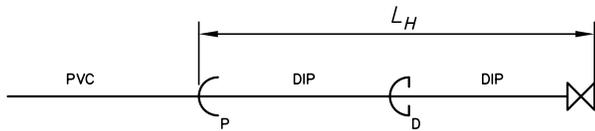
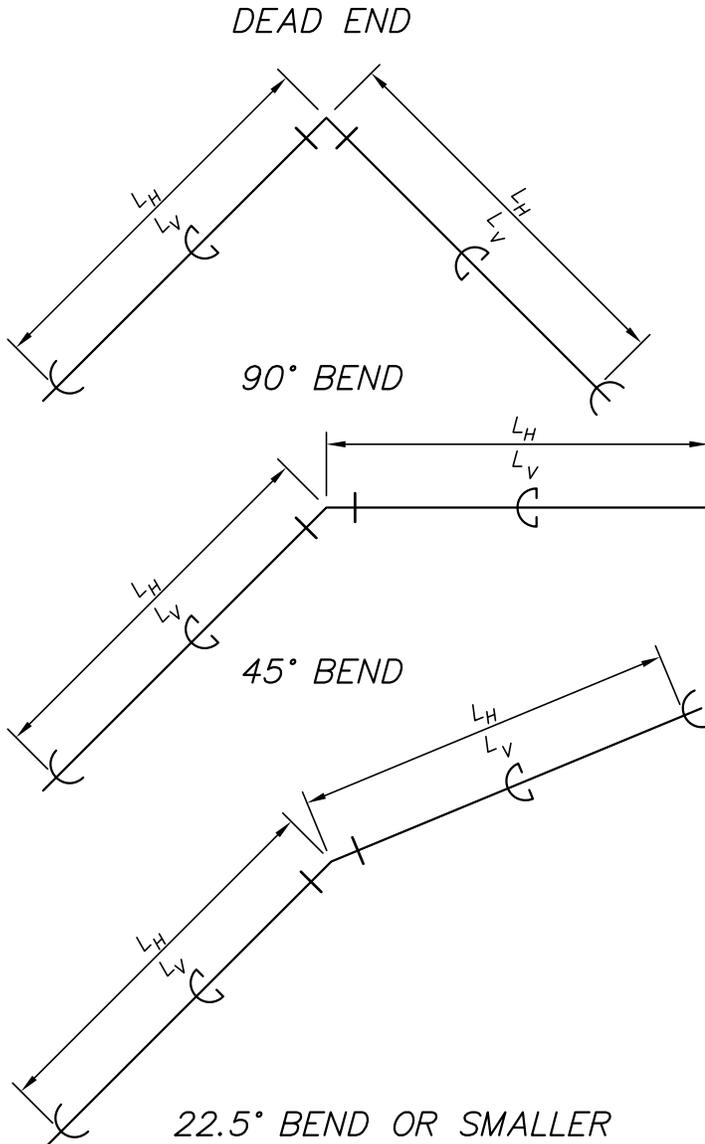


-  STANDARD BELL FOR (PVC)
-  STANDARD BELL FOR (DIP)
-  RESTRAINED JOINT BELL (DIP)
-  VALVED DEAD END



MINIMUM LENGTH OF RESTRAINED JOINT DIP FOR HORIZONTAL THRUST REACTION					
PIPE SIZE	LENGTH 'L _H '				
	DEAD END	90° BEND	45° BEND	22.5° BEND	REDUCER BEND
4"	18'	24'	10'	6'	8x6=14'
6"	26'	34'	14'	7'	10x8=14'
8"	34'	44'	18'	9'	12x10=14'
10"	42'	54'	23'	11'	12x6=36'
12"	50'	64'	27'	13'	10x6=10'

MINIMUM LENGTH OF RESTRAINED JOINT DIP FOR VERTICAL THRUST REACTION (DOWN)					
PIPE SIZE	LENGTH 'L _V '				
	DEAD END	90° BEND	45° BEND	22.5° BEND	REDUCER BEND
4"	N/A	36'	15'	7'	N/A
6"	N/A	52'	21'	10'	N/A
8"	N/A	68'	28'	14'	N/A
10"	N/A	83'	34'	17'	N/A
12"	N/A	99'	41'	20'	N/A



NOTES:

1. ALL LENGTHS ARE DETERMINED BASED UPON "DIPRA" RESTRAINED JOINT CALCULATIONS. TYPE 3 TRENCH IS REQUIRED AND CLAY 1 SOIL ASSUMED. ANY OTHER SOIL TYPE MUST BE DETERMINED AND DESIGNED BY ENGINEER.
2. LENGTHS SHOWN ARE MINIMUM REQUIRED. CONTRACTOR MAY ROUND LENGTH TO NEXT FULL JOINT OF PIPE.
3. POLYETHYLENE WRAPPED PIPE REQUIRE GREATER LENGTHS AND MUST BE DETERMINED AND PROVIDED BY DESIGN ENGINEER.
4. ALL PIPE SHOWN AS RESTRAINED SHALL BE DIP.
5. ALL LENGTHS SHOWN ARE EACH SIDE OF BEND.
6. ALL PIPE MUST HAVE A MINIMUM COVER OF 4 FEET.
7. ALL PIPE MUST HAVE A MINIMUM COMPACTION OF 90%.
8. ALL FITTINGS SHALL BE RESTRAINED JOINT.
9. REQUIRED LENGTHS FOR PIPE GREATER THAN 12" SHALL BE DETERMINED AND PROVIDED BY DESIGN ENGINEER.
10. LIMITS OF DISTURBANCE AROUND THE PIPE ARE AS LISTED AS MAXIMUM TRENCH WIDTHS AND LENGTHS IN ORDER TO COMPLETE THE PIPING ASSEMBLY. EXCESS DISTURBANCES MAY REQUIRE ADDITIONAL LENGTH OF RESTRAINED JOINT.

RESTRAINED JOINT PIPE LENGTHS DETAIL

NO SCALE

Approved By: _____ Date: _____
 Revision No. _____ Date: _____

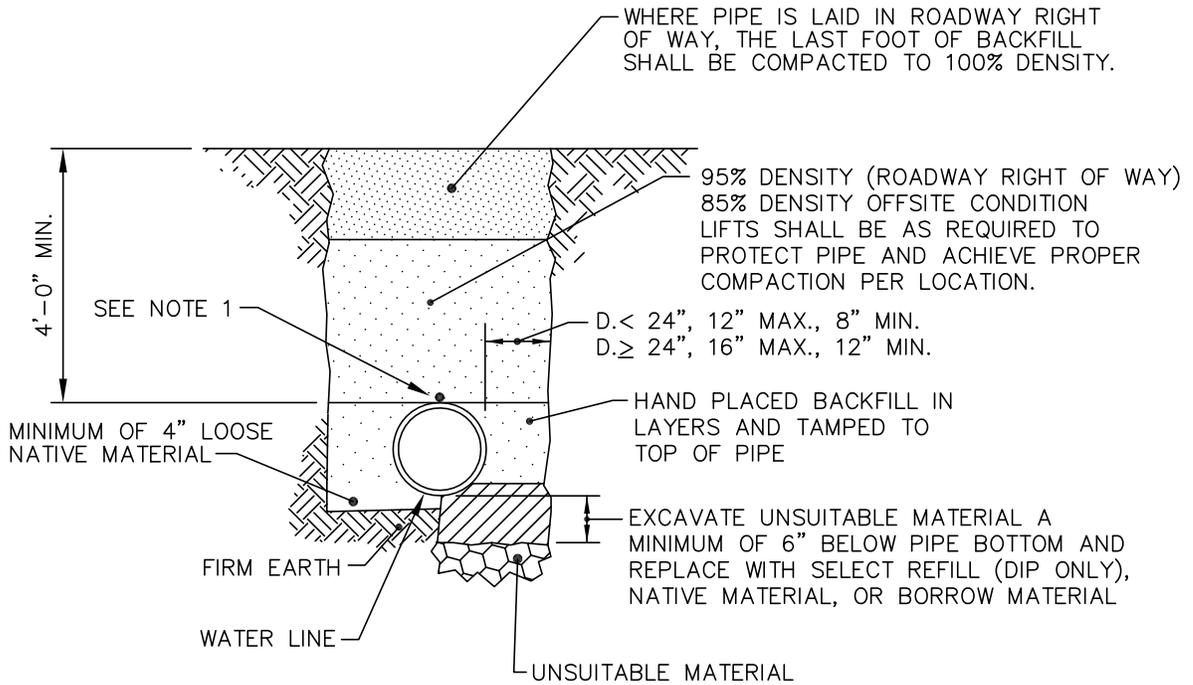
WATER
UTILITY



ENGINEERING
DEPARTMENT

STANDARD
DETAIL NUMBER

14.3.2.4-1



NOTE:

1. ALL PVC PIPE INSTALLATIONS REQUIRE 12 GAUGE LOCATING WIRE AND IDENTIFICATION TAPE FOR UNDERGROUND UTILITY LINE. ALL BEGINNING AND ENDING OF WATER LINES THAT ARE DIP (FOR A PORTION) IN A CASING OR NOT SHALL HAVE CONTINUOUS LOCATING WIRE FROM VALVE TO VALVE OR VALVE TO HYDRANT.
2. ALL COMPACTION DENSITIES SHALL BE IN ACCORDANCE WITH ASTM D698, STANDARD PROCTOR.

TYPE 3 TRENCH

TYPICAL WATER LINE TRENCH
EXCAVATION DETAIL

NO SCALE

Approved By: _____ Date: _____
 Revision No. _____ Date: _____

WATER
UTILITY



ENGINEERING
DEPARTMENT

STANDARD
DETAIL NUMBER

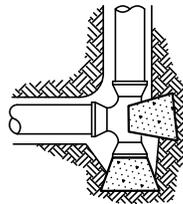
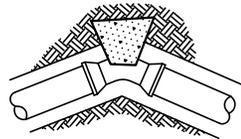
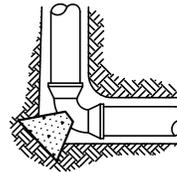
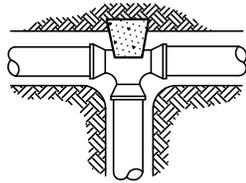
14.4.9-1

PIPE DIAMETER INCHES	DEAD END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4	5119	3620	2771	1412	710
6	10550	7460	5710	2910	1463
8	18187	12860	9843	5016	2522
10	27351	19340	14802	7544	3792
12	38693	27360	20940	10673	5365
14	51987	36760	28135	14339	7208
16	67232	47540	36386	18545	9322
18	84457	59720	45708	23296	11710
20	103634	73280	56086	28585	14369
24	147842	104540	80012	40779	20499
30	227463	160840	123102	62741	31538
36	325835	230400	176341	89875	45178

GUAGE PRESSURE = 200 P.S.I.

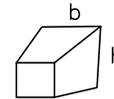
NOTES:

- SUFFICIENT CONCRETE THRUST BLOCKING OR RESTRAINED JOINT PIPE SHALL BE INSTALLED TO ADEQUATELY SUSTAIN THE THRUST REACTIONS NOTED ABOVE FOR PIPE LINES TESTED TO 200 P.S.I. GAUGE PRESSURE. (SEE DETAIL 14.3.2.4-1 FOR RESTRAINED JOINT PIPE.) ALL BLOCKING SHALL BEAR AGAINST UNDISTURBED EARTH.
- THE SOIL BEARING PRESSURE MAY BE ASSUMED AS 3000#/SF. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING SOIL BEARING PRESSURE FOR ALL INSTALLATIONS.



$$A = hb = \frac{S_f T}{S_b}$$

A = Area of Base
 S_f = Safety Factor (1.5)
 T = Thrust to be Restrained
 S_b = Soil Bearing Pressure
 h = Height
 b = Width of Base



DESIGN LOADS FOR THRUST
OR REACTION BLOCKING DETAIL

NO SCALE

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 Revision No. _____ Date: _____

