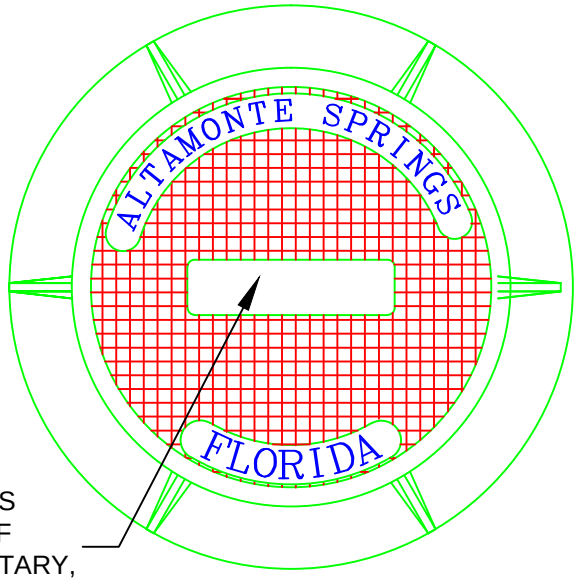
NOTES:

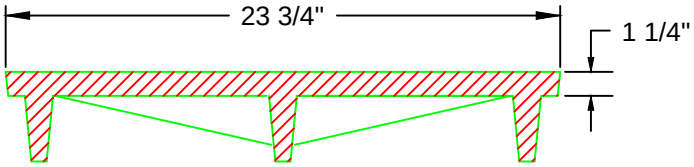
1. ARTERIAL ROADWAYS-
   USF RING AND COVER SERIES 170-CE.
   HEAVY DUTY LOAD RATING. COVER
   WEIGHT 217#, TOTAL WEIGHT 372#.

2. ALL OTHER APPLICATIONS-
   USF RING AND COVER SERIES 170-J.
   HEAVY DUTY LOAD RATING. COVER
   WEIGHT 150#, TOTAL WEIGHT 305#.

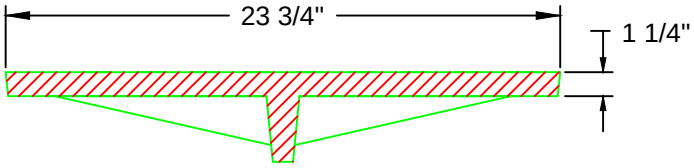
3. CITY IDENTIFIER SHALL BE USED
   FOR CITY OWNED STRUCTURES
   ONLY. PRIVATE FACILITIES SHALL
   ONLY BE IDENTIFIED AS TO USE.



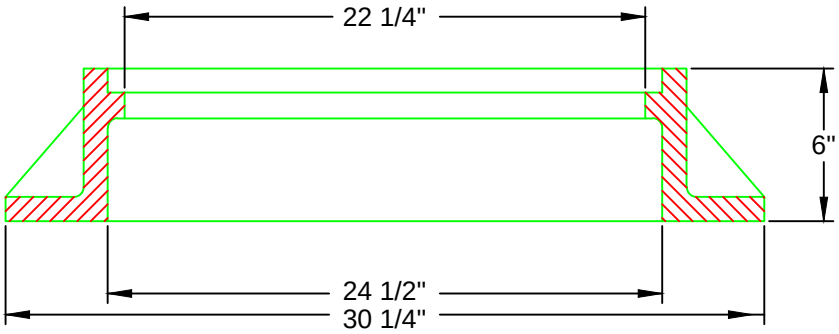
RAISED 1 1/2" LETTERS
FLUSHED WITH TOP OF
COVER LABELED SANITARY,
STORM, POTABLE, OR
RECLAIMED AS APPLICABLE



MANHOLE COVER TYPE CE



MANHOLE COVER TYPE J



USF 170 MANHOLE RING

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MANHOLE FRAME & COVER

GU001-1

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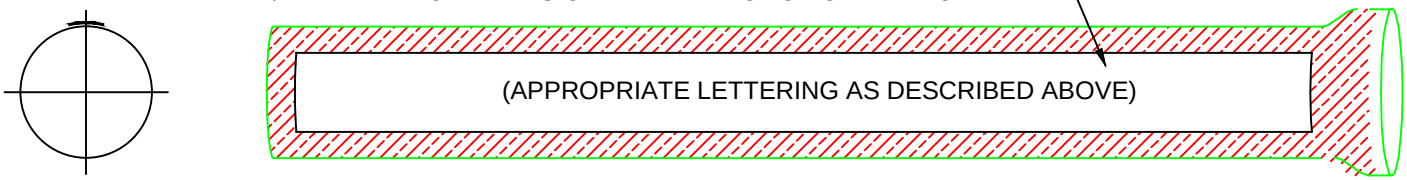
GENERAL NOTES:

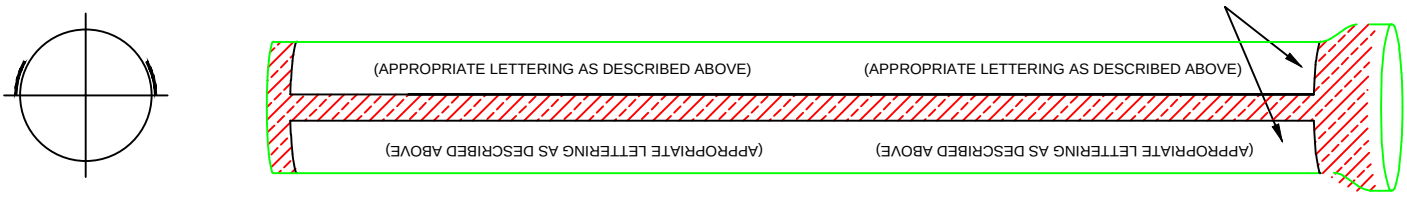
ALL UTILITY PIPE SHALL BE INSTALLED WITH 3 INCH WIDE SELF ADHESIVE VINYL CONTINUOUS TAPE, FOR IDENTIFICATION PURPOSES. TAPE SHALL BE COLOR CODED AND WORDED AS FOLLOWS:

1. POTABLE WATER.
   A. COLOR: BLUE WITH BLACK OR WHITE LETTERING
   B. LETTERING: POTABLE WATER MAIN OR SIMILAR WORDING.
2. RECLAIMED WATER.
   A. COLOR: PURPLE WITH WHITE OR YELLOW LETTERING.
   B. LETTERING: RECLAIMED WATER MAIN OR SIMILAR WORDING.
3. FIRE LINES.
   A. COLOR: RED WITH BLACK OR WHITE LETTERING
   B. LETTERING: FIRE LINE OR SIMILAR WORDING.
4. GRAVITY SEWER.
   A. COLOR: BROWN OR GREEN WITH BLACK OR WHITE LETTERING.
   B. LETTERING: SEWER LINE OR SIMILAR WORDING.
5. SEWER FORCE MAIN.
   A. COLOR: GREEN WITH BLACK OR WHITE LETTERING.
   B. LETTERING: SEWER FORCE MAIN OR SIMILAR WORDING.

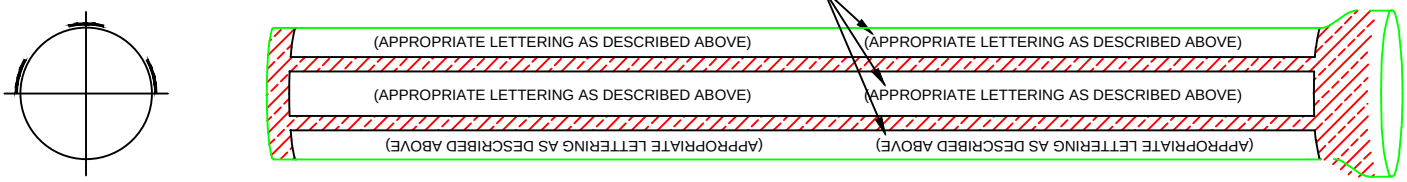
2 1/2"- 4" PIPE - 3" TAPE IS CENTERED ALONG TOP HALF OF PIPE.

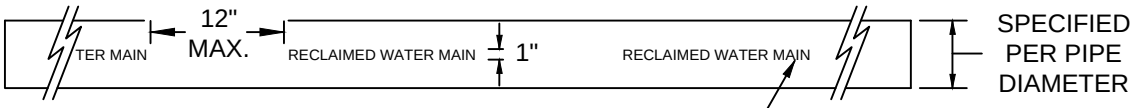


6" - 16" PIPE - 6" MIN TAPE IS PLACED ALONG BOTH SIDES OF TOP HALF OF PIPE.



20" AND LARGER PIPE - 6" MIN TAPE IS PLACED ON BOTH SIDES OF THE TOP HALF OF THE PIPE WITH A THIRD STRIP CENTERED ALONG TOP HALF OF PIPE.





