

**CITY OF STUART
WATER AND SEWER STANDARD DETAILS
FEBRUARY 2012
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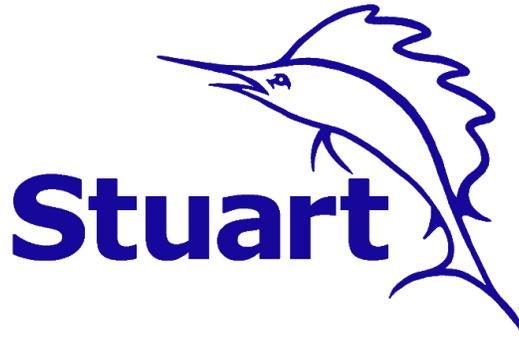
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CITY OF STUART WATER DISTRIBUTION NOTES

1. ALL CONSTRUCTION MATERIAL, INSTALLATION AND TESTING SHALL CONFORM TO THE STANDARD SPECIFICATIONS OF THE CITY OF STUART.
2. WATER MAIN WHERE SPECIFIED AS POLYVINYL CHLORIDE (PVC) SHALL CONFORM TO AWWA C-900 OR C-905, PRESSURE CLASS 150 OR 235, DR (18).
3. MIN. CLASS 50 WATER MAIN, WHERE SPECIFIED AS DUCTILE IRON PIPE , SHALL CONFORM TO ANSI/AWWA C-150/A-21.50 OR ANSI/AWWA C-151/A-21.51 AND SHALL BE PRESSURE CLASS 350 (MINIMUM).
4. POLYVINYL CHLORIDE WATER MAIN SHALL BE BLUE IN COLOR. THE USE OF IDENTIFICATION TAPE ATTACHED TO THE TOP OF THE PIPE MAY BE USED IN LIEU OF MARKING ON THE PIPE, ALSO DIP PIPE SHALL REQUIRE THE USE OF IDENTIFICATION TAPE. ALL PIPE REQUIRE THHN TRACER WIRE.
5. FITTINGS SHALL BE CAST OR DUCTILE IRON, CONFORMING TO AWWA C-110 AND ANSI A21.11, CLASS 250 MINIMUM, CEMENT LINED, AND SEAL COATED.
6. GATE VALVES SHALL BE MUELLER RESILIENT WEDGE SEAT, AMERICAN, CLOW, OR APPROVED EQUAL. VALVES SHALL CONFORM TO AWWA C-509.
7. WATER LINES SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE CITY OF STUART'S DESIGN AND CONSTRUCTION STANDARDS. THE CONTRACTOR SHALL SUBMIT CERTIFIED DENSITY TESTS AS REQUIRED BY THE CITY AND THE COUNTY, FDOT. IN CASES WHERE PAVED AREAS FALL WITHIN THE JURISDICTION OF LOCAL OR STATE AGENCIES, THE COMPACTION REQUIREMENTS SHALL NOT BE LESS THAN THE MINIMUM REQUIRED BY THE APPROPRIATE RESPONSIBLE AGENCY.
8. NO FIELD CHANGES OR DEVIATIONS FROM THE DESIGN SHALL BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER AND CITY/COUNTY/FDOT.
9. THE CONTRACTOR SHALL NOTIFY THE ENGINEER, CITY OF STUART AND COUNTY/FDOT 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
10. A PRE-CONSTRUCTION CONFERENCE BETWEEN THE ENGINEER, THE CONTRACTOR, THE CITY, COUNTY/FDOT AND ANY OTHER APPLICABLE AGENCIES SHALL BE MANDATORY PRIOR TO COMMENCEMENT OF CONSTRUCTION.
11. TRAFFIC CONTROL, BARRICADES, ETC., SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARDS AND APPROVED BY THE CITY ENGINEER.
12. MINIMUM COVER SHALL BE 36 INCHES EXCEPT AS APPROVED BY THE ENGINEER AND CITY/COUNTY/FDOT.
13. DISTURBED AREAS SHALL BE RESTORED IN CONFORMANCE WITH THE APPLICABLE GOVERNING AGENCY REQUIREMENTS.
14. EXISTING UTILITIES AND DRAINAGE SHALL BE FIELD VERIFIED PRIOR TO CONSTRUCTION AND PROTECTED BY THE CONTRACTOR.
15. WATER MAINS SHALL BE TESTED AND DISINFECTED IN ACCORDANCE WITH THE APPLICABLE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION AND AWWA C-601 FOR DISINFECTION.



STANDARD UTILITY DETAILS
City of Stuart Public Works Department
 121 S.W. Flagler Avenue, Stuart, Florida 34994
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WATER DISTRIBUTION NOTES

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CITY OF STUART
WATER DISTRIBUTION NOTES
CONTINUED

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING EXISTING UTILITIES AND DRAINAGE.
17. THE CONTRACTOR SHALL FURNISH RECORD DRAWING INFORMATION TO THE ENGINEER INCLUDING LOCATIONS OF VALVES, FITTINGS, SERVICE CONNECTIONS, BLOWOFFS, AIR RELEASE VALVES, AND ANY OTHER PERTINENT INFORMATION NECESSARY TO LOCATE ITEMS CONSTRUCTED UNDER THIS PROJECT, AS REQUIRED BY THE UTILITIES ENGINEER.
18. THE CONTRACTOR SHALL TAP EXISTING LINES UNDER THE SUPERVISION OF THE CITY OF STUART ONLY AFTER TESTING AND DISINFECTION HAS BEEN COMPLETED AND APPROVED ON THE TAPPING SLEEVE AND VALVE.
19. WATER MAIN SHALL BE MARKED BY THE USE OF CONTINUOUS 10 GAUGE THHN MULTI STRANDED WIRE (BLUE IN COLOR) AND IDENTIFICATION TAPE WITH "WATER" MARKED ON TAPE, PERMANENTLY ATTACHED TO THE TOP OF THE WATER MAIN IN ACCORDANCE WITH THE CITY OF STUART SPECIFICATIONS.
20. SERVICE TAPS SHALL BE PLACED APPROXIMATELY TEN FEET AWAY FROM GATE VALVES, AS SHOWN, FOR TESTING. FOLLOWING TESTING AND STERILIZATION OF WATER LINES. CONTRACTOR SHALL PLACE A BRASS PLUG IN CORPORATION STOPS AND CURB STOPS SHALL BE REMOVED FROM TESTING LOCATIONS.
21. MECHANICAL RESTRAINTS TO BE USED ON ALL FITTINGS AND PLACED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND CITY OF STUART REQUIREMENTS.
22. ALL MAINS SHALL BE TESTED AT A MINIMUM OF 150 PSI. TESTING METHODS SHALL CONFORM TO AWWA C-600.

$$L = \frac{SD(P)^{1/2}}{133,200} \text{ OR CURRENT AWWA STANDARD}$$

L= LEAKAGE IN GPH
S= LENGTH OF PIPE IN FEET
D= PIPE DIAMETER IN INCHES
P= TESTING PRESSURE IN PSI

23. PRIOR TO ANY TESTING, ALL MAINS 4" IN DIA. AND LARGER SHALL HAVE A LINE SIZE SWAB PASSED THRU THE ENTIRE LENGTH OF THE LINE. NOTE: SWAB SHOULD BE PLACED IN 1st. JOINT OF NEW LINE. END OF MAIN SHOULD BE "TURNED UP" AT 45% AND EXTENDED SO THAT SWABBING AND A FULL BORE FLUSH CAN BE ACCOMPLISHED. BLOW-OFF ASSY CAN THEN BE PLACED. WHERE LINES BRANCH, SWABS WILL BE PLACED IN BRANCH LINES AND SEQUENTIALLY SWABBED AND FLUSHED.
24. TEN FEET MINIMUM HORIZONTAL AND 18 INCHES MINIMUM VERTICAL SEPARATION SHALL BE MAINTAINED BETWEEN THE WATER MAIN AND ANY WASTEWATER LINES. THE DISTANCE SHALL BE MEASURED FROM OUTSIDE OF PIPE TO OUTSIDE OF PIPE OR STRUCTURE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE WASTEWATER PIPE JOINTS AND THE WATER MAIN PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING, AND THE WATER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (DIP) AT THE CROSSING. SUFFICIENT LENGTHS OF DIP MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10 FEET BETWEEN ANY TWO JOINTS. ALL JOINTS ON THE WATER MAIN WITHIN 20 FEET OF THE CROSSING MUST BE MECHANICALLY RESTRAINED. A MINIMUM VERTICAL CLEARANCE OF 6 INCHES MUST BE MAINTAINED AT ALL CROSSINGS.
25. WHERE A WATER MAIN IS TO BE INSTALLED BELOW A STORM DRAIN PIPE, A MINIMUM OF 6 INCHES OF VERTICAL CLEARANCE BETWEEN PIPES SHALL BE CONSTRUCTED OF DIP AT THE CROSSING, AND SHALL BE MECHANICALLY RESTRAINED WITHIN 20 FEET OF THE CROSSING.
26. CONTRACTOR SHALL COMPLY WITH FLORIDA TRENCH SAFETY ACT REQUIREMENTS.



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**WATER DISTRIBUTION
NOTES**

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CITY OF STUART

WASTEWATER CONSTRUCTION NOTES

1. ALL CONSTRUCTION MATERIAL, INSTALLATION AND TESTING SHALL CONFORM TO THE STANDARD SPECIFICATIONS OF THE CITY OF STUART.
2. GRAVITY SEWER MAIN SHALL BE POLYVINYL CHLORIDE SDR-26, GREEN IN COLOR, GRAVITY SEWER MAIN SHALL HAVE CONTINUOUS 10 GAUGE THHN WIRE, GREEN IN COLOR.
3. THE MANHOLE BASE SHALL BE SET ON A FIRM, DRY AND STABLE OR COMPACTED BASE FOUNDATION. IF NECESSARY, THE CONTRACTOR SHALL UTILIZE ROCK TO PROVIDE A FIRM AND SUITABLE MANHOLE BASE FOUNDATION.
4. WASTEWATER LINES SHALL BE BACKFILLED AND COMPACTED IN ACCORDANCE WITH THE CITY OF STUART DESIGN AND CONSTRUCTION STANDARDS. THE CONTRACTOR SHALL SUBMIT CERTIFIED DENSITY TESTS AS REQUIRED BY THE CITY. IN CASES WHERE PAVED AREAS FALL WITHIN THE JURISDICTION OF LOCAL OR STATE AGENCIES, THE COMPACTION REQUIREMENTS SHALL NOT BE LESS THAN THE MINIMUM REQUIRED BY THE APPROPRIATE RESPONSIBLE AGENCY.
5. A 1% MINIMUM SLOPE SHALL BE MAINTAINED ON ALL SANITARY SERVICE LATERALS.
6. THE CONTRACTOR SHALL FURNISH RECORD DRAWING INFORMATION TO THE ENGINEER CONSISTING OF PIPE SIZES, LOCATION OF SERVICE TEE WYES, DIAMETER OF SERVICES, LOCATION OF ANY FITTINGS, FINAL RIM AND INVERT ELEVATION OF ALL MANHOLES AND ANY OTHER PERTINENT INFORMATION NECESSARY TO LOCATE ITEMS CONSTRUCTED UNDER THIS PROJECT.
7. MAINTAIN 10 FEET HORIZONTAL DISTANCE BETWEEN WATER MAINS AND SEWER MAINS AS A MINIMUM.
8. WASTEWATER FORCE MAINS, WASTEWATER COLLECTION LINES, AND STORM SEWERS SHOULD CROSS UNDER WATER MAINS WHENEVER POSSIBLE. A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE SHALL BE PROVIDED WHENEVER POSSIBLE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE WASTEWATER PIPE JOINTS AND THE WATER PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING, AND THE WATER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (DIP) AT THE CROSSING. SUFFICIENT LENGTHS OF DIP MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10 FEET BETWEEN ANY TWO JOINTS. ALL JOINTS ON THE WATER MAIN WITHIN 20 FEET OF THE CROSSING MUST BE MECHANICALLY RESTRAINED. A MINIMUM VERTICAL CLEARANCE OF 6 INCHES MUST BE MAINTAINED AT ALL CROSSINGS.
9. A PRE-CONSTRUCTION CONFERENCE BETWEEN THE ENGINEER, THE CONTRACTOR, CITY OF STUART PUBLIC WORKS DEPARTMENT, COUNTY/FDOT AND ANY OTHER NECESSARY AGENCY SHALL BE MANDATORY PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
10. NO FIELD CHANGES OR DEVIATIONS FROM THE DESIGN SHALL BE MADE WITHOUT PRIOR APPROVAL FROM THE ENGINEER, CITY, OR COUNTY/FDOT.
11. TRAFFIC CONTROL, BARRICADES, ETC. SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARDS.
12. CONTRACTOR SHALL NOTIFY THE CITY OF STUART 48 HOURS PRIOR TO COMMENCING CONSTRUCTION.
13. WASTEWATER FORCE MAIN SHALL BE POLYVINYL CHLORIDE CONFORMING TO AWWA C-900, AND SHALL BE CLASS 150, DR-18 (12" AND SMALLER), OR DR-21, AWWA C-905 (14" AND ABOVE).
14. WASTEWATER FORCE MAIN SHALL BE GREEN IN COLOR. WASTEWATER FORCE MAIN SHALL HAVE THHN WIRE & LOCATOR TAPE WITH "SEWER" MARKED ON TAPE.
15. FITTINGS SHALL BE CAST OR DUCTILE IRON, CONFORMING TO AWWA C-110 AND ANSI A21.11, CLASS 250 MINIMUM, CEMENT LINED, AND SEAL COATED.
16. WASTEWATER FORCE MAIN SHALL BE MARKED BY THE USE OF CONTINUOUS 10 GAUGE THHN, STRANDED COPPER WIRE (GREEN IN COLOR) PERMANENTLY ATTACHED TO THE TOP OF THE FORCE MAIN WITH LOCATOR TAPE MARKED "SEWER" ON TAPE IN ACCORDANCE WITH CITY SPECIFICATIONS.
17. MINIMUM COVER SHALL BE 48 INCHES, PIPES WITH LESS COVER REQUIRE PRIOR APPROVAL OF THE ENGINEER AND CITY OF STUART AND SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE.
18. EACH SERVICE LATERAL WILL BE MARKED WITH A LOCATOR BALL AS MANUFACTURED BY 3M CORPORATION, OR APPROVED EQUAL.
19. ALL MANHOLES SHALL HAVE SEWER RAIN GUARDS INSTALLED.
20. THE CONTRACTOR SHALL COMPLY WITH THE FLORIDA TRENCH SAFETY ACT REQUIREMENTS.
21. PRIOR TO ANY TESTING, ALL MAINS 4" IN DIA. AND LARGER SHALL HAVE A LINE SIZE SWAB PASSED THRU THE ENTIRE LENGTH OF THE LINE. NOTE: SWAB SHOULD BE PLACED IN 1st. JOINT OF NEW LINE. END OF MAIN SHOULD BE "TURNED UP" AT 45% AND EXTENDED SO THAT SWABBING AND A FULL BORE FLUSH CAN BE ACCOMPLISHED. BLOW-OFF ASSY CAN THEN BE PLACED. WHERE LINES BRANCH, SWABS WILL BE PLACED IN BRANCH LINES AND SEQUENTIALLY SWABBED AND FLUSHED.



STANDARD UTILITY DETAILS
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WASTEWATER CONSTRUCTION NOTES

DATE: FEBRUARY, 2012
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SHEET NUMBER
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STANDARD SEPARATION STATEMENT FOR WATER / RECLAIMED / SEWER CONFLICTS

1. SANITARY SEWER, FORCE MAINS, AND STORM SEWERS SHOULD CROSS UNDER WATER MAINS WHENEVER POSSIBLE. SANITARY SEWERS, FORCE MAINS, RECLAIM WATER MAINS AND STORM SEWERS CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE WHENEVER POSSIBLE.

WHERE SANITARY SEWER, FORCE MAINS, RECLAIMED WATER MAINS AND STORM SEWERS MUST CROSS A WATER MAIN LESS THAN 18 INCHES VERTICAL DISTANCE, BOTH THE SEWER AND WATER MAIN SHALL BE CONSTRUCTED OF DUCTILE IRON PIPE (DIP) AT THE CROSSING. (DIP IS NOT REQUIRED FOR STORM SEWERS.) SUFFICIENT LENGTHS OF DIP MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10 FEET BETWEEN TWO JOINTS. ALL JOINTS ON THE WATER MAIN WITHIN 20 FEET OF THE CROSSING MUST BE MECHANICALLY RESTRAINED. A MINIMUM VERTICAL CLEARANCE OF 6 INCHES MUST BE MAINTAINED AT ALL CROSSINGS.

ALL CROSSINGS SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND WATER MAIN PIPE JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING (PIPES CENTERED ON THE CROSSING).

WHERE A NEW PIPE CONFLICTS WITH AN EXISTING PIPE WITH LESS THAN 18 INCHES VERTICAL CLEARANCE, THE NEW PIPE SHALL BE CONSTRUCTED OF DIP (EXCEPT STORM SEWERS) AND NEW PIPES SHALL BE ARRANGED TO MEET THE CROSSING REQUIREMENTS ABOVE.

2. A MINIMUM 10-FOOT HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN ANY TYPE OF SEWER AND WATER MAIN IN PARALLEL INSTALLATIONS WHENEVER POSSIBLE.

IN CASES WHERE IT IS NOT POSSIBLE TO MAINTAIN A 10-FOOT HORIZONTAL SEPARATION, THE WATER MAIN MUST BE LAID IN A SEPARATE TRENCH OR ON A UNDISTURBED EARTH SHELF LOCATED ON ONE SIDE OF THE SEWER OR FORCE MAIN AT SUCH AN ELEVATION THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES ABOVE THE TOP OF THE SEWER.

WHERE IT IS NOT POSSIBLE TO MAINTAIN A VERTICAL DISTANCE OF 18 INCHES IN PARALLEL INSTALLATIONS, THE WATER MAIN SHALL BE CONSTRUCTED OF DIP AND THE SEWER OR THE FORCE MAIN SHALL BE CONSTRUCTED OF DIP (EXCEPT STORM SEWER) WITH A MINIMUM VERTICAL DISTANCE OF 6 INCHES. THE WATER MAIN SHOULD ALWAYS BE ABOVE THE SEWER. JOINTS ON THE WATER MAIN SHALL BE LOCATED AS FAR APART AS POSSIBLE FROM JOINTS ON THE SEWER OR FORCE MAIN (STAGGERED JOINTS).

3. ALL DIP SHALL BE PRESSURE CLASS 350 MIN.. ADEQUATE PROTECTIVE MEASURES AGAINST CORROSION SHALL BE USED AS DETERMINED BY THE DESIGN ENGINEER.

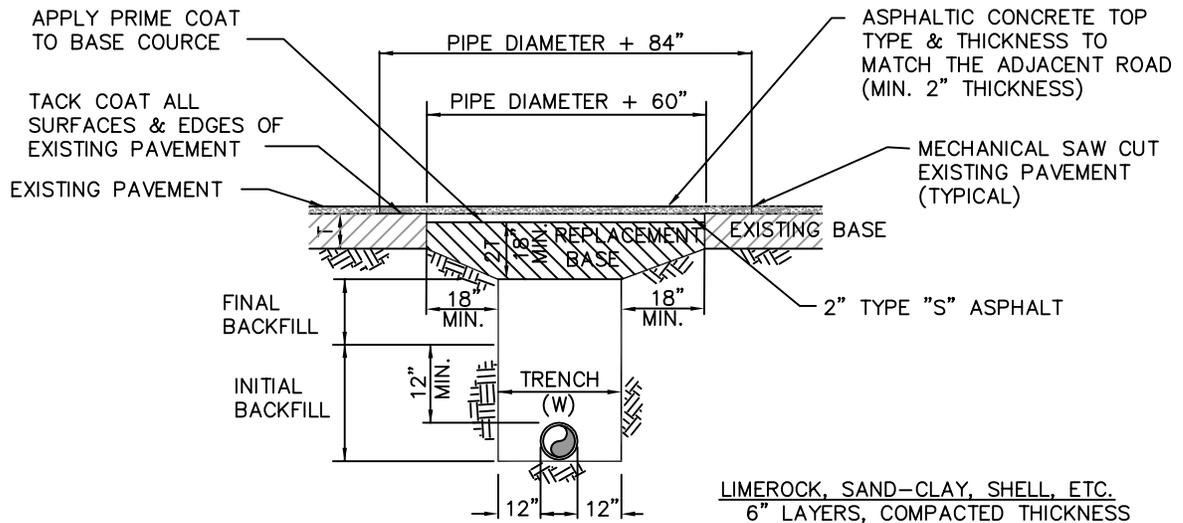


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WATER and SEWER CONFLICT NOTES

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SHEET NUMBER
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LIMEROCK, SAND-CLAY, SHELL, ETC.
6" LAYERS, COMPACTED THICKNESS

DENSITY REQUIREMENTS:

98% UNDER ROADWAY
95% SHOULDER PAVEMENT
METHOD AASHTO T-180

NOTE:

PAVEMENT RESTORATIONS FOR LONGITUDINAL CUTS IN ARTERIAL STREETS SHALL INCLUDE FULL LANE WIDTH RESURFACING FOR EACH LANE WITHIN THE LIMITS OF THE CUT.

UTILITY ROAD CUT (LONGITUDINAL)
PAVEMENT RESTORATION

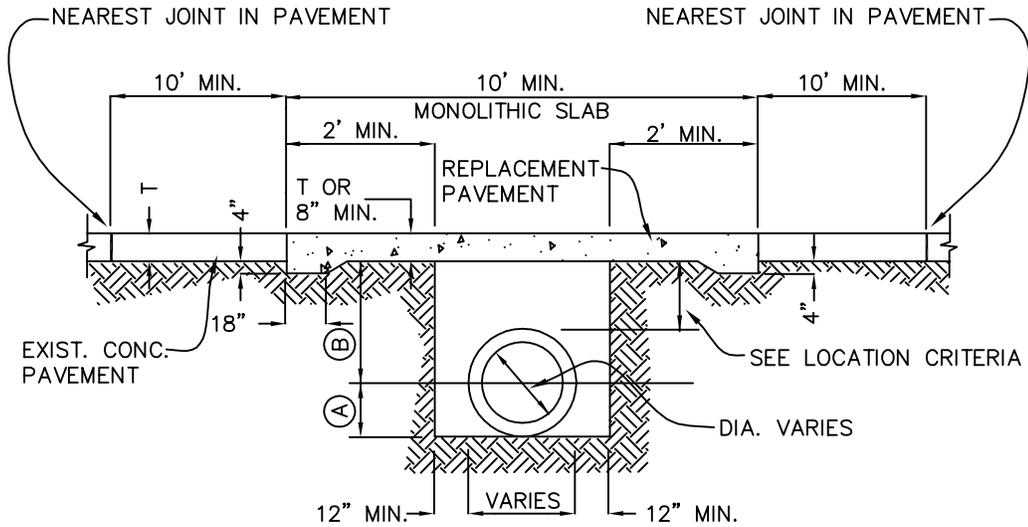


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UTILITY ROAD CUT
PAVEMENT RESTORATION

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REPLACEMENT OF CONCRETE PAVEMENT FOR PERMITTED PAVEMENT CUT

DENSITY PROCEDURES:

THE BACKFILL FOR (A) AND (B) SHALL BE PLACED IN 6" LAYERS (COMPACTED THICKNESS) AND SHALL BE COMPACTED TO 98% OF MAXIMUM DENSITY AS DETERMINED BY AASHTO T-180.

- (A) 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.
- (B) THE PERMITTEE SHALL OBTAIN A WELL COMPACTED BED AND FILL ALONG THE SIDES OF THE PIPE AND TO A POINT INDICATING THE BOTTOM OF REPLACEMENT PAVEMENT.

GENERAL NOTES:

1. 3000 P.S.I. CONCRETE, BY USE OF HIGH EARLY STRENGTH CEMENT, TO BE USED FOR REPLACEMENT, OR OTHER APPROVED HIGH STRENGTH, FAST SET MATERIALS.
2. CONCRETE PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED 90 DEGREES TO CONFORM WITH ADJOINING SLABS.
3. BACKFILL MATERIAL SHALL BE EITHER OF THE SAME TYPE AND COMPOSITION AS THE MATERIAL REMOVED, OR OF EQUAL OR GREATER STRUCTURAL ADEQUACY. MATERIALS CONTAMINATED WITH DELETERIOUS SUBSTANCES DURING EXCAVATION SHALL NOT BE USED.

CITY OF STUART PAVEMENT RESTORATION DETAIL (CONCRETE)

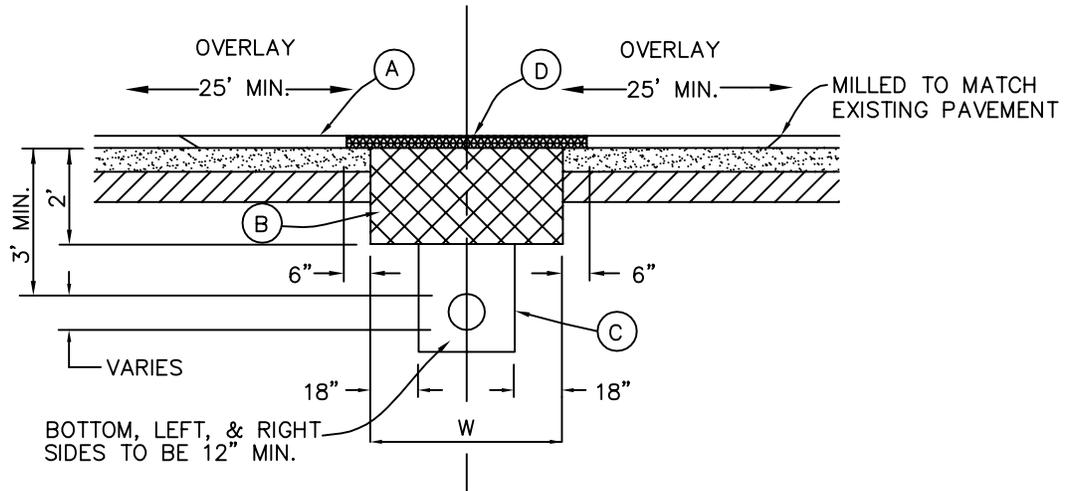


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PAVEMENT RESTORATION DETAIL (CONCRETE)

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- A. OVERLAY SHALL EXTEND 25' BEYOND TRENCH WALL ON BOTH SIDES OF ROAD CUT. MINIMUM TYPE S-III ASPHALT OR MATCH EXISTING SURFACE MATERIAL WHEN POSSIBLE.
- B. CONSTRUCT 2.0' DEEP X WIDTH AND LENGTH OF TRENCH WITH CEMENTED COQUINA OR LIMEROCK. SEE SPECIFICATIONS #2 BELOW FOR COMPACTION REQUIREMENTS.
- C. PROVIDE CLEAN BACKFILL. BACKFILL SHALL BE REPLACED IN 6" LAYERS. EACH LAYER SHALL BE MECHANICALLY COMPACTED TO A MINIMUM 98% DENSITY AS DETERMINED BY AASHTO T-180.
- D. DITCH WIDTH (W)+12", MATCH EXISTING TYPE AND THICKNESS OF ASPHALT OR TYPE S-III.

NOTES:

1. REPLACED BASE MATERIAL OVER DITCH SHALL BE AS SHOWN ABOVE.
2. BASE MATERIAL SHALL BE PLACED IN 6" LAYERS OR AS OTHERWISE APPROVED AND EACH LAYER THOROUGHLY MECHANICALLY COMPACTED TO (98%) DENSITY AS DETERMINED BY AASHTO T-180.
3. FINAL ASPHALT CONCRETE PAVEMENT JOINTS SHALL BE MILLED TO MATCH EXISTING ASPHALT.
4. ALL PAVEMENT JOINTS SHALL BE MECHANICALLY SAWED 90 DEGREES.
5. SURFACE MATERIAL WILL BE CONSISTENT WITH EXISTING SURFACE OR AS OTHERWISE DIRECTED (TYPE S-III) AND PLACED IN ACCORDANCE WITH FDOT REQUIREMENTS.
6. A MINIMUM OF TWO DENSITY TESTS SHALL BE TAKEN FOR EACH SIX (6) INCH LIFT OF SUBGRADE AND EACH OPEN CUT CROSSING. WHEN THE SPECIFIED COMPACTED BASE IS GREATER THAN SIX AND ONE-HALF (6-1/2) INCHES THE BASE SHALL BE CONSTRUCTED IN TWO OR MORE COURSES. PROCTORS FOR MATERIALS USED IN BACK-FILLING SHALL BE OBTAINED BY A CERTIFIED LABORATORY. DENSITY TESTS SHALL BE CONDUCTED BY A CERTIFIED LABORATORY OR THE PERMITTEE'S CONSULTANTS. THE PERCENTAGE OF MAXIMUM DENSITY REQUIRED SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS. A COPY OF ALL COMPLETED AND ACCEPTED DENSITY TESTS SHALL BE FURNISHED TO THE COUNTY ENGINEER'S OFFICE PRIOR TO FINAL INSPECTION.

**CITY OF STUART PAVEMENT RESTORATION DETAIL
(ASPHALT)**

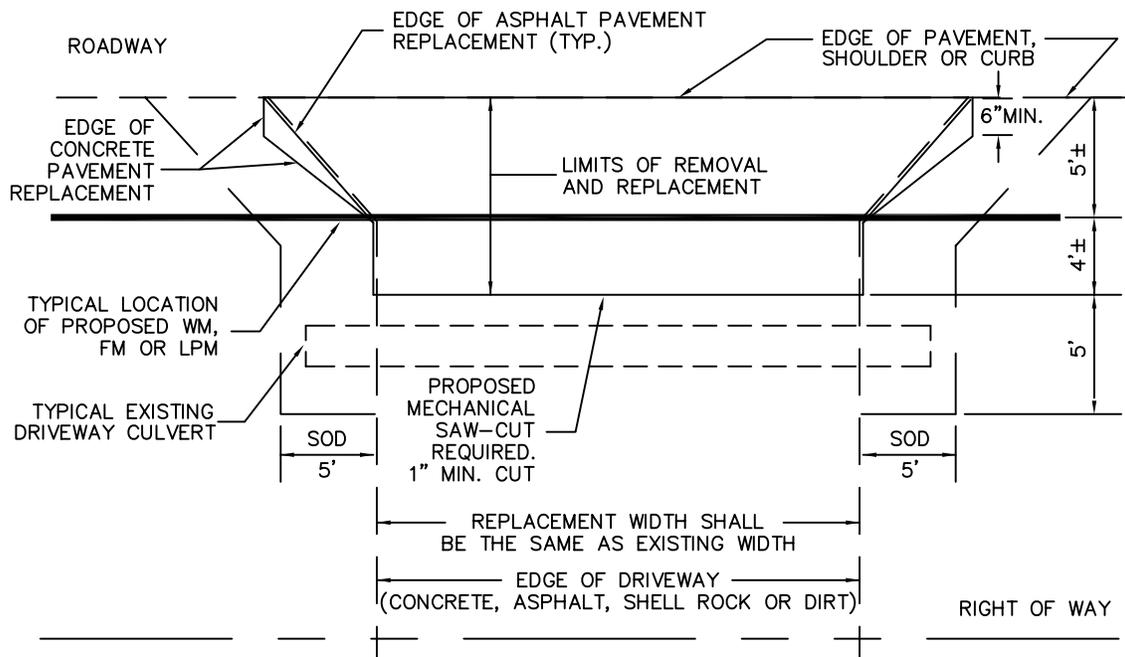


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**PAVEMENT RESTORATION
DETAIL (ASPHALT)**

DATE: FEBRUARY, 2012
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PLAN VIEW

NOTES:

1. ALL DRIVEWAYS SHALL BE REPLACED WITH MATERIAL OF THE SAME TYPE AND COMPOSITION AS THE MATERIAL REMOVED, TO THE LIMITS OF THE EXISTING DRIVE.
2. ALL CONCRETE DRIVEWAYS WITHIN THE CITY OF STUART RIGHT-OF-WAY SHALL BE 6" THICK, 4000 PSI FIBER MESH CONCRETE. THE SUB-GRADE FOR THE CONCRETE SHALL BE 6" SAND OR OTHER APPROVED MATERIAL COMPACTED TO 98% AASHTO MAXIMUM DENSITY.
3. ALL ASPHALT DRIVEWAYS SHALL BE 1" TYPE S-1 AND 6" COMPACTED LIMEROCK BASE.
4. SAW-CUT AND REMOVE ALL EXISTING DRIVEWAYS TO LIMITS AND REPLACE TO SAME GRADE AND LINES AS ORIGINAL. CONCRETE DRIVEWAYS SHOULD BE REMOVED TO THE NEAREST EXISTING JOINT.
5. SOD 5' MINIMUM OUTSIDE OF EDGE OF REPLACED DRIVEWAY AND ALL DISTURBED AREAS.
6. ROCK/SHELL AND DIRT DRIVEWAYS SHALL BE COMPACTED TO 98% MAXIMUM DENSITY PER ASSHTO T-180. ROCK/SHELL DEPTH SHALL BE SIX INCHES, COMPACTED DEPTH.
7. CONTRACTOR SHALL REPLACE ALL DRIVEWAYS IN KIND, IN ACCORDANCE WITH THIS DETAIL, THE SPECIFICATIONS OR THE CITY OF STUARTS STANDARDS, WHICHEVER IS THE MOST STRINGENT.
8. NEW DRIVEWAYS SHALL BE SLOPED IN A WAY THAT WILL NOT ALLOW PONDING OF STORM WATER.
9. CONTRACTOR SHALL DISPOSE OF ALL REMOVED MATERIAL IN A SUITABLE FASHION IN ACCORDANCE WITH ALL CITY, COUNTY AND STATE REGULATIONS.
10. FOR ASPHALT DRIVEWAYS, THE BASE SHALL EXTEND SIX INCHES BEYOND THE ASPHALT OVERLAY.
11. ALL REPLACEMENT DRIVEWAYS SHALL BE CONSTRUCTED WITH A FOOTING PARALLEL TO THE ROADWAY. FOOTING SHALL BE A MINIMUM 6" DEEP AND 8" WIDE FOR THE ENTIRE LENGTH OF THE DRIVEWAY FRONTAGE.
12. ALL ASPHALT DRIVEWAYS SHALL BE OVERLAYED WITHIN THE LIMITS OF THE RIGHT-OF-WAY.

TYPICAL DRIVEWAY RESTORATION

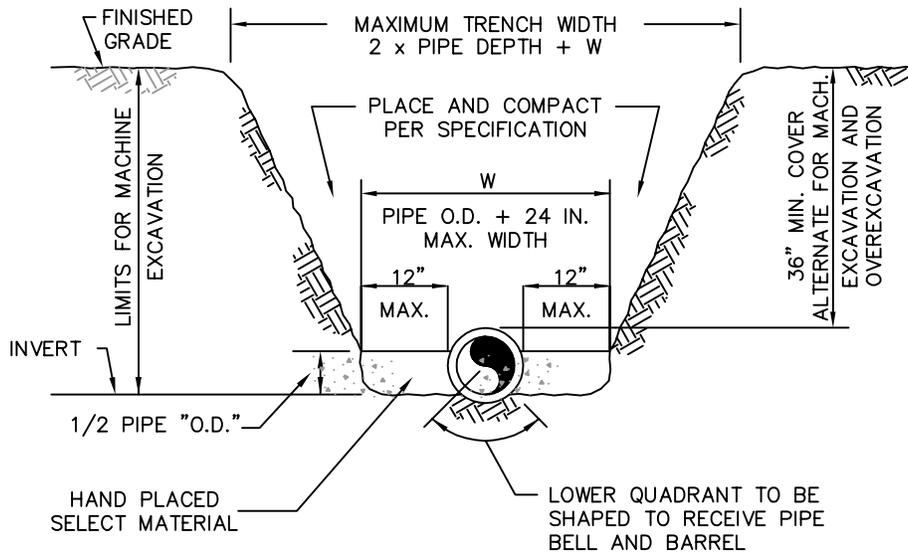


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TYPICAL DRIVEWAY RESTORATION

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NOTES:

1. THE CONTRACTOR SHALL COMPLY WITH REQUIREMENTS OF THE FLORIDA TRENCH SAFETY ACT.
2. INITIAL BACKFILL SHALL BE HAND PLACED TO 12" ABOVE THE PIPE. BACKFILL SHALL BE MECHANICALLY TAMPED TO A MINIMUM OF 98% OF MAX. DENSITY AS DETERMINED BY AASHTO METHOD T-180.

TYPICAL TRENCH DETAIL

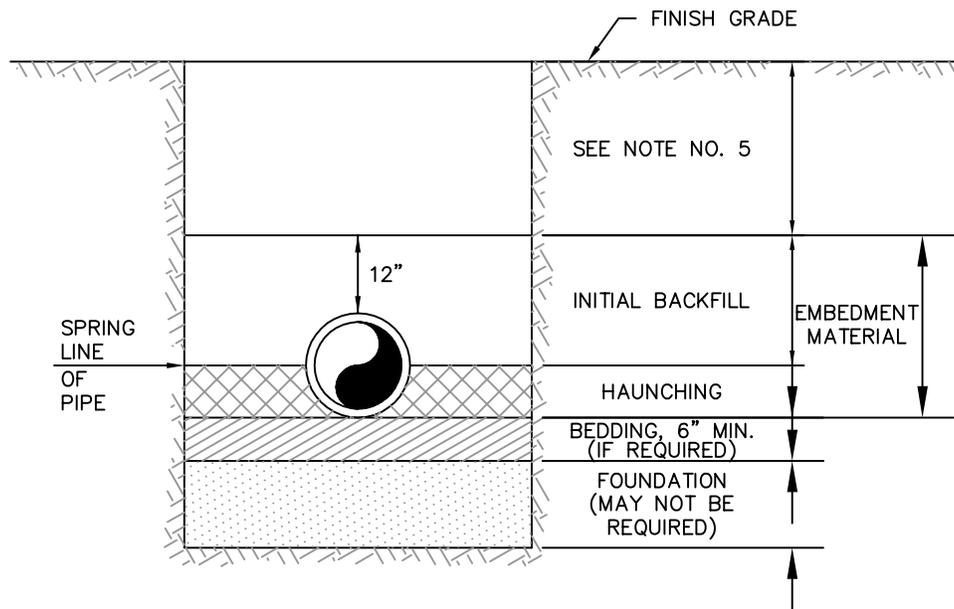


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**TYPICAL TRENCH
 DETAIL**

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NOTES:

1. IN CERTAIN SOIL CONDITIONS A FOUNDATION MAY BE REQUIRED.
2. BEDDING IS REQUIRED PRIMARILY TO BRING THE TRENCH BOTTOM UP TO GRADE. BEDDING MATERIALS SHALL PROVIDE A UNIFORM AND ADEQUATE LONGITUDINAL SUPPORT UNDER THE PIPE.
3. HAUNCHING MATERIAL SHALL BE HAND PLACED TO THE SPRINGLINE OF THE PIPE. MATERIAL SHALL BE CONSOLIDATED UNDER THE PIPE AND HAND TAMPED TO PROVIDE ADEQUATE SIDE SUPPORT.
4. INITIAL BACKFILL MATERIAL SHALL BE HAND PLACED TO 12" ABOVE THE TOP OF PIPE AND BE COMPACTED USING A HAND OPERATING TAMPING DEVICE.
5. BACKFILL SHALL BE COMPACTED TO 98% OF MAX. DENSITY AS PER AASHTO T-180, TO A POINT 30" BELOW PROPOSED PROFILE GRADE OR EXISTING GRADE. THE FINAL 30" OF BACKFILL SHALL BE COMPACTED TO 98% OF MAX. DENSITY AS PER AASHTO T-180.
6. DENSITY TEST SHALL BE PERFORMED AT AREAS DETERMINED BY THE DESIGN ENGINEER OR PERMIT AGENCY HAVING JURISDICTION, AT THE CONTRACTORS EXPENSE.

