

EXHIBIT "D"

**SEACOAST UTILITY AUTHORITY
4200 HOOD ROAD
PALM BEACH GARDENS, FL 33410**

(PHONE: 561-627-2900)

"SHOP" SPECIFICATIONS

Project Name: _____

Concurrence of Utility Contractor: _____
Signature Date

Firm

Concurrence of the Engineer: _____
Signature Date

Firm

By signature above, the utility contractor and engineer for referenced project agrees to adhere to both the following product specifications and Authority's Construction Standards and Specifications (latest edition). It is understood that Authority will reject construction not in accordance with this document.

Basis: The following products and specifications have been found to be acceptable and/or desirable in their respective groups. Shop drawings need not be submitted for Authority's approval if the contractor uses products on this list. Any product that is not on this list must be approved in advance by Authority. Such approval requires the submission of sufficient copies (Authority will retain two copies) of a shop drawing for each product that has been approved by the EOR. Shop drawings will also be required for all non-standard items including, but not limited to all precast concrete structures, manholes, exterior joint wrap, wet wells, grease interceptors, oil separators, castings, pumps and electrical panels. All material for use in a potable water system shall be NSF61 certified.

CIRCLE ITEMS OF CHOICE

I. MAIN LINE CONSTRUCTION FOR WATER, SANITARY SEWER, AND RECLAIMED WATER

A. Pipe - All pipe must be properly labeled.

1. Water Main/Reclaimed Water Main

a. Push on and mechanical joint-DIP, Class 350, Cement mortar lining AWWA C-151 and C-104. MJ pipe shall require ductile iron glands and corten steel tee bolts.

1. American 2. U.S. Pipe 3. McWane

b. Flanged DIP Class 53, Cement mortar lining AWWA C-151 and C-104, flanges must be ductile iron.

1. American 2. U.S. Pipe 3. McWane

2. Sanitary Force Main

a. Direct bury pipe shall be C-900, SDR 14 PVC

b. Subaqueous crossing pipe shall be push on and mechanical joint-DIP, Pressure Class 350, Protecto 401 lined, AWWA C-151 and C-104. MJ pipe shall require ductile iron glands and Cor-Ten Tee Bolts.

1. American 2. U.S. Pipe 3. Griffin 4. Clow 5. McWane

c. Above grade lift station piping and canal crossing pipe shall be flanged DIP Class 53, Polyethylene Protecto 401, or Permox CTF lined AWWA C-115 and C-104. Flanges must be ductile iron.

1. American 2. U.S. Pipe 3. Griffin 4. Clow 5. McWane

d. The lining must be installed at pipe manufacturing plant or at approved applicator facility.

3. Gravity Sewer Main

a. Pipe

1. PVC - ASTM D-3034, SDR 26, For 12' and deeper cut or where plans require use SDR 18 AWWA C-900. Transition from SDR 18 to SDR 26 not permitted in runs between manholes, Factory color coded green.

b. Manhole Cover

1. U. S. Foundry Model #230-AB-M

2. Vulcan Foundry Model #VM-101

B. Valves and Fittings - All rubber and synthetic elastomeric components of products that come in contact with potable water shall be manufactured with chloramine resistant elastomers.

1. Resilient Seat Gate Valves AWWA C-509, C-515 for water valves up to and including 12 inch. (Wedge material to be EPDM. EPDM to be clearly stamped on wedge)

- a. American Flow Control
- b. U.S. Pipe
- c. Mueller
- d. Clow
- e. Kennedy

2. Butterfly Valves C-504 14 inch and larger (Ductile iron body, bi-directional, and seat material shall be EPDM. Valve shall clearly identify that seat material is EPDM and is bi-directional)

- a. Mueller Linesal
- b. Pratt
- c. M&H 4500 12"-24" 1450-30"+
- d. GA Series 800

3. OS & Y Valves (Flanged - Above ground fire line use only - wedge material to be EPDM. EPDM to be clearly stamped on wedge)

a. Valves shall be resilient seat and equipped with bronze follower packing gland and bronze follower studs and nuts. (Cast iron and/or cadmium-plated steel are not acceptable). AWWA C-509.

- 1. U. S. Pipe
- 2. American
- 3. Kennedy
- 4. Clow

4. Plug Valves (Minimum 80% port opening, bi-directional Ductile Iron Body)

a. Below grade - mechanical joint, side actuated with 2" square operating nut

- 1. Kennedy
- 2. GA Eco-Centric

b. Above grade - flanged 4" to 8" - top activated with 2" square operating nut. Ten inch and larger, wheel operated

- 1. Kennedy
- 2. GA Eco-Centric
- 3. VSI

5. Tapping sleeve and valve

a. Tapping sleeves for water mains and reclaimed mains.