PURPLE TAPE WITH WHITE OR OTHER CONTRASTING PERMANENTLY IMPREGNATED LETTERING SHALL BE USED. THE TAPE SHALL RUN FROM JOINT TO JOINT ALONG THE LENGTH OF THE PIPE.

METAL RECLAIMED WATER MAIN WITH IDENTIFICATION TAPE

NTS

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PIPE IDENTIFICATION

GU002-4

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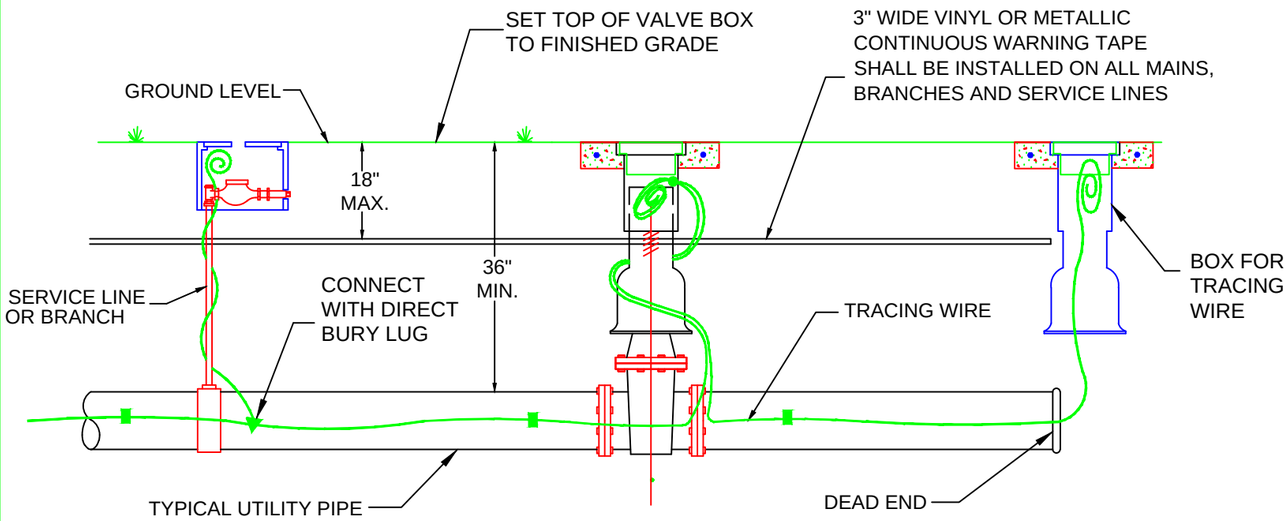
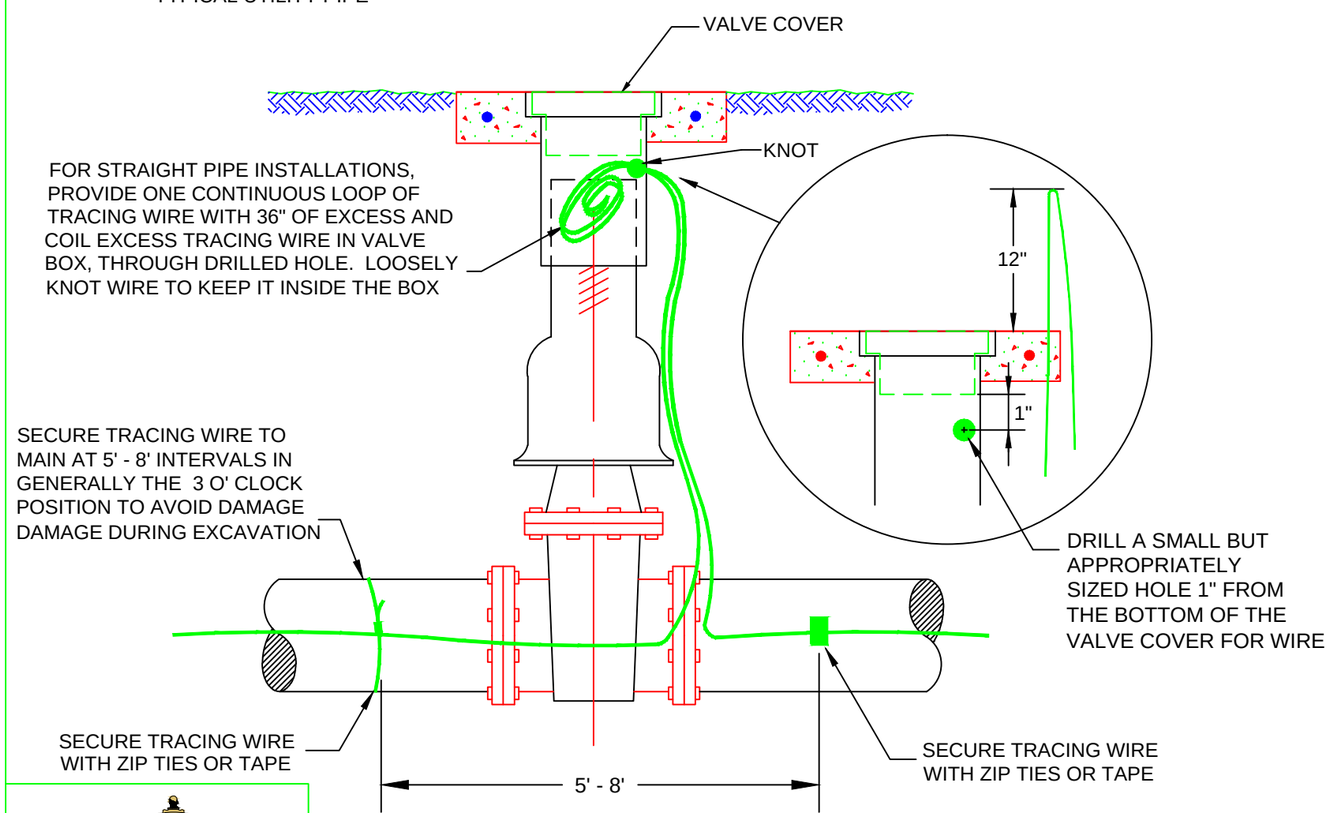
PUBLIC WORKS & UTILITIES ENGINEERING & DESIGN STANDARDS





TRACING WIRE GENERAL NOTES:

A TRACING WIRE SHALL BE INSTALLED ON ALL POTABLE WATER, RECLAIMED WATER, AND SANITARY SEWER PIPE. THE WIRE SHALL BE INSTALLED SO THAT ALL PIPE, INCLUDING PIPE BRANCHES, CAN BE TRACED WITHOUT LOSS OR DETERIORATION OF SIGNAL OR WITHOUT THE TRANSMITTED SIGNAL MIGRATING OFF THE WIRE. THE CONTRACTOR SHALL BE REQUIRED TO PERFORM A CONTINUITY TEST ON ALL TRACING WIRE IN THE PRESENCE THE CITY'S DESIGNATED REPRESENTATIVE USING A STANDARD HAND HELD DETECTOR TO TRACE THE SIGNAL. IF THE TRACING WIRE IS FOUND TO BE NOT CONTINUOUS AFTER TESTING, CONTRACTOR SHALL REPAIR OR REPLACE THE FAILED SEGMENT OF WIRE.

APPROVED TRACING WIRE MATERIAL:
WIRE FOR DIRECT BURY APPLICATIONS: TRACING WIRE SHALL BE #12 AWG HIGH STRENGTH COPPER CLAD STEEL CONDUCTOR (HS-CCS), INSULATED WITH A 30 MIL, HIGH MOLECULAR WEIGHT - HIGH DENSITY POLYETHYLENE (HMW-HDPE) INSULATION, BREAK LOAD 380# MINIMUM, AND RATED FOR DIRECT BURIAL USE AT 30 VOLTS AS MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC, OR APPROVED EQUAL.

WIRE FOR DIRECTIONAL DRILL APPLICATIONS: TRACING WIRE SHALL BE #12 AWG EXTRA HIGH STRENGTH COPPER CLAD STEEL (EHS-CCS), INSULATED WITH A 45 MIL, HIGH MOLECULAR WEIGHT - HIGH DENSITY POLYETHYLENE (HMW-HDPE) INSULATION, BREAK LOAD 1150# MINIMUM, AND APPROVED FOR DIRECTIONAL DRILL APPLICATIONS SUCH AS SOLOSHOT™ MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC, OR APPROVED EQUAL.

