Public Works and Environmental Services Department

WATER AND WASTEWATER SERVICES - ENGINEERING

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PRODUCT SPECIFICATION SHEETS

Date: April 30, 2025

Date Last Issued: April 2, 2019

Date First Issued: June 23, 2010

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

Michael Hagerty, P.E, Chair

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

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" which include 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
- Where reference is made to a standard or specification, like ANSI, NSF, ASTM, etc., the reference is to the latest version of that standard or specification.

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.

Which manufacturer's products are installed on a particular project is to be documented by the Engineer of Record using the WWS "Products Used In Construction" form, which is a separate fillable, saveable Adobe PDF document located on the WWS website. The form is to be submitted to the WWS project manager at the beginning of the project and each time a product manufacturer is changed.

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Water & Wastewater Services
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PRODUCT SPECIFICATIONS

DUCTILE IRON PIPE & FITTINGS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall 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 and shall meet or exceed ASTM A536, latest revision.
- Pressure classification for diameters 4" through 24" shall be 350, minimum.
- 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.
- Sanitary sewer piping and fittings shall have an interior coating of Protecto 401 or Permox CTF, minimum 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 which shall meet or exceed AWWA/ ANSI C104/A21.4, latest revision.
- Potable water main shall have a readily visible blue stripe running longitudinally along the pipe which can be applied by the manufacturer or in the field.
- Sanitary sewer piping shall have a readily visible green stripe running longitudinally along the pipe which can be applied by the manufacturer or in the field.

Note:

- Pipe deflection shall not exceed 50% of the manufacturer's specified maximum amount.
- All push-on fittings and joint restraints manufactured by the pipe manufacturer are approved for use on their respective pipes.
- EPDM Gaskets
- Viton & Tyton Gaskets, Type 1, or approved equal, at Airport or in other areas with petroleum contaminated soils.



PRE-APPROVED MANUFACTURERS:

- ACIPCO (American Cast Iron Pipe Company)
- US PIPE
- McWANE (all plants)
- CLOW
- GRIFFIN PIPE

Date: June 11, 2019
Date Last Issued: March 25, 2019
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:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall be DR 11 (200 PSI) DI Pipe size and meet or exceed AWWA C906, latest revision.
- Resin material shall meet or exceed the requirements of ASTM D3350, lasted revision.
- Material shall be high density polyethylene (HDPE), PE 4710.
- 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
Purple	Reclaimed Water

- 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.

Note:

- Product use is acceptable only when installing pipe by directional drilling at the approval of WWS.
- All fittings and joint restraints manufactured by the pipe manufacturer are approved for use on their respective pipes.
- 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"

- Shall be installed with two 10 gauge copper clad steel tracer wires.





PRE-APPROVED MANUFACTURERS:

- JM EAGLE (Ductile Iron Pipe Size)
- Performance Pipe (Driscoplex 4000/4100)
- Charter Plastics
- WL Plastics

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Sheet Number	1.2

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PRODUCT SPECIFICATIONS

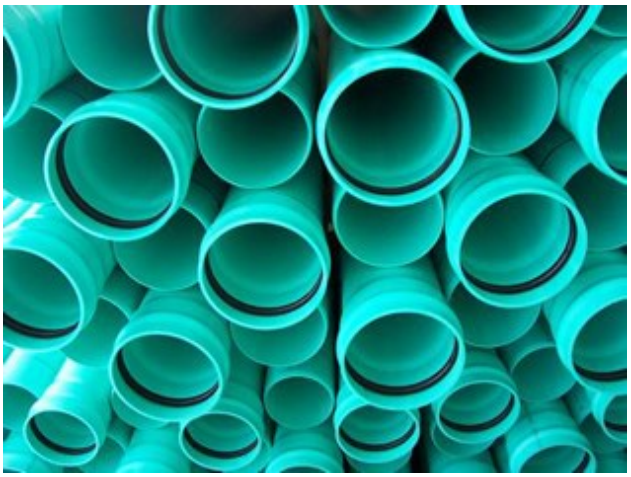
PVC PRESSURE PIPE & FITTINGS FOR GRAVITY SEWER AND RECLAIMED WATER

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed the latest revision of AWWA C900 or C905 or C909.
- C900 and C905 pipe shall be DR 18.
- C909 shall be pressure class 150.
- Shall be new and not subjected to ultraviolet degradation.
- Working pressure shall be 150 psi, minimum.

Note:

- Shall be used for gravity sewer installed at depths greater than 12 feet.
- All fittings and joint restraints manufactured by the pipe manufacturer are approved for use on their respective pipes.



PRE-APPROVED MANUFACTURERS:

- DIAMOND PLASTICS CORP.
- JM EAGLE
- SANDERSON PIPES
- WESTLAKE PIPE & FITTINGS
- UNDERGROUND SOLUTIONS
- NATIONAL PIPE AND PLASTICS
- NEXT POLYMERS

Date: February 5, 2025
Date Last Issued: July 12, 2023
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Standard Detail:

Sheet Number	1.3

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PRODUCT SPECIFICATIONS

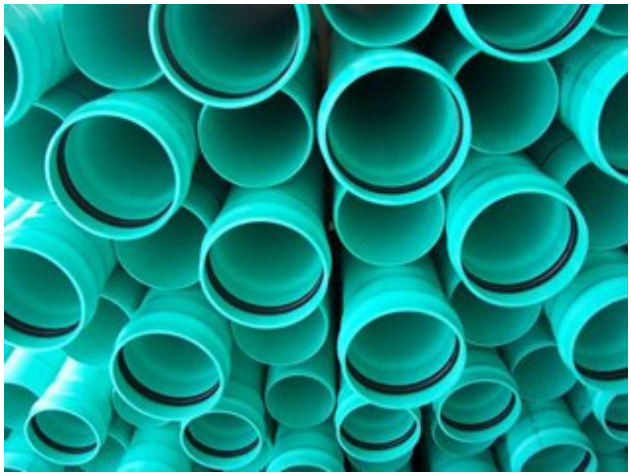
PVC NON-PRESSURE PIPE (6” - 15”)

Minimum Requirements:

- Shall be SDR 26.
- Shall be new and not subjected to ultraviolet degradation.
- Pipe material shall be made of compounds meeting or exceeding ASTM D1784, latest revision, and meet the material requirements of ASTM D3034, latest revision.
- Joints shall be bell and spigot push-on rubber type gaskets meeting or exceeding the requirements of ASTM D3212, latest revision.
- Gaskets shall meet the requirements of ASTM F477, latest revision.
- No solvent weld or threaded joints will be permitted.

Note:

- Shall not be used at depths greater than 12’.



PRE-APPROVED MANUFACTURERS:

- DIAMOND PLASTICS CORP.
- JM EAGLE
- SANDERSON PIPES
- WESTLAKE PIPE & FITTINGS
- NATIONAL PIPE AND PLASTICS
- NEXT POLYMER

Date: February 5, 2025
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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 minimum).
- 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 , latest revision, or better.





PRE-APPROVED MANUFACTURERS:

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

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: 153, 154, 155

Sheet Number	2.1

Water & Wastewater Services
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PRODUCT SPECIFICATIONS

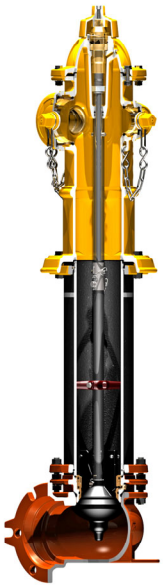
FIRE HYDRANTS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C502, latest revision.
- Rated working pressure shall be minimum 250 psi, test pressure shall be minimum 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 shall consist of two (2) 2-1/2" hose nozzles and one (1) 4-1/2" pumper nozzle. Threads on these nozzles will conform to the latest revision of NFPA #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 chloramines.
- Fire hydrant shall be painted yellow with a reflective type paint that meets NFPA #291, latest revision, or per the latest requirements of the local fire department having jurisdiction.
- Inlet shall be six-inch (6") mechanical joint (MJ).

Note:

- 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.



PRE-APPROVED MANUFACTURERS:

- MUELLER SUPER CENTURION (250, A-423)
- CLOW MEDALLION *[CRTag]
- AMERICAN DARLING (B84B-5)
- AMERICAN AVK (NOSTALGIC STYLE)
- U.S. PIPE METROPOLITAN (M-94) *[CRTag]
- KENNEDY GUARDIAN K-81-D

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

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PRODUCT SPECIFICATIONS

FLANGED FITTINGS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C153 (latest revision) or C110, latest revision.
- Joints shall meet or exceed to AWWA/ANSI C111/ A21.11, latest revision.
- Bolt circle and bolt holes shall meet ANSI B16.1, Class 125, latest revision.
- Gasket shall be full flanged.
- Fitting body material shall be ductile iron meeting or exceeding ASTM 536, latest revision.
- Bolt material shall be stainless steel (Type 304 minimum).
- Pressure rating shall be 250 psi, minimum.
- Sanitary sewer fittings shall have an interior coating of Protecto 401, minimum 40 mils thick.
- Potable water fittings shall be cement lined and seal coated which shall meet or exceed AWWA/ANSI C104/A21.4, latest revision.



