

\\ctarlin02\Eng\Projects\2024\24-0055\WSD.dwg [C-12] May 27, 2025 9:24am TRUBINO

PVC HORIZONTAL BENDS AND VERTICAL UP BENDS					
PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH L (MINIMUM DISTANCE IN FEET FROM FITTING - EACH WAY)				CROSS WITH FULL DEAD END 12" AVE
	90°	45°	22.5°	11.25°	
6	26	11	6	3	53
8	33	14	7	4	68
12	46	19	10	5	96

PVC VERTICAL DOWN BEND					
PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH L (MINIMUM DISTANCE IN FEET FROM FITTING - EACH WAY)				CROSS WITH FULL DEAD END 12" AVE
	90°	45°	22.5°	11.25°	
6	26	11	6	3	
8	33	14	7	4	
12	46	19	10	5	

DIP HORIZONTAL BENDS AND VERTICAL UP BENDS					
PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH L (MINIMUM DISTANCE IN FEET FROM FITTING - EACH WAY)				CROSS WITH FULL DEAD END 12" AVE
	90°	45°	22.5°	11.25°	
12"	68	28	14	7	144
24"	119	49	24	12	258

DIP VERTICAL DOWN BEND					
PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH L (MINIMUM DISTANCE IN FEET FROM FITTING - EACH WAY)				CROSS WITH FULL DEAD END 12" AVE
	90°	45°	22.5°	11.25°	
12"	144	60	29	14	
24"	258	107	51	25	

RESTRAINED JOINT INFORMATION

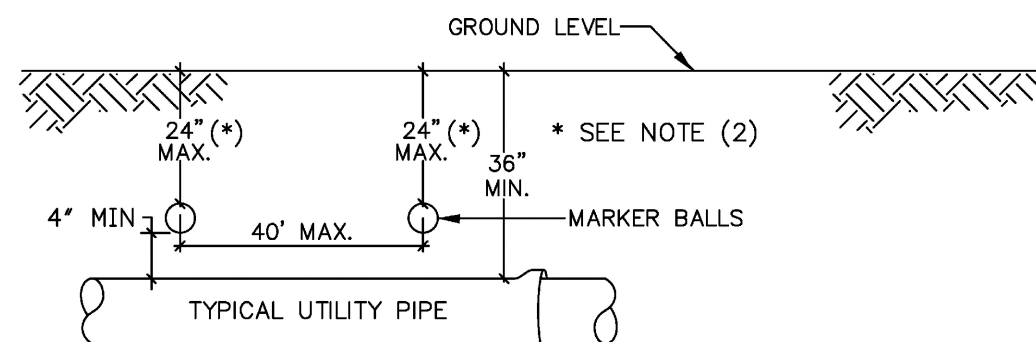
ENGINEERING STANDARDS 2025		
REVISIONS	ENGINEERING DIVISION	RESTRAINED JOINT INFORMATION
BY DATE	CITY OF POMPAÑO BEACH	
		DATE: MAY 2022 DWG. NO. 118-2
	SCALE: N.T.S.	

