

T.I.P. NO.	SHEET NO.
B-5703	UC-1

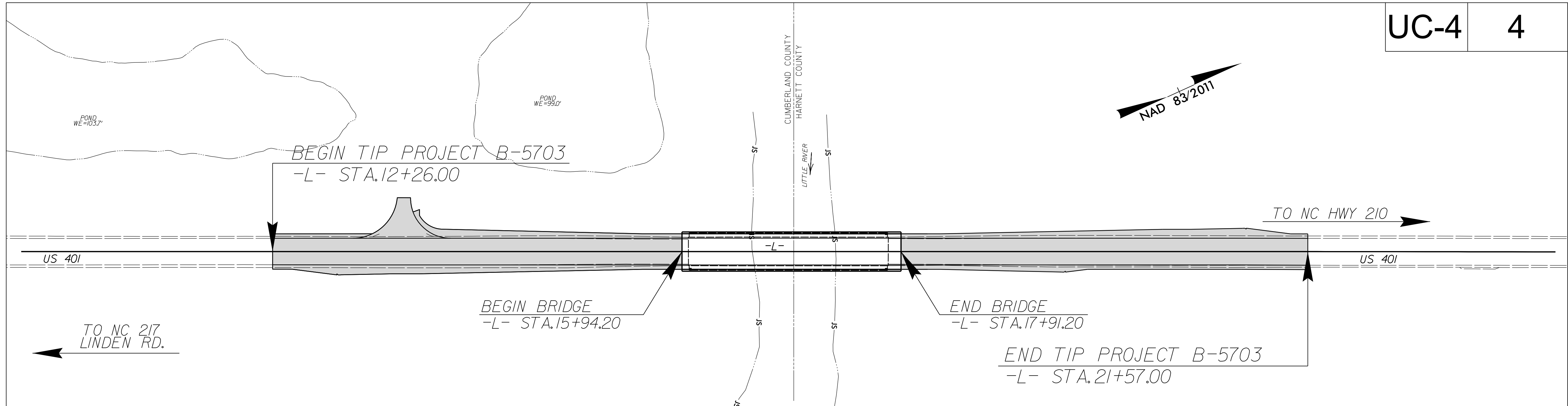
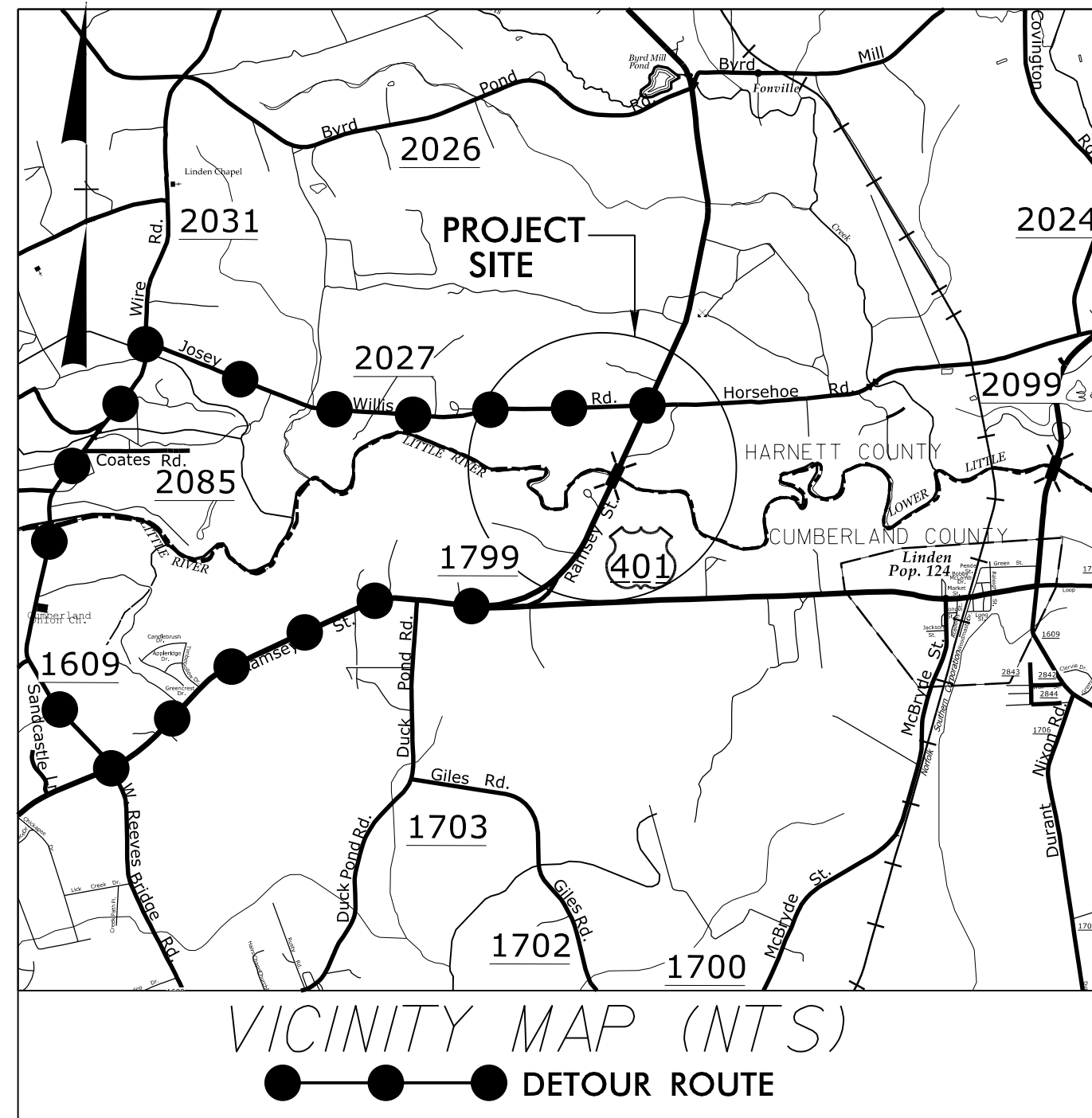
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**UTILITY CONSTRUCTION PLANS  
CUMBERLAND COUNTY**

