

REVISIONS			
REV	DATE	COMMENT	BY

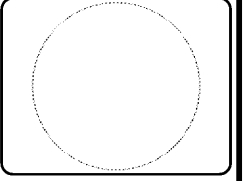
**811**  
 KNOW WHAT'S BELOW  
 ALWAYS CALL 811  
 BEFORE YOU DIG  
 It's fast. It's free. It's the law.

NOT APPROVED FOR CONSTRUCTION

PROJECT NO.: FLB180133  
 DRAWN BY: LUL  
 CHECKED BY: AS  
 DATE: 01/27/2020  
 SCALE: AS SHOWN  
 CAD ID: SDD

PROJECT: **ENGINEERING PLANS**  
 FOR **ENCORE REAL ESTATE**  
 LOCATION OF SITE  
 28100 S TAMAMI TRAIL  
 BONITA SPRINGS, FL 34134  
 LEE COUNTY, FLORIDA

**BOHLER ENGINEERING**  
 3820 NORTDALE BLVD., SUITE 300B  
 TAMPA, FLORIDA 33624  
 Phone: (813) 812-4100  
 Fax: (813) 812-4101  
 FLORIDA LICENSE NO. 10790  
 LANDSCAPE ARCHITECT LICENSE NO. 10790



**CONSTRUCTION DETAILS**

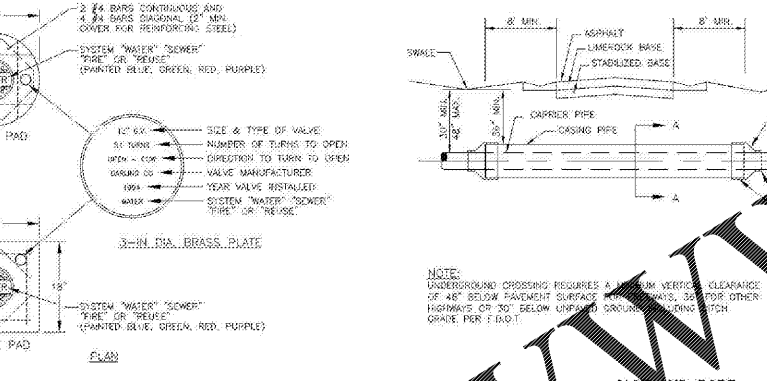
SHEET NUMBER: **C-904**

**LOCATION OF PUBLIC WATER SYSTEM MAINS IN ACCORDANCE WITH F.A.C. RULE 62-555.314**

Other Pipe	Horizontal Separation	Crossings (1)	Joint Spacing @ Crossings (Fall Joint Centered)
Storm Sewer, Stormwater Force Main, Reclaimed Water (2)	Water Main 3 ft. minimum	Water Main 12 inches to the minimum, except for storm sewers, then 6 inches to the minimum and 12 inches to the maximum	Alternate 3 ft. minimum
Vacuum Sanitary Sewer	Water Main 10 ft. preferred 3 ft. minimum	Water Main 12 inches preferred 6 inches minimum	Alternate 3 ft. minimum
Gravity or Vacuum Sanitary Sewer, Sanitary Sewer Force Main, Reclaimed Water (4)	Water Main 10 ft. preferred 3 ft. minimum (3)	Water Main 12 inches to the minimum, except for gravity sewers, then 6 inches to the minimum and 12 inches to the maximum	Alternate 6 ft. minimum
Sanitary Sewer Force Main, Reclaimed Water (4)	10 ft. minimum	—	—

(1) Water mains should never cross over, when water main crosses over other pipe, the minimum separation is 12 inches.  
 (2) Reclaimed water requires under Part III of Chapter 62-555, F.A.C.  
 (3) 1 ft. for gravity storm sewer where the bottom of the water main is laid at least 12 inches above the top of the storm sewer.  
 (4) Reclaimed water requires under Part III of Chapter 62-555, F.A.C.

