



Public Works Department • Water & Wastewater Services

WATER & WASTEWATER ENGINEERING DIVISION

2555 West Copans Road • Pompano Beach, Florida 33369 • 954-831-0745 • FAX 954-831-0798/0925

PRODUCT SPECIFICATION SHEETS

Date: June 20, 2012

Date Last Issued: May 14, 2012

Date First Issued: June 23, 2010

This document approved by the Broward County Water & Wastewater Services Technical Standards Committee.

A handwritten signature in blue ink, appearing to read "Steven W. Uhrick".

Steven W. Uhrick, P.E., Chair

The following product specification sheets were added or changed since the last issuance of this document:

7.5

These product specification sheets describe the minimum requirements established by Broward County's Water and Wastewater Services (WWS) for products used in WWS' potable water, reclaimed water and sanitary sewer distribution and collection systems. Products specific to treatment plants are not included.

Additionally, the product specification sheets list manufacturer's product models that are pre-approved by WWS to meet the described minimum requirements. However, products installed in WWS systems are not limited to those identified as pre-approved. The pre-approved list is **not** an exclusive collection of authorized products.

Some pre-approved manufacturer's listings contain just manufacture's names while other listings include manufacturer's names and model or type designations. Unless otherwise noted, inclusion of model or type designations in the manufacturer's listing means **only** that designated model or type has been pre-approved.

Products listed as pre-approved do not require the submittal of shop drawings for WWS Technical Standards Committee approval. Shop drawings for other products that meet the minimum requirements may be submitted for consideration. The submitted shop drawings must be approved by the Engineer of Record and the WWS Technical Standards Committee. Product categories not covered by the specification sheets require a submittal and WWS Technical Standards Committee approval of shop drawings.

Manufacturers are encouraged to submit their products' technical information to the WWS Technical Standards Committee for review. Upon conclusion of the review, the products may become listed as pre-approved.

These product specifications do not supersede any of the Broward County Purchasing Division's rules or regulations, the standard form construction documents, or the contract's technical specifications. Conflicts with any of the preceding documents should be submitted to WWS Engineering for resolution.

These product specifications are one part of WWS' "Minimum Design and Construction Standards" and are meant to work in conjunction with the other parts of the "Minimum Design and Construction Standards" and published standard details.

The following minimum requirements apply to all products:

- All products must be new and unused
- All products coming into contact with potable water must be ANSI/NSF 61 compliant
- Defective products shall always be cause for rejection

These products are "off the shelf manufactured products" which are designed and produced by manufacturers under the exemption from the requirement that the work be done by a licensed professional engineer as set out in Section 471.003(2)(c) of the Florida Statutes, therefore a professional engineer's signing and sealing of shop drawings is not required.

Chloramine resistance is a required material specification for some system elements in contact with potable water. Some manufacturers provide a chloramine resistant material as the standard configuration of their product, while others offer chloramine resistant material as an option specified at the time of purchase. In the case where a chloramine resistant material is an optional product, the manufacturers have been identified with the symbol "[CRTag]" after their name/ product name on the product specification sheets. Products with the "[CRTag]" symbol must come with a factory applied tag indicating the material used and that the product supplied is chloramine resistant. The following materials are deemed chloramine resistant: EPDM, isobutyl-isoprene, fluorocarbons and silicones. Any other materials such as nitriles (NBR), SBR, natural rubbers and neoprenes must be approved by the Technical Standards Committee.

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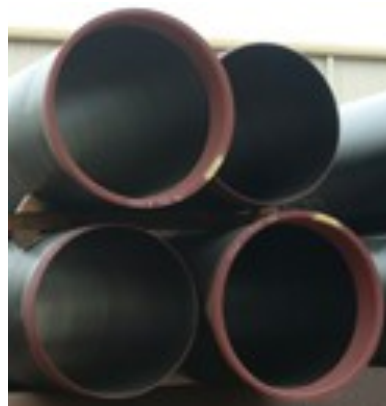
Product Specification Submittal Form



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PRODUCT SPECIFICATIONS

DUCTILE IRON PIPE & FITTINGS



Minimum Requirements:

- Meet or exceed AWWA/ANSI C151/A21.51, AWWA C150, AWWA/ANSI C111/A21.11, and AWWA/ANSI C110/A21.1, latest revisions.
- Material shall be ductile iron conforming to ASTM A536.
- Pressure classification for diameters 4" through 24" shall be 350.
- Pressure classification for diameters larger than 24" shall be determined by the Engineer of Record.
- Working pressure shall be 150 psi, minimum.
- Mechanical or push-on joints shall be the rubber gasket compression type.
- Pipe deflection shall not exceed 50% of the manufacturer's specified maximum amount.
- Sanitary sewer piping and fittings shall have an interior coating of Protecto 401, 40 mils thick.
- Buried pipe and fittings shall have an exterior bituminous coating.
- Potable water main and fittings shall be cement lined and seal coated in accordance with AWWA/ANSI C104/A21.4, latest revision.
- All push-on fittings and joint restraints manufactured by the pipe manufacturer are approved for use on their respective pipes.

PRE-APPROVED MANUFACTURERS:

- ACIPCO
- US PIPE
- McWANE (all plants)
- CLOW
- GRIFFIN PIPE

Date: April 6, 2011
Date Last Issued: January 26, 2011
Date First Issued: June 23, 2010
Standard Detail: 131, 153, 224, 322

Sheet Number

1.1



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PRODUCT SPECIFICATIONS HIGH DENSITY POLYETHYLENE PIPE & FITTINGS (4" AND ABOVE)

Minimum Requirements:

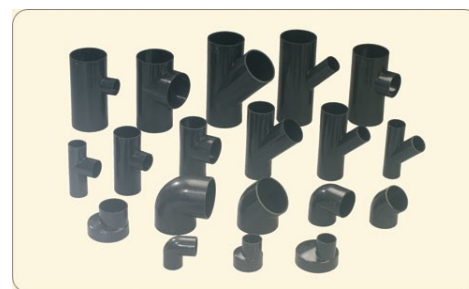
- Product use is acceptable only when installing pipe by directional drilling at the approval of BCWWS.
- Shall be DR 9 and meet or exceed AWWA C906, latest revision.
- Resin material shall meet or exceed the requirements of ASTM D3350, latest revision.
- Material shall be high density polyethylene (HDPE), PE 4710, PE 3608, or PE 3408.
- Permanent identification of the piping shall be provided by equally spaced color stripes on the outside surface or by a solid colored pipe shell. The identifying colors are as follows:

COLOR	SERVICE
Blue	Potable Water
Green	Wastewater or Forcemain
Purple	Reclaimed Water

- Size shall be chosen to maintain an internal diameter relatively equal to that of ductile iron pipe as indicated in the table below:

DIP SIZE	HDPE SIZE
4"	4"
6"	8"
8"	10"
10"	12"
12"	16"
14"	18"
16"	20"

- Pipe lengths and fittings shall be capable of being joined using fusion or mechanical joint methods according to ASTM F2620, D2657, and F1290, latest revisions.
- Shall be installed with two 10 gauge copper clad steel tracer wires.



PRE-APPROVED MANUFACTURERS:

- JM EAGLE (Ductile Iron Pipe Size)

Date: February 9, 2011
Date Last Issued: January 26, 2011
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number

1.2

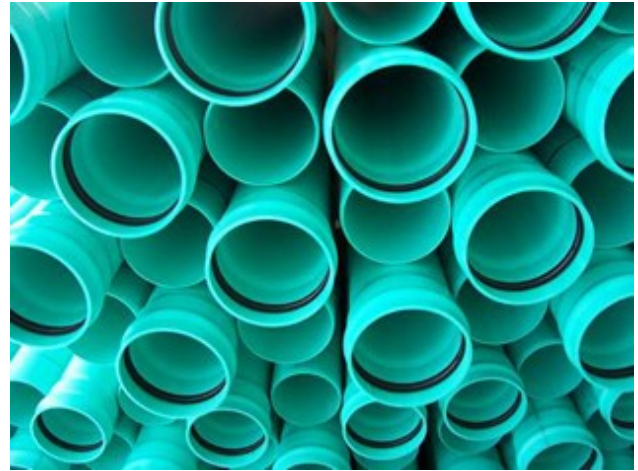


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PRODUCT SPECIFICATIONS PVC PRESSURE PIPE FOR GRAVITY SEWER AND RECLAIMED WATER

Minimum Requirements:

- Shall meet or exceed AWWA C900 or C905 or C909, latest revision.
- C900 or C905 pipe shall be DR 18.
- C909 shall be pressure class 150.
- Shall be used for gravity sewer installed at depths greater than 12 feet.
- Shall be new and not subjected to ultraviolet degradation.
- Working pressure shall be 150 psi, minimum.



PRE-APPROVED MANUFACTURERS:

- DIAMOND PLASTICS CORP.
- JM EAGLE
- CERTAIN TEED
- SANDERSON PIPES
- NORTH AMERICAN PIPE

Date: July 13, 2011
Date Last Issued: June 30, 2010
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number

1.3



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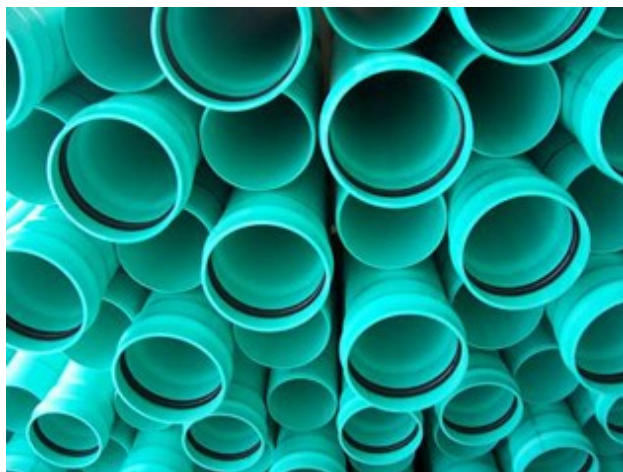
PRODUCT SPECIFICATIONS

PVC NON-PRESSURE PIPE 6" - 15"

Minimum Requirements:

- Shall be SDR-26 for pipe with less than or equal to 12' depth of cover.
- Shall be new and not subjected to ultraviolet degradation.
- Pipe material shall be made of compounds conforming to ASTM D1784 and manufactured in accordance with the material requirements of ASTM D3034.
- Joints shall be bell and spigot push-on rubber type gaskets meeting the requirements of ASTM D3212.
- Gaskets shall meet the requirements of ASTM F477.
- No solvent weld or threaded joints will be permitted.

July 13, 2011 update was title change only.



PRE-APPROVED MANUFACTURERS:

- DIAMOND PLASTICS CORP.
- JM EAGLE
- SANDERSON PIPES
- NORTH AMERICAN PIPE

Date: July 13, 2011
Date Last Issued: June 30, 2010
Date First Issued: June 23, 2010
Standard Detail: 313, 322, 331, 341

Sheet Number

1.4



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PRODUCT SPECIFICATIONS

CASING SPACERS FOR CARRIER PIPE 6" AND ABOVE

Minimum Requirements:

- Band, riser, and hardware material shall be stainless steel type 304.
- Liner material shall be PVC.
- Polymer runners shall be mechanically bolted to the riser.
- Riser shall be minimum 10 gauge and sized to support the pipe.
- Liner shall have a minimum thickness of 0.09".
- Band width shall be a minimum of 8".
- The band shall be a minimum 14 gauge.
- Runner coefficient of friction shall be per ASTM D1894.



PRE-APPROVED MANUFACTURERS:

- PSI (S8G-2, S12G-2)
- CASCADE WATERWORKS MFG. (CCS)
- ADVANCED PRODUCTS & SYSTEMS, INC. (SSI8, SSI12)

Date: June 23, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 153, 154, 155

Sheet Number

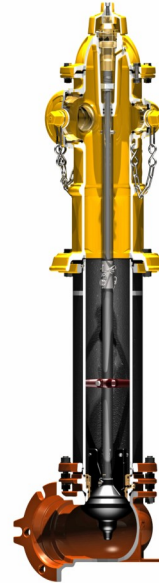
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PRODUCT SPECIFICATIONS

FIRE HYDRANT



Minimum Requirements:

- Fire hydrants shall meet or exceed AWWA C502, latest revision.
- Rated working pressure shall be 250 psi, test pressure shall be 500 psi.
- Hydrant bonnet assembly shall be provided with a grease or oil reservoir and lubrication system that automatically circulates lubricant to all operating stem threads and bearing surfaces each time the hydrant is operated. The system shall be completely sealed from the waterway and from external contaminants.
- The grease or oil used for lubrication shall be nontoxic and safe for use in potable water systems.
- All hydrants will be of the traffic "breakaway" type with safety stem coupling and breakable flange that permits full 360 degree rotation of the nozzle section. Cut down bolts are not acceptable for this requirement.
- The main valve opening of the hydrant shall not be less than 5-1/4".
- Hydrant nozzles will consist of two (2) 2-1/2" hose nozzles and one (1) 4-1/2" pumper nozzle. Threads on these nozzles will conform to N.F.P.A. # 1963 standard for screw threads and gaskets for fire hose couplings.
- All nozzles shall be field replaceable with noncorrosive locking devices.
- The hydrant shall be designed with an anti-friction bearing, located so that it reduces the torque required to operate the hydrant.
- The ferrous waterway of the hydrant's shoe must be epoxy coated.
- The main valve material shall be resistant to chloramine.
- Fire hydrant shall be painted yellow with a reflective type paint that is in accordance with NFPA #291 or per the latest requirements of the BC Fire Marshal or local fire department having jurisdiction.
- Reflective pavement markers in blue shall be used to identify the fire hydrant locations. Each marker is to be placed on the center line of the roadway lane closest to the hydrant.
- Inlet shall be six-inch (6") mechanical joint (MJ).