BACKFILLING REQUIREMENTS

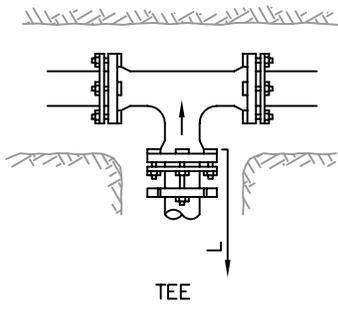


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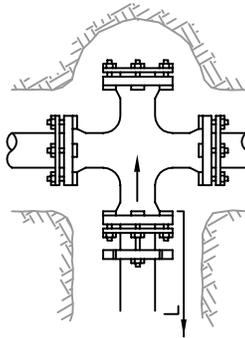
**BACKFILLING
 REQUIREMENTS**

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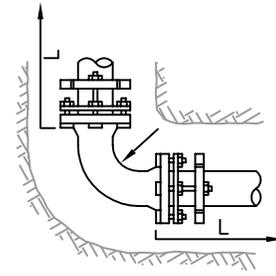
SHEET NUMBER
10



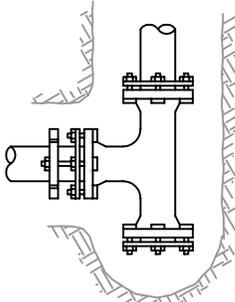
TEE



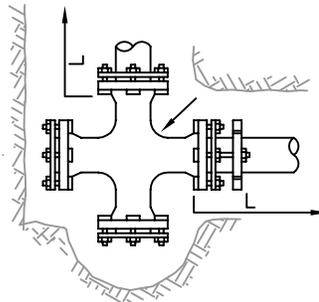
CROSS USED AS TEE



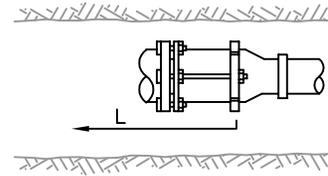
11 1/4", 22 1/2"
45°, OR 90° BEND



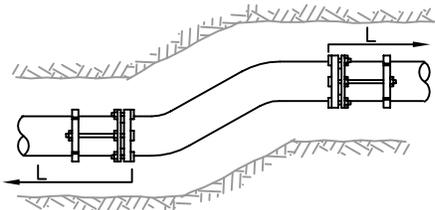
TEE USED AS
90° BEND



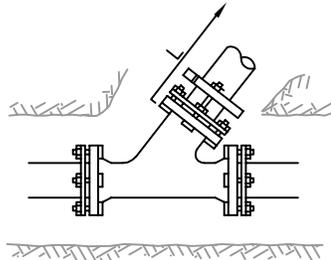
CROSS USED AS
90° BEND



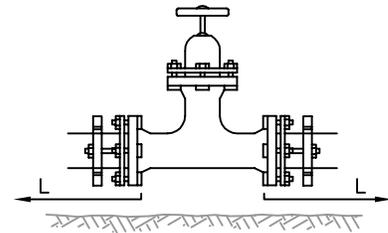
REDUCER



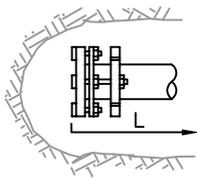
OFFSET



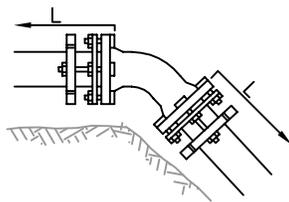
WYE



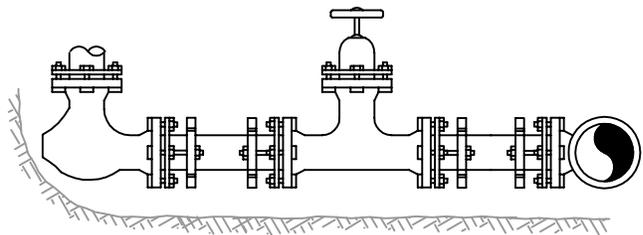
VALVE



DEAD END



VERTICAL END



HYDRANT RUNOUT

MECHANICAL JOINT ANCHORING REQUIREMENTS



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MECHANICAL JOINT ANCHORING REQUIREMENTS

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MIN. LENGTH (IN FEET) OF PIPE TO BE RESTRAINED

(SOURCES: EBAA IRON RESTRAINT LENGTH CALCULATION PROGRAM FOR PVC PIPE, RELEASE 3.1,
AND DIPRA THRUST RESTRAINT FOR DUCTILE IRON PIPE, RELEASE 3.2)

FITTING TYPE		PIPE SIZE							
		4"	6"	8"	10"	12"	16"	20"	24"
90° HORIZ. BEND		14	20	25	30	35	45	54	62
45° HORIZ. BEND		6	8	11	13	15	19	22	26
22.5° HORIZ. BEND		3	4	5	6	7	9	11	12
11.25° HORIZ. BEND		1	2	3	3	4	4	5	6
90° VERT. OFFSET	UPPER BEND	29	41	53	64	74	95	115	134
	LOWER BEND	7	10	13	16	19	25	30	35
45° VERT. OFFSET	UPPER BEND	12	19	24	29	34	39	48	56
	LOWER BEND	3	4	6	7	8	10	12	15
22.5° VERT. OFFSET	UPPER BEND	6	9	12	14	17	19	23	27
	LOWER BEND	1	2	4	4	4	5	6	7
11.25° VERT. OFFSET	UPPER BEND	3	4	6	7	8	9	11	13
	LOWER BEND	1	1	1	2	2	2	3	3
PLUG (DEAD END)		32	45	59	70	83	107	129	151
IN-LINE VALVE		32	45	45	45	45	55	65	80
TEE (BRANCH RESTRAINT)	4"X ∅	23	-	-	-	-	-	-	-
	6"X ∅	21	35	-	-	-	-	-	-
	8"X ∅	18	34	47	-	-	-	-	-
	10"X ∅	16	32	46	58	-	-	-	-
	12"X ∅	13	30	44	57	69	-	-	-
	16"X ∅	7	26	41	55	67	90	-	-
	20"X ∅	1	21	38	52	65	88	109	-
	24"X ∅	1	16	34	49	62	86	108	129
	30"X ∅	1	8	28	44	58	83	106	127
	36"X ∅	1	1	22	39	54	80	103	124
	42"X ∅	1	1	15	33	49	77	100	122
	48"X ∅	1	1	7	27	44	73	97	120
REDUCER (LARGER PIPE RESTRAINT)	6"X ∅	23	-	-	-	-	-	-	-
	8"X ∅	38	25	-	-	-	-	-	-
	10"X ∅	57	43	24	-	-	-	-	-
	12"X ∅	72	60	44	41	-	-	-	-
	16"X ∅	99	90	78	75	45	-	-	-
	20"X ∅	123	116	107	105	81	45	-	-
	24"X ∅	146	140	132	131	111	82	45	-

NOTES:

1. THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
 SOIL TYPE-SAND TEST PRESSURE-150 PSI DEPTH OF BURY-3'
 TRENCH TYPE-3 SAFETY FACTOR- 1.5 VERTICAL OFFSET-3'
 MINIMUM PIPE LENGTH ALONG TEE RUN-5'
2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
3. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
4. RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.



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MECHANICAL JOINT REQUIREMENTS NOTES

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THRUST BLOCK SCHEDULE

PIPE SIZE	HOLD DIMENSIONS		150 P.S.I. TEST PRESSURE								
			90°	45°	22 1/2°	11 1/4°	LAT.	TEE	PLUG		
INCHES	E MIN.	B	A	A	A	A	A	A	C	D	E
4	10"	7"	10"	6"	3"	3"	7"	7"	10"	7"	8"
6	16"	10"	15"	8"	4"	4"	10"	10"	12"	10"	8"
8	20"	14"	18"	10"	5"	5"	14"	14"	14"	14"	12"
10	28"	16"	24"	14"	7"	7"	16"	16"	16"	16"	14"
12	30"	20"	26"	16"	8"	8"	20"	20"	18"	20"	20"

NOTES

1. THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED EXCAVATE ALL LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL.
2. ON TEES AND BENDS EXTEND THRUST BLOCK THE FULL LENGTH AND PUT WOOD BLOCKING IN FRONT OF ALL PLUGS BEFORE POURING CONCRETE.
3. ALL WOOD UTILIZED FOR FORMS SHALL BE CREOSOTED 12 LB. EMPTY CELL PER LATEST REVISION UNITED STATES FEDERAL SPEC. T T W - 556, OR PRESSURE TREATED LUMBER.
4. BACKFILL SHALL CONSIST ENTIRELY OF CLEAN SAND AND SMALL ROCK FRAGMENTS. ANY MUCK FOUND AROUND THE EXCAVATION SHALL BE REPLACED WITH COMPACTED ACCEPTABLE MATERIAL.
5. ALL THRUST BLOCKS SHALL BE CAST IN PLACE WITH 2500 P.S.I. CONCRETE.
6. ALL PIPES GREATER THAN 12" IN DIAMETER SHALL HAVE RESTRAINED JOINTS IN ACCORDANCE WITH RESTRAINED JOINT SPECIFICATION DETAILED IN SECTION 13.
7. PIPES SMALLER THAN 4" SHALL USE THRUST BLOCKS SIZED FOR 4" PIPES.

THRUST BLOCK SCHEDULE

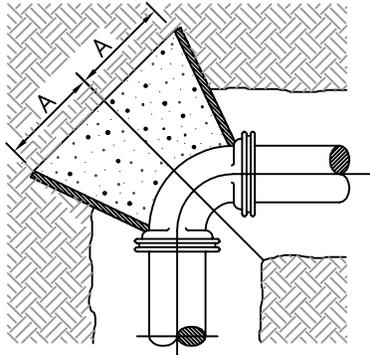


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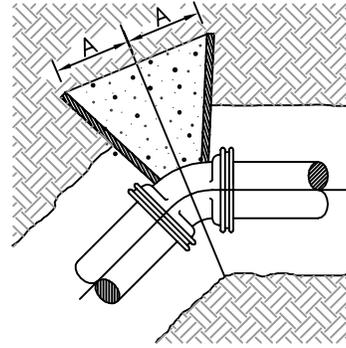
THRUST BLOCK SCHEDULE

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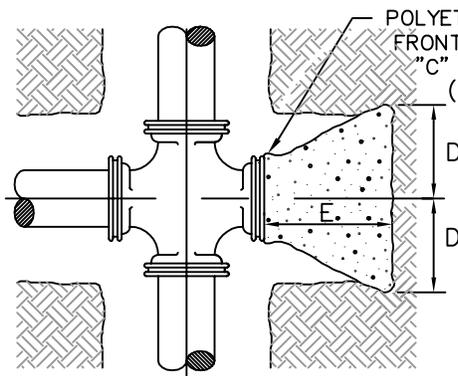
SHEET NUMBER
13



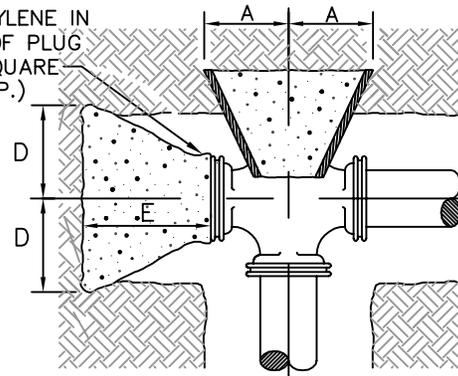
90° BEND



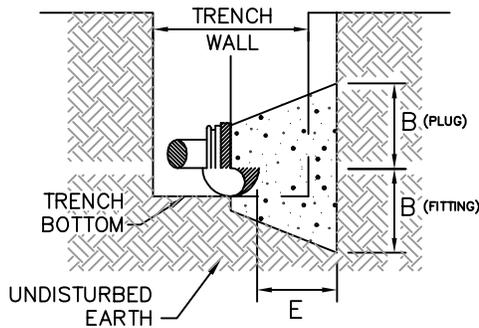
45° - 22½° - 11¼° BENDS



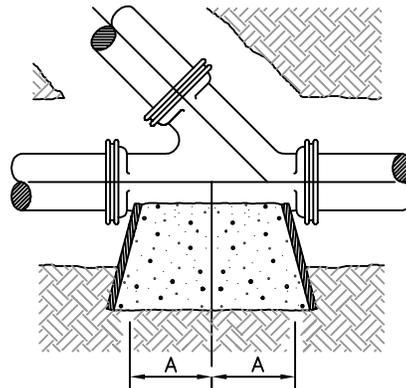
CROSS WITH PLUG



TEE WITH PLUG



TYPICAL SECTION



LATERAL

NOTE

1. POLYETHYLENE (VISQUEEN OR EQUAL) SHALL BE PLACED BETWEEN CONCRETE AND PIPE. (MILLAGE TO BE DETERMINED BY IRCDUS).

THRUST BLOCK DETAILS

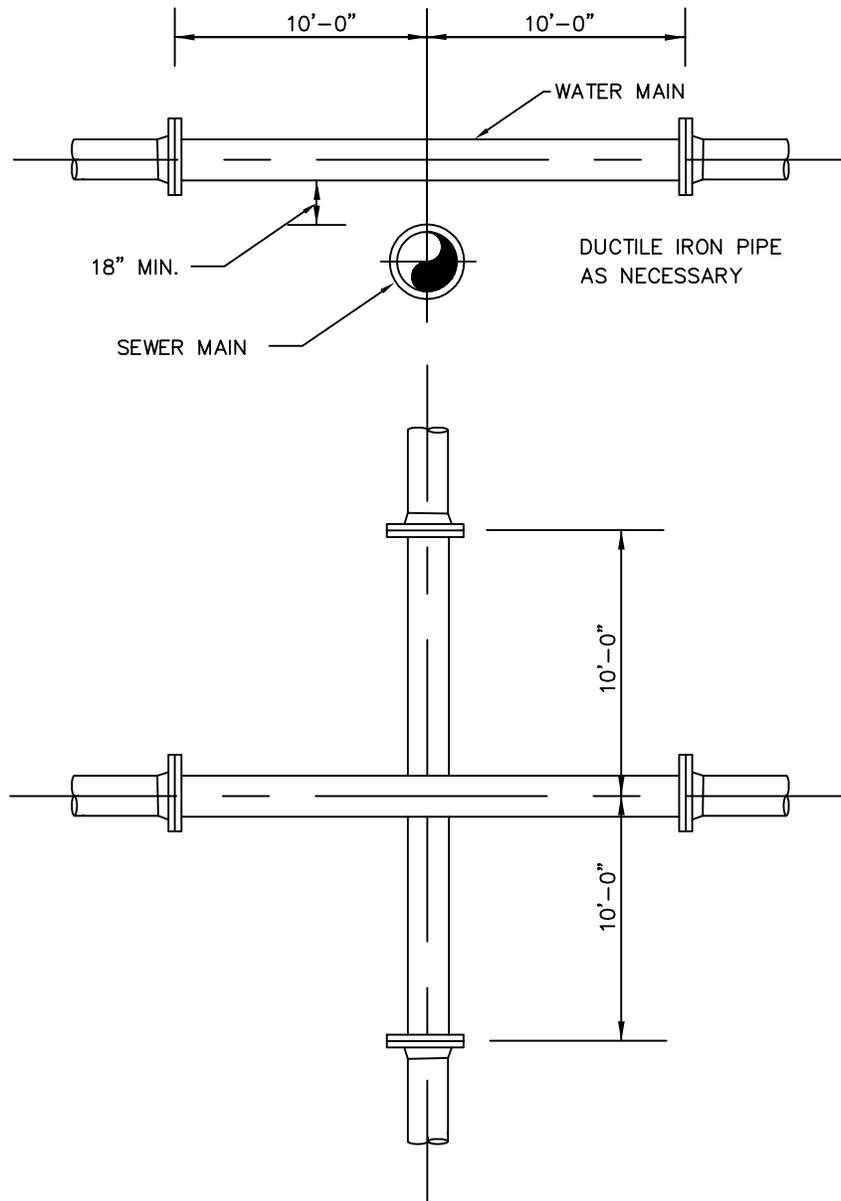


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**THRUST BLOCK
 DETAILS**

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NOTES:

WATER MAIN CROSSING EXISTING FORCE MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE MUST BE USED TO PROVIDE A MINIMUM SEPARATION OF 10 FEET BETWEEN ANY TWO JOINTS. ALL CROSSINGS SHALL BE ARRANGED SO THAT THE SEWER PIPE JOINTS AND THE WATER MAIN PIPE JOINTS ARE EQUAL DISTANCE FROM THE POINT OF CROSSING (PIPES CENTERED ON THE CROSSING). IN ALL CASES A MIN. 18" VERTICAL SEPERATION SHALL BE REQUIRED.

UTILITY CROSSING DETAIL

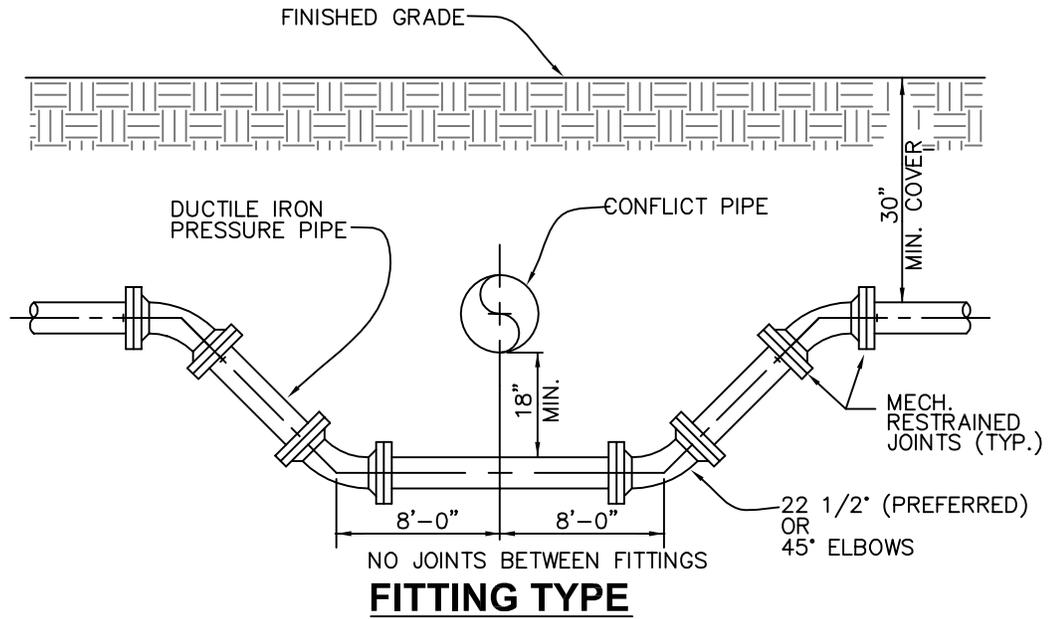


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**UTILITY CROSSING
 DETAIL**

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NOTES:

1. THESE METHODS ARE TO BE USED WHEN INSUFFICIENT COVER EXISTS TO ALLOW PRESSURE PIPE TO CROSS ABOVE CONFLICT PIPE WITH 6" VERTICAL SEPARATION AND MAINTAIN REQUIRED COVER TO FINISHED GRADE.
2. FITTINGS SHALL BE RESTRAINED WITH RETAINER GLANDS AND OR GRAVITY BLOCKS.

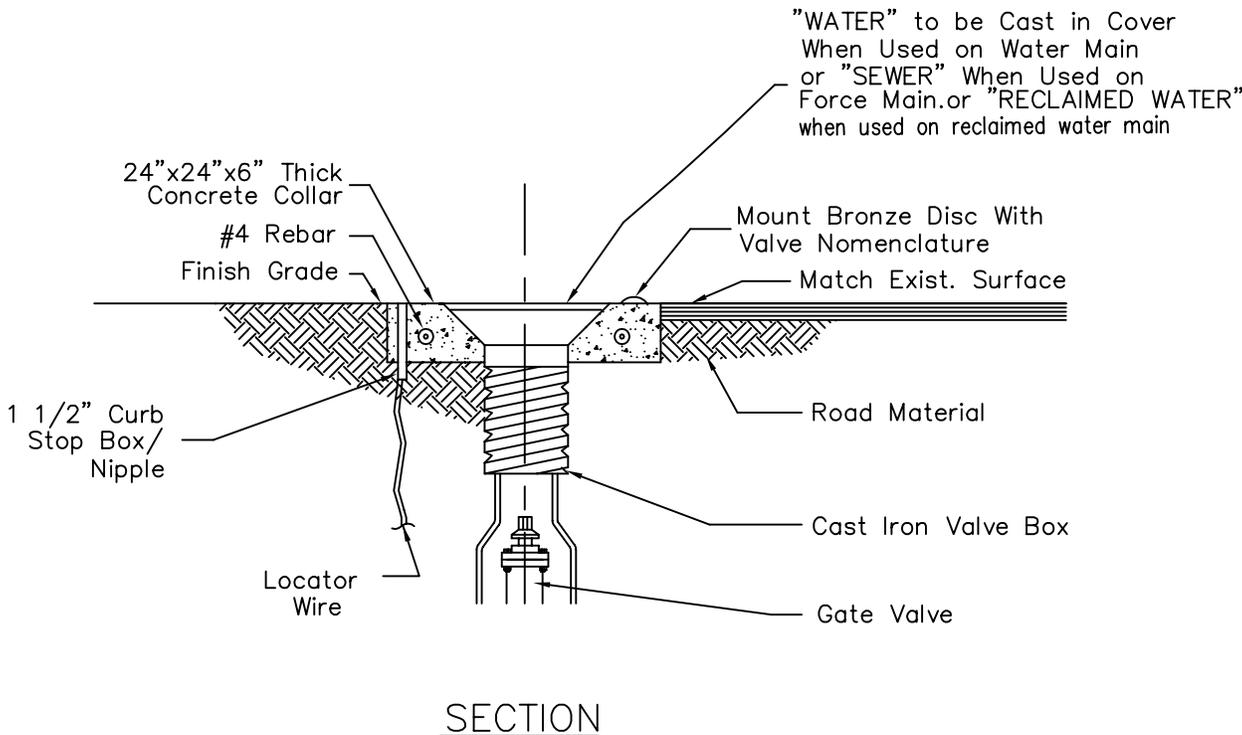
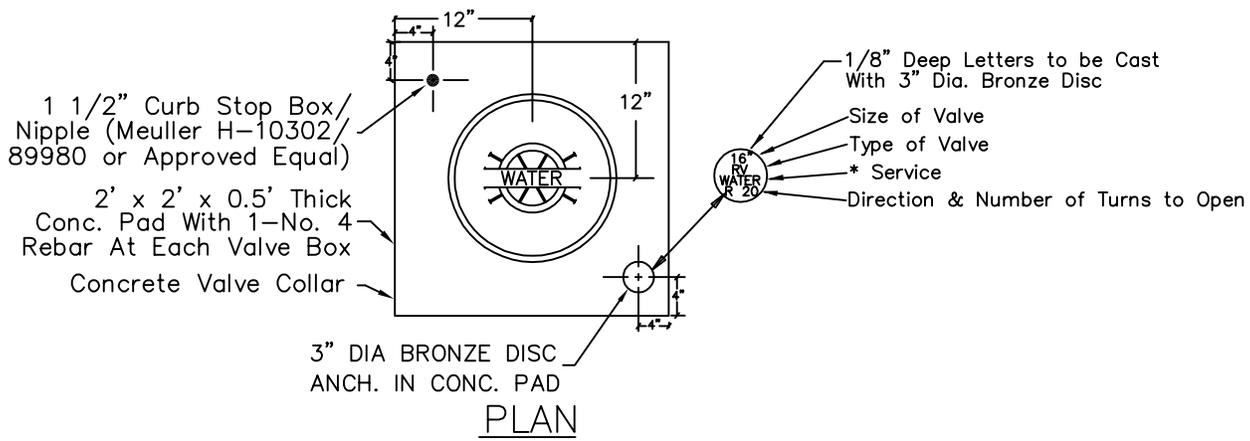


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**PRESSURE PIPE
 CONFLICT DETAIL**

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CONCRETE VALVE COLLAR

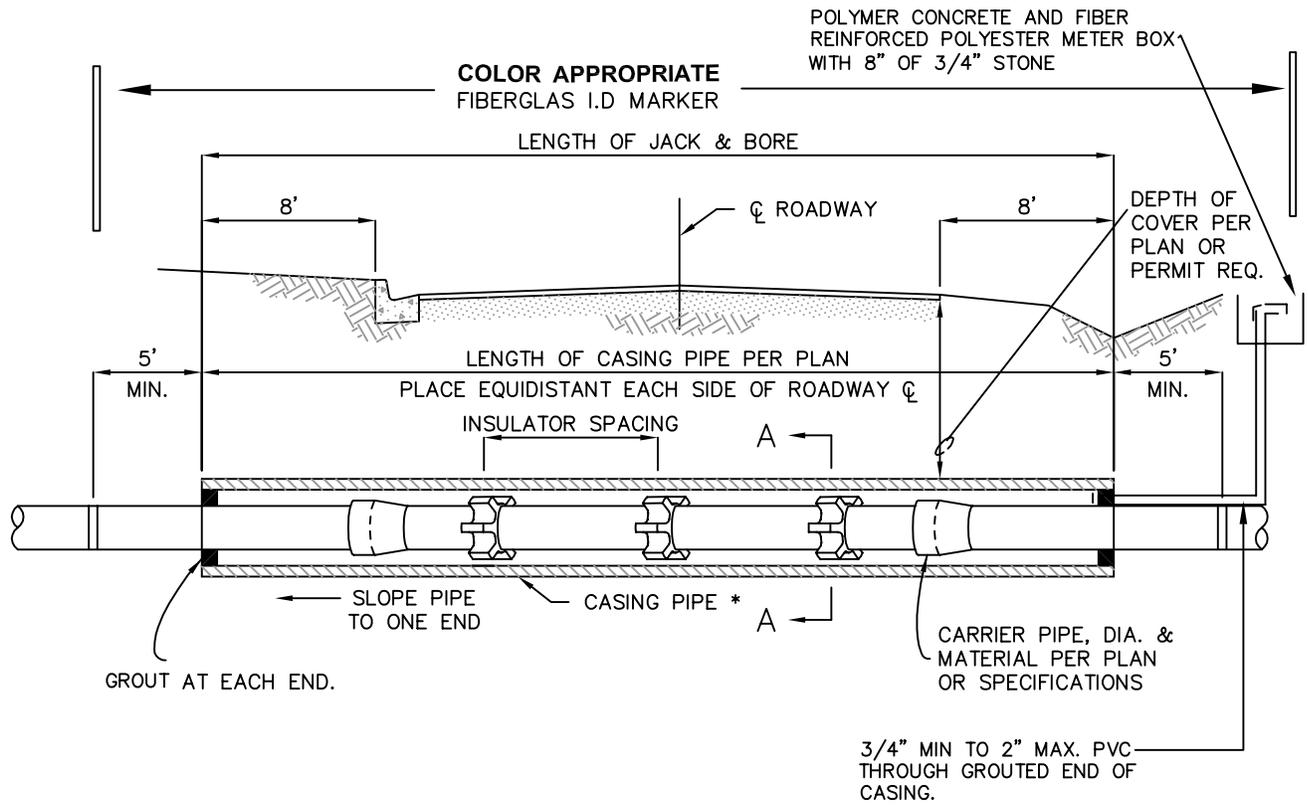


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**CONCRETE VALVE
 COLLAR**

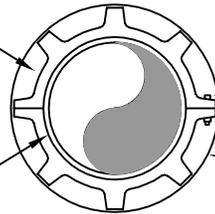
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SHEET NUMBER
17



CASING INSULATOR
BY CASCADE WATER
WORKS MANUFACTURING
COMPANY OR APPROVED
EQUAL.

CARRIER PIPE



STAINLESS STEEL
NUTS & BOLTS

STEEL CASING PIPE

SECTION A-A

NOTES

1. CASING INSULATORS SHALL BE MADE WITH SPECIAL RUNNER HEIGHTS SO AS NOT TO INTERFERE WITH PIPE JOINTS.
2. ALL CARRIER PIPES MUST HAVE MECHANICALLY RESTRAINED JOINTS.
3. INSULATOR SPACING SHALL BE AS REQUIRED BY THE MANUFACTURER, HOWEVER, NO LESS THAN FOUR (4) CASING INSULATORS SHALL BE INSTALLED PER LENGTH OF PIPE.
4. CASING LENGTH SHALL EXTEND A MINIMUM OF 8 FEET BEYOND THE EDGE OF PAVEMENT OR CURBING.
5. LOCATOR WIRE MUST BE INSTALLED THROUGH CASING.

JACK & BORE DETAIL

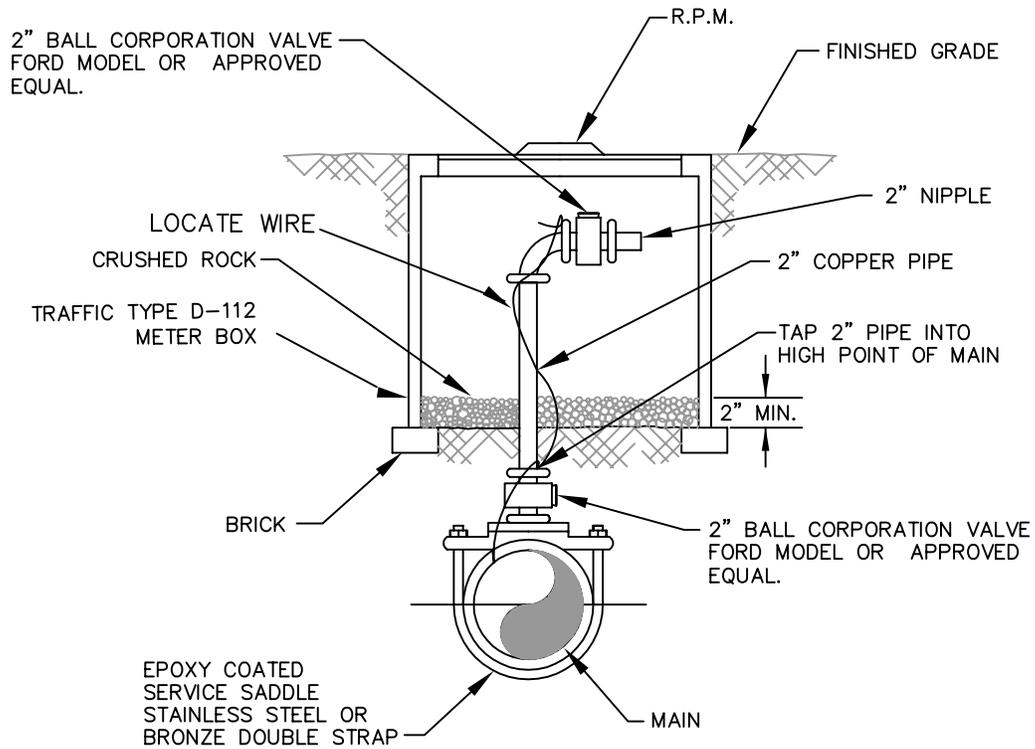


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JACK & BORE DETAIL

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MANUAL AIR RELEASE VALVE

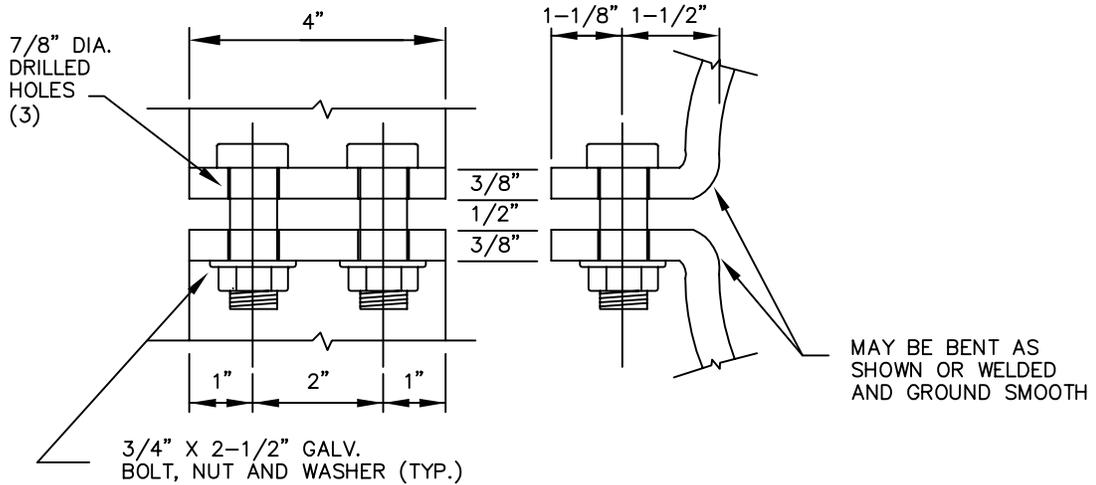


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MANUAL AIR RELEASE VALVE

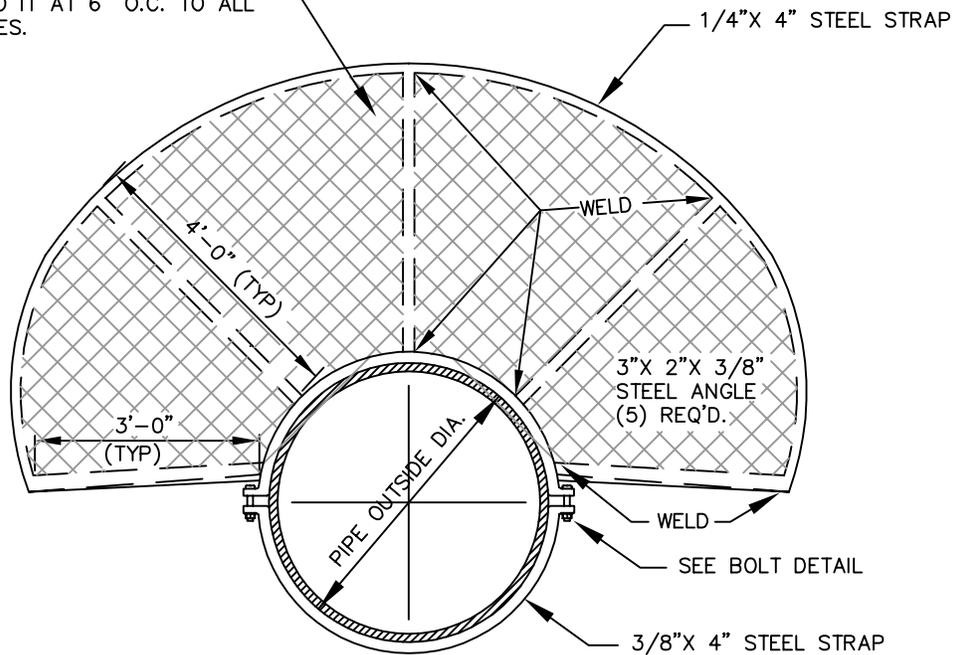
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BOLT DETAIL
N.T.S.

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



NOTES:

1. ENTIRE GUARD ASSEMBLY TO BE DIPPED GALVANIZED AFTER FABRICATION, PAINTING IS NOT PERMITTED.
2. CENTER ANGLES ON 4" STEEL STRAP.

AERIAL CROSSING PIPE GUARD DETAIL



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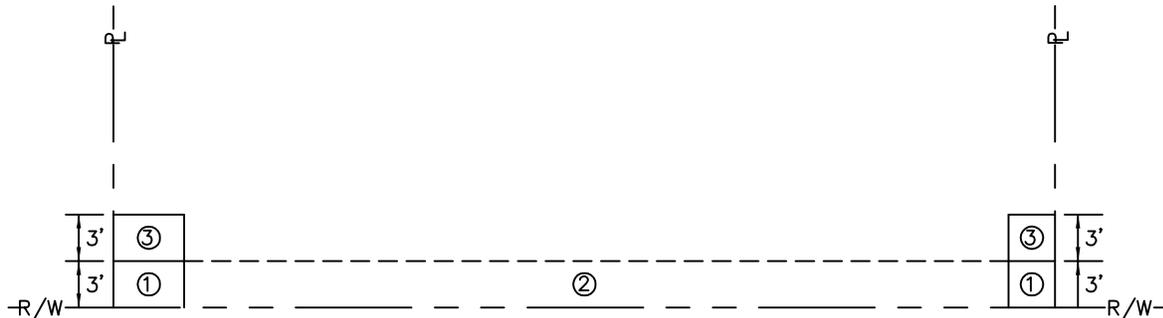
AERIAL CROSSING PIPE GUARD DETAIL

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GENERAL POLICY

WHERE COST JUSTIFIED AND OPERATIONALLY FEASIBLE, IT IS THE GENERAL POLICY OF THE CITY TO PROVIDE WATER, ELECTRIC, SEWER AND GAS SERVICE FROM THE STREET SIDE OF A PIECE OF PROPERTY. DEPENDING ON FACTORS SUCH AS LOCATION OF EXISTING SUPPLY SOURCE FACILITIES, REAR OR SIDE LOT LINE SUPPLY MAY BE AUTHORIZED, BUT ONLY WITH PRIOR APPROVAL FROM THE CITY.



- ① THE PREFERRED POINT OF CONNECTION TO THE CITY WATER METER, AREA ① SHALL BE LOCATED IN THE CORNER OF THE PROPERTY SELECTED BY THE CITY AS THE BEST LOCATION FOR THE WATER METER. EVERY EFFORT WILL BE MADE TO SELECT THE CORNER WHERE TWO WATER SERVICES AND METERS CAN BE CONNECTED.
- ② IF PHYSICAL BARRIERS OR OTHER OBSTACLES PREVENT THE CONNECTION OF THE BUILDING SERVICE LINE TO THE CITY WATER SERVICE, WITHIN AREA ① , THE CITY UTILITY DEPARTMENT MAY AUTHORIZE THE CONNECTION ALONG THE PORTION OF THE R/W LINE MARKED AREA ② , OR ALONG THE PROPERTY LINES MARKED AREA ③ .

NOTES:

1. HORIZONTAL SEPARATION OF WATER AND WASTEWATER SERVICES SHOULD BE A MINIMUM OF 10 FEET.
2. ALL METERS WILL BE INSTALLED IN A UNRESTRICTED AREA ALLOWING EASE OF ACCESS AND PROVIDING ADEQUATE PROTECTION.
3. THE CITY SHALL BE RESPONSIBLE FOR THE MAINTENCE AND REPAIR OF THE WATER SERVICE AND METER WITHIN THE EASEMENT OR RIGHT-OF-WAY, UP TO THE POINT OF CONNECTION.

