

**NOTES:**

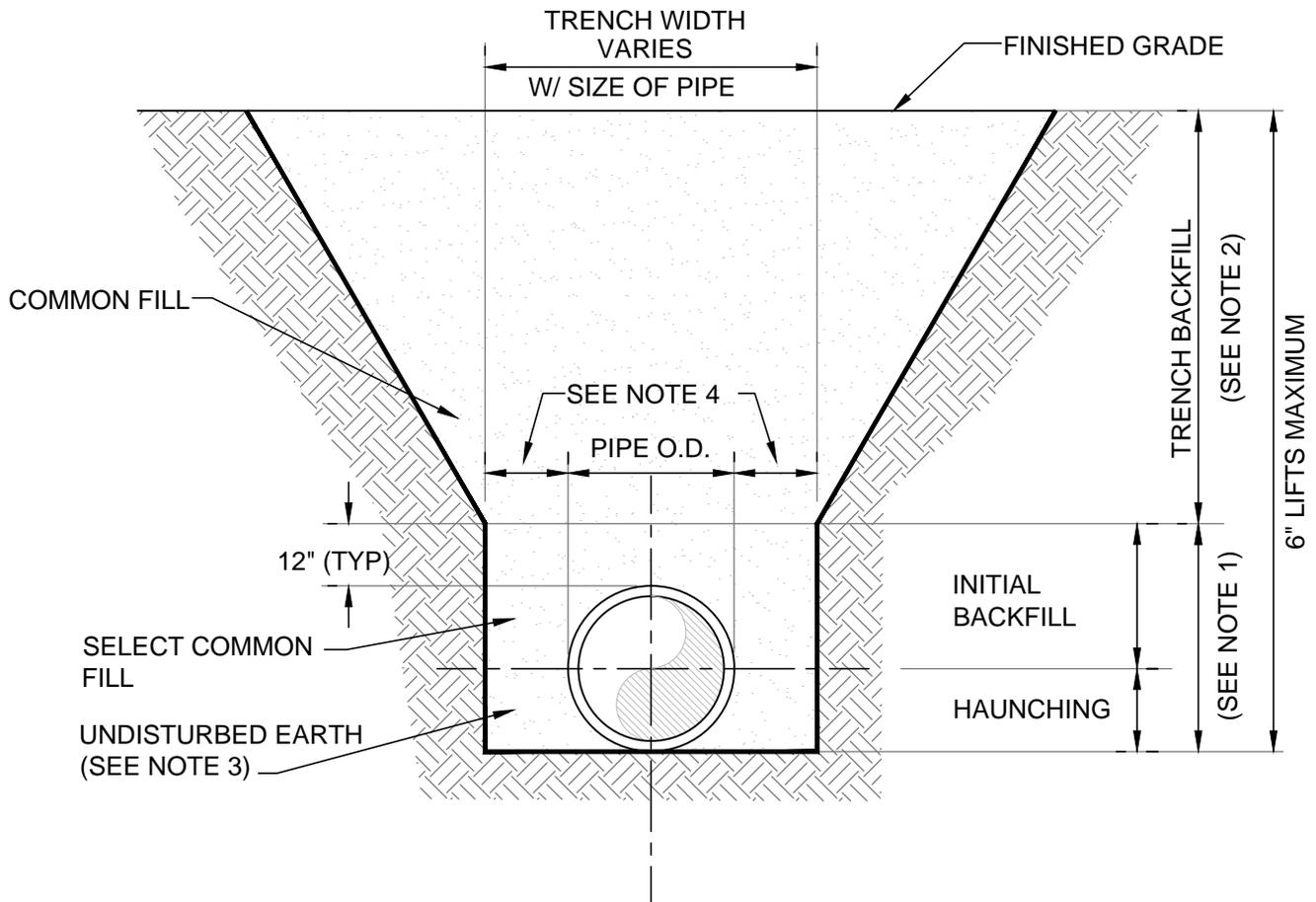
1. SELECT COMMON FILL UNDER & WITHIN 6 FEET OF THE EDGE OF ANY PAVED SURFACE SHALL BE PLACED IN 6" COMPACTED LIFTS TO TOP OF PIPE, THEN 12" COMPACTED LIFTS THEREAFTER, AND COMPACTED TO 100% OF MAX DENSITY PER AASHTO T-99. BACKFILL IN AREAS OUTSIDE THE ROADWAY SHALL BE PLACED IN 6" COMPACTED LIFTS TO TOP OF PIPE THEN 12" COMPACTED LIFTS THEREAFTER AND COMPACTED TO 95% MAX DENSITY PER AASHTO T-180.
2. TRENCH BACKFILL/BACKFILL COMPACTION SHALL BE IN ACCORDANCE WITH THE REGULATIONS OF THE GOVERNING AGENCY HAVING JURISDICTION OVER THE WORK SITE.
3. TYPE A BEDDING MATERIAL SHALL CONFORM TO FDOT NO. 57 AGGREGATE.
4. 15" MAX. (12" MIN.) FOR PIPE DIAMETER LESS THAN 24" AND 24" MAX (18" MIN) FOR PIPE DIAMETER 24" AND LARGER.
5. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
6. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
7. BEDDING DEPTH SHALL BE 4" MINIMUM FOR PIPE DIAMETER UP TO 12" AND 6" MINIMUM FOR PIPE DIAMETER 16" AND LARGER.
8. DEPTH FOR REMOVAL OF UNSUITABLE MATERIAL SHALL GOVERN DEPTH OF BEDDING ROCK BELOW THE PIPE. PCU SHALL DETERMINE IN THE FIELD REQUIRED REMOVAL OF UNSUITABLE MATERIAL TO REACH SUITABLE FOUNDATION.
9. FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF THE GOVERNING AGENCY HAVING JURISDICTION OVER THE WORK SITE. SURFACE RESTORATION WITHIN COUNTY RIGHT-OF-WAY SHALL COMPLY WITH REQUIREMENTS OF POLK COUNTY.

**BEDDING AND TRENCHING  
TYPE A**

POLK COUNTY UTILITIES, FLORIDA

**FIGURE  
GR-01**

DECEMBER, 2010



**NOTES:**

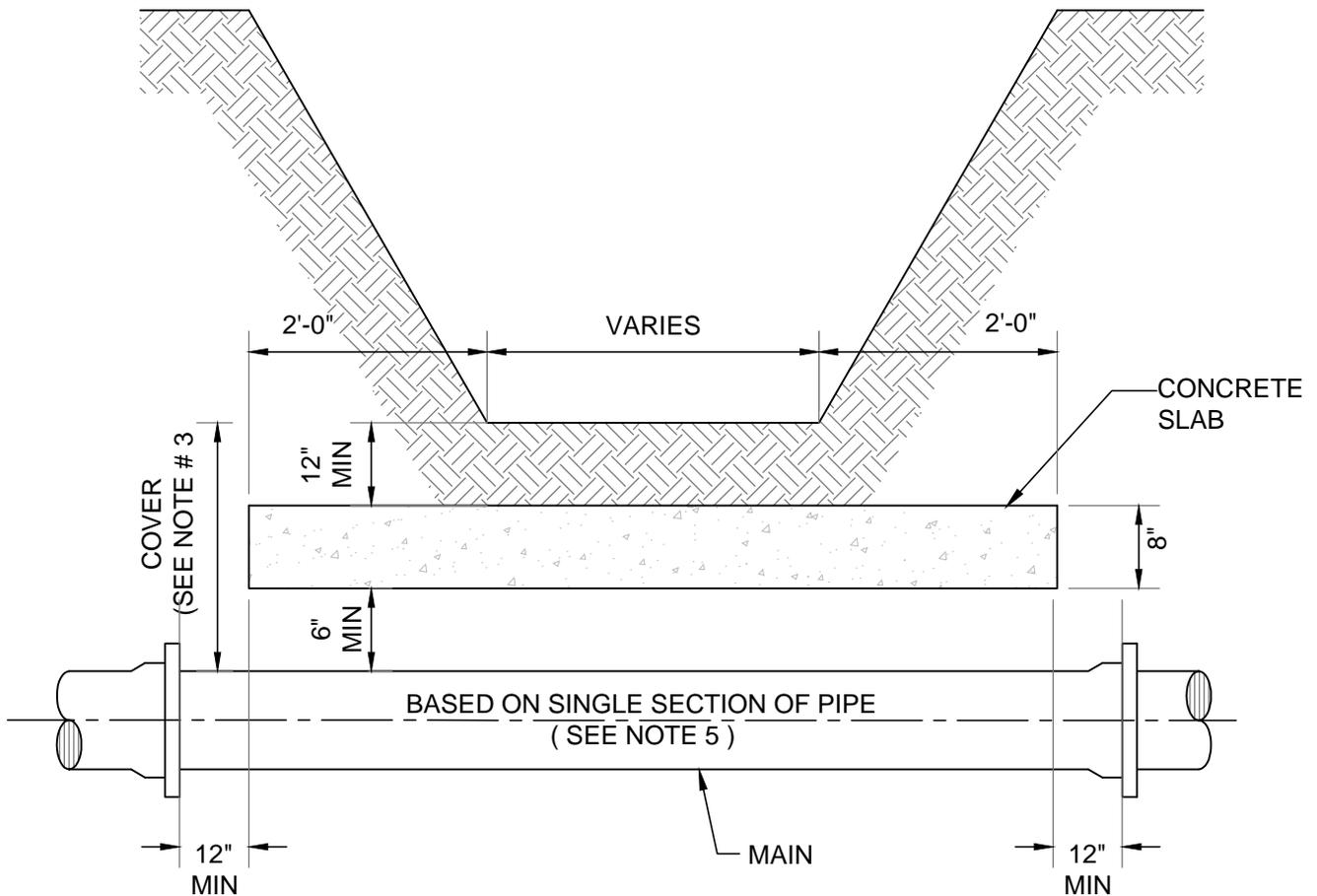
1. SELECT COMMON FILL UNDER & WITHIN 6 FEET OF THE EDGE OF ANY PAVED SURFACE SHALL BE PLACED IN 6" COMPACTED LIFTS TO TOP OF PIPE, THEN 12" COMPACTED LIFTS THEREAFTER, AND COMPACTED TO 100% OF MAX DENSITY PER AASHTO T-99. BACKFILL IN AREAS OUTSIDE THE ROADWAY SHALL BE PLACED IN 6" COMPACTED LIFTS TO TOP OF PIPE THEN 12" COMPACTED LIFTS THEREAFTER AND COMPACTED TO 95% MAX DENSITY PER AASHTO T-180.
2. TRENCH BACKFILL/BACKFILL COMPACTION: SHALL BE IN ACCORDANCE WITH THE REGULATIONS OF THE GOVERNING AGENCY HAVING JURISDICTION OVER THE WORK SITE.
3. PIPE BEDDING UTILIZING SELECT COMMON FILL OR BEDDING ROCK IN ACCORDANCE WITH TYPE A BEDDING AND TRENCHING DETAIL MAY BE REQUIRED AS DIRECTED BY PCU.
4. 15" MAX. (12" MIN.) FOR PIPE DIAMETER LESS THAN 24" AND 24" MAX (12" MIN) FOR PIPE DIAMETER 24" AND LARGER.
5. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
6. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
7. FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF THE GOVERNING AGENCY HAVING JURISDICTION OVER THE WORK SITE. SURFACE RESTORATION WITHIN COUNTY RIGHT-OF-WAY SHALL COMPLY WITH REQUIREMENTS OF POLK COUNTY.

**BEDDING AND TRENCHING  
TYPE B**

POLK COUNTY UTILITIES, FLORIDA

**FIGURE  
GR-02**

DECEMBER, 2010



**NOTES:**

1. THE MAIN SHALL BE A CONTINUOUS LENGTH OF PIPE TO EXTEND 2 FEET MINIMUM EITHER SIDE OF THE CROSSING, WITH NO FITTING OR JOINTS WITHIN THE CROSSING.
2. CONCRETE SLAB SHALL BE 2' WIDER THAN THE PIPE O.D. WITH A MINIMUM WIDTH OF 4'.
3. CONCRETE IS NOT REQUIRED IF COVER IS GREATER THAN 3'.
4. CONCRETE SHALL BE 3000 PSI COMPRESSIVE STRENGTH WITH FIBERMESH REINFORCEMENT.
5. MAIN SHALL BE PLACED IN A STEEL CASING SHOULD BOTTOM OF DITCH OR SWALE EXCEED 12 FEET IN WIDTH. SEE FIGURE GR-06 FOR CASING DETAILS.

**SUBAQUEOUS CROSSING (TYPICAL)**

**FIGURE  
GR-03**

MINIMUM LENGTH (FT) TO BE RESTRAINED ON EACH SIDE OF FITTING(S)												
TYPE	D.I.P. PIPE SIZE											
	4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"
90° BEND OR BRANCH OF TEE	20	29	37	44	51	65	77	89	105	120	132	144
45° BEND	8	12	15	18	21	27	32	37	44	50	55	60
22-1/2° BEND	4	6	7	9	10	13	15	18	21	24	27	29
11-1/4° BEND	2	3	4	5	6	7	8	9	10	12	13	15
PLUG OR CAP	42	59	77	93	108	138	166	194	231	275	328	391
POINT OF CONNECTION WITH HDPE PIPE	40	40	40	40	40	40	40	40	60	60	60	60

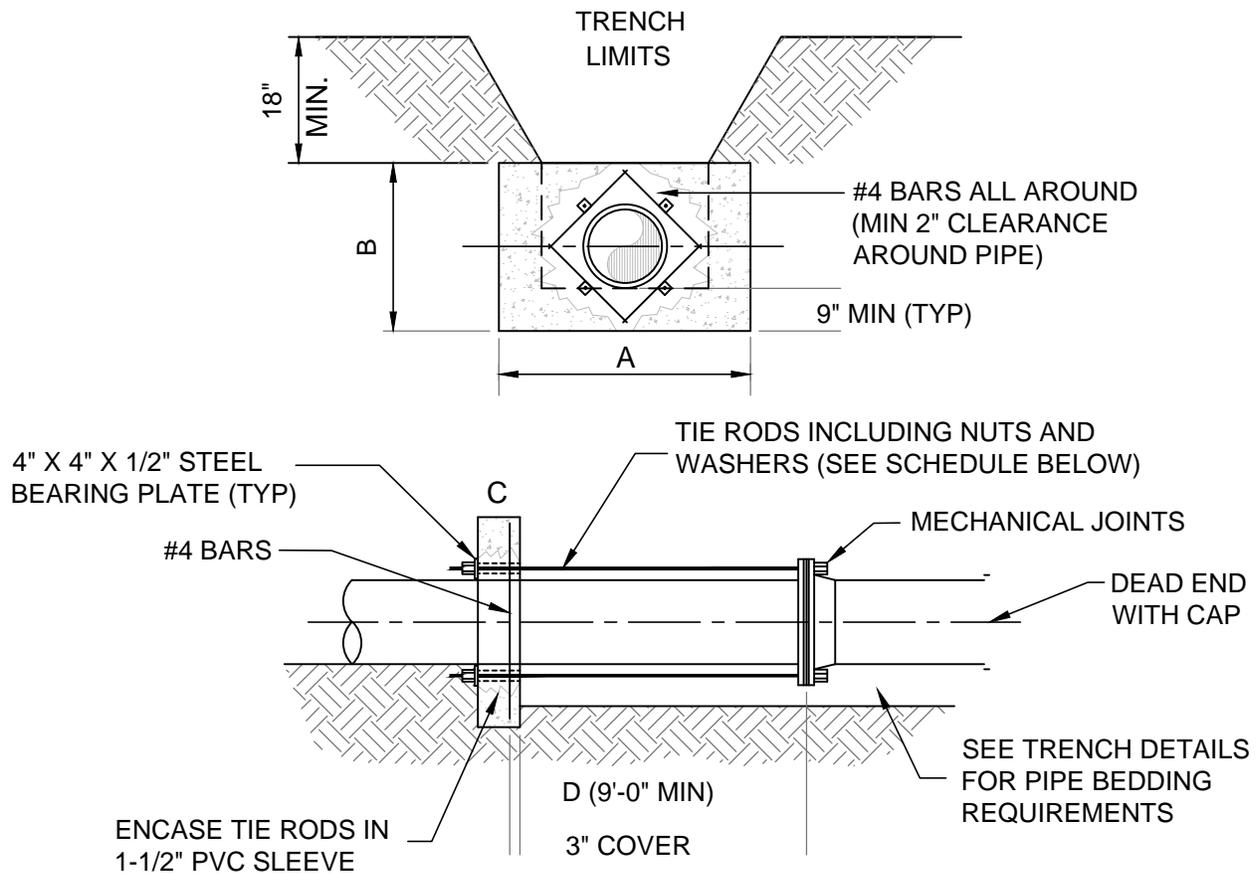
MINIMUM LENGTH (FT) TO BE RESTRAINED ON EACH SIDE OF FITTING(S)												
TYPE	PVC OR HDPE PIPE SIZE											
	4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"
90° BEND OR BRANCH OF TEE	25	37	47	55	64	82	97	112	132	156	172	188
45° BEND	10	15	19	23	27	34	40	47	55	65	72	78
22-1/2° BEND	5	8	9	12	13	17	19	23	27	32	35	38
11-1/4° BEND	3	4	5	7	8	9	10	12	13	16	17	19
PLUG OR CAP	53	74	97	117	135	173	208	243	289	344	410	488
POINT OF CONNECTION WITH HDPE PIPE	40	40	40	40	40	40	40	60	60	80	80	80

NOTES:

- FITTINGS SHALL BE RESTRAINED JOINTS UNLESS OTHERWISE INDICATED.
- INSTALL FULL LENGTH JOINTS WITH TOTAL LENGTH EQUAL TO OR GREATER THAN SHOWN IN THE TABLE.
- WHERE TWO OR MORE FITTINGS ARE TOGETHER, USE FITTING WHICH YIELDS GREATEST LENGTH OF RESTRAINED PIPE.
- ALL LINE VALVES AND THROUGH RUN OF TEES SHALL HAVE MJ RESTRAINTS.
- LENGTHS SHOWN IN THE TABLE HAVE BEEN CALCULATED IN ACCORDANCE WITH THE PROCEDURE OUTLINED IN "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" AS PUBLISHED BY DIPRA, WITH THE FOLLOWING ASSUMPTIONS:  
 WORKING PRESSURE: 150 PSI  
 SOIL DESIGNATION: SM (SAND SILT)  
 LAYING CONDITIONS: 3
- THE ENGINEER SHALL VERIFY THESE MINIMUM DESIGN ASSUMPTIONS AND INCREASE LENGTHS WITH THE APPROVAL OF PCU.
- DI PIPE WRAPPED WITH OR ENCASED IN POLYETHYLENE SHALL BE RESTRAINED SIMILAR TO PVC PIPE.

**RESTRAINED PIPE TABLE**

**FIGURE  
GR-04**



**NOTES:**

1. ADDITIONAL REINFORCEMENTS SHALL BE AS SPECIFIED BY THE ENGINEER.
2. MINIMUM COMPRESSIVE STRENGTH FOR CONCRETE SHALL BE 3000 PSI.
3. BEDDING, BACKFILL AND COMPACTION SHALL BE AS SPECIFIED ELSEWHERE IN THE STANDARD DRAWINGS.
4. ALL FORM BOARDS SHALL BE REMOVED PRIOR TO BACKFILL.
5. NO ALLOWANCE SHALL BE MADE FOR FRICTION BETWEEN THE PIPE WALL AND THE THRUST COLLAR.
6. DESIGN PRESSURE: 150 PSI.
7. A GATE VALVE OF A SIZE MATCHING MAIN SIZE SHALL BE INSTALLED PRIOR TO THE END CAP ON ALL MAINS NOT TERMINATING WITHIN A CUL-DE-SAC.