PRE-APPROVED MANUFACTURERS:

- ACIPCO (American Cast Iron Pipe Company)
- US PIPE
- STAR PIPE PRODUCTS
- TYLER UNION
- SIGMA (water main only)
- SIP

Date: March 25, 2019
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Sheet Number	2.3

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PRODUCT SPECIFICATIONS

FLEXIBLE COUPLINGS

Minimum Requirements:

- Clamp and shear ring material shall be stainless steel (Type 304 minimum).
- Shall connect to pipe of the same or different size and same or different 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: June 8, 2017
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Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	2.4

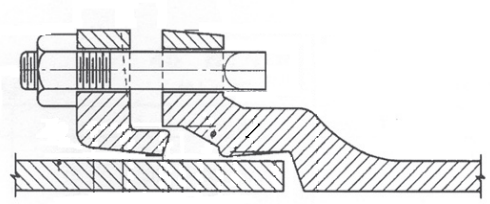
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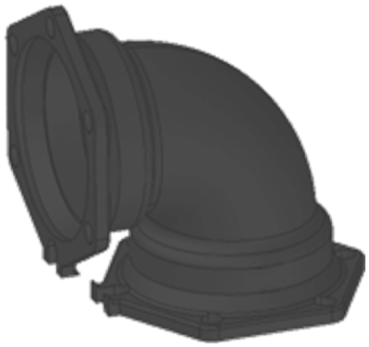
PRODUCT SPECIFICATIONS

MECHANICAL JOINT FITTINGS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA/ANSI C153/A21.53 (latest revision) or C110/A21.1, latest revision.
- Shall be the rubber gasket compression type.
- Joints shall meet or exceed AWWA/ANSI C111/ A21.11, latest revision.
- Fitting body material shall be ductile iron meeting or exceeding ASTM 536, latest revision.
- Pressure rating shall be minimum 350 psi for 4” - 24” diameter fittings.
- Plain end fittings are not permitted.
- Sanitary sewer fittings shall have an interior coating of Protecto 401 or PERMOX CTF, minimum 40 mils thick.
- Buried pipe and fittings shall have an exterior bituminous coating.
- Potable water fittings shall be cement lined and seal coated which shall meet or exceed AWWA/ANSI C104/A21.4, latest revision.





PRE-APPROVED MANUFACTURERS:

- ACIPCO (American Cast Iron Pipe Company)
- US PIPE
- STAR PIPE PRODUCTS
- TYLER UNION
- SIGMA (water main only)*
- ROMAC ALPHA WIDE RANGE RESTRAINED ENDCAP
- SIP

Date: April 16, 2019
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Sheet Number	2.5

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PRODUCT SPECIFICATIONS

PVC FITTINGS FOR GRAVITY SEWER UP TO 12’ IN DEPTH (6” - 15”)

Minimum Requirements:

- Shall be SDR 26.
- Shall meet or exceed 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, latest revision. No solvent weld or threaded joints will be permitted.
- Gaskets shall meet the requirements of ASTM F477, latest revision.

Note:

- Shall not be used at depths greater than 12’.



PRE-APPROVED MANUFACTURERS:

- HARCO
- WESTLAKE PIPE & FITTINGS
- MULTI-FITTINGS
- TIGRE ADS-USA

Date: July 12, 2023
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Sheet Number	2.6

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PRODUCT SPECIFICATIONS

TAPPING SLEEVES

Minimum Requirements:

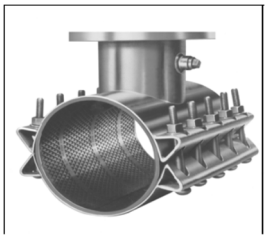
- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C223, latest revision.
- A test plug shall be provided on the outlet throat.
- Shall be recessed for a tapping valve.
- Recess dimensions shall comply with MSS- SP 60, latest revision.
- Shall have a flat-faced flange.
- Body material shall be stainless steel (Type 304 minimum) 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.

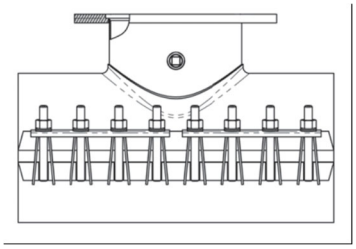
Note:

- Size on size wet taps on asbestos cement pipe are not permitted.
- Minimum tap sizes mains:

6" thru 16" :	6" Tap
18" thru 30" :	12" Tap
36" and larger :	20" Tap

Stainless Steel







Ductile Iron

PRE-APPROVED MANUFACTURERS:

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

16” and larger requires shop drawing approval by Engineer of Record and WWS project manager.

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Standard Detail: 131

Sheet Number	2.7

Water & Wastewater Services
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PRODUCT SPECIFICATIONS

TRANSITION COUPLINGS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C219, latest revision.
- Working pressure shall be 150 psi, minimum.
- Sleeve body material shall be fusion bonded epoxy coated ductile iron meeting or exceeding ASTM A536 (latest revision), fusion bonded epoxy coated carbon steel or stainless steel (Type 304 minimum).
- Flange material shall be fusion bonded epoxy coated ductile iron meeting or exceeding to ASTM A536, latest revision.
- Hardware material shall be stainless steel (Type 304 minimum).



PRE-APPROVED MANUFACTURERS:

- JCM INDUSTRIES (212)
- SMITH BLAIR (441)
- HYMAX (2000-2100 SERIES)
- ROMAC MACRO HP EXTENDED RANGE
- HYMAX VERSA
- TOTAL PIPING SOLUTIONS

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Sheet Number	2.8

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PRODUCT SPECIFICATIONS

PRESSURE PIPE REPAIR CLAMPS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA/ANSI C230, latest revision
- Clamp band (body) and fasteners material shall be stainless steel (Type 304 minimum)
- Lugs material shall be stainless steel (Type 304 minimum) or fusion bonded epoxy coated ductile iron meeting or exceeding ASTM A536, latest revision.
- Gasket shall be virgin SBR per ASTM D2000, latest revision.



PRE-APPROVED MANUFACTURERS:

- FORD METER BOX
- ROMAC INDUSTRIES
- SMITH-BLAIR
- HYMAX EZMAX
- TOTAL PIPE SOLUTIONS
- TOTAL PIPE SOLUTIONS (QUICK SLEEVE WIDE RANGE BELL JOINT REPAIR)
- TOTAL PIPE SOLUTIONS (QUICK-CAM RAPID SEAL REPAIR CLAMP)

Date:	June 11, 2019
Date Last Issued:	April 16, 2019
Date First Issued:	January 23, 2013
Standard Detail:	None

Sheet Number	2.9

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

PRODUCT SPECIFICATIONS

GROOVED PIPING

Minimum Requirements:

- Shall conform to ANSI/AWWA C-606, Standard for Grooved and Shouldered Type Joints and CSA 242 M1980.
- Fittings shall conform to ANSI A21.10/AWWA.
- Fitting body material shall be ductile iron meeting or exceeding ASTM 536, latest revision. • Bolt material shall be stainless steel (Type 304 minimum).
- Pressure rating shall be 250 psi, minimum.
- Sanitary sewer fittings shall have an interior coating of Protecto 401, minimum 40 mils thick.
- Potable water fittings shall be cement lined and seal coated which shall meet or exceed AWWA/ANSI C104/A21.4, latest revision.
- Product approval is limited to 4 to 12-inches in diameter.
- Larger diameters are to be considered on a case-by-case basis.
- Applications are limited to exposed conditions, such as valve vaults and plant pipe galleries.