WATER METER REPLACEMENT POLICY

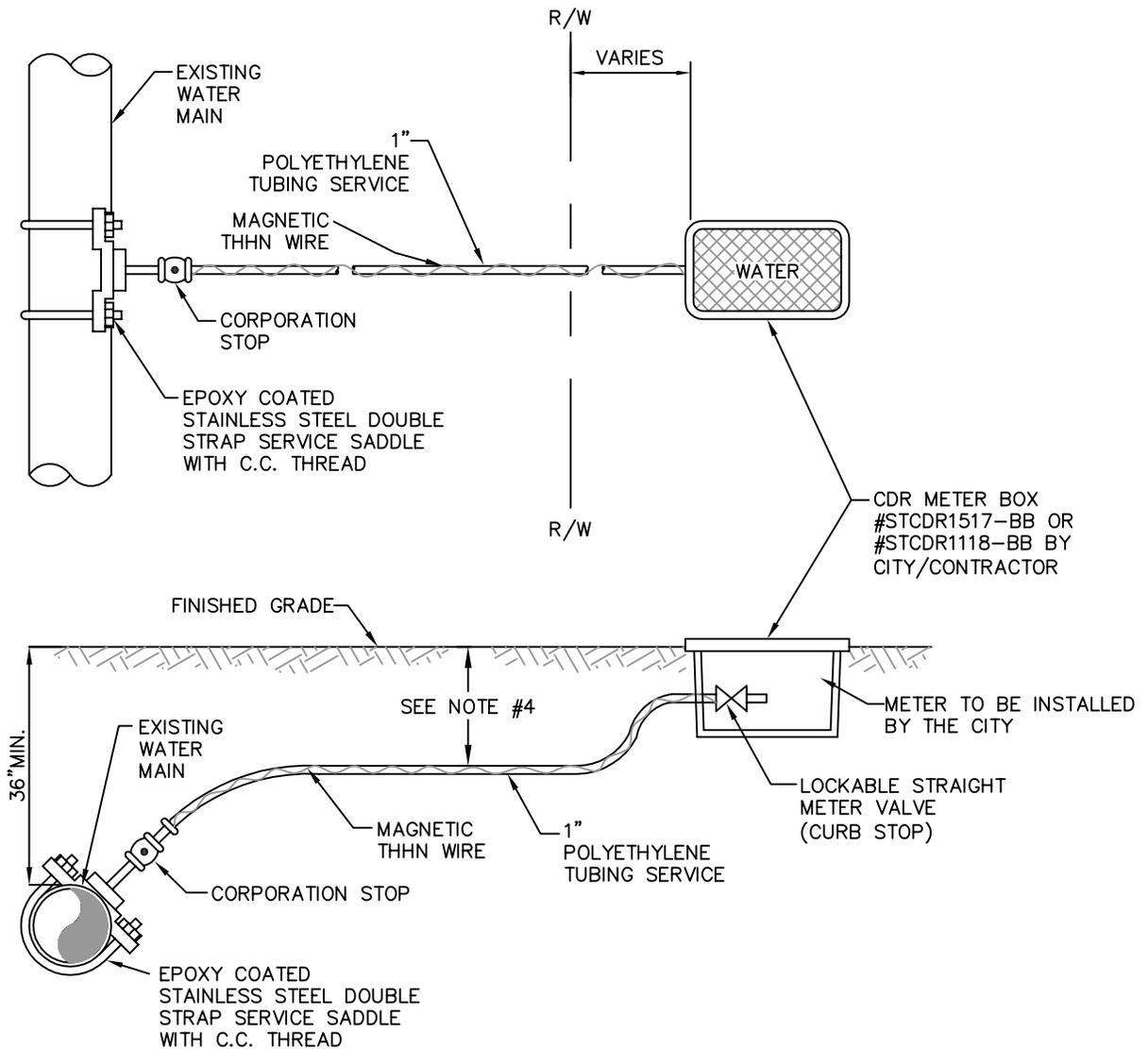


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WATER METER REPLACEMENT POLICY

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NOTES:

1. BLUE 10 GAUGE THHN WIRE SHALL BE ATTACHED TO THE SERVICE LINE.
2. WHERE SERVICES UNDER PAVEMENT ARE REQUIRED, THE POLYETHYLENE TUBING SHALL BE INSTALLED WITHIN SCHEDULE 40 PVC CASING PIPE.
3. 1" & 3/4" METER SIZES SHALL REQUIRE A LOCKABLE METER VALVE. (CURB STOP)
4. MINIMUM COVER IN UNPAVED AREAS IS 18", IN PAVED AREAS OR PLANNED ROADWAYS OR SWALES MIN. COVER SHALL BE 36".

TYPICAL SINGLE WATER SERVICE CONNECTION

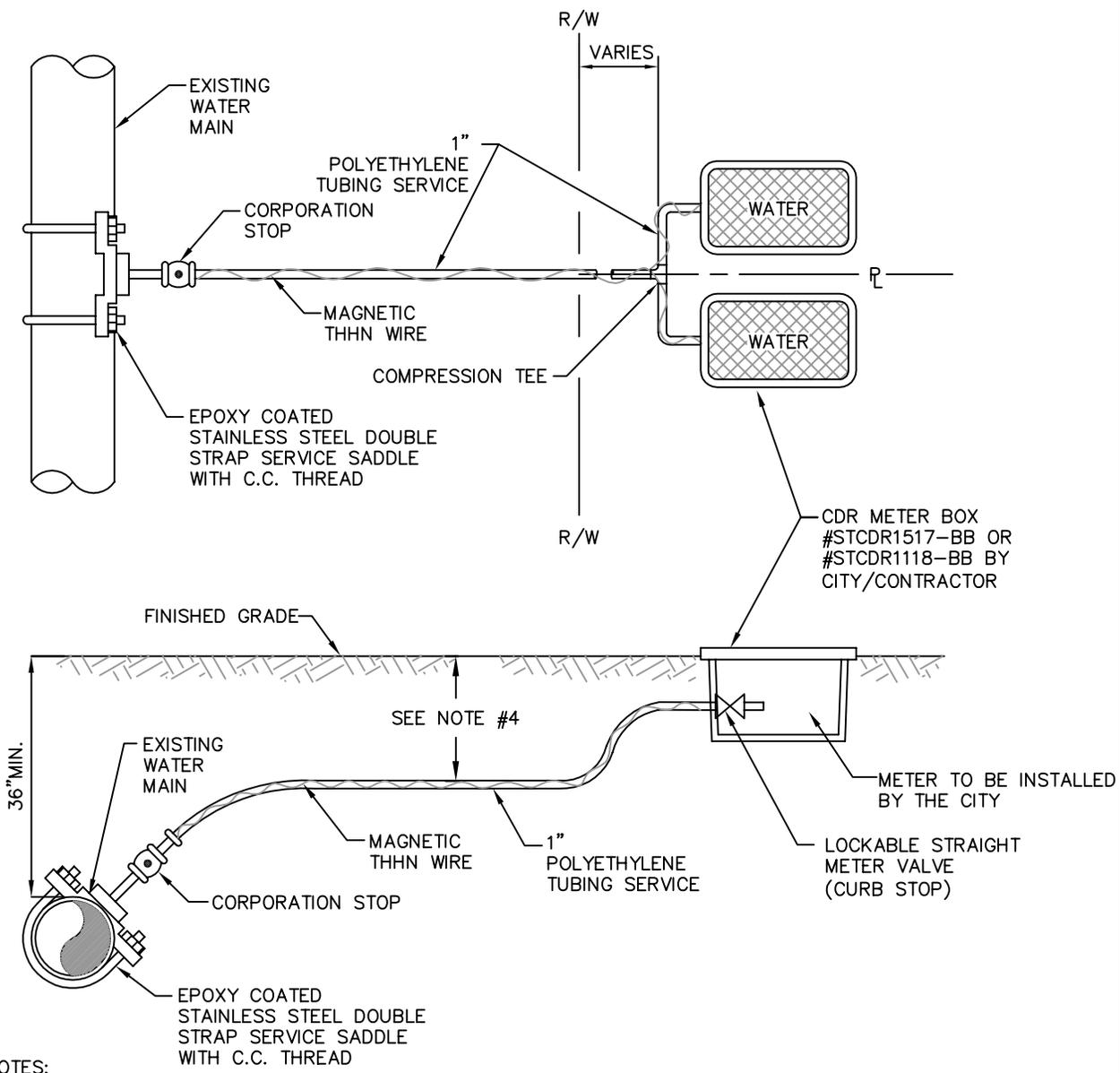


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TYPICAL SINGLE WATER SERVICE CONNECTION

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SHEET NUMBER
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NOTES:

1. BLUE 10 GAUGE THHN WIRE SHALL BE ATTACHED TO THE SERVICE LINE.
2. WHERE SERVICES UNDER PAVEMENT ARE REQUIRED, THE POLYETHYLENE TUBING SHALL BE INSTALLED WITHIN SCHEDULE 40 PVC CASING PIPE.
3. 1" & 3/4" METER SIZES SHALL REQUIRE A LOCKABLE METER VALVE. (CURB STOP)
4. MINIMUM COVER IN UNPAVED AREAS IS 18", IN PAVED AREAS OR PLANNED ROADWAYS OR SWALES MIN. COVER SHALL BE 36".

TYPICAL DOUBLE WATER SERVICE CONNECTION

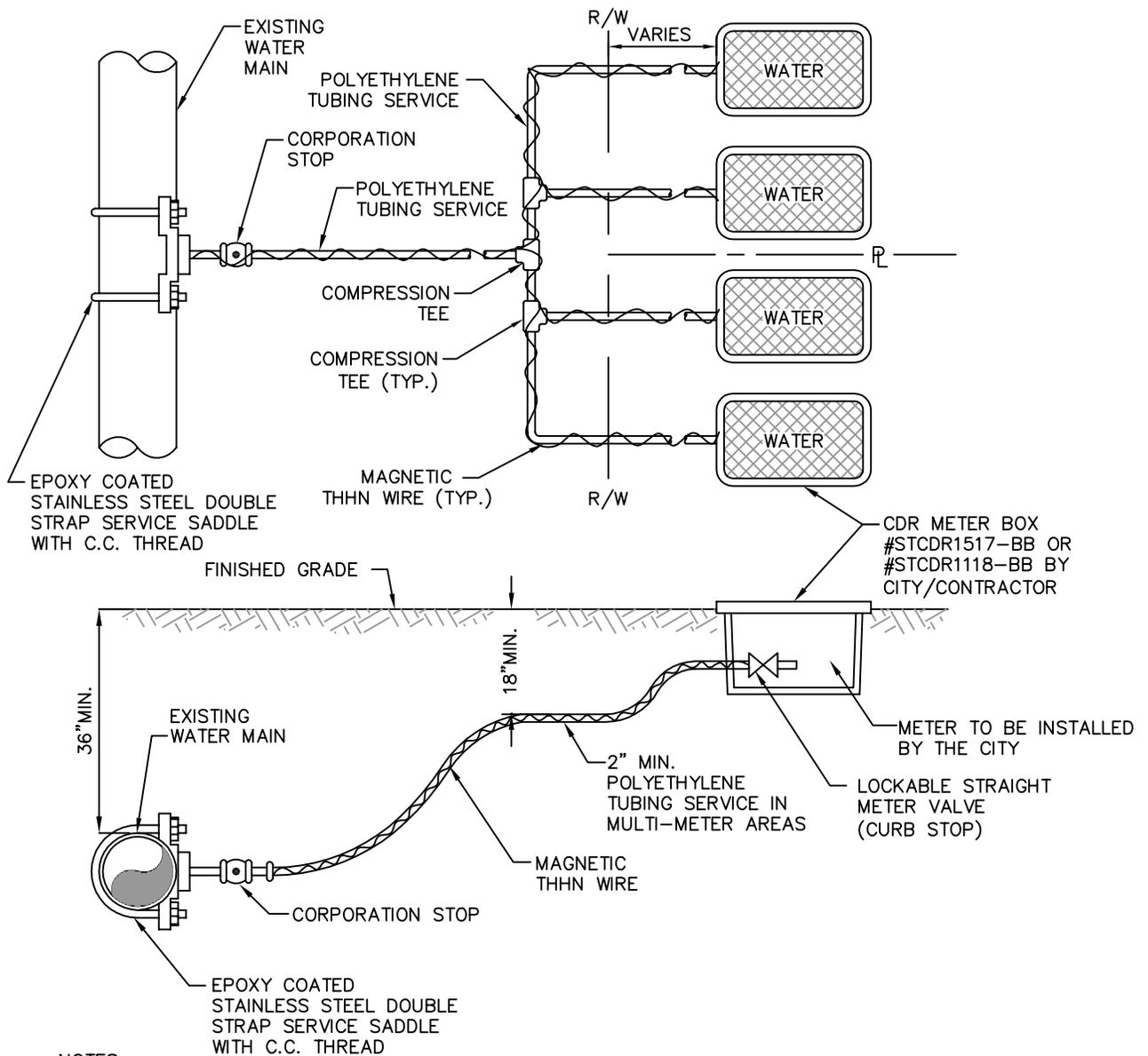


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TYPICAL DOUBLE WATER SERVICE CONNECTION

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
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NOTES:

1. BLUE 10 GAUGE THHN WIRE SHALL BE ATTACHED TO THE SERVICE LINE.
2. WHERE SERVICES UNDER PAVEMENT ARE REQUIRED, THE POLYETHYLENE TUBING SHALL INSTALLED WITHIN SCHEDULE 40 PVC CASING PIPE.
3. 1" & 3/4" METER SIZES SHALL REQUIRE LOCKABLE METER VALVE (CURB STOP)
4. MINIMUM COVER IN UNPAVED AREAS IS 18", IN PAVED OR PLANNED ROADWAYS OR SWALES MIN. COVER SHALL BE 36".

TYPICAL MULTIPLE WATER CONNECTION

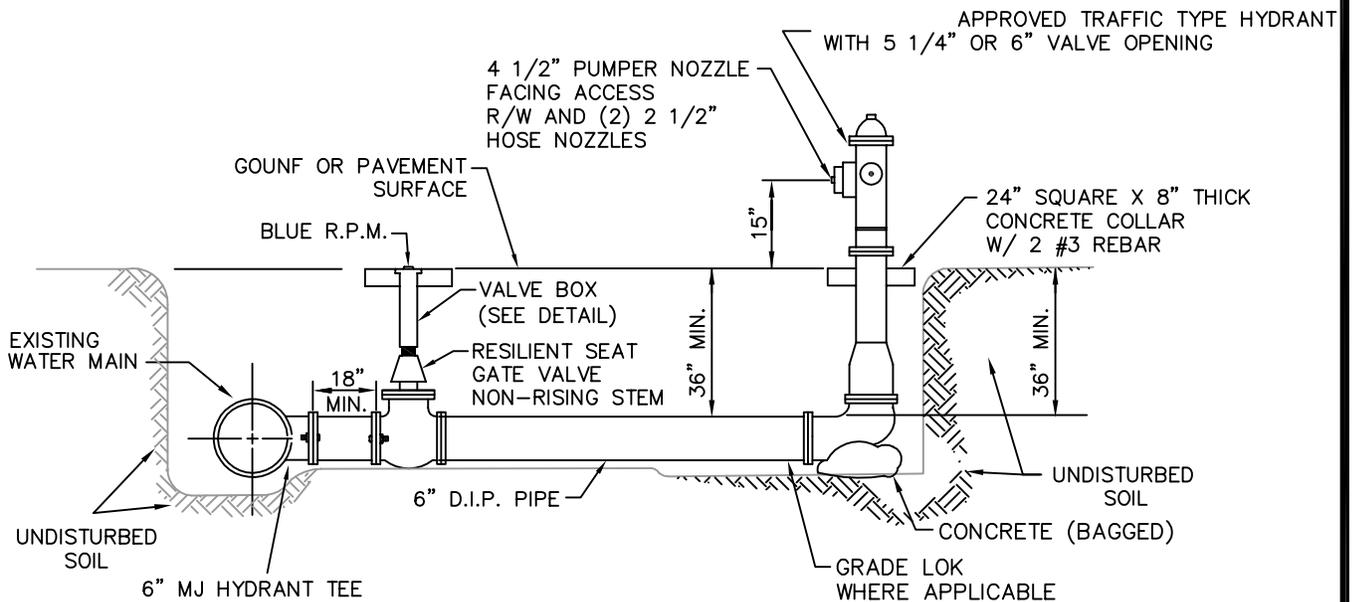
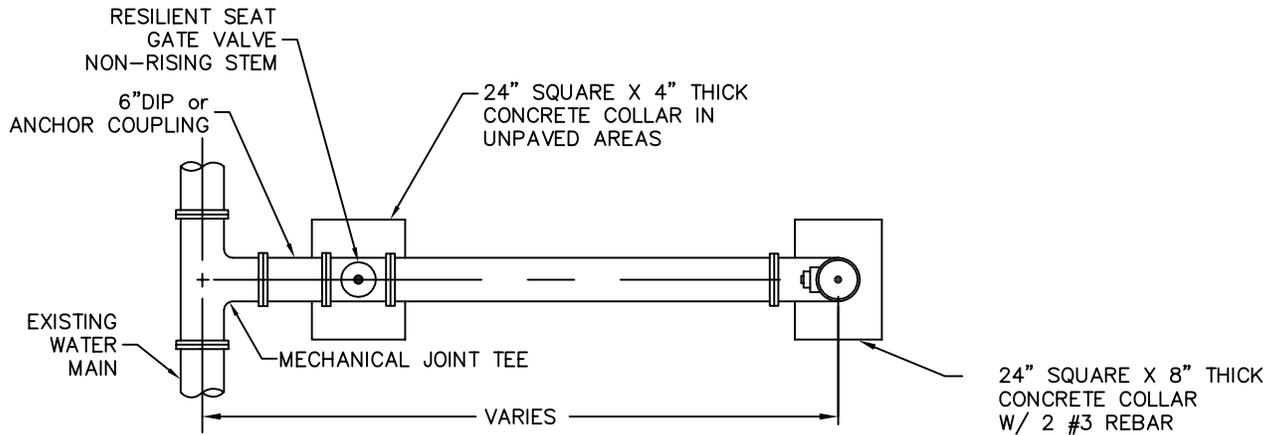


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TYPICAL MULTIPLE WATER CONNECTION

DATE: FEBRUARY, 2012
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24



1. HYDRANT SHALL BE INSTALLED PLUMB & TRUE.
2. HYDRANT SHALL BE PAINTED CARNIVAL RED FROM FACTORY.
3. HEEL TO BE SUPPORTED WITH CONCRETE (BAGGED)
4. HYDRANT ASSEMBLY MUST BE RESTRAINED TO TEE.
5. ALL FITTINGS TO BE MECHANICAL JOINT.
6. ENTIRE ASSEMBLY TO BE MECHANICALLY RESTRAINED.
7. ALL HYDRANTS ARE TO UTILIZE ANCHOR COUPLINGS.
8. THE CONNECTOR PIPE SHALL BE CEMENT LINED, CLASS 350 D.I.P

TYPICAL FIRE HYDRANT ASSEMBLY

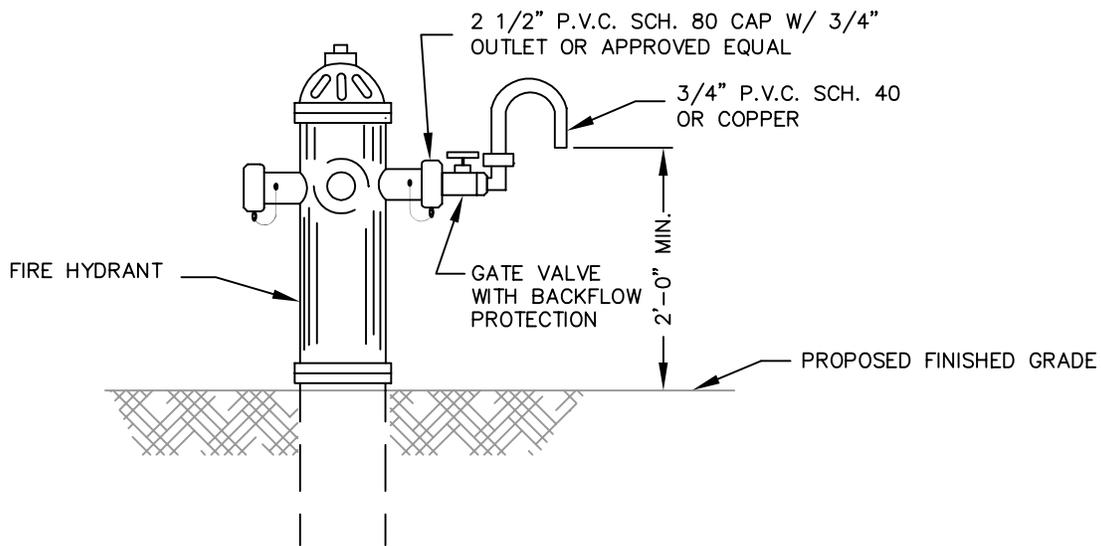


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TYPICAL FIRE HYDRANT ASSEMBLY

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SHEET NUMBER
25



BACTERIOLOGICAL SAMPLING POINT @ FIRE HYDRANT

NOTE: ADD LAMINATED SIGN NOTING THAT "TESTING IS IN PROGRESS" WHILE SAMPLE POINT IS IN SERVICE.

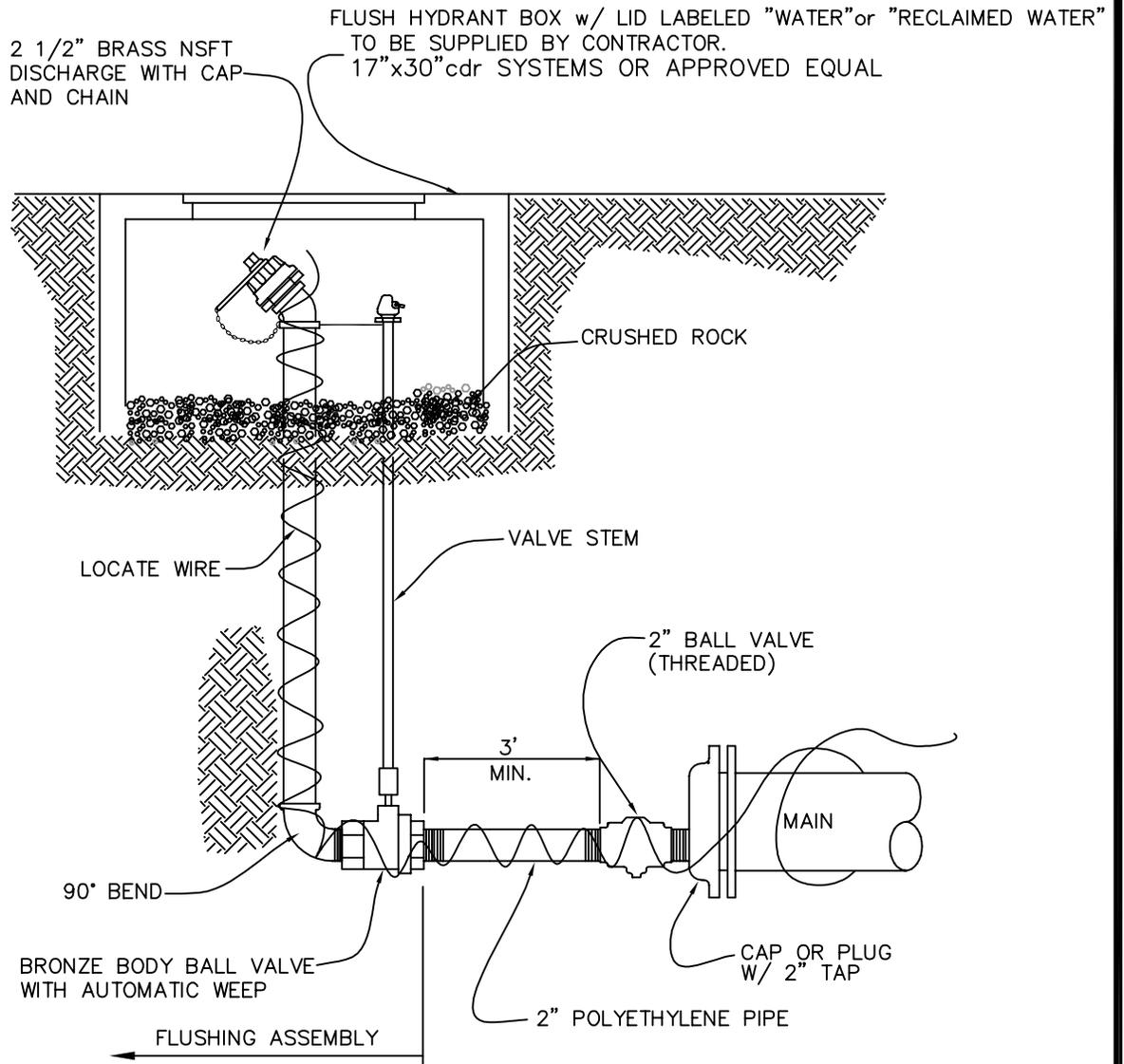


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BACTERIOLOGICAL SAMPLING POINT @ FIRE HYDRANT

DATE: FEBRUARY, 2012
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SHEET NUMBER
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NOTES:

1. FLUSHING HYDRANT ASSEMBLY SHALL BE GIL INDUSTRIES, AQUARIUS ONE-O-ONE OR WATER PLUS VB2000 2" POST FLUSHING HIDDEN HYDRANT.
2. MAIN TO BE RESTRAINED FOR THREE FULL LENGTHS.

POTABLE / RECLAIMED WATER FLUSHING HYDRANT

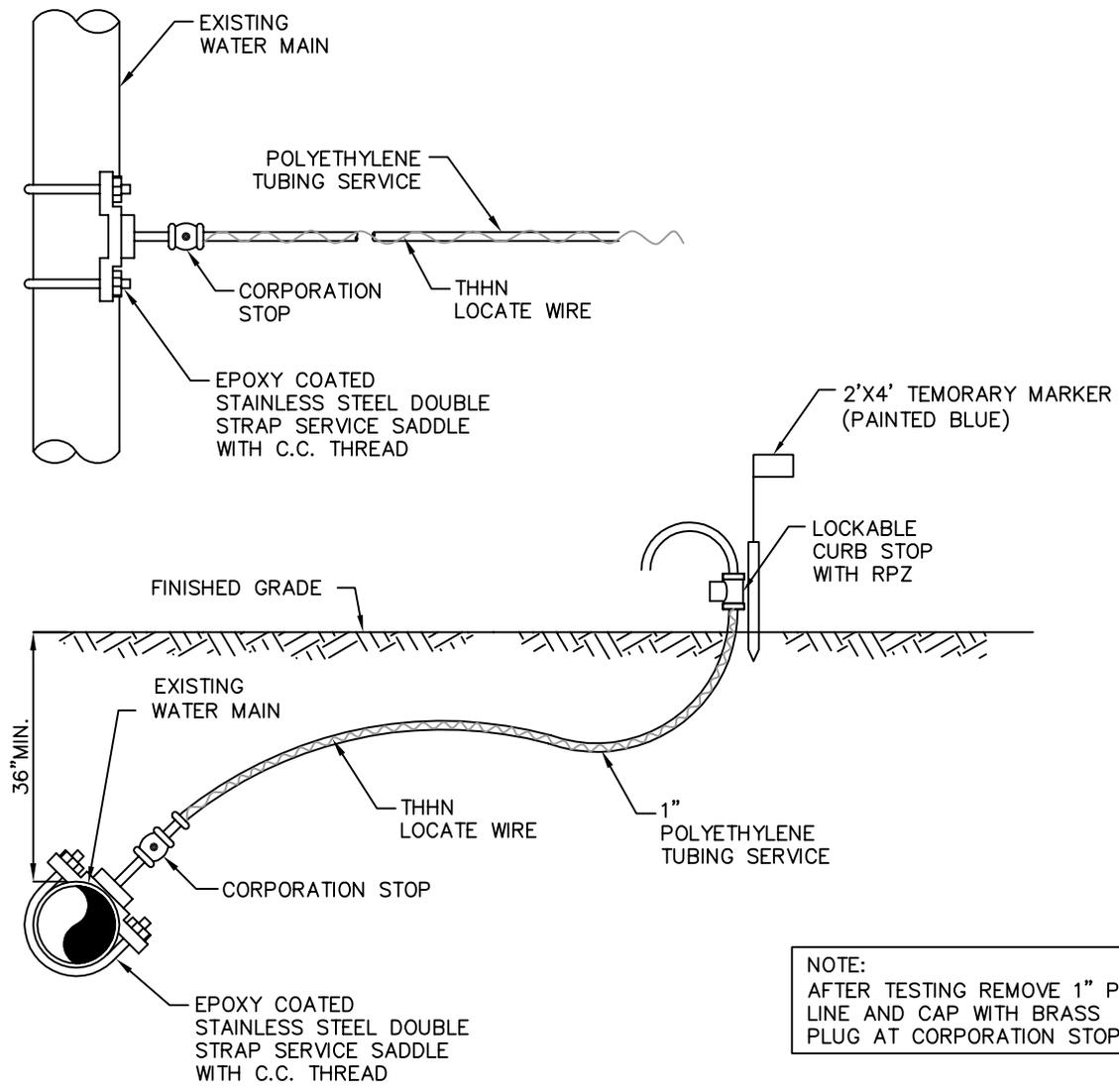


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**POTABLE / RECLAIMED WATER
 FLUSHING HYDRANT**

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27



BACTERIOLOGICAL SAMPLING POINT DETAIL

NOTE: ADD LAMINATED SIGN NOTING THAT "TESTING IS IN PROGRESS – DO NOT DISTURB" WHILE SAMPLE POINT IS IN SERVICE.

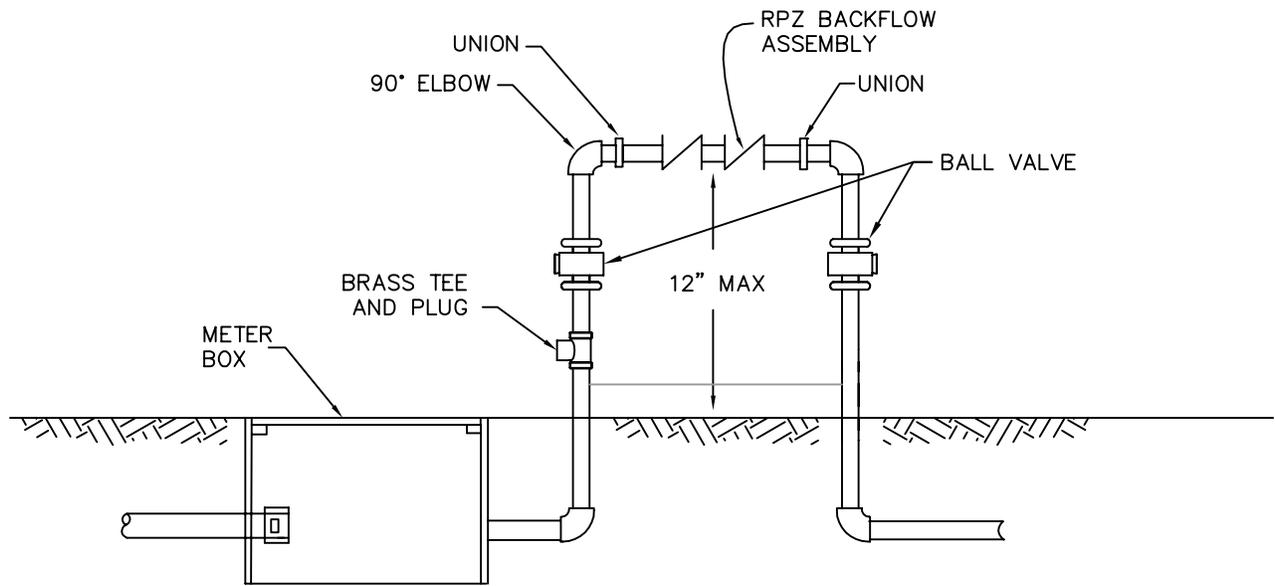


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BACTERIOLOGICAL SAMPLING POINT DETAIL

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TYPICAL WATER / RECLAIMED METER
BACKFLOW PREVENTER ASSEMBLY
5/8" X 3/4" & 1"

1. RECLAIMED WATER BACKFLOW PREVENTER ASSEMBLY MUST BE PAINTED PURPLE PANTONE 522

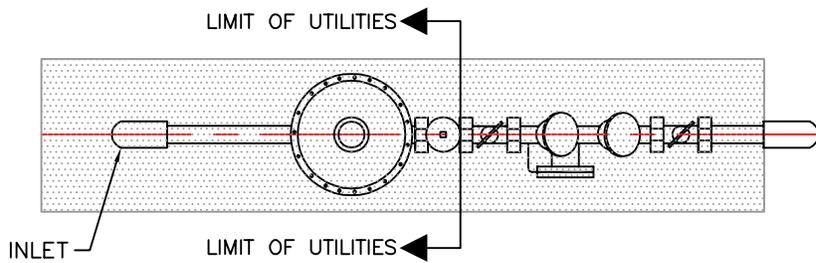


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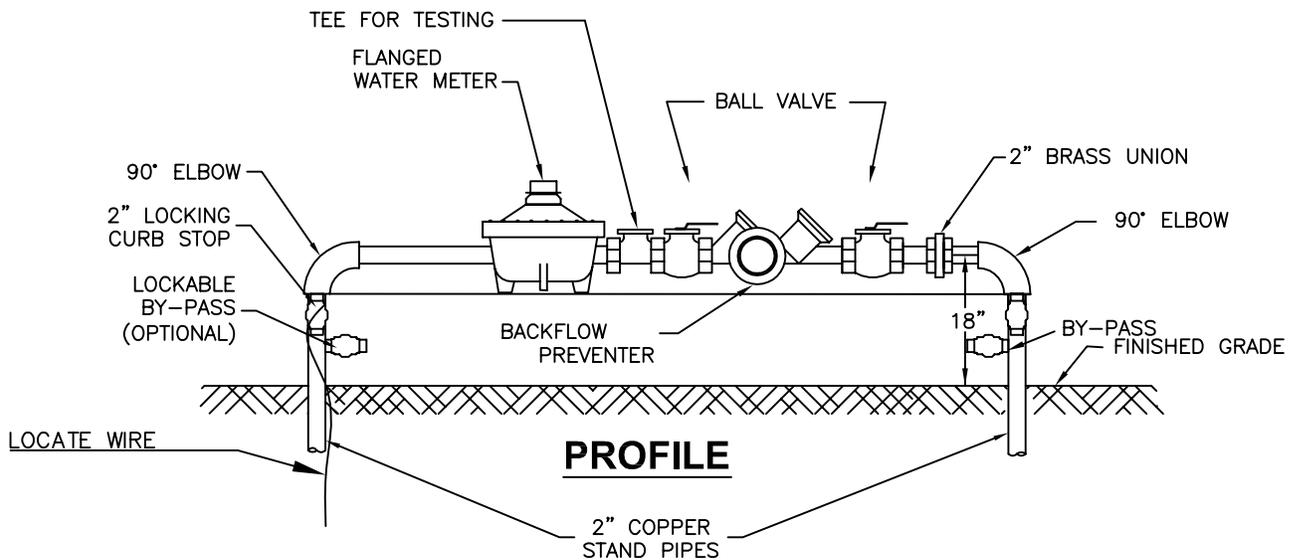
**TYPICAL BACKFLOW
 PREVENTER ASSEMBLY**

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
29



PLAN



PROFILE

NOTES:

1. LANDSCAPING REQUIRED PER CITY OF STUART ORDINANCE. NO PLANTS OR TREES WITHIN 18" AROUND METER OR BACKFLOW. MUST BE SCREENED AT PLANT IN HEIGHT (NO GROW IN PERIOD)
2. ASSEMBLY TO BE 18" FROM FINISH GRADE TO CENTERLINE OF THE 90° BEND.
3. RECLAIMED WATER METER ASSEMBLY MUST BE PAINTED PANTONE PURPLE 522.
4. NO SOLDER JOINTS.

1 1/2" - 2" WATER / RECLAIMED
WATER METER/BACKFLOW
PREVENTER ASSEMBLY DOMESTIC
SERVICE (COMMERCIAL)

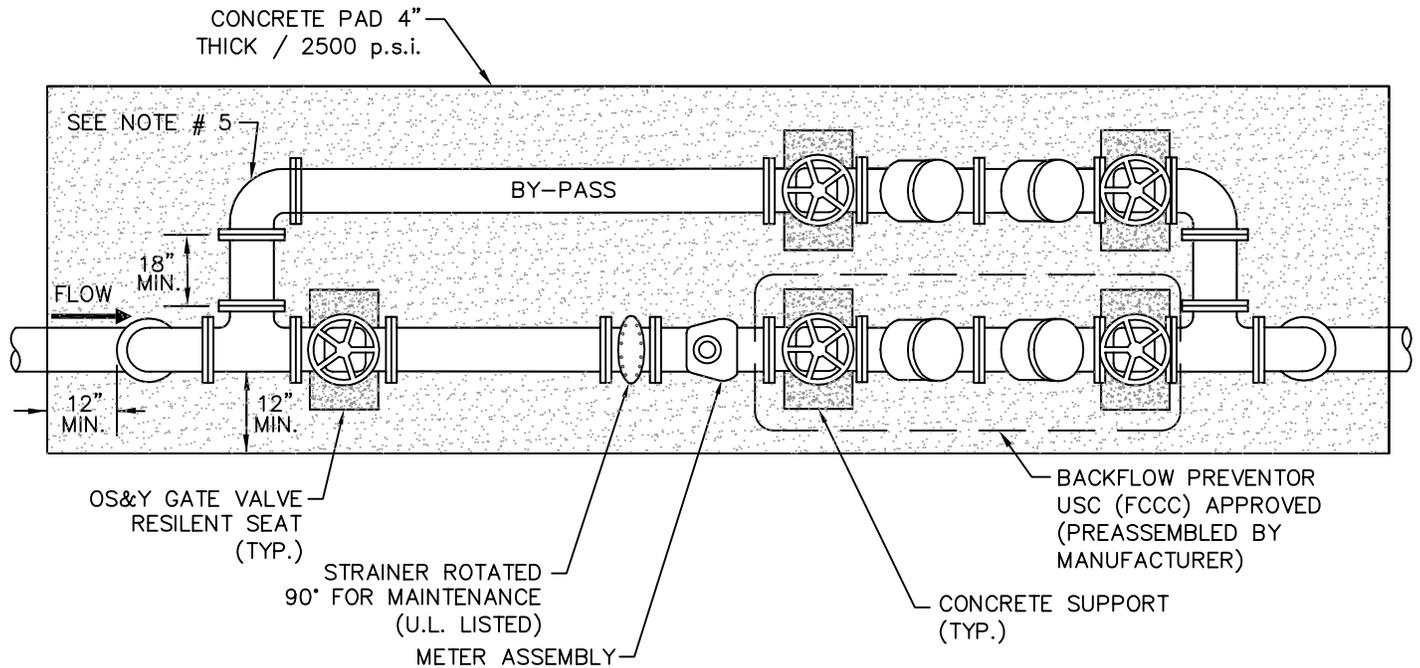


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**TYPICAL BACKFLOW
 PREVENTER ASSEMBLY**

DATE: FEBRUARY, 2012
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SHEET NUMBER
30



NOTES:

PLAN VIEW

1. ALL PIPE AND FITTINGS SHALL BE CLASS 53 DUCTILE IRON.
2. ALL UNDERGROUND FITTINGS SHALL BE RESTRAINED MECHANICAL JOINT TYPE & ALL ABOVE GROUND FITTINGS SHALL BE FLANGE JOINTS, FULL FACE NEOPRENE GASKETS WITH STAINLESS STEEL BOLTS.
3. PROVIDE CHAINS & LOCKS FOR THE VALVES AS REQUIRED BY THE UTILITY.
4. METER BY-PASS TO BE SAME SIZE AS SUPPLY TO METER (FIRE SERVICE WITH POTABLE SERVICE).
5. THE ENGINEER OF RECORD SHALL SIZE METER AND BACKFLOW ASSEMBLY , TAKING INTO CONSIDERATION THE TYPICAL HEAD LOSS FOR EACH AND A MINIMUM SUPPLY PRESSURE BY THE UTILITY OF 20 P.S.I.
6. 12" MIN. / 16" MAX. CLEARANCE IS REQUIRED FROM THE TOP OF THE CONCRETE PAD TO THE BOTTOM OF THE RELIEF VALVE.
7. ASSEMBLY MUST BE SCREENED, LANDSCAPING MUST SCREEN AT PLANT HEIGHT, NO GROW IN PERIOD. A 18" CLEAR ZONE SHALL BE LOCATED ON ALL SIDES OF THE BACKFLOW PREVENTERS.
8. ALL SPOOL PIECES TO BE @ LEAST 18" IN LENGTH.
9. BY-PASS TO BE HALF THE SIZE OF SERVICE SIDE ASSEMBLY (POTABLE WATER SERVICE ONLY).
10. OS&Y GATE VALVES NEEDED IF SERVICES FIRE SYSTEM.