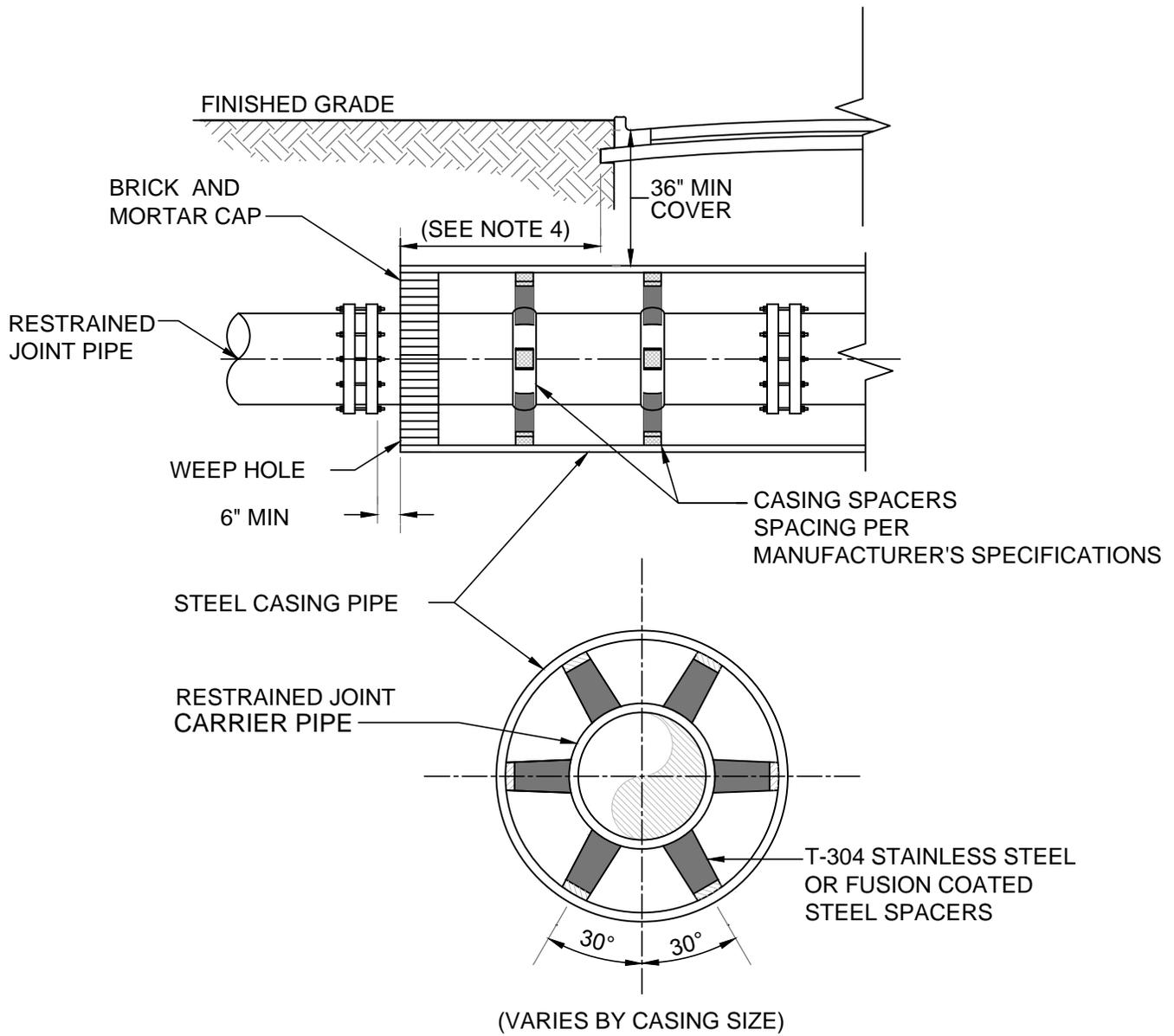
**SCHEDULE OF DIMENSIONS AND MATERIALS**

PIPE SIZE (INCHES)	DIMENSIONS (FT.)				TIE RODS REQ'D	
	A	B	C	D	DIA.	NO.
4	2.0	2.0	1.0		3/4	2
6	2.0	2.0	1.0		3/4	2
8	2.5	2.5	1.0		3/4	2
10	3.5	3.0	1.0		3/4	2
12	5.0	3.0	1.0		3/4	2
16	6.0	4.0	1.5		3/4	4
20	8.0	5.0	1.5		3/4	6
24	9.0	6.0	1.5		3/4	8
30	11.5	7.5	2.0		1	12
36	13.5	9.0	2.0		1	15

NOTE: THRUST COLLAR AREAS TO BE COMPUTED ON BASIS OF 2000 LBS/SF SOIL RESTRAINT BEARING.

**THRUST COLLAR**

**FIGURE GR-05**



**NOTES:**

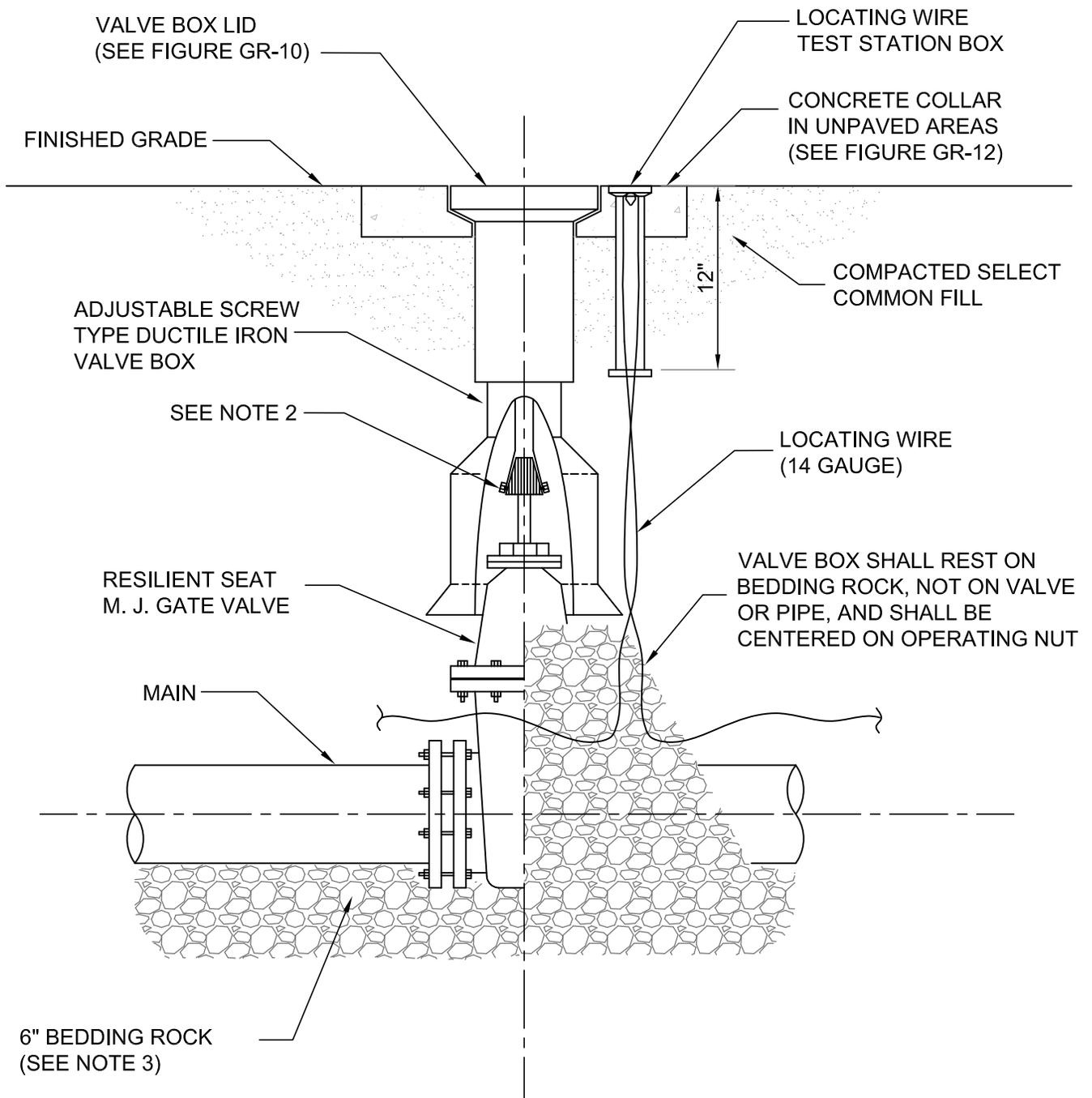
1. WHEN CONSTRUCTION IS WITHIN FDOT JURISDICTION, ADDITIONAL REQUIREMENTS OF THE UTILITY ACCOMMODATION GUIDE SHALL BE MET.
2. DISTANCE BETWEEN SPACERS TO BE PER MANUFACTURER'S SPECIFICATIONS.
3. NO FILL MATERIAL OF ANY KIND SHALL BE PLACED BETWEEN THE ANNULAR SPACE OF THE CASING AND CARRIER PIPE.
4. THE CASING SHALL EXTEND A MINIMUM OF 6' OR MEET THE RIGHT-OF-WAY AUTHORITY'S REQUIREMENTS BEYOND THE EDGE OF THE ROADWAY, WHICHEVER IS GREATER.

**BORE AND JACK**

**FIGURE  
GR-06**

**POLK COUNTY UTILITIES, FLORIDA**

**DECEMBER, 2010**

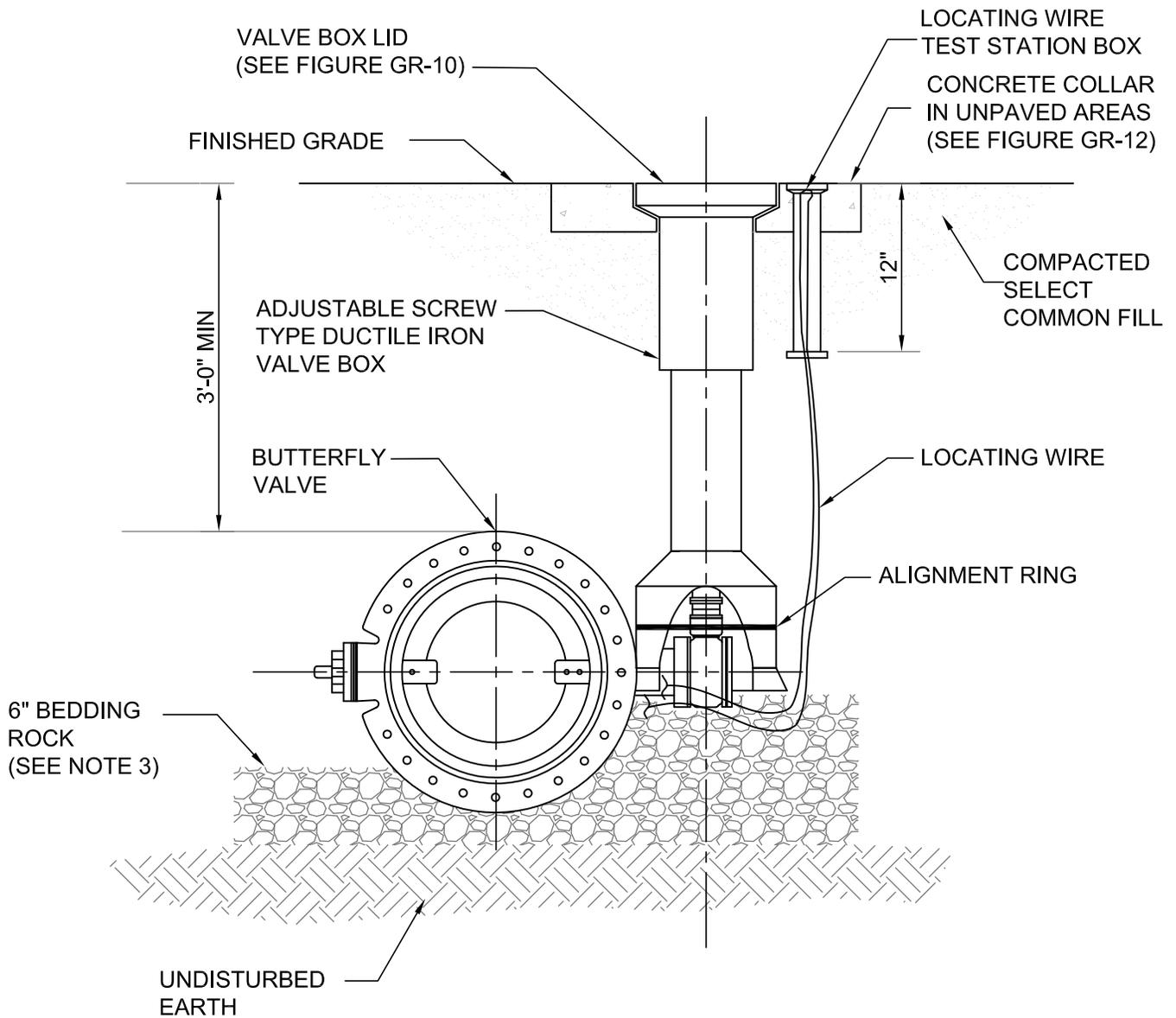


**NOTES:**

1. PVC PIPE OR DUCTILE IRON PIPE EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION IN PAVED AREAS.
2. THE VALVE ACTUATING NUT SHALL BE EXTENDED TO BE WITHIN 3' OF FINISHED GRADE.
3. BEDDING MATERIAL SHALL CONFORM TO FDOT NO. 57 AGGREGATE.
4. WIRE SHALL TERMINATE AT THE TOP OF THE TEST STATION BOX WITH 12" OF COILED EXCESS LENGTH.
5. REFER TO FIGURE GR-11 FOR INSTALLATIONS AT A DEPTH OF 6' OR GREATER.

**GATE VALVE AND BOX (SHALLOW)**

**FIGURE  
GR-07**

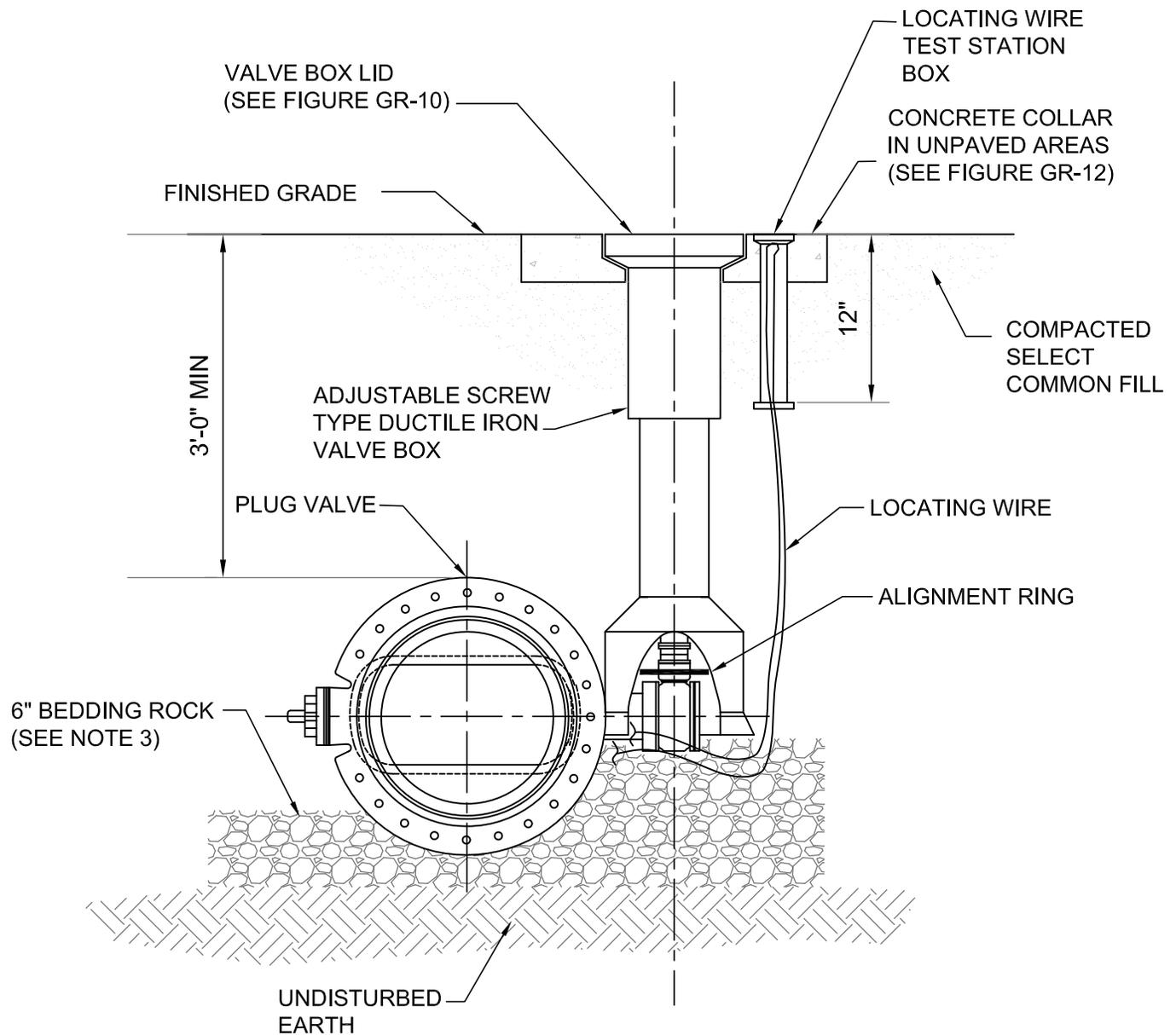


NOTES:

1. PVC PIPE OR DUCTILE IRON PIPE EXTENSIONS SHALL NOT BE USED ON VALVE BOX INSTALLATION IN PAVED AREAS.
2. THE ACTUATING NUT FOR VALVES SHALL BE EXTENDED TO 3' OF FINISHED GRADE.
3. BEDDING MATERIAL SHALL CONFORM TO FDOT NO. 57 AGGREGATE.
4. WIRE SHALL TERMINATE IN TEST STATION BOX.
5. VALVE BOX SHALL REST ON BEDDING ROCK NOT ON VALVE OR PIPE AND SHALL BE CENTERED ON OPERATING NUT.
6. REFER TO FIGURE GR-11 FOR INSTALLATIONS AT A DEPTH OF 6' OR GREATER.

