



ENGINEERING STANDARDS 2022			
REVISONS		ENGINEERING DIVISION CITY OF POMPANO BEACH	UNDERGROUND VALVE IDENTIFICATION MARKER
BY	DATE		DATE: FEB. 2022 DWG. NO. 115-1
S.S.	JUNE 2005		
T.W.	11-2007		
T.W.	02-2008		
S.S.	1-24-12	SCALE: N.T.S.	



ENGINEERING STANDARDS 2022			
REVISIONS BY DATE S.S. FEB. 2008 T.W. 11-2007 T.W. 07-2008		ENGINEERING DIVISION CITY OF POMPANO BEACH SCALE: N.T.S.	TF550 INSTALLATION AND SPECIFICATION DATE: MAY 2022 DWG. NO. 117-2



ENGINEERING STANDARDS 2022			
REVISIONS		ENGINEERING DIVISION CITY OF POMPANO BEACH	RESTRAINED JOINT INFORMATION
BY	DATE		
SCALE: N.T.S.			DATE: MAY 2022 DWG. NO. 118-1

PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH L (MINIMUM DISTANCE IN FEET FROM FITTING - EACH WAY)				CROSS WITH FLUP DEAD END TEE/WYE
	BENDS				
	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)			
	BENDS			
	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 PIPE BEAD END TIE/WYE
	90°	45°	22.5°	11.25°	
12"	68	28	14	7	144
24"	119	49	24	12	258

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

RESTRAINED JOINT INFORMATION

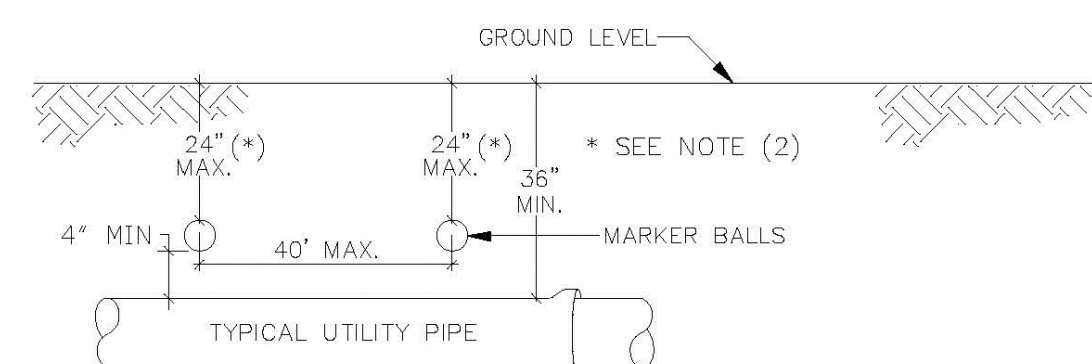
ENGINEERING STANDARDS 2022			
REVISIONS		ENGINEERING DIVISION CITY OF POMPANO BEACH	RESTRAINED JOINT INFORMATION
BY	DATE		
SCALE: N.T.S.		DATE: MAY 2022 DWG. NO.	118-2