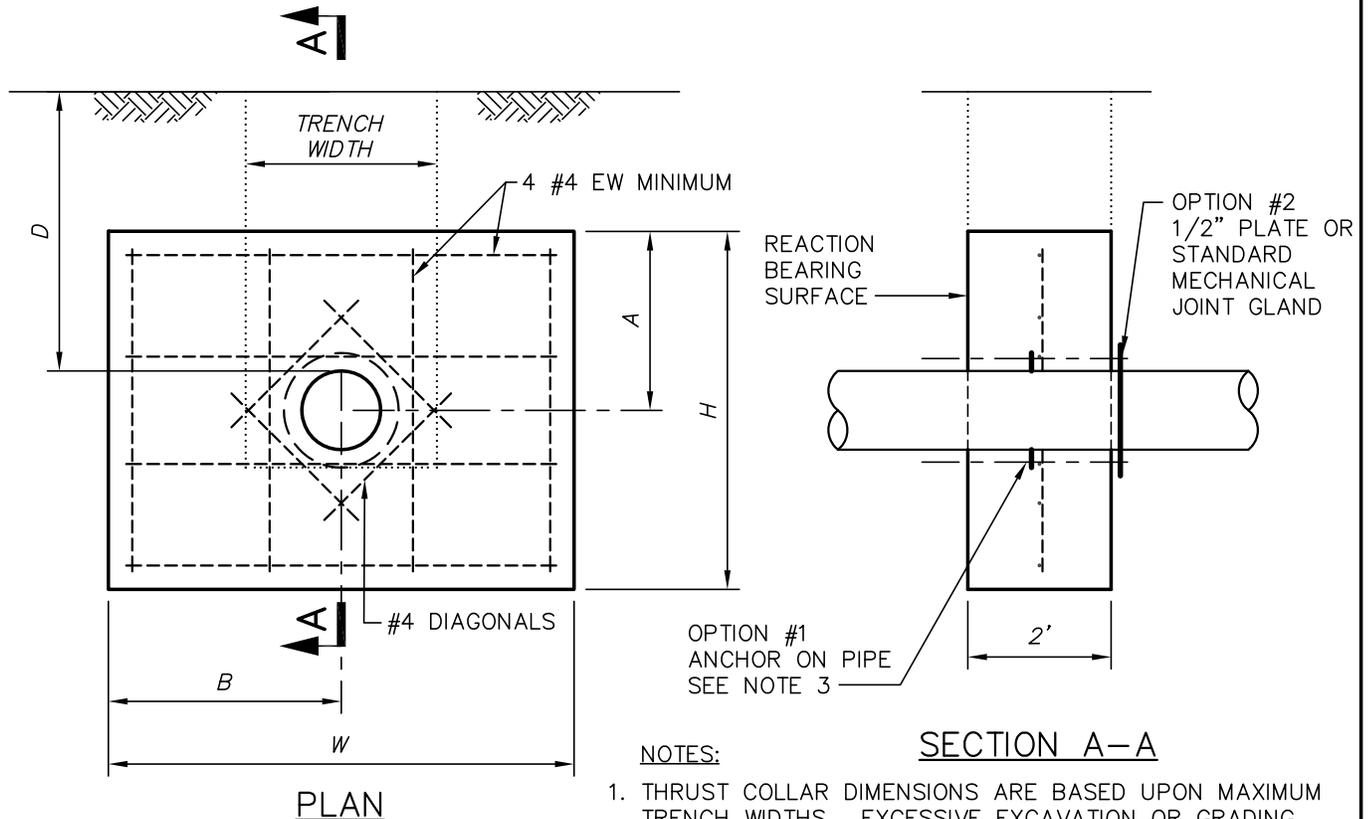
WATER
UTILITY



ENGINEERING
DEPARTMENT

STANDARD
DETAIL NUMBER

14.7-1



NOTES:

SECTION A-A

1. THRUST COLLAR DIMENSIONS ARE BASED UPON MAXIMUM TRENCH WIDTHS. EXCESSIVE EXCAVATION OR GRADING AT OR NEAR COLLAR MAY REQUIRE A LARGER COLLAR OR AN ADDITIONAL COLLAR TO DEVELOP PROPER SOIL BEARING CAPACITY.
2. SOIL BEARING CAPACITY IS ASSUMED AS 3000#/SF. THE CONTRACTOR IS RESPONSIBLE IN DETERMINING IF THE SOIL BEARING CAPACITY IS ADEQUATE PER APPLICATION.
4. ALL DIMENSIONS ARE MINIMUM REQUIREMENTS TO REACT TO A MINIMUM FORCE OF 200 psi. DIMENSIONS FOR THRUST COLLARS NECESSARY FOR PIPES LARGER THAN 12" SHALL BE DESIGNED BY PROFESSIONAL ENGINEER OF RECORD PER APPLICATION.
5. ALL REINFORCING STEEL SHALL BE A MINIMUM OF GRADE 60 #4 BARS. ALL CONCRETE SHALL BE A MINIMUM OF 4000 psi.
6. OPTION #1 UTILIZES A WELDED COLLAR (BY MANUFACTURE) ON PIPE OR 2-EBBA-IRON MID-SPAN ANCHORS FASTENED DIRECTLY TO THE PIPE ENCASED IN CONCRETE COLLAR. WHERE THE MID-SPAN IS USED, A 4 MIL POLYETHYLENE WRAP SHALL BE USED TO COVER THE ANCHOR.

OPTION #2 UTILIZES A 1/2" FLAT FLANGE PLATE DRILLED TO MATCH OR A MECHANICAL JOINT GLAND FLUSH AGAINST CONCRETE COLLAR. RODS SHALL BE USED AS REQUIRED TO RESTRAIN VALVE OR FITTING. SEE STANDARD DETAIL 14.7-3 FOR MORE DETAIL.

THRUST COLLAR DIMENSION TABLE

PIPE SIZE	A	B	D	H	W	T
*4"	1'-6"	2'	4'	3'	4'	2'
6"	1'-6"	2'	4'	3'	4'	2'
8"	1'-9"	2'	4'	3'-6"	4'	2'
10"	2'-3"	2'	4'	4'-6"	4'	2'
12"	2'-3"	2'-6"	4'	4'-6"	5'	2'

* WATER SERVICE LINE ONLY, OR FORCE MAIN.

THRUST COLLAR DETAIL

NO SCALE

Approved By: _____ Date: _____
 Revision No. _____ Date: _____

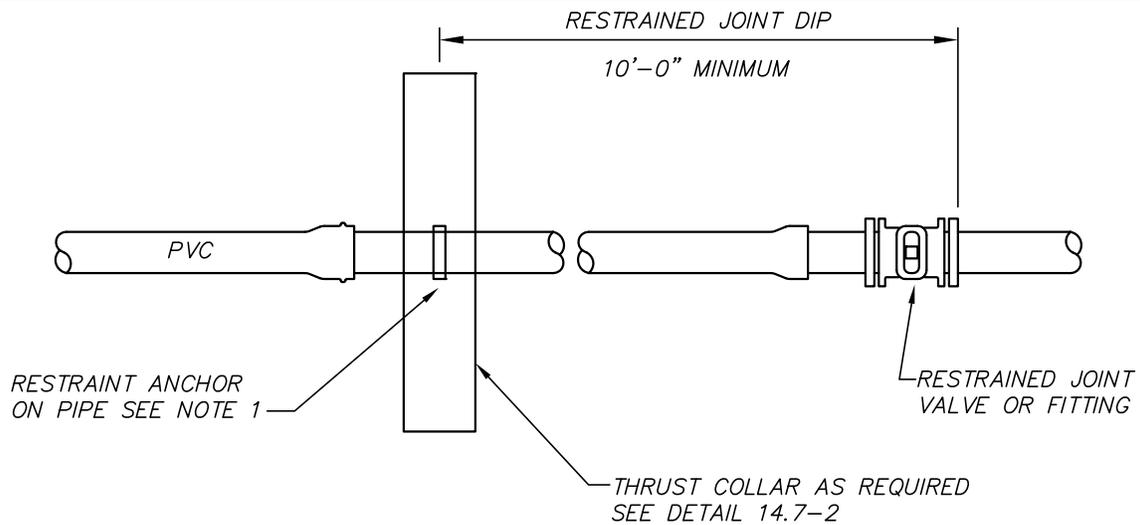
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UTILITY



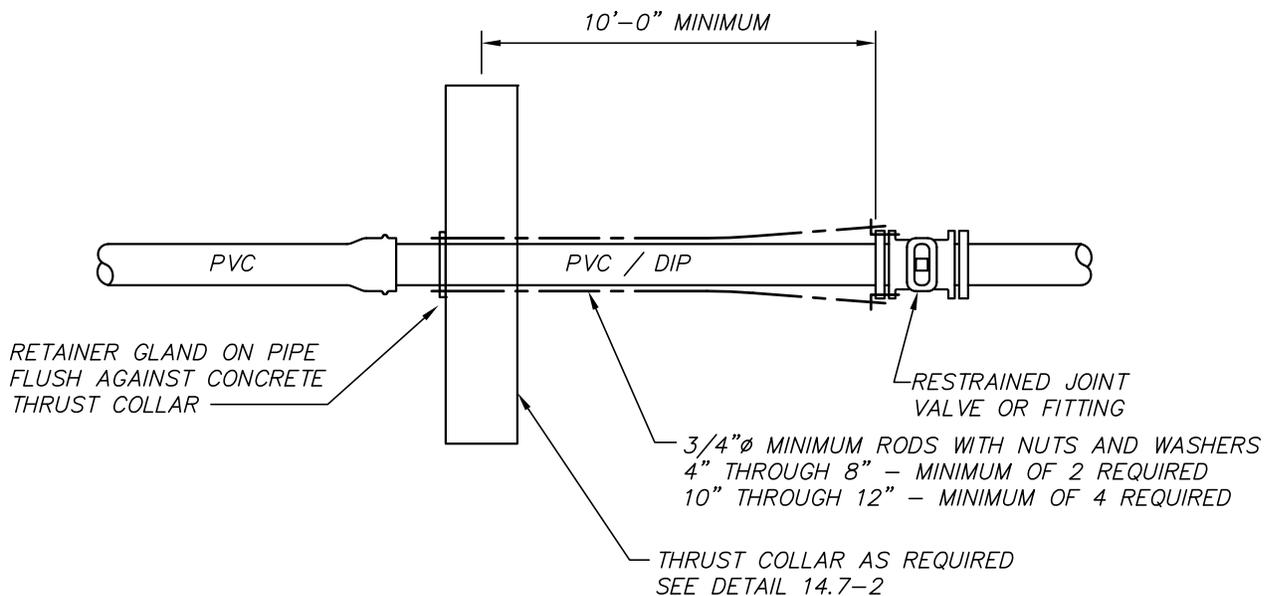
ENGINEERING
DEPARTMENT

STANDARD
DETAIL NUMBER

14.7-2



TYPE 1 (OPTION #1)



TYPE 2 (OPTION #2)

NOTES:

1. SEE STANDARD DETAIL 14.7-2 FOR THRUST COLLAR INFORMATION.
2. ALL RODS SHALL BE BITUMINOUS COATED AFTER INSTALLATION OR SHALL BE STAINLESS STEEL. ALL NUTS AND WASHERS SHALL BE STAINLESS STEEL.
3. COMPACTION FOR THRUST COLLAR BEARING SURFACE SHALL BE A MINIMUM OF 95% DENSITY STANDARD PROCTOR.
4. MULTIPLE COLLARS MAY BE REQUIRED TO SUSTAIN THE THRUST FORCE. SEE DETAIL 14.7-2 FOR MINIMUM SIZE AND BEARING REACTION. THE MINIMUM DISTANCE APART FOR MULTIPLE COLLARS SHALL BE 20'.

THRUST COLLAR INSTALLATION DETAIL

NO SCALE

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UTILITY

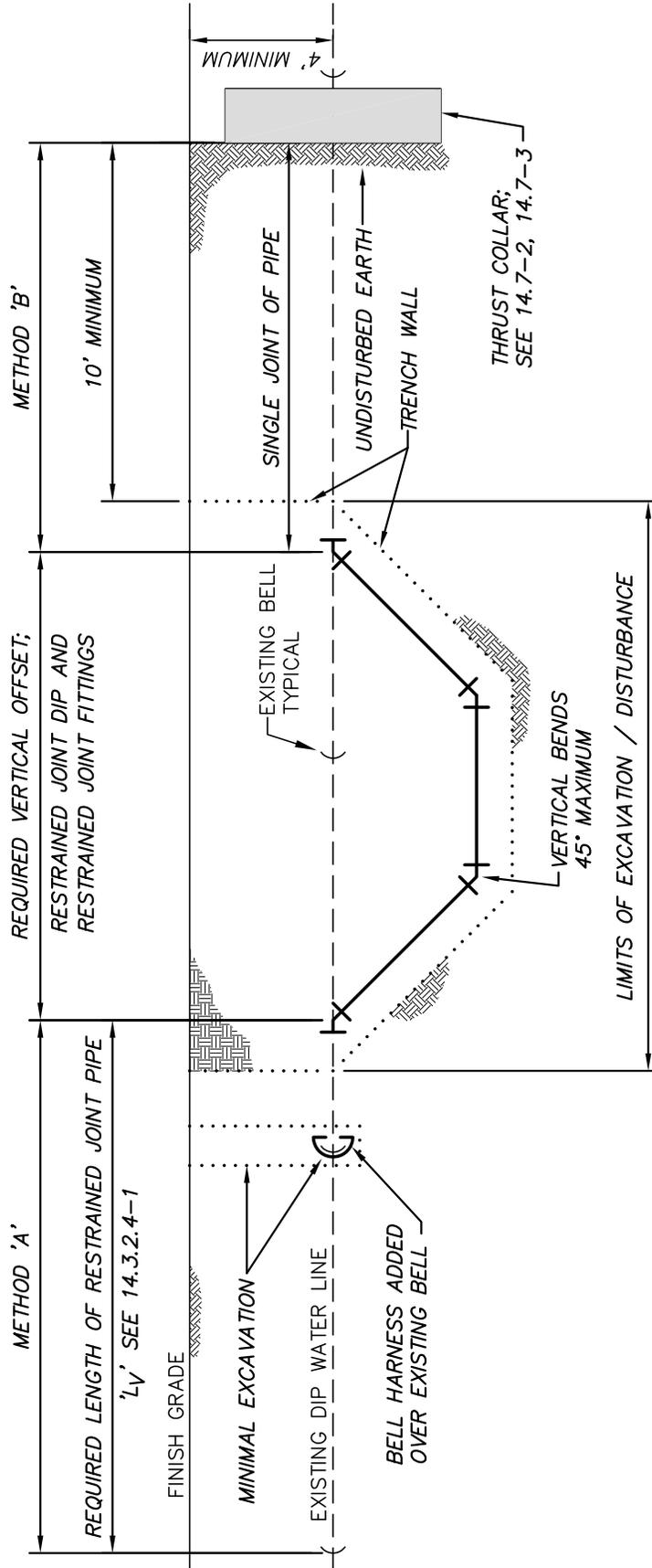


ENGINEERING
DEPARTMENT

STANDARD
DETAIL NUMBER

14.7-3

- NOTES:
1. METHOD 'A', METHOD 'B' OR A COMBINATION OF THE TWO SHALL BE USED TO RESTRAIN THE VERTICAL OFFSET REQUIRED.
 2. WHERE PIPE CAN BE DEFLECTED VERTICALLY WITHOUT PLACEMENT OF VERTICAL BENDS, RESTRAINT MAY NOT BE NECESSARY. PROPER COVER AND COMPACTION MAY ELIMINATE THE REQUIREMENT OF RESTRAINT.