**BUTTERFLY VALVE AND BOX (SHALLOW)  
(FOR STORAGE TANK ISOLATION USE ONLY)**

**FIGURE  
GR-08**

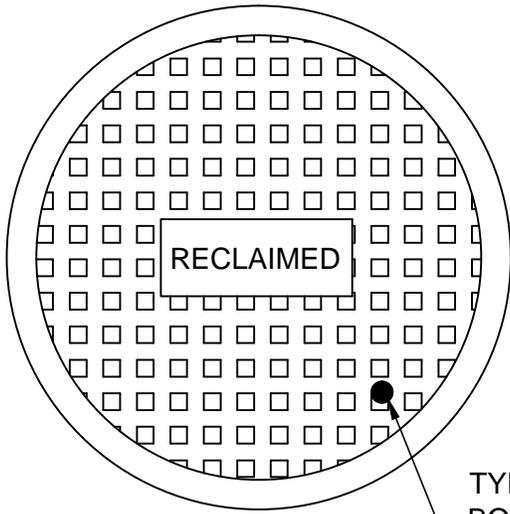


**NOTES:**

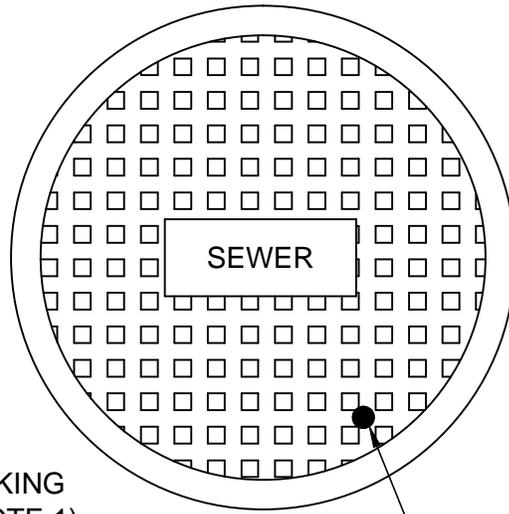
1. PVC PIPE OR DUCTILE IRON PIPE EXTENSION SHALL NOT BE USED ON VALVE BOX INSTALLATION IN PAVED AREAS.
2. THE VALVE ACTUATING NUT FOR SHALL BE EXTENDED TO BE WITHIN 3' OF FINISHED GRADE.
3. BEDDING MATERIAL SHALL CONFORM TO FDOT NO. 57 AGGREGATE.
4. WIRE SHALL TERMINATE IN TEST STATION BOX.
5. VALVE BOX SHALL REST ON BEDDING ROCK NOT ON VALVE OR PIPE AND SHALL BE CENTERED ON OPERATING NUT.
6. REFER TO FIGURE GR-11 FOR INSTALLATIONS AT A DEPTH OF 6' OR GREATER.

**PLUG VALVE (SHALLOW)  
(FOR WASTEWATER TREATMENT FACILITY USE ONLY)**

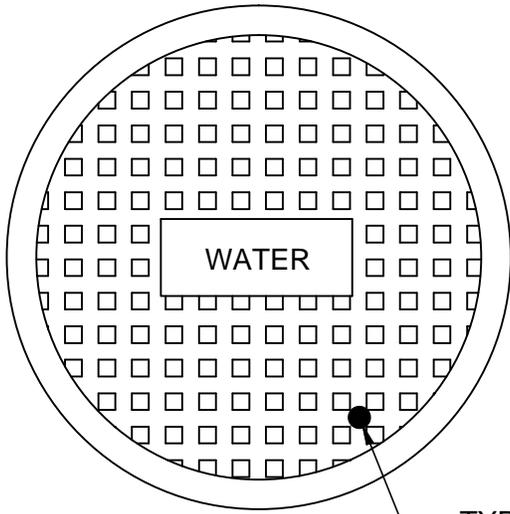
**FIGURE  
GR-09**



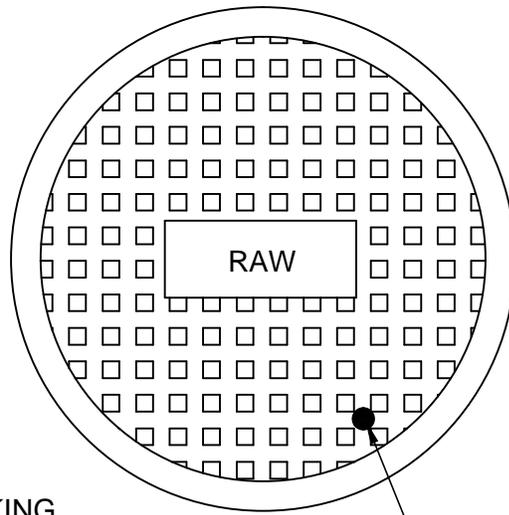
RECLAIMED WATER



WASTE WATER



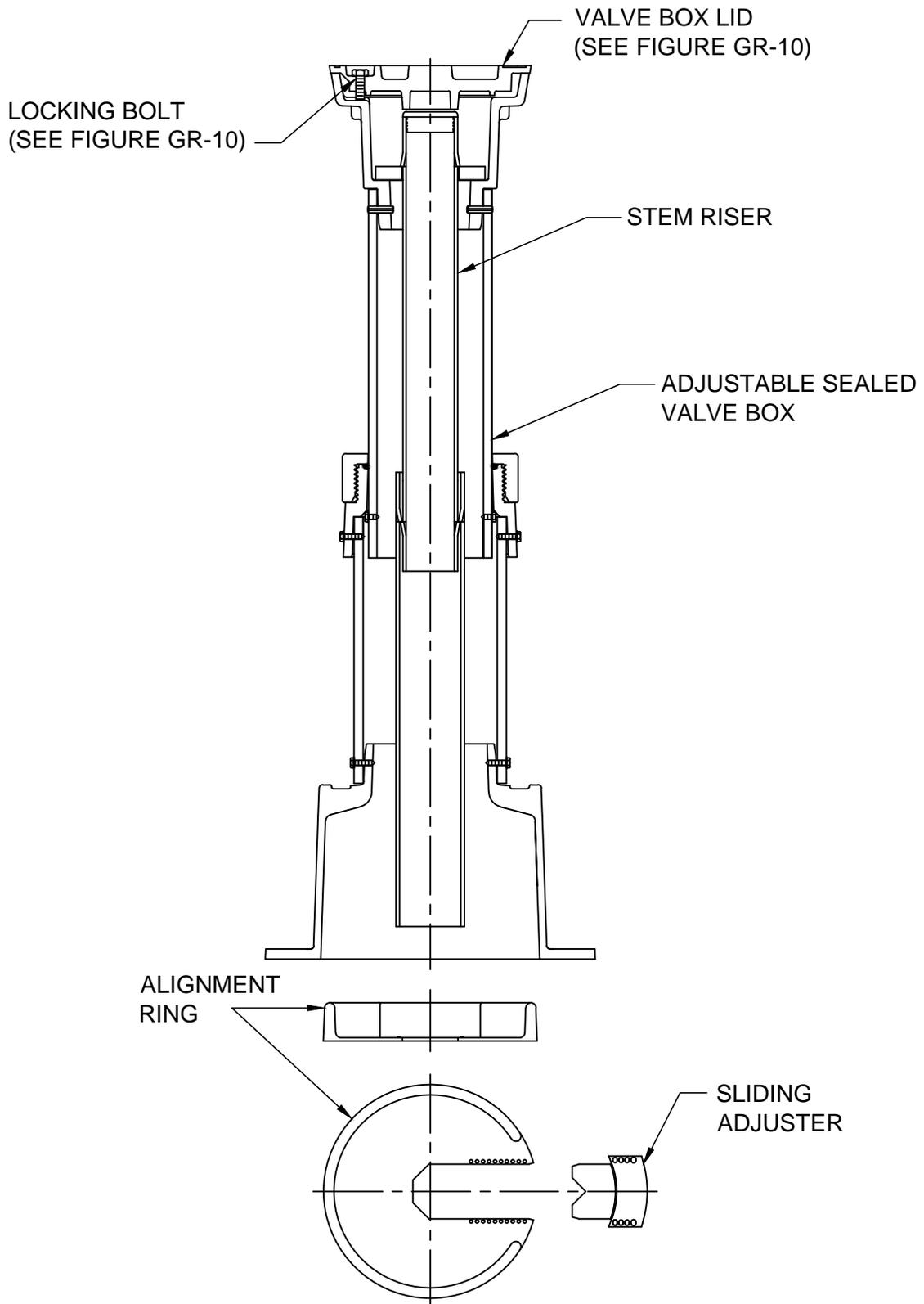
POTABLE WATER



RAW WATER

**NOTE:**

1. LOCKING LIDS ARE REQUIRED ON ALL VALVE BOXES LOCATED IN ROADWAYS WITH SPEED LIMITS ABOVE 30 MPH OR ON MAINS THAT ARE 16 INCHES IN DIAMETER OR LARGER.



NOTES:

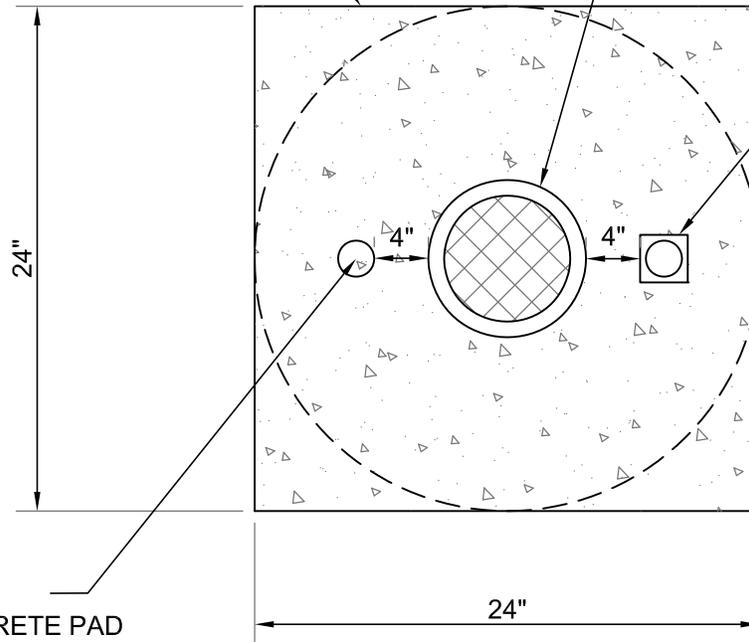
1. REQUIRED ON ALL MAINS WHENEVER THE TOP OF THE VALVE NUT IS 6 FEET OR DEEPER BELOW THE FINISHED SURFACE ELEVATION THAT IS DIRECTLY ABOVE THE VALVE LOCATION.

**VALVE BOX ASSEMBLY (DEEP)**

**FIGURE  
GR-11**

SQUARE (ROUND OPTIONAL)  
CONCRETE PAD

VALVE BOX AND COVER  
(SEE FIGURE GR-10)

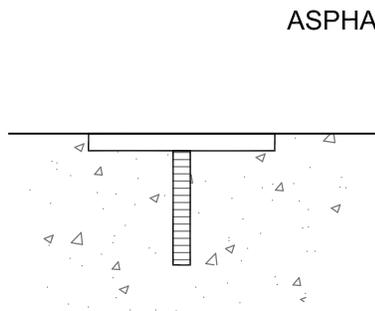


LOCATING WIRE  
TEST STATION  
BOX

4" THICK 3000 PSI  
CONCRETE  
REINFORCED  
W/FIBER MESH

**ID TAG :**  
3" DIA. BRONZE DISC  
ANCHORED IN CONCRETE PAD  
FOR ALL VALVES 3" AND LARGER  
\* SIZE OF VALVE  
\* TYPE OF SERVICE  
\* DIRECTION & NUMBER OF  
TURNS TO OPEN

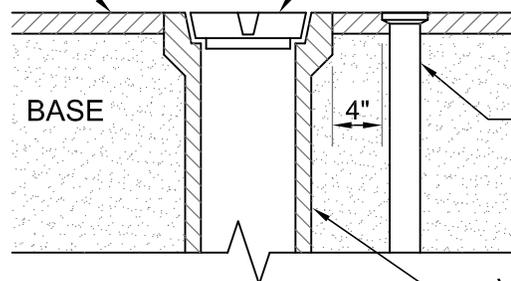
**OUTSIDE PAVEMENT**



TYPICAL ID TAG  
SECTION VIEW

ASPHALT SURFACE

TOP FLUSH  
WITH FINISHED  
GRADE



LOCATING WIRE  
TEST STATION  
BOX

VALVE BOX  
AND COVER  
(TYP)

**INSIDE PAVEMENT**

NOTES:

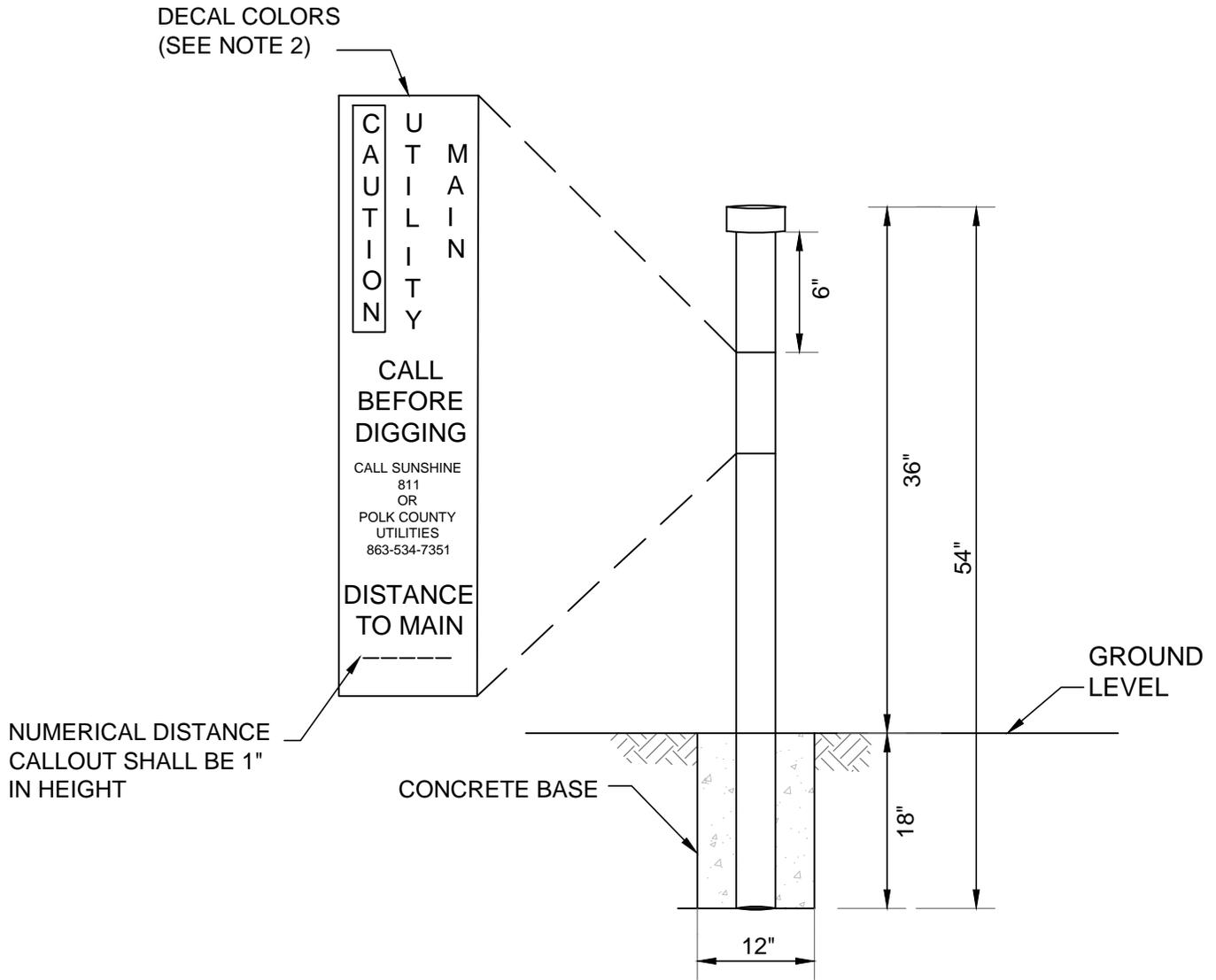
1. BRASS IDENTIFICATION DISC AND VALVE COLLAR SHALL BE REQUIRED FOR ALL VALVES LOCATED OUTSIDE OF PAVEMENT.

**VALVE COLLAR**

**FIGURE  
GR-12**

POLK COUNTY UTILITIES, FLORIDA

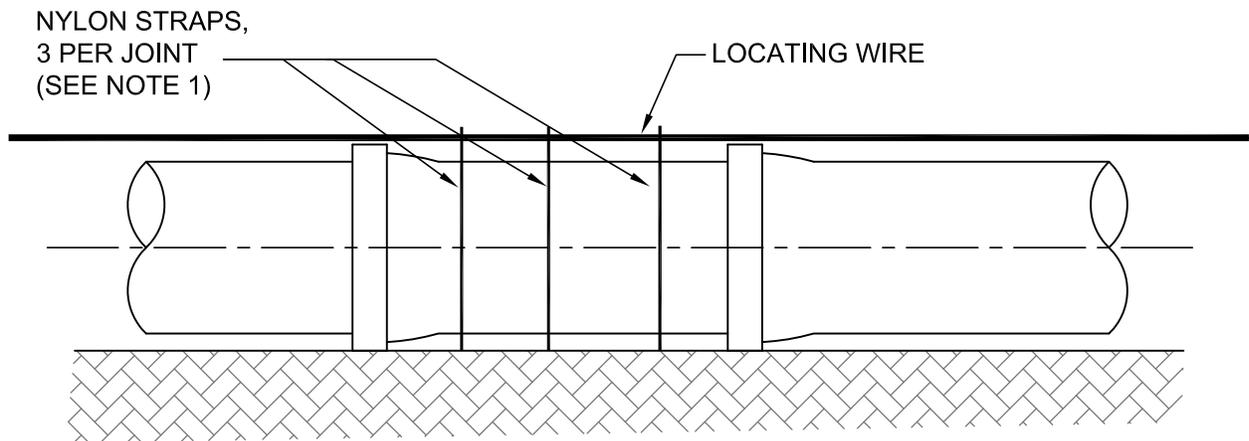
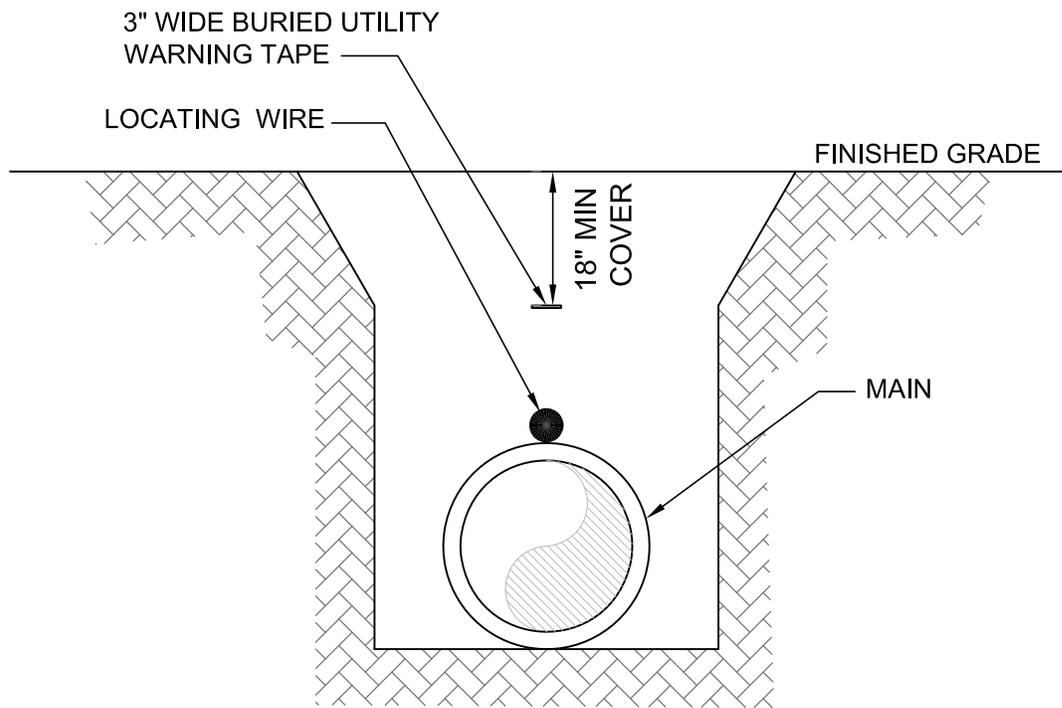
SEPTEMBER, 2014



**NOTES:**

1. MARKERS SHALL BE 4" DIAMETER SCH 80 PVC OR HDPE PIPE WITH GLUED CAP OR PCU APPROVED EQUAL.
2. BACKGROUND COLORS FOR DECALS SHALL BE BLUE FOR POTABLE WATER; WHITE FOR RAW WATER; GREEN FOR WASTEWATER; AND PANTONE PURPLE 522C FOR RECLAIMED WATER WITH BLACK OR WHITE LETTERING TO CONTRAST BACKGROUND COLOR.
3. MARKERS SHALL BE PLACED AT THE EDGE OF THE R/W AND ALONG ALL DRAINAGE EASEMENT LINES.
4. MARKERS SHALL BE PLACED EVERY 1000' AND AT VALVES (EXCEPT WATER VALVES NEAR FIRE HYDRANTS)
5. MARKERS SHALL NOT BE USED ALONG LOCAL RESIDENTIAL STREETS.