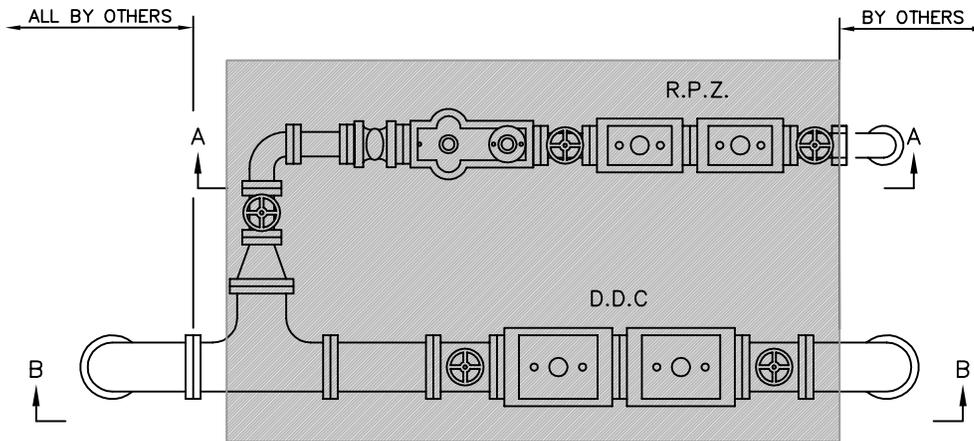


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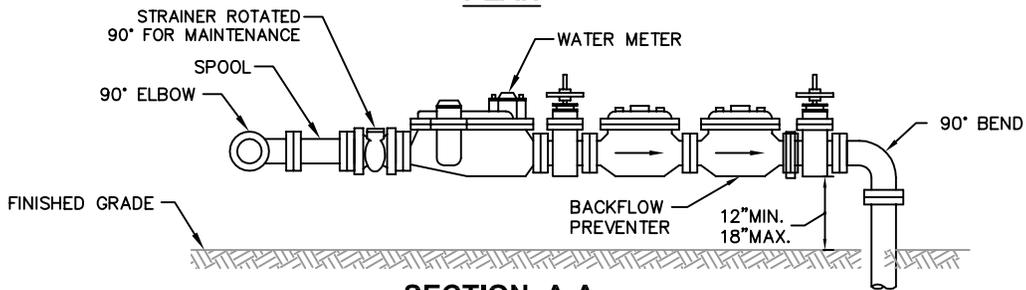
TYPICAL BACKFLOW PREVENTER ASSEMBLY

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
31

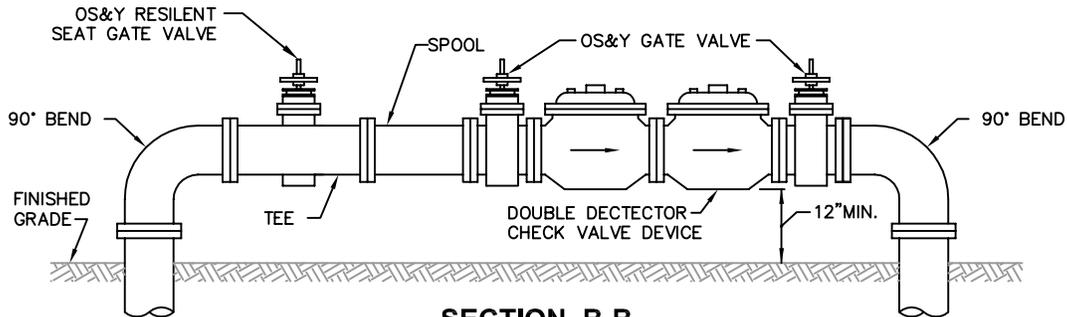


PLAN



SECTION A-A

(DOMESTIC SUPPLY PORTION)



SECTION B-B

(FIRE SERVICE PORTION)

NOTES:

1. LANDSCAPING REQUIRED PER CITY OR COUNTY ORDINANCE. MUST SCREEN AT PLANT HEIGHT, NO GROW IN PERIOD. NO PLANTS OR TREES WITHIN 18" AROUND METER TO ALLOW MAINTENANCE WITHOUT DAMAGE TO PLANTS ETC.
2. NO SOLDER JOINTS.

WATER METER / BACKFLOW PREVENTER ASSEMBLY
- FIRE SERVICE w/ DOMESTIC SUPPLY

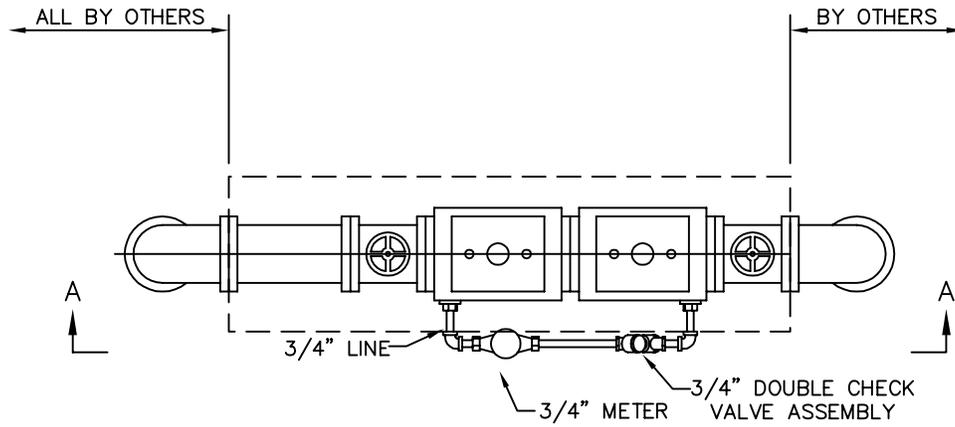


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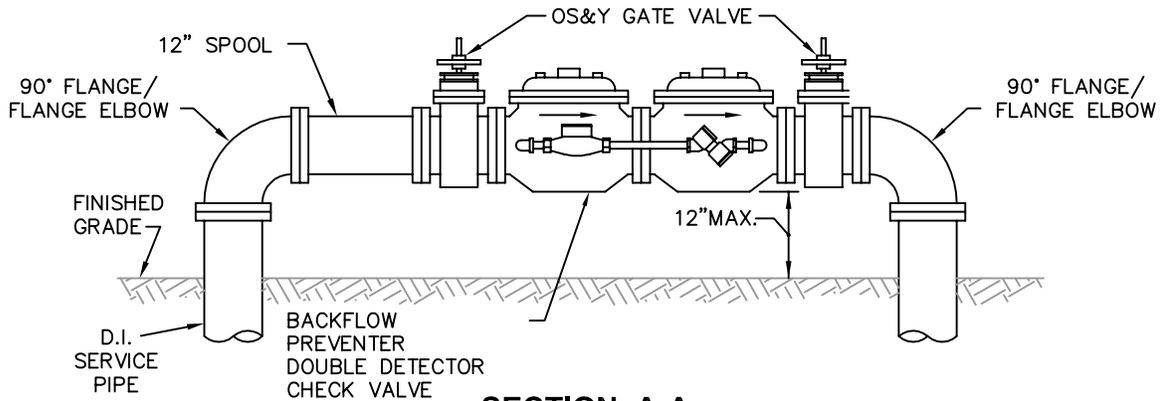
**WATER METER/BACKFLOW PREVENTER-
 FIRE SERVICE w/ DOMESTIC SUPPLY**

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
32



PLAN



SECTION A-A

NOTE:

1. LANDSCAPING IS REQUIRED PER CITY OR COUNTY ORDINANCE. PLANTINGS MUST SCREEN AT PLANT HEIGHT, NO GROW IN PERIOD.

DOUBLE CHECK VALVE
w/ DETECTOR CHECK ASSEMBLY / FIRE SERVICE



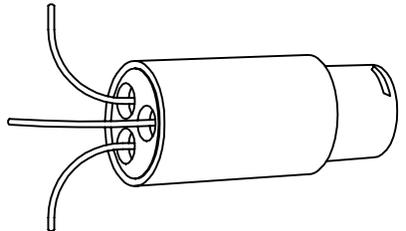
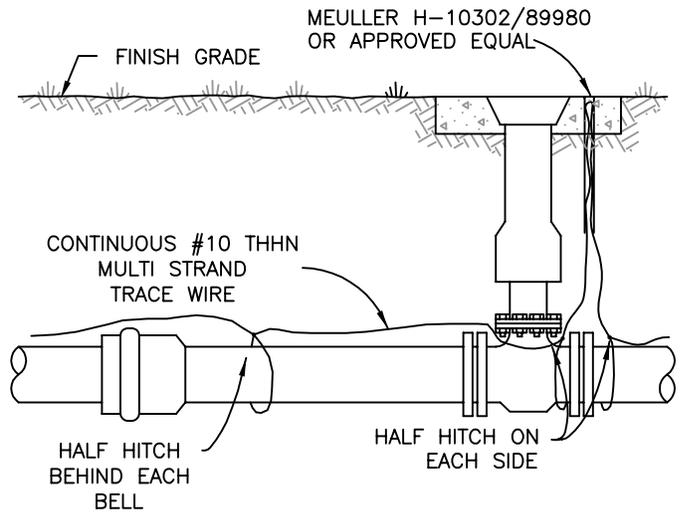
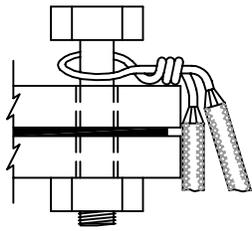
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DOUBLE CHECK VALVE
w/ DETECTOR CHECK ASSEMBLY

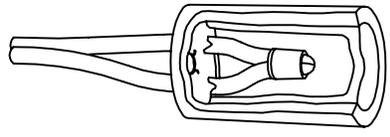
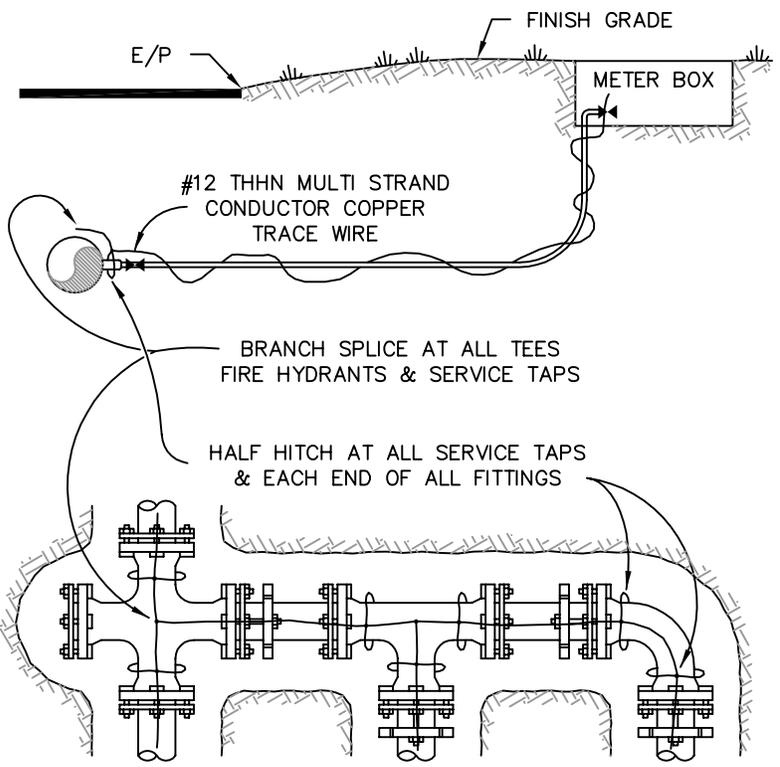
DATE: FEBRUARY, 2012
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TO PUT CONTINUOUS TRACE WIRE UNDER BOLT, FIRST LOOSEN BOLT, THEN STRIP 3" MIN., WRAP ONCE AROUND BOLT, 1 TWIST, 2 WRAPS. "DO NOT CUT WIRE" TIGHTEN BOLT AFTER WRAPPING TRACE WIRE AROUND THE BOLT.



DETAIL OF THREE (3) WIRE SPLICE



CUTAWAY DETAIL OF A TWO (2) WIRE SPLICE

NOTES:

1. TRACE WIRE IS REQUIRED ON ALL PIPE AS NOTED BY UTILITIES ENGINEER, AND SHOWN IN STANDARD DETAILS.
2. INCLUDE ALL COST OF MATERIAL & LABOR IN PRICE OF PIPE.
3. CONTRACTOR IS RESPONSIBLE FOR CONTINUITY OF ALL TRACE WIRE.

TRACE WIRE DETAIL



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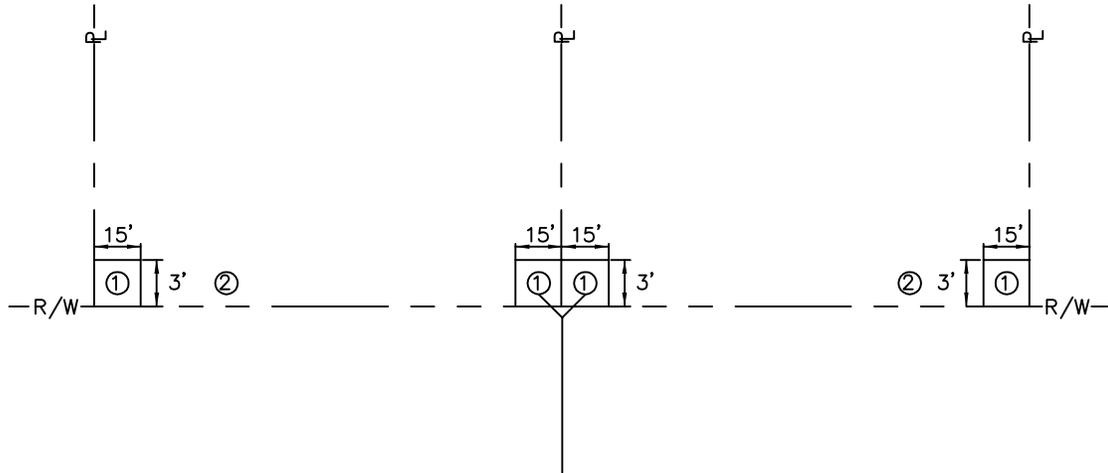
**TRACE WIRE
 DETAIL**

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
34

GENERAL POLICY

WHERE COST JUSTIFIED AND OPERATIONALLY FEASIBLE, IT IS THE GENERAL POLICY OF THE CITY TO PROVIDE WATER AND SEWER SERVICE FROM THE STREET SIDE OF A PIECE OF PROPERTY. DEPENDING ON FACTORS SUCH AS LOCATION OF EXISTING SUPPLY SOURCE FACILITIES, REAR OR SIDE LOT LINE SUPPLY MAY BE AUTHORIZED, BUT ONLY WITH PRIOR APPROVAL FROM THE CITY.



- ① THE PREFERRED POINT OF CONNECTION TO THE CITY SEWER LATERAL, AREA ①, SHALL BE LOCATED IN THE CORNER OF THE PROPERTY SELECTED BY THE CITY AS THE BEST LOCATION FOR THE LATERAL. EVERY EFFORT WILL BE MADE TO SELECT THE CORNER WHERE TWO LATERALS CAN BE CONNECTED IN A "Y" CONFIGURATION AS SHOWN.
- ② IF PHYSICAL BARRIERS OR OTHER OBSTACLES PREVENT THE CONNECTION OF THE BUILDING SERVICE LINE TO THE CITY SEWER LATERAL, WITHIN AREA ①, THE CITY ENGINEERING DEPARTMENT MAY AUTHORIZE THE CONNECTION ALONG THE PORTION OF THE R/W LINE MARKED AREA ②.

NOTES:

1. HORIZONTAL SEPARATION OF WATER AND WASTEWATER SERVICES SHOULD BE A MINIMUM OF 10 FEET.
2. THE WASTEWATER LATERAL SHALL BE LOCATED WITHIN RIGHT-OF-WAY AND TERMINATE AT THE PROPERTY LINE.
3. THE CITY SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND REPAIR OF THE WASTEWATER LATERAL WITHIN THE EASEMENT OR RIGHT-OF-WAY, UP TO THE POINT OF CONNECTION.

WASTEWATER SERVICE PLACEMENT POLICY

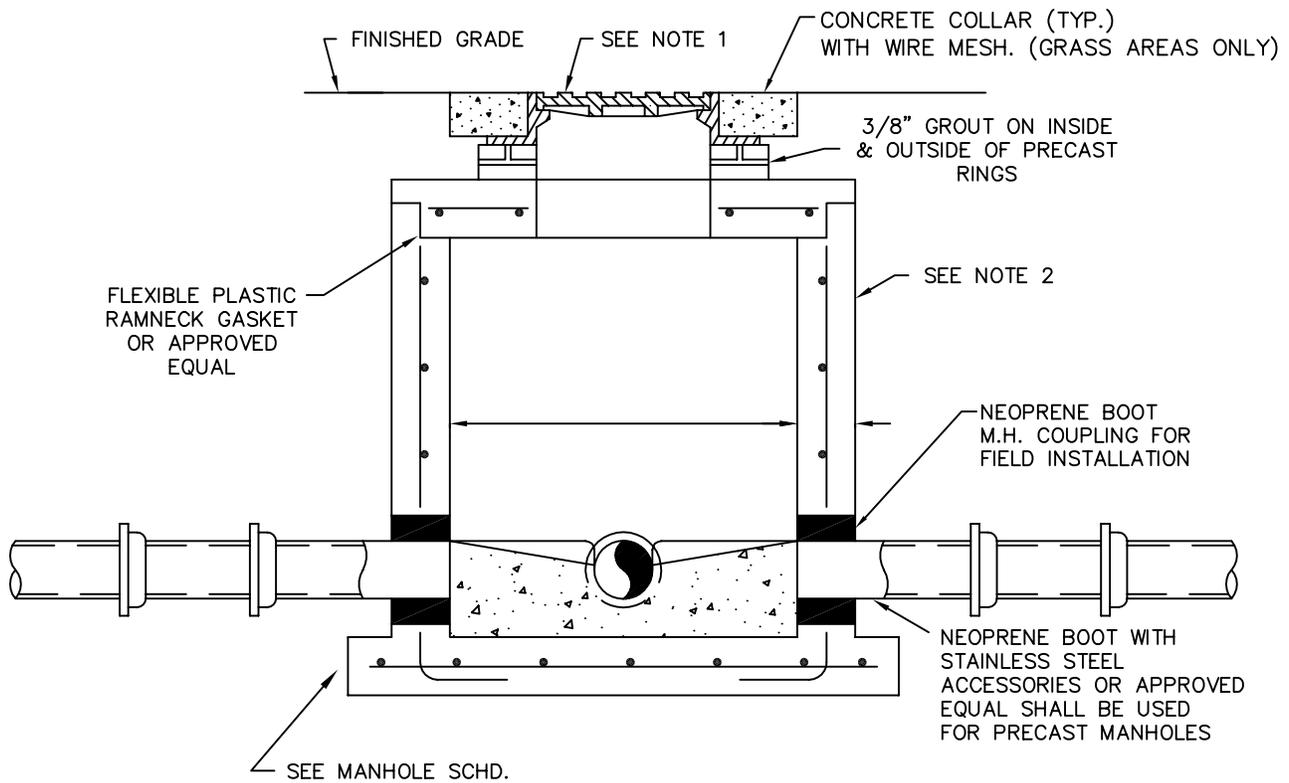


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WASTEWATER SERVICE PLACEMENT POLICY

DATE: FEBRUARY, 2012
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SHEET NUMBER
35



PIPE DIA.	"A"	"B"	"C"	BOT. SLAB "T"
8"-24"	4'-0"	"8"	76"	8"
30"-36"	5'-0"	"8"	88"	10"
42"-48"	6'-0"	"8"	100"	12"

TYPICAL MANHOLE DIMENSIONS

NOTES:

1. MANHOLE FRAME & COVER WITH THE WORDS " SANITARY SEWER" CAST IN THE COVER. U.S. FOUNDRY 170 OR APPROVED EQUAL.
2. ALL CONCRETE MANHOLES TO BE 4000 P.S.I. TO MEET OR EXCEED ASTM C478 ALL CEMENT TO BE TYPE II ACID RESISTANT. REINFORCING AREA OF 0.02 SQ. IN/FT FOR WALL SECTION MIN. TO MEET OR EXCEED ASTM A 185.
3. A MAXIMUM OF 2 LAYERS OF PRECAST CONCRETE RINGS, IF REQUIRED.
4. RAIN GUARDS SHALL BE INSTALLED IN MANHOLES THAT HAVE GRAVITY MAINS 12" OR LESS
5. ALL MANHOLES SHALL BE COATED INSIDE AND OUTSIDE W/ 8-10 MILS EACH OF 100% WATER BASED EPOXY

SHALLOW MANHOLE
(DEPTH LESS THAN 5'-0")

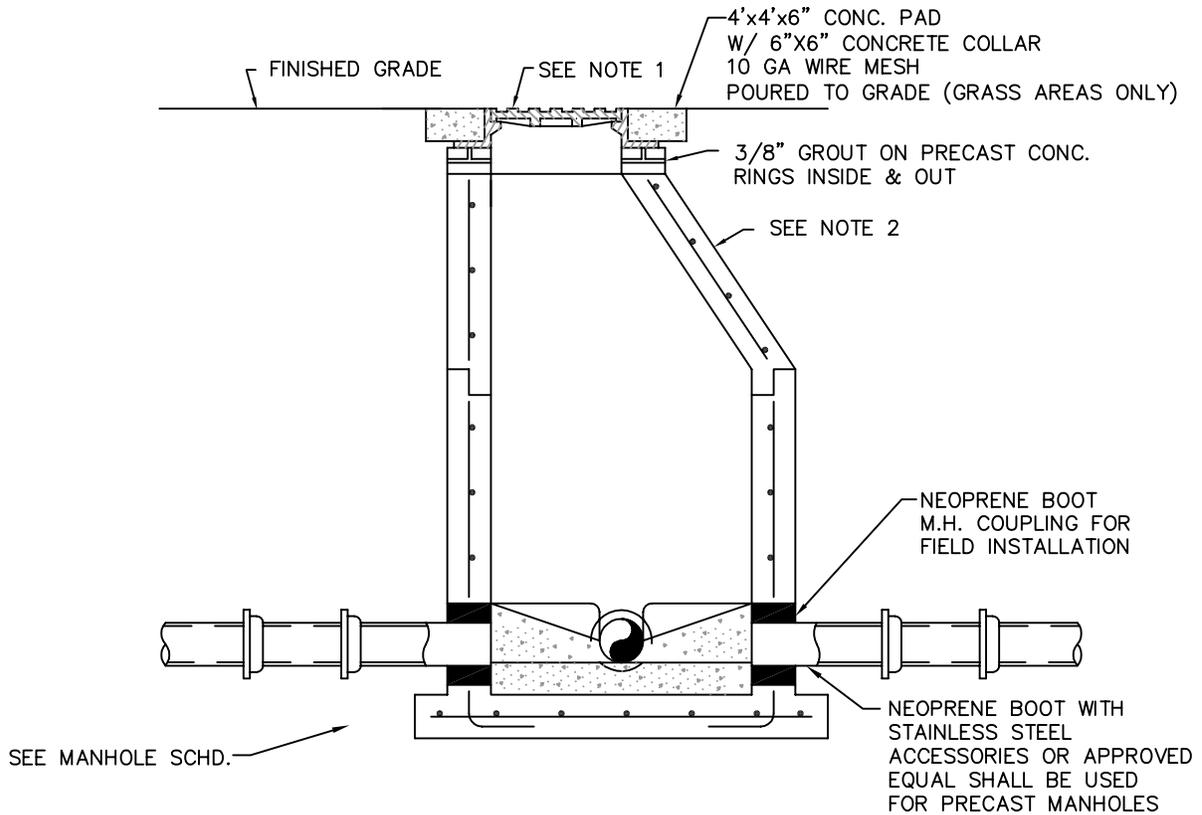


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SHALLOW MANHOLE
(DEPTH LESS THAN 5'-0")

DATE: FEBRUARY, 2012
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SHEET NUMBER
36



PIPE DIA.	"A"	"B"	"C"	BOT. SLAB "T"
8"-24"	4'-0"	"8"	76"	8"
30"-36"	5'-0"	"8"	88"	10"
42"-48"	6'-0"	"8"	100"	12"

TYPICAL MANHOLE DIMENSIONS

NOTES:

1. MANHOLE FRAME & COVER WITH THE WORDS " SANITARY SEWER" CAST IN THE COVER. U.S. FOUNDRY 170 OR APPROVED EQUAL.
2. ALL CONCRETE MANHOLES TO BE 4000 P.S.I. TO MEET OR EXCEED ASTM C478 ALL CEMENT TO BE TYPE II ACID RESISTANT. REINFORCING AREA OF 0.02 SQ. IN/FT FOR WALL SECTION MIN. TO MEET OR EXCEED ASTM A 185.
3. A MAXIMUM OF 2 LAYERS OF PRECAST CONCRETE RINGS, IF REQUIRED.
4. RAINGUARDS SHALL BE INSTALLED IN MANHOLES THAT HAVE GRAVITY MAINS 12" OR LESS.
5. ALL MANHOLES SHALL BE COATED INSIDE AND OUTSIDE W/ 8-10 MILS EACH OF 100% WATER BASED EPOXY

STANDARD MANHOLE

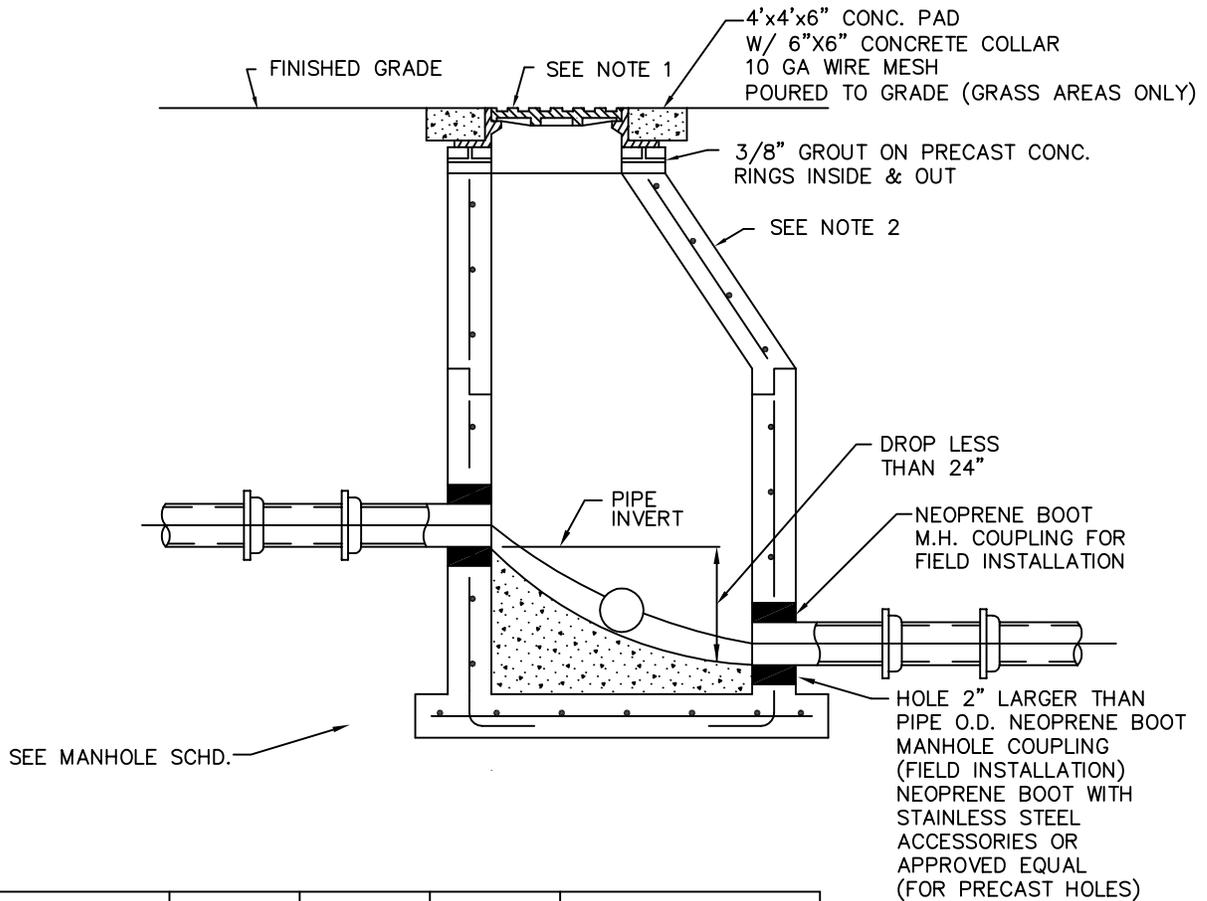


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STANDARD MANHOLE

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
37



PIPE DIA.	"A"	"B"	"C"	BOT. SLAB "T"
8"-24"	4'-0"	"8"	76"	8"
30"-36"	5'-0"	"8"	88"	10"
42"-48"	6'-0"	"8"	100"	12"

TYPICAL MANHOLE DIMENSIONS

NOTES:

1. MANHOLE FRAME & COVER WITH THE WORDS " SANITARY SEWER" CAST IN THE COVER. U.S. FOUNDRY 170 OR APPROVED EQUAL.
2. ALL CONCRETE MANHOLES TO BE 4000 P.S.I. TO MEET OR EXCEED ASTM C478 ALL CEMENT TO BE TYPE II ACID RESISTANT. REINFORCING AREA OF 0.02 SQ. IN/FT FOR WALL SECTION MIN. TO MEET OR EXCEED ASTM A 185.
3. A MAXIMUM OF 2 LAYERS OF PRECAST CONCRETE RINGS, IF REQUIRED.
4. RAINGUARDS SHALL BE INSTALLED IN MANHOLES THAT HAVE GRAVITY MAINS 12" OR LESS.
5. ALL MANHOLES SHALL BE COATED INSIDE AND OUTSIDE W/ 8-10 MILS EACH OF 100% WATER BASED EPOXY

MANHOLE w/ INSIDE DROP

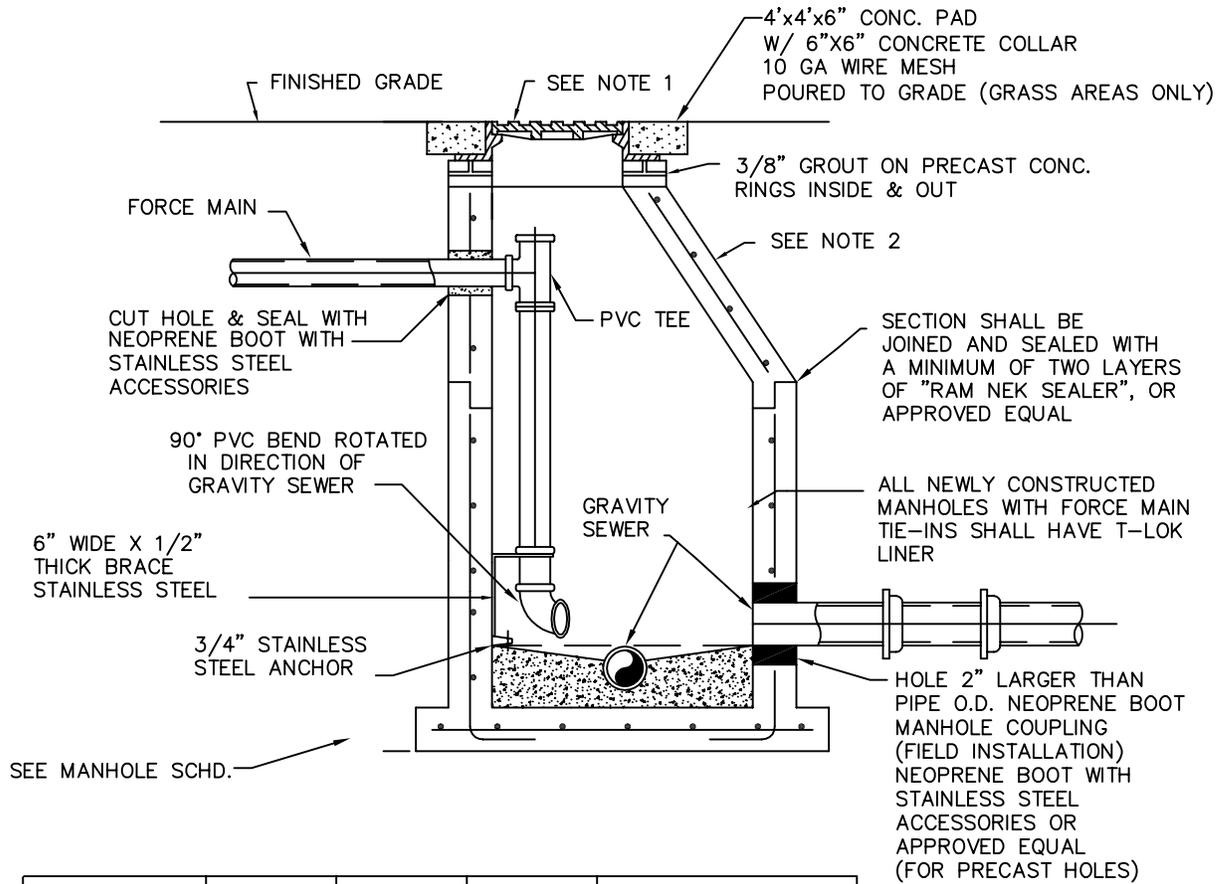


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**MANHOLE
w/ INSIDE DROP**

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
38



PIPE DIA.	"A"	"B"	"C"	BOT. SLAB "T"
8"-24"	4'-0"	"8"	70"	8"
30"-36"	5'-0"	"8"	84"	10"
42"-48"	6'-0"	"8"	96"	12"

TYPICAL MANHOLE DIMENSIONS

NOTES:

1. MANHOLE FRAME & COVER WITH THE WORDS " SANITARY SEWER" CAST IN THE COVER. U.S. FOUNDRY 170 OR APPROVED EQUAL.
2. ALL CONCRETE MANHOLES TO BE 4000 P.S.I. TO MEET OR EXCEED ASTM C478 ALL CEMENT TO BE TYPE II ACID RESISTANT. REINFORCING AREA OF 0.20 SQ. IN/FT FOR WALL SECTION MIN. TO MEET OR EXCEED ASTM A 185.
3. A MAXIMUM OF 2 LAYERS OF PRECAST CONCRETE RINGS, IF REQUIRED.
4. FORCE MAIN TIE-IN SHALL BE TO MANHOLES WITH A MINIMUM DEPTH OF 4'-6".
5. ALL MANHOLES SHALL BE COATED INSIDE AND OUTSIDE W/ 8-10 MILS EACH OF 100% WATER BASED EPOXY
6. PIPE TO BE FASTENED TO WALL w/ STAINLESS STEEL STRAPPING.

FORCE MAIN TIE-IN @ PRECAST MANHOLE

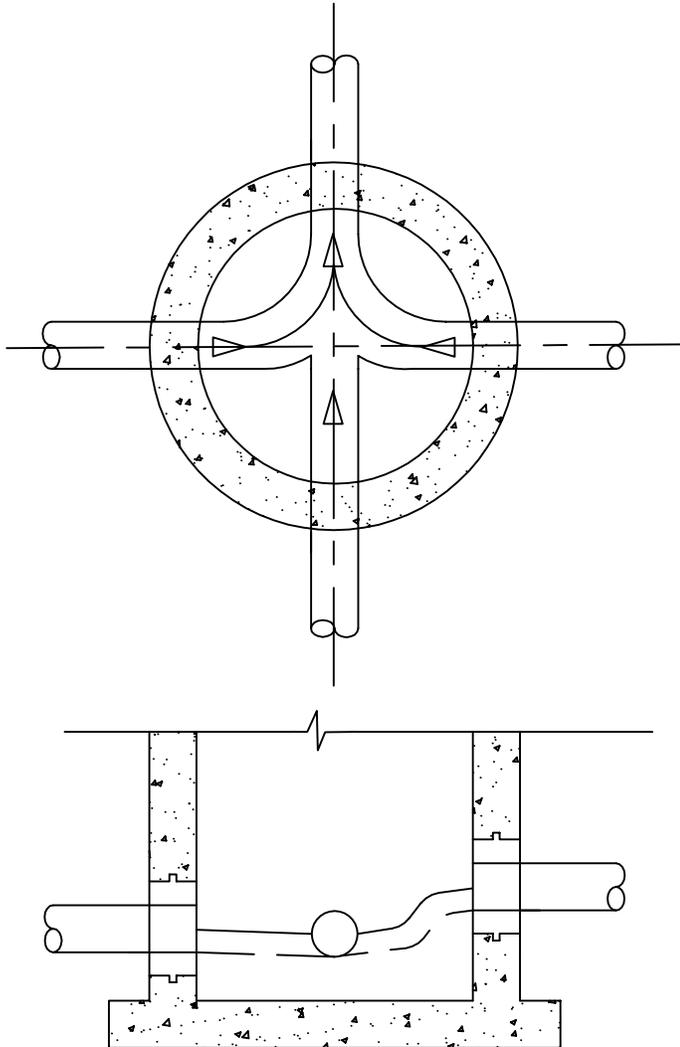


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**FORCE MAIN TIE-IN
 @ PRECAST MANHOLE**

DATE: FEBRUARY, 2012
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39



NOTES:

1. ALL INVERT CHANNELS ARE TO BE CONSTRUCTED FOR SMOOTH FLOW WITHOUT OBSTRUCTION.
2. PROPERLY SHAPED SPILLWAYS SHALL BE CONSTRUCTED BETWEEN PIPES WITH DIFFERENT INVERT ELEVATIONS TO PROVIDE FOR SMOOTH FLOWS.
3. BRICK AND CONCRETE RUBBLE PERMITTED AS FLOW CHANNEL BUILDUP.
4. SIDEWALLS OF FLOW CHANNEL SHALL BE AT LEAST HALF OF PIPE HEIGHT AT ALL POINTS.

