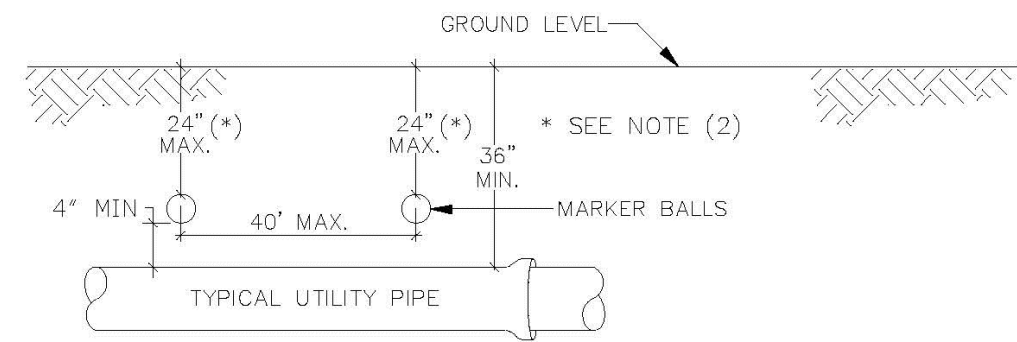




Know what's below.
Call before you dig.

A UTILITIES LOCATES NOTE

SCALE: NTS



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:

- COLOR: BLUE PER 62-555.320(21)(b)(3) F.A.C.
- LETTERING: WATER
- FREQUENCY OF MARKER BALLS SHALL BE 145.7 Khz.
- THE MARKER BALLS CAN BE BURIED IN ANY ORIENTATION.

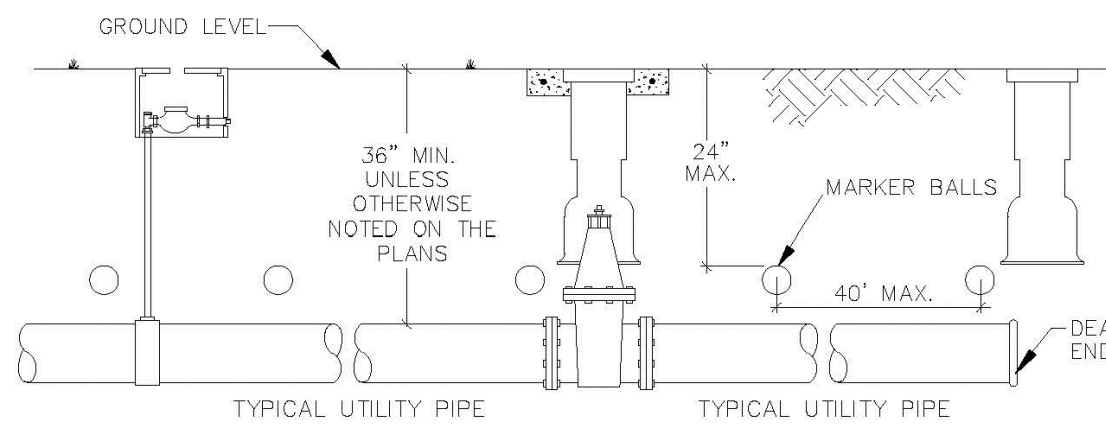
THE MARKER BALLS SHALL BE DETECTABLE BY STANDARD METAL DETECTION EQUIPMENT AND SHALL BE MANUFACTURED BY TEMPO OR 3M LOCATOR SYSTEM OR EQUIVALENT (FREQUENCY 145.7 Khz)

- 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 2022

REVISIONS		ENGINEERING DIVISION CITY OF POMPAÑO BEACH	WATER PIPE IDENTIFICATION	DATE: JAN. 2022 DWG. NO.
BY	DATE			
S.S.	01/12			
S.S.	06/16			
		SCALE: N.T.S.		118-1



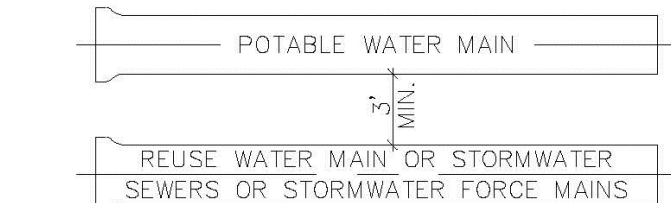
GENERAL NOTES:

- 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.