**LOCATION: BRIDGE NO. 60 OVER LOWER LITTLE RIVER  
ON USE 401**

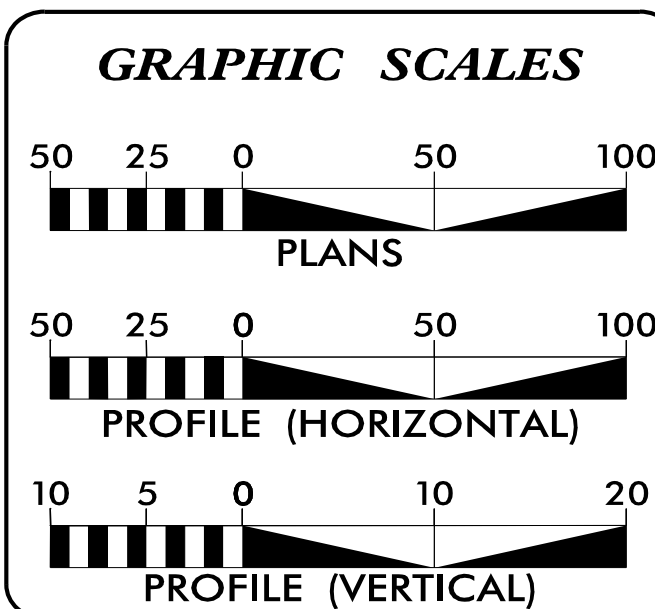
**TYPE OF WORK: WATER LINE RELOCATION**

**TIP PROJECT: B-5703**



UC-4 4

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INDEX OF SHEETS	
SHEET NO.:	DESCRIPTION:
UC-1	TITLE SHEET
UC-2	UTILITY SYMBOLOGY
UC-3	NOTES
UC-3A THRU UC-3C	DETAIL SHEETS
UC-4	UTILITY PLAN SHEET
UC-5	UTILITY PROFILE SHEET

**WATER OWNER  
ON PROJECT**

TOWN OF LINDEN  
9456 ACADEMY STREET  
POST OFFICE BOX 130  
LINDEN, NC 28356-0130


PREPARED IN THE OFFICE OF



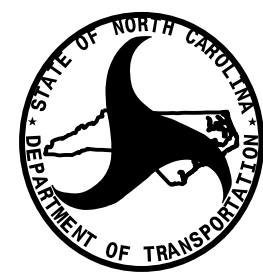
Engineers • Planners • Scientists • Construction Managers  
4505 Falls of Neuse Road, Suite 400  
Raleigh, NC 27609  
Phone (919) 783-9214 • Fax (919) 783-9266  
License No. C-764

MARCO MENENDEZ, PE PROJECT ENGINEER  
MARCO MENENDEZ, PE PROJECT MANAGER  
ANGELICA PURA PROJECT DESIGNER

SEAL



6/7/2021



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  
KYLE PLEASANT UTILITIES AREA COORDINATOR  
KELVIN MARTIN, EI UTILITIES COORDINATOR

01-MAY-2020 16:21 M:\208\256501945\13 B-5703\Water-Wastewater\B-5703\_sew\_tsh\_UC01.dgn \$\$\$\$SERVNAME\$\$\$\$

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## UTILITIES PLAN SHEET SYMBOLS

### PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	12" W.
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	GV
Butterfly Valve	BV
Tapping Valve	TGV
Line Stop	LS
Line Stop with Bypass	LS/BP
Blow Off	BO
Fire Hydrant	PFH
Relocate Fire Hydrant	RFH
Remove Fire Hydrant	REM FH
Water Meter	PWM
Relocate Water Meter	RWM
Remove Water Meter	REM WM
Water Pump Station	PS(W)
RPZ Backflow Preventer	PRPZ
DCV Backflow Preventer	PBFP
Relocate RPZ Backflow Preventer	RRPZ
Relocate DCV Backflow Preventer	RBFP

### PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	TEL PED
Utility Line by Others (Type as Shown)	PROP O/H POW LINES
Trenchless Installation	12" TL INSTALL
Encasement by Open Cut	24" ENCAS. BY OC
Encasement	24" ENCASUREMENT

Thrust Block	
Air Release Valve	AR
Utility Vault	UV
Concrete Pier	CP
Steel Pier	SP
Plan Note	
Pay Item Note	

NOTE  
PAY ITEM

### 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	A/G Gas
Power Manhole		*Underground Water Line	
Telephone Manhole		Aboveground Water Line	A/G Water
Sanitary Sewer Manhole		*Underground Gravity Sanitary Sewer Line	SS
Hand Hole for Cable		Aboveground Gravity Sanitary Sewer Line	A/G Sanitary Sewer
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



# UTILITY CONSTRUCTION

## GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.
2. THE EXISTING UTILITIES BELONG TO TOWN OF LINDEN. HARNETT REGIONAL WATER OPERATES AND MAINTAINS THE WATER SYSTEM FOR THE TOWN OF LINDEN.
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. A PRECONSTRUCTION MEETING WILL BE HELD. CONTRACTOR SHALL ENSURE THAT HARNETT REGIONAL WATER IS INVITED TO THIS MEETING.
6. 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.

7. 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.
8. 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.
9. 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.
10. 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'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.
2. THE HDPE PIPE, INSTALLED BY DIRECTIONAL DRILL, SHALL BE FILLED WITH WATER AND NOT BE CONNECTED TO ANY OTHER PIPE OR FITTINGS FOR SEVEN DAYS FROM THE TIME OF INSTALLATION.
3. CONTRACTOR SHALL SUBMIT FIELD REPORTS TO HARNETT REGIONAL WATER AFTER EACH INSPECTION IS MADE.
4. ANY AND ALL FIELD CHANGE ORDERS DURING CONSTRUCTION SHALL BE PROPERLY DOCUMENTED IN 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.
5. ALL PROPOSED OPEN CUT WATER PIPING SHALL BE CLASS 50 DIP. ALL PROPOSED HORIZONTAL DIRECTIONAL DRILLING PIPING SHALL BE DR 9 HDPE.
6. ALL PIPE JOINTS AT FITTINGS AND VALVES SHALL BE RESTRAINED WITH RESTRAINED JOINTS AND THRUST BLOCKING. SEE DETAIL W-7 ON SHEET UC-3B FOR THRUST BLOCKING.
7. CONTRACTOR SHALL ENSURE THAT WATER LINES SHUTDOWN PERIOD IS APPROVED BY HARNETT REGIONAL WATER.
8. PIPING FOR HORIZONTAL DIRECTIONAL DRILLING SHALL BE SIZED SUCH THAT THE INTERNAL DIAMETER IS GREATER THAN OR EQUAL TO 12".
9. FINAL CONNECTIONS TO THE NEW MAIN SHALL BE IN ACCORDANCE WITH THE HARNETT REGIONAL WATER STANDARDS AND AWWA STANDARD C651-05 FOR FINAL CONNECTIONS.
10. CONTRACTOR SHALL COORDINATE WITH HARNETT REGIONAL WATER TO CLOSE ISOLATION VALVES DURING THE SHUTDOWN PERIOD.

