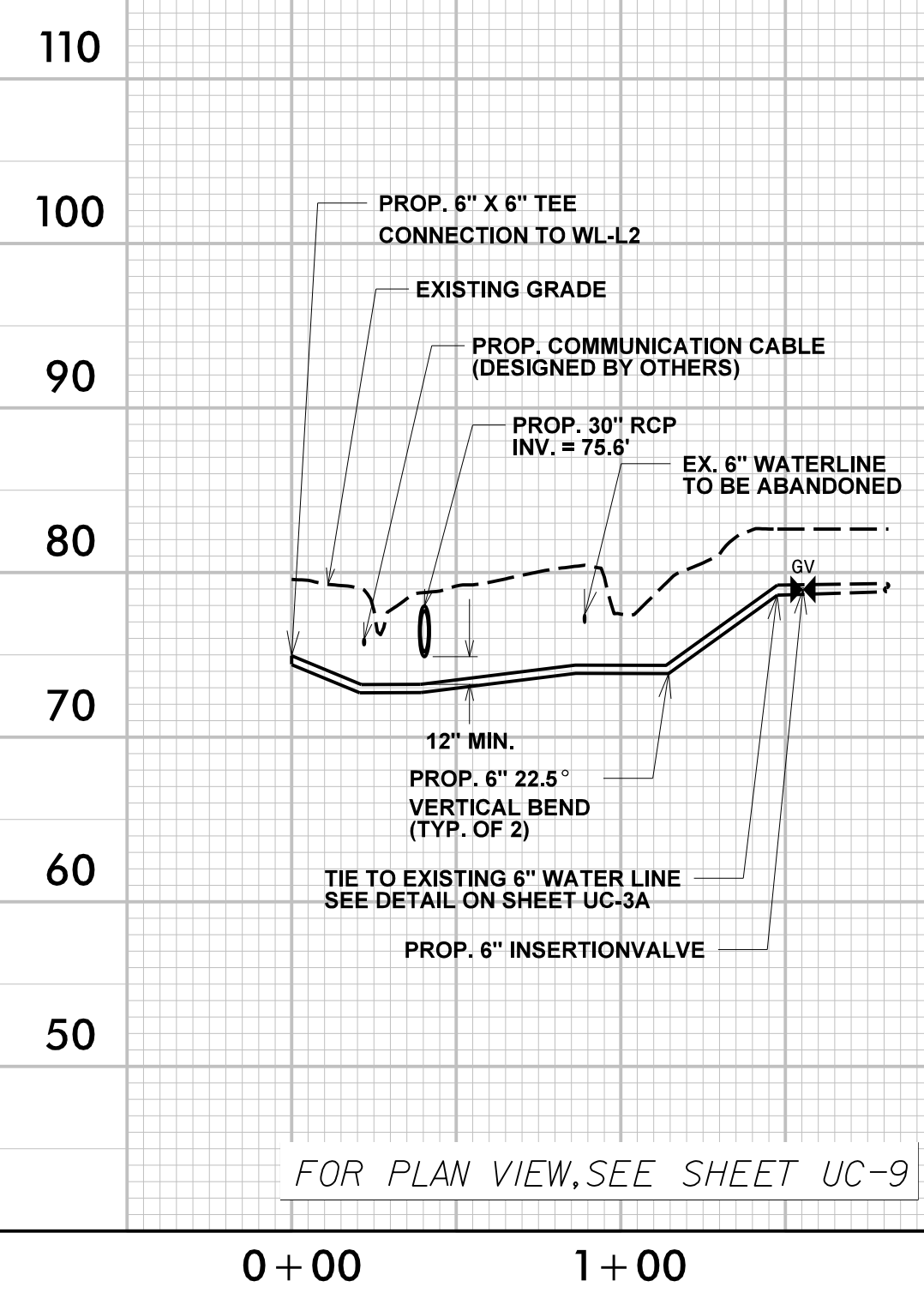
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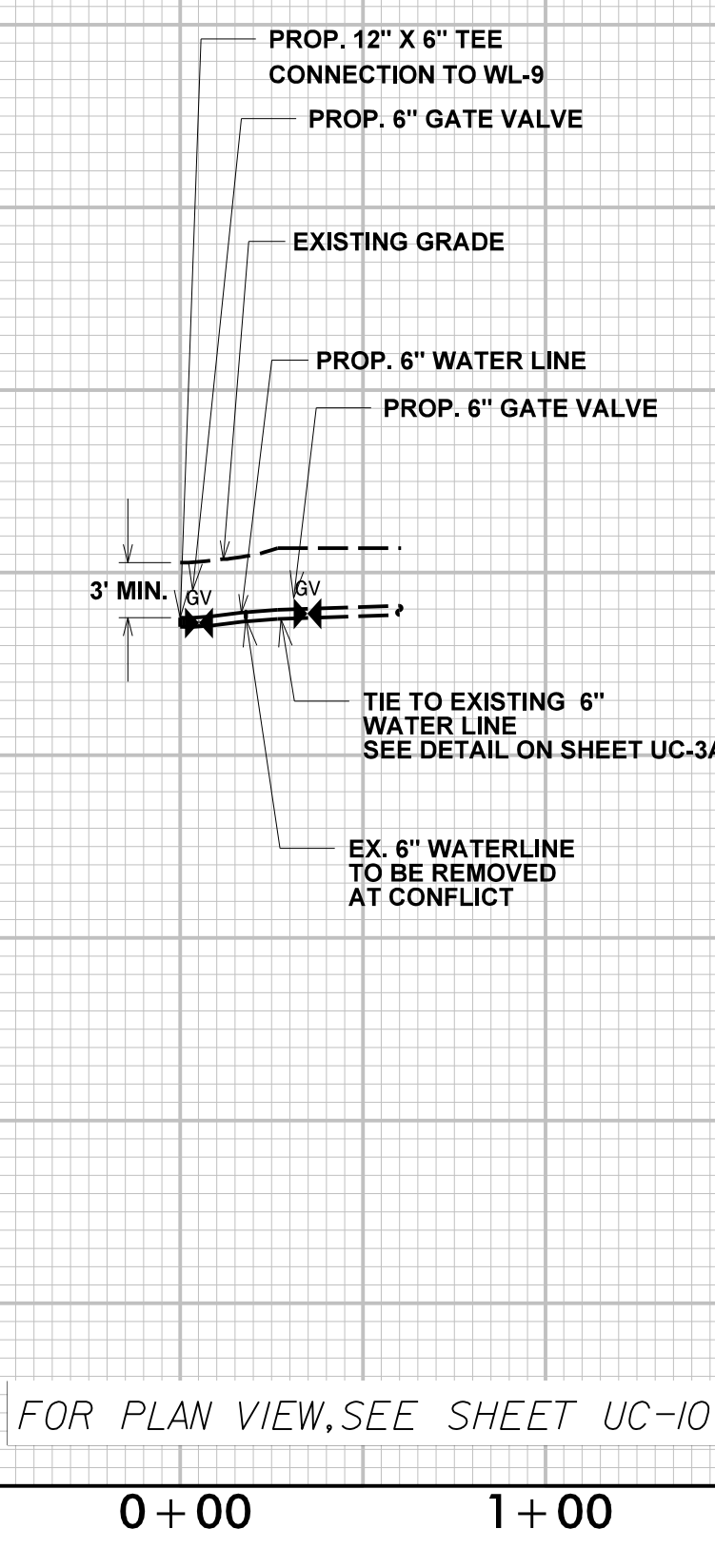
UTILITY CONSTRUCTION

