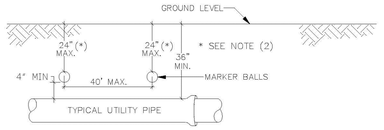
DRC
PZ22-12000032
10/15/2024

811 Know what's below. Call before you dig.

A UTILITIES LOCATES NOTE

SCALE: NTS



GENERAL NOTES:

1. 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.

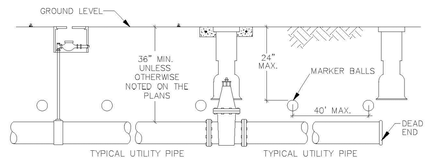
   THE MARKER BALLS SHALL BE DETECTABLE BY STANDARD METAL DETECTION EQUIPMENT AND SHALL BE MANUFACTURED BY TEMPO OR 3M LOCATOR SYSTEM OR EQUIVALENT (FREQUENCY 145.7 Khz)

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

REVISIONS		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



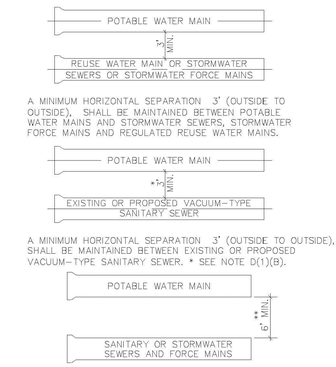
GENERAL NOTES:

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

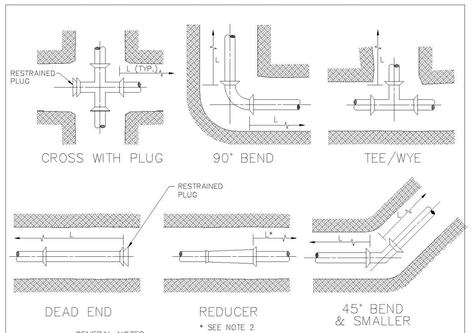
REVISIONS		ENGINEERING DIVISION CITY OF POMPANO BEACH	UTILITY PIPE AND MARKER BALLS LOCATION
BY	DATE		
S.S.	01/12		
S.S.	06/16		
		SCALE: N.T.S.	DATE: JAN. 2022 DWG. NO. 120-1



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

ENGINEERING STANDARDS 2022

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



GENERAL NOTES:

1. 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.
2. CONFIRM THE EXACT LENGTH OF RESTRAINING REQUIRED FOR REDUCERS, PIPE ENCASED IN POLYETHYLENE AND ENCROACHING RESTRAINED LENGTHS WITH THE DESIGN ENGINEER.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPER INSTALLATION OF THE RESTRAINED JOINTS TO PREVENT MOVEMENT OF THE PIPE & FITTINGS.
4. 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

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

PVC HORIZONTAL BENDS AND VERTICAL UP BENDS

PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH L (MINIMUM DISTANCE IN FEET FROM FITTING – EACH WAY) BENDS 90°	45°	22.5°	11.25°	CROSS WITH PLUG DEAD END TEE/WYE
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) BENDS 90°	45°	22.5°	11.25°	CROSS WITH PLUG DEAD END TEE/WYE
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 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

MIN. LENGTH OF PIPE (FEET) 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)

