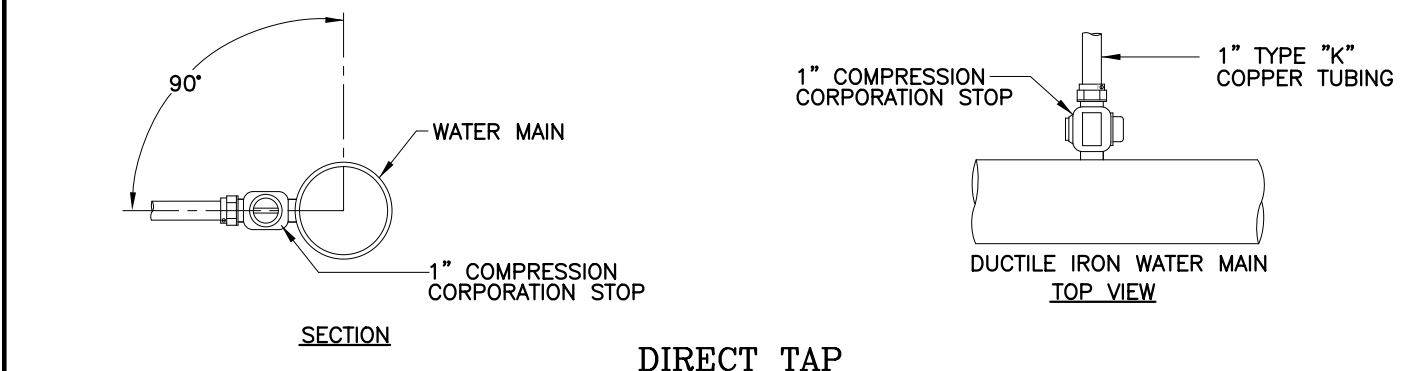
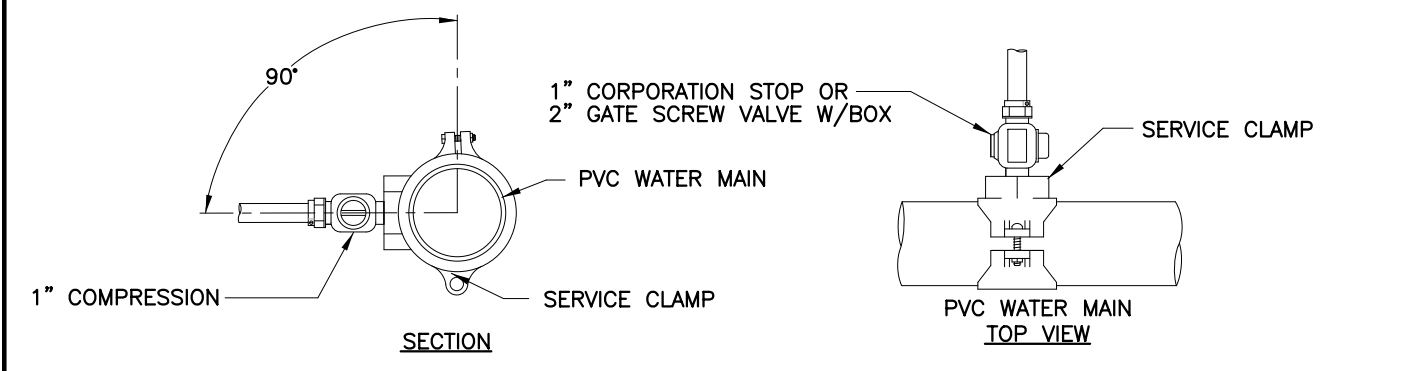