INVERT FLOW CHANNEL DETAIL

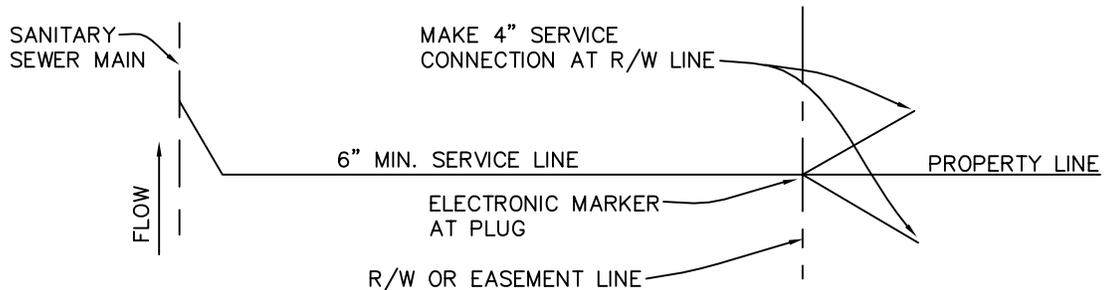
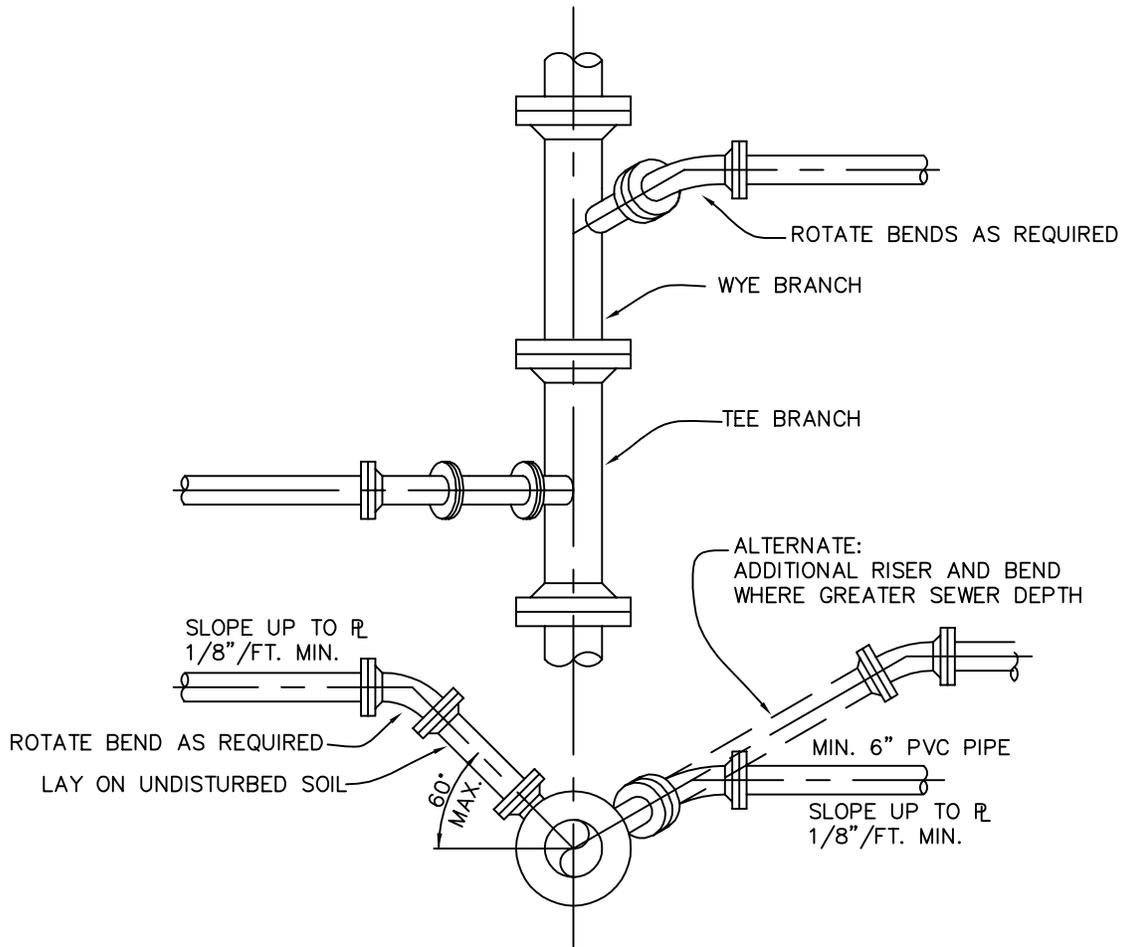


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**INVERT FLOW
 CHANNEL DETAIL**

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
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NOTE:

SERVICE LATERALS SHALL TERMINATE AT ∇ AT A DEPTH OF (3) FEET, PLUGGED WATERTIGHT AND MARKED WITH 2"x2" TREATED STAKE AND ELECTRONIC MARKER

SERVICE CONNECTION
(LATERAL)

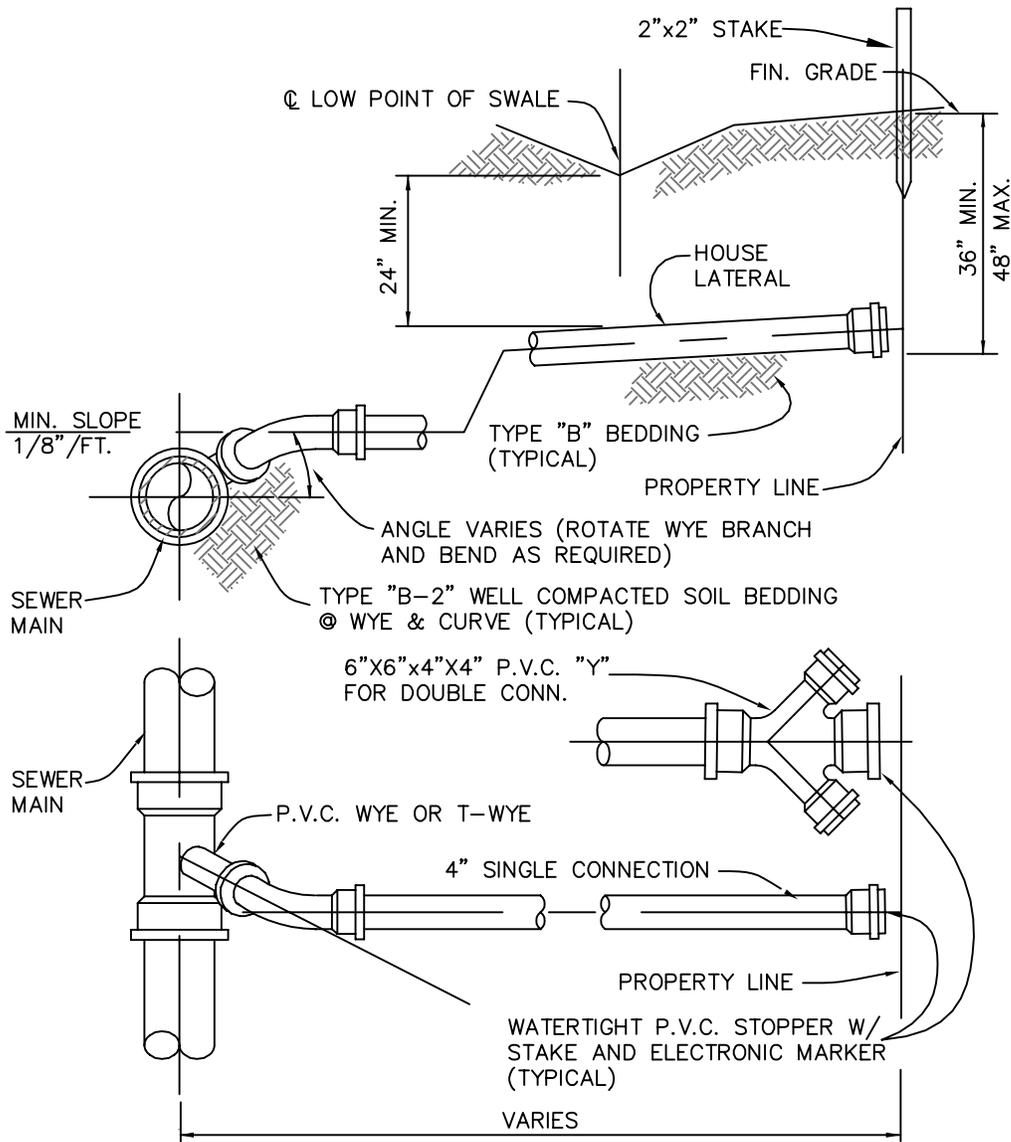


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SERVICE CONNECTION
(LATERAL)

DATE: FEBRUARY, 2012
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SHEET NUMBER
41



NOTES:

1. INVERT OF LATERAL TO BE 36" FROM FINISHED GRADE EXCEPT ON " WATER LINE SIDE " OF STREET R/W WHERE IT SHALL DROP TO 48" AS SOON AS DEPTH OF SEWER MAIN PERMITS.
2. THIS DETAIL TO BE USED WHEN TOP OF SEWER MAIN IS LESS THAN 7'-0" DEEP.
3. INSTALL MAGNETIC MARKERS AT THE END OF EACH SERVICE LINE OR OPPOSITE WYES AND RECORD LOCATION.

SERVICE CONNECTIONS
(SINGLE & DOUBLE)

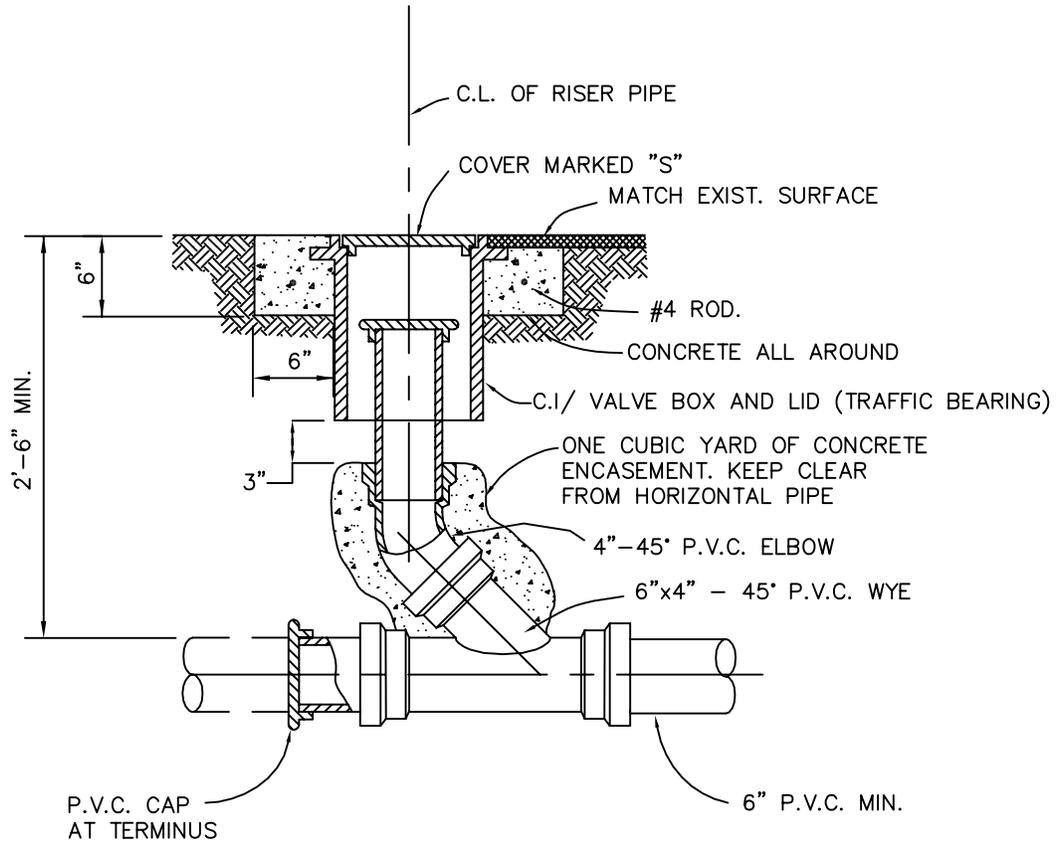
SINGLE CONNECTIONS
(SINGLE & DOUBLE)



STANDARD UTILITY DETAILS
City of Stuart Public Works Department
 121 S.W. Flagler Avenue, Stuart, Florida 34994
 (772) 288-5300

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
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TERMINAL CLEANOUT DETAIL
(POSSIBLE TRAFFIC AREA)

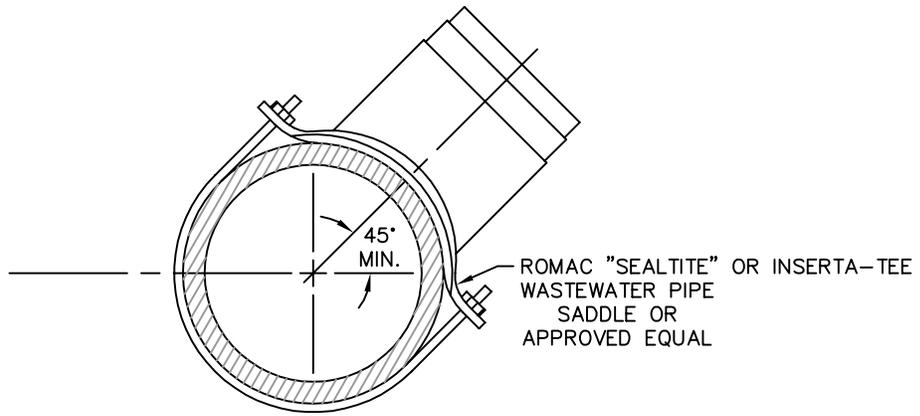


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TERMINAL CLEANOUT DETAIL
(POSSIBLE TRAFFIC AREA)

DATE: FEBRUARY, 2012
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TAPPING SADDLE TO BE
304 STAINLESS STEEL

WASTEWATER SERVICE TAP DETAIL

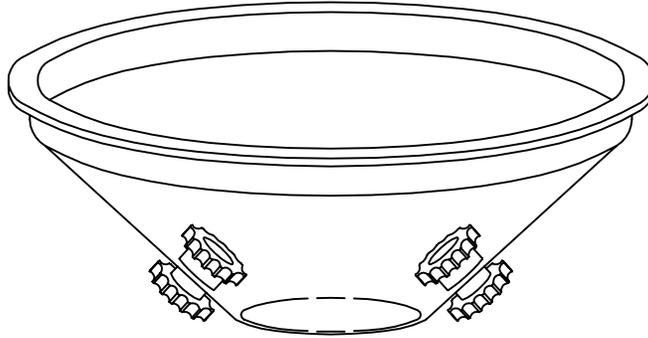


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WASTEWATER SERVICE TAP DETAIL

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NOTES:

1. SEWER RAIN GUARDS SHALL BE INSTALLED ON ALL MANHOLES WHERE GRAVITY MAINS ARE 12" OR LESS AND IN AREAS DESIGNATED BY ENGINEER TO BE IN A FLOOD AREA.
2. SEWER RAIN GUARDS SHALL BE AS MANUFACTURED BY FOSROC-PRECO INDUSTRIES, INC., OR APPROVED EQUAL.
3. RAINGUARDS MUST BE "SNUG" FIT.

WASTEWATER RAIN GUARD DETAIL

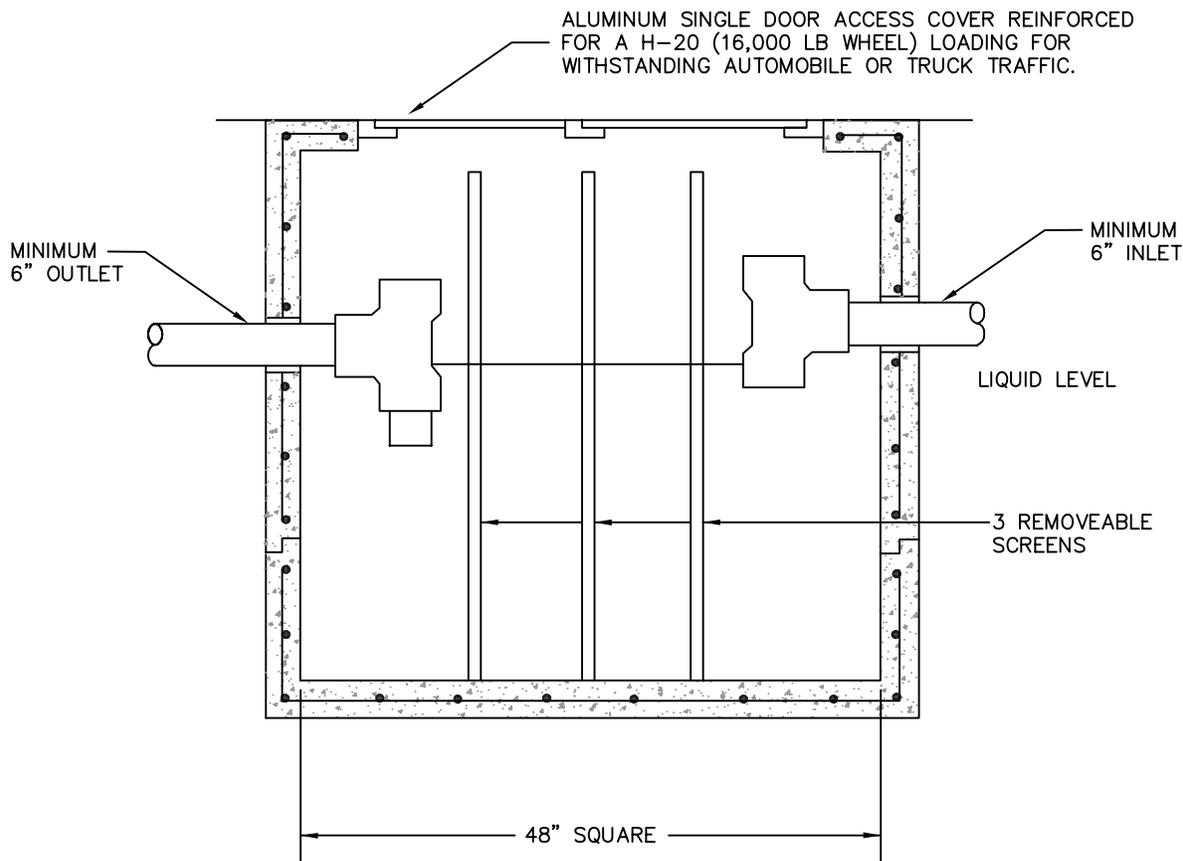


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**WASTEWATER RAIN
GUARD DETAIL**

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NOTES:

1. ALL PIPING SHALL BE MINIMUM OF 6"
2. PIPING SHALL BE INSTALLED USING A CONCRETE MANHOLE ADAPTER.
3. SANITARY 'T' SHALL BE INSTALLED 4" INSIDE MANHOLE WALLS.
4. SECTIONS SHALL BE JOINED AND SEALED WITH MINIMUM 1 3/4" "RAM-NEK" SEALER OR EQUIVALENT TO FORM A WATER TIGHT SEAL.
5. WALLS & BOTTOM SLABS MINIMUM 4" THICK REINFORCED CONCRETE.

OPTIONS:

1. TANKS INSIDE BUILDING AS IS.
2. OUTSIDE BUILDING
 - A. ABOVE SURFACE WATER
 - B. POST PROTECTION FROM TRAFFIC

LINT TRAP

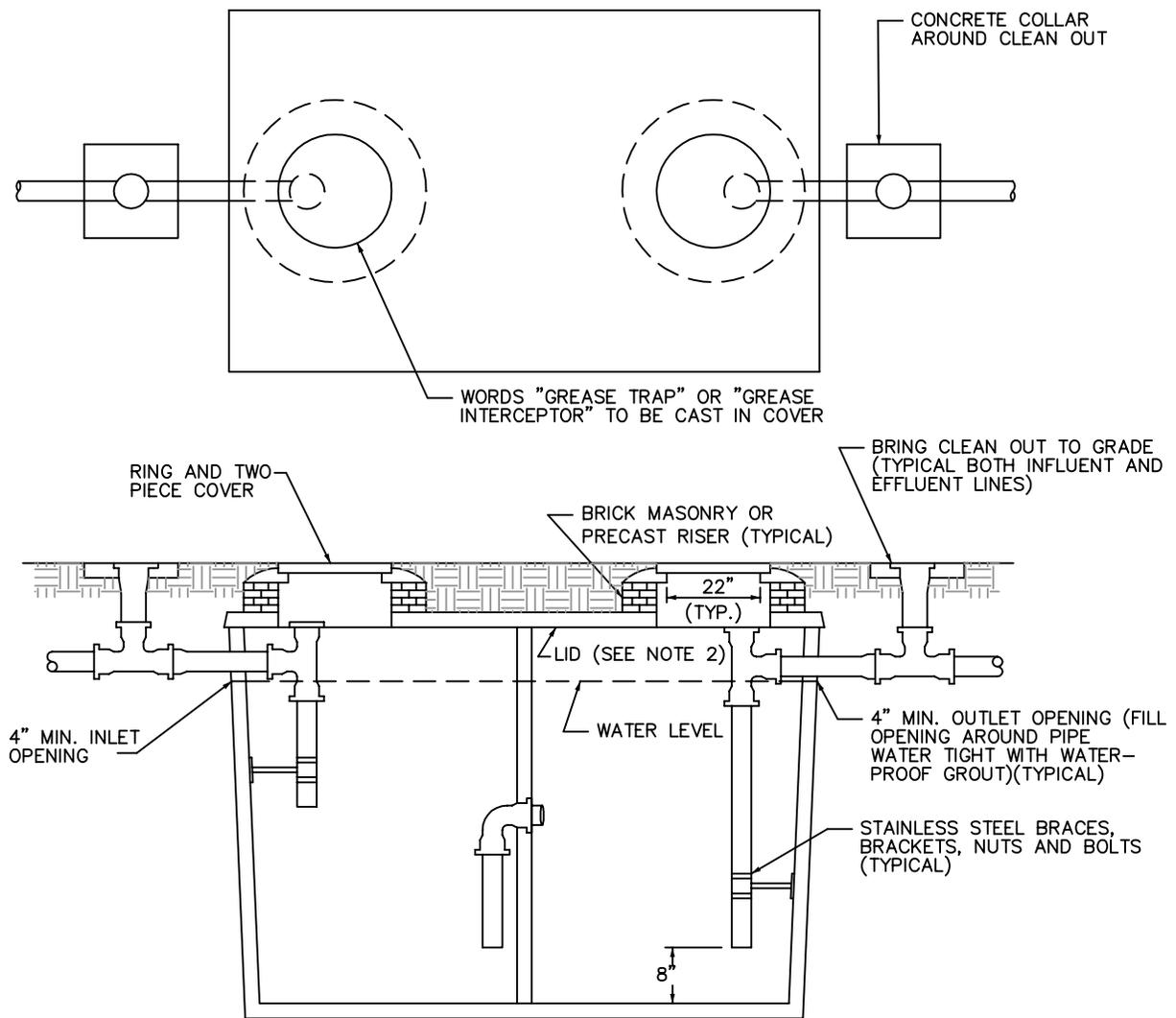


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LINT TRAP

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- NOTES:
1. GREASE TRAPS (SEPTIC TANKS) SHALL BE MANUFACTURED BY FLORIDA SEPTIC INC. OR APPROVED EQUAL STATEMENT: "THIS CONCRETE STRUCTURE MEETS OR EXCEEDS ALL THE REQUIREMENTS FOR GREASE INTERCEPTORS/SEPTIC TANKS AS IN THE FLORIDA ADMINISTRATIVE CODE, CHAPTERS 10D-6 AND 10D-9, AND CITY OF STUART" SPECIFICATIONS AND STANDARDS". THE SHOP DRAWINGS (3 COPIES MINIMUM) SHALL THEN BE SIGNED AND SEALED BY THE ENGINEER-OF-RECORD AND FORWARDED TO THE CITY FOR APPROVAL.
 2. LID TYPES:
 - A) 4" REGULAR LID
 - B) 8" TRAFFIC BEARING LID
 3. TANKS WITH REMOVABLE BAFFLES: BAFFLES MUST BE GROUTED IN PLACE

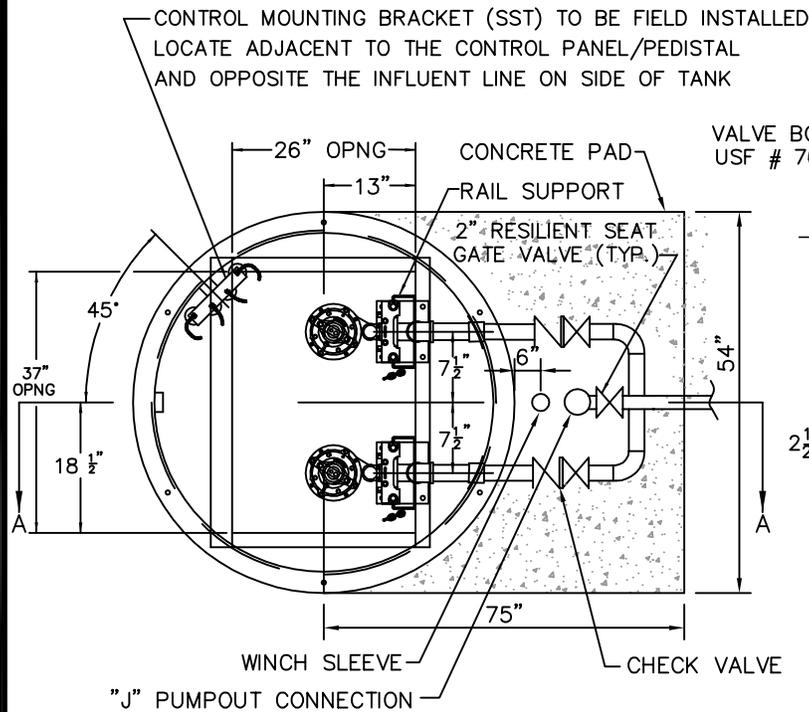
GREASE TRAP



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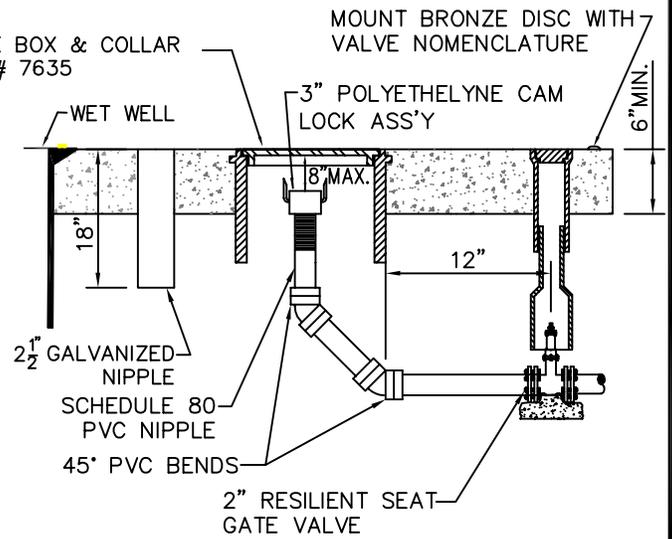
GREASE TRAP

DATE: FEBRUARY, 2012	SHEET NUMBER
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PUMP STATION PLAN VIEW

NOT TO SCALE



SECTION A-A

PUMPOUT CONNECTION

INFORMATION PROVIDED BY ENGINEER OF RECORD

A	RIM ELEVATION		FT NGVD
B	INFLUENT INVERT ELEVATION		FT NGVD
C	ALARM		FT NGVD
D	LAG PUMP "ON"		FT NGVD
E	LEAD PUMP "ON"		FT NGVD
F	PUMPS "OFF"		FT NGVD
G	WET WELL BOTTOM ELEVATION		FT NGVD
H	INFLUENT DIAMETER		IN
J	PUMPOUT CONNECTION	3	IN

NOTE:

ALL PIPING FOR VALVE AND PUMPOUT CONNECTION ASSEMBLY
SHALL BE SCHEDULE 80 P.V.C.

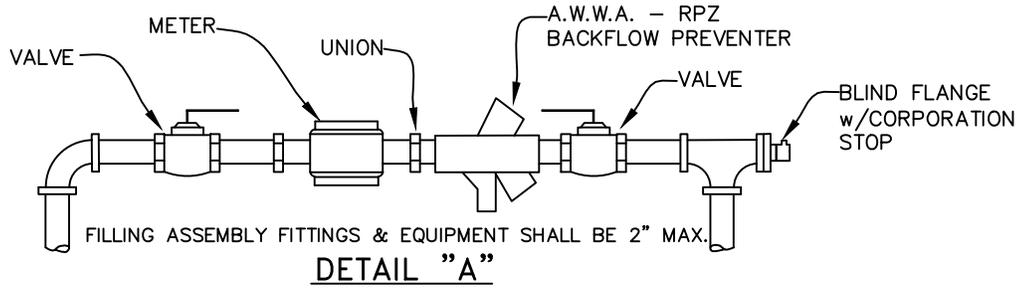


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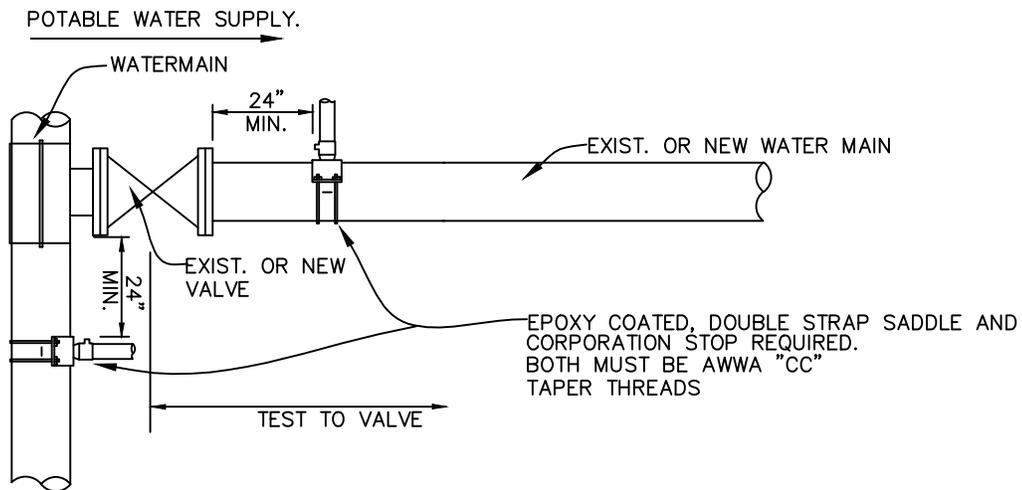
SINGLE PHASE DUPLEX PUMP STATION

DATE: FEBRUARY, 2012
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48



SEE DETAIL "A"
FOR FILLING
ASSEMBLY



NOTES:

1. GATE VALVE SHALL BE KEPT CLOSED.
2. DEPARTMENT SHALL BE NOTIFIED BEFORE FILLING AND FLUSHING.
3. AFTER BACTERIOLOGICAL CLEARANCE, GATE VALVE IS TO BE OPEN WITH VALVE BOX.
4. PRESSURE TEST PUMP CONNECTS TO SERVICE LINE OR BLOWOFF. NO EXTRA TAPS ARE PERMITTED.
5. PRESSURE GAUGE TO BE LOCATED IN VICINITY OF TEST PUMP CONNECTION.
6. GAUGE AND RISER TO BE REMOVED AFTER PRESSURE TEST.
7. REMOVE TEMPORARY CONNECTION AT CORPORATION STOPS AFTER FILLING & FLUSHING HAS BEEN COMPLETED.
8. INJECT CHLORINE ON PROJECT SIDE OF BACKFLOW PREVENTER.
9. MUST OBTAIN METER AND BACKFLOW ASSEMBLY FROM CITY OF STUART. PRIOR TO INSTALLATION.



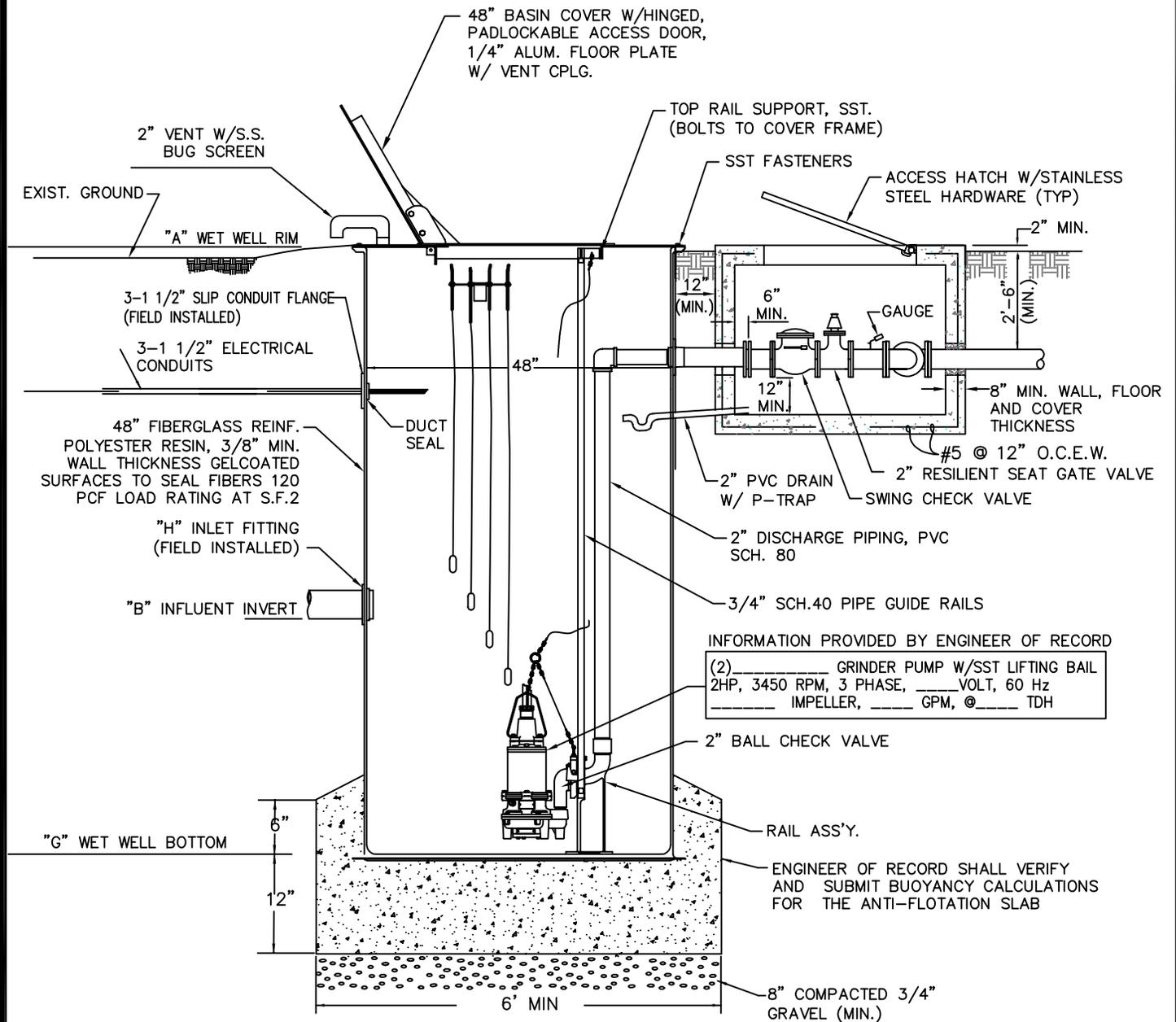
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**FILLING AND
FLUSHING CONNECTION**

DATE: FEBRUARY, 2012
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INFORMATION PROVIDED BY ENGINEER OF RECORD

(2) _____ GRINDER PUMP W/SST LIFTING BAIL
 2HP, 3450 RPM, 3 PHASE, _____VOLT, 60 Hz
 _____ IMPELLER, _____ GPM, @ _____ TDH

SECTION VIEW
 NOT TO SCALE

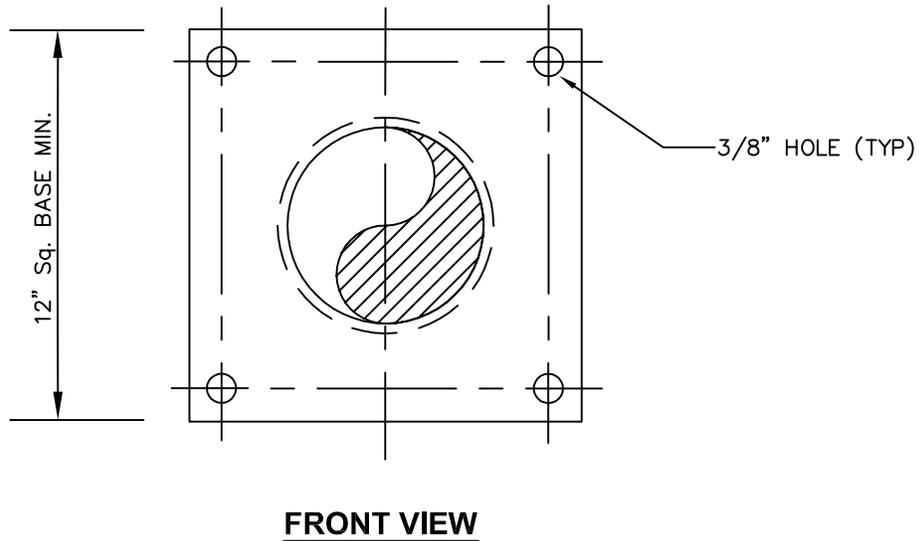
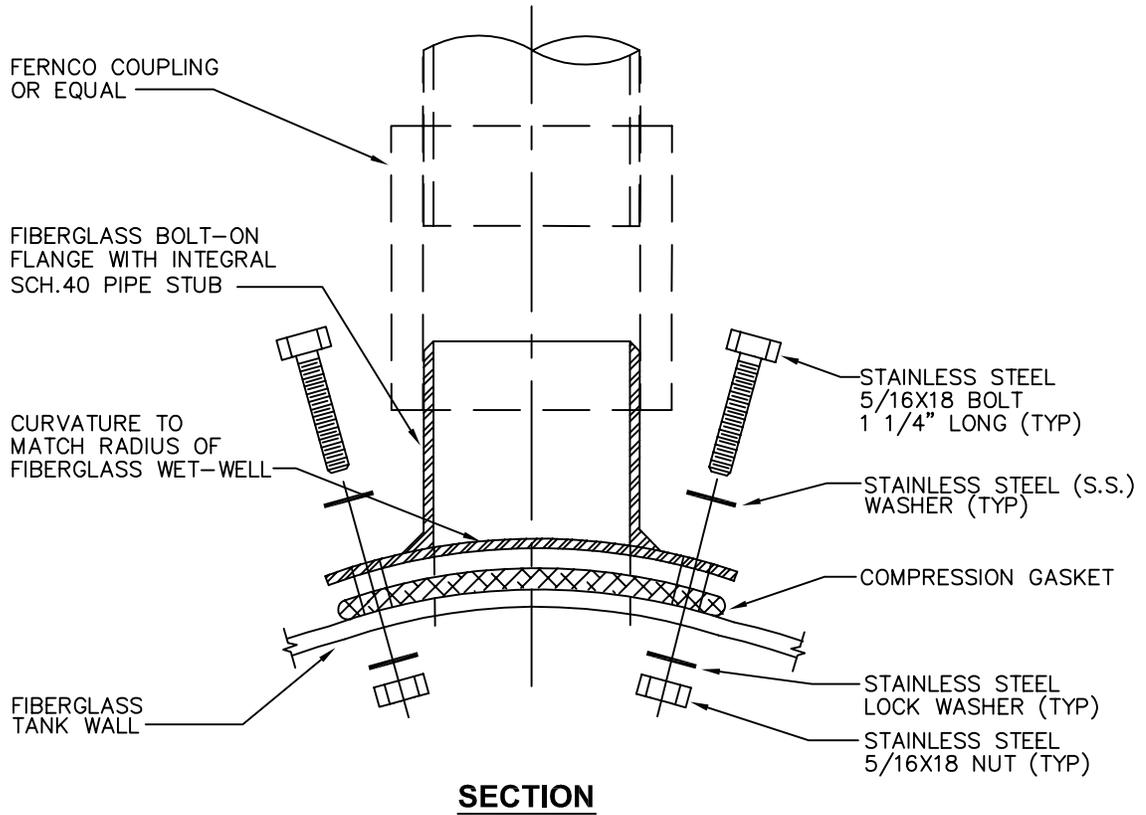


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**THREE PHASE DUPLEX
 COMMERCIAL GRINDER SYSTEM**

DATE: FEBRUARY, 2012
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SHEET NUMBER
50



NOTE:

1. THIS CONNECTOR SHALL BE INSTALLED IN FIELD AT ELEV. BASED ON EXIST. SEWER PIPE. ENCASE FERNCO COUPLING UNDER AND AROUND WITH #57 ROCK FOR BEDDING SUPPORT.
2. ALL HARDWARE SHALL BE 316 STAINLESS STEEL (S.S.).