VERTICAL OFFSET RESTRAINT DETAIL

NO SCALE

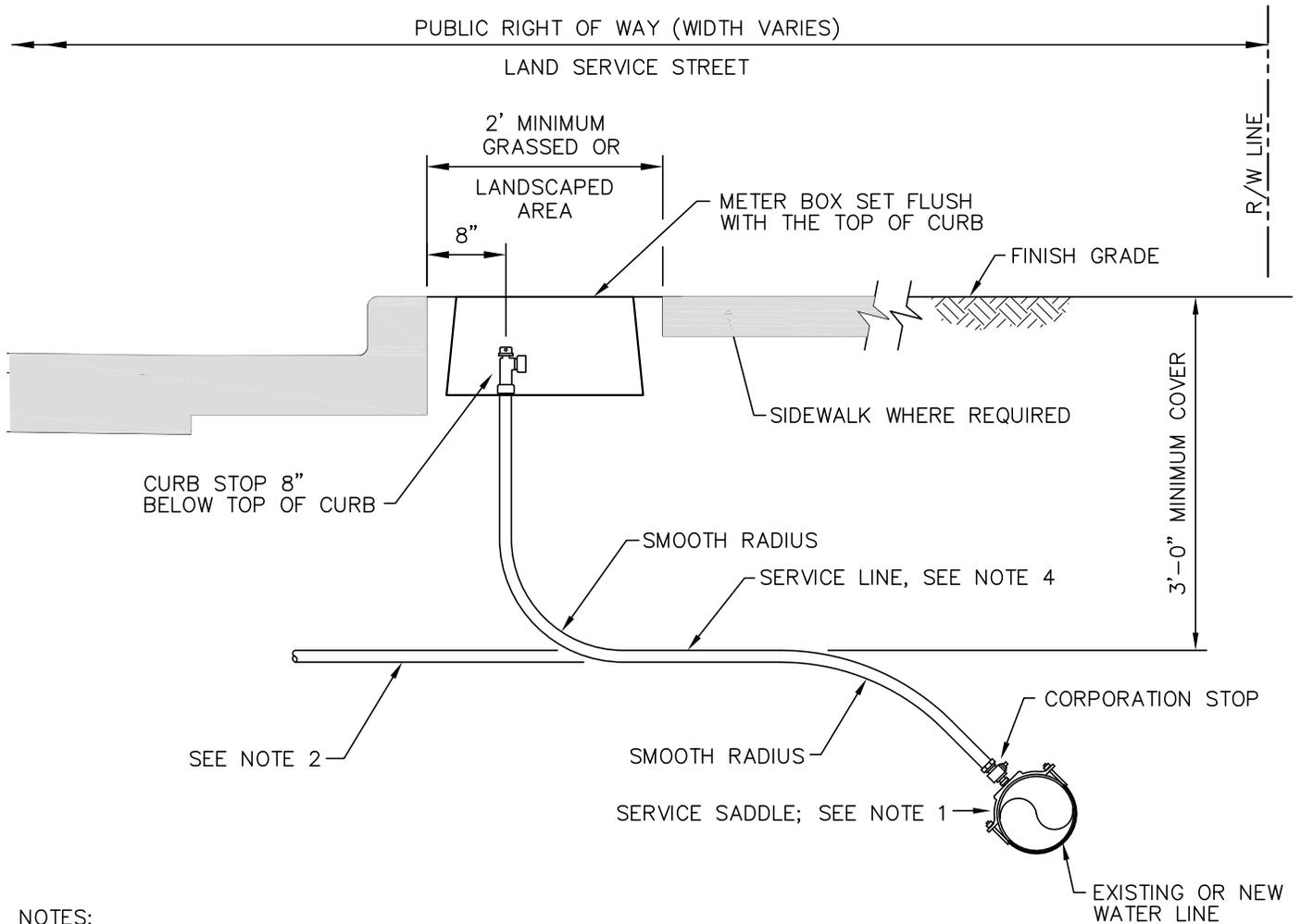
Approved By: _____	Date: _____
Revision No. _____	Date: _____

WATER
UTILITY



ENGINEERING
DEPARTMENT

STANDARD
DETAIL NUMBER
14.7.1.2-1



- NOTES:
1. ALL SERVICE SADDLES SHALL BE INSTALLED IN THE 10 O'CLOCK OR 2 O'CLOCK POSITION.
 2. THE SHORT SIDE SERVICE IS SHOWN IN THIS DETAIL; A LONG SIDE SERVICE IS SIMILAR AND SHALL BE THE MIRRORED OPPOSITE.
 3. METER BOXES SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVED AREAS.
 4. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE UNLESS OTHERWISE APPROVED.
 5. SEE STANDARD DETAILS 11.5-1, 11.5-2, AND 11.5-3 FOR WATER LINE LOCATION DETAIL.
 6. SEE STANDARD DETAILS 14.10-2 THROUGH 14.10-7 FOR SERVICE LINE & METER BOX INSTALLATIONS LARGER THAN 1"Ø.

TYPICAL 3/4" & 1" SERVICE
LINE & METER BOX DETAIL-1

NO SCALE

Approved By: _____	Date: _____
Revision No. _____	Date: _____

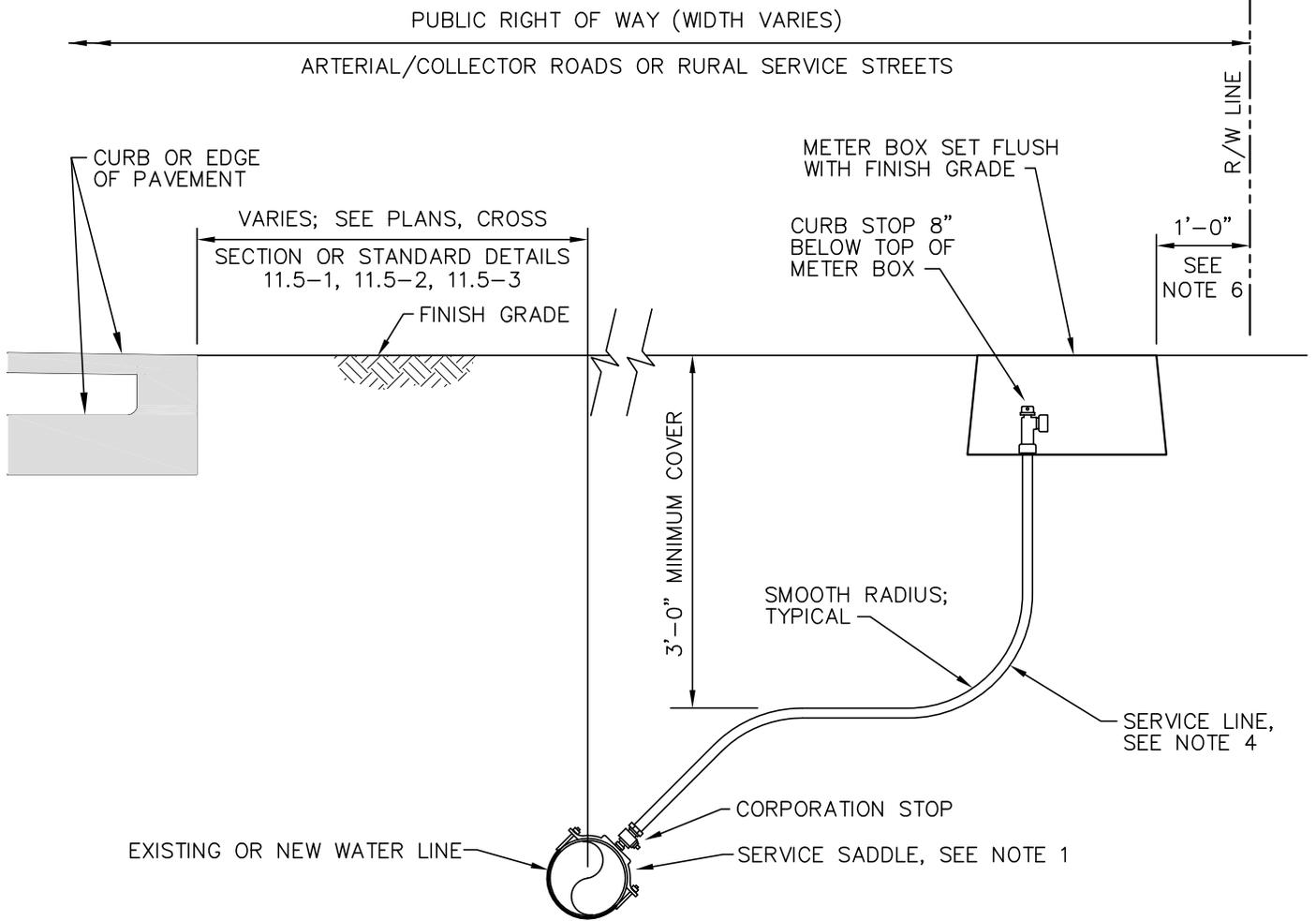
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COLUMBIA COUNTY
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ENGINEERING
DEPARTMENT

STANDARD
DETAIL NUMBER
14.10-1



NOTES:

1. ALL SERVICE SADDLES SHALL BE INSTALLED IN THE 10 O'CLOCK OR 2 O'CLOCK POSITION.
2. THE SHORT SIDE SERVICE IS SHOWN IN THIS DETAIL; A LONG SIDE SERVICE IS SIMILAR AND SHALL BE THE MIRRORED OPPOSITE.
3. METER BOXES SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVED AREAS.
4. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE UNLESS OTHERWISE APPROVED.
5. SEE STANDARD DETAILS 14.10-2 THROUGH 14.10-7 FOR SERVICE LINE & METER BOX INSTALLATIONS LARGER THAN 1" ϕ .
6. WHERE SPECIFICALLY APPROVED, THE METER INSTALLATION MAY BE INSTALLED WITHIN AN EASEMENT DEDICATED TO COLUMBIA COUNTY WHERE NECESSARY.