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

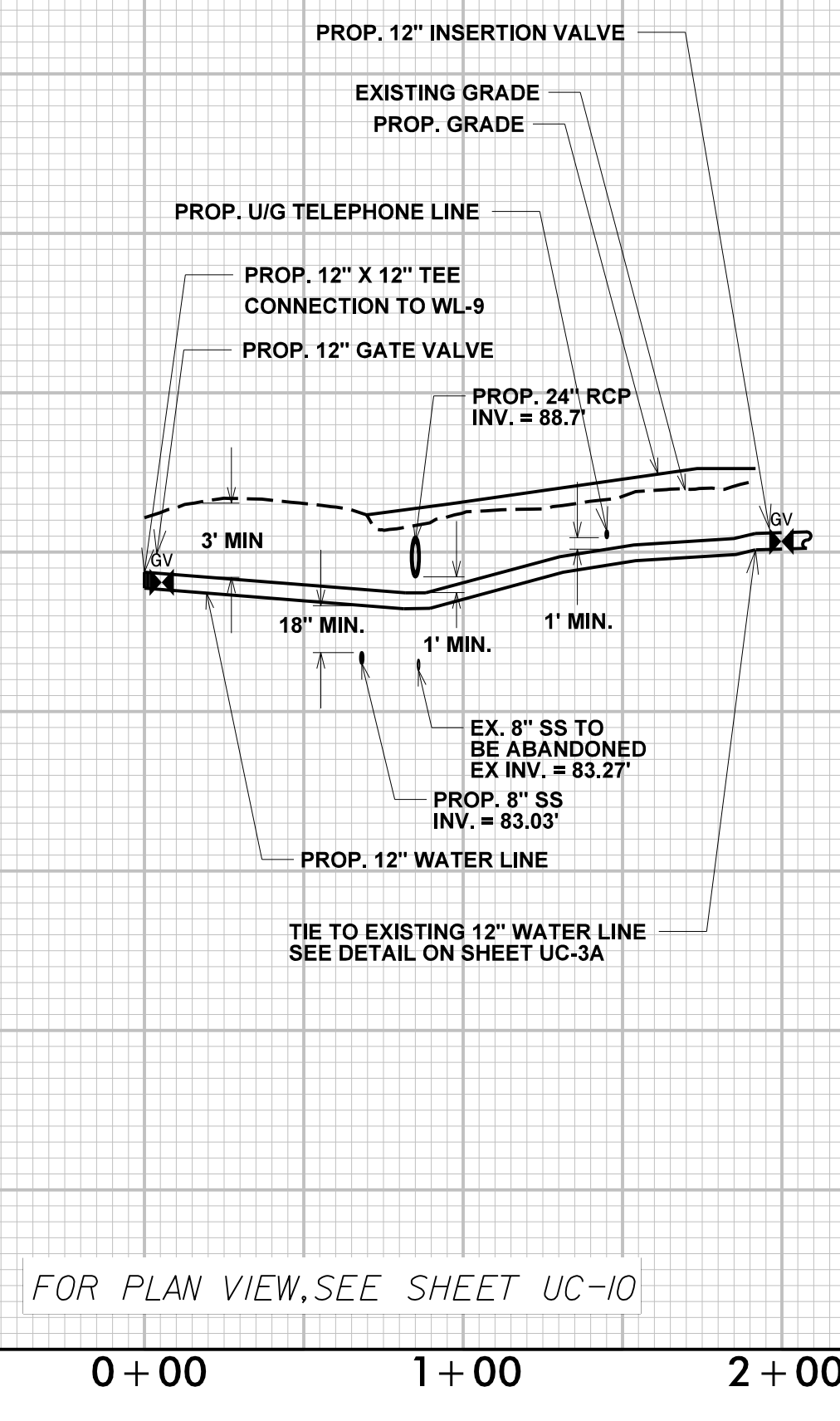
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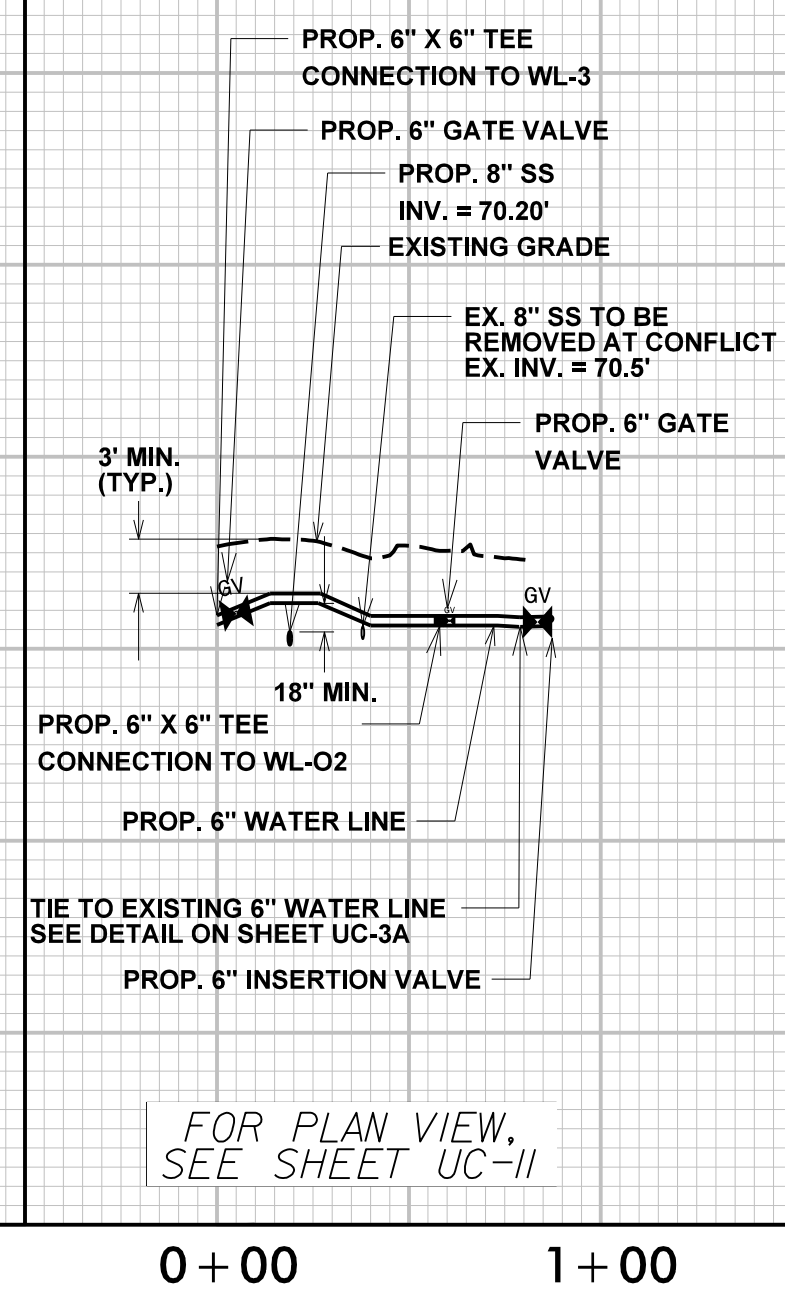
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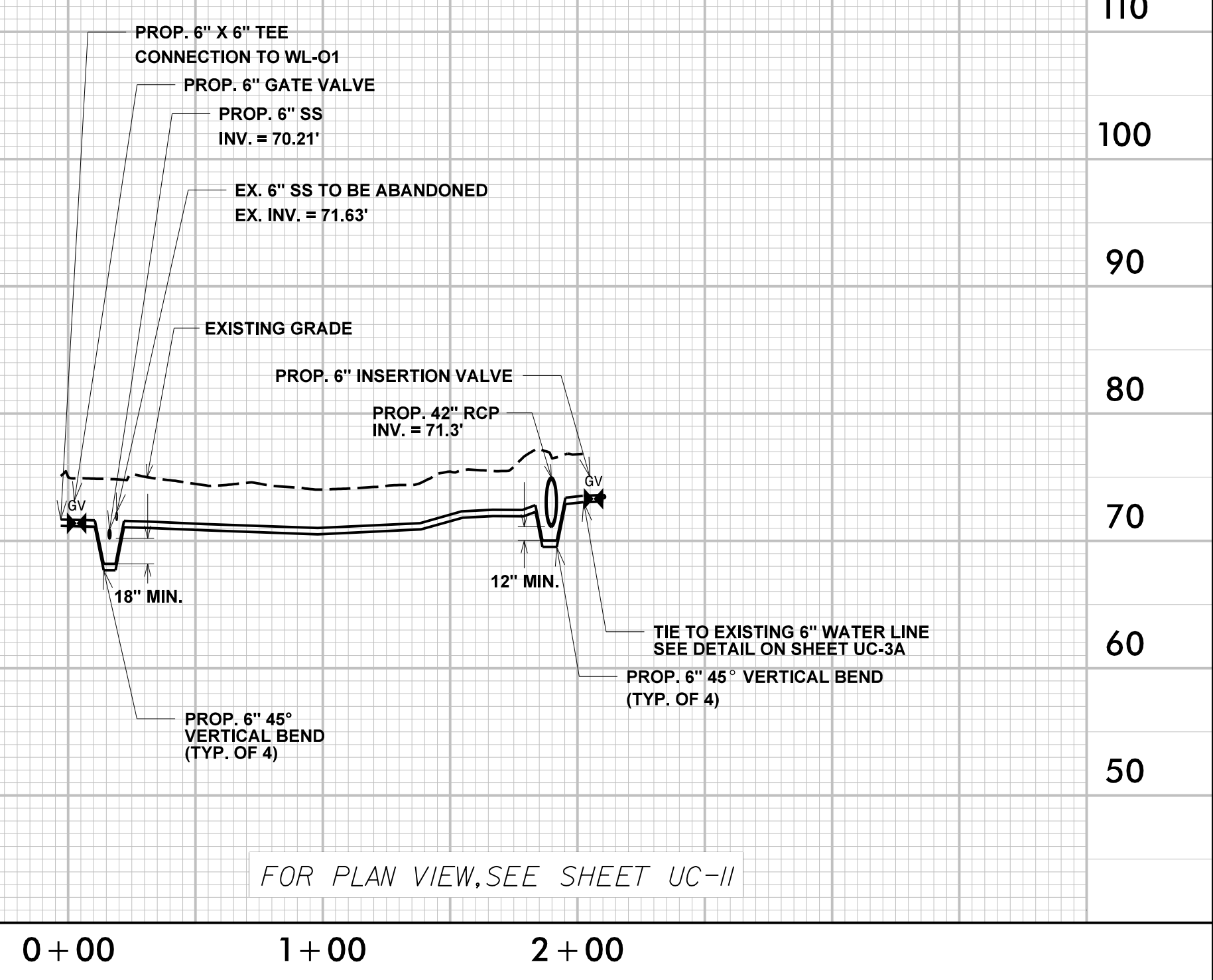
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# -WL-O1-