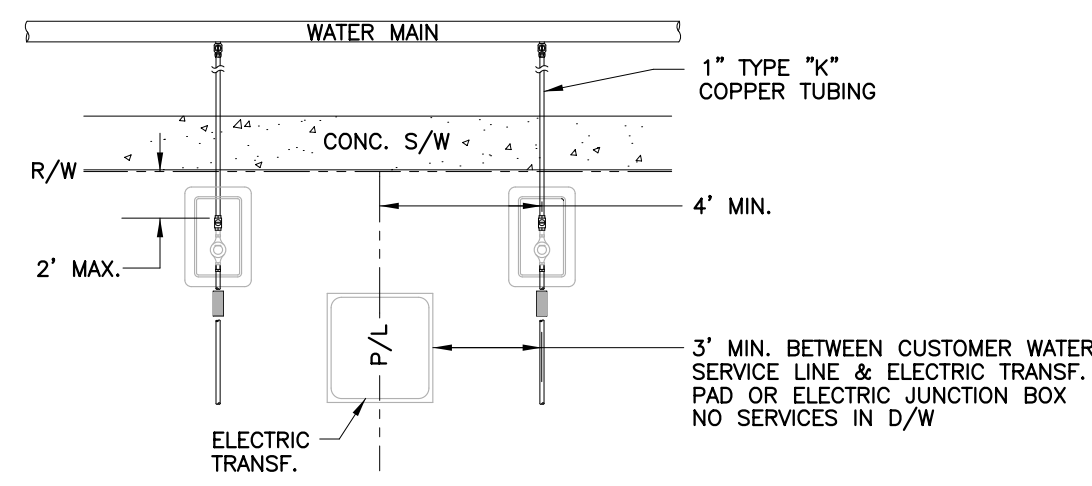
SERVICE LINE DETAILS



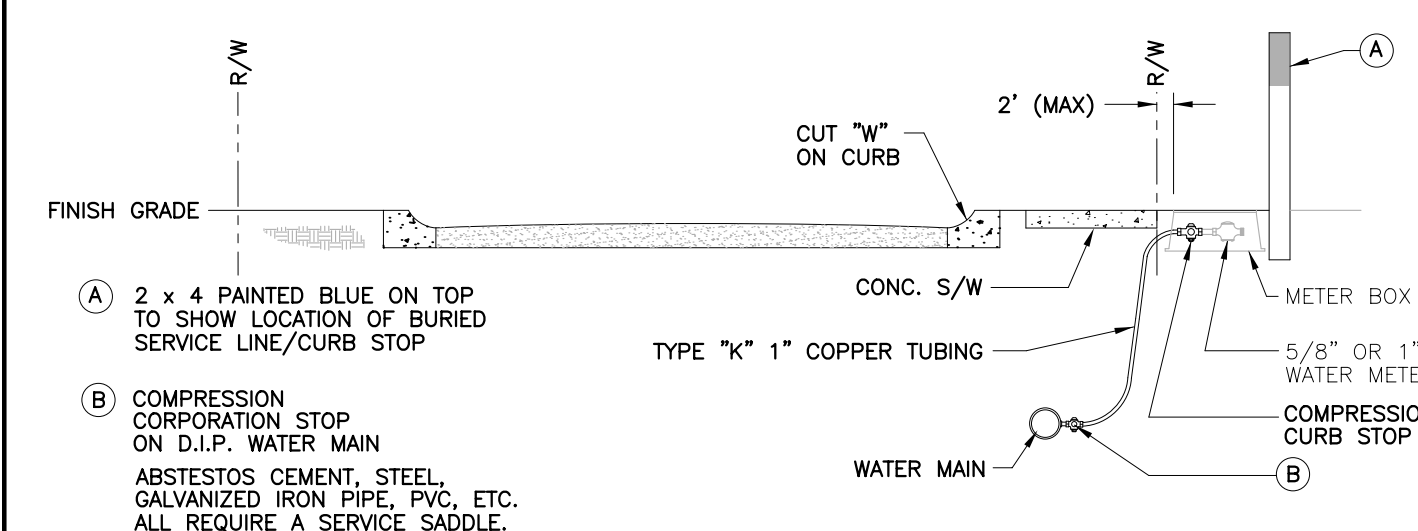
DIRECT TAP



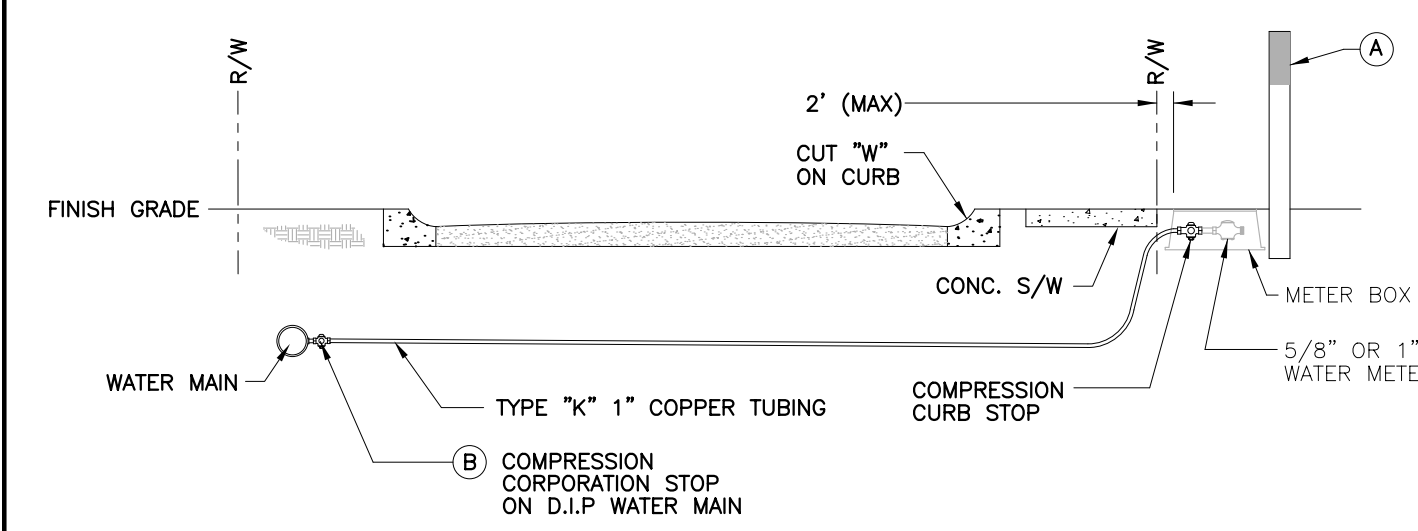
SERVICE CLAMP



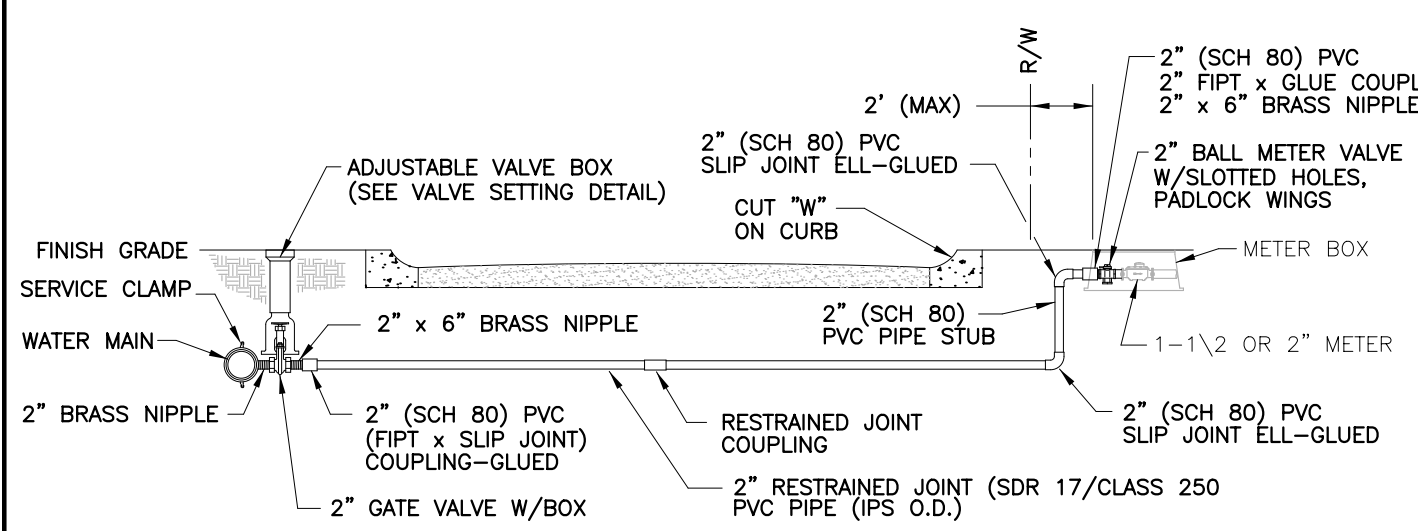
TYPICAL 1" SERVICE LOCATION (SHORT OR LONG)