<b>PIPE LINE MARKER (TYPICAL)</b>	<b>FIGURE GR-13</b>
POLK COUNTY UTILITIES, FLORIDA	DECEMBER, 2010



**NOTES:**

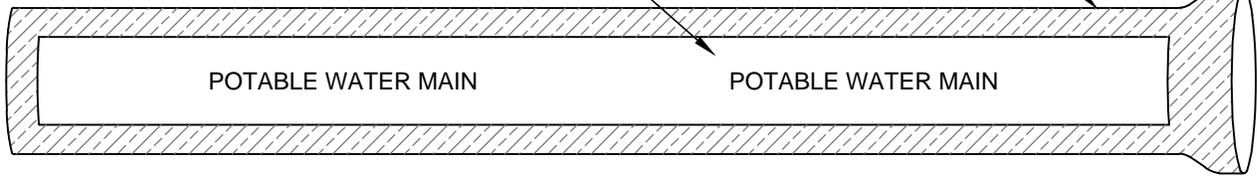
1. ALL PIPE SHALL REQUIRE INSULATED LOCATING WIRE (14 GAUGE SINGLE STRAND COPPER) CAPABLE OF DETECTION BY A CABLE LOCATOR AND SHALL BE SECURED TO THE TOP AND ON THE CENTERLINE OF THE PIPE WITH NYLON STRAPS THAT ARE SLIPPED ON THE PIPE PRIOR TO THE INSTALLATION OF EACH PIPE SECTION, AND TIGHTENED OVER THE WIRE AFTER INSTALLATION.
2. LOCATING WIRE SHALL TERMINATE AS INDICATED BY FIGURES GR-07 AND GR-12.
3. ALL CONNECTIONS SHALL BE MADE USING WATER-PROOF CONNECTORS.

**PIPE LOCATING WIRE**

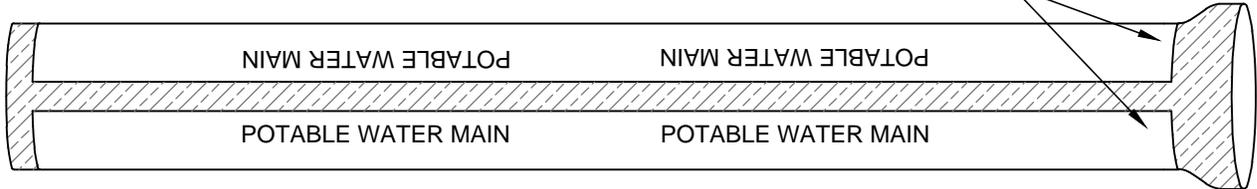
**FIGURE GR-14-1**

4" TO 8" PIPE - 6" TAPE IS CENTERED ALONG TOP HALF OF PIPE.

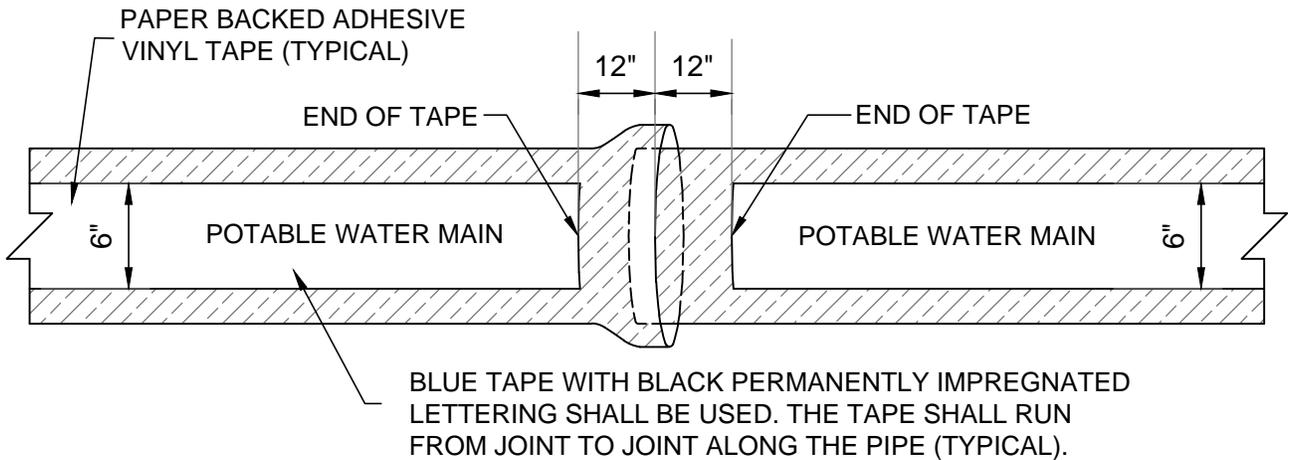
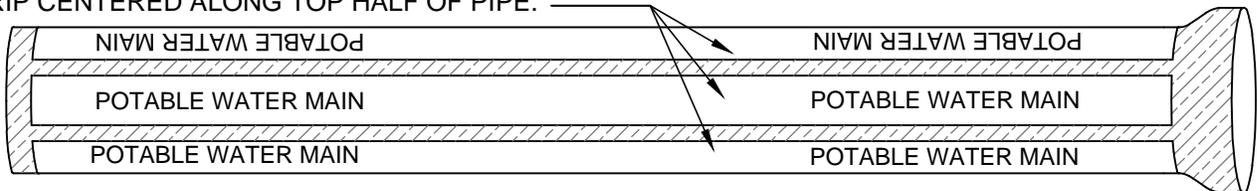
TYPICAL PIPE



10" TO 18" PIPE - 6" TAPE IS PLACED ALONG BOTH SIDES OF TOP HALF OF PIPE.



20" AND LARGER PIPE - TAPE IS PLACED ON BOTH SIDES OF THE TOP HALF OF THE PIPE WITH A THIRD STRIP CENTERED ALONG TOP HALF OF PIPE.



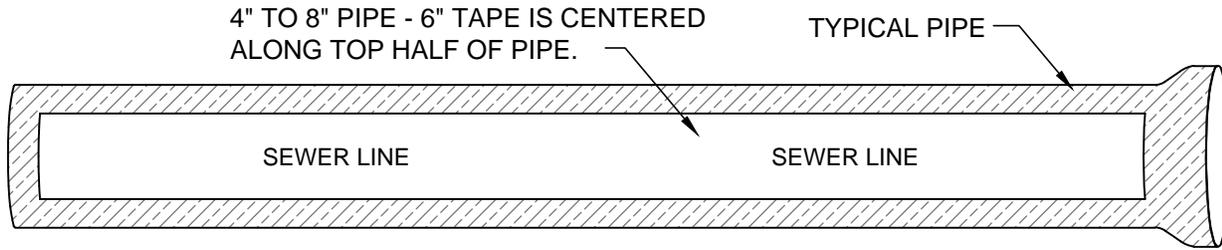
**DUCTILE IRON PIPE POTABLE WATER MAIN WITH IDENTIFICATION TAPE**  
**NTS**

**PVC PIPE COLOR : BLUE**

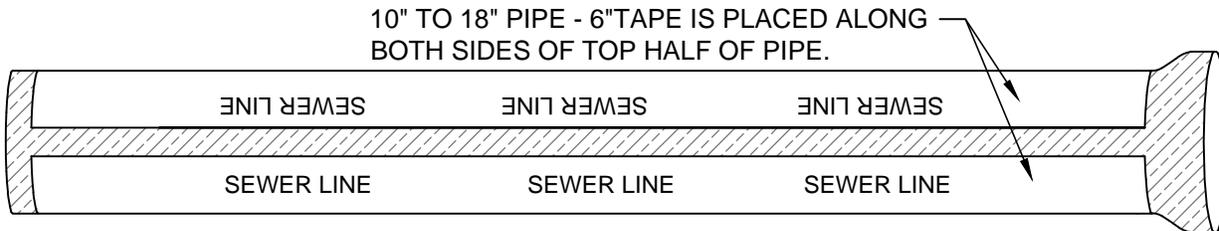
**PIPE IDENTIFICATION  
 POTABLE WATER MAINS  
 POLK COUNTY UTILITIES, FLORIDA**

**FIGURE  
 GR-14-2  
 DECEMBER, 2010**

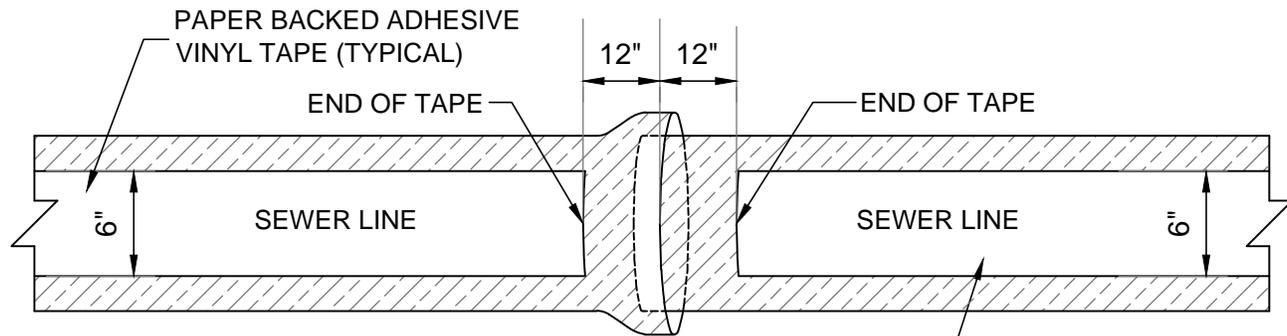
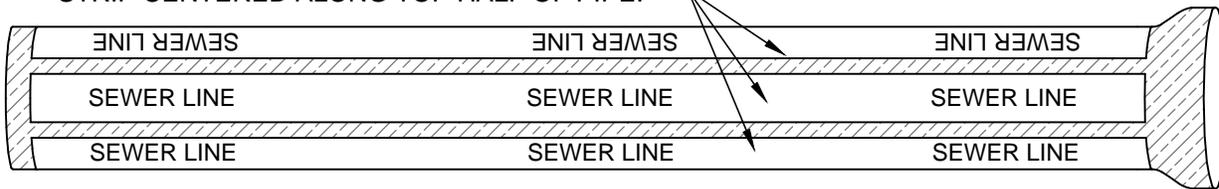
4" TO 8" PIPE - 6" TAPE IS CENTERED ALONG TOP HALF OF PIPE.



10" TO 18" PIPE - 6" TAPE IS PLACED ALONG BOTH SIDES OF TOP HALF OF PIPE.



20" AND LARGER PIPE - TAPE IS PLACED ON BOTH SIDES OF THE TOP HALF OF THE PIPE WITH A THIRD STRIP CENTERED ALONG TOP HALF OF PIPE.



FOR SEWER LINES - TAPE SHALL BE GREEN WITH BLACK LETTERING. FOR SEWER FORCE MAIN - TAPE SHALL BE BROWN WITH BLACK LETTERING. TAPE SHALL RUN FROM JOINT TO JOINT ALONG THE LENGTH OF THE PIPE (TYPICAL).

**DUCTILE IRON PIPE FORCE MAINS WITH IDENTIFICATION TAPE**  
**NTS**

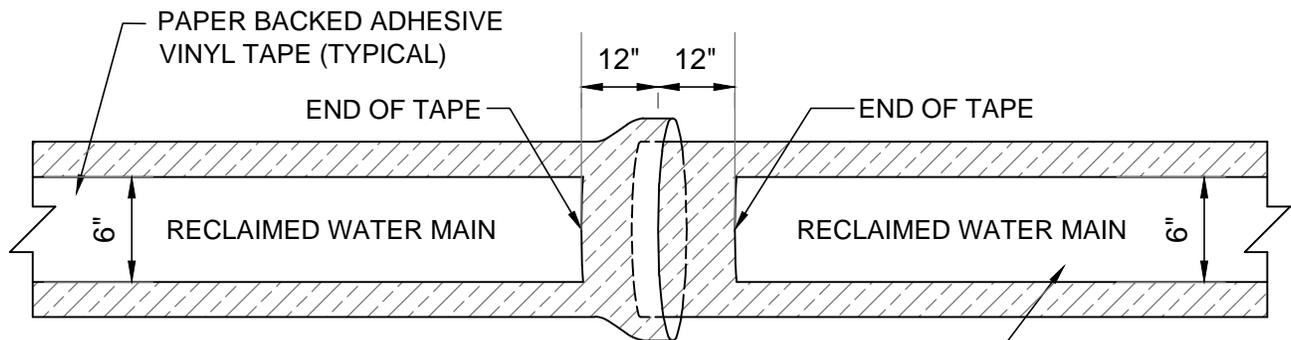
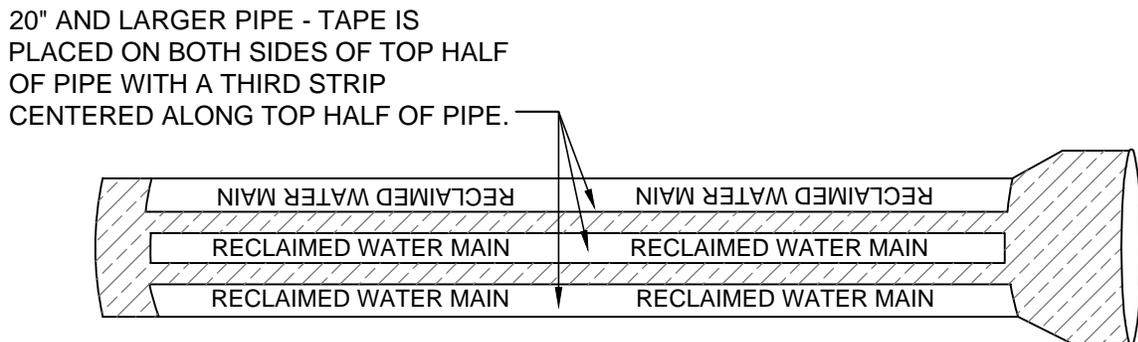
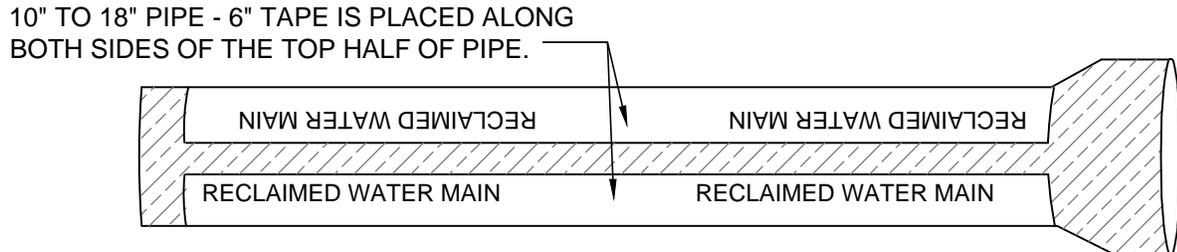
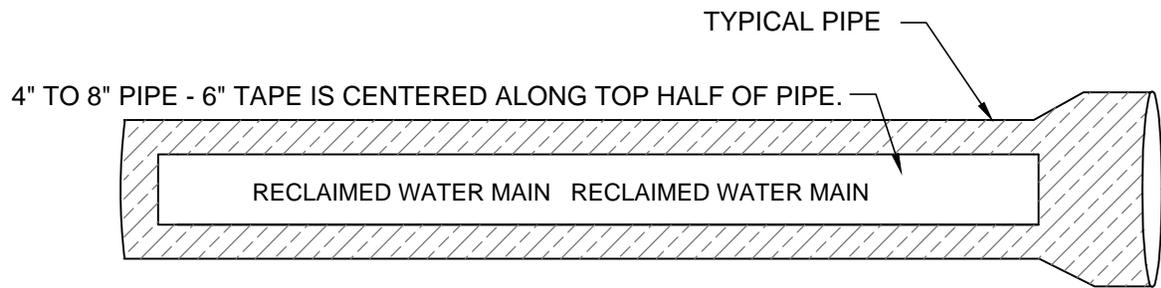
**PVC PIPE COLOR : SOLID LIGHT GREEN**

**PIPE IDENTIFICATION  
WASTEWATER FORCE AND GRAVITY MAINS**

**POLK COUNTY UTILITIES, FLORIDA**

**FIGURE  
GR-14-3**

**DECEMBER, 2010**



PANTONE PURPLE 522C TAPE WITH BLACK PERMANENTLY IMPREGNATED LETTERING SHALL BE USED. THE TAPE SHALL RUN FROM JOINT TO JOINT ALONG THE PIPE (TYPICAL).