FITTING TYPE		PIPE SIZE																200psi	
		4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"						
90° HORIZ. BEND		14	20	25	30	35	45	54	62	98	112	124	135						
45° HORIZ. BEND		4	8	11	13	15	19	22	26	41	46	51	56						
22.5° HORIZ. BEND		3	4	5	6	7	9	11	12	19	22	25	27						
11.25° HORIZ. BEND		1	2	3	3	4	4	5	6	10	11	12	13						
90° VERT. OFFSET	UPPER BEND	29	41	53	64	74	95	115	134	214	246	276	304						
	LOWER BEND	7	10	13	16	19	25	30	35	57	66	74	83						
45° VERT. OFFSET	UPPER BEND	12	19	24	29	34	39	48	56	89	102	114	126						
	LOWER BEND	3	4	6	7	8	10	12	15	23	27	31	34						
22.5° VERT. OFFSET	UPPER BEND	6	9	12	14	17	19	23	27	43	49	55	60						
	LOWER BEND	1	2	4	4	5	6	7	11	13	15	16							
11.25° VERT. OFFSET	UPPER BEND	3	4	6	7	8	9	11	13	21	24	27	30						
	LOWER BEND	1	1	1	2	2	2	3	3	6	6	7	8						
FLUG (DEAD END)		32	45	56	70	83	107	129	161	214	246	276	304						
IN-LINE VALVE		32	45	45	45	45	56	65	80	110	125	140	150						
TEE (BRANCH RESTRAINT)	4" x Ø	23	-	-	-	-	-	-	-	-	-	-	-						
	6" x Ø	21	35	-	-	-	-	-	-	-	-	-	-						
	8" x Ø	18	34	47	-	-	-	-	-	-	-	-	-						
	10" x Ø	16	32	46	58	-	-	-	-	-	-	-	-						
	12" x Ø	13	30	44	57	89	-	-	-	-	-	-	-						
	16" x Ø	7	26	41	55	67	90	-	-	-	-	-	-						
	20" x Ø	1	21	36	52	65	86	109	-	-	-	-	-						
	24" x Ø	1	16	34	49	62	86	108	129	-	-	-	-						
	30" x Ø	1	8	28	44	58	83	106	127	208	-	-	-						
	36" x Ø	1	1	22	39	54	80	103	124	208	240	-	-						
	42" x Ø	1	1	15	33	49	77	100	122	208	239	270	-						
	48" x Ø	1	1	7	27	44	73	97	120	203	238	269	288						
REDUCER (LARGER PIPE RESTRAINT)	6" x Ø	23	-	-	-	-	-	-	-	-	-	-	-						
	8" x Ø	39	25	-	-	-	-	-	-	-	-	-	-						
	10" x Ø	57	43	24	-	-	-	-	-	-	-	-	-						
	12" x Ø	72	60	44	41	-	-	-	-	-	-	-	-						
	16" x Ø	99	90	78	75	45	-	-	-	-	-	-	-						
	20" x Ø	125	116	107	105	81	45	-	-	-	-	-	-						
	24" x Ø	146	132	133	131	82	45	-	-	-	-	-	-						
	30" x Ø	209	204	197	188	177	153	116	75	-	-	-	-						
	36" x Ø	243	238	233	228	217	196	168	135	74	-	-	-						
	42" x Ø	273	270	265	259	252	234	211	183	133	72	-	-						
	48" x Ø	301	298	294	289	283	268	248	228	183	131	71	-						

- NOTES:
- THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
SOIL TYPE-SAND TEST PRESSURE-150 PSI/200 PSI
TRENCH TYPE-3 SAFETY FACTOR-1.5
MINIMUM PIPE LENGTH ALONG THE RUN-5'
 - THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
 - ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
 - RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.

RESTRAINED JOINT INFORMATION

ENGINEERING STANDARDS 2025		
REVISIONS	ENGINEERING DIVISION	RESTRAINED JOINT INFORMATION
BY DATE	CITY OF POMPAÑO BEACH	
		DATE: MAY 2022 DWG. NO. 118-3
	SCALE: N.T.S.	

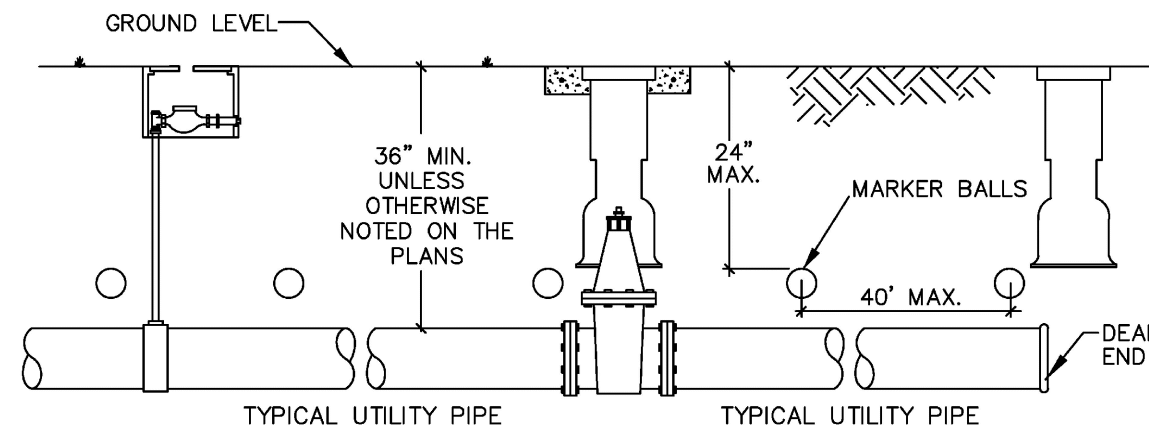


GENERAL NOTES:

- ALL UTILITY PIPE SHALL BE INSTALLED WITH 4"Ø MARKING BALLS PLACED EVERY 40' AND AT EVERY FITTING, FOR IDENTIFICATION AND WARNING PURPOSES, BURIED ABOVE THE PIPE AT A MAXIMUM DEPTH OF 24 INCHES OR AS APPROVED BY THE OWNER. IT SHALL BE COLOR CODED AND WORDED AS FOLLOWS:
POTABLE WATER.
A. COLOR: BLUE PER 62-555.320(21)(b)(3) F.A.C.
B. LETTERING: WATER
C. FREQUENCY OF MARKER BALLS SHALL BE 145.7 Khz.
D. THE MARKER BALLS CAN BE BURIED IN ANY ORIENTATION.
THE MARKER BALLS SHALL BE DETECTABLE BY STANDARD METAL DETECTION EQUIPMENT AND SHALL BE MANUFACTURED BY TEMPO OR 3M LOCATOR SYSTEM OR EQUIVALENT (FREQUENCY 145.7 Khz)
- FOR LARGE DIAMETER PIPE INSTALLED AT DEPTHS BELOW 4'-0" MARKER BALLS SHALL BE PLACED AT A MAXIMUM DEPTH OF 4'-0" BELOW GRADE .

WATER PIPE IDENTIFICATION

ENGINEERING STANDARDS 2025		
REVISIONS	ENGINEERING DIVISION	WATER PIPE IDENTIFICATION
BY DATE	CITY OF POMPAÑO BEACH	
S.S. 01/12		DATE: JAN. 2022 DWG. NO. 119-1
S.S. 06/16		
	SCALE: N.T.S.	

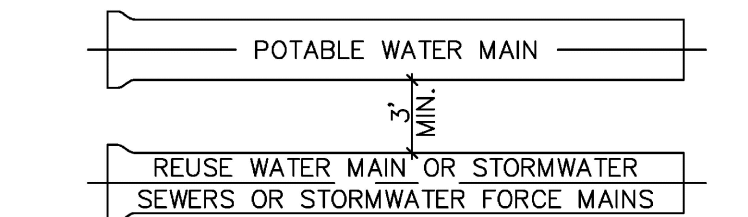


GENERAL NOTES:

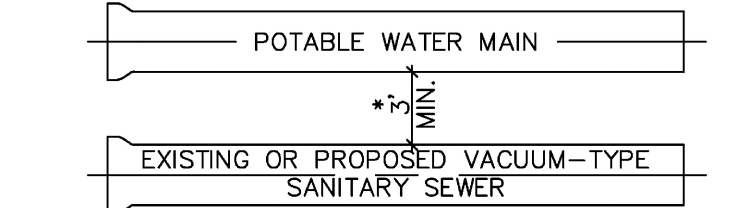
- ALL NONMETALLIC PIPE SHALL BE INSTALLED WITH 12 THHN SOLID COPPER TRACING WIRE.
- THE MARKER BALLS MUST BE INSTALLED DIRECTLY ABOVE THE PIPE.
- MARKER BALLS SHALL BE INSTALLED AT 40' O.C.
- BALL COLOR CODING:
POTABLE WATER SYSTEM: BLUE PER 62-555.320(21)(b)(3) F.A.C.

UTILITY PIPE AND MARKER BALLS LOCATION

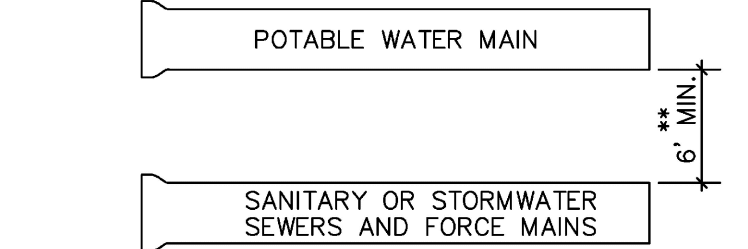
ENGINEERING STANDARDS 2025		
REVISIONS	ENGINEERING DIVISION	UTILITY PIPE AND MARKER BALLS LOCATION
BY DATE	CITY OF POMPAÑO BEACH	
S.S. 01/12		DATE: JAN. 2022 DWG. NO. 120-1
S.S. 06/16		
	SCALE: N.T.S.	