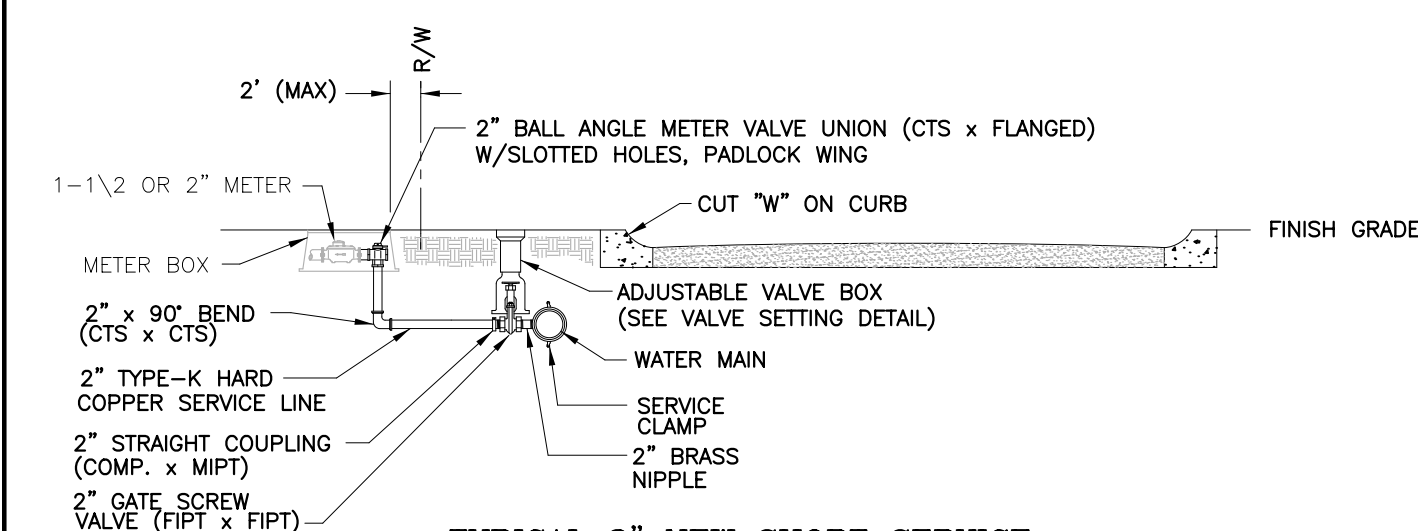
TYPICAL 1" SHORT SERVICE



TYPICAL 1" LONG SERVICE



TYPICAL 2" NEW LONG SERVICE



TYPICAL 2" NEW SHORT SERVICE

SERVICE LINE NOTES

- NOTE:
- O.U.C. SHALL FURNISH/INSTALL ALL WATER METERS.
 - O.U.C. SHALL FURNISH METER BOXES, DEVELOPER'S CONTRACTOR TO INSTALL.
 - METER SHOULD BE ON THE CUSTOMER SIDE OF THE RIGHT-OF-WAY NO FURTHER THAN 2' BEYOND RIGHT-OF-WAY LINE AND ALWAYS ALONG THE BACK SIDE OF CONC. SIDEWALK.

LEGEND

- DT DIRECT TAP MAY BE ALLOWED
 SC SERVICE CLAMP IS REQUIRED
 NA NOT ALLOWED
 * ABSTESIOS CEMENT, STEEL GALVANIZED IRON PIPE, PVC, ETC. ALL REQUIRE A SERVICE SADDLE.

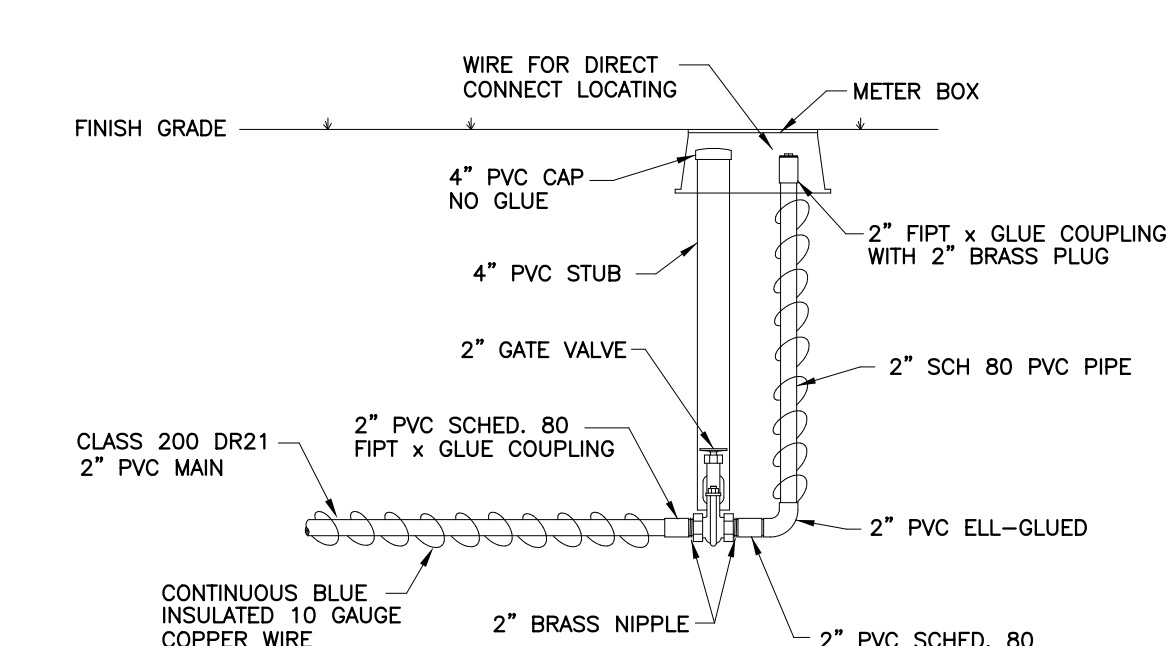
PIPE	SIZE	CORPORATION	TAP SIZE
D.I.	12"	DT	SC
	10"	DT	SC
	8"	DT	SC
	6"	DT	SC
PVC	4" C-900	SC	SC
	2"-SDR21	SC	NA