PRE-APPROVED MANUFACTURERS:

- MUELLER HIGH SECURITY SUPER CENTURION (250, A-423)
- CLOW MEDALLION *[CRTag]
- AMERICAN DARLING (B84B-5)
- AMERICAN AVK (CLASSIC STYLE)
- U.S. PIPE METROPOLITAN (M-94) *[CRTag]

Note: The Mueller hydrant main valve material must be Robbins 1018201 SBR.

Date: May 2, 2012

Date Last Issued: June 1, 2011

Date First Issued: June 23, 2010

Standard Detail: 231

Sheet Number

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PRODUCT SPECIFICATIONS

FLANGED FITTINGS

Minimum Requirements:

- Meet or exceed AWWA C153 or C110, latest revision.
- Joints shall conform to AWWA/ANSI C111/A21.11, latest revision.
- Bolt circle and bolt holes shall conform to ANSI B16.1, Class 125.
- Gasket shall be full flanged.
- Fitting body material shall be ductile iron conforming to ASTM 536.
- Bolt material shall be stainless steel 304.
- Pressure rating shall be 250 psi, minimum.
- Sanitary sewer fittings shall have an interior coating of Protecto 401, 40 mils thick.
- Potable water fittings shall be cement lined and seal coated in accordance with AWWA/ANSI C104/A21.4, latest revision.



PRE-APPROVED MANUFACTURERS:

- ACIPCO
- US PIPE
- STAR PIPE PRODUCTS
- TYLER/UNION (Water main only)
- SIGMA (Water main only)

Date: March 21, 2012

Date Last Issued: June 1, 2011

Date First Issued: June 23, 2010

Standard Detail:

Sheet Number

2.3



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PRODUCT SPECIFICATIONS

FLEXIBLE COUPLINGS

Minimum Requirements:

- Clamp and shear ring material shall be stainless steel.
- Shall connect to pipe of the same or different size and material.
- Shall provide a positive seal against infiltration and exfiltration.
- Bushings are not permitted.



PRE-APPROVED MANUFACTURERS:

- FERNCO (Standard, SS Shear Rings, Strong Back RC, 5000 Series Strong Back, No-Hub)
- MISSION

Date: January 26, 2011

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail:

Sheet Number

2.4



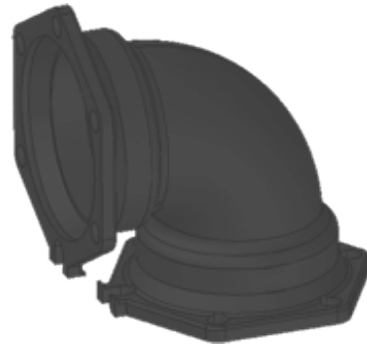
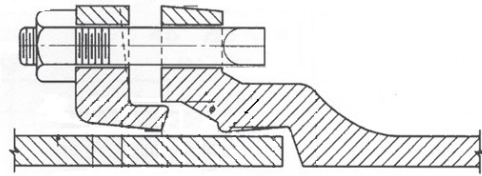
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PRODUCT SPECIFICATIONS

MECHANICAL JOINT FITTINGS

Minimum Requirements:

- Meet or exceed AWWA/ANSI C153/A21.53 or C110/A21.1, latest revision.
- Shall be the rubber gasket compression type.
- Joints shall conform to AWWA/ANSI C111/A21.11, latest revision.
- Fitting body material shall be ductile iron conforming to ASTM 536.
- Pressure rating shall be 350 psi for 4" - 24" diameter fittings.
- Plain end fittings are not permitted.
- Sanitary sewer fittings shall have an interior coating of Protecto 401, 40 mils thick.
- Buried pipe and fittings shall have an exterior bituminous coating.
- Potable water fittings shall be cement lined and seal coated in accordance with AWWA/ANSI C104/A21.4, latest revision.



PRE-APPROVED MANUFACTURERS:

- ACIPCO
- US PIPE
- STAR PIPE PRODUCTS
- TYLER/UNION (Water main only)
- SIGMA (Water main only)*

Date: March 21, 2012
Date Last Issued: January 26, 2011
Date First Issued: June 23, 2010
Standard Detail: 109, 110, 111, 112

Sheet Number

2.5



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PRODUCT SPECIFICATIONS

PVC FITTINGS FOR GRAVITY SEWER UP TO 12' IN DEPTH

Minimum Requirements:

- PVC fittings shall be SDR-26 when installed on pipes with less than or equal to 12' depth of cover.
- Shall conform to ASTM D3034, D3212, and F477, latest revisions.
- Shall be monolithic construction.
- Joints shall be spigot push-on rubber type gaskets meeting the requirements of ASTM D3212.
- Gaskets shall meet the requirements of ASTM F477.
- No solvent weld or threaded joints will be permitted.

July 13, 2011 update was title change only.



PRE-APPROVED MANUFACTURERS:

- HARCO
- PLASTIC TRENDS
- MULTI-FITTINGS

Date: July 13, 2011
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 313, 331, 341

Sheet Number

2.6



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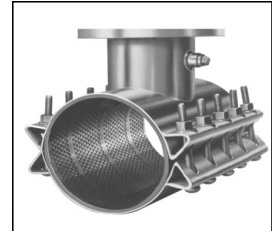
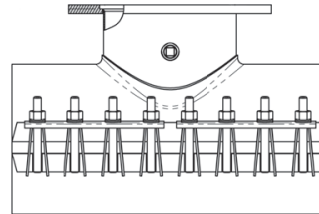
PRODUCT SPECIFICATIONS

TAPPING SLEEVE

Minimum Requirements:

- Meet or exceed AWWA C223, latest revision.
- A test plug shall be provided on the outlet throat.
- Shall be recessed for a tapping valve.
- Recess dimensions shall comply with MSS- SP 60.
- Shall have a flat-faced flange.
- Minimum Tap Sizes for Water Mains
 - 6" thru 16" : 6" Tap
 - 18" thru 30" : 12" Tap
 - 36" and larger : 20" Tap
- Size on size wet taps on asbestos cement pipe are not permitted.
- Body material shall be stainless steel or ductile iron.
- Gaskets on stainless steel models shall have restraints incorporated into the sleeve.
- Ductile iron models shall be the mechanical joint type with all end and side gaskets totally confined.

Stainless Steel



Ductile Iron

PRE-APPROVED MANUFACTURERS:

- **Ductile Iron**
 - AMERICAN FLOW CONTROL (2800 Series)
 - TYLER UNION
 - MUELLER (H-615 Series)
 - U.S. PIPE (Type-9)
- **Stainless Steel**
 - JCM (432)
 - FORD METER BOX (Style FTSS)
 - SMITH BLAIR (663)
 - MUELLER (H-304)
 - ROMAC (Series SST)
 - CASCADE (CST-EX)

*16" and larger requires shop drawing submittal to Engineer of Record and BCWWS.

Date: June 23, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 131

Sheet Number

2.7



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PRODUCT SPECIFICATIONS

TRANSITION COUPLINGS

Minimum Requirements:

- Meet or exceed AWWA C-219, latest revision.
- Shall conform with ANSI/NSF 61.
- Working pressure shall be 150 psi, minimum.
- Sleeve body material shall be ductile iron conforming to ASTM A536 or stainless steel.
- Flange material shall be ductile iron conforming to ASTM A536.
- Hardware material shall be stainless steel.
- Shall be coated with a fusion epoxy.



PRE-APPROVED MANUFACTURERS:

- JCM INDUSTRIES (212)
- SMITH BLAIR (441)

Date: March 21, 2012
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number 2.8



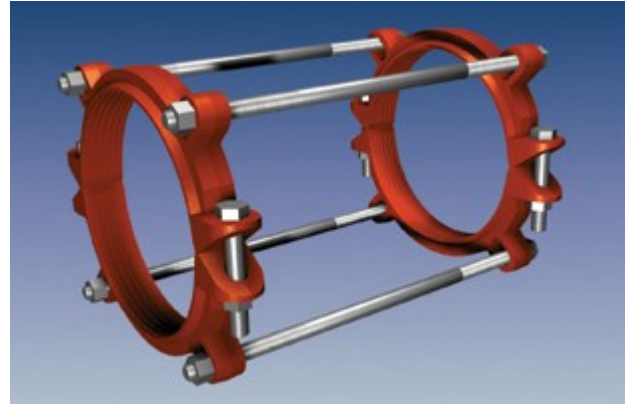
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PRODUCT SPECIFICATIONS

BELL JOINT RESTRAINT FOR DUCTILE IRON AND PVC PIPE

Minimum Requirements:

- Compatible with joints which meet AWWA C111, latest revision.
- Restraining rings material shall be ductile iron conforming to ASTM 536.
- Restraining rod material shall be 304 stainless steel.
- Working pressure shall be 250 psi, minimum, for ductile iron pipe.
- Shall be rated to the full working pressure of PVC pipe.
- The restraint device shall consist of split restraint rings with serrations on the inside diameter.



PRE-APPROVED MANUFACTURERS:

Ductile Iron Pipe

- SIGMA (PV LOK)
- EBAA IRON (1700 MEGALUG HARNESS)

PVC Pipe

- FORD METER BOX (UNI-FLANGE SERIES 1390)
- EBAA IRON (SERIES 1600PV, SERIES 1500PV)
- SIGMA (PV LOK)

Date: June 23, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail:

Sheet Number

3.1



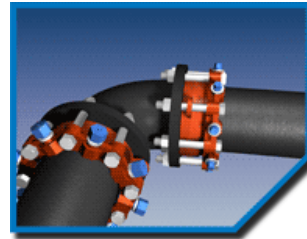
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PRODUCT SPECIFICATIONS

DUCTILE IRON FLANGE ADAPTERS

Minimum Requirements:

- Flange bolt circles meet or exceed AWWA/ANSI C110/A21.10.
- Body material shall be ductile iron conforming to ASTM A536.
- Shall utilize gripping wedges to maximize restraint capabilities.
- Torque limiting actuating screws shall be used to ensure proper initial setting of the gripping wedges.
- Shall be capable of deflection up to 5 degrees.
- Shall allow a minimum 0.6 inch gap between the end of the pipe and the mating flange without effecting the integrity of the seal.
- Minimum pressure rating, categorized by pipe material, shall be as follows:
 - Ductile iron 20" and under: 200 psi
 - PVC C-900 DR18 20" and under: 150 psi



PRE-APPROVED MANUFACTURERS:

- EBAA IRON (Series 2100)

Date: March 21, 2012

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail:

Sheet Number

3.2



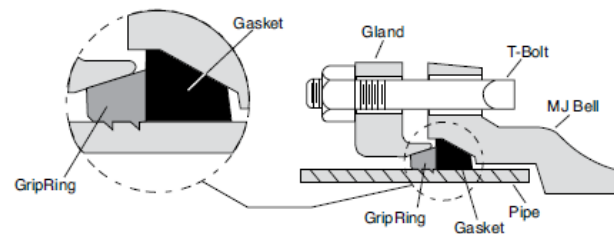
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PRODUCT SPECIFICATIONS

GRIPPING RING JOINT RESTRAINT FOR DUCTILE IRON AND PVC PIPE

Minimum Requirements:

- Compatible with joints which meet AWWA C111, latest revision.
- The gripping ring type mechanical joint restraint shall be acceptable on pipe diameters 4" through 12".
- Meet or exceed ASTM F1674 for use on PVC pipe.
- Gland body and gripping ring material shall be ductile iron conforming to ASTM 536.
- T-bolts and nuts shall conform to AWWA C111, latest revision.
- Working pressure shall be 250 psi, minimum, for ductile iron pipe.
- Shall be rated to the full working pressure of PVC pipe.
- Pipe deflection shall not exceed 50% of the manufacturer's specified maximum amount.
- Restraint device shall consist of a gripping ring held in place by the follower gland.



PRE-APPROVED MANUFACTURERS:

Ductile Iron

- ROMAC (GRIP RING)

PVC Pipe

- ROMAC (GRIP RING)

Date: March 21, 2012
Date Last Issued: February 22, 2012
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	3.3
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PRODUCT SPECIFICATIONS

MECHANICAL JOINT RESTRAINT FOR DUCTILE IRON AND PVC PIPE

Minimum Requirements:

- Compatible with joints which meet AWWA C111, latest revision.
- The follower gland and gripping wedge style joint restraint shall be acceptable on pipe diameters 4" and above.
- Meet or exceed ASTM F1674 for use on PVC.
- Body material shall be ductile iron conforming to ASTM 536.
- Gripping wedge and actuating component material shall be ductile iron conforming to ASTM 536.
- Working pressure shall be 250 psi, minimum, for use on ductile iron pipe.
- Shall be rated to the full working pressure of the PVC pipe.
- Restraint devices shall consist of multiple gripping wedges incorporated into the follower gland.
- Mechanism shall be in place to ensure proper tightening of the restraint without overstressing the pipe. Properly tightening the restraint shall not depend upon accurate field measurements of applied pressure or utilize a tool which requires calibration. Torque-off bolts are an example of an acceptable tightening mechanism.