TYPICAL WET WELL GRAVITY CONNECTOR HUB

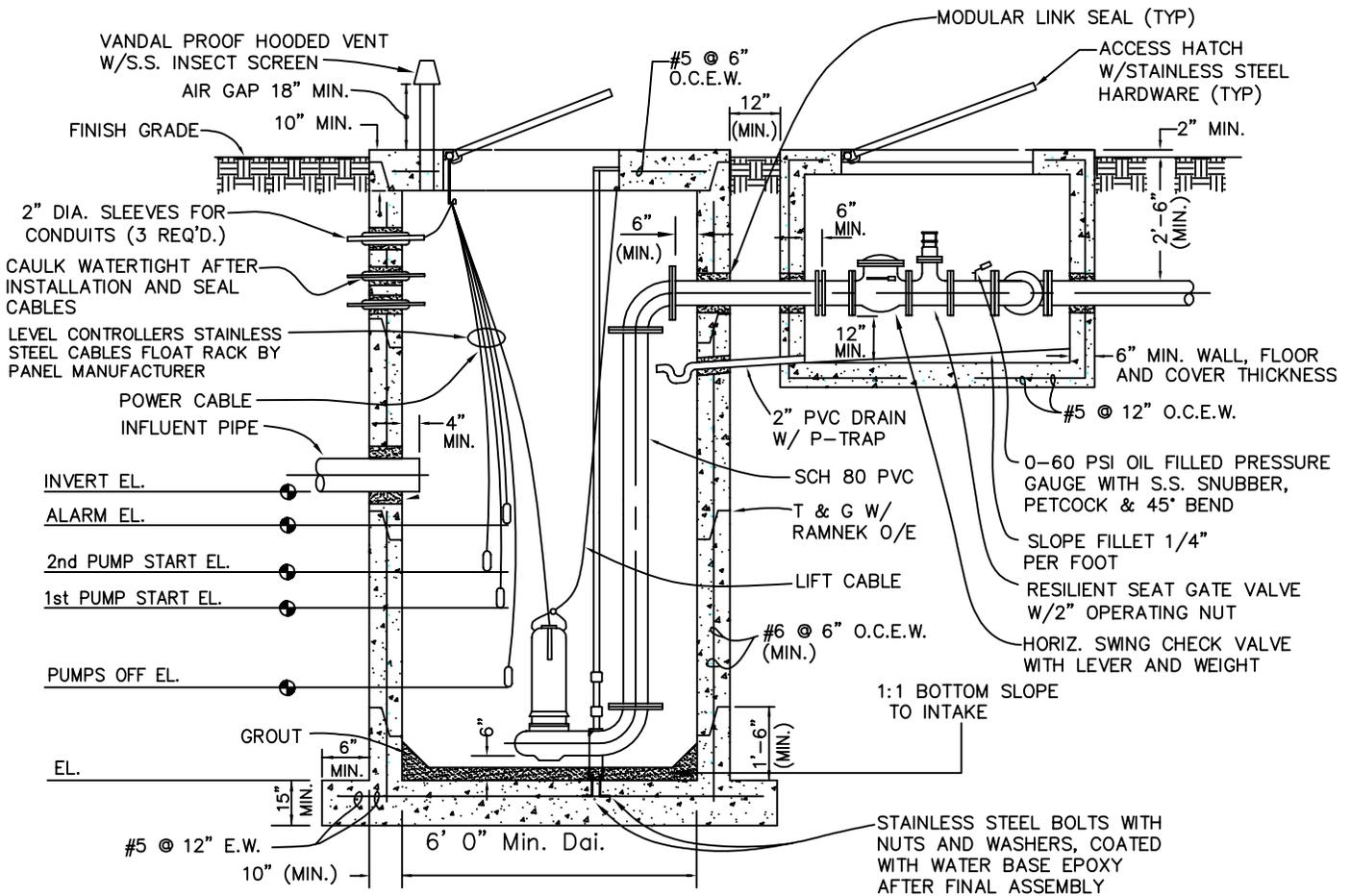
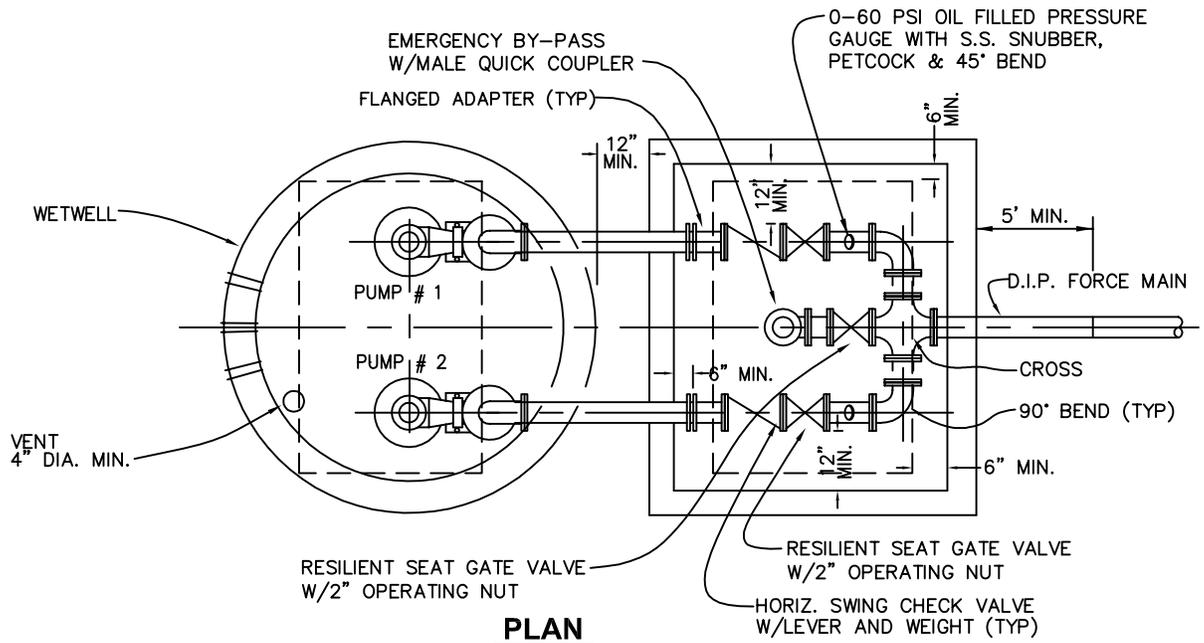


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**TYPICAL WET WELL
 GRAVITY CONNECTOR HUB**

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SHEET NUMBER
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TYPICAL LIFT STATION DETAIL



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TYPICAL LIFT STATION DETAIL

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<u>PUMP DATA:</u> MANUFACTURER, _____ MODEL No. _____ IMP. No. _____ MOTOR, _____ HP, _____ RPM, _____ VOLTS, _____ PHASE, 60 HERTZ
<u>OPERATING CONDITIONS:</u> _____ GPM AT _____ TDH. _____ % EFFICIENCY
<u>WET WELL:</u> SIZED FOR MINIMUM PUMP CYCLE TIME OF 10 MINUTES AND A MAXIMUM OF 6 PUMP STARTS PER HOUR. WORKING DEPTH _____ FT. WORKING VOLUME _____ GALS.
<u>ELECTRICAL:</u> FEEDERS AND CONDUIT _____ MAIN SWITCH _____ POLES _____ AMPS

TYPICAL LIFT STATION DATA



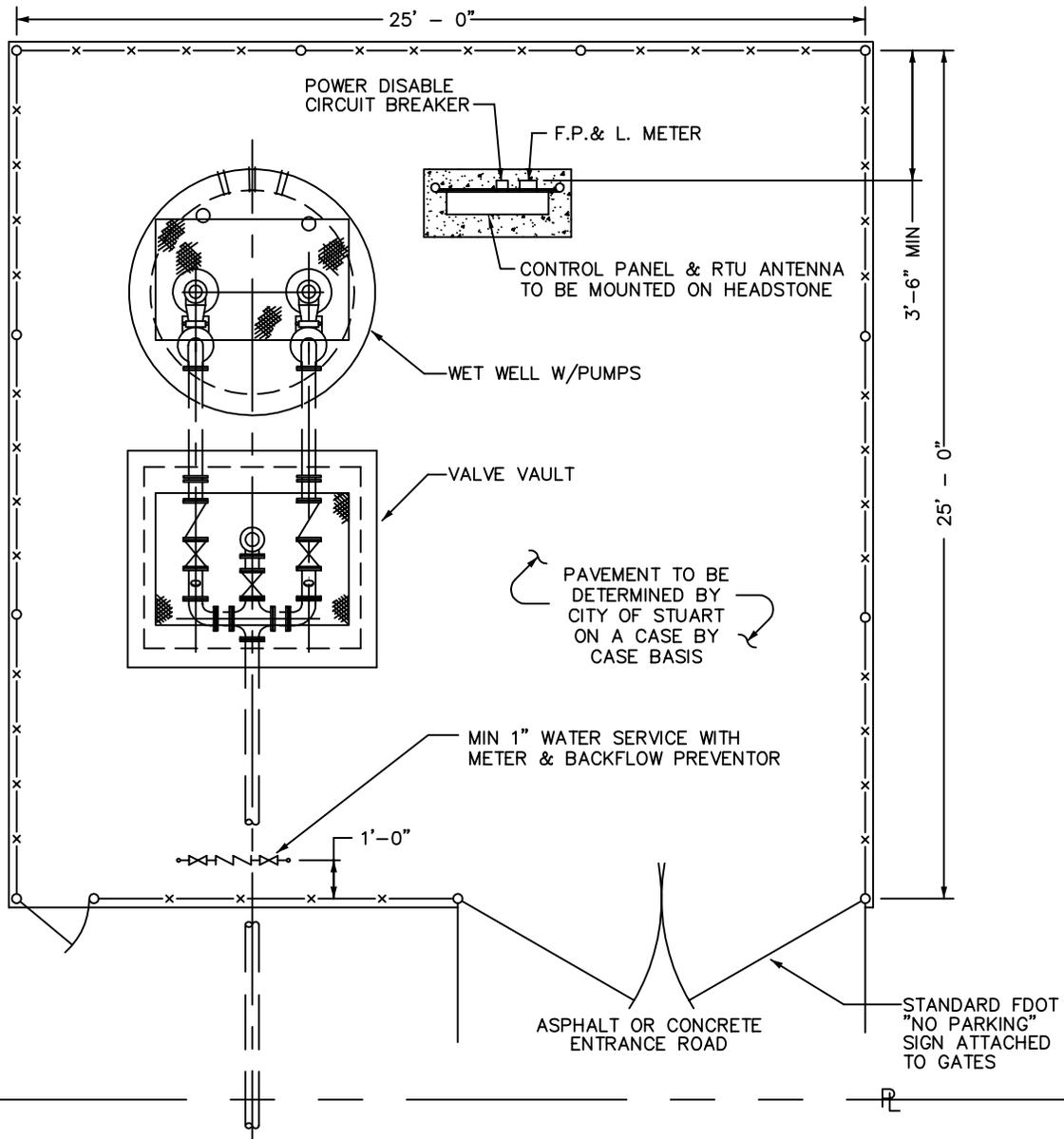
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TYPICAL LIFT STATION DATA

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THIS DRAWING DEPICTS A GENERAL SITE PLAN ONLY. THE ENGINEER OF RECORD SHALL ORIENT THE COMPONENTS OF THE SYSTEM TO MEET SPECIFIC SITE PLAN CONDITIONS



NOTES:

1. MINIMUM 12' WIDE ASPHALT OR CONCRETE ENTRANCE ROAD.
2. ENTRANCE ROAD TO BE EITHER CONCRETE OR ASPHALT AND CONFORM TO FDOT SPECIFICATIONS.
3. PROVIDE TWO (2) SIX FOOT WIDE SWING OPEN GATES AT THE ENTRANCE ROAD AND A 30" WALK-IN GATE.
4. PROVIDE A ONE INCH POLYETHYLENE WATER SERVICE LINE WITH METER BOX THAN A REDUCED PRESSURE BACKFLOW PREVENTION DEVICE LOCATED INSIDE FENCE.
5. THE CHAIN LINK FABRIC SHALL BE HOT-DIPPED GALVANIZED AFTER WEAVING. THE SIZE OF MESH SHALL BE 2 INCHES AND THE SIZE OF COATED WIRE SHALL BE 9 GAGE. FABRIC HEIGHT SHALL BE 72 INCHES. PRIVACY SLATS TO BE INSTALLED.
6. ALL POSTS, RAILS AND APPURTENANCES SHALL BE HOT-DIPPED ZINC-COATED STEEL. PIPE POSTS SHALL HAVE TOPS WHICH EXCLUDE MOISTURE. END, CORNER, PULL AND GATE POSTS SHALL BE BRACED WITH THE SAME MATERIAL AS TOP RAIL AND TRUSSED TO LINE POSTS WITH 3/8" RODS AND TIGHTENERS.
7. TOP AND BOTTOM RAIL SHALL BE 1 5/8" OD STANDARD WEIGHT PIPE, 2.27 lbs PER FT., INTERMEDIATE POSTS SHALL BE 2" OD STANDARD WEIGHT PIPE, 2.27 lbs PER FT. AND POSTS FOR SWING GATES SHALL BE 4" OD STANDARD WEIGHT PIPE, 9.11 lbs PER FT.
8. POSTS WHICH COME IN CONTACT WITH CONCRETE SHALL BE COATED WITH KOPPERS 300-M OR APPROVED EQUAL.
9. LIFT STATION MUST BE SCREENED WITH EITHER LANDSCAPING (AT PLANT HEIGHT, NO GROW IN PERIOD) OR APPROVED OPAQUE FENCE MATERIAL.
10. GATE VALVE SHALL BE LOCATED @ OR NEAR CONNECTION TO FORCEMAIN.

TYPICAL LIFT STATION SITE PLAN

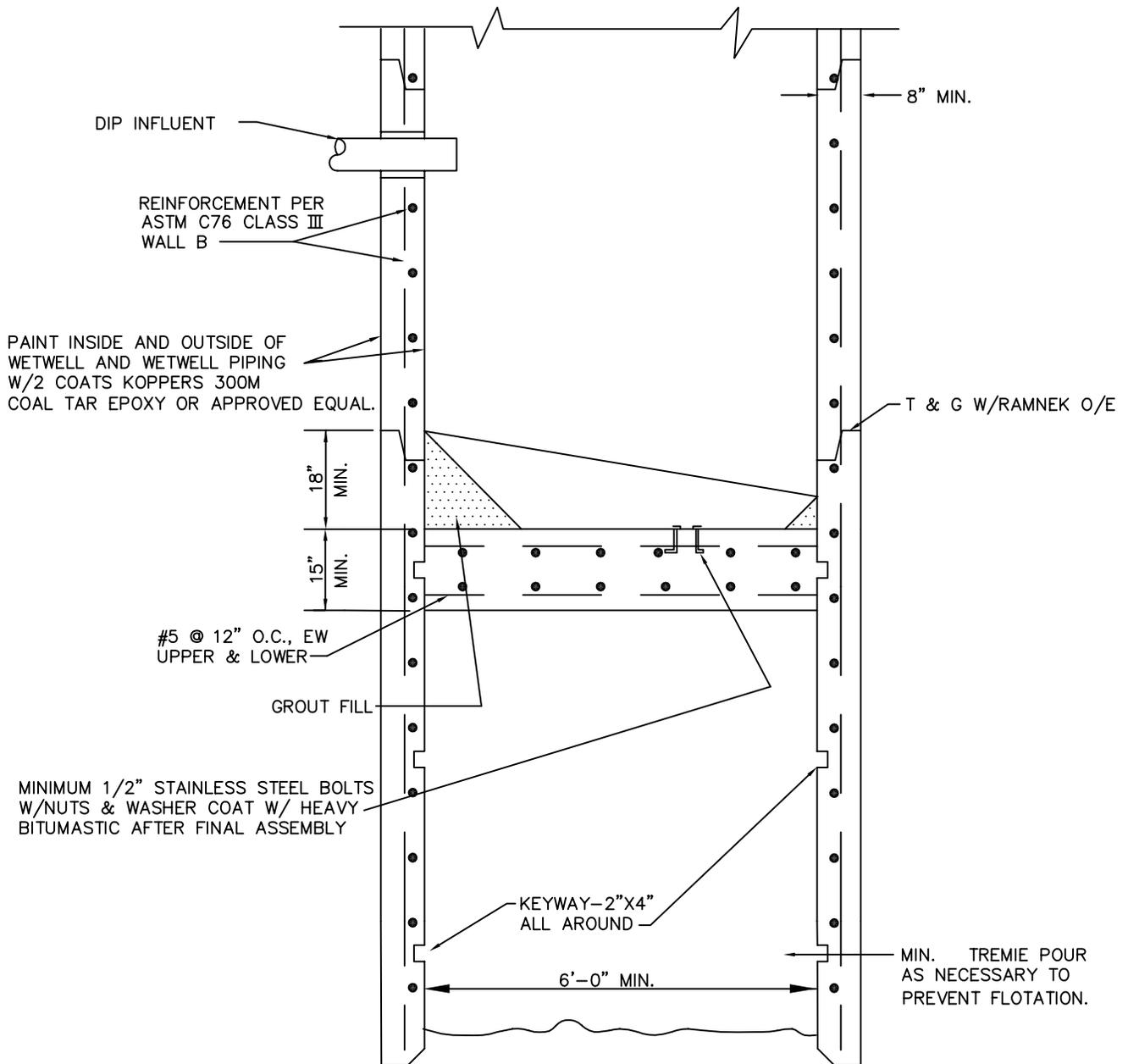


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TYPICAL LIFT STATION PLAN

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SECTION

NOTES:

1. CONCRETE WETWELL SECTIONS SHALL BE CONNECTED BY STEEL STRAPS. CONTRACTOR SHALL SUBMIT METHOD TO CITY OF STUART PUBLIC WORKS DEPARTMENT FOR APPROVAL ALONG WITH SHOP DRAWINGS.
2. SEE TYPICAL LIFT STATION DETAILS FOR ADDITIONAL DESIGN AND CONSTRUCTION STANDARDS.
3. BUOYANCY CALCULATIONS SHALL BE SUBMITTED TO THE CITY FOR REVIEW. DESIGN CRITERIA SHALL BE BASED ON DEPTH OF GROUNDWATER AT FINISHED GRADE ELEVATION.

LIFT STATION TREMIE POUR DETAIL

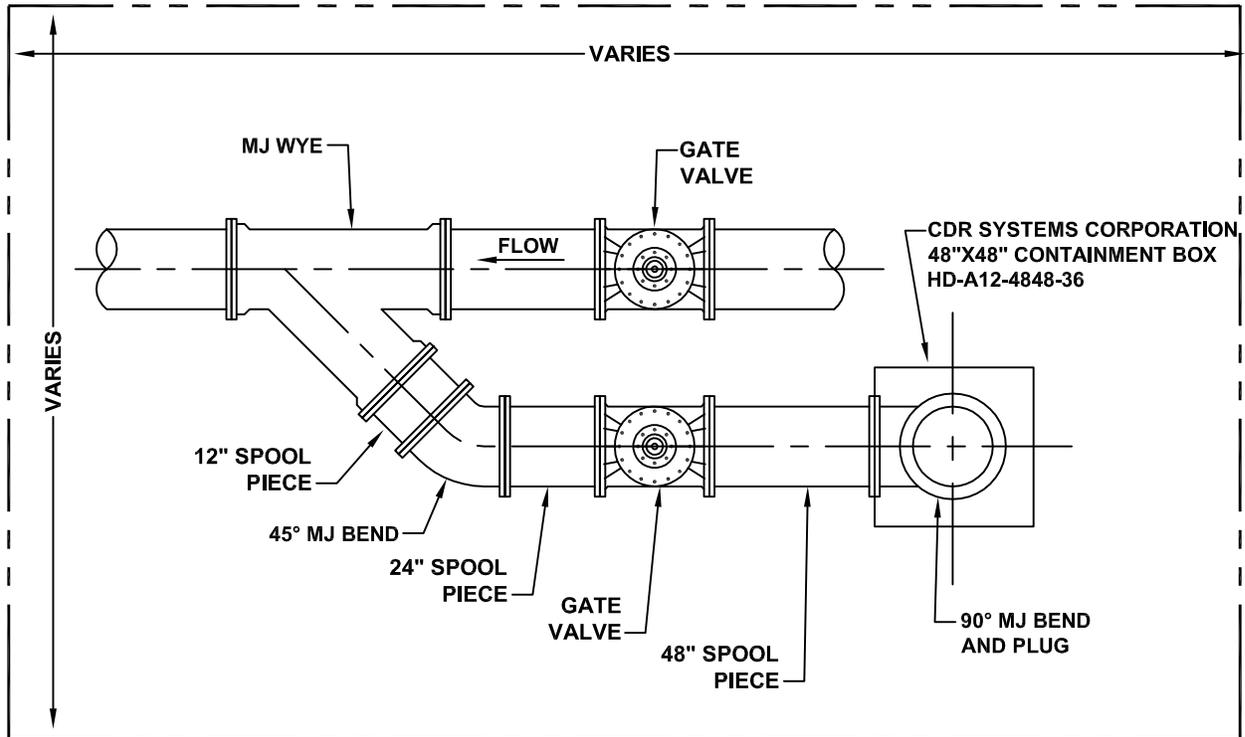
**LIFT STATION TREMIE
POUR DETAIL**



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**PIG LAUNCHING
STATION**

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480V, 3 ϕ , 3W, DUPLEX LIFT STATION EQUIPMENT SCHEDULE

SERVICE CONDUIT & WIRE	MOTOR H.P.	STARTER NEMA SIZE	PUMP C.B. RATING	MCB & ECB RATING	SERVICE DISC. RATING	GEN. RECEPT.	SPECIFIC NOTES
4#8,1" C	5	1	15	30	30/30	⑥	①
4#8,1" C	7-1/2	1	20	40	40/60	⑥	①
4#8,1" C	10	1	25	40	40/60	⑥	①
4#6,1" C	15	2	40	60	60/60	⑥	①
4#4,1" C	20	2	60	80	80/100	⑥	
3#3,1#4,1-1/4" C	25	2	70	100	100/100	⑥	
3#1,1#4,1-1/2" C	30	3	80	125	125/200	⑥	
3-1/0,1#4,2" C	40	3	90	150	150/200	⑥	
3-3/0,1#4,2" C	50	3	100	200	200/200	⑥	②

240V, 3 ϕ , 4W, DUPLEX LIFT STATION EQUIPMENT SCHEDULE

SERVICE CONDUIT & WIRE	MOTOR H.P.	STARTER NEMA SIZE	PUMP C.B. RATING	MCB & ECB RATING	SERVICE DISC. RATING	GEN. RECEPT.	SPECIFIC NOTES
5#8,1" C	1/2	1	15	30	30/30	⑦	
5#8,1" C	3/4	1	15	30	30/30	⑦	
5#8,1" C	1	1	15	30	30/30	⑦	
5#8,1" C	1-1/2	1	15	30	30/30	⑦	
5#8,1" C	2	1	15	30	30/30	⑦	
5#6,1-1/4" C" C	3	1	20	40	40/60	⑦	
5#6,1-1/4" C" C	5	1	30	50	50/60	⑦	
5#6,1-1/4" C" C	7-1/2	1	50	70	70/100	⑦	
5#4,1-1/4" C	10	2	60	90	90/100	⑦	
4#2,1#4,1-1/2" C	15	2	80	125	125/200	⑧	
4-1/0,1#4,2" C	20	3	90	150	150/200	⑧	③



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LIFT STATION
 EQUIPMENT SCHEDULE

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208V, 3 ϕ , 4W, DUPLEX LIFT STATION EQUIPMENT SCHEDULE							
SERVICE CONDUIT & WIRE	MOTOR H.P.	STARTER NEMA SIZE	PUMP C.B. RATING	MCB & ECB RATING	SERVICE DISC. RATING	GEN. RECEPT.	SPECIFIC NOTES
5#8,1" C	1/2	1	15	30	30/30	7	
5#8,1" C	3/4	1	15	30	30/30	7	
5#8,1" C	1	1	15	30	30/30	7	
5#8,1" C	1-1/2	1	15	30	30/30	7	
5#8,1" C	2	1	15	30	30/30	7	
5#6,1-1/4" C" C	3	1	20	40	40/60	7	
5#6,1-1/4" C" C	5	1	40	60	60/60	7	
5#4,1-1/4" C" C	7-1/2	1	50	80	80/100	7	
4#3,1#4,1-1/4" C	10	2	60	100	100/100	7	
4-1/0,1#4,2" C	15	3	90	150	150/200	8	
4-3/0,1#4,2-1/2" C	20	3	90	150	200/200	8	3
240V, 1 ϕ , 3W, DUPLEX LIFT STATION EQUIPMENT SCHEDULE 5							
SERVICE CONDUIT & WIRE	MOTOR H.P.	STARTER NEMA SIZE	PUMP C.B. RATING	MCB & ECB RATING	SERVICE DISC. RATING	GEN. RECEPT.	SPECIFIC NOTES
4#8,1" C	1/4	1	15	30	30/30	9	
4#8,1" C	1/3	1	15	30	30/30	9	
4#8,1" C	1/2	1	15	30	30/30	9	
4#8,1" C	3/4	1	15	30	30/30	9	
4#8,1" C	1	1	15	40	40/60	9	
4#8,1" C	1-1/2	1	20	40	40/60	9	
4#8,1" C	2	1	25	50	50/60	9	
3#6,1#8,1" C	3	1	35	60	60/60	9	4



STANDARD UTILITY DETAILS
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LIFT STATION EQUIPMENT SCHEDULE

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GENERAL ELECTRICAL NOTES

1. SERVICE CONDUIT AND WIRE INDICATED IN SCHEDULE SHALL BE 100 FEET OR LESS. FOR LENGTHS GREATER THAN 100 FEET, PROVIDE FLORIDA REGISTERED ELECTRICAL ENGINEER'S DESIGN.
2. INTERRUPTING RATINGS OF ALL SHORT CIRCUIT AND GROUND FAULT PROTECTION EQUIPMENT SHALL BE PROVIDED AS PER THE DESIGN OF A FLORIDA REGISTERED ELECTRICIAN ENGINEER. A FAULT CURRENT LETTER FROM FPL SHALL BE PROVIDED.
3. FOR MOTOR HP NOT EQUAL TO NEC STANDARD SIZE, USE THE NEXT STANDARD SIZE RATING.
4. THE PREFERRED POWEWR SUPPLY FOR LIFT STATIONS SHALL BE 240V, 3PH, 4W.
5. GRINDER LIFT STATIONS (LESS THAN 2 HP) SHALL BE PROVIDED WITH AN AUTO DIALER SYSTEM AND REGULAR LIFT STATIONS (LARGER THAN 2 HP) SHALL BE PROVIDED WITH AN RTU SYSTEM.

SPECIFIC ELECTRICAL NOTES

- ① SPECIAL SERVICE VOLTAGE MAY BE PERMITTED BY PERMISSION OF THE CITY OF STUART. THE PREFERRED VOLTAGE FOR 15 HP AND LESS IS 230V, 3 ϕ , 4W.
- ② COORDINATE WITH ELECTRICAL UTILITY. PROVIDE REDUCED VOLTAGE STARTERS AS REQUIRED.
- ③ SPECIAL SERVICE VOLTAGE MAY BE PERMITTED BY PERMISSION OF THE CITY OF STUART. THE PREFERRED VOLTAGE FOR 20 HP AND GREATER IS 480V, 3 ϕ , 3W.
- ④ SPECIAL SERVICE VOLTAGE MAY BE PERMITTED BY PERMISSION OF THE CITY OF STUART. THE PREFERRED VOLTAGE FOR 3 HP AND LESS IS 230V, 3 ϕ , 4W.
- ⑤ FOR SMALL GRINDER PUMP STATIONS WHERE ONLY 1 ϕ , 240, 3W SERVICE IS AVAILABLE; PROVIDE CAPACITOR SYSTEM TO PROVIDE 3 ϕ POWER OUTPUT TO PUMPS.
- ⑥ CITY DOES NOT CURRENTLY USE 480V STANDBY PORTABLE GENERATORS. THEREFORE DIESEL ENGINE PUMPS OR LOCAL DIESEL STAND BY GENERATORS SHALL BE PROVIDED.
- ⑦ PROVIDE 120/240V, 3 ϕ , 4W, WITH GROUND, MALE RECEPTACLE, 100 AMP, PYLE NATIONAL PART NUMBER JRE4100, CONFIRM WITH CITY BEFORE CONSTRUCTION.
- ⑧ PROVIDE 120/240V, 3 ϕ , 4W, WITH GROUND, MALE RECEPTACLE, 200 AMP, RUSSELSTOLL PART NUMBER FCF3144, CONFIRM WITH CITY BEFORE CONSTRUCTION.
- ⑨ PROVIDE 120/240V, 1 ϕ , 3W, WITH GROUND, MALE RECEPTACLE, HUBBLE 8450A, CONFIRM WITH CITY BEFORE CONSTRUCTION.



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ELECTRICAL NOTES

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SHEET NUMBER
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ELECTRICAL LEGEND

A	AMBER LENS	IL	INDICATING LIGHT
AB	ALARM BELL	ISR	INTRINSICALLY SAFE RELAY
AL	ALARM LIGHT	LA	LIGHTNING ARRESTOR
ALT	ALTERNATOR	LS	LEVEL SWITCH
ASB	ALARM SILENCE PUSH BUTTON	MCB	MAIN CIRCUIT BREAKER
ASR	ALARM SILENCE RELAY	MS	STARTER
CR	CONTROL RELAY	OL	HEATER
CCB	CONTROL CIRCUIT BREAKER	PCB	PUMP CIRCUIT BREAKER
ETM	ELAPSED TIME METER	PM	PHASE MONITOR
ECB	EMERGENCY CIRCUIT BREAKER	PS	PRESSURE SWITCH
FL	FLASHER	R	RED LENS
F	FUSE	RL	RUN LIGHT
GFI	CONVENIENCE RECEPTACLES	RTU	REMOTE TELEMTRY UNIT
GP	GENERATOR PLUG	SC	SURGE CAPACITOR
GR	GENERATOR RECEPTACLE	XFMR	TRANSFORMER
HOA	HAND OFF AUTO SWITCH		

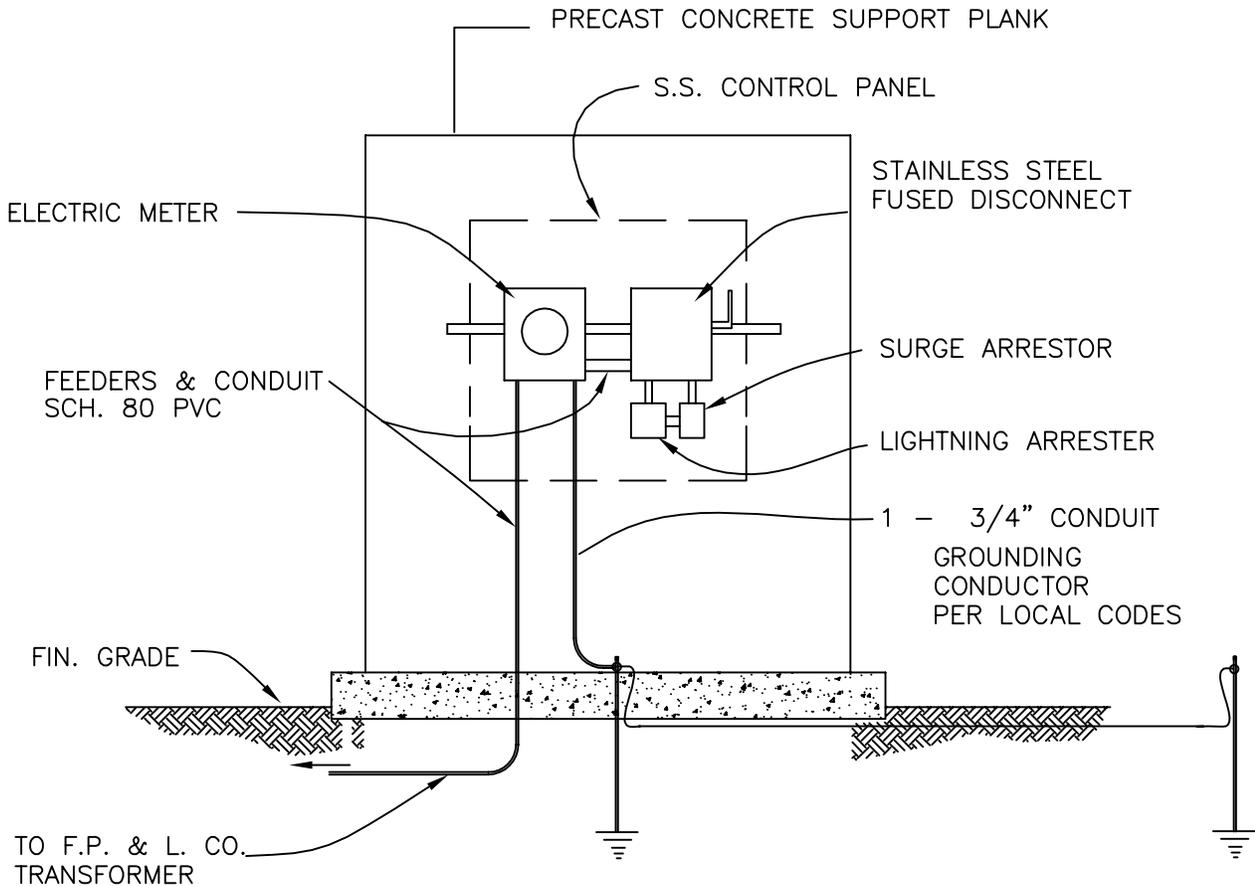


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ELECTRICAL LEGEND

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5/8"X20' GROUND ROD, QUANTITY OF 2, 72" APART TOP END TO BE 6" ABOVE SLAB / ROCK POSITIONED THROUGH 4" PVC SLEEVE IN CONCRETE / ROCK

NOTES:

1. NO PENETRATION THROUGH PANEL TOPS.

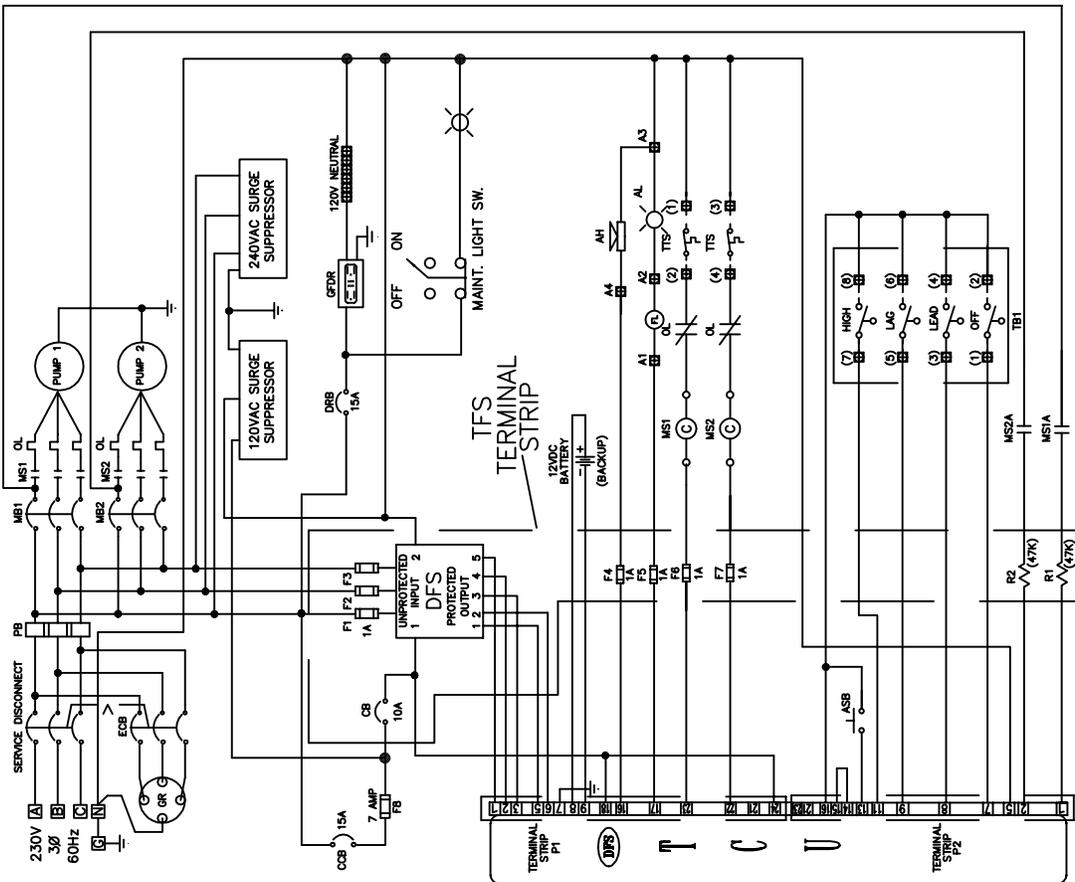
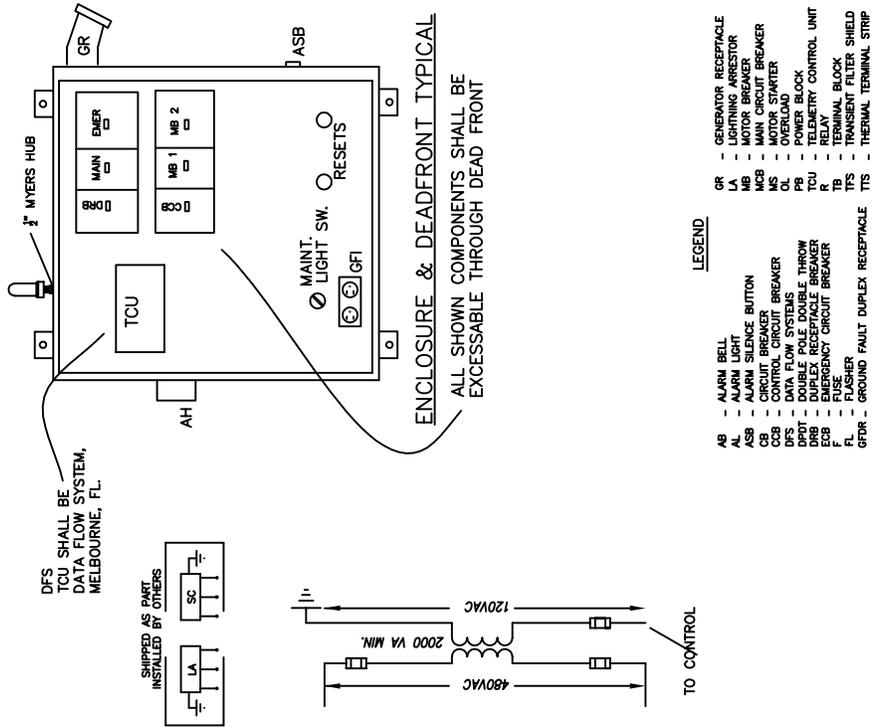


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**L/S CONTROL PANEL
 REAR VIEW**

DATE: FEBRUARY, 2012
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SHEET NUMBER
62

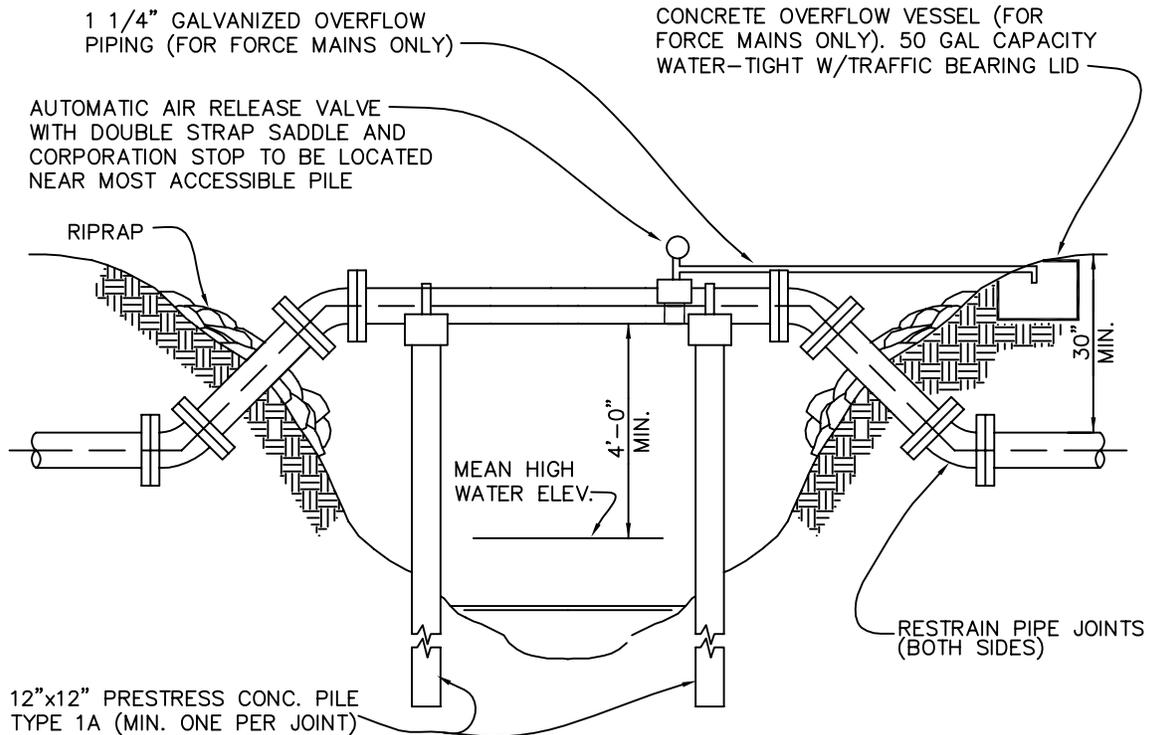


STANDARD UTILITY DETAILS
City of Stuart Public Works Department
 121 S.W. Flagler Avenue, Stuart, Florida 34994
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TCU PANEL

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
63



NOTES

1. ALL EXPOSED PIPES SHALL BE DUCTILE IRON WITH FLANGED FITTINGS. RETAINER GLANDS. UNIFLANGE TYPE FITTINGS ARE NOT TO BE SUBSTITUTED FOR FLANGED FITTINGS.
2. SPAN HEIGHT AS REQUIRED BY PERMITTING AGENCY.
3. MAXIMUM SUPPORT SPACING SHALL BE IN ACCORDANCE TO MANUFACTURERS RECOMMENDATION.
4. FAN GUARDS ARE REQUIRED, SEE STANDARD DETAIL.
5. ALL EXPOSED PIPING, GUARDS AND FITTINGS SHALL BE PAINTED.
6. PIPE SHALL BE CRADLED ON NEOPRENE.
7. TIE-DOWN STRAPS MUST PROPERLY FIT AND SECURE PIPE IN CRADLE.
8. FOR CONCRETE PILES SEE DETAILS
9. ALL PAINT SPECIFICATIONS MUST BE SUBMITTED AND APPROVED BY MARTIN COUNTY UTILITIES PRIOR TO APPLICATION.
10. CONCRETE IN C.I.P. CAP SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 3,400 p.s.i.
11. ALL REINFORCING STEEL SHALL BE ASTM A615 GRADE 60.
12. THE PILES SHALL BE DRIVEN TO A MINIMUM PENETRATION OF 20'-0" UNLESS THE PRESENCE OF POOR SOILS (N<3) NECESSITATE A DEEPER PENETRATION.
13. PROVIDE TWO FULL LENGTHS OF RESTRAINED D.I.P. BOTH SIDES OF CROSSING.
14. CONTINUE LOCATOR WIRE ACROSS CANAL CROSSING.

