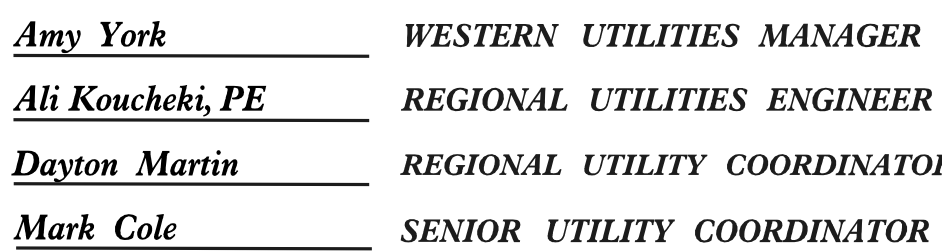


***TYPE OF WORK: UTILITY CONSTRUCTION***



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	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement Method	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

EXISTING UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Utility Pole	
Utility Pole with Base	
H-Frame Pole	
Power Transmission Line Tower	
Water Manhole	
Power Manhole	
Telephone Manhole	
Sanitary Sewer Manhole	
Hand Hole for Cable	
Power Transformer	
Telephone Pedestal	
CATV Pedestal	
Gas Valve	
Gas Meter	
Located Miscellaneous Utility Object	
Abandoned According to Utility Records	
End of Information	

*Underground Power Line	
*Underground Telephone Cable	
*Underground Telephone Conduit	
*Underground Fiber Optics Telephone Cable	
*Underground TV Cable	
*Underground Fiber Optics TV Cable	
*Underground Gas Pipeline	
Aboveground Gas Pipeline	
*Underground Water Line	
Aboveground Water Line	
*Underground Gravity Sanitary Sewer Line	
Aboveground Gravity Sanitary Sewer Line	
*Underground SS Forced Main Line	
Underground Unknown Utility Line	
SUE Test Hole	
Water Meter	
Water Valve	
Fire Hydrant	
Sanitary Sewer Cleanout	

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

BR-0096

UC-2

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
ROCKINGHAM COUNTY

UTILITY DESIGN UNIT

DESIGNED BY: DMP

DRAWN BY: DMP

CHECKED BY: DMP

APPROVED BY:

REVISED:

UTILITIES ENGINEERING SEC.  
PHONE:(919)707-6690  
FAX:(919)250-4151



# UTILITY CONSTRUCTION NOTES

## GENERAL NOTES:

1. THE PROPOSED WATER UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2024.
2. THE EXISTING WATER UTILITIES BELONG TO DAN RIVER WATER, INC.
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 AND DAN RIVER WATER, INC.
4. THE UTILITY OWNERS OWN 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 OWNERS ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNERS 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 OWNERS' REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNERS 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. UNLESS OTHERWISE NOTED, FOR PROPOSED 6" DIAMETER WATER MAINS, PIPE SHALL BE DUCTILE IRON, PC 350, AND RESTRAINED JOINT WHERE INDICATED ON PROFILES.
2. WATER LINE VALVES SHALL BE RESILIENT-SEAT GATE VALVES CONFORMING TO ANSI/AWWA C509 OR ANSI/AWWA C515, AND SHALL BE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI.
3. CONTRACTOR SHALL COORDINATE WITH THE UTILITY OWNER CONCERNING THE TIMING AND SCHEDULE OF REQUIRED SHUT-DOWNS OF ANY EXISTING WATER MAINS.

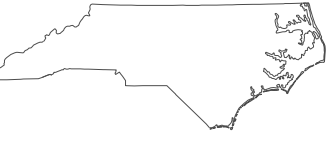
## LIST OF STANDARD DRAWINGS

- 1515.01 WATER METER
- 1515.02 FIRE HYDRANT

BR-0096

UC-3

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
WAKE COUNTY



UTILITY DESIGN UNIT  
UTILITY CONSTRUCTION  
PLANS ONLY

FINAL PLANS

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

DESIGNED BY: DMP

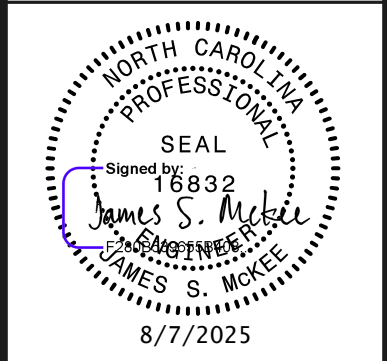
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CHECKED BY: DMP