PRE-APPROVED MANUFACTURERS:

- VICTAULIC (FOR EXPOSED APPLICATIONS ONLY)
  - STYLE 31 COUPLING
  - STYLE 341 FLANGE ADAPTER
  - DUCTILE IRON FITTINGS

Date:	May 9, 2018
Date Last Issued:	January 5, 2018
Date First Issued:	January 5, 2018
Standard Detail:	None

Sheet Number	2.10

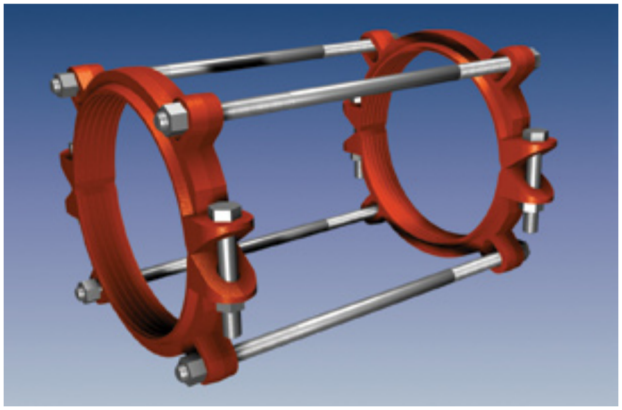
Water & Wastewater Services
Engineering Division
2555 West Copans Road
Pompano Beach, Florida
33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

BELL JOINT RESTRAINT FOR DUCTILE IRON AND PVC PIPE

Minimum Requirements:

- Shall be compatible with joints which meet AWWA C111, latest revision.
- Restraining rings material shall be ductile iron meeting or exceeding ASTM 536.
- Restraining rod material shall be stainless steel (Type 304 minimum).
- Working pressure shall be 250 psi, minimum, for ductile iron pipe.
- Working pressure shall be 150 psi, minimum, for PVC.
- 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)
- EBAA IRON (SERIES 1600TD 4”-12”)
- STAR (SERIES 1100, BELOW 10” DIAMETER)
- STAR (SERIES 3100S & 3100P)
- TYLER UNION (TUFGRIP)
- SIP

PVC Pipe

- FORD METER BOX (UNI-FLANGE SERIES 1390)
- EBAA IRON (SERIES 1600PV, SERIES 1500PV)
- EBAA IRON (SERIES 1600TD, 4” - 12”)
- SIGMA (PV LOK)
- STAR (SERIES 1100)
- TYLER UNION (TUFGRIP)
- SIP

Date: June 11, 2019
Date Last Issued: April 16, 2019
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	3.1

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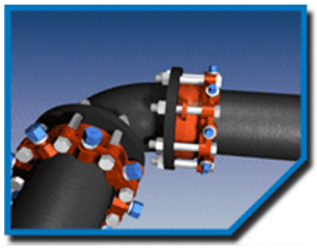
PRODUCT SPECIFICATIONS

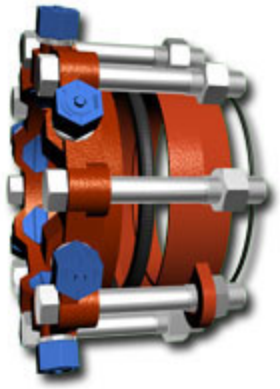
DUCTILE IRON FLANGE ADAPTERS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Flange bolt circles shall meet or exceed AWWA/ANSI C110/A21.10, latest revision.
- Body material shall be ductile iron meeting or exceeding ASTM A536, latest revision.
- 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: June 8, 2017
Date Last Issued: March 21, 2012
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	3.2

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Engineering Division
2555 West Copans Road
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PRODUCT SPECIFICATIONS

GRIPPING RING JOINT RESTRAINT FOR DUCTILE IRON AND PVC PIPE

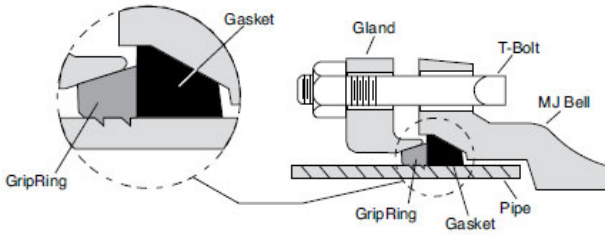
Minimum Requirements:

- Shall be 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".
- Shall meet or exceed ASTM F1674 (latest revision) for use on PVC pipe.
- Gland body and gripping ring material shall be ductile iron meeting or exceeding ASTM 536, latest revision.
- T-bolts and nuts shall meet or exceed 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.
- Restraint device shall consist of a gripping ring held in place by the follower gland.

Note:

- Pipe deflection shall not exceed 50% of the manufacturer's specified maximum amount.





PRE-APPROVED MANUFACTURERS:

Ductile Iron

- ROMAC (GRIP RING)

PVC Pipe

- ROMAC (GRIP RING)
- STAR PIPE (GENERATION II)

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	3.3

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

PRODUCT SPECIFICATIONS

MECHANICAL JOINT RESTRAINT FOR DUCTILE IRON AND PVC PIPE

Minimum Requirements:

- Shall be 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.
- Shall meet or exceed ASTM F1674 (latest revision) for use on PVC.
- Body material shall be ductile iron meeting or exceeding ASTM 536, latest revision.
- Gripping wedge and actuating component material shall be ductile iron meeting or exceeding ASTM 536, latest revision.
- 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)
- SIP MJ DI MJ FITTINGS
- ROMAC ALPHA WIDE RANGE
- IN FACT FOSTER ADAPTOR

PVC Pipe

- FORD METER BOX (UNI-FLANGE SERIES 1500)
- EBAA IRON (MEGALUG SERIES 2000 PV)
- STAR PIPE PRODUCTS (STARGRIP 4000)
- SIGMA (ONE-LOK SLC)
- TYLER UNION PVC BELL (SS304 RODS)

Date: June 8, 2017
Date Last Issued: January 23, 2014
Date First Issued: June 23, 2010
Standard Detail: 109, 110, 111, 112

Sheet Number	3.4

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

PRODUCT SPECIFICATIONS

GRIPPING GASKET JOINT RESTRAINT FOR DUCTILE IRON AND PVC PIPE

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Gripping gasket pressure rating shall meet or exceed the pressure rating of the pipe.
- Gripping gaskets shall meet or exceed the material requirements of AWWA C111, latest revision.
- Locking material shall be stainless steel (Type 304 minimum).

Note:

- Pipe deflection shall not exceed 50% of the manufacturer's specified maximum amount.



PRE-APPROVED MANUFACTURERS:

- ACIPC (Fast Grip Gaskets) (DIP)
- US PIPE (Field Lok 350) (DIP)
- RIEBERLOK (C900 PVC 4" - 16")

Date: June 11, 2019
Date Last Issued: June 8, 2017
Date First Issued: February 22, 2012
Standard Detail:

Sheet Number	3.5

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Engineering Division
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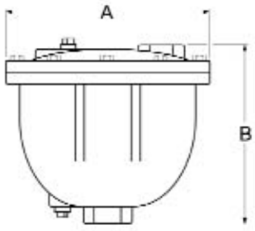
PRODUCT SPECIFICATIONS

AIR RELEASE VALVES FOR POTABLE WATER AND RECLAIMED WATER

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C512, latest revision.
- Body, cover, and baffle material shall be cast iron or ductile iron meeting or exceeding ASTM A126 (latest revision) or A536, latest revision.
- Float and trim material shall be stainless steel (Type 304 minimum).
- 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:

- GA INDUDTRIES (#920, #922)
- CRISPIN (PL10, PL10A, PL20, PL20A)
- Val-Matic Model 38 & 38.2 DISV
- H-TEC Model 986 & 989

Date: October 26, 2018
Date Last Issued: June 21, 2018
Date First Issued: June 23, 2010
Standard Detail: 127

Sheet Number	4.1

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

PRODUCT SPECIFICATIONS

AIR RELEASE VALVES FOR WASTEWATER

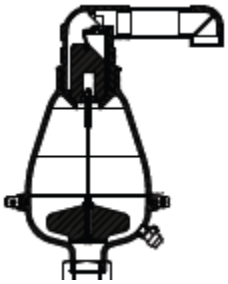
Minimum Requirements:

- Shall 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 meeting or exceeding ASTM A126 (latest revision) or ASTM A536 (latest revision), or stainless steel (Type 304 minimum).
- Trim, float, and seat material shall be stainless steel (Type 304 minimum).
- Orifice button material shall be synthetic rubber.
- 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.

Note:

- The inlet, outlet, and venting orifice shall be sized by the Engineer of Record.