**DUCTILE IRON PIPE RECLAIMED WATER MAIN WITH IDENTIFICATION TAPE**  
**NTS**

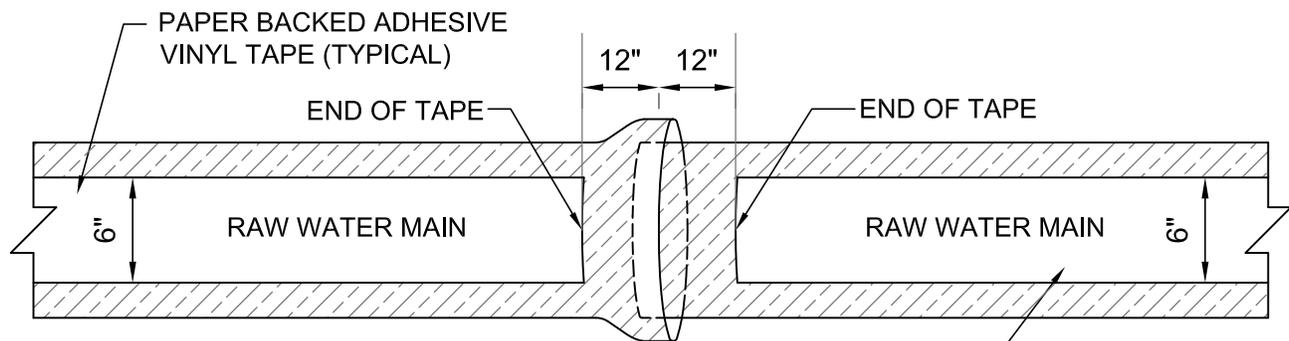
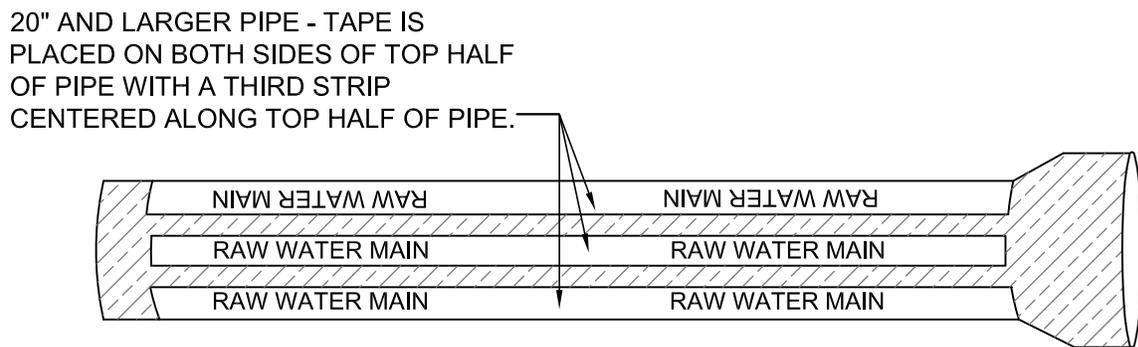
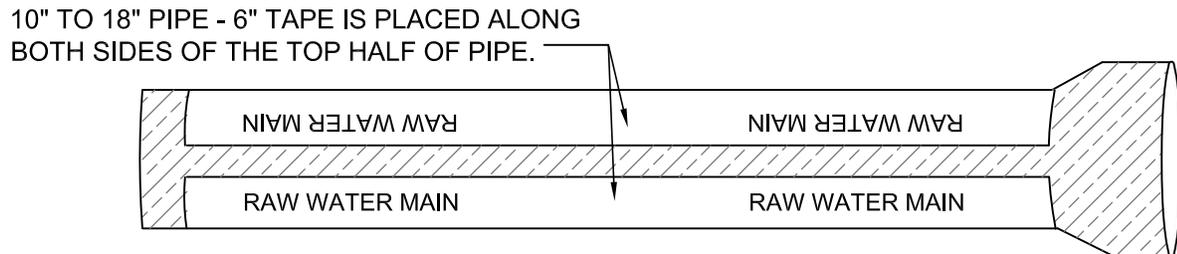
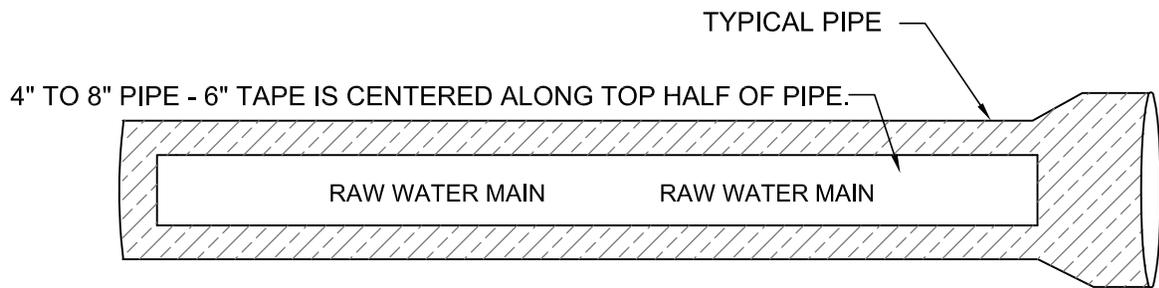
**PVC PIPE COLOR : PANTONE PURPLE 522C**

**PIPE IDENTIFICATION  
 RECLAIMED WATER MAINS**

**POLK COUNTY UTILITIES, FLORIDA**

**FIGURE  
 GR-14-4**

**DECEMBER, 2010**



SILVER TAPE WITH BLACK PERMANENTLY IMPREGNATED LETTERING SHALL BE USED. THE TAPE SHALL RUN FROM JOINT TO JOINT ALONG THE PIPE (TYPICAL).

**DUCTILE IRON PIPE RAW WATER MAIN WITH IDENTIFICATION TAPE**  
**NTS**

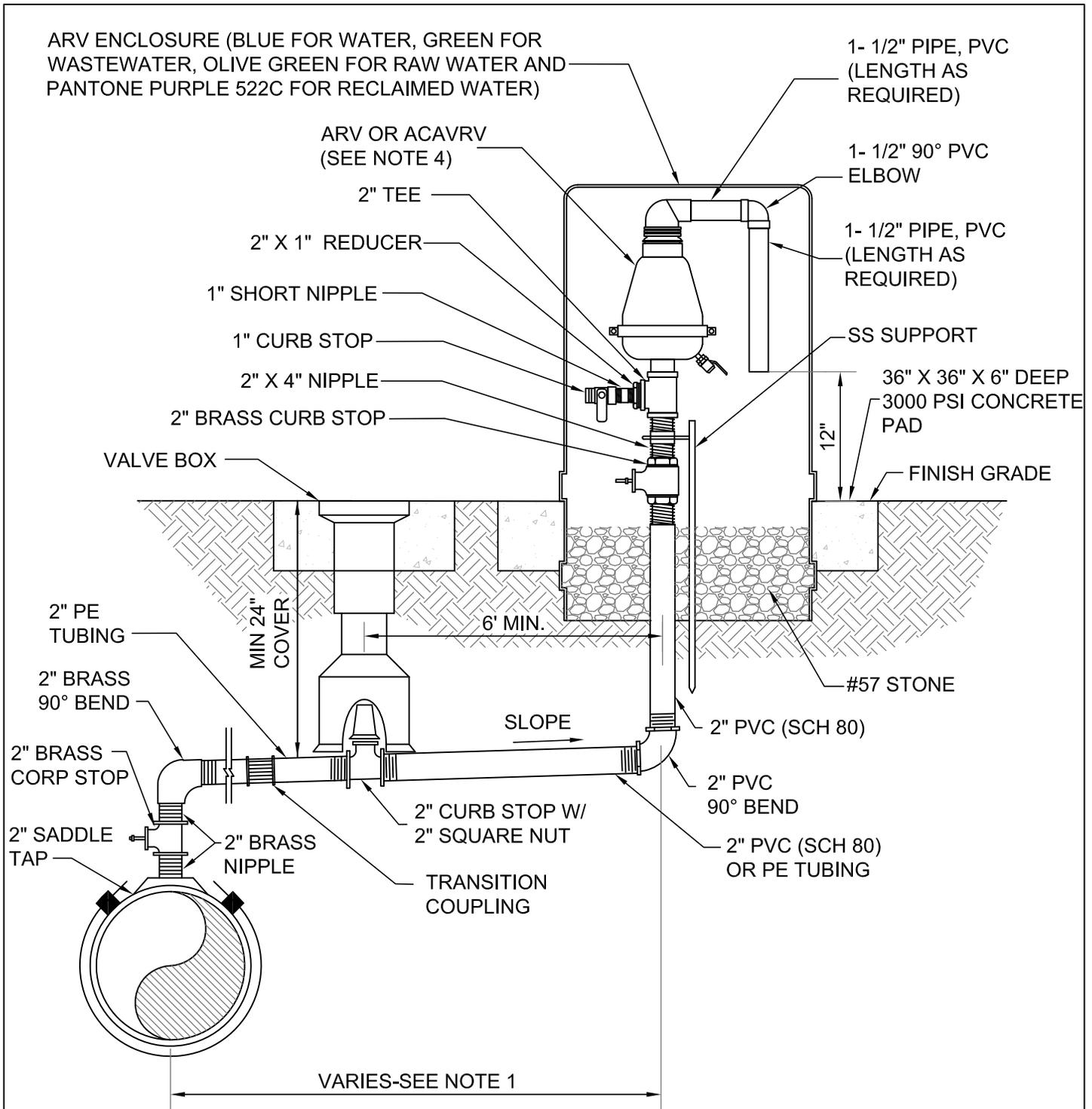
**PVC PIPE COLOR OLIVE GREEN OR WHITE OR BLUE IF OLIVE GREEN OR WHITE ARE UNAVAILABLE WITH A 3" OLIVE GREEN STRIPE WITH BLACK LETTERING**

**PIPE IDENTIFICATION  
 RAW WATER MAINS**

**POLK COUNTY UTILITIES, FLORIDA**

**FIGURE  
 GR-14-5**

**MARCH, 2012**



**NOTES:**

1. OFFSET DISTANCE TO BE FIELD DETERMINED AND AS CLOSE TO THE RIGHT-OF-WAY AS POSSIBLE.
2. ADJUST HORIZONTAL LOCATION OF SIDEWALK, AS REQUIRED TO AVOID ARV ENCLOSURE.
3. ABOVE DETAIL IS BASED ON 2" RELEASE VALVE. CHANGE PIPE AND FITTINGS ACCORDINGLY FOR OTHER VALVE SIZES AND TYPES. VALVE SIZES AND NUMBERS TO BE DETERMINED BY THE ENGINEER AND APPROVED BY PCU PRIOR TO INSTALLATION.
4. AUTOMATIC COMBINATION AIR AND VACUUM RELEASE VALVES (ACAVRV) SHALL UTILIZED AS APPROPRIATE OR REQUIRED BY PCU.

**AUTOMATIC AIR RELEASE VALVE  
(ABOVE GROUND)**

**FIGURE  
GR-15-1**

POLK COUNTY UTILITIES, FLORIDA

DECEMBER, 2012



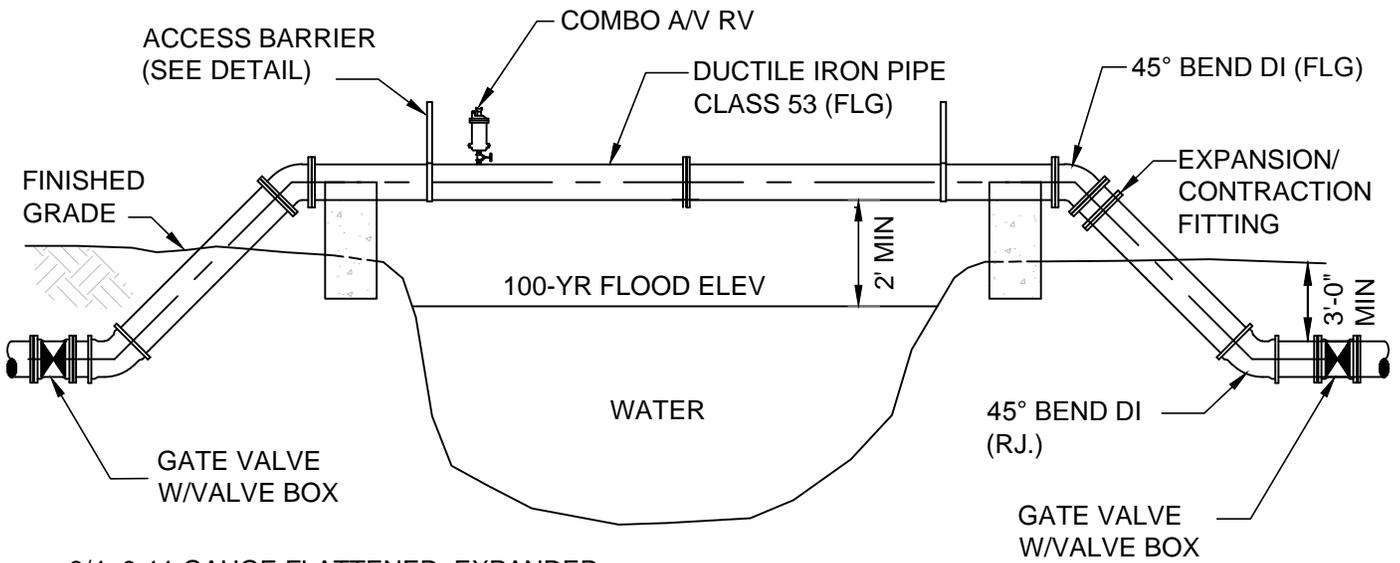
PROPOSED UTILITY	HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS								ACCEPTABLE VARIANCES
	POTABLE WATER (PW)		RECLAIMED WATER (RW)		SAN SEWER (SS) GRAVITY & FM)		STORM SEWER		
	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	HORIZ	VERT	
POTABLE WATER	-	-	3'	12"	6'	12"	3'	12"	REFER TO GENERAL NOTE #4
RECLAIMED WATER	3'	12"	-	-	3'	12"	*	*	
SANITARY SEWER	6'	12"	3'	12"	-	-	*	*	

\* MINIMUM SEPARATION SHALL BE AS SPECIFIED BY THE ENTITY HAVING JURIDICITION.

GENERAL NOTES:

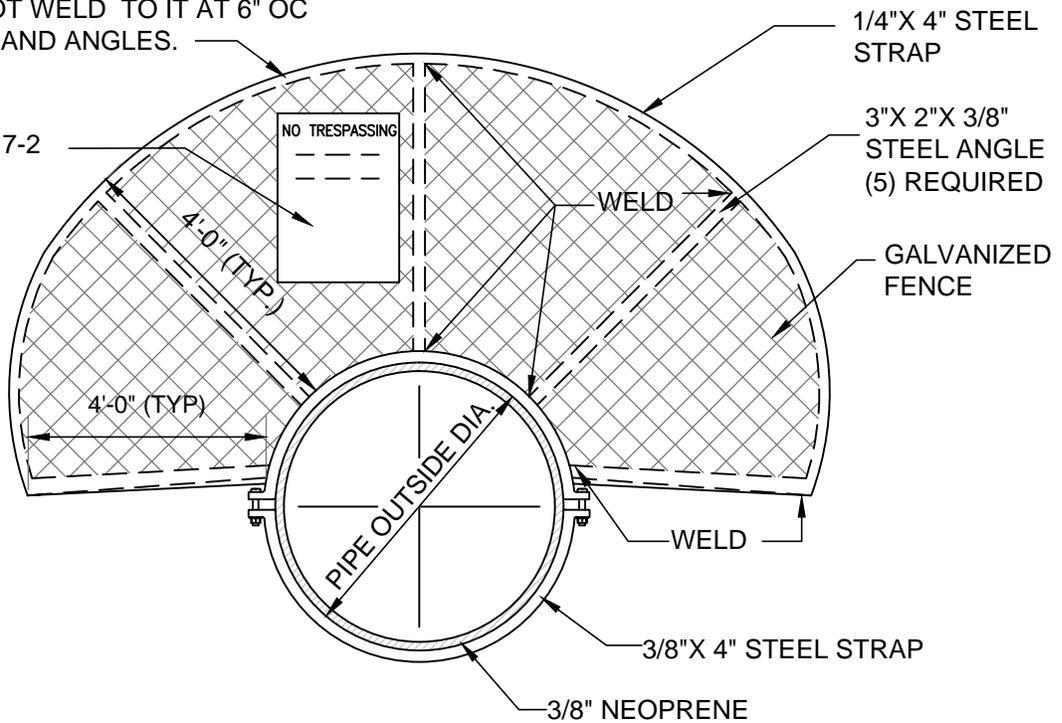
1. THE TABLE MEETS SEPARATION REQUIREMENTS AS DESCRIBED BY FDEP IN THE FLORIDA ADMINISTRATION CODE (FAC). THESE SEPARATION REQUIREMENTS SHALL APPLY BETWEEN NEWLY PROPOSED UTILITY LINES AND EXISTING OR PROPOSED UTILITY LINES.
2. FOR THE PURPOSE OF THIS TABLE, RECLAIMED WATER SHALL MEAN UNRESTRICTED PUBLIC ACCESS RECLAIMED WATER AS DEFINED BY F.A.C. 62-610. RAW WATER AND OTHER TYPES OF RECLAIMED WATER SHALL BE CONSIDERED RAW SEWAGE AND SEPARATION LISTED FOR SANITARY SEWER SHALL APPLY.
3. ALL SEPARATION DISTANCES ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE.
4. ACCEPTABLE VARIANCES:
  - A. WHERE HORIZONTAL SEPARATION IS NOT ATTAINABLE FOR NEW INSTALLATIONS OF PW AND SS, THE PIPES WILL BE INSTALLED IN SEPARATE TRENCHES AND THE BOTTOM OF THE PW MAIN WILL BE 12" HIGHER THAN THE TOP OF THE SS.
  - B. WHERE HORIZONTAL SEPARATION IS NOT ATTAINABLE FOR NEW SS AND A NEW OR EXISTING PW MAIN, THE SS WILL BE UPGRADED TO A DR OF 18.
  - C. WHERE INSTALLATION OF A NEW PW MAIN IS IN CONFLICT WITH EXISTING SS, THE FOLLOWING SHALL BE MAINTAINED:
    1. VERTICAL CONFLICT: DEFLECT NEW PW MAIN 12" ABOVE THE EXISTING SS WITH SUFFICIENT COVER FOR THE PW OR 12" BELOW THE EXISTING SS. WHERE DEFLECTION IS NOT POSSIBLE OR MINIMUM COVER NOT MET, THE PW MAIN SHALL BE UPGRADED TO DIP AND CENTERED AT CROSSING.
    2. HORIZONTAL CONFLICT: PW MAIN SHALL BE INSTALLED 18" HIGHER THAN THE EXISTING SS WITH SUFFICIENT COVER OR THE PW WILL BE DIP.
  - D. SEPARATION REQUIREMENTS BETWEEN PW AND STORM SEWER ARE THE SAME AS WITH PW AND SS. SPECIAL SUPPORT MAY BE REQUIRED.
  - E. WHERE VERTICAL AND HORIZONTAL SEPARATIONS ARE NOT ATTAINABLE FOR PW AND FM, THE FOLLOWING SHALL BE MAINTAINED:
    1. FM UPGRADED TO DR 14 (12" DIA AND UNDER) AND DR 18 (14" DIA AND OVER). WHERE FM IS EXISTING, PW SHALL BE UPGRADED TO DIP.
    2. STAGGER THE LOCATION OF JOINTS FOR EACH PIPE.
5. NO POTABLE WATER MAIN SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SANITARY OR STORM WATER MANHOLE OR STRUCTURE.

<b>MINIMUM SEPARATION REQUIREMENTS</b>	<b>FIGURE GR-16</b>
POLK COUNTY UTILITIES, FLORIDA	DECEMBER, 2010



3/4- 9-11 GAUGE FLATTENED EXPANDED METAL TO COVER FACE OF GUARD FRAME AND SPOT WELD TO IT AT 6" OC TO ALL STRAPS AND ANGLES.