# -WL-O2-



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8/17/99

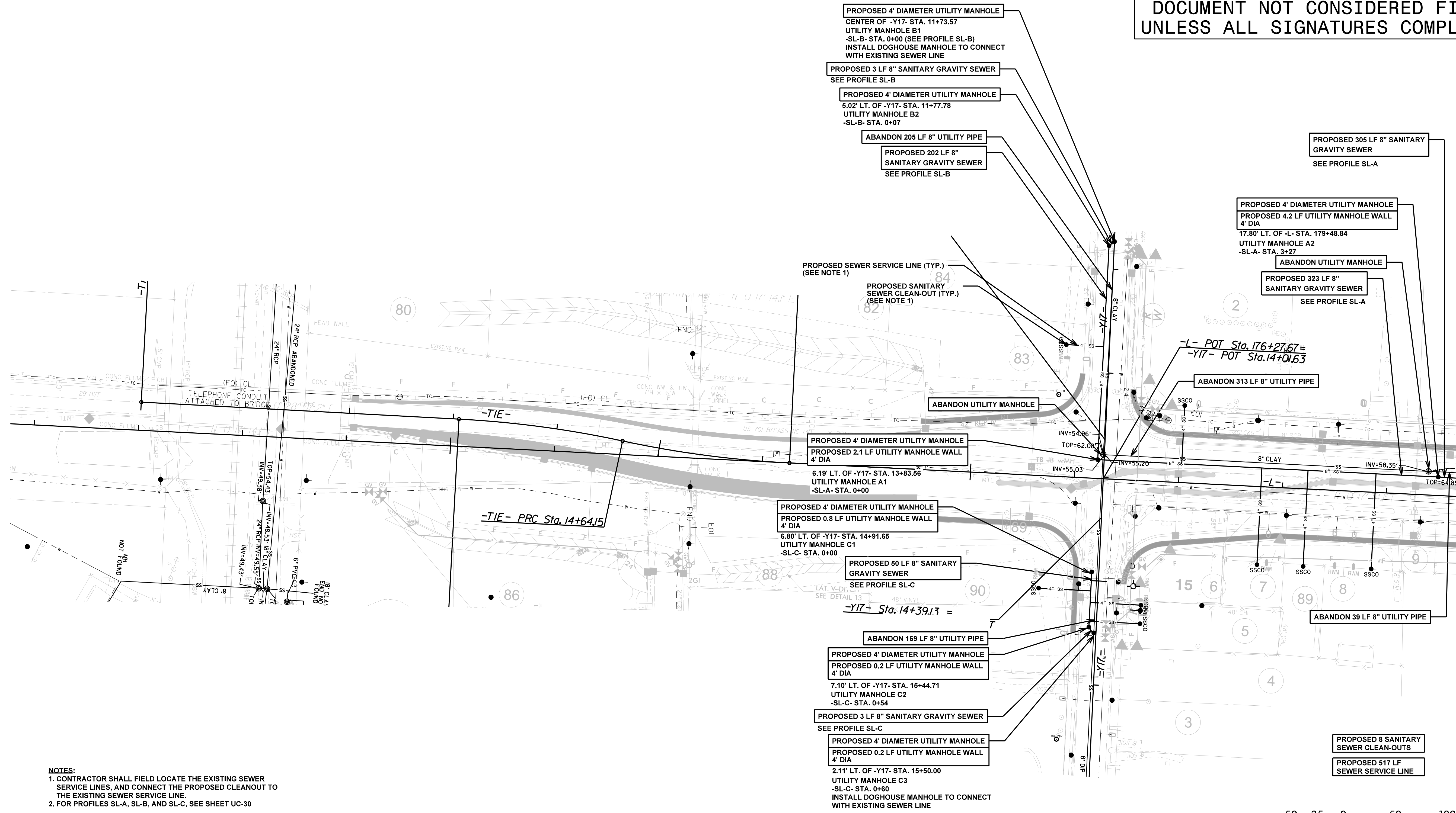
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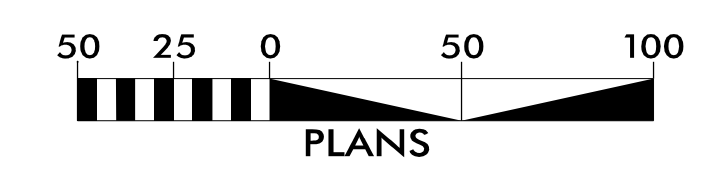
PROJECT REFERENCE NO. <b>R-5020B</b>	SHEET NO. <b>UC-24</b>
DESIGNED BY: <b>DK</b>	
DRAWN BY: <b>AP</b>	
CHECKED BY: <b>MM</b>	
APPROVED BY:	
REVISED:	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 9/3/2020
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY

## UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



- NOTES:**
- CONTRACTOR SHALL FIELD LOCATE THE EXISTING SEWER SERVICE LINES, AND CONNECT THE PROPOSED CLEANOUT TO THE EXISTING SEWER SERVICE LINE.
  - FOR PROFILES SL-A, SL-B, AND SL-C, SEE SHEET UC-30



MATCHLINE -L- STA. 179+80.00 SEE SHEET 25

14-APR-2020 09:28  
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8/17/99  
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# SANITARY SEWER



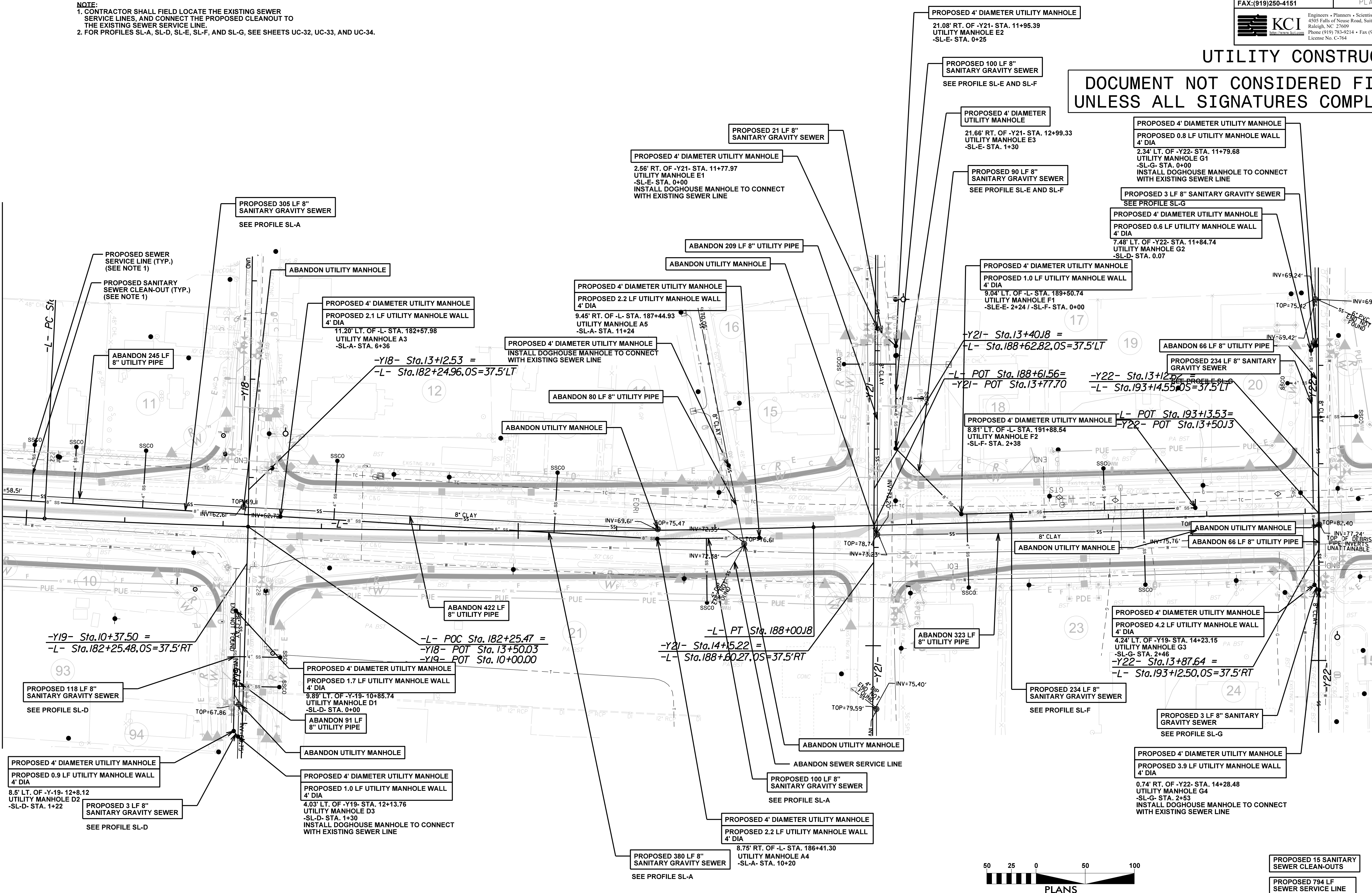
PROJECT REFERENCE NO.	R-5020B	SHEET NO.	UC-25
DESIGNED BY:	DK		
DRAWN BY:	AP		
CHECKED BY:	MM		
APPROVED BY:			
REVISED:		NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151		UTILITY CONSTRUCTION PLANS ONLY	