PRE-APPROVED MANUFACTURERS:

- GA INDUSTRIES (#929)
- CRISPIN (S Series)
- H-Tec (Model 986) (where height of the valve is not an issue)
- ARI (D-025PT)
- Val-Matic Model 48A DISV/with backwash assembly

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: 127

Sheet Number	4.2

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

PRODUCT SPECIFICATIONS

AUTOMATIC BLOWOFFS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- 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 schedule 80 PVC.
- Mounting brackets and hardware material shall be stainless steel (Type 304 minimum).
- 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.
- Shall have a 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 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: 253, 254

Sheet Number	4.3

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

PRODUCT SPECIFICATIONS

BUTTERFLY VALVES (12” AND LARGER)

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C-504, Class 150B, latest revision.
- Body and disc material shall be cast or ductile iron meeting or exceeding ASTM A126 (latest revision) or A536,latest revision.
- Seat and all rubber material shall be chloramine resistant.
- Shaft, nuts, screws, and hardware material shall be stainless steel (Type 304 minimum).
- 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]
- M&H (Model 4500 12” only)*[CRTag]
- KENNEDY (Model 4500 12” only)*[CRTag]
- VICTAULIC (Series 761 - up to 12”)

Date: May 9, 2018
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	4.4

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

PRODUCT SPECIFICATIONS

CHECK VALVES FOR LIFT STATIONS

Minimum Requirements:

- Shall 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 (Type 304 minimum).
- 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 52-SC)
- CLOW (5380)
- AMERICAN AVK (SERIES 41)
- VICTAULIC (Series 317 - up to 12”)
- MATCO-NORCA (Series 120 WC)

Date:	September 28, 2018
Date Last Issued:	May 9, 2017
Date First Issued:	June 23, 2010
Standard Detail:	WWS Standard Lift Station Details

Sheet Number	4.5

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

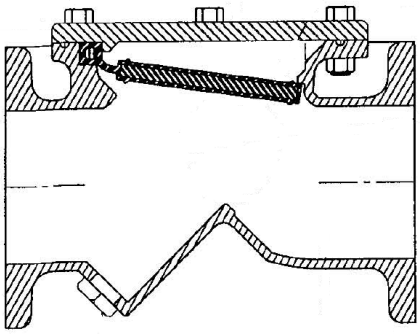
PRODUCT SPECIFICATIONS

CHECK VALVES FOR POTABLE WATER

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C508, latest revision.
- Shall be the flexible, rubber coated disc type.
- Body material shall be cast or ductile iron meeting or exceeding ASTM A126 (latest revision) or ASTM A536, latest revision.
- Seating shall be rubber to metal.
- Rubber material shall be chloramine resistant.
- Bolts and nuts shall be stainless steel (Type 304 minimum).
- Working pressure shall be 250 psi minimum.
- 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)
- VALMATIC (VM-500A-S) [CRTag]

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: 231, 235, 236

Sheet Number	4.6

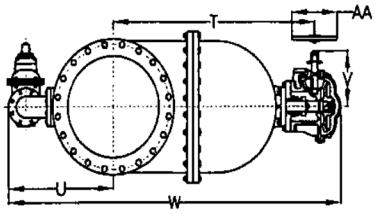
Water & Wastewater Services
Engineering Division
2555 West Copans Road
Pompano Beach, Florida
33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

DOUBLE DISC GATE AND TAPPING VALVES (12” - 48”)

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C500, latest revision.
- Tapping valves shall have one flanged end meeting ANSI standards.
- Shall have clear waterway equal to the full nominal diameter of the valve.
- Body material shall be cast or ductile iron meeting or exceeding ASTM A126 (latest revision) or A536, latest revision.
- Valve seat material shall be bronze.
- Stuffing box and operating nut material shall be cast or ductile iron meeting or exceeding ASTM A126 (latest revision) or A536, latest revision.
- Valve stem material shall be bronze meeting or exceeding ASTM B62 (latest revision) or stainless steel (Type 304 minimum) for valves 42” and greater.
- Nuts and bolts material shall be stainless steel (Type 304 minimum).
- 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 (minimum); Valves 14” and larger shall have a minimum working pressure of 150 psi and be tested at 300 psi minimum.
- 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
- J&S VALVE (4” - 16”)

Date: April 16, 2019
Date Last Issued: June 8, 2017
Date First Issued: June 23, 2010
Standard Detail: 131

Sheet Number	4.7

Water & Wastewater Services
Engineering Division
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PRODUCT SPECIFICATIONS

ECCENTRIC PLUG VALVES

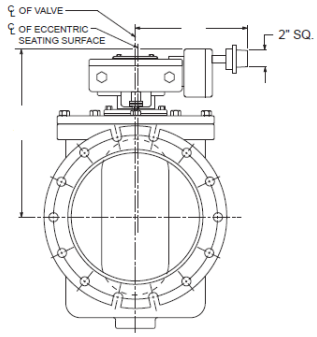
Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall 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.
- Body material shall be cast or ductile iron meeting or exceeding ASTM A126 or ASTM A536.
- Body seat material shall be welded nickel alloy or type 316 (minimum) stainless steel.
- Material for the bearings shall be permanently lubricated 316 (minimum) stainless steel , bronze, or Teflon.
- Material for the nuts, bolts, springs, and washers shall be 316 (minimum) 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 minimum 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.

Note:

- Buried service valves shall have mechanical joint ends.
- Lift Station valves shall have flange ends.





PRE-APPROVED MANUFACTURERS:

- DEZURIK (PEF)
- MILLIKEN VALVE CO. (Series 600/601)
- HENRY PRATT
- VICTAULIC (Series 377—up to 12”)
- VAL-MATIC (Series 5600F and 5700F)
- GA INDUSTRIES ECO-CENTRIC
- KENNEDY VALVE
- VSI WATERWORKS (Series PVII and PVIF)

*16” and larger requires shop drawing approval by EOR and WWS Project Manager.

Date: April 30, 2025
Date Last Issued: June 7, 2019
Date First Issued: June 23, 2010
Standard Detail: 418

Sheet Number	4.8

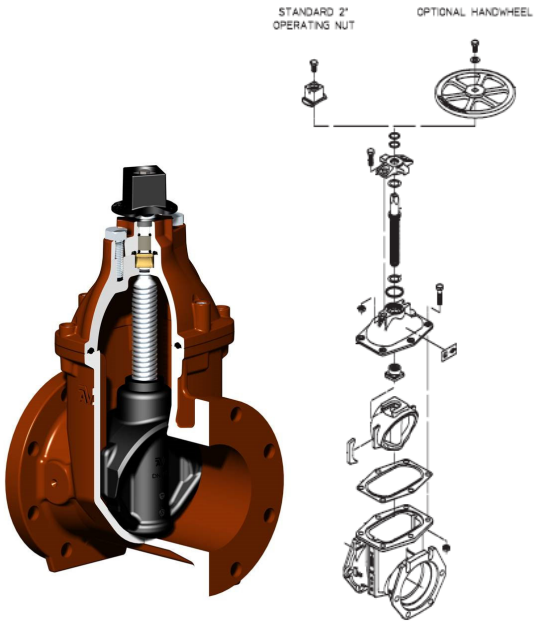
Water & Wastewater Services
Engineering Division
2555 West Copans Road
Pompano Beach, Florida
33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

GATE AND TAPPING VALVES

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Resilient wedge line valves shall meet or exceed AWWA C509 (latest revision) or AWWA C515, latest revisions.
- Valves shall meet or exceed AWWA C550, latest revision.
- 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 meeting or exceeding ASTM A126 (latest revision) or A536, latest revision.
- 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 meeting or exceeding ASTM A126 (latest revision) or A536, latest revision.
- Gate valve stem material shall be bronze meeting or exceeding ASTM B62 (latest revision) or stainless steel (Type 304 minimum).
- Hex head nuts and bolts material shall be stainless steel (Type 304 minimum).
- Valve disc shall be contoured to assure uniform seating.
- Both ends shall be mechanical joint meeting ANSI/ AWWA A21.11/C111, latest revision.
- 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 & 2639) *[CRTag]
- KENNEDY VALVE *[CRTag]
- MUELLER (A2360,T2360) *see note
- MUELLER RESILIANT WEDGE (A-2361)
- GA INDUSTRIES
- MATCO-NORCA (Series 225)
- J&S VALVE (4" - 16")

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

Date: August 2, 2019
Date Last Issued: April 16, 2019
Date First Issued: June 23, 2010
Standard Detail: 123

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PRODUCT SPECIFICATIONS

INSERTION VALVES

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Applicable valve components shall meet or exceed the requirements of AWWA C509, latest revision.
- Valve stem material shall be in meet AWWA C500, latest revision.
- 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 stainless steel (Type 304 minimum).
- Valve sleeve, body bonnet and/ or neck shall be ductile iron or stainless steel (Type 304 minimum).
- 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
- TEAM INDUSTRIAL SERVICES (4” - 12”, with optional 304SS bolts)

16” and larger requires shop drawing approval by Engineer of Record and WWS project manager.

