



**ENGINEERING SERVICES DEPARTMENT  
CONSTRUCTION ADMINISTRATION  
401 Clematis Street  
Fourth Floor  
West Palm Beach, Florida 33401  
Phone: 561-822-1200  
Fax: 561-494-1116**

## **APPROVED MATERIALS LIST (AML)**

**REVISED: November 1, 2011**

**PLEASE REFER TO THE GENERAL NOTES AND SUBMITTAL GUIDELINES SECTION PRIOR TO FILLING OUT ANY OF THE SUBMITTAL SHEETS.**

---

### **OFFICIAL USE ONLY – THIS SECTION**

Contractor: \_\_\_\_\_

Engineer: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project No.: \_\_\_\_\_

APPROVED: \_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

APPROVED AS NOTED: \_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

NOT APPROVED: \_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

### **OFFICIAL USE ONLY – THIS SECTION**



## TABLE OF CONTENTS

ITEM	PAGE	APPLICABLE STANDARD DETAIL No.
COVER SHEET .....	1	
TABLE OF CONTENTS .....	2 - 4	
INSTRUCTIONS AND GENERAL NOTES ...	5 - 6	
CERTIFICATION AND CONCURRENCY FORM	7	
<b>SECTION ONE, PRESSURE PIPE</b> (cover sheet)	8	
(Water mains, large services and force mains)		
Hydrants .....	9	
Hydrant Cap, Bonnet & Barrel Paint .....	9	
Ductile Iron Pipe .....	10	
Linings and Coatings for Pipe & Fitting .....	11	
Ductile Iron Fittings .....	12	
Joint Restraint .....	12 & 13	
Valves .....	14	
Valve Box Debris Caps .....	15	
Valve Boxes .....	15	
Valve Box Lids .....	15	
Valve Stem Extensions .....	15	
Valve Box Alignment Device (VBAD) .....	15	
Valve ID Tags .....	16	
Valve Trench Adapter .....	16 & 17	
Blow-off Materials.....	18	
Corporations (for Blow-offs)		
Brass Nipples		
Blow-offs		
Meter box		
Tapping Sleeves and Saddles.....	19	
Casing Materials .....	20	
Casing Spacers		
End Seals		
ARV Materials .....	21 & 22	
ARV's		
Corporations (for ARV's)		
48" Ring and Cover (for ARV's)		
S. S. Ball valves (for ARV's)		
S. S. Nipples (for ARV's)		
Linings and Coatings for ARV manholes		



**TABLE OF CONTENTS**

ITEM	PAGE	APPLICABLE STANDARD DETAIL No.
<b>SECTION TWO, WATER SERVICES:</b> (cover sheet)	23	
Tapping Saddles .....	24	
1" Water Service.....	25	
2" Water Service .....	26	
Dual Water Service .....	27	
Extended Water Services.....	28 - 29	
Miscellaneous Service Parts .....	30	
3" and Larger Water Services .....	31 - 33	
Private Fire Lines (PFL) .....	34 - 37	
Backflow Preventers Check List Sheet.....	38	
Backflow Preventer General Requirements..	39	
3" or larger single DCA & RPA .....	40	
Fire Department Connection (FDC) .....	40	
3" or Larger Parallel DCA & RPA .....	40	
3/4 to 2" Single RPA .....	40	
3/4 to 2" Parallel RPA .....	40	
Additional Material for 3/4" L.S. RPA .....	40	
<b>SECTION THREE, GRAVITY SEWERS:</b> (cover sheet)	42	
(Gravity mains and laterals)		
Gravity Sewer Material .....	43	
Pipe		
Fittings		
Clean-outs		
Manhole Materials .....	42	
Rings & covers		
Manhole lid seals		
Manhole Joint Sealant		
Manhole adapters .....	43	
Manhole precast adjustment rings		
Couplings		
Pipe Transition Sleeves		
Manhole Lining		
Manhole Coatings		
Manhole Sealant .....	44	



**TABLE OF CONTENTS**

ITEM	PAGE	APPLICABLE STANDARD DETAIL No.
<b>SECTION FOUR, LIFT STATIONS:</b> (cover sheet)	45	
Pumps and Electric .....	UNDER DESIGN	
Wet well .....	UNDER DESIGN	
Manhole Sealant (Ramnek or Madwell) .....	UNDER DESIGN	
Manhole Seal (Wrapid Seal) .....	UNDER DESIGN	
Valve Vault.....	UNDER DESIGN	
Valves (Plug) (FJ) in valve vault.....	UNDER DESIGN	
Pressure Sensors .....	UNDER DESIGN	
RTU (JM Process Systems) .....	UNDER DESIGN	
Water Service Piping .....	UNDER DESIGN	
RPA's (for water service) .....	UNDER DESIGN	
Link-Seals (for valve vaults and wet wells) .....	UNDER DESIGN	
DI Piping .....	UNDER DESIGN	
Retainer's glands (Megalug 2100) .....	UNDER DESIGN	
Water Service Materials .....	UNDER DESIGN	
DIP Fittings .....	UNDER DESIGN	
Wet well and Vault Coating (inside) .....	UNDER DESIGN	
Wet well and Vault Coating (outside) .....	UNDER DESIGN	
Bypass Pumping Material (Cam-Lok Fittings)..	UNDER DESIGN	
In-Ground Valves .....	UNDER DESIGN	
<b>SECTION FIVE, STORMWATER:</b> (cover sheet)	46	
Manhole Ring and Cover	47	
Exfiltration Trench	47	
Filter Fabric		
Stormwater Pollution Prevention Plan.....	UNDER DESIGN	
Stormwater Drainage System.....	UNDER DESIGN	
<b>SECTION SIX, HARDSCAPE:</b> (cover sheet)	48	
Paving.....	UNDER DESIGN	
Concrete.....	49	
Curbing		
Sidewalk / Pedestrian Surface		
Traffic Control.....	UNDER DESIGN	
<b>SECTION SEVEN, LIGHTING:</b> (cover sheet)	50	
Cobra-head Fixtures.....	UNDER DESIGN	
Post-Mount Fixtures.....	UNDER DESIGN	
Special District Fixtures.....	UNDER DESIGN	
<b>SECTION EIGHT, LANDSCAPE:</b> (cover sheet)	51	
Plant Material.....	UNDER DESIGN	
Trees.....	UNDER DESIGN	
Irrigation.....	UNDER DESIGN	
<b>SECTION NINE, IRRIGATION:</b> (cover sheet)	52	
Controllers.....	53	
Communications.....	53	
Valves.....	54	



## INSTRUCTIONS AND GENERAL NOTES:

Sections 1 through 4 are listed material for specific use in City-owned and maintained water and wastewater systems. Sections 5 through 8 are listed material for specific use in the construction and maintenance of infrastructure to be owned and maintained by the City. Materials are listed by type of material, group, short specification listed with each approved item, approved manufacturer, and manufacturer's part number.

Where applicable, standard detail sheet number(s) will be identified on the Approved Materials List (AML) page for the purpose of cross referencing the material to the drawing.

## SUBMITTAL GUIDELINES:

1. Submit two (2) complete original AML packages with a transmittal letter. One (1) original to be retained in the project file and one (1) original provided to staff for use.
  - A. Submit with the original AML package any additional copies, as needed, to be approved and returned for the Engineer/Contractor/Supplier's use.
  - B. Submit with the original AML package a Concurrency form executed by the Engineer and Contractor.
  - C. Submittals shall be complete AML packages. Complete AML's by indicating the following:
    1. Check each type of the material item to be used.
    2. Check each corresponding manufacturer and model number to be used.
    3. Initial any written changes or corrections to an AML.
  - D. Any proposed non-standard material submittals shall include two (2) original copies for City retention and a Shop Drawing Material Approval for each separate material item. Submit with the original AML package any additional shop drawing copies, as needed, to be approved and returned for the Engineer/Contractor/Supplier's use.
2. The City of West Palm Beach Public Utilities Department approves materials to be utilized in the water distribution system within the rights-of-ways, easements, and private property, up to the downstream side of a backflow preventers, for the following municipalities in our utility service coverage area:
  - A. City of West Palm Beach
  - B. Town of Palm Beach
  - C. Town of South Palm Beach
  - D. Parts of Palm Beach County

The City of West Palm Beach Public Utilities Department approves materials to be utilized in the sanitary collection system, wastewater lift stations, force mains, and services within the rights-of-ways and easements of:

- A. City of West Palm Beach.

The City of West Palm Beach Construction Services Department approves all items on these lists, via the resolution covering the plumbing code. Everything used on private property in the City of West Palm Beach will need to meet these standards, unless approved otherwise by the Plumbing, Mechanical, and Fire Officials.

3. Material cut sheets from a supply house catalog will not be considered a suitable shop drawing submittal.
4. Foreign and domestic materials manufacturers shall meet the same criteria for quality and craftsmanship.
5. All materials, fittings, pipe and equipment shall be new, unused, and warranted for a minimum period one (1) year after acceptance.
6. The City of West Palm Beach undertakes a continual effort to maintain an AML that reflects the latest technological advances and industry capabilities. The AML is updated as often as is practical.



## **SUBMITTAL GUIDELINES (CONTINUED):**

7. The AML does not supersede the policies and procedures of the City of West Palm Beach Purchasing Department. Any direct and specifically identifiable conflicts between the AML and City technical specifications shall be arbitrated by the Department Director responsible for the related material (i.e. Any conflict with water distribution pipe would be decided by the Director of Public Utilities).
8. The most current edition of the AML is maintained on the City of West Palm Beach Engineering Services web page and is available via email or paper copy, upon request. AML's associated with City capital construction projects will utilize the edition stipulated by the contract execution date, all other shall utilize the latest edition at time of initial submission.
9. A Department Director may implement new and additional materials and/or manufacturers to a project-specific AML or in general. Project-specific material shall be added as a shop drawing amendment and in general material shall be added to the next edition of the AML.
10. By signing the Concurrency form, the Engineer and Contractor agree to adhere to the material specifications of the AML. It shall be acknowledged that the City will reject construction materials not in accordance with the AML.
11. All material parts utilized in the City's water distribution system, except hydrants, shall meet the provisions of Chapter 62-555.335, Florida Administrative Code.

**- End of Section -**







## APPROVED MATERIALS LIST SECTION ONE PRESSURE PIPE

### PRESSURE PIPE STANDARDS ARE TO BE USED FOR:

1. Potable water distribution system, water distribution transmission mains, large meter services, and private fire lines. Distribution System Utility Service Area includes: City of West Palm Beach, Town of Palm Beach and Town of South Palm Beach.
2. Sanitary Collection System Gravity Mains and Sanitary Force Mains. Sanitary Collection System Utility Service Area includes: City of West Palm Beach.



Submittal: **FIRE HYDRANT**

**FIRE HYDRANTS APPROVED FOR USE:**

Hydrants shall conform to the requirements of AWWA Standard C502-94 for Dry Barrel Hydrants, or the latest revision, as to the design, component materials, construction and manufacture, except as modified or noted in the City technical specifications (a copy of the specifications can be supplied on request). Approved hydrants shall be used in the construction of systems to be owned and operated by the City of West Palm Beach Public Utilities Department. Approved hydrants shall be used in the construction of private systems within the corporate boundaries of the City of West Palm Beach.

- Clow Medallion
- American B-84-B
- Mueller Super Centurion 250
- Kennedy Guardian

**HYDRANT COATINGS:**

When constructed to the City of West Palm Beach technical specifications, hydrants shall have a shop coat of silver paint applied during the manufacturer. Contractors shall paint the hydrant bonnet with the following coating after installation and prior to acceptance. Contractors shall clean, prep, and paint all damaged factory paint.

**Paint For Fire Hydrant Bonnet. (REQUIRED)**

- AXON AEROSPACE, INC.: Alert Series Light Reflective Coating. Distributed by J. D. L. INDUSTRIES, INC.

**Paint For Barrel Section and Nozzle Caps. (TOUCH-UP PAINT)**

- SHERMAN-WILLIAMS: Silver-Brite Aluminum paint. Two numbers on the can are B59-511 and 631-1336

**Miscellaneous Colors:**

Hydrants installed outside the City of West Palm Beach corporate boundaries, may be painted alternate colors. A letterhead correspondence from the Fire Chief or Fire Marshal of the corresponding service area (Town of Palm Beach, Town of South Palm Beach, and Unincorporated Palm Beach County) may request permission to paint the barrel section any alternate color. An original copy of the request shall accompany the AML submittal. The reflective bonnet paint color can not be changed.

- Proposed Color: \_\_\_\_\_
- Manufacturer: \_\_\_\_\_
- Paint Color No.: \_\_\_\_\_

**AUTOMATIC FLUSH DEVICE:**

- Kupferle Foundry Co., 9800-WC Eclipse
- Kupferle Foundry Co., 9400-WC Eclipse

**- End of Section -**



Submittal: **DUCTILE IRON PIPE**

**DUCTILE IRON PIPE:**

Pipe shall comply with ANSI/AWWA Standard or latest revision. 3", 10", 14" and 16" pipe are considered "odd" sizes and may only be used to tie into existing lines. The minimum standards for 3" through 12" pressure pipe is Class 52. The minimum standard for 14" through 64" pressure pipe is Class 51. The minimum standard for all F. J. pipes, for any usage, shall be Class 53. The minimum standard for all pipe size diameter sanitary collection system gravity mains shall be Class 50 or Pressure Class 350.