TYPICAL 3/4" & 1" SERVICE
LINE & METER BOX DETAIL - 2

NO SCALE

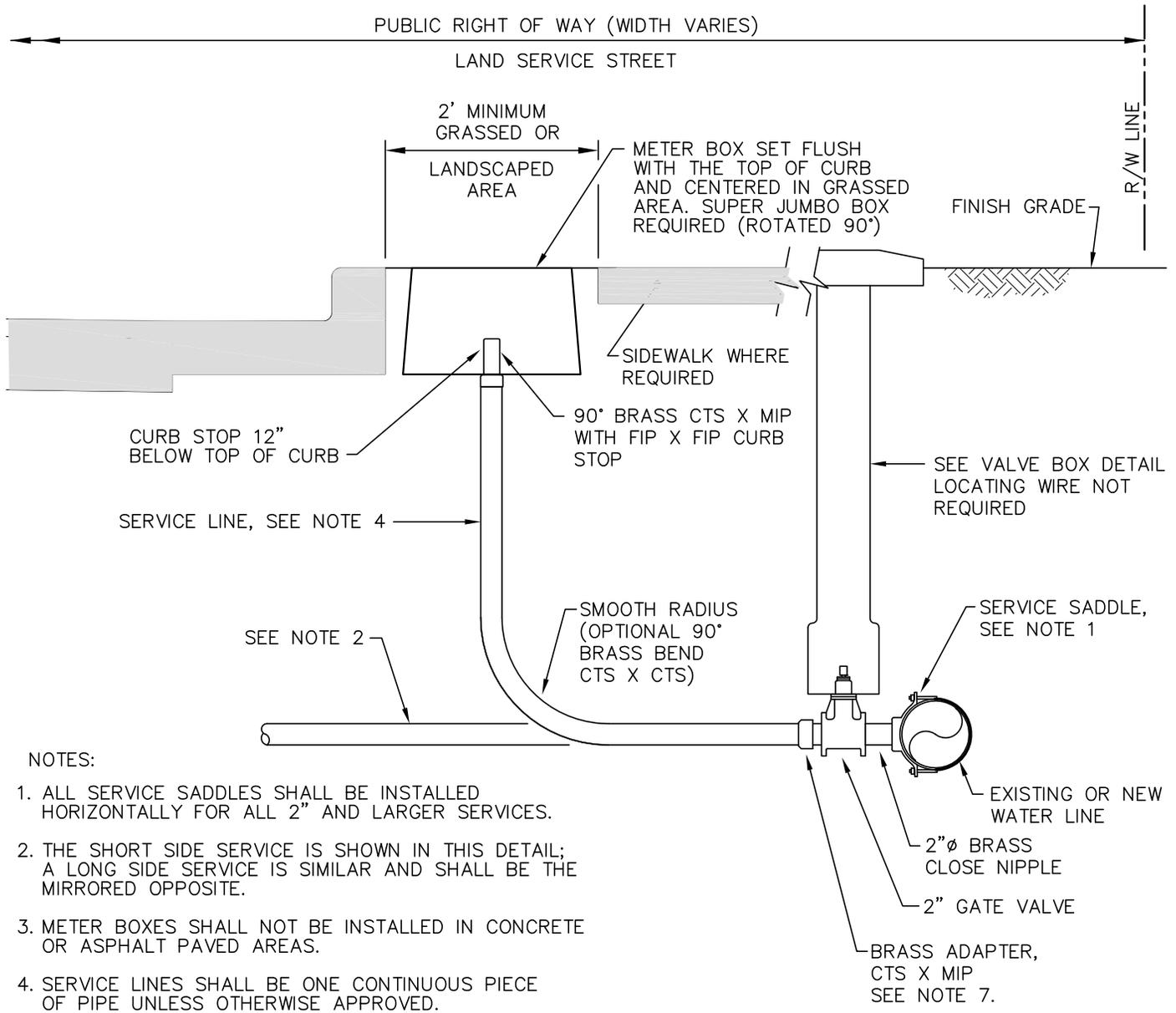
Approved By: _____ Date: _____
 Revision No. _____ Date: _____

WATER
UTILITY



ENGINEERING
DEPARTMENT

STANDARD
DETAIL NUMBER
14.10-1A



NOTES:

1. ALL SERVICE SADDLES SHALL BE INSTALLED HORIZONTALLY FOR ALL 2" AND LARGER SERVICES.
2. THE SHORT SIDE SERVICE IS SHOWN IN THIS DETAIL; A LONG SIDE SERVICE IS SIMILAR AND SHALL BE THE MIRRORED OPPOSITE.
3. METER BOXES SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVED AREAS.
4. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE UNLESS OTHERWISE APPROVED.
5. SEE STANDARD DETAILS 11.5-1, 11.5-2, AND 11.5-3 FOR WATER LINE LOCATION DETAIL.
6. ALL 1 1/2"Ø AND 2"Ø SERVICES SHALL BE INSTALLED AS A 2"Ø TAP. A 1 1/2"Ø SERVICE SHALL UTILIZE A 2" X 1 1/2" MIP X FIP BRASS BUSHING TO REDUCE TO SERVICE LINE PIPE SIZE.

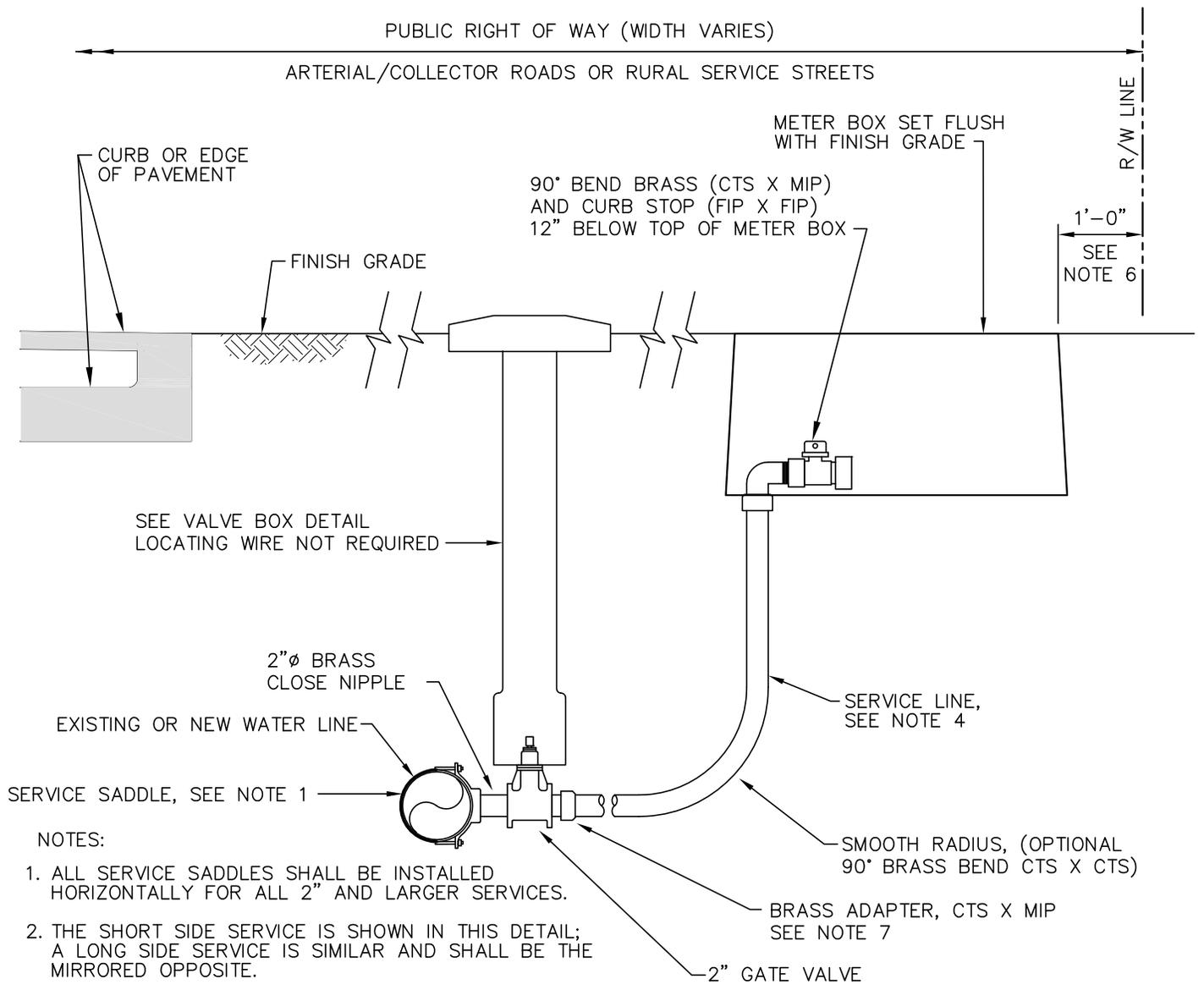
TYPICAL 1 1/2" & 2" SERVICE
LINE & METER BOX DETAIL-1

NO SCALE

Approved By: _____	Date: _____
Revision No. _____	Date: _____

<p>WATER UTILITY</p>  <p>COLUMBIA COUNTY GEORGIA</p>	<p>ENGINEERING DEPARTMENT</p>
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STANDARD DETAIL NUMBER
14.10-2



- NOTES:
1. ALL SERVICE SADDLES SHALL BE INSTALLED HORIZONTALLY FOR ALL 2" AND LARGER SERVICES.
 2. THE SHORT SIDE SERVICE IS SHOWN IN THIS DETAIL; A LONG SIDE SERVICE IS SIMILAR AND SHALL BE THE MIRRORED OPPOSITE.
 3. METER BOXES SHALL NOT BE INSTALLED IN CONCRETE OR ASPHALT PAVED AREAS.
 4. SERVICE LINES SHALL BE ONE CONTINUOUS PIECE OF PIPE UNLESS OTHERWISE APPROVED.
 5. SEE STANDARD DETAILS 11.5-1, 11.5-2, AND 11.5-3 FOR WATER LINE LOCATION DETAIL.
 6. WHERE SPECIFICALLY APPROVED, THE METER INSTALLATION MAY BE INSTALLED WITHIN AN EASEMENT DEDICATED TO COLUMBIA COUNTY WHERE NECESSARY.
 7. ALL 1 1/2" ϕ AND 2" ϕ SERVICES SHALL BE INSTALLED AS A 2" ϕ TAP; A 1 1/2" ϕ SERVICE SHALL UTILIZE A 2" X 1 1/2" MIP X FIP BUSHING TO REDUCE TO SERVICE LINE PIPE SIZE.

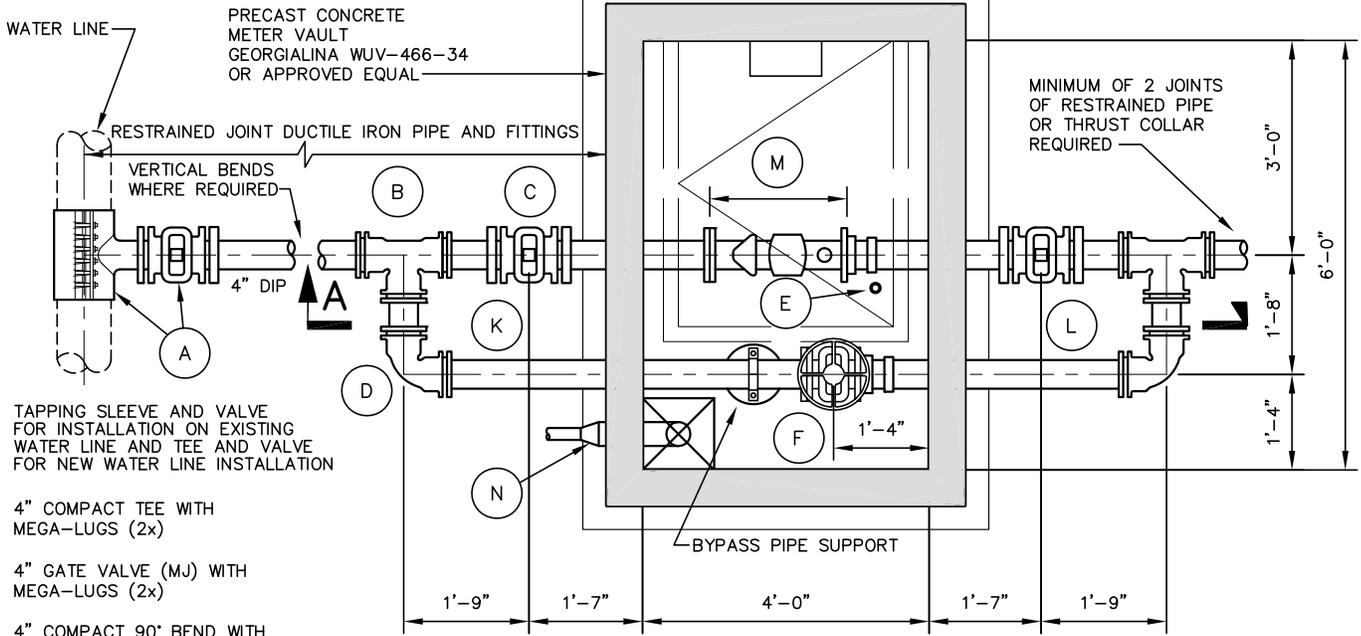
**TYPICAL 1 1/2" & 2" SERVICE
LINE & METER BOX DETAIL - 2**

NO SCALE

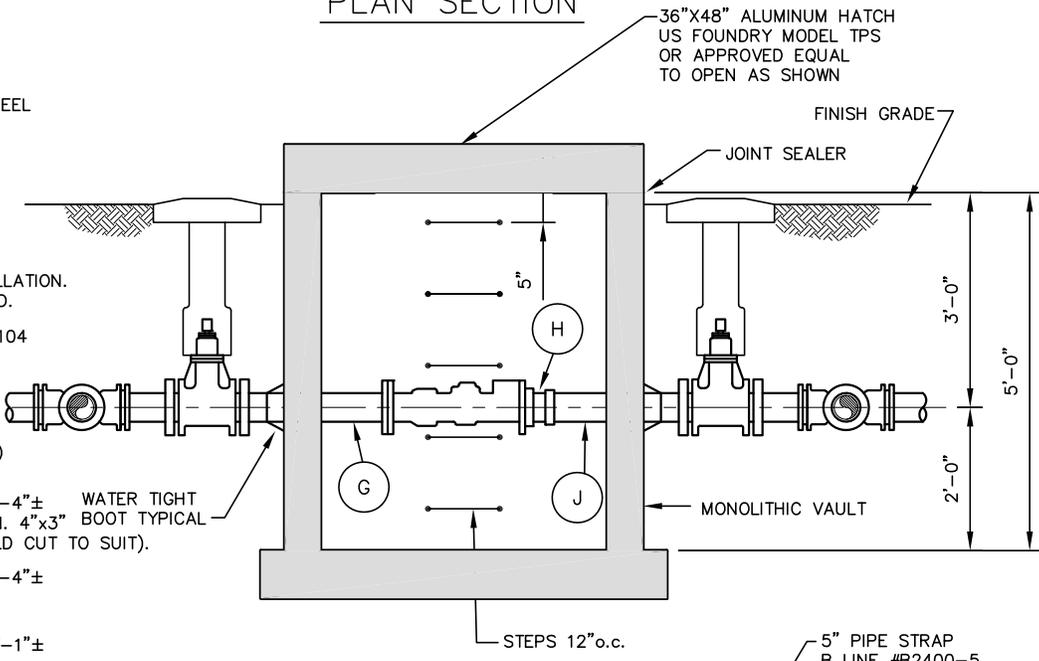
Approved By: _____	Date: _____
Revision No. _____	Date: _____