WIRE FOR PIPE BURSTING APPLICATIONS: TRACING WIRE SHALL BE MULTI-STRAND STAINLESS STEEL TRACING WIRE APPROVED FOR PIPE BURSTING APPLICATIONS SUCH AS SOLOSHOT™ BURST MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC OR MEETING THE FOLLOWING MINIMUM REQUIREMENTS:

WIRE:
MATERIAL: 316 STAINLESS STEEL ALLOY, 49 STRANDS, ANNEALED
RATING: 30 VOLTS MAXIMUM, 1,700 LB BREAK LOAD
THICKNESS: 0.125" OVERALL DIAMETER (DIMENSIONALLY EQUIVALENT TO #8 AWG)

INSULATING JACKET: 45 MIL, HIGH MOLECULAR WEIGHT - HIGH DENSITY POLYETHYLENE (HMW-HDPE); 30 VOLT MAXIMUM

DIRECT BURY WIRE NUTS: SHALL BE DRYCONN™ MANUFACTURED BY KING INNOVATION, DBY OR DBR SERIES MANUFACTURED BY 3M™, SNAKEBITE™ MANUFACTURED BY COPPERHEAD INDUSTRIES, LLC, OR APPROVED EQUAL.

DIRECT BURY LUGS: SHALL BE DRYCONN™ MANUFACTURED BY KING INNOVATION, OR APPROVED EQUAL.

EXECUTION:
DIRECT BURY INSTALLATION: INSTALL IN THE SAME TRENCH WITH PIPE, LAYING TRACING WIRE FLAT AND SECURELY AFFIXED TO THE PIPE AT 5 TO 8 FOOT INTERVALS IN GENERALLY THE THREE O-CLOCK POSITION TO AVOID DAMAGE DURING EXCAVATION. METALLIC FASTENERS ARE NOT TO BE USED. INSTALL WIRE WITH SOME SLACK TO ALLOW FOR BENDS IN LAYING AND FOR FUTURE INSTALLATION OF JOINTS, SPLICES, TAPPING SADDLES, ETC. THE SLACK SHOULD BE SUFFICIENT TO ALLOW FOR SMALL EARTH MOVEMENTS OCCURRING DURING COMPACTION, TRENCH FILL OR NATURAL SUBSIDENCE. NO BREAKS OR CUTS IN THE TRACING WIRE OR WIRE INSULATION IS PERMITTED. AT WATER SERVICE SADDLES, THE WIRE SHALL NOT BE ALLOWED TO BE PLACED BETWEEN THE SADDLE AND THE MAIN.

DIRECTIONAL DRILL OR PIPE BURSTING INSTALLATION: INSTALL INSIDE THE BORED HOLES AND CASING WITH PIPE DURING INSTALLATION. ALWAYS ATTACH THE TRACING WIRE TO THE LEAD END OF THE PIPE WHEN BORING OR PLOWING AND AVOID KINKING OR TANGLING THE WIRE DURING INSTALLATION. A MINIMUM OF TWO TRACING WIRES SHOULD BE PULLED WITH THE PIPE IN CASE ONE OF THE TWO WIRES BREAK.

ACCESS POINTS: TRACING WIRE ACCESS POINTS SHALL IN GENERAL BE NO MORE THAN FIVE-HUNDRED (500) FEET APART AND AT EVERY PROPOSED CONCRETE VALVE BOX COLLAR. WIRE IN VALVE BOXES ARE VULNERABLE TO BEING TWISTED AROUND VALVE KEYS AND SNAPPED, OR PUSHED TO THE BOTTOM OF THE VALVE BOX WHERE THEY ARE INACCESSIBLE TO THE LOCATOR. TO MITIGATE THESE PROBLEMS, WIRE SHALL ENTER THE VALVE BOX NEAR THE TOP WHERE IT CAN BE COILED JUST UNDER THE VALVE COVER. THE WIRE SHALL EXTEND A MINIMUM OF 12" ABOVE THE TOP OF VALVE SO THAT IT CAN BE EASILY PULLED OUT OF THE WAY BEFORE OPERATING THE VALVE. ON FORCE MAINS, DEAD END MAINS, LONG UTILITY RUNS THAT EXCEED 500 FEET, AND OTHER SIMILAR APPLICATIONS WITHOUT A VALVE OR METER BOX, WIRE SHALL BE BROUGHT TO THE SURFACE IN A METAL CITY-APPROVED VALVE BOX FOR ACCESSIBILITY. ACCESS POINTS SHALL BE WITHIN PUBLIC RIGHT-OF-WAY OR PUBLIC UTILITY EASEMENTS.

TRACING WIRE IN A VAULT: TRACING WIRE SHALL BE BROUGHT UP ON THE OUTSIDE OF THE VAULT AND PLACED INSIDE THE VAULT THROUGH A GROUT HOLE OPPOSITE ANY ACCESS STEPS. COIL ENOUGH WIRE TO EXTEND A MINIMUM OF 36" ABOVE GROUND. WIRE SHOULD NOT BE PLACED WHERE A PERSON ENTERING THE VAULT COULD TRIP ON THE WIRE.

CONNECTIONS: EXCEPT FOR APPROVED SPLICE-IN CONNECTIONS, TRACING WIRE SHALL BE CONTINUOUS AND WITHOUT SPLICES FROM EACH TRACING WIRE ACCESS POINT. APPROVED SPLICE-IN CONNECTIONS ARE AS FOLLOWS:

JOINING ENDS OF TRACING WIRE: CONNECTIONS INTO EXISTING TRACING WIRE, CONNECTIONS INTO TRACING WIRE USED DURING PIPE BORES, CONNECTIONS BETWEEN ONE SPOOL OF TRACING WIRE TO ANOTHER, AND OTHER SIMILAR CONNECTIONS SHALL BE MADE USING A DIRECT BURY NUT. WHEN CONNECTING TRACING WIRE ENDS TOGETHER, STRIP 5/8" OF INSULATION FROM THE END OF EACH WIRE. INSERT THE TWO ENDS FIRMLY INTO THE DIRECT BURY WIRE NUT. TWIST THE WIRE NUT CLOCKWISE WHILE PUSHING THE WIRES FIRMLY INTO THE NUT. DO NOT OVER TORQUE. TIE THE WIRES IN A LOOSE KNOT BELOW THE WIRE NUT.

JOINING TRACING WIRE - BRANCH TO MAIN: CONNECTIONS OF TRACING WIRE AT TEES, CROSSES, AND AT LOCATIONS WHERE THE TRACING WIRE WILL BE BROUGHT TO THE SURFACE SHALL BE CONDUCTED USING A DIRECT BURY LUG.

JACKET COLOR: THE APWA UNIFORM COLOR CODE SHALL BE FOLLOWED. (BLUE - POTABLE WATER; PURPLE - RECLAIMED WATER; GREEN - SANITARY SEWER)

REPAIRS: AT ALL REPAIR LOCATIONS WHERE THERE IS EXISTING TRACING WIRE, THE WIRE SHALL BE PROPERLY RECONNECTED AND SPLICED AS OUTLINED ABOVE. ELECTRICAL TAPE IS NOT AN ACCEPTABLE REPAIR SINCE CORROSION WILL EVENTUALLY OCCUR AND THE LOCATE SIGNAL WILL BE LOST TO GROUND AT THE CONNECTION.

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UTILITY PIPE TRACING WIRE, LOCATION & MATERIALS

GU004-4

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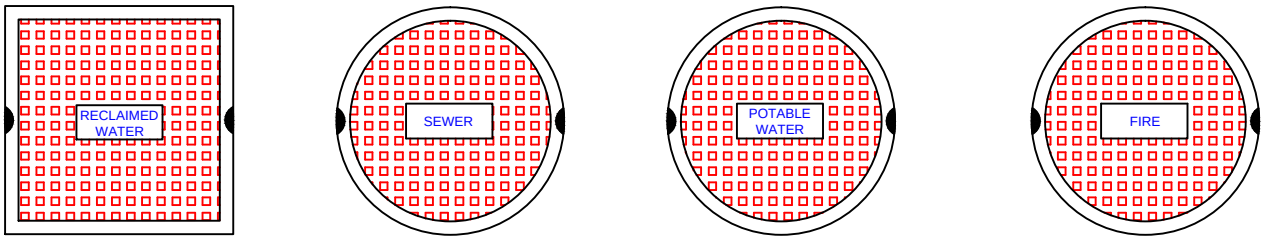
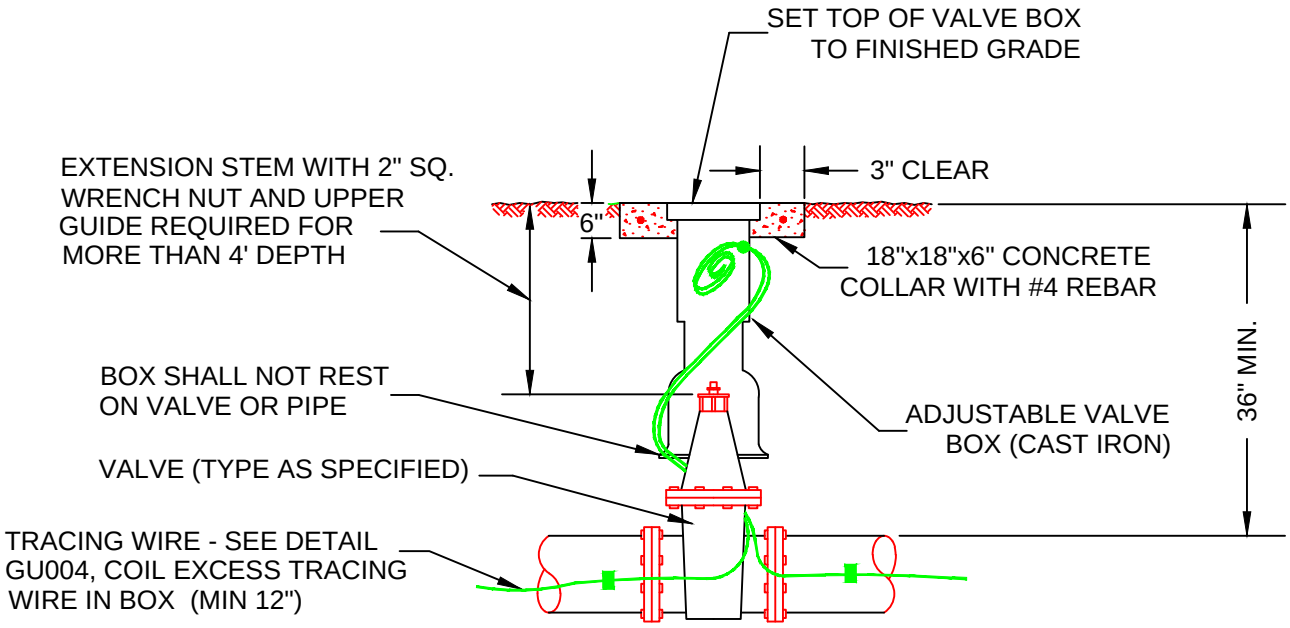