**MANUFACTURER:**

American       Clow       U.S. Pipe       McWane       Griffin

**CLASS:**

Class 52, sizes to be used on water mains: \_\_\_\_\_  
 Class 51, sizes to be used on water mains: \_\_\_\_\_  
 Class 52, sizes to be used on force mains: \_\_\_\_\_  
 Class 51, sizes to be used on force mains: \_\_\_\_\_  
 Class 50, sizes to be used on gravity mains: \_\_\_\_\_  
 Pressure Class 350, sizes to be used on gravity mains: \_\_\_\_\_  
 Class 53, sizes to be used for FJ pipe: \_\_\_\_\_

**BELL TYPE:**

**FLANGE JOINTS:**

Flanges shall be ANSI Standard Class 125, plain faced and drilled, in accordance with ANSI B16.1. Flanges shall be solid with a uniform thickness as shown on Table 15.3 and Figure 15.1 of the ANSI/AWWA C115/A21.15 standard or latest revision. Submit a letterhead correspondence from the manufacturer/vendor certifying that the flanged pipe complies with ANSI/AWWA Flange standard, the ANSI/AWWA pipe standard and the ANSI/AWWA lining standard (if for water) or the lining for gravity or force mains.

**MECHANICAL JOINT:**

All mechanical joints shall conform to the latest edition of ANSI/AWWA C111/A21.11 standard.

**SLIP OR PUSH-ON JOINT:**

All push-on type joints shall conform to the latest edition of ANSI/AWWA C111/A21.11 standard. The gasket material shall be SBR type or equal.

**RESTRAINED JOINT:**

All restrained joints shall conform to the latest edition of ANSI/AWWA C151 standard.

**- End of Section -**



Submittal: **DUCTILE IRON LININGS AND COATINGS**

**LININGS AND COATINGS FOR DUCTILE IRON PIPE AND FITTINGS:  
DISTRIBUTION SYSTEM WATER MAINS:**

**INTERIOR:**

- \_\_\_\_\_ Cement Mortar Lining, per latest edition of ANSI/AWWA C104/A21.4 standard.
- \_\_\_\_\_ Fusion-Bonded Epoxy Coating, per latest edition of ANSI/AWWA C116/A.21.16 standard.

**EXTERIOR:**

- \_\_\_\_\_ In-ground placement, bituminous asphalt coating required, per ANSI/AWWA C104/A21.4 standard or latest revision.
- \_\_\_\_\_ Fusion-Bonded Epoxy Coating, per ANSI/AWWA C116/A.21.16 standard.

**ENCASEMENT:**

- \_\_\_\_\_ Polyethylene Encasement, per the latest edition of ANSI/AWWA C105/A21.5 standard. Encasement shall be a minimum material thickness of 4 mil CL/HDPE.
  - Fulton Enterprises
  - American Ductile Iron Pipe Company
  - U. S. Pipe Company

**SANITARY SEWER COLLECTION GRAVITY MAINS, FORCE MAINS, and LATERALS (DIP):**

**INTERIOR:**

- \_\_\_\_\_ PERMITE
  - Permax PCS-9043, Glass Flake Epoxy
- \_\_\_\_\_ VULCAN PAINTERS, INC.
  - Protecto 401, Ceramic Epoxy Lining.

**NOTE:** When DIP is utilized in wetwells and air release valve vaults, the interior coating for the wetwell or vault will also be applied to the outside of the pipe.

**EXTERIOR:**

- \_\_\_\_\_ In-ground placement, Bituminous asphalt coating required, per the latest edition of ANSI/AWWA C104/A21.4 standard.

**ENCASEMENT:**

- \_\_\_\_\_ Polyethylene Encasement, per the latest edition of ANSI/AWWA C105/A21.5 standard. Encasement shall be a minimum material thickness of 4 mil CL/HDPE.
  - Fulton Enterprises
  - American Ductile Iron Pipe Company
  - U. S. Pipe Company

**COATING CERTIFICATIONS:**

- Certification letter must state the pipe and or fitting manufacturer to be used, the applicable ANSI/AWWA standard, the coating to be used and the thickness of the coating.
- \_\_\_\_\_ Shop for pipe (attach certification letter after this page)
  - \_\_\_\_\_ Shop for fittings (attach certification letter after this page)

**- End of Section -**



Submittal: **DUCTILE IRON FITTINGS**

**DUCTILE IRON FITTINGS:**

Cast ductile iron fittings 3" through 24" shall be pressure rated at 350 psi minimum. Flange-joint fittings shall be rated at 250 psi minimum. All 30" through 36" fittings shall be pressure rated to 250 psi minimum. All fittings shall conform to the latest edition of either ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53, and C111/A21.11 standards.

- |  |  |
|--|--|
| <input type="checkbox"/> TYLER/UNION           | <input type="checkbox"/> UNION FOUNDRY COMPANY |
| <input type="checkbox"/> GRIFFIN PIPE PRODUCTS | <input type="checkbox"/> STAR PIPE PRODUCTS    |
| <input type="checkbox"/> SIGMA PRODUCTS        |  |

List fitting sizes to be used: \_\_\_\_\_

**RESTRAINED JOINT TYPE (by pipe manufacturer):**

- American Cast Iron Pipe, 4" - 12" Field Lock Gaskets
- American Cast Iron Pipe, Fast-Grip gaskets 4 thru 16"
- American Cast Iron Pipe, Lok-Ring 42" - 64"
- American Cast Iron Pipe, Flex Ring 4" - 36"
- American Cast Iron Pipe, 14" - 36"; 4"-16" Fast-Grip gaskets
- Griffin Pipe Products, Snap-Lok 6" – 48"
- U.S. Pipe, T.R. Flex 4" - 64"
- U. S. Pipe, Field LOK Gaskets 4" -24".

**MECHANICAL JOINT RESTRAINT:**

Mechanical type joint shall be furnished with high strength corten T-head bolts and hex nuts with composition, dimensions, and threading in accordance with C-111 Standard. For all joint restraint products, apply corrosion resistant coating Mega-bond (or approved equal). Polyester based powder electro-statically applied in two coats and heat cured after each coating for cast body. Xylan flouropolymer coating will be used for wedge assemblies. Applicable for all restraint devices through 24". Clow Field Lok Gaskets will use a normal cast or ductile iron mechanical joint gland or the Clow Field Lok gland.

**DIP:**

- |  |   |   |  |
|--|---|---|--|
| <input type="checkbox"/> EBAA IRON<br>Megalug<br>Series 1100 | <input type="checkbox"/> STAR PIPE<br>Stargrip<br>Series 3000 | <input type="checkbox"/> FORD<br>Uniflange<br>Series 1300, 1390,<br>1400 & 1450 | <input type="checkbox"/> CLOW<br>MJ Field Lok Gasket<br>Series DI, 4 to 24" only |
| <input type="checkbox"/> SIGMA PRODUCTS<br>Series SLD        |   |   |  |

**PVC:**

- |   |   |
|---|---|
| <input type="checkbox"/> EBAA IRON<br>Series 2000 | <input type="checkbox"/> STAR PIPE<br>Series 4000 |
|---|---|

**PVC / C900/C905 PVC:**

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> EBAA IRON<br>Series 2000     | <input type="checkbox"/> STAR PIPE<br>Series 1100 | <input type="checkbox"/> CLOW<br>MJ Field Lok Gasket and or Gland<br>Series PV, 4 to 12" only |
| <input type="checkbox"/> SIGMA PRODUCTS<br>Series SLC |   |   |

**NOTE:** All restrained joint systems shall be pressure rated to the same as Ductile Iron pipe and fittings. All components of the restrained system shall meet or exceed the requirements of the latest edition of ANSI/AWWA C-111/A21.21.11 standard. Restraints shall provide a non-point loading type of restraint contact on the pipe with sufficient positive gripping action to secure the gland to the pipe and be designed so that the restraint action is increased as a result of increases in the line pressure.

-



Submittal: **DUCTILE IRON FITTINGS (CONTINUED)**

**FLANGED JOINT RESTRAINT:**

Flange Bolts and nuts shall be carbon steel, hex head, ASTM A183, with Zinc electroplated finish. The flange type gasket material shall be 1/8-inch thick rubber type conforming to ANSI B16.21 and AWWA C-207, unless otherwise specified. For all joint restraint products, apply corrosion resistant coating Mega-bond (or approved equal). Polyester based powder electro-statically applied in two coats and heat cured after each coating for cast body. Xylan flouropolymer coating will be used for wedge assemblies. Applicable for all restraint devices through 24".

\_\_\_\_\_ EBAA IRON  
Megalug  
Series 2100

**APPROVED JOINT RESTRAINT FITTINGS:**

\_\_\_\_\_ UNION FOUNDRY  
Swivel Joint Fittings

**APPROVED JOINT RESTRAINT FOR PVC:**

In some cases there are existing PVC water mains that need to be cut or tied into and restrained back due to the addition of elbows, tees and valves. This section covers the types and approved joint restraint allowed. For all joint restraint products, apply corrosion resistant coating Mega-bond (or approved equal). Polyester based powder electro-statically applied in two coats and heat cured after each coating for cast body. Xylan flouropolymer coating will be used for wedge assemblies. Applicable for all restraint devices through 24".

**BELL RESTRAINTS:**

\_\_\_\_\_ EBAA IRON  
Series 1600 (4" through 12")  
Series 2800 (14" through 36")

**TIE RODS AND ACCESSORIES: (Utilized As Required By The City)**

\_\_\_\_\_ SIGMA PRODUCTS:  
Duc Lugs (bent eye bolts not allowed):  
Socket Clamps (with cast iron washers)  
All thread rod, zinc plated ( $\frac{3}{4}$ " only)

- End of Section -



Submittal: **VALVES**

**RESILIENT WEDGE GATE VALVES (RWGV):**

**Distribution Water Main and Sanitary Sewer Collection Force Main.** Valves shall conform to the latest edition of ANSI/AWWA C509-87 standard, Non-rising stems (NRS) with 2" square operating nuts. Minimum valve size shall be 4". Valves smaller than 4" see curb stop material section. UL/FM required on shut-off RSGV for Double Detector check valves application only. See backflow prevention.

_____ AMERICAN 500 Series 2500 Series	_____ CLOW F-6100 Series	_____ KENNEDY Ken-Seal 2370 (Super Seal)	_____ MUELLER A-2360	_____ U.S.PIPE
_____ WATEROUS Series 500	_____ M & H Style 3067 or 3068			

**RESILIENT SEAT BUTTERFLY VALVES:**

**For use on 14" and larger Distribution Water Main only.** 2" square operating nuts. Valves shall conform to the latest edition of AWWA 504 standard.

_____ AMERICAN 1450 150-B	_____ CLOW 5300 Series H Series 450 & 4500	_____ Dresser 14501	_____ DEZURIK BAW
_____ KENNEDY	_____ MUELLER Lineseal III	_____ PRATT Groundhog	

**PLUG VALVES:**

**For use on Sanitary Sewer Collection Force Mains only.** If a tapping valve is used then a plug valve has to be installed immediately after the tapping valve. The tapping valve will need to be laid on its' side and buried. Plug valve opening shall 2" larger than the pipe ID to allow passing of a "cleaning pig".

\_\_\_\_\_ PRATT

**JOINT TYPES (For All Valve Types):**

_____ MJ	_____ FJ
_____ SJ	_____ TF / MJ (Tapping Flange to Mechanical Joint)

- End of Section -



Submittal: **VALVE BOXES AND ADAPTERS**

**NOTE: A valve box, valve lid, debris cap, and valve extension shall be utilized for each valve. The UVI tags will be used where the debris cap can not be used.**

**DEBRIS CAP:**

Lockable handle with ID tag attached to the bottom of the debris cap. See Underground Valve Identification Tags section for ID tag information. All Debris Caps within the system shall have color coded operating handles meeting the following standard:

- \_\_\_\_\_ "Yellow" hydrant and private fire line valves.
- \_\_\_\_\_ "Orange" curb stops and valves on water services.
- \_\_\_\_\_ "Blue" potable water main valves.
- \_\_\_\_\_ "Green" sanitary force main valves.
- \_\_\_\_\_ "Red" Any water or sewer valve that is to be normally in the "off" position.
- \_\_\_\_\_ SW SERVICES: Debris Cap, Model DC-590 or DC-590BC (for top section of valve box), with ID Tag.
- \_\_\_\_\_ SW SERVICES: Debris Cap, Model DC-500 (for bottom section of valve box), with ID Tag.

**VALVE BOX ALIGNMENT DEVICE (VBAD)**

All buried gate valves 4" and larger requiring a valve box shall be furnished with a Valve Box Alignment Device (VBAD). The VBAD will lock under the operating nut of the valve and will center the valve box over the operating nut. The device shall not affect the operation of the valve.

- \_\_\_\_\_ Box Lok by EMMA Sales LLC
  - 7-1/4" Diameter (Designed to fit inside the bottom of a valve box)
  - Model #1; Only fits US Pipe valves 3 thru 12", AFC 10 & 12", Mueller 12"
  - Model #2; Only fits all Kennedy, Clow, Dresser valves, AFC 4 thru 8, Mueller 4 thru 10".
  - 6" Diameter (Designed to fit inside a 6" pipe riser)
  - Model #1; Only fits US Pipe valves 3 thru 12", AFC 10 & 12", Mueller 12"
  - Model #2; Only fits all Kennedy, Clow, Dresser valves, AFC 4 thru 8", Mueller 4 thru 10".
- \_\_\_\_\_ AFC Valve Box Alignment Ring
  - Fits all sizes and manufacturers of valves.