<p>WATER UTILITY</p>  <p>COLUMBIA COUNTY GEORGIA</p>	<p>ENGINEERING DEPARTMENT</p>
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<p>STANDARD DETAIL NUMBER</p> <p>14.10-2A</p>
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PLAN SECTION



SECTION A-A

**TYPICAL 3" & 4" SERVICE LINE
& METER VAULT DETAIL**

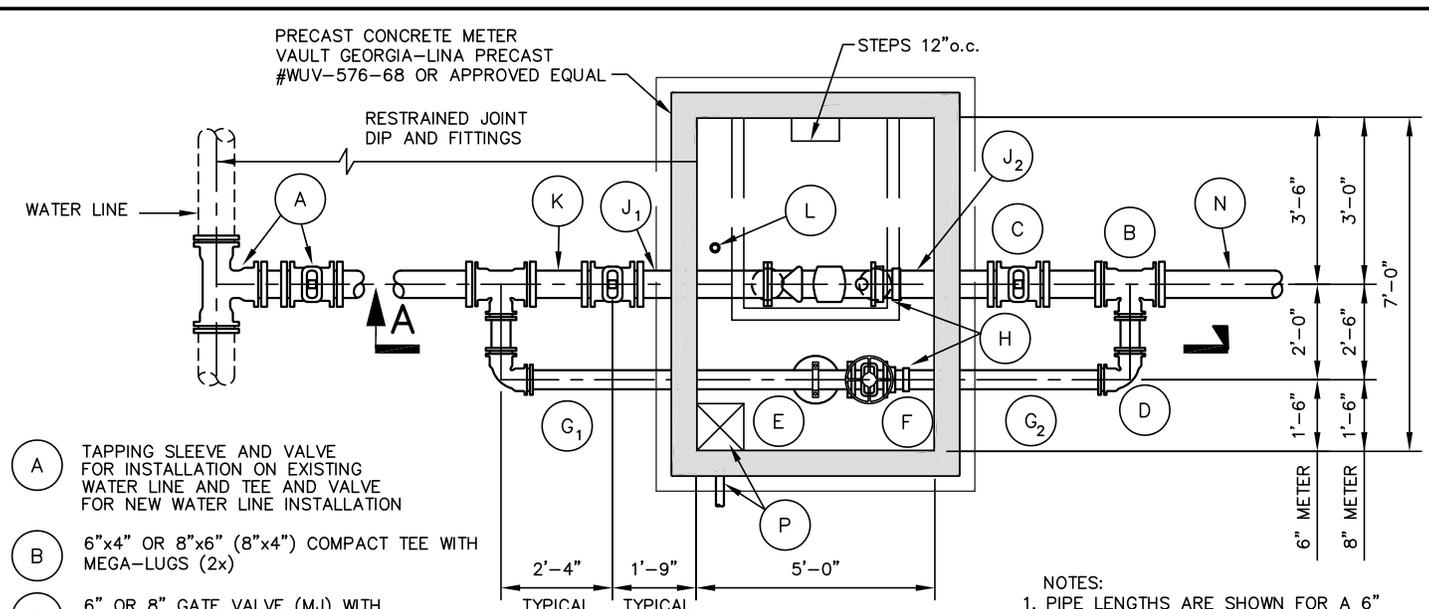
SCALE: 3/8" = 1'-0"

- (A) TAPPING SLEEVE AND VALVE FOR INSTALLATION ON EXISTING WATER LINE AND TEE AND VALVE FOR NEW WATER LINE INSTALLATION
- (B) 4" COMPACT TEE WITH MEGA-LUGS (2x)
- (C) 4" GATE VALVE (MJ) WITH MEGA-LUGS (2x)
- (D) 4" COMPACT 90° BEND WITH MEGA-LUGS (2x)
- (E) 1 1/2"Ø HOLE IN HATCH FOR TOUCH READ SENSOR
- (F) 4" NRS GATE VALVE (FL) HANDWHEEL OPERATOR WITH S.S. CHAIN IN CLOSED POSITION
- (G_{4"}) 4" DIP SPOOL PIECE (PE X FL) 2'-4" LONG FOR 4" METER INSTALLATION.
- (G_{3"}) 4" DIP SPOOL PIECE (PE X FL) 2'-7" LONG FOR 3" METER INSTALLATION. 4"x3" FLANGE REDUCERS REQUIRED.
- (H) MEGA-FLANGE ADAPTER SERIES 2104 OR APPROVED EQUAL (2x)
- (J_{4"}) 4" DIP SPOOL PIECE (PE X PE) 2'-6"± LONG FOR 4" METER INSTALLATION (FIELD CUT TO SUIT)
- (J_{3"}) 4" DIP SPOOL PIECE (PE X FL) 2'-4"± LONG FOR 3" METER INSTALLATION. 4"x3" BOOT TYPICAL FLANGE REDUCERS REQUIRED (FIELD CUT TO SUIT).
- (K) 4" DIP SPOOL PIECE (PE X FL) 5'-4"± (CUT IN FIELD TO SUIT)
- (L) 4" DIP SPOOL PIECE (PE X PE) 4'-1"± (CUT IN FIELD TO SUIT)
- (M) SENSUS W-350 TR PL 3" INSTALLATION (19" LL)
SENSUS W-2000 TR PL 4" INSTALLATION (23" LL)
PURCHASE FROM CCWU MAIN OFFICE (CONTRACTOR INSTALL)
- (N) 4" FLOOR DRAIN IN 2' SQUARE DEPRESSION WITH BRASS GRATE. DRAIN PIPE MAY REDUCE TO 2" PIPE OUTSIDE PIT. DRAIN LINE TO DAYLIGHT, DITCH OR STORM TRAP. METER PIT MUST BE INSTALLED AT AN ELEVATION TO FACILITATE PROPER DRAINAGE AWAY FROM PIT.

Approved By: _____	Date: _____
Revision No. 1 _____	Date: 9-17-08
Revision No. 2 _____	Date: 5-27-09
Revision No. _____	Date: _____
Revision No. _____	Date: _____
Revision No. _____	Date: _____


 WATER UTILITY ENGINEERING DEPARTMENT

STANDARD
 DETAIL NUMBER
14.10-3



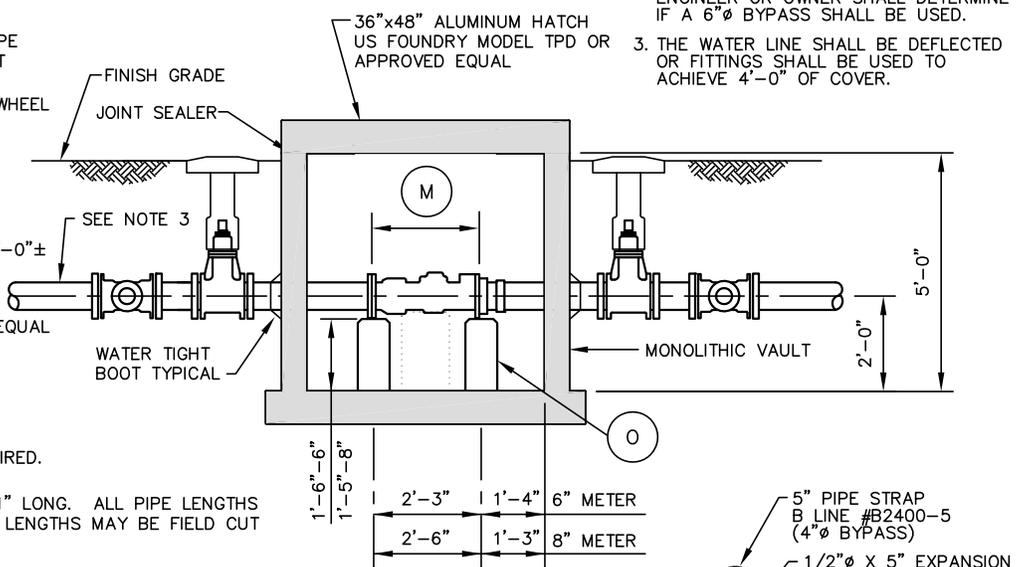
- (A) TAPPING SLEEVE AND VALVE FOR INSTALLATION ON EXISTING WATER LINE AND TEE AND VALVE FOR NEW WATER LINE INSTALLATION
- (B) 6"x4" OR 8"x6" (8"x4") COMPACT TEE WITH MEGA-LUGS (2x)
- (C) 6" OR 8" GATE VALVE (MJ) WITH MEGA-LUGS (2x)
- (D) 4" OR 6" COMPACT 90° BEND WITH MEGA-LUGS (2x)

- (E) CONCRETE PIPE SUPPORT WITH PIPE STRAP; SEE DETAIL BOTTOM RIGHT
- (F) 4" OR 6" GATE VALVE (FL) HANDWHEEL OPERATOR WITH S.S. CHAIN IN CLOSED POSITION
- (G₁) 4" DIP SPOOL PIECE (PE X FL) 7'-0" LONG.
- (G₂) 4" DIP SPOOL PIECE (PE X PE) 5'-0"± LONG FIELD CUT AS REQUIRED
- (H) MEGA-FLANGE ADAPTER SERIES 2104, 2106, 2108 OR APPROVED EQUAL
- (J₁) 6" DIP SPOOL PIECE (FL X PE) 3'-0" LONG.
- (J₂) 6" DIP SPOOL PIECE (PE X PE) 3'-0"± LONG FIELD CUT AS REQUIRED.
- (K) 6" DIP SPOOL PIECE (PE X PE) 21" LONG. ALL PIPE LENGTHS LEAD FROM TAP SIDE. ALL OTHER LENGTHS MAY BE FIELD CUT AS REQUIRED.
- (L) 2"Ø PVC PIPE IN TOP SLAB FOR TOUCH READ SENSOR.

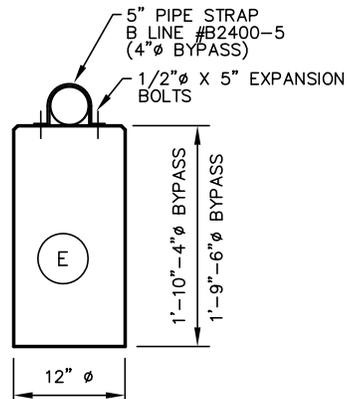
- (M) 6" OR 8" SENSUS METER WITH TOUCH READ SENSORS. 6" (L.L. 27") AND 8" (L.L. 30 1/8"). METER SHALL BE PURCHASED FROM CCWU AND CONTRACTOR SHALL INSTALL. ALLOW 3-6 WEEKS DELIVERY.
- (N) PRIVATE SERVICE LINE REQUIRES AN ADEQUATELY SIZED THRUST COLLAR TO RESTRAIN PIPE AND PREVENT PIPE MOVEMENT INTO THE VAULT DURING BYPASS OPERATIONS. ALL BACKFLOW DEVICES SHALL BE A MINIMUM OF 7 PIPE DIAMETERS BEYOND BYPASS TEE INSTALLATION.
- (O) 8"Ø CONCRETE METER SUPPORT CAST INTO VAULT BOTTOM. THE METER SHALL REST UNIFORMLY AND COMPLETELY ON CONCRETE SUPPORT.
- (P) 2"Ø DRAIN LINE AND 12" SQUARE SUMP. CONTRACTOR TO DETERMINE PIPE EXIT DIRECTION. DRAIN TO DAYLIGHT, STORM TRAP OR DITCH LINE.

- NOTES:
1. PIPE LENGTHS ARE SHOWN FOR A 6" METER INSTALLATION.
 2. 8" METER INSTALLATIONS SHALL BE STANDARD AS A 4"Ø BYPASS. THE ENGINEER OR OWNER SHALL DETERMINE IF A 6"Ø BYPASS SHALL BE USED.
 3. THE WATER LINE SHALL BE DEFLECTED OR FITTINGS SHALL BE USED TO ACHIEVE 4'-0" OF COVER.