**NOTE:**  
1. CONTRACTOR SHALL FIELD LOCATE THE EXISTING SEWER SERVICE LINES, AND CONNECT THE PROPOSED CLEAN-OUT TO THE EXISTING SEWER SERVICE LINE.  
2. FOR PROFILES SL-A, SL-D, SL-E, SL-F, AND SL-G, SEE SHEETS UC-32, UC-33, AND UC-34.

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

MATCHLINE -L- STA. 179 + 80.00 SEE SHEET 24

MATCHLINE -L- STA. 193 + 79.92 SEE SHEET 26



PROPOSED 15 SANITARY SEWER CLEAN-OUTS  
PROPOSED 794 LF SEWER SERVICE LINE



8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5020B	UC-26
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151

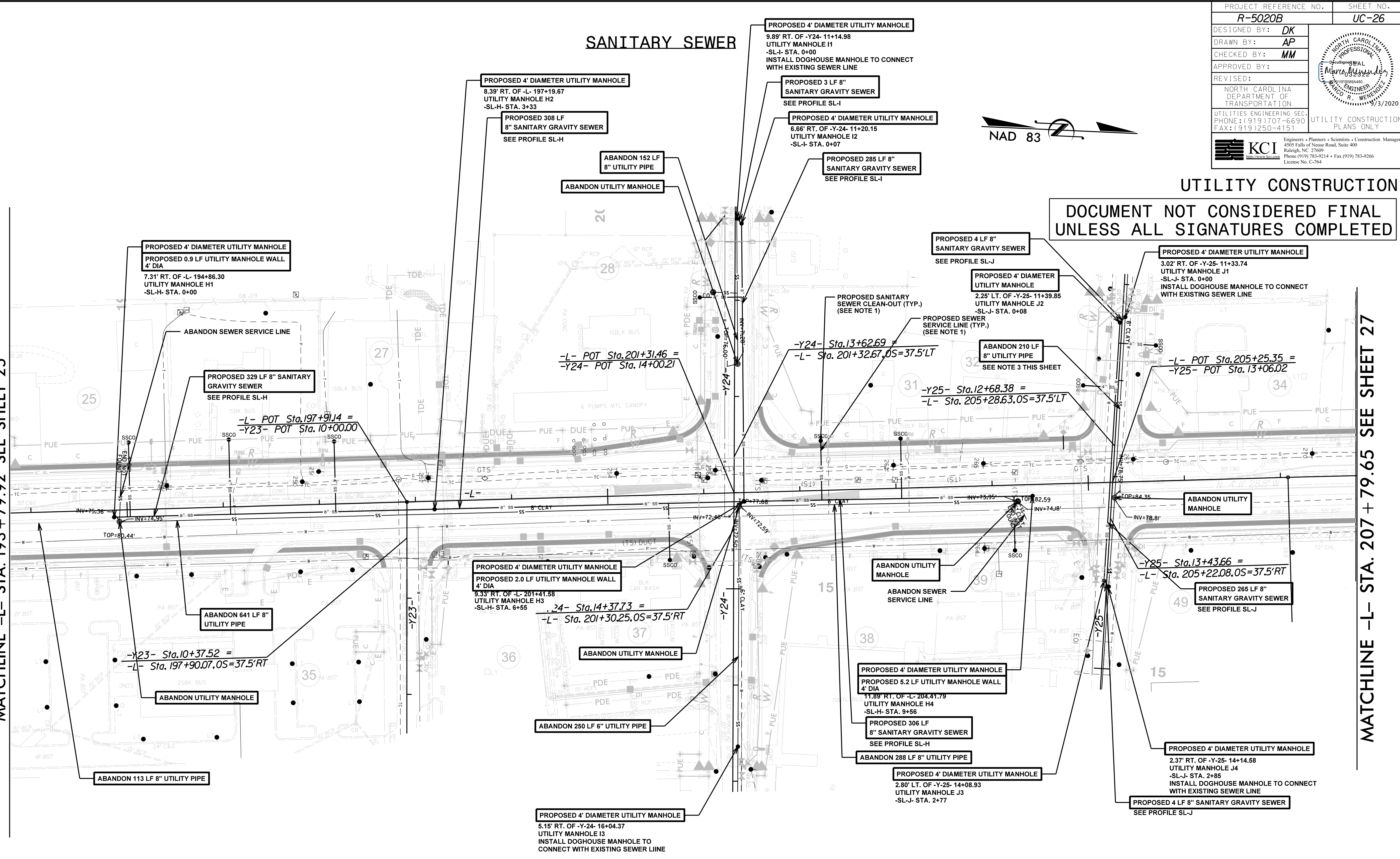
### SANITARY SEWER

### UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

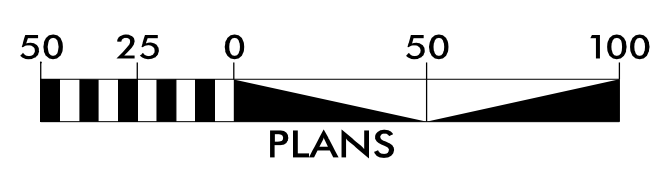
MATCHLINE -L- STA. 193 + 79.92 SEE SHEET 25

MATCHLINE -L- STA. 207 + 79.65 SEE SHEET 27



- NOTE:**
- CONTRACTOR SHALL FIELD LOCATE THE EXISTING SEWER SERVICE LINES, AND CONNECT THE PROPOSED CLEANOUT TO THE EXISTING SEWER SERVICE LINE.
  - FOR PROFILES SL-H, SL-I, SL-J, SEE SHEETS UC-34 AND UC-35.
  - EXISTING PIPE TO BE ABANDONED SHALL BE REMOVED AS NECESSARY BY CONTRACTOR FOR THE PROPOSED PIPE INSTALLATION.