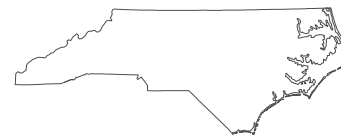
APPROVED BY:

REVISED:

UTILITIES ENGINEERING SEC.  
PHONE: (919) 707-6690  
FAX: (919) 250-4151







FINAL PLANS

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

DESIGNED BY: DMP

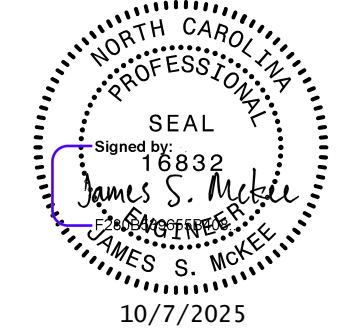
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APPROVED BY:

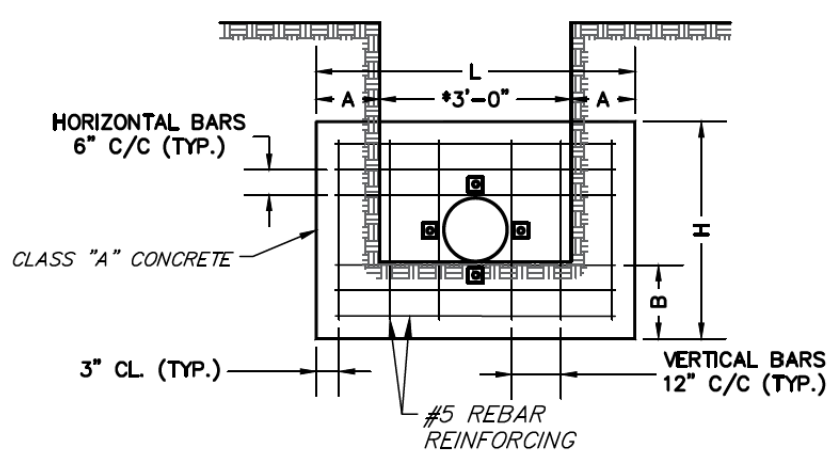
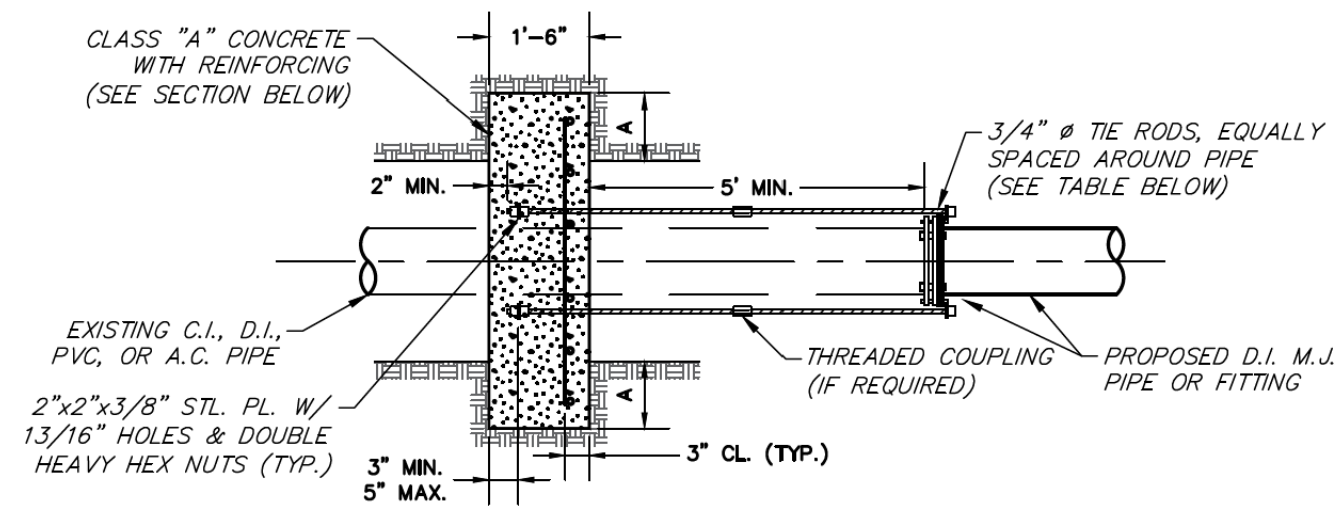
REVISED:

UTILITIES ENGINEERING SEC.  
PHONE: (919) 707-6690  
FAX: (919) 250-4151



PROJECT TYPICAL DETAILS

THRUST HARNESS FOR EXISTING PIPE



TRENCH CROSS SECTION

NOTES:

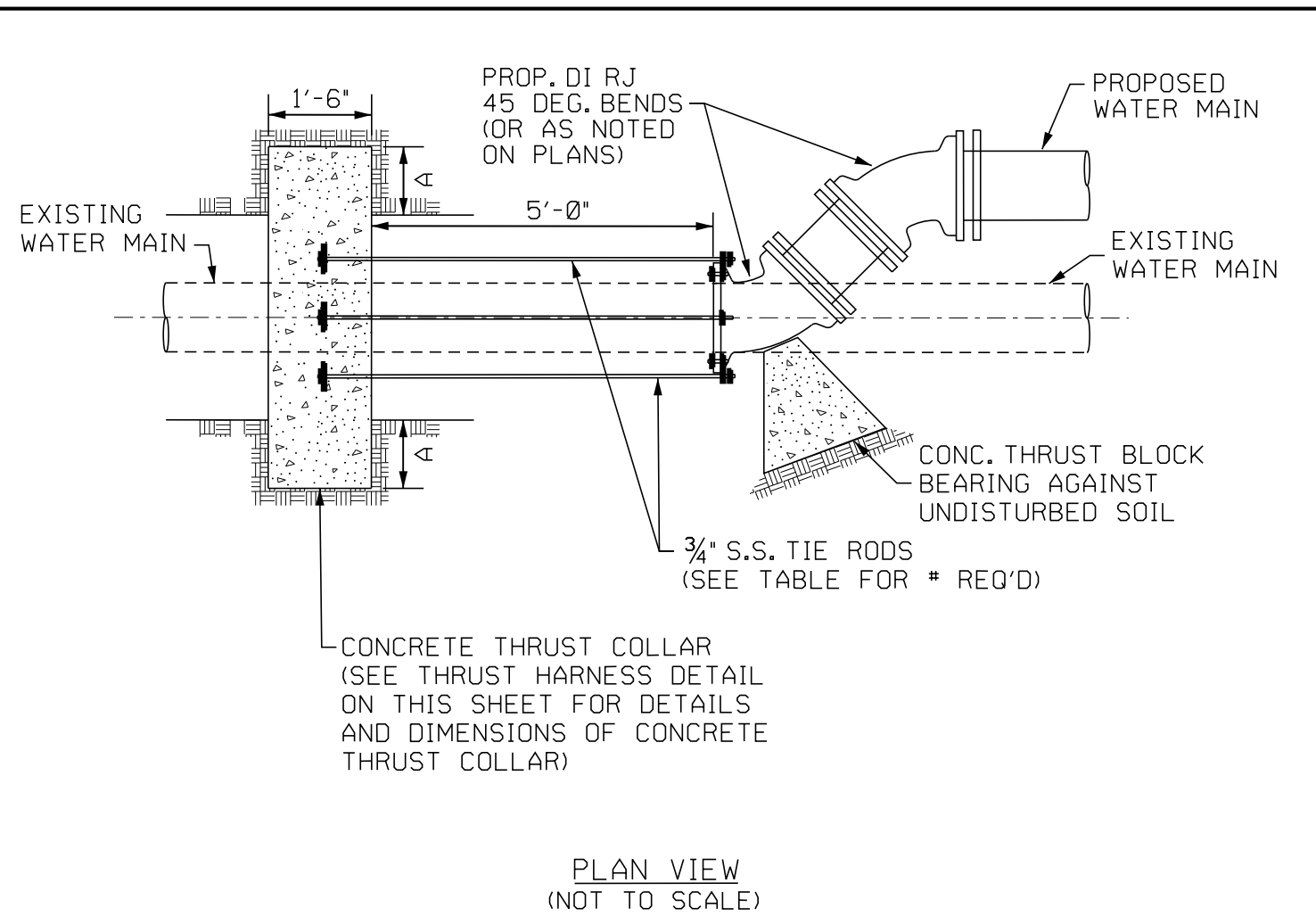
1. CONCRETE SHALL BE PLACED AND CURED THREE DAYS PRIOR TO REMOVING EXISTING PIPE OR FITTINGS.
2. INSTALL POLYETHYLENE WRAP AROUND EXISTING PIPE PRIOR TO POURING CONCRETE.
3. MAINTAIN 2" CLEAR BETWEEN ALL REBARS AND PIPE.
4. CONCRETE TO BE KEED IN TO UNDISTURBED SOIL ADJACENT TO TRENCH WALL AND BOTTOM.
5. DESIGN BASED ON MIN. SOIL BEARING OF 2000 PSF; SOFT SOIL CONDITIONS MAY REQUIRED SPECIAL DESIGN.