PLAN SECTION



SECTION A-A



TYPICAL 6" & 8" SERVICE LINE & METER VAULT DETAIL

SCALE: 1/4" = 1'-0"

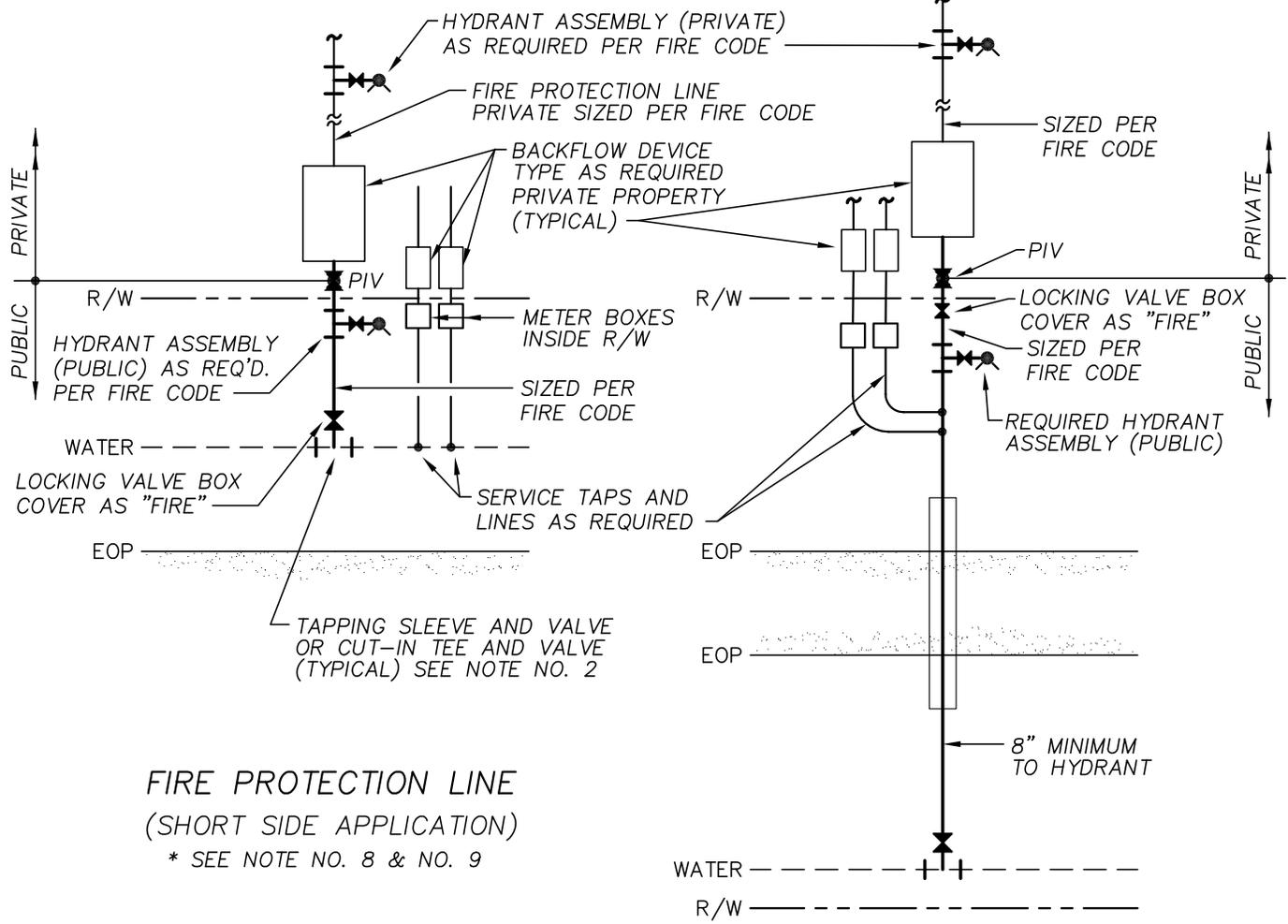
Approved By: _____	Date: _____
Revision No. _____	Date: _____

WATER UTILITY

COLUMBIA COUNTY
GEORGIA

ENGINEERING
DEPARTMENT

STANDARD
DETAIL NUMBER
14.10-4



**FIRE PROTECTION LINE
(SHORT SIDE APPLICATION)**

* SEE NOTE NO. 8 & NO. 9

**FIRE PROTECTION LINE
(LONG SIDE APPLICATION)**

NOTES:

1. ALL FIRE LINES SHALL BE RESTRAINED JOINT DUCTILE IRON PIPE AND FITTINGS.
2. CONNECTIONS USING A CUT IN TEE WILL REQUIRE A SHUT-DOWN AND PRE-APPROVAL BY THE CCWUED BEFORE CONSTRUCTION PLANS RECEIVE FINAL APPROVAL.
3. ALL HYDRANT ASSEMBLIES NOT INSTALLED WITHIN PUBLIC RIGHT OF WAY OR APPROVED DEDICATED EASEMENT SHALL BE PRIVATE.
4. SERVICE LINES GREATER THAN 2"Ø SHALL HAVE SEPARATE CONNECTION DIRECTLY OFF WATER LINE VERSUS FIRE PROTECTION LINE.
5. ALL BACKFLOW DEVICES SHALL BE INSTALLED IMMEDIATELY AFTER ISOLATION VALVES OR WATER METERS.
6. DETAILS SHOW AN EXISTING WATER LINE CONNECTION; NEW WATER LINE INSTALLATION SHALL UTILIZE STANDARD TEES AS NECESSARY.
7. METERS THAT CAN NOT FIT INTO RIGHT OF WAY MAY BE INSTALLED IN DEDICATED EASEMENT AS APPROVED BY THE CCWUED.
8. WHERE A FIRE PROTECTION LINE IS INSTALLED WITHOUT A HYDRANT ASSEMBLY BEFORE A BACKFLOW DEVICE, THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY TAPS NECESSARY FOR THE DISINFECTION OF PIPE LINE.
9. SHORT SIDE FIRE LINES SHALL NOT BE TAPPED FOR DOMESTIC OR IRRIGATION SERVICES. ALL OTHER TAPS SHALL BE MADE OFF OF THE DISTRIBUTION LINE DIRECTLY AS SHOWN.
10. ALL NOTATIONS OF "FIRE CODE" SHALL BE CURRENT EDITION OR AS AMENDED.

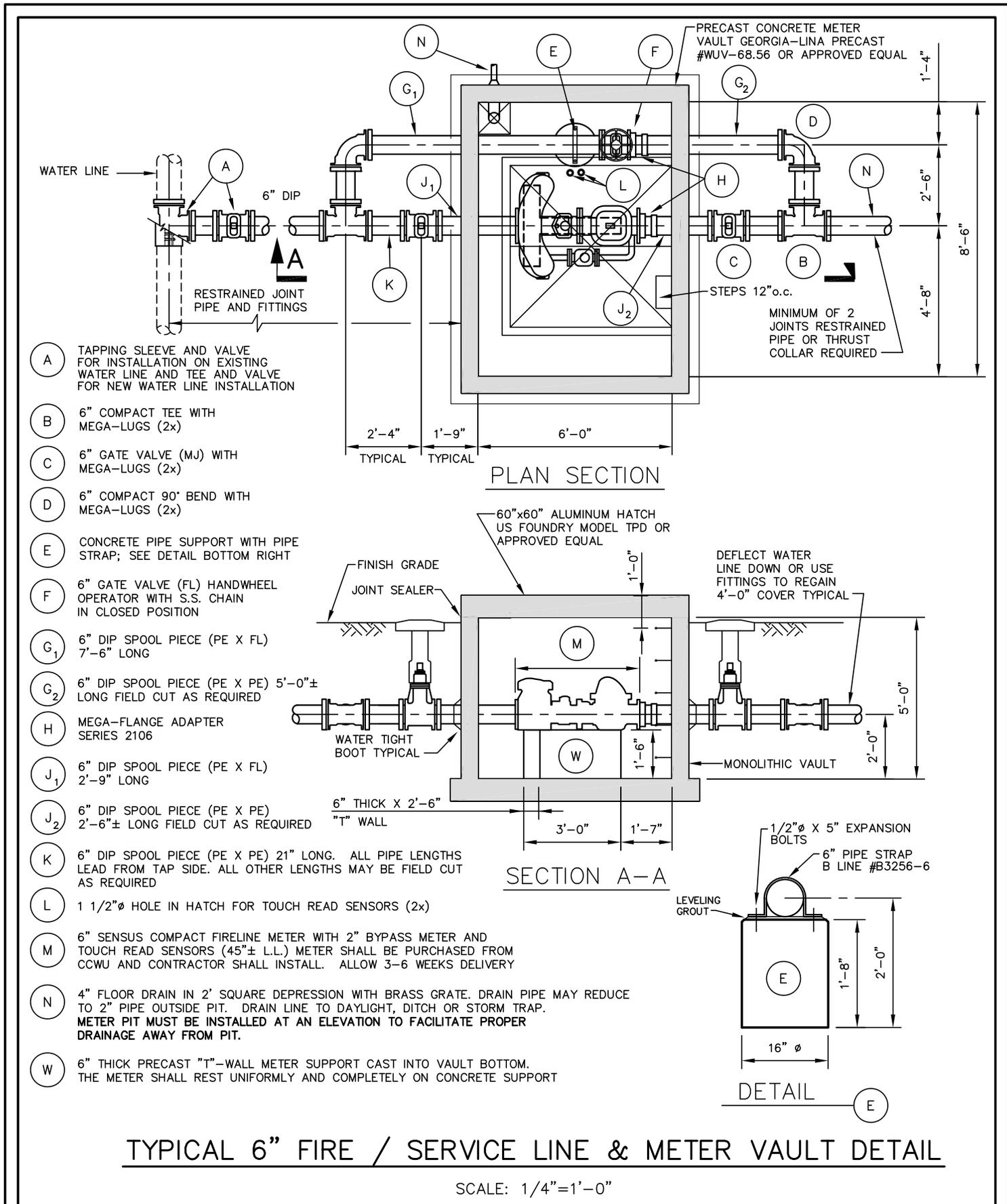
GENERAL ARRANGEMENT FOR FIRE PROTECTION LINE DETAIL

NO SCALE

Approved By: _____	Date: _____
Revision No. _____	Date: _____

<p>WATER UTILITY</p>  <p>COLUMBIA COUNTY GEORGIA</p>	<p>ENGINEERING DEPARTMENT</p>
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<p>STANDARD DETAIL NUMBER</p> <p>14.10-5</p>



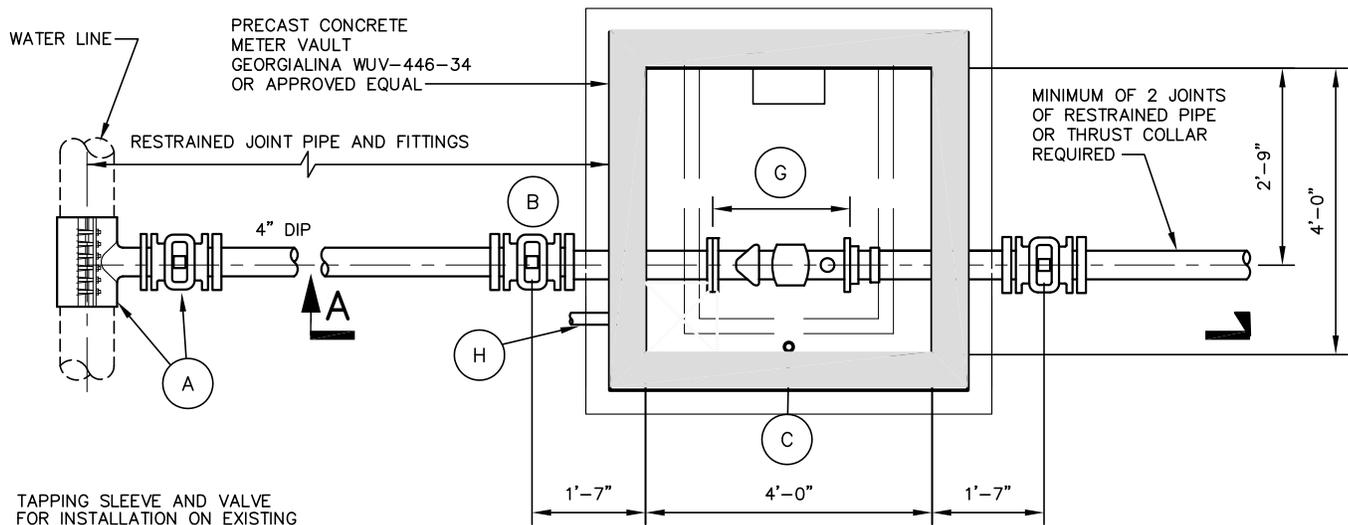
TYPICAL 6" FIRE / SERVICE LINE & METER VAULT DETAIL

SCALE: 1/4"=1'-0"

Approved By: _____	Date: _____
Revision No. 1	Date: 6-1-2009
Revision No. _____	Date: _____