**VALVE BOXES:**

Heavy duty, Cast Iron ASTM-A48 Class 30, 2 piece, 5-1/4" opening, flanged base, 18 to 24" adjustable, screw type, valve box, with Locking lid (For all paved areas), embossed with "WATER" on the lid for water mains and services.

- \_\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell/Russco
  - 461-S                      461-S Part # VB261X/60WT
  - (Russco and Tyler are interchangeable)

**VALVE BOX LIDS: (Box Lid Shall Match Box Manufacturer)**

**Non-Locking Lid:** Cast Iron ASTM-A48, Class 30. Class 30, embossed with "SEWER" on the lid for force mains, embossed with "WATER" on the lid for water distribution mains and meter service connection.

- \_\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell

**Locking lid (For all paved areas):** Cast Iron ASTM-A48, Class 30, embossed with "SEWER" on the lid for force mains. To be used on Tyler model 461S, 5-1/4", screw type box.

- \_\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell Pipe

**Locking lid (For all paved areas):** Cast Iron ASTM-A48 Class 30, embossed with "WATER" on the lid for water distribution mains and meter service connections.

- \_\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell

**VALVE EXTENSION STEMS:**

Utilized on all in-ground valves 36" or more below finished grade. Used in place of the American Trench Adapter (valve box). Valve extension must be secured to the valve stem, not set over the operating key.

- \_\_\_\_\_ MUELLER                      \_\_\_\_\_ JOHNSON DAVIS
  - A-26441



**UNDERGROUND VALVE IDENTIFICATION (UVI) TAGS:**

Utilized when the Tyler-style valve box with the Debris Cap is not used, such as with the American Trench Adapter. **Dimensions:** 3" x 1/4", Brass, with 2-1/2" theft proof "J" rod anchor. **Stamped:** 1/4" to 3/8" capital lettering. Each valve will have the following minimum information on the tag, words in parentheses are examples of wording to use, City code (WPB), valve size (6"), type of valve (RV, BV, PV), type of use (WM, FM), and operation instructions (R-21) right 21 turns to open, plus valve number, if applicable. In unpaved areas the UVI will be placed in the concrete collar around valve boxes. In paved areas the UVI will be epoxy mounted adjacent to the valve box or on a nearby concrete curb face.

\_\_\_\_\_ WAGCO MARKER

**VALVE TRENCH ADAPTERS:**

The American Flow Control trench adapter is to be used on all in ground valves. It is required that the optional Cast Iron Lid be used and that the valve have embossed on the lid "WATER" for all water applications and "SEWER" for all force main applications. The UVI tags specifications will also need to be used with the trench adapter.

\_\_\_\_\_ AMERICAN FLOW CONTROL  
Model # 1 - 7

NOTE: The following information is supplied to help the supplier to pick the proper model number of the American Flow Control trench adapter. American used the measurements for a trench adapter resting on 7 different sized American Flow Control RW valves. The supplier will need to compare the valve manufacturer used (if not American) with the American valve to determine the difference in height of Dimension "B" (TABLE 2 on the following page), which is the depth from the trench bottom to where the trench adapter will rest on the valve bonnet.

**EXAMPLE:**

If you are utilizing a Mueller 6" valve and Dimension "B" is 14.25 and you were going to have 6' of bury from the bottom of the trench then you would add 14.25" to 72" which would give you 86.25" of bury. So you would need to use a Model # 7 to have the ability to adjust the box.

TABLE 1 on this page is based on the valve size and the trench depth. It then refers to the model number to use. If you wish you can use TABLE 3 to figure the minimum length of a trench adapter and your dimension "B" to figure the length of the model to use.

If the minimum length of the No. 1 Valve Trench Adapter is too great or the No. 7 extended out as far as it will go is not long enough then, revert to using the valve boxes, debris caps and valve stem extension listed after this section.

**EXAMPLE:**

If you are installing a 16" American Flow Control Valve and the depth of bury is 36" then the OD of the pipe (17.5) would place the trench depth at 53.5". Dimension "B" for a 16" valve is 41", so the remaining distance is 12.5" and a valve trench adapter would not be usable, since the minimum length for #1 is 18.25".



Submittal: **VALVE BOXES AND ADAPTERS (CONTINUED)**

VALVE SIZE	TRENCH DEPTH AND TRENCH ADAPTER MODEL NUMBER (dimension "B")										
	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"
4"	3	4	4-5	5	5-6	6	6	6	6	7	7
6"	2	3	4	4-5	5	5-6	6	6	6	6	7
8"	-	2	3-4	4	5	5	6	6	6	6	6
10"	-	1	2	3-4	4	5	5	6	6	6	6
12"	-	-	1	3	3-4	4-5	5	5	6	6	6
14"	-	-	-	-	-	3	4	5	5	5	6
16"	-	-	-	-	-	-	3-4	4	5	5	6

TABLE 1 (part 1)

VALVE SIZE	TRENCH DEPTH AND TRENCH ADAPTER MODEL NUMBER									
	8'6"	9'0"	9'6"	10'0"	10'6"	11'0"	11'6"	12'0"	12'6"	13'0"
4"	7	7	7	7	7	7	-	-	-	-
6"	7	7	7	7	7	7	7	-	-	-
8"	7	7	7	7	7	7	7	7	-	-
10"	7	7	7	7	7	7	7	7	7	-
12"	6	7	7	7	7	7	7	7	7	7
14"	6	6	6	7	7	7	7	7	7	7
16"	6	6	6	7	7	7	7	7	7	7

TABLE 1 (part 2)

VALVE SIZE	DIMENSION "B"
4"	9.25"
6"	13.50"
8"	18.25"
10"	23.00"
12"	27.50"
14"	36.50"
16"	41.00"

TABLE 2

MODEL NUMBER	MINIMUM LENGTH	MAXIMUM EXTENSION
# 1	18.25	20.25
# 2	22.25	28.25
# 3	24.75	32.50
# 4	29.75	40.50
# 5	37.75	56.50
# 6	49.75	80.50
# 7	73.75	128.50

TABLE 3

- End of Section -



Submittal: **PERMANENT BLOW-OFFS:**

**CORPORATIONS FOR BLOW-OFFS:**

Corporations to be screwed into a cast iron plug or cap shall meet these specifications: 2" Male Iron Pipe Thread (For Tap Side) by 2" Female or Male Iron Pipe Thread for tie-in to blow-off. (NOTE: It is recommended to utilize male thread to eliminate the need for a brass nipple between the corporation and permanent blow-off).

_____ FORD	_____ MUELLER	_____ MACDONALD
FB1700-7, or	B-20046, or	3131B
3149B, or	H-15015, or	
FB500-7	H-9969	

**BRASS NIPPLES:**

All brass shall be of no-lead brass (maximum lead content of .10% by weight).

\_\_\_\_\_ For connections from corporation to blow-off must be 2" iron pipe thread by 6" long brass nipples.  
(Cut sheet shall be submitted)

**BLOW-OFFS:** (Prefabricated)

\_\_\_\_\_ Model VB2000B, The hydrant Plus for meter box installation, as manufactured by Water Plus Corporation.  
Due to dead-end streets where water mains cannot be looped, the following automatic flush type blow-offs are to be used at all dead-ends.

\_\_\_\_\_ Hydro-Guard Standard Unit or:  
\_\_\_\_\_ Hydro-Guard Vacuum Breaker DDU (Direct Discharge Unit).

**METER BOX:**

\_\_\_\_\_ Meter box as outlined in the 1" Water Services Submittal Package on page 30.

**- End of Section -**



Submittal: **TAPPING SLEEVES & SADDLES**

**TAPPING SLEEVES:  
DUCTILE IRON:**

Allowed for 4" and larger size taps. May be used on DIP, CIP, ACP and PVC. For use on Distribution System Water Main and/or Sanitary Sewer Collection Force Main. Ductile iron with mechanical joints.

_____ AMERICAN	_____ CLOW	_____ MUELLER	_____ U.S. PIPE
2800	F-5200 Series	H-615	Type 9
1004		H-616	

List sizes to be used: \_\_\_\_\_.

**STAINLESS STEEL:**

Allowed only when tapped line is more than twice as large as tapping diameter (i.e., 12 x 4 is allowable, a 12 x 6 is not allowed). For use on Distribution System Water Main and/or Sanitary Sewer Collection Force Main. All 304 stainless steel (SS), with 304 SS hardware for water or force main taps. May be used on DIP, CIP, AC, PVC.

_____ JCM	_____ MUELLER	_____ SMITH BLAIR	_____ ROMAC	_____ FORD
H304	(Rockwell)	419	FAST 622	CST-ST, SST, or FTSS

List sizes to be used: \_\_\_\_\_.

**NOTE: The following materials shall be used when an existing PVC or Transite water or force main is encountered and a sample point, air release, or test tap needs to be installed.**

**SERVICE SADDLES:**

**All brass shall be of no-lead brass (maximum lead content of .10% by weight).** All straps shall be either double stainless steel or single wide stainless steel strap with two bolts on each side of the strap. Use, size, and tapping thread for the corporation to be attached to the saddle shall be as follows:

- A. Water Services: Only 1" and 2" AWWA tapping thread are allowed.
- B. Sample Point/Vent pipe (temporary): 1" AWWA tapping thread
- C. Terminal Blow-offs: 2" Iron pipe tapping thread
- D. Air Releases: 1-1/2"x 2" AWWA tapping thread

List the following with each saddle to be used:

- A. Size(s) of pipe to be tapped \_\_\_\_\_,
- B. Type(s) of pipe to be tapped \_\_\_\_\_,
- C. Size(s) of tap to be made \_\_\_\_\_,
- D. Use (See A through D above) \_\_\_\_\_,

\_\_\_\_\_ FORD  
202BS Double Band Brass Saddles

**- End of Section -**



Submittal: **CASING MATERIAL:**

**CASING SPACERS:**

Install casing spacers 4' on both sides of carrier pipe joints. All bolts, nuts, and washers to be attach to spacer sections shall be cadmium plated or stainless steel. All casing spacers larger than 36" shall be factory designed, taking into consideration the weight of the carrier pipe filled with water. Wooden skids are not acceptable as an alternative.

**24" OR LARGER CARRIER PIPE:**

- \_\_\_\_\_ Pipeline Seal and Insulators, Inc  
A8G-2  
C8G-2  
A12G-2  
C12G-2

**24" OR SMALLER CARRIER PIPE:**

- \_\_\_\_\_ Pipeline Seal and Insulators,  
Ranger Model

- \_\_\_\_\_ APS - Advance Products Systems  
Cascade CST-SL  
PSI - Pipeline Seal  
Romac Series 55T"

**END SEALS:**

Casing ends shall be completely closed at both openings of all Jack and Bore crossings. These seals shall be no less than 1/8" thick and made of specially compounded synthetic rubber.

- \_\_\_\_\_ Model "C" as manufactured by PSI
- \_\_\_\_\_ Model "W" as manufactured by PSI
- \_\_\_\_\_ LINK-SEAL, Stainless Steel 316 bolts, washers and nuts.

- End of Section -



Submittal: **AIR RELEASES:**

**GENERAL:**

ARV's should be painted blue (potable water) and green (force main) for ease of identification. First choice for sewer ARV will be the 927, then the smaller 929 if the pipe is too close to the surface. The connection on all ARV's shall be a 2-inch threaded connection. Air releases shall be installed every 1,500' and at every vertical offset in the main line. For force mains, the air release will be placed on the upstream side of a vertical offset. The same practice will be applicable for distribution system water main, where the direction of normal flow can be determined. ARV's must be supplied with all back-flush valves, which must use stainless steel nipples and ball valves.

**CANAL CROSSING:**

ARV's should be painted blue (potable water) green (force main) for ease of identification.

\_\_\_\_ GA Industries 920 (Water)(Short)      \_\_\_\_ Val-Matic 45 Series (Water)(Long)

\_\_\_\_ GA Industries 929 (Sewer)(Short)      \_\_\_\_ GA Industries 927 (Sewer)(Long)

**SIZE:**                      \_\_\_\_ 2" Thread      \_\_\_\_ 4" Flanged (For special uses to be called out on the plans)

**CORPORATIONS FOR AIR RELEASES:**

The 2" corporation shall be used in conjunction with a brass saddle. AWWA tapping thread by male or female iron pipe thread (it is suggested using a male thread otherwise a nipple (SS) will be required between the corporation and the ball valve increasing the height of the top of the air release).

THREAD TYPE:      \_\_\_\_ Female      \_\_\_\_ Male

\_\_\_\_ FORD      \_\_\_\_ MUELLER      \_\_\_\_ MACDONALD

**AIR RELEASE MANHOLE RING AND COVER:**

Heavy duty, traffic rated, large manhole rings with double covers. The cover must have the offset inner access lid. Ordering information must include: "WEST PALM BEACH" embossed in the lid. If it is a privately owned sewer system then leave out "WEST PALM BEACH". If the air release is on a force main then it should come with "SANITARY" embossed on the lid, if it is on an air release for a water main then it should come with "WATER" embossed on the lid. Manhole lid style "D" must be used in sidewalk areas (non-skid, pedestrian traffic design). Manhole lid style "G" must be used in traffic areas and grass medians.