TAPPING FOR 1" CORP. STOP, & 2" GATE VALVE

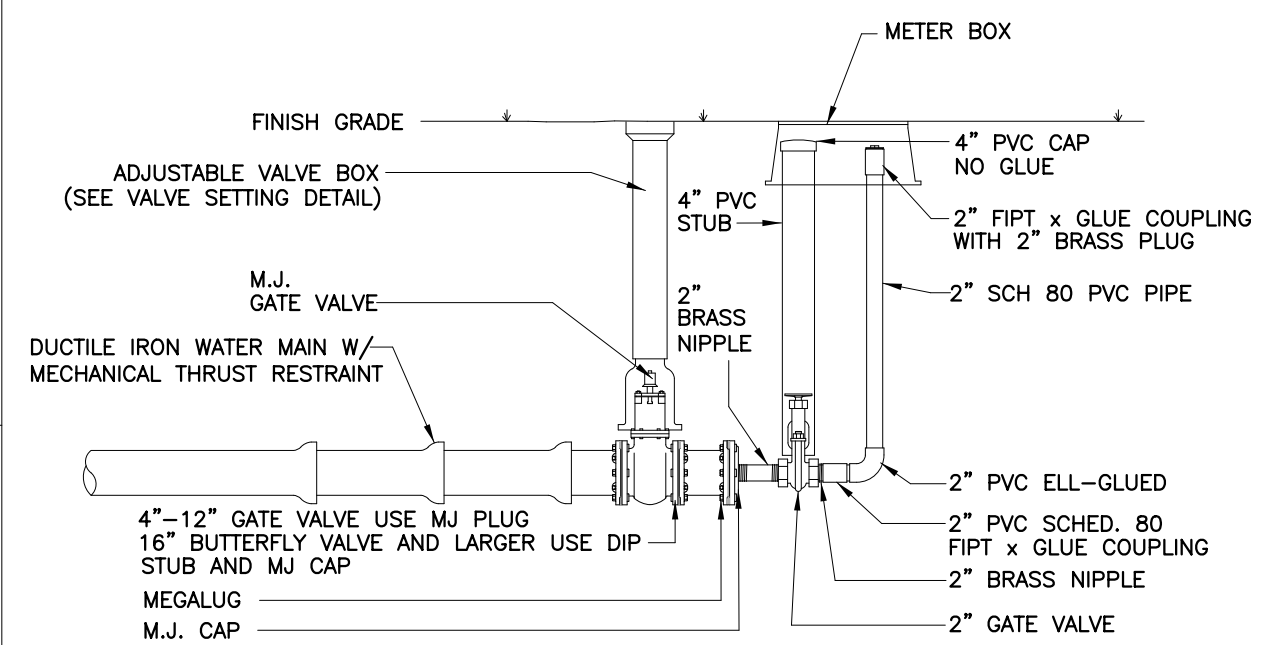
SPECIAL NOTICE:

PROCEDURES FOR AN O.U.C. SINGLE FAMILY HOME HAVING RECLAIM WATER SERVICE.
 WHERE RECLAIM WATER IS PROVIDED TO A PROPERTY, O.U.C.'S POTABLE WATER SYSTEM MUST BE PROTECTED BY AN APPROVED DOUBLE CHECK VALVE ASSEMBLY BACKFLOW PREVENTER WITH TOP ACCESS (FOR TESTING AND MAINTENANCE), INSTALLED, OWNED AND MAINTAINED BY O.U.C.
 NO CONNECTIONS ARE ALLOWED BETWEEN THE METER AND THE BACKFLOW PREVENTER.
 PRIOR TO ANY RECLAIM WATER SERVICE INSTALLATION, INSPECTION AND TESTING WILL BE CONDUCTED BY A REPRESENTATIVE OF THE RECLAIM WATER PROVIDER TO MAKE CERTAIN THAT THE APPROPRIATE BACKFLOW DEVICE HAS BEEN INSTALLED ON THE DOMESTIC WATER SERVICE.

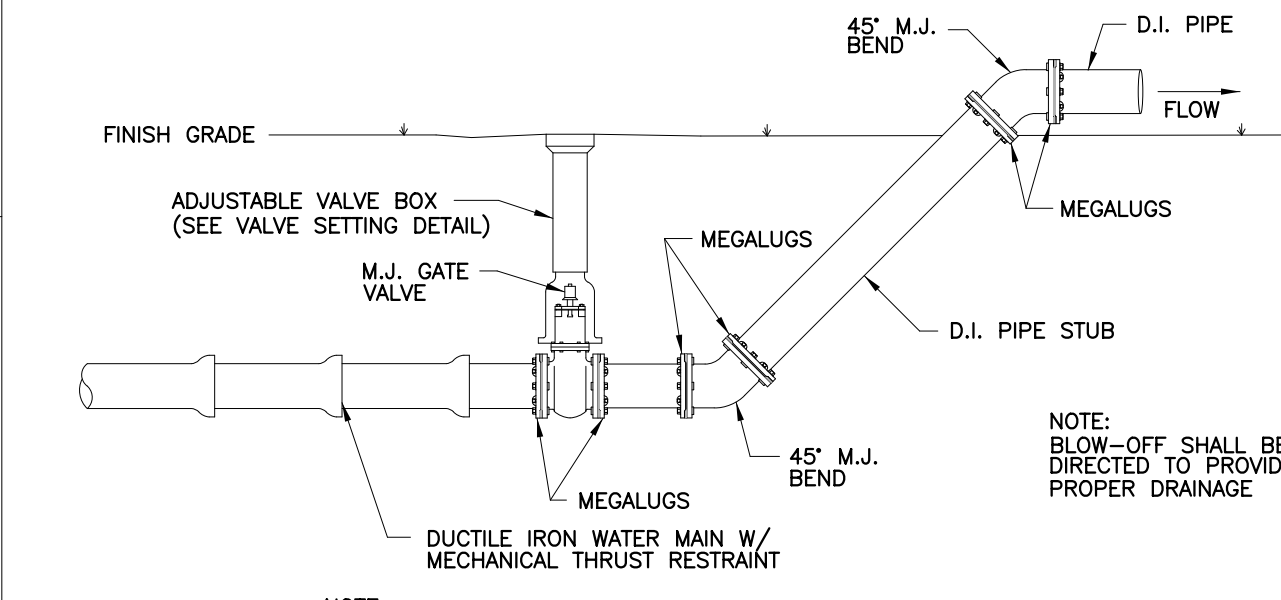
BLOW OFF DETAILS



2" PVC DEAD END WITH PERMANENT BLOW OFF
 INSTALL ON ALL DEAD ENDS UNLESS OTHERWISE NOTED.