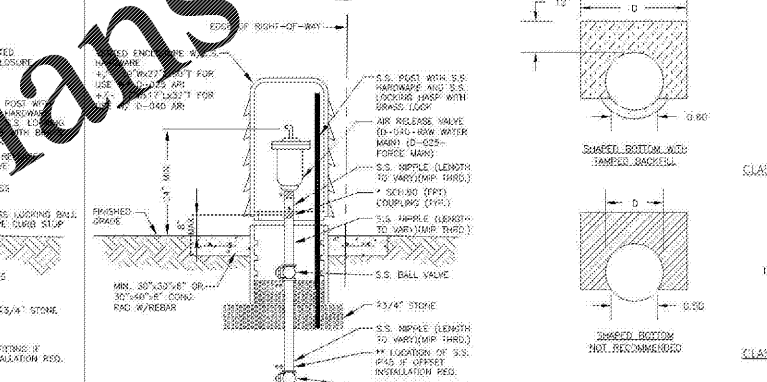
**CROSSING DETAIL**  
 (CB-7)



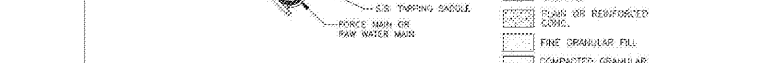
**JACK AND BORE**  
 (CB-10)



**VALVE PAD**  
 (CB-11)



**AIR RELEASE VALVE (WATER)**  
 (2" ONLY)  
 (CB-4)

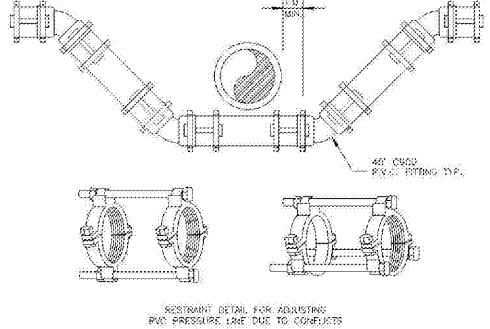


**AIR RELEASE VALVE (RAW WATER/SEWER)**  
 (2" ONLY)  
 (CB-4)

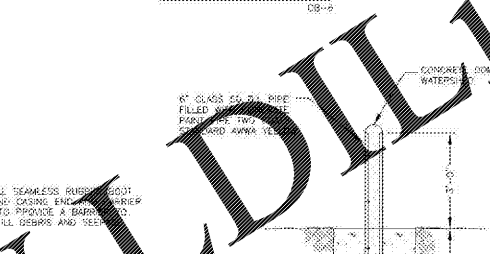


**LEGEND**  
 CAREFULLY TAMPED BACKFILL  
 FINES OR REINFORCED CONC.  
 FINE GRANULAR FILL  
 COMPACTED GRANULAR MATERIAL  
 LIGHTLY COMPACTED CHECKFILL  
 LOOSE BACKFILL

**RESTRAINT SYSTEM FOR PUSH OR P.V.C. FITTINGS & PIPING SIZE AND TYPE AS SPECIFIED ON PLAN**



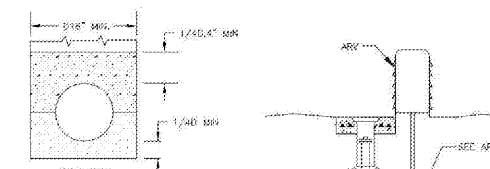
**PVC PRESSURE LINE CONFLICT ADJUSTMENT FITTINGS**  
 (CB-9)



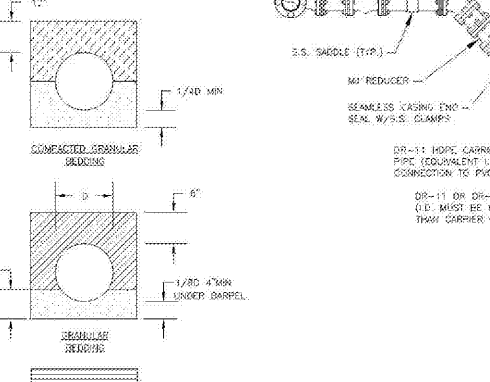
**GUARD POST DETAIL**  
 (CB-12)