Date:	June 8, 2017
Date Last Issued:	January 23, 2013
Date First Issued:	January 26, 2011
Standard Detail:	

Sheet Number	4.10

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PRODUCT SPECIFICATIONS

POTABLE WATER AIR RELEASE VALVE INFLOW PREVENTERS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall be designed, manufactured and tested to meet or exceed ASSE 1063, latest revision.
- Shall be fully automatic, float operated and designed to close in the event of a flooded structure to prevent contaminated water from reaching the air release valve outlet with submergence pressure up to 20 psi.
- Shall be designed to allow the air release valve to perform its normal function of admitting and discharging air under normal operating conditions.
- The device shall consist of a lower chamber with a float actuated closure member, and an upper chamber to provide redundancy including an independent closure member.
- The device shall provide greater flow area than an equivalently sized air release valve resulting in minimal flow restriction.
- The screen shall be made of stainless steel (Type 304 minimum) and have a quick-disconnect joint for easy removal and inspection.
- The upper and lower chambers shall be cast iron or ductile iron meeting or exceeding ASTM A126 (latest revision) or A536, latest revision.
- Floats and trim material shall be stainless steel (Type 304 minimum).
- The upper chamber air inlet shall be a threaded connection equal to the nominal size of the vent outlet piping.
- Except where otherwise specified, all interior and exterior ferrous surfaces, exclusive of stainless steel surfaces, shall be coated with a two-part thermosetting epoxy coating or fusion bonded epoxy coating.
- Epoxy shall be suitable for use in potable water and reclaimed water.



PRE-APPROVED MANUFACTURERS:

- VAL-MATIC (Floodsafe Series 1300)

Date:	June 8, 2017
Date Last Issued:	January 23, 2013
Date First Issued:	November 14, 2012
Standard Detail:	127

Sheet Number	4.11

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PRODUCT SPECIFICATIONS

PRESSURE REDUCING VALVES

Minimum Requirements:

- Valve body and cap(s) shall be constructed of gray iron castings that conform to ASTM Specification A 126 Class B.
- Internal bronze components shall conform to ASTM Specification B-584.
- Internal Stainless Steel components shall conform to ASTM Specification A-743 Grade CF-8 or CF-8M.
- The control piping shall be rigid red brass, no less than 0.5" in diameter.
- The flanged assemblies shall conform to ANSI standards for wall thickness of body and caps, and flange thickness and drilling, subject to other specified standards.



PRE-APPROVED MANUFACTURERS:

- ROSS VALVE MFG. CO., INC.

Date:	June 8, 2017
Date Last Issued:	N/A
Date First Issued:	November 10, 2016
Standard Detail:	N/A

Sheet Number	4.12

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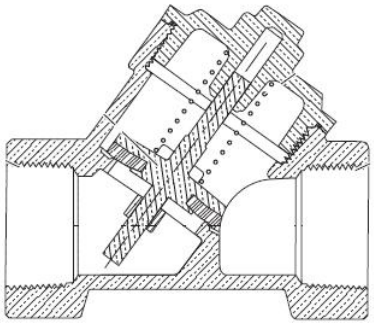
PRODUCT SPECIFICATIONS

CHECK VALVES FOR WATER SERVICES

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C800, latest revision, for all brass components.
- Body material shall be brass meeting or exceeding ASTM B62, latest revision.
- Spring material shall be stainless steel (Type 304 minimum).
- 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:	June 8, 2017
Date Last Issued:	January 23, 2013
Date First Issued:	June 23, 2010
Standard Detail:	221, 222, 224, 226, 227, 228

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PRODUCT SPECIFICATIONS

CORPORATION STOPS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C800, latest revision.
- Body material shall be brass alloy meeting or exceeding ASTM B62, latest revision.
- 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 8, 2017
Date Last Issued:	January 23, 2013
Date First Issued:	June 23, 2010
Standard Detail:	205, 206, 221, 222, 224, 235, 236, 237

Sheet Number	5.2

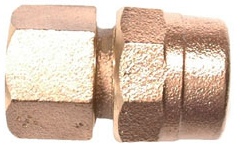
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PRODUCT SPECIFICATIONS

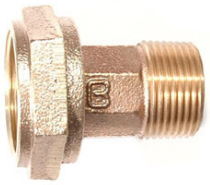
COUPLINGS AND ADAPTERS FOR WATER SERVICES

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed 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 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: 226, 227, 228

Sheet Number	5.3

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PRODUCT SPECIFICATIONS

CURB STOPS/ METER VALVES

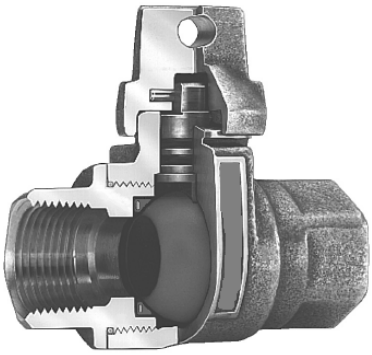
Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C800, latest revision.
- Body material shall be brass meeting or exceeding ASTM B62, latest revision.
- 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 O-rings.
- O-ring material shall be chloramine resistant.
- Valve shall open and close with a 90^{O} turn of a standard slotted wrench.
- Shall have a working pressure of 300 psi, minimum.
- Shall have a pack-joint compression fitting on the inlet.

Note:

- 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 CURB STOP 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: June 8, 2017
Date Last Issued: January 23, 2017
Date First Issued: June 23, 2010
Standard Detail: 226, 227, 228

Sheet Number	5.4

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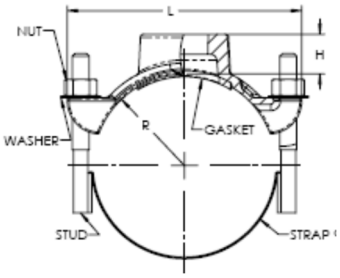
PRODUCT SPECIFICATIONS

DOUBLE STRAP SERVICE SADDLES

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C800, latest revision.
- Shall be double strap design or single shell band.
- Saddle material shall be ductile iron meeting or exceeding ASTM A536, latest revision or 304 SS.
- Material for the straps, bales, nuts, and washers shall be stainless steel (Type 304 minimum).
- Straps or shell band 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 (double strap service saddle).
- EPDM to be rubber insulating boot for 304 SS shell band service saddle.
- 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 (DI only).





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
- TOTAL PIPING SOLUTIONS (Series T3)

Date: August 1, 2018
Date Last Issued: June 8, 2017
Date First Issued: June 23, 2010
Standard Detail: 205, 206, 221, 222

Sheet Number	5.5

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PRODUCT SPECIFICATIONS

METER FLANGES FOR WATER SERVICES

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C800, latest revision.
- Working pressure of 150 psi, minimum.
- Material for the nuts and bolts shall be stainless steel (Type 304 minimum).



PRE-APPROVED MANUFACTURERS:

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

Date: June 8, 2017
Date Last Issued: January 23, 2017
Date First Issued: June 23, 2010
Standard Detail: 226, 227, 228

Sheet Number	5.6

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PRODUCT SPECIFICATIONS

POLYETHYLENE TUBING FOR 1" AND 2" WATER SERVICES

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C901, latest revision.
- Shall be SDR 9.
- Shall have surfaces free from bumps and irregularities.
- Shall comply with ASTM 3350 (latest revision) providing for an inner and outer layer of UV protection for 5 years in direct sunlight.
- Shall 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.

Note:

- Stainless steel (Type 304 minimum) tube stiffener insert shall be used for tubing services.



PRE-APPROVED MANUFACTURERS:

- PERFORMANCE PIPE (DRISCOPLEX)
- ENDOT ENDOPOLY
- MUNICIPEX PEXa
- ADS (POLYFLEX)

Date:	June 8, 2017
Date Last Issued:	January 23, 2013
Date First Issued:	June 23, 2010
Standard Detail:	221, 222, 224, 226, 227, 228

Sheet Number	5.7

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PRODUCT SPECIFICATIONS

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

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed the requirements of AWWA C800 (latest revision), Section A.2 and ASTM B88, latest revision.
- 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.

Note:

- Soldered fittings are acceptable on aboveground tubing.



PRE-APPROVED MANUFACTURERS:

Use requires shop drawing approval by Engineer of Record.

Date:	June 8, 2017
Date Last Issued:	January 23, 2013
Date First Issued:	June 23, 2010
Standard Detail:	206, 221, 222, 224, 226, 227, 228, 235, 236, 237

Sheet Number	5.8

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PRODUCT SPECIFICATIONS

U-BRANCHES

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed the requirements of AWWA C800, latest revision.
- Working pressure shall be 150 psi, minimum.



PRE-APPROVED MANUFACTURERS:

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

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: 227

Sheet Number	5.9

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PRODUCT SPECIFICATIONS

YOKES

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Spacing shall accommodate meter lengths as described in AWWA C800, latest revision.
- Body material shall be cast iron ASTM A48 (latest revision) or A126, latest revision.

Note:

- Not allowed on new construction.