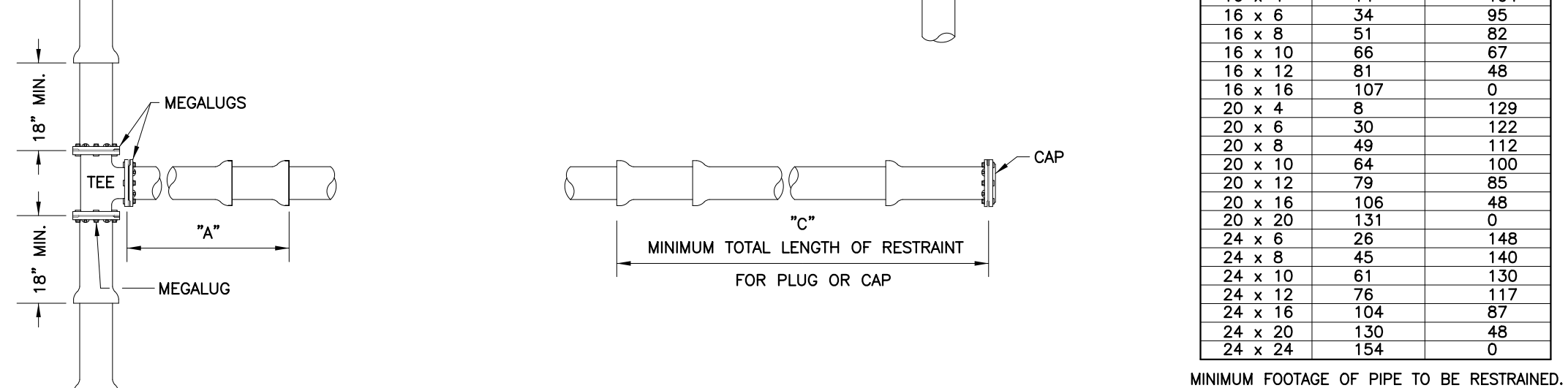
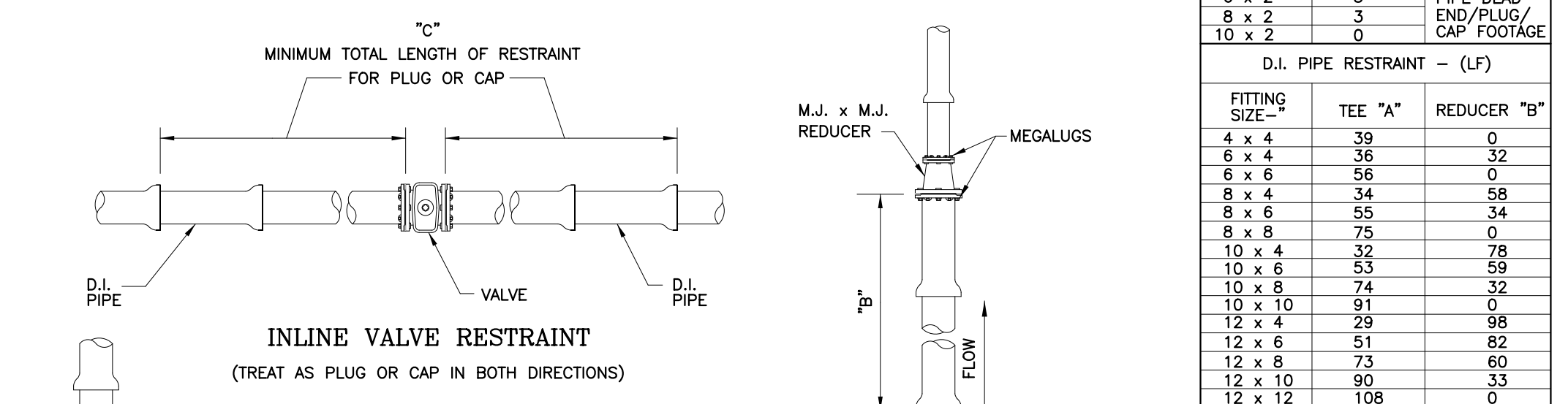
PERMANENT BLOW OFF (4" AND LARGER)
 INSTALL ON ALL DEAD ENDS UNLESS OTHERWISE NOTED.



TEMPORARY BLOW OFF (4" THROUGH 12") FOR CONSTRUCTION PURPOSE

RESTRAINED JOINT STANDARDS

CONTACT O.U.C. FOR SPECIAL RESTRAINT DETAILS FOR WORK ON EXISTING PIPING.



2" PVC - PIPE RESTRAINT (LF)

FITTING SIZE	TEE "A"	REDUCER "B"
2 x 2	11	
4 x 2	8	USE LARGE
6 x 2	5	PIPE DEAD-END/PLUG/CAP FOOTAGE
8 x 2	3	
10 x 2	0	

D.I. PIPE RESTRAINT - (LF)

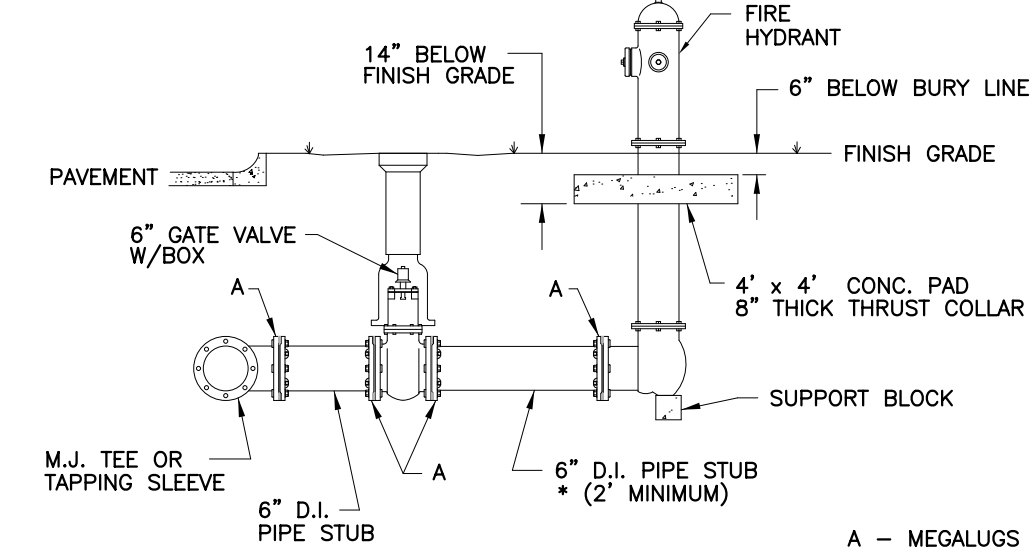
FITTING SIZE	TEE "A"	REDUCER "B"
4 x 4	39	0
6 x 4	36	0
8 x 4	32	0
10 x 4	28	0
12 x 4	24	0
14 x 4	20	0
16 x 4	16	0
18 x 4	12	0
20 x 4	8	0
22 x 4	4	0
24 x 4	0	0
26 x 4	0	0
28 x 4	0	0
30 x 4	0	0
32 x 4	0	0
34 x 4	0	0
36 x 4	0	0
38 x 4	0	0
40 x 4	0	0
42 x 4	0	0
44 x 4	0	0
46 x 4	0	0
48 x 4	0	0
50 x 4	0	0
52 x 4	0	0
54 x 4	0	0
56 x 4	0	0
58 x 4	0	0
60 x 4	0	0
62 x 4	0	0
64 x 4	0	0
66 x 4	0	0
68 x 4	0	0
70 x 4	0	0
72 x 4	0	0
74 x 4	0	0
76 x 4	0	0
78 x 4	0	0
80 x 4	0	0
82 x 4	0	0
84 x 4	0	0
86 x 4	0	0
88 x 4	0	0
90 x 4	0	0
92 x 4	0	0
94 x 4	0	0
96 x 4	0	0
98 x 4	0	0
100 x 4	0	0
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104 x 4	0	0
106 x 4	0	0
108 x 4	0	0
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120 x 4	0	0
122 x 4	0	0
124 x 4	0	0
126 x 4	0	0
128 x 4	0	0
130 x 4	0	0
132 x 4	0	0
134 x 4	0	0
136 x 4	0	0
138 x 4	0	0
140 x 4	0	0
142 x 4	0	0
144 x 4	0	0
146 x 4	0	0
148 x 4	0	0
150 x 4	0	0
152 x 4	0	0
154 x 4	0	0