\_\_\_\_ USF 690-AH-M. 10" high casting with a base of 62", large lid is 50-7/8" wide. 105 lbs. Access lid weight, 760 lbs. Main lid weight, 700 lbs. Ring weight.

**BALL VALVES:**

\_\_\_\_ Nebco

**NIPPLES:**

\_\_\_\_ 2" NPT stainless steel. 3" or 4" in length.

**WATER AND FORCE MAIN AIR RELEASE MANHOLES COATINGS AND LININGS:**

To be applied per manufacturers specifications and by a certified applicator (Supply letter of certification).



Submittal: **AIR RELEASES (CONTINUED):**

**FORCE MAIN ARV MANHOLES:**

To be applied per manufacturers specifications and by a certified applicator (Supply letter of certification).

**INTERIORS:**

**SPRAY OR BUSH APPLIED (by certified applicator)**

- \_\_\_\_\_ MADEWELL: Mainstay ML72 sprayable micro silica cement mortar base, with DS-5 epoxy lining coat.
- \_\_\_\_\_ CHEM REX: ThoRoc Sewer Guard SP15 sprayed mortar base, with HBS100 epoxy lining coat.
- \_\_\_\_\_ LAFARGE ALUMINATES: SewperCoat PG (new and rehabbed manholes)
- \_\_\_\_\_ FLOWRITE FIBERGLASS LINING SYSTEMS (for rehabilitation of manholes)
- \_\_\_\_\_ SPECTRAGUARD by SPECTRUM (new and rehabbed manholes)

**FACTORY APPLIED (joints sealed in the field by a certified applicator)**

- \_\_\_\_\_ U. S. PRECAST/AGRU: Studded polypropylene welded liner fabric. Must be applied by a certified pre-caster.
- \_\_\_\_\_ U. S. PRECAST/AGRU: Studded HDPE welded liner fabric. Must be applied by a certified pre-caster.
- \_\_\_\_\_ T-LOCK: Polyethylene or polybutylene welded fabric. Must be applied by a certified pre-caster.

**EXTERIOR:**

- \_\_\_\_\_ KOPPERS: 300M
- \_\_\_\_\_ MAB: Ply-Tile Epoxy Tar Coating for exterior coating of manholes.

**WATER MAIN ARV MANHOLES:**

**INTERIOR AND EXTERIOR:**

- \_\_\_\_\_ KOPPERS: 300M
- \_\_\_\_\_ MAB: Ply-Tile Epoxy Tar Coating for exterior coating of manholes.

**- End of Section -**





## APPROVED MATERIALS LIST SECTION TWO WATER SERVICES

### WATER SERVICES STANDARDS ARE TO BE USED FOR:

1. Potable water distribution services and private fire lines. Distribution System Utility Service Area includes:
  - A. City of West Palm Beach
  - B. Town of Palm Beach
  - C. Town of South Palm Beach.
2. If DIP pipe and/or fittings are required, review and use the appropriate pages in Section One "Pressure Pipe" submittal package for materials.
3. All brass fittings shall be of no-lead brass (maximum lead content of .10% by weight).  
**(NOTE: Some manufacturers in this list may not be able to produce compliant lead content material and subsequently are restricted.)**



Submittal: **TAPPING SADDLES**

**NOTE:** The following materials are to be used when an existing PVC or Transite water main is encountered and a service, sample point, air release, or test tap needs to be installed.

**SERVICE SADDLES:**

All brass shall be of no-lead brass (maximum lead content of .10% by weight). All straps shall be either double stainless steel or single wide stainless steel strap with two bolts on each side of the strap. Use, size, and tapping thread for the corporation to be attached to the saddle shall be as follows:

- A. Water Services: Only 1" and 2" AWWA tapping thread are allowed.
- B. Sample Point/Vent pipe (temporary): 1" AWWA tapping thread
- C. Terminal Blow-offs: 2" Iron pipe tapping thread
- D. Air Releases: 1-1/2"x 2" AWWA tapping thread

List the following with each saddle to be used:

- A. Size(s) of pipe to be tapped \_\_\_\_\_ ,
- B. Type(s) of pipe to be tapped \_\_\_\_\_ ,
- C. Size(s) of tap to be made \_\_\_\_\_ ,
- D. Use (See A through D above) \_\_\_\_\_ ,

\_\_\_\_\_ FORD  
202BS Double Band Brass Saddles

- End of Section -



Submittal: **1" WATER SERVICE**

**NOTE:** Brass fittings listed in these specifications must meet 85-5-5-5 ASTM B62 Cast Brass Specs. Use NPT by copper tubing compression fittings, such as; Pack Joint, 110, Mac-Pak or "T" compression. If polyethylene pipe is used then stainless steel stiffeners are required in conjunction with fittings.

**METER BOXES:**

All box lids shall have a non-skid surface, the metal hinged meter reader's lid will be self closing, and the lids will have the pre-drilled or manufactured opening for touch read sensors. All boxes and lids will be H-20 traffic rated. All boxes will come with mouse holes and be of a flared design, with the exception for Okie Dokie manufactured material. All box lids shall have the touch read sensor secured in the pre-drilled or manufactured opening or a blank 'mushroom' insert filler shall be secured into the opening. The 'mushroom' insert filler shall be manufactured by Sensus Technologies, Inc. Use TR/PL Housing Item No. 45 with Sensor Button (blank) Item No. 53907152-39004.

Box:	_____ CDR	_____ ADVANCE	_____ OKIE DOAKIE
Box Lid:	_____ LWB10-1118-12	_____ WFB111812TC21	_____ OKDK12
	_____ WC10-1118-2	_____ WPA111812WMCLR1	_____ OKDK-2RT

(Okie Doakie boxes are approved for green areas only)

**PIPE:**

Service line pipe shall be continuous length with no joints or fittings allowed in the service, except at the corporation and angle stop.

1" CTS polyethylene water service tubing. (Manufactured by Endot Industries)

1" Copper tubing, ASTM B88, and WWT-799, type "K", soft or hard drawn, rolls or 20' straight lengths.

(Copper tubing use requires the approval of the Director of Public Utilities)

- \_\_\_\_\_ Endotrace, CTS, polyethylene, with attached tracing wire
- \_\_\_\_\_ Mueller Industries, Inc.
- \_\_\_\_\_ Cerro Flow Products LLC

**ANGLE VALVES (Plug or Ball):**

1" compression by 1" meter coupling, locking style, quarter turn.

_____ FORD	_____ <del>MUELLER</del>	_____ MCDONALD
_____ KV43-444W	_____ <del>H14258</del>	_____ 4602BT or 4602T
_____ BA43-444W	_____ <del>B-24258</del>	_____ 4602B-22 or 4602-22

**METER BUSHING:**

1" meter size (male IPT) reducer to 3/4" meter size (female IPT) to be used on 1" angle valves to set 5/8 x 3/4 and 3/4" meters.

_____ FORD	_____ <del>MUELLER</del>	_____ MCDONALD
_____ 34 or 12M	_____ <del>H-10889</del>	_____ 4134-239

**METER COUPLING:** (Consumers Side): 3/4" or 1".

_____ FORD	_____ <del>MUELLER</del>	_____ MCDONALD
_____ 3/4" C38-23-2.5	_____ <del>H-44223</del>	_____ 4624
_____ 1" C38-44-2.625		

**CORPORATIONS:**

1" AWWA tapping thread by 1" compression coupling

_____ FORD	_____ <del>MUELLER</del>	_____ MCDONALD
_____ FB1000-4	_____ <del>B-25008</del>	_____ 4701-22, 4701T, 4701B-22, or 4701BT

- End Section -



Submittal: 2" WATER SERVICE

NOTE: Brass fittings listed in these specifications must meet 85-5-5-5 ASTM B62 Cast Brass Specs. Use NPT by copper tubing compression fittings, such as; Pack Joint, 110, Mac-Pak or "T" compression. If polyethylene pipe is used then stainless steel stiffeners are required in conjunction with fittings.

METER BOXES:

All box lids shall have a non-skid surface, the metal hinged meter reader's lid will be self closing, and the lids will have the pre-drilled or manufactured opening for touch read sensors. All boxes and lids will be H-20 traffic rated. All boxes will come with mouse holes and be of a flared design, with the exception for Okie Dokie manufactured material. All box lids shall have the touch read sensor secured in the pre-drilled or manufactured opening or a blank 'mushroom' insert filler shall be secured into the opening. The 'mushroom' insert filler shall be manufactured by Sensus Technologies, Inc. Use TR/PL Housing Item No. 45 with Sensor Button (blank) Item No. 53907152-39004.

	CDR	ADVANCE	OKIE DOKIE
Box:	___ WB10-1730-12	___ WFB173012C21	___ OKDK15
Box Lid:	___ WC10-1730-2C	___ WPA173012WMCLR1	___ OKDK-5RT

(Okie Doakie boxes are approved for green areas only)

PIPE:

Service line pipe shall be continuous length with no joints or fittings allowed in the service, except at the corporation and angle stop.

2" CTS, polyethylene as manufactured by Endot Industries.

2" Copper tubing, ASTM B88, and WWT-799, type "K", soft or hard drawn, rolls or 20' straight lengths.

(Copper tubing use requires the approval of the Director of Public Utilities)

- \_\_\_ Endotrace, CTS, polyethylene, with attached tracing wire
- \_\_\_ Mueller Industries, Inc.
- \_\_\_ Cerro Flow Products LLC

ANGLE VALVES (Plug or Ball):

2" compression by 1 - 1/2 & 2" meter flange coupling, locking style, quarter turn to open.

	FORD	<del>MUELLER</del>	MCDONALD
___	FV43-777W	___ <del>H14277</del>	___ 46 02B22
___	BFA43-777W		

METER COUPLING (Consumer Side):

Two sizes of couplings are listed. The first size is to come out of the back of a 1-1/2" meter, and the other is to come out the back of a 2" meter. Two types of couplings are specified. The first is a meter flange to compression coupling iron pipe size, the second is meter flange to compression coupling copper tubing size.

	FORD	<del>MUELLER</del>
___	1-1/2" x IP Size	CF35-66
___	1-1/2" x CT Size	CF34-66
___	2" x IP Size	CF35-77
___	2" x CT Size	CF34-77

CORPORATIONS:

AWWA tapping thread by 2" compression coupling.

	FORD	MCDONALD
___	FB1000-7	___ 3128B
___	Must use 2" female by compression fitting FORD 5-77 or MCDONALD 4754-22	
___	2" by 2" Brass Bushing, FORD C18-67 or MCDONALD 3126-626	

- End of Section -



Submittal: **DUAL WATER SERVICE**

**NOTE:** The following material is required for all dual services. The City of West Palm Beach specifies two sizes for its dual water services, 1" copper tubing for short services, and 2" for longer services. Dual services can not have more than 2 - 3/4" meters on the one 1" service. Brass fittings listed in these specifications must meet 85-5-5-5 ASTM B62 Cast Brass Specs. Use NPT by copper tubing compression fittings, such as; Pack Joint, 110, Mac-Pak or "T" compression. If polyethylene pipe is used then stainless steel stiffeners are required in conjunction with fittings.

**METER BOXES:**

All box lids shall have a non-skid surface, the metal hinged meter reader's lid will be self closing, and the lids will have the pre-drilled or manufactured opening for touch read sensors. All boxes and lids will be H-20 traffic rated. All boxes will come with mouse holes and be of a flared design, with the exception for Okie Dokie manufactured material. All box lids shall have the touch read sensor secured in the pre-drilled or manufactured opening or a blank 'mushroom' insert filler shall be secured into the opening. The 'mushroom' insert filler shall be manufactured by Sensus Technologies, Inc. Use TR/PL Housing Item No. 45 with Sensor Button (blank) Item No. 53907152-39004.

		CDR		ADVANCED		OKIE DOKIE
Box	_____	WB10-1517-12	_____	WPA151712CLR1	_____	OKDK13
Box Lid	_____	WC10-1517-2CU	_____	WFB151712C21	_____	OKDK-3RT

(Okie Dookie boxes are approved for green areas only)

**PIPE:**

Service line pipe shall be continuous length with no joints or fittings allowed in the service, except at the corporation and angle stop.

1" CTS polyethylene water service tubing. (Manufactured by Endot Industries)

1" Copper tubing, ASTM B88, and WWT-799, type "K", soft or hard drawn, rolls or 20' straight lengths.

(Copper tubing use requires the approval of the Director of Public Utilities)

_____	Endotrace, CTS, polyethylene, with attached tracing wire
_____	Mueller Industries, Inc. _____ Cerro Flow Products LLC

**ANGLE VALVES (plug or ball style):**

1" female by 1" meter coupling, locking style, quarter turn (for dual services only).

\_\_\_\_\_ FORD, KV13-444W (Ford "U" branch comes with angle valves)

\_\_\_\_\_ **MUELLER**, # H-14285 or B-24265, To be used with the "U" branches listed below

\_\_\_\_\_ MCDONALD, # 4604, or 4644B, To be used with the "U" branches listed below

**"U" BRANCHES:**

2" female iron pipe thread by 2 - 1" male iron pipe threads by 7.5" separation between angle valves.