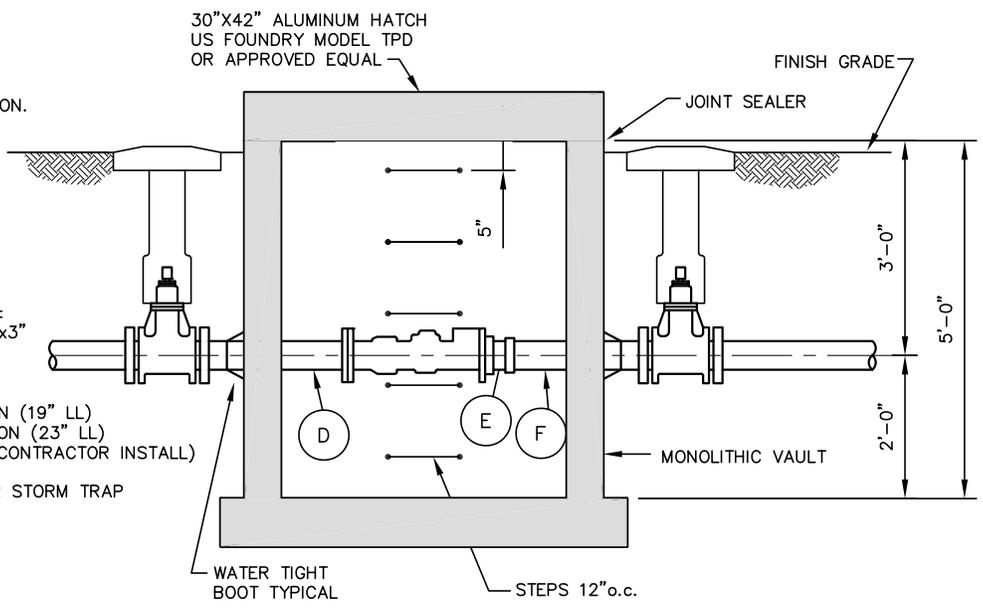

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COLUMBIA COUNTY
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STANDARD DETAIL NUMBER
14.10-6



PLAN SECTION

- (A) TAPPING SLEEVE AND VALVE FOR INSTALLATION ON EXISTING WATER LINE AND TEE AND VALVE FOR NEW WATER LINE INSTALLATION
- (B) 4" GATE VALVE (MJ) WITH MEGA-LUGS (2x)
- (C) 1 1/2"Ø HOLE IN TOP SLAB FOR TOUCH READ SENSOR
- (D_{4"}) 4" DIP SPOOL PIECE (PE X FL) 2'-4" LONG FOR 4" METER INSTALLATION.
- (D_{3"}) 4" DIP SPOOL PIECE (PE X FL) 2'-7" LONG FOR 3" METER INSTALLATION. 4"x3" FLANGE REDUCERS REQUIRED.
- (E) MEGA-FLANGE ADAPTER SERIES 2104 OR APPROVED EQUAL
- (F_{4"}) 4" DIP SPOOL PIECE (PE X PE) 2'-6"± LONG FOR 4" METER INSTALLATION (FIELD CUT TO SUIT)
- (F_{3"}) 4" DIP SPOOL PIECE (PE X FL) 2'-4"± LONG FOR 3" METER INSTALLATION. 4"x3" FLANGE REDUCERS REQUIRED (FIELD CUT TO SUIT).
- (G) SENSUS W-350 TR PL 3" INSTALLATION (19" LL)
SENSUS W-2000 TR PL 4" INSTALLATION (23" LL)
PURCHASE FROM CCWU MAIN OFFICE (CONTRACTOR INSTALL)
- (H) 2" DRAIN LINE TO DAYLIGHT, DITCH OR STORM TRAP



SECTION A-A

**TYPICAL 3" & 4" IRRIGATION
SERVICE LINE & METER VAULT DETAIL**

SCALE: 3/8"=1'-0"

Approved By: _____	Date: _____
Revision No. _____	Date: _____

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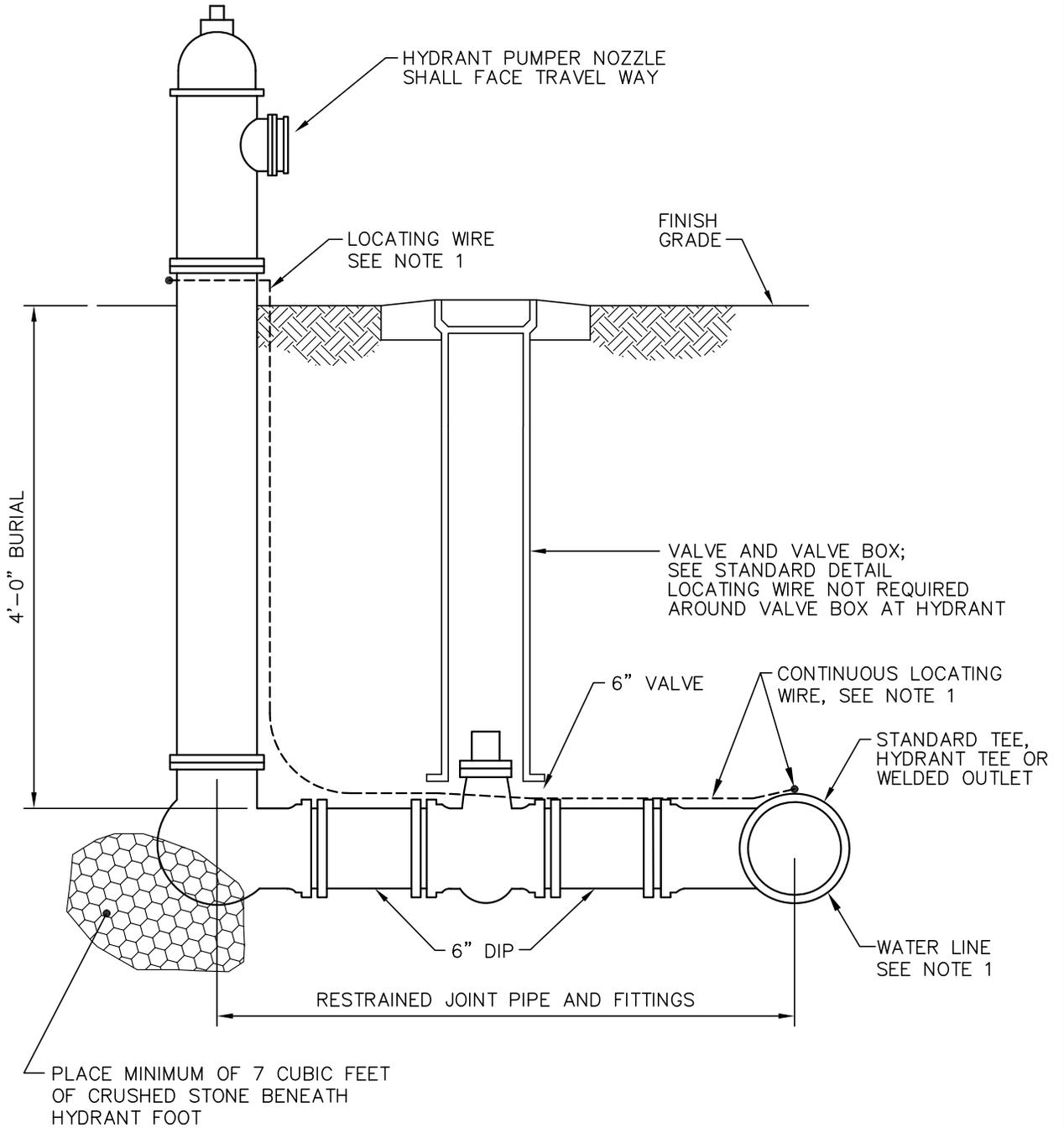
COLUMBIA COUNTY
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DETAIL NUMBER
14.10-8

NOTE:

1. A CONTINUOUS RUN OF LOCATING WIRE IS REQUIRED WHERE THE WATER LINE IS PVC. THE RUN SHALL BE CONTINUOUS THROUGHOUT THE HYDRANT LEAD AND EXTEND UP TO THE TRAFFIC FLANGE AND BE EXPOSED. COMPLETE DIP WATER LINES DO NOT REQUIRE.
2. ALL HYDRANT INSTALLATIONS REQUIRE A REFLECTIVE MARKER BE PLACED IN PAVEMENT. SEE STANDARD DETAIL 11.5-1, 11.5-2 AND 11.5-3.



TYPICAL HYDRANT ASSEMBLY DETAIL

NO SCALE

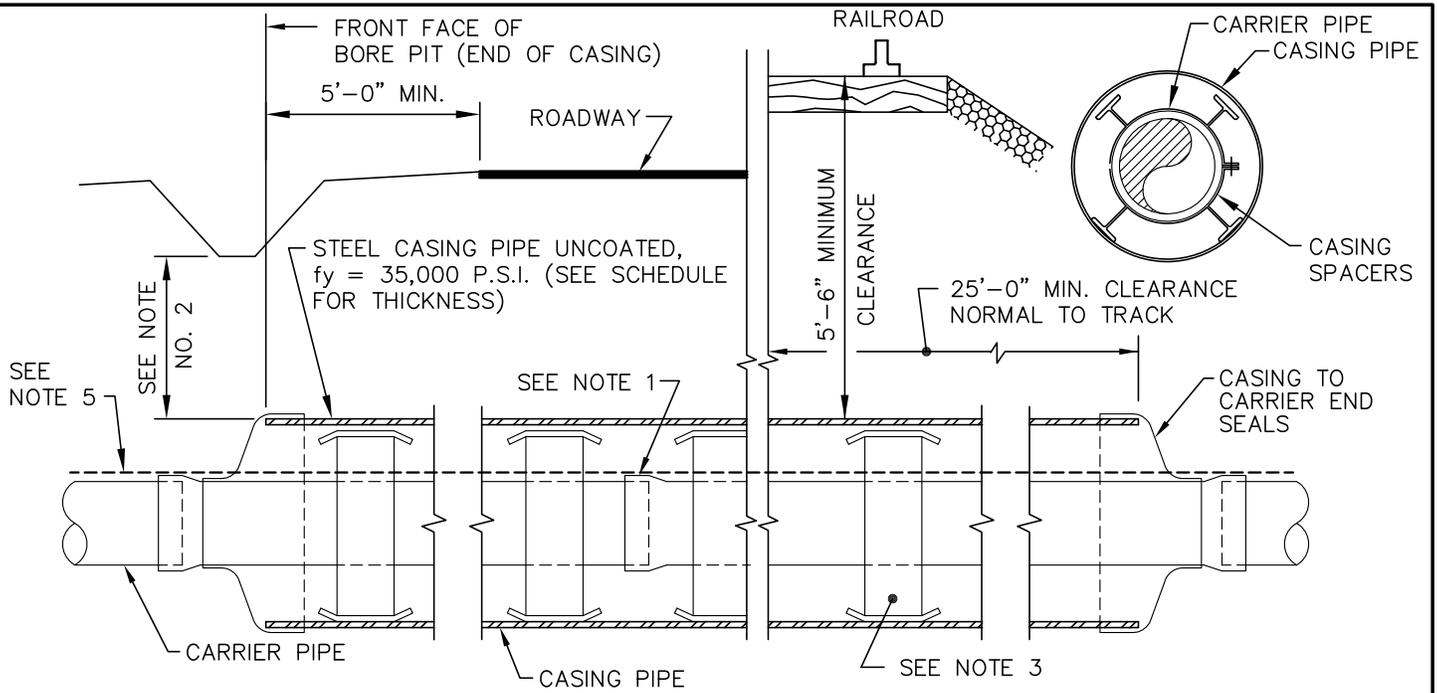
Approved By: _____ Date: _____
 Revision No. _____ Date: _____

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ENGINEERING
DEPARTMENT

STANDARD
DETAIL NUMBER
14.15-1



DUCTILE IRON CARRIER PIPE SIZE	CASING PIPE		
	SIZE	THICKNESS *	
		ROADWAY	RAILROAD
4"(FORCE MAIN ONLY)	10"	.25"	.312"
6"	12"	.25"	.312"
8"	16"	.312"	.312"
10"	20"	.312"	.312"
12"	24"	.312"	.375"
16"	24"	.312"	.375"
18"	30"	.375"	.50"
20"	36"	.50"	.562"
24"	42"	.50"	.562"

SEE NOTE 4

* .063" HAS BEEN ADDED TO MINIMUM FOR A CORROSION ALLOWANCE.

NOTE:

- PIPE WITHIN THE CASING SHALL BE INSTALLED WITH RESTRAINED JOINTS.
- 4'-0" MINIMUM CLEARANCE FROM LOWEST POINT OF ROADWAY CROSS SECTION. MINIMUM 4'-0" BELOW PAVEMENT.
- PROVIDE A MINIMUM OF 2 CASING SPACERS PER JOINT OF PIPE.
- 4" C-900 PC 150 AND 200 ARE PERMITTED FOR FORCE MAINS ONLY. THE CASING PIPE MUST BE A MINIMUM OF 12" INSIDE DIAMETER AND THERE MUST BE A MINIMUM OF 3 CASING SPACERS PER JOINT OF CARRIER. ALL BELLS SHALL BE RESTRAINED WITH EBBA IRON SERIES 1500 HARNESSSES.
- ALL PVC WATER LINES OR PVC FORCE MAINS SHALL HAVE CONTINUOUS LOCATING WIRE REGARDLESS OF PIPE MATERIAL WITHIN CASING.