PRE-APPROVED MANUFACTURERS:

Ductile Iron Pipe

- EBAA IRON (MEGALUG SERIES 1100)
- ROMAC (ROMA GRIP)
- FORD METER BOX (UNI-FLANGE SERIES 1400)
- STAR PIPE PRODUCTS (STARGRIP SERIES 3000)
- SIGMA (One-Lok SLD)

PVC Pipe

- FORD METER BOX (UNI-FLANGE SERIES 1500)
- EBAA IRON (MEGALUG SERIES 2000 PV)
- STAR PIPE PRODUCTS (STARGRIP SERIES 4000)
- SIGMA (ONE-LOK SLC)

Date: March 21, 2012

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 109, 110, 111, 112

Sheet Number

3.4



**Water & Wastewater Services
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PRODUCT SPECIFICATIONS
GRIPPING GASKET JOINT
RESTRAINT FOR DUCTILE IRON
AND PVC PIPE

Minimum Requirements:

- Gripping gasket pressure rating shall meet or exceed the pressure rating of the pipe.
- Pipe deflection shall not exceed 50% of the manufacturer's specified maximum amount.
- Gripping gaskets shall meet or exceed the material requirements of AWWA C111, latest revision.
- Locking material shall be stainless steel.



PRE-APPROVED MANUFACTURERS:

- ACIPC (Fast Grip Gaskets)
- US Pipe Field Lok 350

Date: March 21, 2012
Date Last Issued: February 22, 2012
Date First Issued: February 22, 2012
Standard Detail:

Sheet Number 3.5

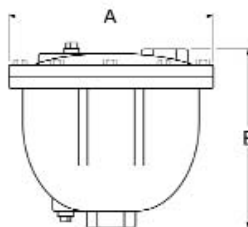


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PRODUCT SPECIFICATIONS AIR RELEASE VALVES FOR POTABLE WATER AND RECLAIMED WATER

Minimum Requirements:

- Meet or exceed AWWA C512, latest revision.
- Body, cover, and baffle material shall be cast iron or ductile iron conforming to ASTM A126 or A536.
- Float and trim material shall be stainless steel.
- Air release shall automatically release small pockets of air from the pipeline while in operation and under pressure.
- Shall have a minimum 3/32" orifice for a minimum working pressure of 150 psi.
- Valve inlet and outlet shall be threaded.
- Combination Air/Vacuum Valves are not acceptable.
- Except where otherwise specified, interior ferrous surfaces, exclusive of stainless steel surfaces, of all valves shall be coated with two-part thermosetting epoxy coating or fusion bonded epoxy coating. Flange faces of valves shall not be epoxy coated.
- Exterior surfaces shall be coated with a primer.
- The epoxy shall be suitable for use in potable and reclaimed water.



PRE-APPROVED MANUFACTURERS:

- GOLDEN-ANDERSON (#920, #922)
- CRISPIN (PL10, PL10A, PL20, PL20A)

Date: March 21, 2012

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 127

Sheet Number

4.1



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PRODUCT SPECIFICATIONS

AIR RELEASE VALVES FOR WASTEWATER

Minimum Requirements:

- Meet or exceed AWWA C512, latest revision.
- Combination Air Valves are acceptable when required based upon calculations by the Engineer of Record. Specific brand and model will be determined by the Technical Standards Committee.
- Air Release Valve shall be of the type that automatically releases air, gas, or vapor under pressure during system operation.
- Body and cover material shall be cast or ductile iron conforming to ASTM A126 or ASTM A536, or stainless steel.
- Trim, float, and seat material shall be stainless steel.
- Orifice button material shall be synthetic rubber.
- The inlet, outlet, and venting orifice shall be sized by the Engineer of Record.
- The outlet shall be threaded.
- Working pressure shall be 150 psi, minimum.
- Except where otherwise specified, interior ferrous surfaces, exclusive of stainless steel surfaces, of all valves shall be coated with two-part thermosetting epoxy coating or fusion bonded epoxy coating. Flange faces of valves shall not be epoxy coated.
- Exterior surfaces shall be coated with a primer.
- The epoxy shall be suitable for use in wastewater.



PRE-APPROVED MANUFACTURERS:

- GOLDEN ANDERSON (#929)
- CRISPIN (S Series)

Date: June 23, 2010
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 127

Sheet Number

4.2



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2555 West Copans Road
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PRODUCT SPECIFICATIONS

AUTOMATIC BLOWOFF

Minimum Requirements:

- Shall be a self-contained unit powered by a 9V battery with a 1 year minimum operational life.
- Material for the above-grade components shall be designed for direct exposure to the sun.
- Internal piping material shall be SDR 80 PVC.
- Mounting brackets and hardware material shall be stainless steel.
- Internal piping and control valve shall have a minimum operational rating of 200 psi.
- Internal piping and control valve shall be removed from the housing by means of a quick-disconnect.
- Male 2" NPT water supply connection.
- Discharged water shall be directed downward.
- Sampling system shall be designed to reduce potential for contamination.
- Shall have a minimum of four (4) programmable flushing cycles.
- Shall have manual on/off functions with a locking dome cover.



PRE-APPROVED MANUFACTURERS:

- HYDRO-GUARD STANDARD UNIT
- KUPFERLE FOUNDRY CO. (9400 WC ECLIPSE)

Date: June 23, 2010
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 253, 254

Sheet Number

4.3

PRODUCT SPECIFICATIONS

BUTTERFLY VALVES (12" AND LARGER)

Minimum Requirements:

- Meet or exceed AWWA C-504, Class 150B, latest revision.
- Body and disc material shall be cast or ductile iron conforming to ASTM A126 or A536.
- Seat and all rubber material shall be chloramine resistant.
- Shaft, nuts, screws, and hardware material shall be stainless steel.
- Valve disc shall be rigidly attached to the shaft to eliminate any relative motion.
- Shaft shall be offset from the disc and body seats so that they do not intersect.
- Shafts of 3" diameter and smaller shall be one piece through the valve with factory set thruster(s) to center the disc in the seat.
- Shafts larger than 3" diameter shall be stub-shafts rigidly keyed to the disc.
- Stub-shafts shall be provided with an adjustable thruster(s) to move the disc and shaft assembly positively in either direction to center the disc in the seat.
- Valves shall open left, or counterclockwise.
- Buried service valves shall have a 2" operating nut.
- Valve operators for valves 24" and smaller shall be traveling nut or worm gear type; Valves larger than 24" shall be equipped with worm gear type operators.
- Operators shall be one size larger than the minimum specified by the manufacturer.
- Except where otherwise specified, interior and exterior ferrous surfaces, exclusive of stainless steel surfaces, in all valves shall be coated with two-part thermosetting epoxy coating or fusion bonded epoxy coating. Flange faces of valves shall not be epoxy coated.
- The epoxy shall be suitable for use in potable water, reclaimed water, and wastewater.



PRE-APPROVED MANUFACTURERS:

- MUELLER (LINESEAL III) *[CRTag]
- VAL-MATIC *[CRTag]
- MILLIKEN *[CRTag]
- PRATT (#2MII,#2FII,TRITON-XR70) *[CRTag]
- CLOW (Model 4500 12" only)*[CRTag]

Date: July 27, 2011

Date Last Issued: December 9, 2010

Date First Issued: June 23, 2010

Standard Detail:



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PRODUCT SPECIFICATIONS

CHECK VALVES FOR LIFT STATIONS

Minimum Requirements:

- Meet or exceed AWWA C508 , latest revision.
- Shall be the flapper type with a lever and weight and capable of handling sewage fluids under pressure.
- Seating material shall be bronze to metal.
- Material for all internal working parts shall be stainless steel.
- Shall have O-ring packing.
- Shall have flanged ends.
- Side plugs are not permitted.
- Except where otherwise specified, ferrous surfaces, exclusive of stainless steel surfaces, of all valves four (4)-inch and larger, as well as the exterior surfaces of all submerged valves, shall be coated with two-part thermosetting epoxy coating or fusion bonded epoxy coating. Flange faces of valves shall not be epoxy coated.
- The epoxy shall be suitable for use in reclaimed water and wastewater.



PRE-APPROVED MANUFACTURERS:

- M&H (159-02)
- MUELLER (2600-6-01)
- AMERICAN FLOW CONTROL (SERIES 50-SC)
- GOLDEN ANDERSON (FIGURE 220)
- CLOW (5380)
- AMERICAN AVK (SERIES 41)

Date: March 23, 2011

Date Last Issued: June 30, 2010

Date First Issued: June 23, 2010

Standard Detail: Standard Lift Station Details

Sheet Number

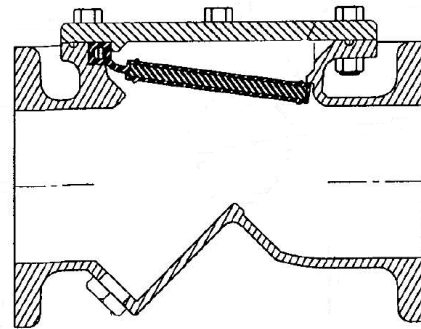
4.5

PRODUCT SPECIFICATIONS

CHECK VALVES FOR POTABLE WATER

Minimum Requirements:

- Meet or exceed AWWA C508, latest revision.
- Shall be the flexible, rubber coated disc type.
- Body material shall be cast or ductile iron conforming to ASTM A126 or ASTM A536.
- Seating shall be rubber to metal.
- Rubber material shall be chloramine resistant.
- Bolts and nuts shall be stainless steel.
- Working pressure shall be 250 psi or greater.
- Side plugs shall not be permitted.
- Valves shall have a resilient hinge. Valves designed with a shaft and mechanical hinge are not permitted.
- Except where otherwise specified, interior and exterior ferrous surfaces, exclusive of stainless steel surfaces, in all valves four (4)-inch and larger shall be coated with two-part thermosetting epoxy coating or fusion bonded epoxy coating.
- The epoxy shall be suitable for use in potable water and reclaimed water.



PRE-APPROVED MANUFACTURERS:

- MUELLER (FLEXIBLE DISK) *[CRTag]
- DANFOSS FLO-FLEX (745) *[CRTag]
- AFC (SERIES 2100) (FLANGED BY FLANGED)
- AFC (2100 HYDRANT SECURITY CHECK VALVE)
(MJ BY SOLID GLAND)
- CLOW (306AS with SS nuts and bolts)

Date: February 22, 2012

Date Last Issued: July 27, 2011

Date First Issued: June 23, 2010

Standard Detail: 231, 235, 236

Sheet Number

4.6



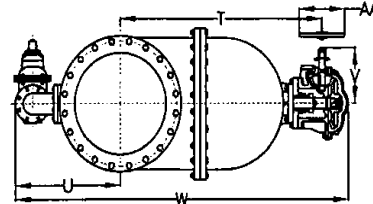
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2555 West Copans Road
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33069
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FAX 954-831-0798

PRODUCT SPECIFICATIONS

DOUBLE DISC GATE AND TAPPING VALVE (12" - 48")

Minimum Requirements:

- Meet or exceed AWWA C-500 latest revisions.
- Tapping valves shall have one flanged end conforming to ANSI standards.
- Shall have clear waterway equal to the full nominal diameter of the valve.
- Body material shall be cast or ductile iron conforming to ASTM A126 or A536.
- Valve seat material shall be bronze.
- Stuffing box and operating nut material shall be cast or ductile iron conforming to ASTM A126 or A536.
- Valve stem material shall be bronze conforming to ASTM B62 or stainless steel for valves 42" and greater.
- Nuts and bolts material shall be 304 stainless steel.
- Valves are to be iron body, bronze mounted, double disc, non-rising stem, parallel seat type, opening left (counter-clockwise).
- The operating mechanism shall be for buried service with a 2" square operating nut.
- Valves shall have a minimum of 2 points of bearing in the wedging mechanism.
- Valves 16" and larger shall be furnished with bevel gears and by-pass valves. Bevel geared valves shall have roller, tracks, and scrapers.
- Valves 12" in size shall have a minimum working pressure of 200 psi and be tested at 400 psi; Valves 14" and larger shall have a minimum working pressure of 150 psi and be tested at 300 psi.
- Except where otherwise specified, interior and exterior ferrous surfaces, exclusive of stainless steel surfaces, in all valves shall be coated with two-part thermosetting epoxy coating or fusion bonded epoxy coating. Flange faces of valves shall not be epoxy coated.
- The epoxy shall be suitable for use in potable water, reclaimed water, and wastewater.



Flanged ends, NRS,
with Bevel Gears,
By-Pass

PRE-APPROVED MANUFACTURERS:

- MUELLER (A-2380, H-667)
- KENNEDY VALVE
- CLOW VALVE
- M&H VALVE

Date: March 21, 2012

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 131

Sheet Number

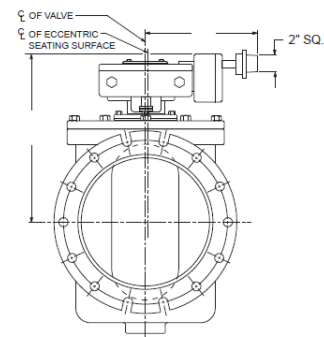
4.7



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PRODUCT SPECIFICATIONS

ECCENTRIC PLUG VALVES



Minimum Requirements:

- Meet or exceed AWWA C517, latest revision.
- Valve and actuator shall be capable of operation in either direction of flow.
- Valve shall be bubble tight in both directions.
- Shall be designed for buried service.
- Buried service valves shall have mechanical joint ends.
- Lift Station valves shall have flange ends.
- Body material shall be cast or ductile iron conforming to ASTM A126 or ASTM A536.
- Body seat material shall be welded nickel alloy or type 316 stainless steel.
- Material for the bearings shall be permanently lubricated 316 stainless steel, bronze, or Teflon.
- Material for the nuts, bolts, springs, and washers shall be 316 stainless steel.
- Pressure rating shall be 175 psi, minimum, for valves up to 12" diameter.
- Pressure rating shall be 150 psi, minimum, for valves 14" diameter and above.
- Shall be operated by a two (2) inch operating nut.
- Port area of valves shall be 100% of the full pipe area.
- Stainless steel plate seats must be locked in the body cavity and replaceable through the bonnet access.
- Bearing areas shall be isolated from the flow.
- Shall have packing bonnets where the shaft protrudes from the valve.
- Packing shall be the self-adjusting type and replaceable without removing the bonnet.
- Valves 10" and greater shall have worm gear operators.
- Operators shall be sized one size greater than the manufacturer's suggested minimum.
- Except where otherwise specified, interior and exterior ferrous surfaces, exclusive of stainless steel surfaces, of all valves four (4)-inch and larger shall be coated with two-part thermosetting epoxy coating or fusion bonded epoxy coating. Flange faces of valves shall not be epoxy coated.
- The epoxy shall be suitable for use in potable and reclaimed water, and wastewater.