\_\_\_\_\_ FORD, # UV43-62W (1-1/2" by 3/4" for the long side)

\_\_\_\_\_ FORD, # UV43-42W (1" by 3/4" for the short side)

\_\_\_\_\_ **MUELLER**, \_\_\_\_\_, Need to supply angle valves with "U" branch (see above)

\_\_\_\_\_ MCDONALD, \_\_\_\_\_, Need to supply angle valves with "U" branch (see above)

2" compression by 1-1/2" male iron pipe thread

**METER COUPLING (consumers side): 3/4 by 3/4"**

_____	FORD	_____	<b>MUELLER</b>	_____	MCDONALD,
_____	C38-23-2.5	_____	<del>H-10890</del>	_____	4620 or 4621

**CORPORATIONS:**

2"AWWA tapping thread by 2" compression coupling.

_____	FORD	_____	<b>MUELLER</b>	_____	MCDONALD
_____	FB1000-7	_____	<del>H-15014</del>	_____	3128B

Must use 2" female by compression fitting and

_____	FORD	_____	MCDONALD
_____	C15-77	_____	4754-22

2" by 2" Brass Bushing

_____	FORD	_____	MCDONALD
_____	C18-67	_____	3126-626



Submittal: **EXTENDED & MULTIPLE WATER SERVICE**

The City of West Palm Beach specifies a 2" water service for multiple services. A multiple service line is any service with more than two (2) single services or combination of two (2) services that include a 1" or larger meter. Two-inch (2") water service is required for any single service in excess of 50'. The next two pages will provide the additional materials needed beyond those specified under the submittals for 1", 2", or Dual Services. Select the required materials from those lists and the additional materials listed in these submittals.

All 2" water service lines shall to be extended from a minimum of pipe size of 4". Review and select material listed in the "Pressure Pipe Submittal Package", as needed.

The Engineer-Of-Record (EOR) shall be responsible to calculate and properly size the service piping to meet hydraulic flow demand from the main through the meter(s), backflow preventer(s) and to the residence or business.

**CURB STOPS:**

2" compression by 2" female IPT. To be placed on the end of an extended service.

_____ FORD	_____ <del>MUELLER</del>	_____ MCDONALD
_____ B41-777	_____ <del>B-25170</del>	_____ 6106-22

**VALVE BOXES:**

Heavy duty, Cast Iron ASTM-A48 Class 30, 2 piece, 5-1/4" opening, flanged base, 18 to 24" adjustable, screw type, valve box, with Locking lid (For all paved areas), embossed with "WATER" on the lid for water mains and services.

_____ Tyler/Union	_____ Russell/Russco
_____ 461-S	_____ 461-S Part # VB261X/60WT
	(Russco and Tyler are interchangeable)

**VALVE BOX LIDS:** (Box Lid Shall Match Box Manufacturer)

**Non-Locking Lid:** Cast Iron ASTM-A48, Class 30. Class 30, embossed with "SEWER" on the lid for force mains, embossed with "WATER" on the lid for water distribution mains and meter service connection.

_____ Tyler/Union	_____ Russell
-------------------	---------------

**Locking lid (For all paved areas):** Cast Iron ASTM-A48, Class 30, embossed with "SEWER" on the lid for force mains. To be used on Tyler model 461S, 5-1/4", screw type box.

_____ Tyler/Union	_____ Russell Pipe
-------------------	--------------------

**Locking lid (For all paved areas):** Cast Iron ASTM-A48 Class 30, embossed with "WATER" on the lid for water distribution mains and meter service connections.

_____ Tyler/Union	_____ Russell
-------------------	---------------

**VALVE EXTENSION STEMS:**

Utilized on all in-ground valves 36" or more below finished grade. Used in place of the American Trench Adapter (valve box). Valve extension must be secured to the valve stem, not set over the operating key.

_____ MUELLER	_____ JOHNSON DAVIS
_____ A-26441	

**UNDERGROUND VALVE IDENTIFICATION (UVI) TAGS:**

Utilized when the Tyler-style valve box with the Debris Cap is not used, such as with the American Trench Adapter.

**Dimensions:** 3" x 1/4", Brass, with 2-1/2" theft proof "J" rod anchor. **Stamped:** 1/4" to 3/8" capital lettering. Each valve will have the following minimum information on the tag, words in parentheses are examples of wording to use, City code (WPB), valve size (6"), type of valve (RV, BV, PV), type of use (WM, FM), and operation instructions (R-21) right 21 turns to open, plus valve number, if applicable. In unpaved areas the UVI will be placed in the concrete collar around valve boxes. In paved areas the UVI will be epoxy mounted adjacent to the valve box or on a nearby concrete curb face.

_____ WAGCO MARKER
--------------------



Submittal: **EXTENDED & MULTIPLE WATER SERVICE (CONTINUED)**

**DEBRIS CAP:**

Lockable handle with ID tag attached to the bottom of the debris cap. See Underground Valve Identification Tags section for ID tag information. All Debris Caps within the system shall have color coded operating handles meeting the following standard:

- \_\_\_\_\_ "Yellow" hydrant and private fire line valves.
- \_\_\_\_\_ "Orange" curb stops and valves on water services.
- \_\_\_\_\_ "Blue" potable water main valves.
- \_\_\_\_\_ SW SERVICES: Debris Cap, Model DC-590 or DC-590BC (for top section of valve box), with ID Tag.
- \_\_\_\_\_ SW SERVICES: Debris Cap, Model DC-500 (for bottom section of valve box), with ID Tag.

**BRASS BUSHING:**

All brass shall be of no-lead brass (maximum lead content of .10% by weight). 2" male IPT by 1" female IPT solid brass bushing. To be placed on the end of the curb stop for an extended 1" or Dual service. Use 2 bushings in the tee listed below for two one inch or dual services. See the 2 by 1" - "Y" fitting which can be used in lieu of the 2" tee, brass bushing and compression fittings.

- \_\_\_\_\_ LEE BRASS

**BRASS TEE:**

All brass shall be of no-lead brass (maximum lead content of .10% by weight). 2 male IPT. To be placed on the end of the extended service for a multiple service connection. See the 2 by 1" - "Y" fitting to be used in lieu of the tee, brass bushing and compression fittings.

- \_\_\_\_\_ LEE BRASS

**BRASS FITTINGS:**

All brass shall be of no-lead brass (maximum lead content of .10% by weight). 1 compression by 1" female IPT to be placed in the bushings on the run of the tee for multiple services. See the 2 by 1" - "Y" fitting to be used in lieu of the tee, brass bushing and compression fittings.

- \_\_\_\_\_ FORD                      \_\_\_\_\_ MUELLER                      \_\_\_\_\_ MCDONALD

2" male IPT by 2" Female IPT

- \_\_\_\_\_ FORD                      \_\_\_\_\_ MUELLER                      \_\_\_\_\_ MCDONALD

**BRASS NIPPLE:**

All brass shall be of no-lead brass (maximum lead content of .10% by weight). 2" threaded by 6" long solid brass nipple. To be placed between the curb stop and tee for multiple services.

- \_\_\_\_\_ LEE BRASS                      \_\_\_\_\_ FORD

**BRASS "Y" BRANCH:**

All brass shall be of no-lead brass (maximum lead content of .10% by weight). 2" by 1" compression double ended "Y" branch fitting. Placed on end of curb stop to multiple services. Use in lieu of the tee, brass bushing and compression fittings.

- \_\_\_\_\_ FORD                      \_\_\_\_\_ MUELLER

- End of Section -



Submittal: **MISCELLANEOUS PARTS**

On occasion, a variety of parts are required to install service lines and these parts are not listed in the AML. Parts to be utilized in the construction of water distribution mains and service lines, which are not contained in the AML, shall be submitted as a shop drawing for approval. **All brass shall be of no-lead brass (maximum lead content of .10% by weight).**

**- End of Section -**



Submittal: 3" OR LARGER WATER SERVICE

**GENERAL REQUIREMENTS:**

1. See the standard detail sheet for the location of the material for a large meter installation and the corresponding "item" codes listed below in item No. 7. Review Section One "Pressure Pipe" for the approved material requirements for water mains and make your selections from that list. Remember each meter installation will have its own challenges and may call for additional material.
2. Backflow preventers shall be set to the corresponding customer-side pipe depth as to eliminate an offset. Offsets may be made in the service line after the backflow preventer installation.
3. The material list pertains to a meter that will be set on a new or existing stub. Materials for each individual service will call for additional materials, refer to the plan design. The itemized list of material used for the water service will not include the following; tapping valve and sleeve, material for the backflow preventer riser after the meter installation, and material to go from a larger direct tap for fire flow to tee off to the water service.
4. Location and piping for the meter may be rotated to fit the available parkway, sidewalk and/or easement space.
5. A single tapping valve and sleeve may be made on a City water main for both the private fire line and metered service. A tee can be installed in the line after the tapping valve and sleeve for the metered service. Service lines utilizing a tee shall install separate valves after the tee to operate the fire line and domestic line separately. The tapping valve and sleeve shall be sized for the larger of the two services (6" private fire line and 4" water service would call for a 6" minimum tap).
6. The following is an itemization of the minimum materials specified for a three-inch (3") or larger meters. For a 4", 6", and 8" meters, delete item "E" and revise all other items to the corresponding meter size. For a more thorough list of the specifications for the material refer to Section One "PRESSURE PIPE".

The contractor may choose to use F. J. instead of M. J. fittings on the meter assembly, excluding roadway installations. The tapping valve and first elbow (item "G") in the service line shall be M. J.

**ITEM "A", VALVES:**

(2) required, 4", Resilient Wedge, M. J., 2" square operating nut. To be installed in line with the meter, on each side and as close as the pipe and fittings will allow. If one will fit in the meter box, usually the one after the meter then delete one each of the valve boxes and debris caps.

**VALVE BOXES:**

(2) required on the valves listed above. Heavy duty, Cast Iron ASTM-A48 Class 30, 2 piece, 5-1/4" opening, flanged base, 18 to 24" adjustable, screw type, valve box, with Locking lid (For all paved areas), embossed with "WATER" on the lid for water mains and services.

_____ Tyler/Union	_____ Russell/Russco
461-S	461-S Part # VB261X/60WT
	(Russco and Tyler are interchangeable)



Submittal: **3" OR LARGER WATER SERVICE (CONTINUED)**

**VALVE BOX LIDS:** (Box Lid Shall Match Box Manufacturer)

(2) Required on the valve boxes listed above.

**Non-Locking Lid:** Cast Iron ASTM-A48, Class 30. Class 30, embossed with "SEWER" on the lid for force mains, embossed with "WATER" on the lid for water distribution mains and meter service connection.

\_\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell

**Locking lid (For all paved areas):** Cast Iron ASTM-A48, Class 30, embossed with "SEWER" on the lid for force mains. To be used on Tyler model 461S, 5-1/4", screw type box.

\_\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell Pipe

**Locking lid (For all paved areas):** Cast Iron ASTM-A48 Class 30, embossed with "WATER" on the lid for water distribution mains and meter service connections.

\_\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell

**DEBRIS CAP:**

(2) Required in the valve boxes listed above. All Debris Caps within the system shall have color coded operating handles to the following standard; "Orange" for curb stops and valves on water services.

**VALVE EXTENSION STEMS:**

Utilized on all in-ground valves 36" or more below finished grade. Used in place of the American Trench Adapter (valve box). Valve extension must be secured to the valve stem, not set over the operating key.

\_\_\_\_\_ MUELLER      \_\_\_\_\_ JOHNSON DAVIS  
A-26441

**UNDERGROUND VALVE IDENTIFICATION (UVI) TAGS:**

Utilized when the Tyler-style valve box with the Debris Cap is not used, such as with the American Trench Adapter.

**Dimensions:** 3" x 1/4", Brass, with 2-1/2" theft proof "J" rod anchor. **Stamped:** 1/4" to 3/8" capital lettering. Each valve will have the following minimum information on the tag, words in parentheses are examples of wording to use, City code (WPB), valve size (6"), type of valve (RV, BV, PV), type of use (WM, FM), and operation instructions (R-21) right 21 turns to open, plus valve number, if applicable. In unpaved areas the UVI will be placed in the concrete collar around valve boxes. In paved areas the UVI will be epoxy mounted adjacent to the valve box or on a nearby concrete curb face.

\_\_\_\_\_ WAGCO MARKER

**ITEM "B", FLANGE ADAPTERS:**

(2) required, 3", Megalug series 2100 flange to P.E. pipe (restrained). One on each side of the meter/strainer/test port

**ITEM "C", METER:** (1- required, supplied by the City, call for length)

"C-1" a length of pipe 5 times the diameter of the pipe before the strainer/meter and

"C-2" a length of pipe 3 times the diameter of the pipe after the meter.

**ITEM "D", STRAINER:**

(1 required)

As manufactured by Neptune Technology Group, flanged, NSF 61 Envirobrass II housing, stainless steel strainer with twice the flow capacity as the meter, stainless steel bolts and nuts. Does not take the place of the straight pipe (C-1). Not required when the meter comes supplied with a built in strainer (Fire Flow Meter).

