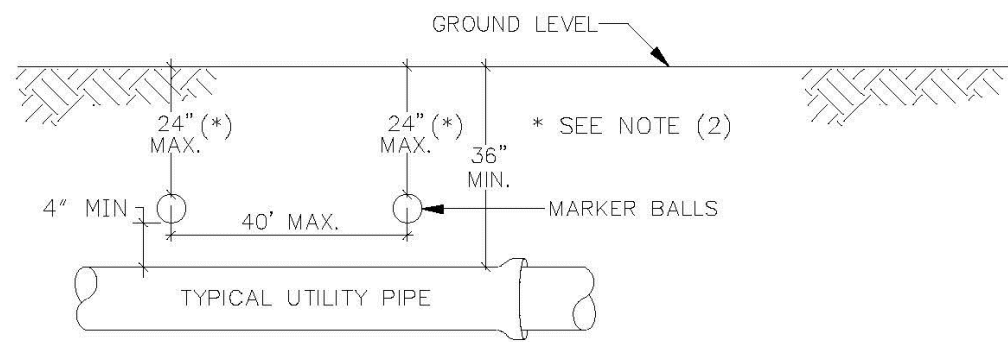




Know what's below.  
Call before you dig.

## 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.

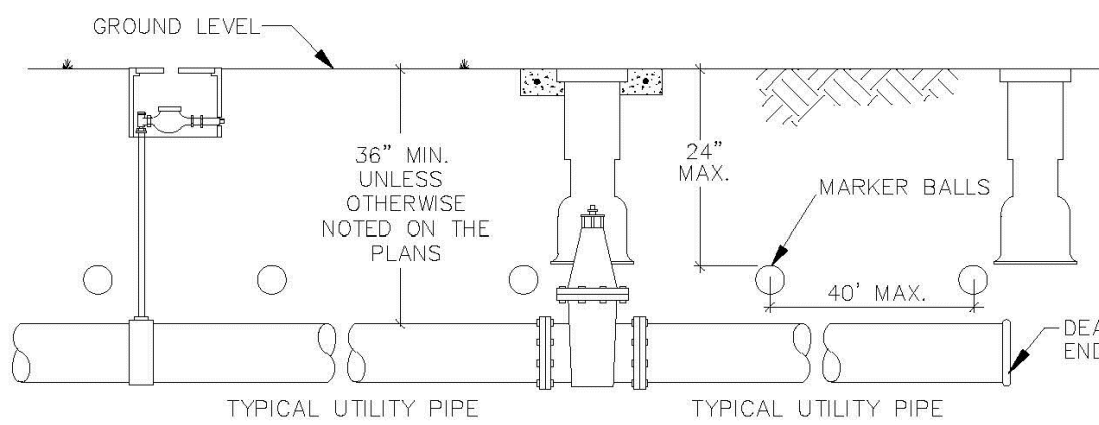
THE MARKER BALLS SHALL BE DETECTABLE BY STANDARD METAL DETECTION EQUIPMENT AND SHALL BE MANUFACTURED BY TEMPO OR 3M LOCATOR SYSTEM OR EQUIVALENT (FREQUENCY 145.7 Khz.)

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 POMPAÑO BEACH	WATER PIPE IDENTIFICATION	DATE: JAN. 2022 DWG. NO.
BY	DATE			
S.S.	01/12			
S.S.	06/16			
		SCALE: N.T.S.		119-1



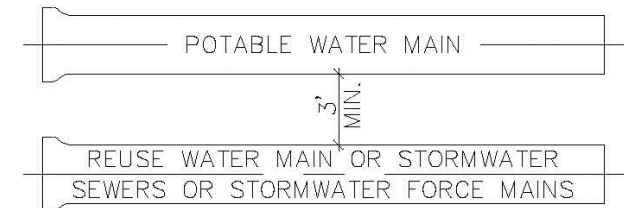
### GENERAL NOTES:

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.

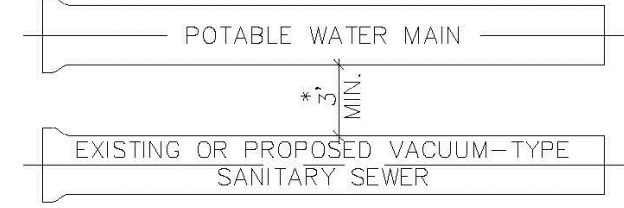
### UTILITY PIPE AND MARKER BALLS LOCATION

#### ENGINEERING STANDARDS 2022

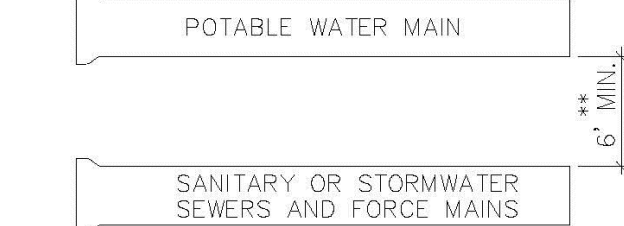
REVISIONS		ENGINEERING DIVISION CITY OF POMPAÑO BEACH	UTILITY PIPE AND MARKER BALLS LOCATION	DATE: JAN. 2022 DWG. NO.
BY	DATE			
S.S.	01/12			
S.S.	06/16			
		SCALE: N.T.S.		120-1



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).