PROJECT REFERENCE NO. <b>B-5703</b>	SHEET NO. <b>UC-3</b>
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	
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**

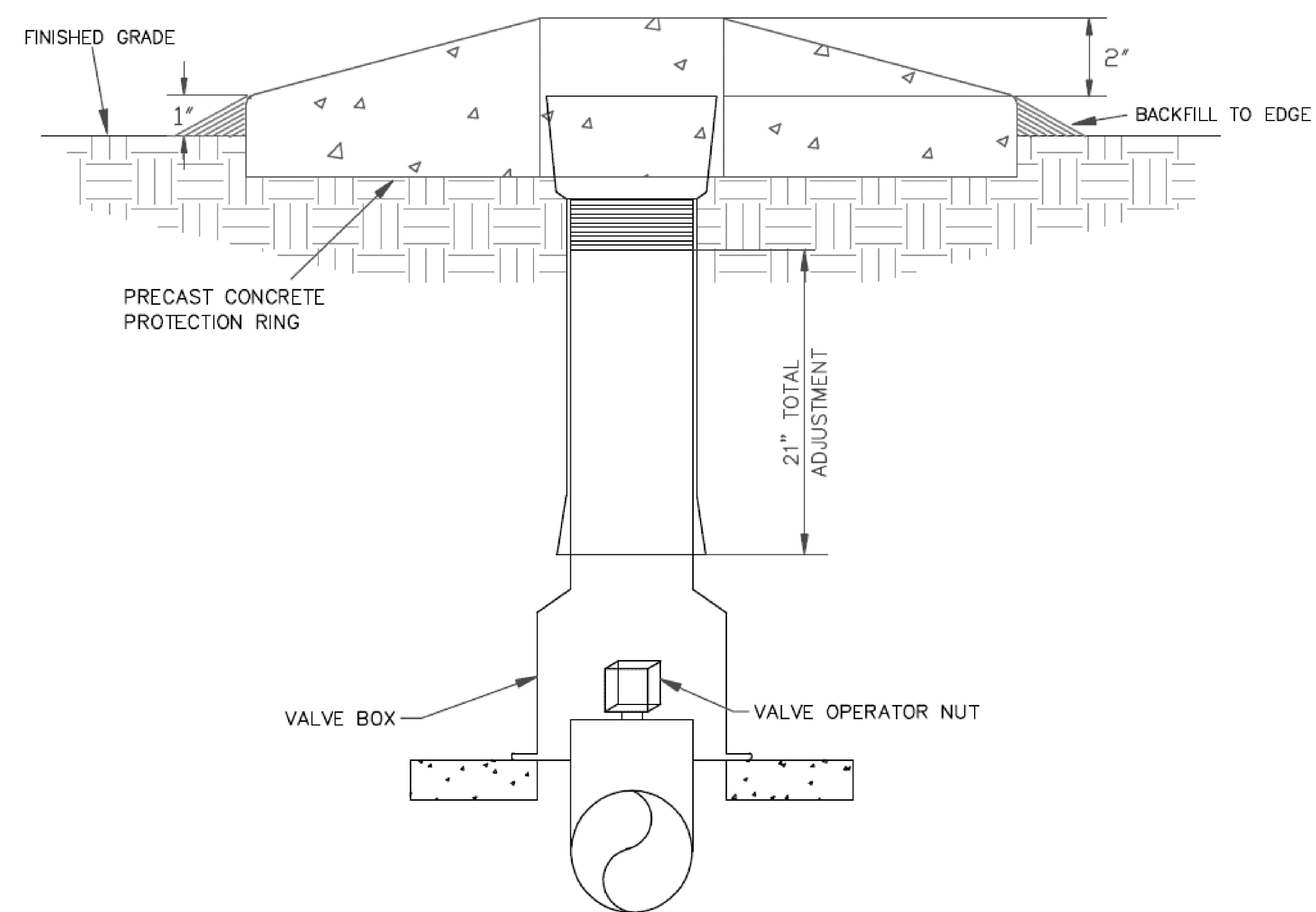
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11. CONTRACTOR SHALL REMOVE EXISTING 12" WATER LINE, AS NECESSARY TO CONNECT PROPOSED 12" WATER LINE.
12. ALL PROPOSED HDPE OR FUSIBLE PVC PIPING JOINTS SHALL BE RESTRAINED BY BUTT FUSION.
13. ALL PROPOSED DUCTILE IRON PIPING JOINTS SHALL BE RESTRAINED.
14. ALL PROPOSED PIPING SHALL BE INSTALLED BY OPEN CUT METHOD OR HORIZONTAL DIRECTIONAL DRILLING AS SHOWN ON THE PLANS.