PRE-APPROVED MANUFACTURERS:

- DEZURIK (PEF)
- MILLIKEN VALVE CO. (Series 600/601)
- HENRY PRATT

*16" and greater requires shop drawing submittal to the Engineer of Record and BCWWS.

Date: June 23, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 418

Sheet Number

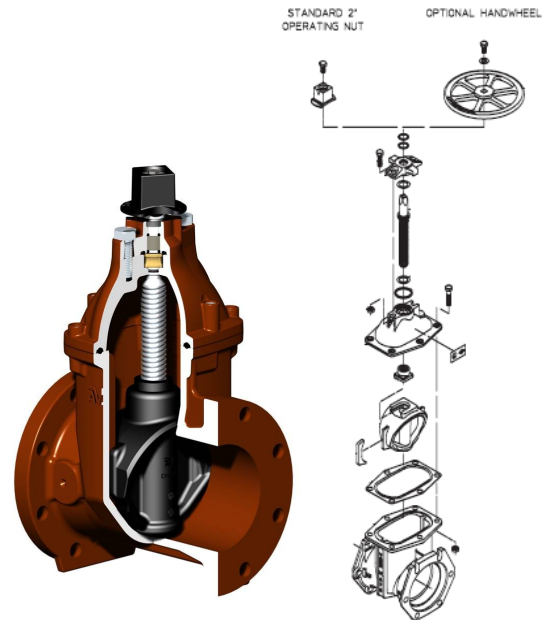
4.8

PRODUCT SPECIFICATIONS

GATE AND TAPPING VALVE

Minimum Requirements:

- Resilient wedge (RW) line valves shall meet or exceed AWWA C509 or AWWA C515, latest revisions.
- Valves shall meet or exceed AWWA C550.
- Shall be the resilient seat type, with a non-rising stem, opening left (counterclockwise).
- No leakage will be allowed or permitted.
- Body material shall be cast or ductile iron conforming to ASTM A126 or A536.
- Wedge material shall be cast or ductile iron, fully encapsulated with a chloramine resistant material.
- Stuffing box and operating nut material shall be cast or ductile iron conforming to ASTM A126 or A536.
- Gate valve stem material shall be bronze conforming to ASTM B 62 or stainless steel.
- Hex head nuts and bolts material shall be 304 or 316 stainless steel.
- Valve disc shall be contoured to assure uniform seating.
- Both ends shall be mechanical joint in accordance with ANSI/ AWWA A21.11/C111.
- Pressure rating shall be 250 psi, minimum.
- Shall have a two-inch (2") square operating nut.
- Resilient seat and other rubber tight parts shall be formed of synthetic elastomer which is corrosion and chloramine resistant.
- Except where otherwise specified, interior and exterior ferrous surfaces, exclusive of stainless steel surfaces, in all valves four (4)-inch and larger shall be coated with two-part thermosetting epoxy coating or fusion bonded epoxy coating. Flange faces of valves shall not be epoxy coated.
- The epoxy shall be suitable for use in potable water and reclaimed water.



PRE-APPROVED MANUFACTURERS:

- AMERICAN FLOW CONTROL (2500 SERIES)
- AMERICAN AVK
- CLOW (2639) *[CRTag]
- KENNEDY VALVE *[CRTag]
- MUELLER (A2360, T2360) *see note

MUELLER A2360 and T2360 product tag must end with 0331 which indicates chloramine resistance

Date: April 18, 2012
Date Last Issued: August 6, 2010
Date First Issued: June 23, 2010
Standard Detail: 123



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PRODUCT SPECIFICATIONS

INSERTION VALVE



Minimum Requirements:

- Applicable valve components shall meet or exceed the requirements of AWWA C509.
- Valve stem material shall be in accordance with AWWA C500.
- Pressure rating shall be 250 psi, minimum.
- Shall be able to be installed on operating mains with pressure up to 150 psi without interruption of service to customers.
- Insertion valve shall be compatible with pipe material.
- Valve shall open and close with the standard number of turns.
- Valve height shall be comparable to standard valve heights.
- Shall have a two-inch (2") square operating nut.
- Hardware shall be Type 304 stainless steel.
- Valve sleeve, body bonnet and/ or neck shall be ductile iron or stainless steel.
- Wedge material shall be cast or ductile iron, fully encapsulated with a chloramine resistant material.
- Except where otherwise specified, interior and exterior ferrous surfaces, exclusive of stainless steel surfaces, in all valves four (4)-inch and larger shall be coated with two-part thermosetting epoxy coating or fusion bonded epoxy coating. Flange faces of valves shall not be epoxy coated. The epoxy shall be suitable for use in potable water and reclaimed water.
- Gasket system shall prevent leakage at the valve insertion point.

PRE-APPROVED MANUFACTURERS:

- Advanced Valve Technologies

Shop drawing submittal is required for valves greater than 12 inches.

Date: January 26, 2011
Date Last Issued: January 26, 2011
Date First Issued: January 26, 2011
Standard Detail:

Sheet Number 4.10



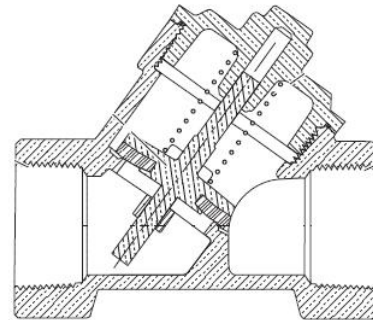
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PRODUCT SPECIFICATIONS

CHECK VALVES FOR WATER SERVICES

Minimum Requirements:

- Meet or exceed AWWA C800, latest revision, for all brass components.
- Body material shall be brass conforming to ASTM B62.
- Spring material shall be stainless steel.
- Shall be a single spring and poppet assembly.
- Removable access cap shall allow for inspection and replacement of internal working parts without removing the check valve from the service line.
- Working pressure shall be 150 psi, minimum.
- Maximum head loss shall be as follows:
 - 1" valve: not to exceed 4 psi at 20 gpm.
 - 2" valve: not to exceed 1 psi at 50 gpm.
- Shall have a female iron pipe inlet and outlet.



PRE-APPROVED MANUFACTURERS:

- FORD METER BOX (HS11-444 [1"], HS11-777 [2"])

Date: March 21, 2012

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 221, 222, 224, 226, 227,
228

Sheet Number

5.1



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PRODUCT SPECIFICATIONS

CORPORATION STOP

Minimum Requirements:

- Meet or exceed AWWA C800, latest revision.
- Body material shall be brass alloy in accordance with ASTM B62.
- Shall be ball valve type.
- Inlet shall be male threaded to match the saddle.
- Outlet connections shall have a compression type fitting for water service lines. All other connections shall be per the design.
- All rubber gasket seals shall be chloramine resistant.



PRE-APPROVED MANUFACTURERS:

- FORD METER BOX (FB-1000)
- MUELLER (B-25008) *[CRTag]
- CAMBRIDGE BRASS (301) *[CRTag]
- A.Y. McDONALD MFG. CO. (4701B-22)

Date: June 23, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 205, 206, 221, 222, 224,
235, 236, 237

Sheet Number

5.2



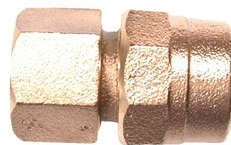
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PRODUCT SPECIFICATIONS

COUPLING AND ADAPTERS FOR WATER SERVICES

Minimum Requirements:

- Meets or exceeds AWWA C800, latest revision.
- Working pressure shall be 150 psi, minimum.



PRE-APPROVED MANUFACTURERS:

- CAMBRIDGE BRASS (105, 117, 119, 417)
- MUELLER
- FORD METER BOX
- A.Y. McDONALD (4761-22, 4753-22, 4754-22, 4758-22, 4620)

Date: June 23, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 226, 227, 228

Sheet Number

5.3



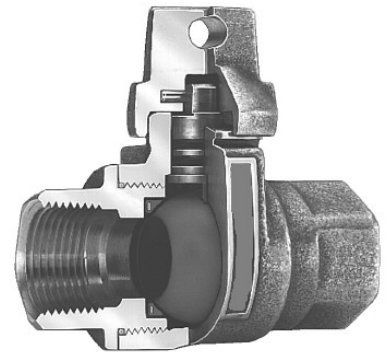
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PRODUCT SPECIFICATIONS

CURB STOP/ METER VALVE

Minimum Requirements:

- Meet or exceed AWWA C800, latest revision.
- Body material shall be brass conforming to ASTM B62.
- Shall be the ball valve type with full port opening.
- Ball and seat material shall be coated with a chloramine resistant seat material; or nickel and chrome plated brass with a chloramine resistant seat.
- Shall have a tee-head with a locking wing.
- Shall be water tight against flow in either direction.
- Seal around the stem shall consist of two (2) o-rings.
- O-ring material shall be chloramine resistant.
- Valve shall open and close with a 90° turn of a standard slotted wrench.
- Shall have a working pressure of 300 psi.
- Shall have a pack-joint compression fitting on the inlet.
- Meter valves for 1 1/2" and 2" meters shall have flanged connections on the outlet sides. Meter valves over 2" will be considered on an individual basis for the particular installation involved.



PRE-APPROVED MANUFACTURERS:

- FORD METER BOX STRAIGHT BALL VALVES (B41-444, B41-777)
- FORD METER BOX BALL METER VALVES (B43-444W, B43-344W, BF43-777W)
- MUELLER 300 BALL CURB VALVES (P25122) *[CRTag]
- MUELLER 300 BALL STRAIGHT METER VALVES (P24335, P24350) *[CRTag]
- CAMBRIDGE BRASS (210, 212, 292) *[CRTag]
- A.Y. McDONALD MFG. CO. (4602B-22, 74602B-22, 6101MW, 76101MW, 6100MW-22, 76100MW-22)

Date: March 21, 2012

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 226, 227, 228

Sheet Number

5.4



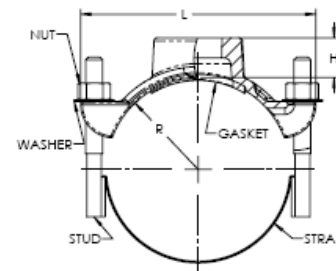
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PRODUCT SPECIFICATIONS

DOUBLE STRAP SERVICE SADDLES

Minimum Requirements:

- Meet or exceed AWWA C800, latest revision.
- Shall be double strap design.
- Saddle material shall be ductile iron conforming to ASTM A536.
- Material for the straps, bales, nuts, and washers shall be stainless steel 304 or better.
- Straps shall tighten to conform to the curvature of the pipe.
- An O-Ring gasket confined in a retaining groove shall seal as the straps are tightened.
- The saddle shall have an outlet for the service connection that will accommodate an NPT or AWWA thread.
- Shall have a factory applied epoxy coating.



PRE-APPROVED MANUFACTURERS:

- JCM (406)
- SMITH-BLAIR (Series 317)
- ROMAC (202NS, 202NU)
- FORD METER BOX (FC202, FCD202)
- A.Y.McDONALD MFG. CO. (4825A, 4826A, 4855A, 4856A)
- MUELLER

Date: March 21, 2012

Date Last Issued: September 17, 2010

Date First Issued: June 23, 2010

Standard Detail: 205, 206, 221, 222

Sheet Number

5.5



**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
Pompano Beach, Florida
33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

METER FLANGE FOR WATER SERVICES

Minimum Requirements:

- Meet or exceed AWWA C800, latest revision.
- Working pressure of 150 psi, minimum.
- Material for the nuts and bolts shall be stainless steel.



PRE-APPROVED MANUFACTURERS:

- CAMBRIDGE BRASS (421, 424)
- FORD METER BOX
- MUELLER
- A.Y.McDONALD MFG. CO. (610F, 610M)

Date: June 23, 2010
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 226, 227, 228

Sheet Number

5.6



**Water & Wastewater Services
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2555 West Copans Road
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FAX 954-831-0798

PRODUCT SPECIFICATIONS

POLYETHYLENE TUBING FOR 1" AND 2" WATER SERVICES

Minimum Requirements:

- Meet or exceed AWWA C901.
- Shall be SDR 9.
- Have surfaces free from bumps and irregularities.
- Comply with ASTM 3350 providing for an inner and outer layer of UV protection for 5 years in direct sunlight.
- Display labels at intervals of not more than 5 feet which convey the following information:
 - Manufacturer's name
 - Brandname or Trademark
 - Nominal size
 - HDPE designation code
 - Standard dimension ratio (SDR)
 - Pressure Class: PC 200
 - AWWA C901
 - Mark or seal of the testing agency
- Fittings shall be of the compression type utilizing a totally confined grip seal and coupling nut.
- Stainless steel tube stiffener insert shall be used for tubing services.