PRE-APPROVED MANUFACTURERS:

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

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	5.10

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PRODUCT SPECIFICATIONS

DUAL CHECK VALVES FOR WATER SERVICES

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed ANSI/ASSE 1024, latest revision.
- The wetted surface of this product contacted by consumable water shall contain less than 0.25% of lead by weight.
- Spring material shall be stainless steel (Type 304 minimum)
- Working pressure shall be 150 psi, minimum.
- Shall have two independently operating spring loaded check valves.
- Maximum head loss shall be as follows:
  3/4" valve: not to exceed 5 psi at 12 gpm.
  1" valve: not to exceed 6 psi at 20 gpm.



Note:

- Inlet and outlet types vary depending on the specific situation.
- This product is approved only for residential water service and only when the residence has access to reclaimed water.
- To be installed immediately downstream of the water meter.

PRE-APPROVED MANUFACTURERS:

- WATTS SERIES LF7R
- WILKINS MODEL 700XL

Date:	June 8, 2017
Date Last Issued:	May 29, 2013
Date First Issued:	May 29, 2013
Standard Detail:	None

Sheet Number	5.11

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PRODUCT SPECIFICATIONS

COMPOUND FIRELINE WATER METERS

Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed the requirements of AWWA C703, latest revision.
- Shall be UL listed or FM approved.
- Flanges shall meet ANSI 16.1 (latest revision) Class 125.
- Main case 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.

Note:

- 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.





PRE-APPROVED MANUFACTURERS:

- SENSUS (Omni F2)
- HERSEY METERS (Model FM3)

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	6.1

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PRODUCT SPECIFICATIONS

WATER METERS (3”, 4”, 6”, 8”)

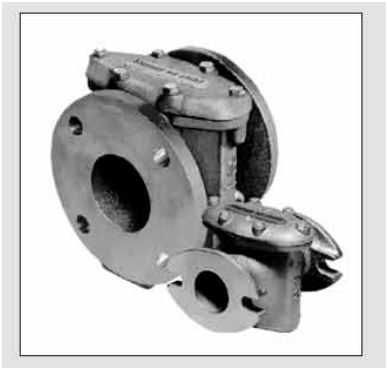
Minimum Requirements:

- Shall meet or exceed ANSI/NSF 61, latest revision.
- Shall meet or exceed AWWA C701, latest revision.
- Meters shall be the Class II turbine type meter assembly.
- Main case 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 (Type 304 minimum).
- Registers shall be permanently sealed, tamper resistant, with a straight reading odometer type display.
- Meters shall have a direct magnetic drive.
- Shall be designed so maximum continuous flow rates may be exceeded up to a minimum of 25% for intermittent periods.
- Flanges shall meet to ANSI B16.1 (latest revision), Class 125 or Class 150.
- Working pressure shall be 175 psi, minimum.

Note:

- 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.





PRE-APPROVED MANUFACTURERS:

- HERSEY-METERS (HORIZON)
- SENSUS (Omni T2)
- ZENNER PMCB03
- ZENNER PMCB04

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	6.2

Water & Wastewater Services
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PRODUCT SPECIFICATIONS

FIRE PROTECTION BY-PASS METERS (1”)

Minimum Requirements:

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



PRE-APPROVED MANUFACTURERS:

- BADGER (Model 25 [5/8”]; Model 70 [1”]; Model 120 [1-1/2”] and Model 170 [2”]).
- NEPTUNE (Model T-10 [all sizes])

Date: June 8, 2017
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail: 226, 235, 237

Sheet Number	6.3

Water & Wastewater Services
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PRODUCT SPECIFICATIONS

SERVICE METERS (5/8", 1", 1-1/2", 2")

Minimum Requirements:

- Main case material for 5/8" to 2" meters shall be ANSI/NSF 61 (latest edition) approved and shall be certified lead free bronze or brass.
- Main case shall have ANSI/NSF 61 (latest edition) molded on the body in raised lettering.
- Main case shall have non-corrosive metal, male threaded end connections for 5/8" and 1" meters and flanged end connections for 1-1/2" and 2" meters.
- The manufacturer shall warranty bronze or brass main cases for a period of fifteen years from the date of final acceptance by the County.
- 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 engraved onto the 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".
- Meter 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 shall be designed with a minimum 4-bolt threaded 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 an the measuring chamber shall be locked into place with a chamber retainer, as applicable.
- Meters shall meet or exceed AWWA C700 (latest revision) 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.



PRE-APPROVED MANUFACTURERS:

See Next Page

Date: See Next Page
Date Last Issued: See Next Page
Date First Issued: See Next Page
Standard Detail: See Next Page

Sheet Number	6.4

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

PRODUCT SPECIFICATIONS

SERVICE METERS (5/8", 1", 1-1/2", 2")

Minimum Requirements (Cont'd):

- 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, brass or an engineered plastic and have a box lid with stainless steel (Type 304 minimum) 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:

- BADGER (Model 25 [5/8"]; Model 70 [1"]; Model 120 [1-1/2"] and Model 170 [2"]).
- NEPTUNE (Model T-10 [all sizes])

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: 224, 226, 227, 228

Sheet Number	6.4 (Cont'd)

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

PRODUCT SPECIFICATIONS

WATER SAMPLING STATIONS

Minimum Requirements:

- Sampling Stations shall be meter box- retrofit style. Each station will Install Into existing meter yokes, and water meters can then be reset into sampling station setter.
- Each male valve will be located before the water meter, have an auxiliary shut-off valve, and be protected by a (PVC or brass) cover when not in use.
- Each station shall have a dual check valve between water meter and residence.



PRE-APPROVED MANUFACTURERS:

- KUPFERLE FOUNDARY COMPANY, ECLIPSE, #94WM SAMPLING STATION
- FORD METER BOX COMPANY, RETROSETTER SAMPLING STATION
- MUELLER CO. HYDRO-GUARD BELOW GROUND

Date: March 7, 2018
Date Last Issued: N/A
Date First Issued: March 7, 2018
Standard Detail: N/A

Sheet Number	6.5

Water & Wastewater Services
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FAX 954-831-0798

PRODUCT SPECIFICATIONS

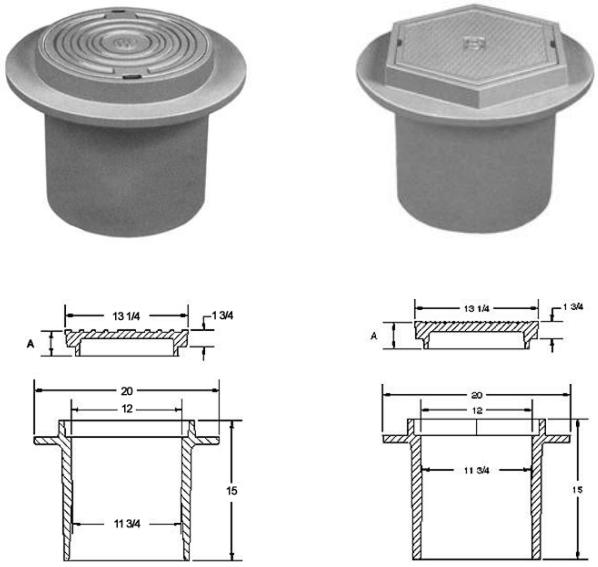
BOX AND COVER

Minimum Requirements:

- Box and cover material shall be cast iron meeting or exceeding ASTM A48 (latest revision) Class 35B.

Note:

- 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.
- The Engineer of Record is responsible for complying with FAA Engineering Guidance 98-11 when this item could be subject to aircraft loading.



PRE-APPROVED MANUFACTURERS:

- US FOUNDRY (7630)
- US FOUNDRY (7635, Standard Detail Figure 154 only)
- EJ 1553Z 1553A & 1556A 1556Z ASSEMBLY

Date: June 8, 2017
Date Last Issued: January 23, 2013
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.

Note:

- The Engineer of Record is responsible for complying with FAA Engineering Guidance 98-11 when this item could be subject to aircraft loading.



PRE-APPROVED MANUFACTURERS:

- US FOUNDRY (USF 7635, FJ cover)
- US FOUNDRY (USF 7636, MJ cover)
- CARSON (MSCO-3) W/ EBAA IRON COVER

Date: April 16, 2019
Date Last Issued: March 26, 2019
Date First Issued: June 23, 2010
Standard Detail: 341

Sheet Number	7.2

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

PRODUCT SPECIFICATIONS

MANHOLES

Minimum Requirements:

- Shall 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.
- 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.

Note:

- Sections shall be joined with a preformed plastic joint sealing compound consisting of either bituminous or butyl rubber base, meeting or exceeding 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.
- The Engineer of Record is responsible for complying with FAA Engineering Guidance 98-11 when this item could be subject to aircraft loading.