REFER TO FIGURE A117-2

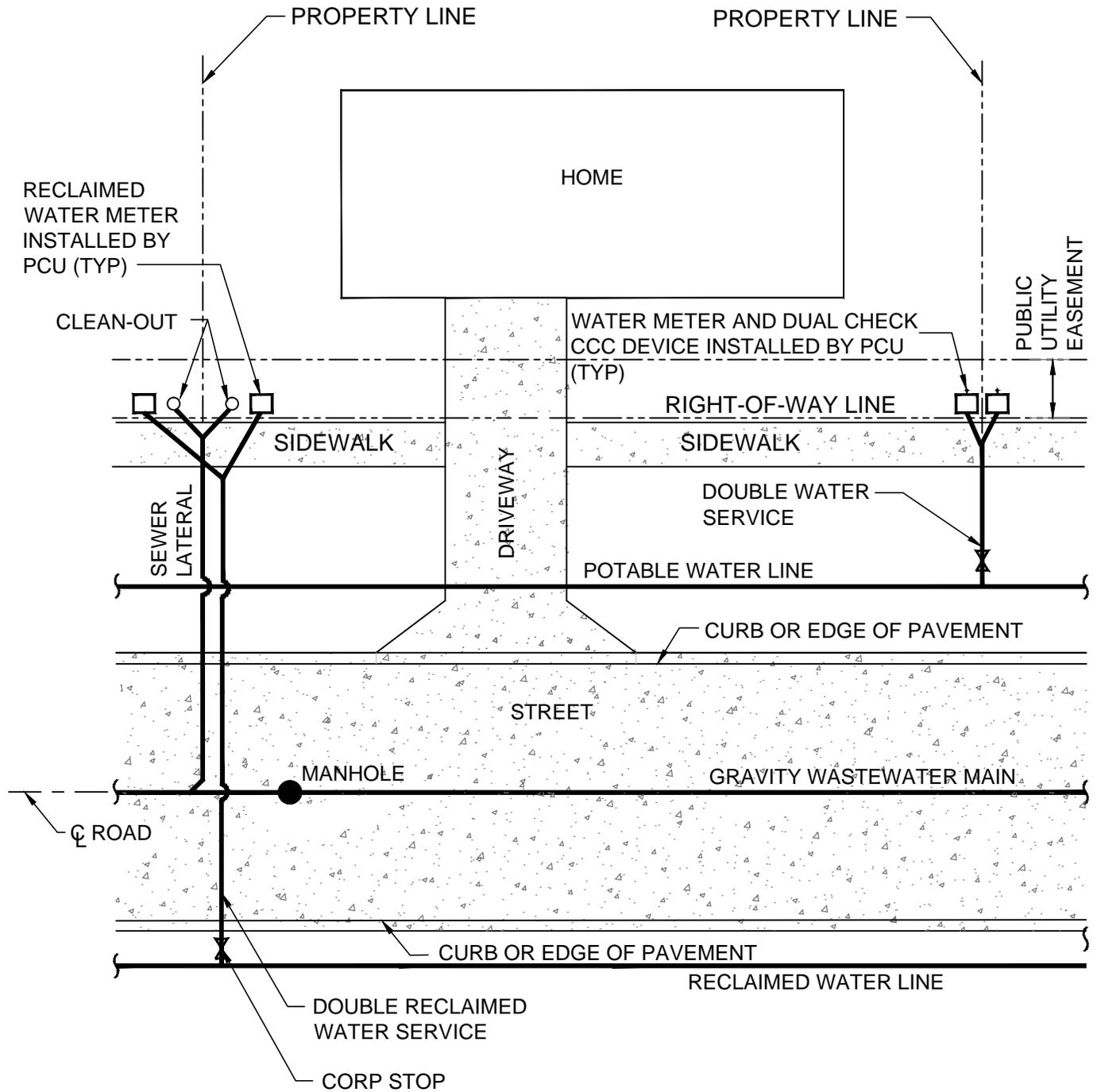


**ACCESS BARRIER**

**NOTES:**

1. ENTIRE GUARD ASSEMBLY TO BE DIPPED GALVANIZED AFTER FABRICATION, PAINTING IS NOT PERMITTED.
2. CENTER ANGLES ON 4" STEEL STRAP.
3. PILINGS ARE TO BE DESIGNED, SIGNED AND SEALED BY AN APPROPRIATELY QUALIFIED STRUCTURAL/GEOTECHNICAL ENGINEER.
4. ALL JOINTS SHALL BE RESTRAINED.



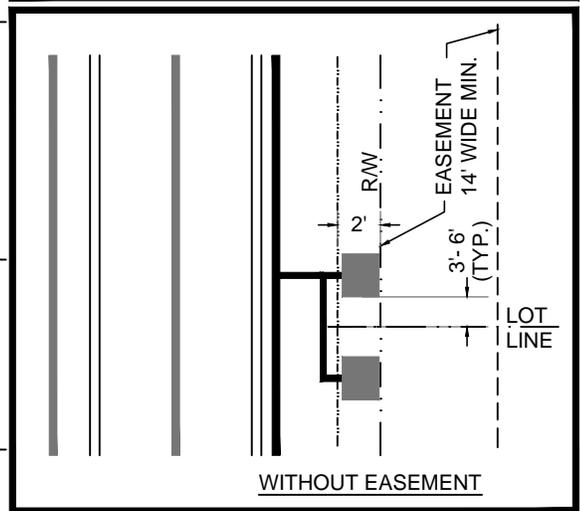
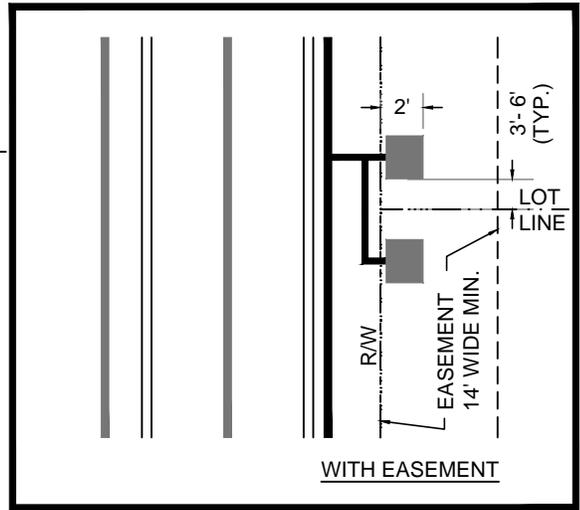
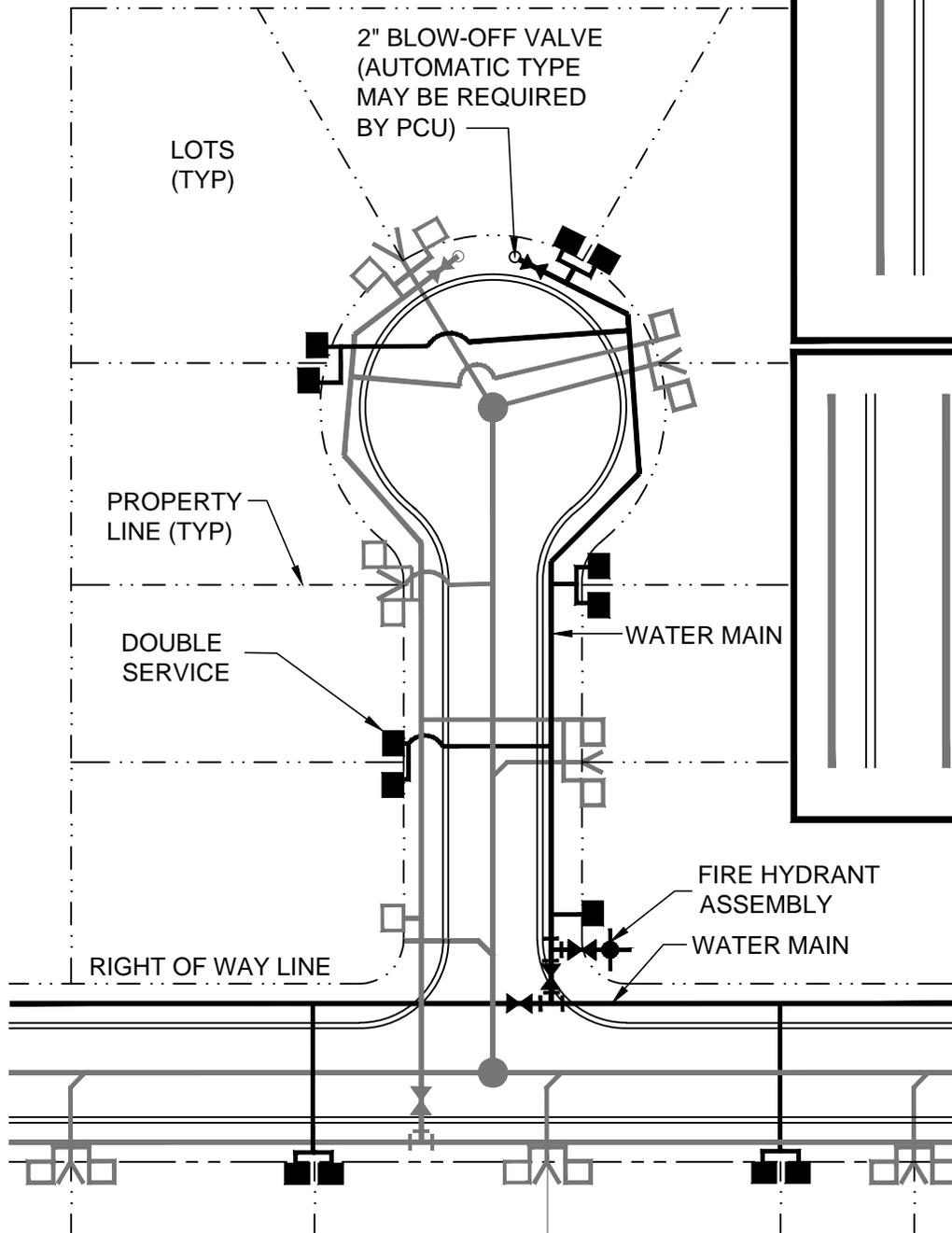


NOTES :

1. SERVICE, CORP STOPS, METER BOXES AND CURB STOPS SHALL BE INSTALLED BY THE CONTRACTOR.

**RESIDENTIAL SERVICE LOCATIONS (TYPICAL)**

**FIGURE  
GR-18**



NOTE:

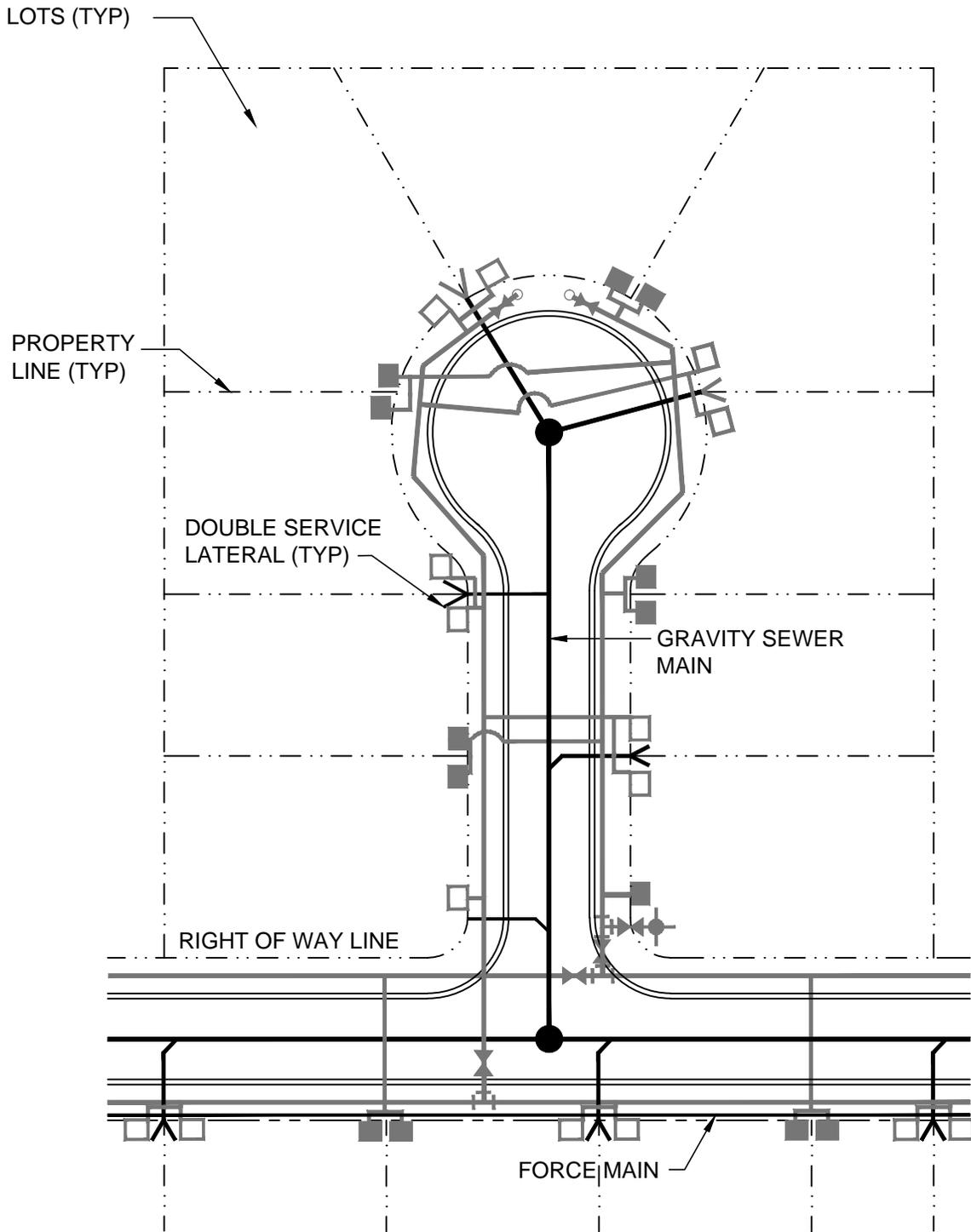
1. CONTRACTOR SHALL LOCATE CURB STOP BY PLACING A 2" X 2" STAKE 24" ABOVE THE GROUND. THE TOP OF THE STAKE SHALL BE PAINTED WITH THE COLOR OF THE UTILITY SERVICE PROVIDED AND LABELED WITH THE LOT NUMBERS IT SERVES.
2. LOCATION OF METER SHALL BE ADJUSTED IN ACCORDANCE WITH FIGURE GR-18 WHERE PUBLIC UTILITY EASEMENTS DO NOT EXIST PARALLEL TO THE RIGHT OF WAY.

**SINGLE FAMILY RESIDENTIAL UTILITY PLAN (TYPICAL)  
POTABLE WATER**

POLK COUNTY UTILITIES, FLORIDA

**FIGURE  
GR-19-1**

DECEMBER, 2010



NOTE:

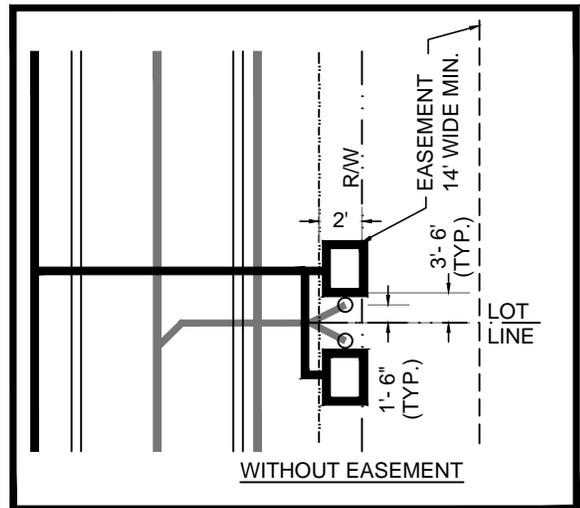
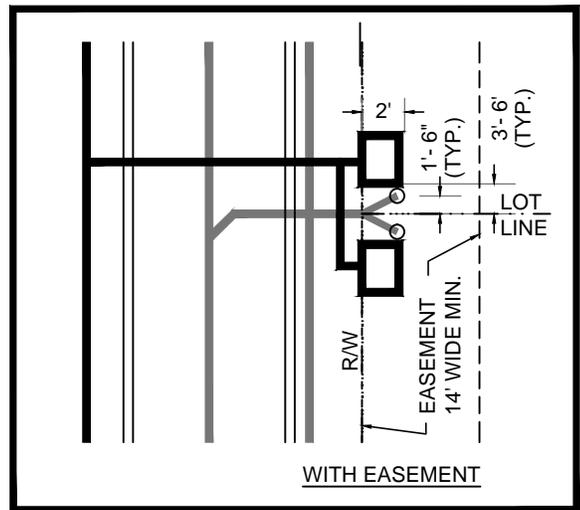
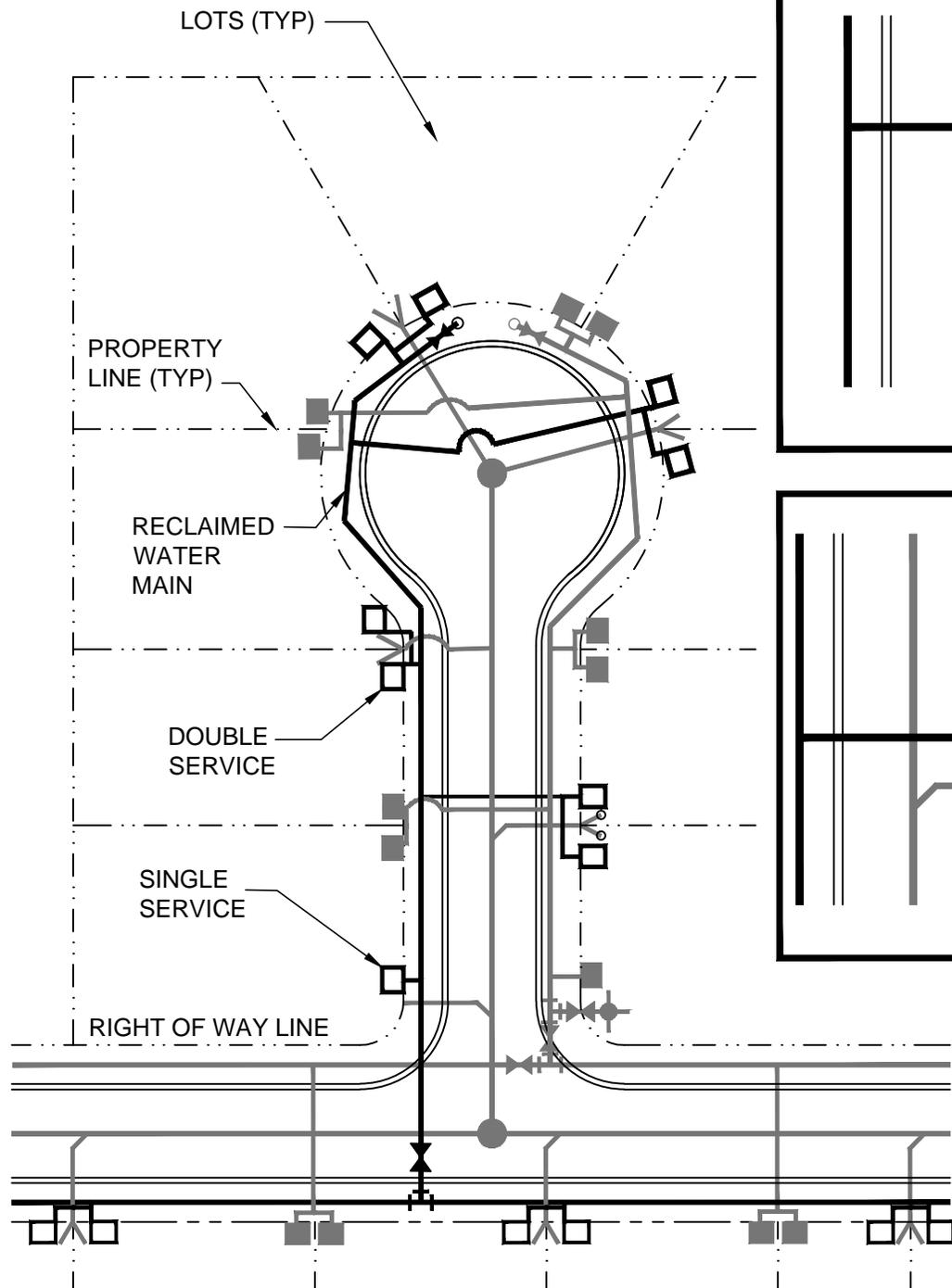
1. CONTRACTOR SHALL LOCATE CLEAN OUTS BY PLACING A 2" X 2" STAKE 24" ABOVE THE GROUND. THE TOP OF THE STAKE SHALL BE PAINTED WITH THE COLOR OF THE UTILITY SERVICE PROVIDED AND LABELED WITH THE LOT NUMBERS IT SERVES.