1. For use on 4" to 24" cast iron, ductile iron, and cement asbestos mains. 304 or 316 stainless steel construction required, including outlet flange.

- a. Ford FTSS
- b. JCM 432
- c. Mueller H304
- d. Cascade CST-EX
- e. JCM 452

2. For use on 30” cast iron, ductile iron, or cement asbestos mains. 304 or 316 stainless steel construction required, including outlet flange.

a. JCM 452

3. For use on 12” and larger cast iron or ductile iron mains.

a. Mueller H-615

b. American Series 2800-C

4. Sanitary Sewer Force Main (316 stainless steel body, bolts and outlet).

a. JCM 432

b. Tapping Valves

1) Water (Resilient seat - Wedge material to be EPDM. EPDM to be clearly stamped on wedge).

a. Mueller b. American

c. Kennedy d. Glow

6. Check Valves

a. Lift Station - outside lever and weight only AWWA C-508, neoprene seat

1. Mueller 2602-6-01 3. Kennedy Style 106 LW

2. APCO 250 LW 4. VSI Series CVI

7. Air Release Valves

a. Potable main, Reclaimed Water Main 1" Inlet

1. Val-Matic Model #25

2. Crispin Model # PL10

3. APCO Model #200A

b. Force Main 2" Inlet

1. Val-Matic Model #48 A with 316 stainless steel internal hardware

8. Fittings, AWWA C-104 AWWA C-110, Mechanical joint fitting to be compact ductile iron (Class 350 AWWA C-153) only. Glands for MJ fittings shall be ductile iron and tee bolts shall be corten steel. Flange fittings AWWA C104 AWWA C110. Epoxy coated fittings shall also meet or exceed ANSI/AWWA C550 and C116/AZI 116.

- a. Cement lined for water main and reclaimed water main use
- b. Protecto 401, or Permax CTF lined for force main use
- c. Full face neoprene gaskets shall be required on all flanged fittings.
- d. Flange bolts on flanged connections inside lift station wet wells shall be 316 stainless steel.

- 1. Tyler/Union
- 2. Sigma
- 5. SIP
- 3. Star
- 4. Griffin

9. Transition Couplings - Ductile iron body and glands only with ductile iron or stainless steel nuts and bolts and EPDM gaskets.

- a. Romac Macro HP

10. Fire Hydrants (AWWA C-502 "traffic type" break away flange, no cut bolts; non-rising stem; dry barrel; 5-1/4 inches main valve opening; bronze to bronze seating) no drain

- a. Mueller Super Centurion
- b. Kennedy K-81 D (Guardian)
- c. American Flow Control B-84-B
- d. Clow Medallion F-2545 No Drain

11. Flushing Hydrant - post type, 3" mechanical joint connection rated working pressure of 150 PSI

- a. M & H 2 -1/4"

12. Tie Rods - all valves, hydrants, tees, joints and other appurtenances which are restrained by means of tie back bolts, nuts, washers and all thread rods shall meet ASTM A-242 requirements (corten steel or equivalent) and painted in accordance with Authority's specifications. Tie back bolts shall be Star Model SST 753 of corten steel or approved equivalent. All tie rods shall be a minimum 3/4" diameter; the use of rebar with welded thread is prohibited. Two tie rods are required per joint for pipe sizes 4" through 10". A minimum of four tie rods are required per joint for pipe sizes 12" and larger.

13. Self restraining gaskets for push on DIP

- a. U.S. Pipe - "Field Lok"
- b. American - "Fast Grip"
- c. McWane - "Sure Stop 350"

14. Restrained mechanical joint gland

- a. EBBA Iron - "Megalug" (all sizes)
- b. Sigma – One Lok (all sizes)
- c. Star Pipe – Stargrip 3000 (sizes through 24")
- d. Tyler Union - (4" through 16")
- e. SIP – EZ Grip

II. SERVICE LINE CONSTRUCTION

A. Pipe

- 1. Water Service – 1", 1 ½", or 2"
 - a. Driscopipe 5100, Endot Endopoly, ADS polyethylene tubing
 - b. Type "K" copper tubing
- 2. Sanitary Sewer Service Lateral – factory color coded green
 - a. PVC (conforming to ASTM D3034, SDR 26)
 - b. SDR 18 AWWA C-900 PVC pipe shall be required for services connecting to deep sanitary sewer mains