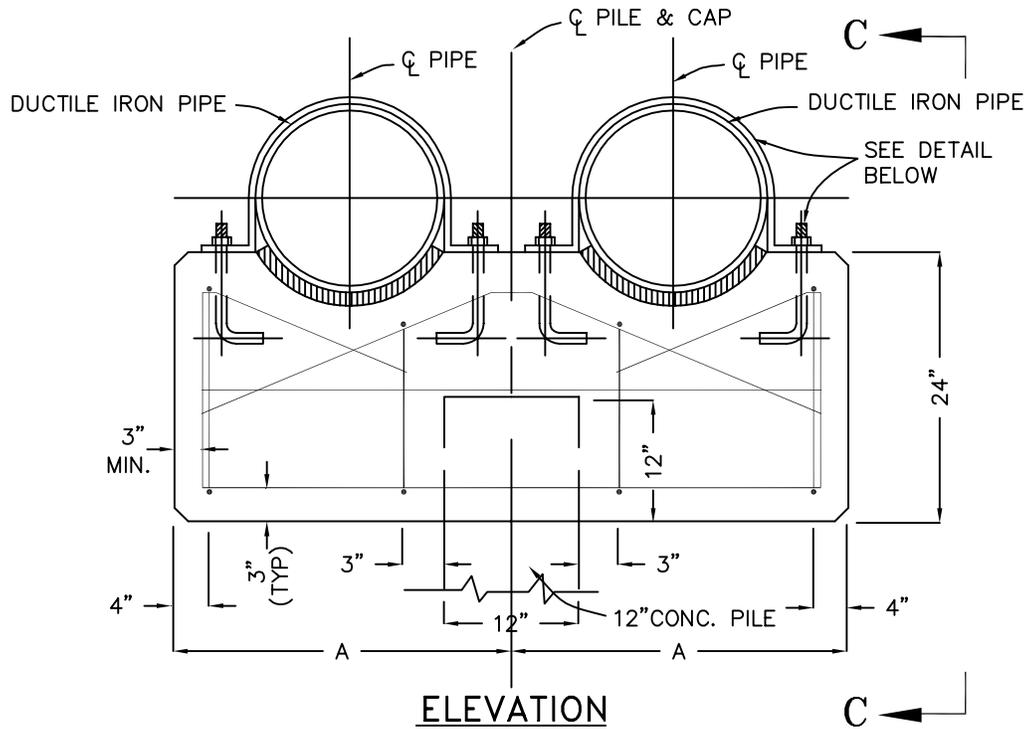


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TYPICAL UTILITIES CANAL CROSSING

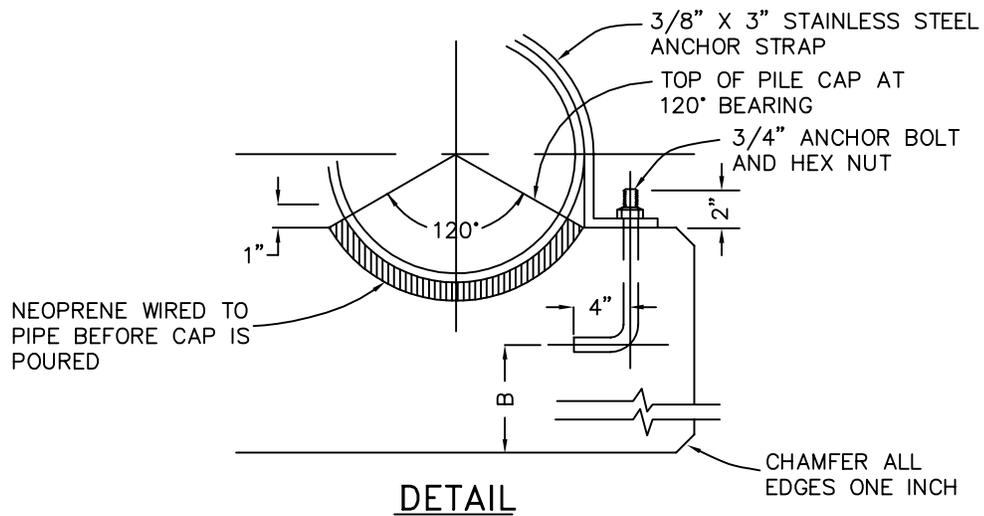
DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
65



NOTE:

1. ALL REINF. STEEL SHALL BE No. 4 BARS.
2. ALL HARDWARE SHALL BE STAINLESS STEEL.
3. SEE SHEET 26A FOR ADDITIONAL DIMENSIONS.

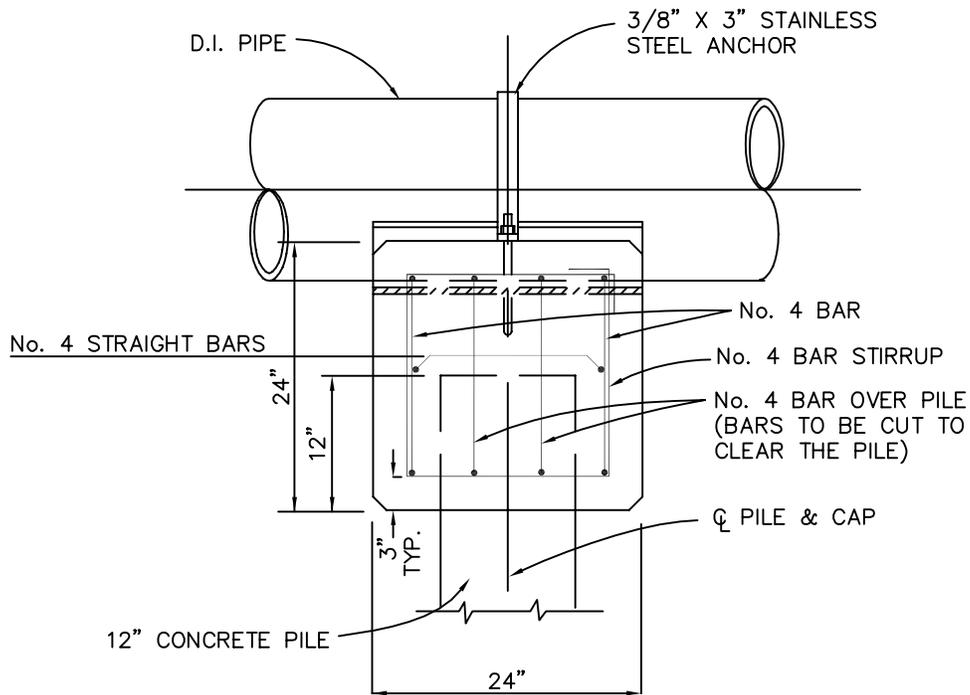


STANDARD UTILITY DETAILS
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**PILE CAP SUPPORT
 DETAIL DUAL PIPE (ELEVATION)**

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
66



VIEW C-C

NOTE: ALL HARDWARE SHALL BE STAINLESS STEEL.

PIPE DIA.	PILE SIZE	DIMENSIONS	
		A	B
4"	12"x12"	16"	16"
8"	12"x12"	20"	16"
12"	12"x12"	26"	16"
16"	12"x12"	30"	16"

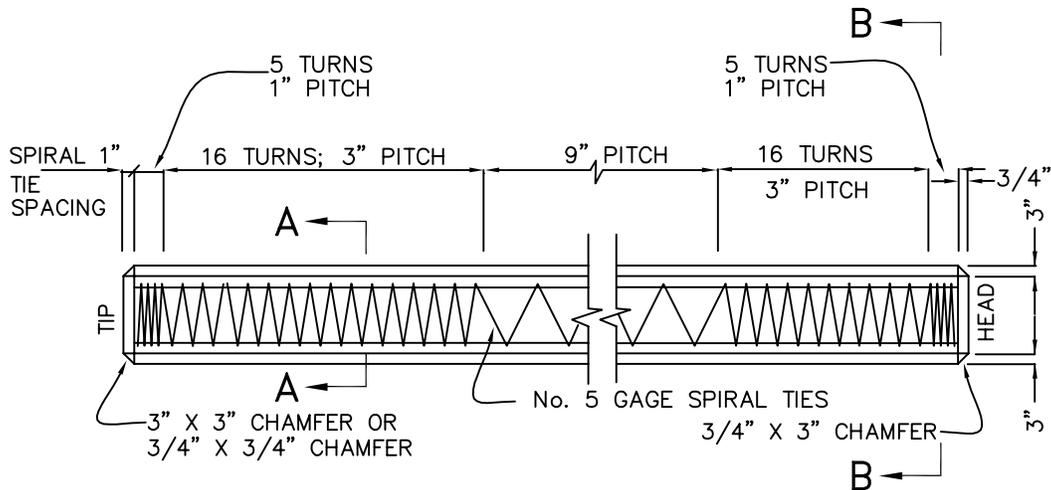


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City of Stuart Public Works Department
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**PILE CAP SUPPORT
 DETAIL DUAL PIPE (VIEW C-C)**

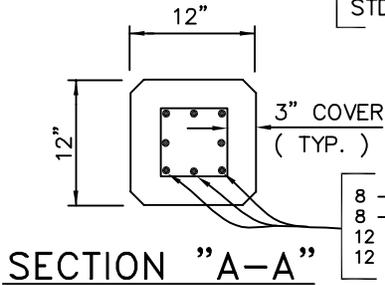
DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
67

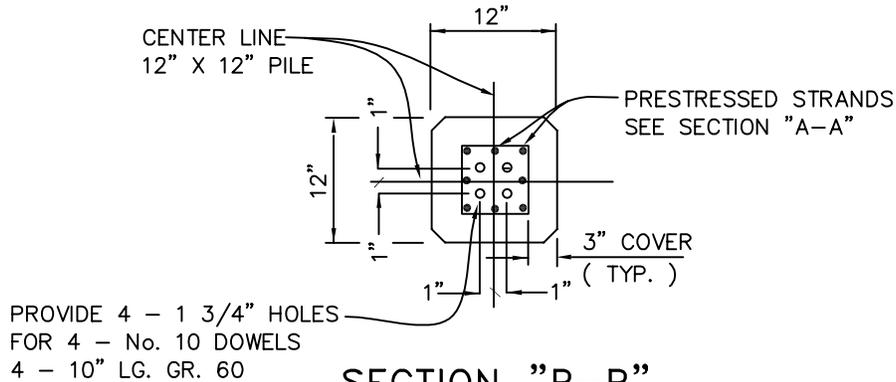


ELEVATION OF 12" X 12" PILE

MAXIMUM LENGTH - 50' SINGLE POINT PICK-UP
 MAXIMUM LENGTH - 70' DOUBLE POINT PICK-UP
 OVER 70' TRIPLE POINT PICK-UP SEE F.D.O.T
 STD. DRAWINGS INDEX No. 600



8 - 7/16" \emptyset L.R.S. - AS - 0.115 in² - 270K @ 21,700# EA. SPACED 2 9/16" CTRS.
 8 - 1/2" \emptyset S.R. - AS - 0.144 in² - 250K @ 24,100# EA. SPACED 2 1/2" CTRS.
 12 - 3/8" \emptyset L.R.S. - AS - 0.085 in² - 270K @ 14,800# EA. SPACED 1 11/16" CTRS.
 12 - 3/8" \emptyset S.R. - AS - 0.085 in² - 270K @ 15,600# EA. SPACED 1 11/16" CTRS.



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CONCRETE PILE DETAIL

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
67A

NOTES:

1. PILE BUILD-UP, WHEN REQUIRED, SHALL BE ACCOMPLISHED WITH 4 #10 DOWEL 3" LONG SET IN 1 3/4" DIA. DRILLED HOLES WITH EPOXY MORTAR. PROVIDE 4 #5 LONGITUDINAL BARS AS LONGITUDINAL REINFORCING. SPIRAL TIES SHALL BE #5 CONTINUOUS. SPIRALS SHALL BE TIED TO AT LEAST TWO LONGITUDINAL BARS FOR EACH WRAP.
2. PILING AS PER F.D.O.T. STANDARD SPECIFICATION SECTION 455.
3. SPIRAL TIES: EACH WRAP OF SPIRALS SHALL BE TIED TO AT LEAST TWO CORNER STRANDS. ONE TURN REQUIRED FOR SPIRAL SPLICES. SPIRALS MAY BE MANUFACTURED FROM STOCK MEETING REQUIREMENTS OF ANY GRADE OF REINFORCING STEEL OR HARD DRAWN STEEL.
4. CONCRETE CLASS: CONCRETE FOR ALL PILES SHALL BE CLASS V (SPECIAL). CLASS V (SPECIAL) CONCRETE SHALL CONFORM TO THE REQUIREMENTS FOR CLASS V CONCRETE EXCEPT FOR THE 28 DAY STRENGTH AS NOTED BELOW.
5. CONCRETE STRENGTH: THE CYLINDER STRENGTH SHALL BE 6,000 p.s.i. MINIMUM AT 28 DAYS AND 4,000 p.s.i. MINIMUM AT TRANSFER OF THE PRESTRESSING FORCE.
6. PILES SHALL BE MARKED AT PICK-UP POINTS TO INDICATE PROPER POINTS FOR ATTACHING HANDLING LINE.
7. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE EITHER GRADE 40 OR 60. UNLESS OTHERWISE NOTED. SEE ENVIRONMENTAL REQUIREMENTS NOTE FOR SPLICE REINFORCING ONLY (SPIRAL TIES AND PRESTRESSING STRAND ARE UNCOATED FOR ALL ENVIRONMENTAL CLASSES).
8. STRAND NOMENCLATURE: S.R. = STRESS RELIEVED STRAND L.R.S = LOW-RELAXATION STRAND

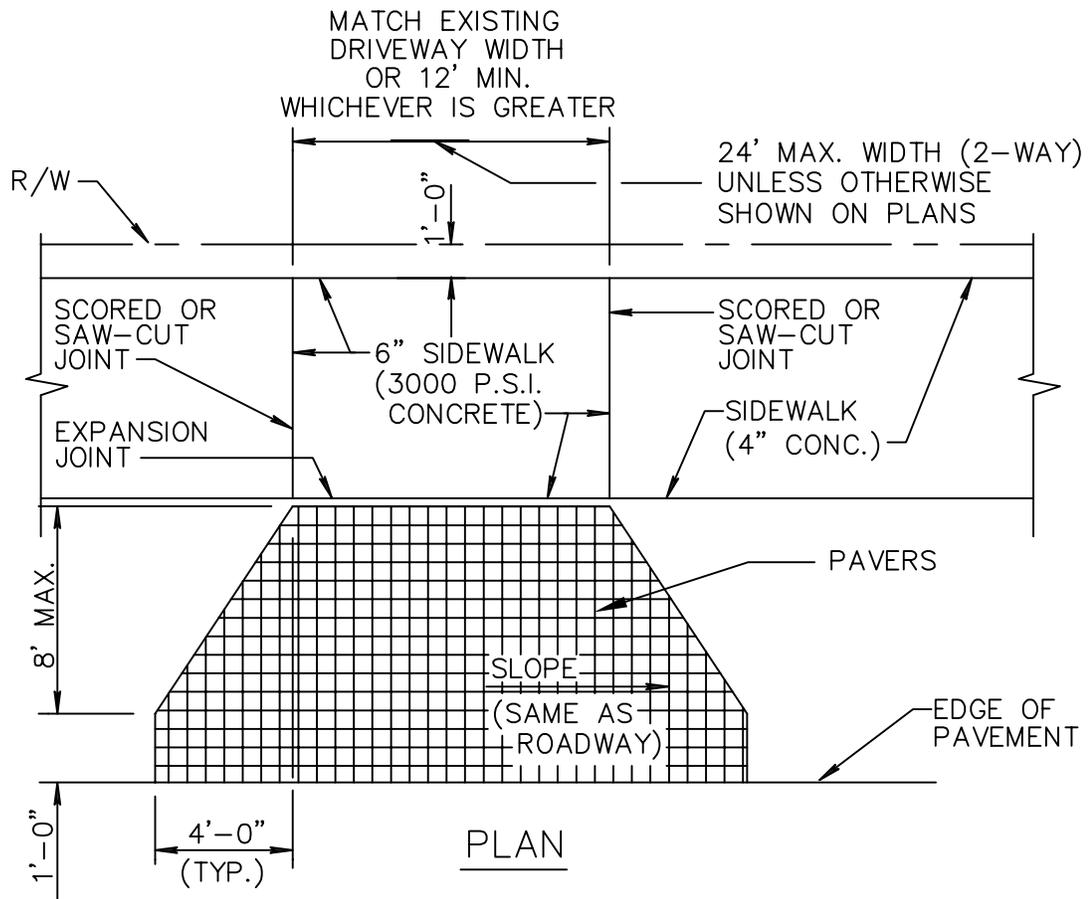


STANDARD UTILITY DETAILS
City of Stuart Public Works Department
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CONCRETE PILE NOTES

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
67B



NOTE: SIDEWALK SHALL BE CONSTRUCTED THROUGH DRIVEWAY.

- All subsurface improvements shall be indicated on as-built drawings filed with and approved by the city.
- All improvements shall be constructed and maintained without expense to the city.
- The city shall have access to the right-of-way at all times. The permittee shall gain no prescriptive rights in the subject right-of-way.
- The improvements and use of the right-of-way shall not interfere with the provision of municipal services or utilities.
- The permittee shall hold the city harmless from any and all claims, injury or damage to persons or property caused in any manner whatsoever by the private use of the right-of-way or the improvements constructed thereon.

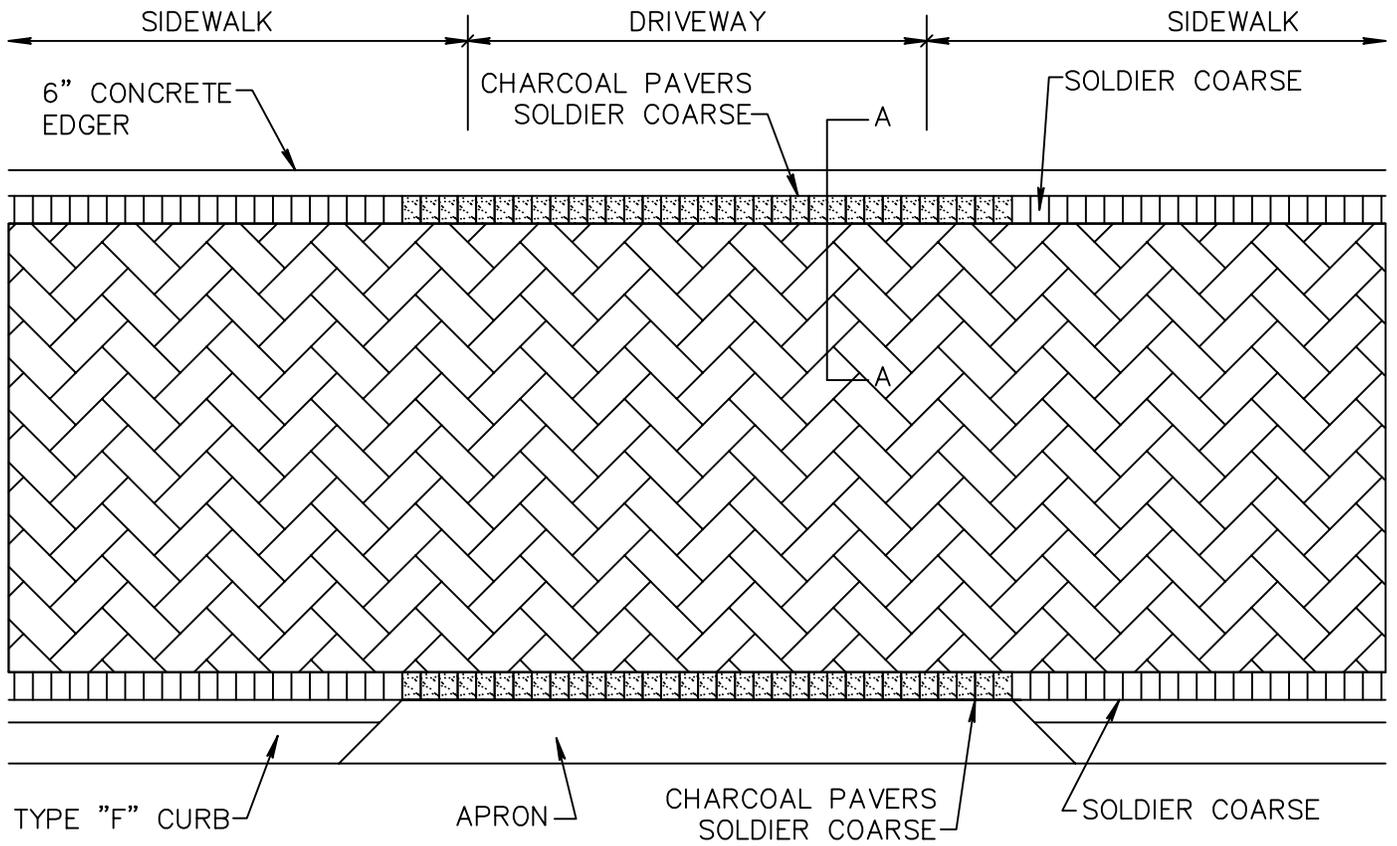


STANDARD UTILITY DETAILS
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**TYPICAL BRICK PAVER
 PUBLIC R.O.W. DETAIL**

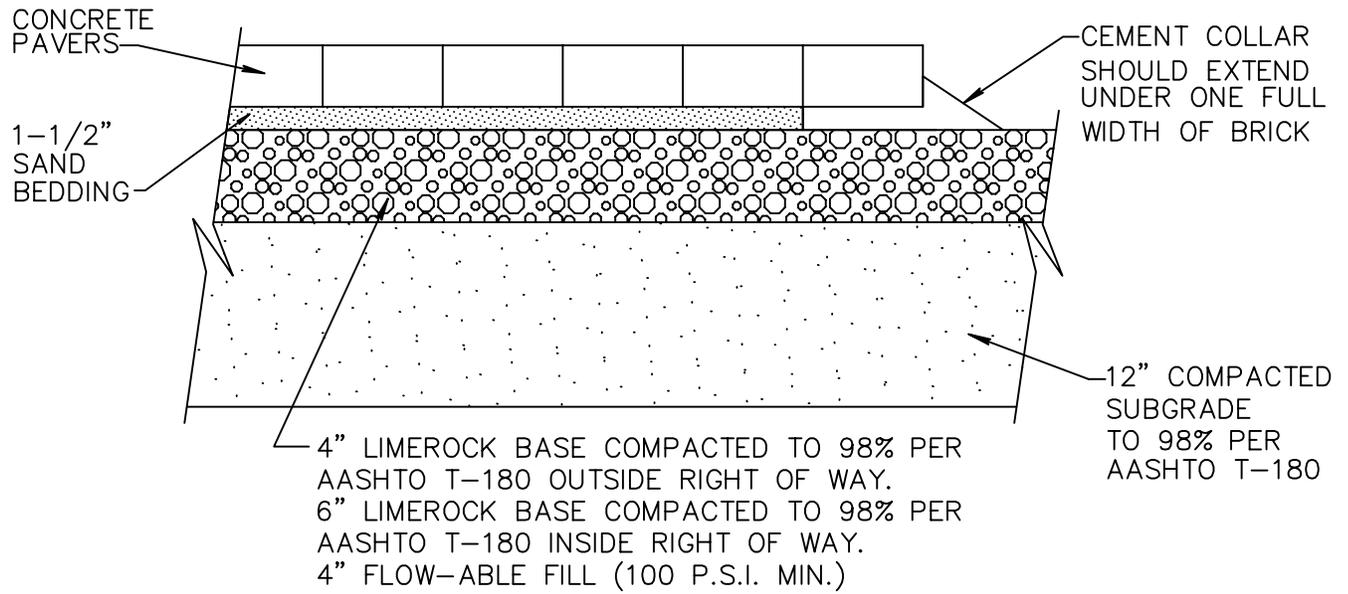
DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
68



PLAN

NOTE: SIDEWALK SHALL BE CONSTRUCTED THROUGH DRIVEWAY.



SECTION

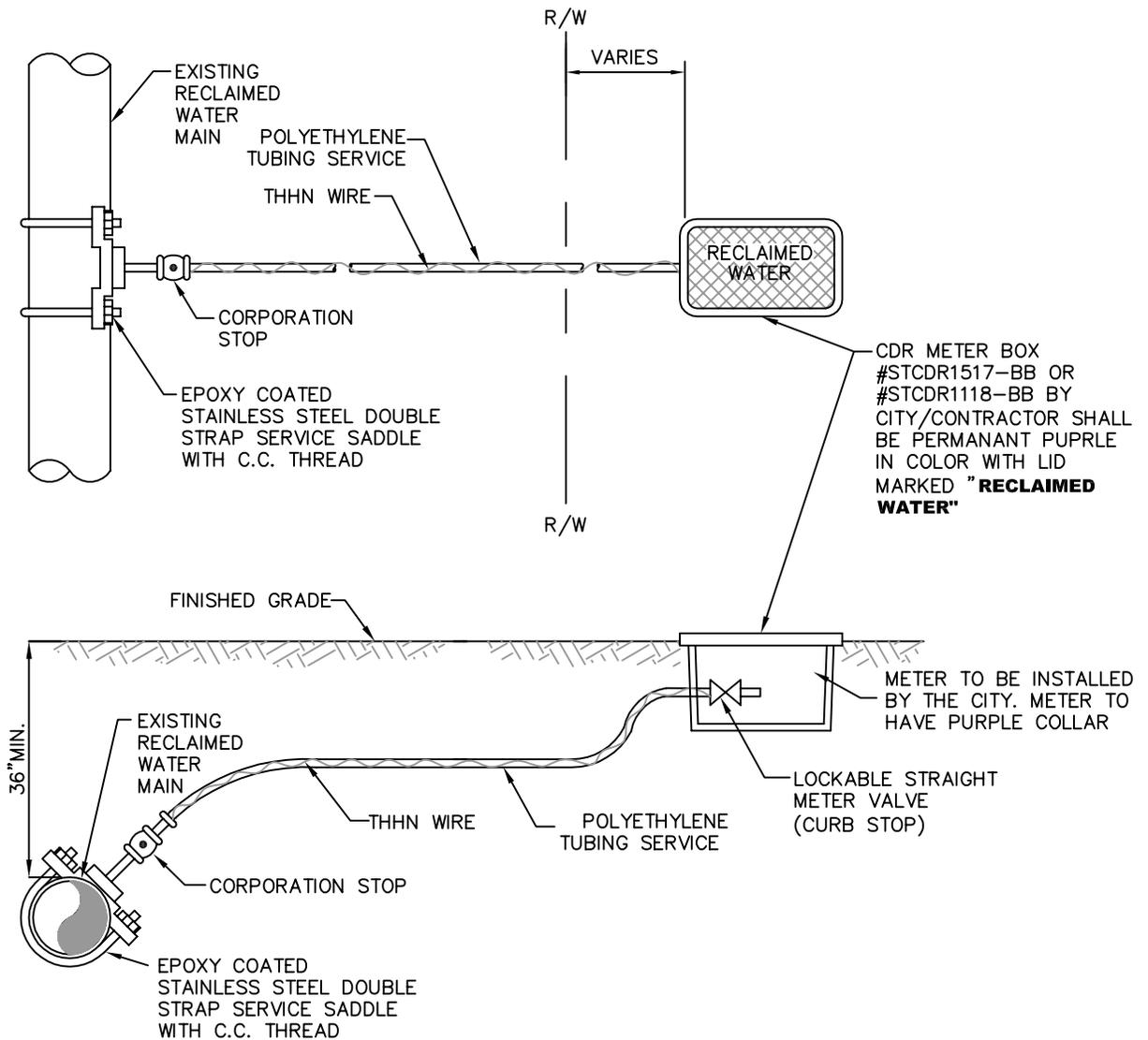


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City of Stuart Public Works Department
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**BRICK PAVER SIDEWALK
 WITHIN PUBLIC R.O.W.**

DATE: FEBRUARY, 2012
FILE NAME: 2008 COS Std Details.dwg

SHEET NUMBER
68A



NOTES:

1. PURPLE 10 GAUGE THHN WIRE SHALL BE ATTACHED TO THE SERVICE LINE.
2. MIN. SERVICE LINES SHALL BE AS FOLLOWS: 1" FOR SINGLE AND DOUBLE SERVICES WHERE METER(S) SIZE IS 5/8"x3/4"; 2" FOR SINGLE AND DOUBLE SERVICES WHERE METER SIZE IS 1" THRU 2"
3. DOUBLE SERVICES REQUIRE "U" BRANCH WITH STRAIGHT CURB STOPS
4. POLYETHYLENE SHALL BE AS DEFINED BY A.S.T.M. D2737 SDR9 AND AWWA 901, LATEST EDITION, AND BE PRESSURE RATED FOR 200 PSI, COLORED PURPLE PANTONE 522. OUTSIDE DIAMETER EQUIVALENT TO THE OUTER DIAMETER OF COPPER TUBING.
5. AN RPZ (REDUCED PRESSURE ZONE) BACKFLOW DEVICE MUST BE INSTALLED DIRECTLY OUTSIDE THE METER BOX DOWNSTREAM, PAINTED PURPLE PANTONE 522.

TYPICAL RECLAIMED WATER SERVICE CONNECTION



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City of Stuart Public Works Department
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TYPICAL RECLAIMED WATER SERVICE CONNECTION

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
69

RECLAIMED WATER SYSTEM

**RECLAIMED WATER
Used for Irrigation**



"DO NOT DRINK"



"NO BEBER"

A Water Conscious Community

NOTE: FOR POSTING IN AREAS THAT IRRIGATE WITH RECLAIMED WATER

**LAKE CONTAINS
RECLAIMED WATER**

"DO NOT DRINK"



"NO BEBER"



"DO NOT SWIM"



"NO NADAR"

A Water Conscious Community

NOTE: FOR POSTING AROUND STORAGE LAKES/PONDS THAT USE RECLAIMED WATER.

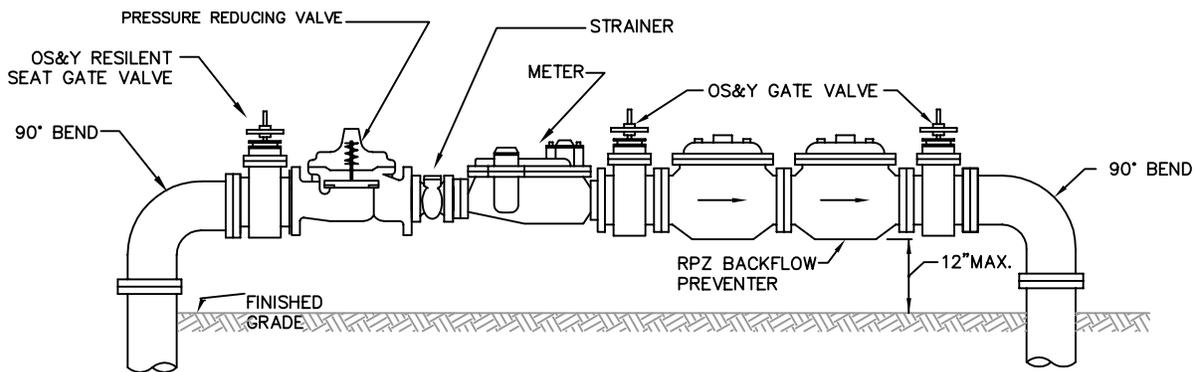
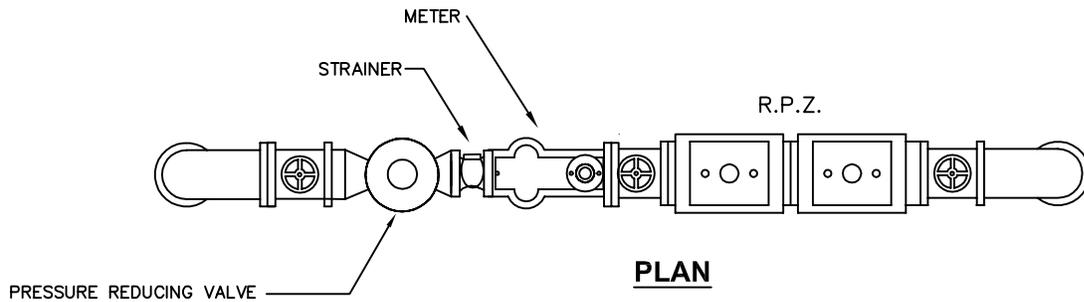


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**RECLAIMED WATER
LOCATION SIGNAGE**

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
70



NOTES:

1. LANDSCAPING REQUIRED PER CITY OR COUNTY ORDINANCE. MUST SCREEN AT PLANT HEIGHT, NO GROW IN PERIOD. NO PLANTS OR TREES WITHIN 18" AROUND METER TO ALLOW MAINTENANCE WITHOUT DAMAGE TO PLANTS ETC.
2. COMPLETE ASSEMBLY MUST BE PAINTED PURPLE PANTONE 522. WITH REQUIRED SIGNAGE.

RECLAIMED WATER METER / BACKFLOW PREVENTER ASSEMBLY



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**RECLAIMED WATER METER/
 BACKFLOW PREVENTER ASSEMBLY**

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS Std Details.dwg

SHEET NUMBER
71

LOW PRESSURE SEWER SYSTEM



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City of Stuart Public Works Department
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(772) 288-5300

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
COVER

GENERAL NOTES:

1. LOW PRESSURE PUMPING UNITS SHALL BE LOCATED SO THAT SURFACE WATER RUN OFF SHALL NOT INTERFERE WITH ELECTRICAL COMPONENTS.
2. MANUFACTURER SHALL SUPPLY AND ATTACH ELECTRICAL CONTROL PANEL SCHEMATIC TO INSIDE FACE OF CONTROL PANEL DOOR.
3. LIFT STATION AND CONTROL PANEL SHALL BE LOCATED SO THAT BOTH ARE ACCESSIBLE FOR MAINTENANCE.
4. WHERE FEASIBLE, HOMEOWNER SHALL PROVIDE WATER HOSE BIB. HOSE FOR MAINTENANCE OPERATIONS W/ BACKFLOW DEVICE.
5. AIR RELEASE VALVE AND/OR VACUUM RELIEF VALVES SHALL BE PROVIDED ON ALL LOW PRESSURE FORCE MAIN INSTALLATION IMMEDIATELY UPSTREAM OF DISCHARGE POINT TO REGIONAL GRAVITY OR FORCE MAIN SYSTEMS.
6. FORCE MAIN MARKING TAPE OR MAGNETIC LOCATING DEVICES WILL BE INSTALLED OVER FORCE MAIN, VALVES, AND SERVICES, 18" MAX. BURIED DEPTH.
7. FORCE MAIN SHALL HAVE TRACER WIRE—#10 AWG, STRANDED COPPER (OPEN TRENCH CONSTRUCTION), #8 AWG SOLID COPPER (DIRECTIONAL BORES) TYPW THHN W/ GREEN INSULATION SECURED TO PIPE.



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GENERAL NOTES

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-1

* STANDARD WATER AND SEWER SEPARATION STATEMENT

SEPARATION REQUIREMENTS

62-555.314 F.A.C. AUGUST 28, 2003

HORIZONTAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, RECLAIMED WATER PIPELINES AND ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS.

1. NEW OR RELOCATED UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY OR PROPOSED STORM SEWER, STORMWATER FORCE MAIN, OR PIPELINE CONVEYING EXISTING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610. F.A.C.
2. NEW OR RELOCATED UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST THREE FEET, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED VACUUM-TYPE SANITARY SEWER.
3. NEW OR RELOCATED UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX, AND PREFERABLY TEN FEET, BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED GRAVITY- OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610. F.A.C. THE MINIMUM, HORIZONTAL SEPARATION BETWEEN WATER MAINS AND GRAVITY-TYPE SANITARY SEWERS SHALL BE REDUCED TO THREE FEET WHERE THE BOTTOM OF THE WATER MAIN IS LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER.
4. NEW OR RELOCATED UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST TEN FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND ALL PARTS OF ANY EXISTING OR PROPOSED "ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM" AS DEFINED IN SECTION 381.0065(2). F.S. AND RULE 64E-6.002, F.A.C.

VERTICAL SEPARATION BETWEEN UNDERGROUND WATER MAINS AND SANITARY OR STORM SEWERS, WASTEWATER OR STORMWATER FORCE MAINS, RECLAIMED WATER PIPELINES.

1. NEW OR RELOCATED UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED GRAVITY- OR VACUUM-TYPE SANITARY OR STORM SEWER SHALL BE LAID SO THE OUTSIDE OF THE WATER MAIN IS AT LEAST SIX INCHES, AND PREFERABLY 12 INCHES ABOVE, OR AT LEAST 12 INCHES BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.
2. NEW OR RELOCATED UNDERGROUND WATER MAINS CROSSING ANY EXISTING OR PROPOSED PRESURE-TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN, OR PIPELINE CONVEYING RECLAIMED WATER SHALL BE LAID SO THE OUTSIDE OF THE WATERMAIN IS AT LEAST 12 INCHES ABOVE OR BELOW THE OUTSIDE OF THE OTHER PIPELINE. HOWEVER, IT IS PREFERABLE TO LAY THE WATER MAIN ABOVE THE OTHER PIPELINE.
3. AT THE UTILITY CROSSING DESCRIBED IN PARAGRAPHS 1 AND 2 ABOVE, ONE FULL LENGTH OF WATER MAIN PIPE SHALL BE CENTERED ABOVE OR BELOW THE OTHER PIPELINE SO THE WATER MAIN JOINTS SHALL BE AS FAR AS POSSIBLE FROM THE OTHER PIPELINE. ALTERNATIVELY, AT SUCH CROSSINGS, THE PIPES SHALL BE ARRANGED SO THAT ALL WATER MAIN JOINTS ARE AT LEAST THREE FEET FROM ALL JOINTS IN VACUUM-TYPE SANITARY SEWERS, STORM SEWERS, STORMWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C., AND AT LEAST SIX FEET FROM ALL JOINTS IN GRAVITY- OR PRESSURE-TYPE SANITARY SEWERS, WASTEWATER FORCE MAINS, OR PIPELINES CONVEYING RECLAIMED WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.