**BORE AND JACK CROSSING DETAIL
FOR WATER LINE OR FORCE MAIN**

NO SCALE

Approved By: _____ Date: _____
 Revision No. _____ Date: _____

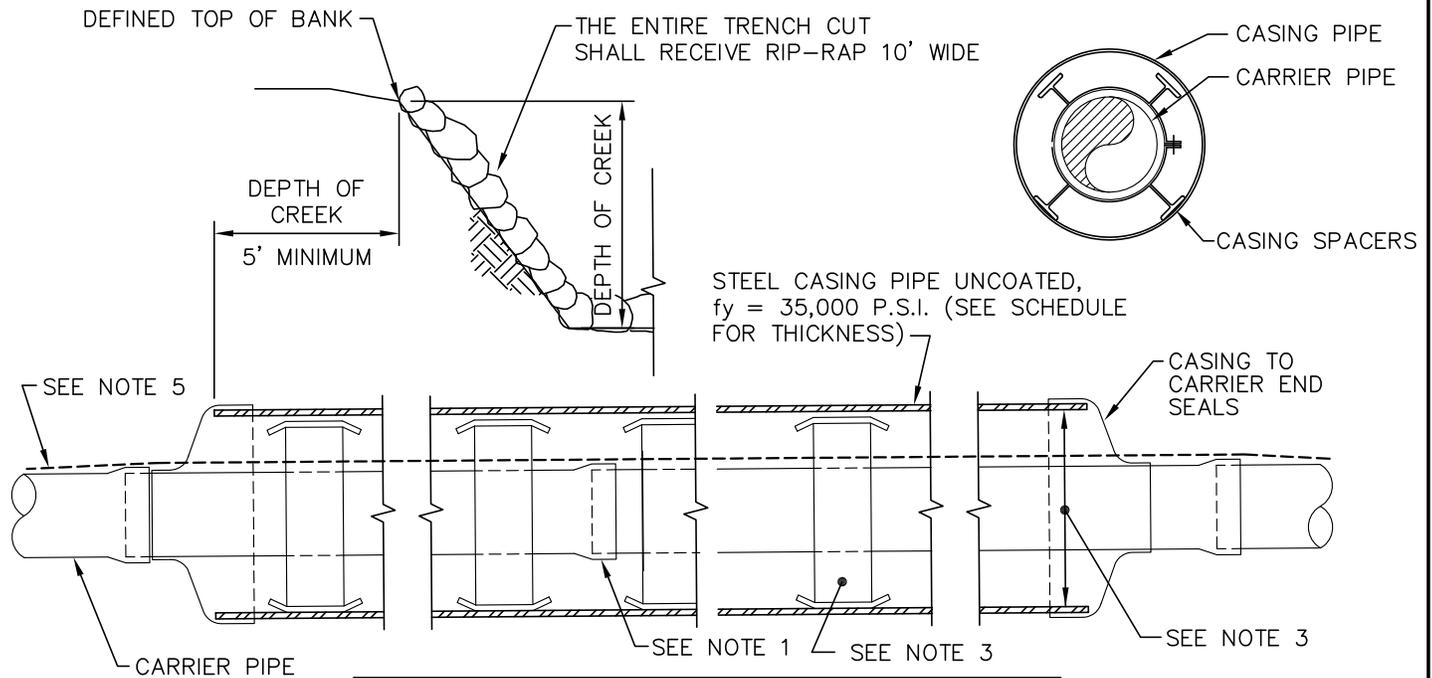
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DEPARTMENT

STANDARD
DETAIL NUMBER

14.18-1



OPEN CUT TRENCH INSTALLATION ONLY		
DUCTILE IRON CARRIER PIPE SIZE	CASING PIPE FOR CREEK CROSSING	
	SIZE	PIPE THICKNESS *
4"(FORCE MAIN ONLY)	10"	.25"
6"	12"	.25"
8"	16"	.312"
10"	16"	.312"
12"	20"	.312"
16"	24"	.312"
20"	30"	.375"
24"	36"	.375"

* .063" HAS BEEN ADDED TO MINIMUM FOR A CORROSION ALLOWANCE.

NOTES:

1. PIPE WITHIN THE CASING SHALL BE DUCTILE IRON PIPE ONLY AND INSTALLED WITH RESTRAINED JOINTS.
2. PROVIDE A MINIMUM OF 2 CASING SPACERS PER JOINT OF PIPE.
3. CONCRETE OR MORTAR IS NOT PERMITTED TO SEAL ENDS OF THE CASING PIPE.
4. WELDING RODS TO THE END OF THE CASING SHALL NOT BE USED TO RESTRAIN CARRIER PIPE. SUFFICIENT RESTRAINED JOINTS, THRUST COLLARS OR BLOCKING SHALL BE USED TO PREVENT MOVEMENT INSIDE AND OUTSIDE OF CASING PIPE.
5. ALL PVC WATER LINES OR PVC FORCE MAINS SHALL HAVE CONTINUOUS LOCATING WIRE REGARDLESS OF PIPE MATERIAL WITHIN CASING.

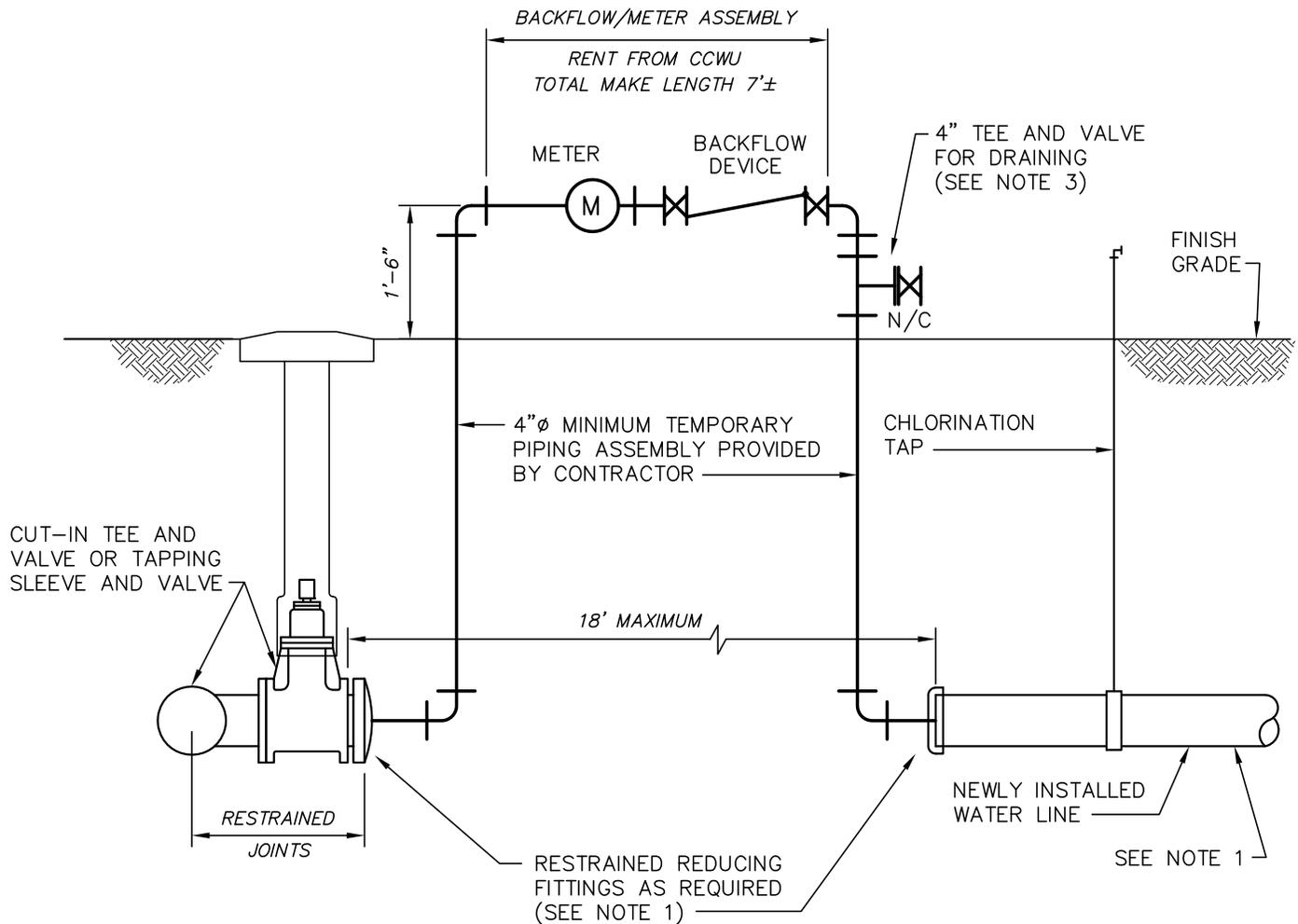
**CREEK CROSSING DETAIL FOR
WATER LINE OR FORCE MAIN**

NO SCALE

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 Revision No. _____ Date: _____


WATER UTILITY **ENGINEERING DEPARTMENT**
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14.19-1



NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY RESTRAINING PIPE AND ALL FITTINGS NECESSARY. THRUST COLLARS AND/OR RESTRAINED JOINT PIPE MUST BE USED.
2. UPON COMPLETION OF THE PRESSURE TEST AND DISINFECTION THE TEMPORARY CONNECTION PIPING SHALL BE REMOVED AND A SINGLE JOINT OF PIPE WITH A RESTRAINED SLEEVE SHALL BE INSTALLED IN THE PRESENCE OF THE CCWU INSPECTOR.
3. PROVIDE ADEQUATE VALVE AND DRAIN HOSE TO PREVENT SITE FLOODING AND EROSION AFTER COMPLETION OF DISINFECTION AND BEFORE TEMPORARY CONNECTION REMOVAL.

**TYPICAL TEMPORARY CONNECTION
FOR DISINFECTION DETAIL**

NO SCALE

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 Revision No. _____ Date: _____

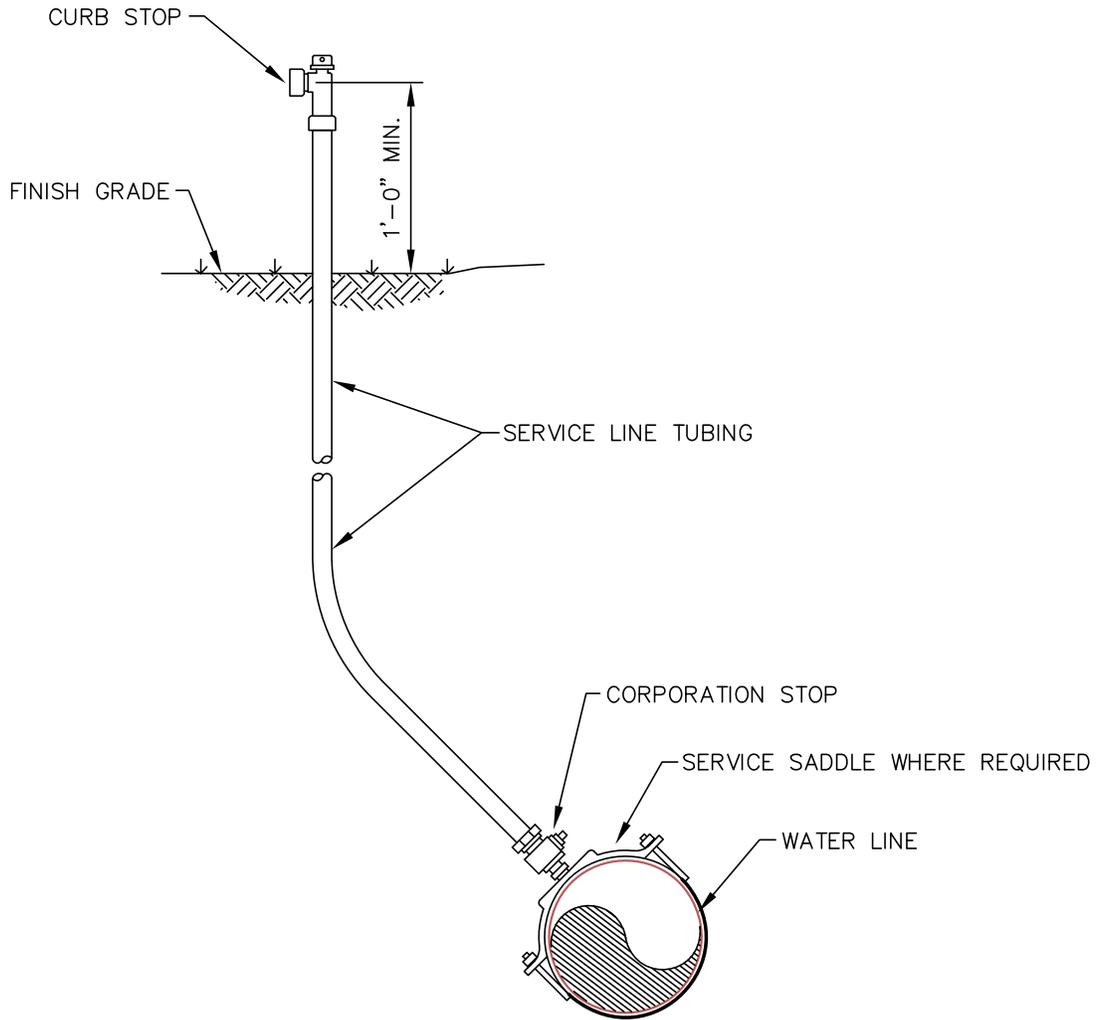
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DETAIL NUMBER
14.21-1



TYPICAL SAMPLE TAP DETAIL

NO SCALE

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 Revision No. _____ Date: _____

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DETAIL NUMBER

14.21-2