PIPE LENGTH OF PIPE (FEET) TO BE RESTRAINED														
(SOURCES: EBAA IRON PIPE LENGTH CALCULATION PROGRAM FOR PVC PIPE, RELEASE 3.1, AND DRIPA THRUST RESISTANCE FOR DUCTILE IRON PIPE, RELEASE 3.2)														
FITTING TYPE	PIPE SIZE										200psi			
	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"
90° HORIZ. BEND	14	20	25	30	35	45	54	63	68	111	124	134	136	
45° HORIZ. BEND	6	8	11	13	15	19	22	26	41	41	46	51		
22.5° HORIZ. BEND	3	4	5	6	7	9	11	12	19	22	25			
11.30° HORIZ. BEND	3	4	5	6	7	9	10	11	12	19	22	25		
90° VERT. OFFSET	UPPER BEND	28	41	53	64	76	92	114	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	32	
22.5° VERT. OFFSET	UPPER BEND	6	9	12	14	17	18	23	27	43	48	56	60	
	LOWER BEND	1	2	4	4	5	6	7	7	13	15	16	16	
11.30° VERT. OFFSET	UPPER BEND	6	8	9	8	7	8	9	11	13	21	24	27	30
	LOWER BEND	1	2	3	2	2	3	3	3	6	8	7	9	
PLUG (BEND SIDE)	32	48	59	70	83	107	139	151	244	268	288	304		
IN-LINE VALVE	32	45	45	45	45	65	65	65	80	120	125	140	155	
TEE (BRANCH RESTRAINT)	6" x 6"	23	—	—	—	—	—	—	—	—	—	—	—	—
	8" x 6"	21	35	—	—	—	—	—	—	—	—	—	—	—
	10" x 6"	18	34	47	—	—	—	—	—	—	—	—	—	—
	12" x 6"	16	30	46	58	—	—	—	—	—	—	—	—	—
	14" x 6"	13	24	47	57	69	—	—	—	—	—	—	—	—
	16" x 6"	7	28	41	55	67	80	—	—	—	—	—	—	—
	20" x 6"	1	31	58	52	65	89	108	—	—	—	—	—	—
	24" x 6"	—	—	—	—	—	—	—	108	139	—	—	—	—
	30" x 6"	1	8	28	44	58	83	106	127	208	—	—	—	—
	36" x 6"	1	1	22	39	54	80	103	124	206	240	—	—	—
	42" x 6"	1	1	15	33	48	77	100	122	205	236	272	—	—
	48" x 6"	1	1	7	27	44	73	97	120	203	238	269	298	—
REDUCER (LARGER PIPE RESTRAINT)	6" x 6"	93	—	—	—	—	—	—	—	—	—	—	—	—
	8" x 6"	38	25	—	—	—	—	—	—	—	—	—	—	—
	10" x 6"	17	43	24	—	—	—	—	—	—	—	—	—	—
	12" x 6"	12	60	44	41	—	—	—	—	—	—	—	—	—
	14" x 6"	9	58	58	75	45	—	—	—	—	—	—	—	—
	20" x 6"	133	116	107	105	81	45	—	—	—	—	—	—	—
	24" x 6"	146	140	132	131	111	80	45	—	—	—	—	—	—
	30" x 6"	209	204	197	186	177	153	116	75	—	—	—	—	—
	36" x 6"	243	236	228	216	203	168	148	134	77	—	—	—	—
	42" x 6"	273	270	263	250	234	213	183	163	133	77	—	—	—
	48" x 6"	301	300	294	284	268	253	248	248	183	131	77	—	—
	200psi													

- NOTES:
1. THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
SOL PIPE-SAND TEST PRESSURE-150 PSI/200 PSI DEPTH OF BURY-3'
TRENCH TYPE-3 STRENGTH FACTOR-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.

RESTRAINED JOINT INFORMATION

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

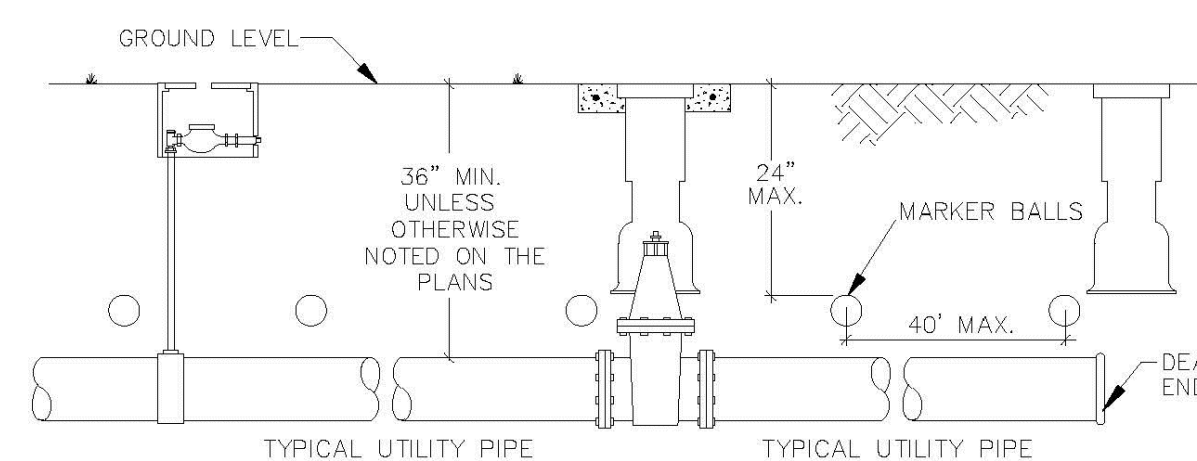


GENERAL NOTES:

1. ALL UTILITY PIPE SHALL BE INSTALLED WITH 4" 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)
2. 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 2022			
REVISONS		ENGINEERING DIVISION CITY OF POMPANO BEACH	WATER PIPE IDENTIFICATION
BY	DATE		
S.S.	01/12		
S.S.	06/16		
SCALE: N.T.S.		DATE: JAN. 2022 DWG. NO.	119-1

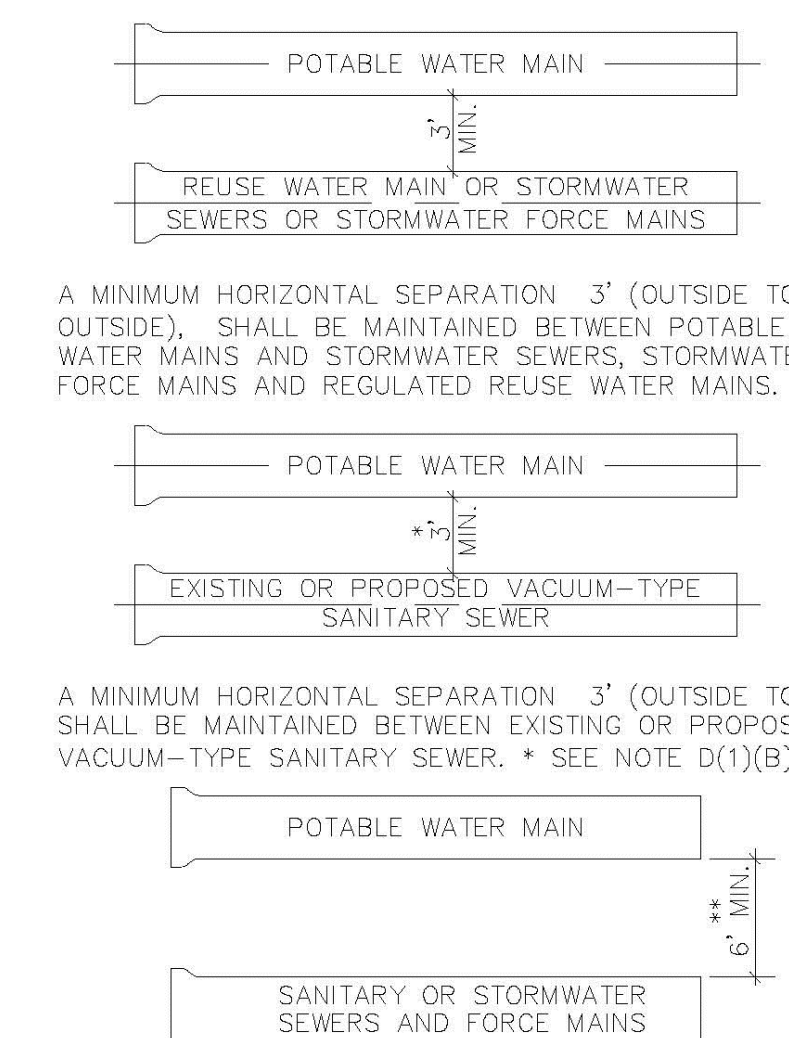


GENERAL NOTES:

1. ALL NONMETALLIC PIPE SHALL BE INSTALLED WITH 12 THHN SOLID COPPER TRACING WIRE.
2. THE MARKER BALLS MUST BE INSTALLED DIRECTLY ABOVE THE PIPE.
3. MARKER BALLS SHALL BE INSTALLED AT 40' O.C.
4. 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 2022			
REVIEWS		ENGINEERING DIVISION CITY OF POMPANO BEACH	UTILITY PIPE AND MARKER BALLS LOCATION
BY	DATE		
S.S.	01/12		
S.S.	06/16		
SCALE: N.T.S.			DATE: JAN. 2022 DWG. NO. 120-1



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

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

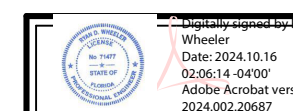
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OAKS @ PALM AIRE
WATER DISTRIBUTION & SANITARY SEWER DETAILS

POMPAÑO REACH, FLORIDA

DATE	06/12/23
DRAWN BY	RHT
F.B./ PG.	N/A
SCALE	n.t.s.



RYAN D. WHEELER
PROFESSIONAL ENGINEER
LICENSE NO. 71477
STATE OF FLORIDA
- FOR THE FIRM -
DATE Oct 16, 2024

JOB #10326

SHT.NO.
WS.04
OF 8 SHEETS