**ITEM "E", REDUCERS:**

(2) Required, 4" by 3", P. E. on the 4" end is allowed to save on the amount of Megalugs and pipe to be used. The reducers can not be used in lieu of the straight pipe listed under item "C".



Submittal: **3" OR LARGER WATER SERVICE (CONTINUED)**

**ITEM "F", METER VAULTS:** (1 to 2 required)

Vaults for 3" and 4" compound meters will be 48" wide and 48" long and 18" deep. All lids will have the metal, hinged, meter readers lid within the heavy duty, hot dipped galvanized, steel, traffic rated lid (2-piece). 4" Fire flow and larger meters will call for a minimum of a 48" wide and 72" vault with a three piece lid. The hinged meter reader's lid will be centered over the meter dial. All boxes and lids will be H-20 traffic rated. Due to the size of the services the bypass (see item "H") may need to be installed in a separate 48 by 48" vault. All vault lids shall have the touch read sensor secured in the pre-drilled or manufactured opening or a blank 'mushroom' insert filler shall be secured into the opening. The 'mushroom' insert filler shall be manufactured by Sensus Technologies, Inc. Use TR/PL Housing Item No. 45 with Sensor Button (blank) Item No. 53907152-39004.

\_\_\_\_\_ US Precast                      \_\_\_\_\_ Brooks

**ITEM "G", MECHANICAL OFFSET:**

The service at the meter shall be offset higher than the depth of the road crossing. To bring up the service to the proper grade (14" of cover) use one group of the following:

1. M. J., 18" Offset, 2 - M. J. 45 degree bends, cement mortar lined.
2. M. J. 90 degree bends, Backflow preventer(s) are required behind the meter so the pipe is not required to be offset back down to the proper laying depth until after the backflow preventer installation.

**ITEM "H", BY-PASS:**

Bypass piping around meter to allow meter to be tested, repaired or replaced. Bypass piping to be same size as metered service piping (4", 6", or 8").

2 - 4", Resilient Wedge Gate Valves, F. J., with wheel handles

2 - 4", Megalug Series 2100, flange to P.E. pipe (restrained). One on each side of the two valves.

2-4", M. J., tees, cement mortar lined. One on the outside of each of item # A.

1-4" x 2", F. J. By threaded tee or 4 x 4 tee with a tapped plate, to be installed between the F. J. valves, with the 2" threaded vertical "branch".

with,

1-2 x 6" brass nipple threaded into the tee to,

1- 2" locking style curb cock,

2 - 4" M. J. 90 degree bends,

**ITEM "I", TEST PORT:**

Flanged tee is to be bolted to the back of the meter and may be used as part of "C-2".

1-3" Flanged tee with 2" threaded branch.

1-2" by 3" brass nipple.

1-2" Stainless steel ball valve or curb stop with handle.

**ITEM "J", MISCELLANEOUS ITEMS:**

16-4" Megalug series 1100 restrainer glands for M. J. fittings (minimum).

2-3" Megalug series 1100 restrainer glands for M. J. fittings (minimum).

3", DIP, Class 52, cement mortar lined. List Manufacturer:

4", DIP, Class 52, cement mortar lined. List Manufacturer:

3", DIP, Class 53, FJ, cement mortar lined. List Pipe Manufacturer and Company installing the flanges (attach certification letter from shop):

4", DIP, Class 53, FJ, cement mortar lined. List Pipe Manufacturer and Company installing the flanges (attach Certification letter from shop):

2 - 4" Megalug series 2100 may be used in lieu of the flanged pipe.

- End of Section -



**GENERAL REQUIREMENTS:**

1. Review Section One "Pressure Pipe" for the approved material requirements for water mains. Each Private Fire Line (PFL) installation will have its own challenges and may require additional material.
2. Backflow preventers are required at the property line.
3. The material list pertains to a new tap for a private fire line (PFL). Information and material for each individual installation may require additional material, refer to the plan design for this material. The itemized list of material used for the private fire line will not include the material for the backflow preventer riser after the property line.
4. A single tapping valve and sleeve may be made on a City water main for both the private fire line and metered service. A tee can be installed in the line after the tapping valve and sleeve for the metered service. Service lines utilizing a tee shall install separate valves after the tee to operate the fire line and domestic line separately. The tapping valve and sleeve shall be sized for the larger of the two services (6" private fire line and 4" water service would call for a 6" minimum tap). This material is listed separately under "DUAL SERVICE MATERIAL"
5. There is no standard detail for Private Fire Line installation. A breakdown of the minimum required material for a private fire line installation is listed below. Each Private Fire Line (PFL) installation will have its own challenges and may require additional material.
6. The following is an itemization of the minimum materials specified for four-inch (4") fire line  
For a 6", 8", or 10" PFL revise all items to the corresponding meter size. For a 3" PFL add the items under "D". See a two-inch (2") water service and an extended water service for the materials used for a 2" PFL.

**ITEM "A", VALVES:**

(2) Required, 4", Resilient Wedge, M. J., 2" square operating nut. To be installed in line with the meter, on each side and as close as the pipe and fittings will allow. If one will fit in the meter box, usually the one after the meter then delete one each of the valve boxes and debris caps.

**VALVE BOXES:**

(2) Required on the valves listed above. Heavy duty, Cast Iron ASTM-A48 Class 30, 2 piece, 5-1/4" opening, flanged base, 18 to 24" adjustable, screw type, valve box, with Locking lid (For all paved areas), embossed with "WATER" on the lid for water mains and services.

_____ Tyler/Union	_____ Russell/Russco
461-S	461-S Part # VB261X/60WT
	(Russco and Tyler are interchangeable)

**VALVE BOX LIDS:** (Box Lid Shall Match Box Manufacturer)

(2) Required on the valve boxes listed above.

**Non-Locking Lid:** Cast Iron ASTM-A48, Class 30. Class 30, embossed with "SEWER" on the lid for force mains, embossed with "WATER" on the lid for water distribution mains and meter service connection.

_____ Tyler/Union	_____ Russell
-------------------	---------------

**Locking lid (For all paved areas):** Cast Iron ASTM-A48, Class 30, embossed with "SEWER" on the lid for force mains. To be used on Tyler model 461S, 5-1/4", screw type box.

_____ Tyler/Union	_____ Russell Pipe
-------------------	--------------------

**Locking lid (For all paved areas):** Cast Iron ASTM-A48 Class 30, embossed with "WATER" on the lid for water distribution mains and meter service connections.

_____ Tyler/Union	_____ Russell
-------------------	---------------



Submittal: **PRIVATE FIRE LINES (CONTINUED)**

**DEBRIS CAP:**

(2)-required in the valve boxes listed above. All Debris Caps within the system shall have color coded operating handles to the following standard; "Yellow" for curb stops and valves on water services.

**VALVE EXTENSION STEMS:**

Utilized on all in-ground valves 36" or more below finished grade. Used in place of the American Trench Adapter (valve box). Valve extension must be secured to the valve stem, not set over the operating key.

\_\_\_\_\_ MUELLER                      \_\_\_\_\_ JOHNSON DAVIS  
A-26441

**UNDERGROUND VALVE IDENTIFICATION (UVI) TAGS:**

Utilized when the Tyler-style valve box with the Debris Cap is not used, such as with the American Trench Adapter. **Dimensions:** 3" x 1/4", Brass, with 2-1/2" theft proof "J" rod anchor. **Stamped:** 1/4" to 3/8" capital lettering. Each valve will have the following minimum information on the tag, words in parentheses are examples of wording to use, City code (WPB), valve size (6"), type of valve (RV, BV, PV), type of use (WM, FM), and operation instructions (R-21) right 21 turns to open, plus valve number, if applicable. In unpaved areas the UVI will be placed in the concrete collar around valve boxes. In paved areas the UVI will be epoxy mounted adjacent to the valve box or on a nearby concrete curb face.

\_\_\_\_\_ WAGCO MARKER

**ITEM "B", TAPPING SLEEVE:**

(1)-required, size of the main to be tapped by 4"

**ITEM "C", MISCELLANEOUS ITEMS:**

(1) - 4" Megalug series 1100 restrainer glands for M. J. fittings.  
4", DIP.

**ITEM "D", REDUCER:**

For a 3" PFL. 1-4 by 3", M. J. Reducer, to be installed in the City Right of Way, just before the property line.

(1) additional 4" Megalug series 1100 restrainer glands for M. J. fittings.

(1)-3" Megalug series 1100 restrainer glands for M. J. fittings.  
3", DIP



Submittal: **PRIVATE FIRE LINES (CONTINUED)**

**DUAL SERVICE MATERIALS (fire line and water service):**

It is less expensive to make a single tap on a main and have both the fire line and water service come off of the tapped line. The tap will need to be sized for the larger of the two services (normally the PFL). Here is the additional material required to do the work.

**ITEM "A", VALVES:**

(2) required, 1-M. J., R.W. valve, on the building side of the tee to isolate the PFL (sized to fit the run). 1-M. J., R.W. valve, on the branch of the tee to isolate the water service (sized to fit the branch).

**VALVE BOXES:** (Box Lid Shall Match Box Manufacturer)

(2) Required on the valves listed above. Heavy duty, Cast Iron ASTM-A48 Class 30, 2 piece, 5-1/4" opening, flanged base, 18 to 24" adjustable, screw type, valve box, with Locking lid (For all paved areas), embossed with "WATER" on the lid for water mains and services.

\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell/Russco  
461-S                              461-S Part # VB261X/60WT  
(Russco and Tyler are interchangeable)

**VALVE BOX LIDS:**

(2) Required on the valve boxes listed above.

**Non-Locking Lid:** Cast Iron ASTM-A48, Class 30. Class 30, embossed with "SEWER" on the lid for force mains, embossed with "WATER" on the lid for water distribution mains and meter service connection.

\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell

**Locking lid (For all paved areas):** Cast Iron ASTM-A48, Class 30, embossed with "SEWER" on the lid for force mains. To be used on Tyler model 461S, 5-1/4", screw type box.

\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell Pipe

**Locking lid (For all paved areas):** Cast Iron ASTM-A48 Class 30, embossed with "WATER" on the lid for water distribution mains and meter service connections.

\_\_\_\_ Tyler/Union      \_\_\_\_\_ Russell

**DEBRIS CAP:**

(2)-required in the valve boxes listed above. All Debris Caps within the system shall have color coded operating handles to the following standard; "Yellow" for curb stops and valves on water services.

**VALVE EXTENSION STEMS:**

Utilized on all in-ground valves 36" or more below finished grade. Used in place of the American Trench Adapter (valve box). Valve extension must be secured to the valve stem, not set over the operating key.

\_\_\_\_ MUELLER                              \_\_\_\_\_ JOHNSON DAVIS  
A-26441

**UNDERGROUND VALVE IDENTIFICATION (UVI) TAGS:**

Utilized when the Tyler-style valve box with the Debris Cap is not used, such as with the American Trench Adapter.

**Dimensions:** 3" x 1/4", Brass, with 2-1/2" theft proof "J" rod anchor. **Stamped:** 1/4" to 3/8" capital lettering. Each valve will have the following minimum information on the tag, words in parentheses are examples of wording to use, City code (WPB), valve size (6"), type of valve (RV, BV, PV), type of use (WM, FM), and operation instructions (R-21) right 21 turns to open, plus valve number, if applicable. In unpaved areas the UVI will be placed in the concrete collar around valve boxes. In paved areas the UVI will be epoxy mounted adjacent to the valve box or on a nearby concrete curb face.

\_\_\_\_ WAGCO MARKER



Submittal: **PRIVATE FIRE LINES (CONTINUED)**

**ITEM "B", TEE:**

M.J, Run of the tee sized to fit the PFL , branch sized by the service size required (4, 6 or 8").

**ITEM "C", MISCELLANEOUS ITEMS:**

Minimum of 7 Megalug series 1100 restrainer glands for M. J. fittings to be used on the tee and valves.

**PIPE:**

Service line pipe shall be continuous length with no joints or fittings allowed in the service, except at the corporation and angle stop.

1" CTS polyethylene water service tubing. (Manufactured by Endot Industries)

1" Copper tubing, ASTM B88, and WWT-799, type "K", soft or hard drawn, rolls or 20' straight lengths.

(Copper tubing use requires the approval of the Director of Public Utilities)

\_\_\_\_\_ Endotrace, CTS, polyethylene, with attached tracing wire

\_\_\_\_\_ Mueller Industries, Inc. \_\_\_\_\_ Cerro Flow Products LLC

**FITTINGS:**

\_\_\_\_\_ Brass, 90 degree elbows, compression to female iron pipe thread. To screw into the ball valves on the backflow preventer

\_\_\_\_\_ Brass, 90 degree elbows, compression on both ends. Located at the bottom of the backflow preventer.

\_\_\_\_\_ Brass or copper, 90 degree elbows, solder to female iron pipe thread. To screw into the ball valves on the backflow preventer. Size: \_\_\_\_\_.

\_\_\_\_\_ Brass or copper, 90 degree elbows, solder joint on both ends. Located at the bottom of the backflow preventer.

**ACCEPTABLE JOINTS:**

\_\_\_\_\_ Solder Joints, per Plumbing and Health Department regulations (lead free).

\_\_\_\_\_ Use NPT by copper tubing compression fittings, such as; Pack Joint, 110,Mac-Pak or or "T" compression.