- PROPOSED 10 SANITARY SEWER CLEAN-OUTS
- PROPOSED 528 LF SEWER SERVICE LINE
- PROPOSED 56 LF 6" SEWER SERVICE LINE



03-SEP-2020 15:32 N:\2016\21001889\NCDOT\_R-5020B\US 701 Widening\Water Sanitary\R-5020B.ut\_rduj6\_UC26\_psh.dgn



8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-5020B	UC-27
DESIGNED BY:	DK
DRAWN BY:	AP
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	
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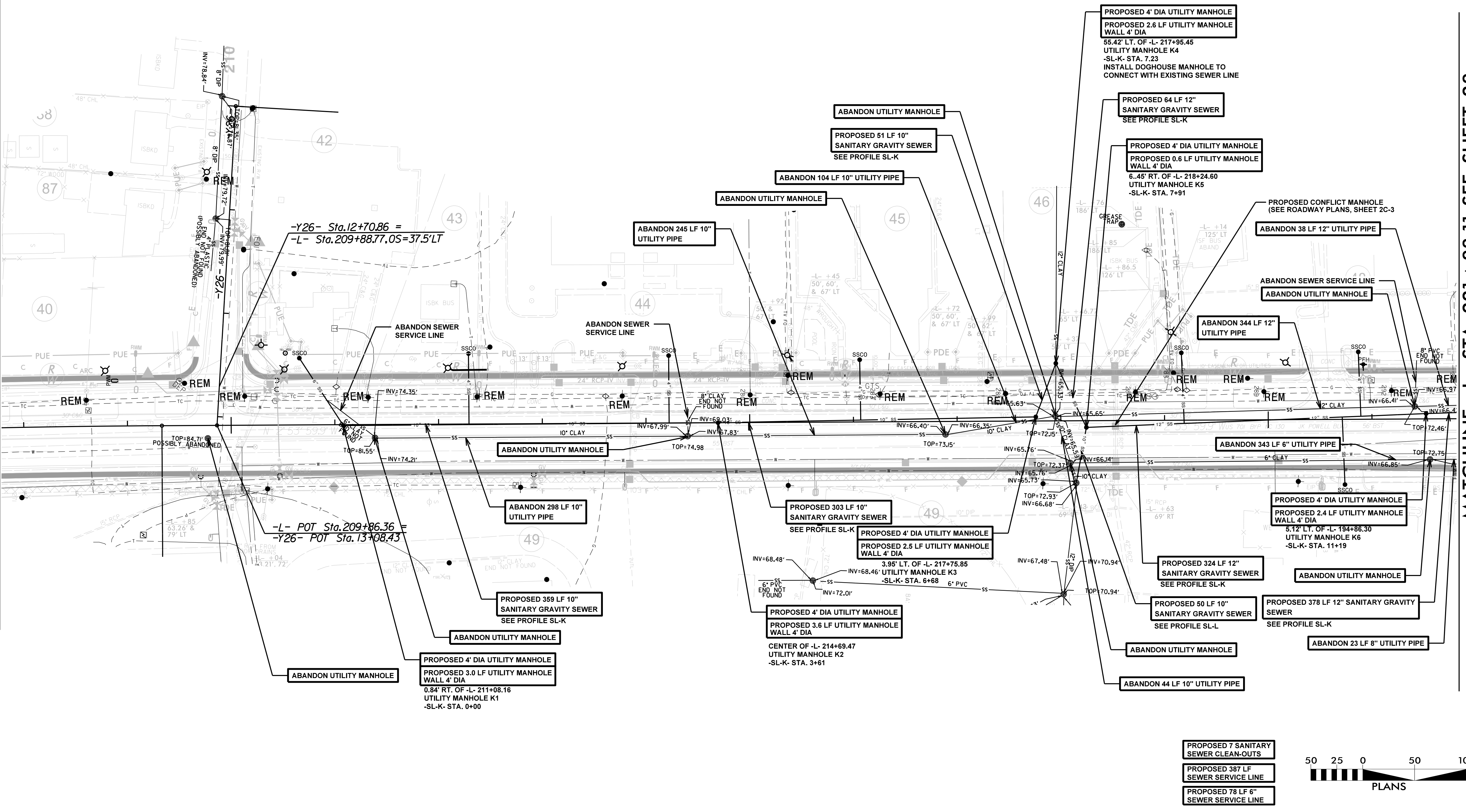


# SANITARY SEWER

**NOTE:**  
 1. CONTRACTOR SHALL FIELD LOCATE THE EXISTING SEWER SERVICE LINES, AND CONNECT THE PROPOSED CLEANOUT TO THE EXISTING SEWER SERVICE LINE.  
 2. FOR PROFILES SL-K AND SL-L, SEE SHEETS UC-36 AND UC-37.

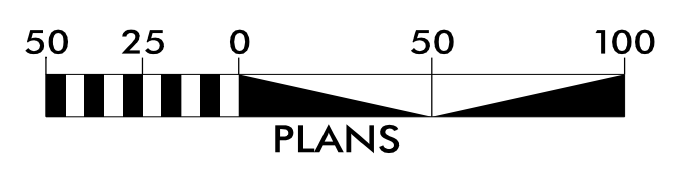
UTILITY CONSTRUCTION  
 DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L- STA. 207 + 79.65 SEE SHEET 26



MATCHLINE -L- STA. 221 + 83.11 SEE SHEET 28

PROPOSED 7 SANITARY SEWER CLEAN-OUTS  
 PROPOSED 387 LF SEWER SERVICE LINE  
 PROPOSED 78 LF 6" SEWER SERVICE LINE





8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5020B	UC-28
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	9/3/2020
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

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 4509 Falls of Noe Road, Suite 400  
 Raleigh, NC 27609  
 Phone (919) 783-9214 • Fax (919) 783-9266  
 License No. C-764

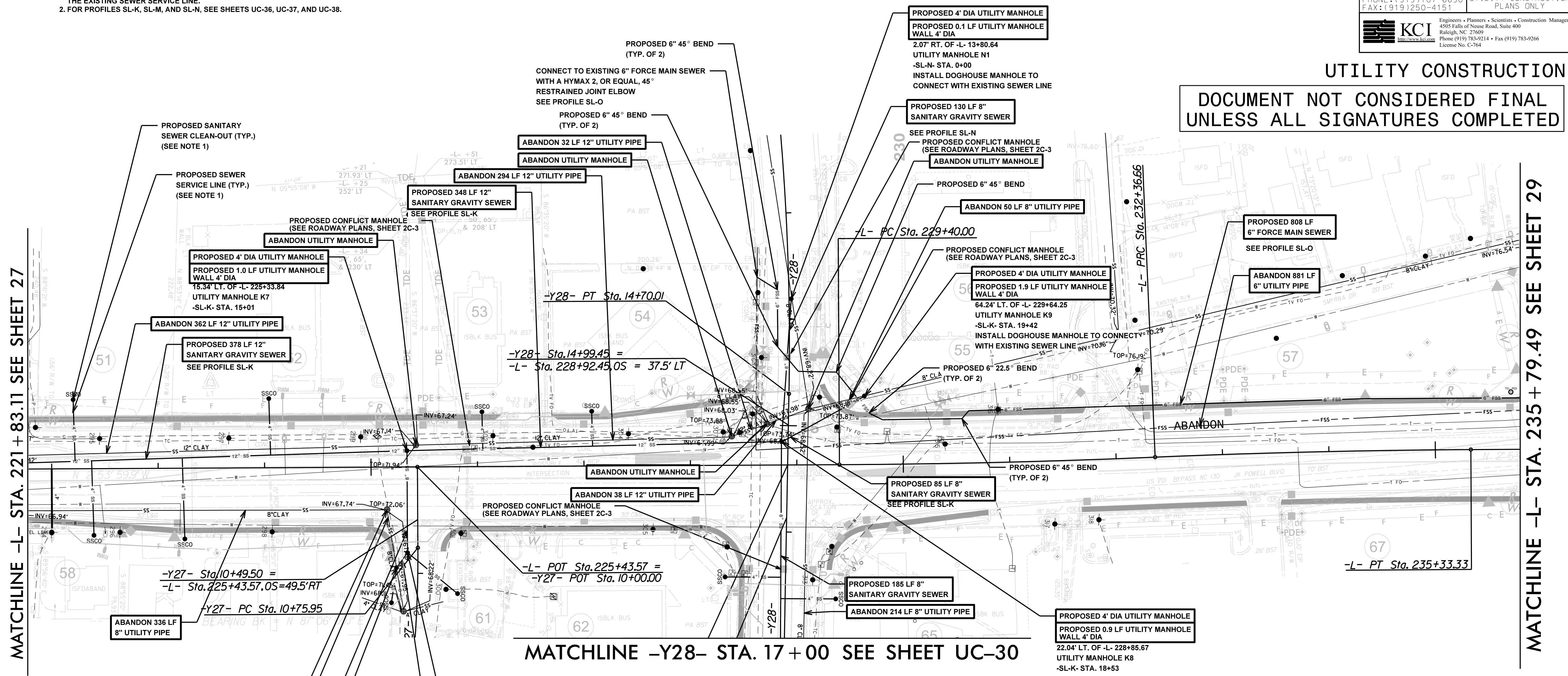
# SANITARY SEWER



**NOTE:**  
 1. CONTRACTOR SHALL FIELD LOCATE THE EXISTING SEWER SERVICE LINES, AND CONNECT THE PROPOSED CLEAN-OUT TO THE EXISTING SEWER SERVICE LINE.  
 2. FOR PROFILES SL-K, SL-M, AND SL-N, SEE SHEETS UC-36, UC-37, AND UC-38.