PRE-APPROVED MANUFACTURERS:

- PERFORMANCE PIPE (DRISCOPLEX)
- ENDOT ENDOPOLY

Date: September 7, 2010
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 221, 222, 224, 226, 227,
228

Sheet Number 5.7



**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
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PRODUCT SPECIFICATIONS

TYPE K COPPER TUBING FOR 1" AND 2" WATER SERVICES

Minimum Requirements:

- Meet or exceed the requirements of AWWA C800, Section A.2 and ASTM B88, latest revisions.
- Pipe material shall be Type K Copper.
- Threaded fittings for underground tubing shall be of the compression type utilizing a totally confined grip seal and coupling nut.
- Soldered fittings are acceptable on aboveground tubing.



PRE-APPROVED MANUFACTURERS:

Date: June 23, 2010
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 206, 221, 222, 224, 226,
227, 228, 235, 236, 237

Sheet Number

5.8



**Water & Wastewater Services
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33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

U-BRANCH



Minimum Requirements:

- Meet or exceed the requirements of AWWA C800, latest revisions.
- Working pressure shall be 150 psi, minimum.

PRE-APPROVED MANUFACTURERS:

- A.Y.McDONALD MFG. CO.
- CABRIDGE BRASS
- FORD METER BOX
- MUELLER

Date: June 23, 2010
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 227

Sheet Number

5.9



**Water & Wastewater Services
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2555 West Copans Road
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FAX 954-831-0798

PRODUCT SPECIFICATIONS

YOKES



Minimum Requirements:

- Spacing shall accommodate meter lengths as described in AWWA C800, latest revision.
- Body material shall be cast iron conforming to ASTM A48 or A126.
- Not permitted on new construction.

PRE-APPROVED MANUFACTURERS:

- FORD METER BOX (IRON YOKE BARS, Y500 SERIES)
- MUELLER (IRON METER YOKES, H-5020)

Date: June 23, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail:

Sheet Number

5.10



**Water & Wastewater Services
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PRODUCT SPECIFICATIONS

COMPOUND FIRELINE WATER METER

Minimum Requirements:

- Meet or exceed the requirements of AWWA C703, latest revision.
- Shall be UL listed or FM approved.
- Flanges shall conform to ANSI 16.1 Class 125.
- Compound fire line water meters are intended for use where an extremely wide flow range is required and where measurement of both domestic and fire service water usage is desired.
- Maincase material shall be bronze, cast iron, or ductile iron.
- Bypass meter casing material shall be bronze*.
- The high-capacity and by-pass meter registers shall have a magnetic drive.
- The register shall be permanently sealed, tamper resistant, and have a standard gear ratio for interchangeability.
- Operating pressure shall be 150 psi, minimum.
- Transition between the low-flow and main-line meter shall be controlled by an internal, automatic device.*

*Not required for Sensus Omni F2 as it does not have an external bypass meter.



PRE-APPROVED MANUFACTURERS:

- SENSUS (Omni F2)
- HERSEY METERS (Model MFM II)

Date: July 26, 2010
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number

6.1



**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
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Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

WATER METER (4", 6", 8")

Minimum Requirements:

- Meet or exceed AWWA C701, latest revision.
- Meters shall be the Class II turbine type meter assembly.
- Maincase material shall be bronze or epoxy coated ductile iron.
- Strainer body material shall be bronze or epoxy coated ductile iron or cast iron.
- Strainer and fastener material shall be stainless steel.
- Registers shall be permanently sealed, tamper resistant, with a straight reading odometer type display.
- Meters shall have a direct magnetic drive.
- Maximum continuous flow rates may be exceeded up to a minimum of 25% for intermittent periods.
- A strainer is required upstream of the meter.
- The strainer screen area shall have a minimum net open area of at least 2 times the pipe opening.
- Flanges shall conform to ANSI B16.1 Class 125 or Class 150.
- Working pressure shall be 175 psi, minimum.



3", 4", 6", 8", 10"



PRE-APPROVED MANUFACTURERS:

- HERSEY-METERS (HORIZON)
- SENSUS (Omni T2)

Date: July 26, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail:

Sheet Number

6.2



**Water & Wastewater Services
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2555 West Copans Road
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33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

FIRE PROTECTION BY-PASS METER (1")

Minimum Requirements:

- Meet or exceed the Minimum Requirements for Service Meter (5/8", 1", 1 1/2", 2"), Product Specification Sheet 6.4.

PRE-APPROVED MANUFACTURERS:

Date: June 23, 2010
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 226, 235, 237

Sheet Number

6.3



**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
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33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

SERVICE METER (5/8", 1", 1 1/2", 2")

Minimum Requirements:

- Main case material for 5/8" to 2" meters shall be NSF61 approved and certified bronze or plastic composite material.
- Main case shall have NSF61 molded on the body in raised lettering.
- Main case shall have non-corrosive metal, male threaded end connections.
- The manufacturer shall warranty plastic composite main cases for a period of 10 years and bronze, aluminum, and ductile iron main cases for a period of 15 years from the date of shipment.
- All materials used in the construction of the main case shall have sufficient dimensional stability to retain operating clearances at working temperatures up to 105 degrees F.
- The meter serial number shall be permanently marked on the plastic composite main case or engraved onto the bronze, aluminum, or ductile iron main case of the meter on a flat serial number pad parallel to the face of the register so that it is easily visible within the meter box and will not wear down after installation.
- The meter serial number shall begin with the last two digits of the year of manufacture. For example, meter manufactured in 2010 shall have a serial number beginning with 10XXXXX.
- The meter size, model number, manufacturer, and direction of flow shall be molded in raised lettering on the main case.
- Meters shall be of split case bottom entry design for sizes 5/8" and 1".
- Plastic composite bodies shall incorporate non-corrosive metal end connections with male threads of the proper size for easy installation and compatibility with existing metal meter couplings. Plastic threads or end connections will not be accepted. Non-corrosive metal end connections shall be permanently bonded to the meter.
- Meter bodies, except for plastic composite bodies, shall be designed with a male thread connection to the bottom plate so that any expansion due to pressure will not allow the bottom plate to loosen. Female threaded meter body connections to the bottom plate will not be accepted.
- The measuring chamber shall be AWWA compliant to current standards.
- The chamber shall be of the nutating disc or oscillating piston style.
- The chamber magnet shall be a minimum 4-pole magnet and the measuring chamber shall be locked into place with a chamber retainer, as applicable.
- Meters shall meet or exceed AWWA C700 requirements for pressure loss and accuracy. Accuracy requirements shall be met for a period of 5 years from the date of installation.
- Meters shall be 100% factory tested for accuracy and results shall be provided upon request.
- All meters requiring strainers shall be provided with non-corrosive strainer screens installed in the meter.
- Strainers shall be rigid, fit snugly, be easy to remove, and shall have an effective straining area at least twice that of the inlet opening.
- The register shall be magnetically driven with internal gearing and mechanically driven 6-wheel odometer, read in US gallons, and be permanently sealed by the manufacturer.

- The register shall provide for visual registration at the meter.
- The moving odometer wheels shall be of contrasting colors. All digits 1000 gallons and higher must be white wheels with black lettering.
- The numerals on the number wheels of the register shall not be less than 1/4 in height and should be legible at a 45 degree angle.
- Registers shall incorporate a center sweep test hand and a low flow indicator.
- The register shall be secured to the meter main case by a tamper resistant mechanism or casing protection against unauthorized removal of the register and be interchangeable with meters of the same size.
- Direct reading registers shall be housed within an engineered, heat treated glass to prevent scratching.
- Register box shall be made of bronze or a suitable engineered plastic and have a box lid with stainless steel hinge pins.
- A register and/or meter ID number shall be clearly imprinted on the top of the register and must be capable of being removed while the meter is in service without the need to remove or access the measuring chamber.

PRE-APPROVED MANUFACTURERS:

Date: March 7, 2012
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 224, 226, 227, 228

Sheet Number

6.4



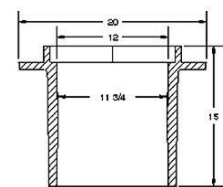
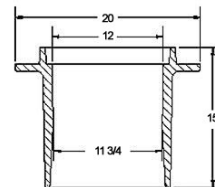
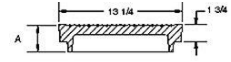
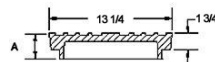
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Engineering Division**
2555 West Copans Road
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33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

BOX AND COVER

Minimum Requirements:

- The box and cover are to be used in casing pipe vent and manual blow off situations.
- The box and cover with extensions are to be used on clean outs.
- Box and cover material shall be cast iron conforming to ASTM A48 Class 35B.



PRE-APPROVED MANUFACTURERS:

- US FOUNDRY (7630)
- US FOUNDRY (7635, Standard Detail Figure 154 only)

Date: January 26, 2011

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 154, 252, 418

Sheet Number

7.1



**Water & Wastewater Services
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PRODUCT SPECIFICATIONS

CLEANOUT BOX AND COVER

Minimum Requirements:

- Box material shall be polyethylene, cast iron, or ductile iron.
- Cover shall be ductile iron, hexagonal shaped, and marked with "Sewer" or an "S".
- Cover dimensions shall be 11 3/4" ID x 15".
- The cover shall meet or exceed a minimum proof load of 25,000 pounds on a 9" x 9" area.



PRE-APPROVED MANUFACTURERS:

- US FOUNDRY (USF 7635, FJ cover)
- US FOUNDRY (USF 7636, MJ cover)
- CARSON (MSCO-3)

Date: July 14, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 341

Sheet Number

7.2



**Water & Wastewater Services
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FAX 954-831-0798

PRODUCT SPECIFICATIONS

MANHOLE



Minimum Requirements:

- Meet or exceed ASTM C478, latest revision.
- Structure material shall be Type II concrete.
- Shall have an 8" minimum wall and base thickness.
- Base section inside diameters shall be 48", minimum.
- Minimum height of the base section shall be 3 feet from the outside bottom of the base slab. The base section shall be cast monolithically with the bottom section's wall.
- Lifting holes are not permitted.
- Sections shall be joined with a preformed plastic joint sealing compound consisting of either bituminous or butyl rubber base, conforming to Federal Specification SS-S-210A, Type I.
- Sealing compound shall be protected with a two piece cover to prevent adhesion until used, and shall be a minimum of 7/8" by 1-3/8" wide.
- Invert channels shall be smooth and accurately shaped to a semicircular bottom conforming to the inside of the adjacent sewer section.
- Inside drop connections are not permitted.
- Steps or ladders are not permitted.
- Structure shall be designed for a minimum proof load of 25,000 pounds.
- Vertical crush to exceed 18,000 pounds and sidewall load to exceed 200 pounds per square inch.

PRE-APPROVED MANUFACTURERS:

- All manufacturers that meet or exceed ASTM, Florida Department of Transportation, and Broward County Highway Construction and Engineering Division specifications.*

*Requires shop drawing submittal to BCWWS for each manhole to describe non-structural details. The drawings shall be signed and sealed by the Engineer of Record.

Date: June 1, 2011

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 311, 312, 313, 318, 322

Sheet Number

7.3



**Water & Wastewater Services
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FAX 954-831-0798

PRODUCT SPECIFICATIONS

MANHOLE RISERS

Minimum Requirements:

- Product shall not be used on new manhole installations.
- Risers shall have an adjustable diameter.
- Riser material shall be A36 Hot roll steel and galvanized metal.
- Stud material shall be stainless steel.



PRE-APPROVED MANUFACTURERS:

- REL (TYPE 1 & 2) (Not approved for new manhole installations)

Date: June 1, 2011
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number

7.4



**Water & Wastewater Services
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PRODUCT SPECIFICATIONS

MANHOLE CONNECTOR

Minimum Requirements:

- Meet or exceed the testing requirements set forth in ASTM C923-00.
- Body material shall be rubber.
- Hardware material shall be stainless steel.
- Shall provide a flexible, watertight seal between the pipe and concrete structure.
- Shall be cast integrally with the structure wall during the manufacturing process in a manner that it will not pull out during pipe coupling.
- The seal between the connector and the pipe shall be made by compressing the connector against the outside circumference of the pipe.
- Shall allow for deflection and vertical or horizontal movement without loss of seal.



PRE-APPROVED MANUFACTURERS:

- A-LOK (Z-LOK) (CAST IN BOOT CONNECTOR)
- KOR-N-SEAL I (706 SERIES)
- A-LOK (X-CEL) (DOES NOT REQUIRE STAINLESS STEEL BAND)

Date: June 13, 2012

Date Last Issued: June 1, 2011

Date First Issued: June 23, 2010

Standard Detail: 322

Sheet Number

7.5



**Water & Wastewater Services
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FAX 954-831-0798

PRODUCT SPECIFICATIONS

MANHOLE GRADE RINGS

Minimum Requirements:

- Concrete grade rings shall be used on new manhole installations and meet or exceed ASTM C478, latest revisions.
- Concrete grade ring material shall be Type II concrete with a minimum 28 day strength of 4000 psi.
- Plastic manhole grade rings shall be used only in conjunction with an approved chimney seal system when installed on existing manholes and shall meet or exceed ASTM D4976, latest revisions.
- 100% recycled material is preferred for plastic grade rings.
- Plastic grade rings shall be manufactured using the injection molding process and tested to assure compliance with the impact and loading requirements per the ASSHTO Standard Specification for Highway Bridges.
- Plastic grade rings shall be sealed with a butyl sealant in the annular space between the rings and cone basin, the rings, and the rings and cover frame
- Plastic ring Installation shall be per the manufacturer's recommendations.