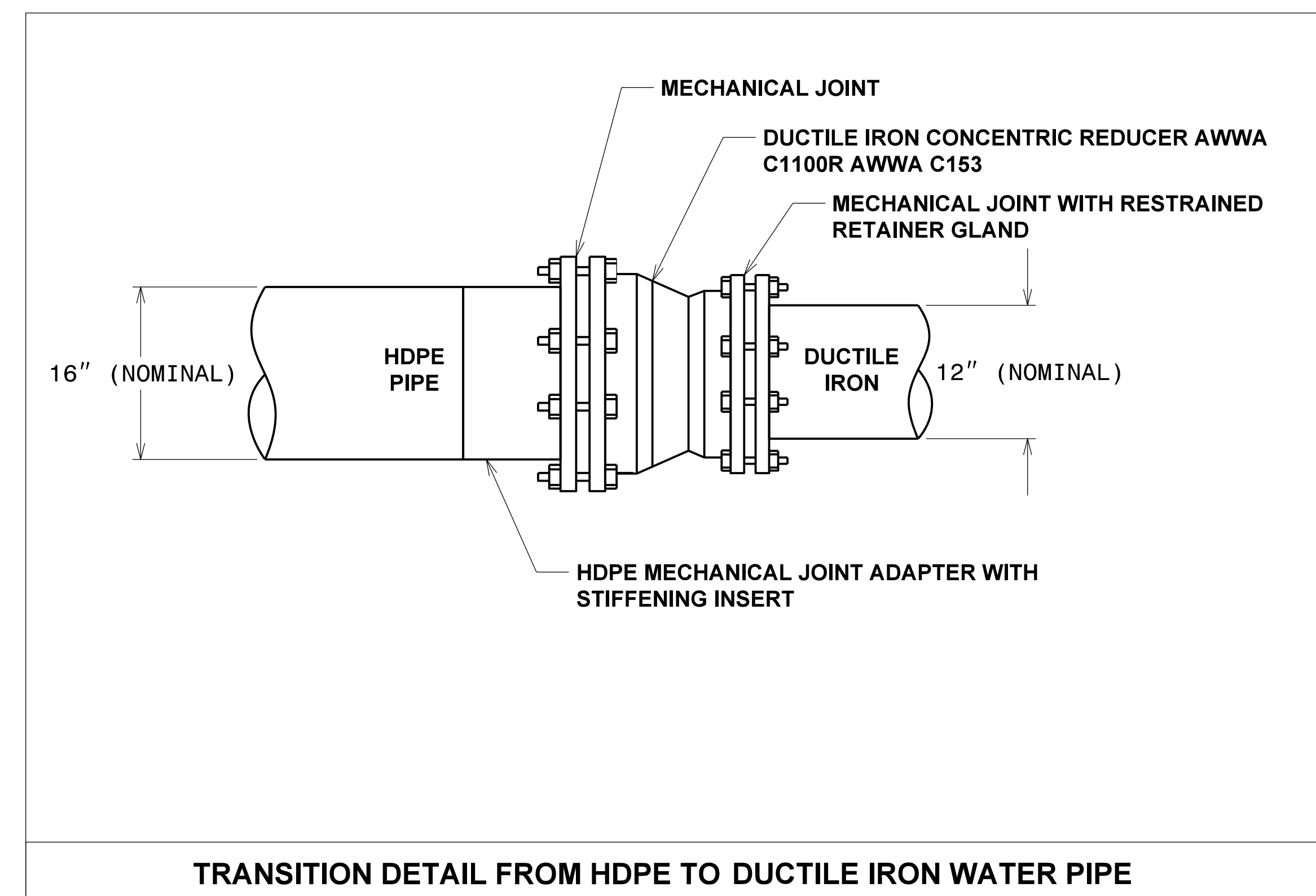
PROJECT REFERENCE NO. B-5703	SHEET NO. UC-3A
DESIGNED BY: MM	
DRAWN BY: AP	
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APPROVED BY:	
REVISED:	
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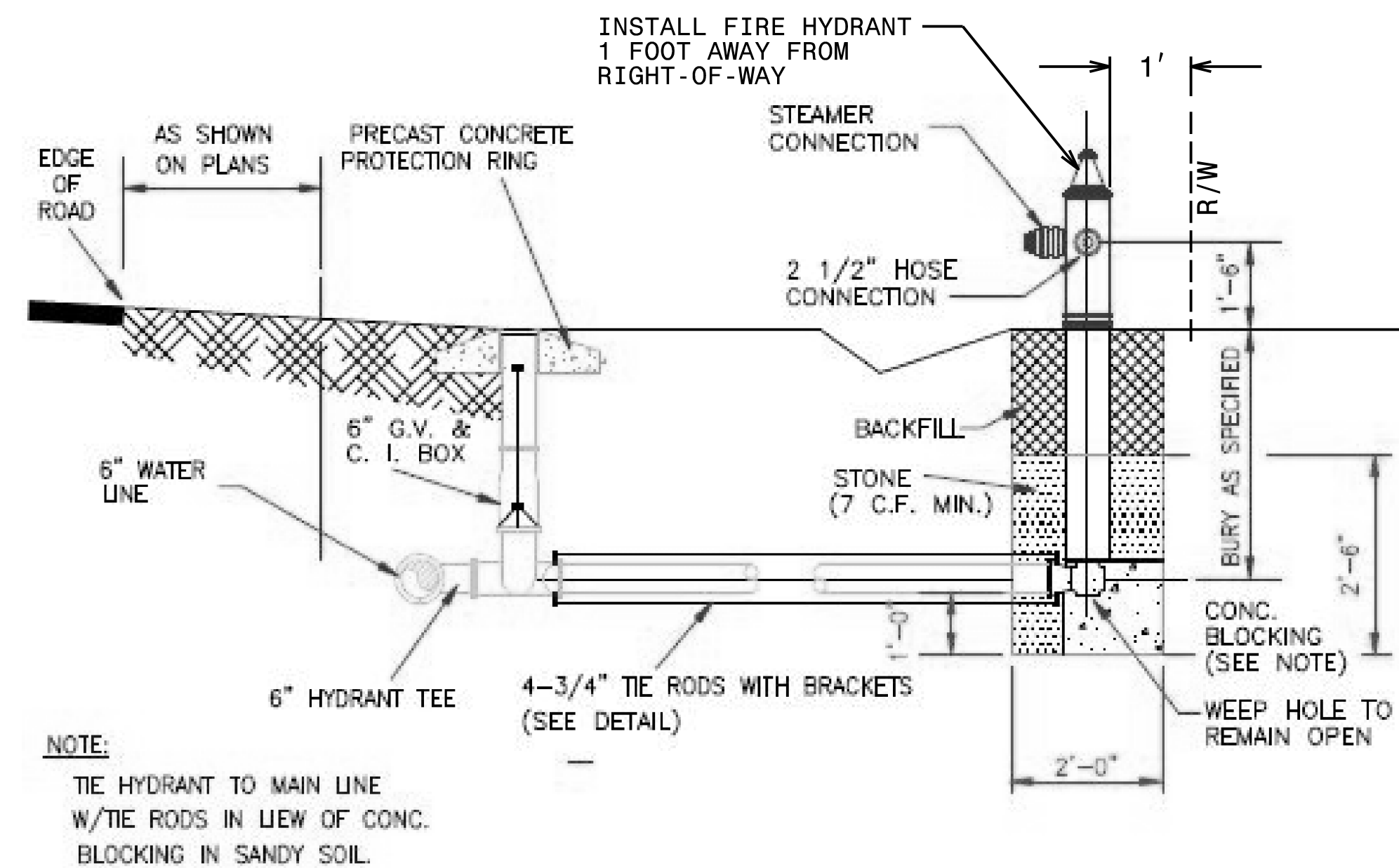
TYPICAL VALVE BOX DETAIL (W 2)  
NO SCALE



TRANSITION DETAIL FROM HDPE TO DUCTILE IRON WATER PIPE



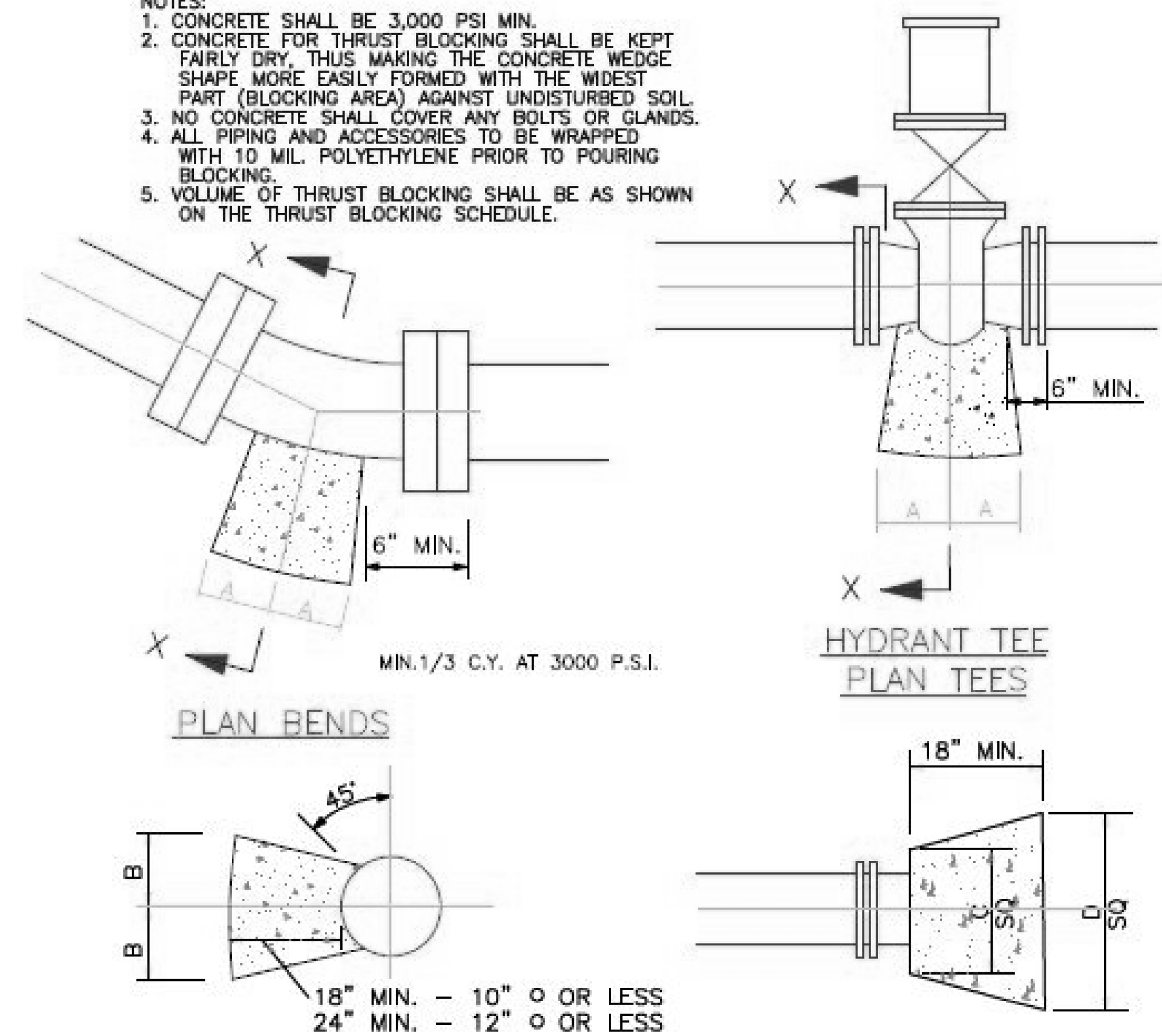
PROJECT REFERENCE NO. B-5703	SHEET NO. UC-3B
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NOTE:  
TIE HYDRANT TO MAIN LINE  
W/TIE RODS IN LIEU OF CONC.  
BLOCKING IN SANDY SOIL.