## UTILITY CONSTRUCTION

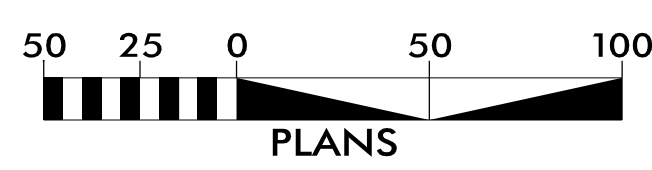
**DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED**



MATCHLINE -L- STA. 221 + 83.11 SEE SHEET 27

MATCHLINE -L- STA. 235 + 79.49 SEE SHEET 29

MATCHLINE -Y28- STA. 17 + 00 SEE SHEET UC-30



- 750 LB DUCTILE IRON SEWER PIPE FITTINGS
- PROPOSED 13 SANITARY SEWER CLEAN-OUTS
- PROPOSED 523 LF SEWER SERVICE LINE
- PROPOSED 138 LF 8" SEWER SERVICE LINE

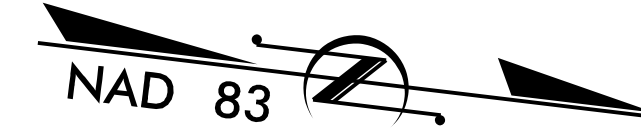
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-5020B	UC-29
DESIGNED BY: DK	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	9/3/2020
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SECTION PHONE: (919) 707-6690 FAX: (919) 250-4151	
KCI Engineers • Planners • Scientists • Construction Managers 4519 Falls of Noose Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-7164	

# SANITARY SEWER



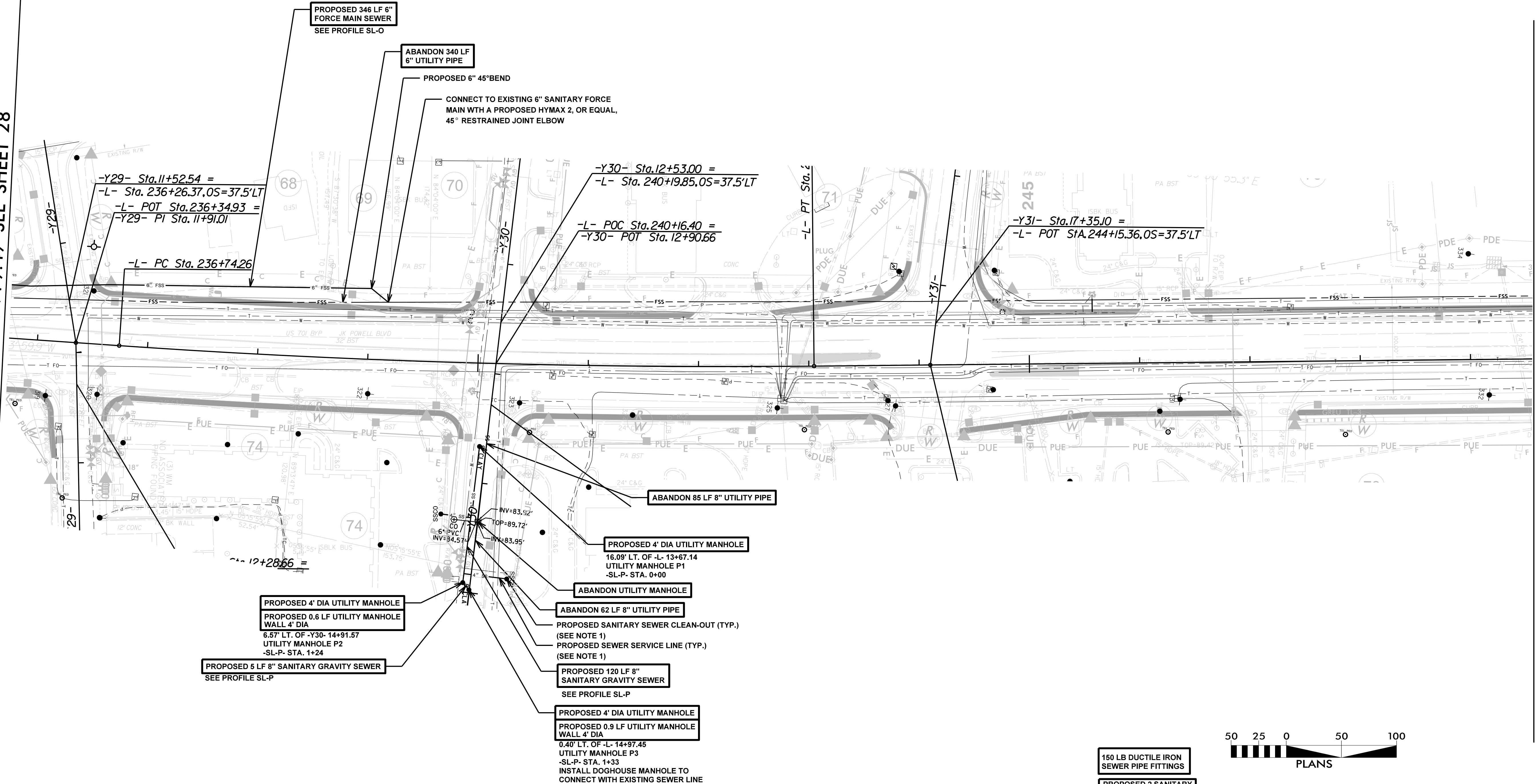
- NOTE:**
- CONTRACTOR SHALL FIELD LOCATE THE EXISTING SEWER SERVICE LINES, AND CONNECT THE PROPOSED CLEANOUT TO THE EXISTING SEWER SERVICE LINE.
  - FOR PROFILES SL-P, SEE SHEET UC-39.

## UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
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MATCHLINE -L- STA. 235 + 79.49 SEE SHEET 28

MATCHLINE -L- STA. 249 + 57.03 SEE SHEET 30



- 150 LB DUCTILE IRON SEWER PIPE FITTINGS
- PROPOSED 2 SANITARY SEWER CLEAN-OUTS
- PROPOSED 39 LF SEWER SERVICE LINE
- PROPOSED 27 LF 6" SEWER SERVICE LINE



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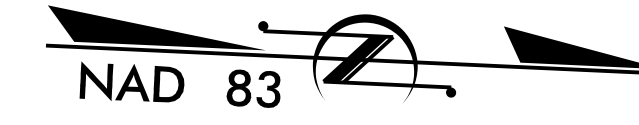