PIPE SIZE (INCHES)	CONCRETE DIMENSIONS (FT)			
	H	L	A	B
6	2.5	5.0	1.0	1.0
8	2.5	5.0	1.0	1.0
12	4.0	6.0	1.5	1.0
16	4.0	9.0	3.0	1.0
20	5.0	10.0	3.5	1.0
24	5.5	12.0	4.5	1.0

\*SPECIAL BLOCKING DESIGN IS  
REQUIRED FOR TRENCH WIDTHS  
THAT EXCEED THE DIMENSIONS  
SHOWN

PIPE SIZE (INCHES)	# OF RODS REQUIRED
6	2
8	2
12	4
16	6
20	8
24	12

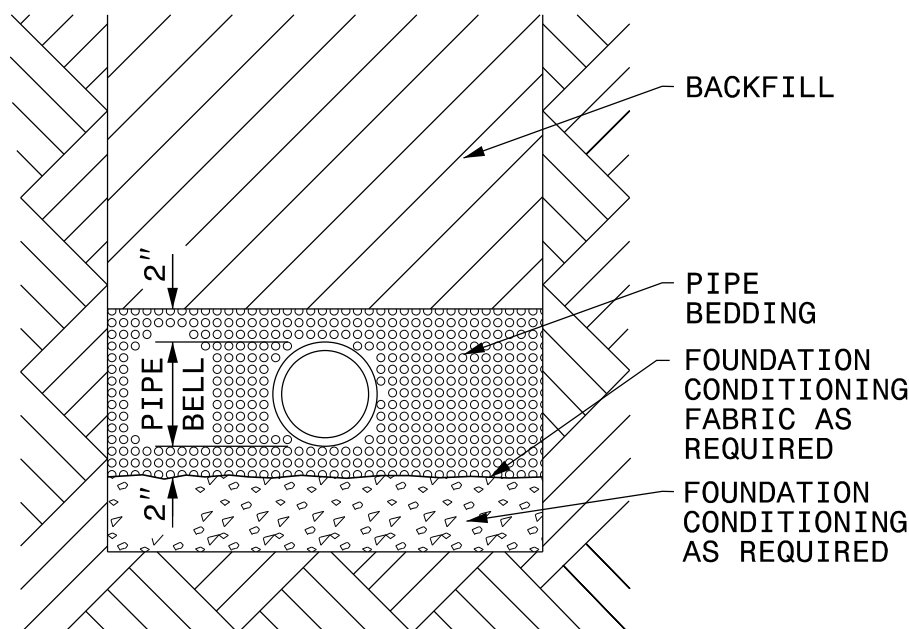
NOTE: TIE RODS, BOLTS, AND  
NUTS SHALL MEET ANSI A21.11  
(AWWA C111)



PLAN VIEW  
(NOT TO SCALE)