TYPICAL FIRE HYDRANT INSTALLATION DETAIL W  
NO SCALE 6

- NOTES:
1. CONCRETE SHALL BE 3,000 PSI MIN.
  2. CONCRETE FOR THRUST BLOCKING SHALL BE KEPT FAIRLY DRY, THUS MAKING THE CONCRETE WEDGE SHAPE MORE EASILY FORMED WITH THE WIDEST PART (BLOCKING AREA) AGAINST UNDISTURBED SOIL.
  3. NO CONCRETE SHALL COVER ANY BOLTS OR GLANDS.
  4. ALL PIPING AND ACCESSORIES TO BE WRAPPED WITH 10 MIL. POLYETHYLENE PRIOR TO POURING BLOCKING.
  5. VOLUME OF THRUST BLOCKING SHALL BE AS SHOWN ON THE THRUST BLOCKING SCHEDULE.



PIPE SIZE	90° BEND		45° BEND		22 1/2° BEND		11/4° BEND		TEE		PLUG	
	A	B	A	B	A	B	A	B	A	B	C	D
4"	8"	12"	8"	8"	6"	6"	6"	6"	8"	9"	10"	16"
6"	10"	12"	8"	10"	8"	8"	8"	8"	10"	10"	12"	18"
8"	15"	13"	10"	10"	8"	8"	8"	8"	10"	12"	12"	24"
10"	16"	14"	10"	12"	6"	10"	6"	10"	11"	14"	14"	25"
12"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
14"	22"	18"	14"	16"	10"	14"	10"	14"	16"	18"	18"	34"
16"	26"	20"	16"	18"	12"	16"	12"	16"	18"	20"	20"	36"

For the dimensions in the table above, it is assumed that the soil bearing is 4,000 lbs. per square foot. If the actual soil bearing value is less than 4,000 lbs. per square foot, the Contractor will be required to provide thrust block calculations for approval and to increase the thrust block dimensions as required based on the calculations.