DUCTILE IRON PIPE RESTRAINT "C" (LF)

FITTING	4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	2"
11-1/4"	2	3	4	5	5	6	7	9	10	1	
22-1/2"	4	6	8	11	11	13	15	18	20	1	
45' OFFSET	9	12	16	19	22	22	26	31	36	42	3
90'	21	29	38	46	53	53	64	74	88	101	6
VALVE/PLUG/CAP	44	61	80	96	113	112	136	159	191	221	13

MINIMUM FOOTAGE OF PIPE TO BE RESTRAINED.

FIRE HYDRANT ASSEMBLY



- NOTE:
- THE USE OF 2" AND/OR 4" PVC PIPE MUST BE APPROVED BY O.U.C. WATER ENGINEERING.
 - PVC PIPE MUST BE BLUE IN COLOR OR HAVING CONTINUOUS BLUE MARKINGS TO CONFORM TO AWWA COLORS WITH NSF LOGO FOR POTABLE WATER USE.
 - DUCTILE IRON POTABLE WATER MAINS REQUIRE SPECIAL IDENTIFICATION, SUCH IDENTIFICATION SHALL INCLUDE A MINIMUM OF 4 CONTINUOUS STRIPES SPACED AT NO MORE THAN 80" APART. THE STRIPES SHALL BE MINIMUM TWO INCHES IN WIDTH FOR PIPE 4-12 INCH IN DIAMETER AND FOUR (4) INCHES IN WIDTH FOR LARGER PIPE, AND SHALL BE BLUE IN COLOR. BACKFILL SHALL NOT BE PLACED FOR AT LEAST 30 MINUTES FOLLOWING PAINT APPLICATION.
 - ALL PIPE FITTINGS 4" UP TO 30" SHALL BE CEMENT OR EPOXY LINED (CLASS 350) AWWA C153 "COMPACT" DUCTILE IRON, WITH MECHANICAL JOINT ENDS. ALL PIPE FITTINGS 30" OR LARGER SHALL BE CEMENT LINED (CLASS 250) DUCTILE IRON, WITH MECHANICAL JOINT ENDS.
 - A SERVICE MATERIAL FOR AND 1" SHALL INCLUDE SOFT ANNEALED TYPE-K COPPER TUBING.
 - B SERVICE MATERIAL FOR 2" SHORT SIDE SERVICES SHALL INCLUDE 2" CTS TYPE-K HARD COPPER PIPE.
 - C SERVICE MATERIAL FOR 2" LONG SIDE SERVICES SHALL INCLUDE 2" RESTRAINED JOINT (SDR 17/CLASS 250) PVC PIPE (IPS-O.D.).
 - SERVICE MATERIAL (CORP. STOPS, CURB STOPS, ETC.) FOR 1", AND 2" SERVICES SHALL BE BRASS COMPRESSION FITTINGS IN ACCORDANCE WITH AWWA C600. FLARED FITTINGS ARE ACCEPTABLE UNDER CONTROLLED CONDITIONS. AN AWWA (CC) THREADING IS REQUIRED ON ALL 1" CORPORATION STOPS USED WITH DIRECT PIPE TAPPING ON DUCTILE IRON PIPE OR WITH SERVICE CLAMPS ON PVC PIPE. INSTALLATION OF 2" SERVICES REQUIRE SERVICE CLAMPS AND TO ACCOMMODATE 1 1/2" OR 2" METERS, 2" BALL ANGLE METER VALVES (CTS X PADLOCK) WITH SLOTTED HOLES ON THE FLANGE FACE ARE REQUIRED. PADLOCK WINGS MUST BE INCLUDED ON EACH CURB STOP OR BALL METER VALVE.
 - FIRE HYDRANTS SHALL BE TRAFFIC DRY BARREL TYPE AND MEET OUC SPECIFICATIONS.
 - ALL VALVES 4" THROUGH 12" SHALL BE RESILIENT SEAT/WEDGE GATE VALVES WITH EPOXY COATING INTERNALLY/EXTERNALLY AND CONFORM TO AWWA STANDARD C509 OR LATEST REVISION. ALL VALVES 16" AND LARGER SHALL BE BUTTERFLY, HAVE EPOXY COATING AND CONFORM TO AWWA C504 OR LATEST REVISION.
 - ALL VALVE BOXES SHALL BE CAST IRON SLIDING TYPE. SCREW TYPE ARE NOT APPROVED.

MAXIMUM ALLOWABLE LEAKAGE

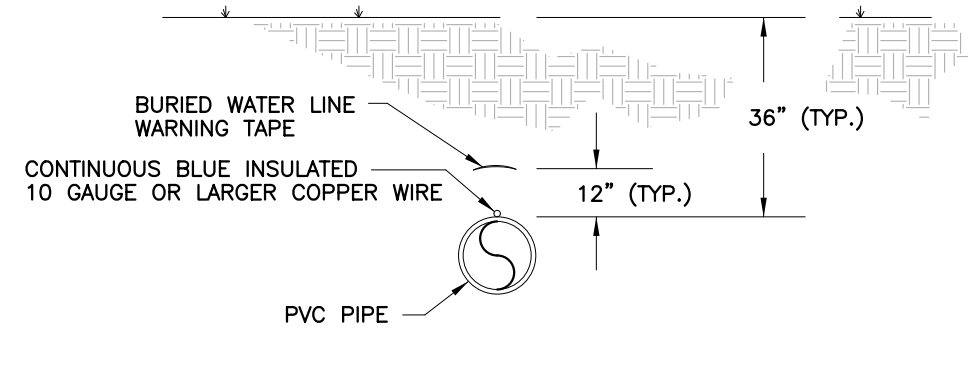
NOTE: 150 PSI TESTING, 2 HOUR LEAKAGE TESTS; MAXIMUM LEAKAGE ALLOWED PER 1000 LF OF PIPE.