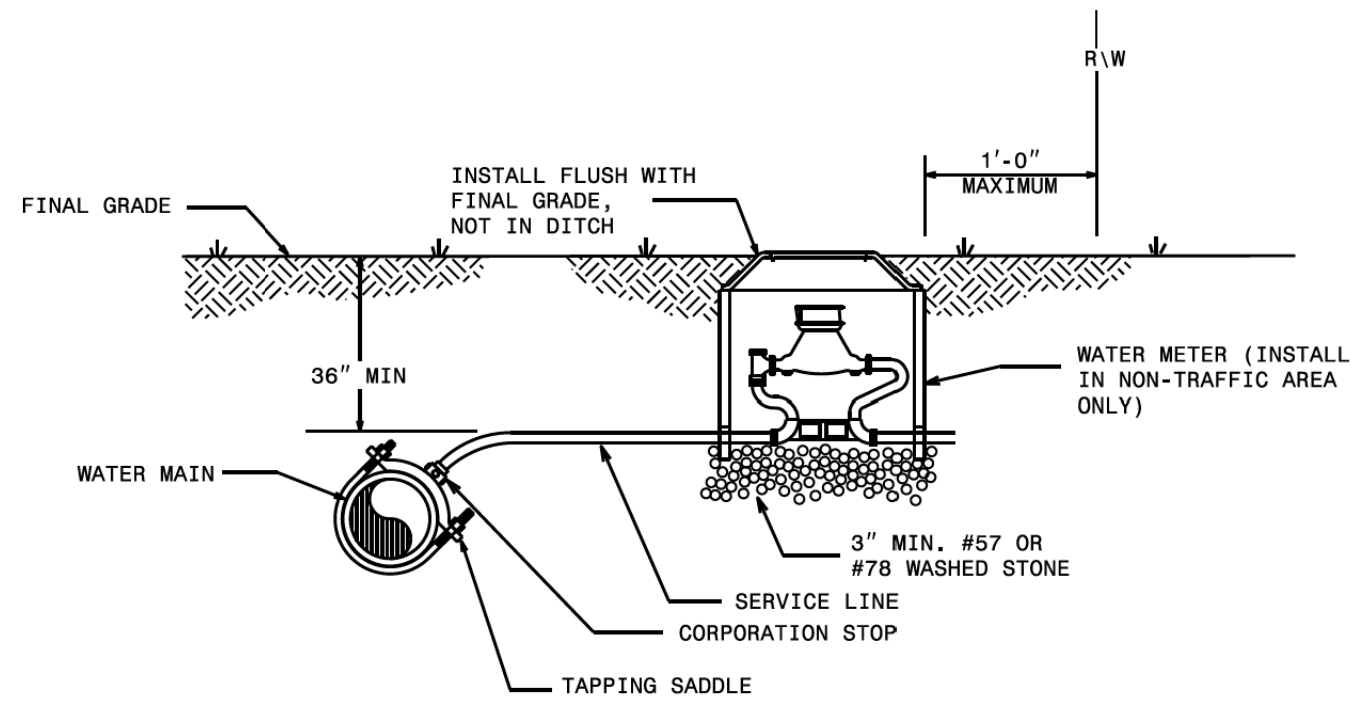
THRUST RESTRAINT FOR TYING PROPOSED  
WATER MAIN TO EXISTING WATER MAIN

TRENCH DETAIL



PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

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

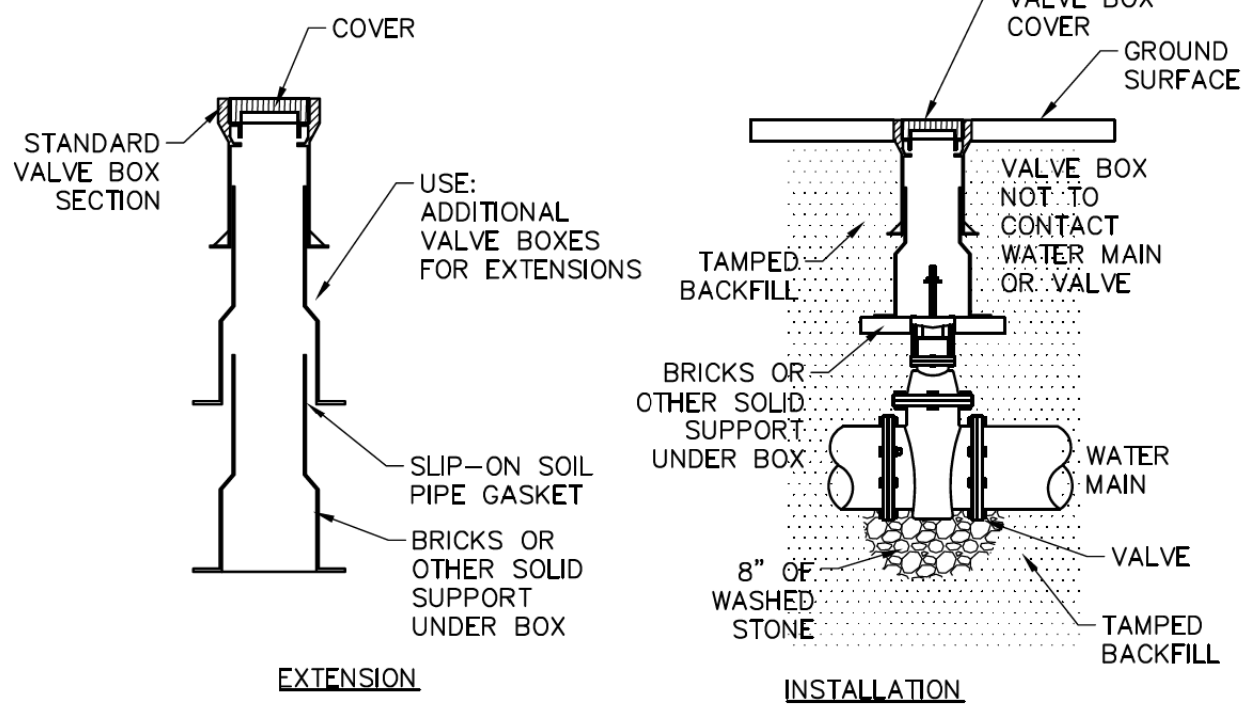
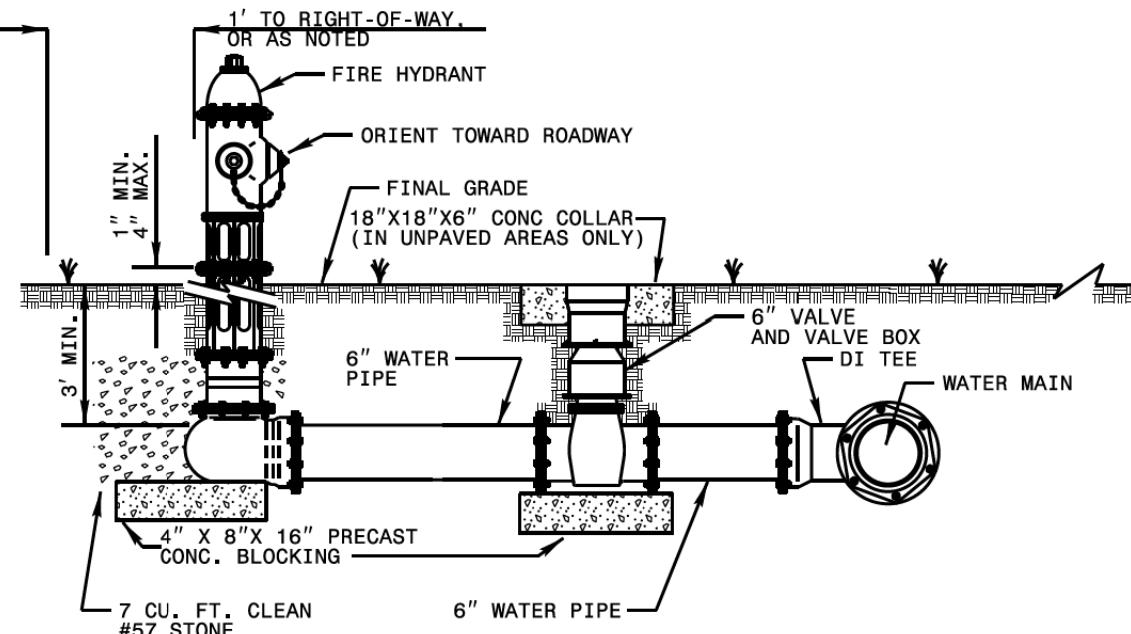


NOTES:

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.

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 D1 TEES.
9. LOCATE FIRE HYDRANT OUTSIDE OF THE VEHICLE RECOVERY AREA, ADJACENT TO THE R/W LINE, OR IN A PROTECTED AREA.



WATER SYSTEMS  
VALVE BOX INSTALLATIONS

NTS

UTILITY CONSTRUCTION PLANS PREPARED BY:

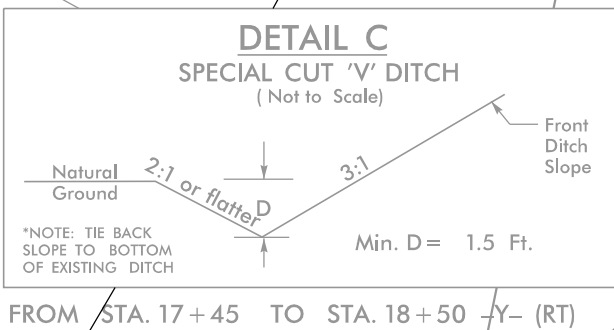
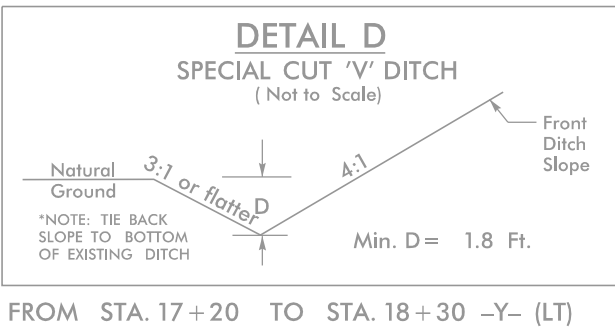
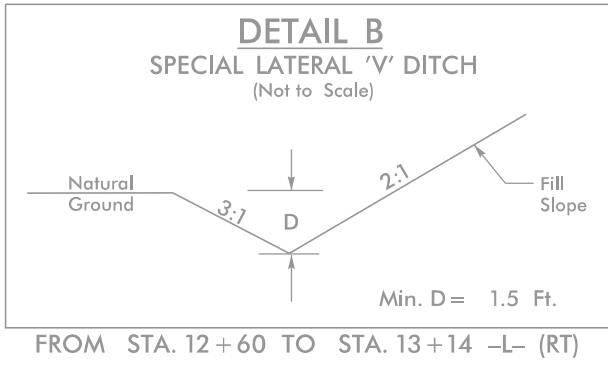
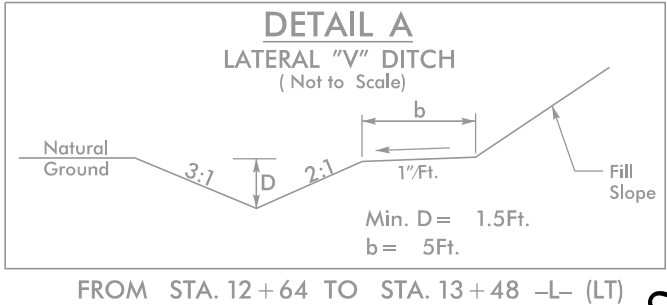
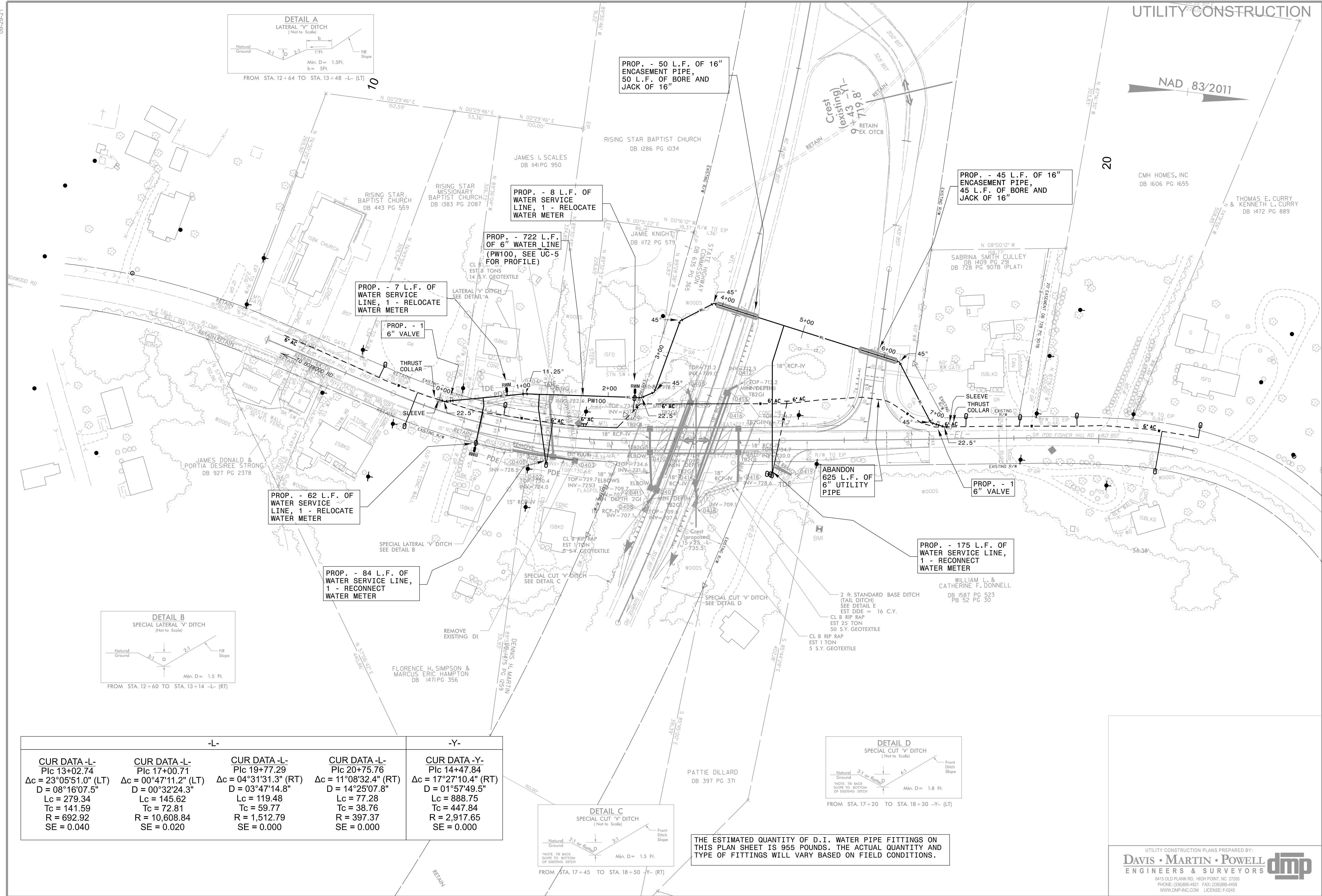
**DAVIS • MARTIN • POWELL**  
ENGINEERS & SURVEYORS