RECLAIMED WATER SEWER POTABLE WATER FIRE LINE

TYPICAL VALVE BOX COVER DETAILS

NOTE: COVERS AND RINGS TO TRAFFIC RATED PER FDOT STANDARDS AND SPECIFICATIONS.



TYPICAL VALVE AND VALVE BOX DETAIL

ADDITIONAL REFERENCE: FIRE HYDRANT DETAIL PW002.

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VALVE, VALVE BOX & COVER

GU005-3

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PROPOSED UTILITY	HORIZONTAL & VERTICAL SEPARATION REQUIREMENTS								
	POTABLE WATER		RECLAIMED WATER*		SANITARY SEWER (GRAVITY & F.M.)		STORM SEWER		ACCEPTABLE VARIANCES
	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.	HORIZ.	VERT.	
POTABLE WATER	---	---	3' O/O	12"	6'	6" / 12" FM	3'	6"	SEE GENERAL NOTES: NO. 4
RECLAIMED* WATER	3' O/O	12"	---	---	3' O/O	12"	3'	6"	
SANITARY SEWER	6'	6" / 12" FM	3' O/O	12"	---	---	3'	6"	

GENERAL NOTES:

1) THE TABLE REPRESENTS THE MINIMUM SEPARATION REQUIREMENTS AS DESCRIBED IN F.D.E.P. RULES OF THE FLORIDA ADMINISTRATIONCODE (F.A.C.). 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 REUSE WATER AS DEFINED BY F.A.C. 62-610. OTHER TYPES OF RECLAIMED WATER ARE SEWAGE AND SEPARATIONS LISTED FOR SANITARY SEWER SHALL APPLY.

3) ALL SEPARATION DISTANCES ARE FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE UNLESS OTHERWISE SPECIFIED. CRITERION PRODUCING GREATER CLEARANCE SHALL BE USED.

- C/C -DENOTES CENTER OF PIPE TO CENTER OF PIPE.
- O/O -DENOTES OUTSIDE OF PIPE TO OUTSIDE OF PIPE.

4) REQUIRES PRIOR APPROVAL FROM FDEP.

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UTILITY PIPE MIN. SEPARATION REQUIREMENTS TABLE

GU006-4
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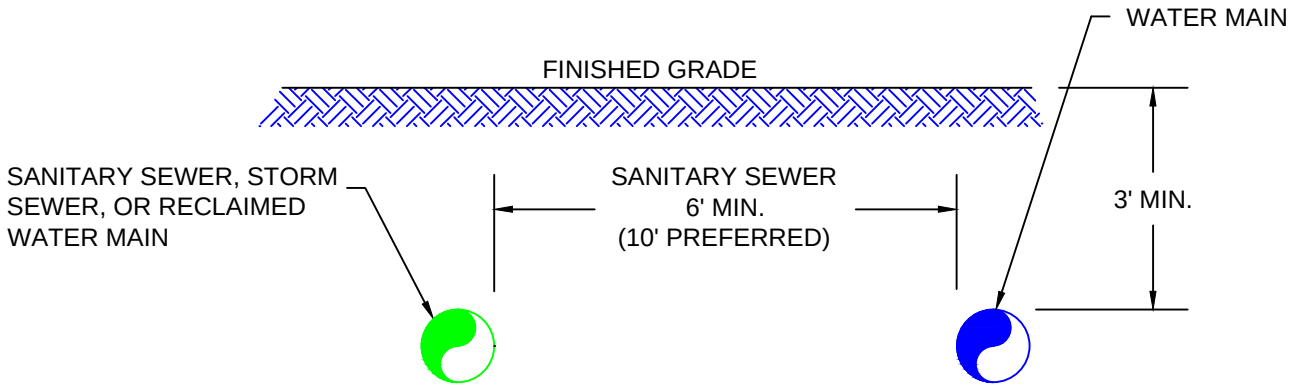
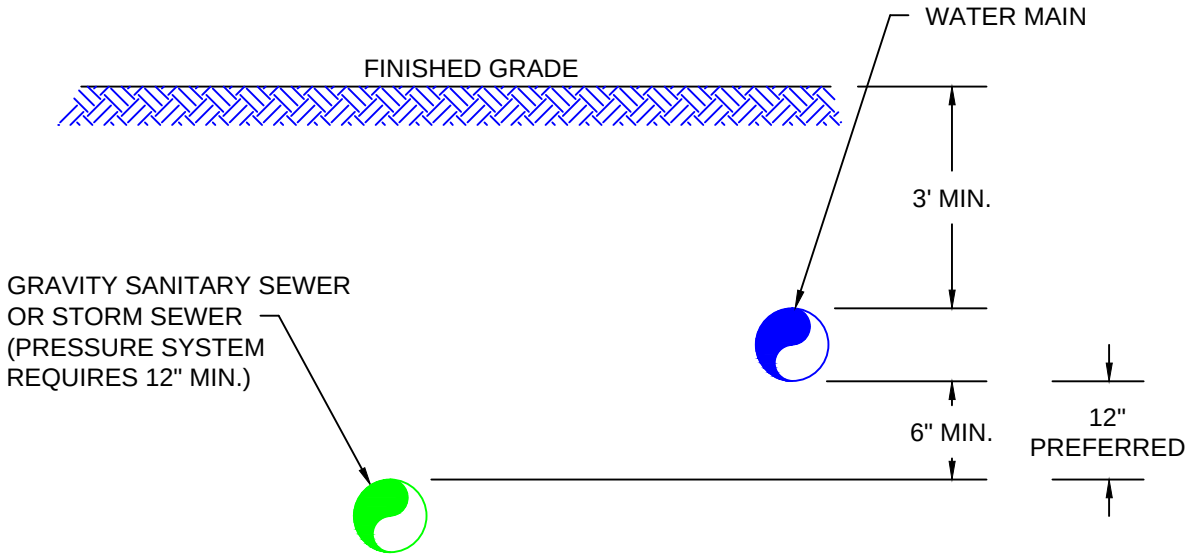


NOTES: (HORIZONTAL)

1. A MINIMUM SEPARATION OF SIX (6) FEET, OUTSIDE TO OUTSIDE, SHALL BE MAINTAINED BETWEEN WATER MAINS AND SANITARY SEWER, GRAVITY- OR PRESSURE-TYPE SANITARY SEWER, OR WASTEWATER FORCE MAIN.
2. A MINIMUM HORIZONTAL SEPARATION OF THREE (3) FEET, OUTSIDE TO OUTSIDE, SHALL BE MAINTAINED BETWEEN WATER MAINS AND RECLAIMED WATER LINES CARRYING UNRESTRICTED PUBLIC ACCESS REUSE WATER, AND STORM SEWER LINES.



3. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND SANITARY GRAVITY SEWERS SHALL BE REDUCED TO THREE FEET (3') WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST SIX INCHES (6") ABOVE THE TOP OF THE SEWER (62-555.314(C)).