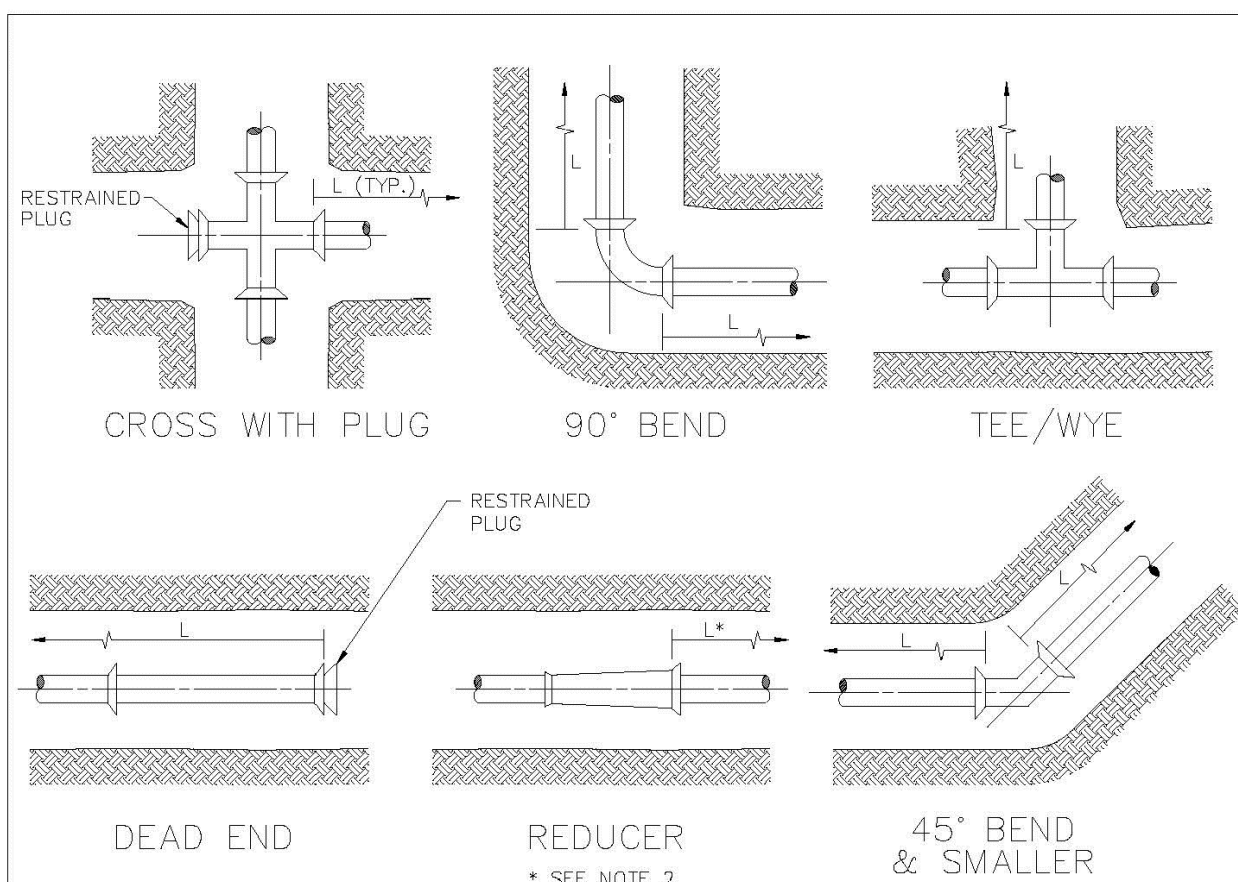
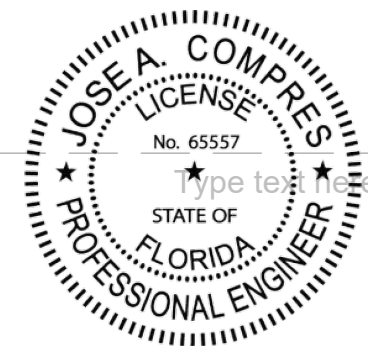


A MINIMUM HORIZONTAL SEPARATION OF 6' (OUTSIDE TO OUTSIDE), SHALL BE MAINTAINED BETWEEN POTABLE WATER MAINS AND EXISTING OR PROPOSED GRAVITY-OR PRESSURE TYPE SANITARY SEWER, WASTEWATER FORCE MAIN OR NOT REGULATED REUSE WATER MAIN. \*\* SEE NOTE D(1)(C).