PRE-APPROVED MANUFACTURERS:

Concrete

- All manufacturers that meet or exceed ASTM, Florida Department of Transportation, and Broward County Highway Construction and Engineering Division specifications.

Plastic

- LADTECH, INC.

Date: June 23, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 312, 311, 313

Sheet Number

7.6

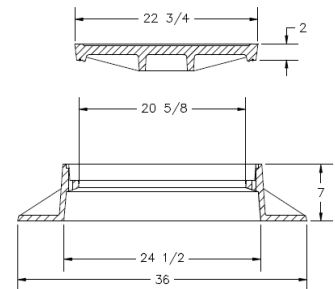
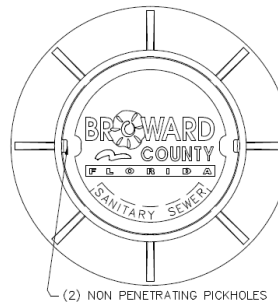


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PRODUCT SPECIFICATIONS MANHOLE RING AND COVER

Minimum Requirements:

- Cover material shall be cast iron or ductile iron conforming to ASTM A48.
- Frame material shall be cast iron or ductile iron conforming to ASTM A48.
- The combined weight of the frame and cover shall not be less than 400 pounds.
- The cover shall weigh a minimum of 160 pounds.
- The seating surfaces between frame and cover shall be machined to fit true and shall be water tight.
- Non-penetrating pick holes will be cast into the lid.
- No plugging or filling will be allowed.



PRE-APPROVED MANUFACTURERS:

- US FOUNDRY (420 LR-ORS, 540 LR-ORS)
- US FOUNDRY (690 AG-M, for Air Release Valve manholes only, County logo not required)

Date: June 23, 2010
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 161

Sheet Number

7.7

PRODUCT SPECIFICATIONS

METER BOX AND LID

Minimum Requirements:

- The meter box shall be made from high-density 100% homogenous polyethylene material, of one-piece molded construction for durability and impact strength or equal.
- Interior wall shall be smooth finish.
- Wall thickness shall be a minimum of .50 inches with wall core interior are of rigid foam construction and offering insulation and tensile strength.
- Vertical crush to exceed 18,000 pounds and sidewall load to exceed 200 pounds per square inch.
- A flange shall encircle the top area for installation in concrete.
- Meter boxes must be constructed with pre-cut knock-outs for piping. The box shall have removable pre-cut pipe entry areas, 3" wide X 4" high, located on the center of each end (short side) of the box for single meter installations, and 3 pre-cut pipe entry areas (single in, dual out) for dual meter installations.
- Meter box shall meet the dimensions indicated on the Standard Details and shall fit all pre-approved lids so that the lids may be interchanged without adjustment to the meter box.
- Meter box lids shall be ductile iron conforming to ASTM A-536, Grade 60-40-18, current revision.
- Lids shall have reader/window with hinged flap to be located over the meter.
- The meter box lid shall meet or exceed a minimum proof load of 25,000 pounds on a 9" x 9" area.
- Testing shall be verified by an independent third party.
- All meter box lids shall have a minimum of 10 (ten) years limited warranty.



PRE-APPROVED MANUFACTURERS:

- OLDCASTLE/CARSON BRAND (BOX) (MSBCF 1324-12; MSBCF 1416-12; MSBCF 1730-12)
- OLDCASTLE/ EAST JORDAN IRON WORKS (LID)
- EBAA IRON (LID)
- DFW (DWF39C-12-BODY and DFW1324C-12-BODY BOXES)

Date: March 21, 2012

Date Last Issued: October 26, 2010

Date First Issued: June 23, 2010

Standard Detail: 226, 227, 228

Sheet Number

7.8



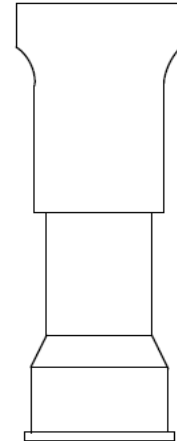
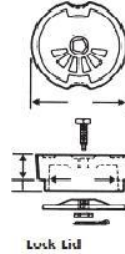
**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
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33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

VALVE BOX

Minimum Requirements:

- Valve boxes shall be cast iron ASTM-A48, extension, adjustable screw type.
- Shaft diameter shall be 5-1/4".
- Covers shall be labeled per the standard detail.
- Extensions 18" through 24" are acceptable.
- All lids shall be locking type.
- The stem of a buried valve shall be within 18" of the finished grade.



PRE-APPROVED MANUFACTURERS:

- TYLER UNION
- STAR PIPE PRODUCTS
- US FOUNDRY

Date: June 23, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: 121, 123, and 418

Sheet Number

7.9



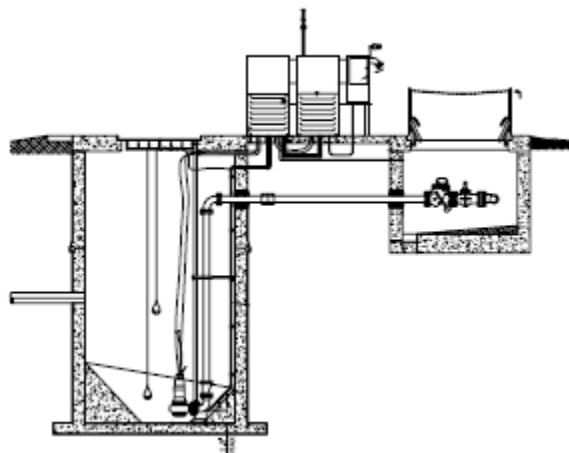
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2555 West Copans Road
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33069
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PRODUCT SPECIFICATIONS

WETWELL AND VALVE PIT STRUCTURES

Minimum Requirements:

- The standard lift station detail drawings are a part of these specifications and contain the latest information on WWS lift station requirements.



PRE-APPROVED MANUFACTURERS:

- Any manufacturer who meets ASTM, FDOT, and Broward County Specifications.*

*Requires shop drawing submittal to BCWWS for each wetwell and valve pit to describe non-structural details. Shop drawing to include buoyancy calculations when the wetwell is installed by the Tremie Seal method. The drawings shall be signed and sealed by the Engineer of Record.

Date: June 1, 2011

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: Lift Station Details

Sheet Number

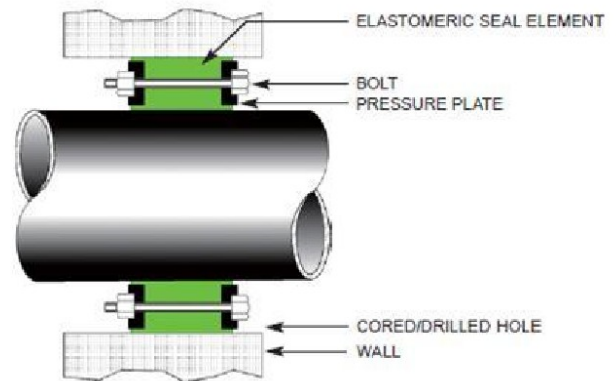
7.10

PRODUCT SPECIFICATIONS

WALL PENETRATING SEAL

Minimum Requirements:

- Seals shall be the modular, mechanical type, consisting of a series of interlocking, molded synthetic rubber links with pressure plates and corrosion resistant nuts and bolts.
- Rubber links shall be shaped to continuously fill the annular space between the pipe and wall or casing opening.
- Shall be designed to provide a hydrostatic seal, rated to 20 psi, between the pipe and wall penetration.
- The link material shall be EPDM.
- The nuts and bolts material shall be stainless steel.
- The pressure plate material shall be reinforced plastic.
- Seals shall be sized and selected per the manufacturer recommendations.



PRE-APPROVED MANUFACTURERS:

- PSI (Thunderline/Link Seal, S-316)
- ADVANCED PRODUCTS & SYSTEMS, INC. (Innerlynx, S-316)
- METRAFLEX (Metraseal, ES)

Date: June 29, 2011
Date Last Issued: June 29, 2011
Date First Issued: June 29, 2011
Standard Detail: 313



**Water & Wastewater Services
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PRODUCT SPECIFICATIONS
COATING FOR EXTERNAL
DUCTILE IRON PIPE AND NON-
WET CONCRETE SURFACES

Minimum Requirements:

- Surface preparations, priming, and application shall be in accordance with the more stringent of the manufacturers recommendations or the BCWWS specifications.
- Composition shall be 100% solids polyamine epoxy and provide resistance against the corrosion caused by hydrogen sulfide found in wastewater.
- Coating color shall be beige.
- Coating shall be suitable for application in confined spaces.

PRE-APPROVED MANUFACTURERS:

- TNEMEC PERMA-GLAZE 435
(In extreme wastewater environments, prime non-concrete surfaces with Series 218 Mortarclad)

Date: June 23, 2010
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: BCWWS Lift Station Details

Sheet Number

8.1



**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
Pompano Beach, Florida
33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

MANHOLE CHIMNEY SEAL

Minimum Requirements:

- Shall be a wrap system or approved equal. Alternative systems will be considered on a case-by-case basis.
- System shall use a heat shrinkable wraparound sleeve to create a barrier to water infiltration and protect the structure from ground moisture.
- Shall provide for a water tight seal between the cone and cover.
- Shall bond to primed concrete and metal surfaces.
- Shall have a 40% minimum shrink factor.
- Maximum water absorption shall be .05% per ASTM D 570 (Standard Test Method for Water Absorption of Plastics).
- Adhesive shall be heat activated .



PRE-APPROVED MANUFACTURERS:

- WRAPIDSEAL

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8.2



**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
Pompano Beach, Florida
33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

WETWELL, VALVE PIT, & MANHOLE COATINGS

Minimum Requirements:

- Application of the coating shall be in accordance with the manufacturer's specification.
- Preparation of the surface shall meet or exceed BCWWS requirements.
- Coating shall meet or exceed the latest revisions of ASTM C78, C109, C138, C157, C293, C457, C496, C580, D638, C642, D695, C666, C882, C1202, D2240, and D4541, as applicable.
- Shall provide resistance against the corrosion caused by hydrogen sulfide found in wastewater as well as other industrial chemicals.
- Shall cure in damp environments.
- Shall be suitable for application in confined spaces.
- Coating levels are defined as follows:
 - Level I:** new or rehabilitated surface, non-corrosive to slightly corrosive environment;
 - **Composition:** Coal tar epoxy
 - Level II:** new or rehabilitated surface, corrosive environment (medium—high);
 - **Composition:** Cement mortar with abrasion and corrosion-resistant qualities
 - Level III:** new or rehabilitated surface, highly corrosive and abrasive environment;
 - **Composition:** 100% solids cyclo-aliphatic amine -cured epoxy coating
- The coating shall be Level II or Level III in highly corrosive areas, as directed by BCWWS.
- New or rehabilitated surfaces in areas designated Level III shall be coated with sprayable, high-build, moisture tolerant, chemical resistant, epoxy coating designed to be applied on dry or damp concrete surfaces and yielding a hard, durable, chemical resistant finish to a pH of 1.



PRE-APPROVED MANUFACTURERS:

LEVEL I

- CARBOLINE 300M

LEVEL II

- SEWPER COAT
- BASF SP15

LEVEL III

- BASF SEWER GUARD HBS 100 EPOXY LINER

Date: June 23, 2010

Date Last Issued: June 23, 2010

Date First Issued: June 23, 2010

Standard Detail: Standard Lift Station Details,
311, 312, 313

Sheet Number

8.3



**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
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33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

WETWELL, VALVE PIT, & MANHOLE LINERS



PRE-APPROVED MANUFACTURERS:

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- Shall be approved on a case-by-case basis by the WWS Technical Standards Committee.



**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
Pompano Beach, Florida
33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

SUBMERSIBLE WASTEWATER LIFT STATION PUMPS (3-100 HP)

Minimum Requirements:

- Provide Factory Mutual Explosion Proof listed submersible sewage pumps suitable for continuous duty operation underwater without loss of watertight integrity to a minimum depth of 50 feet for the Water and Wastewater Services/ Water and Wastewater Operations Division (WWS/WWOD). Pump system design shall include an Ebara/Flygt or Equal compatible guide rail system such that the pump will be automatically connected to the discharge piping when lowered into place on the discharge connection. The pump shall be easily removable for inspection or service, requiring no bolts, nuts, or other fasteners to be disconnected, or the need for personnel to enter the wet well. The motor and pump shall be designed, manufactured, and assembled by the same manufacturer.
- All major parts of the pumping unit(s) including casing, impeller, suction cover, motor frame and discharge elbow shall be manufactured from gray cast iron, ASTM (American Society for Testing and Materials) A-48 Class 30 minimum.
- Castings shall have smooth surfaces devoid of blowholes or other casting irregularities.
- Casing design shall be centerline discharge with a large radius on the cutwater to prevent clogging.
- Units shall be furnished with an Ebara/Flygt compatible discharge elbow that has a 125 lb. flat face ANSI (American National Standards Institute) flange on the discharge side.
- All exposed bolts and nuts shall be 304 stainless steel.
- All mating surfaces of major components shall be machined and fitted with NBR (Nitrile butadiene rubber) o-rings where watertight sealing is required.
- Machining and fitting shall be such that sealing is accomplished by automatic compression of o-rings in two planes and o-ring contact is made on four surfaces without the requirement of specific torque limits.
- Internal and external surfaces are prepared to SPPC-VISI-SP -3-63 then coated with a zinc-chromate primer.
- The external surfaces are then coated with a coal tar epoxy specifically designed for use in wastewater applications.
- The impellers shall be single or multi-vane, semi-open or enclosed design.
- The impellers shall be dynamically balanced and shall be designed for solids handling with a long thru let without acute turns.
- The impellers shall pass 3" solids.
- The inlet edge of the impeller vanes shall be angled toward the impeller periphery.
- The impeller design shall include back pump out vanes.
- A lip seal shall be located behind the impeller hub.
- The design shall include a replaceable cast iron wear ring/ plate.
- The wear ring shall be designed such that it may be adjusted to maintain working clearances and hydraulic efficiencies.
- The manufacturer shall offer vortex impellers on pumps 3 to 30 HP as a standard option.
- The design shall include replaceable shoe adapter plates that

are not cast as part of the pump assembly.