**END SEAL/CASING PIPE**  
 (CB-13)



**DIRECTIONAL DRILL**  
 (CB-14)



**CONCRETE/STEEL JOINTMENTS**

B.S.L. DETAIL SHEETS MUST REMAIN AS IS (NO ALTERATIONS)  
 IF ASSUMED DETAILS ARE REQUIRED SUBMIT ON SEPARATE SHEET

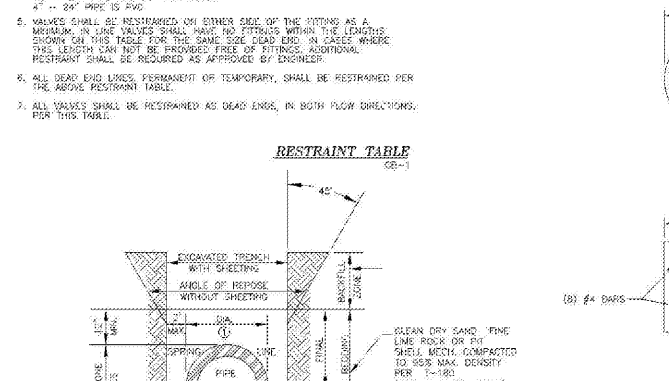
CLIENT: **Bonita Springs Utilities, Inc**  
 PROJECT: **COMBINATION WATER/WASTEWATER DETAILS**  
 TITLE: **COMBINATION WATER/WASTEWATER DETAILS**  
 SCALE: NOT TO SCALE  
 DATE: APRIL 2019  
 DWG #: COMBDET.904  
 SHEET: 02 OF 02

**RESTRAINT TABLE**

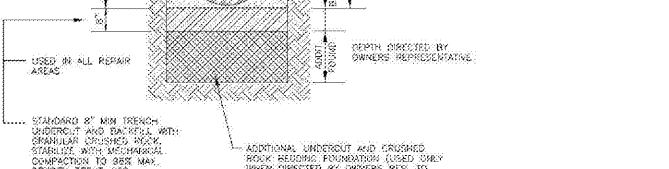
PIPE SIZE	HORIZONTAL BENDS				VERTICAL OFFSETS				DEAD ENDS				TEES				REDUCERS (SEE NOTES)			
	90° (L.F. (F.T.))	45° (L.F. (F.T.))	22.5° (L.F. (F.T.))	11.25° (L.F. (F.T.))	45° (L.F. (F.T.))	22.5° (L.F. (F.T.))	11.25° (L.F. (F.T.))	5.625° (L.F. (F.T.))	45° (L.F. (F.T.))	30° (L.F. (F.T.))	15° (L.F. (F.T.))	7.5° (L.F. (F.T.))	4" (F.T.)	6" (F.T.)	8" (F.T.)	10" (F.T.)	12" (F.T.)	14" (F.T.)	16" (F.T.)	
4"	27"	11"	5"	3"	31"	13"	8"	4"	89"	4"	4"	10"	10"	10"	10"	8" x 4"	6"	4"	45"	
6"	37"	15"	7"	4"	43"	18"	11"	5"	124"	6"	6"	14"	14"	14"	14"	8" x 6"	6"	4"	60"	
8"	48"	20"	10"	5"	57"	24"	15"	7"	151"	8"	8"	18"	18"	18"	18"	8" x 8"	8"	6"	80"	
10"	57"	24"	12"	6"	69"	31"	19"	9"	181"	10"	10"	22"	22"	22"	10" x 10"	10"	8"	100"		
12"	67"	29"	15"	8"	83"	39"	25"	12"	216"	12"	12"	28"	28"	28"	12" x 12"	12"	10"	120"		
14"	75"	33"	17"	9"	97"	47"	31"	14"	251"	14"	14"	34"	34"	34"	14" x 14"	14"	12"	140"		
16"	83"	37"	19"	10"	111"	55"	37"	16"	286"	16"	16"	42"	42"	42"	16" x 16"	16"	14"	160"		
18"	91"	41"	21"	11"	125"	63"	43"	18"	321"	18"	18"	50"	50"	50"	18" x 18"	18"	16"	180"		
20"	99"	45"	23"	12"	139"	71"	49"	20"	356"	20"	20"	58"	58"	58"	20" x 20"	20"	18"	200"		
24"	115"	53"	27"	14"	161"	85"	59"	24"	421"	24"	24"	70"	70"	70"	24" x 24"	24"	20"	240"		