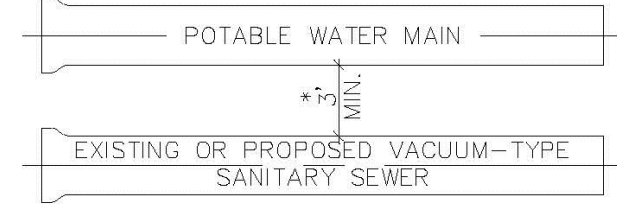
UTILITY PIPE AND MARKER BALLS LOCATION

ENGINEERING STANDARDS 2022

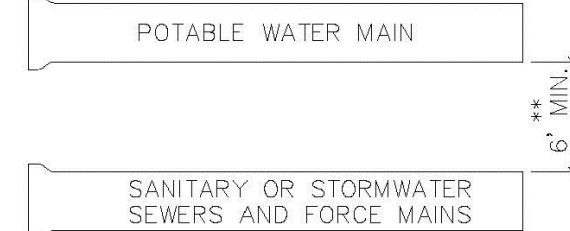
REVISIONS		ENGINEERING DIVISION CITY OF POMPAÑO BEACH	UTILITY PIPE AND MARKER BALLS LOCATION	DATE: JAN. 2022 DWG. NO.
BY	DATE			
S.S.	01/12			
S.S.	06/16			
		SCALE: N.T.S.		120-1



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).

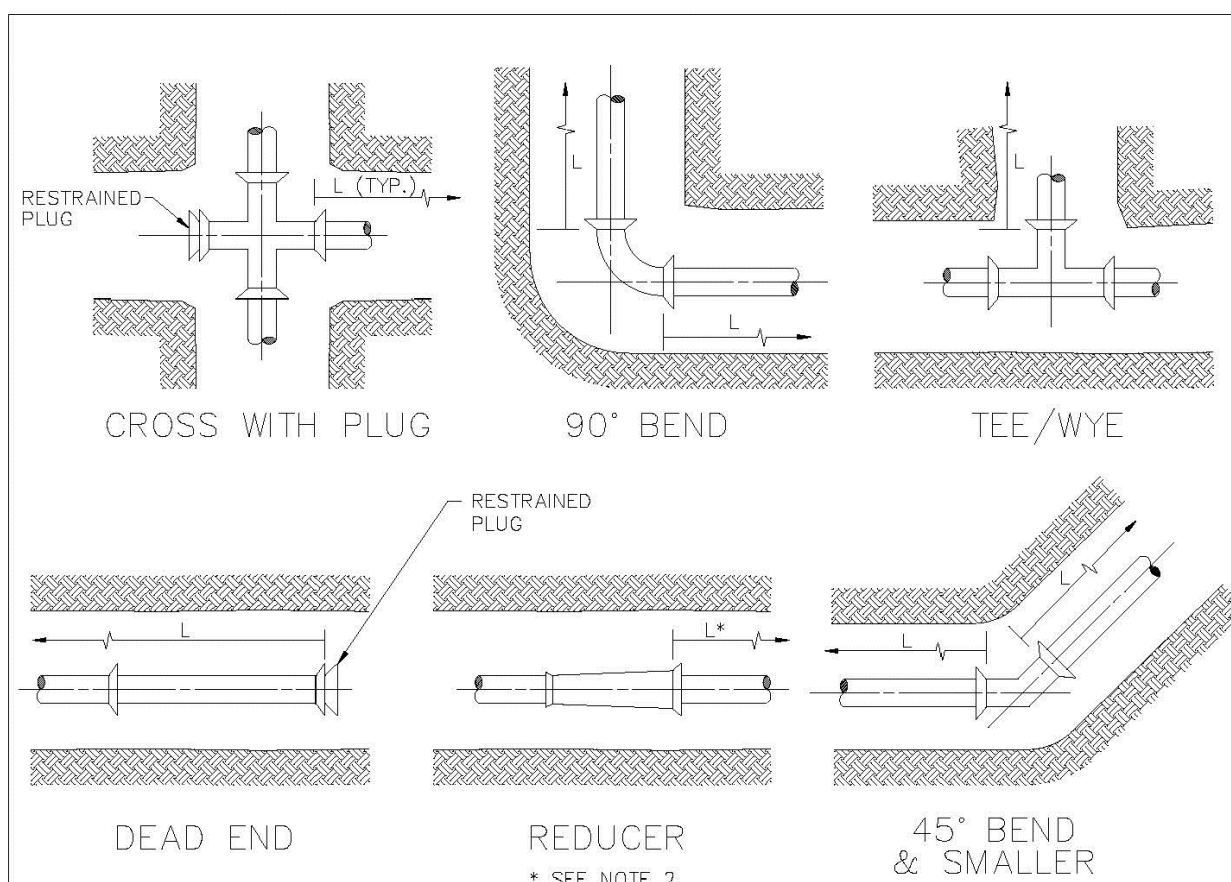
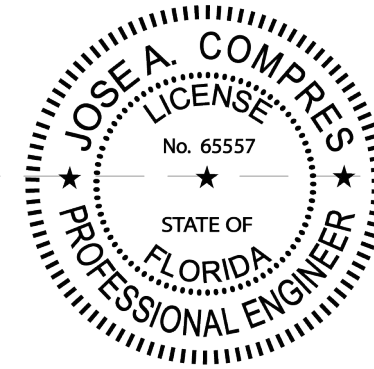