TYPICAL THRUST BLOCK DETAIL W  
NO SCALE 7

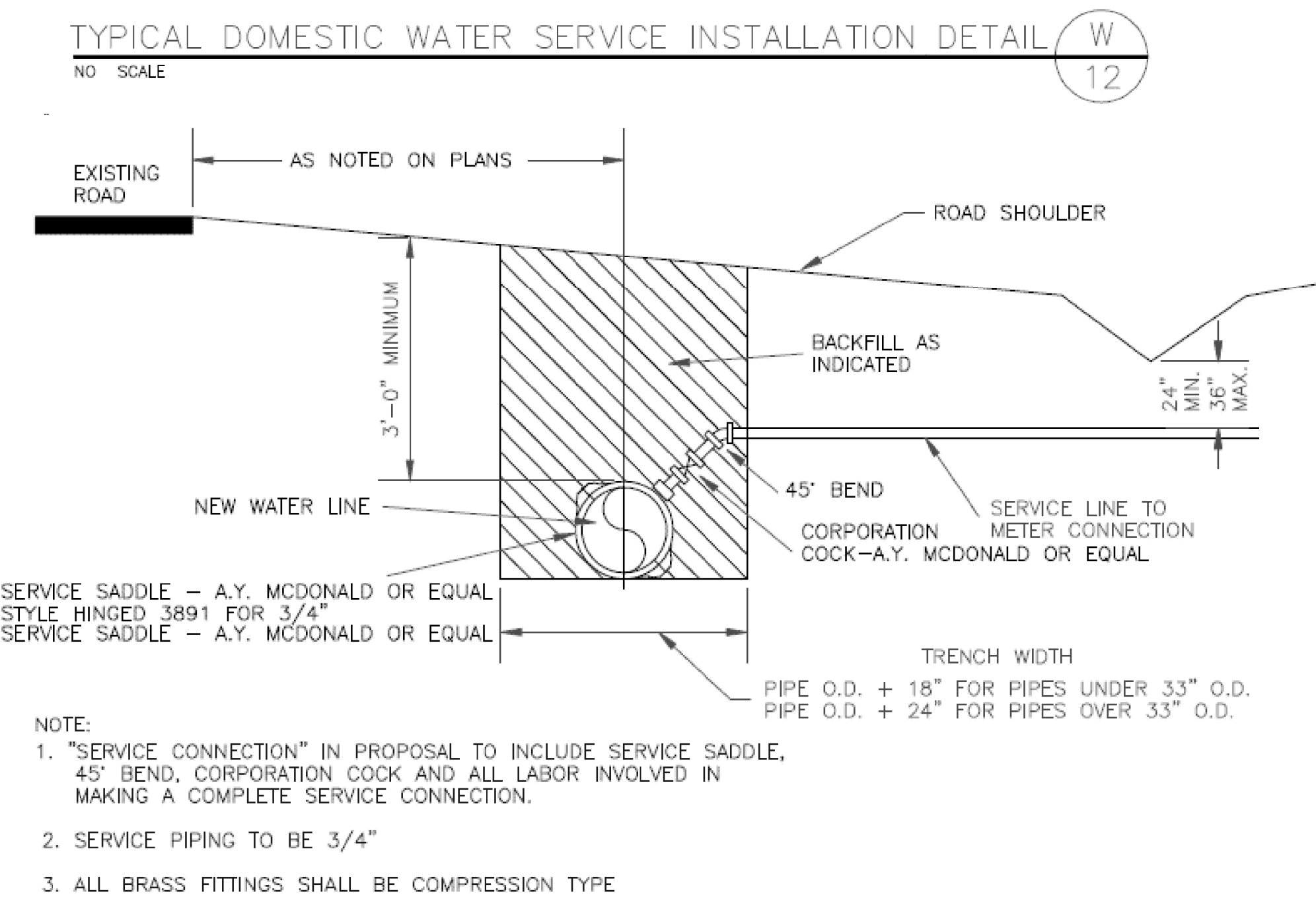
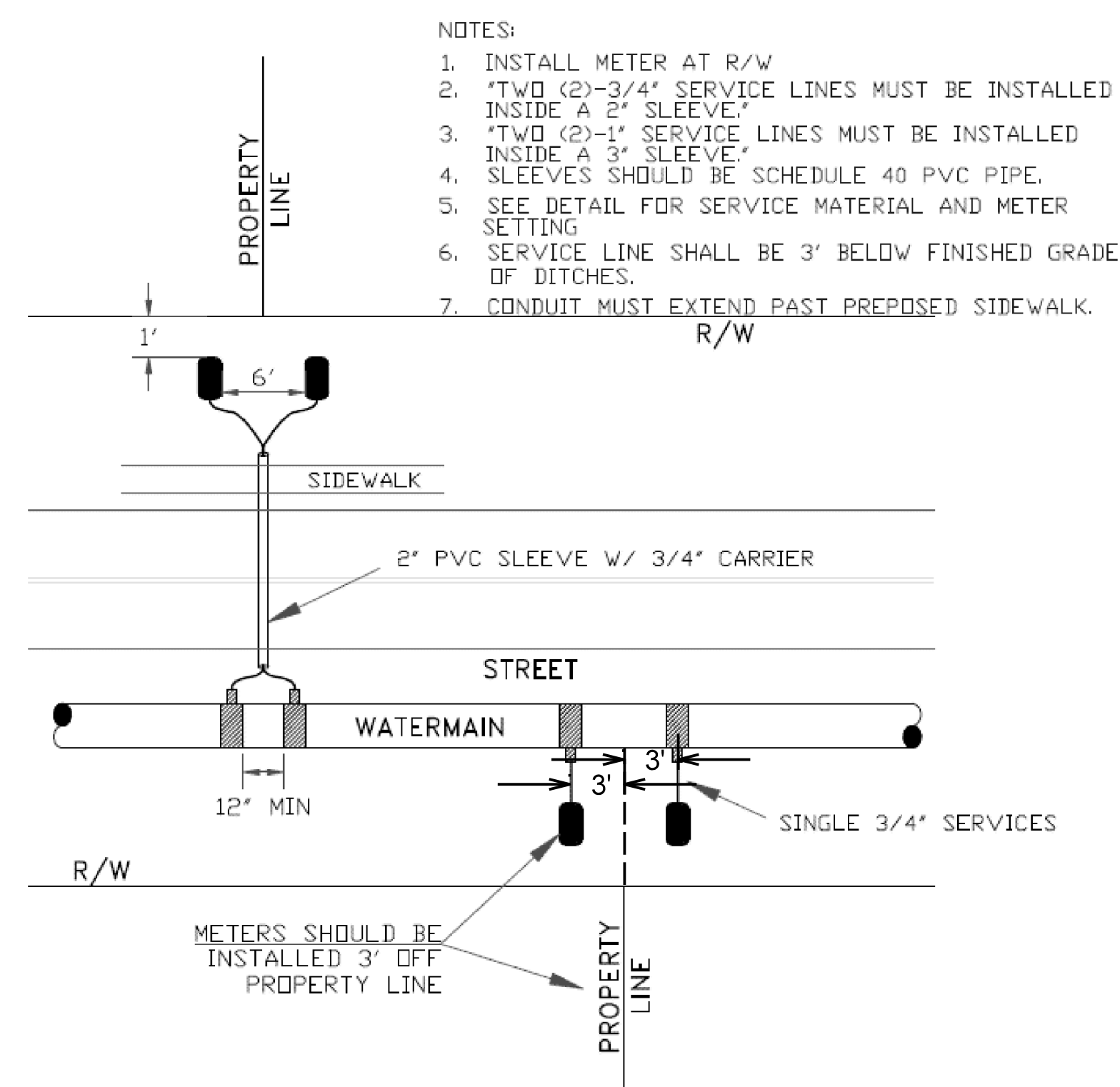
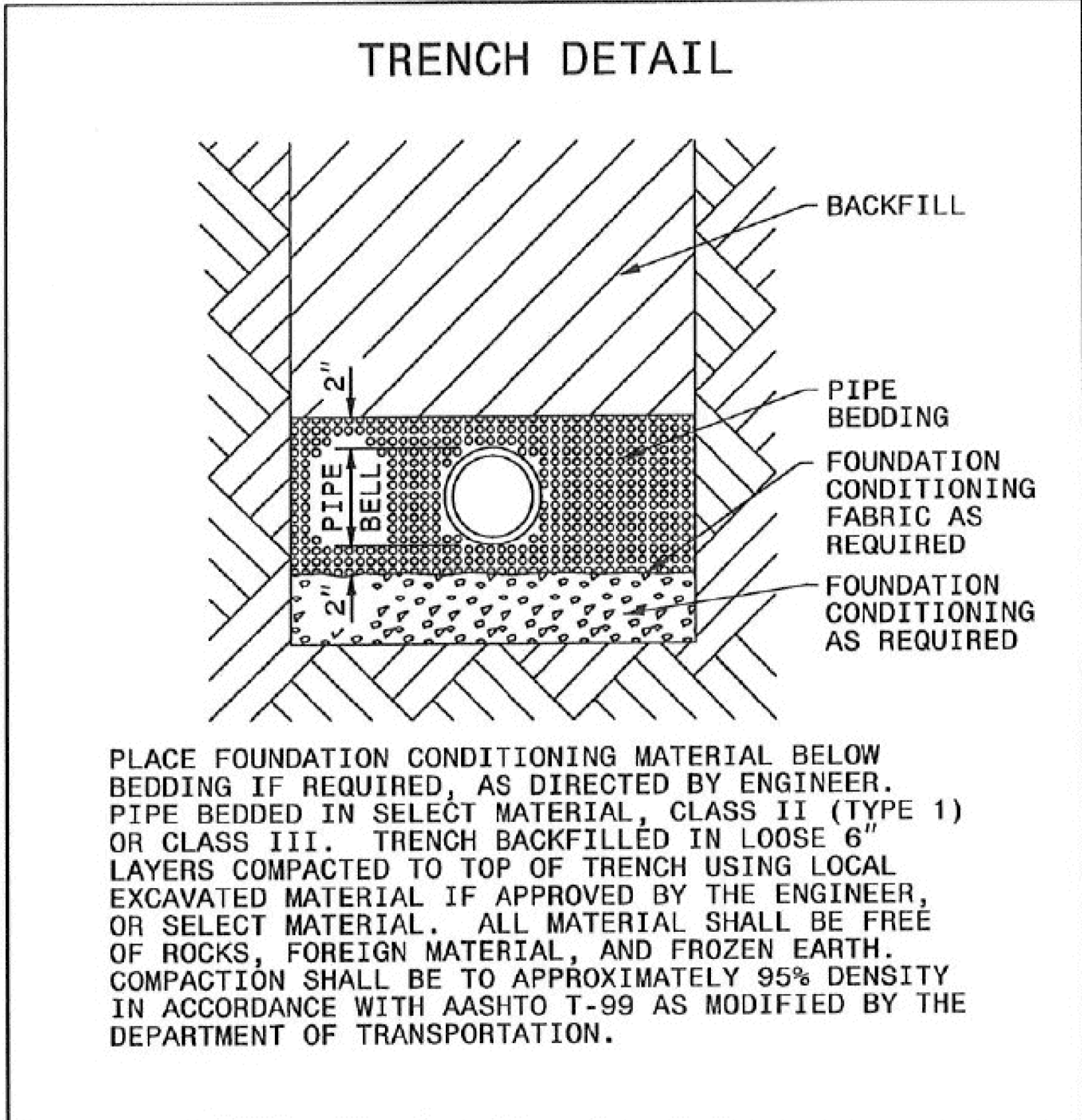
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- NOTE:
- "SERVICE CONNECTION" IN PROPOSAL TO INCLUDE SERVICE SADDLE, 45° BEND, CORPORATION COCK AND ALL LABOR INVOLVED IN MAKING A COMPLETE SERVICE CONNECTION.
  - SERVICE PIPING TO BE 3/4"
  - ALL BRASS FITTINGS SHALL BE COMPRESSION TYPE