A MINIMUM HORIZONTAL SEPARATION 3' (OUTSIDE TO OUTSIDE), SHALL BE MAINTAINED BETWEEN POTABLE WATER MAINS AND STORMWATER SEWERS, STORMWATER FORCE MAINS AND REGULATED REUSE WATER MAINS.



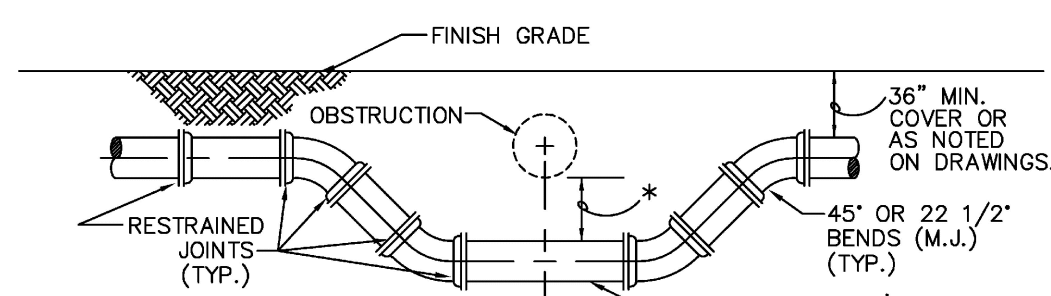
A MINIMUM HORIZONTAL SEPARATION 3' (OUTSIDE TO OUTSIDE), SHALL BE MAINTAINED BETWEEN EXISTING OR PROPOSED VACUUM-TYPE SANITARY SEWER. * SEE NOTE D(1)(B).



A MINIMUM HORIZONTAL SEPARATION OF 6' (OUTSIDE TO OUTSIDE), SHALL BE MAINTAINED BETWEEN POTABLE WATER MAINS AND EXISTING OR PROPOSED GRAVITY-OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN OR NOT REGULATED REUSE WATER MAIN. ** SEE NOTE D(1)(C).

MINIMUM HORIZONTAL SEPARATION REQUIREMENTS FOR POTABLE WATER, REUSE, STORMWATER AND SEWER LINES

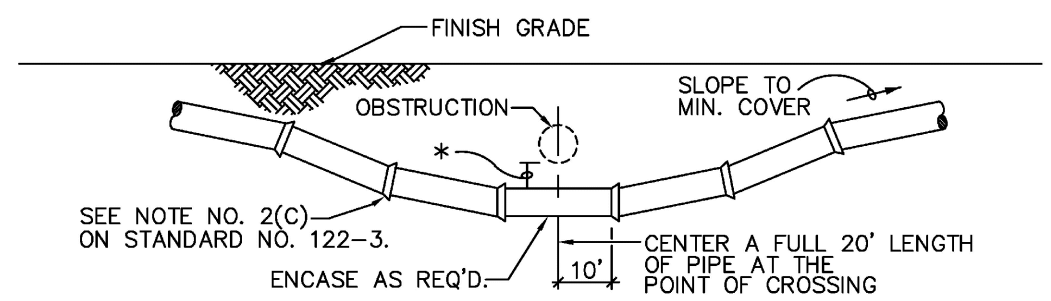
ENGINEERING STANDARDS 2025		
REVISIONS	ENGINEERING DIVISION	MIN. HORIZONTAL SEPARATION FOR POTABLE WATER
BY DATE	CITY OF POMPAÑO BEACH	
S.S. 01/12		DATE: JAN. 2022 DWG. NO. 121-1
	SCALE: N.T.S.	



SPECIAL UTILITY CROSSING - FITTING TYPE

* 12" MINIMUM CLEARANCE REQUIRED FOR PRESSURE TYPE SANITARY SEWER, WASTEWATER OR STORMWATER FORCE MAIN OR REUSE WATER MAIN CROSSINGS. IF MINIMUM CLEARANCE CANNOT BE OBTAINED, REFER TO "PROTECTION OF POTABLE WATER SUPPLY" FOR WATER MAIN CROSSINGS. SEE NOTE 2(B), ON STANDARD NO. 122-3

6" MINIMUM CLEARANCE REQUIRED FOR WATER AND STORMWATER, SEWER MAIN CROSSINGS. SEE NOTE 2(A), ON STANDARD NO. 122-3.