PIPE SIZE	DUCTILE IRON PIPE		PVC PIPE	
	GALLONS PER TWO (2) HOUR	GALLONS PER TWO (2) HOUR	GALLONS PER TWO (2) HOUR	GALLONS PER TWO (2) HOUR
2"	0.42	0.38		
4"	0.72	0.65		
6"	1.10			
8"	1.48			
10"	1.84			
12"	2.20			
16"	2.94			
20"	3.68			
24"	4.42			
30"	5.52			
36"	6.62			
42"	7.73			
48"	8.83			

NOTE: ANY PIPE LENGTH EQUAL TO OR LESS THEN 300' SHALL HAVE 0 LEAKAGE

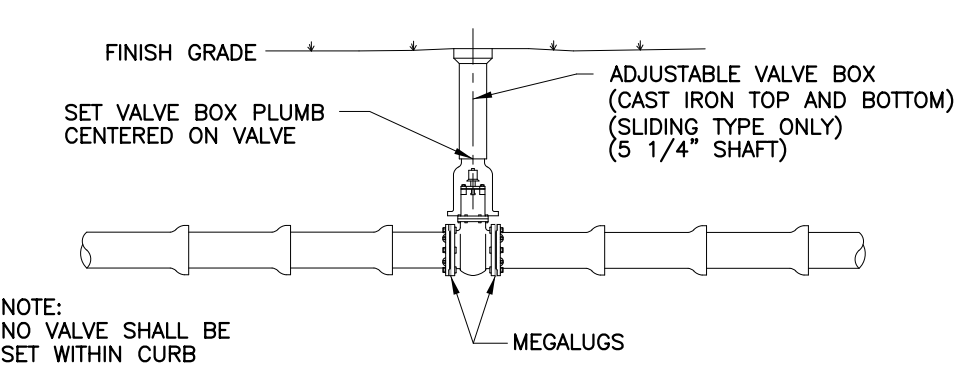
PVC PIPE DETAIL

(REFER TO GENERAL MATERIAL SPECIFICATIONS FOR LIMITATIONS ON USE)



VALVE SETTING

RESTRAINT REQUIRED FOR INLINE VALVES (SEE RESTRAINED JOINT STANDARDS)



NOTE: NO VALVE SHALL BE SET WITHIN CURB

GENERAL SPECIFICATIONS

- IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER/CONTRACTOR TO ENSURE THAT ALL REQUIRED PERMITS ARE IN-HAND BEFORE BEGINNING ANY CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND VERIFYING ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION, AND FOR NOTIFYING THE VARIOUS UTILITY COMPANIES TO MAKE THE NECESSARY ARRANGEMENTS OR ANY RELOCATION, TEMPORARY DISRUPTION OF SERVICE, OR CLARIFICATION OF ACTIVITY REGARDING SAID UTILITY. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN CROSSING AN UNDERGROUND UTILITY, WHETHER SHOWN ON THESE PLANS OR FIELD LOCATED. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING STRUCTURES OR UTILITIES FROM CONSTRUCTION OF WATER FACILITIES. CONTRACTOR SHALL COORDINATE ANY NECESSARY ADJUSTMENTS AND COOPERATE WITH THE OWNER.
- ANY DELAY OR INCONVENIENCE OF THE VARIOUS UTILITIES SHALL BE INCIDENTAL TO THE CONTRACT AND NO EXTRA COMPENSATION WILL BE ALLOWED.
- ALL CONSTRUCTION OF THE WATER DISTRIBUTION SYSTEM SHALL MEET CURRENT ORLANDO UTILITIES COMMISSION SPECIFICATIONS FOR MATERIAL, INSTALLATION, AND DISINFECTION. MATERIAL AND EQUIPMENT SHALL BE STORED, INSTALLED, AND USED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL WATER FACILITIES WILL BE IN COMPLIANCE WITH THE CONDITIONS OF FDEP PERMIT FOR THE PROJECT.
- WATER MAIN SEPARATION FROM SEWER, STORM, AND RECLAIM LINES WILL BE IN COMPLIANCE WITH FDEP GUIDELINES.
- THE MINIMUM SEPARATION REQUIREMENTS FROM SANITARY FORCE MAINS, AT LEAST A 6' HORIZONTAL AND AN 12" VERTICAL SEPARATION AT CROSSINGS, MUST BE OBSERVED WITH NO STANDARD MITIGATION ALLOWED.
- A MINIMUM OF 18" SEPARATION FROM BUILDINGS AND STRUCTURES IS REQUIRED.
- ALL ELECTRICAL CONDUIT TO BE A MINIMUM 2" FROM ALL WATER MAINS, AND APPURTENANCES.
- THE RECLAIMED WATER MAIN SHALL BE ON THE OPPOSITE SIDE OF THE STREET FROM THE POTABLE WATER MAIN WHERE PRACTICAL. IF IT IS NOT PRACTICAL, THE RECLAIMED WATER MAIN SHALL BE INSTALLED AT A MINIMUM HORIZONTAL DISTANCE OF 10 FEET TO EDGES FROM THE POTABLE WATER MAIN. RECLAIMED WATER MAINS SHALL BE BELOW POTABLE WATER MAINS WITH A MINIMUM VERTICAL SEPARATION OF 12".
- ALL HYDROSTATIC TESTING SHALL BE IN ACCORDANCE WITH ANSI/AWWA C600 FOR D.I. PIPE AND ANSI/AWWA C605 FOR PVC PIPE.
- PROVISIONS ARE REQUIRED TO PROTECT EXISTING ACTIVE WATER MAINS FROM BACKFLOW CONTAMINATION DURING FILLING, FLUSHING, TESTING, AND MAINTAINING A PRESSURE IN THE NEW PIPING UNTIL A FDEP LETTER OF CLEARANCE IS OBTAINED.
- THE DISINFECTION OF WATER MAINS SHALL BE IN COMPLIANCE WITH "RULES OF THE DEPARTMENT OF ENVIRONMENTAL REGULATION - CHAPTER 62-555 "PERMITTING AND CONSTRUCTION OF PUBLIC WATER SYSTEMS." THE PROCEDURE WILL MEET AND EXCEED THE REQUIREMENTS SET FORTH IN ANSI/AWWA STANDARDS C851. CHLORINATION IS A 3 DAY PROCESS, STARTING ON MONDAY UNLESS APPROVED BY O.U.C.
- CROSS CONNECTION CONTROL SHALL BE IN ACCORDANCE WITH RULES AND REQUIREMENTS OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION - CHAPTER 62-555 "PERMITTING AND CONSTRUCTION OF PUBLIC WATER SYSTEMS."
- BACKFLOW PREVENTERS SHALL BE LOCATED NO MORE THAN 10 FEET FROM POINT OF SERVICE UNLESS PRIOR APPROVAL HAS BEEN RECEIVED FROM OUC CROSS CONNECTION CONTROL DEPT.
- ALL OUC WATER DISTRIBUTION SYSTEM PIPE SHALL HAVE A MINIMUM OF THIRTY-SIX (36) INCHES OF COVER, UNLESS OTHERWISE DIRECTED BY THE OUC PROJECT ENGINEER OR THEIR REPRESENTATIVE.
- A PRE-CONSTRUCTION MEETING FOR THE INSTALLATION OF WATER FACILITIES IS REQUIRED. CONTACT: OUC WATER CONSTRUCTION 407-649-4436.
- ON NEWLY INSTALLED PIPE, ONLY ONE (1) REPAIR EVERY EIGHT-HUNDRED (800) FEET WILL BE PERMITTED. IF MORE THAN ONE REPAIR IS NECESSARY, THE PIPE WILL NEED TO BE REINSTALLED PER OUC STANDARDS. REPAIRS ARE TO BE MADE USING A MECHANICALLY RESTRAINED SLEEVE. BELL CLAMPS ARE NOT TO BE USED. ANY OTHER METHODS MUST BE APPROVED BY THE OUC ENGINEER.
- ALL TAPS ON ACTIVE WATER MAINS SHALL BE PERFORMED BY AN OUC APPROVED TAPPING CONTRACTOR.
- ALL OUC OWNED SERVICES ASSEMBLIES SHALL HAVE A MINIMUM OF 10' SEPARATION FROM STRUCTURES AND TREES.