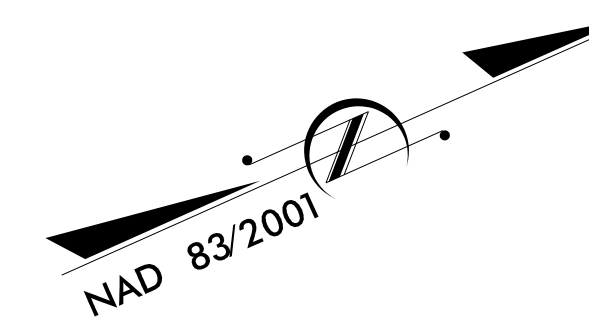


PROJECT REFERENCE NO.	SHEET NO.
B-5703	UC-4
DESIGNED BY: MM	
DRAWN BY: AP	
CHECKED BY: MM	
APPROVED BY:	
REVISED:	
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TIE-IN CONSTRUCTION SEQUENCE

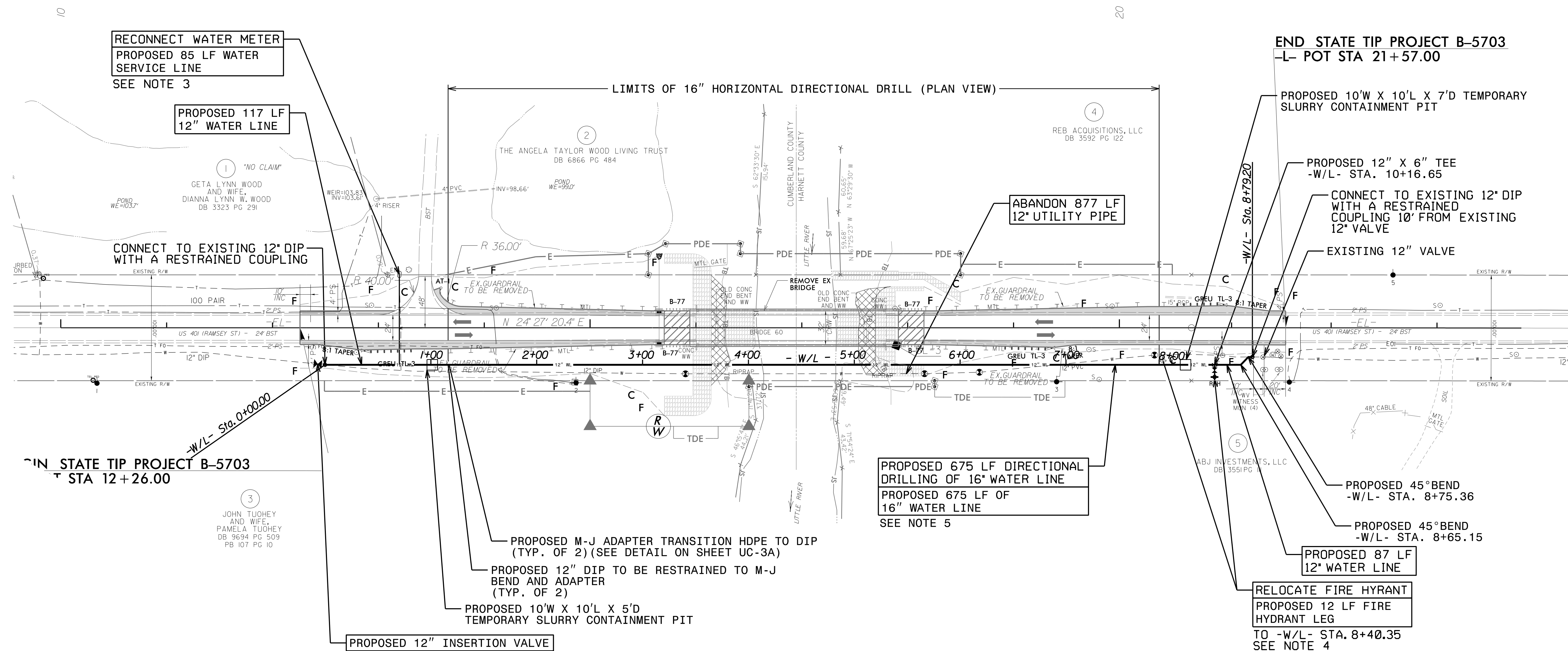
1. PERFORM HORIZONTAL DIRECTIONAL DRILLING (HDD) CONSTRUCTION AS SHOWN. ALLOW HDPE TO SIT FOR 7 DAYS FOLLOWING HDD CONSTRUCTION.
2. BEGIN OPEN CUT CONSTRUCTION NEAR END OF HDD, AND CONNECT WITH HDPE PIPING AS SHOWN.
3. INSTALL INSERTION VALVE ON SOUTH END OF PROJECT WHERE SHOWN. COORDINATE WITH HARNETT REGIONAL WATER TO CLOSE INSERTION VALVE (SOUTH END) AND VALVE(S) AT METER BOX (NORTH END), TO ISOLATE WATER LINE CONNECTION POINTS.
4. MAKE FINAL CONNECTIONS TO EXISTING DI PIPING AS SHOWN.

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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NOTE: THIS SHEET CORRESPONDS WITH SHEET RDY-4 OF THE ROADWAY PLANS.