B. Fittings

- 1. Water Service - Standard (Service under paving requires shop drawing submittal on corporation stop, and curb valve box, curb and corporation stops shall be same manufacturer).
 - a. Polyethylene tubing - "Pack-Joint" fittings, or equal with stainless steel inserts.
 - b. Type "K" copper tubing
 - 1. Cast brass solder joint fittings, or equal for above ground backflow prevention device installation.
 - 2. Both lead free solder and flux shall be used on all solder joints.
 - c. Service Saddles (Brass double strap saddle only, AWWA Threads)
 - 1. Mueller
 - 2. Ford 202B
 - 3. Romac Style 202B
 - 4. A.Y. McDonald 3825 Series
 - 5. Smith-Blair 325
 - d. Corporation Stops (AWWA Inlet Threads x compression, lead free)

1. A.Y. McDonald Mfg. Co. Model #4101B-22
2. Ford - FB 1000 - 4 NL for 1" inlet & outlet
FB 1000 - 6 NL for 1 1/2"
FB 1000 - 7 NL for 2"

3. Mueller Co. Model # P25008

e. Curb Stops (Locking wings & drilled meter nut, lead free)

1. Ford Straight Ball Meter Valves
2. Mueller Model #300
3. McDonald Model 6100 MW-22

2. Gravity Sewer Service Fittings – factory color coded green or white

- a. PVC injection molded conforming to, and compatible with ASTM 3034 SDR 26 or SDR 35 PVC pipe
- b. SDR 18 AWWA C-900 PVC pipe shall be required for services connecting to deep sanitary sewer mains
- c. USSI LDL Clean out Plug (green) to be installed after construction

III. BACKFLOW PREVENTION DEVICES

1. Reduced Pressure Backflow Preventer – Residential sewer systems connected to low pressure force mains, Non-residential, multi-family, or residential with three or more units.

- Size 3/4" – 2" with standard ball valves – supply with chloramine resistant elastomers and lead free brass.
 - a. Ames Model LF 4000 B
 - b. Apollo Model RPLF 4A
 - c. Watts Model LF 919
 - d. Zurn Wilkins 975XL2
- Size 3/4" – 2" with union ball valves – supply with chloramine resistant elastomers and lead free brass for dual backflow installations.
 - a. Apollo Model RPLF 4A with union ball valves
 - b. Zurn Wilkins 975XL2U

- Size 4" – 8", supply with chloramine resistant elastomers, grooved stainless steel body, lead free components and flange x groove non-rising stem gate valves.

a. Apollo Model RPLF 4A

b. Zurn Wilkins 375 AST

2. Double Check Valve Backflow Preventer.

- Size ¾" – 2" - supply with chloramine resistant elastomers and lead free brass for residential fire lines.

a. Apollo DCLF 4A

b. Watts LF 719

c. Zurn Wilkins 950XLT2

- Size 4" – 8", supply with chloramine resistant elastomers, grooved stainless steel body, lead free components and flange x groove non-rising stem gate valves for large meter bypass lines.

a. Apollo DCLF 4A

b. Zurn Wilkins 350 AST

3. Double Detector Check Valves with detector bypass meter and check valve assembly. Sensus meter required which must be purchased from Authority. Supply with chloramine resistant elastomers, grooved lead free stainless steel body, lead free components and flange and groove rising stem gate valves.

- Size 4" – 8"

a. Ames Deringer 30G

b. Apollo Model DCDALF 4A

c. Zurn Wilkins 350 AST DA

IV. PIPELINE MARKING TAPE

1. Vinyl plastic tape PVC backing material with rubber based adhesive, minimum 6 inch width, 0.006 inches in thickness, 20.0 lb inch Tensile strength. Wording, minimum 5/8 inch in height. Wording and color according to application.

a. Proline Safety for Ductile Iron Pipe

b. 3M 7900 EMS Warning Tape for PVC and Polyethylene Pipe

V. TRACER WIRE

1 Tracer wire box

a. Copper Head Access Box #RB14TB

2. Tracer Wire

- a. Copper Head #12 AWG solid 1245-EHS

3. Tracer Wire Connector

- a. Dryconn Direct Bury Lugs #90120

VI. ADJUSTABLE VALVE BOX (2 piece - 5' 4")

1. Tyler

2. Proselect

3. Star

VII. VALVE BOX PLUG

1. LDL Valve Plug