GENERAL MATERIAL SPECIFICATIONS

MATERIAL USED IN THE CONSTRUCTION OF THE WATER DISTRIBUTION SYSTEM SHALL ADHERE TO THE REQUIREMENTS OUTLINED IN THE OUC WATER DISTRIBUTION'S SPECIFICATION STANDARDS MANUAL. THE FOLLOWING INFORMATION IS TO PROVIDE GENERAL GUIDANCE IN THE PREPARATION OF CONSTRUCTION PLANS & SPECIFICATIONS, AND IN NO WAY LIMITS OUC'S RIGHTS TO APPROVE OR DISAPPROVE PLANS, SPECIFICATIONS OR INSTALLATIONS. MOST CENTRAL FLORIDA UTILITY SUPPLY COMPANIES HAVE A COPY OF OUC'S SPECIFICATION STANDARDS MANUAL.

- THE TYPICAL O.U.C. DISTRIBUTION SYSTEM PIPE SIZES AND MATERIAL USED ARE:
- TWO INCH (2") WATER MAINS SHALL BE ASTM 2241 CLASS 200 SDR21 POLYVINYL CHLORIDE (PVC) PIPE.
- TWO INCH (2") WATER MAIN UNDER ROADWAY REQUIRES 2" RESTRAINT JOINT SDR 17/CLASS 250 PIPE.
- FOUR INCH (4") WATER MAINS SHALL BE EITHER PRESSURE CLASS 350 DUCTILE IRON (D.I.) IN ACCORDANCE WITH ANSI/AWWA C150/A21.51 AND ANSI/AWWA C151/A21.51 OR, AS CONDITIONS WARRANT, C900 SDR18 CLASS 150 PVC PIPE.
- SIX INCH (6") THROUGH TWENTY FOUR INCH (24") WATER MAINS SHALL BE PRESSURE CLASS 350 D.I. PIPE IN ACCORDANCE WITH ANSI/AWWA C150/A21.50 AND ANSI/AWWA C151/A21.51.
- THIRTY INCH (30") AND LARGER WATER MAINS SHALL BE PRESSURE CLASS 250 D.I. PIPE IN ACCORDANCE WITH ANSI/AWWA C150/A21.50 AND ANSI/AWWA C151/A21.51.

- NOTE:
- THE USE OF 2" AND/OR 4" PVC PIPE MUST BE APPROVED BY O.U.C. WATER ENGINEERING.
 - PVC PIPE MUST BE BLUE IN COLOR OR HAVING CONTINUOUS BLUE MARKINGS TO CONFORM TO AWWA COLORS WITH NSF LOGO FOR POTABLE WATER USE.
 - DUCTILE IRON POTABLE WATER MAINS REQUIRE SPECIAL IDENTIFICATION, SUCH IDENTIFICATION SHALL INCLUDE A MINIMUM OF 4 CONTINUOUS STRIPES SPACED AT NO MORE THAN 80" APART. THE STRIPES SHALL BE MINIMUM TWO INCHES IN WIDTH FOR PIPE 4-12 INCH IN DIAMETER AND FOUR (4) INCHES IN WIDTH FOR LARGER PIPE, AND SHALL BE BLUE IN COLOR. BACKFILL SHALL NOT BE PLACED FOR AT LEAST 30 MINUTES FOLLOWING PAINT APPLICATION.

- ALL PIPE FITTINGS 4" UP TO 30" SHALL BE CEMENT OR EPOXY LINED (CLASS 350) AWWA C153 "COMPACT" DUCTILE IRON, WITH MECHANICAL JOINT ENDS. ALL PIPE FITTINGS 30" OR LARGER SHALL BE CEMENT LINED (CLASS 250) DUCTILE IRON, WITH MECHANICAL JOINT ENDS.
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SPECIAL NOTICE: OUC SPECIFICATIONS OFTEN ADD TO THE MANUFACTURER'S SPECIFICATIONS. IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT: OUC WATER DISTRIBUTION STANDARDS AND SPECIFICATIONS (407) 244-8786 OR VISIT OUR WEB SITE AT: <http://www.ouc.com/vendor>

ouc
 The Reliable One

ENG.: UPCHURCH
 DRAWN: PRIEMER
 DATE: 11-01-04

REVISED: 07-27-06
 MC 04-12-07
 MC 05-04-07
 CS 03-12-08
 CG 05-01-08

ORLANDO UTILITIES COMMISSION
 WATER BUSINESS UNIT
 500 South Orange Ave. Orlando, FL 32801

WATER DETAIL SHEET
 INSTALLATION INSTRUCTIONS

SCALE: N.T.S. CAD No.: WDS2008.DWG FILE: \DETAIL