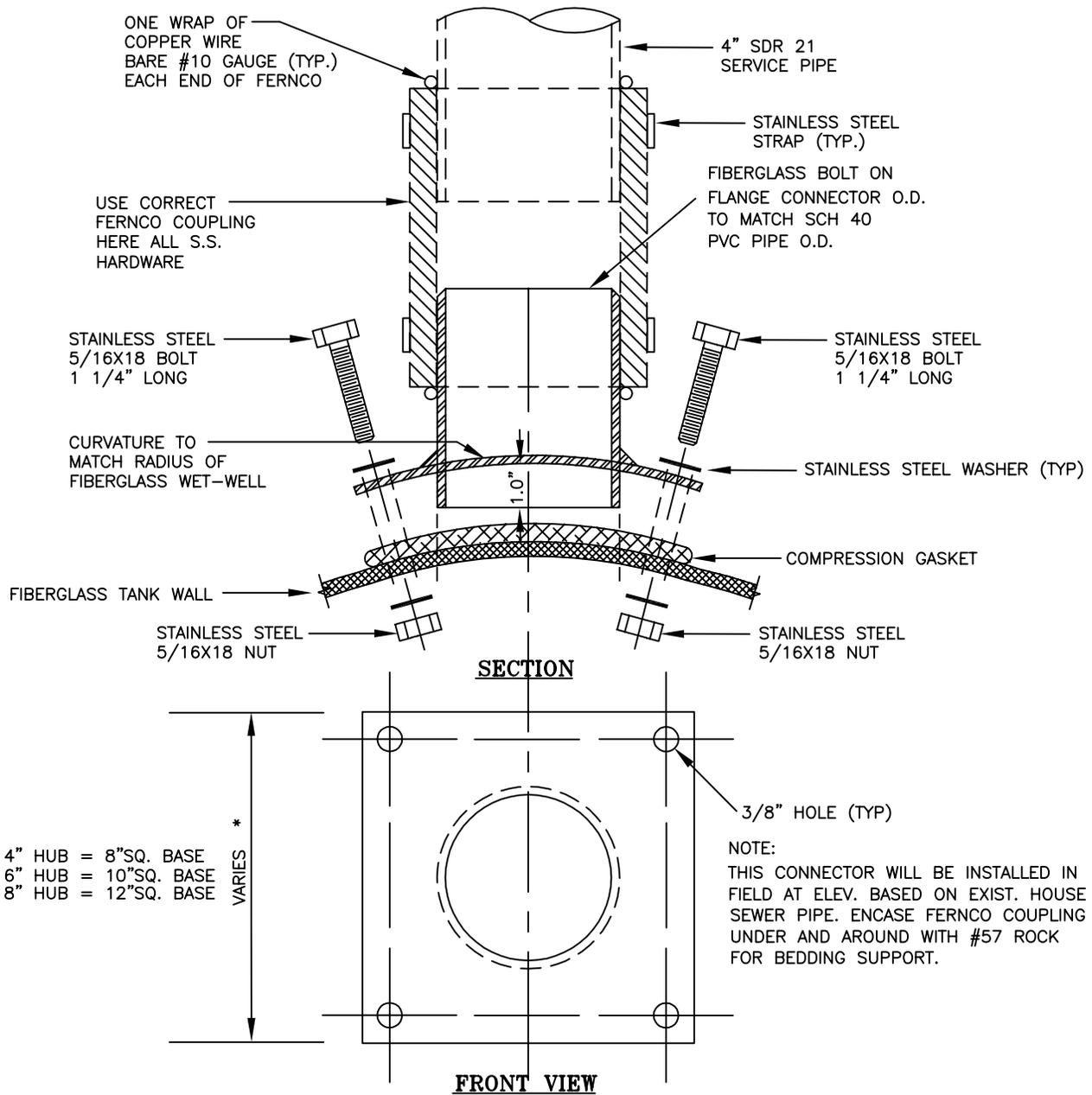


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STANDARD WATER AND SEWER SEPARATION STATEMENT

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-1A



NOTE:
 THIS CONNECTOR WILL BE INSTALLED IN FIELD AT ELEV. BASED ON EXIST. HOUSE SEWER PIPE. ENCASE FERNCO COUPLING UNDER AND AROUND WITH #57 ROCK FOR BEDDING SUPPORT.

NOTE:
 IN LIEU OF THE GRAVITY CONNECTOR HUB, A CITY SUPPLIED RUBBER GROMMET MAY BE USED TO INSTALL THE GRAVITY SEWER LINE INTO THE WET WELL. FOR A 4" CONNECTION A 5" DIA. HOLE SAW SHALL BE USED TO CORE THE OPENING INTO THE WET WELL. THE PIPE SHALL BE CHAMFERED AT THE INSERTION END,(SEE LP-4A).

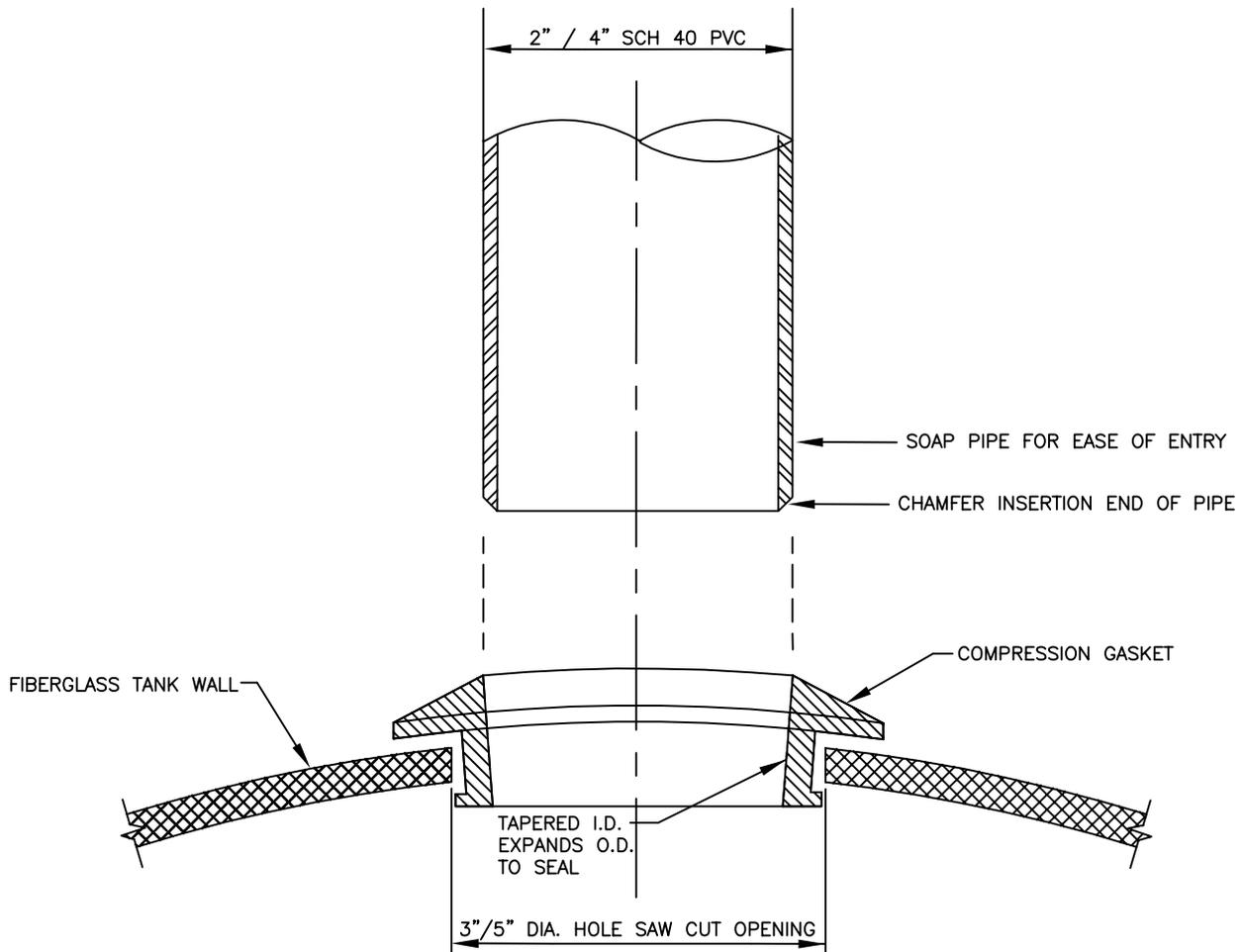


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TYPICAL WET WELL GRAVITY CONNECTOR HUB

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-2



NOTE:

FOR A 4" PVC PIPE, USE A 5" DIA. HOLE SAW TO CUT OUT COUPON FROM WET WELL WALL. THE DISTRICT WILL SUPPLY THE PROPER COMPRESSION GASKET FOR A 4" DIA. PVC PIPE

FOR A 2" PVC PIPE, USE A 3" DIA. HOLE SAW TO CUT OUT COUPON FROM WET WELL WALL. THE DISTRICT WILL SUPPLY THE PROPER COMPRESSION GASKET FOR A 2" DIA. PVC PIPE

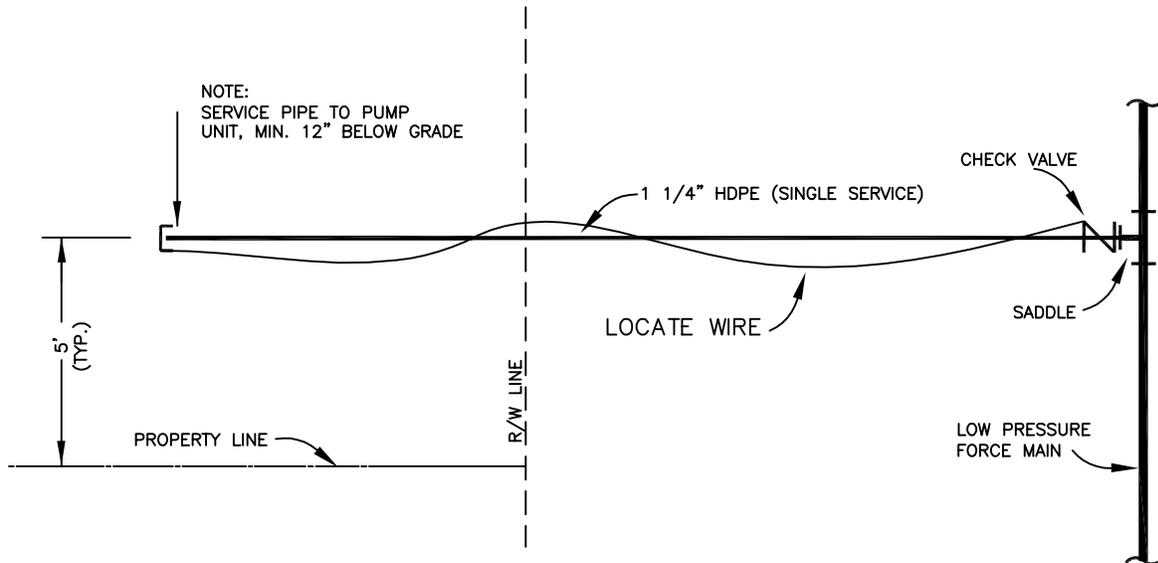


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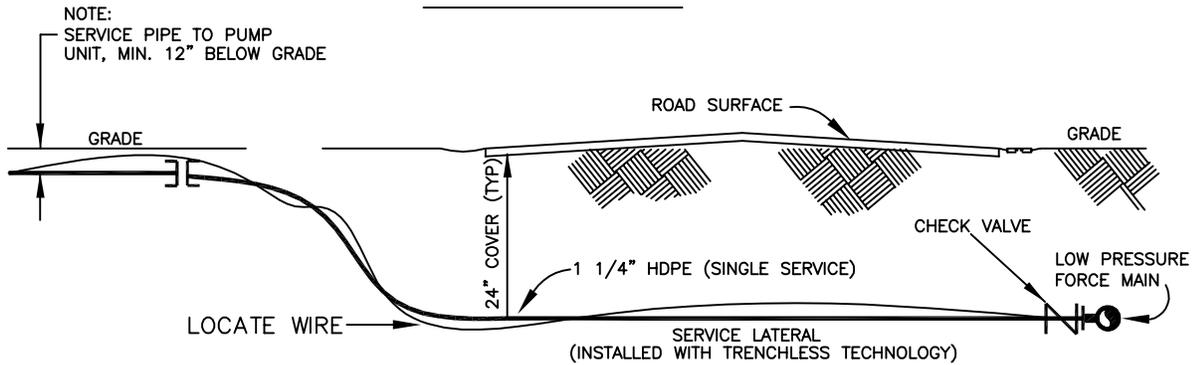
**SIMPLEX PUMP UNIT ALTERNATE
 PIPE CONNECTION DETAIL**

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-3



PLAN VIEW



TYPICAL ROAD CROSSING SECTION VIEW

(N.T.S.)

NOTES:

1. ACTUAL LOCATIONS OF SERVICES SHALL BE DETERMINED IN FIELD BY RESIDENT ENGINEER DEPENDING UPON EXISTING CONDITIONS & LOCATION OF EXISTING SEPTIC TANK.
2. SEE PLAN SHEET FOR LOCATION OF SERVICES.
3. ALL SERVE LINES MUST HAVE #10 STRANDED LOCATE WIRE FROM MAIN TO TANK, GREEN IN COLOR.

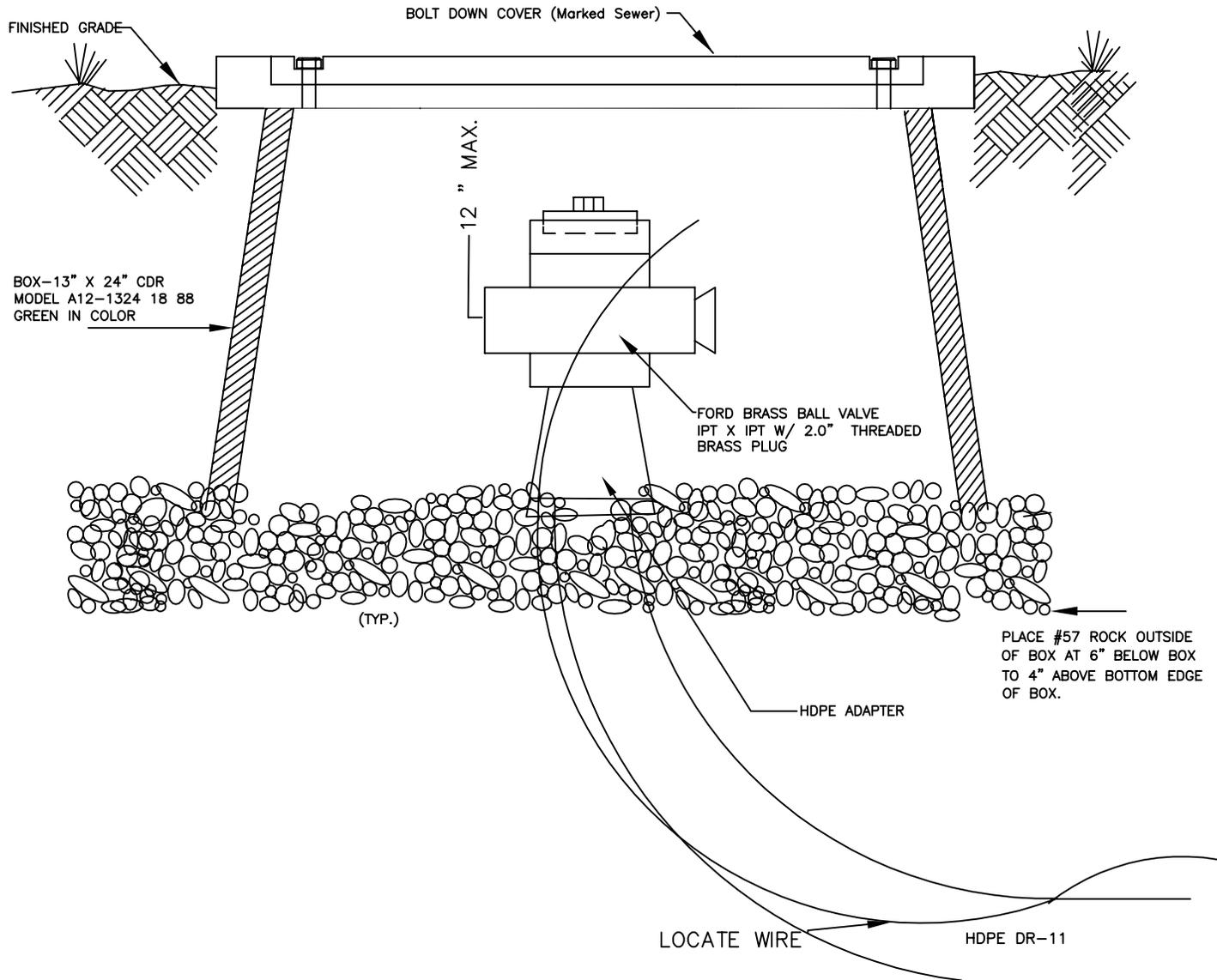


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TYPICAL SINGLE SERVICE SCHEMATIC

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-4



NOTES:

1. MAINS CONSTRUCTED WITH PVC MUST BE PROPERLY RESTRAINED PRIOR TO INSTALLATION OF THE HDPE TERMINAL CLEAN-OUT.
2. MAINS CONSTRUCTED WITH FUTURE STUB-OUTS, A RWGV MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE TERMINAL CLEAN-OUT.

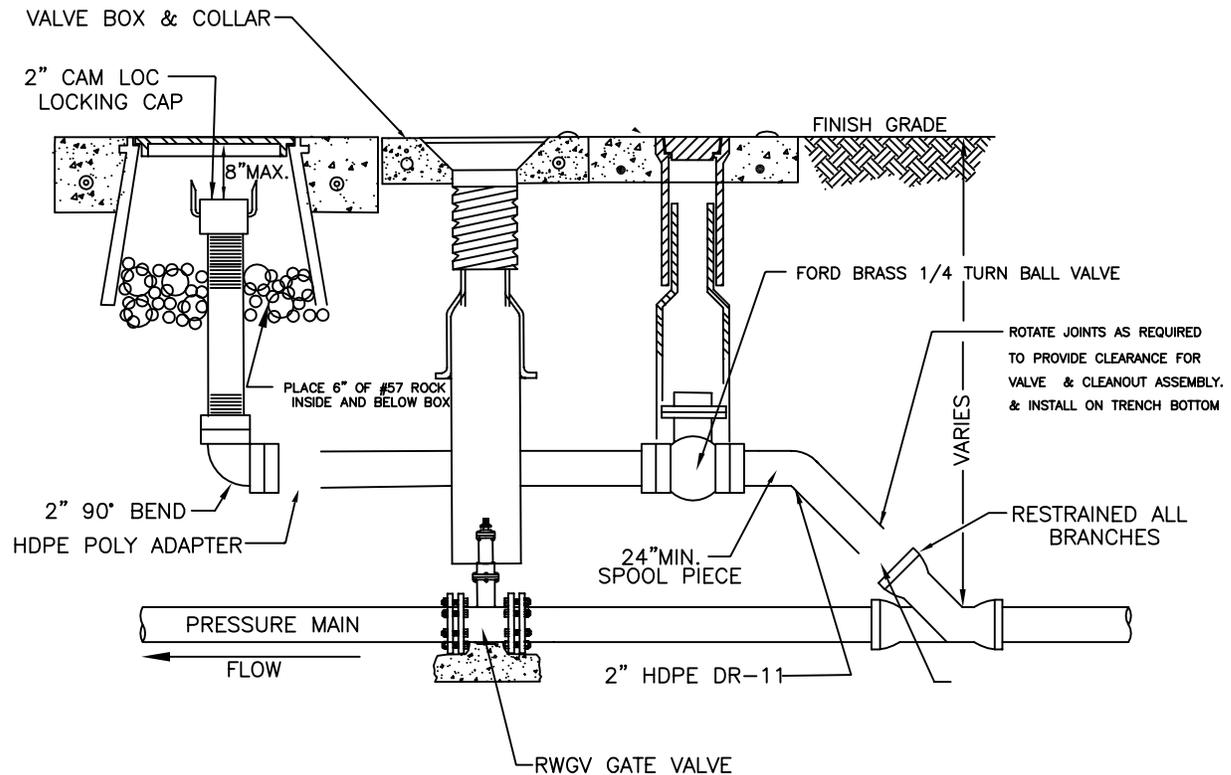
**TERMINAL FLUSHING
PORT DETAIL**



STANDARD UTILITY DETAILS
City of Stuart Public Works Department
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DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-5



NOTES:

1. SQUARE CONCRETE PAD, OR COARSE GRAVEL UNDER GATE, 8" THICK, 1CU. FT.(TYPICAL)
2. RESILENT WEDGE GATE VALVES SHALL BE USED FOR 2" AND LARGER. NIPPLES (2 1/2x CLOSE).
3. ALL FITTINGS AND HDPE FROM THE WYE TO LOCKING CAP MUST BE MECHANICALLY RESTRAINED. FOR MAINS 3, 4 AND 6 INCHES IN DIAMETER, ONLY MECHANICALLY RESTRAINED PUSH-ON FITTINGS AND PIPE MAY BE USED.
4. APPURTENANCES OF THE ASSEMBLY SHALL BE 2" IN SIZE, UNLESS OTHERWISE SPECIFIED BY THE ENG. OF RECORD
5. CLEANOUT ASSEMBLY INCLUDES ALL APPURTENANCES FROM, AND INCLUDING, THE WYE, TO AND INCLUDING THE CAM LOCK, HAND HOLE, AND FOUNDATION.

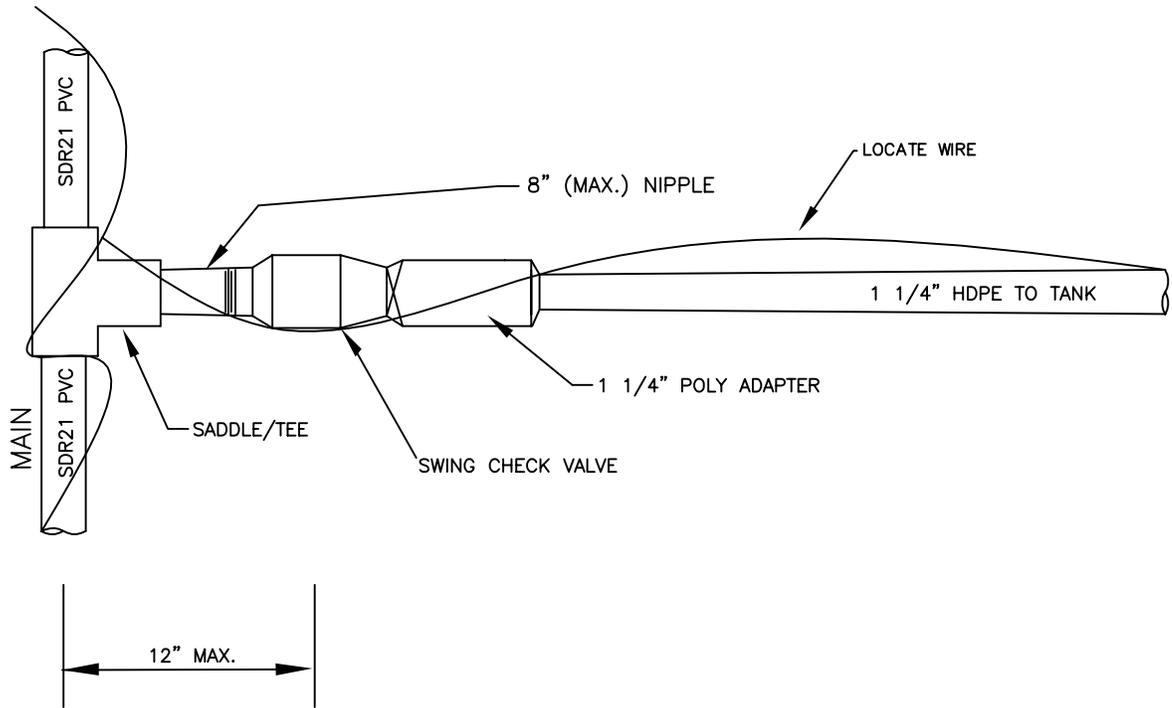


STANDARD UTILITY DETAILS
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**INLINE FLUSHING
 PORT DETAIL**

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-6

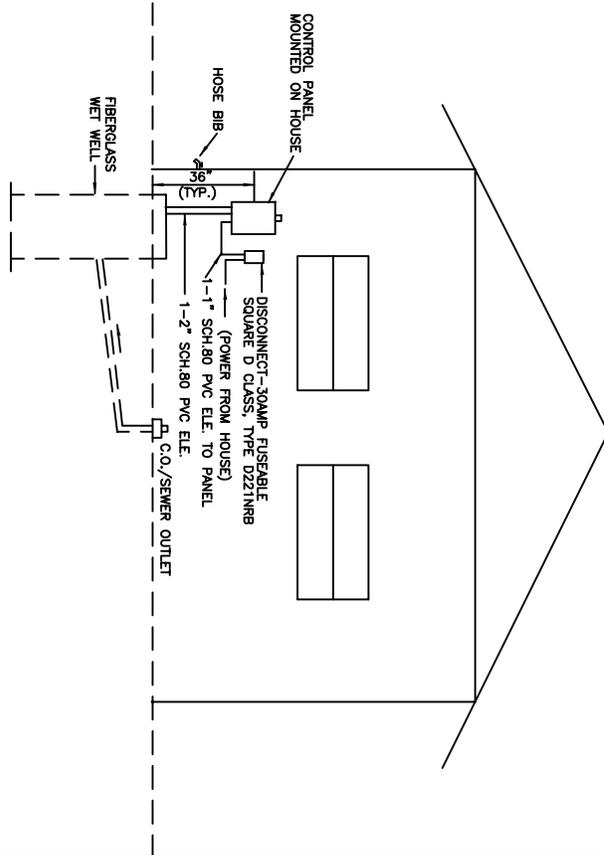


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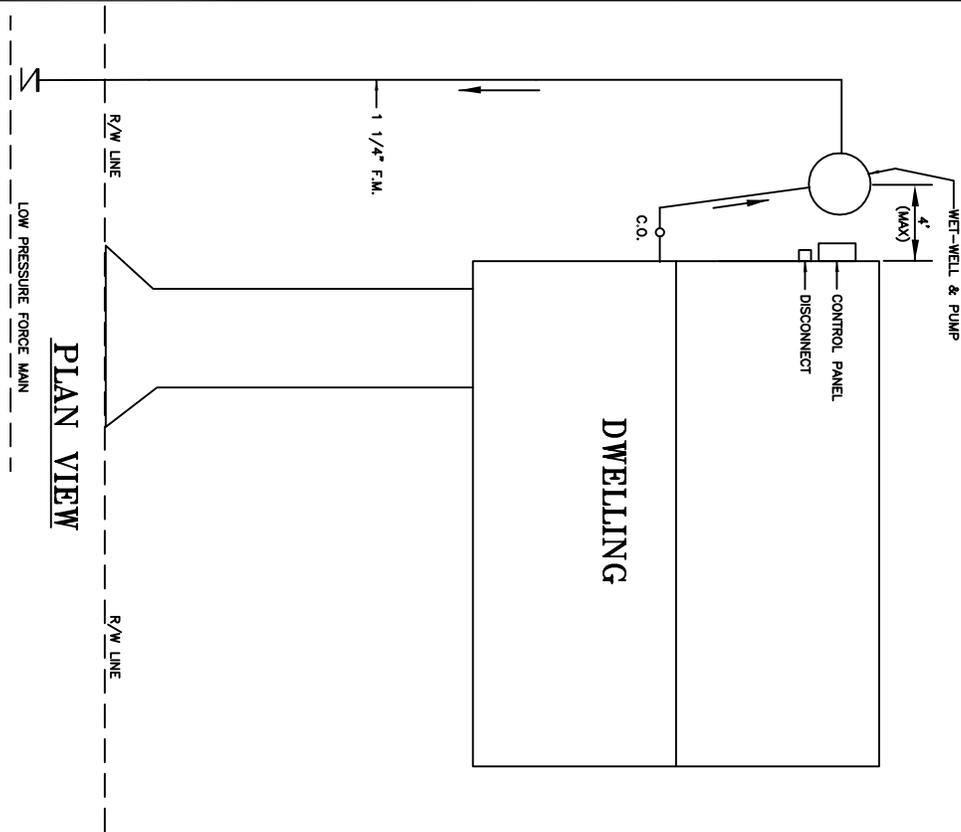
**TYPICAL FORCE MAIN
 CONNECTION DETAIL**

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-7



SECTION VIEW



PLAN VIEW



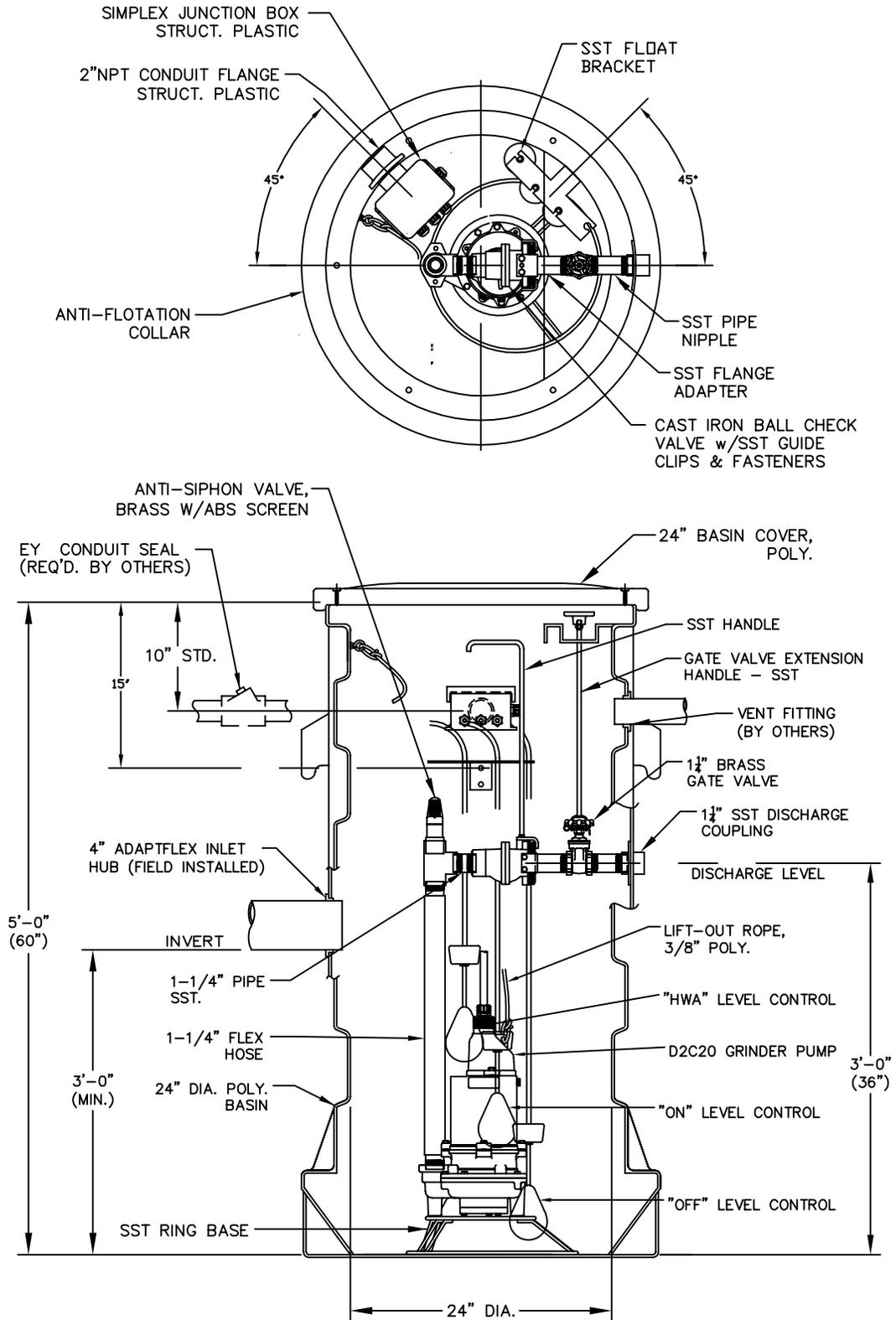
STANDARD UTILITY DETAILS
 City of Stuart Public Works Department
 121 S.W. Flagler Avenue, Stuart, Florida 34994
 (772) 288-5300

**GRINDER PUMP RESIDENTIAL-
 PRIMARY LOCATION DETAIL**

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-8

"STUART, FLORIDA"
(ENGINEERING & WATER
RESOURCES)

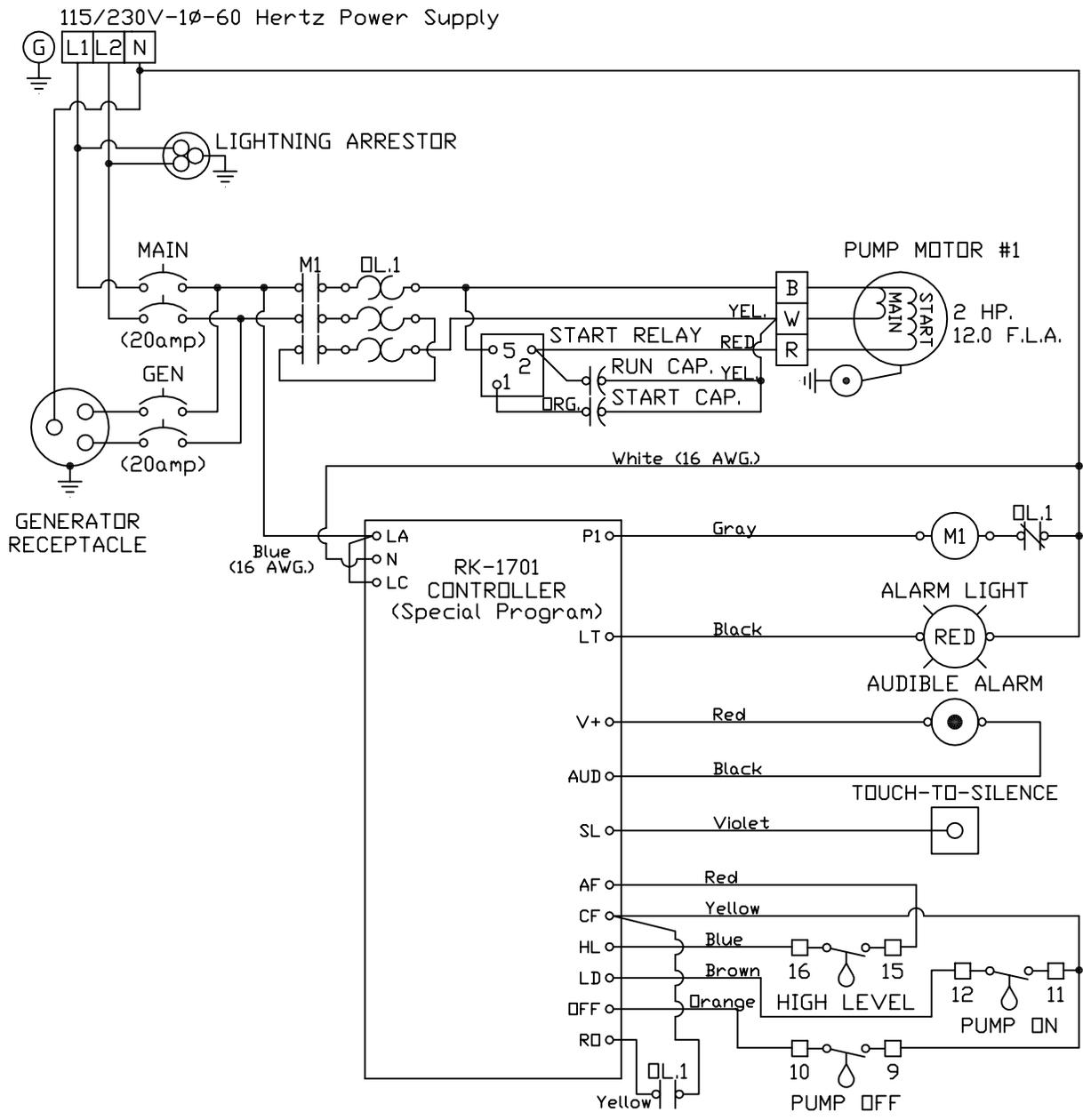


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**DGF12 GRINDER SYSTEM (SIMPLEX)
FOR D2C20 AND FLOATS**

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-9



BUILDER NOTES:
 1) ALL WIRES NOT IDENTIFIED ON THE SCHEMATIC SHOULD BE BLACK, SIZED ACCORDING TO THE CIRCUIT. COLORED START COMPONENT WIRING SHOULD BE 14 AWG. ALL OTHER WIRES, UNLESS OTHERWISE SPECIFIED, ARE TO BE 22 AWG.

NOTES:
 1. MAIN POWER DISCONNECT IS TO BE PROVIDED BY INSTALLER
 2. TORQUE LARGE FIELD WIRING TERMINALS TO 35 In. Lbs.
 TORQUE SMALL FIELD WIRING TERMINALS TO 12 In. Lbs.
 3. FIELD WIRING MUST BE 60°C COPPER WIRE MINIMUM.
 4. LEVEL SWITCHES MUST BE RATED A MINIMUM OF 2 AMPS @ 120V.



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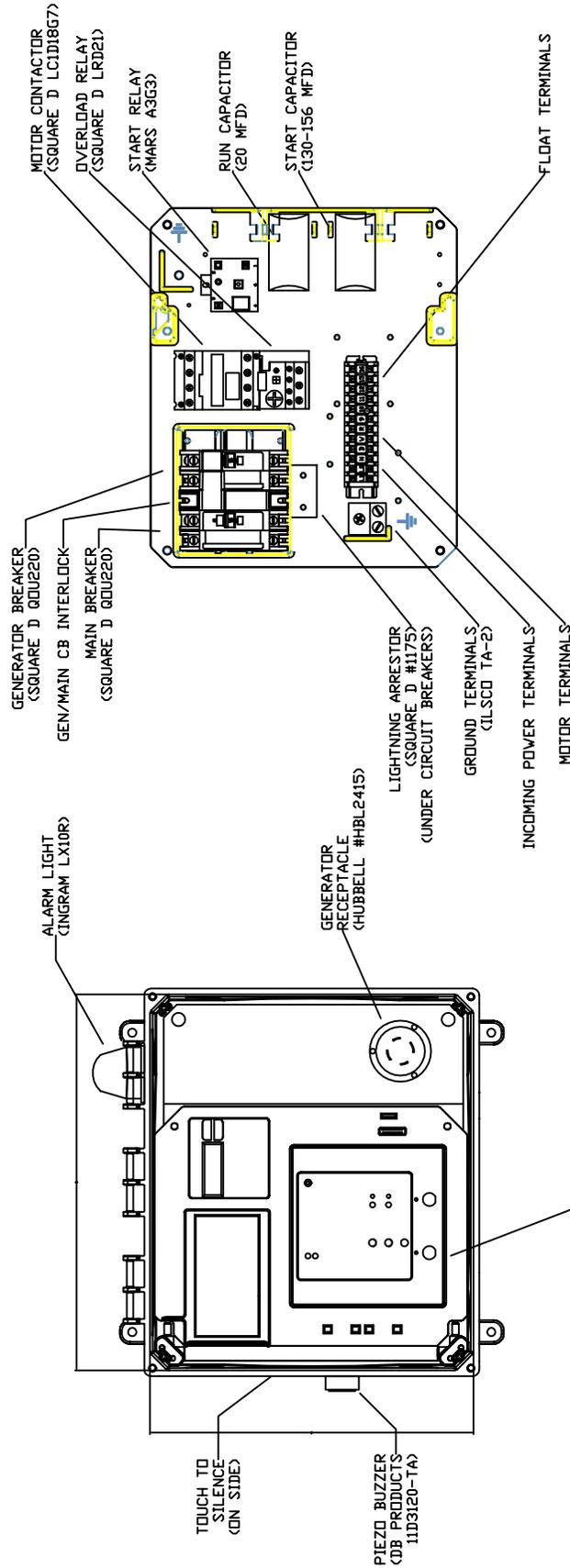
CONTROL PANEL SCHEMATIC

DATE: FEBRUARY, 2012
 FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-10

NEMA 4X THERMOPLASTIC
INNER-DOOR LAYOUT
ENCLOSURE DEPTH = 6.75"
(OUTTER DOOR SHOWN REMOVED FOR CLARITY)

BACKPANEL LAYOUT



LAYOUTS SHOW APPROXIMATE SIZE AND LOCATION ONLY



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CONTROL PANEL

DATE: FEBRUARY, 2012
FILE NAME: 2012 COS LP Details.dwg

SHEET NUMBER
LP-11