PRE-APPROVED MANUFACTURERS:

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

Use requires shop drawing approval (non-structural details only) by Engineer of Record and WWS project manager for each manhole. The shop drawings are to be signed and sealed by the Engineer of Record.

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: 311, 312, 313, 318, 322

Sheet Number	7.3

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

MANHOLE RISERS

Minimum Requirements:

- Risers shall have an adjustable diameter.
- Riser material shall be ASTM A36 (latest edition) hot roll steel and galvanized metal or electro-coating.
- Stud material shall be stainless steel (Type 304 minimum).

Note:

- Product shall not be used on new manhole installations.



PRE-APPROVED MANUFACTURERS:

- RELL (TYPE 1 & 2) (Not approved for new manhole installations)
- EJ USA (M2 & M5) (Not approved for new manhole installations)

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	7.4

Water & Wastewater Services
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FAX 954-831-0798

PRODUCT SPECIFICATIONS

MANHOLE CONNECTORS

Minimum Requirements:

- Shall meet or exceed the testing requirements set forth in ASTM C923, latest edition.
- Body material shall be rubber.
- Hardware material shall be stainless steel (Type 304 minimum).
- Shall provide a flexible, watertight seal between the pipe and concrete structure.
- 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.

Note:

- Shall be cast integrally with the structure wall during the manufacturing process in a manner that it will not pull out during pipe coupling.



PRE-APPROVED MANUFACTURERS:

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

Date: June 8, 2017
Date Last Issued: June 13, 2012
Date First Issued: June 23, 2010
Standard Detail: 322

Sheet Number	7.5

Water & Wastewater Services
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PRODUCT SPECIFICATIONS

MANHOLE GRADE RINGS

Minimum Requirements:

Concrete

- Concrete grade rings shall meet or exceed ASTM C478, latest revision.
- Concrete grade ring material shall be Type II concrete with a minimum 28 day strength of 4000 psi.

Plastic

- Plastic manhole grade rings shall meet or exceed ASTM D4976 (latest revision) and shall be used only in conjunction with an approved chimney seal system.
- 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.

Note:

- Concrete grade rings can be used on new manhole installations or on existing manholes.
- Plastic manhole grade rings shall be used only on new manhole installations.
- 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.
- The Engineer of Record is responsible for complying with FAA Engineering Guidance 98-11 when this item could be subject to aircraft loading.



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.

Use requires shop drawing approval by Engineer of Record.

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: 312, 311, 313

Sheet Number	7.6

Water & Wastewater Services
Engineering Division
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PRODUCT SPECIFICATIONS

MANHOLE RING AND COVER

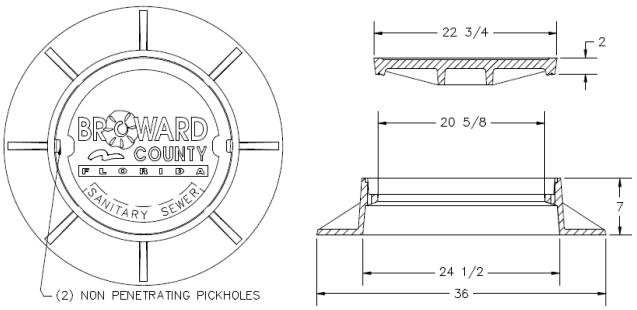
Minimum Requirements:

- Cover material shall be cast iron or ductile iron meeting or exceeding ASTM A48, latest revision.
- Frame material shall be cast iron or ductile iron meeting or exceeding ASTM A48, latest revision.
- 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 cover shall be coated with a shop coat to minimize rusting prior to delivery.
- 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.

Note:

- No plugging or filling will be allowed.
- The Engineer of Record is responsible for complying with FAA Engineering Guidance 98-11 when this item could be subject to aircraft loading.





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)
- EJ USA (1072Z frame and 1072A1GS cover)

Date: June 8, 2017
Date Last Issued: December 3, 2013
Date First Issued: June 23, 2010
Standard Detail: 161

Sheet Number	7.7

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

METER BOX AND LID

Minimum Requirements:

- The meter box shall be made from high-density 100% homogenous polyethylene material or other approved 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 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. The dual out knockouts shall be 10" from outside edge to outside edge.
- 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 meeting or exceeding ASTM A536 (latest revision), Grade 60-40-18 or polymer concrete.
- 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.
- Lids shall be coated with a shop coat to minimize rusting prior to delivery (DI Only).
- Testing shall be verified by an independent third party.
- All meter box lids shall have a minimum of 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)
- SIGMA Model RMB 132412-SW-W and Ductile Iron Lid LC 1324-R-D
- HUBBELL QUARITE PG STYLE (13"x24"x12" DEPTH & 17" x 30")

Date: August 1, 2018
Date Last Issued: June 21, 2018
Date First Issued: June 23, 2010
Standard Detail: 226, 227, 228

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

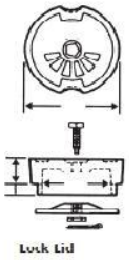
VALVE BOXES

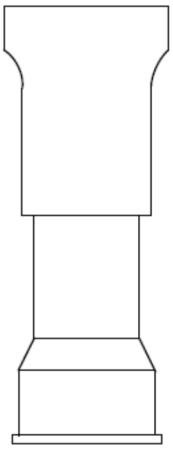
Minimum Requirements:

- Valve boxes shall be cast iron ASTM A48 (latest revision), 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.

Note:

- The stem of a buried valve shall be within 18" of the finished grade.





PRE-APPROVED MANUFACTURERS:

- TYLER UNION
- STAR PIPE PRODUCTS
- US FOUNDRY
- EJ USA (8850 Box and 6800 Lid)
- SIP
- BINGHAM & TAYLOR HEAVY DUTY

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: 121, 123, and 418

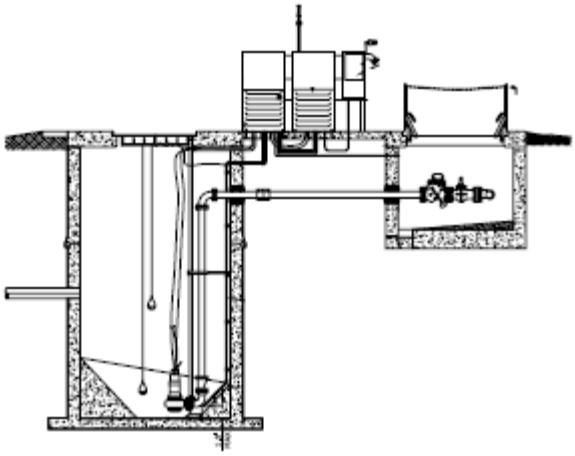
Water & Wastewater Services
Engineering Division
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33069
Tel 954-831-0745
FAX 954-831-0798

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.*

Use requires shop drawing approval by Engineer of Record and WWS project manager for each structure. Shop drawings to describe non-structural details and include buoyancy calculations when the structure is installed by the Tremie Seal method. The shop drawings are to signed and sealed by the Engineer of Record.

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: WWS Lift Station Details

Sheet Number	7.10

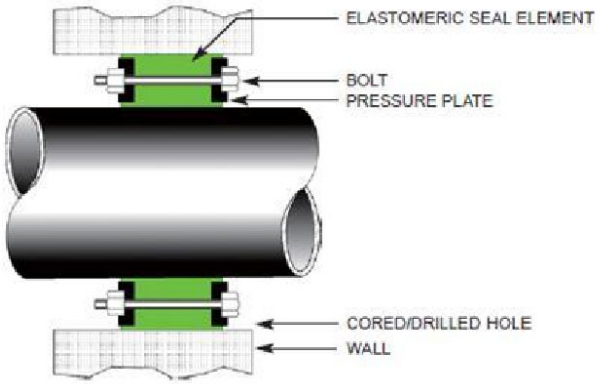
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2555 West Copans Road
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PRODUCT SPECIFICATIONS

WALL PENETRATING SEALS

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 minimum , between the pipe and wall penetration.
- The link material shall be EPDM.
- The nuts and bolts material shall be stainless steel (Type 304 minimum).
- 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 8, 2017
Date Last Issued:	January 23, 2013
Date First Issued:	June 29, 2011
Standard Detail:	313

Sheet Number	7.11

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

PRODUCT SPECIFICATIONS

COATING FOR EXTERNAL DUCTILE IRON PIPE AND NON-WET CONCRETE SURFACES

Minimum Requirements:

- 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.

Note:

- Surface preparations, priming, and application shall be in accordance with the more stringent of the manufacturers recommendations or the WWS specifications.