END STATE TIP PROJECT B-5703  
 STA 12+26.00

END STATE TIP PROJECT B-5703  
 -L- POT STA 21+57.00

PROPOSED 675 LF DIRECTIONAL DRILLING OF 16" WATER LINE  
 PROPOSED 675 LF OF 16" WATER LINE  
 SEE NOTE 5

PROPOSED 12" INSERTION VALVE  
 INSTALL 5' FROM PROPOSED CONNECTION. INSTALL VALVE BOX AS SHOWN ON DETAIL UC-3A. INSTALL BREAKABLE VALVE MARKER OUTSIDE OF RECOVERY ZONE.

NOTES:

1. APPROXIMATE COORDINATES OF HDD PIPE ENTRY ARE N550255.4377, E2066491.1753.
2. APPROXIMATE COORDINATES OF HDD PIPE EXIT ARE N550894.0550, E2066780.7555.
3. INSTALL 1" SERVICE LINE IN SLEEVE (SEE SHEET UC-3B). CONTRACTOR SHALL INSTALL A TEMPORARY SERVICE LINE FOR THE EXISTING CUSTOMER DURING CONSTRUCTION. THE TEMPORARY SERVICE SHALL REMAIN IN PLACE UNTIL PIPE TESTING HAS PASSED. ENGINEER CERTIFIES THE MAIN AS-BUILTS ARE PROVIDED AND NCDEQ ISSUES FINAL APPROVAL.
4. FIRE HYDRANTS ARE INSTALLED AT CERTAIN ELEVATIONS. ANY GRADE CHANGE IN THE VICINITY OF ANY FIRE HYDRANT WHICH IMPEDES ITS OPERATION SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE PROPOSED HDPE PIPE SHALL BE DR9 16" (NOMINAL). THIS PIPE HAS AN OUTSIDE DAIMETER OF 17.4".



PROPOSED 1,365 POUNDS OF DUCTILE IRON WATER PIPE FITTINGS

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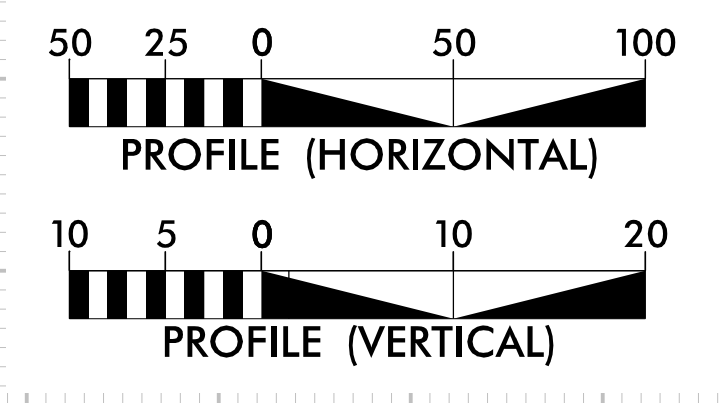
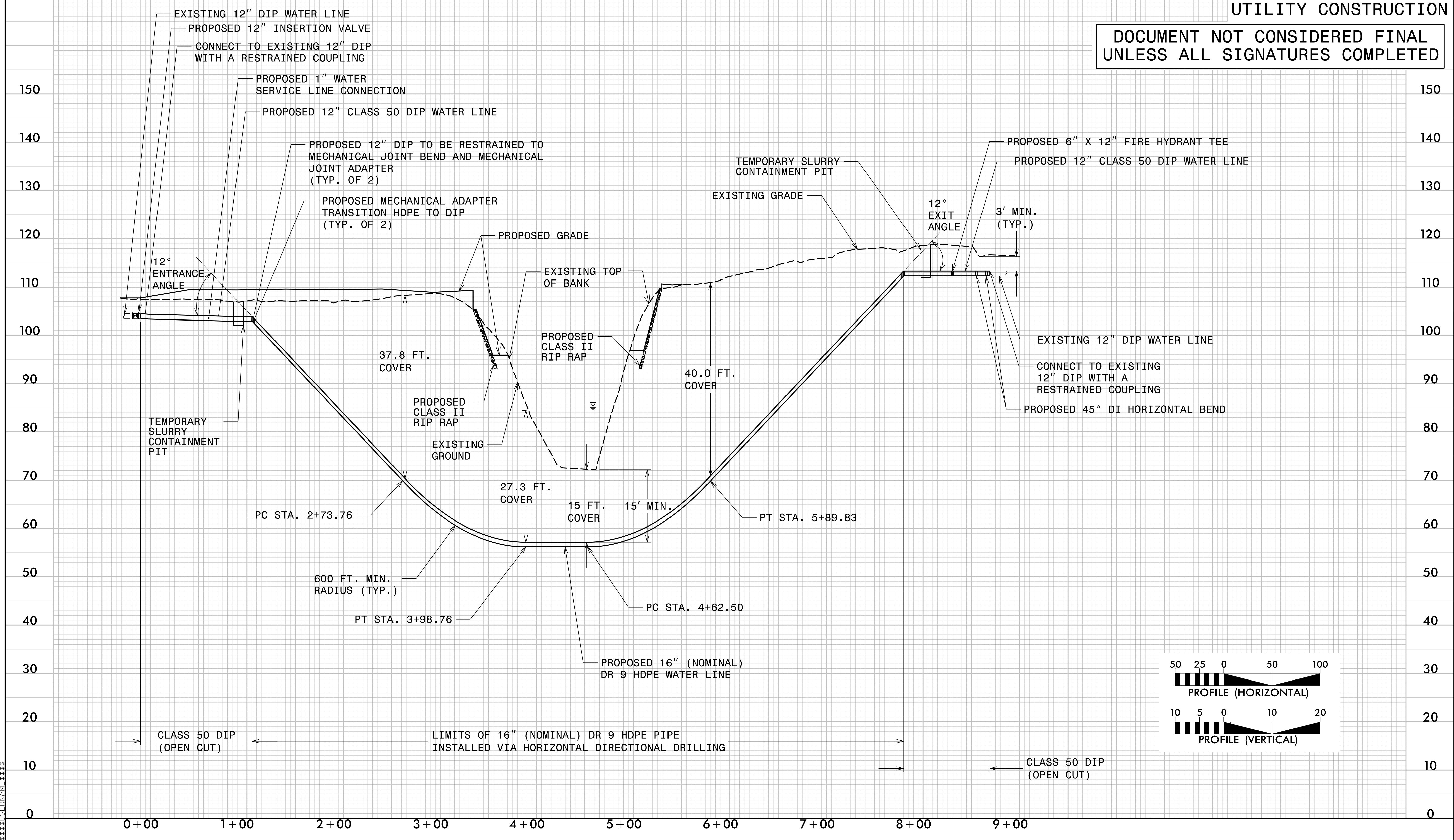
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PROJECT REFERENCE NO. <b>B-5703</b>	SHEET NO. <b>UC-5</b>
DESIGNED BY: <b>MM</b>	
DRAWN BY: <b>AP</b>	
CHECKED BY: <b>MM</b>	
APPROVED BY: <b>MM</b>	
REVISD:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 6/7/2021	
UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	UTILITY CONSTRUCTION PLANS ONLY
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**-W/L-**

**UTILITY CONSTRUCTION**

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