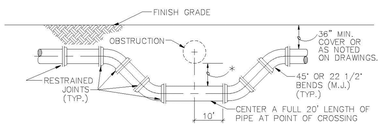
FITTING TYPE	PIPE SIZE	4"	6"	8"	10"	12"	14"	16"	20"	24"	30"	36"	42"	48"
90° HORIZ. BEND		14	20	29	30	35	45	54	82	98	152	124	135	
45° HORIZ. BEND		6	8	11	13	15	19	22	26	41	46	51	56	
22.5° HORIZ. BEND		3	4	5	6	7	9	11	13	19	23	25	27	
11.25° HORIZ. BEND		1	2	3	3	4	4	5	6	10	11	12	13	
90° VERT. OFFSET	UPPER BEND	29	41	53	64	74	93	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	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	
PLUG (DEAD END)		33	45	58	70	83	107	129	151	314	248	276	304	
IN-LINE VALVE		33	45	45	45	45	58	65	80	110	125	140	155	
TEE (BRANCH RESTRAINT)	4"x Ø	33	–	–	–	–	–	–	–	–	–	–	–	
	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	69	–	–	–	–	–	–	–	
	16"x Ø	7	28	41	55	67	80	–	–	–	–	–	–	
	20"x Ø	1	21	38	52	65	88	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	206	240	–	–	
	42"x Ø	1	1	15	33	49	77	100	122	205	238	270	–	
	48"x Ø	1	1	7	27	44	73	97	120	203	238	269	298	
REDUCER (LARGER PIPE RESTRAINT)	6"x Ø	33	–	–	–	–	–	–	–	–	–	–	–	
	8"x Ø	28	25	–	–	–	–	–	–	–	–	–	–	
	10"x Ø	57	43	24	–	–	–	–	–	–	–	–	–	
	12"x Ø	72	60	44	41	–	–	–	–	–	–	–	–	
	16"x Ø	99	90	78	73	45	–	–	–	–	–	–	–	
	20"x Ø	123	116	107	105	81	45	–	–	–	–	–	–	
	24"x Ø	146	140	132	131	111	80	45	–	–	–	–	–	
200psi	30"x Ø	208	204	197	198	177	153	116	75	–	–	–	–	
	36"x Ø	243	238	233	236	217	198	168	135	74	–	–	–	
	42"x Ø	273	270	265	269	252	234	211	183	133	73	–	–	
	48"x Ø	301	298	294	299	283	268	249	226	183	131	71	–	

NOTES:
1. THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
   SOIL TYPE-SAND TEST PRESSURE-150 PSI/200 PSI DEPTH OF BURY-3'
   TRENCH TYPE-3 SAFETY FACTOR-2.0 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

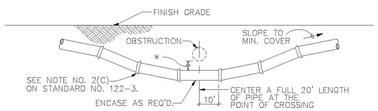
REVISIONS		ENGINEERING DIVISION CITY OF POMPANO BEACH	RESTRAINED JOINT INFORMATION
BY	DATE		
		SCALE: N.T.S.	DATE: MAY 2022 DWG. NO. 118-3



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

UTILITY CROSSINGS

ENGINEERING STANDARDS 2022

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

CONEMCO ENGINEERING
DBA Conemco Engineers
SBA 8a - Civil - Structural - MEP - CEI - Program Management - Land Surveying
782 NW 42ND AVENUE UNIT 635
MIAMI, FL 33126
MAIN NUMBER 888-536-1536
CA # 29447

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY JOSE A. COMPRES ON AUGUST 29TH, 2024. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

Jose Compres — Digitally signed by Jose Compres Date: 2024.08.29 16:52:22 -04'00'

JOSE A COMPRES, P.E
FLORIDA P.E. LIC. # 65557

CONEMCO ENGINEERING, INC.

JOSE A. COMPRES LICENSE No. 65557 STATE OF FLORIDA PROFESSIONAL ENGINEER

PROJECT NAME / ADDRESS:
324 HAUS NEW BUILDING - CIVIL PLANS
324 NW 6TH ST. POMPANO BEACH, FL 33060

CLIENT/OWNER:
MR. RICARDO LARA

REVISIONS	DATE

DATE:	8/29/2024
SCALE:	AS SHOWN
DRAWN:	FP
CHECKED:	PS
APPVD:	JC
PROJECT ID:	FPV-C231001
CONTRACT NO:	-

SHEET NAME:
GENERAL WATER AND SEWER DETAILS

DRAWING NO.
C-504

Sheet No.
14 OF 17