- There shall be a replaceable rubber gasket interface between the base elbow and pump discharge for pumps under 50 HP. Pumps larger than 50 HP shall have a replaceable wear plate.
- Pumps shall be designed to include a double mechanical seal in a cartridge mounted or tandem arrangement.
- Each seal shall be positively driven and act independently with its own spring system.
- The oil filled seal chamber shall be designed to prevent over-filling and include an anti-vortexing vane to insure proper lubrication of both seal faces.
- Lower face materials shall be silicon carbide, upper faces carbon vs. ceramic, NBR elastomers, and 304 stainless steel hardware.
- Seal system shall not rely on pumping medium for lubrication.
- The pump motor shall be an air filled induction type with a squirrel cage rotor, shell type design, built to NEMA (National Electrical Manufacturers Association) MG-1, Design B specifications.
- The motor shall be rated by Factory Mutual as Explosion Proof and suitable for operation in Class 1, Division 1, Groups C & D environments. Ratings by other agencies are not acceptable and will not be considered.

PRE-APPROVED MANUFACTURERS:

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Sheet Number

9.1



**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
Pompano Beach, Florida
33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

SUBMERSIBLE WASTEWATER LIFT STATION PUMPS (3-100 HP)

Minimum Requirements (Cont'd):

- The pump motor will be furnished with a large lifting bail constructed of stainless steel. Lifting rings are not acceptable. The bail shall not be an integral part of any other pump casting/housing. The bail shall be replaceable.
- The lifting bails must provide proper balance to the pump so that it is tilted to properly engage the guide rail system and base elbow.
- 3 HP through 60 HP models shall be capable of operating on 208, 230 or 460 volts without requiring a special stator.
- 75 HP and larger shall operate on 460 volts.
- Stator windings shall be copper, insulated with moisture resistant Class F insulation, rated for 311°F.
- The stator shall be dipped and baked in Class F varnish and heat shrunk fitted into the stator housing.
- Rotor bars and short circuit rings shall be manufactured of cast aluminum.
- Motor shaft shall be one piece stainless steel rotating on two permanently grease lubricated ball bearings designed for a minimum L-10 life of 60,000 hours.
- On pumps 3 to 60 HP the motor service factor shall be 1.15 rated for a maximum of 10 starts per hour.
- Pumps 75 HP and larger shall have a 1.10 motor service factor rated for a maximum of 10 starts per hour.
- The motor junction area shall use either rings eyes or a terminal board to connect the power cables to the stator leads.
- The motor shall be designed for intermittent pumping in a dry environment or at a maximum sump temperature of 120°F.
- Voltage and frequency tolerances shall be a maximum 10 / 5% respectively.
- Motor over temperature protection shall be provided by three (3) thermal protectors (klixons) embedded in the windings.
- The (3) klixons shall be normally closed and embedded, one in each of the three phases. The klixons shall be wired in series.
- A system to detect mechanical seal failure shall be provided.
- Motors 75 HP and larger shall be capable of being furnished with an integral cooling jacket.
- Power cable jacket shall be manufactured of an oil resistant chloroprene rubber material designed for submerged applications.
- The cable entry seal shall be watertight to a depth of 50 feet.
- The cable entry system shall be the same for both the power and control cables. The power and sensor cable furnished must be a minimum of 60' long.
- The pump design shall include an Ebara/Flygt compatible discharge flange suitable for guiding the pump on two (2) 304 stainless steel schedule 40 guide rails sized to mount directly to a base elbow at the floor of the wet well and to a stainless steel guide rail bracket at the top of the wet well below the hatch opening. Guide cables are not an acceptable substitute for guide rails.
- The proposed pump guide rail system shall be fully

compatible and interchangeable with systems currently installed and in use in the WWS system : a) pumps 3 HP to 30 HP will use 2 inch Schedule 40 stainless steel double guide rails, and b) pumps 40 HP and larger will use 3 inch Schedule 40 stainless steel double guide rails.

- The Ebara/Flygt compatible base elbow shall be manufactured of cast iron, ASTM A48 Class 30 minimum.
- The base elbow shall be designed to adequately support the guide rails, discharge piping, and pumping unit under both static and dynamic loading conditions with support legs that are suitable for anchoring it to the wet well floor. The entire weight of the pump unit shall be guided to and wedged tightly against the inlet flange of the base elbow.
- The face of the inlet base elbow flange shall be perpendicular to the floor of the wet well.
- The discharge flange of the base elbow shall conform to ANSI B16.1 Class 125.
- The pump design shall include a self-aligning sliding bracket.
- Sealing of the pumping unit to the base elbow shall be accomplished by a single, linear, downward motion of the pump.

PRE-APPROVED MANUFACTURERS:

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**Water & Wastewater Services
Engineering Division**
2555 West Copans Road
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33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

SUBMERSIBLE WASTEWATER LIFT STATION PUMPS (3-100 HP)

Minimum Requirements (Cont'd):

- The pump design will provide for being not submerged a distance equal to half the height of the pump during each pump down cycle.
- WWS uses 15 standard pump curves shown at the right. A manufacturer's untrimmed impeller pump curve must be within 20% of the required flow at the required head for the left and right points and within 10% of the required flow at the required head for the mid point for the manufacturer's pump to meet WWS minimum requirements for that standard curve. It is expected that one manufacturer may not be able to meet minimum standard curve requirements for all curves.
- All pumps will be supplied with an untrimmed impeller, except for pumps with curves numbers 14 and 15. Curve 14 and 15 pump impellers may be trimmed to meet specific design parameters, but the untrimmed impeller must meet the curve requirements described above.

Curve	Left Point	Mid Point	Right Point
1	129 gpm @ 29 ft.	234 gpm @ 24 ft.	382 gpm @ 16 ft.
2	74 gpm @ 47 ft.	156 gpm @ 40 ft.	324 gpm @ 27 ft.
3	225 gpm @ 44 ft.	375 gpm @ 36 ft.	580 gpm @ 23 ft.
4	127 gpm @ 57 ft.	268 gpm @ 47 ft.	457 gpm @ 36 ft.
5	265 gpm @ 49 ft.	565 gpm @ 39 ft.	910 gpm @ 27 ft.
6	191 gpm @ 65 ft.	407 gpm @ 54 ft.	621 gpm @ 40 ft.
7	401 gpm @ 70 ft.	674 gpm @ 54 ft.	974 gpm @ 34 ft.
8	282 gpm @ 84 ft.	402 gpm @ 74 ft.	641 gpm @ 56 ft.
9	182 gpm @ 104 ft.	367 gpm @ 87 ft.	600 gpm @ 66 ft.
10	340 gpm @ 81 ft.	650 gpm @ 66 ft.	970 gpm @ 50 ft.
11	240 gpm @ 107 ft.	400 gpm @ 97 ft.	625 gpm @ 76 ft.
12	220 gpm @ 123 ft.	491 gpm @ 104 ft.	859 gpm @ 78 ft.
13	501 gpm @ 90 ft.	953 gpm @ 73 ft.	1494 gpm @ 50 ft.
14	470 gpm @ 122 ft.	855 gpm @ 102 ft.	1340 gpm @ 73 ft.
15	670 gpm @ 140 ft.	1030 gpm @ 119 ft.	1555 gpm @ 87 ft.

PRE-APPROVED MANUFACTURERS:

- EBARA*
- FLYGT*
- HOMA*

* Not approved for all standard pump curves. Shop drawings required to detail hydraulic performance only.

Date: September 8, 2011

Date Last Issued: June 1, 2011

Date First Issued: June 23, 2010

Standard Detail: Standard Lift Station Details

Sheet Number

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10. Product Specification Submittal Form

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Public Works Department • Water & Wastewater Services

WATER & WASTEWATER ENGINEERING DIVISION

2555 West Copans Road • Pompano Beach, Florida 33369 • 954-831-0745 • FAX 954-831-0798/0925

PRODUCT SPECIFICATION SUBMITTAL FORM

Project Name	_____	Date	_____
Project Number	_____	Contract Number	_____
Contractor Name	_____	Phone	_____
Address	_____	Fax	_____

The purpose of this form is to identify the products that will be used during construction on the above-named project. Products are organized in tables that group like items. For example, fire hydrants are grouped in one table separate from gate valves and non-pressure pipe is separated from pressure pipe. Place a check next to one and only one option within the table for each product group. Shop drawing submittals to the Engineer of Record and WWS Technical Standards Committee are required when the option 'Other' is chosen. Typically, only one manufacturer for a given product should be used throughout the project. In the unusual circumstance that products from multiple manufacturers are approved by the WWS Technical Standards Committee for the same item (for example, both Mueller and Clow fire hydrants are installed within the same project), then the record drawings for the project must indicate the manufacturer and model installed at each location.

Some pre-approved manufacturer's listings contain just manufacture's names while other listings include manufacturer's names and model or type designations. Unless otherwise noted, inclusion of model or type designations in the manufacturer's listing means only that designated model or type has been pre-approved.

Chloramine resistance is required for rubber material in contact with potable water. Several manufacturers either provide chloramine resistant material as the standard configuration of their product or offer chloramine resistant material as an option to be specified at the time of purchase. In the case where chloramine resistant material is an optional purchase item, the products have been identified with the label *[CRTag]*. Products with the *[CRTag]* label must be delivered to the construction site with a factory applied tag stating the name of the material used and that the compound is chloramine resistant. The following materials are deemed chloramine resistant: EPDM, isobutyl-isoprene, fluorocarbons and silicones. Any other materials such as nitriles (NBR), SBR, natural rubbers and neoprenes must be approved by the Technical Standards Committee.

The space below has been provided for the Engineer of Record's and Contractor's approval stamps.

Date Issued: June 20, 2012

Pipe

1.1 Ductile Iron Pipe & Fittings (Select one)

Manufacturer	Check
Not used on project	
ACIPCO	
US Pipe	
McWane (all plants)	
Clow	
Griffin Pipe	
Other (Shop drawing submittal required)	

1.2 High Density Polyethylene Pipe (4" and Above) & Fittings (Select one)

Manufacturer	Check
Not used on project	
JM Eagle (Ductile Iron pipe size)	
Other (Shop drawing submittal required)	

1.3 PVC Pressure Pipe for Gravity Sewer and Reclaimed Water (Select one)

Manufacturer	Check
Not used on project	
Diamond Plastics Corp.	
JM Eagle	
Certain Teed	
Sanderson Pipes	
North American Pipe	
Other (Shop drawing submittal required)	

1.4 PVC Non-Pressure Pipe (Select one)

Manufacturer	Check
Not used on project	
Diamond Plastics Corp.	
JM Eagle	
Sanderson Pipes	
North American Pipe	
Other (Shop drawing submittal required)	

Fittings and Accessories

2.1 Casing Spacers for Carrier Pipe 6" and Above (Select one)

Manufacturer	Check
Not used on project	
PSI (S8G-2, S12G-2)	
Cascade Waterworks Mfg. (CCS)	
Advanced Products & Systems, Inc. (SSI8, SSI12)	
Other (Shop drawing submittal required)	

2.2 Fire Hydrants (Select one)

Manufacturer	Check
Not used on project	
Mueller High Security Super Centurion (250, A-423)	
Clow Medallion *[CRTag]	
American Darling (B84B-5)	
American AVK (Classic Style)	
US Pipe Metropolitan (M-94) *[CRTag]	
Other (Shop drawing submittal required)	

Date Issued: June 20, 2012

2.3 Flanged Fittings (Select one)

Manufacturer	Check
Not used on project	
ACIPCO	
US Pipe	
Star Pipe Products	
Tyler Union (Water main only)	
Sigma (Water main only)	
Other (Shop drawing submittal required)	

2.4 Flexible Coupling (Select one)

Manufacturer	Check
Not used on project	
Fernco (Standard, SS Shear Rings, Strong Back RC, 5000 Series Strong Back, No-Hub)	
Mission	
Other (Shop drawing submittal required)	

2.5 Mechanical Joint Fittings (Select one)

Manufacturer	Check
Not used on project	
ACIPCO	
US Pipe	
Star Pipe Products	
Tyler/Union (Water main only)	
Sigma (Water main only)	
Other (Shop drawing submittal required)	

2.6 PVC Fittings for Gravity Sewer up to 12' In Depth (Select one)

Manufacturer	Check
Not used on project	
Harco	
Plastic Trends	
Multi-Fittings	
Other (Shop drawing submittal required)	