8/17/99

# SANITARY SEWER

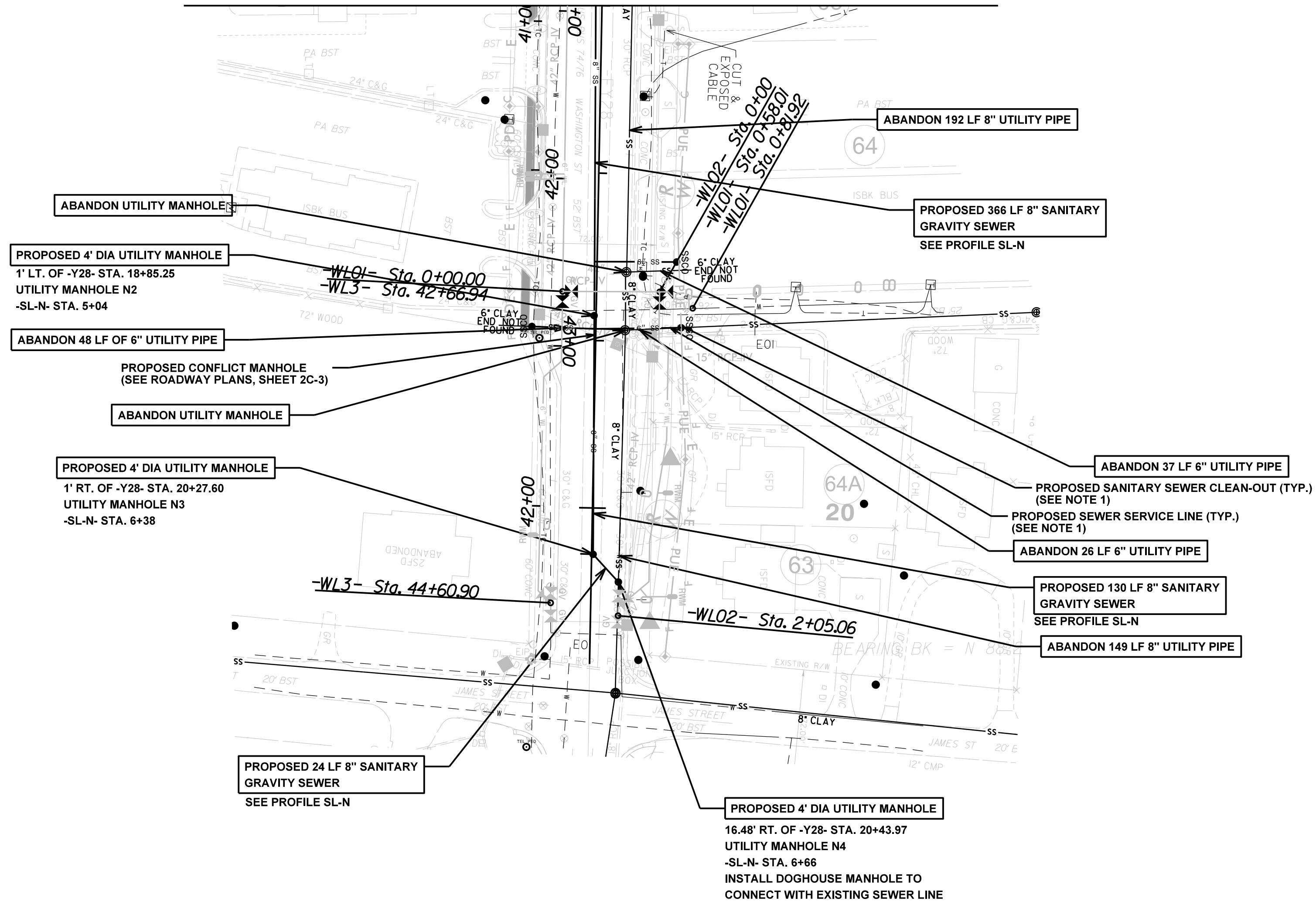


PROJECT REFERENCE NO. <b>R-5020B</b>	SHEET NO. <b>UC-31</b>
DESIGNED BY: <b>DK</b>	
DRAWN BY: <b>AP</b>	
CHECKED BY: <b>MM</b>	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
Engineers • 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	

## UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

### MATCHLINE -Y28- STA. 17+00 SEE SHEET UC-28



- NOTES:**
- CONTRACTOR SHALL FIELD LOCATE THE EXISTING SEWER SERVICE LINES, AND CONNECT THE PROPOSED CLEANOUT TO THE EXISTING SEWER SERVICE LINE.
  - FOR PROFILES SL-N, SEE SHEET 38.



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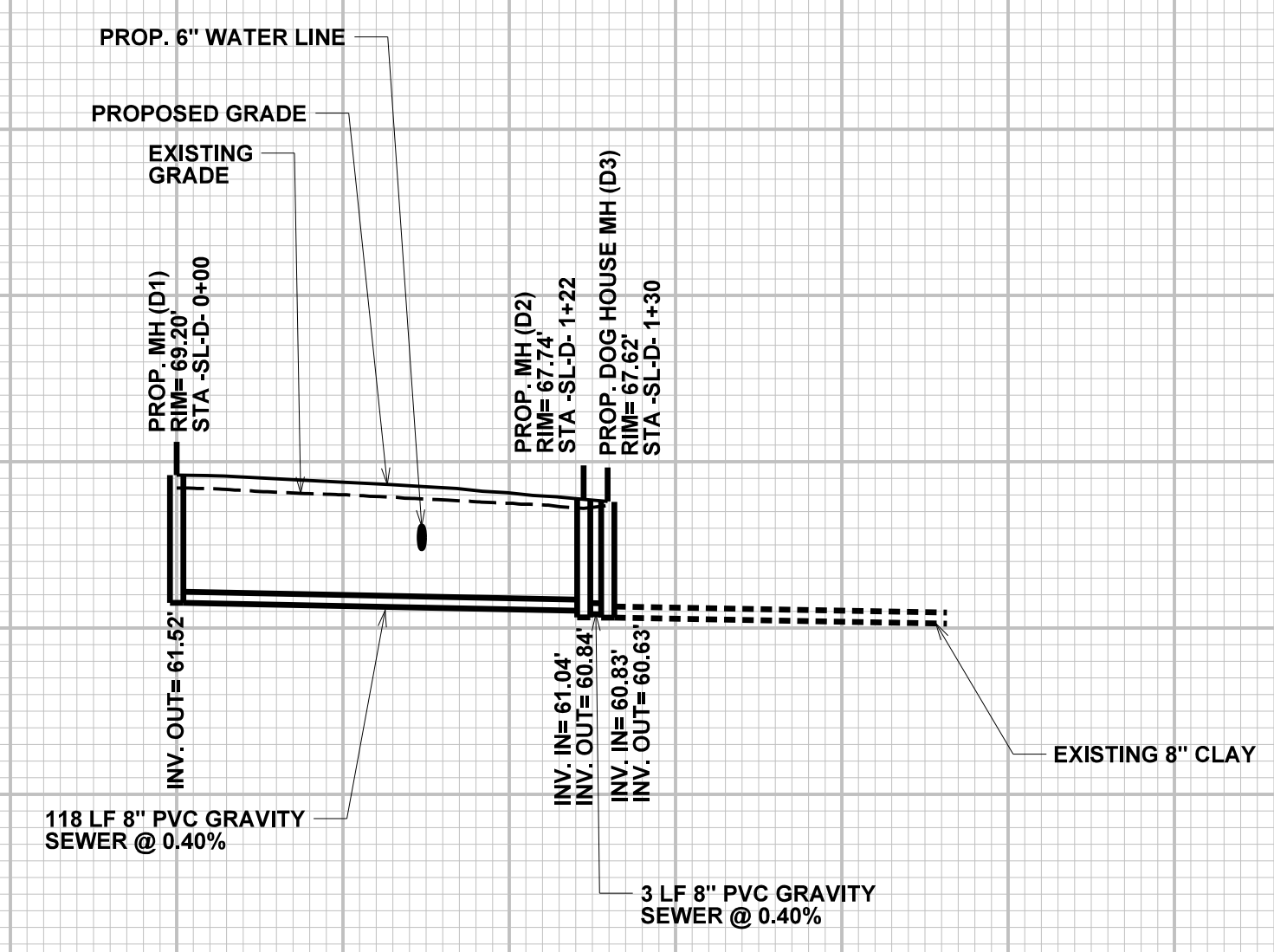
# -SL-D-

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-33
DESIGNED BY: MM	
DRAWN BY: SW	
CHECKED BY: MM	
APPROVED BY: MM	
REVISI:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITIES CONSTRUCTION PLANS ONLY	

## UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

110  
100  
90  
80  
70  
60  
50

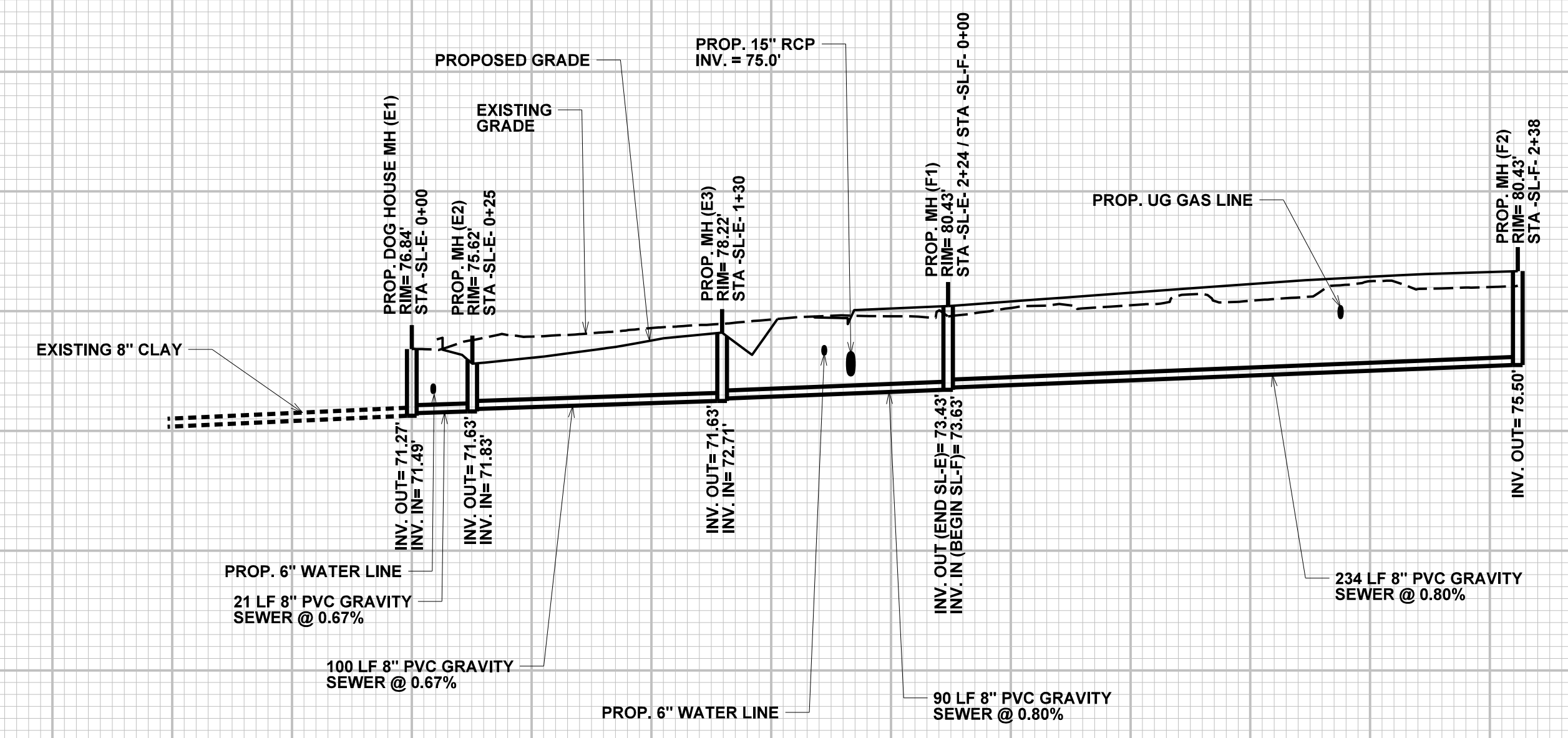


0+00 1+00 2+00

FOR PLAN VIEW, SEE SHEET UC-25

# -SL-E- & -SL-F-

110  
100  
90  
80  
70  
60  
50



0+00 1+00 2+00 3+00

FOR PLAN VIEW, SEE SHEET UC-25

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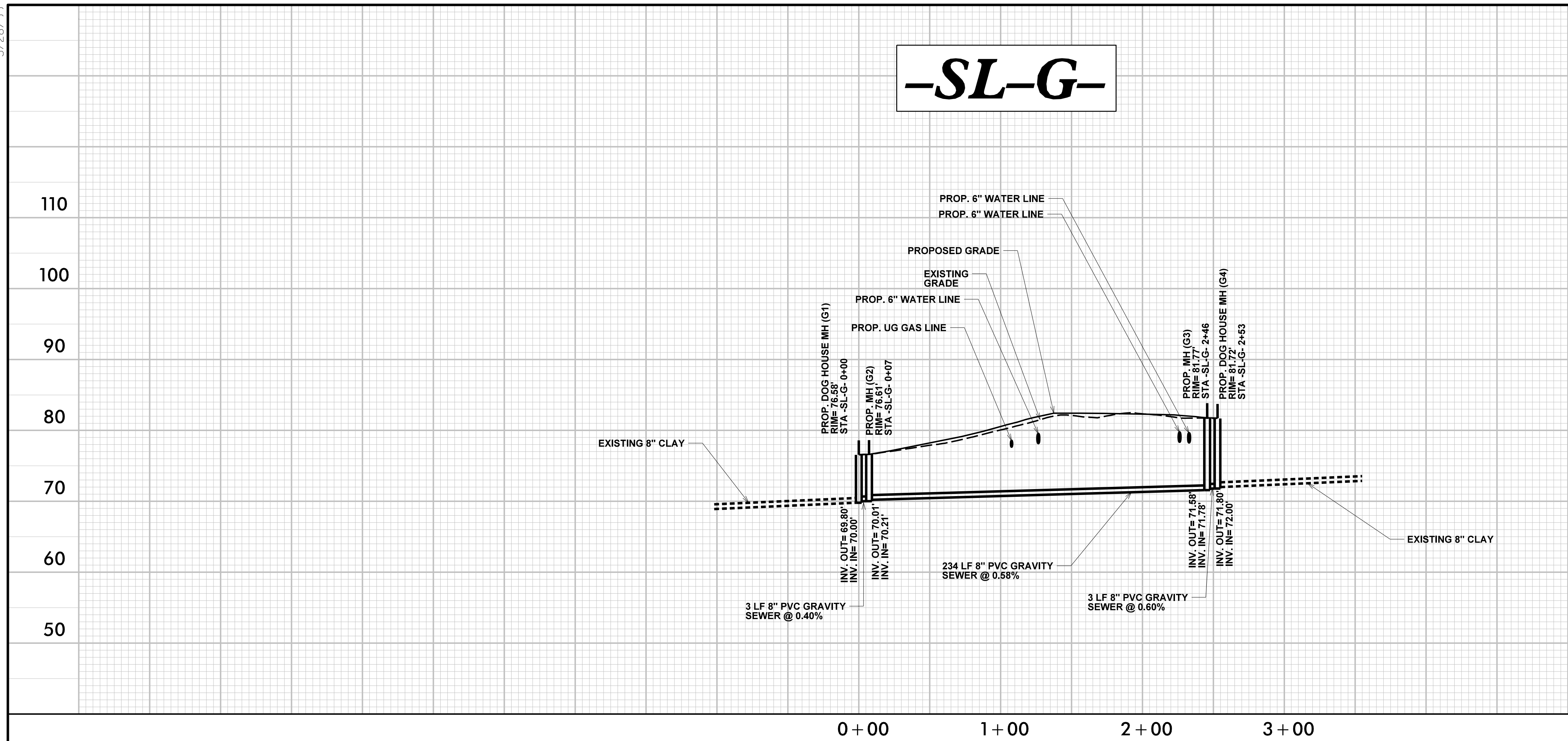


5/28/99

PROJECT REFERENCE NO. R-5020B	SHEET NO. UC-34
DESIGNED BY: MM	
DRAWN BY: SW	
CHECKED BY: MM	
APPROVED BY: MM	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS 4508 Falls of Neuse Road, Suite 400 Raleigh, NC 27609 Phone (919) 783-9214 • Fax (919) 783-9266 License No. C-764	

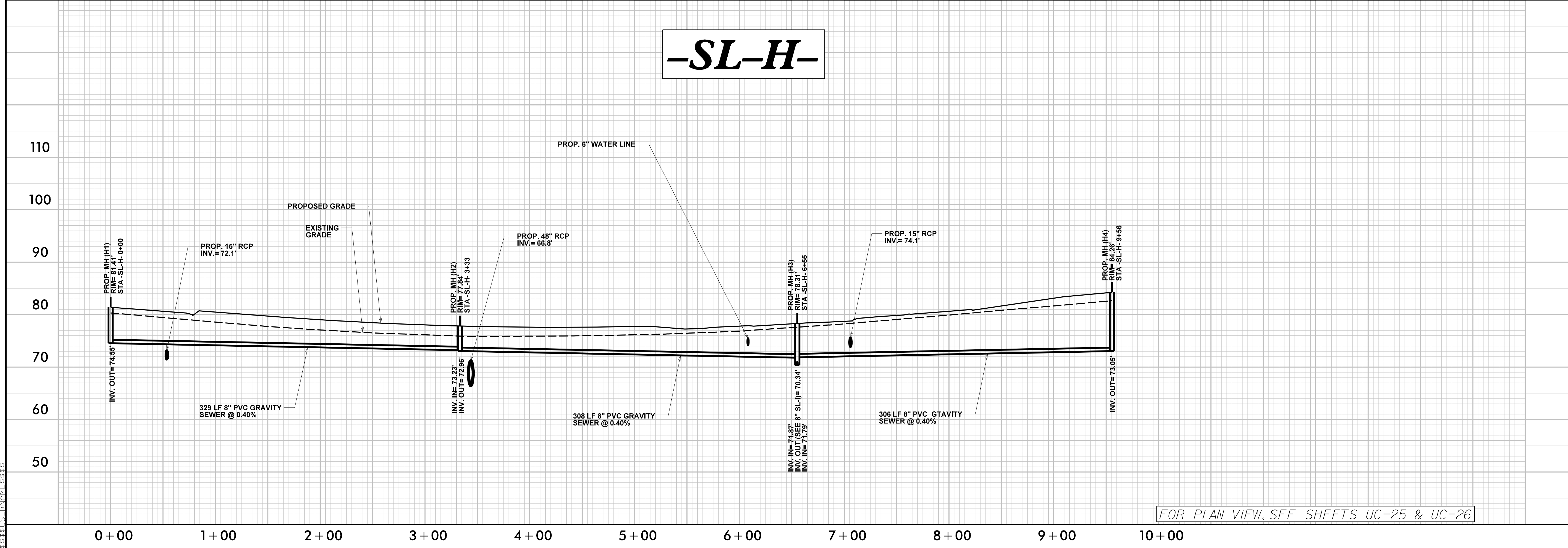
### UTILITY CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



FOR PLAN VIEW, SEE SHEET UC-25

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FOR PLAN VIEW, SEE SHEETS UC-25 & UC-26