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UTILITY PIPE MIN. SEPARATION REQUIREMENTS

GU007-2A

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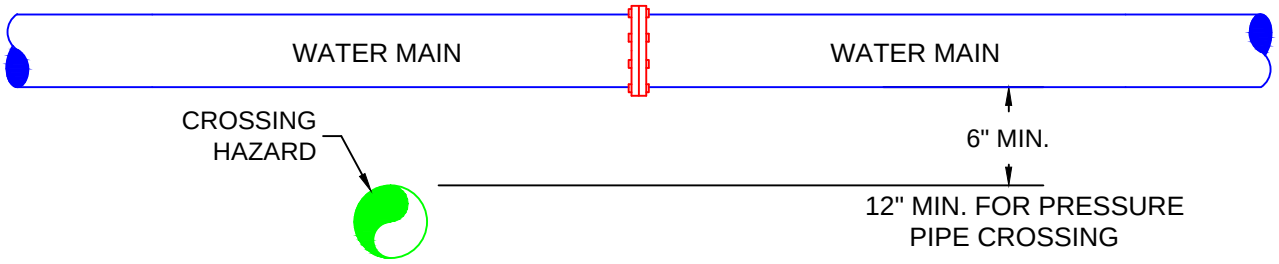


NOTES : (VERTICAL)

1. A MINIMUM OF VERTICAL SEPARATION OF AT LEAST SIX INCHES (6"), AND PREFERABLY TWELVE INCHES (12") ABOVE, OR AT LEAST TWELVE INCHES (12") BELOW, OUTSIDE TO OUTSIDE OF PIPE BARREL, SHALL BE MAINTAINED BETWEEN WATER MAIN, SANITARY GRAVITY SEWER, OR STORM SEWER. MINIMUM VERTICAL SEPARATION OF 12" OUTSIDE TO OUTSIDE SHALL BE MAINTAINED FOR CROSSING PRESSURE PIPES (RECLAIMED WATER, STORM FORCEMAIN, OR SANITARY FORCEMAIN).

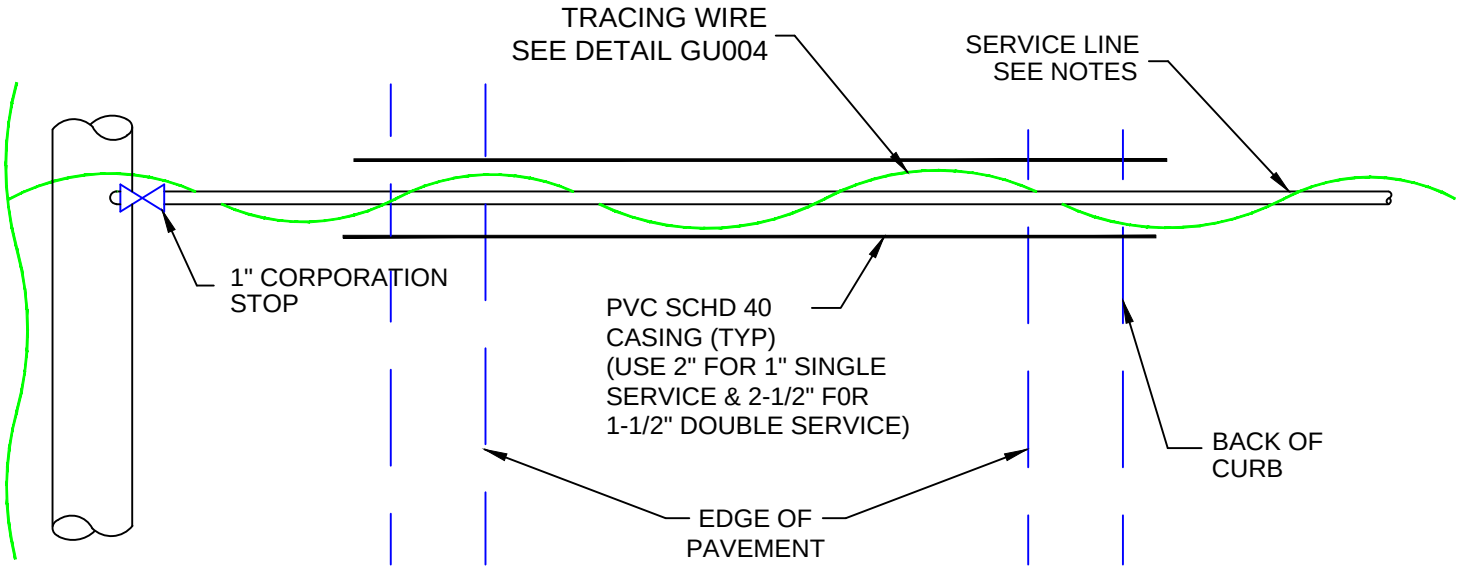
2. IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE CROSSING HAZARD.

3. WHERE IT IS NOT POSSIBLE TO MAINTAIN THE REQUIRED SEPARATION, IT SHALL BE REPORTED TO THE CITY ENGINEER. DEVIATIONS AND OTHER ALTERNATIVES SHALL BE CONSIDERED ON A CASE-BY-CASE BASIS AND MUST RECEIVE SPECIFIC APPROVAL BY F.D.E.P., IN ACCORDANCE WITH FLORIDA STATUTE 62-555.314(5), PRIOR TO IMPLEMENTATION.

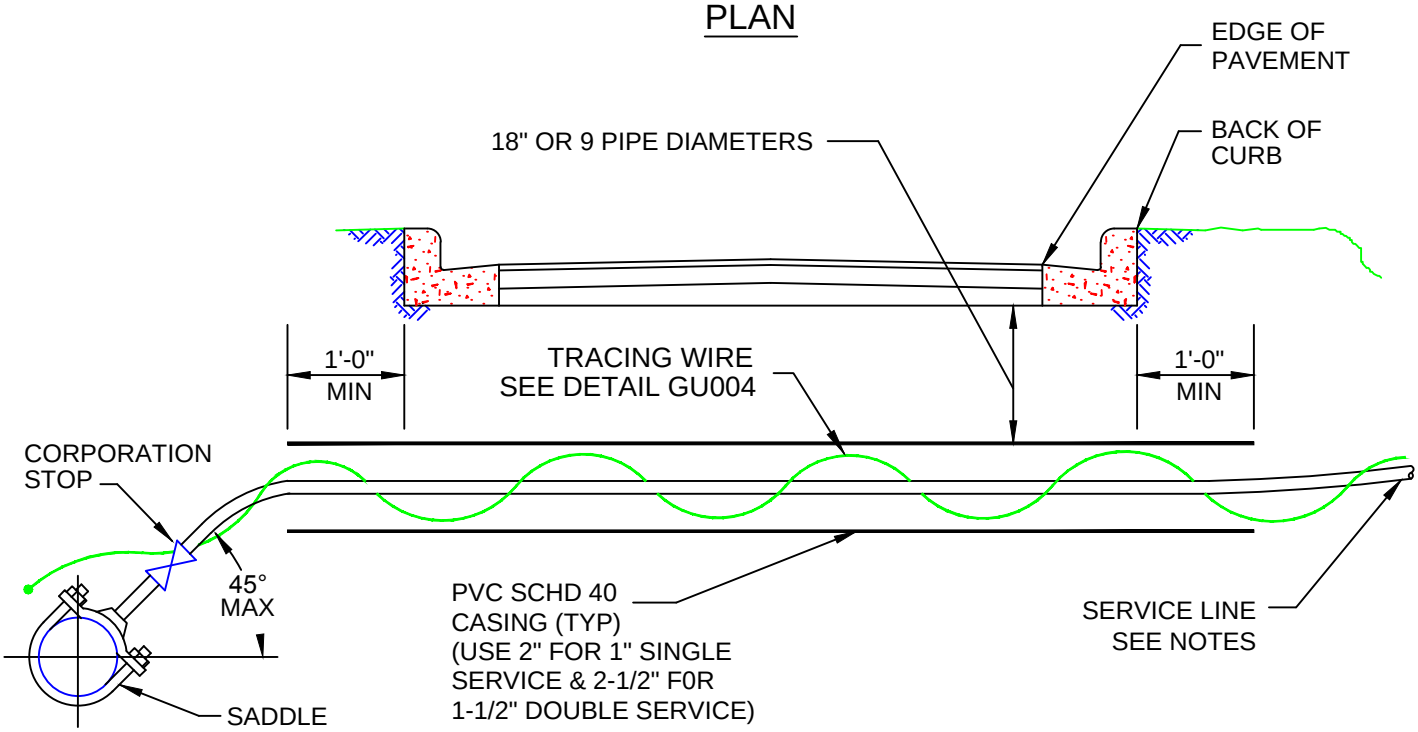
NOTES : (HORIZONTAL)

4. THERE SHALL BE AT LEAST A SIX FOOT (6') HORIZONTAL SEPARATION BETWEEN WATER MAINS AND SANITARY FORCE MAINS WITHOUT EXCEPTION. FIELD PROBLEMS SHALL BE REPORTED TO THE CITY ENGINEER. SPECIFIC SOLUTIONS MUST BE ACCEPTED BY F.D.E.P. PRIOR TO IMPLEMENTATION.

5. NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SANITARY SEWER MANHOLE OR STORM SEWER STRUCTURE.



PLAN



SECTION

NOTES:

SERVICE LINE CONTINUATION SEE DETAIL:

1. RW002 - RECLAIMED WATER SINGLE SERVICE CONNECTION.
2. PW004 - POTABLE WATER SINGLE SERVICE CONNECTION.
3. PW005 - POTABLE WATER DOUBLE SERVICE CONNECTION.

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BORE AND JACK FOR WATER SERVICE CONNECTION

GU008-2

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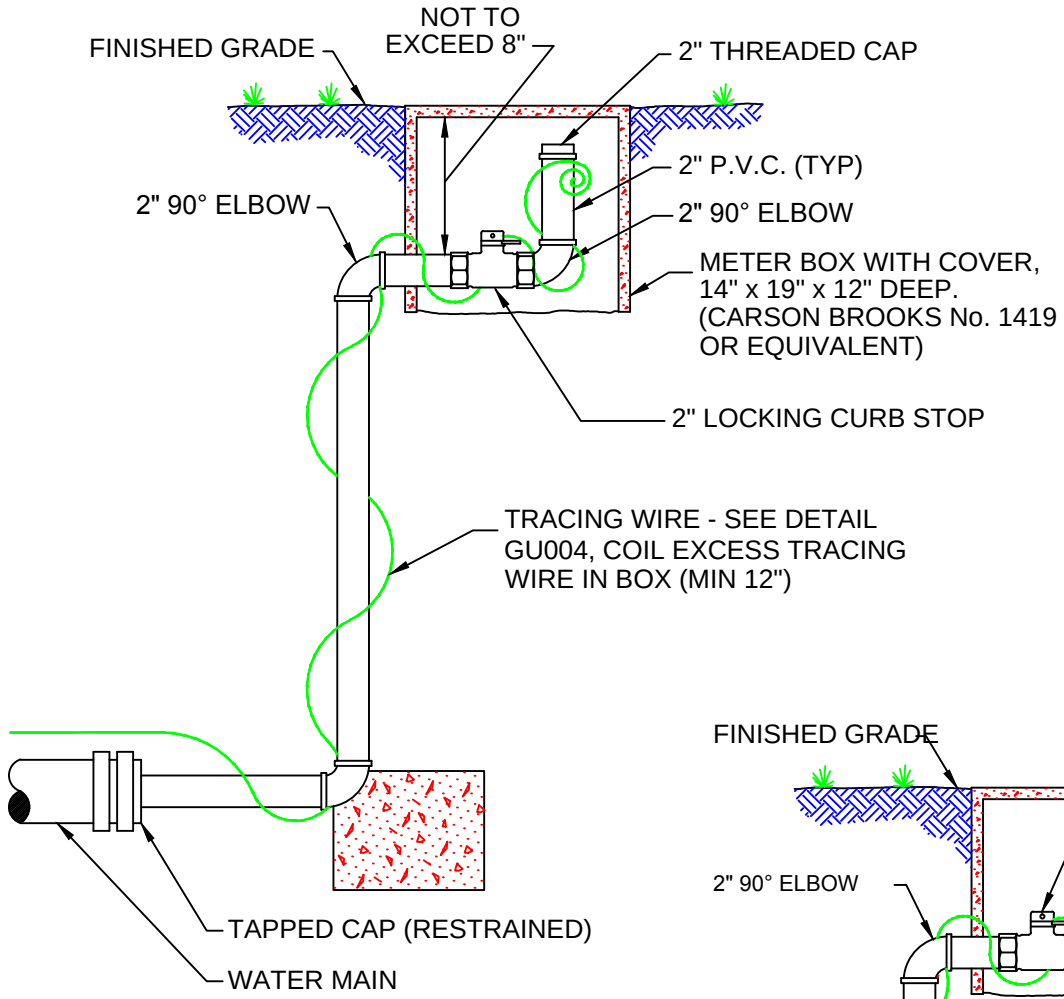
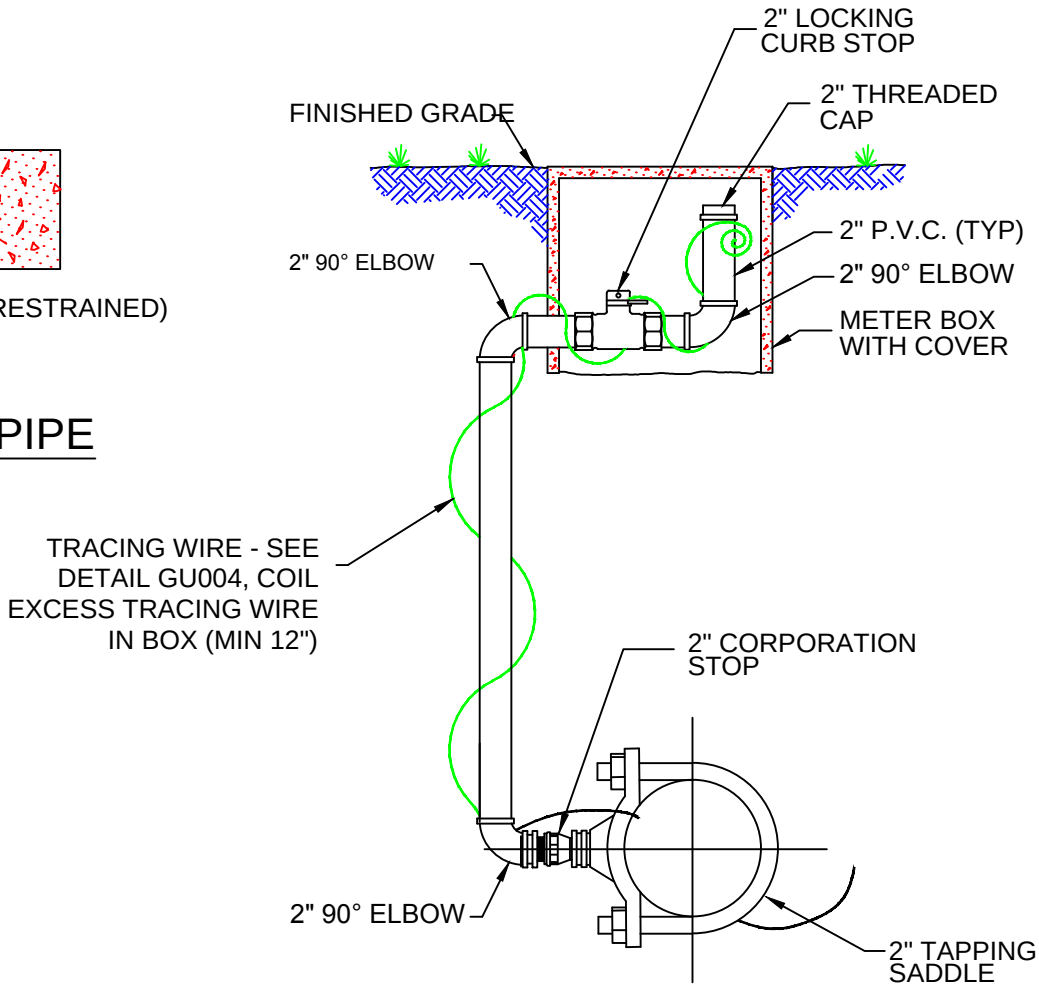


END OF PIPE



PIPE TAP

NOTE:

ALL PIPE AND FITTINGS MUST BE SCHEDULE 80 P.V.C.