**NOTES:**  
 1. LENGTHS SHOWN ON THIS TABLE ARE TO BE INTERPRETED AS FOLLOWS:  
 (a) RESTRAINED LENGTH FROM HIGH SIDE FITTING OF A VERT. BEND  
 (b) RESTRAINED LENGTH FROM LOW SIDE FITTING OF VERT. BEND  
 (c) RESTRAINED LENGTH ON BOTH SIDES FROM FITTING  
 (d) MINIMUM LENGTH TO FIRST JOINT OF RUN ON BOTH SIDES  
 (e) RESTRAINED LENGTH REQUIRED ON BRANCH FROM FITTING (L) = LENGTH OF PIPE ON SMALL SIDE FREE OF FITTING (R) = RESTRAINED LENGTH ON LARGE SIDE OF REDUCER  
 2. A SAFETY FACTOR OF 2.0 IS USED FOR VERTICAL OFFSETS TO COMPENSATE FOR SOFTENED SOIL CONDITIONS. A SAFETY FACTOR OF 2.0 IS USED FOR ALL OTHER CASES.  
 3. (L) AND (R) ABOVE ARE TWO OPTIONS FOR PROVIDING THE REQUIRED TRUST RESTRAINT FOR THE FITTING. EITHER (L) OR (R) LENGTH OF PIPE FREE OF FITTINGS (BENDS, TEES, REDUCERS OR VALVES) ON THE SMALL SIDE OF THE RESTRAINER WILL PROVIDE THE REQUIRED RESTRAINT ON (L) OR (R) LENGTH CAN BE RESTRAINED ON THE LARGE SIDE OF THE FITTING.  
 4. THE FOLLOWING ARE ASSUMED:  
 (a) 4" - 24" PIPE HAS 30" MIN. COVER  
 (b) 12" - 24" PIPE HAS 30" MIN. COVER  
 (c) 4" - 24" PIPE IS PVC  
 5. VALVES SHALL BE RESTRAINED ON EITHER END OF THE FITTING AS A MINIMUM IN LINE WITH THE SPACE BETWEEN FITTINGS WITH THE LENGTHS SHOWN ON THIS TABLE FOR THE SAME SIZE DEAD END IN CASES WHERE THE LENGTH CAN NOT BE DETERMINED FROM FITTINGS. ADDITIONAL RESTRAINT SHALL BE PROVIDED AS APPROVED BY ENGINEER.  
 6. ALL DEAD END LINES, PERMANENT OR TEMPORARY, SHALL BE RESTRAINED PER THE ABOVE RESTRAINT TABLE.  
 7. ALL VALVES SHALL BE RESTRAINED AS DEAD ENDS, IN BOTH FLOW DIRECTIONS, PER THIS TABLE.

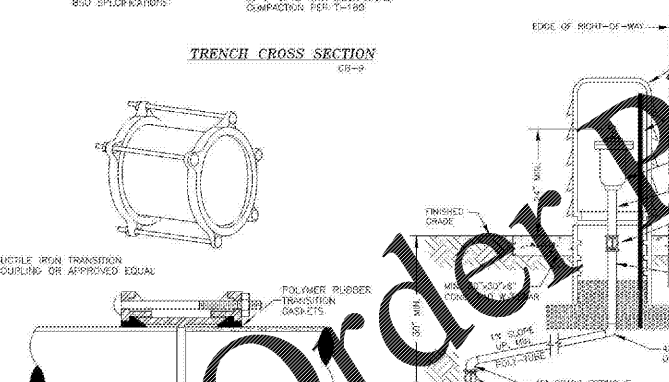
**RESTRAINT TABLE**  
 (CB-1)



**TRENCH CROSS SECTION**  
 (CB-2)



**AIR RELEASE VALVE (WATER)**  
 (2" ONLY)  
 (CB-4)



**AIR RELEASE VALVE (RAW WATER/SEWER)**  
 (2" ONLY)  
 (CB-4)



**DUCTILE IRON TRANSITION COUPLING**  
 (CB-5)  
 JOINTS CAST IRON, DUCTILE IRON, ASBESTOS-CEMENT, C-900 BY MECHANICAL JOINT COMPRESSION PRESSURE.