**2", PARALLEL RPA INSTALLATION (Additional required material)**

\_\_\_\_\_ Brass tee, compression to female iron pipe thread. To screw into the ball valves on the backflow preventer.

\_\_\_\_\_ Brass, 90 degree elbows, compression on both ends. Located at the bottom of the backflow preventer.

\_\_\_\_\_ Brass or copper, 90 degree elbows, solder to female iron pipe thread. To screw into the ball valves on the backflow preventer.

\_\_\_\_\_ Brass or copper, 90 degree elbows, solder joint on both ends. Located at the bottom of the backflow preventer.

- End of Section -



Submittal: **BACKFLOW PREVENTER(S)**

**NOTE:** It is recommended that you review the City's Manual on Cross Connection Control. All backflow prevention assemblies used on City properties such as buildings, irrigation systems, lift stations, water re-pump stations, water treatment facilities and wastewater treatment facilities must use any one of the following:

<b>BACKFLOW PREVENTER TYPE</b>	<b>TYPE OF SYSTEM TO BE PROTECTED</b>	<b>MAKER</b>	<b>MODEL No.</b>	<b>SIZE</b>
DCDA	Fire Line Protection:	Conbraco	40-60	3" thru 10"
DCDA	Fire Line Protection:	Febco	806YD	3" thru 10"
DCDA	Fire Line Protection:	Watts	709DC_A	3" thru 10"
DCDA	Fire Line Protection:	Wilkins	950DA	2.5" thru 10"
RP	Domestic & Irrigation	Conbraco	40-200	3/4" thru 2.5"
RP	Domestic & Irrigation	Conbraco	40-20	4" thru 10"
RP	Domestic & Irrigation	Febco	825Y	3/4" thru 2"
RP	Domestic & Irrigation	Febco	825YD	2-1/2" thru 10"
RP	Domestic & Irrigation	Watts	909	3/4" thru 10"
RP	Domestic & Irrigation	Wilkins	975	3/4" thru 10"

List the backflow prevention assemblies to be used; include type, manufacturer, model number, model name (if applicable) size and what type of system it will protect. The following are the minimum standards to be met:

1. All assemblies must appear on the latest approval list from the University of South California's Foundation for Cross Connection Control
2. Only assemblies on that list that are currently being manufactured will be allowed.

<b>BACKFLOW PREVENTER TYPE</b>	<b>TYPE OF SYSTEM TO BE PROTECTED</b>	<b>MAKER</b>	<b>MODEL No.</b>	<b>SIZE</b>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
<b>RP</b>	<b>Domestic</b>	<b>Watts</b>	<b>U009M1APCQT</b>	<b>1-1/2" (EXAMPLE)</b>



**GENERAL REQUIREMENTS:**

The following lists of material are for:

1. 3" or larger, single, approved Double Check Detector Assembly (DCDA) or a 3" or larger, single, approved Reduced Pressure Principle Assembly (RPPA).
2. Additional material will be required for a parallel 3" or larger RPA with the first assembly.
3. ¾ to 2", single, approved Reduced Pressure Principle Assembly (RPPA).
4. Additional material for a ¾ to 2" parallel RPPA with the first assembly.
5. Additional material for a ¾ RPPA for a City owned lift station.
6. Dual, parallel installations of RPPA's are not required, but it is strongly suggested for restaurants and businesses that can not afford to have their water turned off during regular working hours.
7. Backflow prevention assemblies and piping are required behind the meter on private property. The Public Utilities Department shall approve the material used through the backflow prevention assembly installation.
8. Location and piping for the backflow prevention assemblies may be rotated to fit the available property lay-out space, with no increase in materials or distance from the property line.
9. Landscaping is a requirement for the installation of backflow preventers. Since backflow preventers must be installed at the property line hedges must be planted around the assemblies to hide them. The hedges are also suggested as a security measure, this may avoid the backflow prevention assemblies not to be tampered by vandals.
10. See the standard detail sheet for the minimum design standards required for backflow installations. Remember the standard detail sheet is the standard, each backflow installation will have its own character and may call for additional material.
11. Some backflow prevention assemblies come built with elbows into the body and others are built with the purpose of being installed in the vertical position. By using these assemblies you can reduce the amount of fittings used. Call you supplier or our backflow techs for a list of this type of approved assemblies.
12. The Fire Department of the local municipality that the DCDA is installed may have their own requirements. Check with the local official on these items. One item is the installation of tamper switches on the OS & Y valves to insure against them being operated.
13. The following is an itemization of minimum amount and type of materials specifically detailed for a three inch DCDA or RPPA. For a 4", 6", or 8" backflow preventer change all items to the size required.
14. All backflow preventers used must be new, on the latest USC, FCCC approved list and be a device that is currently manufactured.



**3" OR LARGER, SINGLE DCDA OR RPPA INSTALLATION**

**FITTINGS:**

(4)-3", 90 degree elbows are required. Most installers use two FJ elbows at the top where they are attached to the flanged valves on the assembly and two MJ elbows on the bottom. All flanged elbows are allowed, but it is suggested that mechanical joint elbows be used underground.

**FLANGE ADAPTERS:**

(2)-3", Megalug series 2100 flange to P.E. pipe (restrained). If flanged pipe is not used or flanged joint (F. J.) by plain end (P. E.) Pipe is used then flange joint to plain end adapters will be required.

**MISCELLANEOUS ITEMS:**

(4) - 3" Megalug series 1100 restrainer glands for M. J. fittings (minimum).

3",DIP, class 52, cement mortar lined. List Manufacturer:

3",DIP, class 53, FJ, cement mortar lined. Supply Company installing the flanges on the pipe. NOTE: If flanged pipe is utilized on both ends, it must be manufactured to fit the correct height requirement for the backflow preventers, or the assembly will not be approved.

Supports under each device.

Electrical conduit, wiring and two tamper switches. May be required to be installed on the O. S. & Y. Valves on DCDA Only. Check with local Fire Department and Building Official.

**FIRE DEPARTMENT CONNECTIONS (FDC):** (Not a Public Utilities Requirement or review item)

To reduce the amount of pipe and fittings many contractors are placing the siamese connections on the back of the DCDA. It must be understood in West Palm Beach it is required that the FDC must not be more than 150' (hose length) from the closest City fire hydrant. To install the FDC on the backflow preventer do not place a flanged 90 degree bend on the back of the DCDA, but instead place the following (WITH PERMISSION AND MATERIAL REVIEW FROM THE BUILDING DEPARTMENT AND THE FIRE DEPARTMENT):

(1)-3" F. J. Tee, one end of run coming off of the DCDA, the branch going down and;

(1)-3" flanged 90 degree bend, on the other end of the run and then;

(1)-3" wafer check valve, then;

(1)-3" flange tapped for 3" IPT, then;

(1)-3" steel nipple (IPT), and a

(1)-3" FDC (Siamese).

Check with your local Fire, Mechanical, Plumbing plan reviewers and construction inspectors for the requirements of the local municipality you are working in.

**3" OR LARGER, PARRELLEL RPA INSTALLATION**

(2)-3", F. J., Tee, run and branch same size to fit the riser pipe.

(2) or 4, 3", DIP, length to fit, class 53, FJ, cement mortar lined spool pieces. None may be required if there is enough space between the tee and 90 degree bends to separate the backflow preventers. Supply certification letter from the Company installing the flanges.

**3/4 to 2", SINGLE RPA INSTALLATION**

The brass fittings listed in these specifications must meet 85-5-5-5 ASTM B62 Cast Brass Specs. If solder joint fittings are used they must meet the brass spec unless they are pressed cooper fittings. **All brass shall be of no-lead brass (maximum lead content of .10% by weight).**

- End of Section -





**APPROVED PRODUCT LIST  
SECTION THREE  
GRAVITY SEWERS**

**GRAVITY SEWERS STANDARDS ARE TO BE USED FOR:**

1. The City of West Palm Beach Public Utilities Department approves materials to be utilized in the sanitary collection system, wastewater lift stations, force mains, and services within the rights-of-ways and easements of:
  - A. City of West Palm Beach.
2. If DIP pipe and or fittings are required review and use the appropriate pages in the section one "Pressure Pipe" submittal package for materials.



Submittal: **SANITARY GRAVITY SEWER**

These submittals shall cover non-pressurized sanitary gravity sewer pipe for the City of West Palm Beach.

**GRAVITY SANITARY SEWER PIPE:**

PVC sewer pipe shall conform to the requirements of ASTM D-3034 standard with minimum wall thickness of SDR 26.  
\_\_\_\_ J-M                      \_\_\_\_ Napco                      \_\_\_\_ Diamond Plastic Corporation                      \_\_\_\_ CertainTeed

PVC sewer pipe required when a gravity main or gravity lateral intersect with a DIP water main pipe, shall be C-900, Class 150, DR 18, PVC water main pipe or (if not available Class 350, ductile iron, epoxy lined, pipe. Review Section 1, Pressure Pipe).

\_\_\_\_ J-M

**GRAVITY SEWER FITTINGS:**

PVC sewer fittings shall conform to the requirements of ASTM D-3034 standard with minimum wall thickness of SDR 26. Fittings 8-inch and smaller shall be molded in one piece with gasket joints that are of a molded "locked-in" design to prevent loss during transport or "fish mouthing" during pipe insertion. The minimum socket depths shall comply with ASTM D-3034. Fittings 10-inch and larger shall be molded or fabricated with manufacturers standard pipe bells and gaskets. Gaskets shall have minimum cross sectional area of 0.20 square inch and conform to ASTM F0477 standard. All fittings shall be supplied by one manufacturer. Fitting types that are not approved are any "Tee", "Tee Wye" or "Cross" type fittings. Flows into a run from a branch must be at a minimum of a 30 degree angle. The smallest allowed main size is 8" the smallest allowed lateral size (owned by the City) is 6".

\_\_\_\_ IPEX                      \_\_\_\_ PLASTIC TRENDS                      \_\_\_\_ VASSALLO                      \_\_\_\_ HARRINGTON CORP.

**CLEAN - OUTS:**

PVC clean-outs shall have a handhold ring and cover (mini-manhole) for protection placed over it.

\_\_\_\_ U. S. F:                      \_\_\_\_ Russell/Russco.  
Model 7610                      Model VB2610 (65lbs)set

**TAPS INTO EXISTING PIPE:**

Tie-in to an existing main that has been Insituformed or lined by another method.

\_\_\_\_ Inserta Tee

**MANHOLE RING AND COVER STANDARD:**

Manhole lid style "D" must be used in sidewalk and pedestrian crossing areas (non-skid, pedestrian traffic design). Ordering information must include: with "WEST PALM BEACH" and "SANITARY" embossed in the lid. If it is a privately owned sewer system then "SANITARY" only is embossed in the lid. In traffic areas and grass medians the ring and lid to be used is to be either the Permex or USF hinged style listed below.

\_\_\_\_ Parmex: 24" Hinged Ring and Cover  
\_\_\_\_ USF: 750 Hinged Ring and Cover  
\_\_\_\_ USF: 240 ring and cover with an O-ring seal built into the lid (240-ORS).  
\_\_\_\_ Lid style "D" for walkways and sidewalk areas

**NOTE:** All hinged lid covers will be installed so that the lid is opened into the direction of traffic. This is to ensure that if the lid raises up during flooding it will be pushed down by approaching traffic.

**MANHOLE LID AND RING SEAL:**

Manhole lids that do not have o-ring seals are required to be retrofitted with seals, between the lid and casting.

\_\_\_\_ CRETEX:

**JOINT SEALANT FOR MANHOLES, AIR RELEASE MANHOLES, AND WETWELLS**

\_\_\_\_ K. T. SNYDER COMPANY, INC.: RAM-NEK, plastic gasket joint material.  
\_\_\_\_ MADEWELL: 806 Flexible Joint Sealant.



Submittal: **SANITARY GRAVITY SEWER (CONTINUED)**

**PVC MANHOLE TO PIPE ADAPTERS:**

Used to seal the pipe to the manhole. All adapters will be made to fit PVC, SDR-26 pipe. Adapters for use with all new construction. PVC adapters shall have double gasketed bell, with sandcoating cast into the outside to allow for adherence to the concrete seal.

\_\_\_\_\_ Harco - The Harrington Corp., P.O. Box 10335, Lynchburg, VA 24306  
Flow Control

**OTHER MANHOLE TO PIPE ADAPTERS:**

Used to seal the pipe to the manhole. All adapters will be made to fit PVC, SDR-26 pipe. Adapters for use with all new construction. Adapters shall have stainless steel ring seals to seal the adapter to the pipe and to the manhole if they are not poured in place.

\_\_\_\_\_ Press Seal Gasket Corporation – Press Boot  
\_\_\_\_\_ U.S. Precast Manhole w/HDPE liner cast-in boot to sleeve connection  
\_\_\_\_\_ U.S. Precast HDPE liner system "Turn Back" joint installed after cast

**MANHOLE PRECAST ADJUSTING RINGS:**

Brick is not allowed to be used to raise to grade manholes or air release manholes. Concrete reinforced 12" wide, 2" high with OD of 36" precast concrete rings are required.

\_\_\_\_\_ TRI-COUNTY CONCRETE PRODUCTS

**COUPLINGS FOR USE ON EXISTING FACILITIES (VCP, ETC):**

Must have the stiffening collars (shear rings) or they can not be used.