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ALTAMONTE SPRINGS, FLORIDA 32714

LINE FLUSHING ASSEMBLIES

GU009-3

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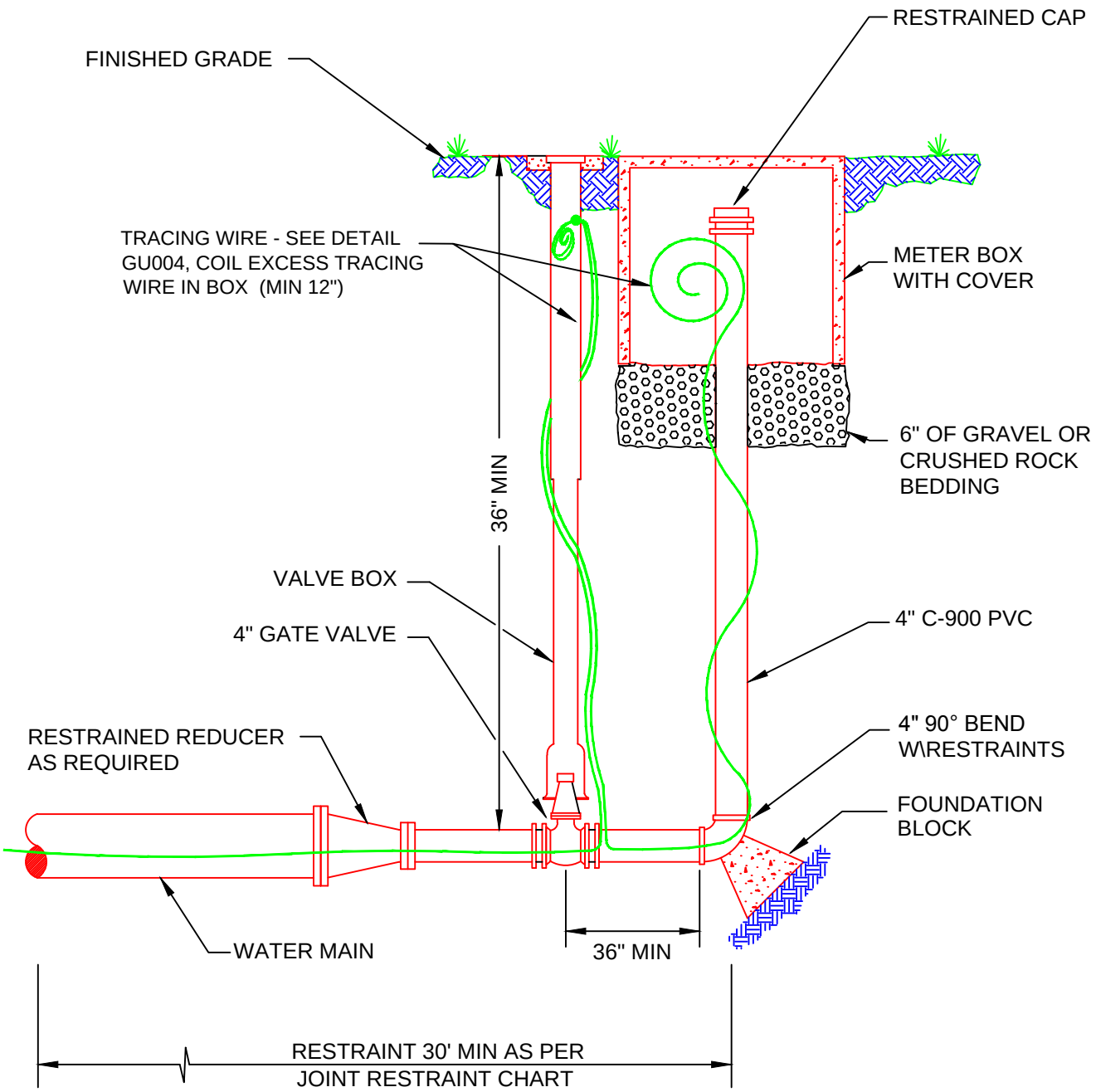

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ALTAMONTE SPRINGS, FLORIDA 32714

FOUR-FOOT FLUSHING VALVE ASSEMBLY

GU010-3

ISSUED 2015

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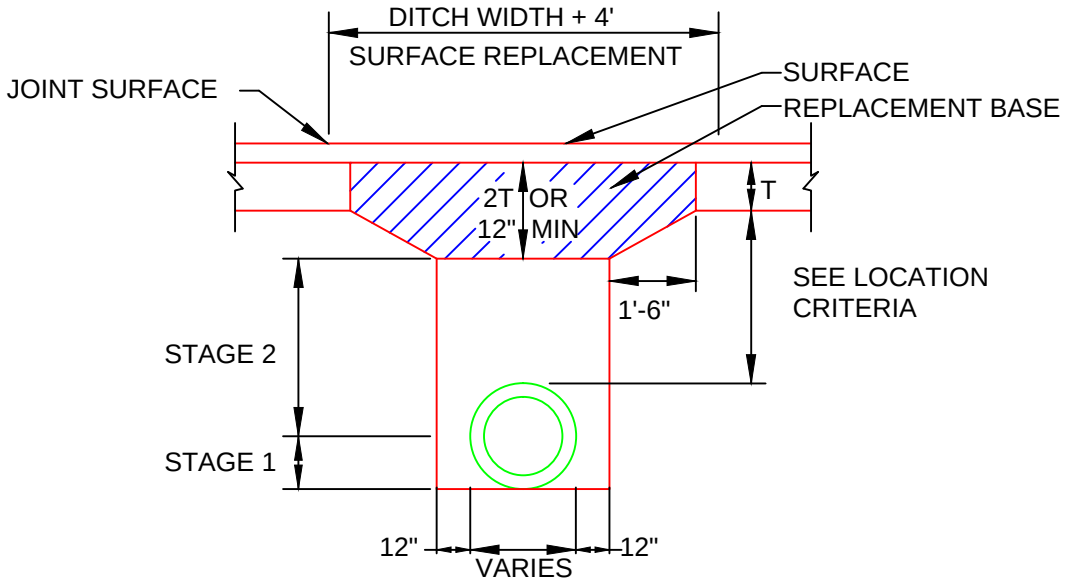


REPLACEMENT OF FLEXIBLE PAVEMENT FOR PERMITTED PAVEMENT CUT

DENSITY PROCEDURES:

THE BACK FILL FOR THE FIRST AND SECOND STAGES SHALL BE PLACED IN 6" LAYERS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 98% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180. TEST REPORTS SHALL BE FURNISHED TO THE CITY.

STAGE #1

THE PERMITTEE SHALL PROVIDE ADEQUATE COMPACTED FILL BENEATH THE HAUNCHES OF THE PIPE, USING MECHANICAL TAMPS SUITABLE FOR THIS PURPOSE. THIS COMPACTION APPLIES TO THE MATERIAL PLACED BENEATH THE HAUNCHES OF THE PIPE AND ABOVE ANY BEDDING REQUIRED.

STAGE #2

THE PERMITTEE SHALL OBTAIN A WELL-COMPACTED BED AND FILL ALONG THE SIDES OF THE PIPE AND TO A POINT INDICATING THE TOP OF SUB-GRADE MATERIAL.

GENERAL NOTES:

BASE AND BACK FILL MATERIALS SHALL BE EITHER OF THE SAME TYPE AND COMPOSITION AS THE MATERIALS REMOVED, OR OF EQUAL OR GREATER STRUCTURAL ADEQUACY. MATERIALS CONTAMINATED WITH DELETERIOUS SUBSTANCES DURING EXCAVATION SHALL NOT BE USED.

REPLACED BASE MATERIAL OVER DITCH SHALL BE TWICE THE THICKNESS OF THE ORIGINAL BASE, (MINIMUM 12")

BASE MATERIAL SHALL BE PLACED IN TWO OR THREE LAYERS AND EACH LAYER THOROUGHLY ROLLED OR TAMPED TO THE SPECIFIED DENSITY.

ASPHALT CONCRETE PAYMENT THICKNESS SHALL EQUAL EXISTING THICKNESS BUT NOT LESS THAN TWO (2) INCHES.

SURFACE TREATED PAVEMENT JOINT SHALL BE LAPPED AND FEATHERED.

SURFACE MATERIAL WILL BE CONSISTENT WITH THE EXISTING SURFACE.

LIMESTONE, SAND-CLAY, SHELL, ETC. BASES:

6" LAYERS COMPACTED THICKNESS DENSITY REQUIREMENTS:

98% UNDER ROADWAY

98% OUTSIDE THE TRAVELED ROADWAY, SUCH AS INTERSECTIONS, CROSSOVERS, TURNOUTS, ETC.