**SINGLE FAMILY RESIDENTIAL UTILITY PLAN (TYPICAL)  
WASTEWATER**

POLK COUNTY UTILITIES, FLORIDA

**FIGURE  
GR-19-2**

DECEMBER, 2010



**NOTE:**

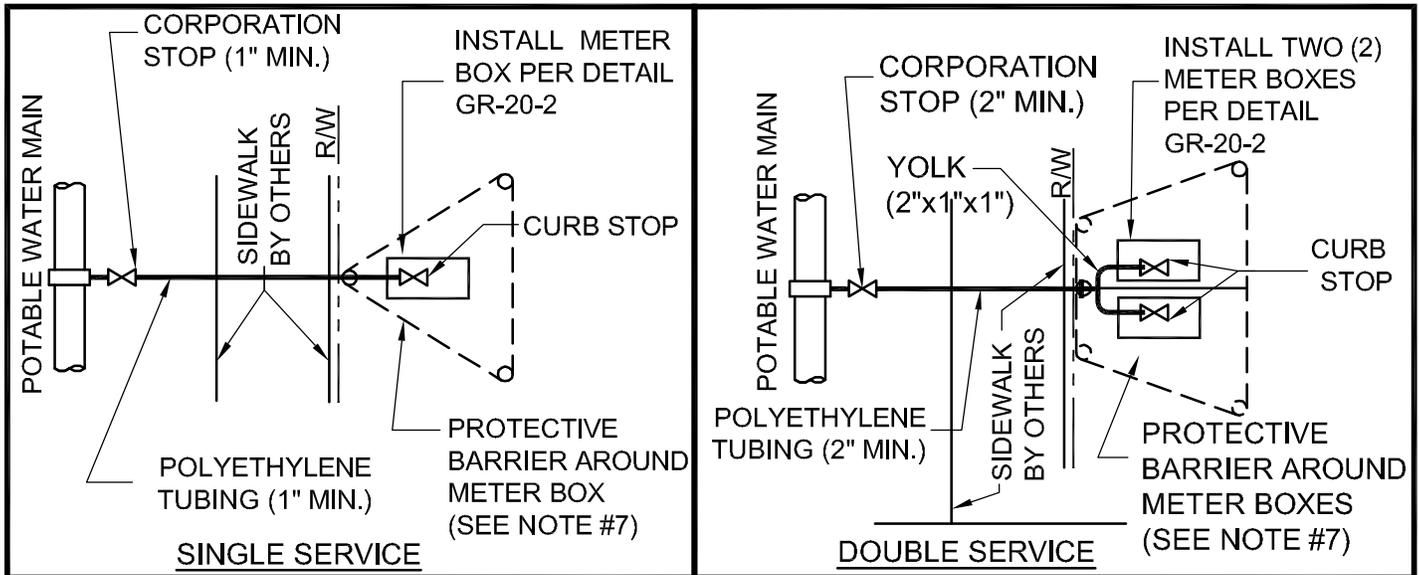
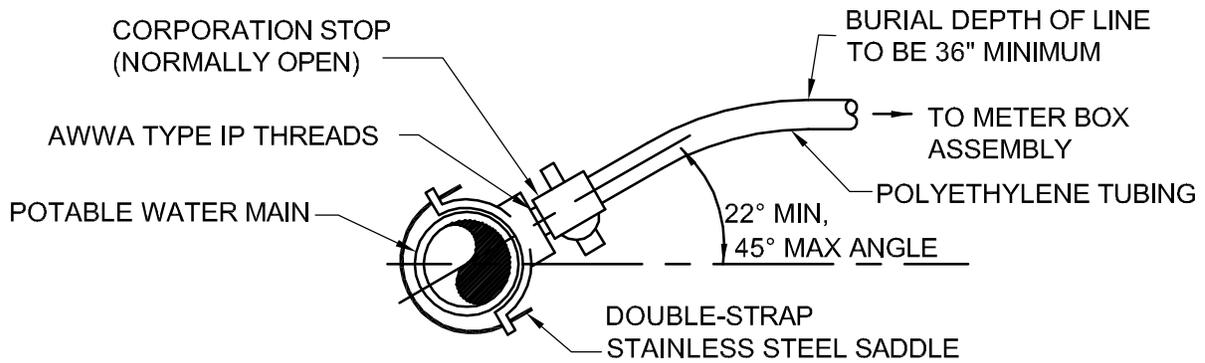
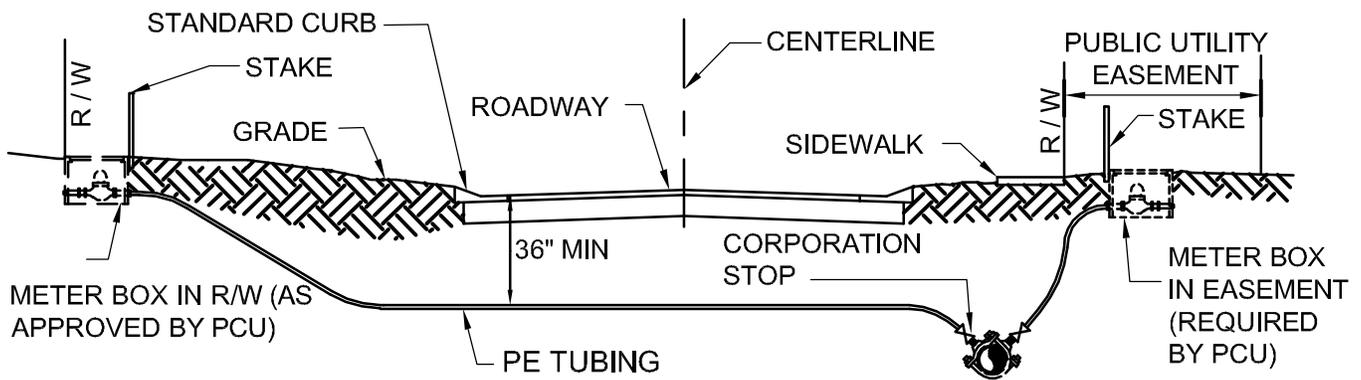
1. CONTRACTOR TO LOCATE CURB STOP BY PLACING A 2" X 2" STAKE 24" ABOVE THE GROUND. THE TOP OF THE STAKE SHALL BE PAINTED WITH THE COLOR OF THE UTILITY SERVICE PROVIDED AND LABELED WITH THE LOT NUMBERS IT SERVES.
2. LOCATION OF METER SHALL BE ADJUSTED IN ACCORDANCE WITH FIGURE GR-18 WHERE PUBLIC UTILITY EASEMENTS DO NOT EXIST PARALLEL TO THE RIGHT OF WAY.

**SINGLE FAMILY RESIDENTIAL UTILITY PLAN (TYPICAL)  
RECLAIMED WATER**

POLK COUNTY UTILITIES, FLORIDA

**FIGURE  
GR-19-3**

DECEMBER, 2010



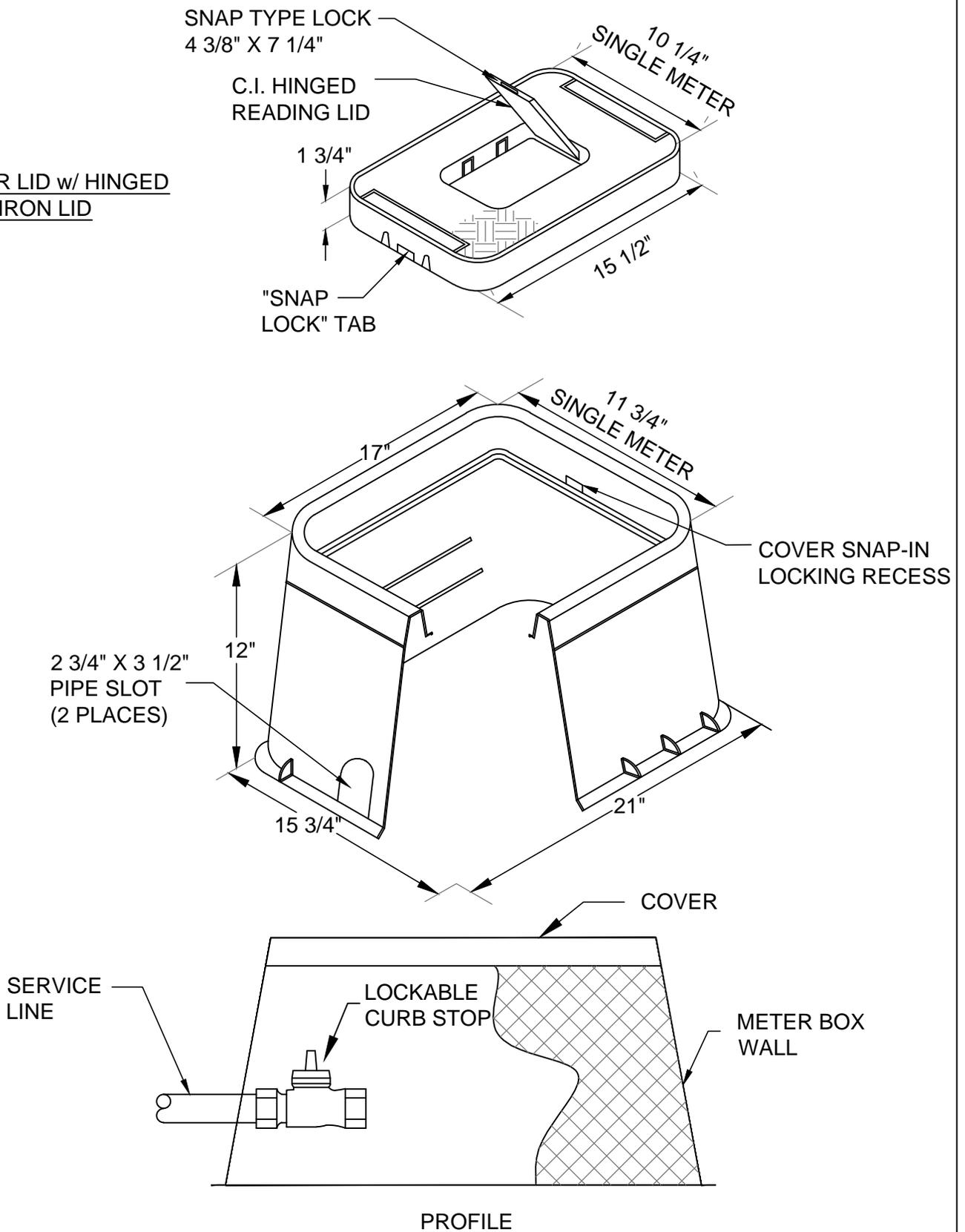
**NOTES:**

1. DRAWING NOT TO SCALE.
2. METER BOXES FURNISHED BY CONTRACTOR IN ACCORDANCE WITH FIGURE GR-20-2.
3. SEPARATION BETWEEN CURB AND METER BOX AND BETWEEN METER BOX AND SIDEWALK SHALL BE 12 INCHES MINIMUM WITH A 18 INCHES MAXIMUM.
4. CONTRACTOR TO LOCATE CURB STOP BY PLACING A STAKE (2" X 2" AT 24" ABOVE GROUND) TOP PAINTED WITH THE COLOR OF THE UTILITY SERVICE AND WITH THE LOT NUMBERS IT SERVES.
5. ALL FITTINGS SHALL BE BRASS WITH COMPRESSION/PACK JOINT CONNECTIONS.
6. PROTECTIVE BARRIER TO BE 3-2x4 or 2" POLES w/ WITH RED CONSTRUCTION WARNING FENCE OR TAPE.
7. TUBING SHALL BE BLUE FOR POTABLE WATER AND PURPLE PANTONE 522C FOR RECLAIMED WATER IN COLOR.
8. CONTRACTOR TO INSTALL SERVICE LINE, METER BOX, AND TERMINATE LINE IN BOX WITH CURB STOP EQUIPPED WITH TEMP PLASTIC PLUG AT END.
9. METER BOXES AS DESCRIBED SHALL NOT BE INSTALLED IN DRIVEWAY OR SIDEWALK.

**POTABLE WATER AND RECLAIMED WATER SERVICES (TYPICAL)**

**FIGURE  
GR-20-1**

COVER LID w/ HINGED  
CAST IRON LID



**NOTES:**

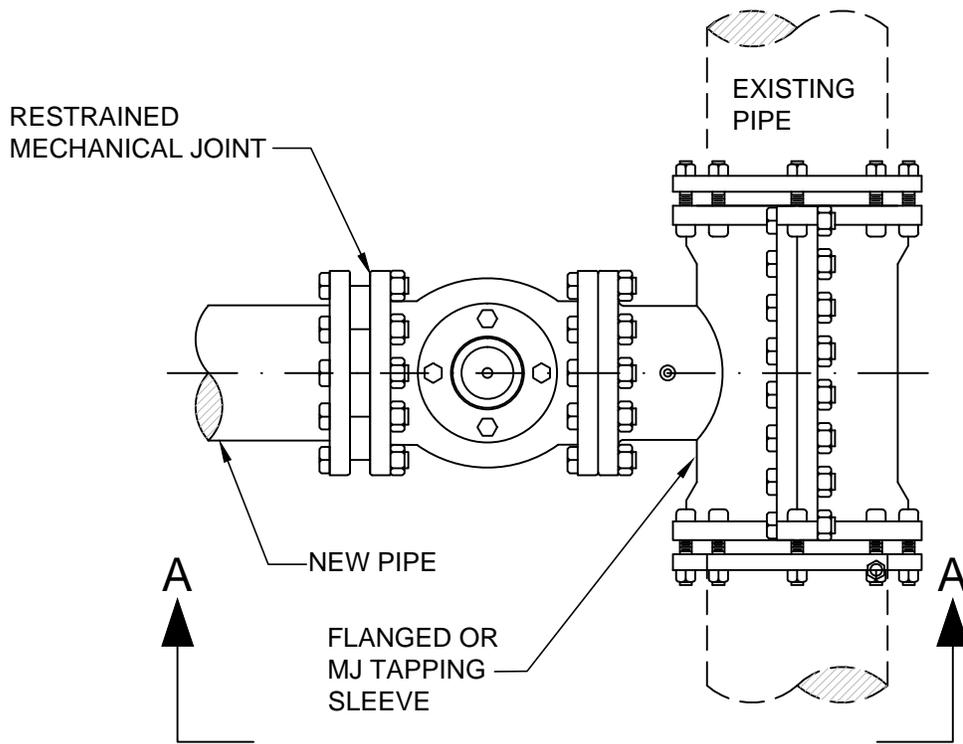
1. METER BOXES AND LIDS SHALL BE BLACK FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER.
2. THE WORDS "RECLAIMED WATER" AND THE FOLLOWING WORDS " DO NOT DRINK" AND "NO BEBER" SHALL BE CLEARLY MOLDED ON THE TOP OF EACH RECLAIMED WATER LID ALONG WITH THE STANDARD INTERNATIONAL SYMBOL " DO NOT DRINK " .
3. ALL MATERIALS SHALL BE IN ACCORDANCE WITH APPROVED MATERIAL CHECKLIST .

**STANDARD RECTANGULAR METER BOX ASSEMBLY  
POTABLE WATER AND RECLAIMED WATER**

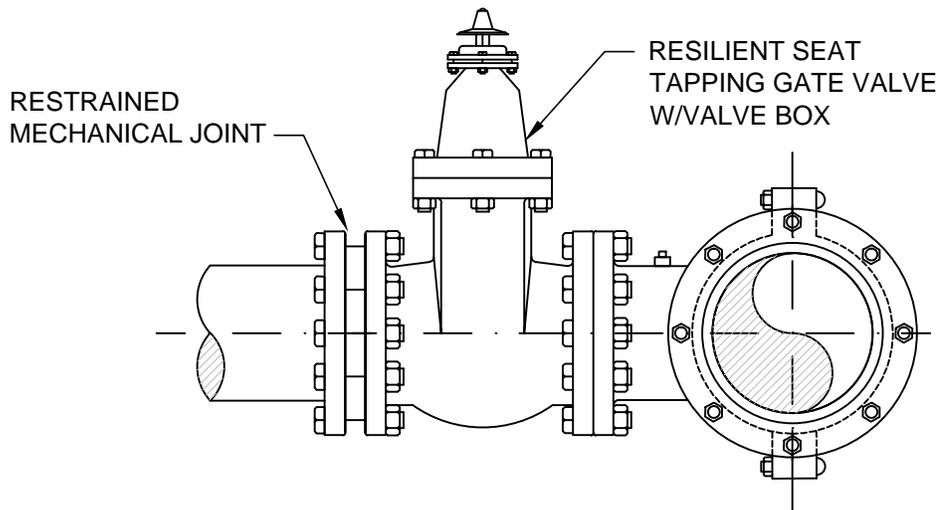
**FIGURE  
GR-20-2**

POLK COUNTY UTILITIES, FLORIDA

DECEMBER, 2010



PLAN



SECTION A - A

NOTES:

1. TAPPING VALVE SHALL BE PLACED IN AN UPRIGHT POSITION AND USED AS THE ISOLATION VALVE UNLESS FIELD CONDITIONS REQUIRE THE TAPPING VALVE TO BE LAID HORIZONTAL IN A PERMANENT OPEN POSITION AND THE ISOLATION VALVE LOCATED NEARBY.