A MINIMUM HORIZONTAL SEPARATION OF 6' (OUTSIDE TO OUTSIDE), SHALL BE MAINTAINED BETWEEN POTABLE WATER MAINS AND EXISTING OR PROPOSED GRAVITY-OR PRESSURE TYPE SANITARY SEWER, WASTEWATER FORCE MAIN OR NOT REGULATED REUSE WATER MAIN. ** SEE NOTE D(1)(C).

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

ENGINEERING STANDARDS 2022

REVISIONS		ENGINEERING DIVISION CITY OF POMPAÑO BEACH	MIN. HORIZONTAL SEPARATION FOR POTABLE WATER	DATE: JAN. 2022 DWG. NO.
BY	DATE			
S.S.	01/12			
S.S.	06/16			
		SCALE: N.T.S.		121-1



GENERAL NOTES:

- VALUES IN TABLE ARE BASED ON 3' OF COVER, 100 PSI INTERNAL PRESSURE, FOR FORCE MAINS, 150 PSI REUSE WATER LINES, ANSI/AWWA C605 & C150/A21.50 LAYING CONDITION 3, ASTM D2487 SAND-SILT SP SOIL TYPE, AND SAFETY FACTOR OF 2.0. RESTRAINED LENGTHS WERE COMPUTED PER DIPRA "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" AND "PVC PIPE THRUST RESTRAINT DESIGN HANDBOOK," EBAA IRON, INC.
- CONFIRM THE EXACT LENGTH OF RESTRAINING REQUIRED FOR REDUCERS, PIPE ENCASED IN POLYETHYLENE AND ENCRANCHING RESTRAINED LENGTHS WITH THE DESIGN ENGINEER.
- THE CONTRACTOR IS RESPONSIBLE FOR PROPER INSTALLATION OF THE RESTRAINED JOINTS TO PREVENT MOVEMENT OF THE PIPE & FITTINGS.
- IN THE EVENT OF A CONFLICT BETWEEN RESTRAINED LENGTHS SHOWN ON THE TABLE AND RESTRAINED LENGTHS SHOWN ON THE DRAWINGS, THE LONGEST RESTRAINED LENGTH SHALL BE USED.

RESTRAINED JOINT INFORMATION

REVISIONS		ENGINEERING DIVISION CITY OF POMPAÑO BEACH	RESTRAINED JOINT INFORMATION	DATE: MAY 2022 DWG. NO.
BY	DATE			
S.S.	01/12			
S.S.	06/16			
		SCALE: N.T.S.		118-1

PVC HORIZONTAL BENDS AND VERTICAL UP BENDS	
PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH L (MINIMUM DISTANCE IN FEET FROM FITTING - EACH WAY)
	BENDS
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
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)
	BENDS
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)
	BENDS
12"	144 60 29 14
24"	258 107 51 25

RESTRAINED JOINT INFORMATION

REVISIONS		ENGINEERING DIVISION CITY OF POMPAÑO BEACH	RESTRAINED JOINT INFORMATION	DATE: MAY 2022 DWG. NO.
BY	DATE			
S.S.	01/12			
S.S.	06/16			
		SCALE: N.T.S.		118-2