6415 OLD PLANK RD., HIGH POINT, NC 27265  
PHONE: (336) 886-4821 FAX: (336) 886-4458  
WWW.DMP-INC.COM LICENSE: F-0245

REVISIONS





-L-				-Y-
<b>CUR DATA -L-</b> P/c 13+02.74 Δc = 23°05'51.0" (LT) D = 08°16'07.5" Lc = 279.34 Tc = 141.59 R = 692.92 SE = 0.040	<b>CUR DATA -L-</b> P/c 17+00.71 Δc = 00°47'11.2" (LT) D = 00°32'24.3" Lc = 145.62 Tc = 72.81 R = 10,608.84 SE = 0.020	<b>CUR DATA -L-</b> P/c 19+77.29 Δc = 04°31'31.3" (RT) D = 03°47'14.8" Lc = 119.48 Tc = 59.77 R = 1,512.79 SE = 0.000	<b>CUR DATA -L-</b> P/c 20+75.76 Δc = 11°08'32.4" (RT) D = 14°25'07.8" Lc = 77.28 Tc = 38.76 R = 397.37 SE = 0.000	<b>CUR DATA -Y-</b> P/c 14+47.84 Δc = 17°27'10.4" (RT) D = 01°57'49.5" Lc = 888.75 Tc = 447.84 R = 2,917.65 SE = 0.000

THE ESTIMATED QUANTITY OF D.I. WATER PIPE FITTINGS ON THIS PLAN SHEET IS 955 POUNDS. THE ACTUAL QUANTITY AND TYPE OF FITTINGS WILL VARY BASED ON FIELD CONDITIONS.

## UTILITY CONSTRUCTION



**BR-0096**  
**UC-4**

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
ROCKINGHAM COUNTY

UTILITY DESIGN UNIT  
UTILITY CONSTRUCTION  
PLANS ONLY

**FINAL PLANS**  
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DESIGNED BY: DMP  
DRAWN BY: DMP  
CHECKED BY: DMP  
APPROVED BY:  
REVISED:  
UTILITIES ENGINEERING SEC.  
PHONE: (919) 707-6680  
FAX: (919) 250-4151

NORTH CAROLINA  
PROFESSIONAL  
SEAL  
Signed by:  
**James S. McKee**  
Professional Engineer  
JAMES S. MCKEE  
10/27/2025

REVISIONS

UTILITY CONSTRUCTION PLANS PREPARED BY:  
**DAVIS • MARTIN • POWELL**  
ENGINEERS & SURVEYORS **dmp**

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