STANDARD UTILITY CROSSING - DEFLECTION TYPE

- NOTES:
- THE DEFLECTION TYPE CROSSING SHALL BE USED WHEREVER POSSIBLE. ONLY UNDER SPECIFIC ORDERS BY THE ENGINEER SHALL THE FITTING TYPE CROSSING BE ALLOWED.
 - CONSTRUCT STANDARD CROSSING USING NO MORE THAN 75% OF MANUFACTURERS' MAXIMUM JOINT DEFLECTION.
 - FOR POTABLE WATER MAINS, REFER TO "PROTECTION OF POTABLE WATER SUPPLY".

UTILITY CROSSINGS

ENGINEERING STANDARDS 2025		
REVISIONS	ENGINEERING DIVISION	UTILITY CROSSINGS
BY DATE	CITY OF POMPAÑO BEACH	
S.S. 01/12		DATE: JAN. 2022 DWG. NO. 122-1
	SCALE: N.T.S.	

PROTECTION OF POTABLE WATER SUPPLY NOTES

A. GENERAL

IN ADDITION TO THESE REQUIREMENTS, ALL POTABLE WATER MAINS CONSTRUCTED IN THE VICINITY OF STORM SEWERS, SANITARY SEWERS OR FORCE MAINS SHALL COMPLY WITH THE APPLICABLE PROVISIONS OF FLORIDA ADMINISTRATIVE CODE CHAPTER 62-555, GREAT LAKES-UPPER MISSISSIPPI RIVER BOARD OF STATE SANITARY ENGINEERS (GLUMRB) "RECOMMENDED STANDARDS FOR WATER WORKS", AND GLUMRB "RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES".

B. DEFINITIONS

FOR THE PURPOSES OF THIS SPECIFICATION, THE WORDS "OTHER PIPE" OR "OTHER PIPES" SHALL MEAN SANITARY SEWER MAIN, SEWAGE FORCE MAIN, STORMWATER MAIN OR ANY COMBINATION THEREOF.

C. CROSS CONNECTIONS PROHIBITED

THERE SHALL BE NO PHYSICAL CONNECTIONS BETWEEN A PUBLIC OR PRIVATE POTABLE WATER SUPPLY SYSTEM AND ANY OTHER PIPE OR APPURTENANCE THERETO WHICH WOULD PERMIT THE PASSAGE OF ANY WASTEWATER, POLLUTED WATER, OR ANY OTHER WATER INTO THE POTABLE SUPPLY. NO WATER PIPE SHALL PASS THROUGH OR COME INTO CONTACT WITH ANY PART OF A SANITARY SEWER MANHOLE OR STORMWATER MANHOLE.

D. RELATION OF OTHER PIPES TO POTABLE WATER MAINS

1. HORIZONTAL SEPARATION

A. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX FEET BETWEEN THE OUTSIDE OF THE WATER MAIN AND THE OUTSIDE OF ANY EXISTING OR PROPOSED STORM MAIN, OR PIPELINE CONVEYING REUSE WATER NOT REGULATED UNDER PART III OF CHAPTER 62-610, F.A.C.

B. 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 GRAVITY-OR PRESSURE-TYPE SANITARY SEWER, WASTEWATER FORCE MAIN, OR PIPELINE CONVEYING REUSE WATER NOT REGULATED UNDER CHAPTER 62-610, F.A.C. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY TYPE SEWERS SHALL BE REDUCED TO THREE FEET WHERE THE BOTTOM OF THE WATER IS LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER.

C. NEW OR RELOCATED, UNDERGROUND WATER MAINS SHALL BE LAID TO PROVIDE A HORIZONTAL DISTANCE OF AT LEAST SIX FEET, 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 REUSE WATER NOT REGULATED UNDER CHAPTER 62-610, F.A.C. THE MINIMUM HORIZONTAL SEPARATION DISTANCE BETWEEN WATER MAINS AND GRAVITY TYPE SEWERS SHALL BE REDUCED TO THREE FEET WHERE THE BOTTOM OF THE WATER IS LAID AT LEAST SIX INCHES ABOVE THE TOP OF THE SEWER.

ENGINEERING STANDARDS 2025		
REVISIONS	ENGINEERING DIVISION	POTABLE WATER SUPPLY NOTES
BY DATE	CITY OF POMPAÑO BEACH	
S.S. 01/12		DATE: JAN. 2022 DWG. NO. 122-2
	SCALE: N.T.S.	