PRE-APPROVED MANUFACTURERS:

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

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail: WWS Lift Station Details

Sheet Number	8.1

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FAX 954-831-0798

PRODUCT SPECIFICATIONS

MANHOLE CHIMNEY SEALS

Minimum Requirements:

- 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 D570 (Standard Test Method for Water Absorption of Plastics), latest revision.
- Adhesive shall be heat activated.

Note:

- Alternative systems will be considered on a case-by-case basis.



PRE-APPROVED MANUFACTURERS:

- WRAPIDSEAL

Date: June 8, 2017
Date Last Issued: January 23, 2013
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	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:

- 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;

OPTION ONE

- **Composition:** 100% solids cyclo-aliphatic amine-cured epoxy coating.
- 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.

OPTION TWO

- **Composition:** Two component 100% solids modified polyurea.
- The applicator shall be trained and provide a letter of certification from the manufacturer for the handling, mixing, application, and inspection of the liner system. *Can also be used for Levels I and II.

Note:

- Application of the coating shall be in accordance with the manufacturer's specification.
- Preparation of the surface shall meet or exceed WWS requirements.
- The coating shall be Level II or Level III in highly corrosive areas, as directed by WWS.
- DURA-PLATE 5900 is acceptable for coating wet well and valve pit fittings.



PRE-APPROVED MANUFACTURERS:

LEVEL I
- CARBOLINE 300M
- TARGUARD

LEVEL II
- SEWPER COAT
- BASF SP15
- HITECH

LEVEL III
- BASF SEWER GUARD HBS 100 EPOXY LINER
- DURA-PLATE 5900
- SPECTRUM SPECTRASHIELD POLYUREA

Date:	June 11, 2019
Date Last Issued:	June 8, 2017
Date First Issued:	June 23, 2010
Standard Detail:	WWS Standard Lift Station Details, 311, 312, 313

Sheet Number	8.3

Water & Wastewater Services
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PRODUCT SPECIFICATIONS

WETWELL, VALVE PIT, & MANHOLE LINERS

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



PRE-APPROVED MANUFACTURERS:

Date: June 8, 2017
Date Last Issued: June 23, 2010
Date First Issued: June 23, 2010
Standard Detail:

Sheet Number	8.4

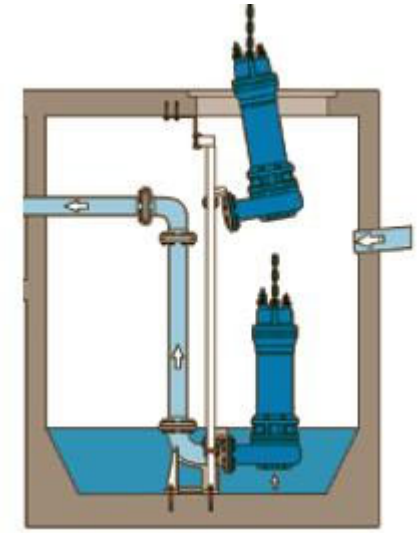
Water & Wastewater Services
Engineering Division
2555 West Copans Road
Pompano Beach, Florida
33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

SUBMERSIBLE WASTEWATER LIFT STATION PUMPS (3-100 HP)

Minimum Requirements:

- Shall be 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.
- Pump system design shall include an Ebara/Flygt 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 including casing, impeller, suction cover, motor frame and discharge elbow shall be manufactured from gray cast iron, ASTM A48 (latest revision), 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 flange on the discharge side.
- All exposed bolts and nuts shall be stainless steel (Type 304 minimum).
- All mating surfaces of major components shall be machined and fitted with NBR 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 (latest revision) 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.
- Pumps shall be capable of passing intact hard spheres of at least 3 inches in diameter. Pump suction and discharge openings shall be at least 4 inches in diameter .
- The impellers shall be dynamically balanced and shall be designed for solids handling with a long thru let without acute turns.
- 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.



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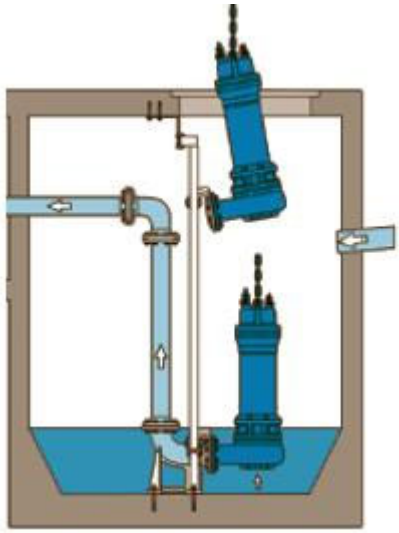
Water & Wastewater Services
Engineering Division
2555 West Copans Road
Pompano Beach, Florida
33069
Tel 954-831-0745
FAX 954-831-0798

PRODUCT SPECIFICATIONS

SUBMERSIBLE WASTEWATER LIFT STATION PUMPS (3-100 HP)

Minimum Requirements (Cont'd):

- The 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 overfilling 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 stainless steel (Type 304 minimum) 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 MG-1 (latest revision), 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.
- The pump motor will be furnished with a large lifting bail constructed of stainless steel (Type 304 minimum). 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 up to and not including 20 HP pump models shall be capable of operating on three (3) phase 240 volts and three (3) phase 480 volts without requiring a special stator.
- 20 HP and larger shall operate on three (3) phase 480 volts.
- Stator windings shall be copper, insulated with moisture resistant Class F insulation, rated for 311°F minimum.
- The stator shall be dipped and baked in minimum 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 (Type 304 minimum) 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 minimum rated for a maximum of 10 starts per hour.
- Pumps 75 HP and larger shall have a 1.10 minimum motor service factor rated for a maximum of 10 starts per hour.
- 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 /



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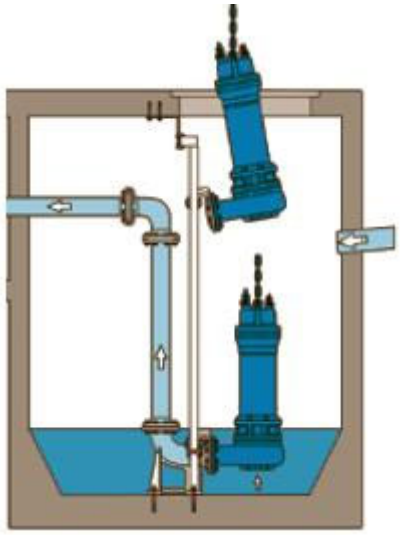
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PRODUCT SPECIFICATIONS

SUBMERSIBLE WASTEWATER LIFT STATION PUMPS (3-100 HP)

Minimum Requirements (Cont'd):

- 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 stainless steel (Type 304 minimum) schedule 40 guide rails sized to mount directly to a base elbow at the floor of the wet well and to a stainless steel (Type 304 minimum) 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 20 HP will use 2 inch schedule 40 stainless steel (Type 304 minimum) double guide rails, and b) pumps 25 HP and larger will use 3 inch schedule 40 stainless steel (Type 304 minimum) 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 meet ANSI B16.1 (latest revision) 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.
- The motor junction area shall use either rings eyes or a terminal board to connect the power cables to the stator leads.



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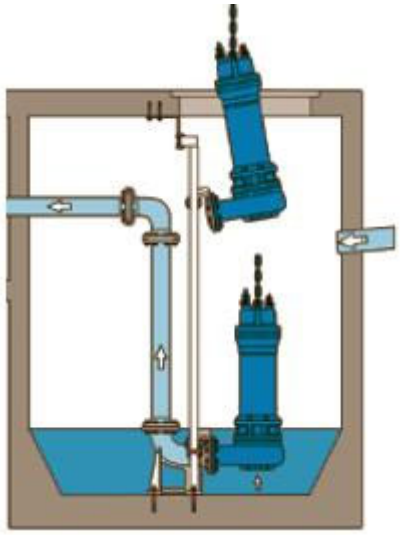
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PRODUCT SPECIFICATIONS

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 18 standard pump curves. A manufacturer's trimmed or untrimmed impeller pump curve must be within 15% of the required flow at the required head for the left and right points and within 7% 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 the impellers that meet WWS standard curve requirements, except for pumps for curve numbers 14 through 18. Curve 14 through 18 pump impellers may be further trimmed to meet specific design parameters.
- See "WWS Standard Lift Station Pumps" document for standard pump curves and operating points.



PRE-APPROVED MANUFACTURERS:

- EBARA*
- FLYGT*
- HOMA*

* Not approved for all standard pump curves. Use requires shop drawing approval by Engineer of Record and WWS project manager for each lift (pumping) station. Shop drawings to detail hydraulic performance only.

Date:	October 17, 2024
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Standard Detail:	WWS Standard Lift Station Details

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