### 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:

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 ENCRANCHING 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 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)				CROSS WITH DEAD END - TEE PIPE
	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 DEAD END - TEE PIPE
	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 DEAD END - TEE PIPE
	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 DEAD END - TEE PIPE
	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 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 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												200psi
	4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	
90° HORIZ. BEND	14	20	26	32	38	45	54	62	69	112	124	135	
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	2	3	3	4	4	5	6	7	8	11	12	13	
90° VERT. OFFSET	29	41	53	64	76	95	119	134	154	246	276	304	
45° VERT. OFFSET	7	10	13	16	19	23	30	36	41	66	74	83	
22.5° VERT. OFFSET	12	16	20	24	29	34	39	46	56	89	102	114	
11.25° VERT. OFFSET	3	4	5	7	8	10	12	15	18	27	31	34	
PLUG (DEAD END)	33	45	59	70	83	107	129	151	174	246	276	304	
IN-LINE VALVE	37	49	65	78	93	117	141	165	190	262	292	320	
TEE (BRANCH RESTRAINT)	6" x 6"	23	—	—	—	—	—	—	—	—	—	—	
	6" x 8"	18	34	47	—	—	—	—	—	—	—	—	
	10" x 6"	16	32	46	58	—	—	—	—	—	—	—	
	12" x 6"	13	30	44	57	69	—	—	—	—	—	—	
	16" x 6"	7	26	41	56	87	90	—	—	—	—	—	
	20" x 6"	1	19	34	49	67	86	108	129	—	—	—	
	30" x 6"	1	6	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	238	270	
	48" x 6"	1	1	7	27	44	73	97	120	203	236	268	
	6" x 8"	53	—	—	—	—	—	—	—	—	—	—	
	8" x 8"	38	25	—	—	—	—	—	—	—	—	—	
REDUCER (LARGER PIPE RESTRAINT)	10" x 8"	57	43	74	—	—	—	—	—	—	—	—	
	12" x 8"	72	60	14	41	—	—	—	—	—	—	—	
	16" x 8"	38	90	78	75	45	—	—	—	—	—	—	
	20" x 8"	123	118	107	105	81	45	—	—	—	—	—	
	24" x 8"	146	140	131	131	101	65	45	—	—	—	—	
	30" x 8"	209	204	197	188	172	153	116	75	—	—	—	
200psi	36" x 8"	243	238	233	226	217	196	168	135	74	—	—	
	42" x 8"	272	270	265	258	250	226	201	183	163	73	—	
	48" x 8"	301	298	294	286	283	260	234	208	183	131	71	
	60" x 8"	331	326	321	312	306	280	252	224	196	163	131	

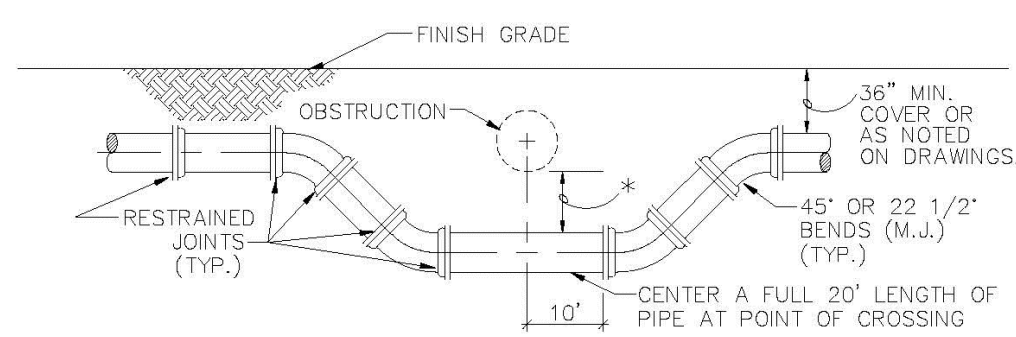
### NOTES:

1. 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'
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

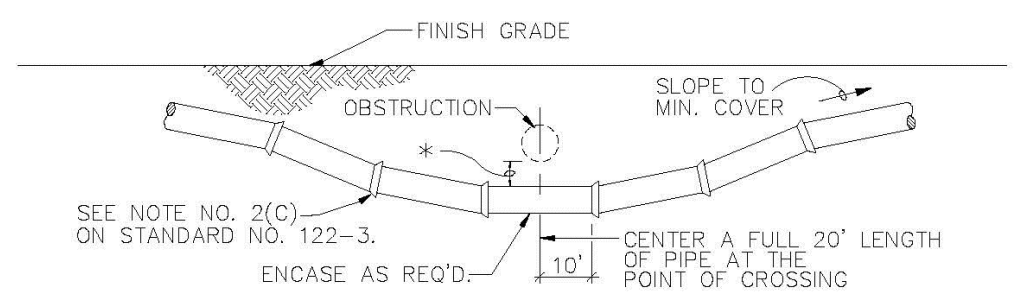
REVISIONS		ENGINEERING DIVISION CITY OF POMPAÑO BEACH	RESTRAINED JOINT INFORMATION	DATE: MAY 2022 DWG. NO.
BY	DATE			
S.S.	01/12			
S.S.	06/16			
		SCALE: N.T.S.		118-3



### 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:

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 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



782 NW 42ND AVENUE UNIT 635  
MIAMI, FL 33126  
MAIN NUMBER 888-536-1536

CA # 29447

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

CONEMCO ENGINEERING, INC.

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

CLIENT/OWNER:  
MR. RICARDO LARA

REVISIONS	DATE

DATE:	2/18/2025
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 18