**GENERAL NOTES:**

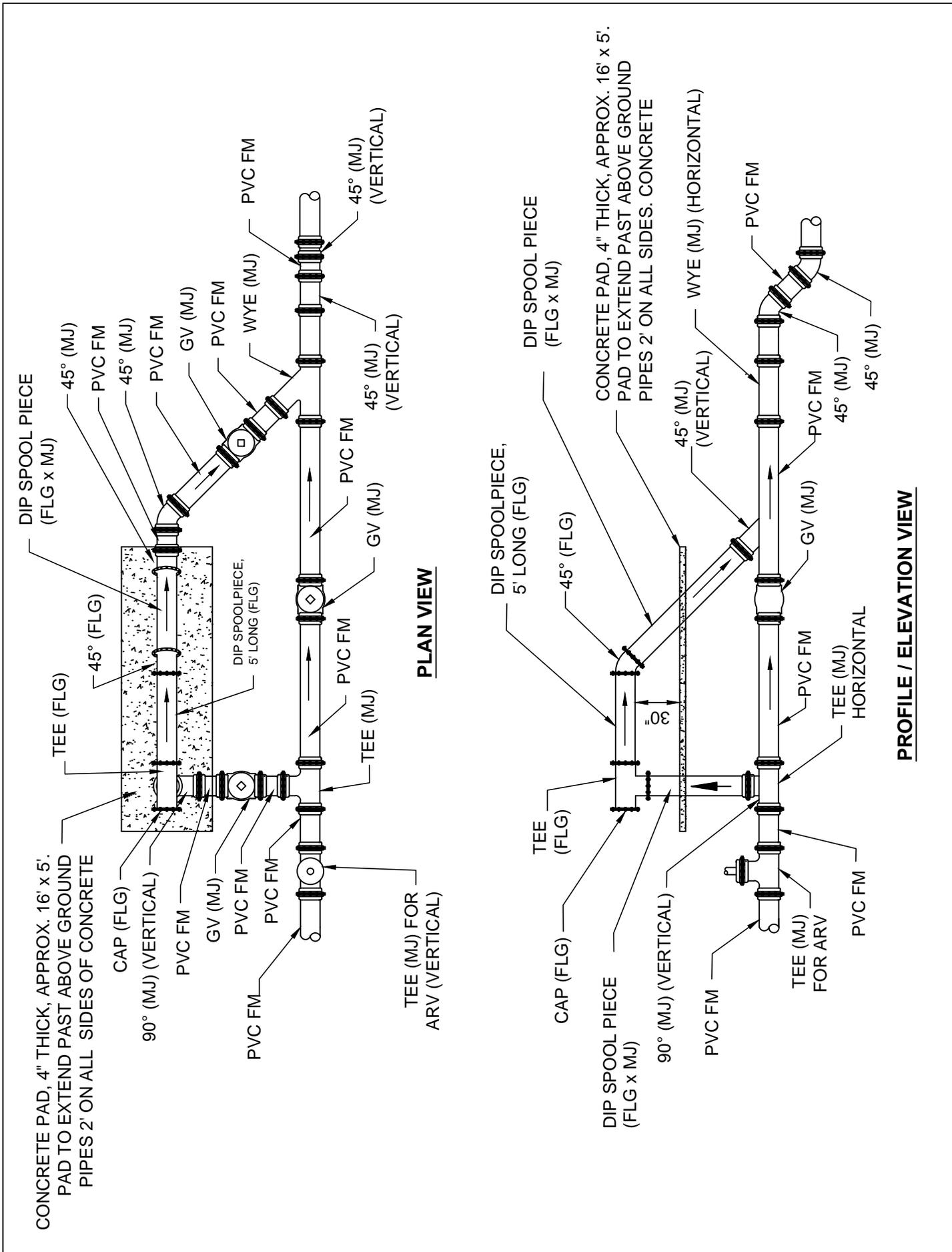
1. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN EXCAVATING IN PROXIMITY OF WATER MAINS, WASTEWATER FORCE MAINS, GRAVITY MAINS AND RECLAIMED WATER MAINS. MAIN LOCATIONS SHOWN ON PLANS ARE NOT EXACT OR GUARANTEED. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING EXISTING UTILITY LOCATIONS.
2. THE PCU BASE-1 DISPATCH OPERATOR (863-534-7351) SHALL BE NOTIFIED BY THE CONTRACTOR FOR PIPE EMERGENCIES.
3. MAKE TEMPORARY CONNECTIONS TO AN EXISTING POTABLE WATER SOURCE; FLUSH OUT NEW WATER MAIN WITH POTABLE WATER (USE "JUMPER" ASSEMBLY WITH A CROSS CONNECTION CONTROL ASSEMBLY TO MAKE TEMPORARY CONNECTIONS TO AN EXISTING WATER SOURCE).
4. ALL EXISTING WATER, FORCE, GRAVITY AND RECLAIMED WATER MAINS AND OTHER FACILITIES WITHIN THE LIMITS OF THE PROJECT SHALL BE SUPPORTED AND PROTECTED AGAINST DAMAGE DURING CONSTRUCTION.
5. ALL EXISTING AND NEW PCU VALVES, VALVE BOXES, ARV'S, FIRE HYDRANTS AND MANHOLES SHALL BE PROTECTED AND ADJUSTED TO FINISHED GRADE AS SHOWN ON THE DRAWINGS. ALL EXISTING ABOVE GROUND VALVES SHALL BE RELOCATED, AS REQUIRED.
6. PCU SHALL BE NOTIFIED AT LEAST FIVE (5) DAYS PRIOR TO ANY CONSTRUCTION ACTIVITY WITHIN PROXIMITY OF ITS FACILITIES.
7. THE CONTRACTOR SHALL IMMEDIATELY CONTACT PCU AND REPAIR ALL DAMAGES TO PCU'S MAINS AND FACILITIES AT THE CONTRACTOR'S EXPENSE. IF THE REPAIR IS NOT MADE IN A TIMELY MANNER, AS DETERMINED BY PCU, PCU MAY PERFORM REQUIRED REPAIRS AND CLEANUP. THE CONTRACTOR WILL BE CHARGED FOR ALL EXPENSES ASSOCIATED WITH THE REPAIR.
8. ONLY PCU STAFF SHALL OPERATE WATER, WASTEWATER, AND RECLAIMED WATER VALVES. THE CONTRACTOR SHALL COORDINATE VALVE OPERATION WITH THE PCU INSPECTOR.
9. THE CONTRACTOR SHALL COORDINATE ALL LIFT STATION OPERATION AND SHUT DOWN CONTROL WITH THE PCU INSPECTOR. THE CONTRACTOR SHALL PROVIDE FOR BYPASSING AND/OR HAULING OF WASTEWATER DURING THE INTERRUPTION OF FLOWS AND CONNECTIONS WITH EXISTING WASTEWATER SYSTEMS.
10. ALL NEW VALVES BEING INSTALLED SHALL REMAIN CLOSED DURING CONSTRUCTION. KEEP VALVES ON ALL WET TAPS CLOSED UNTIL CLEARED BY FDEP/FDOH.
11. THE UTILITY IMPROVEMENTS AND ADJUSTMENTS SHOWN ON THESE PLANS ARE INTENDED TO MAINTAIN THE INTEGRITY OF THE PCU WATER, WASTEWATER AND RECLAIMED WATER SYSTEMS. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE UTILITIES STANDARDS AND SPECIFICATIONS MANUAL. THE PLANS DO NOT INCLUDE WORK PERFORMED ON OR FOR UTILITY SYSTEMS OWNED BY OTHERS, UNLESS STATED OTHERWISE ON THE PLANS.
12. DO NOT OPEN ANY VALVES THAT DIRECTLY CONNECTS ANY PROPOSED WATER MAINS TO ANY EXISTING MAINS UNLESS CLEARED BY BOTH FDEP/FDOH & PCU.
13. DURABLE COLORED PLASTIC CURB MARKERS, AS SPECIFIED WITHIN THE APPROPRIATE APPROVED MATERIALS CHECKLIST AND THE APPROPRIATE SECTIONS OF THE MANUAL, SHALL BE SECURELY ATTACHED 6 INCHES FROM THE TOP OF CURB, OR 6 INCHES FROM THE EDGE OF PAVEMENT WHERE CURBING IS NOT PRESENT, IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS SO THAT ALL SERVICES AND VALVES ARE ACCURATELY LOCATED.

**GENERAL NOTES**

**FIGURE  
GR-22**

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**FIGURE  
GR-23**



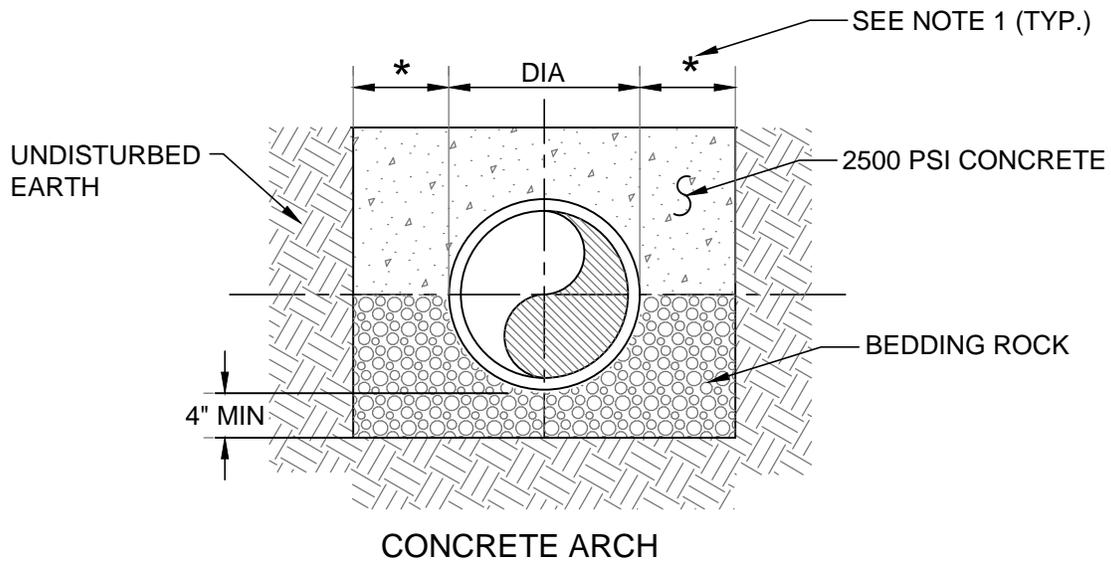
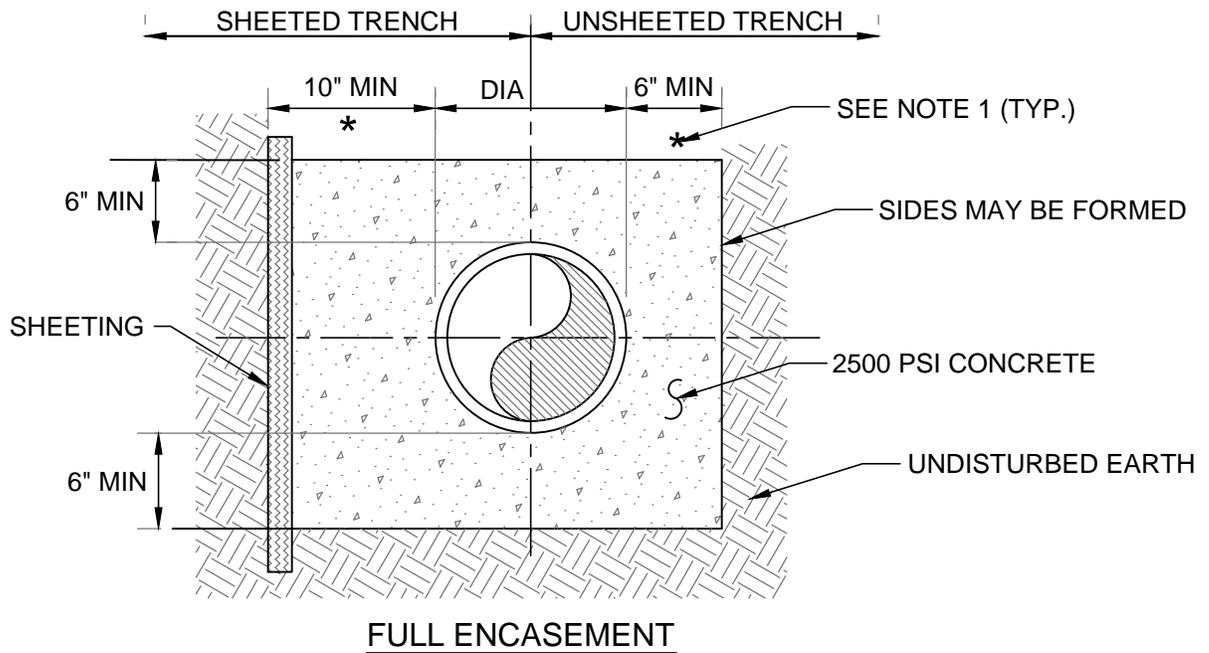
**SWAB / PIG LAUNCHER PORT (TYPICAL)**

POLK COUNTY UTILITIES, FLORIDA

**FIGURE GR-24**

DECEMBER, 2010

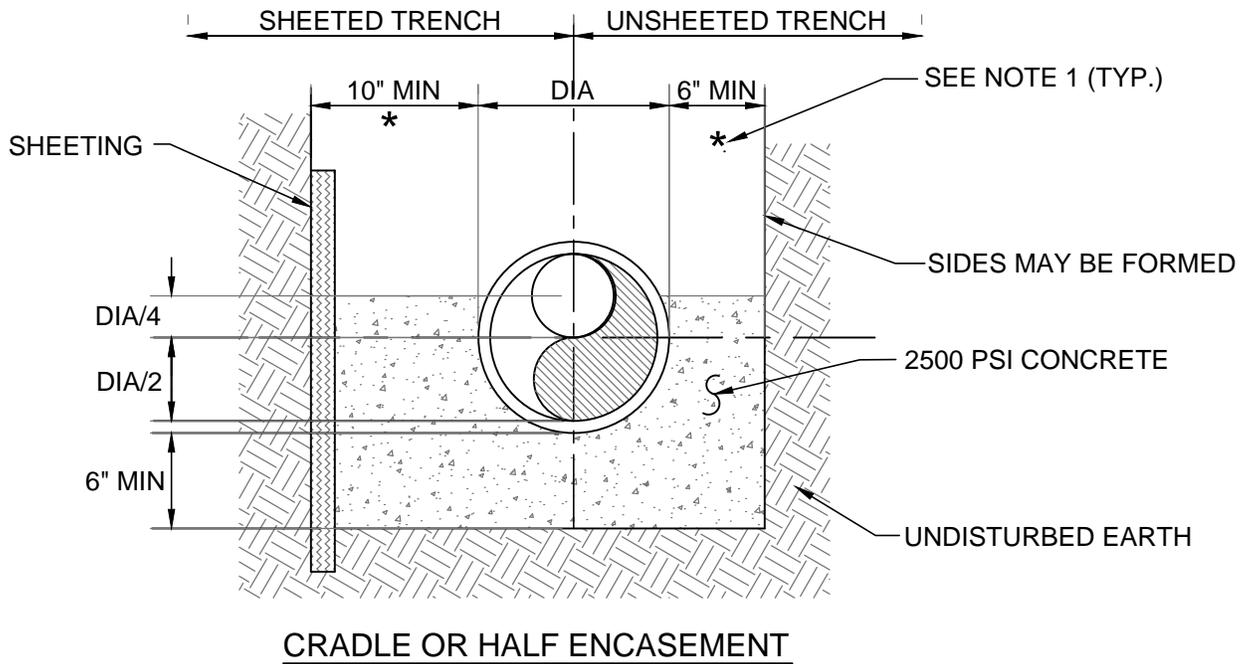




**NOTES:**

1. 15" MAXIMUM FOR PIPE DIAMETER LESS THAN 24", AND 24" MAXIMUM FOR PIPE DIA. 24" AND OVER.
2. USE OF CONCRETE ARCH HALF ENCASEMENT OR FULL ENCASEMENT TO BE DETERMINED BY ENGINEER.
3. REFER TO THE UTILITIES STANDARDS AND SPECIFICATIONS MANUAL FOR SHEETING AND BRACING EXCAVATIONS. ALL SHEETING AND BRACING SHALL CONFORM TO OSHA AND STATE REQUIREMENTS.

<b>CONCRETE ARCH AND FULL ENCASEMENT</b>	<b>FIGURE GR-26</b>
POLK COUNTY UTILITIES, FLORIDA	DECEMBER, 2010



**NOTES:**

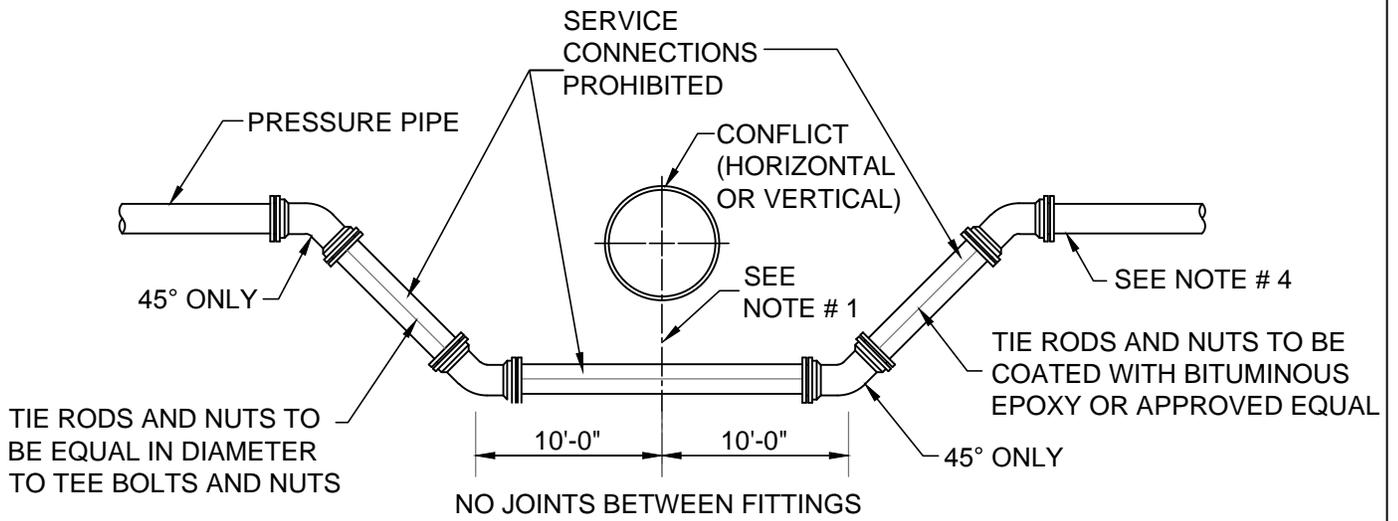
1. 15" MAXIMUM FOR PIPE DIAMETER LESS THAN 24", AND 24" MAXIMUM FOR PIPE DIA. 24" AND OVER.
2. USE OF CONCRETE CRADLE OR HALF ENCASEMENT TO BE DETERMINED BY ENGINEER.
3. REFER TO THE UTILITIES STANDARDS AND SPECIFICATIONS MANUAL FOR SHEETING AND BRACING EXCAVATIONS. ALL SHEETING AND BRACING SHALL CONFORM TO OSHA AND STATE REQUIREMENTS.

**CONCRETE CRADLE OR  
HALF ENCASEMENT**

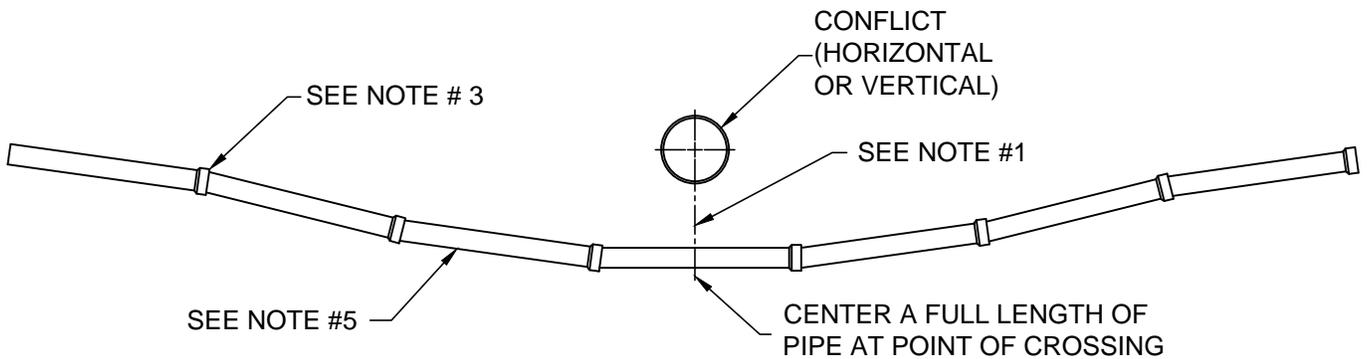
POLK COUNTY UTILITIES, FLORIDA

**FIGURE  
GR-27**

DECEMBER, 2010



**FITTING TYPE**  
(PVC OR DI PIPE)



**DEFLECTION TYPE**  
(DI PIPE ONLY)

**NOTES:**

1. FOR SEPARATION, REFER TO FIGURE GR-16.
2. ALL FITTINGS SHALL BE PROVIDED WITH APPROVED MECHANICAL JOINT RESTRAINT.
3. MAXIMUM DEFLECTIONS AND LAYING RADIUS SHALL NOT EXCEED THE PIPE MANUFACTURER'S RECOMMENDATIONS.
4. PIPE SHALL BE RESTRAINED FROM EACH TOP DEFLECTION IN ACCORDANCE WITH FIGURE GR-04.
5. NO SERVICES SHALL BE MADE TO ANY PORTION OF A DEFLECTED PIPE DEEPER THAN 6.0'.