\_\_\_\_\_ FERNCO, RC Series  
\_\_\_\_\_ MISSON COUPLING

**COUPLINGS FOR USE TO CHANGE PIPE TYPE:**

Required when installing DIP in a PVC run of main or a lateral that is too close to another utility.

\_\_\_\_\_ HARRINGTON:  
8", PVC, C900 (DIP) x SDR 26 Bell to Bell Adapters.

**MANHOLE COATINGS AND LININGS:**

To be applied per manufacturers specifications and by a certified applicator (Supply letter of certification).

**INTERIORS:**

**SPRAY OR BUSH APPLIED (by certified applicator)**

\_\_\_\_\_ MADEWELL: Mainstay ML72 sprayable micro silica cement mortar base, with DS-5 epoxy lining coat.  
\_\_\_\_\_ CHEM REX: ThoRoc Sewer Guard SP15 sprayed mortar base, with HBS100 epoxy lining coat.  
\_\_\_\_\_ LAFARGE ALUMINATES: SewperCoat PG (new and rehabbed manholes)  
\_\_\_\_\_ FLOWRITE FIBERGLASS LINING SYSTEMS (for rehabilitation of manholes)  
\_\_\_\_\_ SPECTRAGUARD by SPECTRUM (new and rehabbed manholes)  
\_\_\_\_\_ SPECTRASHEILD by Concrete Conservation, Inc.

**FACTORY APPLIED (joints sealed in the field by a certified applicator)**

\_\_\_\_\_ U. S. PRECAST/AGRU: Studded polypropylene welded liner fabric. Must be applied by a certified pre-caster.  
\_\_\_\_\_ U. S. PRECAST/AGRU: Studded HDPE welded liner fabric. Must be applied by a certified pre-caster.  
\_\_\_\_\_ T-LOCK: Polyethylene or polybutylene welded fabric. Must be applied by a certified pre-caster.

**EXTERIOR:**

\_\_\_\_\_ KOPPERS: 300M  
\_\_\_\_\_ MAB: Ply-Tile Epoxy Tar Coating for exterior coating of manholes.



Submittal: **SANITARY GRAVITY SEWER (CONTINUED)**

**MANHOLE AND LIFT STATION WETWELL SEALANT:**

On Rehabilitation projects It is required that all joints in manholes and lift station wetwells be sealed on the outside with an 8" wide band of Wrapid Seal on flat surfaces and a 12" wide band on angled surfaces at all riser rings and manhole castings. Must be used in conjunction with the joint sealant.

—— CANUSA  
Wrapid Seal

- End of Section -





**APPROVED MATERIALS LIST  
SECTION FOUR  
LIFT STATIONS**

**THIS SECTION IS UNDER DEVELOPMENT**

**- End of Section -**





**APPROVED MATERIALS LIST  
SECTION FIVE  
STORMWATER/DRAINAGE**

**STORM SEWERS STANDARDS ARE TO BE USED FOR:**

- 1. The City of West Palm Beach Public Works Department approves materials to be utilized in the storm water system and services within the rights-of-ways and easements of:
  - A. City of West Palm Beach.****



Submittal: **STORMWATER MANAGEMENT STRUCTURES:**

**MANHOLE RING AND COVER STANDARD:**

Manhole lid style "D" must be used in sidewalk and pedestrian crossing areas (non-skid, pedestrian traffic design). Ordering information must include: with "WEST PALM BEACH" and "STORM" embossed in the lid. If it is a privately owned sewer system then "STORM" only is embossed in the lid. In traffic areas and grass medians the ring and lid to be used is to be either the Permex or USF hinged style listed below.

- \_\_\_\_\_ Permex: 24" Hinged Ring and Cover
- \_\_\_\_\_ USF: 750 Hinged Ring and Cover
- \_\_\_\_\_ USF: 240 ring and cover with an O-ring seal built into the lid (240-ORS).
- \_\_\_\_\_ Lid style "D" for walkways and sidewalk areas

**NOTE:** All hinged lid covers will be installed so that the lid is opened into the direction of traffic. This is to ensure that if the lid raises up during flooding it will be pushed down by approaching traffic.

**EXFILTRATION TRENCH**

**FILTER FABRIC**

Non-woven and woven geotextile fabric, needle punched fibers, 100% polypropylene.

- \_\_\_\_\_ Advanced Drainage Systems, Inc. (ADS)
- \_\_\_\_\_ Amoco Fabrics and Fiber Company

Approved Use:

Weights	Storm Pipe Joints	Exfiltration Trench
2.3 oz.	Y	N
3.5 oz.	Y	N
4 oz.	Y	Y
6 oz.	Y	Y

- End of Section -





## APPROVED MATERIALS LIST SECTION SIX HARDSCAPE/FIXTURES

**HARDSCAPE/FIXTURES STANDARDS ARE TO BE USED FOR:**

1. The City of West Palm Beach Engineering Department approves materials to be utilized within the rights-of-ways and easements of:
  - A. City of West Palm Beach.



Submittal: **HARDSCAPE:**

**PEDESTRIAN SURFACES:**

\_\_\_\_\_ Detectable Warning Products (Comply with Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Section 527)

\_\_\_\_\_ Yellow

\_\_\_\_\_ Black

\_\_\_\_\_ Forest Green

\_\_\_\_\_ Other: \_\_\_\_\_ (Specify Color)

- End of Section -





**APPROVED MATERIALS LIST  
SECTION SEVEN  
STREET/PUBLIC LIGHTING**

**THIS SECTION IS UNDER DEVELOPMENT**

**- End of Section -**





## APPROVED MATERIALS LIST SECTION EIGHT LANDSCAPE

LANDSCAPE STANDARDS ARE TO BE USED FOR:

1. The City of West Palm Beach Engineering Department / Parks and Recreations Department approves materials to be utilized within the rights-of-ways, easements, and public property of:
  - A. City of West Palm Beach.

- End of Section -





**APPROVED MATERIALS LIST  
SECTION NINE  
IRRIGATION**

**IRRIGATION STANDARDS ARE TO BE USED FOR:**

1. The City of West Palm Beach Parks and Receptions Department approves materials to be utilized in the irrigation system and services within the rights-of-ways and easements of:
  - A. City of West Palm Beach.



Submittal: **IRRIGATION SYSTEM COMPONENTS**

**CONTROLLERS:**

The City of West Palm Beach utilizes two (2) types of irrigation controllers. Both types are manufacturer specific units. Exceptions will not be permitted.

Type I: Electrical Irrigation Controller (Utilized when electric service is available or may be installed)

Type II: Solar Irrigation Controller (Utilized on small irrigation systems where electric service is not available)

- \_\_\_\_\_ Toro Sentinel (Poured Concrete Slab) (Type I)
  - \_\_\_\_\_ SSA-K-12-PSI-6-N-S4-DR
  - \_\_\_\_\_ SSA-K-24-PSI-6-N-S4-DR
  - \_\_\_\_\_ SSA-K-36-PSI-6-N-S4-DR
  - \_\_\_\_\_ SSA-K-48-PSI-6-N-S4-DR
  
- \_\_\_\_\_ Leit Solar 4000 Series (Includes 2 Leit Operations Keys and Interface Kit) (Type II)

**COMMUNICATIONS:**

The Toro Sentinel controller is utilized by the City as a comprehensive irrigation management system. The City utilizes telemetry communications in conjunction with the Toro Sentinel controller. The following items must be included with a Toro Sentinel System:

- \_\_\_\_\_ Antenna (AA101K) Unity Gain Kit (One Per Controller)
- \_\_\_\_\_ Kenwood UHF Handheld Radio (TK3170K4)(Programmed to City Frequency), Kenwood Battery LITH ION (KNB35L), Kenwood Antenna UHF 3160/3180 (KRA27M), Kenwood Rapid Charge 110V (KSC25), With Marine-Grade Weather-Proof Clear Plastic UHF Radio Sealed Bag

**HARDWARE:**

- \_\_\_\_\_ BPGDI Kaddy Shack Controller Protection Enclosure (KS-2) Forest Green w/Concrete Slab
- \_\_\_\_\_ BPGDI Guard Shack Backflow Enclosure (GS-4) Forest Green w/Concrete Slab

**VALVE BOX:**

- \_\_\_\_\_ Ametek 6" Round Plastic Valve Box w/Latching Lid
- \_\_\_\_\_ Ametek 10" Round Plastic Valve Box w/Latching Lid
- \_\_\_\_\_ Ametek 12" X 16" Rectangular Plastic Valve Box w/Latching Lid

**PIPE (PVC):**

- \_\_\_\_\_ 6" Mainline Class 200 PVC "O" Ring w/Ductile Iron Fittings
- \_\_\_\_\_ 4" Mainline Class 200 PVC "O" Ring w/Ductile Iron Fittings
- \_\_\_\_\_ 3" Mainline Class 200 PVC "O" Ring w/Ductile Iron Fittings
- \_\_\_\_\_ 2 1/2" Schedule 80 Lateral Supply Line to Zones
- \_\_\_\_\_ 2" Schedule 80 Lateral Supply Line to Zones
- \_\_\_\_\_ 1 1/2" Schedule 80 Lateral Supply Line to Zones
- \_\_\_\_\_ 1 1/4" Schedule 40 Lateral Supply Line to Zones
- \_\_\_\_\_ 1" Schedule 40 Lateral Supply Line to Zones
- \_\_\_\_\_ 3/4" Schedule 40 Lateral Supply Line to Zones
- \_\_\_\_\_ 1/2" Schedule 40 Lateral Supply Line to Zones
- \_\_\_\_\_ Funny Pipe, Super Blue Flex, EHD 1295-010-D, 100' Coil

**PIPE (DIRECTIONAL DRILL CONDUIT):**

- \_\_\_\_\_ 4" Directional Bore, Schedule 80 PVC
- \_\_\_\_\_ 4" Directional Bore, HDPE, ASTM F 2160
- \_\_\_\_\_ 4" Directional Bore, HDPE, UL 651B (Electrical Wiring)
- \_\_\_\_\_ 6" Directional Bore, Schedule 80 PVC
- \_\_\_\_\_ 6" Directional Bore, HDPE, ASTM F 2160
- \_\_\_\_\_ 6" Directional Bore, HDPE, UL 651B (Electrical Wiring)
- \_\_\_\_\_ 8" Directional Bore, Schedule 80 PVC



Submittal: **IRRIGATION SYSTEM COMPONENTS (CONTINUED)**

**PIPE (DIRECTIONAL DRILL CONDUIT):**

- \_\_\_\_\_ 8" Directional Bore, HDPE, ASTM F 2160
- \_\_\_\_\_ 8" Directional Bore, HDPE, UL 651B (Electrical Wiring)
- \_\_\_\_\_ 12" Directional Bore, Schedule 80 PVC
- \_\_\_\_\_ 12" Directional Bore, HDPE, ASTM F 2160
- \_\_\_\_\_ 12" Directional Bore, HDPE, UL 651B (Electrical Wiring)

**FITTINGS (PVC):**

- \_\_\_\_\_ 1/2" – 1 1/4" Fittings and Adapters, Schedule 40
- \_\_\_\_\_ 1 1/2" – 2 1/2" Fittings and Adapters, Schedule 80
- \_\_\_\_\_ Shrub Adapter, Irritrol HS 100

**VALVES:**

- \_\_\_\_\_ 1 1/2" Nibco, Class 125 Bronze Gate Valve (T113 – 1 1/2")
- \_\_\_\_\_ 2" Nibco, Class 125 Bronze Gate Valve (T113 – 2")
- \_\_\_\_\_ 3" Nibco, Class 125 Bronze Gate Valve (T113 – 3")
- \_\_\_\_\_ 3/4" Zone Valve: Irritrol 700 PRS Series with CDR Box
- \_\_\_\_\_ 1" Zone Valve: Irritrol 700 PRS Series with CDR Box
- \_\_\_\_\_ 1 1/2" Zone Valve: Irritrol 700 PRS Series with CDR Box
- \_\_\_\_\_ 2" Zone Valve: Irritrol 700 PRS Series with CDR Box
- \_\_\_\_\_ 2" Air Relief Valve

**HEADS / BUBBLERS:**

- \_\_\_\_\_ Toro 4" Pop-Up Spray #570 Z-4P-PRX Series
- \_\_\_\_\_ Toro 6" Pop-Up Spray #570 Z-6P-PRX Series
- \_\_\_\_\_ Toro 12" Pop-Up Spray #570 Z-12P-PRX Series
- \_\_\_\_\_ Hunter PGP Series, Pop-up Rotar
- \_\_\_\_\_ Irritrol # 533 Flood Bubblers

**BACKFLOW:**

- \_\_\_\_\_ 1" Febco 825Y or Approved Equal
- \_\_\_\_\_ 1 1/4" Febco 825Y or Approved Equal
- \_\_\_\_\_ 1 1/2" Febco 825Y or Approved Equal
- \_\_\_\_\_ 2" Febco 825Y or Approved Equal

**SENSORS:**

- \_\_\_\_\_ 1 1/2" Data Industries IR Series (IR220P) Flow Sensor
- \_\_\_\_\_ 2" Data Industries IR Series (IR220P) Flow Sensor
- \_\_\_\_\_ 3" Data Industries IR Series (IR220P) Flow Sensor

- End of Section -