95% SHOULDER PAVEMENT

METHOD ASSHTO T-180

Altamonte Springs

CITY OF ALTAMONTE SPRINGS
950 CALABRIA DRIVE
ALTAMONTE SPRINGS, FLORIDA 32714

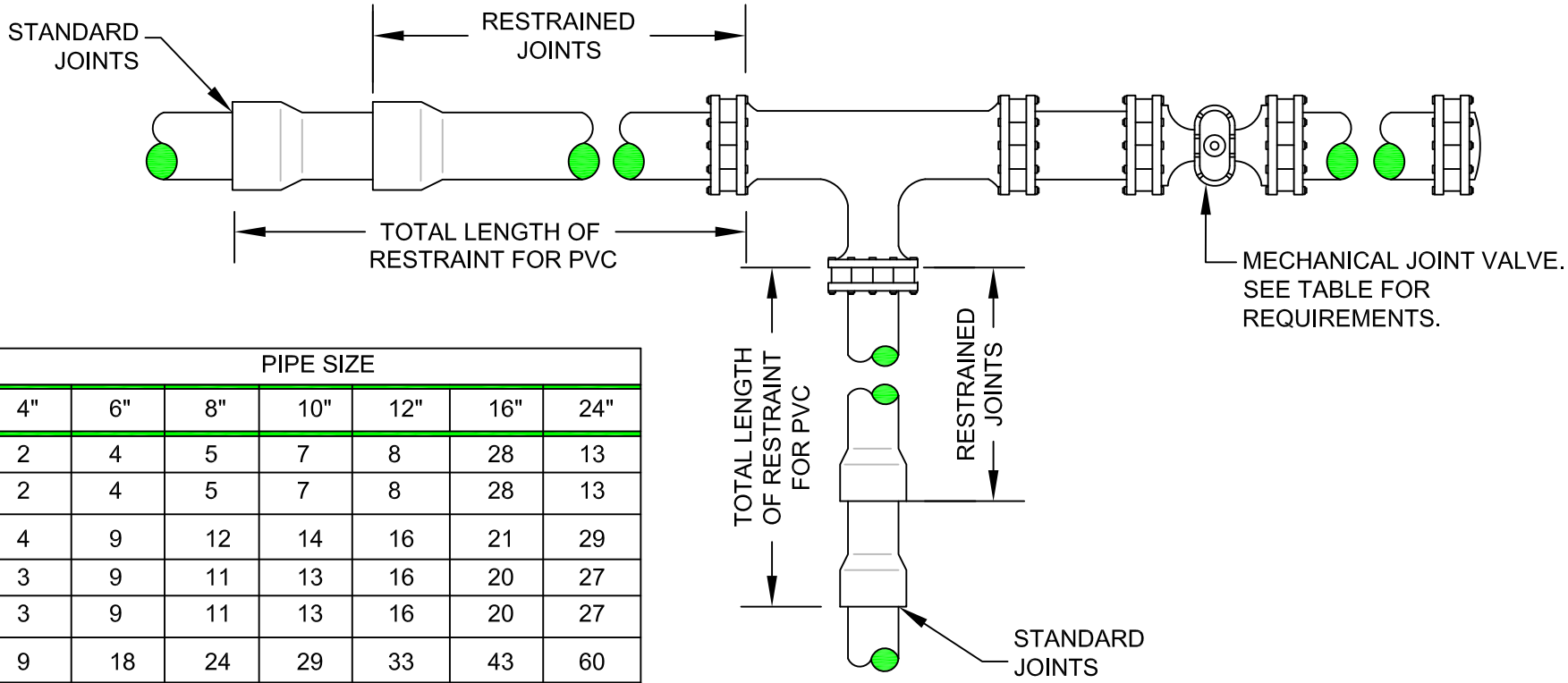
OPEN CUT DETAIL

GU011-0

ISSUED 2015

REVISED 03/31/2015 BY DJB

PUBLIC WORKS & UTILITIES ENGINEERING & DESIGN STANDARDS



		PIPE SIZE						
		4"	6"	8"	10"	12"	16"	24"
11.25°	H-B	2	4	5	7	8	28	13
	VU-B	2	4	5	7	8	28	13
	VD-B	4	9	12	14	16	21	29
22.5°	H-B	3	9	11	13	16	20	27
	VU-B	3	9	11	13	16	20	27
	VD-B	9	18	24	29	33	43	60
45°	H-B	6	18	23	28	32	41	56
	VU-B	6	18	23	28	32	41	56
	VD-B	19	38	49	59	69	89	124
90°	H-B	14	43	56	67	78	99	136
	VU-B	14	43	56	67	78	99	136
	VD-B	46	92	119	143	168	214	299
DEAD END PLUG AND VALVE		46	92	119	143	168	214	299
TEE		17	81	119	143	168	214	299

MINIMUM DESIGN CRITERIA

BEDDING TYPE: 2
DESIGN PRESSURE: 150 PSI
SAFETY FACTOR: 1.5
DEPTH OF COVER: 3.0 FT

MINIMUM FOOTAGE OF PIPE RESTRAINT

H-B: HORIZONTAL BEND
VU-B: VERTICAL-UP BEND
VD-B: VERTICAL DOWN BEND

NOTES:

1. FOR LENGTHS OF PIPE AND NUMBER OF JOINTS TO BE RESTRAINED, SEE TABLE.
2. ONLY DUCTILE IRON PIPE FITTINGS SHALL BE USED AT JOINTS TO BE RESTRAINED UNLESS OTHERWISE SPECIFIED BY THE CITY ENGINEER.

Altamonte Springs

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950 CALABRIA DRIVE
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RESTRAINED JOINT DETAIL

GU012-0

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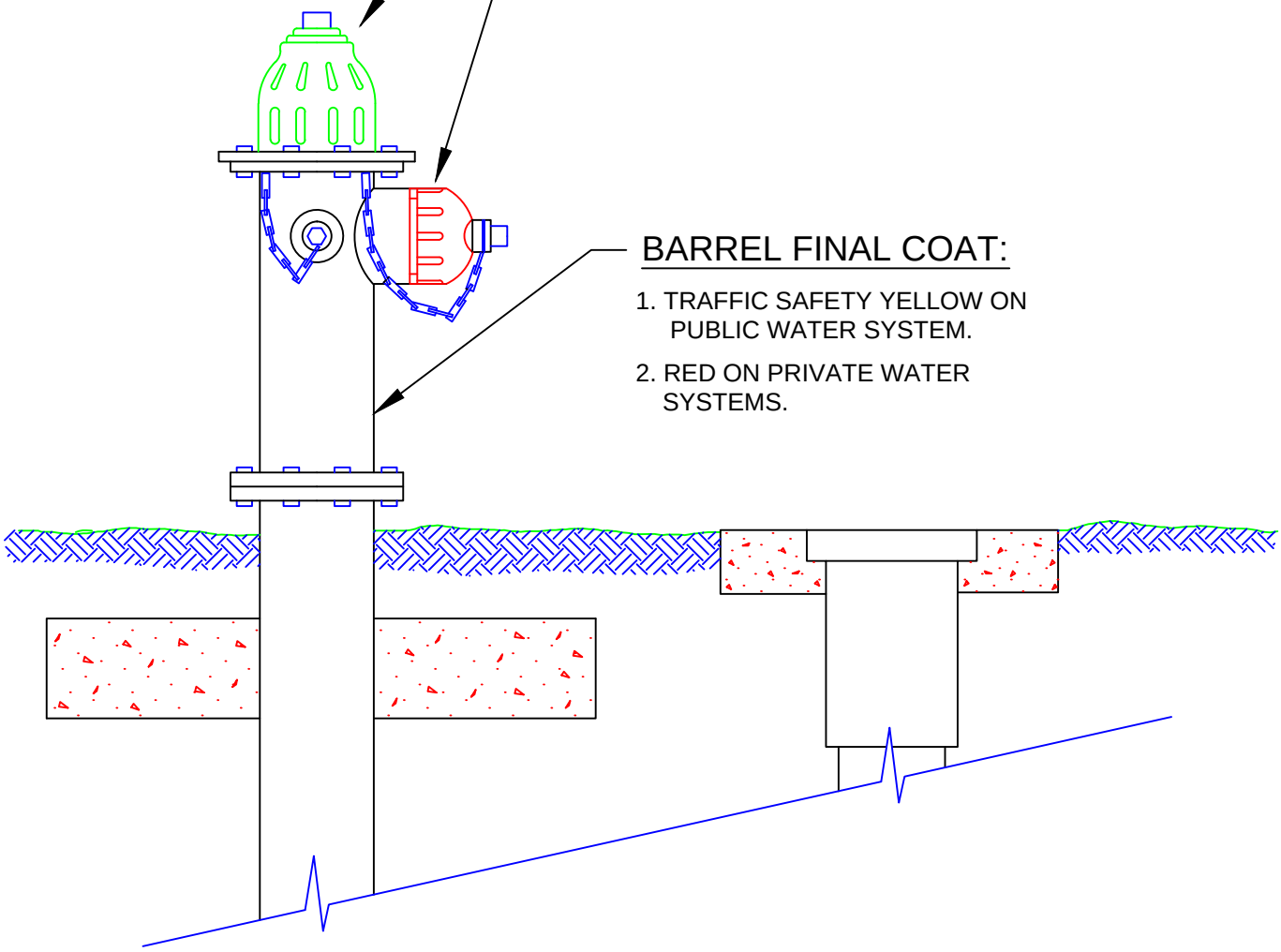

BONNET AND NOZZLE CAPS COLOR FINAL COAT:

TO BE APPLIED BY THE CITY OF ALTAMONTE SPRINGS.

BARREL FINAL COAT:

1. TRAFFIC SAFETY YELLOW ON PUBLIC WATER SYSTEM.
2. RED ON PRIVATE WATER SYSTEMS.

NOTE:

PAINT SHALL BE PORTER PAINTS (SAFETY) DTM ACRYLIC GLOSS ENAMEL #2912 OR EQUAL.

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FIRE HYDRANT COLOR IDENTIFICATION

GU013-0

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