MIN. LENGTH OF PIPE (FEET) TO BE RESTRAINED
(SOURCES: EBAA IRON THRUST 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"	30"	36"	42"	48"
90° HORIZ. BEND	14	20	26	32	35	45	54	62	69	112	124	130
45° HORIZ. BEND	6	8	11	13	15	18	22	26	31	46	51	56
22.5° HORIZ. BEND	3	4	5	6	7	9	11	12	13	22	25	27
11.25° HORIZ. BEND	1	1	1	1	1	1	1	1	1	1	1	1
90° VERT. OFFSET	29	41	53	64	74	95	115	134	154	246	276	304
45° VERT. OFFSET	7	10	13	16	19	25	30	36	41	66	74	83
22.5° VERT. OFFSET	12	16	24	29	34	39	46	56	69	102	114	126
11.25° VERT. OFFSET	3	4	6	7	8	10	12	15	18	27	31	34
PLUG (DEAD END)	32	45	58	70	83	107	129	151	174	246	276	304
IN-LINE VALVE	32	45	58	70	83	107	129	151	174	246	276	304
TEE (BRANCH RESTRAINT)	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	
REDUCER (LARGER PIPE RESTRAINT)	12"	16"	20"	24"	30"	36"	42"	48"	54"	60"	66"	72"

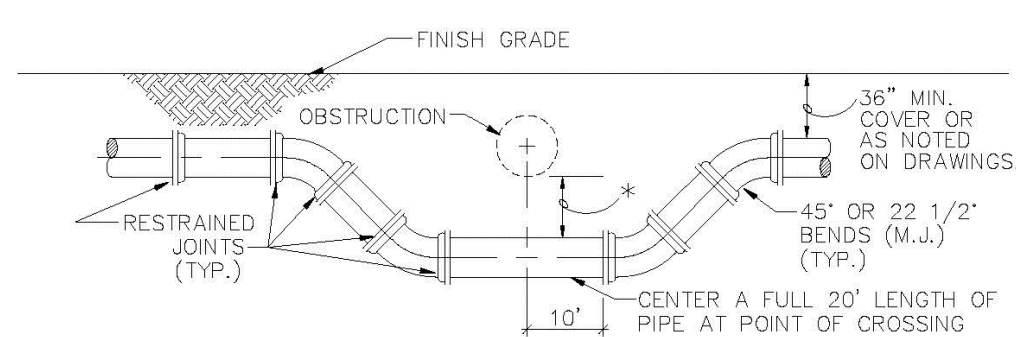
NOTES:

- THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
SOIL TYPE-SAND
TEST PRESSURE-150 PSI/200 PSF
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 2022

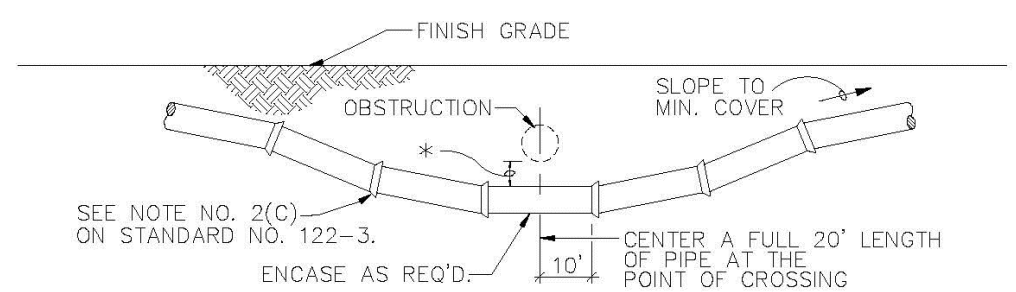
REVISIONS		ENGINEERING DIVISION CITY OF POMPAÑO BEACH	RESTRAINED JOINT INFORMATION	DATE: MAY 2022 DWG. NO.
BY	DATE			
S.S.	01/12			
S.S.	06/16			
		SCALE: N.T.S.		118-3



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 2022

REVISIONS		ENGINEERING DIVISION CITY OF POMPAÑO BEACH	UTILITY CROSSINGS	DATE: JAN. 2022 DWG. NO.
BY	DATE			
S.S.	01/12			
S.S.	06/16			
		SCALE: N.T.S.		122-1

REVISIONS	DATE

DATE:	9/12/2025
SCALE:	AS SHOWN
DRAWN:	FP
CHECKED:	PS
APPVD:	JC
PROJECT ID:	FPV-C251004
CONTRACT NO:	-

SHEET NAME:

GENERAL WATER AND
SEWER DETAILS

DRAWING NO.

C-504