2.7 Tapping Sleeve (Select one)**Ductile Iron**

Manufacturer	Check
Not used on project	
American Flow Control (2800 Series)	
Tyler Union	
Mueller (H-615 Series)	
US Pipe (Type 9)	
Other (Shop drawing submittal required)	
16" and larger requires shop drawing submittal	

Stainless Steel

Not used on project	
JCM (432)	
Ford Meter Box (Style FTSS)	
Smith Blair (663)	
Mueller (H-304)	
Romac (Series SST)	
Cascade (CST-EX)	
Other (Shop drawing submittal required)	
16" and larger requires shop drawing submittal	

2.8 Transition Couplings (Select one)

Manufacturer	Check
Not used on project	
JCM Industries (212)	
Smith Blair (441)	
Other (Shop drawing submittal required)	

Date Issued: June 20, 2012

Adapters and Joint Restraints

3.1 Bell Joint Restraint for Ductile Iron and PVC Pipe (Select one)

Ductile Iron Pipe

Manufacturer	Check
Not used on project	
Sigma (PV Lok)	
EBBA Iron (1700 Megalug Harness)	
Other (Shop drawing submittal required)	

PVC Pipe

Not used on project	
EBBA Iron (Series 1600 PV, Series 1500 PV)	
Ford Meter Box (Uni-Flange Series 1390)	
Sigma (PV Lok)	
Other (Shop drawing submittal required)	

3.2 Ductile Iron Flange Adapters (Select one)

Manufacturer	Check
Not used on project	
EBBA Iron (Series 2100)	
Other (Shop drawing submittal required)	

3.3 Gripping Ring Joint Restraint for Ductile Iron and PVC (Select one)

Ductile Iron Pipe

Manufacturer	Check
Not used on project	
Romac (Grip Ring)	
Other (Shop drawing submittal required)	

PVC Pipe

Not used on project	
Romac (Grip Ring)	
Other (Shop drawing submittal required)	

3.4 Mechanical Joint Restraint for Ductile Iron and PVC Pipe (Select one)

Ductile Iron Pipe

Manufacturer	Check
Not used on project	
EBBA Iron (Megalug Series 1100)	
Romac (Roma Grip)	
Ford Meter Box (Uni-Flange Series 1400)	
Star Pipe Products (Stargrip Series 3000)	
Sigma (One-Lok SLD)	
Other (Shop drawing submittal required)	

PVC Pipe

Not used on project	
Ford Meter Box (Uni-Flange Series 1500)	
EBBA IRON (Megalug Series 2000 PVC)	
Star Pipe Products (Stargrip Series 4000)	
Sigma (One-Lok SLC)	
Other (Shop drawing submittal required)	

3.5 Gripping Gasket Joint Restraint for Ductile Iron and PVC (Select one)

Manufacturer	Check
Not used on project	
ACIPC (Fast Grip Gaskets)	
US Pipe Field Lok 350	
Other (Shop drawing submittal required)	

Date Issued: June 20, 2012

Valves

4.1 Air Release Valves for Potable Water and Reclaimed Water (Select one)

Manufacturer	Check
Not used on project	
Golden-Anderson (#920, #922)	
Crispin (PL10, PL10A, PL20, PL20A)	
Other (Shop drawing submittal required)	

4.2 Air Release Valves for Wastewater (Select one)

Manufacturer	Check
Not used on project	
Golden-Anderson (#929)	
Crispin (S Series)	
Other (Shop drawing submittal required)	

4.3 Automatic Blowoff (Select one)

Manufacturer	Check
Not used on project	
Hydro-Guard Standard Unit	
Kupferle Foundry Co. (9400 WC Eclipse)	
Other (Shop drawing submittal required)	

4.4 Butterfly Valves (12" and Larger) (Select one)

Manufacturer	Check
Not used on project	
Mueller (Linesal III) *[CRTag]	
Val-Matic *[CRTag]	
Milliken *[CRTag]	
Pratt (#2MII, #2FII, Triton-XR70) *[CRTag]	
Clow (Model 4500 12" Only) *[CRTag]	
Other (Shop drawing submittal required)	

4.5 Check Valves for Lift Stations (Select one)

Manufacturer	Check
Not used on project	
M&H (159-02)	
Mueller (2600-6-01)	
American Flow Control (Series 50-SC)	
Golden Anderson (Figure 220)	
Clow (5380)	
American AVK (Series 41)	
Other (Shop drawing submittal required)	

4.6 Check Valves for Potable Water (Select one)

Manufacturer	Check
Not used on project	
Mueller (Flexible Disc) *[CRTag]	
Danfoss Flo-Flex (745) *[CRTag]	
AFC (Series 2100) (flanged by flanged)	
AFC (2100 Hydrant Security Check Valve) (MJ by solid gland)	
Clow (306AS with SS nuts and bolts)	
Other (Shop drawing submittal required)	

4.7 Double Disc Gate and Tapping Valve (12" – 48") (Select one)

Manufacturer	Check
Not used on project	
Mueller (A-2380, H-667)	
Kennedy Valve	
Clow Valve	
M&H Valve	
Other (Shop drawing submittal required)	

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4.8 Eccentric Plug Valves (Select one)

Manufacturer	Check
Not used on project	
Dezurik (PEF)	
Milliken Valve Co. (Series 600/601)	
Henry Pratt	
Other (Shop drawing submittal required)	

4.9 Gate and Tapping Valve (Select one)

Manufacturer	Check
Not used on project	
American Flow Control (2500 Series)	
American AVK	
Clow (2639) *[CRTag]	
Kennedy Valve *[CRTag]	
Mueller (A2360, T2360) product tag must end with 0331 which indicates chloramines resistance	
Other (Shop drawing submittal required)	

4.10 Insertion Valves (Select one)

Manufacturer	Check
Not used on project	
Advanced Valve Technologies	
Other (Shop drawing submittal required)	

5.2 Corporation Stop (Select one)

Manufacturer	Check
Not used on project	
Ford Meter Box (FB-1000)	
Mueller (B-25008) *[CRTag]	
Cambridge Brass (301) *[CRTag]	
A.Y. McDonald Mfg. Co. (4701B-22)	
Other (Shop drawing submittal required)	

5.3 Coupling and Adapters for Water Services
(Select one)

Manufacturer	Check
Not used on project	
Cambridge Brass (105, 117, 119, 417)	
Mueller	
Ford Meter Box	
A.Y. McDonald Mfg. Co. (4761-22, 4753-22, 4754-22, 4758-22, 4620)	
Other (Shop drawing submittal required)	

5.4 Curb Stop/ Meter Valve (Select one)

Manufacturer	Check
Not used on project	
Ford Meter Box Straight Ball Valves (B41-444, B41-777)	
Ford Meter Box Ball Meter Valves (B43-444W, B43-344W, BF43-777W)	
Mueller 300 Ball Curb Valves (P25122) *[CRTag]	
Mueller 300 Ball Straight Meter Valves (P24335, P24350) *[CRTag]	
Cambridge Brass (210, 212, 292) *[CRTag]	
A.Y. McDonald Mfg. Co. (4602B-22, 74602B-22, 6101MW, 76101MW, 6100MW-22, 76100MW-22)	
Other (Shop drawing submittal required)	

Water Service Lines and Appurtenances**5.1 Check Valves for Water Services** (Select one)

Manufacturer	Check
Not used on project	
Ford Meter Box (HS11-444 [1"], HS11-777 [2"])	
Other (Shop drawing submittal required)	

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5.5 Double Strap Service Saddles (Select one)

Manufacturer	Check
Not used on project	
JCM (406)	
Smith Blair (Series 317)	
Romac (202NS, 202NU)	
Ford Meter Box (FC202, FCD202)	
A.Y. McDonald Mfg. Co. (4825A, 4826A, 4855A, 4856A)	
Mueller	
Other (Shop drawing submittal required)	

5.6 Meter Flange for Water Services (Select one)

Manufacturer	Check One
Not used on project	
Cambridge Brass (421, 424)	
Ford Meter Box	
Mueller	
A.Y. McDonald Mfg. Co. (610F, 610M)	
Other (Shop drawing submittal required)	

5.7 Polyethylene Tubing for 1" and 2" Water Services (Select one)

Manufacturer	Check
Not used on project	
Performance Pipe (Driscopex)	
Endot Endopoly	
Other (Shop drawing submittal required)	

5.8 Type K Copper Tubing for 1" and 2" Water Services (Select one)

Manufacturer	Check
Not used on project	
Other (Shop drawing submittal required)	

5.9 U-Branch (Select one)

Manufacturer	Check
Not used on project	
A.Y. McDonald Mfg. Co.	
Cambridge Brass	
Ford Meter Box	
Mueller	
Other (Shop drawing submittal required)	

5.10 Yokes (Select one)

Manufacturer	Check
Not used on project	
Ford Meter Box (Iron Yoke Bars, Y500 Series)	
Mueller (Iron Meter Yokes, H-5020)	
Other (Shop drawing submittal required)	

Meters**6.1 Compound Fireline Water Meter** (Select one)

Manufacturer	Check
Not used on project	
Sensus (Omni F2)	
Hersey Meters (Model MFM II)	
Other (Shop drawing submittal required)	

6.2 Water Meter (4", 6" 8") (Select one)

Manufacturer	Check
Not used on project	
Hersey Meters (Horizon)	
Sensus (Omni T2)	
Other (Shop drawing submittal required)	

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6.3 Fire Protection By-Pass Meter (1") (Select one)

Manufacturer	Check
Not used on project	
Other (Shop drawing submittal required)	

6.4 Service Meter (5/8", 1", 1 1/2", 2") (Select one)

Manufacturer	Check
Not used on project	
Other (Shop drawing submittal required)	

System Structures, Boxes, and Covers**7.1 Box and Cover** (Select one)

Manufacturer	Check
Not used on project	
US Foundry (7630)	
US Foundry (7635, Standard Detail Figure 154 only)	
Other (Shop drawing submittal required)	

7.2 Cleanout Box and Cover (Select one)

Manufacturer	Check
Not used on project	
US Foundry (USF 7635, FJ Cover)	
US Foundry (USF 7636, MJ Cover)	
Carson (MSCO-3)	
Other (Shop drawing submittal required)	

7.3 Manhole (Select one)

Manufacturer	Check
Not used on project	
Shop drawing submittal required	

7.4 Manhole Risers (Select one)

Manufacturer	Check
Not used on project	
Rel (Type 1 & 2) (Not approved for new manhole installations)	
Other (Shop drawing submittal required)	

7.5 Manhole Connector (Select one)

Manufacturer	Check
Not used on project	
A-LOK (Z-LOK) (Cast in Boot Connector)	
KOR-N-SEAL 1 (706 Series)	
A-LOK (X-CEL) (Does not require stainless steel band)	
Other (Shop drawing submittal required)	

7.6 Manhole Grade Rings (Select one)

Manufacturer	Check
Not used on project	
Concrete	
Ladtech, Inc (Plastic, for use with approved manhole chimney seal system only)	
Other (Shop drawing submittal required)	

7.7 Manhole Ring and Cover (Select one)

Manufacturer	Check
Not used on project	
US Foundry (420 LR-ORS, 540 LR-ORS)	
US Foundry (690 AG-M, for Air Release Valve manholes only, County logo not required)	
Other (Shop drawing submittal required)	

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7.8 Meter Box and Lid (Select one)

Manufacturer	Check
Not used on project	
OldCastle/ Carson Brand (Box) (MSBCF 1324-12; MSBCF 1416-12; MSBCF 1730-12)	
OldCastle/ East Jordan Iron Works (Lid)	
EBBA Iron (Lid)	
DFW (DFW39C-12-BODY and DFW1324C-12-BODY Boxes)	
Other (Shop drawing submittal required)	

7.9 Valve Box (Select one)

Manufacturer	Check
Not used on project	
Tyler Union	
Star Pipe Products	
US Foundry	
Other (Shop drawing submittal required)	

7.10 Wetwell and Valve Pit Structures
(Select one)

Manufacturer	Check
Not used on project	
Shop drawing submittal required	

7.11 Wall Penetrating Seal (Select one)

Manufacturer	Check
Not used on project	
PSI (Thunderline/Link Seal, S-316)	
Advanced Products & Systems (Innerlynx, S-316)	
Metraflex (Metraseal, ES)	
Shop drawing submittal required	

Liners and Coatings**8.1 Coating for External Ductile Iron Pipe and Non-Wet Concrete Surfaces** (Select one)

Manufacturer	Check
Not used on project	
Tnemec Perma-Glaze 435	
Other (Shop drawing submittal required)	

8.2 Manhole Chimney Seal (Select one)

Manufacturer	Check
Not used on project	
Wrapidseal	
Other (Shop drawing submittal required)	

8.3 Wetwell, Valve Pit, & Manhole Coatings
(Select one for each category)**Level I**

Manufacturer	Check
Not used on project	
Carboline 300M	
Other (Product specifications required)	

Level II

Not used on project	
Sewper Coat	
BASF SP15	
Other (Product specifications required)	

Level III

Not used on project	
BASF Sewer Guard HBS 100 Epoxy Liner	
Other (Product specifications required)	

8.4 Wetwell, Valve Pit, & Manhole Liners (Select one)

Manufacturer	Check
Not used on project	
Shop drawing submittal required	

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Pumps

9.1 Submersible Wastewater Lift Station Pumps (3-100HP) (Select one)

Manufacturer	Check
Not used on project	
Ebara (Shop drawing submittal required)	
Flygt (Shop drawing submittal required)	
Homa (Shop drawing submittal required)	
Other (Shop drawing submittal required)	